

SURAPID 速捷

Maintenance Manual

File No.: XT0229B20008

Oct. 2020

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1 Purpose of this manual and the elevator owner’s responsibilities

1.1 Purpose of this manual

The purpose of this manual is to provide information on the use and maintenance of elevators for the elevator owners, maintenance companies and other trained and designated staff. Elevator owners should save the file in appropriate place, and by the condition that designated staff can access at any time. This brochure will introduce the normal use and basic maintenance methods of the elevator, and provide instructions about breakdowns and emergencies.

When the expected and required uses are found to be inconsistent, and abnormal operation, noise or movement are observed, it should be reported immediately to the elevator maintenance company, the maintenance company should clear of the fault or to take preventive measures under the correct instructions.

This elevator is designed for transportation of passengers and goods, cargo loading capacity is less than or equal to the maximum prescribed weight and it operates at scheduled speed under rated traffic operating conditions. Overloading will produce a corresponding visual and / or audible alarm signal in the lift car until the overload signal disappeared, can the elevator be activated.

The installer will refuse to take any responsibility for any damage and safety risk caused by failure of the adoption of this manual.

The maintenance should be carried out by qualified maintenance company and according to correct methods. After appropriate risk evaluation, only the authorized and qualified people are allowed to carry out maintenance according to the way required by elevator safety assurance. Changes and replacement of parts should be recorded in the elevator file. Only the use of original spare parts can assure the complete safety and functionality of the elevator design.

1.2 The elevator owner’s responsibilities

For ensuring adequate maintenance of elevator equipment, elevator owners are to bear a heavy legal responsibility. Therefore, before the elevator put into normal operation, maintenance programs developed by the maintenance company are extremely important. Elevator devices use must be limited to its intended use.

Ventilation devices are needed to be installed so that environment of the elevator car, well road, room or machine area and the control cabinet will not exceed the equipment operating conditions / temperature (If the booklet has no different specifications, it is generally between +5 ℃ and 40 ℃).

The elevator documents need to be saved in the appropriate place and designated people can freely access when needed.

Security access needed in coming in and out of the buildings and facilities should be assured under conditions of emergency and maintenance operating. Measures should be taken (such as locking, etc.), only designated people are allowed to go near the machine so as to prevent casual access in and out. Adequate lighting should be assured in engine room or machinery areas, well Road and access roads at any time. All the rooms concerned with the elevator, well Road and compartments shall not be used for other purposes (for storage, piling up debris, etc.).

Repair and maintenance must be entrusted to qualified service companies to ensure the complete safety of installations. General maintenance and repair instructions can be found in the corresponding elevator files.

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It is to be permanently ensured that the elevator to provide users with emergency services. When the elevator is under usage, the elevator car's lines of communication should be assured to work smoothly, and help phone number should be marked in prominent positions.

Examinations should be carried out in accordance with local regulations. If there are no rules about this device, the examination should be carried out by a qualified maintenance company.

If the elevator has stopped using for some time, before putting into normal operation, the elevator need to be cleaned and lubricated by a qualified maintenance company, the damaged parts to be replaced and safety parts to be examined.

It should be reported immediately to the maintenance company when any abnormal emergency situation was found in the elevator use. In addition, the report may also include any buildings and facilities changes that might affect the elevator.

2 Definitions and symbols

2.1 Definitions

Elevator Owner:

Natural or legal person who has control over the elevator, and are responsible for its intended operations and uses.

The elevator's handover:

Time of the first use after the handover of the elevator by the installer to the owner.

Putting into use:

The first time the owner offers elevator passenger service.

Fault:

For provided use, the safe operation of elevators is limited or impossible to achieve operating condition.

Maintenance Company:

Maintenance companies are legal person or legal entity belongs to the legal person with required qualifications who undertake elevator maintenance. Maintenance companies can be divided into the company only to have elevator maintain capacity and the maintenance company who has abilities of elevator maintenance, repair and alteration according to the different abilities each maintenance company has.

Maintain:

Maintenance also known as keeping in good repair, it means after handover of the elevator, to assure the normal and safe operation of the elevator, lubrication, inspection, cleaning, etc. that are carried out according to the plan.

Maintenance:

Maintenance of the narrow sense refers to the maintenance and repair; General maintenance refers to all maintenance, repair and modification services after elevator handover. The instructions referred to the maintenance of narrow sense.

