Service Manual
SMA 51 / 35+ 8K

Service Manual

August 2023

NOTICE TO THE USER

From time to time, files and/or file names will be changed or updated. Therefore, we cannot guarantee that all files named or mentioned will actually be found on the diskettes. The diskettes supplied contain a 'README' file which contains any changes since the last update of this manual and/or other important information. It is strongly advisable to consult the 'README' file prior to using the program.

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Overview

The SMA 51 system is able for long term storage of digital images onto 16 or 35 mm roll film. Depending of the image size the exposure time is about 1-4 seconds per image.

The images will be stored low priced, automatically and without much employment cost to the analogue long term storage media microfilm.

All known data formats, such as TIFF, JPG, PDF, in colour, greyscale or binary will be processed up to DIN A2. To expose A0 images you can order the optional Quad mode which provides 5 frames from one image. You can use film length from 30m, 60m and 300m as well.

To process the exposed film you can choose between different Staude Imaging processors, such as Piccolo or unomat with our ecologically friendly chemicals.

The following pictures show the unit in white colour. All functions and descriptions are also valid for the silver model.

Setup and Installation

Select a location which is free from vibrations. Any vibration of the system will affect image quality negatively. When selecting the location, also ensure that it is free from dampness and dust, for example a room with PVC floor coverings which minimizes dust residue.

The environment in the room should be a constant 20° C to 22° C with a humidity level of 50 % to 70 %. If the relative humidity is outside the range stated, malfunctioning of the system can occur.

The back of the system should be a minimum of 1,200 mm from the wall or any other obstacle. This is to allow operators and service technician's reasonable access to the system.

The power supply must be within 5 % (plus or minus) of the voltage requirement stated. If it cannot be guaranteed that the power supply will conform to these specifications, a constant voltage regulator should be installed.

This is to ensure trouble free operation of the system, especially the computer. Power variations outside the tolerances stated can damage the system and will negate any warranty claims.

Unpacking and installation

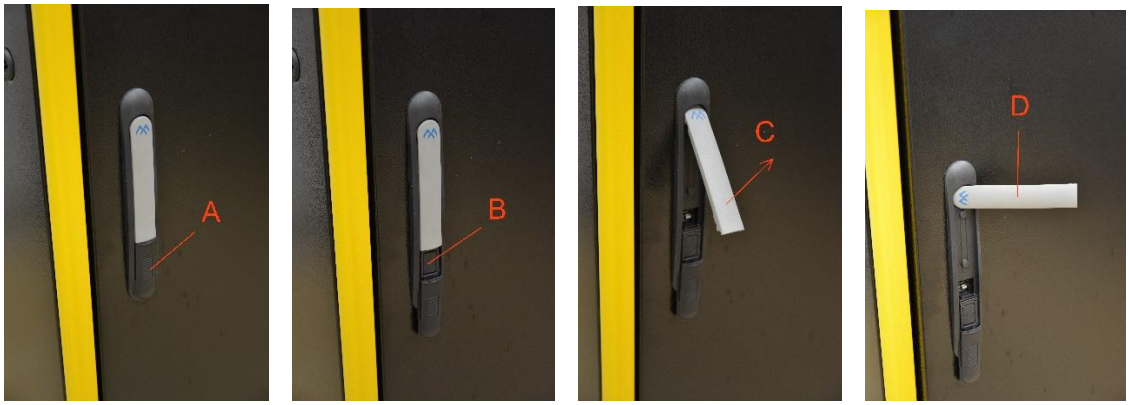
If the system is delivered in a wooden box please open the box by removing all cross recess screws.

Inside the box you will find the following things:

- The SMA51 (or 35+)
- the PC
- the control (small) monitor
- boxes with one or more camera heads
- accessories boxes
- packing material (around)

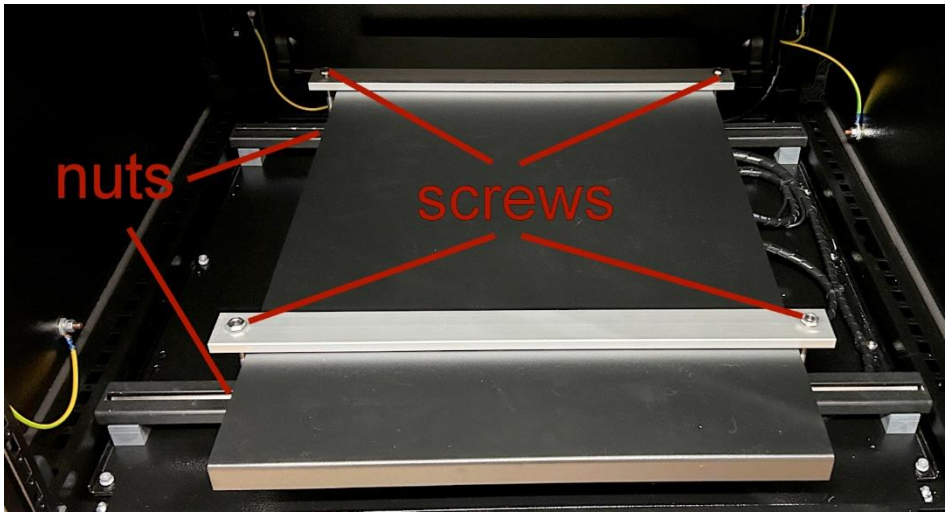
Do the following steps to install the system:

- Move the machine from the box to a place with no floor concussions and align the system first using the four regulating feet.
- Open the front (see next pictures) and the top lid, remove the packing material



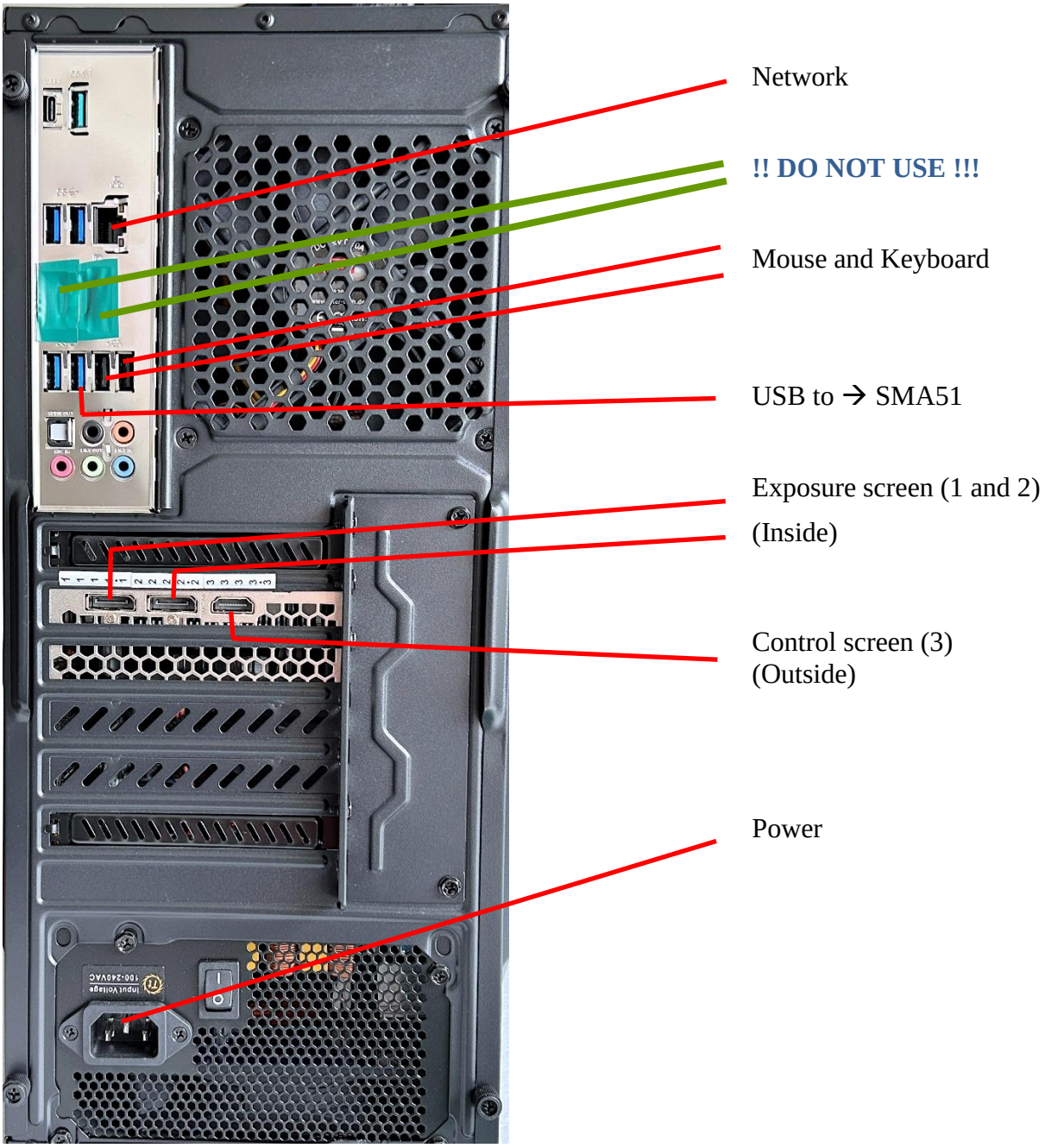
Open the front door:

- Move (A) downwards
- Press (B)
- Move (C) counter clockwise
- Grab (D) and open the door



- Loosen the four nuts on the bottom and turn the threaded rods completely out and keep all parts for later transportation.
- Check if the image display inside the machine is covered!!!
- Pass the three black cables (2xDP and 1xUSB) through the bottom hole in the middle of the rear side.
- Unpack one or both camera modules.
- Unpack the control monitor and connect it to the socket number 3 as shown in the following picture.
- Connect the two screen cables number 1 and 2 to the PC as shown in the following picture.
- Connect the power cable, mouse, keyboard and SMA51-USB as shown in the following picture.

Note: The figure may differ from the actual PC component.



PIC 1

ATTENTION

Make sure that all connections are firmly connected to the PC.

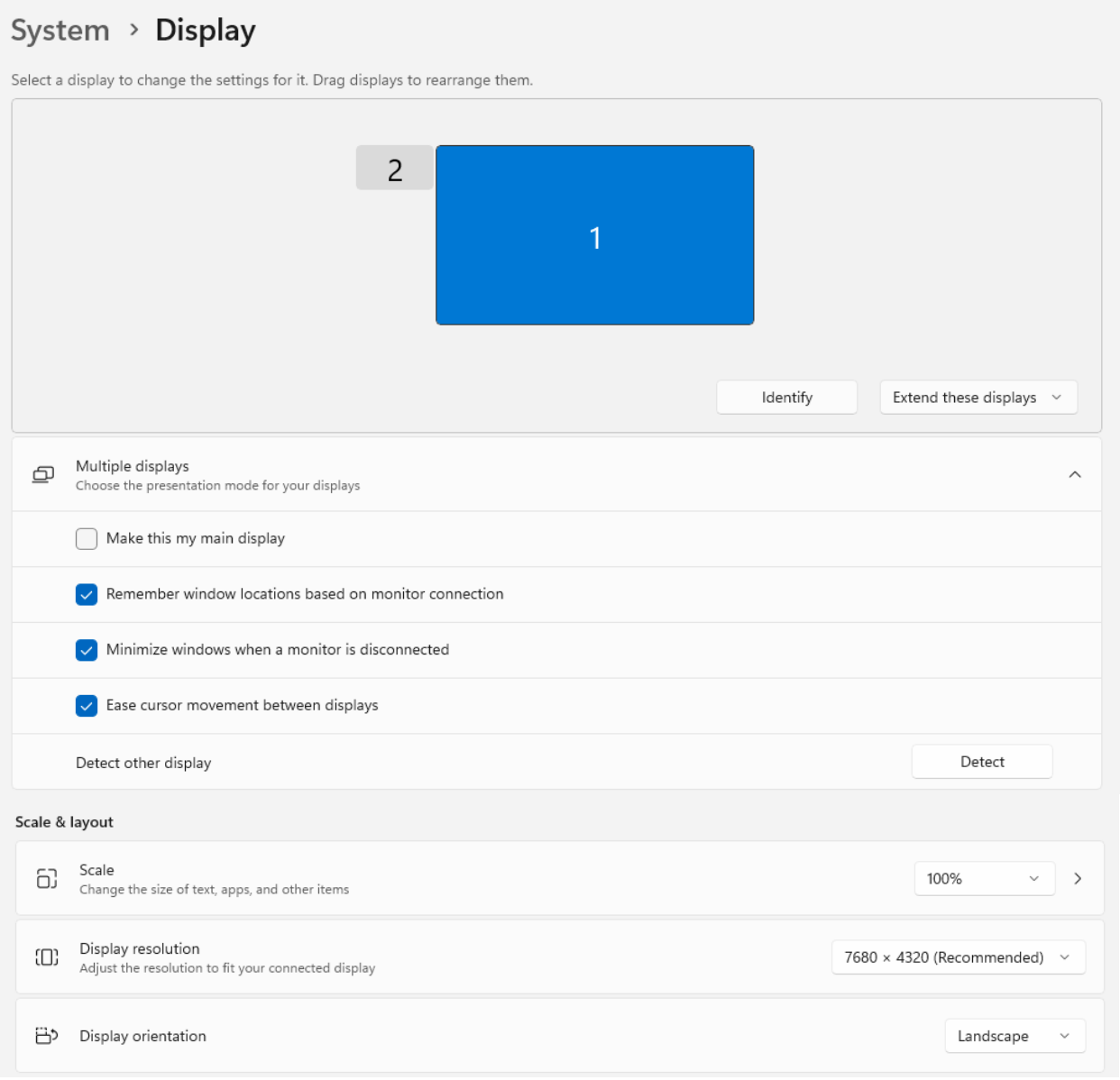
Especially the connections 1, 2 and 3 must be seated properly, otherwise the resolution is not adjusted correctly. Please check the resolution after install all components as described below.

- If everything is properly connected, remove the monitor cover inside the machine and gently clean the surface of the monitor if necessary.

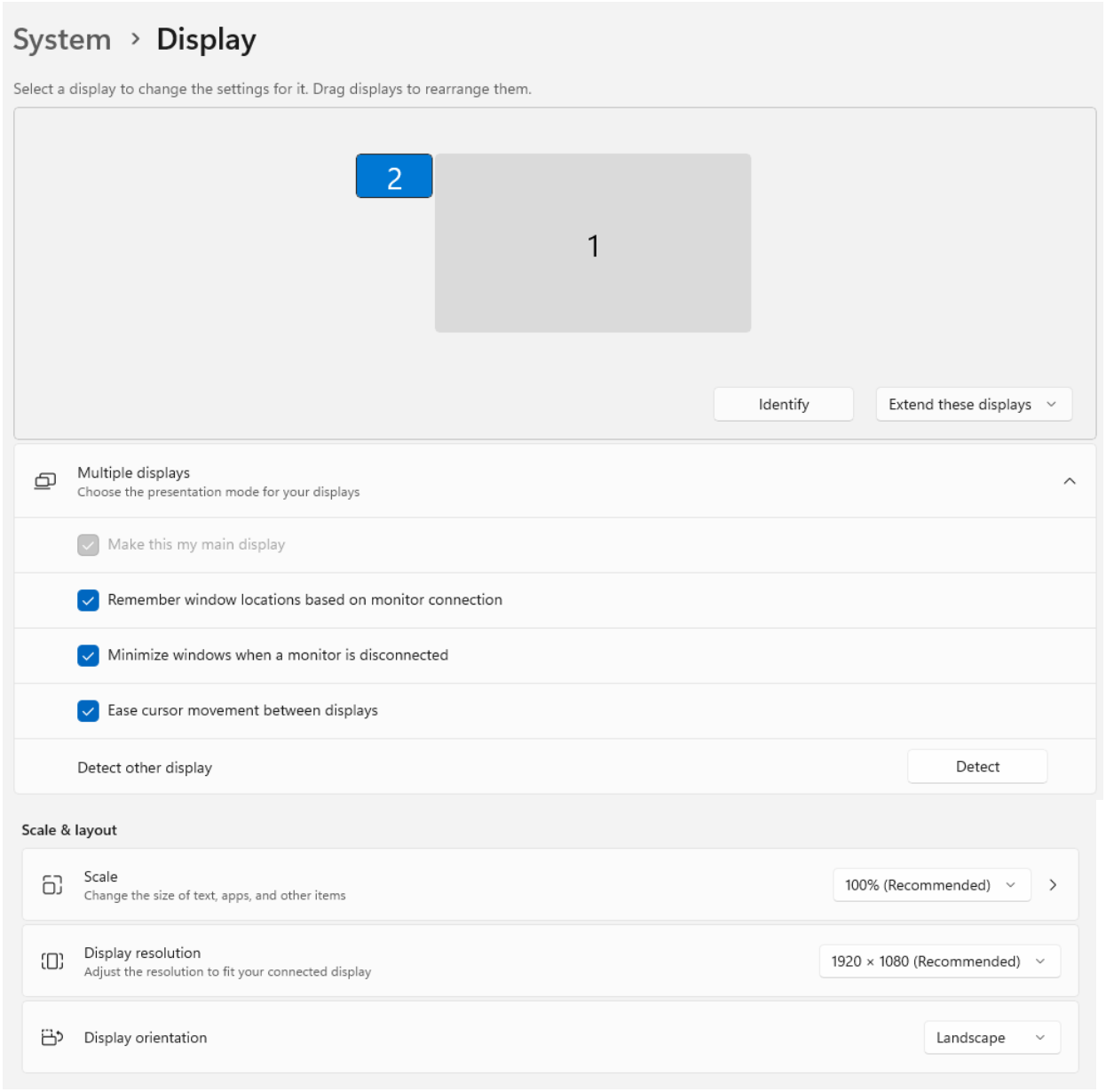
- **Please switch on the PC first and wait until the login dialog appears. Login with → user1 and wait until the windows desktop appears. Now switch on the machine. The exposure monitor will be activated within 10 seconds now.**

