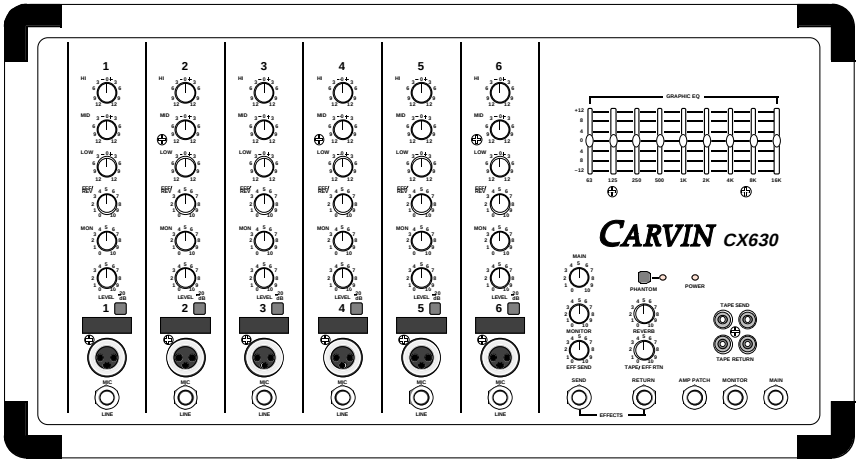
# CARVIN

# CX MONO MIXERS
## CX420 and CX630




HELPLINE

1-800-854-2235

8:30 To 4:30 Monday-Friday
Pacific Standard Time
USA

CARVIN
12340 World Trade Drive
San Diego, CA 92128
619-487-1600

OPERATION MANUAL

Manual No. 76-00630
Revision 1.1

Made in USA

Record the serial number of your CX Mixer in the space provided below:

Serial No._____ Invoice Date_____

CARVIN

1-800-854-2235

# WARRANTY AND SERVICE INFORMATION

Call Toll-Free 800-854-2235 if you need help with your CARVIN product. If you need to return it for service, our service department. will issue a Service Number so that we can expect your shipment. Write the Service Number on the carton and be sure to include a full description of every problem. Pack in its original carton using all its packing material. Return by UPS pre-paid. Units returned with physical damage, missing parts, or damage from improper service are not serviceable.

## REPAIRS UNDER WARRANTY (1Year)

There is no charge for service under warranty. However, shipping is to be paid both ways by the customer.

## REPAIRS OUT OF WARRANTY

If your warranty has expired, call us for the current flat rate service charge which includes parts, labor and testing to bring your unit up to factory specifications.

## 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 unless damage was done because of improper servicing. Under the ONE YEAR WARRANTY, Carvin will ship parts pre-paid to you or your technician provided the defective part(s) 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.

## EXTENDED WARRANTY

An extended warranty is available beyond the normal one year period. Please call 1-800-854-2235 for more information.

## LIMITED WARRANTY

Your Carvin Professional Series Product is guaranteed against failure for ONE YEAR. Carvin will service the unit and supply all parts at no charge to the customer provided the unit is under warranty. CARVIN DOES NOT PAY FOR PARTS OR SERVICING OTHER THAN OUR OWN. This warranty is extended to the original purchaser only and is not transferable. THIS WARRANTY DOES NOT INCLUDE FAILURES CAUSED BY INCORRECT USE, INADEQUATE CARE OF THE UNIT, OR NATURAL DISASTERS. A COPY OF THE ORIGINAL INVOICE IS REQUIRED TO VERIFY YOUR WARRANTY. Carvin takes no responsibility for any horn driver or speaker damaged by this unit. This warranty is in lieu of all other warranties, expressed or implied. No representative or person is authorized to represent or assume for Carvin any liability in connection with the sale or servicing of Carvin products. No liability is assumed for damage due to accident, abuse, lack of reasonable care, loss of parts, or failure to follow Carvin's directions. CARVIN SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

*In the interest of creating new products and improving existing ones, Carvin is continually researching the latest state of the art audio design methods, and modern packaging and production techniques. Thus, Carvin reserves the right to make changes in its products and specifications without notice or obligation.*

CARVIN

1-800-854-2235
(619) 487-1600 M-F 8 to 4:30



# RECEIVING INSPECTION

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

SAVE THE CARTON & ALL PACKING MATERIALS. In the event you have to reship your mixer, always use the original carton and packing material. This will provide the best possible protection for the mixer 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 servicing of your unit. Always check the invoice against the items you have received.

SHIPMENT SHORTAGE. If you find some items missing, it may be that they were shipped separately. Please allow several days for the rest of your order to arrive before inquiring. If you determine (after allowing an appropriate amount of time) you have not received all the items you ordered, please call CARVIN.

# FOR THE NEW OWNER

Congratulations on your selection of CARVIN products: "The Professional's Choice." Your new CX series mixer demonstrates CARVIN's commitment to producing the highest quality and most sophisticated engineering in the audio industry today. Its wide acceptance and use by industry professionals illustrates the basis for CARVIN's recognition as "The Professional's Choice."

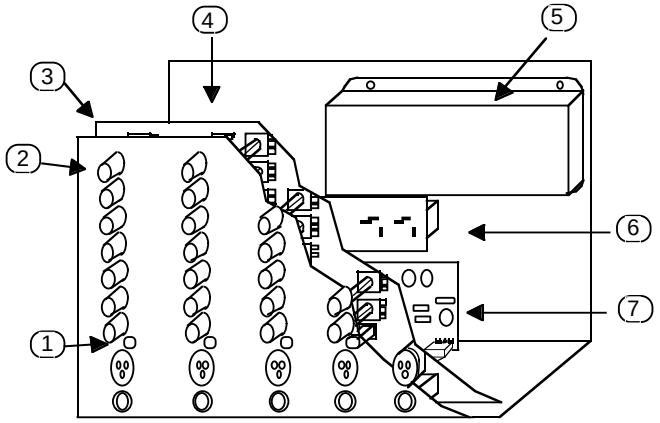
The CX series mixers were designed with the desire to pack as many high performance features into the smallest package we could, without sacrificing the quality of any one of the features or the mixer. The CX630 features a full function 6 channel mixer, a nine band graphic equalizer and a 200 Watt power amplifier (100 Watts per speaker output into 8 ohms). The CX420 is a 4 channel version of the CX630 with a 150 Watt power amplifier (75 Watts per speaker output into 8 ohms). Each CX series mixer is the size of a 5 space rackmount unit, surrounded by a 3/4" poplar plywood cabinet covered with Duratuff™ carpeting, making the CX mixer road worthy and ready for a show anywhere.

If you would like to comment on any features or the performance of your new mixer, please feel free to contact us. Comments from our customers have helped us to improve and further develop our products and our business.

May you enjoy many years of success and fun with your new CARVIN mixer!

