

SPECIFICATIONS

WF120BD11/12/13/14 4¾" die cast, Kevlar/Carbon fiber cone mid/woofers, 4/8 ohm



The 4¾" transducers WF120BD11 (round, 4 ohm), WF120BD13 (truncated, 4 ohm), WF120BD12 (round, 8 ohm), and WF120BD14 (truncated, 8 ohm) were designed as high performance bass and midrange units for compact monitors and high-end hi-fi speakers.

FEATURES

- New cone of interwoven Kevlar/Carbon fibers, a new reference for the combination of low mass, rigidity, and damping - highly beneficial properties for midrange reproduction
- Balanced Drive motor structure for optimal drive force symmetry resulting in largely reduced even order harmonic distortion
- Vented, inverted center dome for reduced compression
- Copper cap on center pole to reduce voice coil inductance and to minimize variations in voice coil inductance as a function of voice coil position
- Rigid die cast alu chassis with extensive venting for lower air flow speed reducing audible distortion
- Vented voice coil former for reduced distortion and compression
- Heavy-duty black fiber glass voice coil former to reduce mechanical losses resulting in better dynamic performance and low-level details
- Large motor with 1.25" voice coil diameter for better control and power handling
- Built-in alu field-stabilizing ring for reduced distortion at high levels
- Low-loss suspension (high Qm) for better reproduction of details and dynamics
- Black motor parts for better heat transfer to the surrounding air
- Conex spider for better durability under extreme conditions
- Gold plated terminals to ensure long-term trouble free connection



Left photo: Round frame version. Right: Truncated frame version

NOMINAL SPECIFICATIONS

Notes	Parameter	WF120BD11/13		WF120BD12/14		Unit
		Before burn-in	After burn-in	Before burn-in	After burn-in	
	Nominal size	4¾"		4¾"		[inch.]
	Nominal impedance	4		8		[ohm]
	Recommended max. upper frequency limit	4		4		[kHz]
1, 4	Sensitivity, 2.83V/1m (average SPL in range 300 - 1,000 Hz)	88		85		[dB]
2, 4	Power handling, short term, IEC 268-5, no additional filtering					[W]
2, 4	Power handling, long term, IEC 268-5, no additional filtering					[W]
2, 4	Power handling, continuous, IEC 268-5, no additional filtering					[W]
	Effective radiating area, Sd	48		48		[cm ²]
3, 4, 6	Resonance frequency (free air, no baffle), F _s	58	56.5	59	57.5	[Hz]
	Moving mass, incl. air (free air, no baffle), M _{ms}	6.6		6.4		[g]
3, 4	Force factor, B _{xl}	4.2		5.3		[N/A]
3, 4, 6	Suspension compliance, C _{ms}	1.15	1.20	1.15	1.20	[mm/N]
3, 4, 6	Equivalent air volume, V _{as}	3.8	3.9	3.8	3.9	[lit.]
3, 4, 6	Mechanical resistance, R _{ms}	0.25	0.25	0.25	0.25	[Ns/m]
3, 4, 6	Mechanical Q, Q _{ms}	9.6	9.4	9.5	9.3	[-]
3, 4, 6	Electrical Q, Q _{es}	0.40	0.40	0.50	0.49	[-]
3, 4, 6	Total Q, Q _{ts}	0.39	0.38	0.47	0.46	[-]
4	Voice coil resistance, R _{DC}	3.0		5.9		[ohm]
5	Voice coil inductance, L _e (measured at 10 kHz)					[mH]
	Voice coil inside diameter	25		25		[mm]
	Voice coil winding height	10		10		[mm]
	Air gap height	4		4		[mm]
	Theoretical linear motor stroke, X _{max}	±3		±3		[mm]
	Magnet weight	440		440		[g]
	Total unit net weight excl. packaging	1.1		1.1		[kg]
3, 4, 5	K _{rm}					[mohm]
3, 4, 5	E _{rm}					[-]
3, 4, 5	K _{xm}					[mH]
3, 4, 5	E _{xm}					[-]

Note 1 Measured in infinite baffle.

