

Short installation and maintenance manual for  
TR541a TLC scanner

Service group

2006



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**Part I**

**Introduction**



This short manual covers the installation and basic maintenance methods of TR-541a TLC scanner.

If your instrument is delivered without pre-installed xenon lamp (in case of air parcel), the lamp installation procedure can be find in the Maintenance part of the manual in Chapter Lamp change.

This manual does not contain comprehensive and highly detailed error detection and fixing methods, those are in the Service Manual.





**Part II**

**Installation steps**



# Chapter 1

## X-Y table lock device

Open the sample compartment door. On right side you find an M4 Philips type screw. Remove this screw (see figure 1.1) and move the table left.



Figure 1.1: Lock screw place on the table

You find a hexagonal shape M4 brass spacer, remove with a 7mm wrench. You can move the table forward. On the base plate you find a small metal block (see figure 1.2), locked by 2 screws that can be removed safely.



Figure 1.2: Metal block

The table is ready to use.

Recommended to retain these accessories, if you deliver the instrument you should fix the table with them again.

## Chapter 2

# Sample holder

Slide your layer into the sample holder. If you use thin layers (aluminium based), you have to apply the metal filler, in case of glass based layers you dont. See the layer orientation on figure 2.1.

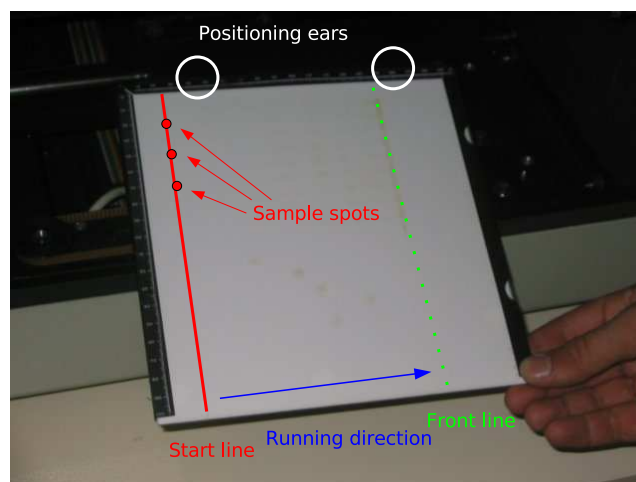


Figure 2.1: Layer holder

There are two ears on the back side of the layer holder, fit them in to the slots of the X-Y-table, set horizontal the layer holder, then screw about 1/8 on the locks, the layer holder is fixed.

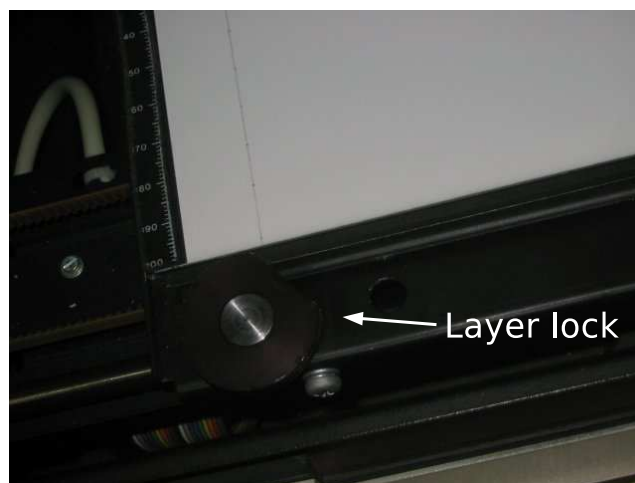


Figure 2.2: Layer lock

## Chapter 3

# Cables

Connect the serial (RS232) cable to the back of the instrument, see figure 3.1. The two tails of the cable differs, the male goes to the instrument, the female to the computer. Connect to Com1 port (sometimes signed by A) of the computer.



Figure 3.1: Back of the instrument





## Chapter 4

# Running LabChrom2 software

This chapter covers *only* the test functions of the LabChrom2 software, the measuring and data processing are detailed in the *User's manual*.

Turn ON the computer and the display. Wait until the login screen appears. The factory default login is:

Login name: **labor**

Password: **labor**

You will find a LabChrom2 icon on the screen, duoble-click on it.



Figure 4.1: LabChrom2 icon

The main window will appear on the screen, see figure 4.2. You should select the Measure function by pressing the **Measure** button.

