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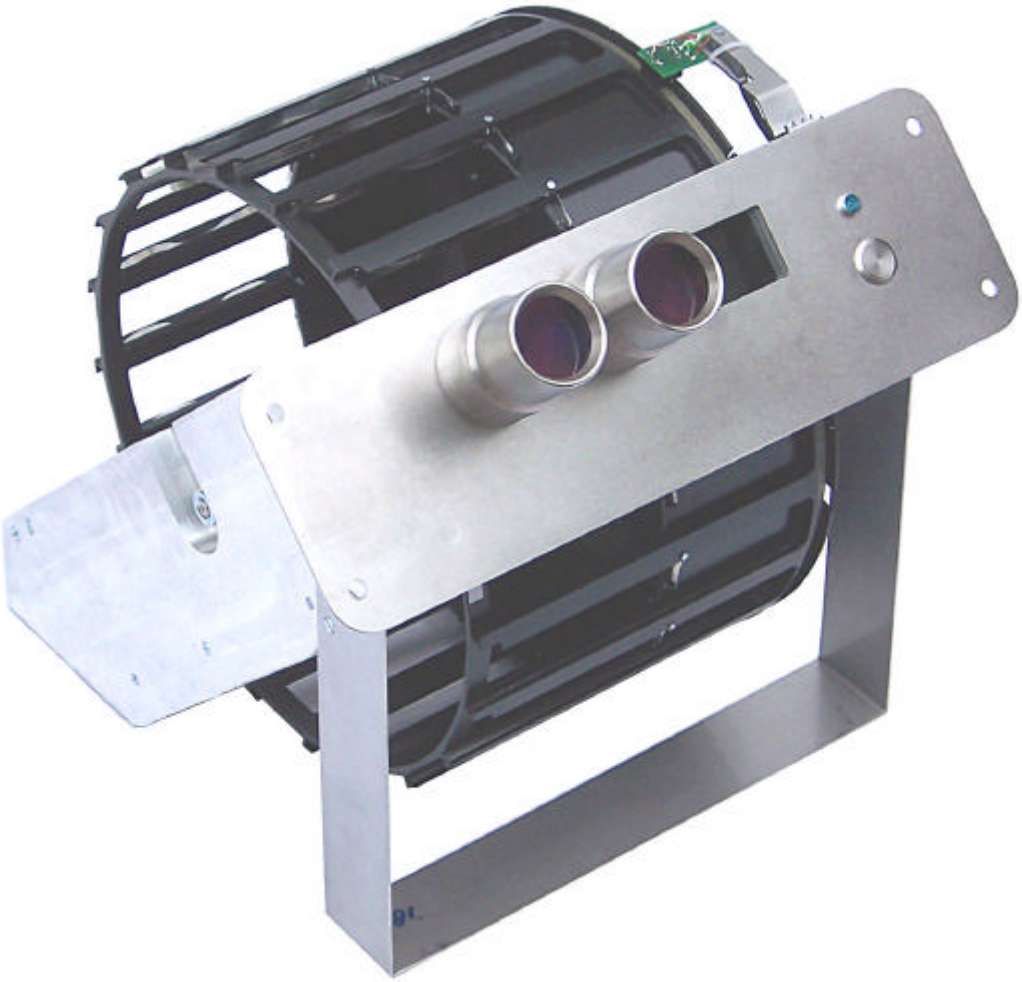
DE WIJS

Design and production of stereoscopic instruments.

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User manual for the rotary viewer model 2004



The specification subject to change without prior notices. Last update July 2005

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Introduction

This rotary viewer is a result of 30 years experience building public stereo slide viewing equipment. Every model had its improvements with regards to previous models meaning durability, stability and quality. This latest model has been build using the latest CAD-CAM techniques and production techniques. To give an idea of the changes to this model;

- The supporting frame for the drum and lens barrels is now casted, giving more stability and better alignment of the drum.
- The electronics are now running on 12 Volts dc. For more safety and less dependent on the local mains voltages using an adapter.
- Illumination by Cold Cathode Fluorescent Lamp (CCFL).
- Improved motor spanner.
- Easier adjustment of misalignment of the drum.
- Easier removal of the front panel from the supporting frame.
- Two choices of appearance; as build-in-wall version and as stand alone with wooden cover version.

1. Directions for taking into operation

1.1 Opening the viewer (with wooden cover).

Disconnect all cables from the viewer at the back.
Remove the 2 bolts on top of the viewer mounted in the tilted front panel.
Unlock the lock at the front.
Now grab the lens tubes, pull on these lenses upwards. This should release the mechanical construction from the cover. Pull the total mechanical construction out of the casing and place it on a flat solid table. Now you should be able to change slides, remove dust, etc.

