

SP E E S

PEAVEY ELECTRONICS

1808 BWX® Driver Series

1808-8sps BWX

00560580

1808-4sps BWX

00560640

1808-8cu BWX

00560660

1808-8he BWX

00560620

The 1808 BWX driver series represents a new level of power and performance for Black Widow® loudspeakers. Power handling is increased by 40% over other comparable models, along with reduced distortion and higher overall sound quality.

This series consists of four specially designed 18" drivers, suitable for high performance sound reinforcement and musical instrument applications.

DESIGN

The 1808 series uses a new cone that is a variation on the existing Kevlar® impregnated cones used on all Black Widows. The new cone is stronger and tougher, highly water resistant, and has a specially designed deep roll accordion surround. The dustcap is also made of the same extremely strong material.

Voice coil assemblies on the new drivers use thermoset insulated aluminum or copper ribbon



wire, bonded onto an incredibly durable, heat resistant polyimide composite former. The coil wires are solderless diffusion welded to which are embedded inside the former assembly and soldered to the tinsel leads with high temperature silver solder. The solder joint is then coated with

a special thermally conductive silicone adhesive for encapsulation and heat dissipation.



The voice coil assembly is bonded to the Kevlar cone and new super tough nylon composite spider using a thermoset epoxy originally developed for attaching nose cones on ICBM missiles – truly an aerospace grade adhesive. The spider and surround are bonded to the frame with a high strength adhesive.

The magnet structure includes subtle changes to its geometry that improve power handling. While it appears the same as the standard structure and replacement baskets from the '08 series will fit on standard BW magnet structures, the improved power handling will be compromised if the standard structure is used.

These new drivers also adhere to the familiar features of Black Widow products: Cast aluminum frames, replaceable basket assemblies, Rubatex gaskets and high reliability spring-loaded terminals are all used.

APPLICATIONS

The 1808 sps, cu and he drivers are excellent choices for a wide range of sound reinforcement, high level playback, sub woofer, musical instrument and other low frequency applications.

The 1808-8sps driver is a traditional 18" PA speaker design, requiring a fairly large enclosure but producing very deep bass at high sound pressure levels. It has a warm midbass character and works in both vented and single-reflex bandpass designs.

The 1808-4sps is similar to the 8 Ohm version, but in a 4 Ohm impedance. It is an excellent choice for keyboard / bass guitar / drum monitor use.

The 1808-8he works in moderately sized enclosures, and has extremely high efficiency. Vented and properly designed dual-reflex bandpass enclosure is suitable for this driver. It is also an excellent choice for keyboard / bass guitar /

drum monitor applications.

The 1808-8cu is designed to work in small vented enclosures with surprising bass extension and very high output. Its low frequency response isn't quite as deep as the 1808-8sps, but performance in small enclosures is outstanding. The midbass balance of this driver is generally neutral.

ENCLOSURES

To assist with the growing interest in home built enclosure designs, Peavey includes complete parameter data on these drivers and also provides the user with several recommended enclosure designs. This information and much more can be found at www.peavey.com.

Strength of the completed enclosure has a great effect on the bass performance of the finished system. Box panels that aren't stiff enough will vibrate – cancelling bass produced by the woofer and creating undesired sounds of their own. If your box vibrates or you don't think the box panels are stiff enough, add more bracing.

Vents shown in the examples require standard Schedule 40 PVC pipe for vent construction. The pipe should be dadoed tightly into the back of the baffle and glued firmly in place with high quality epoxy or high strength industrial grade hot glue. Roughen up the outside of the pipe to improve the glue bond.

Be sure to allow for the displacement of the vent, bracing and woofer in your enclosure design before building it, or it will be smaller than its intended volume. This can reduce bass output and mis-tune the enclosure. Accurate enclosure volume is particularly important with bandpass designs.

Line the inside of the enclosure with polyester fiber batting such as quilt stuffing. For bandpass loosely fill the sealed side, leave the vented side empty, and

place the low Rider's magnet in the vented side for cooling. The batting material should conform to California bedding fire codes. Attach the batting with spray adhesive or staples and keep material away from the end of the vent tube where it can be pulled in by air flow. Handles, protective corners, cabinet covering, grille materials and crossovers are available through Peavey Accessories.