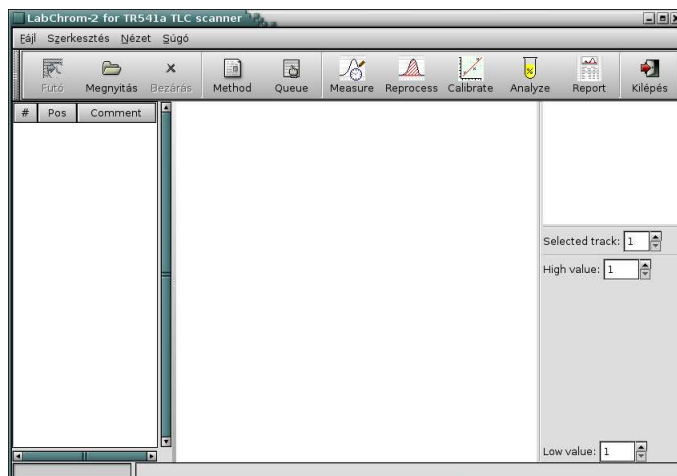


Figure 4.2: Main window

The measure window will appear, you should select the Service function by pressing **Service** button.

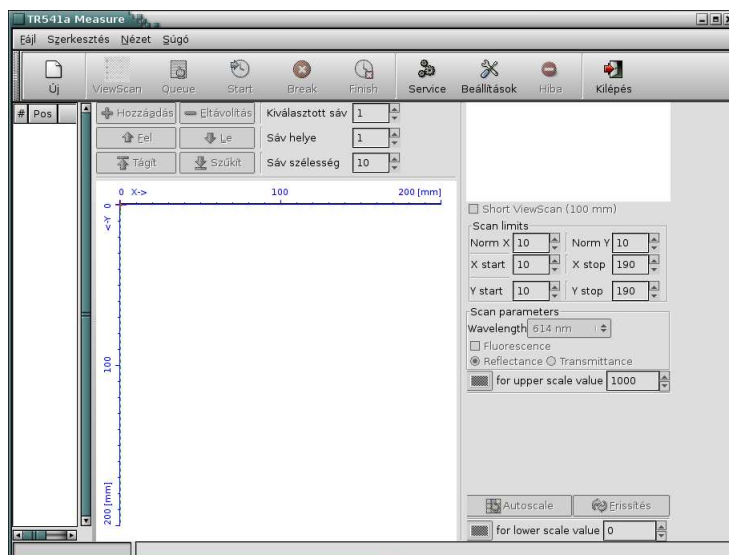


Figure 4.3: Measure window

In the Service window you can check the functionality of the instrument.

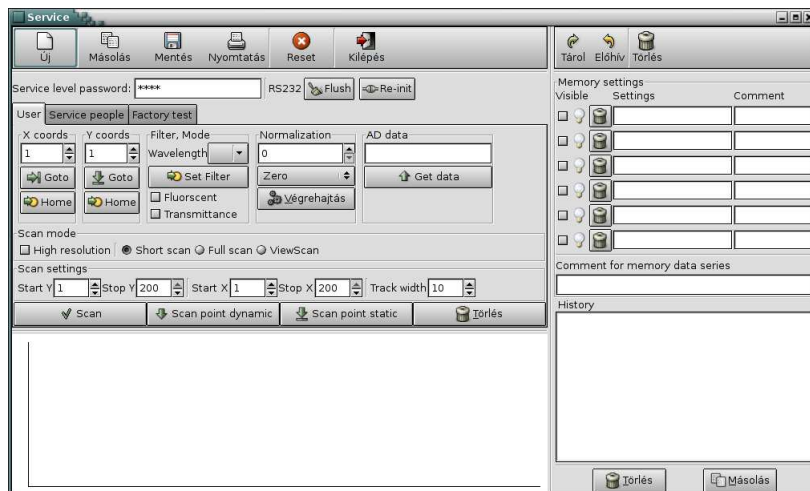


Figure 4.4: Service window

Move the table in the sample compartment to center by hand and press **X Home** button. The table *must move promptly* to the zero position. If does not happen anything usually means there is communication failure between computer and instrument.

1. Press **Re-init** button and try again
2. Press **Reset** button in the instrument's sample compartment (wait until the table moves tho zero position then remove to center again), **Re-init** and try again
3. Check the cable, fix it, check position (Com1-Com2)
4. Exit from LabChrom2 and start again



**Part III**

**Maintenance**



## Chapter 5

# Lamp

This chapter covers the lamp installation and change change procedure too.

