

JBL

GRAND TOURING SERIES



AUTOMOTIVE SUBWOOFERS

P-800, P-1000, P-1200, P-1500 OWNER'S MANUAL

GENUINE JBL



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Thank you for choosing this JBL Power Series subwoofer. The Power Series of automotive subwoofers is designed to be used in modern car audio systems to produce extended, powerful bass in a limited amount of space. Power Series subwoofers are designed to suit a broad range of applications and can be used in a wide variety of enclosure types. In order to maximize the performance potential of these subwoofers, it is recommended that installation be left to a qualified professional. If you feel you have the ability to properly build an enclosure and install the subwoofer yourself, the information in this manual will help you get it right.

Keep your sales receipt with this manual in a safe place so both are available for future reference.

JBL Power Series Features

The JBL Power Series consists of serious subwoofers that are unlike any others in their class. They will deliver unparalleled performance in a wide variety of enclosures, giving creative installers unprecedented flexibility in system design.

The JBL Power Series incorporates:

- **Injection-molded Titanium composite cones** for optimum combination of stiffness and low mass
- **Butyl rubber surround** for lower harmonic distortion and precise voice-coil travel
- **Dual-stacked magnets and X-Linear™ motor assembly** for controlled, long-throw cone excursion

- **Deepbeat™ anti-resonance chassis coating** on the basket to prevent audible ringing

- **Thermosink™ motor assembly coating** to dissipate heat and increase power handling

- **Unique 5-ohm nominal impedance** for extreme flexibility in installations with multiple subwoofers

The JBL Power Series woofers are designed to maximize the sonic potential of any system. When installed in a proper enclosure they offer smooth frequency response, excellent transient response, high-output efficiency, and high-power handling capability. The result is powerful, dynamic and accurate sound reproduction that could only come from JBL.

A Few Words About Enclosures

The enclosure or box that you choose for your Power Series woofer will define the sound that will ultimately come out of it. The size of the box and tuning frequency of port tubes in vented enclosures dictate the low-frequency performance and output capability of your system. The flexibility designed into the Power Series subwoofers lets them make tons of bass in small sealed, vented and bandpass enclosures. They will also work well in infinite baffle applications where there is no space or budget to build a box. Be aware that infinite baffle or “free air” mounting will reduce the power handling

and the low-frequency response of a subwoofer. Finally, although information is available for Bandpass enclosures from your JBL Dealer, any variations from the recommended dimensions should be made using dedicated enclosure-design software such as JBL Speakershop™.

If this type of software is not available, assistance is available through JBL's Web site at www.jbl.com or from your authorized JBL dealer.

Your Car And The BASS Made In It

Depending on the size of the vehicle, bass frequencies below 50Hz or 80Hz are actually boosted by nearly 12dB per octave as the frequency decreases. If you wanted to purchase that kind of power, you would need an amplifier that was eight times more powerful than the one you have. You can either reduce bass level to compensate for this, or simply sit back and enjoy the "free" bass.

Enclosure Calculation and Building

Recommended box designs are available from your JBL Dealer, or at www.jbl.com on the Internet. You may choose cabinet dimensions to fit your car, but the internal volume must not be changed, since changes in internal volume will change the tuning frequency of the enclosure. Please contact your authorized JBL dealer if you cannot do the necessary calculations yourself. The JBL Speakershop™ dedicated enclosure-design software program may also be helpful for experienced car-audio enthusiasts.

Sealed enclosures exert the most control over the motion of a subwoofer because the air acts like a spring against the motion of the woofer cone. Larger boxes allow for more excursion, thus more sound output for the amount of power used. When placed in a sealed box larger than the rated compliance (Vas) of the subwoofer, it will react as if it were in an infinite baffle installation. Vented and bandpass enclosures have the lowest amount of excursion for the amount of sound output. This is a result of port tuning reinforcing the sound output. Vented boxes will not provide adequate woofer control when driven below the port tuning range, meaning proper design is important. A fourth-order bandpass box will have the lowest

overall cone excursion at the expense of limited bandwidth.