Note 2 Tested in free air (no cabinet).

Note 3 Measured using a semi-constant current source, nominal level 2 mA.

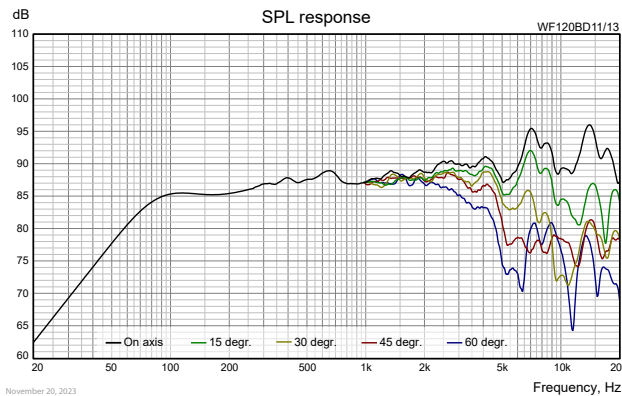
Note 4 Measured at 25 deg. C

Note 5 It is generally a rough simplification to assume that loudspeaker transducer voice coils exhibit the characteristics of an inductor. Instead it is a far more accurate approach to use the more advanced model often referred to as the "Wright empirical model", also used in LEAP-4 as the TSL model (www.linearx.com), involving parameters K_{rm}, E_{rm}, K_{xm}, and E_{xm}. This more accurate transducer model is described in a technical paper [here at our web site](#).

Note 6 After-burn-in specifications are measured at least 12 hours after exciting the transducer by a sine wave at the frequency of F_s for 2 hours at level 4/5 V_{RMS} (4/8 ohm version). The unit is not burned in before shipping.

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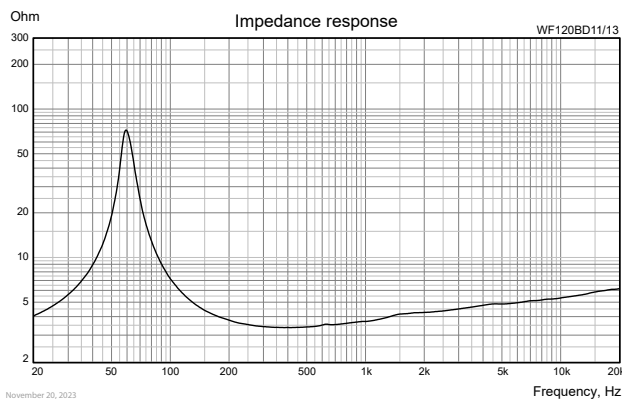
Important!
Please observe that graphs on the left side of this page and the below text files for download are actual measurements of the drivers measured in infinite baffle and without any enclosure. Measuring the drivers in a finite baffle (like the baffle of most speaker cabinets) and in any size of enclosure will lead to different response curves.



Download WF120BD11/13 on-axis SPL response as .txt file

Measuring conditions, SPL

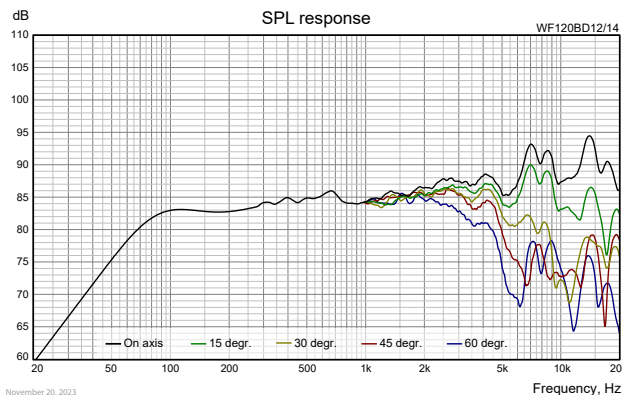
Driver mounting: Flush in infinite baffle, back side open (no cabinet)
Microphone distance: 1.0 m
Input signal: 2.83 V_{RMS} LogChirp, 64k, Hanning/2
Smoothing: 1/6 oct.



