



INSTALLATION MANUAL & OPERATION INSTRUCTIONS

PUZZLE PARKING SYSTEM



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CHAPTER 1: USER'S RECORD

RECORD BELOW INFORMATION WHICH LOCATED ON THE NAME PLATE

MODEL NO _____

SERIAL NO _____

CUSTOMER _____

DATE OF INSTALLATION _____

WE HEREBY DECLARED THAT THE ABOVE MENTIONED MACHINE HAS BEEN INSTALLED CORRECTLY. ALL FUNCTIONS HAVE BEEN CHECKED AS WELL AS CORRECT OPERATING OF ALL SAFETY DEVICES. WE CONSIDER THEREFORE THE MACHINE WORK IN GOOD CONDITION.

Date of Installation

The authorized technician

The customer



(READ THIS MANUAL COMPLETELY AND PAY MORE ATTENTION TO THE INSTRUCTIONS BEFORE INSTALLING)

CHAPTER 2: INTRODUCTION

This Manual has been made to supply the owner as well the user with the basic instructions for installation and a correct use of the PUZZLE PARKING SYSTEM.

Read this guide carefully before using the lift and follow the instructions given by this guide to grant it a correct function, efficiency and a long service life.

PUZZLE PARKING SYSTEM is dependant parking type where it requires valet to remove lower car away before lowering the platform.

This lift is suitable for residential parking purposes. The platform moves only vertically, so that the users have to clear the ground level to get the higher level car down. It is hydraulic driven Type that lifted directly by cylinder with chain connected to carriage.

This is electro-hydraulic lift used ONLY for motor vehicle parking.

The product designed according to the EN 1493:2010 and EN 14010:2003+A1:2009.
Reference of Directive Machine: 2006/42/EC.



Working Principle:

1. When operating the unit and pushing UP Button, the hydraulic power unit will be electrically activated to pump hydraulic oil from tank to hydraulic oil cylinder.
2. The hydraulic cylinder will pull upwards the steel chain which is connected to the carriage.
3. The carriage will lift the platform as both of them are connected with bolts.
4. Once reaching pr-determined lifting height, the carriage will touch the limit switch and stop the hydraulic motor.
5. The ground floor under the platform is free for parking lower car.

CHAPTER 3: SAFETY INSTRUCTIONS

1. Read and understand all safety warning procedures before operating the parking lift.
2. Do not install the parking lift on any asphalt surface.
3. This parking lift is designed for parking motor vehicles that weighs within its max lifting capacity.



4. Exceeding the maximum lifting weight will cause grave damage to the lift and **DANGEROUS INJURIES** for the persons.
5. This parking lift, in its standard version, is not designed for outdoor use.
6. This parking lift is not designed to be used as car service lift to do any maintenance for the car on platform.
7. The manufacturer doesn't bear any responsibility for any accidents or damage might happen to the cars or/and persons due to misuse of the lift.
8. Keep hands and feet away from any moving parts. Keep feet clear of parking lift when lowering.
9. The parking lift **MUST** only be used by qualified staff, properly trained for such work.
10. During installation, do not wear unfit clothes, large clothes, ties, etc, which could get caught by moving parts of the machine.
11. The parking lift surrounding area must be free from people or objects which could be a danger for lifting operations.



12. Use suitable handling and lifting tools/equipment such as crane, forklift, and pallet lift during off-loading of the packages and during installation of different parts.
13. Always insure the safety devices are engaged before any attempt to work on or near vehicle.
14. The parking lift is only designed to park the entire body of vehicle, having maximum weight not more than the lift capacity.

15. The vehicle must be centered and positioned in a stable correct way with respect to the platform and following the instructions given by manufacturer.
16. Make sure that the lift and its devices are working correctly, according to the specific instructions for maintenance.
17. Do not modify the parking lift without manufacturer's written approval.
18. If the parking lift will not be used for a long period, proceed as follows:
 - a. Disconnect the energy source.
 - b. Grease the moving parts which might be damaged by dust or drying out.
19. Only Authorized personnel are allowed to operate the control box. Only person with qualification for repairing electrical appliances could open control box.
20. Control box is allowed to open only after power is cut off.
21. Installation technicians should be healthy, well trained and qualified to carry on the installation with experience for both mechanical & electrical work.

1. Puzzle parking equipment manual

In order to ensure safe operation of the parking equipment, before operating the equipment must read this section carefully.

Parking equipment operation is controlled by the operator and the control box two parts. GGlifters parking equipment operators include touch screen and dedicated operator two main forms. Touch screen is mainly used for small parking equipment, parking equipment with more parking spaces dedicated operator. Garage operator can achieve keyboard. System electrical components are concentrated in a sealed control box. Equipment operator and control box can be devided, easy for maintenance and operations.

In the parking equipment operator has the emergency stop switch, you can quickly shut down the whole machine under a state of emergency, to prevent worsening situation.

2. Parking equipment dedicated operator

Dedicated parking equipment operator of our company, the appearance is simple, beautiful, easy to operate. The parking equipment dedicated operator can achieve manual modes of operation.

3. Operator interface profile

Follows pic is our parting equipment dedicated control panel.



Key switch: operator is on manual mode, individually control the platforms up or down.

EMERGENCY: when the equipment meet emergency situation,press EMERGENCY will be stopped.

4.Operation manual

After turn on the power of control box,turn key switch to manual position.

Under manual mode, only turn the key to achieve the parking space up or down.

MEMO: When the equipment is under manual mode, please be sure that the space you choose can lift up or down, to avoid accident. This mode can be only operate by professional staff, in every use the equipment should be under automatic mode and take away the key, consequence made by wrong operation, our company will not accept the responsibility.

5.Debug

- 1) When some up limit or down limit fault,or some other reason knock down the up or down limit,the screen show "limit switcher fault" and alarm will be on.
- 2) The system have anti-falling feedback, when the platform lift/down,but the anti-falling hook is not open,the alarm will be on,the screen display "Anti-falling charged"
- 3) The system have electricity supply alarm,when the power supply phase sequence is changed or gap,the system will stop running and alarm will be on,the screen display "power supply fault"
- 4) The system have motor protection device, when the motor over current or overload, it will trip out,at same time alarm will be on.

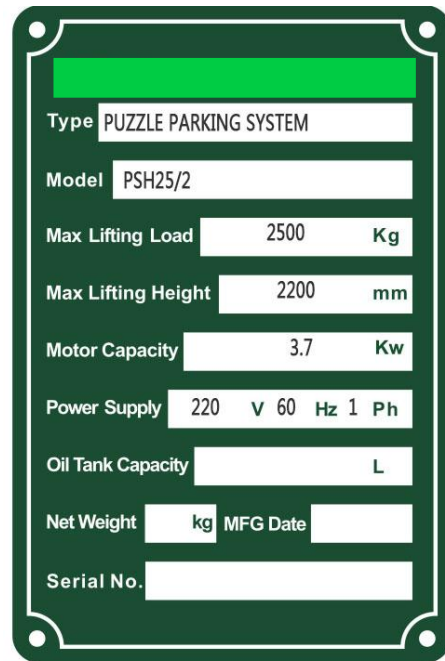
Please refer to follows list for debug, if the problem is not solved please contact with our company.

