

Il Theremin di Clara Rockmore note tecniche.

Questi schemi elettrici esistono grazie alla generosità di Clara Rockmore.

Questo testo riporta gli appunti di Bob Moog durante la revisione del Theremin custom di Clara Rockmore nel 1989

I commenti fatti dalle persone che mise in rete il testo sono tra parentesi quadrate {{ }}

Grazie a Bob Moog per aver disegnato a mano gli schemi del Theremin di Clara Rockmore pubblicato sulla pagina web di Jason.

Purtroppo il testo è in un inglese molto stringato per cui lo lascio in lingua originale vista l'impossibilità di realizzare una traduzione esatta.

Suono Elettronico

Testo originale trovato sul web nel 1997

-This post made possible by the generosity of Clara Rockmore-

This post concerns theremin adjustment instructions written by Bob Moog for Clara at the time he revived Clara's custom theremin in 1989

My comments are in brackets {{ }} Thanks to Bob Moog for his hand traced Rockmore schematic seen on Jason's web pages. It continues to be a great help and inspiration.

August 25, 1989

{{ Bob's sketch shows the settings of three knobs inside the instrument mounted on a vertical wood bulkhead. The theremin tubes are surface mounted to this bulkhead, which is accessed through a drop-down door on the front }}

The upper adjustment has little effect on the range or tone quality.

{{ this is a rheostat pot in series with the grid of the 27 voltage amp}}

The LEFT and RIGHT adjustments affect the range and the tone quality.

{{ rheostat pots in series with the respective grids of the 24A mixer}}

At the present time, the RIGHT adjustment is full counterclockwise (minimum resistance). The useful range of the LEFT adjustment appears to be between "noon" & 3 o'clock. the more counterclockwise you turn it, the closer together the low notes will be and the brighter & buzzyer the sound will be. You should feel free to try different settings of the LEFT adjustment.

{{ turning the LEFT or RIGHT controls alters the RF voltage to each grid of the 24A. Early theremins use the venerable 24A as a mixer tube. Here is where the audio wave is synthesized.

The LEFT/RIGHT settings not only determine RF voltage level to the respective 24A grids (and therefore, tone color), but the aggregate adjustment of the two resistors determines the 24A's negative bias and cut-off characteristic.

The mixer tube is biased beyond cut off even though its cathode is grounded. Bias is obtained not only from the large negative peaks of RF voltage applied to the 24A grids, but from a steady component developed in the cathode circuit of each HF oscillator. The RF sine wave fed to each grid is very large -on the order of 100V p-p or more. Only the peaks of positive voltage are large enough to produce pulses of plate current in in the 24A.

This plate current forms pulses corresponding to the frequency difference between the two HF sine waves. The magnitude of the high frequency pulses, but not the steady component of the bias, is determined by the pot adjustments. Therefore, it is a complex system, because turning either pot not only alters the magnitude of the synthesized audio frequency, but its waveform. The RCA theremin is very similar in this regard, but lacks rheostat adjusters}}

In the tuned circuit portion of the instrument (the back of the instrument) there is a small variable capacitor midway between the two pitch oscillators. There is a red dot that shows where the tops of the plates should be. This adjustment probably should not be changed.

{{This is the "coupling control" . It may be just 10 picofarads or so,

to couple the plate circuits of the fixed and variable oscillators. Effects are well described in the Lucy Rosen notes already published on the Levnet. Coupling between the HF oscillators pulls and distorts the audio wave. The pulling is fairly proportional to the lowness of audio frequency. Treble notes "sing" (more purity) and bass notes have a growl (more distorted).

Without sufficient coupling the bass will go soft and mushy. It will not blend with bite of the midrange. Furthermore, coupling is vital to pitch linearity. As the coupling effect becomes pronounced, as it does with descending pitch, lower octaves compress somewhat, their spacing gets closer. I find in my research that treble linearity is altered to a noticeable degree. Good bass linearity as adjusted by the plate coupler also brings better spreading apart of notes in the highest register. Even without a coupling control there may be some natural coupling because of the proximity of the oscillator coils, as in the RCA, coupling through the mixer grids, and coupling through the oscillator plate supplies if these are not well isolated. This leads to the conclusion that if grid pots were to be added to an RCA, a plate coupler need be fitted as well- because adding series resistance to the mixer grids will reduce the tendency to couple through the 24A grids. }}

Therefore, proper implementation of coupling is just as vital to original style theremin tone as is anything else in the tube theremin. Lev's style of high impedance HF oscillators naturally and progressively "distort" the oscillators' pure HF sine wave as the player runs down the scale}}

