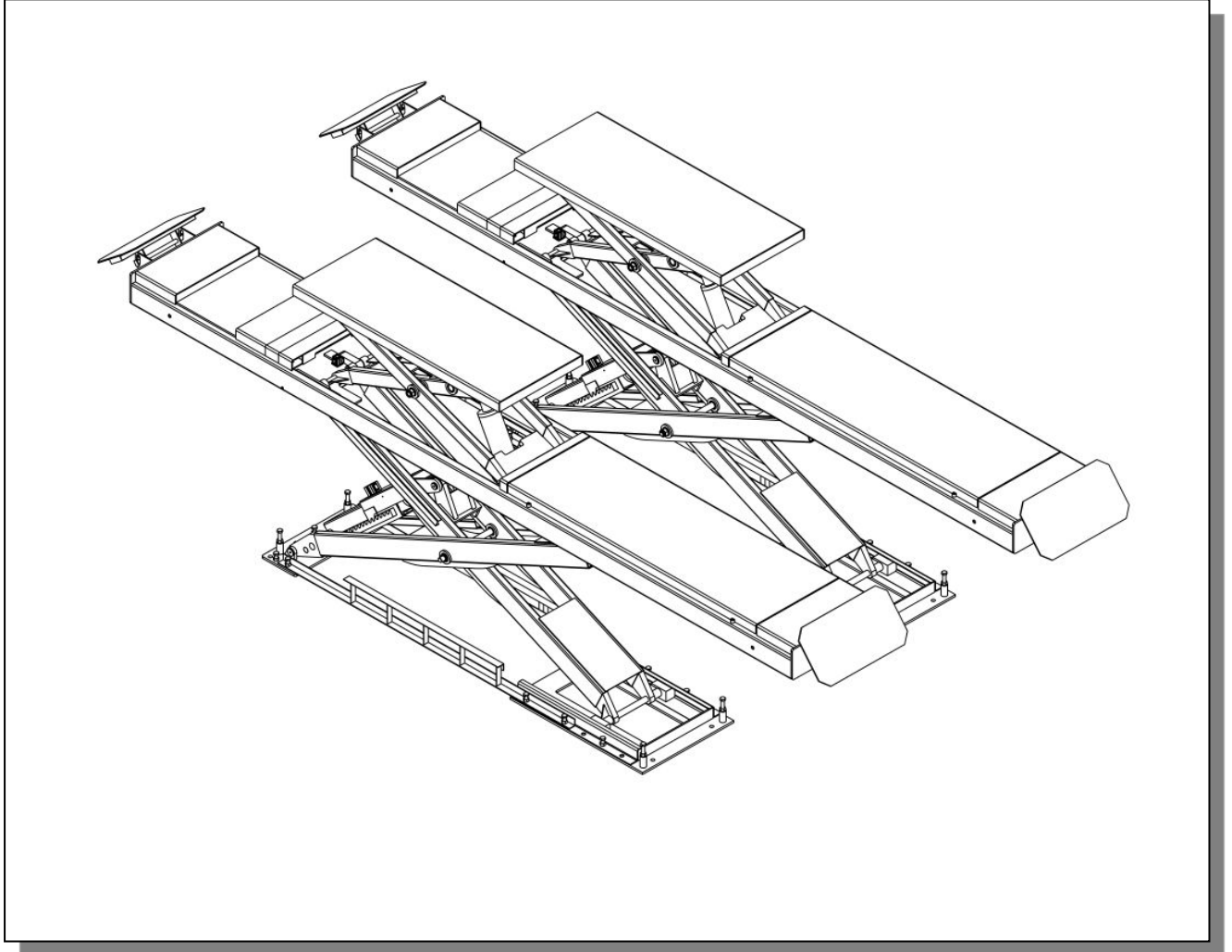




## ***Tubular Big Scissor Hydraulic Auto Lift***



# User's Manual

## Manufacturer and Facilitator

Scissor Hydraulic Lifter for Vehicles

Model:

Manufacturing code:

Manufactured on:

DD	MM	YY
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Manufacturer:

Authorized Distribution Center

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# Packaging, Transportation and Storage



All the operations such as packaging, handling, transportation and dismounting shall be operated by specialized technicians.

## Packaging and transportation

### Packaging (Figure 1)

**Standard configuration:** oil pipe and accessories (1# box) one piece, control panel (2 # box) one piece, front and back baffle and support (3 # box) one piece, main and auxiliary beam (4# and 5# box) two pieces and five pieces of standard configurations.

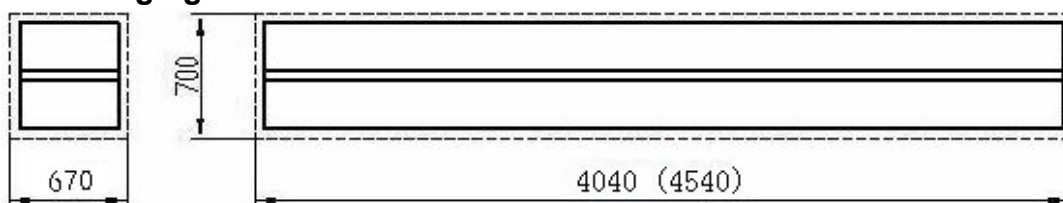
**Choose and configuration:** mounting guide plate (6# box) one piece, trapezoidal cover plate (7# box) one piece (used for ground mount installation).

### Encasement List

CaseNo.	Name	Name and quantity of accessories
1	Oil pipe and accessories	① 22 sets of foundation bolts; ② Four pieces of foamy cushions (plat large scissor type never gets involved in such item) ③ One copy of User's Manual ④ 4 pieces of $\phi 14$ composite washer ⑤ 10 pieces of bandage (250 mm long)
2	(Control cabinet)	All the joints of gas pipe are in the control cabinet, with gas cylinder, joints at the gas cylinder and four pieces of pipes excluded (gas cylinder, joint of gas pipe and gas pipes have already been installed in the machine)
3	Main beam (1 P)	① Gas pipe and joint of gas pipe ② Limit switch ③ Oil pipe all are installed in the machine
4	Auxiliary beam (2P)	The same as above
5	Front and back baffle and support	① Two pieces of front baffle and support; ② 2 pieces of dual front and back baffle and support ③ Four pieces of $\phi 3.2 \times 35$ split pins ④ Two pieces of back baffle and support.
6	Mounting guide plate (selective configuration)	2
7	Trapezoidal cover plate (selective configuration)	① One piece of 1800 mm long; ② One piece of 950 mm long; ③ One piece of 750 mm long
Date		Inspector of encasement

**Figure 1 Note:** Box 6 and box 7 are configured according to customers' demand.

### Diagram of Packaging Dimension:



**Figure 1**

- (1) The diagram above is the diagram of packaging dimension of CW835WA,
- (2) The dimension inside the brackets in the diagram above is the appearance dimension of CW835WA+

## Packaging, Transportation and Storage

### Transportation (Figure 2)



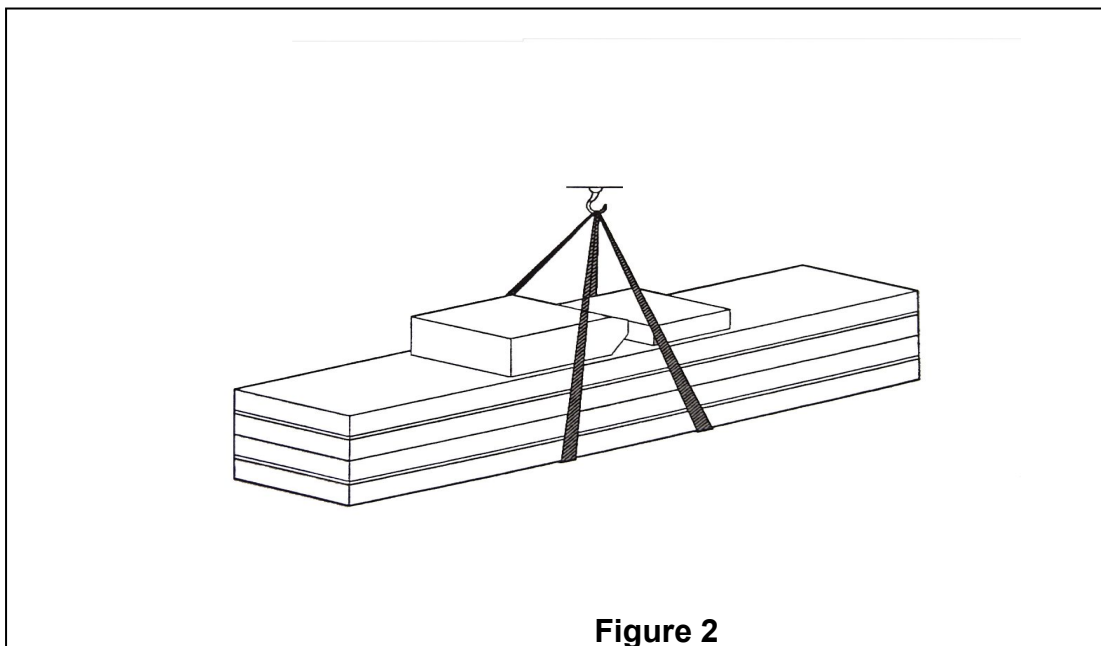
**Goods shall be handled and moved by crane and fork lift truck weighing over 3 ton. To prevent goods from falling down, during the lifting operation, one person shall be in charge of observing the goods intently, so as to avoid accidents. The goods shall be transported by vehicles or liners.**

When the goods arrive at the destination, it is necessary to check whether the goods are complete to prevent damage and loss during the transportation. If there is any damage in the package, inspection to the damaged box shall be conducted by the *Encasement List* to confirm the situation about the damage and loss of goods. Meanwhile, it is necessary to notify the person that undertakes the transportation immediately.



**The machine is heavy goods! Manual loading, unloading and handling shall be beyond the consideration, safety during the operation is of great importance.**

In addition, the lifting of goods during loading and unloading shall be operated according to the figure (Figure 2)



**Figure 2**

### Storage:

The machinery and equipment shall be placed in indoor warehouse and outdoor storage shall make good water-proof treatment.

Van truck shall be adopted during the transportation and goods shall be stored in containers if they are shipped by liners.

The control panel shall be kept upright during the transportation; in addition, extrusion of goods shall be avoided.

Environmental temperature for storage of machine: -25°C~55°C.

## Introduction of User's Manual



**This manual is intended for operators of vehicle maintenance enterprise and routine maintenance personnel.**

Before the lifter is operated, relevant personnel shall carefully read the *User's Manual*.

There is important relevant information in the manual:

- Personal safety of operators and maintenance personnel
- Safety in installation
- Safety operation of lifter



### **Please keep this manual**

This manual is an important part of the lifter

The manual shall be place around the lifter, so that the operator and maintenance personnel can read it at any time

Please carefully read Chapter III, which contains important information on application and safety

The lifter is designed and manufactured by European Standard



**Loading and unloading, transportation, dismounting, assembling, commissioning and testing; specially the maintenance, repair, overhaul, transportation and dismounting of lifter shall executed by professionals with license.**

Injury of human and damage of the machine caused by operation of no-authorized personnel or operation not in accordance with the operating rules occur, the manufacturer bears no liability for this.



**The manual suggests: operation and safety is guarantee for operator and maintenance personnel. To better understand the structure and operating rules of the machine, please carefully read the *User's Manual* before you use the machine.**

To better understand the terms in the manual, operator shall possess experience on service at factory, maintenance and repair, etc. and can read the explanations in drawings and the manual and relevant special national safety ordinance on equipment installation.

This is also applicable to maintenance and the maintenance personnel shall possess special knowledge on machinery engineering

- Operator: Personnel that have been trained and authorized to use the lifter
- Maintenance personnel: Routine maintenance personnel that have been trained and authorized



**The manufacturer keeps the right of the minor modification of the manual due to advancement of technology**

# Chapter I: Description of Machine

## Machine

Scissor Hydraulic Lifter can lift vehicles weighing no more than 3500 kg. They are applied in test and measurement of four-wheel positioning of vehicles of various grades in vehicle maintenance enterprise and tire distributor, overhaul, maintenance and care of vehicles.

