

Instruction Manual

Pallet Tilter (LT10M)



Note: Owner/Operator must read and understand this instruction manual before using the pallet tilter.

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1. Before the first operating the machine, you should learn:

Please read, understand and follow these safety rules, maintenance, operating instructions and repair before operating this machine so as to prolong the lifetime of the machine and avoid death or damage of material.

- ♦ Please read the Instruction Manual carefully.
- ♦ The safety rules, maintenance, operating instructions.
- ♦ Proper application.
- ♦ Risks with improper use.
- ♦ Please replace the screw with hole of Part No.3450A before use.

2. General specifications

Model	LT10M
Capacity (kg)	1000
Pressure (MPa)	≤25
Lifting rod diameter (mm)	Ø30
Lifting rod stroke (mm)	200
Tilting rod diameter (mm)	Ø50
Tilting rod stroke (mm)	240
Pump rod diameter (mm)	Ø18
Pump rod stroke (mm)	35
Operating force of capacity (N)	230

3. Functions and features of the machine

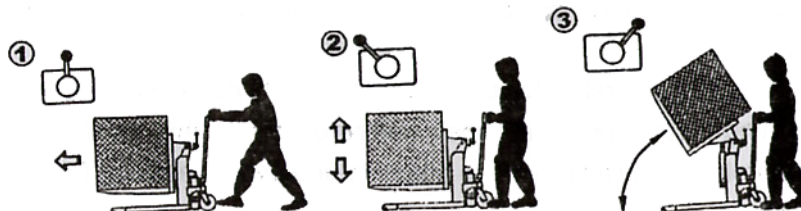
3.1. On the handle of the machine, you will find the control lever which can be set in three positions:

- 1) Control lever in neutral (Fig. 1): Drive: push, drag, move and turn the machine.
- 2) Control lever to left (Fig. 2): Lift /lower
- 3) Control lever to right (Fig. 3): Tilt/return

Fig.1

Fig.2

Fig.3



3.2. Handle with control lever functions (Fig. 4)

The working position of the control lever is Lift /lower and Tilt/return, the same working position can be in two different functions,

that is: normal lift, normal tilt, lower and return four functions.

3.3. Disengagement of the handle (Fig. 5)

The handle can be freely turned to the left or the right by pressing the foot pedal as shown right. This function makes the loading/unloading easier by giving better access.

Fig.4

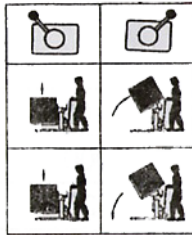
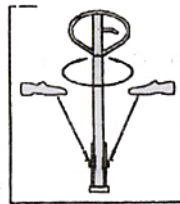


Fig.5



3.4. Locking the handle

The handle can be locked in $\pm 90^\circ$ position, which makes load or unload easily, but pumping the handle up and down is prohibited at this time.

Turn the handle to the middle position to be locked, press the handle and turn it left and right, making the steering wheel turn to the same position to push and pull in order to make the turning flexible.

4. Safety rules

4.1. Optimum safety

4.1.1. Avoid overloads

The maximum load must not be exceeded. Remember, the machine is designed for evenly distributed load, if it is overloaded there is a risk of bending.

4.1.2. Avoid offset loads

The load must be distributed evenly on forks or pallets, with a distance of 400mm between center of gravity and forks front, the maximum height of center of gravity is 420mm, the minimum is 200mm, the distance out of this scope will reduce the level of safety and increase the risk. (Fig. 7)

Goods on pallets or forks must be properly secured, avoid unbalance the load, so that they can not fall off during transport, when the truck is lifted, or when the truck must remain lifted for a time. (Fig. 8)

Fig.7

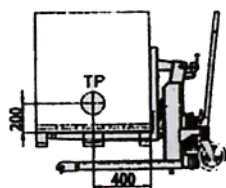


Fig.8



4.1.3. Understand the relationship between pressure valve and overflow valve

The pressure valve (D) on the machine is factory-set for the maximum design load 1000kg. Setting the overflow valve (W) to avoid the risk of overload, when lifting the overload, the overflow valve opens to make the lifting fail, if the overflow valve does not open, the lifting of overload will succeed, but this is very danger, so inspect and adjust the overflow valve, even replace the entire valve insert.

