



Control Contractor Ceiling Loudspeakers

Owner's Manual

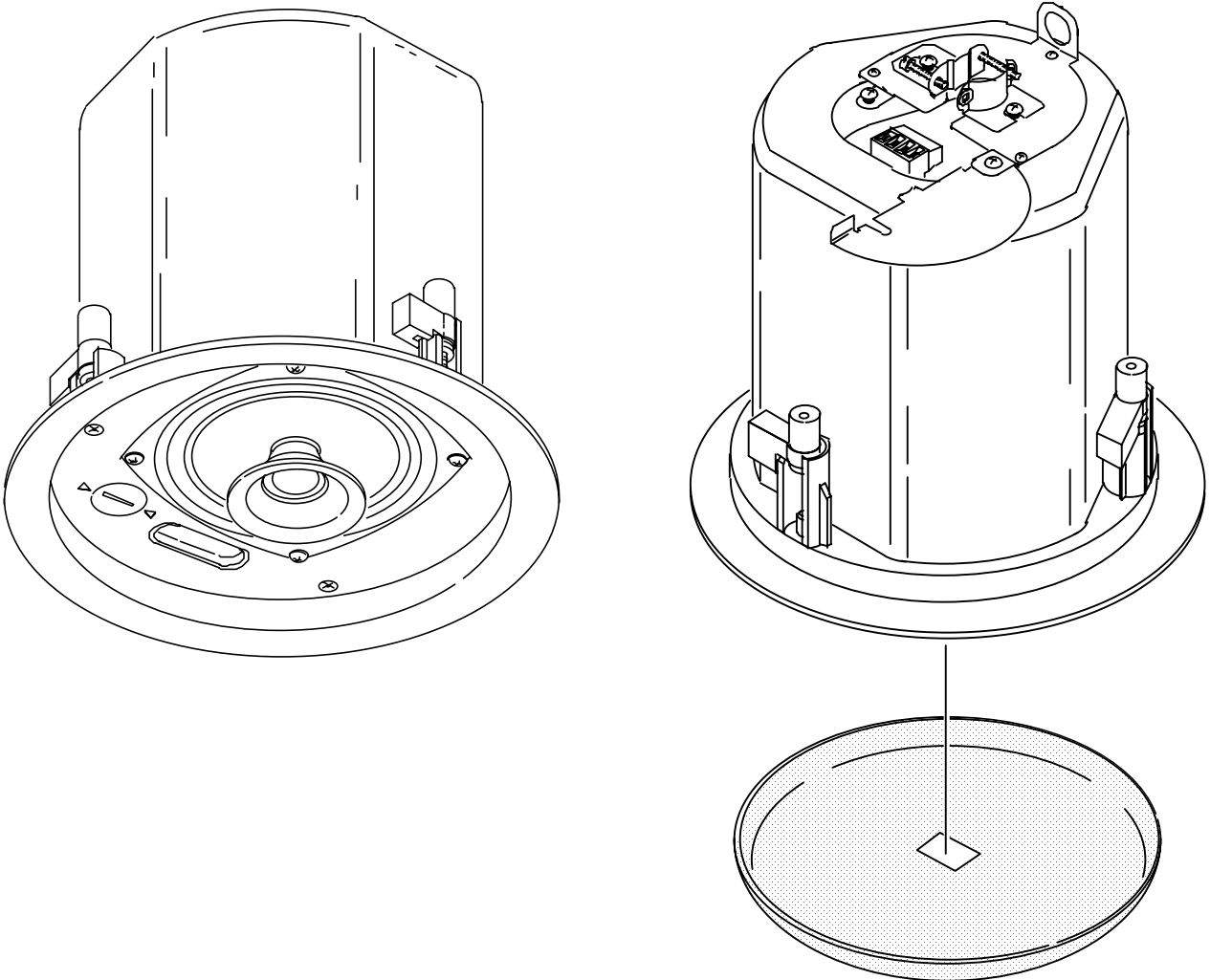


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Thank you for purchasing JBL Control Contractor ceiling loudspeakers.

Read through this manual to familiarize yourself with the features, applications and precautions before you use these products.

Product Descriptions

The JBL Control Contractor ceiling loudspeakers utilize innovative design and materials to provide premium level performance from compact in-ceiling speakers.

