

**EXACT / 10/12**

# Subwoofers

## OWNER'S MANUAL AND INSTALLATION GUIDE

**SOUNDSTREAM**<sup>®</sup>  
T E C H N O L O G I E S

SOUNDSTREAM TECHNOLOGIES

120 Blue Ravine Road • Folsom • California 95630 USA  
tel 916.351.1288 fax 916.351.0414

(REV B, 7/8/98)

**SOUNDSTREAM**<sup>®</sup>  
T E C H N O L O G I E S

# EXACT 10/12 SUBWOOFER

**CONGRATULATIONS!** You have chosen a superior product for reproducing true high fidelity in the car. This precision component, when properly installed, is capable of audiophile-quality performance. The EXACT 10 and 12 woofers are well-suited for sealed, vented, sealed bandpass and vented bandpass enclosures. They also work well in infinite baffle installations at one-half the power rating.

Should your woofer ever require service or replacement, recording the information below for your own records will help protect your investment.

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

Dealer's Name: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

Installation Shop: \_\_\_\_\_

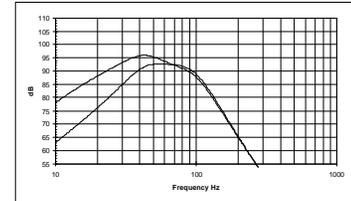
Installation Date: \_\_\_\_\_

## DESIGN FEATURES

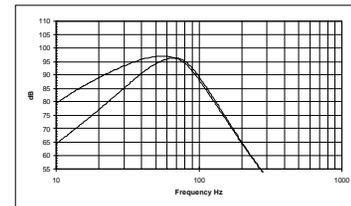
- **Installation Flexibility** - The EXACT woofers perform well in smaller-sized sealed, vented and bandpass enclosures. Regardless of the application, the EXACT woofers perform!
- **Heavy Cast Aluminum Frame** provides extra rigidity and damping with **Blue Powder Coat Finish** for durability and scuff resistance.
- **Ultra-High power handling Voice Coil with Glass Polyimide Former** increases power handling and performance. Aerospace grade adhesives and materials insure longevity and high performance.
- **High Excursion Design** - The EXACT woofer offers an **Extra Long Voice Coil** for extra high output. **New Ultra-Excursion Surround** helps support this.
- **Computer Numerically Controlled (CNC)** machined magnet plates and pole piece precisely focus the magnetic energy for optimum performance. **High Emissivity Coating** and **Copper Thermal/Inductor Ring** for improved power handling and lower distortion.
- **Vented Pole Piece** for greater voice coil cooling.
- **Rubber Magnet Cover** for added durability and exceptional appearance.
- **Custom-designed High Strength Spider** controls the long travel cone assembly.
- **Gold Plated 8 Gauge Terminals** ensure consistently outstanding connectivity for cable hook-up.
- **Designed and Manufactured** in the **U.S.A.**

### Sealed Bandpass

- Rear = .8 ft<sup>3</sup> sealed
- Front = .6 ft<sup>3</sup> @ 64 Hz (4" x 10.25" port) - *Very high output, excellent for Rock or Rap.*



- Rear = 1.0 ft<sup>3</sup> sealed
- Front = 0.8 ft<sup>3</sup> @ 65 Hz (Two 4" x 12.5" ports)- *Good output with very small enclosure.*

