

User's Guide

Control 321C/CT

Control 322C/CT

Control 328C/CT

Control 312CS

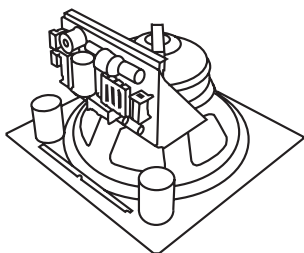


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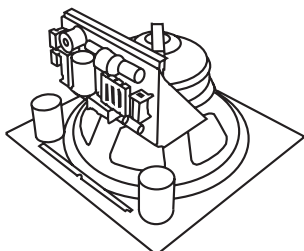
PRODUCT DESCRIPTION



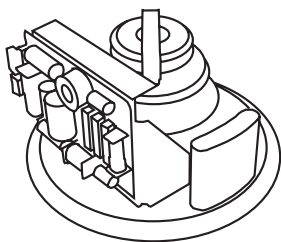
JBL Professional Control® 300 Large Format, In-Ceiling Loudspeakers are designed from the ground up to provide optimal performance for the most demanding installed sound applications. Thanks to the conical constant coverage waveguide design, Control 300 Series Loudspeakers feature exceptional broadband control ensuring extremely even coverage and remarkably consistent performance. The Control 321C/CT, 322C/CT, 328C/CT and 312CS represent the state of the art in in-ceiling loudspeaker systems design.



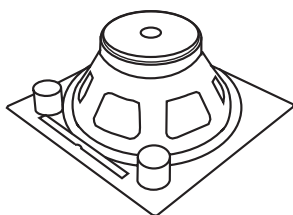
Control 321C - A coaxial design that features a 12" Kevlar-reinforced cone on the woofer coupled with JBL Professional's 2412 Compression Driver. The **Control 321CT** offers the same driver compliment as the Control 321C but also includes a multi-tap transformer for use on 70V or 100V line distribution systems.



Control 322C - A coaxial design that also features a 12" Kevlar-reinforced cone on the woofer coupled with JBL Professional's 2407H Compression Driver and offers higher power handling capabilities than Control 321 models. The **Control 322CT** offers the same driver compliment as the Control 322C but also includes a multi-tap transformer for use on 70V or 100V line distribution systems.



