
Please read this manual carefully before using
Note: improper operation will result in personal injury

INVENTO

TIP-TOPOL



Manual

Scissor Lift

INVENTO SL 230 LNI S

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Safety Note

- ◆ Please read this manual carefully before using this machine. Strictly operating in accordance with the instructions, not free to operate. Only trained and qualified staff to operate and use the lift.
- ◆ Make sure the voltage, phase such Technical Parameters on the nameplate of motor before installation, the power connection must be done by a professional qualified electrician. Make sure the motor turn to the right direction.
- ◆ Use of equipment below 10 degree, should ensure that compressed air through the water filter effectively.
- ◆ When the lift works, people and equipment should keep a certain distance, no standing above and under the equipment, and the car on lift can not take any staff.
- ◆ The weight of the vehicle which by lifting shall not exceed the lifting capacity range of the machine.
- ◆ Remove all barrier around and under of platform before working.
- ◆ While drive the car on, ensure that the vehicle centerline should coincide with the centerline of the lift countertops..
- ◆ Leveling should be carried out on the no loading platform. It's strictly prohibited to open the balancing valve while the car on the platform.
- ◆ Equipment no working or overnight for long period, it should reduce to the lowest position, and drive away the vehicle, then cut off the power.

Packing, Handling and Storage

1. Packing

- a) The lift packed in 2 separate parts, packed by unbreakable material.
- b) Motor power unit and electric control box packed separated in paper cartons.

2. Handling

- a) Using crane or forklift by gravity centre of the machine during handling.
- b) Loading bearing stress of sling used for handling should be more than 2 ton.
- c) Avoid damager or deformation for equipment during handling.
- d) Take suitable protective measurements in case of rain or snow during handling.

3. Storage and stacking of packages

- a) Packages must be stored in a covered place, out of direct sunlight and in low humidity, at a temperature between -10°C and +40°C.
- b) Stacking is not recommended: the package's narrow base, as well as its considerable weight and size make it difficult and hazardous.

1. Features

1.1 General Introduction:

The lift adopts the scissor-type mechanical structure; utilize the hydraulic pressure to produce the lifting power. The air pressure controls the lock and loosening of the execution components. The mechanical lock could insure the security and the hydraulic balance valve adjust the lifting flat level. It possesses many advantages, such as simple structure, advanced technology, easy operation, and safety. It is especially suitable for high precision wheel alignment and Auto's repair and maintenance. The features as below:

- 1) Underground installation, small floor space, flexible installation location.
- 2) Pressure control safety mechanical lock assure safety operation.
- 3) Equipped with emergency decline manual pump interface, can land vehicles with manual pump in case power cut.
- 4) Adopt series synchronous hydraulic pressure loop, good synchronization and high horizontal precision.

1.2 Structural Performance:

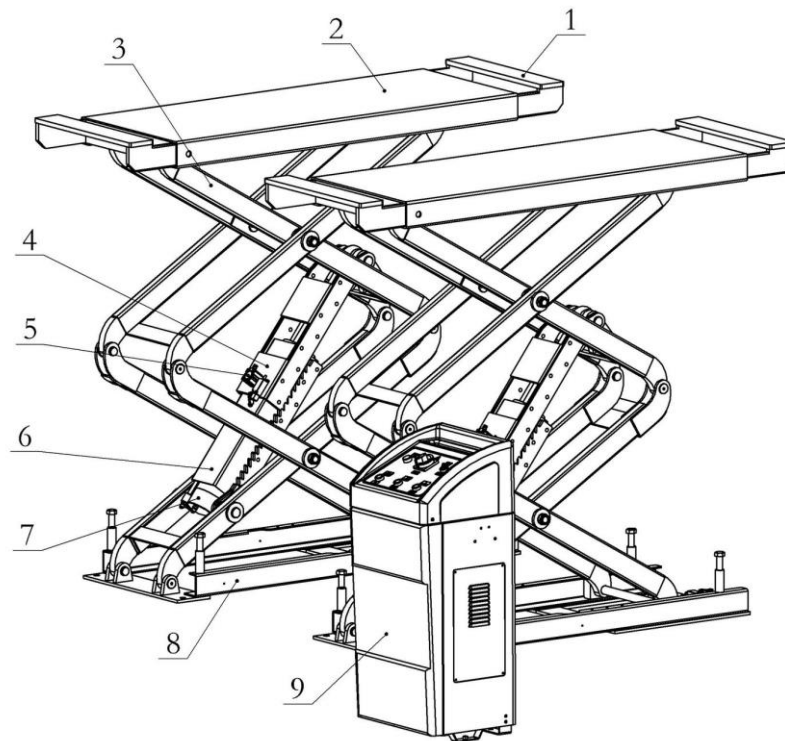


Fig.1 Lift Structure

The lift is including mechanical system, hydraulic system, pneumatic system and electrical system as below: (Fig. 1):

- | | | |
|--------------------------|-----------------|--------------------------|
| 1. Pulling head | 2. Platform | 3. Machine arm |
| 4. Above protection lock | 5. Air cylinder | 6. Below protection lock |
| 7. Hydraulic cylinder | 8. Base | 9. Control box |

2. Technical Parameters

2.1 Main Technical Parameters:

Model	Lifting Height	Lifting Weight	Hydraulic Pressure	Pneumatic Pressure
SXJS3018D	$\geq 2140\text{mm}$	3000Kg	25Mp	0.5-0.8Mp

Lifting Time	Power	Motor power	Dimension(mm)
$\leq 90\text{s}$	380/220V,50Hz	2.2Kw	

