

# OWNER'S MANUAL

**PrecisionPower™**  
Absolutely State of the Art Mobile Audio™

## *PowerClass SubWoofers*

*PCX 102    PCX 104    PCX 122    PCX 124*

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## **CONGRATULATIONS**

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Thank you for choosing *PrecisionPower™* woofers. Designed and engineered in the USA, this product combines innovative technology with the finest materials to consistently deliver *Absolutely State of the Art™* performance, sound quality, reliability, and value. This *PrecisionPower™* product reflects our commitment to offer you unparalleled performance and quality for years of dependable service and listening enjoyment.

Included in this manual are a number of different enclosure suggestions. These are by no means the only enclosures to use, but they provide a starting point. To determine the correct enclosure for your needs many factors must be addressed (amount of power, vehicle, placement, crossovers, etc.) Therefore, as always *PrecisionPower™* recommends that your subwoofer be installed by an authorized *PrecisionPower™* dealer

## **CAUTION**

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Extended use of a high powered audio system may result in hearing loss or damage. While *PrecisionPower™* systems are capable of “Concert Level” volumes with incredible accuracy, they are also designed for you to enjoy at more reasonable levels all of the sonic subtleties created by musicians. Please observe all local sound ordinances.

## SPECIFICATIONS

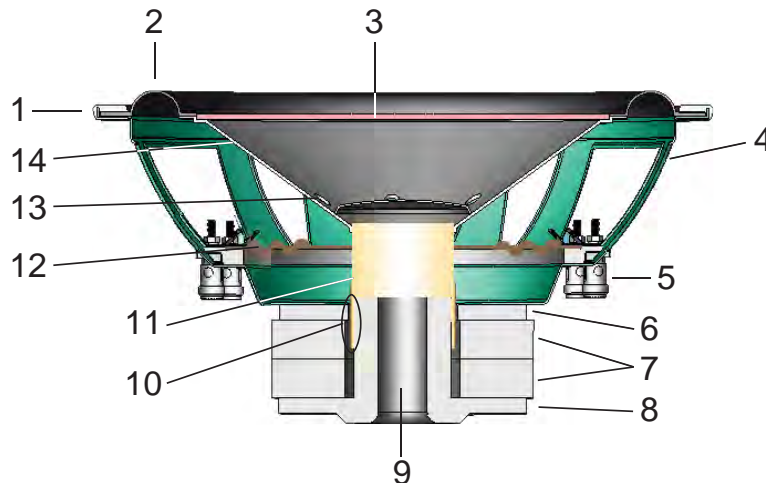
Directed Part Number	PCX 102	PCX 104	PCX 122	PCX 124
Model Number	28102	28107	28112	28117
<b>Thiele/Small Parameters</b>				
Fs (free-air resonance, Hz)	36.7	39.77	22.07	24.2
Vas (equivalent compliance, cu. ft.)	0.75	0.64	4.38	3.96
Vas (equivalent compliance, liters)	21.09	17.96	123.96	112.15
Qms (Q, mechanical)	3.56	3.46	3.58	2.98
Qes (Q, electrical)	0.96	1.03	0.62	0.65
Qts (total driver Q)	0.75	0.79	0.53	0.54
Re (DC resistance, ohms)	3.7	7	3.7	7
Z (nominal impedance, ohms)	2 x 2	2 x 4	2 x 2	2 x 4
Le (inductance, mh)	2.12	3.23	2.13	3.24
Efficiency (1W @ 1M, dB)	82.26	82.3	85.22	85.78
Xmax (one way linear excursion, in.)	0.63	0.63	0.63	0.63
Xmax (one way linear excursion, mm)	16.1	16.1	16.1	16.1
Pe (continuous power handling, watts)	300	300	300	300
Peak power handling (music, watts)	600	600	600	600
Mms (total moving mass, grams)	129	129	152	140
Cms (mechanical compliance, mm/N)	0.145	0.124	0.342	0.309
Bl (motor strength, Tesla-M)	10.7	14.82	11.22	15.13
Sd (effective radiating area, sq. cm.)	320.5	320.5	506.71	506.71
Sd (effective radiating area, sq. in.)	49.692	49.692	78.54	78.54
Frequency range (Hz)	36.7-250	39.8-250	22.1-250	24.2-250
Energy Bandwidth Product (EBP)	38	39	36	37
<b>Driver Physical Dimension</b>				
Speaker Outer Diameter (inches)	10.118	10.118	12.992	12.992
Speaker Outer Diameter (mm)	257	257	330	330
Mounting hole diameter (inches)	9.212	9.212	11.1	11.1
Mounting hole diameter (mm)	234	234	282	282
Mounting depth (inches)	5.866	5.866	6.18	6.18
Mounting depth (mm)	149	149	157	157
Magnet Weight (oz)	65	65	70	70
Basket diameter (inches)	10.118	10.118	12.992	12.992

Note: Specifications subject to change without notice.

## SPECIFICATIONS (Continued)

Recommended Enclosures				
Typical sealed enclosure (cu. ft.)	0.6	0.6	1.25	1.25
SPL sealed enclosure (cu. ft.)	0.5	0.5	1	1
Typical vented enclosure (cu. ft.)	0.9	0.9	1.25	1.25
Port Tuning (Hz)	32	32	29	29
Port Diameter (inside, in.)	2.25	2.25	2.6	2.6
Port Length (in.)	10	10	12	12
Equivalent Square Port (in.)	2 x 2	2 x 2	2.3 x 2.3	2.3 x 2.3
Enclosure Details				
1. External dimensions calculated for 3/4" building material.				
2. Includes speaker displacement.				
3. Volumes given are net tuning volume.				
4. Enclosures include a minimal amount of damping material. Use just enough material to line the inside of the enclosure.				

