



NAVIGATOR E604

Installation and Service Manual



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1. Introduction

The Merits 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 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 the staircases inclined between 0°~45°. It is designed to carry one person at a time and the maximum weight capacity is 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 E604 stairlift. This manual includes whole sections in the following:

- Introduction
- Installation
- Testing

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, INC. WARRANTY POLICY

Merits Health Products, Inc. will repair or replace the following items that have a manufacturing defect. Credit will be given following inspection by an authorized representative of Merits Health Products, Inc. into the material or workmanship.

5-Year Warranty from the original date of consumer purchase:

- Base Frame
- Seatbelt

18-Month Warranty from the original date of consumer purchase:

- Joystick/Power Module/Controller
- Motor/Gearbox/Brake Assembly
- PCB's
- Angle Sensor
- Electrical Harness
- Charger
- Transaxle
- Cushions

13-Month Warranty from the original date of consumer purchase:

- Seat Post/Mount
- Power Seat Actuator
- Caster Beam
- Joystick Mounting Bracket
- Metal Sitting Frame
- Anti Tipper Assembly
- 31Ah or above batteries
- Powered Footplate
- Armrest Bracket (metal part only)
- Caster Forks

6-Month Warranty from the original date of consumer purchase:

- Bearings/Bushings
- Front Riggings
- Non-Powered Footplate
- Swivel Seat Mechanism
- Batteries less than 31Ah supplied by Merits

Pilot Staircase:

5-Year Warranty from the original date of consumer purchase:

- Motor Gear Box

2-Year Warranty from the original date of consumer purchase:

- Non-Wear Components
- Rails
- PCB's
- Fasteners

Warranty Exclusions: The following items are excluded from warranty:

- Tires & Tubes
- Fuses & bulbs
- Battery cases
- Plastic/Rubber parts
- Motor brushes
- Brake pads
- Upholstery including seat/arm pads/padding
- Painted surfaces including shrouds/fenders

Warranty becomes invalid on any parts damaged from:

- Acts of nature, lost or stolen
- Commercial use
- Neglect, improper operation, and/or maintenance or repair
- Units altered or serviced by an agency not authorized by Merits Health Products, Inc.
- Serial numbered products if the serial number has been removed or defaced

Part(s) purchased outside of warranty have 90 days to report manufactured defect.

Warranty Service:

Merits Health Products, Inc. retains the right to replace the warranted part(s) with either refurbished or new part(s) at their discretion. Any costs related to labor, service calls, transportation, freight, or other charges associated with the installation of warranted part(s) are the responsibility of the consumer/dealer. This warranty gives you specific rights and you may also have other rights which may vary from state to state.

Technical Specs:	
Load Capacity	350 lbs @ 45°
Range of Stair Angle	0°~45° 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	950W, 24VDC
Brake	Electromagnetic brake/ Over speed governor
Charging	At the preset Charging Stations on rail. Input: 115/230VAC, 50/60Hz. Output: 24V  2A
Operating Ambient Temperature (Humidity)	14°F ~ 104°F (up to 95% non-condensing)
Storage/ Transport Temperature (Humidity)	14°F ~ 140°F (up to 95% non-condensing)

