

**Newton Series® HD**

**CAMBRIDGE  
SOUNDWORKS®**

**MC650-IW / MC630-IW**

High Performance In-Wall Speaker Installation and User Manual

Cambridge SoundWorks, Inc.  
120 Water Street  
North Andover, MA 01845  
1-800-FOR-HIFI  
**[cambirdgesoundworks.com](http://cambirdgesoundworks.com) or [hifi.com](http://hifi.com)**



*Newton Series HD  
In-Wall Loudspeaker*

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# About This Manual

Successful installation of an in-wall speaker requires a working knowledge of typical building construction and wiring. If you are an experienced and knowledgeable Do-It-Yourself homeowner this manual will help you successfully install your speakers. However, it is beyond the scope of this manual to fully instruct the installer on the basic techniques of wiring and carpentry. If you are not already comfortable with these techniques we recommend you have the speakers professionally installed.

Cambridge SoundWorks is not responsible for any damage resulting from the installation or installation process, or due to wiring or materials used in the installation.

If you are not comfortable with performing a speaker system installation, we recommend you rely on a qualified home entertainment installer. Contact your dealer or Cambridge SoundWorks for assistance in selecting a suitable installer.

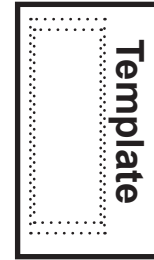
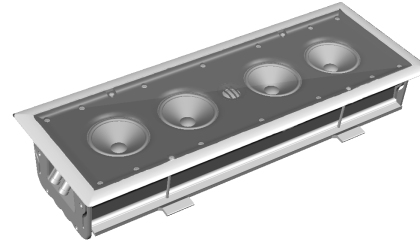
# Introduction

Thanks for choosing a Newton HD Series in-wall speaker. The MC630-iw and MC650-iw feature the finest drivers, precision internal crossover circuitry, and an easy to install in-wall configuration.

The design team at Cambridge SoundWorks believes there is no better combination of audiophile-level attention to detail and reasonable cost.

# Contents

1. One Speaker (MC650-iw pictured)
2. Cutting template and paint mask.



# After Unpacking

Save the shipping carton and packing material for future use and transport.

# Inspecting For Damage

Examine each part carefully for shipping damage. If there is any, do not install or use the speaker. Return the speaker to the merchant where you made the purchase or call Cambridge SoundWorks at 1-800 FOR-HIFI (1-800-367-4434) for assistance.

# System Configuration

For the best performance, a Cambridge SoundWorks HD series in-wall or freestanding loudspeaker should be used on all channels of the surround-sound system. You may freely mix and match the main and surround speaker pairs within the series with good results. Both models covered in this manual are intended for use in systems that contain one or more subwoofers, and is not designed to reproduce the deep bass range. Use a receiver or AV processor that incorporates a high-pass crossover whenever possible.

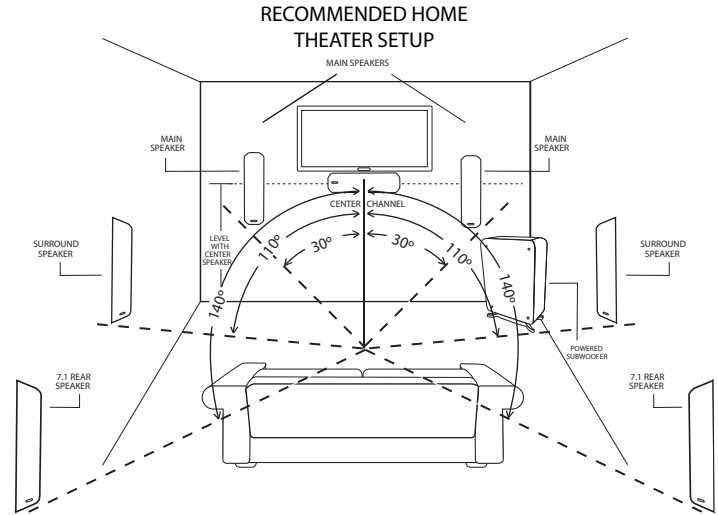
# Speaker Placement

Placement of the speakers affects how well the AV surround system recreates the sound field intended by the recording engineer. Current recording practice typically assumes a speaker array with a center channel speaker directly in front of the central viewing position, and with left and right speakers placed so they each form a 30 degree angle from the center line. Left and right surround speakers are placed 110 degrees from the center line. Left and right rear speakers in a 7.1 system are typically at 140 degrees. If a single rear speaker is used in a 6.1 system, it should be centered on the rear wall. Front speakers should be as close to the height of the TV monitor as practical. Surround and rear speakers should be slightly higher. The best recreation of the desired sound field is achieved by recreating this speaker pattern as closely as your room and furnishings allow.