Carvin's toll free number: 800-854-2235

| | | | | | |
|---|---|---|---|---|---|
| R16 | Resistor, 10K, 1/4W, ±5% | 50-10045 | R67 | Resistor, 180K, 1/4W, ±5% | 50-18055 |
| R17 | Resistor, 10K, 1/4W, ±5% | 50-10045 | R68 | Resistor, 2.2K, 1/4W, ±5% | 50-22035 |
| R18 | Resistor, 4.70K, 1/4W, ±5% | 50-47035 | R69 | Resistor, 360K, 1/4W, ±5% | 50-36055 |
| R19 | Resistor, 4.70K, 1/4W, ±5% | 50-47035 | R70 | Resistor, 2.0K, 1/4W, ±5% | 50-20035 |
| R20 | Resistor, 22Ω, 1/2W, ±5% | 52-22015 | R71 | Resistor, 130K, 1/4W, ±5% | 50-13055 |
| R21 | Resistor, 22Ω, 1/2W, ±5% | 52-22015 | R72 | Resistor, 2.2K, 1/4W, ±5% | 50-22035 |
| R30 | Resistor, 47K, 1/4W, ±5% | 50-47045 | R73 | Resistor, 110K, 1/4W, ±5% | 50-11055 |
| R31 | Resistor, 2.2K, 1/4W, ±5% | 50-22035 | R74 | Resistor, 2.2K, 1/4W, ±5% | 50-22035 |
| R32 | Resistor, 33K, 1/4W, ±5% | 50-33045 | R75 | Resistor, 110K, 1/4W, ±5% | 50-11055 |
| R33 | Resistor, 27K, 1/4W, ±5% | 50-27045 | R76 | Resistor, 1.8K, 1/4W, ±5% | 50-18035 |
| R34 | Resistor, 33K, 1/4W, ±5% | 50-33045 | R77 | Resistor, 91K, 1/4W, ±5% | 50-91045 |
| R35 | Resistor, 10K, 1/4W, ±5% | 50-10045 | R78 | Resistor, 10K, 1/4W, ±5% | 50-10045 |
| R36 | Resistor, 10K, 1/4W, ±5% | 50-10045 | R79 | Resistor, 150K, 1/4W, ±5% | 50-15055 |
| R37 | Resistor, 10K, 1/4W, ±5% | 50-10045 | R80 | Resistor, 470Ω, 1/4W, ±5% | 50-47025 |
| R38 | Resistor, 10K, 1/4W, ±5% | 50-10045 | R81 | Resistor, 4.70K, 1/4W, ±5% | 50-47035 |
| R39 | Jumper, 0Ω, Carbon, 0 | 50-00035 | R82 | Resistor, 1K, 1/4W, ±5% | 50-10035 |
| R40 | Jumper, 0Ω, Carbon, 0 | 50-00035 | R83 | Resistor, 4.70K, 1/4W, ±5% | 50-47035 |
| R41 | Resistor, 150K, 1/4W, ±5% | 50-15055 | R90 | Resistor, 350Ω, 10W, ±10% | 56-35010 |
| R42 | Resistor, 470Ω, 1/4W, ±5% | 50-47025 | R91 | Resistor, 350Ω, 10W, ±10% | 56-35010 |
| R43 | Resistor, 470Ω, 1/4W, ±5% | 50-47025 | R92 | Jumper, 0Ω, Carbon, 0 | 50-00035 |
| R44 | Resistor, 150K, 1/4W, ±5% | 50-15055 | R93 | Jumper, 0Ω, Carbon, 0 | 50-00035 |
| R45 | Resistor, 470Ω, 1/4W, ±5% | 50-47025 | R94 | Jumper, 0Ω, Carbon, 0 | 50-00035 |
| R46 | Resistor, 33K, 1/4W, ±5% | 50-33045 | R95 | Resistor, 680Ω, 1/4W, ±5% | 50-68025 |
| R47 | N/U | | R96 | Resistor, 15K, 1/4W, ±5% | 50-15045 |
| R48 | Jumper, 0Ω, Carbon, 0 | 50-00035 | R97 | Resistor, 22K, 1/4W, ±5% | 50-22045 |
| R49 | Resistor, 150K, 1/4W, ±5% | 50-15055 | R98 | Resistor, 22K, 1/4W, ±5% | 50-22045 |
| R50 | Resistor, 470Ω, 1/4W, ±5% | 50-47025 | R99 | Resistor, 10K, 1/4W, ±5% | 50-10045 |
| R51 | Resistor, 4.70K, 1/4W, ±5% | 50-47035 | R100 | Resistor, 33K, 1/4W, ±5% | 50-33045 |
| R52 | Resistor, 47K, 1/4W, ±5% | 50-47045 | R101 | Resistor, 680Ω, 1/4W, ±5% | 50-68025 |
| R53 | Resistor, 100Ω, 1/4W, ±5% | 50-10025 | R102 | Resistor, 15K, 1/4W, ±5% | 50-15045 |
| R54 | Resistor, 150K, 1/4W, ±5% | 50-15055 | R103 | Resistor, 22K, 1/4W, ±5% | 50-22045 |
| R55 | Resistor, 10K, 1/4W, ±5% | 50-10045 | | | |
| R60 | Resistor, 2.4K, 1/4W, ±5% | 50-24035 | S1 | Switch DPDT Push PC Mtg | 25-02201 |
| R61 | Resistor, 150K, 1/4W, ±5% | 50-15055 | S4 | Switch DPDT Push PC Mtg | 25-02201 |
| R62 | Resistor, 2.2K, 1/4W, ±5% | 50-22035 | | | |
| R63 | Resistor, 220K, 1/4W, ±5% | 50-22055 | U1 | 100V/100W DMOS Audio Amp | 60-72940 |
| R64 | Resistor, 2.2K, 1/4W, ±5% | 50-22035 | U2 | 100V/100W DMOS Audio Amp | 60-72940 |
| R65 | Resistor, 300K, 1/4W, ±5% | 50-30055 | | | |
| R66 | Resistor, 2.4K, 1/4W, ±5% | 50-24035 | All "B" Reference Designators are 0 ohm jumpers. | | |




| # | DESCRIPTION | CARVIN # | QTY |
|---|---|---|---|
| 1. | Switch Cap Grey Extended | 07-01603 | 7 |
| 2. | Knob 11 D shaft (COLOR) | 07-120-- | --- |
| 3. | Front Panel PCB (6 Chan) | 80-0630-1 | 1 |
| 4. | POWER TRANSFORMER | 15-15070B | 1 |
| 5. | Accutronics™ REVERB TANK | 70-00821 | 2 |
| 6. | SPEAKER JACK PCB | 80-0630-3 | 1 |
| 7. | POWER AMP PCB | 80-0630-2 | 1 |

Color Knob Code

| | |
|---|---|
| Yellow | 20 |
| Green | 25 |
| Drk Grey | 28 |



# 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 turned off complete the following procedures:

1. CONNECTING AC POWER TO YOUR MIXER
   - Check the rear panel to make sure the mixer received uses the proper AC Line Voltage. (USA 120VAC, Europe 240 VAC ...etc.)
   - Use only a grounded (3 prong) power outlet to prevent a shock hazard. This gives the quietest grounding for your mixer.

2. CONNECTING SPEAKERS
   - For connecting speakers, use the two 1/4" speaker jacks on the rear panel. These jacks are controlled by the main level control on the front panel. The speaker cables should be non-shielded and at least 18 gauge(AWG) wire. For speaker cable runs of over 20 feet 16 gauge wire is recommended.

     NOTE: Do not run your speakers through microphone cables, 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 and oscillations at high frequencies in the amplifier. All speaker wires must be <u>non-shielded</u>.

