DAVIES
AUTOMOTIVE EQUIPMENT

4T clear floor Two post Lift

C240L

User's Manual

Please read this Manual carefully before operating this equipment

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Table of Contents

Chapter1 Safety Precautions

1. Make sure that you have read the User's Manual completely including relevant instructions on installation, operation and safety before operating the lift.
2. Do not use the lift if any abnormality is found in the lift.
3. Do not overload the lift (rated capacity: 4,000kg).
4. Put the four bracket arms aside to ensure that the track is barrier-free before driving to the entry position. Do not kick the bracket arm as this may damage the bracket arm teeth.
5. The lift can be operated by trained personnel only. The vehicle customer or the inexperienced person is prohibited from operating the lift at will.
6. The rubber tray of the lift bracket arm must have contact with the support point of the vehicle; otherwise, the vehicle chassis may be damaged. (It is recommended to consult the vehicle manufacturer by telephone if the location of the support point is not clear.)
7. Ensure that all bracket arm teeth are engaged successfully before lifting the vehicle.
8. Always lift the vehicle with all the four bracket arms at the same time. Never lift the vehicle with less than 4 bracket arms.
9. Be sure to perform mechanical locking after the vehicle is lifted. It is forbidden to work under the vehicle before mechanical locking is performed.
10. The centre-of-gravity position of the vehicle may change when you install or remove any automobile component or push the vehicle forward and backward. To ensure safety, four independent brackets should be applied to improve the stability of the vehicle.
11. Keep the area around the lift clean and tidy as any oil stain or obstacle may pose a safety risk.
12. Never lift the vehicle with people in it.
13. Make sure there is no obstacle under the vehicle before lowering it.
14. Move the bracket arms back to original positions and ensure that they will not interfere with the vehicle before driving away from the lift.
15. Do not remove any hydraulic component when the hydraulic system is under pressure.
16. Do not put your hands at such dangerous positions as safety block, wire rope, gap between sliding table and post, chain, electrical connection, etc.
17. Do not use the product outdoors as it is only suitable for indoor use.
18. The short bracket arm is installed in the front while the long bracket arm is installed in the rear. (as most vehicles are equipped with front engine)
19. The safety rope must be firm. When the safety handle is pulled, the safety blocks of the main and auxiliary posts must be opened completely and synchronously.
20. Always wear safety shoes during operation.

Chapter2 Product Features and Parameters

2.1 Product Features：

3 sections of bracket arms, suitable for a wide range of models

Unilateral manual unlocking, safe and reliable

Tray height adjusted by thread, with the adjustable height of

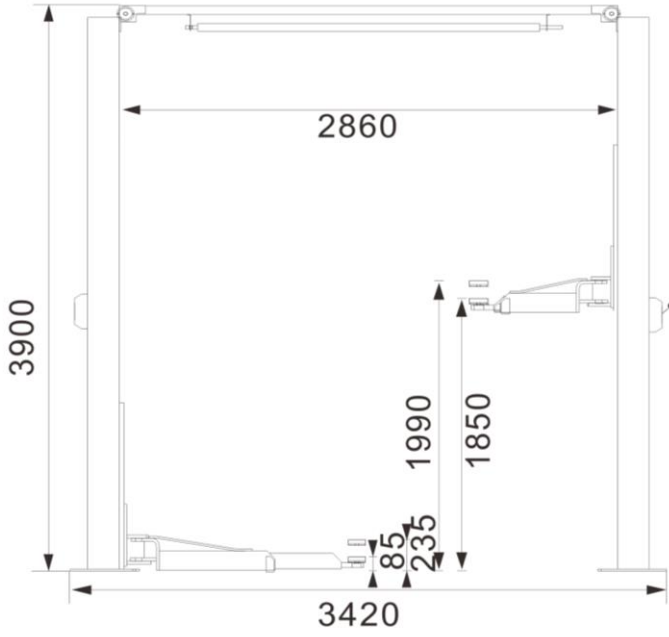
70mm Minimum lifting height of 95mm, suitable for low riders

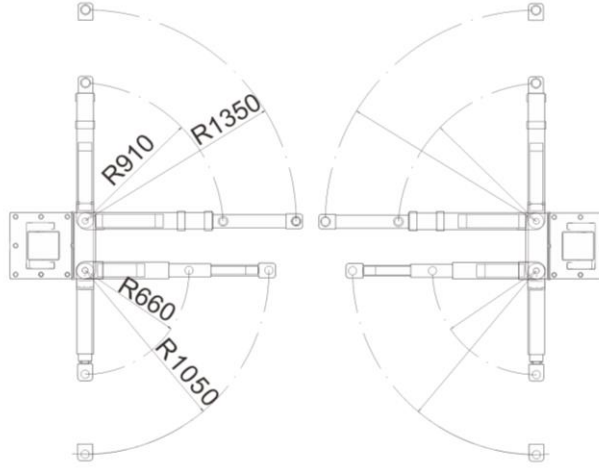
Aluminum alloy motor with low noise and fast heat dissipation

