E605

INSTALLATION AND SERVICE MANUAL

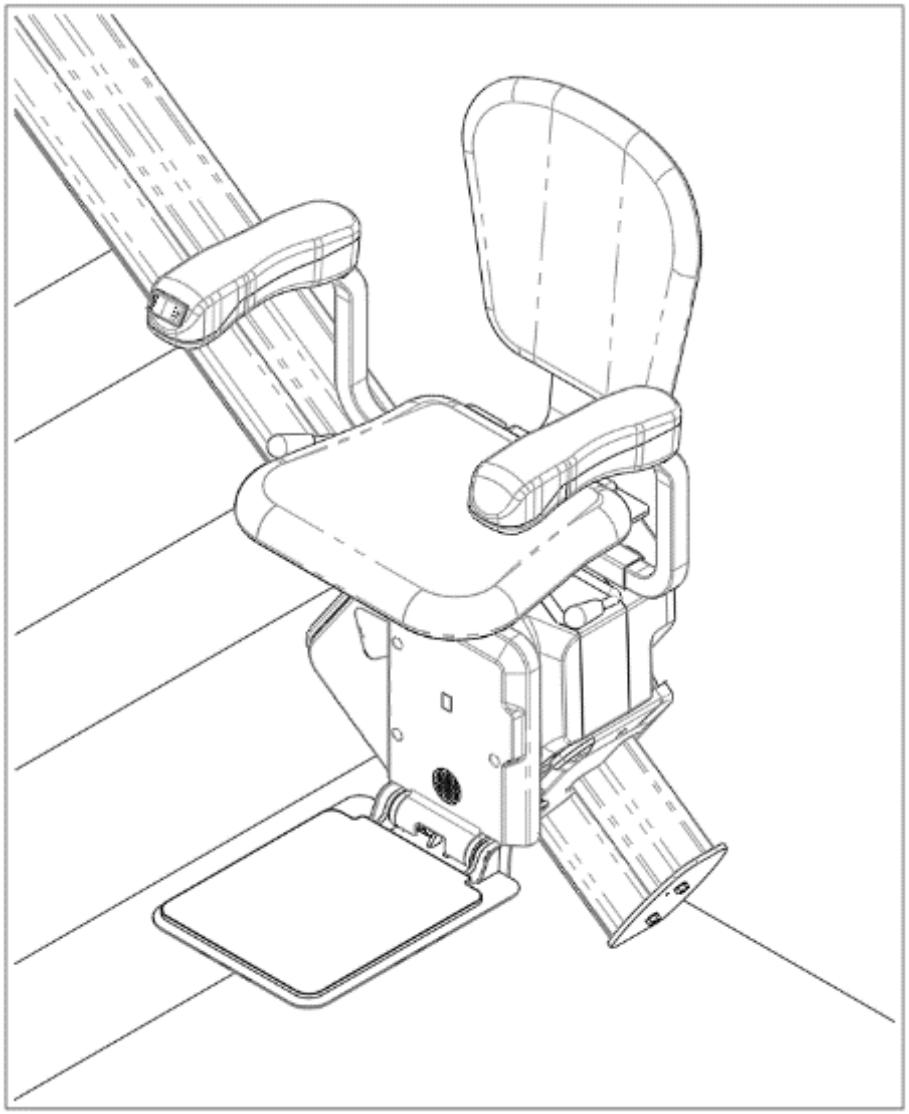


Table of Contents

1. Introduction

The Merits Stairlift is basically consists of four parts: the carriage, the footrest, the seat, and the rail. The stairlift is powered by the rechargeable batteries inside the carriage. There are safety sensors on upper and lower covers and bottom of footrest. These sensors will stop the unit if any obstruction is detected on the rail or stairway. The footrest, the armrests and the seat can be folded up when not in use to allow more space on the stairway. Pull the swivel handle up to unlock the seat when you reach the top of the stairs. This will allow you to get into or out of the seat at a convenient position. The rail has two copper stripes (known as Bus Line) that provide continuous charging to the carriage. The batteries can be recharged automatically. when the unit was stop along the rail.

1.1. Intended Use

The Merits Stair Lift System is a powered patient transport, also commonly known as a Stairway Chairlift, or Stairlift. It is a motorized device intended for medical purposes to assist transfers of patients, or mobility-impaired persons, up and down flights of stairs. This stairlift can only be used on straight staircases inclined between 25°~55°. It is designed to carry one person at a time and the maximum weight capacity is 136kg (300lbs). Any other uses which this stairlift does not intend for may cause serious injury or damage to personal property.

1.2. How to Use Installation and Service Manual

This manual provides instruction for installation and servicing of the E605 stairlift.
This manual includes whole sections in the following:

- Introduction
- Installation
- Testing
- Dismantling Components
- Maintenance
- Troubleshooting

All section titles, subject subtitles and illustration are listed in the Table of Contents.

Note

This manual specifically instruction for service engineers and distributors only. This is not a manual for user use.

1.3. Safety Rules

As you read the manual, please pay attention to all of following:

- Fire Hazard Do not use an improper voltage source. Verify the rated voltage matches the voltage of the charger before applying power.
- Electrical Shock Hazard Do not remove or open the cover during operation.
- Disconnect the power cord from the electrical outlet before cleaning or servicing.

1.4. Warranty

Merits Health Products Co., Ltd. warrants the Merits Stairlift to be free from defective workmanship and materials for a period of 3 years from the date of purchase. The rechargeable battery is warranted for 180 days from date of purchase. Check with your dealer for more details. This warranty is limited to the original purchaser of the Stairlift. Any defective part or assembly will be repaired or replaced, at the sole discretion and determination of Merits Health Products Co., Ltd., if the unit has been properly operated during the warranty period. Normal maintenance items and disposable components are not covered by this warranty. Shipping charges, if any, shall be paid by the purchaser.

Note: There is no other express warranty. Implied warranties, including those of merchantability and fitness for a particular purpose, are limited to the duration of the express limited warranty and to the extent permitted by law and all implied warranties are excluded. This warranty does not cover providing a loaner Stairlift, compensating for costs incurred for Stairlift rental, or labor costs incurred in repairing or replacing defective part(s).

Specifications

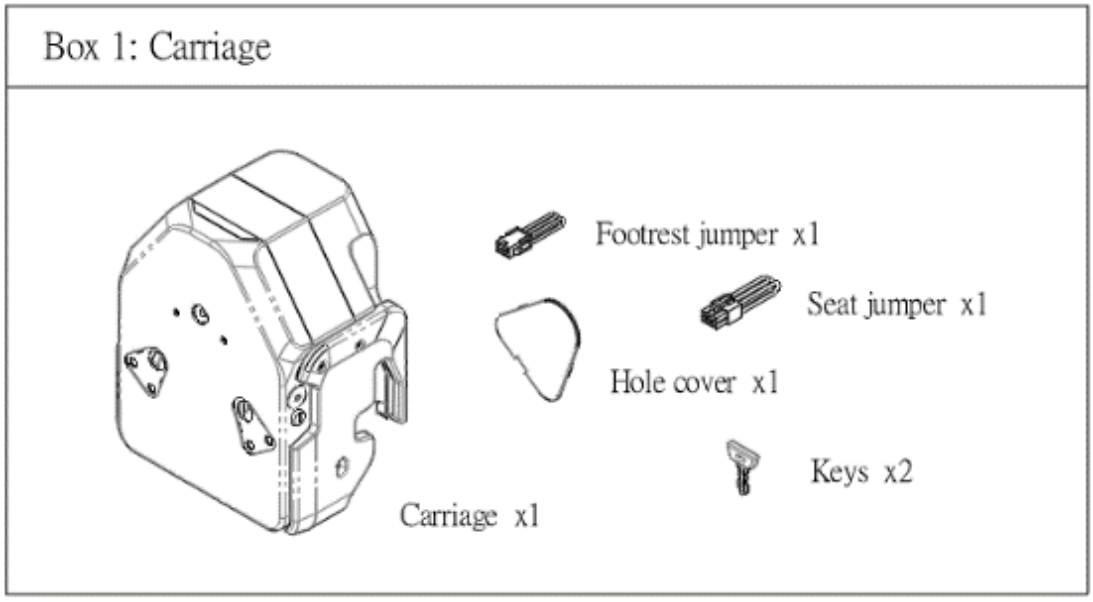
Technical Specs:	
Load Capacity	136kg (300 lbs)@45° or 114kg (250 lbs)@52°
Range of Stair Angle	25°~52° **Note: According to ASME A18.1, no lift should be installed to operate on a greater incline than 45 deg. as measured on the mean.**
Travel Speed	6 m/min. (20 ft/min)
Drive System	Rack and Pinion
Operator Control	Constant-pressure type (rocker switch and remote controller)
Operating Voltages	24VDC rechargeable batteries
Motor	1/2 HP, 24VDC
Brake (Optional)	Electromagnetic brake
Charging	On the top or bottom stop of the rail. Input: 115/230VAC, 50/60Hz. Output: 24V ⎓ 2A
Operating Ambient Temperature (Humidity)	5℃ ~ 40℃ (41°F ~ 104°F) (up to 95% non-condensing) (up to 2,000m in altitude)
Storage/ Transport Temperature (Humidity)	-10℃ ~ 60℃ (14°F ~ 140°F) (up to 95% non-condensing)

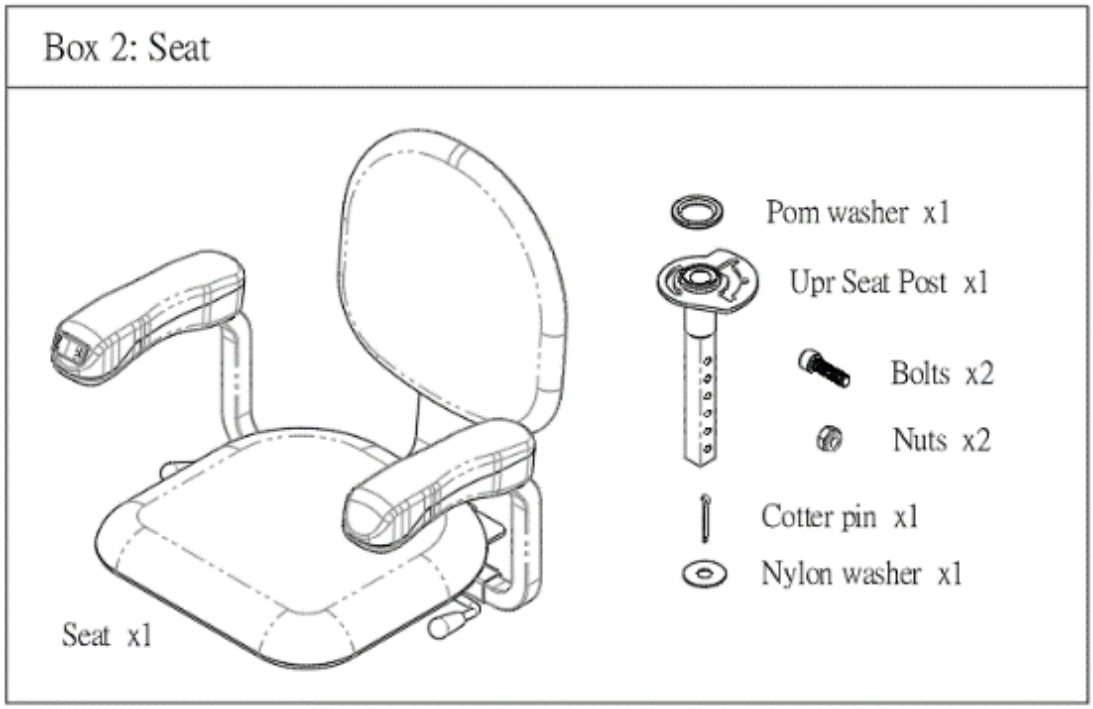
Table1 Specification of Stairlift

2. Installation

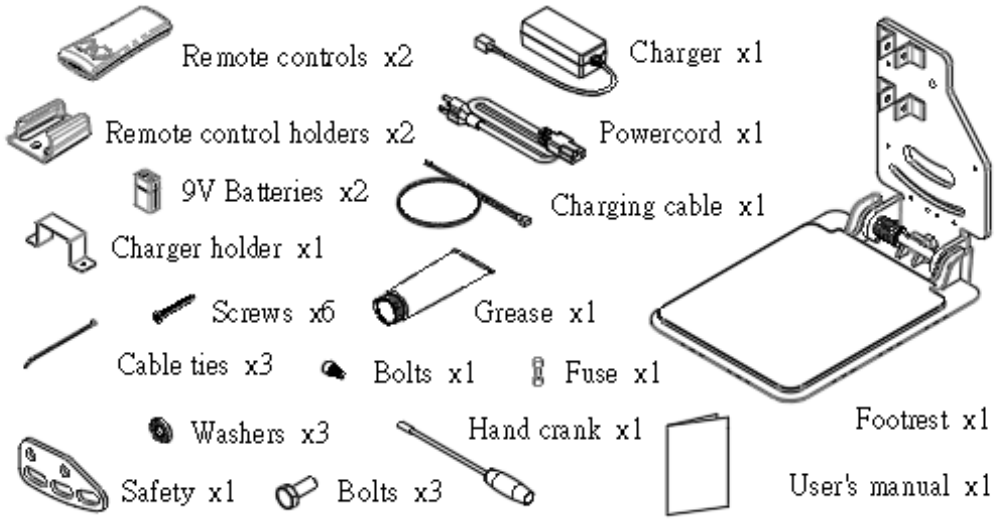
2.1. Unpack and verify the shipment

Check for any obvious damage to the carton or its contents. If possible, take a picture of any damaged part.