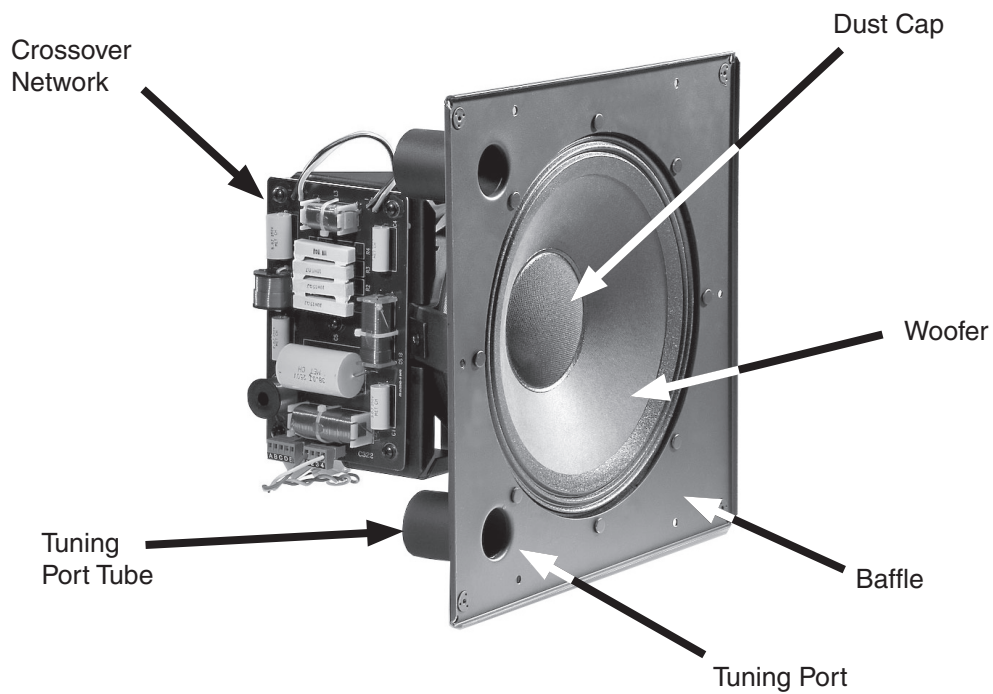
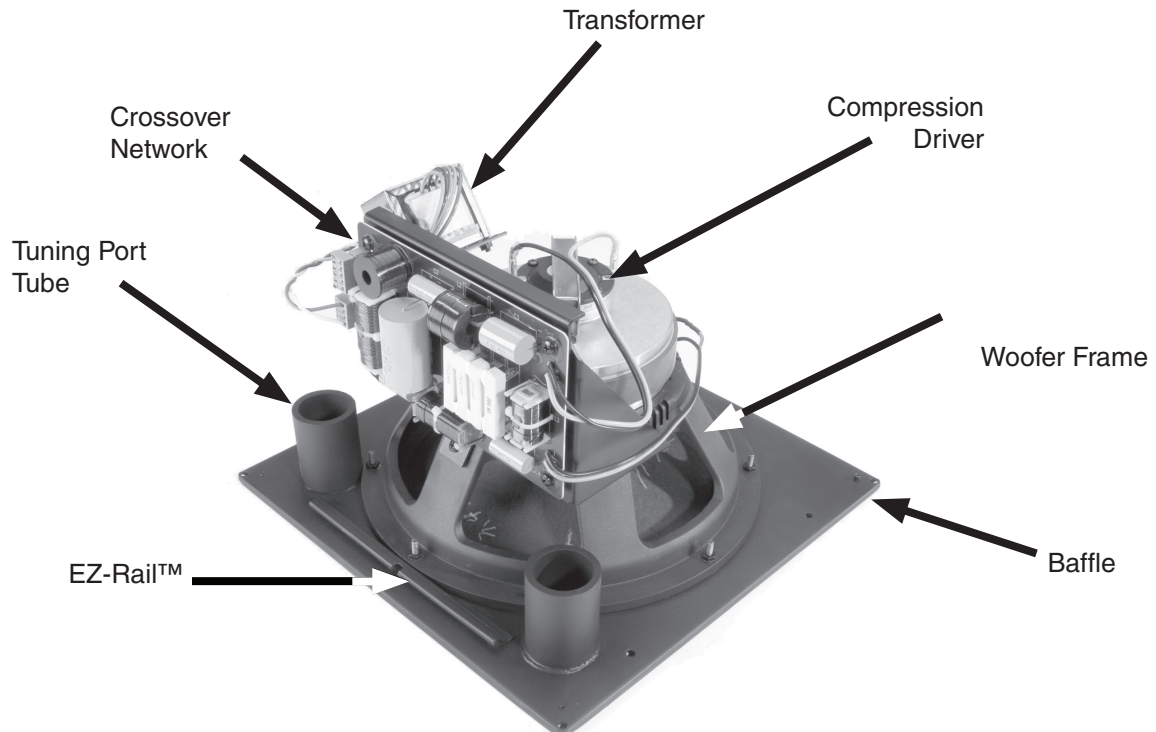
Control 328C - A smaller coaxial design that features a 8" Kevlar-reinforced cone on the woofer coupled with JBL Professional's 2412 Compression Driver. The **Control 328CT** offers the same driver compliment as the Control 328C and but includes a multi-tap transformer for use on 70V or 100V line distribution systems.



Control 312C - An 8 ohm, 12" Kevlar-reinforced cone for extended bass requirements.