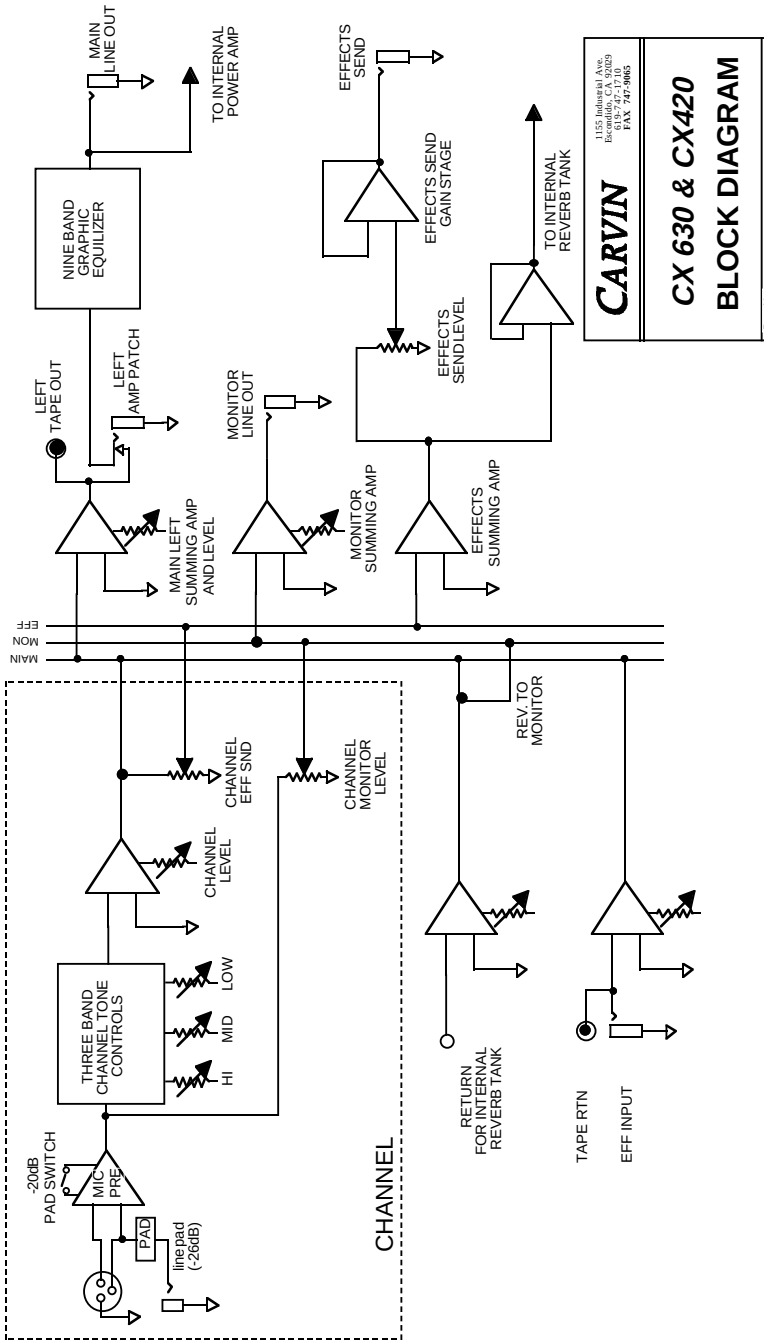
3. CONNECTING INPUTS TO YOUR MIXER
   - For low level balanced devices such as microphones, plug into the balanced **MIC** inputs using an XLR shielded microphone cable.
   - For high level unbalanced devices such as Tape Recorders and Keyboards plug into the **LINE** input jacks using a 1/4" phone shielded cable.

4. TURNING YOUR MIXER ON
   - Adjust all channel and master level controls to the <u>off</u> position (fully counter clockwise).
   - Adjust all "EQ" tone controls, the channel's Hi, Mid, and Lo and the master 9 Band Graphic EQ, to their <u>center</u> detent position.
   - 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.

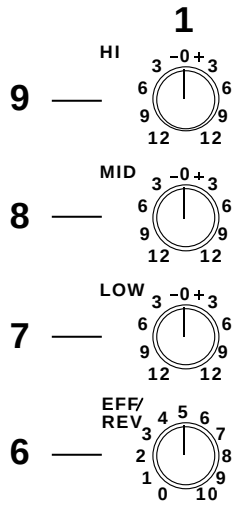
# MAINTENANCE

To bring back the new look, your CX mixer can be washed with mild detergent and/ or a warm damp soft cloth. This will remove normal dust and oil from the front and back panels. Never spray cleaners or detergents directly at the unit. The mixer's are virtually sealed from outside dust and dirt, but it is recommended to keep the mixer free from dust, dirt, and moisture as much as possible.




6. CHANNEL EFFECTS/REVERB LEVEL CONTROL

The EFF/REV level control adjusts the volume of the channel going to the effects send master control, and the internal reverb tank. The effects control is post channel level. This means adjustments in the channel's EQ or level controls will be affecting the effects send of that channel.




7-9. CHANNEL TONE CONTROLS

Each channel features three tone controls LO, MID, and HI. The LO and HI controls are shelving type tone controls with corner frequencies at 100Hz and 10KHz respectively. The shelving means, the for the LO control, all frequencies from 100Hz down to the lowest frequency the mixer can handle are all boosted when the knob is turned clockwise and cut when turned counter-clockwise from the center position. For the HI control the shelving means all the frequencies from 10kHz and up to the upper limit of the mixer are all boosted when the knob is turned clockwise and cut when turned counter-clockwise from the center position. The MID control is a band pass type of tone control with the center frequency set at 1.5KHz. The band pass means a middle section of frequences centered around 1.5kHz, but not over lapping the HI and LO controls, is boosted when the knob is turned clockwise and cut when turned counter-clockwise from the center position.

**Familarity with the channel tone controls:**

The three tone controls can add brightness, clairity, and control to the channel's input signal. Here are some tonal references for these tone controls.

• LO affects the deep low bass tones and the typical bass tones.

• MID affects all the middle frequencies where the clairty of an average persons spoken voice is mostly heard. Also the MID incompases the louder sometimes harsher tones that can distort the over all sound of the system.

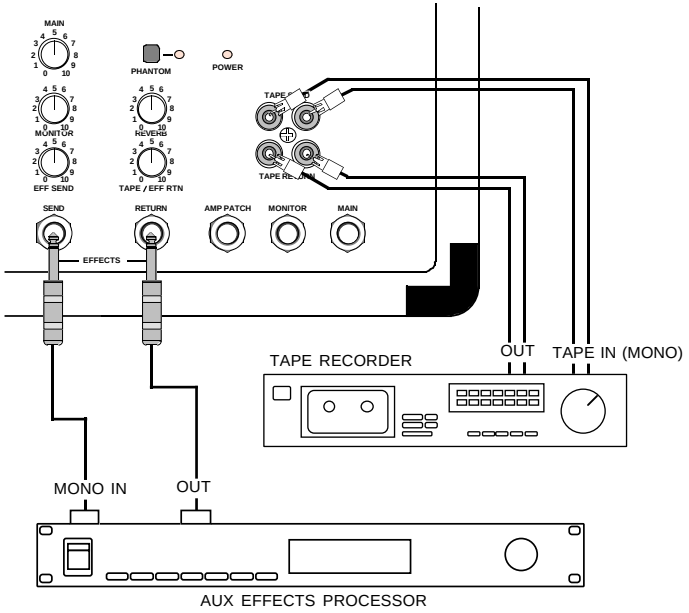
• HI affects the treble tones and very high treble tones bringing brightness and brillance to the channel's input.

**Adjusting:**

Use these controls to change the tonal shape of the input signal and in many cases to reduce possible feedback from microphones near the mixer's output speakers. It is suggested the channel tone controls start out in their center detent position where they do not effect the original incoming signal. Then, if needed, turn the tone controls (boost,turn to the right, or cut, turn to the left) to change the sound.

# 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 return's into the tape deck's outputs. This will of course be a mono




mix because the CX630 and CX420 are mono mixers, but for playing back pre recorded stereo tapes this hookup allows both left and right sides to be heard. For play back turn up the TAPE/ EFF RTN level control to the desired play back volume. For setting the recording level the MAIN level control is used. Also, when recording turn down the TAPE/ EFF RTN level as feedback may occur through the tape deck.