1.2 Where do I place the viewer?

Obviously you already have chosen a spot for the viewer in your museum, exhibition or other public environment. Here are some considerations that might help you to check the spot;

?? Keep in mind the height of the viewer. Children and grown-ups both want to look in the viewer!
?? Depending on the interest of the viewer, people might form a queue. This could cause congestion for the rest of the public.
?? Watch out for sunlight coming through the lenses! The lenses will act like burn glasses on the slides. A few minutes in the sun will cause enough damage to the slide that it should be replaced. Within 1 day, in worst case, you have to replace all slides. You can see this on the slide like tiny little white spots showing the track of the sun during the day.
?? Avoid spotlights to be shinning on the lenses. The slides are not going to be burned but it does shorten the lifecycle of the slide.
?? Cover the back opening of the viewer with all its connectors and cables. Avoid the public to get access to this part of the viewer. Let the installation of the electrical cables be executed by authorised personal only.
?? Do always provide a grounding facility to the casing of the viewer. By default the Euro connector provides a solid Earth connection.
?? When the viewer is to be mounted inside some kind of panel, be sure you can get easy access to the viewer for replacing the lamp bulb and slides.

1.3 How can I mount the viewer?

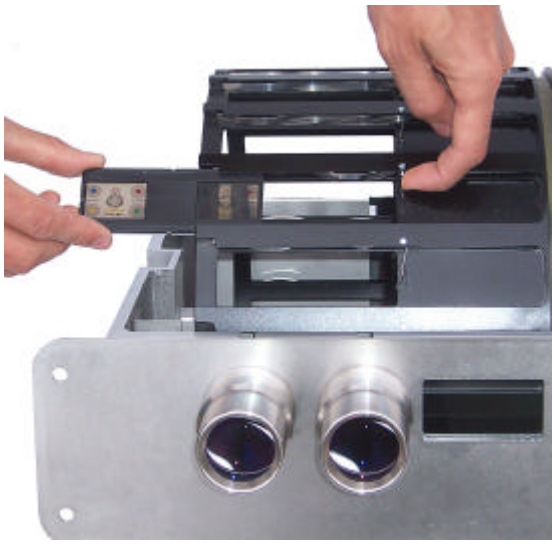
?? The rotary viewer can be used hanging on a wall or mounted on a table. The wooden casing should be strong enough to hold screws and bolts.
?? For temporary exhibitions, it is best to place the viewer on a table without any fixation to the table. Again, when children get access to the viewer, use double-sided tape to fix it to the table.

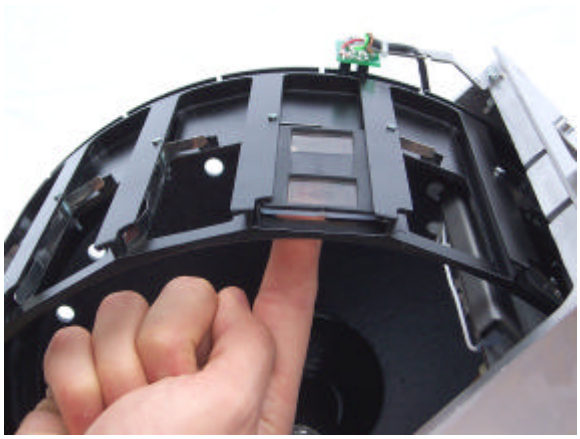
2. Manual operation (without PC control)

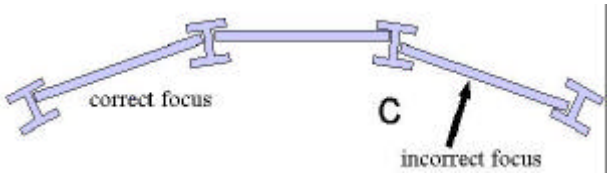
In this situation, the rotary viewer is used in stand-alone mode, without any external control devices. This mode is also recommended when inserting or changing the slides.

2.1 Inserting slides:

Disconnect all cables from the viewer at the back. Remove the mechanical construction as described in chapter 1.1.







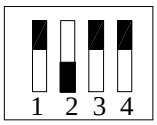
In the left picture you see how to insert the slides in the drum. With your finger you should keep the spring on its place when shifting the slide.

After inserting the slide you have to push the slide inside-out of the drum to get it in focus point. Push with one finger in the middle of the slide frame between the images.

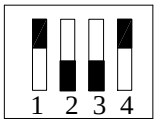
2.2 Selecting function modes

The rotary viewer is able to work in 4 different modes, in stand-alone situation. These modes are configurable using the small switches at the back of the viewer. The black square marks the position of the switch.

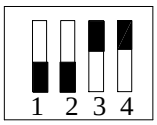
Mode 1:
After the pre-set shut-off time, the lamp turns off and the viewer stays at this slide.



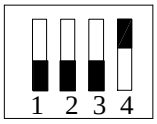
Mode 2:
After the pre-set shut-off time, the lamp turns off and the drum revolves to slide number 1.