4.1.4. Driving loaded

The machine is designed for use on even and level floor. During transport the forks shall be raised as little as possible. Transport with raised forks should be made over the shortest possible distances and at low speed.

Do not transport when tilting goods on the machine, this is not safe. (Fig. 9)

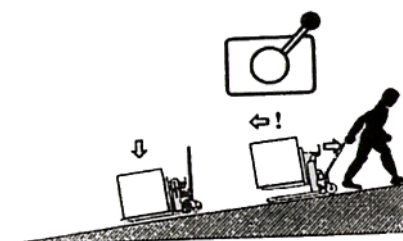
Fig. 9



4.1.5. Driving the machine on the slope (Fig.10)

- 1) The machine shall be unloaded or a small load.
- 2) The load shall be in the lowest position.
- 3) The gradient shall be no more than 2° when dragging the machine.
- 4) The operator shall be on the upper position whether upgrade or downgrade.

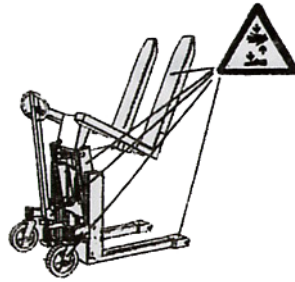
Fig. 10



4.2. Warning

Never place hands or feet on the moving parts, occurring the risk of injury. (Fig. 11)

Fig. 11



4.3. Safety regulations

- ♦ Never walk under a raised load.
- ♦ Before lowering the forks, make certain that no foreign elements can hinder the free lowering of the forks.
- ♦ The machine is designed for use on even and level floor.
- ♦ During transport the forks shall be raised as little as possible.
- ♦ Transport with raised forks should be made over the shortest possible distances and at low speed.

5. Maintenance and operating instructions

5.1. Lifetime of the machine

Regular inspection, repair and the replacement of worn or defective parts in good time will prolong the life of the machine.

“Prevention is better than repair”, therefore ensure:

- ♦ Correct usage.
- ♦ Regular cleaning.
- ♦ Oil changes at the correct intervals.
- ♦ Periodic safety inspection.

5.2. Lubrication and oil change

Under normal conditions the machine requires no lubrication. All ball bearings are sealed and treated with molybdenum disulphide grease. So it has self-lubricating function during moving. Use the hydraulic type oil according to the table below.

Temperature	Oil
-20°C~+40°C	L-HV46 Hydraulic oil

5.3. Oil change

5.3.1. Draining:

- 1) Lower the forks to bottom position.
- 2) Remove the discharge valve shaft (133) in the discharge valve body (130Q) and the spring (135).
- 3) The oil now runs out of the hole of the discharge valve (pour the waste oil in an oil container).

- 4) After draining off the oil, install the discharge valve shaft and the spring back.

5.3.2. Filling:

- 1) Remove the screw (3450) of the reservoir (3448).
- 2) Fill the hole with oil, the oil level shall be on level with the filler hole. Oil quantity: 0.8 liters.
- 3) Insert the screw (3450) into the hole of the reservoir (3448).
- 4) Expel the air from the pump unit as point 5.7.

5.4. Replacement of pressure valve (D), overflow valve (W) and discharge valve (B)

If all fault remedy possibilities have been tried without satisfactory results, the three valves inserts must be replaced.

After the replacement, fill the oil in the tank again. Then bleed the system as point 5.7.

5.5. Seal leakage

Locate the point at which oil leakage appears and then replace defective seals.

5.6. The overflow valve does not seal completely

The overflow valve will open when the load exceeds the 20% of the capacity, the overflow valve must seal completely in capacity, no leakage.

(This has been set in factory, do not regulate it under general conditions.)

Press the pump rod by the control lever quickly so that oil quickly flows over the valve cone (best with a small load on the forks). If the forks do not lift or tilt, it is because that the overflow valve does not close (not seal), regulate the pressure of the spring of the overflow valve. If this does not solve the problem, the valve insert must be replaced by new ones.

