JBL PROFESSIONAL

Control Contractor Ceiling Loudspeakers

Control 24C/CT Micro and Control 24CT MicroPlus Owner's Manual
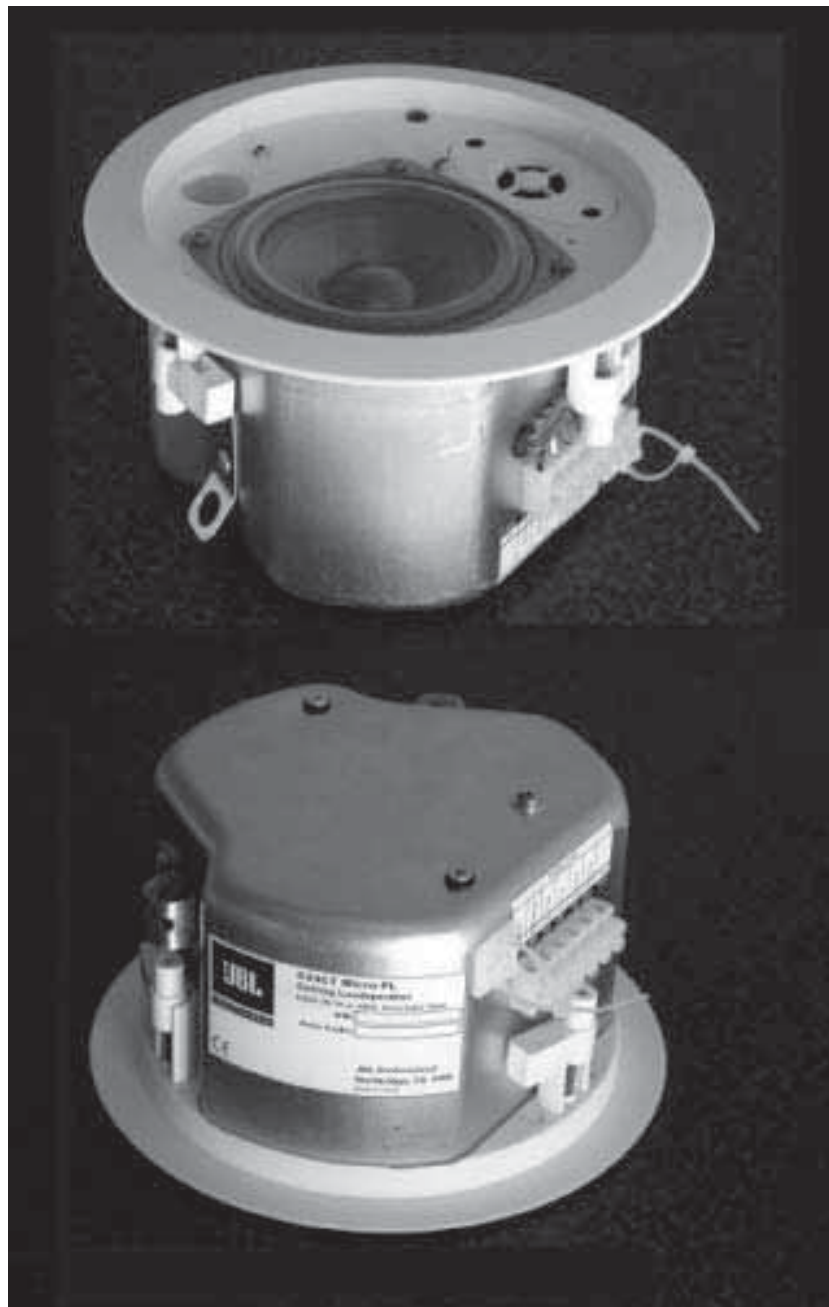
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Thank you for purchasing JBL Control Contractor ceiling loudspeakers.

