Ningbo Kaifat Medical Science and Technical Co.,Ltd

Medical Electric Transfer Vehicle

Operation & Service Manual

Model: SE-I, SE-A, SE-II

Edt.2017

Foreword

Dear Customer:

You just purchased KAIFAT SE Series of Medical Electric Transfer Vehicle. We congratulate your choice and believe that you will be completely satisfied with its operation and performance.

We advise that you should read this manual carefully, be familiar with the operation methods and make full understanding of its performance before using the device. Please keep the manual in a safe place for future reading at any moment. Thank for your trust!

Quality guarantee

The users are responsible for obeying current legislative provisions on device operation and maintain.

Ningbo Kaifat Medical Science and Technical Co.,LTD wouldn't be responsible for any malfunction, physical destruction, personal damage or quality difference caused by improper use or maintenance due to user's inobservance of advised schemes.

Under the circumstances that electrical and mechanical protection equipments have some defection or provisions on maintenance procedure are disobeyed, operation of the device is forbidden.

Only Ningbo Kaifat Medical Science and Technical Co.,LTD or the authorized dealers or the authorized service providers may make modification or extension of the device inclusive of installation or device itself. And the modification must comply with the effective provisions of the country where the devices come from and be accordant with general trade practice.

If you are using the device at first time, we suggest you to contact your local dealers or authorized service providers for operation training.

After finishing the installation of device, the warranty card filled in correctly should be sent back to your local dealers or the authorized service providers so as to correctly keep your information into our database for further service and spare parts supply.

⚠Warnings:

1. Read this manual carefully before operation.
2. If there is any failure in electric circuit, the product should be repaired by technician from the manufacture (except fuses and switches)
3. The qualified technician can fix the failures of electric circuit with the authorization of our company. The electric circuit map can be required from us.
4. This vehicle is not available for patients with heart pacemakers.

Contents

I. Function and application.

1. Functions:

Medical Transport Area (hereinafter vehicle)

It is a patented product designed to solve the problems with the transport of patients which delicate care required. The original mechanism of the vehicle allows you to easily move the patient on the operating table or bed without efforts of medical personnel. Automatically controlled surface of the device adapts to the anatomical features of the body, minimizing the risk of causing physical harm to the patient's health in the process of transferring.

2. Application:

The device is intended for all categories of patients, especially for post-operative patients, patients with injuries of the spine and musculoskeletal system, cardiovascular diseases, stroke and any other kinds of patients who need orthopedic operation.

Model SE-II device can implement a two-way connection between the two bases and can be used in a sterile operating room.

II. Components of the vehicle.

1. A vehicle manufactured as a model SE-A, SE-I and SE-II.

2. The vehicle comprises the following main components: a mechanism lifting/lowering, rotating wheels, transferring system, control panel, the control unit and the other, the shape and structure of which is shown in Figure 1-3.

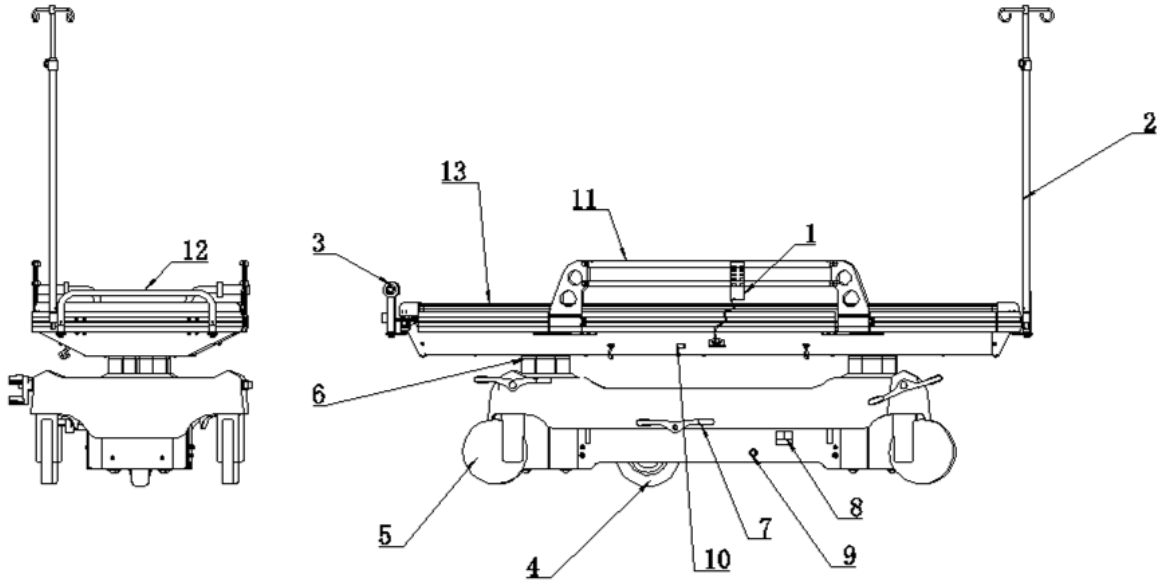
3. The vehicle is equipped with side rails, carved diameter wheels, handle controller and other accessories, depending on model:

