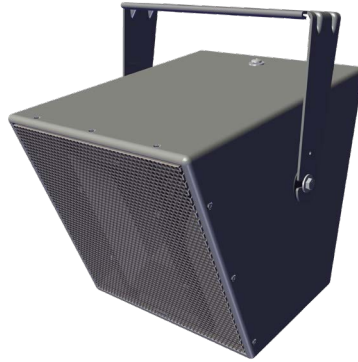


COMMERCIAL LOUDSPEAKERS

CCA-80 CONSTANT COVERAGE AISLE LOUDSPEAKER

Installation Guide



PRODUCT DESCRIPTION

- Purpose-built for long aisles and concourses in warehouses, sports complexes, shopping malls, hotels, themed entertainment venues, and more
- Efficient design with 70V/100V transformers for cost-effective sound reinforcement
- Dual speaker option provides additional mounting flexibility and reduced total system costs

INSTALLER SUPPLIED TOOLS / HARDWARE

- Safety-rated M10 Eyebolt or fastener, and safety cable
- Phillips screwdriver
- Small flat screwdriver
- 17mm Socket or Wrench
- Inclinometer

ACCESSORIES (OPTIONAL)

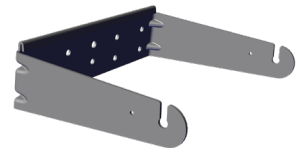
- M10EYBLTKIT - (4) M10 Eyebolts
- SPA-HBC 100 - Beam Clamp Kit

CONTENTS (CCA-80)

- CCA-80 Loudspeaker
- Mounting Bracket
- Hardware
 - M10 Hex Bolts (2)
 - M10 Flat Washers (3)
 - M10 Phillips Bolt (1)
 - M4 Phillips screws (4)
- Documentation: Bracket drilling template with QR code to access online manual; Loudspeaker Safety Guide



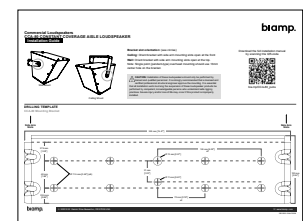
CCA-80 Loudspeaker



Mounting Bracket

CONTENTS (CCA-80D)

- CCA-80 Loudspeaker (x2) (contents noted above)
- Dual Mounting Bracket
- Hardware
 - M10 Hex Bolts (4)
 - M10 Flat Washers (4)
- Documentation: Quick Instruction sheet with QR code to access full online manual