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

Product Description

The JBL Control Contractor ceiling loudspeakers utilize innovative design and materials to provide premium level performance from compact in-ceiling speakers.
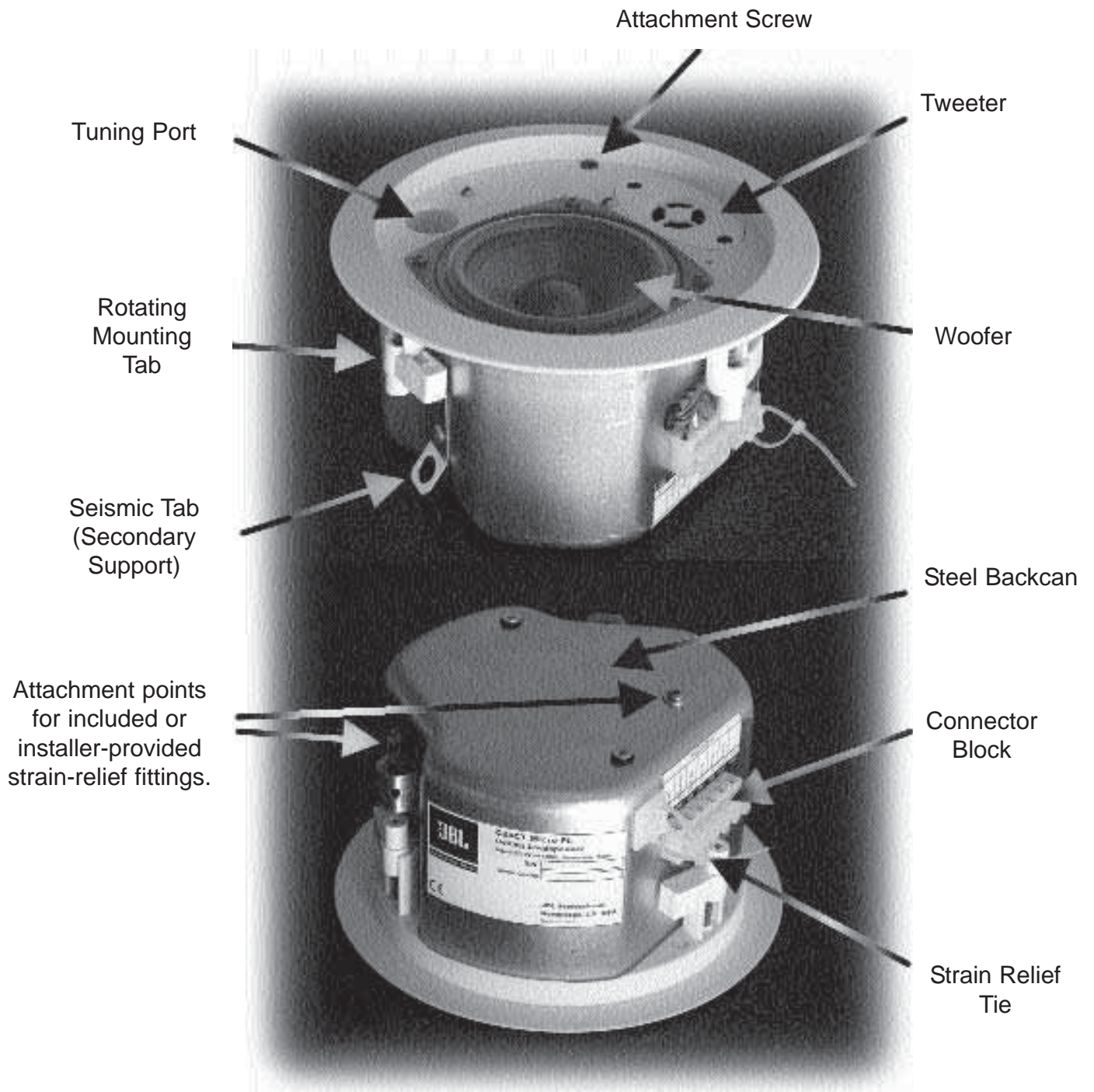
CONTROL 24C MICRO - Most compact of the JBL ceiling speakers, the Control 24C Micro contains a 4" woofer and a ¾" titanium-coated tweeter, providing high-fidelity sound over an extremely wide coverage area. The Control 24C Micro also has a small backcan and is ideal for smaller ceiling spaces.

CONTROL 24CT MICRO - The Control 24CT Micro includes a multitap transformer for use on 70V or 100V line distribution systems. The transformer has a top tap rating of 9 Watts.

CONTROL 24CT MICROPLUS - The Control 24CT MicroPlus includes a multitap transformer for use on 70V or 100V line distribution systems. The transformer has a top tap rating of 25 Watts.

Product Feature Identification

(Control 24CT Micro Shown)

Attachment Screw

Tweeter

Tuning Port

Rotating
Mounting
Tab

Woofer

Seismic Tab
(Secondary
Support)

Steel Backcan

Attachment points
for included or
installer-provided
strain-relief fittings.

Connector
Block

Strain Relief
Tie

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.