Modification:

After the elevator delivery, a series of operations have been carried out on the elevator and its parts due to some reasons, these operations will have impact on the elevator's characteristics,

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such as changing the normal rated speed, rated load, elevator car quality, replacement of tractor, car, control systems, rail, and rail type, etc.

Introduction of new technologies, new materials, completely or partially improve the using elevator’s features, performance, reliability, security, and decoration, such modification also belongs to the scope of such transformation.

Preventive Maintenance:

All measures that are needed to ensure the elevator’s safety and normal operation.

Competent maintenance staff:

People who have been fully theoretically and practically trained, with experience in maintenance of equipment, can make an accurate assessment of the state of the elevator’s continued safe operation, have been supported by their institutions and have gotten certain types of operation certificates.

3 General rules

3.1 This manual applies to the company's production of gearless elevators.

3.2 User units should take the elevator random file for archiving.

3.3 Elevator normal operating conditions should be consistent with the relevant provisions of elevator technology and requirements of using environmental conditions of frequency conversion devices.

3.4 To ensure safe driving, the right maintenance management system should be established.

3.4.1 Take one time of examination and maintenance on safety loop and electrical control components, mechanical parts every half month;

3.4.2 Conduct careful inspection, adjustment and maintenance (For example, frequency VFD operation status and set parameters inspection) on important mechanical and electrical equipment every season.

3.4.3 Carry out whole staircase test once a year, check all the mechanical and electrical safety circuits working conditions, insulation resistance value, repair, replace badly damaged devices;

3.4.4 Determine the lift overhaul period according to using condition;

3.4.5 Once the elevator was out of use for more than seven days, it is subject to detailed inspection before use;

3.4.6 Make elevator operation records.

3.5 User units are required to let trained and qualified personnel to operate the elevator, Elevator base station keys and emergency unlock keys should be in charge of by these people.

3.6 The door leading to the engine room should remain locked.

3.7 For well Roads that are not completely closed, users should take appropriate measures to avoid intentional or unintentional access of irrelevant personnel.

4 Normal use instructions

4.1 Boot ready

4.1.1 All the action switches are placed in the normal position;

4.1.2 Switch on the computer room power distribution box;

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4.1.3 Place the control cabinet power switch at ON position.

4.2 Operation and running

4.2.1 Hall Call

- (a) If the elevator standby at the passenger floor, after the passengers press the call button, the button indicator lights, elevator door opens automatically to answer passengers call;
- (b) If the elevator standby at other floors, after the passenger's call pressing, the elevator should start immediately to respond to the passenger's elevator calling;
- (c) When the elevator is operating upwards, it will respond to upwards elevator calling in order; on the contrary it will respond to downwards elevator calling signals;
- (d) When the elevator car reached the last recorded call layer station of the elevator in a certain direction, it will change directions to the answer elevator calls in the opposite direction;
- (e) If several units of elevators are in group control, the elevator car answering will be controlled by the system uniformly, the system will calculate the response time of each elevator and response forms to ensure the passengers the shortest waiting time for an elevator.

4.2.2 Instruction in the elevator car

- (a) After passengers entering the elevator, press the button of the floors that they are to go;
- (b) The elevator responds to elevator car calling in order by the running direction;
- (c) After responding to the last elevator calling signal, the elevator will standby at the final floor with closed door.

4.2.3 Automatic Returning To the Base Station (HL)

- (a) According to user requirements, one floor, usually the first floor can be set as base station;
- (b) If there is no elevator calling signal within setting time, the elevator will automatically return to the base station with the door closed after responding to the last elevator calling signal;
- (c) If someone calls the elevator during the elevator's returning to the base station, and the calling signal comes from the running direction of the elevator, then the elevator will run to the calling floor and open the door; If the calling signal comes from opposite direction, then the elevator stop at the near floor without opening the door and change direction to run to the calling floor.

4.2.4 Door Protection

- (a) Entrance protection system of elevator door uses the security touch plate with light eyes, or infrared light curtain protection system, in the door closing process, when the touch pad encounters obstacles or infra-red of the light screen detects any obstacle, the door will open in time;
- (b) If anyone of the security touch plate, light screen or open button keeps the elevator gate open for more the set time, the buzzer within the elevator car will ring to remind passengers not to prevent the closing of the elevator door;
- (C) When the elevator runs to one floor and gives out opening signal and the door can not open to the end in set time, the door will close and run to the next floor and gives

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opening signal, if the door still can not open completely in set time, the elevator will close the door immediately and go on running to the next floor, after three times of repetitions, if the door still can not open completely, the elevator will stop running and keep in closing state, response to no signal and the server will show "DTO";

(d) If the elevator door can not close completely in set time after the elevator gives closing signal, the door will open again and go on closing, after three times of repetitions, if the door still can not close completely, the elevator door will opening and the elevator will not response to any directions, the server will show "DTC".

