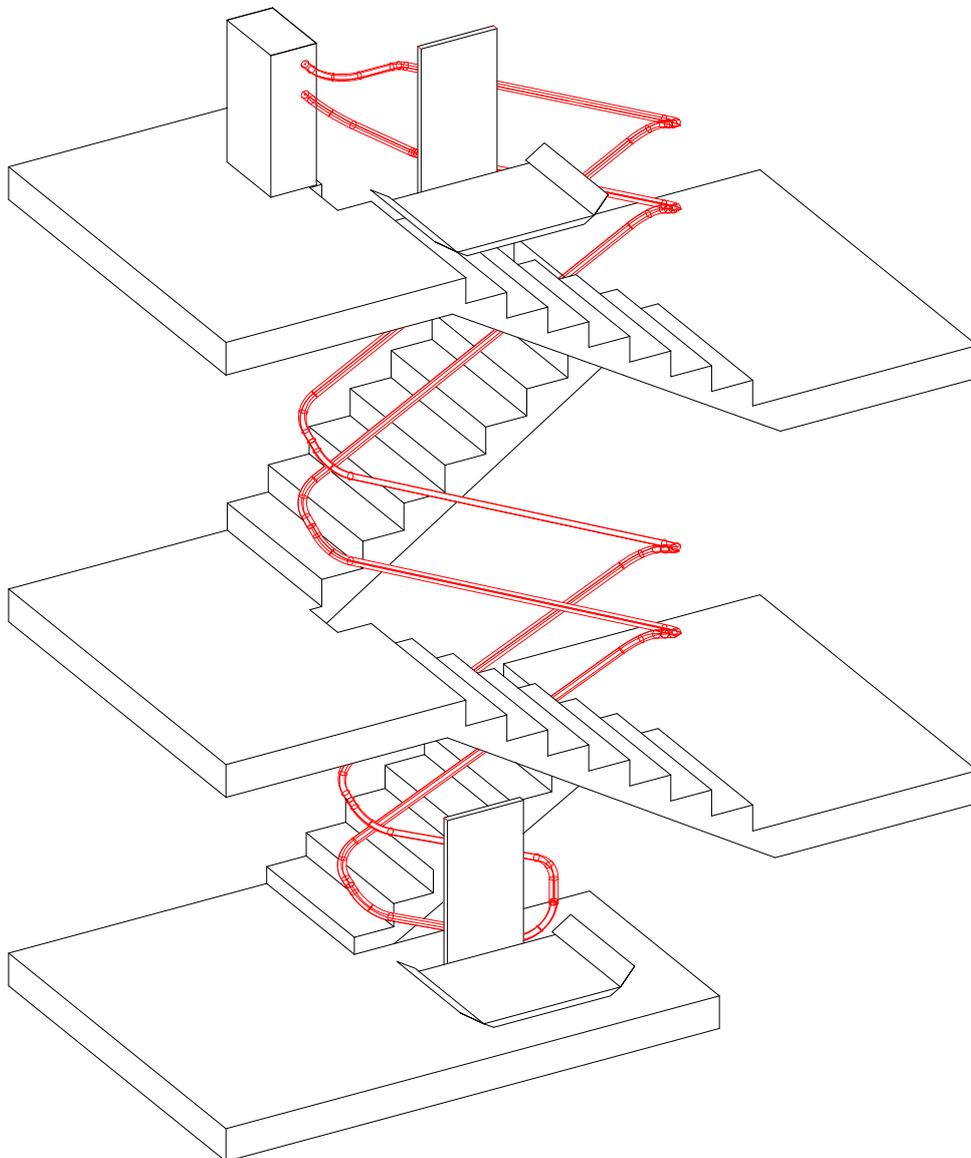




# OMEGA-F

## User Manual



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## Introduction

Congratulations on your decision to buy a Omega stairlift, and welcome to the growing circle of satisfied customers.

The *OMEGA-F* stairlift marks the beginning of a new generation of platform stairlifts equipped with a well-established power train.

Quiet and easy operation, low operating costs, and individual adaptation to structural situations are just a few of the outstanding features of OMEGA lifts.

To ensure flawless lift function, please utilise this OMEGA user handbook. It offers many helpful operating instructions as well as important safety hints.

Please take advantage of the many years of experience we have summarized in this user handbook. Common sense handling and regular servicing serve as a basis for the safe and reliable operation of your platform lift for many years.

Please be informed that Lehner Liftechnik GmbH assumes no liability for breakdowns caused by either the non-observance of instructions provided in this handbook or incorrect handling. In these cases, Lehner Liftechnik GmbH must charge the customer for all costs incurred in fixing the problem.

Now enjoy your *OMEGA* stairlift!

## Key to Symbols Used in this Handbook

The following signs stress important passages:



Pay attention to all paragraphs marked with this sign. These paragraphs contain important hints that will insure flawless operation of the lift.



**WARNING!** Important safety advice! Observing these instructions greatly reduces the possibility of hazardous situations.



**Pay attention!** Do not execute the actions marked with this sign!

## ATTENTION - SAFETY FIRST

Please pay careful attention to the next points/instructions!



### User group:

Only specially instructed persons are to use the **OMEGA** stairlift and must take responsibility for all others who are present.

Users, who are not able to fulfil these requests, as well as children, need an attendant person who takes responsibility over the user.



### Setup area:

**OMEGA** lifts can be mounted on staircases and ramps. The lift, however, is not designed for use in unusual areas (like areas in danger of explosion, areas surrounded by aggressive chemical substances ...). Outdoor use is possible, but the parts must remain clear of ice and snow in winter.



### Keys:

Keys should be kept in a safe place, away from those who are not to use the lift. Remove the key from the control when not in use.



### Provision application

- **OMEGA** stairlifts must only be used for the transport of persons in wheelchairs or sitting on the fold down seat.
- Never use the stairlift in the standing position.
- **OMEGA** stairlifts must not be used for freight transportation.
- Lock both the lift and the platform after use. Do not let children play on the lift.
- Do not exceed the maximum platform load or maximum wheelchair size.
- Pay attention to the instructions provided on the lift.
- Pay attention to the following points for the correct use of the stairlift.

**Load capacity:**

The maximum load is indicated on the sideboard of the carriage.

