

SERVICE MANUAL

LINEAR STAINER cromatec



INS5100GB
2018-02-001.00

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1. Introduction

1.1 About this Manual

This manual shall help you handling the device. Please read the manual completely and follow the advice. Acquaint yourself to the control elements and their functionality by studying the figures. This way, an adequate use of the device is ensured.

1.1.1 Used symbols and their meanings



Danger warning: Danger warnings are marked by a red framed triangle.



Warning: Warnings are marked with a yellow warning triangle, showing an exclamation mark.



Flammability: Warnings regarding flammability are marked with a yellow triangle, showing a flame.



Heat warning: Heat warnings identify parts and situations of the device with high temperatures.



Notice: Notices, meaning important information for the user, that are not classified as danger or warning, are marked with an information symbol.



Before any work, the devices are disconnected from the mains! Make sure that the device is switched off.

1.2 Intended Use

The cromatec is an automated stainer and is made for the purpose of staining tissue specimens in histology and pathology laboratories only. The instrument may be operated only according to the instructions contained in this manual. Any other use of the cromatec is considered improper.

The conditions for operation, maintenance and service mentioned in this instruction manual have to be strictly observed.



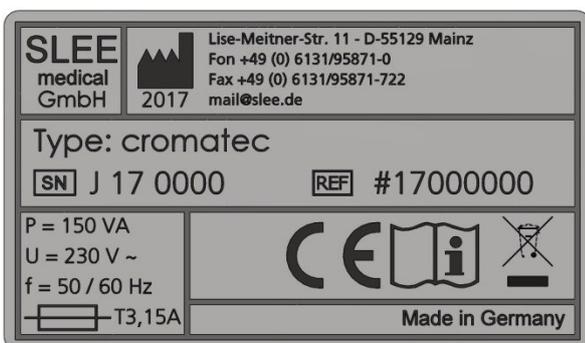
To prevent damages to the instrument and specimens, only use accessories and spare parts which have been approved by SLEE medical GmbH.

1.3 Authorized Operators

The cromatec must be used only by those persons who have been authorized by the owner. In his working area, the operator is responsible with regard to third persons. The owner must give the operator access to this instruction manual and make sure that the operator has read and understood its contents.

1.4 Instrument type

All information provided in this manual applies only to the instrument type indicated on the title page. A name plate indicating the instrument serial number is attached to the rear panel of the instrument.



1.5 Safety Instructions for working with the cromatec and reagents

When working with the cromatec, please pay particular attention to the used reagent's characteristics regarding flammability and further hazards. Read the manual carefully before working with the cromatec and reagents for the first time. Keep the manual near and easy accessible to the device. Consult the manual in case of obscurities.



Many reagents' fluids and vapours are flammable. If you are not sure about using a reagent, please contact the manufacturer.



Always wear protective clothes (e.g. laboratory coat, gloves, safety glasses) to prevent accidental contact with reagents!



Do not eat, drink or otherwise consume reagents and/or reagent vapours! Do not eat, drink, smoke within the surrounding area of the device!



In case of accidental eating or drinking of, or skin contact with a reagent or its vapours, immediately consult the correspondent safety data sheet and follow the instructions stated in the corresponding sections!



Make sure the exhaust air decontamination system is working before starting to work with the cromatec and reagents!



Ensure that the device is cleaned and maintained according to the schedule and advice given in Chapter 5!



If the cromatec is not in use, the water supply must be switched off at the tap independently. In case the device becomes a defect, the warranty expires.

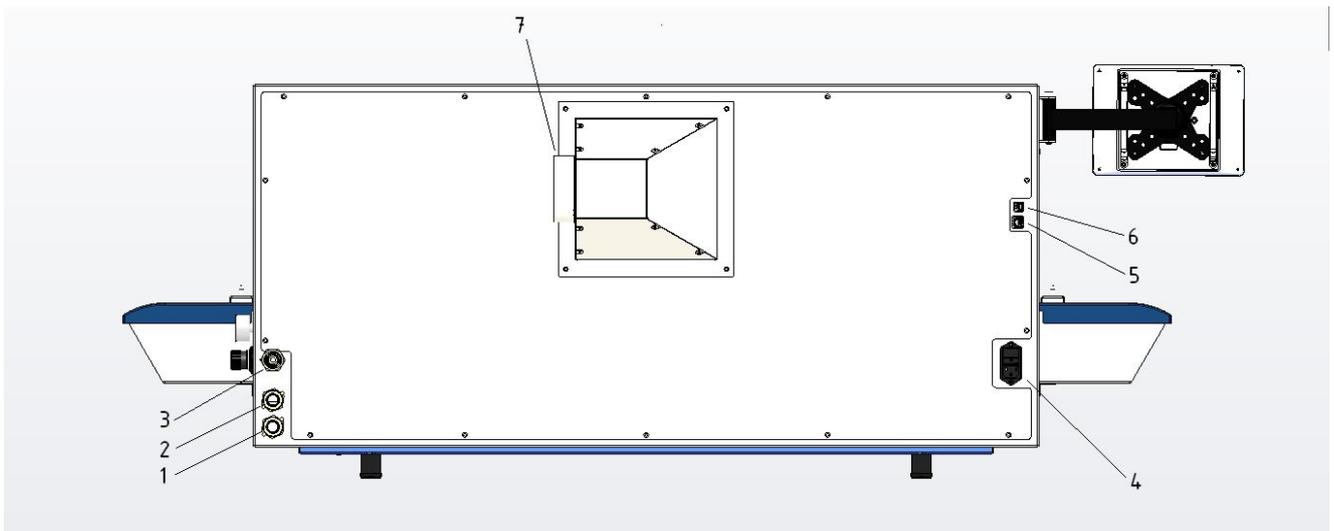
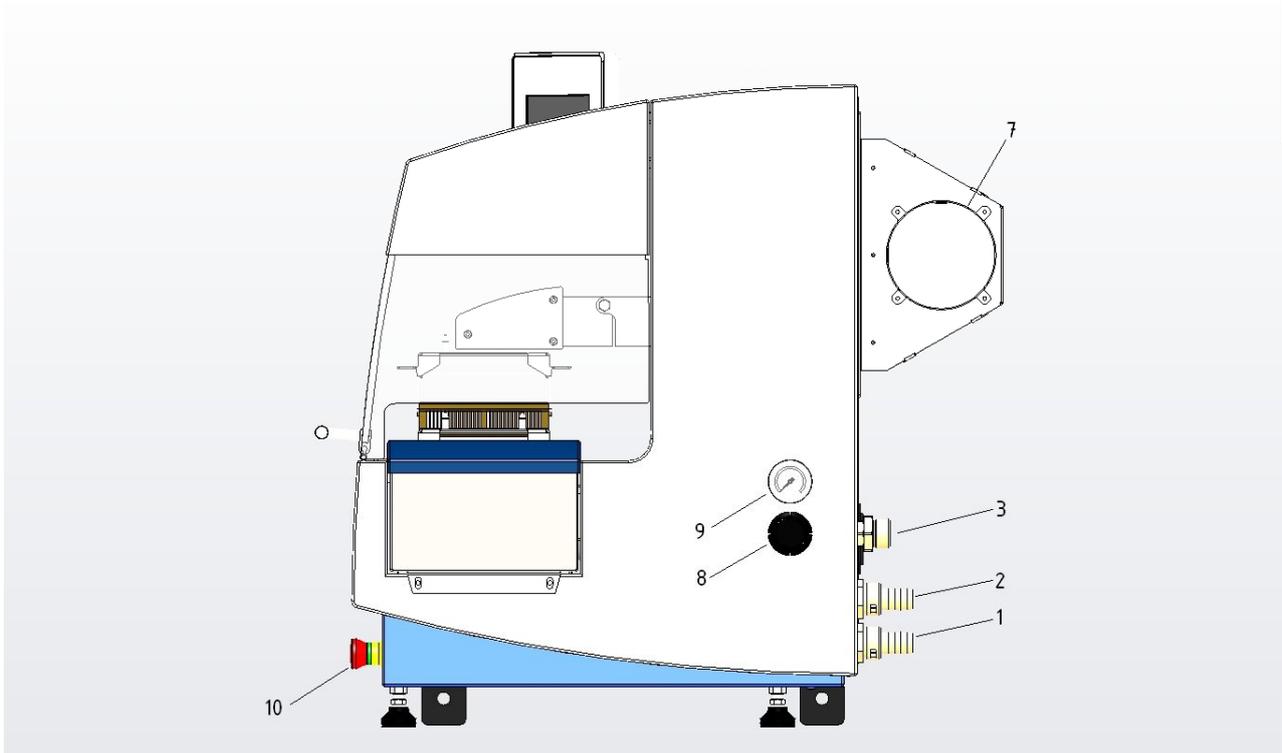


If you have trouble understanding instruction, questions, or are not sure about the safety, please consult your Sales Representative first!

2. Components of the cromatec Linear Stainer

2.1 Instrument Components





1	Water drain receptacle
2	Water drain washing cuvettes
3	Water connection / inlet
4	Connection power cable
5	Network connection RJ45
6	USB connector type B
7	Hose connection exhaust air Ø 100 mm
8	Water flow pressure regulator
9	Pressure gauge
10	Emergency stop button

2.2 Standard components

Basic instrument with 20 incubation stations
1 x loading station
1 x unloading station
20 x Staining cuvettes (plastic)
6 x Flushing station (plastic)
2 x Basket carrier
2 x Slide basket (plastic) for 30 slides
Inlet- and drain tube for flushing water
Fume extraction with 1 charcoal filter
Mains cable
Operation manual
Transport handles

2.3 Technical Specification

General

Nominal Voltage	100 – 240 V AC +/- 10 %
Nominal frequency	50 / 60 Hz
Max. power consumption	250 VA
Max. heat emission	250 J/s
IEC 1010 classification	Protective class 1 Pollution degree 2 Overvoltage installation category II
Fuses	2 x T 2,5 A
Interfaces	USB, RJ 45
Operating temperature range	+10° to +35°C
Relative humidity	Max. 80 % non condensing
Temperature range during storage	+5 to + 55°C
Humidity during storage	<80%

Dimensions and weight

Dimensions (W x D X H)	1560 mm x 640 mm x 620 mm
Weight unpacked (without accessories)	110 kg

Capacity

Specimen slide throughput	Up to 1.800 slides/h*
Loading capacity	Up to 20 slide racks simultaneously
Slide rack capacity	30 slides
Total number of stations	20
Number of washing stations	Max. 6
Reagent / Washing cuvettes volume	400 ml
Water flow regulation for washing stations	0,5 to 2,0 l/min
Load / Unload stations	5 each
Programs	20 programs, up to 20 steps each
Incubation time setting	10 sec. up to 59 min, 59 sec.

*depending on staining protocol

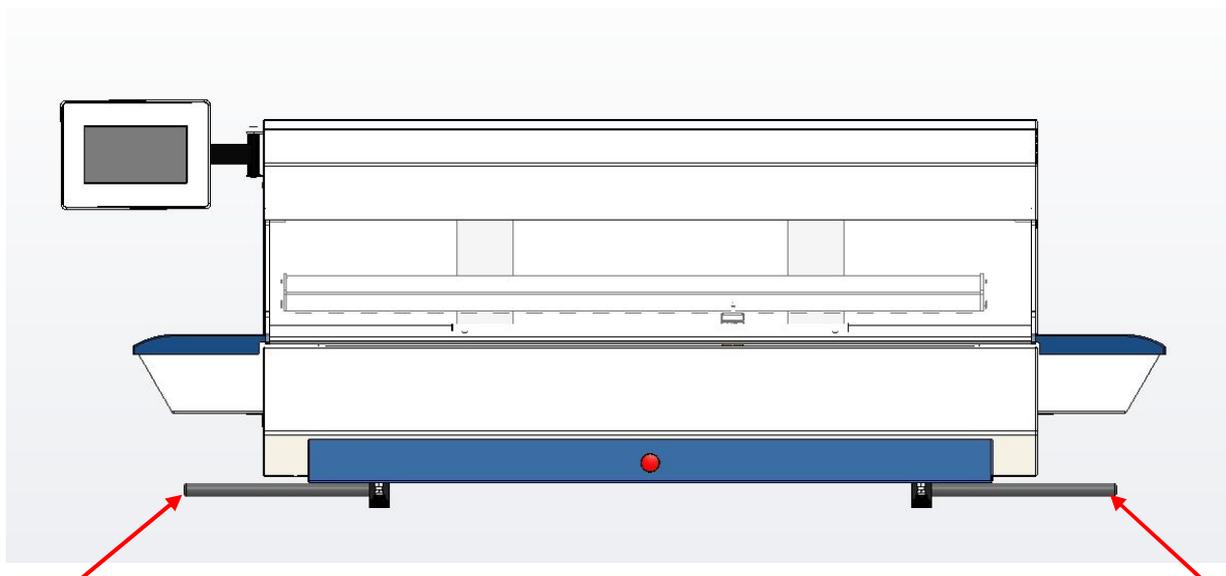
3. Setting up the instrument

3.1 Installation site requirements

Installation site requirements:

- The instrument must be used in closed rooms, only.
- Stable, exactly horizontal laboratory bench with even surface of a minimum width of 1.80 m and minimum depth of 0.80 m which can accept a weight of 110 kg!
- The minimum distance of the instrument back to the wall or other instruments should at least be 10 cm to guarantee sufficient ventilation. Furthermore pay attention that no inflammable objects are in the area heated by the instrument.
- Tap water supply located a maximum of 2.50 m and waste water drain pipe a maximum of 2.00 m away from the corresponding in-/outlets at the rear panel of the instrument.
- If the instrument is to be operated with air evacuation hose, a fume cupboard at a distance of maximum 3.50 m from the instrument is required. Alternative: operation with activated carbon filter.
- Sufficient space of min 0.90 m above the laboratory bench for opening / closing the instrument lid without any problem.
- Stable ambient temperature between +10 °C and +35 °C.
- Relative air humidity of maximum 80 %, non-condensing.
- Do not place near instruments which might be sources of vibration.
- The instrument must not be exposed to direct sunlight.

To lift, take the instrument by the carrying the handles (see below picture). Four people are required to lift and / or carry the instrument, as the instrument weights a total of approx. 110 kg.



Handle lefthand side – two each side

Handle righthand side – two each side

Afer installation please remove the handles on both sides!

3.2 Tap water supply connection

- Unpack the water inlet hose (including Safety-Aquastop).
- Connect the hose to the inlet connection.



Always connect the water inlet hose!



3.3 Waste water hose connection



Please note that the waste water hose is not part of the standard delivery.

- Connect the waste hose to the waste water connection. Please note that water can escape in the upper drain hose, but in the lower only in an exceptional case.



Please do not bend the hoses and pay attention for sufficient inclination.



The two drains on the rear of the unit must never be brought together.



The lower drain is to be used only for cleaning purposes to rinse and clean the cuvette trough. Connect as required and provide sufficient slope.



The upper drain is only for the maximum of 6 water baths and must be connected constantly with sufficient slope.

3.4 Electrical connection

- The electrical connection is located at the rear of the unit.
- Connect the mains cable to the mains power supply socket.



The instrument must be connected to an grounded mains power outlet socket. Make sure to use the appropriate mains cable for the local voltage supply.



3.5 Connection of air evacuation (optional)

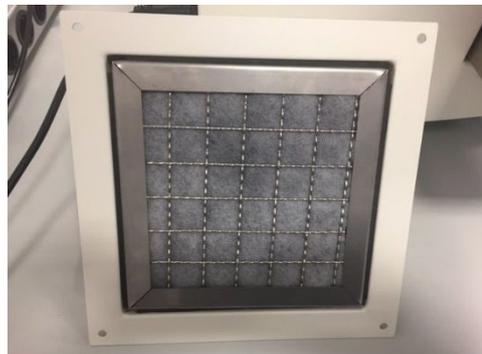
- For the connection to an external air evacuation please contact the local SLEE service.

3.6 Inserting/Changing the activated carbon filter



The cromatec will be delivered with the filter already installed.

- For changing the filter, unscrew the 4 screws at the rear of the instrument panel.
- Take out the filter and replace with a new one.
- Connect the filter housing to the rear panel again.
- Set filter change in the menu (see chapter 4.6.3).



3.7 Leveling the instrument

- Once all accessories are installed move the instrument to its final position.
- The easiest way to find the right level is using a spirit level.
- The right level will be achieved by adjusting the instrument feet.



3.8 Inserting the cuvettes

- There are two different cuvette types:
 - Reagent cuvettes
 - Running water cuvettes



Reagent cuvette



Running water cuvette



The reagent cuvette can simply be placed at the any station



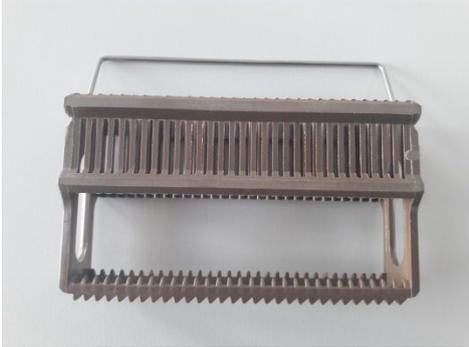
The running water cuvette can simply be clicked into the water tube at the button of the station. It can be freely selected.



Please do not use chloroform, acetone and toluene (Methylbenzene).

3.9 Inserting the racks

- The rack carrier system consists of two parts:
 - The rack for 30 slides
 - The transport system to connect to the magnet system



To make sure the rack is not falling out of the transport system, you can hold it with your finger as shown in the picture.

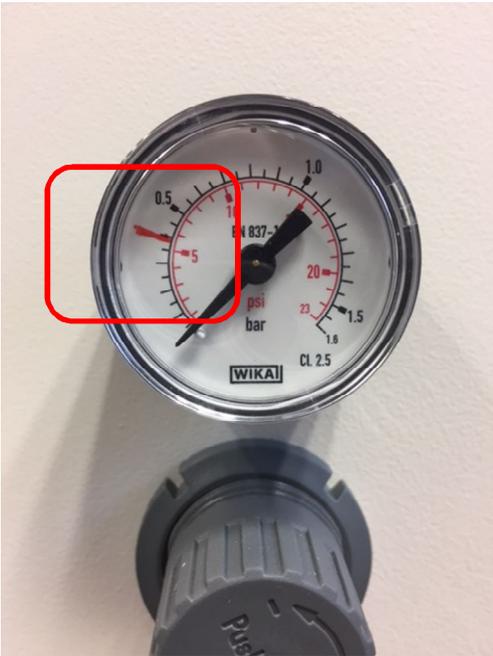


The transport system has to be clean at all time to make sure the magnets are taking the full racks. Please do not use the instrument with just the transport system but always with a basket insertet.



Please pay attention to an even load.

3.10 Setting the water pressure for running water station



The red marking indicates the flow pressure during operation – here 0,4 bar.