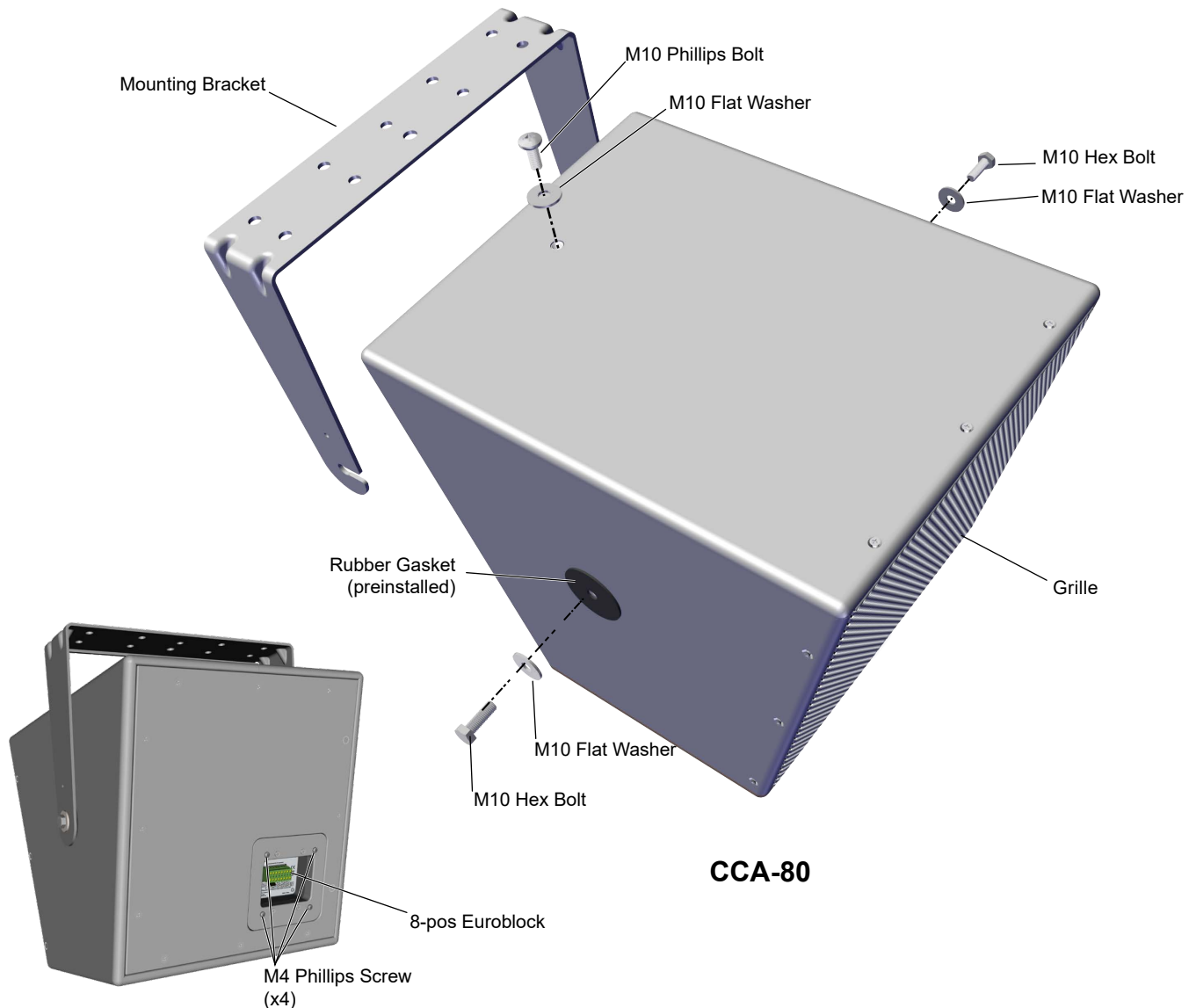


Bracket Drilling Template



CCA-80D Dual Mounting Bracket

PRODUCT REPRESENTATION



RIGGING AND ELECTRICAL SAFETY



IMPORTANT: The loudspeaker described in this manual are designed and intended to be mounted to differing building surfaces using a variety of rigging hardware, means and methods. Installation of loudspeakers should only be performed by trained and qualified personnel. All electrical connections must conform to applicable city, county, state, and national (NEC) electrical codes.



DANGER: The output power capabilities of audio amplifiers present a danger to installers especially in 70-volt and 100-volt distributed systems. To minimize the risk of electric shock from loudspeaker connecting cables, confirm that the power amplifiers are turned "off" before connecting loudspeaker cable(s) to the loudspeaker or amplifier. Always follow local electrical codes and proper electrical safety procedures.



IMPORTANT: Refer to the sections on installation and connections later in this manual for additional information on rigging and electrical safety.



IMPORTANT: Please review the safety guide accompanying this product and these installation instructions prior to installing this loudspeaker.



CAUTION: Installation of Biamp loudspeakers should only be performed by trained and qualified personnel. It is strongly recommended that a licensed and certified professional structural engineer approve the mounting. Severe injury and/or loss of life may occur if this product is improperly installed.



DANGER: It is advised that a safety cable be secured to a suitable load-bearing point separate from the primary loudspeaker mounting point, with as little slack as possible so as not to develop undue kinetic force if the primary mount were to fail.

PRODUCT INSTALLATION

Basic Installation Steps:

The loudspeaker is intended to be installed indoors and connected directly to an amplifier with digital signal processing (DSP). It must have factory processing (high pass filter & limiter) applied to prevent damage. The loudspeaker is designed to be oriented with the angled grille aiming out and down. It is not designed to be rotated.

- Run wires to locations as defined by system design
- Mount brackets (may also be done when installing the loudspeakers)
- Attach the loudspeakers to the brackets, set the angles and make the wiring connections
- Power the amps and commission/test the system

Mount Bracket to Structure

Follow the system design recommendations for placement and spacing. Run cabling to each location.

1. Use bracket template to mark holes.

Important: Bracket attachment hardware must be supplied by the installer and rated for the load and structure material.

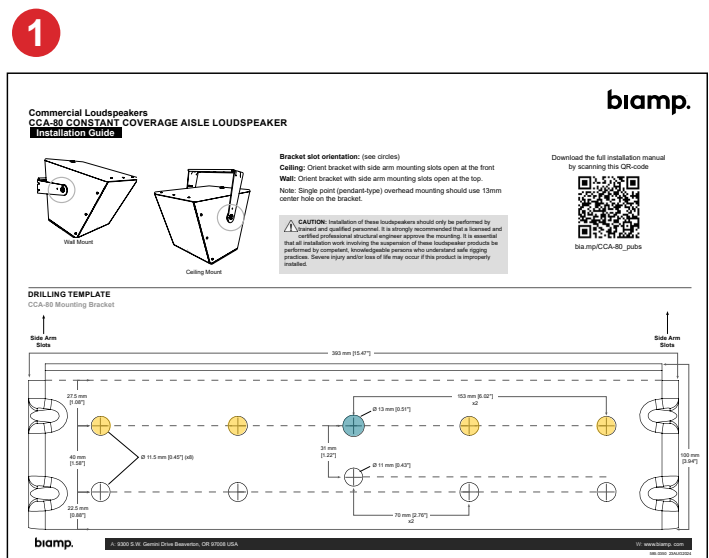
2. Mount the bracket with the side arm slots oriented correctly. (See circles noting slot direction).

Overhead Mounting: Single point (pendant-type) mounting should utilize the 13mm center hole on the bracket (blue highlight). Beam clamps should attach to any two holes on either side and in line with the large center hole (yellow highlight), if feasible. Those holes are fairly aligned with the loudspeaker's center of gravity.

Warehouse Designer:

Biamp's interactive tool to facilitate the design of an audio system for your warehouse or similar location. Use this tool to determine the type and how many loudspeakers are needed to cover your audio system needs. The report feature concisely lists the number, type, placement, and angle of each of the loudspeakers.

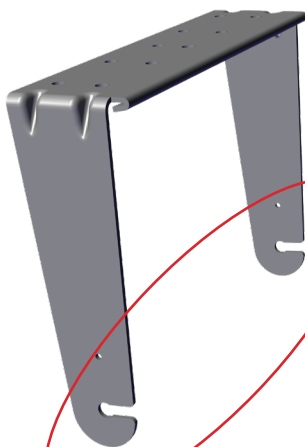
Link: [Warehouse Designer](#)



2



REAR

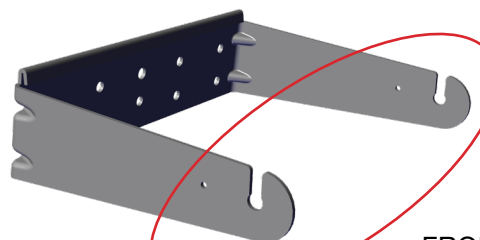


FRONT

Ceiling Orientation
(bracket mounted above)



