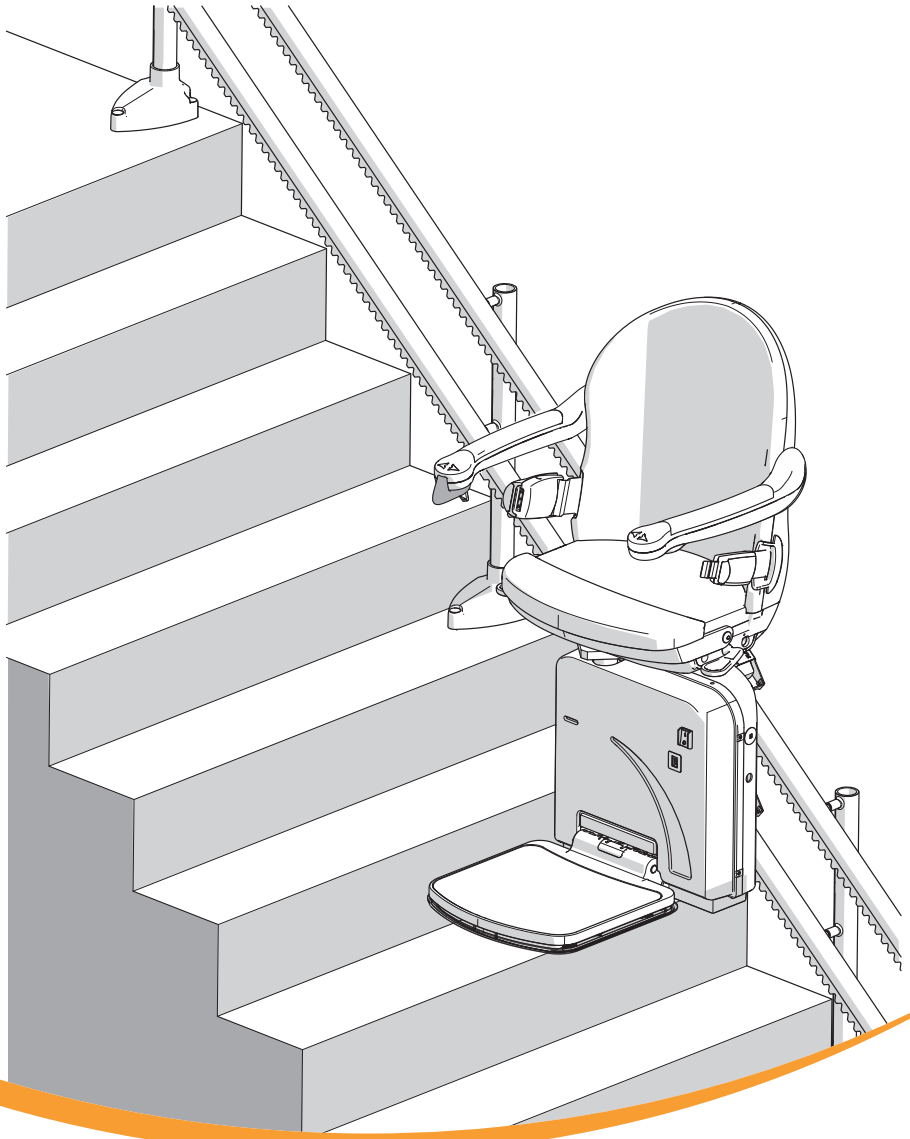
Handicare 2000 | QUICK REFERENCE GUIDE



VERSION 2.1

handicare

Contents

1. Introduction

This guide is intended for use as a general reference by engineers repairing faults on the Handicare 2000. The guide is structured as follows: the first chapter provides general information about the Handicare 2000, including how the Handicare 2000 should be tested, where the components are located and how they react to certain situations. The subsequent chapters deal with repairing faults.
Flow charts are used in some cases, where step-by-step choices have to be made in order to find the cause of the fault.

There is room for improvement in every guide. If you have any tips or suggestions, please let us know so that we can incorporate them.
We wish you the best of luck with your tasks and hope that this guide will be of assistance.

2. Display codes

Left hand

Code	Meaning	Page
None	Power off	24
–	Charging, joystick failure	23,26
0	General safety line	22
1	Requires charge	31
2	Off charge	31
3	Top track limit activated	27
4	Top safety edge activated	29
5	Bottom track limit activated	28
6	Bottom safety edge activated	30
7	Low battery voltage	31
8	UP travel direction	21
9	DOWN travel direction	21
A	Hinge open	35
b	Toggle switch active at power up	21
C	IR address fail	32
d	Relay not open	20
E	Relay not closed	20
F	Brake semi-conductor failed	21
G	Brake not connected	20
H	Relay not open (pre-delay)	20
J	Hinge interlock switch fault	34
L	Current limit exceeded	20
n	Lift driving at half speed	38
o	Default Eprom	21
r	Power supply fault during charging	31
U	Power supply fault when battery on float	31
y	Main board hardware fault	21
.ll.	Overcurrent	20

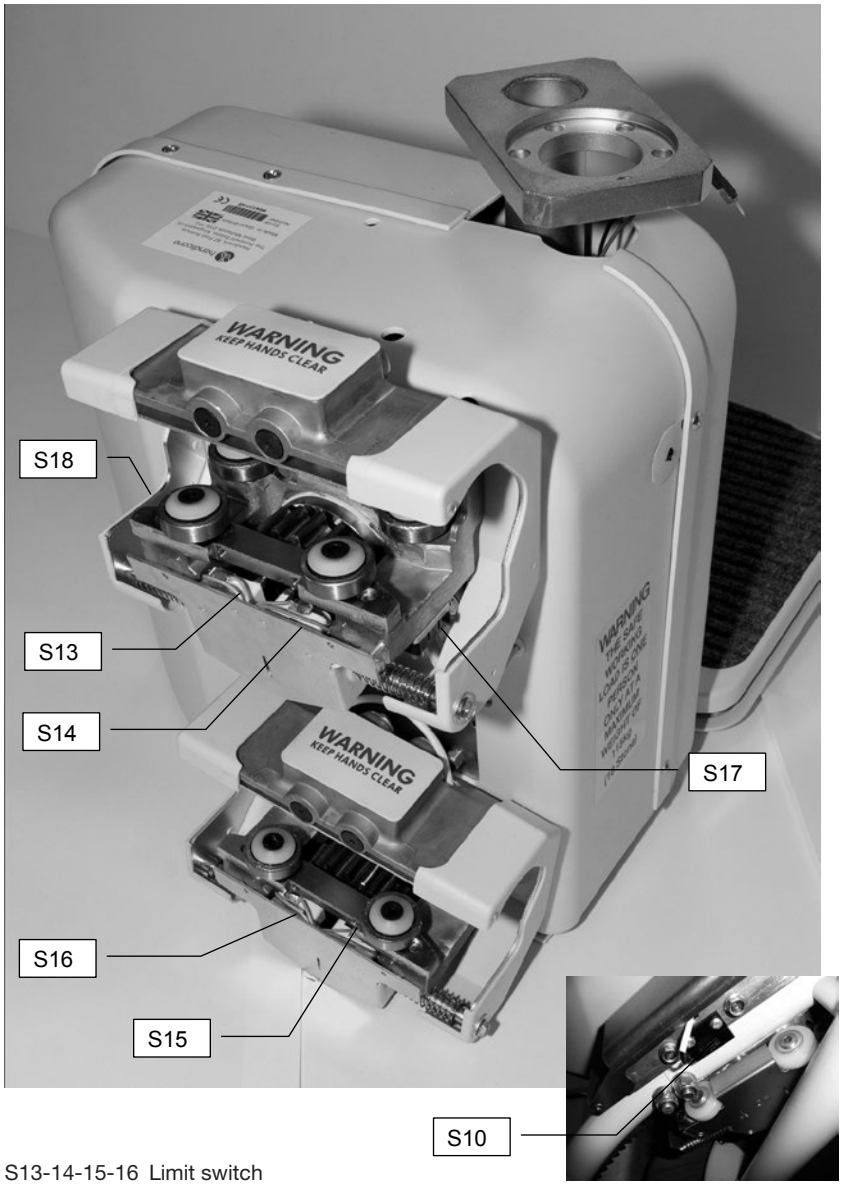
2. Display codes

Right hand

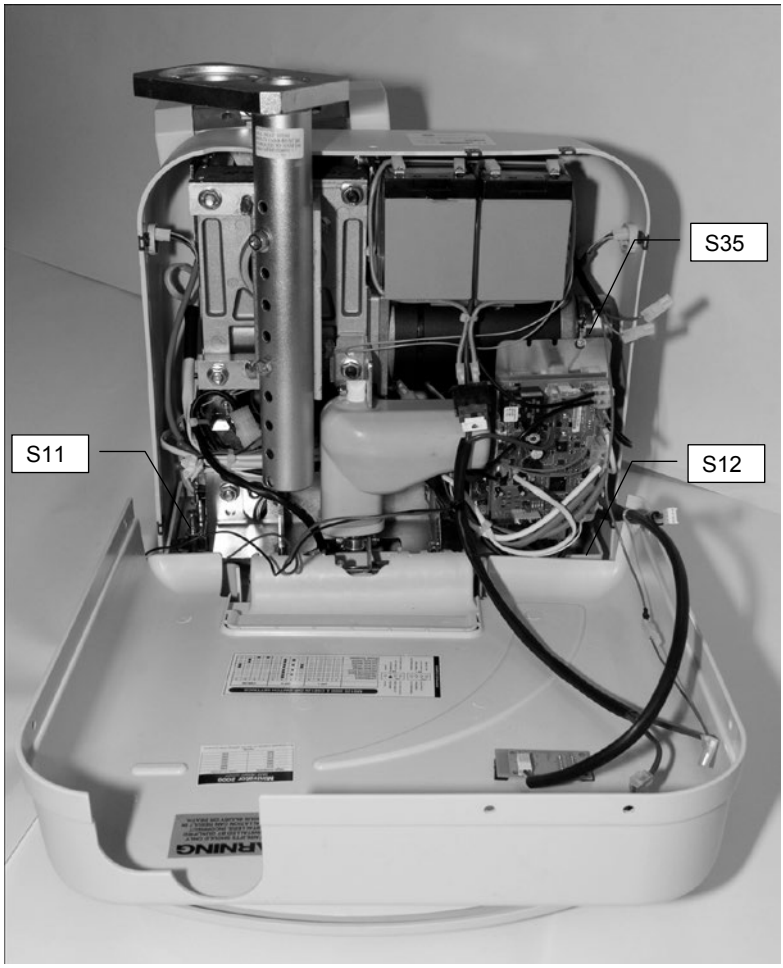
Code	Meaning	Page
None	Power off	24
–	Charging, joystick failure	23,26
0	General safety line activated	22
1	Requires charge	31
2	Off charge	31
3	Bottom track limit activated	27
4	Bottom safety edge activated	29
5	Top track limit activated	28
6	Top safety edge activated	30
7	Low battery voltage	31
8	UP travel direction	21
9	DOWN travel direction	21
A	Hinge open	35
b	Toggle switch active at power up	21
C	IR address fail	32
d	Relay not open	20
E	Relay not closed	20
F	Brake semi-conductor failed	21
G	Brake not connected	20
H	Relay not open (pre-delay)	20
J	Hinge interlock switch fault	34
L	Current limit exceeded	20
n	Lift driving at half speed	38
o	Default Eprom	21
r	Power supply fault during charging	31
U	Power supply fault when battery on float	31
y	Main board hardware fault	21
.ll.	Overcurrent	20

3. References

4. Glossary

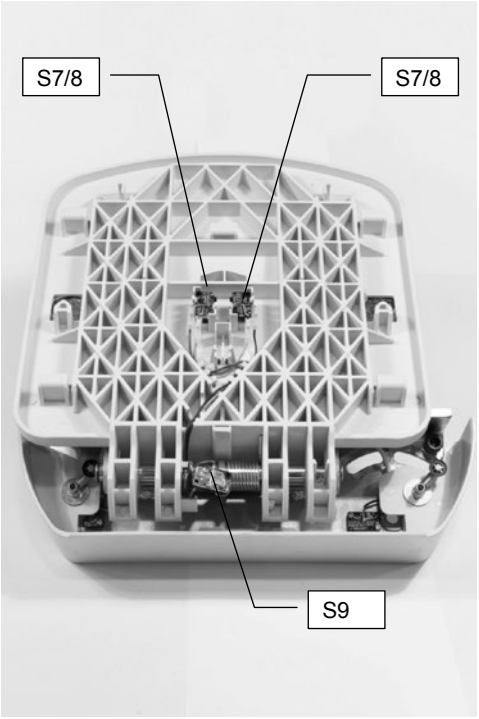


S13-14-15-16	Limit switch
S 17-18	Final limit switch
S10	Speed switch (lower trunnion)
S22	Hinge enable switch (top trunnion) not visible



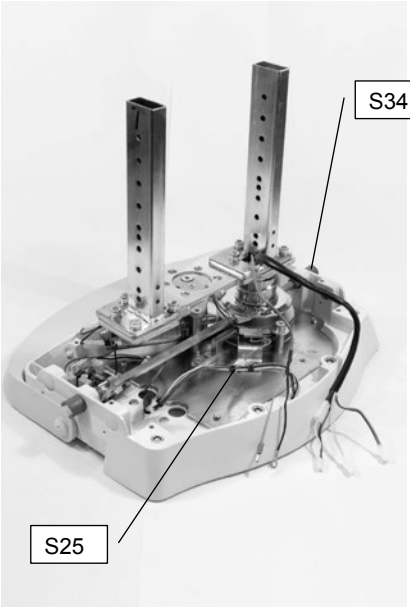
S11-12 Front chassis edge switch
S35 Handwinderswitch
Contact charging (lower trunnion)
Contact communication hinge (upper trunion)