When building a bandpass enclosure, design a panel or door to be removable for access to the woofer. Use foam weather-strips to seal the panel along with enough screws and bracing to prevent leaks and buzzes. For single reflex designs, fill the sealed volume loosely with polyester fiber but leave the vented volume empty. Dual reflex designs leave both vented volumes empty. Place the magnet of the woofer in the vented side of a bandpass enclosure for improved cooling.

These instructions are a general guideline for design. Proper construction techniques, good planning and common sense will result in a reliable, high quality, high performance system.

Peavey in no way accepts liability for any damage, accidents or injury that may result from design, construction or operation of enclosures using this information. Due to Peavey's continuing efforts to improve products, features and specifications are subject to change without notice.

PARAMETERS

Thiele-Small parameters for Black Widow® 1808 BWX drivers follow. This data is for use in designing enclosures. Numerous software packages are available that use this data to simulate the response of the driver and enclosure together for optimum performance in any application. Specifications are subject to change without notice.

PARAMETER DEFINITIONS

Znom: The nominal impedance of the driver in Ohms.

Revc: DC resistance of the driver in ohms, also known as R_e .

Sd: The functional radiating surface area of the cone assembly in meters².

BL Efficiency of the voice coil and magnet system in Tesla meters.

Fo: Free air resonance. Also known as F_s .

Vas: Volume of air having the same compliance (springiness) as the driver's suspension.

Cms: Restorative force of the driver's suspension in micrometers/Newton.

Mms: The total mass of the moving parts of the loudspeaker, including the air load, in grams.

Qms: Resonance characteristics of the mechanical factors of the loudspeaker.

Qes: Resonance characteristics of electrical factors of the loudspeaker.

Qts: Resonance characteristics of the electrical and mechanical factors combined together.

Xmax: Distance the cone can move in one direction before the coil begins to leave the magnetic gap.

Le: Inductance of the voice coil in millihenries.

SPL: Typical sound pressure level at 1 watt, 1 meter.

No: Electrical to acoustical conversion efficiency in percent.

Vd: Air displacement of the driver from negative X_{max} to positive X_{max} .

Pmax: Maximum continuous program power in watts.

Disp: Volume displaced by the driver inside the cabinet when mounted on its rear flange.

SUGGESTED ENCLOSURES

The most typical enclosure for these drivers will be a vented system. Other suitable enclosures would include certain bandpass types. The 1808-8cu is an excellent choice for a bass horn, but the complexity of horn design prevents its discussion in this paper.

Generally, drivers with larger X_{max} values have better performance at lower frequencies, so they are a preferred choice for the sub woofer enclosures. Drivers with short X_{max} values tend to have better upper bass and midrange performance, and may be preferred for musical instrument applications.

For those who want to build their own enclosures, but don't want to go through the design process using driver parameters, Peavey provides the following optimized designs.

For 1808-4/8sps:

1. Small Vented Box

Powerful bass performance in a compact enclosure. F_3 is 45 Hz.

2. Medium Vented Box

Excellent compromise between bass extension and size. F_3 is 42 Hz.

3. Large Vented Box

Rock solid sub woofer choice for permanent installation or extremely low bass. F_3 is 37 Hz.

4. Single Reflex Bandpass

Special enclosures design that uses the enclosure as an acoustic filter for shaped response. Great choice for a compact sub woofer system. Response is 43 Hz – 120 Hz

For 1808-8cu:

1. Small Vented Box

An incredibly small enclosure with outstanding bass performance for its size. F_3 is 52 Hz.

2. Medium Vented Box

Very small box with powerful bass and predictable, flat response down to an F_3 is 44 Hz.

3. Large Vented Box

A compact design with strong, flat response and bass extension to an F_3 is 39 Hz. Deep, predictable bass quality for great sub woofer performance

For 1808-8he:

1. Small Vented Box

Very high efficiency, warm midbass and good bass performance in a small enclosure. F_3 is 48 Hz.

2. Medium Vented Box

Super high efficiency in a popular enclosure size. F_3 is 43 Hz.