## FEATURES



1. Wrap around gasket to accommodate either front or rear mounting alternatives
2. High density NBR foam surround
3. Glass fiber honey comb flat panel
4. Stamped steel basket
5. Push terminals (1 pair each side)
6. 8mm steel front plate
7. Double stack ceramic magnets
8. 8mm steel vented T yoke back plate/pole piece
9. 1" flared vent
10. Dual 4 ohm copper voice coil
11. Kapton voice coil former
12. Progressive roll Conex spider
13. Vent holes in cone assembly for additional cooling
14. Paper cone assembly to support and stabilize the flat panel

## WIRING CONFIGURATIONS

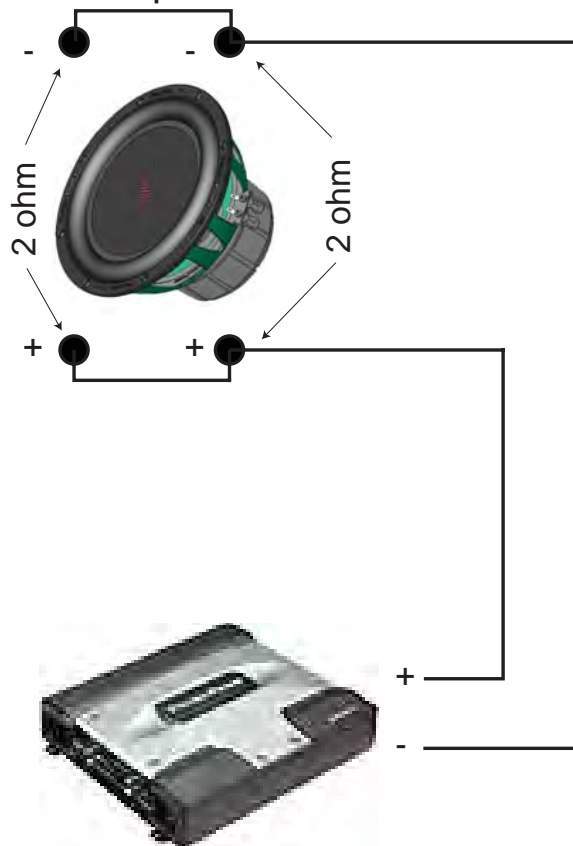
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The following illustrations provide guidelines on properly connecting your *PrecisionPower™* woofer to a *PrecisionPower™* amplifier for maximum power and performance using common parallel, and series/parallel wiring configurations.

Recommended Amplifier Power	
1 woofer	200 to 600 watts
2 woofers	400 to 1200 watts
3 woofers	600 to 1800 watts
4 woofers	800 to 2400 watts

### Parallel—One Speaker (dual 2 ohm voice coils)

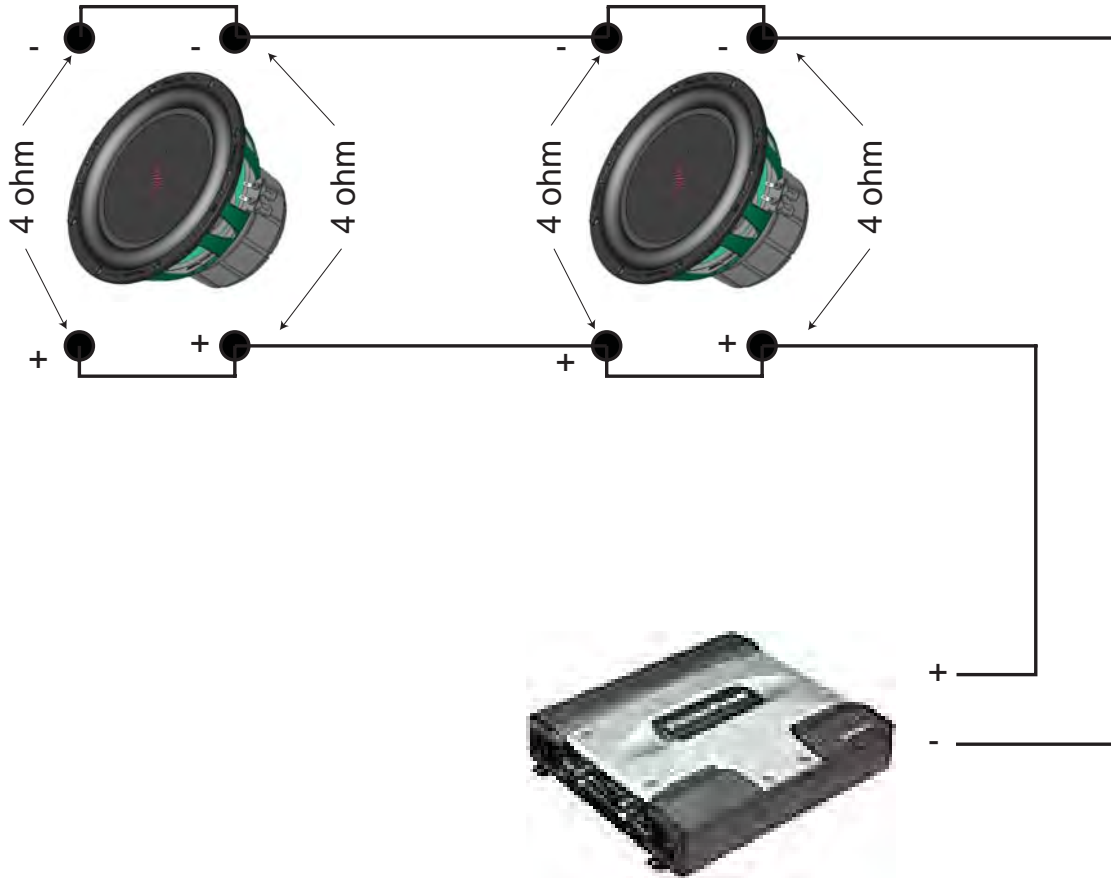
One dual 2 ohm voice coil woofer with voice coils in parallel results in a 1 ohm load to the amplifier.



