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1. Abstract

QJY3.0-D double-cylinder hydraulic jack is a new type of hydraulic drive vehicle elevator equipment developed by our company recently. It is designed briefly and reasonably. It select hydraulic power unit, having merits of low noise, smooth rise-and-fall. The machine has elevator carriage, safety device guard against falling, qualification equipment for ultimate load, lock equipment of revolution angle of lift arm, and the forced same step of the steel wires of elevator carriage.

Lower elevator carriage makes it have strong flexibility and convenient operation. It is the necessary elevator equipment in the vehicle industry.

2. Use

The machine can be used in elevating saloon car, beach wagon, and station wagon which have lower than 3000kg deadweight. It fixes them at operational height needed in order to repair, service and clean.

3. Profile
4. Basic structure of product

The machine mainly has double-pole, double oil cylinders, hydraulic power unit, elevating carriage, steel wire in-step equipment, safety mechanism, and rotation-angle lock equipment of lift arm which can be operated simply.

When you push the switch on the electric motor of hydraulic power unit, the machine will rise. If you loosen, it will stop. If you want to fall it down, you must pull the safety unlocked wire to apart the safety bracing plate from the safety seat firstly, and open the handle bar on the hydraulic power unit.

Gyration lift arm is telescopic and rotatable. Height of pallet can be adjusted in order to meet the different need of different kinds of vehicle. Our company can customize the machine with high pallet.
5 Primary technical parameter

<table>
<thead>
<tr>
<th>Style</th>
<th>Lift mass(kg)</th>
<th>Lift height(mm)</th>
<th>Lift time(s)</th>
<th>Fall time(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QJY3.0-D</td>
<td>3000</td>
<td>&gt;1700</td>
<td>&lt;50</td>
<td>&gt;20</td>
</tr>
<tr>
<td>Gantry crane</td>
<td>3000</td>
<td>&gt;1700</td>
<td>&lt;50</td>
<td>&gt;20</td>
</tr>
<tr>
<td>Working voltage (V)</td>
<td>Complete appliance height (mm)</td>
<td>Complete appliance width (mm)</td>
<td>Frame effective width (mm)</td>
<td>Complete appliance weight (kg)</td>
</tr>
<tr>
<td>220</td>
<td>2830</td>
<td>3280</td>
<td>2690</td>
<td>650</td>
</tr>
<tr>
<td>220</td>
<td>3680</td>
<td>3490</td>
<td>2900</td>
<td>780</td>
</tr>
</tbody>
</table>

Note: the user using 380v power source must match voltage regulator self in order to avoid unstable voltage and damage for which user must responsible.

6. Safety device

The machine has safety device guard against crack falling, no-pressure protection defending oil pipe overload, lift carriage in-step forced by steel wire equipment, and revolution angle lock equipment of lift arm.

Safety bracing plates are designed on the left and right lift carriages. When lift pallet rise, safety bracing plate dragged by spring jumps in the safety block of pole. When stop the rise, safety bracing plate dragged by spring is on the safety block and defends carriage falling. If the carriage would fall, crawling the hydraulic pump switch make the carriage rise a little firstly. Then draw the unlocked line on the left and right carriage in order to draw safety bracing apart from safety seat. Last, open the pressure relief valve on the hydraulic pump to make the carriage fall.

The left and right carriages are in-step forced individually by the two steel wires. If the left and right carriages are not at the same level, the length of wires should be adjusted. In order to make them at the same level, we must tighten the wires and assure them unloosened. Otherwise, they can’t be in-step.

Lock devices are installed on the four lift arms in order to lock automatically at any angle work need. When carriage is at the bottom, lift arm can rotate freely.
7. tallation and debugging

1. Ground demand: The ground on which the jack will be installed should be prefabricated, and be maintained dry not less than 15 days in order to assure the concrete has enough intensity. Basic dimension: length as 4000mm, width as 1000mm, depth as 350mm. Adding more concrete reinforced bars are advised in order to increase the hardness of ground base. Normally, the depth of concrete base is not less than 200mm.

2. Confirm the dimension of installed place: Stick up the two poles individually. At the mid between them, install a figured veneer to guarantee the two poles on the same line. Drill holes with Φ16 bit and fix left and right poles on the concrete floor stably. The poles must be vertical to the floor. If there exists error, full the gap with the skims.

3. Install and connect in-step steel wire and long oil pipe: Move away the figured veneer. Place in-step steel wire directed from the lift carriage of minor pole around the steel wire wheel of minor pole through the bottom of minor pole. After pulled up around the top wire wheels, it
should be fixed in the square hole on the top of carriage with two M16 nuts. Place the wire of lift carriage on the minor pole fixed on the major pole with the same method. Before fixing wires, we can elevate the carriage in order to fix well. After wire fixed, the cushion block should be moved away. To see whether the left and right carriage are at the same level. If right carriage is lower, heighten the wires on the left one to make the right rise a little and confirm the two carriages are at the same level. We can adjust the height of left one with the same method. Loosening wires can be used to adjust carriages’ level. But, normally, the two wires must be tightened to guarantee the in-step of two carriages.

