



# **SLS™ CS1090 Speaker User's Guide**

Issue 2 11/15/2018

Part Number 9112433

---

---

# SLS Audio

## A Division of Dolby Laboratories

### Headquarters

**SLS Audio**  
1650 West Jackson Street  
Ozark, Missouri 65721 USA

**Telephone** 417-883-4589

**Fax** 417-485-5606  
[www.slsaudio.com](http://www.slsaudio.com)

DOLBY LABORATORIES, INC. WARRANTS, TO THE ORIGINAL PURCHASER ONLY, THAT THIS PRODUCT WILL BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP UNDER NORMAL USE FOR THE GREATER OF 1 YEAR, OR THE MINIMUM PERIOD REQUIRED UNDER LOCAL LAW, COMMENCING UPON THE DATE OF ORIGINAL RETAIL PURCHASE. THIS LIMITED WARRANTY IS NON-TRANSFERABLE. THIS LIMITED WARRANTY DOES NOT COVER DAMAGE OR MALFUNCTIONS CAUSED BY ACCIDENT, DISASTER, MISUSE (INCLUDING ANY USE IN A MANNER CONTRARY TO THE INSTRUCTIONS CONTAINED IN ANY USER GUIDE OR ON THE PACKAGING OF THE PRODUCT), ABUSE, NEGLIGENCE OR OTHER EXTERNAL CAUSES; POWER SURGES; IMPROPER INSTALLATION; THIRD-PARTY PRODUCTS; UNAUTHORIZED OPENING, USE, SERVICE, TAMPERING, ALTERATION, REPAIR OR MODIFICATION; OR INADEQUATE PACKING OR SHIPPING PROCEDURES. THIS LIMITED WARRANTY ALSO DOES NOT COVER COSMETIC DAMAGE OR ISSUES INCIDENT TO NORMAL WEAR AND TEAR.

#### **DISCLAIMER OF WARRANTIES**

THERE ARE NO OTHER EXPRESS OR IMPLIED WARRANTIES AND NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR OF NON-INFRINGEMENT OF THIRD-PARTY RIGHTS (INCLUDING, BUT NOT LIMITED TO, COPYRIGHT AND PATENT RIGHTS).

#### **LIMITATION OF LIABILITY**

IT IS UNDERSTOOD AND AGREED THAT DOLBY LABORATORIES' LIABILITY, WHETHER IN CONTRACT, IN TORT, UNDER ANY WARRANTY, IN NEGLIGENCE, OR OTHERWISE, SHALL NOT EXCEED THE COST OF REPAIR OR REPLACEMENT OF THE DEFECTIVE COMPONENTS OR ACCUSED INFRINGING DEVICES, AND UNDER NO CIRCUMSTANCES SHALL DOLBY LABORATORIES BE LIABLE FOR INCIDENTAL, SPECIAL, DIRECT, INDIRECT, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, DAMAGE TO SOFTWARE OR RECORDED AUDIO OR VISUAL MATERIAL), COST OF DEFENSE, OR LOSS OF USE, REVENUE, OR PROFIT, EVEN IF DOLBY LABORATORIES OR ITS AGENTS HAVE BEEN ADVISED, ORALLY OR IN WRITING, OF THE POSSIBILITY OF SUCH DAMAGES.

#### **WARRANTY CLAIMS**

IN ORDER TO MAKE A WARRANTY CLAIM, YOU MUST CONTACT CINEMASUPPORT AT [cinemasupport@dolby.com](mailto:cinemasupport@dolby.com) DURING THE WARRANTY PERIOD. A CINEMA SUPPORT REPRESENTATIVE WILL DETERMINE WHETHER THE PURPORTED DEFECT IS COVERED UNDER THE WARRANTY. IF COVERED, [cinemasupport@dolby.com](mailto:cinemasupport@dolby.com) WILL PROVIDE YOU WITH DETAILED INFORMATION ON HOW AND WHERE TO SEND YOUR DEFECTIVE PRODUCT. FAILURE TO FOLLOW THE REPAIR RETURN INSTRUCTIONS MAY VOID YOUR WARRANTY.

#### **PRODUCT MODEL:**

THIS DOCUMENTATION APPLIES TO MODEL CID1012.

#### **PATENTS:**

THIS PRODUCT MAY BE PROTECTED BY PATENTS AND PENDING PATENT APPLICATIONS IN THE UNITED STATES AND ELSEWHERE. FOR MORE INFORMATION, INCLUDING A SPECIFIC LIST OF PATENTS PROTECTING THIS PRODUCT, PLEASE VISIT <http://www.dolby.com/patents>.

Dolby and Dolby Atmos are registered trademarks of Dolby Laboratories.  
SLS and the SLS Audio logo are trademarks of Dolby Laboratories.  
All other trademarks remain the property of their respective owners.  
© Dolby Laboratories 2018 All rights reserved.

Part Number 9112433  
Issue 2



## IMPORTANT SAFETY INSTRUCTIONS



1. **USER ASSUMES ALL RESPONSIBILITY AND LIABILITY FOR THE INSTALLATION OF THIS PRODUCT.**
2. Prior to installing this product, read and completely understand the installation instructions. You must read these instructions to prevent personal injury and property damage. Keep the installation instructions in an easily accessible location for future reference.
3. Installation must be performed by qualified, licensed, and insured installers, and installed in accordance with all laws, rules, and regulations applicable to the installation site. Failure to do so could result in serious personal injury or even death. Consult an installation professional if the installation instructions are not understood.
4. Compliance with local building codes (and, where applicable, national codes) is the responsibility of the buyer and/or installer. Users should consult with local regulatory authorities for specific codes and/or guidelines for the use of this product.
5. Use proper personal lifting techniques when working with heavy objects to avoid personal injury.
6. Any supplied rigging hardware is intended only for use with the specified loudspeaker. The user assumes all risk of loss and/or injury arising out of the use of the supplied rigging hardware with any other loudspeaker.
7. This guide is meant only for the purpose of instructing the user in the intended use of SLS supplied rigging. All other rigging is considered part of the venue and/or user supplied equipment and is not addressed in this guide.”
8. This guide is not a comprehensive source for rigging in general. User assumes all responsibility for ensuring that accepted rigging and safety practices are employed. User assumes all responsibility for the appropriate use of SLS supplied rigging hardware and follows at a minimum all applicable laws, rules, and regulations in force for each venue.
9. For ceiling installations, the system safety cable must be mounted to the structural steel above the suspended ceiling tile in an auditorium. Do not attach the system safety cable to any wood structure, wood roof joists, or wood frame. For wall installations, the system safety cable must be anchored to the building structure independent of the primary rigging device. In all instances, the safety cable must be mounted in a way that supports a minimum of 5 times the static weight of the speaker, or greater if a higher requirement is mandated as per local laws.
10. Do not install on a structure that is prone to abnormal vibration, movement, or chance of impact. Failure to do so could result in damage to the equipment and/or damage to the mounting surface.
11. Make sure that no water pipes, natural gas lines, electrical wire, or conduit are present where the speaker is to be installed. Cutting or drilling into water pipes, natural gas lines, electrical wire, or conduit could cause serious personal injury or property damage.
12. Prior to installation, always inspect all hardware components for wear, deformations, corrosion, and missing or damaged parts.
13. This product is intended for installation in dry indoor locations only. Premature product failure or serious personal injury could occur if this product is used outdoors or in wet indoor environments.
14. No open flame sources should be placed on the apparatus.

15. No information contained in this guide is intended as a warranty on the part of SLS. Anyone using this information assumes all liability arising from its use. Product abuse, use of the product not in accordance with SLS instructions, or use in an application for which the product has not been designed is not covered under any SLS warranty, nor is SLS liable for any loss or damage.
16. THIS APPARATUS IS NOT INTENDED FOR FLOOR-STANDING INSTALLATIONS WITH NO ANCHORAGE.

