

Foreword

The LDSJ – H(side-shifting) fork positioner [hereinafter referred to as “fork positioner”] positions the fork(cargo side-shifting) without human interference by means of a hydraulic driver , and not only improve the handling efficiency , but reduce labor intensity , decrease the damages to cargoes . The fork positioner is designed and manufactured by ourself and have been in the market for many years . Now has becoming a mature and gradually formed series after constant improvements ,tackle key technical problem of key components and comprehensive testings.

The manual is designed to familiarize operators with fork positioned , benefit of operators with better standard operations.

The manual contains important notes concerning safe , proper and economic working with the equipment . Strict observation of these notes will help to avoid risks , reduce repair costs and down time , and increase the reliability and useful life of the equipment.

In addition to the instructions contained in this manual , all pertinent national and local regulations relating to safety and environments protection must be observed in full . This operating manual must be kept available for ready reference at the equipment's place of use . The manual must be read and followed by all persons involved in work with or on the equipment . Such workers include :

- Operators : in charge of setting up for use , troubleshooting and maintenance of machine and so on.
- Maintenance crew : in charge of inspection ,repair and so on.
- Transportation crew : in charge of handling , loading ,unloading and so on.

In addition to this operating manual and the safety regulations in force at the place of use,standard practice relating to safe and proper working tools and machines must be observed at all times.



联动属具

Fork Positioner User's Manual

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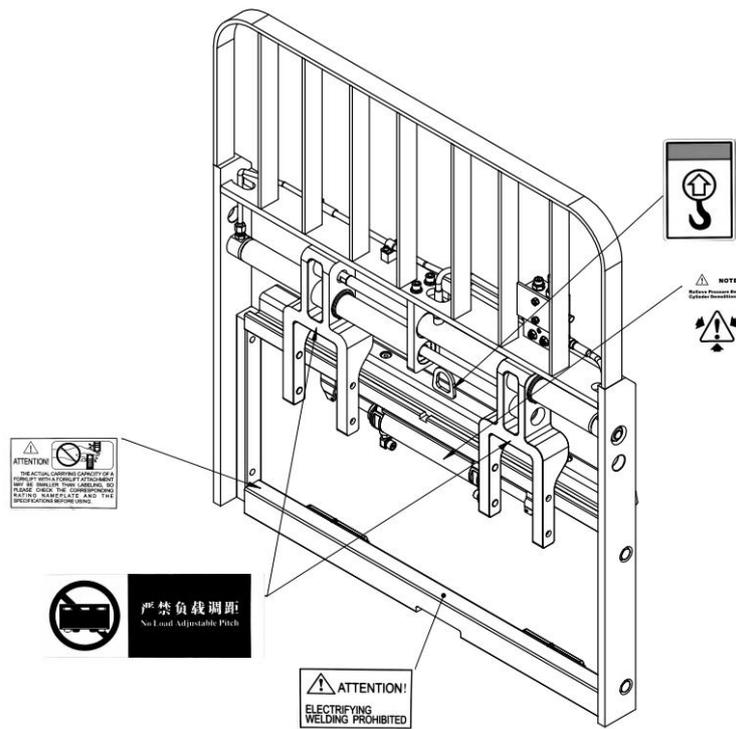
Fork Positioner User's Manual

1 Safety

1.1 Safety Notes and Marks

The following marks and symbols are used in this operating manual to highlight details holding special importance :

- ▲ **Danger** : used for identifying big or direct dangerous situation , to avoid injury and property damage . If not able to avoid the dangerous situation , can cause serious casualties.
- ▲ **Caution** : used for potential dangerous situation , to avoid injury and property damage . If not able to change the dangerous situation , can cause serious casualties.
- ▲ **Attention** : used for used for potential dangerous situation , to avoid injury and property damage . If not able to change the dangerous situation , can cause serious casualties or property damage.
- ▲ **LIFT HERE:** Used for potential hazardous situations, if these hazardous situations cannot be changed, they may cause serious casualties.



