



**SHENXI Temporarily Installed  
Suspended Access Equipment**

**OPERATION MANUAL  
For Shenxi ZLP250  
Temporarily Installed Suspended Platform**

**INSTALLATION OPERATION  
MAINTENANCE**

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**NOTE: READ OPERATION INSTRUCTIONS CAREFULLY BEFORE OPERATING TEMPORARILY INSTALLED SUSPENDED ACCESS EQUIPMENT**

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## 1. Brief Description

ZLP series temporarily installed suspended access equipment is ideal equipment for building facade construction, decoration, cleaning and maintenance. And it is also widely used in façade building, glass cleaning and installing, elevator installing, ship building and repairing, or in other works such as big-size tank, bridge, embankment and chimney.

It is easy for operation, flexible for moving, reliable in safety. Besides, it is not necessary to build scaffolding in the construction, the efficiency will be promoted and the cost will be reduced. Therefore, ZLP series versatile knock-down platforms provides workers safer, easier and more efficient platform access.

ZLP series temporarily installed suspended access equipments conform to the national standard GB19155-2003.

## 2. Main Parameters

### Model description

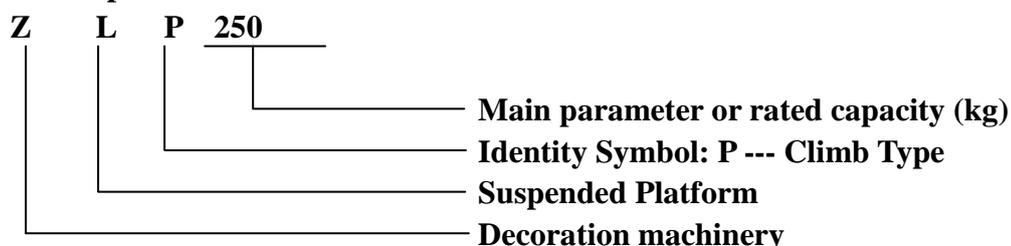


Table 1: Main Parameters for ZLP250

Item		Parameters	
Rated capacity		250kg	
Rated speed		8-10 m/min	
Platform length		1.2m	
Steel rope		4X 31SW+Fc-8.3	
Hoist	Hoist model	LTD6.3	
	Rated lifting force	6.3KN	
	Motor	Model	YEJ90L-4
		Power	1.5 KW
		Voltage	AC380V
		Speed	1420 r/m
Brake force moment	15 Nm		
Safety lock	Configuration	Centrifugal type	
	Permission force of impact	30 KN	
	Locking Cable Distance	< 100mm	
	Locking Cable Speed	≥ 22m/min	
Suspension mechanism	Front beam overhang	1.3m-1.5m	
	Height adjustment	1.27m -1.83 m	

Weight	Lifting part (including hoist, safety lock and electric control system)	Steel Platform	180kg
	Suspension mechanism		115kg
	Counter weight		400kg

### 3. Main Structure and Operation Principle

#### 3.1 Suspended Platform

ZLP250 platform consists of the components as following:

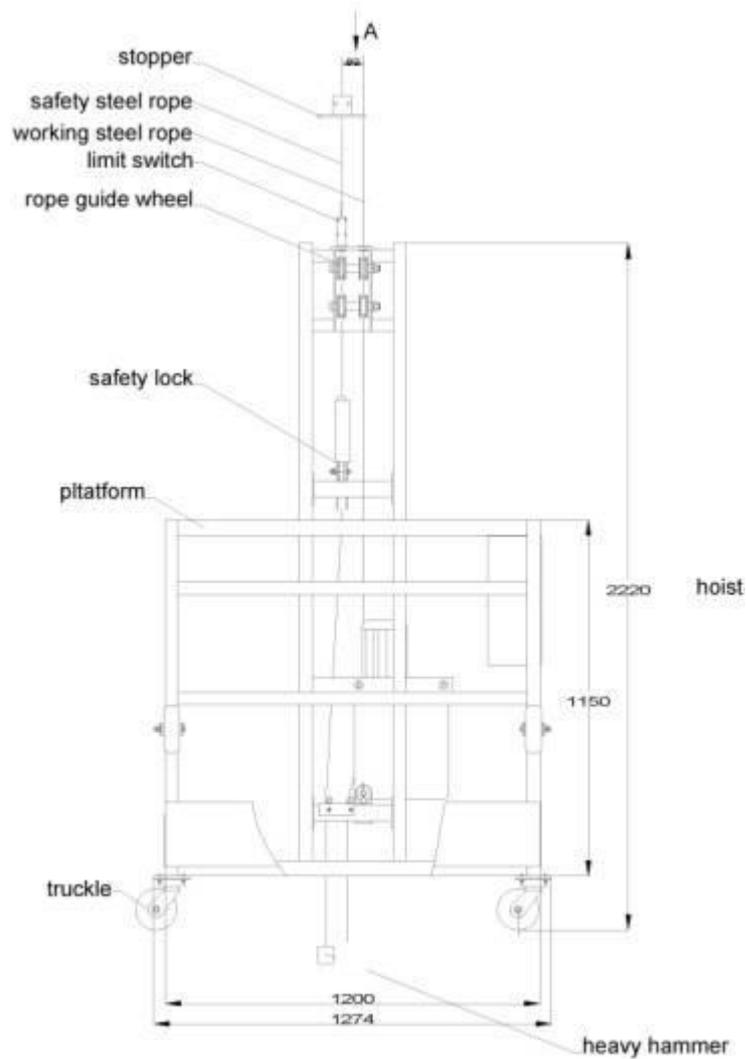
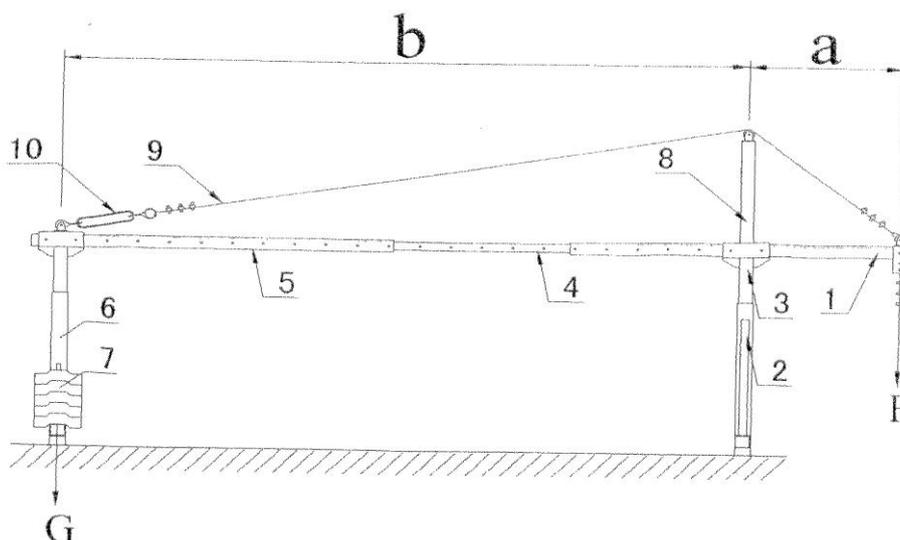


Figure 1: Suspended Platform

### 3.2 Suspension Mechanism

The suspension mechanism is the heavy-duty steel frame structure fixed on the top of the building as the supporting equipment. It is mobile, adaptable and easy to erect and dismantle.