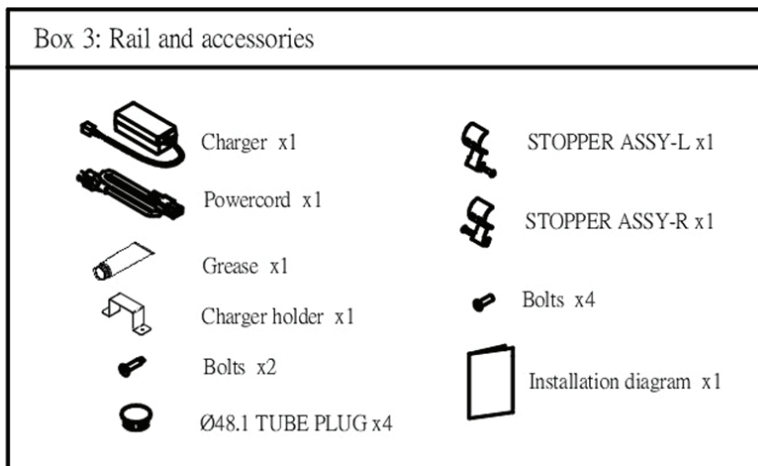
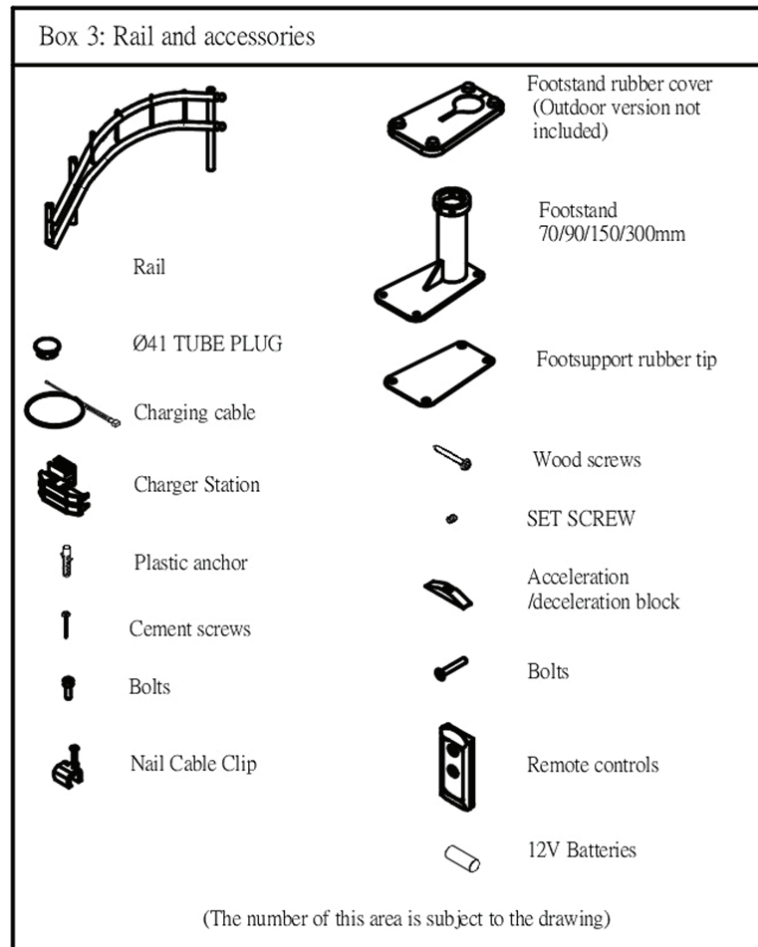
2. Installation

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 parts.

Unpack the Rail sections and check the packing list to find if there are any missing parts.

Box 1: Carriage	
 Carriage x1  Tube x2	 Remote controls x2  12V Batteries x2  Bolts x2  Hand crank x1  Keys x2  User's manual x1  Installation manual x1
Rainproof Kit (Outdoor version only)	
 Waterproof box, remote control X2  Waterproof box, charger X1	 Carriage protective cover L or R X1
Box 2: Seat and Backrest Pad	
 Backrest Pad X1  Seat x1	 Bolts x8



2.1.1 Compare and Verify the Installation Location

Compare the installation location with the drawing. Check the positions of the Receptacle for Charger, Parking position and the installation of the Charging Station.

