SAFETY TIPS

Prolonged continuous operation of an amplifier, speaker, or subwoofer in a distorted, clipped or over-powered manner can cause your audio system to overheat, possibly catching fire and resulting in serious damage to your components and/or vehicle. Amplifiers require up to 4 inches open ventilation, but no less than 2 inches for the amplifier to cool itself properly. Subwoofers should be mounted with at least 1.5 inches clearance between the front of the speaker and any surface.

All amplifiers need the proper gauge of wire to operate properly and safely. Please refer to our wire gauge sizing chart for the proper gauge of wire for your particular amp. All Memphis Audio wire is 100% pure copper and the best wire in the business. CCA (copper clad aluminum) wire is an inferior wire to copper and transmits significantly less current compared to the same size wire in copper. ALWAYS use the proper gauge of copper wire for your amplifier installations.

Mounting: MOUNT EVERYTHING SECURELY!! Securely mounting all of your aftermarket audio components not only makes your installation safe, but in most cases makes the sound quality better (subwoofer boxes). In an auto accident anything not mounted securely can become a projectile doing damage not only to your vehicle, but your melon as well, and nobody wants that.

BOX BUILDING

What type of box?

The only way you are going to get that full, rich sound from your car audio system is by adding a subwoofer. But which type of subwoofer box is right for you? That is the question

Why does it matter?

Adding a subwoofer to your system will give it that extra kick it has been missing; a subwoofer will greatly extend your sound system's bass response produced by your existing speakers and improves your musical listening experience. No matter what kind of music you listen to, it has bass.

Generally speaking, there are two major bass types: *tight and accurate* or that *big bass boom*.To that end, the music you prefer to listen to is the key factor that will determine which type of bass and ultimately which subwoofer enclosure type is right for you.

Ported vs Sealed Box

Which is superior? There is no shortage of opinions on the subject, but unfortunately, there are a lot of widespread misconceptions as well. You might hear people saying that vented subwoofer are solely designed for the purpose of big booming bass systems and are not ideal for acoustically pleasant music, or conversely that sealed boxes are musical but tend to be lacking in terms of bass depth and performance. There are some truths to this, but let's dig a little deeper.

Ported and sealed subwoofer enclosures come with their own pros and cons. At the risk of sounding cliche, the answer to which is superior is "it depends." The pros and cons of each subwoofer enclosure type are discussed below. That being said, you have to think carefully before choosing the right subwoofer and box type for you.

Sealed Enclosures:

In this corner, we've got sealed subwoofer boxes! Now, what sets sealed boxes apart is their relatively small size when compared to ported boxes. Sealed boxes are generally more compact than ported boxes, thus they fit in more applications. If space is an issue, it would be a good idea to

go with a sealed box. Size isn't the only factor that distinguishes sealed boxes from vented ones, there's also sound. The trapped air inside a sealed box acts like a shock absorber or a spring against the cone of the subwoofer, restricting the woofer movement so it doesn't over-exert itself.. This also limits cone motion so all the notes get produced evenly with less distortion resulting in tighter, more accurate bass.

Pros:

•Smaller overall footprint.
•Sound quality & accuracy.
•Excellent transient response.

Cons:

•There arent many cons when it comes to sealed enclosures, but there are several complaints.
•Limited efficiency: Unlike ported boxes, the trapped air inside a sealed box greatly restricts cone movement. The rear wave dissipates inside the enclosure and offers no additional output.

Ported Enclosures:

Ported boxes undoubtedly deliver louder, boomier bass with more of a punch than sealed boxes. This This is easily achieved with a ported subwoofer box without using any additional sound equalizer or digital processor. In a sealed enclosure you are only getting sound from the front of the subwoofer, whereas in a vented enclosure you are also using the rear portion of the sub to create sound. You are effectively doubling the surface area playing which equates to more output. A caveat to this design is that the extra sound you are hearing is coming from a "tuned" port. This means these boxes, while having more output, tend to be peaky at the tuned frequency. These "tuned vents" makes this type of enclosure much more difficult to design and build properly.

The vent redirects sound from the back of the cone and adds it to the sound coming from the front, which significantly increases bass output of the subwoofer system. This increase makes a vented enclosure much more efficient, or in other words, more bass for your buck. This type of enclosure is preferred when listening to rap and R&B music as these are very bass heavy and have the type of bass that happens to be focused around the tuning frequencies of vented enclosures. Another advantage to ported enclosures is subwoofer longevity; vented enclosures allow more air to flow around the magnet which helps keep the voice coil cool.