2.2 Technical parameters：

Work safe design registration		WSV-0150525012
Serial No.		
Rated lifting capacity		4000KG
Inner width of the post		2860mm
Height of the lift		3900mm
Minimum lifting height		95mm
Tray adjustment height		70mm
Maximum lifting height		1990mm
Telescopic range of 3-section bracket arm		660mm~1050mm
Telescopic range of 2-section bracket arm		910mm~1350mm
Motor parameters	C240L	3PH, 380VAC, 2.2KW, motor with an aluminum alloy housing
		1PH, 220VAC, 2.2KW, motor with an aluminum alloy housing
Type of hydraulic oil		IS0 46# anti-wear hydraulic oil

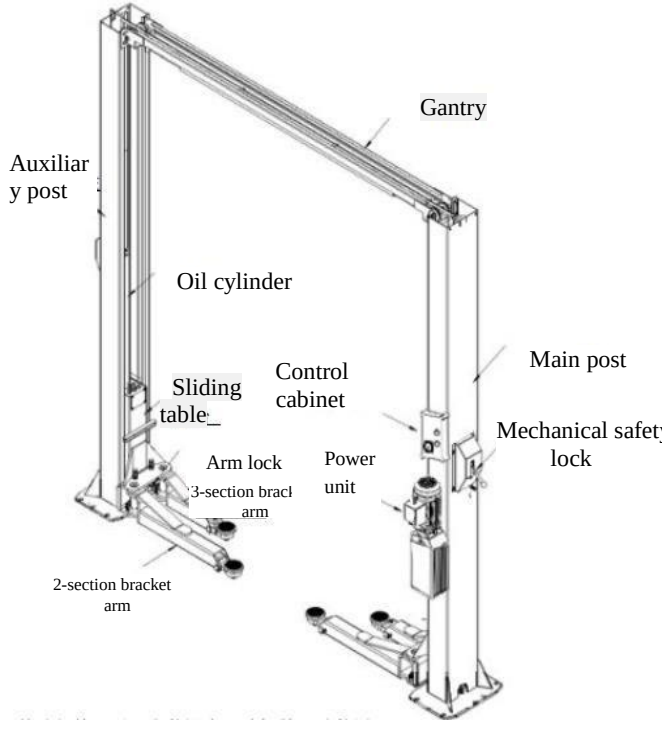
Diagram of product (unit: mm)





2.3 Description of main components：

This machine mainly consists of the main post, auxiliary post, sliding table, bracket arm, arm lock, bracket arm lock, mechanical lock, cylinder, power unit, gantry, etc. (See the figure below)



Post: Basic component, carrying sliding table, cylinder and other drive devices; Sliding

Table:Lifting component,installed inside the post, sliding up and down;

Bracket arm: Lifting component, installed together with the sliding table, having contact with the support point of the vehicle to lift the vehicle;

Arm lock: Safety component, locking the bracket arm to prevent it from rotation

Mechanical lock: Safety component. When the hydraulic oil is drained, the safety block pushes the safety strip to keep the sliding table still;

Cylinder: Drive component. When the hydraulic station pumps the high pressure oil into the lower chamber of the cylinder, the piston rod rises and drives the sliding table to rise;

Power unit: Power component. The motor drives the pump to suck oil via the filter strainer and pump high pressure oil

Gantry: Bridging component. The balance wire rope, oil pipe, and safety rope are arranged from the main post to the auxiliary post by way of the gantry, which also reduces the inward inclination of the two posts.

Control cabinet: 24V control circuit

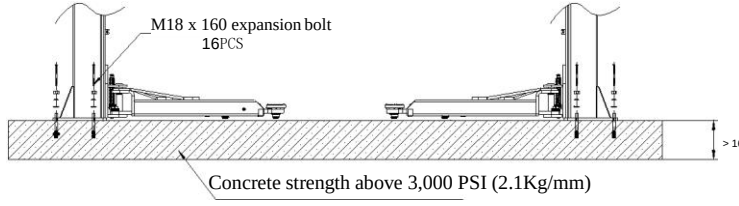
Chapter3 Preparation for Installation

3.1 Unpacking

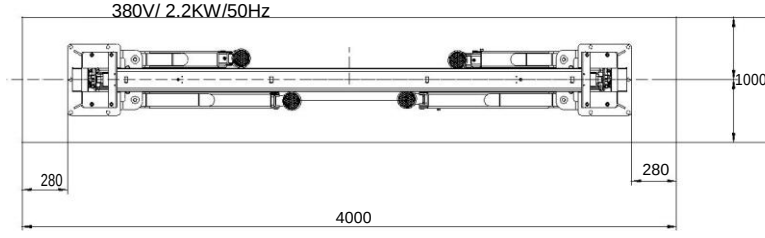
Open the packing case, remove the surrounding packing materials, inspect the machine for damage during transportation, and inspect the main components and accessories for completeness as per the packing list. Keep packing materials away from children so as not to pose any danger, and properly dispose them if they may cause pollution.

3.2 Foundation

The user has a responsibility to ensure the stability of the foundation. The concrete shall have a minimum entire thickness of 160mm and a minimum strength of 25MPa, and shall be properly prepared 15 days prior to the installation date. No other foundation equipment is allowed within 350mm of the expansion bolt to avoid degrading the foundation strength. The user has a responsibility to provide safe power, air source, and such connecting components as power wire.