Mode 3:
The lamp is always on, after the shut-off time the viewer stays at the current slide.

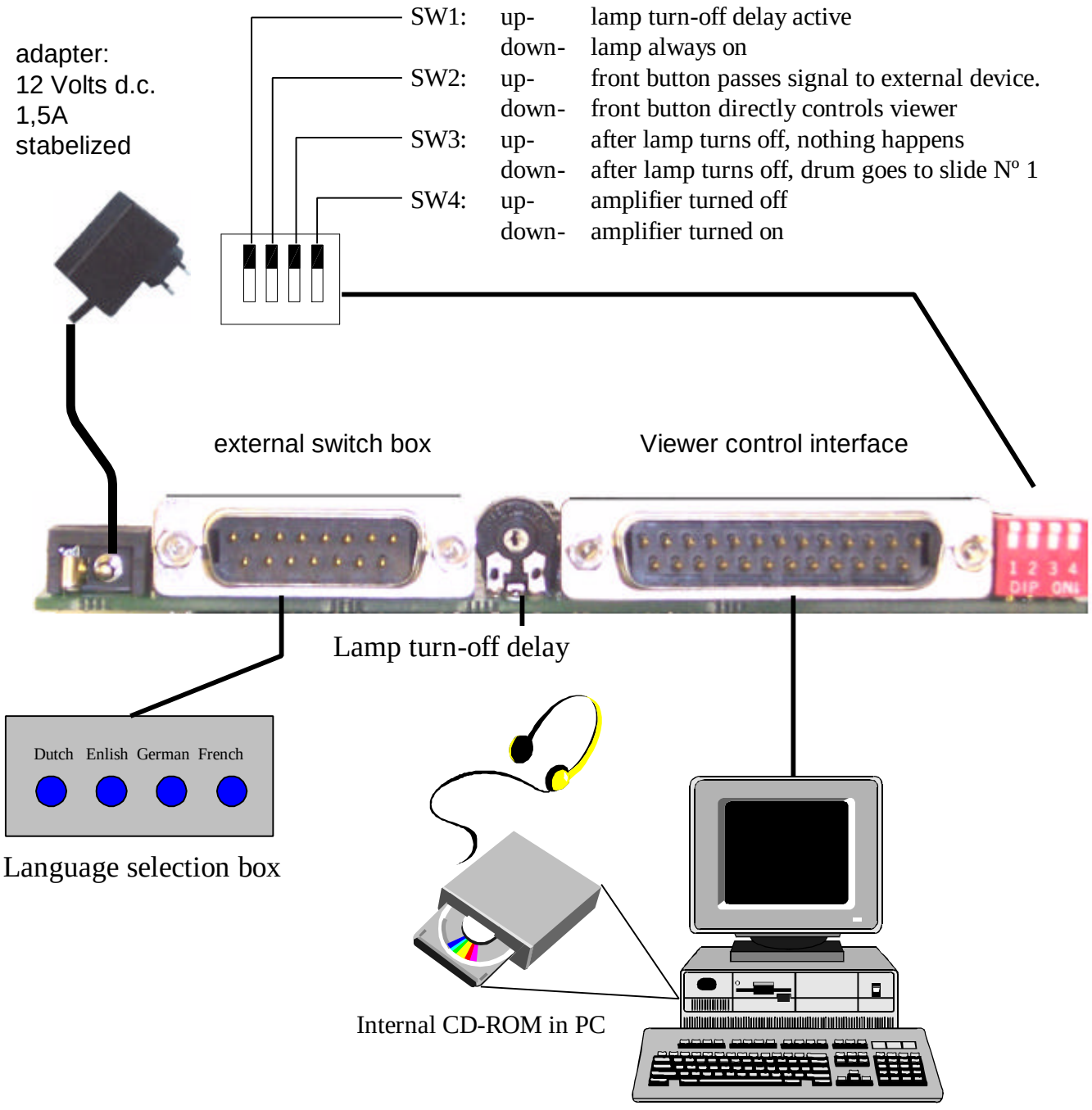


Mode 4:
The lamp is always on, after the shut-off time the drum revolves to slide number 1.

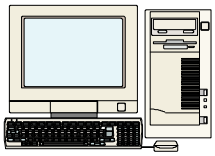


?? Connecting the adapter to the corresponding socket can now turn on the rotary viewer.
?? You can adjust the shut-off time of the lamp by turning with a screwdriver the knob between the two Sub-D sockets at the rear of the viewer. Turning counter counter-clockwise will increase the time, turning clockwise will decrease it.

3. Connection diagram



4. External control (with PC)



In this situation, the rotary viewer is able to operate according to a configured program with or without audible explanation of the slide. An IBM compatible PC is required to work with the accompanied software of the rotary viewer to control the rotary viewer. Look at www.dewijs-3d.com at the technical information and download pages for more information about this function.