To access the lamp and other electronic parts of the instrument remove the outer screws on back of the instrument (see figure 3.1) then the three inner screws in the sample compartment, see figure 5.1. First push back the cover then pull up.



Figure 5.1: Instrument cover screws in the sample compartment

For any lamp operation you must remove the small side cover, near sample compartment. You find three screws in the right side of sample compartment, see figure 5.2. Do not remove these screws totally, screw only about five rounds off because these screws push the cover, see figure 5.3.



Figure 5.2: Side cover **pushing** screws in the sample compartment

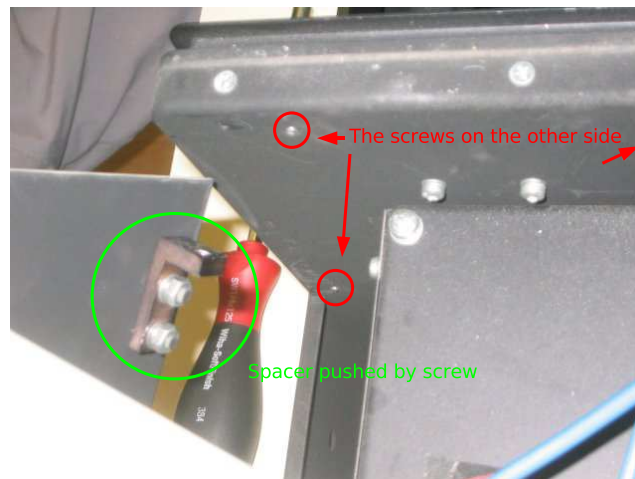


Figure 5.3: Side cover removed



If you dislocate the screws you can remove the cover, see figure 5.4.

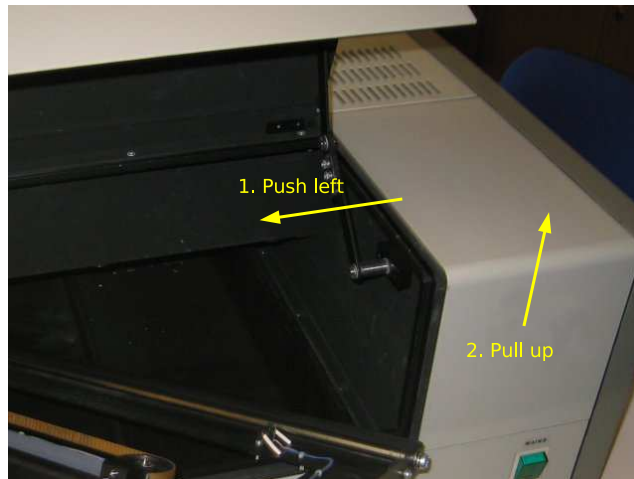


Figure 5.4: Removing of side cover

For the operations on lamp – lamp change or lamp current measure – you should remove the lamp inner cover. Remove the three screws that fix the cover, see figure 5.5 and figure 5.6.

