OWNER'S MANUAL

PrecisionPower™

Absolutely State of the Art Mobile Audio™

PRO SubWoofers

PRO 104 PRO 124

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CONGRATULATIONS

Thank you for choosing *Precision**Power***™ 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 *Precision**Power***™ 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 *Precision**Power***™ recommends that your subwoofer be installed by an authorized *Precision**Power***™ dealer

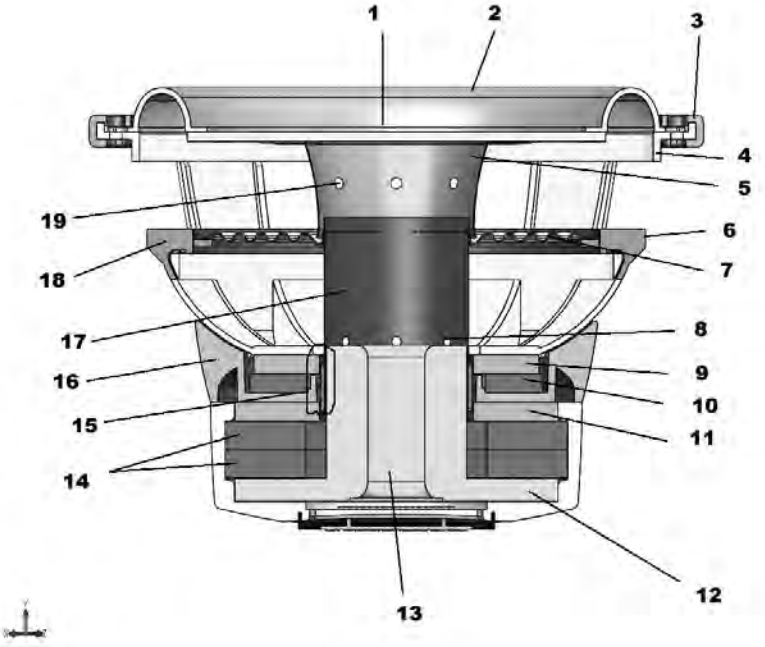
CAUTION

Extended use of a high powered audio system may result in hearing loss or damage. While *Precision**Power***™ 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	28206	28216
Model Number	PRO104	PRO124
Thiele/Small Parameters		
Fs (free-air resonance, Hz)	44.51	42.26
Vas (equivalent compliance, cu. ft.)	0.319	0.656
Vas (equivalent compliance, liters)	9.03	18.58
Qms (Q, mechanical)	6.76	7.68
Qes (Q, electrical)	1.01	1.03
Qts (total driver Q)	0.88	0.91
Re (DC resistance, ohms)	5.8	5.8
Z (nominal impedance, ohms)	2 x 4	2 x 4
Le (inductance, mh)	1.46	1.47
Efficiency (1W @ 1M, dB)	80.87	83.23
Xmax (one way linear excursion, in.)	0.91	0.91
Xmax (one way linear excursion, mm)	26.5	26.5
Pe (continuous power handling, watts)	1000	1000
Peak power handling (music, watts)	2000	2000
Mms (total moving mass, grams)	218	260
Cms (mechanical compliance, mm/N)	0.059	0.055
Bl (motor strength, Tesla-M)	18.68	19.72
Sd (effective radiating area, sq. cm.)	330.06	491.03
Sd (effective radiating area, sq. in.)	51.18	76.11
Frequency range (Hz)	44-250	42-250
Energy Bandwidth Product (EBP)	44	41
Driver Physical Dimension		
Speaker Outer Diameter (inches)	10.71	12.44
Speaker Outer Diameter (mm)	272	316
Mounting hole diameter (inches)	9.29	11.06
Mounting hole diameter (mm)	236	281
Mounting depth (inches)	7.09	8.07
Mounting depth (mm)	180	205
Magnet Weight (Oz)	155	155
Basket diameter (inches)	10.71	12.44

Recommended Enclosures		
Typical sealed enclosure (cu. ft.)	0.6	0.9
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. Just enough ma terial to line the inside of the enclosure is required.		
Specifications subject to change without notice		



