TW 550 - 4 / - 6

TW 750 - 4 / - 6

Truck Lifter

22 t, 33 t, 30 t, 45 t

twinbusch.de

OPERATING AND SERVICE MANUAL

Read this entire manual carefully and completely before installation or operation of the lift. Follow the instructions

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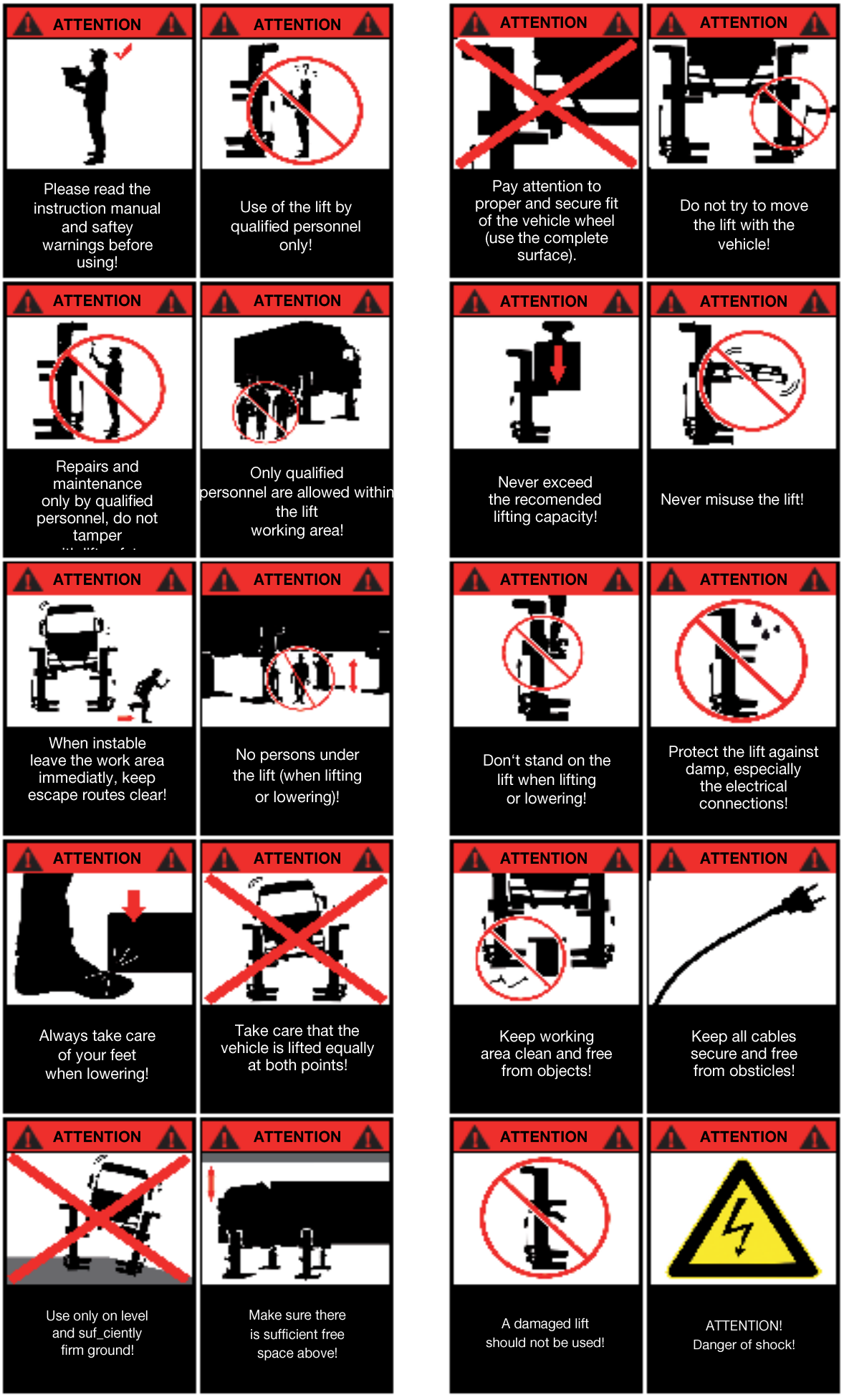
Contents

Warning signs

All safety warning signs attached on the machine are for the purpose of drawing the user's attention to safety operation. The labels must be kept clean and need to be replaced when they are worn-out or missing. Read the explanations of the labels carefully and try to memorize them.



Packing, transportation and storage

Special instructions for boxing and transportation

1. Packing

The following component will be transported:

One set of combined movable lifter is composed of one primary post and three secondary posts (or five posts), each of which is of the same structure.

The primary post is composed of the main electric cabinet, post housing, forklift, lead screw, motor, speed reducer, safety device, hauling device, cables etc.

The secondary post is composed of the electric cabinet, post housing, forklift, lead screw, speed reducer, safety device, hauling device, cables etc.

The speed reducer and motor are installed on top of the post housing of the vertical post.

The lead screw, copper mother nut, safety nut, safety wire cable, safety wedge board, forklift.

The bottom of the post housing of the vertical post is concave.

The electric cabinet, cable and hauling device are installed at the back of the post housing of the vertical post.

2. Lifting, loading and unloading

It is necessary to load and unload the lifter with a forklift. Put the forklift arms under the concave bases of vertical posts, put it into the container, tie it and then move it. The weight of TW5500 lifter with one post is about 650kg (four posts for one whole machine with total weight of about 2500kg), and TW7500 with one post is about 780kg (four posts for one whole set with total weight of about 3200kg).

The lifter is placed in the container or truck with the dimensions of 6000mm×2300mm×2690mm (see Figure 1).

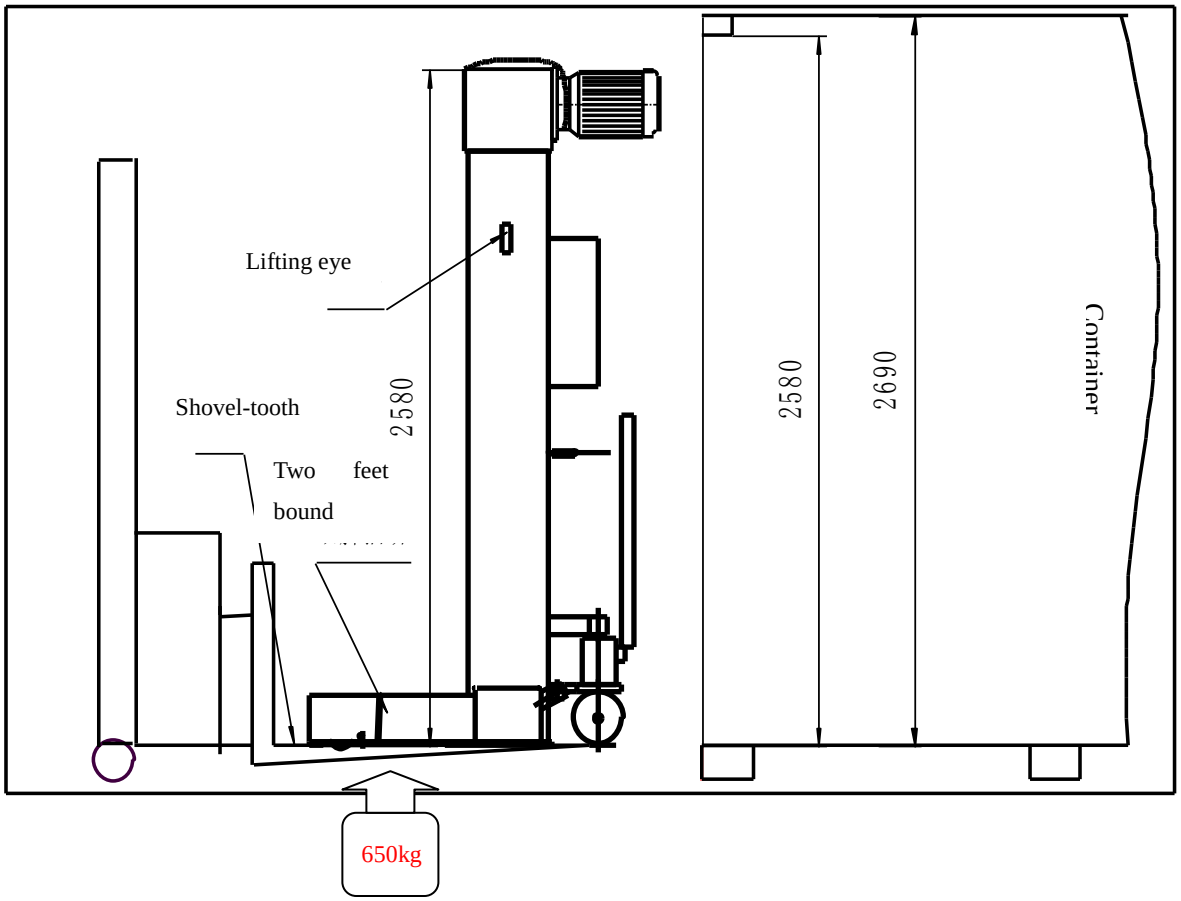


Figure 1 Sketch Map for Lifter's Placement in Container

The two lifting eyes (Fig. 1) should be tied tightly before lifting when either of the truck crane and bridge crane is used for lifting.

Make sure safe lifting and movement when lifting. Pay attention to the dimensions and weight of the vertical post.

When transporting vertical posts on a truck, tie them tightly, then fix them to the truck with four fixed points in four directions.

The forklift may be used when the truck crane or bridge crane is useless for lifting. Press the hauling handle on the vertical post to jack up the post, make forklift arms under concave bases with much care. Make sure everything is steady enough, then load the lifter into or unload it out of the container.

Storage:

Lifters in packing condition should be stored indoor from –5℃ to +40℃, free from water or moisture and direct sunshine.

Place the filter on the cement directly. Stacking storage is forbidden. Check the electric cabinet and machine if they are in good working condition on arrival. All damaged parts should be listed one by one.

3. Disposal of plastic packing materials

Please dispose them according to requirements for wastes classification.

4. Note

Warning

Operators and technical persons should carefully read this manual before carrying out any operation. This manual includes the following:

1) Person safety of operators and maintenance persons

2) Lifting safety

3) Safety of vehicles lifted

5. Storage of manual

The manual should be provided with the lifter as part of it for delivery.

The manual should be placed where it is available for convenient reference of operators and maintenance persons.

Pay attention to data and warning information in Chapter 3 — Safety.

The lifer is designed according to the following parameters of directives.

6. Laws

European directive: CE-89/336 CE-98/37 [Lifting equipment directive COM(92)35] MAC-M283 directive module

Technical standards

European standards: according to 292 standards

Non-daily maintenance, repair and thorough check should be carried out by trained persons who have related qualification or the service center authorized by the manufacturer.

The manufacturer will assume no responsibility for damages to persons, transportation vehicles or other goods caused by non professional persons.

This manual is especially useful for operation, maintenance, repair or safety of operators or maintenance persons. Please absolutely understand words and drawings in this manual and carry out the lifter according to safety precautions. Ordinary and special safety precautions for equipment installation should be strictly observed.

Note: Only authorized operators are allowed to operate the lifter.

Only authorized maintenance persons are allowed to maintain the lifter.