- The shape and appearance of the model SE-I shown in Figure 1.

- The shape and appearance of the model SE-A shown in Figure 2.

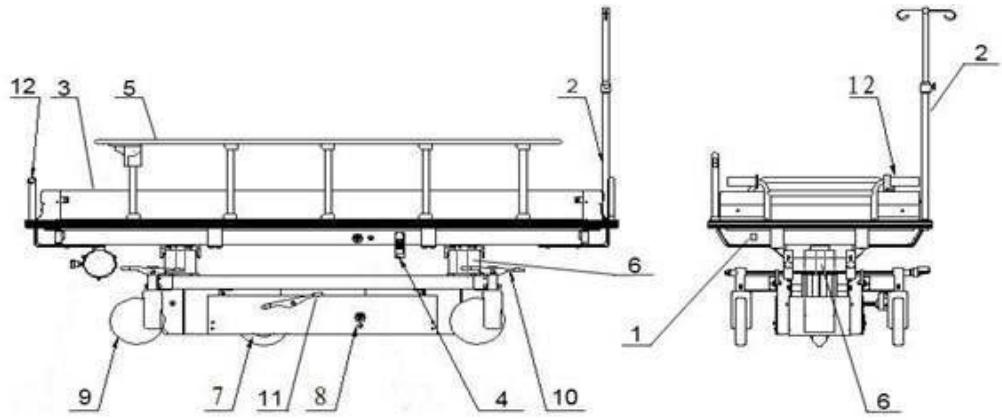
-The shape and appearance of the model SE-II shown in Figure 3.

Figure 1. The shape and appearance of medical electric transfer vehicle Model SE-I.



1 – Hand Controller;
2 – IV Pole;
3 – Electric Handle;
4 – Electric Wheel;
5 –Universal Wheel;
6 – Lift Column;
7 – Pedal Brake;
8 – General Switch;
9 – Charge Port;
10 – Transfer Switch;
11 – Side Rail;
12 – Push Handle;
13 – Transfer Board;

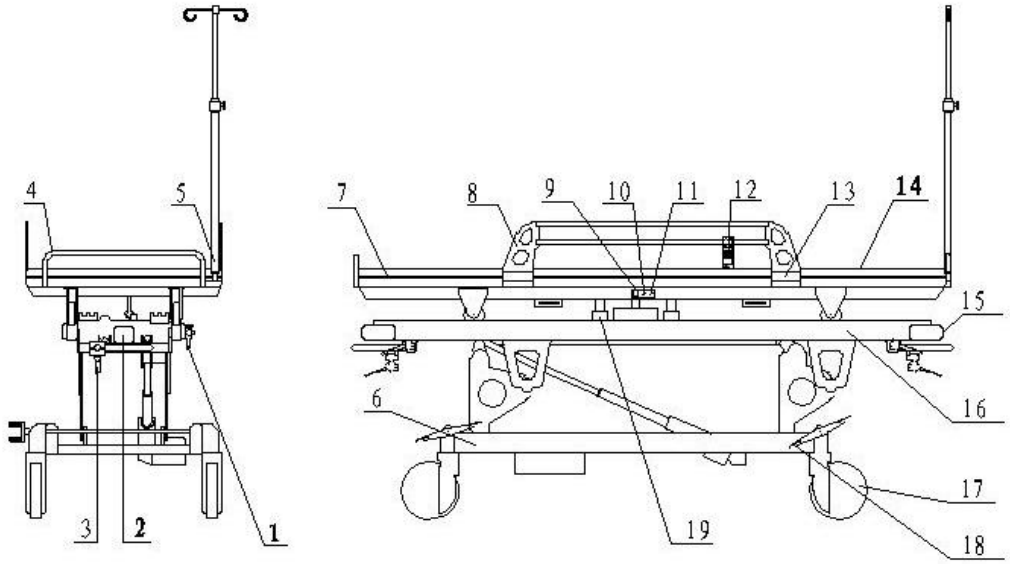
Figure 2. The shape and appearance of medical electric transfer vehicle model SE-A.