- Right click onto the desktop and choose → Screen Resolution.

- Click onto the first (1) (large) monitor and check the following parameters:
  - Scale & layout → 100%
  - Display resolution → 7680 x 4320
  - Display orientation → Landscape
  - Make this my main display → Not checked



- Click onto the second (2) (small) monitor and check the following parameters:
  - Scale & layout → 100%
  - Display resolution → 1920 x 1080
  - Display orientation → Landscape
  - Make this my main display → Checked



Important information if you create a new user under WIN 11

After creating a new user the following steps are necessary:

- Give full rights for the user to the folder C:\file-converter

- All backgrounds must be totally black

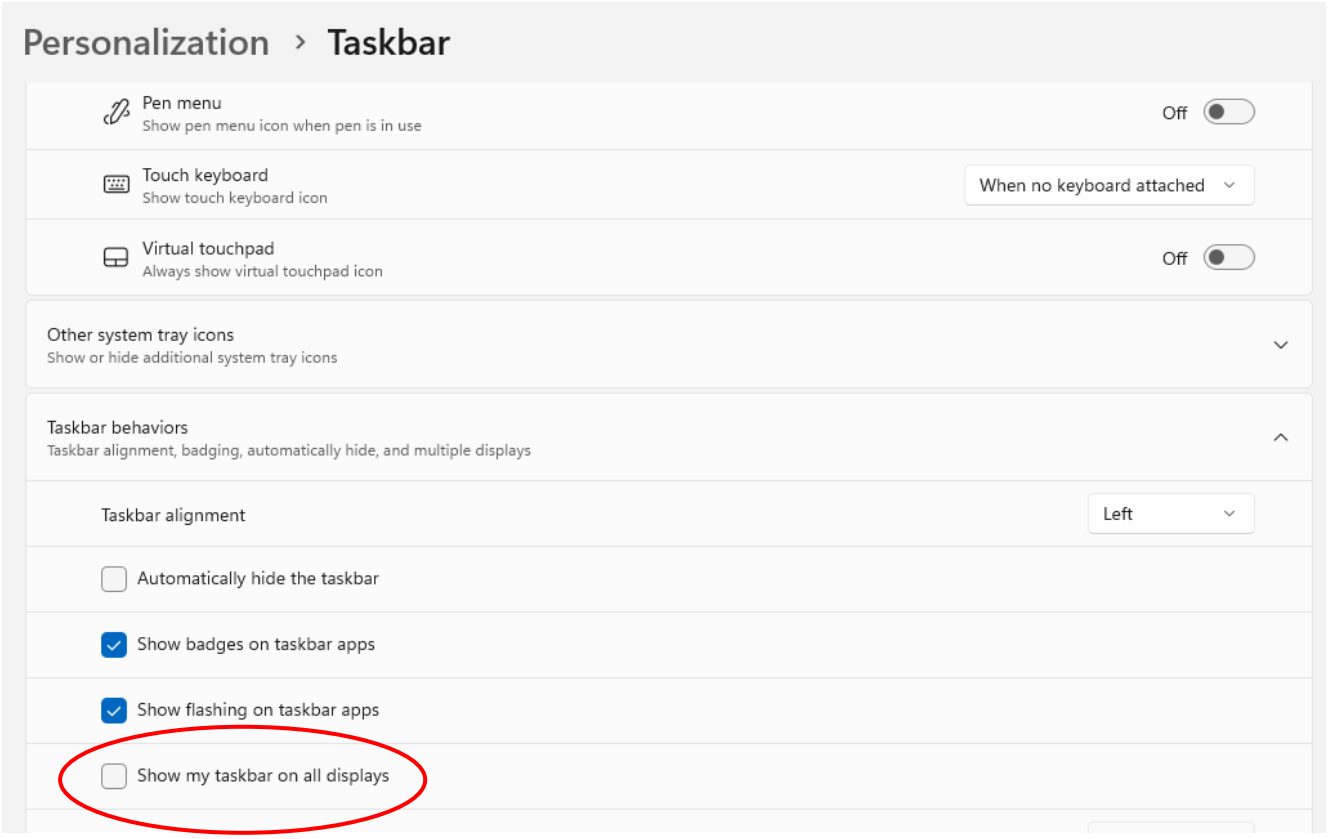
- All screensavers must be off

- All screens and hard drive may not go to stand by

- The exposure monitor has to show the images in the right size.

Disable the taskbar of the exposure monitor

- right click onto the taskbar
- choose → Taskbar settings
- look for → Taskbar behaviors
- uncheck the box → Show my taskbar on all displays

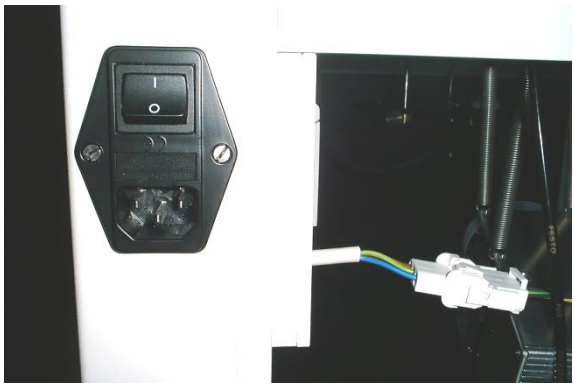


Starting up the system

The main switch you will find on the rear side top left. (PIC 2 and 3)

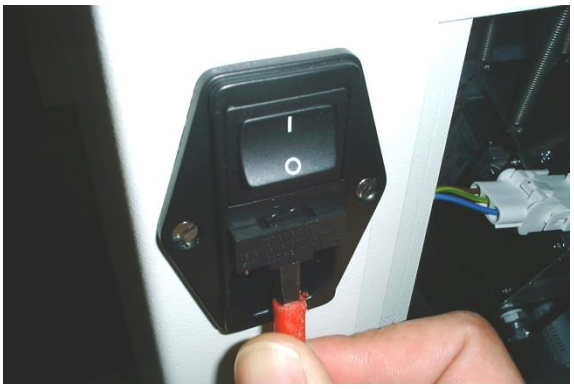
The PC and the control monitor switch on afterwards

PIC 2



PIC 3

If the main switch does not switch on the system, it can be a defective fuse (10A). See PIC 4 and PIC 5 for changing.



