

CX672 / CX872 / CX1272 / CX1272R

Congratulations on the purchase of your CX mixer. Your new CX series mixer demonstrates CARVIN's commitment to producing the highest quality and most sophisticated engineering in the audio industry today. The CX series mixers were designed to be professional mixers in compact units. The CX includes a full function stereo mixer, with two nine band graphic equalizers, a digital signal effects processor and a powerful stereo amplifier. A rack mount version is also available without power amps. Each CX series mixer is surrounded by a strong, lightweight 3/4" poplar plywood cabinet covered with Duratuff II™ carpeting making the CX mixer road worthy.

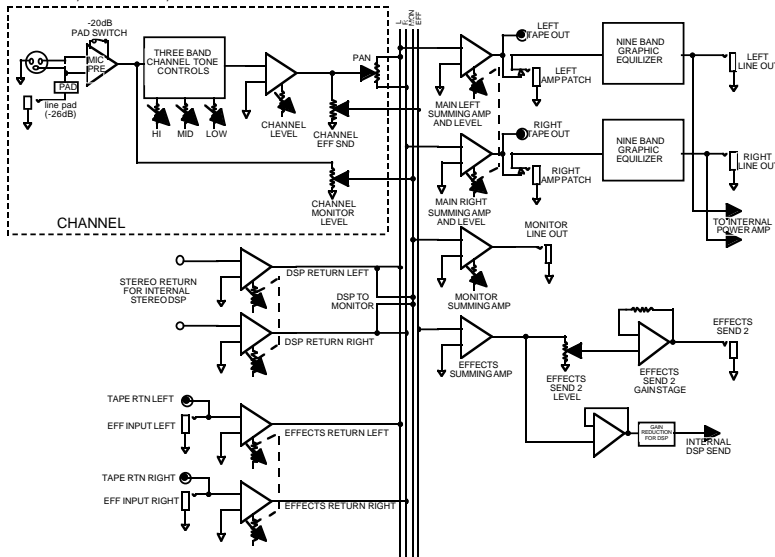
**CX OVERVIEW**

The MIC/LINE input channels feature XLR and 1/4" LINE inputs with phantom power for condenser mics. There are 3 bands of EQ, a post fader effect send, and a monitor pre-fader send on each channel. The master section features two 9 band graphic EQs, master stereo main and monitor mix controls, a complete 16 program effects processor with send and return controls, and a stereo external effects return.

**"SHELVING" EQ WITH ACTIVE TONE CIRCUITS**

The CX series incorporates 3 bands of EQ per channel. They offer smooth tone curves so your adjustments will sound natural and yet be effective. The high (treble) and low (bass) "shelving" type controls cover the complete upper and bottom portions of the audio range. The MID EQ controls are a "band pass" type which peak at 2.2k Hz for added presence to your mid range tones. Because CARVIN uses "active" tone circuits, you are able to boost or cut your tones without any signal loss to your sound.

**CX672, CX872, CX1272 BLOCK DIAGRAM**



**RECEIVING INSPECTION—read before getting started**

INSPECT YOUR MIXER FOR ANY DAMAGE which may have occurred during shipping. If any damage is found, please notify the shipping company and CARVIN immediately.

SAVE THE CARTON & ALL PACKING MATERIALS. In the event you have to re-ship your unit, always use the original carton and packing material. This will provide the best possible protection during shipment. CARVIN and the shipping company are not liable for any damage caused by improper packing.

SAVE YOUR INVOICE. It will be required for warranty service if needed in the future. SHIPMENT SHORTAGE. If you find items missing, they may have been shipped separately. Please allow several days for the rest of your order to arrive before inquiring.

RECORD THE SERIAL NUMBER on the enclosed warranty card or below on this manual for your records. Keep your portion of the card and return the portion with your name and comments to us.

**INTERNAL SIGNAL ROUTING**

Your balanced mic or instrument plugs directly into the high quality XLR Neutric™ connectors and is then routed into the differential circuits for excellent hum and noise cancellation. As your signal continues within the console, a double-sided printed circuit board (FR-4 fire rated) carefully guards the circuit traces with a copper shield running over the traces. This eliminates RF interference and reduces crosstalk substantially. The printed circuit board has plated-through holes which means that every component is soldered securely in three places (bottom, in the hole and on top). This offers unsurpassed component security while reducing circuit resistance for pure dynamic sound.

