



Philips EL 6911, A rare and very old tape echo

15-Aug-2010: A unit as we describe here was located in the Westcoast USA and sold at eBay for \$3580 (2800 Euro). There are still 2 units here on the shelf!

We've found someone in the northern part of Holland selling a contraption that was so rare that we did some fact finding on the Internet first. We googled a couple of entries even in Japan and decided to go-ahead in acquiring this device designed by Philips here in Eindhoven. At first the weight 26Kg (60lbs) was too high for sending it by post but after some persuasion by Jacob the guy did send it by DHL. Here is a total frontal view of the restored machine without the covers on:



The purpose of this Philips EL 6911 reverberating machine build around 1960 was:

1. Improvement of acoustics of existing concert halls for various kind of music
2. Producing special effects for instance, church scenes in operas.
3. Producing acoustical effects in radio plays and theatre pieces transmitted by radio or television.
4. The retardation of the sound in combination with a public address (PA) installation in order to increase the intelligibility of a speaker.

The dimensions are 14"x 15 3/4" x 9 1/2" (48x40x27 cm)

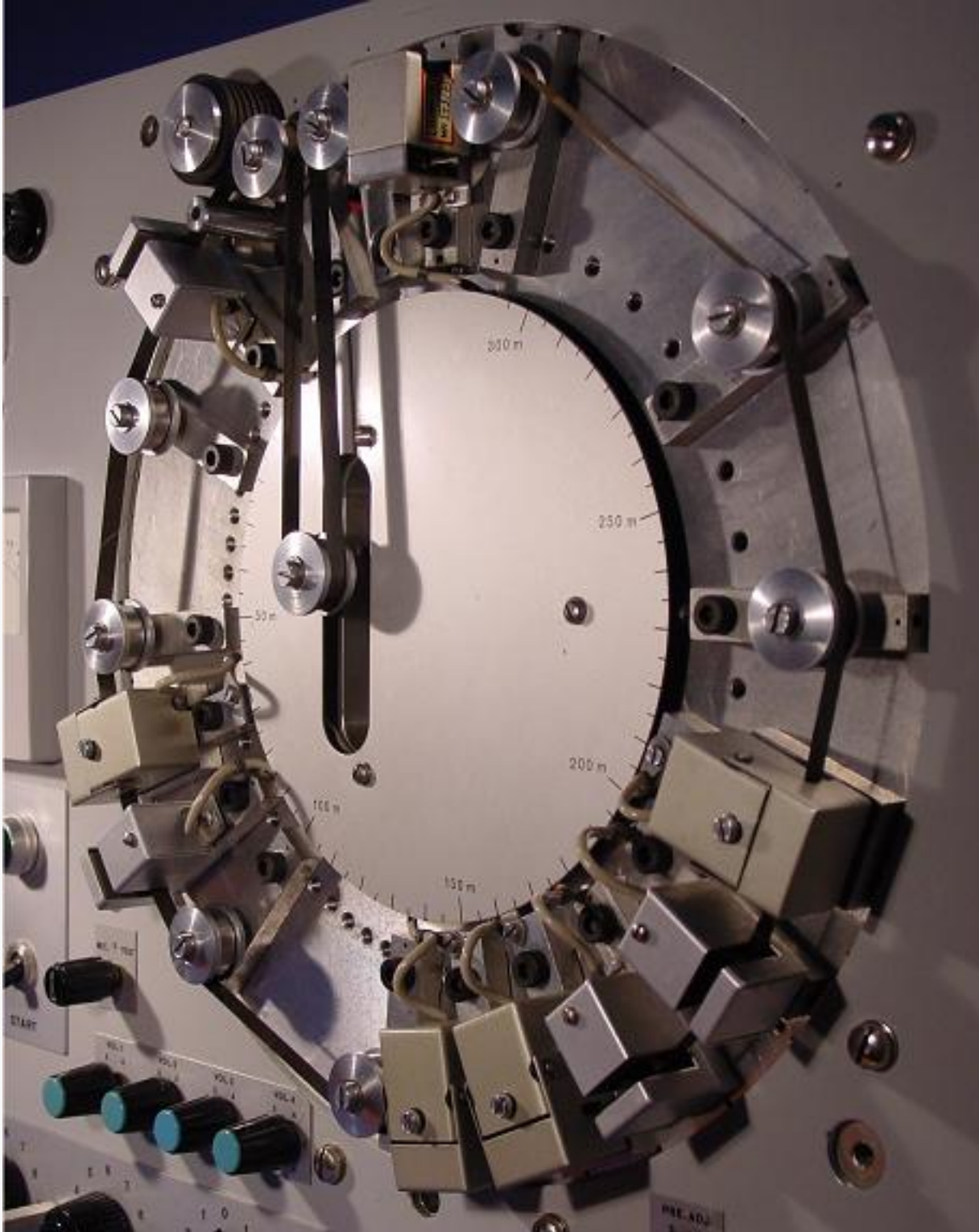
Weight 26Kg (60lbs)

Power 110-245 V 100W

Interesting is the fact that the tape runs clockwise so the first head after the erase head is to be found at around 16:00 CW. The heads are all aligned on very small indents and then locked with a bolt to assure a perfect tape/head alignment. The dial in the middle provides a timescale for the actual delay time in mS. Each head can be positioned on a location with ease so the machine can be set to emulate a wide range of echo equipment.

There are 19 tubes/valves in this device: 7 x EF86, 4 x ECC82, 7 x ECC83 and 1 x EZ80

A sideview to allow for following the tape around the bearings and heads. The pulley in the middle is with a counterweight so just sufficient pull is (gravity) applied to keep the tape under tension.



