

## RCF MB15N351

# RCF MB15N351 15-inch Mid Bass Woofer Instruction Manual

Model: MB15N351 | Brand: RCF

## 1. INTRODUCTION

The RCF MB15N351 is a high-performance 15-inch mid-bass woofer designed for professional audio applications. It features excellent linearity in frequency response with minimal distortion, making it suitable for various sound reinforcement systems. This transducer incorporates a robust neodymium magnetic structure and a 3.5-inch voice coil, enhancing power handling capabilities. The unique dual-forced air venting system ensures efficient voice coil ventilation, minimizing power compression during high-power operation.

This manual provides essential information for the proper installation, operation, and maintenance of your RCF MB15N351 woofer.

## 2. SAFETY INFORMATION

- **Electrical Safety:** Always ensure proper wiring and impedance matching with your amplifier to prevent damage to the woofer and associated equipment. Incorrect wiring can lead to electrical hazards or component failure.
- **Power Handling:** Do not exceed the specified power handling limits (650W RMS, 1300W Peak) to avoid thermal or mechanical damage to the voice coil and cone.
- **Mounting:** Securely mount the woofer in a suitable enclosure. Ensure all mounting hardware is tightened correctly to prevent vibration and potential detachment.
- **Hearing Protection:** Prolonged exposure to high sound pressure levels can cause permanent hearing damage. Use appropriate hearing protection when operating audio systems at high volumes.
- **Ventilation:** Ensure the woofer's magnet structure and voice coil area have adequate ventilation, especially within an enclosure, to dissipate heat effectively.

## 3. PACKAGE CONTENTS

Upon unpacking, verify that the following item is included:

- 1 x RCF MB15N351 15-inch Mid Bass Woofer (8-Ohm)

## 4. SETUP AND INSTALLATION

Proper installation is crucial for optimal performance and longevity of the woofer. This section outlines key considerations for mounting and connection.

### 4.1 Enclosure Design

The RCF MB15N351 is designed to perform best in a well-constructed, acoustically optimized enclosure. Consult professional audio resources or speaker design software to determine the ideal enclosure volume and port tuning (if applicable) based on the woofer's Thiele-Small parameters provided in Section 7.

### 4.2 Mounting

The woofer can be mounted from the front or rear of the baffle. Ensure the baffle material is rigid enough to support the woofer's weight and prevent unwanted vibrations.

- **Overall Diameter:** 15.47 inches (393 mm)
- **Bolt Circle Diameter:** 14.61-14.8 inches (371-376 mm)
- **Bolt Hole Diameter:** 0.28 inches (7 mm)
- **Front Mount Baffle Cut-out:** 13.94 inches (354 mm)
- **Rear Mount Baffle Cut-out:** 13.94 inches (354 mm)
- **Volume Occupied by Driver:** 3.8 liters / 0.15 ft<sup>3</sup>



Figure 1: Front view of the RCF MB15N351 woofer, showing the cone and surround.



Figure 2: Rear view of the RCF MB15N351 woofer, highlighting the robust neodymium magnet structure and connection terminals.

### 4.3 Wiring Connections

Connect the woofer to your amplifier using appropriate gauge speaker wire. Observe correct polarity: connect the amplifier's positive (+) output to the woofer's positive terminal, and the amplifier's negative (-) output to the woofer's negative terminal. Incorrect polarity can lead to phase cancellation and reduced bass response.

The woofer has a rated impedance of 8 ohms. Ensure your amplifier is stable and capable of driving an 8-ohm load. If connecting multiple woofers, calculate the total impedance to match your amplifier's specifications.

## 5. OPERATING PRINCIPLES

The RCF MB15N351 is a passive mid-bass woofer, meaning it requires an external amplifier to operate. It is designed to reproduce frequencies within the 40 Hz to 3 kHz range with high sensitivity (100 dB).

- **Power Handling:** The woofer can handle a continuous program power of 1300W and a power handling capacity of 650W RMS. It is crucial to use an amplifier that can provide sufficient power without clipping, but also not overpower the driver.

- **Voice Coil Technology:** The 3.5-inch inside/outside copper voice coil design, combined with dual-forced air ventilation, helps to dissipate heat efficiently, reducing power compression and maintaining consistent performance even during extended use.
- **Suspension System:** A dual spider design with silicon-based dampening control ensures precise cone movement and stability, contributing to the woofer's linear response and low distortion.



Figure 3: Angled view of the RCF MB15N351, illustrating the cone and robust frame construction.

