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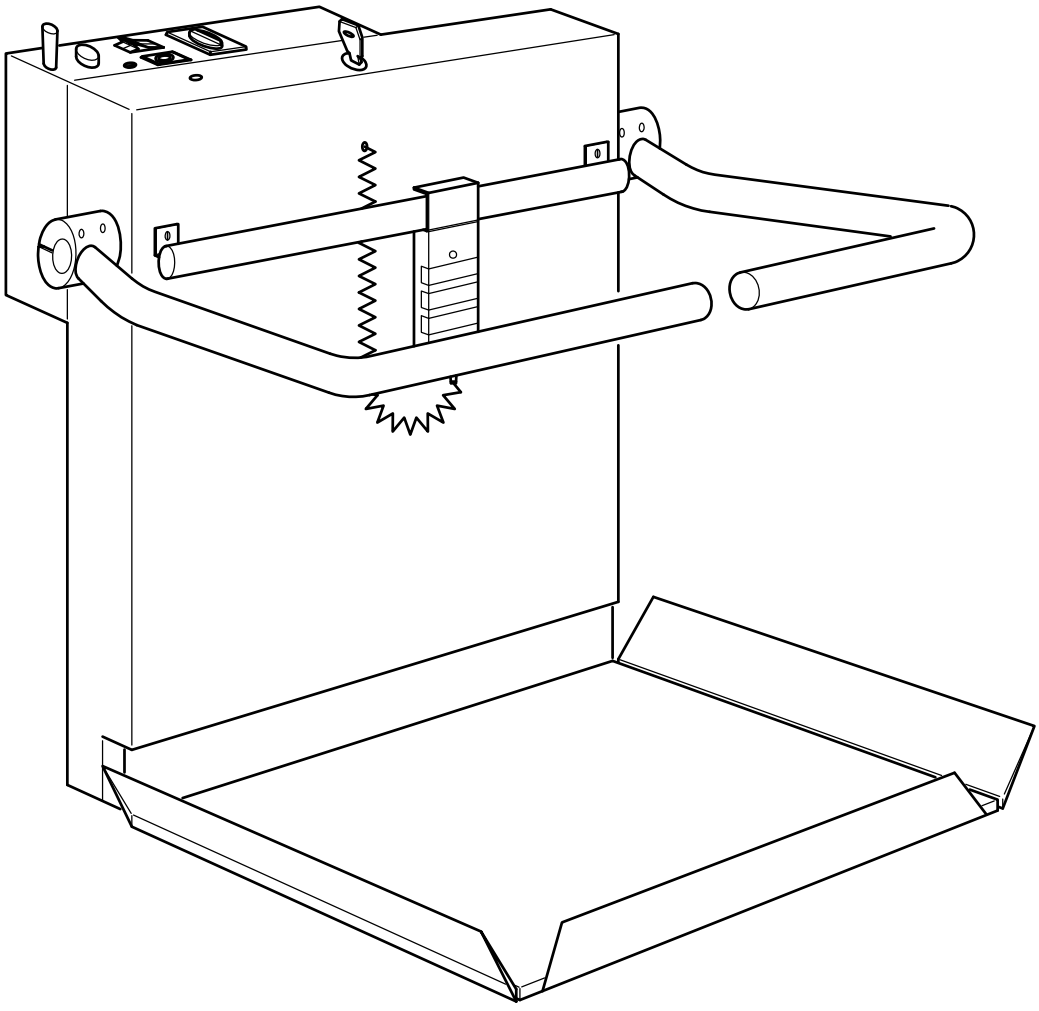
General Installation Instruction
Curved Wheelchair Lift



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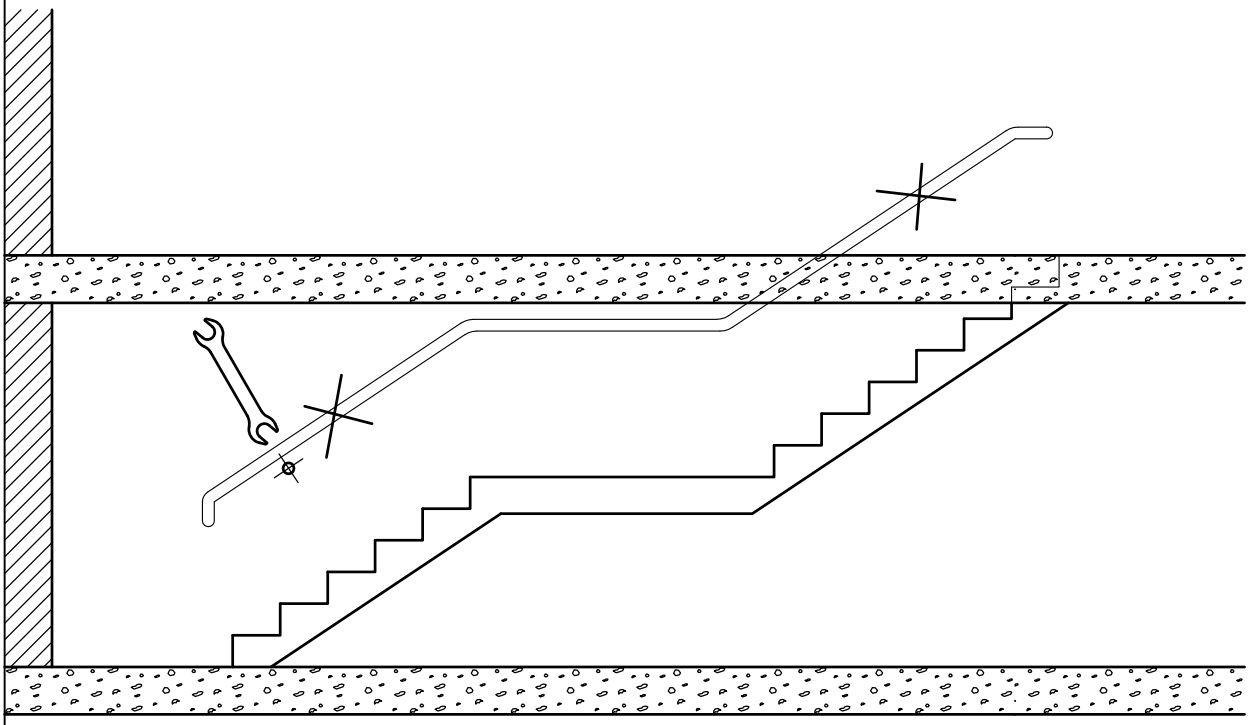
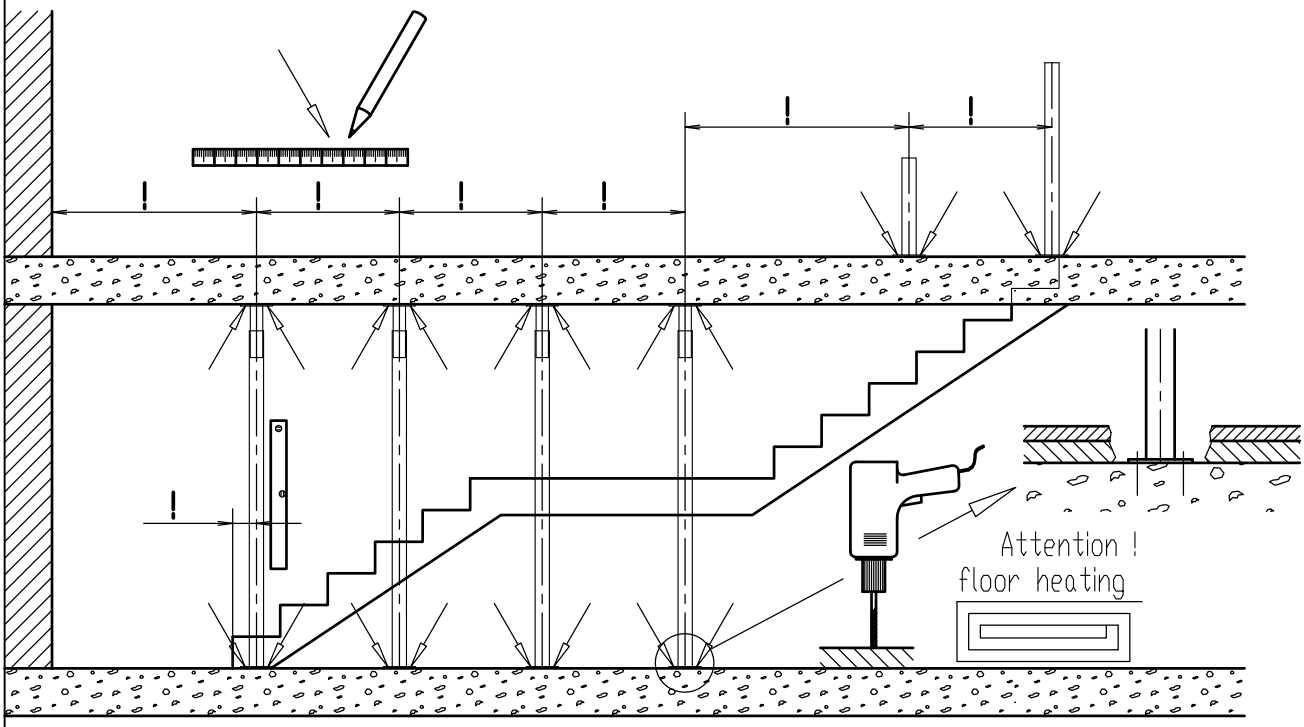


Remove anything that will obstruct the installation of the lift.
This includes anything on the floor, walls, or step areas.



Look at the shop drawing and locate the telescoping posts, mark and drill the anchor holes. Level and fasten the posts.

Attention: Ask the architekt or the customer whether there is a heating, some plastic isolation sheets or floating mastic under the floor. Be sure to bolt the posts down to the concret. Even on the tile cover of the floor you should not fasten the posts.