5.7. Bleeding the hydraulic system

The pump will not operate if there is air in the hydraulic system.

The system can be bled as follows:

- 1) Loosen the screw (3450) of the reservoir (3448).
- 2) Pump the control lever to make the forks up to the top, then open the discharge valve quickly to make the forks down to the bottom.
- 3) Open the discharge valve, keep on pumping the control lever until expel the air.

If the hydraulic system contains only a small amount of air, it will be bled automatically when the forks with load are pumped up to top position.

5.8. Cleaning

When cleaning the machine, do not direct the jet onto bearings and seals. Otherwise the grease will be washed out and the life of the equipment shortened.

5.9. Adjustments of the discharge handle

5.9.1. Three positions of the discharge handle (Fig. 6)

Lowering position (Discharge position):

The discharge handle of the control lever is in the upper position (pos.1).

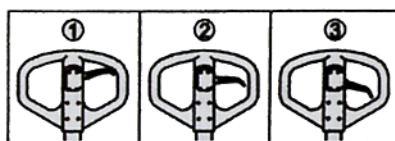
Normal position (Neither lift nor lower position):

The discharge handle of the control lever is in the neutral normal position (pos.2).

Lifting position (Lift or tilt position):

The discharge handle of the control lever is in the bottom position (pos.3).

Fig. 6



5.9.2. Adjustment of normal position

- 1) Place the small handle bar in normal position (pos.2).
- 2) Press the control lever to the lowest position.
- 3) Regulate the nut (H3414) and the regulating screw (3454) on the crank link (3453) to make the crank link be dragged, while the forks in the state of neither lower nor lift position.

5.9.3. Adjustment of lifting position

- 1) Place the small handle bar in lifting position (pos.3).
- 2) Pump the control lever, the crank link (3453) shall not be dragged, the forks in the working state of lifting and tilting, while the discharge valve shall be closed completely.
- 3) If the forks do not lift or tilt, regulate the nut (H3414) and the regulating screw (3454), until satisfy the needs of normal position and lifting position simultaneously.

5.9.4. Adjustment of lowering position

- 1) Pull the small handle bar in lowering position (pos.1).
- 2) The crank link (3453) shall be dragged, and make the discharge valve and pressure valve open completely, the forks in the lowering state.
- 3) If the forks do not lower, regulate the nut (H3414) and the regulating screw (3454), until satisfy the needs of three state positions simultaneously.

5.10. Forks height adjustment

Two rollers (F3407) in the middle of the carriage are mounted on eccentric axle (F3408), turn the eccentric axle, and adjust the tilting angle of the carriage so that they can be adjusted.

Adjustments:

- 1) Loosen the setting screw (F3410, each one on the left and right).
- 2) Lock the hexagon point of the eccentric axle (F3408) with a wrench, the eccentric axle can now be turned to give the necessary adjustment.
- 3) To ensure the same load on all rollers, the eccentric axle (F3408) must be adjusted on both sides and to the same position.