Download WF120BD11/13 Impedance response as .txt file

Measuring conditions, impedance

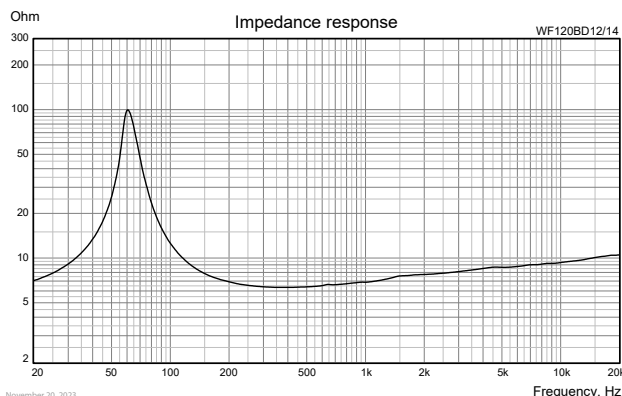
Driver mounting: Free air, no baffle, back side open (no cabinet)
Input signal: Stepped sine wave, semi-current-drive, nominal current 2 mA
Smoothing: None



Download WF120BD12/14 on-axis SPL response as .txt file

Measuring conditions, SPL

Driver mounting: Flush in infinite baffle, back side open (no cabinet)
Microphone distance: 1.0 m
Input signal: 2.83 V_{RMS} LogChirp, 64k, Hanning/2
Smoothing: 1/6 oct.



Download WF120BD12/14 Impedance response as .txt file

Measuring conditions, impedance

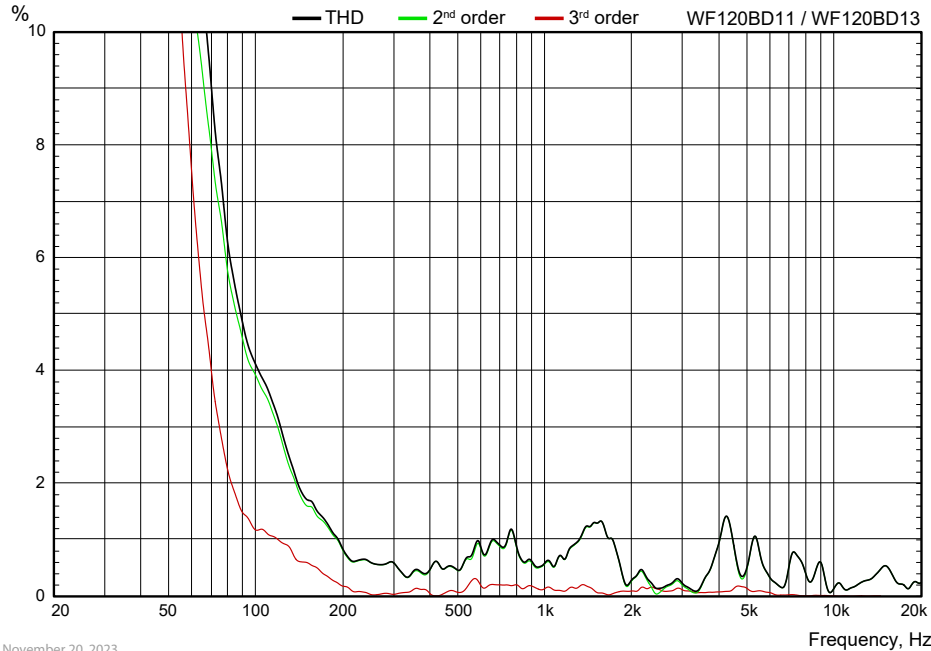
Driver mounting: Free air, no baffle, back side open (no cabinet)
Input signal: Stepped sine wave, semi-current-drive, nominal current 2 mA
Smoothing: None