Safety brake
S19,S20 Overspeed governor switch
Infrared receiver
5-Amp-fuse/30-Amp-fuse
Main board P1
Motor
Brake

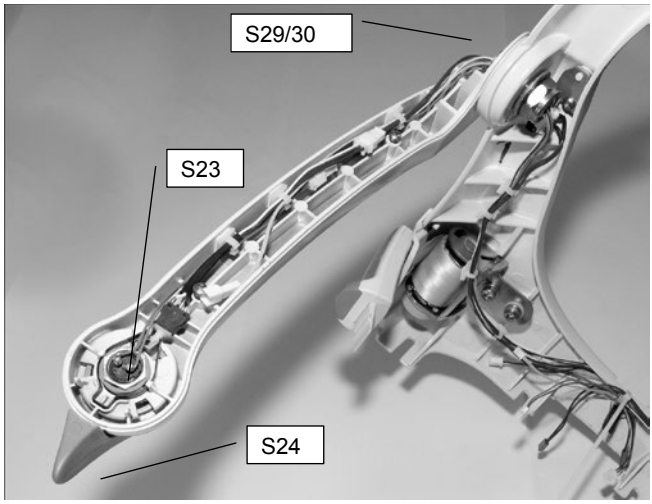


S7 Footrestswitch
S8 Footrestswitch
S9 Footrestswitch

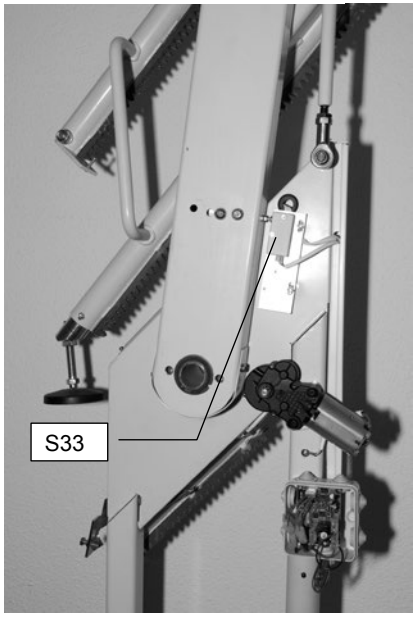
Display
S21 Mainswitch



Powered swivel
Motor
S25 Seat swivel switch
Board P3
S34 Emergency stop switch



S24 Toggle
S23 Keyswitch
S29 – S30 Armrestswitches



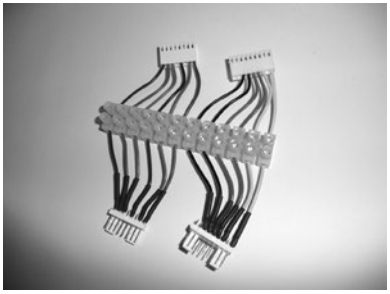
S31 Foldable hinge contact
S32 Foldable hinge contact
S33 Foldable hinge contact
Motor
Board P4

5. Testing

The circuits should be tested as follows:

- Use the electrical diagram to see which circuit you need to test
- Disconnect the Handicare 2000 from the power supply
- Connect the molex testing link to the pcb
- Ensure looms are removed from pcb before carrying out continuity testing
- Set the multimeter to the “beep” or resistance or voltage test mode
- Check that you are testing between the correct connector pins/ numbers.
- No “beep” or resistance means that the circuit being tested is not complete.
- Voltages can be find on the electrical scheme

If there is a short circuit with the frame, hold one of the measuring pins against the unit’s ground pin of the seat and push the other measuring pins into the top of the molex testing link.



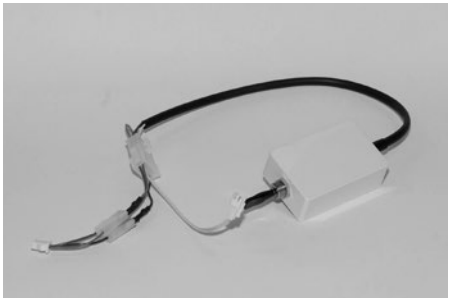
Molex testing link

6. Display

On the lift is a display which shows a diagnostic code to help you to locate the cause of the breakdown. The codes can be found on page 4/5 and in the user- and installation manual.

7. The toggle

The lift is operated by the toggle on the armrest. The toggle as well as the key switch or the button for the powered footrest raiser can be swapped from right to left on side.
The lift will not ride when the armrests are in the folded position. It does however operate on the remotes. During the ride the diagnostic display show “8” or “9”.



An installation toggle loom can be used to ride the power pack without chair. (art. Nr.181001.50083).

In case of a public building when the key switch should switch off the toggle but the remotes should stay operational, the key switch needs to be transferred from the safety line to the control line.

8. The remotes

The remotes function on infrared. On the backside is a dipswitch for setting a different code.

The lower button is a special button for parking the lift. On the backside is a red,orange or green cover. Green means the remote functions on

radiofrequency (2,4 Ghz), red means the remote functions on infrared. Orange means the remote functions on 868 Mhz.

Under this cover you can find a dipswitch to set a different canal.
The infrared remotes work out of the box. If they don't, they can be linked as follows: Press and hold the red button on the board P1. A yellow light will illuminate on the board. Press any button on the handset and the light will go out.

9. The safety edges

Two direction-sensitive safety edges and one general safety edge have been included in the Handicare 2000.

The direction-sensitive safety edges

The direction-sensitive safety edge prevents the lift from moving further in the direction that is blocked.
However, the Handicare 2000 can still be moved in the opposite direction to remove the block.
The diagnostic code shows "4" or "6"

The following switches have been included in the direction-sensitive safety edge:

- Footrest switches
- Detection switches for the power pack

The handing of the safety edges is when sitting on the lift.

The general safety edges

The general safety edge prevents the lift from moving further in both directions.

The diagnostic code shows “0” when the toggle is moved in either direction if the safety edge is obstructed.
The following switches have been included in the general safety edge:

- Seat swivel switch
- Overspeed governor switch
- Key-operated switch
- Final limit switch
- The emergency stop
- The handwinder switch

10. The batteries

Two 12V 7,2 Ah maintenance-free lead-acid batteries are used. They have an expected life span of three years.

If the output voltage of one of the batteries is at least 5V less than that of the other, it can be assumed the battery is faulty. If the voltage between the batteries varies, there is something wrong with them.

Guarantee
No guarantee is provided for the batteries. However, we do ask that you report any complaints to us, stating the identification number on the battery.

11. Charging power supply

The battery charger is suitable for an input voltage of between 100V and 240V. The output voltage is 33 V=. The charging current is 1 A.

There are different diagnostic codes if the lift requires charge

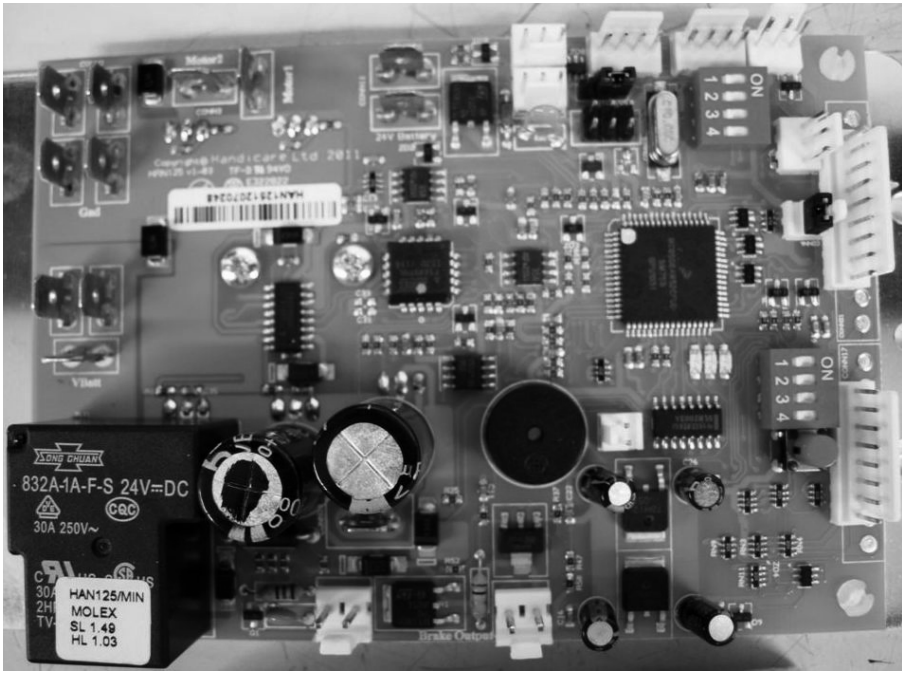
Code 1 and 7: When the battery voltage is very low (maybe down to 10%capacity left in batteries), this fault code will appear. When the lift docks on to charge contacts, the lift will not drive off the contacts. 1 will flash. Lift will only drive off if battery voltage has recovered approximately three quarter capacity. Another way of driving off the contacts is if lift is powered “off” then back “on” but as soon as lift docks on contacts, process will repeat again. This fault code is linked to fault code 7 but the code 7 is not usually seen as code 1 takes priority.

Code r: This fault will occur when the lift is charging. If the power supply is disconnected while the lift is charging, the r code will display. A fault with the 33V power supply where the power supply cannot supply current to charge the batteries will also show this code.

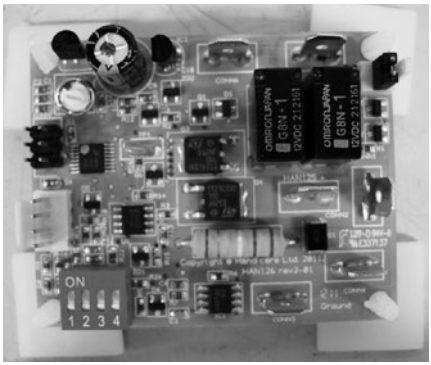
Code U: This fault occurs when the lift has fully charged the batteries and is in float mode. When the 33V power supply is disconnected, the U code will display.

Code E: This fault appears if the batteries are low. The main relay on the board is rated for 24VDC operation so the low voltage will give a false fault condition.

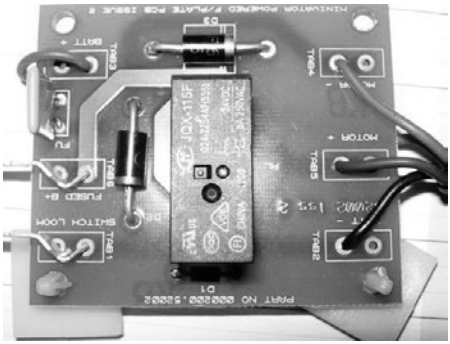
12. Boards



125 Mainboard P1



126 Powered swivel P3
126 Foldable hinge P4



Powered footrest raiser P2

13. Options

The stairlift can be extended with extra powered options:

- Powered swivel chair
- Powered footrest raiser
- Foldable hinge

Logic

The grey communication loom provides a link between the MS125 pcb and the 126 pcb.
The 126 connection on the MS125 pcb output is between 8-12 volts. Each time a 126 pcb is connected, the reading will drop by approximately 0.8 volts as communication between the two pcb's is established.
The 126 pcb dip switch settings tell the MS125 pcb what powered option is connected. Each dip switch setting is looking for different parameters to determine when and where power should be applied to the attached motor.
When the parameters are met, the MS125 pcb passes the battery voltage through the communication loom to the 126 pcb. The 126 pcb then reduces the output to the correct voltage for the attached motor to power the option. Depending on which option is attached, voltage would be applied to the motor for a set time or until the motor has hit a stop, the 126 pcb has a stall current.
In case of a failure on the communication circuit, the lift runs, but the options don't function.

Powered swivel chair

The powered swivel chair swivels at the top and is operated from the toggle. The lift shall be on the upper end limit switch and the board

should detect the charge voltage. The powered swivel chair can be operated manually in case of emergency.