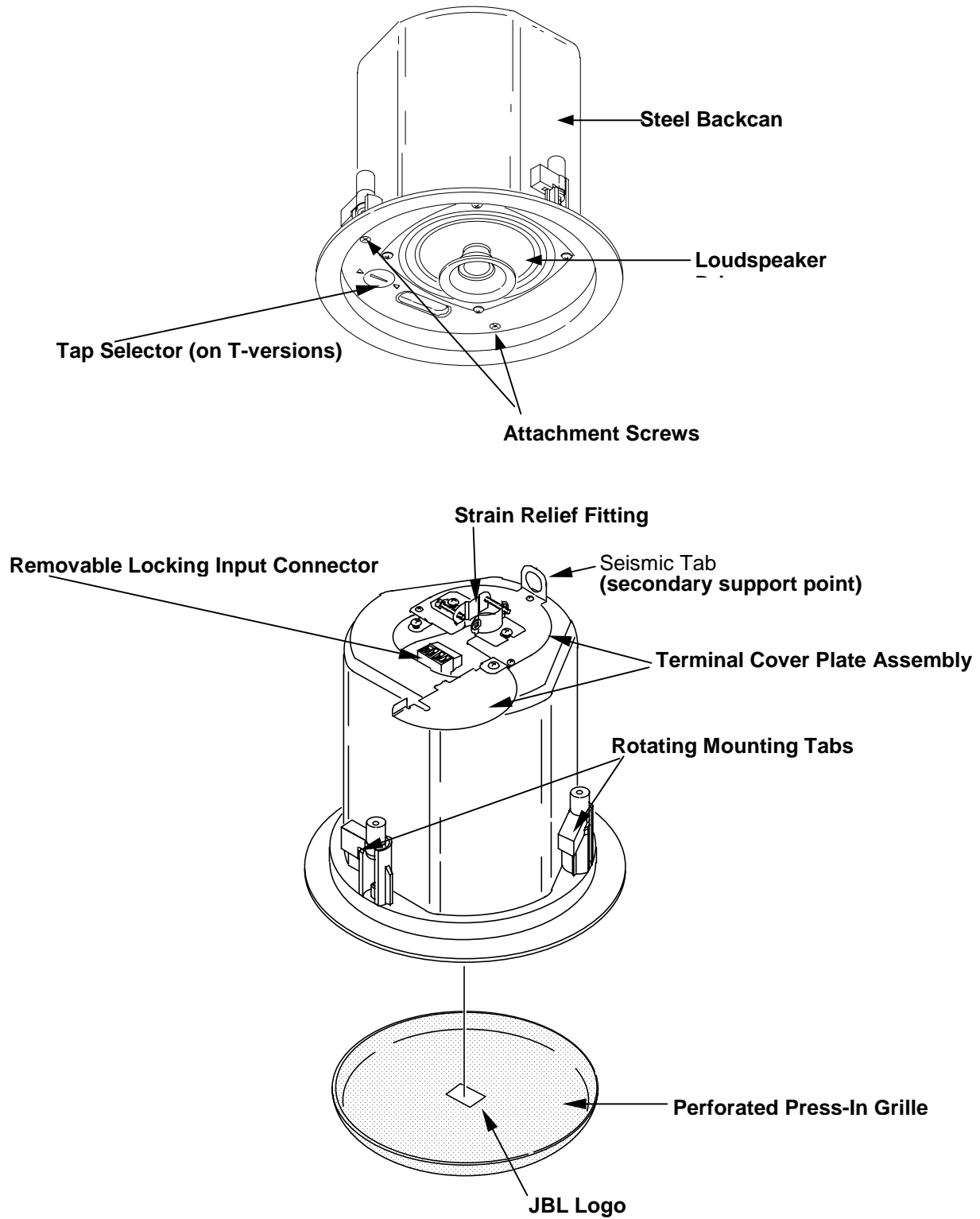
CONTROL 24C & 24CT – Most compact of the JBL ceiling speakers, the Control 24C contains a coaxially mounted 4” woofer and ¾” titanium-coated tweeter, providing high-fidelity full-range sound over an extremely wide coverage area. The optional Control 24CT includes a multi-tap transformer for 70V or 100V systems.

CONTROL 26C & 26CT – The Control 26C is a powerhouse ceiling speaker containing a coaxially mounted 6.5” woofer and ¾” titanium-coated tweeter, able to deliver maximum sound level over a wide coverage area. The optional Control 26CT includes a multitap transformer for a 70V or 100V line distribution system.

CONTROL 19CS & 19CST Subwoofer – The unique Nested Chamber™ design and Linear Dynamics™ port allows powerful low-frequency reinforcement from a compact in-ceiling enclosure. The Control 19CS is an ideal addition to any system, resulting in full-fidelity high level sound. The optional Control 19CST includes a special subwoofer-band transformer for use on 70V or 100V line distribution systems.

