



[www.VintageWindings.com](http://www.VintageWindings.com)



## The Vintage Windings Sphere® 900 Style Equalizer Pot Core Inductor Set

During the 1970's Electrodyne introduced a Mic-pre/Equalizer channel model 712 for their line of recording consoles. That model had seven bands of graphic style equalization and soon became a favorite with engineers who used them. Eventually Electrodyne sold out but the 712 design did not die. Each time the company sold, the 712 design was expanded upon. After a couple of company sales, Sphere ended up with the design and improved it by using larger ferrite pot cores and adding two bands making a total of nine bands with two being switchable creating 11 affected band choices. The Sphere 900 was born. Vintage Windings ferrite pot cores are the same size and core material as the original Sphere coils.

Sphere used pcb clamps to affix the coils to the circuit board. The problem with that approach is that the air gap, which determines the final inductance value in the coils, is set by the amount of pressure holding the two core halves together. It is next to impossible to get the gap, therefore the inductance, just right when soldering the clamp to the pcb. This means that the inductance values are never as close as they should be for resonant circuits. We use nylon machine screws with nuts to set the inductance value correctly with the help of an inductance bridge. Mounting the coil on a pcb is as simple as bending a small piece of wire over the top of the coil, laying it through the screw slot and soldering the ends to ground on the bottom of the pcb. Please see mounting notes on the next page.

Coil Inductance values:

Coil 1 - 20.6 mH	12.8 Khz.
Coil 2 - 42 mH	5, 6.4, 8 Khz.
Coil 3 - 75 mH	3.2 Khz.
Coil 4 - 145.5 mH	1.6 Khz.
Coil 5 - 330 mH	800 hz.
Coil 6 - 586 mH	400 hz.
Coil 7 - 1.346 H	200 hz.
Coil 8 - 2.53 H	100 hz.
Coil 9 - 5.06 H	50 hz.

### Note:

The original 712 and 900/10/20 used Digitran® Lever switches. The company still makes the switches and a .pdf can be found here: [www.digitran-switches.com/specsheets/leverswitch.pdf](http://www.digitran-switches.com/specsheets/leverswitch.pdf). Digitran requires a considerable minimum order with a fair lead time. In our studio we have a Sony console with EQ's that use Digitran lever switches. They are hard to see, hard to use, and they don't really show the "graphic" part of the graphic EQ. For DIY we recommend using standard, single pole, 12 position rotary switches which can be purchased for under \$5 each. We are currently prototyping 900 style Sony 3000 EQ modules using mini rotary switches (a little more \$) and we like them better than the lever switches. If you want more 8K, just crank it up!

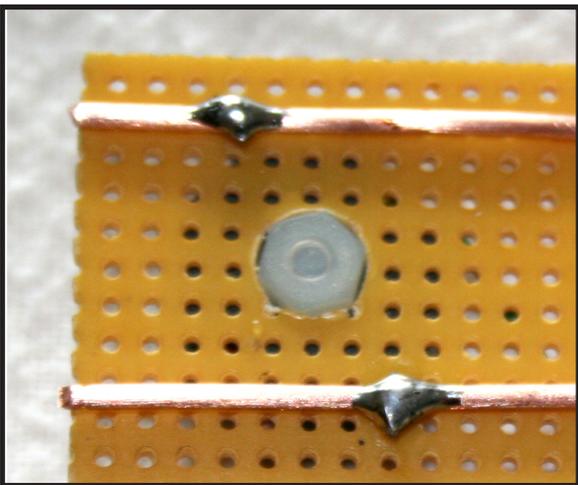
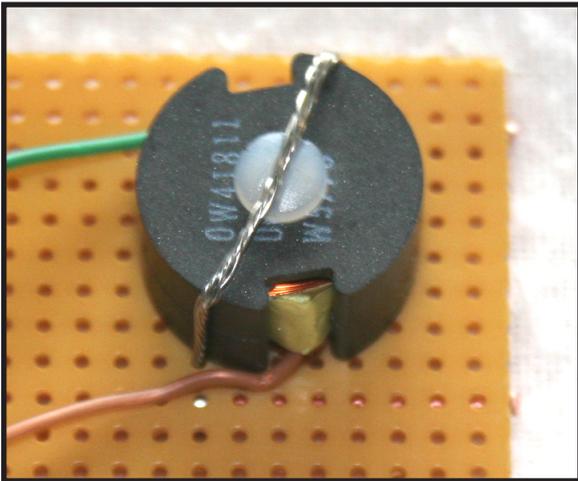


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### Mounting:



Simple Pot Core Inductor Mounting

The photos to the left show a simple and effective way of mounting the coils on a pcb. At Vintage Windings we use nylon screws and nuts to set the core gap for final inductance adjusting. This approach is much more accurate than using pcb clamps which do not hold the core halves together with any consistency. The screws are always placed in a position where the mounting wires will miss the winding windows. First a 9/32" hole is drilled through the pcb at the center of the coil's location. This leaves a recess for the nylon nut and keeps the coil from sliding around. As an alternative to drilling a hole in the pcb a plastic or nylon washer with a 9/32 center hole can be used between the coil bottom and the pcb. A daub of easy to remove glue can be used on the top and bottom of the washer which will keep the coil from moving. A small gauge wire is then threaded through the pcb, wrapping around the top of the core, through the screw head slot, and then back through the board. The wire is soldered to the underside ground plane which, in turn, grounds the ferrite coil core. The core then becomes it's own shield (that was the purpose of the pcb clamps on the originals). While pcb clamps can be used, the screws are more accurate and the clamps need to be ordered in huge quantities.

A complete 900 schematic is included with the coil set.