CHAPTER 4 DESCRIPTION AND TECHNICAL DATA

4.1 Technical Date

Manufacturer	Champion Distributors, LLC
Machine Type	2 Cars Puzzle Parking System
Lifting capacity	2500 kg / platform.
Net lifting Height	2200 mm
Unit External dimensions	5190*5756*3228mm
Runway type	Up /down
Electric parts	Original Chint
Lock release type	Electromagnetic lock release
Middle between runways	Galvanized wave plates
Safety Devices	Anti-fall device
Operation Type	Turn keys on operation box
Power Supply	220 V/60 Hz/1 PH. 3.7 KW lifting motor

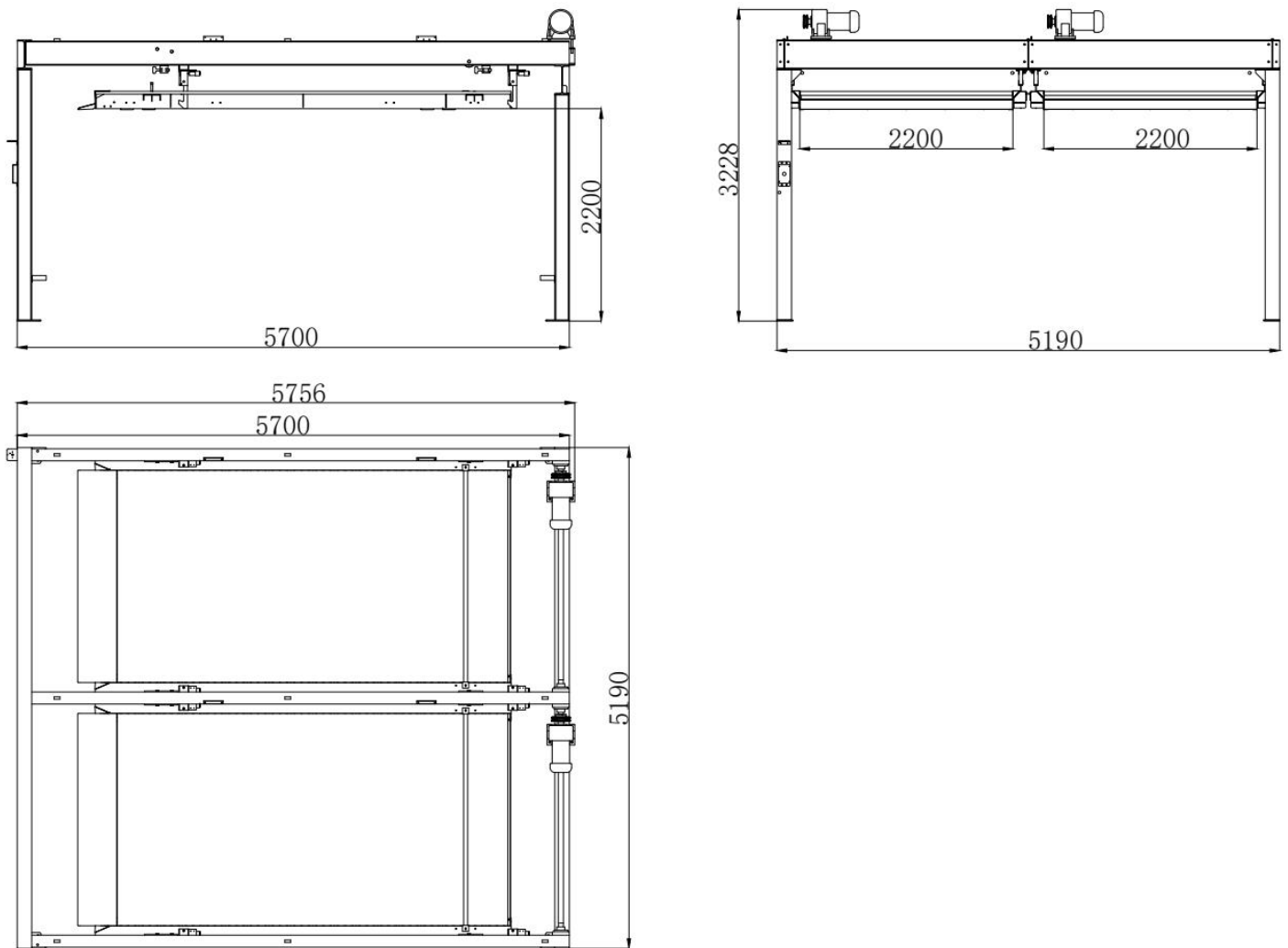
4.2 Identification Plate(Serial No.):



The image shows a green identification plate with white text and fields. The top section is a solid green bar. Below it, the following information is displayed:

Type	PUZZLE PARKING SYSTEM	
Model	PSH25/2	
Max Lifting Load	2500	Kg
Max Lifting Height	2200	mm
Motor Capacity	3.7	Kw
Power Supply	220 V 60 Hz 1 Ph	
Oil Tank Capacity		L
Net Weight	kg	MFG Date
Serial No.		

4.3 Drawing



CHAPTER 5: INSTALLATION INSTRUCTIONS

GG Lifters Equipment, ensuring our customers' safety is our primary concern.

“PUZZLE PARKING SYSTEM were designed and built with safety in mind. However, safety relies on proper installation and training. Prepare for a successful installation by making sure your floor meets specific requirements.

5.1 Installation technicians should be healthy, well trained and qualified to carry on the installation with experience with both mechanical & electrical work.