Serial load:           225 kg (330 lb) for the wheelchair platform  
(Optionally a platform with a maximum load up to 300 kg is available).  
130 kg (286 lb) for seat performance.

Do not exceed this limit!



Keep hands and fingers away from the back of the carriage! Passengers must remain in the wheelchair or seat while the lift is operating.



Persons walking up or down the stairs while the lift is being operated must avoid contact with the platform. Platform users should take into consideration that the platform needs more space in a bend than on a straight railway. Therefore, before moving, look to see if anyone is using the stairs or if there are any obstacles.

**Emergency stop**

An emergency stop is fitted on the carriage control. In case of emergency press the red STOP-switch and the lift will stop immediately. To unclamp the STOP-switch, it is necessary to press it once more or to turn it clockwise.



**OMEGA** stairlifts are equipped with the following safety features:

- drive with self-locking gear and break
- overspeed governor
- mechanical bolted barriers
- optional: safety contact pads and ramps
- audio alarm button
- manual driving wheel for lowering of platform
- error display with operation time counter

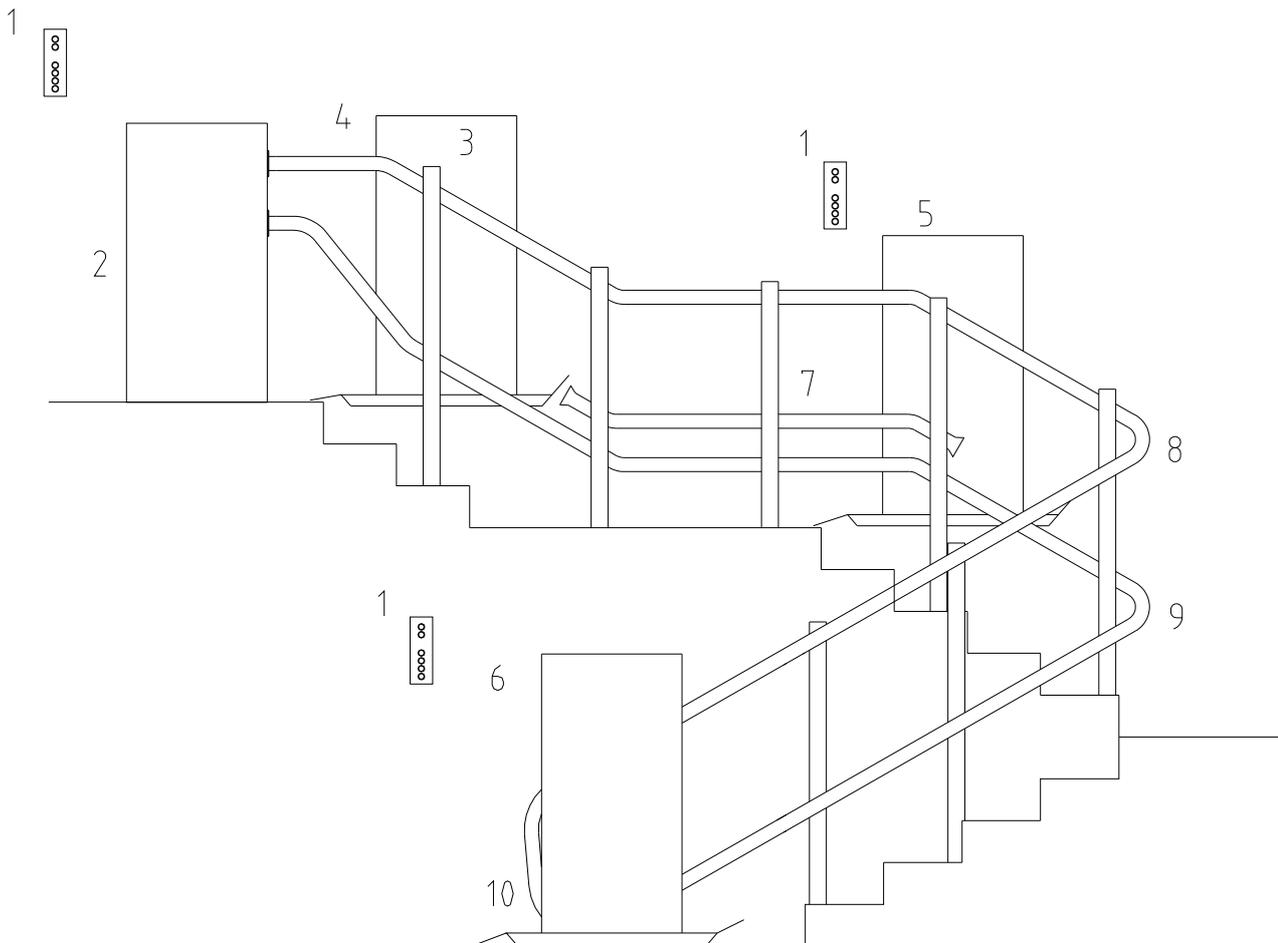


Do not disable any safety feature of the lift by modifying mechanical or electrical parts of the lift. Please contact Lehner Lifttechnik or one of its authorised partners for service!



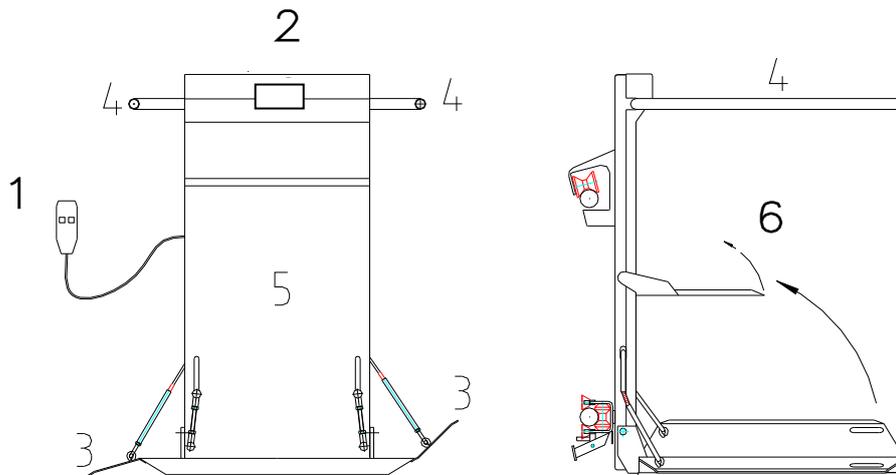
We recommend preventive checks, i.e. a regular servicing of the OMEGA stairlift will insure safe operation for a long time. Any abnormal operation of the lift should be reported to the servicing engineer. In the case of irregularities such as vibrations or abnormal noise emissions, do not use the lift. Call Lehner Lifttechnik for help! Follow all instructions given by Lehner Lifttechnik experts, fitting teams and service staff.