## 6. MAINTENANCE

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The RCF MB15N351 woofer is designed for durability and requires minimal maintenance. Follow these guidelines to ensure its longevity:

- **Cleaning:** Use a soft, dry cloth to gently wipe the cone and frame. Avoid using harsh chemicals or abrasive cleaners, which can damage the materials.
- **Inspection:** Periodically inspect the woofer for any signs of damage, such as tears in the cone or surround, loose connections, or foreign objects. Address any issues promptly.
- **Environmental Conditions:** Store and operate the woofer in a dry environment, away from extreme temperatures, direct sunlight, and excessive moisture.

- **Dust Protection:** If the woofer is not installed in an enclosed cabinet, consider using a dust cover when not in use to protect the cone and voice coil gap from debris.

## 7. TROUBLESHOOTING

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If you encounter issues with your RCF MB15N351 woofer, refer to the following troubleshooting guide:

- **No Sound:**
  - Check all wiring connections from the amplifier to the woofer for secure contact and correct polarity.
  - Verify that the amplifier is powered on and functioning correctly.
  - Ensure the audio source is active and sending a signal.
- **Distorted Sound:**
  - Reduce the amplifier's volume or gain settings. Distortion often occurs when the amplifier is clipping.
  - Check for physical damage to the woofer cone or surround.
  - Ensure the enclosure is sealed properly (if applicable) and free from air leaks.
  - Verify that the woofer is not being overdriven beyond its power handling capabilities.
- **Weak or Muffled Bass:**
  - Confirm correct wiring polarity. Reversed polarity can cause phase cancellation.
  - Ensure the enclosure volume and tuning are appropriate for the woofer.
  - Check for any obstructions in front of the woofer or port (if ported).
- **Overheating (Voice Coil):**
  - Reduce the input power to the woofer.
  - Ensure adequate ventilation around the woofer, especially within the enclosure.
  - Verify that the amplifier is not clipping, as clipped signals generate excessive heat.

If the problem persists after following these steps, contact RCF customer support or a qualified audio technician.

## 8. SPECIFICATIONS

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Detailed technical specifications for the RCF MB15N351 15-inch Mid Bass Woofer:

### General Specifications

Parameter	Value
Nominal Diameter	15 inch
Rated Impedance	8 ohm
Program Power	1300 W
Power Handling Capacity (RMS)	650 W
Sensitivity (1W/1m)	100.0 dB

Frequency Range	40 Hz – 3 kHz
Effective Piston Diameter	12.99 inch
Max. Excursion Before Damage	1.54 inch
Minimum Impedance	6.8 ohm
Voice Coil Diameter	3.5 inch
Voice Coil Winding Material	Copper
Voice Coil Length	0.67 inch
Number of Voice Coil Layers	2 (inside/outside)
Top Plate Thickness	0.43 inch
Cone Design	Curved
Surround Material	Polycotton
Surround Design	M-roll
Magnets	Neodymium
Dual-force Air Ventilation	Yes
Spider	3
Safety Agency	CE compliant

## Thiele-Small Parameters

Parameter	Value
Resonance Frequency (Fs)	42 Hz
DC Resistance (Re)	5.60 ohm
Mechanical Factor (Qms)	4.00
Electrical Factor (Qes)	0.24
Total Factor (Qts)	0.22
BI Factor (BI)	22.50 T x m
Effective Moving Mass (Mms)	80.0 g
Equivalent Cas Air Loaded (Vas)	191.0 liters
Effective Piston Area (Sd)	0.090 m <sup>2</sup>
Max. Linear Excursion (Xmax)	6 mm
Voice Coil Inductance @ 1kHz (Le1k)	1.65 mH
Half-space Efficiency (Eff)	0.0568

## Physical Dimensions & Weight

Parameter	Value
Height	7.09 inches (180 mm)
Diameter	15.47 inches (393 mm)
Weight	11.38 lbs (5.16 kg)

## 9. WARRANTY INFORMATION

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RCF products are manufactured to high standards and are covered by a limited warranty against defects in materials and workmanship. The specific terms and duration of the warranty may vary by region and product. Please retain your proof of purchase for warranty claims.

For detailed warranty information, please refer to the official RCF website or contact your local RCF distributor.

## 10. SUPPORT

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Should you require technical assistance, service, or have questions regarding your RCF MB15N351 woofer, please utilize the following resources:

- **RCF Official Website:** Visit [www.rcf.it](http://www.rcf.it) for product documentation, FAQs, and support contact information.
- **Authorized Dealers:** Contact the RCF authorized dealer or distributor from whom you purchased the product. They can provide local support and service.
- **Customer Service:** Refer to the RCF website for specific customer service contact details in your region.