1 Woven Fiberglass over a Rohr cell foam center – flat panel.
2 Tall, wide, balanced, NBR Foam (high density expanded polyester foam) surround for linear controlled long excursion using a Tri Radius symmetrical edge design optimized on non-linear FEA
3 Rubber wrap around two way mounting gasket.
4 Custom Cast Aluminum frame.
5 Aluminum flat panel to voice coil former attachment yoke.
6 Custom terminals and impedance jumpers.
7 Tinsel leads woven to single flat interlaced Conex spider.
8 Voice coil former vent holes. Part of enhanced voice coil cooling system (forced convection).
9 10mm thick steel front gap plate. Part of Mmag dual gap motor assembly.
10 Magnetic ring consisting of 12 donut style ceramic magnets for front gap of dual gap motor. Part of Mmag dual gap motor assembly. Total magnet weight of items 10 & 14 is 155 oz.

11 10mm thick steel rear gap plate. Part of Mmag dual gap motor assembly.

12 10mm thick steel rear plat / pole piece T yoke Part of Mmag dual gap motor assembly.

13 1 inch flared Vent. Part of enhanced voice coil cooling system (forced convection).

14 Two stack ceramic magnet for rear gap Part of Mmag dual gap motor assembly. Total magnet weight of items 10 & 14 is 155 oz.

15 High temperature (Polyester Amide Amide Resin Coated) Copper dual voice coil (2x4 ohm) wound on an).

16 Voice coil heat pick-up and heat sink assembly that also serves as a control for flux and heat build up and control in the dual gap motor. Part of enhanced voice coil cooling system (forced convection – aluminum heat sinking –shorting rings to reduce inductive heating).

17 Aluminum voice coil former (voice coil is a 3”).

18 Vented spider ring and terminal block assembly. Integrates custom terminals and impedance jumper block. Venting in spider ring is part of enhanced voice coil cooling system (forced convection).

19 Vent holes in flat panel yoke assembly. Part of enhanced voice coil cooling system (forced convection – aluminum heat sinking –shorting rings to reduce inductive heating).

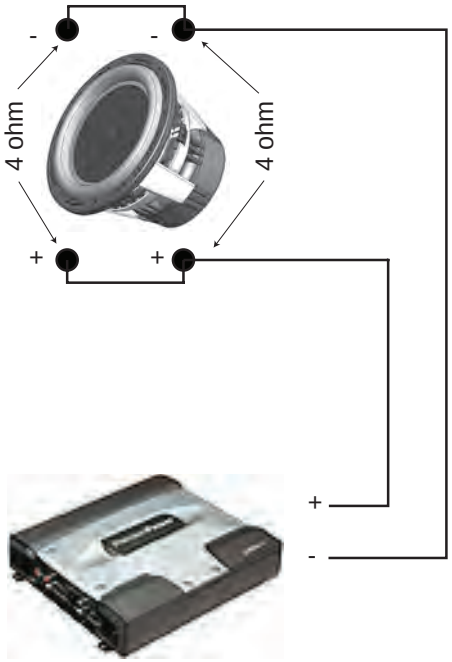
WIRING CONFIGURATIONS

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

Recommended Amplifier Power

	Continuous Power (RMS)	Peak Power (watts
1 woofer	500 to 1000	600 to 2000
2 woofers	1000 to 2000	1200 to 4000
3 woofers	1500 to 3000	1800 to 6000
4 woofers	2000 to 4000	2400 to 8000

Technical Brief:
How to properly wire a PPI woofer in parallel to a PPI amplifier for maximum power and performance.

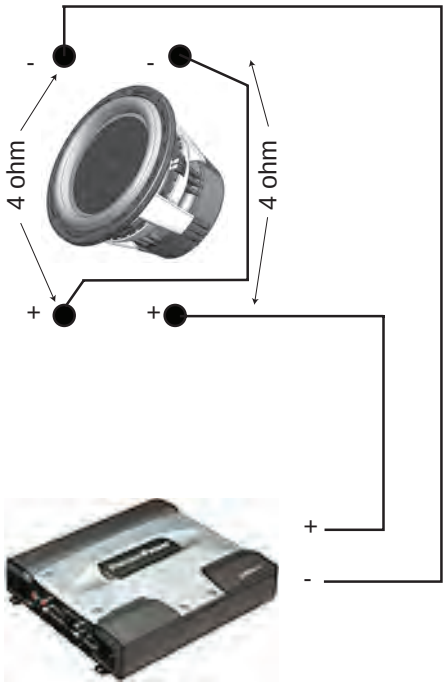


1. Wire the speaker parallel by connection the two + terminals together and the two - terminals together.

2. Wire the positive (+) terminals of the speakers to the positive (+) terminal on the amplifier. Wire the negative (-) terminals of the woofers to the negative (-) terminal on the amplifier.