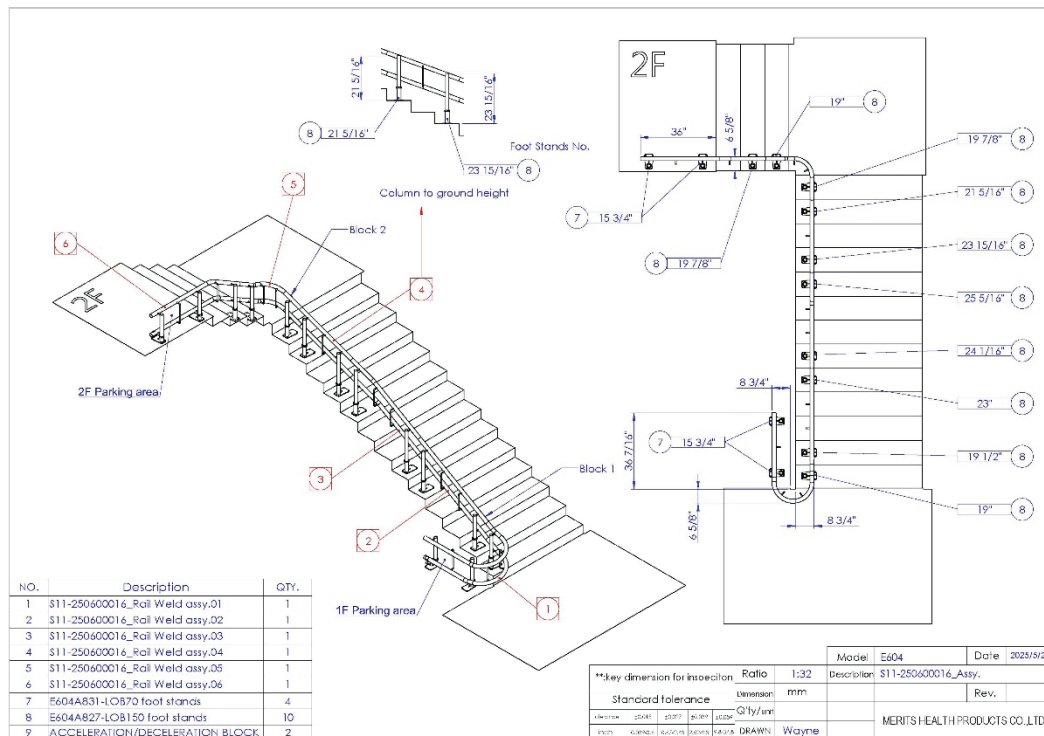


Figure 2-1.1 Sample Drawing

2.1.2 Protection Foam

Remove the protecting foam of the upright stanchions rails and unpack the rail foot stands. Leave the Foam on the rails until the installation is finished to prevent damage.



Figure 2-1.2 Rail Foam

2.1.3 Preassemble the Rail Foot Stands

According to the Installation Drawing, preassemble each rail foot stand to each relative rail section. Slightly tighten only one set screw on each Rail Foot Stand to prevent it from falling off while installing.

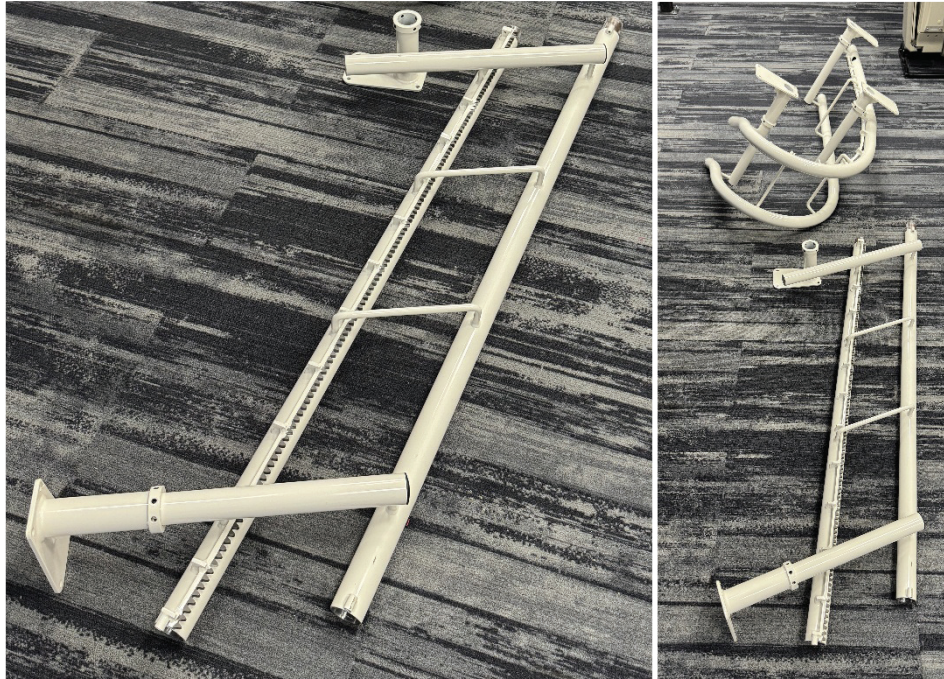


Figure 2-1.3 Foot Stand

2.2.1 Place each Rail Section on the Stairs

Stage each rail section on the staircase according to the installation drawing.



