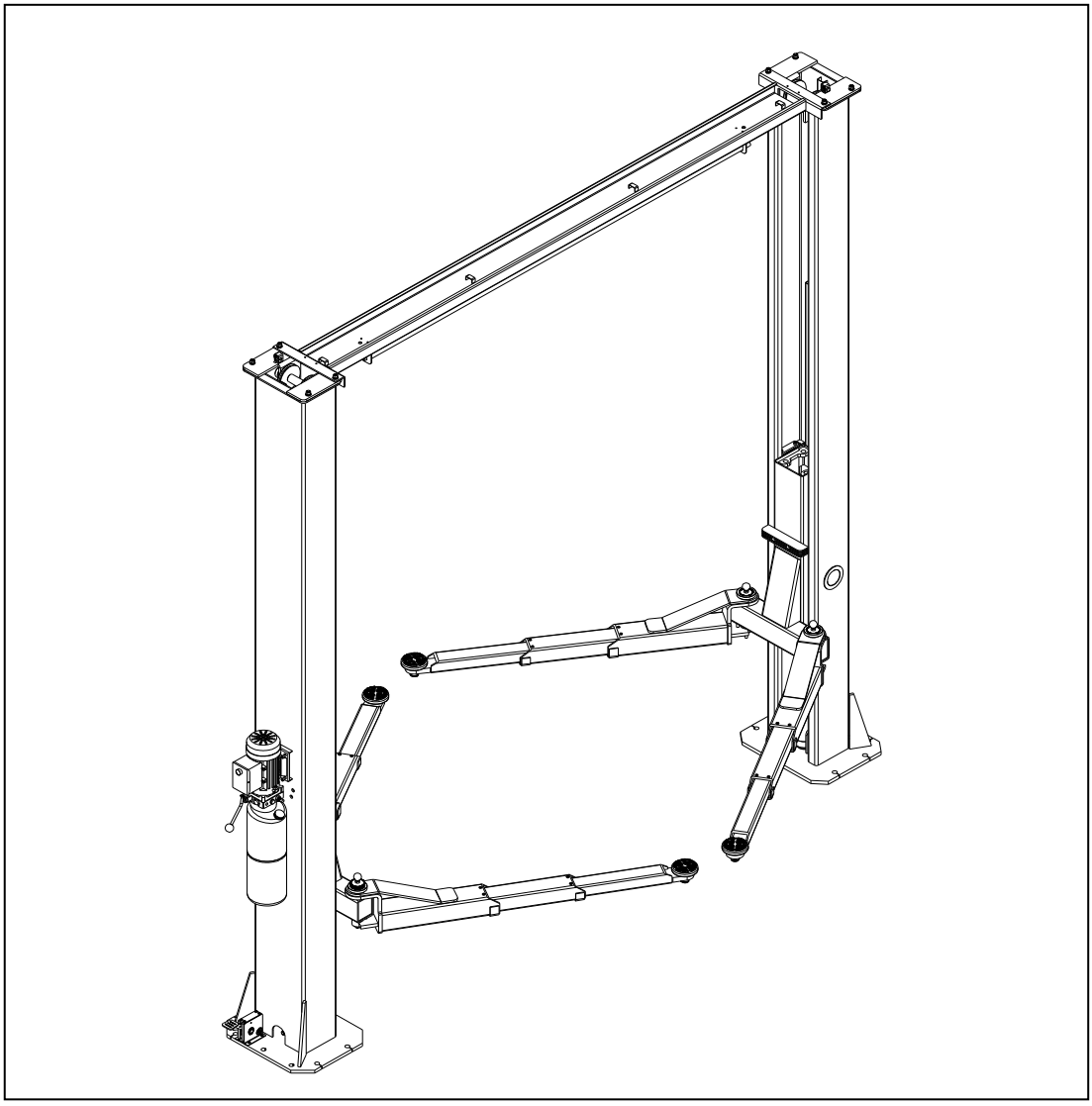
# TWO POST LIFT

# INSTRUCTION & MAINTENANCE MANUAL



## MODEL: 4.5-MP

**Clear Floor Two Post Lift**

**Manual release**

**Lifting Capacity: 4500KG**

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

# Cautions

## Warning

- The manual is indispensable part of the product and please read it carefully.
- Please conserve the manual well for reference in overhaul.
- The machine here shall be only used for the purpose specified in design, never for others.
- The manufacturer never takes any responsibility for damage caused by misuse or other use.

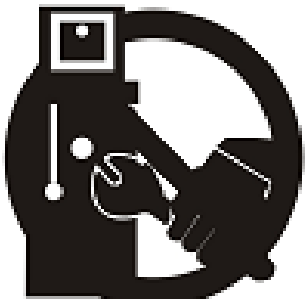
## Cautions

- The machine here must be operated, used or maintained by qualified personnel, who has obtained specialized training, and arbitrary change of machine parts or application scope may result in damage to machine directly or indirectly if there is never approval by manufacturer or the behavior is not in line with the manual.
- Never make lifter in extreme temperature or humid environment. The installation shall be far from water tap, air humidifier or furnace.
- The lifter shall be prevented from much dust, ammonia, alcohol, diluents or spray adhesive and others.
- The person beyond operators shall never approach the machine when the machine is in operation.
- The routine inspection for lifer shall not be conducted when the lifer is in failure or there is damage to parts and the original equipment parts shall be used when the part is repaired or exchanged.
- The lifer shall never be in overload and the rated bearing capacity of lifer is marked on nameplate.
- It is forbidden to hoist the lifer when there is person in vehicle. The client or spectators shall be beyond the lifting scope in operation.
- Make sure that there is no obstacle, grease, machine oil, refuse or other impurities in lifter area.
- Locate bracket arm of lifer to make it in line with hoist point recommended by manufacturer. Hoist the lifer, ensure that bracket arm is in closed contact with vehicle and make lifter rise to proper work height.
- As for some vehicles, the removal (installation) of parts may result in severe gravity shift and instability of vehicle. The vehicle shall be balanced by support.
- Please locate bracket arm of lifer before the vehicle leaves lifting area so as to avoid obstruction in moving.
- Use proper equipment, tools and safety protection facilities, such as, uniform, safety shoes and others.
- Please pay special attention to different safety identifiers on machine.
- It is forbidden to touch moving parts with hands or other parts when lifer is in operation.
- It is forbidden to remove safety device of the machine or makes it useless.
- The hydraulic oil for the machine is N32 or N46 wear-resistance hydraulic oil. Please make sure to use it in safety scope and refer to appendix for safety data.

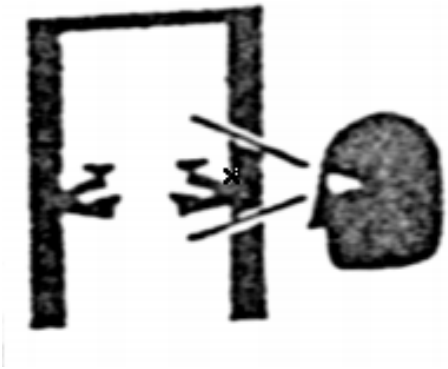
**Illustrations for Warning Signs**

(1)Please carefully read user's manual and service manual

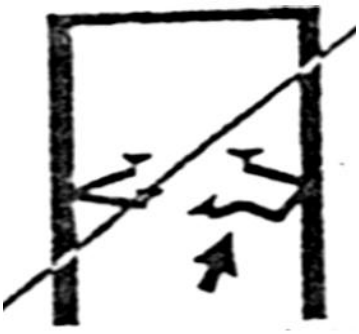
(2)Never adjust safety pressure of hydraulic pump Station of lifter



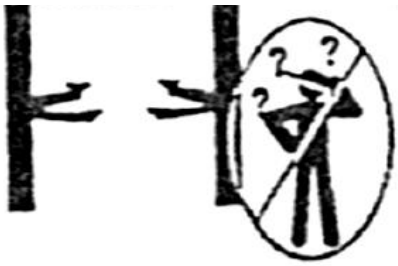
(3)Provide proper maintenance and inspection for safety operation



(4)Forbid operating damaged lifter

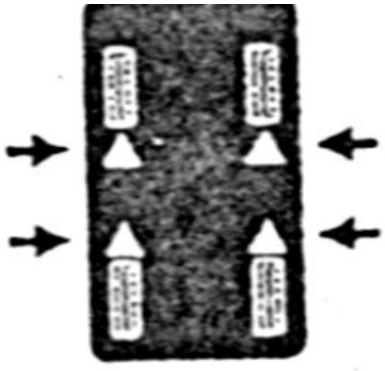


(5)The lifter shall be only used by operator trained



(6)Only authorized person can conduct operation in lifter scope

(7)Use hoist point designated for vehicle



(8)Use safety support at any time when heavy parts are removed or installed.

(9)Auxiliary accessories may reduce

(10)Peripheral regions shall be unlocked when vehicle tilting may occur.

(11)The vehicle must be located by tonnage in manual

(12)There shall not be obstruction around lifter in hoist of falling

(13)Prevent vehicle from excessive swing in hoist

(14)Never make lifter in auto-closing or controller beyond control

(15)The feet must leave lifter when the lifter is in falling

(16)It is forbidden that person stands on bracket arm when lifter is in hoist

# Contents

# 1.Overview and Features

## 1.1 Description for machine model

| Machine name | Description |
|---|---|
| Single unlocking externally large-scale gantry lifter | 4.5T Symmetric 3-stage arm lifter of economical and practical type |

## 1.2 Purpose:

As excellent equipment for automobile hoist with simple operation, safety and reliability, double-column hydraulic lifter of PL series is applicable to various medium and small cars below 4.5T in hoist to conduct maintenance and care for different vehicles.