With an effects processor, plug the EFFECTS SEND 1/4" phone output on the mixer into the input jack on the effects processor, and plug the EFFECTS RETURN 1/4" phone input on the mixer into the output jack on the effects processor. Use the EFF SEND level control to adjust the volume sent to the external effects unit, and use the TAPE/ EFF RTN level control to adjust the return volume heard in the main mix.



4. TAPE/EFFECTS RETURN LEVEL CONTROL

The TAPE/ EFF RTN is an effects or tape return volume control. It can receive input from both the tape return RCA jacks and the 1/4" effects return jack. This volume controls the return level being fed back into the main mix. The return can also be used as just another input to the main mix for a keyboard or other gear.

5. REVERB RETURN LEVEL CONTROL

The REVERB return level control is the volume control for the internal reverb tank. This volume controls the amount of reverb heard in the main and monitor mixes.

6. MONITOR LINE OUT JACK

The MONITOR LINE OUT jack is where the MONITOR master level control's signal can be accessed. This is a line level output and can be used to drive an external power amplifier or it can be plugged into the AMP PATCH jack to drive the graphic EQ and the internal power amplifier.

7. MAIN LINE OUT JACK

The MAIN LINE OUT jack is the post EQ output jack for the main mix. This output is the same signal that is being feed to the internal power amplifier.

Note: If the AMP PATCH jack is being used for patching the monitor out to the internal amplifier, then that new signal will also be present on the MAIN LINE OUT jack. The original main mix may still be accessed at the RCA TAPE SEND jacks in this case.

8. AMP PATCH JACK

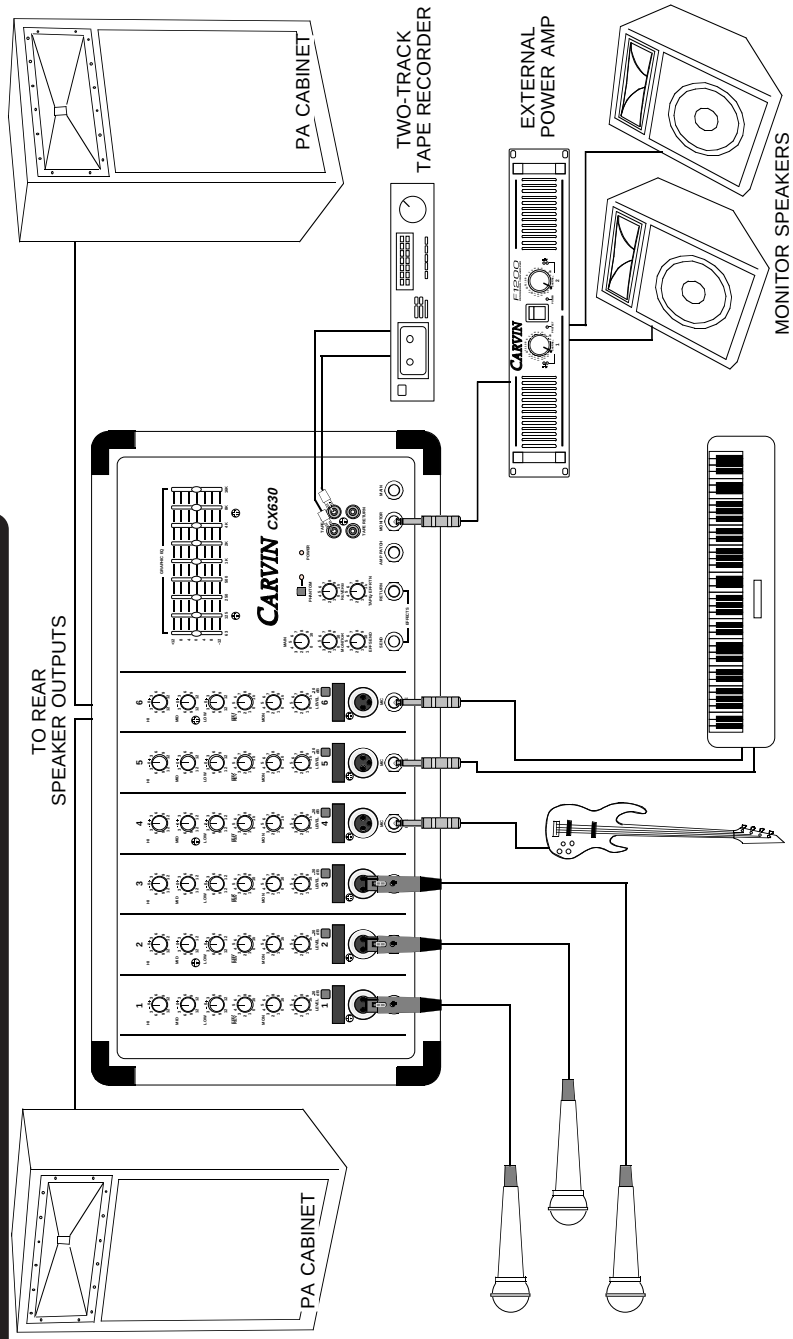
The AMP PATCH jack is pre-graphic EQ and normalized to the main mix. When something is plugged into this jack, the main mix is disconnected from the graphic EQ and internal power amplifier and the new signal, that was plugged into the jack, is now going through the graphic EQ and to the internal power amplifier. Also this new signal appears at the MAIN LINE OUT jack. A typical use for this jack is where power for monitor speakers is needed and a larger external power amplifier is to be used for the main speakers. Here the monitor line out jack can be plugged, or "patched" into the AMP PATCH jack for a powered monitor mix.

9. TAPE SEND AND TAPE RETURN RCA JACKS

The TAPE SEND RCA jacks deliver the main mix output pre the graphic EQ uninterrupted by the status of the AMP PATCH jack. The two jacks are linked internally together so either or both can be used**.** Also, the TAPE SEND jacks are a way to access the main mix, if the amp patch jack is being used.

The TAPE RETURN RCA jacks are RCA inputs to the TAPE/ EFF RTN level control. The tape return jacks can also be used for returning another effects processor or instrument such as a keyboard to the main mix.

These RCA jacks are Ideal for using a cassette deck to record a mix with the tape send jacks and then playing it back through the tape returns without using up any channels or having to use adapters to hook up the cassette deck.






# SETTING UP THE SOUND SYSTEM

This section is a brief overview of what it takes to hook up a sound system using a CX series mixer. The overview will include some of the different possible set-ups and some basics on how to mix live sound. If you are new to using mixers, you should find this section very informative in helping to operate your sound system properly. If you are experienced with mixers, then you may find some of the information new or presented with a new approach that can help you as well. As always, experimentation is the key to success, so don't be afraid to use the controls to get a feel for what they do.

## 1. INPUT CONNECTIONS FROM THE STAGE

For live sound reinforcement or public address systems (P.A. Systems), 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 mixer's inputs. It is preferred to have as many of the stage instruments as possible plugged into the mixer. This allows the best overall sound control of the instruments as they are mixed together and then amplified by the P.A. system.

## 2. ON STAGE OPERATION

The CX Series mixers are small enough to have on stage. The advantages to this are: a band member can operate the mixer so no extra person is needed, and also the microphone, 1/4" phone inputs, and speaker cables are short and plug directly into the mixer, leaving no cables for the audience to trip over. The only disadvantages are the band member / mixer operator, on stage, doesn't hear what the audience is hearing and because the mixer operator is a band member he can not react fast to problems with the "PA" system such as feedback and sudden volume changes.