TOP



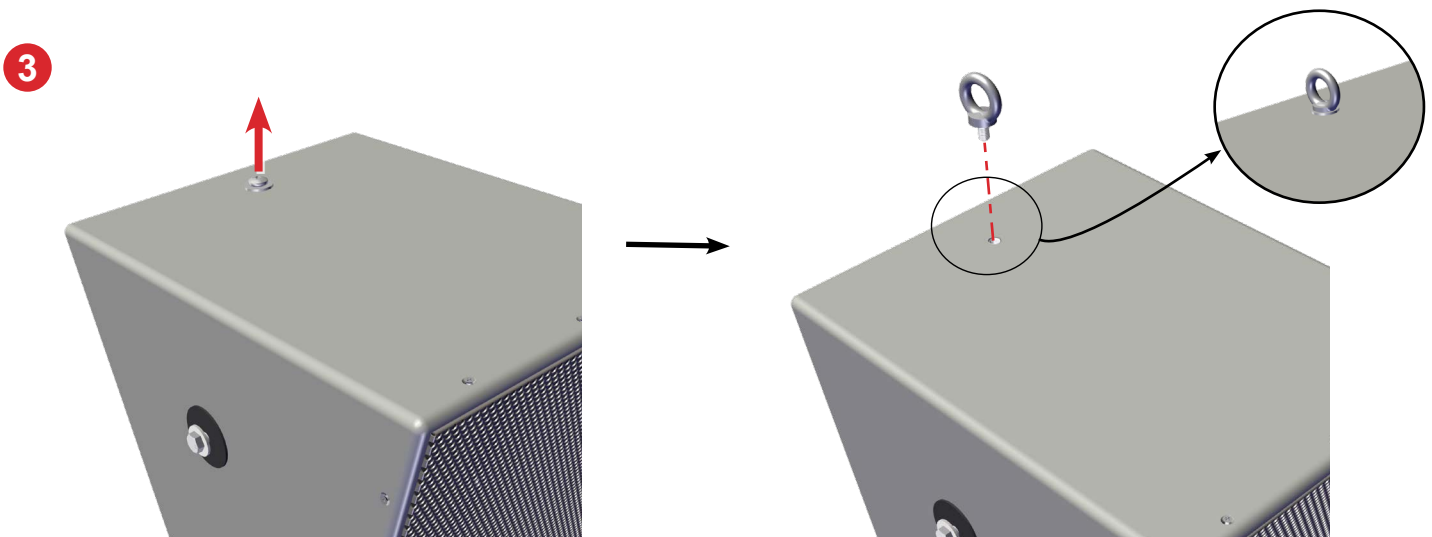
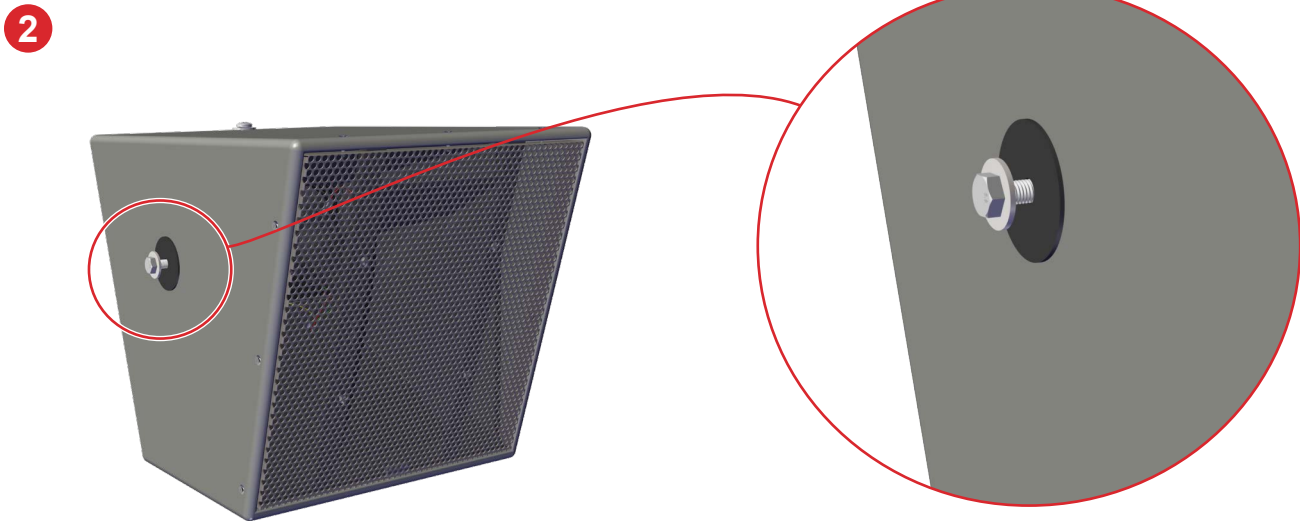
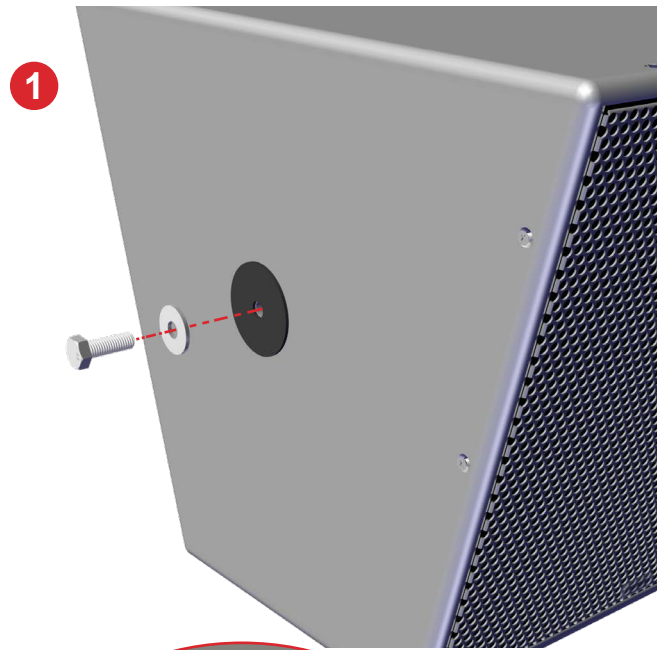
FRONT

Wall Orientation
(bracket mounted behind)

Install the Loudspeaker

1. Install the side hardware (x2). The rubber gaskets are preattached to the side of the cabinet. Install the bolt and flat washer as shown.
2. Leave approximately 6-7 mm (.25") of thread exposed on the bolts.
3. Safety Cable: Remove the Phillips head bolt and flat washer from the top mounting point. Install an M10 eyebolt or similar load-rated fastener. Refer to the grey box on the next page for details. *The eyebolt is shown as an example.*

Note: Community Accessory M10EYBLTKIT kit contains 4 eyebolts and is suitable for this use.