3. This wiring show the amplifier a 2 ohm load.

Technical Brief:
How to properly wire a PPI woofer in series to a PPI amplifier for maximum power and performance.

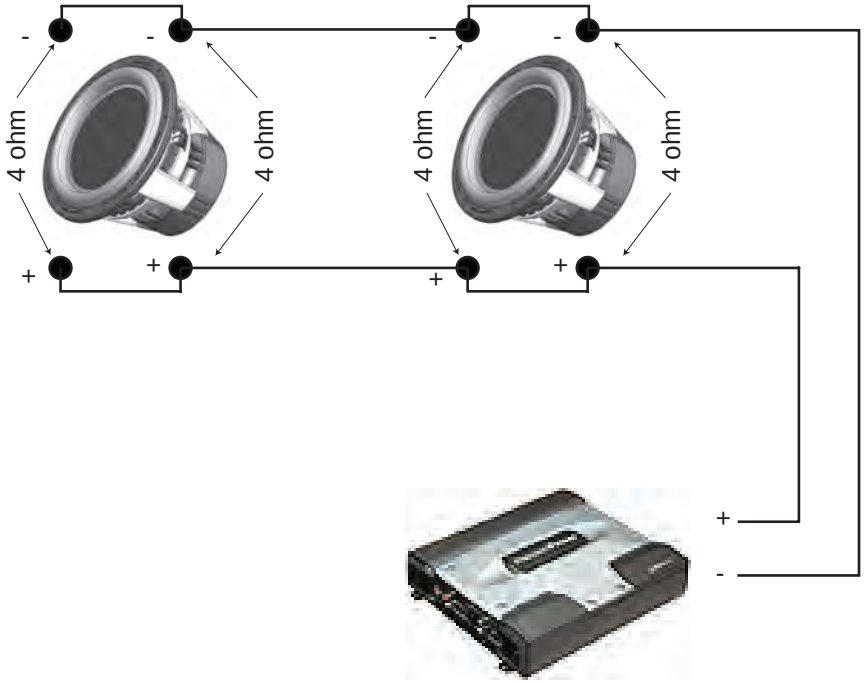


1. Wire the woofer's coils together in series by wiring the positive of one coil to ther negative of the other coil. This is series wiring.

2. Wire the two open terminals to the amplifier, positive terminal to the amplifier positive and negative terminal to the amplifier negative.

3. This wiring show the amplifier a 8 ohm load.

Technical Brief:
How to properly wire a PPI woofer in parallel to a PPI amplifier for maximum power and performance.