SPECIFICATIONS

WF120BD11/12/13/14 4 $\frac{3}{4}$ " die cast, Kevlar/Carbon fiber cone mid/woofers, 4/8 ohm



Harmonic Distortion



November 20, 2023

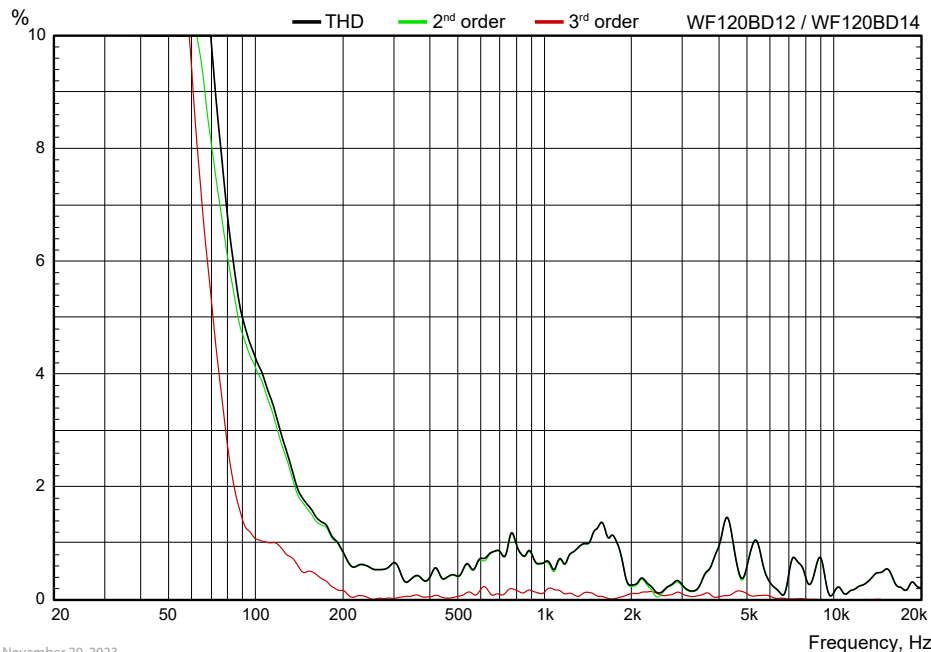
Measuring conditions, distortion

Driver mounting: 2 lit. sealed cabinet

Input voltage: 4.7 V_{RMS}

Smoothing: 1/12 oct.