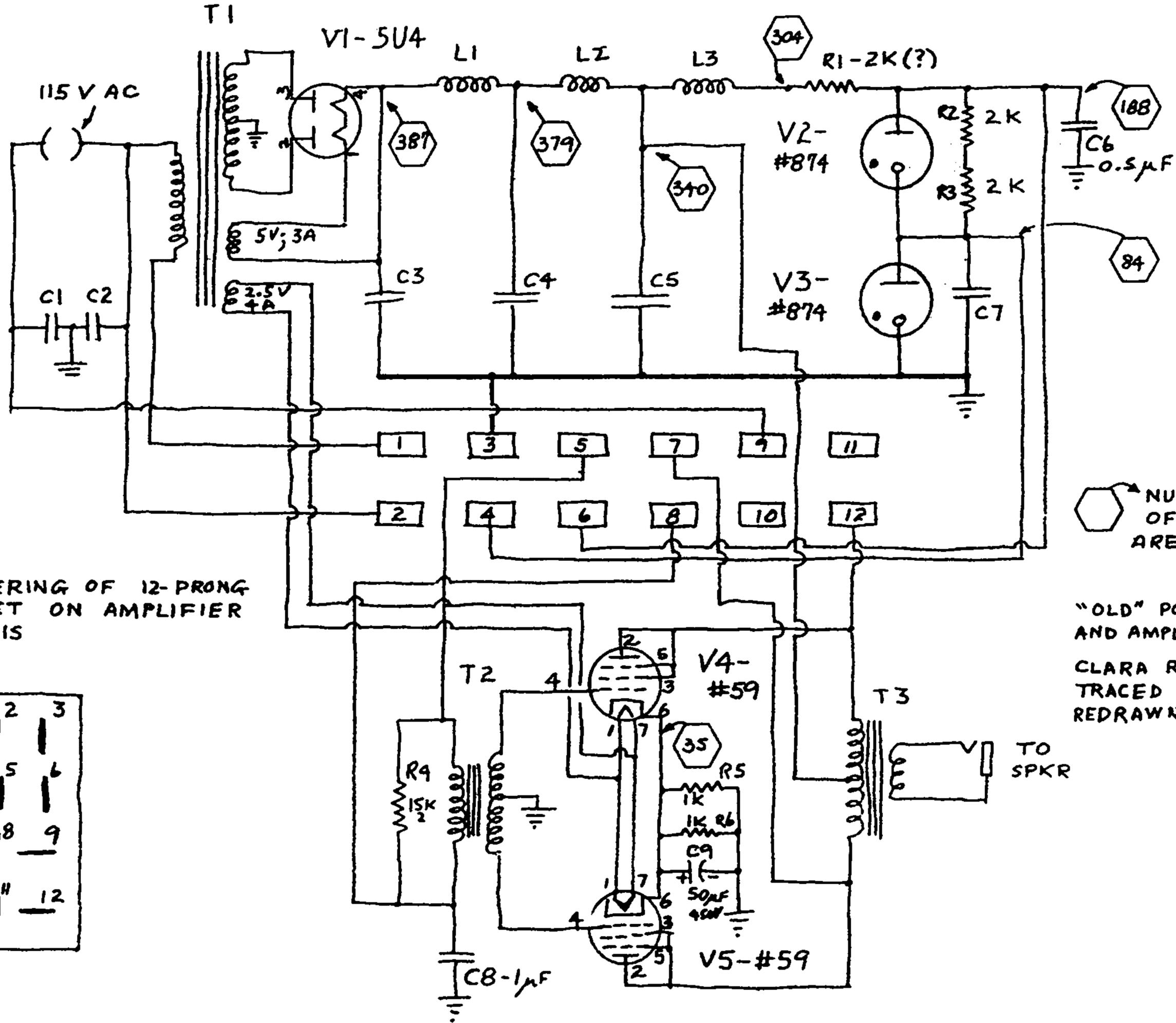
In case of "wobbling" (instability)

a) Work the LEFT adjustment back & forth many times, then reset it to correct position.

b) With a skinny screwdriver, work the variable coupling capacitor around and around, then reset it to its original position.

c) If Clara notices a drifting in volume, remove the batteries, clean all the contacts, then put the batteries back.