Motor position, the place to which the power wire extends.
380V three-phase four-wire
380V/ 2.2KW/50Hz



3.3 Tools

a. 5m tape
b. Chalk
c. Proper impact drill and bit (expansion bolt M18X160mm)
d. Hammer
e. 1.2m spirit level
f. Crowbar
g. Proper screwdriver

Chapter4 Installation Instructions

4.1 Determine the mounting position, which shall be close to wall and power as much as possible.

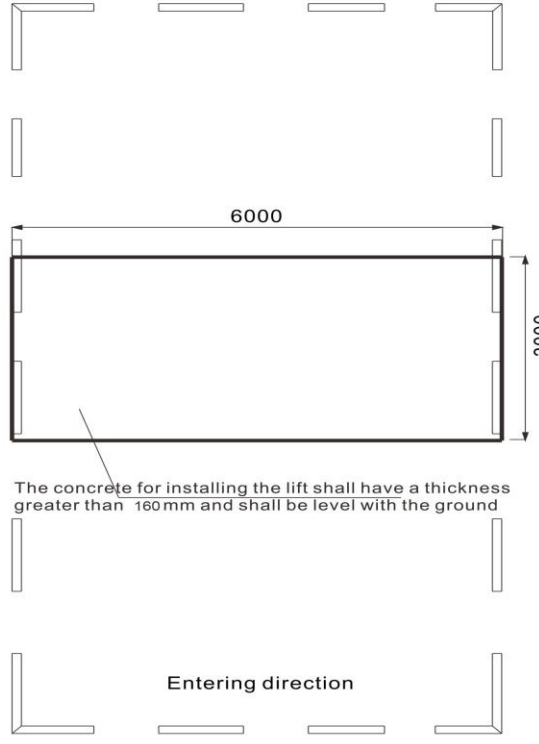
4.2 Thoroughly clean the mounting position of the lift, which shall be free from oil stains.

4.3 The dimension diagram of mounting space of the product is given below for reference only.

Foundation diagram of the product:

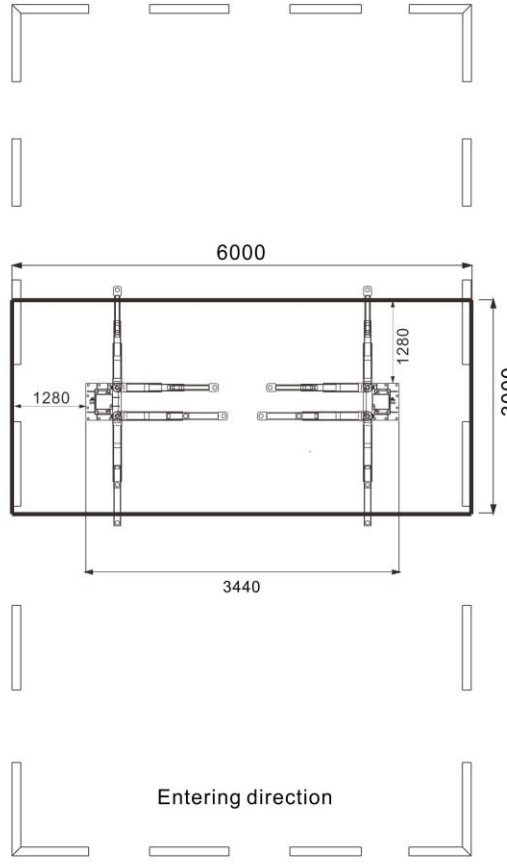
220V
Incoming power
wire 4mm²
Ground wire
2.5mm²

380V
Incoming power
wire 2.5mm²
Ground wire
1.5mm²

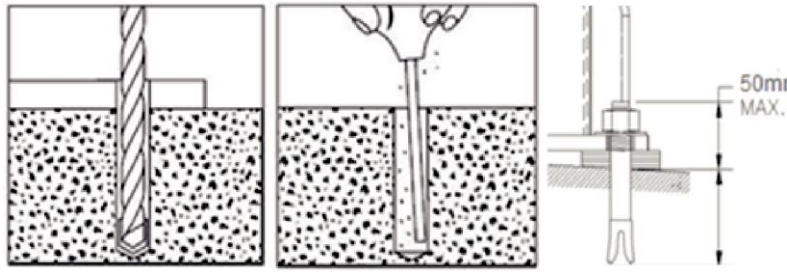


Note:
1. The concrete shall be reinforced with steel, and have a thickness greater than 160 mm and a compressive strength not lower than 25MPa. The grade of the foundation concrete shall be greater than C30.

Foundation diagram of the product:



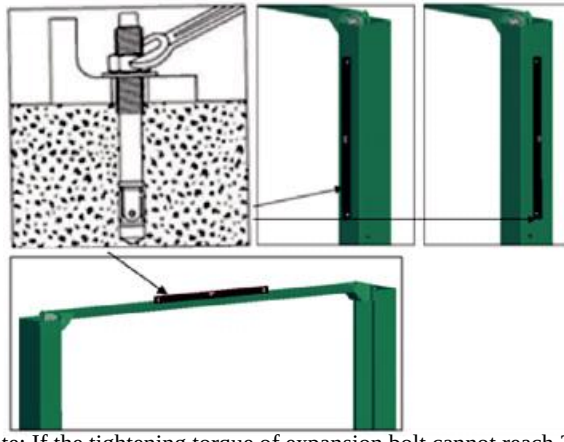
4.4 Properly position the main post, drill holes with the impact drill, remove the dust in the bolt hole with a vacuum cleaner, and hammer the expansion bolt into the hole. The length of the expansion bolt protruding from the ground shall not exceed 50mm, and the nut shall not be tightened.