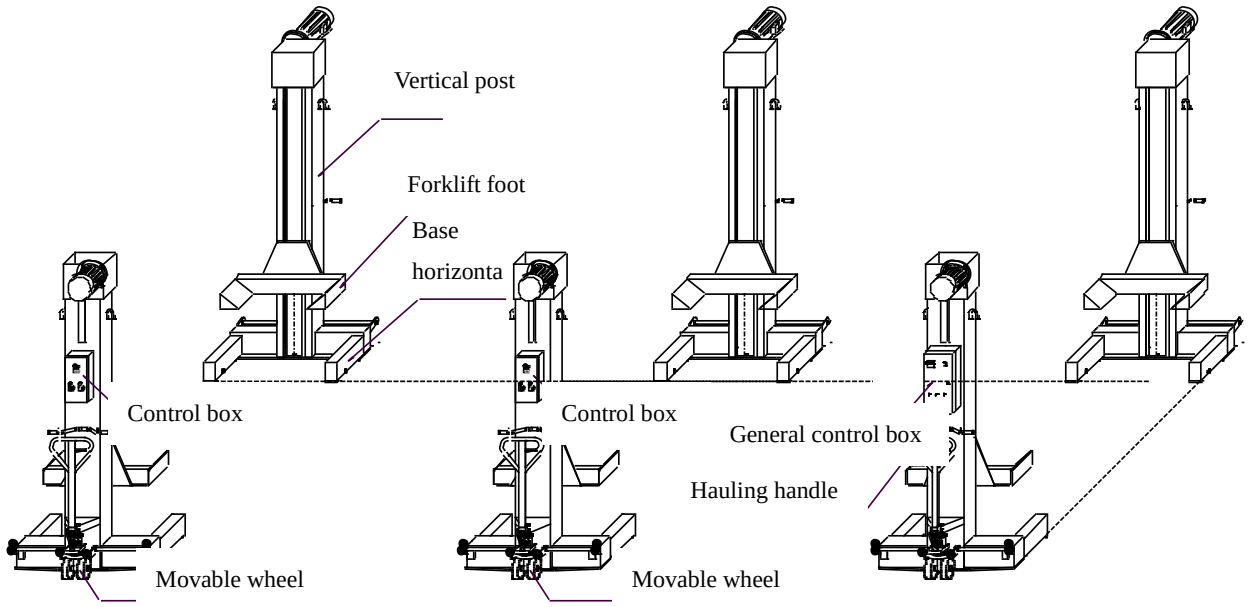
Chapter 1 Descriptions of machine

The combined movable vehicle lifter is a group of movable machines designed and manufactured specially for lifting vehicles such as large buses or cargo trucks.

The lifter is mainly composed of the following:

- Fixed structure (with post housing with concave bases)
- Lifting units (motor +speed reducer + screw bolt +mother nut +crane dolly);
- Electric control system (control box +stroke switch +cable)
- Safety protection device (secondary nut +safety switch +electric lock and control system);
- Hauling system (hydraulic jack +nylon wheel +hauling handle).

Main components of lifter (Fig. 2).



Figures 2 Main components of lifter

The combined movable lifter is composed of four separate and identical vertical posts (six posts maybe available according to requirements). One of them is installed with the main electric cabinet on top, and the rest are installed with secondary electric cabinets.

●Fixed structure of vertical posts (Fig. 3):

The vertical post housings are made of bent steel plates, welded with the concave bases to form stable vertical posts;

Concave bases are also made of bent steel plates;

The whole surface of the vertical post is coated with plastics;

Motors and speed reducers are fixed on top of vertical posts;

Screw bolts, nuts and forklift feet are used to support loading;

The hauling part is installed at the back of the vertical posts, manual hydraulic jack on nylon wheels connecting with hauling handles.

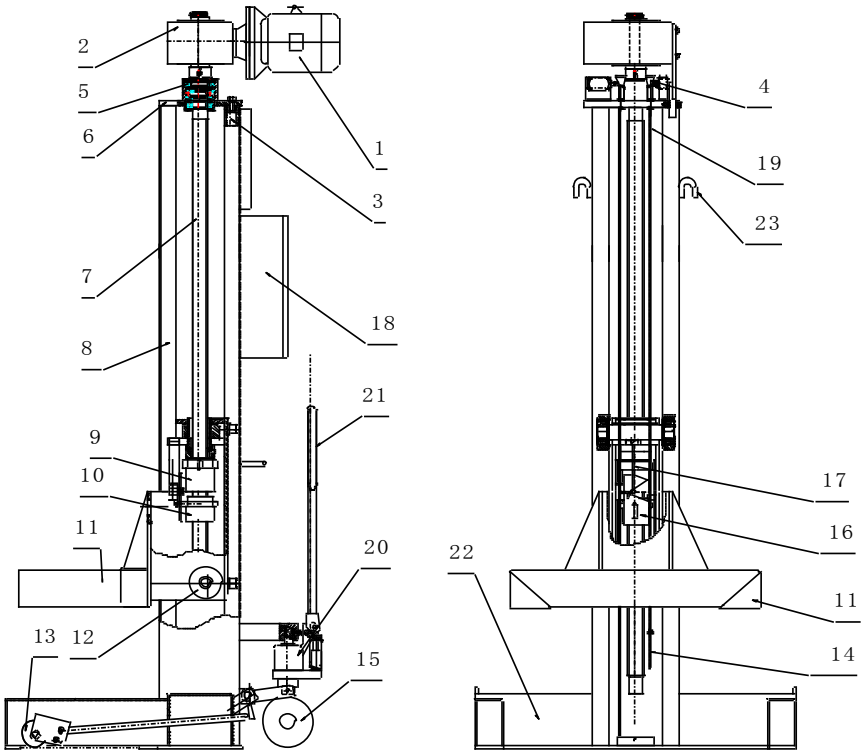


Figure 3 Structure drawing of vertical posts

Each post is composed of:

Ascending and descending unit

- The forklift (11) with idler wheels (12) is seated on the mother nut, ascending and descending up and down. The vehicle moves up and down with the forklift after

clasping of vehicle tires.

Lifting unit

- The housing of each vertical post (8) is welded with bent steel plates, with four guide rails (3) at four corners inside of the chamber of the housing, the mother nut (9) and safety nut (10) fixed on the screw bolt (7) in the middle. The upper part of the screw bolt is inserted into the output axis of the speed reducer (2), and speed reducer flange (2) are connected to the electric motor (1).

Electric drive units

- One electromotor (1)
- One speed reducer (2)

Electric cabinet

- Functions of control buttons on the main control cabinet panel are described as follows: (**Fig 8 and Fig 9)**
- On/Off switch (0-1)
- Start button
- Up button (UP)
- Down button
- Adjusting button
- Emergency stop button
- Functions of control buttons on the secondary control box are described as follows:
- Adjustment button
- Up button (UP)
- Down button

Safety device

The safety device includes:

- Safety wedge board (16)
- Safety pull bar (17)
- Upper terminal stopping pull bar (19)

- Upper ending limit switch
- Lower terminal stopping pull bar (14)
- Lower ending limit switch
- Safety pull bar of mother nut (4)
- Safety nut (10)
- Safety hauling wire cable
- Regular electric safety device

More details on these safety devices will be provided in the following chapter.

Hauling units for lifter's movement

- Front wheels (13) may be retracted inside the concave base of the vertical post
- Rear hydraulic steering wheels (15) for direction control
- Handy hydraulic jack (20)
- Hauling handle (21)

Chapter 2 Technical parameters

2.1 List for main technical parameters of mechanical components

Model	TW 550	TW 575
Lifting capacity of single post	5500 kg	7500kg
Lifting height	~ 1550 mm	~ 1550 mm
Lifting speed	0.6 m/min	0.6 m/min
Control Voltage	24 V	24 V
Quantity of post	~ 650 kg	~ 780 kg
Noise	<60 dB(一)/m	<60 dB(一)/m
External dimensions	1120×1120×2575mm	1120×1150×2575mm
Ambient temperature	-5℃ / +40℃	-5℃ / +40℃
Motor	3-phase	3-phase
Motor output	3 kW	3kW
Volt	400V 3 ph.+/-5%	400V 3 ph.+/-5%
Frequency	50 Hz	50 Hz
Phase	4	4
Revolutions	1400 RPM	1400 RPM

External dimensions:

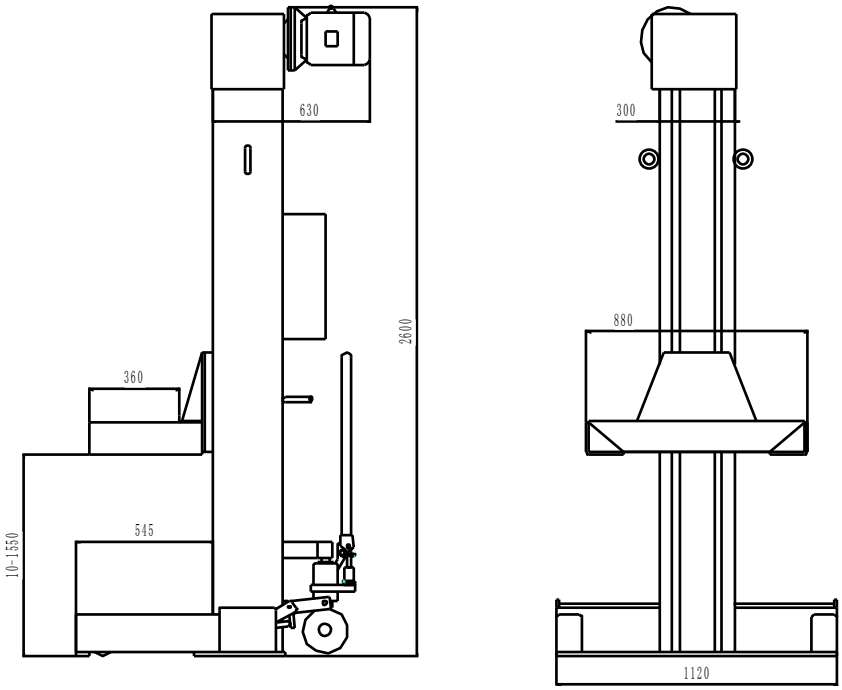


Figure 6 External dimensions of 5.5t vertical post

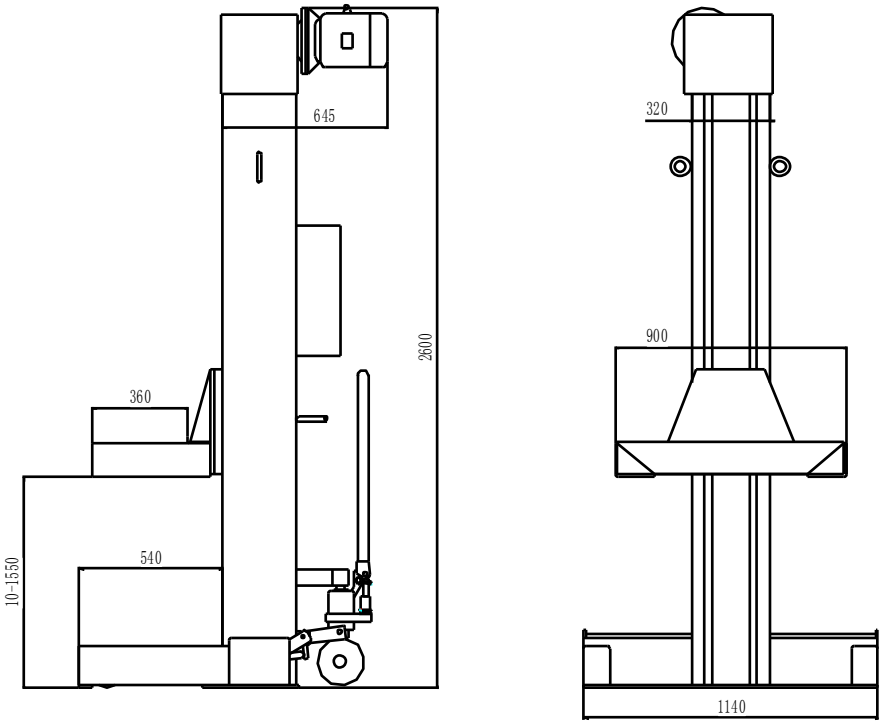


Figure 7 External dimensions of 7.5t vertical post

2.2. Main technical parameters of electric components

2.2.1 List for main technical parameters of power supply (single post)

Name / Model	TW5500	TW7500
Motor	Three-phase	Three-phase
Power	3 kW	3kW
Voltage	400V 3 ph.+ /- 5%	400V 3 ph.+ /- 5%
Frequency	50 Hz	50 Hz
Phase connecting method	4	4
Rotation speed	1400 RPM	1400 RPM
Insulation grade	IP	IP

2.2.2 Electric cabinet

Each set of the lifter is composed of four vertical posts, each of which is installed with control boxes. One of the control boxes is the main control box (**Fig 8)**, and the other three are secondary control boxes (**Fig 9).** Each lifter is composed of four vertical posts, each of which is fixed with control boxes, one is fixed with a main control box (**Fig 8)**, the other three are fixed with secondary control boxes (**Fig 9).**