**HEADROOM**

Headroom is very important when designing a mixer—especially for recording. Lack of headroom will cause your sound to become distorted and muddy. This can happen when you turn the volume too high, if the input signal is too hot or if excess bass or treble is added. With most mixers, you have to reduce the input gain to fight headroom problems, but this just increases noise. That's why we have taken great care in the CX series to make sure that each gain stage is properly designed and balanced for more headroom along the entire audio path.

**TOROID SUPPLY**

A big feature in the CX power supply is the precision wound Toroid transformer (not available from our competitors) that offers lighter weight with massive current capability for the power amp. The toroid based power supply also offers unsurpassed rejection of noise and hum while providing precision voltage for all preamp stages. Now you can go anywhere and never worry about inconsistent sound due to fluctuating voltages. CARVIN has spared no expense to achieve the best possible quality & performance.

For your records, you may wish to record the following information.

Serial No. \_\_\_\_\_ Invoice Date \_\_\_\_\_

**CX672, CX872 & CX1272 SPECIFICATIONS:**

- Frequency Response: Mic or Line Inputs: 20Hz-20KHz ±2dB
- Total Harmonic Distortion: Less than .1%
- Equivalent Input Noise: 150 ohm source: -110dBu
- Output Noise: -90dBu Master Line Out (all levels minimum) (Power Mixers Only)
- Output Power: CX872 & CX1272 : 8Ω: 175/175 w, 4Ω: 250/250 w 2Ω: 375/375 w, less than 1% THD
- Output Headroom: +20dB 1/4" unbalanced
- Maximum Gain: Mic in to Master Line Out: 70dB
- Crosstalk: Adjacent ch's: -60dB at 1KHz
- Common Mode Rejection: -80dB at 1KHz
- Phantom Power: All XLR Mic in channels
- Channel EQ.: 3 band active, LOW: 80Hz ±12dB MID: 2.2KHz ±12dB HI: 11.5KHz ±12dB
- Graphic EQ.: 9 Band Oct. Intervals ±12dB
- Mic Input: Balanced XLR input
- Line Input: Unbalanced 1/4" Phone Jack
- Power Consumption: 700VA
- Size: 11"H x 19.5"W x 9"D Rack Model: 8.75"H x 19"W x 7.75"D



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# CX672, CX872 & CX1272 CONTROLS

## QUICK START UP

If you're like most new owners, you're probably in a hurry to plug your CX mixer in and use it. Here are some brief instructions to get you going quickly. With the mixer unplugged and the unit turned off, complete the following procedures:

### 1. CONNECTING AC POWER TO YOUR MIXER

- Check the rear panel to make sure the mixer has the correct AC Line Voltage. (120VAC or 240 VAC)
- Use only a grounded (3 prong) power outlet to prevent a shock hazard. This gives the quietest grounding for your mixer.

### 2. CONNECTING SPEAKERS (Powered Models Only)

- Use the 1/4" speaker jacks on the rear panel to connect up to four 8Ω speaker systems per jack (daisy chain). The speaker cables are to be non-shielded with a minimum size of 16 gauge.

NOTE: Do not run your speakers through microphone wire, guitar cables, or multi-conductor microphone junction boxes or "snakes" as they are sometimes referred to. This wire is normally shielded and of a very light gauge causing a substantial loss of power.

### 3. SpeakerGuard™ and the "PROTECT" LED

- The protect LED comes on along with the output relays in three different protection modes: Shorted speaker outputs, Speaker Impedance below minimum rating, and when the amplifier exceeds maximum operating temperature.
- In event the LED comes on, turn off the amplifier and identify and correct any speaker cable or speaker jack shorts and make sure the total speaker Impedance for each output is 2 ohms or greater. Also make sure the fan is not blocked and check that cool air can circulate around the rear of the mixer.

### 4. CONNECTING INPUTS TO YOUR MIXER

- For low level balanced devices such as microphones, plug into the balanced MIC inputs using a shielded microphone cable with XLR ends.

- For high level unbalanced devices such as instruments & Keyboards plug into the LINE input jacks using a shielded cable with 1/4" phone ends. Set the GAIN switch so the level control is not over sensitive.