---

# Table of Contents

<b>Chapter 1 Introduction .....</b>	<b>1</b>
1.1 CS1090 Overview.....	1
1.2 Customer Support and Spare Parts .....	2
<b>Chapter 2 Installing the CS1090 .....</b>	<b>3</b>
2.1 Installing the CS1090 Using the YK-1090 in 5.1 and 7.1 Auditoriums.....	3
2.1.1 Tools Required.....	3
2.1.2 Identifying the YK-1090 Rigging Kit Parts.....	3
2.1.3 Installing the CS1090 in a 5.1 or 7.1 Sidewall Configuration .....	4
2.1.4 Connecting the Safety Cable .....	6
2.1.5 Connecting Audio.....	6
2.2 Installing the CS1090 Using the YK-1090 and MMA-1090 in Dolby Atmos Auditoriums....	7
2.2.1 Tools Required.....	7
2.2.2 Identifying the MMA-1090 Rigging Kit Parts .....	8
2.2.3 Installing the CS1090 in a Dolby Atmos Overhead Configuration .....	8
2.2.4 Connecting the Safety Cable .....	11
2.2.5 Connecting Audio.....	12
2.2.6 Installing the CS1090 in a Dolby Atmos Sidewall Configuration.....	12
2.2.7 Connecting the Safety Cable .....	15
2.2.8 Connecting Audio.....	15
2.3 Dimensions.....	16

---

---

# Introduction

## 1.1 CS1090 Overview

The SLS™ CS1090 is a high-performance cinema surround loudspeaker for use in 5.1 and 7.1 cinema auditoriums and small to medium sized Dolby Atmos® equipped auditoriums. These speakers ship in pairs.

Two optional rigging kits are available for the CS1090:

- YK-1090 kit (enables only tilt adjustments for side-wall installations):
  - This kit includes yokes for use in all auditoriums, shoulder eyebolts, and other hardware.
  - A dedicated 1/4"-20 sized insert is provided on each speaker for use with the provided eyebolts (or installer-supplied eyebolts) to attach a safety cable.
- MMA-1090 kit (for Dolby Atmos installations).
  - This add-on kit to the YK-1090 kit enables three-axis adjustments for ceiling installations and two-axis adjustments for side-wall installations. It includes U-brackets, screws, and other hardware.
  - You can also use the MMA-1090 rigging kit with the FCT-24 flat-mount or RCT-24 recessed-mount ceiling tile rigging kits to enable the CS1090 to fly from the ceiling tile grid. However, the RCT-24 may restrict the available angle. Detailed documentation on these ceiling tile installations is provided in the *SLS Ceiling Tile Rigging Kits Installation Guide*, which is available for download at <https://www.dolbycustomer.com>.

For third-party hardware rigging installations, four 1/4"-20 sized attachment points in a standardized layout on the back of the CS1090 are available. The four bolts that are already installed in these positions on each speaker may be reused for fastening the third-party hardware to the CS1090.

## 1.2 CS1090 Specifications

Following are the CS1090 general specifications:\*

- Frequency response: 55 Hz to 20 kHz
- Sensitivity: 1 watt @ 1 M: 94 dB
- Continuous power rating: 300 watts
- Maximum continuous rated SPL at 1 meter: 119 dB
- Coverage angle: 90 degrees horizontal, 60 degrees vertical
- Drivers: 10-inch low-frequency, 1-inch compression driver high-frequency
- Size:
  - Width: 15.48 inches (393 millimeters)
  - Height: 18.5 inches (470 millimeters)
  - Top depth: 11 inches (280 millimeters)
  - Bottom depth: 6.2 inches (157 millimeters)

- Net weight: 28 pounds (12.7 kilograms)

\*Due to product improvement research, SLS Audio reserves the right to make changes to existing products without notice.

## 1.2 Customer Support and Spare Parts

If you need assistance installing the CS1090, require replacement parts, or have other questions, you can contact us at:

Portal: [www.dolbycustomer.com](http://www.dolbycustomer.com)

Email: [cinemasupport@dolby.com](mailto:cinemasupport@dolby.com)

Region	Support Phone Numbers
Americas	+1-415-645-4900
EMEA	+44-33-0808-7700
APAC	+86-400-692-6780
Japan	+81-3-4540-6782



---

# Installing the CS1090

## 2.1 Installing the CS1090 Using the YK-1090 in 5.1 and 7.1 Auditoriums

You can use the YK-1090 rigging kit for 5.1 and 7.1 auditorium sidewall mounting installations (where only the tilt axis needs to be adjusted).



---

**Warning:** TO PREVENT INJURY, THIS APPARATUS MUST BE SECURELY ATTACHED TO THE FLOOR/WALL IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS. CONSULT A PROFESSIONAL MECHANICAL OR STRUCTURAL ENGINEER TO OBTAIN APPROVAL FOR ALL ATTACHMENTS TO THE STRUCTURE. THIS APPARATUS MUST BE INSTALLED BY LICENSED PROFESSIONAL INSTALLERS. IF NOT ATTACHED TO THE STRUCTURE PROPERLY, THIS APPARATUS COULD FALL AND CAUSE PERSONAL INJURY OR DEATH. INSPECT ALL COMPONENTS BEFORE INSTALLATION. THIS APPARATUS IS NOT INTENDED FOR FLOOR STANDING INSTALLATIONS WITH NO ANCHORAGE. ALL LOCAL BUILDING AND SEISMIC CODES MUST BE ADHERED TO.

---

### 2.1.1 Tools Required

- 7/32-inch Allen wrench to remove the bolts for installation of the YK-1090
- #2 Phillips screwdriver for attaching speaker wire to barrier strip

### 2.1.2 Identifying the YK-1090 Rigging Kit Parts

The following parts are included in the YK-1090 rigging kit:

- Two yokes
- Four neoprene washers
- Two ¼"-20 closed shoulder eyebolts (not shown; attach directly to each CS1090)

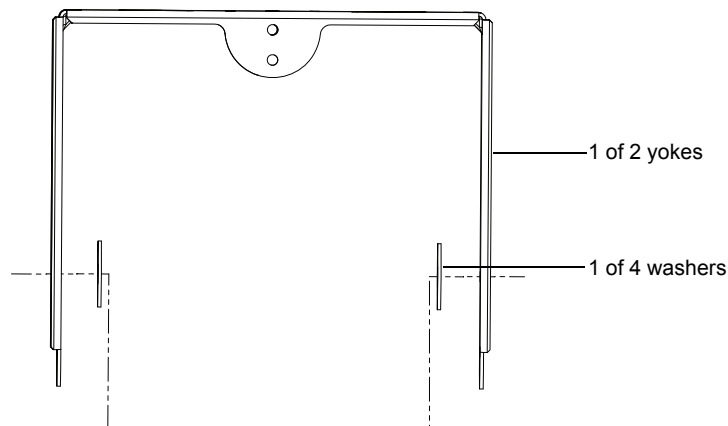


Figure 2-1 YK-1090 Rigging Kit Parts

### 2.1.3 Installing the CS1090 in a 5.1 or 7.1 Sidewall Configuration



**Warning:** USE THE APPROPRIATE QUANTITY OF M10 OR 3/8-INCH BOLTS TO SECURE THE HARDWARE TO THE STRUCTURE. BASED ON THE WEIGHT OF THE APPARATUS, INSTALLER-SUPPLIED HARDWARE MUST HAVE A MINIMUM 5:1 SAFETY FACTOR OR GREATER IF A HIGHER REQUIREMENT IS MANDATED AS PER LOCAL LAWS. HARDWARE MUST BE SECURELY TIGHTENED.

To install the CS1090, there are two yoke attachment options:

- If maximum adjustment on the tilt axis is needed, you need to mount the CS1090 to the attachment points that are farthest from the wall.
- If the maximum adjustment is not required, we recommend that you mount the CS1090 to the attachment points close to the wall to avoid obstructing line of sight to the screen.