1 - Electric Power Switch;
2 - IV Pole;
3 - Transfer Surface:
Transfer board & cloth;
4 - Hand Controller Panel;
5 - Side Rail;
6 - Lifting/Lowering Column ;
7 - Guide Wheel
8 - Charging port;
9 - Universal Wheel;
10 - Pedal Brake;
11 - Pedal (press up/down)
to control the guide wheel
12 -Handle with electric power.

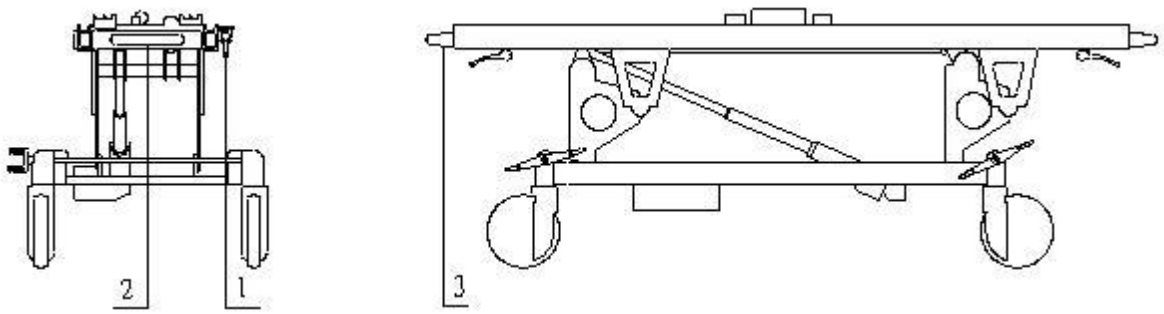
Figure 3. The shape and appearance of medical electric transfer vehicle model SE-II.

Основание А



1 – Extraction Handle;
2 – End Shackle;
3 – Depart Handle;
4 – Pushing Handle;
5 – IV Pole;
6 – Base A;
7 – Transfer Surface A;
8 – Side Rail;
9 – Power Switch;
10 – Charging Port;
12 – Hand Controller Panel;
11 – Socket of hand controller panel
13 – Lock of Side Rail;
14 - Transfer Surface：
Transfer board& cloth
15 – Connection guide
16 - Sliding Track
17 – Universal Wheel
18 –Pedal Brake
19 – Electric contactor

Основание В



1 – Extraction Handle; 2 – End Shackle; 3 – Connection guide

Accessories:

1. Rechargeable battery.
2. The side rails.
3. The universal wheel.
4. The upper frame.
5. The guide wheel
6. The protective cover.
7. Operating Instructions.
8. IV pole (optional).
9. Power cable, Charger.
10. Oxygen cylinders holder (optional).
11. Buttons incl. ON/ Off.
12. Sockets.
13. Hooks clutch.
14. Transfer Cloth.
15. The mechanism of displacement.
16. The mechanism of lifting and lowering..
17. The lower frame.
18. Pedal brake.
20. Clutch.
21. Control box.
22. Plugs.
23. Electric power handle.
24. Handles for separation.
25. Hand controller panel.
26. Handles for fixation.
27. Lock the railing.
28. The electronic control unit.

Note: List of membership may differ depending on the vehicle model.