### **Structural characteristics:**

- The machine adopts concealing scissor structure with small occupation area
- With independent control cabinet and low-voltage control, the safety performance of the machine is excellent
- The machine possesses safe testing device that can lower and hoist claw to unlock
- With hydraulic capacity synchronous oil cylinder, the operation of platform is synchronous and stable
- With double safety devices of hydraulic lock and mechanical double-tooth safety claw, the machine can automatically open. By operation of locking, reversed positioning of the safety claw can be realized. It is safe and reliable.
- The machine possesses hydraulic failure and overloading safety valve protection
- The machine possesses control device at oil way, thus, when the oil pipe cracks, the machine will not rapidly fall
- The machine adopts super wear-resistance sliding block for oil-feeding
- The machine adopts good quality hydraulic and electric components from Italy, Germany and Japan, etc.
- The machine adopts an integrated base, which makes a strong



horizontal adjusting ability and the horizontal precision can be accurately adjusted, this is especially suitable for four-wheeled fixed position testing

-The machine possesses emergency manual lowering device when there is a power failure

#### **The normal lifting of vehicles requires the following conditions for devices**

- Foundation of machine (position for equipment installation and space)
- Frame of lifter (main structure of lifter and safety mechanism)
- Control cabinet (control part of the machine)

#### **Basic structure**

The foundation of machine is composed by concrete structure and it is suggested that angle steel protection be set around the pit.

#### **Frame of lifter**

It is composed by solid steel connecting leveler, main lifting platform, secondary lifting platform, prolonged back-wheel side sliding plate components, pneumatic double-tooth safety components and hydraulic oil cylinder components.

#### **Control cabinet**

At the bottom of the control panel, there is a hydraulic control system such as hydraulic oil tank, hydraulic pump, hydraulic motor and hydraulic valve, etc. While the upper part is electrical control system



Scissor Lifter is designed to lift vehicles. It is not suitable for other occasions, especially for operation of washing and spraying. In addition, it shall not lift things heavier than the rated load.

## **Chapter II Specification Parameters**

#### **Main technical parameters:**

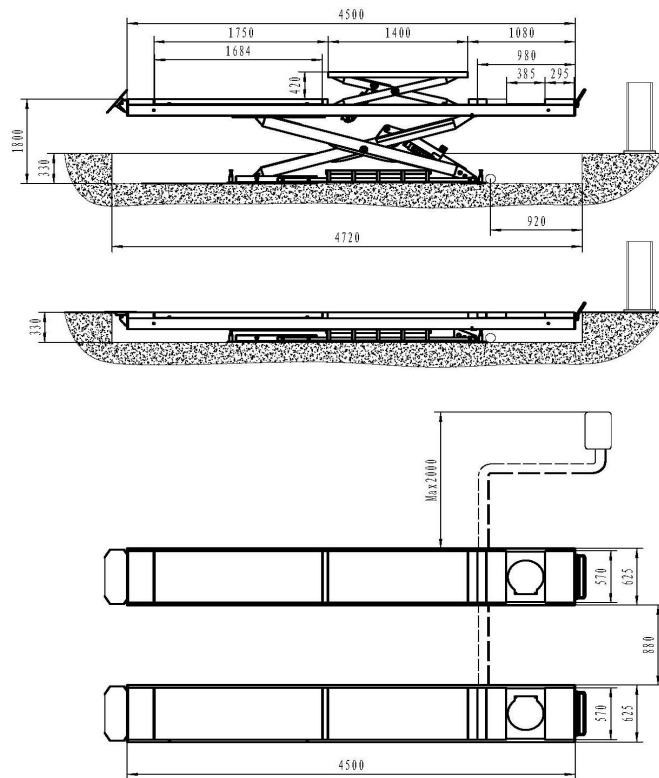
Model	CW830WA	CW830WA+
Driving method	Electro hydraulic	
Rated lifting weight of host	3500kg	
Rated lifting weight of sub-machine	3500kg	
Hoist height of host	1800mm	
Hoist height of sub-machine	420mm	
Original height of platform	330mm	
Length of platform of host	4000mm	4500mm
Length of platform of sub-machine	1400mm	

Width of platform of host	625mm
Width of platform of sub-machine	570mm
Lifting time of host	≤60s
Falling time of host	≤60s
Lifting time of sub-machine	≤20s
Falling time of sub-machine	≤30s
Total width of platform of the whole machine	About 2070mm about
Total length of the whole machine	About 4500 mm
Weight of the whole machine	About 1600kg
Power supply	AC 400V or 230V±5% 50Hz
Power of the whole machine	2.2kw
Hydraulic oil	The same as that of 20# wear-resistance hydraulic oil (user prepares it by himself/herself) 201 The same as that of 20# wear-resistance
Pressure of air supply	6-8kg/cm <sup>2</sup>
Temperature of working environment	5-40℃
Humidity of working environment	30-95%
Noise of machine	< 76db
Height of installation of machine	Altitude≤1000M
Temperature for storage of machine	-25℃~55℃

Table 2



## Overall dimension of CW830WA+



**Figure 4**

### Motor of oil pump:

Model.....Y90L  
 Rated power..... 2.2kw  
 Rated voltage...AC 400 or 230V  
 ±5%  
 Rated current..... 400V:5A  
 .....230V:10A  
 Rated frequency.....50Hz  
 Limit No. .... 4  
 Rotating speed.....1450rpm/min  
 Connecting form..... B14  
 Insulation class.....F  
 The connecting of motor is  
 indicated in the diagram, the  
 direction of motor is clockwise  
 (see from top to bottom)

### Pump:

Model.....P4. 3  
 Type.....Gear pump  
 Rated flow.....4. 3cc/r  
 Connecting type.....Direct  
 connection  
 Overflow valve  
 Successive working pressure...  
 210bar  
 Intermittent working pressure...  
 150~300bar  
 Fill 18 L that is the same as 20#  
 wear-resistance hydraulic oil into  
 oil tank of the pump station that

## Installation scheme of scissor lifter

### Attention: Basic requirements

- Concrete type is 425#, the dry period is 15 days
- Remove the internally generated surface in the foundation pit, the thickness of concrete at the pit bottom is  $\geq 150\text{mm}$
- The levelness of the two foundation pit is  $\leq 5\text{mm}$

### Provide the following at the same time:

- Preliminarily bury the pit between the control panel and the foundation pit and the PVC pipe between the two pits that is no more than 100mm length, so as to connect oil pipe, gas pipe and wire.
- Connect to the power of the control panel (400V or 230V 15 A)
- Connect to the compressed air inlet tube on

## Foundation Installation Diagram of Tubular dual Big Scissors Lifters Series of CW830WA

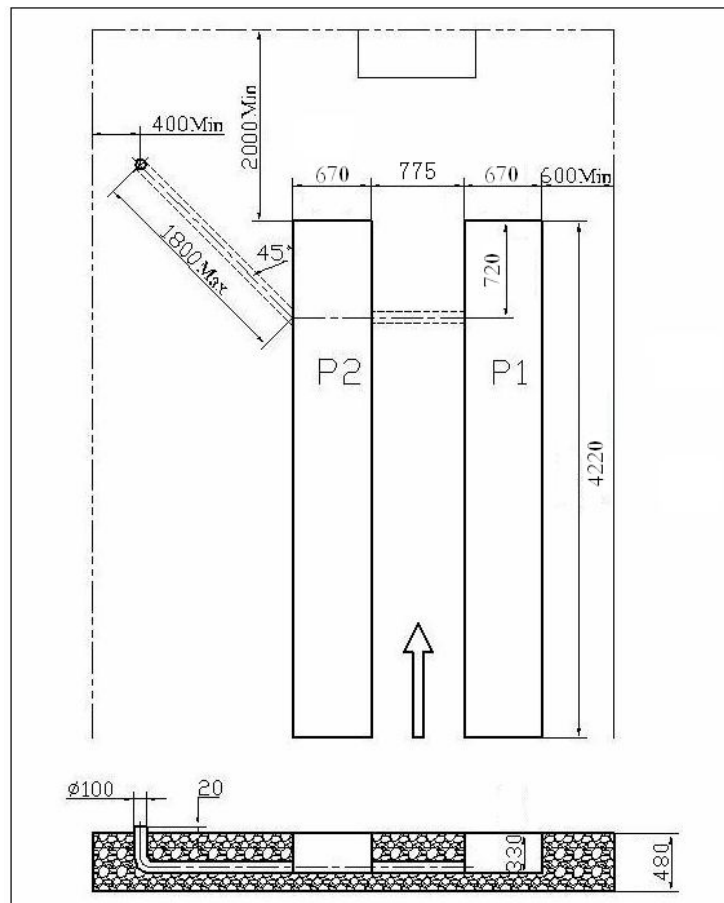
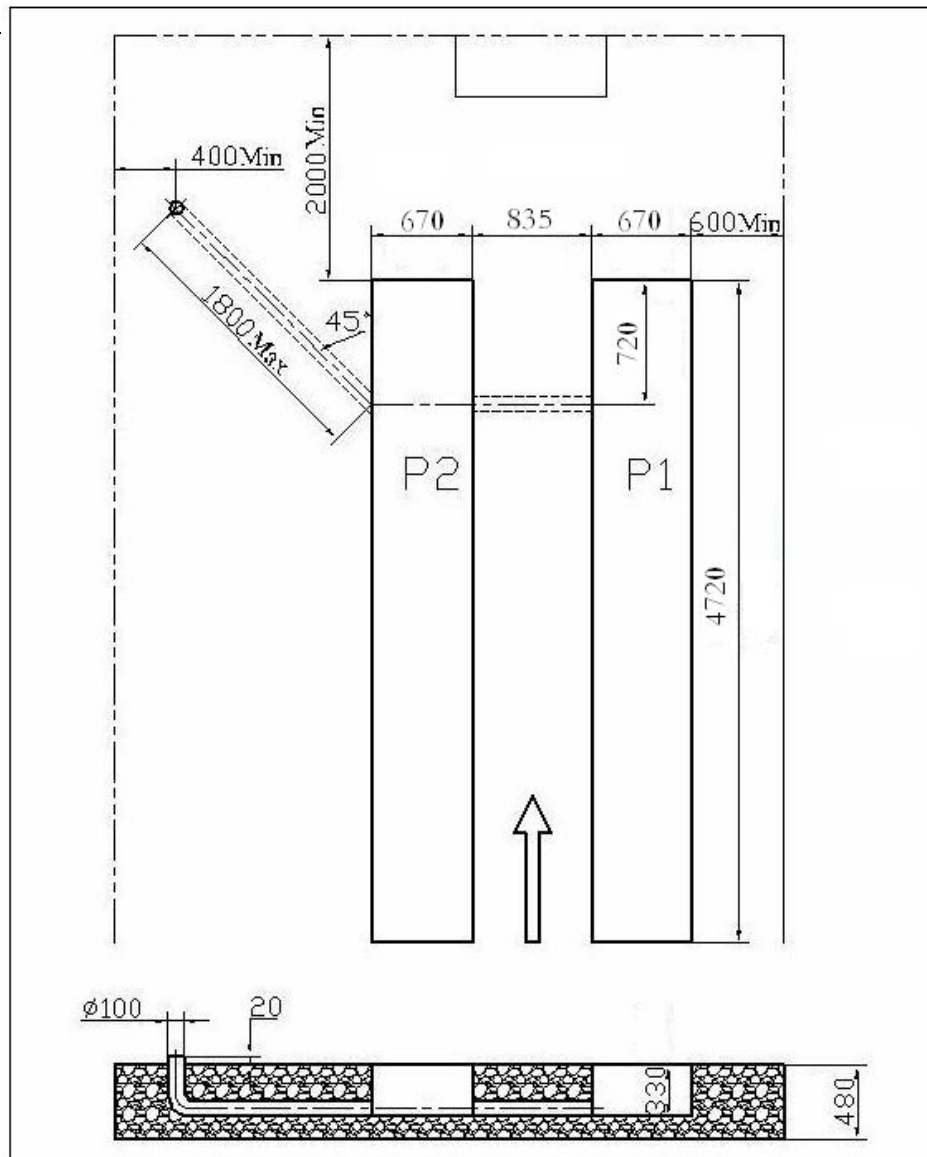


