

Crest F/D

Service & Installation Manual

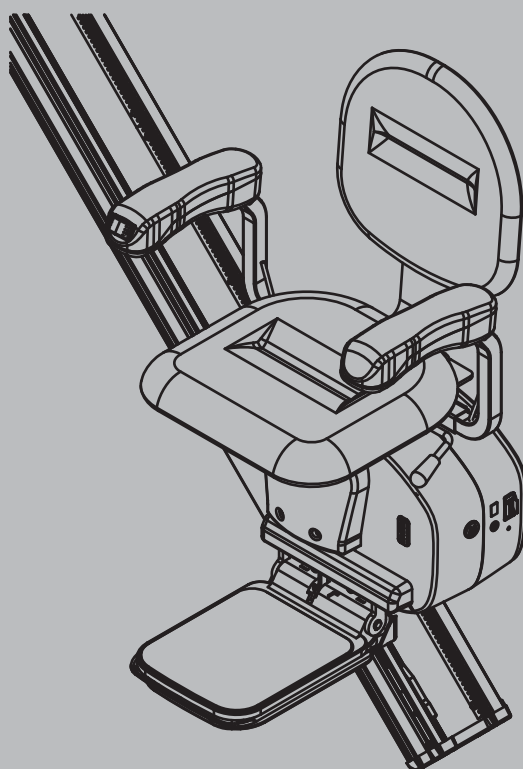


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1. Introduction

The Stairlift 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 charging points at the top and bottom. The batteries can be recharged automatically when the unit stops at these positions.

1.1.Intended Use

The 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 158kg (350lbs). 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 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

We warrant the Stairlift to be free from defective workmanship and materials for a period of 1 year from the date of purchase. The rechargeable battery is warranted for 90 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 us 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

Table 1-1 Specification of Stairlift

Technical Specs:	
Load Capacity	158kg (350 lbs)@45° or 136kg (300 lbs)@55°
Range of Stair Angle	25°~55° 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)
Maximum Travel	9.75m (32 ft)
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°C ~ 40°C (41°F ~ 104°F) (up to 95% non-condensing) (up to 2,000m in altitude)
Storage/ Transport Temperature (Humidity)	-10°C ~ 60°C (14°F ~ 140°F) (up to 95% non-condensing)

Lighting Requirements - The stairway where the lift is installed shall have a minimum of 50 lux lighting at each landing.

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.

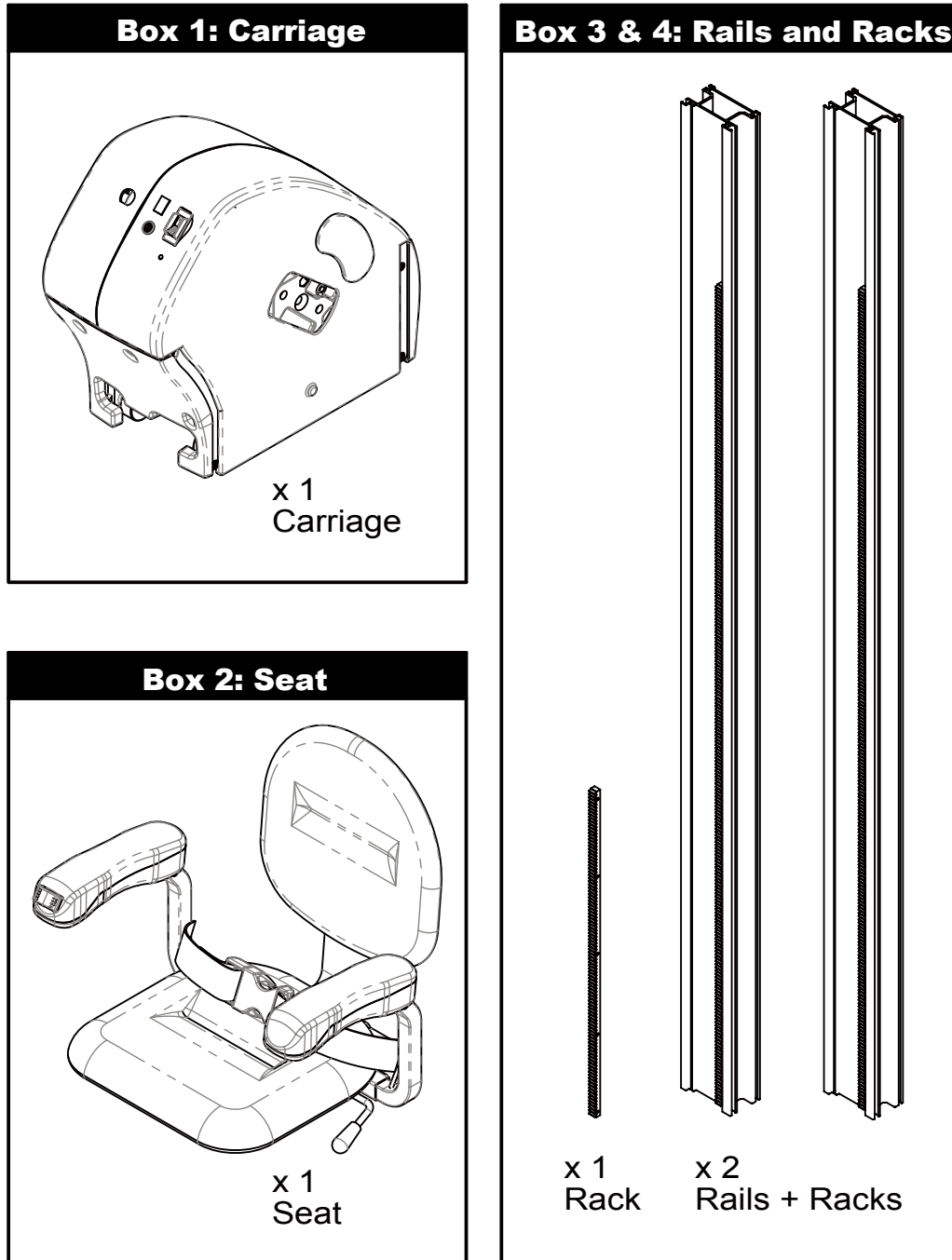


Figure 2-1 Unpacking Carriage, Seat, and Rails

Box 5: Seat post/Footrest and Accessories

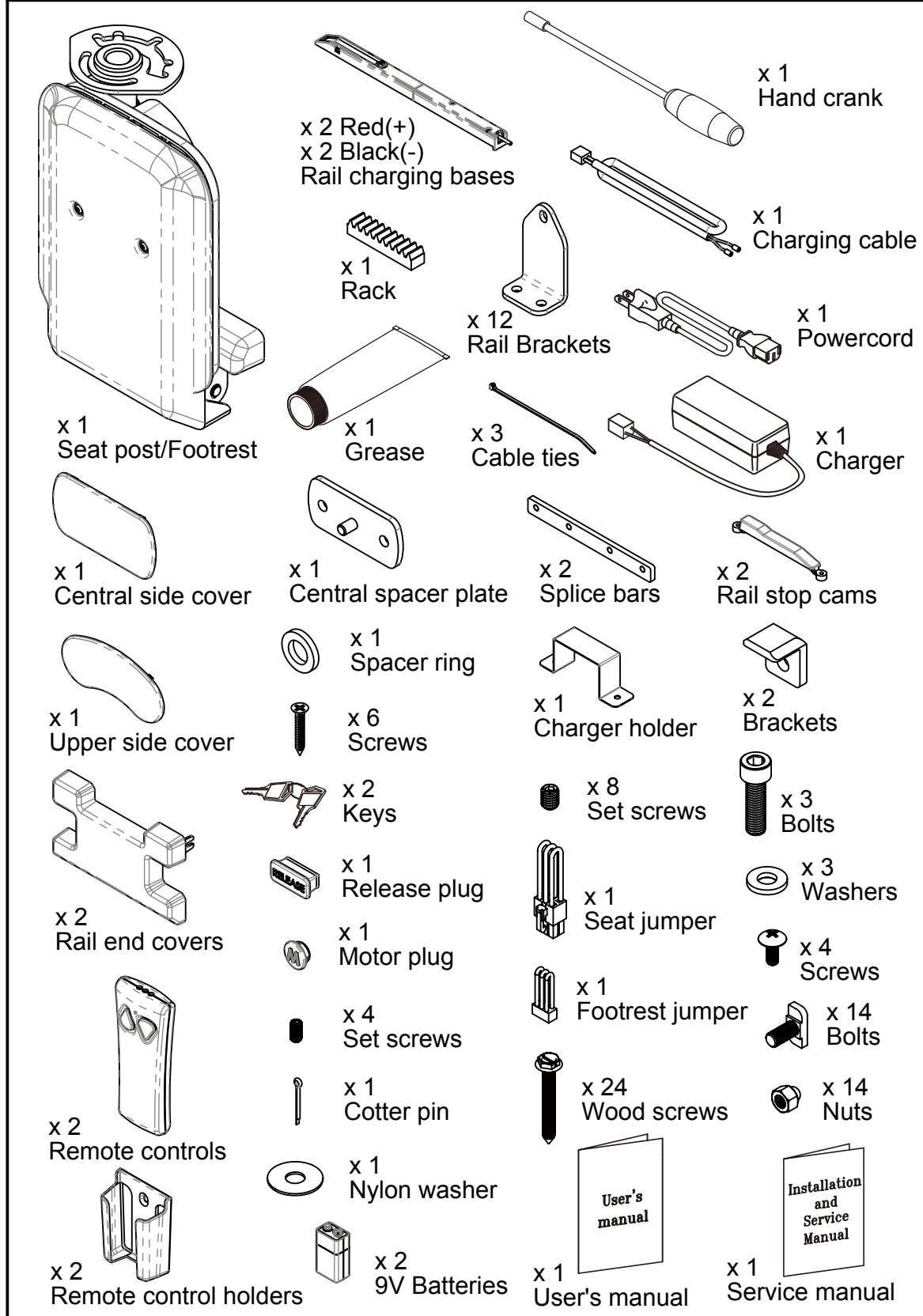


Figure 2-2 Unpacking Seat post/Footrest and Accessories

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)

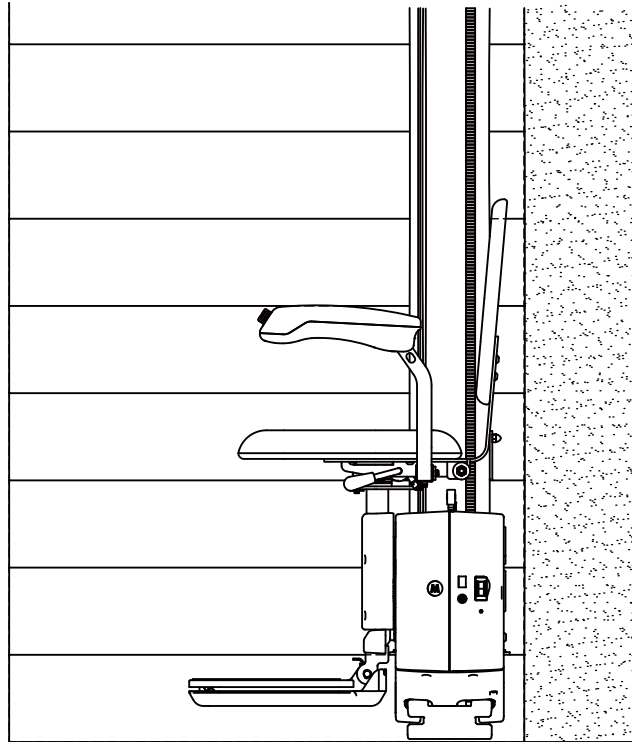


Figure 2-3 The rail is installed on the right side of stairs for the right-hand unit

2.3. Cut the rail to length as required

Always cut the rail from the top of the rail. The top side of rail is same for both left-hand and right-hand units (shown below). The steel rack is always on the right side of rail. Cut the aluminum rail separate from the steel rack.

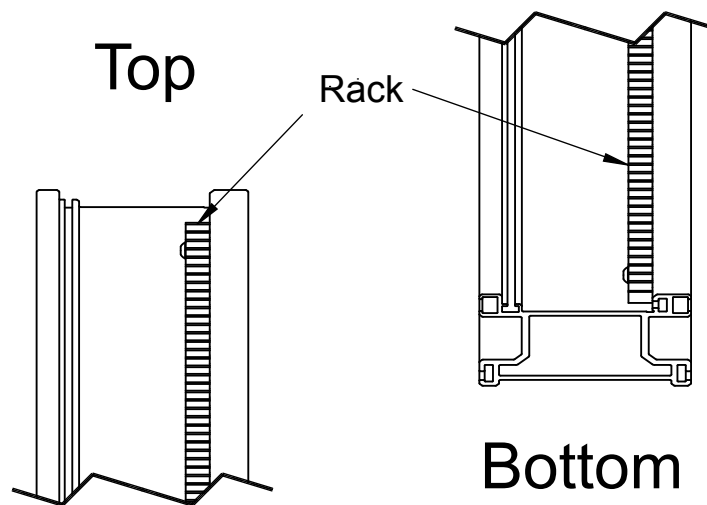


Figure 2-4 The top and bottom side of the rail

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.

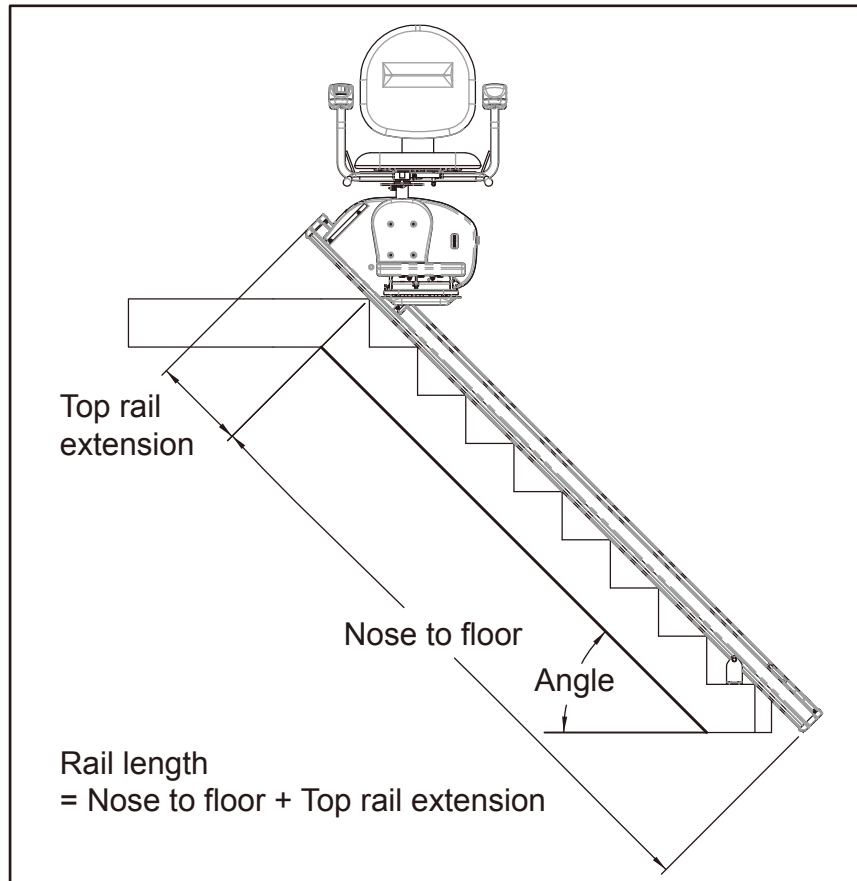


Figure 2-5 Stair measurement

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

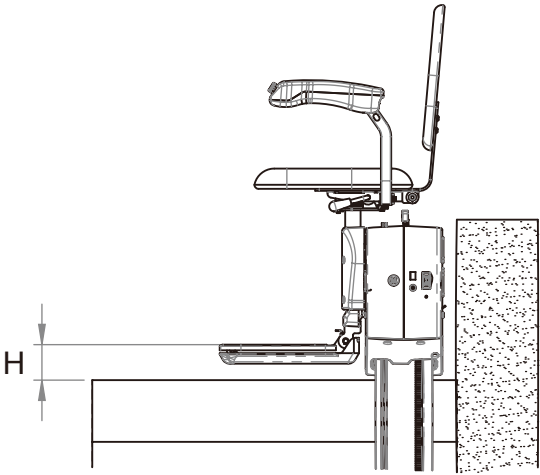
Always choose the angle larger than the measured one if the angle is between two angles on the table.

Note

Ensure all rail sections are long enough to have at least two sets of bracket bolting on the stairs before cutting. Adjust the length of rail sections if necessary.

Table 2-1 Top rail extension length

Angle of stairs	Top rail extension length	
	Height from Footrest to Landing (H)	
	H = 0	H = 50mm(2")
25°	145mm(5-5/8")	260mm(10-1/4")
30°	170mm(6-5/8")	270mm(10-5/8")
35°	190mm(7-1/2")	280mm(11")
40°	205mm(8-1/8")	285mm(11-1/4")
45°	225mm(8-7/8")	295mm(11-3/4")
50°	240mm(9-1/2")	305mm(12-1/8")
55°	255mm(10")	315mm(12-1/2")



The diagram illustrates a side view of a stair railing system. It shows a vertical post with a handrail and a footrest. A horizontal line labeled 'H' indicates the height from the footrest to the landing. The railing is shown in a cross-section view, with a textured wall or landing surface on the right.

2.4. Connect rail sections together (if required)

Place the rail sections end to end on the floor. Connect the rail sections using the splice bars in the accessory box. Slide the rails together. Tighten the screws to secure the rail sections together.

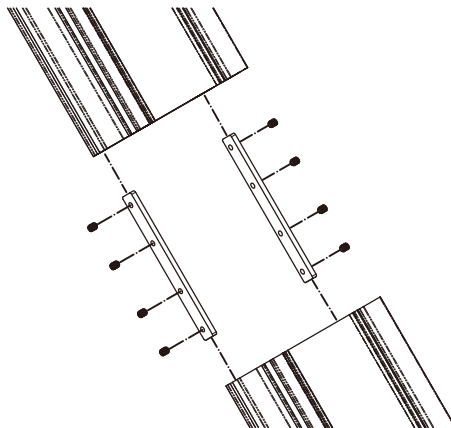


Figure 2-6 Connect rail sections together

Note

Insert T-bolts in the middle rail section before inserting the splice bars if you are connecting more than two rail sections.

2.5. Install Bottom Rail Accessories

Assemble the charging bases of the bottom rail section. The negative ports are always installed on the rack side. Tighten the set screws. Install the limit switch cam on the bottom rail.