5. Maintenance

In general does the rotary viewer not need any mechanical maintenance using it on a fixed location and handled with care. The viewer is made quite solid with the aim to guarantee the best optical alignment of the lenses as long as the life cycle of the viewer is. A hard impact at the front, like tumbling from a table, causes inevitable miss-alignment of the drum and maybe bend main axle. So be careful when transporting the viewer and arrange a stable spot to place the viewer. Besides these incidents, the viewer gets covered with a thin layer of dust, outside as well as inside.

5.1 Cleaning slides.

Open the viewer according to the actions to be taken in chapter 1.1
You have two types of slide mounts;
- mounted in masks and encased in glass.
- mounted in frames without glass

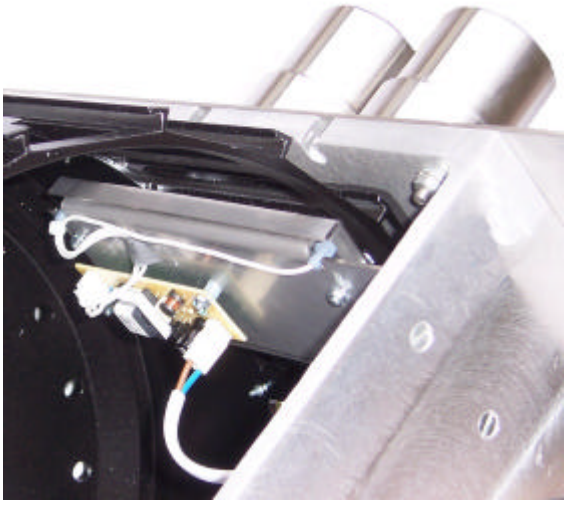
Encased in glass:
In this case you do not have to take the slides out of the drum. Best is to turn the rotary viewer into manual operation (chapter 2.1 mode 2). Take a soft cloth, clean the slide first at the outside of the drum. Secondly clean it at the inside of the drum. When cleaning it push it a little inside out of the drum to preserve fixed focus position of the slide.

Without glass:
This is a difficult situation. Slide frames without glass are very fragile. Taking them out of the drum, cleaning them, and replace them back again often causes damage to the slide. So if you can, take a soft brush and wipe the dust away at both sides. When the dust is too much, then there is no other way than taking them out of the drum. Try cleaning it with the brush and finally with a soft lens cleaning cloth. Be very careful, some clothes can even scratch the slides, or decreases the clearness.

5.2 Changing the lamp

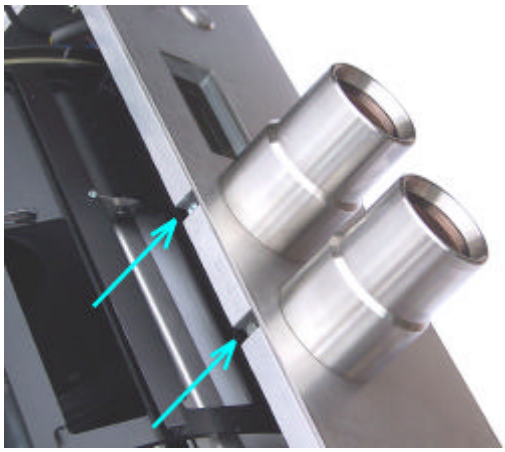
The CCFL lamp has a lifespan of 10.000 hours. If the viewer is used 8 hours a day (lamp turned on) it should take theoretically 3 years before replacing the lamp.
But if the brightness is getting too low follow the next instructions.

?? Open the viewer according to the actions to be taken in chapter 1.1
?? At the left side of the frame you can get access to the CCFL lamp holder. First disconnect the cable that runs to the back of the CCFL panel. Then remove the two bolts at the left side of the frame that attaches the lamp to the casted frame.
?? Now you can take the total CCFL panel with holder out of the viewer and send it to the ‘de Wijs’ company for replacing the lamp.



5.3 Cleaning / Exchanging the lenses.

After several years of use the lenses are scratched and dust is coming between the two achromatic lenses. The lenses are can be taken apart to clean them. Follow the following steps:



1. Open the viewer according to the actions to be taken in chapter 1.1
2. The two lens barrels are screwed in the casted frame and locked with a small M3 bolt on top. First remove this bolt.
3. The barrels are mounted tight in the frame, use some kind of ‘belt’ spanner to remove the lens barrels.
4. Now you need to make a small little metal plate of 1 mm. Thickness. With a length of about 60 mm. And exactly 37 mm. Width.



5. Now put the metal plate in the back off the barrel and be sure it fits in the small gaps of the screw ring that keeps the lenses in its barrel as shown in right picture…
6. Turn the metal plate counter clockwise to release the screw.
7. When the screw is released, take a soft cloth and put it with your finger in the back of the lens barrel against the lenses.
8. Turn the total barrel upside down so the lenses will drop out of the barrel.