4.2.5 Bypass when full load

(a) At stop state, if the elevator detects up to 80% of the load switch movement, that is, into the full state, elevator door remains open, when press the direction button within the elevator car, the door automatically shut down and start running;

(b) The elevator will only accept calls within, rather than to respond to hall calls when enter into the full load state.

4.2.6 Overload protection

If the elevator has been detected in the overloaded state, the buzzer inside the elevator car will ring, overloading light of the manipulating boxes will illuminate, while the door remains open, the elevator can not start.

4.2.7 Automatic control of lighting and fans inside the elevator car

Within the set time there are nobody calling and fire, earthquakes, power supply for emergency operation, lighting and fans inside the elevator car will shut down automatically, once there are call signals the elevator car and fan will open automatically.

4.2.8 Arrival Bell

The arrival bell on the roof of the elevator car will ring to remind the passenger that the elevator is arriving when the elevator car arrives at the calling signal outside the hall.

4.2.9 Voice announcement

(a) When the elevator car arrives at the calling floor of the passenger, the voice announcement system will broadcast floor information;

(b) If there are still other calling signals when the elevator has arrived at one floor, the voice announcement system will broadcast the running direction next after opening the door.

4.2.10 Driver Operation (ATT)

(a) The elevator driver's operation must be carried out by switching over a "driver" switch in the operating box, once enter into the driver's operation, close the door and elevator calling overpass out in the hall will all be taken by driver operation;

(b) When there are elevator calling signals, the driver must keeping pressing the ATU / ATD button until the door closes then the elevator will start and proceed to calling floors, and automatically open the door; if release the ATU / ATD button during the closing process, the door will be re-opened;

(c) The elevator can only close the door by ATU/ATD button when there are elevator calling signals;

(d) When there are upward and downward signals at the same time, the driver can select the elevator's direction by ATU/ATD button in the operation box;

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4.2.11 Independent service (ISC)

- (a) The elevator will not respond to calling signal out in the hall and only respond to command signals inside the elevator car when in independent state;
- (b) Other states of the independent service are the same to driver operation.

4.2.12 Fire Emergency Operation (EFO)

- (a) If there are fire detectors or fire switch actions, then all elevator calling signals records will be canceled and the elevator calling is in vain;
- (b) Fire light [FSL] on COP will illuminate;
- (c) When the elevator is not at the retreating floor(usually the base station):
 - i) If the elevator's direction is to the retreating direction, then it goes directly to the retreating floor; Otherwise it will stop at the nearest floor and change direction directly to the retreating floor without opening the door;
 - ii) If the elevator is closing standby, then it will goes directly to the retreating floor;
 - iii) If it is on the door opening process, then after the door opens completely, it closes immediately and goes directly to the retreating floor, when in door closing, DOB/SGS is in vain;
 - iv) The door opens automatically when the elevator arrives the retreating floor;
 - v) If the elevator is at the retreating floor, even the door is closed with nobody using it, the door will open again;
 - vi) When the door opens, illumination and fan will cut off automatically and the elevator stops using.

4.2.13 (EFS) Fireman Service (EFS)

- (a) EFS function is a continuation of EFO function;
- (b) It automatically switches into the EFS when EFO process is complete, this process of change can be seen on the server;
- (c) When firefighters enter the elevator, first press floor direction, and then press close button, notice to keep pressing until the door closed completely and then start, then it needs no keeping press on the open button; In the process of closing the door, if the close button was released then the door will open gain;
- (d) If firefighters choose more than one directions in COP, then the elevator cancels all calling signals after it runs to the nearest elevator calling floor;
- (e) The elevator door will not automatically open when the elevator arrives the calling floor of the firefighters, firefighters should keep pressing at the opening button until the door opens complete and the elevator will keep at door opening state;
- (f) After the fire switch closed, EFS state can only be canceled after the elevator has returned to the retreating floor, and the elevator returns to normal state.