1.2 Organizational Notes :

- Operating , maintenance and servicing / repair personnel must have read and understood the operating manual before commencing work on the equipment.
- All safety and danger notices on the fork positioned must be observed.
- The equipment must be shut down immediately in the occurrence of any safety-related change on the equipment or in its workings and the malfunction must be reported to the officer responsible
- Working with and on the equipment may only be carried out by responsible and properly trained personnel , who must be of the legally required minimum age.
- Operating temperature range range of $- 20^{\circ}\text{C}$ to $+ 40^{\circ}\text{C}$, relative humidity should be less than 85% , altitude should be less than 1000 meters.

1.3 Operator's Safety Notes

1.3.1 Operation requirements for fork posotioner.

1.3.1.1 Wear safety uniform and fasten the safety belt.

All operators must wear proper personal protective equipment , such as labor suits , helmets , safety shoes and gloves , should follow the specified below :

- Fasten the safety belt before working.
- Do not wear loose , damaged or smeary clothes.
- Not allowed to wear any jewelry during operation , maintenance and repair process.
- Regular cleaning and maintaining fork positioned in accordance with the provisions of the manual , to ensure it is working normally.

1.3.1.2 Fork positioned operator's requirements :

- Good physical quality , strong mental state , the ability for reading and upstanding the manual.
- Non fatigue operation , non operation under the influence of alcohol or drugs.
- No chat during operating fork positioned , ensure no unauthorized people in working space.
- Unload by fork positioner when don't know limit load , otherwise will damage fork positioner , even cause serious risks.

▲ Danger

Overload can lead to fork positioner tilting , causing damage to the fork positioner , and may cause the casualties.

- Operators can't leave operating room , when load isn't discharged from the fork positioner.
- Operators must operating in the instructions of the teleseme when operators are in limited vision or in dangerous place.
- Operators must have professional training and qualified guide.

1.3.2 Installation and Use

Only be allowed to use suitable transportation and lift tools with enough load force (fork positioner self-weight labeled in nameplate).

▲ Danger

Do not stand under the lifting fork positioner.

1.3.3 Operation

- The equipment must be inspected for visible damage and effects at least once per shift . Any changes occurring (on or in the equipment itself and its working) must be reported immediately to the officer responsible . The equipment must be shut down immediately if conditions warrant.
- When working with the equipment , we recommend running hydraulic cylinder below 80°C , or failures may occur to the cylinder.
- When working with the equipment , make sure that risk of injury to all persons due to the equipment is satisfactory ruled out.
- All activities detrimental to the stability of the equipment must be avoided.
- Maximum capacity always denotes lifting with two or more forks or load handling arms.
- Attention is required to the rated load capacity , maximum working pressure and load center stated on the nameplate.

- Moving , reciprocating or rotating parts of the attachment entail danger of pinching , crushing , snagging and dragging . Safe distance must be maintained at all times to prevent clothing , body parts or hair from being caught by such parts.
- Loads may only be handled when the pallets , crates , containers and packaging are in satisfactory condition.

1.3.4 Maintenance

- Mandatory regular inspection intervals , including those specified in the operating manual , must be observed . Inspection may only be carried out by authorized and qualified personnel.
- Maintenance and repair work must only be carried out when the equipment is supported on a level and firm surface and is secured from rolling and tipping.
- When replacing components and assemblies , they must be fastened securely to hoisting equipment so as to eliminate all danger . Use exclusively appropriate hoisting equipment and load handling devices in satisfactory condition and of adequate capacity . Keep clear of suspended loads.
- Do not make any alterations , additions or conversions to the equipment that might affect their safety unless duly authorized by the supplier . This includes fitting and adjusting safety valves and other safety devices and welding work on supporting members.

▲ Caution

Unauthorized alterations to any parts and assembly or installation other than as specified in the instructions will render all guarantees null and void.

- If safety devices need to be dismantled for setting up , maintenance or repair work , they must be re-installed and checked for proper function immediately on completion of the work.
- Spare parts must meet the manufacturer's technical specifications . This is assured by using exclusively original spare parts.