## General layout:



- |    |                            |     |                     |
|----|----------------------------|-----|---------------------|
| 1. | wall control               | 6.  | lower stop position |
| 2. | drive box small or big     | 7.  | horizontal railway  |
| 3. | carriage                   | 8.  | upper railway tube  |
| 4. | upper stop position        | 9.  | lower railway tube  |
| 5. | intermediate stop position | 10. | overspeed governor  |

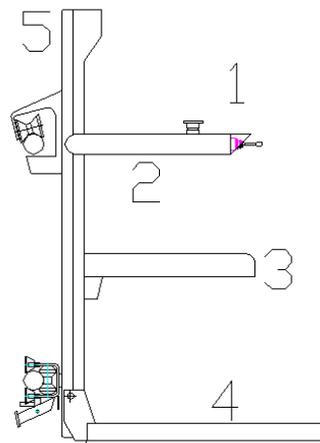
## Carriage with platform for wheelchairs



1. Handset with direction buttons, audio alarm and stop switch (key switch optional)
2. Display
3. Access ramps
4. Barrier arms
5. Sidewall covers
6. folding seat

## **Carriage with seat performance**

1. directional control
2. armrest
3. seat
4. footrest
5. carriage, sidewall



## **Horizontal railway**

If the gradient is less than 20 degrees a third pipe is required to stabilise the platform. Horizontal sections may be necessary at half-landings or stop positions.

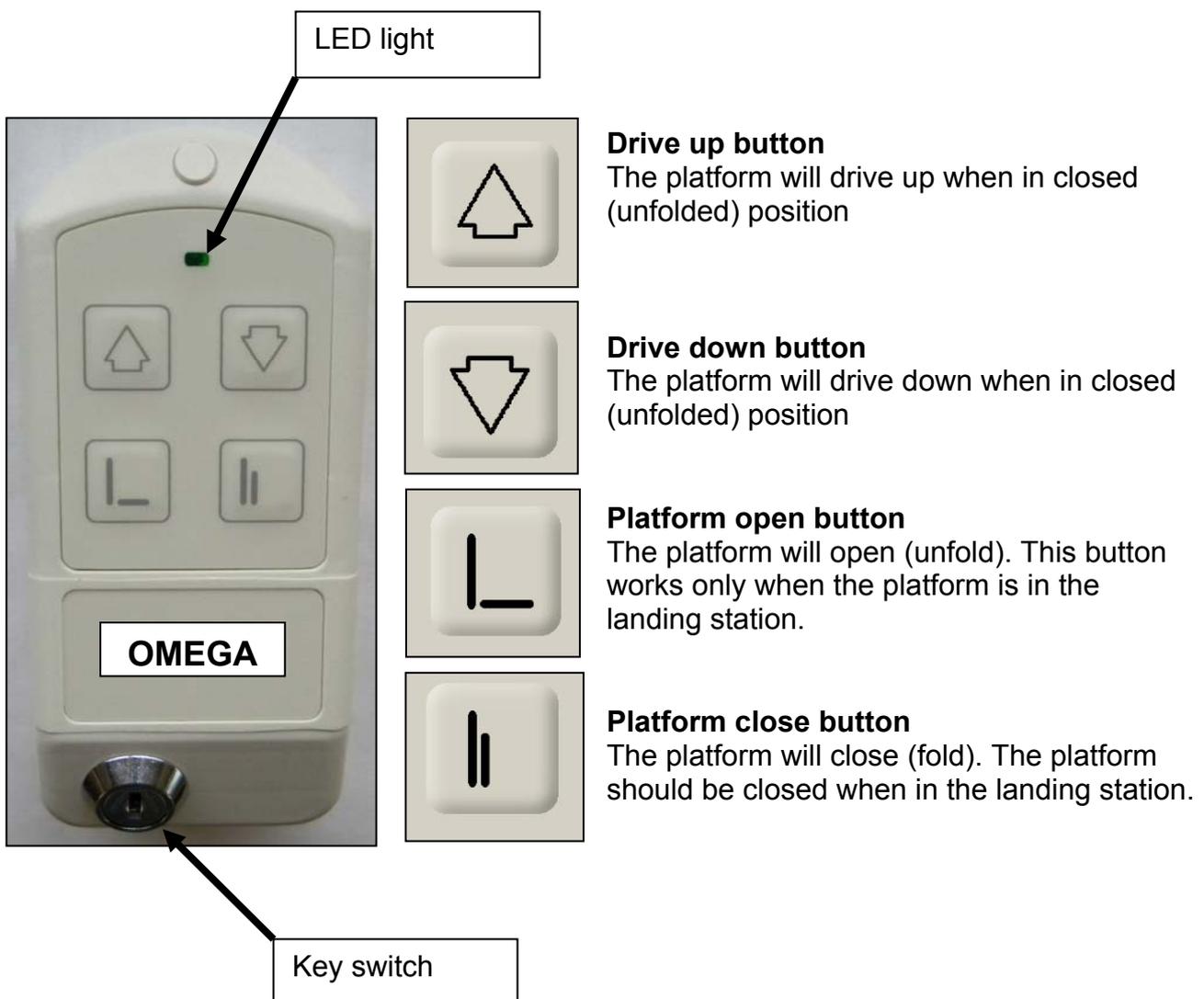
## External call stations

All Omega installations are equipped with calling stations, with which you can call and send the lift. Call stations are located in the area of the upper and lower landing position.