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4.3 Maintenance Running

4.3.1 Emergency electric operation in engine room (ERO)

- (a) Whether the elevator door is open or closed, after switch on the ERO, the elevator door should shut immediately and opening button and Safety touch panel are in vain now;
- (b) Whatever kind of running mode the elevator is (Normal operation, self-learning operation, maintenance operation of elevator car) running at, after start/stop the ERO switch, the elevator stops running immediately;
- (c) ERO running speed is of 0.3m / s (can be set by the VFD), after ERO switch start/stop, press up or down button on the ERO box, the elevator should be able to run up or down;
- (d) In ERO operation will enable over-speed governing switch, the upper and lower limit switches and electrical safety gear switches failure;
- (e) When the elevator switches from the normal operation mode to ERO mode, the location of elevator display will change to "-"; When the elevator switches from standby mode stopping at an flat floor position of a floor to ERO mode, and then uses the up and down buttons to run away the door zone, the location of the elevator will lose also;
- (f) When the elevator switches from ERO mode to the normal operation mode, under the mentioned position losing display state, the elevator will go down direction to make correct run (CORRECT RUN).

4.3.2 Maintenance operation of elevator car (TCI)

- (a) Whether the elevator door is open or closed, after switch on the TCI, the elevator car door should shut immediately and opening button and Safety touch panel are in vain now;
- (b) Whatever kind of running mode the elevator is (Normal operation, self-learning operation, emergency electric operation in engine room) running at, after start/stop the TCI switch, the elevator stops running immediately;
- (c) Maintenance running speed is of .4m / s (can be set by the VFD), after TCI switch start/stop, press up or down button of public button on the on the TCI box, the elevator should be able to run up or down;
- (d) When the elevator switches from the normal operation mode to TCI mode, the location of elevator display will change to "-"; When the elevator switches from standby mode stopping at an equal position of a floor to TCI mode, and then uses the up and down buttons to run away the door zone, the location of the elevator will lose also;
- (f) When the elevator switches from TCI mode to the normal operation mode, under the mentioned position losing display state, the elevator will go down direction to make correct run (CORRECT RUN).

4.3.3 Correction Running (COR RUN)

- a) When power up the elevator, if the elevator does not stop at flat floor position of the top or the bottom floor, and the elevator is in normal mode, the elevator will carry out reset down or up to run to the bottom or top of the flat floor location;
- b) The elevator will close door immediately after it detects any location fault signal at any place, the opening button is in vain and all calling records will be canceled and no calling signal will be recorded;

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- c) During elevator floor location fault and correction running period, the position indicator shows “-” and only after the elevator end station to resume location, it can display a normal floor displays and the elevator go back to normal;
- d) Elevator correction operation under normal circumstances is down to the bottom floor to resume position, only when before the elevator correction operation is started, if its bottom location has forced deceleration switch (1LS) action, but not in the flat floor position, this time correction running will go to the top-level recovery position;
- e) Deceleration of correction running at the end station relies on force deceleration switch works.

4.4 The Security Circuit Parking

4.4.1 If the security circuits disconnect, elevator door opens or safety switch actions during the elevator running, it will cause an emergency stop;

4.4.2 An emergency stop, the floor is displayed as “-”;

4.4.3 Once safety circuit recovers, the elevator will start correction running.

4.5 End station forcing deceleration devices (1LS/2LS)

For the 1m / s elevator, end-station installation position 1LS/2LS are forwarder than normal deceleration point, in order to prevent the elevator hoisting or compliance to the end; for 1.75m / s elevator, end-station installation position 1LS/2LS are more rearward than normal deceleration point, when the elevator heading for the terminal floor, if speed of the elevator location in 1LS/2LS is not reduced to the permitted extent of the elevator, the elevator will be forced to slow down and stop.

4.6 Motor overheated

- (a) When the elevator detects the motor coil temperature exceeds 130 degrees, the system will show overheat protection (SE-FAULT); the motor temperature drops down, the elevators automatically return to normal;
- (b) If in the normal course of operation, the system detects the signal of overheated motors, the elevator will go to the nearest calling floor, cancels all the calling records after opening the door, and makes no calling signal records, and then it stops use to wait for elevator recovery;
- (c) If the motor overheat signal appears at standby time, elevators will stop using;
- (d) When (SE-FAULT) appears, the open button inside the elevator car is still valid;
- (e) When (SE-FAULT) appears, the maintenance running is still valid;

4.7 VFD Fault

4.7.1 The elevator will stop running immediately when VFD fault appears during running process;

4.7.2 Cancel all elevator car calling signals in and out, the elevator is in an invalid state;

4.7.3 After faults recovering, the elevator will carry out correction running (COR RUN).

4.8 Serious Situation Dealing

In three kinds of severe cases, the elevator can only be used after being subjected to strict inspection, repair and appraisal of relevant departments.