▲ Caution

All screws or bolts loosened for maintenance and repair work must be tightened at the permissible torque . Replace screws and bolts that have been retightened three times.

Note the following tightening torques which are valid for screws with connecting surfaces according to ISO4762 , ISO4014 , ISO4032 etc. :

Bolt Rating	8.8	10.9	12.9
M10	45N.m	66N.m	77N.m
M12	77N.m	115N.m	135N.m
M16	190N.m	280N.m	330N.m
M20	385N.m	550N.m	640N.m

- Workon hydraulic equipment may only be carried out by personnel specially trained and experienced in hydraulics.
- All hydraulic pipes , hose lines and couplings must be inspected regularly for leaks and visible damage . All damage must be repaired immediately . Leaking oil can cause accidents and is a fire hazard.

1.4 General Hazard Notes

Serious injury to persons or damage to equipment and property may be caused as a result of:

- Improper use of the equipment
- Incorrect operation of the equipment
- Inadequate maintenance and servicing

Failure to observe the safety notes contained in the operating manual can lead to injury or

even death . This applies particularly to improper use of the equipment .

The equipment must not be operated in explosion – hazard areas unless expressly designed and authorized for use in such areas.

For preventions of fire , burn , electric shock , chemical hazards (toxic exhaust , etc .) , risks of electromagnetic interference , noise and other vibration , please refer to the forklift machine manual.

2 Mounting Instructions

2.1 Installation Requirements

2.1.1 Pressure setting of the forklift safetyvalve(hydraulic circuit supplied to the attachment):The recommended pressure is 14MPa ; the max pressure is 16MPa .

2.1.2 Flow setting of the forklift(hydraulic circuit supplied to the attachment):

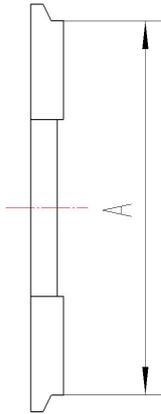
Type	Min	Recommended	Max
Fork positioner	6.0LPM	8.0LPM	11.0LPM
Side-shifting Fork positioner	10.0LPM	15.0LPM	18.0LPM

①Flows lower than the min can result in unsteady movement.

②Flows higher than the max can result in overheating and thereby degrade the system performance and reduce the service life of the hydraulic system.

2.1.3 Recommended min hole diameter of the rubber and tube connector : 6mm.

2.1.4 The forklift carriage should comply with ISO 2328 or equivalent to Industrial Truck Association(ITA) as detailed below :



Installation	A (ISO standard)	
	Min	Max
Grade 2	380.0mm	381.0mm
Grade 3	474.5mm	476.0mm

2.1.5 To comply with the industrial standard , it is crucial to ensure that the attachment moves in the direction corresponding to the multi – way valve control handle of the forklift as indicated below :

Control functions of the handle

Function	Attachment movement	Multi-way valve handle movement
Side shifting load	Right shift	Backward or upward
	Left shift	Forward or downward
Positioning fork	Close	Backward or upward
	Open	Forward or downward