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, sometimes a pre-installation bracket is required to reserve the space within the ceiling area, or to provide a place to which wiring can be tied behind the sheet rock. A pre-installation bracket can also function as a cutout template when many cutouts are to be made. Two types of pre-installation brackets are available from JBL Professional as optional accessories:

1) The optional **NEW-CONSTRUCTION BRACKET** is made of flat sheet metal, 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 ¾ 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 can typically be cut with a router-type cutting tool, using the bracket ring as a cutout guide.
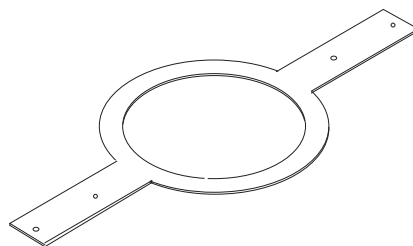

Figure 1:
Optional New-Construction Bracket

2. The optional **PLASTER-RING BRACKET** (or "mud ring") is identical to the New Construction Bracket, with the addition of a circular offset, forming an 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. The sheet rock hole is then plastered (or "mudded") up to the ring to create a seamless cutout.
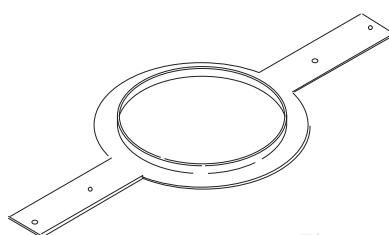

Figure 2:
Optional Plaster Ring Bracket

NEW CONSTRUCTION BRACKETS
The model numbers for the New Construction Brackets for the Control 24C/CT Micro and the Control 24CT MicroPlus are the same as the brackets for the Regular Control 24C & CT ceiling speaker.

New Construction Bracket: MTC-24NC
Plaster Ring Bracket: MTC-24MR

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
The speakers are packaged in cardboard cutout templates which can be used for scribing the cutout hole onto your ceiling surface. The cutout size for the Control 24C/CT Micro and the Control 24CT MicroPlus is the same as the Regular Control 24C & CT.

Cutout Size: 6.6 inches (168 mm)

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 Ceiling Hole. Cut out the hole size either by tracing the cardboard cutout template and cutting the hole or by using a circular cutter set to the cutout sizes listed above. Pull the wiring through the cutout hole.

> **Guide to the Pins for Connection** - The locking input connector contains 7 terminals, as marked above the connector. The pin functions are listed on the label located on the terminal cover plate.
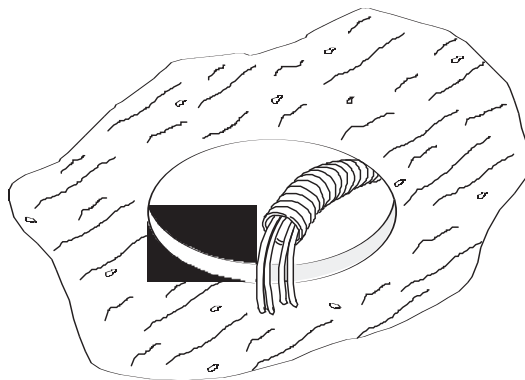

Figure 3:
Hole Cutout

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 upper side of the tile. Secure the rails onto the C-bracket tabs by inserting a screw though 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
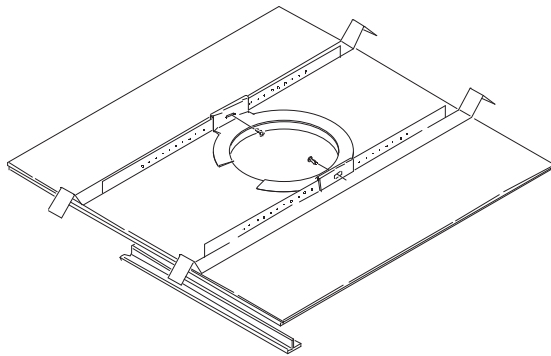MUST be used when installing into suspended ceiling tiles.

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.

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 Input Terminal Block. Connect the wiring to the UL & CE-rated, touch-proof terminal block that is attached to the side of the speaker by stripping the insulation back about about 3/16 inches (5 mm) [do not strip any longer than this], inserting the bare end of wire into the connector and screwing the hold-down screw until tight using a small flat blade screwdriver. Tighten any unused screws to avoid vibration.
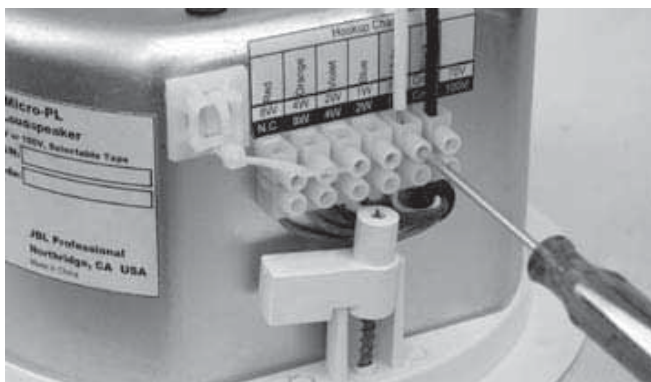

Figure 5:
Connecting Wires to Connector

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Guide to the Pins for Connection - The locking input connector contains 7 terminals, as marked above the connector. The pin functions are listed on the label located on the terminal cover plate.

