

# JCC & ASSOCIATES

2082 CEDAR CREST DRIVE

HIGHLAND PARK, IL 60035

847 831 5628

cunningham1986@sbcglobal.net

## REVERBERATION PLATE CONSTRUCTION DRAWINGS

The following drawings were copied from the original sketches of the prototype ECOPLATE™ I. The engineering blueprints that were made from these were too large to fit in any available scanner so they (the original sketches) were corrected per the engineering blueprints. The scans of the drawings are low resolution to save space but they will print fine.

The only details that are not revealed here are the voice coil-magnet combination and the pickups. There are still sold on the open market and are available from JCC & Assoc.

The miniboxes shown in Fig. 2 have two grommets holes, one in each end of the box. Inside is a terminal strip where leads from the pickups join with the cable to the amplifier. The latter can be any good single conductor microphone cable. The pickup leads should be any small diameter single conductor cable that is flexible. A twisted pair of #28 wire will suffice if it is under 8" in length. All wire should be kept from touching the plate with tyrap, where possible.

The steel plate can be purchased from most steel companies precut to size. Stainless steel has more high frequency decay time (suitable for rock music) whereas cold rolled steel is more like a concert hall (suitable for classical music). The EMT 140 was cold rolled. Most of the other parts are available from local hardware stores, lumber yards, and electronic suppliers such as Mouser, Newark and Allied. Somewhat special items (such as the spade bolts and links) can be had at large hardware supplier such as McMaster-Carr.

The amplifier schematics can be used as a guide or built as is. PC board layouts are available. Basically they are flat amps except for the Drive amp EQ noted in Fig. 11. Therefore it is possible to use any good power amp capable of the required EQ and at least 20 watts. The preamp stage needs to

have a high impedance input.

The most important part in a Plate Reverb system is the damping plate. There are several requirements necessary to ensure that the sound of the reverb decay is realistic. The damping material must have "flow resistance". Armstrong Shasta Fiberglass ceiling tiles 2'x4' and about 5/8 inch thick, with a thin plastic backing that contains many tiny holes are ideal. Available at Home Depot. Mount as shown in the drawing. This is all explained in the EMT Patent, available from our website: [platerverb.com](http://platerverb.com) Also a story on the development of the ECOPLATE is available there as well as many other details concerning Plate Reverb. That address is [platerverb.com](http://platerverb.com) An optional box to provide isolation will be posted there. Many studios, however, often put the reverb in the studio because it is often added during mixdowns. Otherwise the unit can be hung from chains if structure born noise is a problem.

Once constructed the plate must be properly tensioned so the reverb decay is smooth and even. This is accomplished by achieving even tension on all four sides of the steel plate. Tension affects, inversely, the low frequency reverb time. The more tension the less low frequency reverb time. Tensioning is usually a long, time consuming procedure and should be done several times a year. Also there is the risk of over tightening the plate and stretching it. If this happens it will not be possible to properly tension the plate again. To avoid this and to make tuning simple, a tuning gauge is also available from JCC & Assoc. for \$50. A torque wrench does not measure plate tension due to the friction component in the threads.

A somewhat smaller and simpler version of the ECOPLATE™ I was the ECOPLATE™ II. Drawings of this plate can be made available in the future if there is sufficient interest.

