

E P I Q U E

by Dayton Audio

*D. B. Keele Jr.*

Signature Series

**CBT24 Kit Assembly Manual**

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Constant Beamwidth Transducer System

Congratulations on your purchase of the Epique™ CBT24 Signature Series Line Array Speaker System Kit. The legendary Don B. Keele Jr., in conjunction with Dayton Audio® developed the Epique™ CBT24 floor-standing curved line array which is based upon declassified U.S. Navy underwater sound research. The CBT24 provides sonic accuracy and sound field coverage control, surpassing even the finest high-end loudspeakers.

### KIT ASSEMBLY OVERVIEW:

Assembly of the kit version of the CBT24 line array system is very straightforward. Not counting cabinet finishing; the estimated time to assemble a pair of systems is about eight hours. The most labor-intensive part of the procedure is installing the 24 drivers in each array, but is relatively easy with the preassembled wiring harness which requires no soldering.

### ASSEMBLY STEPS:

Here are the steps required to assemble the CBT24 kit. These steps are covered in much detail in the following "DETAILED ASSEMBLY" section after the parts list table.

- 1) **Finish the cabinet:** The cabinet and base are supplied unfinished in raw MDF, Finishing the cabinet is the most demanding and labor intensive step in the whole assembly process. Cabinet finishing is not covered in this short guide but should be done prior to assembly.
- 2) **Install rear connection cup:**
- 3) **Attach base gasket to top of base:**
- 4) **Attach metal plates to bottom of base:**
- 5) **Attach the base to the array:**
- 6) **Insert the wiring harness:**
- 7) **Add the polyfill damping material:**
- 8) **Install the drivers:**

### ADDITIONAL ITEMS NEEDED FOR ASSEMBLY:

In addition to the items supplied with the kit you will need some basic tools and inexpensive parts to complete your CBT24 kit. Refer to the brief list below.

### TOOLS AND PARTS:

- 1) **Small needle nose pliers**
- 2) **Phillips head screwdriver (or bit)**
- 3) **Hex-head screwdriver (or bit)**
- 4) **Bit driver (suggest cordless to make driver attachment easier)**
- 5) **Roll of adhesive tape (suggest painters tape that is easily removable)**

### CBT24 KIT PARTS LIST:

The following table lists all the parts supplied with the CBT24 kit. Before assembly is started, please make sure all the supplied parts have been provided. Contact Dayton Audio customer service info@daytonaudio.com if any parts are missing.

ITEM	QTY	DESCRIPTION
1	2	Cabinets MDF 1547 mm (H) 89 mm (W) x 183 mm (D)
2	2	Bases MDF 344 mm 25 mm (H) x 344 mm (W) x 635 mm (D)
3	48	Dayton Audio ND64-16 2-1/2" full-range drivers
4	2	Speaker terminal cups 4" x 4" Square with gold banana binding posts
5	2	Wiring harness with 24 numbered driver connection leads with push-on terminals
6	2	Polvfill sound dampening material
7	4	Metal plates for bases 20 W x 150 L x 3 mm T black metal strap with four mounting holes
8	2	Gaskets for bases 110 W x 88 D x 1 H mm black foam gasket with adhesive backing
9	8	Rubber feet for bases 20 mm diameter x 5 mm thick circular rubber foot
10	200	Mounting screws for drivers CA3.5 x 15 mm hex-head wood screw
11	8	Terminal cup mounting screws FA4 x 15 mm Phillips flat-head wood screw
12	8	Base to cabinet mounting screws KM5 x 40 mm Phillips flat-head machine screw
13	8	Metal plate to base screws M5 x 11.4 mm Phillips flat-head wood screw

## DETAILED ASSEMBLY:

Here are the detailed steps required to assemble the CBT24 kit:

### 1) Finish the cabinet:

The cabinets and bases are supplied unfinished in raw MDF. Each cabinet and base must be finished before the following steps are followed. As pointed out previously, finishing the cabinet is the most demanding and labor intensive step in the whole assembly process. Cabinet finishing is not covered in this short guide.

### 2) Install rear connection cups:

Each rear connection cup (item 4) is inserted in the rear of each finished cabinet and attached with four each 15 mm (0.6") long Phillips flat-head wood screws (item 11). The cabinet should be laid down on its side before attaching the connection cup.