4.5 Fix the gantry mounts to the top of posts using the 8*M12*35 Bolts, and check the diagonal distances of the two post bottom plates is not more than 3mm.

4.6 Prepare the ladder cart for the two posts respectively, fasten both sides of the gantry with slings, lift the gantry, and then install the connecting bolts 8*M12*35mm.
Note: The irrelevant personnel shall be kept away from the lift during the installation of gantry.

4.7 Tighten the expansion bolts (reference torque: 203N.m), and meanwhile check that the post is vertical with a spirit level. Place the gasket at the bottom of the post to level the post if necessary. Check that the upper surface of the gantry is level with a spirit level.

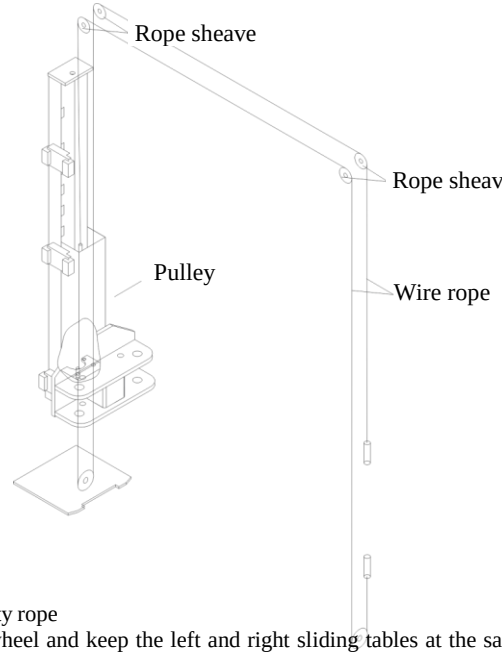


Note: If the tightening torque of expansion bolt cannot reach 203N.m, the strength of concrete shall be rechecked.

4.8 Install the roof collision-prevention limit rod and connect the limit switch using 4*M8*30mm bolts.

4.9 Installation of balance wire rope

Make sure that the left and right sliding tables are at the first safety position, and then install the balance wire rope as per the track shown in the figure. Do not tighten the nut temporarily as the tension of two wire ropes will be adjusted for synchronization later on. Note: The screw rod for the left or right wire rope must be tightened. Make sure that the left & right sliding tables are locked at the same height during adjustment.



4.10 Installation of safety rope

Install the safety wheel and keep the left and right sliding tables at the same safety position, and then install the wire rope as shown in the figure. Adjust the tension of the safety rope to ensure the left and right safety blocks can be simultaneously opened and locked.

4.11 Installation of bracket arm

Install four bracket arms into the sliding table through the pin, with three-section straight arms at the front end and two-section straight arms at the back end. (Note: The three-section bracket arms shall be installed at the front end and each arm is required to be installed with a circlip.)

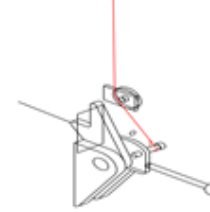
4.12 Installation of power unit

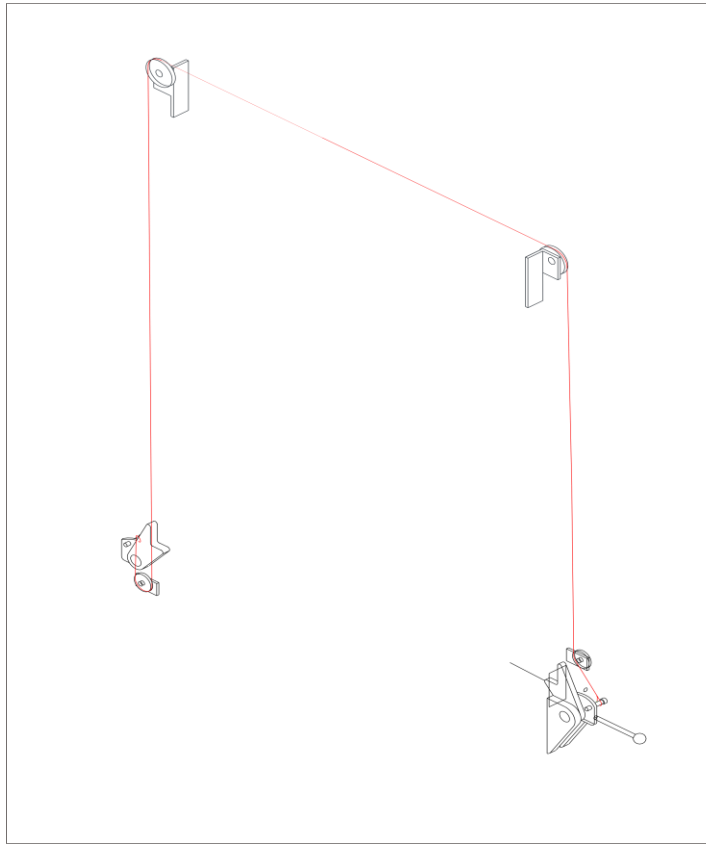
Install the power unit on the motor board of the main post and fix it with 4*M8*20mm bolts. Install the limit switch properly and connect the wires.

