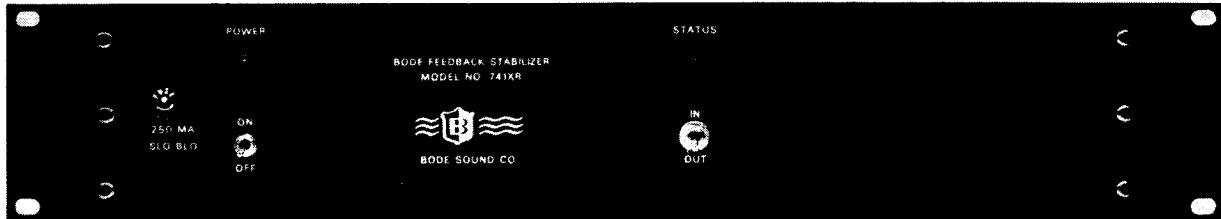




BODE SOUND CO.

BODE FEEDBACK STABILIZER MOD. 741XR



FRONT PANEL OF FEEDBACK STABILIZER

WHAT IS A FEEDBACK STABILIZER?

The Bode Feedback Stabilizer is a frequency shifter for the reduction and stabilization of acoustical feedback in public address and sound reinforcement systems.

HOW DOES IT WORK?

The feedback effect, which leads to the well known and very disturbing howl, is caused by resonances in the listening area (reflection off various surfaces) and by a build-up of these resonances through many round trips of the sound from the speaker to the microphone and back.

By inserting the model 741XR (or 742XR) Feedback Stabilizer in the line between mixer and power amplifier, the frequencies of the entire program material are shifted away from those resonance peaks, so that the recycling process (leading to the howl) is interrupted. Thus it is possible to increase the usable power of the installation by an average of 4 to 7 dB and as much as 10 to 12 dB in some cases. It should be noted, that every 3 dB step of feedback reduction means doubling of the usable power of the P.A. system.

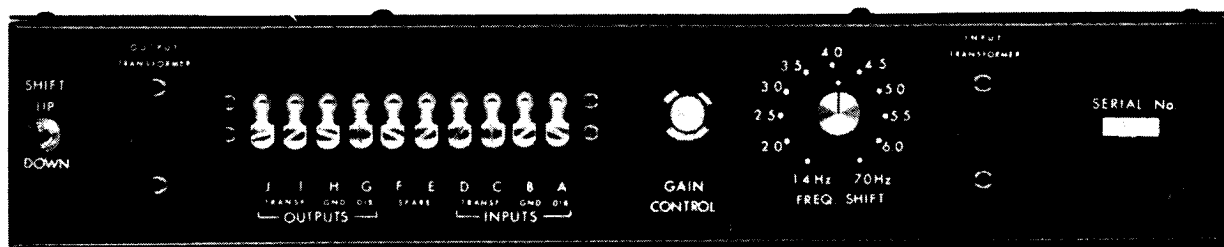
HOW IS IT ADJUSTED?

When the upper gain limit of the system with a frequency shifter is reached, no build-up of the typical howl will be observed, but a "chirping" effect will be recognized, which tells you to reduce the gain slightly to make the chirping disappear. The system can be easily adjusted for stable performance at this level. And it stays there.

As a rule of thumb the shift frequency is selected by using the figure 7 and dividing it by the reverberation time of the listening area. For instance, if the reverberation time is 2 seconds, then the amount of shift chosen will be $7/2$ or 3.5 Hz.

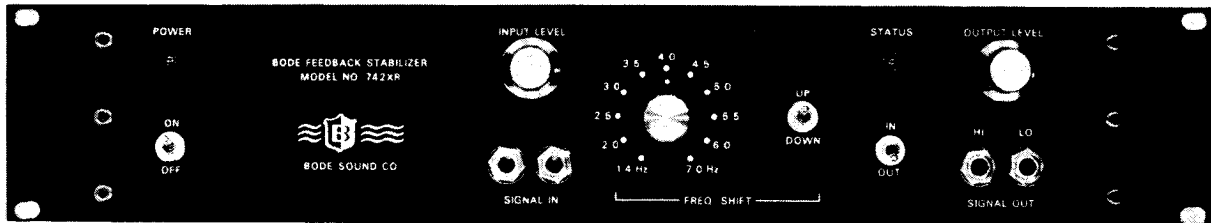
WHAT ARE THE LIMITATIONS?