Powered footrest raiser

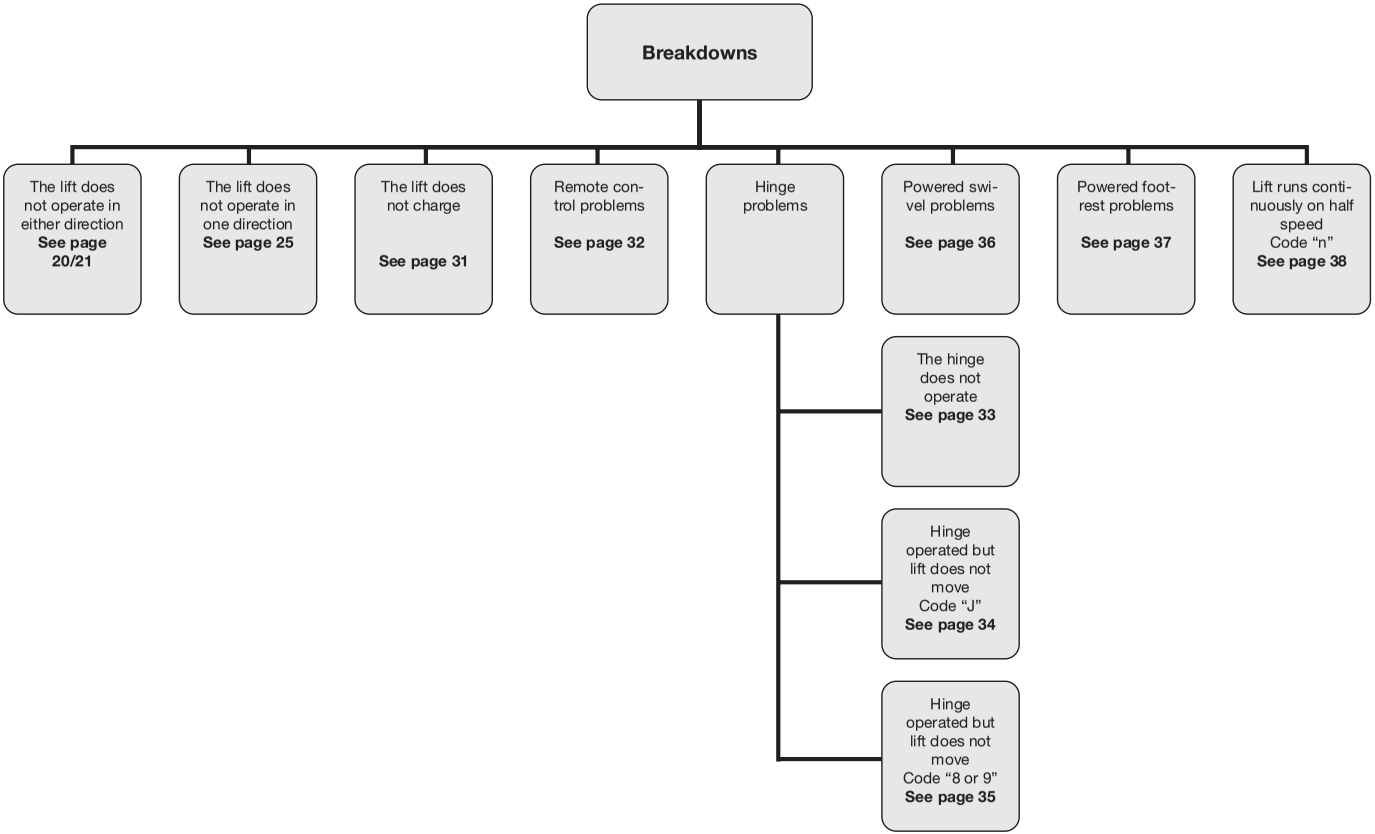
The powered footrest raiser is powered from a button under the armrest or from a switch between the 2 seat parts. The powered footrest can be activated all along the track.
The pcb used for the powered footrest raiser does not communicate with the main pcb. The safety and the limits are build into the footrest motor.

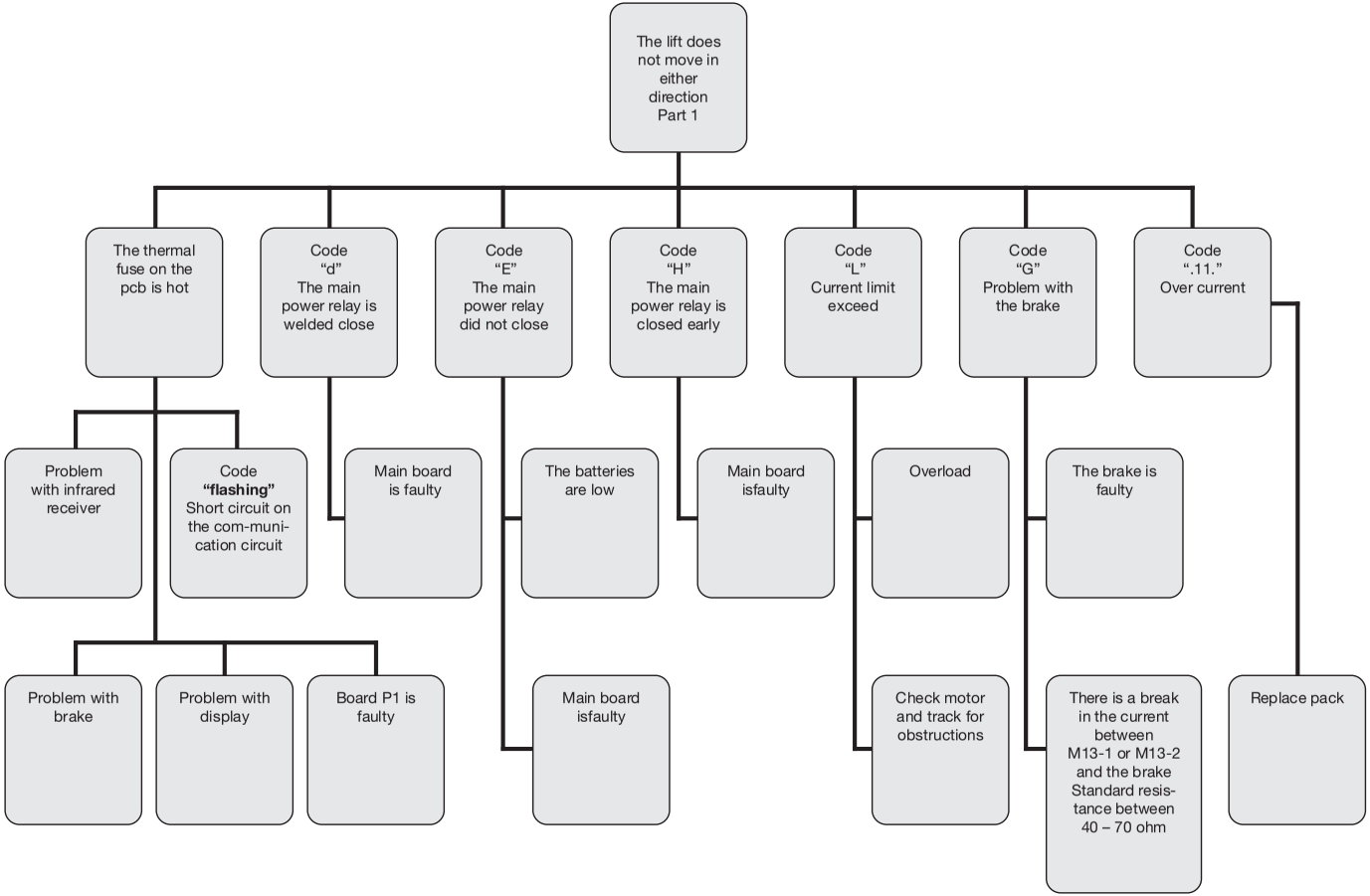
The foldable hinge

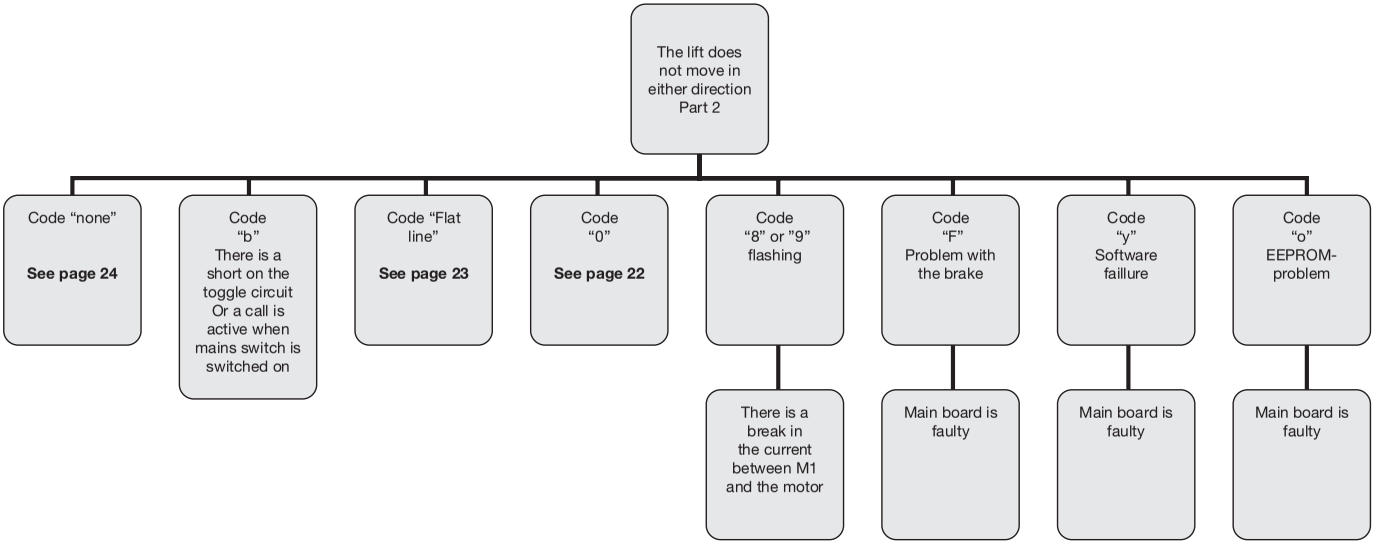
The foldable hinge is operated by the toggle. From the top of the stairs, the toggle is pushed in the down direction. The lift will drive down the track until it reaches the intermediate charge contacts. The lift will stop at this point. Keep the toggle pushed in the down direction. After a short pause the hinge will lower.
On the rail at the top and just above the foldable hinge are 2 contacts. The contact on the upper tube is for the communication and the contact on the lower tube is for the charging.
On the backside of the unit is a foldable hinge enable contact. This contact shall be activated by the ramp to enable the foldable hinge to move. At the same time the cupper strip in the power pack shall have contact with the cupper strip on the rail, so the lift “sees” 33V=. In case of a power down the foldable hinge will act on the foldable hinge enable contact only.
On the rail are 2 switches to control the end position of the hinge and to enable the lift to drive in case the hinge is completely (un) folded.
On the main board the dipswitch to enable foldable hinge shall be activated. And on the board in the electric box on the rail shall be activated. Consult the electric scheme for the right setting off the dipswitch.