Product Feature Identification

(Control 24C Shown)



Installation Preparations

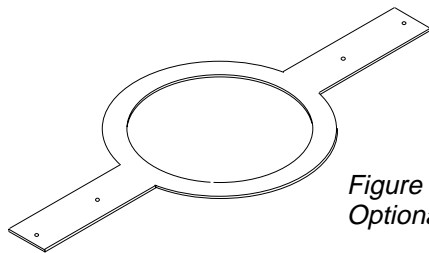
The entire installation can be accomplished, if necessary, without requiring access above the ceiling. Bracketry for use with either suspended ceilings or sheetrock ceilings is included. The speaker is held securely in place via mounting ears which lock into place. Inputs are attached to a removable locking connector (included) which can be prewired before installing the speaker for ultra-fast snap-on installation.

OPTIONAL PRE-INSTALLATION BRACKETS

IN MOST CASES, NO BRACKETS OTHER THAN THE ONES INCLUDED WITH YOUR SPEAKER ARE REQUIRED. Everything needed for most installations of these loudspeakers is provided with your Control Contractor ceiling speaker.

However, a particular procedure that is sometimes used for installation into sheet rock (typically gypsum board) can be facilitated by the use of JBL's optional preinstallation brackets before the sheetrock is installed. The preinstallation bracket provides a bracket to which wiring can be tied behind the sheetrock and it can function as a cutout template when many cutouts are to be made in a production-line style installation. Two types of pre-installation brackets are available from JBL Professional as optional accessories:

1) The optional **NEW-CONSTRUCTION BRACKET** is made of flat sheetmetal, with wings to attach to the building structure. Holes are drilled for nails or screws at 16 inches (406 mm) and 24 inches (610 mm) on-center. Additional holes can be drilled by the installer at other spacings up to a maximum of 24-3/4 inches (630 mm) apart. Sheet rock installs over the bracket, and the bracket provides a template for blind cutout of the hole in the sheet rock. The sheet rock is typically cut with a router-type cutting tool, using the bracket ring as a cutout guide.



*Figure 1:
Optional New -Construction Bracket*

2) The optional **PLASTER-RING BRACKET** (or “mud ring”) contains a circular offset, forming a edge guide for sheet rock plastering. The bracket has wings that attach to the building structure. Sheet rock is typically either precut or cut with a rotary cutting tool using the outside of the plaster ring circle as a guide. The sheet rock hole is then plastered (or “mudded”) up to the ring to create a seamless cutout.

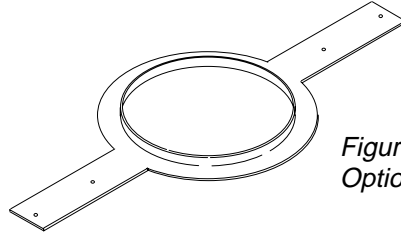


Figure 2:
Optional Plaster Ring Bracket

Table 1: New Construction Brackets

Model	New Construction Bracket	Plaster-Ring Bracket
Control 24C & 24CT	MTC-24NC	MTC-24MR
Control 26C & 26CT	MTC-26NC	MTC-26MR
Control 19CS & 19CST	MTC-19NC	MTC-19MR

USING INCLUDED C-BRACKET WITH SHEETROCK

For most installations, the INCLUDED C-shaped backing plate provides adequate reinforcement to the ceiling material, spreading out the clamping force from the tab clamps.

CUTOUT SIZES

Packaged with the speakers are cardboard cutout templates for scribing the cutout hole onto your ceiling surface.

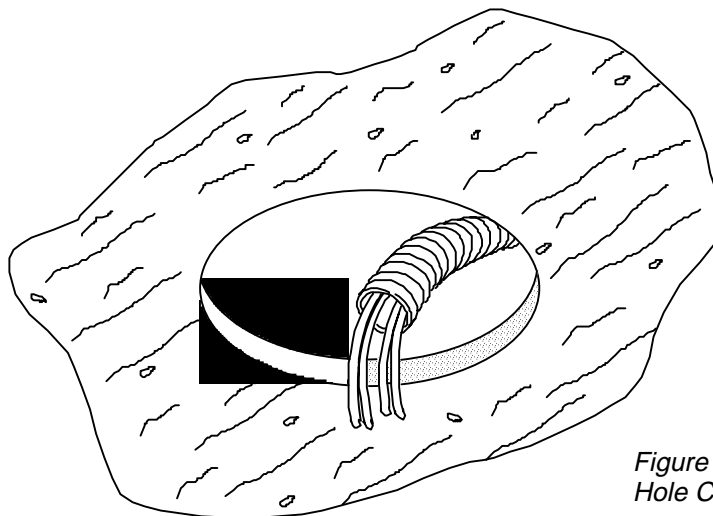
Table 2: Cutout Sizes

Model	Cutout Size (diameter)
Control 24C & 24CT	165 mm (6.5 in)
Control 26C & 26CT	220 mm (8.75 in)
Control 19CS & 19CST	305 mm (12.0 in)

STEP-BY-STEP INSTALLATION AND WIRING

The installation system has been designed so that the entire installation can be accomplished from beneath the ceiling, for instances when access above the tile is not possible or practical. However, in some cases it may be easier with removable ceiling tiles to access from both the top and bottom of the ceiling tile during various phases of the installation.

