

Z150C2VX

Owner's Manual

Competition Series  
Power Amplifier  
and  
Variable Crossover

## ■ What is the Z150C2VX?

Thank you for purchasing a ZAPCO product. The Z150C2VX is a stereo amplifier conservatively rated at 100 watts per channel. It can produce 115 watts per channel into a two ohm load and 200 watts per channel into a one ohm load. The Z150C2VX incorporates a dual electronic crossover that provides both high pass or low pass outputs.

The Amplifier can be configured for low pass, full range, or high pass operation. The electronic crossover is separately adjustable for both frequency and level for the internal amplifier and the external crossover line level outputs. The crossover is a Linkwitz-Riley type that eliminates phase error and the typical 3 dB "hump" at the crossover point.

The power supply in the Z150C2VX is a new design that dramatically increases power and efficiency. New Gate Drive Boost circuitry greatly improves the MOSFET switching performance and allows for cooler operation.

## ■ Z150C2VX Key Features

- Dual slope, continuously variable crossover (12 & 24 dB/octave)
- Linkwitz-Riley zero-phase crossover with slope selection
- Line level crossover outputs for driving an external amplifier
- Low pass, high pass, or full range configurations available
- 0% symmetrical, discrete power amplifier circuitry
- Dual pro audio balanced differential inputs
- Separate LED's for Power and Protection
- Load stability down to one ohms
- Six 50-ampere MOSFET switching devices
- Precision 1% resistors used throughout
- Low radiated noise for clean AM / FM reception
- Very high damping factor
- Gold plated power, RCA & speaker connectors
- Input sensitivity range switch for optimum channel matching
- Low global feedback
- Can drive highly reactive loads
- Gate Drive Boost maximizes power supply efficiency and improves overall performance
- Short circuit, high temperature, reverse, DC offset, and over voltage protection
- Sixteen 25-ampere bipolar amplifier output transistors
- Quality ZAPCO construction
- Three year warranty
- Designed and manufactured in the U.S.A.

## ■ Warnings

ZAPCO highly recommends that a **system protection device** (fuse, circuit breaker) should **always** be installed near the battery connection. Although ZAPCO products have adequate internal protection, it is possible that battery wires may be pinched between the ZAPCO product and the battery. A system protection device should be located in the engine compartment within eighteen inches of the power connection (battery), where it can be accessed easily. Also, make sure that all wiring is routed correctly and safely according to the following guidelines.

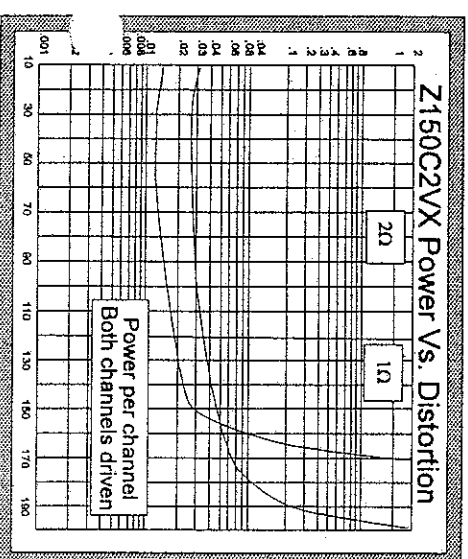
- Do not run wiring close to hot, spinning or sharp objects.
- Always use wire grommets when routing wire through fire wall and door jams.
- Make sure that the potential for pinched wires is avoided by routing wires away from moving hinges and seats, and wires too close to the brake, clutch and gas pedals.

### Caution:

Continuous exposure to excessive sound pressure levels may cause *permanent hearing loss*. ZAPCO asks that you use common sense in setting volume levels.