6. Troubles shooting

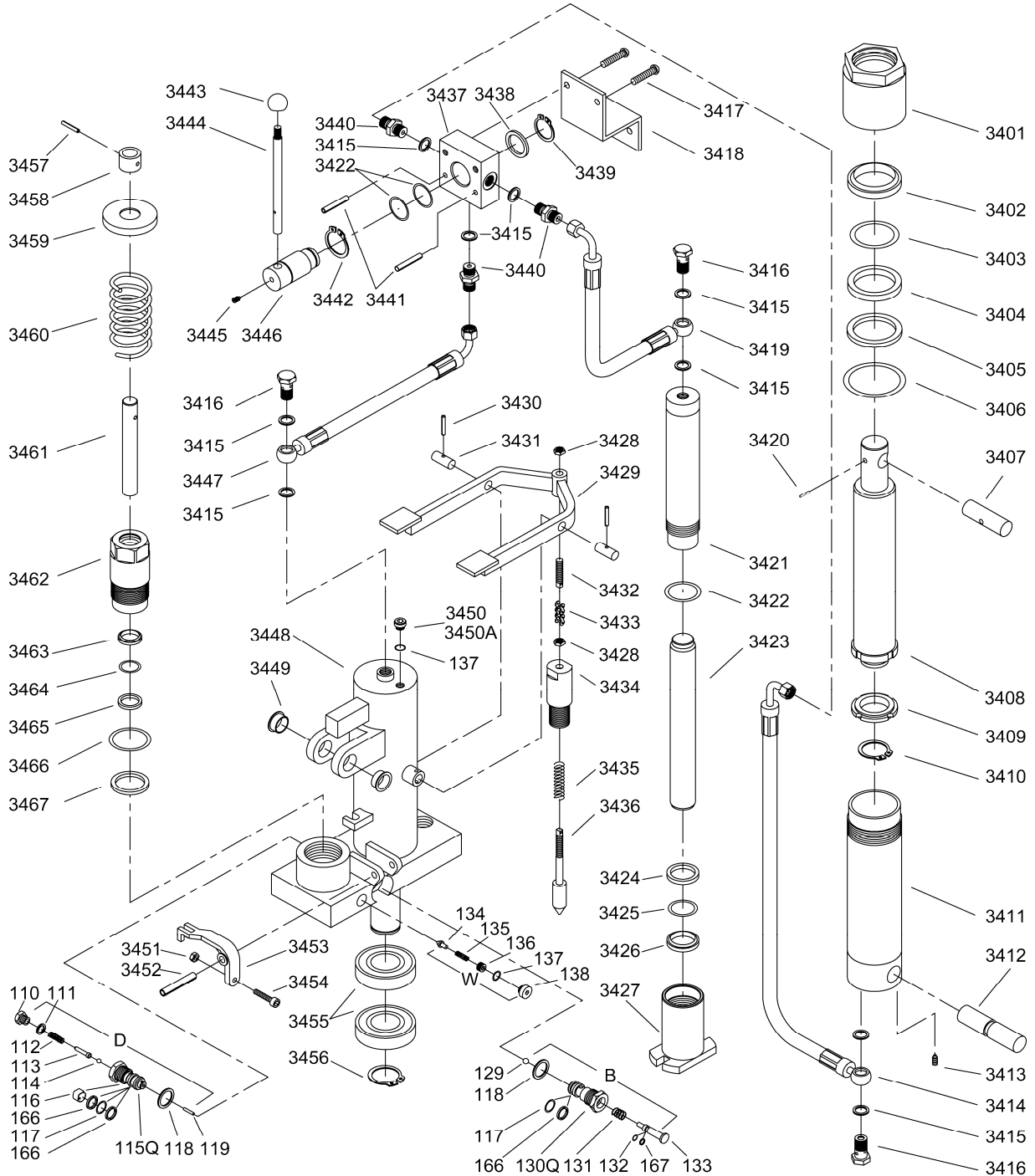
When the machine is used every day, adjustments and the replacement of worn parts might be necessary. For the frequency of troubles, causes and actions please refer to the following table.

NO	TROUBLE	CAUSE	ACTION
1	The forks do not lift up.	-Not enough hydraulic oil. -Discharge valve is out of adjustment or locked. -Air in the hydraulic oil. -The oil has impurities. -Seals leakage. -Overflow valve is not sealed or out of adjustment. -Pressure valve is out of adjustment. -Overload the machine seriously.	-Pour in more oil. -Adjust the discharge valve, eliminate locking. -Expel the air. -Change the oil. -Replace seals with new ones. -Adjust the overflow valve or replace component. -Adjust the pressure valve. -Lift according to the rated capacity.
2	The forks do not lift to maximum height.	-Not enough hydraulic oil.	-Add more oil.
3	The forks unable to lift 1000kg.	-Overflow valve is out of adjustment or not sealed completely.	-Adjust or replace the overflow valve.
4	The forks sink after they have been raised.	-Pressure valve does not seal completely. -Seals leakage. -Discharge valve is out of adjustment.	-Adjust the pressure valve. -Replace seals with new ones. -Adjust the discharge valve.
5	The forks do not descend.	-Discharge valve is out of adjustment. -Low temperature, viscosity class is large. -The lifting rod is deformed resulting from a seriously unbalanced load. -A part has been damaged or been deformed resulting from unbalanced load.	-Adjust the discharge valve. -Replace the hydraulic oil applied to the low temperature. -Replace the lifting rod. -Repair or replace component.
6	The forks do not descend to the lowest height.	-The eccentric axle of carriage is out of adjustment.	-Adjust the eccentric axle.
7	The forks do not lift horizontally.	-The eccentric axle of carriage is out of adjustment.	-Adjust the eccentric axle.

