

ARC 802  
ARC 804

ARC 1002  
ARC 1004

ARC 1202  
ARC 1204

ARC 1502  
ARC 1504

HIGH PERFORMANCE SUBWOOFERS

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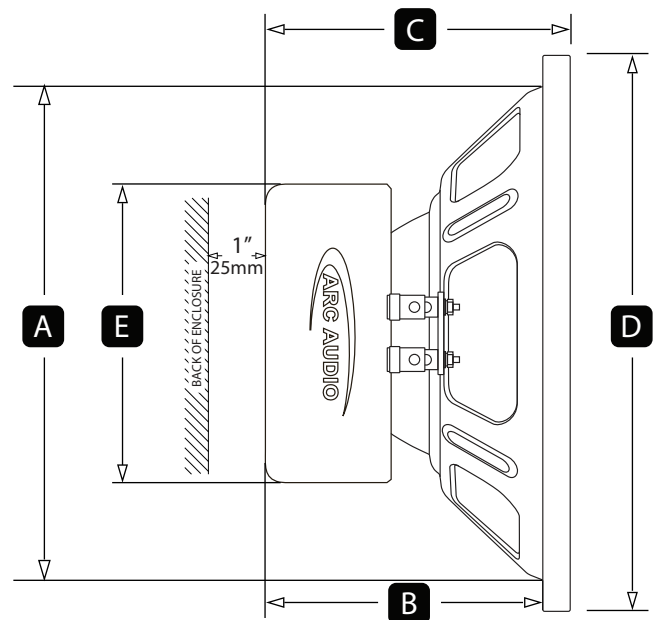
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	ARC 80	ARC 100	ARC 120	Discontinued ARC 150 For Reference Only
Cutout Diameter	<b>A</b> 7 1/8"	9 1/4"	11"	13 7/8"
Mounting Depth	<b>B</b> 4 3/4"	5 1/2"	6"	8 1/8"
Total Depth	<b>C</b> 5 1/4"	6"	6 5/8"	9"
Outside Diameter	<b>D</b> 8 5/16"	10 1/4"	12 3/8"	15 3/8"
Magnet Diameter	<b>E</b> 4 7/8"	5 1/2"	6 1/2"	7"
Displacement (cu.ft)	.04	.05	.07	.17
Amplifier Power Range	5-300	5-500	5-700	5-1500
Musical Power Handling	300 Watts	500 Watts	700 Watts	1500 Watts
RMS Power Handling	150 Watts	250 Watts	350 Watts	750 Watts
Sensitivity 1 Watt @ 1 Meter	85.4dB	87dB	89dB	89dB

# RECOMMENDED ENCLOSURES

## ARC 802 ARC 804

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

<b>Sealed-</b>	<b>Minimum</b>	<b>Optimum</b>	<b>Maximum</b>
Volume (Gross)	.35 cu.ft.	.45 cu.ft.	.55 cu.ft.
<b>Ported-</b>	<b>Minimum</b>	<b>SPL</b>	<b>SQ</b>
Volume (Gross)	.5 cuft	.75 cuft	.7 cuft
Port -(Single) Dimensions	2" (Round port) 13.5" (Length)	2" (Round port) 4.5" (Length)	2" (Round port) 12.75" (Length)
Tuning Freq.	35Hz	44Hz	32Hz

## ARC 1002 ARC 1004

<b>Sealed-</b>	<b>Minimum</b>	<b>Optimum</b>	<b>Maximum</b>
Volume (Gross)	.65 cu.ft.	.75 cu.ft.	.85 cu.ft.
<b>Ported-</b>	<b>Minimum</b>	<b>SPL</b>	<b>SQ</b>
Volume (Gross)	.75 cuft	1.25 cuft	1.6 cuft
Port -(Single) Dimensions	3" (Round port) 13.5" (Length)	3" (Round port) 6" (Length)	3" (Round port) 18.5" (Length)
Tuning Freq.	40Hz	44Hz	25Hz