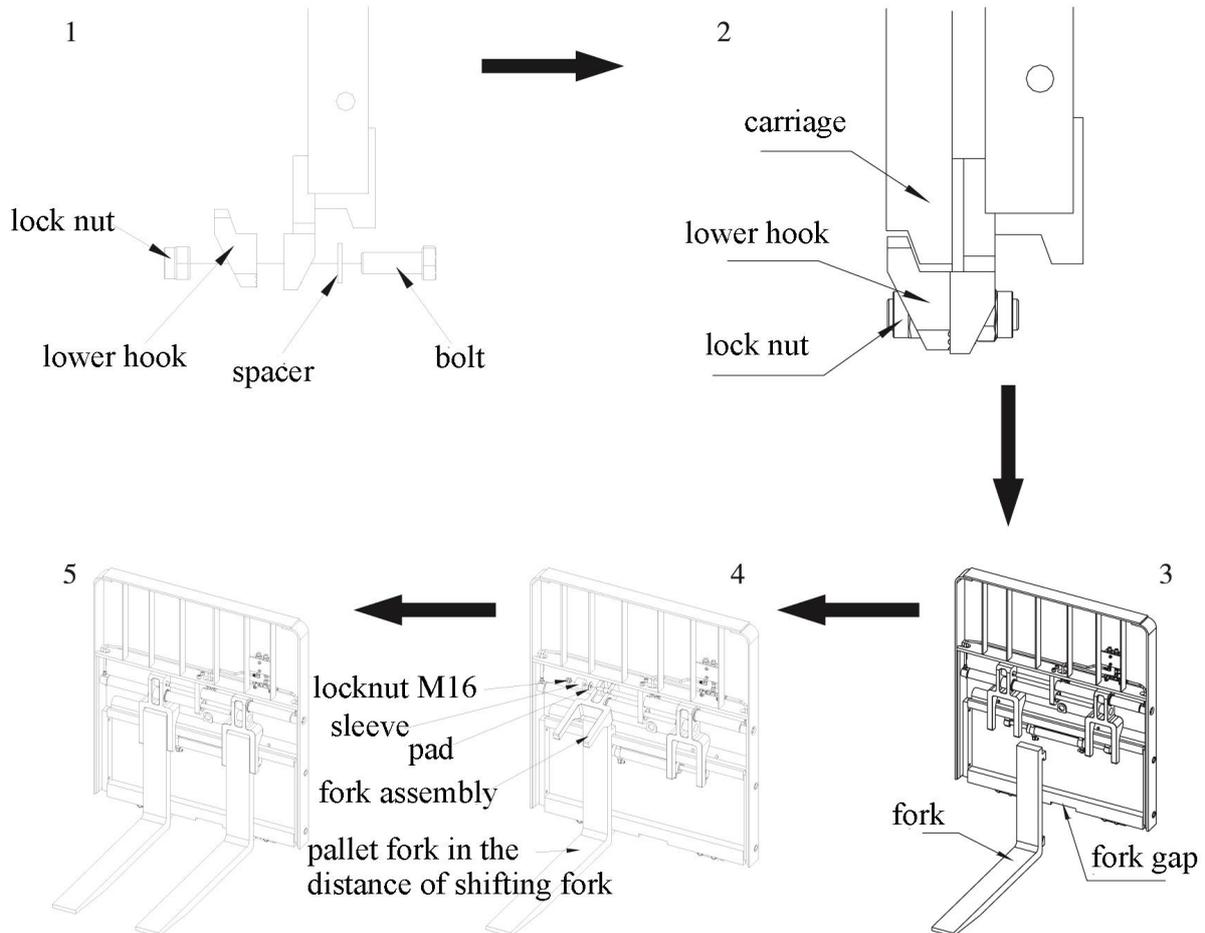
2.2 Installation methods

2.2.1 Mount on the forklift

- (1) Release the 4 locknuts on the lower hook (figure 1) and hang the positioned on the carriage.
- (2) Fix the frame on the forklift carriage with the lower hook and lock the locknut to the moment of 140N.m(figure 2).
- (3) Attach the fork into the carriage from the fork gap(figure 3).
- (4) Release locknut M16 of fork assembly , hang up the whole fork assembly(figure 4).

(5) Lay down the load bracket and join the frame to the load bracket with 4 bolts (figure 5).

