



ACOUSTIC AND ELECTRICAL

Frequency Range:
20-65Hz

Maximum operating level:
110dB SPL

LED Green:
Power on

LED Red:
Circuit overload

Duty Cycle:
Designed for continuous
operation 24/7

Power Required:
120 VAC
(240 VAC available)
Watts - Min 24/Max 62
Neutrik Powercon mains
connector

Controls:
2 - Independent mode
damping channels

Feedback, Contour, Coarse
Frequency, Fine Frequency,
Mic Selection, On/Off
switch for each channel

SYSTEM COMPONENTS

Enclosure:
Consultant Version: 13-ply
birch plywood, black textured
paint finish with handle

Installation Version: 13-ply
birch plywood, black textured
paint finish

Designer Version: Natural
wood custom finish

Damping Surface:
10" loudspeaker

PHYSICAL

Grille:
Black cloth

Dimensions:
18"h x 13"w x 9.5"d
45.72cm x 33cm x 24.13cm

Weight:
33 lbs.
15 kg

Shipping Dimensions:
26.25"h x 18.125"w x 14.5"d
66.67cm x 46cm x 36.83cm

Shipping Weight:
41 lbs.
18.40 kg

APPLICATIONS:

Recording Studios

Control Rooms

Home Theaters

The E-Trap™ Solution The electronic bass trap offers a precise tool to attack the very worst problems with a high degree of effectiveness in a fraction of the space occupied by passive bass traps. It also offers a practical low cost solution to existing rooms where problems are present and room re-design or large passive absorbers are not an option.

The E-Trap™ can be viewed as an electronic acoustic absorber. It incorporates a feedback control scheme into a loudspeaker making the speaker exhibit the same dynamics as that of a reactive absorber. It employs a microphone, E-Trap™ circuit module, tuning controls, amplifier, speaker and the room to create a real time active electronic acoustic feedback circuit. This active feedback adds damping to a room mode at the tuned frequency. Because it is active it is capable of adding considerable damping to a room and still be very small in size. The small size allows the designer to place it in acoustically strategic locations without effecting the rooms upper frequency characteristics and with minimal impact to floor space and cosmetics.

The E-Trap™ offers precise tunability of two well separated target frequencies simultaneously. The frequency and amount of damping is adjustable via potentiometer controls. A high resolution spectrum analyzer to measure the room modes is useful in pinpointing the frequency requiring damping. Once the E-Trap™ is placed and tuned, it requires no additional attention.

While not likely to replace all passive bass trap implementations, the precision, ease of tuning and small size offered by the E-Trap™ provides an additional tool to absorb low frequencies and can provide a dramatic improvement in the sound of the room.