Figure 7 (The control panel can be placed left-rightly)

## Installation and Foundation Diagram of Lifters of CW830WA+



**Figure 8**

**(The control panel can be placed left-rightly)**

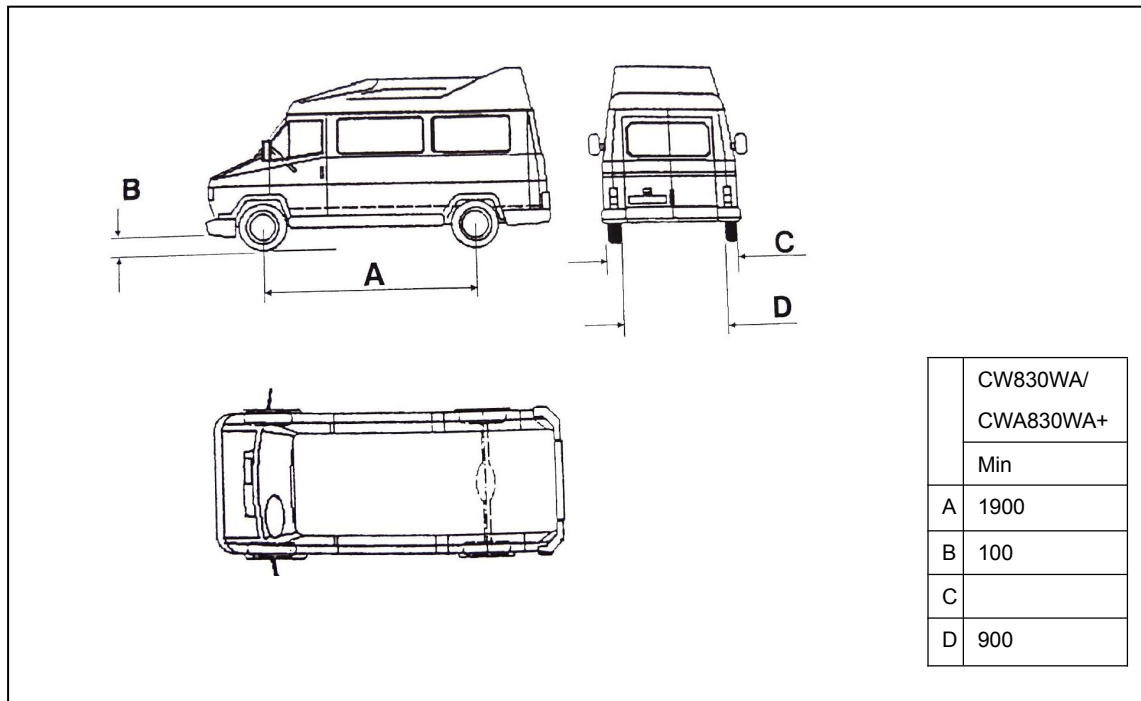
**Thickness and levelness of foundation concrete is extremely crucial. One shall not expect too much of level adjusting capability of the machine.**

### Vehicle type that the lifter is suitable for:

This lifter is applied to vehicles with weight and dimension within the following data:

**The maximum hoist weight: no more than 3500 kg**

**Maximum dimension of vehicle:** The table below is used to define the standard of limit in operating of lifter



**Figure 9**



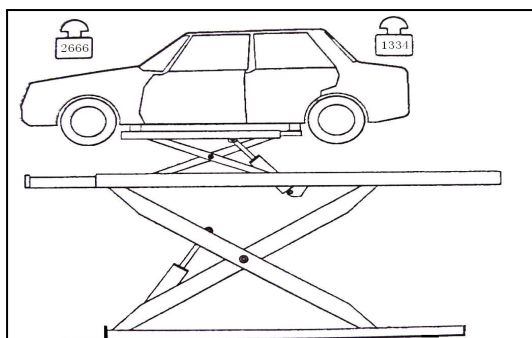
The lower bottom of the vehicle may collide with parts of the lifter. When one drives the vehicle, one shall pay special attention to this.

The lifter can also hoist ordinary or non-standard vehicles, when the weight of vehicle does not exceeds the maximum hoist capability

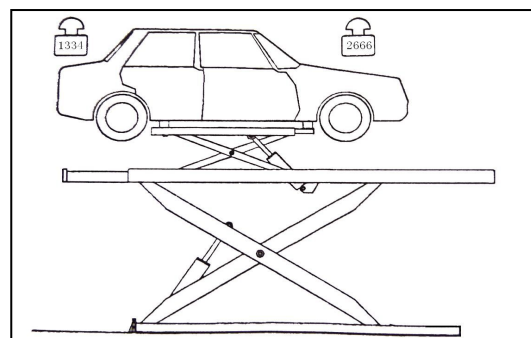
There shall also be different definition of dimensions in personnel safety area

Inspect the maximum load and the possible maximum limit of imbalance

### Maximum distribution of weight during the hoisting of vehicles



**Figure 10**



**Figure 11**

## Chapter III Safety



**There is important content in this chapter. Operators shall carefully read this chapter.**

The following content is explanation and description about danger and the possible danger during the operation, the correct effect and description of safety devices of equipment, other dangers, correct operating rules and potential dangers, etc.



**The designing and manufacturing of lifter is intended for hoisting and maintenance of vehicles. It is inappropriate for the hoisting of other goods. It is suitable especially for the following operation:**

- Washing and cleaning of vehicles**
- The hoisting operation where there are persons on the platform**
- The hoisting operation of goods in bulk or broken goods**
- It is applied as the elevator**
- It is applied in vehicles with severely tilt frame or severe deformed tire**



The manufacturer bears no liability for personal injury or loss of property caused by incorrect operation or operation that violates the operating rules.

During the falling, operator shall operation within the safety area shown in the diagram.

As is shown in the diagram, operations by operator or other irrelevant personnel within this dangerous area are strictly forbidden.

Only when the vehicle is completely hoisted to the required position and the operation platform becomes still and the safety devices of the machine is completely prepared (such as the insurance gear is fully locked), can the operator and maintenance personnel be permitted to conduct operation under the vehicle.



**Lifter shall never be used when there are no safety protection devices.**

**The might be casualty of personnel, damage of machine and damage of the vehicle that is to be hoisted if the operating rules mentioned above are not observed.**

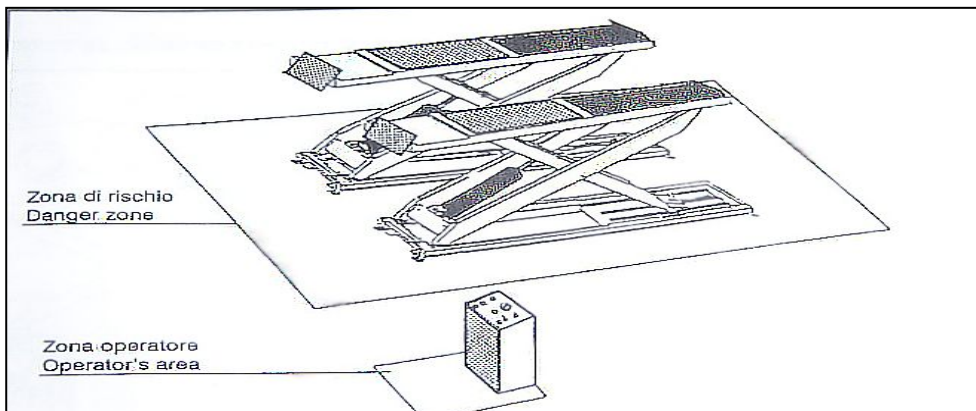




Figure 12



### Overall Prevention

**Operator and maintenance personnel shall operate the machine according to the ordinance on safety formulated by the country where the lifter is located.**

In addition, operator and maintenance personnel shall:

- Conduct operation in the safety area required in the manual
- Make no alteration of the safety devices casually.
  - Read carefully the safety warnings on the machine and the safety information in the manual
- Here are the safety warnings:



**Suggests the following operation will cause personal injury, damage of the lifter and vehicle or other loss of property.**



**It is the situation that is unsafe and might cause more personal casualty and loss of property.**



**Safety mark in the place where the lifter might have an electric shock**

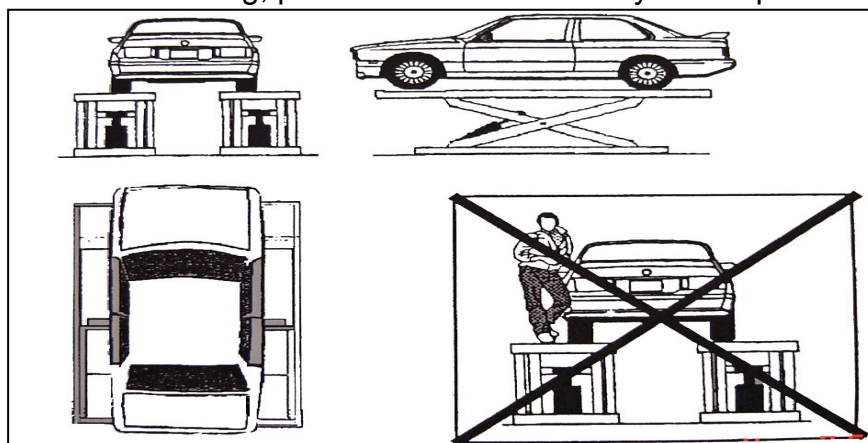
### Safety protection device

When the vehicle is on the hoisting platform, operator and maintenance personnel shall check the possible danger, the manufacturer also shall adopt various protection devices to avoid and reduce the occurrence of dangers as possible.

**The safety of personnel and vehicle shall operate according to the following rules:**

- When the vehicle-hoisting, operator and maintenance personnel shall never enter the non-safe working area (Figure 12, in the lower part of the machine and the vehicle)
- When the vehicle is placed on the platform, the engine of the vehicle shall be turned off and the brake shall be pulled tightly.
- Make sure that the vehicle is at the correct position on the platform (See Figure 13)
- Make sure only vehicles with weight, height and length being within the permitted scope of weight, maximum height and length can be hoisted.

During the vehicle-hoisting, personnel shall never stay on the platform (See Figure 13)



**Figure 13**

**The potential dangers during vehicle-hoisting:**



The following safety devices are intended for protecting overloading or mechanical failure protection:

Under the situation of overloading, the overflow valve at the pump station will open and return oil into the oil tank (See Figure 14)

Bottom of each oil cylinder is equipped with flow control valve. When some oil pipes crack in hydraulic circuit, the flow control valve will work and limit the speedy sliding and falling of the platform (See Figure 15)

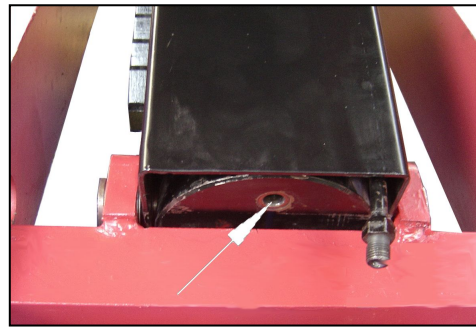
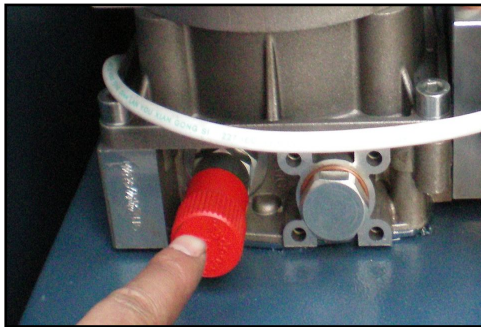


Figure 14(Overflow valve)

Figure 15 (Flow control valve)

Safety rack and gear and rack set of host guarantees personnel under the machine when other protection measures fail. It is necessary to make sure the safety gear and rack set is of perfect occlusion and the integrity of safety gear and rack set is good. (Figure 16)

Function of sub-machine safety claw is the same as that mentioned above. (Figure 17)

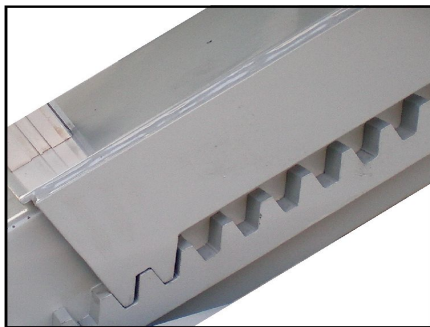


Figure 16 (Safety of Host)

Figure 17 (Safety of Sub-machine)



**When the host is hoisted to the required height, Button “locking” shall be operated. Make sure that the safety claw and the safety rack are firmly fastened, following that one can operate under the machine and there shall be no rarity on the safety components.**



**Danger of personnel**

This item suggests: the possible potential danger due to incorrect operation of operator and maintenance personnel any other personnel within the working area.



