

The RCF Precision family of professional compression drivers 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 driver technology and high tolerance manufacturing processes.



Diaphragm Assembly

The ND3030T3 is a high performance 3.0-inch diaphragm compression driver with a 1.4 inch exit throat featuring several state of the art technologies. The diaphragm and suspension are precision formed from .05 mm (.002 in.) thick pure titanium. The suspension is based on an innovative design using progressive parabolic semi circles. The sections of the suspension offer a consistent suspension modulus with a variable, altering profile. This drastically reduces distortion eliminating resonance points and assists in controlling suspension breakup modes. The rear magnetic plate where the diaphragm assembly is located, possesses specially designed CNC machined ventilation slots that eliminate standing waves, turbulence and distortion created by the movement of the suspension. At the point where the titanium suspension is bonded to the assembly ring, a special dampening adhesive has been applied in order to further reduce and eliminate distortion creating resonances. The diaphragm assembly has been designed with easy field service in mind as it can be removed and replaced within minutes.

Direct Drive™ Voice Coil Assembly

The voice coil assembly is designed using a high strength, high temperature Nomex® voice coil former, rectangular profile copper clad aluminum wire and assembled using advanced, specially formulated adhesives. Proprietary curing processes ensure optimal assembly strength and safe operation even under extreme thermal conditions. The top of the former is bent and bonded directly to the edge of the titanium diaphragm resulting in a Direct Drive™ configuration. Direct Drive™ guarantees optimal transfer of energy between the voice coil and the dome assembly providing smoother, extended frequency response beyond 10 kHz, reducing break up modes and lowering distortion. This assembly delivers high power handling along with excellent mechanical and thermal properties that make the compression driver exceedingly reliable and robust.

Magnetic Circuit

The ND3030T3's neodymium magnetic circuit design provides even higher magnetic field strength in the voice coil gap than standard ceramic assemblies while dramatically lowering the overall weight of the device. Neodymium rare earth material also provides higher levels of force (BL) that increase control of the dome assembly's moving mass. This leads to higher efficiency, better transient response and diminishes high frequency distortion modes. A thin copper ring is precision pressed on to the pole piece in order to modify and lower the inductance characteristics of the magnetic circuit and voice coil providing a controlled extension of the acoustic frequency response. RCF Precision has provided cooling fins on the rear of the aluminum diaphragm assembly cover that creates a heat dissipating surface area for the driver's magnetic circuit. This assists in lowering circuit temperature, improving the driver's power compression characteristics and increasing output.

Phase Plug

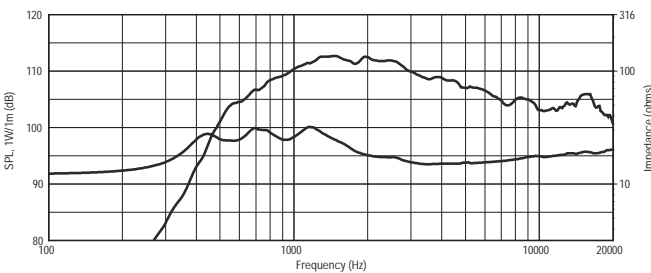
The ND3030T3 features a 3-slot, optimized geometry, phase plug design. Extensive computer assisted mathematical modeling and testing has resulted in a phase plug geometry that provides balanced acoustic performance by controlling and lowering air distortion and maximizing output. This permits the use of a lower phase plug slot compression ratio that generates substantially lower distortion artifacts. The result is high output with smooth acoustic frequency response and low harmonic distortion artifacts.

Mechanical Design

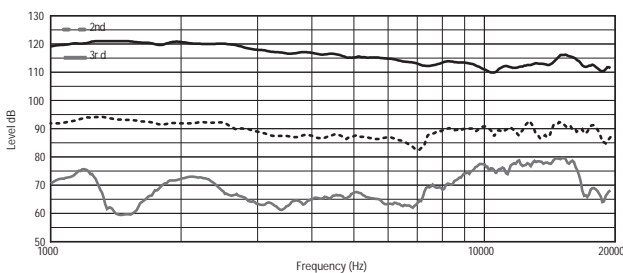
Connection of speaker cables is improved through the design of push buttons capable of easily accepting large diameter cables effortlessly. The compression driver's front plate is designed to dissipate heat when mounted on aluminum horn assemblies or plate adaptors. The ND3030T3 is constructed using precision CNC machined components with strict adherence to proprietary assembly methods and stringent tolerances. Each driver is thoroughly tested for frequency response, impedance and distortion with DSP enabled digital testing equipment. The result is a robust device capable of withstanding the rigors of modern, portable loudspeaker system applications.

Product Features:

- 3-inch Diaphragm, 1.4-inch Exit Throat/Pure Titanium Compression Driver
- Lightweight, high efficiency neodymium magnetic structure
- Direct Drive™ Nomex® Voice Coil Assembly
- 3-slot, optimized geometry phase plug
- Aluminum rear covers featuring an advanced vented fin heat dissipation design
- Copper Inductance ring for extended response
- Vented, damped, low distortion, variable profile suspension system
- Extended linear frequency response, low distortion and high power handling
- 160 watt Continuous program power handling
- Frequency range: 500Hz - 20kHz



Frequency response curve of the driver measured on-axis at a distance of 1 meter with a 1 watt input signal in an anechoic environment mounted on a horn with a Q of 15.



Measurements made at 1 meter distance with an input signal whose power is equal to 10% of the driver's rated power mounted on a horn with a Q of 15

MODEL	ND3030T3	CODE	151.20.010
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General Specifications

Exit Throat Diameter	35.5/1.4	mm/inch
Rated Impedance	8	Ω
Power handling capacity ¹		
Continuous Program above 1 kHz	160	Watts
AES above 1 kHz	80	Watts
Sensitivity 1W, 1M on-axis on horn ²	109	dB
Frequency Range ³	500 Hz - 20kHz	
Diaphragm Material	Pure Titanium	
Suspension Material	Pure Titanium	
Suspension Design	Progressive, Elliptical Alternating Mass	
Minimum Impedance	8 Ohms @ 3.5 kHz	
Voice Coil Diameter	74.4/2.93	mm/inch
Voice Coil Material	Edgewound Aluminium	
Voice Coil Former Design and construction material	Direct Drive / Nomex	
Number of layers	1	
Kind of layer	Outside	
BL Factor	BL	13.1 T · m
Flux Density	2 Tesla (20.000 Gauss)	
Phase Plug Design	3-slot radial	
Phase Plug Material	Pure Aluminium	
Magnetics	Neodymium	
Voice Coil Demodulation	Gap Mounted Copper Ring	

Dimensions

Overall Diameter	139/5.5	mm/inch
Overall Height	64/2.5	mm/inch
Mounting		
4 each 6mm threaded holes 90 deg. apart on	101.6/4.0	mm-dia./inch-dia.
Net Weight	3.4/7.5	Kg/lbs.
Shipping Weight	3.7/8.1	Kg/lbs.

Notes to Specifications

- 1 Continuous pink noise ratings are derived from suggested AES standards sending a pink noise signal having a 6dB crest factor with a high pass filter set at the specified limiting frequency for two hours. Continuous program power is a conservative power rating for reproduction of typical audio program material
- 2 Sensitivity measurement is based on pink noise signal with input power of 1 watt and measured at 1 meter from the mouth of a horn with a Q of 15 on axis and averaged between 2 and 5 kHz
- 3 Frequency range is defined as the measured frequency response -10dB relative to the rated sensitivity
- 4 Distorsion is measured at -10dB from maximum power rating, from lower limiting frequency to 10 kHz