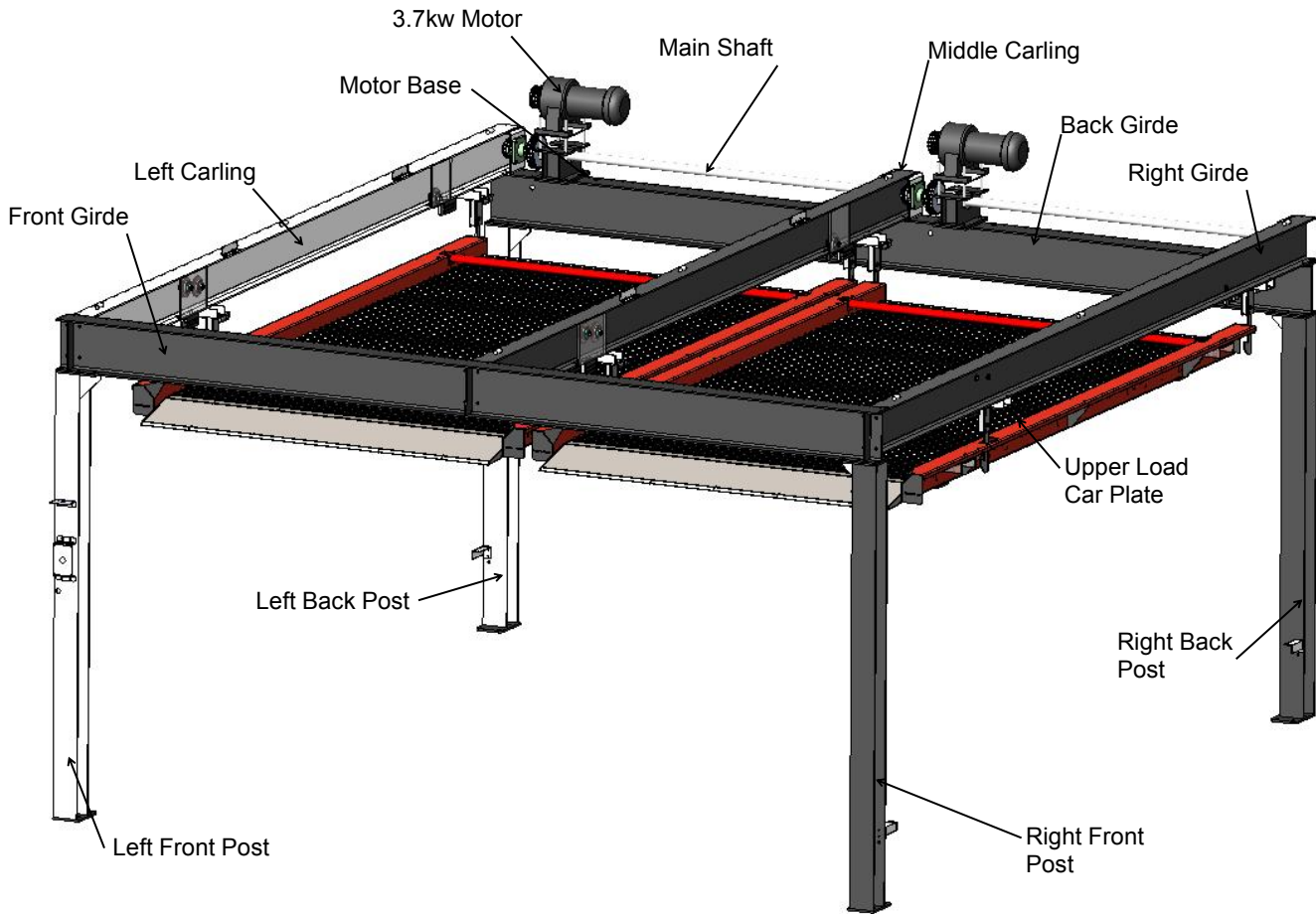
The installation of this lift is relatively simple and can be accomplished by four qualified technicians in a few hours. The following tools and equipment are needed:

- Appropriate lifting equipment such as crane /Hoist / fork lift
- Chalk line / marking string and measuring tape.
- Concrete Rotary Hammer Drill with M18 drill bit.

- Open – End Metric Wrench set
- Metric Socket and Ratchet Set
- Torque Wrench, Screwdrivers, Needle Nose Pliers.
- Vise Grips, Teflon Tape and rubber Hammer.
- Step Ladder, 1.2 m Foot Bubble Leveler, Tape Measure 10 m.



CHAPTER 6: INSTALLATION STEPS



STEP 1(Selecting Site): before installing your new lift, check the following.

1. **LIFT LOCATION:** Always use architects plans when available. Check layout dimension against floor plan requirements making sure that adequate space is available.
2. **OVERHEAD OBSTRUCTIONS:** The area where the lift will be located should be free of overhead obstructions such as heaters, building supports, electrical lines etc.
3. **DEFECTIVE FLOOR:** Visually inspect the site where the lift is to be installed and check for cracked or defective concrete.

DO NOT install or use this lift on any asphalt surface or any surface other than concrete.

DO NOT install or use this lift on expansion seams or on cracked or defective concrete.

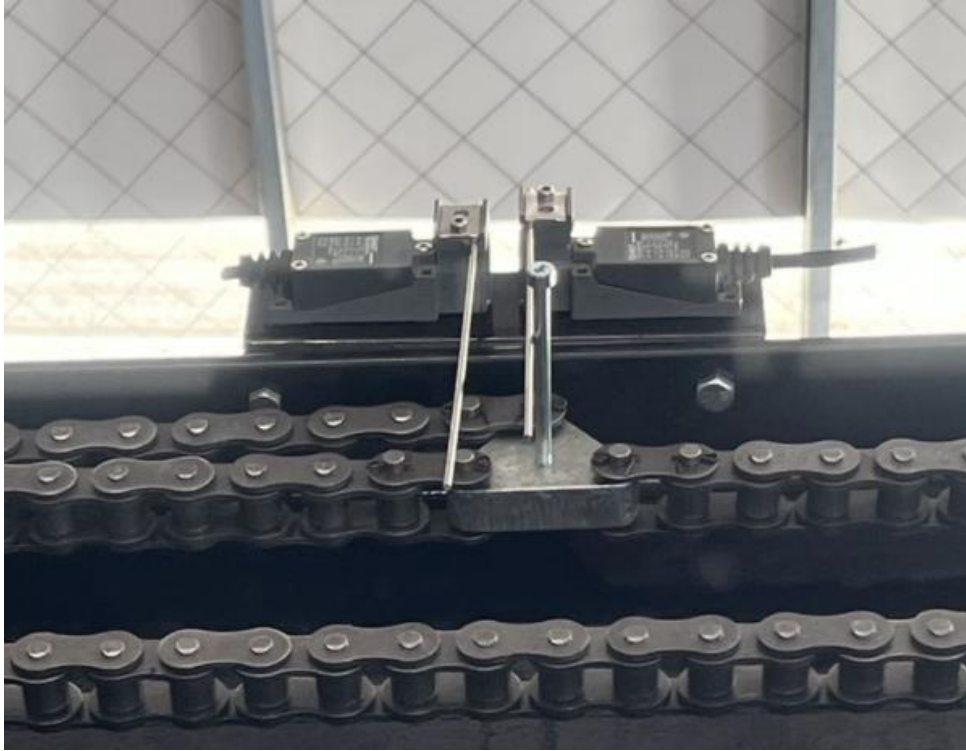
DO NOT install or use this lift on a second /elevated floor without first consulting building architect.

DO NOT install or use this lift outdoors unless special consideration has been made to protect the power unit from weather conditions.