**3.1.1** The suspension mechanism (see figure 2 as below) consists of front beam (1), middle beam (4), rear beam (5), front base (2), rear base (6), upper column (8), tommy bar (3), counter weight (7) and reinforce steel rope (9) etc. The tommy bar is mounted on the front and rear base; the front and rear beams will be fixed through the tommy bar, the middle beam is fixed between the front and rear beam. The upper column is mounted on the tommy bar for fixing the reinforced steel rope and counter weight will be placed on the rear base. For details of structure, see attached figure 1: suspension mechanism.



**Figure 2: Suspension Mechanism**

- |                           |                |                   |                 |
|---------------------------|----------------|-------------------|-----------------|
| 1. Front beam             | 2. Front base  | 3. Tommy bar      | 4. Middle beam  |
| 5. Rear beam              | 6. Rear base   | 7. Counter weight | 8. Upper column |
| 9. Reinforcing steel rope | 10. Turnbuckle |                   |                 |

**3.1.2** The configuration of the suspension mechanism shall meet the following formula:

$$n = \frac{G * b}{F * a} \geq 2$$

- n----- Safety coefficient against overturning;
- G----- Weight of counter weight in kg;
- a----- Front beam overhang in m;
- F----- Total weight in kg of the platform, hoists, electric control system, safety lock, steel rope and rated load, plus wind pressure;
- b----- Distance in m between the front base and rear base.

The permissible load should be adjusted according to the height, front beam overhang, distance between the front base and rear base and other variables (see table 2 next page).

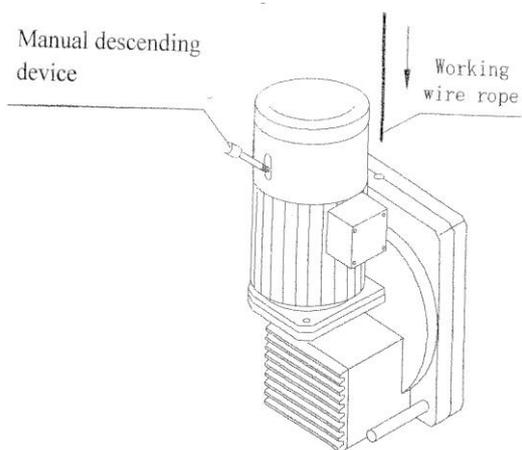
### 3.3 Hoist

The hoist is the powered unit for the platform with the climbing structure.

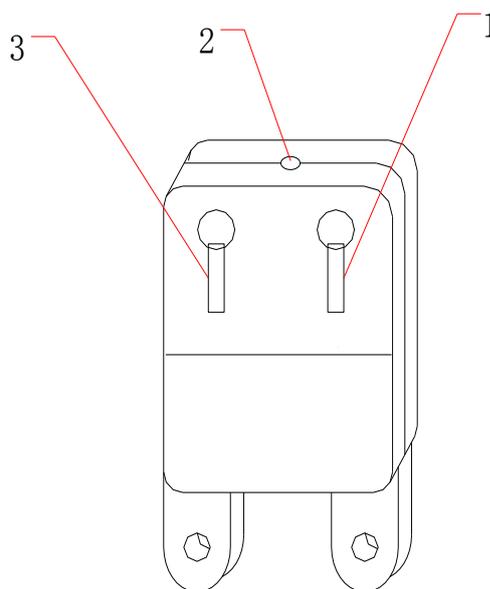
**3.3.1** The hoist for ZLP250 is model LTD6.3. It consists of electromagnetic brake motor, centrifugal speed limiter and dual speed reduction system and “α” cable-guiding system (For details of structure, see attached figure 4 and attached figure 5). The hoist is driven by the electromagnetic brake three-phase asynchronous motor through the worm gear and a pair of reduced gears. The suspended platform will be moved upward and downward with the movement of the hoist.

**3.3.2** The hoist is provided with automatic rope feeding function and operators just need to insert steel rope into the inlet of the hoist (see figure 3 as below).

**3.3.3** The electromagnetic brake of hoist motor is able to be auto-engaged to produce braking torque that stops and supports the suspended platform. In the event of power failure or emergency, the manual descending device can be used to prompt the suspended platform to slide downwards at even speed (see figure 3 as below).



**Figure 3: LTD5 Hoist**



**Figure 4: LSL30 Safety Lock**

### 3.4 Safety Lock

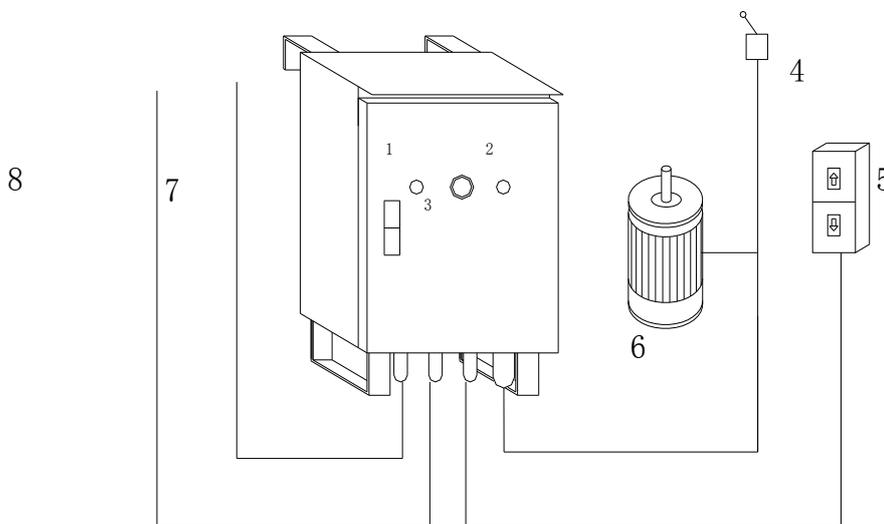
The LSL30 safety lock is the safety-protecting device for the suspended platform. When the working steel rope is broken suddenly, the safety lock will be actuated to lock the safety steel rope to prevent the suspended platform from falling down.

The working principle: The safety wire rope goes through the rope inlet hole to the space between the pressing wheel and the block rotation disc. When the platform goes down, the steel wire rope drives the wheels to move in the opposite direction by the friction power. There is block on the rotation disc. When the lowering speed is over the regulated value, the centrifugal force of the block will overcome the pressing force of the spring. Then the components will be touched and as a result , the wire

rope locking system will start to work and will make the locking block is locked on the safety wire rope. The suspended platform will stop lowering.

### 3.5 Electric Control System

The electric control box is used to control the working of the suspended platform. The main components are installed on the insulation board. On the box door, there is power indicator light, start button, emergency stop button. On the bottom of the electric box, there is power supply, handle switch, power board and the hoist connection plug. (See figure 6 as below).



**Figure 5: Electric Control System**

The electric control box is used for the control of the up and down movement of the suspended platform. The main elements are mounted onto an isolated plate and the universal switch, power indicator light, starting button and emergency stop button are fixed on the panel.

