

The LF12G300 low frequency transducer is the result of a two year R&D project with the goal of creating new levels of professional audio performance standards. This project led to advancements and improvements in all the key areas of transducer technology. The LF12G300 is a 12-inch woofer with linear frequency response characteristics, high power handling while generating low harmonic distortion artifacts. The LF12G300 uses a carbon fiber loaded cone assembly along with a high excursion triple roll, constant geometry surround. This combination provides remarkable strength and a peak to peak maximum excursion of 34 mm.



Power Handling

At the core of the LF12G300 is its new voice coil technology featuring a number of proprietary technologies. Significant amounts of time and resources were spent in material science research in order to develop a voice coil former with optimal structural strength and thermal characteristics. Former strength also provides the best possible transfer of power between the voice coil and the cone assembly and assists in controlling distortion artifacts. RCF Precision engineers have developed a composite polyimide former material capable of withstanding peak temperatures in excess of 380°C, well beyond the thermal requirements of modern professional audio systems. By combining this material with special adhesives and our inside / outside voice coil technology, the LF12G300 features the industry's most robust voice coil assembly.

Magnetic Circuit Design

RCF Precision set out to develop a magnetic circuit capable of delivering the highest, balanced level of performance in three specific areas; maintenance of a consistent, high integrity magnetic flux gap, distortion lowering design techniques and efficient integration of the magnetic circuit design within the overall design of the loudspeaker cooling system. The LF12G300 features a fully optimized magnetic circuit highlighted by a flux maximizing T-pole design and a rear plate cover that provides the lightest possible weight and highest flux efficiency. The T-pole design is optimized to generate the minimum amount of flux modulation in the magnetic assembly during typical voice coil movement within the gap. This substantially lowers generation of distortion artifacts.

Complex Cooling System

The LF12G300 features a complex cooling design where individual components come together to create an ideal ventilation system. Commencing with the design of the basket, RCF Precision has focused on providing finned cooling channels while optimizing the surface area available in order for the front magnetic plate to dissipate heat efficiently. The finned channels not only dissipate heat but also provide an entrance for cool air to enter the magnetic structure. RCF Precision's unique double silicone sealed spider design functions as an air pump expelling hot air and drawing in cool air every time the cone assembly moves.

Mechanical Design

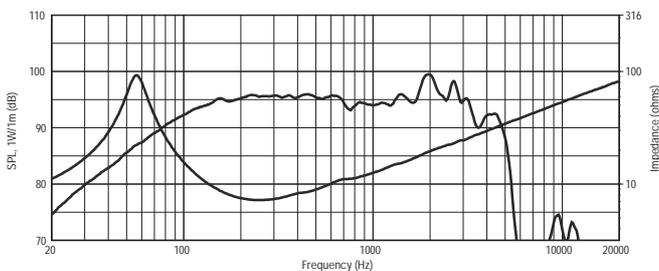
RCF Precision has also invested countless hours addressing mechanical design issues. Connection of speaker cables is improved through the design of push buttons capable of easily accepting large diameter cables effortlessly. The basket is designed to provide maximum strength, the lightest weight, while minimizing overall diameter and maximizing the cone piston diameter.

LF12G300 Applications

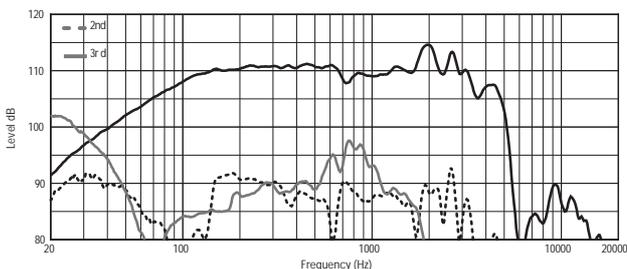
The LF12G300 is ideal for use in compact applications where sizable amounts of low frequency, low distortion acoustic power is desired. The robust mechanical design and optimized weight of the device make it desirable for use in fixed installation or portable professional loudspeaker systems.

Product Features:

- Long coil 12" Woofer
- 3 inch voice coil, inside/outside wound, high temperature composite polyimide coil assembly
- Carbon fiber loaded cone, high excursion triple roll surround with constant geometry
- Dual spider design with silicon based dampening control
- Magnetic structure, basket and coil assembly complex ventilation system for higher output and lower power compression
- 1,3 inch maximum excursion very high temperature capability ideal for compact two system
- Very high temperature capability
- Ideal for compact two system



Frequency response curve of the loudspeaker taken in a hemispherical, free field environment and mounted in a closed box with an internal volume of 600 liters (21.2 cu. ft.) enclosing the rear of the driver. The impedance magnitude curve is measured in free air.



2nd and 3rd harmonic distortion levels have been raised 20dB. Measurements made at 10% of rated power.

MODEL	LF12G300	CODE	111.40.002
-------	----------	------	------------

General Specifications

Nominal Diameter	300/11,8	mm/inch
Rated Impedance	8	Ω
Power handling capacity ⁽¹⁾	450	Watts
Program Power ⁽²⁾	900	Watts
Sensitivity 1W, 1m ⁽³⁾	96,5	dB
Frequency Range	55 - 5500	Hz
Effective Piston Diameter	260/10,2	mm/inch
Maximum Excursion Before Damage (peak to peak)	34/1,3	mm/inch
Minimum Impedance	7,2	Ω
Voice Coil Diameter	76/3	mm/inch
Voice Coil Material	Copper	
Voice Coil Winding Depth	18/0,7	mm/inch
Number of layers	2	
Kind of layer	Inside/Outside	
Thickness Top Plate Depth	10/0,4	mm/inch

Thiele - Small Parameters ⁴

Resonance frequency	F _s	54	Hz
DC resistance	R _e	5,7	Ω
Mechanical factor	Q _{ms}	5,7	
Electrical factor	Q _{es}	0,30	
Total factor	Q _{ts}	0,28	
BL Factor	BL	20,3	T x m
Effective Moving Mass	M _{ms}	63	gr
Equivalent C _{as} air load	V _{as}	55	liters
Effective piston area	S _d	0,053	m ²
Max. linear excursion	X _{max}	6,5	mm
Voice - coil inductance @ 1KHz	L _{e1k}	1,8	mH
Half-space efficiency	Eff	2,83	%

Mounting Information

Overall Diameter	320/12,6	mm/inch
Bolt Circle Diameter	293 - 304 / 11,5 - 11	mm/inch
Bolt Hole Diameter	6,5/0,3	mm/inch

Baffle Cutout Diameter

Front Mount	280/11,0	mm/inch
Rear Mount	284/11,2	mm/inch
Depth	138/5,4	mm/inch
Volume occupied by the Driver	2,60/0,1	liters/ft ³
Net Weight	7,50/16,5	Kg/lbs.
Shipping Weight	8,30/18,3	Kg/lbs.

Notes to Specifications

- 1 AES standard (50 - 500) Hz
- 2 Program power is defined as 3dB greater than the nominal rating.
- 3 Sensitivity measurement is based on a 100-500Hz pink noise signal with input power of 2.83V @ 8 Ohms.
- 4 Thiele-Small parameters are measured after a 2 hour warm up period running the loudspeaker at full power handling capacity.