PIC 4

PIC 5

Camera modules

One of the main components is the compact and changeable camera module (PIC 6)

PIC 6

PIC 7

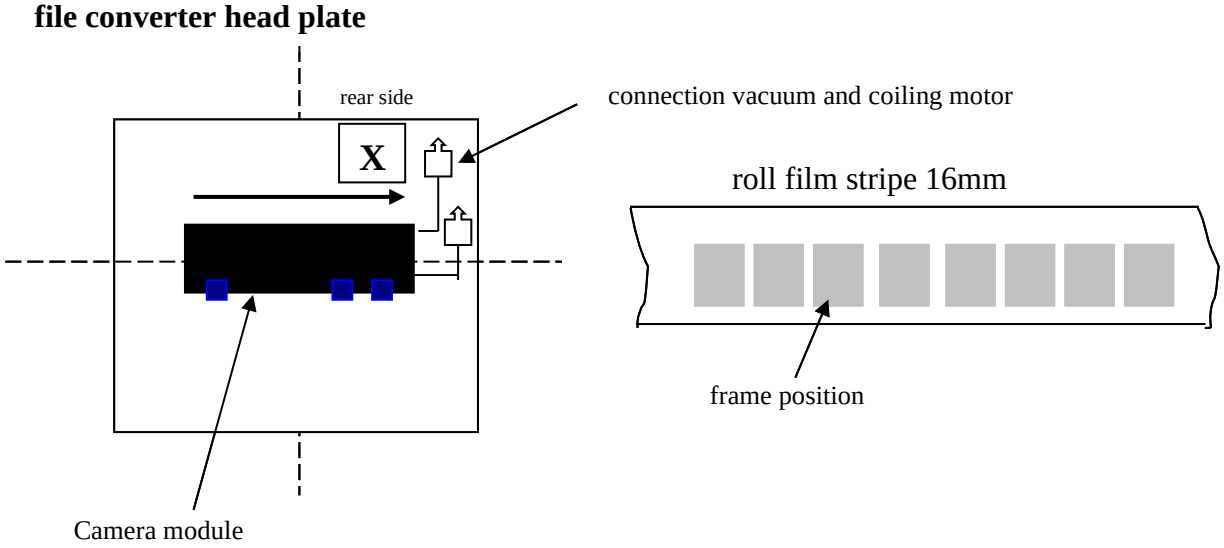
In a light-proof aluminium case (290x125x70 mm) you will find the camera optic, the film magazine, the stepper motor, the coiling unit and the film guide (PIC 7).

For use with 16 and 35mm roll film two different types of camera module are necessary.

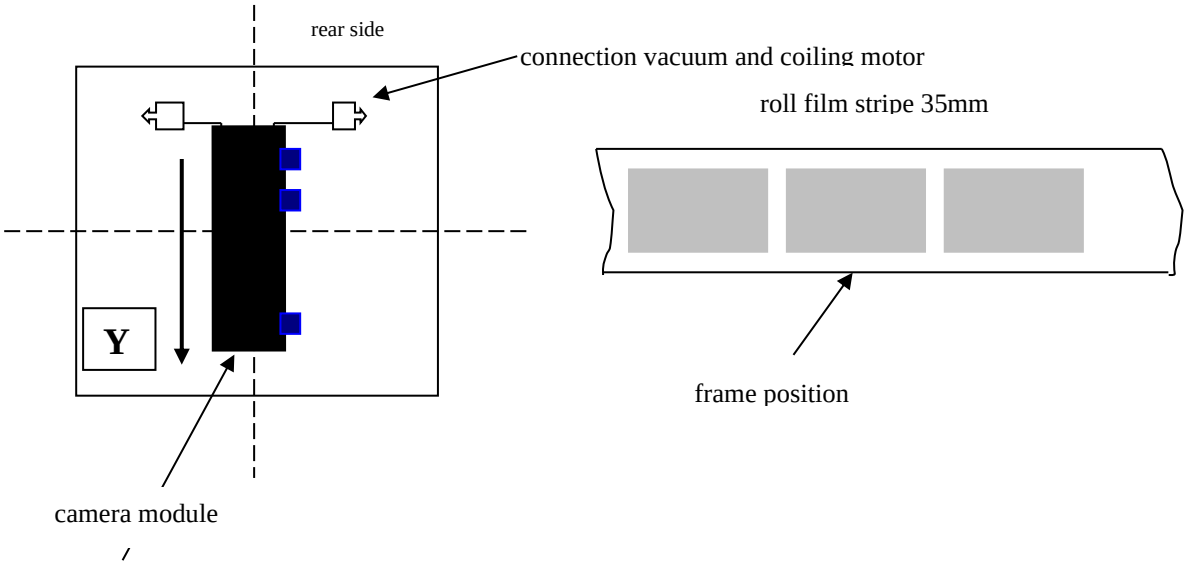
Positioning of the camera module

The system is designed for 16mm portrait and 35mm landscape filming (others on request).

16 mm



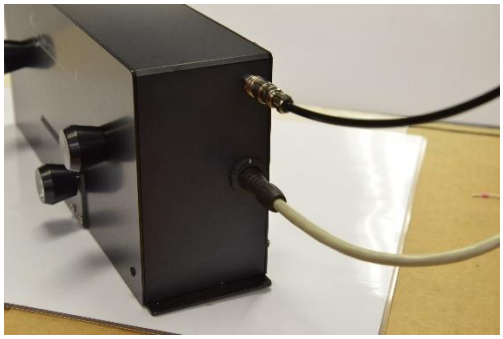
35 mm



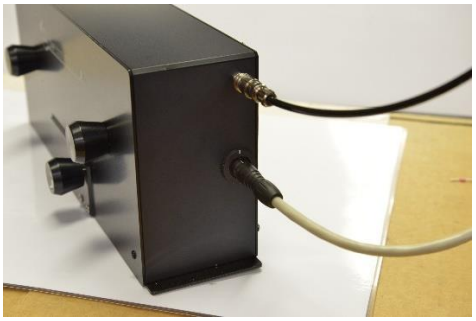
Max frame size 16mm film → 12,5 x 10 mm

Max frame size 35mm Film → 41,0 x 30 mm

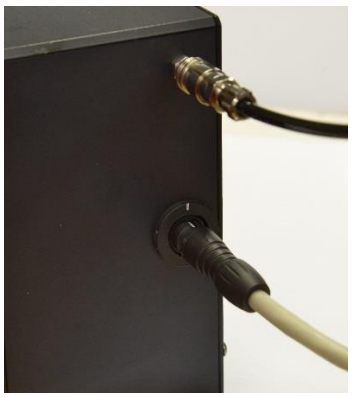
To change the camera module check first power supply for the head unit is off (automatically off by opening the lid). The front control LED must be off. Then unfix the connection from the module, turn both camera holders by lifting the two plastic pieces and remove the complete unit.



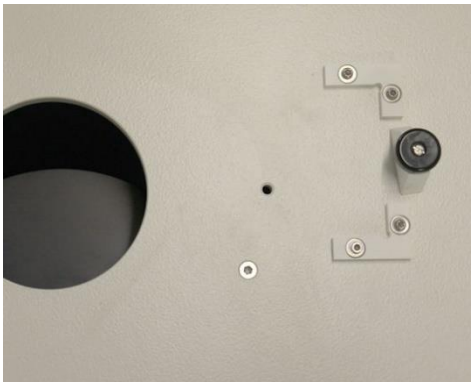
PIC 8



PIC 9



PIC 10



PIC 11

Please pay attention to the marking (PIC 10) when inserting the module and push the plug and the tube in with slight pressure.