Don't be too concerned if your situation and listening environment dictate somewhat different speaker positions. Most rooms do not allow ideal placement. Place your speakers as close to these guidelines as practical and the speakers will still provide convincing, lifelike sound.

Your surround processor has a variety of adjustments to optimize the sound based on the speakers' capabilities and placement. These adjustments vary by processor, so refer to your processor's manual for instructions specific to your equipment. Set your main, center, and surround settings to "SMALL", with subwoofer "ON".

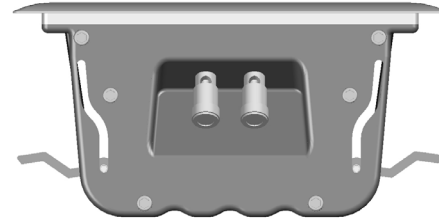
- Avoid placing front left and right speakers very close to a side wall (within 12-14 inches). The reflected sound from the wall degrades the sound coming directly from the speaker.



# Wiring The Speakers

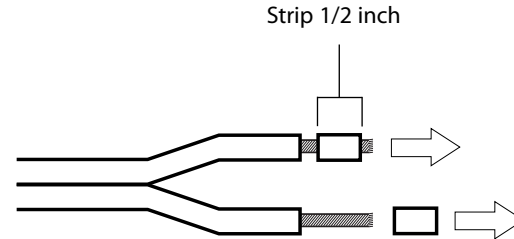
Run the wires to their final positions prior to mounting the speakers. The spring loaded terminals accept bare wire between AWG #12 and AWG #18 (lower numbers are thicker). It is not necessary to "tin" the wire or use connectors to terminate the wire. They will also accept individual banana plugs.

- Use at least AWG #18 speaker cable for short runs (under 15 feet). Use AWG #16 or heavier speaker cable for longer runs.
- Building codes typically require plenum rated wire for installation within walls. Be sure to use wire that complies with any applicable local building codes. Plenum rated cable typically has an outer jacket with individually insulated conductors inside the outer jacket.



## Preparing The Wires

1. Strip 1/2 inch of insulation from the two individual conductors in the speaker cable. Twist the exposed strands of bare wire together. It is not necessary to terminate the wires with pins or banana plugs, but you may do so if you wish.
2. Determine which conductor you will use to connect the positive terminals of the amplifier and speaker together. Printing or a ridge on the insulation usually distinguishes one of the two conductors. Sometimes the metal of the conductors has two different colors, or the insulation color of each conductor may be different.



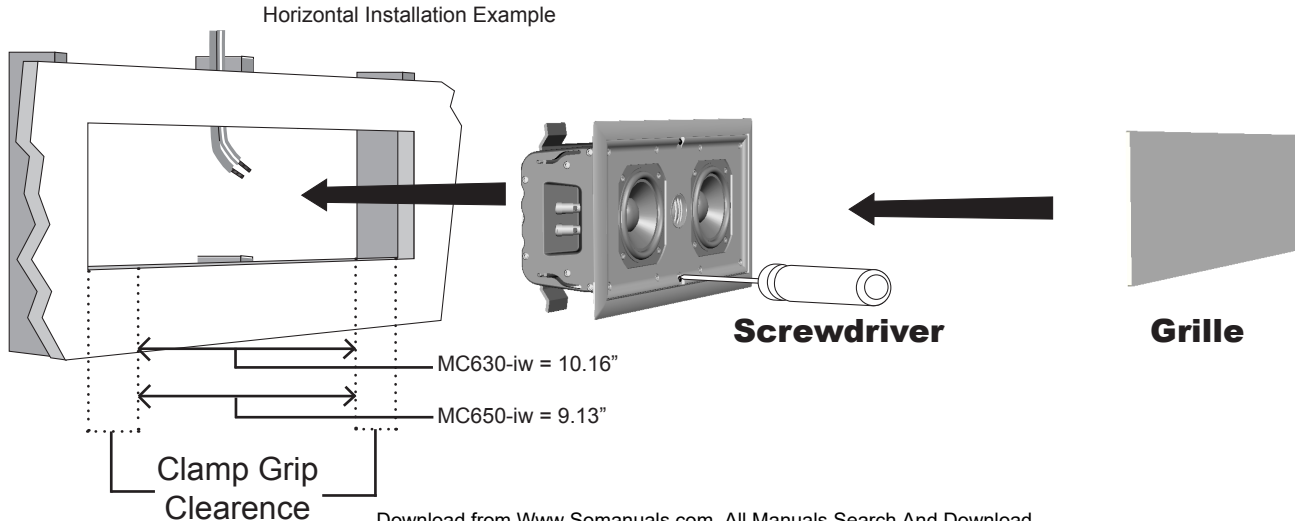
# Speaker Mounting

The HD series speakers may be mounted without any specialized brackets or back boxes. The enclosed design of the speakers makes them insensitive to the environment behind the wall, so no insulation or specific acoustic treatment is required. Extruded aluminum clamp rails along each side of the enclosure provide secure mounting directly to the wall material and are suited to both new and old construction.