PRODUCT FEATURE IDENTIFICATION

(Control 322CT Shown)



WIRING INSTRUCTIONS

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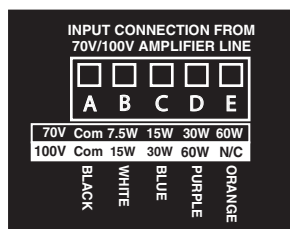
Control 300 Series Loudspeakers include Euroblock or Phoenix-type locking input connectors that allow the system to be “pre-wired” before the speakers are installed into their respective back cans and backboxes.

Connecting the Wiring to the Euroblock -- 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. Using terminal block connectors allows the system to be pre-wired before final installation of the drivers.

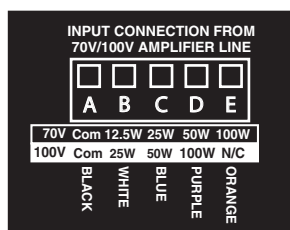
When wiring Control 300 Series loudspeakers, always use proper electrical wiring practices in accordance with your area’s building codes and regulations.

Guide to Connection Pins on Transformer Models (Control 328CT, 321CT & 322CT) -- The removable locking input connector contains 5 terminals, as marked on the connector. The pin functions are listed on the label located on the crossover frame.

Control 321CT & 328CT:



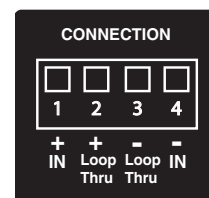
Control 322CT:



For Control 328CT, 321CT and Control 322CT (transformer models), connect the negative input to the “Common” terminal and connect the positive input to the appropriate tap. *For example, if the system is being driven from a 70V Distributed Line and in the case of the Control 321CT the 30W tap is desired, the positive input would be made to the input marked 30W and the negative connection would be made to the “Common” pin.* The input pins correspond to the taps of the transformer indicated on the label below each connector.

Guide to Connection Pins on Low Impedance Models (Control 321C, 322C, 328C & 312CS) -- The removable locking input connector contains 4 terminals, as marked on the connector. The pin functions for the Control 328C, 328C and 322C are listed on the label located on the crossover frame and on the driver backplate on the Control 312CS.

Control 328C, 321C, 322C & 312CS:



Pins 1 & 4 are the “+” and “-” inputs to the loudspeaker. Connect the negative wire to the “-” or pin 4 and connect the positive wire to “+” or pin 1. Pins 1 & 4 are looped to pins 2 & 3, respectively (Pin 1 connects to Pin 2 and Pin 3 connects to Pin 4) inside the speaker. Pins 2 & 3 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.

Hookup Schemes for Subsequent Speakers

Choose whichever of the following hookup patterns best accommodates your installation.

1.) Paralleling Input Terminals -- Connect the wire pair of the subsequent speaker to pins 1 & 4 (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 2 & 3.

Figure A:
Paralleling Input Terminals

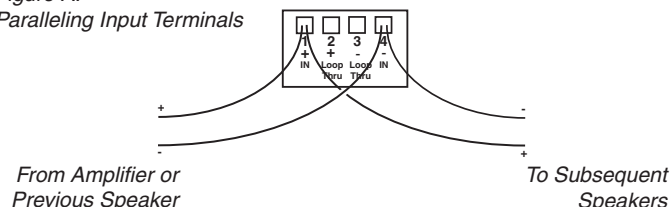
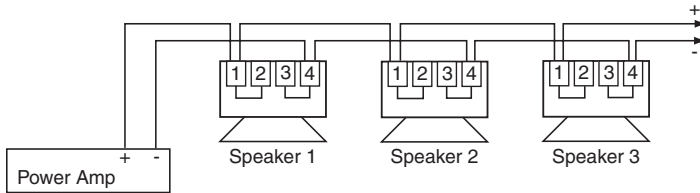