## 1.3 Functions, overview and features:

As the essence by our company integrating different domestic and overseas categories and models, double-column hydraulic lifter is based upon lots of data argument and long-term fatigue experiment and characterized by stability, reliability, safety, convenience, use of imported components and steady hoist and falling. The large-volume pump station is featured by high speed in hoist and low noise in operation. 4.5-MP is with single pedal release, more convenient for operation. The explosion-proof valve or throttle valve is adopted in hydro-cylinder connector. The machine and hydraulic pressure with double-safety is convenient and safe; it is the best choice for vehicle maintenance, care or washing.

The company can manufacture machines with different hoist height and hoist weight in accordance with clients' requirements.

A. Manual release lifter is with hidden cable and pipeline and its appearance is beautiful and generous.

B. Mechanical safety device based on international standard and manual unlock device is in perfect integration

D. Double-safety self-locking protection device, safe and simple operation.

E. Two steel cables in synchronous connection in use force both sliding ways in synchronous moving to prevent vehicle tilting.

F. Minimum hoist height is 110mm and it is applicable to maintenance of high-grade car.

G. High load bearing chain, safe and reliable.

H. Imported hydraulic components in use.

**The company reserves the right to modify the products without further notice.**

# 2. Main Technical Parameters

## 2.1 Basic parameters for equipment:

| Name / Model | Technical parameter | | | | | |
|---|---|---|---|---|---|---|
| | **Rated load (Kg)** | **Rising and falling time** | **Hoist height** | **Hydraulic oil** | **Electric power** | **Rated oil pressure** |
| PL4.5-MP | 4500 | 40～60S | ≥1850mm | N46# | 2.2KW | 15-16Mpa |

**Note: 1. Voltage: The motor with different voltages can be selected in accordance with client's requirements.**

Single-phase/three-phase: 110V/380V 60Hz

Single-phase/three-phase: 220V/380V 50Hz (standard configuration)

2. The pump station of 220V is adopted and the user must provide power stabilizer to make sure that motor and related electrical components are not damaged for undervoltage.
3. The hydraulic oil may differ much in different regions and seasons. It is proposed that No.46 wear-resistance hydraulic oil be used in 10～40℃ and No. 20＃ wear-resistance hydraulic oil be used in －5～10℃.
4. Environmental requirement:

Working temperature: －5℃～+40℃

Relative humidity: Temperature +30℃,

relative humidity ≤80%

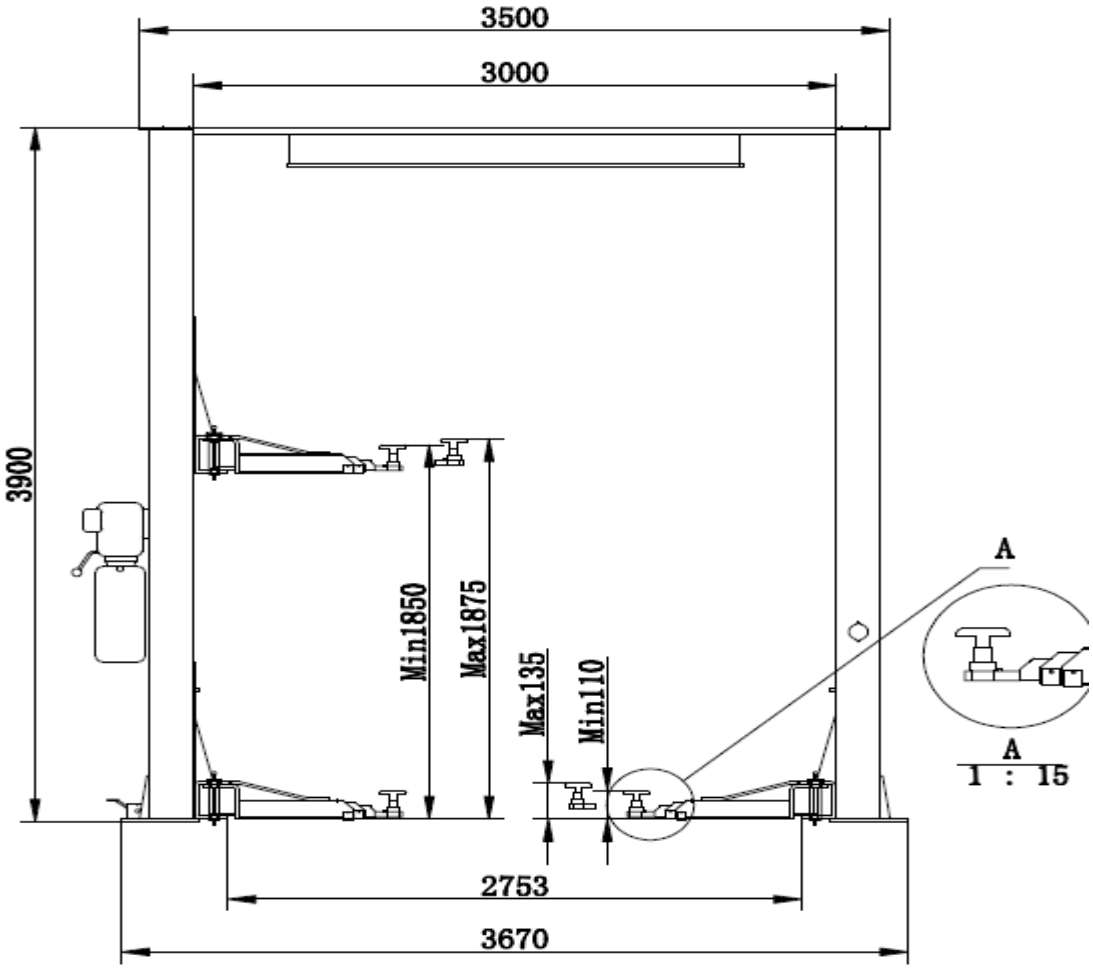
Transport storage temperature: -25℃～+55℃

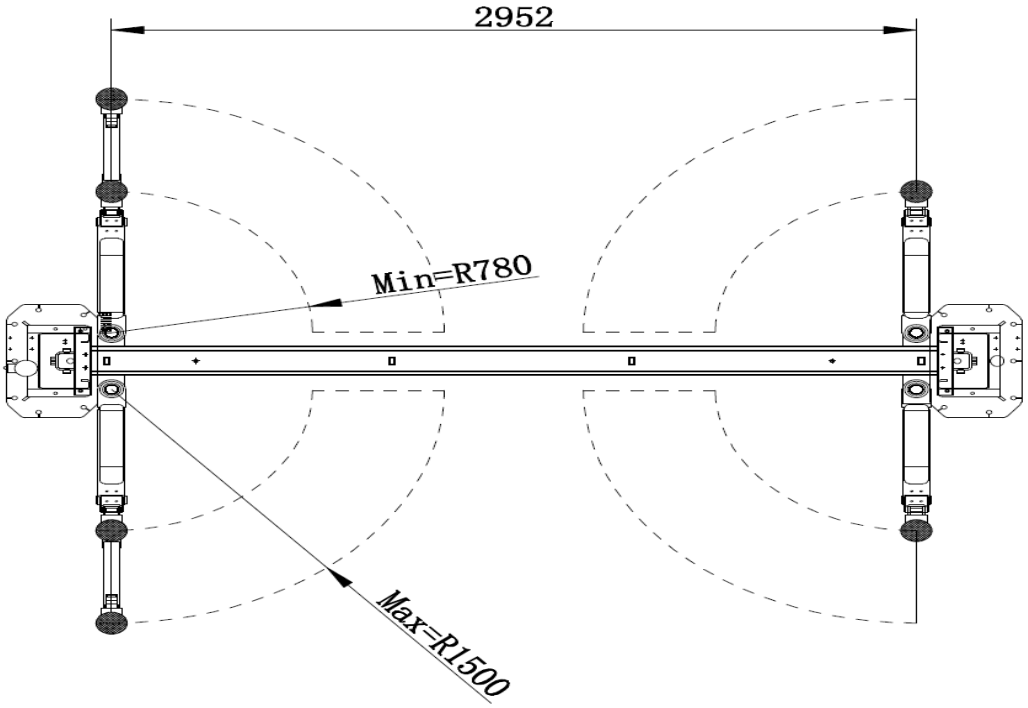
Altitude in use: Up to 2,000m

The noise of the machine in operation shall be below 80dB (A).

# 3. Overall Dimension of Machine

## 3.1. Outline dimensional drawing

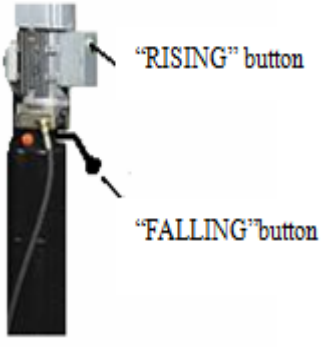


## 4. Machine Structure and Working Principle

The machine is mainly composed of main column, auxiliary column, slide, bracket arm, spindle part, safety device, oil cylinder, chain, dynamic unit, oil pipe, electric cabinet (electric cabinet is only for electric series) and wires. The machine lock and explosion-proof valve as double-safety ensures the safety and the user can use the machine at ease.