**3.5.1** The schematic diagram and wiring diagram see attached figure 4 and attached 5.

**3.5.2** The main electric elements see table 3 next page.

**Table 3: List of Electric Elements**

Code	Name	Code	Name
<b>KM1,2,3</b>	AC contactor	<b>HL</b>	Power indicator light
<b>QF1</b>	Power leakage breaker	<b>SL1</b>	Limit switch (or travel switch)
<b>QF2</b>	Miniature circuit breaker	<b>XPI</b>	10-core plug
<b>TC</b>	Control transformer	<b>XP2</b>	5-core plug
<b>FR</b>	Thermal overload relay	<b>HA</b>	Alarm bell

<b>SB1</b>	Starting button	<b>YB</b>	Electromagnetic brake
<b>SB2,3</b>	Control button	<b>FU</b>	Fuse
<b>STP</b>	Emergency stop button	<b>TX</b>	Power board
<b>U</b>	Rectifier for brake	<b>HL</b>	Power indicator light

**3.5.3** The principle of electric control is as below:

The principle of electric control is as below:

Press start button---Start the contactor (KM1) ---The power indicator light starts---Press the control button---Main contactors (KM2, KM3) work:

{ Main contact point closes--- Thermal overload relay ---The motor  
 electrifies and works --- The platform lifts or lowers  
 { Normal close contact opens---Contact is closed  
 { Normal open contact closes---Electromagnetic brake works

Press emergency stop button---Starting contactor loses power supply--- cut main power supply and controlling power supply ---platform stops

Upper limit switch works

{ Starting contactor loses power supply--- Cut main power supply and  
 { Controlling power supply ---platform stops; Alarm bell rings

(If the upper limit switch bumps the limit block and works, only after the suspended platform is lowered, the start button and control button can be pressed.)

(If power failure happens, it needs to pull upwards the handle release switch to make the suspended platform lower down to the ground.)

**3.6 Steel Rope**

**3.6.1** The steel rope used in hoists for the equipment is special galvanized steel rope, diameter is 8.3mm, rated strength is 1960Mpa, breaking force is over 53kN.

**3.6.2** The maintenance and inspection of steel rope

The steel rope should be kept and maintained in a proper way to prevent corrosion and pollution, and the steel ropes should be regularly inspected for deformation and breakage. The rejection of steel rope is as per the specification of GB5972.

**3.6.3** Special notice:

The steel rope must be the steel rope designated by our company.

The steel rope should be replaced in any one of the situations below:

- a. The loosening, twisting, untwisting, or any other deformation and distortion.
- b. The steel rope should be rejected when the rope breaking number within the range

of ab spacing reaches 5 (see figure 6 as below). When any corrosion or abrasion on the surface of steel rope, the standard for rejection is reduced further. The percentage of reduction is that the maximum allowable breaking numbers 5 times the percentage of the corrosion or abrasion on the surface of steel rope to make deduction.



**Figure 6: Steel Rope**

- c. Obvious corrosion on the steel rope, that is, the concave pit on the surface and the steel rope is loose.
- d. The nominal diameter of steel rope is reduced by 6%, even if there is no twist breakage.
- e. When the abrasion of outer rim of steel rope up to 40% of diameter.
- f. The damage or accumulation incurred by the heat or electric arc.

## **4. Installations and Adjustment**

### **4.1 The Preparation before Installation**

Prior to installation, please check up the number of parts as shown in the packing list. Check the condition of each and all the parts and components.

### **4.2 Installation of Suspension Mechanism**

See attached figure 1: suspension mechanism and use the special installing tool — pinch bar if necessary.

**4.2.1** Insert the tommy bars into the front base and rear base respectively. Adjust the height of the tommy bars and tighten the bolts to form the front base and rear base. (The height of which should be adjusted with the 1.44~2.14m range according to the height of parapet).

**4.2.2** Lead the front and rear beams into sleeve on front or rear base, position the middle beam between the front and rear beams and tighten the bolts and nuts.

**4.2.3** Mount the working steel rope and safety steel rope onto the coupling sleeve of the front beam. Make sure that the ends of the ropes must be clamped well (see section

**4.2.4** Adjust the front beam overhang and fix the upper column with tommy bar with the bolts and make sure that it is not askew.

**4.2.5** Adjust the distance between the front and rear bases. Adjust the three beams to make sure that the three beams should be in the same straight line. Care must be taken that the height different between the three beams must not larger than 10 cm. Moreover, it is only allowed that the front is higher than the rear.

**4.2.6** Fix the coupling sleeve on the tommy bar of the rear base. Lead one end of the reinforcing steel rope (7m long) into the coupling sleeve of front beam and tighten the rope clamp. Lead the reinforcing steel rope to the rope sheave on upper column and the other end through the hole of the close side of the turnbuckle, tighten the rope clamp. Adjust the screw bar of the turnbuckle and tighten the reinforcing steel rope to raise one end of front beam about 3cm.

**4.2.7** Place the suspension mechanism to its working position with the reach of front hanger plate out of the working wall space about 60cm. The distance between two front hanger plates of suspension mechanism should be the same as the length of the suspended platform.

**4.2.8** Place the counter weight onto the poles of the rear holder and fix them with bolts and slowly release the steel ropes.

### **4.3 Installation of Hoists, Safety Locks and Electric Control Box**

**4.3.1** Fix the hoists on the hoist-mounting frame with pins and M10 bolts: insert the pin into the hole at the low end of the hoist and at the mount frame, insert the M10 bolt into the two holes at the high end of the hoist and at the mount frame (see figure8 next page).

**4.3.2** Install safety lock on the bracket of the hoist-mounting frame and tighten with bolts. Fix the limit switch onto the right position of the safety lock.

**4.3.3** Install and hang the electric control box in the middle of high balustrade of the suspended platform.

**4.3.4** Insert motor plug and handle switch plug into the power socket of the electric control box. Power plug should be inserted and power cable should be connected based on three-phase five-wire system.

### **4.4 Connection between Suspended Platform and Suspension Mechanism**

#### **4.4.1** Rope passing of the hoist

Turn the universal switch to the side where the hoist is prepared for rope passing. Insert the working steel rope into the inlet of the hoist after passing between the limiting wheel and the roller of safety lock. And then press the upward button, the hoist will wind automatically to finish the rope passing and positioning of steel rope.

#### **4.4.2** Rope passing of the safety lock

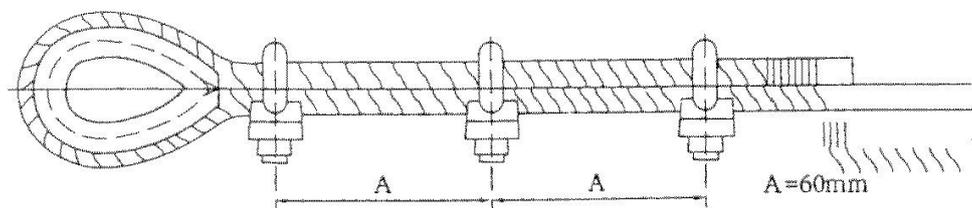
Make the suspended platform rise up until the arm of the safety lock cannot be rose, and then insert the safety steel rope into upper inlet of safety lock.

**4.4.3** Place heavy hammer: After the complete of the connection of the safety steel rope, hang the heavy hammer onto the other end of the ropes.

### **4.5 Special Notice**

**4.5.1** The suggested front beam overhang should be 1.3 m; the suggested distance between the front and rear should be 4.6 m. The counter weight should be placed on the two rear beams on the average basis and fixed with the bolts.