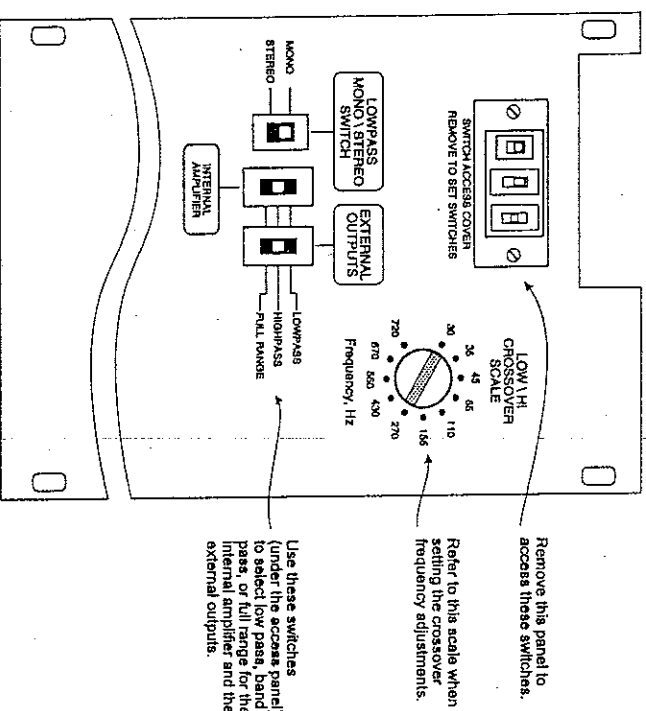
## ■ Specifications

OUTPUT POWER	150 Watts/Ch @ 2Ω, 20-20,000 Hz
T.H.D. + N	210 Watts/Ch @ 1Ω, 40-20,000 Hz <.03%, 20-20,000 Hz @ 150 Watts/Ch, 2Ω
S/N RATIO	>105 dB below 150 watts (power amplifier output) >90 dB below 2 volts (crossover output)
SEPARATION	>68 dB (crossover outputs) >70 dB (power amplifier output)
DAMPING FACTOR	>700 @ 4Ω, >350 @ 2Ω, >175 @ 1Ω
INPUT TYPE	1 dB @ 1Ω load Fully Balanced Differential + REF GND
INPUT SENSITIVITY	.1 - 5.0 Volts, variable
MAXIMUM INPUT LEVEL	5 Volts R.M.S.
INPUT IMPEDANCE	100KΩ
HIGH PASS OUTPUT LEVEL	8 Volts, max
POWER REQUIREMENTS	60 Amperes, max., @ 2Ω
FUSE	Dual 25 Ampere external automotive blade-type
MINIMUM LOAD	1Ω
IDLE CURRENT	1.8 Amperes
DIMENSIONS	16"L x 5-7/8"W x 2-1/2"H



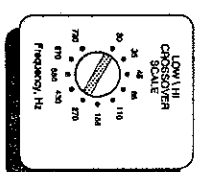
# The Electronic Crossover

The amplifier bottom plate diagram



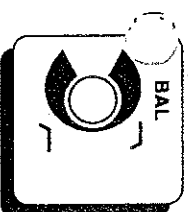
The electronic crossover in the Z150C2VX offers much greater flexibility than other crossovers currently available. The filters have Linkwitz-Riley slope and damping characteristics that are superior to other designs. The high pass and low pass crossovers are independently adjustable and the crossover frequencies can be overlapped or underlapped. The output level is adjusted with a balance control that automatically optimizes the crossover headroom. A 12 / 24 dB/octave switch allows for steep (24 dB/octave) or ordinary (12 dB/octave) low pass slopes. The amplifier and external crossover outputs can be configured for low pass, band pass, or high pass operation.

## Crossover Controls - Frequency



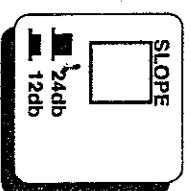
The crossover low pass and high pass frequency controls independently vary the crossover frequency between 30 Hz and 720 Hz. The crossover frequency can be determined by referencing the frequency scale on the end plate.

## Crossover Controls - Balance



The crossover balance control decreases either the high pass or low pass outputs. Using a single control assures that the crossover and amplifier will the maintain maximum headroom. Turning the control counter-clockwise decreases the high pass output while clockwise rotation decreases the low pass output.

## Crossover Controls - Slope



The slope switch changes the slope of the low pass amplifier output to either 12 or 24 dB / octave. This switch is located on the amplifier control end. 24 dB / octave is only available in the low pass mono mode.

## ■ Unpacking the Z150C2VX

Included in your Z150C2VX packing box you will find the warranty registration card. *Please* fill it out and return it to the factory.

If for any reason your Z150C2VX must be returned to the factory, we suggest you retain the original packing box for safe transportation. We suggest you record the serial number of your Z150C2VX in the space below for your permanent records.