1. Connect the speaker in parallel by connecting the two positive (+) terminals together and the two negative (-) terminals together.
2. Wire the positive (+) terminals of the woofer to the positive (+) terminal on the amplifier. Wire the negative (-) terminals of the woofer to the negative (-) terminal on the amplifier.

### Parallel—Two Speakers (dual 4 ohm voice coils)

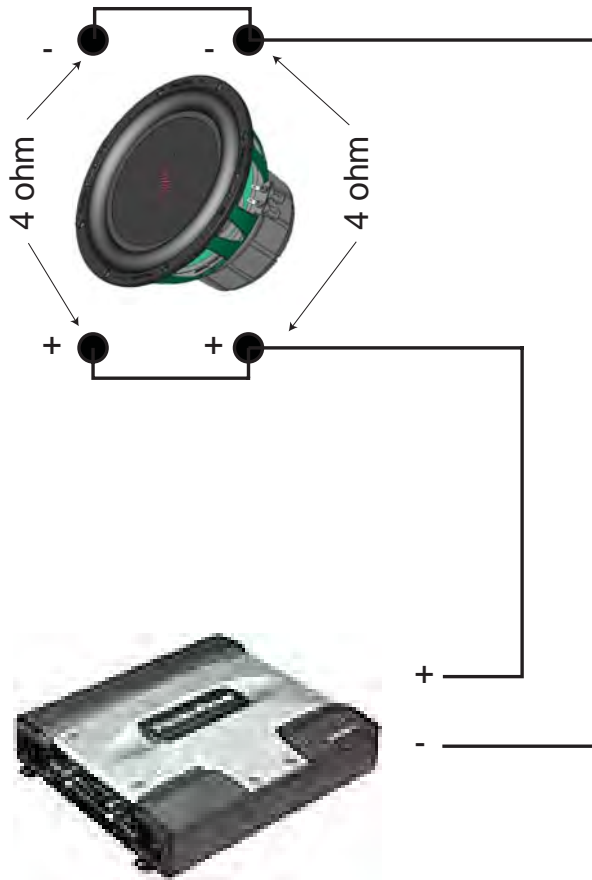
Two dual 4 ohm voice coil woofers with voice coils in parallel and the two woofers in parallel results in a 1 ohm load to the amplifier.



1. Connect the speaker in parallel by connecting the four positive (+) terminals together and the four negative (-) terminals together.
2. Wire the positive (+) terminals of the woofers to the positive (+) terminal on the amplifier. Wire the negative (-) terminals of the woofers to the negative (-) terminal on the amplifier.

## Parallel—One Speaker (dual 4 ohm voice coils)

One dual 4 ohm voice coil woofer with voice coils in parallel results in a 2 ohm load to the amplifier.



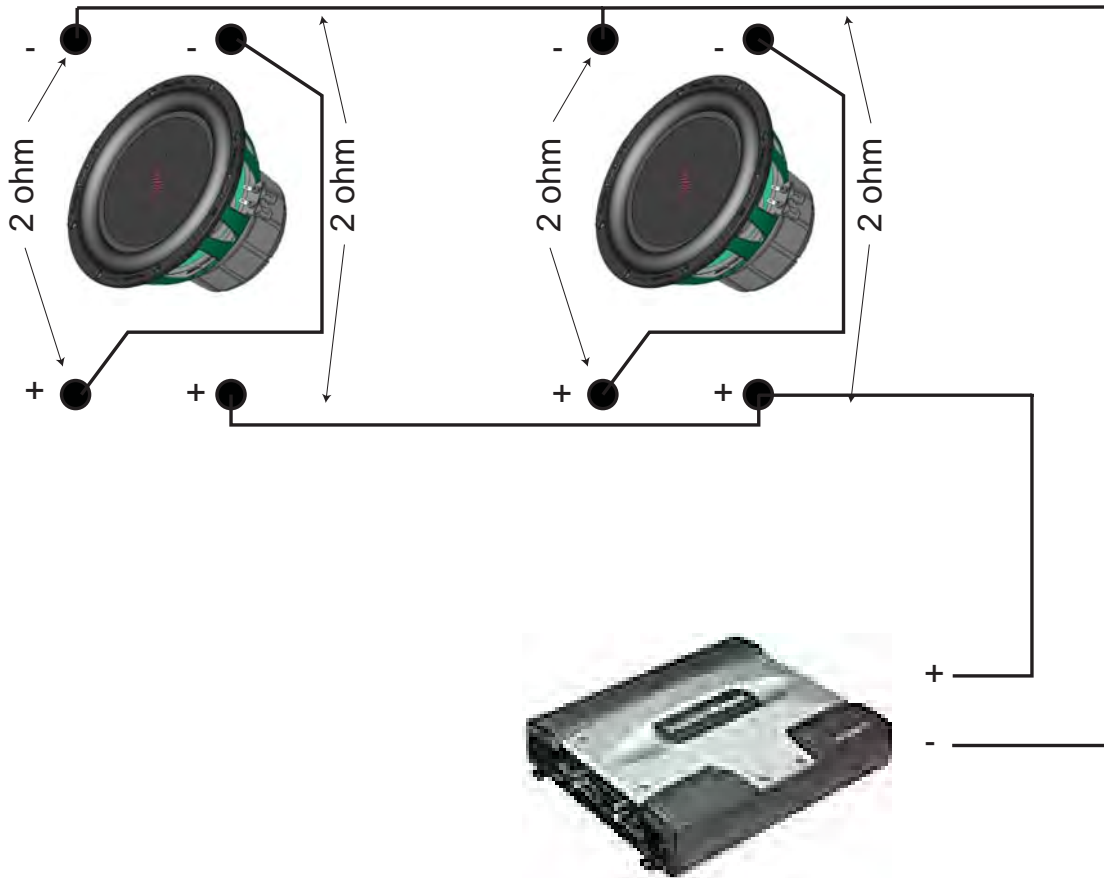
1. Connect the speaker in parallel by connecting the two positive (+) terminals together and the two negative (-) terminals together.
2. Wire both positive (+) terminals of the woofer to the positive (+) terminal on the amplifier. Wire both negative (-) terminals of the woofer to the negative (-) terminal on the amplifier.