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4.8.1 When the elevator has event of a serious hit on the top, pit, or rolling car; 4.8.2 Case of fire; 4.8.3 An earthquake occurs. 4.9 Rules and procedures of release of the passengers trapped in elevator: 4.9.1 Whenever the elevator failures, it shall promptly notify the elevator maintenance department, before the arrival of professional maintenance staff, according to different circumstances, the release of trapped passengers as a result of a sudden power failure is to carried out by the aid of trained personnel based on the following steps. 4.9.2 Cut off the total power supply of elevator machine room, and hang up the "maintenance" diagram; 4.9.3 Check whether the situation inside the elevator machine room is as usual; 4.9.4 The engine room must have adequate lighting, check floor marks on the steel wire rope or steel stop to determine the location of parking. 4.9.5 If the elevator car parked near Door location, it is higher or lower than the floor of no more than 0.5 meters: (a) Open the Door with special key; (b) Open the elevator car top door with human force; (c)To assist passengers to leave the elevator car; (e) Re-closed the door properly. 4.9.6 If the elevator car parked far away from the layer gate position, first it should move the elevator car to the floor near the door, and then rescued the passengers according to the above steps, moving the elevator car as follows: (a) Use walkie-talkie to advise passengers to keep quiet, and explain that the elevator car will move at any time and do not let any part of the body to be stuck outside the car in order to avoid danger, and if the elevator car door is in a semi-state, it should be shut down completely. (b) Use internal contracting brake to wrench at the front hand: (c) To ensure that the elevator master switch has been cut off; (d) To ensure that all Hall Door, Car door is shut. (e) When using brake wrench, one person must control declutching while another person moves hand-wheel. (f) Pull down the brake wrench be placed on the brake-staff, slowly release the brake-staff and another person rotate the hand-wheel to the rotation direction, the direction of a relatively easy to flip as prevail. (g) Once again remind passengers the relief work in progress, and then slowly twist the elevator car which will move due to deadweight and, in order to avoid the car rise or fall too quickly that cause dangers, the operation should take discontinuous action and make the elevator car to move gradually to prevent accidents. (h) Slowly raise or lower the elevator car, until near the Hall Door of the emergency door key hole.			

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(i) Before use the emergency door key to open the door, a difference of less than 100 mm must be assured between the elevator car sill and the hall Door threshold in order for passengers to leave the car. 4.9.7 When all passengers have left the elevator, the hall Door must be shut and locked. 4.9.8 It should also be noted on operation that: If the elevator car stops on the top Hall Door above or below the bottom Hall Door, it can not just force open the brake-staff to make the free movement of the elevator car, but hold tight the hand-wheel when force opening the brake-staff, and use human power to twist the elevator car to move to the right direction. <u>In case of other complex situation, should wait for the elevator professionals to come to deal with!</u> 4.10 Important Notice 4.10.1 Engine room doors remain locked Only allows designated personnel to go near the mechanical room and control cabinet, and through appropriate means (locking, etc.) to prevent abuse. In order to cope with emergency situations, rescue and repair operations, the designated officer must be able to get the key at any time. Must ensure the security of access to the engine room or machinery control areas; must immediately report any changes or danger to the maintenance company. 4.10.2 Safety of loading and unloading The elevator car may be slightly lower or higher than the table level station stop according to the type of load and drive control. It must be taken to prevent passengers or cargo trips, especially when goods are moving on the wheel. Do not use too small wheels, they may get stuck at the gap between the elevator car sill and layer sill, or stuck in the ground sill orbit, or may damage the sill. Special attention must be paid to the gap between the elevator car sill and layer sill to ensure that no objects stuck (stick, heel), and to prevent items falling into the well tract. If it is the transportation of goods, then the goods must be evenly distributed on the floor of the elevator car and to be fixed, in order to avoid an internal move during the running process. To contrast the weight of the transported goods and personnel, check the maximum load of your elevator. Overloading may cause dangers to load (cargo, passenger) and the elevator itself. If the elevator’s intended use of the function do not include, then using lift truck loading and unloading is prohibited in the elevator car. 4.10.3 Preventive measures taken in partial closure of Elevator shafts When the shaft is partially closed, it must have baffles or barriers to prevent the elevator user from the equipment damage in operation. These barriers or baffles must be maintained in good condition under all circumstances and in accordance with national regulations. If these barriers are made of glass, special attention will need to be paid. When it needs to clean up the glass, due to security reasons, need to listen to the repair company. 4.10.4 Things that managers need to intervene in For ensuring adequate maintenance of elevator equipment, elevator owners are to bear a heavy legal responsibility. Therefore, before the elevator put into normal operation, maintenance programs developed by the maintenance company are extremely important. Elevator devices use must be limited to its intended use.			