4.13 Connection of hydraulic system

a. Unscrew the hydraulic tank cap and add 10L 46# anti-wear hydraulic oil. (46# anti-wear hydraulic oil is preferred; 32# anti-wear hydraulic oil is preferred at a temperature below -10℃)

b. Connect the hydraulic joint and connect the oil pipe to the oil outlet joint of the main and auxiliary cylinders. Hydraulic chread sealer is to be used.





Note:

a. Adjust the wire rope until the locking status of the safety locks on the main and auxiliary posts are consistent.

b. Add general lithium base grease (GB7324-87) to the gap between the safety lock and the shaft. Ensure that the safety lock is safe and reliable during normal use. If the safety lock cannot be reset, stop the machine immediately and resume operation after troubleshooting.

c. The safety wire rope shall not be brought into contact with any stationary or moving parts in the post, except for the two fixed ends and the rope sheave.

4.15 Adjustment for no-load test

a. Clean the site and check that there is no oil stain on the ground and the lift is unloaded.

b. Power on the lift, press UP button to lift the sliding table and then stop at any position. Then, press the oil return handle to lower the left and right sliding tables to the same safety position.

c. Tighten the balance wire rope nut to keep the tension of the two balance wire ropes basically the same.

d. Press the UP button to lift the sliding table until it is out of the safety position, and then pull the safety handle with the left hand and press the oil return handle with the right hand to lower the sliding table to the lowest position.

e. Press the UP button to lift the sliding table continuously (if the limit switch is triggered when the sliding table is at any position, the motor will stop). After the limit position is reached, the relief valve will open, the oil will return to the hydraulic system, and the sliding table will stop rising. Observe the synchronization of the left and right sliding table bracket arms during this process, and continue to adjust the tightness of the balance wire rope nut if significant difference exists.

f. Install the door collision-prevention rubber pad.

4.16 Adjustment for load test

a. Fully put the four bracket arms aside to ensure that the track is barrier-free.

b. Drive to the middle position of the lift, and keep the length ratio of the front part to the rear part of the vehicle (for those equipped with front engine) around 2:3 when the connecting line of the posts is taken as a reference. When the tonnage of the vehicle exceeds 3.5T, the vehicle shall be moved backward appropriately.

c. Rotate the bracket arm tray to the support point of the chassis.

d. Press the UP button to lift the bracket arms and ensure the 4 bracket arm locks are completely engaged.

e. Continue to inch it up until a rubber tray has contact with the support point of the chassis, and then rotate other rubber trays counterclockwise to bring them into contact with the support point.

f. Press the UP button to lift the vehicle slowly until all tires are off the ground. Gently push the rear of the vehicle to check that the vehicle is fixed firmly and the bracket arm locks are completely engaged.

g. Press the UP button to continue lifting the vehicle and observe if the vehicle is stable during this process. Stop lifting the vehicle when the sliding table rises to the third or fourth safety position, and press the oil return handle, after which the oil will return to the hydraulic station and the sliding table will be locked. Observe if the vehicle is stable. (adjust the balance wire rope nut if there is an obvious height difference between the left side and right side of the vehicle).

h. Continue to lift the vehicle until it rises to the highest safety position, and then press the oil return handle, after which the oil will return to the hydraulic station and the sliding table will be locked. Observe if the lift is stable without vibration.

i. Inch the sliding table up until it is out of the safety position, and then pull the safety handle with the left hand and press the oil return handle with the right hand. after which the vehicle will descend.

j. Release the safety handle when the sliding table is at any position in the middle, after which the safety lock will rebound automatically, the sliding table will be locked and stop descending.

k. Inch the sliding table up until it is out of the safety position, pull the safety handle with the left hand and press the oil return handle with the right hand, and then release the safety handle when the sliding table is at any position in the middle, after which the safety lock will rebound automatically, the sliding table will be locked and stop descending. Repeat these operations for more than three times to verify the safety and reliability of the mechanical safety lock.

l. While lifting the vehicle, check for abnormal sound and friction or interference between the wire rope and other components.

Chapter5 Maintenance Instructions

5.1 Daily maintenance

a. Inspect all hydraulic joints, oil pipes, and cylinders for leakage.

b. Inspect all electric wires for damage.

c. Inspect all moving parts for excessive wear.

d. Remove the oil stains on the rubber tray and inspect the rubber tray for excessive wear.

5.2 Maintenance after every 2 months

a. Replace the grease in the post slideway.

b. Replace the grease on the bracket arm pin.

c. Inspect and tighten the nut of expansion bolt.

5.3 Maintenance after every 6 months

a. Replace the grease on the chain and wire rope.

b. Adjust the balance wire rope and safety rope.

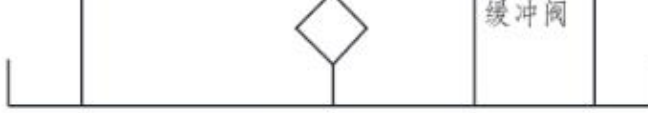
c. Inspect the wire rope for burrs.