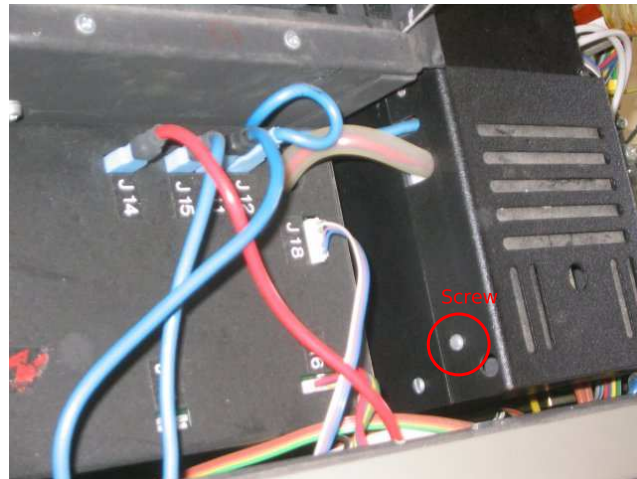


Figure 5.5: Left side of lamp compartment

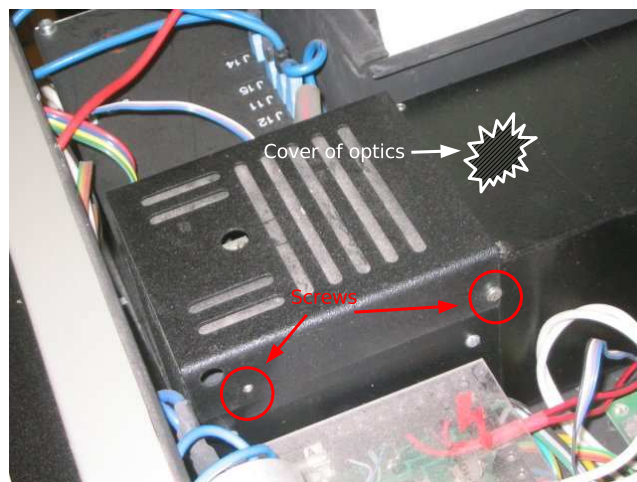


Figure 5.6: Right side of lamp compartment

When you removed the inner lamp cover, you access to the four lamp mechanic fixing screws and the lamp-power cables, see figure 5.7. First remove the power cables with 7mm wrench. *Warning*, there are **two washers** and can jump off from the bolt. Do not lose them! Then remove the four screws that hold the lamp assembly.

For this operation you should wear **safety glasses** and **cotton glove**!

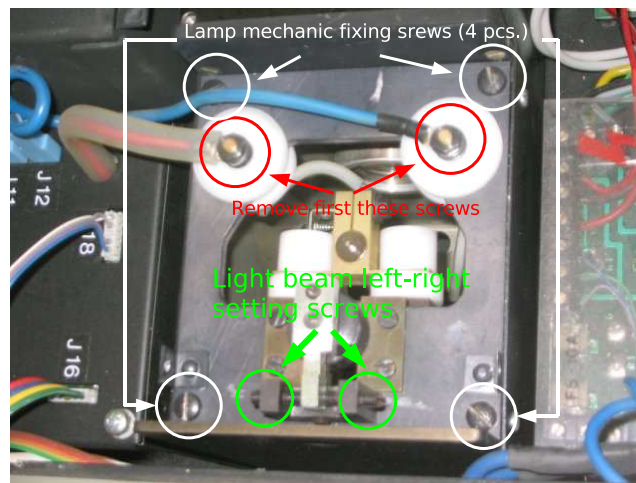


Figure 5.7: Lamp cover off

When you remove the cable fixing nuts, the other nuts on the bolt usually loose. Tight them gently (see figure 5.8), but

- do not overtight, do not deform the teflon spacers
- do not screw the internal lamp cables

### Do not touch the lamp bulb with your hand!

If you change the lamp, slack the bottom screw first, remove the plug then slack the upper screw that holds the lamp. *Warning*, the lamp is asymmetrical, the bigger electrode is the upper, the lamp end thickness differ. Very important, *do not overtight* the lamp fixing and lamp plug screws!

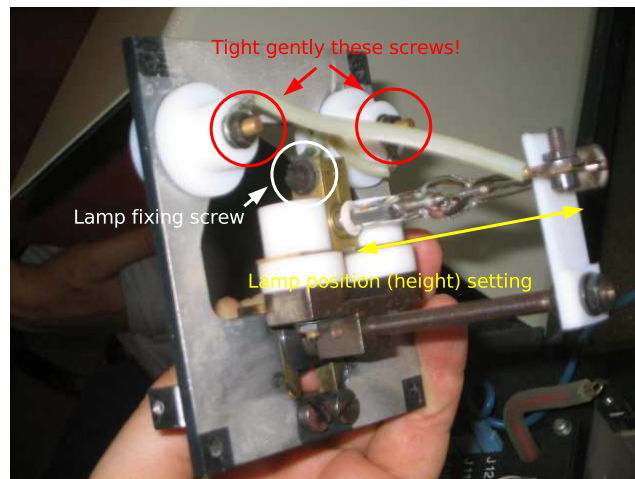


Figure 5.8: Lamp off

When you assembled back the lamp assembly and the the power cables, you should remove the optic cover, that fixed by four screws on its corners, see figure 5.9.

