Philips EL3549

Autor:
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Philips EL3549 using all transistors 4 speed 15/16 - 1 7/8 - 3 3/4 - 7 1/2 inches per second, 4 track super quality very reliable, still going strong.

Vintage tape recorder from 1963
The EL 3549 came in 1962 on the market. It was with Philips for a new look of its recorders and EL 3549 is one of these new models. The unit has 4 speeds and 4 tracks. (15/16 - 1 7/8 - 3 3/4 - 7 1/2 inches per second)
Through a separate preamplifier EL 3787 is also multiplay and stereo reproduction.
Up to 18 cm flush on the recorder, and despite being a fairly large recorder allows the device to operate them easily.
Left and right two levers for track selection and speed selection (also on / off switch).
The 4 potentiometers for volume control, tone control, microphone recording and radio / phonograph recording.
In the middle are the control buttons and small meters.
The EL 3549 unit cost in 1962, FL 698, -. (They had to dig deep into their pockets)
The device was delivered with microphone EL 3782 and a connection cable.

Specifications & Manuals

The Philips EL3549 Tape Recorder is a transistorized four track, multi speed, monaural tape recorder produced by Philips in Austria in the early 1960s. For the technical specifications refer to the user and service manuals.

Download User Manual for Philips EL 3549 Tape Recorder: English | PDF | 8.17 MB

Download Service Manual for Philips EL 3549 Tape Recorder: English | PDF | 33.6 MB

Download Modifications, Additions and Corrections to the Service Manual for Philips EL 3549 Tape Recorder: English | PDF | 14.4 MB

http://raremanualdepository.blogspot.com.es/2015/04/philips-el3549-tape-recorder-manuals.html

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Belt threading on Philips EL3549

21st Apr 2012, 10:19 pm
#1

ricard

Octode

Join Date: Mar 2006

Location: Lund, Sweden

Posts: 1,020

Belt threading on Philips EL3549

A while ago I got a Philips EL3549 as part of a bumper purchase of recorders at an antique radio auction, but have only recently gotten around to taking a closer look at it. I've always been a bit intrigued by these 4-speed machines, and I'd actually never had the opportunity to take a look inside one of these.

Upon opening it I found that the rewind belt had not unexpectedly turned to goo. (The other rubber parts seemed fine though; the counter belt was missing completely; the main drive idler had a few flats which I've managed to alleviate to some extent by sanding it down). Bits of the belt were lying in various places, and the mere thought of touching any piece instantly transformed it from square cross-section belt to a sticky black mess. After cleaning up the mess, I was going to attempt to fit a spare belt I had lying around, probably not intended for this machine, but would fit well enough for the time being. It was now I came to the realization that for the rewind reel to turn in the proper direction, the belt must be threaded in a figure-8-fashion. Not having the service manual at hand, I cannot figure out any other way to thread it; any other threading would require an idler somewhere which I cannot find. Indeed, from a picture at radiomuseum.org it does look like this is indeed the case.

Can anyone else confirm the figure-8-threading? It seems odd to me because that means that where the belt crosses itself it would be rubbing against itself which I would have thought would lead to a lot of wear and rubber dust all over the place.

Mechanically this machine really is a halfway house between earlier machines with chunky mechanical parts, to later machines such as the N4308 with its multitude of linkages, petite partsz and nylon idlers.

21st Apr 2012, 10:37 pm
#2

Steve_P

Dekatron

Join Date: Sep 2003

Location: Bolton, Greater Manchester, UK.

Posts: 6,536

Re: Belt threading on Philips EL3549

Do it properly and with instructions - This machine deserves it.

http://www.ebay.co.uk/itm/Belts-for-...-/110855785761

It's only £11 - Well worth it.

I have no connection with the seller in any way shape or form and this Ebay link is for information purposes only.

Cheers,

Steve P.

_____
If we've always had it, why is the Car Boot open? You're not sneaking another Old TV in are you...?

22nd Apr 2012, 10:09 pm
#3

ricard

Octode

Join Date: Mar 2006

Location: Lund, Sweden

Posts: 1,020

Re: Belt threading on Philips EL3549

Thanks for the tip, might well order a set, they don't seem too common, and the length and cross sectoin is probably more critical than in general, as it's the back of the belt that drives the left reel table in rewind mode, and the belt tension has to compete with the tension of the spring pulling it towards the left table.