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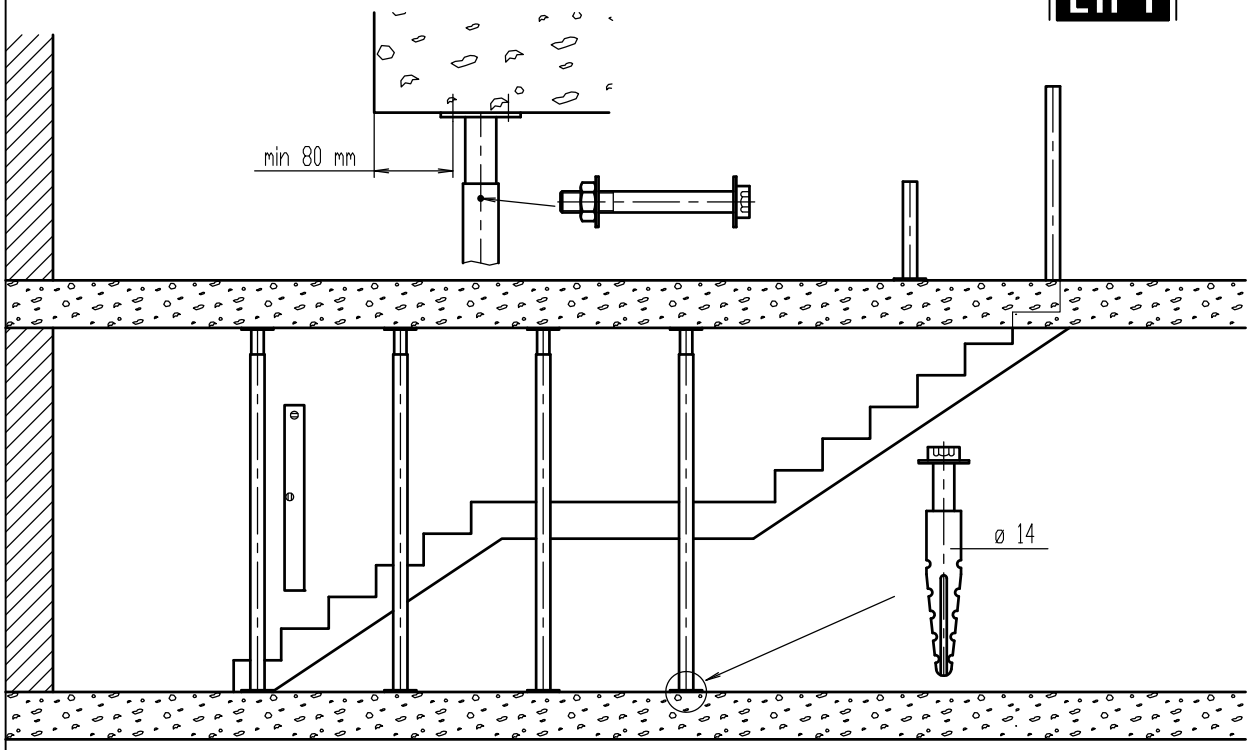
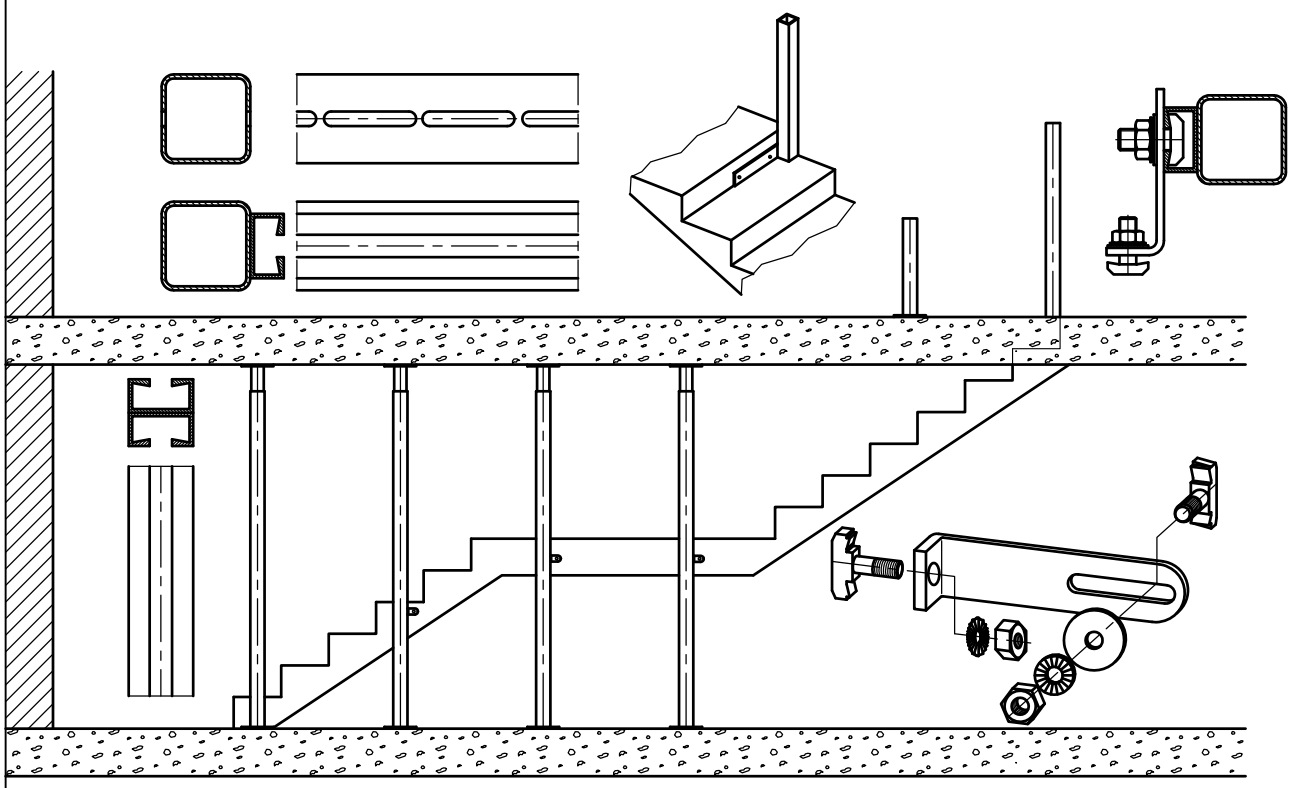


After fastening the posts to the floor, and fastening the upper portion of the posts to the ceiling, drill through the tubes and screw them tight together.

Warning: Be sure to have a bigger distance than 80 mm to the edge of the ceiling to be able for a securely fastening without destroying anything.



Install connecting angles with hammer bolts, lock washers, nuts and insert into sliding channels before hanging the track, for ease of installation.

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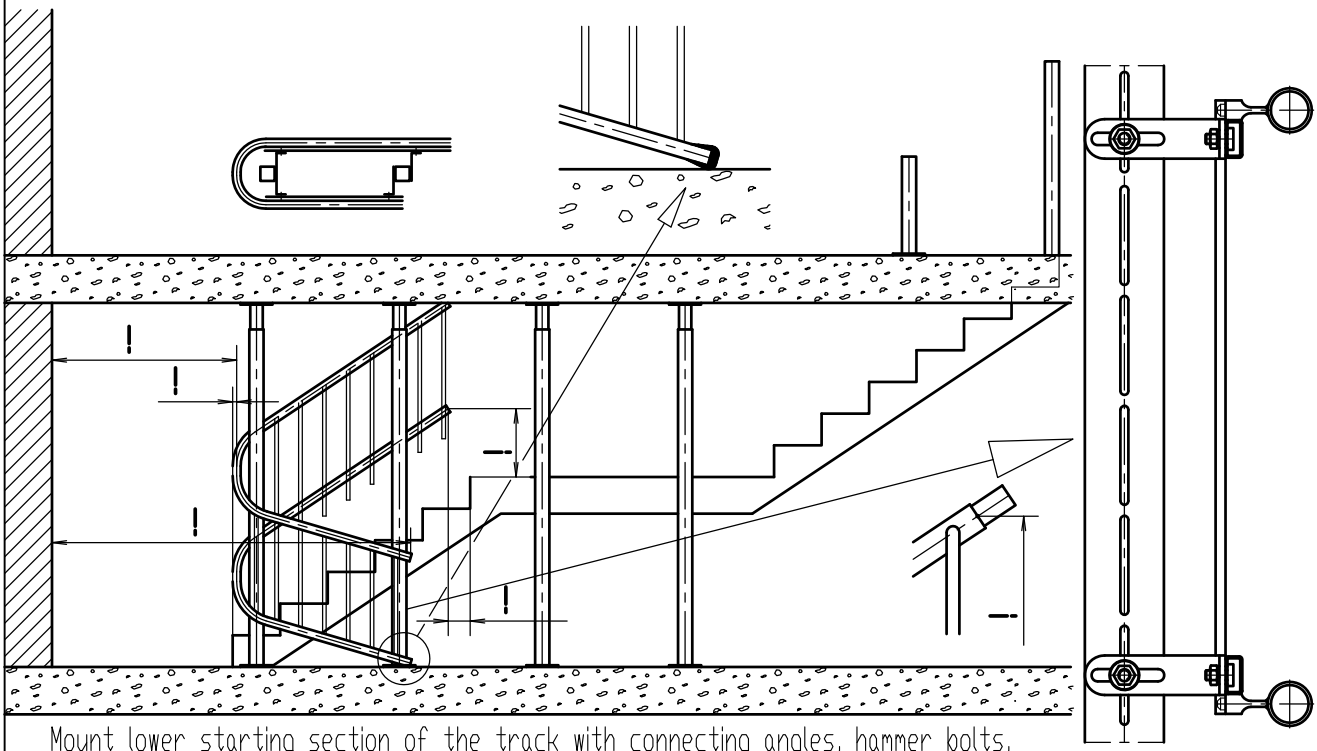
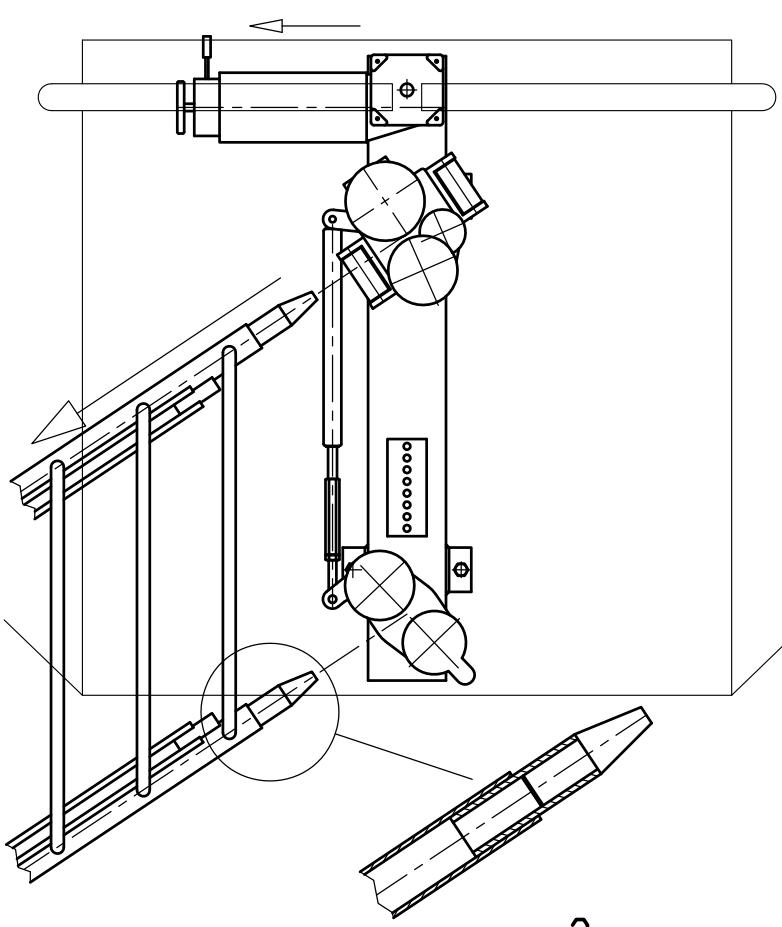
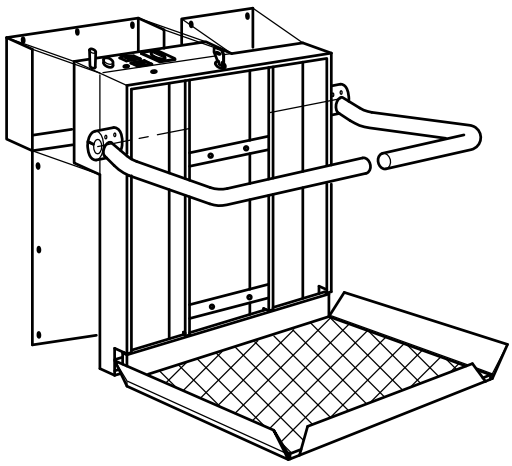


Mount lower starting section of the track with connecting angles, hammer bolts, lock washers and nuts. Take the measurements out of the shop drawing, level the track. Both tubes have to be plumb, vertical to each other. You have to do this work as accurate as possible, because the complete track depends on the first section.

Attention: Be sure to put the plastic end cap in forehand on the tube. You won't have the possibility to do it after fastening the track.





Put the plastic cones into the pipes before inserting the drive column. In this case you won't damage the polyurethan rollers. Winde the column by releasing the brake with the hand-wheel into the track.

If you fasten the track to a wall you have to insert the drive column with the frame and the back cover. You don't have the opportunity to install the back cover afterwards.