Figure 2-2.1 Staging of Rail Sections

2.2.2 Install the Power Wire in Rails

Pull power wire through each rail section. Leave each section disconnected until the wire is pulled through. Start and finish at the charging station access hole, if you have more than 2 charging station you will need to leave a service loop at the 3rd charging station in the middle of the build.

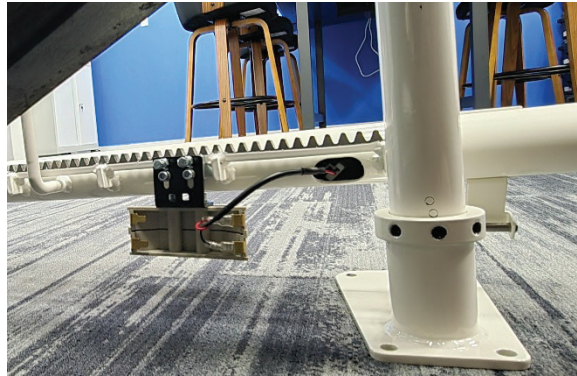


Figure 2-2.2 Access Hole for Charging Power Cable

2.2.3 Assemble the Rail Sections

Assemble the Rail Sections together one by one. **(If rails are too tight to fit together easily, lightly sandpaper the pipe collar to allow fitment)** Tighten the rail section by using the provided screw. **(Make sure there isn't a gap between the rail sections as this will lead to timing issues with the gear rack.)**



Figure 2-2.3.1 Rail Section Connection Points

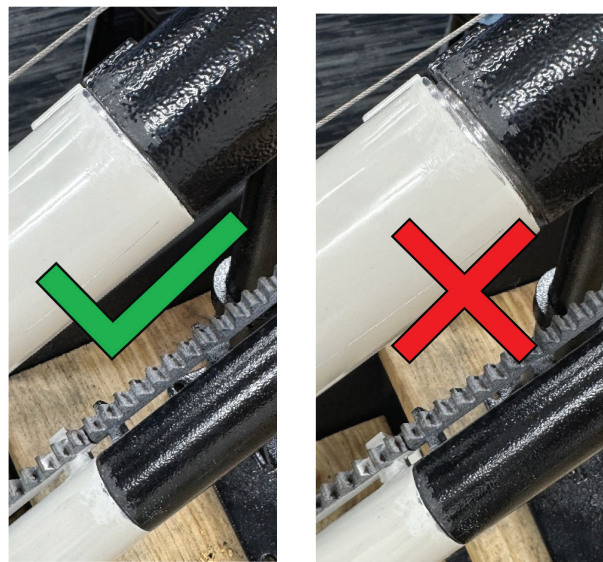


Figure 2-2.3.2 Correct and Wrong Connections

2.2.4 Adjust the Height of each Rail Section

Adjust the height of the rail foot stands to the height listed in the installation drawing. Use allen key to tighten one set screw of each rail foot stand to prevent it from moving while making the adjustment. Make sure all feet are touching the ground when completed. **(Do not tighten all set screw until carriage level has been checked in section 2.3.2.2)**

2.2.5 Mocking up Rail

Move completed rail into the location off the wall according to the installation drawings.

(DO NOT mount feet to the stairs until the carriage has been tested on rail)

2.3.1 Unpack the Carriage

Unpack the carriage from the carton and remove the steel tube on the Swing Head only. Insert the Connecting Tube to the Upper Rail and the Shuttle Guide for Swing Head to the Lower Rail. (see figure 2.2.2)



Figure 2.3.2 Connect Tube and Shuttle Guide

2.3.2. Install the Carriage to the Rail

2.3.2.1 Align the Swing Arm to the upper tube and Swing Head to the lower tube. Move the carriage onto the rail until its gear touches the rack. Turn on the carriage and move it onto the Rail on the Staircase.



Figure 2.3.2.1 Install Process

2.3.2.2 Checking that Carriage is level: Place a level on the Carriage Seat and move the carriage to each rail section. Verify that the carriage is within 2 degrees of level at each section. Fine tune the height of the rail foot if needed. Tighten all the set screws on the rail foot stands after finishing this calibration.