Control 24CT Micro:

Hookup Chart						
Red	Orange	Violet	Blue	White	Black	
9W	4W	2W	1W	0.5W	Com	70V
N.C.	9W	4W	2W	1W	Com	100V

Control 24CT MicroPlus:

Hookup Chart						
		Blue	Orange	Red	Black	
N.C.	N.C.	6W	12W	25W	Com	70V
N.C.	N.C.	12W	25W	N.C.	Com	100V

Control 24C Micro:

+	-

For Control 24CT Micro and the Control 24CT MicroPlus, connect the negative input to the "Common" terminal and connect the positive input to the appropriate tap. The input pins correspond to the taps of the transformer indicated on the label above each connector. For example, if the system is being driven from a 70V Distributed Line, and the 2W tap is the desired connection, the positive input would be made to the input marked "2W, Violet." The negative connection would be made to the "Common" pin.

On the Control 24C Micro, low impedance version, connect the negative wire to the "-" terminal and connect the positive wire to the "+" terminal.
All other pins are "No Connection."

Paralleling Input Terminals - It is common to run two sets of wires - one set is the input to the speaker and the other is the feed to the next speaker. In this case, simply parallel the two sets of wires to the same terminals on the speaker's terminal block.

Step 4 - **Add included metal strain relief as necessary.** The Control 24C/CT Micro and the 24CT MicroPlus are equipped with two locations where the installer can affix strain relief connectors - one is on the back of backcan and one is on the side (for applications with shallow access). The location of these two attachment points is shown on the Product Feature Identification on Page 3. The installer can attach a wide variety of installer provided fittings to these points if the included equipment is not adequate for the particular installation. Refer to Figure 6 shows the strain relief INCLUDED with the Control 24C/CT Micro and Control 24CT MicroPlus.

Figure 6:
Included Metal Strain Relief

1 - Cable Tie - If using loose wire, this cable tie can secure the loose ends of wire that are connected to the terminal block. The strap can be tightened by pulling on the loose end and then tightening the holding screw.

Figure 7:
Tightening the Cable Tie

2 - Adjustable Metal Strap - This adjustable steel tie fitting is provided for those applications where it can be utilized to affix a set of wires. It can be useful for regions where such a fitting is allowed for terminating a flexible conduit. It can also be used for tightening down onto incoming wires to provide strain relief. It might be necessary to place electrical tape or heat shrink over any wire bundle, underneath the metal strap, to physically protect the wire from the strap.

3 - PEM Screws - Two screws, which are threaded into PEM fittings in the backcan, one on the back and one on the side, can be used to attach a wide variety of strain fittings. Please remove the correct screws with the PEM fitting, as shown on the Product Feature Identification Picture on Page 3, NOT the two screws that hold the backcan in place. Check building codes in your area for what kind of physical strain relief fittings are required in your region.