**Danger of extrusion**

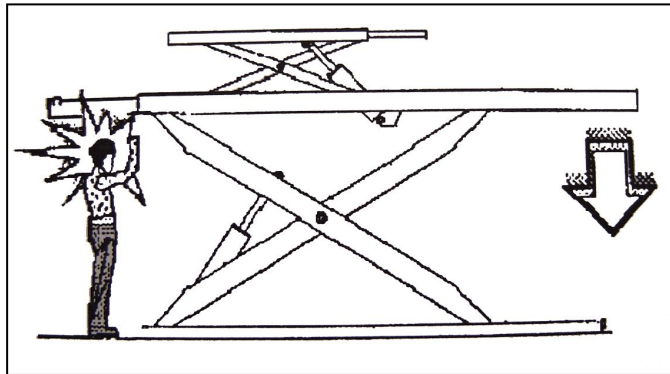
Danger caused by personnel's failure in leaving the area mentioned above according to the rules when the lifter is hoisting or falling.

No personnel can work under the moving parts of the machine when the lifting platform is hoisting or falling. Personnel shall stay in safety position. (Figure 18)



### **Danger of impact**

Operator can conduct hoisting and falling of the lifter when he/she has confirmed that there are no personnel within the dangerous area. Meanwhile, when the lifter is at a rather low height (less than 1.75 meter from the ground), since there is no color on the machine, impact of collision of personnel due to no color on the machine, shall be avoided. (Figure 18)

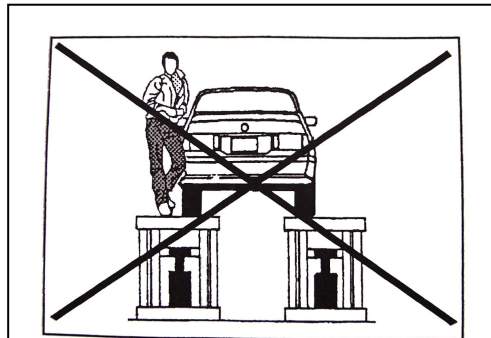


**Figure 18**



### **Danger of personnel falling down**

There shall be no personnel on the lifting platform or inside the vehicle that is to be hoisted when the lifter is hoisting or falling, so as to prevent them from falling. (Figure 19)

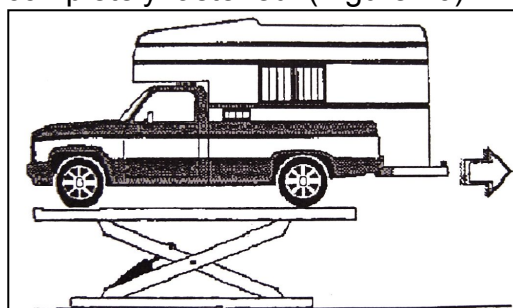


**Figure 19**



### **Danger of vehicle-moving:**

Danger cause by forcefully moving the vehicle, it is necessary to make sure that the brake of the vehicle is completely fastened. (Figure 20)

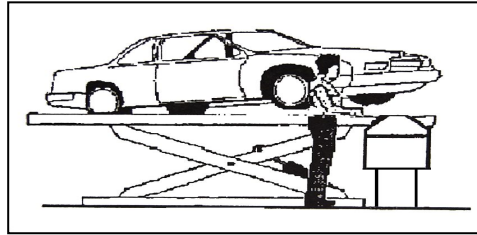


**Figure 20**



**Danger of vehicle-falling:**

Danger caused when vehicle is placed at the incorrect position, the over-weight of vehicle and the dimension of vehicle is not in accordance with standards.



**Figure 21**



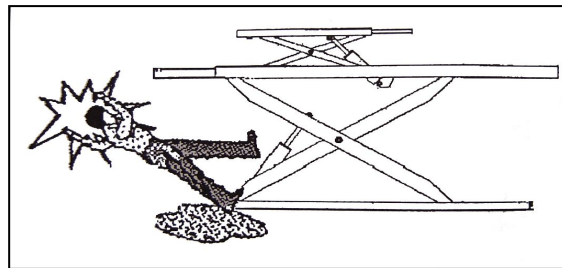
**Never start the engine of vehicle to conduct hoisting or falling and testing on the lifting platform.**

**Never lay articles at the falling area and moving parts of the lifter.**



**Danger of sliding:**

Danger of personnel slipping due to oil pollutant on the ground in the surrounding of the lifter, the lower part of the lifter or the surrounding area and platform shall be clean. If there is oil pollutant, please remove it immediately. (Figure 18)



**Figure 22**



**Danger of electric-shock:**

Danger of electric shock caused by damage of insulation of electrical equipment  
Never use water and steam, etc. to clean the machine, never use solvent or paint, etc. to approach the control panel of the lifter.



**Danger caused by insufficient lighting:**

Operator and maintenance personnel shall install lighting required for working area of lifter operation in the corresponding position to prevent loss of parts and personal danger due to insufficient light.

Operator shall constantly observe the lifter and conduct operation within the position of operator due to hoisting and falling.

Rubber cushion shall be placed under the chassis when the sub-machine is hoisting and falling.



**Never move the safety devices**

**Hoist weight shall not exceed the maximum hoist capability required for the machine and make sure that the machine is not over-loaded.**

It is necessary to operate according to the rules in the manual on using, maintenance

and safety, etc.

## Chapter IV Installation



Only the specialized personnel can conduct installation. They shall carefully read and follow the following instructions to avoid damage of machine and personnel casualty.

Only the authorized technicians can install the lifter.

### Installation requirements:

The lifter shall be installed according to the specified distance between walls, columns and other facilities. (Figure 23)

The minimum distance to wall surface is 1000 mm. To prevent against emergency and provide convenience to work, the sufficient space of safety channel shall also be taken into consideration.

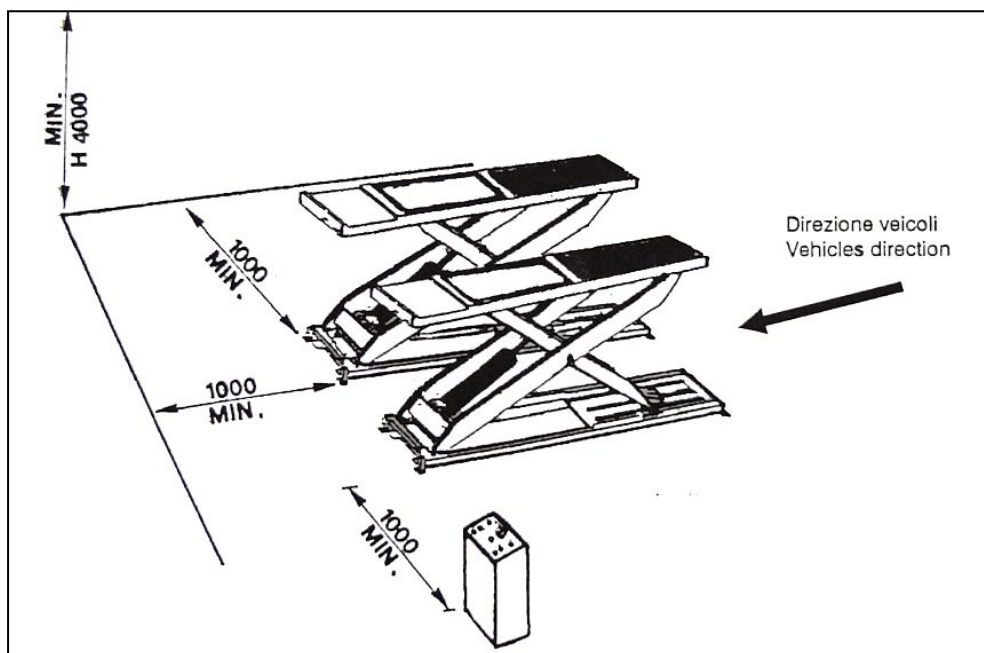
The site for installation shall be equipped with power supply and air supply, which are connected to the control panel.

Indoor height shall be no less than 4000mm.

It is suggested that the lifter be installed in the pit, according to installation foundation of construction in Figure 7 or Figure 8.

It can also be installed in any indoor ground, when the ground level is in accordance with requirements and possesses enough weight bearing capacity. ( $\geq 250\text{KG}$ )

When the machine is to be installed, there shall be enough light to guarantee the safe operation of commissioning and maintenance and avoid the eyestrain of personnel caused by stimulated light.



**Figure 23**

It is necessary to check the completeness of the goods before the lifter is installed. Moving and installation of lifter shall be conducted by specialized personnel.

Transportation and storage can be referred to chapter of package, transportation and storage.



## Installation of lifting platform

The groove of the rotary table of the platform is at the front of the vehicle-mounting direction, the side plate of platform with yellow and black stripes is outside the machine.

When the lifter is installed in the pit or the ground, adjusting cushion iron shall be inserted at the bottom of the platform.

Fork lift truck or other hoisting equipment hoists the lifting platform (Figure 24); to hoist it to the height of about 1000MM to ensure that the safety device of the machine is on and locked.

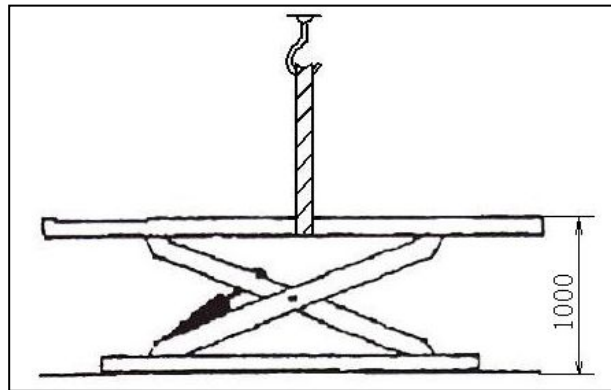


Figure 24



**To avoid failure of safety device of the machine, one wooden block can be inserted between the connecting rod.**

**Never work under the lifter when hydraulic system is not fully filled with hydraulic oil and there is hoisting and falling.**

Move the lifting platform, adjust the distance between the two platforms and make sure the two platforms are in parallel position.

Conduct connecting of electric circuit, oil-way and air-way according to *Electrical Connection Diagram* and *Oil-way Connection Diagram*.

**The connecting of air-way can be conducted only after the connecting of the hydraulic system has been completed.**



**Oil pipe, wires and air pipe shall never be damaged.**

**During the procedure the oil pipe and air pipe is traversing into the pit through the PVC pipe from the control panel, protection of connectors shall be given special attention to prevent rarities from entering the oil-way and air-way and damaging the hydraulic system.**

## Electric circuit connection:

Electric circuit shall be connected in accordance with wire diameters and wire number specified in *Electrical Connection Diagram*.



**Electric mounting operation shall be only carried by professionals with electric operation qualification.**

-Open upper cover of control cabinet

- Power cord connection: connect 400V three-phase four-wire system power cord ( $3 \times 2.5 \text{ mm}^2 + 1 \times 1.5 \text{ mm}^2$  cable) to control panel L1, L2, L3 and incoming terminals; Connect PE ground wire to stud with grounding sign (Figure 25) and stud with grounding sign provided at the bottom of two platforms.