2.2 Dimensional Schematic Diagram (Fig. 2):

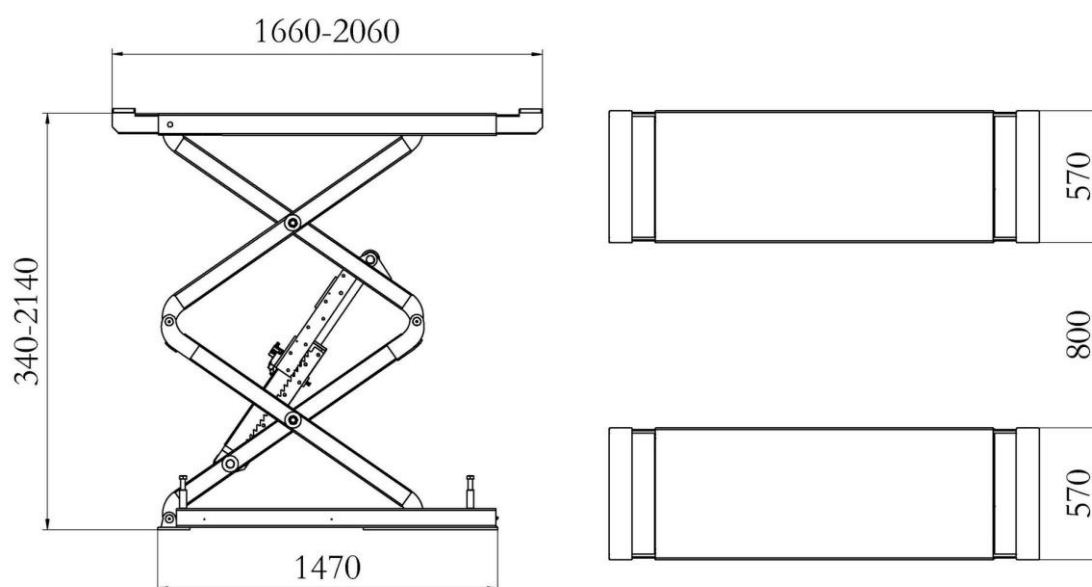


Fig. 2 Dimensions layout

3. Installation and Adjustment

3.1 Installation Environment

The lifts should be installed in the indoor environment without dust and other pollution, and adequate lighting. Note the control cabinet should be placed in secure area.

3.2 Foundation preparation

Refer to dimension layout Fig.2 and Foundation Installation Diagram Figure II for foundation preparation. Thickness (strength) and level of concrete is important. Don't rely much on machine adjustment on level. Under good geological conditions, the thickness of the concrete foundation is above 150mm, and recommended thickness 180mm-200mm. Total length of level degree $\leq 5\text{mm}$.

The location of the control cabinet can be interchanged on left or right.

3.3 Equipment complete

Place the equipment on the flat ground, the lift without pulling head will be in same place with car head after driving car on. The lift with LOGO side toward the outside. Refer to Fig.3 Hydraulic system connection diagram to pave the pipe but not connected in the ditch, make certain protection to pipe connector.

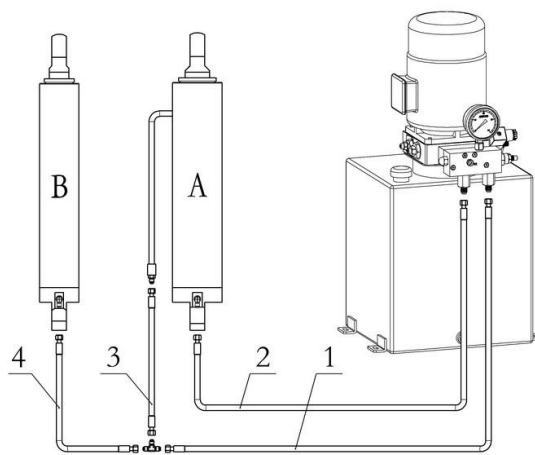


Fig. 3 Hydraulic system connection diagram

No.	Name	Remarks
1	Adjusting level control tube	3200mm
2	Main Cylinder control tube	3200mm
3	Oil tube of top cavity for Main cylinder	350mm
4	Oil tube of bottom for vice cylinder	1800mm
A	Main cylinder	
B	vice-cylinder	

3.4 Infuse hydraulic oil

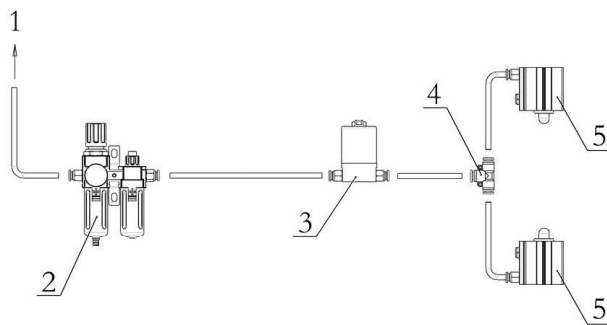
Infuse enough hydraulic oil in tank of control cabinet (About 16L). Recommend 46# anti-wear hydraulic oil. Note: viscosity of hydraulic oil is higher in winter for lower temperature, so falling speed of lift with no load could be too slow. 32# or 40# hydraulic oil is more suitable in winter.

3.5 Power and gas supply connection

According to the electrical schematic diagram (refer to Figure I) to connect power line, control cabinet need be reliable grounding. **Requires special attention, 220V motor, the diameter specifications of the power line is not**

less than 4.0mm²,380V motor is not less than 2.5mm². To ensure that power is not lack of phase, the voltage is normal, and then click UP button (no more than 3 seconds), check the motor rotation direction is correct. If rotation is right, the oil export pumps out, no oil shows that motor is reversal. Need adjust any two position to change the motor rotation direction.