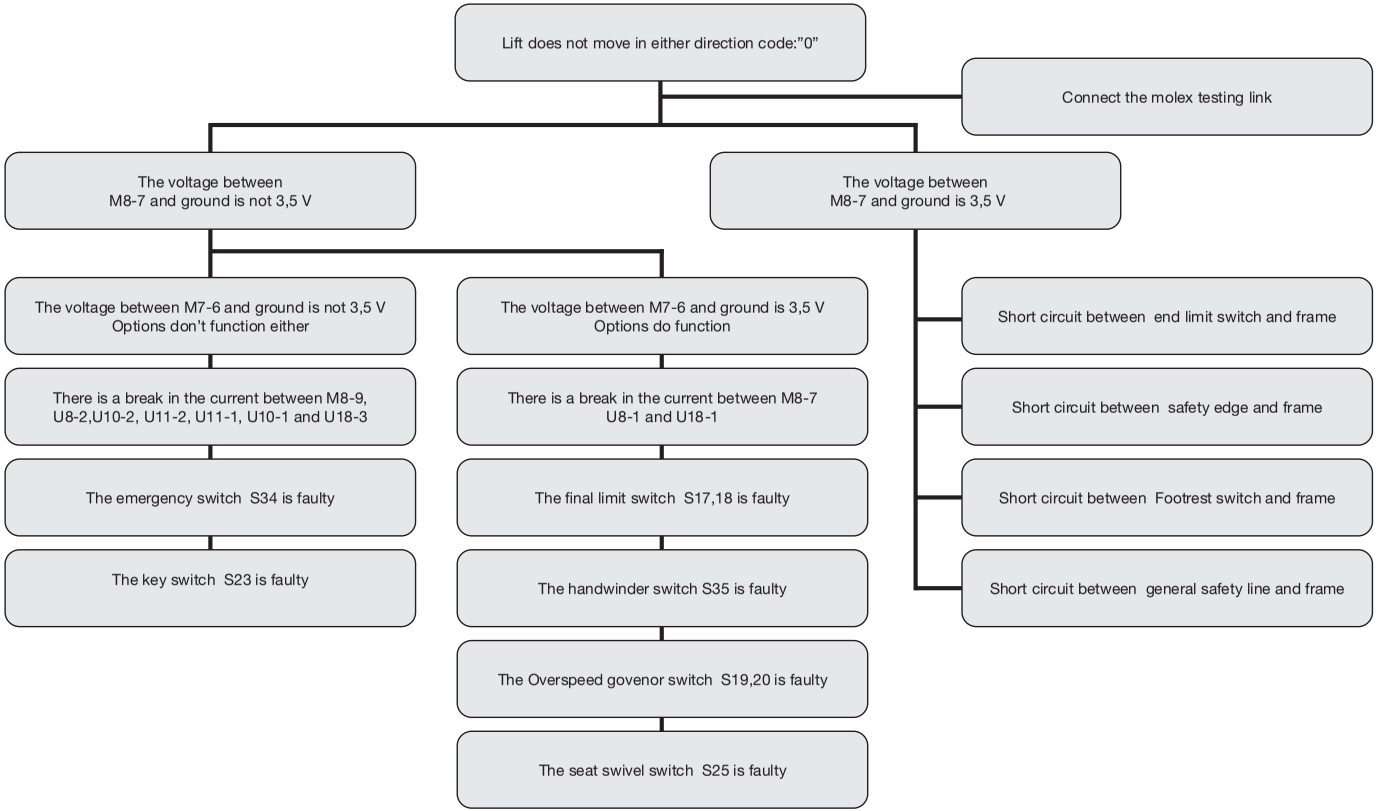
14. Rescuing the user

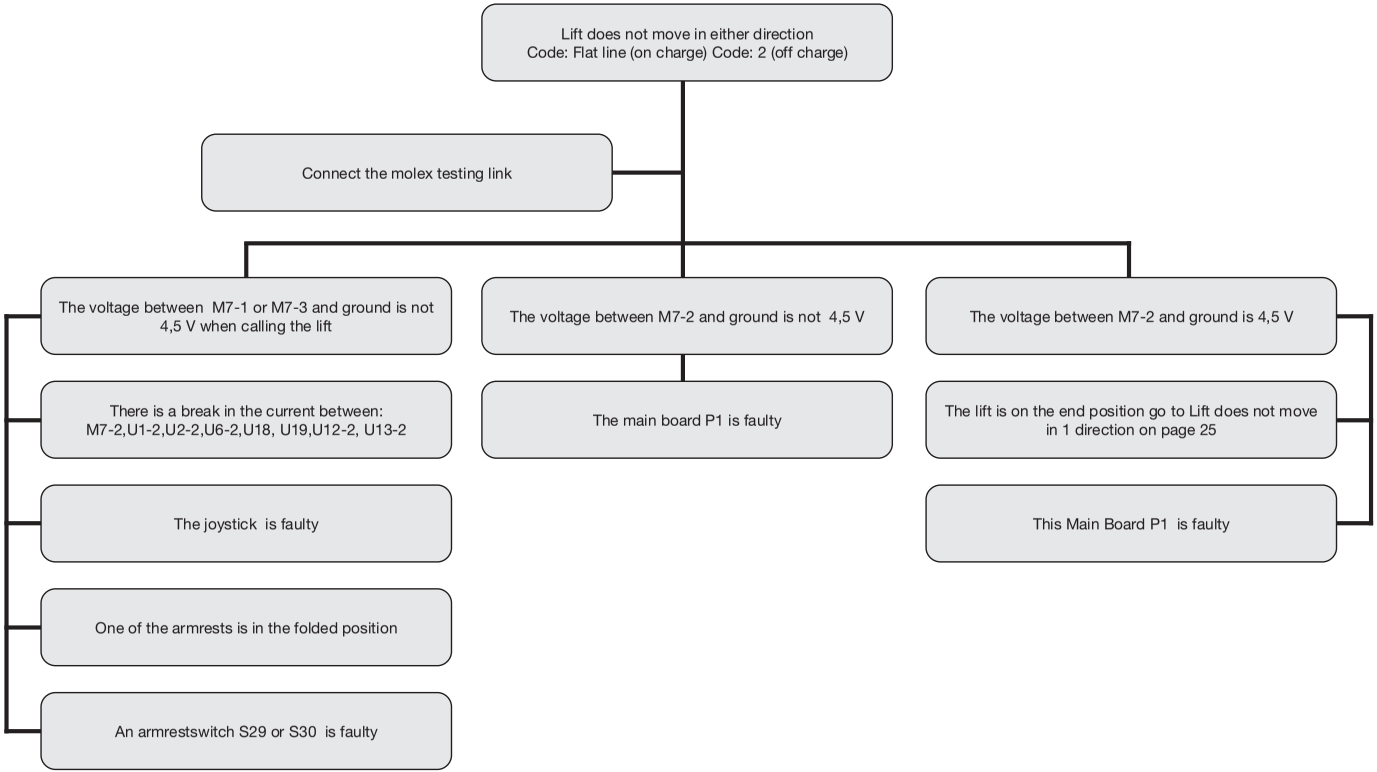
Instructions for rescuing a user seated on a chair lift of the type Handicare 2000 that is still at the top of the stairs.
Check the status of the stairlift via the diagnostic display. Remove faults in the stair lift that could pose a danger to the user. For example, faults in the footrest safeguard, in the operation, detection strips or the chair position switch.
Never ride with the user on the lift when a safety measure is switched off.
If it is not possible to remove the fault without danger to the user, first release the user:
In such case ensure that your are positioned above the user and the chair lift at all times.
Move the user to safety by turning the chair in the direction of the stairs. Lock the chair in place. Unfasten the safety belt. The client may now step in the direction of the stairs and proceed to the floor above.
Remove the fault; if necessary, you may ride the chair lift to the floor level using the manual hand wheel, for which please refer to the manual.

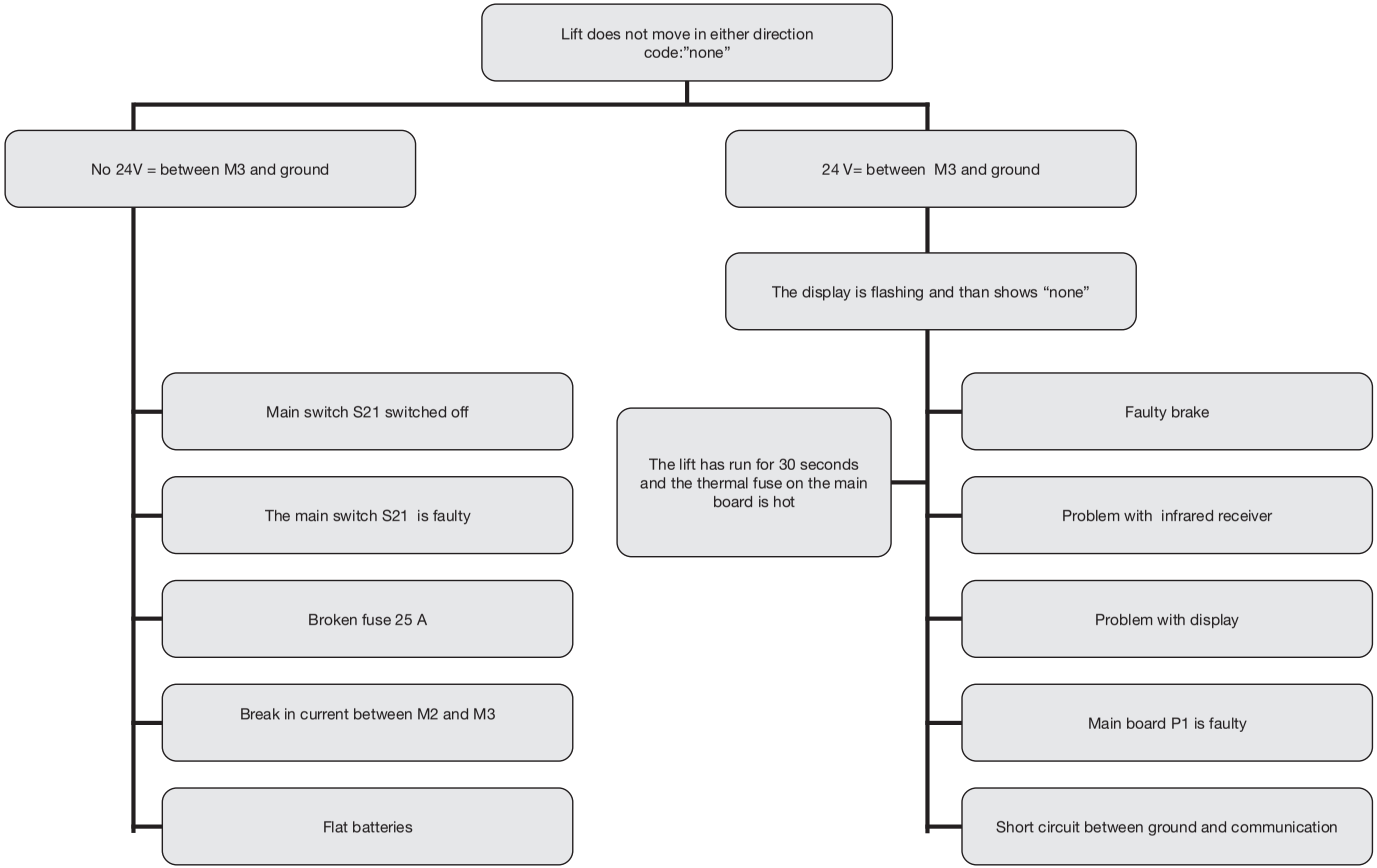

Breakdowns
The lift does not operate in either direction
See page 20/21
The lift does not operate in one direction
See page 25
The lift does not charge
See page 31
Remote control problems
See page 32
Hinge problems
Powered swivel problems
See page 36
Powered footrest problems
See page 37
Lift runs continuously on half speed
Code "n"
See page 38
The hinge does not operate
See page 33
Hinge operated but lift does not move
Code "J"
See page 34
Hinge operated but lift does not move
Code "8 or 9"
See page 35

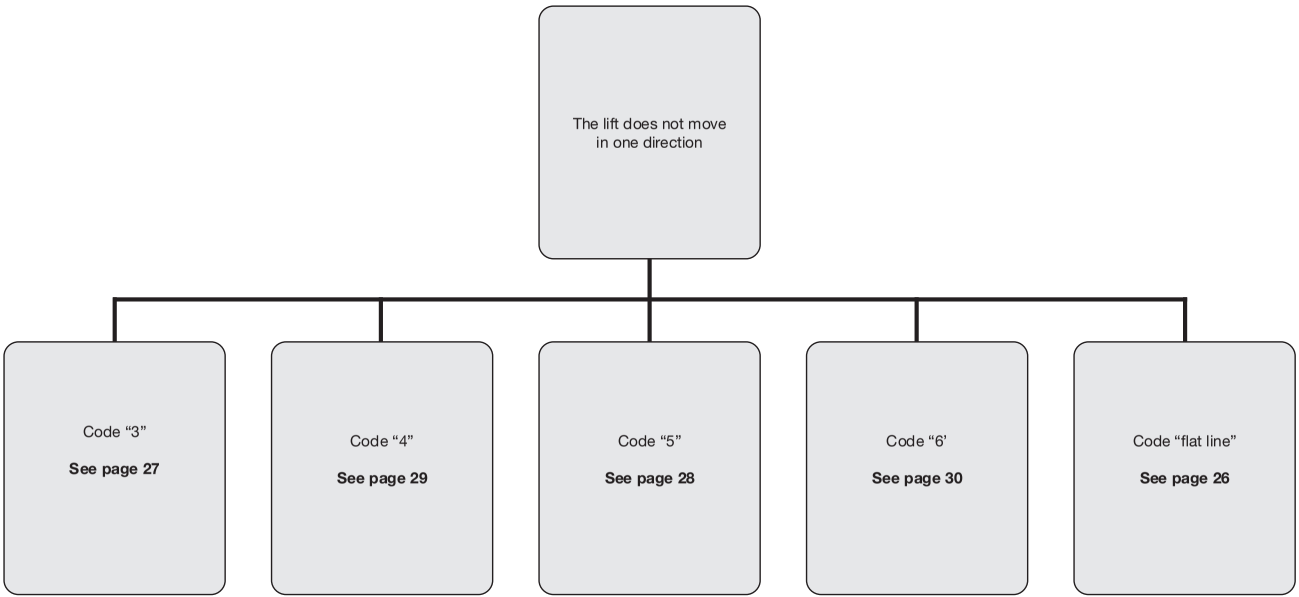

The lift does not move in either direction Part 1
The thermal fuse on the pcb is hot
Code "d" The main power relay is welded close
Code "E" The main power relay did not close
Code "H" The main power relay is closed early
Code "L" Current limit exceed
Code "G" Problem with the brake
Code ".11." Over current
Problem with infrared receiver
Code "flashing" Short circuit on the com-muni-cation circuit
Main board is faulty
The batteries are low
Main board isfaulty
Overload
The brake is faulty
Problem with brake
Problem with display
Board P1 is faulty
Main board isfaulty
Check motor and track for obstructions
There is a break in the current between M13-1 or M13-2 and the brake Standard resis-tance between 40 – 70 ohm
Replace pack

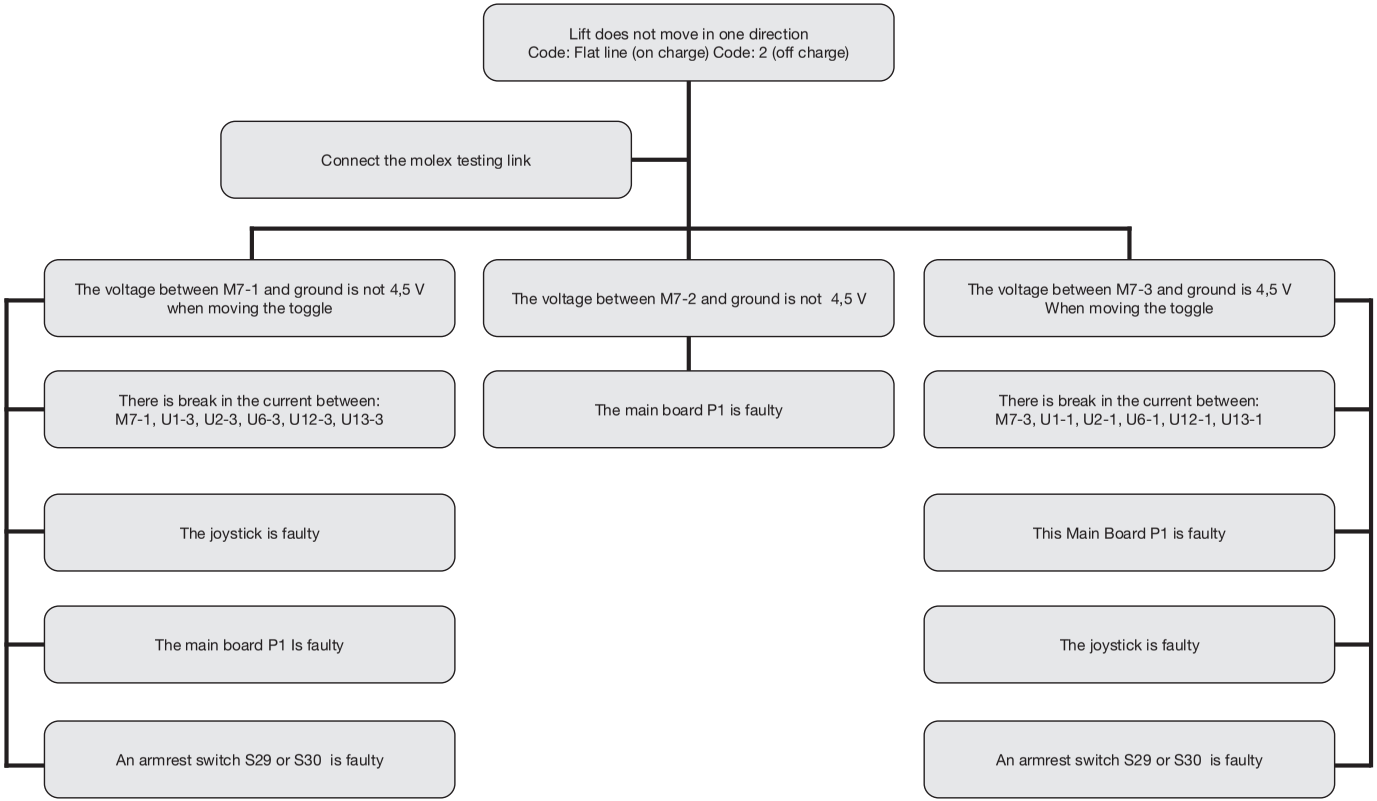

The lift does not move in either direction Part 2
Code “none”
See page 24
Code “b” There is a short on the toggle circuit Or a call is active when mains switch is switched on
Code “Flat line”
See page 23
Code “0”
See page 22
Code “8” or ”9” flashing
There is a break in the current between M1 and the motor
Code “F” Problem with the brake
Main board is faulty
Code “y” Software faillure
Main board is faulty
Code “o” EEPROM-problem
Main board is faulty