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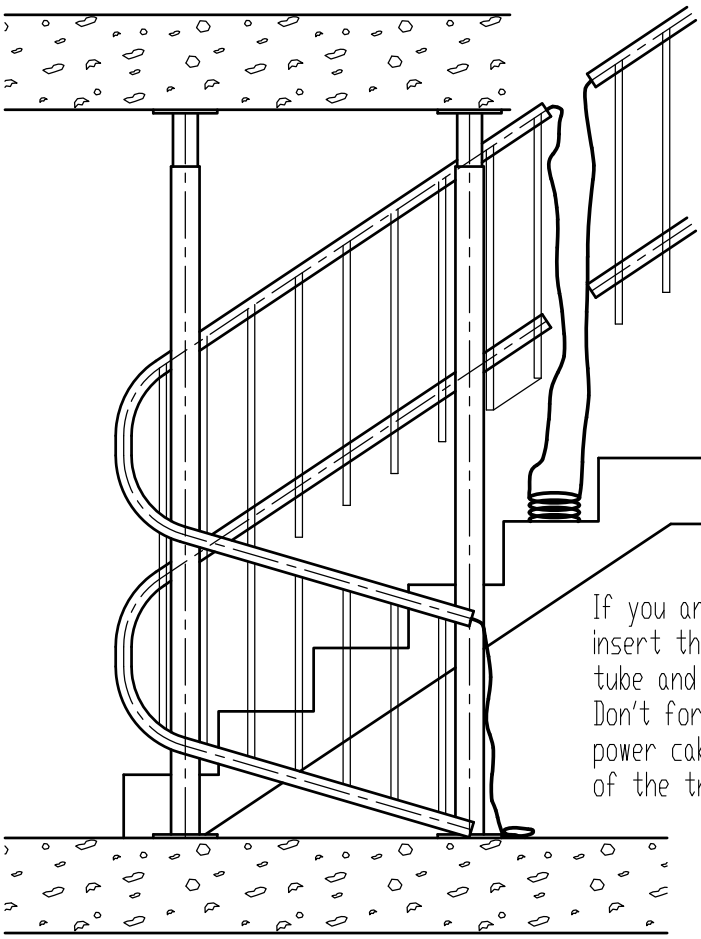
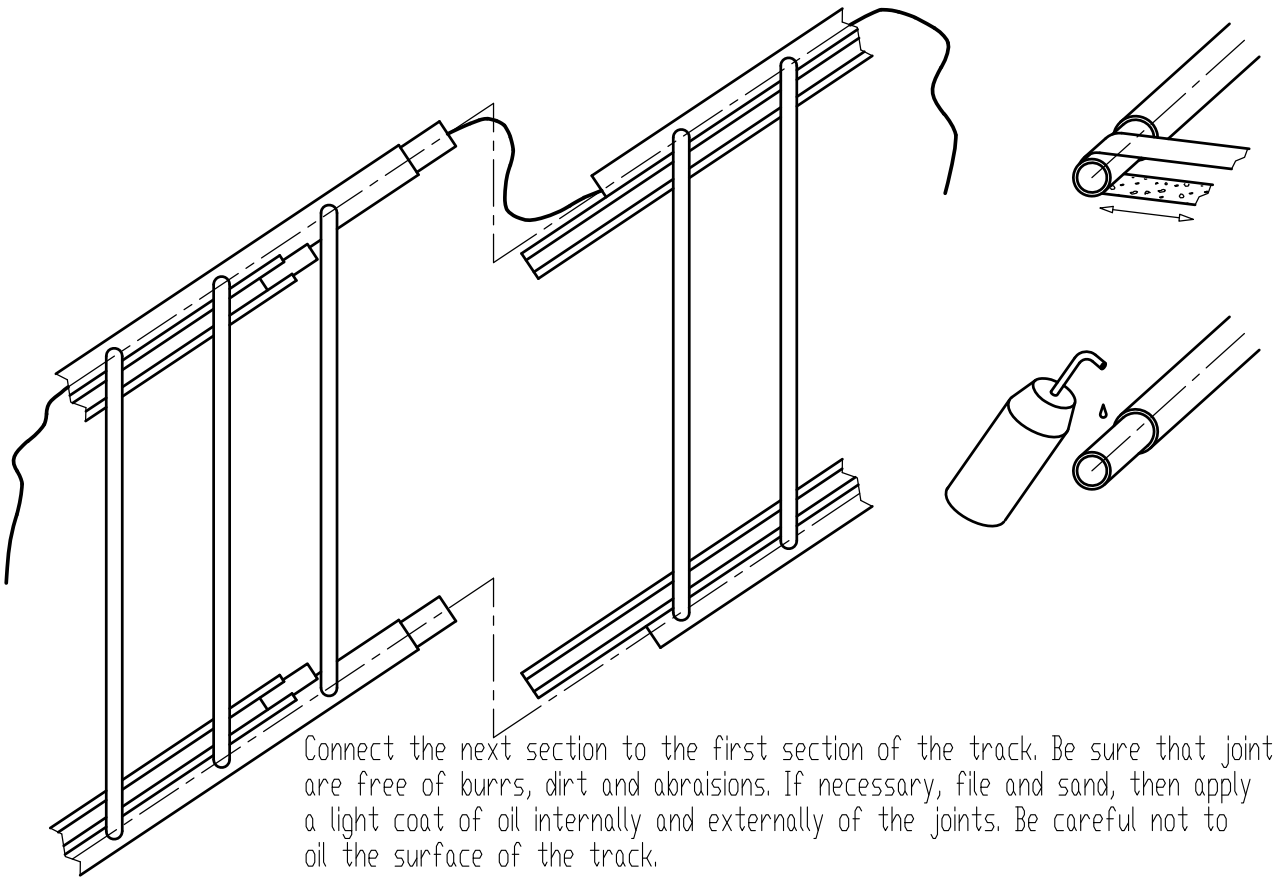


If you are erecting a battery unit insert the power cable into the lower tube and push it through the tube. Don't forget to insert and to push the power cable through the next section of the track.



Connect the next section to the first section of the track. Be sure that joints are free of burrs, dirt and abraisions. If necessary, file and sand, then apply a light coat of oil internally and externally of the joints. Be careful not to oil the surface of the track.

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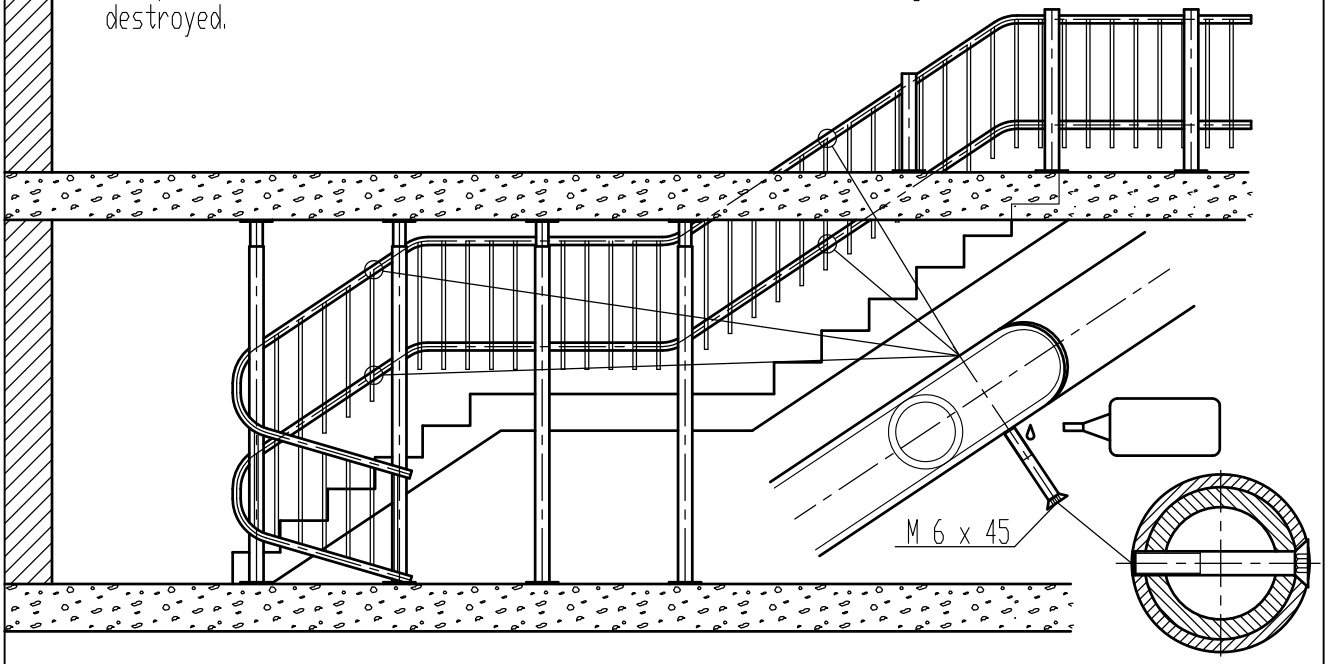
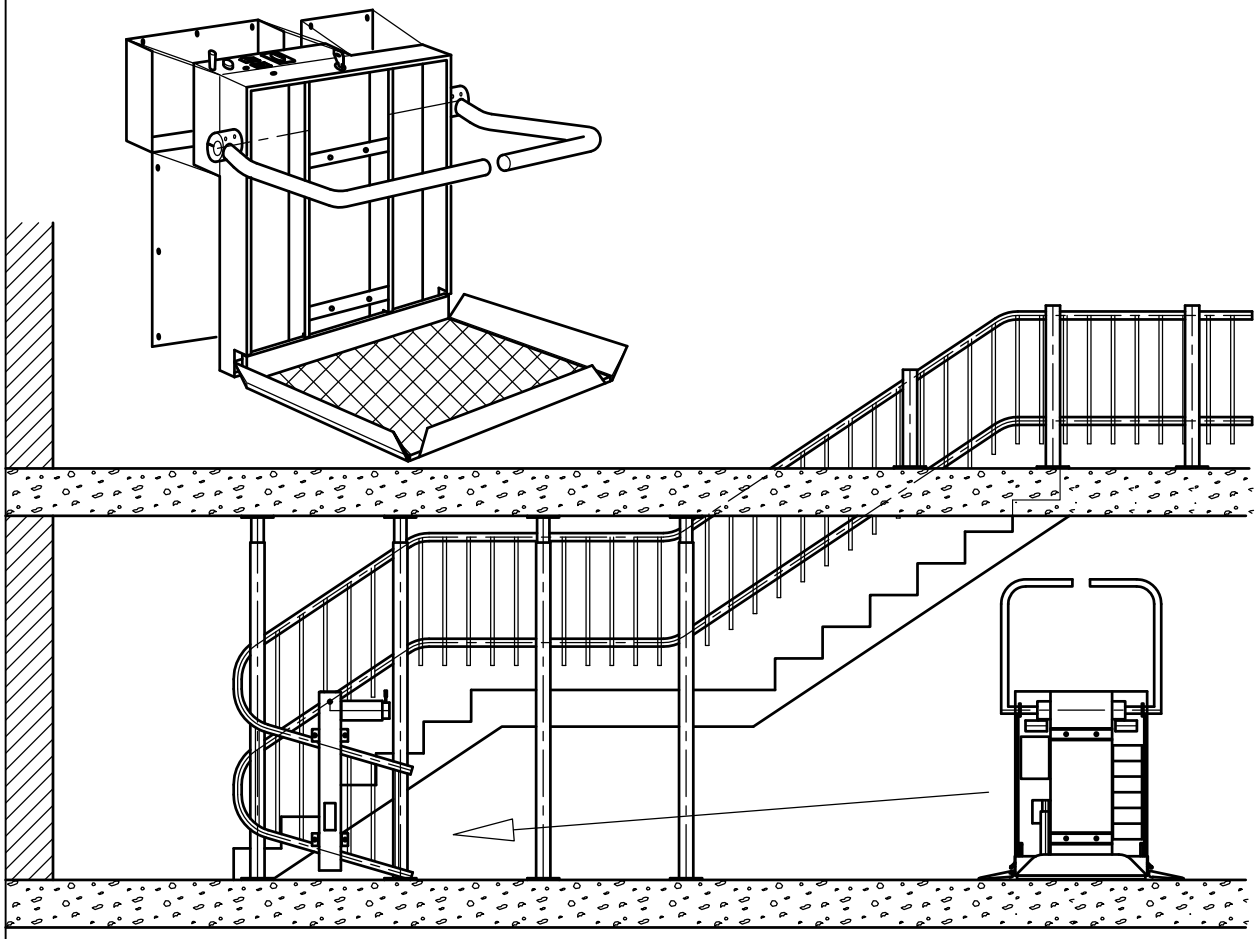
Be sure to secure the joints with screws. Use 'loctitte' for the screws. File and polish the screws afterwards, otherwise the delrin rollers will get destroyed.





After assembling the track up to the top, drive the column down to the floor landing and fix the uncovered platform to the column.
For a wall installation look at page 3.

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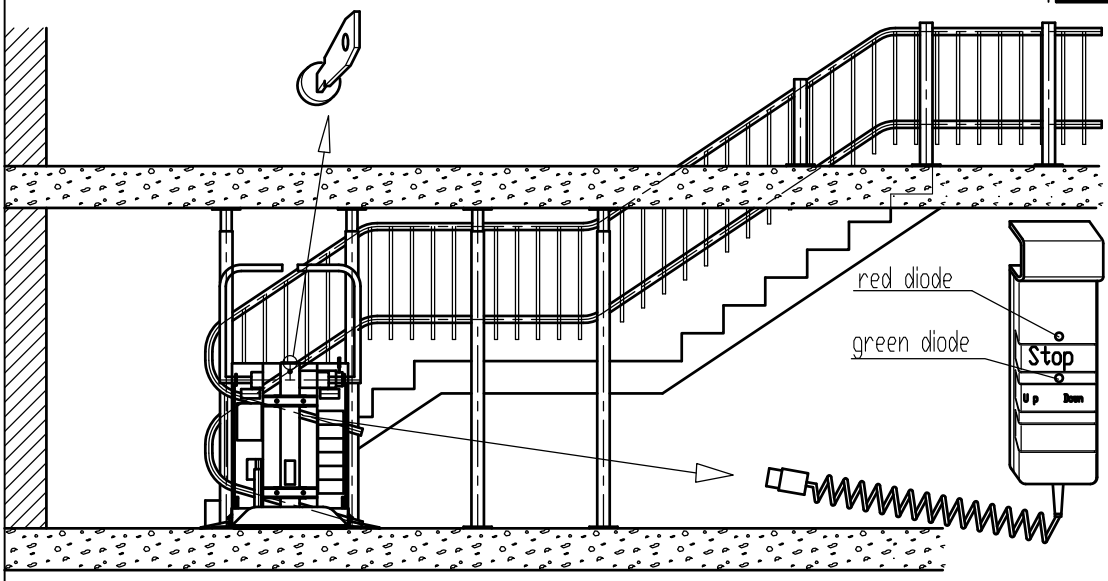

Plug the hand control with the spiral cable together with the platform. Switch on the main switch, the key switch on the platform and be sure, that the automatic fuses are in on-position. If the red diode on the hand control is not lightening, you can drive the platform in the **basic operation state** with the hand control. You can drive the platform with a speed adjusted according to the potentiometer (see 7) on the CPU if the eeprom is empty (the green diode of the hand control will flash with a fast frequency of 6,25 Hz). Anyway you should be sure that the eeprom is empty by erasing the eeprom.
For a right unit, the track is on the right side looking from the bottom, equivalent to the one above. The jumper (see CPU on 7 and 16), which gives in connection with the incoder the direction to the processor, is not bridged.
If the direction is wrong, the yellow diode (see 7 and 16) above the potentiometer is flashing fast with a frequency of 6,25 Hz.
If the incoder is not connected at all the yellow diode is flashing with a slow frequency of 1,25 Hz.
If everything is okay, the yellow diode on the CPU is dark and the green diode on the hand control is flashing with a fast frequency of 6,25 Hz.