ELECTRO INSTALLATION

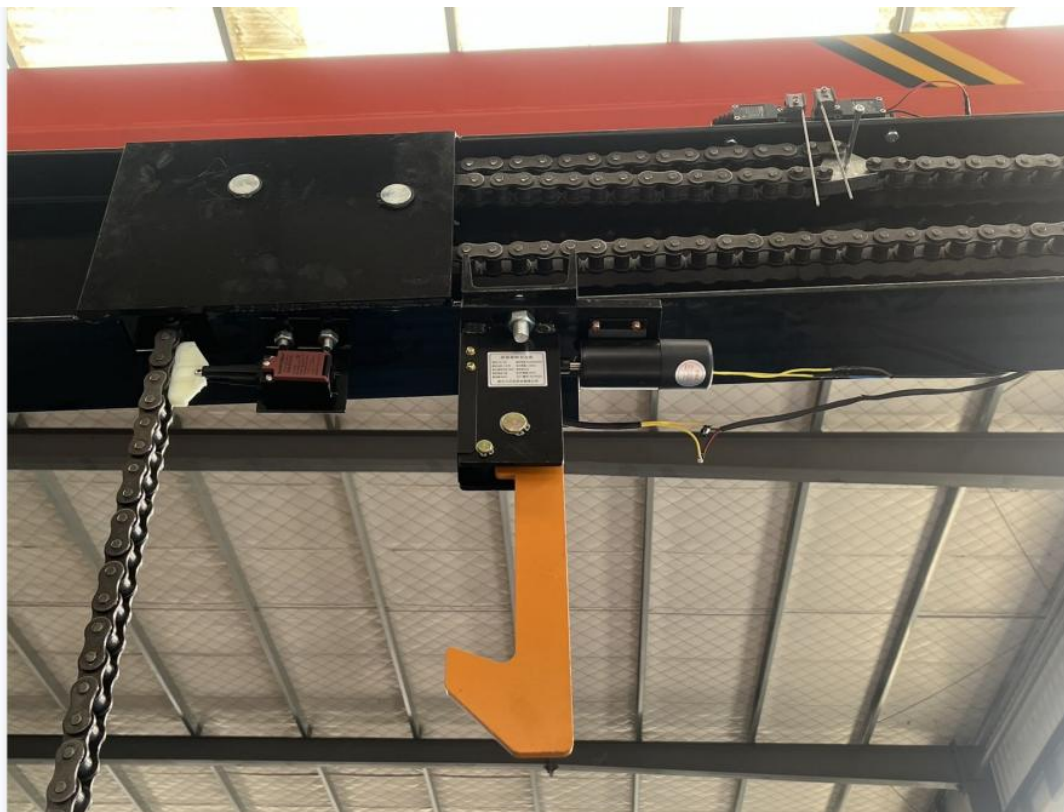
1.limit switch installation

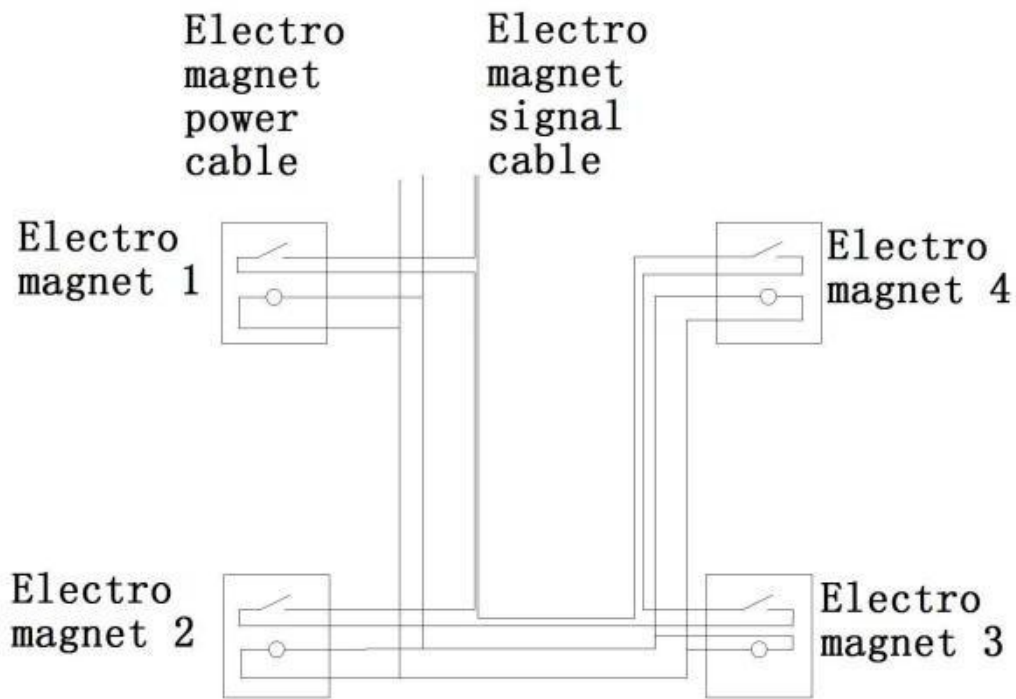
Upper and lower limit switch devices: limit switches are set to protect the vehicle.
There are upper limit and upper limit when ascending; lower limit and lower limit when descending



2. Safety anti-fall device: adopt safety hook and electromagnet drive.

The U-shaped ring is installed on the lifting vehicle plate, and the safety hook is hung in the U-shaped ring after ascending to the position, which plays a role of preventing falling.

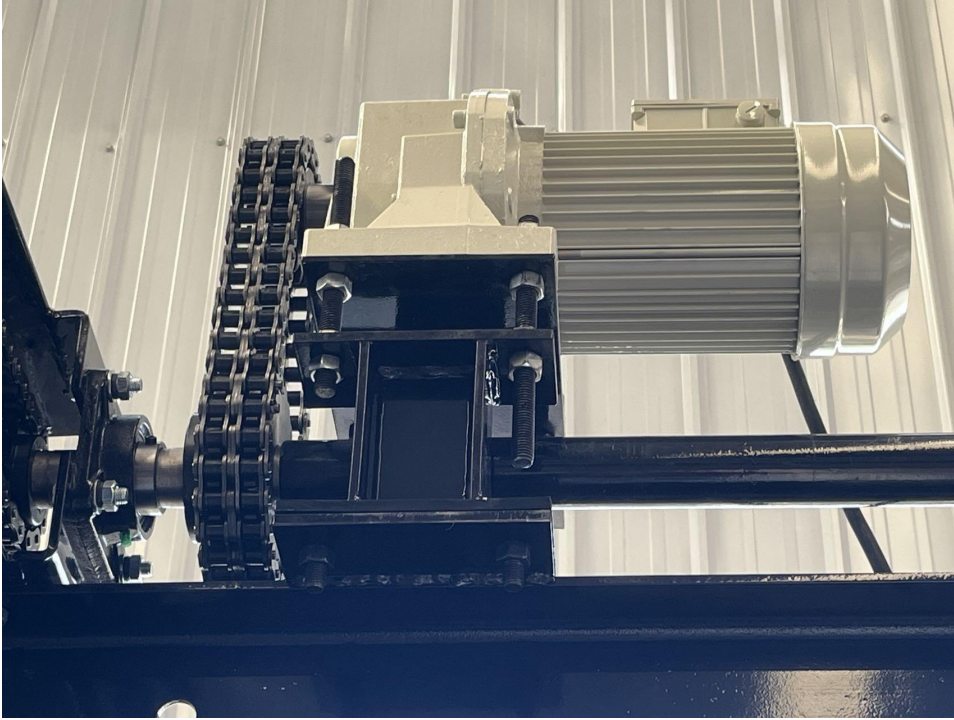




3. Wire rope anti-loosening device: the linkage of limit switch, arm and spring is adopted, so that when the chain breaks suddenly, the limit switch will be touched to prevent the device from continuing to operate.