2.4.1 Installing Rail Foot Stand to Stairs

Place the Black Rubber Cushion under each Rail Foot Stand. Move the Carriage from the start to the end and then back to the start again. Make sure the Carriage will not interfere with anything near the staircase while moving along the Rail.

2.4.2 Different Mounting Surfaces

2.4.2.1 (For Concrete & Marble Staircase) Drill 8mm hole with SDS Hammer Drill. Then use the 10mm x 50mm hex head screws to fix each rail foot stand on the stair treads. **Recommended to use vacuum cleaner to remove the dust while drilling holes.**

2.4.2.2 (For Wooden Staircase) Use the 10mm x 50mm hex head screws to fix each rail foot stand on the stair treads. **Recommended to use vacuum cleaner to remove the wood chips while installing.**



Figure 2.4.2.1 Concrete or Marble install Figure 2.4.2.2 Wooden Staircase install

2.5.1 Install the Charging Station and the End Stopper

Connect the Wire Harness for Charger to the copper electrodes of the Charging Station. Make sure the Positive & Negative Electrodes are on the correct positions.

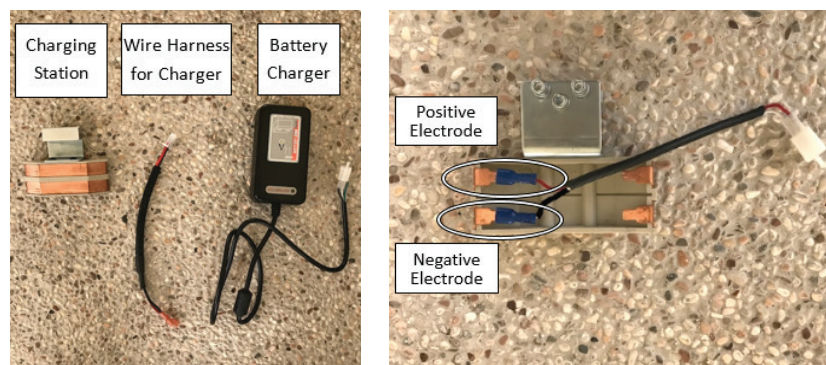


Figure 2.5.1 Charging Station

2.5.2 Connect the Charging Station to the Rail Cable

Connect the connectors on the Rail Cable to the copper electrodes on the other end of the Charging Station. **Make sure the Positive & Negative Electrodes are in the correct positions.**

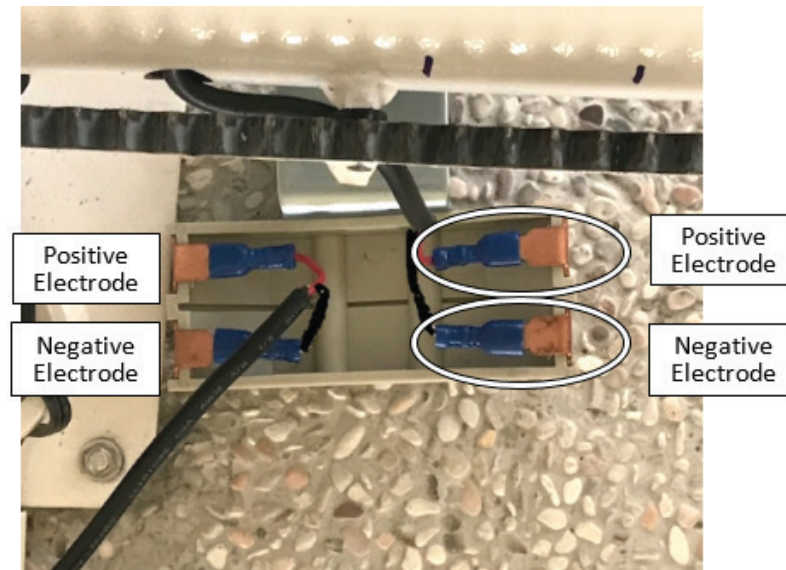


Figure 2.5.2 Proper Connections for Positive and Negative leads

2.5.3 Attach the Charging Station to the Rack

Adjust its height to align the copper plates with the electrodes on the Carriage. Drive the carriage in and out of the charging station several times to confirm the position of the charging station is adequate. Tighten the screws. Fix the wire harness out of the way of the gear track with cable ties.