Erasing of the eeprom: Switch off the main switch or the automatic fuses with the left hand, put the hand control into your right hand, give constant pressure to the up-direction and switch on the platform again. Release the hand control and give constant pressure always for less than 3 seconds, twice to the down-direction and afterwards one time for the up-direction. If the erasing has been made done correct you see one flash of the yellow diode above the potentiometer.
In this **basic operation state** the controller recognizes only the terminal end magnets.

Once again in short: Give constant pressure and release always for less than 3 seconds (key switch on).

1. While giving power, at the same time the up-command is activated.
2. Push and release the down-command.
3. Push and release the down-command.
4. Push and release the up-command (lightening of the yellow diode).

By giving constant pressure in either direction, both barrier arms will get lifted completely or drive against the lock and will come back into the horizontal position afterwards. If the valleyside barrier arm is locked, the platform will travel with the speed according to the potentiometer.
The green diode on the hand control will flash periodically fast with a frequency of 6,25 Hz.

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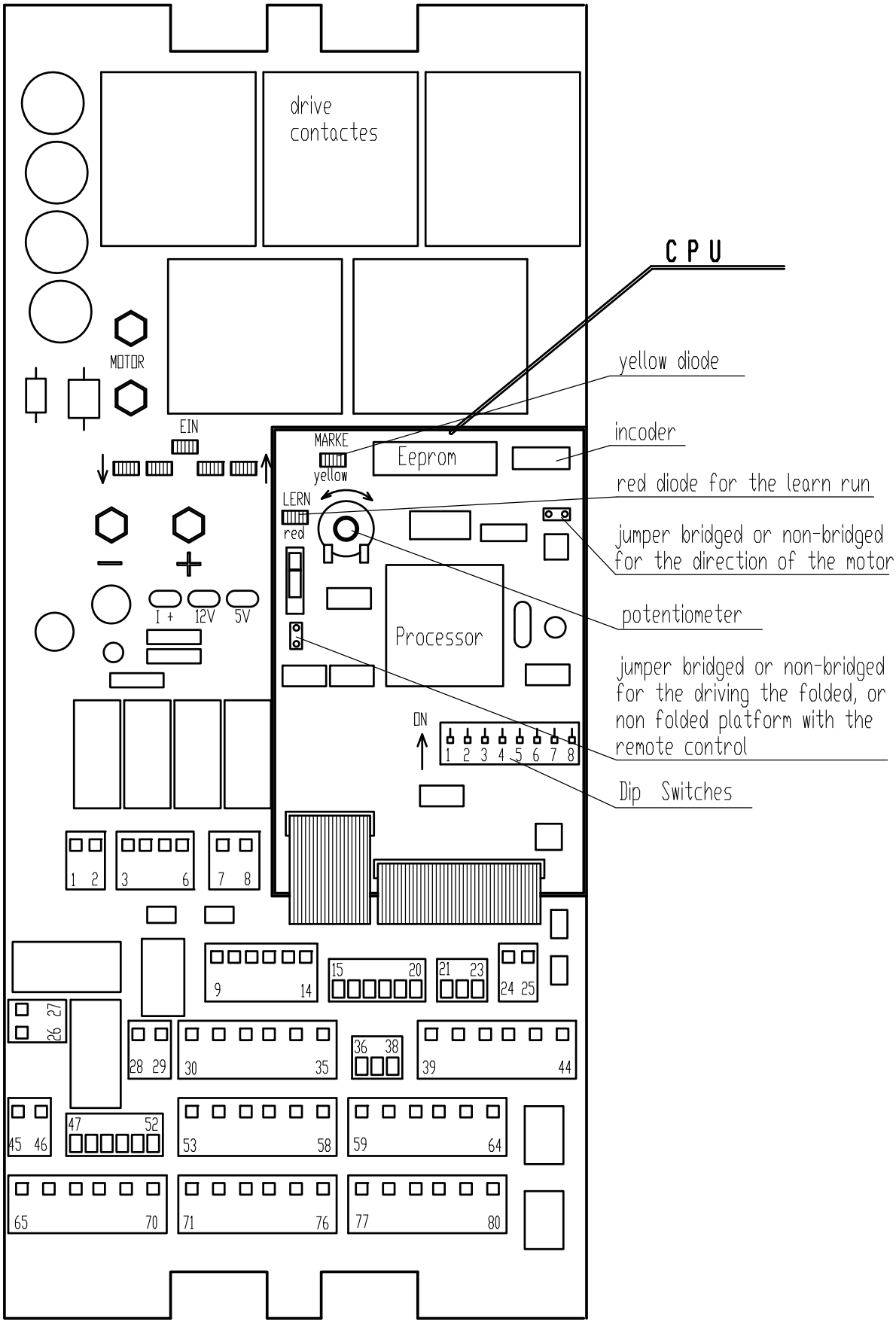
Processor Controller



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If the controller is switched on and you give a command one red and one green diode is lightening. At the time you start traveling the yellow diode gets lightened too.

The incoder has to know the direction of the motor. Therefore the poles of the motor have to be installed in that way, that both red diodes and one green diode are lightening with an up-command and both green diodes and one red diode are lightening with a down-command.

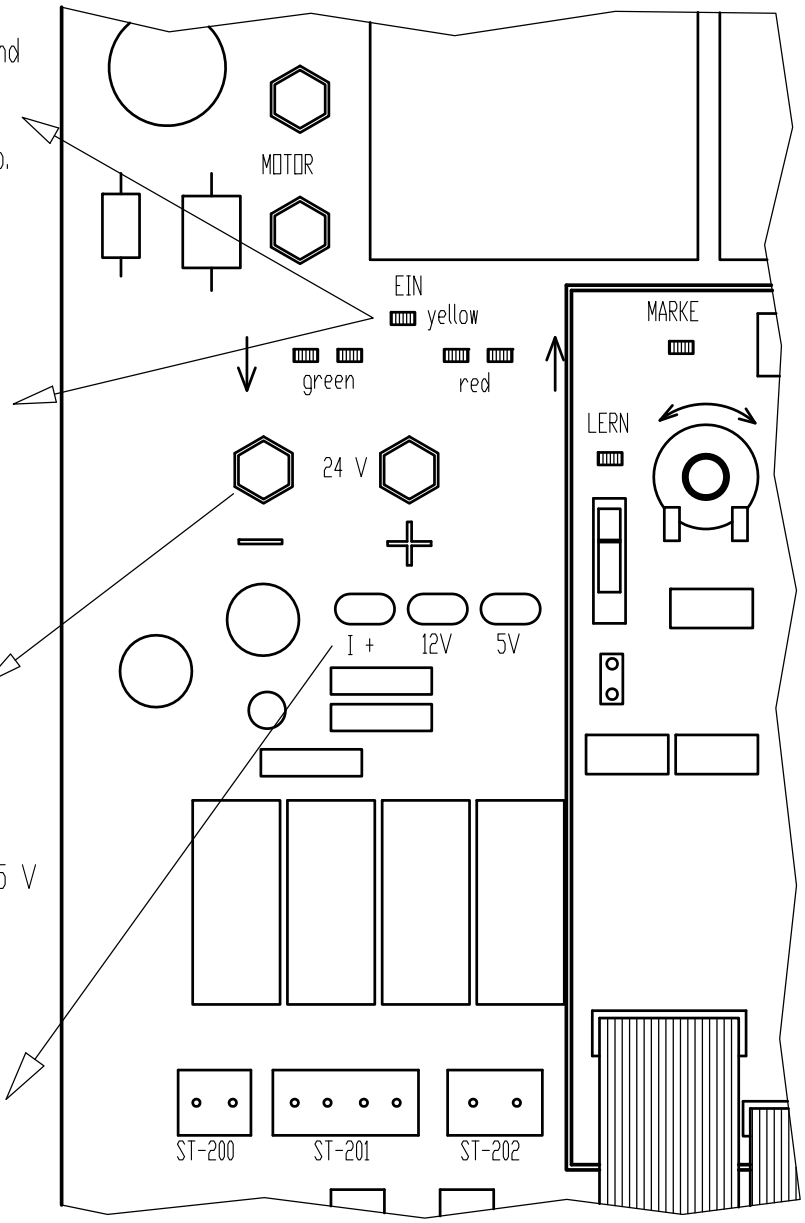
Battery Connection
The unit will work without any problems if you have a tension while traveling of 19.2 -28.8 V.

The measurement points 1 V, 12 V, 5 V These points usually are only for internal assembly.

Measurement point 1 V you should not touch at all.

If the tension between the 12 V measurement point and the minus pole is lower than 10.5 V and greater than 13.5 V you have to change the controller. If the tension is below 2 V an internal fuse has been blown up. You have to change the controller, too.

If the measurement point 5 V has a tension which is lower than 4.8 V and greater than 5.5 V the processor won't work correct. The internal power supply is defect.



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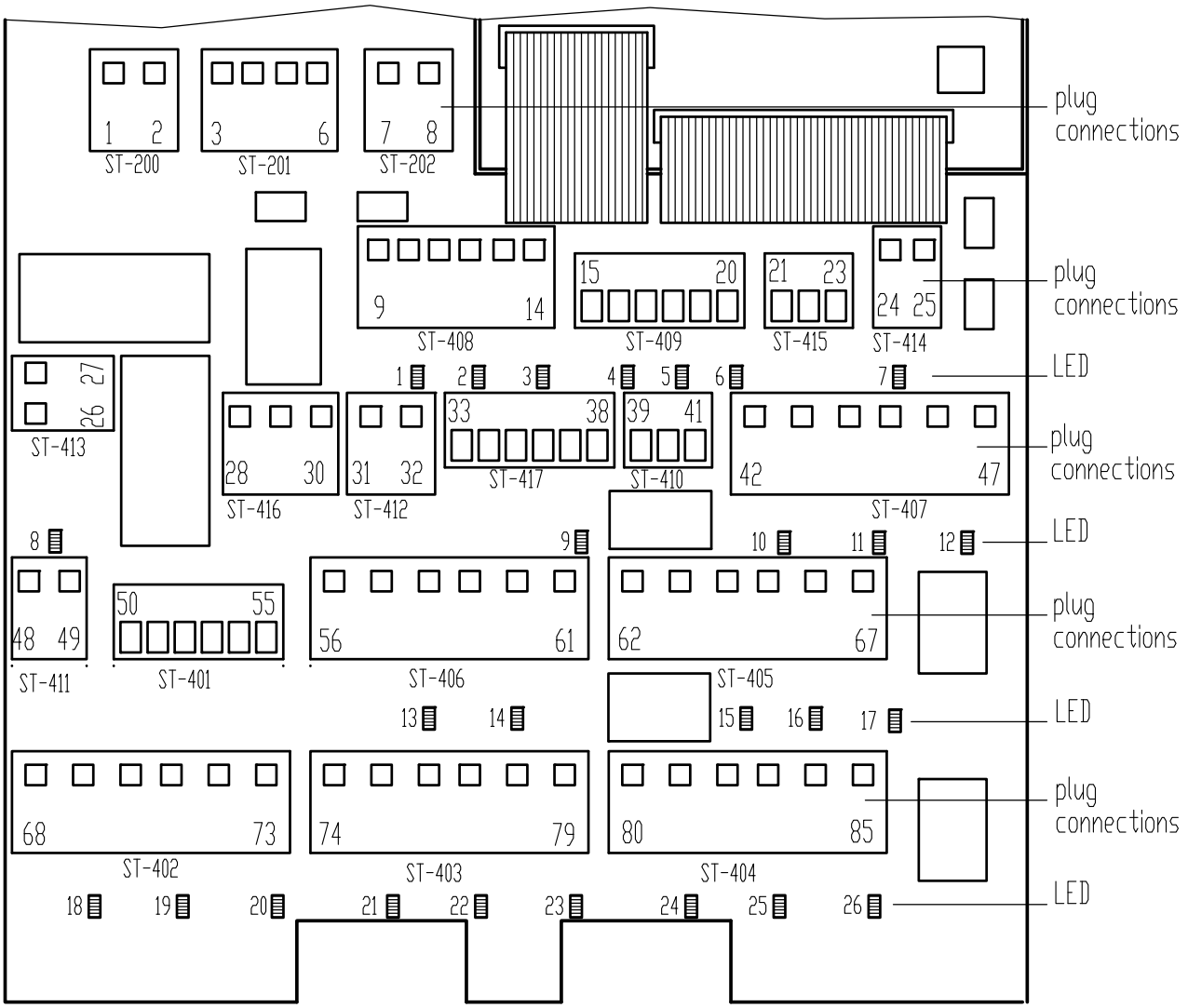

Explanations of the LEDs 1 - 26

If the platform is switched on the LEDs 1 - 3 and 15 - 26 are lightening.