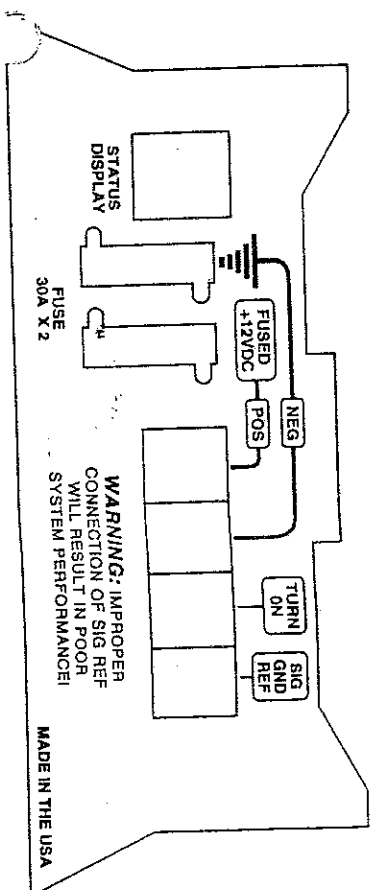
SERIAL NUMBER: \_\_\_\_\_  
PURCHASE DATE: \_\_\_\_\_

## ■ Mounting Guidelines for the Z150C2VX

Mounting the Z150C2VX is easy. Keep in mind the following guidelines.

- The amplifier may be mounted in any direction, on wood, metal, or carpet. The metal case of the amplifier may be grounded or left isolated.
- The amplifier requires adequate ventilation. Locate the amplifier with sufficient surrounding area for proper cooling.
- Keep the amplifier out of the engine compartment and other locations that may cause the amplifier to get wet.
- Mount the amplifier in a location to allows easy access to the crossover frequency and gain controls.
- Do not mount the amplifier near the radio antenna.

## ■ Wiring Guidelines - Power Wiring



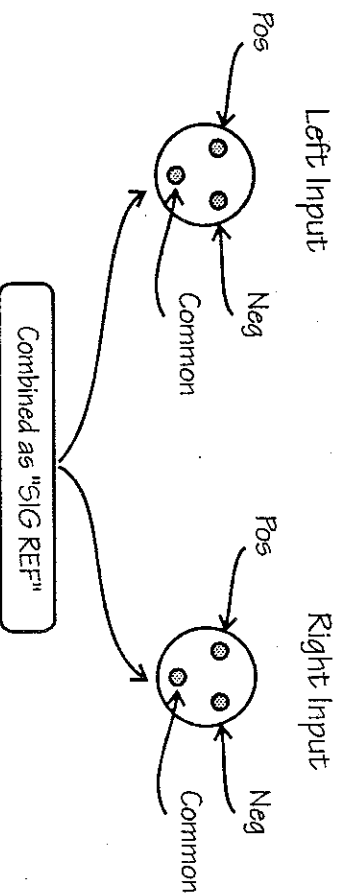
Amplifier Power End

- 1) Connect the 12V "POS" terminal (FUSED +12VDC) to the battery with 8 GAUGE (or heavier) wire.
- 2) Fuse the wire *near the battery* with a 50 Amp fuse or circuit breaker. Although the amplifier is already fused, a short circuit between the amplifier and the battery could cause a fire without fusing near the battery. See the section: "WARNINGS"
- 3) Connect the 12V "NEG" terminal to the vehicle chassis with the shortest possible 8 GAUGE wire. Do not make this connection directly to the battery. Do not share this connection with other equipment. A "single point ground" for high current connections degrades the system performance. An inadequate power supply connection to this amplifier will result in REDUCED POWER OUTPUT.
- 4) Connect the "SIG GND REF" terminal to the car chassis near the source (CD player.) This connection may be made with light gauge wire. See the following page for an explanation of the Signal Reference connection.
- 5) Connect the "TURN ON" connection to the source remote output. This connection requires very little current and may be connected with a light gauge wire such as #22. Connecting 12 volts to this terminal turns the amplifier on.