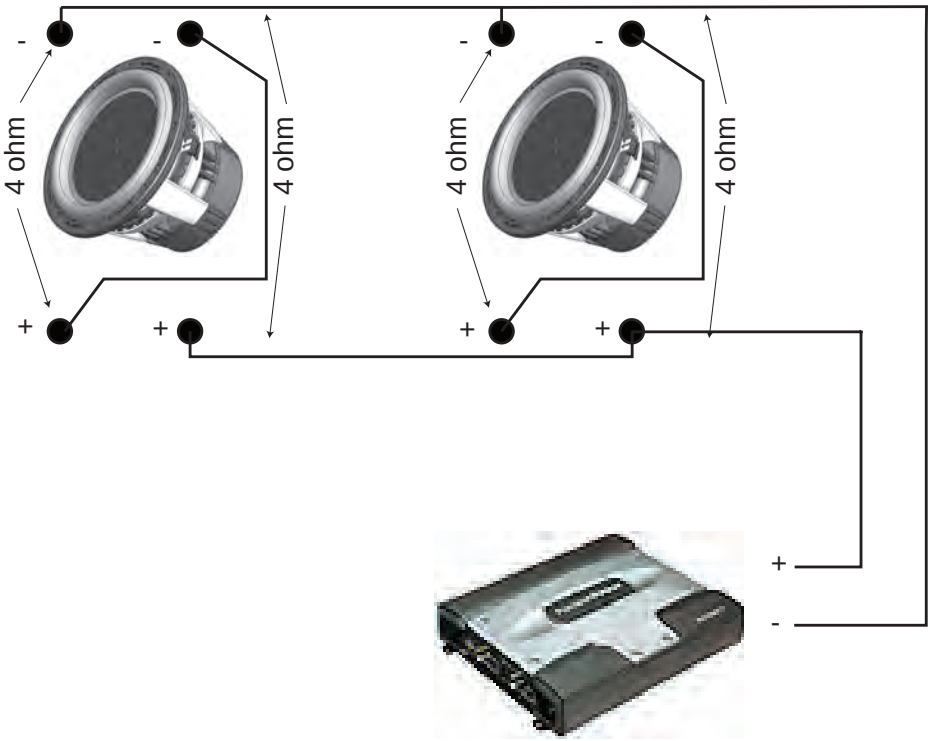


1. Wire the two speaker's voice coil parallel by connection the two + terminals together and the two - terminals together.

2. Wire the positive (+) terminals of the speakers to the positive (+) terminal on the amplifier. Wire the negative (-) terminals of the woofers to the negative (-) terminal on the amplifier.

3. This wiring show the amplifier a 1 ohm load.

Technical Brief:
How to properly wire a PPI woofer in series/parallel to a PPI amplifier for maximum power and performance.

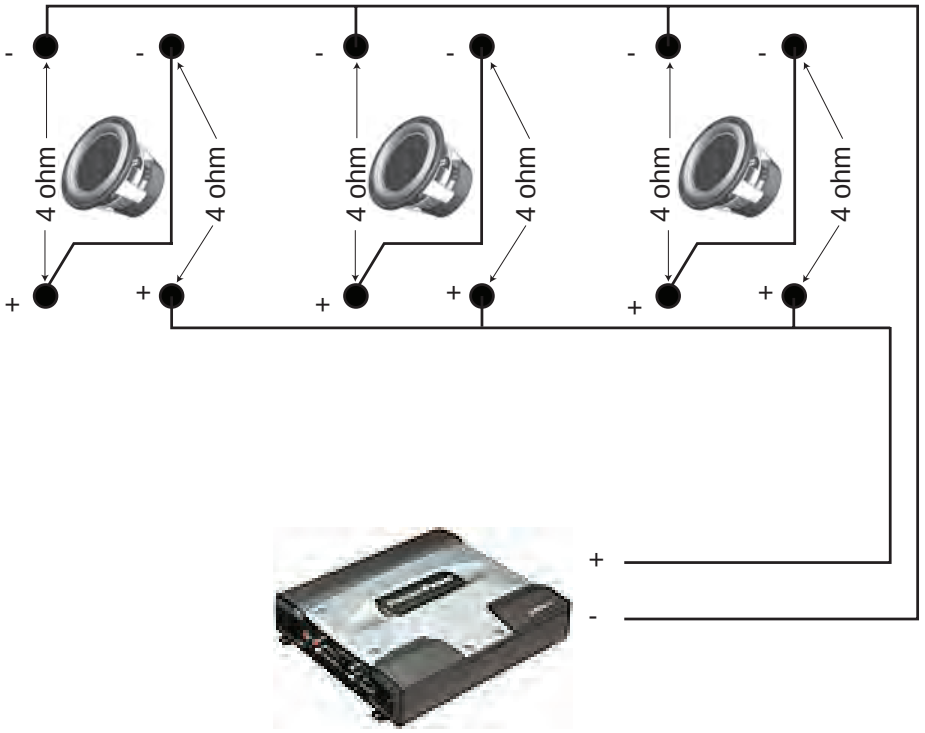


1. Connect each woofer in series by connecting the negative (-) of the first coil to the positive (+) terminal of the second coil.

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.

3. This wiring show the amplifier a 4 ohm load.

Technical Brief:
How to properly wire a PPI woofer in parallel to a PPI amplifier for maximum power and performance.