Input:

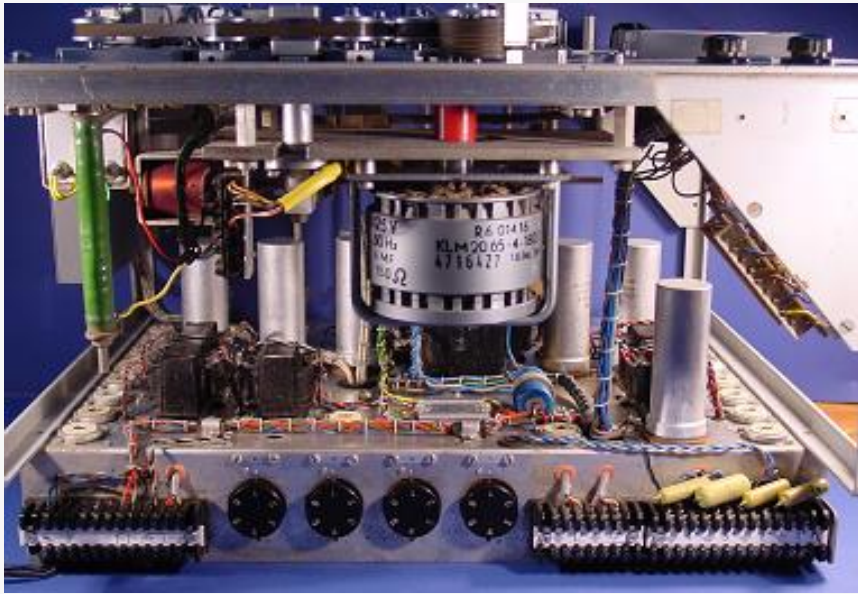
There are inputs that can be controlled balanced/unbalanced and 4 playback amplifiers in total. The input circuitry is featured with balanced transformers who can be switched-off to become unbalanced. The input sensitivities are 2 mV for microphone and for line-in 15 mV. The input impedance of the microphone input is 0-100 Ω and with transformer 30-80 Ω . For line-in the impedance range is 0-100K Ω .

Output:

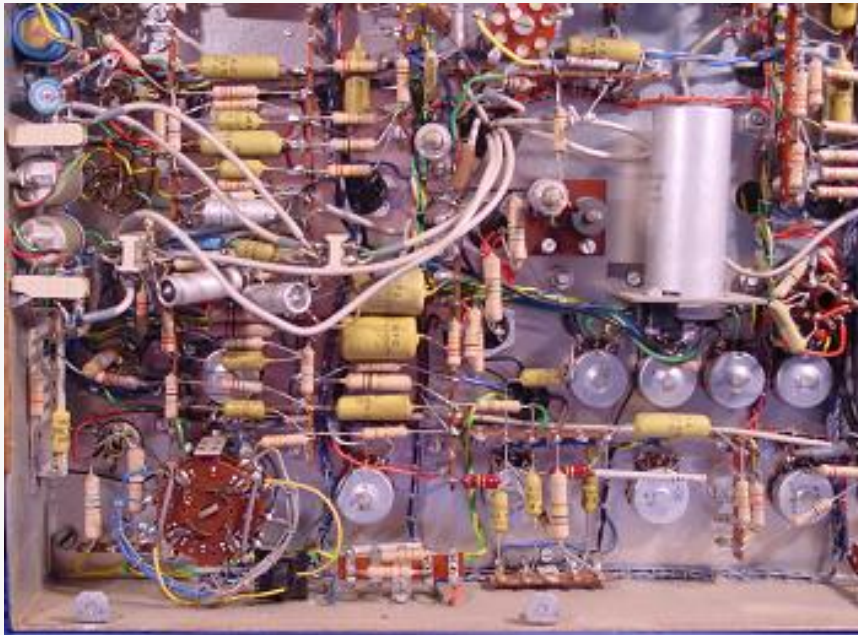
The output impedance is 500 Ω and there is even an attenuator switch allowing for 5 steps a -6dB

The W&F is to be < 0.3% RMS and the distortion max 3%

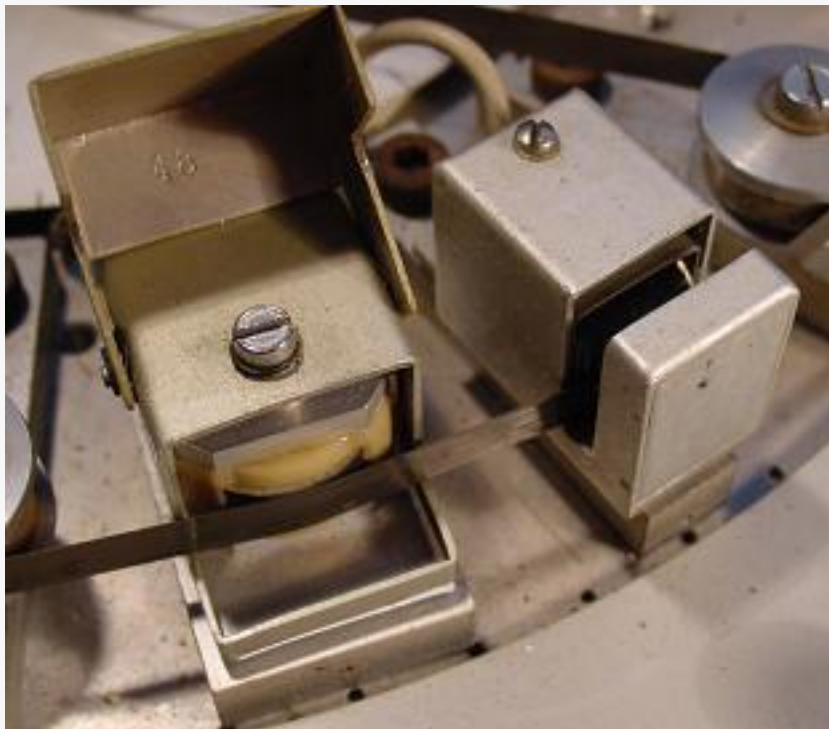
Here is an another peek of the just acquired vintage echo gear already being cleaned by Jacob. Interesting is the 19!! tubes used (see sockets one row left and one row on the right hand). The motor is a Pabst ausenlaufer running at 115Volts/50Hz obtained directly from the mains transformer.



