

# SP E E S

PEAVEY ELECTRONICS

## **Black Widow® BWX™ Weather Resistant Woofers**

**1808-8 SPS BWX WR - 03609660**

**1508-8 SPS BWX WR - 03609650**

**1208-8 SPS BWX WR - 03609640**

**1008-8 HE BWX WR - 03609800**

The revolutionary weather resistant BWX WR series of woofers have been designed to perform at peak levels in outdoor environments.

The series includes 10", 12", 15" and 18" models with 8 ohm impedance.

### **DESIGN**

The BWX series uses a cone that is a variation on the existing Kevlar® impregnated cones used on all Black Widows. This cone is stronger and tougher, highly weather resistant, and has a specially designed surround. The dust cap is also made of the same extremely strong material.

Voice coil assemblies on the weather resistant drivers use the 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 high conductivity OFHC copper foil leads, 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 weather resistant cone and super tough nylon composite spider using a thermoset epoxy originally developed for attaching nose cones to ICBM missiles – truly an aerospace grade adhesive. The spider and surround



are bonded to the frame with a high strength toughened adhesive.

For best performance results use BWX magnet structures. The BWX WR series replacement baskets will fit on standard BW magnet structures, however the optimal power handling capacity will be compromised.

These weather resistant drivers 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 weather resistant drivers are excellent choices for a wide range of sound reinforcement, high level playback, subwoofer, and monitor applications.

The 1508 HE BWX WR driver is best used as the bottom end of a full range enclosure. It has very high efficiency for superior output in the mid-bass and mid-range.

The 1208 SPS BWX WR works well in sealed or vented enclosure designs, and its smooth, extended frequency response makes it an excellent mid-range performer.

Because the 1208 SPS BWX WR low frequency output is limited, it should be used along with a subwoofer when response below 60 Hz is needed. The best application for the 1208 SPS BWX WR is in compact enclosures and very high quality mid-bass/mid-range reproduction at high sound pressure levels.

The 15" drivers can work with crossover points as high as 2.0 kHz but work best below 1.5 kHz. The 12" drivers are usable to 3.5 kHz but perform best below 2.5 kHz.

## ENCLOSURES

To assist with the growing interest in home built enclosure designs, Peavey provides complete parameter data on these drivers, as well as several recommended enclosures for each model. This information and much more can be found at [www.peavey.com](http://www.peavey.com).

The 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, canceling 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 used 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. Rough up the outside of the pipe to improve the glue bond.

Be sure to account for the displacement of the vent, bracing, horn (if used) and woofer in your enclosure before building it or it will be smaller than its intended volume. This can reduce bass output and mis-tune the enclosure.

Line the inside of the enclosure with polyester fiber batting such as quilt stuffing. 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. Fill the sealed volume loosely with polyester fiber, but leave the vented volume empty. Place the magnet of the woofer in the vented side for improved cooling.

Peavey does not supply hardware

required for the manufacturing of flying systems, and recommends that builders should not suspend or fly any enclosure not certified for such applications.

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 construction or use of enclosure using this information.

Due to Peavey's continuing efforts to improve its products, features and specifications are subject to change without notice.

## PARAMETERS

Thiele-Small parameters for Black Widow® weather resistant 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.