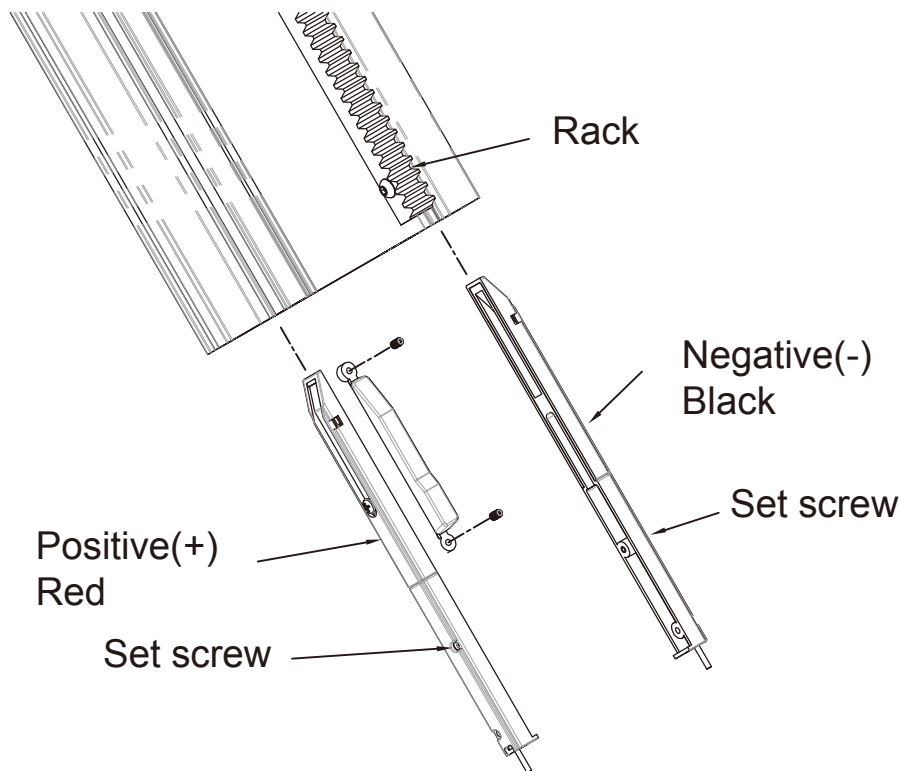


Figure 2-7 Install charging bases and limit switch cam

2.6. Install Rail Assembly on Stairs

Position the rail assembly on the nose of steps. Leave the bottom of rail about 3/8" (9mm) above the floor. The minimum distance between the wall and the rail is 2-3/8" (60mm). Slide the T-bolts into the lower slots of the rail. There should be six t-bolts on one rail section (three on each side). Place the mounting brackets at lowest and highest stairs the rail spanned. Mount the third one at the middle of the other two brackets. Ensure the distance between two mounting brackets is smaller than 40" (1016mm).

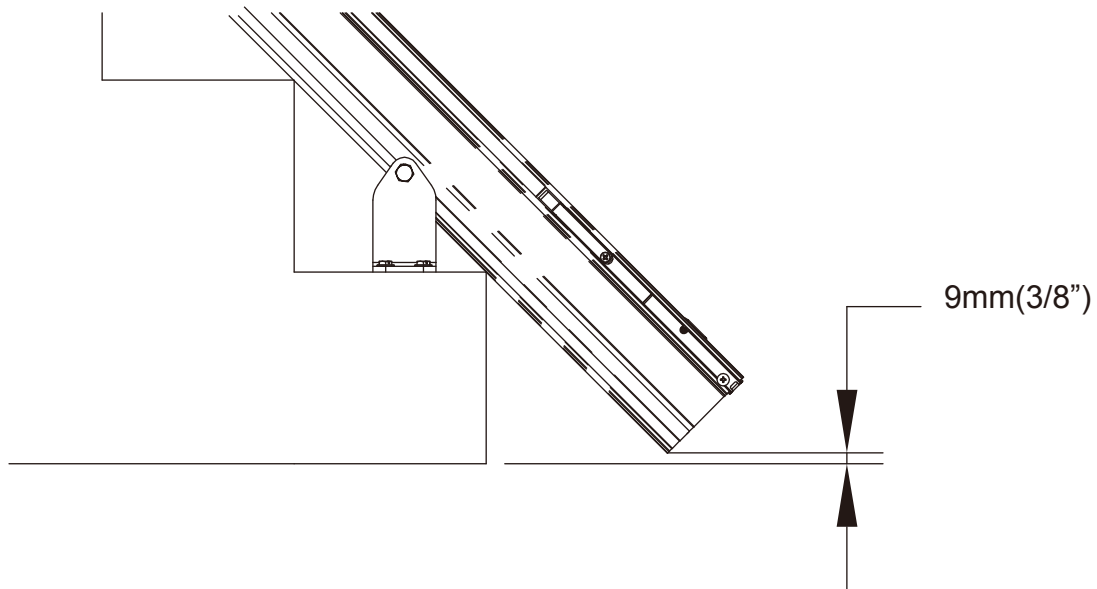


Figure 2-8 Rail bottom distance to the floor



Figure 2-9 Install mounting brackets

2.7. Install Racks on Rail Assembly

Loose the screws of the rack on the upper rail section and slide down to the lower rail section. Mesh the rack sections together tightly and tighten the screws to secure the rack. Fill up the entire of rail with rack. The steel rack need to be cut 1/2" shorter than the rail to allow for installation of top rail cap. Make sure that there are at least two fasteners for the top rack section before cutting the rack. Swap the position of the short rack sections with the long one to meet the requirement if necessary. Leave the top rack section uninstalled.

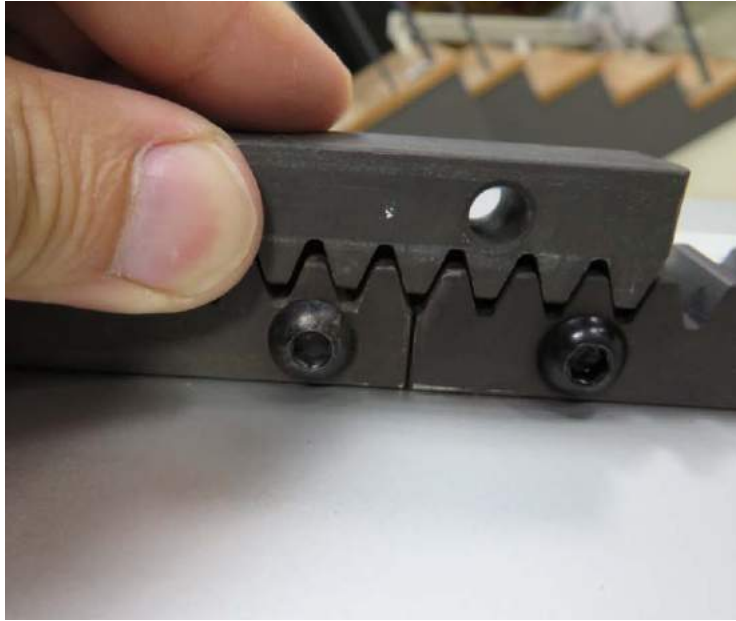


Figure 2-10 Mesh the rack sections

Note

Do not remove any of the screws on the racks once the rack is installed. The nuts in the slot will fall down and cannot be tighten again. You will have to remove the complete rack to reinstall the rack screw again if the screw has been removed.

2.8. Install Carriage on Rail

2.8.1. Slide Carriage onto Rail

Remove top rack section, limit switch cam, and charging bases on the top rail section if they have been installed. 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.

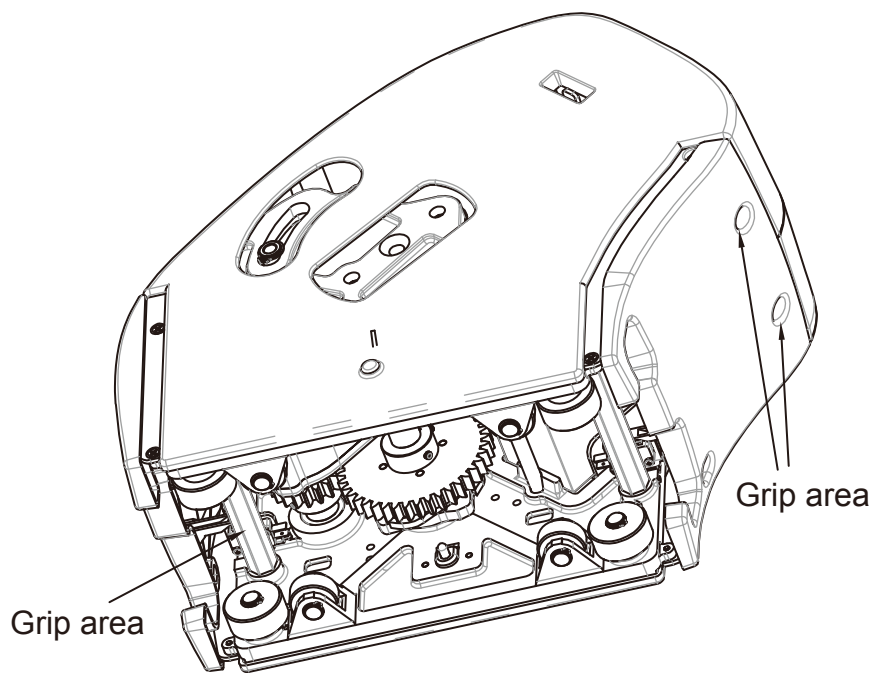


Figure 2-11 Carriage gripping area

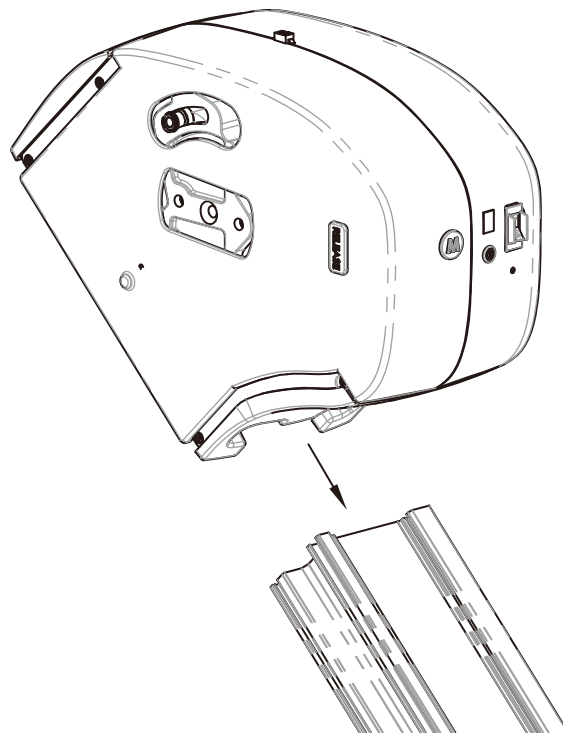


Figure 2-12 Carriage installing direction

2.8.2. Engage Carriage Gear with Rack on Rail

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

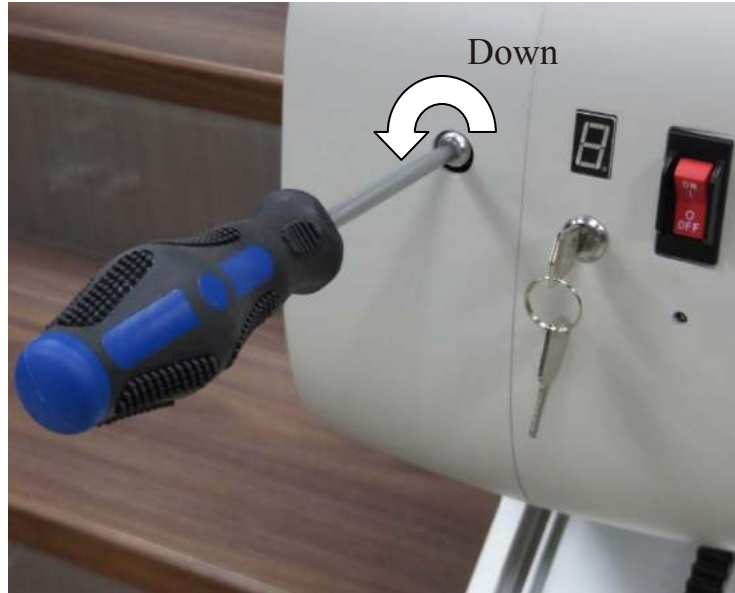


Figure 2-13 Drive carriage down by hand crank

2.8.3. Move Carriage Down by Remote Controller

Plug the short links of seat and footrest into the seat connector and the footrest cable. Use the remote controller to drive the carriage down to install the top section of steel rack.

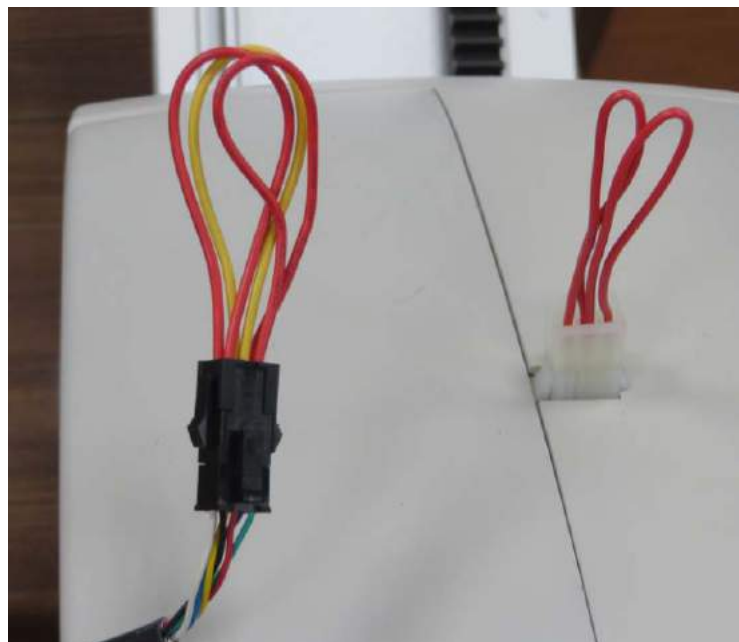


Figure 2-14 Plug short links on carriage

2.8.4. Install Accessories on Top Rail Section

Assemble the charging bases 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.

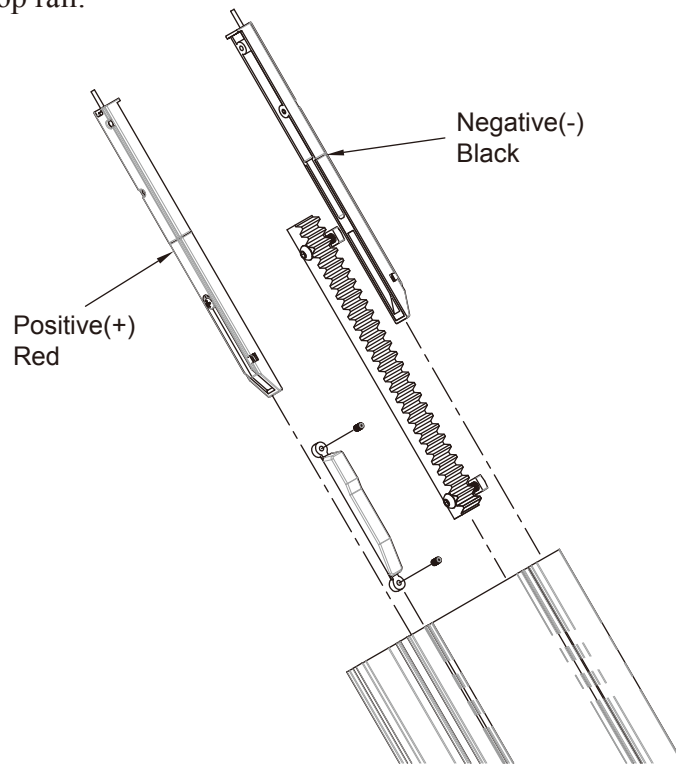


Figure 2-15 Install accessories on top rail section

2.8.5. 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.

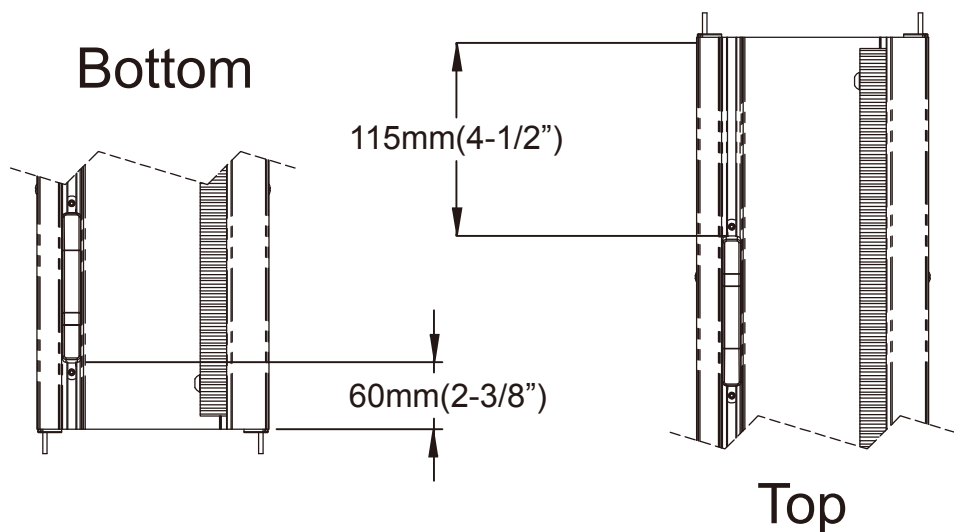


Figure 2-16 Location of limit switch cams

2.9. Install Footrest Assembly

2.9.1. Check Handing of Footrest

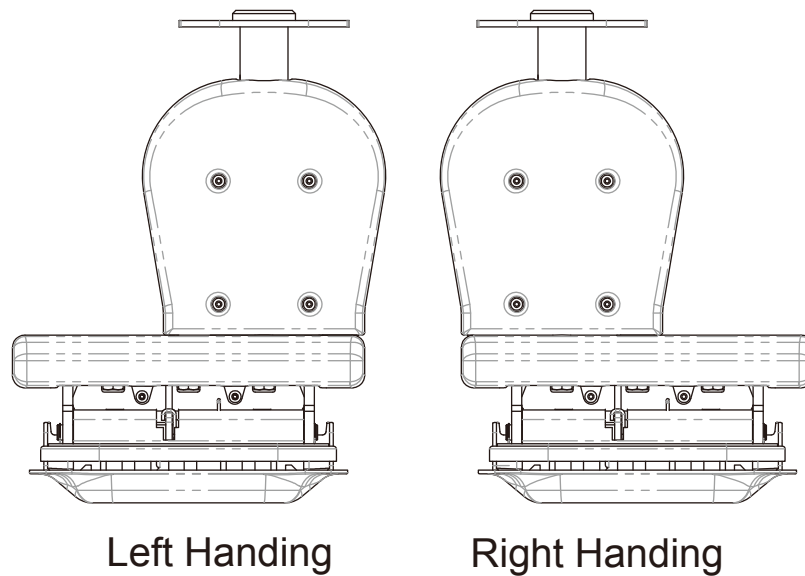


Figure 2-17 Footrest Handing

2.9.2. Switch Handing of Footrest (if required)

Remove covers on the footrest. Loosen two nuts and then move the bottom part to the correct side. Tighten the nuts.