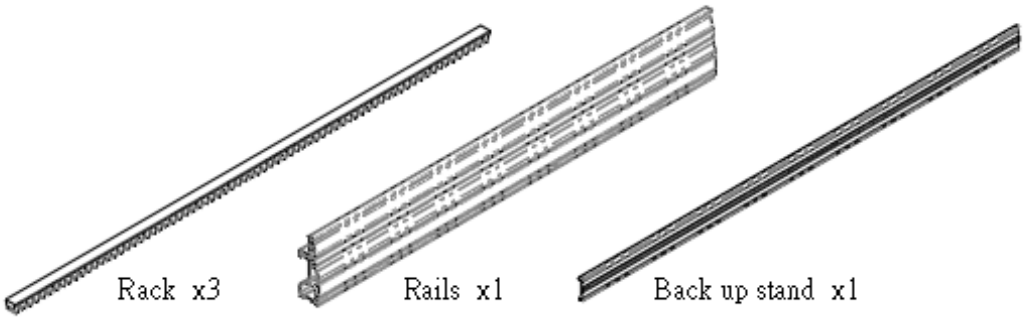




Box 3: Footrest and accessories



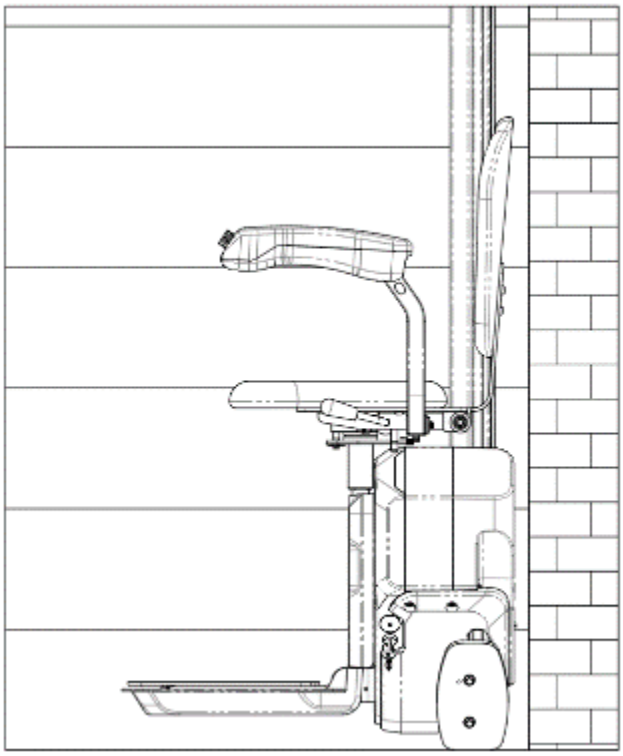
Box 4 & Box 5: Rail



Box 6: Rail accessories

2.2. Determine handing

Stand at the bottom of the stairway looking upward. A right-hand unit will be installed on the right side of stairs (shown below).



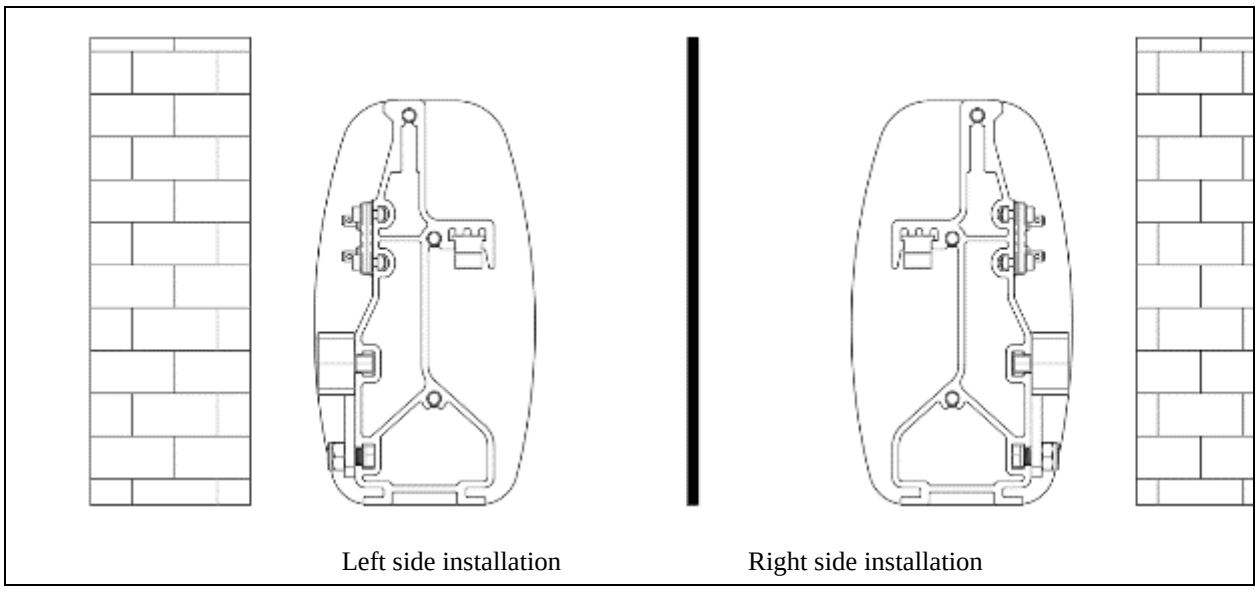


Figure 2-1 The rail installed on the right and left side

2.3. Cut the rail to length as required

Always cut the rail from the top of the rail.

2.3.1. Stairs Measurement

i. Measure the length from the nose of top landing to the floor at the bottom landing.
ii. Measure the angle of stairs.

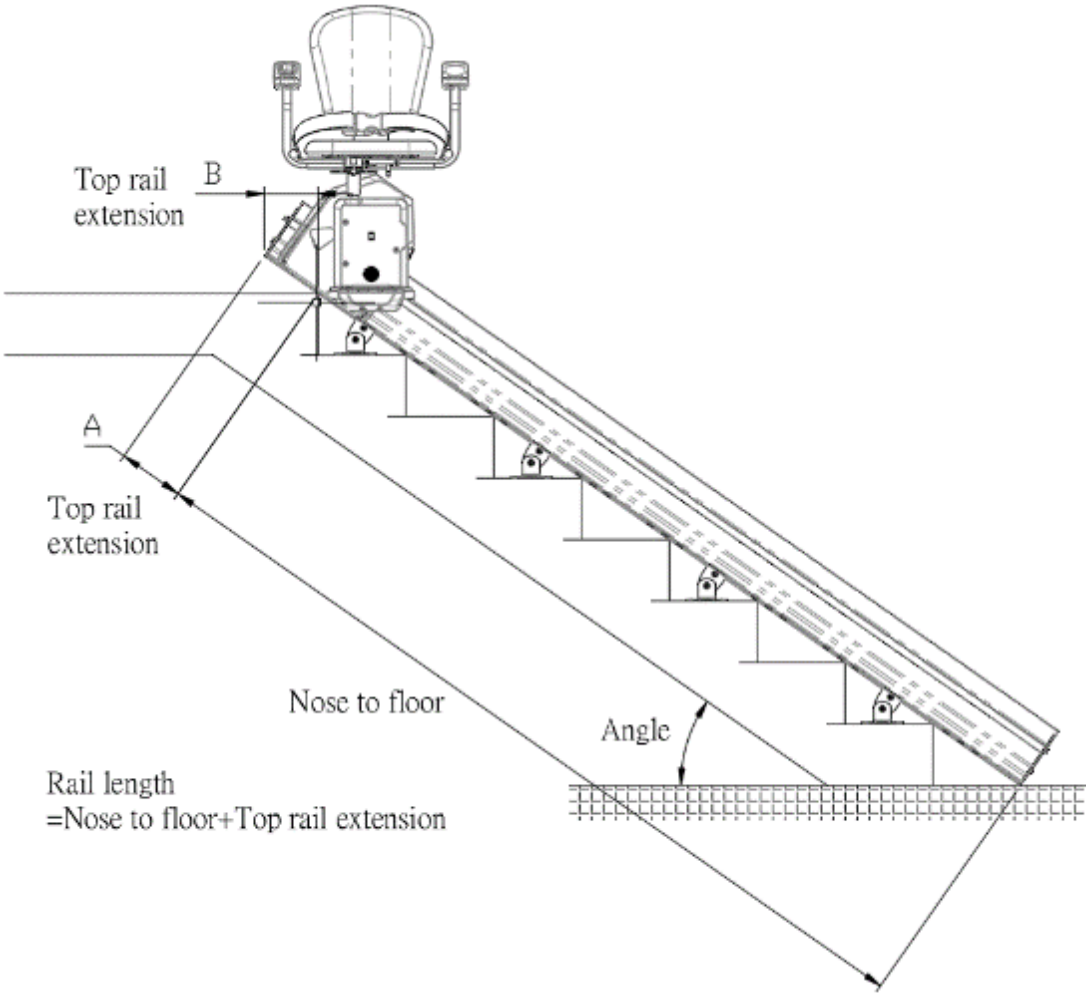


Figure 2-2 Stair measurement

2.3.2. Determine the Rail Length

Refer to the table below for the length of the rail extension required at the top landing. Recommend to install with H=50mm(2”) for smaller gap between the footrest and the top landing.

Note

Always choose the angle larger than the measured one if the angle is between two angles on the table.

Note

This manual specifically instruction for service engineers and distributors only. This is not a manual for user use.

Angle of stairs	Top rail extension length	
	Height from Footrest to Landing (H)	
	H = 0	H = 50mm(2")
25°	155mm(6.1")	270mm(10.6")
30°	185mm(7.3")	285mm(11.2")
35°	210mm(8.2")	295mm(11.6")
40°	230mm(9.1")	310mm(12.2")
45°	250mm(9.85")	320mm(12.6")
50°	270mm(10.6")	335mm(13.2")
55°	290mm(11.4")	350mm(13.8")

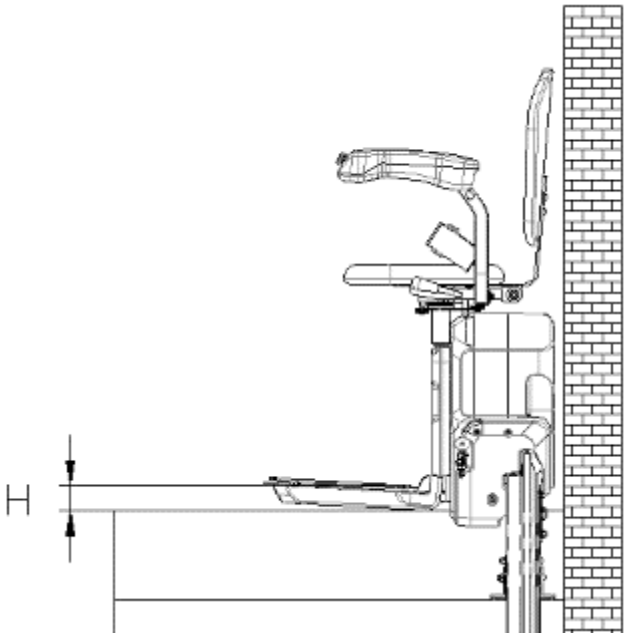


Table 2 Top rail extension length

Torque Specifications

GRADE 10.9 (Metric) (Roughly equivalent to US Grade 8)		
M8	Grade 8.8	225 lb.-in
M8	Grade 10.9	25 lb.-ft
M10	Grade 10.9	47 lb.-ft
M12	Grade 10.9	83 lb.-ft
M14	Grade 10.9	133 lb.-ft

2.4. Connect rail sections together (if required)

Place the rail sections end to end on the floor. Connect the rail sections using the joint pin in the accessory box. Tap the barbed end of the rail connector pin halfway into the lower rail and insert four piece of T-bolts to the upper rail Slide then the upper rail section onto the lower rail section. Use the splice plate to tighten the nuts to lock rails together.