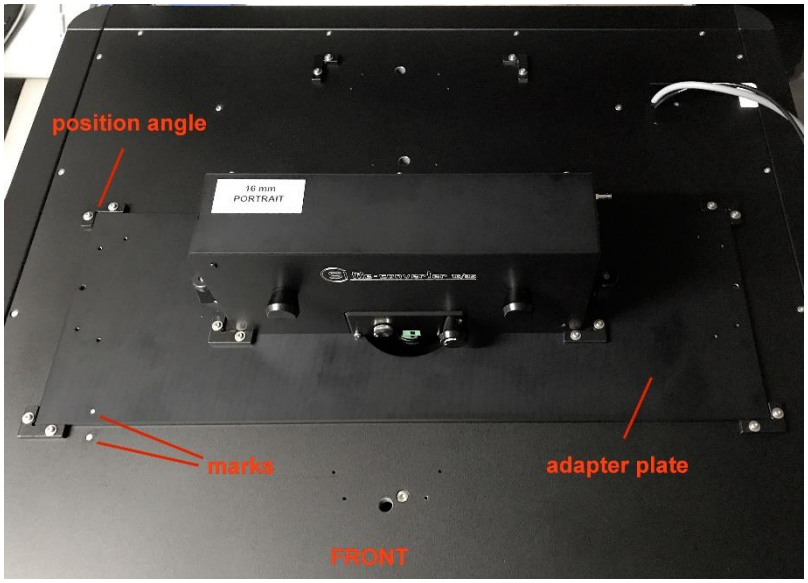
The plastic guides (PIC 11) are adjustable and responsible for the perpendicularity of the camera head.

If necessary please loosen the screws and correct the angle of the camera head but keep in mind that that has direct influence of the frame parallelism onto the film.

See the following notes if your system is delivered with an adapter plate

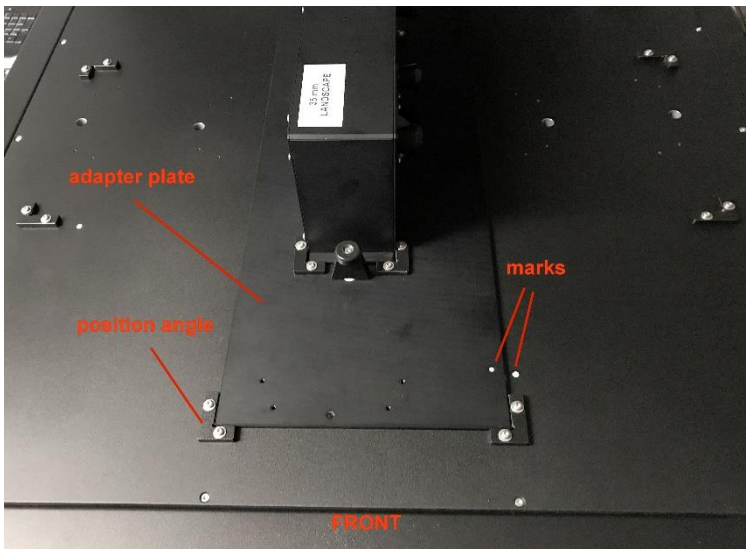
Please remove the plate carefully and bring it in the desired position. Make sure the marks are matched. After that take the camera module and insert it like the following pictures shows.

16mm Portrait



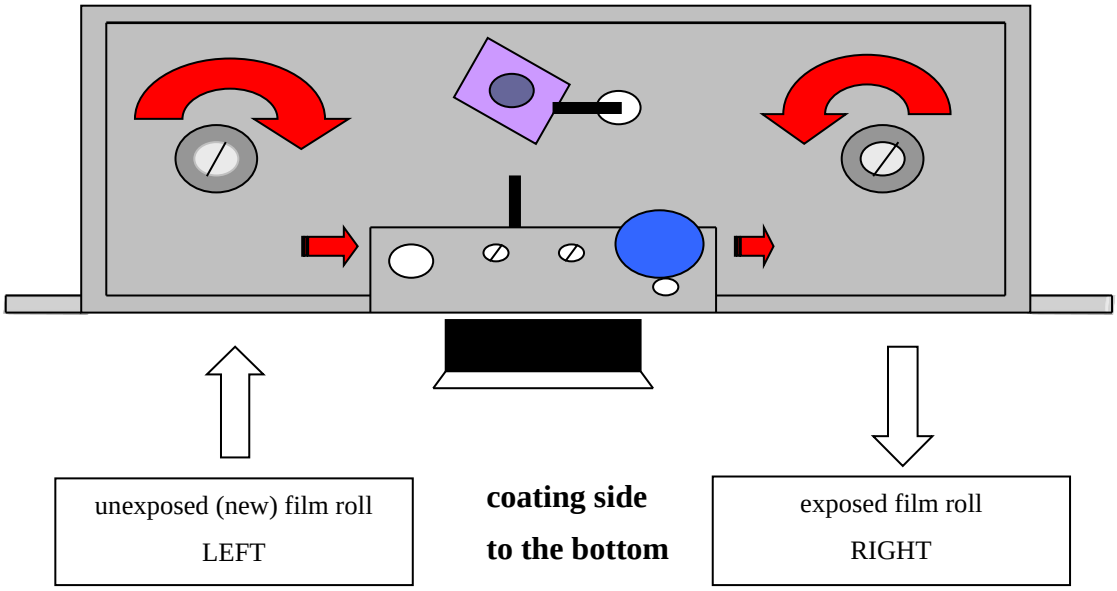
PIC 12

35mm Landscape



PIC 13

Insert a film into the camera module



Attention

To load and take out a film please use a dark room!!!!!!

a. Remove the lid of the camera module (PIC 14).

b. Prepare a new film roll

c. Mount the film roll onto the **left** pin.

d. Load the film underneath the white roller in the guidance groove and move it to the right (PIC 15).

e. Move the film further to the right up to the chance to use the black button to take up the film by turning counter-clockwise (PIC 16).

f. Transports the film as far as you can slip it in the second empty film roll (PIC 17 and 18).

g. Turn the right film roll several times and mount it onto the **right** pin.

h. Close the lid.

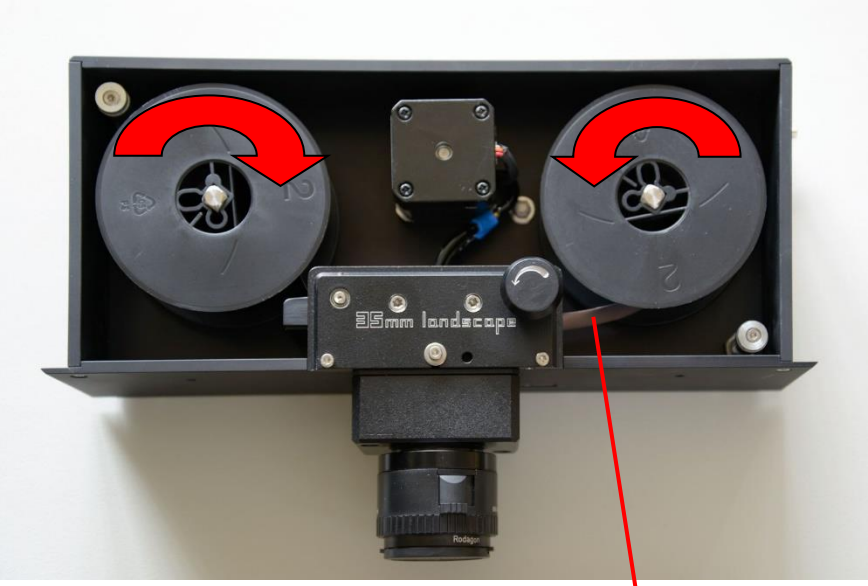
PIC 14

PIC 15

PIC 16

PIC 17

PIC 18



PIC 19

Please note before developing that the emulsion side of the film is outside.

Adjust the camera focus

It is necessary to adjust the lens properly to the used film. There is a scale on each lens and a mark on the lens holder.

	Film length	
Scale	Meters	Feet
0.06	66	216
0.10	40	131
0.13	30	98

Simple unfix the knurled head screw S1 (16mm) or S2 (35mm) and move the lens carefully to the desired position. Carefully tighten the screw after adjusting (see PIC 20)

PIC 20

S2 (35mm)

S1 (16mm)

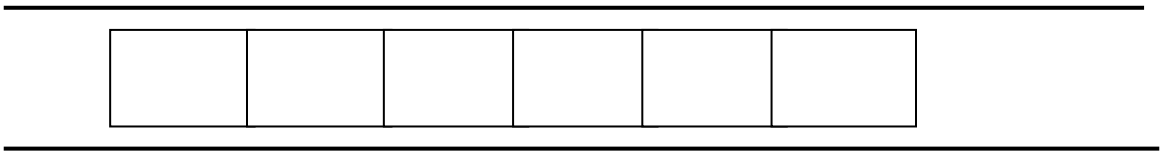
ATTENTION

Check the adjustment before using the camera otherwise you will have blurred frames on your film.