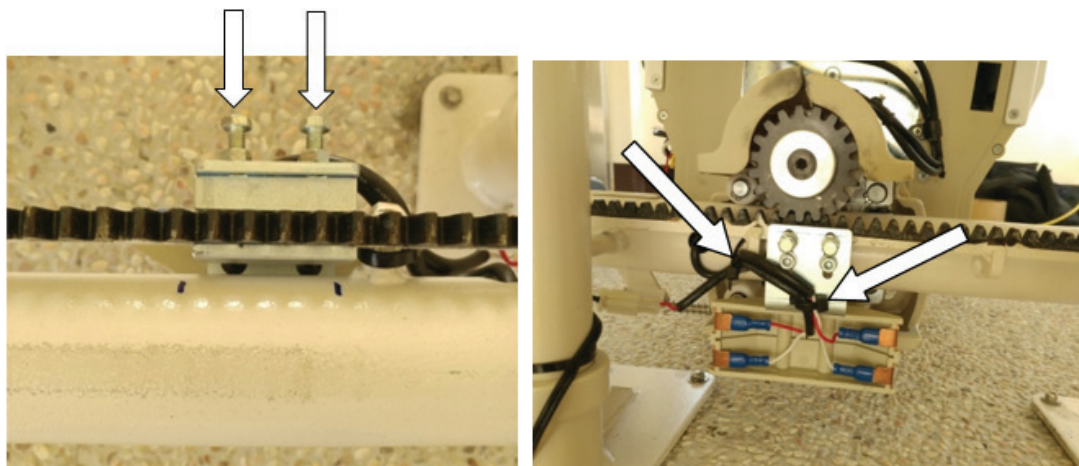


Figure 2.5.3 Charging Station Mounted

2.5.4 Install the Battery Charger

Choose an adequate position. Fix the Battery Charger to the wall or other rigid surface with the Charger Holder by using 2 screws.



Figure 2.5.4 Charger Mounting

2.5.5 Install the End Stopper

Position of the end will be at both ends of the rail; holes will be predrilled and tapped.



Figure 2.5.5 End Stoppers Installed

2.5.6 Install the Speed Control Blocks to the Upper Rail

Position of Speed Control Blocks (Accel/Deaccel Blocks) will be marked on drawings and will have predrilled and tapped holes on the rail for installation.

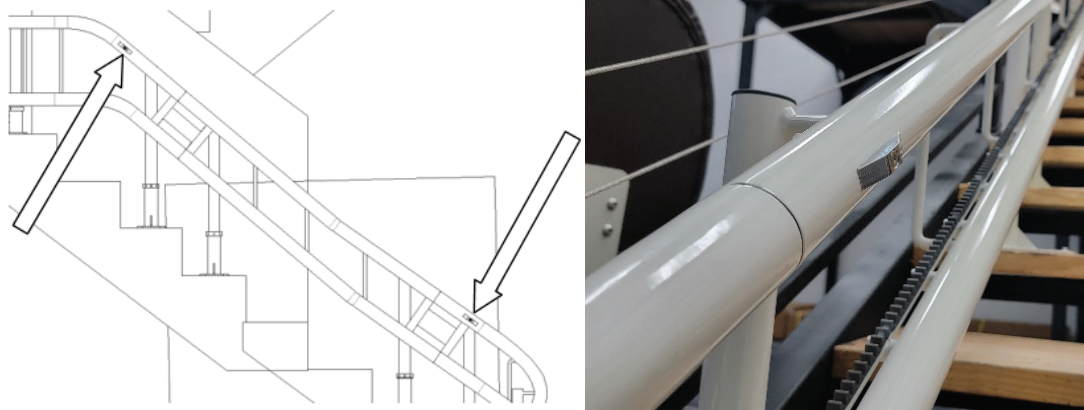


Figure 2.5.6 Speed Control Blocks

2.6 Test Run of Carriage

- 1.) Drive the carriage along the rail. Check if the hi-lo speed control is functioning normally while the Carriage passes through the speed control blocks.
- 2.) Check the function of toggle switch and remote controls. Make sure the controller's function is oriented in the correct direction.
- 3.) Drive the carriage to the charging station. The carriage should stop automatically. Check the status LED on the battery charger to see if the Batteries are charging correctly.