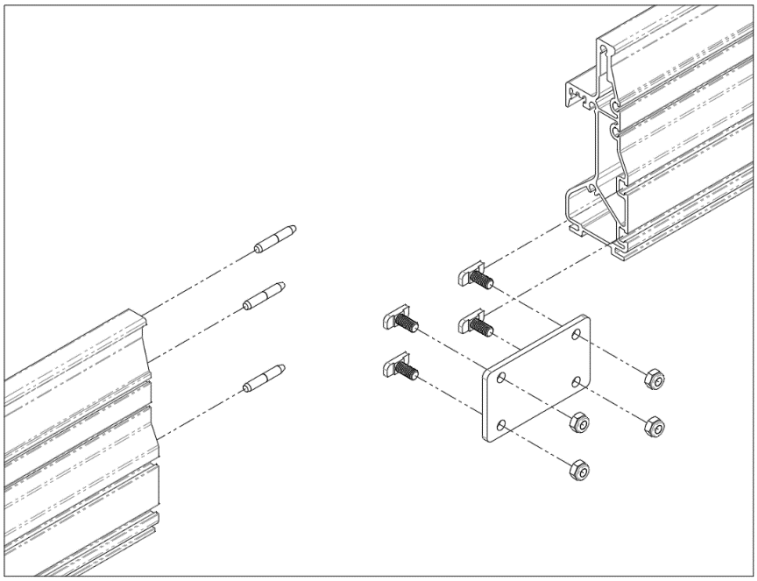


Figure 2-3 Connect rail sections together

Note

Insert T-bolts to upper rail section before slide the rail. If you are connecting more than two rail sections.

2.5. Install Bottom Rail Accessories

At the bottom of the lower rail section, slide the charging contacting kit into the back side of the rail and slightly locked the screws. The kit fits snugly against the charging strip carrier. Install the limit switch cam and then use the screws to mount the lower end cap.

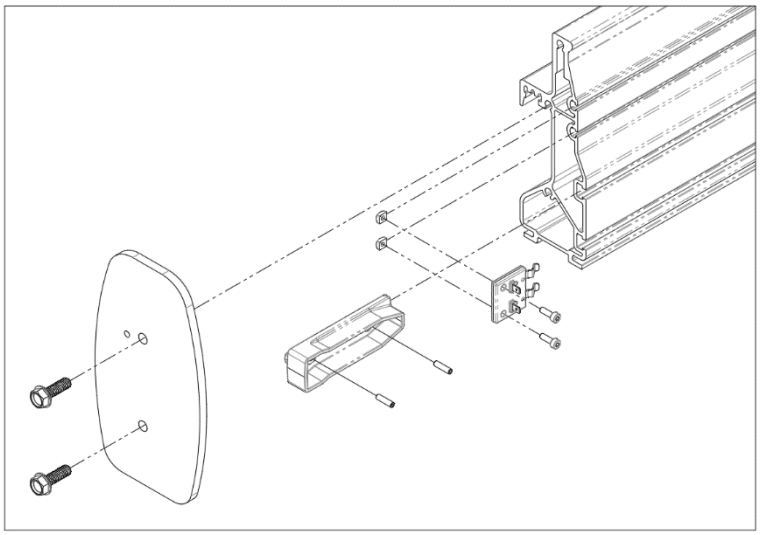


Figure 2-4 Install charging bases and limit switch cam

2.6. Install charging strip carrier and copper

To calculate the required length of the charging strip carrier accord to the cutting length in chapter 2.3; slide the charging strip carrier to the back sild of rail.

The length of charging strip carrier= The length of the cutting rail -60mm(2.36”)

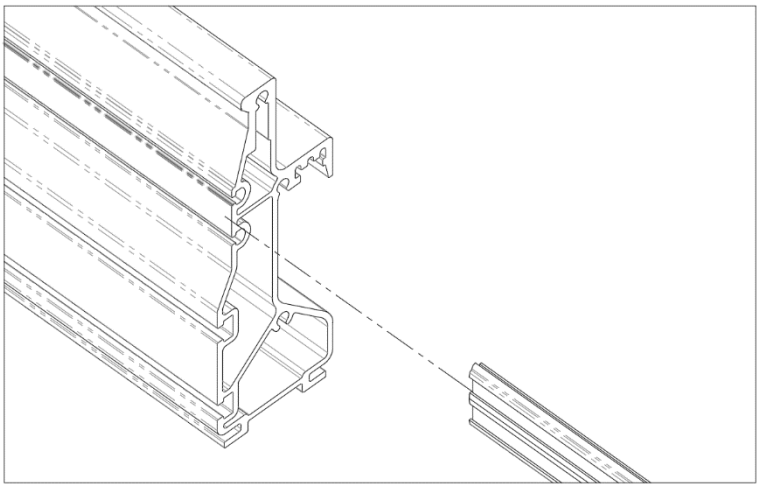


Figure 2-5 Slide the charging strip carrier.

To cut the same length as charging strip carrier copper strip. Slide one of the copper strip into the charging strip carrier until it touches the charging kit.

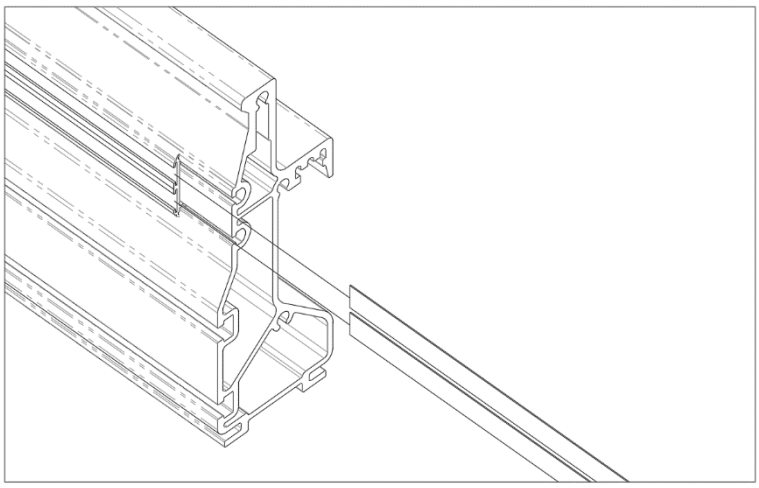


Figure 2-6 Slide copper strip

> ***Note***
> Strip copper can't be cut off to make up length, it will be concerns about power failure.

2.7. Install rack

Put the rack into the track of the rail until it fills the track, and cut off the rack that goes beyond the end of the track.

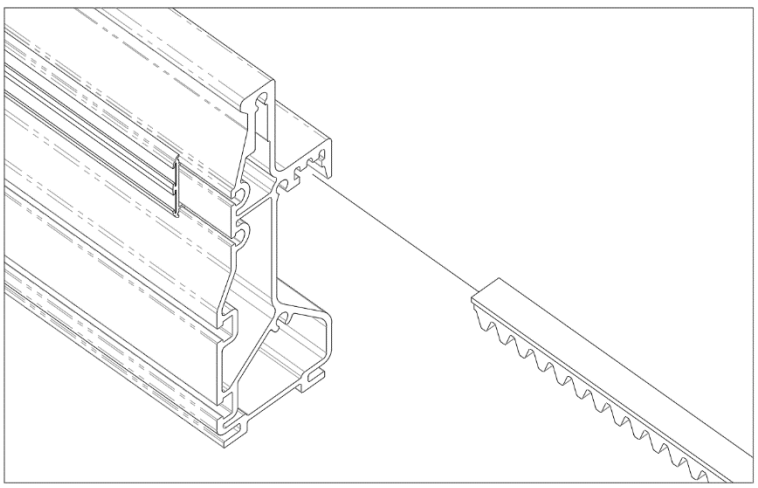


Figure 2-7 install rack

> ***Note***
> Place the rack of cutting side close to the end of the upper rail side.to void the a gap between two rack.

2.8. Install Rail Assembly on Stairs

Install the rail, the bottom port of the rail should be as close as possible to the floor, and the bottom surface of the rail should be as close as possible to the tip of the ladder (closed installation, the rail is more stable); the distance between the installation of the supporting feet should span two steps. Side to wall dimension is 116mm (4.6”).

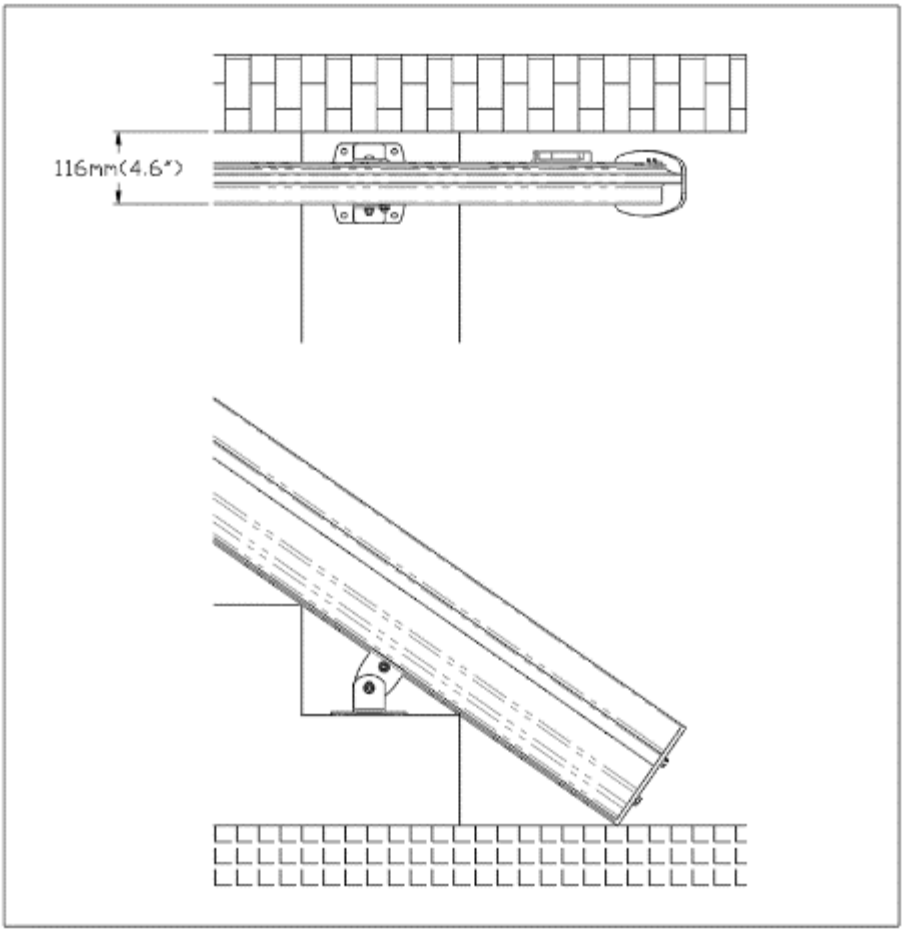


Figure 2-8 The distance between the rail and the wall and the installation of supporting feet

2.9. Install Carriage on Rail

The rack at the end of the rail is taken out first, which is easy to put the carrage into the rail. Lift the carriage and line up the rollers with the rail. Slide the carriage carefully onto the rail. Pay attention to the charging pins and limit switches inside the carriage.

> ***Note***
>
> The carriage is heavy. Take care when handling the carriage assembly.

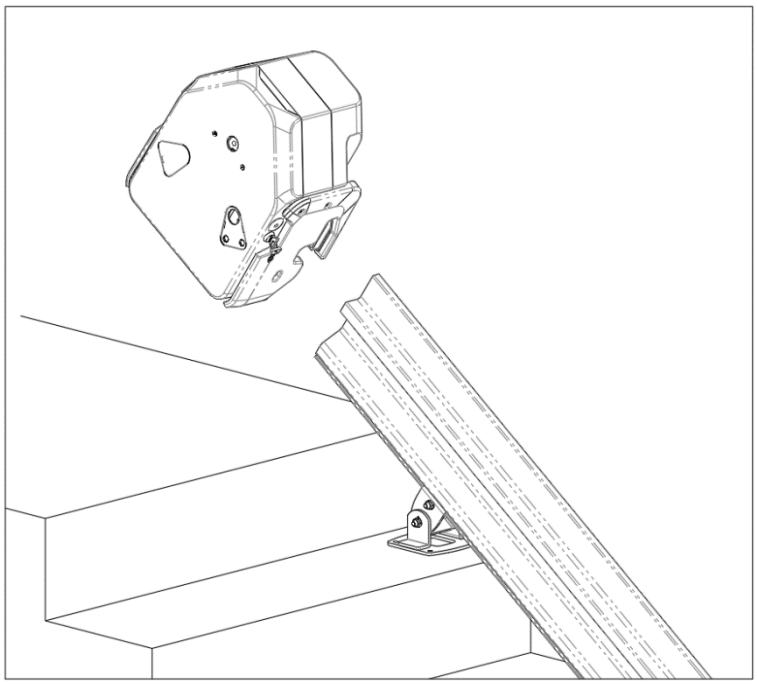


Figure 2-9 Carriage installing direction

2.10. Engage Carriage Gear with Rack on Rail

Release the motor brake if required. Use the hand crank to drive the carriage down about 1”.