A nice side-view. The 4 dials in the middle are to set the attenuation. The solenoid (close to the resistor) is to activate the capstan/roll engagement



All those components are bringing back memories (Just 25% shown from the total machine here!)

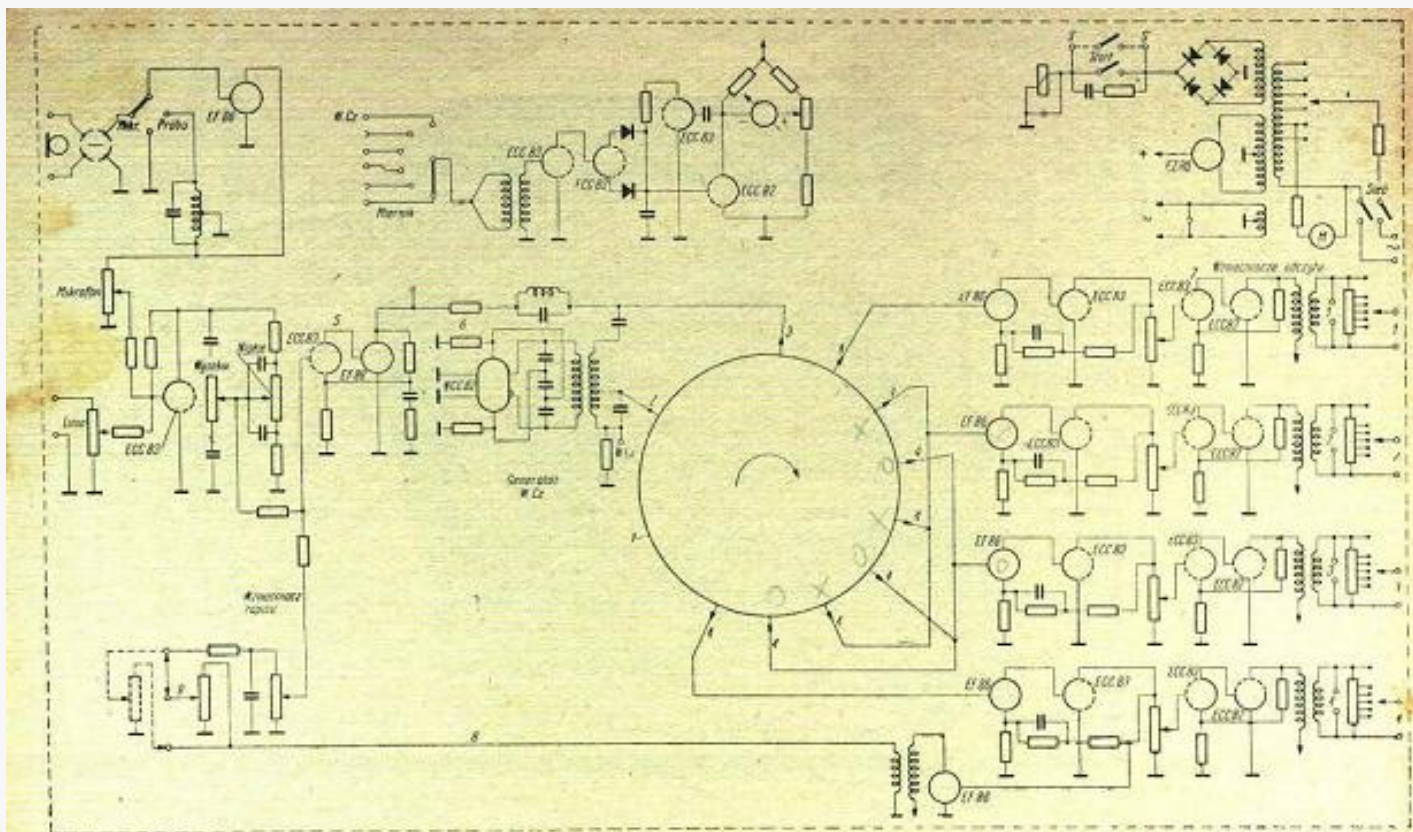


The heads are all made of (borosilicate) glass and are in

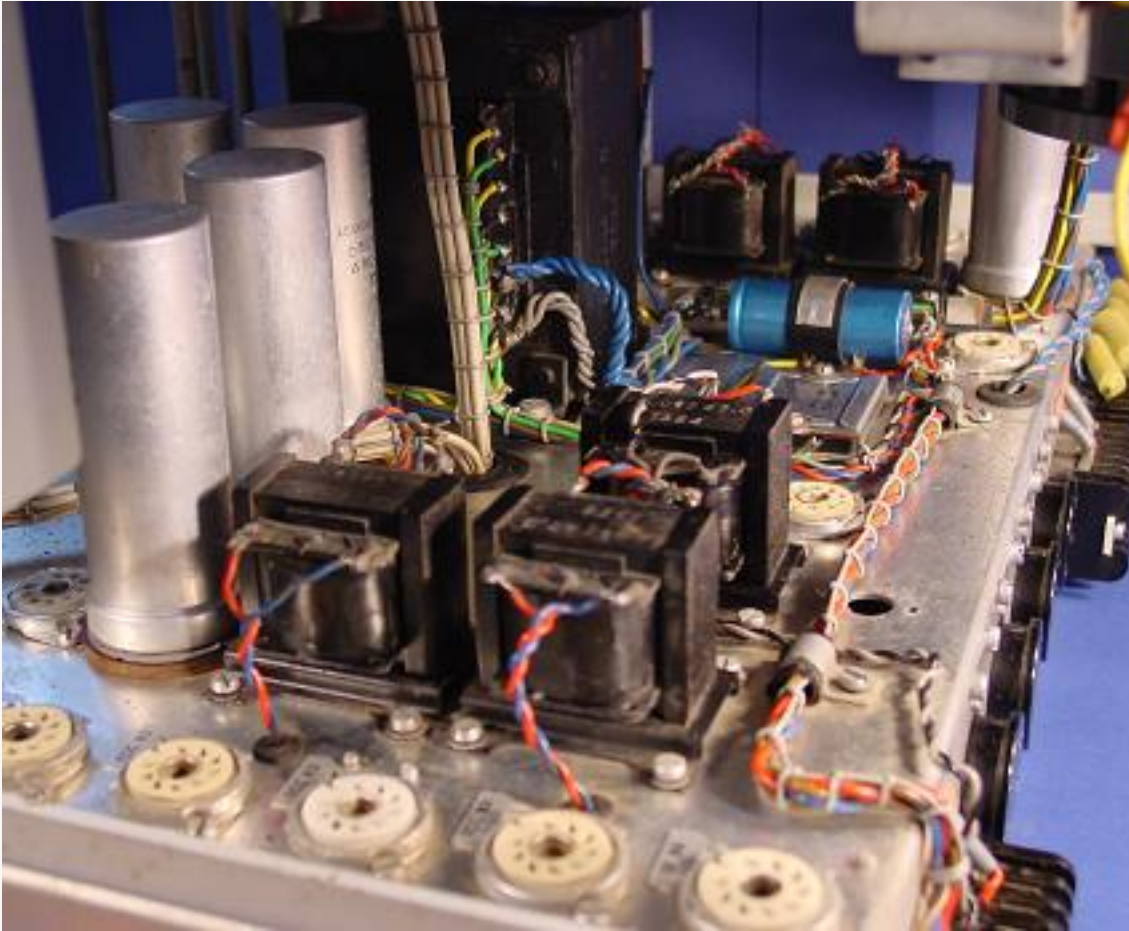
two variations: closed and open.