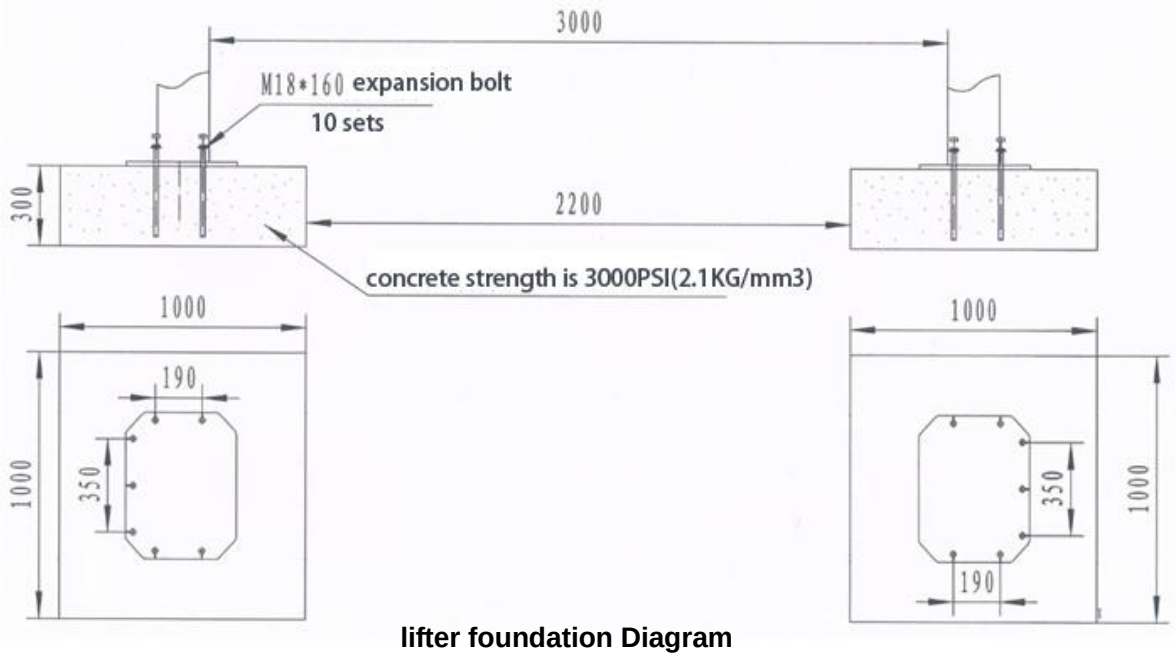
**Driving principle of common lifter:** Press "RISING" button, the contactor is power on, the motor is also power on and in operation, the motor drives oil pump, the hydraulic oil is input to lower cavity of oil cylinder through one-way valve and oil pipe, piston driven by oil pressure pushes oil cylinder to pass steel wire rope and rope wheel set and drags bracket arm for rising so as to complete hoist. When the vehicle is in maintenance, press falling handler, mechanical lock is in safety status and the operator can conduct vehicle maintenance. Press "RISING" button firstly in falling, make machine rise for about 20mm, unlock safety lock and press falling handler to make machine fall.



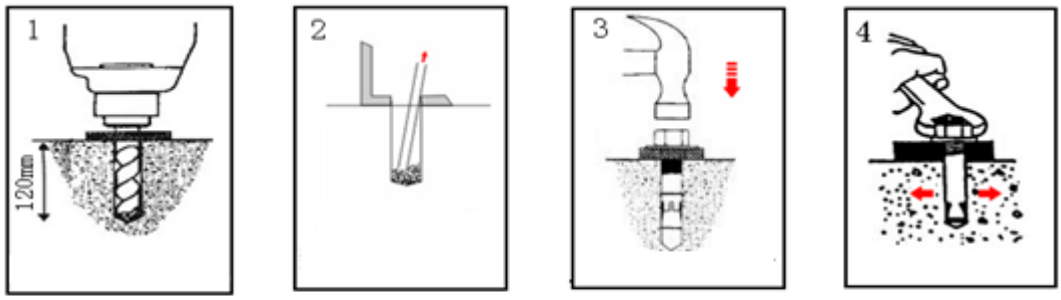

## 5. Equipment Installation and Commissioning

Carefully read the manual, make clear the structure and inspect whether there is damage in transportation or loading& unloading and whether accessories are complete before machine installation. Then the installation and commissioning shall be conducted in procedures as follows. (The product shall never be connected outdoors)

5.1. The equipment shall be installed on the ground where there is no dust, pollution or humidity , the horizontal error is not less than 5mm, the concrete thickness is more than 300mm and the strength is 3,000PSI（2.1Kg/MM2）, basic dimension is 4,000MM long, 1,000MM wide and 400MM deep; It is proposed to add steel bar and consolidate ground fastness. (See foundation installation diagram). The foundation installation diagram shall be selected according to machine type in selection.




**lifter foundation Diagram**




Drill as per regulation and depth shown in figure

Clean dust in hole completely with dust remover or blowing pump

Hit top core screw with hammer

Tighten nut with wrench

**Expansion bolt installation diagram**

5.2. The luminance shall not be lower than 1001X indoors.

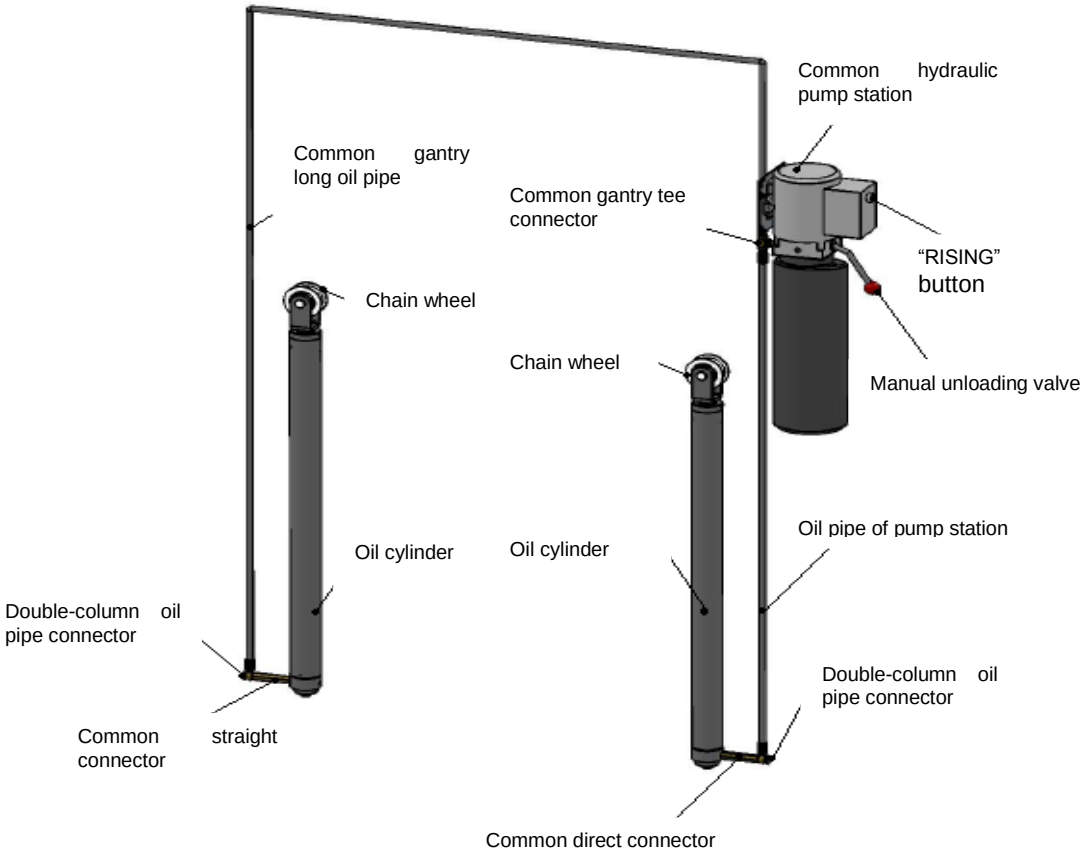
5.3. Ensure installation position and dimension:

Erect both vertical columns (main column with motor mount, used for motor fixing), set pattern backplate in open middle, make both vertical columns on the same straight line, drill hole with impact drill hammer of electric hammer pinch ¢20 and fix both vertical columns with ten M18X160 expansion screws. The vertical column must be vertical to the ground. If the ground is rough, the filling can be conducted with thin block for regulation. The large gantry shall be installed in similar way and gantry frame shall be set in open middle of large gantry respectively so as to keep both vertical columns on the same straight line. The installation dimension is shown in outline dimensional drawing.

5.4. Install and connect synchronous steel wire rope and long oil pipe: remove back plate (**gantry shall be installed in reverse way as shown in steel wire rope installation diagram**), hoist main column on slide, extended synchronous steel wire rope can insert steel wire rope wheel at bottom of auxiliary column through steel wire rope at bottom of main column, after it inserts steel wire rope at the top, fix it at screw hole in square hole of slide with two M16 nuts, hoist auxiliary column and fixed it on slide of main column with steel wire rope on bracket, block up slid slightly when steel wire rope is fixed so as to facilitate adjustment and fixture of steel wire rope screw. Take block away after fixing, inspect whether left slide and right slide at the same height and adjust it to the same level. Both slides shall be on the same surface. Adjust height of left slide in same way, loosen steel wire rope and regulate slide height. However, both steel wire ropes must be tightened, not loose, otherwise, both slides can not be synchronous (**see steel wire rope installation diagram**). Fill butter on steel wire rope, sliding block and sliding way of column and fill engine oil on axis and safety.

