



Precision Engineered Subwoofer

www.Arcaudio.com

- ARC 15D2
- ARC 15D4
- ARC 12D2
- ARC 12D4
- ARC 10D2
- ARC 10D4
- ARC 8D2
- ARC 8D4



SPEAKER SPECIFICATIONS

	8D2	8D4	10D2	10D4	12D2	12D4	15D2	15D4	
IMP	1 or 4	2 or 8	1 or 4	2 or 8	1 or 4	2 or 8	1 or 4	2 or 8	Impedance
Re	.95/3.8	1.95/7.8	.925/3.7	1.95/3.9	.975/3.9	1.75/7.0	.90/3.6	1.8/7.2	DC Resistance
Fs	22.7Hz	24.7Hz	24.5Hz	25Hz	21Hz	22Hz	20.4Hz	20.5Hz	Resonant Frequency
Qes	.317	.367	.357	.365	.298	.317	.443	.431	Electrical "Q"
Qms	3.331	3.572	4.56	5.12	4.29	4.35	2.462	2.762	Mechanical "Q"
Qts	.289	.332	.331	.341	.278	.317	.375	.373	Total "Q"
Vas (cuft)	1.7	1.55	2.0	2.25	4.76	4.41	9.99	9.88	Equivalent Volume
Xmax (mm)	15mm	15mm	15mm	15mm	16mm	16mm	18mm	18mm	One way Linear
Sd (cm2)	231 cm2	231 cm2	350 cm2	350 cm2	530 cm2	530 cm2	840 cm2	840 cm2	Cone Area
SPL (dB)	85.4dB	85.6dB	87dB	87dB	89.dB	89dB	89.dB	89dB	1 watt @ 1 meter
RMS Power	150 W	150 W	250 W	250 W	350 W	350 W	750 W	750 W	Continuous
MAX Power	300 W	300 W	500 W	500 W	700 W	700 W	1500 W	1500 W	Music

ENCLOSURE RECOMMENDATIONS

	8D2	8D4	10D2	10D4	12D2	12D4	15D2	15D4
SEALED ENCLOSURES								
Optimum Sealed	.35cuft	.35cuft	.65cuft	.65cuft	.90cuft	.90cuft	2.25cuft	2.25cuft
Small Sealed	.2cuft	.2cuft	.5cuft	.5cuft	.65cuft	.65cuft	1.5cuft	1.5cuft
PORTED ENCLOSURES								
Volume	.6cuft	.6cuft	.9cuft	.9cuft	1.30cuft	1.30cuft	3.0cuft	3.0cuft
Port Frequency	34Hz	34Hz	32Hz	32Hz	30Hz	30Hz	32Hz	32Hz
Port Quantity	1	1	1	1	1	1	2	2
Port Area and Length	2"d X 12"L	2"d X 12"L	3"d X 15"L	3"d X 15"L	3"d X 12"L	3"d X 12"L	4"d X 18"L	4"d X 18"L
PHYSICAL DIMENSIONS								
Displacement	.04cuft	.04cuft	.05cuft	.05cuft	.07cuft	.07cuft	.17cuft	.17cuft
Cutout Diameter	7.125"	7.125"	9.25"	9.25"	11.125"	11.125"	11.125"	11.125"
Mounting Depth	4.75"	4.75"	5.5"	5.5"	6.0"	6.0"	8.0"	8.0"

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 two enclosure recommendations that are listed on the previous page. One sealed and one ported. 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 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 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" x 14" x 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 cu in / 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: 3/4" x 2 = 1 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" x 12.5" x 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 / 1728 = .5696 cubic feet.

For additional information call ARC Audio Tech support at:

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