4.5.2 The fixing method at the end of steel rope should be in accordance with the requirements of the standard GB5976-86 (see figure 7 as below). U bolt is fixed on the rear portion of steel ropes; clamp is fixed on the working section of steel ropes, which cannot be mixed up. The steel rope clamp cannot be alternately arranged on the steel rope, and the correct clamping method is as follows:



**Figure 7: The Correct Clamping Method**

- Quantity of the clamps: 3 pieces (at least);
- Arrangement of the clamps (see figure 9 above);
- The distance between the clamps is 60 mm;
- Tightening of the clamp: the first clamp should be close to the rope ring and tightened. Care must be taken that it is not allowed to damage the steel rope when tightening, and then make the second and third clamps. It is necessary to make the clamps tightened again after the steel rope is loaded one or two times.

4.5.3 Care must be taken that the steel ropes must not be damaged, deformed or twisted.

4.7.4 The hoist must be fixed with the pins and bolts.

4.7.5 Make sure that the plugs of the motors and the control button be inserted into the sockets of the control box correctly.

4.7.6 The power supply, connected with the control box, should have the null and earth lines and the control box should be ground contacted reliably.

4.7.7 Make sure that the connection of the steel rope with the hoist is in normal, otherwise, stop connection for check.

4.7.8 The remaining steel rope should be placed in order and bounded well.

4.7.9 The four heavy hammers must be hung onto the lower ends of the safety steel rope respectively.

## 5. Operation

### 5.1 Checking and Adjusting after Installation

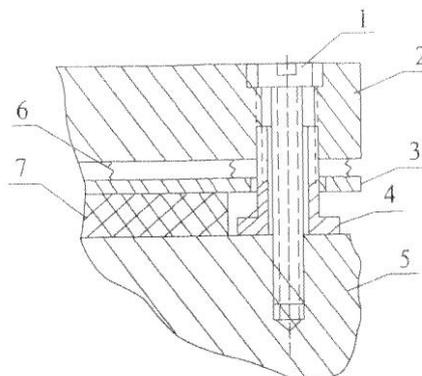
5.1.1 Check if the connections are correct, the steel ropes are not damaged, the clamping are correct, the nuts are tightened, the front beam overhang is in accordance with the standard. Make sure that the moment of force of the stability of the suspension mechanism is over two times of the overturning moment.

5.1.2 Check if the wiring is correct. The voltage of power should be within the range of  $380V \pm 5\%$ . After the power is connected, push the testing button on the power leakage breaker, and power leakage breaker should work swiftly. Close the door of

electric control box, and inspect if handle switch, universal switch and motor is normal.

**5.1.3 Checking electromagnetic brake:**

- a. The spacing between the armature and the electromagnetic disk should be within 0.8-1.0 mm (see figure 10). First, loose inner hexagon screw (1), then adjust the spacing by turning hollow screw (4). Finally, tighten inner hexagon screw (1).
- b. Power on to check the operation of electromagnetic armature, the armature must separate with friction disc completely after being absorbed, and no clog after power is off. The armature should press the spring disc completely under the force of spring.



**Figure 8: Electromagnetic Brake**

- |                       |                         |
|-----------------------|-------------------------|
| 1.Inner hexagon screw | 2. Electromagnetic disk |
| 3. Armature           | 4. Hollow screw         |
| 5. Motor cover        |                         |
| 6.Spring              | 7. Friction disk        |

**5.1.4 Checking safety lock:** move the suspended platform upward about 1-2 m and make its one end inclined about  $3^{\circ} \sim 8^{\circ}$ , the safety lock should be actuated to lock the safety steel rope.

**5.1.5 Make the suspended platform upward and downward 3-5 times for about 3-5 m travel and check:**

- a. The noise of the hoist should be normal and the electromagnetic brake will be actuated reliably.
- b. Press emergency stop button or pull the limit switch, the suspended platform will stop moving immediately.
- c. Make the suspended platform horizontal, if necessary.

**5.1.6 Checking manually descending:** move the suspended platform upward for about 3-5 m and stop it. Pull the manual descending device, the suspended platform can move downward smoothly.

**5.1.7 Adjustment of the upper limit stopper:** move the suspended platform upward to the highest position. Fix the limit stopper and adjust the location of the limit switch and make sure that the limit switch will be actuated normally.

**5.1.8 Rated load testing:** The rated load should be evenly distributed on the working platform. In the operating process no abnormal sound, and when stopping no sliding movement. The safety lock should lock the safety steel rope flexibly and reliably when the platform is in tilting.

**5.2 Operation Procedure**

**5.2.1** Turn on the power supply.

**5.2.2** Press the starting button.

**5.2.3** After the work completed, cut off the power supply and make sure the control box is locked.

### 5.3 Safety Operation Regulations

The suspended access equipment is special equipment operated at the certain height, so it is very important to pay more attention to the safety operation. After installation, it is necessary to follow the procedures of 5.1 last page for checking and adjusting. Besides, the following safety operation regulations should be followed:

**5.3.1** The suspended access equipment should only be operated and maintained by qualified personnel with adequate technical training.

**5.3.2** The operators should read the operation manual and check the equipment carefully before operation strictly follow the safety regulations and “Daily Check Items” during the operation and maintenance of the equipment.

**5.3.3** The operators should wear safety helmets and should be fastened with rope lifeline with the self-lock device. Moreover, the rope lifeline should be fixed independently on the attachment over the operating area.

**5.3.4** It is not allowed to use the equipment overloaded or with troubles (the rated weight including the weight of operators). The load should be evenly distributed on the platform. The loaded weight must be decreased as the working height, the front beam overhang or the distance between the front and rear holders change (see table 2). Furthermore, the loaded weight must be decreased further if the wind force is stronger. Make sure that the moment of force of the stability of the suspension mechanism is over two times of the overturning moment.

**5.3.5** It is not suggested to install the platform over the rated length or use the two platforms together. And it is also not allowed to assembly the suspended platform with the parts and elements from different manufactories.

**5.3.6** The limit switch, emergency stop button, electromagnetic brake and manual descending device should be sensitive and reliable.

- a. When the platform is in its normal operation, it is prohibited to manually break the motors or safety lock, so as to prevent any accident from happening.
- b. The emergency stop button is the self-lock one, it is necessary to be rotated in clockwise to make the button out when reset.
- c. It is necessary to press the starting button to move the platform after the limit switch or the emergency stop button is pressed.
- d. When the limit switch is activated, the operation of platform will automatically halt and the alarm bell will ring. Under this circumstances, lower the platform promptly to have the limit switch be away from the limit stopper.

**5.3.7** During operation of platform, the operator should keep an eye on the platform’s operation condition and promptly shoot any hidden trouble possibly leading to accidents.

**5.3.8** The platform should be adjusted promptly if it is tilting and the height difference of two ends should be no higher than 15cm. And otherwise, it will affect the operation of the safety lock.

**5.3.9** It is not allowed to use ladders, boxes, or other tools to obtain increased height. Never use additional extensions to exceed the permissible length of the platform.

**5.3.10** It is not allowed to make use the platform as the elevator for people or goods

and also it is not allowed to mount any hanging device in the platform.

**5.3.11** Once the hoist is blocked during operation, it is not allowed to move the platform forcedly. Fix the platform first and make sure it is safety, then check and eliminate the troubles.

**5.3.12** In case of working steel rope breakage during operation, the personnel in the platform should keep calm and leave the platform under the prerequisite of ensured safety. After maintenance and repair personnel enters the platform, the first thing to do is to take anti-dropping measures by having the clamp of safety steel rope hold the platform or by fastening the platform with the steel rope secured on the building roof. Then, pull the replacing steel rope through the hoist, and press the up button to have the platform move upward. If the suspended access equipment works normally, release the safety lock cautiously, detach the fixing steel rope and lower the platform down to the ground. It will not be put into operation again until it passes the stringent inspection.

