MODEL- 1LF-535，1LF-435，1LF-430，1LF-335 ,1LF-330 SERIES HYDRAULIC REVERSIBLE PLOUGH

OPERATION MANUAL

Draft of the location of the plough poles

### Uses and applicable scope:

Model- 1LF-535，1LF-435，1LF-430，1LF-335 hydraulic reversible plough is designed and manufactured according to The National Standard for the share plough used in the dry field in the North. It is suitable for ploughing on the cultivated dry field with the soil resistance less than 1.0kg/cm2, and also can be used in the paddy field in the North. The operation is double direction as shuttle doing. After ploughing, the land surface if smooth without opened and closed furrows, and less empty lines at both end of the land. Operation on slope land, the slope degree will be reduced year by year.

### Main Specifications

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | 1LF-435 | 1LF-430 | 1LF-335 | 1LF-330 | 1LYF-230 | 1LYF-320 |
| Overall DimensionL x W x H (cm) | 330\*178\*149 | 300\*160\*138 | 270\*160\*149 | 250\*150\*135 | 2200\*1350\*1250 | 2100\*1350\*1200 |
| Weight (kg) | 830 | 750 | 650 | 600 | 250 | 230 |
| Nos. of Plough Body | 4 left, 4 right | 4 left, 4 right | 3 left, 3 right | 3 left, 3 right | 2 left, 2 right | 3 left, 3 right |
| Working Width/Share (cm) | 35 | 30 | 35 | 30 | 30 | 20 |
| Working Depth (cm) | 16-27 | 16-25 | 16-25 | 16-25 | 16-25 | 10-25 |
| Fitted Power (HP) | 75-100caterpillar | 65-90 wheels | 70~100 wheels | 55-80 wheels | 30-50 | 30-50 |
| Type of Linkage | 2-point mount | 3-point mount | 3-point mount | 3-point mount | 3-point mount | 3-point mount |
| Productivity (mu/hr) | 8-10 | 7.5-9 | 6.5-9 | 6.5-8.5 | 4-5 | 34 |

### Main Structure and Reversing Mechanism

* 1. Main Structure: The structure of all hydraulic reversible plough is same or similar except the nos. of the plough body. See Fig. 1, it consists of: 1. plough frame assembly; 2. plough body assembly; 3.ground wheel assembly; 4. double action cylinder; 5. mounting frame assembly.



* + 1. Plough Frame Assembly (Fig. 2) consists of: 1. plough frame welding; 2. smaller bushing;

3. grease nozzle; 4. bigger bushing; 5. reversing axle washer; 6. reversing axle; 7. reversing axle washer. Smaller and bigger bushings are fixed on the plough traverse beam by M10x40 bolts with spring washers. Reversing axle is fixed on the traverse beam by M30 nut with spring washer. Reversing axle washer is placed on the other end of the axle and locked by the split pin 8x70, to fix the cylinder rod ring.



* + 1. Plough Body Assembly (Fig. 3) consists of: 1. plough share; 2. plough tribal; 3. plough board; 4. plough leg; 5. plough support welding; 6. ground side plate. All these parts are fixed together by countersink and neck bolt M1x35, M12x35, M16x80 and the nuts with spring washers.

 

* + 1. Mounting Frame Assembly (Fig. 4) consists of: 1. upper mounting pin; 2. lower mounting pin; 3. cylinder support pin axle; 4. mounting frame welding; 5. adjusting threading rod.

 

* + 1. Ground Wheel Assembly (Fig. 5), there are two types of the ground wheel, Model ILF-430 and 1LF-335 is assembled 2 wheels of type I, while others is assembled one wheel of type II.

Type I consists of: 1. guiding tube welding; 2. fixing plate; 3. split pin; 4. locating pin; 5. U-bolt; 6. supporting pole welding; 7. depth control wheel welding; 8. hub; 9. defense washer; 10. defense bushing; 11. J-type seal without bone; 12. grease nuzzle; 13. bearing 207; 14. separate bushing; 15. slotted nuts M24; 16. flat washer; 17. axle cap



Type II consists of: 1. guiding tube welding; 2. locating pin; 3. depth control wheel welding; 4. supporting pole welding; 5. defense washer; 6. defense bushing; 7. rubber seal; 8. roller bearing 30208; 9. roller bearing 30206; 10. smaller round nut M24x1.5; 11. straight press in oil cup; 12. axle cap; 13. stop washer; 14. bearing cover; 15. defense cup.

* + 1. Cylinder (Fig. 1), cylinder support ring is fixed to the mounting frame by the pin axle, while the rod ring is assembled onto the reversing axle of the plough frame.
	1. Reversing Mechanism: during reversing, the tractor hydraulic system works on the cylinder and the plough frame with the two sets of plough body turn around the center axle for 180 degrees, so that the plough can work from opposite direction as shuttle’s way. To reduce the impact during reversing, we have a buffering device in the hydraulic system.

### Assembly and Installation

Check all the parts according to the packing list and then start assembling and installation.

* 1. Assembly of the plough
		1. Assembly of the center axle (Fig. 6), place the plough frame on some supports more than 650mm above the ground surface and keep the frame steady and levelly, stick the dust prevention cap of the front and rear beam to the big and small bushings with grease, put the center axle into the bushings, at the same time, fill the dust prevention slips into the caps and assemble the cylinder rod ring onto the reversing axle, at last, fill the dust prevention slips into the defense ring and place the ring onto the center axle and then lock the position by the center axle nut and split pin 8x110.