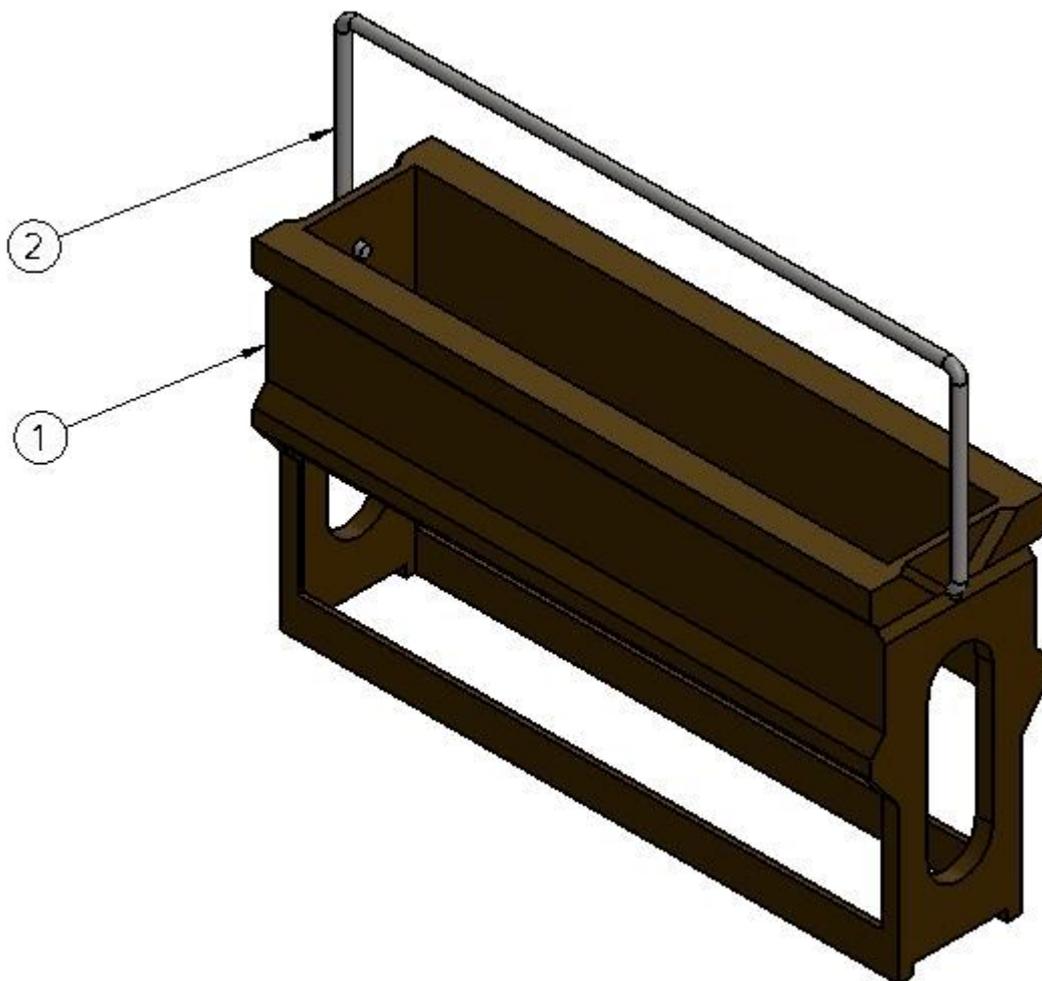
Make sure that the water supply is completely open

4. Components

4.1 Mechanical components

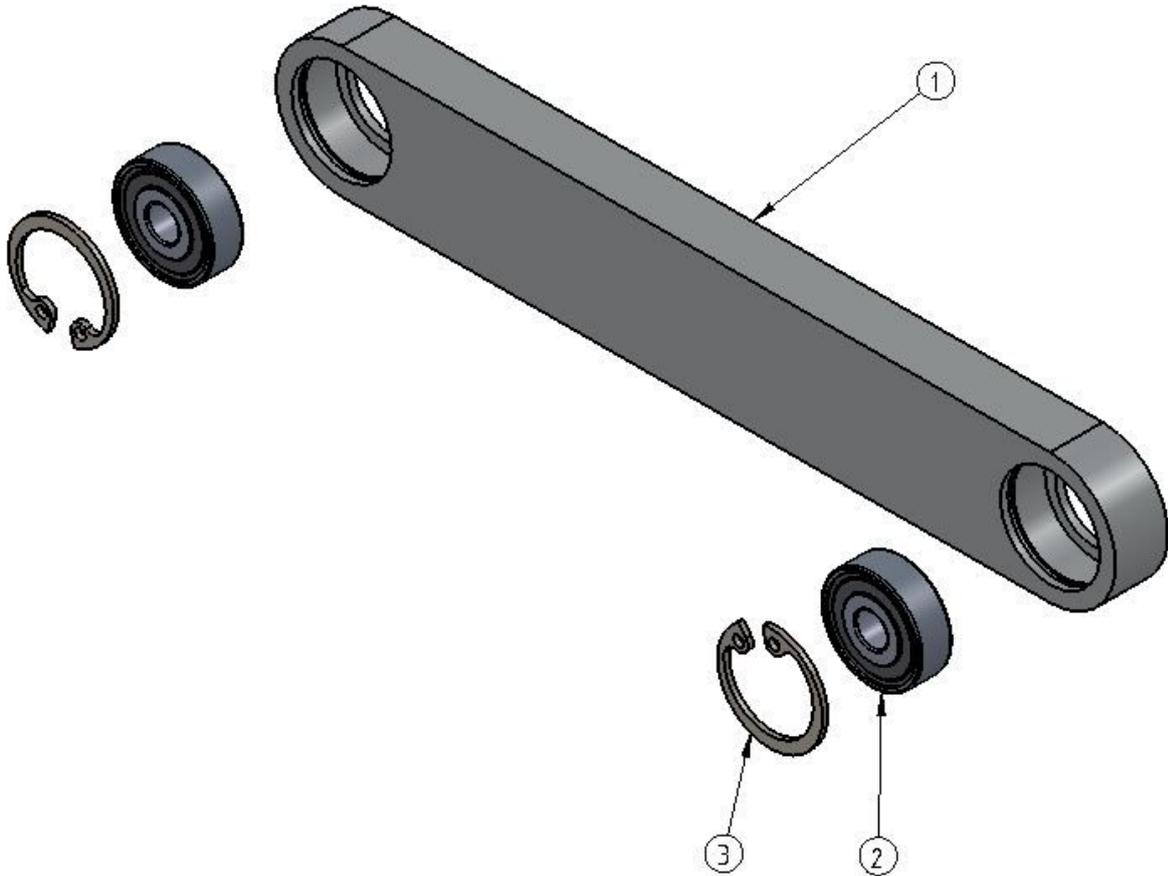
41000420 – Slide basket + bracket

The slide basket with bracket is necessary for the transportation of the slides during the staining process. The capacity which are possible to load is up to 30 slides.



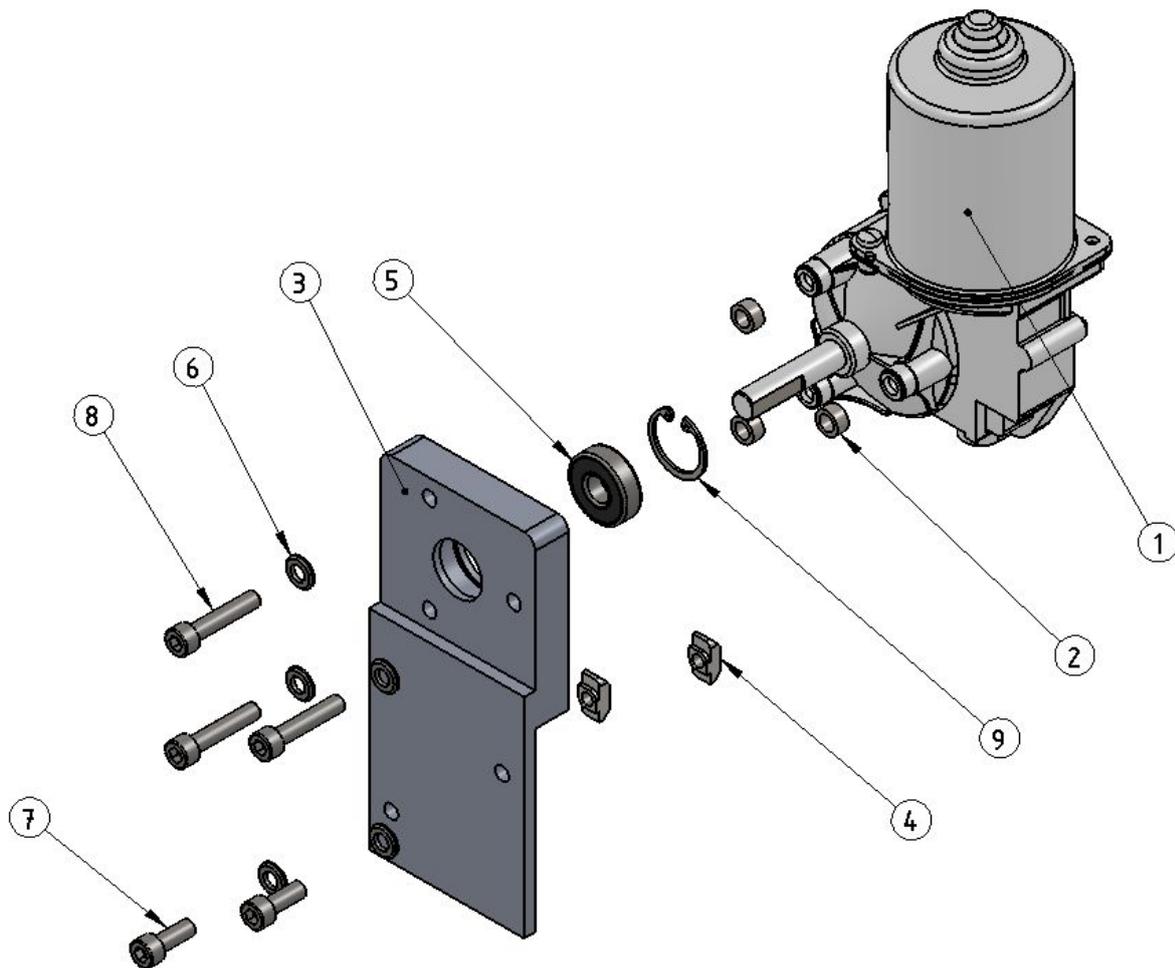
Pos.	part no	description	pcs
1	38501051	Slide basket (plastic) for 30 slides	1
2	41000702	transport bracket	1

41000190 - bearing swivel mounted



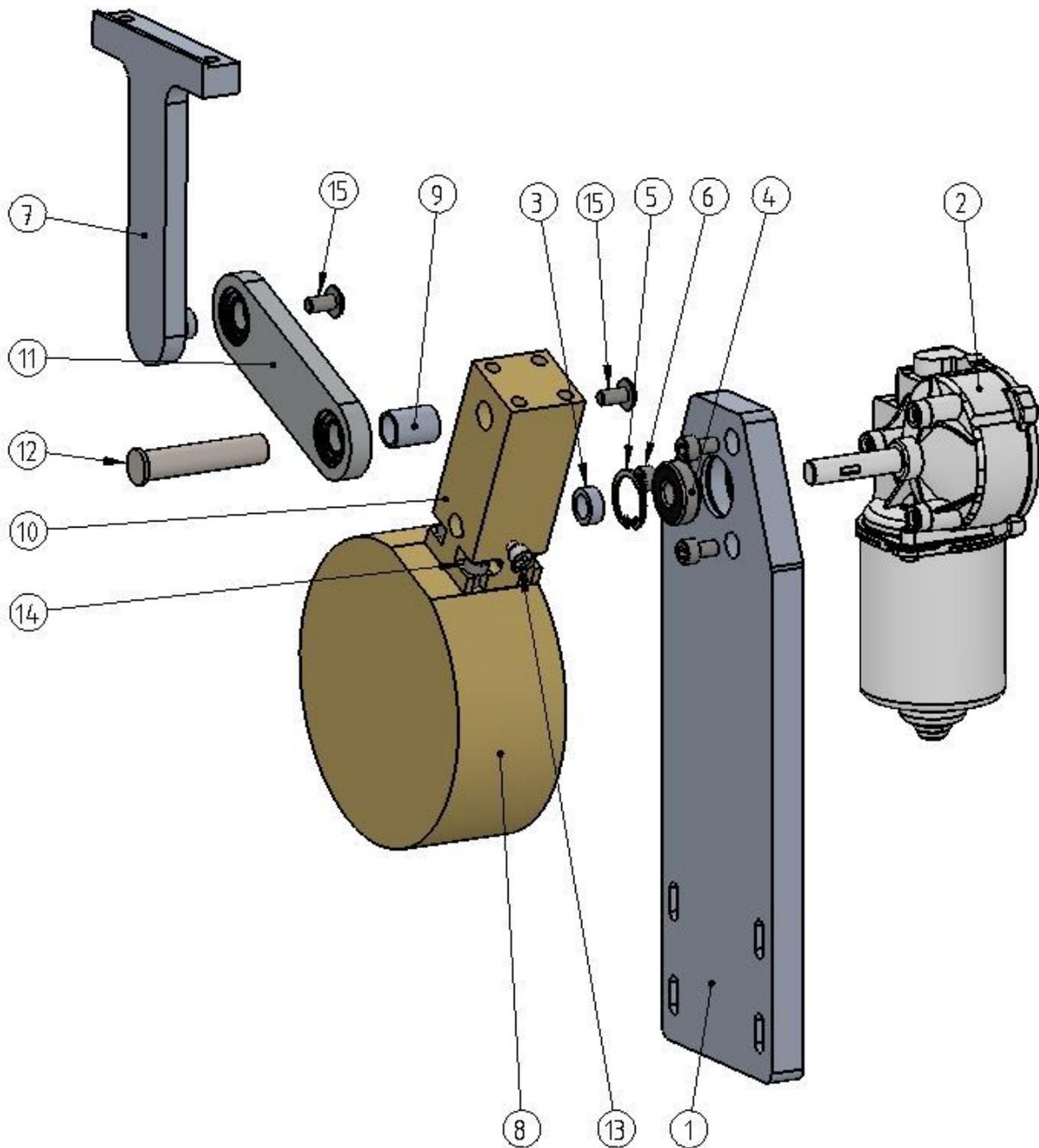
Pos.	part no	description	pcs
1	41000126	driver link	1
2	70381906	ball bearing	2
3	70421910	circlip 19 x 1 mm	2

41000191 - horizontal drive



Pos.	part no	description	pcs
1	41000320	motor cromatec	1
2	41000073	distance sleeve	3
3	41000124	motor braket	1
4	39500138	hammer-head nut M6	2
5	71382610	ball bearing - 26 x 10	1
6	70130006	washer 6 mm	5
7	70010616	allen screw ISO 4762 M6 x 16 -A2	2
8	70010630	allen screw ISO 4762 M6 x 30 -A2	3
9	70422612	outer circlip 26 x 1,2	1

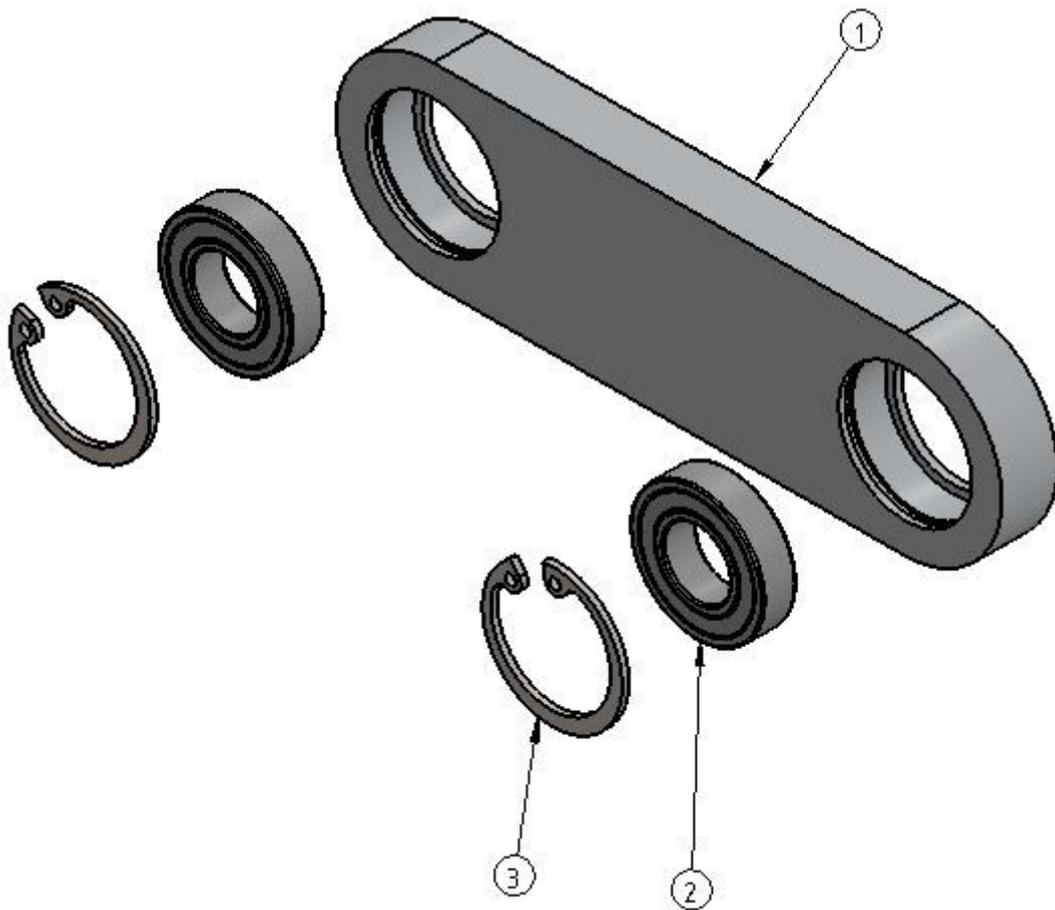
41000170 - lifting motor unit



Pos.	part no	description	pcs
1	41000185	motor support	1
2	41000320	motor cromatec	1
3	41000186	spacer	1
4	70382610	ball bearing	1
5	70422412	outer circlip 24x1,2	1
6	70010610	allen screw - ISO 4762 – M6 x 10	3