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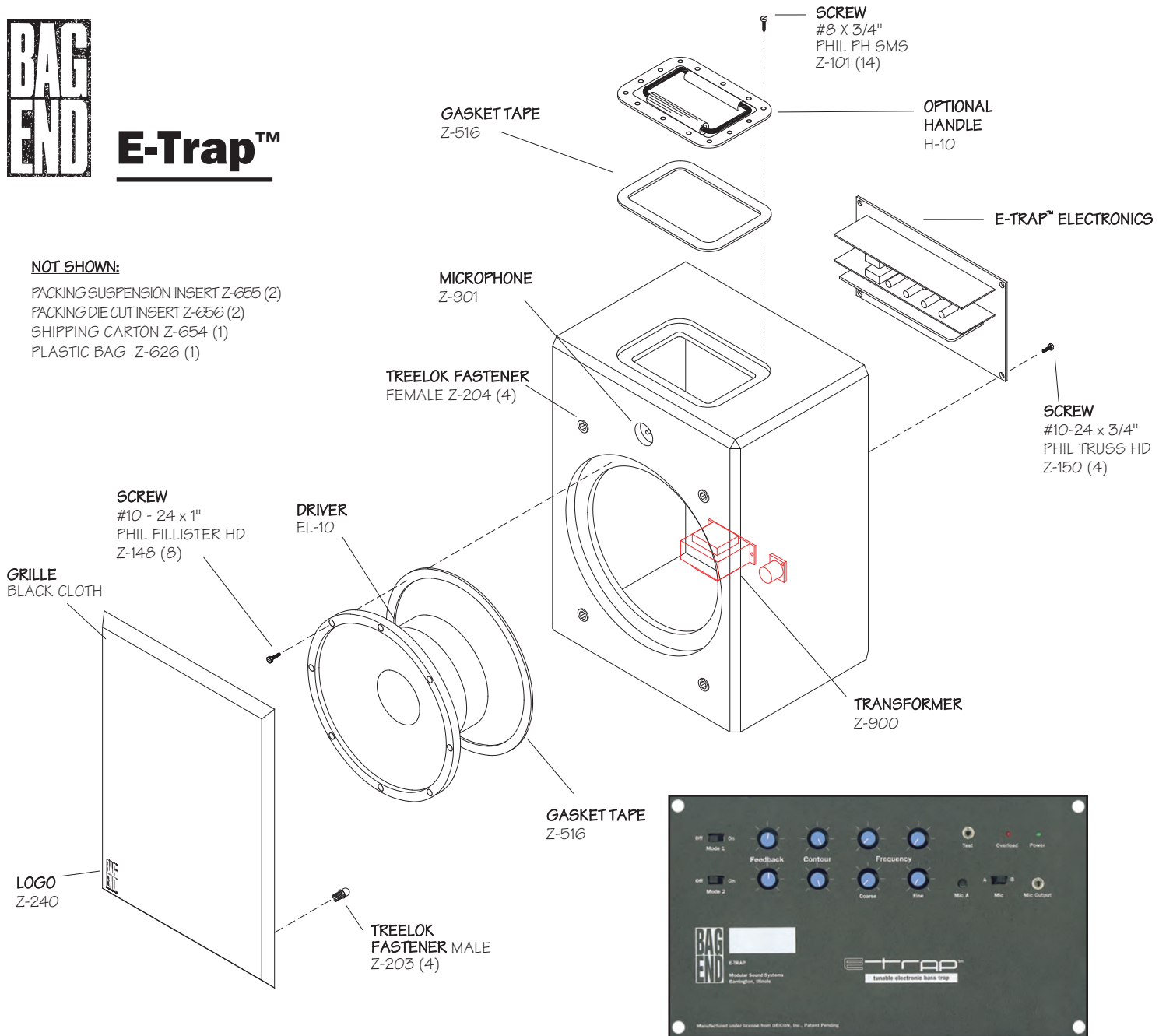




E-Trap™

NOT SHOWN:

- PACKING SUSPENSION INSERT Z-655 (2)
- PACKING DIE CUT INSERT Z-656 (2)
- SHIPPING CARTON Z-654 (1)
- PLASTIC BAG Z-626 (1)



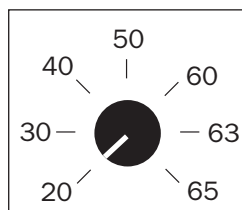
CONTROLS

Feedback:

This controls the amount of damping effect. This can be thought of as the gain of the feedback. Turning the control clockwise increases feedback. (Note: feedback is how the E-Trap™ works. This should not be confused with instability, which is commonly called feedback in PA systems when a mic is turned up too much. Instability occurs when there is too much feedback for a given situation.)

Contour:

This controls both feedback and the Q of the damping effect. Turning the Contour clockwise will increase feedback and narrow the Q. (Note: the range of the Q is from narrow to very narrow.)



Frequency:

Frequency range is from 20 Hertz, fully counter clockwise to 65 Hertz, fully clockwise. Note: Look at the calibration on the data sheet to approximate knob location in between 20 Hertz and 65 Hertz.

Fine Frequency:

Approximately 2 Hertz difference between fully counter clockwise and fully clockwise

On/Off: Turns on and off damping for mode 1

On/Off: Turns on and off damping for mode 2

Switch Mic A/B:

Selects active microphone. Mic A is on the back plate next to this switch. Mic B is on the front plate above the speaker.

Test: No user function, for manufacturing use

Mic Out: E-Trap™ mic out for testing



E-Trap™

Tuning instructions for Advanced Users:

Use FFT spectrum analyzer with 1/2 Hertz resolution. Typically 8 sample refresh rate is good for initial tuning. Longer averages are best for final data and documentation.

Measure the magnitude of the modes of interest in various locations in the room typically along the boundaries. To add damping to a mode, place the E-Trap™ physically in a hi-pressure location of that mode. Locate the measurement microphone in another location of high pressure of the same mode. Typically across the room near an opposite boundary.