Insert long high-pressure oil pipe from bottom of main and auxiliary columns on the ground, connect them with oil cylinder connector respectively and tightly and avoid leakage.

5.5. Hydraulic dynamic pump station: fix hydraulic dynamic pump station on motor mount of main column with four M8X35 hexagon bolts, then connect oil pipe, tighten them and avoid leakage. (See hydraulic system installation diagram).



**Connection diagram for oil pipe connector**

5.6. Fill hydraulic oil:

Fill 46# or 20#wear-resistance hydraulic oil into oil tank (the user shall provide hydraulic oil), the maximum oil level shall be about 10mm from filling opening and minimum oil level shall be about 50mm from filling opening(the inspection shall be conducted with gage rod on filling air cover above oil tank ). It is proposed to use 20＃ wear-resistance hydraulic oil in cold place.

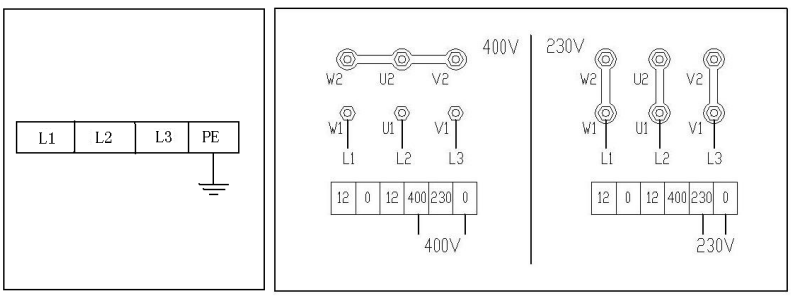
5.7. Install bracket arm: install four bracket arms on the left and right respectively, make long bracket arm and short bracket arm on different sides of column and use short bracket arm in head direction when the vehicle is in hoist.

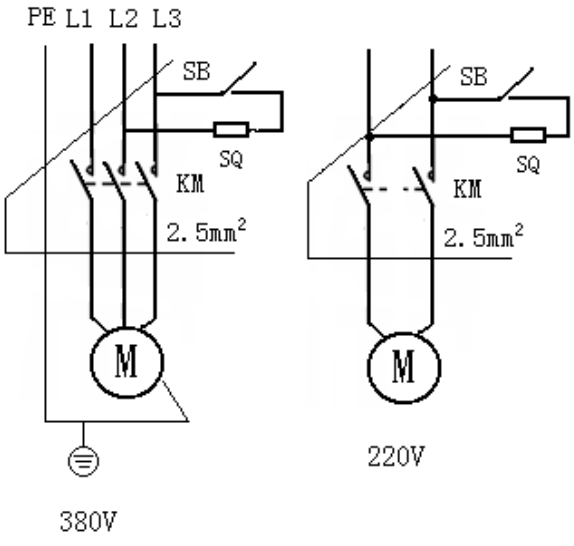
5.8. The safety device shall be installed as shown in safety installation diagram, the flexibility is required after the safety is installed and the safety block shall not be clamped.

⚠ 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 (3×2.5mm$^2$＋1×1.5 mm$^2$ cable) to control panel L1, L2,L3 and incoming terminals; Connect PE ground wire to stud with grounding sign (Figure 21) and stud with grounding sign provided at the bottom of two platforms.
-If it is 230V two-phase power supply, control transformer and wire connection of motor is required to adjust (Figure 22)



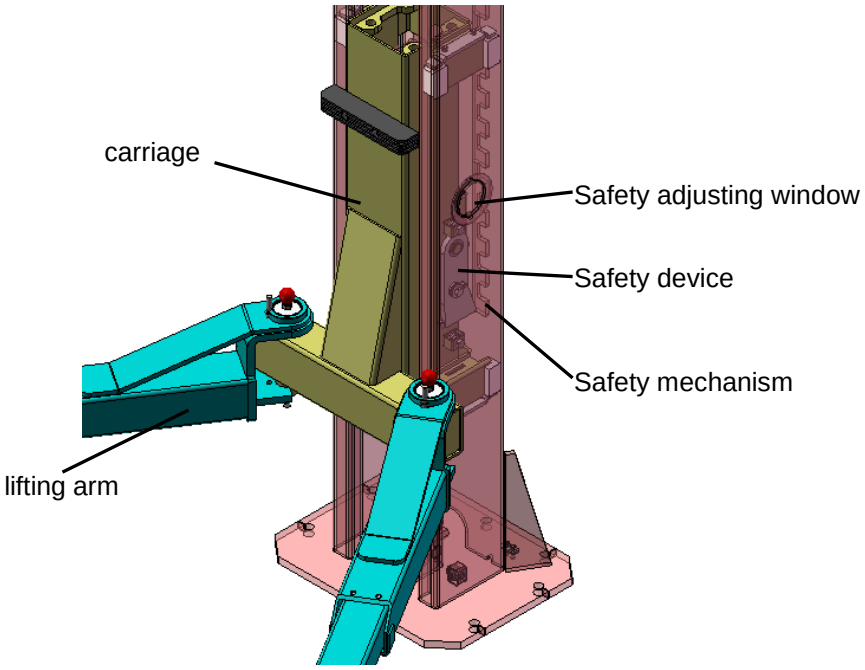



5.9. Cleaning at site: the several times of lifting and falling of lifter and bracket arm shall be repeated to determine whether the operation is normal. If some problems exist, such lifter and bracket arm can be used only after the abnormal phenomenon is inspected and eliminated following above steps. Finally, the cover plate with decorative pattern shall be coated to observe whether lubricating grease is filled to guide surface of column and sliding block. If there is no lubricating grease, proper amount of lubricating grease can be filled. Meanwhile, lubricating grease or oil shall be applied to wheel and axle of upper and lower steel wire rope to reduce wear and prolong service life.

5.10. Load test: lubricating grease shall be applied to each lubricating point and surface. In addition, the inspection on whether oil leakage phenomenon exists in oil-way or whether the foot margin assembly is fasten. After the above is normal, the test can be carried out. The method of load test is identical to no-load test. The load-test ends where there is no noise and leakage and the hoist time and height is compliant with technical parameters after 2~3 times loading is performed.

5.11. After load commissioning, the length of steel wire rope will be slightly extended. Thus, the leveling shall be carried out once again. The machine can be put into use after step 4 is repeated.

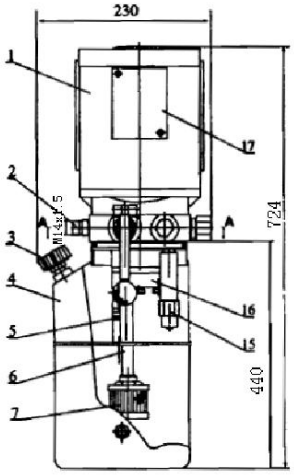
## 6. Safety Mechanism




**Safety mechanism**

Note: upon the use of **MP-4.5**, especially lifting vehicle, our lifter will generate the sound indicating that safety mechanism is locked in its safety. If user hears such sound, it shows that our safety mechanism operates normally. In this case, the lifter can be used in a safe way. If the safety does not generate the sound indicating that safety mechanism is locked, it is not allowed to use machine. In this case, we shall open safety adjusting window, screw down cross screw in safety mechanism till such sound is generated. After the mechanical hoisting, we shall press down manual unloading valve to make safety mechanism locked in its safety. Only then, the vehicle maintenance can be carried out, otherwise, it is not allowed to conduct vehicle maintenance. Upon falling, we shall press down the "RISING" button at first, and then safety rope for two slides can be undrawn. Finally, the manual unloading valve shall be pressed down, and the lifter will descend.

## 7. Hydraulic System




Details for hydraulic pump

1.Motor 2. Delivery connection 3. Oil inlet

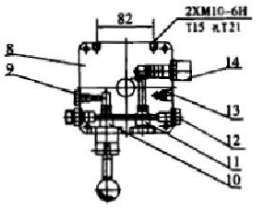
4. Fuel tank 5. Oil filling pipe 6. Oil inlet

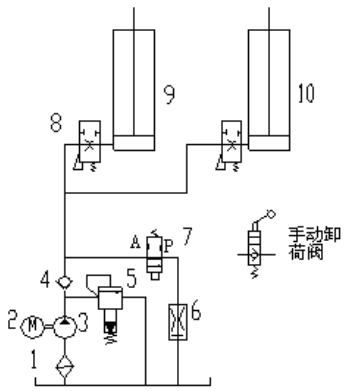
7. Oil filter 8. Valve body 9. Throttle valve for oil return

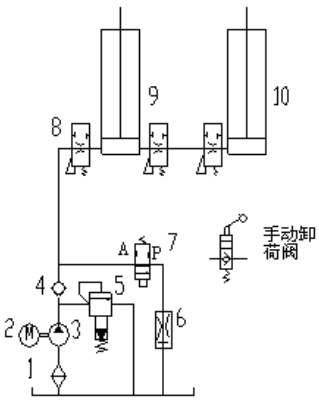
10. Oil drain valve (Electronic oil drain valve)

11. One-way valve 12. Drain plug for oil outlet 13. Drain plug for return opening 14. Turbulence valve 15. Buffer valve 16.Oil pump 17. Junction box

Note: position of 2 and 12 can be mutually replaced.