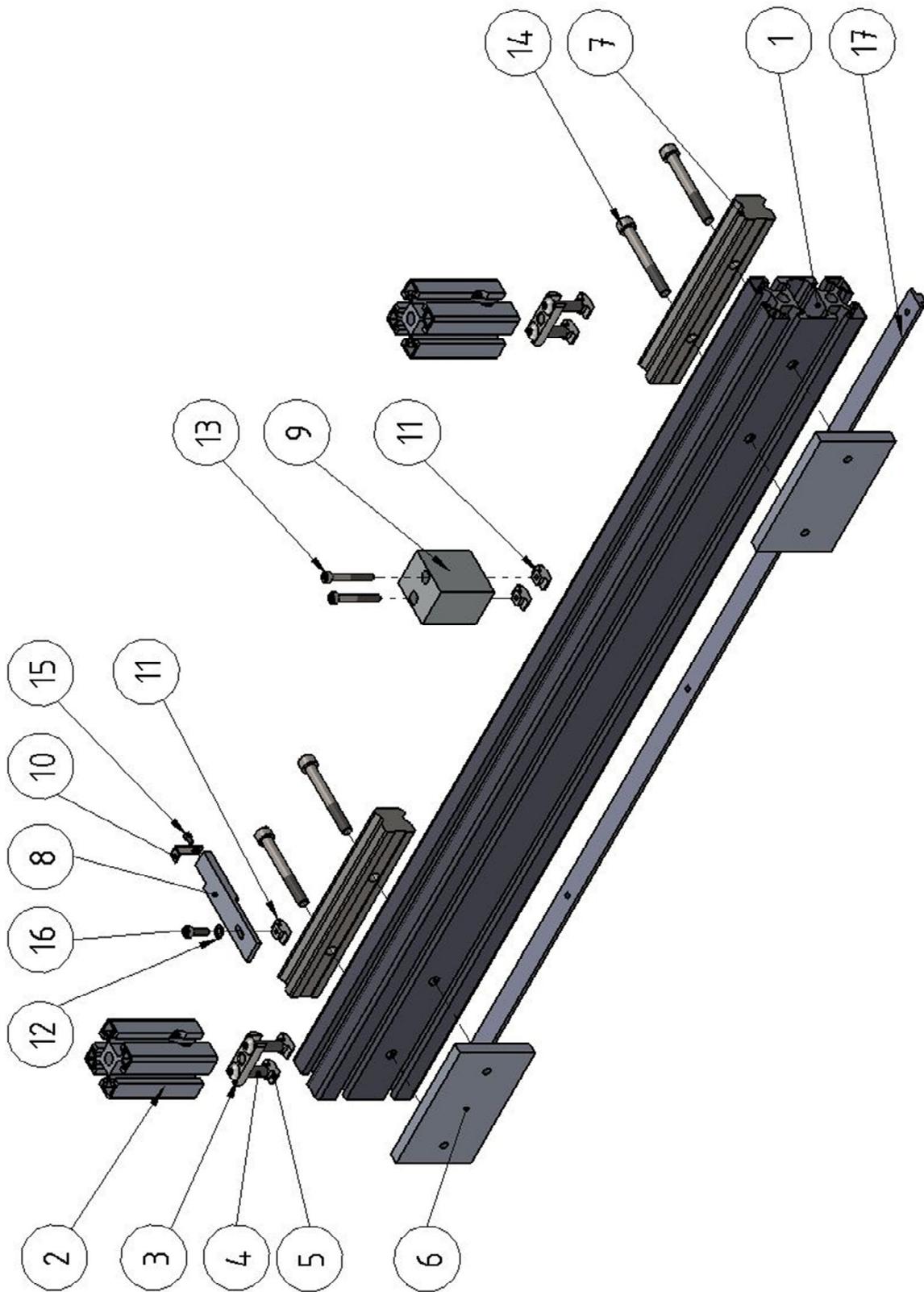
7	41000093	tappet	1
8	41000183	flywheel	1
9	41000184	spacer	1
10	41000187	connecting rod	1
11	41000080	linkage compl.	1
12	41000182	bolt	1
13	70010516	allen screw - ISO 4762 - M5 x 16	1
14	70010616	allen screw - ISO 4762 - M6 x 16	4
15	70120612	lenshead screw ISO 7380 - M6 x 12	2

41000080 – linkage



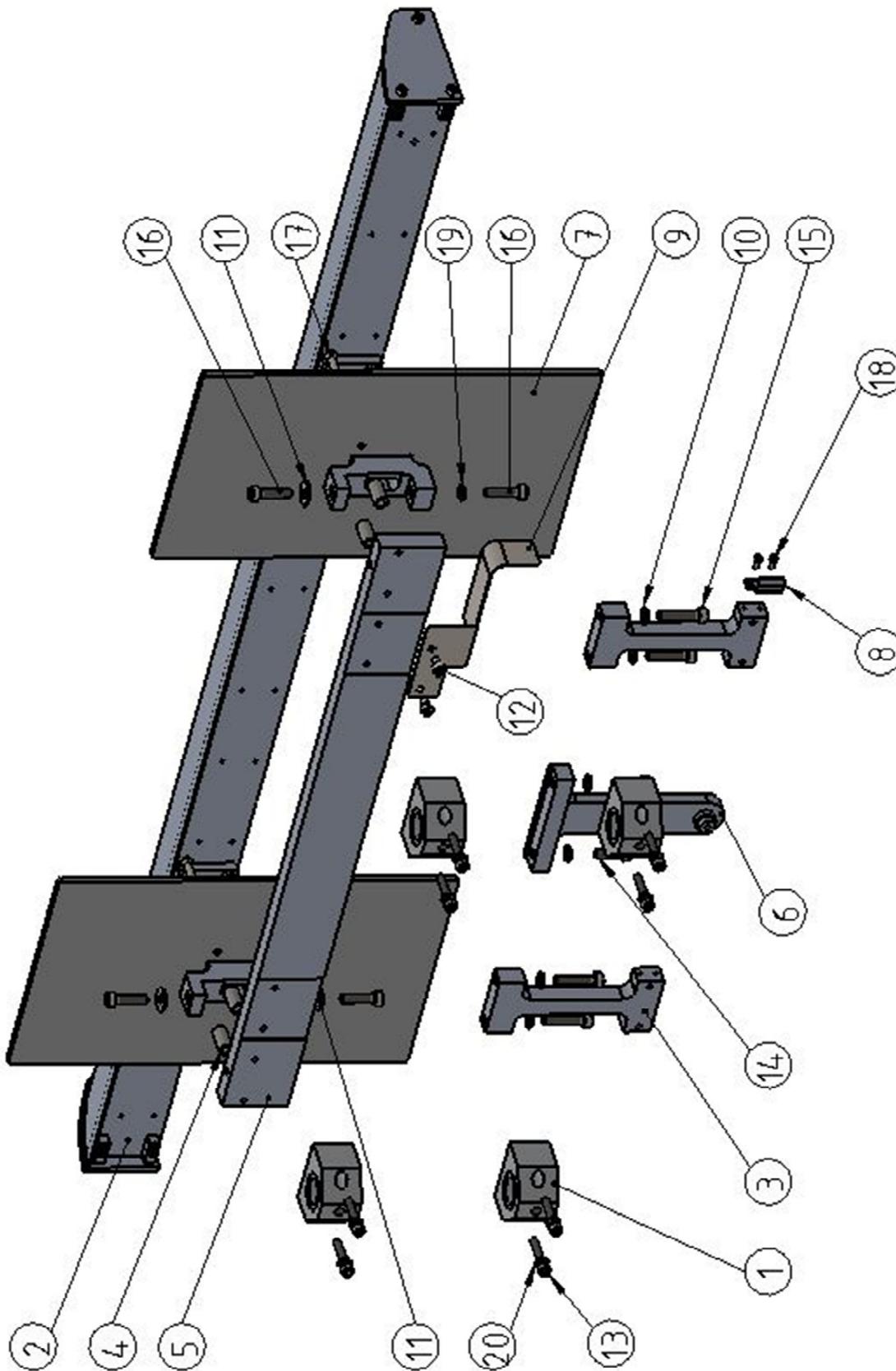
Pos.	part no	description	pcs
1	41000087	Linkage	1
2	70382412	ball bearing	2
3	70422412	circlip 24 x 1,2 mm	2

41000090 - basic frame



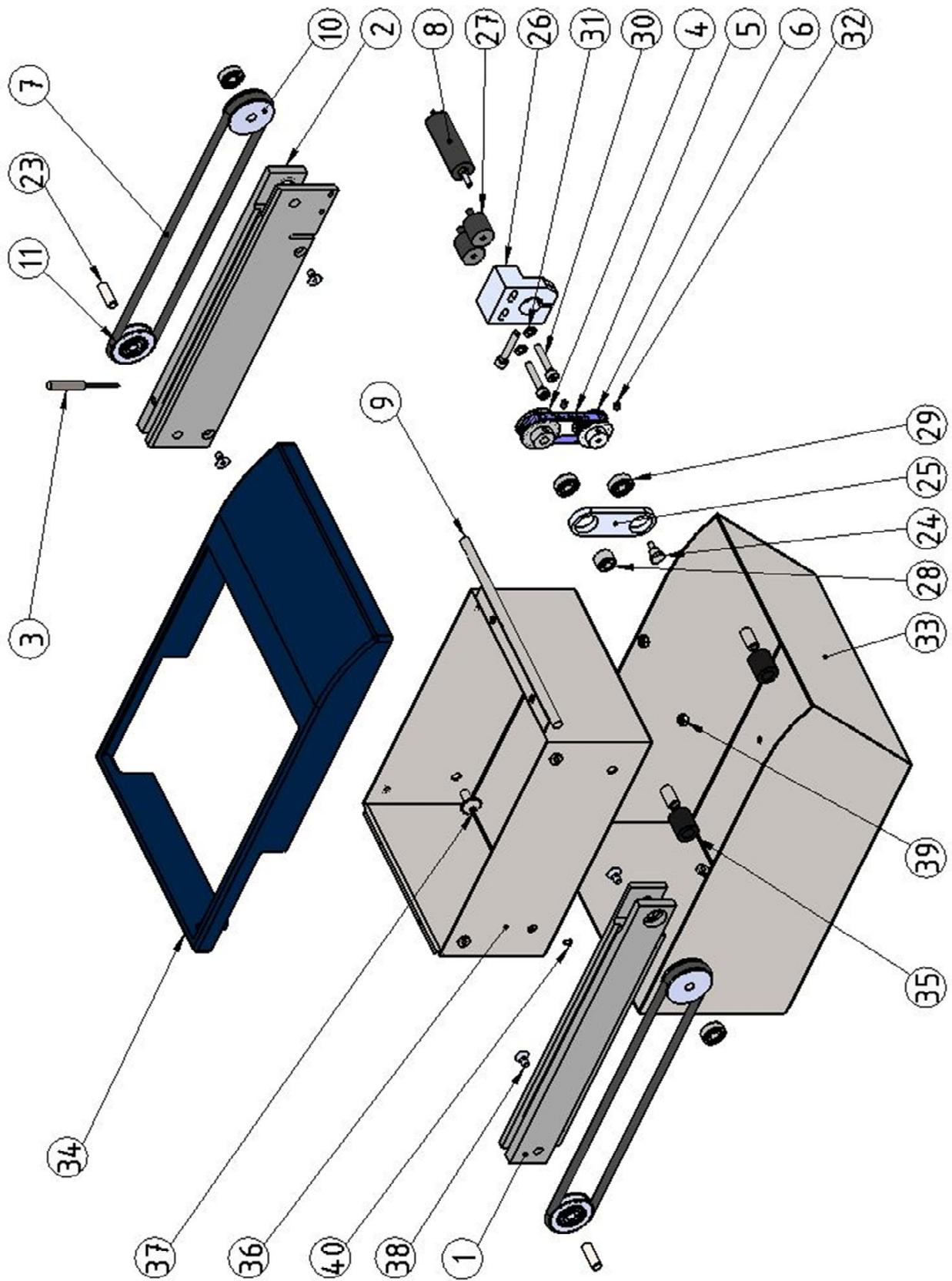
Pos.	part no	description	pcs
1	41000022	profile 45 x 90 mm	1
2	41000024	profile 45 x 45 mm	2
3	41000037	bolt connector	2
4	70013835	lens head screw - ISO 7380-1 - M8 x 35	4
5	41000035	hammer-head nut M8	4
6	41000047	mounting plate	2
7	41000081	profile rail guide system complete	2
8	41000092	cam switch plate	1
9	41000125	drive plate	1
10	41000536	horizontal cam	1
11	39500138	driving disc vertical	3
12	70130502	washer ISO 7090-5-A2	1
13	70010540	allen screw - ISO 4762 - M5 x 40	2
14	70010870	allen screw - ISO 4762 - M8 x 70	4
15	70010306	allen screw - ISO 4762 - M3 x 6	1
16	70010516	allen screw - ISO 4762 - M5 x 16	1
17	41000573	sectional strip	1

41000097 - lifting frame



Pos.	part no	description	pcs
1	41000031	bearing unit vertical	4
2	41000050	swivel arm	1
3	41000078	guide support	2
4	41000074	spacer	4
5	41000091	traverse	1
6	41000093	tappet	1
7	41000175	cover	2
8	41000535	vertical flag	1
9	41000571	cable guide	1
10	70130006	washer ISO 7090-6-A2	6
11	70132006	washer ISO 7093-6-A2	3
12	70010508	allen screw - ISO 4762 - M5 x 8	2
13	70010530	allen screw - ISO 4762 - M5 x 30	8
14	70010620	allen screw - ISO 4762 - M6 x 20	2
15	70010630	allen screw - ISO 4762 - M6 x 30	4
16	70010625	allen screw - ISO 4762 - M6 x 25	4
17	70020530	countersunk screw M5x30 - A2	4
18	70010305	allen screw - ISO 4762 - M3 x 5	2
19	70130006	washer ISO 7090-6-A2	1
20	70130005	washer ISO 7090-5-A2	8

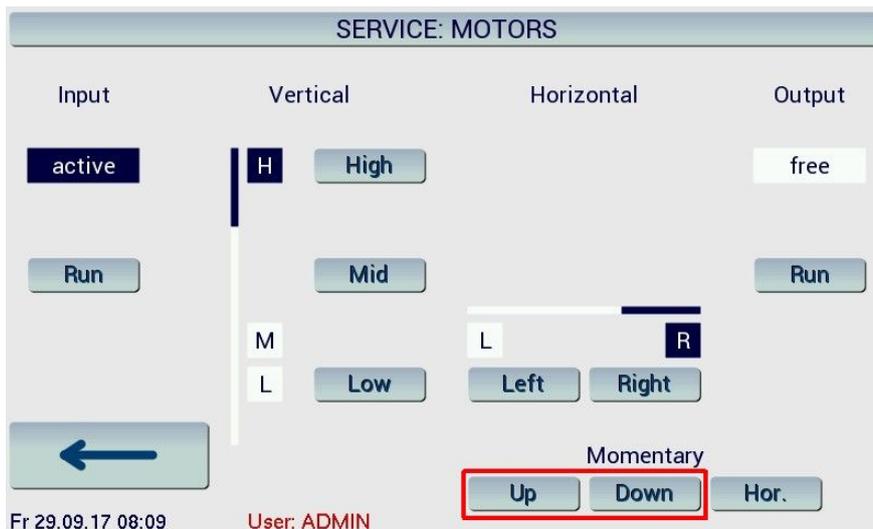
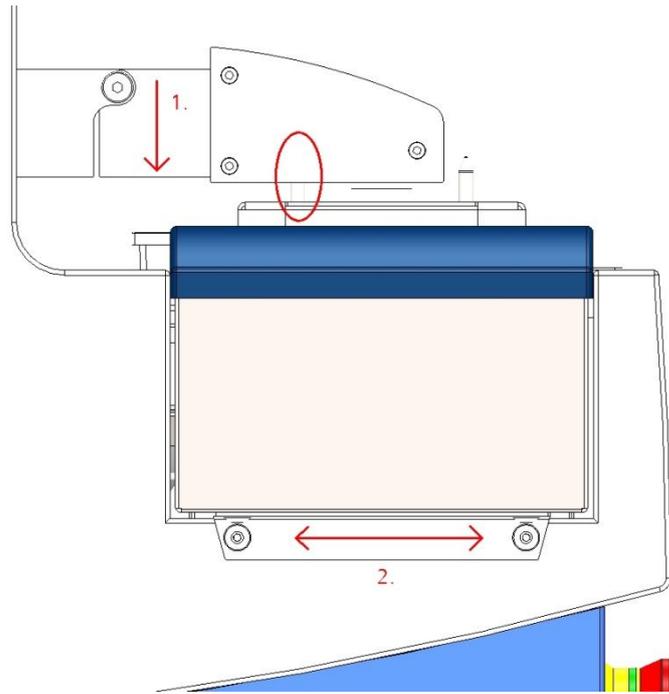
41000555 - input belt



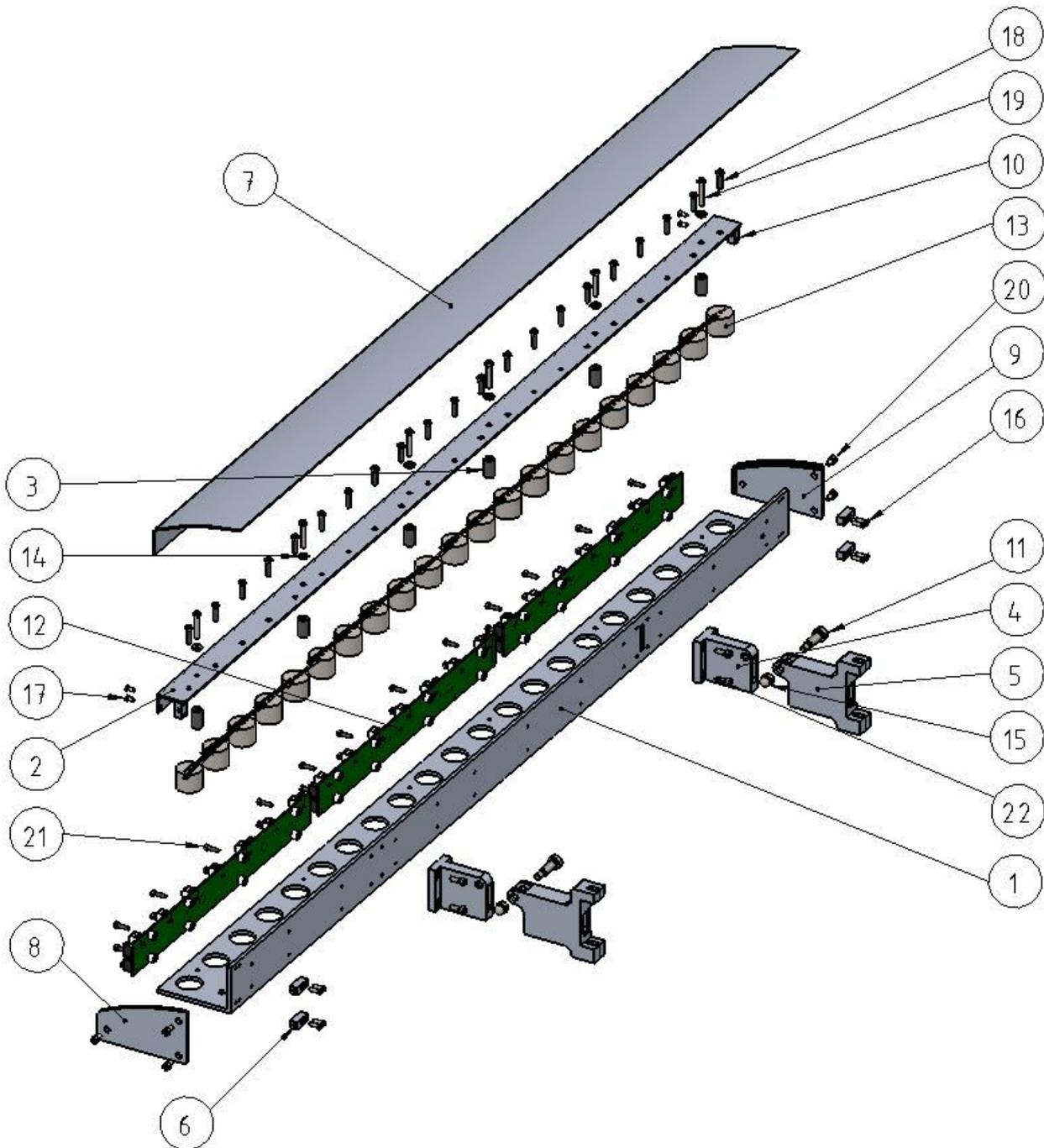
Pos.	part no	description	pcs
1	41000611	bracket guide	1
2	41000612	bracket guide sensor	1
3	41000614	inductive sensor	1
4	41000615	tooth belt disc 28 Z	1
5	41000616	tooth belt	1
6	41000015	tooth belt disc 25 Z	1
7	41000041	o-belt endless	2
8	41000075	motor for input/output unit	1
9	41000132	transmission shaft	1
10	41000133	transmission shaft fully machined	2
11	41000134	output pulley	2
23	41000135	shaft	2
24	41000142	distance bolt	1
25	41000143	swivel	1
26	41000177	motor support	1
27	34003828	bumper M4x10	2
28	70450612	adjusting ring 6	1
29	70381506	ball bearing 619 6 ZZ	4
30	70010425	allen screw - ISO 4762 - M4 x 25	3
31	70130004	washer ISO 7090-4-A2	2
32	70040305	grub screw ISO 4026 - M3 x 5	2
33	41000506	input tray	1
34	41000526	belt cover	1
35	41000613	spacer	4
36	41000528	tray transport-belt	1
37	70120512	lenshead screw ISO 7380 - M5 x 12	4
38	70020408	countersunk screw ISO 10642 M4 x 8	4
39	70180004	hexagon nut ISO 4032-4-A2	2
40	70249203	screw ISO 1207 - M2 x 3	2

Installing the input / output unit

To install the input / output unit, assemble the complete unit to the housing, install a transport basket and move the magnet arm slowly downwards (1) by using the momentary movement in the service menu. Make sure that the pin and the hole of the magnet-arm aligned properly. After adjustment (2) tight the screws of the input/output unit.