### 5. TURNING YOUR MIXER ON

- Adjust all channel and master level controls to their off positions
- Adjust all "EQ" tone controls—the channel's Hi, Mid, and Bass and the two master 9 Band Graphic EQ's to their center position.
- Adjust all the Channel "PAN" controls to their center position.
- Set the power amp switch (located next to main volume) out for stereo mode
- Turn the mixer on by the rear panel power switch and watch for the power LED to come on. Your mixer is now ready to operate.

## MIC CHANNEL FEATURES

### 1. LINE INPUT JACK

The Line input is a 1/4" phone jack designed for unbalanced line and instrument level inputs. Examples of these inputs would be instruments such as a guitar, a keyboard, an unbalanced mic, or a pre-amp output. The line input can be used at the same time the mic input is being used.

### 2. XLR MICROPHONE INPUT

The XLR Mic input is designed for balanced low impedance (microphone) input signals. The differential balanced input amplifier reduces the common noise picked up on the microphone cables. The XLR connector is wired as per the industry standard, pin 1 is ground, pin 2 is non-inverting (positive), and pin 3 is inverting (negative). Phantom power is available on every XLR input jack when the phantom power switch in the master section is pressed. This feature allows condenser microphones to be run directly from the mixer. Note: When using phantom power, make sure the phantom power is switched off before connecting or disconnecting microphones to the mixer. It is recommended to allow 5 seconds for the phantom power to discharge before making any microphone connections. Also, to avoid hearing a pop, turn down the master volume when turning on the phantom power.

### 3. +20DB GAIN SWITCH

The gain switch increases the input sensitivity on both the line and mic input jacks by 20dB. After determining the input is too low for mixing with the level control, turn down the level control, press in the gain switch, and adjust the level again. If distortion is heard regardless of the channel level control's setting, disengage this switch to eliminate over-driving of the input amplifier.

### 4. CHANNEL LEVEL CONTROL

The Level control adjusts the final volume of the channel before

going to the Pan control. Here is where the individual channel volumes are adjusted to make up the desired mix heard at the main outputs. A general rule to prevent distortion with in the mixer is to always keep the MAIN master level the same or higher than the channel LEVEL.

