

# SPECIFICATIONS



## SW312WA03/04/05/06 12¼" alu-cone subwoofer, 4/8 ohm

SW312WA03 and SW312WA04 are woofers designed for dedicated sub bass applications. They work equally well for high-end hi-fi, high quality home theater systems, and top multimedia setups.

The extremely stiff aluminium cone, the long linear throw, exaggerated ventilation, and the special dynamic linearization short circuiting rings together make up for an unusually linear and low-distortion woofer. Even at very high signal levels, the unit behaves controlled and without distortion.

Due to low mechanical losses SW312WA03 and SW312WA04 master equally well low level details and extreme dynamic peaks. Both models are available with black anodized alu cones as SW312WA05 (4 ohm) and SW312WA06 (8 ohm).



### FEATURES

- Extremely rigid aluminium cone to ensure piston motion at high levels and for better heat transfer at high continuous power levels
- New reinforced die cast alu chassis with optimal ventilation and increased stroke
- Venting through holes in cone neck for reduced distortion and compression
- Vented chassis for lower air flow speed reducing audible distortion
- Two internally built-in alu rings for stabilizing the magnetic field leading to lower high-level distortion
- Heavy-duty black fiber glass voice coil bobbin to reduce mechanical losses resulting in better dynamic performance and low-level details
- Large motor system with 2" voice coil diameter and 145 mm magnet for better control and efficiency
- Black-anodized magnet structure steel parts for increased heat dissipation and power handling
- Long linear stroke motor for reduced distortion at high levels
- Linear suspension with specially designed CONEX damper (spider) for long durability under extreme operating conditions
- 4-layer voice coil for increased control and better small-cabinet performance

### NOMINAL SPECIFICATIONS

Notes	Parameter	SW312WA03 SW312WA05		SW312WA04 SW312WA06		Unit
		Before burn-in	After burn-in	Before burn-in	After burn-in	
	Nominal size	12¼		12¼		[inch.]
	Nominal impedance	4		8		[ohm]
	Recommended max. upper frequency limit	300		300		[Hz]
1, 3	Sensitivity, 2.83V/1m (calculated from T/S parameters)	90		87		[dB]
2	Power handling, short term, IEC 268-5, no additional filtering					[W]
2	Power handling, long term, IEC 268-5, no additional filtering					[W]
2	Power handling, continuous, IEC 268-5, no additional filtering	250		250		[W]
	Effective radiating area, S <sub>d</sub>	488		488		[cm <sup>2</sup> ]
3, 6	Resonance frequency (free air, no baffle), F <sub>s</sub>	28		29		[Hz]
	Moving mass, incl. air (free air, no baffle), M <sub>ms</sub>	185		172		[g]
3	Force factor, BxI	14.5		18.4		[N/A]
3, 6	Suspension compliance, C <sub>ms</sub>	0.18		0.18		[mm/N]
3, 6	Equivalent air volume, V <sub>as</sub>	61		61		[lit.]
3, 6	Mechanical resistance, R <sub>ms</sub>	2.8		2.8		[Ns/m]
3, 6	Mechanical Q, Q <sub>ms</sub>	11.5		11.0		[-]
3, 6	Electrical Q, Q <sub>es</sub>	0.50		0.60		[-]
3, 6	Total Q, Q <sub>ts</sub>	0.48		0.57		[-]
4	Voice coil resistance, RDC	3.2		6.6		[ohm]
5	Voice coil inductance, L <sub>e</sub> (measured at 1 kHz)	1.55		2.5		[mH]
	Voice coil inside diameter	51		51		[mm]
	Voice coil winding height	31		31		[mm]
	Air gap height	8		8		[mm]
	Theoretical linear motor stroke, X <sub>max</sub>	±11.5		±11.5		[mm]
	Magnet weight	2.7		2.7		[g]
	Total unit net weight excl. packaging	6.5		6.5		[kg]
3, 5	K <sub>rm</sub>	10.4		12.8		[mohm]
3, 5	E <sub>rm</sub>	0.70		0.72		[-]
3, 5	K <sub>xm</sub>	11.3		18.7		[mH]
3, 5	E <sub>xm</sub>	0.75		0.74		[-]

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.