2.11. Install Accessories on Top Rail Section

Assemble the charging kit on the top rail section. The negative ports are always installed on the rack side. Tighten the set screws. Install the limit switch cam on the top rail. Slide the charging strip carrier into the back side of the rail. At the bottom of the lower rail section, slide the charging contact kit into the back side of the rail and slightly locked the screws. The kit fits snugly against the charging strip carrier. Install the limit switch cam and then use the screws to mount the lower end cap.

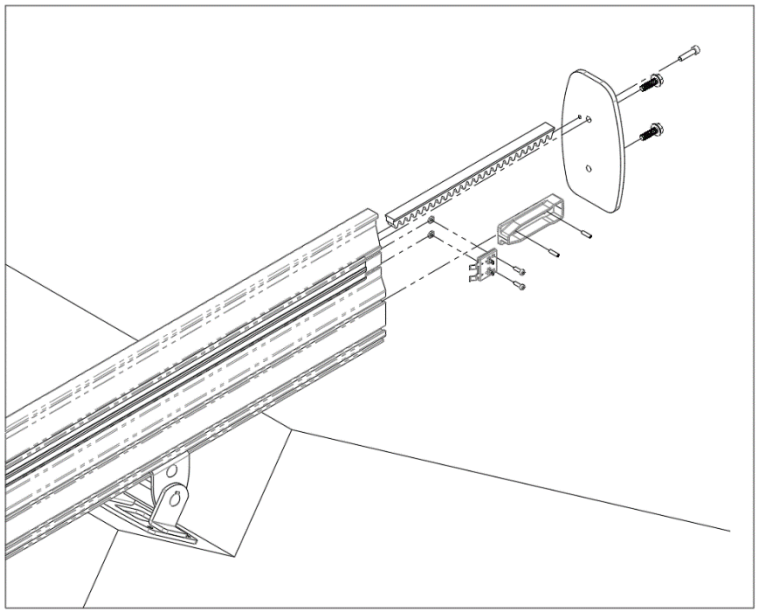


Figure 2-10 Install accessories on top rail section

2.12. Adjust Location of Top and Bottom Limit Switch Cams

Loosen the set screws on the cam. Slide the cams to the correct location and then tighten the set screws.

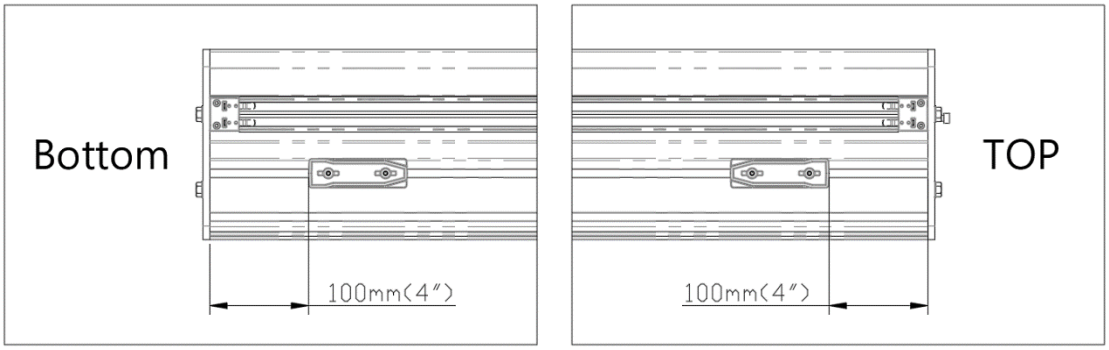


Figure 2-11 Location of limit switch cams

2.13. Install Footrest Assembly

2.13.1. Check Handing of Footrest

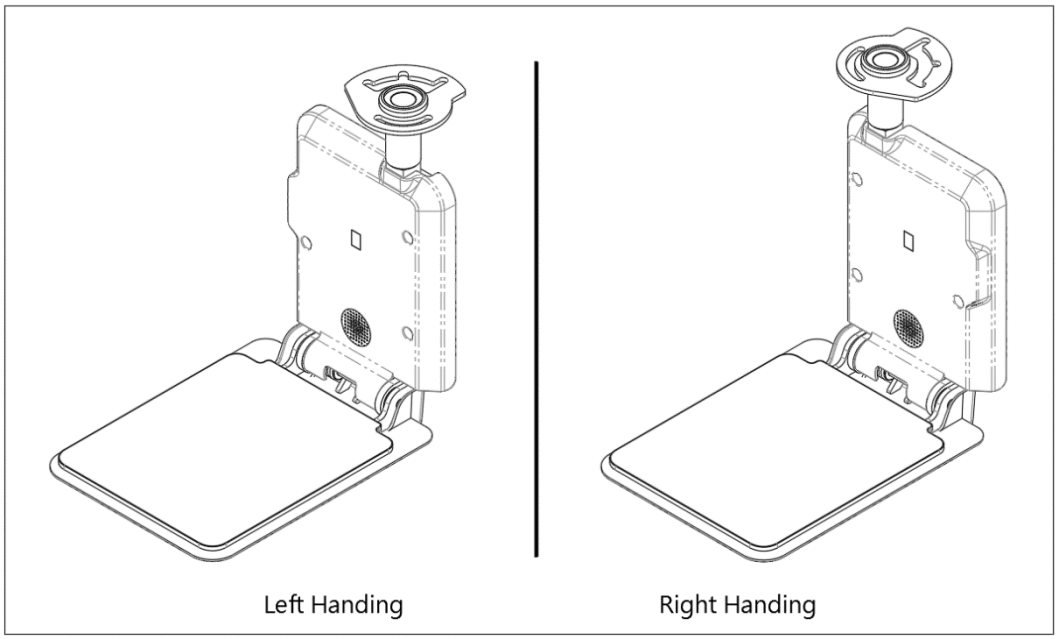


Figure **Error! No text of specified style in document.**-12 Footrest Handing

2.13.2. Install Footrest

Install the footrest with three screws.

Figure 2-13 Footrest installation

2.13.3. Plug in Connector to Carriage Footrest Cable

Turn off the power and key switch. Remove jumper plug from the carriage footrest cable. Plug in either L or R connector to the carriage footrest cable. For the right hand side please plug to connector of mark R. For the left hand side please plug to connector of mark L.

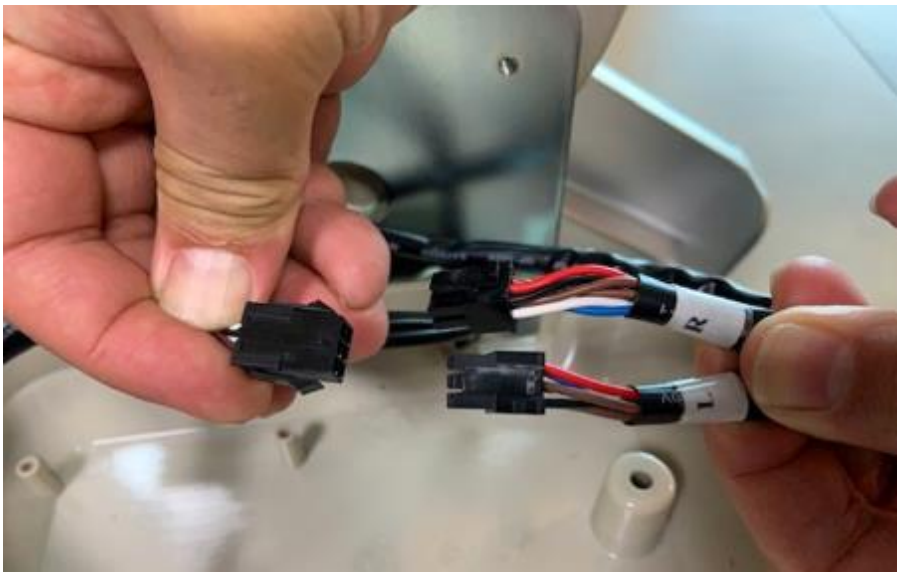


Figure2-14 Footrest connector

2.14. Install Seat Assembly

2.14.1. Check Handing of Seat

Turn off the switch on the carriage. Check the handing of the seat. Switch the handing if required.

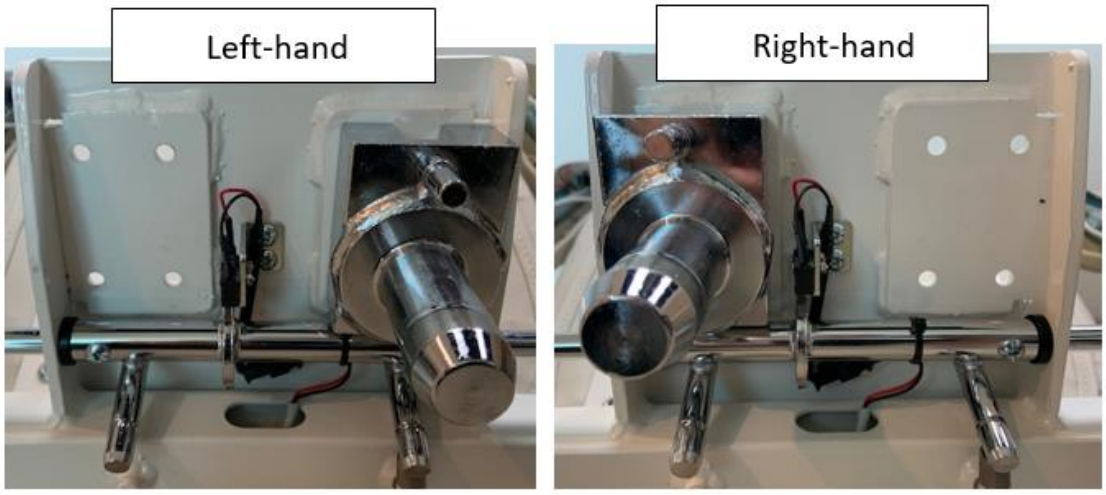


Figure2-15 Seat handing

2.14.2. Adjust Armrest Width (if required)

Loosen the screws under the seat on the back side. Slide the arm in or out as required and then tighten the screws.

Figure2-16 Armrest width adjustment

2.14.3. Adjust Seat Height (if required)

Remove the bolt from the seat post. Move the seat up or down as required and then reinstall the bolt.

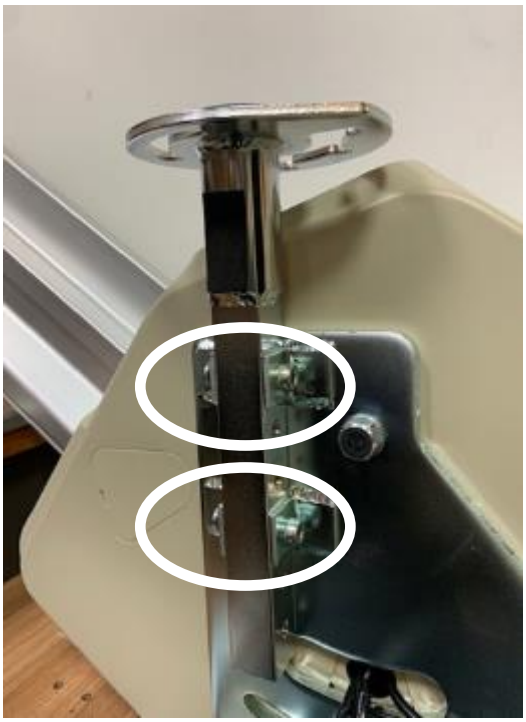


Figure2-17 Seat height adjust

2.14.4. Plug in Seat Control Cable

Turn off the power and key switch. Remove jumper plug from the carriage seat connector. Plug in the seat control cable to the carriage housing. Rotate the seat to ensure the cable won't affect the function of seat.

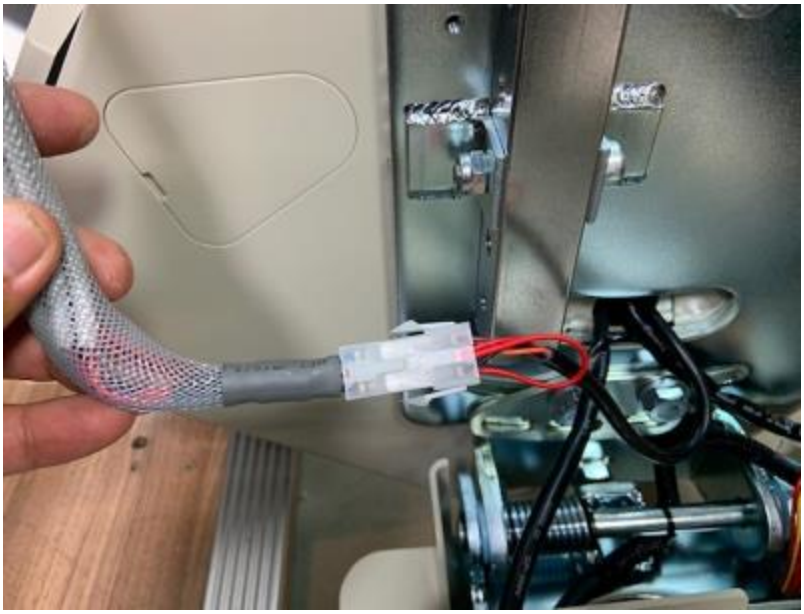


Figure2-18 Seat cable

2.14.5. Secure Seat on Seat Post

Install the pin and the nylon washer under the seat to secure seat on seat post. Bend one end of pin to lock it.

