

The LF15X400 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 LF15X400 is a 15-inch woofer with incredibly linear frequency response characteristics, extreme high power handling while generating the lowest harmonic distortion of any comparable 15-inch transducer within its application range. The LF15X400 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 48 mm.



### Power Handling

At the core of the LF15X400 is its new voice coil assembly 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. High former strength 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 LF15X400 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 LF15X400 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. The T-pole also features RCF Precision's spaced gap demodulation technology designed to dramatically lower distortion artifacts within the loudspeaker's operating frequency band. This technology assists in progressively braking the voice coil as it reaches its maximum excursion point. This braking effect provides a much quieter, smoother transition for the moving mass as it reaches its maximum excursion limits.

### Complex Cooling System

The LF15X400 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. When assembled and placed on the basket, the front plate, ceramic core and the rear plate form part of the ventilation system that is highlighted by cooling slots precision machined through all three components. 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. This system provides cooler operating conditions and optimal power compression.

### Mechanical Design

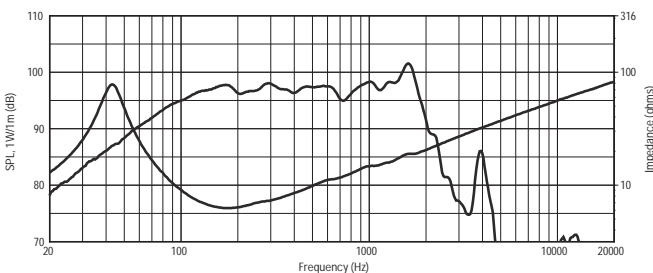
RCF Precision has also invested countless hours addressing mechanical design issues. Connection of speaker cables is improved through the design of push buttons capable of easily accepting large diameter cables effortlessly. The basket is designed to provide maximum strength, the lightest weight, while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

### LF15X400 Applications

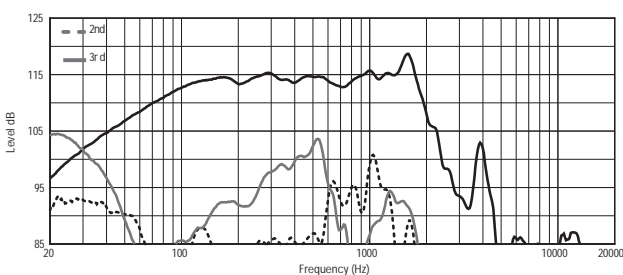
The LF15X400 is ideal for use in applications where sizable amounts of low frequency, low distortion acoustic power is desired. The robust mechanical design and optimized weight of the device make it desirable for use in fixed installation or portable professional loudspeaker systems. The transducer's low frequency extension, coupled with its extremely low generation of harmonic distortion, also makes it ideal for use within critical listening applications such as studio monitoring subwoofer systems.

## Product Features:

- Ideal low compression 15" Woofer
- Very high thermal capability
- 4 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
- Ideal for high demanding Subwoofer applications



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.



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

**MODEL** LF15X400 **CODE** 111.60.001

## General Specifications

Nominal Diameter	380/15,0	mm/inch
Rated Impedance	8	Ω
Power handling capacity <sup>(1)</sup>	800	Watts
Program Power <sup>(2)</sup>	1600	Watts
Sensitivity 1W, 1m <sup>(3)</sup>	97	dB
Frequency Range	30 - 2500	Hz
Effective Piston Diameter	340/13,4	mm/inch
Maximum Excursion Before Damage (peak to peak)	48/1,9	mm/inch
Minimum Impedance	6,3	Ω
Voice Coil Diameter	100/4	mm/inch
Voice Coil Material	Copper	
Voice Coil Winding Depth	23/0,9	mm/inch
Number of layers	2	
Kind of layer	Outside	
Thickness Top Plate Depth	14/0,6	mm/inch

## Thiele - Small Parameters <sup>4</sup>

Resonance frequency	F <sub>s</sub>	37	Hz
DC resistance	R <sub>e</sub>	5	Ω
Mechanical factor	Q <sub>ms</sub>	4,9	
Electrical factor	Q <sub>es</sub>	0,26	
Total factor	Q <sub>ts</sub>	0,25	
BL Factor	BL	24	T x m
Effective Moving Mass	M <sub>ms</sub>	130	gr
Equivalent C <sub>as</sub> air load	V <sub>as</sub>	164	liters
Effective piston area	S <sub>d</sub>	0,091	m <sup>2</sup>
Max. linear excursion	X <sub>max</sub>	8,0	mm
Voice - coil inductance @ 1KHz	L <sub>e1k</sub>	2,1	mH
Half-space efficiency	Eff	3,08	%

## Mounting Information

Overall Diameter	393/15,5	mm/inch
Bolt Circle Diameter	371 - 376	mm
Bolt Hole Diameter	6,5/0,3	mm/inch

## Baffle Cutout Diameter

Front Mount	352/13,9	mm/inch
Rear Mount	360/14,2	mm/inch
Depth	158/6,2	mm/inch
Volume occupied by the Driver	4,30/0,2	liters/ft <sup>3</sup>
Net Weight	12,60/27,7	Kg/lbs.
Shipping Weight	13,60/29,9	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.