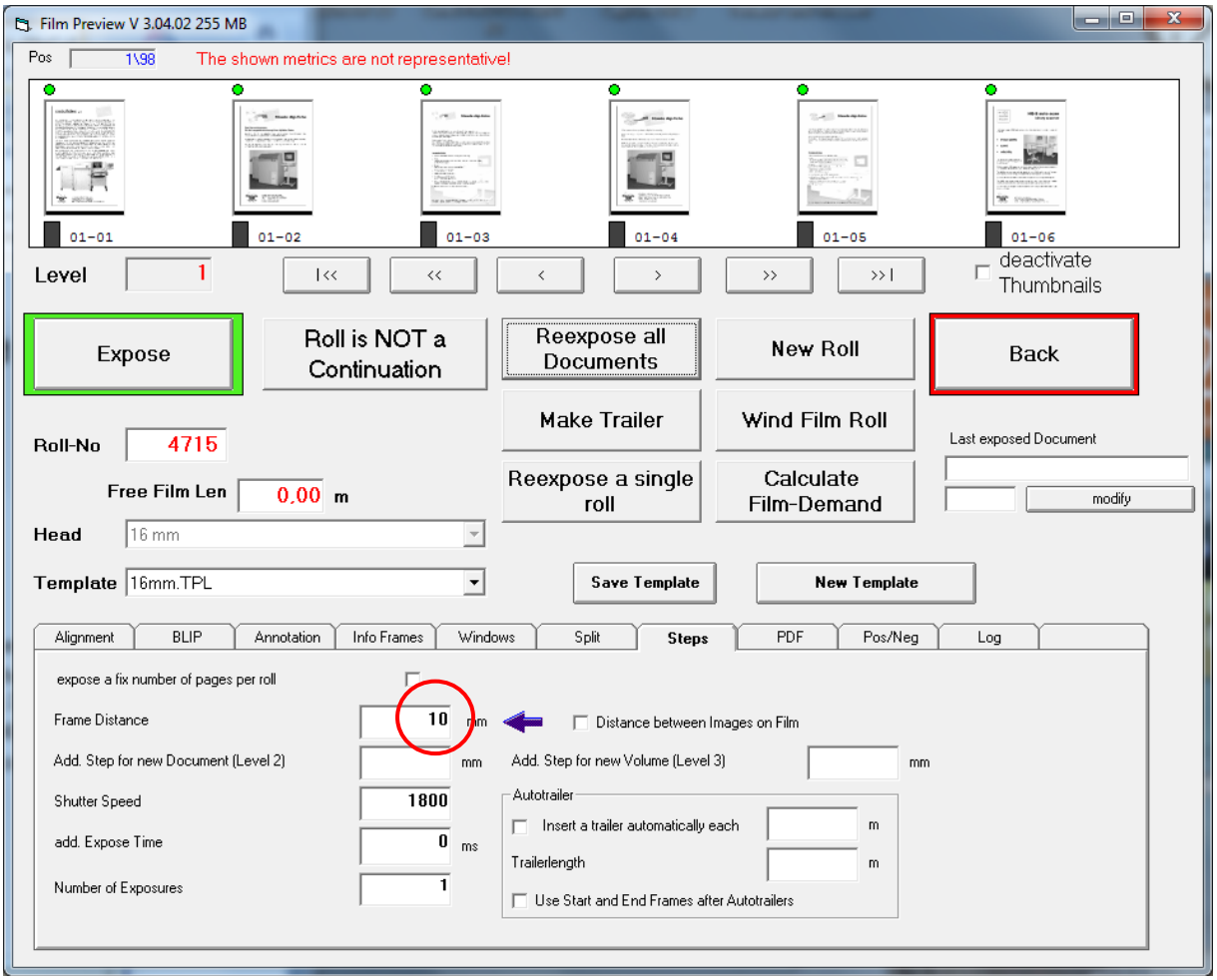
Adjusting the camera head

In case of overlapping frames we must differ between:

1. All images are overlapped (PIC 21) → check the frame distance in the film preview window; it must be at least 43 by a 35mm and 10 by a 16mm film (see the red circle in PIC 22)

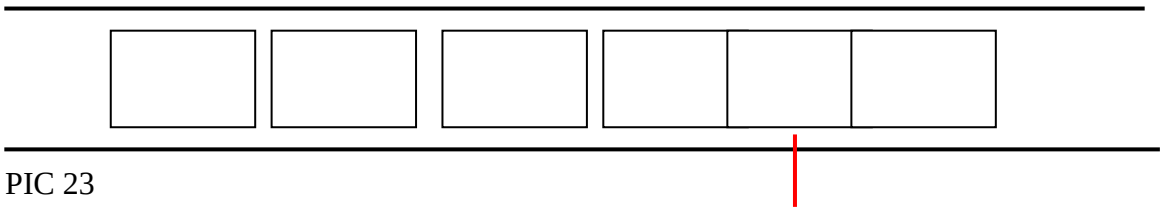


PIC 21



PIC 22

2. The images are overlapped irregular (PIC 23)

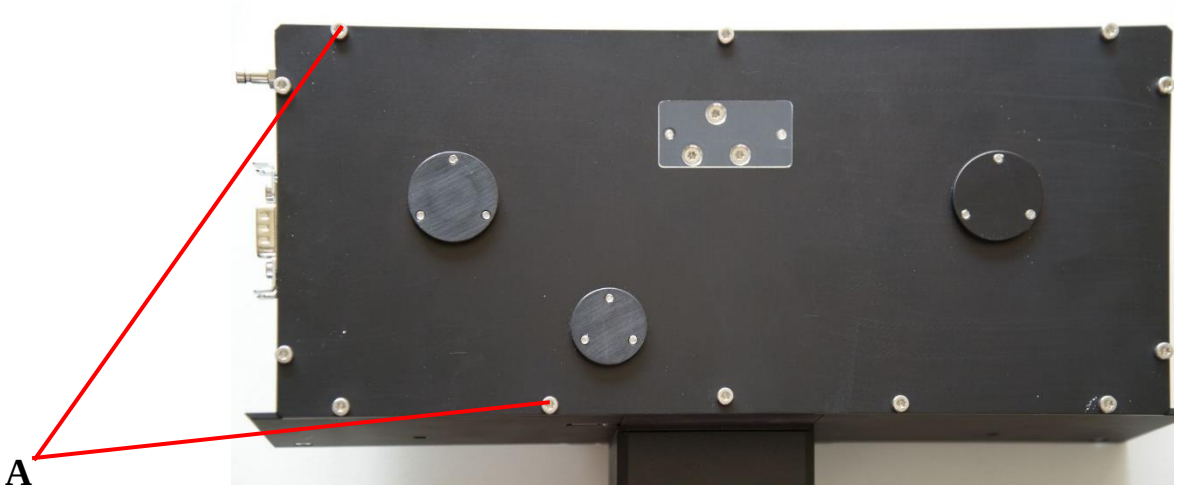


PIC 23

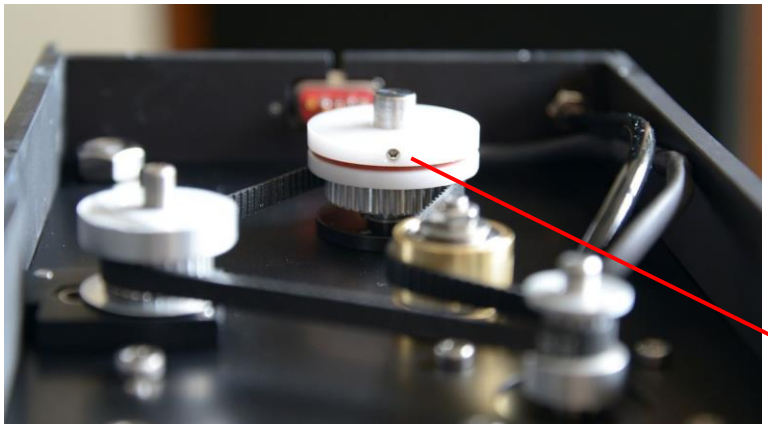
Overlapped

Open the rear cover of the camera head by removing the twelve screws (A).