Connected to the gas source according to the pneumatic system connection diagram (Fig. 4)

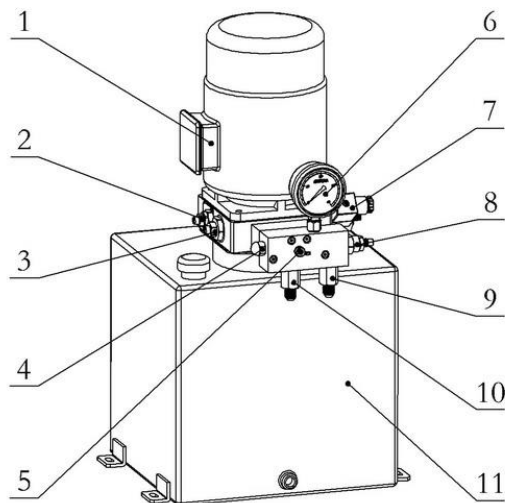


No.	Name	Remarks
1	To Air Compressor	
2	Pneumatic FRL	
3	Air Valve	
4	Air connector	
5	Air Cylinder	

Fig.4 Pneumatic system connection diagram

3.6 Pipe connection

Power on, click UP button to confirm the oil outlet on pipe connector, Refer to Fig.3 Hydraulic system connection diagram and Fig.5 hydraulic pump station to connect pipes.



No.	Name	Remarks
1	Motor	
2	Relief valve	
3	Throttling valve	
4	Cut-off valve	
5	Emergency interface	
6	Pressure gauge	Optional
7	Unloading valve	
8	Balancing valve	
9	pipe connector	
10	pipe connector	
11	Tank	

Fig. 5 Hydraulic pump station

3.7 Add oil and adjustment

Press UP button to lift up the platforms. If two platforms are not on the same level, adjust the balancing valves to level the two platforms. The steps are as below: (refer to Fig.5)

If the main platform (with thicker cylinder), open valve 8 (How much should be open depending on how much height difference between two platforms.) Press UP button till the two platforms leveled. Close valve 8 immediately. If the sub-platform (with thinner cylinder) is higher, open valve 8. Press DOWN button till the two platforms leveled. Close valve 8 immediately. If necessary, repeat the steps above till the two platforms leveled.

Attention! Implementation of the leveling operation is prohibited on the bus state! Balancing valves are not free to open to avoid danger.

3.8 Limit switch adjustment

Lifting to top position, make sure the limit switch can work when the lift at the top position, cut off the power of motor to protect engineer and motor immediately. Otherwise, need adjust the limit switch front and rear position or touch point angle, make lift can stop work at top position. (Fig. 6, it has adjust well in factory, normally no need adjust.)

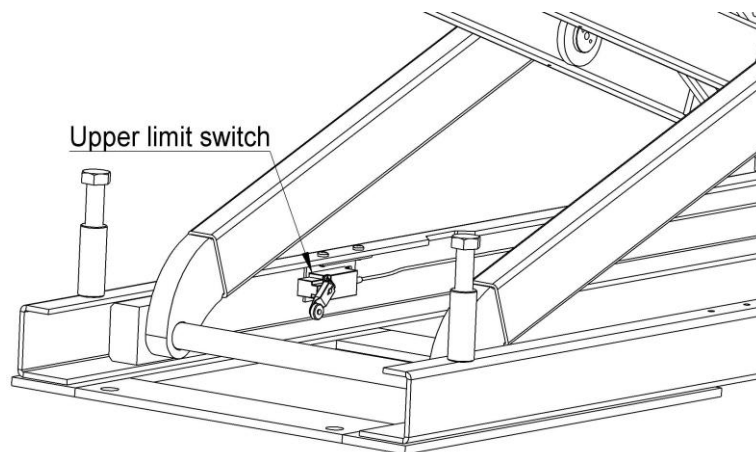


Fig. 6

When pressing DOWN button, normally the safety lock will be opened and the lift will start to low down. Because of the limit switch installed on the safety lock (Fig. 7), when accident conditions happened to make one side safety lock not opened, it will make the lift stop timely to prevent danger.

Before you low down the lift at the first time, please close one side air supply to

make this side safety lock not working. Then click DOWN button to low down the lift, the lift will rise up a little and stop automatically. If it cannot be stopped automatically, you need adjust the position of limit switch to make it working normal. Of course, normally before the delivery, the limit switch has been adjusted very well in the factory, no need adjustment again.

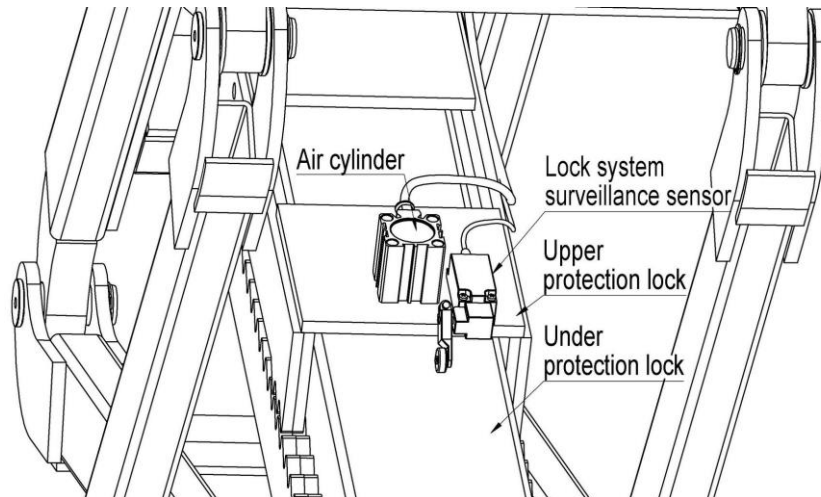


Fig. 7

3.9 Installation and horizontal adjustment

Lift the platforms up about one meter. Press LOCK button. Keep the left and right mechanical locks fall in the same lock tooth. Adjust the space around the lifts well (Refer to Fig. 2). Use a bolt to bore the bolt $\Phi 14$ holes in the ground. Put in the bolts but not expanded.