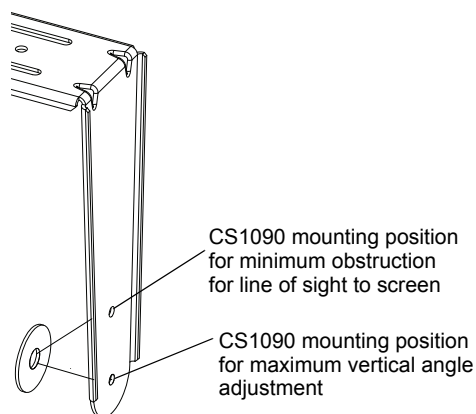
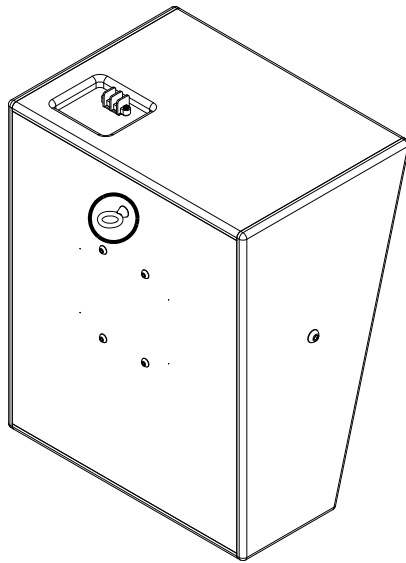


Figure 2-2 Yoke Placement Options

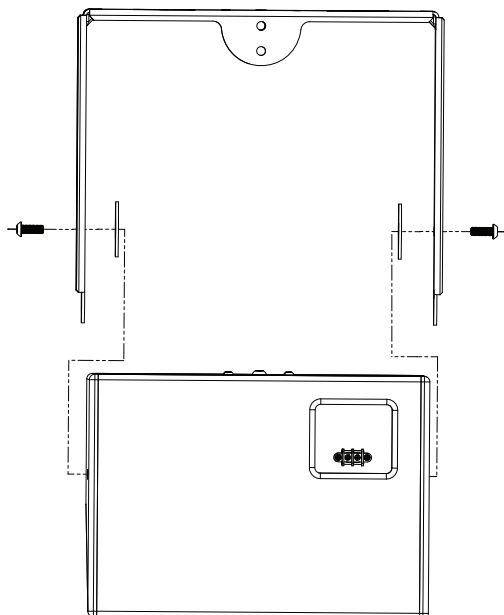
1. Remove the ¼"-20 bolt, and insert and install the provided ¼"-20 shoulder eyebolt (or an installer-supplied eyebolt) at the back of the CS1090.



**Figure 2-3** Eyebolt in Place for Safety Cable

To install the CS1090:

1. Mount the yoke to the wall with installer-supplied hardware using a minimum of four fasteners. We recommend M10 or 3/8" sized bolts.
2. Remove the two 3/8"-16 bolts from the sides of the CS1090.
3. Peel off the paper on the neoprene washers to expose the adhesive layer, and adhere the washers to the yoke in the desired yoke position holes.
4. Position the CS1090 between the yoke, and insert the two 3/8"-16 bolts and lightly tighten.
5. Adjust the tilt angle as needed, and securely tighten the bolts to complete the installation.



**Figure 2-4** CS1090 Placement

### 2.1.4 Connecting the Safety Cable

After the CS1090 is attached to the structure, you must connect a secondary safety attachment point to an independent point on the building structure. The 1/4"-20 eyebolt is provided to attach an installer-supplied safety cable. Based on the weight of the CS1090, all installer-supplied safety rigging hardware must have a minimum 5:1 safety factor or greater if a higher requirement is mandated as per local laws. Remove all slack to avoid any shock loading of the cable in the event of a primary rigging failure.



---

**Warning:** INSTALLER-SUPPLIED RIGGING HARDWARE MUST HAVE A MINIMUM 5:1 SAFETY FACTOR BASED ON THE WEIGHT OF THE APPARATUS. YOU MUST SECURELY TIGHTEN THE HARDWARE. DO NOT SECURE THE SAFETY CABLE BACK TO THE YOKE. REMOVE ALL SLACK FROM THE CABLE. REPLACE THE CABLE IF IT HAS BEEN PULLED IN THE EVENT OF A PRIMARY RIGGING FAILURE.

---

### 2.1.5 Connecting Audio

The input barrier strip accepts 16- to 12 gauge wire, either with #6 spade lugs or bare wire. Always use industry standard practices for selecting wire gauge, based on the product power rating and cable length. Note that the barrier strip is marked with a plus (+) or red indicator to show the polarity. Per IEC standard, a positive voltage on the positive marked input results in the low-frequency drivers moving outward. Always tie down the cable to available hardware to minimize any buzzing or pullouts.



---

**Warning:** TURN OFF ALL AMPLIFIERS WHEN CONNECTING THE LOUDSPEAKER WIRING.

---

## 2.2 Installing the CS1090 Using the YK-1090 and MMA-1090 in Dolby Atmos Auditoriums

The MMA-1090 rigging kit is an add-on to the YK-1090 rigging kit. You need both of these kits to mount the speakers in Dolby Atmos auditoriums, where both vertical and horizontal axis adjustment is required. In addition to the yokes, neoprene washers, and eyebolts that are included with the YK-1090 kit, you need additional hardware that is included in the MMA-1090 kit for overhead installations.



**Note:** The CS1090 provides a front baffle that is tilted 15 degrees relative to an overall box tilt of 0 degrees. When using the Dolby Audio Room Design Tool (DARDT) specification for aiming angle calculations in Dolby Atmos installations, subtract 15 degrees from the down angle data provided for side surrounds. For overheads, subtract 15 degrees from the axis that the front baffle slope is angled toward.



**Warning:** TO PREVENT INJURY, THIS APPARATUS MUST BE SECURELY ATTACHED TO THE FLOOR/WALL IN ACCORDANCE WITH THE INSTALLATION INSTRUCTIONS. CONSULT A PROFESSIONAL MECHANICAL OR STRUCTURAL ENGINEER TO OBTAIN APPROVAL FOR ALL ATTACHMENTS TO THE STRUCTURE. THIS APPARATUS MUST BE INSTALLED BY LICENSED PROFESSIONAL INSTALLERS. IF NOT ATTACHED TO THE STRUCTURE PROPERLY, THIS APPARATUS COULD FALL AND CAUSE PERSONAL INJURY OR DEATH. INSPECT ALL COMPONENTS BEFORE INSTALLATION. THIS APPARATUS IS NOT INTENDED FOR FLOOR STANDING INSTALLATIONS WITH NO ANCHORAGE. ALL LOCAL BUILDING AND SEISMIC CODES MUST BE ADHERED TO.

### 2.2.1 Tools Required

- 7/32-inch Allen wrench wrench or socket
- #2 Phillips screwdriver for attaching speaker wire to barrier strip
- 9/16-inch end wrench or socket

## 2.2.2 Identifying the MMA-1090 Rigging Kit Parts

The following parts are included in the MMA-1090 rigging kit:

- Two U-brackets
- Six 3/8-inch nylon lock nuts
- Twelve 1-inch washers
- Six 3/8"-16 sized screws

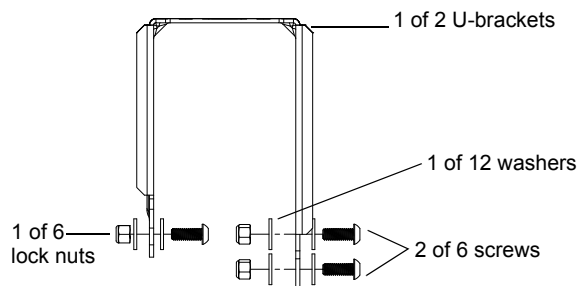


Figure 2-5 MMA-1090 Rigging Kit Parts

## 2.2.3 Installing the CS1090 in a Dolby Atmos Overhead Configuration



**Warning:** USE THE APPROPRIATE QUANTITY OF M10 OR 3/8-INCH BOLTS TO SECURE THE HARDWARE TO THE STRUCTURE. BASED ON THE WEIGHT OF THE APPARATUS, INSTALLER-SUPPLIED HARDWARE MUST HAVE A MINIMUM 5:1 SAFETY FACTOR OR GREATER IF A HIGHER REQUIREMENT IS MANDATED AS PER LOCAL LAWS. HARDWARE MUST BE SECURELY TIGHTENED.

To install the CS1090:

1. Attach the U-bracket to the structure using installer-supplied hardware. You can utilize any of the attachment points on the back of the U-bracket. If three-axis aiming (vertical, horizontal, rotational) is required, use only the single-center attachment point. If the U-bracket is attached directly to the ceiling, you must use all four points for two-axis aiming.