We are in contact with the Philips organisation in Eindhoven and Piet (who also worked for Philips technical documentation centre) went to a special Philips museum to get some pictures and service documentation (dated 1959) of a similar device on display there see panorama. Through some friends in Polen (Rycho) we did also receive some scans of pages that are not only very interesting reading but contains some diagrams and schematics who are already being used to get more grip on the electronics. Jacob decided to re-visit the Philips's museum and the two of us went to that place.

Remember that we (Piet and Jacob) are in daily contact by phone and email but see each other once/twice per year! Jacob took some detailed measurements of a cover that was missing on the acquired product. He also took some detailed pictures of a particular plug that fits a tube connector and is used for switching microphone configurations.

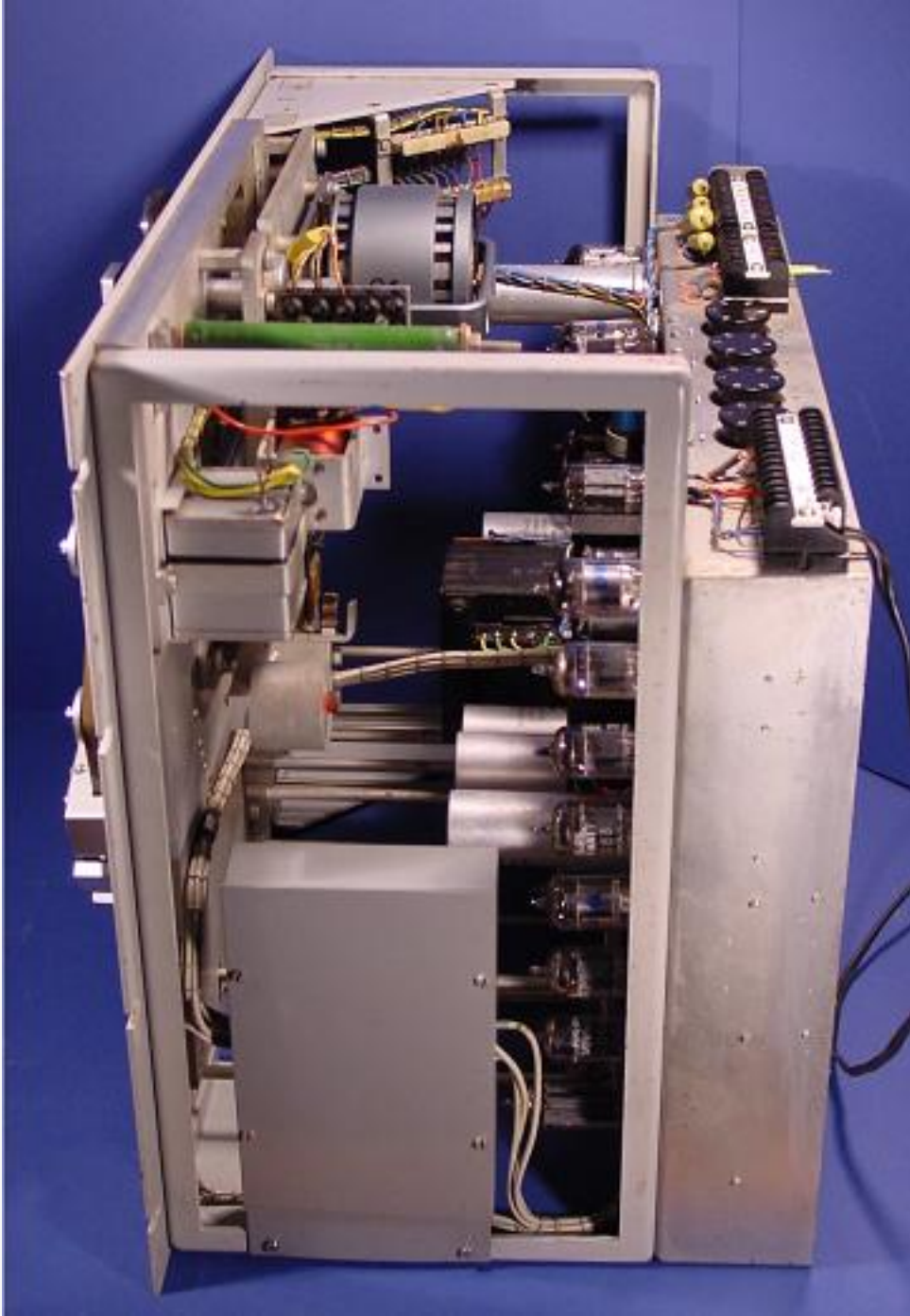


Here is a picture of the already refurbished unit's chassis. Each loom required to be cleaned and checked for the functionality of each wire!The vertical grey loom are directly connected to the replay heads.