Use a leveling tool to make sure the front, back, left and right of the platforms are leveled min tolerance $\leq 3\text{mm}$. If not in this tolerance range, please fill in some washer under the floor plate. The clearance between the floor plate and the ground must be filled with steel or cement. Then, expand the bolts.

3.10 Load test

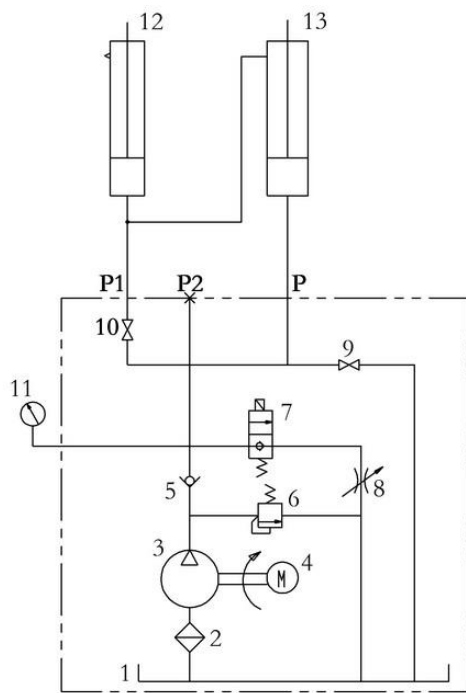
Check all the oil and air pipes to make sure no oil or air leaking. Check the bolts to make sure they are tight. If everything is normal and in good condition, then can start to test.

Firstly, proceed with no-load test, run 2-3 times, no abnormal noise and leakage, and lifting time and lifting height are in line with the technical parameters, then the test is finished. The test is OK ,to get ready for normal use.

4. Hydraulic System

4.1 Lift hydraulic system installed in the control cabinet, structure and composition refer to Fig. 5, and hydraulic system refers to Fig. 8. Adjust the relief valve can change the system pressure, change the lifting capacity. (Relief valve is adjusted well in factory, it's forbidden to adjust than the rated load.)

4.2 When you use the lift first time after installation, pay attention to the direction of motor rotation while connecting wires. If the motor is rotating in the wrong direction for too long time, the gear pump could be damaged.



No.	Name	Remark
1	Oil tank	
2	Purolator	
3	Lubricant pump	
4	Motor	
5	Retaining valve	
6	Relief valve	
7	Unloading valve	
8	Throttle valve	
9	Cut-off valve	
10	Cut-off valve	
11	Hydraulic gauge	option
12	Vice-cylinder	
13	Main cylinder	

Fig. 8 Hydraulic system diagram

5. Pneumatic System

The connection of the pneumatic system refer to Fig. 4. The schematic of the pneumatic system refer to Fig. 9

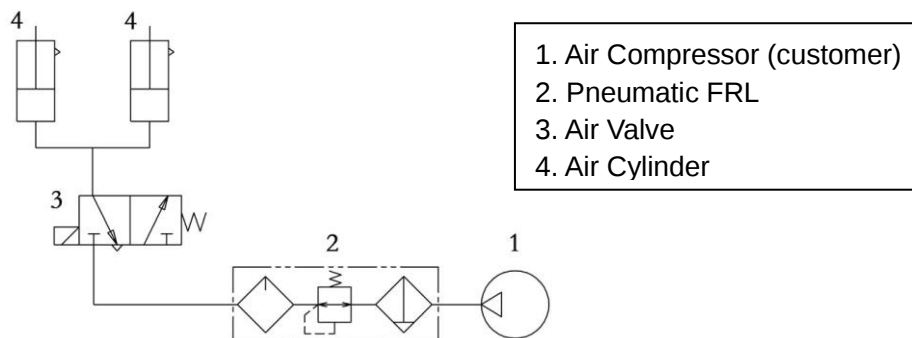


Fig. 9 Pneumatic system schematic

Chapter 6. Operation

Safety is the key in the operation. Pay more attention to that if the mechanical lock is reliable and normal. Never put hands or feet into the middle part of the flats during the process of lifting and before mechanical lock is well operated to avoid danger. **Please operate according to the following procedures to ensure safety. The operator will take the responsibility if any accident happened due to wrong or improper operation.**

6.1 Turn on the electrical source and the indicating light will be on.

6.2 Press UP button, Check the height level of the two main platform. If they are not on the same level, open the balance valve and adjust it. (Refer to 3.7)

6.3 Press the descending button, the falling status of the main platform should be normal.

6.4 Press the descending button, and place the platform to the lowest location. Then release the descending button.

6.5 Drive a vehicle on the lifts. Put rubber pads under the vehicle. Make sure the lift points are directly to the rubber pads. Press UP button short-time. If everything is correct, press UP button. Loose UP button when the lift up to the position suitable for repairing or testing. Press LOCK button. Make sure the upper lock teeth are in the lower lock jaw bottom, then starting to repair or test. Always pay attention to the platforms if synchronous or not during lifting up the platforms. If not synchronous, stop immediately. Repair and start again.

6.6 Please check and make sure that, No obstruction under or around the lift after finished testing or repairing. Press the DOWN button (Firstly, press the UP button to open the safety lock while lifting vehicles. Then press the DOWN button) to make the working platform to the lowest position and drive away the vehicle.