There are practically no limitations for using this Feedback Stabilizer. If the frequency shift is sufficiently small (1.4 Hz to 7.0 Hz as in the 741XR and the 742XR), a change of the sound will not be detected by the listener. This is especially true for speech. In the case of music reinforcement a "stereo enhancement" effect may be produced, when hearing the live and the reproduced music simultaneously.



REAR VIEW OF MODEL NO. 741 XR.

BODE FEEDBACK STABILIZER MOD. 742 XR



FRONT PANEL OF MODEL NO. 742 XR.

FEATURES AND SPECIFICATIONS OF BODE FEEDBACK STABILIZERS

	MODEL NO. 741 XR	MODEL NO. 742 XR
TYPE:	Frequency shifter for feedback stabilization.	Frequency shifter for feedback stabilization.
GAIN:	-8 to +10 dB (adjustable)	Same (ref. to high output).
OUTPUT:	+18 dBm into 600 ohm load	+18 and +4 dBm into 600 ohm load.
INPUT IMPEDANCE:	In excess of 25 kOhm.	Same
SOURCE IMPEDANCE:	Any value.	Same
DISTORTION:	Less than 1% THD at 1000 Hz.	Same
FREQUENCY RESPONSE:	± 1 dB from 30 Hz to 16,000 Hz (with A.M. less than 0.1 dB) Overall 20 Hz to 20,000 Hz.	Same
OUTPUT NOISE:	62 dB below rated output (unweighted) 82 dB below rated output (A-weighted)	Same
FREQUENCY SHIFT:	1.4 to 7.0 Hz adjustable in 11 steps (1.4, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0 and 7.0 Hz).	1.4 to 7.0 Hz continuous.
CONTROLS:	POWER and IN/OUT switch with LED status indicator on front panel, GAIN and FREQUENCY SHIFT controls in rear.	POWER and IN/OUT switch with LED status indicator as well as GAIN and FREQUENCY SHIFT controls on front panel.
FEATURE:	Switch for UP/DOWN detuning of shifted signal left of output transf. in rear.	Switch for UP/DOWN detuning of shifted signal on front panel.
POWER:	120 volts A.C. 60 Hz. Other voltages on request.	120 volts A.C., 60 Hz. Other voltages on request.
DIMENSIONS:	3½"H 19"W x 9 5/8"D without controls.	Same
WEIGHT:	9½ lbs.	Same
ACCESSORIES: (Optional)	Plug-in input transformer Altec I5335 or equiv. Plug-in output transformer Altec I5356 or equiv.	N.A. N.A.

In the interest of product improvement Bode Sound Co. reserves the option to change the appearance design and other minor details without notice. U.S. Patents No. 3,800,088 and No. 4,145,670.

harald bode

Live Demonstration of the Bode Vocoder

wednesday, sept. 12

8 pm

Harald Bode, a pioneer, preeminent figure and, according to composer Gordon Mumma, an "engineering hero" in the development of electronic music instruments, will present his most recent instrument, the Bode Vocoder.