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5 Maintenance Instructions

5.1 Notes

5.1.1 Conditions for maintenance staff

(a) Familiar with the principles, structure, methods of operation of the elevator;

(b) Familiar with the structure, and action process of the major components, in particular, the application methods of VFD device;

(c) Familiar with the control program flow;

(d) With a familiar fault judgments, analysis, and exclusion capacity;

(e) Have knowledge of safe operation.

5.1.2 When in maintenance, the elevator does not allow taking passengers and cargo, the total power switch and all levels of the Office of the door should be hung with "under repair, closing (using) prohibited " signs.

5.1.3 Maintenance should determine the host (usually borne by the highly skilled) to be responsible for directing, and other coordination officers have to obey their scheduling.

5.1.4 In maintenance, the elevator can only be placed in the "maintenance" state, when no elevator car running is needed, corresponding switch should be disconnected.

(a) The Power Switch (NFBM) should be off when in the engine room;

(b) The Emergency Stop Switch (TES) of overhaul Box should be disconnected when at the top of the elevator car.

(c) The Emergency Stop Switch (PES) of pit boxes should be disconnected when at the end of pit.

5.1.5 Running with the security circuit and the circuit locks are closed with a short way up is prohibited.

5.1.6 To lift and down the elevator car by hand drive wheel, the total power switch (NFBM) must be cut off.

5.1.7 Line lights should use 36V safety lamp with shields.

5.1.8 It is strictly prohibited to operate by probing body into the elevator car or on top outside the hall, it is strictly prohibited of operation with one foot in the shaft side or elevator car threshold, the other foot on any fulcrum in the shaft, it is strictly prohibited working within the counterweight operating range, if work must be taken in the area, it should be with specifically appointed people who is responsible for care of elevator car running switch.

5.1.9 Demolition if the drive circuit wiring in maintenance should be recovered with same phase sequence and try to run and observe if the traction machine turn is correct or not.

5.1.10 After maintenance finished, all switches should be restored to its original location, maintenance records be completed, the elevator is put into use after delivery and acceptance.

5.2 Safety Operation

5.2.1 Before driving the elevator in normal running, the drivers should:

(a) Before opening the hall Door and enter into the elevator car, they must note whether the elevator car is stopping at the floor;

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(b) Open the lighting in the elevator car;

(c) Every day before starting work, the elevator should be carried up and down running for few times to see if there are abnormal occurrences or not;

(d) The door outside in the hall can not be opened by hand, when the hall door elevator car door is not completely closed, the elevator can not start;

(e) Note if there are remarkable changes in the flat floor;

(f) Clean the hall door in the elevator car and areas that can be seen by passengers, but water washing is prohibited.

5.2.2 Notes the drivers should pay attention to In normal driving:

(a) If he/she has to leave the elevator car, stop it at the base station, disconnect power switch inside the elevator car and close the hall door;

(b) The carrying capacity of the elevator car should not exceed the rated load of the elevator;

(c) Passenger elevators are not allowed to use as goods lift for often;

(d) The transport of flammable, explosive dangerous goods is not allowed, special circumstances should be subjected to the approval authorities and to take security measures;

(e) Normal driving with the repair rate is strictly prohibited with the hall, elevator doors opening.

(f) It is not allowed to open the top safe car windows, car security door to ship long objects;

(g) Passengers are advised not to rely on the door of the elevator car;

(h) Materials shall not be placed on top of the elevator car;

(i) Load should be securely installed in the middle of the elevator car as much as possible, so as to avoid dumping in operation;

5.2.3 When the elevator has the following failures, press an alarm button to alarm, and promptly notify the maintenance personnel;

(a) It can not start normally when the hall and elevator car doors are closed;

(b) For elevator controlled with the setting of pressing start button to start, when it automatically runs without pressing the starting button after the hall and elevator car doors are closed;

(c) With significant speed changes in running;

(d) When the running direction is opposite to command direction;

(e) Inside selection, flat floor, speed change, calling and floor pointing signals failure, out of control;

(f) With abnormal noise, larger vibration and shock;

(g) Go on running when passed the end station position;

(h) When safety tongs are wrong acted;

(i) Has Arima electrical phenomena when coming into contact with any metal part;

(j) When the electrical components emit a burnt smell due to overheating.