-If it is 230V three-phase power supply, control transformer and wire connection of motor is required to adjust (Figure 26)

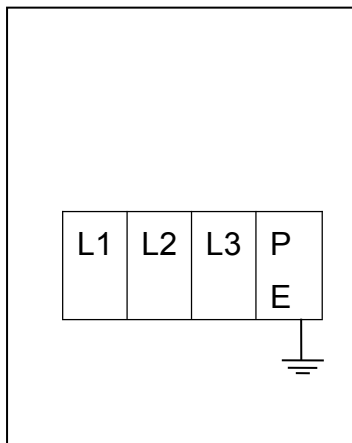


Figure 25

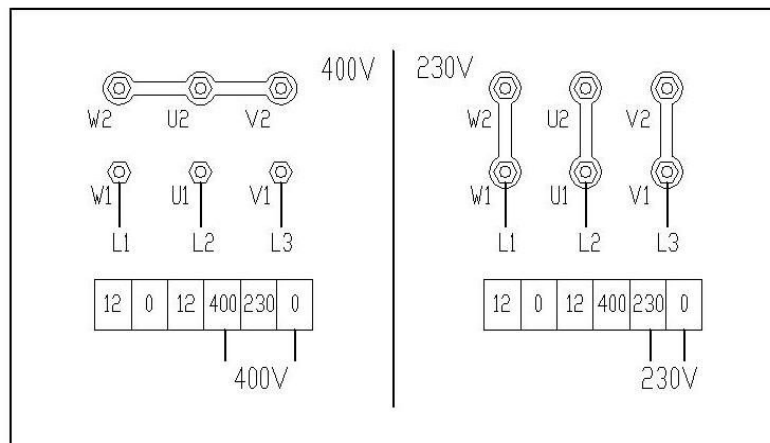


Figure 26

#### Connecting of limit switch

Limit switch of host is equipped at the switch shelf at the bottom of big beam of host (Figure 27), the conductor is connected to the SQ2 terminal in the control cabinet through the PVC pre-bury tube;

Limit switch of sub-machine is equipped at the switch shelf at the bottom plate of the sub-machine (Figure 28), the conductor is connected to the SQ1 terminal in the control cabinet through PVC pre-bury tube;

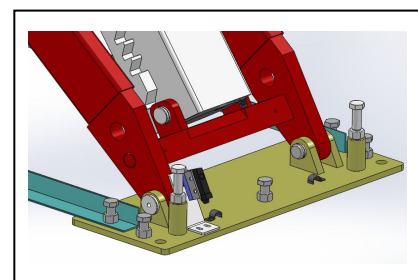
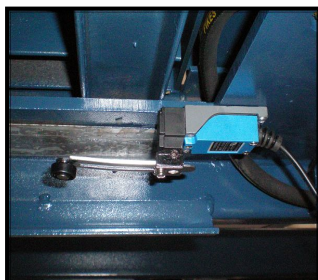


Figure 27 (Limit Switch of Host) Figure 28 (Limit Switch of Sub-machine) Figure 27A (Limit Tubular plat big scissor)

#### Connecting of hydraulic circuit

Connect hydraulic oil pipes according to *Oil-way Connection Diagram*.



**Only authorized specialized technicians can engage in the installation of hydraulic circuit.**

#### Pay special attention to oil pipe connector.

- Introduce the high-pressure oil pipe from the solenoid valve of host inside the control panel according to the oil pipe number and connect it to the oil cylinder of host through PVC pipe. (See *Oil-way Connection Diagram* for details)
- Introduce the oil pipe of sub-machine from the solenoid valve and connect it to oil cylinder of sub-machine along the connecting of the connecting rod through PVC pipe. (Figure 29)
- During the placing, oil pipe connector shall be wrapped to prevent rarities from entering the hydraulic circuit.





When oil pipes are connected, be careful not to commit mistakes in numbering of oil pipes. In standard installation, the control panel is at the left of the direction when vehicle enters, if it is placed on the right, correspond oil pipes shall be adjusted.

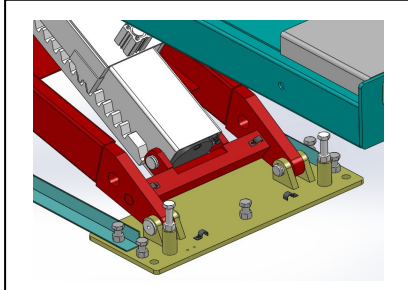


Figure 29 (oil pipe goes through the cap)  
gets involved in the secondary lifting oil tube)



Figure 30 (The flat big scissor never gets involved in the secondary lifting oil tube)

#### Connecting of compressed air-way:



The connecting of air-way shall be in accordance with *Air-way Connection Diagram*.  
**Only the authorized technicians with specialized qualifications can engage in the installation.**

- Connect the  $\Phi 8 \times 5$  air inlet pipe to the air inlet port of double oil-water separator at the control panel (Figure 31)
- Introduce the  $\Phi 6 \times 4$  compressed air pipe from the air outlet of pneumatic solenoid valve of host (Figure 32) and connect it to the air valve of claw-lifting (Figure 33)
- Introduce the compressed air pipe of the sub-machine from the pneumatic solenoid valve of sub-machine through the PVC pipe and connect it to the air valve of claw-lifting along the connecting rod.
- When traversing PVC, the connector of air pipe shall be wrapped for protection to prevent rarities from entering the compressed air circuit.**
- Before the compressed air pipe is connected to the control panel, the oil cup of the double oil-water separator shall be filled with engine oil (users prepare by themselves) to prolong the service life of pneumatic components and the reliability of actions.

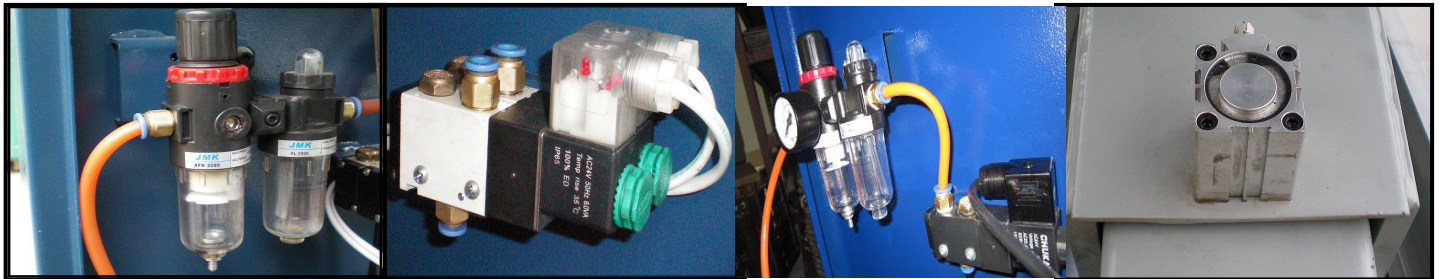


Figure31 (Double Oil-water Separator)

(Electromagnetic Air

Valve) Figure32A (Plat Electromagnetic Air Valve) Figure 33(Air Valve of Claw-lifting)



**During the procedure the hydraulic air pipe traverses PVC pipe, air pipe shall not be folded and knotted to avoid unsmooth air circuit or blockage of air circuit.**

**Before the compressed air inlet pipe is introduced to the air inlet of the**

**pneumatic solenoid valve inside the control panel, the double oil-water separator shall be filled with engine oil to conduct separation treatment to the compressed air to avoid failure of actions of pneumatic unit.**

## Chapter V Commissioning

### Add oil and check phase sequence:

After hydraulic circuit, electrical circuit and air-way are connected according to the annex, operate according to the following procedures:

-Remove the cover of the control cabinet and fill 18 L that is the same as “ESSO-NUTO H20” wear-resistance hydraulic oil to the oil tank with funnel (users prepare hydraulic oil by themselves). Figure 34



**Make sure the hydraulic oil is clean when one fills hydraulic oil,**

**To prevent any rarity from entering the oil-way and causing unsmooth oil-way or failure of actions of solenoid valve.**

-Connect the power, turn off the total switch QS of power supply, Press “RISING” button SB1, check whether the rotation direction of motor is correct (rotating from top to down clockwise). If reversal direction is discovered, cut down the power supply and adjust power phase.



**After the power supply is connected, high-voltage electric shock inside the control panel is likely to occur. Operation shall be only carried out by professionals with electric operation qualification and it is necessary to prevent electric shock.**

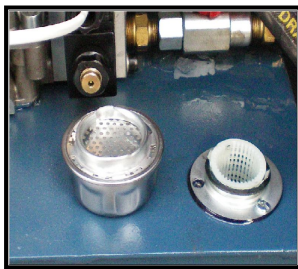


Figure 34 (Oil Tank)

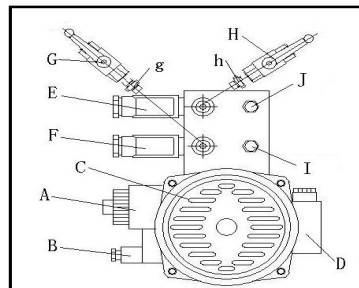


Figure 35 (Pump Valve Diagram)

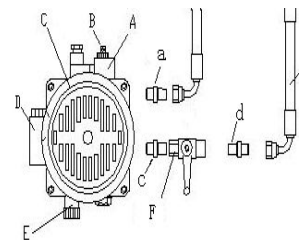


Figure 35A (Flat Pump Valve Diagram)

Diagram)

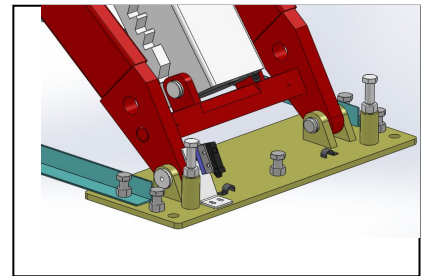
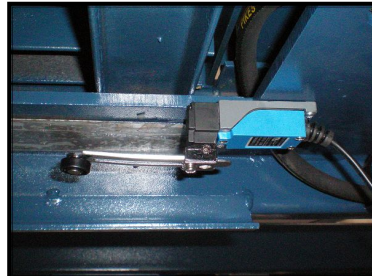
### Procedure for adjusting of filling and gas exhaust of host:

1. Place the switching switch of the host and sub-machine at the control panel to SA position of “host” (The flat big scissor never gets involved in SA change-over switch).
2. Turn off “host filling-ending valve G” and “Sub-machine filling-ending valve H” (anti-clockwise 90°) Figure 35; The flat big scissor closes “oil cutoff valve F for the host”
3. Press “RISING” button of SB1 to hoist the left and right platforms of host (view from vehicle head) to 1000mm about.
4. Press “down” button of SB2 to make the left and right platforms fall to the lowest position.
5. Left and right platform shall be lifted to 1400mm about.
6. Open “ host filling-ending valve G”(clockwise90°).
7. Press “RISING” button of SB1 to hoist the right platform of host to 1000mm about (view from

the vehicle head).

8. Press “down” button of SB2 to make the right platform of host fall to the lowest position.
  9. Repeat the step pf 7 and 8 for 5-6 times and air shall be exhausted automatically.
  10. Finally press SB1, the right platform of host shall be lifted to 1400mm about (both of platforms are equal in height).
  11. Close “ host filling-ending valve G” in anticlockwise of 90°.
- Regulation of filling and exhausting for host ends.

**Inspection: Whether the safety claws of the two hosts keep flexible and reliable movement and whether there exists leakage in the oil-way and gas-way**



**Figure 36** (sub-machine limit switch)      **Figure 37** (host limit switch)      **Figure 37A**  
( Flat big scissor limit switch)

**Procedure for filling oil and releasing gas of the sub-machine**

1. Place the switch SA for changing host and sub-machine on the control panel to “SUB-MACHINE” position (The flat big scissor never gets involved in SA change-over switch)
2. Shut “host filling-ending valve G” and”sub-machine filling-ending valve H” (turn 90° counterclockwise) Figure 35
3. Press the “RISING” button SB1 and lift the sub-machine right platform (see form the vehicle head) to about 300mm
4. Press the “FALLING” SB2 and lower the sub-machine right platform to the lowest position
5. Lift the sub-machine right platform to about 400mm
6. Open “sub-machine filling-ending valve H” (turn 90° clockwise)
7. Press the “RISING” button SB1 and lift the sub-machine left platform (see from the vehicle head) to about 300mm
8. Press the “FALLING” button SB2 and lower the sub-machine left platform to the lowest position
9. Reap the steps in Item 7 and 8 for 5-6 times and conduct automatic air-releasing
10. Finally, Inch SB1 and lift the sub-machine left platform to about 400mm (90°)
11. Turn 90° counterclockwise to shut “sub-machine filling-ending valve”. The oil-filling and gas-releasing adjustment is ended

**Inspection: Whether the safety claws of the two sub-machines keep flexible and reliable movement and whether there exists leakage in the oil-way and gas-way**

**Adjustment of sub-machine limit switch:**

- Place SA to “SUB-MACHINE’ position. Press SB1 to lift the sub-machine platform to 450mm. conduct adjustment and limit for SQ1 (refer to Figure 36)
- Lower the sub-machine platform. Lift it to 450mm for many times to verify whether the sub-machine limit is accurate and reliable

**Adjustment of host limit switch:**

-Place SA to "HOST" position. Press SB1 to lift the host platform to 1,850mm.