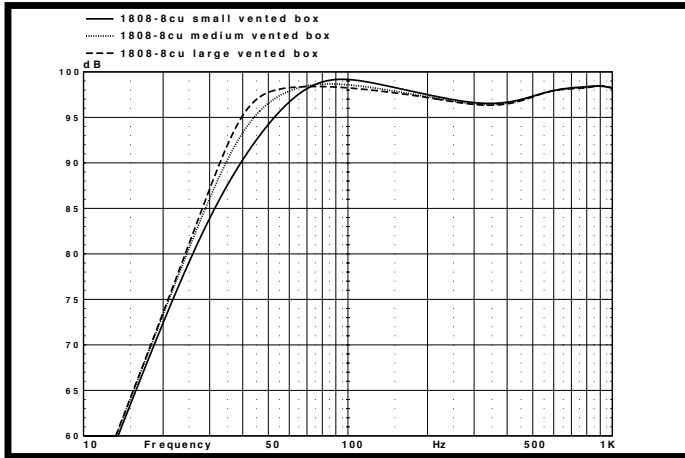
3. Large Vented Box

Super efficiency and strong bass performance. F_3 is 39 Hz.

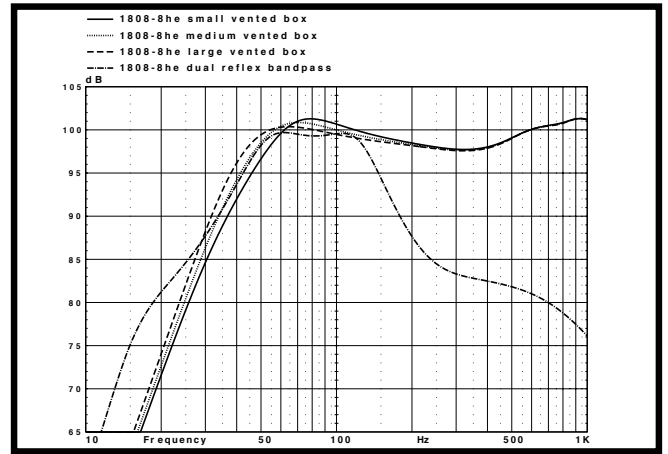
4. Dual Reflex Bandpass enclosure

Special enclosures design that uses the enclosure as an acoustic filter for shaped response. Great choice for a compact sub woofer system. Response is 45 Hz – 139 Hz

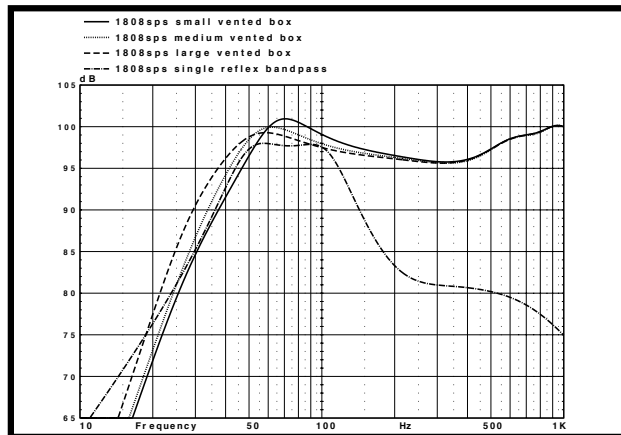
1808cu



1808he



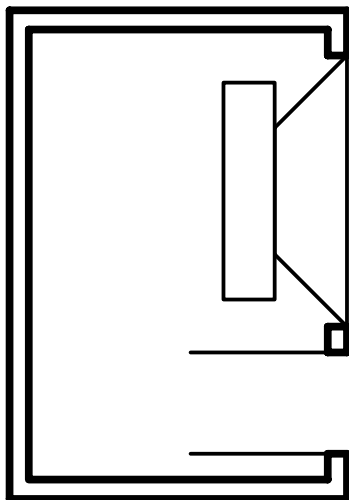
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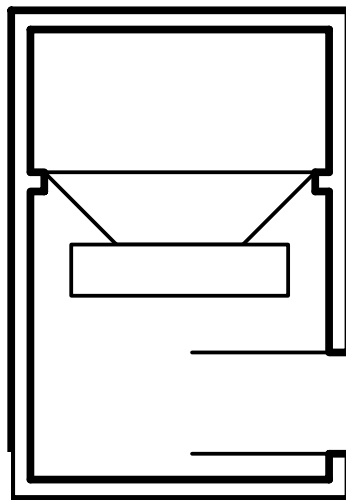
| ENCLOSURE | NET VOLUME Cubic feet/liters | VENT DIAMETER (qty) inches/mm | VENT LENGTH inches/mm | Vb BOX TUNING frequency in Hz | F3, -3 Db point in Hz |
|------------------------|--|----------------------------------|--------------------------|----------------------------------|--------------------------|
| 1808-8/4sps | | | | | |
| Small Vented Box | 7.0 / 198.2 | (2) 6" / 152 | 4.25" / 108 | 46 | 45 |
| Medium Vented Box | 9.0 / 254.9 | (2) 6" / 152 | 2.625" / 67 | 42 | 42 |
| Large Vented Box | 11.0 / 311.5 | (2) 6" / 152 | 4.50" / 114 | 36 | 37 |
| Single-Reflex Bandpass | Vented: 4.0 / 113.3 Sealed: 4.0 / 113.3 | (3) 6" / 152 | 4.375" / 111 | 76 | 43 – 120 |