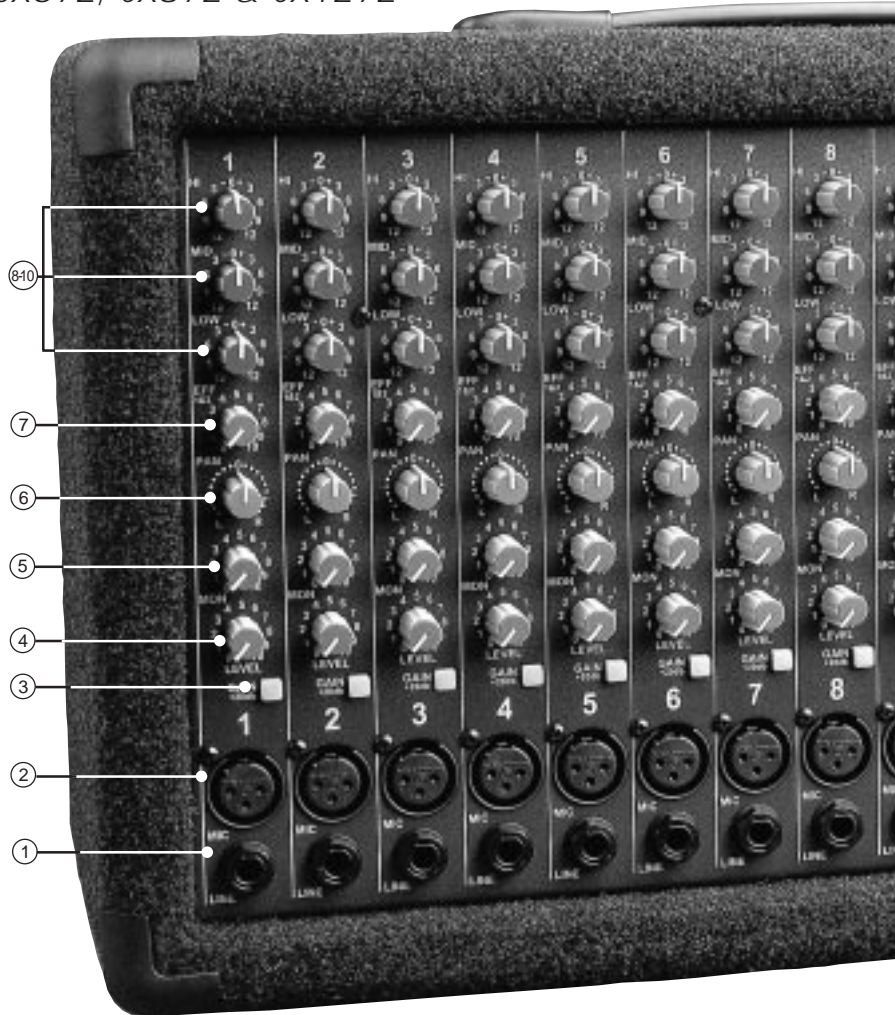
### 5. MONITOR LEVEL CONTROL

The Mon level control adjusts the volume of the channel going to the monitor mix. Here is where the individual channel monitor volumes are adjusted to make up the desired mix heard at the monitor output. The monitor level control is pre-channel level and pre-channel tone controls. This means it is unaffected by adjustments in channel level and tone controls. The purpose for this is so the main mix adjustments for tone and level can be made without disturbing the monitor mix.

### 6. CHANNEL PAN CONTROL

The Pan control adjusts where the channel is heard in the stereo field of the stereo main outputs. If it is turned to the extreme left, then the channel will only be heard in the left main output and similarly only in the right main output if turned to the extreme right. In

## CX672, CX872 & CX1272



the center position the channel is heard equally in both the left and right main outputs. A good starting point for the pan is in the center position. Then if stereo placement is needed, a quarter turn to the desired side from the center position gives a smooth placement in the stereo field, or if desired a full turn to one side gives a hard placement.

### 7. CHANNEL EFFECTS 1&2 LEVEL CONTROL

The EFF 1&2 control adjusts the volume of the channel going to the internal effects Send 1 master control, and directly to the EFF SND 2 output. The effects control is post-channel level and automatically tracks the channel's level & tone controls.

### 8-10. CHANNEL TONE CONTROLS

Each channel features active tone controls LO, MID, and HI. All

three function as boost (clockwise) & cut (counter-clockwise) controls where the center 0 position is neutral. The LO and HI controls are shelving type tone controls with corner frequencies at 80Hz and 11.5k Hz respectively. The MID control is a band pass type centered around 2.2kHz. It is suggested the channel tone controls start out in their center 0 positions. A good setting for added dynamics is to set the LO & HI at +3, and the MID at -3.

## MASTER SECTION FEATURES

### 11. MAIN MASTER LEVEL CONTROL

The Main control is the master volume control for all channels receiving the signals from the channel pan controls. The Main feeds the Graphic EQ, the main line out jacks and the internal power amplifier(s). If the power amp switch is out, then the Main control sends a stereo mix from all channels to both power amps. If the power amp switch is pushed in, then the Main controls sends a mono mix from all channels to the left power amp only, and the master MONITOR level sends the channel MON to the right power amp only.

### 12. POWER AMP INPUT SELECTOR

The Power Amp selector selects the inputs to the two graphic EQ's and the power amplifiers. The out position is the normal stereo power mixer mode. The inputs to the two EQ's are the main left and right signals. In the push in position the main left/right signals are combined to produce one mono signal (still controlled by the MAIN control). This mono signal becomes the input signal to the left EQ (top EQ) and the left power amp. Also, in the in position the output of the monitor jack and control knob becomes the input signal for the right EQ and right power amp.

### 13. MONITOR MASTER LEVEL CONTROL

The Monitor master level control is the master volume for the monitor mix heard in the monitor output. This volume receives its signals from the channel monitor level controls. If the power amp

switch is pushed in, then this knob controls the input to the right power amp.