## Series-Parallel—Two Speakers (dual 2 ohm voice coils)

**Note: Verify and ensure that the woofer wiring is connected as shown with the negative connection from the first woofer coil connected to the positive connection of the second woofer coil.**

Two dual 2 ohm voice coil woofers with voice coils in series and then parallel the two series woofers results in a 2 ohm load to the amplifier.

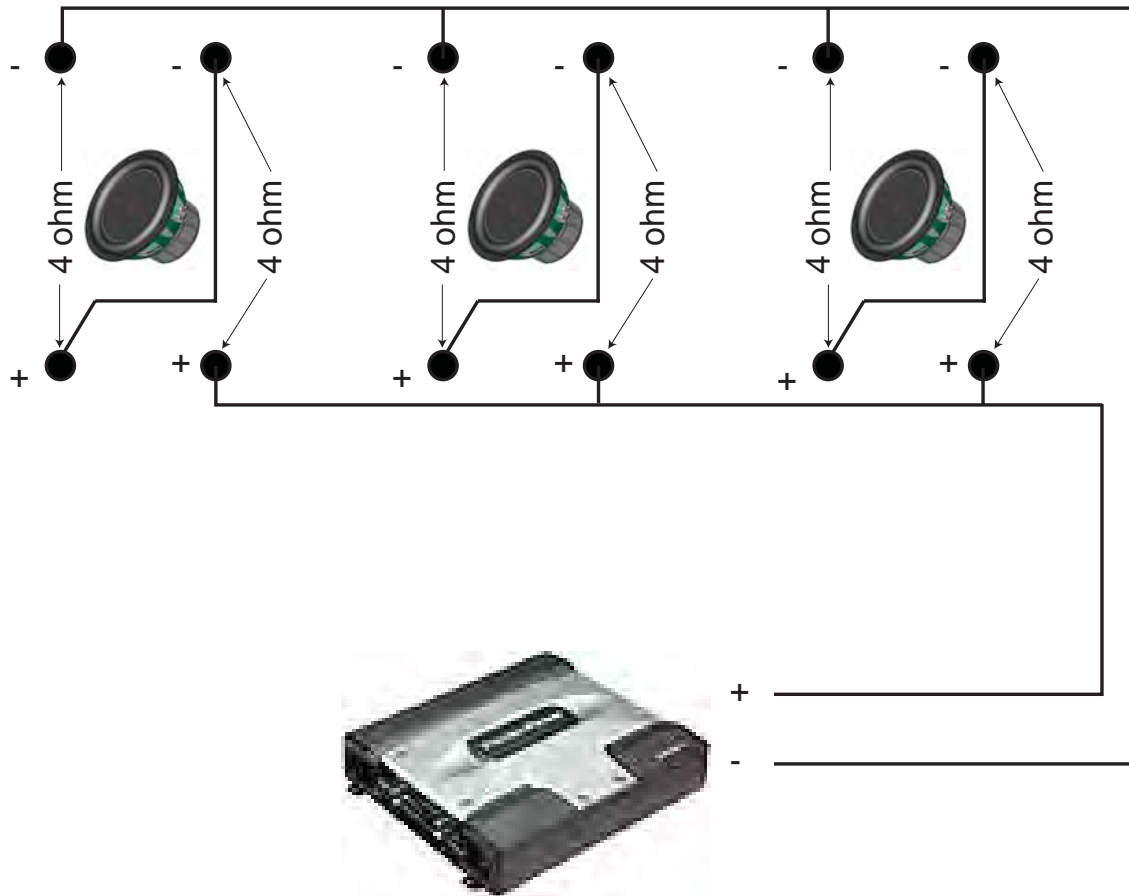


1. Connect each woofer in series by connecting the negative (-) of the first coil to the positive (+) terminal of the second coil.
2. Wire the positive (+) terminal of each woofer's first coil to the positive (+) terminal on the amplifier. Wire the negative (-) terminal of each woofer's second coil to the negative (-) terminal on the amplifier.