Figure 2-19 Install pin and nylon washer

2.15. Install Covers

2.15.1. Install Seat Post Cover

The cable plug to the dynastic board then assemble the cover with three screws.

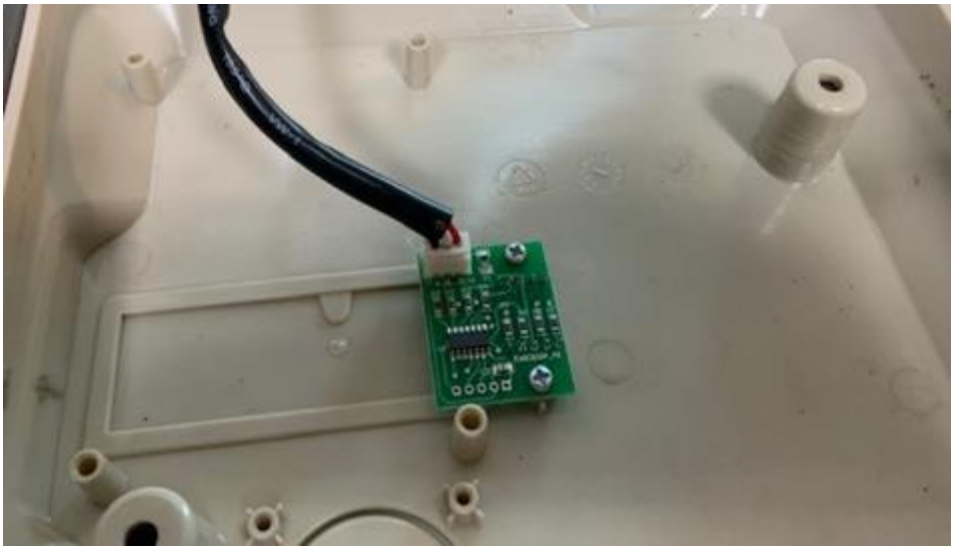


Figure 2-20 cable connect to the board

Figure 2-21 Install seat post cover

2.15.2. Install Side Cover

assemble the cover with two screws.

Figure2-22 Install carriage left side cover

Figure2-23 Install carriage right side cover

2.16. Install Charger

Determine the charger location (upstairs or downstairs). Connect together from the plug of charging kit wire to charger's socket.

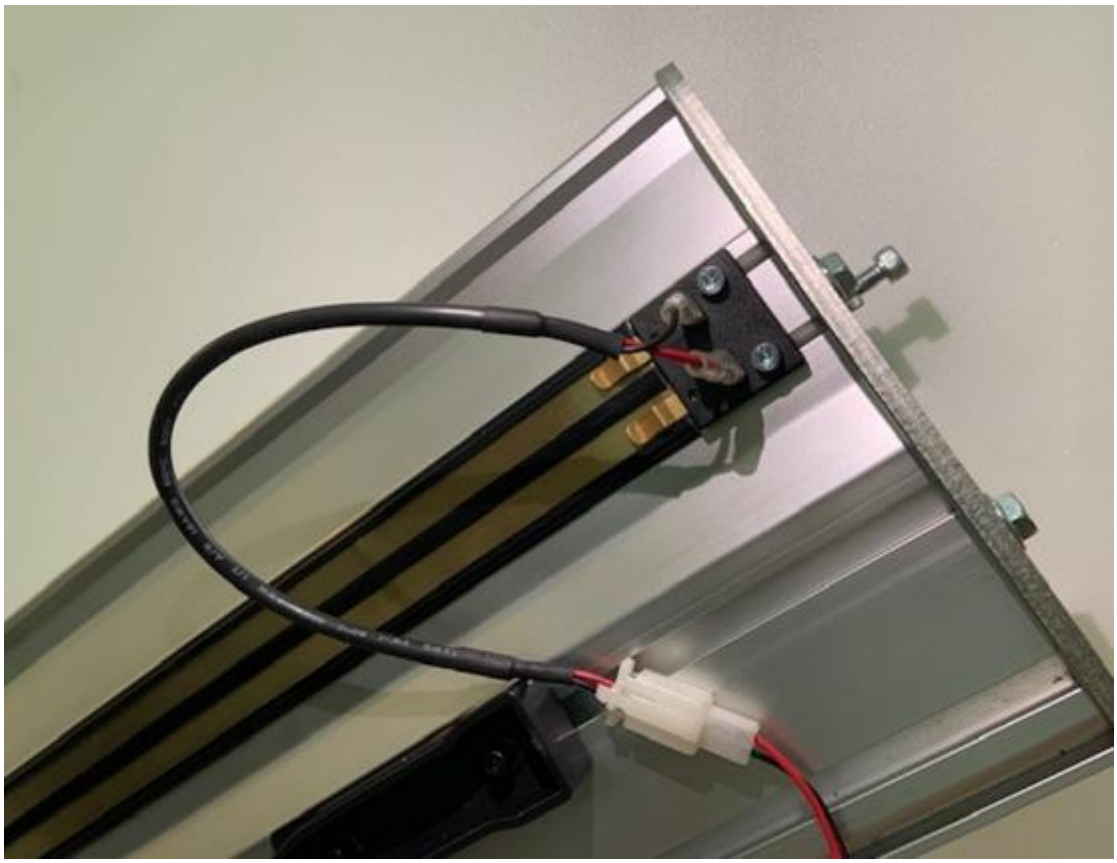


Figure2-24 Charger and connectors

2.17. Mount Charger and Remote Control Holder

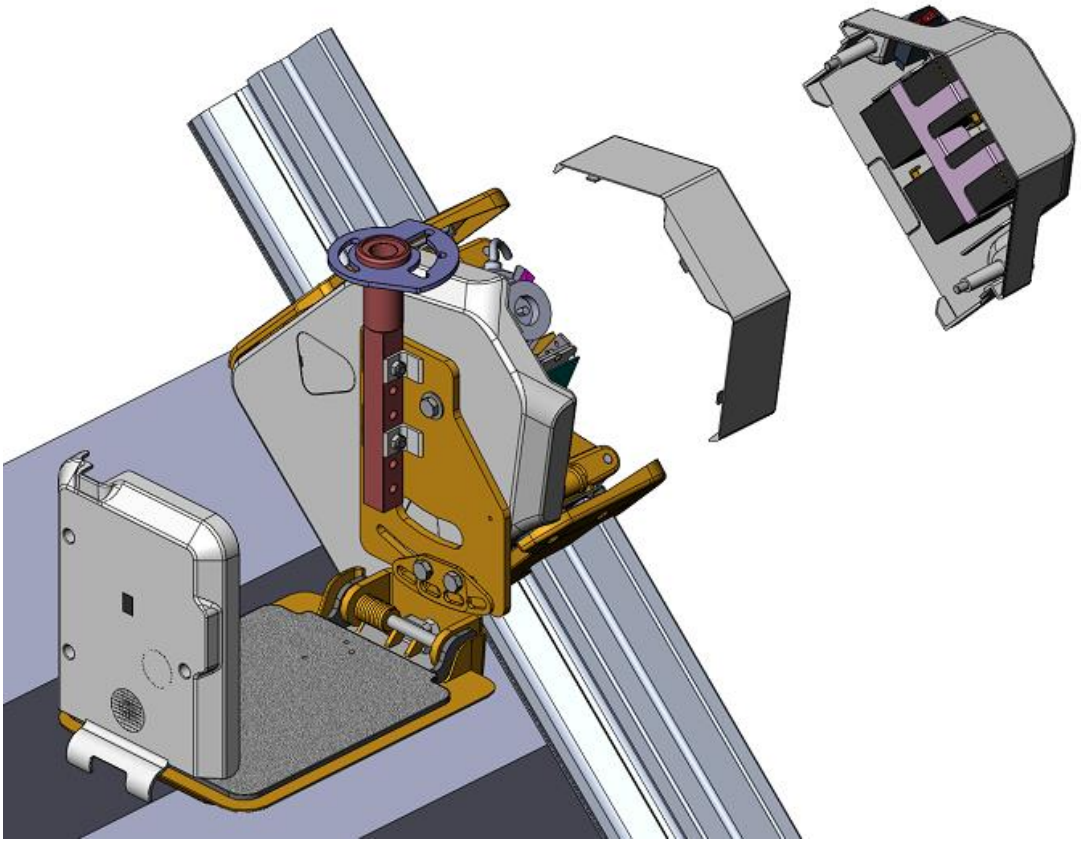
Mount the charger on the wall at upstairs or downstairs. Mount remote control holder on the wall at both upstairs and downstairs.

2.18. Check Installation and Lubricate

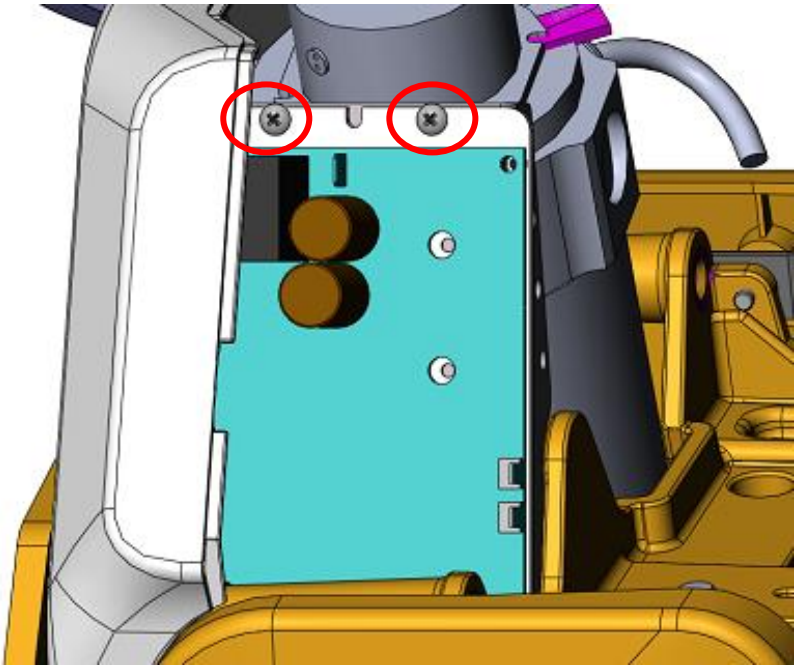
Verify that all mechanical components and electrical connections are properly installed. Use the tube of grease to lubricate the rack teeth.

I. **2.18** Electrically swivel seat mounting

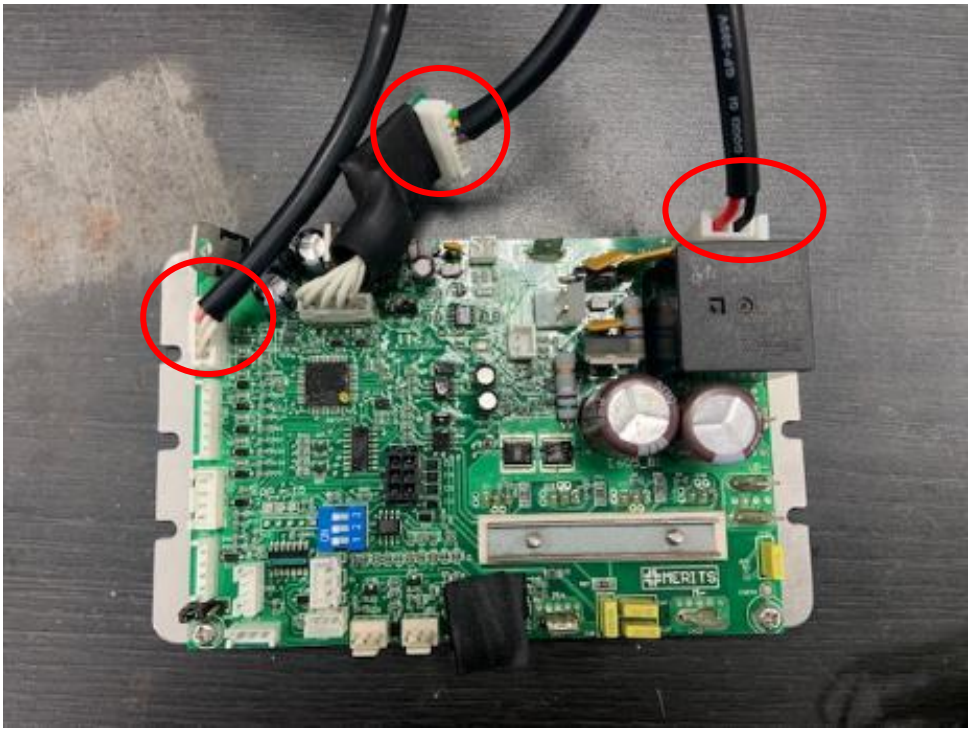
II. (1) Remove the back cover group (battery) & upper cover > turntable outer cover group ◦