The refurbished machines with all tubes in. It was put on 220volts and all seems to be ok although the input circuitry is not fully operational yet .

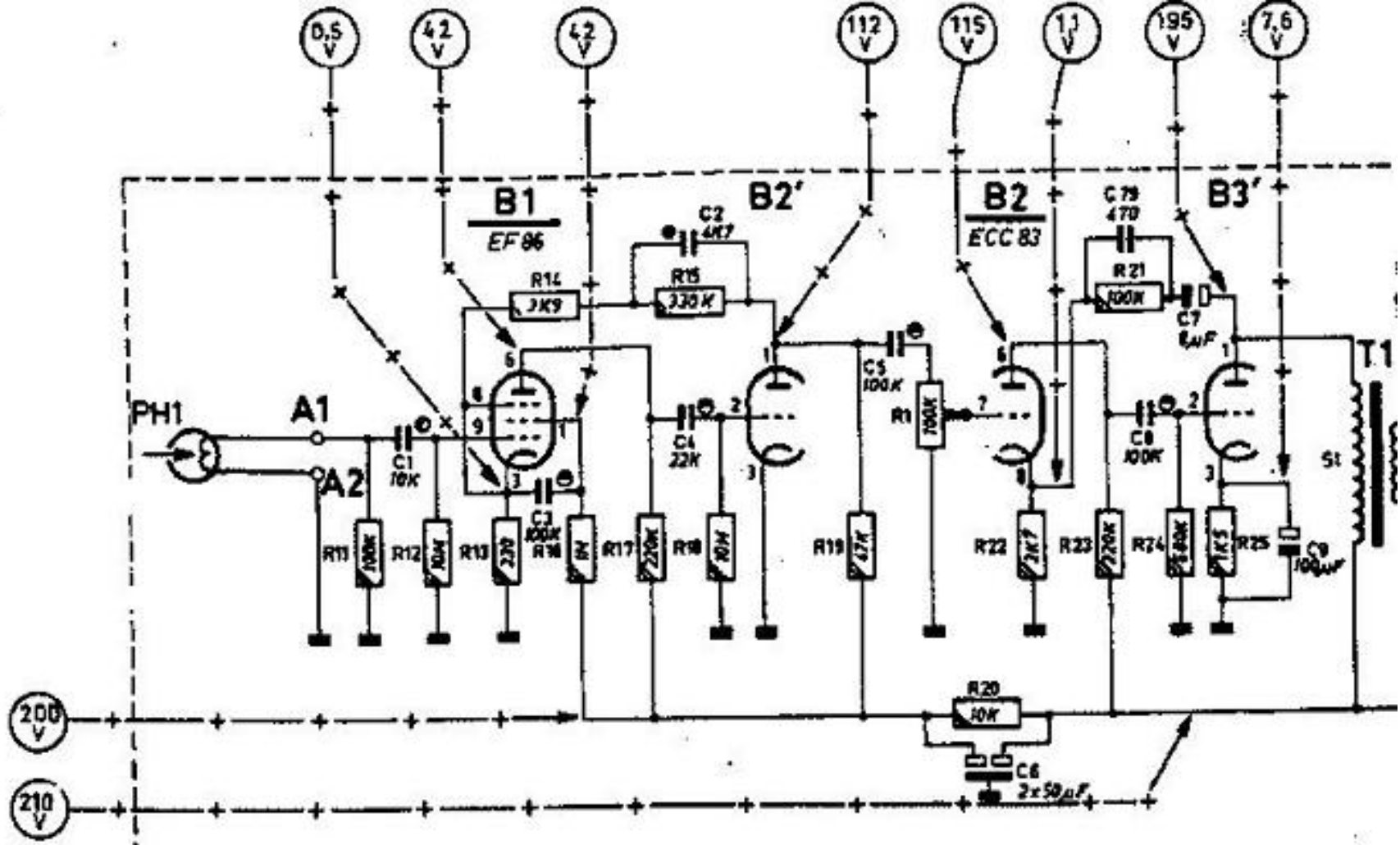
The small grey box upfront with some grey/white wires connected is the head configuration box. It's an enclosed box to assure the hum is minimized.



Jacob requested directly from Philips main archive the schematics as they are missing from the service manual we bought from Philips museum a while back. They did send a complete set of schematics and component positions and, although not 100% compatible with the model can be used to fault find the machine in minute detail.

After almost 2 weeks of fault finding Jacob succeeded in making the unit fully operational. The set of schematics just received allowed for detailed fault findings and some faults required to be repaired.