## Series-Parallel—Three Speakers (dual 4 ohm voice coils)

**Note: Verify and ensure that the woofer wiring is connected as shown with the negative connection from the first woofer coil connected to the positive connection of the second woofer coil.**

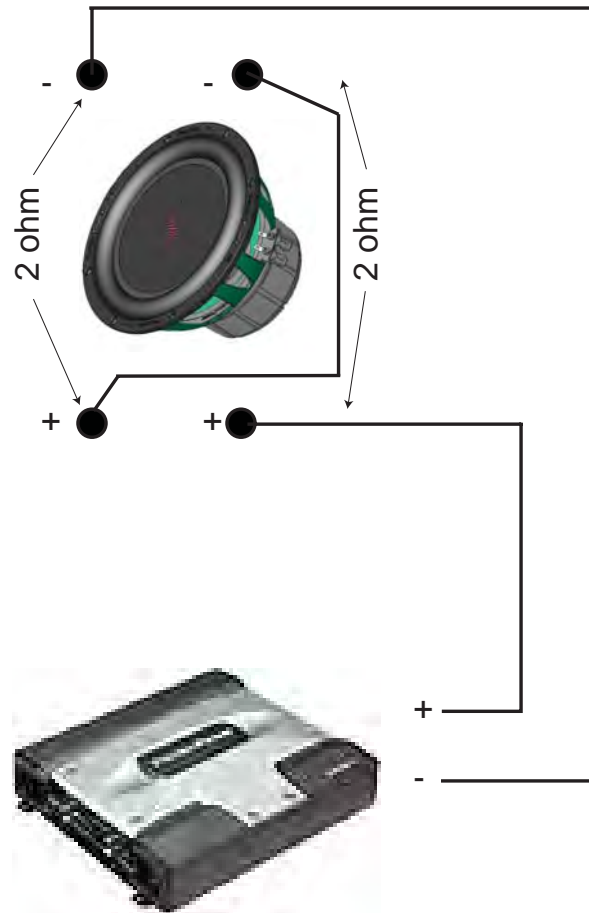
Three dual 4 ohm voice coil woofer with voice coils of each woofer wired in series and then parallel the three woofers for a resulting 2.67 ohm load to the amplifier.



1. Connect each woofer in series by connecting the negative (-) of the first coil to the positive (+) terminal of the second coil.
2. Wire the positive (+) terminal of each woofer's first coil to the positive (+) terminal on the amplifier. Wire the negative (-) terminal of each woofer's second coil to the negative (-) terminal on the amplifier.

## Series—One Speaker (dual 2 ohm voice coils)

One dual 2 ohm voice coil woofer with voice coils in connected in series results in a 4 ohm load to the amplifier.

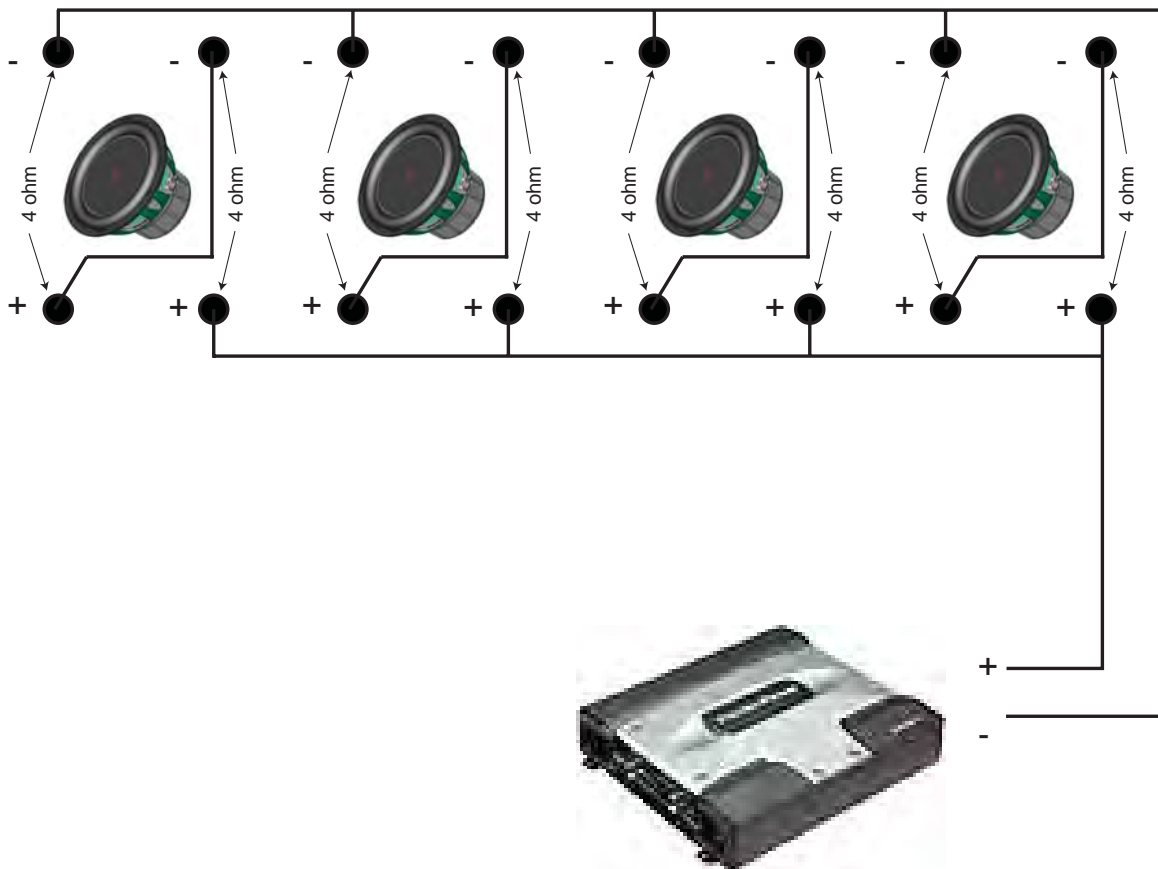


1. Connect the woofer in series by connecting the negative (-) of one terminal to the positive (+) terminal of the other coil.
2. Wire the positive (+) terminal of the first coil to the positive (+) terminal on the amplifier. Wire the negative (-) terminal of the second coil to the negative (-) terminal on the amplifier.