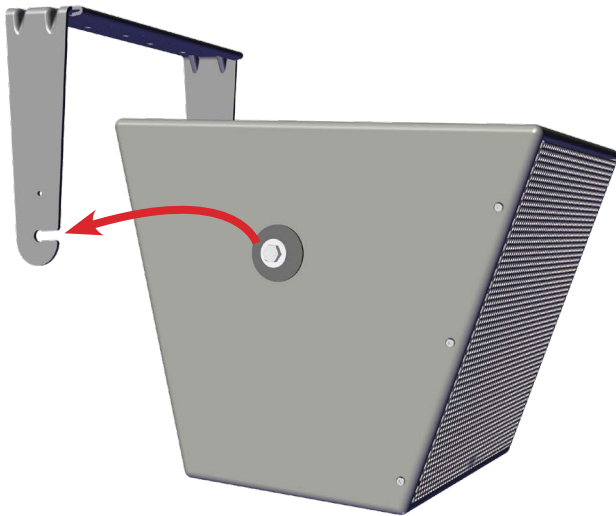


Install the loudspeaker (continued)

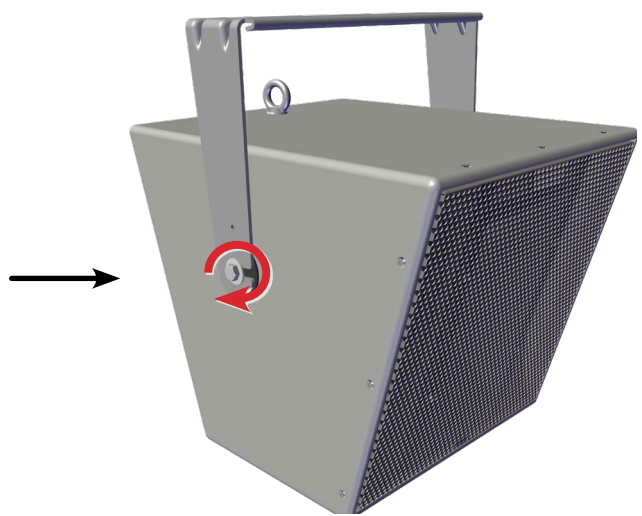
4. Mount the loudspeaker on the bracket as shown.
5. Snug tighten the bolts to set the aiming angle, and fully tighten once that angle is set.
(Maximum torque 11.86 Nm [8.7 ft-lb])
6. Ensure all (3) mounting points are filled with hardware to maintain performance and preserve the product warranty.
7. Power and test the system. Refer to safety information at right.

The safety cable and hardware are not included.
Consult a structural engineer for the appropriate cable for the load and application. The safety cable must be secured to a suitable load-bearing point separate from the loudspeaker mounting point, with as little slack as possible, so as not to develop undue kinetic force if the primary mounting were to fail.

4

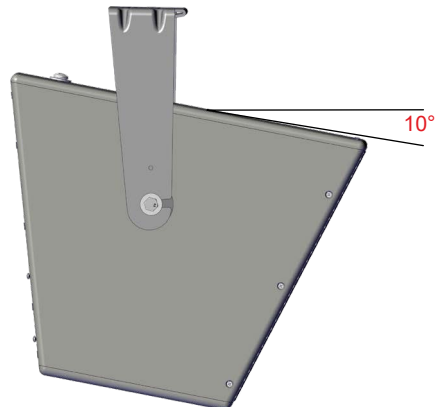
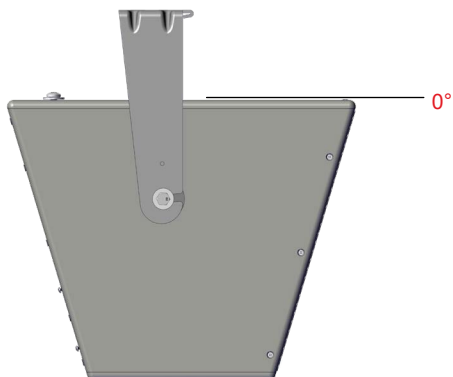