1. Dimensions: Whenever possible, try not to make a box that has dimensions that are equal to, or multiples of, each other. For example, a 10" x 10" x 20" box would be susceptible to standing waves that may cancel some frequencies and add to cabinet resonance. A better alternative would be 18" x 11" x 10".

2. It is recommended that 3/4" (19mm) MDF be used to build the enclosure. Particle board is acceptable, but it is more difficult to work with. Enclosures for 12" and larger subwoofers, or small subwoofers, driven by high power amplifiers should be constructed out of 1" (25mm) material.

3. All joints should be glued and screwed; do not use nails. "Deck" or "Zip" screws are recommended since they have coarse threads for better grip and don't require pre-drilling holes. Once the box has been tested, it should be sealed with caulk around all interior joints.

4. Apply a 1" thick sheet of polyfill (available at fabric and craft stores) to all inside walls except the wall where the subwoofer is mounted. If this is not done, increase the recommended box volume by 10 percent.

5. Use PVC or ABS pipe (cardboard tubing is acceptable if the walls are over 1/16" thick). Keep in mind the openings at either end of the port must be at least

one port diameter away from any obstructions inside or outside of the box. Minimum recommended port size is as follows:

- 8" Subwoofer – 2"
- 10" Subwoofer – 3"
- 12" Subwoofer – 3"
- 15" Subwoofer – 4"

Tools you will need:

- Straight-edge
- Saw (circular or table)
- Screwdriver (powered or screwdriver bits in a variable-speed drill are best)
- Sabre saw or keyhole saw (to cut hole for woofer)
- Measuring tape
- Soldering iron and solder
- Wire cutters/strippers
- Utility knife (to cut carpet)
- Pencil

Materials:

- 3/4" or thicker MDF
- Caulk
- PVC or ABS pipe
- Deck screws
- Carpet
- Carpet Adhesive (aerosol-type works well)
- Speaker wire (12 or 16 gauge for woofers)

Take your time and mark the wood carefully before making any cuts. The old adage "measure twice and cut once" definitely applies here. Use the straight-edge to make sure your lines are straight, and clamp it to the wood to use it for guiding the saw if you are using a circular saw. This will get you the straightest edges, the best fit and the best sound.

Possible Perils Pertaining To Power Handling

The power-handling capability of any woofer is related to both its ability to dissipate heat, and the maximum excursion limits of its cone. Power handling for subwoofers is directly related to the type of enclosure that is chosen. The JBL Power Series subwoofers are designed to meet their power ratings in properly designed, sealed, vented, and bandpass boxes. Please be aware of the following:

- Voice-coil overheating and burning is typically caused by overdriving an amplifier into “clipping”. This damages more speakers than any other cause. Damage occurs because the amplifier is too small rather than too large. Bass that sounds broken up and distorted at higher volumes usually indicates that the amplifier is being asked to deliver power beyond its capabilities.
- Sharp “popping” sounds coming from a woofer indicate that the voice coil is “bottoming out” or hitting the back of the motor structure. This can seriously damage a woofer. Either your sealed box is too big or leaking air, the port tuning frequency of a vented box is too high or your amp may be overpowering the woofer. Fix the box, retune the box or turn the gain down on the amplifier respectively.
- Infinite Baffle or “free air” mounting applications allow for greater cone excursion than subwoofers mounted in an enclosure. In order to compensate, the power rating of the subwoofer should be reduced to half its rated power. If the woofer “pops,” turn down the amplifier gain.

5 Ohms And System Optimization

In order to increase flexibility, the Power Series subwoofers are designed with a 5-ohm nominal impedance. This provides an extra margin of safety for simple installations, and allows those in competition or those who are always pushing the “edge” to use more woofers per amplifier channel safely and efficiently, without shutting the amplifier down or exceeding the amplifier’s SOA (Safe Operating Area), which could cause serious damage. In systems using multiple woofers per channel, please make sure your amplifier can drive low-impedance loads safely and effectively.