## 3. REMOTE TO STAGE OPERATION

Many times the mixer will be located a distance from the stage. This allows the performance to be monitored and mixed from the audience's perspective. Monitoring at a distance from the stage usually means employing a multi-cable cable or more commonly referred to as a "Snake" (available from CARVIN). Each of the microphones and instruments are plugged into the snake box at the stage and the snake cable carries all these signals to the mixer. At the mixer, the snake cable, which fans out to plugs corresponding to the jacks on the snake box, is plugged into the appropriate inputs and line level (pre-amp) outputs of the mixer. All snake cables are numbered, both on the snake box and the cable, to help in keeping track of which microphones are being plugged into which channels. It is a good idea at this point to label each of the mixer channels according to what instrument each will be controlling. This can be done with masking tape (Scotch brand #230 drafting tape) or another suitable 'light' sticking tape. The tape will give you a surface to write on, to properly label the channels. The (XLR) balanced low impedance format will ensure the best possible performance and lowest possible noise when operating with long cable lengths, such as a snake.

## CAUTION

**RISK OF ELECTRIC SHOCK**
**DO NOT OPEN**

ATTENTION: RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

**CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT OPEN CHASSIS; DO NOT DEFEAT OR REMOVE THE GROUND PIN OF THE POWER CORD; CONNECT ONLY TO A PROPERLY GROUNDED AC POWER OUTLET.

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

**CAUTION:** NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

**EXPLANATION OF SYMBOLS:**

"DANGEROUS VOLTAGE"
"DANGER HAUTE TENSION"
"GEFAHLICHE SPANNUNG"

"IT IS NECESSARY FOR THE USER TO REFER TO THE INSTRUCTION MANUAL"
"REFERREZ-VOUS AU MANUAL D'UTILISATION"
"UNBEDINGT IN DER BEDIENUNGSANLEITUNG NACHSCHLAGEN"

## IMPORTANT! FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

**WATER AND MOISTURE:** Appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

**POWER SOURCES:** The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

**GROUNDING OR POLARIZATION:** Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

**POWER CORD PROTECTION:** Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

**SERVICING:** The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

**FUSING:** If your unit is equipped with a fuse receptacle, replace only with the same type fuse. Refer to replacement text on the unit for correct fuse type.

## SAFETY INSTRUCTIONS (EUROPEAN)

**NOTICE FOR CUSTOMERS IF YOUR UNIT IS EQUIPPED WITH A POWER CORD.**

**WARNING: THIS APPLIANCE MUST BE EARTHED.**

**The cores in the mains lead are coloured in accordance with the following code.**
**GREEN and YELLOW - Earth BLUE - Neutral BROWN - Live**

The power cord is terminated in a CEE7/7 plug (Continental Europe). The green / yellow wire is connected directly to the unit's chassis. If you need to change the plug, and if you are qualified to do so, refer to the table below.

| CONDUCTOR | | WIRE COLOR | |
|---|---|---|---|
| | | NORMAL | ALTERNATIVE |
| L | LIVE | BROWN | BLACK |
| N | NEUTRAL | BLUE | WHITE |
| E | EARTH | GREEN / YEL | GREEN |

**WARNING:** If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and the earth ground are touched simultaneously.

**U.K. MAINS PLUG WARNING:** A moulded mains plug that has been cut off from the cord in unsafe. Discard the mains plug at a suitable disposal facility. **NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAINS PLUG INTO A 13 AMP POWER SOCKET.** Do not use the mains plug without the fuse cover in place. Replacement fuse covers can be obtained from your local retailer. Replacement fuses are 13 amp and MUST be ASTA approved to BS1362.

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# CX MIXER SPECIFICATIONS

| | |
|---|---|
| **Frequency Response:** | Mic or Line Inputs: 20Hz-20KHz ±2dB |
| **Total Harmonic Distortion:** | Less than .1% |
| **Equivalent Input Noise:** | 150 ohm source: -120dBV |
| **Output Noise:** | All levels Minimum: -60dBu |
| **Output Power:** | CX630: 200Watts RMS @ 4Ω<br>CX420: 150Watts RMS @ 4Ω |
| **Maximum Gain:** | Mic in, main out: 70dB |
| **Crosstalk:** | Adjacent ch's: -60db at 1KHz |
| **Phantom Power:** | On All channel MIC Inputs |
| **Channel EQ.:** | 3 band active, LOW: 100Hz ±12dB<br>MID: 1.5KHz ±12dB<br>HI: 10KHz ±12dB |
| **Graphic EQ.:** | 9 Band Oct. Intervals ±12dB |
| **Mic Input:** | Balanced XLR input: -60 dBu |
| **Line Input:** | Unbalanced 1/4" Phone Jack: -10dBV |
| **Power Consumption:** | CX630: 280VA, CX420: 240VA |
| **Size:** | Cabinet Model: 11"H x 19.5"W x 9"D<br>Rack Model: 8.75"H x 19"W x 7.75"D |

# FUSE SELECTION

There are two versions of the CX420 and the CX630. A 120 Volt AC version using the North American three prong plug and a 240 Volt AC version using the European CEE-7 plug. The following chart shows what fuse values to use for each model.

## Fuse Selector Chart for 120 VAC Models

| Model | Fuse Value | Carvin # | Size |
|---|---|---|---|
| **CX630** | **2A, 250V, Slow Blow** | **70-22020** | **3AG, 1/4 x 1 1/2" (6.35 x 32mm)** |
| **CX420** | **2A, 250V, Slow Blow** | **70-22020** | **3AG, 1/4 x 1 1/2" (6.35 x 32mm)** |

## Fuse Selector Chart for 240 VAC EXPORT Models

| Model | Fuse Value | Carvin # | Size |
|---|---|---|---|
| **CX630** | **1A, 250V, Slow Blow** | **70-22010** | **3AG, 1/4 x 1 1/2" (6.35 x 32mm)** |
| **CX420** | **1A, 250V, Slow Blow** | **70-22010** | **3AG, 1/4 x 1 1/2" (6.35 x 32mm)** |

# CHANNEL FEATURES

1. LINE INPUT JACK

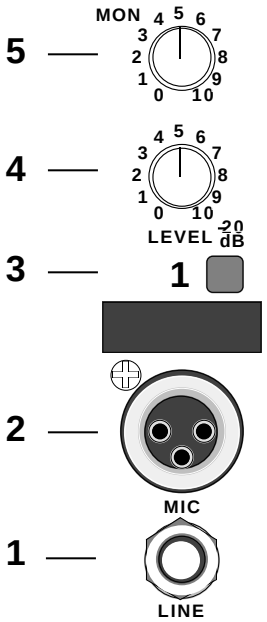
The 1/4" LINE phone jack is designed for unbalanced line and instrument level inputs. Examples of these inputs would be instruments such as a guitar, a keyboard, unbalanced mics, or a pre amp output. The line input can be used at the same time the mic input is being used.

2. XLR MICROPHONE INPUT

The XLR MIC input is designed for balanced low impedance ( microphone ) input signals. The balance means the input differential amplifier will reduce 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 main volume when turning on the phantom power.




3. -20DB PAD SWITCH

This switch reduces the input gain on both the line and mic input jacks by 20dB. If distortion is heard regardless of the channel LEVEL control's setting, engage this switch. This will eliminate the over-driving of the input amplifier before the channel level control.