To begin switch on only one mode channel of the E-Trap™. Switch to mic "B" this is the front mic. Press the knobs and they pop out for accessing them. After tuning carefully press them in so they are less likely to get bumped or turned.

Turn the "Contour" control up full to the right, turn the feedback control up some, perhaps 1/4 to 1/2 way, tune the coarse frequency control until you see some reduction in the peak of the magnitude on the analyzer.

Once you get the E-Trap™ in the general range then adjust the fine frequency control. The fine frequency control moves the tuning about 2 Hertz in its full adjustment. Reduce the contour and adjust the feedback until you obtain the desired amount of damping.

Too much feedback and the E-Trap™ will go unstable. This is the common sound of too much gain on a microphone in a PA system. Turn it down. An E-Trap™ will not ever give good results at or near instability.

The contour control is a combination of "Q" and feedback. Turning it down both reduces feedback and widens the frequency range you can add damping to. This may assist in reducing split mode tuning. Remember the E-Trap™ is a narrow frequency mode device. The contour control range goes from "narrow" in the down position (left) to "very very narrow" as its turned up to the right. Also turning it up may allow more damping with less instability. (common settings are 1/2 to full)

Sometimes when your looking for more damping it can actually be achieved by turning down the feedback. If getting the damping your looking for seems hard, sometimes less feedback will help rather than more. This may seem counter intuitive.

Graphs showing E-Trap™ on and off:

A concrete room known as the boathouse was chosen as a test location because of the extreme intensity of its low frequency standing waves. The construction is solid concrete on 5 sides. Figures 1 and 2 show two different measurements within the boathouse.

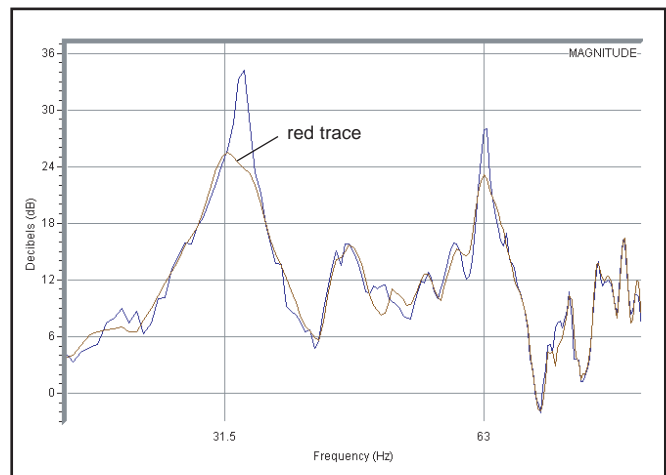


Figure 1: The magnitude vs frequency in the boathouse shows very strong resonant peaks. The red trace is with a single E-Trap™ tuned to two frequencies and turned on.

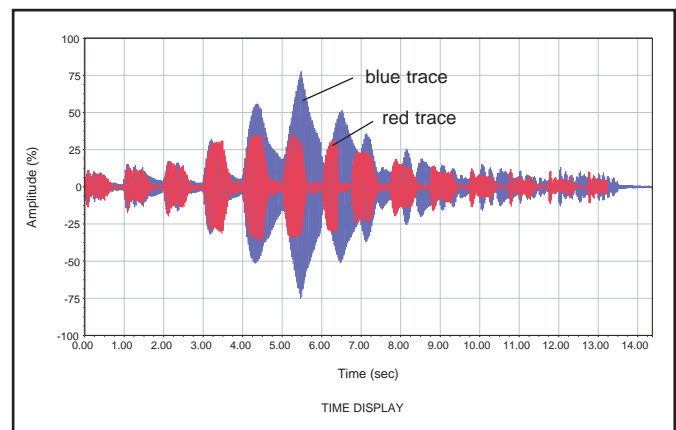


Figure 2: A test signal consisting of sine wave tones, on for 1/2 second then off for a 1/2 second, starting at 27 Hertz, and raising 1 Hertz each time it turns on, up to 40 Hertz, was played in the room using a flat response Infrasub loudspeaker. The blue trace is the undamped response within the room. The red trace is the well damped response with the E-Trap™ on.