III. Remove the screws that hold the control board in place

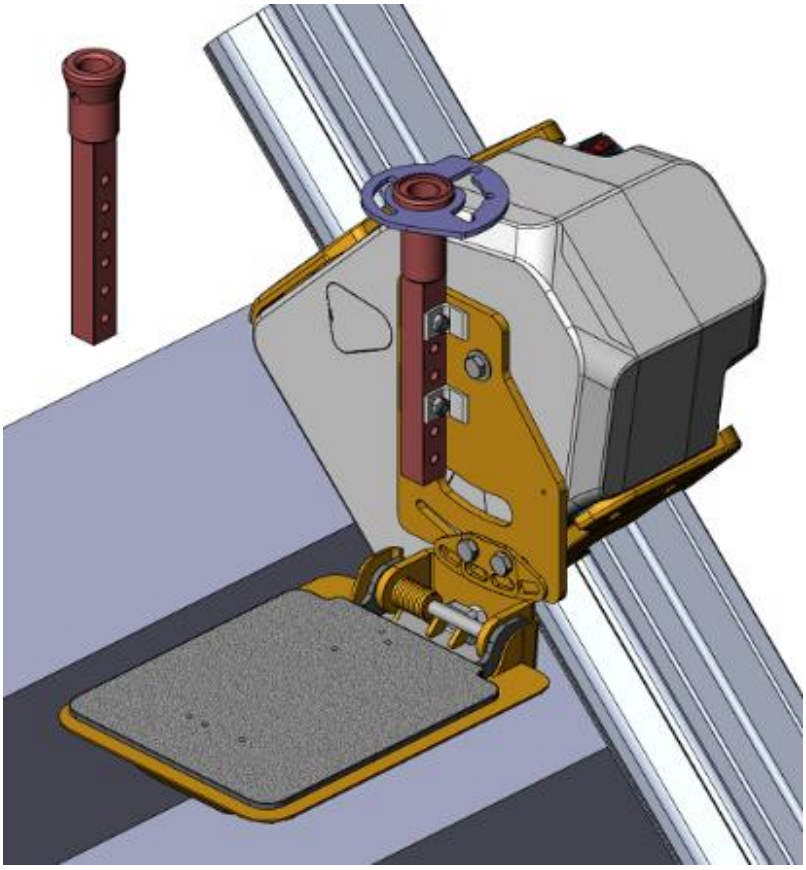


IV. Replace the cables: Plug the connectors of the cables into the control board.

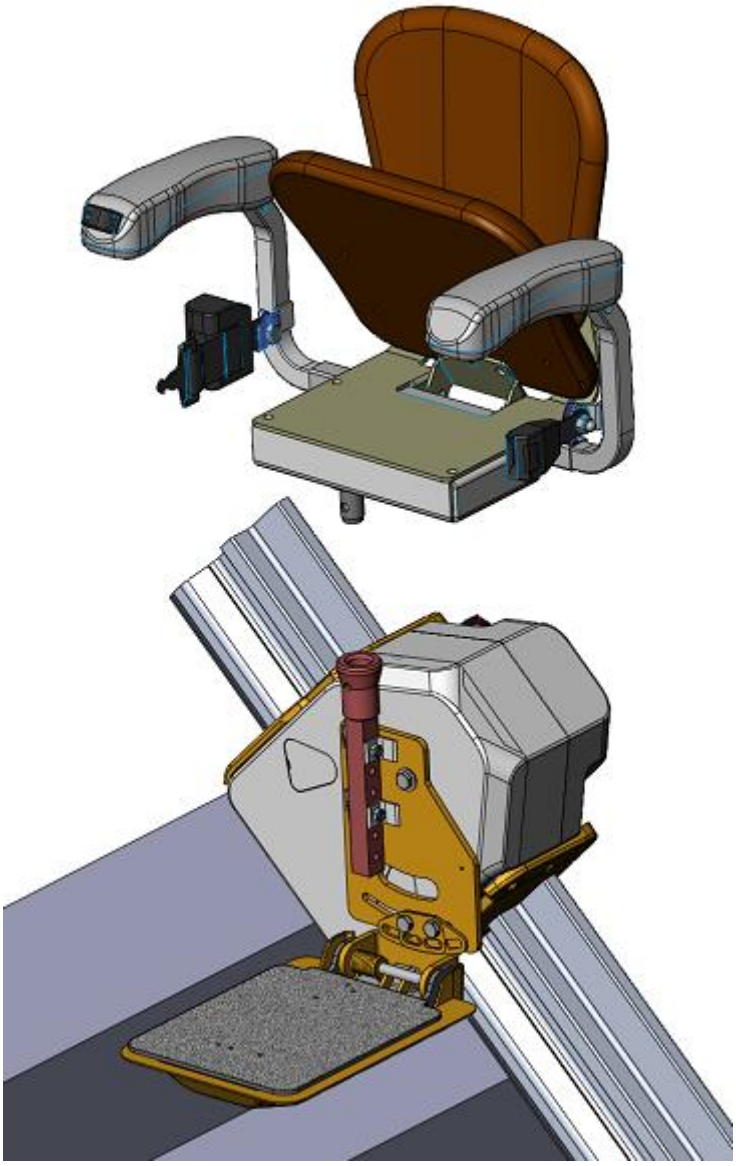


V. Hook back cover and back cover (battery)

VI. Replace the upper seat tube set for the power seat



VII. 安裝電動座椅



VIII.插上座椅及腳踏板的連接器; 裝回轉盤外蓋組;

3. Testing

The stairlift must be tested to ensure that it is operating correctly after installation or service.

3.1. Remote Control Testing

Verify the moving direction of stairlift by pressing the up or down button on the remote control. Check the wiring of motor if the direction is reversed.

3.2. Seat Testing

3.2.1. Rocker Switch Direction

Sit on the seat and press the rocker switch on the armrest. Check the moving direction of the stairlift. Check the status display and follow the corrective action if there is any problem.

3.2.2. Swivel Handle

Sit on the seat and lift the swivel handle. Check the locking function at different angle. Press the rocker switch on the armrest at all angles. The stairlift can only move at riding position. The status display indicates  at the other position. Check the switch under the seat if there is any problem.

Figure 3-1 Seat swivel

3.3. Footrest Testing

3.3.1. Obstacle Detection at Unfolding

Move the stairlift in up direction and then push the footrest safety cover in three directions as shown in Figure as below. The stairlift stops while pushing in direction "1". The status display indicates 4 . Move the stairlift in down direction and test again. It stops while pushing in direction "2" or "3". The status display indicates 6 . Check the footrest connector if the direction is reversed.

Figure3-2 Footrest test direction

3.3.2. Obstacle Detection at Folding

Move the stairlift down and then push the footrest safety cover in directions "4" as shown in Figure 3-5. The stairlift stops and the status display indicates 6 .

Figure3-3 Footrest test direction at folding

3.4. Carriage Testing

3.4.1. Obstacle Detection

Move the stairlift in up direction and then push the obstacle covers as shown in Figure 3-6. The stairlift stops while pushing in direction “1”. The status display indicates 4 . Move the stairlift in down direction and test again. It stops while pushing in direction “2”. The status display indicates 6 .

Figure3-4 Carriage obstacle test

3.4.2. Limit Switch Detection

Move the stairlift up or down. The limit switches should stop the stairlift when it reaches the top or bottom of the rail. The status display indicates 3 When the upper limit switch continued active during ride down The status display indicates 5 When the lower limit switch continued active during ride up.

3.4.3. Charging

Power on the key switch and the status display indicates - when the batteries are charging. Check the charger if the status display indicates 2 and the warning sound is beeping.

4. Dismantling Components

The stairlift must only be serviced and maintained by trained personnel. Before working on the stairlift ensure that power is switched off and unplug the charger from the household wall outlet.

4.1. Rocker Switch Replacement

i. Loose two screws from the bottom of the armrest and take the cover apart from the armrest.
ii. Disconnect the connector of rocker switch.
iii. Press the snap features on both side of rocker switch and then push the rocker switch out.
iv. Remove cable from the switch and connect to new one. Remember to connect the cable in the same color sequence.
v. Snap the rocker switch in the top armrest cover.
vi. Reconnect the connector and assemble the bottom cover. Be careful not to trap the cables while assembling this cover.

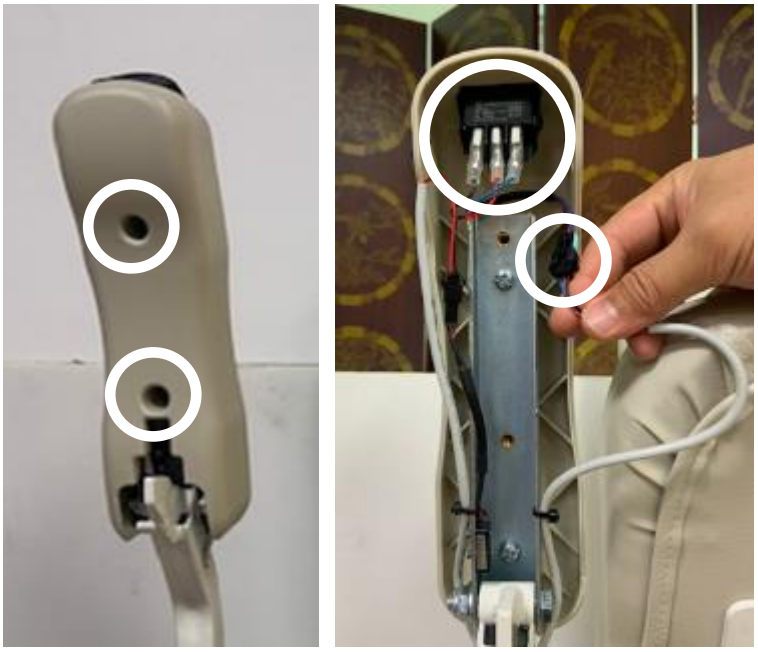


Figure4-2 Rocker switch replacement

4.2. Seat Removal

i. Remove the pin and the nylon washer under the seat.
ii. Loose three screws on cover.
iii. Disconnect the seat cable from the carriage.
iv. Pull the swivel handle and wiggle the seat to pull the seat out from the seat post.

4.2.1. Swivel Switch Replacement

i. Loose two screws from the bottom of the seat.
ii. Disconnect the connector and cut the cable tie.
iii. Loose the screws to replace the switch.
iv. Install the new switch and tighten the screws. Ensure the cable is not interfering with the locking device and switch.

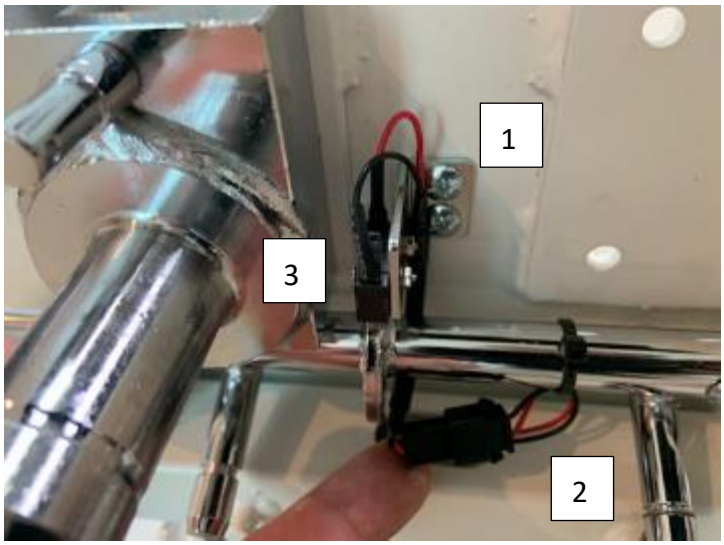


Figure4-3 Swivel switch replacement

4.3. Footrest Removal

4.3.1. Front Cover Removal

i. Loose three screws from the top cover.
ii. Disconnect the connector on the PCB board.

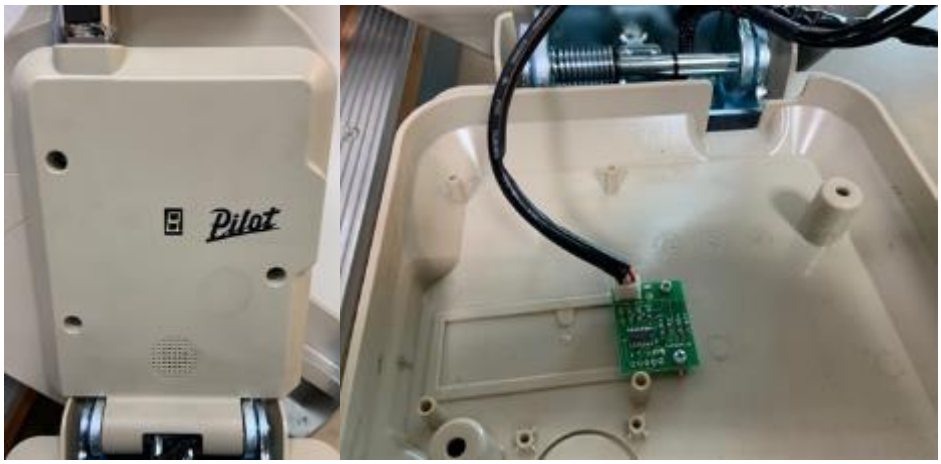


Figure4-4 Front cover replacement

4.3.2. Footrest and Seat Post Removal

i. Disconnect the footrest cable.
ii. Loose three bolts from the carriage side plate.