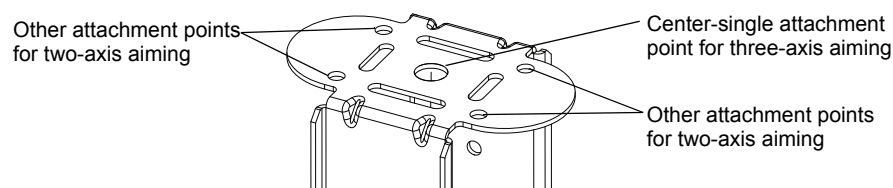
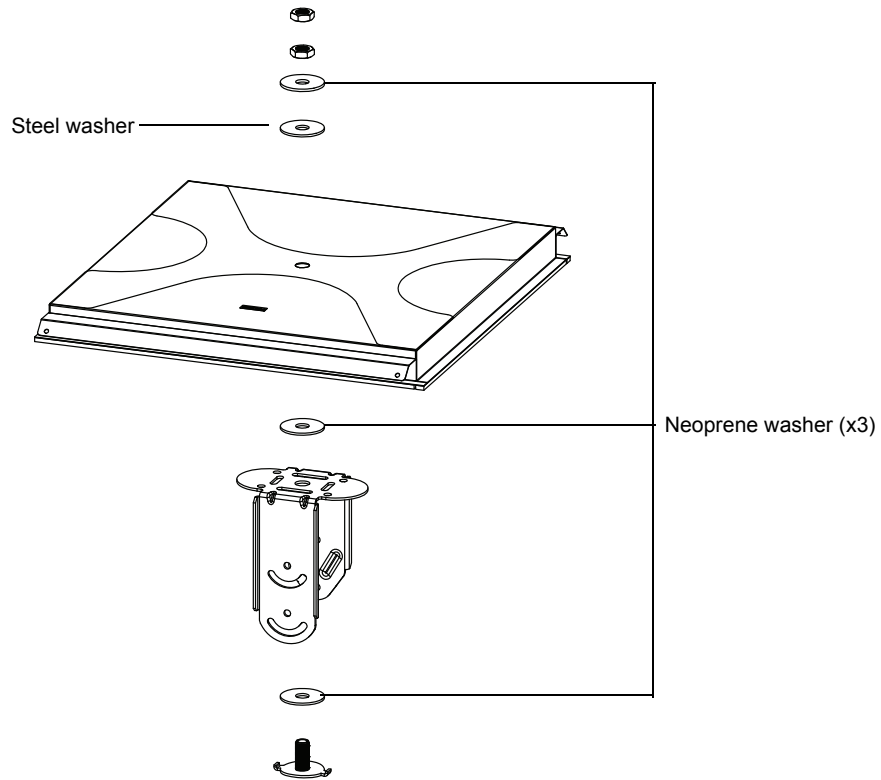


Figure 2-6 Multiple Attachment Points

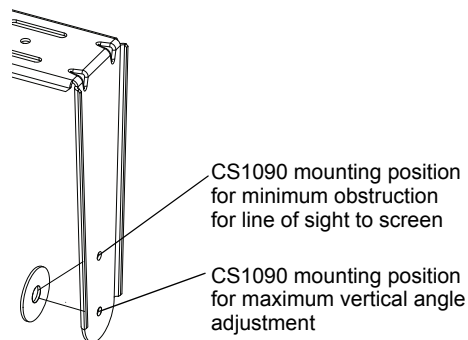
To allow the CS1090 to hang from the ceiling tile grid, you can use the MMA-1090 rigging kit with the FCT-24 flat-mount or RCT-24 recessed-mount ceiling tile rigging kits. However, the RCT-24 may restrict the available angle. You insert the M20 hollow bolt from the ceiling tile kits, as shown in the following figure (FCT-24 shown in figure).



**Figure 2-7** MMA-1090 with FCT-24 or RCT-34 Rigging Kit

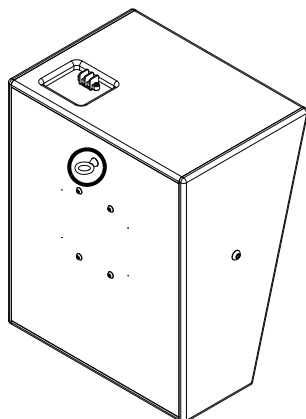
For detailed information on FCT-24 and RCT-24 ceiling tile installations, you can download the *SLS Ceiling Tile Rigging Kits Installation Guide* at <https://www.dolbycustomer.com>.

2. Remove the two 3/8"-16 bolts from the sides of the CS1090, place the speaker into the yoke, then position the neoprene washer between the speaker and yoke, and reinstall the bolts.



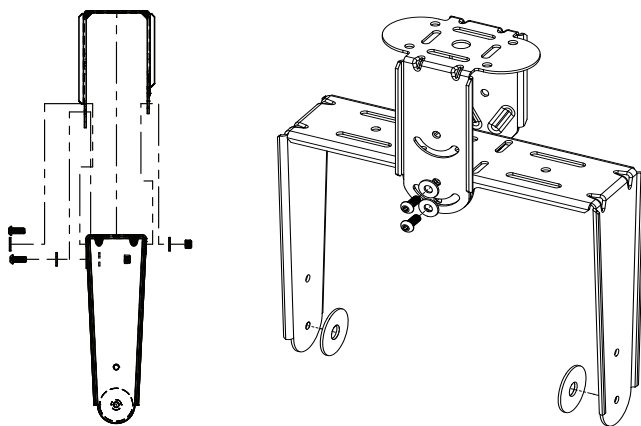
**Figure 2-8** Neoprene Washer Positions

3. Remove the ¼"-20 bolt, and insert and install the provided ¼"-20 shoulder eyebolt (or an installer-supplied eyebolt) at the back of the CS1090. An eyebolt is provided with the YK-1090 rigging kit.



**Figure 2-9** Eyebolt in Place for Safety Cable

4. Attach the U-bracket to the yoke, as shown in the following figure, then adjust any of the angles as needed, and tighten down all bolts.



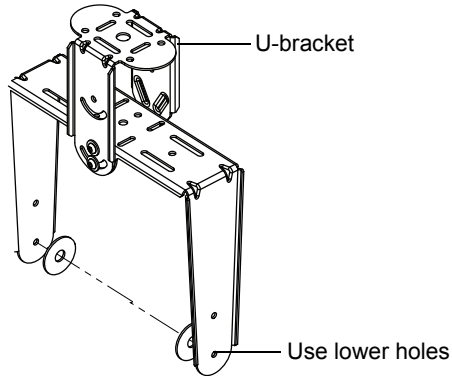
**Figure 2-10** Attach Yoke to U-bracket



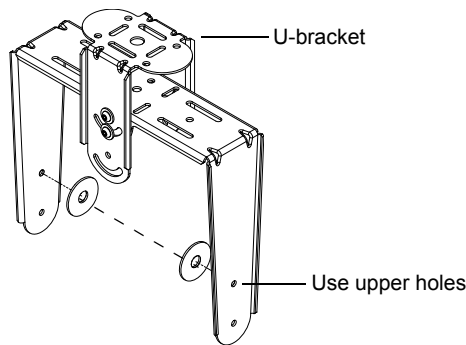
The U-bracket also provides two options for attachment to the yoke:

- For maximum vertical and horizontal angle adjustment, use the holes on the yoke and U-bracket, as shown in [Figure 2-11](#).
- In cases where minimal vertical or horizontal angle adjustment is needed, use the holes on the yoke and U-bracket shown in [Figure 2-12](#) to avoid blocking the image projected to the screen.

You can also use a combination of both of these examples.



**Figure 2-11** Attachment Points for Maximum Vertical and Horizontal Angle Adjustment



**Figure 2-12** Attachment Points for Improved Sight Lines to Minimize Projector Light-Beam Blockage

## 2.2.4 Connecting the Safety Cable

After the CS1090 is attached to the structure, you must connect a secondary safety attachment point to an independent point on the building structure. The 1/4"-20 eyebolt is provided to attach an installer-supplied safety cable. Based on the weight of the CS1090, all installer-supplied safety rigging hardware must have a minimum 5:1 safety factor or greater if a higher requirement is mandated as per local laws. Remove all slack to avoid any shock loading of the cable in the event of a primary rigging failure.



**Warning:** INSTALLER-SUPPLIED RIGGING HARDWARE MUST HAVE A MINIMUM 5:1 SAFETY FACTOR BASED ON THE WEIGHT OF THE APPARATUS. YOU MUST SECURELY TIGHTEN THE HARDWARE. DO NOT SECURE THE SAFETY CABLE BACK TO THE YOKE. REMOVE ALL SLACK FROM THE CABLE. REPLACE THE CABLE IF IT HAS BEEN PULLED IN THE EVENT OF A PRIMARY RIGGING FAILURE.

## 2.2.5 Connecting Audio

The input barrier strip accepts 16- to 12 gauge wire, either with #6 spade lugs or bare wire. Always use industry standard practices for selecting wire gauge, based on the product power rating and cable length. Note that the barrier strip is marked with a plus (+) or red indicator to show the polarity. Per IEC standard, a positive voltage on the positive marked input results in the low-frequency drivers moving outward. Always tie down the cable to available hardware to minimize any buzzing or pullouts.