III. Instructions and tips for operating.

When first using the vehicle should be carried out to unlock

The mechanism of lifting (SE-I &SE-A model):

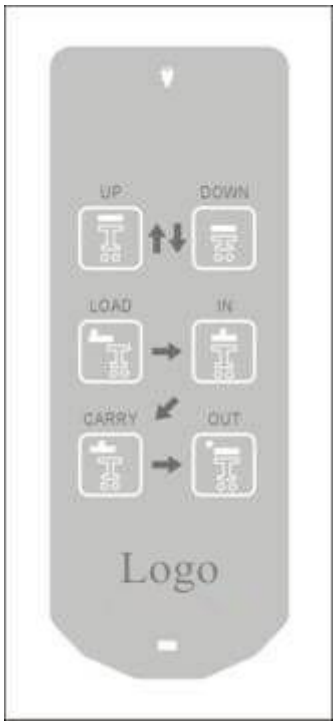
a) Turn on the power button/general switch;
b) On the hand controller panel press the "Down» (Down) and keep pressing for 30-40 seconds. During this time the vehicle will be lowered to a minimum height, then unlocked, and a little table rise. The device can be used.

Warning!

• This procedure should be performed after each battery terminal on the battery and lock with the full discharge of the battery.

1. Manage and display signals of the vehicle.

1.1. Hand Controller Panel.



POWER – Indicator light

UP – Lifting the height of vehicle

DOWN – Lowering the height of vehicle

LOAD – The transfer board and cloth extend out to be neath the body of patient

IN - Transfer the patient to the vehicle

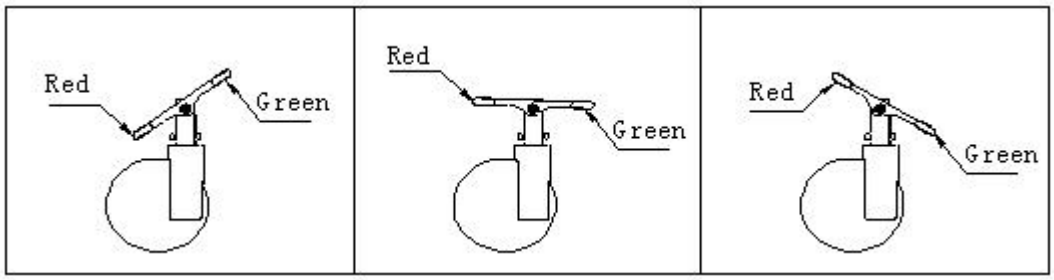
CARRY - Move the patient with the vehicle

OUT – Retract back the transfer board and cloth, leaving the patient on another bed

1.2 Wheel lock system (pedal brake)

Three-position the brake pedal:

A **B** **C**



A - The red end of the brake pedal is lowered - Wheel locked (the vehicle cannot move).

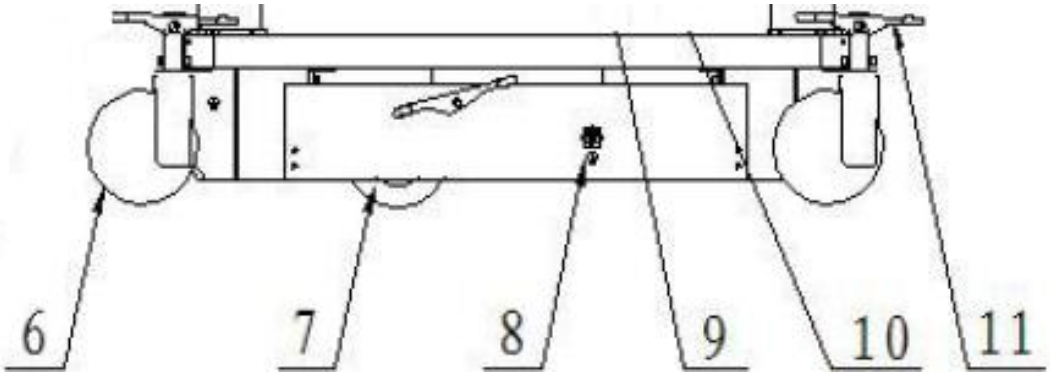
B - Brake pedal position for rectilinear movement of vehicle

Warning!

• Do not move left, right and back under this status!