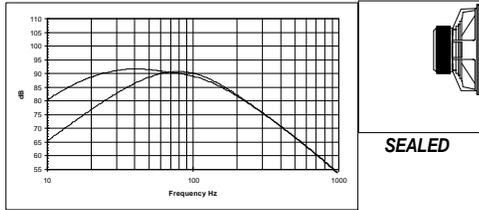


**Infinite Baffle**

- Excellent performance for all types of music at moderate levels

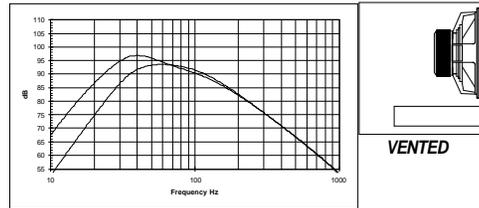
**Sealed**

- 1.3 ft<sup>3</sup> - *Good linear response, excellent small enclosure.*

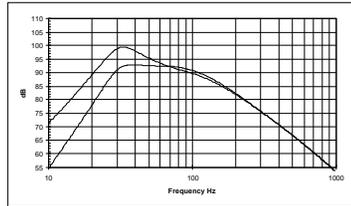


**Vented**

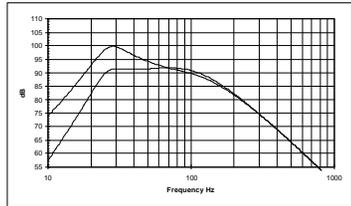
- 1.2 ft<sup>3</sup> @ 34 Hz (4" x 16.9" port) - *High output with excellent low frequency extension. Good general enclosure.*



- 2.0 ft<sup>3</sup> @ 30 Hz (4" x 12.25" port) - *High output with good low frequency extension. Great for Rock music.*



- 2.5 ft<sup>3</sup> @ 26 Hz (4" x 13.28" port) - *High output with good low frequency extension. Great for Rock and Rap music.*



**Preliminary SPECIFICATIONS & THIELE/SMALL PARAMETERS**

**EXACT 10      EXACT 12**

<b>Freq. Response</b>	32-500 Hz	30-500 Hz
<b>Sens. 2.83v/1m</b>	90 dB	92 dB
<b>Impedance (nom. z)</b>	4 ohms	4 ohms
<b>Rated Program Power</b>	400 watts	500 watts
<b>Fs</b>	35 Hz	30 Hz
<b>Qts</b>	.32	.34
<b>Qms</b>	8.9	12.08
<b>Qes</b>	.33	.35
<b>Vas (ft<sup>3</sup>)</b>	1.80	4.54
<b>Vas (liters)</b>	51	128.6
<b>Vas (m<sup>3</sup>)</b>	.051	.128
<b>Cms (um/N)</b>	329.8	322
<b>DCR (ohms)</b>	3.00	2.81
<b>Levc (mH) @ 1 KHz</b>	1.5	1.5
<b>BL (Tesla m)</b>	10.98	11.42
<b>Sd (in<sup>2</sup>)</b>	54.3	86.7
<b>Sd (m<sup>2</sup>)</b>	.035	.053
<b>Sd (cm<sup>2</sup>)</b>	350	531
<b>X max; one way (linear mm)</b>	11.35	11.35
<b>X max; one way (peak mm)</b>	22	25
<b>Vd (linear cm<sup>3</sup>)</b>	397	602
<b>Vd (peak cm<sup>3</sup>)</b>	770	1325
<b>Vd (linear m<sup>3</sup>)</b>	.000397	.000602
<b>Vd (peak m<sup>3</sup>)</b>	.000770	.001325
<b>Mms (grams)</b>	60	87.3
<b>Magnet Assembly (oz)</b>	230	230
<b>Magnet Weight (oz)</b>	112	112
<b>Vf (volume of frame)</b>	180 in <sup>3</sup>	200 in <sup>3</sup>
<b>Coil length (mm)</b>	32	32
<b>Coil diameter (in)</b>	2	2

## SELECTING AN ENCLOSURE

There are several different enclosure designs for different applications. The EXACT subwoofers work very well in all the following enclosure designs. It is up to you to select the specific enclosure that will work the best for your particular application.

### Infinite Baffle

Infinite baffle is the simplest type of subwoofer installation. In this type of installation, the woofer(s) is mounted to a baffle which is then mounted to either the rear deck or back seat of the vehicle. The best results are achieved when the trunk area is virtually airtight and isolated from the passenger compartment.

#### Pros

- Excellent low frequency extension
- Excellent transient response
- Uses almost no trunk space

#### Cons

- Lower power handling
- Low to medium efficiency

### Sealed Enclosure

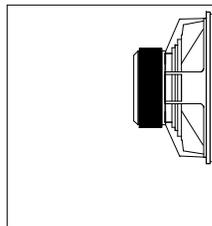
Sealed enclosures are relatively simple to build and install, as all that is required is an airtight box. The larger the sealed enclosure, the more the performance resembles that of an infinite baffle installation.