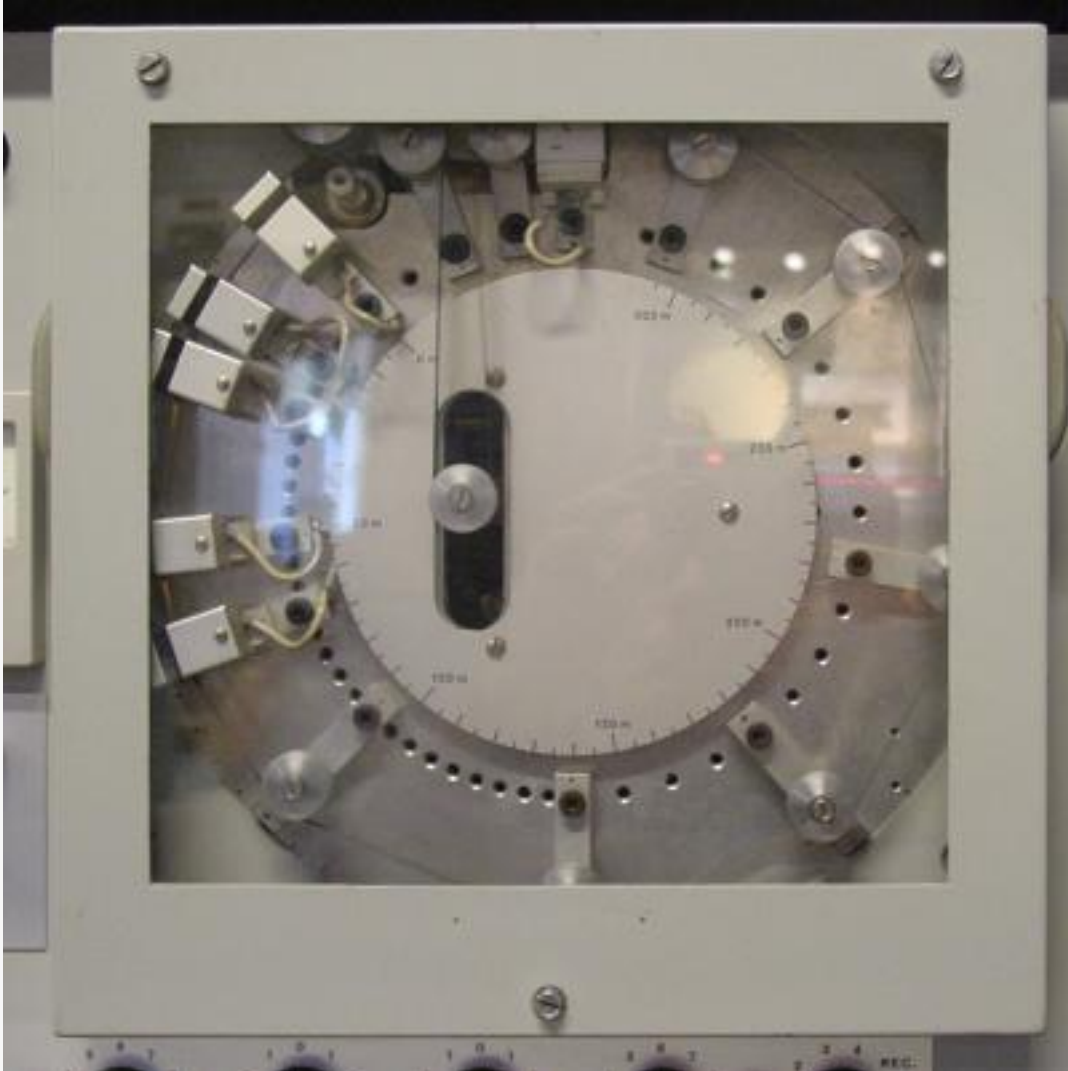
There is now sound in and sound out with a very nice warm tone. The next step is to calibrate the machine. Remember the service documentation is with many pages dedicated to calibrate this pro machine. Here is a small example of one of the four (4) amplifier stages to demonstrate the quality of the documentation:



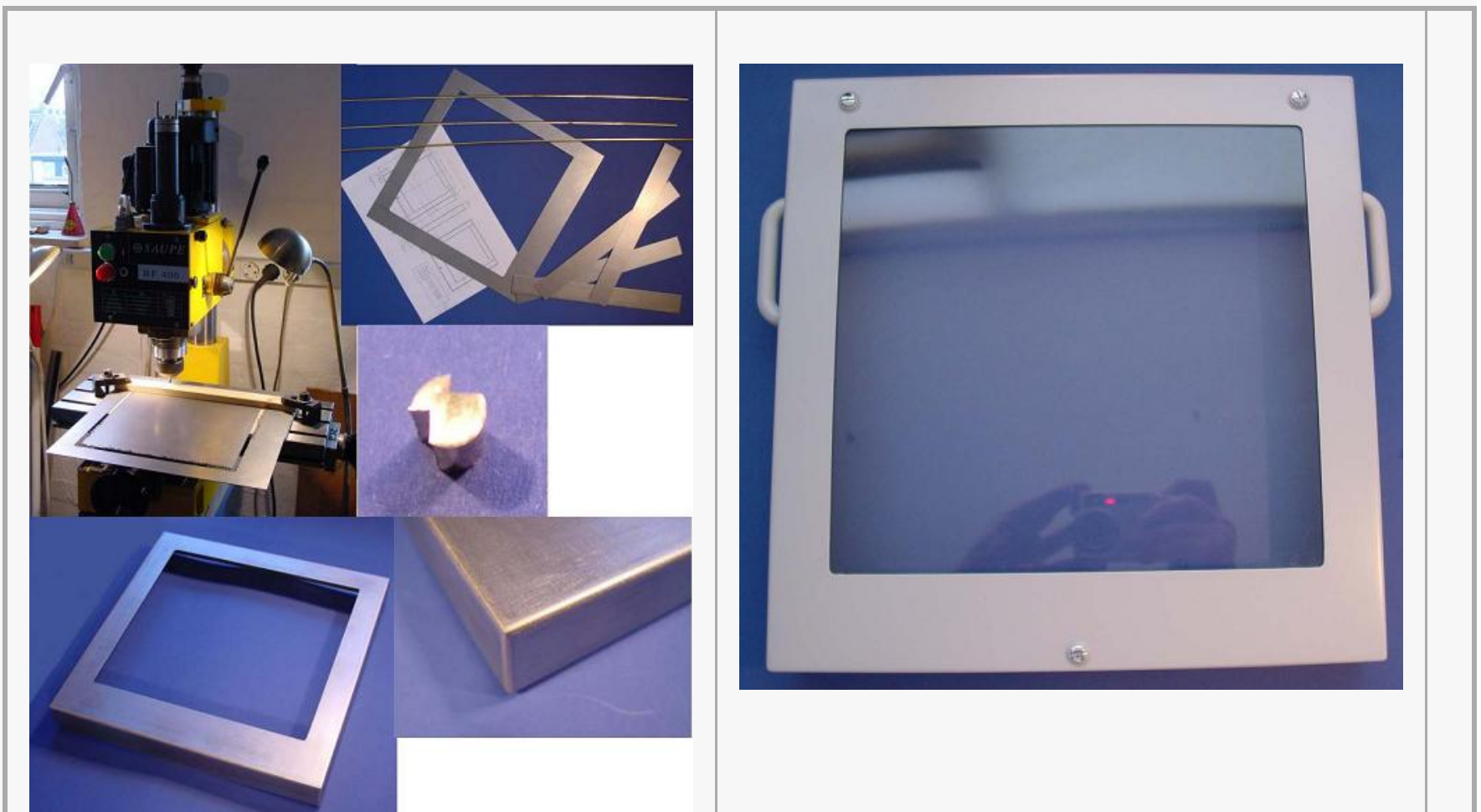
Most of the machines parameters can be checked against information provided in balloons where the arrow here is with a "+" marker meaning normal voltage measurements. There are also markers for only the signal etc. Each of those 4 amplifier is with a EF86 and then followed by the ECC83 (3x) The T1 transformer provides outputs controlled with a 5-pole switch allowing for 5 steps a -6dB. In order to use 4 heads those amplifiers' output should be added together.