9. Warning!! The lenses do have a front and backside. The front (view side) is the side with the most flat surface. This counts for both lenses.
10. With a soft clothe and a brush cleans the lenses. Look through the lenses against the light to check cleanliness they might show remaining dust of scratches.
11. If you decide to replace the lenses, you can order them at the De Wijs Company.
12. Put the lenses together and follow the steps (1-10) in reverse.

5.4 Solving miss-alignment.

Especially during installing the viewer in a public viewing area, parts of the viewer have to be de-assembled. The drum is the most sensitive part to be aligned for the lenses. The axle on which the drum is running can be moved to the front or to the back of the viewer. To make the re-alignment somewhat easier you can check some measurements to get the drum roughly in position, see the picture below.



The distance from the centre of the axis to the edge of the milled chamber is 20 mm. This view is seen from the left side of the viewer, that is the side to get access to the CCFL lamp

CAUTION: the optical switches, just above the front plate, close to the push button are fragile and need to be handled with care when taking the drum out of the frame or moving it into focus.

6. Technical data

6.1 Sizes and dimensions

Rotary viewer 2004 model A, for 41x101 mm. Frames
?? Maximum picture format: 28x33 mm.
?? Lenses: double coated achromatic ø 37 mm. F= 120 mm. (total 60 mm.)
?? Maximum amount of slides: 21.
?? Text card size: ??

General data:
?? Weight rotary viewer, build in wall version: 11.5 kg.
?? Weight rotary viewer, with wooden cover.
?? Illumination: Cold Cathode Fluorescent Lamp of 5500 Kelvin
?? Power supply: 12 Volts. 0,5 Ampère, Adapter 12 Volts stabilized 1,5 Ampère.
?? Power consumption: 6 Watt.
?? The rotary viewer is fused for 1 A slow.
?? D25 connector providing an interface to an XT/AT parallel port of a computer.
?? D15 connector providing an additional interface to an external language selection device.
?? The D15 connector is also providing an external stabilised power supply of +5 and +12 Volts.
?? Adjustment of the turn-off time of the lamp is possible between 5-70 seconds.
?? The software that is provided with the rotary viewer is written in Pascal 7.0 and runs on DOS. On almost every x86 machine with CD-ROM player the software will work. A Windows version will be available in the future.

6.3 Connections of the D25 and D15 connectors.

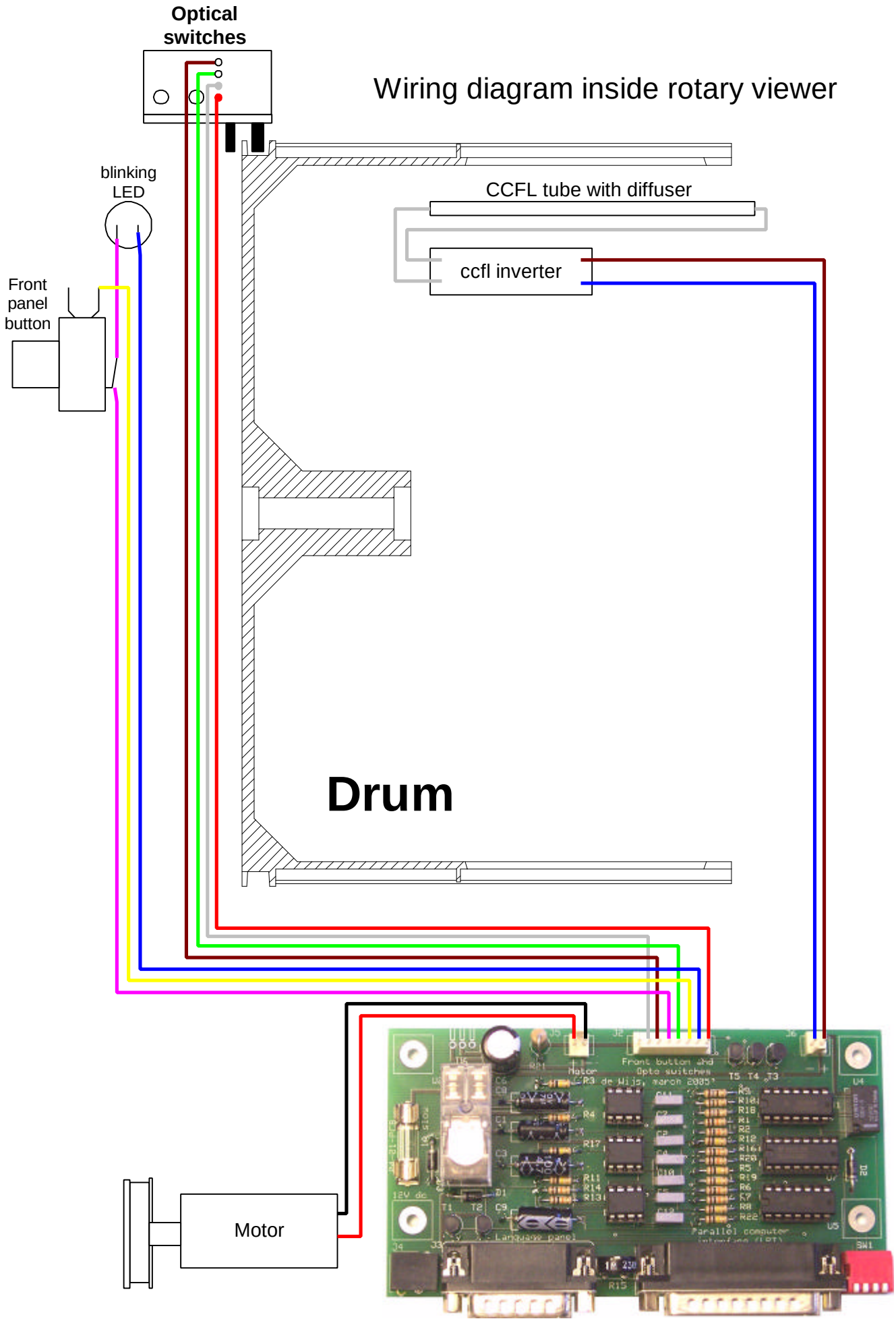
D25 connector:

Connector pin	Description computer side and addressing		Description rotary viewer side	Direction looking from computer side.
1	Strobe	Base+2 bit 0	Not used	Output
2	D0	Base+0 bit 0	Change slide, 1= moving	Output
3	D1	Base+0 bit 1	Lamp, 1=lamp on.	Output
4	D2	Base+0 bit 2	Not used	Output
5	D3	Base+0 bit 3	Not used	Output
6	D4	Base+0 bit 4	Loopthrough to D15 con.	Output
7	D5	Base+0 bit 5	Loopthrough to D15 con.	Output
8	D6	Base+0 bit 6	Loopthrough to D15 con.	Output
9	D7	Base+0 bit 7	Loopthrough to D15 con.	Output
10	Acknowledge	Base+1 bit 6	Button front panel, 1=pressed	Input
11	Busy	Base+1 bit 7	Loopthrough to D15 con.	Output
12	Paper end	Base+1 bit 5	Light gate ‘zero’ detection.	Input
13	Select out	Base+1 bit 4	Light gate ‘stop’ detection.	Input
14	Auto feed	Base+2 bit 1	Not used	Output
15	Error	Base+1 bit 3	Loopthrough to D15 con.	Input
16	Init	Base+2 bit 2	Not used	Output
17	Select in	Base+2 bit 3	Not used	Output
18	Gnd			
19	Gnd			
20	Gnd			
21	Gnd			
22	Gnd			
23	Gnd			
24	Gnd			
25	Chassis ground			

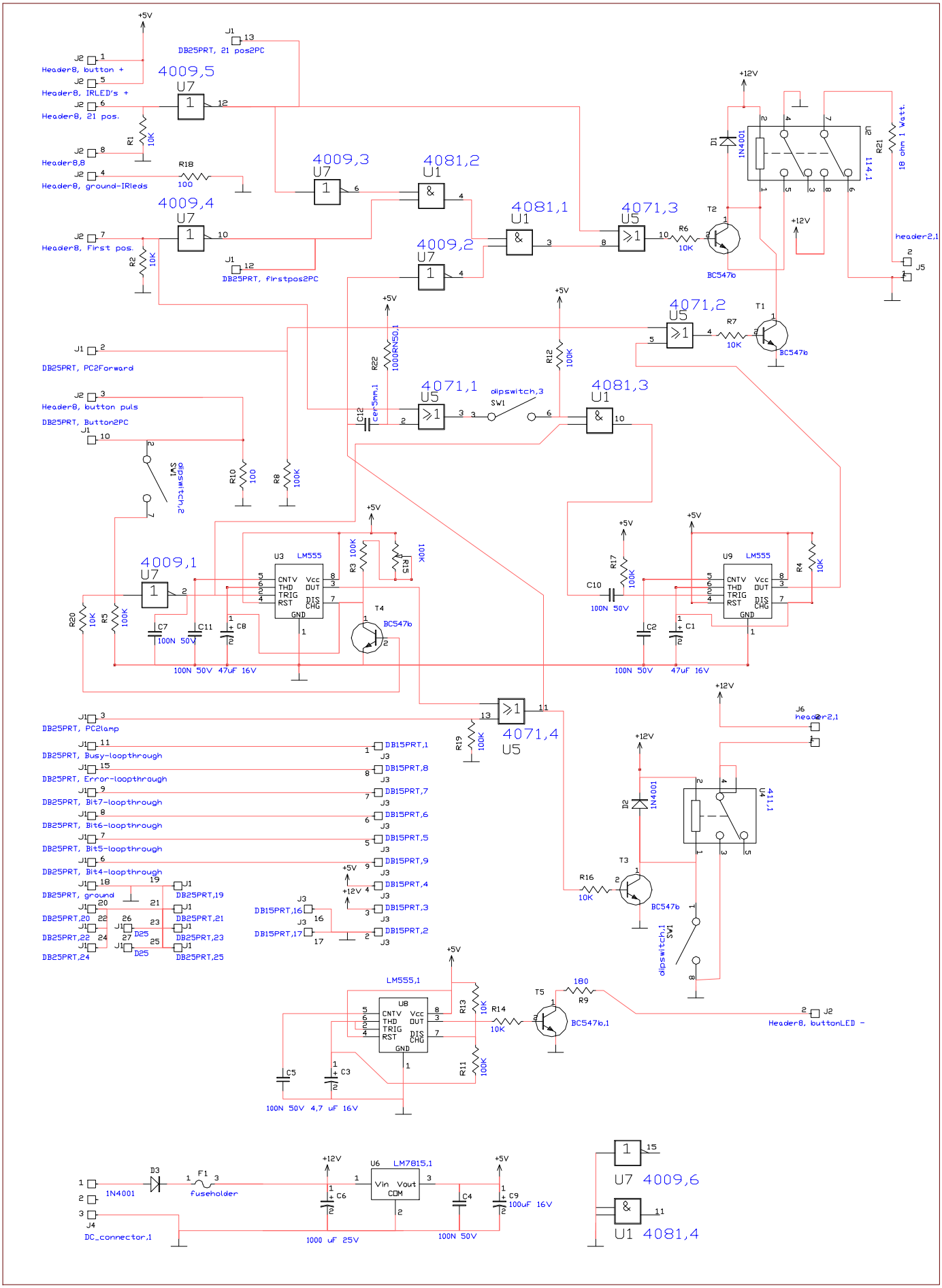
D15 Connector: (for language selection box)