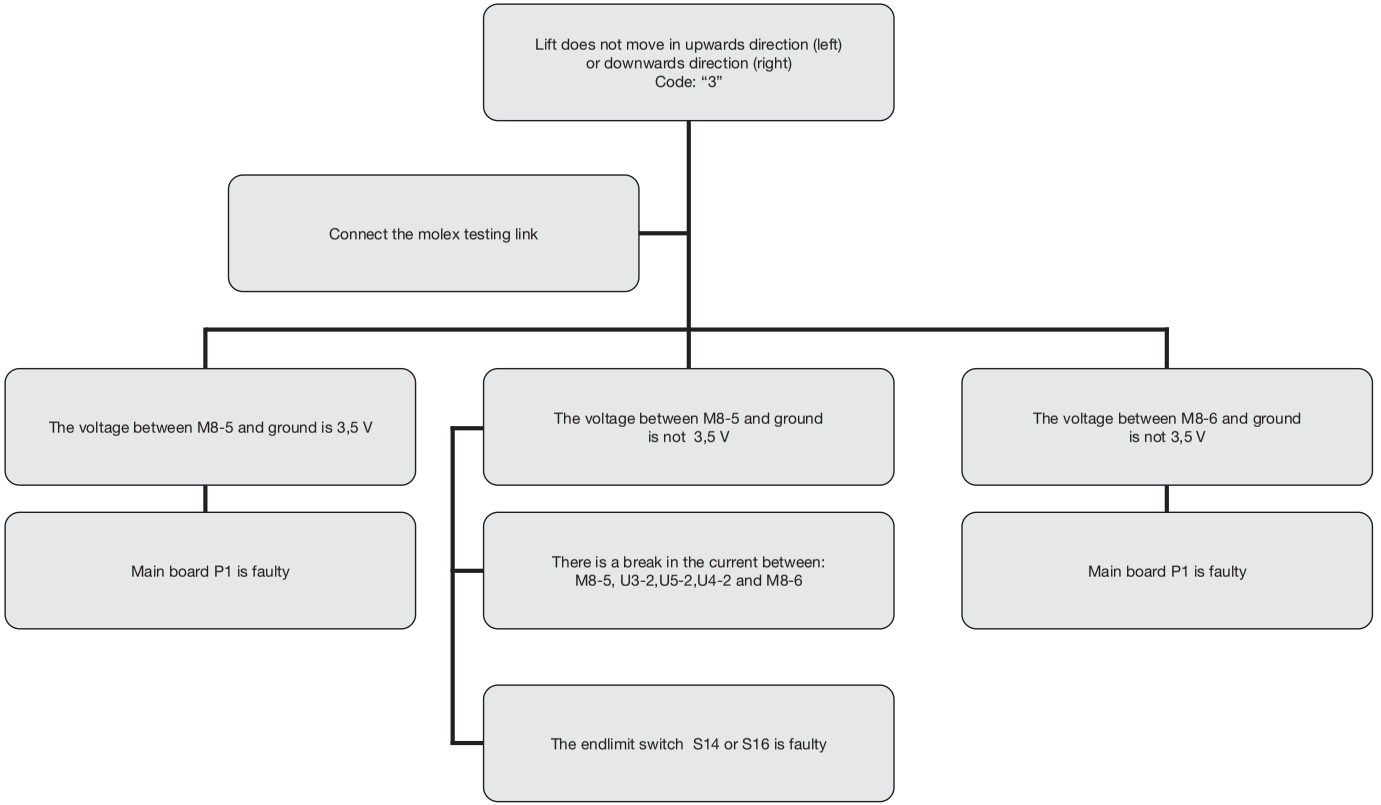

Lift does not move in either direction code:"0"
Connect the molex testing link
The voltage between M8-7 and ground is not 3,5 V
The voltage between M8-7 and ground is 3,5 V
The voltage between M7-6 and ground is not 3,5 V Options don't function either
There is a break in the current between M8-9, U8-2,U10-2, U11-2, U11-1, U10-1 and U18-3
The emergency switch S34 is faulty
The key switch S23 is faulty
The voltage between M7-6 and ground is 3,5 V Options do function
There is a break in the current between M8-7 U8-1 and U18-1
The final limit switch S17,18 is faulty
The handwinder switch S35 is faulty
The Overspeed govenor switch S19,20 is faulty
The seat swivel switch S25 is faulty
Short circuit between end limit switch and frame
Short circuit between safety edge and frame
Short circuit between Footrest switch and frame
Short circuit between general safety line and frame

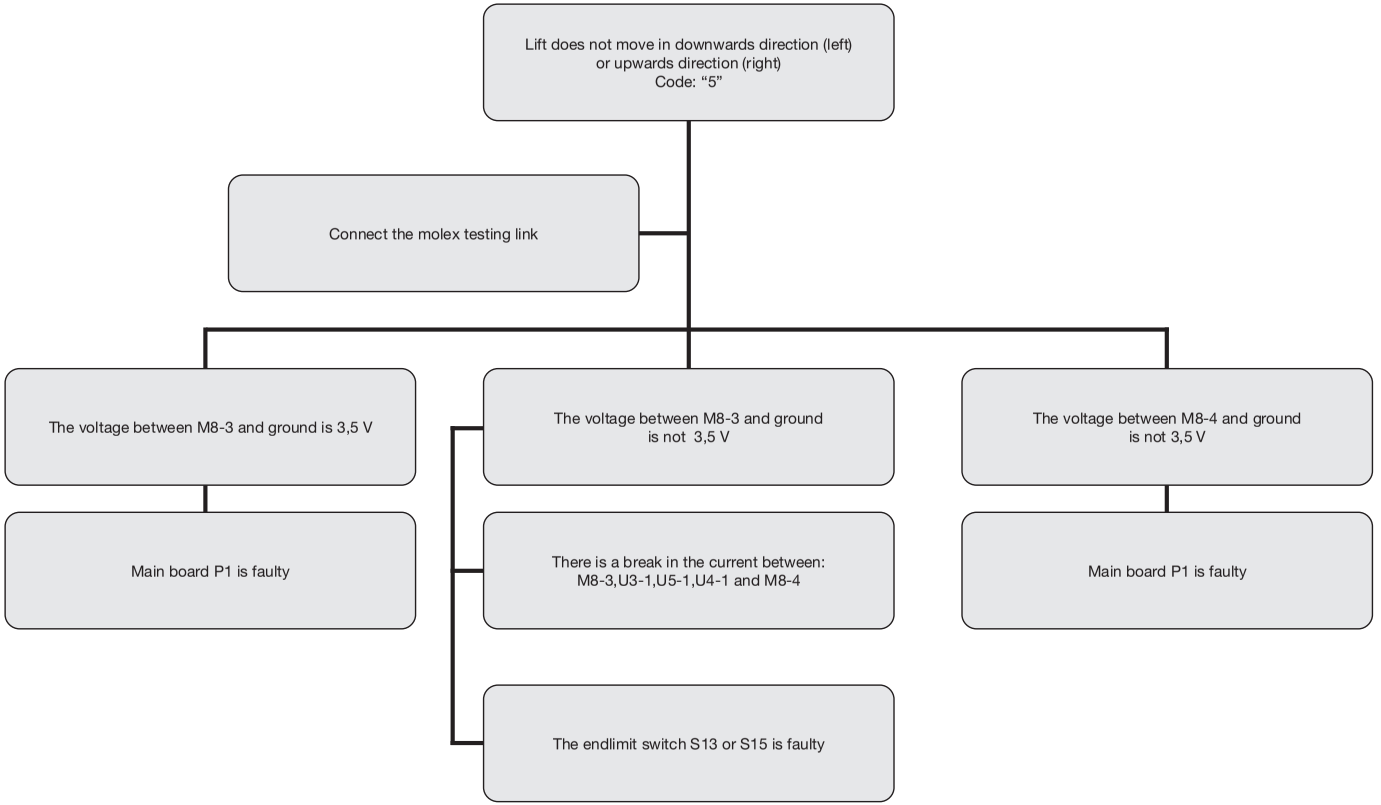

Lift does not move in either direction
Code: Flat line (on charge) Code: 2 (off charge)
Connect the molex testing link
The voltage between M7-1 or M7-3 and ground is not 4,5 V when calling the lift
There is a break in the current between: M7-2,U1-2,U2-2,U6-2,U18, U19,U12-2, U13-2
The joystick is faulty
One of the armrests is in the folded position
An armrestswitch S29 or S30 is faulty
The voltage between M7-2 and ground is not 4,5 V
The main board P1 is faulty
The voltage between M7-2 and ground is 4,5 V
The lift is on the end position go to Lift does not move in 1 direction on page 25
This Main Board P1 is faulty

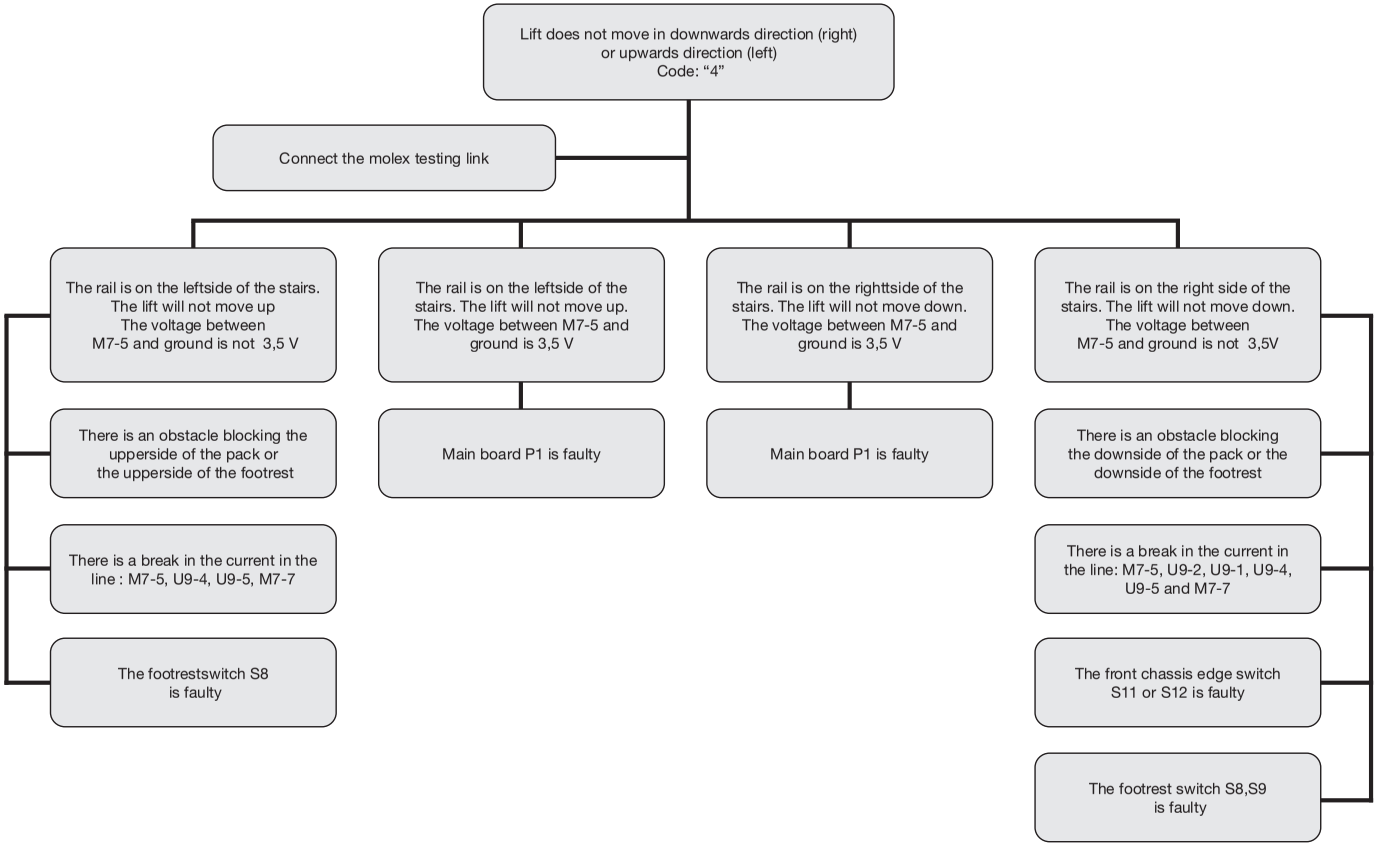

Lift does not move in either direction
code:"none"
No 24V = between M3 and ground
24 V= between M3 and ground
The display is flashing and than shows "none"
Main switch S21 switched off
The main switch S21 is faulty
Broken fuse 25 A
Break in current between M2 and M3
Flat batteries
The lift has run for 30 seconds and the thermal fuse on the main board is hot
Faulty brake
Problem with infrared receiver
Problem with display
Main board P1 is faulty
Short circuit between ground and communication