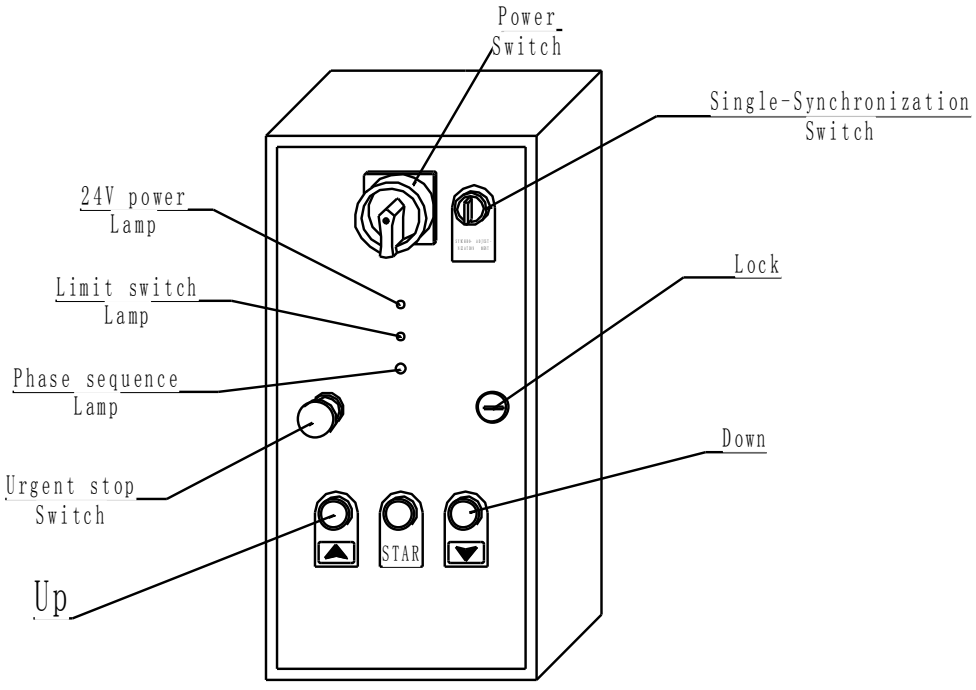


Figure 8 Main electric cabinet

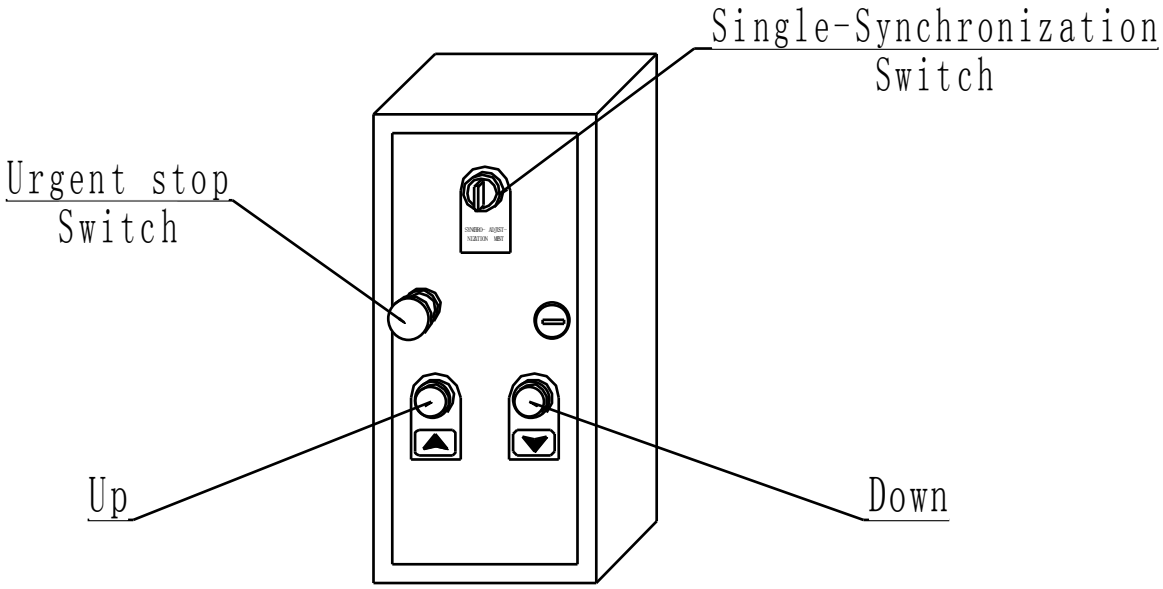


Figure 9 Secondary electric cabinet

2.2.3 Wiring diagram

The motor should be connected according to the wiring diagram attached.

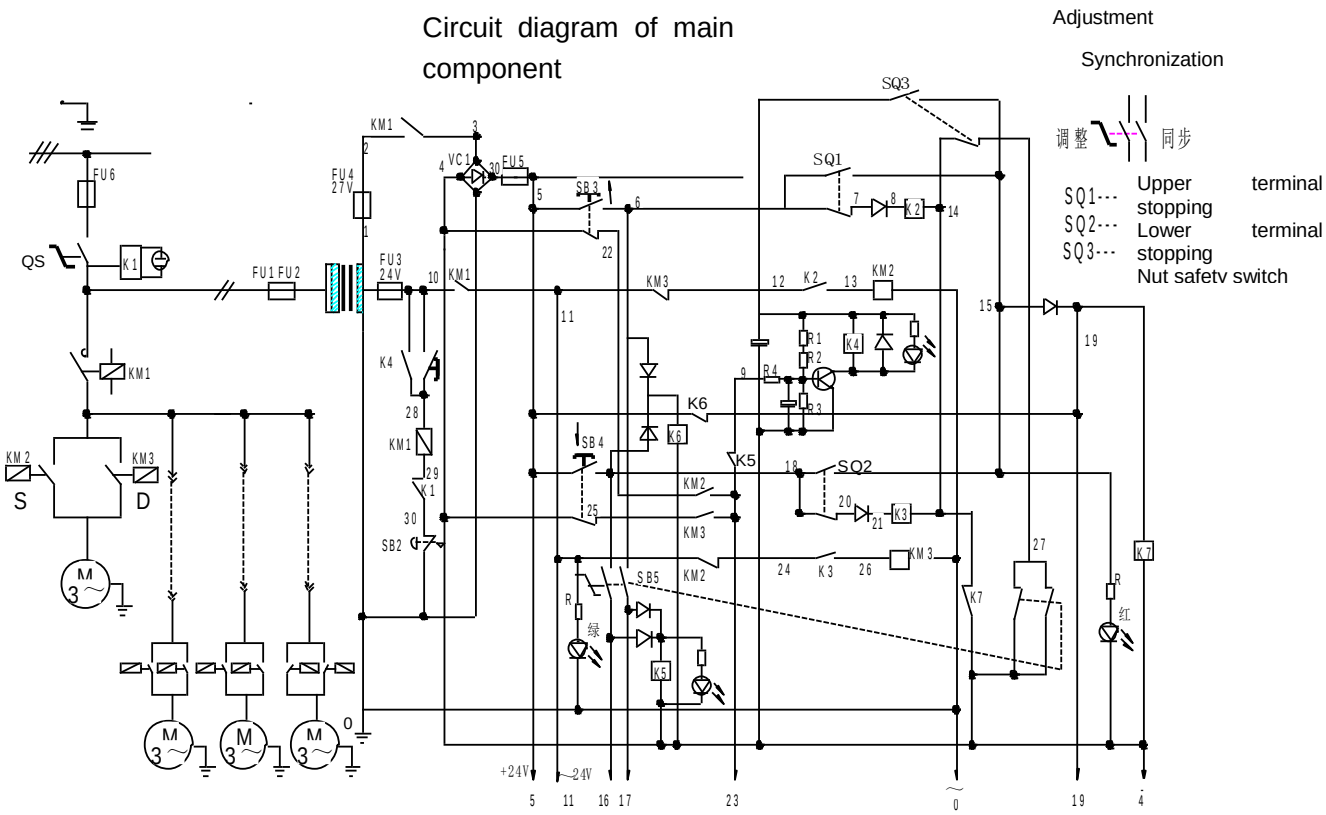


Figure 10 Circuit diagram of main cabinet

Circuit diagram of auxiliary component

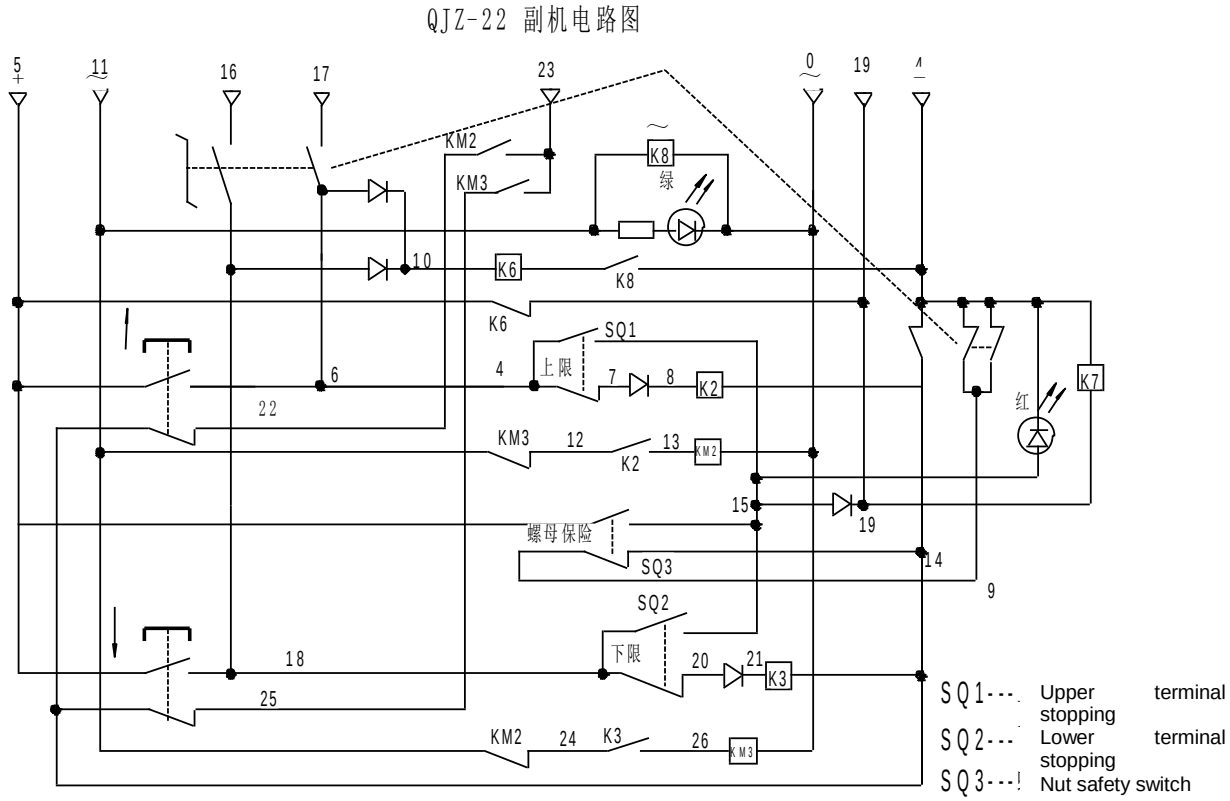


Figure 11 Circuit drawing of secondary control box

2.2.4 Details on electric components

7.5t & 5.5t Combined Movable Vehicle Lifter Electrical part list

No	sign	name	model	Material
1	QS	"0-1" switch	LW42B25-1016/LF101	IEC 947ITH:25A AC-21 400V 25A
2	QF	breaker	DZ47-63	50/60Hz 3P400V disjunction ability:4500AC 40A t<1s
3	TC	transformer	BK-100VA	Import:400V 50/60Hz 100VA Export:24V 27V 40/E
4	SQ1|、2、3	Terminal stopping switch	LXJM1-8104	Ac 250V 5A Contact switch time: ≤0.04s DC 115V 0.4A IP 64 动作力 motion force ≤20N
5	KM1	Contactor unit	CJX1-22	IEC 60947-4-1 ui 660v ITH:30A AC-3 ue 400v pe 11KW Coil Nominal Voltage:24V
6	KM2.3	Contactor unit	CJX1-9	IEC 60947-4-1 ui 660v ITH:20A AC-3 ue 400v pe 11KW Coil Nominal Voltage:24V
7	SB	Button switch	Y090/11X21	IEC 337 ui 660V ITH:10A AC-15
8	VC	Bridge pile		QL 35A 1000V
9	K1	Relay	HG4183	240VAC/28VDC NO:20A NC:10A
10	K2.3.4.5.6.7	Relay	HG4123 DC.24V-2C1	Contact form 1H 1Z 1FormA 1FormC Contact /Resistance ≤ 100m- Insulation Resistance≥100m- at 500VDC Operatetime≤10ms Release time≤5ms
11	K8	Relay	2085C	HH529 5A 240VAC 24VAC-IEC-255 TV-5 5A 28VDC
12	M	electromotor	Y2-100L2-4	50Hz 400V F grade Insulation LW 64dB(A)6.78A Y connect means IP 54 Cos Φ0.82
13	FU1.2	Fuse tube GBXP		100PCS 5A
14	FU3.4.5	Fuse tube GBXP		100PCS 3A
15	R	Resistor		R1.1kΩ R2020kΩ R3.3.6kΩ R4.2kΩ/0.25W

2.3 Tire specifications applicable

Pay attention to tire sizes and vehicles lifted when using this lifter within scope.