We did get some feedback from Didier (A very friendly helpful guy from France) that someone did use this type of machine around 1970 and explained that it was a two speed device. He also told Didier that there was still some documentation/schematics around so we are now waiting for that assuming it's not lost already. Remember that we do have schematics but they are from a slightly different model. Jacob did the calibration (as per service documentation and everything except one area is now within spec. The area that's not in-spec is possible different due to that model difference and requires possible another procedures.

In the meantime Jacob started to build a dustcover. Here is a picture of an authentic cover as we've seen in the Philips museum:



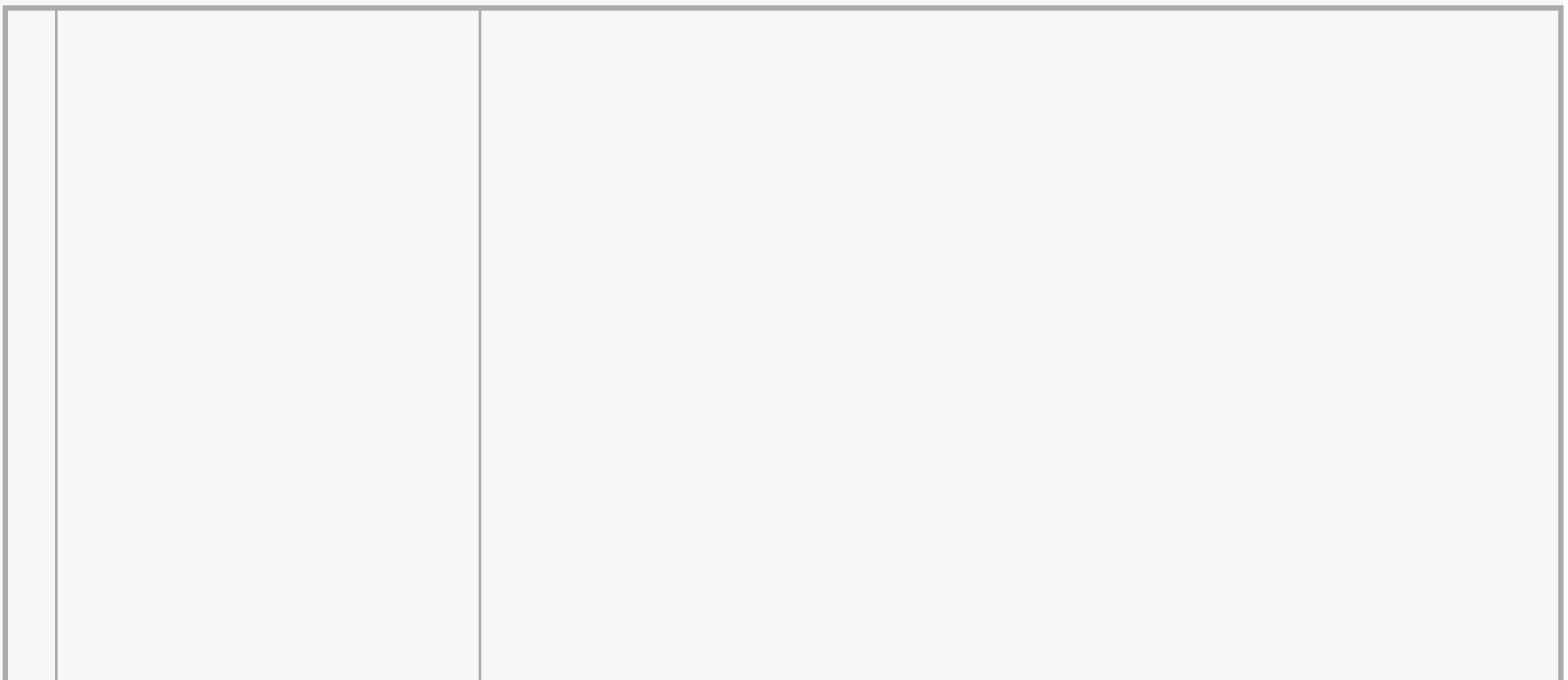
And here the tools and parts as used by Jacob including the resulted dustcover. It's interesting to see how he resolved the radius. A rod with a special milled profile (Jacob's idea!!) provides a solution that's like perfect welding.:





Detail of the construction to keep the glass aligned and fixed in the frame (screw = M2)

Here are the final results of the dustcover:





The final view of the top dustcover. The dials below are also covered with a similar cover that was already part of the machine