If you give an up- or down-command the LEDs 8, 13, 14 are getting lightened in addition and LED 25 gets dark.

1.7 seconds after releasing a command the LEDs 8, 13, 14 will get dark and LED 25 gets lightened again.
The reason for the time delay is that we like to have a soft stop by releasing the traveling command. Therefore the relay no. 402 falls down and cuts the safety circuit after a time delay of 1.7 s, before the mechanical brake falls down. Only if the emergency stop switch or a safety switch from for instance a barrierarm lock or the safety pan is actuated, the safety circuit gets cut off immediately and the mechanical brake will fall down and stop the lift without a time delay. On the other hand this relay gives you a second safety; the processor will only be able to start the motor if this relay is actuated.

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T A B L E This table gives you a view of the LEDs 1 - 26.

LED	Siemens LED	Switches	actuated	LED are	and lightening	add.LEDs
1	417	lower terminal magnet end switch	yes	no		/
2	418	upper terminal magnet end switch	yes	no		/
3	419	magnet switch for intermediate landing and acceleration	yes	no		/
4	420	bistable magnet switch for parking position	yes	yes		/
5	421	mechanical safety switch if platform is folded	no	yes		/
6	421	reserve	/	yes		/
7	416	turning control of the lower roller	yes no, bridged	flashing yes		/ /
8	425	door opener	yes	yes		/
9	423	key switch handcontrol	no	yes		/
10	414	safety switch valleyside sensitive ramp	yes	no		/
11	415	safety switch hillside sensitive ramp	yes	no		/
12	413	safety switch for the sensitive pan	yes	no		9
13	412	safety switch hillside barrier arm	yes	no		9 - 11
14	411	safety switch valleyside barrier arm	yes	no		9 - 13
15	410	safety switch valleyside locking device	yes	no		9 - 14
16	409	safety switch hillside locking device	yes	no		9 -15
17	408	controller " ON "	yes	yes		9 - 15
18	400	final terminal safety end switch	yes	no		18 - 24
19	401	emergency stop switch	yes	no		19 - 24
20	402	safety gear	yes	no		20 - 24
21	403	safety switch for lower chain	yes	no		21 - 24
22	404	safety switch for upper chain	yes	no		22 - 24
23	405	safety switch for the handwheel usually not installed, then	yes no	no yes		23 - 24 23 - 24
24	406	safety switch for the folding seat if not installed, then	yes no	no yes		24 24
25		reserve	yes	no		/
26		reserve	yes	no		/

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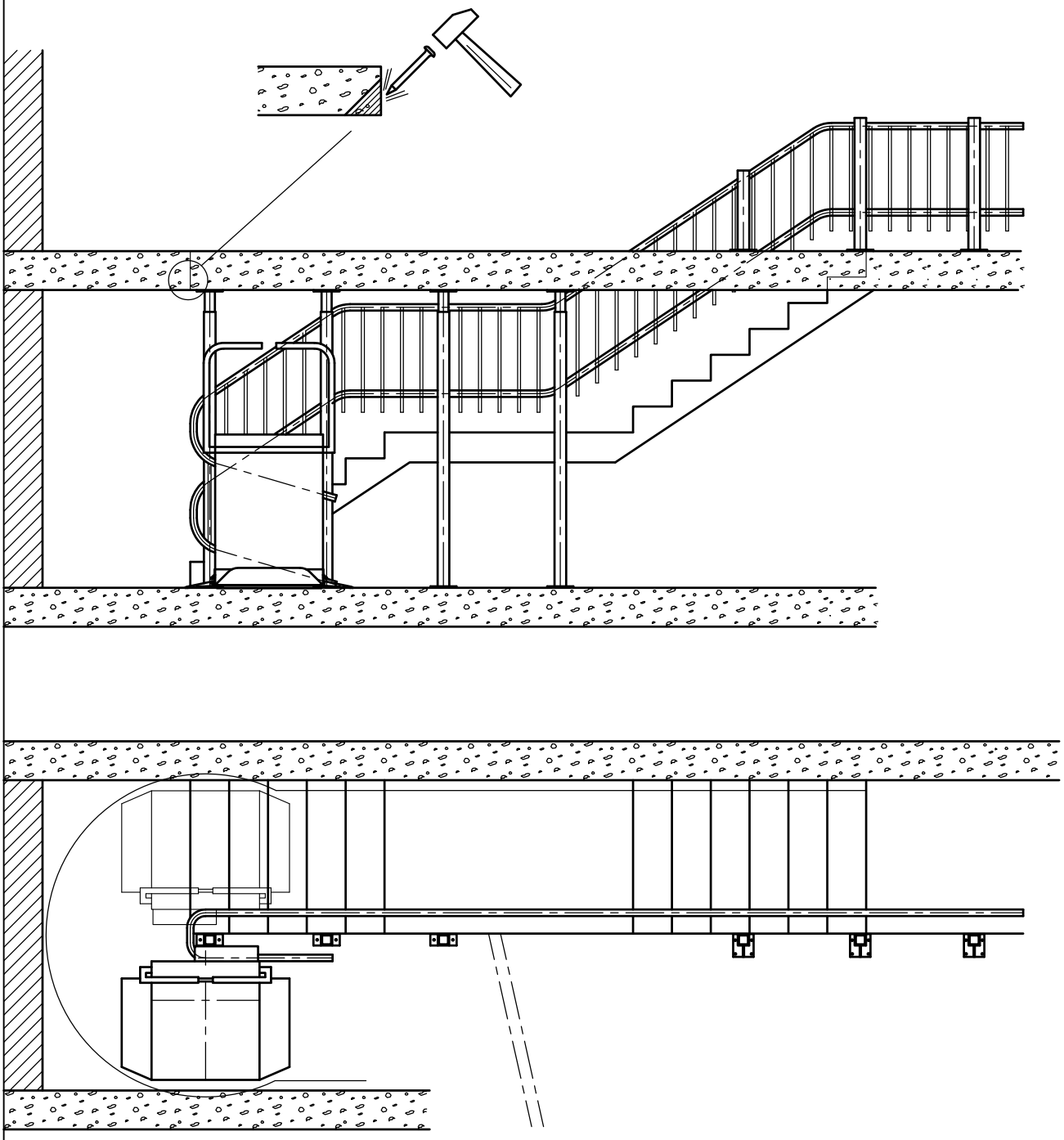

For the test travel of the platform put the charger on the platform in order not to discharge the batteries. If you have a narrow staircase put the wheelchair from the customer on the platform for the test travel, too. If there has to be cut something out off the wall or from the ceiling for the overhead-clearance, check whether you have the approval from the customer in the shop drawing.

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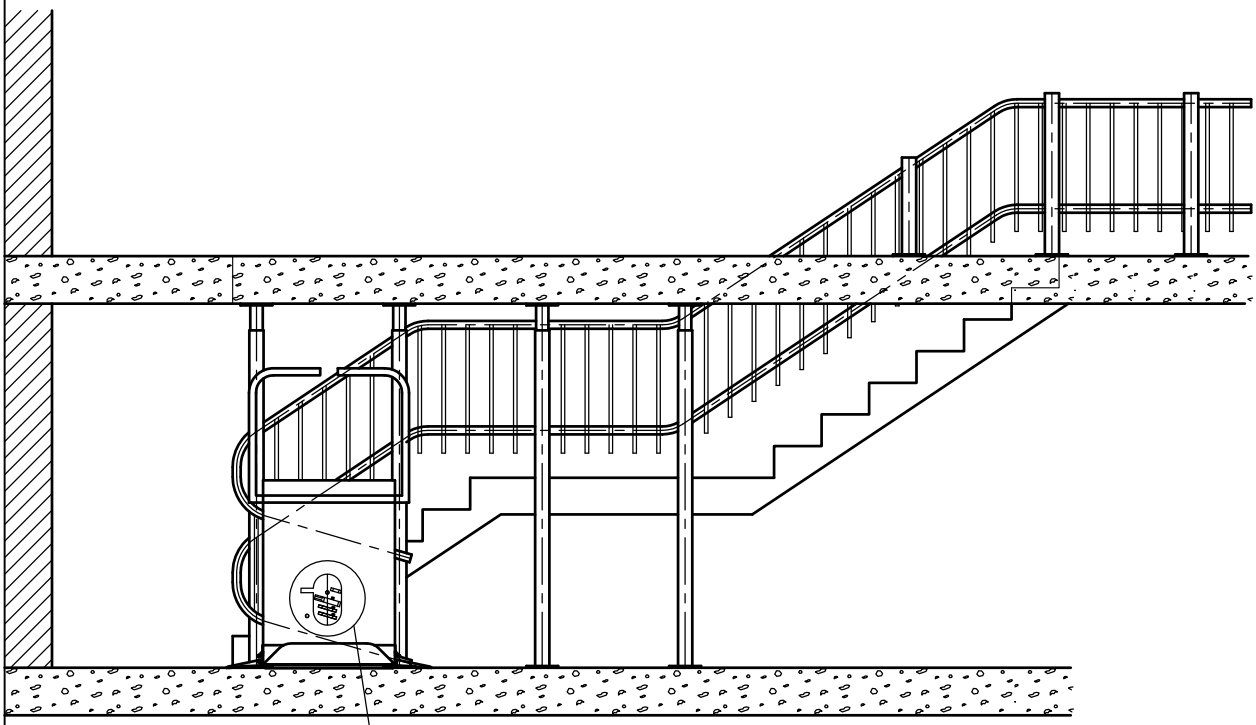

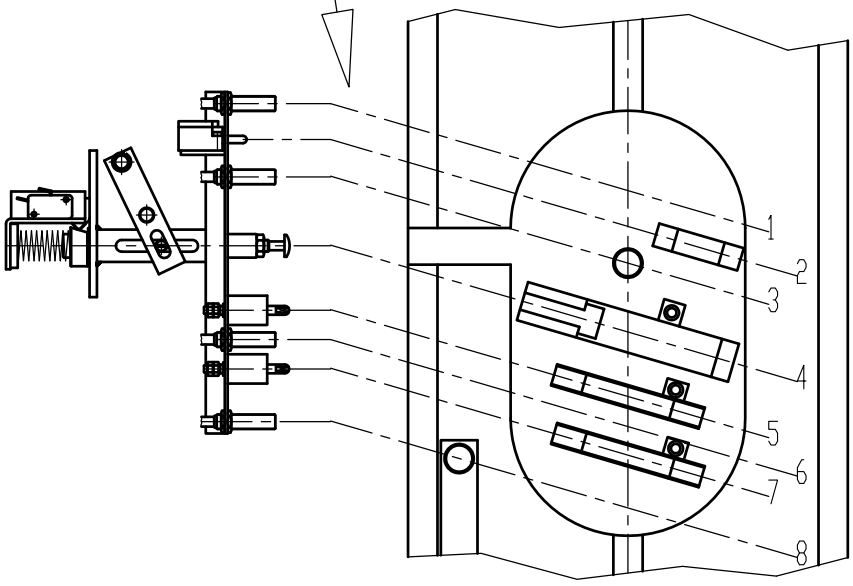

1. upper terminal end switch
2. final end switch
3. lower terminal end switch
4. locking / unlocking system
5. minus power supply
6. bistable parking magnet switch
7. plus power supply
8. stop in between, accelleration and deaccelleration

Adjust the landing control by installing at first the set with the cam for the lock, the cams for the power supply, the terminal end magnet and the cam for the final terminal switch with an inch rule at the lower landing.
At this time don't care for parking positions before the lower landing and behind the upper landing. Check if all parts fit from the back side of the platform.