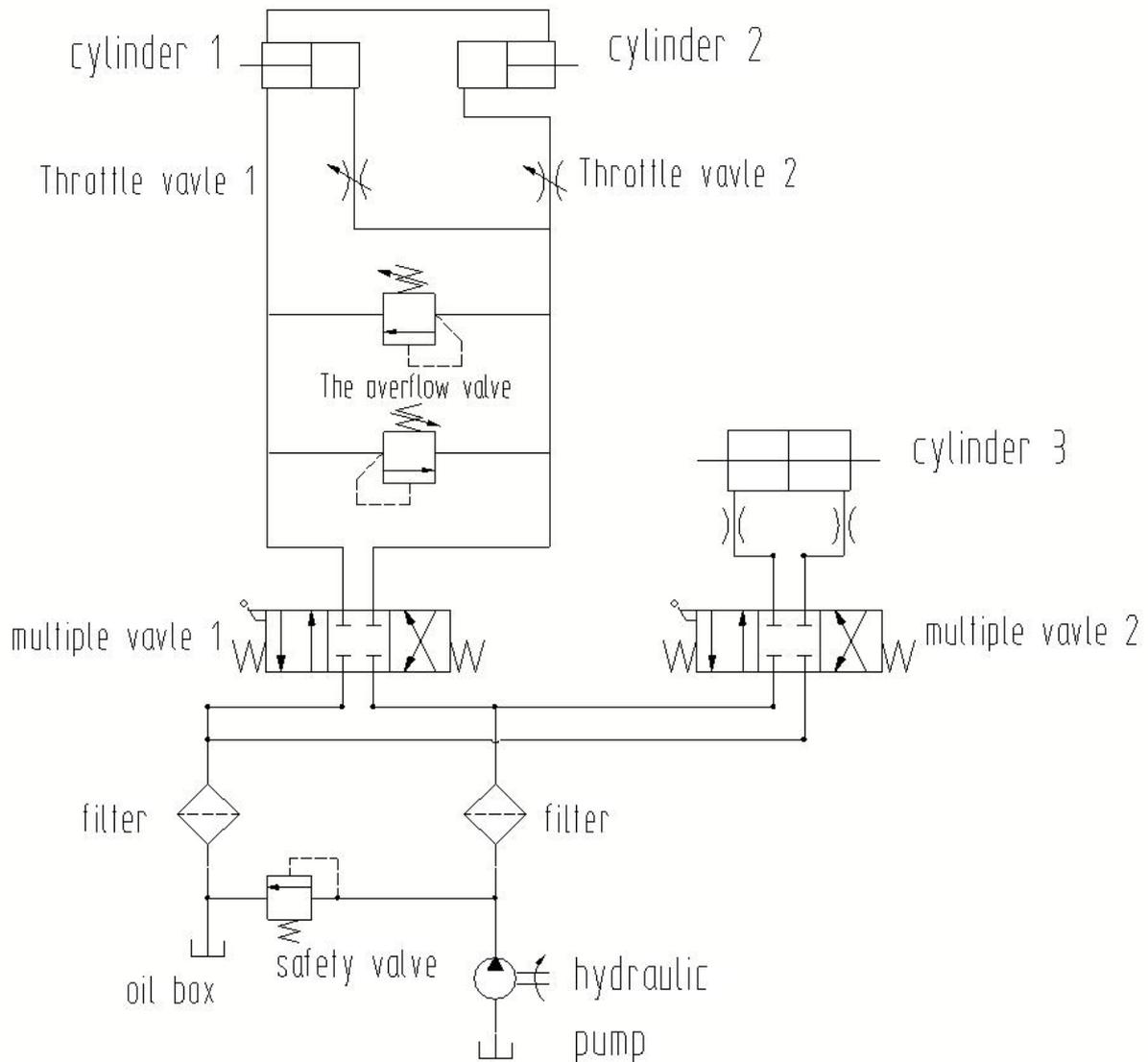
Installation diagram :



2.2.2 Connect the rubber hose

Select a proper length of rubber hose and join it to the connector of the dividing valve of the attachment . The connector thread should be M18×1.5 and should be flush sealed.

The hydraulic circuit of the fork positioned mainly consists of cylinders , a hydraulic pump , multi – way valves , a safety valve , filters and a number of oil tubes and is composed in the way shown below :



2.3 Operation Inspection

2.3.1 Before any operation, first operate the multiway valve handle to make yourself intimate with the control functions of the handle and satisfy yourself that the handle movement complies with the foregoing Control Functions of the Handle.