## ■ The "SIG REF" Connection

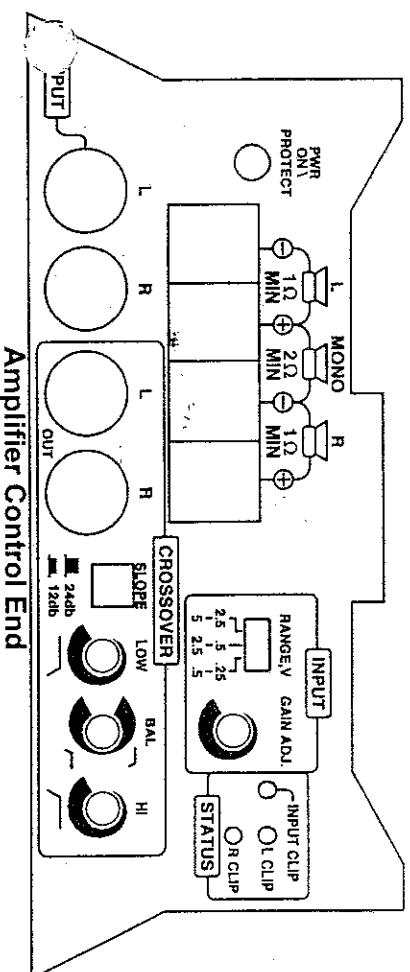
The Signal Reference connection first appeared in the ZAPCO model Z300C2 amplifier. This connection was added to fully implement the balanced differential type connection found in professional studio and very high quality home audio gear. Balanced inputs are composed of a (+), a (-) and a common ground connection per channel. To incorporate this style connection in our audio gear, we combined the left and right common connections and called it the "SIG REF" connection. This allows the amplifier to dramatically reduce common mode distortion and ultra-sonic noise produced in the automobile environment. Bench testing of audio products typically does not reveal these types of distortions. This type of audio input allows the amplifier to have the same sonic purity in the automobile as it does on the test bench.

### Studio Style Audio Connection



*Failure to connect the SIG REF wire properly will result in distortion and*  
**REDUCED POWER OUTPUT.**

## ■ Wiring Guidelines - Signal Wiring



### Input Connections

Connect the right and left input signals to the corresponding RCA input jacks on the end of the Z150C2VX. Keep these wires and the "SIG REF" wire close to each other, and far away from power or speaker wires.

### Input Sensitivity

The input sensitivity is switch selectable. Also, the "GAIN ADJ" control will vary the input level between any two range settings. This method allows a single input gain control for both channels and assures maximum channel matching. Initially set the "GAIN ADJ" at maximum and the "RANGE" switch at 2.5-5 volt setting. Try to obtain the proper input sensitivity with the range switch. Fine tune the input sensitivity with the "GAIN ADJ" control. This procedure optimizes the system headroom.

### Crossover Output Connections

Connect the left and right line level outputs to a second amplifier / crossover. High quality audio cable should be used for optimum performance.

## ■ Technical Assistance

Should you experience a problem with your Z150C2VX, contact the dealer that sold you the the product. If your dealer can not solve your problem, contact the factory service department.

Phone: (209) 577-4268  
Fax: (209) 577-8548

If you need to return the product for repair, send it to:

**Service Department**  
**A.R.P.A. of America**  
**413 South Riverside Drive, Suite D**  
**Modesto, California 95354**

## ■ Three Year Limited Warranty

**What is covered.** The Z150C2VX is warranted by ZAPCO for a period of three years from date of original purchase. If you sell or give this product as a gift, the warranty is automatically transferred to the new owner and remains in effect for the original three year period. During the warranty period, we will repair or, at our option, replace at no charge, a product that proves to be defective, provided you return the product, shipping prepaid, to ZAPCO. (Replacement may be made with a newer model of equal or better functionality.)

warranty gives you specific legal rights, and you may also have other rights that vary from state to state, province to province, or country to country.

**What is not covered.** This warranty does not apply if the serial number has been modified or defaced or if the product has been damaged by misuse. The warranty does not apply to product that has been serviced by unauthorized entities.

No other express warranty is given. The repair or replacement of a product is your exclusive remedy. ANY OTHER IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS IS LIMITED TO THE THREE YEAR DURATION OF THIS WRITTEN WARRANTY. SOME STATES, PROVINCES OR COUNTRIES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. IN NO EVENT SHALL ZAPCO BE LIABLE FOR CONSEQUENTIAL DAMAGES. Some states, provinces or countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Products are sold on the basis of specifications applicable at the time of manufacture. ZAPCO shall have no obligation to modify or update products, once sold.