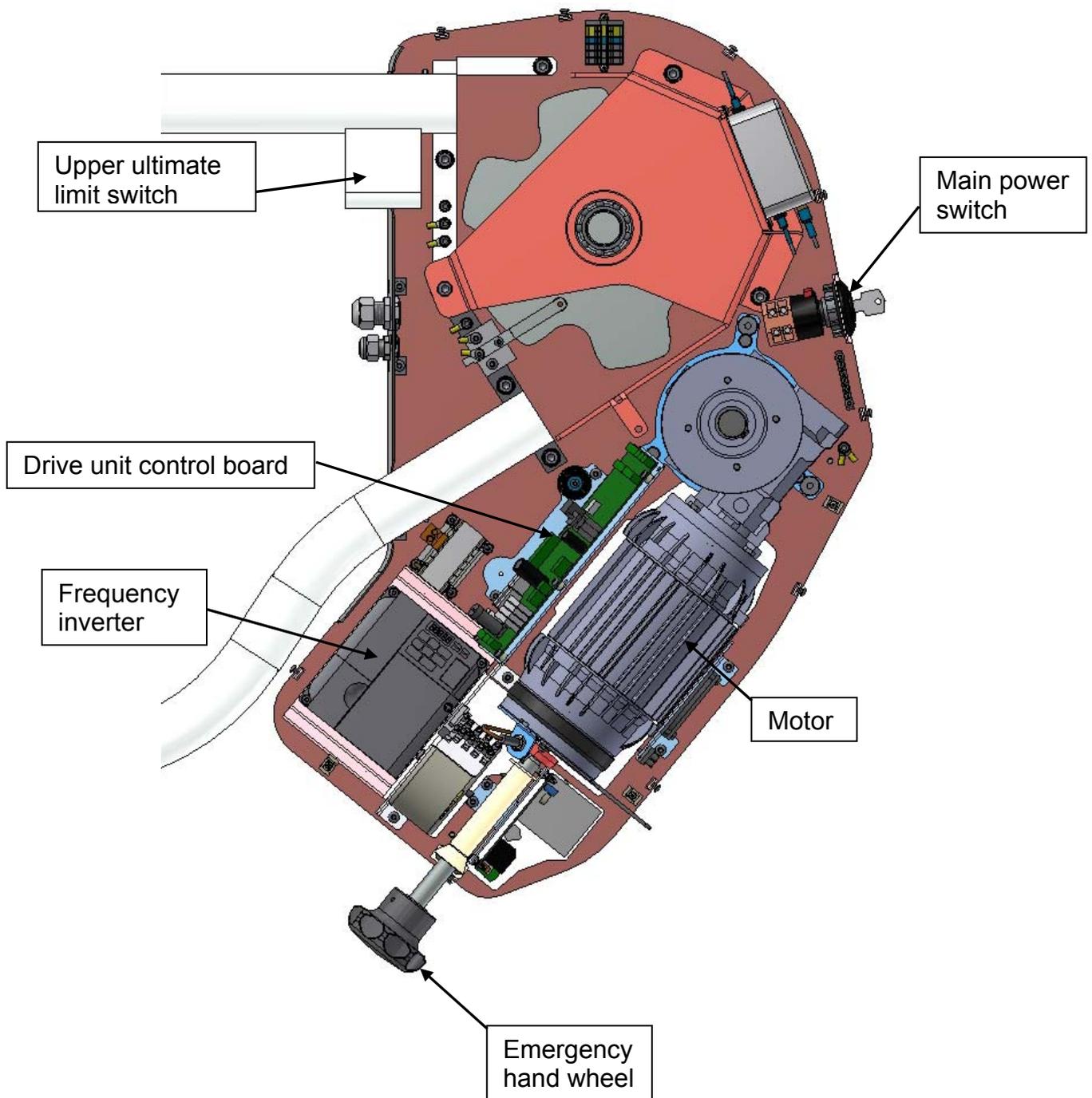
Each landing call station needs to be activated with a key switch before use.

The call stations are needed to call and send the lift with closed platform and to open and close the platform in the landing stations.

A green LED light will start flashing when a command button is pressed.



**Overview compact motor box**



## General operation

*OMEGA* lifts are safe and easy to use. The technical control of the lift is entirely adapted to the abilities of physically handicapped persons. Please refer to the general layouts on the previous pages for a better understanding of the lift.

For use of the lift, first turn on the main power switch. By switching off the main power switch, the whole plant can be divided from the circuit.

It is necessary to switch off the main power switch while repairs are done to the stairlift, especially in the drive box. The main power switch can be locked in both the “on” and “off” position with a padlock.

Before operating the lift, ensure that the platform area is clear.

Is the platform not on the level on which you want to move onto the platform, you can call the platform by using the wall controls:

Switch on the wall control by putting in and turning the key. The green light is on now. Press the “Up” or “Down”-Button and the platform moves into the direction as long as you hold the button. If the green light is not on, please make sure that the stairlift is not used from another person on the platform or from another wall control! In this case please turn the key back (=switch off your wall control) and wait until the lift is free for usage. Now you can switch on the wall control again and call the lift to your landing. If the wall control does not work anyway, please call our service team and ask for advise!

The carriage travels as long as you keep pressed the directional button on the wall control.



Wall controls only control the lift when the platform is folded up.

The carriage stops automatically at the stop position. To use the lift fold down the platform by using the “Open”-Button. Press the button as long as it takes that the platform is in horizontal position and the barrier has opened completely. Simultaneously the ramps turn down to the correct position enabling safe driving/moving onto the platform. When the platform is folded down, all controls other than the platform control lose their function. This allows safe movement onto the platform.

Before moving onto the platform switch off the wall control, turn back the key to position “OFF” and take out the key.

## Driving/Moving onto the platform

You can move onto the platform after you have opened the platform and the barrier in accordance with the former chapter.



Always face the direction of travel and use the wheelchair brake for safety.

## Travelling

The handset carriage control on the sidewall has directional control buttons, an audio alarm switch and optional a key switch and an emergency stop.

When the passenger has moved onto the platform in accordance with the “Driving/Moving onto the platform” instructions, the platform control must be switched on. Put on the key and turn it into “ON” position. Now the carriage can be set in motion by pressing the “up” or “down” directional control.

As soon as you press the directional control, the barrier closes and the ramp moves into travel position automatically. After the barrier is closed and the ramp is in up position, the stairlift starts to travel.