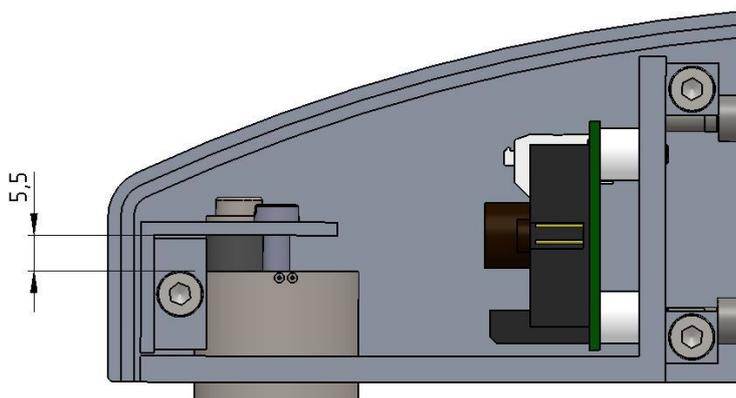


41000050 - magnet arm - swivable

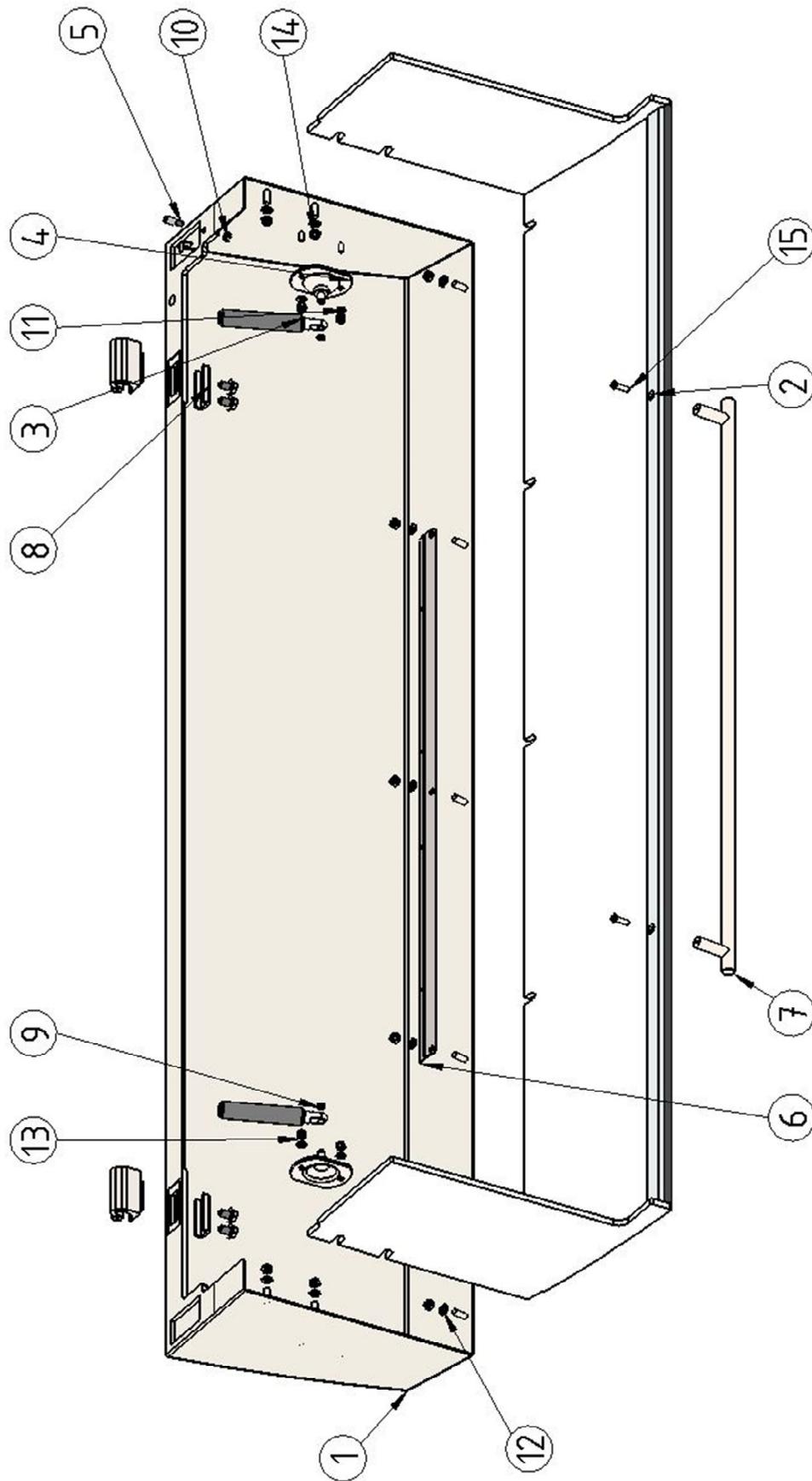


Pos.	part no	description	pcs
1	41000051	magnet support	1
2	41000052	mounting bracket	1
3	41000053	spacer	6
4	41000054	hinge - front	2
5	41000055	hinge - rear	2
6	41000056	mounting block	4
7	41000057	cover - swivable arm	1
8	41000058	side cover - right	1
9	41000059	side cover - left	1
10	41000088	mounted attachment	2
11	70300620	fitted screw - M6 x 20	2
12	41000305	LFM7 board	3
13	41000001	electro magnet	21
14	70130004	Washer 4 mm	6
15	70610006	cap nut M6	2
16	70020312	countersunk screw M3 x 12	8
17	70020306	countersunk screw M3 x 6	4
18	70014416	screw ISO 1207 M4 x 16 PA	21
19	70010425	allen screw - ISO 4762 - M4 x 25	6
20	70010408	allen screw - ISO 4762 - M4 x 8	6
21	70010312	allen screw - ISO 4762 - M3 x 12	24
22	70010412	allen screw - ISO 4762 - M4 x 12	8

The electro magnets must be installed as shown in the below picture.

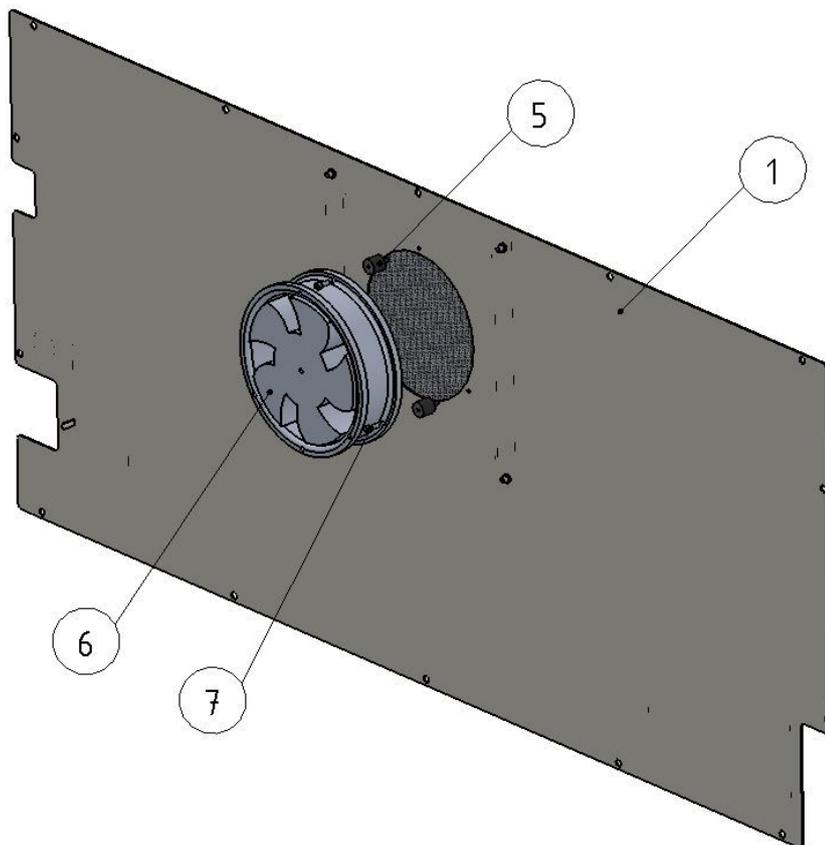
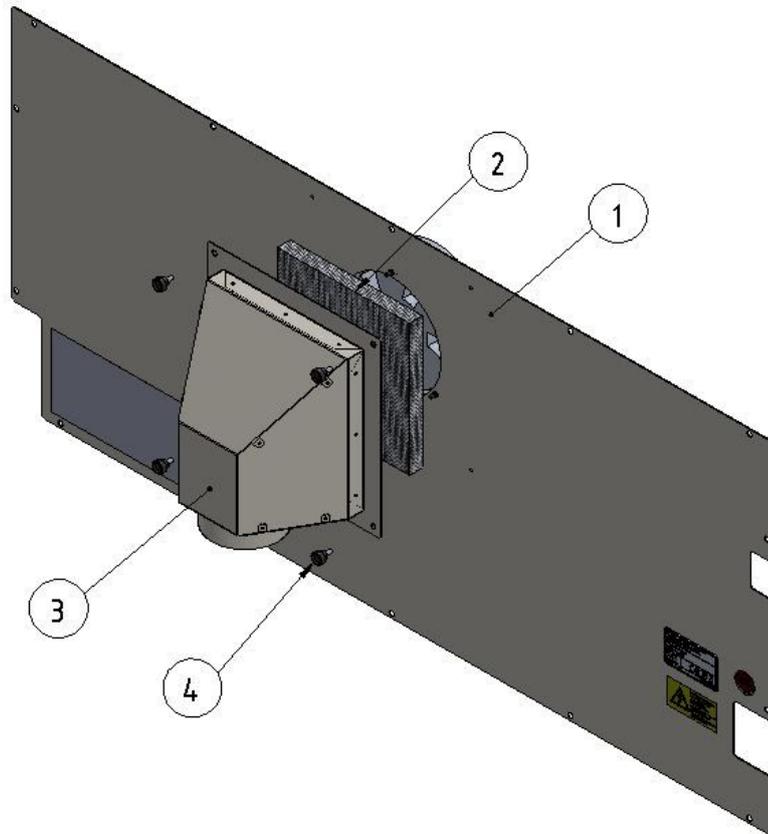


41000570 – hood - swivable



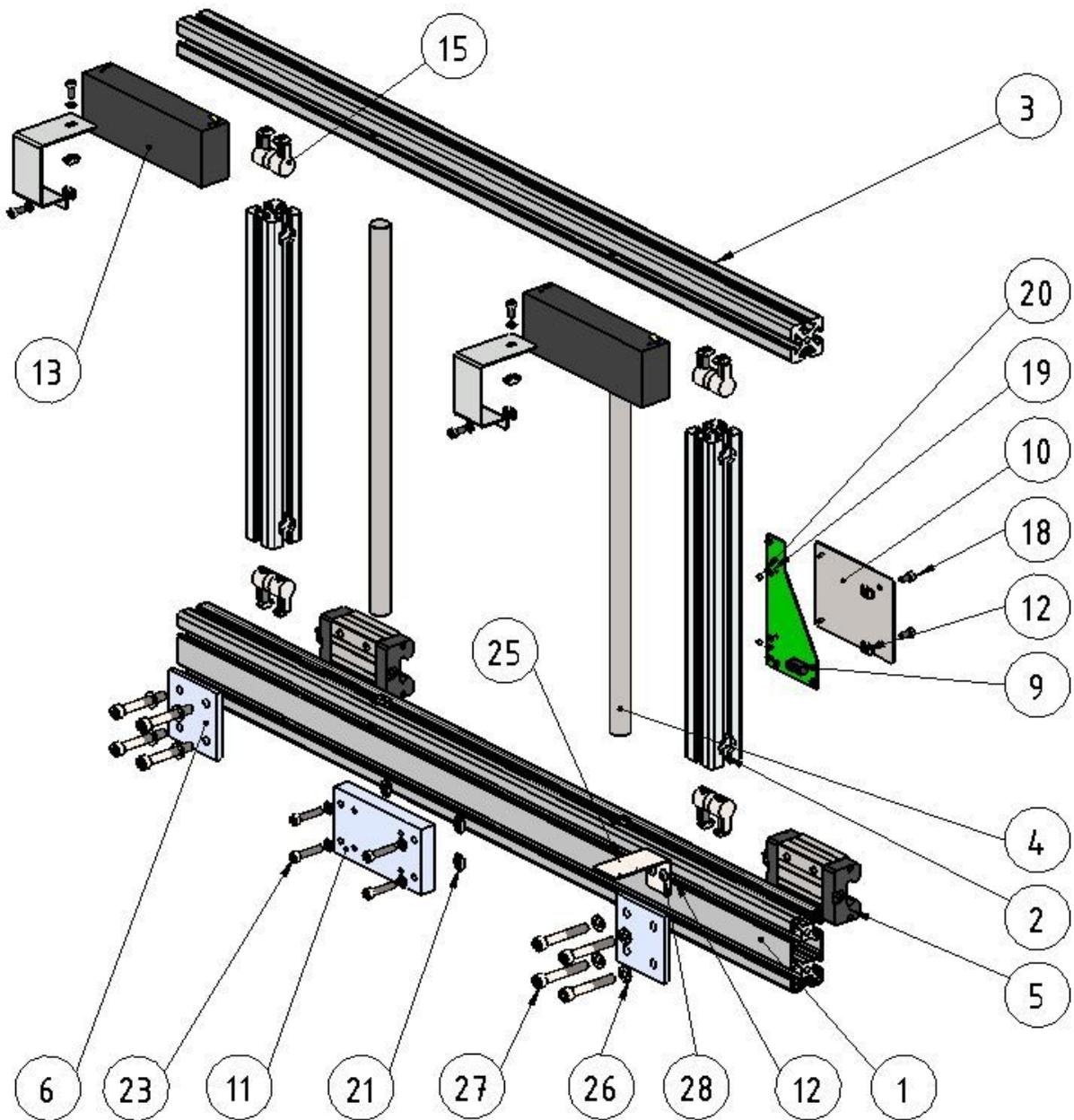
Pos.	part no	description	pcs
1	41000525	hood cromatec	1
2	41000553	hood PMMA - cromatec	1
3	41000038	pneumatic spring	2
4	41000009	pneumatic spring armature	2
5	41000137	pin	1
6	41000609	LED bar support	1
7	41000701	handle - stainless steel	1
8	41000003	hinge for cromatec hood	2
9	70430607	circlip 6 mm	2
10	70180004	hexagon nut ISO 4032-4-A2	1
11	70130004	washer 4 mm	4
12	70130005	washer 5 mm	9
13	70180104	hexagon nut ISO 4032-4-A2	4
14	70180105	hexagon nut ISO 4032-5-A2	9
15	70020414	countersunk screw ISO 10642 M4 x 14	2

41000560 – backside cover - complete



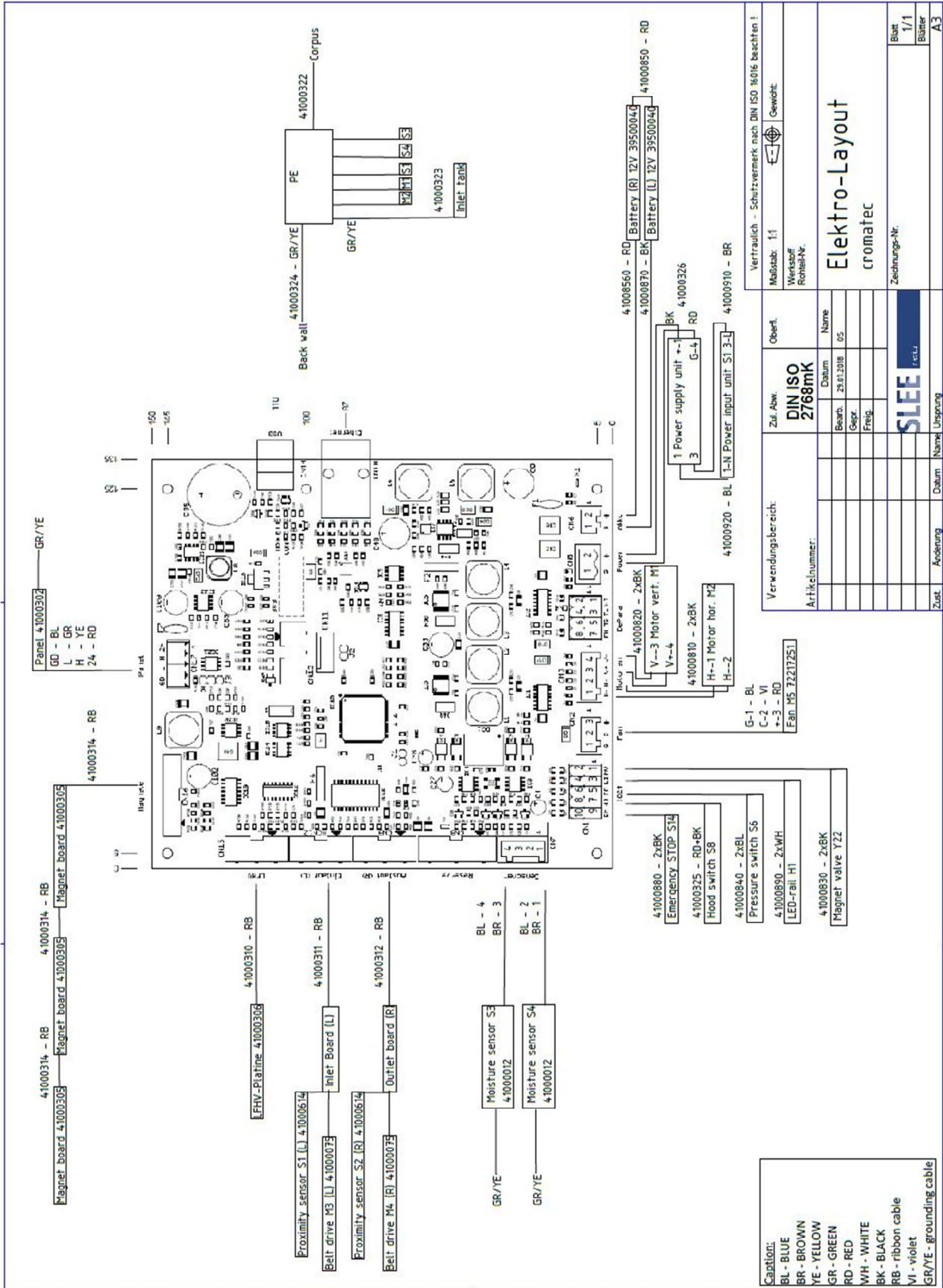
Pos.	part no	description	pcs
1	41000508	backside cover - cromatec	1
2	41000020	carbon filter - 200 x 200 mm	1
3	41000561	filter housing	1
4	39500363	knurled screw M5x10	4
5	34003828	bumper M4x10	3
6	72217251	axial exhaust fan	1
7	70010410	allen screw - -ISO 4762 - M4 x 10	3