C–Green end of the brake pedal is lowered - the wheels are unlocked (the vehicle can move in any direction)

1.3Wheels:

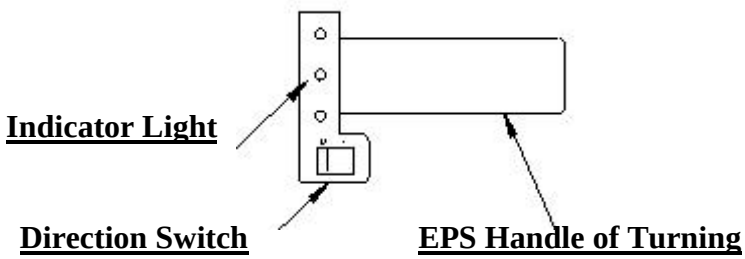


a). No.7 wheel is the Oriented or EPS (Electronic Power Steering) guide wheel;
Above it is its foot pedal switch; When trod down the right end of pedal brake, this wheel will be put down to ground to help guide or fix the whole vehicle; when trod down the green end, this wheel will be put up.
Notice:

1. When trod down the right end of pedal brake, the transfer vehicle can go forward and backward, or turn around; but cannot move horizontally (left to right), so under this status, you cannot push the transfer vehicle to close to the operating table or sickbed;
2. When trod down the green end of pedal brake, the electric wheel will be put up, Under this status, the electric handle is as normal handle, cannot help as electric handle; if you turn round the electric handle, you will hear the noise sound of electric wheel rolling in the air;

b). No.6 wheel is universal wheel, above it is its foot pedal switch,
(See No.11 for reference);
The right end is “Lock”, by pressing this end; none of universal wheels can rotate, the whole vehicle locked;
The green end is “Steering”, by pressing this end, the universal wheels can 360° rotate, the vehicle can go anywhere.

1.4. The electric handle.



Direction switch: “D”---Forward; “R”---Backward

1.5. Symbols and Abbreviations:

a)  —— Power Switch. I (ON); O (OFF)

b)  —— Type B equipment

c)  —— Ground Protection

d)  —— Fuses

2. Transfer the patient from bed or operate table to the vehicle.

Turn on the vehicle.
a) Release the brake (the green end of the brake pedal is pressed down).
b) Lift the side rails to ensure patient safety while driving.
c) Put down the guide wheel (model SE-I) or guide wheel (model SE-A) to the ground, lowering the end of the green pedal.

Warning!

• When the guide wheel put down, the vehicle can only move forward or backward; when need turn direction, pls press the brake to make guide wheel up to avoid damaging the floor by force power.

d) Use the pushing handle at the beginning movement of vehicle

For models SE-I &SE-A equipped with the "Electric power handle" to move forward, It is necessary to turn the switch "Auto-arm" in position "D", to make the vehicle move back; turn the switch to "R", to make the vehicle move forward;

Warning!

• The hand controller panel during the movement of vehicle should be placed on the handrail. Any other location may damage the hand controller panel.

a) Lower the side rails on the side, which will be closer to patient.
b) Slide the vehicle close to the patient's bed or an operating table at a free position of the guide (SE-A model) or lead (SE-I model) wheels, and by means of the brake pedal to lock wheel.
c) using the «UP» button and «DOWN» to adjust the height of the vehicle,

Note: Set transfer board at 1-2 cm above the patient's bed or an operating table.

Warning!

• Patient movement may be carried out only under the condition of these operations are carried out. Thereafter moving the transfer board may be set in motion.
• Used with the unit beds and operating tables should be well documented.

d) Press the «Load», to make the transfer board and cloth extend out to be neath of the body of patient.

Warning!

• Before the transfer board in motion, sheets and clothes of the patient should be aligned. If the sheet is to be moved along with the patients, put the sheets on the edge of the transfer board before bringing it into motion. If there is no need to move the sheet, secure it under the edge of the mattress to prevent it from getting into the board.

• Avoid making patient's hair under transfer board surface.

•Do not insert your fingers under the transfer board

e) When the movable surface is completely under the patient, press «IN» to move the patient to the device

Warning!

• If the width of the bed or operating table much long nominated surface, alternately pressing «LOAD» and «IN» to adjust the position of the patient so that he was moved from the center of the transfer board.

3. Transfer the patient from the vehicle to bed or operate table.

a) Lower the side railing on the side, which will be closer to the patient.

b) Slide the vehicle close to the patient's bed or an operating table at a free position of the guide wheel (SE-A model) & (SE-I model), and by means of the brake pedal to lock wheel.

c) Pressing the «UP» button and «DOWN», to adjust the height of the vehicle,

Note: Set transfer board at 1-2 cm above the patient's bed or an operating table.

