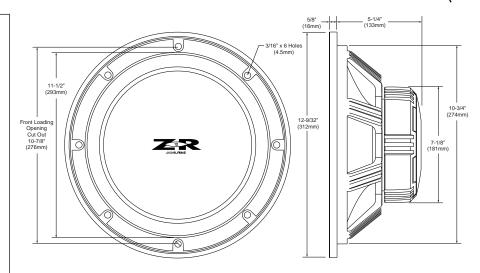
SWR-304E

12" ZR Series Subwoofer (4 ohm)

FEATURES

General

Large Strontium Ferrite Magnet
Brass Voice Coil Bobbin
3" Diameter Voice Coil
OFC Edge Wound Voice Coil
One-Piece Inverted Dome Cone
Parabolic Cone
Epoxy-Coated Non-Pressed Pulp Cone
Dual Spider Suspension
Diecast Aluminum Magnet Heat Sink
Extended and Vented Pole
Bumped Backplate
Soft Clip Design
Rubber Surround
Aluminum Diecast Frame
Large Gold Plated Screw Terminals



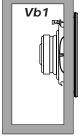
SPECIFICATIONS

Power Handling Power Handling Capacity(RMS) Power Handling Capacity(Peak) Recommended Amplifier Output	1000W RMS
Thiel Small Parameters Impedance(Nominal) DC Resistance Free Air Resononce(Fs) Equivalent Suspension Stiffness(Vas) Mechanical Q Electrical Q Total Loudspeaker Q(Qts) Linear Excursion(X linear) Maximum Excursion(X peak)	
Diaphragm Material Diaphragm Shape Cone Area Surround Material Magnet Material Magnet Weight Voice Coil Diameter Mounting Depth(top mount) Mounting Depth(bottom mount) Cutout Diameter Driver Physical Volume(top mount) Driver Physical Volume(bottom mount)	Inverted Dome 511sq.cm.(79.2sq.in.) Rubber Strontium Ferrite 1.5kg(52oz.) 75mm(3 in.) 133mm(5-1/4in.) 149mm(5-7/8in.) 275mm(10-13/16in.) 3.2liters(.11cu.ft.)

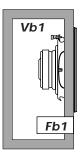
SWR-304E

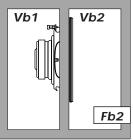
12" ZR Series Subwoofer (4 ohm)

Vehicle	Sound	Box	Vb1(Unfilled)	Vb1(Filled)	F(B1)	Q(tc)	Vb2	Fb2	Vent Description
Size	Туре	Type	(cu ft)	Cu. Ft.	(Hz)	-	(cu ft)	(Hz)	
		Sealed	0.89	0.76	-	0.67	-	-	-
	Low & Tight	Vented	-	-	-	-	-	-	Not Recommended
Compact		Bandpass	1.17	0.99	-	0.6	1	72	two 3" ports, each 4.25" long
		Closed	0.64	0.55	-	0.78	-	-	-
6' to 7.5'	Balanced	Vented	0.64	0.59	36	0.78	-	-	one 2" port, 10.75" long
87 Hz		Bandpass	0.89	0.76	-	0.67	0.9	77	two 3" ports, each 4.0" long
		Sealed	0.49	0.43	-	0.9	-	-	-
	Loud &Boomy	Vented	0.54	0.50	39	0.85	-	-	one 2" port, 11.5" long
		Bandpass	0.70	0.60	-	0.75	0.8	84	two 3" ports, each 3.75" long
		Sealed	0.96	0.82	-	0.65	-	-	-
	Low & Tight	Vented	1.17	1.07	30	0.6	-	-	one 2" port, 7.5" long
		Bandpass	1.41	1.19	-	0.56	0.92	65	two 3" ports, each 6.75" long
Mid Size		Closed	0.76	0.65	-	0.72	-	-	-
	Balanced	Vented	0.86	0.79	33	0.68	-	-	one 2" port, 9.0" long
7.5' to 10'		Bandpass	0.96	0.82	-	0.65	0.82	71	two 3" ports, each 6.25" long
66 Hz		Sealed	0.63	0.54	-	0.79	-	-	-
	Loud &Boomy	Vented	0.70	0.64	35	0.75	-	-	one 2" port, 10.5" long
		Bandpass	0.70	0.60	-	0.75	0.75	78	two 3" ports, each 5.25" long
		Sealed	1.03	0.88	-	0.63	-	-	-
	Low & Tight	Vented	1.28	1.17	34	0.58	-	-	one 3" port, 12.0" long
Large		Bandpass	1.48	1.25	-	0.55	0.8	60	two 3" ports, each 10.25" long
		Sealed	-	=	-	-	-	-	Not Recommended
10' to 12'	Balanced	Vented	1.07	0.99	38	0.62	-	-	one 3" port, 11.5" long
48 Hz		Bandpass	1.07	0.91	-	0.62	0.69	65	two 3" ports, each 10.0" long
		Sealed	-	=	-	-	-	-	Not Recommended
	Loud &Boomy	Vented	0.89	0.82	42	0.67	-	-	one 3" port, 11.75" long
		Bandpass	0.81	0.69	-	0.7	0.6	71	two 3" ports, each 9.5" long



Sealed





Vented

Bandpass

Notes

Vehicle Size = Longest measurement in the vehicle

Sound Type

Low ~ Typically a real "tight" sound, Qtc near 0.505 very accurate bass Neutral ~ Good balance between "boom" and "tight". Qtc near 0.707

Loud ~ "Boom" type system. Loud but not low (Hz). Qtc near 0.9

 ${\it Qtc}$ = The total "Q" of the closed box system. The lower the Q, the smoother the bass

Vb1 (Unfilled) = "Build-to" volume. accounts for speaker and port displacement **Vb1 (Filled)** = "Build-to" volume. 20% box volume reduction when using filling

F(b1) = Tuning frequency of Vb1 (Vented Enclosures)

F(b2) = Tuning frequency of Vb2 (Bandpass enclosures)

Recommended Crossover Points.

Sealed enclosures as low as possible ~ 65 Hz or below

Vented enclosures ~ 80 Hz or below

Bandpass enclosures ~ 100 Hz or below

Enclosure Filling: In sealed boxes it is recommended to fill with acoustic fiberglass or Dacron batting in order to minimize sound reflections inside the box. Filling an enclosure can allow for approximately a 20% smaller box due to its thermodynamic capabilities. The calculated box volumes above, Vb1 (filled), have taken this reduction into consideration. Vented Enclosures: It is recommended that the interior walls of a vented enclosure be lined with 1/2" to 1" fiberglass sheeting or polyester batting. This will greatly reduce sound reflections in the enclosure. Loose filling in a vented enclosure is not recommended as it can impede air flow through the vent.

Vehicle Size: Since installing a speaker into a vehicle is like putting a box inside of another box, the calculations above take into consideration the vehicles sound properties. Just as a woofer/box combination must be matched for the best sound, so must the woofer/box and vehicle. To find out the proper size of the vehicle to use in the chart above, simply measure the longest length in the vehicle. This is typically from the left corner of the front windshield to the right corner of the rear window. Using this method will help produce consistent predictable results, with the desired bass performance.

Box Construction: Use 3/4" to 1" wood, preferably MDF (Medium Density Fiberboard), or Marine-Grade Plywood. Glue and nail, or screw the enclosure together. Seal all potential air leaks. A box with air leaks creates allot of noise and can cause speaker damage. Round the edges of the ports to reduce port noise (whistling), and keep the openings of the ports free from obstructions.