That said, I found a makeshift solution, by rethreading the belt; I took a square section belt and threaded it around the knurled part of the left reel table that it normally just makes contact with when threaded round the idler. It then runs over the idler to get it in the right position for the trail towards the right (nylon) idler. I had to file a couple of mm away from the left brake arm so the belt wouldn't rub against it. Perhaps not an ideal solution, as it seems to add a bit of friction to the left reel table (but on the other hand I don't get loops in play mode when starting), but at least a way to get the mechanics working while I go through other parts of the machine to see what else looks looking to.

I'll see if I can post a picture, it's easer than describing it.

The quiescent current in the output stage (slightly oddly enough a class A output stage with an OC26) was off, causing the output volume to be too high and slightly distorted. A simple adjustment gave me a good sounding output. The output stage is typically Philips, with a three-coil output transformer; one is the primary and internal speaker secondary, as an autotransformer, another is for the external speaker output and also used for negative feedback. The third coil is just connected via a resistor and capacitor to +15.5V, so in normal use there's no current flowing through it. The only reason I can think of is some form of anti-thumping turn-on circuit (counteracting some other current flow in another winding), or possibly some form of bootstrapping.

22nd Apr 2012, 11:20 pm
#4

dmaillard

Triode

Join Date: Nov 2009

Location: Adelaide, South Australia

Posts: 42

Re: Belt threading on Philips EL3549

Hi,
Here's some pics that may help. This is for the WR00 version of this recorder.

Cheers
David

Attached Thumbnails

23rd Apr 2012, 10:31 am
#5

ricard

Octode

Join Date: Mar 2006

Location: Lund, Sweden

Posts: 1,020

Re: Belt threading on Philips EL3549

Thanks for the pictures! Apparently (among other sources the eBay link above), WR 00 is different from later versions. And comparing the pictures above with my machine I can see that is definitely the case.

On my machine (it's a WR 04, made in 1963), the right-hand pulley is made of nylon, the middle pulley is missing and has been replaced by a pulley just to the right of the left-hand reel table. As designed, the belt does not loop around the left hand reel table at all, the pulley having been replaced by a knurled roller instead. The belt instead loops around the pulley just to the right of the reel table, which moves to the left in fast rewind mode, forcing the back of the square section belt to make contact with the knurled roller which is part of the left-hand reel table, in order to provide the drive. In order to get the reel turning the right way, the belt must be crossed over, in a figure 8 manner, which looks ludicrous, but I cannot see any other way; it's consistent with pictures and a diagram I've now seen in the service manual. I would have expected there to be lots of rubber dust from the belt having rubbed against itself in opposite directions, but couldn't see anything to that effect, so apparently it works.

Radiokmuseum.org has a picture which shows it, not too clearly though:

http://www.radiomuseum.org/r/hornyph...t_wm_34.html#a

After the modification I've made, it works more or less as the pictures above though, with the difference that the middle pulley is much further to the left, as it was originally intended to make contact with the knurled roller on the reel table.

I wonder why Philips changed the design? Since it was done so early in the revision history of the machine, I would think there was some sort of a major problem with it. Indeed, a machine with a similar design (and identical button arrangement), the EL3548, as the simpler design with the belt running around a pulley on the reel table. This machine has a different motor placement though, so the belt is shorter.

BTW, the belt in the above pictures looks like it has a round rather than square cross section, so I assume it has been replaced?

23rd Apr 2012, 8:47 pm
#6

ricard

Octode

Join Date: Mar 2006

Location: Lund, Sweden

Posts: 1,020

Re: Belt threading on Philips EL3549

Some pictures of my new belt arrangement. The machine itself is a WR 04 version. Note the different arrangement and types of the pulleys compared to the WR 00 above.

Note that I'm not saying this way of threading the belt has any special advantage compared to the original figure-8-threading, save for the fact that I happened to have a belt that was too long to fit the way originally intended, and that I couldn't really get my head around the way the fbelt apparently rubs against itself due to the figure-8 pattern. Also note the little cut-out I had to file in the left hand brake mechanism so the belt wouldn't rub against it.

Attached Thumbnails