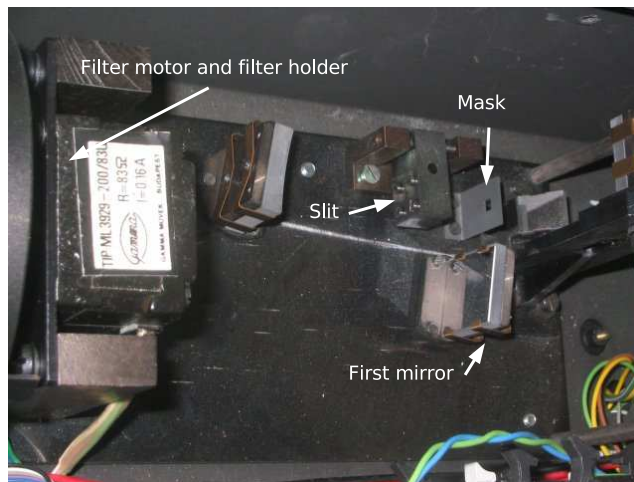


Figure 5.9: Optical compartment

After a lamp change you must adjust the lamp position. Re-assemble the lamp assembly, remove the four screws from the cover of optic and turn on the instrument.

First turn the filter holder to the green filter, you can check the light spot on the first mirror by a small piece of white paper, usually a business card, see figure 5.10.

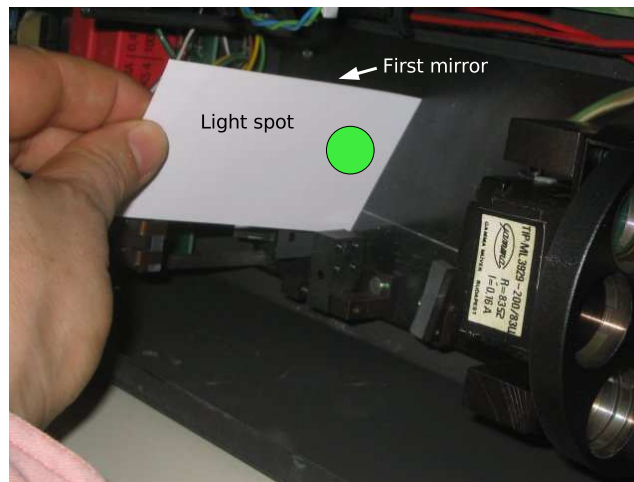


Figure 5.10: Optical settings first step

Then look the pattern of the light spot on the slit, see figure 5.11. The left-right position of the light spot can be set by the left-right screws on the lamp assembly, see figure 5.7. The coarse adjustment of the spot height can be set by the lamp position in the lamp assembly, that means you have to remove the lamp assembly again after 5 minutes cooling. The fine positioning can be set by the screw on the top of the lamp assembly.

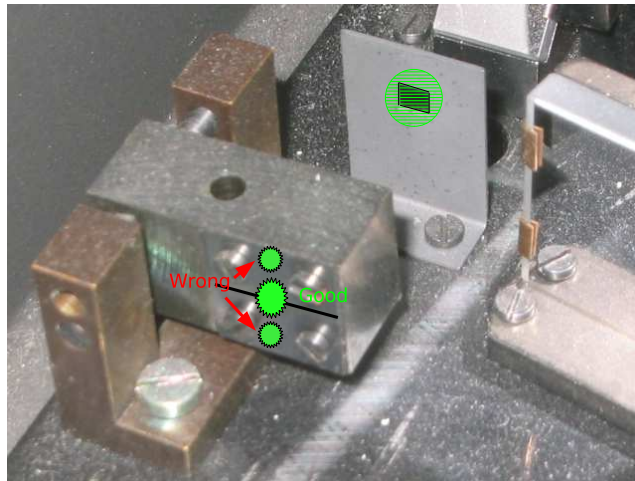


Figure 5.11: Settings on slit of light beam

When you positioned correctly the lamp, you must see the pattern on the mask as shown on figure 5.11 and a small light spot in the sample compartment on the layer.





## Chapter 6

# Belts and bearings

Disassembling the X-Y-table is usually a maintenance method, the belts do not break away in daily practice. The aim of the disassembling is the cleaning and greasing the bearings.

The recommended material for cleaning and greasing is the WD-40 spray, but you can use other degreasing and lubricating materials, fine oils.

First remove the sample holder from the X-Y-table (see figure 6.1) and clean the pillows see figure 6.2.