The carriage stops at all stop positions (upper-, lower-, intermediate stop) automatically. The barrier will open in all stop positions, if the directional control remains pressed. If you want to leave the platform, please look at chapter “Leaving the platform”. If you want to travel to the next stop position, stop pressing the directional button for a moment, then press the button for the same direction again! The barrier keeps closed (or closes again when it has been opened a little bit already) and the carriage starts to travel to the next station.

The carriage stops also when the ramps or any other safety pad travels against obstacles!

Keep the directional control pressed until reaching the desired stop position. If the directional control is released, the carriage will stop immediately.

As a safety measure, the plant is equipped with an emergency stop (red button on the control). In the unlikely event that the stairlift does not stop when the directional control button is released, press the emergency stop button, a self-locking button, and the lift will stop immediately.

To unlock the emergency stop button, press it once more or turn it clockwise.

## Leaving the platform

The stairlift has been designed to stop in the correct position at each station. Keep the directional control button pressed until the barrier has folded up and the ramp has folded down to the correct position. When the barrier is fully opened (and the ramps are fully folded down), release the directional control.

Switch off the platform control by turning the key into "OFF" position. Take out the key. Now you can leave the platform.

After leaving the platform you have to switch on the wall control by putting in and turning the key. Press the "Up"-Button and the platform folds up as long as you hold the button. Press the "Up"-Button until the platform is folded up completely. Now switch off the wall control by turning back the key to position "OFF". Take out the key before traveling away from the stairlift.



After leaving the lift, fold down the barriers and fold up the platform.

By folding up the platform the wall controls (landing controls) will be re-activated. The carriage can be sent to the desired parking position.



Lift up the armrests before leaving the platform when using a carriage with seat performance!



To avoid unauthorised use of the stairlift, always switch it off with the key when not in use.

## Troubleshooting

For safety reasons, the *OMEGA-F* stairlift is equipped with several electrical and mechanical locking devices. The stairlift will not work if any of these devices are tripped or if the order of events is incorrect. By following the instructions provided in the ensuing paragraphs, the user will be able to determine the reason for breakdown. Contact our service team! You must not manipulate, modify or remove any safety feature of the stairlift.

Work through the following instructions paragraph-by-paragraph. Do not skip any part! Be sure that the landing controls are deactivated whenever the platform is folded down.

Before troubleshooting, pay attention to the following:

-  When a landing control is activated, it automatically deactivates all other wall controls, i.e., the complete lift can only be controlled by one control at a time.
-  Please check if the main power switch, located either at the side of the drive box is and check if the stop switch on the platform control is pressed
-  Please check if the fuses in the distribution box of your house are working and turned on.

### **Possible errors**

If during the operation of the lift an error is occurring, it will be displayed as an error code on the 7 segment display on the control boards as well as on the LCD display. If there is no error the display shows Omega as in the picture on the left.

If a safety switch is pressed or the platform is used in a wrong way the following status report could be shown on the display – “Issue reason”:

- S11p – platform is not fully opened
- S11o – platform is not fully closed
- Contact down (downward ramp or lateral bar is pressed)
- Contact up (upward ramp or lateral bar is pressed)
- Safety bottom: Contact plate under the platform is pressed
- S. circuit p – emergency stop button or lever for barrier arm unblocking are pressed
- S. circuit d – Ultimate stop switch at upper end of rail is pressed
- S. circuit f-a – ultimate stop switch at lower rail end or overspeed governor switch is pressed



If the unit does not work, check on the Display what the error code is shown and see on the list below what this error means. Talk to the service technician and tell him the error code so the correct action for fixing the lift can be taken.

Problem (issue reason)	Beschreibung
contact up	upward ramp or lateral bar is pressed
contact down	downward ramp or lateral bar is pressed
s. circuit p	emergency stop button or lever for barrier arm unblocking are pressed, switch S14, S15 or S16 is pushed
safety bottom	Contact plate under the platform is pressed
s. circuit d	Ultimate stop switch at upper end of rail is pressed or emergency hand wheel is in the drive, must be removed
s. circuit f-a	ultimate stop switch at lower rail end or over speed governor switch is pressed
S11o	platform is not fully closed, must be complete closed until switch S11o is pushed, that the lift can go up or down from landing controls
S11p	platform is not fully opened, switch S11p is not complete pushed, must be pushed to go up and down from platform control
S11m	The switch S11m is not correct adjusted
S11s	The switch S11s is pushed, barrier arms are not complete closed
S11u	Barriere arms complete open, cannot be open more
S33	If the side access ramp with the second actuator is not complete closed
current limit	If the platform actuator need to much power during folding the platform. It can be adjusted on the platform PCB with the Poti R50
in station	Platform cannot be moved anymore, it is already in the landing station.
not in station	Will be shown if someone try to open the platform, also i fit is not in a station
overload	If there is too much weight on the platform, moving into landing station is possible

## Error table

The following table lists all error codes and their cause or effect. The number is shown on the Display (for example, Error 20). The *numbers* in the *parentheses* are those symbols **that are displayed blinking on the seven-segment display on the drive.**

Name	Number	Reaction	Possible Cause
No error	0 (-)	-	-
Pulse timeout	1 (1)	Only slow ride	Timeout pulses. No pulses from the pulse generator were counted while driving.  Causes: Pulse generator defective, cable not connected, FI does not start
Wrong pulse at standstill	2 (2)	Only slow ride	Pulses were counted, although the lift should be at a standstill.  Causes: Possibly brake defective, as lift moves, although no ride contactor is tightened
KKS1 contact gets stuck	3 (3)	-	With the short-circuit control relay KKS1, the contact has remained stuck.  The relay must be replaced.
Too many points	4 (4)	Only slow ride	The system attempted to store too many points during the learn trip.  A maximum of 40 points can be programmed.