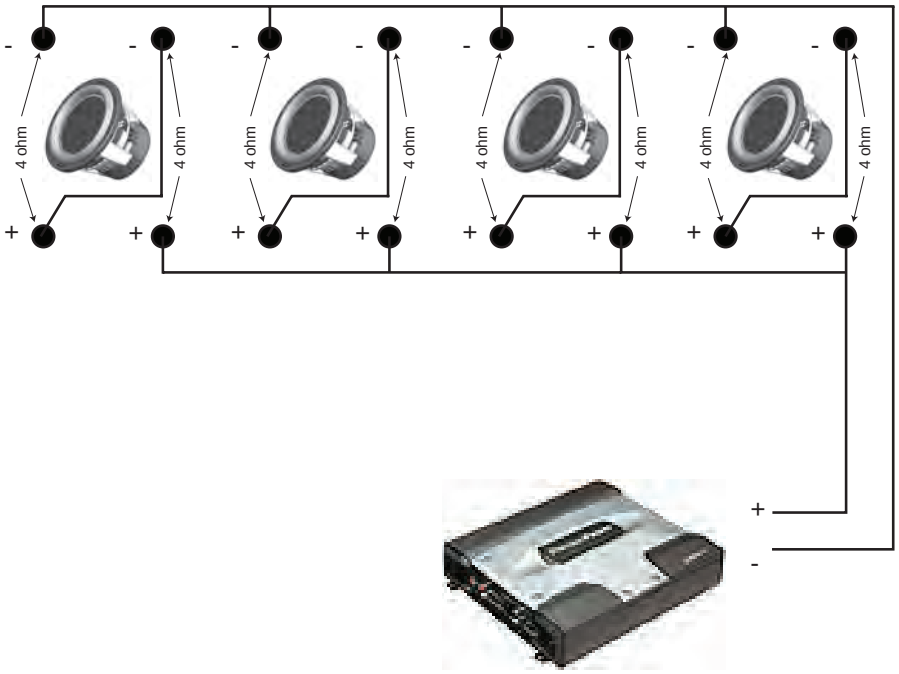


1. Connect each woofer in series by connecting the negative (-) of the first coil to the positive (+) terminal of the second coil.

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.

3. This wiring show the amplifier a 2.67 ohm load.

Technical Brief:
How to properly **wire a PPI woof**er in seriesparallel to a PPI amplifier for maximum power and performance.



1. Connect each woofer in seri**es b**y connecting the negative (-) of the first coil to the positive (+) terminal of the second coil.

2. Wire the positive (+) termi**nals** 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.

3. This wiring show the amplifi**er** a 2 ohm load.

The Pro subs also can utilize jumper settings rather than wiring each coil individually as the above diagrams show.

By default the jumpers come in the top two spots. This would keep each of the coils separate just as a regular dual voice coil woofer operates. All of the above diagrams would work fine when the jumpers are in this position.

With the jumpers in the bottom two it would wire the coils in parallel, giving you a two ohm final load. You would only need to use one set of terminals when using the jumpers. The diagram would look like this.

Technical Brief:
How to properly wire a PPI woofer in parallel to a PPI amplifier for maximum power and performance.

1. Using 1 set of terminals wire ther - to the - post of the amplifier and the + to the + terminal of the amplifier.
2. This wiring show the amplifier a 2 ohm load.

With one jumper in the middle on the bottom row it wires the coils in series.

The diagram would look like this

Using the jumper block - both coils in series:
With the cone facing upward and the jumper block in front of you, the positive terminal on the terminal block on the left side would be positive and the negative terminal on the right side would be negative. The negative on the left terminal and the positive on the right terminal are shorted together and not used.

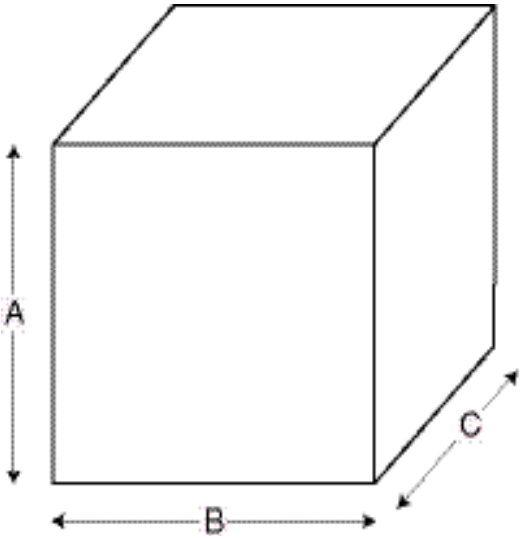
Technical Brief:
How to properly wire a PPI woofer in parallel to a PPI amplifier for maximum power and performance.