---

**Warning:** TURN OFF ALL AMPLIFIERS WHEN CONNECTING THE LOUDSPEAKER WIRING.

---

## 2.2.6 Installing the CS1090 in a Dolby Atmos Sidewall Configuration



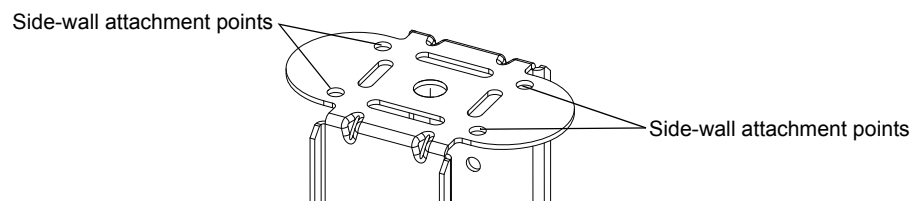

---

**Warning:** USE THE APPROPRIATE QUANTITY OF M10 OR 3/8" BOLTS TO SECURE THE HARDWARE TO THE STRUCTURE. BASED ON THE WEIGHT OF THE APPARATUS, INSTALLER-SUPPLIED HARDWARE MUST HAVE A MINIMUM 5:1 SAFETY FACTOR OR GREATER IF A HIGHER REQUIREMENT IS MANDATED AS PER LOCAL LAWS. HARDWARE MUST BE SECURELY TIGHTENED.

---

To install in a sidewall configuration:

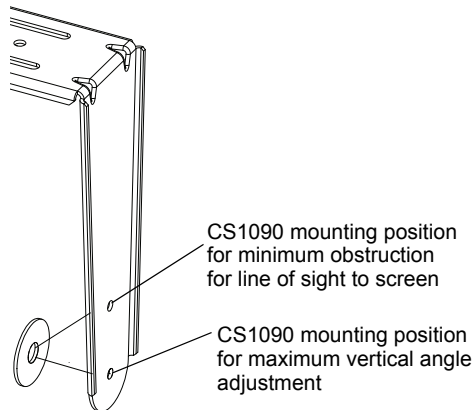
1. Attach the U-bracket to the wall with user-supplied hardware using the holes and orientation, as shown in [Figure 2-13](#). We require that you use a minimum of four fasteners. We recommend M10 or 3/8" bolts.



**Figure 2-13** Four Side-Wall Mounting Attachment Points (and Required Orientation)

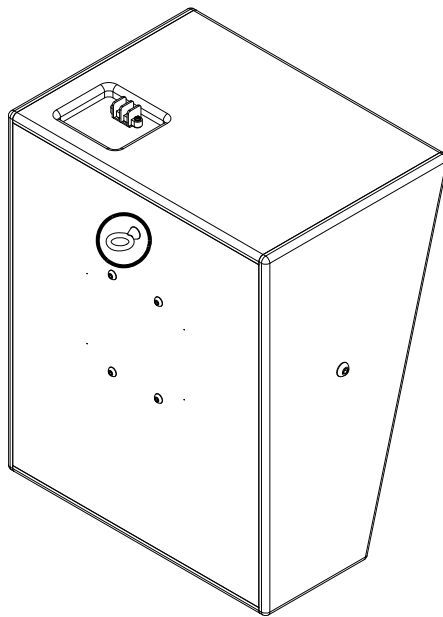
2. Remove the two 3/8"-16 bolts from the side of the CS1090, and place the speaker into the yoke.

3. Position the neoprene washer in between the speaker and yoke (using the adhesive on the washer to adhere to the yoke at the desired position), and then reinstall the bolts.



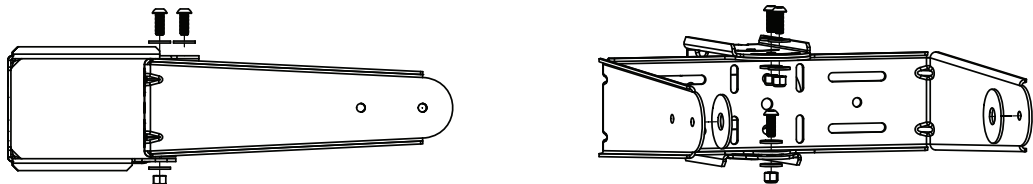
**Figure 2-14** Neoprene Washer Position

4. Remove the 1/4"-20 bolt, and insert and install the provided 1/4"-20 shoulder eyebolt (or an installer-supplied eyebolt) at the back of the CS1090. An eyebolt is provided with the YK-1090 rigging kit.



**Figure 2-15** Eyebolt in Place for Safety Cable

5. Connect the U-bracket to the yoke, as shown in [Figure 2-16](#).

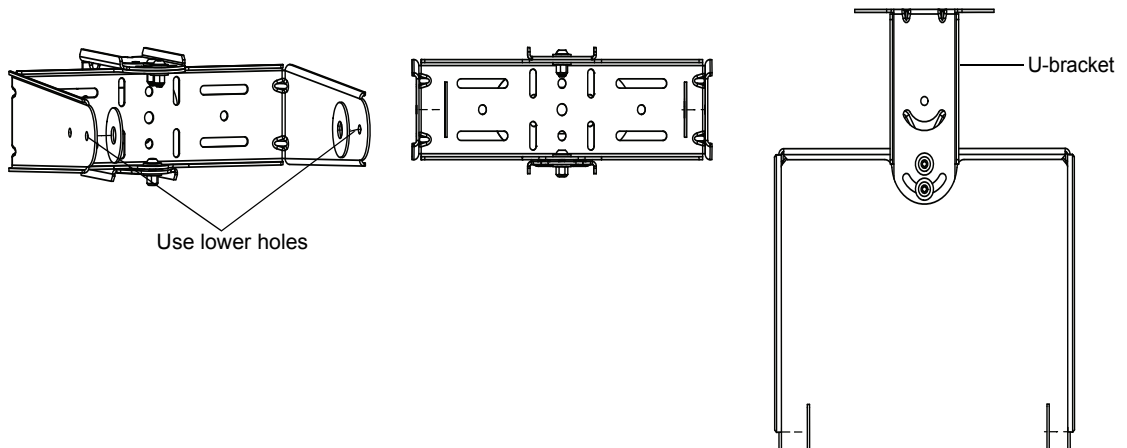


**Figure 2-16** Connecting the U-Bracket to the Yoke

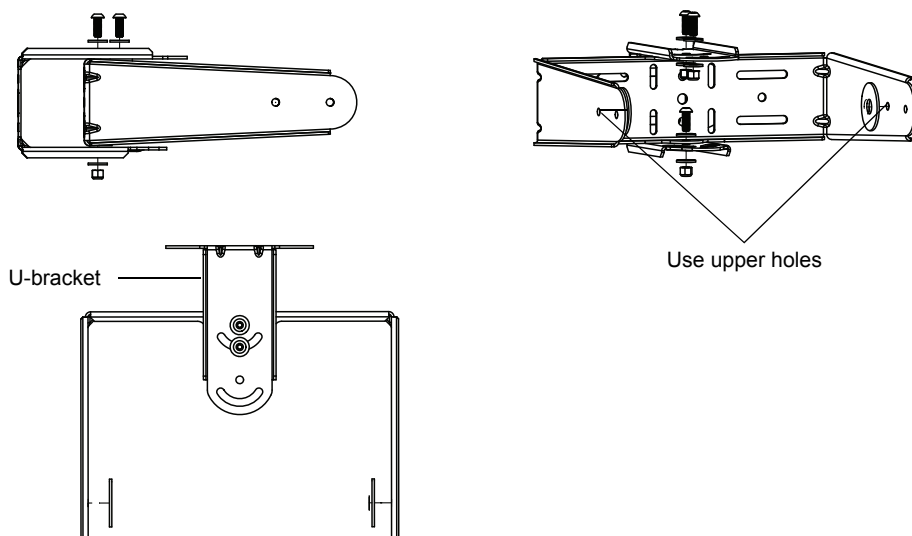
6. Adjust the angles as needed, and tighten down all bolts.

The U-bracket also provides two options for attaching the yoke:

- For maximum vertical and horizontal angle adjustments, use the holes on the yoke and U-bracket, as shown in [Figure 2-17](#).
- In cases where minimal vertical or horizontal angle adjustment is needed, use the holes as shown in [Figure 2-18](#) to prevent the blocking of any lines of sight to the screen. You can also combine both of these approaches.