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

Step 5 - **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. Turn the attachment screws to tighten the mounting tabs, by using the following directions:
IMPORTANT - For each attachment screw, FIRST turn ½ turn COUNTER-CLOCKWISE to release the mounting tab from its guide.
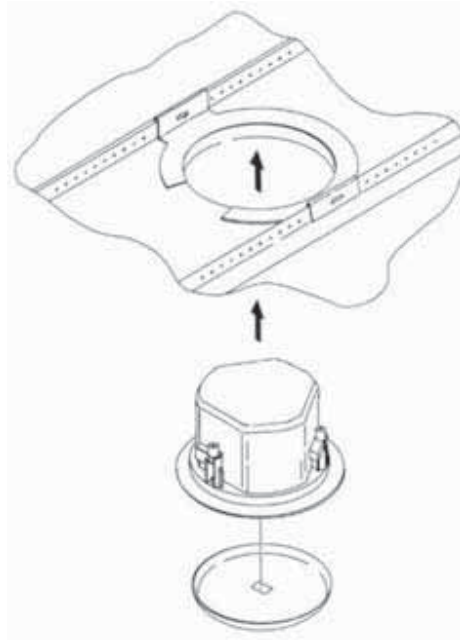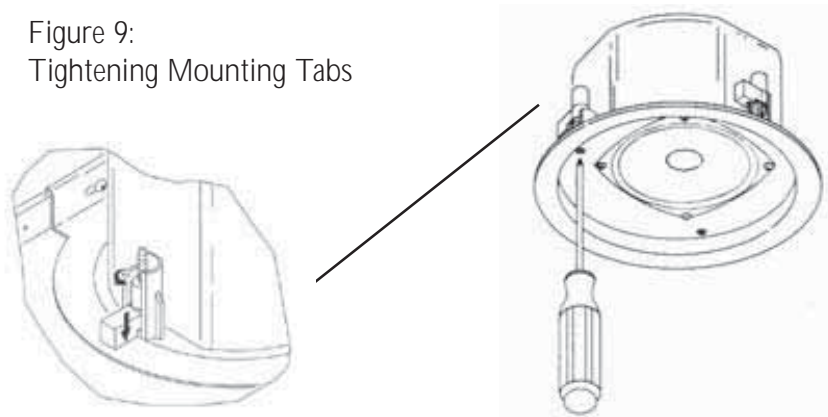

Figure 8:
Inserting Speaker Into Ceiling

Then tighten the mounting tabs by turning the screw CLOCKWISE until tight. The first ¼ 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 9:
Tightening Mounting Tabs

Step 6 - Connect a Secondary Support Line to Seismic Tab - A tab is provided on the side of the Control 24C/CT Micro and the Control 24CT MicroPlus for connection to an independent secondary support point. Some construction codes require using this secondary support point, by connecting a support line to a separate secure support point.
Consult construction codes in your region.

Step 7 - 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.

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Painting the Speaker

The speaker's textured white finish complements most decors 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.

· Mask the baffle.

· After cleaning, apply two or more two 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 Grille - Painting the grille requires removal of the logo and the internal grille cloth, then 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 (or if damaged use new internal grille cloth) and JBL logo.

CE

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.

Control 24CT Micro

Transformer Taps:	70V: 9W, 4W, 2W, 1W, 0.5W
	100V; 9W, 4W, 2W, 1W

Control 24CT MicroPlus

Transformer Taps:	70V: 25W, 12W, 6W
	100V; 25W, 12W

Control 24C Micro

|	
Power Capacity:	15W Continuous Pink Noise (UL shaped pink noise as defined by a 6dB Crest Factor)
	30W Continuous Program POwer (Defined as 3dB above Pink Noise Power)
Continuous-Tone Test Rating:	5.3V RMS (Pure sine wave signal swept from 800 Hz to 2400 Hz over ten seconds)

NOTE
When using a distributed line system, the distribution amplifier is incapable of producing an output voltage higher than its rating (70.7 V or 100 V depending on geographic region). This is a peak voltage rating. As such, loudpseakers utilizing distribution transformers are not rated for voltage inputs in excess of those amplifier specifications.

## Control 24C/CT Micro and Control 24CT MicroPlus Connector Cover Addendum

The included Connector Cover is designed for use as a conduit attachment point and as a protective cover for the screw terminal connector block.

When using conduit with the cover, remove the conduit knockout Before affixing the cover to the loudspeaker, attach the flexible conduit with a rated conduit clamp, and fasten it to the cover. Make the appropriate wiring connections to the loudspeaker and install the cover on the backcan according to the instructions below.

Step 1 Loosen the screw on the top of the backcan enough to fit the tab of the cover between the head of the screw and the backcan.
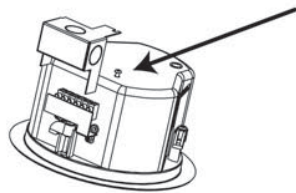
Step 2 Fit the cover over the connector block. Be sure to fit the cover snugly to the mating piece attached below the block, and make sure that no wires are being pinched. Press the cover fully up against the side of the can and see that the tab is flush to the top of the can.
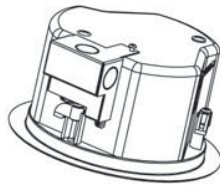
Step 3 Tighten the screw down completely on the tab.
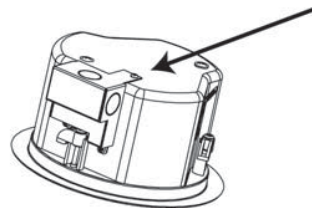
Warranty & Contacting JBL

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:

Applications Department, 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.

OUTSIDE OF THE USA:

Contact the JBL Professional
Distributor in your country.

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