Here is the snap connection (3x) that will install

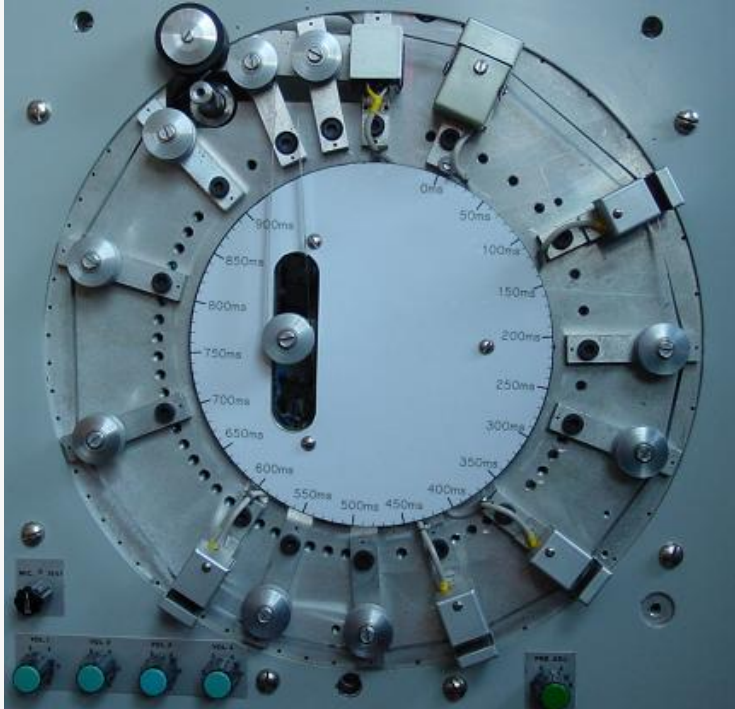
the dustcover to the machine. also visible is a

rim of about 4 mm that was obtained from a

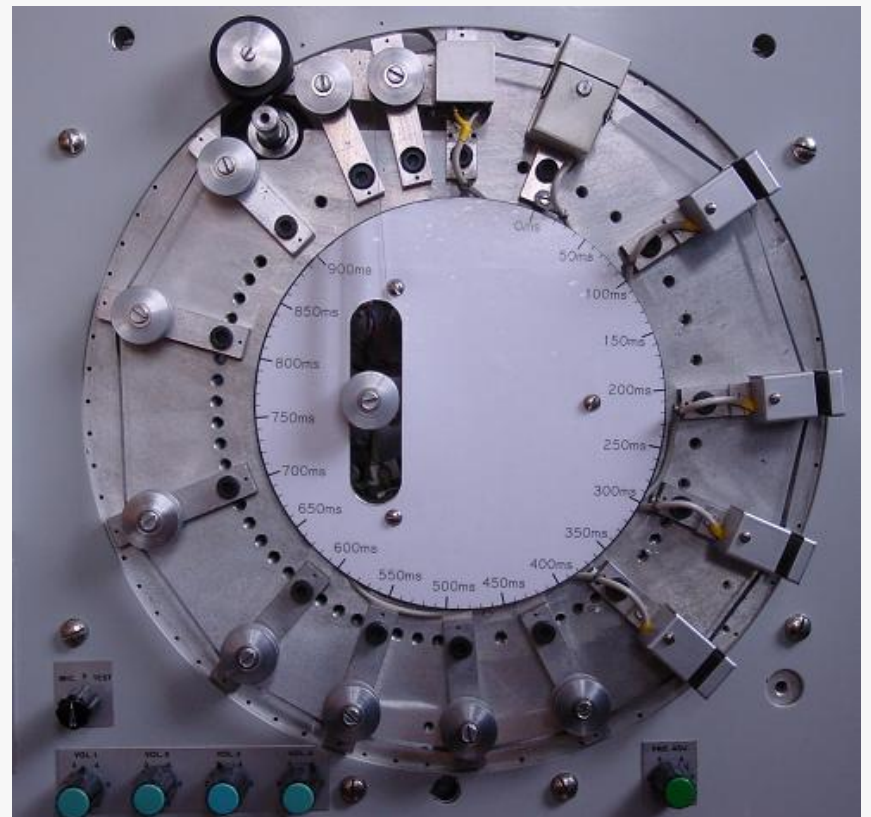
rubber vendor and painted with textile paint to

assure the rim would stay flexible.

When you would recheck the dial on the machine as received the maximal delay seemed to be 300 mS this is much too short to set the machine for the echo timings we're familiar with. Jacob discovered that this was not the time in Ms but the distance from the source in meters!. This Philips EL 6911 reverberating machine was used to balance the space in hall's and therefore this unit of measure was used. Remember from school that sound moves at 340 meters per second at 20 degrees centigrade? So this machine was fitted with a new dial reflecting the mS unit of measure. Jacob already created two settings covering the old Meazzi Echomatics as shown below. If you look to the setting per head you'll find small discrepancies due to the mechanical inability to place the heads exactly.



The Meazzi Echomatic #1 head configuration



The Meazzi Echomatic # 2 head configuration

The first sounds revealed this machine to be rather flat in his frequency domain so a equalizer was put in front of this machine to reflect the curves of the particular machines.

Jacob aquired another unit and is presently restoring it.

Comments

Philips EL 6911, A rare and very old tape echo — 4 Comments

Pingback: [The Norelco/Phillips EL 6911 Studio Echo Machine c.1961 | Preservation Sound](#)



Tim

on October 4, 2012 at 2:24 pm said:

Hello,

I have the same machine and it continues to blow fuses. I was wondering if it would be possible to get a copy of the schematics. Any help would be much appreciated. Thanks!



echotapper

on October 4, 2012 at 2:43 pm said:

Tim,

The documentation is with Jacob. I possible have some also but the complete set was bought by him when we visited Philips getting the info. I'll have a look in my archive also. Gr. piet



Tim

on October 4, 2012 at 6:57 pm said:

Hi Piet,

Thanks for the reply. Is there any way i can get ahold of Jacob? i have a partial service manual with most of the info but no schematics. Thanks again!

Tim

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