Step 1 – Cut the Hole. Cutout the hole size either by tracing the cardboard cutout template or with a circular cutter set to the cutout sizes listed above. Pull the wiring through the cutout hole.



*Figure 3:
Hole Cutout*

Step 2 – Insert Backing Hardware Through the Hole. Packaged with the speakers are two types of backing hardware – a C-shaped backing-plate bracket and two tile rails.

Suspended Ceilings – Insert the C-plate through the hole cut in the ceiling tile. Place the C-plate around the hole with the tabs located as shown on Figure 4. Insert the tile rails through the cut hole in the ceiling tile. Snap the two rails into the two tabs in the C-plate and align the rails so that the ends extend OVER the T-channel grid on the side of the tile. Secure the rails onto the C-bracket tabs by inserting a screw through each tab into the rail. This can all be accomplished from below the ceiling tile, if necessary.

FOR SAFETY: IMPORTANT TO USE BRACKETS

ALL included support brackets – C-plate and tile rails -- MUST be used when installing into suspended ceiling tiles.

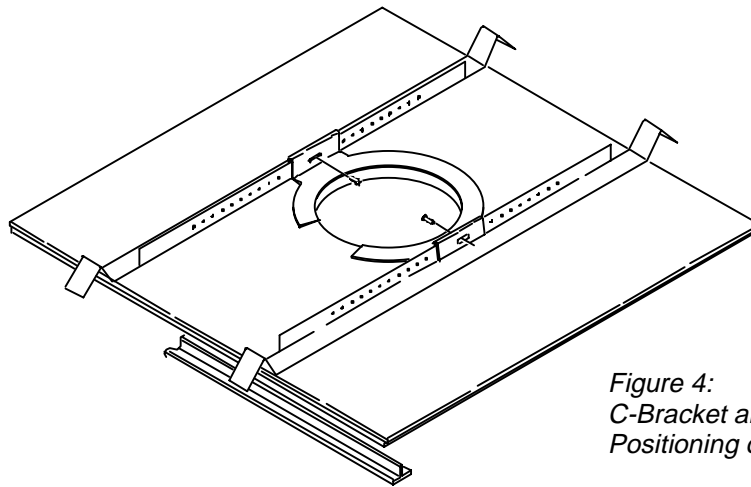


Figure 4:
C-Bracket and Tile Rail
Positioning on Ceiling Tile

Tile Rails: The tile rails are designed to fit either standard 24-inch wide tiles or 600-mm wide tiles. The tile rail pieces do NOT physically attach to the T-grid struts. Instead, the inverted-V shape at the ends of the rails sit OVER the T-grid strut. During normal operation, the rails are supported by the edge of the tile. In the unlikely even that the tile comes out or falls apart, the ends of the support rails are designed to catch onto the T-grid, providing secure support to hold the loudspeaker assembly in place.

Vibration Reduction: These loudspeakers can generate substantial vibration, which can cause buzzing of the ceiling materials or structure. Depending on the character of the ceiling tile and structure, the installer might need to place neoprene or other dampening material under the tile rails or the edges of the tiles to eliminate rattles.

Cutout Placement: The tile rails are pre-punched with attachment holes along their length. Placement is not limited to the center of the tile as is the case with many other tile rail support systems.

Non-Suspended Ceiling Types – The C-bracket can be optionally used by itself to shore up the ceiling material and to spread out the clamping force from the tab clamps. Insert the C-plate through the cut hole in the ceiling and place it on the back side of the hole before inserting the speaker.

Step 3 – Connect the Wiring to the Removable Locking Connector – Connect the wiring to the removable locking connector that is INCLUDED with the speaker by stripping the insulation back about 5 mm (about 3/16 inch), inserting the bare end of wire into the connector and screwing down the hold-down screw until tight using a small flatblade screwdriver. Tighten any unused screws to avoid vibration.

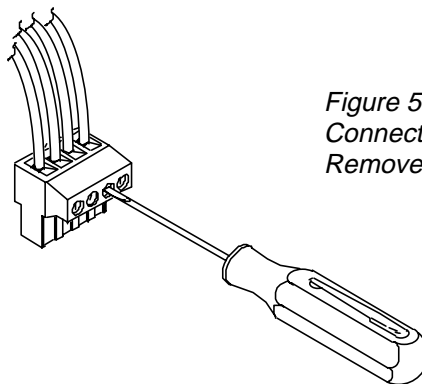


Figure 5:
Connecting Wires to
Removeable Locking Connector

Guide to the Pins for Connection -- The removable locking input connector contains 4 terminals, as marked on the connector. The pin functions are listed on the label located on the terminal cover plate.