Connector pin	Description computer side and addressing		Description rotary viewer side	Direction looking from computer side.
1	Busy	Base+1 bit 7	Loopthrough to D25 con.	Input
2			Ground	
3			+12 Volt.	
4			+5 Volt.	
5	D5	Base+0 bit 5	Loopthrough to D25 con.	Output
6	D6	Base+0 bit 6	Loopthrough to D25 con.	Output
7	D7	Base+0 bit 7	Loopthrough to D25 con.	Output
8	Error	Base+1 bit 3	Loopthrough to D25 con.	Input
9	D4	Base+0 bit 4	Loopthrough to D25 con.	Output
10				
11				
12				
13				
14				
15				

6.4 Cabling inside the rotary viewer

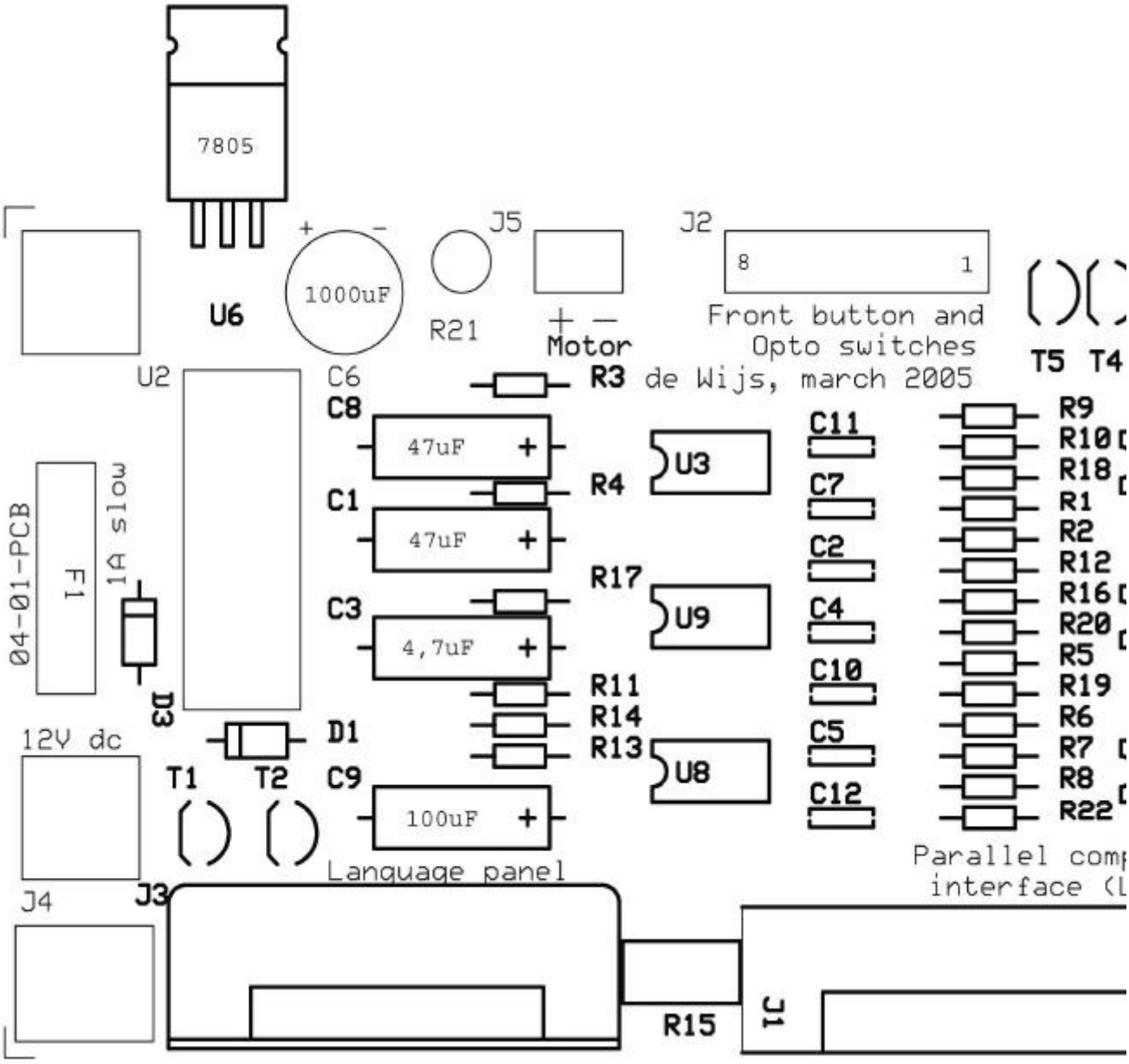


6.5 Electronic schematics



6.6 Electronic component list

R1	10K 1/4 Watt IR detect
R2	10K 1/4 Watt IR detect
R3	100K 1/4 Watt
R4	10K 1/4 Watt
R5	100K 1/4 Watt
R6	10K 1/4 Watt
R7	10K 1/4 Watt
R8	100K 1/4 Watt
R9	180 1/4 Watt
R10	100 1/4 Watt
R11	100K 1/4 Watt
R12	100K 1/4 Watt
R13	10K 1/4 Watt
R14	10K 1/4 Watt
R15	1M 0.15 Watt 10 mm. standing Pot.
R16	10K 1/4 Watt
R17	100K 1/4 Watt
R18	180 1/4 Watt
R19	100K 1/4 Watt
R20	10K 1/4 Watt
R21	22 1 Watt
C1	47uF 10 Volt axial
C2	100n 50 Volt polyester
C3	4,7uF 50 Volt Elco rad
C4	100n 50 Volt polyester
C5	100n 50 Volt polyester
C6	1000uF 16 Volt Elco rad.
C7	100n 50 Volt polyester