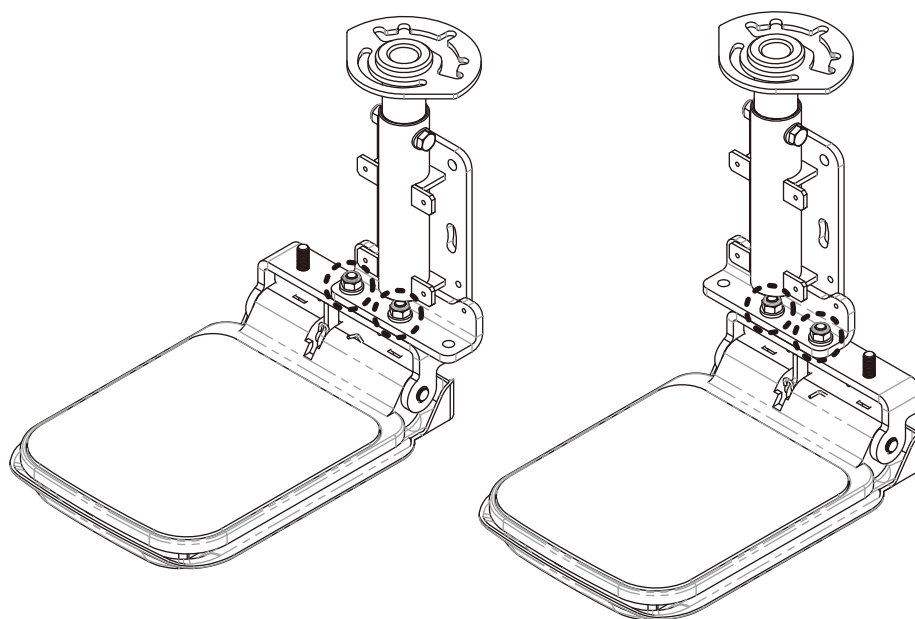


Figure 2-18 Switch footrest handing

2.9.3. Assemble Footrest

Install the central spacer plate with the welding side toward the carriage. Assemble the footrest and spacer ring. Make sure the C-ring is not caught between the spacer ring and carriage side plate. Adjust the level and tighten with bolts and washers.

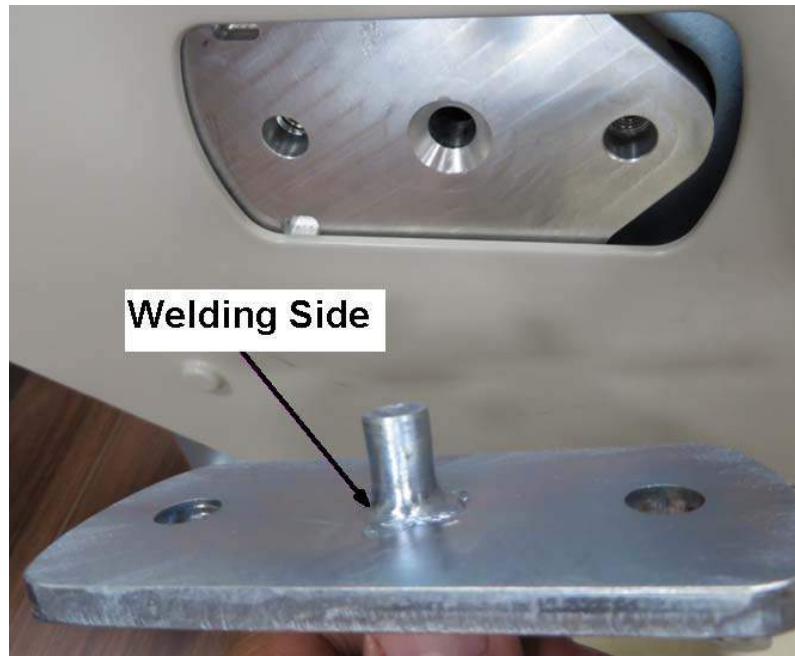


Figure 2-19 Central spacer plate

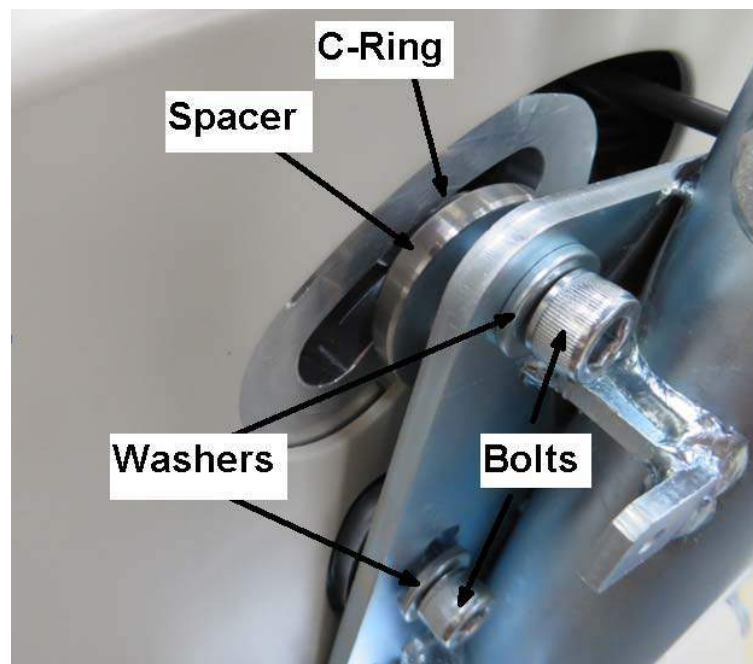


Figure 2-20 Footrest installation

2.9.4. 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.



Figure 2-21 Footrest connector

2.10. Install Seat Assembly

2.10.1. Check Handing of Seat

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

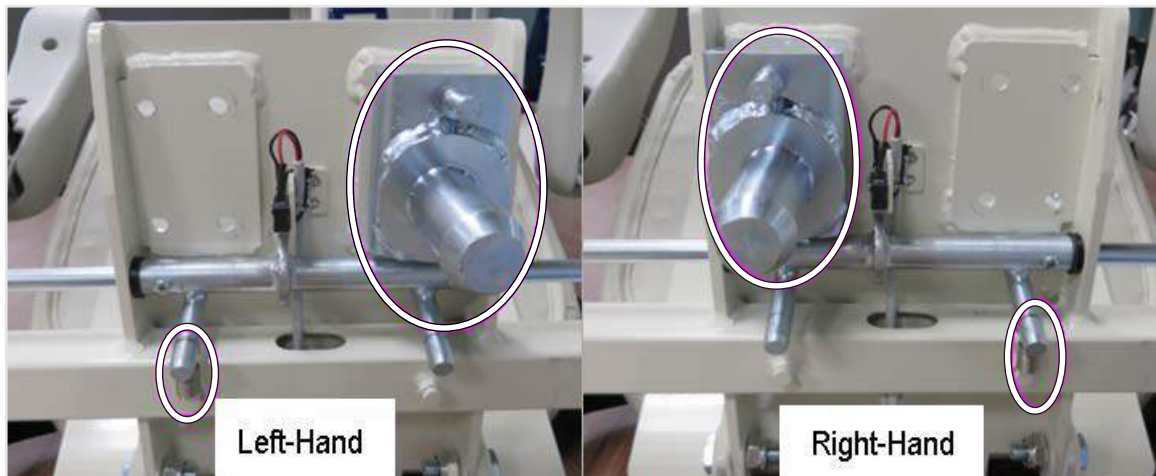


Figure 2-22 Seat handing

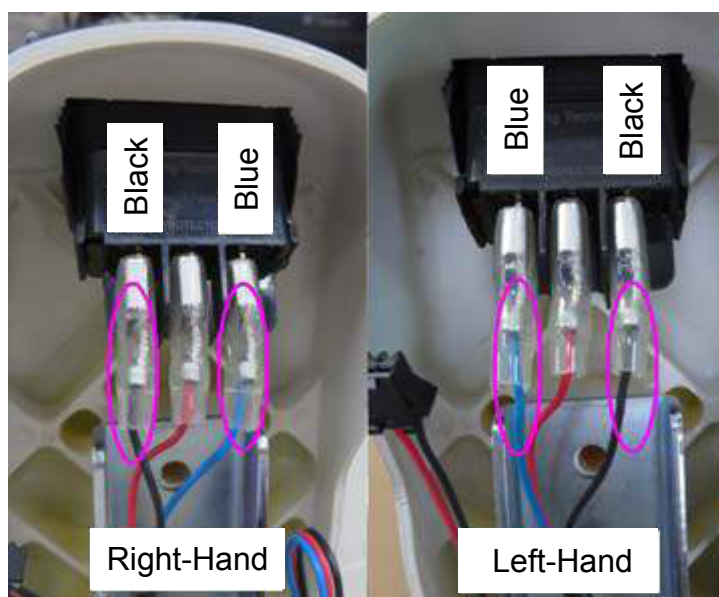


Figure 2-23 Rocker switch wiring for different handing

2.10.2. Change Handing of Armrest (if required)

The armrest safety switch must be installed on the downstairs side. Change the armrest safety switch if required. Unscrew the four screws under the armrests. Open the armrest bottom covers. Change the plugs and switch to the mirror side. Close the armrest covers and fasten the screws.



Figure 2-24 Armrest bottom cover screws



Figure 2-25 Armrest safety switch and plugs

2.10.3. 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.



Figure 2-26 Armrest width adjustment

2.10.4. 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.

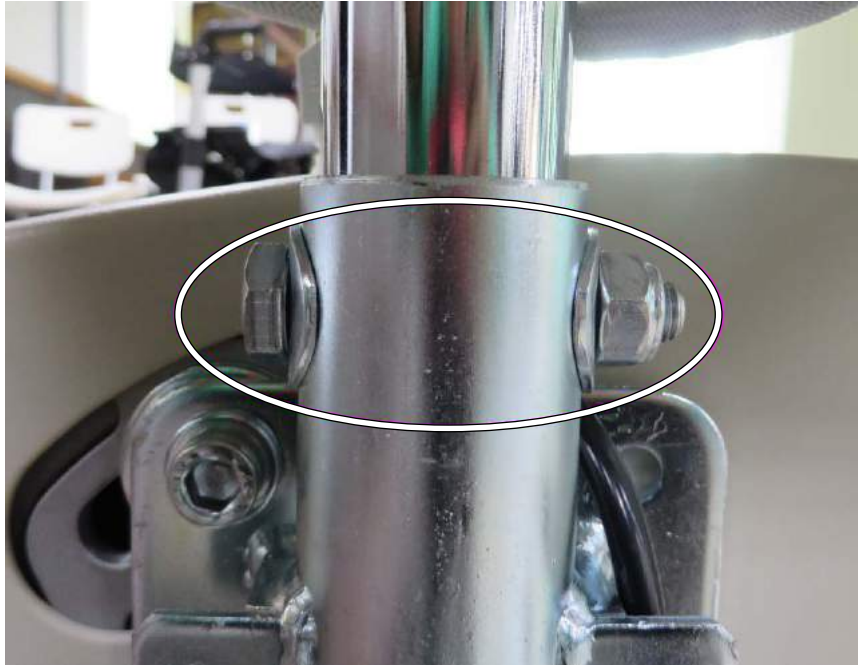


Figure 2-27 Seat height adjustment

2.10.5. 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.



Figure 2-28 Seat cable

2.10.6. 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.

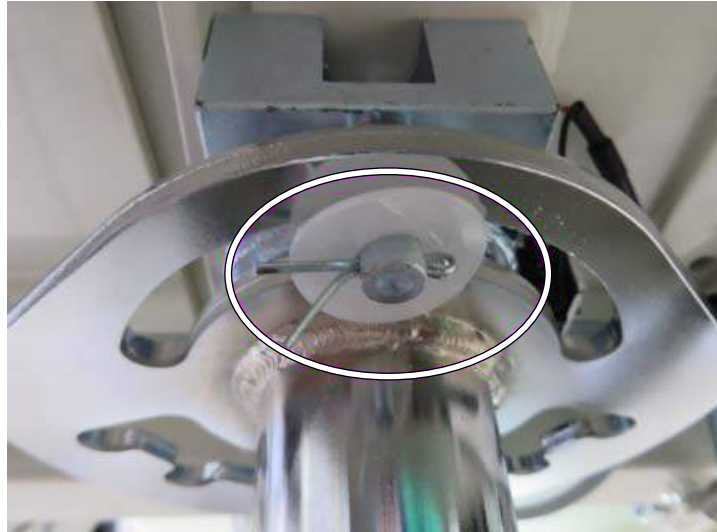


Figure 2-29 Install pin and nylon washer

2.11. Install Covers

2.11.1. Install Seat Post Cover

Assemble the cover with four screws.



Figure 2-30 Install seat post cover

2.11.2. Install Carriage Side Covers

Install the side covers on the opposite side of footrest.



Figure 2-31 Install carriage side covers

2.11.3. Install Carriage Rubber Plugs

Install the side covers on the opposite side of footrest.

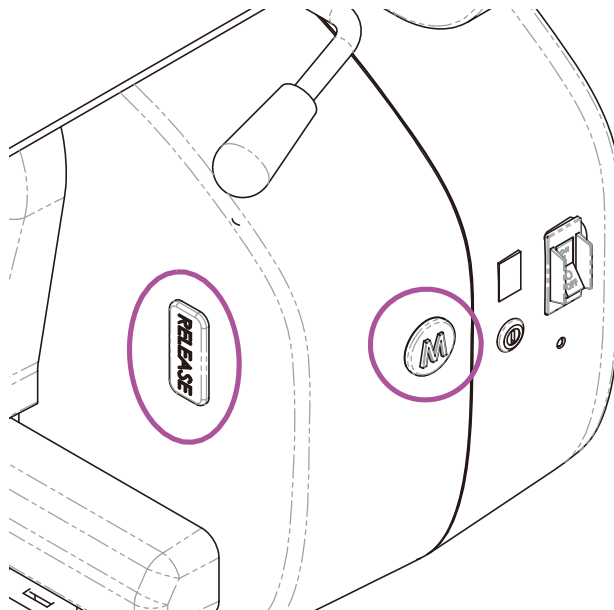


Figure 2-32 Carriage rubber plugs

2.12. Install Charger

Determine the charger location (upstairs or downstairs). Insert the wires from the top of the rail. The yellow connector need to be at the same location as the charger. Plug the charging wires into the charging bases.

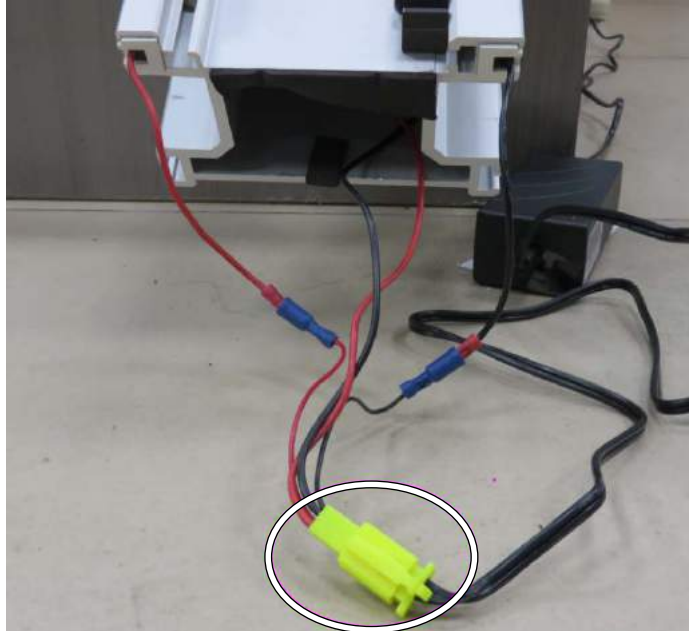


Figure 2-33 Charger and connectors

2.13. Install Mechanical Stop

Install mechanical stops at the top of rail.

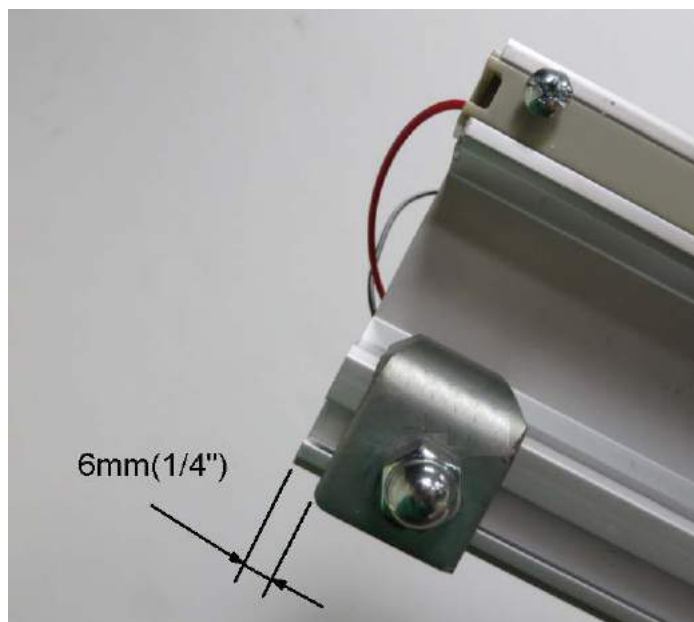


Figure 2-34 Mechanical stops

2.14. Assemble Rail End Covers

Insert the wires into the cavity of rail carefully. Assemble the end covers on top and bottom of rail.

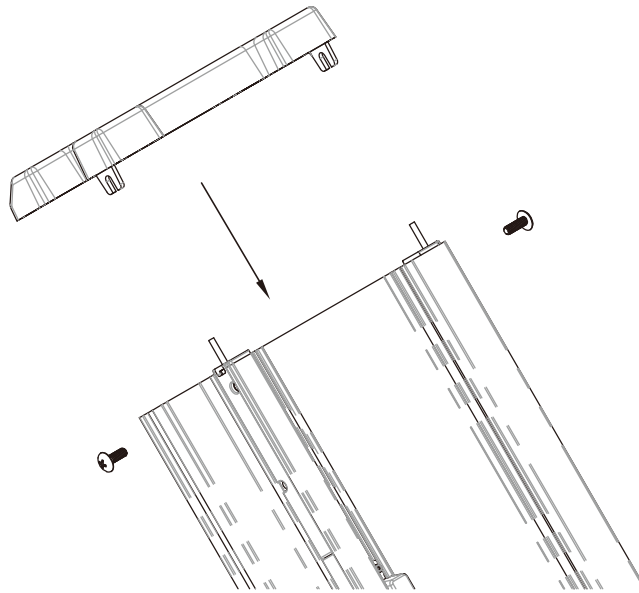


Figure 2-35 Assemble rail end cover

2.15. 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.