STEEL PLATE  
CONSTRUCTION

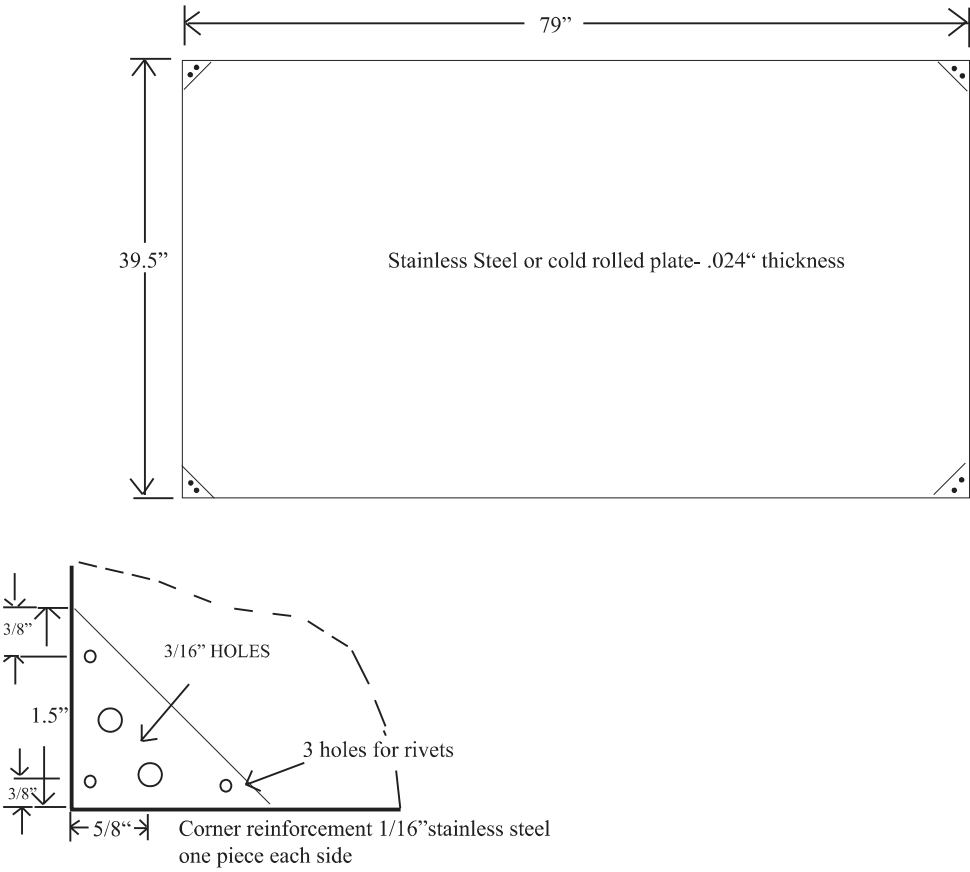


Fig. 1

## DRIVER SIDE OF FRAME CONSTRUCTION

Using 