| ENCLOSURE | NET VOLUME Cubic feet/liters | VENT DIAMETER (qty) inches/mm | VENT LENGTH inches/mm | Vb BOX TUNING frequency in Hz | F3, -3 Db point in Hz |
|-------------------|---------------------------------|----------------------------------|--------------------------|----------------------------------|--------------------------|
| 1808-8cu | | | | | |
| Small Vented Box | 3.5 / 99.1 | (1) 6" / 152 | 6.375" / 162 | 42 | 52 |
| Medium Vented Box | 5.0 / 141.6 | (2) 6" / 152 | 11.375" / 289 | 41 | 44 |
| Large Vented Box | 6.5 / 184.0 | (2) 6" / 152 | 8.25" / 210 | 40 | 39 |

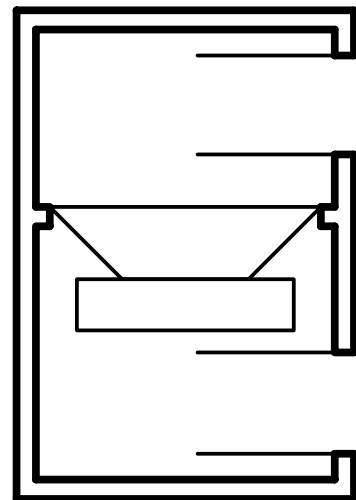
| ENCLOSURE | NET VOLUME Cubic feet/liters | VENT DIAMETER (qty) inches/mm | VENT LENGTH inches/mm | Vb BOX TUNING frequency in Hz | F3, -3 Db point in Hz |
|-----------------------------|---|----------------------------------|---------------------------|----------------------------------|--------------------------|
| 1808-8he | | | | | |
| Small Vented Box | 5.0 / 141.6 | (2) 6" / 152 | 7.50" / 191 | 47 | 48 |
| Medium Vented Box | 6.5 / 184.0 | (2) 6" / 152 | 5.875" / 149 | 44 | 43 |
| Large Vented Box | 8.0 / 226.6 | (2) 6" / 152 | 5.125" / 130 | 41 | 39 |
| Dual-Reflex Bandpass box | Side A - 5.0 / 141.6 Side B - 2.5 / 70.8 | (1) 6" / 152 (2) 6" / 152 | 16.0" / 406 2.25" / 57 | 27 90 | 45 – 139 |



Vented



Single Reflex Bandpass

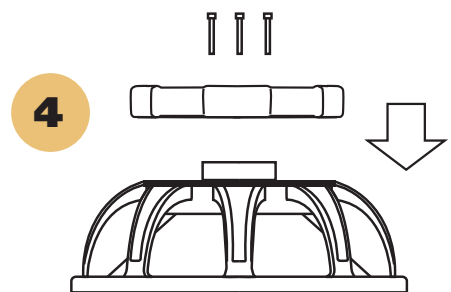
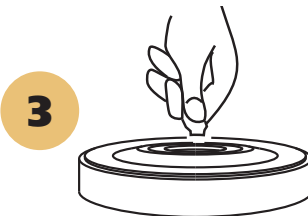
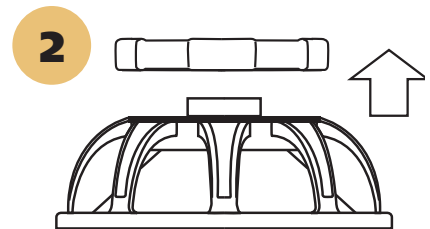
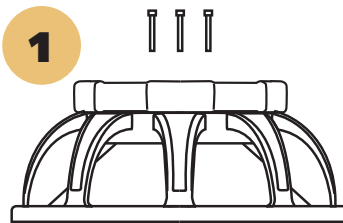