2.16. 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.

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 wiring of rocker switch if the direction is reversed. Refer to Figure 2-23 for correct wiring. 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

3.2.3. Armrest Safety Switch



Press the rocker switch on the armrest. Lift the armrest at the downstairs side. The stairlift should stop if the armrest was lifted. The status display indicates . Check the switch inside the armrest if there is any problem. Refer to Figure 2-25 for correct wiring.



Figure 3-2 Armrest safety switch

3.2.4. Emergency Stop (Optional)

Press the rocker switch on the armrest. Press the emergency stop button. The stairlift should stop if the button was pressed. The status display indicates . Check the wiring inside the armrest if there is any problem.

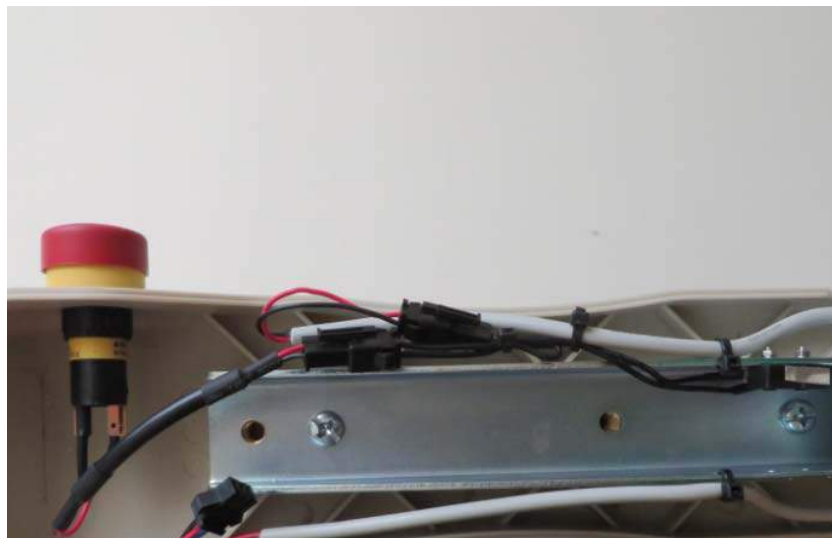


Figure 3-3 Emergency stop button

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 3-4. 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 **5**. Check the footrest connector if the direction is reversed.



Figure 3-4 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 **5**.

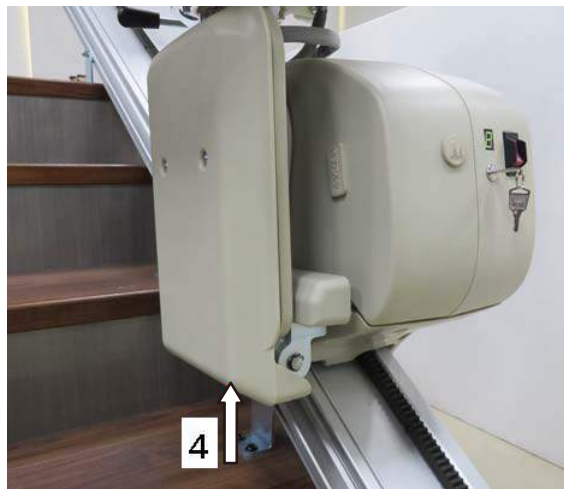


Figure 3-5 Footrest test direction at folding

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 **5**.



Figure 3-6 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 it reaches the top limit and **5** for bottom limit.

3.4.3. Charging

Move the stairlift up or down until it reached the limit switches and stops. The status display indicates **2** 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. Follow the dismantling procedure in Figure 4-1 to replace the components.

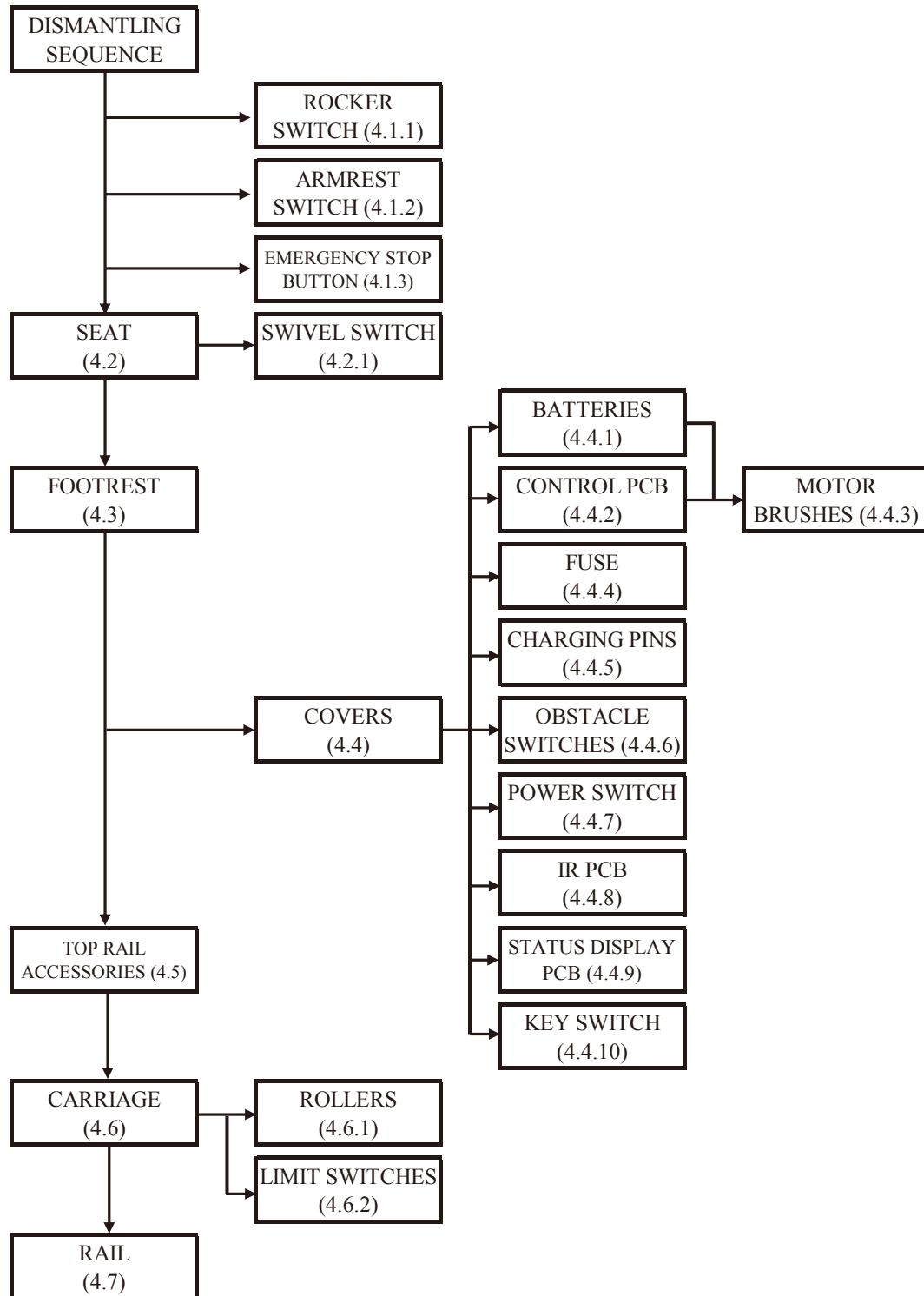


Figure 4-1 Dismantling sequence

4.1. Armrest Components Replacement

4.1.1. Rocker Switch Replacement

- i. Loosen the 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.

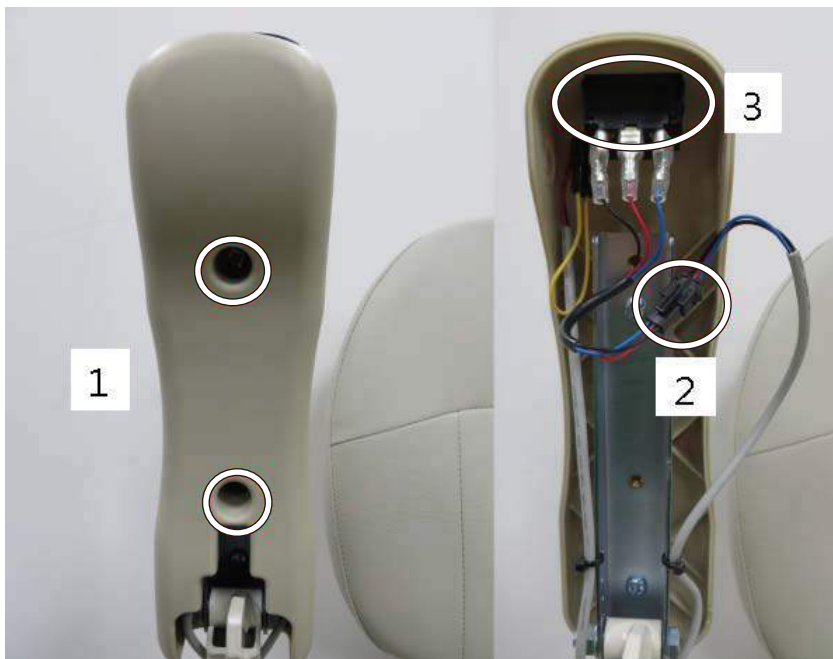


Figure 4-2 Rocker switch replacement

4.1.2. Armrest Switch Replacement

- i. Loosen the two screws from the bottom of the armrest and take the cover apart from the armrest.
- ii. Disconnect the two connectors of armrest switch and cut the cable ties.
- iii. Loosen the two screws on the switch.
- iv. Install the new switch and tighten two screws. Adjust the switch to ensure the switch is working properly.
- v. Snap the rocker switch in the top armrest cover.
- vi. Reconnect the connectors and use cable tie to fix the cables.
- vii. Assemble the bottom cover. Be careful not to trap the cables while assembling this cover.

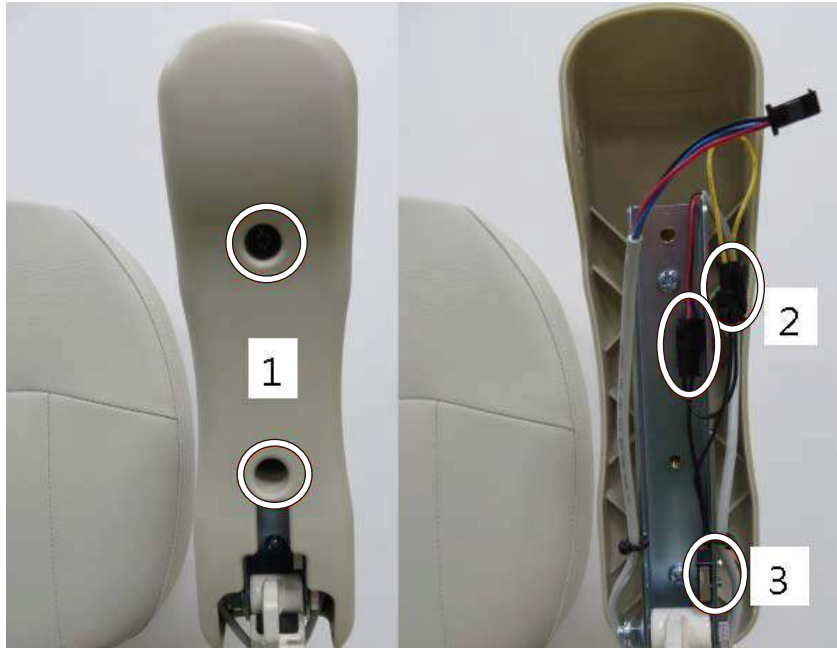


Figure 4-3 Armrest switch replacement

4.1.3. Emergency Stop Button Replacement (optional)

- i. Loosen the two screws from the bottom of the armrest and take the cover apart from the armrest.
- ii. Disconnect the connector of emergency stop button.
- iii. Loosen the nut on the button.
- iv. Install the new emergency stop button and tighten the nut.
- v. Reconnect the connector and assemble the bottom cover. Be careful not to trap the cables while assembling this cover.

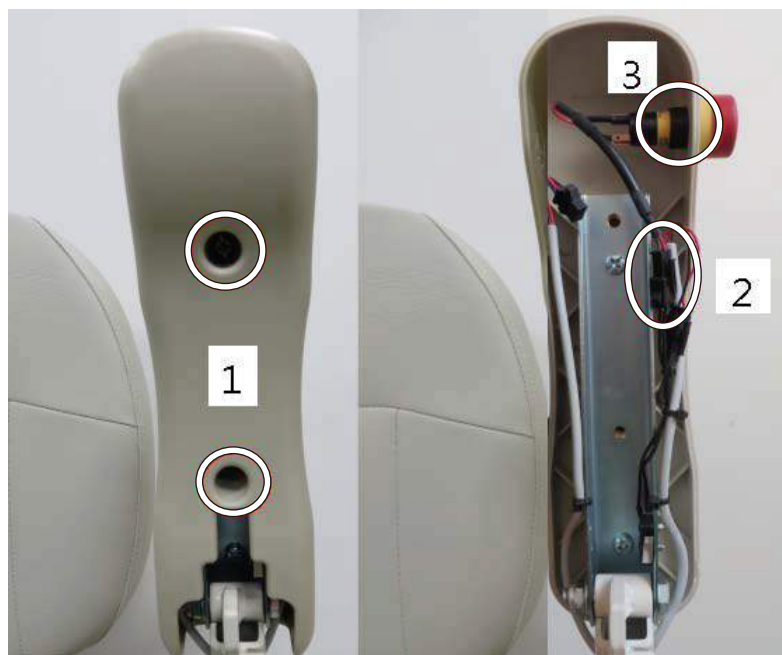


Figure 4-4 Emergency stop button replacement

4.2. Seat Removal

Remove the pin and the nylon washer under the seat. Disconnect the seat cable from the carriage. Pull the swivel handle and wiggle the seat to pull the seat out from the seat post.

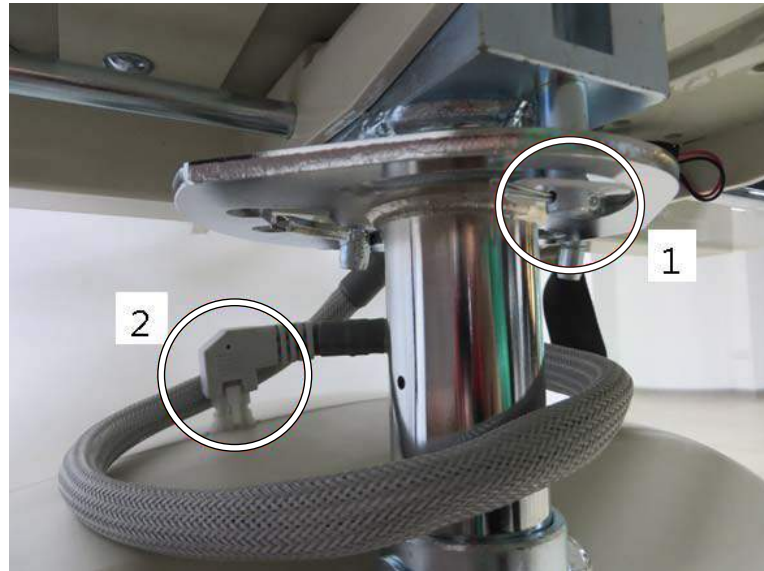


Figure 4-5 Seat removal

4.2.1. Swivel Switch Replacement

- i. Loosen the two screws from the bottom of the seat.
- ii. Disconnect the connector and cut the cable tie.
- iii. Loosen 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.

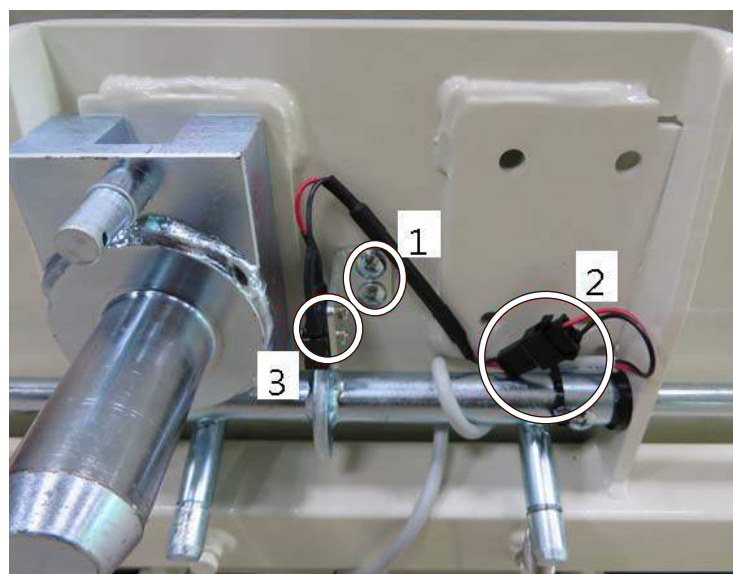


Figure 4-6 Swivel switch replacement

4.3. Footrest Removal

4.3.1. Top Cover Removal

- i. Loosen four screws from the footrest.
- ii. Remove the top cover.

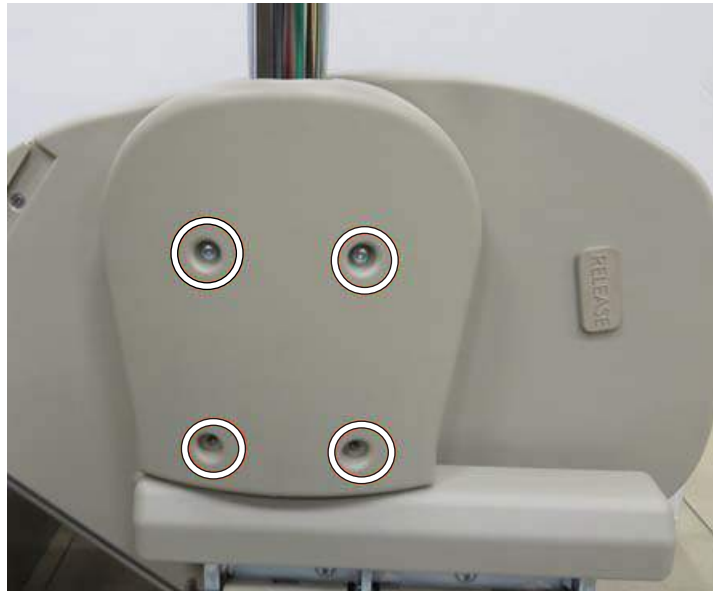


Figure 4-7 Top cover removal

4.3.2. Footrest and Seat Post Removal

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

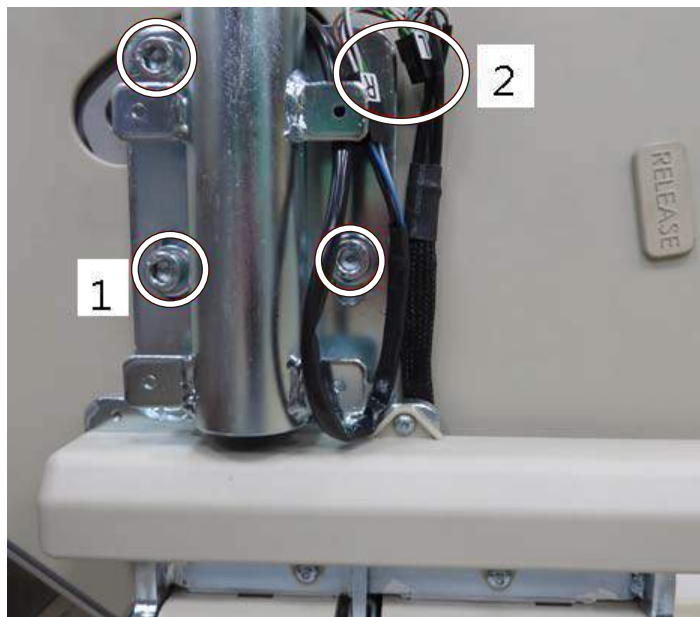


Figure 4-8 Footrest and seat post removal

4.3.3. Footrest Safety Cover Removal

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



Figure 4-9 Footrest cover removal

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. Loosen two screws on the switch and disconnect the terminals to replace the broken switch.