5



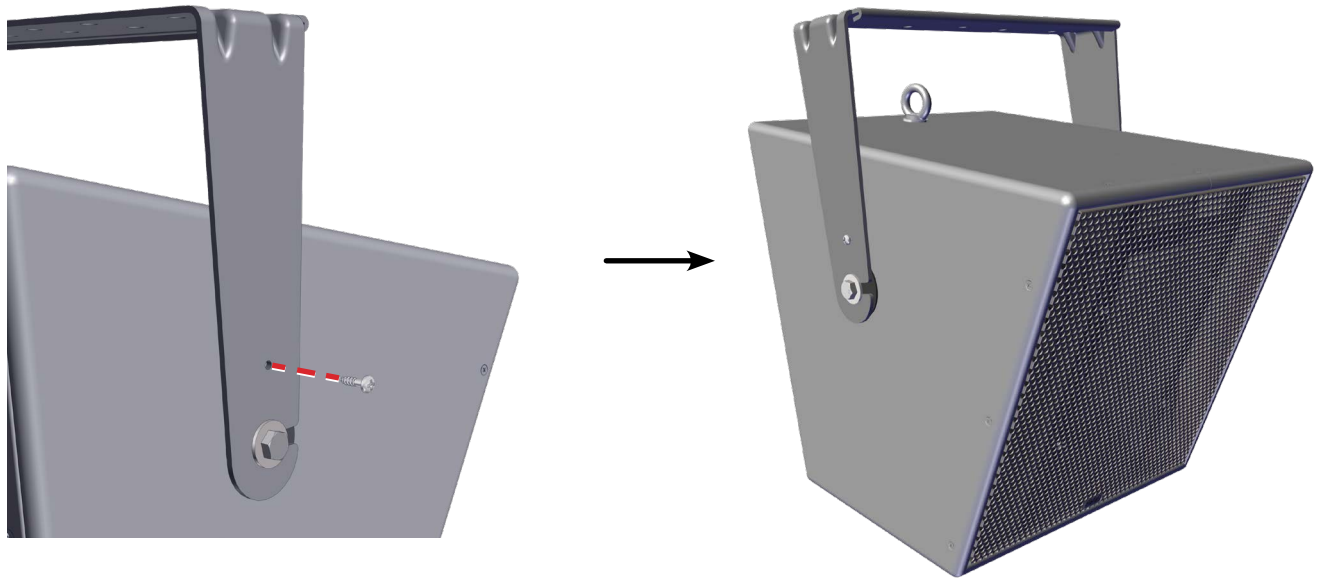
Aiming Angles

Use an inclinometer to set the cabinet downtilt as specified in the report(s) from the system designer. Downtilt angles are in increments of 1°. Maximum tilt with an overhead hang is approximately 23°-25° depending if an eyebolt is used for the safety cable.



Final Installation Steps

8. Once the system has been tested and the coverage angle verified to be correct, the bracket may optionally be locked into place by screwing a M5 x 20 (or #10 x 3/4") screw through the smaller hole and into the cabinet. Screws are installer-supplied.



Note: If the aiming angle is 0-5° the friction of the bracket against the rubber gasket will be enough to maintain the angle. For angles more than 5°, Biamp recommends installing a screw to guarantee long term stability of the cabinet angle.

Dual Bracket (CCA-80D) Installation

The Dual Bracket kit allows two CCA-80s to be mounted back to back from a central mounting point and aimed in opposite directions.

Basic Installation Steps:

- Run wires to locations as defined by system design
- Mount Individual brackets to the dual bracket (may also be done when installing the loudspeakers)
- Mount the dual bracket to the structure
- Attach the loudspeakers to the u-brackets, set the angles and make the wiring connections
- Power the amps; commission and test the system

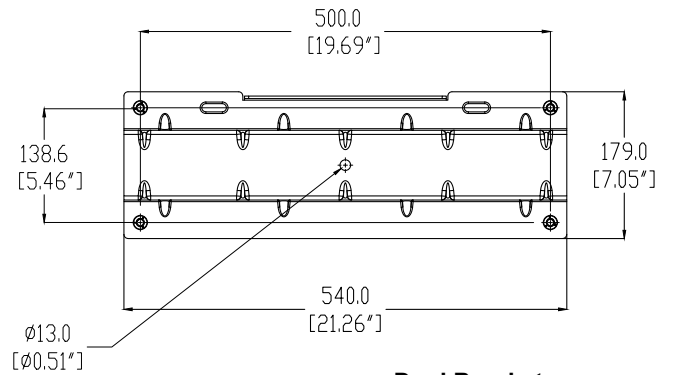


Distance between cabinet centers = 500 mm (19.69")

