

ARC AUDIO Black Series 12D2 Woofer

REVIEW

BY GARRY SPRINGGAY

When discussing the best high performance brands for any product, there are always a few that are considered by purists to be at the top, year in and year out. When it comes to cars, you might mention Ferrari, Porsche, Aston Martin or McLaren. If the discussion is about top wristwatches, names like Rolex, Tag Heuer, Omega or Breitling come to mind. When it comes to car audio, one of the names frequently associated with high performance and purist values is Arc Audio. In this review, we're looking at one of their best woofers - the Black Series 12D2 - which is a dual 2 ohm woofer. A dual 4 ohm version is also available. With a retail price of \$459 (USD), the 12-inch Black Series represents the highest performance woofer the company offers. This should be good.



arcaudio.com

FEATURES

A casual observer may not give the woofer a second look because of its understated and somewhat reserved cosmetics. The front the woofer is basically a matte black color, from the injection-molded inverted dust cap with matte black raised logo, to the high pressure composite cone [which is constructed of a blend of treated pulp and bamboo fiber] to the matte black, low shore progressive SLA rubber surround. Nothing flashy or gimmicky here - just straightforward quality components.

The woofer is constructed on a high strength cast aluminum basket, attached with adhesive and mechani-

QUICK TECH SPECS

▶ Power Handling	500 W (RMS) / 1,000 W (Peak)
▶ Frequency Range	20 Hz - 500 Hz
▶ Sensitivity	85.8 dB/SPL @ 1.0 W (2.0 V @ 4 ohms)
▶ Nominal Impedance	(2) 2 ohm coils



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cal fasteners to a double stacked 7-inch magnet. The motor drives a precision-wound, high temperature copper voice coil, with a 3-inch diameter. The former for the coil is interesting; unlike the typical aluminum or Kapton fare, this is made of non-conductive fiberglass. Control and compliance comes from a single progressive type pure Nomex spider with woven-in tinsel leads. The woofer gets its electrical input via heavy duty spring loaded terminals which accept up to 8-gauge wire. A rubber gasket/trim ring is included for a clean look and better woofer-to-baffle-board sealing.

The Black Series 12D2 is conservatively rated for 500 watts of continuous power, and each driver must undergo a 12-stage quality control process before it is packaged for shipment.

LISTENING

Whenever I evaluate a woofer like this, the first thing I do is exercise it to let the mechanical components "break-in" and loosen up a bit. When that's done, I let the woofer sit overnight and prepare an appropriate enclosure for my listening session. In this case, I mount the 12D2 in a 1.2-cubic-foot sealed enclosure with the 2 ohm coils wired in series. Setting my system with a fourth-order low-pass crossover at 100 Hz and plenty of power on tap, I am ready to listen. The first track is Take the A-Train from a DMP Big Band disc called "Carved in Stone." One of my favorite parts of this recording is the stand up bass that sounds like it's positioned front and center. The instrument is played by the amazing Lynn Seaton and has plenty of natural resonance and overtones. Playback





of this technical track proves to be no problem for the Black woofer, and the output sounds smooth and natural without any loss of detail. Another favorite track for woofer sound-quality is Donald Fagen's classic Ruby Baby. This track has an exceptionally well-recorded kick drum, synthesizer and bass guitar. Once again, the Arc Audio woofer sounds great, with very good authority and deep, clean bass.

So it sounds good, but will it play loud? A few tunes from Nelly, Nine Inch Nails, and Michael Jackson prove that it will indeed hammer out heavy bass notes without complaint – and sound good doing it. I listen to it for another hour or so and come away very pleased with the sonic capabilities of the woofer, regardless of the type of music selected or the volume level used.

ON THE BENCH

After letting the woofer cool and normalize overnight once again, I remove it from the enclosure, fire up my Klippel analyzer and measure the Thiele-Small parameters. Comparing my results to the published numbers, I find them to be well within the usual tolerances for woofer specifications. The following parameters are measured on the sample I tested, with the voice coils in series.

THIELE-SMALL PARAMETERS
MODEL = ARC AUDIO BLACK 12D2

Coils in Series

Electrical Parameters

- ▶ Re = 3.79 ohm
- ▶ Le = 4.079 mH
- ▶ L2 = 4.298 mH
- ▶ R2 = 5.76 ohm
- ▶ Cmes = 742 μF
- ▶ Lces = 69.37 mH
- ▶ Res = 51.48 ohm
- ▶ fs = 22.2 Hz

Mechanical Parameters

- ▶ Mms = 216.321 g
- ▶ Mmd = 204.042 g
- ▶ Rms = 5.664 kg/s
- ▶ Cms = 0.238 mm/N
- ▶ Kms = 4.20 N/mm
- ▶ Bl = 17.076 N/A

Loss factors

- ▶ Qtp = 0.370
- ▶ Qms = 5.323
- ▶ Qes = 0.391
- ▶ Qts = 0.365

Mechanical Parameters

- ▶ Vas = 81.042 l
- ▶ n0 = 0.217 %
- ▶ Lnom = 85.81 dB
- ▶ Sd = 490.60 cm²
- ▶ EBP = 56.8



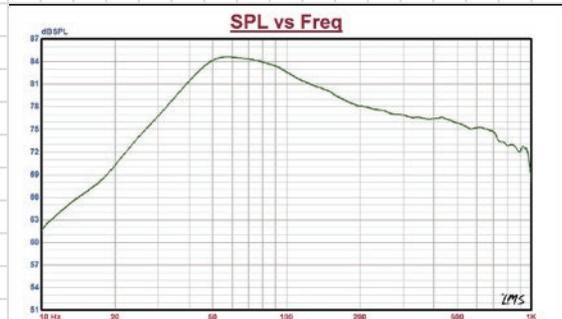
...THE OUTPUT SOUNDS SMOOTH AND NATURAL WITHOUT ANY LOSS OF DETAIL."

CONCLUSION

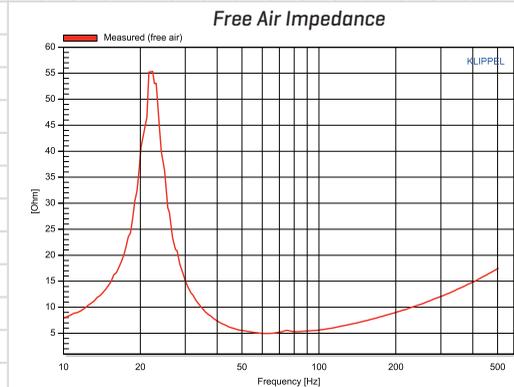
The Arc Audio Black Series 12D2 continues the high performance tradition the brand has become known for. This is a woofer that can easily satisfy (if not delight) a wide range of listeners. From SQ tweaks to parking lot SPL bass heads, the Black Series will provide the type of performance you're looking for, and that by itself puts in some fairly rare company. Couple that with great build quality and a reasonable price for a woofer of this quality and performance, and you've got a pretty compelling reason to check one out at your local Arc Audio dealer. **PAS**



For additional photos, visit pasmag.com/ArcAudioBS12D2



Nearfield Frequency Response in Recommended Sealed Enclosure



Free Air Impedance

System Impedance with Woofer in 1.25-cubic-foot Sealed Enclosure