Warning!

• Patient movement may be carried out only under the condition of these operations are carried out. Thereafter moving the transfer board may be set in motion.

• Used with the unit beds and operating tables should be well documented.

d) Press «CARRY», which will result in the movement of the transfer board to move the patient onto the bed or operating table.

e) When the transfer board is fully extended out, pressing «OUT», to leave the patient on the operating table or bed and pushed the panel.

Warning!

• Note that the panel will slide back, fold the sheets on the bed, so she did not get on a moving surface.

• If the width of the bed or operating table much longer nominated surface, alternately pressing «CARRY» and «OUT» buttons to adjust the position of the patient so that he was at the center of the bed.

Warning!

• The patient or on the surface of the bed should be with no sharp objects (such as keys and other foreign objects) that may damage the mechanism of a transfer board or transfer cloth.

• Before using the vehicle, clean the surface of small items to prevent them from falling into the mechanism and causing damage.

• Do NOT let gap bends the transfer board. Despite the fact that the vehicle has a function of height adjustment between the bed and a movable surface Make sure that the height difference between them does not exceed 1-2 cm.

- **If there is noisy sound during operation, stop immediately to check:**
- **Is it true to set the correct height and distance;**

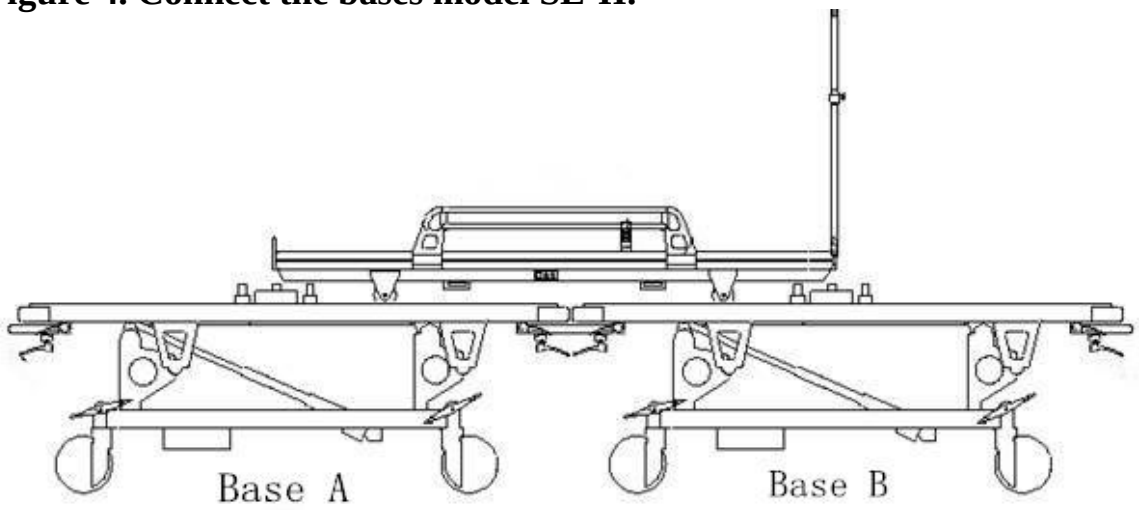
  Do not render in the mechanism of foreign objects;

  whether the sheet wrapped under the retractable surface.

  Work can be continued after the problem is resolved.

4. Compound bases (Model SE-II).

Figure 4. Connect the bases model SE-II.



a) Move the vehicle to patients on the basis of "A" to the place of connection, lower end of the brake pedal.

b) Move the base of the "B" along the "A" base.

c) It is necessary to adjust the base of "A" in height with a base "B" using buttons "UP" and "DOWN" of the hand controller panel.

d) Longitudinal connect the base "A" and "B" With the help of the connecting shackle and hook and connecting rails, pushing both the base at each other.

e) Press the release knob located on the outer side of the connecting rails and the block on the right vehicle, push the upper base with patients by connecting the rails to the next base. If the correct connection of the upper base and the base of the "B", you will hear a click.

f) To release the brake, lift handle division, located on the inner side of the connecting rails and left the cake base of the unit "A" and separate them.

Similarly, the procedure should be same method when connecting "B" base to base "A".