**Figure 2-17** Attachment Points for Maximum Vertical and Horizontal Angle Adjustment (Top View)



**Figure 2-18** Attachment Points for Improved Sight Lines (Top View)

## 2.2.7 Connecting the Safety Cable

After the CS1090 is attached to the structure, you must connect a secondary safety attachment point to an independent point on the building structure. The 1/4"-20 eyebolt is provided to attach an installer-supplied safety cable. Based on the weight of the CS1090, all installer-supplied safety rigging hardware must have a minimum 5:1 safety factor or greater if a higher requirement is mandated as per local laws. Remove all slack to avoid any shock loading of the cable in the event of a primary rigging failure



---

**Warning:** INSTALLER-SUPPLIED RIGGING HARDWARE MUST HAVE A MINIMUM 5:1 SAFETY FACTOR BASED ON THE WEIGHT OF THE APPARATUS. YOU MUST SECURELY TIGHTEN THE HARDWARE. DO NOT SECURE THE SAFETY CABLE BACK TO THE YOKE. REMOVE ALL SLACK FROM THE CABLE. REPLACE THE CABLE IF IT HAS BEEN PULLED IN THE EVENT OF A PRIMARY RIGGING FAILURE.

---

## 2.2.8 Connecting Audio

The input barrier strip accepts 16- to 12 gauge wire, either with #6 spade lugs or bare wire. Always use industry standard practices for selecting wire gauge, based on the product power rating and cable length. Note that the barrier strip is marked with a plus (+) or red indicator to show the polarity. Per IEC standard, a positive voltage on the positive marked input results in the low-frequency drivers moving outward. Always tie down the cable to available hardware to minimize any buzzing or pullouts.