Tire specifications

Tire model	Tire width (H)	rim diameter (d)	Tire diameter (D)	
(inch)	(inch)	(inch)	(inch)	mm
9.00 -- 20	9.0	20	38	965
10.00 -- 20	10.0	20	40	1016
11.00 -- 20	11.0	20	42	1066
12.00 -- 20	12.0	20	44	1118

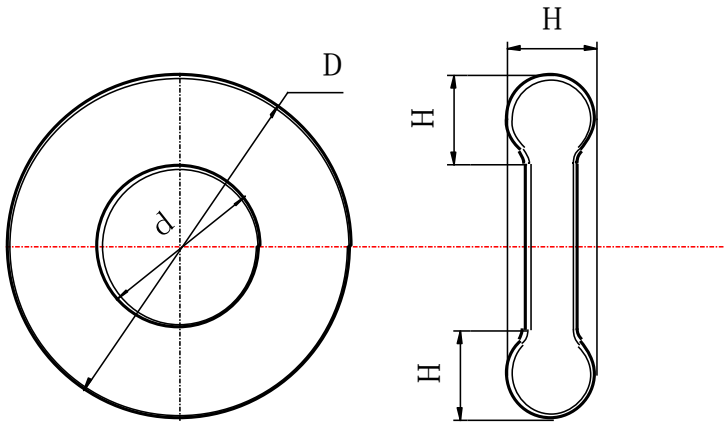
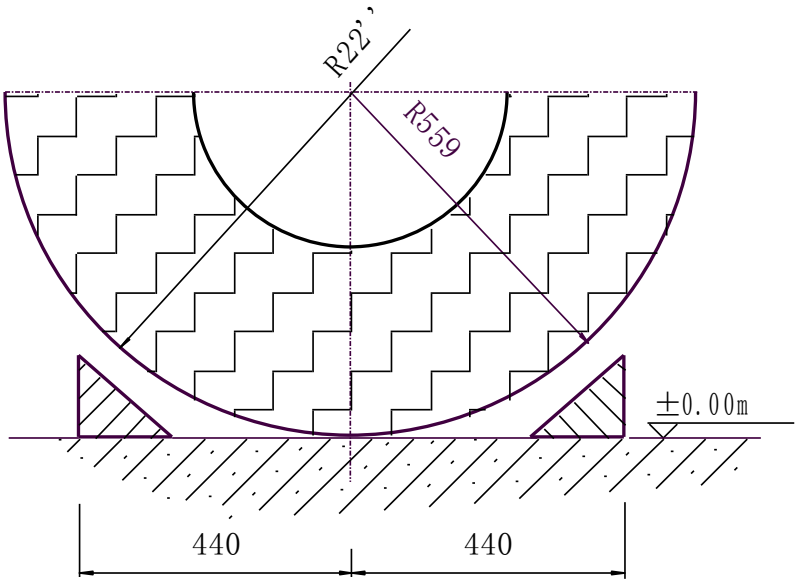


Figure 12 Tire Size

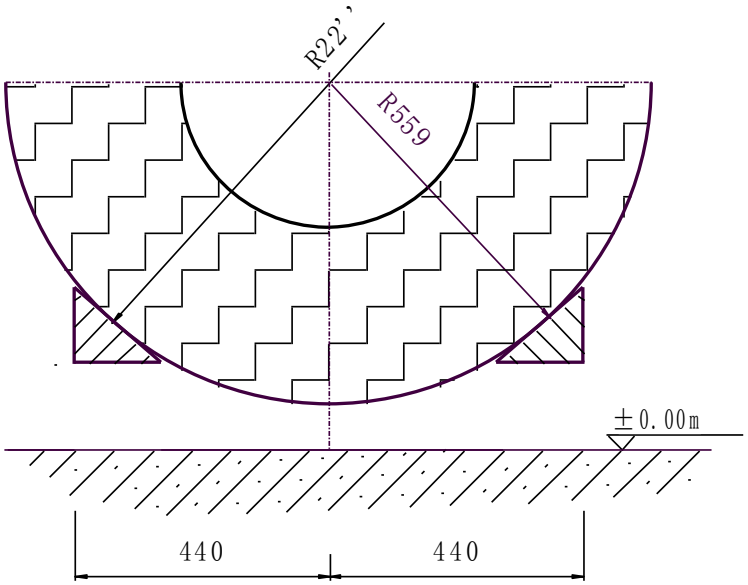
When the forklift placed in position and no lift is carried out, there should be gap between the fork and the tire. See the following drawing for more information.



Sketch map for forklift's placement under tires before lifting

Figure 13 Sketch map before lifting

For contact of the forklift and tire when lifting, see the following drawing:



Sketch map for contact of forklift and tire when lifting

Figure 14 Sketch map when lifting

2.4 Working area of lifter

The safety working area is determined according to the dimension the vehicle.

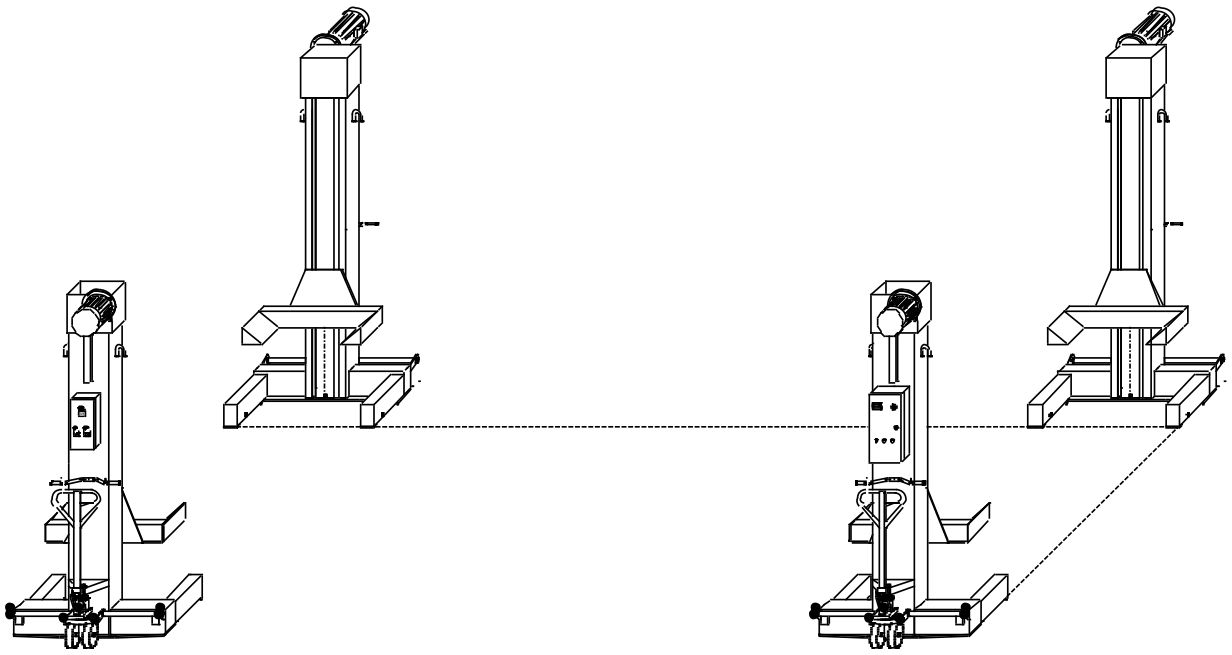


Figure 15 Sketch map for working area

Chapter 3 Safety

Read this chapter carefully for safe operation, maintenance and repair to avoid accidents.

3.1Warning

1) It is forbidden to lift the vehicle with vertical posts when moving!

2) It is forbidden to move vertical posts at random when the vehicle is lifted;

3) The lifter may be operated after the vehicle turns off;

4) Only when the tires are supported securely, no foreign substances are under bases of vertical posts (wheels in bases have been retracted) can you start the lifter;

5) Persons are forbidden entering into the working area during lifting;

6) No person or other articles (including gasoline, acid base chemicals) should be allowed on the forklift;

7) The lifter should not be used as a forklift;

8) All cables should be free of pressure from heavy objects, vertical posts or vehicles;

9) It is forbidden to connect or disconnect cables when the power is on to ensure safety of persons and devices;

10) Aerial plugs should be placed gently to avoid heavy collision with the ground;

11) Electric cabinets and cables should be free from water to avoid serious accidents;

12) It is forbidden to lift vehicles exceeding specified weight or with tires not in accordance with prescriptions.

3.2. Warning sings

! Attached on the concave fork. Standing on the forklift forbidden. No goods on it.

Attached on the electric cabinet. High voltage! Take care!

3.3 Regular preventions

Operators and maintenance persons should be familiar with national preventions for accidents caused in the operation of lifters.

In addition, operators and maintenance persons should observe the following:

Working in the pre-determined working area showed in the manual;

Never removing mechanical, electric or other types of safety devices.

Meanings of safety decals:

Danger: Indicates an immediate hazardous situation which, if not avoided, will result in death or serious injury;

Warning: Indicates a potentially hazardous situation which, if not avoided will result in death or serious injury;

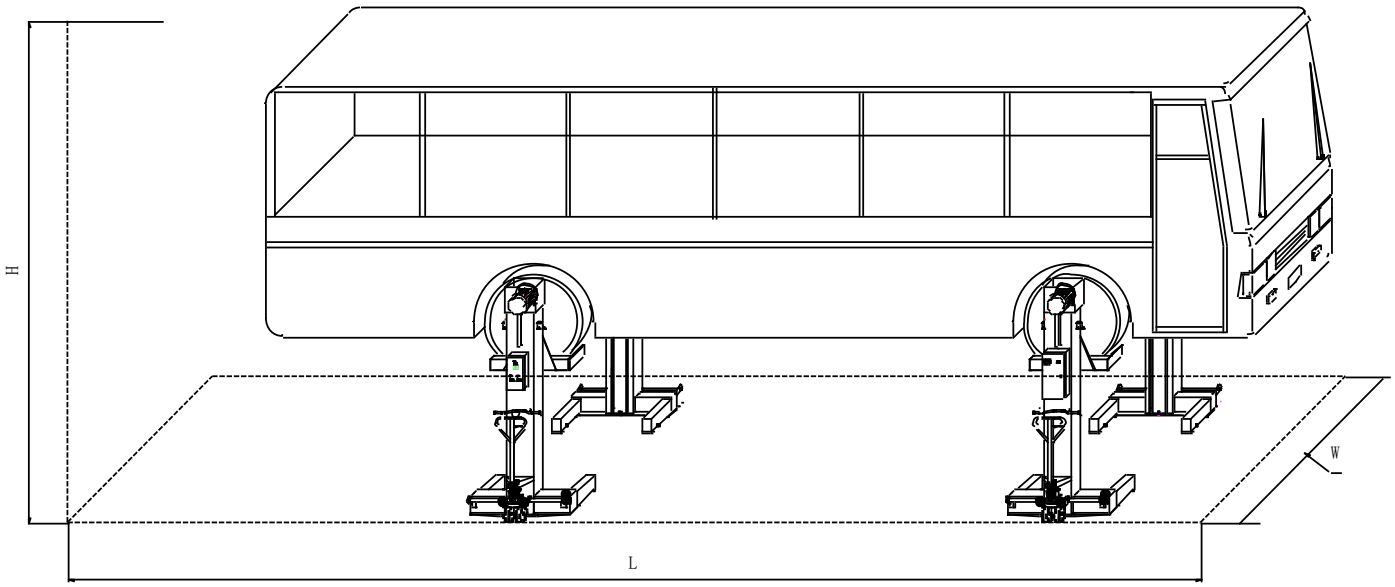
Caution: Indicates a potentially hazardous situation which, if not avoided, may result in the minor or moderate injury to persons, vehicles.