1. Filter. 2. Motor 3. Gear pump 4. One-way valve 5. Overflow valve 6. Descent velocity regulating valve 7. Electronic unloading valve (manual unloading valve) 8 throttle valve or explosion-proof valve 9. Main oil cylinder 10 Auxiliary oil cylinder

# 8. Operating Instructions

## 8.1. Pre-commissioning

8.1.1 Inspect motors to check whether its power supply is accurately installed or whether it can be normally used.

8.1.2 General 2# lithium base grease (GB7324-87) shall be applied to moving contact surface of slides. It is required that all sliding surface from top to bottom shall be uniformly painted.

8.1.3 Hydraulic oil in oil tank shall be sufficient to use.

8.1.4 Inspect steel wire rope, rope wheel and wheel and axle.

8.1.5 Inspect connecting bolt to check whether they are firm.

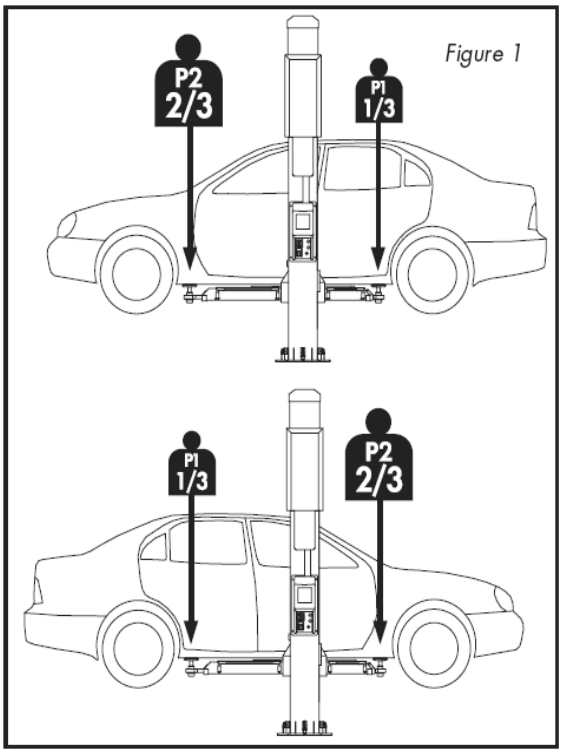
## 8.2. Operating process:

The hoist shall be conducted for 200~300mm before commissioning, depending on whether two slides are synchronous and provided with equal height. Otherwise the commissioning shall be started after adjustment. The vehicle shall be driven to middle part of two vertical columns, and the manual brake of car shall be well pulled. The bracket arms and trays shall be adjusted to make the bearing point to support the bearing surface of car. The inspection on whether there is barrier shall be carried out. Persons shall not approach it or lift with overweight. Press down "RISING" button in control cabinet and connect contactor. After the motor powers up, the hydraulic oil will be extracted. In addition, such hydraulic oil will be flowed into oil cylinder via high-pressure oil pipe. With the oil pressure, oil cylinder propels piston and piston rod. In this case, slides and bracket arms start to rise. Upon vehicle maintenance, the lock button shall be pressed down. In this case, solenoid valve for oil return powers on and oil return valve is opened. The slide descends if the pressure of oil-way is lost. Safety block will reset under the effect of spring and self-weight. Meanwhile, the slides are locked. Upon the completion of vehicle maintenance, the "down" button shall be pressed down. After the lifter is lifted for 2 seconds, the safety will be opened to allow lifter descend. The operation will be ended.

## 8.3. Cautions:

8.3.1 Each kind of automobile differs in centre-of-gravity position. Centre-of-gravity position of automobile shall be understood at first. When automobile enters the lifter, the center of gravity shall get close to plane formed by both vertical columns. The rocker arm shall be adjusted to allow bearing point to be on bearing surface

of car.



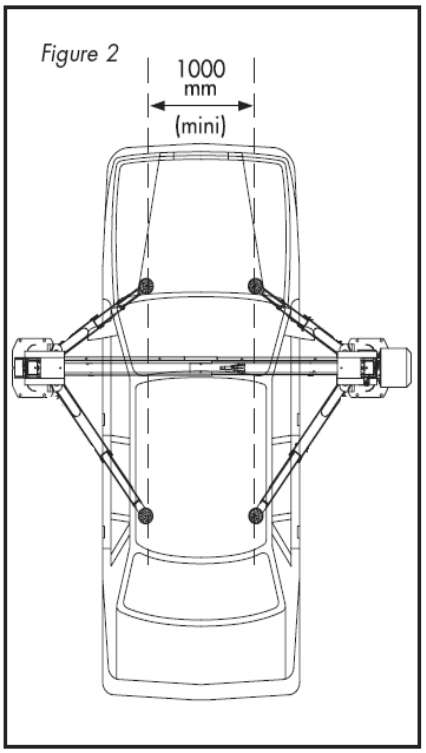
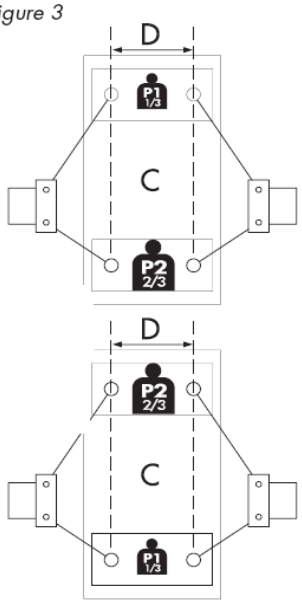




Figure 3




| Lift | D | P2 (2/3) | P1 (1/3) | C=P1+P2 |
|---|---|---|---|---|
| 3. 2T | 710 mm | 1675 kg | 840 kg | 2515 kg |
| | 800 mm | 1800 kg | 900 kg | 2700 kg |
| | 900 mm | 1920 kg | 960 kg | 2880 kg |
| | 1000 mm | 2140 kg | 1060 kg | 3200 kg |
| 3. 5T | 710 mm | 1890 kg | 940 kg | 2830 kg |
| | 800 mm | 2020 kg | 1010 kg | 3030 kg |
| | 900 mm | 2160 kg | 1080 kg | 3240 kg |
| | 1000 mm | 2400 kg | 1200 kg | 3600 kg |
| 4. 0T | 710 mm | 2100 kg | 1040 kg | 3140 kg |
| | 800 mm | 2250 kg | 1120 kg | 3370 kg |
| | 900 mm | 2400 kg | 1200 kg | 3600 kg |
| | 1000 mm | 2650 kg | 1350 kg | 4000 kg |
| 5. 0T | 710 mm | 2620 kg | 1310 kg | 3930 kg |
| | 800 mm | 2750 kg | 1375 kg | 4125 kg |
| | 900 mm | 3000 kg | 1500 kg | 4500 kg |
| | 1000 mm | 3350 kg | 1650 kg | 5000 kg |
| 6. 0T | 710 mm | 3140 kg | 1570 kg | 4710 kg |
| | 800 mm | 3370 kg | 1680 kg | 5050 kg |
| | 900 mm | 3600 kg | 1800 kg | 5400 kg |
| | 1000 mm | 4000 kg | 2000 kg | 6000 kg |

8.3.2 Pay attention to warning signs

8.3.3 Maintenance and care for lifters shall be undertaken by operators having been trained. Lubricating oil shall be applied to all axis of the machine for once a week via engine oil container. In addition, lubricating grease shall be applied to moving parts including safety rack and block and sliding for once a week. Hydraulic oil shall be replaced once a year. The oil level shall be kept at upper limit for a long period of time. Upon replacing hydraulic oil, old oil in oil tank shall be released.

Upon filling new oil, such oil shall be filtered with oil filter. For each shift, the inspection on whether the safety device is flexible and reliable shall be carried out.

8.3.4 Moving condition of steel wire rope shall be normally observed. If there is damage, such steel wire rope shall be replaced in time.

8.3.5 The oil-way (such as oil cylinder, oil pipe and connector) shall be frequently observed.

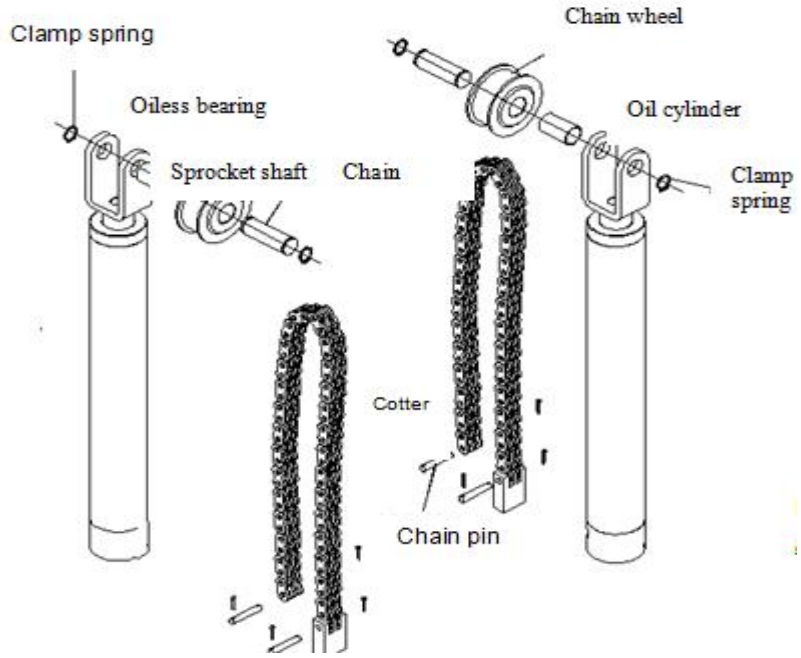
8.3.6 Before leaving factory, the hydraulic valves have been well adjusted. Thus, users shall make every effort possible to voluntarily adjust; otherwise, all consequences shall be undertaken by users.