Conduct adjustment and limit for SQ1 (refer to Figure 37)

Attention: the **maximum limit adjustment of the host** shall make the host safety claw stop where it is 5-10mm above the last rack of the safety rack. Also, **the limit can be adjusted at any height according to the height situation of the user's house**

-Lower the host platform. Lift it to the limit for many times to verify whether the host limit is accurate and reliable

**Note: see figure 37A of Tubular type flat big scissor limit switch**



If ceiling is lower than 4000MM, limit switch is regulated to the position with distance  $\leq 200\text{MM}$  of roof of vehicle after hoisted from the ceiling in order to avoid damaging vehicle and guarantee the safety of vehicle and person.

**Installation of foundation bolt:**

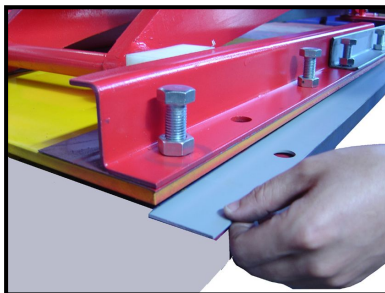


The construction of foundation bolt shall be undertaken after the expiration of maintenance for concrete. Otherwise the strong quality shall be affected.

-Adjust the left and right platform in alignment and the distance of the two platforms according to the requirements of figure 7 or figure 8.

**-Metal backing is adjusted by the base pad of platform to prevent the lifter shall be adjusted levelly due to uneven ground (figure 38, 39)**

Attentions: metal backing iron shall be provided by users.



**Figure 38**



**Figure 39**

- Impact drill hammer of  $\Phi 18$  shall be drilled to the deep hole of 120mm from ground through base hole of platform with electric hammer pinch (figure 40) and entrance to hole shall be cleaned.

-Foundation bolt shall be installed in the holes with light hammer (without installing the central expansion nail of foundation, it shall be installed after leveling adjustment is completed (figure 41).

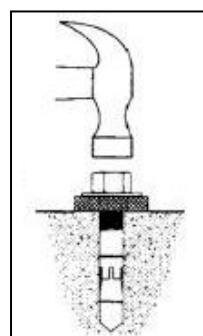
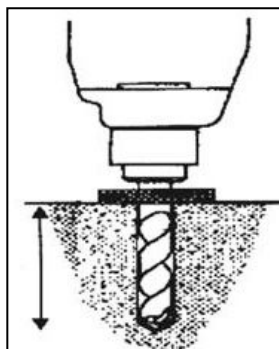




Figure 40

Figure 41

**Leveling adjustment:**



**The leveling accuracy of machine is the guarantee of the detecting accuracy for four-wheel positioning. Therefore, machine leveling is very critical.**

- When the platform of host is hoisted to the fifth or sixth rack, the safety claws of left and right platform shall be fastened in the safety rack chain after pressing "lock" button of SB3.
- Inspect the levelness on all sides of plan for left and right platform with transparent leveling pipe or level-mete (figure 42)

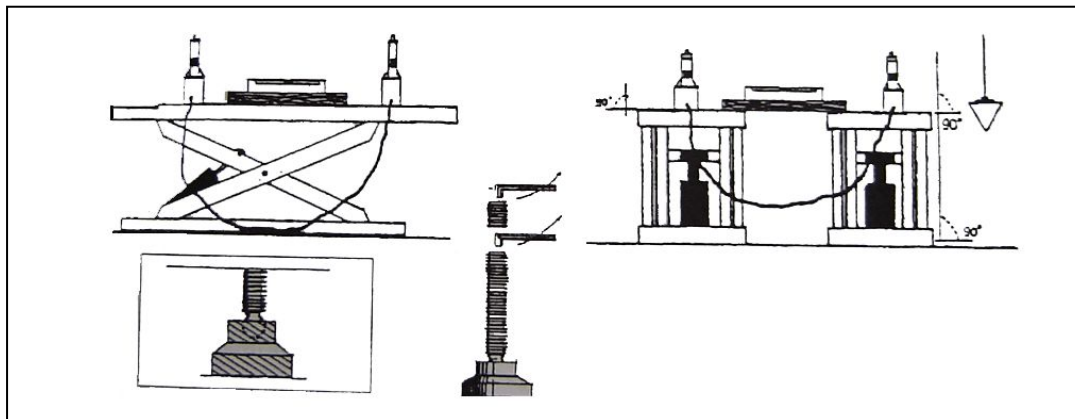


Figure 42

- If platform is unlevelled due to the unlevelled base, adjusting bolt in the base plate of host shall be adjusted with wrench to make the level accuracy of platform reach the requirements of detecting for four-wheel positioning (figure 43)

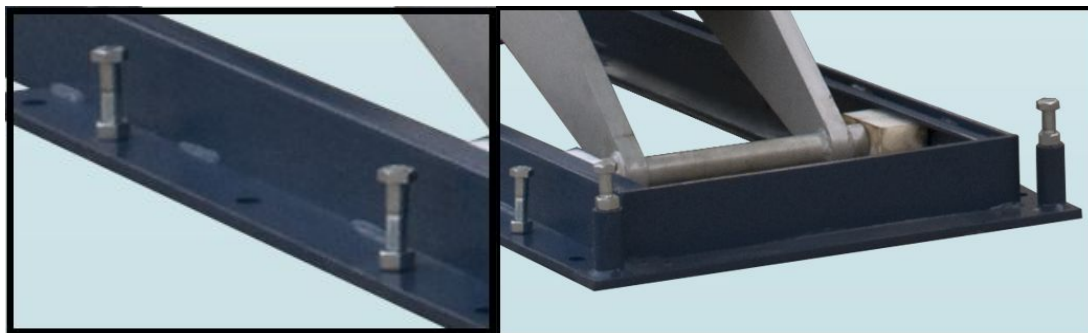


Figure 43

Figure 44

- After leveling adjustment is completed, central expansion nail of foundation bolt shall be installed and hammered by with heavy hammer.
- Screw on the nut of foundation bolt



**When the guarantee period of concrete is not expired and central expansion nail of foundation bolt shall not be installed.**

**After leveling, the space between base plate and ground shall be filled with cement mortar.**

**Low leveling adjustment:**

When main platform falls to the lowest position, low leveling of platform shall be adjusted by adjusting the support adjusting screw at the lower of main platform ( refer to figure 44).

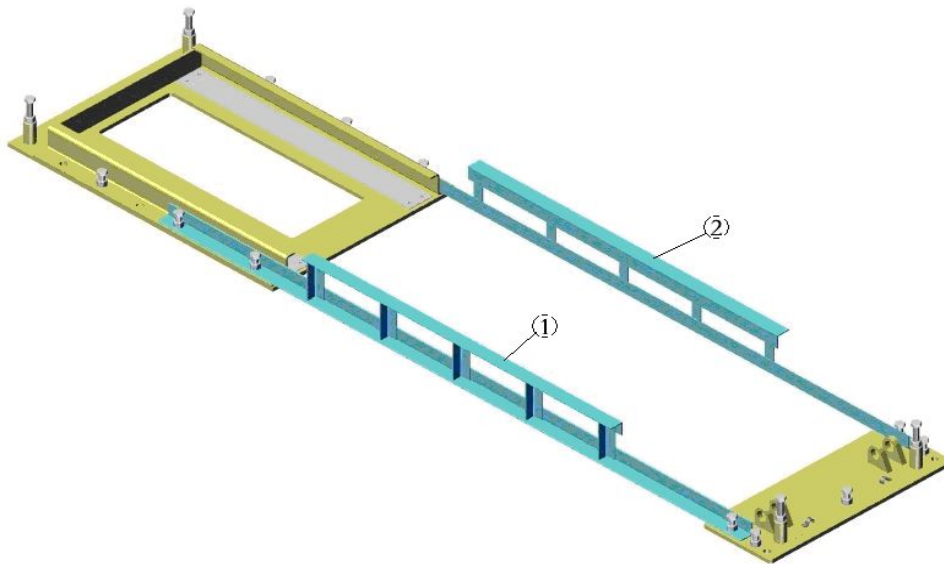
-Undo fixed nut firstly.

-Adjust the length of support screw to suitable length.

-Then screw on fixed nut.

**Note: Instructions for Foundation Bolt Fixing**

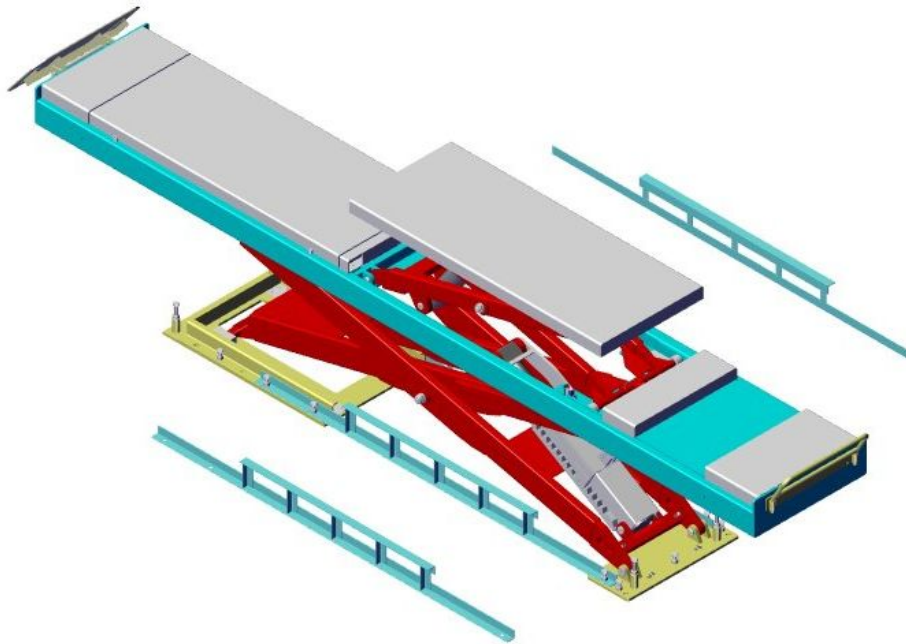
Parts ①② shall be removed when the foundation bolt is fixed so as to fix the rest foundation bolt on the base.



Main functions of **Parts ①②**:

(1) Firstly, Parts ①② can fix two bases so as to facilitate the client to fix the position of the lift

(2) Additionally, Parts ①② prevent that the complete machine is damaged by the transport machine in the transportation.