Figure B:
Parallel System
Hookup Diagram



2.) Using Loop-Through Terminals (Pins 2 & 3) -- By connecting the wire pair of the subsequent speaker to pins 2 & 3, then all subsequent speakers will be disconnected when this speaker's connector is disconnected during 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 C:
Using Loop-Through
Terminals

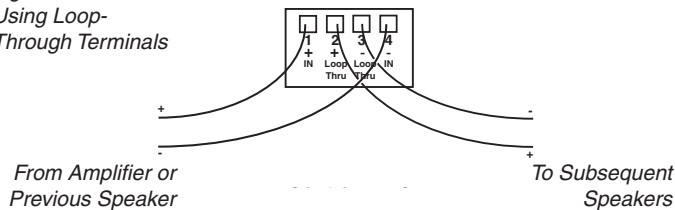
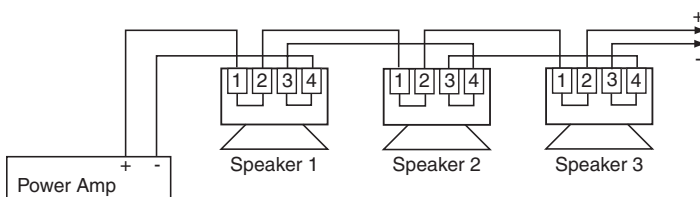


Figure D:
Loop-Through System
Hookup Diagram



CONTROL 328C/CT SYSTEM ASSEMBLY

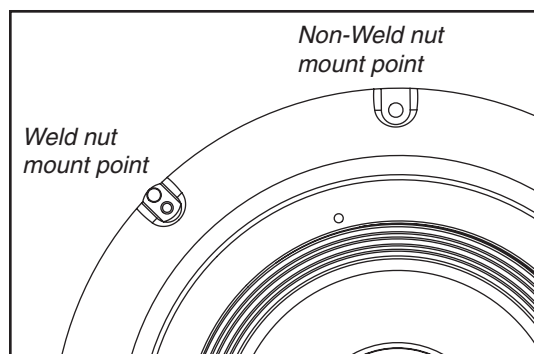
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Ceiling Preparation - Cut a 12.2 inch (310 mm) diameter hole in the ceiling to allow sufficient room for the loudspeaker baffle.

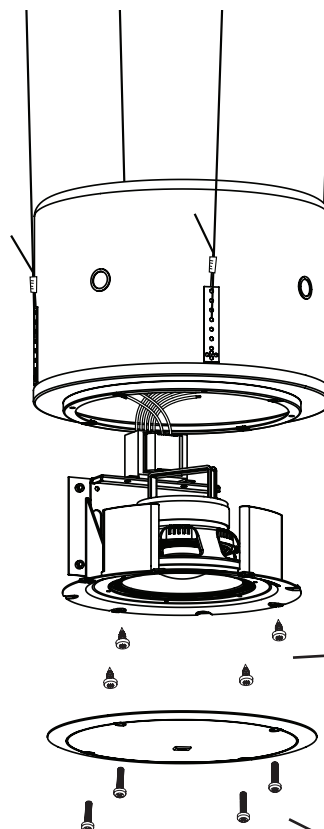
Assembling the Control 328C/CT into the Back Can

- After inserting the Control 328C/CT into the back can, align the mouting holes without weld nuts to the holes with clip nuts on the back can. These are the mounting points that will be used to secure the Control 328 baffle and driver to the backcan.



Next, using 4 pcs - #10 x 0.75 in (19 mm) sheet metal screw, attaching the baffle / driver to the back can. Be sure to match the mouting holes without weld nuts to clip nuts on back can.

Finally, using 4 pcs - M4 x 38 mm powder coated machine screws, attach the metal grille to the baffle. Be sure to match the grille mouting holes to the weld nuts on the baffle assembly.



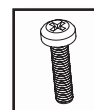
IMPORTANT!

When installing the MTC-300BB8 with a Control 328C/CT, see "Securing Speaker Assembly to the Building Structure" details below.