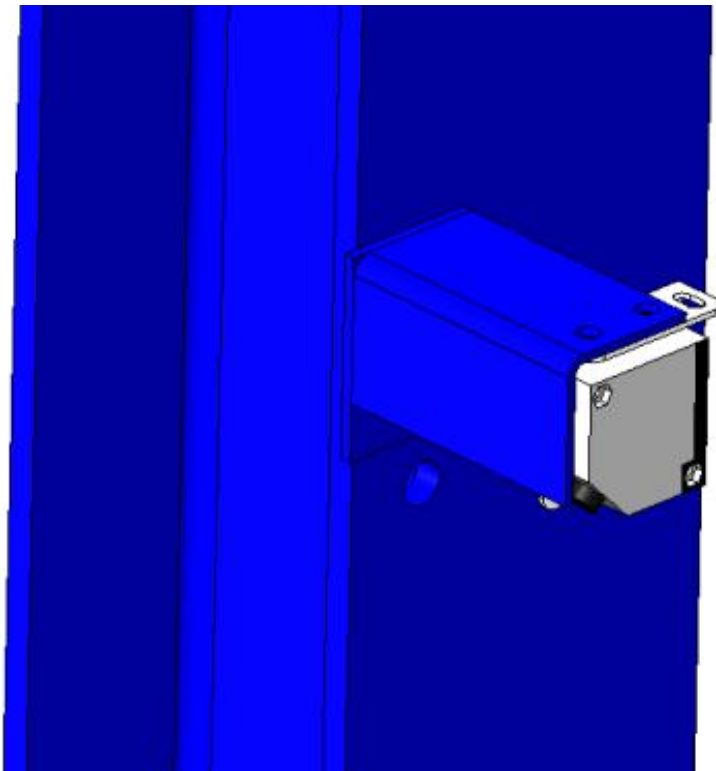


4. Motor installation



5. Photo sensor installation

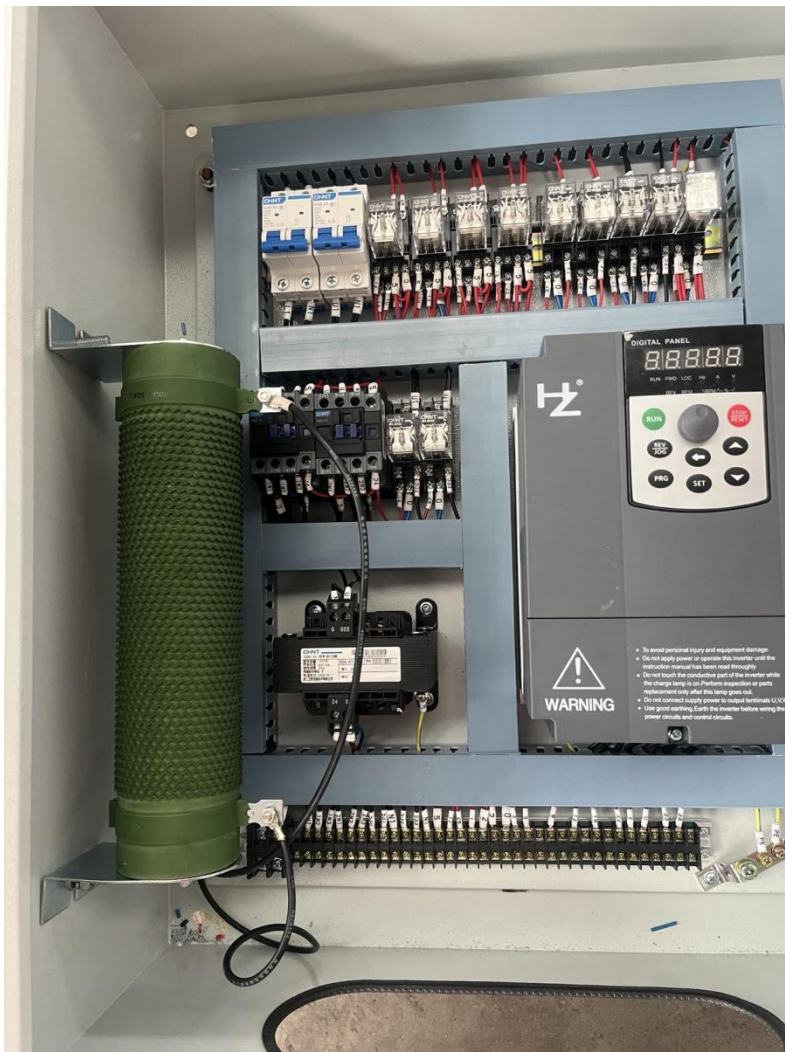
Incoming detection of people and vehicles: Stop running when detected by the front and rear photoelectric sensors and send a warning by buzzer to prevent accidents.



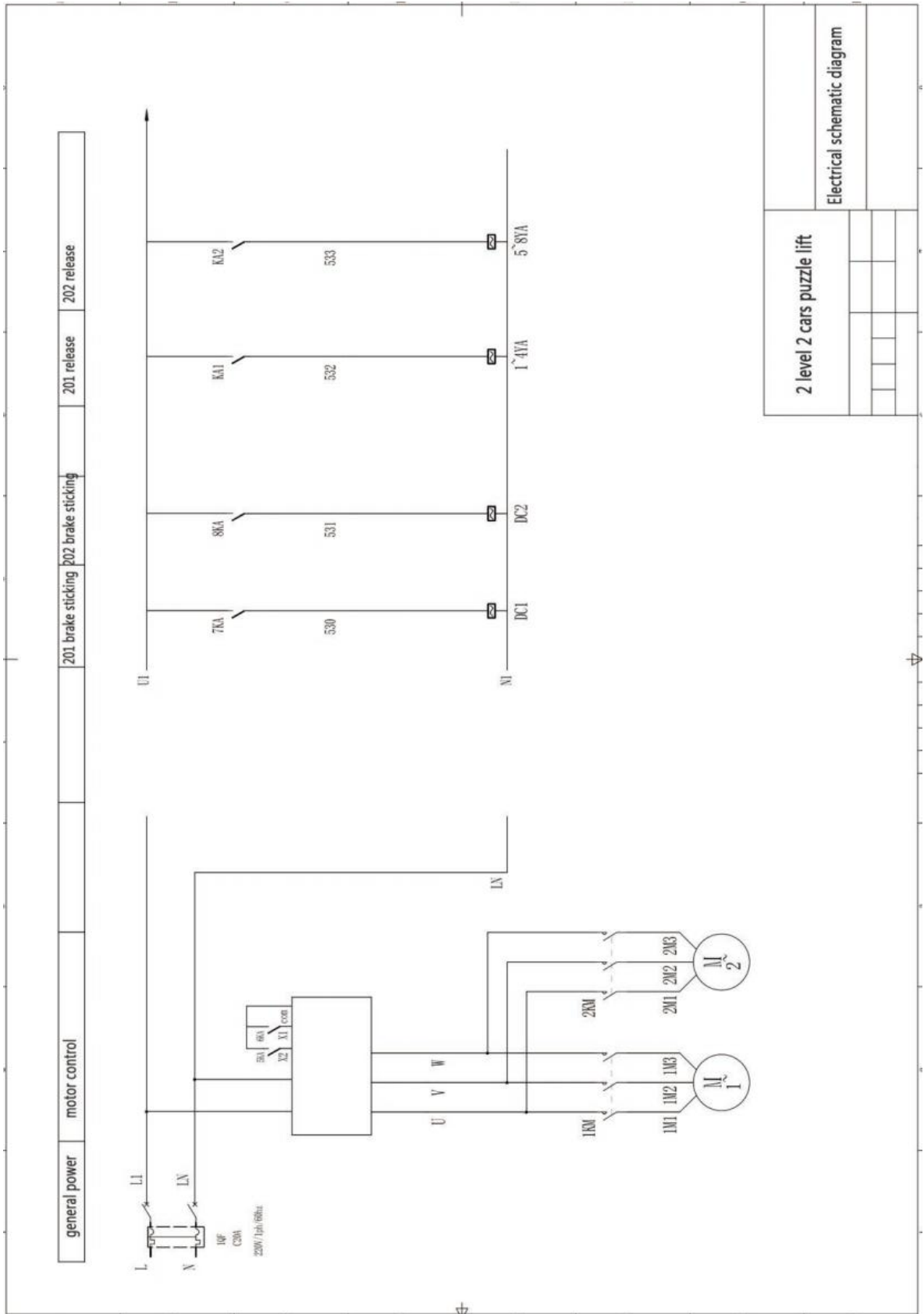
6. **Warning system:** warnings (warning light, buzzer) when the vehicle is running and an accident occurs.