1.5" steel tubing  
1.5" Angle iron

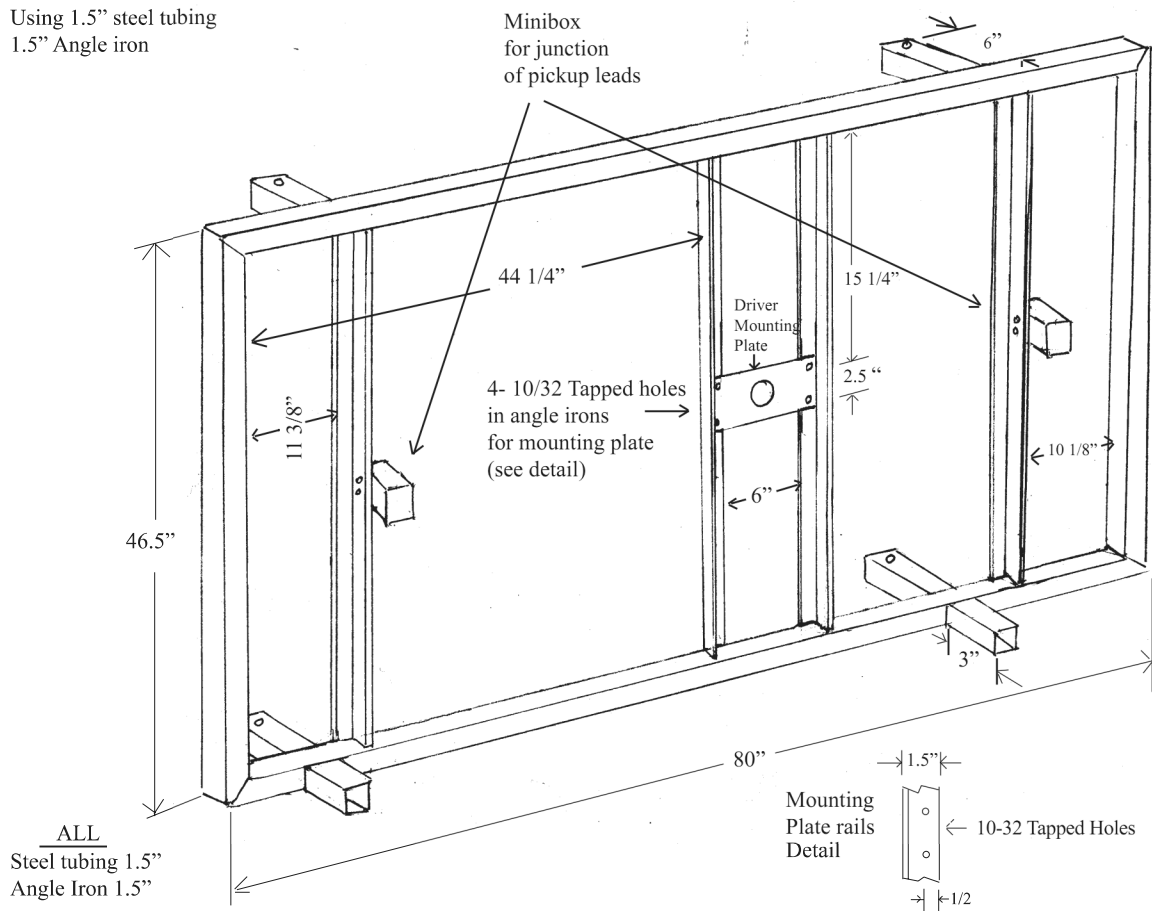
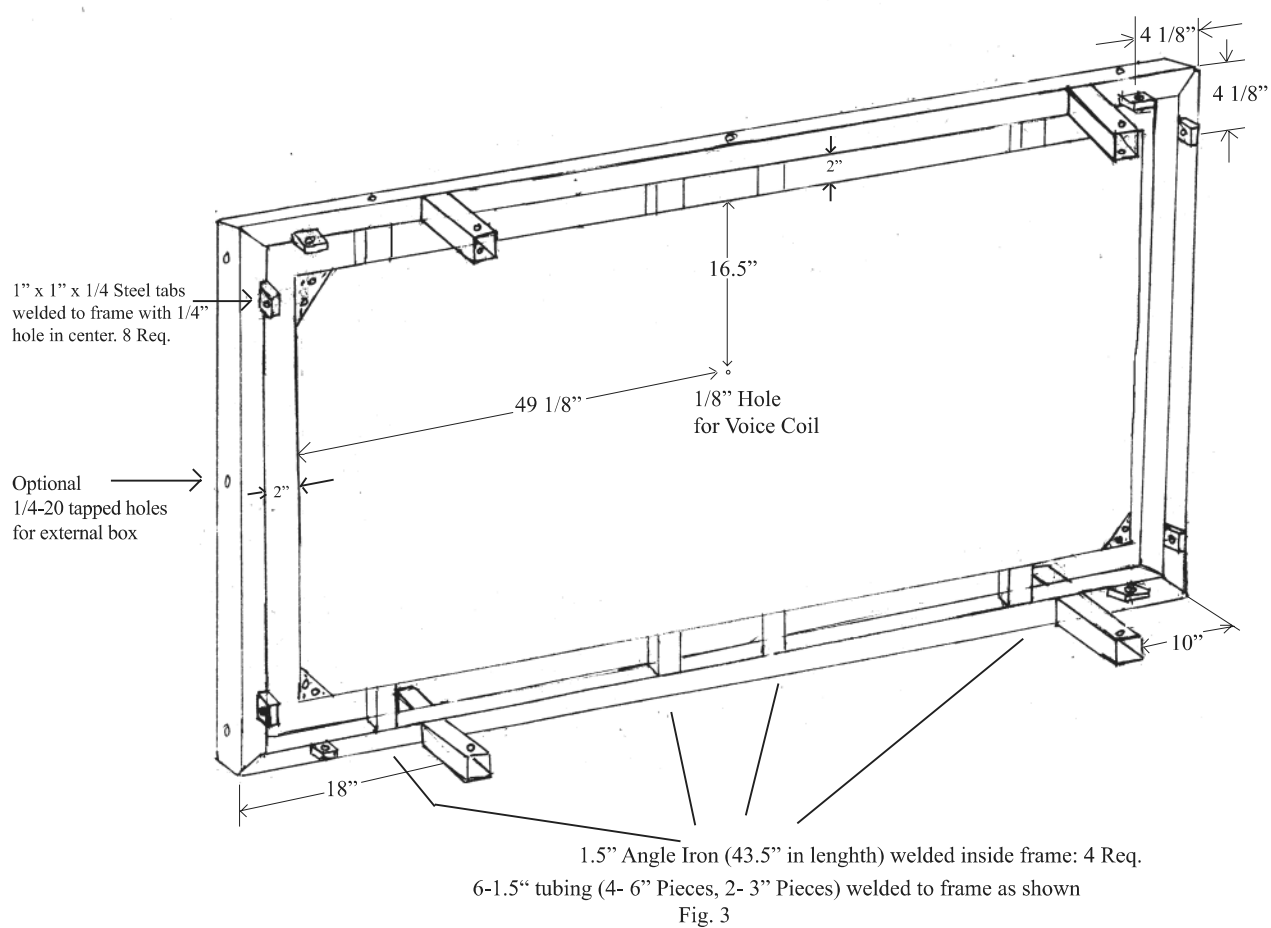


