JBL GT SERIES™

Automotive Subwoofers Owner's Manual

GT100 | GT100D | GT120 | GT120D | GT150 | GT150D

Choosing an Enclosure JBL GT Series

Thank you for purchasing a new JBL GT Series subwoofer. Subwoofer installation requires woodworking skills and some experience disassembling and reassembling automotive interiors. If you lack the tools or necessary skills, have your subwoofer installed by an authorized JBL dealer.

Warning: Playing loud music in an automobile can permanently damage your hearing as well as hinder your ability to hear traffic. We recommend listening at low levels while driving. JBL accepts no liability for hearing loss, bodily injury or property damage resulting from use or misuse of this product.

GT Series subwoofers are optimized to perform best in small, sealed, vented and prefabricated bandpass enclosures. While infinite-baffle mounting of GT Series subs is possible, power handling will be greatly compromised because there's no enclosed volume of air to prevent the speaker's cone from moving past its limit. For this reason, we do not recommend infinite-baffle mounting for GT Series subwoofers.

You should choose the enclosure you will use based on the type of music you listen to, how much amplifier power you will use for the subwoofer and how much space inside the vehicle you can devote to a subwoofer enclosure.

Because a sealed enclosure provides the most control over the woofer's movement, a woofer mounted in a sealed enclosure will handle more power than a woofer mounted in another enclosure type. Sealed enclosures provide more accurate sonic reproduction than other enclosure types, so they are well suited to all types of music. Sealed-enclosure construction is straightforward and there are many prefabricated sealed enclosures available. An optimum sealed enclosure is always smaller than other types of enclosures optimized for a particular speaker, so they require the smallest amount of space inside the vehicle.

Vented enclosures provide better efficiency in the 40Hz – 50Hz range but this efficiency comes at the expense of sound in the lowest octave (below 40Hz) and at the expense of some control and power handling. If you are using a small amplifier, a vented box will provide more bass output from less power. Vented enclosures are also well suited to a variety of music types. Because vented enclosures require the volume of the enclosure and the size of the port to have a specific relationship with the characteristics of the woofer, the enclosure must be built *exactly* to the specifications provided. While there are some prefabricated vented boxes available, matching a prefabricated box to a particular woofer is difficult. If you wish to use a vented enclosure, we strongly recommend having your authorized JBL dealer build it or verify that your design is correct if you wish to build it yourself. An optimum vented enclosure is always larger than the optimum sealed box for the same woofer and will require more space inside the vehicle.

Bandpass enclosures often provide the most output available from any amplifier and subwoofer combination at the expense of sonic accuracy. If sheer SPL (sound-pressure level) is what you desire most, choose a bandpass enclosure. Bandpass-enclosure design is very tricky and the aid of a computer and enclosure design software is necessary. If you are an experienced installer or have some woodworking experience, you may wish to build the enclosure described in the enclosure design sheet included with this woofer. Fortunately, there are many prefabricated bandpass boxes available and they are all optimized to extract the most output possible from any woofer. Bandpass enclosures can be quite large and may require a lot of space inside your vehicle.

Connecting Your Subwoofer to Your Amplifier JBL GT Series

JBL GT Series subwoofers are available in two different configurations: as a single 4-ohm voice coil or as dual 4-ohm voice coils. Depending on the amplifiers you are using, you may use either single-voice coil or dual-voice coil subwoofers in singles or multiples to maximize the power available from your amplifiers. To achieve the maximum amplifier output possible, you should design a speaker system that provides the lowest impedance that your amplifier is rated to drive safely. When designing a subwoofer system, consider the following rules:

1. Don't mix different subwoofer or enclosure types in the same system (use all single-coil woofers or all dual-coil woofers).
2. You may connect the coils of a dual-voice coil woofer in series, but we recommend that you avoid connecting separate woofers in series. The amplifier-damping factor (the amplifier's ability to control the motion of the woofer) is expressed as a ratio of terminal impedance (the sum of speaker impedance, wire resistance and the D.C. resistance of any crossover coil connected to the woofer) to amplifier-output impedance. Therefore, connecting separate woofers in series reduces the damping factor of the amplifier to a value less than 1. This will result in poor transient response.
3. You must use both coils of a dual-voice coil woofer connected either in series or in parallel.
4. Most amplifiers deliver exactly the same amount of power bridged into a 4-ohm load as they do running a 2-ohm stereo load.

To design a subwoofer system that maximizes available amplifier power, keep the following rules in mind:

1. The total system impedance of woofers in parallel can be calculated using the formula:

$$\text{Impedance} = \frac{1}{\frac{1}{w_1} + \frac{1}{w_2} + \frac{1}{w_3} \cdots}$$

   where w is the nominal impedance of the woofer.
2. The total system impedance of voice coils (or woofers) in series can be calculated using the formula:

$$\text{Impedance} = w_1 + w_2 + w_3 \ldots$$

The diagrams at right show parallel and series speaker connections.

Figure 1. Parallel connection

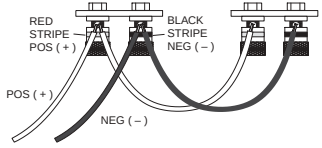
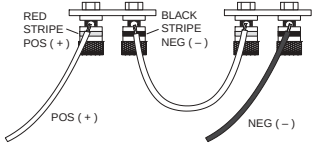


Figure 2. Series connection



Specifications JBL GT Series

	GT100 10" Automotive subwoofer	**GT100D** 10" Dual-voice coil automotive subwoofer	**GT120** 12" Automotive subwoofer	**GT120D** 12" Dual-voice coil automotive subwoofer	**GT150** 15" Automotive subwoofer	**GT150D** 15" Dual-voice coil automotive subwoofer
Power handling (RMS)	250 Watts	250 Watts	250 Watts	250 Watts	250 Watts	250 Watts
Power handling (Peak)	1000 Watts	1000 Watts	1000 Watts	1000 Watts	1000 Watts	1000 Watts
Sensitivity (2.83V/1m)	90dB	90dB	93dB	93dB	95dB	95dB
Frequency response	28Hz – 500Hz	28Hz – 500Hz	23Hz – 450Hz	23Hz – 450Hz	20Hz – 400Hz	20Hz – 400Hz
Impedance	4 Ohms	Dual 4-ohm voice coils	4 Ohms	Dual 4-ohm voice coils	4 Ohms	Dual 4-ohm voice coils
Mounting depth	5-3/4" (147mm)	5-3/4" (147mm)	6-1/4" (159mm)	6-1/4" (159mm)	6-3/4" (172mm)	6-3/4" (172mm)
Cut-out diameter	9-1/8" (232mm)	9-1/8" (232mm)	11-1/8" (283mm)	11-1/8" (283mm)	14-1/4" (362mm)	14-1/4" (362mm)

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Features, specifications and appearance are subject to change without notice.

Part No. GTSUBSEROM

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Declaration of Conformity

CE

We, Harman Consumer International
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FRANCE

declare in own responsibility, that the products described in this owner's manual are in compliance with technical standards:

EN 50081-1:1992

EN 50082-1:1997

Emmanuel Millot
Harman Consumer International
Chateau-du-Loir, FRANCE. 7/02