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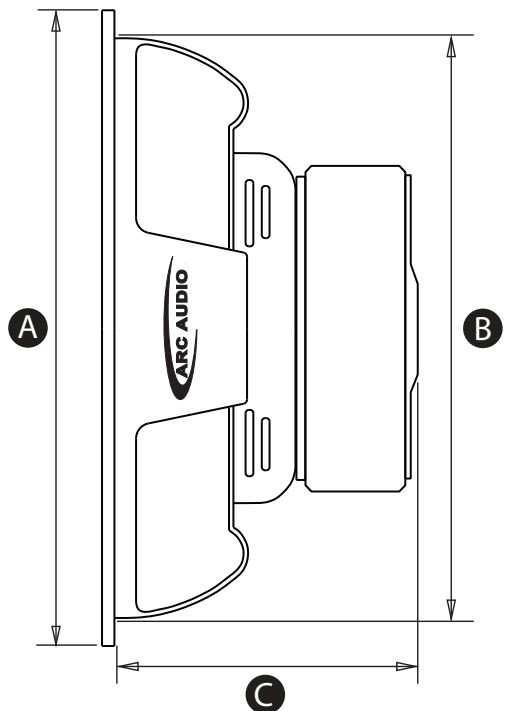
X2 Series HIGH PERFORMANCE SUBWOOFERS

X2 1002
X2 1004

X2 1202
X2 1204

DIMENSIONS & SPECIFICATIONS

	<i>X2 100</i>	<i>X2 120</i>
Outside Diameter (A)	10 ³ / ₈ "	12 ³ / ₈ "
Cut Out Diameter (B)	9 ¹ / ₈ "	11 ¹ / ₈ "
Mounting Depth (C)	5 ¹ / ₈ "	5 ⁵ / ₈ "
Musical Power Handling	400 Watts	500 Watts
RMS Power Handling	200 Watts	250 Watts
Sensitivity 1 Watt @ 1 Meter	85dB	86dB
Amplifier Power Range	5-400 Watts	5-500 Watts
Displacement	0.03 cu. ft.	0.04 cu. ft.

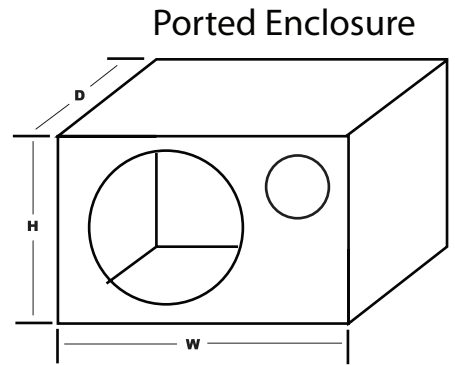
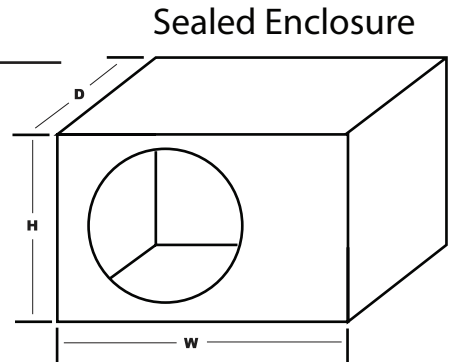


RECOMMENDED ENCLOSURES

X2 1002
X2 1004

X2 1202
X2 1204

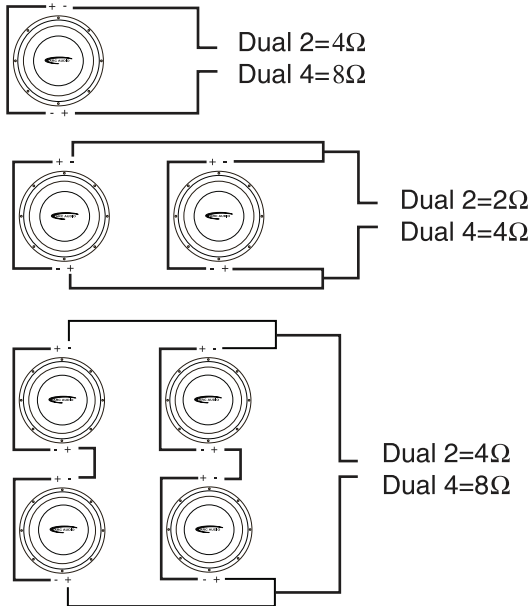
	Minimum Optimum		Minimum Optimum	
Sealed- Volume (Gross)	.65 cuft	1.0 cuft	1.0 cuft	1.5 cuft
Ported- Volume (Gross)	1.3 cuft	1.7 cuft	1.5 cuft	2.0 cuft
Port -(Single) Dimensions	4" (Round port) 11.5" (Length)	4" (Round port) 8.0" (Length)	4" (Round port) 11.5" (Length)	4" (Round port) 8.5" (Length)
Tuning Freq.	42Hz	42Hz	38Hz	38Hz