C8	47uF 10 Volt axial
C9	100uF 16 Volt Elco ax.
C10	100n 50 Volt polyester
C11	100n 50 Volt polyester
C12	100n 50 Volt polyester
D1	1N4001
D2	1N4001
D3	1N4001
T1	BC547b
T2	BC547b
T3	BC547b
T4	BC547b
T5	BC547b
U1	4081 Quad And
U2	Relays 2x 12V OMRON G2R-2
U3	LM555 timer IC
U4	Relays 1x 12V OMRON G5V-1
U5	4071 Quad Or
U6	LM7805 1A
U7	4049 Hex inv. Buff.
U8	LM555 timer IC
U9	LM555 timer IC
J1	D25 PCB socket 90º male
J2	Header 8 pins
	Header Socket 8 pins
J3	D15 PCB socket 90º male
J5	Header 2 pins
J6	Header 2 pins
	Header Socket 2 pins
	Shrink contacts for Headers
SW1	Dip switch 4x 90º
3	DIL8 sockets
2	DIL14 sockets
1	DIL16 sockets
F1	Fuse holder internal metal clamps
1	Opto switches 5mm. Gap with PCB
	Wiring to opto coupler and front panel switch 8 leads 74,5 cm. Long
	Wiring to CCFL tube lamp 45 cm.
	Wiring to motor; single leads 10 cm.
1	04-01-PCB; circuit board


7805
U6
1000uF
R21
J5
Motor
J2
8
1
Front button and
Opto switches
T5 T4
de Wijs, march 2005
U2
C6
R3
C8
47uF
R4
C1
47uF
C3
4,7uF
R17
R11
R14
R13
C9
100uF
U3
U9
U8
C11
C7
C2
C4
C10
C5
C12
R9
R10
R18
R1
R2
R12
R16
R20
R5
R19
R6
R7
R8
R22
Parallel comp
interface (L
04-01-PCB
F1
1A slow
D3
D1
12V dc
T1
T2
Language panel
J4
J3
R15
J1