6.7 Turn off the switch and the air compressor.

6.8 Turn off the power supply and finish the operation.

7. Maintenance

7.1 Keep the facility clean and tidy. Nothing is permitted to put on the flat and the below of the facility to avoid damage to the equipments and hurt to people caused by the decline and extrusion during lifting and falling.

7.2 Maintain the control panel dry and clean. Avoid the dust to fall into the electromagnetic valve and the hydraulic oil box, and damage the hydraulic oil box and electric components.

7.3 Nothing is permitted to place on the operation panel in case misacting and damage of the press button and indicator light.

7.4 Keep the hydraulic pressure, pneumatics, pipeline and connection clean in case the pipelines aging and dilapidate.

7.5 Change the hydraulic oil after used for 3 months. Then change the hydraulic oil according to the times of using longest 6-9 months. Release the used oil thoroughly. Clean the oil tank and oil filter. Fill in enough oil. Check the oil level regularly. Do not let anything dirt falls in the oil tank in case the oil pump is damaged.

7.6 Clean the oil filter every 3 months. Use the kerosene to clean and the brush to clean the dirty things. Pay attention to not damage the oil filter and change it once find damage.

7.7 Check and clean the pneumatic two-component filter regularly. Any dirt found need to be cleaned in time.

7.8 Check the status of the screws for every cardinal axis every half month. Check the status of the cardinal axis.

7.9 Grease must be added one time every half month to every oil filling cup.

7.10 Keep the idler wheel and the moving parts of the sliding block clean and add grease regularly.

7.11 Change the lift sliding block one time every year. Change the lift sliding block in time if the equipment are used very often.

7.12 Clean the area around the lift after work every day to keep the lift clean.

8. Note

8.1 The compressed air pressure for the Pneumatic system is 0.5-0.8Mp.

8.2 If the local voltage fluctuation is over 10%, a voltage stabilized need to be installed.

8.3 First time installation or after power supply maintenance, the turning direction of the motor must be confirmed. (Refer to 3.5 Power Supply and Gas Supply joint). Opposite turning direction of the motor is prohibited in case the hydraulic pump is damaged.

8.4 Do not damage the hydraulic and pneumatic pipelines. In case the accident caused by pressure loss.

8.5 The hydraulic oil must be high pressure anti-wear hydraulic oil $\geq 43\#$ produced by the qualified manufacturers. (Refer to 3.4 Filling hydraulic oil).

8.6 The time relay in the Control cabinet should be set within the range of 1.5-2 second. Do not change the time setting of the time relay.

8.7 The lock must be released before repairing or testing. The protection lock must be released very well.

8.8 If the power off suddenly when the facility has been lifted, **firstly switch off the electrical source in cause power is supplied suddenly**. Then Open the control box, use the manual pump on the hydraulic power unit to open the protection lock, then find cut-off valve 4. (Refer to Fig.5 hydraulic pump station). Loose the screw slightly. Lower the platform slowly. Pay attention to fasten the screw after finish operation.

8.9 In Fig. 5, relief valve 2 is for adjusting the system pressure. Fasten the bolt, pressure will be increased. Loose the screw, pressure will be reduced. Throttle valve 3 is for adjusting the speed of dropping the platform. Fasten the bolt, dropping speed will be faster. Loose the bolt, dropping speed will be slower. **Attention! The release valve and the Throttle valve are adjusted to the proper place. In consider of safety, do no adjust it.**

9. Common Breakdowns and Solutions

Breakdowns	Reasons	Solutions
1.The engine works, but no pressure.	1.No oil in the pump. 2.The filter net is jammed. 3.There is air in the pipelines or connections. The overflow valve leaks.	1. Infuse enough hydraulic oil. 2. Clean out the dirty things. 3. Exhaust, fasten the leaking connection or change the overflow valve washer.
2.No power	The engine is reversed or lack of phases.	Check three phase four line powers.
3.Correct descending procedure, but no response.	The control valve is jammed.	Disconnect the control valve and clean it.
4.The mechanical lock cannot open.	1. Damage on the air cylinder. 2. Damage on the Electromagnetic valve.	1. Check the air cylinder. 2. Check the gas-controlled electromagnetic valve.
5. No lifting.	1. Something wrong with the button. 2.The electromagnetic valve doesn't work. 3. The control valve is jammed.	1. Check or change the button. 2. Check the electromagnetic valve and the relative lines 3. Clean it.
6. There is pressure in the hydraulic system, but it is under 20Mp. It cannot lift a car.	1.Seals of the Non-return Valve or Overflow Valve are invalid. 2. Lack of hydraulic oil.	1. Check the seal circle of the Non-return Valve or Overflow Valve, and the inner tie-in of hydraulic box. 2. Infuse hydraulic oil.
7. Shaking and hard to adjust the height.	There is air in the hydraulic loop.	Raise the cylinder to the highest and the assistant to the lowest, dismantle the pipe connections to exhaust.
8.Heavy car cannot be lifted.	Lack of pressure.	The Common pressure is 18Mp. Adjust the system pressure to 21Mp for the heavy cars, and restores it after getting down.
9.The Button doesn't work.	There is open circuit.	Check that if the circuit ends becomes loosen.
10.The insurance doesn't work.	There is short circuit.	Check that if there is short-circuit in circuit.

SXJS3018D DOUBLE-DECK SCISSOR LIFT

Qualified Certificate

This product executive standard Q/0601KHD002-2013, is qualified according to the delivery inspection.

Dimension: mm × mm × mm

Product Number:

Corporate Representative: Inspected by:

Date:

Yantai Haide Science And Technology Co., Ltd.