#### 14. SEND 1 LEVEL CONTROL-INTERNAL DSP

The Send 1 control is the master input volume for the internal effects. This volume receives its signals from the EFF 1&2 control on the channels. The typical use of effects send is to adjust for maximum input to the internal effects before clipping (see DSP clip LED)

#### 15. DSP RETURN 1 LEVEL CONTROL

The RETURN 1 is the master stereo level control for the internal digital effects processor which is fed back into the L/R stereo mix. A small amount of effects is also sent to the monitor mix.

#### 16. RETURN 2 LEVEL CONTROL

The return 2 control is the stereo effects and tape return volume control. It receives its input from both the L/R tape rtn RCA jacks and the L/R 1/4" effects return jacks. This volume controls the return level being fed back into the master L/R stereo mix. A mono return into the stereo mix can be achieved by simply feeding the mono signal into both Left and right return jacks. The stereo return can also be used as another input to the stereo mix for a keyboard or other stereo gear.

mono plug is plugged into these jacks, the stereo mix is disconnected from the graphic EQ and internal power amplifier allowing the new signal, that was plugged into the jack, to go through the graphic EQ and to the internal power amplifier. In the insert mode using a stereo (tip ring sleeve), the ring is the send and the tip is the return. The typical use of these jacks is for the insertion of a compressor or other outboard gear between the master preamp and the power amp.

#### 20. TAPE JACKS

The RCA jacks are Ideal for using a cassette deck. The Left/Right Tape Send RCA jacks deliver the main mix output pre the graphic EQ. If the Insert jacks are being used, the Tape Send jacks are a way to access the main mix.

The Left/Right Tape Return are RCA inputs to the RETURN 2 & TAPE level control. These tape return jacks can also be used for returning another effects processor or instrument.

#### 21. DSP EFFECTS SELECTOR

Select from 16 different effects that include: Flange, Reverb, Echo-Reverb, & Chorus-Reverb.

#### 25. CLIP INDICATOR

The red CLIP LED indicators will start to flash when the power amp has reached its maximum output. Occasional flashing caused by lower bass frequencies is OK. However, consistent flashing caused from higher frequencies may damage high frequency drivers (excessive distortion). This will not damage the amp.

#### 26. THE GRAPHIC EQUALIZER

Each mixer has two nine band graphic EQ's (equalizer). The graphic EQ's are dedicated to the left and right outputs following (or post) the insert jacks of the mixer. The 9 band Graphic EQ's provide a wide degree of tonal flexibility.

#### Adjusting:

When the sliders are in their center detent position, they do not affect the audio signal. When a slider is raised or lowered from the center position, it boost and cuts respectively the level of a narrow frequency band assigned to that particular slider. It is recommended that all sliders are set in their center position before equalizing your tone. Typically low frequency feedback is in the 125 and 250 Hz range while high feedback is in the 2k and 4k Hz range. Occasionally one frequency (slider) of the equalizer will have to be pulled down to stop feedback. If many of the sliders have to be pulled down to stop feedback, the placement of the speakers with respect to the microphones may need to be reconsidered. As much as possible, try to have the main speaker facing away from and in front of the microphones not on stage behind them. The graphic EQ is mainly used to "equalize" the response of the main room and reduce feedback from microphones. Don't be afraid to use the Graphic EQ, but take care not to over-adjust. Here are some tonal reference ranges for the individual sliders to help relate the frequencies in hertz to perceived tonal changes:

- the 63 Hz slider effects deep sub bass levels.
- the 125 Hz is typical bass adjustments.
- the 250, 500 and 1K Hz are for low mid and high mid adjustments.
- the 2K and 4K Hz are for lower treble adjustments.
- the 8K and 16K Hz are for the very high treble adjustments.

#### 27. PROTECT LED INDICATOR

The red PROTECT LED provides the operator with information about the status of the power amps. The PROTECT LED can come on under 3 different conditions (when this happens both channels are muted by disconnecting the output speaker relays):

- 1) During power-up, the amplifier stays in a muted state for approx. 3 sec until it determines that everything is functioning normally (no output shorts or over temp conditions).
- 2) When the output load draws excessive current or a direct short is detected caused by a shorted speaker cable or speaker system. Reset this condition by turning the amp off for two seconds and then on again. Check for shorted cables and the total speaker system impedance connected to each channel (2 ohms minimum per channel).
- 3) Overheating is usually determined when the amp stops in the middle of a performance and the PROTECT LED is on. If this is the cause, leave the amp on for the fan to cool the amp down. The amp will automatically reset within 1 to 3 minutes.