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5.2.4 After the elevator use, the driver should stop the elevator car at the base station, disconnect all switches at operating plate and close the hall Door. 5.2.5 When the elevator has sudden stopping or out of control in running, the driver should keep calming and press emergency stop immediately, seriously stop the passengers from jumping out of the elevator car and notify the maintenance personnel in time, hand plate traction machine will let the elevator car into the opening area or open the car door by hand to ensure the safety withdrawal of passengers. 5.3 The maintenance and repair of major components 5.3.1 Tractor (1) Traction wheel (a) Keep the traction rope groove clean, no allowing of lubricating in rope slot; (b) When the rope groove wear and tear are not in consistent with each other, a maximum diameter of the gap up to 1 / 10 of the traction rope or more or severe depressions affect the uses, heavy vehicles should be taken or replaced; (c) When the gap between the traction rope and the rope bottom is $\leq 1\text{mm}$, or about half of garden with a slot cut rope wear and tear to the incision depth is less than 2mm, should focus on cars or replaced. Heavy Vehicle rope round incision below the rim thickness should not be less than the diameter of the traction rope. (2) Brake-staff (a) Action should be flexible and reliable, Pin roll should has regular lubrication, brake pads and wheel work surface should keep clean, the oil is not allowed to spill into; (b) Brake shoes on both sides should closely and evenly glue with the brake wheel work surface when braking, the brake shoes on both sides of the brake should leave the brake wheel work surface at the same time when declutching, the clearance is not greater than 0.7mm, if the gap is too large, appropriate adjustments need to be made; (c) Brake band should has no oil, fastening rivets are buried in brake belt to prevent contact with the brake wheel, the brake band has noise due to abnormal brake after being worn and torn, appropriate adjustment can be taken and if the wear and tear is too large that cause rivets exposed over brake band surface, or worn-out amount has a thickness of more than 1 / 4 of the brake band thickness, the brake band should be replaced; (d) Electromagnetic coil wiring has no loosening phenomenon, insulation good, temperature does not exceed 80 °C. 5.3.2 Speed limiter (a) Action should be flexible and reliable, oil in rotating part monthly, clean and change oil once a year (speed limiter has been adjusted and sealed when delivery, users are not allowed to be free to open and make adjustments); (b) The tension of tensioning device should be consistent, rotating flexible, rope sheave and guidance devices oiling once a week, clean and change oil once a year; (c) Regularly checks clip rope JAW and remove foreign body so as to ensure a reliable movement. If over-speed governor rope stretch beyond the prescribed scope, control loop should be cut off and be truncated.			

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(d) The elevator maintenance company must verify the governor act speed once a year for which have been used over 15 years, or once every two years for which have been used within 15 years.

5.3.3 Safety gear

(a) Movements are sensitive and reliable, weekly check rotating rod, it should be flexible and with no stuck phenomenon, pulling power and enhance height both meet the requirements;

(b) Rotating part oiling monthly, the gap between wedge and the slide face should be 2 ~ 3mm, and is the same, movements are flexible and reliable, coated with Vaseline lubrication for anti-rust.

5.3.4 Elevator Car Doors, Hall Door, Elevator Car, Automatic Doors Agency

Hanger roller of Elevator car doors, Hall Doors wear and tear, thus door leaf falls, when the gap between its lower end and ground sill is less than 3mm, the roller wheel should be replaced or adjust their gap to 4 ~ 5mm, when it is worn and torn to the situation of unable to work properly, it should be replaced;

Door rail should always be wiped and smeared with a small amount of oil, so that the door block will be light and flexible with smooth operation, when door slider is worn and affecting the use, it should be replaced promptly;

(1) Weekly Inspection

(a) Turn the various magnetic switches of the door organization on and off to ensure accurate movement;

(b) Security touch-panel actions are flexible and reliable and the impact force should be less than 0.5 kg force;

(c) Movements of hook lock, lock arm and moving contacts of the hall door lock are flexible, dynamic and static contact of the hall lock should be justified, engagement be at least 7mm so as to prevent the emergence of virtual access, adhesion phenomenon;

(d) If the hall door linkage traction device looses, it is necessary to timely adjust the tension;

(e) Whether there are foreign bodies squeezed into the gap between the moving elevator car bottom and the wall to ensure the elevator car bottom activities are unimpeded.