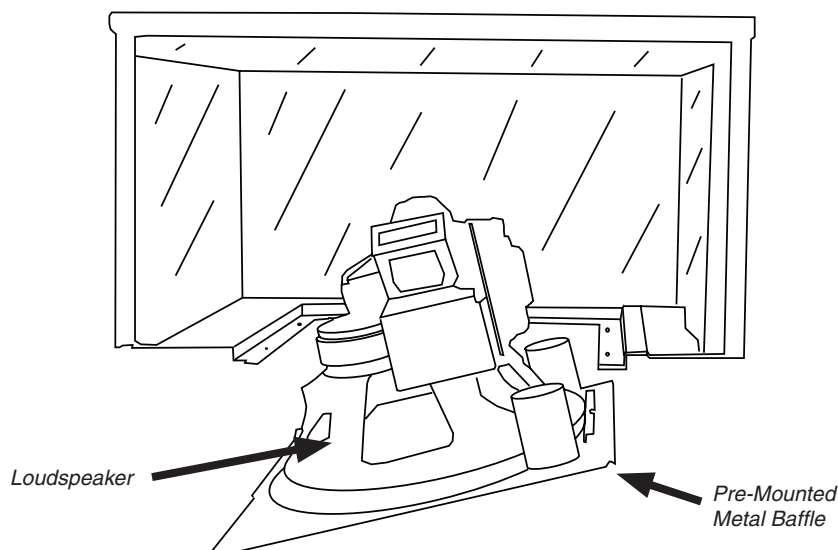
4 pcs - #10 x 0.75 in (19 mm) sheet metal screw for attaching the baffle / driver to the back can. Match to clip nuts on back can. (Included with MTC-300BB8.)

4 pcs - M4 x 38 mm powder coated machine screws for attaching the metal grille to the baffle. (Included with JBL Professional grilles.)



IMPORTANT: SECURING SPEAKER ASSEMBLY TO THE BUILDING STRUCTURE

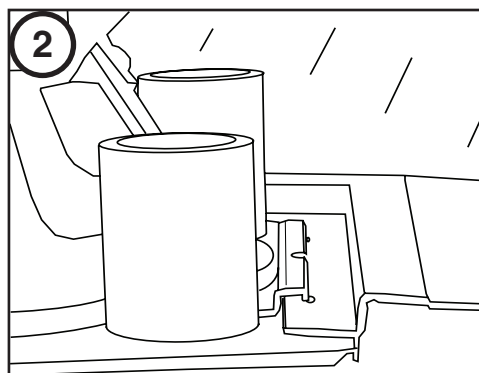
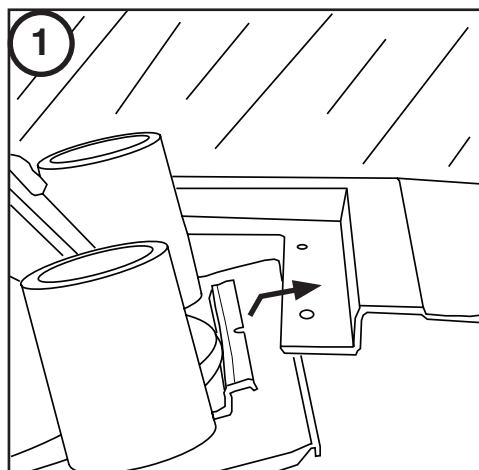
The backcan must be secured to the building structure by qualified personnel in accordance with safe installation practices. Use suspension materials, connection fixturing, and methods that are appropriate for the building structure and installation conditions. Employ a minimum 5:1 safety factor for each suspension point, or higher if required by code. For MTC-300BB8 with a Control 328C/CT a 5:1 safety factor requires that each suspension point be rated to support a minimum of 57 kg (125 lbs).