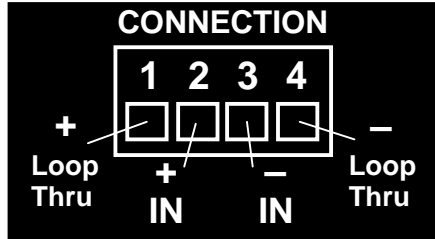


Figure 6: Connector Pins

Pins 2 & 3 are the “+” and “-” inputs to the loudspeaker. Pins 2 & 3 are looped to pins 1 & 4, respectively (Pin 1 connects to Pin 2 and Pin 3 connects to Pin 4) inside the speaker. Pins 1 & 4 are intended as loop-through connections to subsequent loudspeakers. There are two possible hookup schemes for connecting subsequent speakers, determined by the desired result from the circuit whenever this speaker’s connector gets disconnected during troubleshooting:

Paralleling Input Terminals -- Connect the wire pair of the subsequent speaker to pins 2 & 3 (in parallel with the input wire pair). Whenever the connector is pulled out of the speaker for troubleshooting, subsequent speakers will stay connected. This can be useful during troubleshooting to be able to disconnect a single loudspeaker at a time. In this hookup scheme, no wires get connected to pins 1 & 4.

Figure 7:
Paralleling Input Terminals

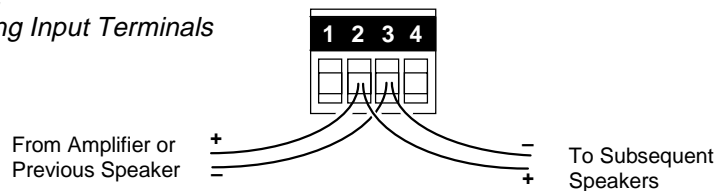
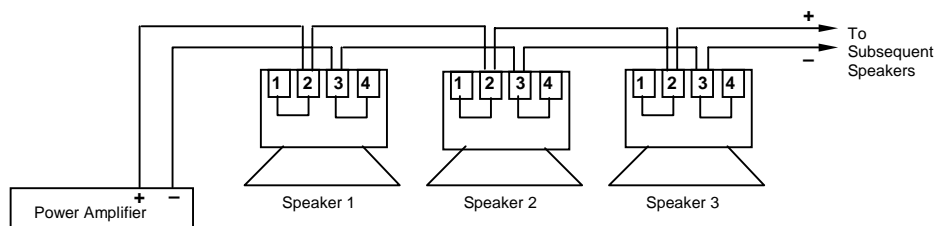
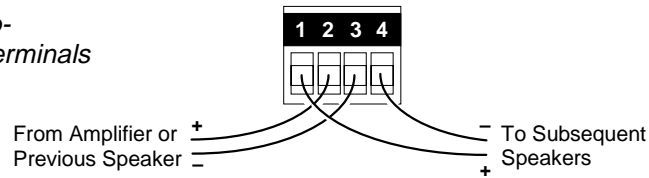


Figure 8:
Parallel System
Hookup Diagram

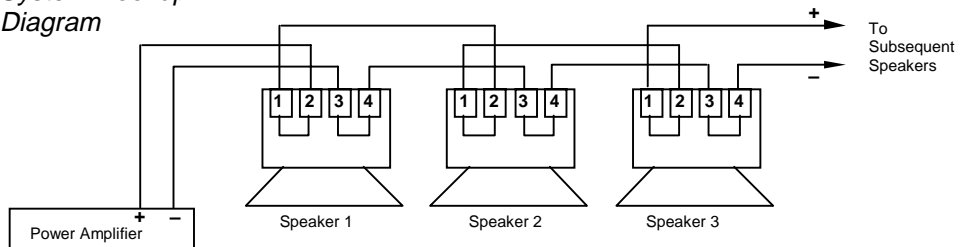


Using Loop-Through Terminals (Pins 1 & 4) -- By connecting the wire pair of the subsequent speaker to pins 1 & 4, then all subsequent speakers will be disconnected when this speaker's connector is disconnected during for troubleshooting,. This can be useful as a way to isolate problems to a section of the distributed line while leaving the wires attached to the connector.

*Figure 9:
Using Loop-Through Terminals*

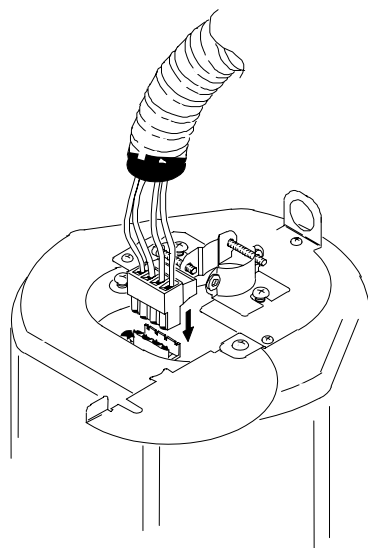


*Figure 10:
Loop-Through System Hookup Diagram*



Choose whichever hookup pattern accommodates your installation best.