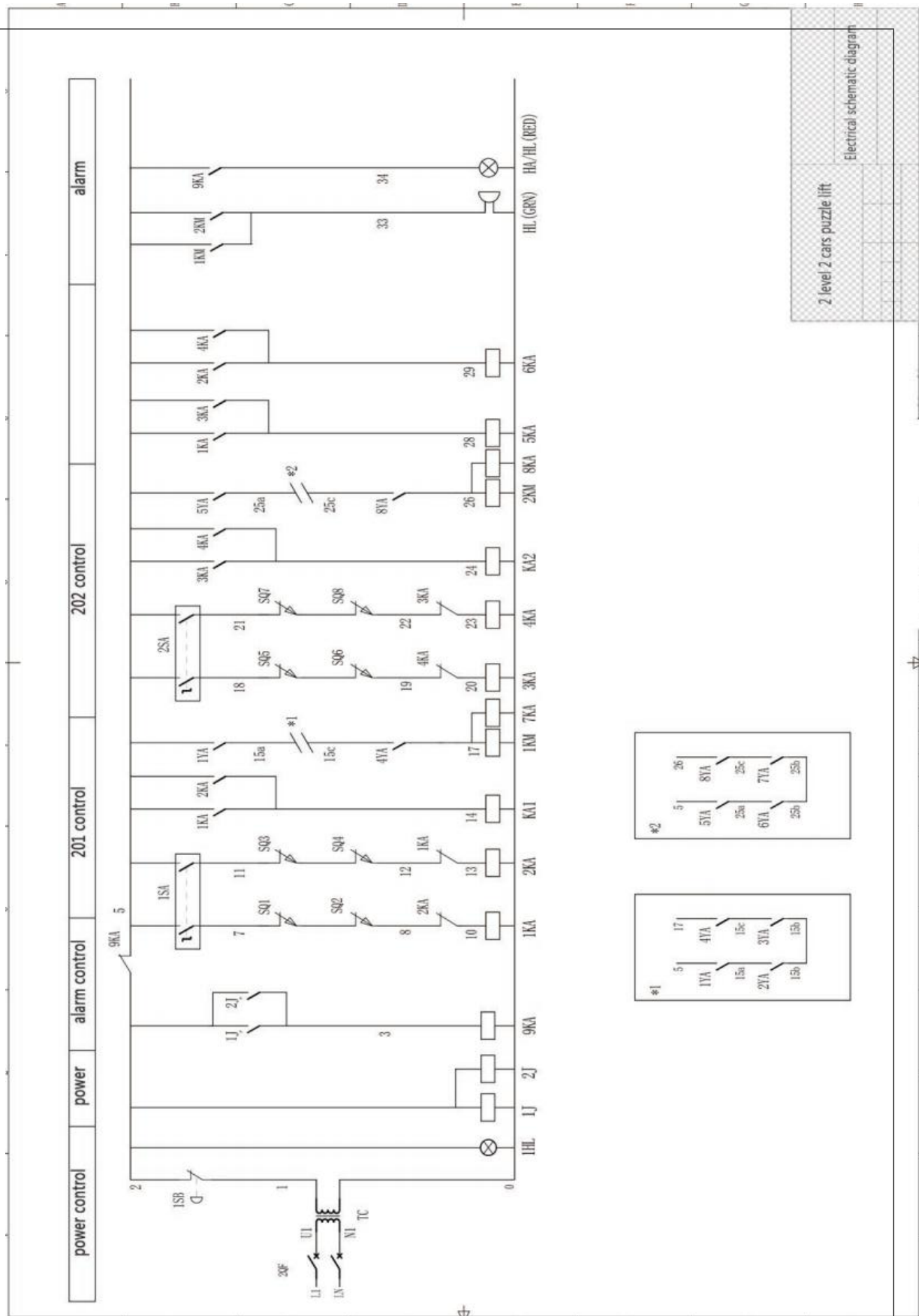


7. Operation panel installation

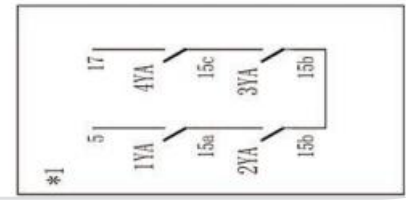
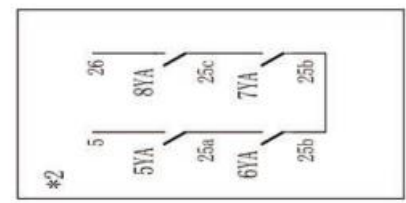
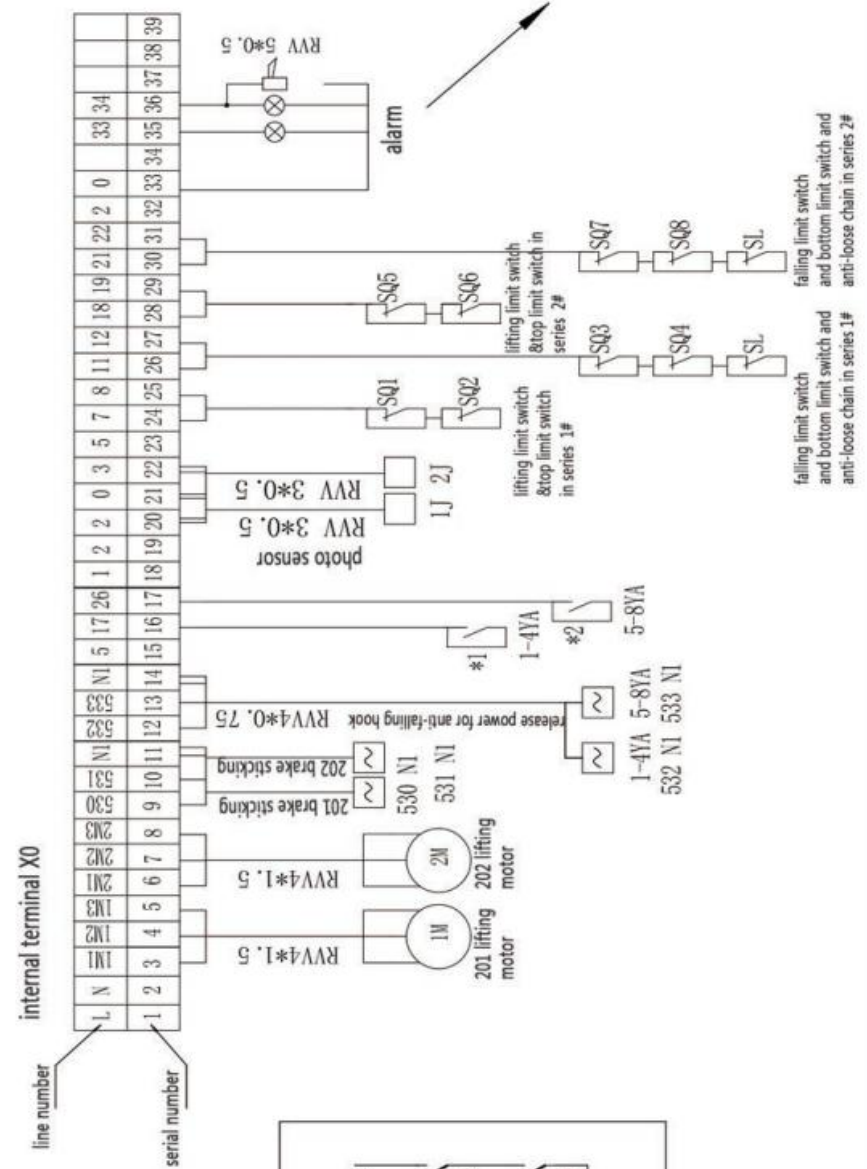
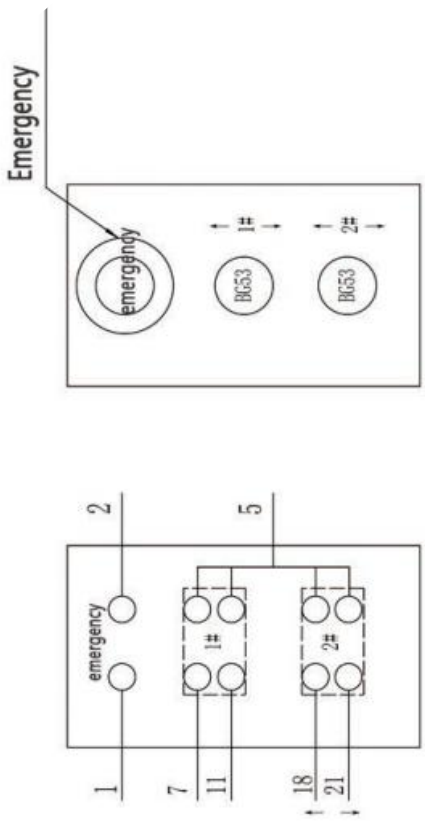
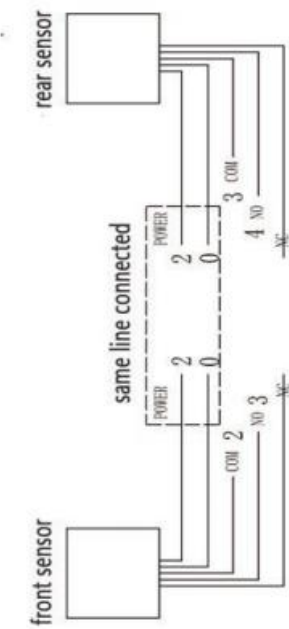