 

1. split pin; 2. center axle nut; 3. defense ring of the center axle; 4. small bushing; 5. dust prevention cap of rear beam; 6. center axle of the mounting frame; 7. defense pin; 8. dust prevention cap of front beam; 9. big bushing; 10. dust prevention slips

* + 1. Fix the cylinder bottom ring to the mounting frame by axle pin.
		2. Assemble the plough leg with plough body onto the plough frame and fixed tightly by U-bolts, nuts and spring washers one by one.
		3. Fix the ground wheel assembly onto the vertical beam behind the second traverse beam by U-bolt and fixing plate.
	1. Mount the plough with the tractor

Shorten the left and right connection rod of the tractor’s mounting device and keep the length same, two vertical rods connect with the two lower mounting points of the plough and the center rod connect with the upper point of the plough.

If matched with wheel tractor, tractor’s mounting device is 3 points. Before connection, adjust the space between the wheels to be 135-150cm inside. If matched with caterpillar tractor, mounting device is 2 points. Combine the two vertical rods together in the middle of the lower axle. Left rod is installed at outside of the arm and the right rod at inside (See Fig. 7). Two position limited chains are cross connected and tighten them when the plough is lifted to top position.

 

* 1. Installation of the reversing valve, oil tube and operation device:
		1. Installation on Tieniu-55 tractors:

Take offer the last two screws at the left of the rear bridge cover of the tractor, assemble reversing valve support and the valve (Fig. 8), disassemble four screws on the cover of the out-put shaft operation handle, fix the peddle support to it, connect valve handle with pad handle by rod and bolt, hang spring.

 

* + 1. Installation on Dongfanghong-802 tractors

 Take offer the last two screws at the right of the checking window cover on the rear bridge of the tractor, assemble reversing valve support and the valve (Fig. 9), disassemble the distributor cover at the side of the driver seat, take off 3 screws on the distributor, install handle support and handle, connect handle and reversing valve handle by rod and bolt.

 

* + 1. Move the handle ( peddle) to check if the valve handle can touch the two position limiting screws, if not, adjust the rod length to touch them.
		2. Take off the two oil tubes from the main cylinder, connect to the two joints in the middle of the valves. The other two joints under the valves to be connected to the main cylinder by shorter oil tubes (if mounted with Dongfanghong-802, disassemble the two bigger joints from the cylinder and replaced by the other two smaller one in the parts box), two joints above the valves to be connected with the reversing cylinder on the plough frame by longer oil tubes. (assemble the buffering valve on the outlet in front of the cylinder and this outlet should be connected to the tractor’s distributor pressure dropping outlet ) See Fig. 10.

 

* + 1. Reversing valves are not required for connection to tractors with double distributors and multi oil ways.
1. reversing cylinder; 2. buffering valves; 3. reversing valve; 4. single valve distributor; 5. oil tube; 6. main cylinder.

### Operation and Adjustment

* 1. Operation for reversing:

Before reversing, lift the plough to the top position. Operate the reversing handle (peddle), make the reversing valves work, close the oil way to main cylinder, connect the reversing cylinder to distributor device. Then operate distributor handle to pressure dropping position to turn the plough frame. When the plough frame is nearly vertical, move the distributor handle to floating position, the frame is turning continuously by the inertia for a certain angle, then move the distributor handle to lift position, make the plough frame turn to working position (Model 1LF-435A can be turned to working position directly by the inertia). At last, operate the reversing valve handle, that is close reversing cylinder, connect main cylinder, then operate distributor handle to drop the plough frame.

* 1. Adjustment during working;
		1. Left and right leveling adjustment, adjust the length of the left and right mounting rod of the tractor to balance the plough frame. Also can adjust the threading rod on the plough frame for auxiliary adjusting (See Fig. 4).
		2. Vertical adjustment, adjust the length of the upper rod of the tractor’s mounting device to adjust the vertical leveling.
		3. Depth adjustment, adjust the ground wheel to control the working depth.

### Maintenance

* 1. Clean off the mud or soil and grasses at a certain period.
	2. Each time when get to the end of the land, lift the plough during forwarding, lifting plough when the machine stopped is not allowed.
	3. After operation, check all the parts to ensure without any destroy or loosing. Repair or replace the parts immediately if necessary.
	4. Leakage of oil with the hydraulic system is not allowed.
	5. Lubricate the ground wheel after working for each 13 hectares, other lubrication points should be lubricated once each shift.
	6. Plough share should be replaced in time if over wearing, so do other parts.

### Transportation and Storage

* 1. Transportation: If transport in short distance, it can be transported by mounting with the tractor directly. If in long distance, it should by transported by vehicle.
	2. Storage: After each working season, the machine should be cleaned and apply rust prevention oil on the working parts and lubricant on the moving parts, then the machine should be stored in the warehouse or on some supports with coverings in the open air.

### Safety Caution

* 1. Users should read the operation manual carefully and understand the structure and the method of operation and adjustment of the machine.
	2. If adjustment under the plough during it is lifted up, the rear part of the plough must be supported steadily.
	3. Reversing the plough before lifting up is forbidden.
	4. Anyone is not allowed to be near the plough during reversing or turning corner.
	5. During transportation, adjust the tractor’s upper rod to be shortest and lift up the plough to be transporting position. And check it usually during transportation, and lift it in time if it is dropped down.
	6. Working on the land with many stones or tree studs is forbidden.
	7. Working on the land with frozen 5-6cm is not allowed.

### List of Wearable Parts

|  |  |  |  |
| --- | --- | --- | --- |
| Item | Location | Part Name | Remark |
| 1 | Fig. 3 (1) | Plough share | Purchased by the user |
| 2 | Fig. 3 (6) | Ground side plate A, B | Purchased by the user |
| 3 | Fig. 3 (3) | Plough tribal | Purchased by the user |

### Note

To improve the products quality, the structure is improved constantly, so there may be some differences between the products and the operation manual. Hope you are well understand it.