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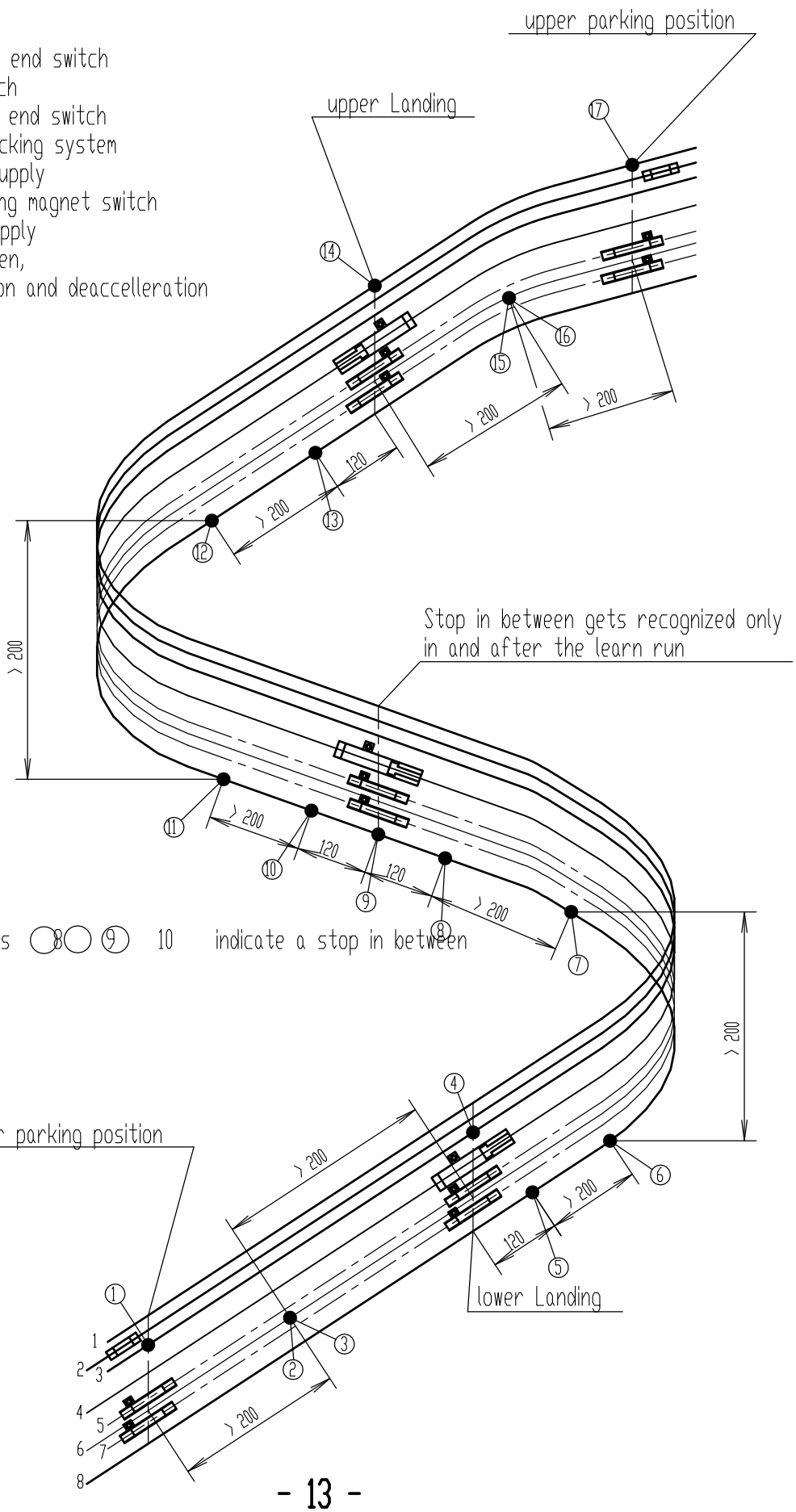

The 3 magnets ◯8◯ ◯9◯ 10 indicate a stop in between

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In the following the general traces along the track for the switches, the power supply and the locking system according to picture 15 is explained in detail.

Without traveling you can fix all sets for the landings in between and the upper landing with the help of an inch rule. Fix too (trace 8) all additional magnets before and behind the landings as well as before and behind the curves, where you want to accelerate and decelerate. Now travel with the platform up to the upper landing and down again, and check the position of the cams and magnets with the opposite parts of the backward platform.

All these elements are assembled to a set, vertical to each other, fixed in the middle of the platform.

Trace 1 This is the trace for the upper terminal magnet switch (mono stable). One magnet has to be fixed at the upper landing and eventually one at the upper parking position.

Trace 2 This is the trace of the mechanical final safety switch with two cams fixed to the track approx. 20 mm below the lower terminal and 20 mm above the upper terminal-magnet.

Trace 3 This is the trace for the lower terminal magnet switch (mono stable). One magnet has to be fixed at the lower landing and eventually one at the lower parking position.

Trace 4 This is the trace for the locking and unlocking system of the barrier arm and ramp. In every stop, where the **valleyside ramp and barrier arm shall be unlocked and opened,** there has to be fixed a cam. Usually this is only necessary at the lower landing, because the upper landing of the platform and the landings in between are usually above the staircase where the valleyside ramp and barrier arm has to stay locked.

Trace 5 This is the trace for the minus power contact which shall connected with the track. Where ever the platform shall be charged there has to be fixed a cam to the track.

Trace 6 This is the trace for the bistable magnet switch with two magnets (1 south- and 1 northpole) somewhere between the lower parking position and the lower landing. If the track has a lower parking position the dip switch no. 7 of the CPU has to be switched on. If there is an upper parking position the dip switch no. 6 of the CPU has to be switched on.

Trace 7 This is the trace for the plus power contact. Where ever the platform shall be charged there has to be fixed a cam to the track.

Trace 8 This is the trace for a magnet switch which indicates the intermediate stop and in which magnets on the track indicates marking points for acceleration and deceleration.

a) 100 - 150 mm before the lower and before the upper terminal end magnet there has to be fixed another magnet.

b) Exactly in the intermediate stop and 100 - 150 mm before and behind that intermediate stop there have to be fixed all together 3 magnets.

c) Approx. 100 - 150 mm before and behind a bend there have to be fixed magnets. The travel distance between these magnets for acceleration and deceleration has to be greater than 200 mm.

By the travel distances between the 2 magnets (end terminal magnet and each magnet before the end stop) and the distance of the magnet before and behind the end stop of 100 - 150 mm and the same distances between the 3 intermediate magnets and the distances of greater than 200 mm between the 2 magnets before and behind a bend, the processor finds out by itself whether the platform stops at an end stop, at an intermediate stop, has to accelerate or has to decelerate. These distances are always possible to keep. If for instance the distance between one magnet before the intermediate stop and the intermediate

magnet is not between 100 and 150 but 190 mm, than the processor will get mixed up and will allow to travel with a speed of 0.02 m/s into the next stop.

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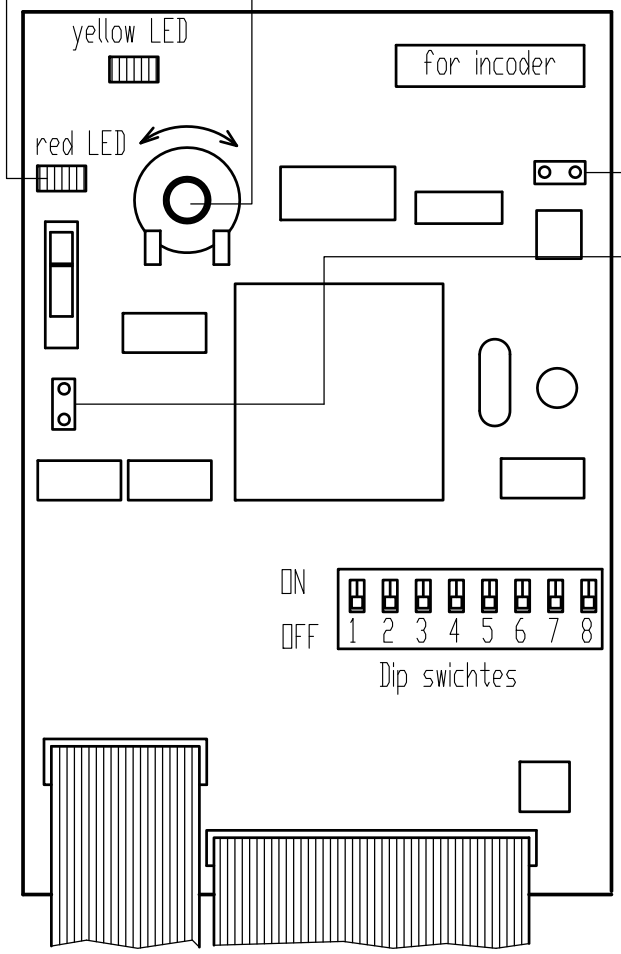
C P U



jumper bridged, left unit

jumper non-bridged, right unit

jumper bridged: unfolded platform-drive with remote control

jumper non-bridged: folded platform-drive with remote control

Dip swichtes

1 lifting of the valleyside barrier arm at upper landing

2 lifting of the hillside barrier arm at upper landing

3 lifting of the valleyside barrier arm at lower landing

4 lifting of the hillside barrier arm at lower landing

5 lifting of the valleyside barrier arm at intermediate stop

6 Upper parking position

7 lower parking position

8 reserve

In the **basic operation state,** with the speed according to the potentiometer, you have traveled up and down with the platform and have checked mechnically the position of the magnets and magnet switches, contacts and cam for contacts a.s.o.. Now you have to program the speed and track-profile in the **Basic Learn Run.**

Before making the learn run you should adjust the dip switches and the bridges on the CPU. For example: we have a right unit with the remote control, the platform shall travel in the folded position. At the lower landing (1) both barrier arms shall get lifted. You have a landing in between (2), where the platform stops over the staircase, that means the valleyside barrier arm shall not get lifted at the intermediate stop. Because of the fact that the platform stops at the upper landing (3) over the staircase, too, there only the hillside barrier arm shall get lifted. Behind the upper landing there is a parking position (4).

IN SHORT

Right unit:	the jumper is not bridged.
Send, call the folded platform:	the jumper in not bridged.
Valleyside barrier arm at upper landing not lifted:	dip switch 1 in off-positon.
Hillside barrier arm at upper landing lifted:	dip switch 2 in on-position.
Valleyside barrier arm at lower landing lifted:	dip switch 3 in on-position.
Hillside barrier arm at lower landing lifted:	dip switch 4 in on-position.
Valleyside barrier arm at intermediate landing shall not get lifted:	dip switch 5 in off-position.
Upper parking position:	dip switch 6 in on-position.
Lower parking position:	dip switch 7 in off-position.
Reserve:	dip switch 8.

ATTENION:

Check, whether the functions of the platform are given correct by the dip switches. Otherwise the controller will misinterprete your thoughts.

If you change a bridge or the position of a dip switch you have to switch off and on the main power, otherwise the controller does not learn the new informations.

BASIC LEARN RUN

The **Basic Learn Run** you must start at the lower landing. In this example (page 13) at magnet (4) , trace 3 you don't have to care for the parking position) by switching on the **learn run** on the CPU. The activated **learn run** is shown by the red diode above the learn switch, that the lower terminal end switch at the lower landing is activated you see by the yellow diode above the potentiometer.

At the beginning you turn the potentiometer in the right end position, that means at a maximum speed of 0.1 m/s. By giving constant pressure with one hand and keeping the potentiometer in the other hand you start the upwards travel on a ramp smoothly up to a speed of 0.1 m/s. The ramp of smooth acceleration has a distance of approx. 80 mm. The yellow diode gets dark at the time you leave the lower terminal end magnet (4) in trace 3 and gets lightening again if the magnet switch of trace 8 is passing magnet (5) .

You don't have to care for this magnet because the magnets belonging to the end stops and the stops in between are stored by the processor controller automatically.

After passing magnet (5) the yellow diode is getting dark, the platform is traveling with a speed of 0.1 m/s and the yellow diode will get lightened again in the surrounding of magnet (6) in trace 8. The speed of the platform at the time the yellow diode is getting dark, after passing magnet (6) will be the speed stored in the processor.

You have now time to reduce the speed by the potentiometer up to the time you reach magnet (7). The speed of the platform after passing magnet (7) and after getting dark of the yellow diode will be the speed stored between magnet (6) and magnet (7).

You can accelerate after passing magnet (7) by turning the potentiometer and you can overtravel (the lift will stop at magnet no. (9) and will keep on going after approx. 2 seconds) the magnets ((8), (9), (10)) of the intermediate landing.