Pull the long high-pressure oil pipes to the bottom of major and minor poles individually from the floor and connect them with the junction of oil cylinder without leak.

4. Install the hydraulic oil pump station: Fix the hydraulic oil pump station on the major pole with four M8X25 hex bolts. Open the cover of oil tank and pour N46 hydraulic oil about 12L. Connect one side of the short soft pipe to the oil outlet and the other side with the junction of oil cylinder. Use short arm in the head direction of vehicle.

5. Install lift arm: Four lift arms are installed on the left and right lift carriages with long and short arms being at the different sides of pole. When rise vehicle, use the short arm in the vehicle head direction.

6. Turn on power and adjust the height of left and right lift carriage: Put the power plug contact of hydraulic driving pump into the power socket with fuse box needed compulsorily. Turn on the switch on the electric motor to see whether the lift carriage rises. If not, exchange the power phase to make oil pump work well. When the carriage rise, check whether the two carriages are at the same level and listen the noise of safety bracing plate to judge the height of carriages. Adjust again the wire correctly to make the bracing plate at the same level, and the left and right carriages are at the same level accordingly.

7. Pull the safety unlocked wire to fall down the lift carriage: Before falling down the carriages, remember: we must pull the safety unlocked wire on the left and right lift carriage respectively to apart the safety bracing from the safety seat to realize the falling. Otherwise, the lift carriage can’t fall or fall with only one side caused by only one side unlocked wire to make accident. So, we must always remember pull two sides safety wire to make safety bracing apart from the seat and push load relief switch to fall the carriages.

8. Clean the yard: rise the carriages repeatedly to assure run well. If there are problems, check and deal with them according to the progress mentioned above until it runs well. Last, cover the figured veneer and assure grease lubricant in the guide rail of grease lubricant of poles. At the same time, add the grease lubricant or lubricating oil around the wheel rolls of wires to reduce the wear and enhance the life length.
8. Matters need attention
   a) Before lifting vehicle, we must adjust the height of four pallets to assure them at the same plane. At the same time, try to divide the longer and the shorter lift arm into two sides in order to get the supporting area gravity in the optimizer situation.
   b) The lifted periphery and beam of vehicle must be placed correctly on the center of the rubber pallet in order to make the gravity on the center of supporting area. When the vehicle is lifted on the
ground about 100mm, stop rising, shake the vehicle and check the bracing. After all run correctly, we can elevate it continually.

c) Strictly prohibit people under the vehicle during the lifting. After arriving a stable height and in a safety situation, workers can go to operate under it.

d) Before falling down the vehicle, open the switch of electric machine a little to make the carriage rise a little, then draw the unlocked line on the major-minor poles in order to draw safety bracing apart from safety seat. Last, open the pressure relief valve on the hydraulic pump to make the carriage fall. Special attention must be paid to see the major and minor can fall synchronously. If they can't, we must draw repeatedly until the vehicle fall well-balanced. Confirm that there are no goods under the lift arms, or the equipment may be damaged.

e) Pour N46 hydraulic oil or No.8 (winter), no.11 (summer) about 12L into the oil tank of hydraulic pump. Change new hydraulic oil after running half a year.

f) If meet accident, ask specialized persons repair or inform dealer or our company to have a check and obstacle avoidance.

g) The machine use 380V electric source. During installing the electric source, make sure to have reliable ground protection defending electric shock.

9. Electrical and hydraulic system
### Failures and recovery

<table>
<thead>
<tr>
<th>Failures</th>
<th>Reasons</th>
<th>Recovery methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric appliance fail, can’t start</td>
<td>Electric source phase lack or electric appliance failure</td>
<td>Check resource, fuse box, contactor in connection box of electric machine</td>
</tr>
<tr>
<td>Carriage crawl during rising</td>
<td>Air existing in the hydraulic system or oil lack in oil tank</td>
<td>Pour oil into tank, oil cylinder run total excursion some times, or discharge the air in the oil tank</td>
</tr>
<tr>
<td>The left and right carriages don’t rise synchronously</td>
<td>In-step forced wire becomes loose</td>
<td>Readjust properly the wire screw, heighten the wires and measure to make the left and right carriages be at the same height</td>
</tr>
<tr>
<td>Carriage can’t fall or fall unwell-balanced</td>
<td>Operation mistake without pull the safety apart</td>
<td>Scrawl the switch to elevate the carriage a little and open pressure relief valve for falling after pall off the safety hook to make it run well.</td>
</tr>
</tbody>
</table>

### Packing list

1) Major pole group 1 piece  
2) Minor pole group 1 piece  
3) Hydraulic power unit 1 piece  
4) High pressure oil pipe (1000mm, 1 piece, 3250mm, 1 piece, Gantry crane 4000mm 2 pieces)  
5) Figured veneer 1 piece (gantry crane, none)  
6) Top cover 1 piece (gantry crane)  
7) Lift arm unit assembly 4 pieces (the long, 2 pieces, the short, 2 pieces)  
8) Pallet unit assembly 4 pieces (on the lift arms)  
9) Expansion bolt 12 pieces (M18X160)  
10) Instruction for mounting and using 1 book  
11) Guarantee card 1 piece  
12) Certificate of qualification 1 piece