# RECOMMENDED ENCLOSURES

## *ARC 1202* *ARC 1204*

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

<b>Sealed-</b>	<b>Minimum</b>	<b>Optimum</b>	<b>Maximum</b>
Volume (Gross)	.9 cu.ft.	1.1 cu.ft.	1.25 cu.ft.
<b>Ported-</b>	<b>Minimum</b>	<b>SPL</b>	<b>SQ</b>
Volume (Gross)	1.3 cuft	2.0 cuft	2.25 cuft
Port -(Single) Dimensions	3" (Round port) 12.5" (Length)	4" (Round port) 7.0" (Length)	4" (Round port) 26" (Length)
Tuning Freq.	32Hz	42Hz	24Hz

## *ARC 1502* *ARC 1504*

*Discontinued For Reference Only*

<b>Sealed-</b>	<b>Minimum</b>	<b>Optimum</b>	<b>Maximum</b>
Volume (Gross)	1.5 cu.ft.	2.25 cu.ft.	4.0 cu.ft.
<b>Ported-</b>	<b>Minimum</b>	<b>SPL</b>	<b>SQ</b>
Volume (Gross)	3.0 cuft	5.0 cuft	6.0 cuft
Port -(Single) Dimensions	4" (Round port) X2 19" (Length)	4" (Round port) X2 4.75" (Length)	4" (Round port) X2 14.5" (Length)
Tuning Freq.	32Hz	42Hz	24Hz

# USEFUL INFORMATION

## **Useful Information**

Ultimately the enclosure you build determines the performance of your subwoofer. The size and port tuning frequency of a ported box determines the low-frequency extension and output of the subwoofer. This ARC Audio subwoofer is designed to perform 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 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

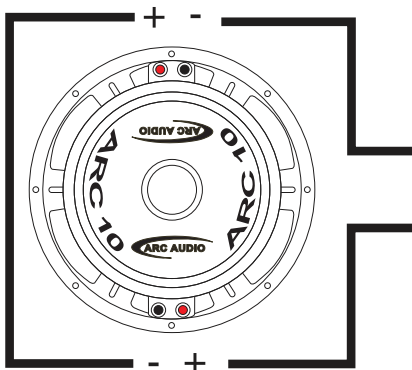
	802	804	1002	1004	1202	1204	1502	1504	
<b>IMP</b>	1 or 4	2 or 8	1 or 4	2 or 8	1 or 4	2 or 8	1 or 4	2 or 8	<b>Impedance</b>
<b>Re</b>	.95/3.8	1.95/7.8	1.00/4.03	1.95/7.81	1.01/4.04	1.97/7.88	.90/3.6	1.8/7.2	<b>DC Resistance</b>
<b>Fs</b>	22.7Hz	24.7Hz	23.8Hz	23.5Hz	22.8Hz	23.2Hz	20.4Hz	20.5Hz	<b>Resonant Frequency</b>
<b>Qes</b>	.317	.367	.431	.455	.469	.533	.443	.431	<b>Electrical "Q"</b>
<b>Qms</b>	3.331	3.572	4.094	3.870	3.680	3.830	2.460	2.762	<b>Mechanical "Q"</b>
<b>Qts</b>	.289	.332	.390	.407	.416	.468	.375	.373	<b>Total "Q"</b>
<b>Vas(cubic liters)</b>	48.14L	43.89L	45.75L	48.37L	74.43L	76.28L	282.88L	279.77L	<b>Equivalent Volume</b>
<b>Xmax (mm)</b>	15mm	15mm	15mm	15mm	16mm	16mm	18mm	18mm	<b>One way Linear</b>
<b>Sd (sq.in.)</b>	35.80sq.in.	35.80sq.in.	49.60 sq.in.	49.60 sq.in.	72.85 sq.in.	72.85 sq.in.	130.2 sq.in.	130.2 sq.in.	<b>Cone Area</b>
<b>SPL (dB)</b>	85.4dB	85.6dB	87dB	87dB	89dB	89dB	89dB	89dB	<b>1 watt @ 1 meter</b>
<b>RMS Power</b>	150 W	150 W	250 W	250 W	350 W	350 W	750 W	750 W	<b>Continuous</b>
<b>MAX Power</b>	300 W	300 W	500 W	500 W	700 W	700 W	1500 W	1500 W	<b>Music</b>