**5.3.13** In case of power break during operation shut down the power first. If it is necessary to have the suspended platform lowered back onto the ground, operate manual descending device to have the platform lowered smoothly onto the ground.

**5.3.14** Site environment:

- a. No high voltage line within the 10 meters;
- b. It is not allowed to use the equipment in thunderstorm, fog or the wind of grade 5 (wind speed 8.3m/s) or higher;
- c. Make sure that the welding spark will not affect or damage the steel rope;
- d. Temperature required:  $-20^{\circ}\text{C}\sim+40^{\circ}\text{C}$ ;
- e. Error of the voltage:  $\pm 5\%$ .

**5.3.15** The suspended access equipment should avoid contacting corrosive gas and liquid. If there is no alternative available, anti-corrosion and segregation measures should be taken in its operation.

**5.3.16** Cut off the power supply, lock the control box and clean the equipment after completion of the operation. It is not allowed any foreign, dirty matter or water entering into the motor, safety lock, electromagnetic brake and control box.

**5.3.17** The working steel rope and safety steel rope should not be bent and should be prevented from the contamination of mortar and other foreign materials. They should be replaced as required by the operation manual in case of cracking, breaking, peeling, distortion, flossing and corrosion. The safety steel rope should be prevented from contacting grease or oil.

**5.3.18** The safety lock should be checked and its moving parts should be lubricated regularly during its service life and it should not be dismantled without authorization.

**5.3.19** Special attention should be paid to mark limit effective of the safety lock. When the steel rope is removed from platform, it should be winded to form a bundle and be stored properly.

## 6. Common Failures and Troubleshooting

Troubles	Analysis of causes	Troubleshooting	Remarks
<b>Suspended platform slides down in static condition</b>	<ol style="list-style-type: none"> <li>1. Motor electromagnetic brake fails.</li> <li>2. The spacing between brake and armature is over too big.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace electromagnetic brake.</li> <li>2. Adjust the space.</li> </ol>	See 5.1.3
<b>Suspended platform cannot stop in ascending</b>	The main contact point of AC contactor disengages.	Press emergency stop button or pull the limit switch to stop the moving of the platform, replace the contactor.	
	Control button fails.	Press emergency stop button or pull the limit switch to stop the moving of the platform, replace the control button.	
<b>Suspended platform cannot stop in descending</b>	The main contact point of AC contactor disengages or the control button fails.	Press emergency stop button or pull the limit switch to stop the moving of the platform, replace the contactor or control button.	
	<p>The electromagnetic brake is out of order:</p> <ol style="list-style-type: none"> <li>1. The space between the electromagnetic disk and the armature is too big.</li> <li>2. Too small contact area between the friction disk and the armature.</li> <li>3. Slipping between the friction disk and the armature because of the water or oil.</li> <li>4. The steel rope is slipping in the hoist.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the space. If it can't be done, replace the brake disk.</li> <li>2. Check if the space between the friction disk and the armature is well-distributed; otherwise, replace the disk or the armature.</li> <li>3. Clean.</li> <li>4. Repair the hoist.</li> </ol>	See 5.1.3
<b>Suspended platform cannot ascend and descend</b>	<p>Power supply is abnormal:</p> <ol style="list-style-type: none"> <li>1. Leakage breaker disengages.</li> <li>2. Phase lacking.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check to see if any leakage, and take preventive measures.</li> <li>2. Check if the 3-phase power is normal and reconnect.</li> </ol>	
	<p>Failure of control line:</p> <ol style="list-style-type: none"> <li>1. Control transformer or control button damaged.</li> <li>2. Thermal overload relay breaks or damages.</li> <li>3. Universal switch not in good contact.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace.</li> <li>2. Wait 3-5 minutes before restarting or replacing the thermal overload relay.</li> <li>3. Replace.</li> </ol>	

	The steel rope is blocked in the hoist.	Fix the platform and examine & repair hoist.	It is not allowed to restart the platform forcedly
<b>Suspended platform tilt</b>	1. Sensitivity difference in motor brake. 2. Difference in motor rotating speed, and hoist rope pulling.	1. Adjust the spacing of motor brake. 2. Check the rope pressing device of hoist or replace rope pressing device or replace motor with incorrect rotating speed.	
	Uneven in the load of suspended platform.	Adjust the load of suspended platform.	
<b>Hoist cannot actuate suspended platform</b>	The electromagnetic brake is not actuated: 1. Rectifier damaged. 2. No input voltage.	1. Replace the rectifier. 2. Check and adjust.	Input voltage: AC380 V and output voltage: DC99 V
	Low voltage of the power supply.	Check and adjust the voltage.	
	Damage of hoist.	Check and repair the hoist.	
<b>Abnormal noise of the motor or the motor is hot</b>	Operation lacking phases.	Check the power supply.	
	Lower or higher voltage.	Adjust the voltage.	
	Bearing damaged.	Replace.	
<b>Safety lock slip or locking angle is too big</b>	Oil dust on the safety steel rope	Clean or replace the steel rope.	
	Problem wit rope clip.	Replace the clip.	Replace by manufactory
	Sluggish motion in safety lock.	Replace torsion spring of safety lock.	

## 7. Maintenance

The daily maintenance and check, before operation of the equipment, will be done by the operators and check periodically by the qualified personnel. The maintenance and the check should be recorded.

### 7.1 Daily Maintenance

#### 7.1.1 Safety lock

- a. Cleaning the surface;
- b. Cleaning the surface of the steel rope and clear out the rust;
- c. Prevent the water and dirty matter from entering the lock.

#### 7.1.2 Hoist

- a. Cleaning the surface;
- b. Cleaning the surface of the electromagnetic brake and the end cover of the motor by removing the cover of the motor;
- c. Cleaning the surface of the steel rope and clear out the rust;
- d. Prevent the water and dirty matter from entering the hoist and motor.

## 7.2 Daily Check

- a. Reliability of the safety lock;
- b. Emergency stop and limit switch;
- c. Reliability of the electromagnetic brake;
- d. Sensitive of the manual descending device;
- e. Steel rope, rope clamp and connections;
- f. Making the suspended platform move upward and downward 3-5 times with the travel of about 3-5 meters;
- g. Following the “Daily Check Items” (see attached table 2), check two times every day (morning and afternoon). It is not allowed to use the suspended platform with any troubles.

## 7.3 Check Periodically

The safety lock must be re-calibrated in six month from the date of the delivery by the manufacturer; and the hoist must be checked by the qualified person. Generally, the equipment should be checked at an interval of 2 months depending on the application condition and the working period. After the end of use of entire machine, a thorough keeping and examination should be done.

### 7.3.1 Hoist:

- a. Replace the oil in the gear reducer: No. 30 machine oil, quantity: 0.6 kg; first replace in 20-30 days, then replace in one or two months intervals. Check the wear-out condition of the worm and gear.
- b. Clearing out the dirty matter by removing the cover of the hoist; cleaning the gear and replace the grease; check the wear-out condition of the bearing assembly, guide roller, steel ring and press pan.
- c. Cleaning the electromagnetic by removing it; check the wear-out condition of the armature and the brake disk. Replace if the armature is deformed or the thickness of the brake disk is less than 10 mm.