5. Battery charging.

a) Turn off the vehicle.

b) Central Lock Brake System.

c) Connect the charger to the vehicle at first, and then network AC.

d) On the charger lights up orange and green. When the batteries are fully charged, the LED lights will turn to green. The charging time is 12-14 hours.

Warning!

• A fully charged battery lasts, on average, 100 cyclic transfers. One of the transfer cycles includes: moving the patient to the vehicle, transportation, moving the patient to the bed or operating table.

6. Controlling the degree of charge of the battery.

For models equipped with electric power handle (SE-A, SE-I) to control the degree of charge of the battery can be on display, located on the electric power handle:

a) All three power indicator light up - the batteries are fully charged.

b) Only the yellow and red power indicator light light up - moving mechanism works, but can be locked lifting - lowering. It is necessary to charge the device.

c) Only the red indicator light up, it’s urgent to charge the battery.

60 seconds short warning signal is heard, it is not working mechanism of lifting and lowering - the batteries are fully discharged. You must charge the device immediately.

For models not equipped with the automatic lever (SE-I, SE-II) control the degree of charge of the battery takes place on the appearance of alarms and failure mechanism lifting - lowering - is urgently needed to charge the batteries.

Warning!

Please note:

• If the vehicle is not used for five or more days, not charging of the battery occurs.

• If the vehicle is locked during operation, then press and hold for 30 – 40 seconds button «DOWN» of the hand controller panel, the device will fall to the lowest position, then up a bit, you can continue to work after that.

• It is necessary to check the level of battery charge, and if the battery is full - charge.

IV. Maintenance and handling.

In the period of 3 - 4 months from the date the device into operation which is necessary to carry out warranty service plans, which include:

- Grease all the details of the mechanism of wheels and fasteners;
- Check the tension coating a transfer board (transfer cloth).

1. Caring for the batteries.

The batteries require no maintenance.

When the battery power runs out, charge the battery immediately to ensure that the equipment can operate normally, thus you will extend the life of the rechargeable battery.

Batteries should be charged once a week, if the equipment is not used for a long time. The average battery life is 2 years.

2. Care for the transfer board.

The transfer board surface can be cleaned with water and disinfected with a soft cloth.

Warning!

• Handle the cover moving the panel carefully; avoid damage by foreign objects.

• Never lift the transfer board with respect to the bottom of an angle more than 45 °.

• Watch for moving the surface tension of the coating: the strong weakening is necessary to contact the service center.

3. Cleaning and disinfection.

Warning!

• Before cleaning, turn off the device, unplug the charger.

• You may only carry out processing of open and accessible surface of the vehicle.

• Do not allow water or moisture on the electronic control unit.

The unit should be kept clean and tidy.
Cleaning the vehicle should be carried out regularly, to the extent of its pollution. Before cleaning check the rules of disinfection and sterilization equipment your hospital.

The outer surface of the device should be cleaned using a cloth of absorbent material: a clean, soft cloth, sponge or cotton swab moistened with non-caustic cleaning solution. Before cleaning, it is recommended to squeeze out the excess detergent.

Examples of cleaning solutions:

- Single soap solution in water
- Dilution of ammonia in water
- Single solution of sodium hypochlorite (bleach)
- Hydrogen peroxide (3%)
- Ethanol (70%) or isopropanol (70%)

Warning!

• The range of concentrations from 500 ppm (1: 100 diluted household bleach) to 5000 ppm (1:10 diluted household bleach) sodium hypochlorite is very effective, but the final concentration should be selected based on how much organic material (blood, mucus, plant and animal) remains on the surface of the device.

The above mentioned cleaning solutions can only be used for routine cleaning. If you use them to control the transmission of infection, we disclaim liability for their effectiveness.

To avoid damaging the device, remember to:

• ALWAYS dilute the solutions according to the manufacturer's recommendations.

• Always wipe the remnants of the cleaning solution with a dry cloth after the cleaning process.

• Never immerse the device in water or any cleaning solution, do not pour a liquid or a hardware solution.

• Never allow liquid flowing into the casing, switches, connectors, or any ventilation openings device.

• Never use abrasive, corrosive cleaners, or cleaners containing acetone.

• Never leave any cleaning materials on the surface.