Add: No.21 Tongrun Road, APEC Industrial Zone, Zhifu District, Yantai, China

Fax: 0535-6853815

Post Code: 264002

Sales line: 0535-6853129, 6853816

Service Line: 0535-6853811, 6853813

Inspection Report

Name of the commodity: Double-deck scissor lift

Model No.: SXJS3018D

This product applied standard Q/0601KHD002-2013. Product inspection items and results before sending out of factory are as follows:

No	Inspection items	unit	Standard Value	measured value
1	Lifting height	mm	≥ 2140	
2	Lifting capacity	Kg	3000	
3	System pressure	Mp	≤ 25	
4	Pneumatic pressure	Mp	0.5~0.8	
5	Lifting time	s	≤ 90	
6	Synchronization accuracy without load	mm	8	
7	Repeat precision	mm	8	
8	synchronization accuracy with load	mm	8	

Inspected by:

Date:

Packing List

No.	Name	Model No.	Qty	Remark
1	Main Lifting Platform	SXJS3018D	2	
2	Rubber Pad		4	
3	Electrical Control Box Assembly		1	
4	Pneumatic FRL		1	
5	Compound Pad	Φ14	8	
6	Expansion Bolt	M16×120	8	
7	Gasket		16	
8	Plastic band		10	
9	Inspection Report		1	
10	User Manual		1	
11	Packing list		1	

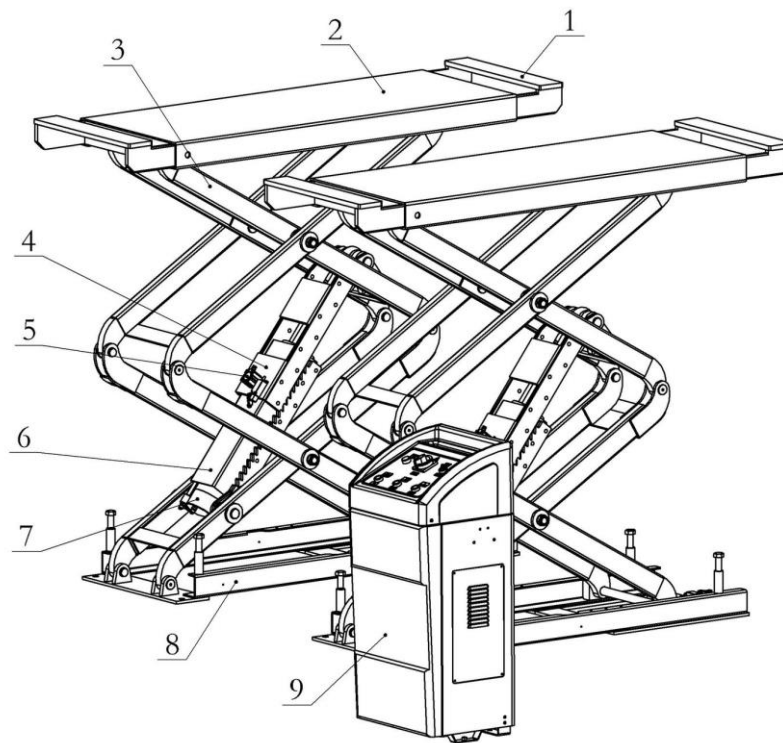
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Inspected by:

Packing Date:

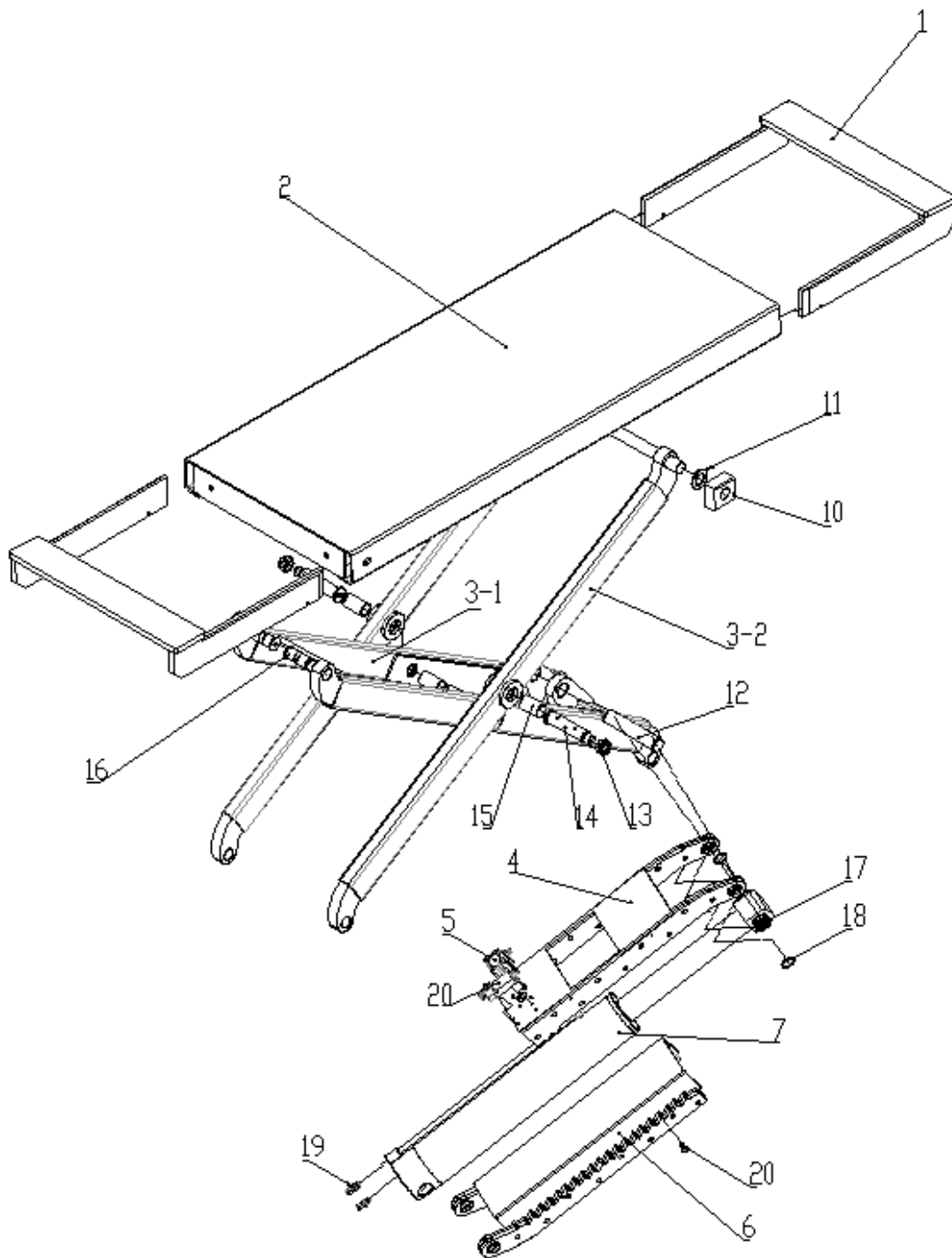
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Fig 1.General Assembly