4. CHANNEL LEVEL CONTROL

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



# CX MONO SERIES PARTS LIST

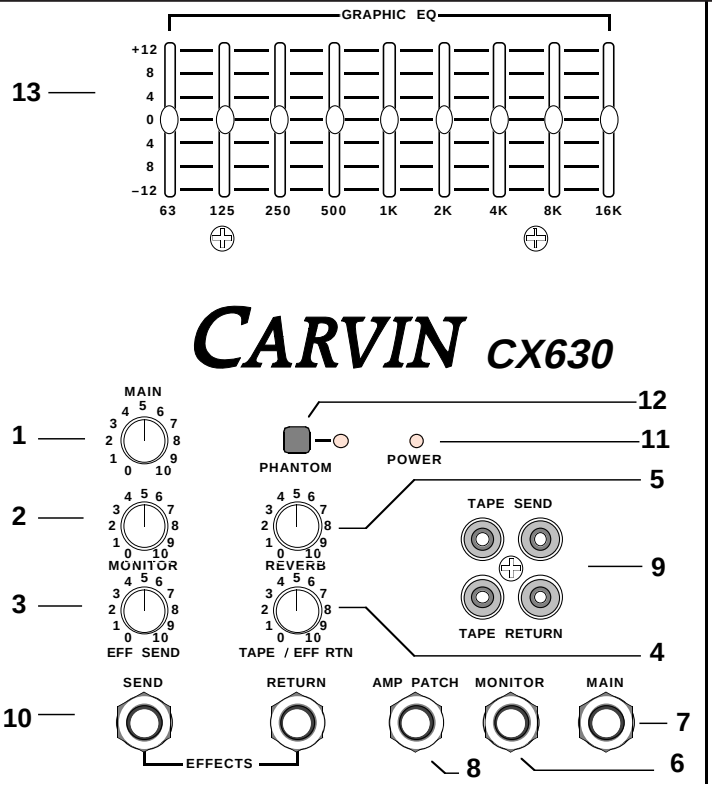
**CAUTION**

**RISK OF ELECTRIC SHOCK**

**THIS UNIT CONTAINS HIGH VOLTAGE COMPONENTS INSIDE! REFER SERVICING TO QUALIFIED SERVICE PERSONNEL!**

| RefDes | DESCRIPTION | CARVIN # |
|---|---|---|
| A1 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A2 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A3 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A4 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A5 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A6 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A7 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A8 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A9 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A10 | 4558, Dual Low Noise Op Amp | 60-45580 |
| A11 | 4558, Dual Low Noise Op Amp | 60-45580 |
| | | |
| C1 | Capacitor, Cera 82pF, 500V | 45-82052 |
| C2 | Capacitor, Cera 82pF, 500V | 45-82052 |
| C3 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C4 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C5 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C6 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C7 | Capacitor, Cera 27pF, 500V | 45-27052 |
| C8 | Capacitor, Cera 27pF, 500V | 45-27052 |
| C9 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C10 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C11 | Capacitor, Cera 330pF, 1000V | 45-33113 |
| C12 | Cap, Poly 0.0047µF, 100V | 46-47212 |
| C13 | Capacitor, Cera 39pF, 500V | 45-39052 |
| C14 | Capacitor, Elec 47µF, 63V | 47-47061 |
| C15 | Capacitor, Poly 0.047µF, 100V | 46-47312 |
| C16 | Capacitor, Poly 0.047µF, 100V | 46-47312 |
| C20 | Capacitor, Poly 0.1µF, 100V | 46-10412 |
| C21 | Capacitor, Cera 39pF, 500V | 45-39052 |
| C22 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C23 | Capacitor, Cera 39pF, 500V | 45-39052 |
| C24 | Capacitor, Elec 470µF, 16V | 47-47116 |
| C25 | Capacitor, Cera 39pF, 500V | 45-39052 |
| C26 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C27 | Capacitor, Elec 470µF, 16V | 47-47116 |
| C28 | Capacitor, Cera 39pF, 500V | 45-39052 |
| C29 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C30 | Capacitor, Cera 39pF, 500V | 45-39052 |
| C31 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C32 | N/U | |
| C33 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C34 | Capacitor, Poly 0.047µF, 100V | 46-47312 |
| C35 | Capacitor, Cera 120pF, 500V | 45-12152 |
| C40 | Capacitor, Elec .47µF, 100V | 46-47412 |
| C41 | Capacitor, Poly 0.022µF, 100V | 46-22312 |
| C42 | Capacitor, Poly 0.22µF, 100V | 46-22412 |
| C43 | Capacitor, Poly 0.01µF, 100V | 46-10312 |
| C44 | Capacitor, Poly 0.1µF, 100V | 46-10412 |
| C45 | Capacitor, Poly 0.0047µF, 100V | 46-47212 |
| C46 | Capacitor, Poly 0.068µF, 100V | 46-68312 |
| C47 | Capacitor, Poly 0.0033µF, 100V | 46-33212 |
| C48 | Capacitor, Poly 0.033µF, 100V | 46-33312 |
| C49 | Capacitor, Poly 0.001µF, 100V | 46-10212 |
| C50 | Capacitor, Poly 0.022µF, 100V | 46-22312 |
| C51 | Capacitor, Poly 0.001µF, 100V | 46-10212 |
| C52 | Capacitor, Poly 0.0068µF, 100V | 46-68212 |
| C53 | Capacitor, Poly 0.001µF, 100V | 46-10212 |
| C54 | Capacitor, Poly 0.0047µF, 100V | 46-47212 |
| C55 | Capacitor, Cera 330pF, 1000V | 45-33113 |
| C56 | Capacitor, Poly 0.0022µF, 100V | 46-22212 |
| C57 | Capacitor, Cera 250pF, 500V | 45-25152 |
| C58 | Capacitor, Cera 56pF, 500V | 45-56052 |
| C59 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C60 | Capacitor, Poly 0.047µF, 100V | 46-47312 |
| C61 | Capacitor, Elec 470µF, 16V | 47-47116 |
| C62 | Capacitor, Elec 470µF, 25V | 47-47125 |
| C63 | Capacitor, Elec 470µF, 25V | 47-47125 |
| C70 | Capacitor, Elec 470µF, 25V | 47-47125 |
| C71 | Capacitor, Elec 470µF, 25V | 47-47125 |
| C72 | Capacitor, Elec 4700µF, 50V | 42-47251 |
| C73 | Capacitor, Elec 4700µF, 50V | 42-47251 |
| C76 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C77 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C78 | Capacitor, Poly 0.1µF, 100V | 46-10412 |
| C79 | Capacitor, Elec 22µF, 160V | 47-22016 |
| C80 | Capacitor, Poly 0.1µF, 100V | 46-10412 |
| C81 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C82 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C83 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C84 | Capacitor, Elec 10µF, 50V | 47-10051 |
| C85 | Capacitor, Poly 0.1µF, 100V | 46-10412 |
| C86 | Capacitor, Elec 22µF, 160V | 47-22016 |
| C87 | Capacitor, Poly 0.1µF, 100V | 46-10412 |
| C88 | Capr, Mylar 0.047µF, 250VAC | 41-47321 |
| | | |
| D1 | LED, Small Red | 60-75320 |
| D2 | LED, Small Red | 60-75320 |
| D3 | Diode, 1N4003 0.35" prep. | 61-40030 |
| D7 | Diode, 1N914 0.35" prep. | 61-19140 |
| D10 | Diode Rect., MR752 6A 200V | 60-75200 |
| D11 | Diode Rect., MR752 6A 200V | 60-75200 |
| D12 | Diode Rect., MR752 6A 200V | 60-75200 |
| D13 | Diode Rect., MR752 6A 200V | 60-75200 |
| | | |
| F1 | Fuse Clips 3AG Vert. PC MTG | 23-03529 |
| | | |
| H1 | Conn. Hdr. 8 pin 90° | 23-10008 |
| H2 | Conn. Hdr 4 pin 90° | 23-10014 |
| H3 | Conn. Hdr 8 pin | 23-10082 |
| | | |
| J1 | XLR Female Neutrik Conn. | 21-40000 |
| J2 | Jack 1/4", 3Pin Plastic. 24mm | 21-06453 |
| J3 | Jack RCA Quad PC Vert. MTG | 21-40022 |
| J4 | Jack 1/4", 3Pin Plastic. 24mm | 21-06453 |
| J5 | Not Assigned | |
| J6 | Jack 1/4", 3Pin Plastic. 24mm | 21-06453 |
| J7 | Jack 1/4", 3Pin Plastic. 24mm | 21-06453 |
| J8 | Jack 1/4", 3Pin Plastic. 24mm | 21-06453 |
| J9 | Jack 1/4", 3Pin Plastic. 24mm | 21-06453 |
| J10 | Jack 1/4", 3Pin Plastic. 24mm | 21-06453 |
| J11 | Jack 1/4", 3Pin Plastic. 24mm | 21-06453 |
| | | |
| P1 | Pot, 12x35mm "D", B50K-C | 71-13057 |
| P2 | Pot, 12x35mm "D", B50K-C | 71-13057 |
| P3 | Pot, 12x35mm "D", B50K-C | 71-13057 |
| P4 | Pot, 12x35mm "D", B50K | 71-13056 |
| P5 | Pot, 12x35mm "D", B50K | 71-13056 |
| P6 | Pot, 12x35mm "D", B50K | 71-13056 |
| P7 | Pot, 12x35mm "D", B50K | 71-13056 |
| P8 | Pot, 12x35mm "D", B50K | 71-13056 |
| P9 | Pot, 12x35mm "D", B50K | 71-13056 |
| P10 | Pot, 12x35mm "D", B50K | 71-13056 |
| P11 | Pot, 12x35mm "D", B50K | 71-13056 |
| P20 | FADER 50K OHM | 71-10332 |
| P21 | FADER 50K OHM | 71-10332 |
| P22 | FADER 50K OHM | 71-10332 |
| P23 | FADER 50K OHM | 71-10332 |
| P24 | FADER 50K OHM | 71-10332 |
| P25 | FADER 50K OHM | 71-10332 |
| P26 | FADER 50K OHM | 71-10332 |
| P27 | FADER 50K OHM | 71-10332 |
| P28 | FADER 50K OHM | 71-10332 |
| | | |
| R1 | Resistor, 5.62K, 1/4W, ±1% | 50-56231 |
| R2 | Resistor, 5.62K, 1/4W, ±1% | 50-56231 |
| R3 | Resistor, 2.21K, 1/4W, ±1% | 50-22131 |
| R4 | Resistor, 2.21K, 1/4W, ±1% | 50-22131 |
| R5 | Resistor, 47K, 1/4W, ±5% | 50-47045 |
| R6 | Resistor, 10K, 1/4W, ±5% | 50-10045 |
| R7 | Resistor, 100K, 1/4W, ±5% | 50-10055 |
| R8 | Resistor, 300K, 1/4W, ±5% | 50-30055 |
| R9 | Resistor, 100K, 1/4W, ±5% | 50-10055 |
| R10 | Resistor, 10K, 1/4W, ±5% | 50-10045 |
| R11 | Resistor, 300K, 1/4W, ±5% | 50-30055 |
| R12 | Resistor, 2.2K, 1/4W, ±5% | 50-22035 |
| R13 | Resistor, 100K, 1/4W, ±5% | 50-10055 |
| R14 | Resistor, 150K, 1/4W, ±5% | 50-15055 |
| R15 | Resistor, 2.2K, 1/4W, ±5% | 50-22035 |