# EXTENDED PARAMETERS

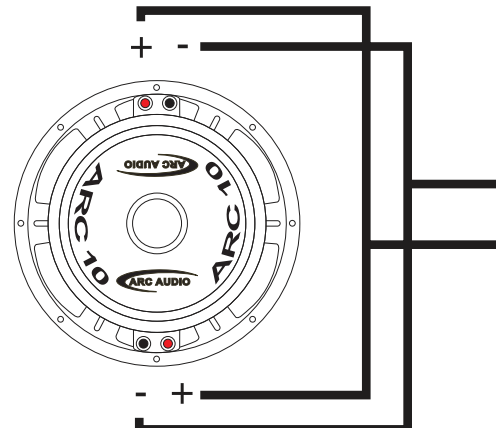
	802	804	1002	1004	1202	1204	1502	1504
<b>BL</b>			11.605	15.447	12.488	16.835		
<b>Mms</b>			118.901g	108.992g	158.537g	148.628g		
<b>Mmd</b>			115.194m Kg	105.286m Kg	151.900m Kg	141.992m Kg		
<b>Krm</b>			9.590m Ω	14.406m Ω	14.406m Ω	17.472m Ω		
<b>Erm</b>			0.819	0.827	0.798	0.812		
<b>Kxm</b>			58.532 mH	119.616 mH	39.393 mH	101.767 mH		
<b>Exm</b>			0.654	0.630	0.706	0.654		
<b>Cms</b>			262.642u M/N	249.199u M/N	226.478u M/N	241.576u M/N		
<b>No</b>			0.200 %	0.185 %	0.200 %	0.257 %		

# WOOFER WIRING

**Series Wiring**  
Ohm Load Goes Up

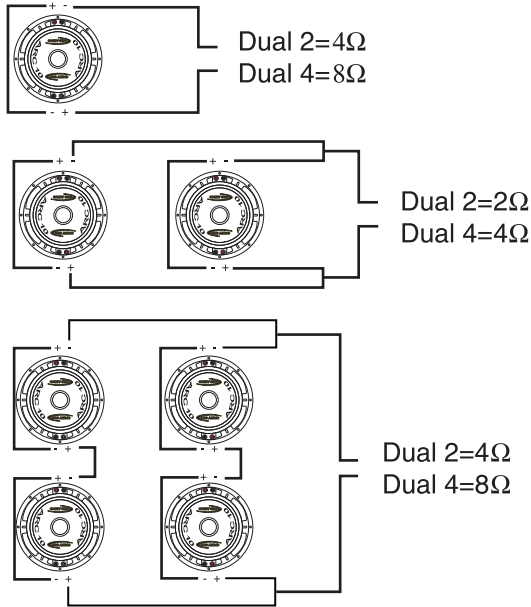


**Parallel Wiring**  
Ohm Load Goes Down

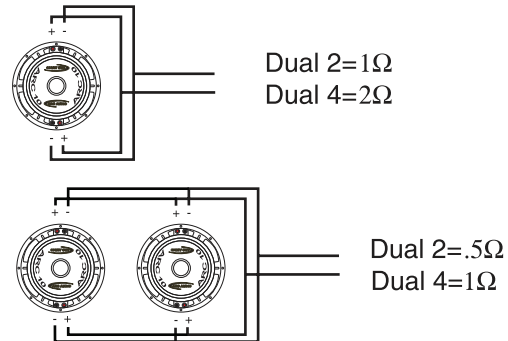


# WIRING OPTIONS

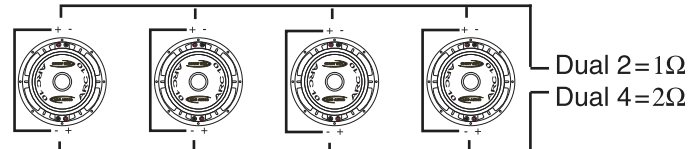
## Wired in Series



## Wired in Parallel



## Wired in Series Parallel



# 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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