2.3.2 Check that the attachment moves levelly and does not hit or cut on the rubber hose.

2.3.3 Do not start any operation, if there is any abnormality of the attachment.

2.3.4 Check the fixing nut of the cylinder and see if the locknut and split pin are securely fixed.

2.3.5 Check if there is any leakage at the joint or in the cylinder.

2.3.6 Check if the two forks move synchronously.

3 Operating Instructions

Both load and the central distance of load gravity shouldn't be longer than the rated range on the label of a fork positioner . When the central distance of load gravity is longer than the rated range , its actual bearing capacity will reduce . After stopping operating the forklift , relieve the pressure in the hydraulic system and do some necessary maintenance.

The following operations must be prohibited :

- ★ Lifting a load on a single fork;
- ★ Adjusting the fork distance with load;
- ★ Moving goods by the side shifting function of the positioner;
- ★ Side shifting or adjusting the fork distance when the forklift is swerving;
- ★ Mounting a pusher without locating the pin in a central notch on the upper bar;
- ★ Using a pusher for non-designed purpose;
- ★ Operating a pusher which is in trouble;
- ★ Operating a pusher when there is a person or barrier in its working area;
- ★ Doing welding on a pusher;
- ★ Carrying a person on the pusher or the fork;
- ★ Being hit by external force while pusher working;
- ★ The size of the goods is too large

4 Common Malfunction and Troubleshooting

4.1 Inability to position the fork

4.1.1 Check if the system provides the required pressure and flow;

4.1.2 Check if the clearance between the fork and the upper/lower crossbeam of the side shifter is appropriate;

4.1.3 Check if there is any leakage in the positioning cylinder or the hydraulic circuit.

4.2 Inability to side shift the fork

- 4.2.1 Check if the system provides the required pressure and flow;
- 4.2.2 Check if there is any deformation in the structure members . If yes , remove the deformation or replace the damaged part;
- 4.2.3 Check of the clearance between the lower hook and the fork is appropriate;
- 4.2.4 Check if there is any leakage in the hydraulic circuit or the side – shifting cylinder.

4.3 Abnormal positioning or side shifting

- 4.3.1 For any slow shifting movement , expand the throttle slice orifice;
- 4.3.2 For any trembled positioning movement of the fork , check if there is any air infiltration in the hydraulic circuit.

5 Routine Maintenance Instructions

- 5.1 Check the attachment everyday and verify if there is any leakage in the cylinder or oil tube and if the lower hook fits normally;
- 5.2 Check the attachment per 100 service hours and verify if there is any flexibility in the rubber hose connector , valve connector , cylinder connector or the lock screw of the lower hook ; if the clearance between the lower hook and the lower crossbeam is acceptable , and re – adjust it if the clearance is too large ;
- 5.3 Lubricate the upper and lower slide blocks of the attachment per 500 service hours ;
- 5.4 Check the attachment per 1000 service hours and verify the abrasion of the upper and lower slide blocks . Replace any that is less than 1.5mm in thickness for upper slide block and less than 5mm for the lower slide block.

6 Special Statement

Thank you very much for selecting products from Anqing Axle Factory . To full guarantee your rights and interests , pls read this statement carefully.

- 1、 The quality assurance defined for the forklift attachment products manufactured by Anqing Axle Factory should be:

- (1)、12 months after receipt of the cargo by the buyer;
- (2)、1000 hours of statutory working days after installation of the attachment;
- (3)、Whichever comes earlier.

2、The buyer and the final user are advised that :

- ◆ They should comply with our User's Manual in the installation , commissioning , operation and maintenance of our products to enable successful execution of our quality assurance;
- ◆ They may repair the attachment with our prior authorization , provided that they shall not remove or replace any part of the product without due approval;
- ◆ Any unauthorized repair or modification of the our attachment product or any unauthorized use of parts not provided by us , or any incompliance with our Use's Manual , Inspection Specifications . Operation Manual or Maintenance Instructions may lead to disqualification of our quality assurance;
- ◆ We assume no responsibility for any loss of , or any personal injury or property damage(including any indirect loss or damage)in connection with , the attachment product provided once it is owned or used by the buyer or final user.