Disinfection
Disinfection or sterilization may cause damage to the life of vehicle.

Prior to disinfection Always clean the surface of the vehicle.

Recommended sterilization solution:
On the basis: alcohol (70% ethanol, 70% isopropanol) or aldehydes.

Warning!

• ALWAYS dilute the solutions according to the manufacturer's recommendations and, if possible, use the lowest concentration.

• Do not immerse the device in water or in any solution not pour water or any solution for the equipment.

• DO NOT allow excess liquid remaining on the surface of the device and on the surface of the auxiliary equipment.

• Do not use for disinfection: ethylene oxide and formaldehyde.

• Do not disinfect device and auxiliary equipment using high pressure and high Temperature

4. Disposal of the vehicle.

The vehicle is made of metal, plastic and electronic components. There are no special recommendations for recovery is not required. The vehicle must be disposed of in accordance with regulations adopted by the recycling equipment in the country. Disposal of batteries should be carried out in specialized enterprises having the license accordingly.

V. Methods for Troubleshooting

Trouble description	Cause	Methods
The motor fails to work	1. Fuse melt 2. Lack of power	1. Replace the fuse 2. Charge the battery
All the key-presses failure	1. “Brake” is unlocked 2. The started pulse is excessive	1. Press down “brake” again 2. Cut off the power, restart
Fail to charge battery	Battery damaged	Replace the battery
Big noise when movement	Foreign objects rolled in the transfer board	Stop operating immediately; do the opposite movements to take out the objects
The vehicle cannot move suddenly	The plug connecting to socket of control box must be loose	Re-insert the plug and fix it
The transfer board cannot extend out or retract back	Check the side rail and the limit switch	Put down the side rail or remove the foreign object inside the limit switch

VI. Technical Data of vehicles.

№	Technical Data		Model SE-A	Model SE-I	Model SE-II
1	Marker device (Length*Width)		2130*810	2000*670	3880*670
2	Height Range мм	Ø wheel 200мм	650÷1050	550÷950	590÷880
		Ø wheel 150 мм	—	560÷860	—
3	Weight, kgs		295	230	292
4	The length of the belt conveyor belt, м		10	10	10
5	Distance of movement board мм		600	520	510
6	Speed of movement board мм/с		30	30	30
7	Minimum time of raising/lowering sec		20 / 12	20 / 12	20 / 12
8	Maximum Load kgs		225	135	135
9	Battery Specification		(12V.20AH)×2	(12V.12AH)×2	(12V.12AH)×2
10	Power of Vehicles		270 (3×90W, DC24V motor)	270 (3×90W, DC24V motor)	270 (3×90W, DC24V motor)
11	Rated voltage		AC220/110, 50/60Hz	AC220/110, 50/60Hz	AC220/110, 50/60Hz
12	Noise level dB		< 55	< 55	< 55
13	Electrical safety		II	II	II
14	Ambient temperature °C		10° ÷ 40°	10° ÷ 40°	10° ÷ 40°
15	Relative humidity, %		30% ÷ 75%	30% ÷ 75%	30% ÷ 75%
16	Atmospheric pressure hPa		700 ÷ 1060	700 ÷ 1060	700 ÷ 1060

Transport and storage conditions

a) Storage temperature: -40 ° C ÷ 55 ° C.
b) Atmospheric pressure: 500 hPa ÷ 1060 hPa.
c) Storing in a dry and ventilated room with a relative humidity of less than 95% non-corrosive gases.
d) During transport to avoid sudden shaking or moisture.

VII. Guarantee.

Warranty Period: 24 months from the date the vehicle is in operation.

Warranty and post-warranty service conducts the official representative of the manufacturer's plant in the Russian Federation:

Ningbo Kaifat Medical Science and Technical Co., LTD.
Address: Kaifat Group,No.599 Qiming Road,Yinzhou Ivestment and Business Incubation of Ningbo, 315104, China

E-mail: kfm@eckaifat.com. www. Kaifat-m.com
Tel.: (86) 0574-8816-7634; Fax: (86) 0574-8816-7639

Model Name: SE-_____ Serial No.: _____

Start-up date _____ 20____ г.

Name of Service Engineer _____Signature _____

Allowance for warranty and service

Date	Device Model	Reason	View Repairs	Comments	Full Name Service Engineer	Name Accepting Work