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## PARAMETER DEFINITIONS

**Znom:** The nominal impedance of the driver in Ohms.

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

**Sd:** The functional radiating surface area of the cone assembly in meters<sup>2</sup>.

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

**Fo:** Free air resonance. Also known as Fs.

**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 Xmax to positive Xmax.

**Pmax:** Maximum continuous program power in watts.

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

## SPECIFICATIONS

Model Name:	1808-8 SPS BWX WR	1508-8 SPS BWX WR	1208-8 SPS BWX WR	1008-8 HE BWX WR
Part Number	03609660	03609650	03609640	03609800
Size: inches/mm	18" / 457.2 mm nominal Frame OD 18.2" / 462.28 mm Bolt circle 17.375" 441.325 mm, 8 holes Cutout diameter 16.750" / 425.45 mm Depth 5.75" / 146.05 mm	15" / 381 mm nominal Frame OD 15.250" / 387.35 mm Bolt circle 14.561" 370 mm, 8 holes Cutout diameter 14.050" / 356.87 mm Depth 5.1875" / 131.763 mm	12" / 304.8 mm nominal Frame OD 12.250" / 311.15 mm Bolt Circle 11.625" 295.275 mm, 8 holes Cutout diameter 11.063" / 281 mm Depth 3.8125" / 96.8375 mm	10" / 254 mm nominal Frame OD 10.250" / 260.35 mm Bolt Circle 9.615" 244.221 mm, 8 holes Cutout diameter 9.115" / 231.521 mm Depth 3.3750" / 85.725 mm
Impedance:	8 Ohms	8 Ohms	8 Ohms	8 Ohms
Power Capacity:	2000 W peak 1000 W program 500 W continuous per AES 2-1984 50 Hz - 500 Hz	2000 W peak 1000 W program 500 W continuous per AES 2-1984 50 Hz - 500 Hz	2000 W peak 1000 W program 500 W continuous per AES 2-1984 50 Hz - 500 Hz	2000 W peak 1000 W program 500 W continuous per AES 2-1984 50 Hz - 500 Hz
Sensitivity:	97.7 dB 1 Watt/ 1 meter	96.7 dB 1 Watt/ 1 meter	96.9 dB 1 Watt/ 1 meter	96.5 dB 1 Watt/ 1 meter
Usable Frequency Range:	35 Hz - 1 kHz	40 Hz - 2 kHz	50 Hz - 3.5 kHz	60 Hz - 4 kHz
Cone:	Water resistant, triple polymer-infused composite	Water resistant, triple polymer-infused composite	Water resistant, triple polymer-infused composite	Water resistant, triple polymer-infused composite
Voice Coil Diameter:	4.0" 100 mm	4.0" 100 mm	4.0" 100 mm	4.0" 100 mm
Voice Coil Material:	Aluminum ribbon wire Polyimide-impregnated fiberglass former Nomex® stiffener Solderless diffusion welded OFHC copper leads	Aluminum ribbon wire Polyimide-impregnated fiberglass former Nomex® stiffener Solderless diffusion welded OFHC copper leads	Aluminum ribbon wire Polyimide-impregnated fiberglass former Nomex® stiffener Solderless diffusion welded OFHC copper leads	Aluminum ribbon wire Polyimide-impregnate fiberglass former Nomex® stiffener Solderless diffusion welded OFHC copper leads
Net Weight:	18 lbs. / 7.7 kg	17 lbs. / 7.7 kg	16 lbs. / 7.3 kg	14.7 lbs. / 6.7 kg

## DRIVER PARAMETERS

Xnom (Ohms)	8	8	8	8
Revc (Ohms)	7.27	5.82	5.43	5.38
Sd (M2)	0.134	0.086	0.059	0.036
BL (TM)	19.16	18.05	16.96	16.55
Vas (liters)	200.3	161.9	49.91	16.7
Fo Hz.	40.4	41.2	60.2	79.7
Cms (uM/N)	78.8	155.4	102.51	93.5
Mms (gm)	149.21	96.61	58.71	42.69
Qms	9.76	9.93	10.32	10.21
Qes	0.865	0.447	0.479	0.421
Qts	0.794	0.428	0.458	0.404
Xmax (mm)	4.7	4.7	4.7	2.2
Le (mH)	0.61	0.62	0.57	0.46
SPL (1W 1m)	95.6	96	96.5	95
no (%)	2.26	2.44	2.77	1.96
Vd (milliliters)	38.4/629.8	48.1/789	16.9 / 277.3	7.7 / 127
Pmax (w. pgm.)	1000	1000	1000	1000
Disp in 3 / ml	228 / 3737	197 / 3229	109 / 1797	143 / 2345

## **SUGGESTED ENCLOSURES**

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 8 SPS WR:**

#### **1. Small Vented Box**

Powerful bass performance in a compact enclosure. F3 is 45 Hz.