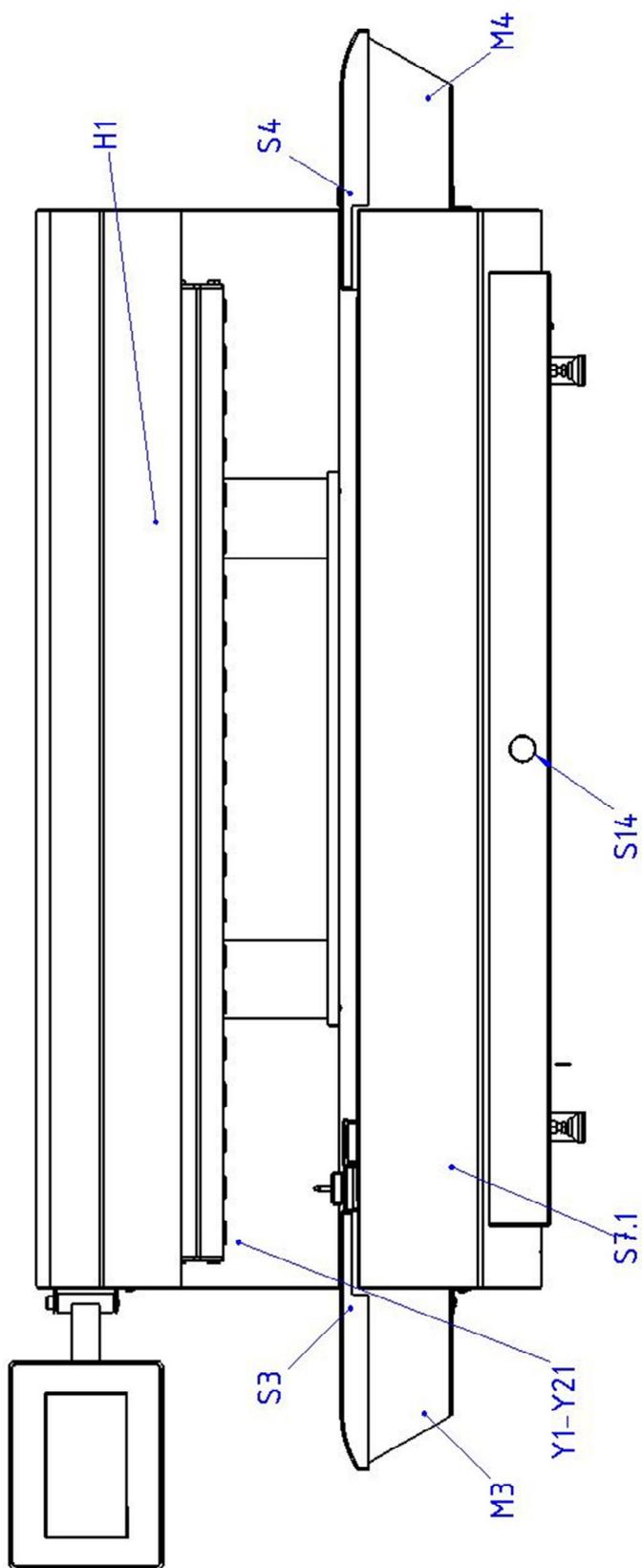
4100095 – horizontal frame

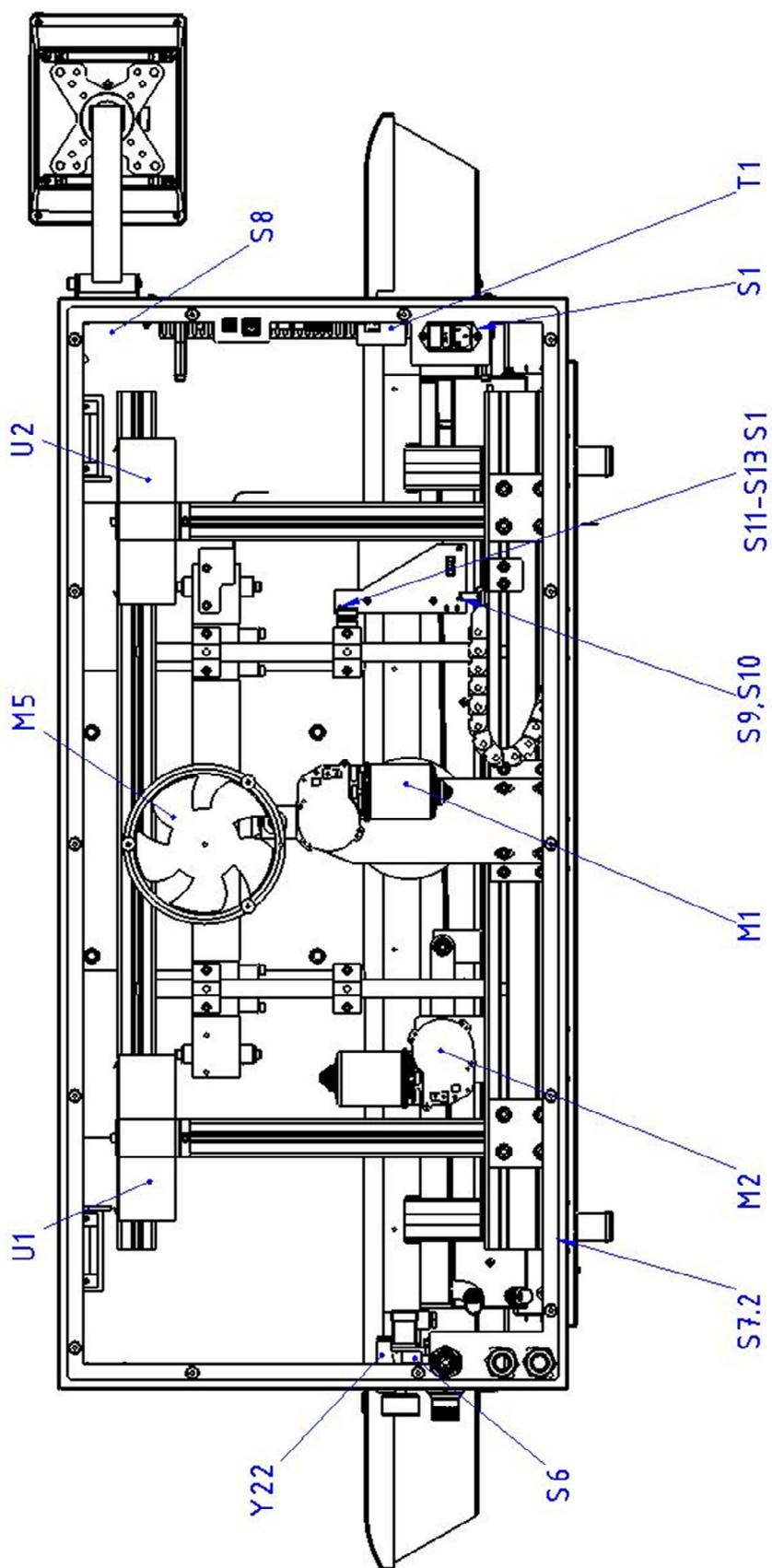


Pos.	part no	description	pcs
1	41000025	profile 40x80 - 920lg	1
2	41000026	profile 40x40	2
3	41000027	profile 40x40-920lg	1
4	41000030	guide shaft	2
5	41000081	profile rail guide system complete	2
6	41000174	transfer plate	2
9	41000306	LFHV board	1
10	41000534	LFHV board support	1
11	41000559	distance plate	1
12	39500175	hammer-head nut M5	4
13	41000530	battery unit	2
15	72003001	universal clamping set	8
18	70010510	allen screw - ISO 4762 - M5 x 10	2
19	70130003	washer ISO 7090-3-A2	2
20	70180103	self locking nut ISO 10511-3-A2	2
21	39500138	hammer-head nut M6	4
23	70010630	allen screw - ISO 4762 - M6 x 30	4
25	41000572	fixation energy chain	1
26	70130008	washer ISO 7090-8-A2	8
27	70010855	allen screw - ISO 4762 - M5 x 55	8
28	70120510	lenshead screw ISO 7380 - M5 x 10	2

4.2 - Electrical components

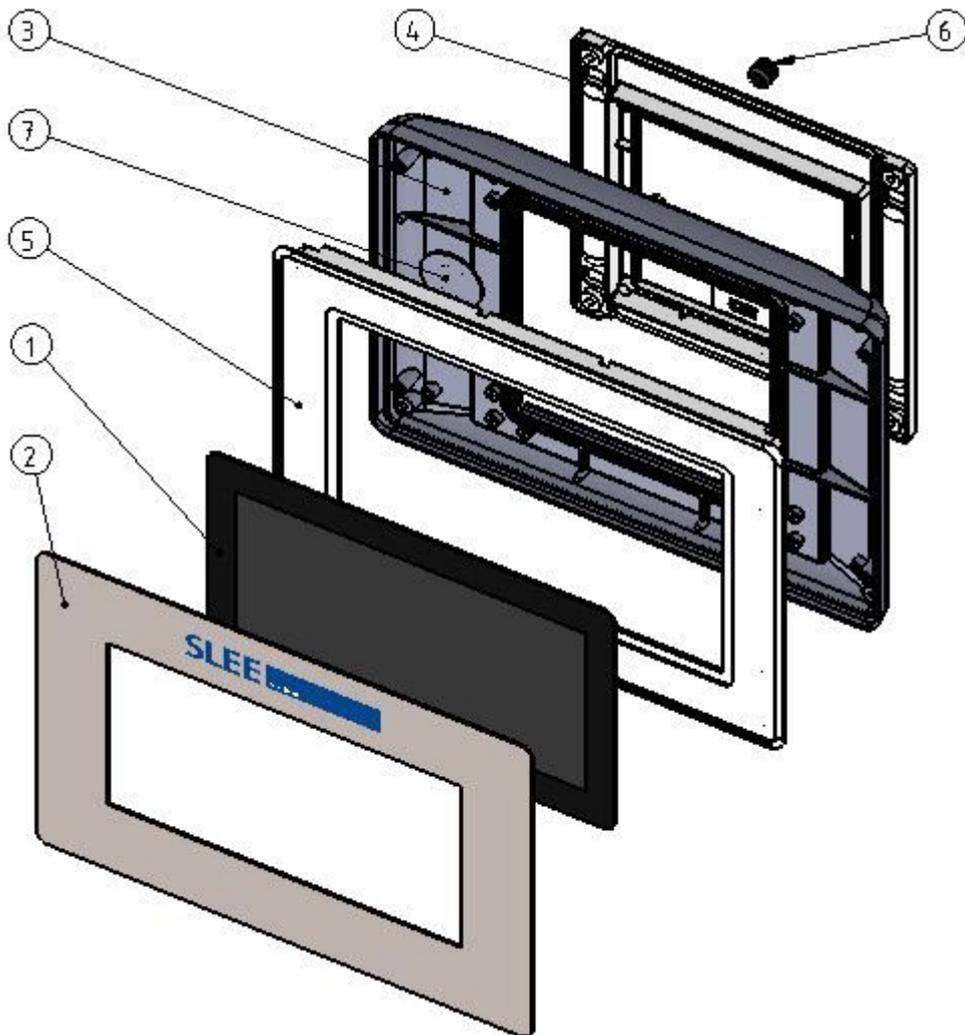






Pos.	part no	description	remarks	pcs
H1	70051106	LED-bar white	24V DC	1
M1, M2	41000320	motor cromatec	~16 Ω	2
M3, M4	41000075	motor for input/output unit	~80–95 Ω	2
M5	72217251	axial exhaust fan	24V DC 40W	1
S1	70220001	power connector with fuse and filter	2 x F=2,5A t	1
S3, S4	41000614	inductive sensor	10-30V DC - NC	2
S6	41000222	pressure switch	NO	1
S7.1, S7.2	41000012	leakage sensor	NO	2
S8	41000240	miniature switch	NO	1
S9 - S13	41000306	LFHV board cromatec		1
S14	34000389	emergency-stop	NC	1
T1	70220015	power supply	24V=, 200W	1
U1, U2	39500040	storage battery	12V, 2,2Ah	2
Y1-Y21	41000001	electro magnet VA	24V=	21
Y22	41000230	magnetic valve 2-way	24V=, 8W	1
	41000309	Ribbon cable 20 pol. magnet arm		1
	41000310	Ribbon cable 10 pol. LFHV board		1
	41000311	Ribbon cable 12 pol. loading station		1
	41000312	Ribbon cable 12 pol. unloading station		1
	41000313	Connection cable display board		1
	41000314	Ribbon cable 20 pol. magnet board		2

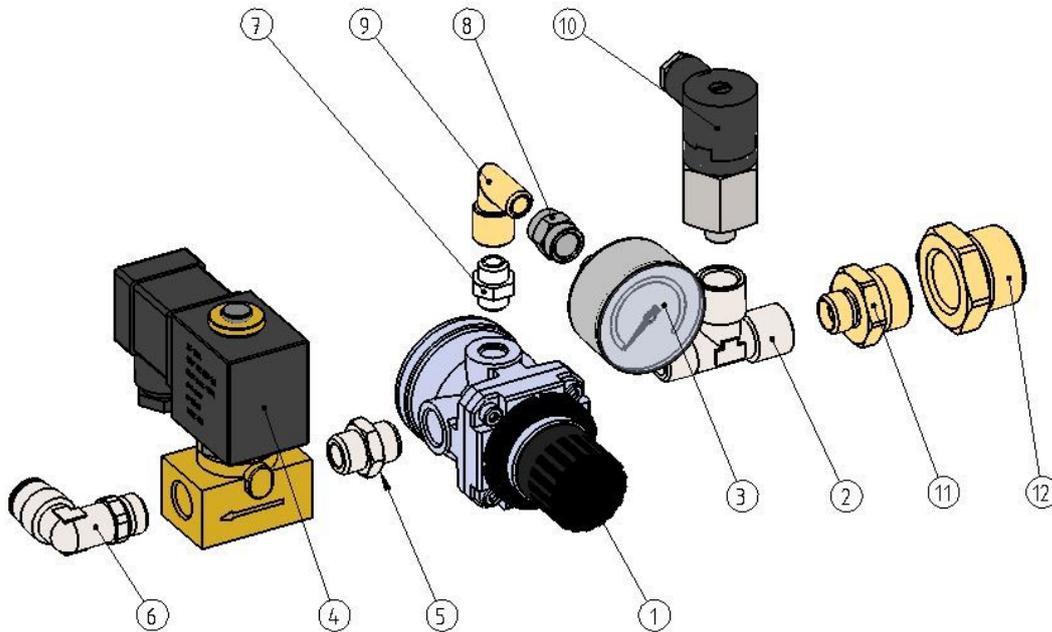
41000590 - display



Pos.	part no	description	pcs
1	41000595	touch screen 7"	1
2	41000562	metal frame for display	1
3	41000592	basic housing for display	1
4	41000593	rear panel for display	1
5	41000594	frame for display	1
6	71360406	wire protection sleeve	1
7	41000330	loud speaker	1

41000514 – pressure regulation

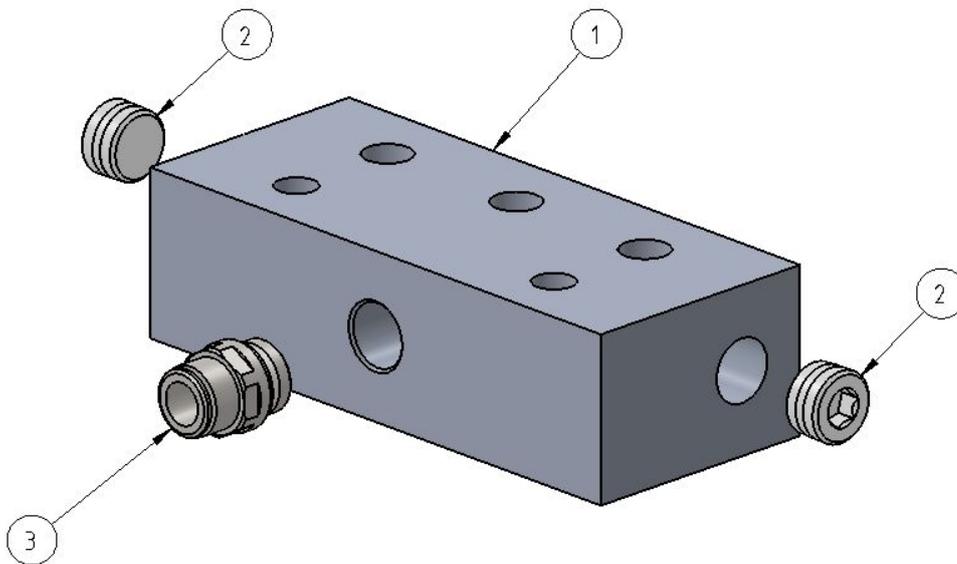
The water circuit of the linear stainer is adjusted by the pressure regulation unit. Fittings and threads are sealed with Loctite® 542.