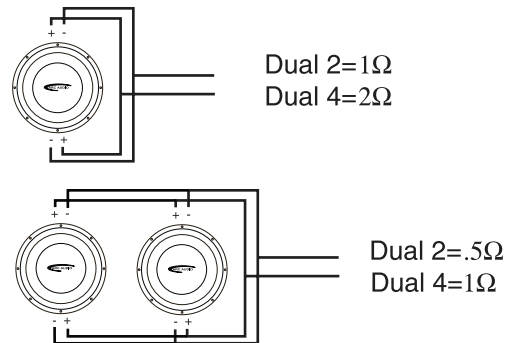
NOTE: These woofers are not limited to the enclosure designs above. Full parameters are provided elsewhere in this manual for modeling purposes. For assistance designing custom enclosures contact ARC Audio Technical support.

WIRING OPTIONS

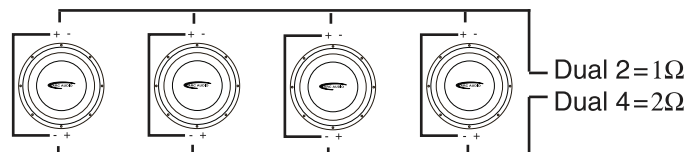
Wired in Series



Wired in Parallel



Wired in Series Parallel



USEFUL INFORMATION

Useful Information

Ultimately the enclosure you build determines the performance of your subwoofer. The size and port tuning frequency of a port box determines the low-frequency extension and output of the subwoofer. This ARC Audio subwoofer performs well when used in both sealed and ported enclosures.

The acoustics of your vehicle influence bass response. The small interior size of most cars and trucks boosts low frequencies dramatically. A smaller enclosure than normal may be needed to achieve a flat bass response. As a rule, below 50Hz (depending on cabin size), bass response increases at about 12dB per octave as the frequency decreases. This "Cabin Gain" adds significant bass output to the subwoofer system.

Recommendations are included in this manual for both sealed and ported enclosure types. The sealed enclosure design will, in most cases, give you the best sound quality and take up less space in your vehicle. The ported box design will offer more output than the sealed enclosure (about 3 - 4 dB more), but it will reduce the power handling and require more space to install. The recommended ported enclosure is not designed for "competition SPL" performance, it is designed for normal listening. It will increase the low frequencies output and increase the overall volume while still sounding good when properly tuned and installed.

A Note About Power Handling

ARC Audio woofers are designed to perform for years without any problems. The RMS power noted under the specifications is the recommended continuous power for long term use. All woofers generate heat. It is possible to dissipate only so much of this heat. The woofer can handle as much as twice its rated RMS power for short periods. This is the MAX power rating. Continued use of this woofer at greater than the RMS power rating will result in a damaged (burnt) voice coil. This damage is considered abuse and is NOT covered under the warranty.

Small Amp Myth

Under powering a woofer is fine. This woofer will suffer no damage from a 100 watt amp if it is correctly tuned. However, even a small amp that is being over driven (clipped) can destroy a sub. Use your power wisely. Clipping can be heard as a dull thud or a popping sound. If you hear any change in the tone of your subwoofer this is a danger sign. TURN IT DOWN. If you want more volume get a bigger amp or add another woofer.

Physics

"Energy cannot be created or destroyed, only change forms". What does this mean? Your amp does not make power, it takes power from your battery and converts it into a different form. The subwoofer is just another kind of converter. It changes AC voltage from the amp into changes in air pressure (that's all sound is) and HEAT. The more energy being converted the more heat. A speaker can not reproduce DC voltage (produced when an amp clips) but this energy must go somewhere. It is all converted into heat. This is why clipping is so dangerous to a speaker.

A great deal of energy can also be lost in the enclosure. If your box is not strong enough the sides will flex. It takes energy to flex the box. This energy is not being converted into sound. In short, the stronger the box the less energy will be lost. So build it strong.

This same thing can happen to the car body. Sound deaden, it will sound better and hit harder.

Building an Enclosure

It is recommended that you use 3/4" MDF (Medium Density Fiberboard) to build an enclosure. Glue all your joints with yellow glue and secure them with screws or nails.

Make sure the enclosure will fit and that you have adequate room to get it in and out of the vehicle.

Calculating Enclosure Volume

It is difficult to give exact box dimensions that are universal for all cars and trucks. It is for this reason that you must be able to calculate the space in which you have available in order to achieve the proper air volume required.

Calculating External Volume

1) To calculate box volume, measure the outside Width x Height x Depth of the enclosure.

Example $12" \times 14" \times 9" = 1512$ cubic inches.

2) Next convert cubic inches into cubic feet. To do this, you must divide the cubic inch total by 1728 .

Example $1512 \text{ cu in} \div 1728 = .875$ Cubic feet.

Calculating Internal Volume

1) To calculate the internal (net) volume of the above box first multiply the thickness of the wood you are using by Two (2).