2.6.1 Carriage Safety Switch Test

- 1.) There are several Safety Switches on the Carriage. Check and make sure every Safety Switch functions normally while the Carriage is moving. The Carriage will stop moving while these Safety Switches are actuated.

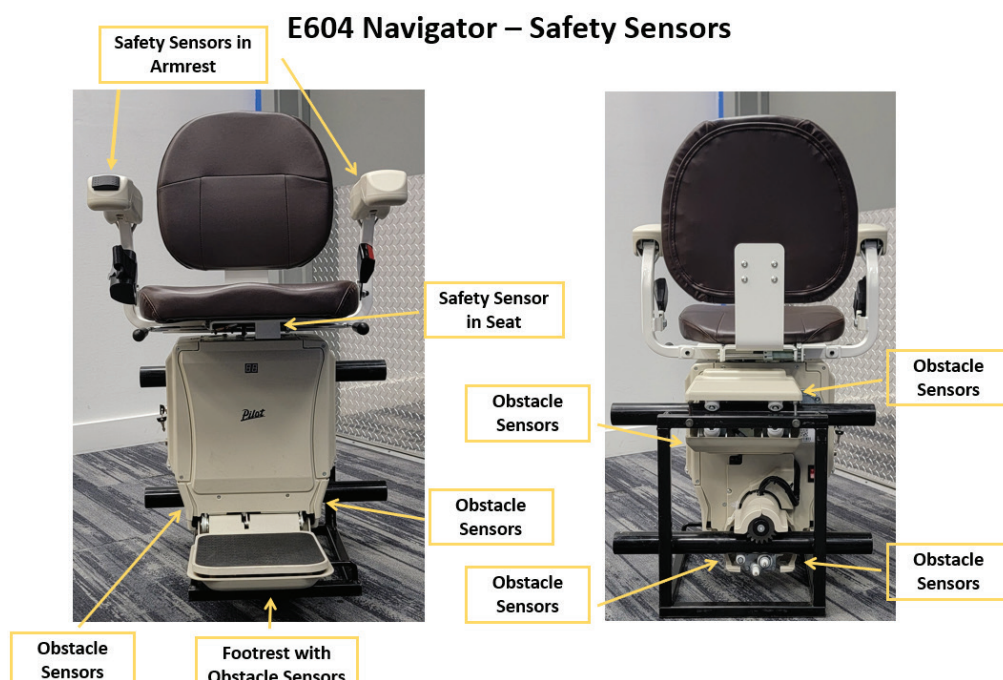


Figure 2.6.1 Safety Sensor locations

2.7 Install the Tube Plugs to the Rail & Foot Stands

Install the 41mm Tube Plug on the top of each Rail Foot Stand. Install the 48.1mm Tube Plug to both ends of the Upper & Lower Rail Tubes. Use the Rubber Hammer if needed.



Figure 2.7 Tube Plug Locations

2.8 Install the Protect Covers of the Rail Foot Stand

Put the Protect Cover to each Rail Foot Stand.



Figure 2.8 Feet Covers

3. Error Codes:

E604 Standard Fault Code Reference Table
For Additional Support Contact Merits Tech Support @ 239-772-0579