#### **Host NO-load test:**

- Connect power supply switch QS, place SA to “HOST” position and shut “host filling-ending valve” and “sub-machine filling-ending valve”
- Press the “RISING” button SB1 and observe whether the two hosts’ platforms rise steadily and simultaneously
- Lift the platforms to the highest position and observe whether the maximum limit is accurate and reliable
- Press the “LOCK” button SB3 and observe whether the safety claw falls onto the accurate position

#### **Sub-machine on-load test:**

- Place SA to “SUB-MACHINE” position
- Press the “RISING” button SB1 and observe whether the two sub-machines platforms rise steadily and simultaneously
- Lift the platforms to the highest position and observe whether the maximum limit is accurate and reliable
- Press the “LOCK” button SB3 and observe whether the safety claw falls onto the accurate position



**During test, there shall not be persons and other articles in the lifter rising and falling or regulated area. For any abnormal conditions, shut power supply general switch and commission once again after the failure is removed**

#### **Load test: host**

- Place SA to “HOST” position
- Drive a car that weighs not more than the maximum lifting weight onto the platform and brake. The personnel in the car leave the car and platform
- Press the “RISING” button SB1, lift host platform and observe whether hosts’ platforms rise



steadily and simultaneously

- Inspect whether lifter frame and hydraulic pump station produce abnormal sound
- Lift the platforms to the highest position and observe whether the maximum limit is accurate and reliable
- Press the "LOCK" button SB3 and observe whether the safety claw falls onto the accurate position

**Load test: sub-machine (Note: flat big scissor does not need the following steps)**

- Place SA to "SUB-MACHINE" position
- Place jacking glue cushion where it is the jacking position of the vehicle bottom on the sub-machine platform
- Press the "RISING" button SB1, Lift sub-machine platform and observe whether sub-machine platform rises steadily and simultaneously
- Inspect whether lifter frame and hydraulic pump station produce abnormal sound
- Lift the platforms to the highest position and observe whether the maximum limit is accurate and reliable
- Press the "LOCK" button SB3 and observe whether the safety claw falls onto the accurate position



**During test, there shall not be persons and other articles in the lifter rising and falling or regulated area.**

**The weight of tested vehicle can not exceed the minimum lifting capacity of the lifter**

**Inspect whether there exists oil or gas leakage in oil-way and gas-way. For any abnormal conditions, shut down the machine timely and commission once again after the failure is removed**

## Chapter V Operation

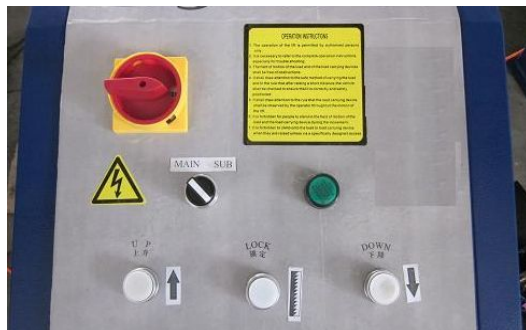


**Only operator that has been trained is allowed to operate the lifter. Inspect according to the following cautions**

### Operational cautions

- The obstacle around and below the machine shall be removed before work
- During rising and falling, there shall not exist persons in the regulated area for the lifter, below the machine and in the vehicle on the platform
- The lifter can not lift vehicles and other goods that weighs beyond the lifter operation scope
- During lifting, the vehicle shall be braked tightly. Place anti-skidding device such as anti-skidding corner blocks under the tier (which the user shall provide)
- During rising and lifting, observe whether the platforms are simultaneous all the time. If abnormal conditions are found, stop the machine at once. The machine can be used again after inspection and the failure is removed
- When maintain and care or four-wheel positioning for detection and commissioning, press the "LOCK" button to lock the safety claws of the two platforms at the same level. The personnel can operate below the lifter and vehicle only after lock operation
- During falling operation, observe whether the two safety claws are separated from the safety rack completely. Stop falling operation if they are not
- When the machine will not operate for a long time or during night, the platform shall be lowered to the lowest position on the ground, the vehicle shall be driven away and the power supply shall be cut

**Electric operational instruction: (refer to operation panel diagram)**



**Figure 45 SUB-MACHINE**



**Figure 45A Flat MACHINE**

### Host (sub-machine) selection:

The operation of host or sub-machine can be selected through changing the selection switch SA for "HOST" and "SUB-MACHINE" on the control cabinet operation panel to "HOST" or "SUB-MACHINE" position

### Host (sub-machine) rising

Press the "RISING" button SB1. The oil pump operates. The hydraulic oil is conveyed to hydraulic oil cylinder through solenoid valve YV1 or YV2 of the host or sub-machine. The platform rises. After 1-2 seconds of delay, the safety claw rises due to gas-way connection for electromagnetic gas valve DQ1 or DQ2. Release SB1 and the pump stops. The host (sub-machine) will stop rising at once. The safety claw falls down onto the safety rack due to power-off of solenoid gas valve and gas-way closing

### Host (sub-machine) falling

Press the "FALLING" button SB2. The pump operates. The host (sub-machine) will rise first (the safety claw shall be released). The safety claw rises due to gas-way connection after 1-2

seconds of delay. The oil pump stops. The platform turns to fall automatically. Release SB2 and the platform stops. The safety claw drops onto the safety rack

When the host (sub-machine) rises to the highest limit position and stops, press the “FALLING” button for 1-2 seconds and the platform will fall (without rising movement)

### **Locking:**

When the host (especially host) or sub-machine rise to the required height, press the “LOCKING” button SB3, The host (sub-machine) will fall and the safety claw will not rise. When the safety claw glides to the nearest safety rack position, the host (sub-machine) will be locked and stops falling. During this period, maintenance and care for the vehicle and four-wheel positioning for inspection and commissioning can be conducted.

### **General power supply switch:**

When the machine breaks down or the lifter is repaired, shut the general power supply switch as lock the lifter. Besides, cut off all the operation circuit and other operations will not be conducted

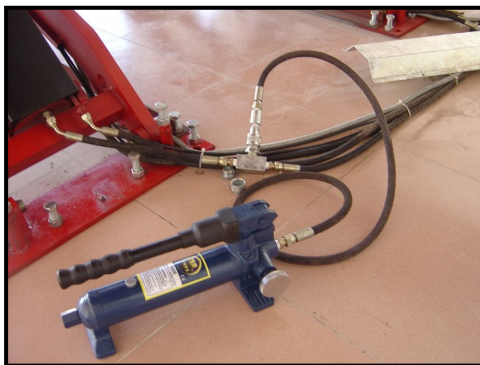
### **Filling and leveling operation (normal usage period)**



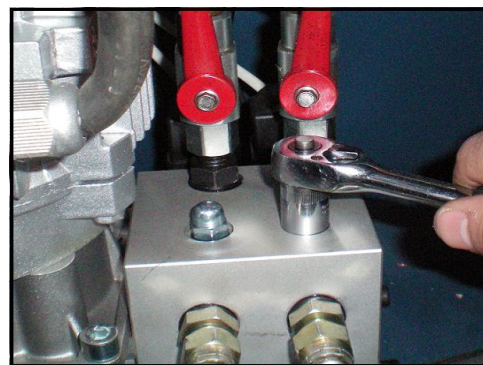
**After the machine is used, the natural loss or leakage of hydraulic oil may cause unevenness to the two platforms. In this case, the filling adjustment shall be conducted. There shall not be any load on the platform when the filling and leveling procedure is being conducted)**

### **Adjustment procedure: (the same as the sub-machine)**

- Select host. Lift the host platform to about 500MM
  - Open “host filling-ending valve G” in the control cabinet
  - Inch the “RISING (FALLING) button and one side of the platform will rise (fall)
- When the two platforms are at the same level, shut “host filling-ending valve G” and the filling adjustment is ended.



**Figure 46** (manual pump operation)



**Figure 47** (undo the nut with round head)

**Operation of manual falling for power failure emergency:**

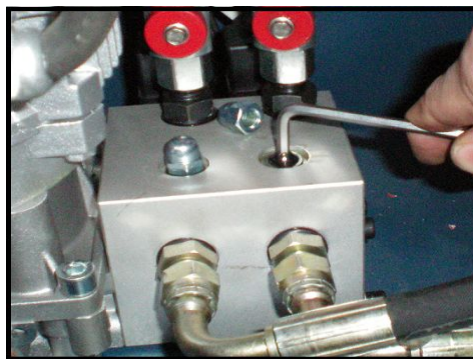


**When falling manually, observe the platform conditions randomly due to there are vehicles on platform**

**If there are failures, oil return valve is screws immediately**

**Operational procedures: (sub-machine is the same as followings)**

- When power is off, portable jack shall be connected to the special connector of oil inlet pipe in main oil cylinder of sub-machine with oil pipe of manual pump (figure 46)
- Operate manual pump and hoist the platform to safety claw breaking away from safety rack. Block shall be used for padding the safety claw of the two platforms
- Turn power switch off (preventing power is on suddenly) and open the rear cover of control platform to find out the solenoid valve of main machine
- Undo the nut with round head installed in manual oil return valve above the solenoid valve of sub-machine (figure 47)
- Slowly loose manual oil return valve with hexagonal wrench and platform shall fall by manual operation (figure 48)
- After machine falls, manual oil return valve shall be screwed immediately and manual falling procedure ends



**Figure 48**(Regulating manual oil return valve)

## Chapter VI Maintenance and Care



**Maintenance and care for lifters shall be undertaken by operators having been trained.**

- Machine oil shall be applied to all branch cardinal axis of the machine for once a week via engine oil container.
- Lubricating grease shall be applied to moving parts including safety rack and block and sliding for once a week.
- Lubricating grease shall be applied to side sliding plate disassembled for once a year.
- When new machines are used for three months, hydraulic oil shall be replaced for first time and it shall be replaced for once a year then. Oil filter in oil inlet and oiling port of pump station shall be cleaned and The oil level shall be kept at upper limit for a long period of time. 20# of hydraulic oil or equivalent 20# of abrasion resistance hydraulic oil shall be used.
- Lifter is used for five years for each time and the structure strength of lifter shall be determined safely by professional department.
- Oil cup and water cup in oil-water separator of air-way shall be cleaned quarterly and machine oil in oil cup is replaced.



**Upon replacing hydraulic oil, old oil in oil tank shall be released.**

**Upon filling new oil, such oil shall be filtered with oil filter.**

- Inspect the reliability of limit switch for each day
- For each shift, inspect the flexibility and reliability of safety device
  - For each shift, the inspection on whether photoelectrical detect switch is normal and reliable shall be conducted.



## Chapter VII Faults and Troubleshooting

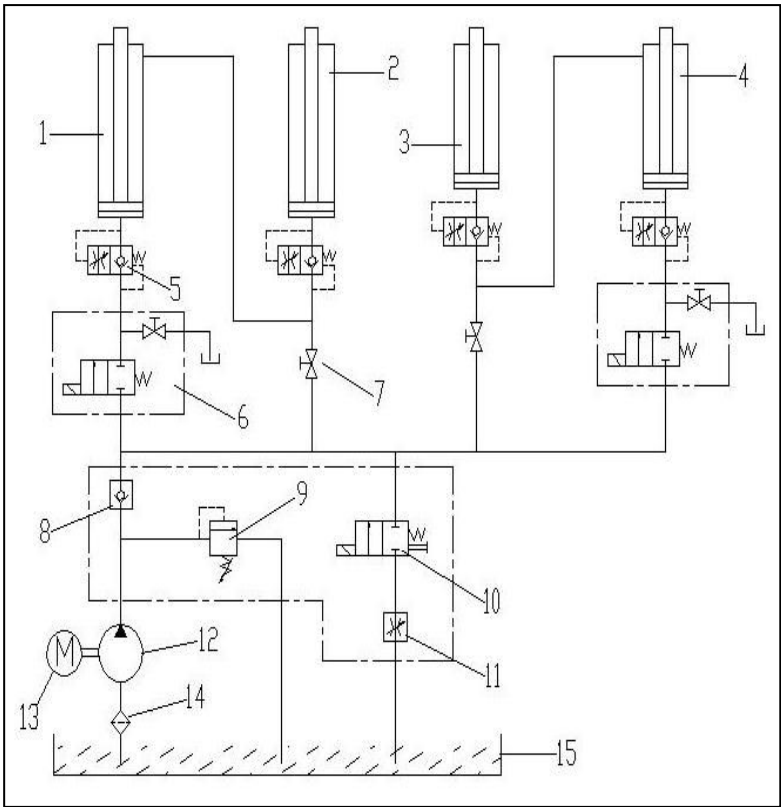
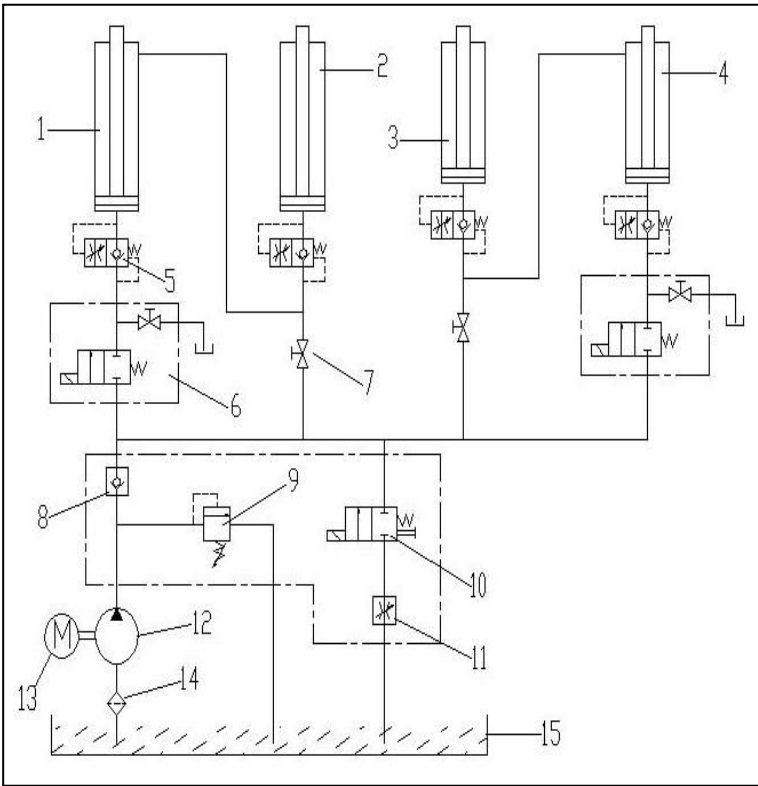
Machine faults solving shall be undertaken by operators having been trained with professional experience.