The PROTECT LED will turn off when ready. Check for the following conditions; a) The rear intake air is restricted from outside air, b) Intake air is extremely warm, c) Excessive speaker load (try other speakers or remove speakers if you have more than one connected to each channel). Again, the minimum impedance is 2 ohms per channel.



#### 17. MONITOR OUT

The Monitor line out jack is the monitor mix from the monitor master level control. This is a line level output to drive an external power amplifier.

#### 18. LEFT/RIGHT OUT

The Left/Right line out jacks are post graphic EQ line output jacks for the stereo mix. The same signals are also being fed to the internal power amplifier. Note: If the insert jacks are being used for patching or if the power amp switch is being used, then that new signal will also be present on the corresponding Left/Right Line Out jack. The stereo mix may still be accessed at the RCA Tape Send jacks if needed.

#### 19. INSERT JACKS

The Left/Right INSERT jacks are pre-graphic EQ, pre-power amp, and normalized to the stereo mix L/R MAIN level control. When a

#### 22. DSP INPUT CLIP LED

The DSP CLIP LED indicates the send level to the internal effects is too high. To prevent clipping, adjust SEND 1 level control down until the clipping LED stops flashing. The individual channel EFF 1 & 2 also controls this level.

#### 23. POWER LED

The Power LED indicates when the mixer is powered up.

#### 24. PHANTOM POWER SWITCH AND LED

The Phantom power switch turns on the microphone phantom power in the channel XLR jacks. This power is used for supplying a bias voltage to condenser microphones. The LED indicates the phantom power is turned on. The phantom power will not damage dynamic microphones.

#### HELPFUL HINTS

- 1) FEEDBACK: To reduce feedback, the placement of the speakers with respect to the microphones may need to be reconsidered. As much as possible, try to have the main speaker facing away from and in front of the microphones not on stage behind them. The graphic EQ may be used to reduce feedback from microphones. See 26. THE GRAPHIC EQUALIZER
- 2) SOUND HEARD ONLY ON LEFT SIDE: Check power amp selection switch. Switch out for stereo mode, switch in for main/monitor mode.
- 3) No High Frequencies: Check the channel tone controls and EQ settings. The tweeters or midrange drivers may have been damaged or blown from feedback or overpowering.
- 4) Main House AC breaker trips : at high output levels, high powered amps require separate circuit breakers (120V:20A, 230V:10A) for delivering their full power. Most 120V homes have only 15 amp breakers you may simply be running too much power
- 5) The Amp's rear circuit breaker trips: Full power at 2Ω (4Ω bridged) can cause the amps circuit breaker to trip. This is normal with high powered amps because they can deliver more than their full rated output if the clip LED flashes.