5.4 Maintenance after every 2 years

a. Replace the hydraulic oil.

Chapter6 Common Faults

S/N	Common Faults	Solution
1	Button fails to work	Replace the button
2	Contactor fails to operate after energization	Replace the contactor
3	The contactor fails to be energized and operate	Inspect the button and limit switch
4	Oil leakage occurs at the connection of hydraulic system	Replace the joint or oil pipe
5	Oil leakage occurs in the cylinder	Replace the sealing ring, or replace the cylinder in the worse case
6	The bracket arm teeth do not engage well	Adjust the position of the bracket arm teeth
7	Safety rope gets loose	Adjust the latch to tighten the safety rope
8	Severe burrs appear on the balance wire rope	Replace the wire rope
9	Left and right sliding tables fails to fall to the same safety position	Adjust the balance wire rope nut to synchronize the sliding tables
10	Automatic oil return volume drops	Replace the oil return valve or lowering flow regulating valve
11	No oil is pumped out when the three-phase motor is working	The motor rotates reversely. Replace two adjacent power phase wires (commonly known as live wires)
12	Abnormal sound is heard in the three-phase motor, or the motor is powerless	Phase loss occurs in the motor, thus inspect the incoming power wire 380VAC with a multimeter
13	The lowering speed is too low when the lift is loaded	Inspect if the oil return valve and lowering flow regulating valve are blocked by foreign matters
14	The lift shakes during operation	Apply grease to the post slideway; inspect if the output pressure of the hydraulic station is stable enough; inspect the cylinder piston rod for climbing. (Replace it if any)



手动回油阀：控制下降油路
手动节流阀：调整下降速度
溢流阀：控制最大压力
齿轮泵：输出油压
缓冲阀：电机启动时减缓电机负载

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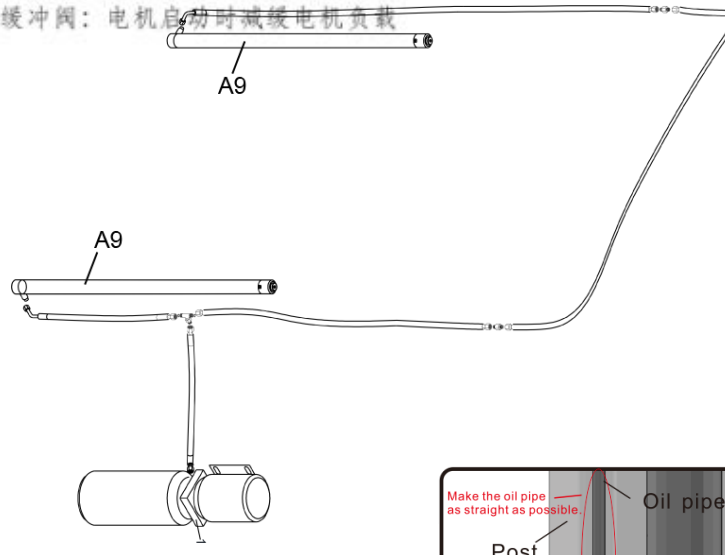
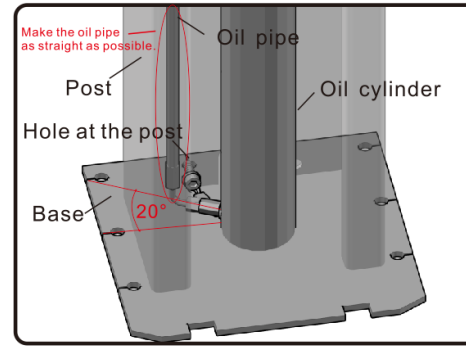
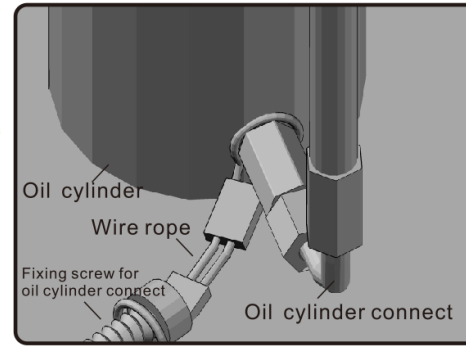
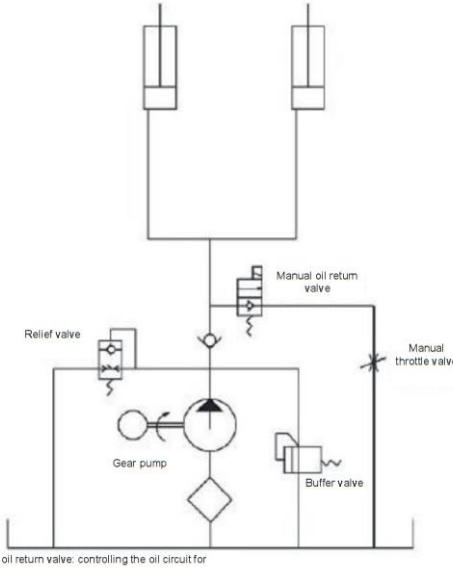