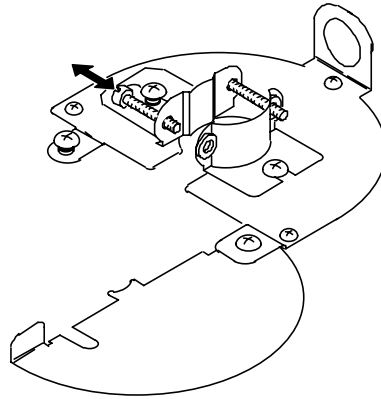
Step 4 – Plug connector into connector socket in the speaker’s terminal cup.



*Figure 11:
Plugging Connector Into Connector Socket*

Step 5 – Tighten the Strain Relief Fitting & Close the Terminal Cover

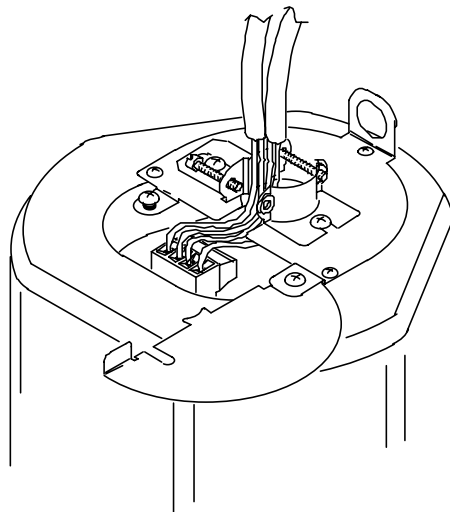
First, remove the horizontal screw indicated in the drawing below.



*Figure 12:
Opening the
Strain-Relief Fitting*

Next, loosen the screws holding the fitting's sliding pieces onto the input-terminal cover by about a half turn. Run the wires through the opening in the fitting.

*Figure 13:
Running Wires
Through Opening
In Strain Relief
Fitting*

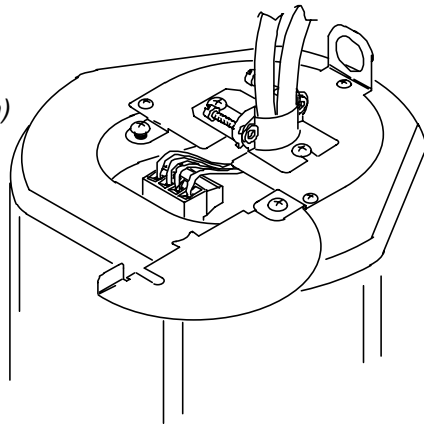


The strain relief can be tightened in two ways, choose whichever is best for your application:

a) Tightening onto plenum cable or bare wire -- Slide the wiring through the strain relief fitting on the terminal cover plate. In the case of bare wire and plenum cable it is often possible to provide acceptable strain relief force by simply tightening the screws holding the sliding strain relief onto the terminal cover plate. To achieve a tight fit, use a clamping mechanism (such as slipjoint pliers) to hold the strain relief pieces together while tightening the hold-down screws.

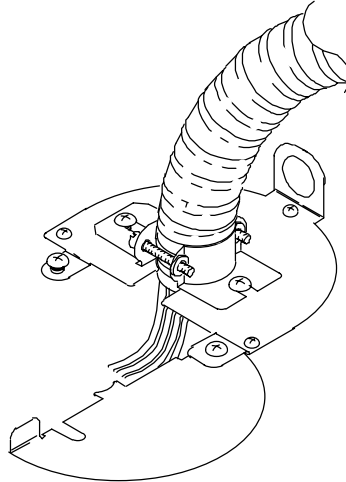
It is optional to reinsert the horizontal screw that was previously removed and to tighten the two horizontal screws, clamping the wire securely between them.

*Figure 14:
Tightening Fitting
Onto Plenum Cable (shown)
Or Bare Wire*



b) Tightening onto flexible or hard conduit – The supplied fitting accommodates up to 3/8 inch (9.5mm) flexible conduit. Slide the wiring through the strain relief fitting on the terminal cover plate. Insert the conduit into the strain relief fitting. Reinsert the horizontal screw that was previously removed. Use the two horizontal screws that clamp the fitting together, clamping the conduit securely between them.