Before cutting into the wall, you must locate the wall studs using either a stud finder or by locating the screws in new construction. Locate the center of each stud and locate your speaker cutout so the nearest edge of it is at least 1-3/4" away from the stud center. Installing the MC650-iw horizontally as a center-channel speaker will require cutting through at least one wall stud. The MC630-iw may be mounted without cutting through any studs if it is carefully located. When cutting a stud cannot be avoided, be certain to keep the cut stud between the clamp rail grips on the speaker. This dimension is 10.16 inches on the MC630-iw and 9.13 inches on the MC650-iw. We recommend locating the TV after you have determined the speaker location so that the TV and center-channel speaker share the same centerline.

Once you have determined the area occupied by the wall studs, remove the center section of the template/paint mask. Tape the outer ring of the template to the wall where you want your cut to be and trace around the inside perimeter. Make your cut carefully along this line and remove the center.

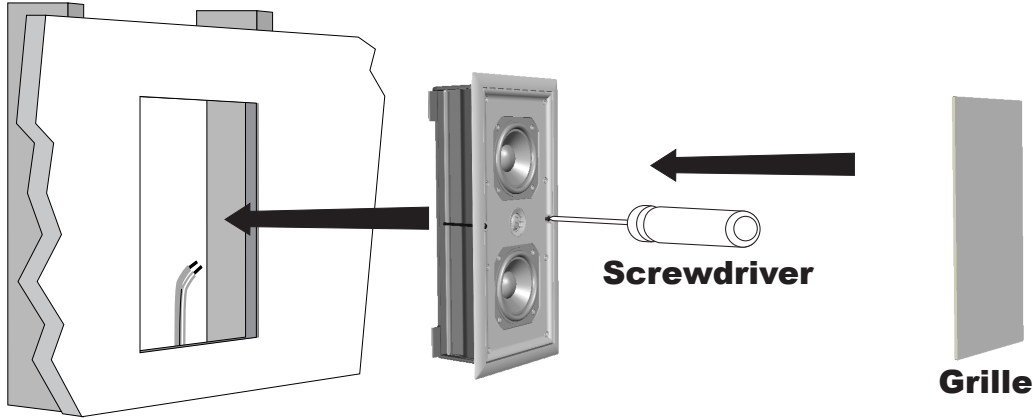
- **Remember to keep the edge of the cutout adjacent to the nearest stud at least 1-3/4" away from the center of the stud when mounting the speakers vertically.**



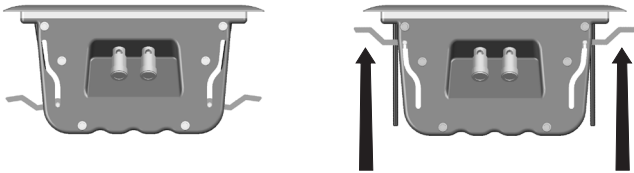


# Speaker Mounting (continued)

Vertical Installation Example



After making the wire connection, carefully insert the speaker into the cutout by first angling in one side so that the wall is sandwiched between the aluminum clamp rail and the front bezel. Maneuver the other side clamp through the hole and center the speaker within the cutout. Tighten the clamp screws firmly using a Phillips head screwdriver.



As you tighten the clamp screws, the aluminum clamp rails will secure the speaker as shown in the above drawings.

## Painting

The grille and frame of the speakers may be easily painted to match your décor. It is best to paint the frame and grille separately. Remove the speaker grille and use the paint mask (the center section from the cutout template) to protect the drivers and baffle. Paint the grille separately and let it dry completely before reinstalling it.

## Automatic Tweeter Protection

The HD series speakers can be safely used with any receiver rated above 20 watts per channel. There is little advantage in using more power than 100 watts per speaker, but receivers above this power rating can be used so long as the receiver is not operated at distorted levels.

To protect the tweeter, a self-resetting circuit breaker is incorporated into the crossover network. If the speaker is overpowered for an extended period, this circuit breaker will open and the tweeter will be disconnected. When the volume is reduced or the overload has passed, the circuit will reset and normal operation will be restored.

## Enclosure Cleaning

The speaker grilles and exposed rim can be cleaned with a soft, damp cloth or mild cleaner.

Brush or vacuum the grille panels with a soft brush attachment to your vacuum cleaner.