If the problem cannot be solved according to the above table, please contact the manufacturer.

7. Exploded View & Parts List

7.1. Pump Assembly

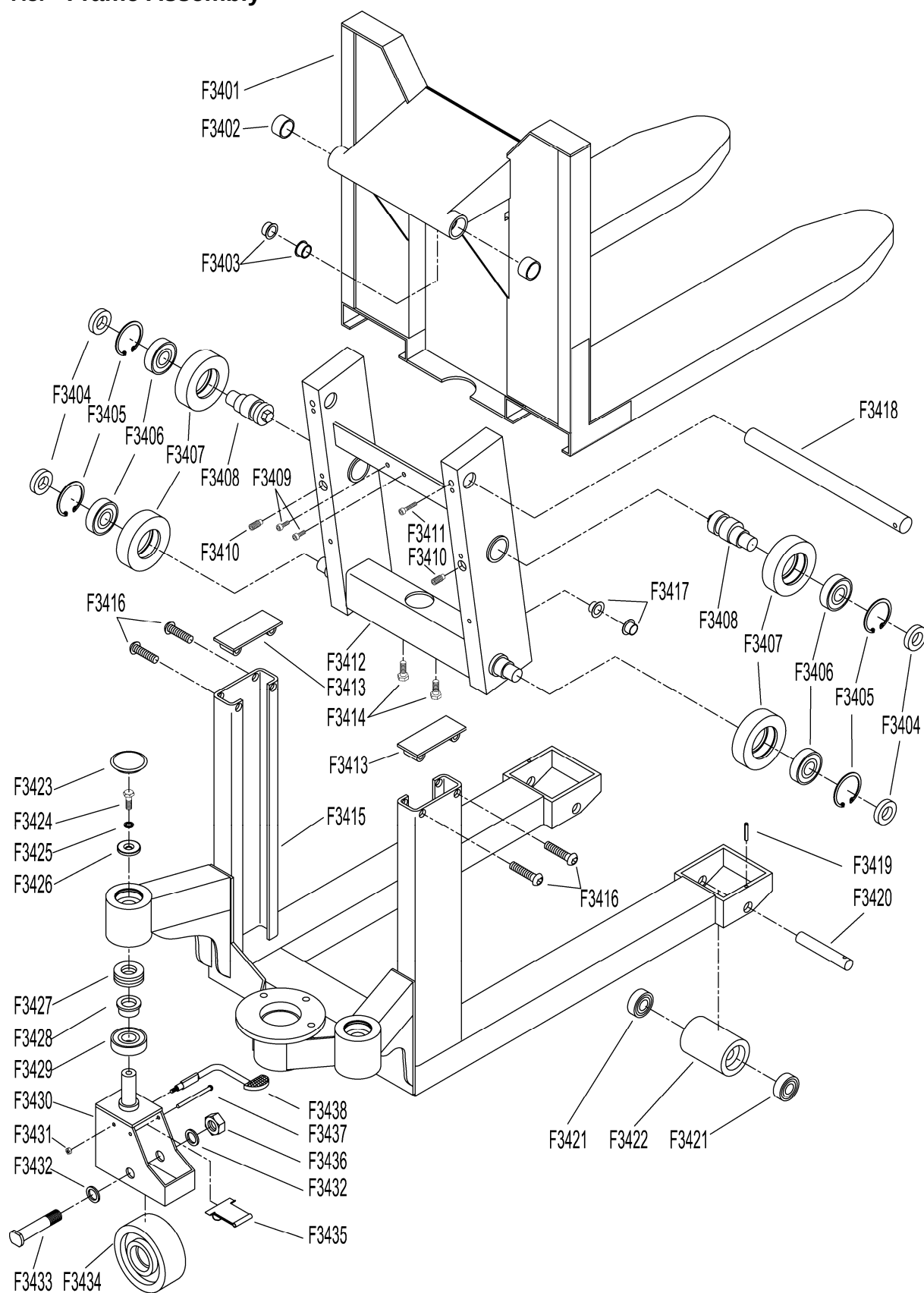


W: overflow valve
D: pressure valve
B: discharge valve

7.2. Parts List of Pump Assembly

Parts No.	Description	Q'ty	Parts No.	Description	Q'ty
3401	Big nut	1	3446	Change-over valve	1
3402	Dust proof ring	1	3447	High pressure tube III	1
3403	O-ring	1	3448	Pump assembly	1
3404	Y-ring	1	3449	Bushing	2
3405	Washer	1	3450	Screw	1
3406	O-ring	1	3450A	Screw	1
3407	Locking axle	1	3451	Hexagon nut	1
3408	Tilting rod	1	3452	Spring pin	1
3409	Guide casing	1	3453	Crank link	1
3410	Retaining ring	1	3454	Hexagon socket	1
3411	Tilting cylinder	1	3455	Bearing	2
3412	Locking axle	1	3456	Retaining ring	1
3413	Setting screw	1	3457	Spring pin	1
3414	High pressure tube I	1	3458	Spacing casing	1
3415	Red copper washer	9	3459	Spring cover	1
3416	Connecting bolt	3	3460	Spring	1
3417	Pan head screw	2	3461	Piston	1