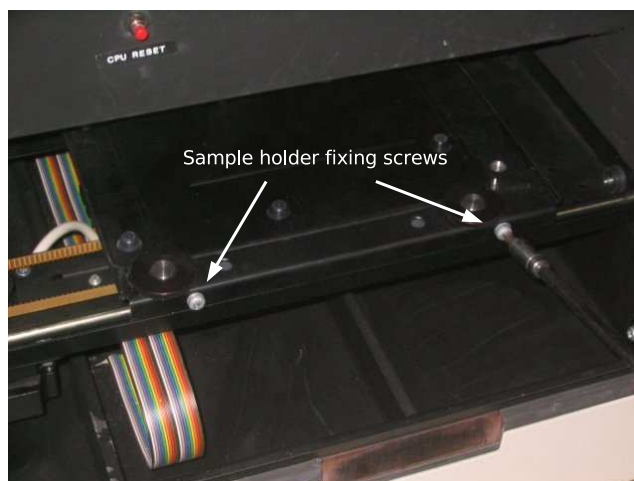


Figure 6.1: Removing sample holder from the X-Y table

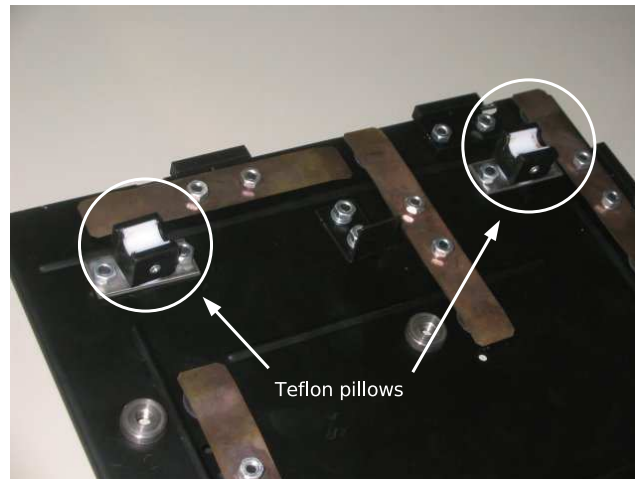


Figure 6.2: Sample holder bearing pillows

There is a flat cable attached to the bottom of the X-Y-table, remove it, see figure 6.3. The connector is fixed by two fixing ears, tilt them.

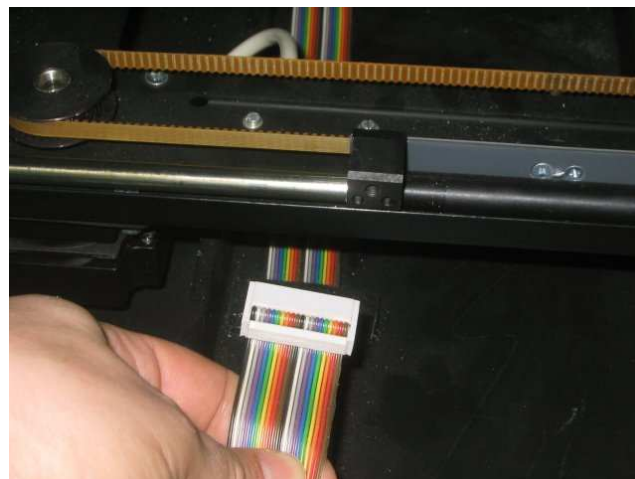


Figure 6.3: Removing cable from the bottom of the X-Y table

To remove the X-Y-table from the sample compartment you must remove the Y-shaft first. The Y-shaft is held by a small metal block, see figure 6.4 and 6.5.



Figure 6.4: Removing table shaft holder

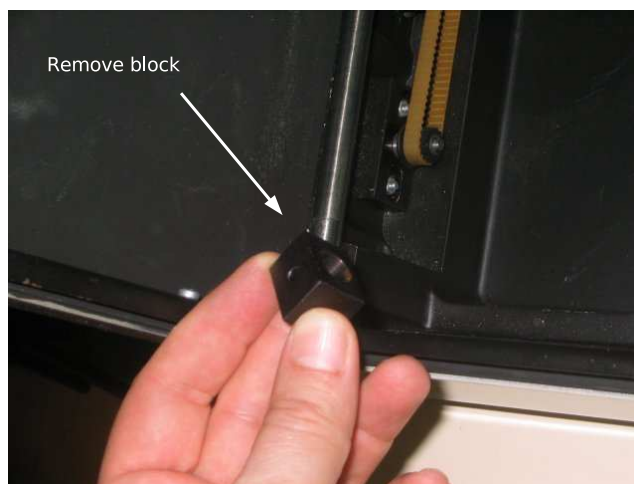


Figure 6.5: The table shaft holder block

Gently lift the free end of the shaft then pull out from sample compartment by the direction shown on figure 6.6.