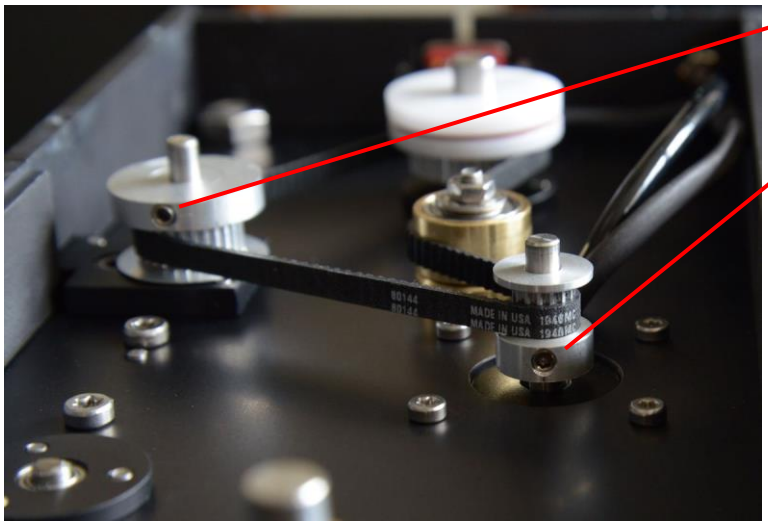
Check the belts and the three grub screws (B) and tighten it if necessary.



PIC 24



PIC 25

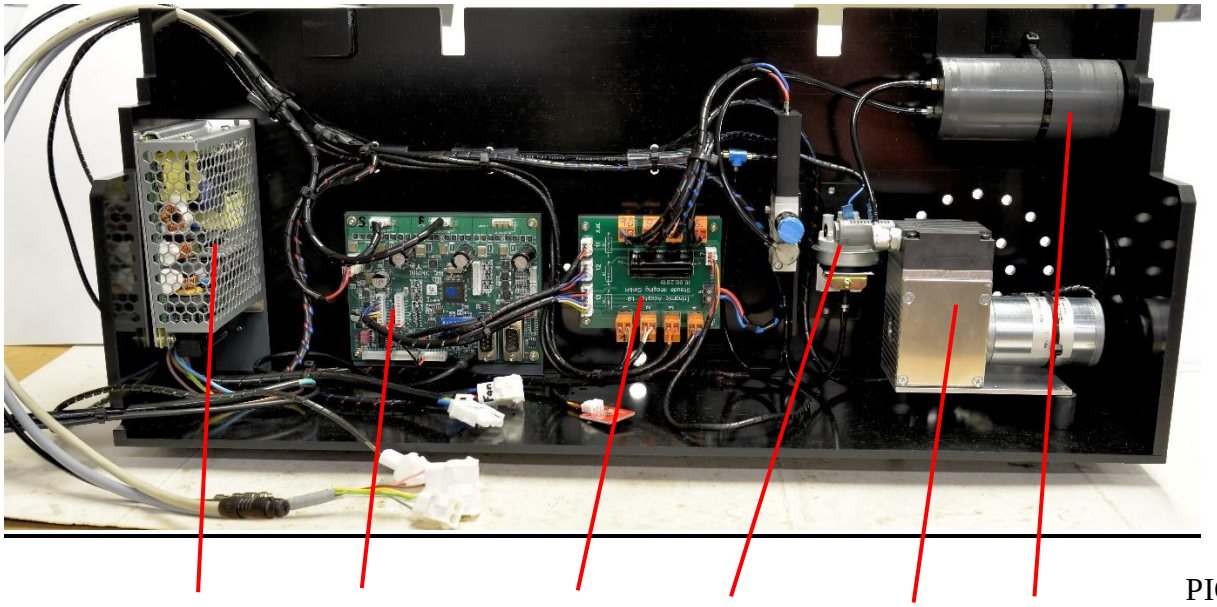


PIC 26

Control unit and vacuum system

On the rear side behind the top lid you find the following parts:

- Power Supply (A)
- Stepper Motor Control Board (B)
- Connection Board (C)
- Vacuum Switch (D)
- Vacuum Pump (E)
- Vacuum Reservoir (F)



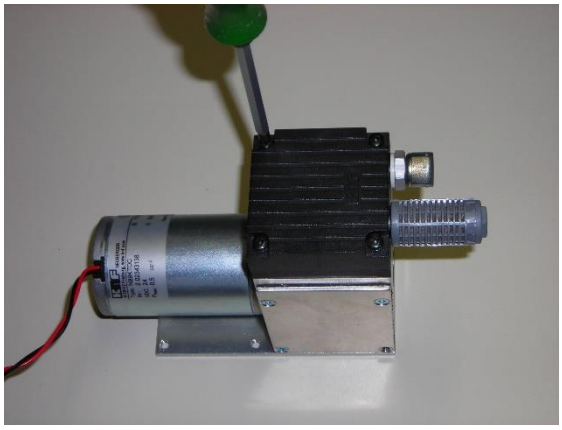
PIC 27

A **B** **C** **D** **E** **F**

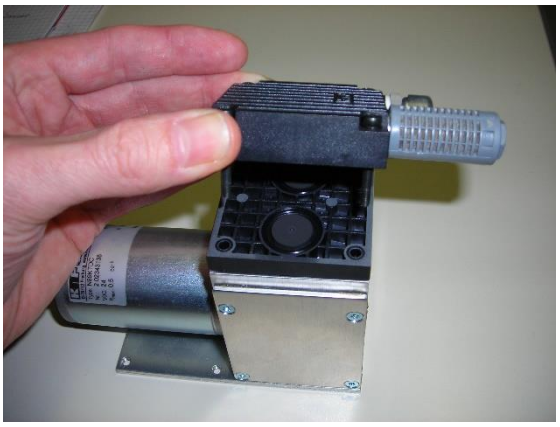
Maintenance the vacuum pump

The vacuum pump is fixed with four springs. Unplug the connectors to take out the pump. The pump contains a membrane, a valve disk and a seal ring.

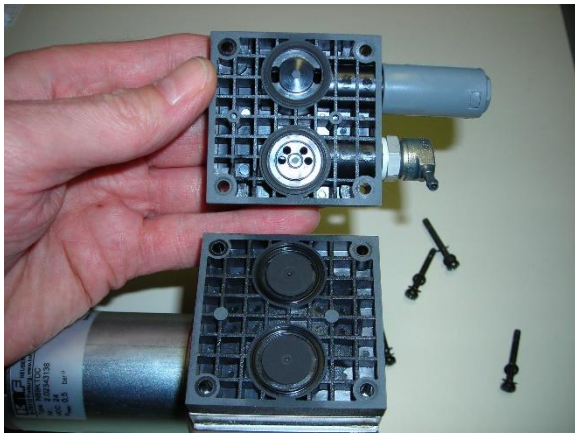
To open it and change the parts necessarily see figures below.