One major factor when selecting a vented enclosure is the overall size of the enclosure and the space limiatations that may be present in your vehicle. Vented enclosures are tend to be twice the size of their sealed counterparts when using the same subwoofer. The larger footprint required is a

major factor when selecting a box, if it doesn't fit, it wont work. The trick to building a ported box is getting the size of the enclosure to correspond with the properly sized vent. You can not simply cut a hole in a sealed box and expect it to perform as a vented enclosure, the measurements must be exact in order for the enclosure to perform properly.

Pros:

•Reduced distortion and cone excursion.
•Ported boxes give you that extra output which enhances certain types of music.
•Increased cooling for your subs
•Great for Rap and R&B.

Cons:

•The sound coming from inside the box through the vent can do more damage than good to certain types of music.
•Vented boxes are larger than their sealed counterparts.
•Design and construction are much more difficult and critical to their performance

The Verdict

Now that we've talked about both sealed and ported subwoofer boxes, and the vastly different ways they cover low frequencies, it's time to decide which one is better. Both designs work very well and have their own ups and downs, one design isn't necessarily better than the next, it all boils down to preference and the physical limitations of the installation.

We typically live by the following advice when it comes to recommending which type of enclosure works best to meet an individuals needs. Ported boxes are louder and more efficient, while sealed boxes offer a very tight and accurate bass response. If you want ground-pounding / window rattling bass, a ported box is the way to go. If you are looking for the most accurate reproduction of your music and a tighter, snappier bass response a sealed enclosure might be the right choice for you.

There are exceptions to every rule and you should do your own research to determine which design best suits your needs. If you need more input please reach out to your local Memphis Audio authorized dealer or one of our box design experts for help designing a system that meets your needs and suits your listening style.

GAIN MATCHING

Theory

The idea here is to use ALL of the available "dynamic range" of each electronic device in the system. In other words, we want all components to "clip" at the same time. This way, each unit is used at its maximum possible level BEFORE distortion. By doing this, we can maximize performance and most importantly, MINIMIZE noise. Note: We are minimizing noise, not eliminating it. All we need to do is lower the noise level below what we can hear. There is noise in every audio system. In a properly designed and installed system, the noise is just not audible. This goes for good home hi-fi systems, home theaters and professional recording studios. We want to get the HIGHEST voltage level through the system and make all final level adjustments at the AMPLIFIERS. The goal is to have the system play at its highest output level with the amplifier gain controls as low as possible.

Tools Required

1.CD with test tones (The CD MUST have an "all bits high" track) or a signal generator. An "all bits high" track is one that is recorded at the maximum digital level allowed. This will give you a reference for the "loudest" CD you could ever encounter.
2.Oscilloscope or DMM with resolution to two decimal places.

Oscilloscope and DMM Method

Disconnect all speakers from the amplifiers.

1.Turn all amplifiers on, and set all gains to the same position (about 1/2).
2.All amplifiers must be fed simultaneously from the same signal source.
3.Set the Oscilloscope Volts / Division setting to 1 volt. Set the Time / Division to .1 mS. Set the DMM range to read up to 20 volts AC.
4.Touch the oscilloscope probe the center pin of the RCA(s) coming from the signal source. Set the source level control to the maximum unclipped setting; or to the maximum input voltage allowed by the amplifier(s). Make a note of this level on the source unit. When using a DMM, clipping cannot be observed as with the oscilloscope. You will have to approximate the maximum unclipped AC output voltage from your source. Check with the manufacturer for a reference voltage to stay at or below.
5.Set the Oscilloscope Volts / Division setting to 10 volts (20 volts for 1000 watt plus amplifiers). Set the Time / Division to .1 mS. Set the DMM range to read up to 100 volts AC.

6.Connect the signal source to the amplifier(s) and bring the level up to that which was established in step #6.
7.Touch the Oscilloscope probe to the amplifier speaker terminal. You will have to check each terminal marked "bridged" or "mono" on stereo amps, or a single terminal on true mono amplifiers. Place the DMM leads in parallel with the output of the amplifier.
8.Adjust the gain on each amp to just below clipping. Clipping will be obvious as the peaks of the waveform on the Oscilloscope screen begin to flatten out. Check with the manufacturer for a reference voltage to stay at or below.

As a secondary procedure to double-check the gain matching on mono amplifiers being used in bridged pairs. This should be done after all of the above steps have been completed.