### 3) Attach base gasket to top of base:

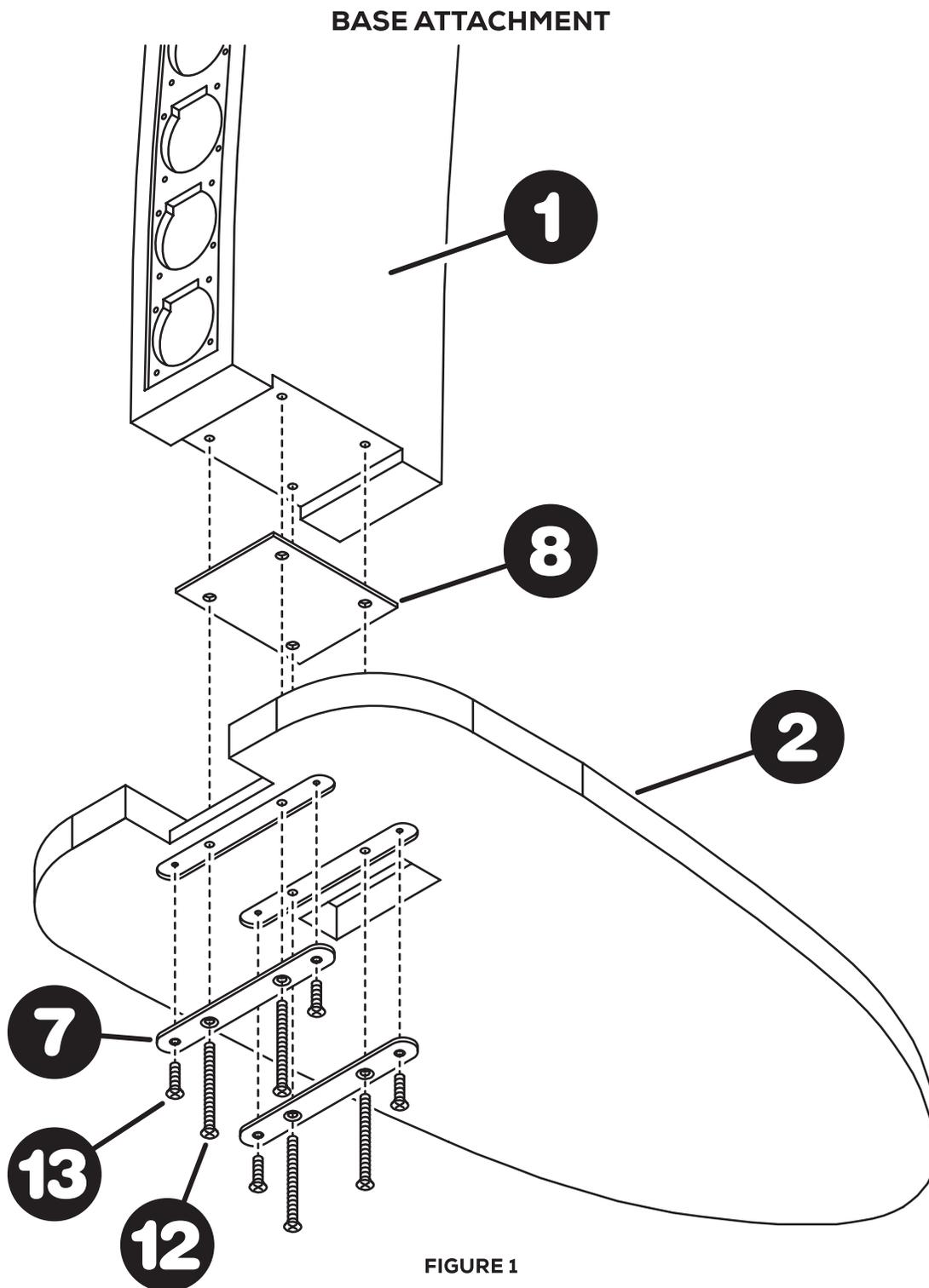
The base gasket (item 8) is attached to the top of each base (item 2) in the cavity where the cabinet attaches to the base. This location is shown in Figure 1.

### 4) Attach metal plates to bottom of base:

Two metal plates (item 7) must be attached to the bottom of each base before the base is attached to the cabinet. The bottom of each base has two cavities where the metal plates are located. Attach each plate to the base using two 11.4 mm long Phillips flat-head wood screws (item 13) in the outside holes in the plates. Pilot holes are drilled in the base to locate and help drive the screws. The plate locations are shown in Figure 1. Make sure the plates are oriented with the beveled holes on the bottom.

### 5) Attach the base to the array:

The base is attached to the array cabinet using four 40 mm Phillips flat-head machine screws (item 12). Make sure the black foam base gasket (item 8) has already been attached to the top of the base before the cabinet is attached to the base.