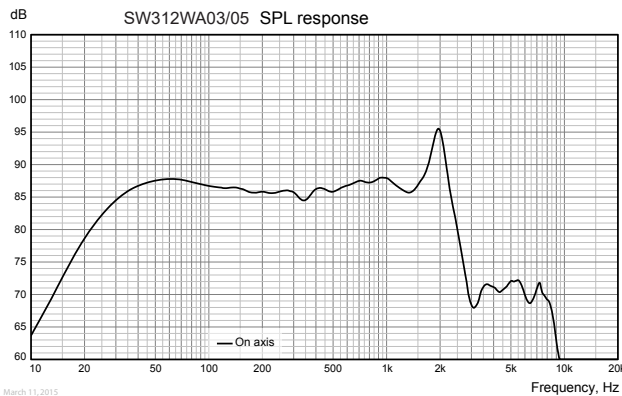
Note 4 Measured at 25 deg. C

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](http://www.linearx.com)), involving parameters K<sub>rm</sub>, E<sub>rm</sub>, K<sub>xm</sub>, and E<sub>xm</sub>. This more accurate transducer model is described in a technical paper [here at our web site](#).

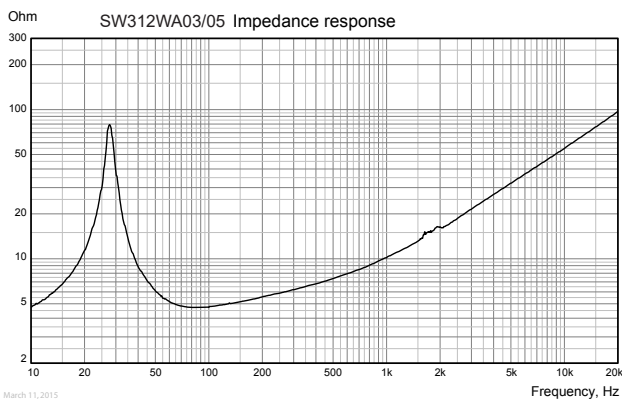
Note 6 After burn-in specifications are measured 12 hours after exciting the transducer by a 20 Hz sine wave for 2 hours at level 10/14.1 V<sub>RMS</sub> (4/8 ohm version). The unit is not burned in before shipping.

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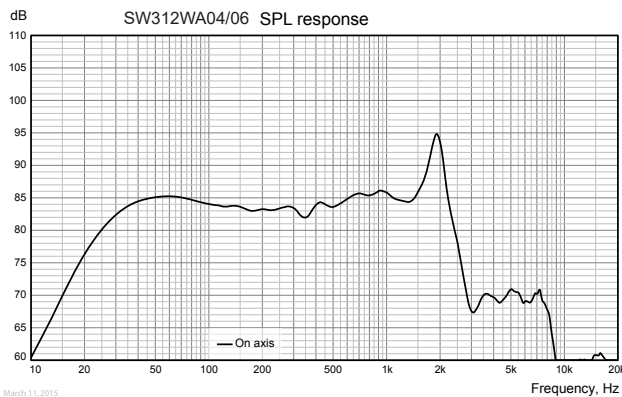
## SW312WA03/04/05/06 12¼" alu-cone subwoofer, 4/8 ohm



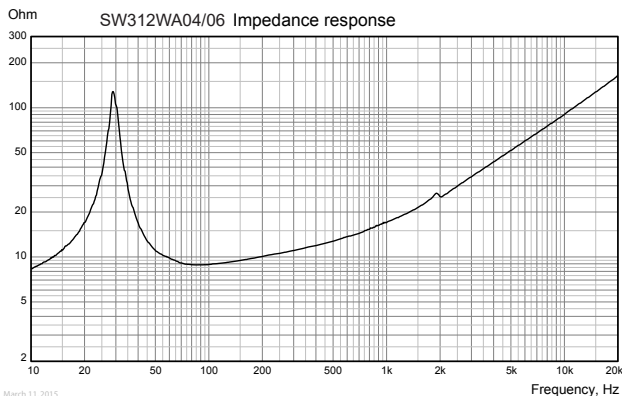
Measuring conditions, SPL  
 Driver mounting: Flush in infinite baffle, back side open (no cabinet)  
 Microphone distance: 1.0 m  
 Input signal: 2.83 VRMS stepped sine wave  
 Smoothing: 1/6 oct.



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



Measuring conditions, SPL  
 Driver mounting: Flush in infinite baffle, back side open (no cabinet)  
 Microphone distance: 1.0 m  
 Input signal: 2.83 VRMS stepped sine wave  
 Smoothing: 1/6 oct.