Harmonic Distortion



November 20, 2023

Measuring conditions, distortion

Driver mounting: 2 lit. sealed cabinet

Input voltage: 6.3 V_{RMS}

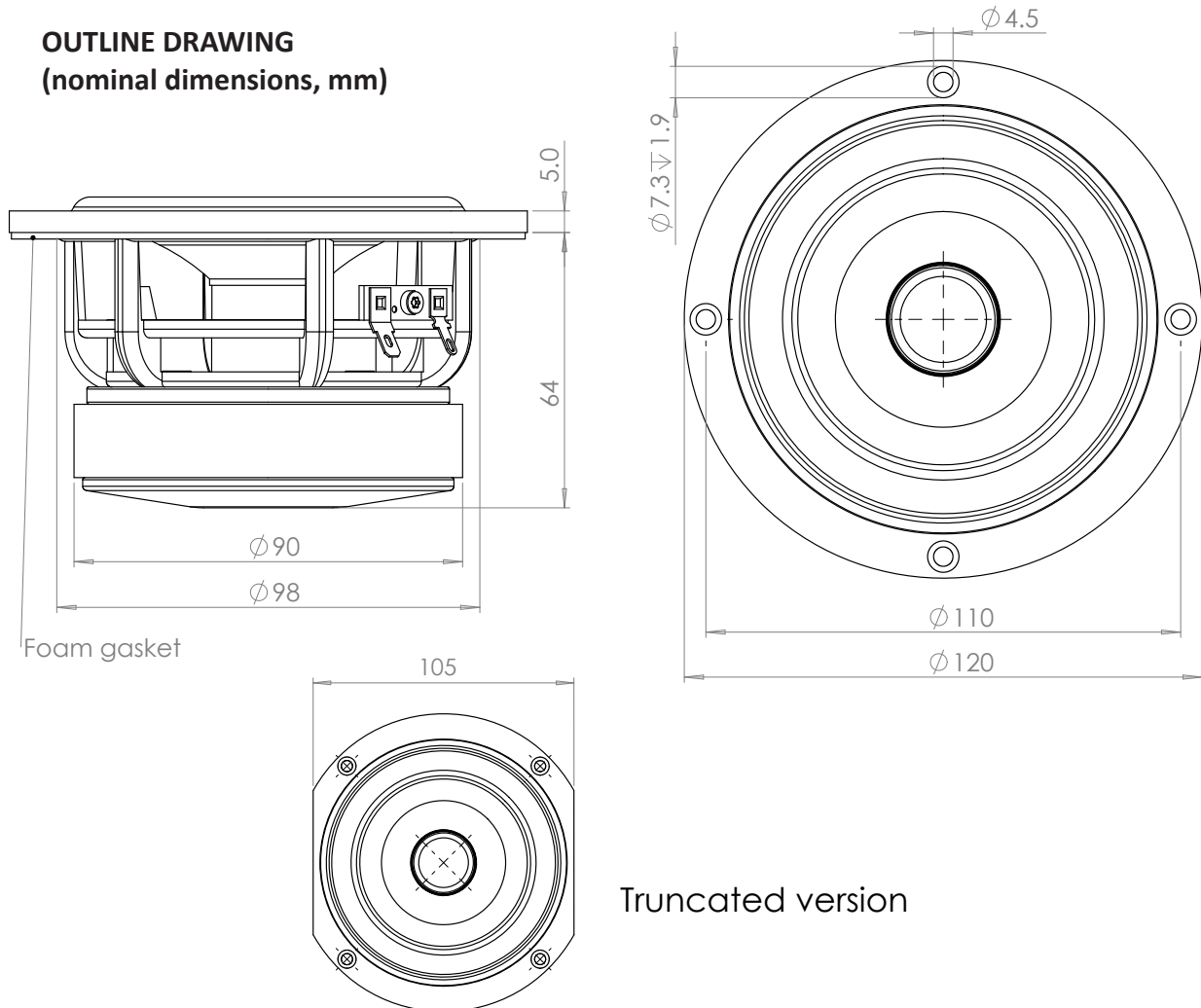
Smoothing: 1/12 oct.

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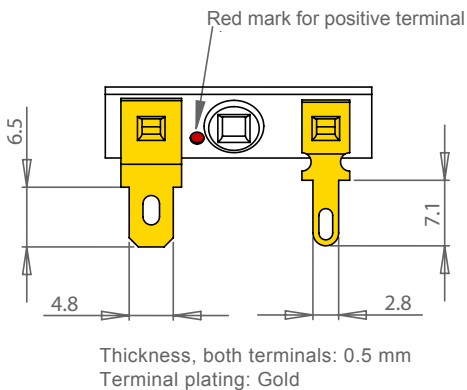


OUTLINE DRAWING (nominal dimensions, mm)



Truncated version

CONNECTIONS



PACKAGING AND ORDERING INFORMATION

Part no. WF120BD11-01	4 ohm version, round, individual packaging (one piece per box)
Part no. WF120BD11-02	4 ohm version, round, bulk packaging
Part no. WF120BD12-01	8 ohm version, round, individual packaging (one piece per box)
Part no. WF120BD12-02	8 ohm version, round, bulk packaging
Part no. WF120BD13-01	4 ohm version, truncated, individual packaging (one piece per box)
Part no. WF120BD13-02	4 ohm version, truncated, bulk packaging
Part no. WF120BD14-01	8 ohm version, truncated, individual packaging (one piece per box)
Part no. WF120BD14-02	8 ohm version, truncated, bulk packaging

Latest update: Nov. 17, 2023