Assembling the Control 321C/CT, 322C/CT or 312CS into the Back Box - First, line up the EZ-Rail™ with one of the back box flanges containing a singular mounting hole. For orientation when holding the speaker overhead, two (2) embossed arrows on the underside of the metal baffle indicate the edge with the EZ-Rail.

Next, slide the EZ-Rail onto the flange of the JBL MTC-300BB12 (or compatible) back box. The EZ-Rail helps to hold one side of the speaker baffle **TEMPORARILY** while the installer installs the screws that hold the baffle.

IMPORTANT: THE INSTALLER MUST SECURE THE BAFFLE IN PLACE WITH SCREWS ON ALL SIDES.



CONTROL 321C/CT, 322C/CT & 312CS SYSTEM ASSEMBLY

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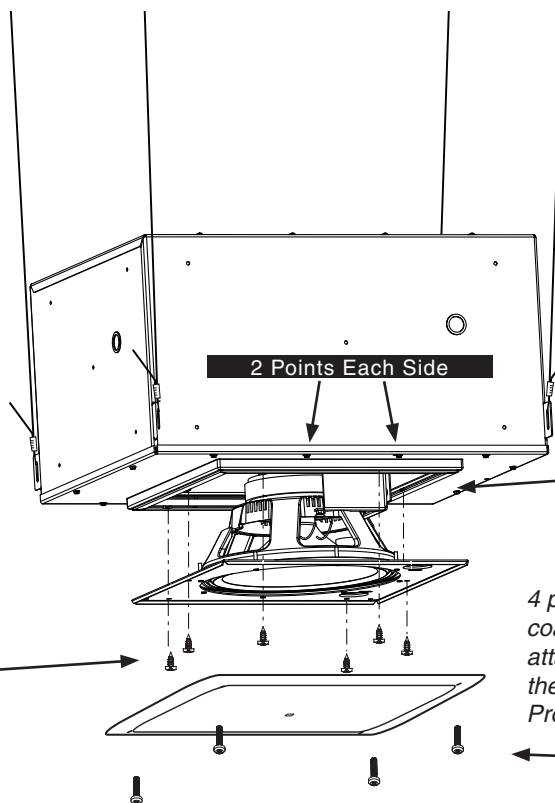
Ceiling Preparation - Cut a 14.9 x 14.9 inch (378 x 378 mm) hole in the ceiling to allow sufficient room for the loudspeaker baffle.

Using JBL Professional's MTC-300BB12 Back Box -- The MTC-300BB12 is compatible with two common mounting systems for installing the loudspeaker / baffle to the back box; **either** of these mounting systems may be utilized. Screws are included with the MTC-300BB12 Back Box.

Using 4 pcs - M4 x 38mm powder coated machine screws, attach the metal grille to the baffle. Be sure to match the grille mounting holes to the weld nuts on the baffle assembly.

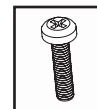


6 pcs - #10 x .75 in (19mm) sheet metal screw for attaching the driver / baffle to the back box. Match to clip nuts on back box.



IMPORTANT!
When installing the MTC-300BB12 with a Control 321C/CT, 322C/CT & 312CS models see "Securing Speaker Assembly to the Building Structure" details below.

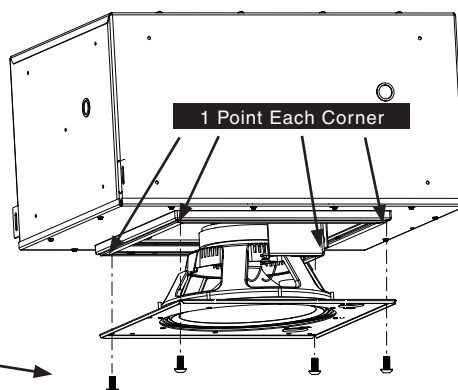
4 pcs - M4 x 38mm powder coated machine screws for attaching the metal grille to the baffle. (Included with JBL Professional grilles.)