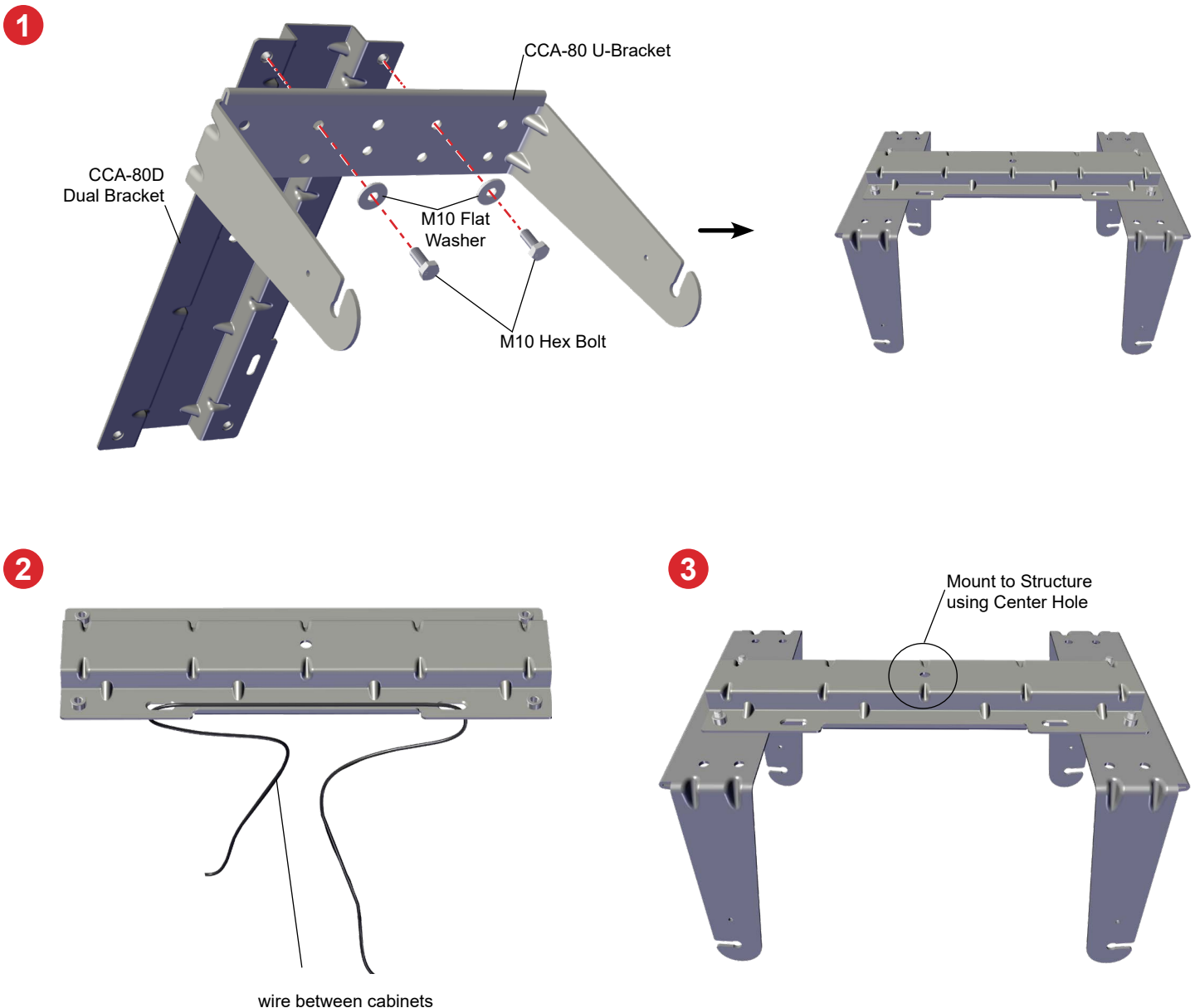
Next page >>

Dual Bracket (CCA-80D) Installation (continued)

1. Attach the CCA-80 U-Brackets (2) to the underside of the dual bracket. Ensure the U-Bracket slots face out.
2. If using a jumper wire to go from one cabinet to the other, thread it through the oblong holes as shown. It can be secured with cable clips on the rear panel.
3. Attach the dual bracket to the structure. A center hole is provided for this purpose. The Installer must provide hardware sufficient for the load and structure. The combined weight of CCA-80s and the dual bracket is 70.5 lbs [32 kg].
4. Follow the steps 4-7 ([page 5](#)) to hang and secure the CCA-80 cabinets on the U-Brackets.



Dual Bracket



Wire the Loudspeaker

The loudspeaker is intended to be connected directly to an amplifier with digital signal processing (DSP). It must have factory processing (high pass filter & limiter) applied to prevent damage.

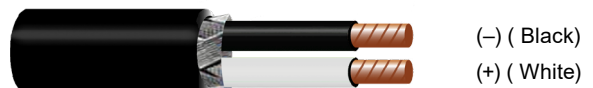
The euroblock will accept 12 ga and smaller wires. The input panel area may be covered with a installer-supplied standard dual gang plate - 2 hole patterns (US & EU) and 4 connection screws are included. If a cover or conduit is being used, prepare it and thread the wire through, leaving enough to attach to the euroblock.

1. Wire the euroblock.

See **1a** for 8 ohm low impedance operation - jumper must be moved to unused terminals or removed from the euroblock connector.

See **1b** for 70V/100V operation. Use the appropriate tap for your application. **Keep the jumper in place on the 8 Ω and Jumper terminals.**

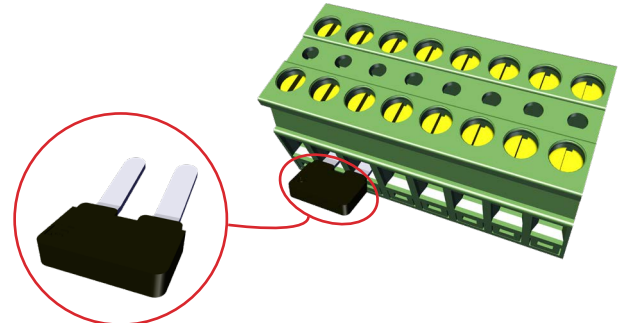
See **1c** for an example of pass-thru wiring to another cabinet. The conductors should mirror each other on the euroblock.



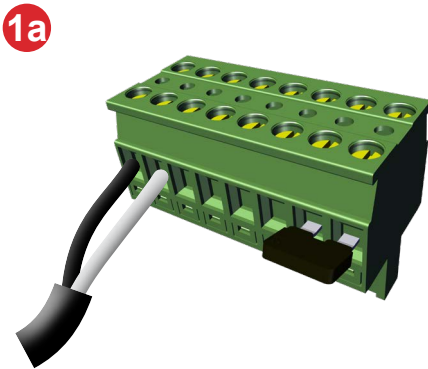
Standard Wiring



Wire Ferrule (optional)



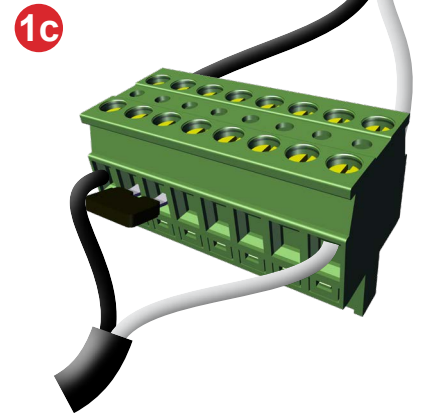
8-position euroblock dual-sided connector
(Jumper is pre-installed)



1a
Low Impedance operation
(move preinstalled jumper to
unused terminals)