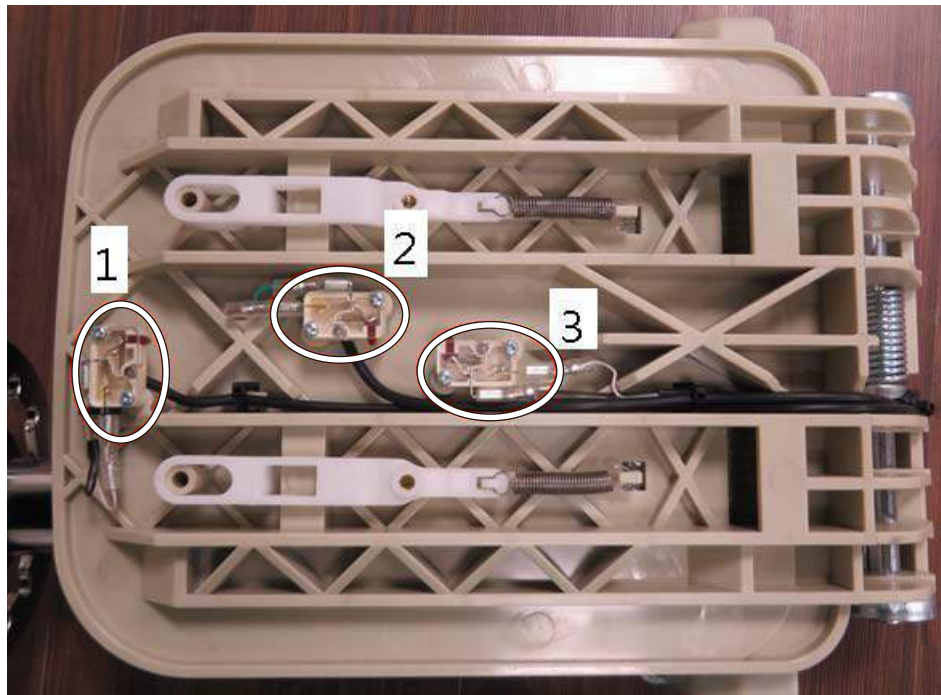


Figure 4-10 Footrest obstacle detecting switches

4.3.5. Footrest Parts Removal

- i. Remove C-ring on the shaft.
- ii. Cut off the cable tie.
- iii. Push the shaft out to separate the parts.

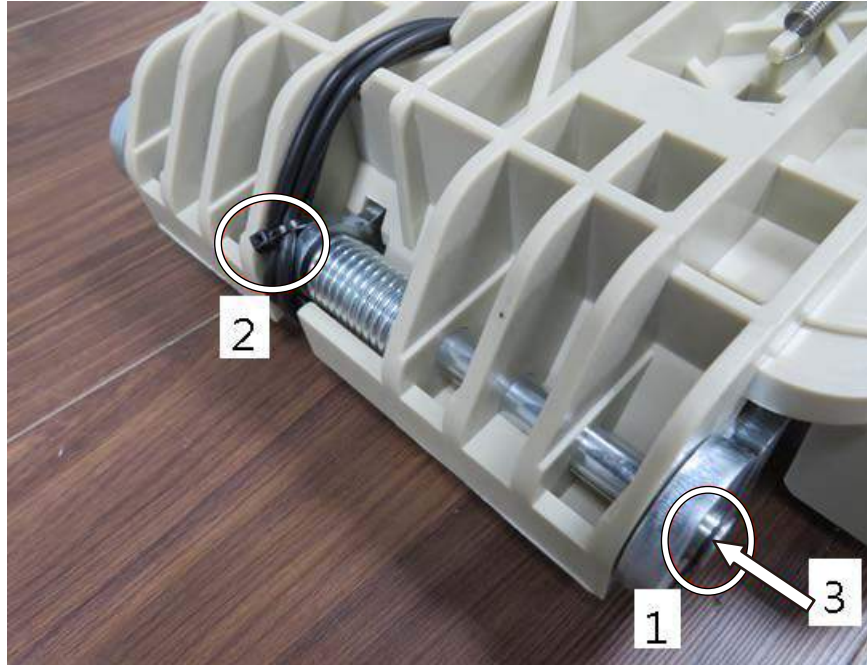


Figure 4-11 Footrest parts removal

- iv. Rotate the spring to remove it from the assembly..

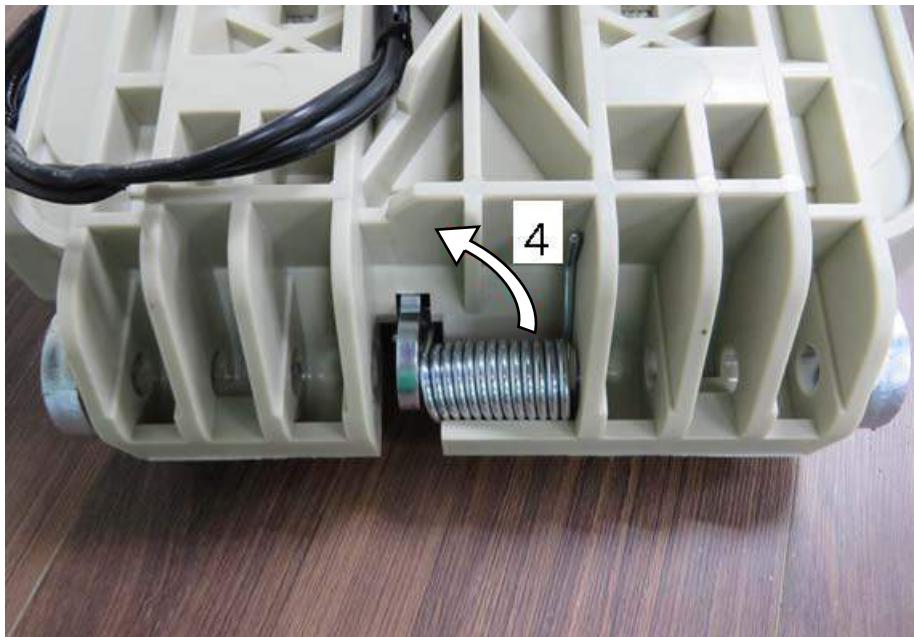


Figure 4-12 Torsion spring removal

4.3.6. Footrest Parts Assembly

- i. Insert the hook of spring in the slot. Rotate the spring to fit in the footplate.

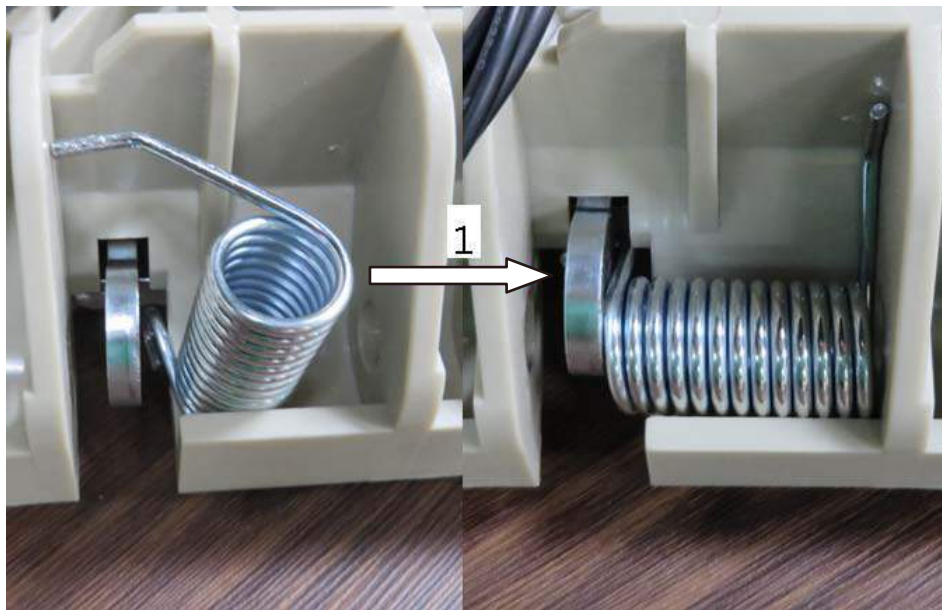


Figure 4-13 Torsion spring assembly

- ii. Push the shaft through the footplate and the spring. Use a cable tie to fix the footrest cable.

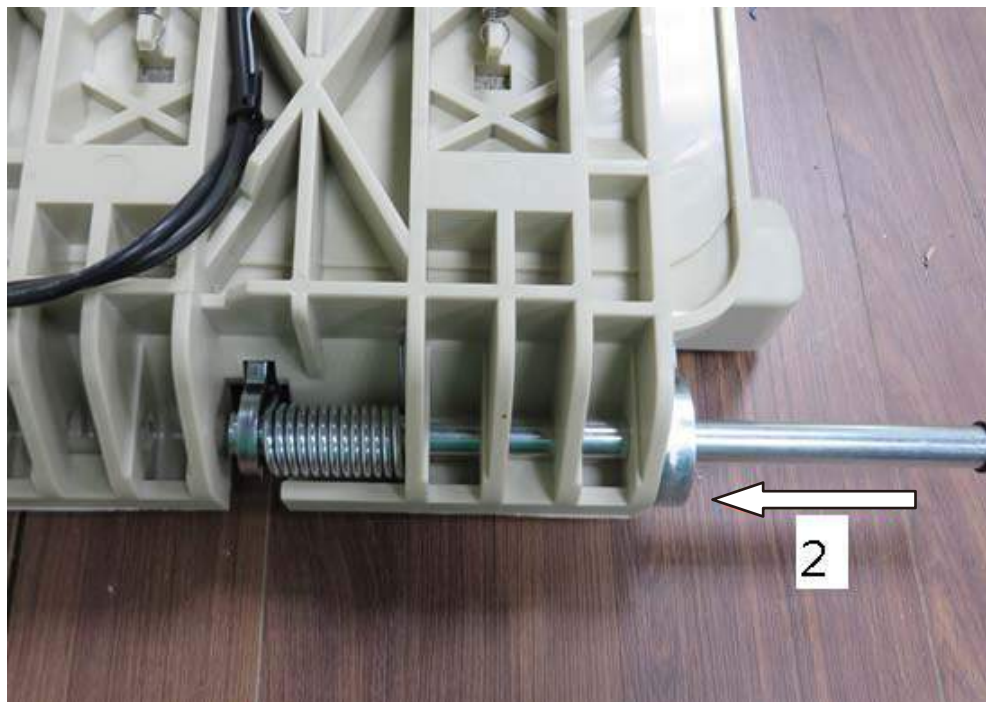


Figure 4-14 Footplate shaft assembly

- iii. Put the footrest safety cover on the footplate. Push the footrest safety cover to the left against the footplate.
- iv. Push the footrest safety cover down to lock it.

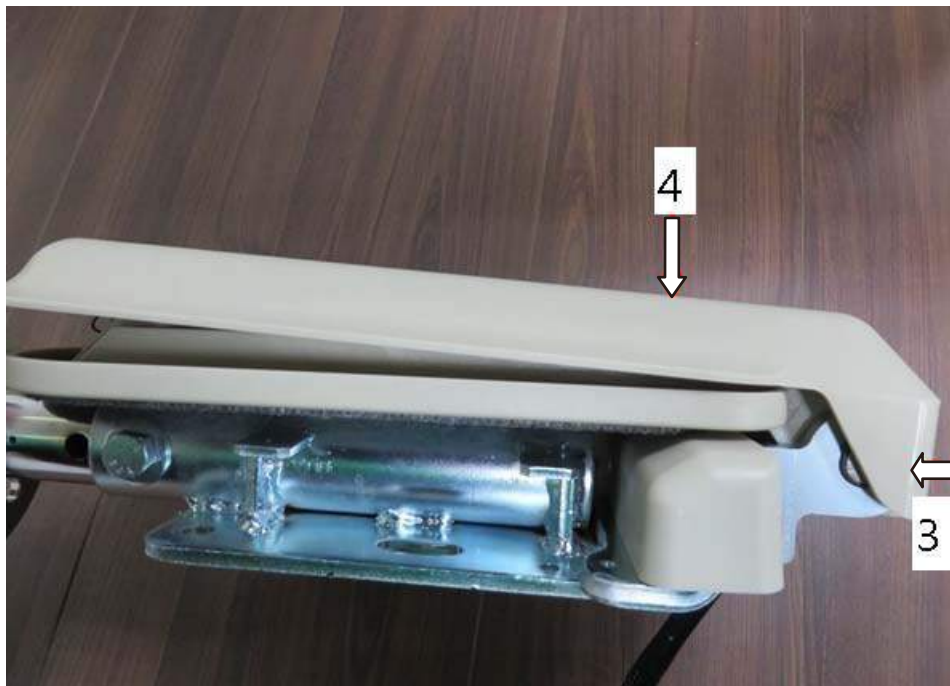


Figure 4-15 Footrest parts removal

- v. Push the footrest safety cover to the right to align with the nuts.
- vi. Tighten washers and screws. Ensure that the footrest safety cover can move freely on the footplate.



Figure 4-16 Tighten footrest safety cover screws

4.4. Covers Removal

- i. Loosen the three screws on the top obstacle sensor cover.
- ii. Disconnect the IR PCB cable and remove the top obstacle sensor cover.

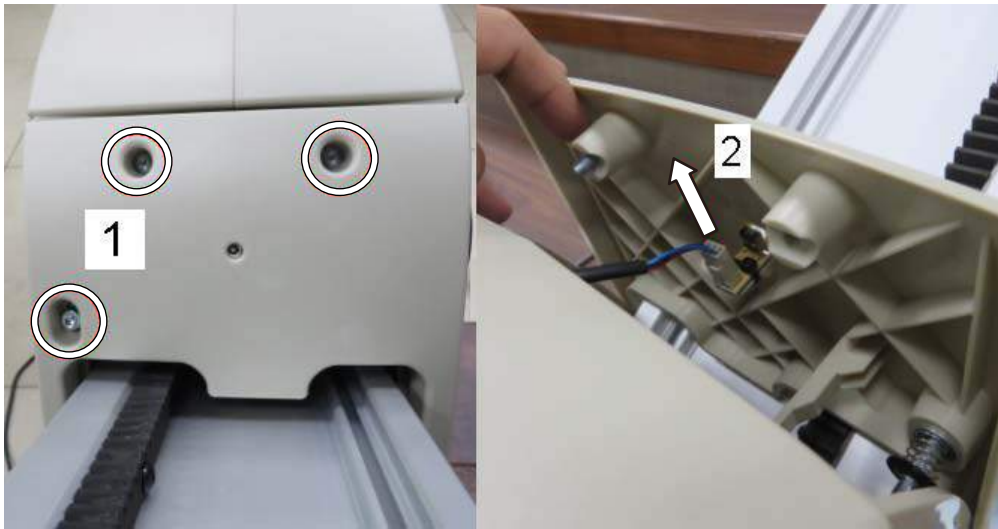


Figure 4-17 Top obstacle sensor cover removal

- iii. Loosen the three screws on the bottom obstacle sensor cover and remove it.

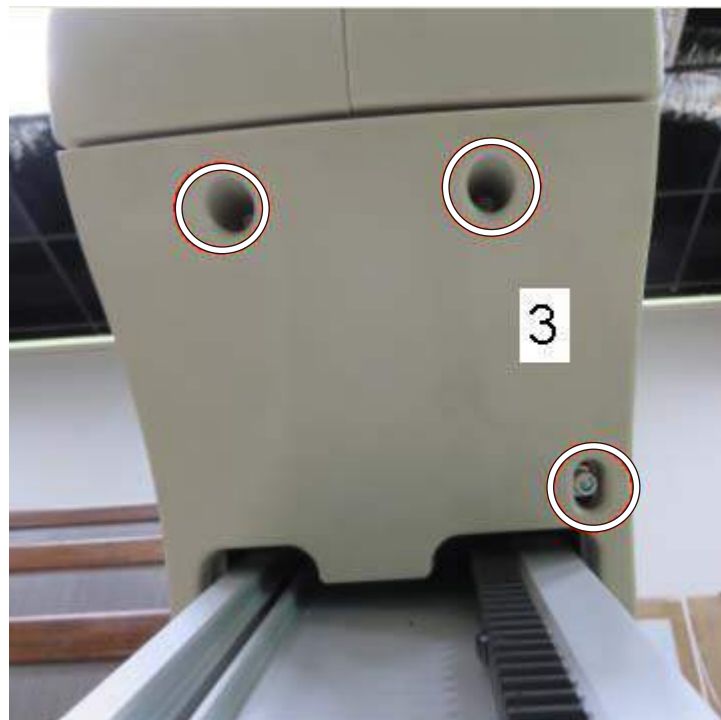


Figure 4-18 Bottom obstacle sensor cover removal

- iv. Loosen eight screws on left and right side covers.