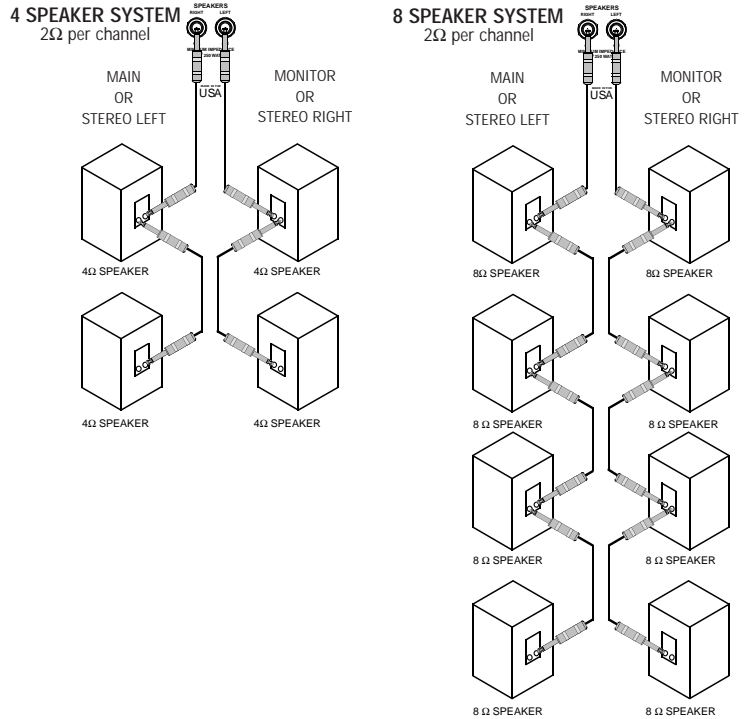
## STEREO LIVE SOUND SYSTEM

In a live sound reinforcement or a public address system (P.A. System), the input signals to the mixer will come from the microphones and instruments on the stage. Each microphone or instrument to be amplified by the P.A. system must be connected to one of the mixing console inputs. It is preferred to have as many of the stage instruments as possible plugged into the mixer. This allows for the best overall sound control of the instruments as they are mixed together and then amplified by the P.A. system. The mixer can be operated on the stage or from a remote location in front of the stage using a snake cable to bring the signals from the stage to the mixer. The advantage of the remote operation allows the performance to be monitored and mixed from the audience's perspective.

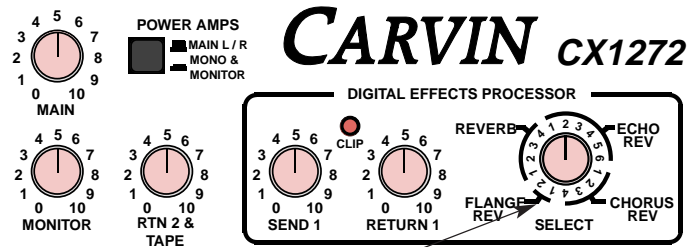
### THE SOUND CHECK

The sound check takes some skill, but mostly patience from the performers and especially you the system operator. If you get frustrated during the sound check the performers can lose confidence and the sound may suffer due to things missed in the sound check. The basic sound check follows this format: First test all microphones and other input devices (direct boxes, etc.) before the performers are included in the sound check. A good thing to also check here is feedback in the monitors from the microphones. Good positioning of the monitors and the use of the graphic equalizer solves most major monitor feedback problems. Now for a sound check with the performers. First set the level of each performer individually and in cases where a performer has multiple microphones, such as with a drummer, set each drum mic individually then the drum set as a whole. This is also a good time to make some channel tone control adjustments to tailor the sound of the individual performers and instruments. Next after setting each individual, have the performers run through a song or a portion of the show. Don't hesitate to stop the performers if something needs to be adjusted or if an individual performer or microphone needs to be heard solo again. Remember the sound check is not a rehearsal, but a system check, a time to work the bugs out of the system so the show can go smoothly. It is always a good idea for the mixer operator to have a microphone to inform the performers of what is needed during the sound check. If a monitor system is being used, the mixer operator's microphone should only be heard through the monitors when addressing the on stage performers, especially if something needs to be checked during the show. If the sound check is allowed to run through its full course, the system should run smoothly at show time.