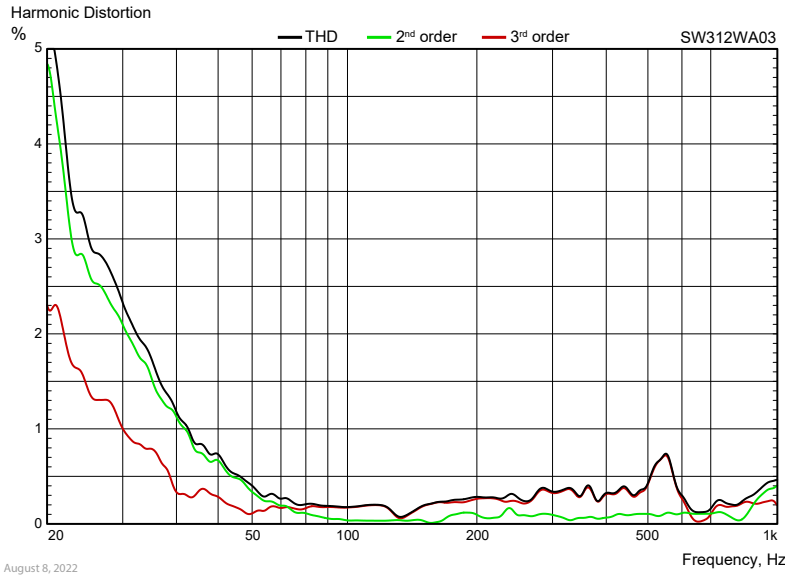
Measuring conditions, impedance  
 Driver mounting: Free air, no baffle, back side open (no cabinet)  
 Input signal: Stepped sine wave, semi-current-drive, nominal current 2 mA  
 Smoothing: None

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## HARMONIC DISTORTION



Measuring conditions, Harmonic Distortion

Driver mounting: In sealed, heavily stuffed enclosure, internal volume 46 lit.

Microphone distance: 0.5 m

Input signal: Stepped sine wave, 10 VRMS

Smoothing: 1/12 oct.

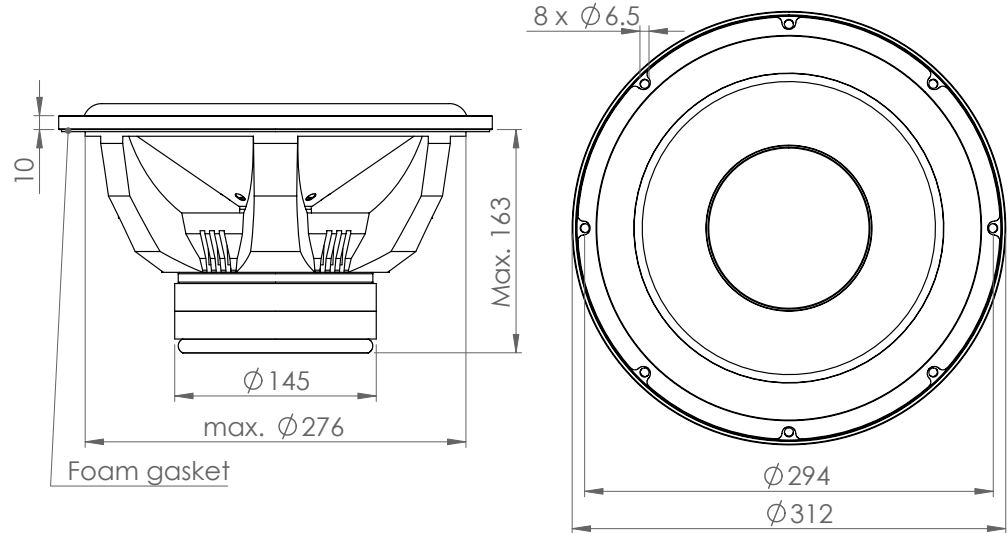
August 8, 2022

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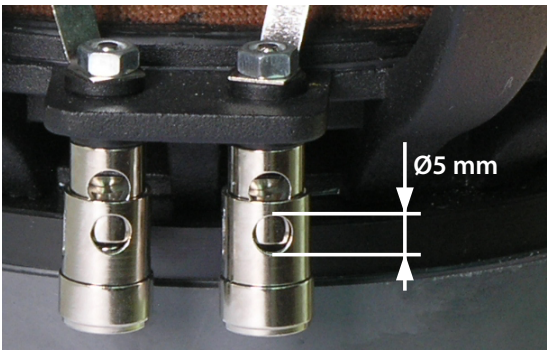
## OUTLINE DRAWING (nominal dimensions)

Dimensions in mm



June 2, 2014

## CONNECTIONS



## PACKAGING AND ORDERING INFORMATION

Part no. SW312WA03-01	4 ohm version, alu colour cone, individual packaging (one piece per box)
Part no. SW312WA04-01	8 ohm version, alu colour cone, individual packaging (one piece per box)
Part no. SW312WA05-01	4 ohm version, black cone, individual packaging (one piece per box)
Part no. SW312WA06-01	8 ohm version, black cone, individual packaging (one piece per box)

Latest update: August 8, 2022