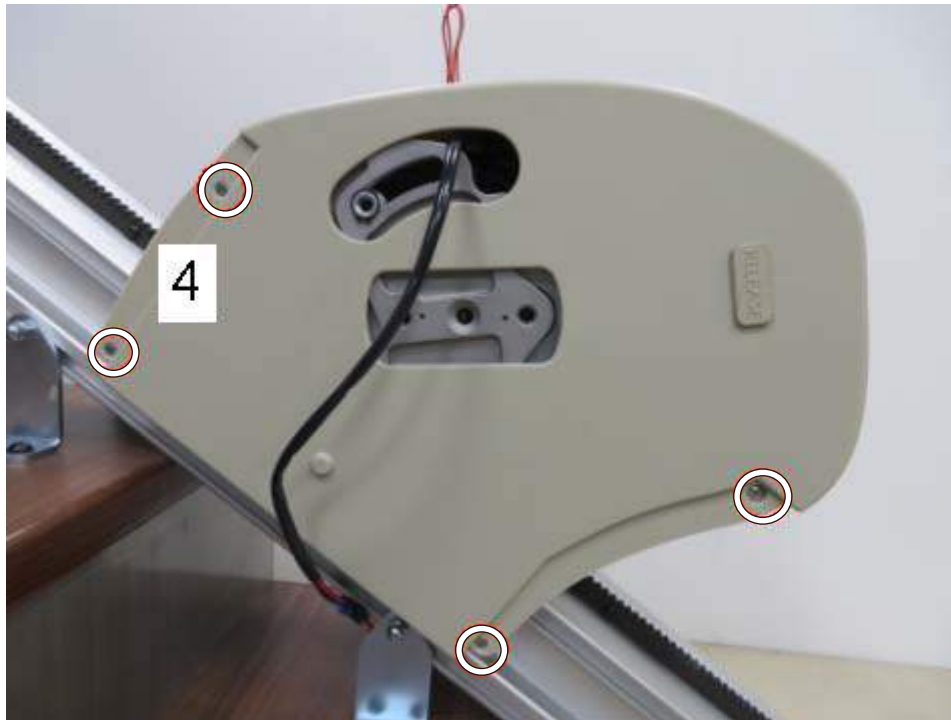


Figure 4-19 Loose screws on the side cover

- v. Push the left side cover down to release the hook and remove the left side cover.

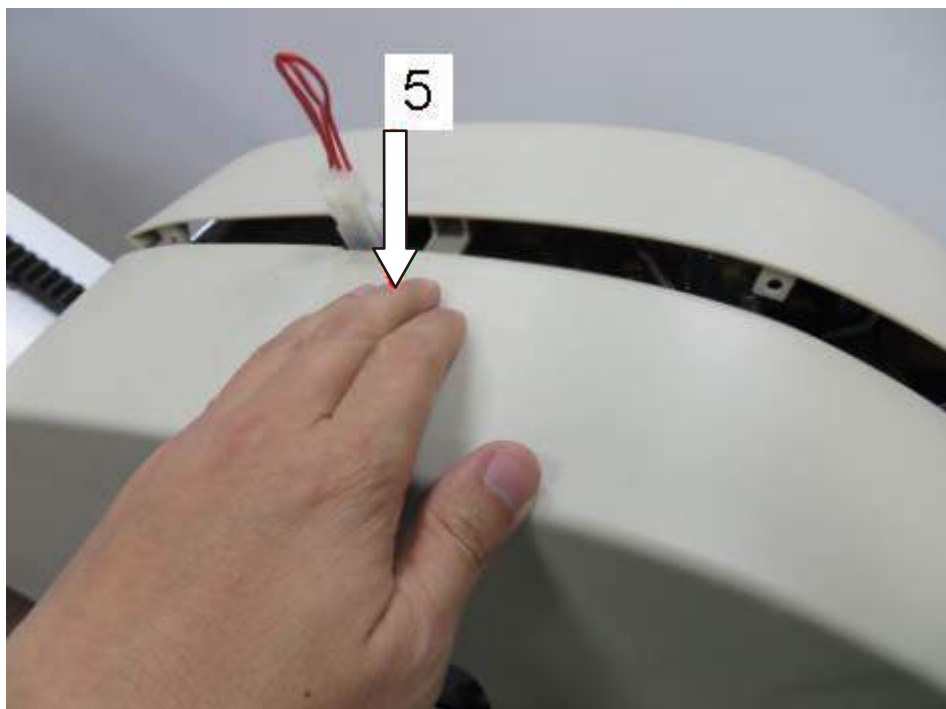


Figure 4-20 Release the hook of side covers

- vi. Disconnect the cables from the control PCB. Remove the right side cover.

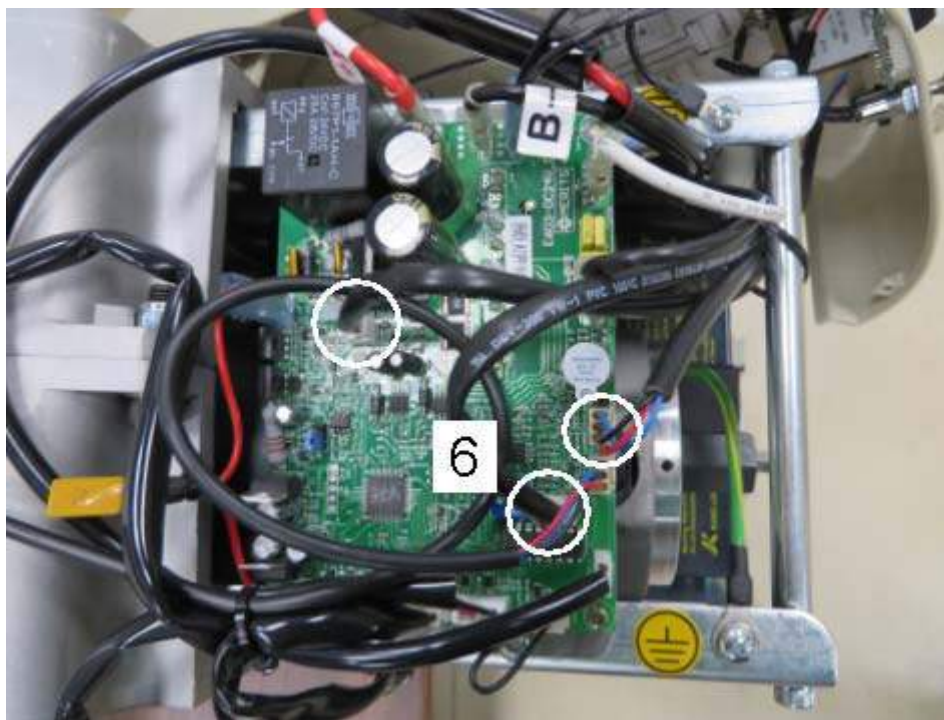


Figure 4-21 Disconnect cables

4.4.1. Batteries Replacement

- i. Disconnect the terminals of battery cable.

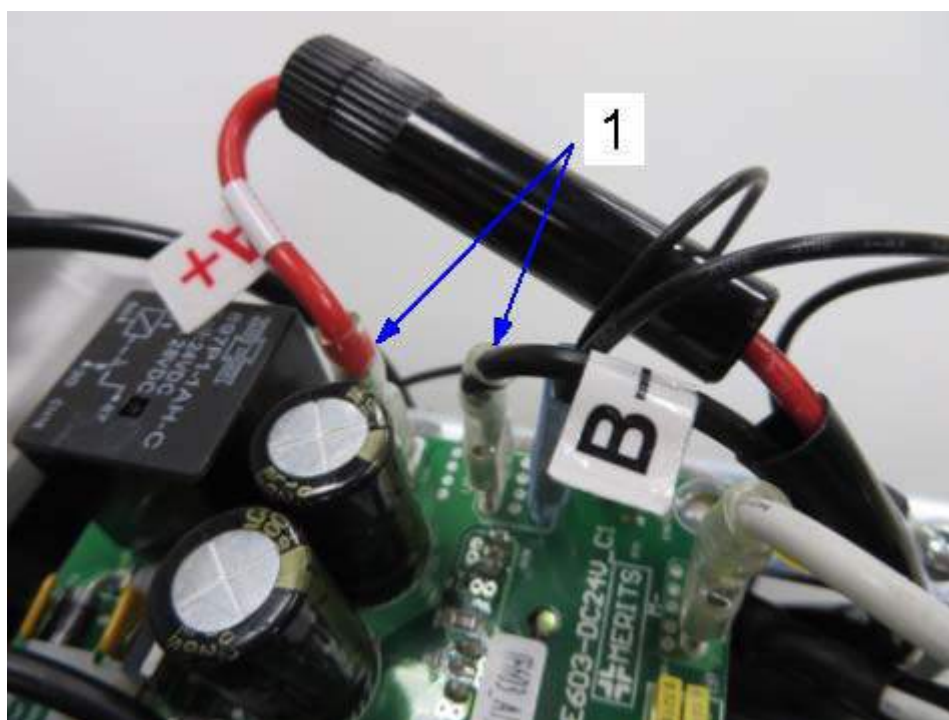


Figure 4-22 Disconnect battery cable

ii. Loosen the battery strap.

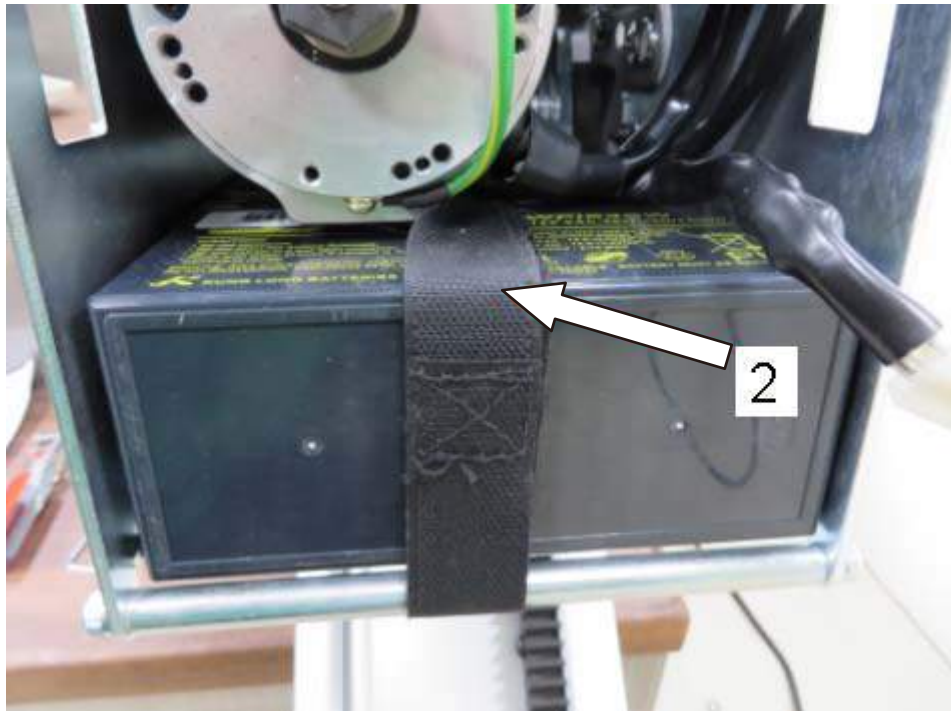


Figure 4-23 Loosen the battery strap

iii. Slide the batteries out.



Figure 4-24 Slide the batteries out

- iv. Replace the batteries and reconnect the cables. Follow the labels on the batteries and cables to plug the terminals. Attach the foam blocks on the new battery.
- v. Install new batteries and plug the terminals on the control PCB.

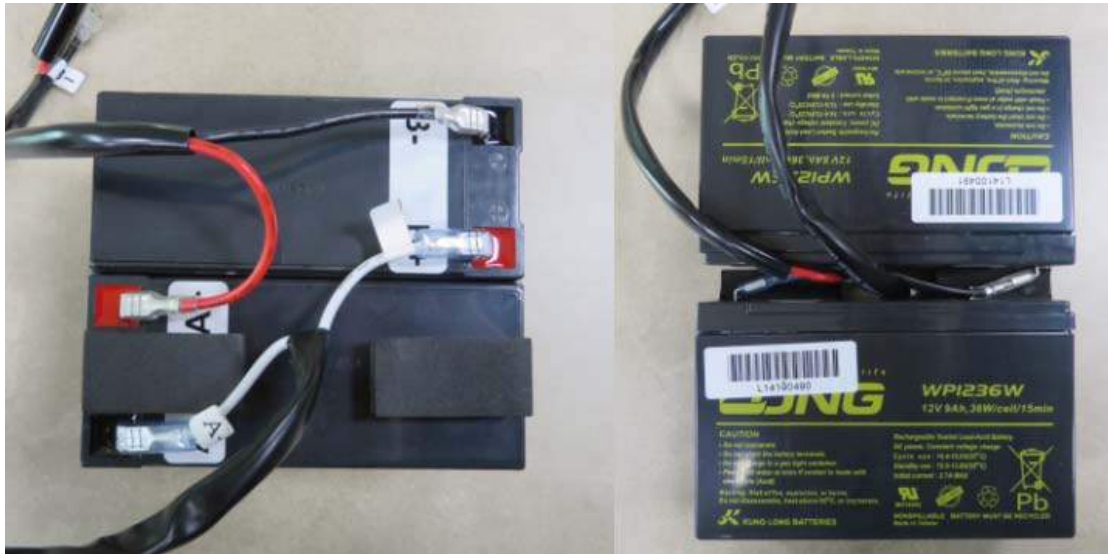


Figure 4-25 Battery cables

WARNING

- DO NOT short the battery terminals.

4.4.2. Control PCB Replacement

- i. Disconnect all connectors.
- ii. Loosen four screws to replace the control PCB.

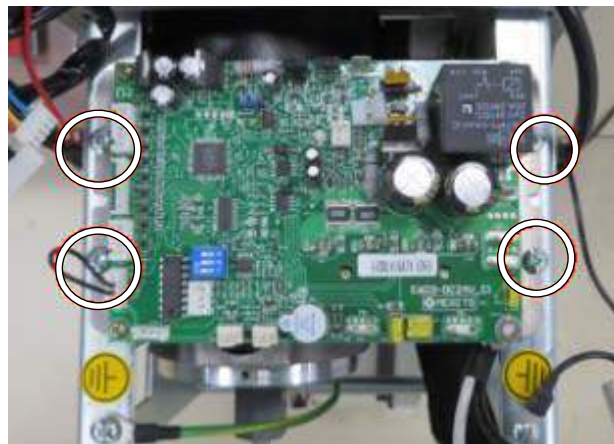


Figure 4-26 Control PCB screws

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.

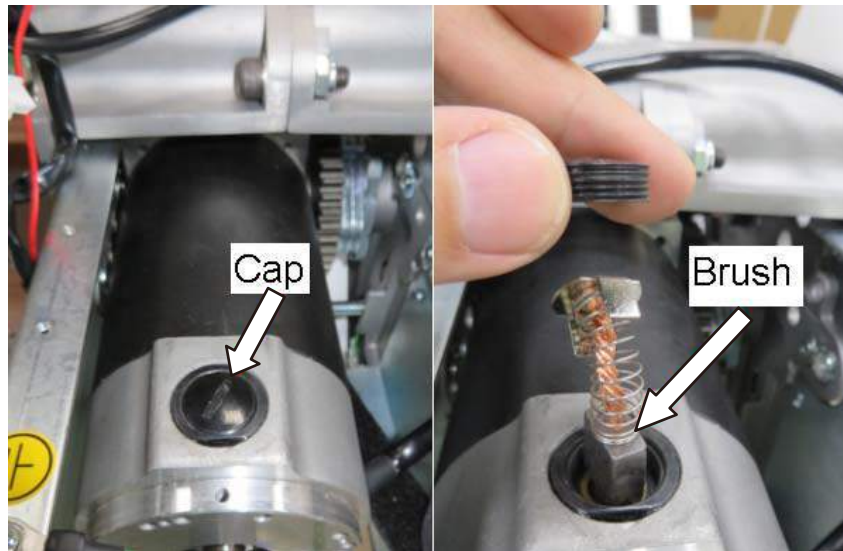


Figure 4-27 DC Motor brushes replacement

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.

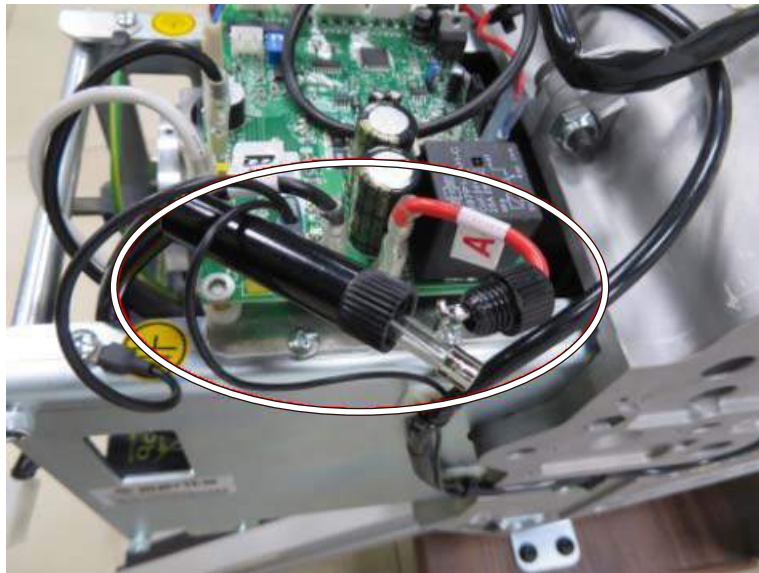


Figure 4-28 Fuse replacement



WARNING

- DO NOT use fuse over the rated current.

4.4.5. Charging Pins Replacement

- i. Loosen the screws on the charging pin cover. There is another pin on the opposite side of carriage.
- ii. Loosen the nut and replace the charging pin.

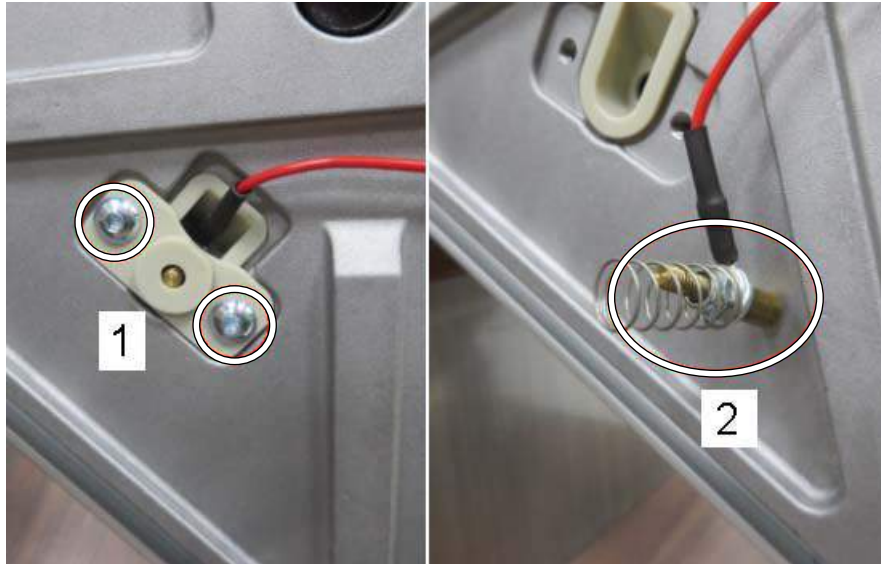


Figure 4-29 Charging pin replacement

4.4.6. Obstacle Switch Replacement

- i. Loosen the screws on the switch holder.
- ii. Disconnect the cable and remove the switch.
- iii. Replace the switch and install in the carriage.