Pos.	part no	description	pcs
1	41000250	pressure reducer	1
2	41000241	T-connector 1/4" - 1/4"	1
3	41000248	manometer 0-1.6 bar	1
4	41000230	magnetic valve 2-way	1
5	41000242	double nipple 1/4"	1
6	41000256	angle connection 10 1-4	1
7	39500228	double nipple 1/8"	1
8	41000206	sleeve 1/8"	1
9	41000252	elbow fitting 1/8"	1
10	41000222	pressure switch	1
11	41000653	double nipple 1/4"-1/2"	1
12	41000654	reduction 3/4"-1/2"	1

4100085 – 3-way distributor

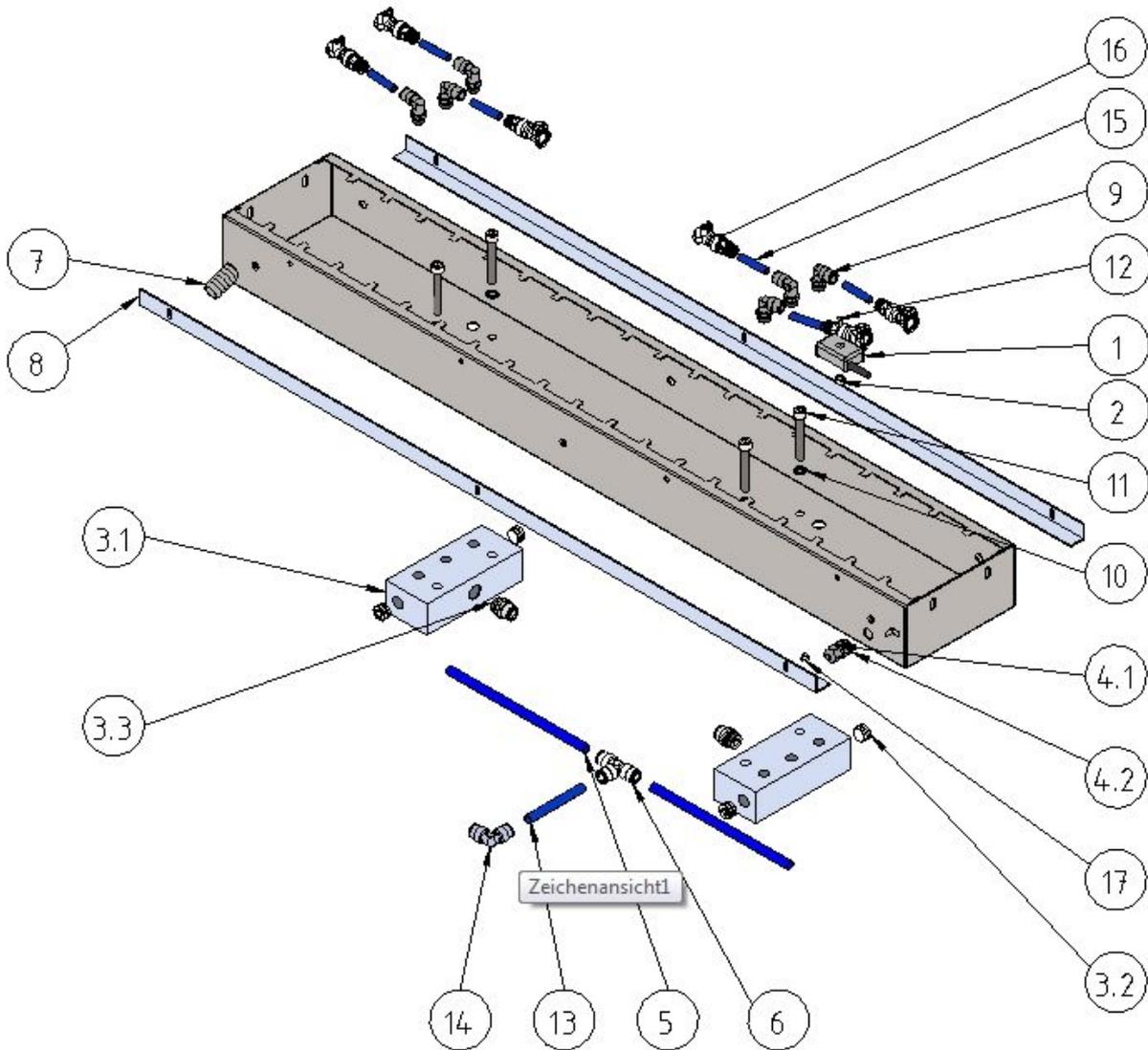
The water distributor for supplying the rinsing stations also serves as a tray support. To connect the fittings (2, 3) with the tray support (1) we recommend to seal the parts with Loctite® 542.



Pos.	part no	description	pcs
1	41000072	tray support	1
2	41000217	sealing plug 3/8"	2
3	41000209	port fitting straight 10-3/8"	1

41000554 – positioning tray

The positioning tray ensures that the cuvettes are all at the same distance. As a result, an accurate settling of the slide baskets is achieved. Furthermore, the necessary water distribution for flushing the slides is also realized by the positioning tray.

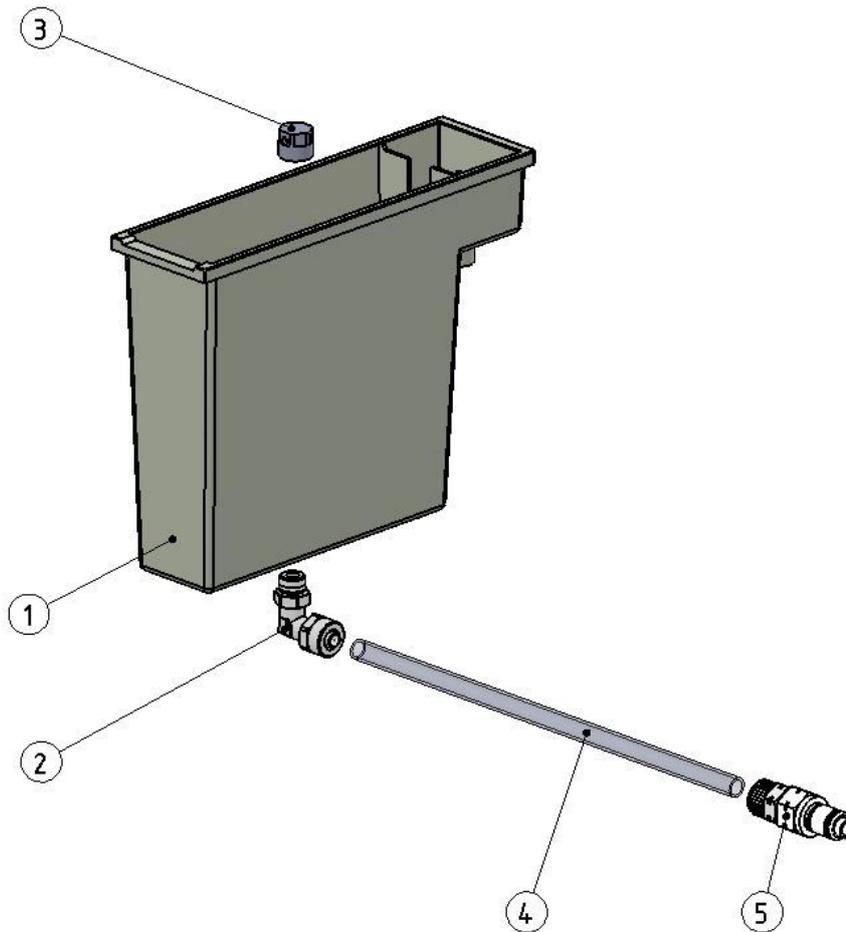


Pos.	part no	description	pcs
1	41000012	leakage Sensor	1
2	41000073	distance sleeve	1
3	41000085	3-way distributor - compl.	2
3.1	41000072	tray support	1
3.2	41000217	sealing plug 3/8"	2
3.3	41000209	port fitting straight	1
4.1	94000134	cord grip M12	1
4.2	94000138	cord grip nut M12	1
5	41000212	polyamid hose 10-8 – 200 mm lg	2
6	41000228	T connector 10	1
7	41000503	positioning tray	1
8	41000516	cuvettes support	2
9	41000207	L-screw-fitting 8 -1/4"	6
10	41000243	seal washer M8	4
11	70320855	allen screw M8x55 - A2	4
12	70020425	countersunk screw M4x25 - A2	1
13	41000257	polyamid hose 10-8 – 80 mm lg	1
14	41000234	angle connector 10	1
15	41000258	polyamid hose 8-6 – quick coupling	6
16	41000203	hose coupling	6
17	70120406	cheese head screw M4x6 - A2	6

41000410 - running water cuvette

The running water cuvette consists of the cuvette the tygon hose and the self-sealing hose connector. As soon as you disconnect the connector from the linear stainer, the system will locked.

To connect the nut (3) with the fitting (2), we recommend to seal both parts with Loctite® 542.



Pos.	part no	description	pcs
1	41000016	running water cuvette	1
2	41000220	90° fitting 8/6-1/8"	1
3	41000254	lock nut 1/8"	1
4	41000411	tygon hose - 200 mm lg	1
5	41000204	hose connector	1

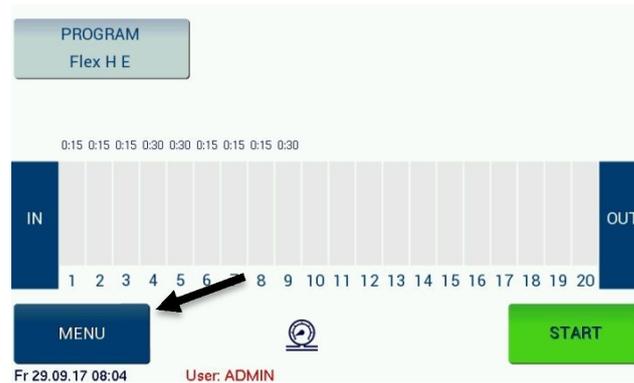
5. Software

5.1 Service level

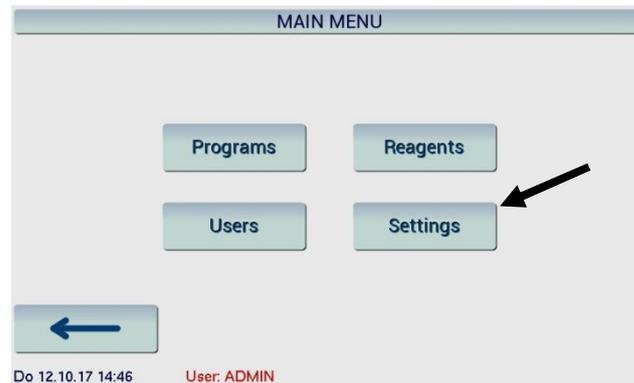
For service and maintenance, it's possible to activate most electrical consumers manually - by entering the Service level of the software.

Follow the steps below to get access to the desired menu:

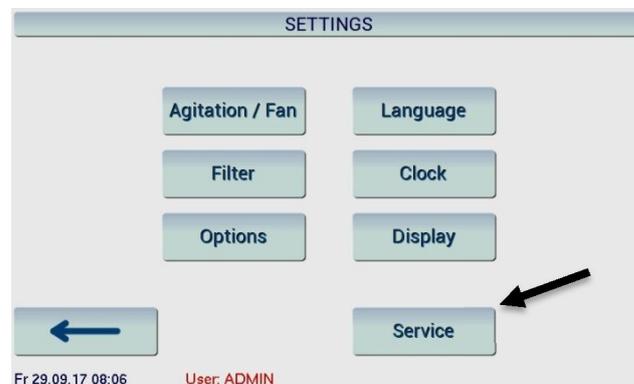
Turn on the cromatec. The display will light up and show the following.



Press „MENU“



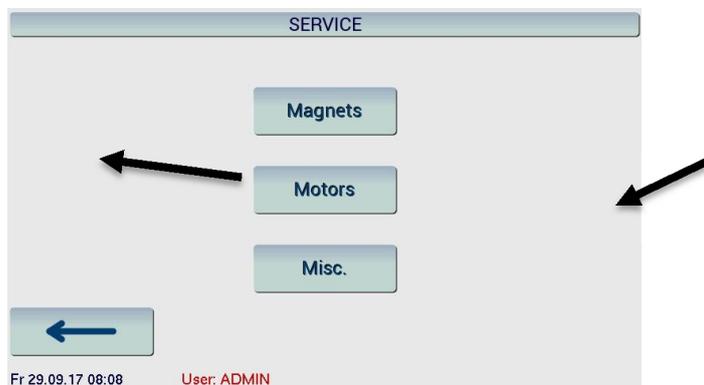
Press „Settings“



Press „Service“



Enter the service password 5792 and confirm by pressing OK.



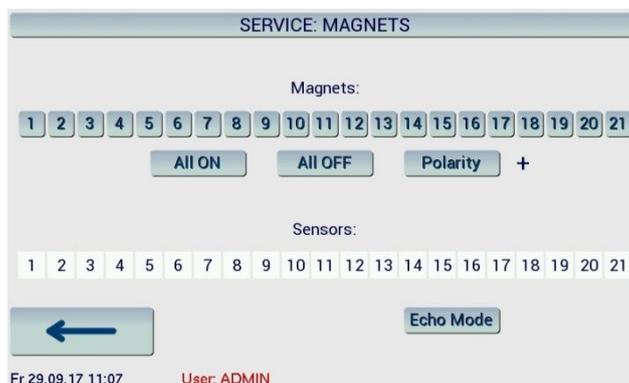
Here you can choose between „Magnets“, „Motors“ and „Miscellaneous“. Pressing the arrow in the bottom left corner will redirect you to the previous task menu.

Caution: Before testing any of the components, first make sure that all components are able to move freely.

Service Magnets:

To check the function of the magnets, it's possible to activate / deactivate a specific magnet or all of them. It's also possible to change the polarity of the chosen magnet.

In the lower area, the sensor-status for recognizing the slide-holder is shown - a dark blue field shows an activated sensor.



Service Motors:

In this menu it's possible to activate / deactivate the different motions of the assembly groups.

In the outer area, the input and output groups are shown, in the middle area the vertical and horizontal drives of the transport unit can be selected. Use „Momentary“ to move the transport unit as long as you press the specific button. For safety reasons, one sensor must always be activated, so note that the magnet arm can only be moved horizontally while, vertically, in the highest position.



Service Miscellaneous:

Here the dark blue buttons will show the activated status of the different sensors.

„Light“, „Fan“ and „Water“ can be activated / deactivated, the fan speed can also be adjusted by moving the slider.

The status bar informs you about the actual voltages of the power supply and the battery.



5.2 Installing the USB driver for SLEE medical cromatec

Preface

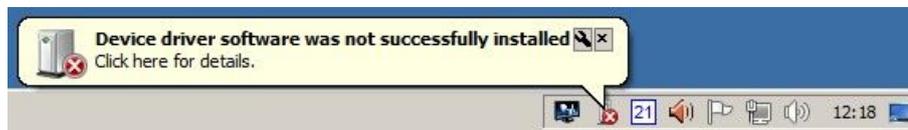
The SLEE medical cromatec uses an USB interface as a communication port for service and maintenance purposes. At the connected PC this communication port is implemented as a virtual COM port (VCP). To make use of that port and to provide access to it for application software, the Windows operating system requires some information about how to handle the USB device with its particular USB identifiers. This information is provided in form of a „driver“ - however, in this case the „driver“ only references the built-in VCP driver that's already present in Windows, so in fact nothing is really installed.

Note that for installing the driver, even if it's only a reference, you need administrative rights.

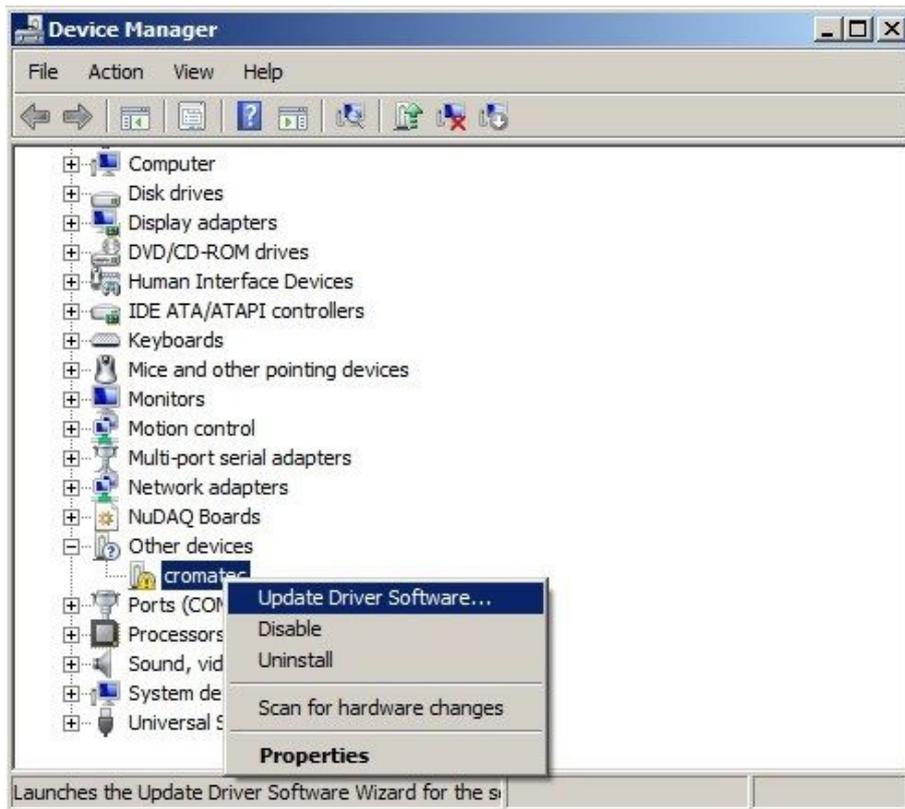
Please store the driver file that is provided by SLEE medical (file: Slee-cromatec-USB.inf) in a folder that you can locate easily later. In the example screenshots, this document assumes the folder „E:\Slee cromatec\“.

Installing the driver in Windows 7

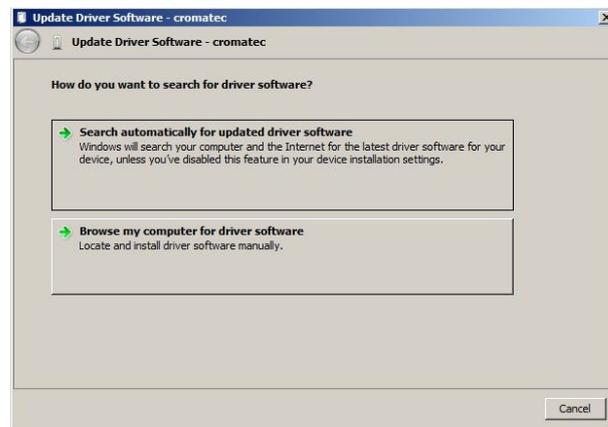
First, you need to connect the SLEE medical cromatec to a free USB port of the PC. After a short time, a message popup will appear at the system tray (along with an error sound), telling you that the required driver could not be installed.



Enter the device manager (Start / Control Panel / Device Manager). If the current user is not an administrator, you need to run the device manager „as administrator“ by using the right mouse button. At „Other devices“, the device „cromatec“ will be shown with an exclamation mark indicating that no driver is installed. Right-click on „cromatec“, then select „Update Driver Software“ in the popup menu.



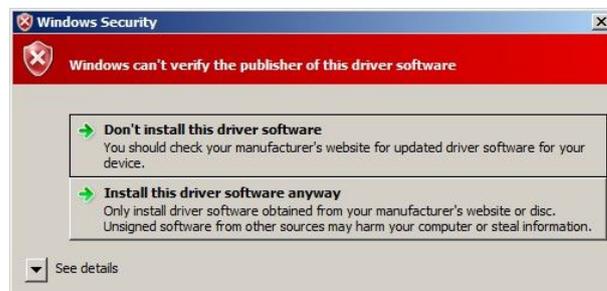
After that, select „Browse my computer for driver software“.