Electric shock: pay much attention to electric shocks around the power supply area

Space for safe operation of the lifter (Fig16)

Main post side: space reserved for operator’s operation on the general electric cabinet.

Secondary post side: space reserved for operator' operation on electric cabinets.



L--length of vehicles lifted needs determining

W--width of vehicles lifted needs determining

H--effective height of workshop should be more than 5.5m

Figure 16 Safe working area

Operators and maintenance persons should ensure sufficient lighting in all working area. Appropriate materials and construction technology have been applied by the manufacturer for reliable and safe lift. Make sure carefully read Chapter 6—Maintenance and troubleshooting.

The manufacturer will assume no responsibility for serious accidents or damages to persons or equipment on condition that the lifter is used for other purposes. It is essential to observe all service and maintenance regulations etc.

3.4 Safety protection devices

Safety protection devices are considered in the design of mechanical and electric components of the lifter for safety of operators and equipment.

3.4.1 Mechanical components

1) If the load mother nut (copper nut) is damaged, the iron nut underneath will work in place of the mother nut. Meanwhile, the safety hauling wire cable is tightened tightly,

safety switches turns on. The machine stops automatically for checking and repair. The whole set of machine will stop in synchronization working condition.

2) The mother nut and secondary nut will continue dropping when the forklift is caught by foreign substances. At this time, the safety wedge board pushes the safety pull bar to pull the safety wire cable, so the safety switch stops, and the machine stops automatically for maintenance and repair. The whole set of machine will stop in “Synchronization” condition.

3) The screw mandrel and nut structure is used for lifting, so the machine may stop or lock itself at any position under the operation of the control system.

3.4.2 Electric components

1) The lifter automatically stops due to the upper terminal stopping switch when it exceeds the height limit. Vice versa, it automatically stops due to the lower terminal stopping switch when the lifter reaches the lowest position.

2) Each time one vertical post stops due to the terminal stopping switch, other vertical posts will stop.

3) The control system will stop the whole set of lifter if any part of it is in electrical trouble or electric wire trouble.

4) 24V DC is applied to electric control circuit for safe operation and overhaul.

The whole set of machine will stop due to malfunction of any vertical post in synchronization condition. Make sure the safety of the operator and vehicle, synchronization and no incline during lifting.

Chapter 4 Installation and debugging

4.1 Working site

The user should prepare the working site for the lifter before its arrival (it may be operated outdoors in a sunny day, but it is strongly recommended by the manufacturer to operate the machine for the favorable performance of electric drive units and electric control system).

4.1.1 Lighting: sufficient lighting for the working site to meet requirements specified in customers' regions.

4.1.2 Machine power supply: 3ph, 400V, 50Hz, safe distribution box with a 4-hole socket around the operation position.

4.13 Ground: The lifter must be placed on flat and hard ground which is made of cement or bricks with the load of vertical post position of 5t/m^2.

4.14 Working area: There should be about 2,000mm space around the vehicle lifted, and the net height indoor is about 5500mm.

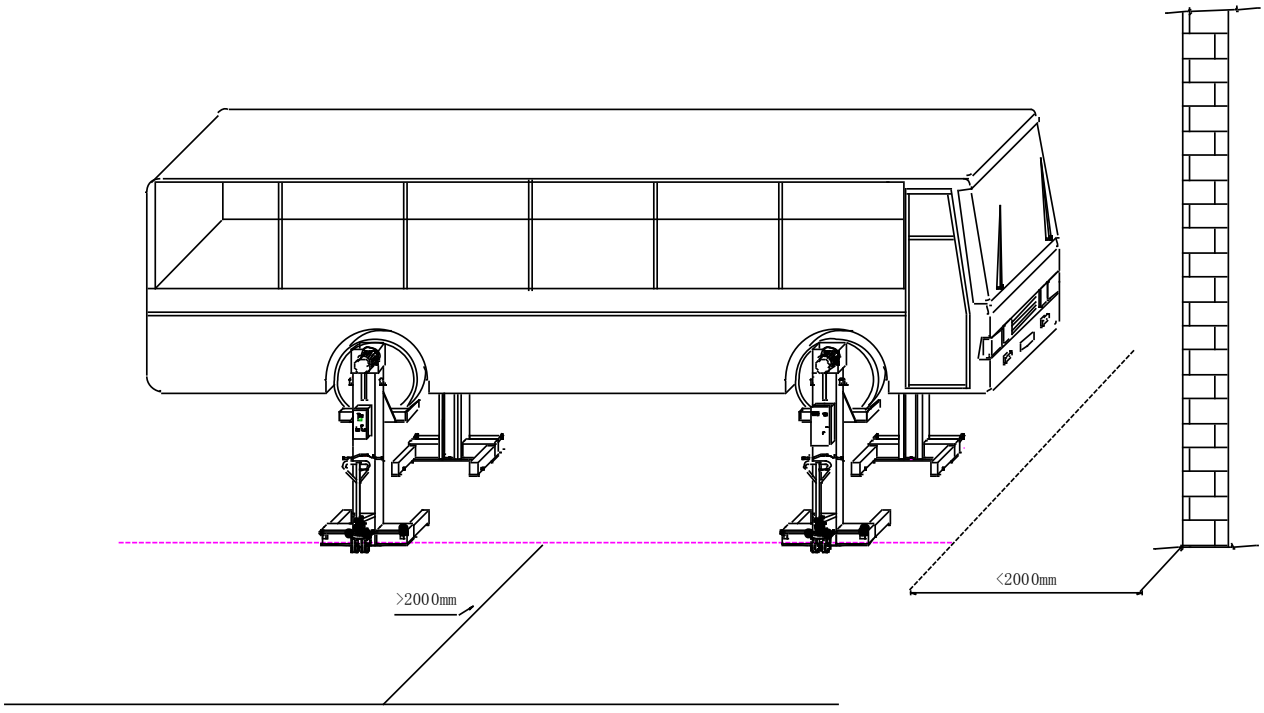
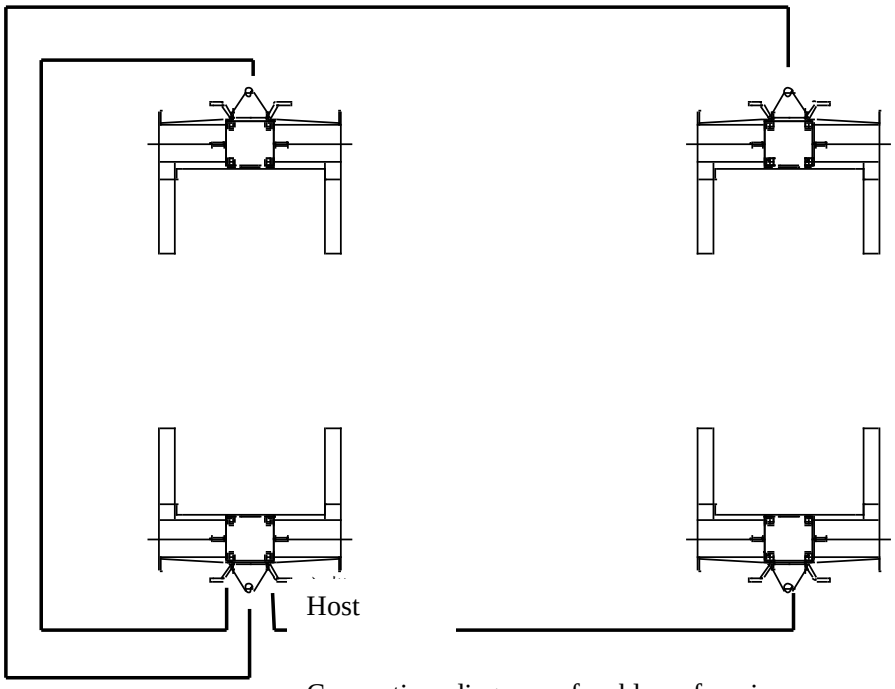


Figure 17 Sketch map for working area required

4.2 Cable connection

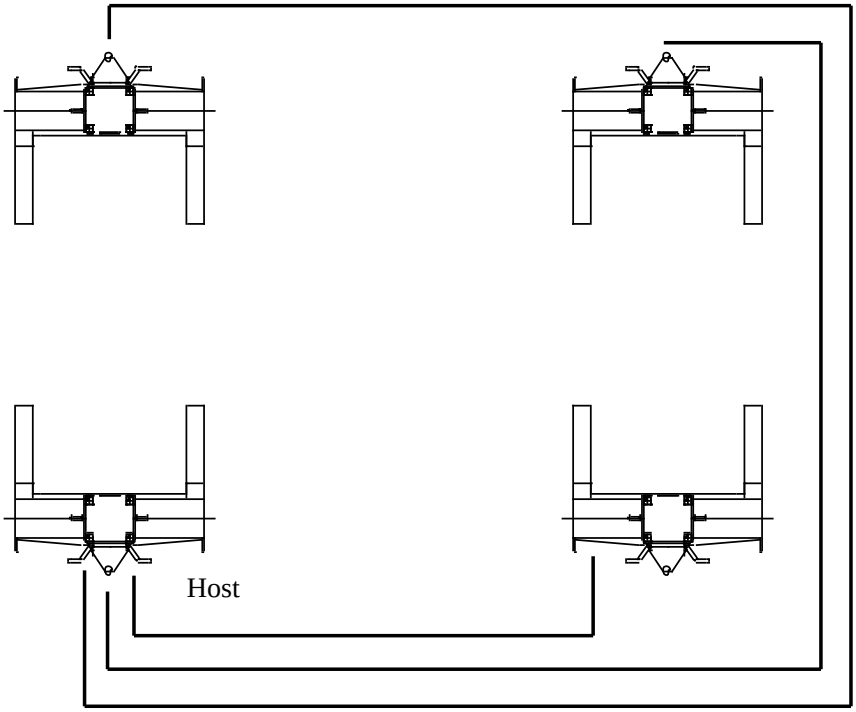
The lifter has been installed and tested completely ready for delivery. The user only needs to switch on the machine to debug it.

Electric control boxes of the main vertical post and secondary vertical post are connected in the following two ways, so sufficient cables are provided by the manufacturer.



Connection diagram of cables of main and secondary vertical posts (1)

Figure 18 Cable connection (1)



Connection diagram of cables of main and secondary vertical posts (2)

Figure 19 Cable connection (2)

4.3 Flow chart for first operation

1) Turn on each vertical post and run it at idle speed before the first operation. First insert the 3-phase power plug with four feet of the main electric cabinet into the supply socket which is in the electric cabinet.(see fig 20)

↓

2) Turn “0→1” switch on main electric cabinet to “1” (see fig 21)

↓

3) Pay attention to indicator. That the indicator lights indicates phase sequence of power supply is not in accordance with that of transmission-line system of electric power]. Press red button in the middle of control panel for 3s, no sound for main contactor’s contacting due to magnetic force (see fig 22)

↓

4) Draw out power-plug, re-insert it after phase sequence is adjusted

↓

5) Turn “0→1” switch on main electric cabinet to “1” (see fig 23)

↓

6) Pay attention to indicator. That the indicator lights indicates phase sequence of power supply is not in accordance with that of transmission-line system of electric power]. Press red button in the middle of control panel for 3s, no sound for main contactor’s contacting due to magnetic force.

↓

7) Press green ”Start” button (Press it for first startup after power interruption)

↓

8) Press “▲” for ascending of forklift foot, “▼” for descending

↓

9) Turn “0→1” switch on main electric cabinet to “1”, disconnect power supply (see fig 23)

↓

10) Discharge cables winded around vertical post, connect them according to drawings (see fig18 and fig 19)

↓

11) Insert cable plug into cable socket under main electric cabinet (fig 24). Aim plug tenon at gap of socket (fig 25), make sure cable plug is in cable socket and tightened tightly.