Specifications

Component Systems

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Specifications:	P-800	P-1000	P-1200	P-1500
Usable frequency range	35Hz – 5kHz	30Hz – 1.5kHz	25Hz – 2kHz	20Hz – 1.2kHz
Recommended power amplifier range	18W – 250W	18W – 300W	18W – 350W	18W – 400W
Continuous power handling	200W	260W	280W	300W
Voice coil diameter	1.5"	2.0"	2.0"	2.0"
Sensitivity (2.83 volt/1 meter)	90dB	90dB	92dB	93dB
Impedance	5 ohms	5 ohms	5 ohms	5 ohms
Thiele/Small Parameters				
Free-air resonance (Fs)	28Hz	30Hz	30Hz	28Hz
Total Damping (Qt)	0.34	0.38	0.45	0.43
Equivalent volume of compliance (Vas)	2.37 cu. ft.	3.01 cu. ft.	5.21 cu. ft.	10.42 cu. ft.
One-way linear excursion (Xmax)	0.16"	0.3"	0.3"	0.3"
One-way excursion limit (Xsvs)	0.6"	1.12"	1.21"	0.91"
Cone area (Sd)	33.2 sq. in.	56 sq. in.	85 sq. in.	140 sq. in.
Dimensions				
Overall frame diameter	8.4" (213mm)	10.1" (257mm)	12.0" (305mm)	15.1" (384mm)
Cut-out diameter	7.1" (180mm)	8.8" (224mm)	10.8" (274mm)	13.6" (345mm)
Mounting Depth				
Top mount	3.9" (99mm)	5.0" (127mm)	5.7" (145mm)	6.6" (168mm)
Bottom mount	4.5" (114mm)	5.6" (142mm)	6.1" (155mm)	7.2" (183mm)

Warranty Terms: 1-Year Transferable Limited Warranty

This is an important document. Attach your Bill of Sale to this page and keep it in a safe place. Your Bill of Sale is your warranty.

The JBL warranty remains in effect for one year from the date of the first consumer purchase unless installed by an authorized JBL dealer. Installation by an authorized JBL dealer will extend the warranty to a period of two years.

Who is Protected by this Warranty

The JBL warranty protects the original owner and all subsequent owners providing that the JBL product was purchased from an authorized dealer in the United States or purchased by military personnel from an authorized military outlet. **A copy of the original dated Bill of Sale must be presented whenever warranty service is required.**

What is Covered by this Warranty

Except as specified below, the JBL warranty covers all defects in material and workmanship. The following are not covered: Damage caused by accident, misuse, abuse, product modification or neglect; damage occurring during shipment; damage from failure to follow instructions contained in the instruction manual; damage resulting from the performance of repairs by someone not authorized by JBL; damage caused by installation of parts that do not conform to JBL specifications; units used for commercial or business use; any claims based on misrepresentations by the seller; products sold on an "as-is" or final sale basis; or the cost of installing, removing, or reinstalling the unit. JBL's liability is limited to the repair or replacement, at our option, of any defective product and shall not

include incidental or consequential damages. JBL reserves the right to replace a discontinued model with a comparable model. Any replacement units or parts may be new or rebuilt.

To Obtain Warranty Service

If you require warranty service, please return the product to your dealer. If this is not possible and you live in the United States, please call 1-800-336-4JBL for information on how to obtain service or replacement. If purchased outside the United States, contact your local dealer for repair or replacement.

Do Not Return Products to the JBL Factory without Authorization.

They will be Returned Unopened.

You are responsible for transporting your product for repair or replacement. JBL will pay reasonable return charges for delivery to any location in the United States if the repair or replacement is covered under the warranty.

Correspondence with JBL should be addressed to: JBL Customer Service, 80 Crossways Park West, Woodbury, NY 11797 or fax us at 516-496-0812. Outside the United States, please contact your local distributor.

This warranty gives you specific legal rights. You may also have other rights which vary from state to state. Some states do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the above may not apply to you.

Declaration of Conformity



We, JBL Europe A/S
Kongevejen 194B
DK-3460 Birkerød
DENMARK

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

EN 50 081-1/1992

EN 50 082-1/3.1995

A handwritten signature in black ink, appearing to read 'Steen Michaelsen'.

Steen Michaelsen
JBL Europe A/S
Birkerød, DENMARK, 4/97



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