**7.3.2 Safety lock:** check if the arm action of the lock and the rotation of the roller are sensitive.

**7.3.3 Electric control box:** the isolated resistance should be less than  $2M\Omega$  ; check the electric elements and the connecting wire; replace the elements, if necessary, based on the diagram; check the system condition with power on.

**7.3.4** Check if the working steel rope and safety steel rope are in good condition.

**7.3.5** Check if the suspended platform and the suspension mechanism are deformed or damaged; if there is any crack and fracture in welding of the structure. Repair or reject if necessary.

## **8. Storage, Packing and Transportation**

The equipment should be stored in the dry and ventilating storehouse to prevent it from rusting. It is necessary to make the maintenance if it is stored for one-year period. The hoist, safety lock and the electric control box should be packed separately. The steel ropes should be bounded and packed for transportation. Care must be taken that the bottom plate of the platform, balustrades, mount frame for hoist and the suspension mechanism should not be deformed when loading and transportation.

## **9. Documents and Tool**

### **9.1 Documents attached**

- |                                   |          |
|-----------------------------------|----------|
| a. Packing list                   | one copy |
| b. Operation manual               | one copy |
| c. Quality inspection certificate | one copy |

### **9.2 Tools**

Pinch bar	one piece
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## **10. Attached Table and Figure**

**Attached figure 1: Suspension Mechanism**

**Attached Figure 2: LTD6.3 Hoist Structural Diagram**

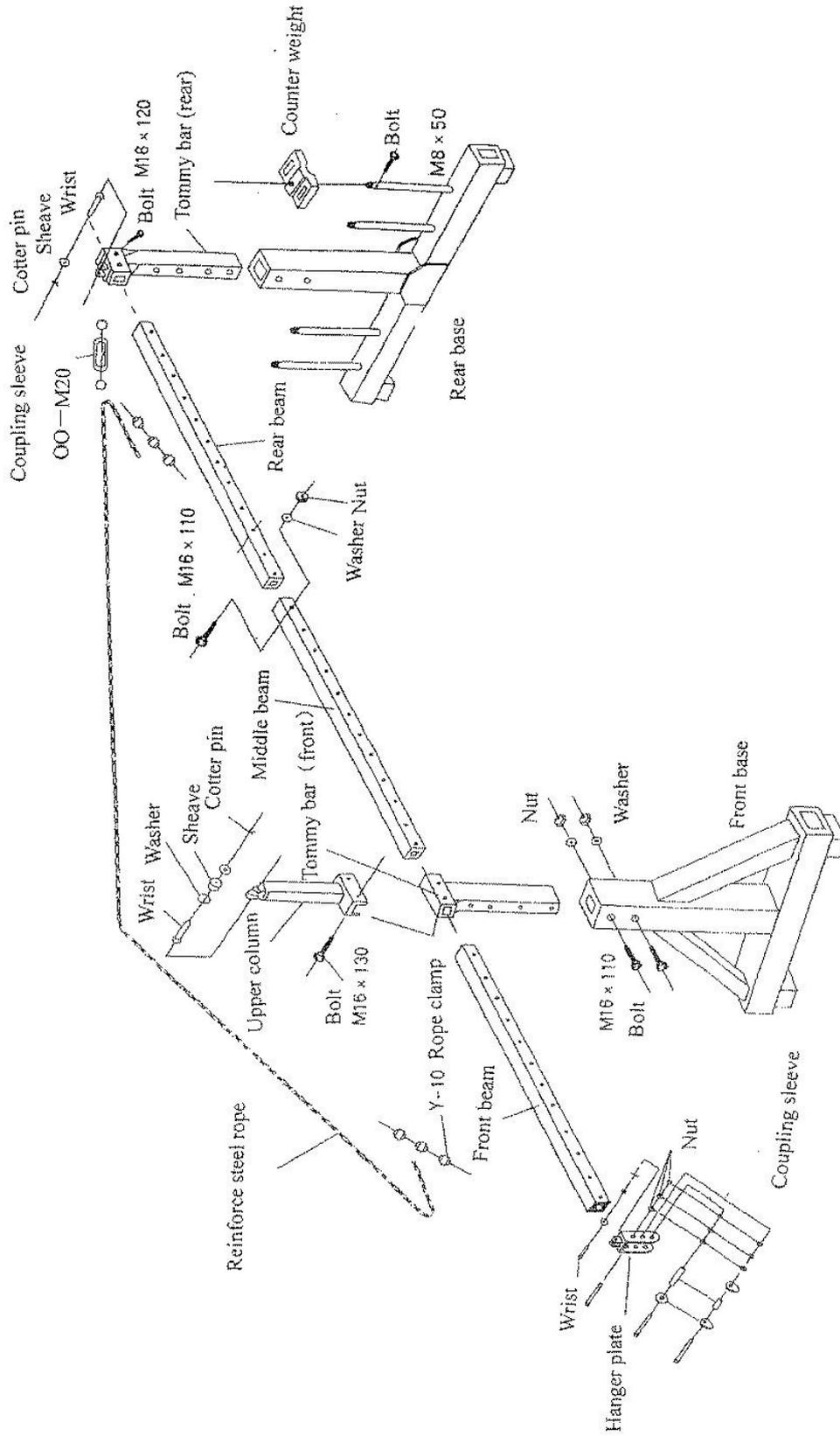
**Attached Figure 3: LTD6.3Hoist Exploded View**