*Figure 15:
Tightening Fitting
Onto Conduit*



Using an Alternate Fitting – The existing strain relief fitting accommodates many common fitting requirements. Sometimes, alternate fittings are required, such as for larger diameter conduit or to meet specific code requirements.

In these cases, the existing fitting can be easily replaced with a number of available off-the-shelf fittings. Simply remove the existing fitting by unscrewing the two hold-down screws, exposing a 7/8 inch (22mm) knockout hole. Install the alternate fitting.

Caution:

Always use the proper fitting in accordance with your area's building codes and regulations.

Close the Terminal Cover – Close the hinged terminal cover and secure it in place with the hold-down screw.

Step 6 – Insert the Speaker Into the Ceiling and Tighten.

Insert the speaker into the ceiling as far as it goes, until the front baffle rim touches the ceiling.

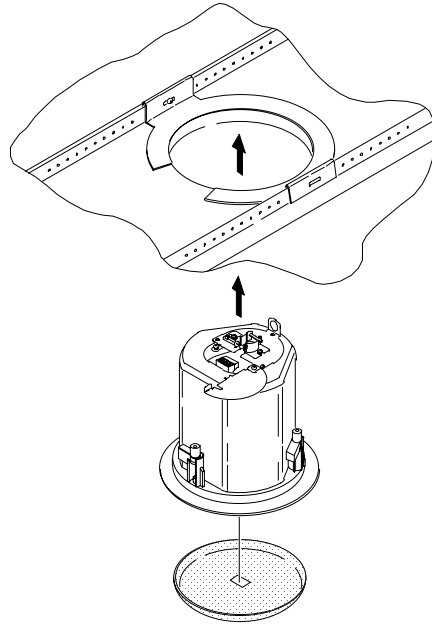


Figure 16:
Inserting Speaker
Into Ceiling

Turn the attachment screws to tighten the mounting tabs, by using the following directions: **IMPORTANT** -- For each attachment screw, **FIRST** turn $\frac{1}{2}$ turn **COUNTER-CLOCKWISE** to release the mounting tab from its guide.

Then tighten the mounting tabs by turning the screw **CLOCKWISE** until tight. The first $\frac{1}{4}$ clockwise turn rotates the attachment tabs outward and the remaining turns tighten the tabs down onto the back of the ceiling surface. **DO NOT OVERTIGHTEN.**

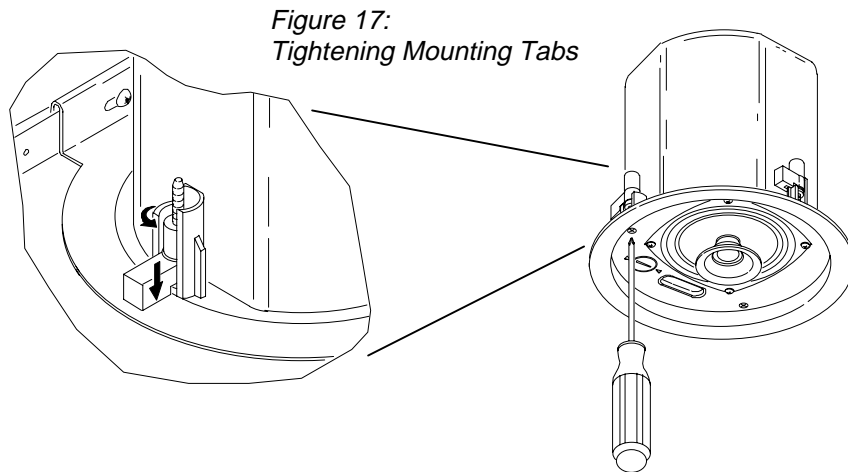


Figure 17:
Tightening Mounting Tabs

Table 3: Number of Attachment Screws, by Model

Model	Number of Attachment Screws
Control 24C & 24CT	3 screws
Control 26C & 26CT	4 screws
Control 19CS & 19CST	5 screws

Step 6 – Connect a Secondary Support Line to Seismic Tab – A tab is provided on the back of each speaker for connection to a independent secondary support point. Some construction codes require using this secondary support point, which requires connecting a support line to a separate secure support point. Consult construction codes in your region.

IMPORTANT:

Control Contractor ceiling speakers can generate substantial vibration . It is **HIGHLY RECOMMENDED** to use the seismic tab as a secondary support point in case the ceiling tile or structure breaks.

Step 7 for “T” Versions Only: Adjust Tap Selector – On T-version models (Control 24CT, 26CT and 19CST) the tap selector switch is located on the front baffle. Adjust the tap setting before inserting the grille. In some installations it is advisable to leave the grilles OFF until final adjustment of the taps for the system.