## SPEAKER CONNECTION

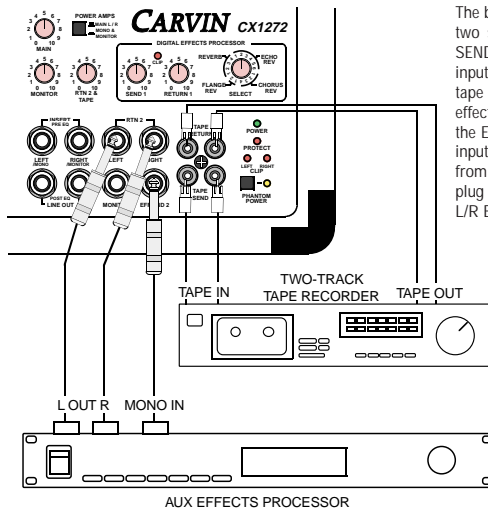


## DSP EFFECTS



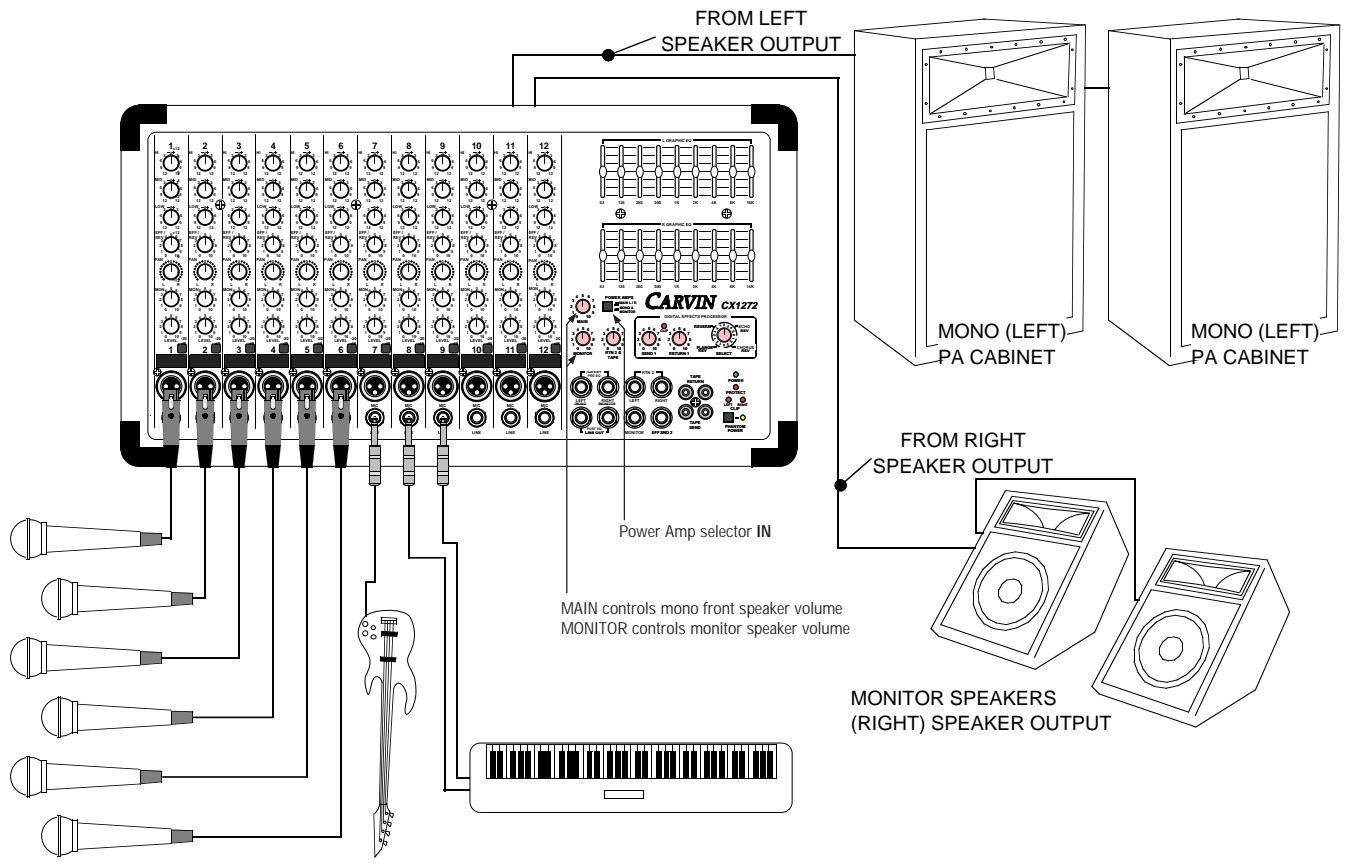
Select from Reverb, Flange, Chorus, and Echo. Echo delays with reverb includes delay times of 50, 100, 150, 250, 350, and 500 milliseconds.

## TAPE DECKS AND EXTERNAL EFFECTS



The basic hook up is simple, using four (or two stereo) RCA cables. Plug the TAPE SEND on the mixer into the tape deck's inputs and the mixer's TAPE RTN's into the tape deck's outputs. With an external effects processor, plug a 1/4" cable from the EFF SEND output on the mixer into the input jack on the effects processor. Then from the outputs of the effects processor, plug one or both (for stereo) cables into the L/R EFFECTS RETURN.

# MONO PA WITH MONITORS



# STEREO PA WITH EXTERNAL MONITOR SYSTEM