## 9. Care and Maintenance

**Maintenance on mechanical system：**

▲ This machine shall be wiped and cleaned with dry cloth, for the purpose of keeping clean. Prior to wiping and cleanup, the power supply shall be cut off to guarantee the safety.

▲ Working environment of this machine shall be normally cleaned. If there is too much dust in working environment, machine wear will be sped up, and its service life will be shortened.




**Every day**

▲ Inspection on whether the connection between hydraulic cylinder and slides is normal or whether connection between chain and slides is loosen or dropped shall be performed.

▲ The inspection on whether wire rope connection presents normal tensile force or is in optimum state.

**Every week:** ▲ General 2# lithium base grease (GB7324-87) shall be applied to moving contact surface of vertical columns of slide blocks. It is required that all sliding surface from top to bottom shall be uniformly painted.

▲ Note: within one month upon initial use, general lithium base grease shall be applied to moving contact surface of vertical columns of slide blocks twice a week.

**Every month:** ▲Foundation bolt shall be screwed down once again.

▲Lubricate and tighten up steel wire rope of chain.

▲ Inspect all hydraulic pipes to check whether the wear exists.

▲ Inspect the movement inside the column of slipway slides to check whether the accurate lubricating is performed. High-quality lubricating grease (lithium base grease (GB7324-87)) shall be used.

▲ Inspect all dowels, bolts, clamp springs and other parts to check whether the connection is normal or tightened.

Note: all foundation bolts shall be securely tightened. If some screws are damaged and do not work, the lifter shall be closed till the bolts are replaced.

**Every six months ▲ Inspect wear, interference or damages may be caused to moving parts.**

▲ Inspect lubricating condition for all pulley wheels. If the dragging phenomenon occurs upon rising and falling period, appropriate amount of lubricating oil shall e applied to wheel shaft.

▲ The balanced tensile force shall be inspected and adjusted to guarantee the horizontal rising and falling.

▲Verticality of vertical columns shall be inspected.

Note: lubricating oil shall be applied to interior angle for each vertical column to make friction of slide block reduce to minimum and guarantee uniform hoist.

**Maintenance for hydraulic system**

**Cleaning and oil change**

▲ After the machine is put into initial use for six months, the hydraulic oil tank shall be cleaned and oil shall be replaced. Later, the hydraulic system shall be cleaned once a year. Meanwhile, the oil shall be replaced.

**▲ Replacement of sealing elements**

After this machine is put into use for a period of time, careful inspection shall be made if oil leakage phenomenon is found. If the oil leakage phenomenon is caused by wear of sealing materials, such sealing materials shall be timely replaced in accordance with original specification.

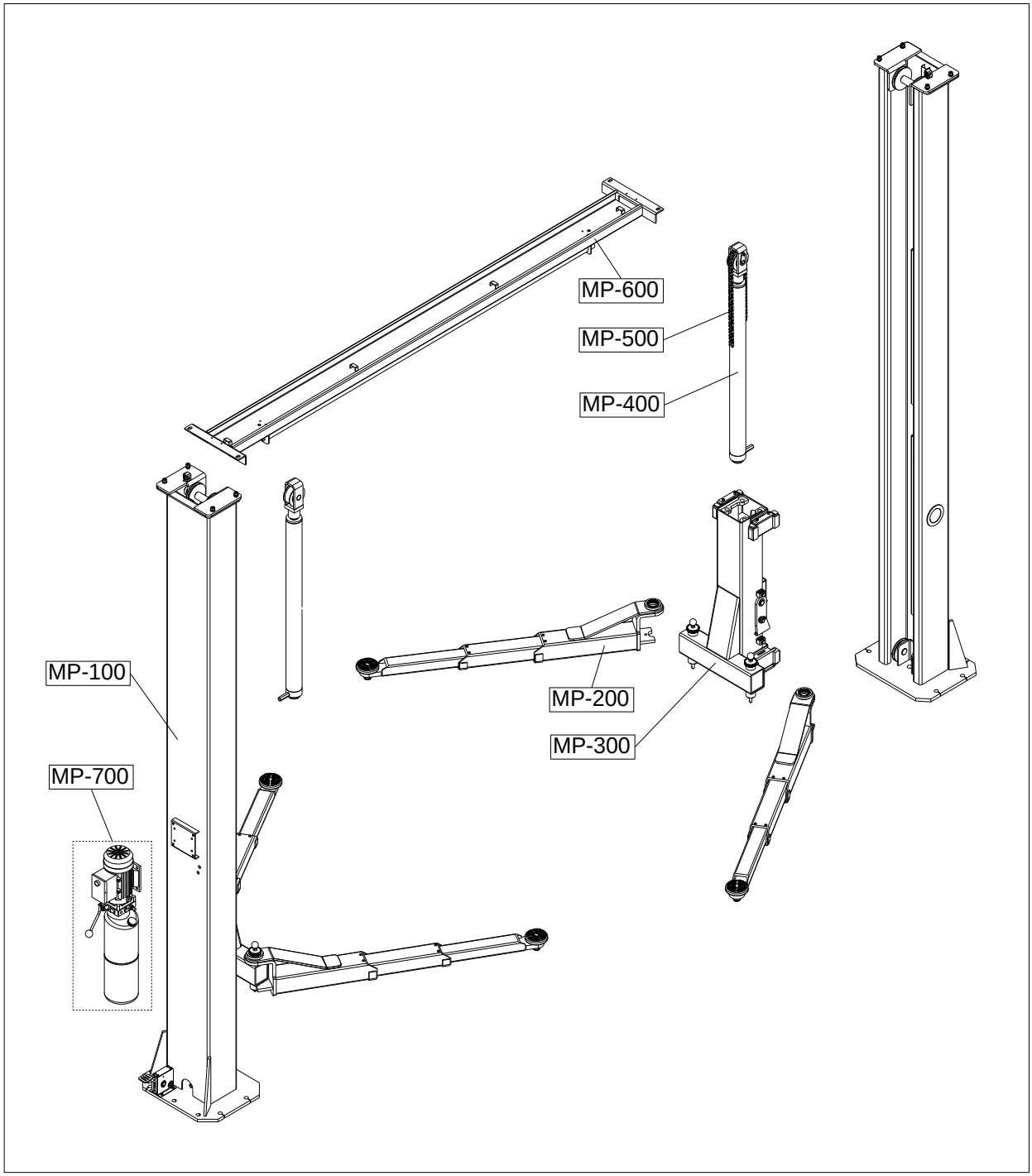
# 10. Faults and Troubleshooting

| Fault phenomenon | Reasons | Troubleshooting |
|---|---|---|
| Motor fails to rotate upon rising | 1. There is wire break of button switch.<br>2. Short-circuit occurs in coil of AC connector occurs.<br>3. Limit switch is damaged | 1. Inspect the circuit of button switch<br>2. Inspect the circuit of AC connector<br>3. If the faults are eliminated after the terminals connecting limit switch is short connected via wire, such limit switch and shall be inspected. Meanwhile, limit switch shall be adjusted or replaced.<br>4. Replace limit switch |
| Motor generates sound but fails to rotate | Default phase of three-phase supply | The rotation shall be stopped immediately. Meanwhile, the inspection on major loop of motors shall be performed to check whether wire break or loss of loop occurs in such loop. |
| Motor can rotate but the working platform fails to rise. | 1. Incorrect motor direction of turning.<br>2. Insufficient hydraulic oil.<br>3. Air is filled in the pump due to transport and other reasons, making air-plugging phenomenon occur.<br>4. Overflow is out of work<br>5. The oil return solenoid valve plug is jammed with dirt.<br>6. The sealing of oil outlet of oil pump is damaged.<br>7. The work of motors is heavy and vibratory. Outside screen of oil filter is seriously jammed. | 1. Change phase sequence of motors.<br>2. Supplement and discard hydraulic oil.<br>3. Remove one-way valve, and the inching rises (attention shall be paid to oil injection). Upon the oil flowing out of the hole, the one-way valve shall be well assembled (tighten up).<br>4. Inspect the condition of sealing and sealing elements of overflow valve plug; clean valves or replace damaged seal ring.<br>5. Inspect oil return solenoid valve and clean valve plug.<br>6. Gear pump can be removed to inspect and replace seal rings.<br>7. Clean filter. |
| Rising velocity is too slow | Oil leakage phenomenon occurs due to the damage to oil outlet of oil pump | See above |
| Upon operation, the vibratory phenomenon occurs. | 1. Air exists in hydraulic circuit.<br>2. Air leakage exist in upper connector of oil suction pipe of oil pump.<br>3. Filter is jammed. | 1. Vent by operating up and down repeatedly.<br>2. Check the connecting and sealing condition of the oil suction pipe.<br>3. Clean oil filter. |
| Lifter can rise but fail to fall | 1. Poor contact of the internal button switch.<br>2. Lock cylinder fails to be separated from the plate.<br>3. The clearance between the column and beam is too narrow. | 1. Disassemble to remove the problem.<br>2. Shorten the lock cylinder rod to lock cylinder to get rid of the square rack when the lock bar is placed in the locking position.<br>3. Adjust the clearance between the column and the beam. |