---

**Warning:** TURN OFF ALL AMPLIFIERS WHEN CONNECTING THE LOUDSPEAKER WIRING.

---

## 2.3 Dimensions

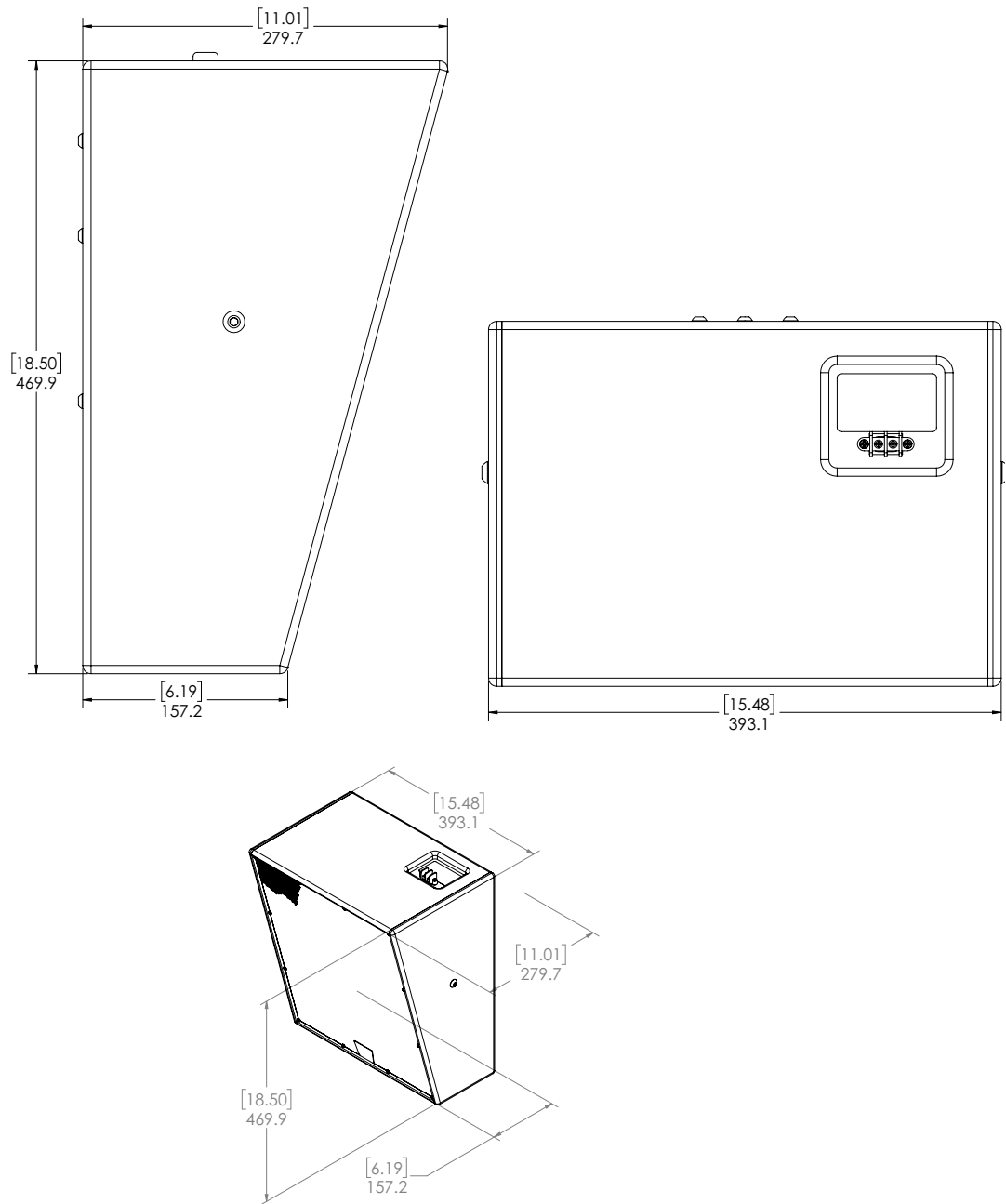


Figure 2-19 CS1090 [Inches] Millimeters

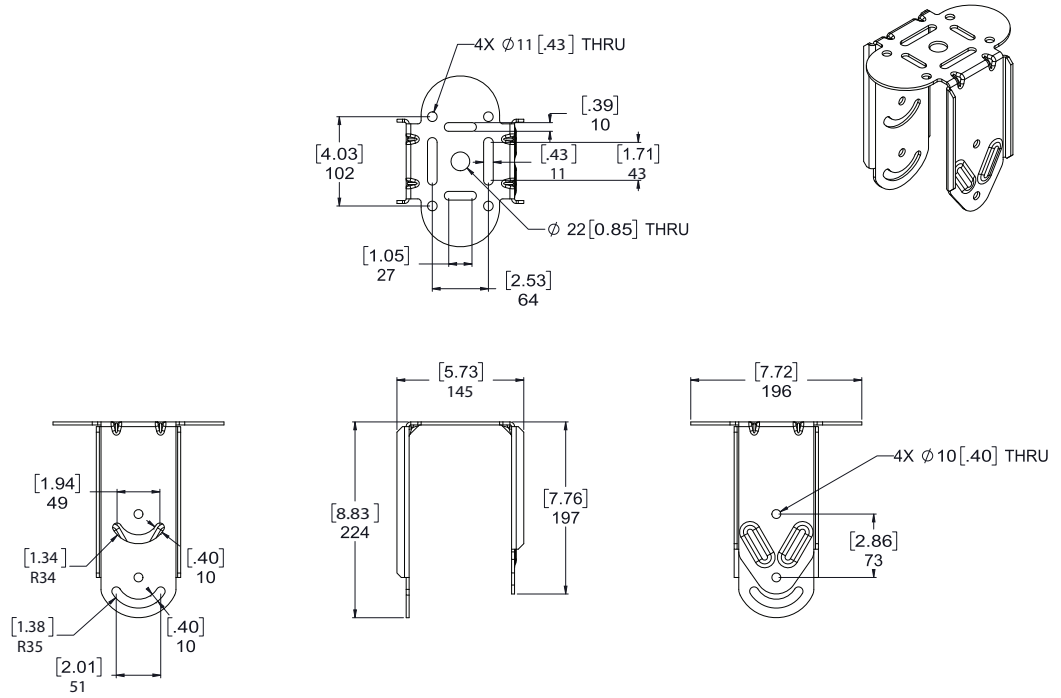


Figure 2-20 MMA-1090 Yoke [Inches] Millimeters

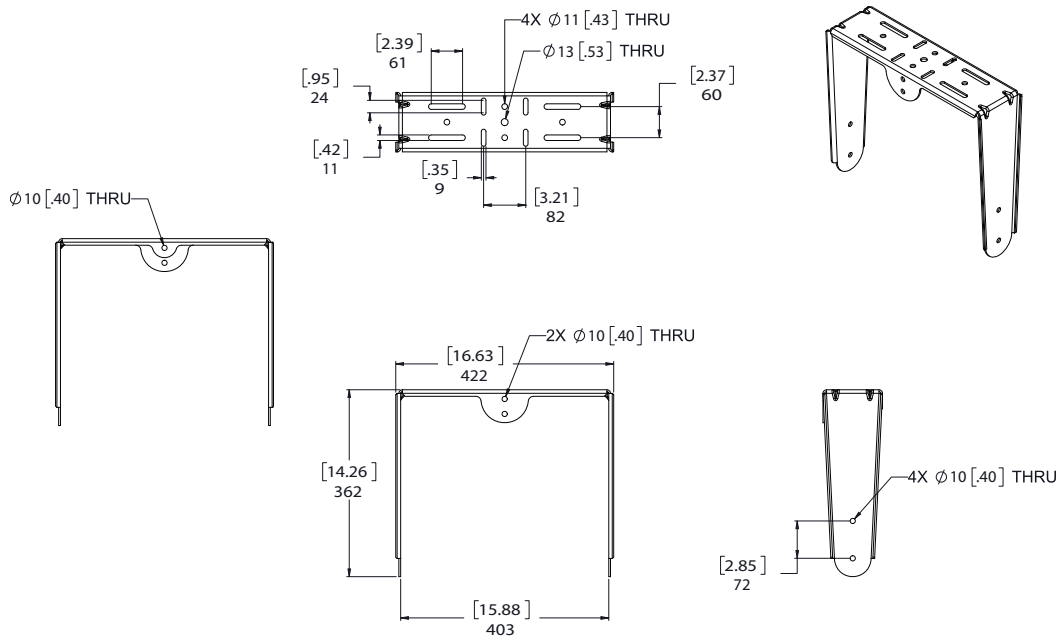
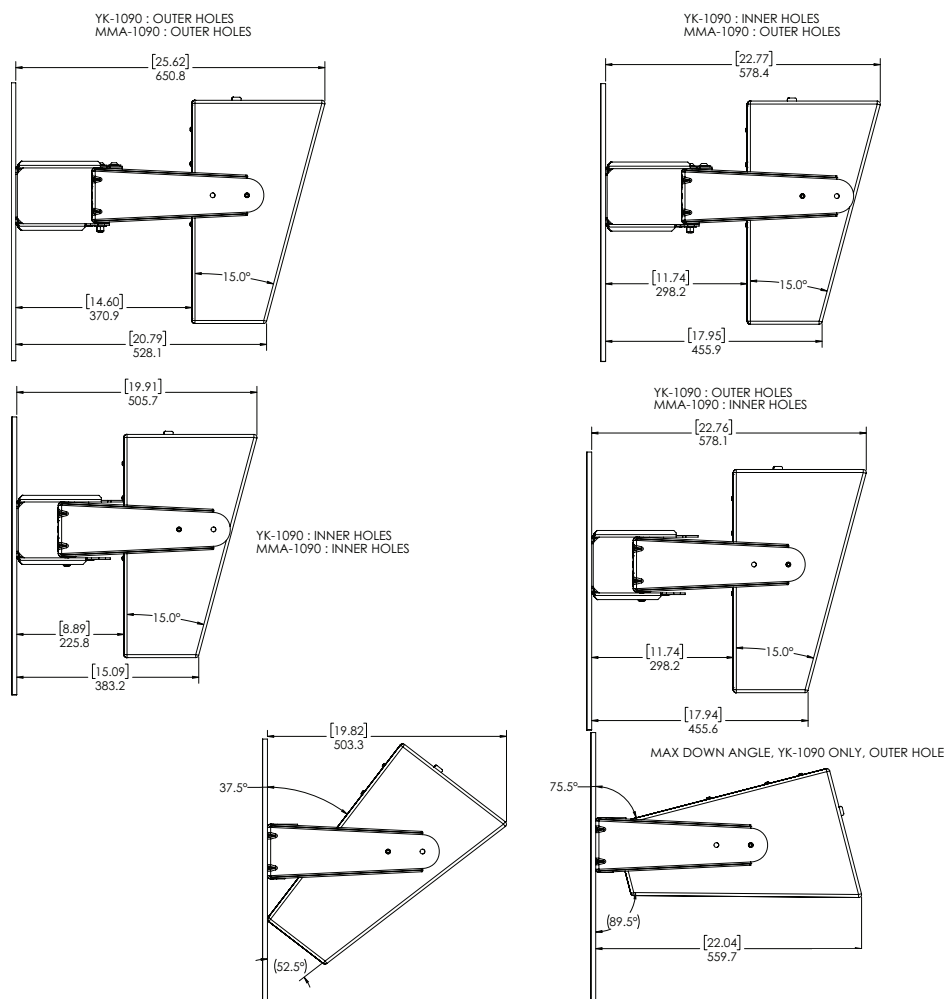


Figure 2-21 YK-1090 Yoke [Inches] Millimeters



**Figure 2-22** CS1090 YK-1090 and MMA-1090 Extended Positions with YK-1090 Maximum Down Angles [Inches] Millimeters



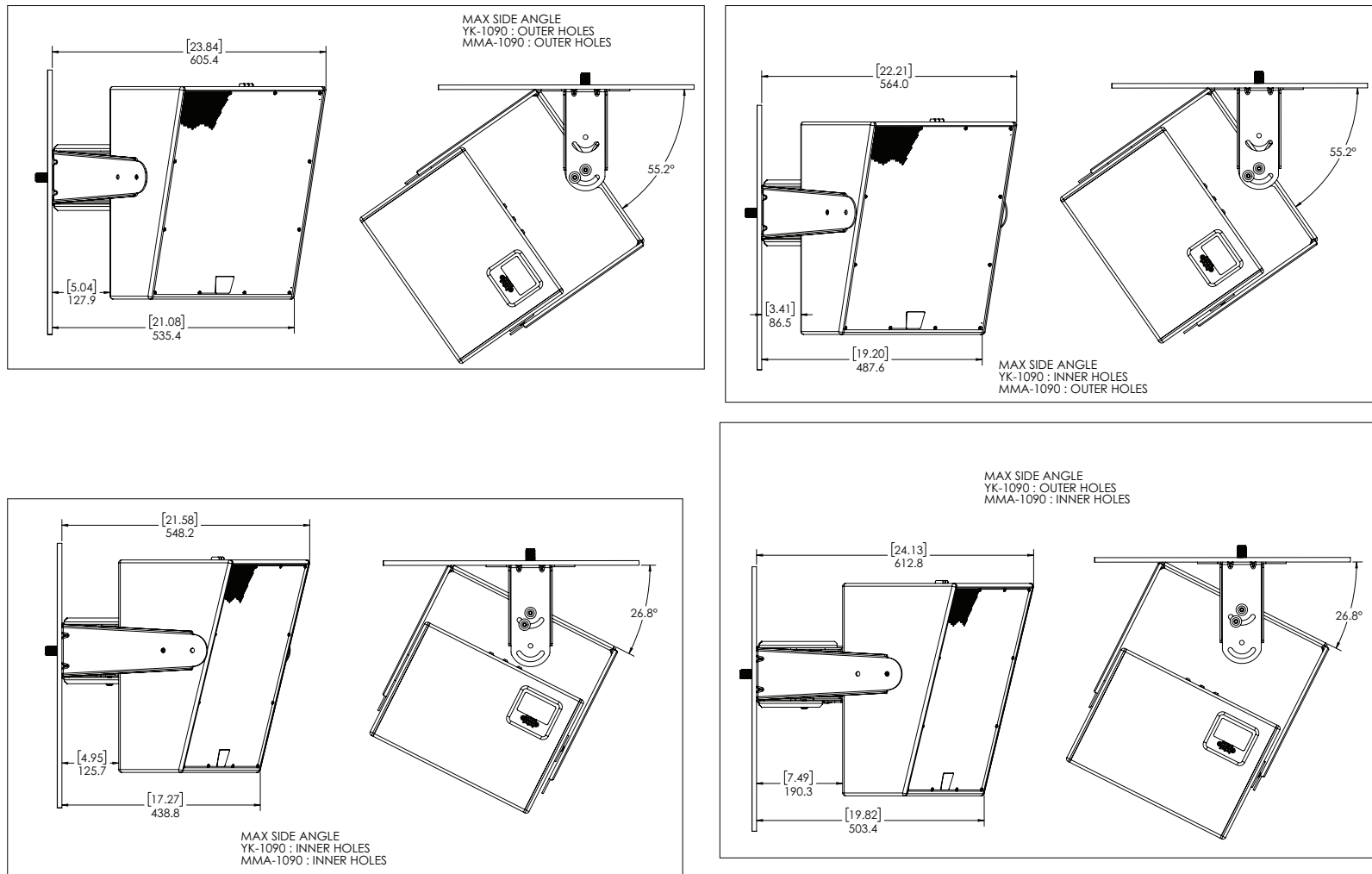


Figure 2-23 CS1090 YK-1090 and MMA-1090 Extended Positions with Maximum Side Angles [Inches] Millimeters