Outside the valid range	5 (5)	Only slow ride	<p>The error occurs when the number of pulses reaches an invalid value (e.g., less than 0).</p> <p>This can happen if you push the lower limit switch anywhere on the track and then continue downwards again.</p> <p>Upon pressing of the lower limit switch, the pulse value is set to e.g. 160, the pulse values are reduced and a value less than 0 can occur when moving further down.</p>
Tolerance field error at end stop position	6 (6)	Only slow ride	<p>If, during normal travel, the counted pulses deviate too much from the stored pulse values.</p> <p>The reason may be that the limit switch curves were adjusted after the learn trip.</p>
Tolerance field error intermediate stop position	7 (7)	Only slow ride	<p>If, during normal travel, the counted pulses deviate too much from the stored pulse values.</p> <p>The cause may be that the limit switch curves of the intermediate stops were adjusted after the learn trip</p>
Pulse at stop position	8 (8)	Only slow ride	<p>If during normal ride more than a certain number of pulses occur as long as the limit switch is pressed.</p> <p>Mostly a sign that a limit switch is stuck.</p>
Wrong direction of rotation	10 (A)	Only slow ride	<p>If the pulse generator returns a different direction than the one output from the inverter.</p>
Brake weak	11 (b)	Only slow ride	<p>If the ride command is interrupted and the pulse generator continues to count a certain number of pulses, this is an indication that the brake does not stop the lift correctly.</p>

Motor temperature  Fire alarm contact (optional)	13 (d)	Ride to the next stop position	The thermal contact in the drive motor has tripped or the fire alarm contact has tripped (optional).  An approach from the stop position is no longer possible as long as the signal is present.
Short circuit between traction rope and tube	14 (E)	Ride to the next stop position, provided that the short circuit is no longer present	This error occurs if there is still a short circuit between the traction rope and the tube after five restart attempts.  An approach from the stop position is no longer possible as long as the signal is present.
Short circuit between support rope and tube	15 (F)	Ride to the next stop position	When a short circuit occurs between the support rope and the tube.  An approach from the stop position is no longer possible as long as the signal is present.  This error also occurs when the resistor RV on the platform is not properly connected or has a resistance of about 50 ohms.  Following error Safety switch triggered → Rocker makes short circuit
SPI timeout drive	16 (1.)	Ride is interrupted	The communication between the PIC microcontroller and the Echelon Powerline module was faulty. Powerline module defective.
Safety circuit	17 (2.)	Ride to the next stop position	Safety Circuit Relay on platform board (KFahrAUF1, KFahrAB1) Contact is stuck.
FI communication	18 (3.)	Only slow ride	The communication with the frequency inverter via the RS485 interface (Modbus) has failed.

Communication with EEPROM drive	19 (4.)	-	The communication of the microcontroller with the EEPROM located on the drive board failed, or memory location in EEPROM could not be written correctly.
Contactor feedback	20 (5.)	Ride to the next stop position	The contacts of the ride contactors (K50, K51) or the safety relay KSK have not dropped off after completion of a ride.  Approach from the stop position is no longer possible unless the correct signal (depending on the setting in contactor feedback) is present.
Data exchange between drive and platform board	21 (6.)	Ride is interrupted	Communication via the rope did not work.  Identified on the drive side.
WDTO occurred drive	22 (7.)	Ride is interrupted	Contact manufacturer!  (Watchdog timer timeout occurred)
SWR occurred drive	23 (8.)	Ride is interrupted	Contact manufacturer!  (Software reset occurred)
BOR occurred drive	24 (9.)	Ride is interrupted	This error occurs with a very short power failure.
Internal FI error	25 (A.)	Ride is interrupted	Indicates if an internal error has occurred in the drive. Troubleshoot the error in the FI error list according to the FI display (Page 387).
FI overcurrent	26 (B.)	Ride is interrupted	Overcurrent has occurred at the drive. Check motor or check for short circuit.
SPI timeout platform	112 (-)	Ride is interrupted	The communication between the PIC microcontroller and the Echelon Powerline module was faulty. Powerline module defective.

Data exchange between drive and platform board	113 (-)	Ride is interrupted	Communication via the rope did not work.  Platform sends data to the drive and does not get a correct response.  Possible Cause: Failure of the voltage regulator (24V) on the drive board due to overheating.
Communication with EEPROM platform	114 (-)	-	The communication of the microcontroller with the EEPROM located on the platform board has failed, or memory location in EEPROM could not be written correctly.
WDTO occurred Platform	116 (-)	Ride is interrupted	Contact manufacturer! (Watchdog timer timeout occurred)
SWR occurred Platform	117 (-)	Ride is interrupted	Contact manufacturer! (Software reset occurred)
BOR occurred Platform	118 (-)	Ride is interrupted	This error occurs with a very short power failure.

### **Information on the display**

If a power failure occurs on the drive or on the platform, this is indicated by information on the display. A power failure on the drive is equivalent to a mains failure (or main power switch off-on). This information is deleted when the stop position is reached.

Power failure at drive → Power-off A. (powerloss d.)  
Power failure at platform → Power-off P. (powerloss p.)

## Rescue of passengers

When the carriage stops between two stations and all instructions given on the previous page are checked, the passenger must be rescued from the carriage.

### **Case 1**

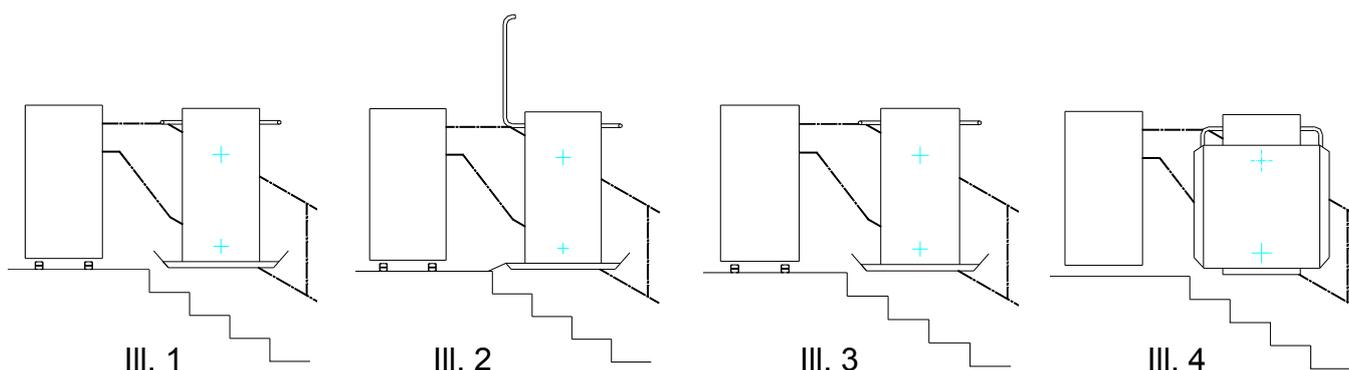
The occupied platform is near a stop position.