## 11. Safety Cautions

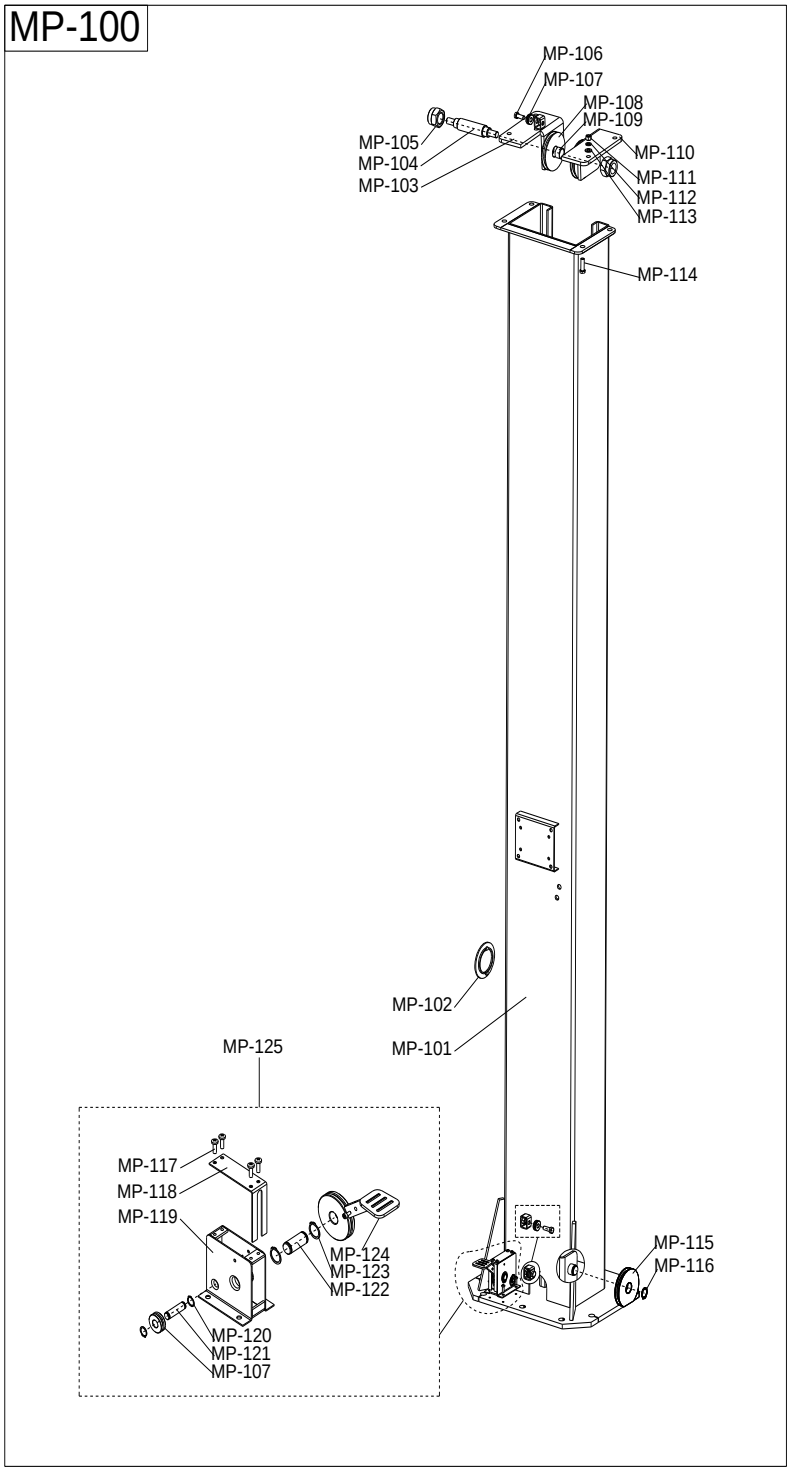
1. The user's manual must be carefully read before use of machine and it is forbidden to operate the machine by personnel who never read the manual.
2. The barriers around lifter shall be removed before work.
3. The person shall never stand around lifter in rising and falling process and there shall be no person in vehicle in rising or falling.
4. The weight of vehicle capacity can never be beyond lift capacity of the lifter.
5. The manual brake of vehicle must take effect in hoist and the hoist can be conducted when locking arm device is in normal status.
6. The maintenance operation can be conducted when it is ensured that both safety blocks enter square rack.
7. The power shall be off when lifter is not used.
8. After the lifter is used for a period, steel wire rope will be strengthened in different degree so as to lead to unbalance of two slides. The nut of steel wire rope shall be adjusted at this moment until there is equal height and synchronization.
9. The machine shall be maintained seriously based upon the manual and the main parts shall be inspected and maintained often.
10. The equipment in use shall be equipped with firefighting device, such as, extinguisher (the user shall provide it).
11. The protection switch of 10A (the user shall provide it) must be mounted at input power of 380V for the machine and the switch shall be in 50meters.

# 12. Explosion drawing



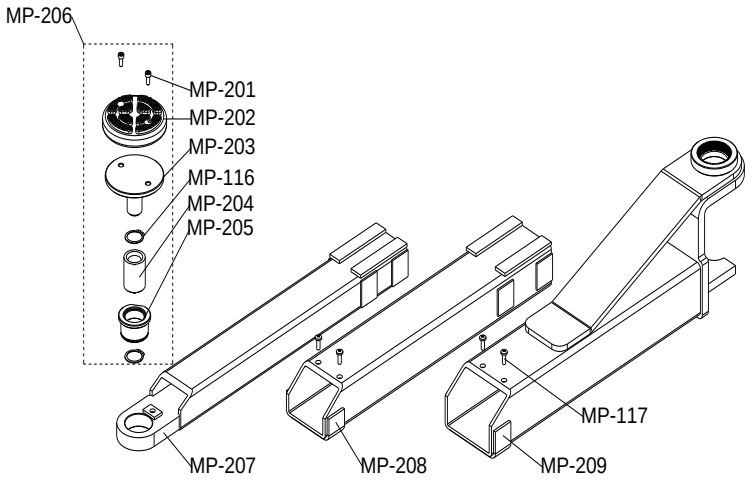

| | |
|---|---|
| MP-100 | complete column assembly |
| MP-200 | complete lifting arm assembly |
| MP-300 | complete carriage assembly |
| MP-400 | complete oil cylinder assembly |
| MP-500 | chain |
| MP-600 | complete cross beam assembly |
| MP-700 | complete power unit assembly |

MP-100



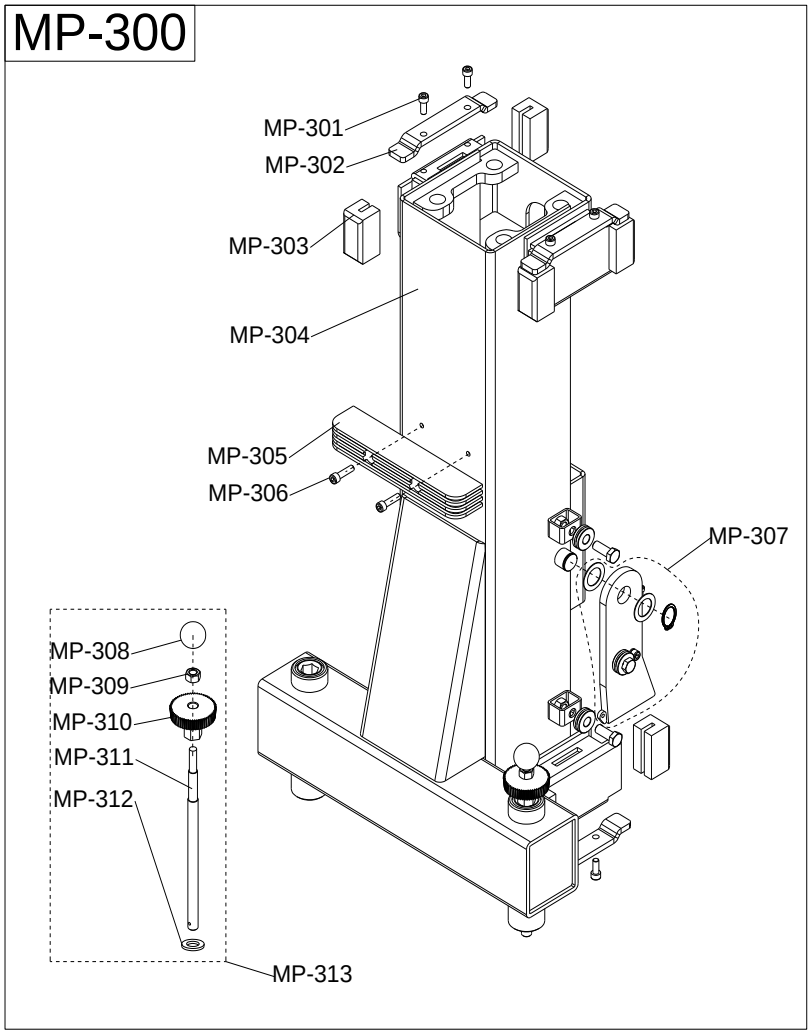

| | |
|---|---|
| MP-101 | column |
| MP-102 | column cover |
| MP-103 | top plate(left) |
| MP-104 | steel cable shaft |
| MP-105 | locking nut |
| MP-106 | hex bolt M12X30 |
| MP-107 | insurance rope pulley |
| MP-108 | steel cable pulley(up) |
| MP-109 | oilless bearing |
| MP-110 | top plate(right) |
| MP-111 | hex nut M12 |
| MP-112 | spring washer Ø12 |
| MP-113 | flat washer Ø12 |
| MP-114 | hex bolt M12X40 |
| MP-115 | steel cable pulley(down) |
| MP-116 | shaft snap ring Ø30 |
| MP-117 | cross round head screw M6X20 |
| MP-118 | cover plate |
| MP-119 | pedal box |
| MP-120 | shaft snap ring Ø12 |
| MP-121 | small shaft Ø12 |
| MP-122 | shaft of insurance cable pulley |
| MP-123 | shaft snap ring Ø20 |
| MP-124 | insurance cable pulley(pedal) |
| MP-125 | complete pedal box assembly |