CHAPTER 8: ELECTRICAL AND HYDRAULIC DIAGRAMS





2 level 2 cars puzzle lift
Electrical schematic diagram



CHAPTER 9: Maintenance

System maintenance

In order to ensure the normal work of the system, the system must be maintained as necessary. The main contents of the maintenance are as follows:

① Regularly remove the dust accumulated in the electrical cabinet, ensure that the cabinet is clean and dry, and ensure that the system grounding wire is good.

② When the circuit breaker and thermal relay are activated, the cause of the fault should be ascertained from the mechanical and electrical aspects, and the operation should be tried after the fault is eliminated.

When the thermal relay is activated, it cannot be reset immediately. Wait 5 minutes for the thermal element to cool before resetting.

After replacing the thermal relay, the operating current value of its thermal element is set at 1.1 times the rated current value of the motor.

Check and replace each switch regularly to ensure the reliability and sensitivity of the switch.

Troubleshooting and maintenance

Although the machine is designed considering various situations, failures are always inevitable. Now the possible failures will be pointed out and the method of elimination will be given for the reference of operation and maintenance personnel.

① Control system failure:

The detection switch used in this machine has a harsh working environment, but its function is very critical. Therefore, to check the working condition of the switch frequently, the wiring and sealing must be good.

Replace it in time after it causes a malfunction.

The thermal relay is activated.

The action of the thermal relay is the protection caused by the motor current being greater than the rated value. If the fault of the thermal relay itself is eliminated, it is generally a problem of the mechanical part. The mechanical fault must be eliminated before it can continue to work.

② Other faults:

If the thermal relay is damaged, the contactor contact is melted and other low-voltage components are damaged, it should be replaced in time.

TROUBLESHOOTING

1) Simple fault Recover.

Fault phenomenon	Cause	Solution
No power supply	Power	Recover power supply
	Power distribution box trip out	Switch on
Input the No. but not work	Communication fault	1) Switch on again after switch off for 1 minute. 2) Check the cable.
	System fault	Solve the fault according to info the screen displayed.
	the platform can park/unpark directly	No need operating
	Limit switch fault	Repair or replace the limit switcher

Platform can not be lift or slide to certain position	Limit switch not in right position	Adjust the limit switcher position
	Foreign matter stop the platform	Remove the foreign matter
The plat form lift or slide over the position	Limit switcher not in right position of fault	Adjust the limit switcher position ;repair the limit switcher or replace the limit switcher.
Front and back IR sensor fault.	IR sensor fault ±24V power supply fault.	Replace IR sensor Replace ±24power unit
Fault message	Operator LCD screen display the fault message	Repair or replace the unit according to the message.

2) motor fault and adjustment

Fault phenomenon	Cause	Solution
1.Motor not work cannot lift	(1)Over load	Over load is forbidden
	(2)The voltage is 10% lower than rated.	Waiting for the voltage recover
	(3)Electro unit fault, circuit open or poor contact	Check the electro unit and circuit
	(4)Drive wheel and end cover rust, can not move	Remove the drive wheel derust the surface
2.。 Breaker not reliable, the slip down distance too long	(5)Motor sweep chamber	Refer to No.9
	(6)Cable too thin	Change cable
	(1)Because the brake ring wear or other reason, the Spring pressure reduced	Adjust
	(2)The brake ring and pyramidal face of back end cover poor contact	Open and grind
	(3)Barker surface have greasy dirt.	Open and clean
	(4)Brake ring loosed	Replace brake ring
	(5)Pressure spring wear	Replace the spring
3.Motor temperature rise too much	(6)The shaft coupler not float or blocked	Check the joint part
	(7)Pyramidal rotator float too much	Adjust according to the rule
	(1)Over load	Forbidden
	(2)Running too frequently	According to FC30% working system.
	(3)。 Brake interval too small, the brake ring not release when running, that is same as over load	Adjust the interval
4.Too much noise of reducer	(1)Poor lubrication	Open and repair
	(3)Gear break down	

	(4) Bearing wear	
5.Noise of Motor。	(1) Power and motor Phase gap	repair or replace the contactor
	(2) AC contactor end wear.	
6.Platform stop in midair, can not lift	(1) Voltage too low or not stable	Waiting for the voltage recover then reset. Reduce the load.
	(2) Over load lift	
7.After running, the platform can not stop or move over the superior limit	(1) AC conductor terminal fusion weild.	Turn off the power supply or replace the contactor. Check the limit switcher circuit
	(2) Limit switcher fault.	
	(3) Limit wire wrong connected	
8.Reducer leak oil	(1) The seal of the cover of reducer not installed correct or wear.	Repair or replace the seal.
	(2) The joint screw not tightened	Tighten the screw.
	(3) Add oil too much	Add oil according to the requirement
9. Pyramidal rotator and stator interval is too small that cause friction. (this is "sweep chamber")	The sweep chamber is caused by the support ring on the motor shaft wear, the rotator shaft displacement or stator displacement.	Replace the support ring, make the interval of rotator and stator equal, every side is 0.35-0.55mm or return to manufacturer to repair.