3418	Mounting plate	1	3462	Pump cylinder	1
3419	High pressure tube II	1	3463	Dust proof ring	1
3420	Spring pin	1	3464	O-ring	1
3421	Lifting cylinder	1	3465	Y-ring	1
3422	O-ring	2	3466	O-ring	1
3423	Lifting rod	1	3467	Red copper washer	1
3424	Y-ring	1	110	Screw	1
3425	O-ring	1	111	Red copper washer	1
3426	Dust proof ring	1	112	Spring	1
3427	Small nut	1	113	Pressure rod	1
3428	Hexagon nut	2	114	Steel ball	1
3429	Spacing parts	1	115Q	Pressure valve body	1
3430	Spring pin	2	116	Split ring	1
3431	Axle	2	117	O-ring	2
3432	Eye bolt	1	118	Red copper washer	2
3433	Chain	1	119	Steel needle	1
3434	Mounting base	1	129	Steel ball	1
3435	Spring	1	130Q	Discharge valve body	1
3436	Bolt	1	131	Spring	1
3437	Change-over valve	1	132	O-ring	1
3438	Washer	1	133	Discharge valve shaft	1
3439	Retaining ring	1	134	Valve taper core	1
3440	Connecting joint	3	135	Spring	1
3441	Spring pin	2	136	Pressure regulating	1
3442	Retaining ring	1	137	O-ring	2
3443	Handle sleeve	1	138	Screw	1
3444	Handle	1	166	Retainer	3
3445	Setting screw	1	167	Retainer	1