## Series-Parallel—Four Speakers (dual 4 ohm voice coils)

**Note: Verify and ensure that the woofer wiring is connected as shown with the negative connection from the first woofer coil connected to the positive connection of the second woofer coil.**

Four dual 4 ohm voice coil woofers should be wired with the voice coils on each woofer in series and then parallel the four woofers for a resulting 2 ohm load to the amplifier.

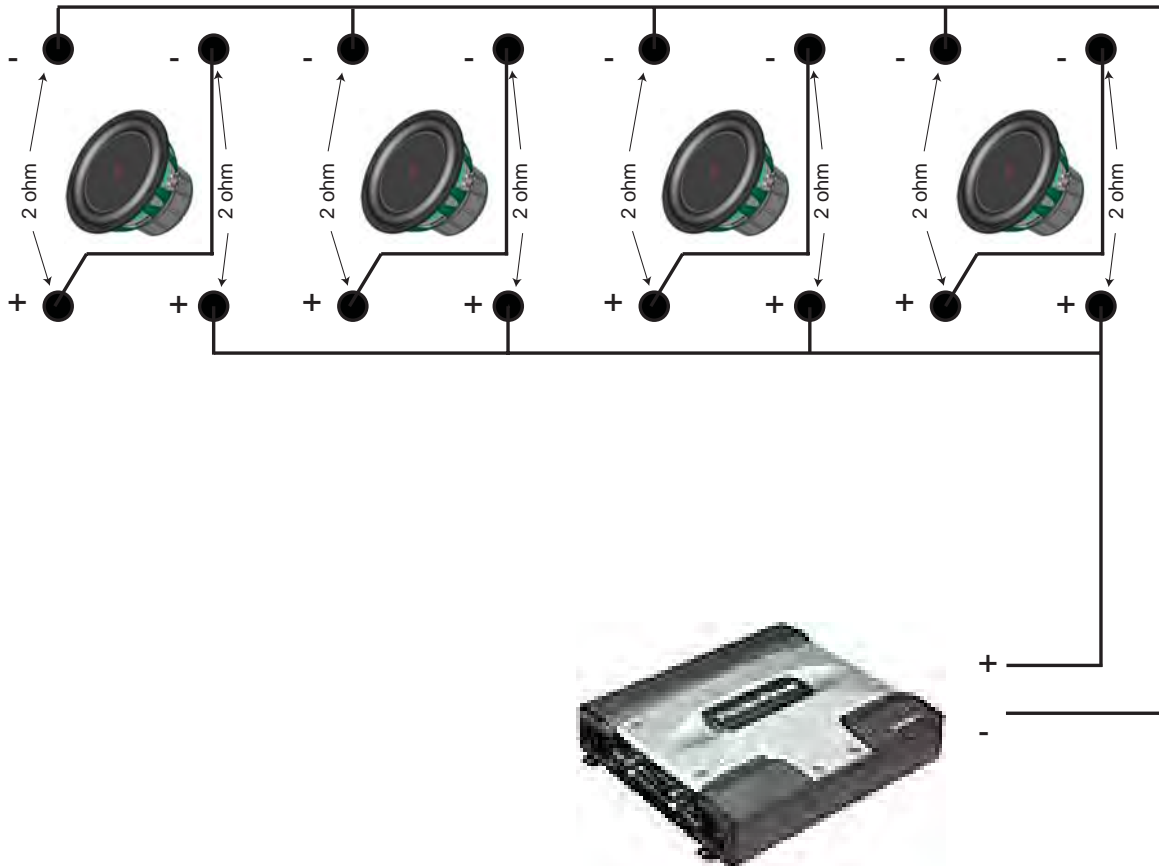


1. Connect each woofer in series by connecting the negative (-) of the first coil to the positive (+) terminal of the second coil.
2. Wire the positive (+) terminals of the first coil of each woofer to the positive (+) terminal on the amplifier. Wire the negative (-) terminal of the second coil of each woofer to the negative (-) terminal on the amplifier.

## Series-Parallel—Four Speakers (dual 2 ohm voice coils)

**Note: Verify and ensure that the woofer wiring is connected as shown with the negative connection from the first woofer coil connected to the positive connection of the second woofer coil.**

Four dual 2 ohm voice coil woofers should be wired with the voice coils on each woofer in series and then parallel the four woofers for a resulting 1 ohm load to the amplifier.



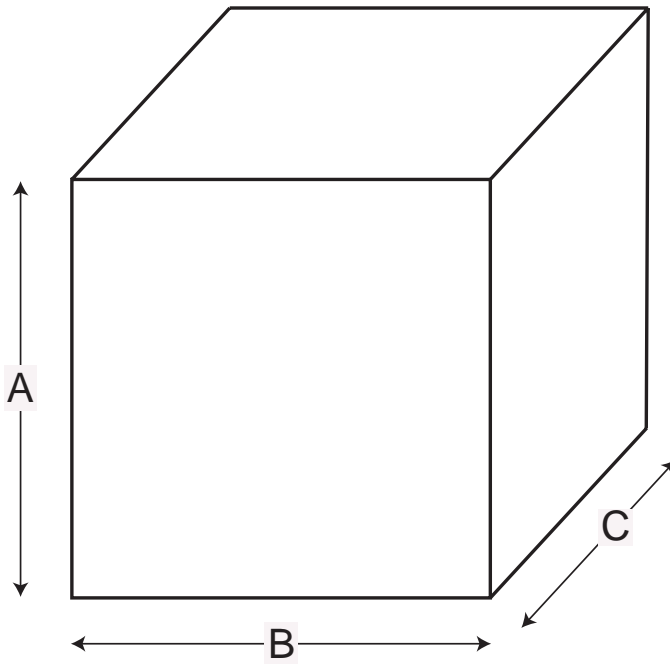
1. Connect each woofer in series by connecting the negative (-) of the first coil to the positive (+) terminal of the second coil.
2. Wire the positive (+) terminals of the first coil of each woofer to the positive (+) terminal on the amplifier. Wire the negative (-) terminal of the second coil of each woofer to the negative (-) terminal on the amplifier.