#### Notice:

Position of the hand lever for break release and the hand wheel is explained on page 9.

The description of the main power switch is on page 10.

1. Turn off the main power switch.
2. Take the hand wheel and insert it into the hole located at the back of the motor.
3. Tighten the hand lever for break release and turn the hand wheel until the next station has been reached. The direction "UP" is indicated on the hand wheel (see Illustration 1).
4. At every landing the barrier can be opened manually at the side where leaving the platform is desired (see Illustration 2).
5. Now the wheelchair driver can leave the platform.
6. If using a manual platform, close the platform as usual. That means: First close the barrier and then fold up the platform!
7. If using an automatic platform, first fold down the barrier to the closed position (see Illustration 3). **Then the platform can be closed without any problem (see Illustration 4). The platform must be locked with the padlock on the carriage.**
8. Call your service team!



**Case 2**

The occupied platform is not close to a stop position.

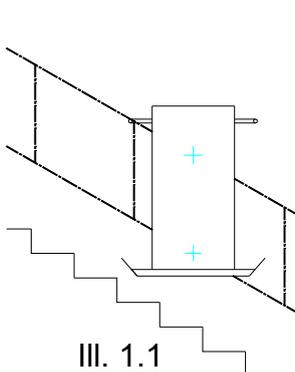
## Notice:

Position of the hand lever for break release and the hand wheel is explained on page 9.  
The description of the main power switch is on page 10.

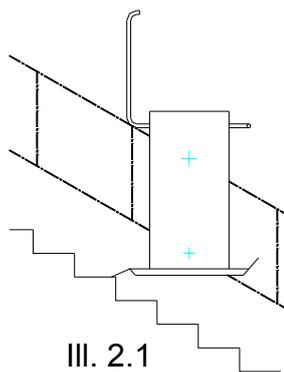


For the rescue of the passenger **two persons** are needed! If there is only one person available, it is necessary to wind the carriage into the next station (see case 1).

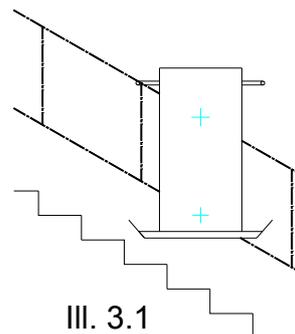
1. Turn off the main power switch.
2. Take the hand wheel and insert it into the hole located at the back of the motor.
3. Tighten the hand lever for break release and turn the hand wheel until reaching the next half-landing or straight part of the staircase (see Illustration 1.1). Do not stop at a curved area of the rail!
4. *Emergency unclamping of the barrier*. In order to open the barrier when not in a station, please carry out the following instructions. It is only permitted to open the barrier up to the stairs (see page 20). Otherwise one could face the danger of falling or rolling down.
5. The wheelchair driver can now be lifted down from the platform (see Illustration 2.1).
6. If using a manual platform, close the platform as usual. That means: First close the barrier and then fold up the platform!
7. If using an automatic platform, first fold down the barrier to the closed position (see Illustration 3). **Now the platform can be closed without any problem (see Illustration 4.1). The platform must be locked with the padlock on the carriage.**
8. Call your service team!



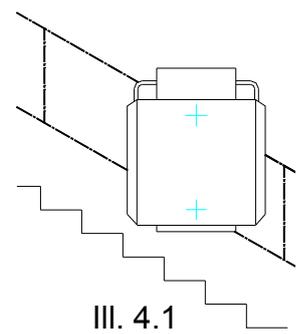
III. 1.1



III. 2.1



III. 3.1



III. 4.1

### Emergency unclamping of barriers:

For unclamping a barrier somewhere out of a station, press the lever located at the back of the carriage (see illustration 5).

The position of this lever is shown in detail in Illustration 6 and 7.

#### **Attention:**

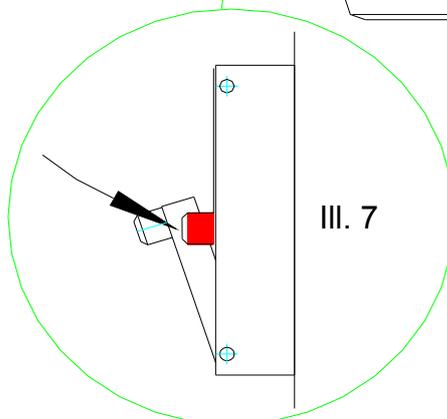
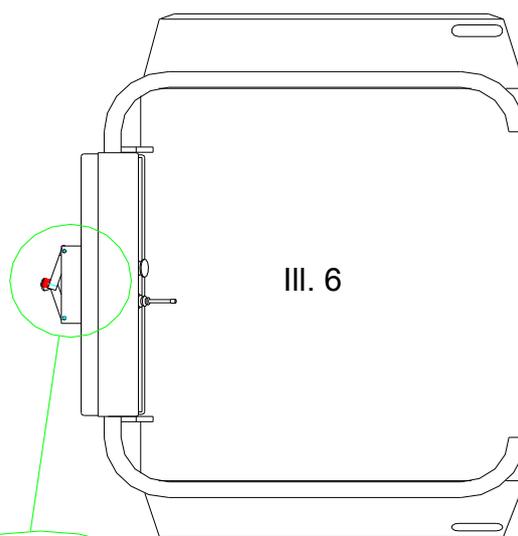
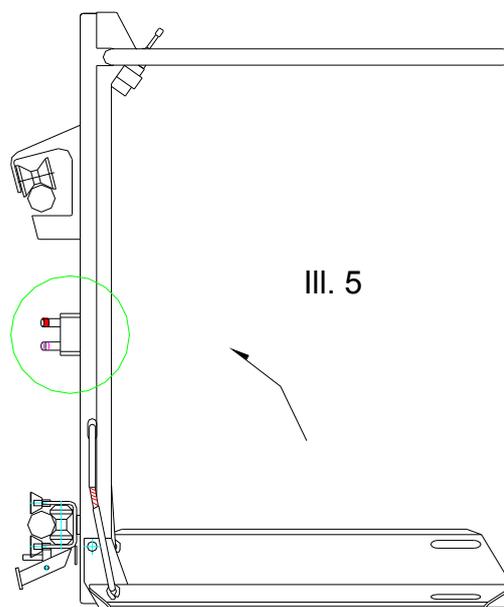


The red, marked lever must be pressed for unlocking the barrier up to the stairs.