# MASTER SECTION FEATURES




1. MAIN MASTER LEVEL CONTROL

The MAIN level control is the master volume control for the main mix. This volume control receives its signals from the channel LEVEL controls, for the main mix heard at the RCA tape send outputs. If the amp patch jack is not being used, then this is also the master volume control feeding the graphic EQ, the main line output jacks, and the internal power amplifier.

2. MONITOR MASTER LEVEL CONTROL

The MONITOR master control is the master volume for the monitor mix. This volume control receives its signals from the channel MONITOR level controls, for the monitor mix heard in the monitor output. Some of the internal reverb signal is also sent to the MONITOR control.

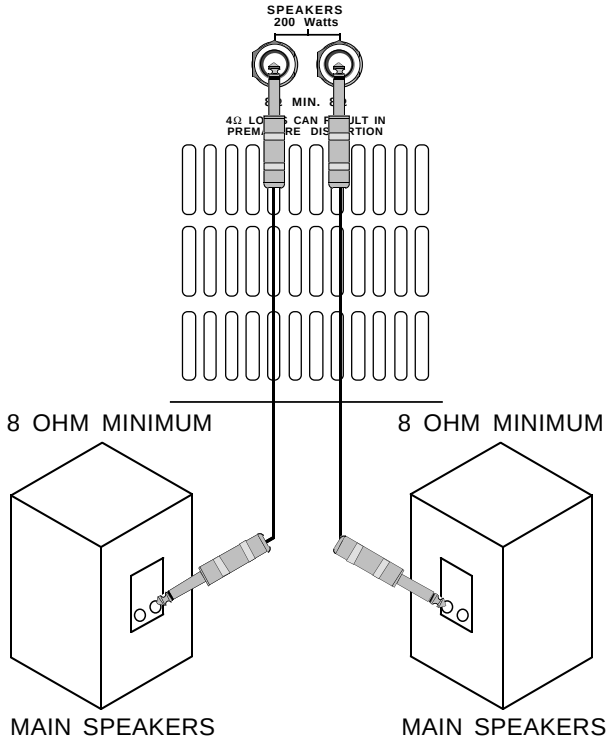
3. EFFECT SEND MASTER LEVEL CONTROL

The EFFECT SEND master control is the master volume for the effects send mix. This volume control gets its signals from the EFF/REV control on the channels, for the effects send mix heard in the effects send output. The typical use of the effects send mix is to drive external effects processors ,but it can also be used as another monitor mix if needed.



# SPEAKER CONNECTIONS

The recommended speaker impedance and connection is two 8 ohm speakers, one to each 1/4 phone jack. This is not the same as patching one speaker to another speaker and plugging the pair into one of the




speaker jacks. The reason is the CX630 and CX420 are made with two amplifiers one to each jack. The equivalent impedance of a linking two 8 ohm speakers together would be 4 ohms into one of the jacks, which is NOT recommended. The CX630 mixer can handle 4 ohms at low operating levels with no added distortion, but at high levels with the CX630 or loading the CX420 with 4 ohms per jack may result in premature distortion (or a crackling sound) , however, this will not damage the amplifiers. If this sound is heard, simply back off the MAIN volume until the no distortion is heard.

10. POWER LED

The POWER LED indicates when the mixer is powered up.

11. PHANTOM POWER SWITCH AND LED

The PHANTOM power switch turns on the microphone phantom power in the channel's XLR jack. 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.