## ENCLOSURE DESIGN

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This section gives the basic description for a sealed enclosure. *PrecisionPower™* woofers are designed for sealed enclosures and vented enclosures. Sealed enclosures are generally considered the most versatile for all music types and are the easiest to build. They will also give high power handling with a wider range of frequencies. The enclosure must be absolutely air tight. Use a high quality wood glue for all seams of the enclosure. The enclosure should also be screwed together. We recommend to use  $\frac{3}{4}$ " MDF for the following enclosures. As MDF is a porous material it is best to also seal the inside of the enclosure.

PCX 102 and PCX 104 Box Recommendations



—External Dimensions—

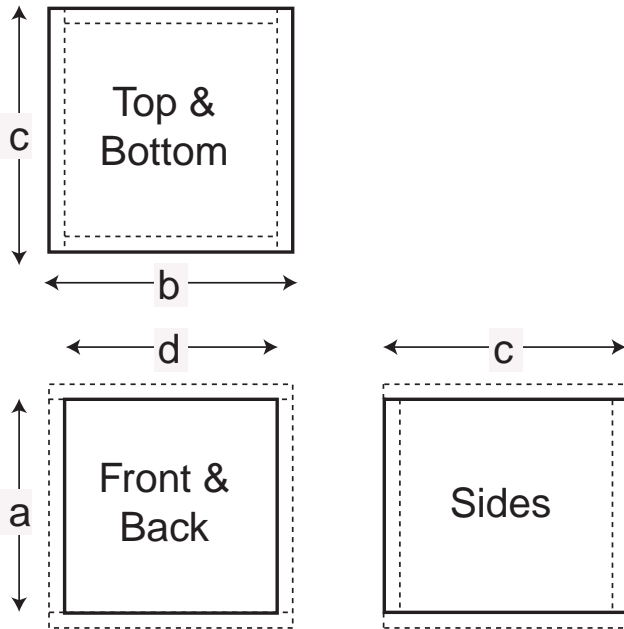
- A = 12 in.
- B = 12 in.
- C = 11.5 in.

—Internal Dimensions—

- A = 10.5 in.
- B = 10.5 in.
- C = 10 in.

—Wall Thickness—

All Sides = 0.75 in.



—Box Parts—

Box Shape – Square Prism

1 Top, 1 Bottom

- depth (c) = 11.5 in.
- width (b) = 12 in.
- thickness = 0.75 in.

1 Front, 1 Back

- height (a) = 10.5 in.
- width (d) = 10.5 in.
- thickness = 0.75 in.

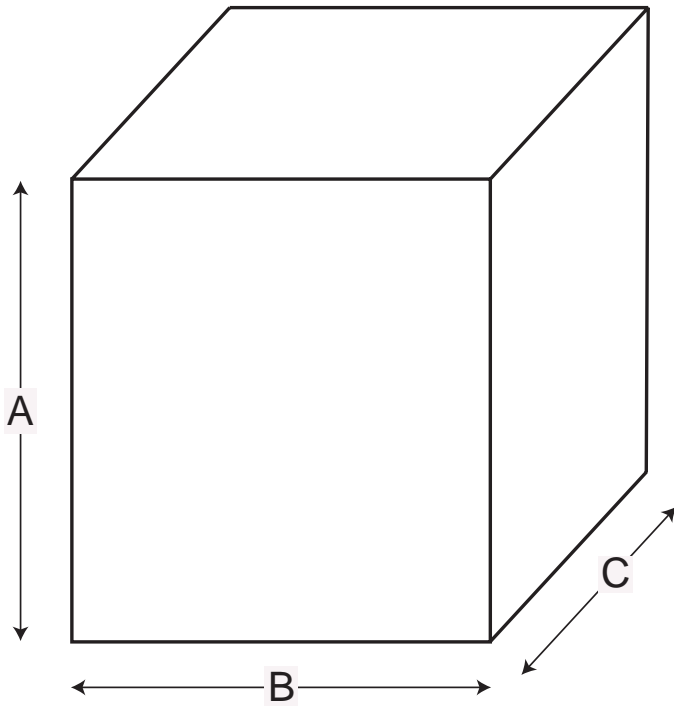
2 Sides

- height (a) = 10.5 in.
- depth (c) = 11.5 in.
- thickness = 0.75 in.

—Driver Mounting—

Front

PCX 122 and PCX 124 Box Recommendations



—External Dimensions—

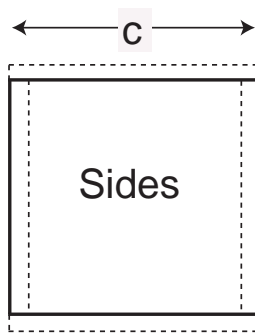
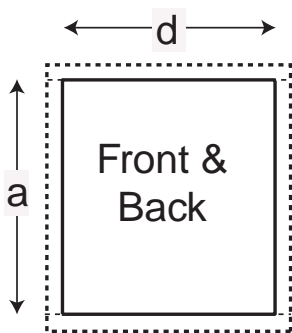
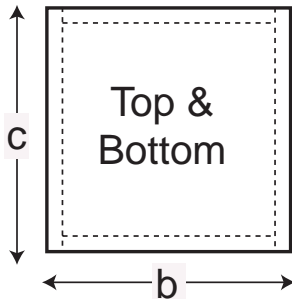
- A = 16 in.
- B = 15 in.
- C = 13.5 in.