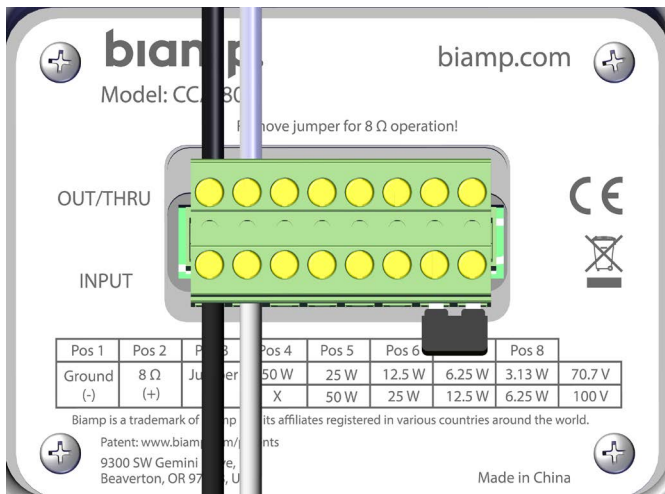
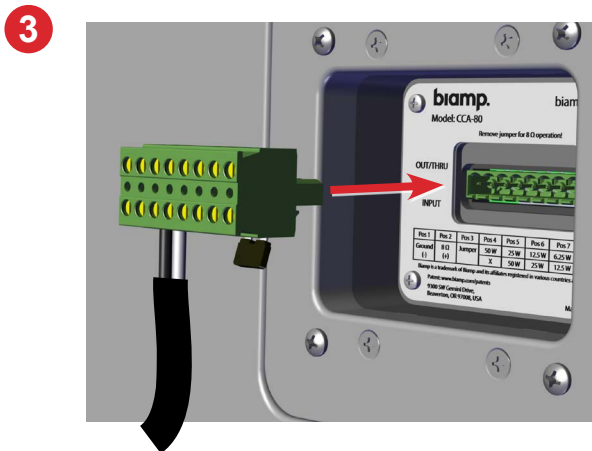
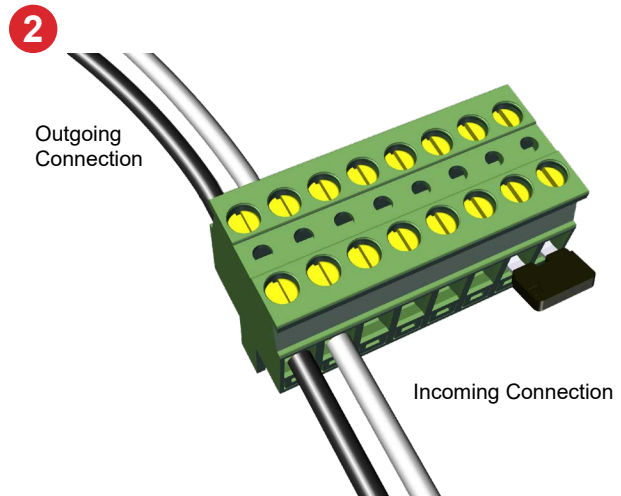
1b
70 V / 100 V operation
(keep jumper on 8 Ω and Jumper
positions)



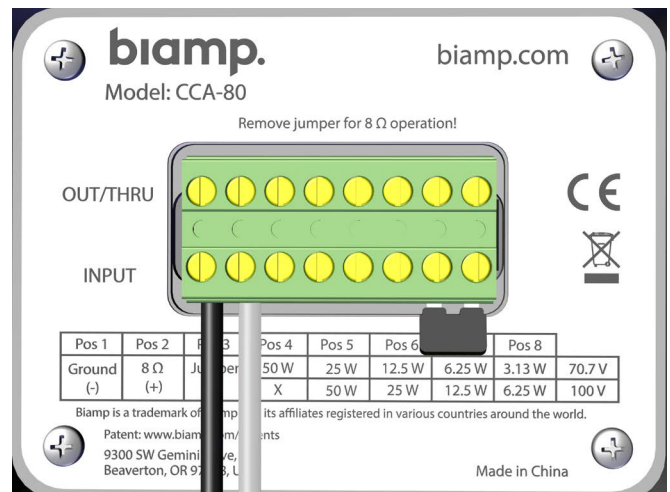
1c
Pass-thru to another cabinet

Wire the Loudspeakers (continued)

2. Be consistent in wiring the euroblock terminals - the incoming wire should be on the lower side and the outgoing wire on the upper side.
3. Plug each Euroblock into their respective cabinets.



Cabinet with pass-thru connection
(8 Ω operation shown)



Cabinet - independently wired
(or last cabinet in series)

Cover Installation

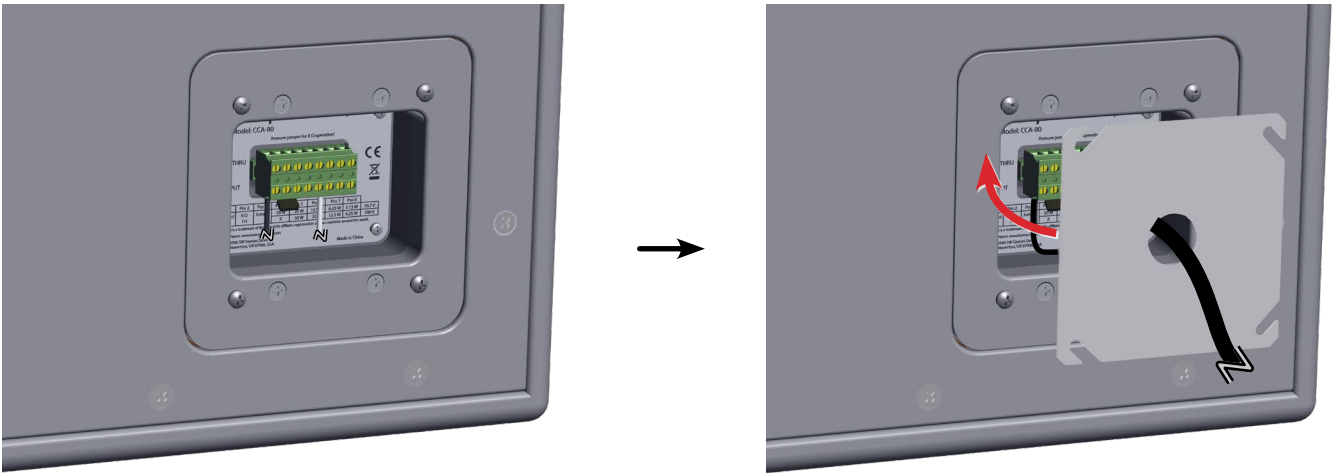
There are preinstalled screws in the cabinet that can be used to attach a cover over the input area .