## Warning About Excessive Amplifier Distortion

Operating a receiver (of any power rating) beyond its maximum undistorted output level creates distortion – added high frequency sound not part of the musical program. Distortion dramatically increases the internal operating temperature of a speaker and will eventually cause the speaker's failure due to burned or melted internal parts. While Cambridge SoundWorks includes the most heat-tolerant parts commensurate with good acoustic design, the speaker's Limited Warranty against defects in materials or workmanship does not apply to parts that fail from long-term operation at very high temperatures.

# Specifications

**Dimensions:** MC650-iw 20 1/2" H x 7 3/4" W x 3 7/8" D  
MC630-iw 14 3/4" H x 7 3/4" W x 3 7/8" D

**Weight:** MC650-iw 12 pounds each  
MC630-iw 10 pounds each

**Impedance:** nominal 8 ohms

**Recommended amplifier power range:** 20W – 100W RMS per channel

**Frequency Range:** 80Hz – 24kHz

**Woofer Type:** MC650-iw 4 x 3-1/2" with molded composite cones and butyl-rubber surrounds  
MC630-iw 2 x 4" with molded composite cones and butyl-rubber surrounds

**Tweeter Type:** 3/4" aluminum dome with ferrofluid-damping and neodymium magnet

**Crossover:** MC650-iw 2-1/2 way, series-connected  
MC630-iw 2 way, series-connected

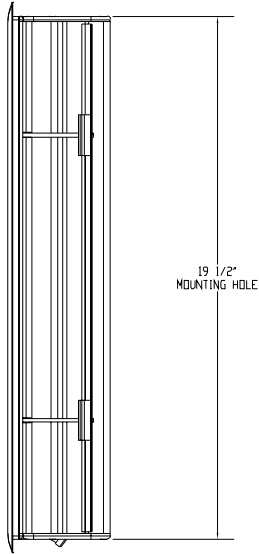
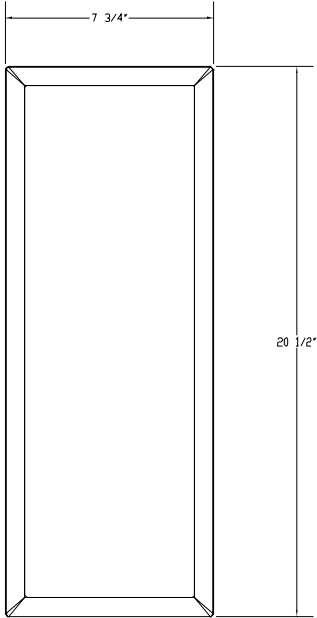
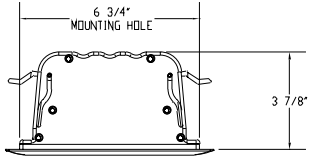
**Enclosure:** Extruded aluminum with molded-composite baffle and end-caps

## In Case of Difficulty

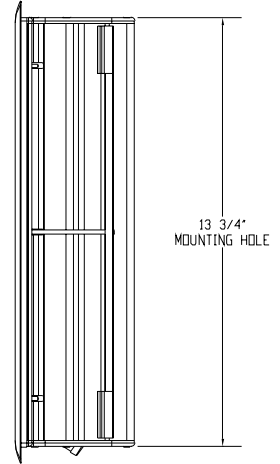
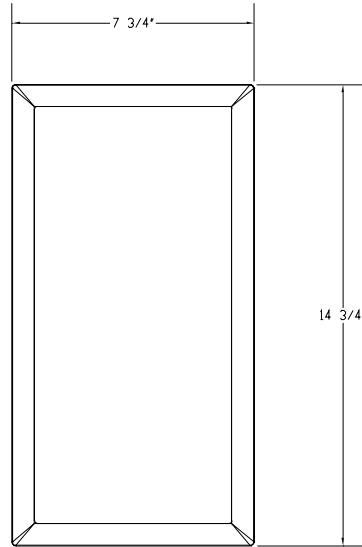
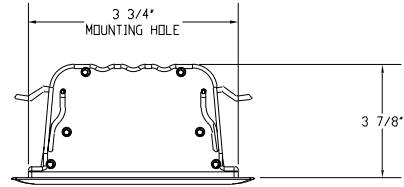
If you suspect there is a problem with your *Newton HD* loudspeaker, contact the retailer where it was purchased or a Cambridge SoundWorks Audio/Video Consultant, who will help you track down the problem. If together you agree there is something wrong with your *Newton HD* loudspeaker, return it to the retailer that sold it to you. Mail-order and Internet retailers will generally require a Return Authorization number. Products purchased from a Cambridge SoundWorks store, you may call us for a factory Return Authorization. **Do not return the *Newton HD* loudspeaker or any parts without first obtaining a Return Authorization.**

# Dimensions

MC650-iw



MC630-iw





# CAMBRIDGE SOUNDWORKS®

A CREATIVE® Company

120 Water Street  
North Andover, MA 01845

(800) FOR-HIFI  
(1-800-367-4434)

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