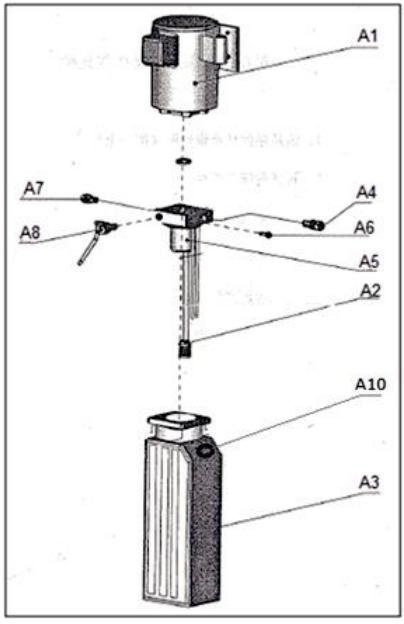






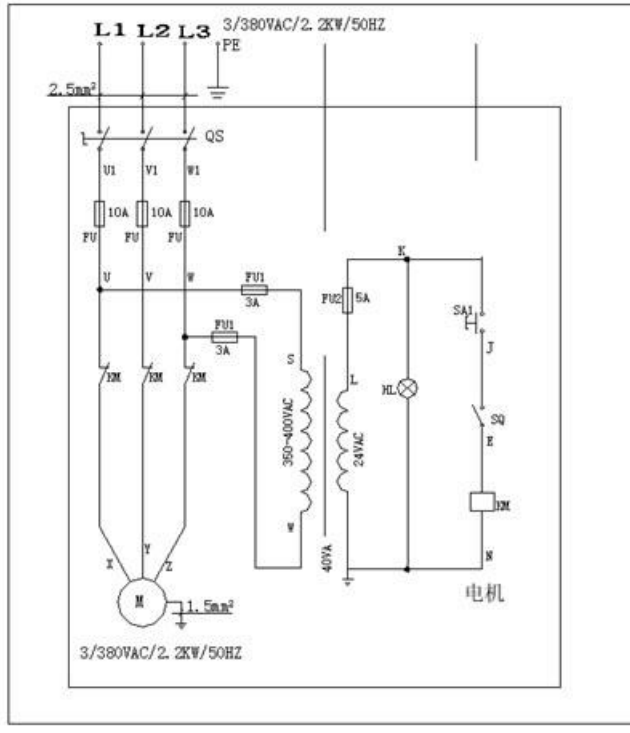
Manual oil return valve: controlling the oil circuit for lowering
Manual throttle valve: adjusting the speed of lowering
Relief valve: controlling the maximum pressure
Gear pump: supplying oil pressure
Buffer valve: reducing the motor load when the motor starts

ylinder connector should be put toward the inside of the post so that he middle of the carrier would not touch the cylinder connector.



S/N	Name
A1	1PH,220VAC, or 3PH,380VAC motor
A2	Suction filter
A3	Oil tank
A4	Relief valve
A5	Hydraulic pump
A6	Throttle valve
A7	Check valve
A8	Oil return valve
A9	Oil cylinder
A10	Oil tank cap

Chapterd8 Electrical Schematic Diagram



Upper limit travel switch: Remove jumper wire between terminals J and E.

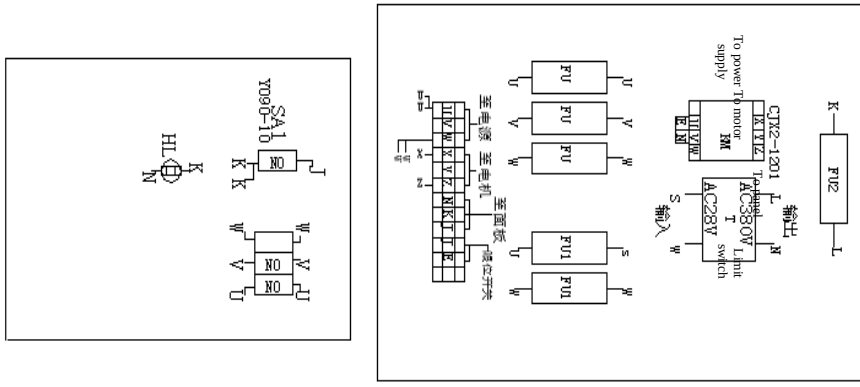
Connect limit switch across terminals J and E.

Voltage	Power	Start current	Operating current	Wire size	Air switch	Applicable to
380V	3kw	21A-35A	7A	At least 2.5 mm²	C63	Scissor lift
220V	3kw	60A	21A-22A	At least 4mm²	C63	Scissor lift
380V	2.2kw	18A-30A	6A	At least 2.5 mm²	C63	Two posts, the gantry, four posts
220V	2.2kw	60A	20A	At least 4mm²	C63	Two posts, the gantry, four posts

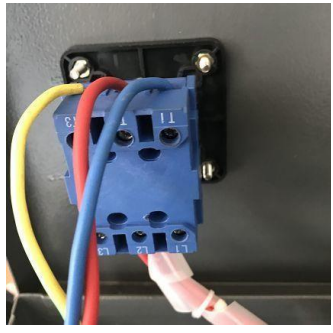
Note:

Power supply: to U, V and W; please use the power wires with minimum size of 2.5 mm² Motor: to X, Y and Z.