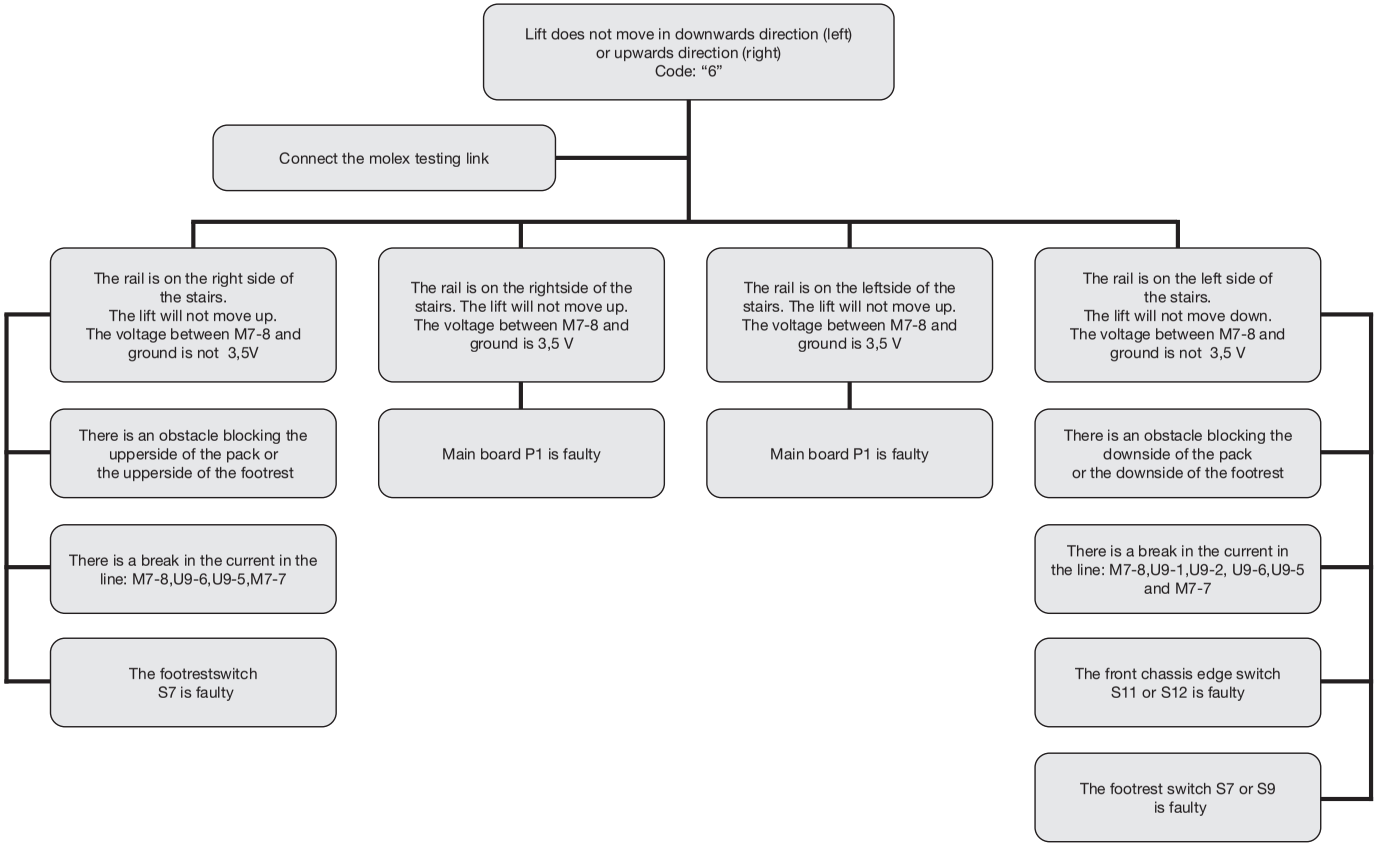

The lift does not move in one direction
Code “3”
See page 27
Code “4”
See page 29
Code “5”
See page 28
Code “6’
See page 30
Code “flat line”
See page 26

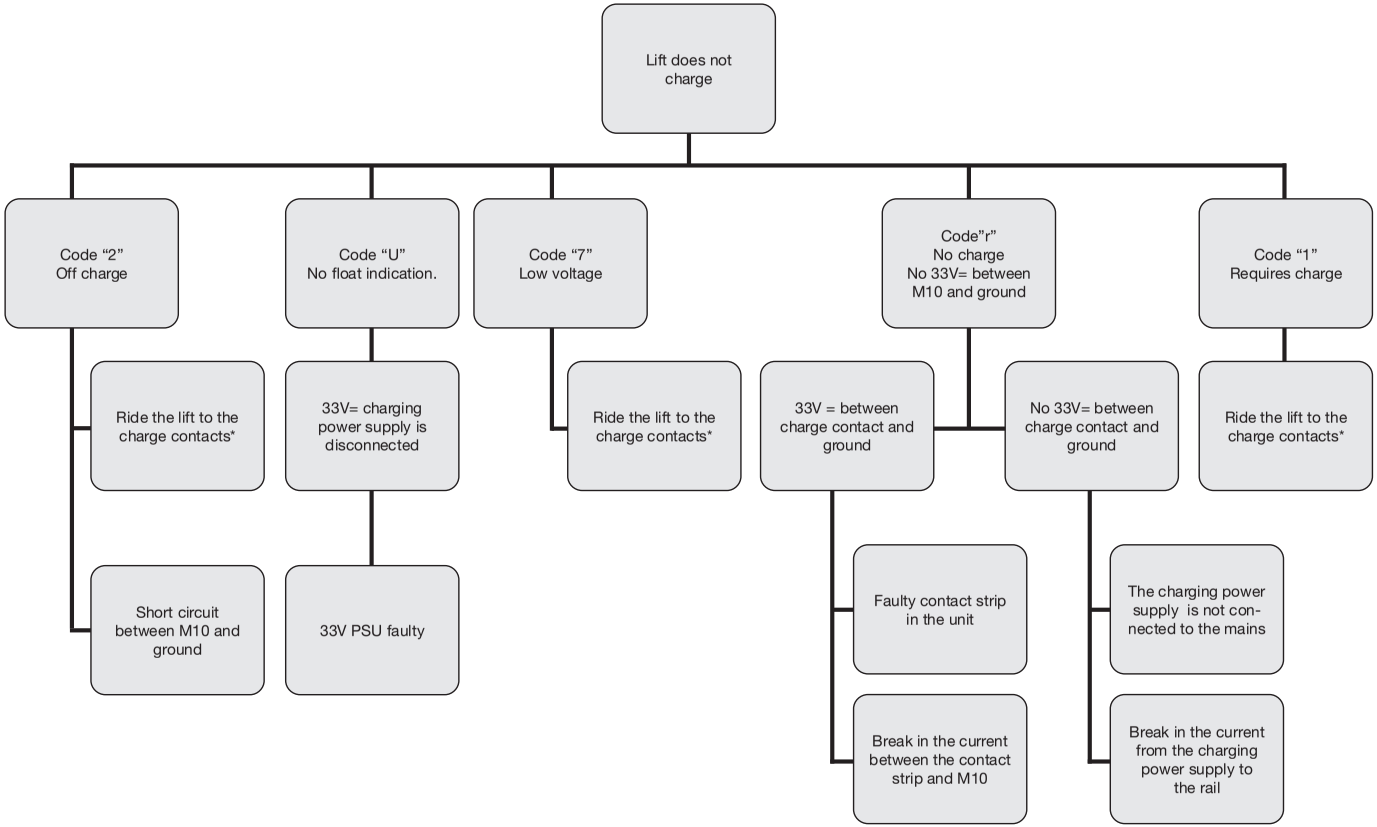

Lift does not move in one direction
Code: Flat line (on charge) Code: 2 (off charge)
Connect the molex testing link
The voltage between M7-1 and ground is not 4,5 V when moving the toggle
There is break in the current between: M7-1, U1-3, U2-3, U6-3, U12-3, U13-3
The joystick is faulty
The main board P1 Is faulty
An armrest switch S29 or S30 is faulty
The voltage between M7-2 and ground is not 4,5 V
The main board P1 is faulty
The voltage between M7-3 and ground is 4,5 V When moving the toggle
There is break in the current between: M7-3, U1-1, U2-1, U6-1, U12-1, U13-1
This Main Board P1 is faulty
The joystick is faulty
An armrest switch S29 or S30 is faulty

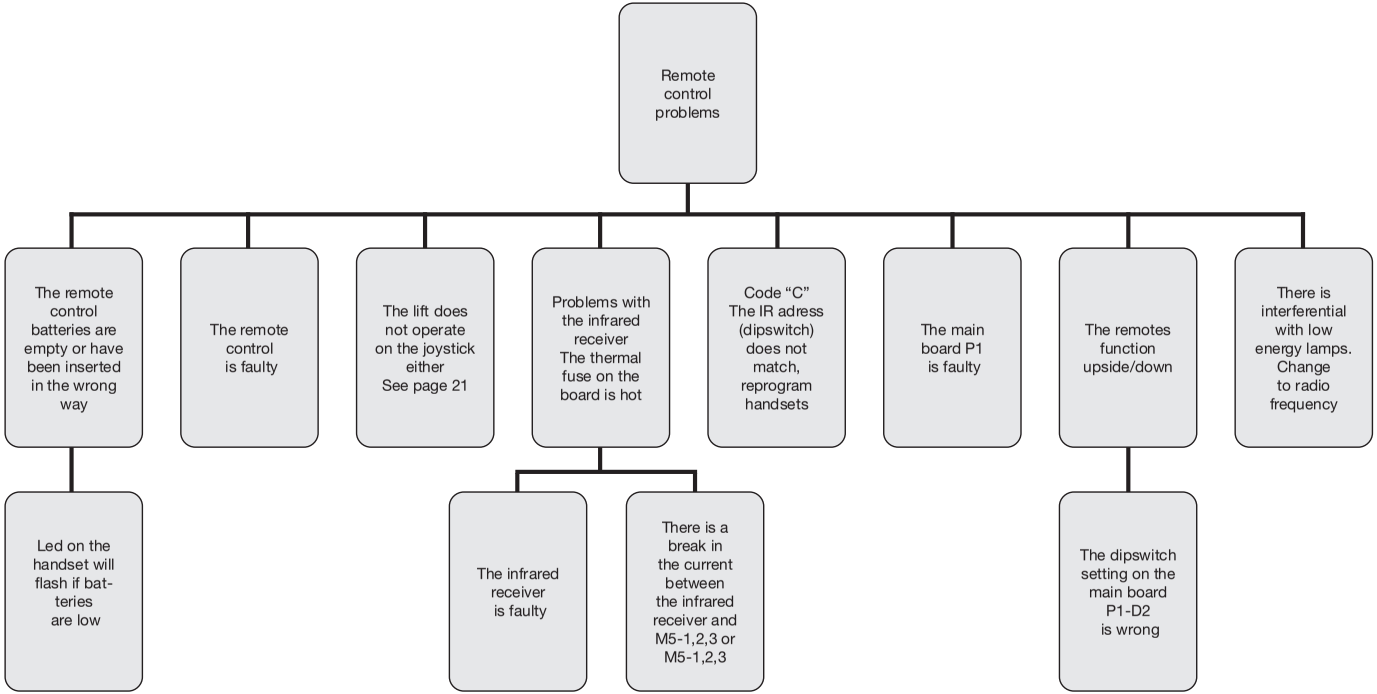

Lift does not move in upwards direction (left)
or downwards direction (right)
Code: “3”
Connect the molex testing link
The voltage between M8-5 and ground is 3,5 V
Main board P1 is faulty
The voltage between M8-5 and ground
is not 3,5 V
There is a break in the current between:
M8-5, U3-2,U5-2,U4-2 and M8-6
The endlimit switch S14 or S16 is faulty
The voltage between M8-6 and ground
is not 3,5 V
Main board P1 is faulty