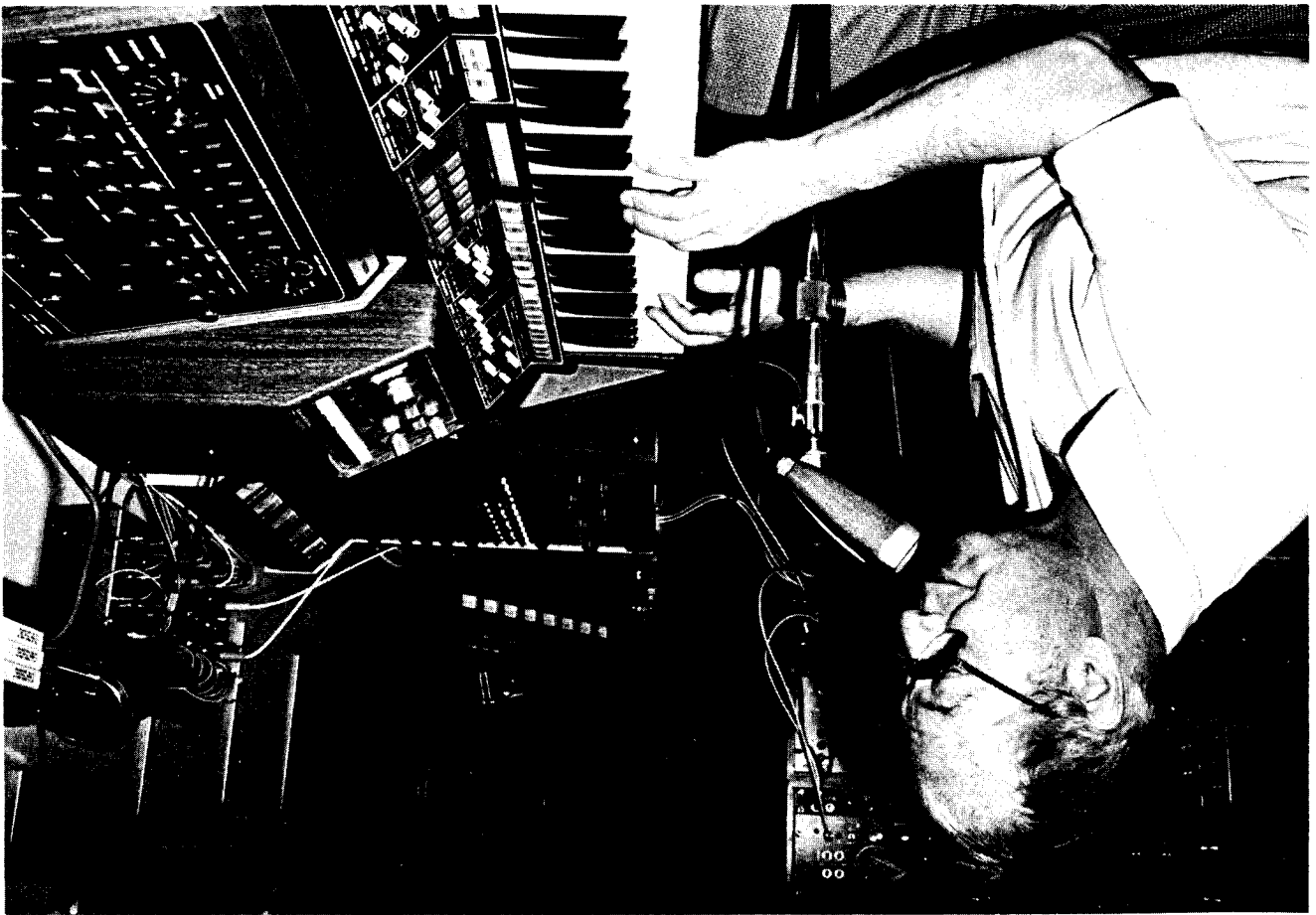
A vocoder allows the timbral changes of one sound to be imposed on another sound in real-time; for example, the contours of a voice can shape the timbre of a series of chords or pitches. Bob Moog has written, "A vocoder is a complete analyzer-synthesizer system that breaks down (analyzes) a vocal or other audio signal into a series of adjacent frequency bands, and then uses the amplitudes of the frequency bands to build up (synthesize) a signal that is similar in certain respects. Vocoders were originally developed in the 1930's to be a potentially efficient means of transmitting voice signals via telephone lines. Today, musicians are becoming increasingly aware of vocoders because of their ability to impart 'speech' to musical sounds, and because of the easy access to a wealth of timbral resources that they provide."

Harald Bode will first speak about the Vocoder and its development, with slide and tape accompaniment, followed by a live demonstration on his instrument.

Harald Bode received his degree in Physics at the University of Hamburg, followed by postgraduate work at the Institute of Technology in Berlin. He was active in the design of electronic music instruments as early as 1937 with the design of an electronic organ; this was soon followed by the Melodium, a melody instrument used extensively for motion picture music. He began work on the Melochord in 1947, an instrument with essentially all the features of a modular audio synthesizer, and a version of which was commissioned by the Electronic Music Studio in Cologne in 1953 and used extensively by Stockhausen. Also in 1953, he was at work on the development of the Bode Organ, the success of which brought Bode to the United States as chief engineer and later Vice President of the Estey Organ Corporation. In 1959, he began initial development of a modular synthesizer, the concept of which was presented to the 1960 Convention of the Audio Engineering Society. As an executive at Wurlitzer Organ, Bode moved to the Buffalo area in 1961. In 1972, he patented a frequency shifter for electronic music uses and anti-feedback applications. Since 1974, he has devoted his full time to electronic music activities.

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