Example: $\frac{3}{4}" \times 2 = 1 \frac{1}{2}"$

2) Next subtract 1.5" from each of the outside measurements of the box. Width $12" - 1.5" = 10.5"$. Height $14" - 1.5" = 12.5"$. Depth $9" - 1.5" = 7.5"$

3) Multiply the new totals (H x W x D)

Example: $10.5" \times 12.5" \times 7.5" = 984.375$ cubic inches.

4) Now convert cubic inches into cubic feet. To do this, you divide the cubic inch total by 1728.

Example $984.375 \div 1728 = .5696$ cubic feet.

For additional information call ARC Audio Tech support at:

209-543-8706

SPEAKER PARAMETERS

	<i>X2 1002</i>	<i>X2 1004</i>	<i>X2 1202</i>	<i>X2 1204</i>
R(e)	3.98 Ohm	7.25 Ohm	4.05 Ohm	7.25 Ohm
f(s)	26.24 Hz	28.26 Hz	25.57 Hz	25.57 Hz
V(as)	47.44 L	43.24 L	79.36 L	82.65 L
Q(ts)	0.519	0.615	0.471	0.543
Q(es)	0.580	0.696	0.521	0.612
Q(ms)	4.915	5.305	4.942	4.778
BL	12.11	15.05	14.83	17.94
Sd	346 cm ²	346 cm ²	514 cm ²	514 cm ²
X(max)	14.8 mm	15.2 mm	15.1 mm	15.0 mm
SPL	83.59 dB @ 1W/1M	83.36 dB @ 1W/1M	85.95 dB 1W/1M	85.43 dB @ 1W/1M
Displacement	0.07 cu. ft.	0.07 cu. ft.	0.07 cu. ft.	0.07 cu. ft.
M(ms)	129.50g	122.44g	176.08g	169.16g
n(O)	0.14%	0.13%	0.24%	0.22%
P. Dia	209.6 mm	209.6 mm	254.0 mm	254.0 mm
Z(max)	37.74 Ohms	62.49 Ohms	42.49 Ohms	63.83 Ohms
L(e)	1.305 mH @ 10kHz	1.966 mH @ 10kHz	1.257 mH @ 10kHz	1.885 mH @ 10kHz
Cms	.28 mm/N	0.26 mm/N	0.22 mm/N	.23 mm/N

WARRANTY

Note to International Customers-

For warranty and repair service outside of the USA, please send your product directly to your countries authorized Arc Audio distributor for your service needs. As a customer you do have the option to send your product directly back to the factory in the USA but you will be responsible for "ALL" shipping costs, taxes, and duties to and from the USA. Return shipping charges and fee's must be paid by Credit Card with a signed credit card authorization form prior to the return shipment. This includes shipping cost, customs fee's, duties, local and government import/export tax's, broker's fee's and any other misc. fee's that could be added by your local government or other international agencies. International warranty shipments will not be accepted without a proper return authorization number and/or sales receipt documentation.

ARC AUDIO WARRANTY AND SERVICE GUIDELINES

ARC AUDIO warranties all new products against defects in material and workmanship for a period of ONE (1) YEAR from the original date of purchase from an AUTHORIZED ARC AUDIO RETAILER.

This warranty is not transferable and applies only to the original retail purchaser of the product from an authorized ARC AUDIO retailer. Upon inspection by ARC AUDIO, should services be necessary under this warranty for any reason due to manufacture defects, ARC AUDIO will, at its sole discretion, repair or replace the defective product with new or similar conditioned product at no charge.

THIS WARRANTY DOES NOT COVER INSTALLATION OR DAMAGE RESULTING FROM ACCIDENT, MISUSE, ABUSE, IMPROPER WIRING, OPERATION OUTSIDE OF UNIT OUTSIDE OF MANUFACTURES SPECIFICATIONS, OR AGAINST INSTRUCTIONS IN OWNERS MANUAL. IN ADDITION ANY PRODUCT THAT HAS BEN OPENED, TAMPERED WITH OR MODIFIED, IF ANY SERIAL NUMBERS HAVE BEEN REMOVED OR ALTERED THE EQUIPMENT WILL NOT BE COVERED BY ANY PART OF THE MANUFACTURER'S WARRANTY.

All warranty returns will be sent to ARC AUDIO freight prepaid and must be accompanied by proof of purchase (a copy of the original sales receipt). Direct returns from consumers or non-authorized retailers will be refused unless specifically authorized by ARC AUDIO with a valid return authorization number.

All warranty returns must be packed in original packaging and be accompanied by a copy of the original printed sales receipt. Product damaged in shipment will not be covered under this warranty and the customer or retailer will be charged full cost to repair the specific piece of product back to a like new or similar condition.

In no event will ARC AUDIO be liable for incidental, consequential, or other damages resulting from the use of this product, this includes but is not limited to, damage of hearing, property or person, damage based upon inconvenience or on loss of use of the product, and to the extent permitted by law, damages for personal injury. This warranty gives you specific legal rights, you may have other rights, which vary from state to state. This warranty applies to products sold and used in the United States of America. In all other countries please contact your distributor.

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