↓

12) Turn “0→1” switch on main electric cabinet to “1”, disconnect power supply

↓

13) Place changeover switches of secondary electric cabinets on the other three vertical posts in “Adjustment” position (fig 26)

14) Check the condition by lifting each vertical post separately for a short distance

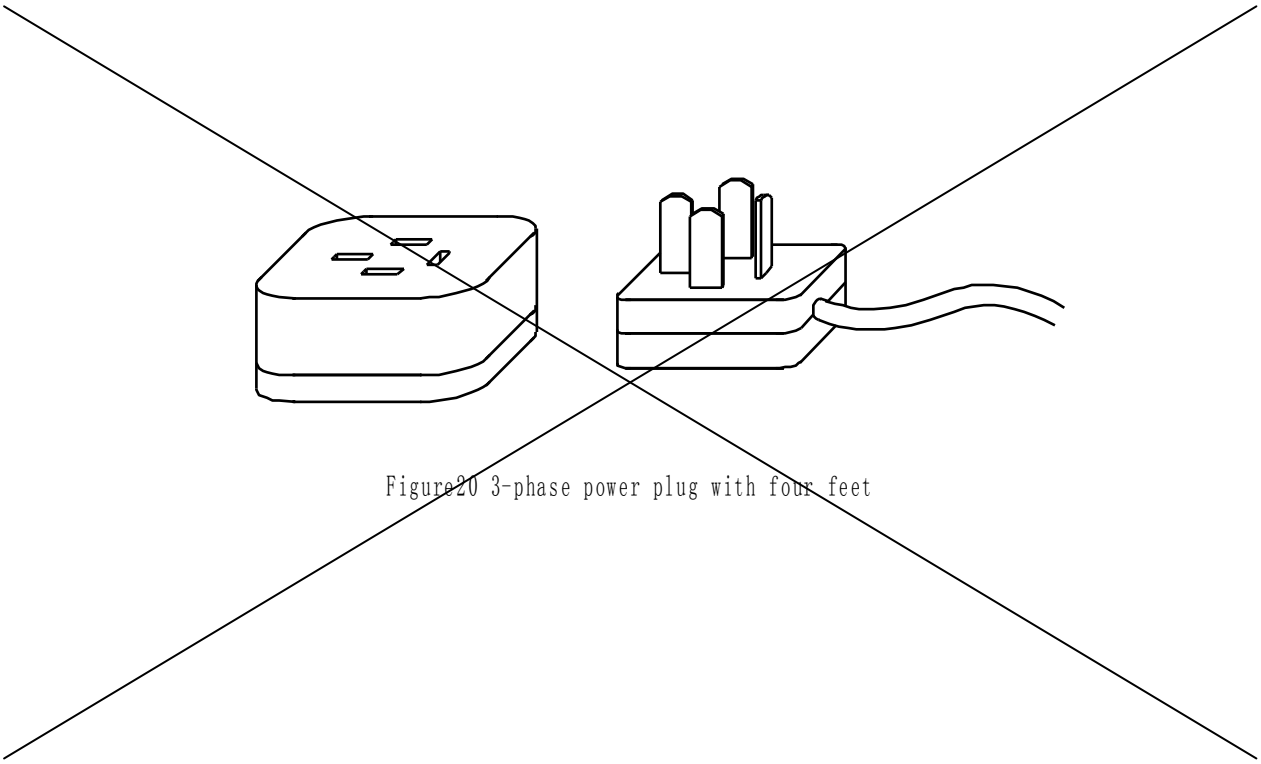


Figure20 3-phase power plug with four feet

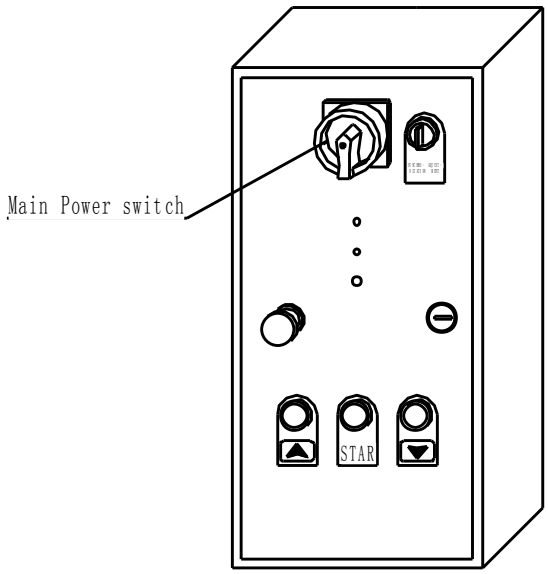


fig 21

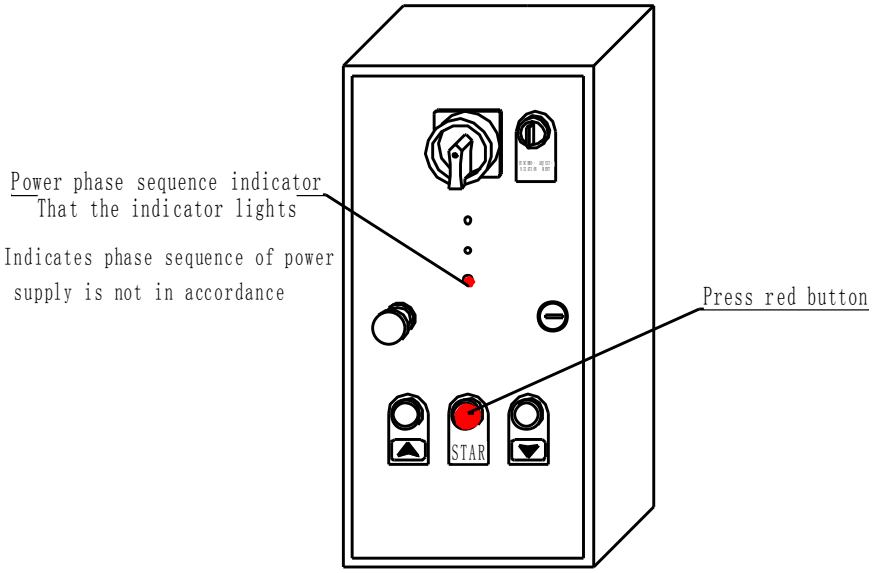


fig 22

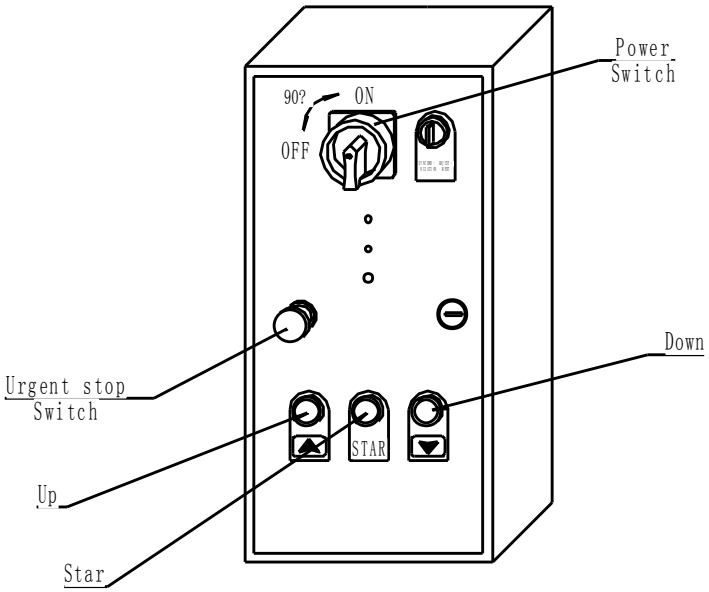


fig23

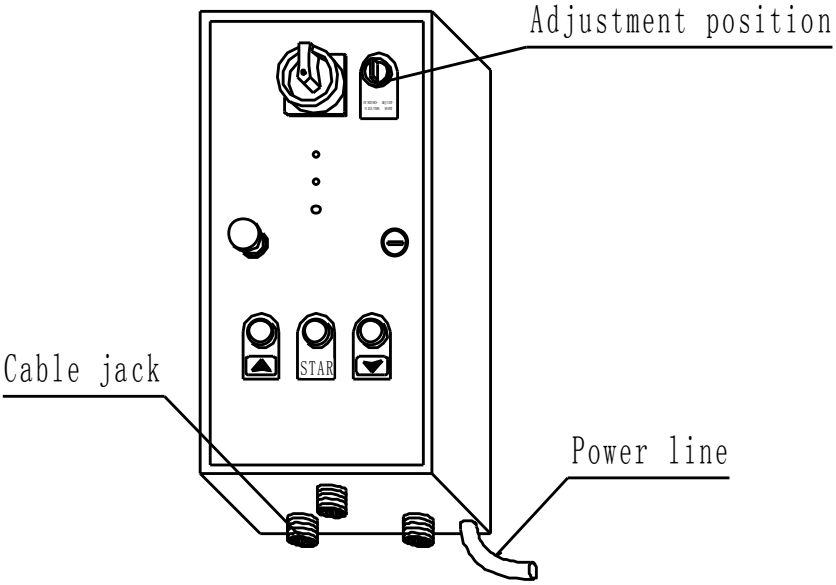


fig24

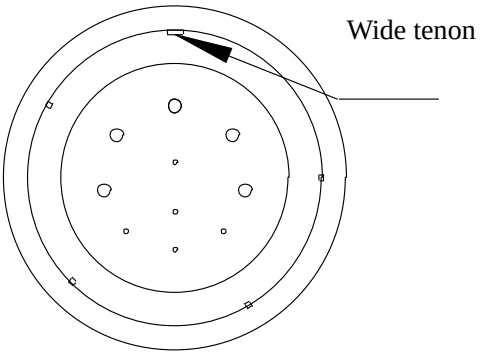


Figure 25 Sketch map of cable plug

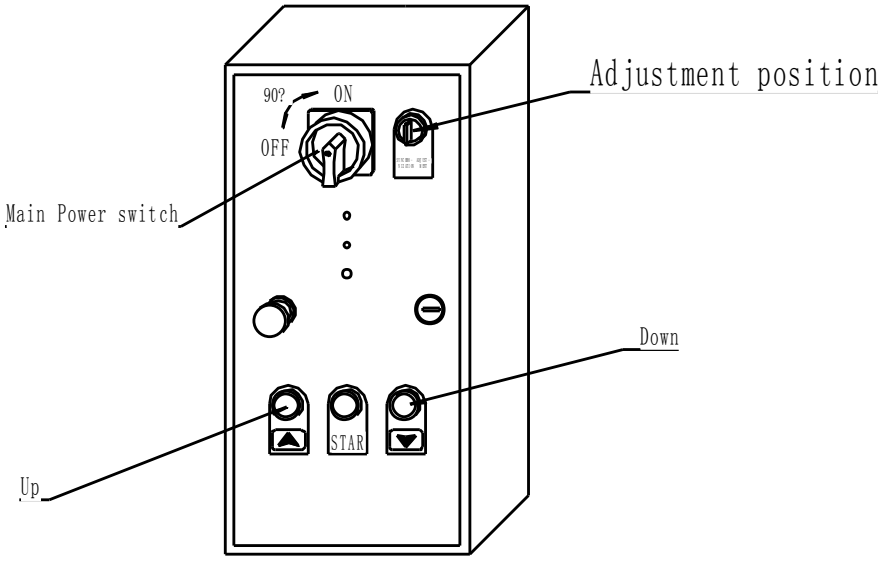


fig26

4.4 Notes on checking and debugging electric cabinet

4.4.1 That the green indicator on the main electric cabinet panel lights indicates No. 11 and 0 cables of DC 24V are in good connection;

4.4.2Turn the job selection switch to the “Adjustment” position, and click the buttons for ascending or descending. If it works normally, it indicates No. (4) and (5) cables of DC 24V are in good connection.

4.4.3 Turn the job selection switch on the control box of this post to the “Adjustment” position, switches of other posts to the “Synchronization” position. Click buttons for ascending or descending, if the other three vertical posts related don’t work except this post, this indicates No. 19 signal wire of the secondary control box is in good condition.

4.4.4 Check No. 23 wire and contact points of contactors: forcedly press buttons for ascending or descending without load, then “KM1” will automatically disconnect, and there is no AC24V, DC24V for the whole machine and no power current.

Chapter 5 Operating rules

5.1 Operating rules for mechanical components

5.1.1 The lifter is possessed of separate traveling components. Shake the hauling handle of the steering rear wheel forwards and backwards to make the vertical post off the ground, then you can move the lifter. On arriving the working site, press the valve handle (see Fig. 27) to retract the wheel, then the vertical post lands on the ground steadily.