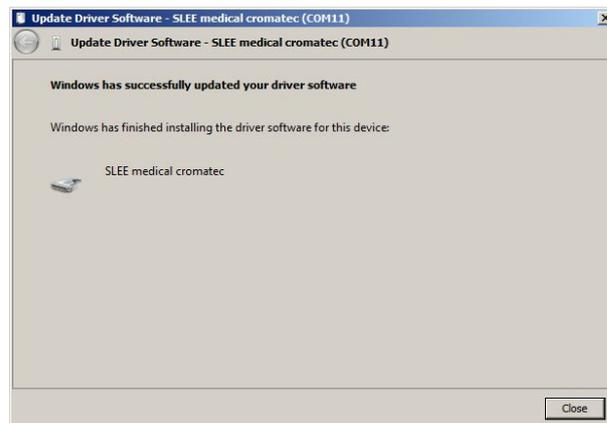
Navigate to the folder that contains the driver file „Slee-cromatec-USB.inf“, then click „Next“.



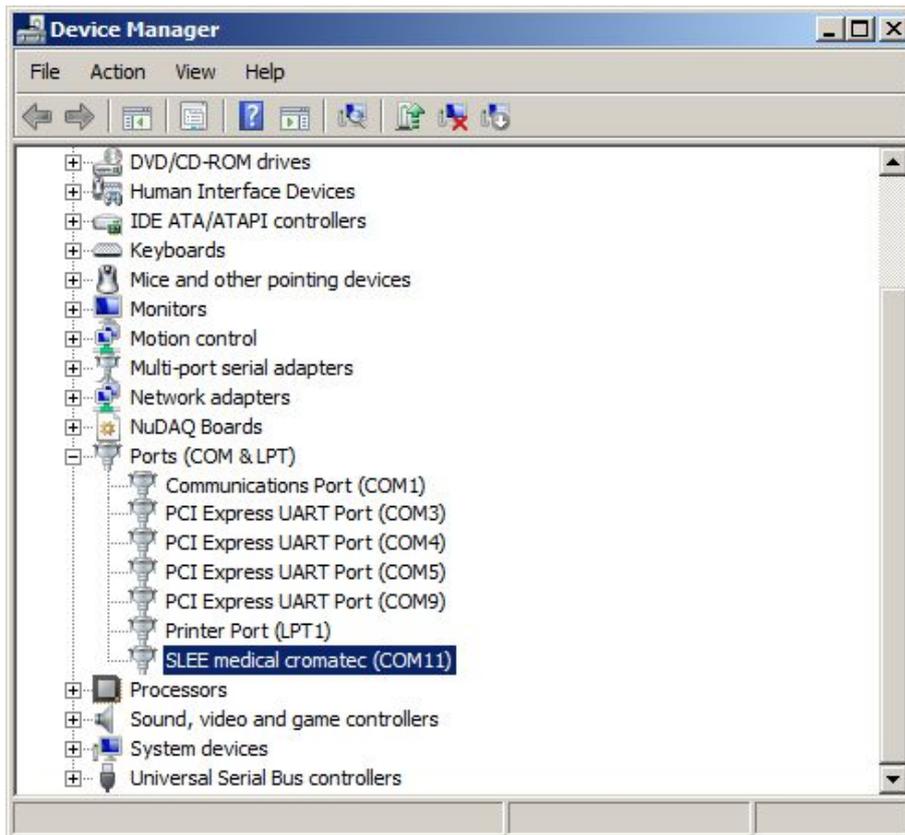
After that, a warning popup window will show, telling you that the driver is not signed by Microsoft. (Remark: this is pure nonsense, since the „driver“ only references the original built-in VCP driver in Windows.)



Click on „install anyway“, and after a short time a success window should show.



After that, the SLEE medical *cromatec* also shows up as a valid device under „Ports (COM & LPT)“:



From now on, the communication port can be used with the VCP name (COM11 in this example) shown in the device manager as soon as the device is connected to the PC. Take care that the USB connection needs to be established before the related software is started at the PC, otherwise the software wouldn't find the VCP (it scans the system for serial ports only once when started).

Installing the driver in Windows 8.1 or 10

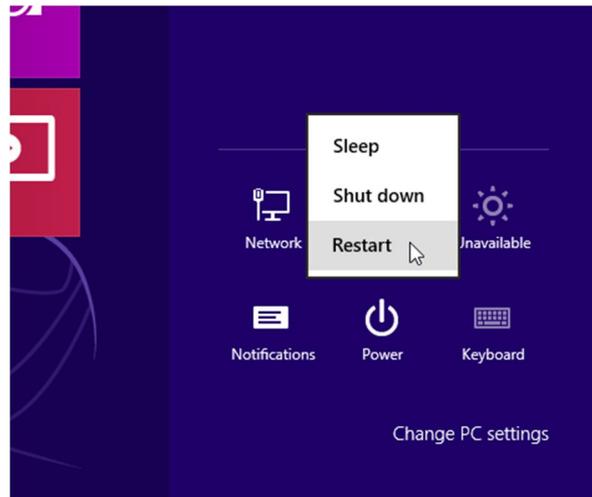
Unfortunately, Microsoft has made the requirement for driver signature much more stringent with the introduction of Windows 8. Now, it's not possible to simply turn it off during installation. To make use of an unsigned driver, you first need to reboot the system with a special setting that temporarily allows you to install unsigned drivers.

The following screenshots show the appearance in Windows 8.1, but it's similar with Windows 10.

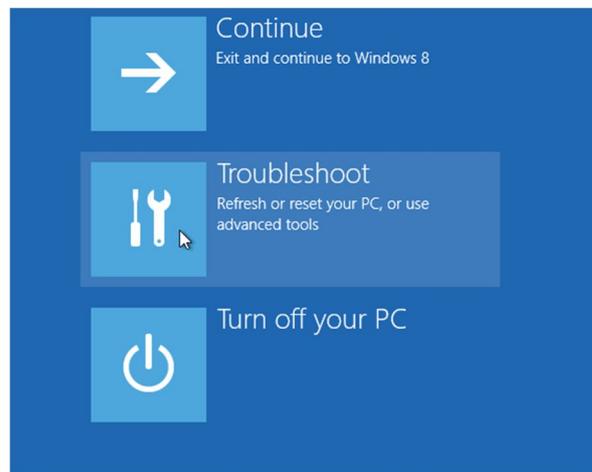
Preparing for installation of an unsigned driver

Before being able to accept an unsigned driver in Windows 8.1 or 10, you need to reboot the system with a special startup setting.

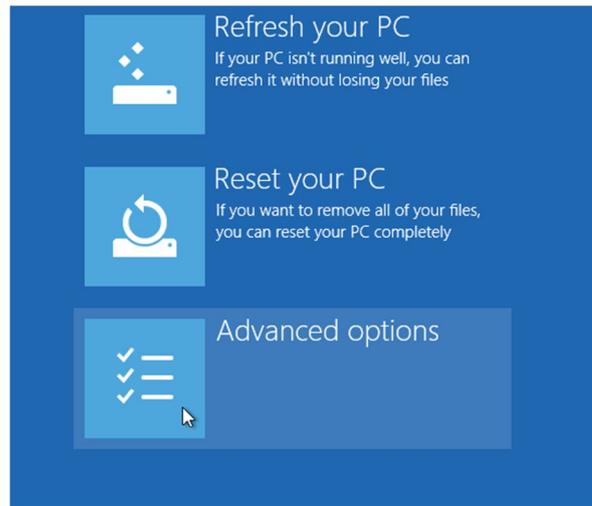
For this, press the keys „Windows+i“ at the desktop, then click on „Power“. Hold the SHIFT key pressed down while clicking on „Restart“:



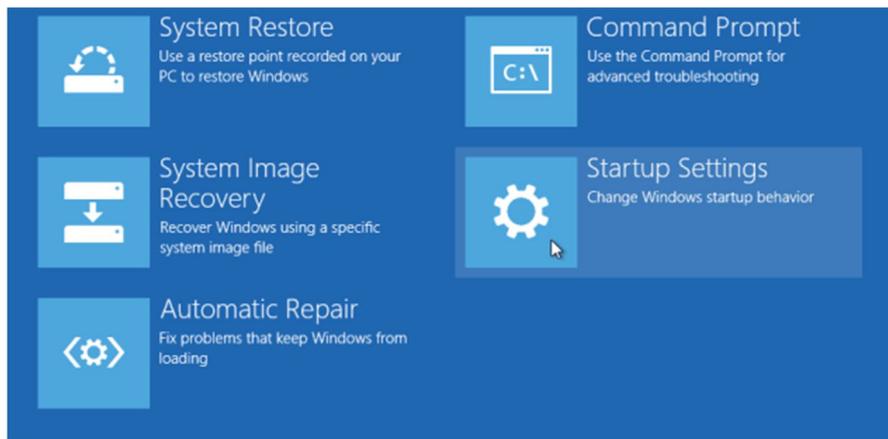
The PC will show an options screen, where you select „Troubleshoot“:



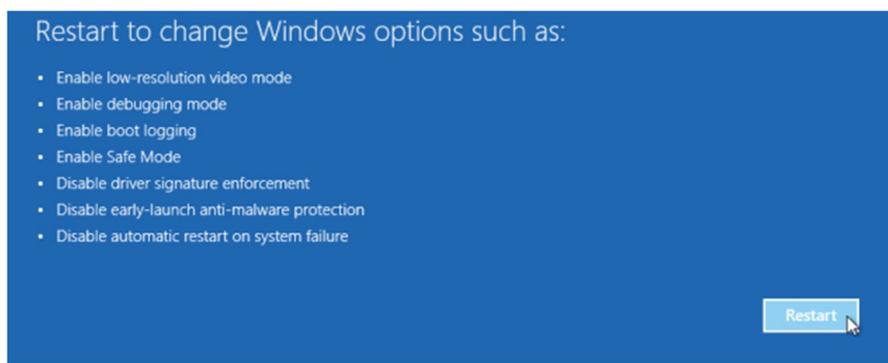
On the next screen, select „Advanced options“:



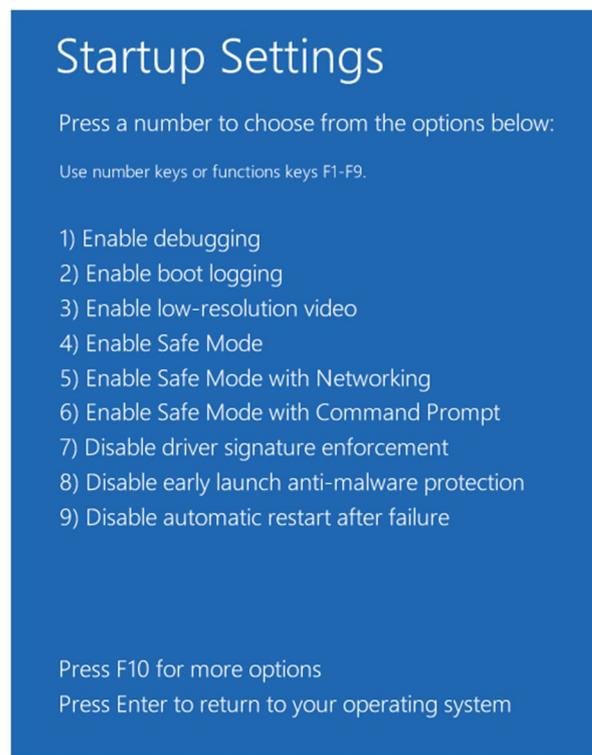
After that, select „Startup settings“:



Finally, click on „Restart“:



Then, the PC will reboot – and show the Startup Settings list:



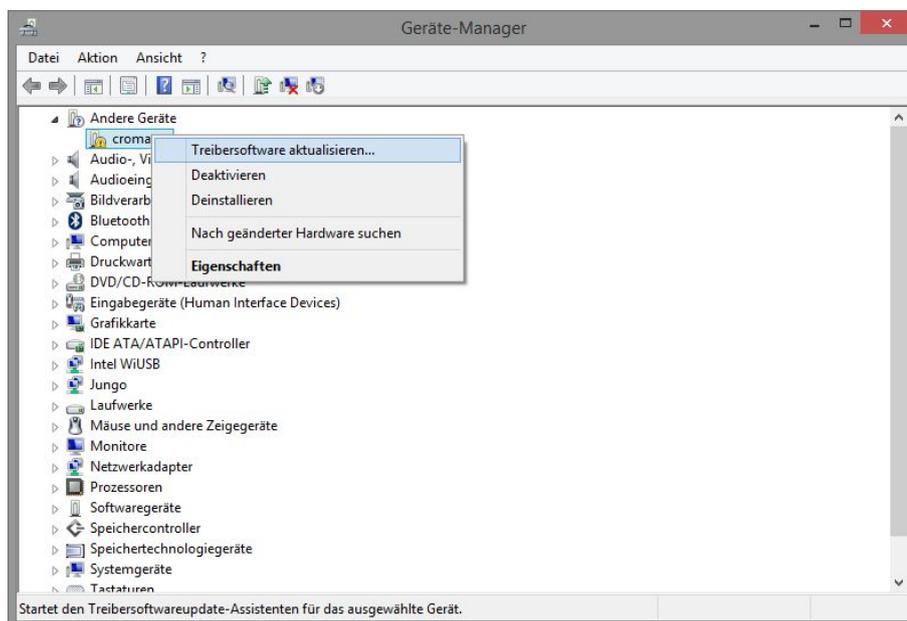
The items of that list can be selected only by keyboard, not by mouse. Press „7“ (or F7) to select „Disable driver signature enforcement“. The PC will restart without any visual difference to a regular boot process, but now you will be able to install an unsigned driver. (With the next start, this setting will revert to its default state, so after that it will be impossible again to install unsigned drivers.)

Installing the SLEE medical cromatec USB driver

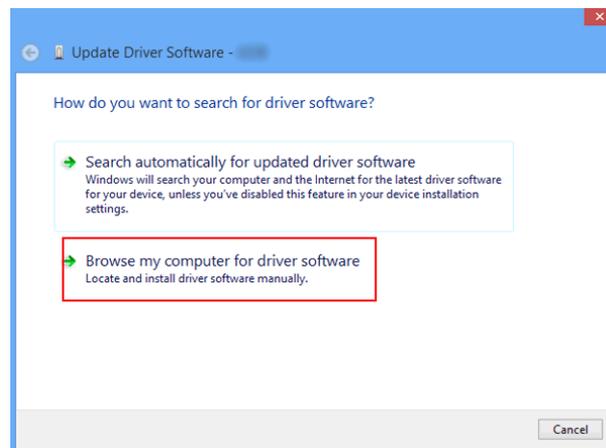
After having allowed for installation of unsigned drivers by use of the startup settings, installing the driver is similar to using Windows 7. First, connect the SLEE medical *cromatec* to a free USB port of the PC. There will be an „USB connection“ sound, and a „progress bar“ entry in the task bar claiming a driver installation, but no driver will be installed.

Enter the device manager (Start / Control Panel / Device Manager). If the current user is not an administrator, you need to run the device manager „as administrator“ by using the right mouse button. At „Other devices“, the device „cromatec“ will be shown with an exclamation mark indicating that no driver is installed. Right-click on „cromatec“, then select „Update

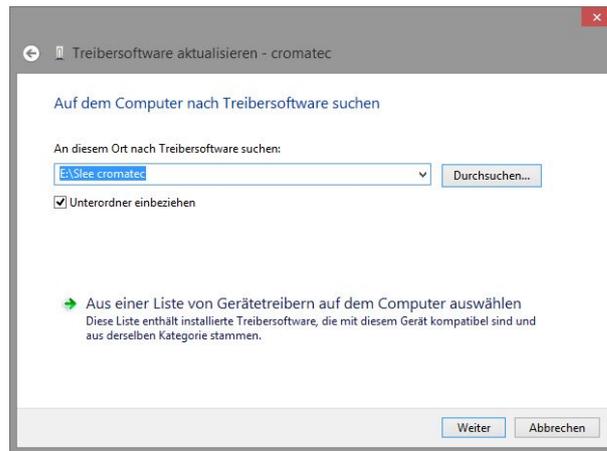
Driver Software“ in the popup menu.



After that, select „Browse my computer for driver software“.



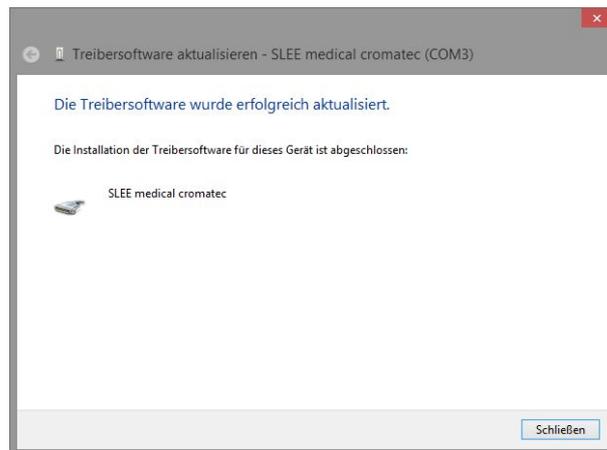
Navigate to the folder that contains the driver file „Slee-cromatec-USB.inf“, then click „Continue“.



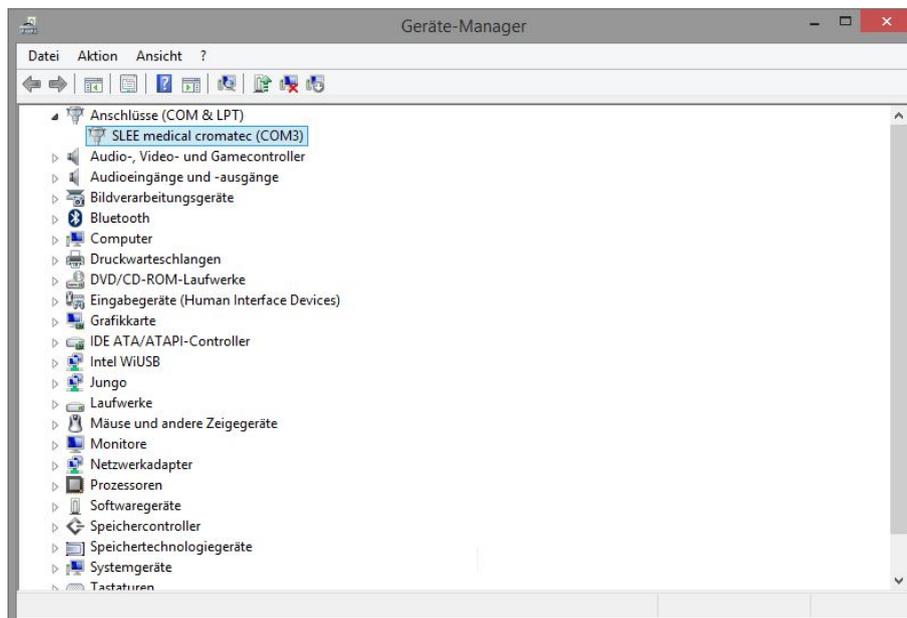
After that, a warning popup window will show, telling you that the driver is not signed by Microsoft. (Remark: this is pure nonsense, since the „driver“ only references the original built-in VCP driver in Windows.)