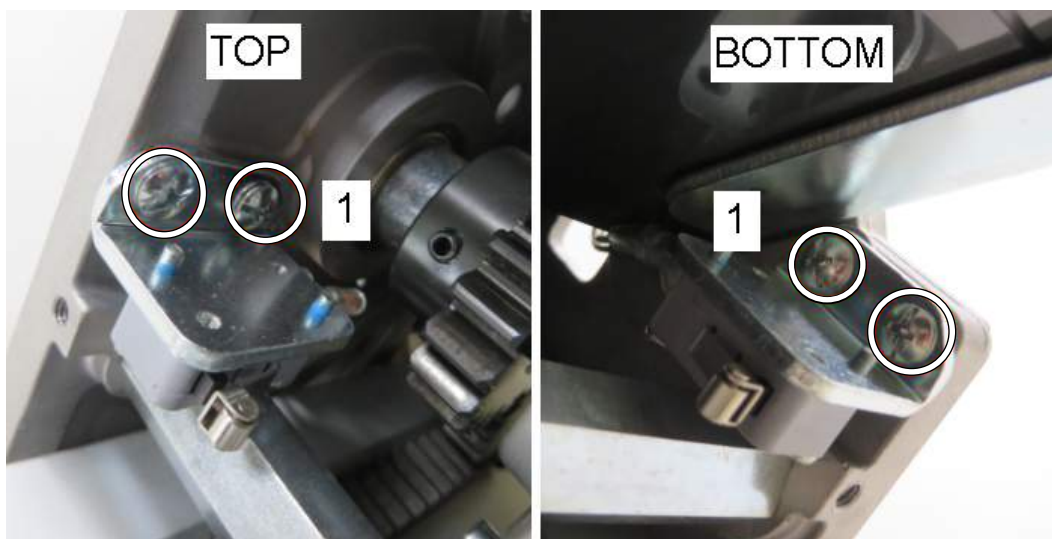


Figure 4-30 Obstacle switch replacement

4.4.7. Power Switch Replacement

- i. Loosen the 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.

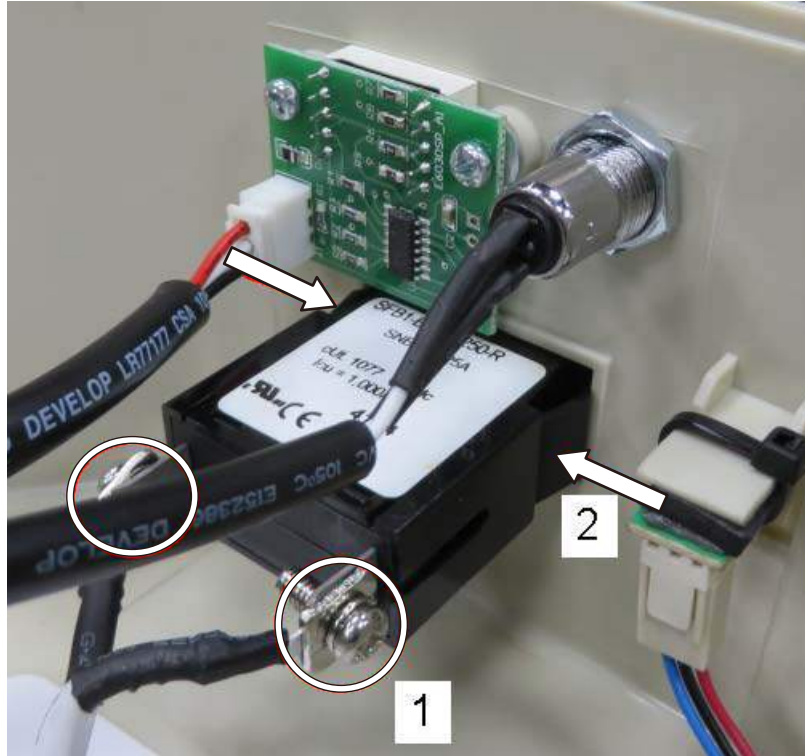


Figure 4-31 Power switch removal

4.4.8. IR PCB Replacement

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

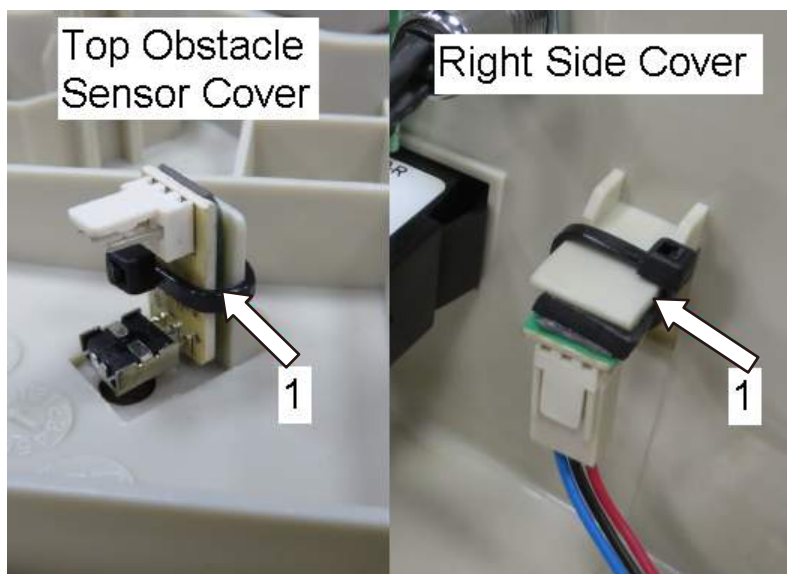


Figure 4-32 IR PCB removal

4.4.9. Status Display PCB Replacement

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

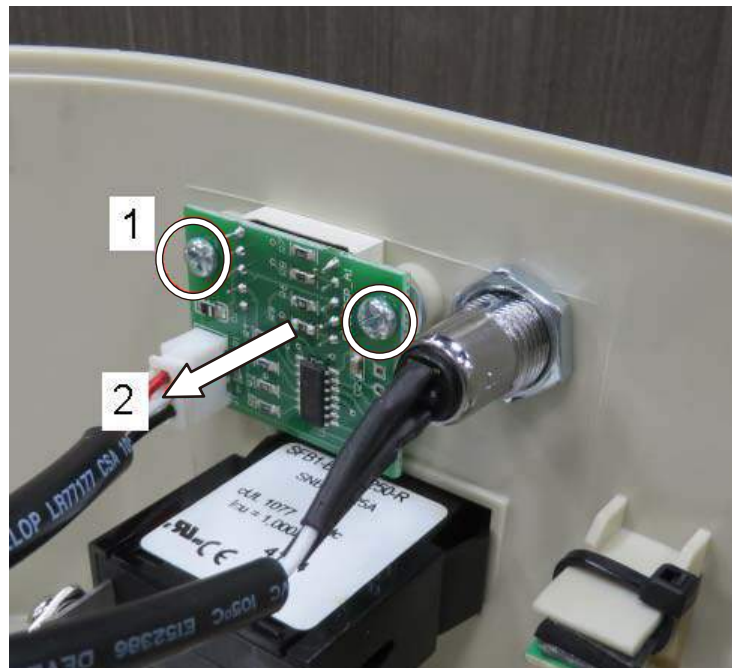


Figure 4-33 Status display PCB removal

4.4.10. Key Switch Replacement

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

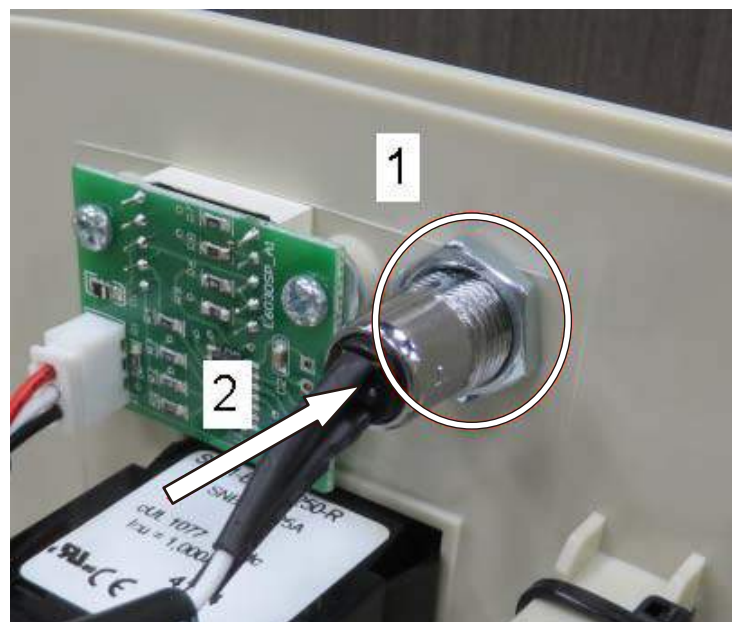


Figure 4-34 Key switch removal

4.5. Top Rail Accessories Removal

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

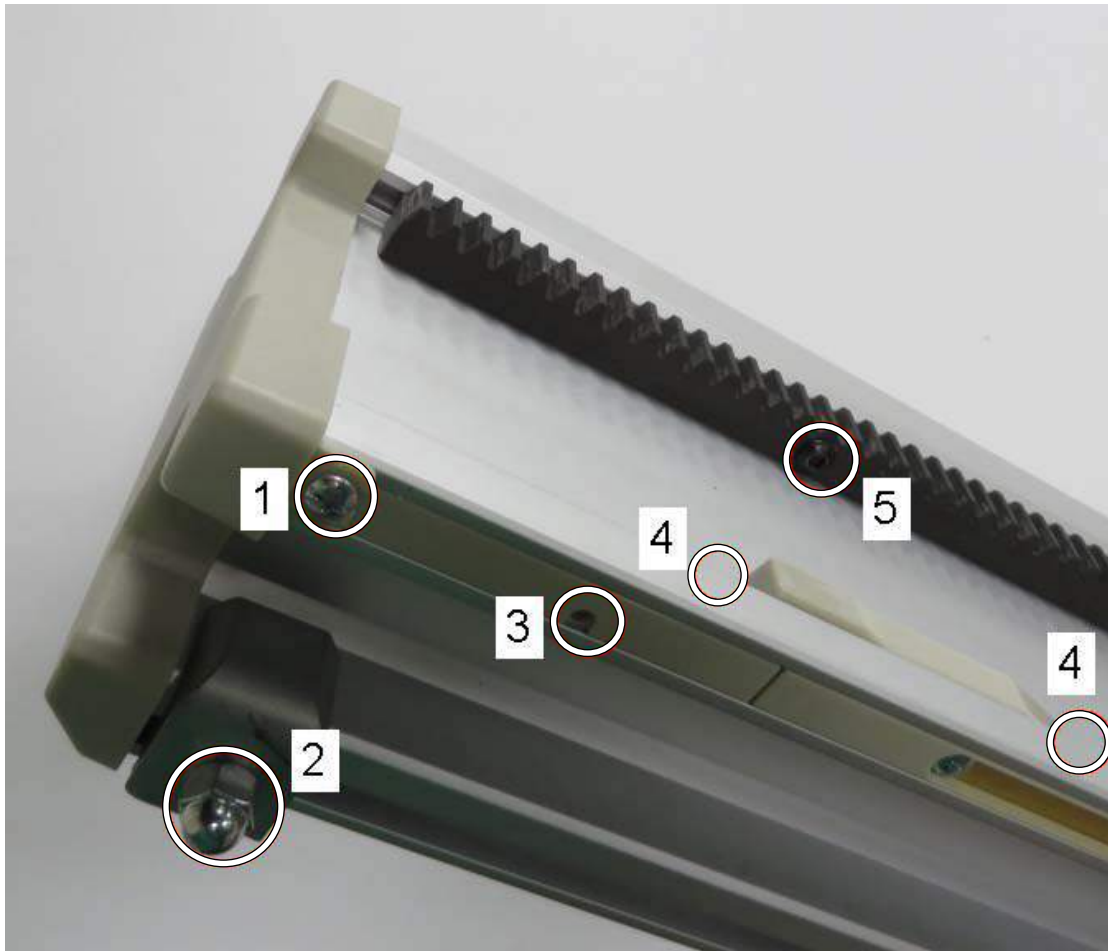


Figure 4-35Top rail accessories removal

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.

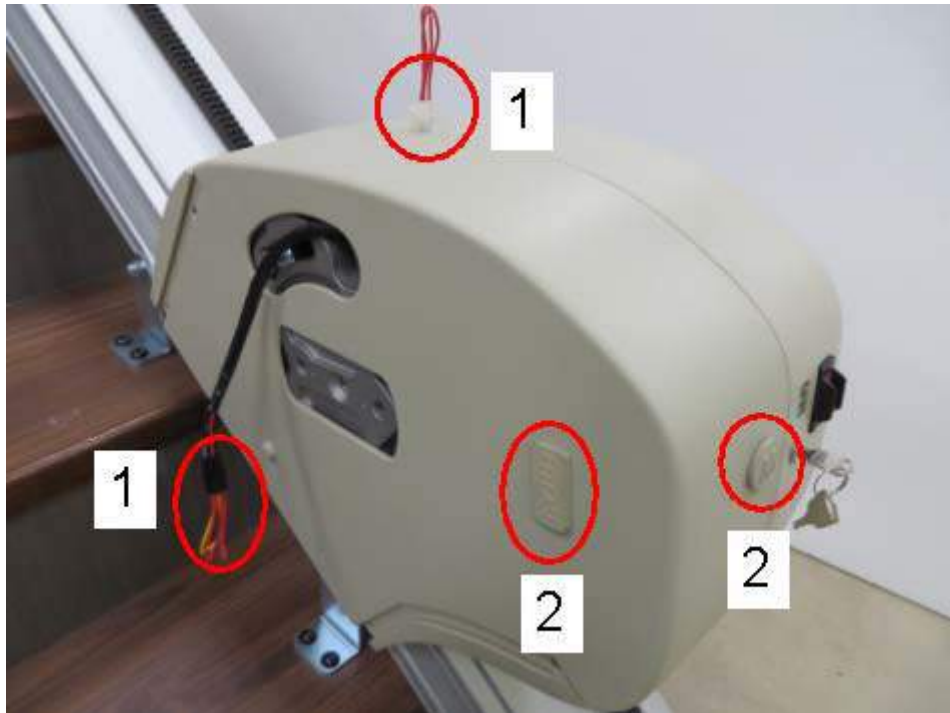


Figure 4-36 Carriage jumpers and rubber plugs

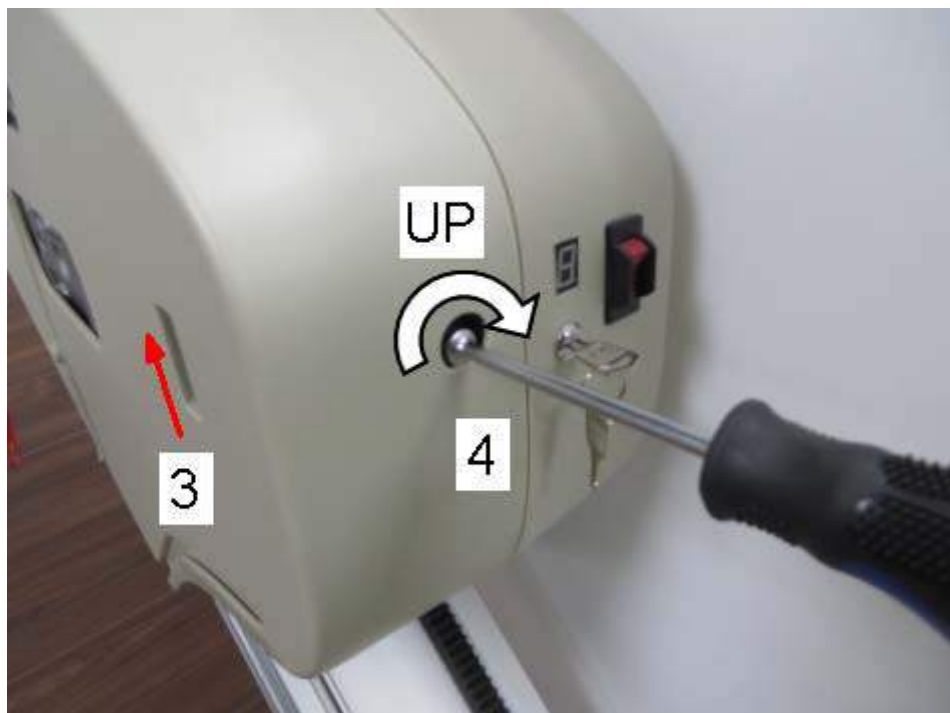


Figure 4-37 Move carriage up by hand crank

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.

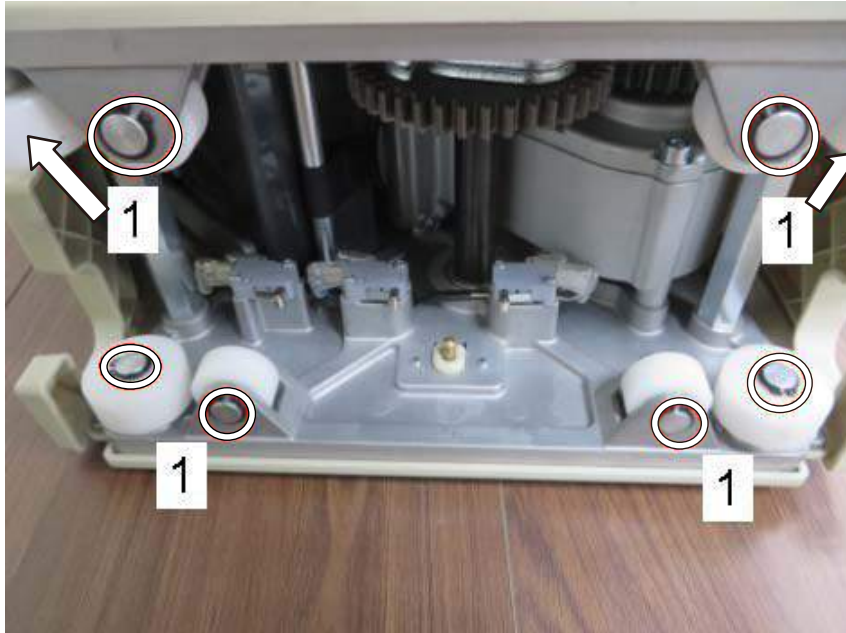


Figure 4-38 Carriage rollers

4.6.2. Limit Switches Replacement

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

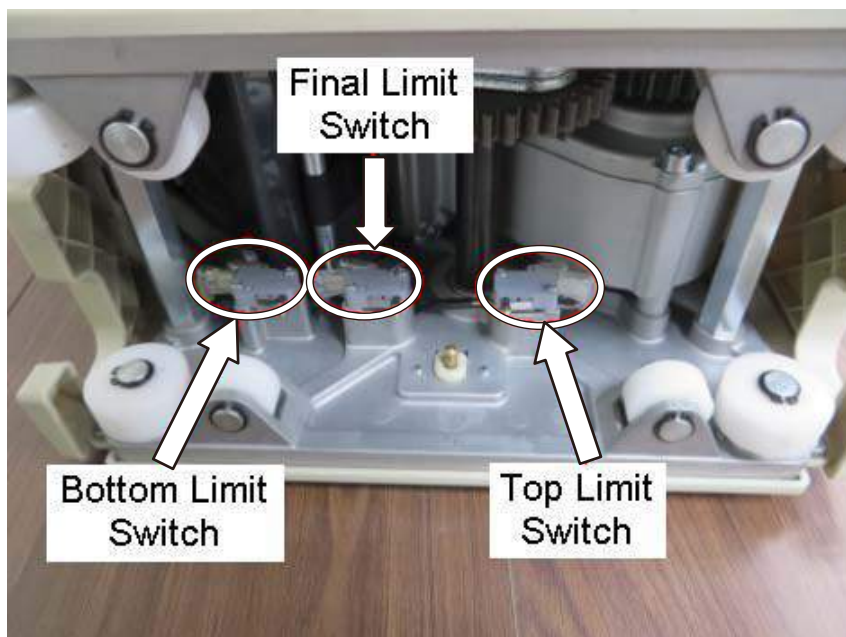


Figure 4-39 Carriage limit switches

4.7. Rail Removal

- i. Loosen the rack screws on the top rail section. Do not remove the screws.
- ii. Slide the racks up onto the upper rail section. Tighten the screws to fix the racks.
- iii. Loosen the set screw on the splice bars.
- iv. Slide the splice bars up or down to separate two rail sections.
- v. Loosen the bolts on the bracket.