12. THE GRAPHIC EQUALIZER

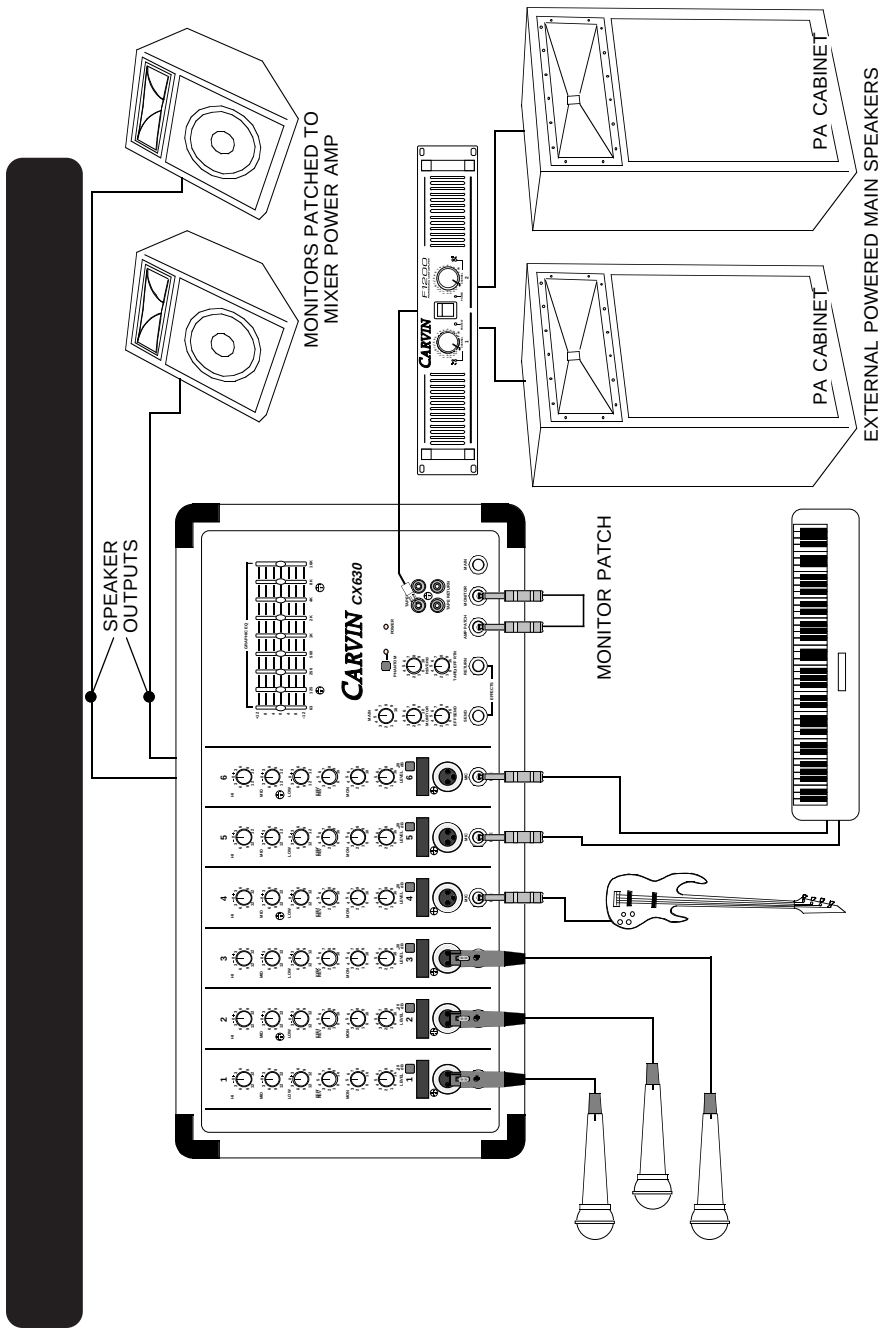
Each mixer has a nine band graphic EQ (equalizer). The graphic EQ is dedicated to the main output following (or post) the amp patch jack of the mixer.
The 9 band Graphic EQ provides a wide degree of tonal flexibility.

The Frequencies:

Here are some tonal reference ranges for the individual sliders to help relate the frequencies in hertz to perceived tonal changes.
In order from left to right:
-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.

Adjusting:

With the sliders in their center detent position, they do not affect the audio signal. When a slider is raised or lowered from the center position, it boosts 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 -12dB 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 Equalizer, but take care not to over-adjust as this may put too much volume in one area of the frequency spectrum affecting the overall sound.



However, many times an unbalanced output (1/4 inch phone plug type) from an instrument is needed to be plugged into the snake or directly into the "LINE" input of the mixer. This can be accomplished by a high to low impedance adapter or a "Direct box" (both are available from Carvin or other electronics outlets).

Once all the input cables to the mixer have been connected, properly label the channels. Verify that all the connections are good and that all mics are connected properly. The next step is connecting your speakers.

WARNING:

With powered mixers (i.e. mixers with built in power amplifiers) the speaker outputs cannot be fed through the snake to power the speakers on stage. Doing this could result in **DAMAGE** to the mixing console's power amp. Only 'Pre-amp' signals can be returned to the stage through the snake. Since speaker level signals cannot be sent through the snake separate speaker cables must be used. These speaker cables will carry the signal from the console's power amp outputs directly to the speakers. The speaker cables should be non-shielded and at least 18 gauge(AWG) wire. For speaker cable runs of over 20 feet 16 gauge wire is recommended.

## 4. CONNECTING THE MONITOR AMPS AND SPEAKERS

In a typical setup for live sound the "CX" series MONITOR LINE OUT will be used to provide a monitor mix for the musicians on stage. The MONITOR LINE OUT is sent to the stage either by using a direct shielded wire from monitor line output or by using one of the snake's returns. The signal can then be plugged into an external power amplifier on stage for powering the monitor speakers.

## 5. TESTING THE MAIN SPEAKERS

It is best to start a new mix with the mixer set as follows: all the channel and monitor level knobs turned down and the master main level, and master monitor level turned down (counterclockwise or off). Also, it is easier to start with the channel tone controls turned to their center positions. This way when the system is turned on and the master is first turned up there will not be any surprises like feedback from a microphone or loud signals coming from a channel that was turned up loud. With the mixer set, the main master level can be turned up to a low level (2 or 3 on the dial). Then a channel with signal can be turned up until it is heard in the speakers. If no signal is heard from the speakers and the channel volume is up full, lower the channel volume and check the connections. It may be the signal source was not plugged in correctly, so try another source. Also, it may be the connections to the speakers or external amplifiers. When the problem has been corrected start again with turning up the low level signal and use this low level signal to check if all the speakers are working. Now the main system is ready for the sound check.

## 6. TESTING THE MONITOR SPEAKERS

Each input channel of the mixer has a knob labeled MON. This knob is used to adjust the volume of each channel's send to the monitor buss.

The channel monitor signal is pre the channel tone controls and the channel level control. What this means is any adjustments to the channel tone controls or the channel level control will not effect the monitor mix. The advantage of this



is, if more high frequencies are wanted in the main mix speakers from one channel, turning up the channel's HI tone control will not result in feedback in the monitor speakers. With the mixer set as suggested in section 5 the monitor master level can be brought up to 5 or 6 on the dial and a channel, with signal, can have its monitor level turned up until it is heard in the monitors. If nothing is heard in the monitors, first, make sure the channel does have signal. One way to test the channel is to turn it up in the main speakers that were just tested. If the signal is present in the main speakers, but not in the monitors speakers then turn them both down low again and start checking the monitor system connections from the mixer's MONITOR LINE OUT to the monitor amplifiers and speakers. When the problem has been corrected start again with turning up the level and use the signal to check that all the monitor speakers are working. Now the monitor system is ready for the sound check.

## 7. 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 brought on stage for 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 a graphic equalizer before the monitor power amp 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, like 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. 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 all the bugs out of the system so that 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 will run smoothly at show time.