

Specialized Playback: *Room Loops & Thumpers*

Field Manual
IATSE Local 695

Sooner or later every sound mixer encounters the need to record dialog in the midst of a musical or dance sequence requiring playback. Before making special equipment rentals, it is wise to carefully review how the scene will be covered; often production needs can be met with simple and inexpensive techniques. If performers have only a few lines, it is possible to simply fade-out the playback track for a moment, record the lines and then fade the track back up. Some mixing panels, especially the Cooper, make provision for isolating a fader from the mix buss to permit controlling playback levels from the recording mixer without risk of audio bleeding into the production track. Dancers and background singers are usually able to keep pace for the few moments the music is suspended and the scene may be completed with minimal extra expense and trouble.

If many lines are to be recorded or dancers must execute complicated moves with precision then it may be necessary to provide a continuous cue track. This can be accomplished two ways: either using a hidden radio link to cue the performers or by playing a special low frequency track that can be removed from the track in post without harm to the recorded voices.

Using a Comtek or IFB transmitter (like the Lectrosonics RI/T1) is the simplest way of feeding audio. The transmitter is connected to the playback unit and each performer wears a headset fed by a small receiver. Personal earphones that inconspicuously fit into the ear canal are available from Radio Shack and similar suppliers. Professional grade earphones are also available from Telex and others. Obvious limitations are the need to conceal

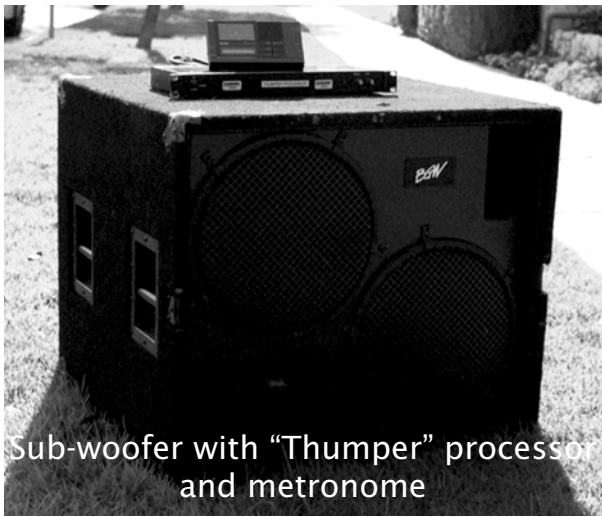
the connecting wire and the small receiver pack.

The next stage in sophistication uses a radio transmitter and receiver pack but sends the audio signal to the hidden earpiece (Phonak makes the most popular units) by induction. The performer wears a wire loop around the neck connected to the radio receiver. The magnetic field generated by the neck loop is sufficiently strong to permit pick-up by the nearby earpiece without the necessity of a wired connection. It is still necessary to conceal the receiver pack, the loop around the neck and the earpiece. A new product from Phonak, the MicroEarVHF, incorporates a VHF receiver in the earpiece, obviating the need for a separate receiver and loop.

By using a room loop we reduce the equipment which must be concealed to a bare minimum. Instead of each performer wearing a neck loop, the entire performance area is encircled with a wire connected to the speaker terminals of the playback amplifier. The signal passing through the wire creates an electro-magnetic field which can be picked up by wireless induction by the miniature earpiece. The only items requiring concealment are the earpiece and the loop of wire on the floor.

Room loops are made of multiple-strand unshielded wire. Typically a junction box connects to the speaker posts of the amp and routes the signal to multiple pin connectors for the loop wire. This wiring harness is arranged so the signal is routed from one lead to the next, making several passes (all in the same direction) through the wire. Two purposes are served by circulating the signal around again and again: the magnetic field is increased by the multiple passes and the accumulation of wire provides adequate impedance to protect the amp. Reducing the signal to 2Ω usually requires 700' of wire and a typical 100' loop will circle the signal through 7 strands to yield the effective 700' minimum. Splicing in extra lengths to achieve a larger loop has no liability but working with less than 700' of total wire is hazardous for the amplifier. Room loop systems are reasonably simple and many mixers build their own. However, it is probably not a task to assume





Sub-woofer with "Thumper" processor and metronome

while in the midst of production.

Radio links provide the most comprehensive cueing. In addition to music, performers can hear specific cues from the director, choreographer or other actors. However, each performer must have their own earpiece and staging may make concealment problematic. A "thumper" system reproduces the beat of the music at a low frequency that can be easily removed by post-production but still heard on set. This is accomplished by feeding a sub-woofer either a specially prepared low frequency track or through the use of a frequency shifting processor.

Typically the music studio or post-sound facility specially prepares a thumper playback tape. Regular audio is on one channel and a click track is on the other. Since music studios regularly provide a click track for the benefit of musicians, preparation of this tape is usually routine. The click itself should be very low frequency so the reproduced click will be below 100 Hz. Manipulation of the sensitivity settings on the sub-woofer can help but will not prevent reproduction of higher frequencies if there is substantial high frequency energy in the original track. The best thumper systems incorporate a frequency shifting electronic box which can be triggered by any

frequency and generate a complementary signal to the sub-woofer that is well below 100 Hz.

If a specially prepared tape with click track is not available, it is possible to use an electronic metronome to generate the clicks. One sets the metronome to the pace of the music and connects the output to the sub-woofer or electronic control box. A proper metronome will permit incrementing one beat at a time without skipping and will provide a line level out. Better units also provide an accent on the first beat to identify the start of the measure.

In a field emergency, it may be possible to prepare a "click track" tape using a rugged dynamic mike. One dubs the playback music onto one track while beating the tempo on the other track by tapping the head of the mike. The resulting thumps will be low frequency and may be suitable as a click track.



A Thumper system packed to travel and rolling out the door.

Rental Sources

Room Loops & Thumpers

At press time the following companies all had room loop and thumper systems available. System specifications vary. Call for details.

Coffey Sound Services	323-876-7525
Location Sound Corp.	818-980-9891
Warner Bros. Studios	818-954-2310
Wilcox Sound Services	818-557-3377

Room Loop Caveats:

1. The earpieces are easily clogged with earwax. If one appears non-functional, check that first.
2. Keep alcohol wipes handy for sterilizing earphones. Performing this task in sight of the talent is probably good public relations.
3. Room loops should always be used with professional grade amplifiers. A home system amp is likely to be damaged by working with a 2Ω load.

Thumper Caveats:

1. The systems tend to be large and heavy. One example is a 32" cube weighing about 200 lb. Pick up should be with a truck or, at least, an SUV. Don't send a PA with a hatchback.
2. Don't skimp on the amplifier. Playback often must be loud for the talent to hear well; if a small amp is over-driven it will distort and output signals well above 100 Hz.

Field Manual pages are available for download in PDF format from www.695.com. Special thanks to Dave Missal, Scott Bernard, Glenn Berkovitz and Blake Wilcox for assistance in preparation and fact checking.