#### Pros

- Very good low frequency extension
- Very good transient response
- High power handling

#### Cons

- Medium efficiency



SEALED

### Vented Enclosure

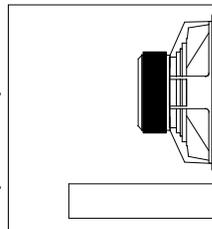
Vented enclosures use a sealed enclosure with a vent or port in the box

#### Pros

- Good low frequency extension down to the tuning frequency
- High power handling down to the tuning frequency
- Higher output than sealed enclosures

#### Cons

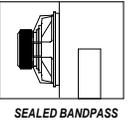
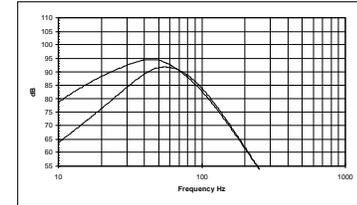
- Low power handling below the tuning frequency
- Almost no output below the tuning frequency



VENTED

### Sealed Bandpass

- Rear = .8ft<sup>3</sup> sealed
- Front = .4 ft<sup>3</sup> @ 58 Hz (4" x 17.5" port) - *Very high output, excellent for Rock or Rap.*



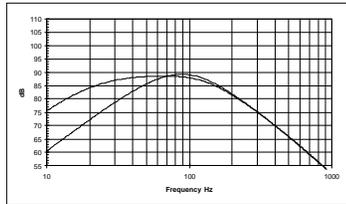
SEALED BANDPASS

**Infinite Baffle**

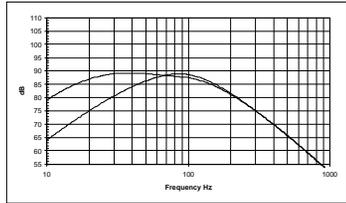
- Excellent performance for all types of music at moderate levels

**Sealed**

- .5 ft<sup>3</sup> *Good overall enclosure. Good for classical and jazz.*

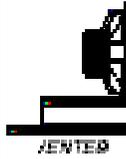
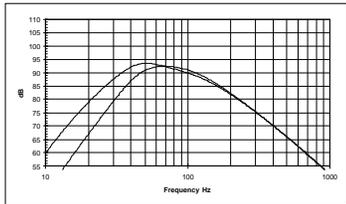


- 1.0 ft<sup>3</sup> - Excellent small enclosure. *Very good for classical and jazz. Good for rock.*

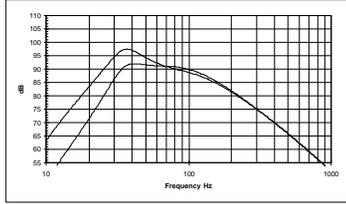


**Vented**

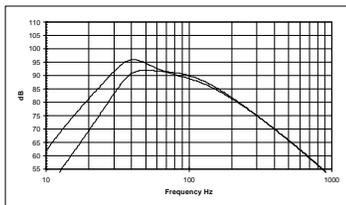
- .5 ft<sup>3</sup> @ 43Hz (3" x 14.5" port) - *Good overall enclosure.*



- 1.0 ft<sup>3</sup> @ 35 Hz (3" x 10.25" port) - *High output with good low frequency extension. Great for Rock and Rap music.*



- .75 ft<sup>3</sup> @ 38 Hz (3" x 12.00" port) - *High output with good*



which is tuned to resonate at a specific frequency.

**Sealed Bandpass Enclosure**

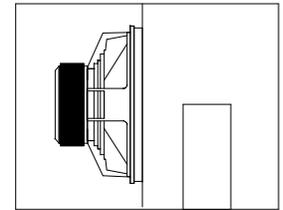
Sealed bandpass enclosures enclose both sides of the woofer(s). An airtight enclosure is built around the front and back of

*Pros*

- High power handling within the operating frequencies
- Very high output within the range of the operating frequencies

*Cons*

- Low power handling beyond the tuning frequency
- Poor to moderate transient response
- Poor low frequency extension



**SEALED BANDPASS**

chamber is ported to a specific frequency.