Fig. 2

## PLATE SIDE OF FRAME CONSTRUCTION



## DAMPING PLATE DETAILS

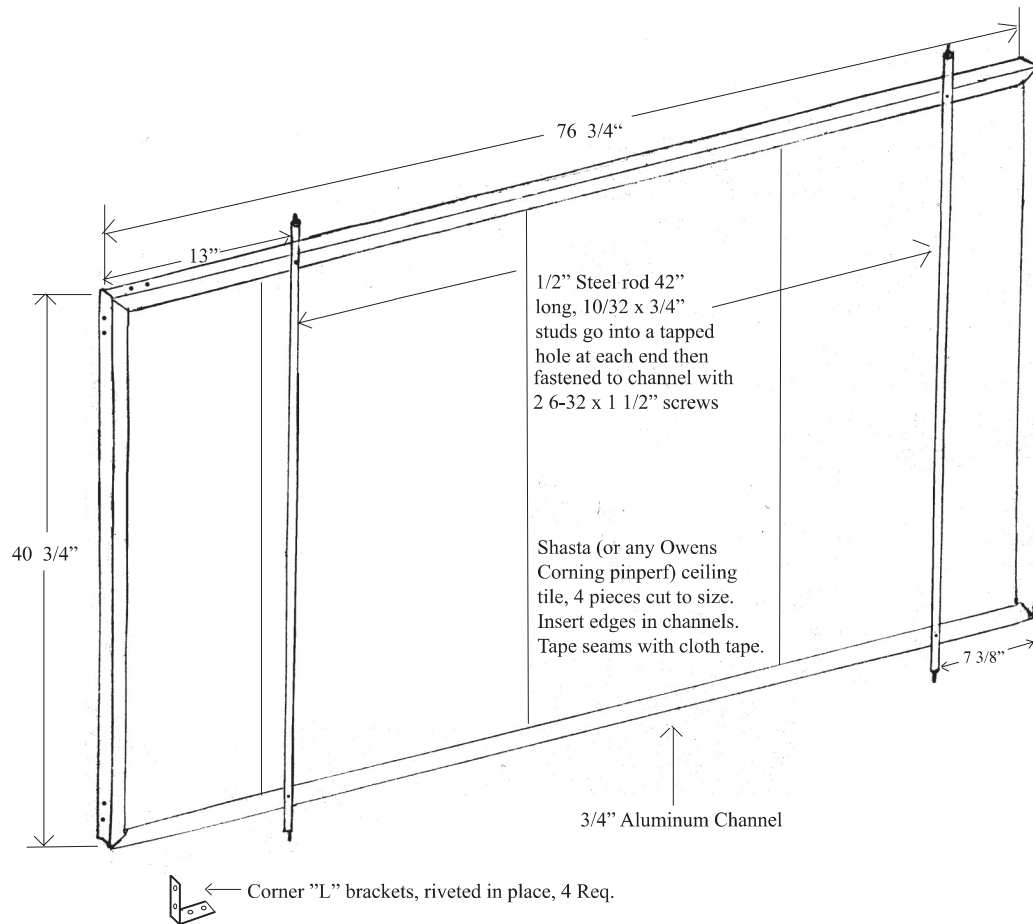


Fig. 4

**FRAME SHOWING DAMPING  
PLATE MECHANISM**

