

Lobo Acoustic Contact Microphone

This microphone is intended to be used primarily on string instruments with a resonating hollow body (instruments such as violin, guitar, and related instruments) but is not limited to those. It has been used with some success on kalimba, piano, and dulcimer, for example.

It can be attached to any surface to record sounds; attached to a wall, it can detect the sounds of traffic traveling through the earth, or people walking in the next room; attached to a table, it can be used as a pseudo-drum; suitably waterproofed, it could be used as a hydrophone to record sounds underwater.

The microphone unit consists of three parts:

- piezoelectric disc (the 'pickup')
- balanced cable ('stereo' TRS male – XLR male)
- phantom-powered preamplifier

- 1) **the pickup:** this is a commonly available piezoelectric disc used typically as a 'buzzer' in various electrical appliances. My implementation uses two piezoelectric discs together to create a 'balanced' signal, which provides a stronger audio signal and is generally more resistant to electromagnetic interference (EMI).

The pickup comes in two functionally identical variants – one with a clamp specifically meant for mounting on violin and viola, and one for practically any other application.

If desired, this pickup can be used without the cable / preamplifier combo, or with a different commercial preamplifier, at the user's discretion.

- 2) **the cable:** this is a custom TRS – XLR cable specifically intended to connect the balanced pickup with the preamplifier built for this purpose. It uses a 6.35mm TRS male connector to connect to the piezoelectric disc on one end, and a common microphone XLR male connector to connect to the preamplifier at the other end. This cable is *required* in order for the microphone to work correctly with the preamplifier.

- 3) **the preamplifier:** As piezoelectric discs are not naturally compatible with common audio equipment, the preamplifier acts as a 'buffer' or 'impedance matcher' which enables the audio interface to record the piezoelectric disc accurately. This is something which is not usually addressed by most commercially available piezoelectric instrument pickups.

The preamplifier is a custom-designed analog electronic circuit which requires 'phantom power' from a professional audio interface in order to function. This is similar to commonly used 'condenser' microphones which also do not work without externally applied power.

While the piezo disc 'pickup' can be used with other preamplifiers and other audio systems at the user's discretion, the preamplifier cannot be used with any other pickup.