#### **2. Medium Vented Box**

Excellent compromise between bass extension and size. F3 is 42 Hz.

#### **3. Large Vented Box**

Rock solid sub woofer choice for permanent installation or extremely low bass. F3 is 37 Hz.

#### **4. Single Reflex Bandpass**

Special enclosure 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 1508 8 SPS WR:**

#### **1. Small Vented Box**

Excellent performance of compact, general purpose use. Warm mid-bass response. F3 is 51 Hz.

#### **2. Medium Vented Box**

Terrific compromise of bass performance and enclosure size. Warm mid-bass response. F3 is 45 Hz.

#### **3. Large Vented Box**

Big box, big bass! Great as a subwoofer or the bottom end of a large multi-way enclosure design. F3 is 41 Hz.

#### **4. Single Reflex Bandpass enclosure**

Special enclosure design that uses the enclosure as an acoustic filter for shaped response. Great choice for a compact subwoofer system. Response is 48 Hz – 138 Hz.

#### **5. Sealed Box**

May be preferred for stage monitors to control boominess and low frequency feedback on stage. F3 is 73 Hz.

### **For 1208 8 SPS WR:**

#### **1. Small Vented Box**

Very small system with excellent voice range performance. Great choice as the mid-range of a sub/satellite system. F3 is 79 Hz. Also good for use in a stage monitor.

#### **2. Sealed Box**

Excellent choice for a dedicated mid-bass/mid-range in a multiway system, or stage monitor. F3 is 105Hz.

#### **3. Large Vented Box**

Still not all that large, with very usable bass response. Great for a compact, 2-way box. F3 is 61 Hz.

### **For 1008 8 HE WR:**

#### **1. Small Vented Enclosure**

Very small enclosure with super efficiency – works well with a subwoofer.

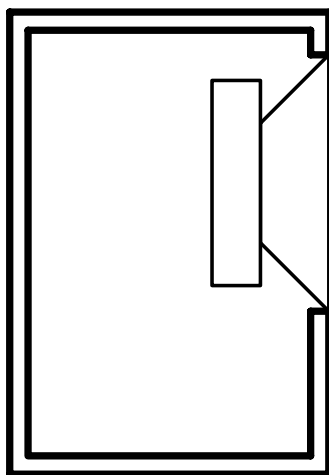
#### **2. Medium Vented Enclosure**

Small system with high efficiency, good voice range and limited bass response – great with a sub.

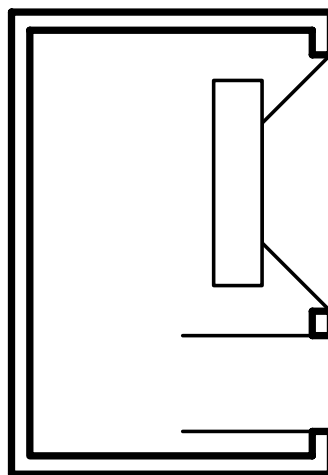
#### **3. Large Vented Enclosure**

Usable bass performance and high efficiency from a compact enclosure – also excellent with a subwoofer.