## MP-200



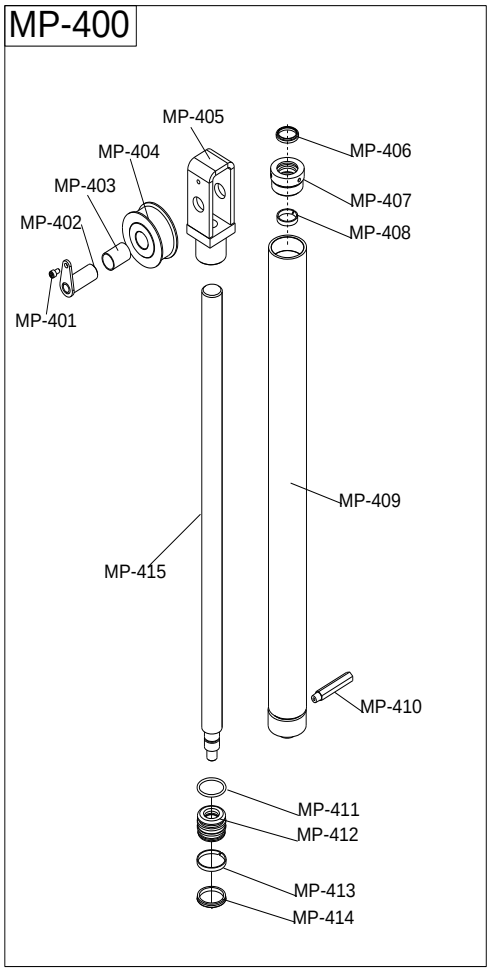

| | |
|---|---|
| MP-201 | hex socket head cap screw M16X16 |
| MP-202 | rubber lifting pad |
| MP-203 | lifting tray |
| MP-204 | swivel nut |
| MP-205 | inside swivel nut |
| MP-206 | complete tray assembly |
| MP-207 | lifting arm 1 |
| MP-208 | lifting arm 2 |
| MP-209 | lifting arm 3 |

## MP-300



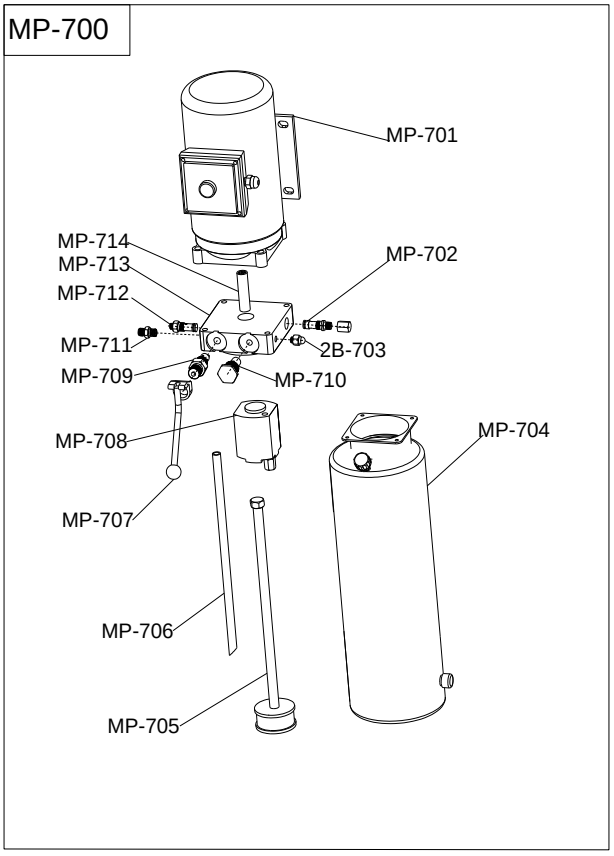

| | |
|---|---|
| MP-301 | hex socket head cap screw M8X20 |
| MP-302 | pressed plate |
| MP-303 | sliding block |
| MP-304 | carriage |
| MP-305 | protection rubber pad |
| MP-306 | hex socket head cap screw M8X25 |
| MP-307 | complete lock device assembly |
| MP-308 | rubber ball |
| MP-309 | hex nut M12 |
| MP-310 | card lock |
| MP-311 | pull rod |
| MP-312 | flat washer Ø15 |
| MP-313 | complete pull rod assembly |

MP-400

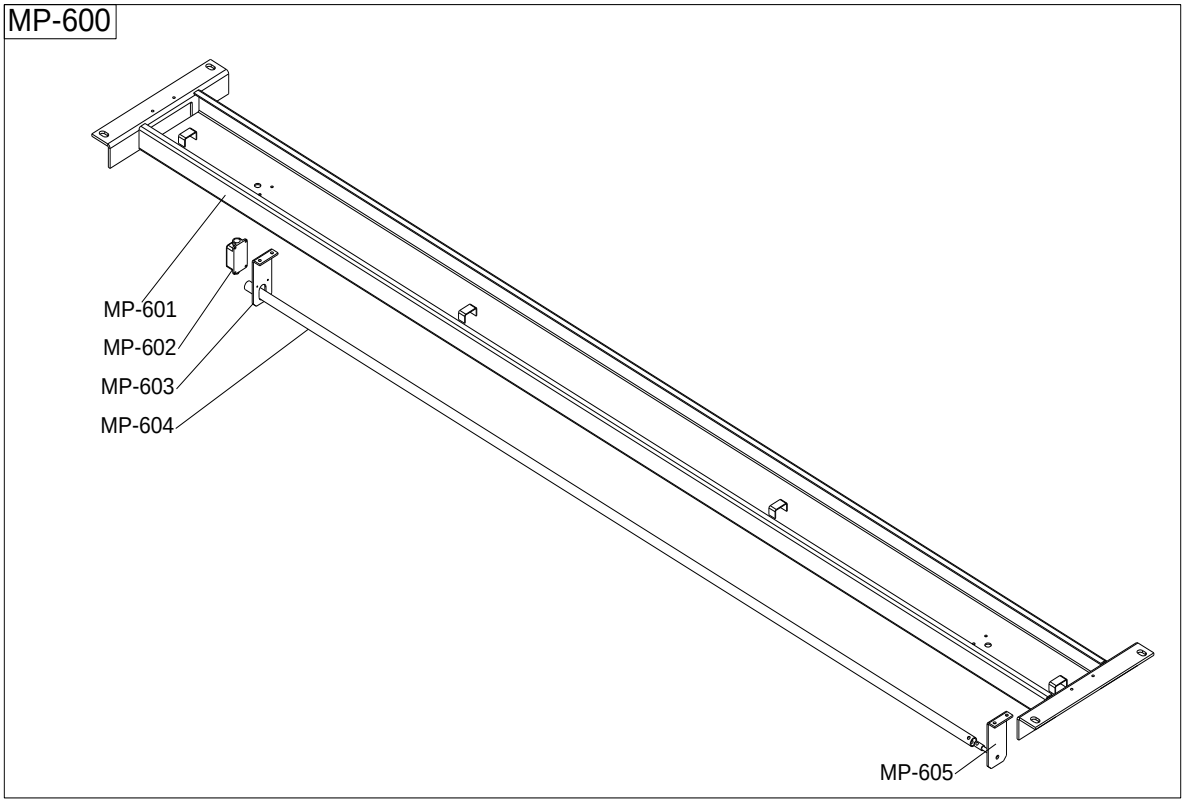



| | |
|---|---|
| MP-401 | hex socket head cap screw M8X12 |
| MP-402 | rotation shaft |
| MP-403 | oilless bearing |
| MP-404 | chain wheel |
| MP-405 | chain wheel support |
| MP-406 | Dust-proof ring 40*52*5mm |
| MP-407 | Oil cylinder cover |
| MP-408 | Guided ring 40*9.5*2.5mm |
| MP-409 | Oil cylinder |
| MP-410 | Oil hose connector |
| MP-411 | O-ring 63*5.7 mm |
| MP-412 | Piston |
| MP-413 | Guided ring 63*8*2 |
| MP-414 | Y-ring 63*53*8mm |
| MP-415 | Piston rod |

MP-700




| | |
|---|---|
| MP-701 | Motor |
| MP-702 | Overflow valve |
| MP-703 | Plug |
| MP-704 | Iron oil tank |
| MP-705 | Oil absorbing pipe |
| MP-706 | Oil back pipe |
| MP-707 | Lowering handle |
| MP-708 | Gear pump |
| MP-709 | Unloading valve |
| MP-710 | One-way valve |
| MP-711 | Oil hose connector |
| MP-712 | Throttle valve |
| MP-713 | Valve seat |
| MP-714 | Annectent spinde |




| | |
|---|---|
| MP-601 | cross beam |
| MP-602 | limit switch |
| MP-603 | fixed seat 1 |
| MP-604 | round steel hose |
| MP-605 | fixed seat 2 |