1.Set your DVM to DC volts on a 0-20 volt scale.
2.Place one probe on appropriate speaker terminal of each amplifier in the bridged pair.
3.Bring the level up to that which was established in the above step #6.
4.You should read very close to ZERO volts.
5.At this point, you can fine-tune the gains on the pair(s) of bridged amps to get this DC reading as low as possible.
6.If you have multiple bridged pairs of amps, the DC readings should match

AMPLIFIER
WIRE GAUGE CHART

MODEL	AMP KIT
SIX FIVE SERIES	
VIV900.5	4GKIT
VIV400.4	4GKIT
VIV200.2	4GKIT
VIV2200	0GKIT
VIV1500.1	0GKIT
VIV1100.1	4GKIT
VIV700.1	4GKIT
POWER REFERENCE	
PRX700.5	4GKIT
PRX.00.4	8GKIT
PRX1500.1	0GKIT
PRX1000.1	4GKIT
PRX500.1	4GKIT
PRX300.1	8GKIT
STREET REFERENCE	
SRX300.4	8GKIT
SRX150.2	8GKIT
SRX1200D1.1	4GKIT
SRX750D.1	4GKIT
SRX500D.1	4GKIT
SRX250.1	8GKIT
MEMPHIS XTREME AUDIO	
MXA850.5M	4GKIT
MXA5.600	10GKIT
MXA480.4M	8GKIT
MXA4.45	10GKIT
MXA2.140	10GKIT
MXA600.1M	4GKIT
MXA1.300	10GKIT
SS225	10GKIT

SUBWOOFER WIRING

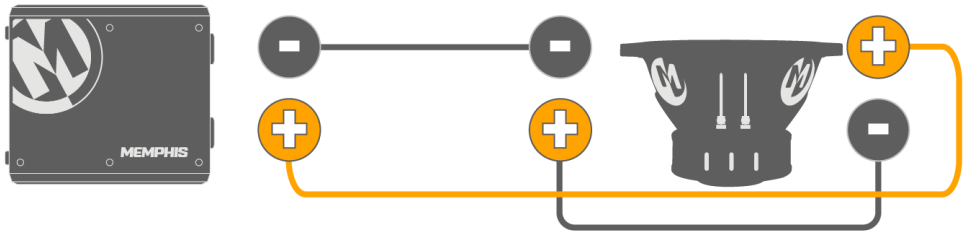
SERIES WIRING (SINGLE DVC SUBWOOFER)

Connecting the two voice coils of the driver in series (+ to -) results in the following impedance.

Dual 4Ω Subwoofer: Final Impedance: 8Ω

Dual 2Ω Subwoofer: Final Impedance: 4Ω

Dual 1Ω Subwoofer: Final Impedance: 1Ω



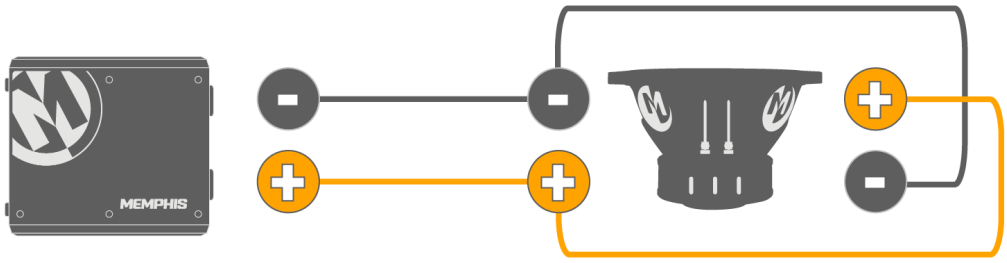
PARALLEL WIRING (SINGLE DVC SUBWOOFER)

Connecting the two voice coils of the driver in parallel (+ to +, - to -) will result in the following:

Dual-4Ω Subwoofer: 2Ω

Dual-2Ω Subwoofer: Not Rec.