4.3.3. Footrest Safety Cover Removal

i. Loose two screws from the footrest.
ii. Push the cover to the left and then lift the left edge.

4.3.4. Footrest Obstacle Detecting Switch Removal

Switch 1 is the bottom obstacle detecting switch. For right-handing unit, Switch 2 is the up obstacle detecting switch and Switch 3 is the down obstacle detecting switch. Switch #2 and #3 will swap the detecting direction for left-handing unit. Loose two screws on the switch and disconnect the terminals to replace the broken switch.

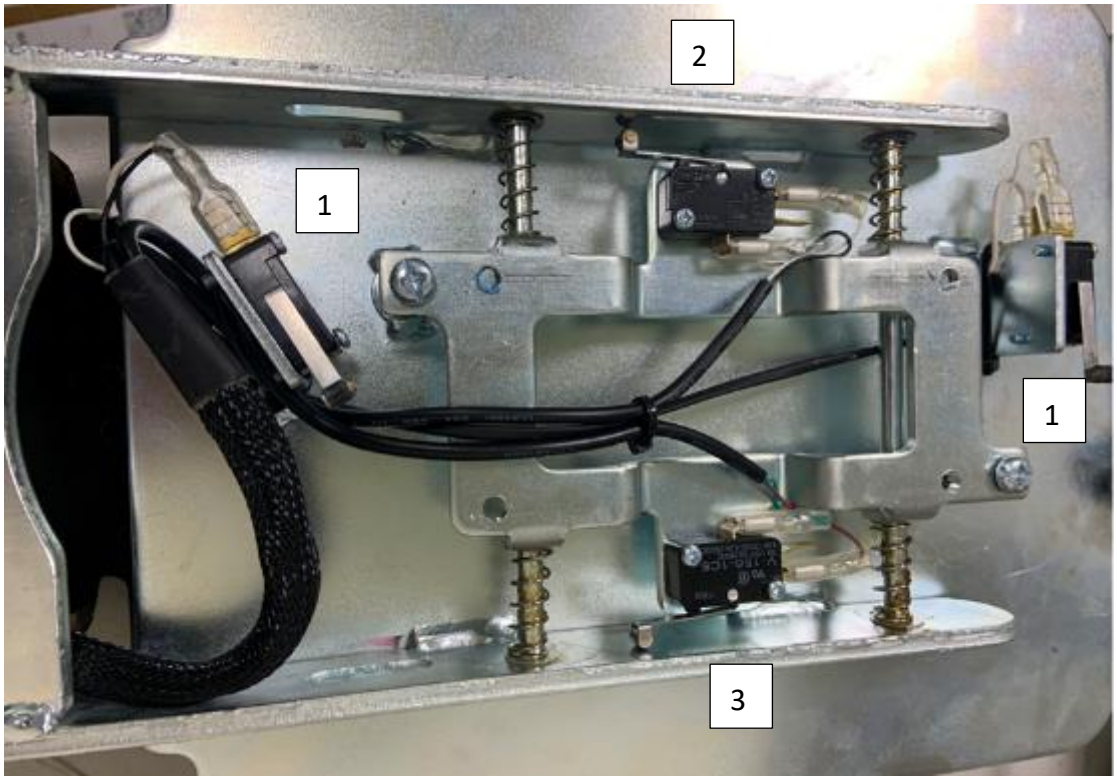


Figure4-5 Footrest obstacle detecting switchs

4.4. Replacement

4.4.1. Batteries Replacement

i. Switch the breaker to OFF.
ii. Disconnect the terminals of battery cable.
iii. Dismantle the battery mounting kit.
iv. Replace the batteries and reconnect the cables. Follow the labels on the batteries and cables to plug the terminals.
v. Install new batteries and plug the terminals on the control PCB.

⚠ WARNING

- DO NOT short the battery terminals.

4.4.2. Control PCB Replacement

i. Disconnect all connectors.
ii. Loose two screws to replace the control PCB.

4.4.3. DC Motor Brushes Replacement

i. Remove batteries and control PCB.
ii. Open the cap and replace the brush. Another brush is on the battery side.

4.4.4. Fuse Replacement

i. Open the fuse holder and take out the fuse.
ii. Insert new fuse into the fuse holder and tighten the holder.

⚠ WARNING

- DO NOT use fuse over the rated current.

4.4.5. Obstacle Switch Replacement

i. Dismantle the right or left side cover.
ii. Loose the nut on the switch
iii. Disconnect the cable and remove the switch.
iv. Replace the switch and install in the carriage.

4.4.6. Power Switch Replacement

i. Loose screws on the power switch and remove cables.
ii. Press the snap features on both side of power switch and then push the switch out.

4.4.7. IR PCB Replacement

i. Cut the cable tie to remove the IR PCB from the cover.

4.4.8. Status Display PCB Replacement

i. Loose two screws on the status display PCB.
ii. Remove status display PCB from the right side cover.

4.4.9. Key Switch Replacement

i. Loose the locking nut on the key switch.
ii. Remove the key switch from the right side cover.

4.5. Top Rail Accessories Removal

i. Loose two screws on rail end cover. Remove the cover.
ii. Loose the nut on mechanical stop. Remove the mechanical stops on both sides.
iii. Loose the set screw on the charging base. Remove the charging bases from the rail.
iv. Loose the sec screws on the limit switch cam. Remove it from the rail.
v. Loose the screws on the top rack section. Remove it from rail.

4.6. Carriage Removal

i. Plug the seat jumper and footrest jump on the carriage. Use remote control to move the carriage up slowly to the end of rack.
ii. Remove the motor plug and release plug.
iii. Rotate the release lever up to release the motor brake. (if required)
iv. Use the hand crank to move the carriage up until the gear and rack can be separated.
v. Slide the carriage up carefully until the bottom rollers leave the rail.

4.6.1. Rollers Replacement

i. Remove C-rings and rollers from the shafts.
ii. Clean the shafts and apply lubricant on the shafts and inner bores of new rollers.
iii. Install new rollers and shafts on the carriage.

4.6.2. Limit Switches Replacement

i. Loose the screws and disconnect the cable to remove the limit switch.
ii. Install the new limit switch.

4.7. Rail Removal

i. Loose the rack screws on the top rail section. Do not remove the screws.
ii. Slide the racks up until the rack spanning on two rail sections is on the top rail section only. Tighten the screws to fix the racks.
iii. Loose the set screw on the splice bars.
iv. Slide the splice bars up or down to separate two rail sections.
v. Loose the bolts on the bracket.

5. Service

5.1. Check List

5.1.1. Rail

i. Check all rail brackets are correctly positioned.
ii. Check all bracket-fixing screws are secure.
iii. Check charging bases are secure and undamaged.
iv. Check rack screws are secure and racks are not worn-out.

5.1.2. Seat

i. Check rocker switch is working properly.
ii. Check swivel locking mechanism and switch are working correctly.
iii. Check armrest safety switch is working correctly.
iv. Check seat pad and armrests remain in upright position when folding.

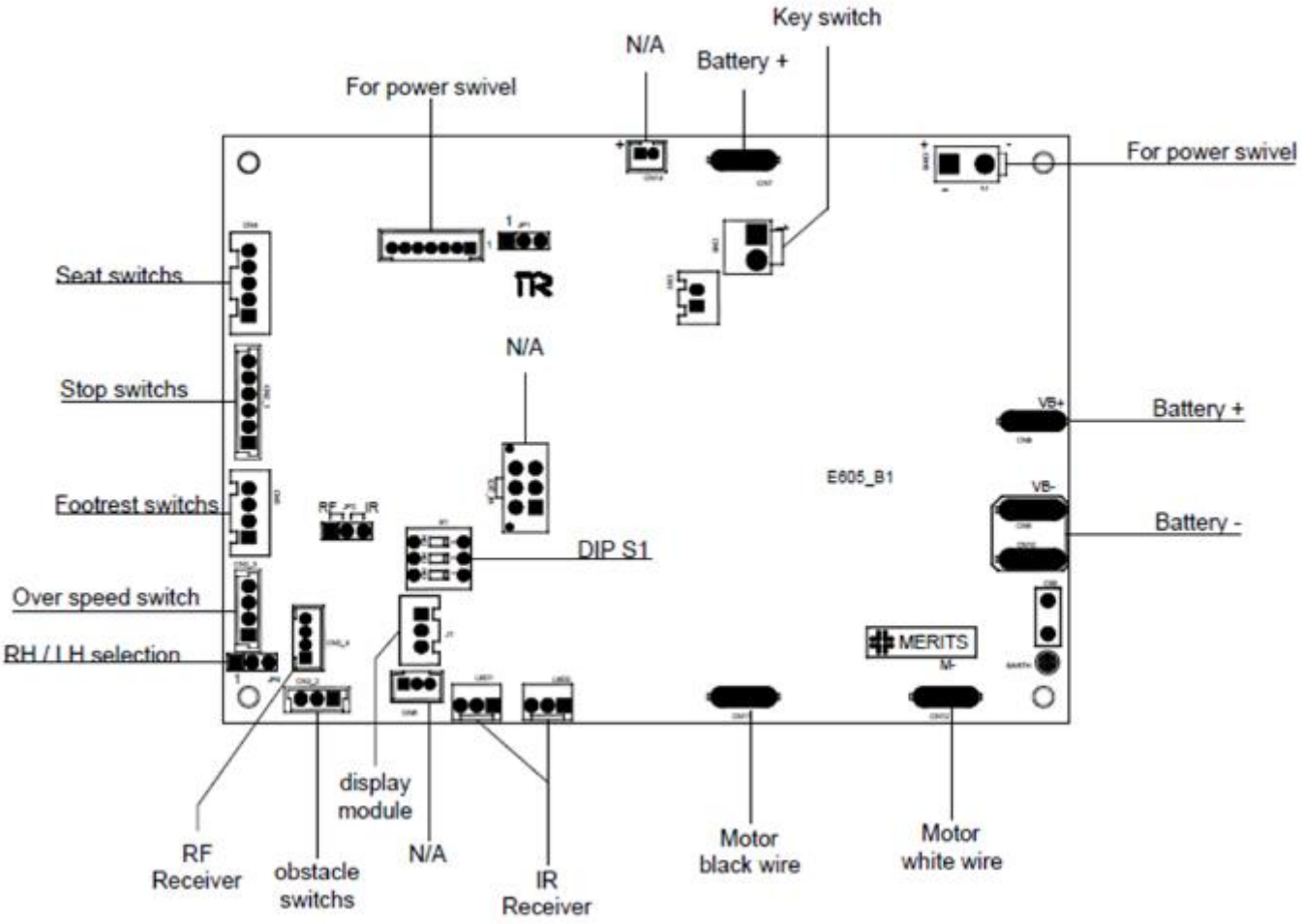
5.1.3. Footrest

i. Check obstacle detection switches are working correctly.
ii. Check footrest remain in upright position when folding.

5.1.4. Carriage

i. Check carriage is not loose on the rail.
ii. Check top and bottom limit switches are working correctly.
iii. Check obstacle detecting switches are working correctly.
iv. Check the rollers are in good condition. Replace as required.
v. Check remote control is working properly from both sides.

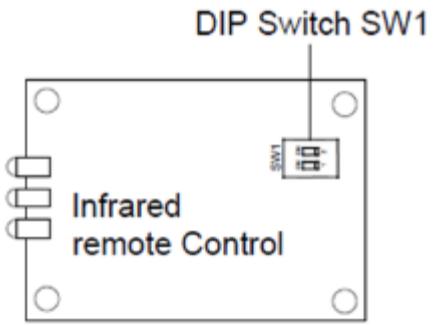
5.2. PCB Layout



Brake Jumper Setting	JP1
W/O Solenoid Brake	1
With Solenoid Brake	1

RF/IR Remote control setting	JP2
RF Remote control	
IR Remote control	

RH/LH Selection	JP4
RH Model	1
LH Model	1



Infrared Control Channel Setting

	Dip S1		Dip SW1	
	1	2	1	2
Channel 1	ON	ON	OFF	OFF
Channel 2	ON	OFF	OFF	ON
Channel 3	OFF	ON	ON	OFF
Channel 4	OFF	OFF	ON	ON

Figure5-1 PCB layout

6.

6. Troubleshooting

6.1. Troubleshooting Flowchart

Refer to the following flowchart to troubleshoot and correct any faults when stair won't run.