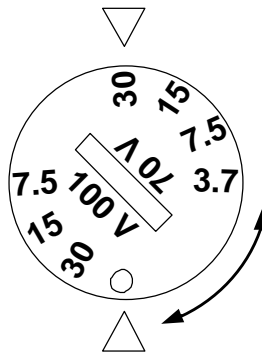


Figure 18:
Tap Selector
(Shown: Control 24CT)

Step 8 – Insert the Grille – Consider which direction the logo is facing and press the grille into place until the front of the grille is flush with the rim. Make sure grille is securely seated to prevent it from vibrating loose and falling.

Removing the Grille -- The grille presents a tight fit in order to make sure that it won't fall out, even with high vibrations that can be produced by these speakers. If you need to remove the grille, it is easiest to do so by inserting 2 pointed objects (such as push pins) into 2 nearby holes in the grille, presenting slow even pressure to pull down on the grille until that section of the grille comes out approximately 6 mm (1/4 inch) . Work your way around the grille, loosening a section at a time until the grille comes out.

Painting the Speaker

The speaker's textured white finish complements most decor and does not need further finishing. Where the interior design requires it, these speakers are easy to paint.

The rim can be painted before installation or in cases where the rim needs to be finished along with the ceiling, the speaker rim can be painted after attaching into the ceiling.

Type of Paint – The speaker's polystyrene rim accepts almost any type of latex or oil based paint. Two coats are recommended.

Painting Process – For best results, it is recommended to use the following procedure:

- Clean the rim and grille with a light solvent such as mineral spirits by rubbing the item with a lightly dampened cloth. Do not, however, use abrasives such as sandpaper or steel wool. Nor should you use gasoline, kerosene, acetone, MEK, paint thinner, harsh detergents or other chemicals. Use of these cleaners may result in permanent damage to the enclosure.
- After cleaning, apply two or more thin coats of either latex or oil-based paints. Latex paint will adhere better if an oil-based primer is used first. Application can be made by rolling, brushing or spraying.

Painting the Speaker Along With the Ceiling – Insert the clear plastic paint shield into the front of the speaker to mask the drivers and internal baffle, paint the speaker, then remove the shield.

Painting the Grille – Painting the grille requires removal of the logo and the internal grille cloth, they spray painting. If the grille is rolled or brush painted, the mesh may become clogged with paint and poor sound quality may result. Replace the internal grille cloth and JBL logo.

Safety Agency Compliance



Complies with the requirements of **UL-2043** Fire Tests for Heat and Visible Smoke Release for Discrete Products and their Accessories Installed in Air Handling Spaces, **NFPA-70** National Electric Code 1996, Article 300-22(C), and **NFPA-90A** Installation of Air Conditioning and Ventilation Systems, Section 2-3.10.1 (a), Exception 3. Listed **UL1480** Speakers for Fire Protective Signaling Systems. For installation instructions refer to JBL manual #*CLNG SPKR MANUAL*.

SUITABLE FOR USE IN AIR HANDLING SPACES.



These products are in compliance with the EMC Directive 89/336/EEC and Article 10 (1) of the directive. In compliance with Technical Regulations EN50081-1 and EN50082-1. For a copy of the model-specific CE Declaration of Conformity, contact JBL at the address listed at the end of this manual.

Maintenance

No maintenance is required when installed in accordance with installation and wiring guidelines described in this manual.

Replacement Parts

There are no user serviceable parts inside these speakers. The following replacement parts are for reference only. Refer servicing to an authorized JBL Service Center. For the name of an authorized Service Center in your area, contact JBL Professional at the address listed below.

	Control 24C	Control 24CT	Control 26C	Control 26CT	Control 19CS	Control 19CST
Driver (Speaker)	124-13000-00		124-16000-00		124-58000-00	
Transformer	None	562-00035-00	None	562-00036-00	none	562-00037-00
Crossover Network	129-20046-00	129-20045-00	129-20047-00	129-20048-00	129-10037-00	129-10038-00
Fuse (internal)	453-80000-00					
Protection Lamp	SK2				SK3	
Input Connector	424-00092-00					
Mounting Tab	885-00050-00					

Warranty & Contacting JBL

These products are designed and backed by JBL Professional, the world leader in sound reinforcement. For complete JBL warranty information, to order replacement parts or to ask for clarifications to this manual, contact JBL Professional:

WITHIN THE UNITED STATES: Contact the Applications Dept, JBL Professional, PO Box 2200, 8400 Balboa Blvd, Northridge CA 91329 USA. In the USA you may call Monday through Friday 8:00 am to 5:00 pm Pacific Coast Time (818) 894-8850.

IN OTHER AREAS THROUGHOUT THE WORLD: Contact the JBL Professional Distributor in your country.

A list of JBL Professional Distributors and U.S. Service Centers can be attained from the JBL Professional WWW.JBLPRO.COM website.



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CEILING SPKR MANUAL
Rev B