Using a different brand compatible back box -- Screwholes in the metal baffle are provided corresponding with two common mounting systems. Utilize the system that works with that particular back box.



4 pcs - M4 x 14mm sheet metal screw for attaching the driver / baffle to the back box. Match to corners on back box.



IMPORTANT: SECURING SPEAKER ASSEMBLY TO THE BUILDING STRUCTURE

The backcan must be secured to the building structure by qualified personnel in accordance with safe installation practices. Use suspension materials, connection fixturing, and methods that are appropriate for the building structure and installation conditions. Employ a minimum 5:1 safety factor for each suspension point, or higher if required by code. For MTC-300BB12 with a Control 321C/CT, 322C/CT or 312CS, a 5:1 safety factor requires that each suspension point be rated to support a minimum of 156 kg (345 lbs).



ACCESSORIES, MAINTENANCE & CONTACTING JBL

Painting the Grille -- Control 300 Series Grilles feature a powder coated, satin finish paint (RAL 9016 - Pantone equivalent 11-0602TPX) and can be painted to match any decor. This should only be done when the grilles have been removed from their loudspeaker and back box / can assembly.

For best results, a spray paint technique is recommended. If the grille is rolled or brush painted, the grille perforations may become clogged with paint and poor sound quality may result.

Maintenance -- No maintenance is required when assembled in accordance with the instructions and wiring guidelines described in this manual.

Optional Accessories

MTC-RG6/8 Grille - a round, contoured grille for use with the Control 328C/CT Loudspeaker System.

MTC-300BB8 Backbox - a round, one cubic foot (nominal), backbox for use with the Control 328C/CT Loudspeaker System.

MTC-300SG12 Grille - a square, contoured grille for use with the Control 321C/CT, 322C/CT & 312CS Loudspeaker Systems.

MTC-300BB12 Backbox - a round, three cubic foot (nominal), for use with the Control 321C/CT, 322C/CT & 312CS Loudspeaker Systems.

MTC-300T150 Transformer - a 100V, 150W (plus 75W at 70V) transformer for applications requiring high power.

Contacting JBL Professional -- These products are designed and backed by JBL Professional, the world leader in professional sound reinforcement. For complete 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
8400 Balboa Blvd., PO Box 2200
Northridge, CA 91329 USA

In the USA you may call Monday through Friday 8:00am to 5:00pm Pacific Coast Time (818) 894-8850.

Outside the USA:

Contact the JBL Professional Distributor in your country.

A list of JBL Professional Distributors and US Service Centers can be obtained from the JBL Professional website at: **www.jblpro.com**

SPECIFICATIONS

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Control 328C/CT

Frequency Range (-10 dB) ¹ :	45 Hz – 18 kHz
Frequency Response (±3 dB) ¹ :	60 Hz – 16 kHz
Coverage Pattern ² :	120° conical, broadband (Avg 1k - 16kHz)
Long-Term System Power Rating, IEC ³ :	250 W (1600 W peak), 2 hrs 150 W (1000 W peak), 100 hrs
Sensitivity (2.83V @ 1m):	93 dB ⁴ measured half-space
Nominal Impedance :	8 ohms (328C)
Transformer Taps :	100V: 68W, 34W & 17W (plus 8.5W at 70V)
Transducers :	8" woofer with Kevlar reinforced cone, 1" exit magnet compression driver
Input Connector :	Removable locking connector with screw-down terminals.
Safety Agency Rating :	Suitable for use in air handling spaces, per U.L.-2043, U.L.-1480, NFPA90 & NFPA70A.
Net Weight :	328C: 4.5 kg (10.0 lbs) 328CT: 5.4 kg (12.0 lbs)
Dimensions (Diameter x D) :	328C: Ø 305 mm (12 in) x 160 mm (6.3 in) 328CT: Ø 305 mm (12 in) x 218 mm (8.6 in)