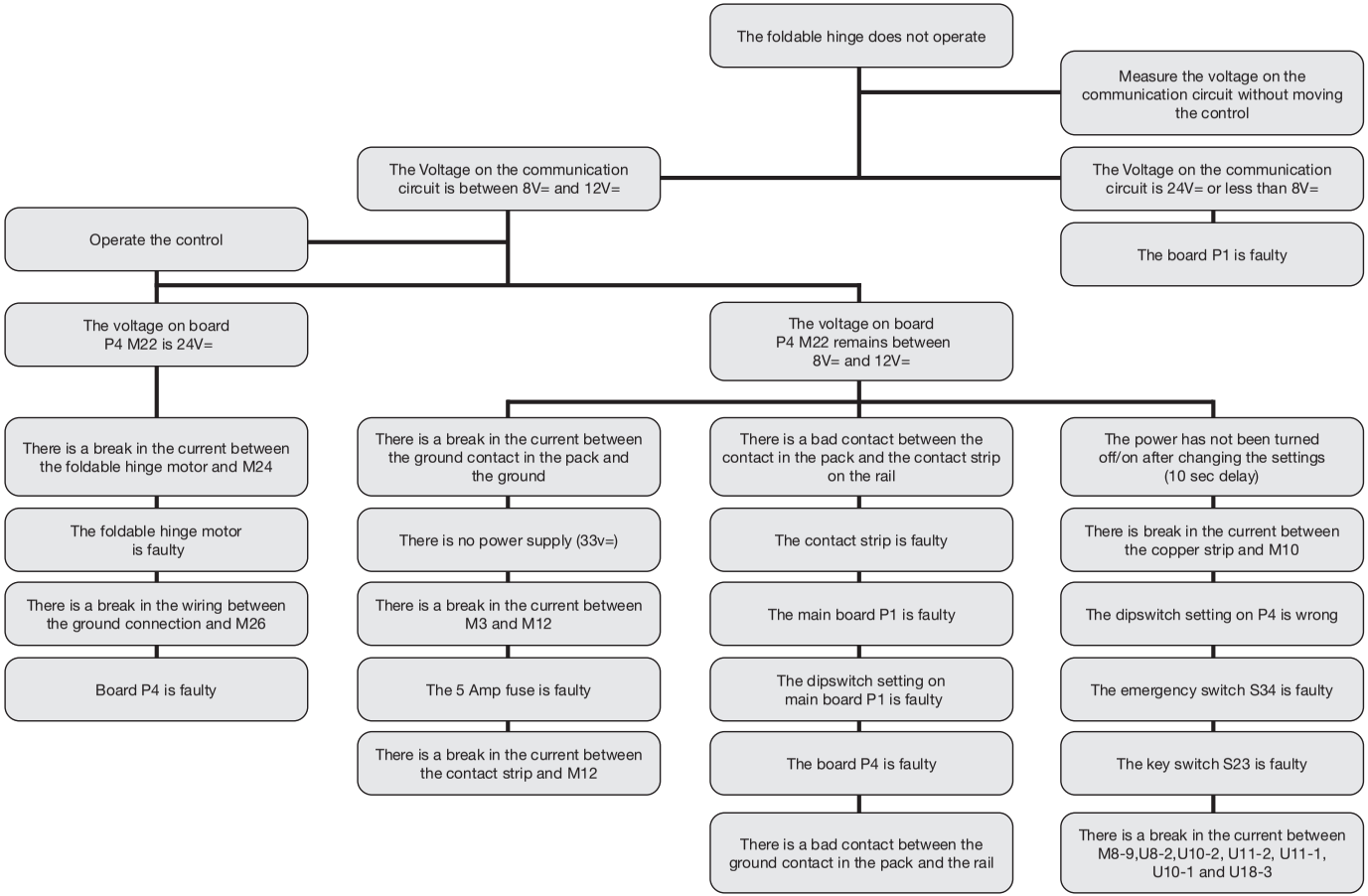

Lift does not move in downwards direction (left)
or upwards direction (right)
Code: “5”
Connect the molex testing link
The voltage between M8-3 and ground is 3,5 V
Main board P1 is faulty
The voltage between M8-3 and ground
is not 3,5 V
There is a break in the current between:
M8-3,U3-1,U5-1,U4-1 and M8-4
The endlimit switch S13 or S15 is faulty
The voltage between M8-4 and ground
is not 3,5 V
Main board P1 is faulty

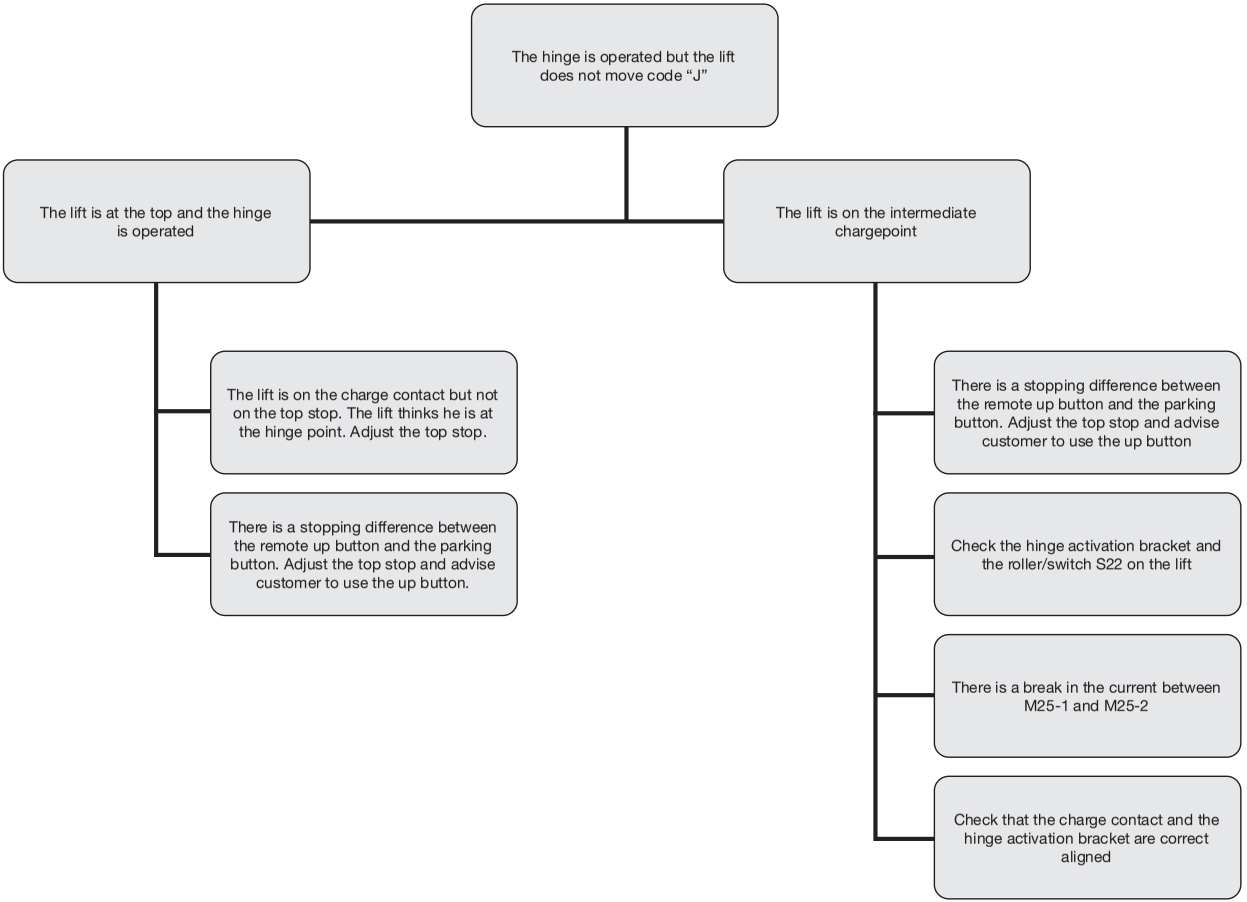

Lift does not move in downwards direction (right) or upwards direction (left) Code: “4”
Connect the molex testing link
The rail is on the leftside of the stairs. The lift will not move up The voltage between M7-5 and ground is not 3,5 V
There is an obstacle blocking the upperside of the pack or the upperside of the footrest
There is a break in the current in the line : M7-5, U9-4, U9-5, M7-7
The footrestswitch S8 is faulty
The rail is on the leftside of the stairs. The lift will not move up. The voltage between M7-5 and ground is 3,5 V
Main board P1 is faulty
The rail is on the righttside of the stairs. The lift will not move down. The voltage between M7-5 and ground is 3,5 V
Main board P1 is faulty
The rail is on the right side of the stairs. The lift will not move down. The voltage between M7-5 and ground is not 3,5V
There is an obstacle blocking the downside of the pack or the downside of the footrest
There is a break in the current in the line: M7-5, U9-2, U9-1, U9-4, U9-5 and M7-7
The front chassis edge switch S11 or S12 is faulty
The footrest switch S8,S9 is faulty

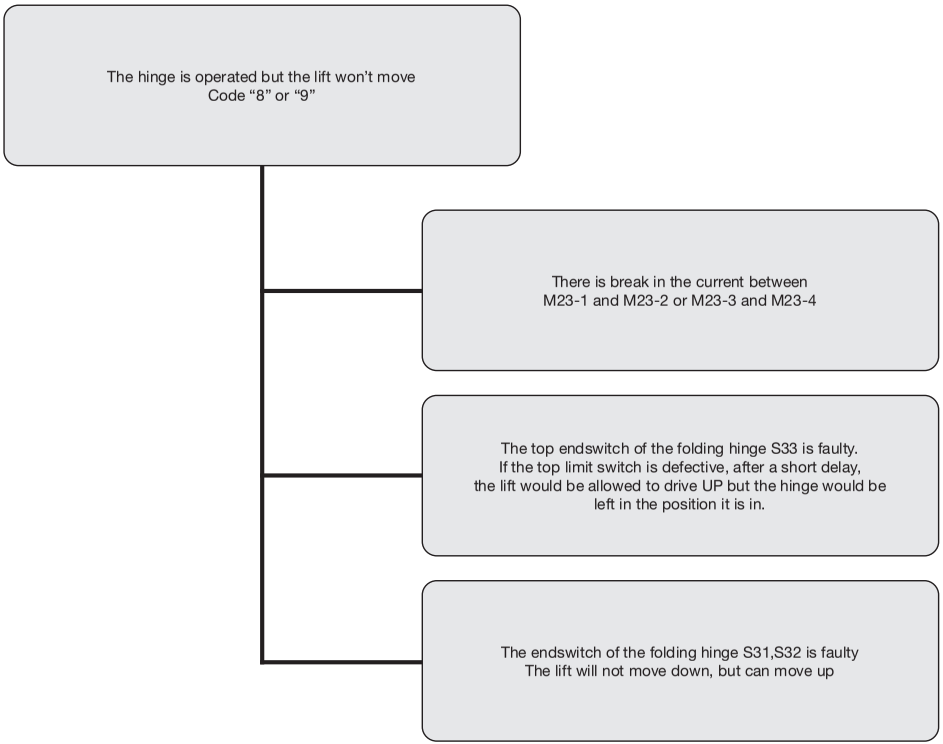

Lift does not move in downwards direction (left)
or upwards direction (right)
Code: “6”
Connect the molex testing link
The rail is on the right side of the stairs.
The lift will not move up.
The voltage between M7-8 and ground is not 3,5V
There is an obstacle blocking the upperside of the pack or the upperside of the footrest
There is a break in the current in the line: M7-8,U9-6,U9-5,M7-7
The footrestswitch S7 is faulty
The rail is on the rightside of the stairs. The lift will not move up.
The voltage between M7-8 and ground is 3,5 V
Main board P1 is faulty
The rail is on the leftside of the stairs. The lift will not move up.
The voltage between M7-8 and ground is 3,5 V
Main board P1 is faulty
The rail is on the left side of the stairs.
The lift will not move down.
The voltage between M7-8 and ground is not 3,5 V
There is an obstacle blocking the downside of the pack or the downside of the footrest
There is a break in the current in the line: M7-8,U9-1,U9-2, U9-6,U9-5 and M7-7
The front chassis edge switch S11 or S12 is faulty
The footrest switch S7 or S9 is faulty