Up to magnet (11) you don't have to change the position of the potentiometer (maximum speed of 0.1 m/s). The soft speed reduction and acceleration at the intermediate landing will be done in the **run state** by the processor controller automatically. The speed after passing magnet (11), that means after the yellow diode is getting dark again, is the speed adjusted after passing magnet (7) stored in the controller.

Now you have time enough to reduce the speed by the potentiometer till you reach magnet 12. The speed of the platform after passing magnet (12) will be again the speed along the bend, that means between magnet (11) and (12).

After leaving magnet (12) you can accelerate again and travel with a speed of 0.1 m/s into the upper landing.

It is unimportant whether you have an upper parking position or not. Now you have to travel downwards again (in the **learn run** you can't travel further upwards) and set the speeds as discribed before down to the lower landing.

Here you switch off the **basic learn operation state,** the red diode gets dark, and the controller knows the complete track- and speed-profile. You get now in the usual **run state.**

If you have not switched off the learn switch in the lower landing but somewhere else, the controller does not store the informations of the track- and speed-profile given before for the **run state.** In the **basic learn operation state,** you shall have to travel from the lower landing up to the upper landing and down to the lower landing again before switching off the **basic learn operation.**

You can enter the platform with a wheelchair at the lower landing, at every landing in between and at the upper landing. It is not possible to travel with the unfolded platform into the parking position. If there are parking positions you have to fold the platform by the remote control in the lower - or upper landing and have the opportunity to send the folded platform into the parking position with a speed of 0.05 m/s. If you call the platform with the remote control the folded platform will travel with a speed of 0.05 m/s into the lower or upper landing before you get the opportunity to unfold the platform with the remote control.

Afterwards-Correction of the Speed

If you are not satisfied with the speed in the **run state,** you drive into the track section which you like to correct. Switch on the **learn run,** adjust the speed you like to have with the potentiometer, overtravel the next magnet (yellow diode), switch off the learn run again. In the **run state** you will have the speed you like to have.

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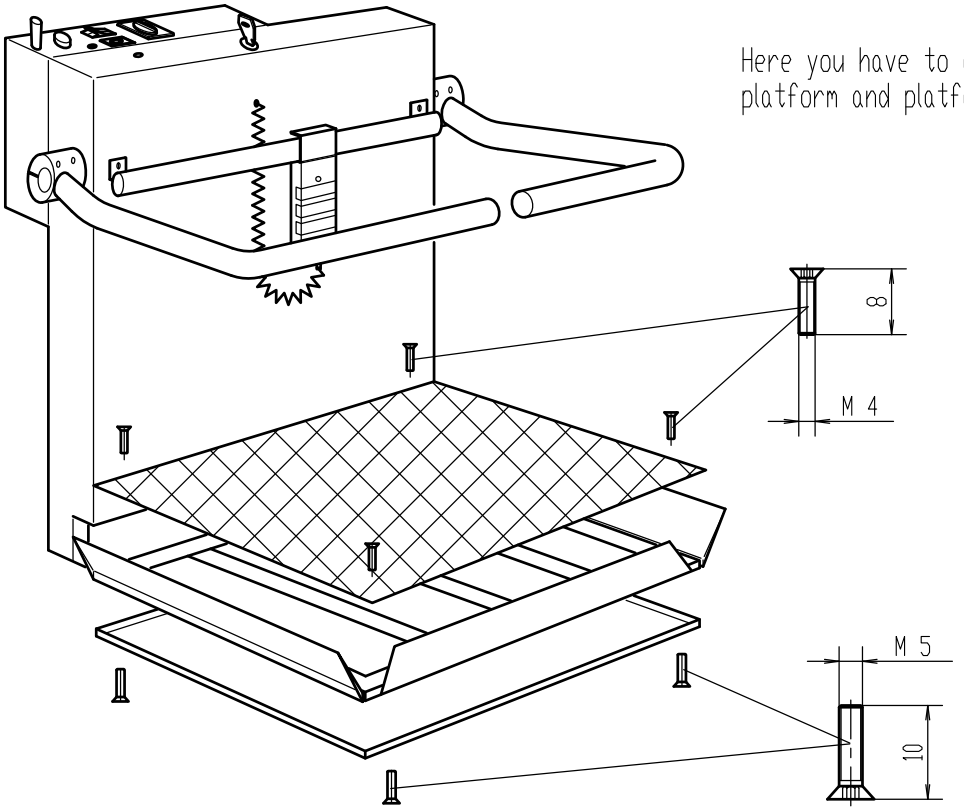
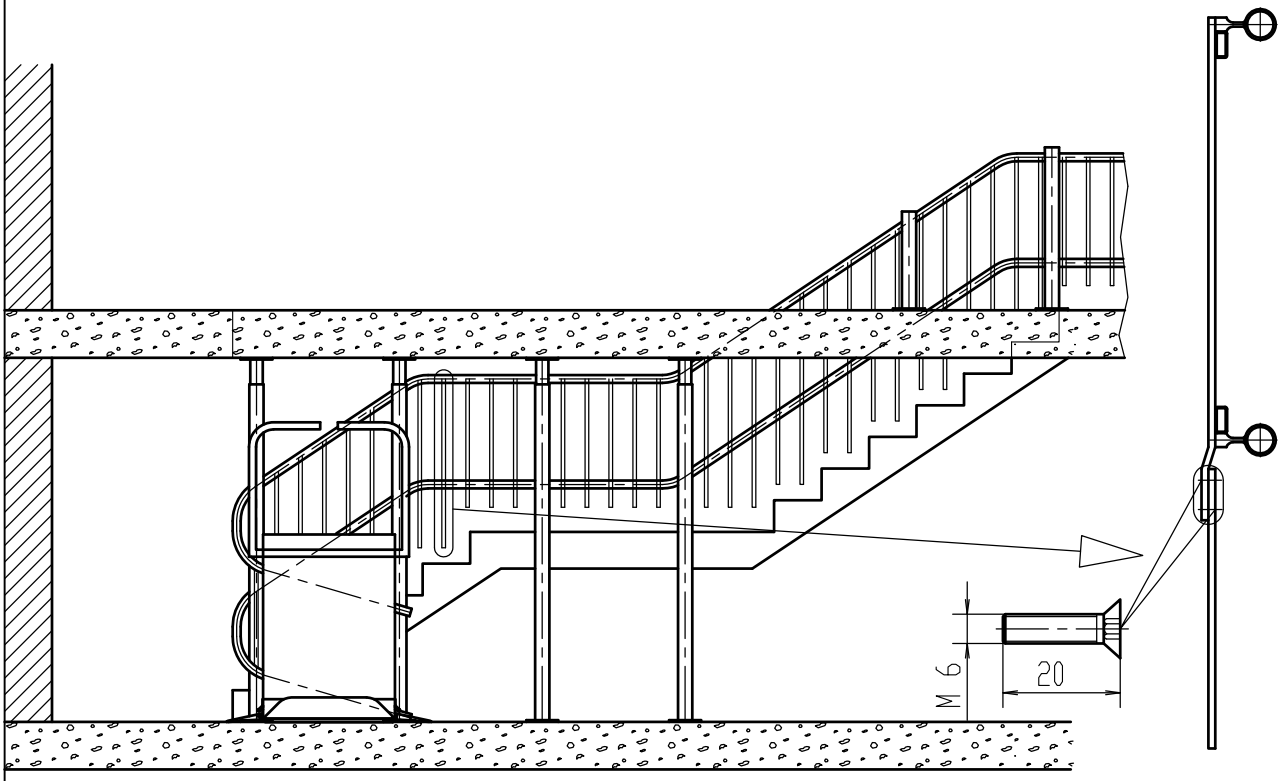


Here you have to cover the platform and platform floor.



Here you protect the space between the track and the staircase with some beams.

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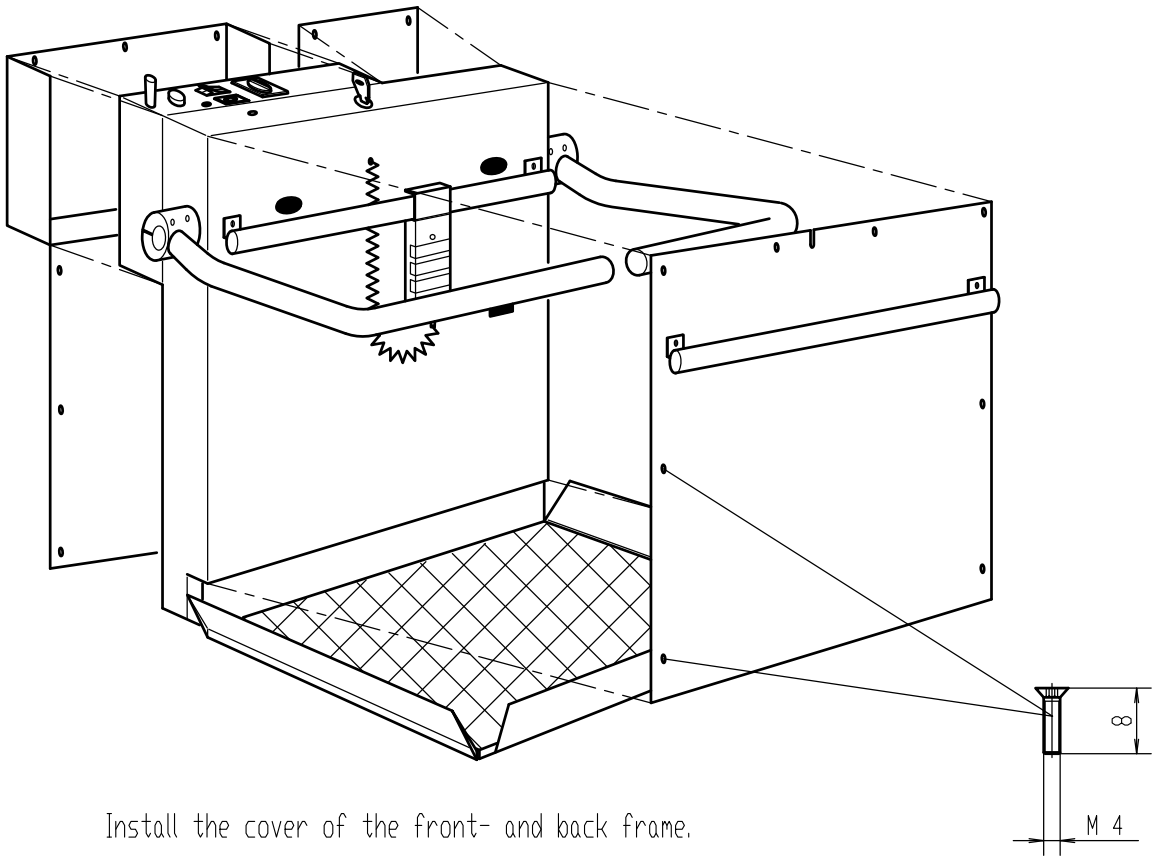
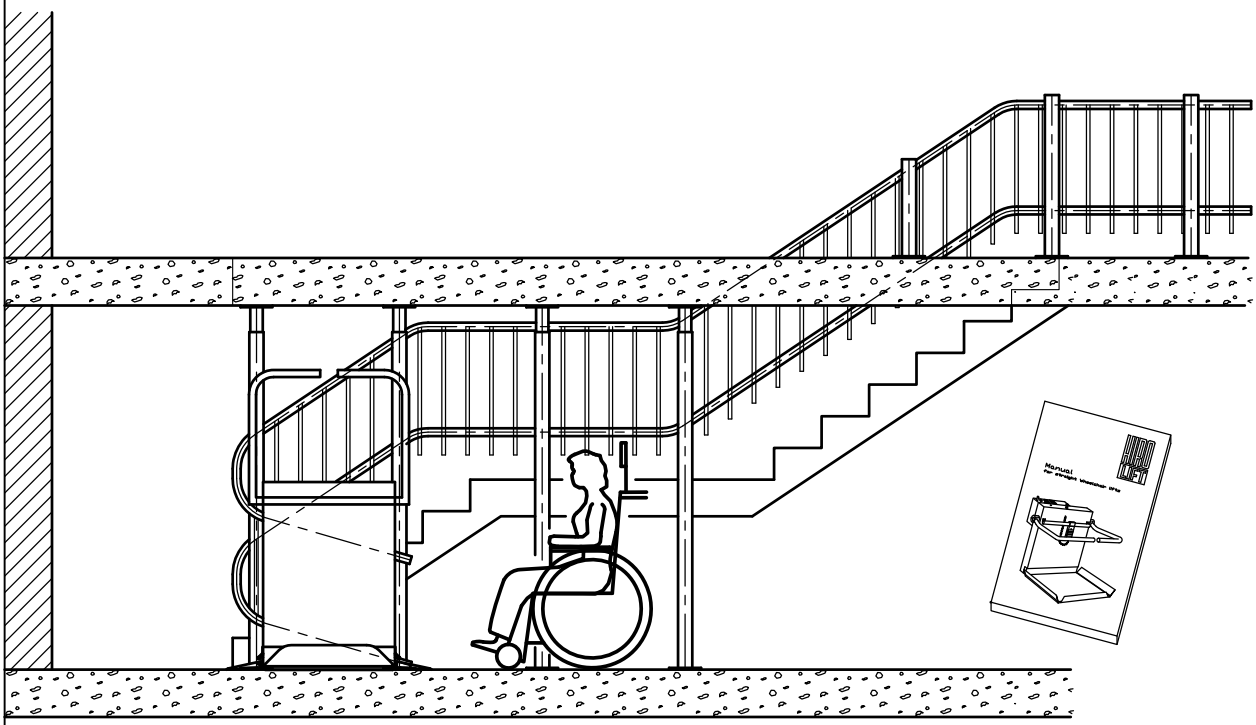


Install the cover of the front- and back frame.