**LISTED**
General Signaling
Equipment
15CM

Control 321C/CT

Frequency Range (-10 dB) ¹ :	34 Hz – 18 kHz
Frequency Response (±3 dB) ¹ :	47 Hz – 16 kHz
Coverage Pattern ² :	90° conical, broadband (Avg 1k - 16kHz)
Long-Term System Power Rating, IEC ³ :	250 W (1600 W peak), 2 hrs 200 W (1000 W peak), 100 hrs
Sensitivity (2.83V @ 1m):	94 dB ⁴ measured half-space
Nominal Impedance :	8 ohms (321C)
Transformer Taps :	100V: 68W, 34W & 17W (plus 8.5W at 70V)
Transducers :	12" woofer with Kevlar reinforced cone, 1" exit magnet compression driver
Input Connector :	Removable locking connector with screw-down terminals.
Safety Agency Rating :	Suitable for use in air handling spaces, per U.L.-2043, U.L.-1480, NFPA90 & NFPA70A.
Net Weight :	321C: 7.3 kg (16.0 lbs) 321CT: 8.2 kg (18.0 lbs)
Dimensions (H x W x D) :	321C: 366 x 366 x 223 mm (14.4 x 14.4 x 8.8 in) depth from back of baffle 321CT: 366 x 366 x 240 mm (14.4 x 14.4 x 9.5 in) depth from back of baffle

Control 322C/CT

Frequency Range (-10 dB) ¹ :	32 Hz – 20 kHz
Frequency Response (±3 dB) ¹ :	48 Hz – 19 kHz
Coverage Pattern ² :	90° conical, broadband (Avg 1k - 16kHz)
Long-Term System Power Rating, IEC ³ :	400 W (1600 W peak), 2 hrs 250 W (1000 W peak), 100 hrs
Sensitivity (2.83V @ 1m):	95 dB ⁴ measured half-space
Nominal Impedance :	8 ohms (322C)
Transformer Taps :	100V: 100W, 50W & 25W (plus 12.5W at 70V)
Transducers :	12" woofer with Kevlar reinforced cone, 1" exit neodymium-magnet compression driver
Input Connector :	Removable locking connector with screw-down terminals.
Safety Agency Rating :	Suitable for use in air handling spaces, per U.L.-2043, U.L.-1480, NFPA90 & NFPA70A.
Net Weight :	322C: 9.1 kg (20.0 lbs) 322CT: 10.0 kg (22.0 lbs)
Dimensions (H x W x D) :	322C: 366 x 366 x 223 mm (14.4 x 14.4 x 8.8 in) depth from back of baffle 322CT: 366 x 366 x 240 mm (14.4 x 14.4 x 9.5 in) depth from back of baffle

Control 312CS

Frequency Range (-10 dB) ¹ :	30 Hz – 4.5 kHz
Frequency Response (±3 dB) ¹ :	34 Hz – 3.5 kHz
Long-Term System Power Rating, IEC ⁵ :	400 W (1600 W peak), 2 hrs 250 W (1000 W peak), 100 hrs
Sensitivity (2.83V @ 1m):	93 dB ⁴ measured half-space
Nominal Impedance :	8 ohms
Transducers :	12" woofer with Kevlar reinforced cone
Input Connector :	Removable locking connector with screw-down terminals.
Safety Agency Rating :	Suitable for use in air handling spaces, per U.L.-2043, U.L.-1480, NFPA90 & NFPA70A.
Net Weight :	312CS: 7.7 kg (17.0 lbs)
Dimensions (H x W x D) :	312CS: 366 x 366 x 160 mm (14.4 x 14.4 x 6.3 in) depth from back of baffle

¹ In half space (in ceiling)

² Average 1 kHz to 16 kHz

³ IEC standard, full bandwidth pink noise with 6 dB crest factor.

⁴ Measured in half space (in ceiling), ave 100 Hz – 10 kHz.

⁵ AES pink noise, 30 Hz to 300 Hz with 6 dB crest factor.