Figure 6.6: How to pull out the shaft

Move the toothed belt forward-backward about one centimeter and pull off from toothed wheel, shown on figure 6.7.



Figure 6.7: Toothed belt removing

Remove the toothed belt from the Y-motor shaft's toothed wheel, figure 6.8.

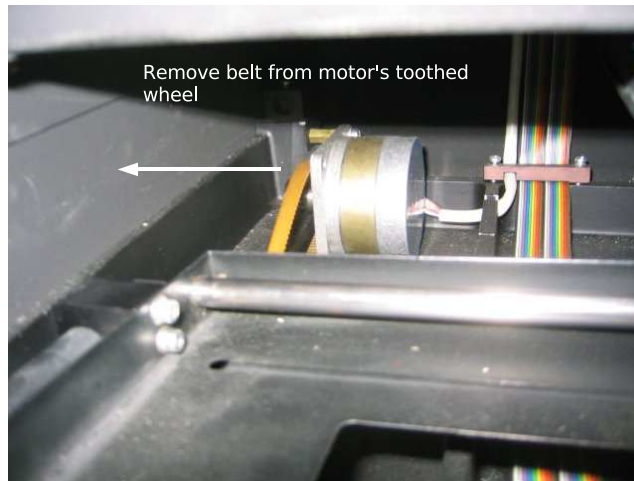


Figure 6.8: Removing belt from motor

You can remove the complete X-Y-table from the sample compartment.  
*Warning, only the direction* is working that shown on figure 6.9.



Figure 6.9: Removing the table from sample compartment

Remove the screw from the end of the near X-shaft and pull out the shaft. Clean and lubricate thin the shaft. The X bearing house is fixed to the toothed belt by a small screw, remove it. Clean and grease (lubricate with oil or WD40 thin) the pillows in the bearing house. The rear X-shaft should not be removed, only clean and lubricate it in assembled state, because the rear bearings are only slide on it, see figure 6.2.

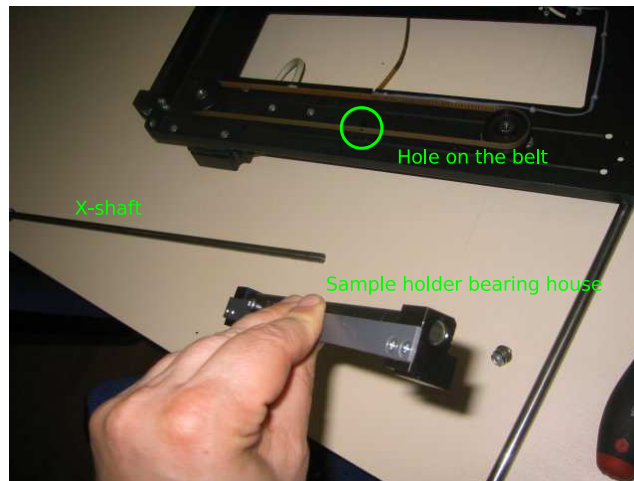


Figure 6.10: Removing X-shaft and bearing house from the table

Clean the pillows with lubricated paper tissue.

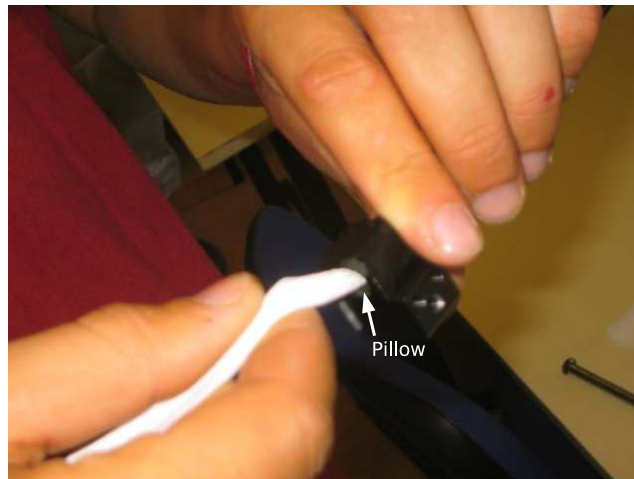


Figure 6.11: Cleaning X pillow

The Y bearing house should not be removed for the cleaning.



Figure 6.12: Cleaning Y pillow and the other X shaft