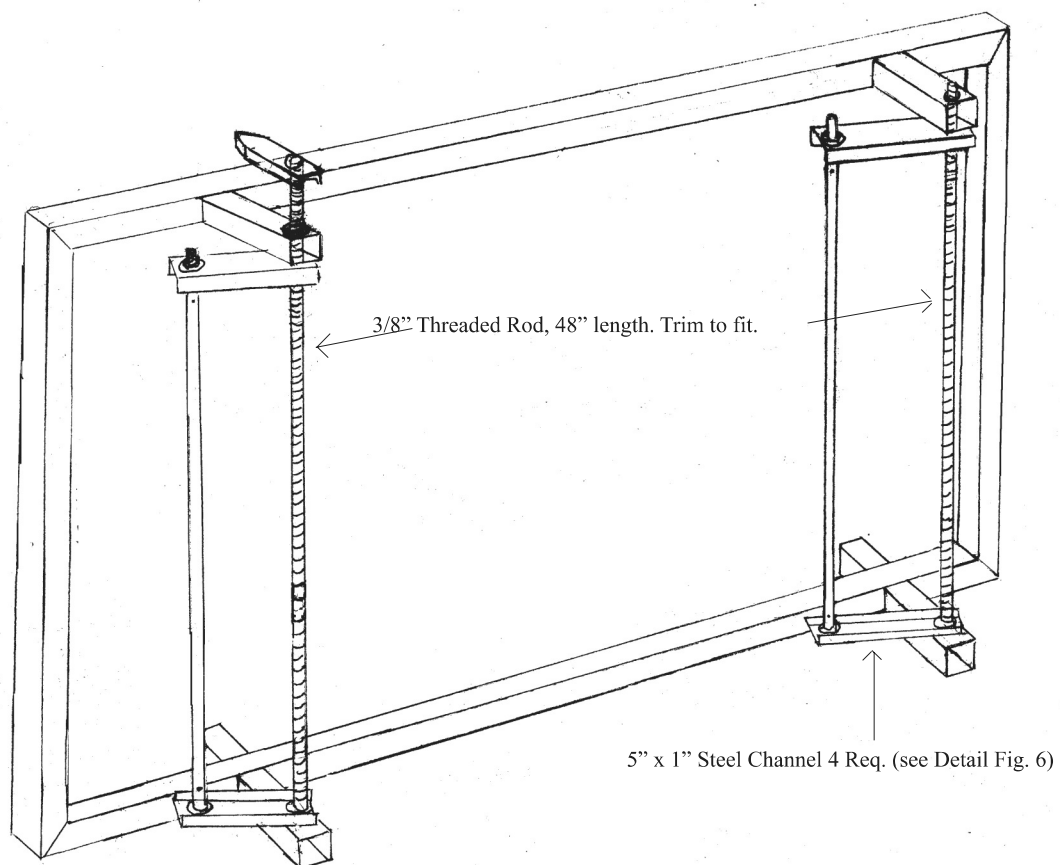


Fig. 5

## FABRICATION DETAILS, ARM

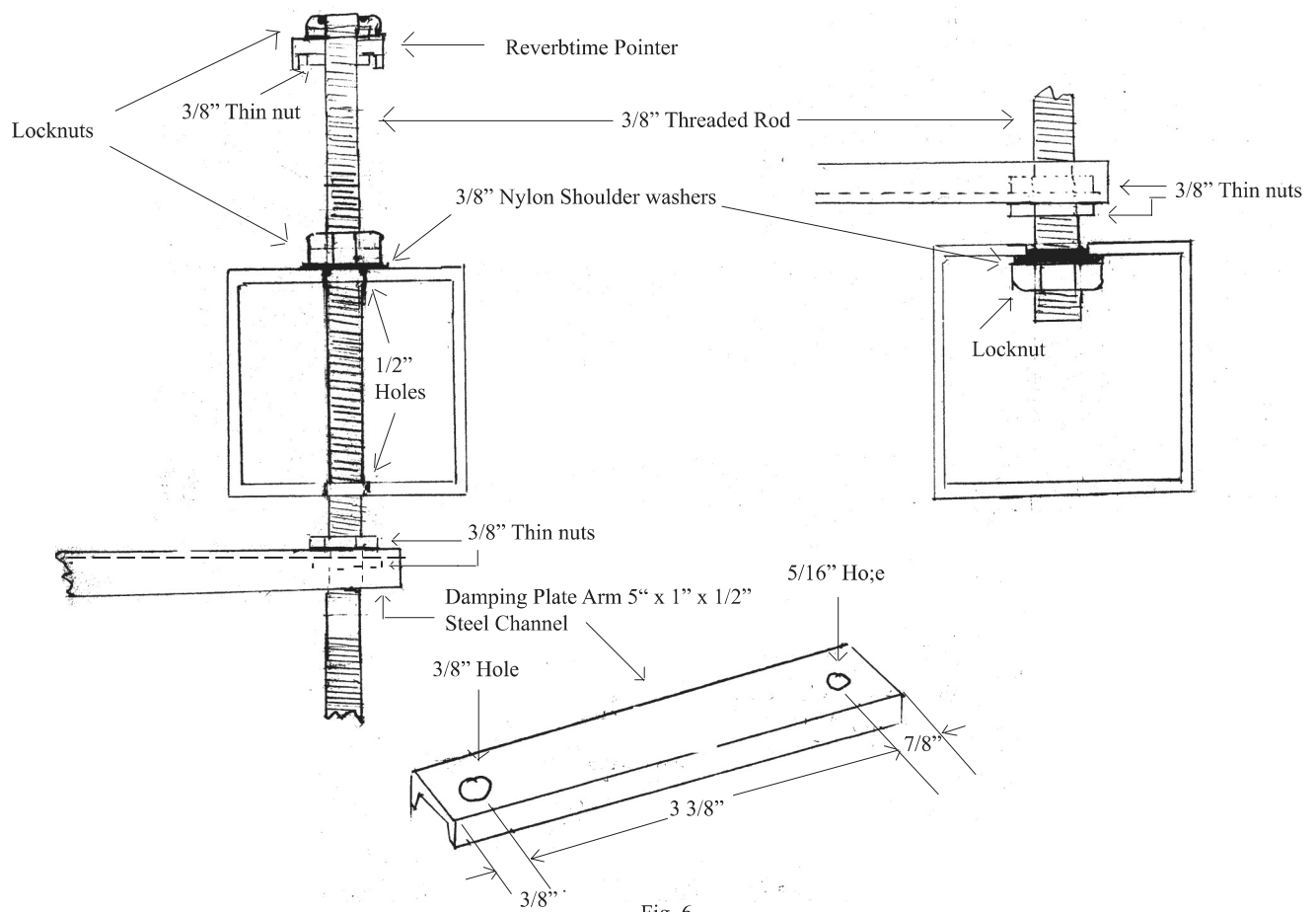
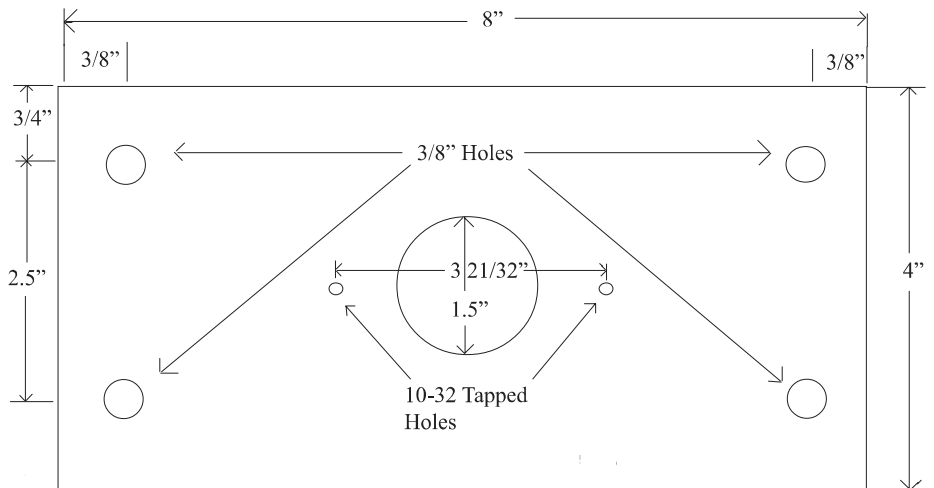