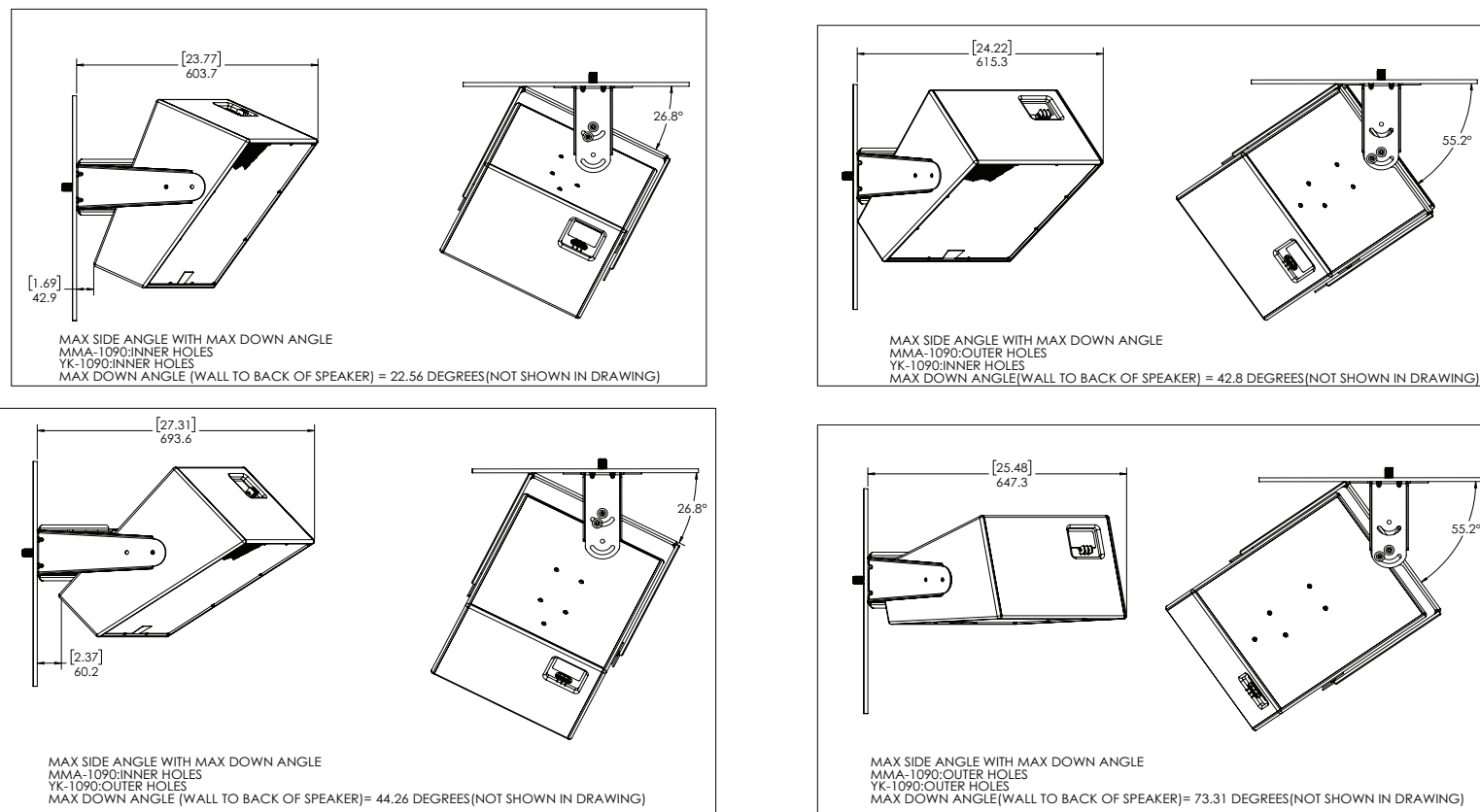


Figure 2-24 CS1090 YK-1090 and MMA-1090 Extended Positions with Maximum Side Angles and Maximum Down Angles [Inches] Millimeters

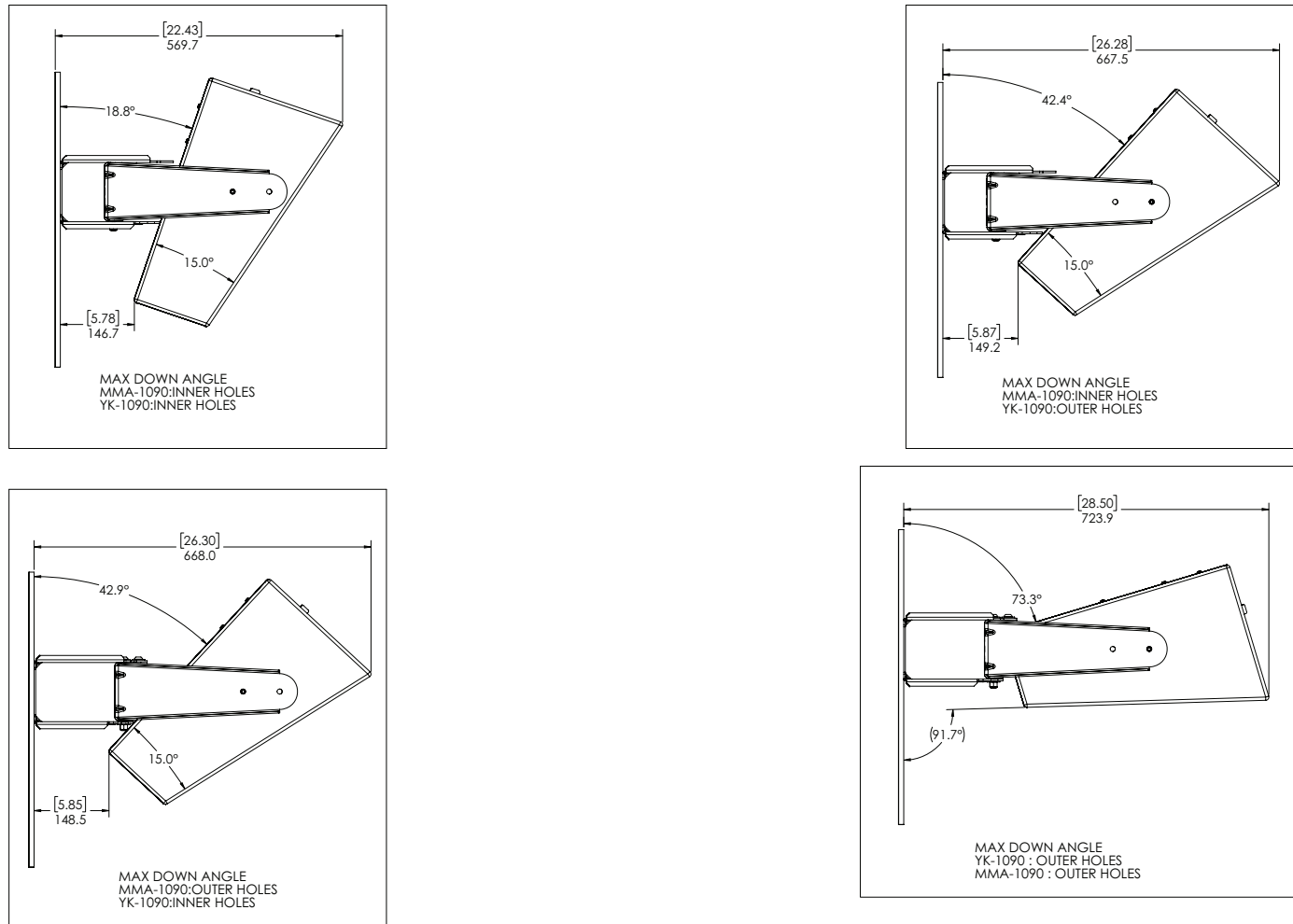


Figure 2-25 CS1090 YK-1090 and MMA-1090 Extended Positions with and Maximum Down Angles [Inches] Millimeters