Fault Code	Status/Fault	Troubleshooting
--	Normal	--
00	Swivel seat switch activated	1. Confirm seat position 2. Check if swivel limit switch is triggered and functional 3. Inspect wiring for pinched wires or tight zip ties
	Over speed governor activated	1. Manually crank carriage up 6 inches 2. Lubricate OSG and remove excess grease
2	Battery not charged	1. Confirm charger is connected 2. Use multimeter to locate voltage drop
3	RH Rail Obstacle Sensor activated	1. Remove obstacles near right swing arm/head 2. Check switch functionality 3. Inspect wiring for damage, pinches or tight zip ties
4	RH Carriage or Footrest Obstacle Sensor activated	1. Check for obstructions near footplate or right obstacle cover 2. Remove footplate cover and see if error persists 3. Test switches 4. Inspect wiring for damage, pinches or tight zip ties
5	LH Rail Obstacle Sensor activated	1. Remove obstacles near left swing arm/head 2. Check switch functionality 3. Inspect wiring for damage, pinches or tight zip ties
6	LH Carriage or Footrest Obstacle Sensor activated	1. Check for obstructions near footplate or left obstacle cover 2. Remove footplate cover and see if error persists 3. Test switches 4. Inspect wiring for damage, pinches or tight zip ties
7	Motor overcurrent	1. Power cycle the machine (wait 30 seconds) 2. Remove carriage and test off rail 3. Replace PCB if issue persists
8	Controller failure	1. Replace PCB
9	Park brake fault	1. Verify brake is ON 2. Confirm limit switch arm is triggered by brake
10	Rocker switch failure	1. Test rocker switch 2. Inspect wiring for damage, pinches or tight zip ties
11	Battery voltage too high	1. Power cycle unit (wait 30 seconds) 2. Check battery voltage
12	Battery voltage too low	1. Check if battery voltage is below 22V
L	Driving in slow mode	1. Occurs during normal function when unit is at section of rail where it slows down. 2. If still occurring after driving past acceleration/deceleration block check if speed probe or photosensor is damaged

E604 HD Fault Code Reference Table

For Additional Support Contact Merits Tech Support @ 239-772-0579

Note: S.W. Stands for Switch

Fault Code	LCD Display	Voice	LED Light	Troubleshooting
2	Please return to the charging station	Please return to the charging station	--	1. Return to charging station
5	Right armrest fault	No Voice	--	1. Confirm armrest is properly positioned. 2. Check if armrest switch cable is loose or damaged (Check for pinched wires & tight zip ties). 3. Check if armrest switch if faulty
6	Left armrest fault	No Voice	--	Same as Code 5, but with left armrest.
7	Left side S.W. fault	Hit an obstacle	Flashes twice	1. Check for obstruction on left obstacle cover. 2. Inspect limit switch cable (Check for pinched wires & tight zip ties) 3. Check if left carriage obstacle switch if faulty
8	Right side S.W. fault	Hit an obstacle	Flashes twice	Same as Code 7, but for right side
9–14	Top/Bottom rail S.W. faults	Hit an obstacle	Flashes twice	1. Check for obstruction on the specified cover/switch. 2. Inspect switch and wiring (Check for pinched wires & tight zip ties) 3. Check if switch if faulty
15–17	Footrest S.W. faults	Hit an obstacle	Flashes twice	1. Remove cover and check for obstruction 2. Inspect switch and wiring (Check for pinched wires & tight zip ties) 3. Replace switch/wiring if needed
18	Seat S.W. fault	No Voice	--	1. Confirm seat position 2. Check if seat swivel limit switch is being triggered properly & if switch is faulty 3. Inspect wiring (Check for pinched wires & tight zip ties)
19–20	Emergency S.W. faults	No Voice	--	1. Set S1 Dip Switches 1 & 2 to ON 2. Replace PCB

Cont- . E604 HD Fault Code Reference Table

Fault Code	LCD Display	Voice	LED Light	Troubleshooting
21	Over speed S.W. fault	No Voice	--	1. Manually crank carriage up 6 inches. 2. Lubricate OSG and remove excess grease
22	Overload	No Voice	--	1. Turn off the machine, wait for 30 seconds, and then turn it on again to check if there are any objects in the motor or rail. 2. Remove carriage from rail and see if the issue occurs off the rail. If issue does not reinstall on the rail
23	Park brake fault	No Voice	--	1. Verify the brake is in the on position. 2. Verify arm on the limit switch is being triggered by the brake.
24	Rock S.W. unusual	No Voice	--	1. Check if the rocker switch is functioning. 2. Verify the cable is not loose or damaged.
25	Battery voltage too high	No Voice	--	1. Check battery voltage
26	Rock S.W. fault	No Voice	Constantly ON	1. Replace rocker switch
27	Please charge the battery	No Voice	--	1. Check battery voltage
29	Controller fault	No Voice	Flashes continuously	1. Replace controller and signal board
30	Charging unusual	No Voice	Flashes three times	1. Confirm charger is connected 2. Use multimeter to locate voltage drop
31	Speed S.W. fault	No Voice	Flashes four times	1. Check speed probe 2. Inspect photo sensor 3. Check wiring

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