

KLH Nine Refurbishment and Upgrade Services

The KLH Nine was designed in the mid-1950's by Arthur A. Janszen, and thousands were sold after the design was brought over to KLH in 1959 and put into regular production. With apologies to proponents of the Quad 57, this design was the first full range ESL, based on measures of bass extension, response flatness, SPL, freedom from resonance, and reliability. We are directing a portion of the efforts of our repair shop toward bringing these landmark speakers back into general service.

Although we believe that bringing them up to somewhat better than their original performance will make most people happy, we are further exploring the possibility of offering upgrades that will make them superior to practically any modern speaker. Upgrades that are intended to have this effect are described in the last half of this document in the hope that your reactions will help us decide whether to invest in creating a working upgrade program.

Refurbishment

Refurbishment of KLH Nines is offered at two levels, *Renewal* and *Restoration*.

The *Renewal* level is for pairs that have been stored under moderate conditions. They might not be entirely operational, but are in good general condition. A basic upgrade to the tweeter circuitry is included. The fee is \$2200/pr.

The *Restoration* level is for pairs that have been long stored disadvantageously and thereby ruined. The fee is \$5500/pr. Partially ruined pairs will be quoted on a case-by-case basis.

In either case, if a signal transformer has become non-functional, both transformers will be replaced with a completely new assembly comprising modern transformers and a special crossover network. This will have the side effect of reducing the nominal impedance from sixteen to eight Ohms. The fee is \$1200/pr. in combination with renewal or restoration service, or \$1900 if performed separately.

The operations involved are as follows:

Renewal

- Replace all woofer membranes and reapply all internal coatings and conductive tracks
- Test tweeters and repair or replace as needed*
- Clean precipitated particulate matter from all surfaces
- De-pot the electronics from the transformer enclosure, replace the selenium rectifiers in the voltage multiplier with silicon units, replace the carbon current limiting resistors with metal film units, modify the circuit to develop the original bias voltages, and re-pot

Refurbishment and Upgrade Services (cont'd)

- Upgrade the tweeter response network to reduce THD and damp the upper midrange bump
- Replace binding posts with modern, gold plated units
- Touch up the exterior finishes, apply a new coat of either urethane or linseed oil (customer choice) to the walnut, and new paint to the base
- Replace steel screws with stainless steel screws
- Replace metal skid buttons on bases with non-scratching, UHMWPE buttons

A 1 year warranty covers failures stemming from defects in parts or workmanship. Failures from overloading are easily detected, and are not covered.

* Once-and-for-all tweeter rebuilding is available separately, comprising replacement of membrane, and using modern coatings and inks. Entails about a 10% risk of destruction of tweeter. Does not include winding new stator wires onto frames. If wire insulation has pulled away from its mounting points, the insulation will be restored. Service availability is contingent on availability of replacements in case the rebuild is unsuccessful. 1 year warranty.

Rebuild: \$120 per tweeter

Replacement: \$175 per tweeter

Restoration

- Completely disassemble
- Strip and refinish external surfaces
- Replace all hardware
- Replace grille cloth
- Replace electrical connectors
- Replace wiring harness elements as necessary
- Proceed with operations in the Renewal service, with added steps for mold amelioration

A 1 year warranty covers failures stemming from defects in parts or workmanship. Failures from overloading are easily detected, and are not covered.

A typical restoration candidate has been wrapped in blankets and propped up on the floor of a damp garage. It is degraded to the point that salvage seems unlikely, including rusting of the potting can, splitting of the wood joints, and moldering of the wood and grille cloth, along with similar effects on the internals. There is nonetheless some motivation for bringing such units back to original condition, as long as the owner does not object to a mild aroma of mold that will remain with them for some years.

Upgrades -- Maybe

Five upgrades are being considered. These are meant for adding to a refurbishment project. The prices listed below do not include the refurbishment fee.

The following descriptions and prices are provisional, but hopefully fairly close to what will be possible once procedures and costs have been accurately determined.

Protection: Adds electronic protection against arcing, with a visual indication of when the limit is being approached, and also indicating clearly when the protection is engaged, by way of a multicolored LED visible from the front. This includes automatic on/off of the bias supply based on the presence of a signal. Yet to be determined is whether it will

Refurbishment and Upgrade Services (cont'd)

include a solid state bias supply that runs from a low voltage DC wall wart. The fee is \$800/pr. in combination with an overhaul or restoration, or \$1500 if performed separately. This includes a 1 year warranty covering the effects of overload.

Monopole conversion: Adds absorptive chamber behind tweeter to eliminate rear radiation in the midrange and treble. Allows closer positioning to walls without comb filtering effects. \$750/pr.

Diffusor: Adds a diffuser behind tweeter to deflect rear radiation to the sides in the midrange and treble. Allows closer positioning to front wall without comb filtering effects. \$450/pr.

SPL: Increases SPL by at least 4 dB, without affecting bass extension. \$2000/pr.

Bass: Deepens bass extension by an octave, without affecting SPL. \$2400/pr.

With the SPL and Bass upgrades, the service would comprise:

- Re-manufacturing of the woofer panels using a set of proprietary techniques and materials
- Modification of the bias supplies

These operations will be performed differently to obtain the different results, based on several trade-offs.

The SPL upgrade would also include an additional tweeter panel on each speaker, with the pairs of tweeters moved to the center, and arranged in a shallow vee configuration that will increase lateral dispersion from about 10° to about 20° at 10 kHz.

The woofer modifications will improve resistance to arcing, but not eliminate the possibility if overloaded.