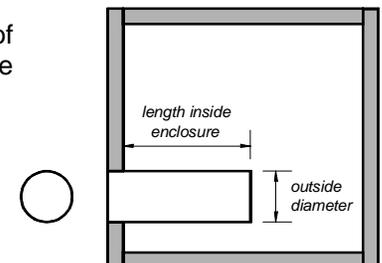
the woofer and one

**CALCULATING NET INTERNAL ENCLOSURE VOLUMES**

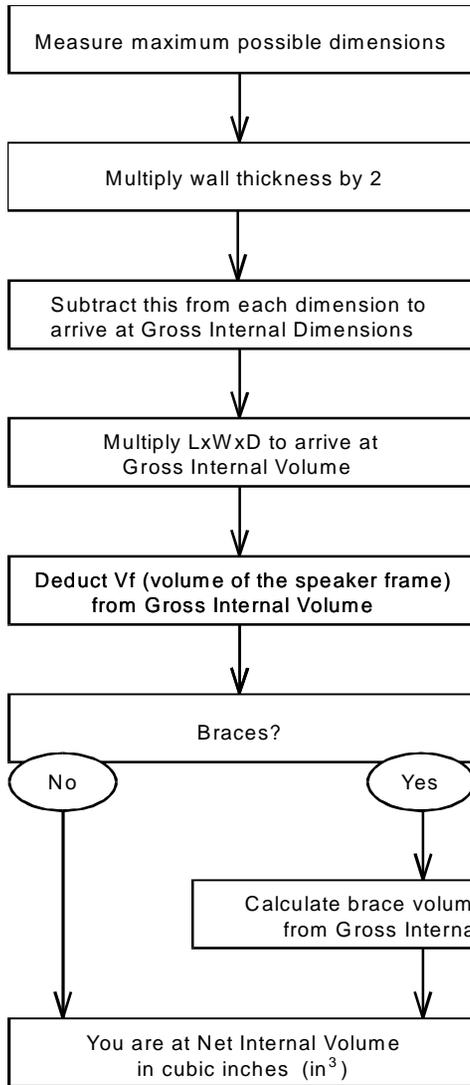
When constructing any type of enclosure, you must be aware that the outside dimensions DO NOT represent the true (Net) volume inside. Such things as woofers, ports, thickness of enclosure material, dividing walls, and any internal bracing will reduce the total amount of the actual air space available. The following worksheet has been designed to provide you with the necessary steps to accurately calculate the absolute (Net) internal volume of any given enclosure.

**Calculating Cylindrical Port Volume**

1. Measure the outside diameter of the port and divide by 2 for the radius.
2. Square the radius and multiply by 3.14 (π) to arrive at outside port area.
3. Multiply the area by the length of the port *inside* the enclosure for the port volume.



## ENCLOSURE VOLUME FLOWCHART



To convert to LITERS:  
Divide in<sup>3</sup> by 61.03

To convert to CUBIC FEET:  
Divide in<sup>3</sup> by 1728

## BUILDING THE ENCLOSURE

- Determine the dimensions of your enclosure.
- Be certain the box you have designed will fit into the location you have chosen. Sometimes making a cardboard box with the same outside dimensions is helpful.
- Use 3/4 inch thick Medium Density Fiberboard (MDF) or High Density Particleboard. It is preferable to cut the wood with a table saw to ensure straight, even joints. If a table saw is not available, a circular saw is acceptable.
- Use a "T" square to verify precise right angle gluing.
- Use a high quality wood glue and air nails or wood screws to assemble the enclosure. Elmer's® woodworker's glue and Weldwood® work well. To guarantee an airtight box, seal each inside joint with silicone sealant.
- For Sealed Enclosures, stuff the chamber with 50-75% filling (approximately 1.5 pounds per cubic foot) of fiberglass insulation or Dacron®.
- For Vented Enclosures, staple 1 inch thick fiberglass insulation or Dacron to all walls of the enclosure except the baffle to which the woofer is mounted.
- Use the supplied gasket to seal the woofer in the enclosure and eight(8) wood screws or T-nuts and bolts. Progressively tighten each of the bolts or screws to prevent warping the woofer frame.
- Use slide-on connectors to attach speaker wires. Do not solder wires to the provided terminals as this may cause damage to the factory wire connection. ~~This may also void the speaker's warranty.~~