**Attached Figure 4: Electric Wiring Diagram**

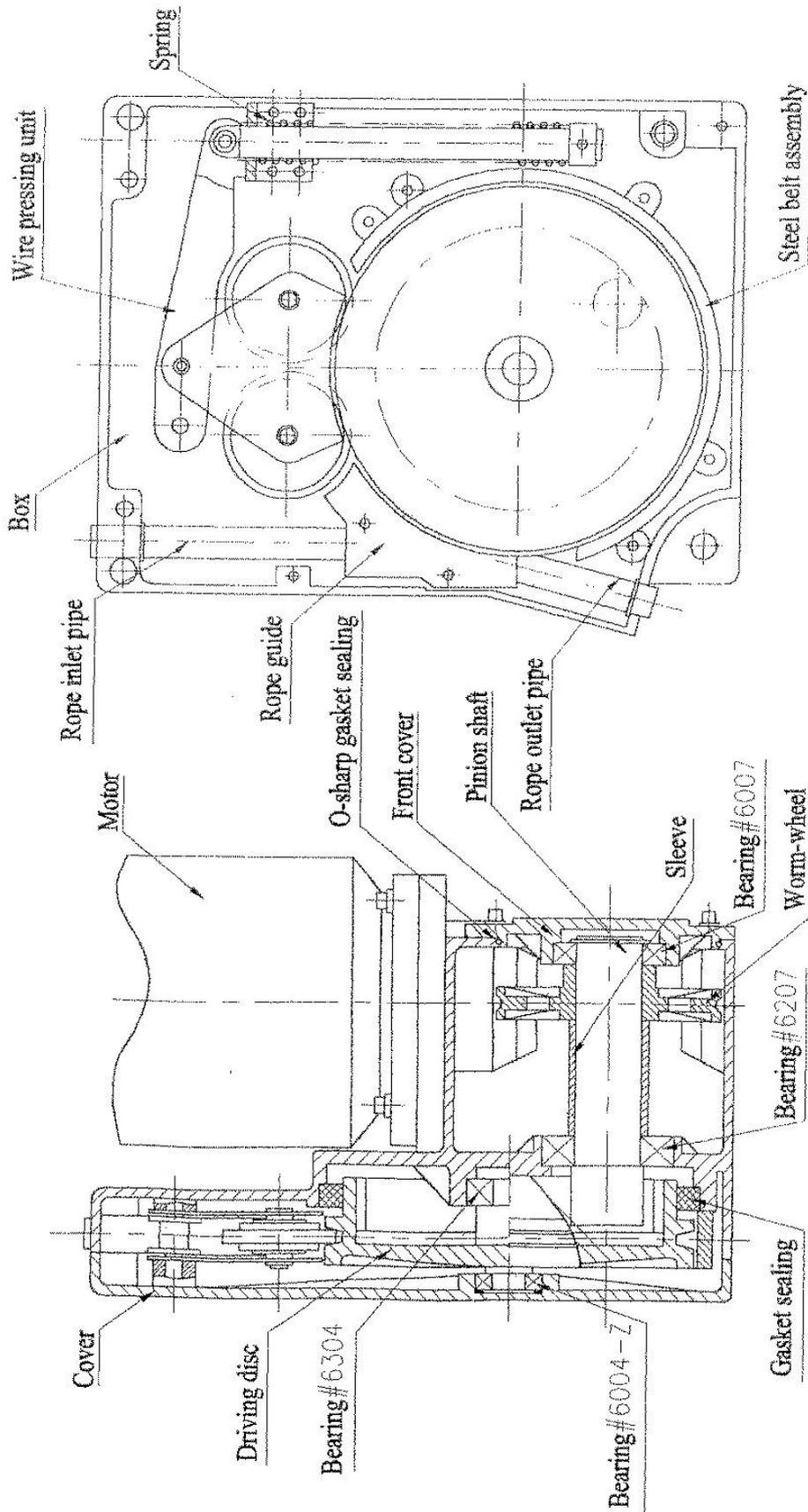
**Attached Table 1: List of Fragile Parts for Model ZLP250**