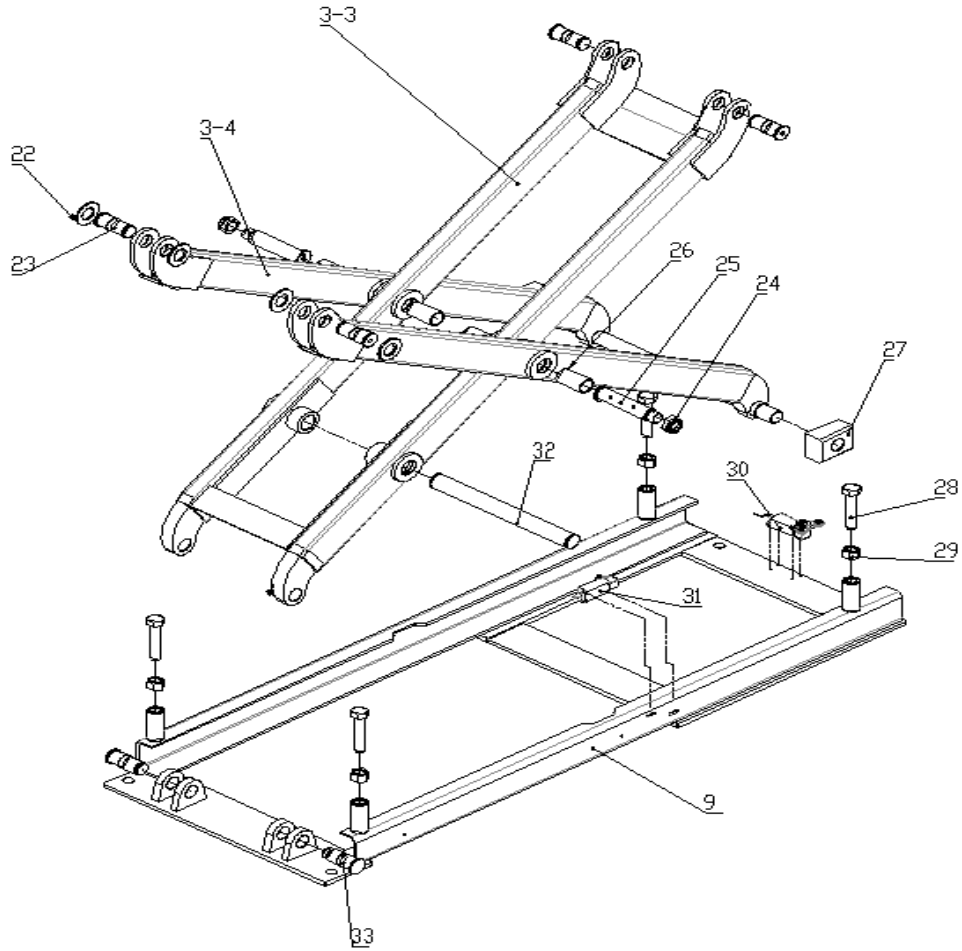
No.	Code	Drawing No. /Spec.	Part Name	Qty	Remark
1	21040400037	SXJS3018 (YDL)-08-00	Platform extension	4	
2	91040110100	SXJS3018-01S-00	platform	2	
3-1	91040120100	SXJS3018-02-00A	Upper inner arm	2	
3-2	91040120200	SXJS3018-06-00A	Upper outer arm	2	
3-3	91040120300	SXJS3018-07-00A	lower inner arm	2	
3-4	91040120400	SXJS3018-04-00A	lower outer arm	2	
4	91040140100	SXJS3018-03-00A	Upper lock bar	2	
5	14010100001	$\phi 32 \times 25$	Pneumatic cylinder	2	
6	91040140200	SXJS3018-05-00A-1	lower lock bar	2	
7-1	14020401060	100*60*455	Master cylinder	1	
7-2	14020401061	80*50*455	Slave cylinder	1	
8	91040130100	SXJS3018-09-00A	Bottom base	2	
9	16200402001	SXJS3018	Control cabinet	1	