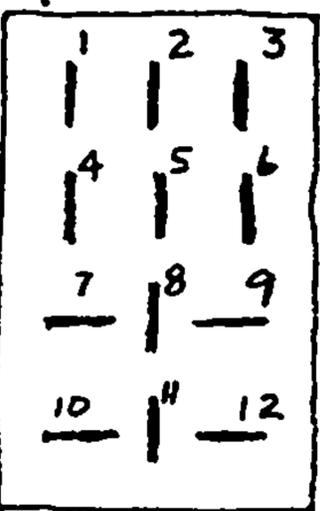
R. Moog

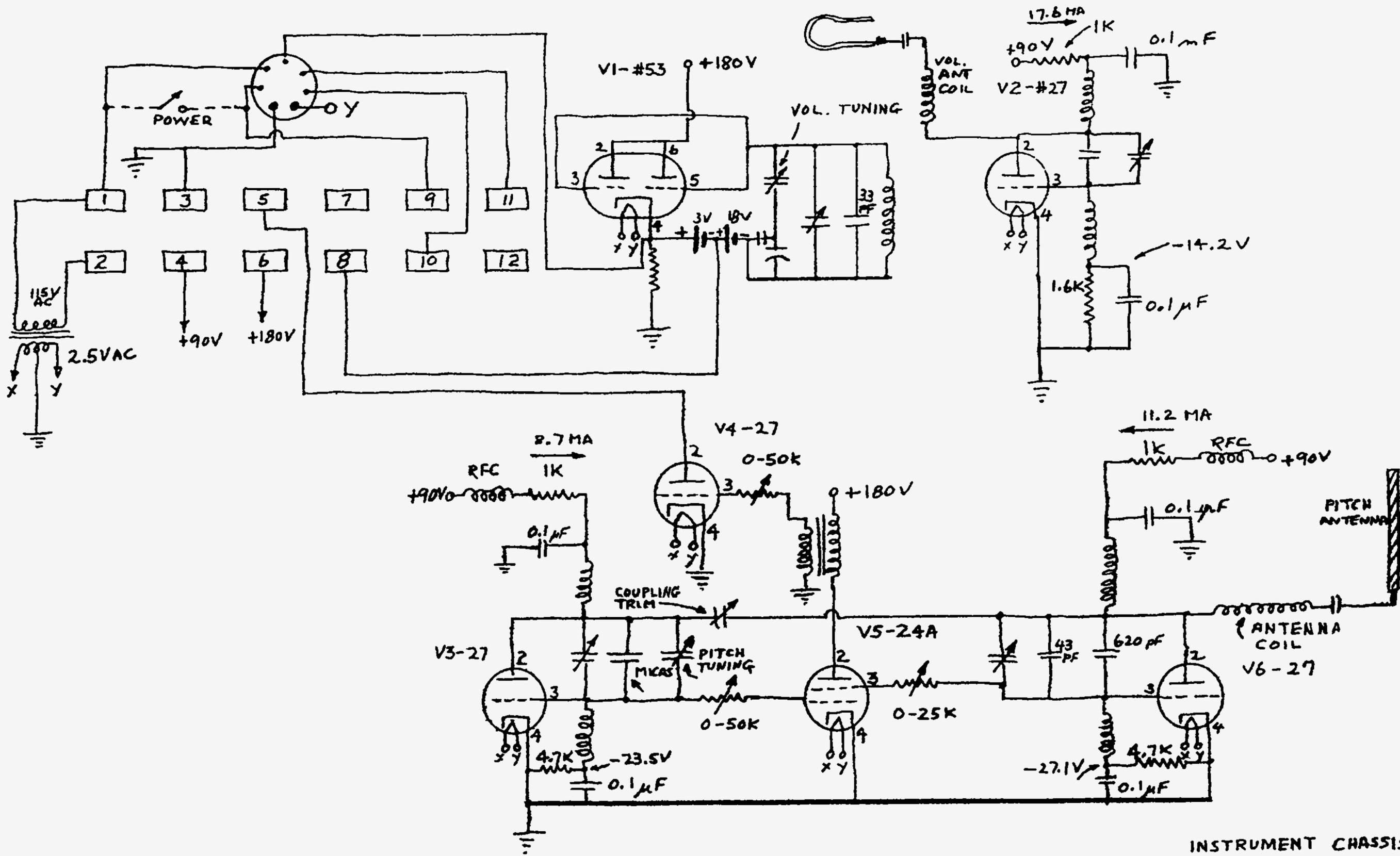


NUMBERS INSIDE OF HEXAGONS ARE DC VOLTAGES

"OLD" POWER SUPPLY AND AMPLIFIER CHASSIS  
 CLARA ROCKMORE'S THEREMIN  
 TRACED OUT ON 4/89  
 REDRAWN BY R. MOOG 5/28/89

NUMBERING OF 12-PRONG SOCKET ON AMPLIFIER CHASSIS





INSTRUMENT CHASSIS  
 CLARA ROCKMORE'S  
 THEREMIN, TRACED OUT  
 ON 4/89, REDRAWN  
 BY R. MOOG 5/28/89