Dual Reflex Bandpass

| SPECIFICATIONS | | | | |
|---------------------|------------------|------------------|------------------|------------------|
| MODEL | 1808-8 SPS BWX | 1808-4 SPS BWX | 1808-8 CU BWX | 1808-8 HE BWX |
| DIAMETER | 18" | 18" | 18" | 18" |
| IMPEDANCE | 8 Ohms | 4 Ohms | 8 Ohms | 8 Ohms |
| POWER CAPACITY | 2000W peak | 2000W peak | 2000W peak | 2000 W peak |
| | 1000 W program | 1000 W program | 1000 W program | 1000 W program |
| | 500 W continuous | 500 W continuous | 500 W continuous | 500 W continuous |
| SENSITIVITY | 97.5 dB/1W 1m | 97.5 dB/1W 1m | 97.7 dB/1W 1m | 97.5 dB/1W 1m |
| USABLE FREQ. RANGE | 35 Hz - 1 kHz | 35 Hz - 1 kHz | 35 Hz - 1 kHz | 35 Hz - 1 kHz |
| VOICE COIL DIAMETER | 4.0"/100mm | 4.0"/100mm | 4.0"/100mm | 4.0"/100mm |
| NET WEIGHT | 18 lbs. / 8.2 kg | 18 lbs. / 8.2 kg | 18 lbs. / 8.2 kg | 18 lbs. / 8.2 kg |
| Znom (ohms) | 8 | 4 | 8 | 8 |
| Revc (ohms) | 6.71 | 3.47 | 5.93 | 5.10 |
| Sd (square meters) | 0.124 | 0.124 | 0.124 | 0.124 |
| BL (T/M) | 16.26 | 13.94 | 23.12 | 17.77 |
| Fo (Hz) | 34.4 | 38.9 | 35.1 | 39.9 |
| Vas (liters) | 368.0 | 311.7 | 312.7 | 281.5 |
| Cms (uM/N) | 169.4 | 143.4 | 143.9 | 129.6 |
| Mms (gm) | 106.70 | 116.60 | 143.20 | 122.60 |
| Qms | 7.55 | 10.22 | 9.93 | 9.95 |
| Qes | 0.637 | 0.509 | 0.350 | 0.497 |
| Qts | 0.587 | 0.485 | 0.338 | 0.473 |
| Xmax (mm) | 4.6 | 2.0 | 4.6 | 2.0 |
| Le (mH) | 0.38 | 0.16 | 0.66 | 0.32 |
| SPL (1W 1m) | 96.7 | 97.5 | 97.7 | 97.5 |
| No (%) | 2.94 | 3.50 | 3.73 | 3.50 |
| Vd (cu in/ml) | 69.4 / 1138 | 29.5 / 483 | 69.4 / 1138 | 29.5 / 483 |
| Pmax (Watts pgm) | 1000 | 1000 | 1000 | 1000 |
| Disp. (cu. in /ml) | 228 / 3737 | 228 / 3737 | 228 / 3737 | 228 / 3737 |

Peavey BWX[®] speakers

feature convenient field-replaceable baskets. Replaceable baskets eliminate the need for re-coning speakers and the frustration and delays associated with the re-coning process. It only takes a few minutes to replace a basket and you are back in business. It just can't get any easier than the four steps outlined here.



Baskets are replaced in four easy steps:

- 1** Remove three screws on back of magnet structure.
- 2** Lift the magnet structure off the basket frame.
- 3** Clean the voice coil "gap".
- 4** Align screw holes, lower structure into place on new basket frame, insert screws and tighten.

ONE YEAR LIMITED WARRANTY

NOTE: For details, refer to the warranty statement. Copies of this statement may be obtained online at www.peavey.com.



Features and specifications subject to change without notice.

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