**Attached Table 2: Daily Check Items**

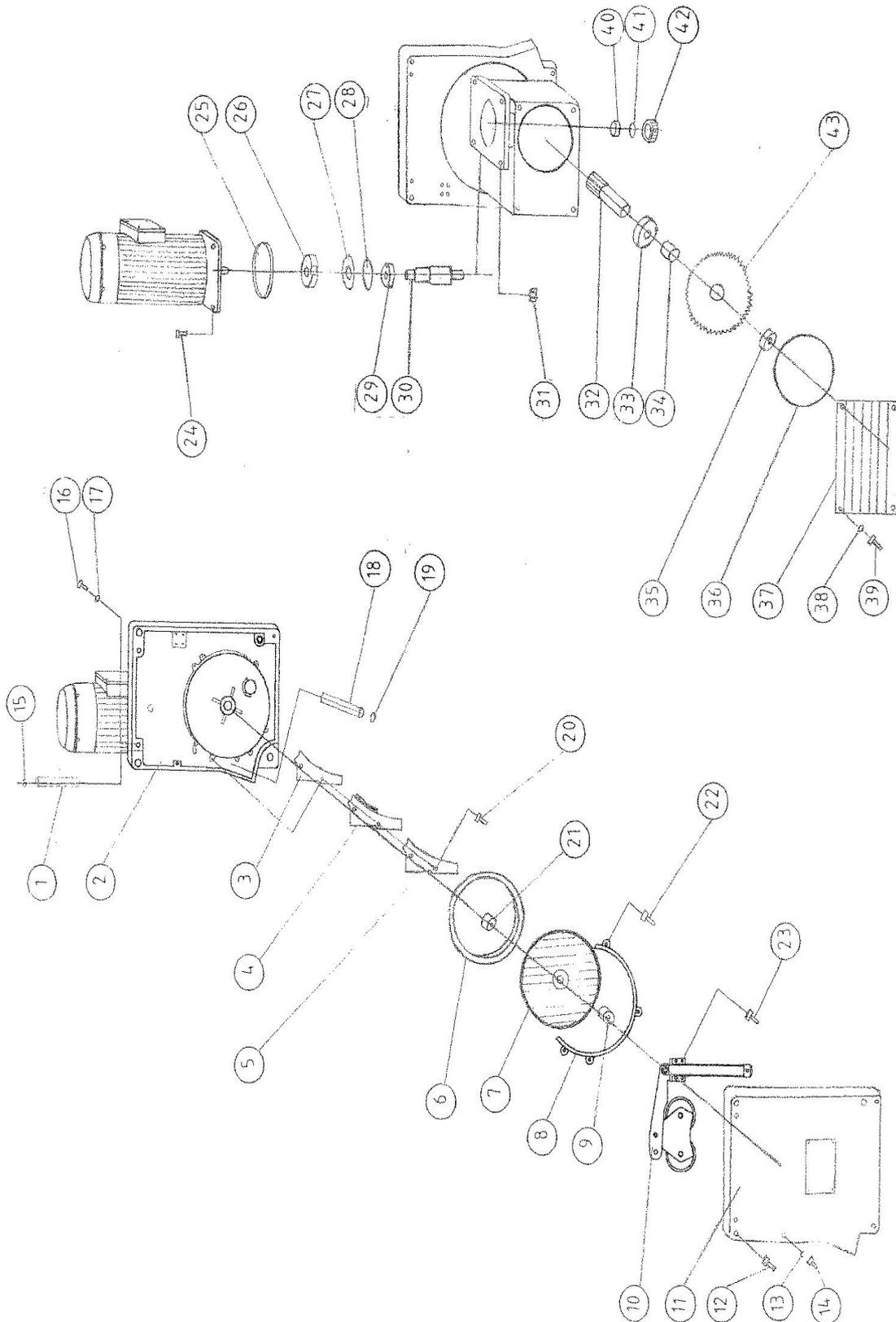
Attached figure 1: Suspension Mechanism



Attached Figure 2: LTD6.3 Hoist Structural Diagram



Attached Figure 3:LTD6.3 Hoist Exploded View

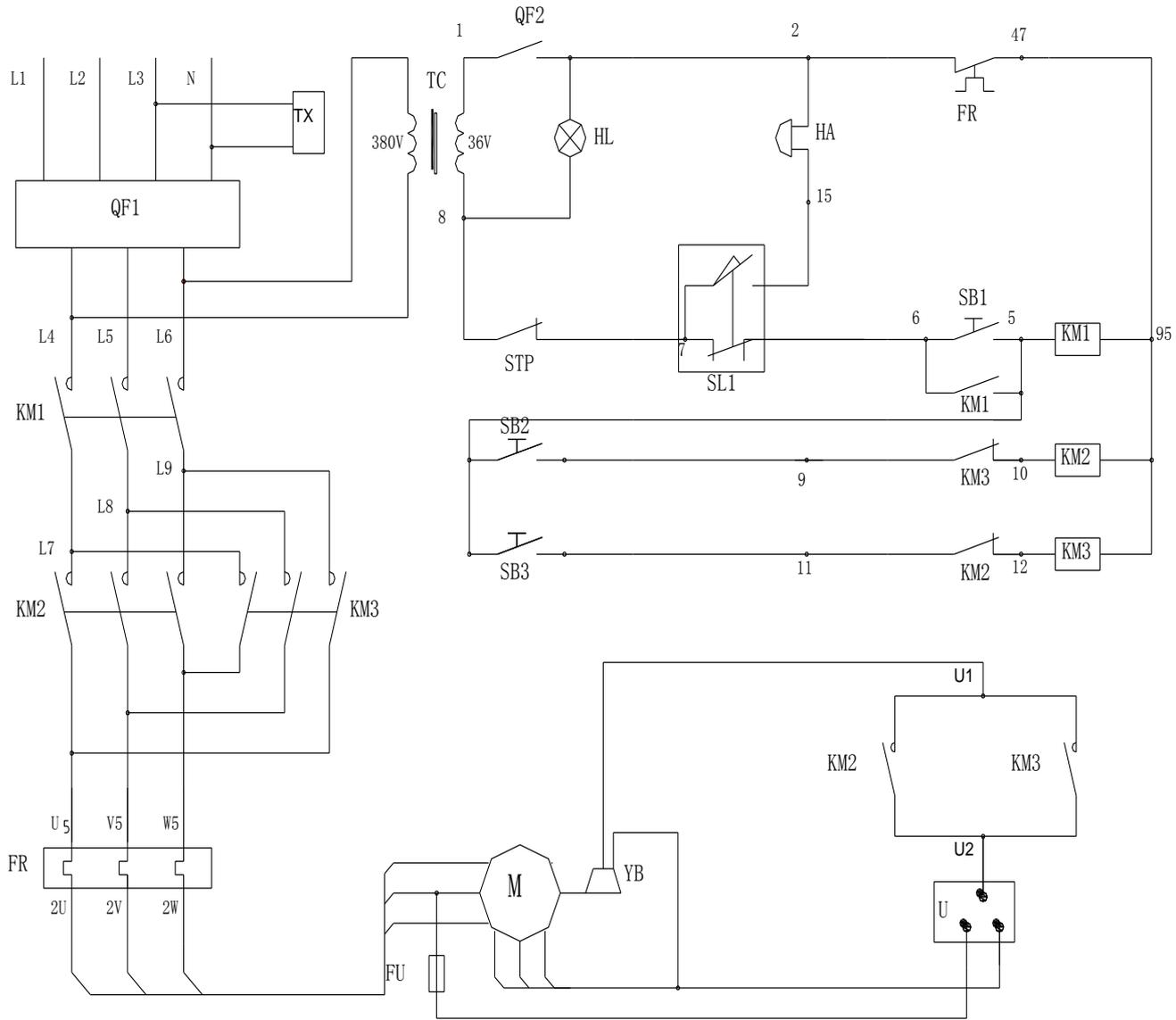


**Operation Instructions for ZLP250 Temporarily Installed Suspended Access Equipment**

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No.	Name	Specification	Quantity	No.	Name	Specification	Quantity
1	Rope inlet pipe	ZLP6308.1-12	1	23	Screw	M6×30	4
2	Box	ZLP6308.1-4	1	24	Bolt	M8×35	4
3	Base plate of rope guide	ZLP6308.4-2	1	25	O-shape gasket sealing	35510460	1
4	Rope guide	ZLP6308.4-1	1	26	Centrifugal speed limiter		1
5	Cover of Rope guide	ZLP6308.4-3	1	27	Gasket sealing	B47×25×7	1
6	Gasket sealing	B230×200×15	1	28	Shield ring	GB893.1-86-37	1
7	Driving disc	ZLP6308.1-11	1	29	Bearing	#6005-2Z	1
8	Steel belt assembly	ZLP6308.1-8	1	30	Worm	ZLP6308.1-1	1
9	Bearing	#16304-Z	1	31	Nut	M8	4
10	Wire pressing unit		1	32	Pinion shaft	ZLP6308.1-7	1
11	Cover	ZLP6308.1-5	1	33	Bearing	#6007	1
12	Bolt	M10×90	2	34	Sleeve	ZLP6308.1-9	1
13	Washer	Φ 6	3	35	Bearing	#6207	1
14	Screw	M6×35	3	36	O-shape gasket sealing	35513600	1
15	Shield ring	GB894.2-86-18	1	37	Front cover	ZLP6308B.1-11	1
16	Screw	M6×70	3	38	Washer	Φ 6	4
17	Washer	Φ 6	3	39	Screw	M6×30	4
18	Rope outlet pipe	ZLP6308.1-13	1	40	Bearing	#10003-2Z	1
19	Shield ring	GB894.2-86-18	1	41	Shield ring	GB893.1-86-37	1
20	Screw	M6×45	2	42	Sealing cover	ZLP6308B.2-2	1
21	Bearing	#10004	1	43	Worm-wheel	ZLP6308B.1-10	1
22	Screw	M6×25	4				

Attached Figure 4: Electric Wiring Diagram



**Attached Table 1: List of Fragile Parts for Model ZLP250**

<b>No.</b>	<b>Item</b>	<b>Specifications</b>	<b>Installation part</b>
<b>1</b>	Steel rope	4T31(8.3)	Working and safety steel rope
<b>2</b>	Braking friction disc	See figure 10	Electromagnetic Brake of Motor
<b>3</b>	Armature	See figure 10	Electromagnetic Brake of Motor
<b>4</b>	Rectifier module		Junction box of Motor
<b>5</b>	Centrifugal speed limiter	See attached figure 3	LTD6.3Hoist
<b>6</b>	Rope pressing unit	See attached figure 3	LTD6.3 Hoist
<b>7</b>	Rope guide	See attached figure 3	LTD6.3 Hoist
<b>8</b>	Steel belt assembly	See attached figure 3	LTD6.3Hoist
<b>9</b>	Rope inlet pipe	See attached figure 3	LTD6.3Hoist
<b>10</b>	Rope outlet pipe	See attached figure 3	LTD6.3 Hoist
<b>11</b>	Sleeve plate		LSB30 II Safety lock
<b>12</b>	Rope clip		LSB30 II Safety lock

**Attached Table 2: Daily Check Items**

Item	Contents	Result	Marks	Item	Contents	Result	Marks
<b>Steel rope</b>	Any damage (broken, deformation, slacking or bending)			<b>Hoist</b>	Connections with the mount frame		
	Dirty with oil				Oil leakage		
	Rust and wear-out			<b>Suspended platform movement</b>	Any abnormal noise when the platform is moving upward and downward for 3-5 m in 3 times		
	Clamp slacking				Horizontal level		
<b>Suspended mechanism</b>	Counter weight lose or damage			<b>Electric control box</b>	Plug and socket connection		
	Connections				Electric cable		
	Location				Indicating lamp of the power supply		
<b>Suspended platform</b>	Connections				Actuation of the universal switch		
	Tube damaged or rust				Actuation of the AC contactor		
	Crack in welding			Actuation of the limit switch			
<b>Safety lock</b>	Lock rope is reliable if inclined			Actuation of the emergency stop			
	Sensitive in action			<b>Comments and suggestions:</b>			
<b>Electro-magnetic brake</b>	Spacing						
	Blocked or not						
	Brake reliable						
	Slipping down manually						

Note: 1. The “Result” column: “√” means good and “×” means trouble.  
 2. If the “Result” column is trouble, “Marks” column: “☆” means to be repaired immediately; “Δ” means to be repaired at the definite period; and “O” means to be rejected.  
 3. The movement of the suspended platform should be checked after the completion of the above items

**Equipment No.**

**Checked by:**

**Date:**