5.1.2 Aim the lifter at the vehicle wheel, push it, make the forklift foot under the wheel as near as possible for deep contact between them. Make sure the two inclined planes of the forklift foot touch the wheel simultaneously.

5.1.3 Retract the front and rear wheel to land the vertical post steadily before lifting loading, and make sure there is no foreign substances such as hand tools, bolts, screw caps, small stones. No lifting during moving!

5.1.4 Move each post outside the wheel of the vehicle lifted, then push them correctly. Ifit is hard to push, lower the height of the post off the ground. Make sure the two inclined planes of the forklift foot touch the wheel simultaneously.

5.1.5 Press the button for ascending to make the forklift foot support the wheel in “Adjustment” condition, then the main post is under obvious load (the wheel may not be off the ground. Stop ascending, press the valve lightly handle to release the wheel thoroughly. For other vertical posts, take the same operation.

5.1.6 Turn all changeover switches to “Synchronization”, press “▲”, and stop it until it reaches the height required.

Important: Cable connection disconnection should be carried out only when the power supply is switched off due to equipment voltage of 400V!

5.2. Operating steps for electric control components

5.2.1 Run the lifter at idle speed before use. There is a main “0-1” power switch at the upper left corner of the main electric cabinet. Turn off the main power switch after use.

5.2.2 Switch on the power supply and pay attention to the indicator. If the indicator lights, this indicates the phase sequence of power supply is not in accordance with that of the transmission-line system of electric power. Press the green button in the center for 3 seconds, no sound for contacting of the main contactor due to magnetic force. Adjust the phase sequence of the plug, then the indicator turns dark, indicating correct phase sequence of power supply.

5.2.3 Press the green button in the middle for 3 second, a sound may be heard by the contactor’s contacting due to magnetic force. Press “▲” or “▼” for the forklift feet’s ascending or descending. Press the green button in the middle first after each power cut**.**

5.2.4 Switch off the main power supply, insert cable plugs of other secondary vertical posts into the cable socket of the main electric cabinet. Make the wide tenon aim at the wide slot of the socket, insert it and tighten it.

5.2.5 Switch on the electric brake, lift each vertical post for a short distance in “Adjustment” condition, thus to check the abnormal condition. Run the four vertical posts up and down once without load in “Synchronization” condition.

5.2.6 There is a function switch on the electric cabinet, switchovering between “Adjustment” and “Synchronization”. Turn all function switches to “Synchronization” for the lifter’s descending or ascending synchronously.

5.3 Operation flow chart

1) Vehicle in service position, engine off

↓

2) Press hydraulic hauling handle on vertical post (see fig 27) to lift concave base a bit

3) Push vertical posts in front of side tires, aim at the center of tires

4) No foreign substances under concave base, flat ground

↓

5) Aim forklift at tire midline and push forklift. Operate valve handle (fig 27) to reduce vertical post base to the right height

↓

6) Operate valve handle at lower part of hauling handle to make concave base fully touch the ground

↓

7) Repeat Steps 2-6 for the other three vertical posts

↓

8) Discharge cables winded around the vertical post. Insert cable plug into cable socket under main electric cabinet. Aim plug tenon at gap of socket (see fig 25), make sure cable plug is in cable socket and tightened tightly.

↓

9) Make sure cable plug is inserted into cable socket and tightened.

↓

10) Insert 3-phase power plug on main electric cabinet with four feet into power supply socket in electric cabinet ready for use (see fig 25)

11) Turn “0→1” switch on main electric cabinet to “1”, turn on power supply

12) Press “Start” button (white)

13) Press “▲” or “▼” to adjust it to a proper height

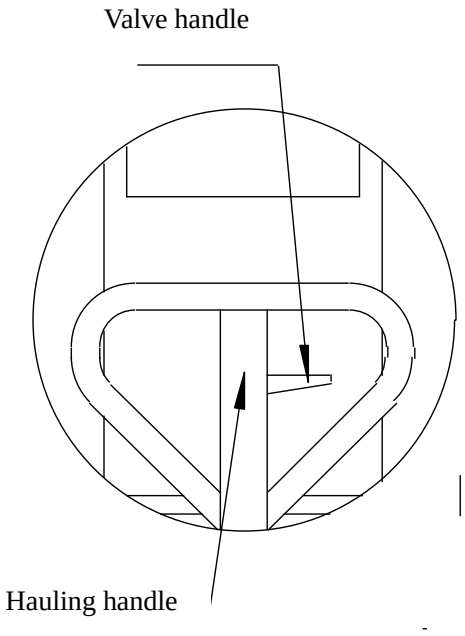


Fig 27 Sketch map of hauling handle

Chapter 6 Maintenance and troubleshooting

6.1 Maintenance

6.1.1 For daily maintenance, see operating steps, usage and precautions on the last page.

6.1.2 The speed reducer on the head of the lifter should be lubricated with engine oil or gear oil once each year, the quantity of which is determined according to the oil window.

6.1.3 Mother nuts, key parts of the lifter, should be changed every two years.

6.1.4 Check whether the oil of the screw bolt is dry after the lifter has been lifted for 10～15 times. If the screw bolt lacks oil, coat it fully with blue Mobil high temperature grease. If the oil is still enough, coat it as required.

6.15 Make sure the safety wire cable is fixed inside the vertical post in good condition first before work starts. Change it for a new one if fractured, and tighten it if loose immediately. It is essential to safety of persons and equipment.

6.2 Troubleshooting

If the lifter stops suddenly during lifting:

6.2.1 Check whether the red trouble indicator on the electric cabinet of each vertical post lights. If one indicator lights, this indicates the safety device of the mother nut is on. At this time, shut off the power supply, remove the front housing plate from the vertical post, and observe whether the mother nut and secondary nut are in right position. If the spiral cord is in normal position of Fig 28, consult an electrician to check whether the wires, cables or plugs are fractured or not.

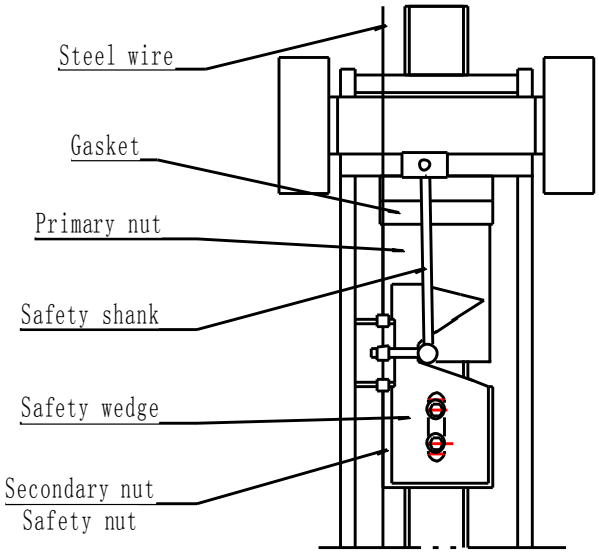


Figure 28 Sketch map for normal position of equipment

6.2.2 If the nut is in position indicated in Fig 29, this indicates the mother nut is damaged, and the safety nut has take the place of the mother temporarily as the supporting nut. Replace the damaged mother nut immediately to avoid danger or vehicle dropping (as the emergency measures, the electrician opens the electric cabinet door, press the contactor directly to drop the vehicle slowly).

6.2.3 If the nut is in position indicated in Fig 29, solve it according to 6.22.

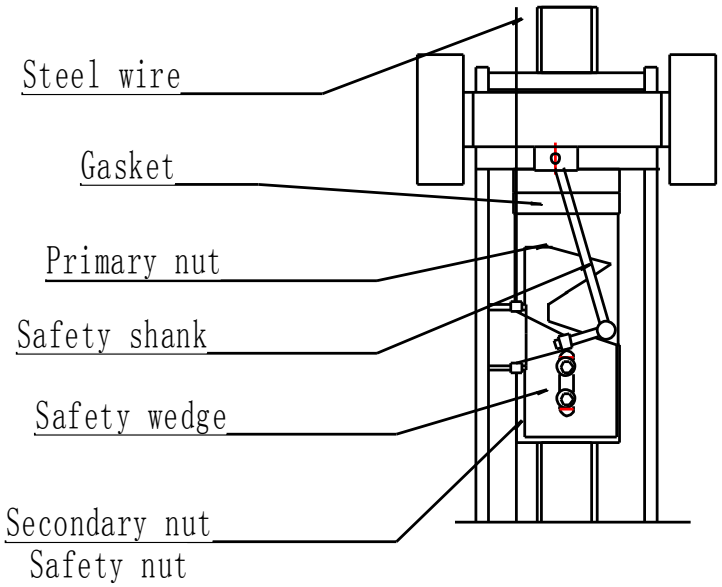


Fig. 29

Sketch map of combination of mother nut and secondary nut and broken mother nut

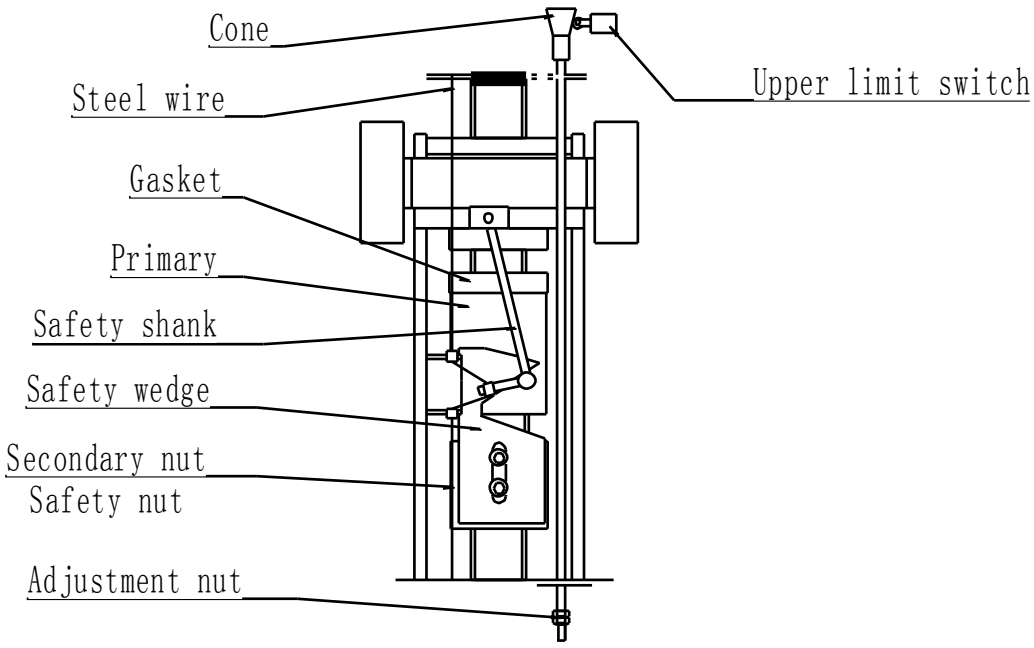


Fig 30

Sketch map for mother nut and secondary nut's getting out of their original position

6.2.4 The trouble light doesn't light when electric cabinets of vertical posts are being checked, press the buttons for ascending or descending alternately to check whether the trouble light lights when the power is on. If the light on one vertical post lights, this indicates the upper or lower terminal stopping switch has operated. You only need to discharge the head hood of the vertical post to check the condition of the terminal stopping switch. If the switch contactor is in loose condition, this indicates the switch is in good condition, and the electrical lines may be in trouble.

Note: The trouble indicator lights only when the dolly is at the highest or lowest position in normal operation!