Note: Installer must supply the cover, cable clamp and conduit.

Cover Installation:

Loosen or remove the screws to install the cover (the wire should have been threaded though before wiring the euroblock (typical slotted cover shown). Remove screws if the cover has holes rather than slots.

Once the cover is in place, tighten screws to secure it.



Cable clamp or conduit fitting not shown

Alternate hole location:

Remove the preinstalled screws and flat head M4 screws. The button head screws will typically be used in the center-most holes (shown) to install a cover. Install cover and tighten screws.



CCA-80 TECHNICAL INFORMATION

Operation

The CCA-80 Constant Coverage aisle loudspeaker is a coaxial, horn-loaded, three-way design. It provides even coverage over a rectangular audience area, delivering consistent sound quality and uniform SPL. When using Biamp power amplifiers and/or Tesira DSP, a mixed-phase FIR loudspeaker optimization preset for the CCA-80 can be loaded. This improves both the frequency response and transient response of the CCA-80 loudspeaker system.

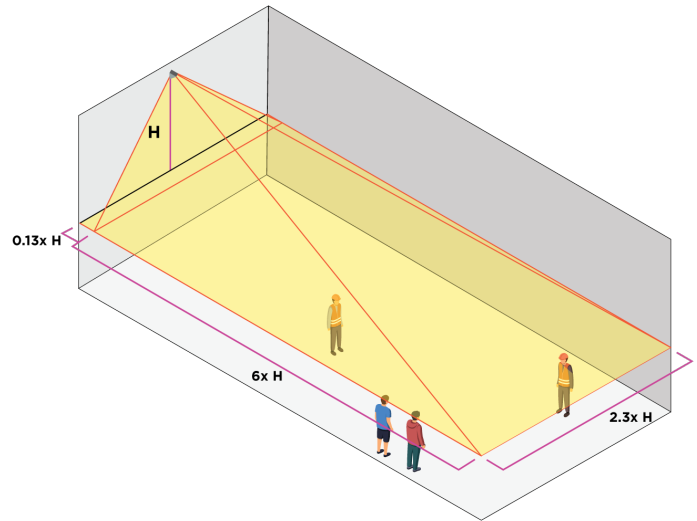
The Constant Coverage MF/HF horn utilizes amplitude shading to direct more acoustical energy to the top of the horn (covering the farther audience area) and less energy to the bottom of the horn (covering the closer audience area). This yields an asymmetrical vertical coverage pattern with higher SPL radiated from the top of the horn and directed towards the farther audience area. The natural tendency is for the SPL in the farther audience area to be lower than in the closer audience area, due to their different distances from the loudspeaker and the inverse square law. The higher SPL directed towards the farther audience area helps to offset the SPL variations that would otherwise occur, front-to-back, in the audience area.

Additionally, the horizontal coverage is narrower for the upper part of the horn (far audience area) and wider for the lower part (near audience area). This results in a more rectangular coverage pattern of the horn, instead of a trapezoidal or fan-shaped coverage pattern that most conventional, constant directivity horns would produce.

The patent-pending Constant Coverage horn design allows for more consistent SPL over a greater distance away from the loudspeaker (i.e., "throw") that would traditionally require additional near-fill or far-fill delay loudspeakers. Reducing the number of loudspeakers required to cover an area reduces equipment cost, installation time and cost, and improves sound quality and intelligibility of the system.

Summary of advantages

- The coverage pattern that better matches the target audience area.
- The SPL is more consistent from the front of the audience area to the back.
- Increased intelligibility due to better coverage and the need for fewer loudspeakers (e.g., lower N factor).
- Fewer loudspeakers results in lower total system cost, faster installation time, and less wire to run.



Location, Aiming, and Coverage Area

The overall size of the coverage area for a CCA-80 loudspeaker is determined by its effective mounting height; this is the height above ear level. For listeners that will be standing, typical ear level is 1.7 m [5.6 feet]. The coverage area extends a distance that is about six times the effective mounting height. The width of the coverage area is about 2.3 times the effective mounting height. For estimating the coverage area during the initial planning phase of a project the 1 : 2.3 : 6 rule can be used. This can also be thought of using the following simple equations.

Effective Mounting Height = Mounting Height – Ear Height (usually 1.7 m [5.6 ft.])

Coverage Width = 2.3 x Effective Mounting Height

Coverage Length = 6 x Effective Mounting Height

It should be noted that the coverage area begins almost directly below the loudspeaker, at about 0.13 times the effective mounting height. This allows for two CCA-80 loudspeakers to be mounted back-to-back using the CCA-80 Dual Mounting Bracket. The result is an almost seamless coverage area that extends 12 times the effective mounting height!

In most cases there won't be a need to aim the loudspeaker down. There is about a 15° down-tilt of the primary coverage lobe built into the CCA-80. However, if improved coverage for a particular application can be achieved by aiming the loudspeaker down, this is easily discovered by using Biamp's [Warehouse Designer](#) to determine the spacing and necessary angles. The installer can easily set the resulting angle by using an inclinometer with the U-bracket included with the CCA-80.

Additionally, loudspeaker coverage simulation software, like EASE® or EASE® Focus, can be used to map the SPL in the target audience area. This allows the designer to optimize the mounting height and aiming angle of the CCA-80 to obtain the desired results.

EASE® is a registered trademark of AFMG Technologies GmbH.

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