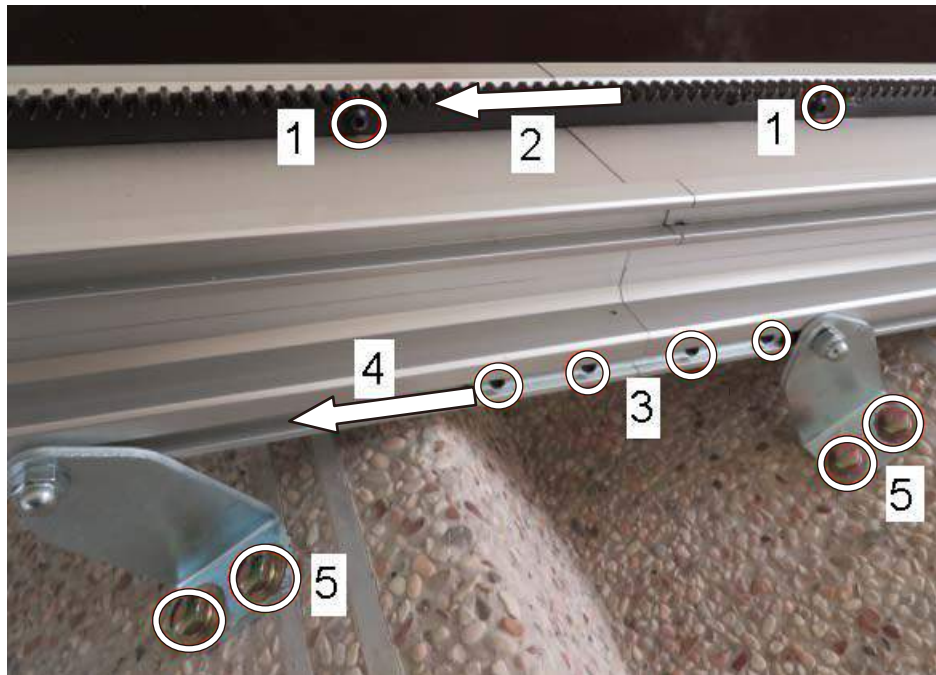


Figure 4-40 Rail removal

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

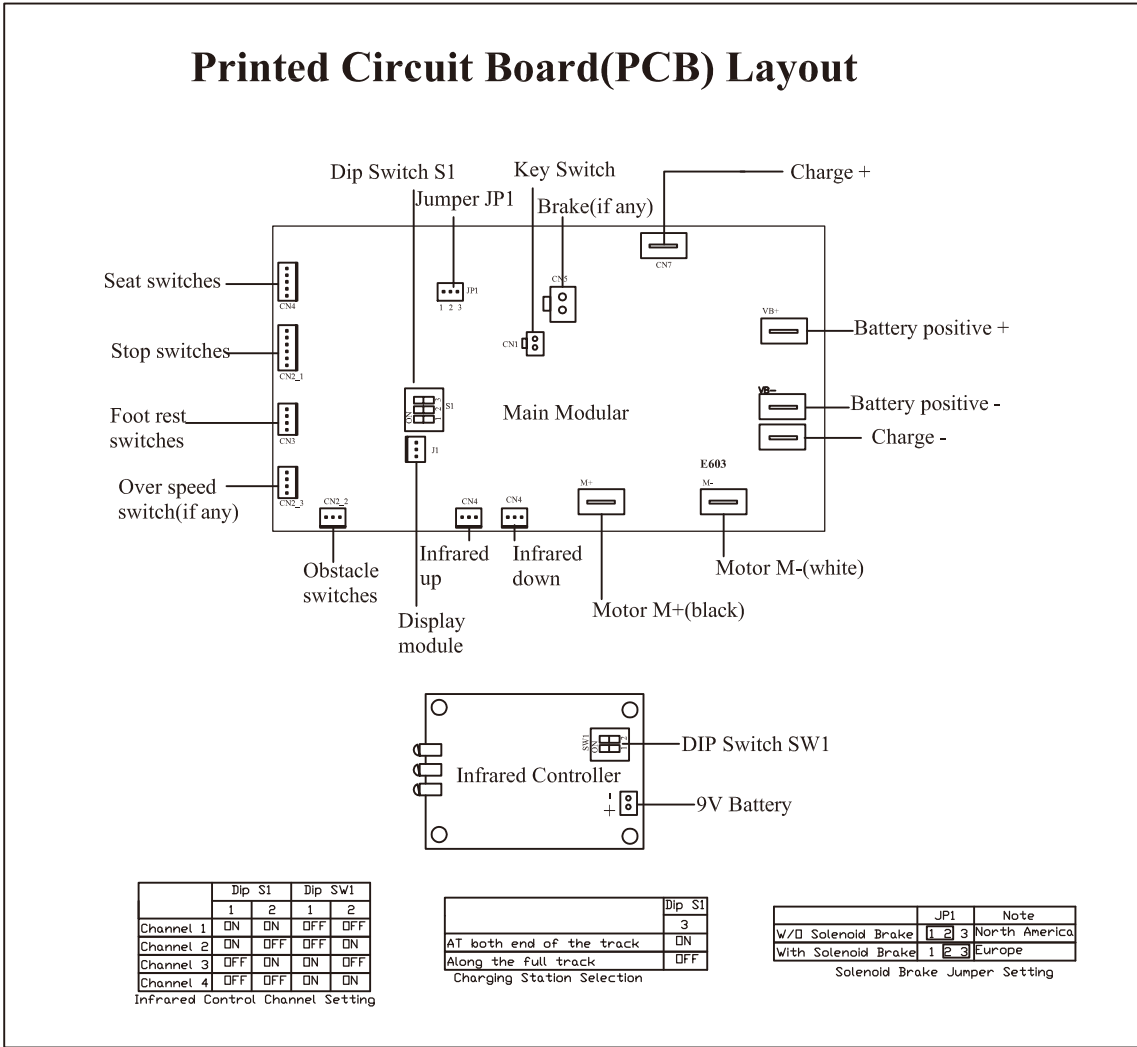


Figure 5-1 PCB layout

6. Troubleshooting

6.1. Troubleshooting Flowchart

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

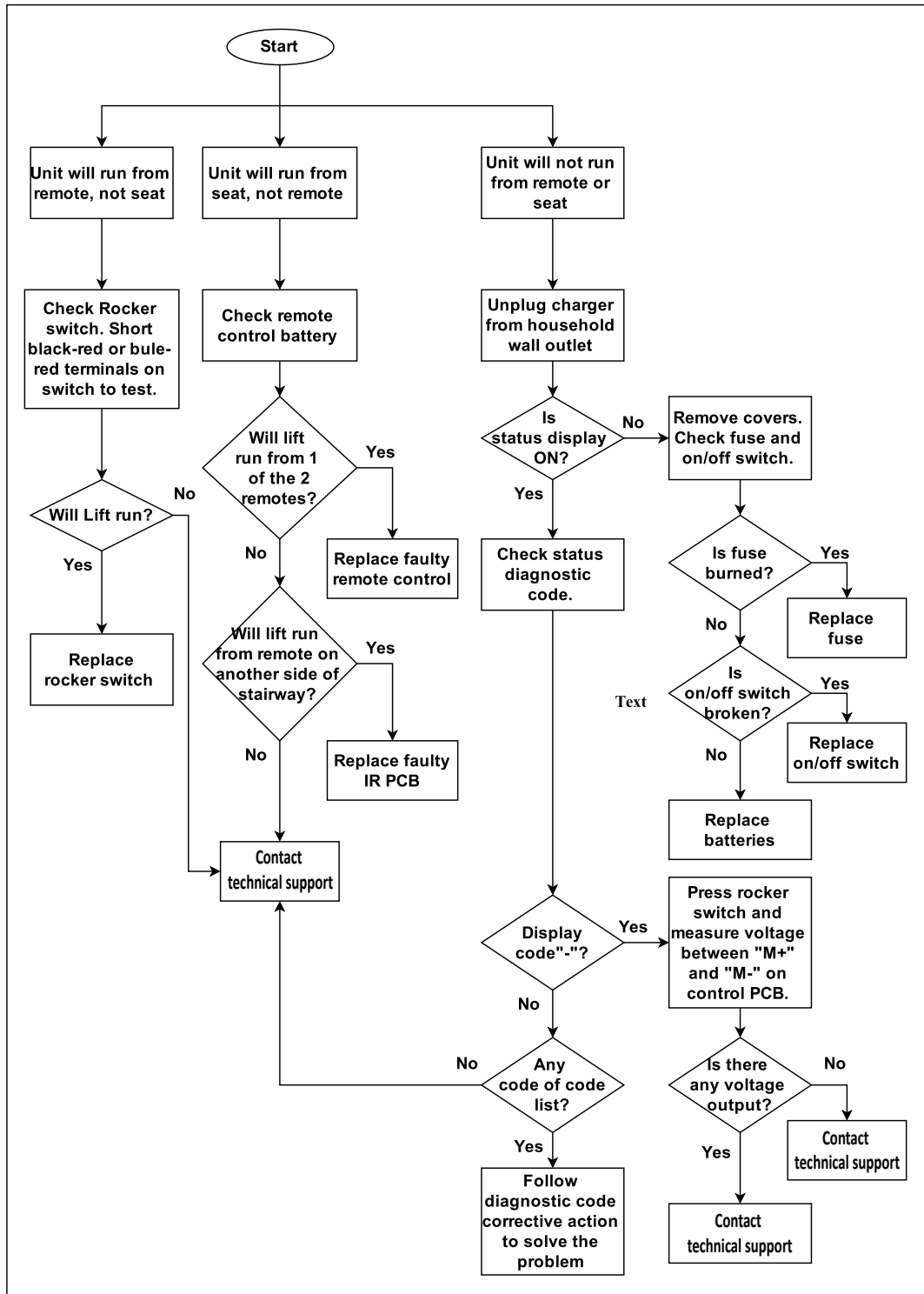















Figure 6-1 Troubleshooting chart when stairlift won't run

6.2. Diagnostic Codes

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

Table 6-1 Troubleshooting

Code	Status/Fault	Recommended Corrective Action
	No display.	Check that the key switch and ON/OFF switch are turned on. Replace status display PCB if stairlift is working correctly except no display.
	The stairlift is ready to use.	No action required.
	<ol style="list-style-type: none"> 1. The swivel seat switch is activated. 2. The armrest switch is activated. 3. The Emergency Stop Button has been pressed. 4. The final limit switch is activated. 5. The over speed governor (optional) is activated. 	<ol style="list-style-type: none"> 1. Rotate and lock the seat in the right position. 2. Fold down the armrest. 3. Release the Emergency Stop Button. 4. Use hand crank to move the carriage until the final limit switch is not activated. Check the top or bottom limit switch. Replace the damaged switch. 5. Use hand crank to move the stairlift up about one inch to reset it.
	Batteries are not charging.	Check that the charger is plugged in and charging. Check the charging pins. Replace if the pins are worn or damaged.
	Upper limit switch is activated.	You have reached the upper limit. Run the unit in the down direction. Check the switch if the stairlift is not stopping at the upper limit.
	Safety sensor in up direction is activated.	Remove any obstacle that may have activated the switch. Check the switch.

	Lower limit switch is activated.	You have reached the lower limit. Run the unit in the up direction. Check the switch if the stairlift is not stopping at the lower limit.
	Safety sensor in down direction is activated.	Remove any obstacle that may have activated the switch. Check the switch.
	Motor current limit is exceeded	Check racks, rails, and carriage rollers. Replace the worn components. Check the motor brushes. Replace the worn motor brushes. Replace a new carriage.
	Main control PCB error.	Switch off the key switch for 30 seconds and then switch on again. Replace the control PCB.
	Rocker switch or remote controller is activated when power on.	Release the switch or button. No action required.
	Motor brake is not engaged.	Push down the lever of motor brake.
	The batteries voltage is too high.	Switch off the key switch for 30 seconds and then switch on again.
	The batteries voltage is too low.	Move the stairlift to the downstairs end and recharge the battery. Replace batteries if the batteries cannot be recharged.

6.3. Wiring Diagram

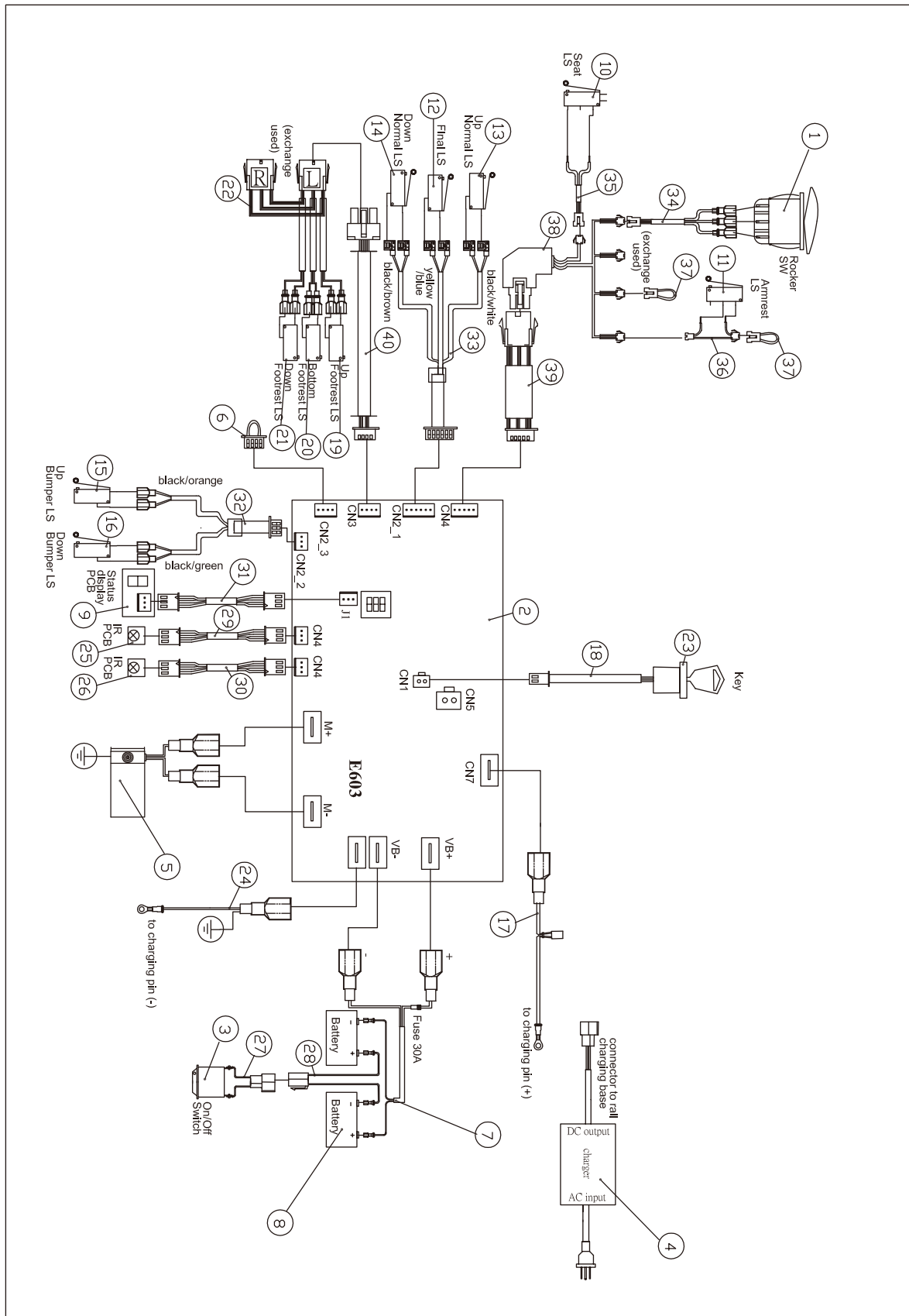


Figure 6-2 Wiring diagram

Table 6-2Wiring components list

item	description	item	description
1	rocker switch	21	down footrest LS
2	control PCB	22	footrest wire (lower)
3	on/off switch	23	key switch
4	charger	24	charging wire -
5	motor	25	IR PCB up
6	jumper	26	IR PCB dn
7	battery wire (include fuse 30A)	27	on/off switch wire
8	batteries	28	battery series wire
9	display module	29	IR PCB up wire
10	seat swivel LS	30	IR PCB dn wire
11	handrest LS	31	status display PCB wire
12	final stop LS	32	right frame wire
13	up normal stop LS	33	left frame wire
14	down normal stop LS	34	rocker switch wire
15	up obstacle LS	35	seat swivel switch wire
16	down obstacle LS	36	armrest switch wire
17	charging wire +	37	jumper wire
18	key switch wire	38	seat wire (upper)
19	up footrest LS	39	seat wire (lower)
20	bottom footrest LS	40	footrest wire (upper)

7. Tool Kit

The service tools are shown in Figure 7-1 and list below.



Figure 7-1 Tool Kit of Service

Table 7-1 Tool Kit

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