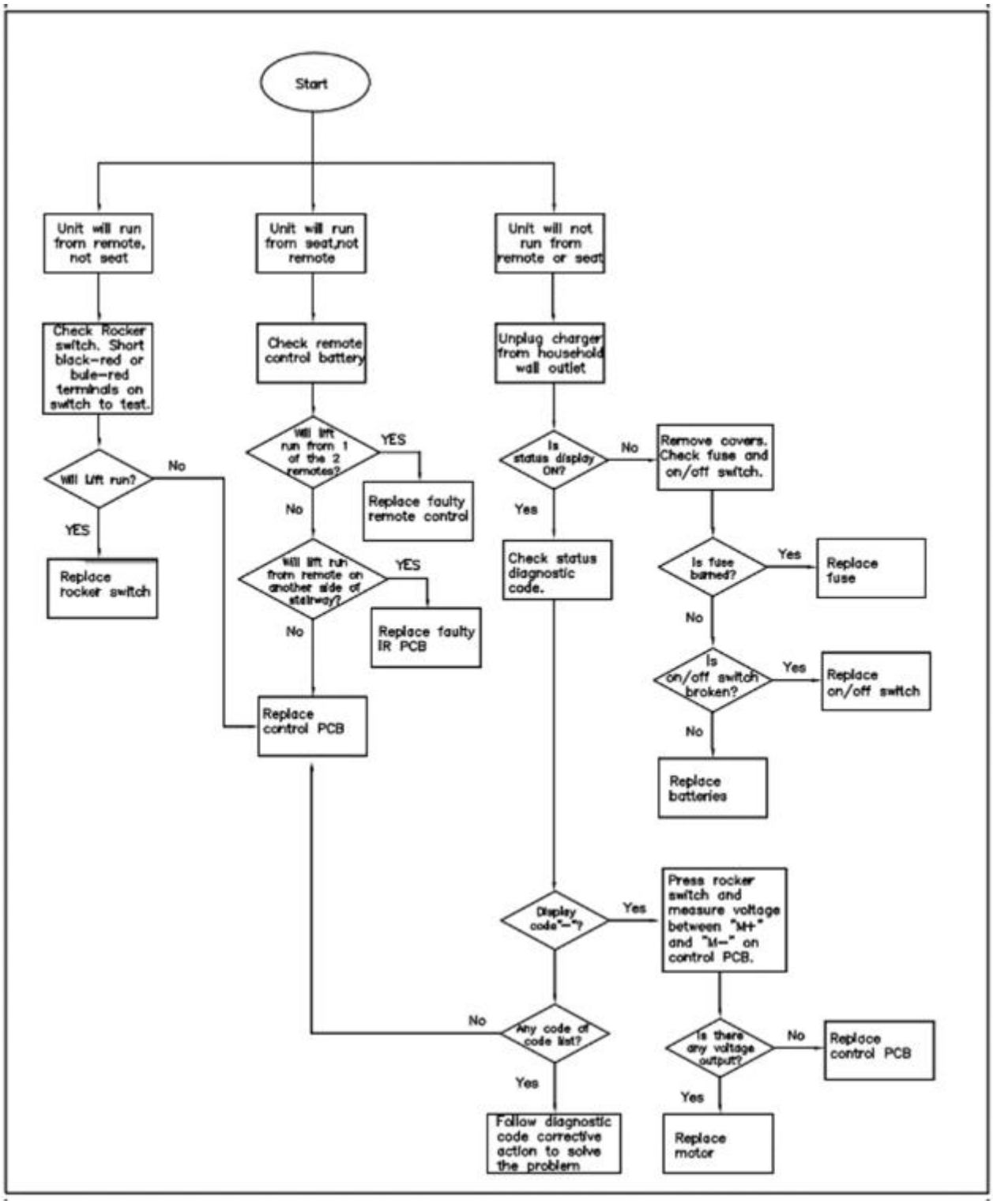


Figure6-1 Troubleshooting chart when stairlift won't run

6.2. Diagnostic Codes

Refer to the following table to help diagnose and correct any faults.

Code	Status/Fault	狀態	檢查	檢修步驟
N/A	No display.	無法正常運行	檢查台車上斷路器及鑰匙開關	重新開啟斷路器及鑰匙開關。
				1. 將台車外蓋拆開。 2. 檢查台車上斷路器及鑰匙開關連接線路是否脫落或短路。 3. 若斷路器及鑰匙開關損壞,更換新品。 ■ 更換料件,請參閱爆炸圖
		可正常運行	檢視狀態顯示板	1. 將台車外蓋拆開。 2. 檢查台車狀態顯示板連接線是否脫落。 3. 若狀態顯示板損壞,更換新品。 ■ 更換料件,請參閱爆炸圖
	The stairlift is ready to use.	可正常運行	無需採取任何行動	
	1.The swivel seat switch is activated.	無法正常運行	檢查座椅位置	重新將座椅旋轉鎖定在正確的位位置。
			檢查座椅開關及線路	1. 將座椅組拆下。 2. 檢查座椅連接線是否脫落。 3. 若座椅定位開關損壞,更換新品。 ■ 更換料件,請參閱爆炸圖
	2.The final limit switch is activated.	無法正常運行	檢查台車位置	1. 檢查台車的最終停止開關是否被軌道上端點限制件啟動。 2. 使用手動起子將台車移動,讓最終停止開關脫離觸發。 3. 檢查軌道端點限制件是否磨耗,若損壞,更換新品。 ■ 更換料件,請參閱爆炸圖
			檢查最終停止開關及線路	1. 將台車外蓋拆開。 2. 檢查台車的最終停止開關連接線是否脫落。 3. 若台車的最終停止開關損壞,更換新品。 ■ 更換料件,請參閱爆炸圖
	3. The over speed governor is activated.	無法正常運行	手動讓台車向上移動	1. 使用手動起子將台車向上移動,讓過速裝置復歸。 2. 檢查軌道齒條是否損壞造成過速,若損壞,更換新品。 ■ 更換料件,請參閱爆炸圖

		無法正常運行	檢查過速開關及線路	1. 將台車向上脫離軌道,並將台車外蓋拆開。 2. 檢查過速微動開關連接線是否脫落。 3. 若過速微動開關損壞,更換新品。 ■ 更換料件,請參閱爆炸圖
	Batteries are not charging.	正常運行	檢查軌道上充電器	1. 檢查軌道上充電器是否已插入電源,並正在充電。充電訊號(綠燈或黃燈) 2. 檢查軌道上充電器連接線是否脫落; 3. 若充電器損壞,更換新品; ■ 更換料件,請參閱爆炸圖
		正常運行	檢查台車的充電銅棒	1. 將台車外蓋拆開; 2. 檢查充電銅棒是否磨損或接觸不良,若損壞,更換新品; ■ 更換料件,請參閱爆炸圖
	Upper limit switch is activated.	無法正常運行	檢查台車環境	檢查上限開關是否有異物卡住(此時台車只可往下移動)。
			檢查開關及線路	1. 檢查台車上限開關連接線是否脫落。 2. 若台車上限開關損壞,更換新品。 ■ 更換料件,請參閱爆炸圖
	Safety sensor in up direction is activated.	無法正常運行	檢查台車環境	1. 移除任何可能觸發上偵測蓋開關的障礙物。 2. 移除任何可能觸發腳踏板開關的障礙物。
			檢查開關及線路	1. 檢查上偵測蓋開關連接線是否脫落。 2. 檢查上偵測蓋開關是否損壞,若損壞更換新品。 3. 檢查腳踏板開關連接線是否脫落。 4. 檢查腳踏板開關是否損壞,若損壞更換新品。 ■ 更換料件,請參閱爆炸圖
			更換控制板	線路及開關皆正常時,請更換控制板。 ■ 更換料件,請參閱爆炸圖
	Lower limit switch is activated.	無法正常運行	檢查台車環境	移除任何可能觸發下偵測蓋開關的障礙物。
			檢查開關及線路	1. 檢查下偵測蓋開關連接線是否脫落。 2. 檢查下偵測蓋開關是否損壞,若損壞更換新品。 3. 檢查腳踏板開關連接線是否脫落。 4. 檢查腳踏板開關是否損壞,若損壞更換新品。 ■ 更換料件,請參閱爆炸圖
	Safety sensor in down direction is activated.	無法正常運行	檢查台車環境	移除任何可能觸發下偵測蓋開關的障礙物。
			檢查開關及線路	1. 檢查下偵測蓋開關連接線是否脫落。 2. 檢查下偵測蓋開關是否損壞,若損壞更換新

				品。 3. 檢查腳踏板開關連接線是否脫落。 4. 檢查腳踏板開關是否損壞,若損壞更換新品。 ■ 更換料件,請參閱爆炸圖
			更換控制板	線路及開關皆正常時,請更換控制板。 ■ 更換料件,請參閱爆炸圖
	Motor current limit is exceeded.	無法正常運行	檢查台車組件	1. 將台車脫離軌道試台車空載運轉電流值是否正常; 2. 將台車向上脫離軌道,並將台車外蓋拆開; 3. 檢查台車滾輪與齒輪是否磨耗損壞,若損壞,更換新品; ■ 更換料件,請參閱爆炸圖"
	Main control PCB error.	無法正常運行	確認是否控制器進入保護模式	關閉鑰匙開關 30 秒,然後重新開啟。
			檢查台車 PCB 板	1. 將台車外蓋拆開。 2. 檢查主控制板,若損壞,更換新品。 ■ 更換料件,請參閱爆炸圖
	Motor brake is not engaged.	無法正常運行	檢查煞車器手柄	重新將煞車器手柄傳動軸離合器柄切至正確位置。
			檢查煞車器迴路	1. 將台車外蓋拆開; 2. 檢查傳動軸煞車是否連接線是否脫落或短路; 3. 檢查煞車器若損壞,更換新傳動軸; ■ 更換料件,請參閱爆炸圖
	The batteries voltage is too high.	無法正常運行	檢查電池	關閉鑰匙開關 30 秒，然後重新開啟;
	The batteries voltage is too low.	無法正常運行	檢查充電迴路	1. 檢查軌道上充電器是否已插入電源,並正在充電。 2. 檢查軌道上充電器連接線是否脫落或短路; 3. 若充電器損壞,更換新品; ■ 更換料件,請參閱爆炸圖
			檢查電池	1. 關閉鑰匙開關 30 秒，然後重新開啟。 2. 將台車外蓋拆開。 3. 檢查電池若損壞,更換新品。 ■ 更換料件,請參閱爆炸圖

Table 3 Diagnostic Codes

7. Regular maintenance

Carriage

Maintenance	Frequency	Method	Replacement cycle	Replacement part
Check if the appearance of carriage is clean or not?	Every **6** months	Wiping	N/A	N/A
Check that the swivel seat switch and the armrest switch are working. Ensure the unit will not move until the swivel seat is locked in the right position and the armrests are folded down.	Every **6** months	Visual inspection	N/A	Limit switches
Check that the footrest and carriage sensors are working. Ensure the unit stops when it contacts an obstacle.	Every **6** months	Visual inspection	N/A	Limit switches
Check if the battery works normally or not?	Every **6** months	Check with multimeter.	Every 1 year	Battery
Check if the charging copper rod is wearing or not? Make sure that the carriage can charge normally at the charging point.	Every **6** months	Visual inspection	When needed	Charging copper rod
Check if the transaxle works normally or not?	Every **6** months	Visual inspection	N/A	Carbon brush
Check if the gear is wearing or not?	Every **6** months	Visual inspection	N/A	Gear
Check the swaying degree of carriage, and inspect the roller to evaluate if the the gap between the roller and rack is too large due to wearing or not? Make sure the roller which located on carriage works normally.	Every **6** months	Visual inspection	Regularly ask customers if they need to replace it every one year	Roller

Rail

Maintenance	Frequency	Method	Replacement cycle	Replacement part
Check if the appearance of rail is clean or not?	Every **6** months	Wiping	N/A	N/A
Check if the lubricating grease on the rack needs to be replenished?	Every **6** months	Apply lubricating grease	N/A	N/A
Check if the copper charging strip is wearing or not?	Every **6** months	Visual inspection	N/A	Copper charging strip
Check if the rack is wearing or not?	Every 6 months	Visual inspection	N/A	Rack
Check if the endpoint limiter is wearing or not ? Check if the endpoint limiter is misaligned or not?	Every **6** months	Visual inspection	When needed	Endpoint limiter
Check if the charging circuit is damaged or not?	Every **6** months	Visual inspection	N/A	N/A

8. Tool Kit

The service tools are shown in and list below.

Figure8-1 Tool Kit of Service

Item	Tool Name
1	Metric Hex L-Key Set
2	External Retaining-Ring Plier
3	Needle-nose Plier
4	Wire Cutter
5	17mm Combination Wrench
6	13mm Combination Wrench
7	10mm Combination Wrench
8	Slotted-head Screwdriver
9	Philips-head #2 Screwdriver
10	Philips-head #0 Screwdriver
11	Tape Rule
12	Multimeter

Table 4 Tool Kit