Click on „install anyway“, and after a short time a success window should show.



After that, the SLEE medical *cromatec* also shows up as a valid device under „Ports (COM & LPT)“:



From now on, the communication port can be used with the VCP name (COM3 in this example) shown in the device manager as soon as the device is connected to the PC. Take care that the USB connection needs to be established before the related service or maintenance software is started at the PC, otherwise the software wouldn't find the VCP (it scans the system for serial ports only once when started).

5.3 Software update

Equipment needed for software update of cromatec:

1. Transfer cable with USB A – USB B connectors
2. Transfer software AMIAP4.exe
3. Device software LF x.xx

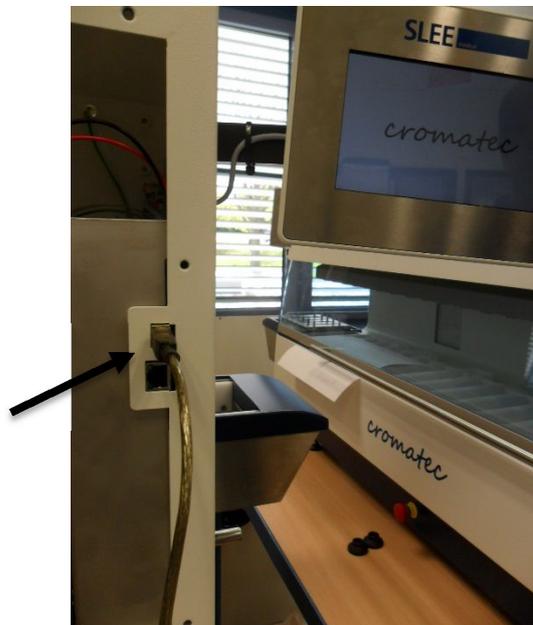
Switch on the PC and the cromatec.

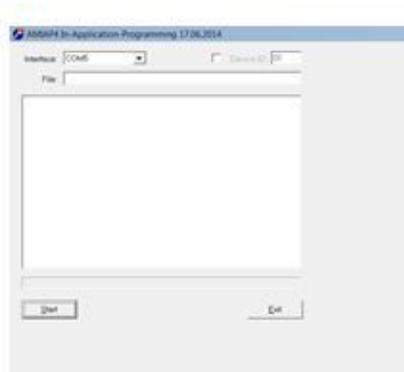
Store the software files AMIAP4.exe and the device software LF x.xx on your PC.

Connect the cromatec with your computer via the USB A –USB B cable.



USB A –USB B cable

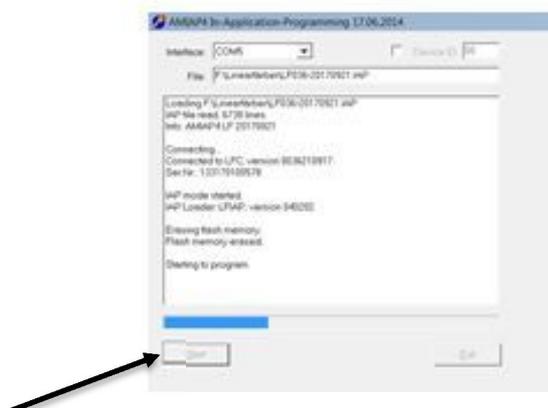




Start the AMIAP4.exe and **maximize** the appearing window.



In the upper left corner, the COM-connection is shown. Click into the small window below to choose the device file for updating the linear stainer.



Press „Start“ to transfer the software to the instrument. During the update, the cromatec’s display will show “Programming...”.

6. Errors

6.1 Notes

Any failure occurring during the operation of the cromatec is indicated by an alarm sound and message, shown on the display. Please refer to the trouble shooting list.

6.2 PopUp messages in normal operation

<p>After pressing STOP: Red PopUp "Would you really cancel all staining procedures?"</p>	 <p>Press ok to confirm or go back.</p>
<p>After confirming of cancellation: Red Info PopUp</p>	 <p>Wait while staining is being stopped.</p>
<p>After confirming of PAUSE</p>	<p>Staining procedures interrupted since hh:mm:ss Terminate PAUSE with OK</p>
<p>After pressing Emergency button: Red PopUp „EMERGENCY STOP“</p>	 <p>Staining procedures interrupted. Resolve problem, unlock EMERGENCY HALT and select: [Continue] [Cancel]</p>
<p>After canceling by "Cancel" after emergency stop: Red PopUp "EMERGENCY STOP"</p>	<p>Manually remove specimen, then touch OK. [OK]</p>
<p>After opening of hood: Red PopUp „Lid open“</p>	 <p>Staining procedures interrupted. Close lid</p>

	and touch OK. [OK]
Flow of the filter running time: Yellow PopUp „INFO“	Filter usage time expired, please replace. [OK]
Expiration of reagent: Yellow PopUp „INFO“	 <p>At least one reagent expired, please replace. [OK]</p>
At start attempt despite emergency stop: Yellow PopUp “EMERGENCY HALT”	Resolve problem, unlock EMERGENCY HALT and select: [OK]
When starting with open hood: Yellow PopUp “Lid open”	 <p>Close lid and touch OK. [OK]</p>
When starting with "Auto" inside a program: Yellow PopUp “INFO”	Program invalid: Empty/Auto is allowed only right-aligned. [OK]
At start-up with water requirement and without pressure: Yellow PopUp “INFO”	 <p>Program requires water, but pressure is too low. [OK]</p>
At initial attempt with almost empty battery: Yellow PopUp “INFO”	 <p>Battery voltage too low, charge before starting. [OK]</p>

	[OK]
<p>In the case of a start experiment with samples still attached to the arm: Yellow PopUp (State after prior emergency stop) "INFO"</p>	 <p>Specimen found at transport arm. Please remove. [OK]</p>
<p>On start with expired filter running time: Yellow PopUp "INFO"</p>	<p>Filter usage time expired please replace. [OK] (Start nevertheless possible)</p>
<p>When starting with reagents that have expired: Yellow PopUp "INFO"</p>	<p>At least one reagent expired, please replace. [OK] (Start nevertheless possible)</p>

6.3 Error messages in normal operation

<p>Motor Error: Red PopUp "MOTOR ERROR"</p>	<p>Staining procedures interrupted since hh:mm:ss [Retry] [Cancel]</p> <p>Messages: Overcurrent horizontal Overcurrent vertical Timeout horizontal Timeout vertical</p>
<p>Failure of the magnetic control: Red PopUp "MAGNET ERROR"</p>	<p>Specimen transport impossible Manually remove specimen and call service</p> <p>Note: no OK-Button, present programm will be cancelled!</p>
<p>Downstream pressure: Red PopUp "ERROR"</p>	<p>Water pressure too low. [OK]</p>
<p>Leakage: Red PopUp "ERROR"</p>	<p>Water leakage detected. -- places see below. -- [OK] Places: (container) (enclosure) (container and enclosure)</p>
<p>No more samples in the enema during the admission test: Yellow PopUp "INFO"</p>	<p>No specimen found in input station. [OK]</p>
<p>Other holders in the system when attempting to take sample holders: Yellow PopUp "INFO"</p>	<p>Specimen found in stations 1-20. Please remove. [OK]</p>

Output station full: Red PopUp "Output station full"	Process hold for hh:mm:ss. Remove specimen, then touch OK. [OK]
Glue the sample holder to the arm (raised too much): Red PopUp „ERROR“	Specimen sticking at n1 n2 n3 (Station number) Correct, then touch OK. [OK]
Specimen lost (while lifting down): Red PopUp „ERROR“	Specimen lost at n1 n2 n3 (station no.) Correct, then touch OK. [OK]
Specimen holder stick or lost (combination 8+9): Red PopUp „ERROR“	Specimen sticking at n1 n2 n3 (station no.) Specimen lost at n4 n5 n6 (station no.) Correct, then touch OK. [OK]
Unexpected samples in the unit (detected during lowering): Red PopUp „ERROR“	Alien specimen found at n1 n2 n3 (station no.) Correct, then touch OK. [OK]
Fail-safe sensor in run-in station (continuous signal): Red PopUp „ERROR“	Input station sensor failure. [OK]
Invalid internal state: Red PopUp „SYSTEM ERROR“	Invalid internal state. Touch OK and shutdown. [OK]
Display not working or not connected correctly	Lights are flashing

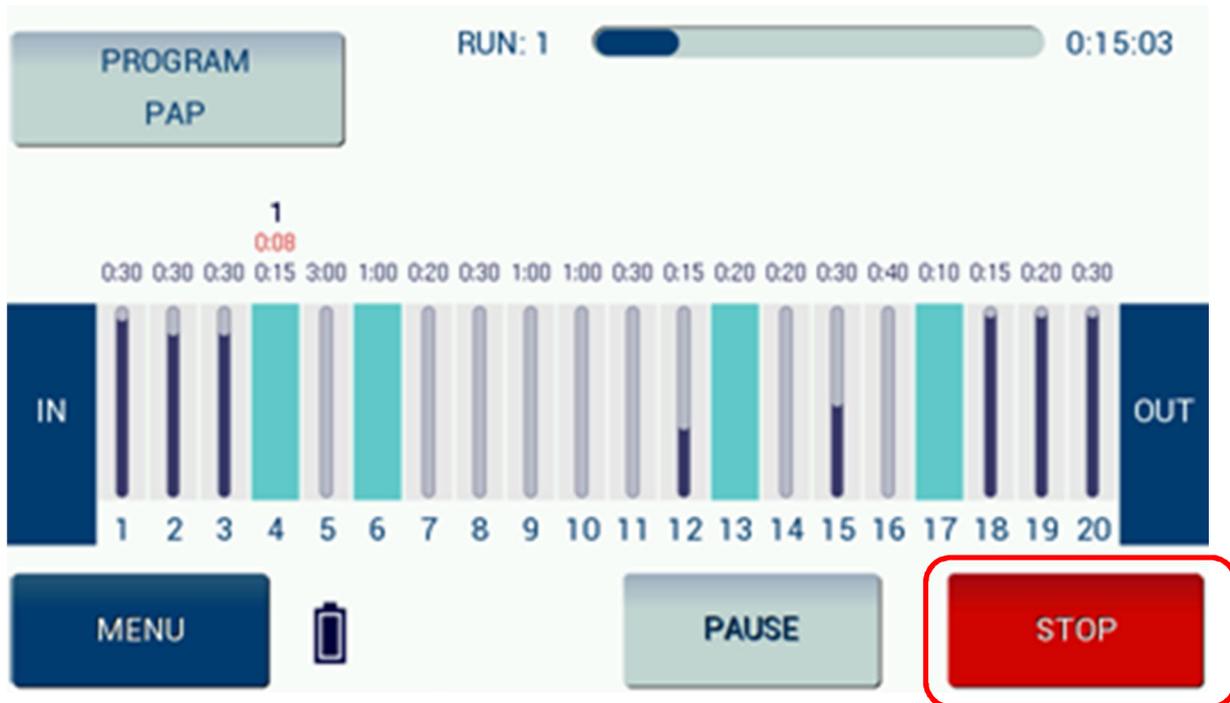


Never use deformed baskets. A damaged basket can stop the staining process.

Fill the baths up to the mark. Check the filling level daily.

6.4 Power failure

The cromatec has a built in battery to allow the unit to work even in a case of power failure. In case of a power failure the display shows the following symbol:



The operation is continued using the emergency power supply. As the battery gets loaded during operation, a fully loaded device can be operated using the battery. However, new racks shall not be placed during indicated battery operation.

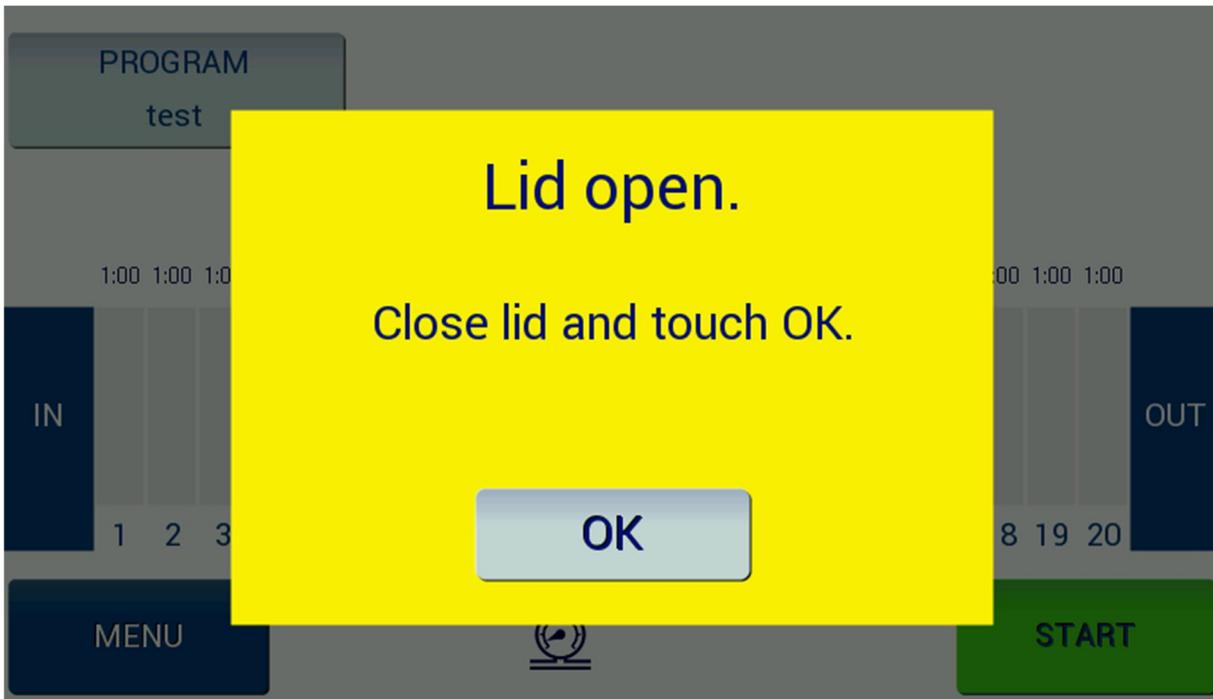


During battery operation the light and ventilation is being switched off.

If the power comes back, the battery symbol disappears and the device turns back to regular operation, including light and ventilation. No action from the user is needed.

6.5 Hood

When the hood is opened, the instrument stops immediately, an alarm sounds until the hood is closed and the following Yellow PopUp window is shown.



The cromatec will not perform any staining program while the lid is open. When the lid is opened, the ventilation will automatically be increased.

7. Spare part list

No.	Qty. [per instrument]	Art.-No.	Description	Structural component	Category
1	1	41000301	LFC mainboard	electronic	SP
2	1	41000302	LFT board with 7" touch screen	electronic	SP
3	3	41000305	LFM7 board magnetcontrolling for 7 positions	electronic	SP
4	1	41000306	LFHV board for horizontal + vertical positioning	electronic	SP
5	2	39500040	storage battery for MTP	electronic	SP
6	2	39500021	turning motor MTP	electronic	SP
7	#	41000001	electromagnet VA 24 V	electronic	SP
8	1	70220015	power supply 24V 200W	electronic	SP
9	2	41000614	inductive sensor	electronic	SP
10	1	70220001	Power connector with fuse and filter 10 A	electric	SP
11	1	70220002	fuseholder	electric	SP
12	2	41000012	leakage sensor	electric	SP
13	1	72217251	axial exhaust fan	electric	SP
14	1	34000389	emergency stop button	electric	SP
15	1	34003837	contact plug for emergency-stop	electric	SP
16	2	70051106	LED-bar	electric	SP
17	1	41000240	miniature switch	electric	SP
18	1	41000420	slide basket (plastic) for 30 slides with transport bracket	mechanic	SP
19	4	41000031	bearing unit vertical	mechanic	RSP
20	1	41000190	bearing swivel mounted	mechanic	SP
21	1	41000080	linkage compl. linear stainer	mechanic	SP
22	2	41000038	pneumatic spring 200 N	mechanic	WP
23	4	41000067	transport belt	mechanic	WP
24	2	41000075	motor for input/output unit	mechanic	SP
25	2	41000081	profile rail guide system	mechanic	SP
26	4	41000083	machine mount with lock nut D30 - M8 x 40 mm	mechanic	SP

No.	Qty. [per instrument]	Art.-No.	Description	Structural component	Category
27	2	41000616	tooth belt for input/output unit	mechanic	SP
28	1	41000110	Perspex hood PMMA	mechanic	SP
29	1	41000562	metal frame for display	mechanic	SP
30	1	41000019	staining cuvette MSM / cromatec	hydraulic	SP
31	1	41000410	wash trough complete	hydraulic	SP
32	6	41000203	hose coupling	hydraulic	SP
33	6	41000204	hose connector staining trough	hydraulic	SP
34	1	41000222	pressure switch	hydraulic	SP
35	1	41000239	pressure switch cover	hydraulic	SP
36	1	41000230	magnetic valve 2-way	hydraulic	SP
37	1	41000224	magnetic valve connector	hydraulic	SP
38	1	41000248	manometer 0-1.6 bar	hydraulic	SP
39	2	33000521	silicone hose 18x3 mm	hydraulic	SP
40	2	41000657	drain hose 19 x 4 mm	hydraulic	SP
41	2	33010428	hose clamp	hydraulic	SP
42	1	41000655	safety inlet water hose, d=3/4 ", 3m length, incl. water stop	hydraulic	SP
43	1	41000020	carbon filter 200x200 mm	pneumatic	WP

WP - Wear Part

RSP - Recommended Spare Part

SP - Spare Part

N/A - Spare Part on Request

8. Cleaning

8.1 General cleaning advice

The SLEE linear stainer cromatec has a solvent resistant surface area according to the requirements of histological laboratories so that an easy cleaning can be done without problems. Only the display should be cleaned with a damp cloth.



Before starting the cleaning, please turn off the instrument. Dispose of used reagents according to the laboratory regulations in force in your country.

Do not use alcohol, detergents containing alcohol (window cleaner!), abrasive cleaning powders, solvents containing acetone or xylene.

Inner side of the cromatec:

Please remove the cuvettes and clean the stainless steel inner panels carefully with a regular cleaner.

Transport system:

Be careful with the lower side, where the magnets are located. In normal operation it should be sufficient to wipe with a moistened cloth.

Outside surfaces:

Please clean the outside surfaces with a mild detergent and subsequently wipe down with a moistened cloth.

For the window, use a moisture cloth.

Screen:

Please use a commercial screen cleaner for cleaning the touch screen.

Cuvettes:

It is also possible to clean the staining cuvettes with a usual dish washer. Please consider the chemical rests in the troughs and their harmful influences to the environment.

Inlet/Outlet hose:

Please check weekly the waste water drain hose for accumulated dirt, particularly for algae. Clean whenever necessary.

8.2 Disposal

The instrument or parts of the instrument must be disposed of according to existing local applicable regulations.



Do not expose the instrument to regular domestic or industry waste. It contains electrical parts that can be dangerous to the environment!

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