—Internal Dimensions—

- A = 14.5 in.
- B = 13.5 in.
- C = 11.75 in.

—Wall Thickness—

All Sides = 0.75 in.



—Box Parts—

Box Shape – Square Prism

1 Top, 1 Bottom

- depth (c) = 13.25 in.
- width (b) = 15 in.
- thickness = 0.75 in.

1 Front, 1 Back

- height (a) = 14.5 in.
- width (d) = 13.5 in.
- thickness = 0.75 in.

2 Sides

- height (a) = 14.5 in.
- depth (c) = 13.25 in.
- thickness = 0.75 in.

—Driver Mounting—

Front





# Warranty

## LIMITED ONE-YEAR CONSUMER WARRANTY/

## \*LIMITED TWO-YEAR CONSUMER WARRANTY FOR AUTHORIZED DIRECTED DEALER PURCHASE & INSTALLATION

Directed Electronics (herein "Directed") promises to the original purchaser, to repair or replace with a new or refurbished unit (at Directed's sole and absolute discretion) this product should it prove to be defective in workmanship or material under normal use, for a period of **\*two-years** from the date of purchase from the authorized Directed dealer **PROVIDED** the product was purchased and installed by an authorized Directed dealer. During this **\*two-year** period, there will be no charge for the repair or replacement **PROVIDED** the unit is returned to Directed, shipping pre-paid, along with the required proof of installation, the bill of sale or other dated proof of purchase, and the consumer's contact information. If the unit is installed by anyone other than an authorized Directed dealer, the warranty period will be **one-year** from the date of purchase. This warranty is non-transferable and does not apply to any unit that has been modified or used in a manner contrary to its intended purpose, and does not cover damage to the unit caused by installation or removal of the unit. During this one-year period, there will be no charge for the repair or replacement **PROVIDED** the unit is returned to Directed, shipping pre-paid, along with the bill of sale or other dated proof of purchase and the consumer's contact information. This warranty is void if the product has been damaged by accident or unreasonable use, neglect, improper service or other causes not arising out of defects in materials or construction. This warranty does not cover the elimination of externally generated static or noise, or the correction of antenna problems or weak reception, damage to speakers, accessories, electrical systems, cosmetic damage or damage due to negligence, misuse, failure to follow operating instructions, accidental spills or customer applied cleaners, damage due to environmental causes such as floods, airborne fallout, chemicals, salt, hail, lightning or extreme temperatures, damage due to accidents, road hazards, fire, theft, loss or vandalism, damage due to improper connection to equipment of another manufacturer, modification of existing equipment, or Product which has been opened or tampered for any reason. Units which are found to be damaged by abuse resulting in thermally damaged voice coils are not covered by this warranty but may be replaced at the absolute and sole discretion of Directed. Unit must be returned to Directed, postage pre-paid, with bill of sale or other dated proof of purchase bearing the following information: consumer's name, telephone number, and address, authorized dealer's name and address, and product description. Unit must be returned to the following address: ATTN: WARRANTY DEPARTMENT, Directed Electronics, 1 Viper Way, Vista, CA 92081. Note: This warranty does not cover labor costs for the removal and reinstallation of the unit. **IN ORDER FOR THE TWO-YEAR WARRANTY TO BE VALID, YOUR UNIT MUST BE SHIPPED WITH PROOF OF INSTALLATION BY AN AUTHORIZED DIRECTED DEALER. ALL UNITS RECEIVED BY DIRECTED FOR WARRANTY REPAIR WITHOUT PROOF OF DIRECTED DEALER INSTALLATION AND PURCHASE WILL BE COVERED BY THE LIMITED 1 YEAR WARRANTY.**

**BY PURCHASING THIS PRODUCT, ALL WARRANTIES INCLUDING BUT NOT LIMITED TO EXPRESS WARRANTY, IMPLIED WARRANTY, WARRANTY OF MERCHANTABILITY, FITNESS FOR PARTICULAR PURPOSE, AND WARRANTY OF NON-INFRINGEMENT OF INTELLECTUAL PROPERTY ARE EXPRESSLY EXCLUDED TO THE MAXIMUM EXTENT ALLOWED BY LAW, AND DIRECTED NEITHER ASSUMES NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT ANY LIABILITY IN CONNECTION WITH THE SALE OF THE PRODUCT. DIRECTED HAS ABSOLUTELY NO LIABILITY FOR ANY AND ALL ACTS OF THIRD PARTIES INCLUDING ITS AUTHORIZED DEALERS OR INSTALLERS. BY PURCHASING THIS PRODUCT, THE CONSUMER AGREES AND CONSENTS THAT ALL DISPUTES BETWEEN THE CONSUMER AND DIRECTED SHALL BE RESOLVED IN ACCORDANCE WITH CALIFORNIA LAWS IN SAN DIEGO COUNTY, CALIFORNIA.** This warranty is only valid for sale of Product within the United States of America. Product sold outside of the United States of America is sold "AS-IS," and shall have **NO WARRANTY**, express or implied. Some states do not allow limitation on how long an implied warranty lasts. In such states, the limitation or exclusions of this Limited Warranty may not apply. Some states do not allow the exclusion or limitation of incidental or consequential damages. In such states, the exclusion or limitation of this Limited Warranty may not apply to you. This Limited Warranty gives you specific legal rights, and you may have other rights which vary from state to state. 920-0033 Rev 01-07