(2) Monthly Inspection

(a) Safety door closing switches of the elevator car door to ensure that the elevator can not be started when the door is not closed strictly;

(b) Terminals of the opening machine, the electrical and the magnetic switch wirings can not have loose and rub touch;

(c) Hall door of each floor: The door can not be opened by hand out the hall door (using the triangular key is an exception);

(d) Forced closing device, the hall door opens at any position without elevator car door, the hall door should be enabled to automatically close and lock;

(e) Overload and full load switches at the bottom of the elevator car to ensure accurate movement.

(3) Seasonly Inspection

(a) Motor of automatic door body, the movements are flexible and reliable;

(b) Whether the elevator car wall has loosening.

5.3.5 Traction rope

(a) Examine and adjust the rope fastening nut mix every week to achieve uniform tension of the traction rope;

(b) The steel rope must be changed under any situations below:

① It appears cage distortion, rope strands out, kinking, flattening or buckling;

② The number of wire break-off at one lay length is over these data listed below:

Form of wire break-off	Type of steel rope		
	6×19	8×19	9×19
Uniform distributed on the outside strands	24	30	34
Concentrated on one or two outside strands	8	10	11
Contiguous wires break-off on one outside strand	4	4	4
Wire break-off in strand gaps	1	1	1
Note: the referred length for calculating the number of wire break-off is one lay length, about 6d(d is the nominal diameter of steel rope, mm)			

③ Diameter of steel rope is smaller than 90 percents of the nominal diameter;

④ The steel rope is serious rusted, and the strand gaps are filled with corruptions.

(c) Traction rope over-stretched, it should be truncated, the traction rope surface has foreign matters like dirt or sand etc., it should promptly be wiped clean with kerosene.

5.3.7 Rails and guiding boots

(1) Car guide rail, heavy rail should be maintained on the well-oiled, monthly check oil level of automatic oil lubricating device box , and fill timely;

(2) When the guide face has been caused damage due to safety gear, or pits, burrs, scratches, etc. are found, they should be promptly polished smooth;

(3) When the guide shoe insert has 1mm work wear it should be replaced, if the inserts are serious worn and torn within a month, the machine should be stopped for inspection, and return running after repaired;

(4) Every year it should carefully examine each connecting plate and the rail frame rail connection bolts, re-tightening all fastening bolts and carry out re-calibration on the face size and vertical degree of the rail.

5.3.8 Compensation Chain

When compensation chain generates large noise in running, it should be checked or coated with silencer oil.

5.3.9 Electrical Equipment

- (a) Various safety contact switches of the elevator electrical safety device should be flexible and reliable, monthly check and wipe out surface dust and verify the reliability of contacts, ablation should be trimmed smooth, serious ones should be replaced;
- (b) Spacing Limit switches should be sensitive and reliable, every ten days to conduct a more-way test to check its ability of reliably disconnect;
- (c) Control cabinet;
- (d) VFD Device
- (e) Power should be cut off (OFF);

Note points for Maintenance and Check;

The capacitor will discharge after power off, operation can be started after the light on the VFD control panel is off;

(f) Routine Inspection

Notify if the VFD device has phenomena of different sound, smell and damage, the happening location and extent should be assured. Always clear out the dirt and foreign body on the control panel and ventilation opening to maintain the normal work of the VFD device.

(g) Regular Maintenance

The VFD device has a different life span due to different environment and time. Continuous use within allowed scope the general electrolytic capacitor has a life span of about 5 years while the cooling fan should be changed about every 3 years.

5.3 Lubrication summary

No.	Name	Lubrication Oil Name	Picture	Maintenance and Protection
1	Driven axle	butter		Monthly fuel
2	Over-speed governor Rope Axle	32 # Machine Oil		15-day refueling
3	Safety Gear Wedge	Vasogen		Wipe oil every season
4	Guide Rail, Guide Shoe	33 # Machine Oil		Check every month, add oil when the oil cup lacks oil
5	Compensation Chain	Silencer Oil		Regular Checks
6	hydraulic buffer			Regular checks, oil spills need to overhaul
7	Door System	32 # Machine Oil		Regular Checks
8	Brake Pin	32 # Machine Oil		Monthly Cleaning