### Fault phenomenon and troubleshooting:

Fault phenomenon	Phenomenon and reasons	Troubleshooting
Motor fails to rotate upon pressing rising	① Power is abnormal	After inspecting and eliminating, wires are connected
	② AC connector of main circuit for motor of pump is not connected	If motor shall operate after pressing motor by insulating rod, inspect control circuit. If the voltage of coil end for contactor is normal, contactor is replaced.
	③ Fault in limit switch occurs	If the faults are eliminated after the terminals connecting limit switch of SQ1 or SQ2 is short connected via wire, such limit switch shall be inspected. Meanwhile, limit switch shall be adjusted or replaced.
	④ Button switch is damaged	Inspect contact point of button and wire for eliminating.
Motor can rotate but fail to rise upon pressing rising	① Motor rotates in reverse	Change incoming sequence of power supply
	② Motor shall rise with light load and it fails to rise with heavy load	Heighten the safety pressure setting of overflow valve by slightly screwing right. If there is dirt in the falling solenoid valve plug, clean the plug.
	③ Hydraulic oil is not sufficient or marking is not correct	Fill or replace hydraulic oil.
	④ Manual oil return screw on of solenoid valve is not tightened	Screw on the oil drainage screw on of main machining or sub-machine
	⑤ Plug of solenoid is burnt out	Replace the plug of solenoid valve in host or sub-machine
Lifter fails to fall after pressing down button	① Safety claw is not separated from safety rack	Lengthen the delay time of relay slightly
	② Safety claw is not hoisted	Air pressure is insufficient, safety claw is blocked, or air pipe is broken. Regulate the pressure of air compressor and inspect air pipe for eliminating
	③ Solenoid air valve does not operate	Where since solenoid valve is power on but fails to operate, air circuit is not connected. Inspect or replace solenoid valve
	④ Solenoid valve in falling does not operate	Inspect the plug of solenoid valve in falling and coil and inspect whether the copper nut on the end is screwed or not
	⑤ Explosion-proof valve is blocked	Remove the "explosion-proof valve" in oil inlet hole at the bottom of oil cylinder of host or sub-machine and clean it
Lifter falls slowly under normal load	① Viscosity of hydraulic oil is too strong or frozen, goes bad(winter)	Replace with hydraulic oil or improve the temperature indoor according to the requirement of user's manual
	② "Explosion-proof valve" preventing oil pipe from crack is blocked off	Remove or close air inlet pipe to make the safety claw of lifter is locked without hoisting. Remove the "explosion-proof valve" in oil inlet hole at the bottom of oil cylinder of host or sub-machine and clean it
Left and right platform are out of sync and unequal in height	① Air in oil cylinder is not exhausted	Refer to the filling and leveling operation
	② There is oil leak in oil pipe or connector	Screw on the connector or replace oil seal. Then filling and leveling are conducted
	③ "Filling-ending valve G or H" is not closed tightly and filling is needed nearly every day	Replace filling-ending valve and filling and leveling are conducted
Sound is generated when lifting and falling	① Lack of lubricating	Oil machine is applied to all hinged place and moving part(including piston) for lubricating
	② Base or machine is distorted	Adjust and level machine again and fill (pad) the base
Lifter still rises after pressing down button	Time rely is loosen or damaged	Insert or replace time relay again
Host and sub-machine rise simultaneously	There is dirt in solenoid valve plug of main and sub-machine without going back the position	SA2 is set to the position of "OFF." the inching rises or disassemble to clean valve plug
It is always host to rise	SA1 is out of work or intermediate relay of KA is loosen or damaged	Inspect wire of SA1 and contact and insert or replace KA again

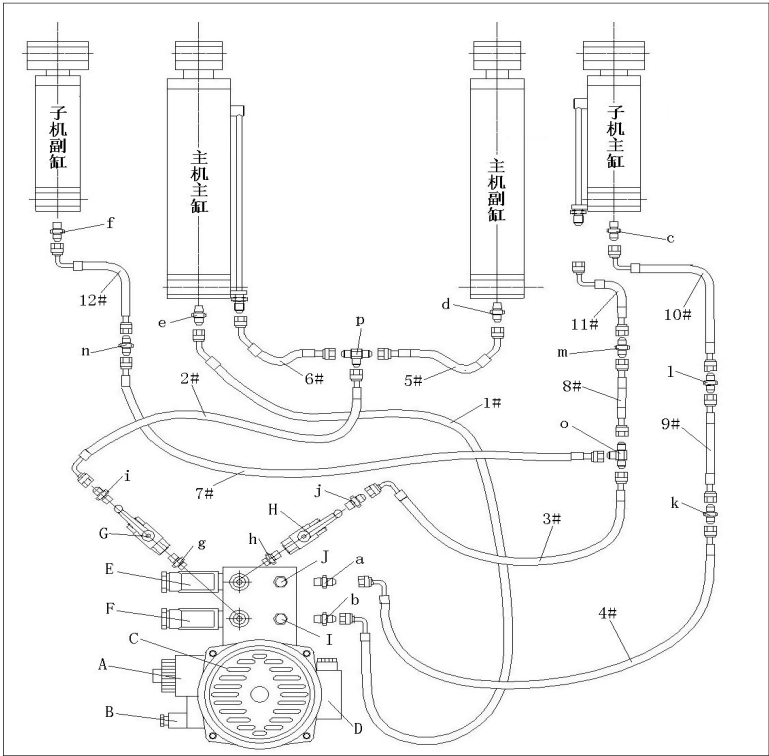
Table 3

**Annex 1**  
**scissor series lifter hydraulic schematic diagram**



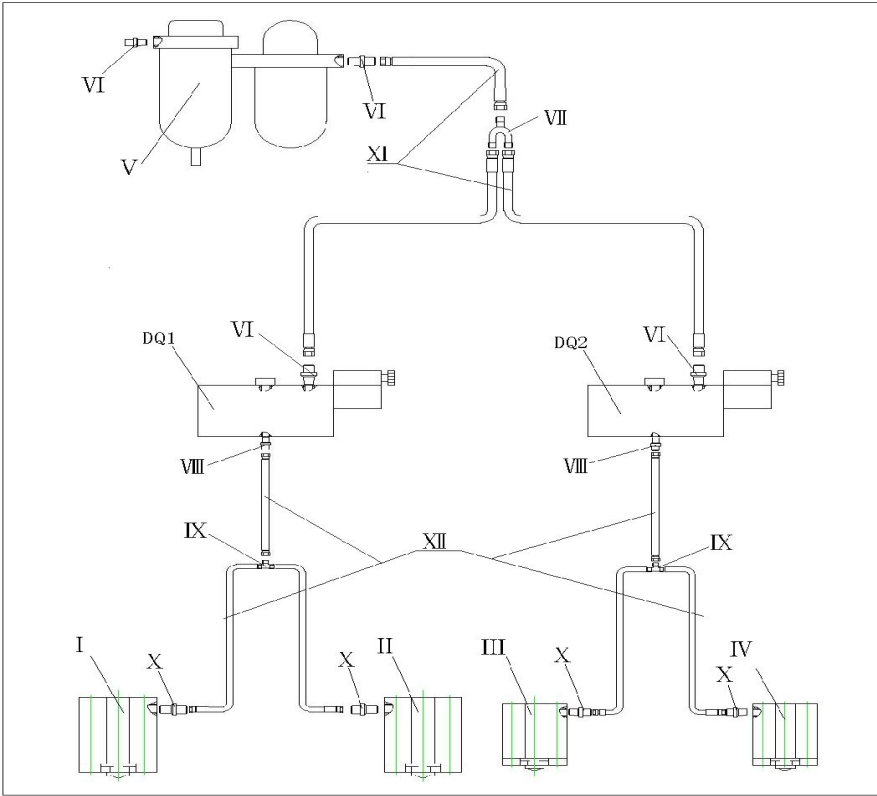
Annex2

Scissor lift Oil Circuit connection Diagram of Big Scissor Series Lifter



Annex 3

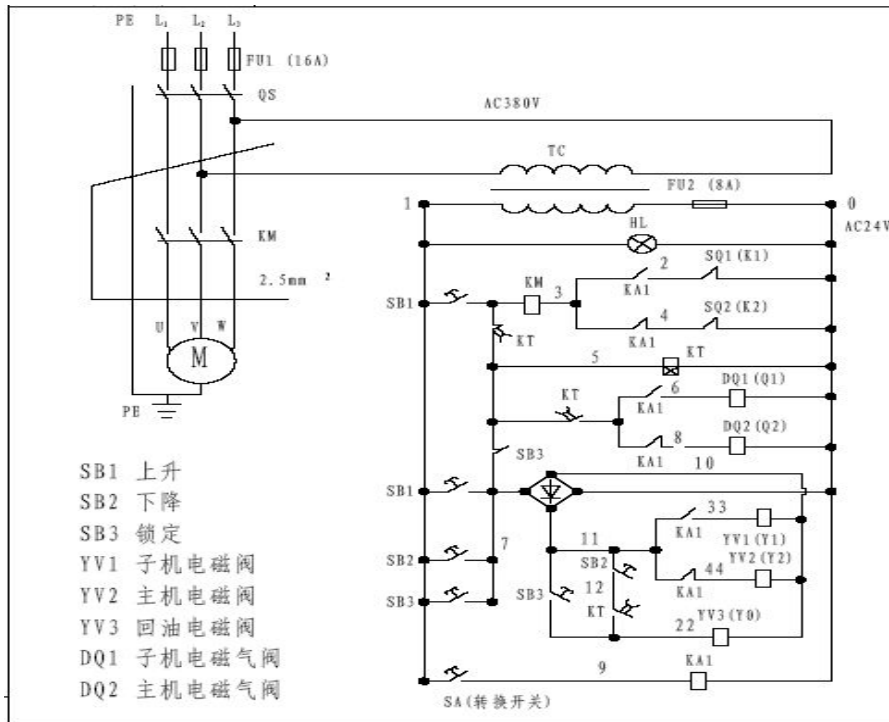
Scissor lift Gas Circuit connection Diagram of Big Scissor Series Lifter





## Annex4

### Scissor lift Electrical Diagram of Big Scissor Series Lifter



### Guarantee of products

*Dear clients:*

Firstly thank you for the trust you have put to our products! We shall give you return in best service.

**If you are satisfied with our products, you do not necessarily tell us!**

**But if you are unsatisfied with our products, please tell us!**

Since you buy the equipment, you shall enjoy one year of free guarantee. But please operate and use it normally according to User's Manual and make maintenance to it periodically.

Please fill the duplicate of guarantee and cut it along the dotted line. The guarantee is valid after it is sent to our company in registered letter.

Sales Department

June 2012

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Product model		Product No.	
User's name		Contact person	
User's address		Telephone	
Operation organization		Purchase date	