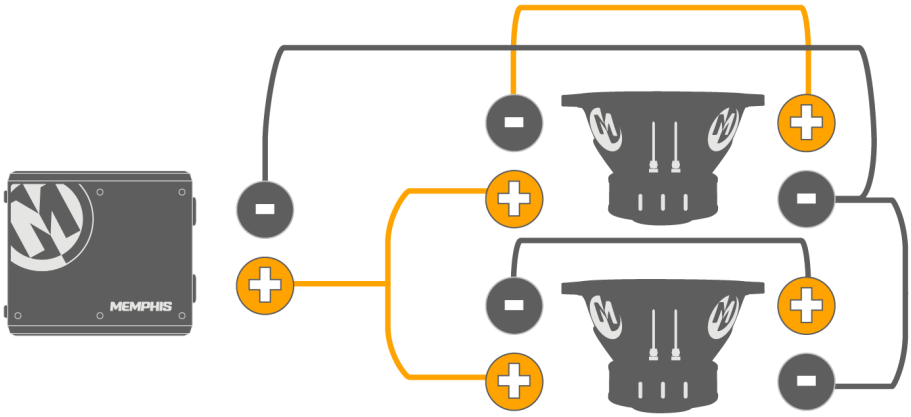
Dual-1Ω Subwoofer: Not Rec.



2 DVC SUBWOOFERS WIRED IN SERIES/PARALLEL

Connecting the voice coils of each driver in parallel (+ to +, - to -}
and the drivers themselves in parallel (+ to +, etc.)
will result in the following:

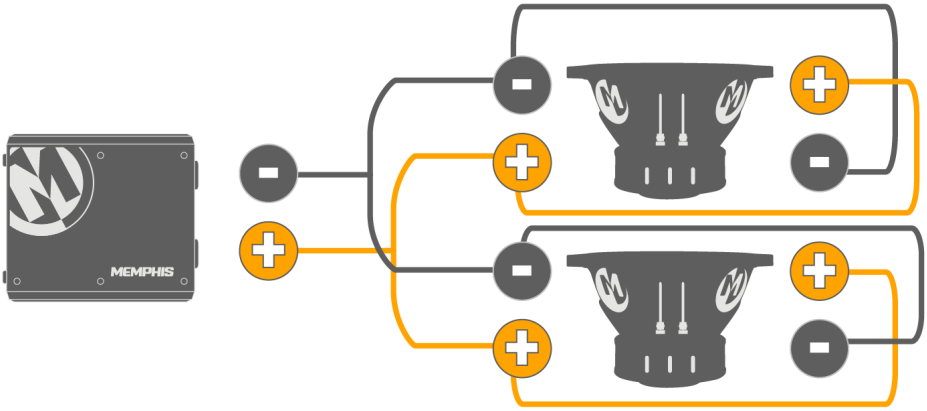
Dual-4Ω Subwoofer: 4Ω
Dual-2Ω Subwoofer: 2Ω
Dual-1Ω Subwoofer: Not Rec.



2 DVC SUBWOOFERS WIRED IN PARALLEL/PARALLEL

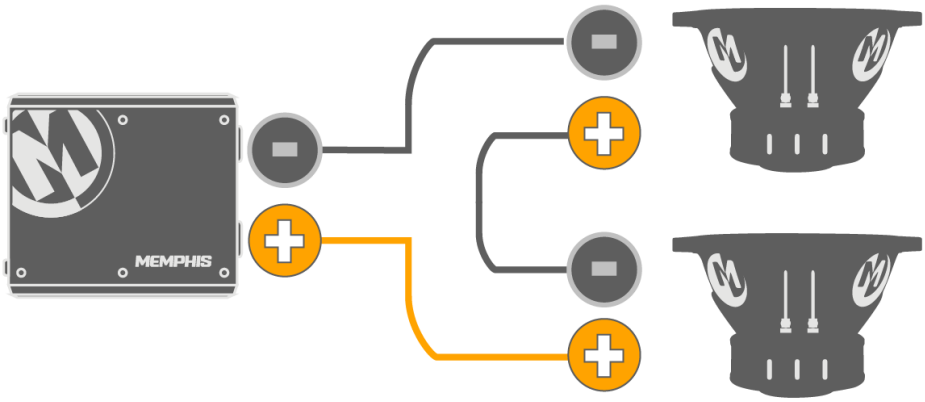
Connecting the voice coils of each driver in parallel (+ to +, - to -)
and the drivers themselves in parallel (+ to +, etc.)
will result in the following impedances:

Dual-4Ω Subwoofers: 1Ω
Dual-2Ω Subwoofer: Not Rec.
Dual-1Ω Subwoofer: Not Rec



2 SVC SUBWOOFERS WIRED IN SERIES

Connecting the voice coils of each driver in Series (+ to -)
will result in the following impedances:
Single-4Ω Subwoofers: 8Ω



2 SVC SUBWOOFERS WIRED IN PARALLEL

Connecting the voice coils of each driver in parallel (+ to + - to -)
will result in the following impedances:
Single-4Ω Subwoofers: 2Ω