Clean the staircase, the unit and make a test travel with the customer.

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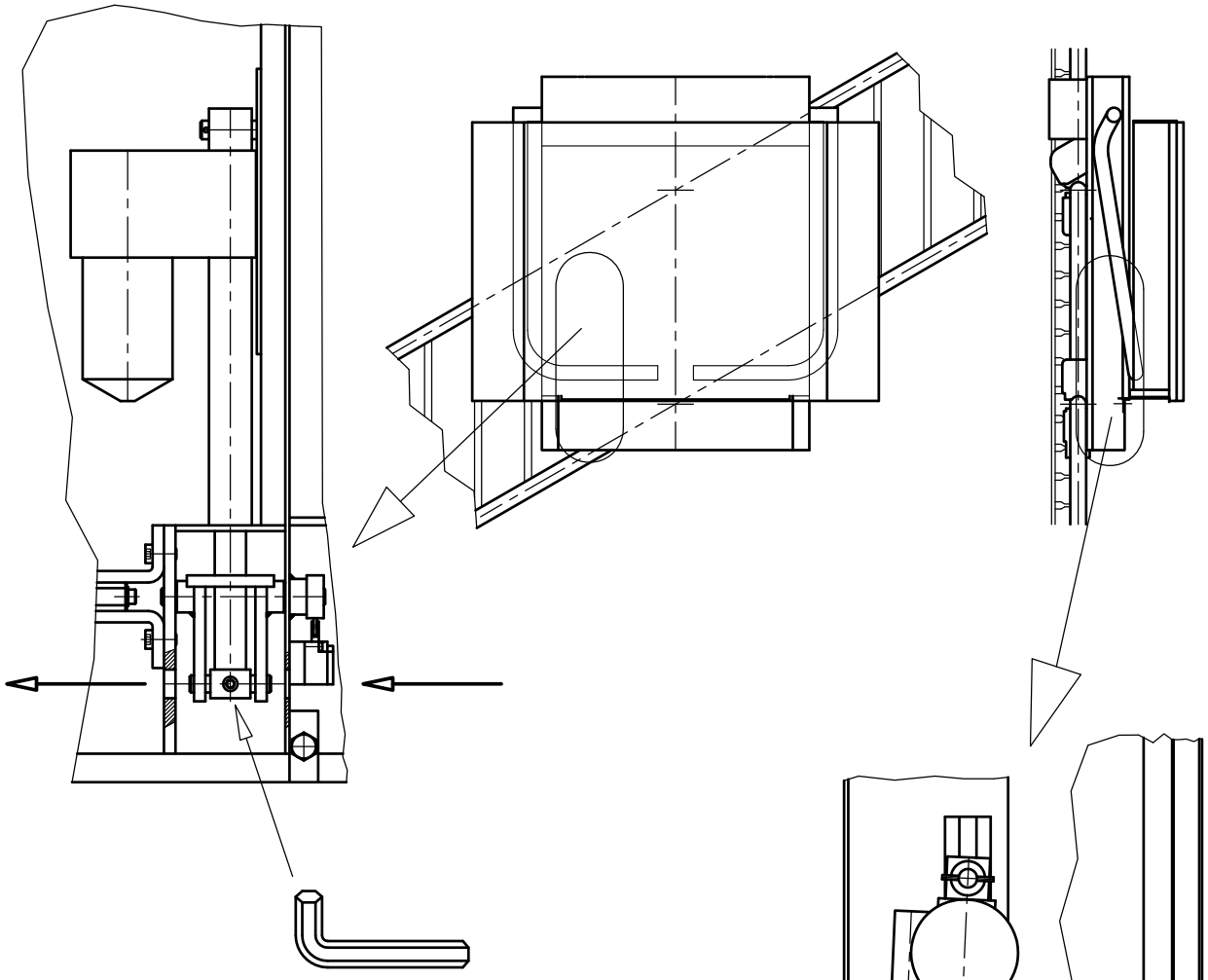

If the platform is folded and nothing works: you can't help yourself at all because the platform is covered and you don't reach the controller.

As described at the drawings you can loose with a special tool the bolt and push it through the open hole. At the same time of course you have to keep the platform floor and get it down soft. Now you can lift the barrier arms if they are not tightened and take off the cover.

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SAFETY GEAR

This safety gear including the speed governor can be compared with the safety gear of a conventional elevator where the carriage gets blocked to the rail if it goes into overspeed.The safety gear is type-proofed under the worsed case with a weight of all together 585 kg, with an oiled track under an angle of 70 degrees to the horizontal.

According to conventinal elevators the safety gear can be tested in the field in two ways:

1. at a rated speed (in our case 0.1 m/s) with 25% above the rated capacity of 225 kg (282 = 225 + 25%) by actuating the overspeed governor manually.

   Here it is very important, that the safety switch on the safety gear -which is opening the safety circuit through actuating by the excenter- is in function. If this safety switch would be bridged the excenter would go into the guide tube by DC power. The DC motor is taking out of the batteries as much power as it gets up to 130 amps where the electronic is cutting the current. That means with a tension of 24 V and a current of 130 amps the motor creates a power for a short time of above 3 KW with which the guide tube can be bended quite a bit.

2. by disconnecting the motor from the drive and a free-fall of the carriage at the rated capacity of 225 kg.

You should **not** use the second point of testing because of the fact that the kinetic energy is increasing with power 2. The speed governor gets actuated at a maximum speed of 0.23 m/s. The actuation of the excenter depends on the position of the hook at the time the speed governor is reaching the speed of 0.23 m/s, that means the actuation of the excenter can be much higher than 0.23 m/s and that means the forces according to test point 2 will always be much higher compared to point 1.

The type approval has been made under the worsed case, that means it has been proofed that the safety gear as well as the track are able to take over the energy in the worsed case (the free-fall case). This you don't have to test again, but you have to test the function of the safety gear. The function is tested to 100% according to point 1 by seeing a mark of the excenter on the track.

After catching you have to handwinde the carriage approx. 60 mm upwards to get the safety gear automatically into function again.

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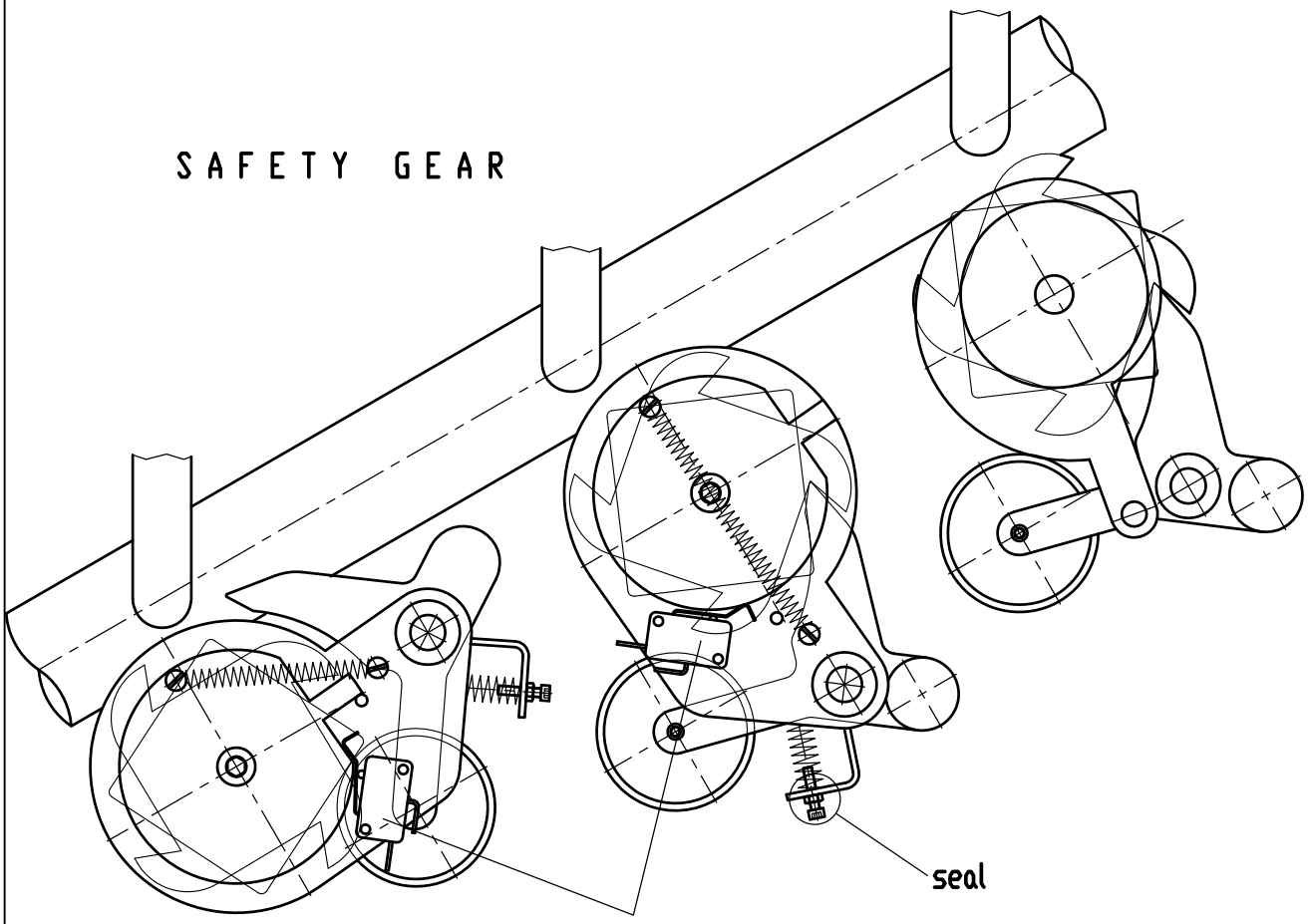
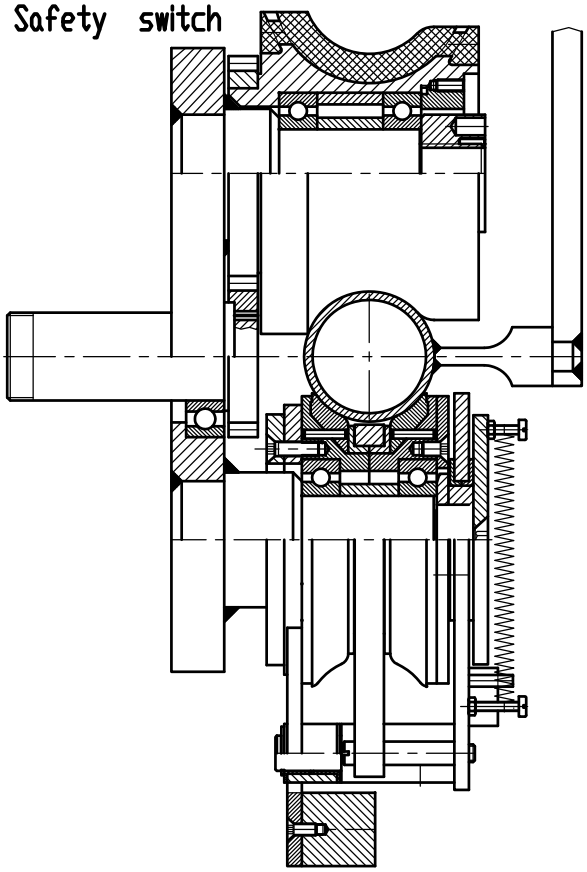
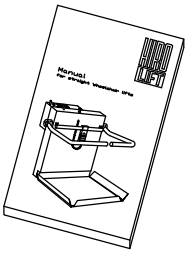
SAFETY GEAR



Safety switch





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