Fig. 6



### DRIVER MOUNTING PLATE

1/8" Aluminum

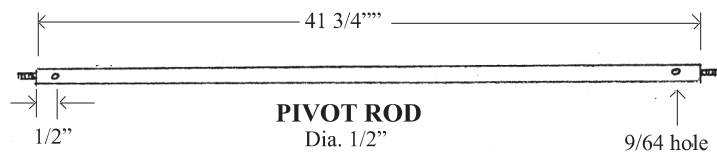
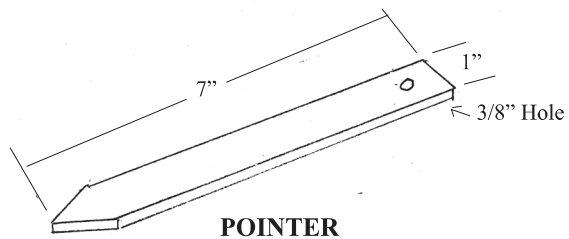


Fig. 7



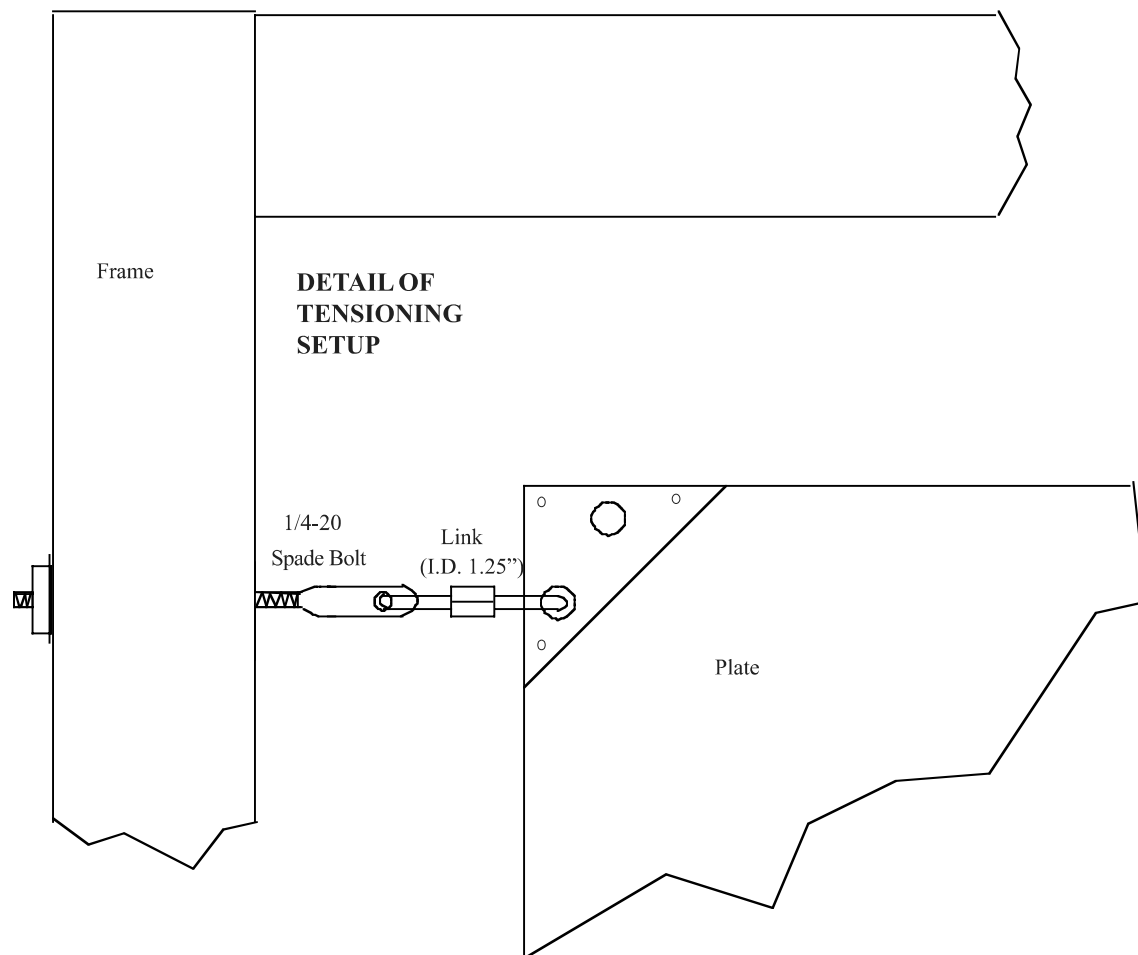
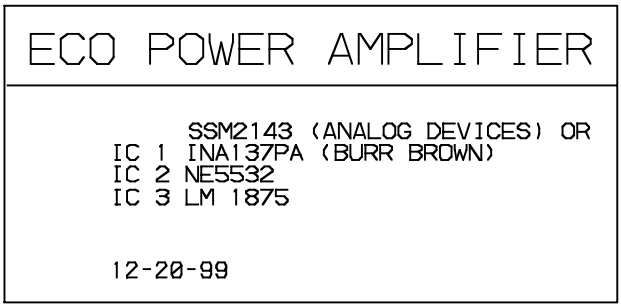