Fig 2: Upper Arms, platform and cylinder



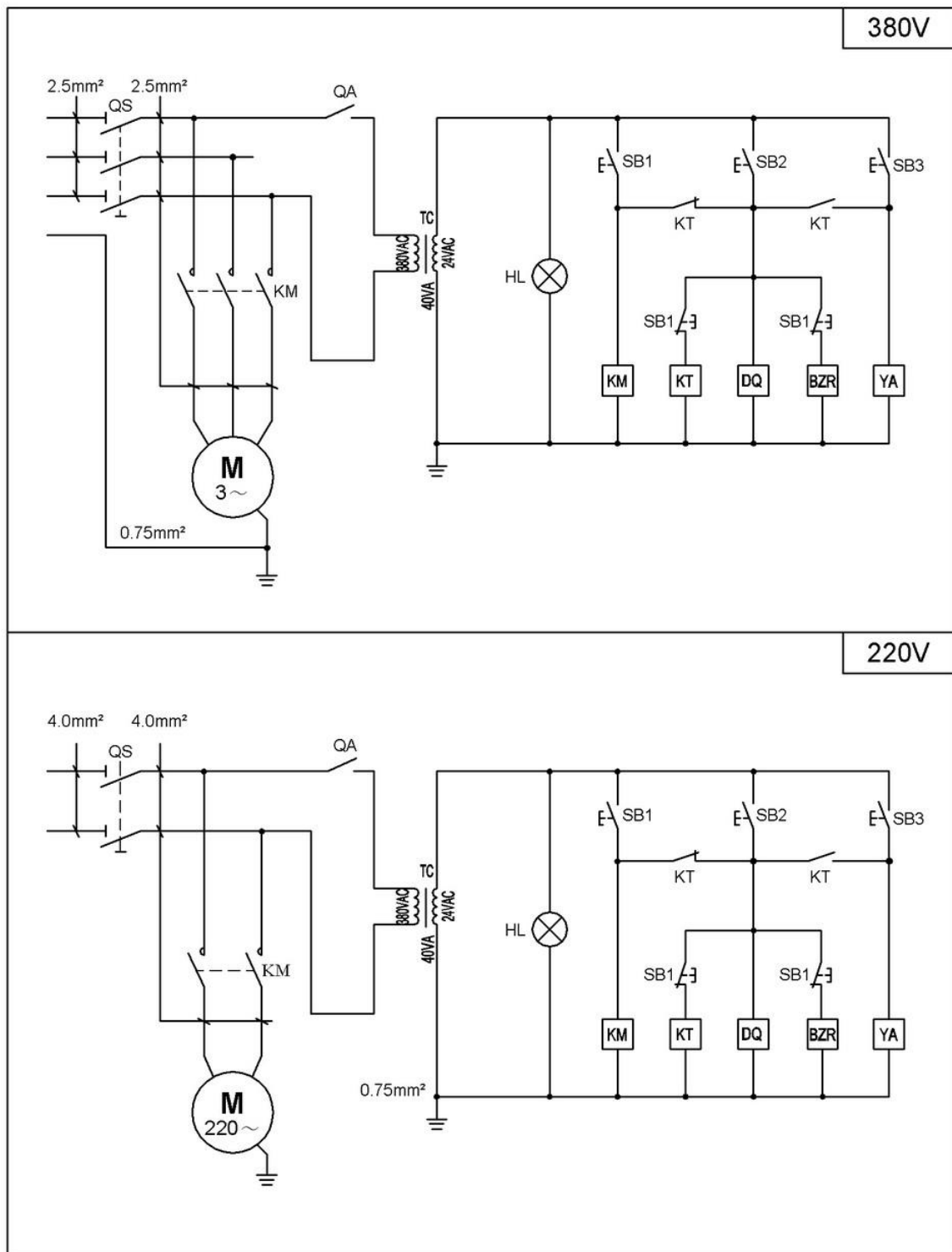
No.	Code	Drawing No. /Spec.	Part Name	Qty	Remark
10	91040160301	SXJS3018-00-09A	Top sliding block	4	
11	21040200012	GB/T848-2002	Grade A washer	4	Top sliding block washer
12-1	91040150505	SXJS3018-00-07A	cylinder shaft 175	1	
12-2	91040150506	SXJS3018-00-07B	cylinder shaft 166	1	
13	12010500010	M24x3	Hex nut	4	
14	91040150502	SXJS3018-00-04	arm middle shaft	4	
15	13010100076	SXJS3018-00-01	bearing	8	
16	91040150503	SXJS3018-00-05	platform shaft	4	
17	91040160102	SXJS3018-00-02A	Lock bush	1	
18	12090100006	φ35*1	Shaft washer	4	
19	15030100012	M16x1.5/14x1.5	I-shape pipe connector	3	
20	11110300004	8104	Limited switch	2	Lock releasing inspection
21	12020301017	M8x25	Hex bolt	2	

Fig 3: Lower Arms and Bottom Base



No.	Code	Drawing No. /Spec.	Part Name	Qty	Remark
22	91040160104	SXJS3018-00-50	Arm shaft bush	16	
23	91040150507	SXJS3018-00-08	Arm shaft	8	
24	12010500010	M24x3	Hex nut	4	
25	91040150502	SXJS3018-00-04	arm middle shaft	4	
26	13010100076	SXJS3018-00-01	bearing	8	
27	91040160302	SXJS3018-00-06	Bottom sliding block	4	
28	12030100029	M12x80	Hex bolt	8	
29	12010101008	M20	nut	8	
30	11110300004	8104	Limited switch	1	Top limited switch
31	11110300001	8108	Limited switch	1	bottom limited switch
32	91040150501	SXJS3018-00-03M	cylinder base shaft	2	
33	91040150503	SXJS3018-00-05	Bottom base shaft	4	

Fig 4: Electric Schematic Diagram



QS	Circuit breaker	SB1	Up button	DQ	Air valve	M	Electromotor
QA	Control switch	SB2	Down button	KM	AC contactor		
KT	Time relay	SB3	Lockup button	TC	Transformer		
YA	Unloading valve	BZR	Buzzer	HL	Power LED		

Fig 5: Foundation Installation Diagram