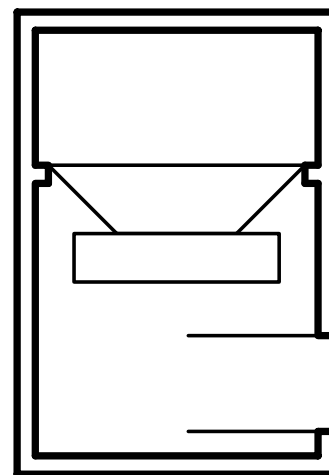
ENCLOSURE	NET VOLUME Cubic feet/liters	VENT DIAMETER (qty) inches/mm	VENT LENGTH inches/mm	Vb BOX TUNING frequency in Hz	F3, -3 Db point in Hz
<b>1808-8 SPS WR</b>					
Small vented box	7.0 / 198.2	(2) 6" / 152	4 1/4" / 108	46	45
Medium vented box	9.0 / 254.9	(2) 6" / 152	2 5/8" / 67	42	42
Large vented box	11.0 / 311.5	(2) 6" / 152	4 1/2" / 114	36	37
Single-reflex bandpass box	Vented 4.0 / 111.3 Sealed 4.0 / 111.3	(3) 6" / 152	4 3/8" / 111	76	43 - 120
<b>1508-8 SPS WR</b>					
Sealed box	1.5 / 42.5	n/a	n/a	87 (resonance)	72
Small vented box	3.0 / 84.9	(2) 4" / 102	6 7/8" / 175	45	51
Medium vented box	4.0 / 113.3	(2) 4" / 102	5" / 127	43	45
Large vented box	5.0 / 141.6	(2) 4" / 102	4 3/8" / 111	40	41
Single-reflex bandpass box	Vented 1.75 / 49.6 Sealed 2.25 / 63.7	(2) 6" / 152	7 3/8" / 187	83	48 - 138
<b>1208-8 SPS WR</b>					
Sealed box	0.65 / 18.4	n/a	n/a	106 (resonance)	105
Small vented box	0.8 / 22.6	(1) 4" / 102	4 1/2" / 114	70	79
Large vented box	1.4 / 39.6	(2) 4" / 102	1 7/8"	65	61
<b>1008-8 HE WR</b>					
Small vented box	0.30 / 8.5	(2) 2" / 51	5 1/2" / 138	85	90
Medium vented box	0.45 / 12.7	(2) 2" / 51	3 3/4" / 95	80	76
Large vented box	0.60 / 17	(2) 2" / 51	2 7/8" / 73	75	69



SEALED



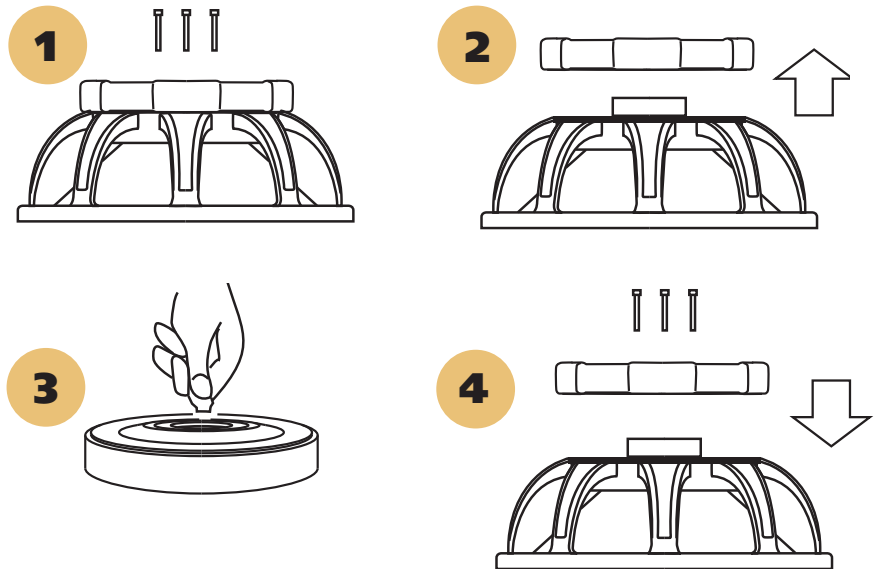
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SINGLE REFLEX BANDPATH