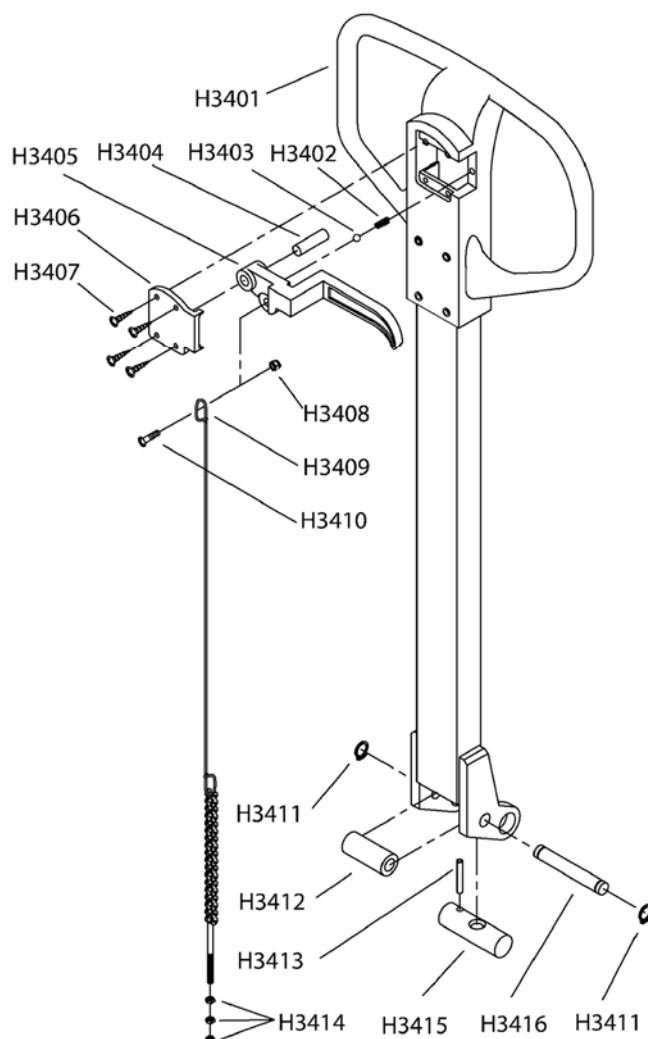
7.3. Frame Assembly



7.4. Parts List of Frame

Parts No.	Description	Q'ty	Parts No.	Description	Q'ty
F3401	Forks assembly	1	F3420	H-link axle	2
F3402	Bushing	2	F3421	Bearing	2
F3403	Bushing	2	F3422	Load roller	2
F3404	Sliding pad	4	F3423	Dust cover	2
F3405	Retaining ring	4	F3424	Hexagon head bolt	2
F3406	Bearing	4	F3425	Spring washer	2
F3407	Roller	4	F3426	Spacing cover	2
F3408	Eccentric axle	2	F3427	Bearing	2
F3409	Hexagon socket screw	2	F3428	Dividing bush	2
F3410	Setting screw	2	F3429	Bearing	2
F3411	Hexagon socket screw	1	F3430	Steering wheel bracket	2
F3412	Carriage assembly	1	F3431	Locking nut	2
F3413	Spacing cover	2	F3432	Axle sleeve	4
F3414	Hexagon head bolt	2	F3433	Steering wheel axle	2
F3415	Frame assembly	1	F3434	Steering wheel	2
F3416	Pan head screw	4	F3435	Brake spring leaf	2
F3417	Bushing	2	F3436	Locking nut	2
F3418	Axle	1	F3437	Axle	2
F3419	Spring pin	2	F3438	Brake control lever	2

7.5. Handle Assembly



7.6. Parts List of Handle

Parts No.	Description	Q'ty	Parts No.	Description	Q'ty
H3401	Handle	1	H3409	Pull rod assembly	1
H3402	Spring	1	H3410	Pan head screw	1
H3403	Steel ball	1	H3411	Retaining ring	2
H3404	Pin	1	H3412	Pressure sleeve	1
H3405	Small handle bar	1	H3413	Spring pin	1
H3406	Cover	1	H3414	Thin nut	3
H3407	Tapping screw	4	H3415	Axle	1
H3408	Self-locking nut	1	H3416	Axle	1

Assembly

H: Handle Ass'y H3401, H3402, H3403, H3404, H3405, H3406,
 H3407, H3408, H3409, H3410, H3411, H3412,
 H3413, H3414, H3415, H3416

LP: Lifting Cylinder Ass'y 3421, 3422, 3423, 3424, 3425, 3426, 3427

LR: Load Roller Ass'y F3421, F3422

SW: Steering Wheel Ass'y F3434, F3421

PC: Pump Cylinder Ass'y 3461, 3462, 3463, 3464, 3465, 3466, 3467

TP: Tilting Cylinder Ass'y 3401, 3402, 3403, 3404, 3405, 3406, 3407,
 3408, 3409, 3410, 3411, 3412, 3413, 3420