Fig. 8



# ECO PREAMP

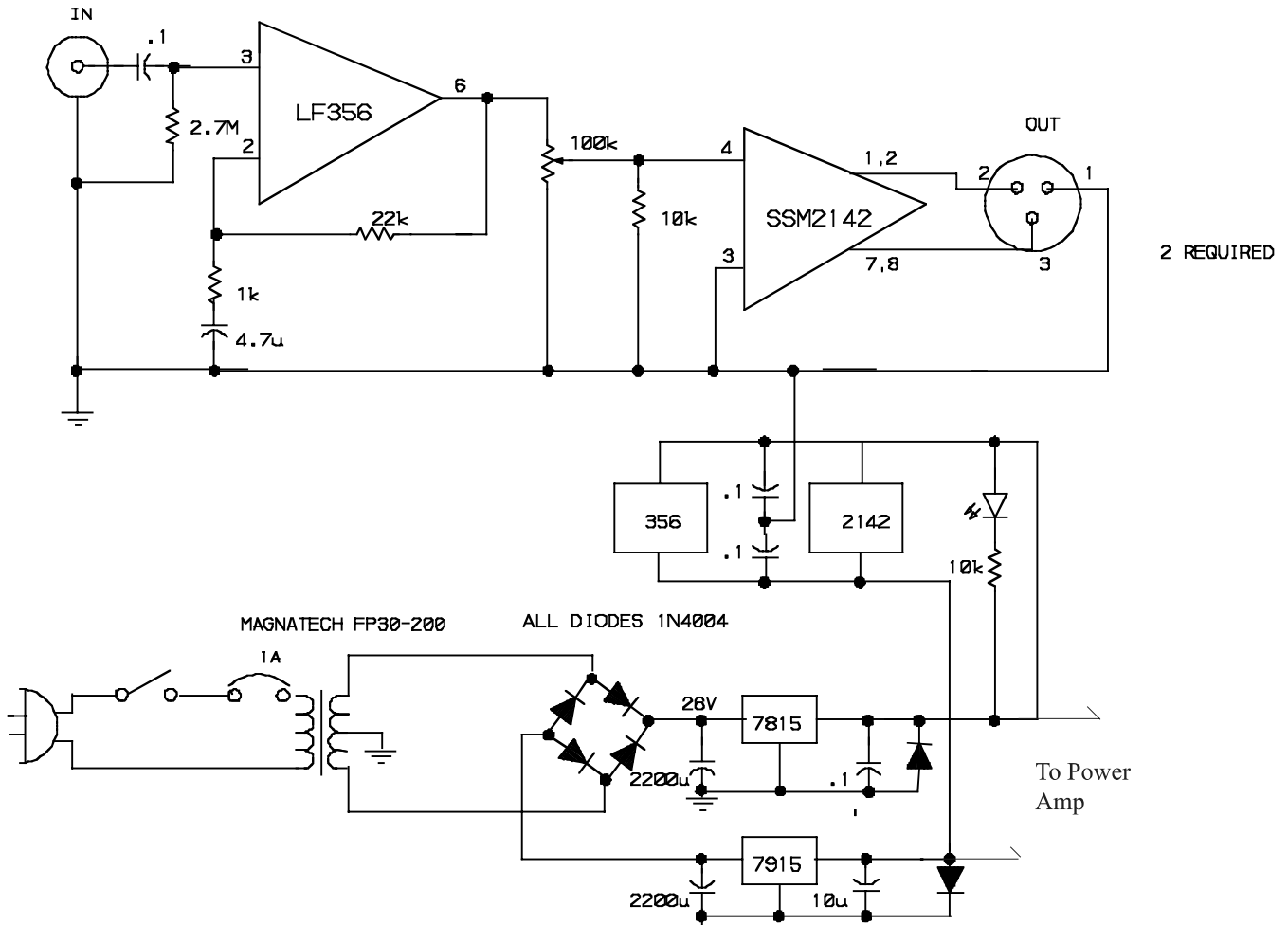


Fig. 10

ECOPLATE III  
DRIVER AMP EQ CURVE

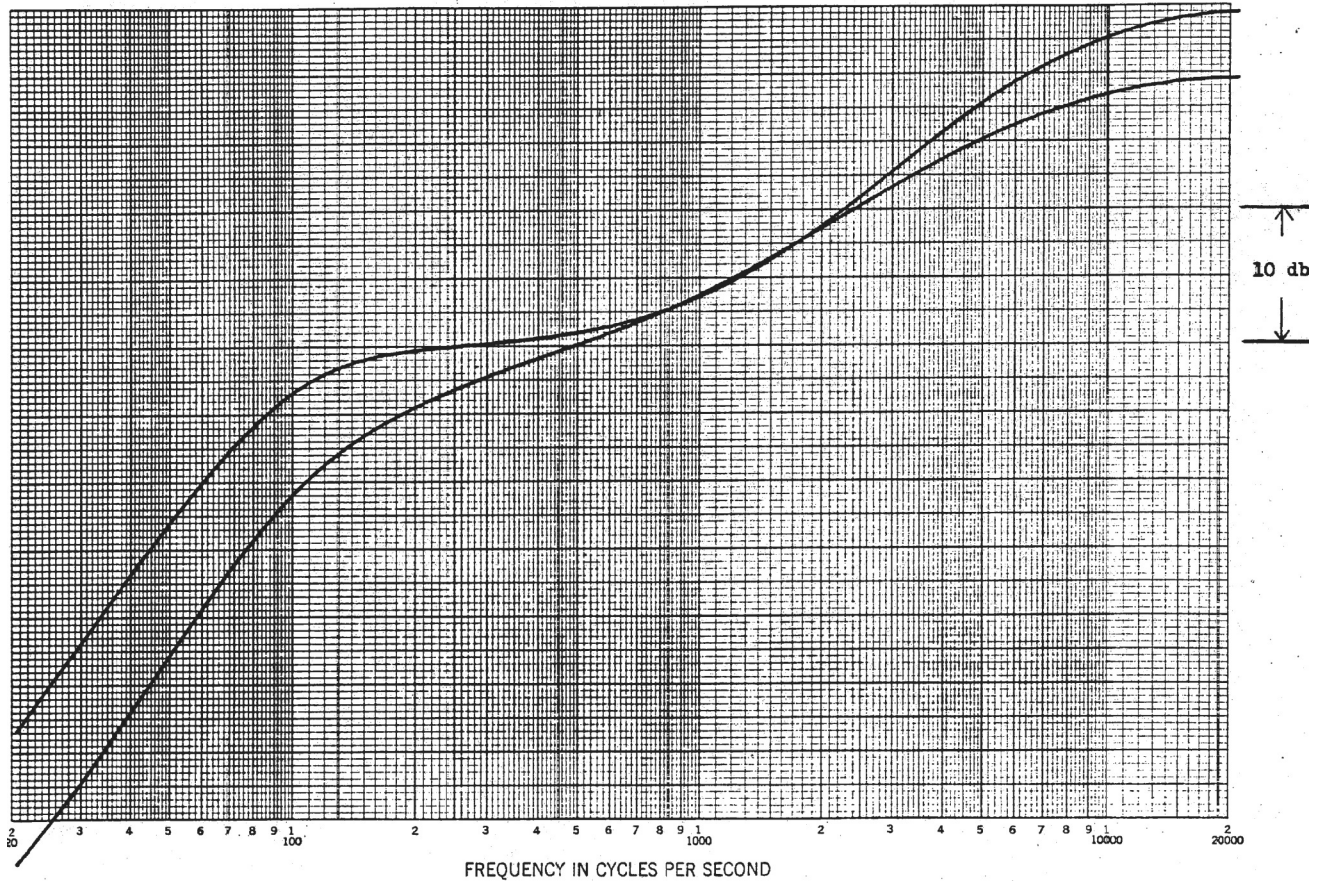
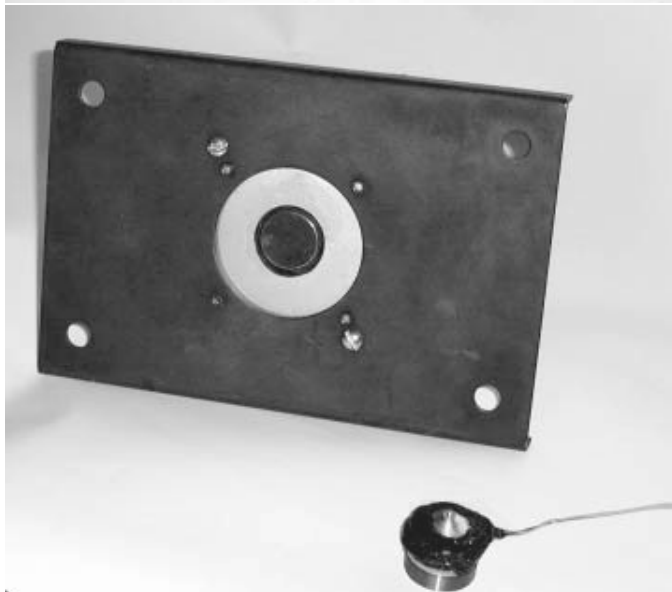


Fig. 11



**Calibrated Tuning Gauge for proper plate tension**  
**Price \$50 USD**



**Magnet (showing wide gap) on user supplied mounting plate and Voice Coil.**

**Voice coil \$75 USD**  
**Magnet \$85 USD**



**Special High Resonant Unimorph Pickup**  
**Stereo Pair with special conductive adhesive \$50 USD**