1. Use the + on one of ther te**rmin**als to the + of the amp and the - of the opposite terminal to the negative on the amp. The subwoofer would be wired in series.
2. This wiring show the amplif**ie**r a 8 ohm load.

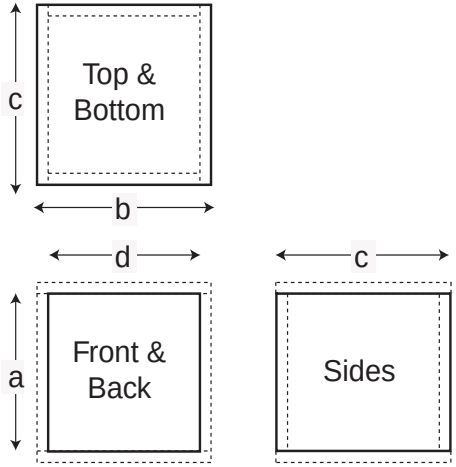
Note if the sub doesn't hit or sound right it is probably wired out of phase, switch around the + and – wires.

This manual will give the basic outline for a sealed enclosure. Precision power woofers are designed for sealed enclosures. Sealed are generally considered the most versatile for all music types and are the easiest to build. They will also give a high power handling at 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 ¾" MDF for the following enclosures. MDF is a porous material so it is best to seal the inside of the enclosure as well.

Pro 104 Sealed Enclosure



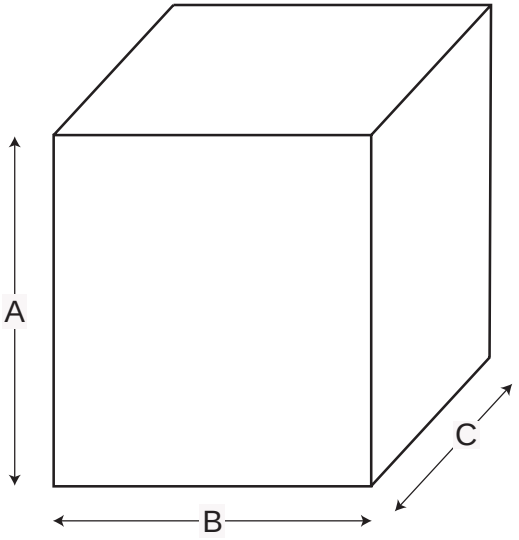
—External Dimensions—
A = 12 in.
B = 12 in.
C = 11.5 in.
—Internal Dimensions—
A = 10.5 in.
B = 10.5 in.
C = 10 in.
—Wall Thickness—
All Sides = 0.75 in.



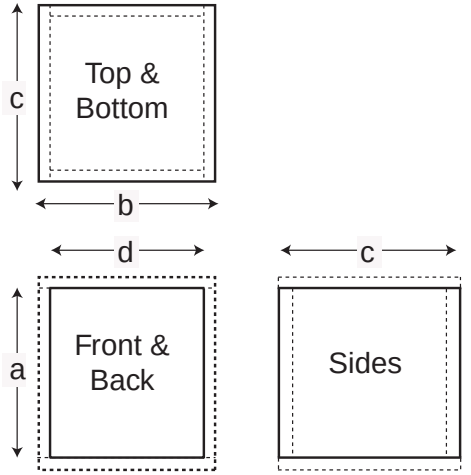
—Box Parts—
Box Shape – Square Prism
1 Top, 1 Bottom
depth (c) = 11.5 in.
width (b) = 12 in.
thickness = 0.75 in.
1 Front, 1 Back
height (a) = 10.5 in.
width (d) = 10.5 in.
thickness = 0.75 in.
2 Sides
height (a) = 10.5 in.
depth (c) = 11.5 in.
thickness = 0.75 in.

—Driver Mounting—
Front

Pro 124 Sealed Enclosure



—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

Notes

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 prepaid, 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. IN NO EVENT WILL DIRECTED BE LIABLE FOR ANY INCIDENTAL, SPECIAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFITS). 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 Warrantymay not apply to you. This Limited Warranty gives you specific legal rights, and you may have other rights which vary from state to state.

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