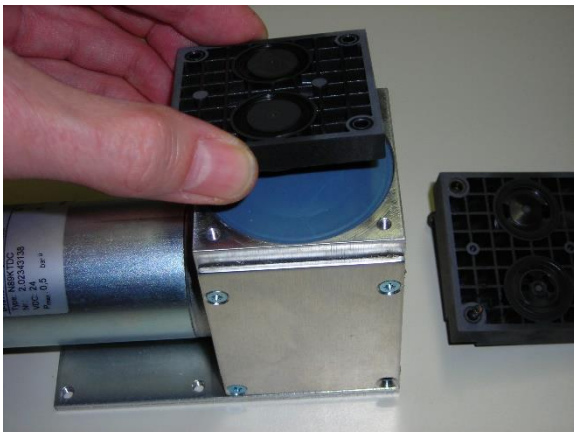
PIC 28



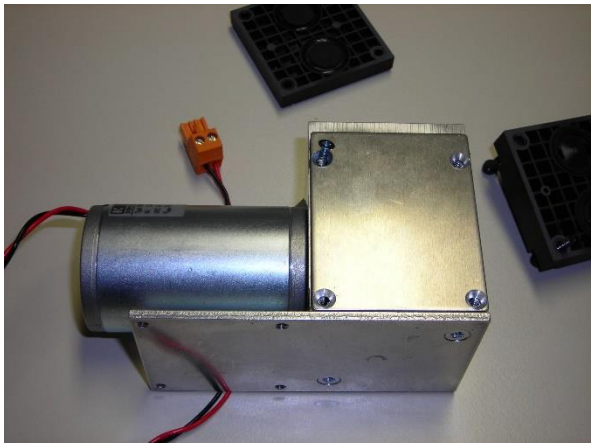
PIC 29



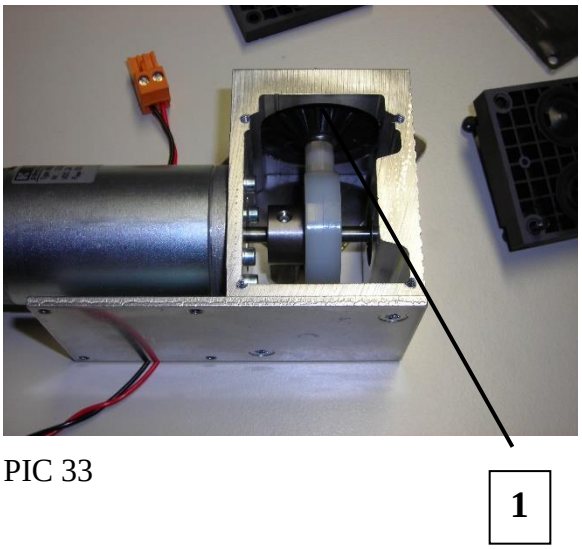
PIC 30



PIC 31

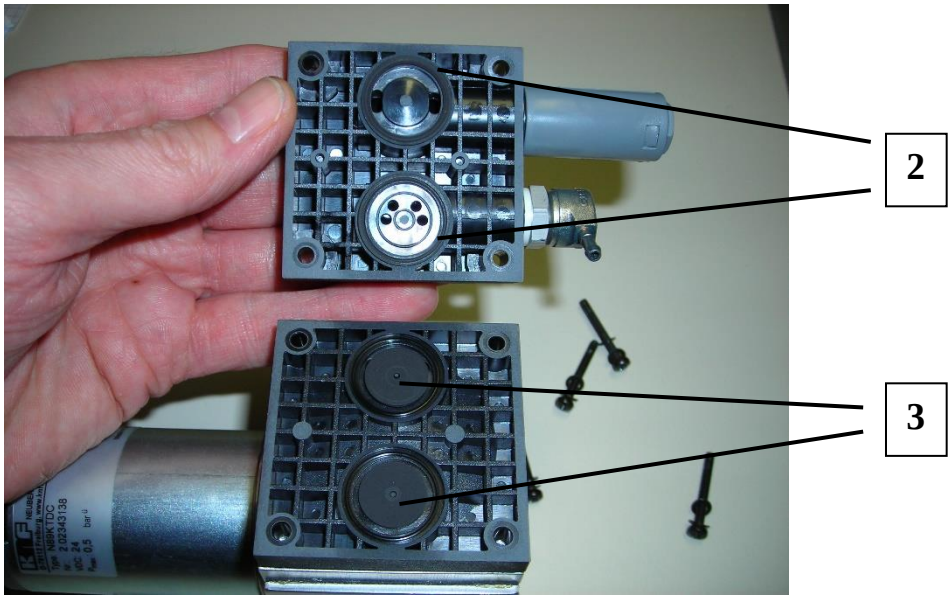


PIC 32



PIC 33

Particularly the membrane (1), the sealings (2) or the valve disks (3) wear out during running time. Most of the time there is not enough sucking pressure. An exchange of these components will clear the source of trouble.



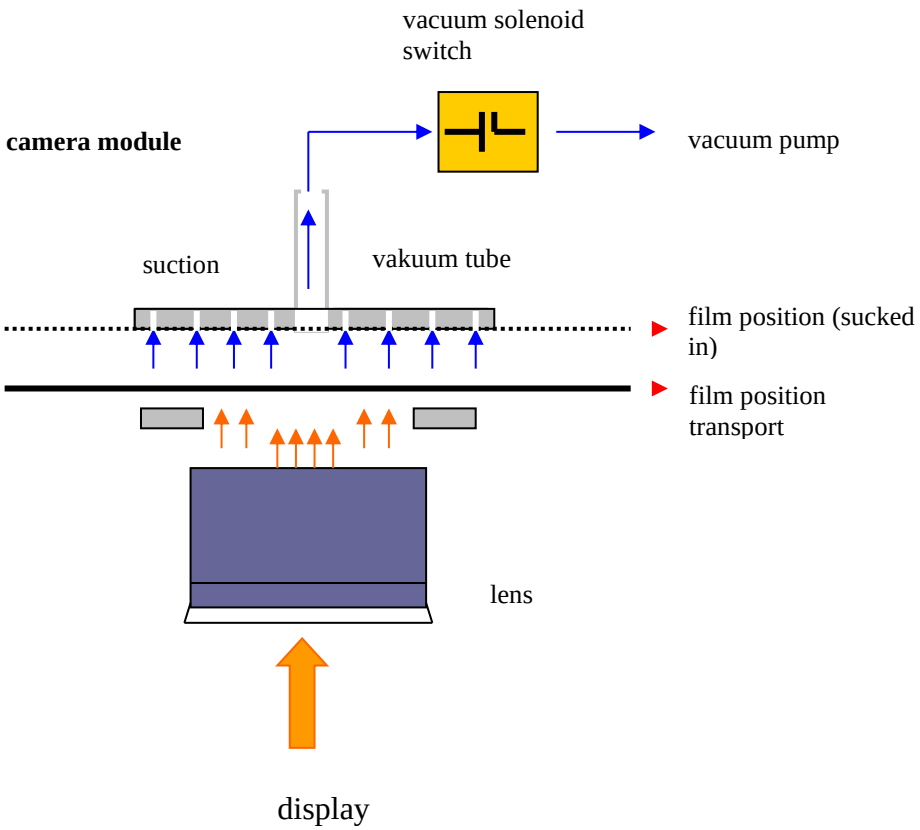
PIC 34

Checking the vacuum

To check the vacuum pump the software offers facilities. Choose **SERVICE** and you are able to check different outputs.

After pressing the buttons ***vacuum pump*** and ***vacuum valve*** both units are running and easy to check.

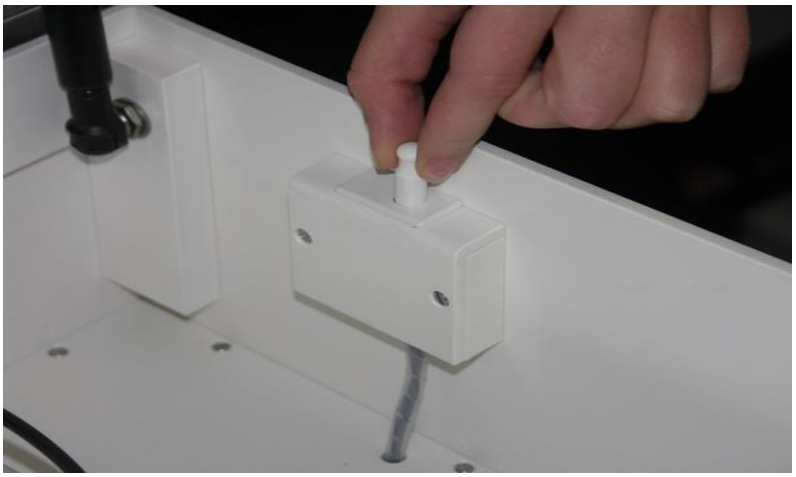
With ***check sensors*** you are able to see the vacuum switch working or not. The check box turns to red if it works proper.



Lid switch system

No function at all when the lid is opened. There is a security switch on the right side to switch off the power supply.

In case of maintenance pull this switch to run the system with open lid.



PIC 35

ATTENTION:

Do not connect or disconnect a camera head if the security switch is on the upper position. Make sure the red LED is off before connect or disconnect the camera connections.

Technical Appendix

See → file-converter-SN-1300-XXXX-2023-03-30.pdf