Do not press the unmarked lever!

Press and hold this lever and open the barrier with an abrupt pull!



## **Installation and dismantling**

### **Electrical installation**

Only Lehner Liffttechnik or one of our authorised partners is allowed to carry out the electrical installation.

If someone else does the electrical installation, you will lose the right to use the lift.

Lehner Liffttechnik does not assume any liability for damages caused by the electrical installation carried out by an unauthorised third party.

### **Installation**

Only Lehner Liffttechnik or one of our authorised partners is allowed to install the stairlift.

Handling or rebuilding the lift will result in the loss of permission for using it.

Lehner Liffttechnik does not assume any liability for damages caused by the improper installation of the lift carried out by an unauthorised third party.

### **Dismantling**

Only Lehner Liffttechnik or one of our authorised partners is allowed to dismantle the stairlift.

We do not take over any liability for damages caused by the contravention of this rule.

## Maintenance instruction

### Servicing summary (recommended every 6 months)

- Check thoroughly fastening of whole unit into stairway. In principle, elevator codes require this kind of equipment to withstand sudden collapse under rated load with a 5 x safety factor: although this is arguably excessive, a public installation must be regarded as a permanent fixture and liable to excesses.
- Thoroughly check fastenings holding all parts of equipment together – check tighten every nut, bolt and screw.
- Check running and stopping of equipment over whole travel length several times, both from wall controls and from platform, with full load.
- Check functioning of all safety features:
  - a) Power on/off switch on electric box.
  - b) Wall control key switch.
  - c) Key switch on rearwall (removal cuts off power).
  - d) Emergency stops on platform and call stations.
  - e) Audio alarm
  - f) Audio signal
  - g) Visual signal
  - h) Constant pressure wall control buttons.
  - i) Directional controls on rearwall.
  - j) Limit switch.
  - k) Security pressure frame
  - l) Sidewall sensitive edges
  - m) Safety underpan (safety bottom)
  - n) Ramp sensitivities both directions, platform folded up and down.
  - o) Ramp lever interlocks, mechanical and electrical.
  - p) Arrestor – mechanical function and switch.
  - q) Grounding of cable to tubes.

## Drive and gearbox

- Check cable tension and alignment of sprocket with tubes – clicking of balls engaging sprocket can usually be cured by adjusting cog alignment by shimming with flat washers between gearbox and cradle.
- Check bolts fastening drive box to wall and/or floor. Tighten if loose.
- Check fastening of tubes to drive box.
- Inside drive box, check tightness of nuts and supports holding motor onto gearbox cradle. Tighten if loose.
- Tension cable by screwing motor/gearbox cradle away from tubes with nuts on threaded bars. If cable length is correct, both cables will be reasonably tight when cradle is in middle of adjustment travel. This means that, with thumb pressure mid-way between drive cog and tubes, and when both cables have same tension (move cog hand crank to achieve this), deflection is about 1 cm (1/2"). Naturally, in operation when loaded conveyance is climbing, upper cable will have much more tension than lower; going down, tensions will be more alike.
- Check and clean 24 volt pickup on drive sprocket with cloth and cleaning solvent or rubbing alcohol.
- Check fastenings of cable harnesses, electrical terminals, fittings, and wires. If loose, tape back into place.

### ***For big drive units (1,5 kW and 2,2 kW motors):***

- Check oil level in gearbox, and that correct oil plug is in place
- Check functioning of loose cable switch. With elevator at rest and cover off, move switch and check that "power on" lights on wall panels go out.

### **Arrestor (Governor)**

- Remove cover, check general tightness of nuts including those on tube terminations fixing to arrestor. Tighten if loose.
- Check free play movement of pawl which idles on arrestor cable, and functioning of cut out switch.
- Clean dust and grease from pawl, pawl slot and bearing.
- Replace cover and tighten screws.

### **Carriage**

- Check and lightly lubricate main platform hinge pins with light oil.
- Remove rearwall cover, check tightness and sparingly spray-lubricate ramps on platform, ramp linkages (clean first), and lever linkages through to rearwall top. Tighten any loose nuts.
- Check functioning and fastening of cam operation of lever mechanism releasing loading ramp at station. Tighten any loose nuts.
- Check functioning of notched ramp safety (limit) switches and tightness of holding screws. (Note that the freeplay in these is a design feature).
- Check other limit switches in like fashion.
- Check fastening of cable harnesses and wires. Tape into position any loose cables.
- Check operation, fastening and wiring switches and remote control on upper surface of hanger. Tighten if loose.
- Check upper and lower carriages behind the rearwall for tightness and check bolting onto rearwall, inside rearwall. Tighten if loose.
- Check free end play on nylon rollers – if noticeable, add appropriate spacer.
- Check carriage-to-cable connecting lugs and tighten if loose.

- Check functioning and fastening of switch at platform hinge pin. Tighten bolts if loose.
- Check attachment and functioning of under platform safety pressure plate operation.
- Clean inside of rearwall and replace cover.
- Recheck functioning of all carriage safety features.

### **Cable, tubes and towers**

- Check fastening to wall/floor/ceiling, and check tube fastenings to towers. Tighten any loose bolts and screws.
- Upon assembly, the cable and nylon balls are pre-greased and when the inside of the tubes has become polished after a few weeks, no further lubrication is necessary.
- Check for loose cable strands: report to dealer or manufacturer.
- Check tube section joints and fastenings. Tighten any loose bolts.
- Outside sliding contact: (outer edge of slot in upper tube): clean off grease and clean with emery cloth.  
Inside sliding contact: remove brass bar between cable levers and check brass brushes – replace if worn. (Easiest to do this at a bend).
- Check fastening and setting of limit switches mounted on plates at landings. Tighten any loose bolts.

### **Paint care**

- Streak marks may be removed with automotive cut-polish and cleaned with mild detergent (dishwashing liquid).
- Apply a hard automotive silicone way polish for final finish.