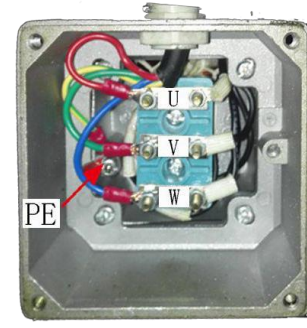
Travel switch: to J and E. Please connect the C63 air switch with leakage protector.



Please connect the C63 air switch with leakage protector using the power wire with minimum size of 2.5 mm²



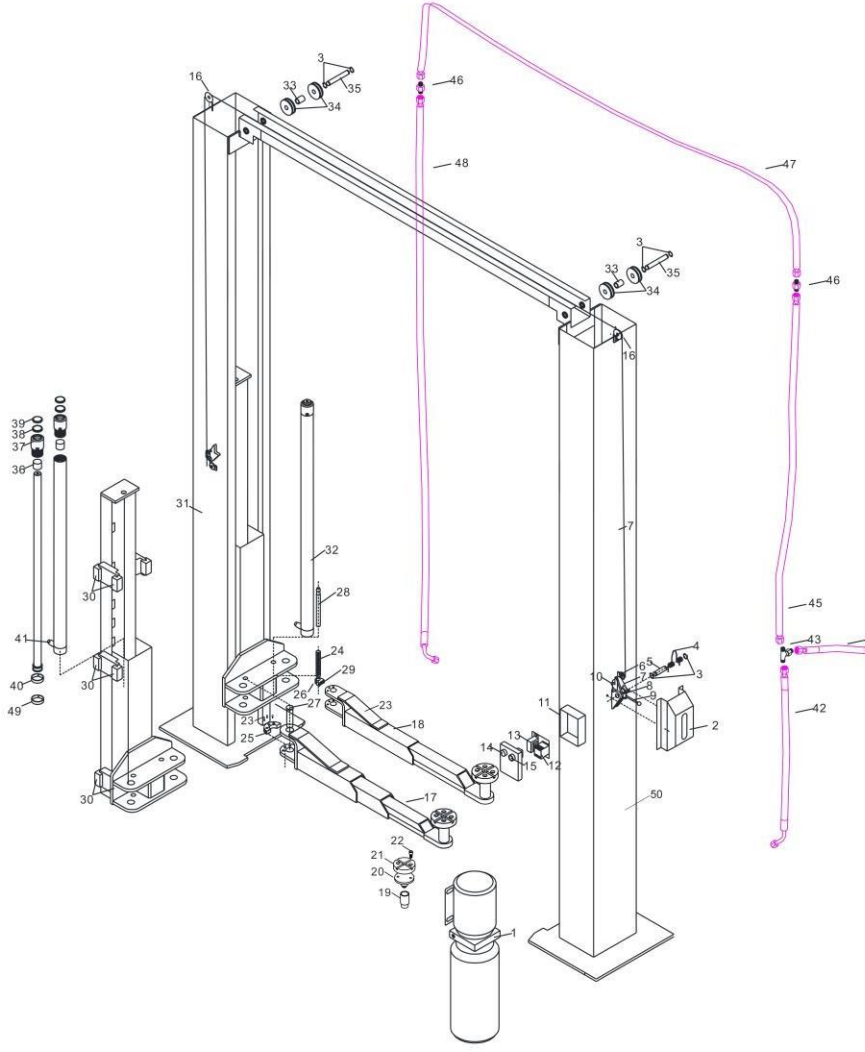
Connection of incoming power wire



Connection of motor wire

Instruction for connecting motor wire (which has been left outside the control cabinet): the live wires are red, blue and green, the ground wire is yellow and arranged at the position where the arrow indicates.

Chapterd9 Exploded Views



S/N	Name	S/N	Name
1	Pump unit	26	Cotter pin of small bracket arm lock
2	Safety cover	27	Bracket arm shaft
3	Safety shaft circlip	28	Shaft for small bracket arm lock
4	Safety spring	29	Small safety gear rack
5	Safety shaft	30	Sliding block for pulley
6	Small safety wheel	31	Auxiliary post
7	Thin safety wire rope	32	Oil cylinder
8	Safety conductive pad	33	Balance wire rope guide wheel
9	Safety handle	34	Cross beam wheel sleeve
10	Safety hook	35	Cross beam end shaft
11	Control cabinet casing	36	Guide sleeve
12	Contactor	37	Oil cylinder nut
13	Transformer	38	Dust seal
14	Indicator	39	Guide ring
15	Button	40	Cylinder piston guide ring
16	Thin safety wire rope guide wheel frame	41	Oil cylinder connector
17	3-section bracket arm	42	Oil pipe 1
18	2-section bracket arm	43	Tee
19	Extended cylinder	44	Oil pipe 2
20	Three-section rotary tray	45	Oil pipe 3
21	Tray rubber pad	46	Through joint
22	Tray screw	47	Oil pipe 4
23	Set screw for big bracket arm lock	48	Oil pipe 5
24	Bracket arm lock spring	49	Cylinder piston sealing ring
25	Big bracket arm lock	50	Main post

No.

Date

No.

Date

4T 2 post lift clear floor

User's Manual

Applicable Model：**C240L**