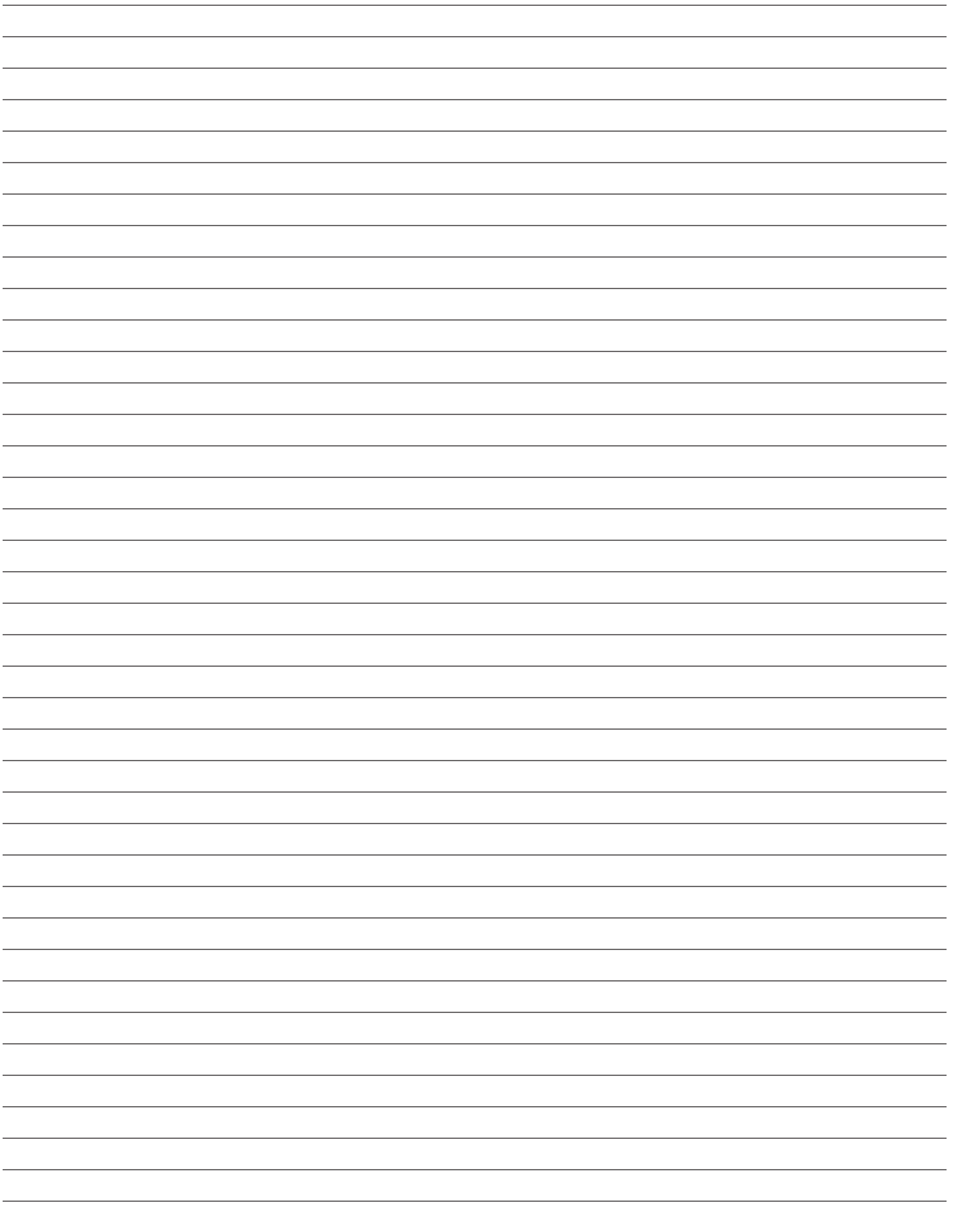
# Peavey BWX<sup>®</sup> WR Speakers

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](http://www.peavey.com).

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*Features and specifications are subject to change without notice.*

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Logo referenced in Directive 2002/96/EC Annex IV  
(OJ(L)37/38,13.02.03 and defined in EN 50419: 2005

The bar is the symbol for marking of new waste and  
is applied only to equipment manufactured after  
13 August 2005