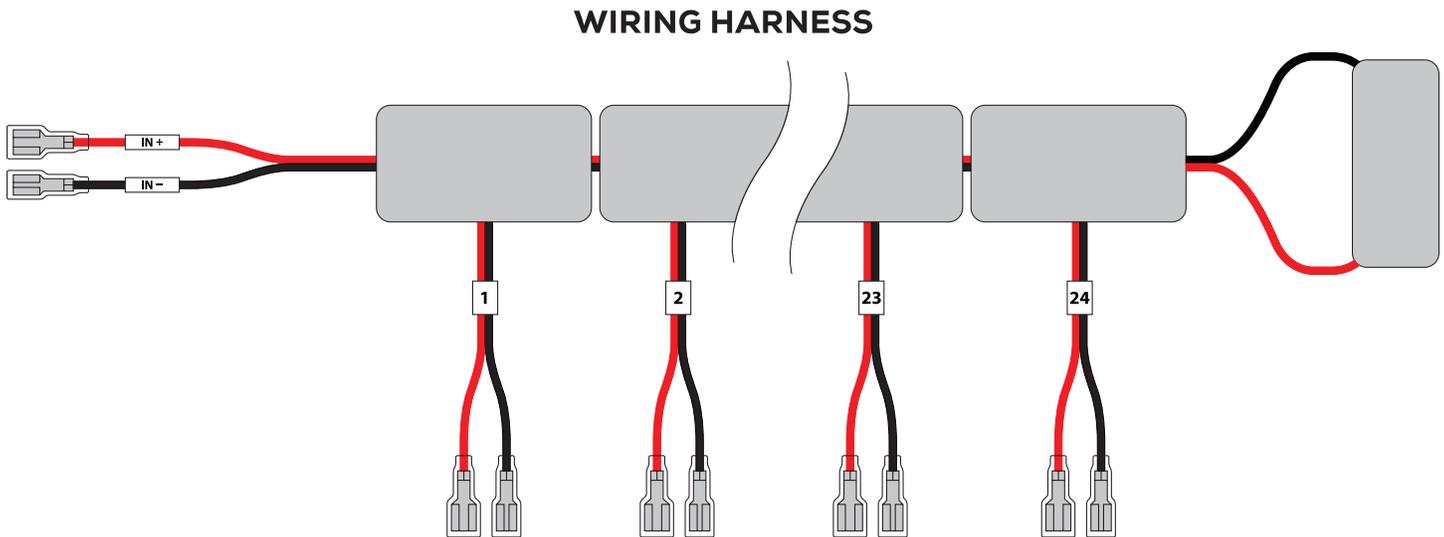
## 6) Insert the wiring harness:

The CBT24's wiring harness is pre-built and just needs to be inserted or threaded in the cabinet with each driver's numbered connection lead brought out through each driver hole. **Figure 2** shows the wiring harness unwound with the input on the left (bottom of cabinet) and the other end on the right (top of cabinet).

Here is the suggested procedure to thread the wiring harness into the cabinet, we suggest that a person assist with this operation. Set the cabinet upright on its base and then thread the wiring harness in through the top driver hole with the harness's input connection going in first.

While wiggling the harness, let gravity pull the harness down into the cabinet until the harness is in proper position to locate each numbered driver lead next to each driver hole in the cabinet with lead 1 on the bottom and lead 24 on the top.

When the harness is in the proper position, thread each driver's numbered lead out each driver mounting hole and tape each lead to the side of the cabinet.



**FIGURE 2**

## 7) Add the polyfill damping material:

After all the driver connection leads are firmly attached to the side of the cabinet, the polyfill damping material (item 6) can be inserted. Eight individual strips of damping material are provided for the 24 drivers in each array. Each individual strip of damping material provides damping for three drivers of the array. Starting from the bottom, the damping material for each group of three drivers can be carefully inserted in the central driver hole of the group of three, and then positioned behind the three open driver-mounting holes.

## 8) Install the drivers:

With the cabinet positioned on its back, each of the drivers (item 3) can be mounted in the array using the 15 mm long hex-drive mounting screws (item 10). Note that the screws are not Philips head but hex drive requiring either an Allen wrench or hex bit in the screwdriver!

First attach each driver to its corresponding numbered lead using the push-on connectors and then position the driver and attach with four screws. **Do not over tighten the screws;** it's easy to strip the MDF material!

After all 24 drivers are mounted in each cabinet, the assembly is complete!

## FINAL SYSTEM TEST:

Conduct a final test of the completed system and verify that all drivers are operating.

## ABOUT THE DESIGNER

D.B. (Don) Keele Jr. is one of the preeminent audio engineers of the last four decades. His work is focused especially on the characteristics of sound as it leaves its source, and its subsequent behavior while filling the listening environment. He is particularly well known for his groundbreaking (and patented) Constant Directivity and Bi-Radial high frequency horn concepts. He has worked for a number of companies including, Electro-Voice, JBL, Klipsch, Crown and Harman International. Mr. Keele holds eight patents with topics including constant directivity loudspeaker horns, loudspeaker arrays, and signal processing.

He is an Audio Engineering Fellow (AES) as well as a 2016 AES Gold Medal recipient. In 2002, he received a Scientific and Engineering Academy Award from the Academy of Motion Picture Arts and Sciences for work he did on cinema Constant Directivity loudspeakers. Mr. Keele holds two BS degrees (EE and Physics) and an MSEE with minor in acoustics. Since 1972, he has presented and published 50 technical papers.



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