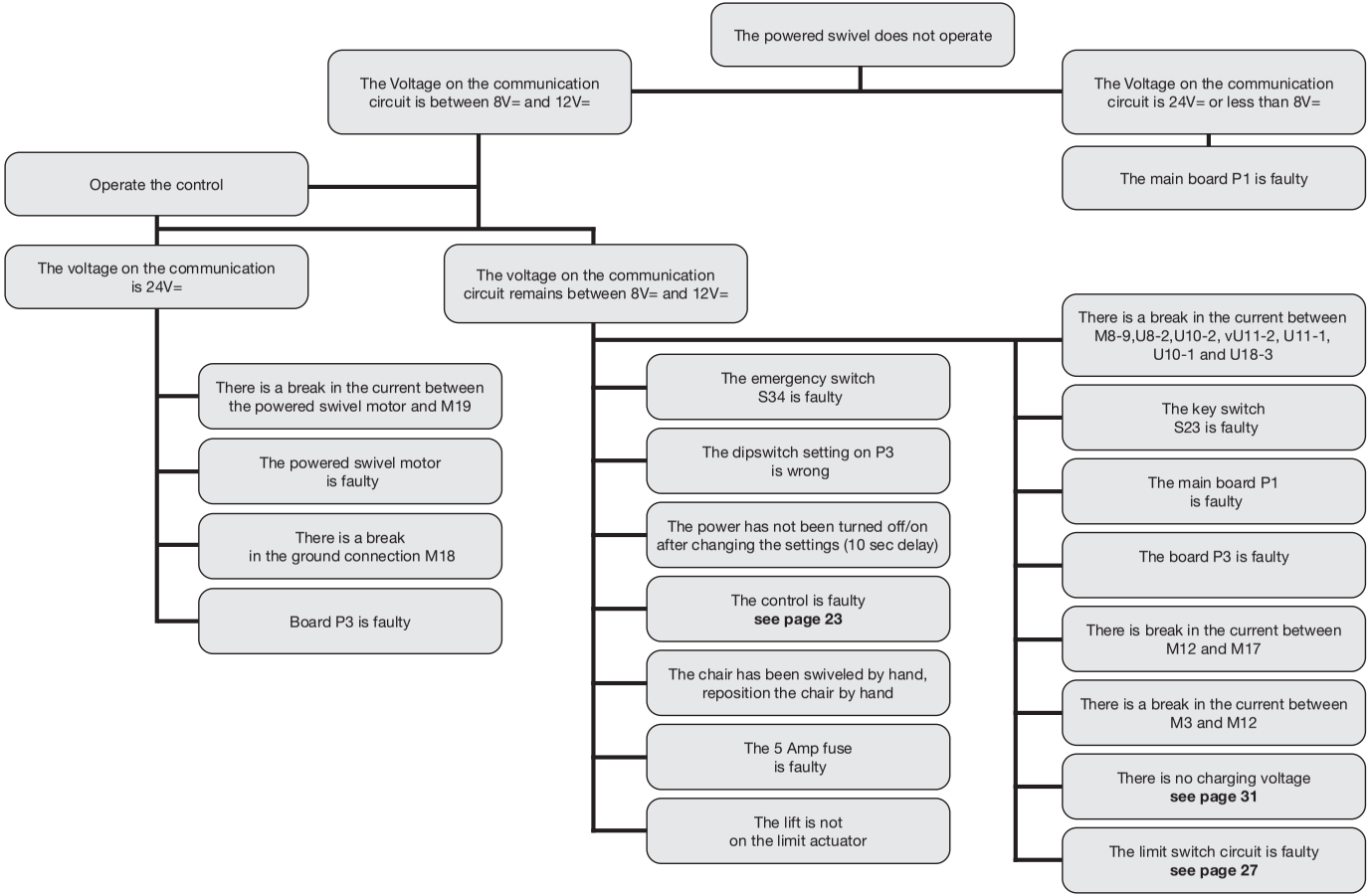

Lift does not charge
Code “2” Off charge
Code “U” No float indication.
Code “7” Low voltage
Code”r” No charge No 33V= between M10 and ground
Code “1” Requires charge
Ride the lift to the charge contacts*
33V= charging power supply is disconnected
Ride the lift to the charge contacts*
33V = between charge contact and ground
No 33V= between charge contact and ground
Ride the lift to the charge contacts*
Short circuit between M10 and ground
33V PSU faulty
Faulty contact strip in the unit
Break in the current between the contact strip and M10
The charging power supply is not connected to the mains
Break in the current from the charging power supply to the rail

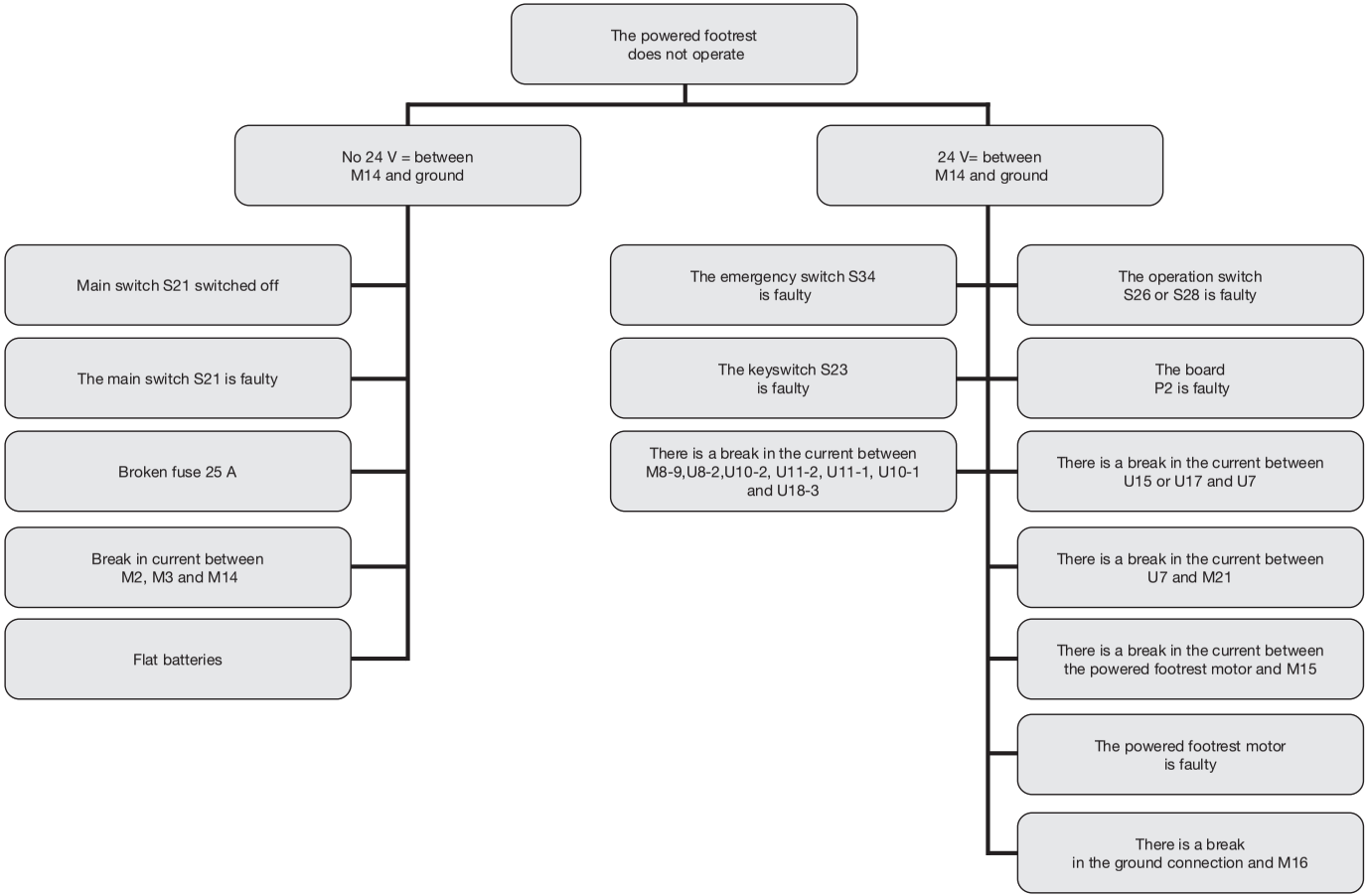

Remote control problems
The remote control batteries are empty or have been inserted in the wrong way
Led on the handset will flash if bat-teries are low
The remote control is faulty
The lift does not operate on the joystick either
See page 21
Problems with the infrared receiver
The thermal fuse on the board is hot
The infrared receiver is faulty
There is a break in the current between the infrared receiver and M5-1,2,3 or M5-1,2,3
Code “C”
The IR adress (dipswitch) does not match, reprogram handsets
The main board P1 is faulty
The remotes function upside/down
The dipswitch setting on the main board P1-D2 is wrong
There is interferential with low energy lamps. Change to radio frequency

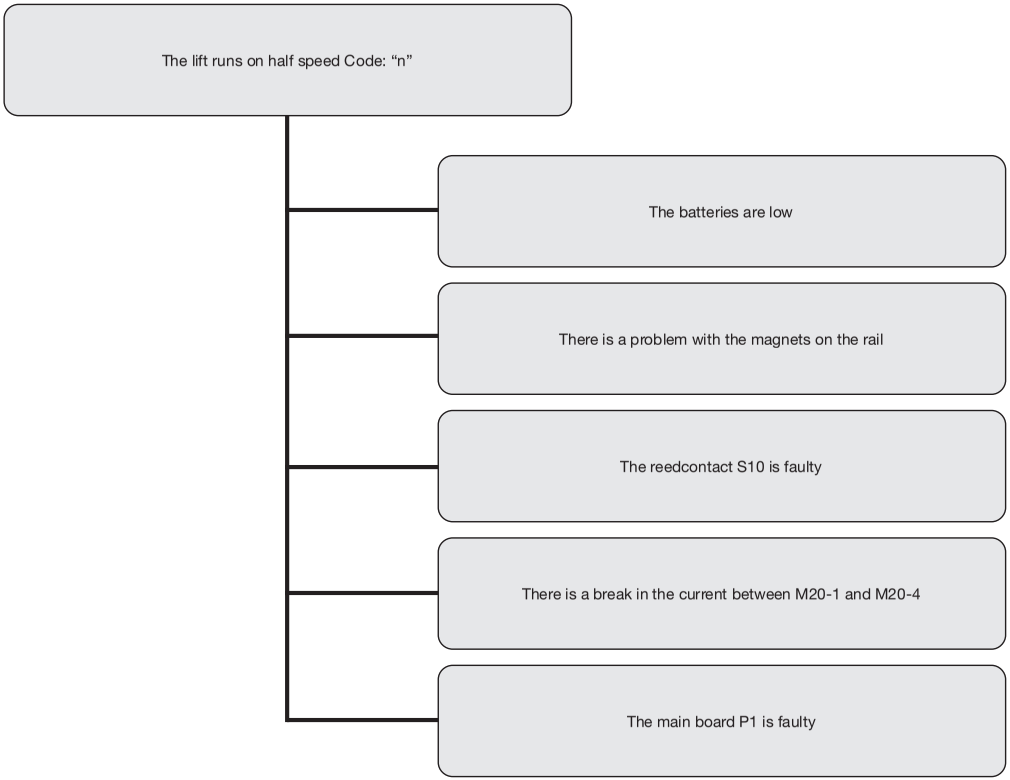

The foldable hinge does not operate
Measure the voltage on the communication circuit without moving the control
The Voltage on the communication circuit is between 8V= and 12V=
The Voltage on the communication circuit is 24V= or less than 8V=
The board P1 is faulty
Operate the control
The voltage on board P4 M22 is 24V=
The voltage on board P4 M22 remains between 8V= and 12V=
There is a break in the current between the foldable hinge motor and M24
The foldable hinge motor is faulty
There is a break in the wiring between the ground connection and M26
Board P4 is faulty
There is a break in the current between the ground contact in the pack and the ground
There is no power supply (33v=)
There is a break in the current between M3 and M12
The 5 Amp fuse is faulty
There is a break in the current between the contact strip and M12
There is a bad contact between the contact in the pack and the contact strip on the rail
The contact strip is faulty
The main board P1 is faulty
The dipswitch setting on main board P1 is faulty
The board P4 is faulty
There is a bad contact between the ground contact in the pack and the rail
The power has not been turned off/on after changing the settings (10 sec delay)
There is break in the current between the copper strip and M10
The dipswitch setting on P4 is wrong
The emergency switch S34 is faulty
The key switch S23 is faulty
There is a break in the current between M8-9,U8-2,U10-2, U11-2, U11-1, U10-1 and U18-3


The hinge is operated but the lift does not move code “J”
The lift is at the top and the hinge is operated
The lift is on the intermediate chargepoint
The lift is on the charge contact but not on the top stop. The lift thinks he is at the hinge point. Adjust the top stop.
There is a stopping difference between the remote up button and the parking button. Adjust the top stop and advise customer to use the up button.
There is a stopping difference between the remote up button and the parking button. Adjust the top stop and advise customer to use the up button
Check the hinge activation bracket and the roller/switch S22 on the lift
There is a break in the current between M25-1 and M25-2
Check that the charge contact and the hinge activation bracket are correct aligned


The hinge is operated but the lift won't move
Code "8" or "9"
There is break in the current between
M23-1 and M23-2 or M23-3 and M23-4
The top endswitch of the folding hinge S33 is faulty.
If the top limit switch is defective, after a short delay,
the lift would be allowed to drive UP but the hinge would be
left in the position it is in.
The endswitch of the folding hinge S31,S32 is faulty
The lift will not move down, but can move up


The powered swivel does not operate
The Voltage on the communication circuit is between 8V= and 12V=
The Voltage on the communication circuit is 24V= or less than 8V=
The main board P1 is faulty
Operate the control
The voltage on the communication is 24V=
The voltage on the communication circuit remains between 8V= and 12V=
There is a break in the current between the powered swivel motor and M19
The powered swivel motor is faulty
There is a break in the ground connection M18
Board P3 is faulty
The emergency switch S34 is faulty
The dipswitch setting on P3 is wrong
The power has not been turned off/on after changing the settings (10 sec delay)
The control is faulty
see page 23
The chair has been swiveled by hand, reposition the chair by hand
The 5 Amp fuse is faulty
The lift is not on the limit actuator
There is a break in the current between M8-9,U8-2,U10-2, vU11-2, U11-1, U10-1 and U18-3
The key switch S23 is faulty
The main board P1 is faulty
The board P3 is faulty
There is break in the current between M12 and M17
There is a break in the current between M3 and M12
There is no charging voltage
see page 31
The limit switch circuit is faulty
see page 27


The powered footrest does not operate
No 24 V = between M14 and ground
24 V= between M14 and ground
Main switch S21 switched off
The main switch S21 is faulty
Broken fuse 25 A
Break in current between M2, M3 and M14
Flat batteries
The emergency switch S34 is faulty
The keyswitch S23 is faulty
There is a break in the current between M8-9,U8-2,U10-2, U11-2, U11-1, U10-1 and U18-3
The operation switch S26 or S28 is faulty
The board P2 is faulty
There is a break in the current between U15 or U17 and U7
There is a break in the current between U7 and M21
There is a break in the current between the powered footrest motor and M15
The powered footrest motor is faulty
There is a break in the ground connection and M16


The lift runs on half speed Code: “n”
The batteries are low
There is a problem with the magnets on the rail
The reedcontact S10 is faulty
There is a break in the current between M20-1 and M20-4
The main board P1 is faulty

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