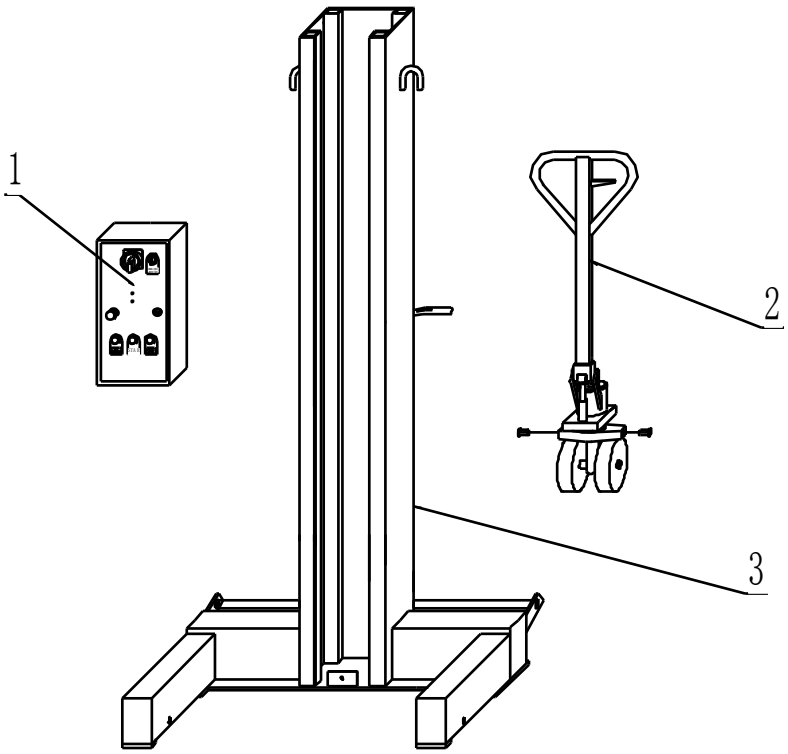
6.2.5 It is not allowed to operate the lifter when it stops during descending or is at the lowest position. At this time, discharge the bolt on top of the face guard and pull the face guard out a bit, then observe the mother nut or secondary nut or touch them by hand. If situation showed in Fig 30 occurs, this indicates the lower terminal stopping switch is invalid or there are foreign substances under the forklift foot. Let the electrician open the electric cabinet door, press the contactor directly to lift the lifter for 5～10cm for elimination of foreign substances.

If it is caused by foreign substances, this indicates that the lower terminal stopping switch fails. It is necessary to discharge the head hood for checking whether the contact between the pyramidal face of the lower terminal stopping pull bar and travel switch is in good condition. If the switch contact head doesn't touch the pyramidal face or the travel isn't sufficient, and the switch lies idle, push the contact head by hand and. A clear and melodious "tick" may be heard which indicates good condition of the switch and insufficient travel. At this time, unscrew the base bolt of the travel switch for 2～3turns, move the travel switch forward until touches the pyramidal face, then tighten the base bolt. If the switch touches the pyramidal face, and travel of the pull bar is insufficient, press the contactor directly to lift the concave forklift feet for 500～600mm. Unscrew the two adjustable nuts under the lower terminal stopping pull bar for 2～3 turns. Press "▼" on the electric panel till it touches the bottom, and press "▲", if there is no reaction, unscrew the

adjustable nut for 2～3 turns for another try according to the above-mentioned method until it ascends by pressing “▲”, finally unscrew the two nuts. Attention! The lowest part of the forklift is about 15mm from the ground.

7. Assembly explosion diagram

1. General structure

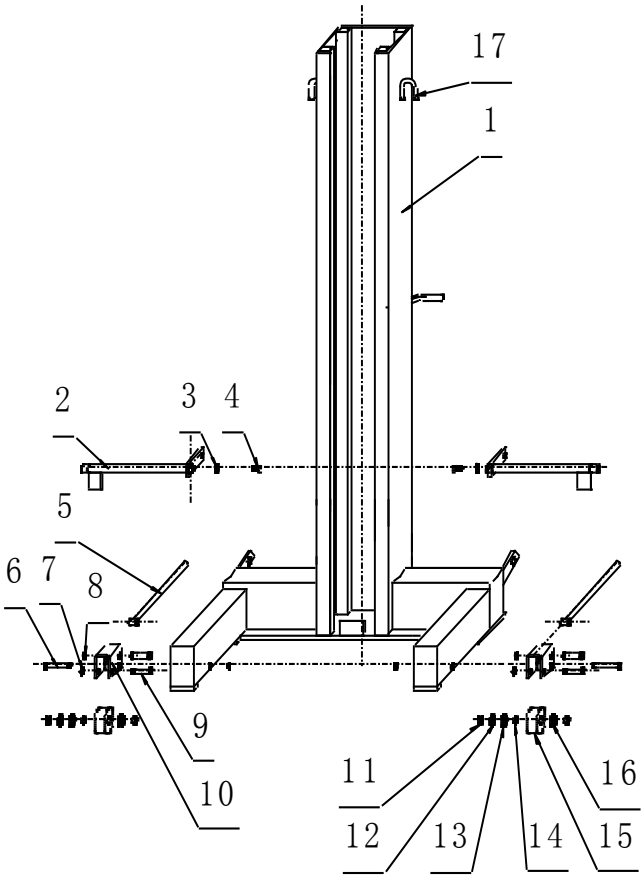


1.1 Electric cabinet

1.2 Hydraulic moving and hauling system

1.3 Vertical post housing

2. Vertical post housing



Supporting frame

2.1 Main body of post housing

2.2 Pole

2.3. Shim

2.4 Outer hexagonal bolt

2.5 Connecting rod

2.6 Pin

2.7 Nut

2.8 Retaining ring

2.9 Bolt

2.10 Wheel seat

2.11 Nut

2.12 Retaining ring

2.13 Bearing

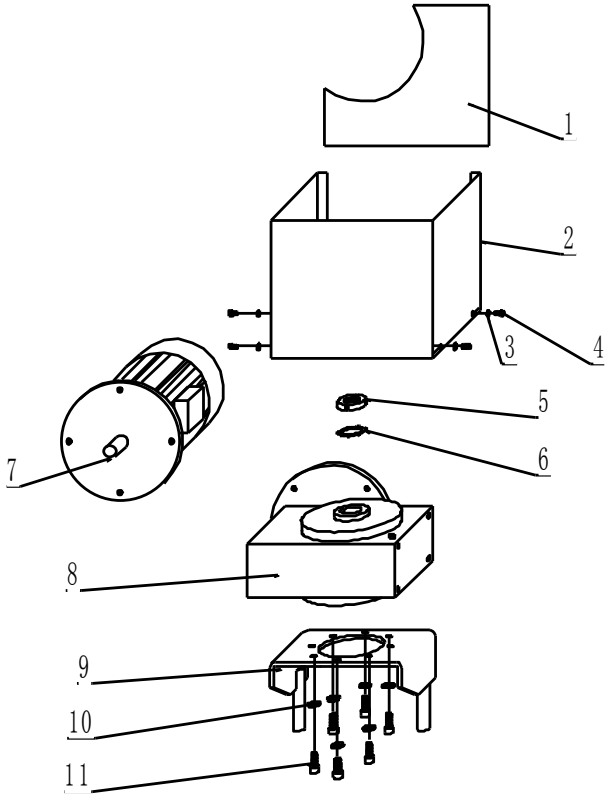
2.14 Sleeve

2.15 Wheel

2.16 Bearing

2.17 Lifting eye

3. Transmission system on top of vertical post



3.1 Cover board of exterior hood

3.2 Exterior hood

3.3 Shim

3.4 Bolt

3.5 Circular nut

3.6 Plum blossom-type fastener

3.7 Electromotor

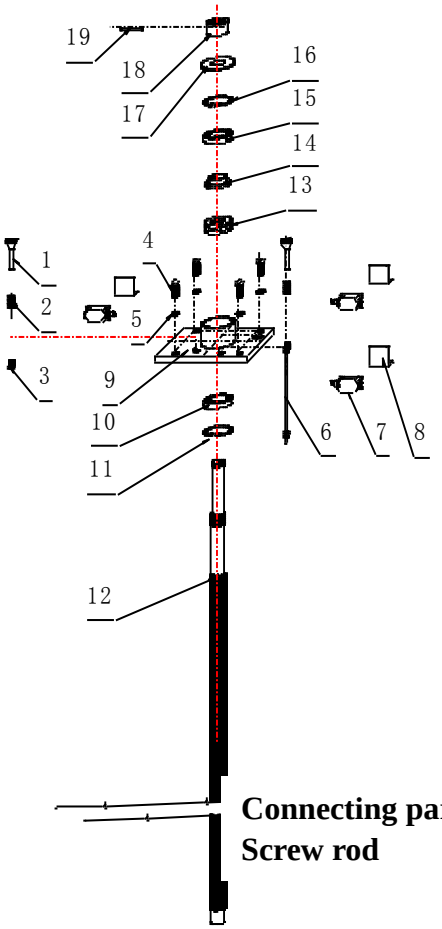
3.8 Speed reducer

3.9 Flashboard

3.10 Shim

3.11 Outer hexagonal bolt

4. Bolt and connecting system



4.1 Safety device

4.2 Spring

4.3 Outer hexagonal bolt

4.4 Outer hexagonal bolt

4.5 Shim

4.6 Terminal stopping pull bar

4.7 Terminal stopping

4.8 Terminal stopping seat

4.9 Ceiling plate

4.10 Bearing

4.11 Fastener

4.12 Screw bolt

4.13 Bearing

4.14 Axial sleeve

4.15 Bearing

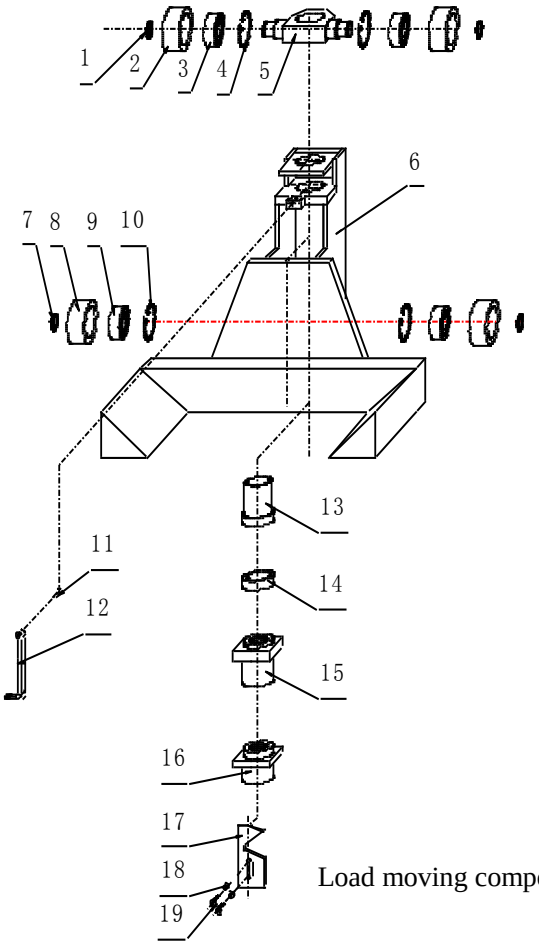
4.16 Retaining ring

4.17 Shim

4.18 Circular nut

4.19 Pin

5. Load moving system



Load moving components

5.1 Retaining ring

5.2 Axial sleeve

5.3 Bearing

5.4 Retaining ring

5.5 Axle

5.6 Main body

5.7 Retaining ring

5.8 Axial sleeve

5.9 Bearing

5.10 Retaining ring

5.11 Pin

5.12 Connecting rod

5.13 Axial sleeve

5.14 Balance pad

5.15 Mother nut

5.16 Safety nut

5.17 Safety wedge board

5.18 Shim

5.19 Allen screw

Space for notes:

EG-declaration of conformity

The company

Twinbusch GmbH
Amperestraße 1
D-64625 Bensheim

declares here with, that the

Combined mobile single vehicle lifts
TW5500-4 und TW5500-6, 22 to. and 33 to.

serial no. _____

in the by us version marketed meets the relevant safety and health requirements, as required by the EC directive(s) in it's current version(s).

EG directive

2006/42/EC Machinery

Applied harmonized standards and regulations

EN 1493:1998+A1:2009 vehicle lifts,
EN 60204-1:2006+A1:2009

CE Certificate No.:

CE-C-1214-09-102-04-5A vom 10.08.2010

Certification body:

CCQS UK Ltd.,
112 London Road, Headington, OXFORD

Any alteration to the equipment, improper use or installation void this declaration.

TWIN BUSCH GmbH
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Michael Glade
Quality Management

EG-declaration of conformity

The company

Twinbusch GmbH
Amperestraße 1
D-64625 Bensheim

declares here with, that the

Combined mobile single vehicle lifts
TW7500-4 und TW7500-6, 30 to. and 45 to.

serial no. _____

in the by us version marketed meets the relevant safety and health requirements, as required by the EC directive(s) in it's current version(s).

EG directive

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