CHAPTER 10: Equipment maintenance and repair

In order to ensure the flexible operation of the mechanism, reduce wear and extend the service life of the equipment, users should maintain and maintain the parking equipment according to the degree of frequent work of the lifting and traversing parking equipment.

Operation requirements:

1. No-load lift

- a. Lifting is stable and flexible, without abnormal sound.
- b. The travel switch and proximity switch are sensitive and reliable, and the appearance and installation position are normal
- c. The lifting position is accurate and the lifting point is of equal height
- d. The sprocket connection is reliable, without loosening, misalignment, etc.
- e. No extra items around the garage
- f. The lifting motor runs normally without noise, heat, etc.
- g. The guide wheel is lubricated normally, rotating flexibly and without cracks
- h. The wire rope connection is normal, no damage

2. Safety hook

- a. The tension reset device operates reliably and the reset is normal
- b. The safety hook is flexible in activity, without stopping, and there is no abnormal sound when working
- c. No abnormal sound when working

d. The electromagnet is firmly attracted when energized, and reset correctly when the power is turned off; within 2 minutes of continuous energization, it works normally, no abnormal sound, no heat phenomenon

e. The linkage is correct and there is no misoperation or interference.

If there is any abnormality, it should be adjusted in time.

3. Photoelectric switch

a. The installation position is firm without looseness or misalignment

b. Block test, photoelectric switch works normally

4. Lifting system

a. The motor base is firmly connected without obvious deformation, and the motor works normally without abnormal sound

b. The chain connection is reliable and no abnormality

c. Flexible rotation of sprocket, fixed and reliable

d. Good lubrication of rotating parts and sliding parts

e. There is no deformation and damage to the sprocket shaft and hoist drive shaft

f. The wire rope connection is reliable and no abnormality

g. There is no damage to the roller and the wire rope pressing plate, and the wire rope is wound orderly

5. Traverse system

a. Stable operation, stop, reliable positioning

b. The transmission gear rotates flexibly, the bearing parts are well lubricated, and they are in good contact with the guide rail during operation, without gliding, jamming, etc.

c. The limit bracket is firmly installed without looseness or misalignment; the position of the travel switch and the limit bracket is accurate, and should be adjusted in time when a misalignment is found

d. The traverse motor works normally, there is no abnormal sound, and the gear mesh is normal

e. The two adjacent loading boards should be kept basically parallel with a maximum error of 15mm, otherwise they should be adjusted

f. The traverse speed of each vehicle board should be basically the same, and there should be no mutual collision

g. The traverse frame is firmly connected, and there is no obvious distortion during operation; the traverse car plate is flat without obvious warpage and deformation

6. Lifting the car plate

a. When ascending and descending, it should be stable without obvious vibration and abnormal sound

b. When rising to the upper limit position, the horizontal state or contour is good

c. The driving part (lifting mechanism, wire rope anti-loosening part, etc.) has flexible transmission without obvious deformation or jamming

d. Limit device, anti-fall device, chain anti-break device are safe and reliable

7. Steel structure and guide rail

a. The overall rigidity of the steel structure is good, there is no obvious deformation or vibration during loading operation

b. Sampling high-strength bolts, tightening torque: M16 is not less than 260Nm; M20 is not less than 400Nm

c. The size error of the distance between the rear pillars is less than or equal to 3mm; the error of bending degree is less than or equal to 2mm

d. The pre-embedded bolts of the column bottom plate should not be loose or corroded

e. The steel structure stress nodes must not be permanently deformed or the weld cracks, etc.

f. The linearity of the fixed guide rail is good, the deformation is less than or equal to 6mm; the joint is uniform, and there is no obvious concave and convex points

8. Bearing

All parts of the bearing should be well lubricated, and any form of damage is strictly prohibited, otherwise it should be stopped immediately, and the equipment can only be operated after replacing the qualified bearing.

9. Foundation

- a. The foundation has no sinking, cracking and other phenomena, and the concrete has no excessive defects and damage
- b. The ground should be kept clean and no debris or garbage should be accumulated; it is strictly forbidden to drop debris into the transmission part
- c. The ground surface should be kept clean, free of debris or water accumulation (icing), and should be drained in time after rain; cleaned in time

10. Electrical parts

- a. Operator: The button is not damaged, the indicator light is normal, there is no malfunction, and it is out of control
- b. Electric control cabinet: the cabinet is clean and dry; the breaker, contactor, power supply and PLC work normally; the cabinet door is waterproof
- c. Wires, cable joints and protective tubes should not be damaged
- d. The travel switches and proximity switches in all areas work normally, are fastened and reliable, and should not be loose or misaligned
- e. The grounding resistance and insulation resistance of the motor control device meet the requirements for safe use

11. Operation and maintenance

- a. Each regular inspection, each parking space runs at least 2 times
- b. Periodically check each time, wipe all moving parts clean, and then add appropriate lubricant (grease)
- c. Every time regular inspection and maintenance, unqualified items should be excluded until the garage is in normal operation, otherwise it should be stopped
- d. Regular maintenance is divided into weekly inspection, monthly inspection, quarterly inspection and annual inspection

12. Appearance and painting

- a. The appearance is neat and clean without stains or oil marks
- b. The surface of the vehicle carrier board should be cleaned and cleaned frequently to keep it clean at all times
- c. The coating layer has no detailed scratches, shedding and other damage
- d. Various signs and guardrails are complete without damage
- e. The cushions are installed firmly everywhere, and if they are torn or aging, they will be replaced in time

13. Record

Each periodic inspection and maintenance shall be completed item by item according to the attached table, and records shall be made carefully and subject to the signature and confirmation of the person in charge of Party A

14. Inspection period

After the three-dimensional parking equipment has passed the acceptance of the State Quality and Technical Supervision and is delivered to Party A, all parking equipment will be inspected and maintained every 15 days

15. Note

- a. All the transmission parts of the garage (such as motors, chains, wire ropes, bearings, etc.), safety anti-fall devices, sensors, limit devices, and main load-bearing parts are the keys to determine whether the garage can operate safely.
- b. If any of the above parts are damaged or other abnormalities are found during inspection and maintenance, they should be dealt with in time and detailed records should be made.
- c. After the parking equipment is out of service for a long time, a comprehensive inspection should be carried out before re-use
- d. The parking equipment shall be recorded in writing after each inspection, maintenance and troubleshooting, and shall be archived and kept
- e. The parking equipment should be graded and maintained according to the frequency of use, working environment and the degree of damage of various components during operation.
- f. The safety device in the parking equipment should be the focus of maintenance
- g. The parts replaced during maintenance should meet the safety performance requirements of the original parts
- h. Reliable protective measures should be taken during inspection and maintenance operations at high places, equipped with contact and communication means, and there should be guardians
- i. Take appropriate safety measures and set up safety warning signs during inspection and maintenance.