

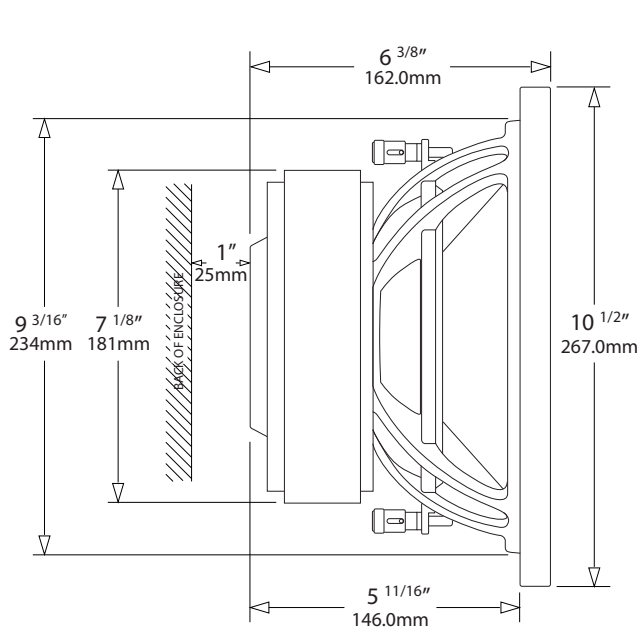


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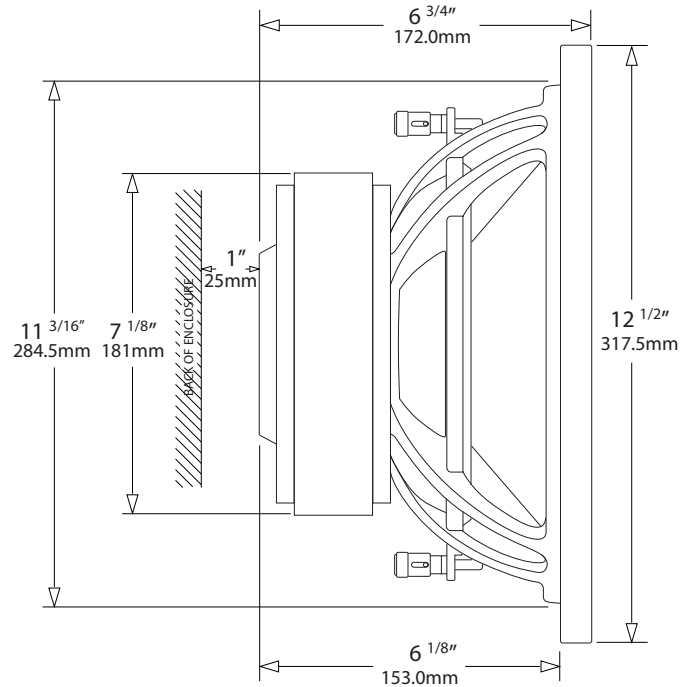
WWW.ARCAUDIO.COM

BLACK V2
SUBWOOFERS

SPEAKER SPECIFICATIONS AND PARAMETERS



Total Displacement .07 cu. ft. (2.0L)



Total Displacement .09 cu. ft. (2.6L)

	BLACK 1002	BLACK 1004	BLACK 1202	BLACK 1204	
Fs	40.6	38.0	22.1	24.1	Hz
Re	4	7.9	4.2	7.9	Ohms
Qms	4.09	4.04	4.71	4.46	
Qes	0.60	0.64	0.41	0.46	
Qts	0.52	0.56	0.38	0.42	
Mms = gr	137.6	135.0	190.0	167.7	Grams
BL	15.9	19.9	16.5	20.8	
SPL	84.9	84.4	85.7	86.1	dB 1 watt @ 1 meter
VAS = L	18.0	21.0	92.0	88.0	Liters
Le	2.31	3.51	2.34	3.53	Millihenry
Sd = cm ²	339.8	339.8	490.9	490.9	Square Centimeters
Xmax	16MM	16MM	16MM	16MM	
Power Handling	800 Watts		1000 Watts		Music
Power Handling	400 Watts		500 Watts		RMS

Sealed	BLACK 1002		BLACK 1202	
	BLACK 1004		BLACK 1204	
Cubic Feet	MINIMUM	SPL	MINIMUM	SPL
Gross	.70	1.1	.9	1.35
Ported				
Cubic Feet	SQ	SPL	SQ	SPL
Gross	1.5	1.65	1.8	2.0
Net	1.25	1.5	1.5	1.8
Port				
Diameter	4"	4"	4"	4"
Length	23"	9.5"	22"	10"
Tuning Freq.	32Hz	42Hz	30Hz	38Hz

Note: SPL numbers are measured using 1 watt of input with the mic at 1 meter (39") from the cone. We do not use 2.83 Volts at the lowest ohm load the voice coils can be configured into. 1 Watt SPL specifications should not be used to determine how loud the woofer can play.

These are only a couple of the enclosure designs suitable for these woofers. We encourage you to experiment with different designs. Start by downloading one of the many free box design tools available on the internet or contact us for help with your custom design needs. The enclosure designs above may be altered by as much as 10% without a significant change in the woofer response.

USEFUL INFORMATION

Useful Information

Ultimately the enclosure you build determines the performance of your subwoofer. The size and vent tuning frequency, if you're using a ported box, determine the low-frequency extension and output of the subwoofer. We have designed the ARC Audio subwoofer to perform well when used in both sealed and ported enclosures.

The acoustics of your vehicle also influence bass response. The small interior size of most cars and trucks boosts low frequencies dramatically. You will need to use a smaller enclosure than normal 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.

We have given you 4 enclosure recommendations that are listed on the previous page. 2 sealed and 2 ported. The sealed enclosure designs 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 make 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 then 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 you must 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 you must 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) Next you must convert cubic inches into cubic feet. To do this, you must divide the cubic inch total by 1728.

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

WARRANTY AND SERVICE GUIDELINES

Arc Audio warrants 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 and **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 MANUFACTURES SPECIFICATIONS, OR AGAINST INSTRUCTIONS IN OWNERS MANUAL. IN ADDITION ANY PRODUCT THAT HAS BEEN OPENED, TEMPERED WITH OR MODIFIED, OR IF THE SERIAL NUMBERS HAVE BEEN REMOVED OR ALTERED WILL NOT BE COVERED BY ANY PART OF THE MANUFACTURES WARRANTY.

All warranty returns should be sent to ARC AUDIO freight prepaid and must be accompanied by proof of purchase (a copy of the original printed 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 the original packaging and be accompanied by a copy of the original printed sales receipt. Product damaged in shipment due to improper packaging will not be covered under this warranty and the customer or retailer will be charged full cost to repair the specific piece of product 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 or hearing, property or person, damage based upon inconvenience or on loss of use of the product, and to no extent permitted by law, damages for personal injury. This warranty gives you specific legal rights, and 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 other countries please contact your distributor.