

700/750/800/850/900/950/1000
704/754/804/854/904/954/1004

Wheeled Tractors

Operation Manual

Product Identification marks record form

Trade name:
Model Type:
Identification number of Tractor:
Identification number of Chassis:
Engine type:
Identification number of Engine:
Time of acquisition:
Place of purchase and contact:
User name:
Manufacturer's Name:
Manufacturer's Address:
Manufacturer's Phone:

Note: 1. Please users fill out the above form carefully at time of purchasing.

2. The number in the table shall be completely written (including letters).

Series 80 Wheeled Tractors

-700/750/800/850/900/950/1000

-704/754/804/854/904/954/1004

Operation Manual

* * *

Number: BW-SM-E-01.1

Instruction to Users

To honorable users:

Thank you for your belief in our company, and purchasing wheeled tractors of our company. For the sake of correct, reasonable and effective operation of tractors, please pay attention to the following information.

1、 Before operating the tractor, please read this specification carefully whether you have experience of driving or not before, because it will help you operate tractor more reasonably and effectively.

2、 For the sake of more economic benefit to you and longer service life of tractor, before operation, please read carefully this operation specification and operation instruction of matching engine and agricultural implements, and manipulate and maintain tractor closely as required in operation specification for the purpose of full use of performance of tractor.

3、 Please don't modify tractors randomly for fear of effect on tractor performance and unexpected accident, or even the consequence that it is hard to performance guarantee service.

4、 Due to great difference in agriculture and soil condition, there are diversified purposes, parameters, matching agricultural implements and operation efficiency recommended in this operation specification accordingly. Please users make a choice according to practical conditions.

5、 The tractor can be only manipulated, maintained and repaired by persons familiar with characteristics of tractor, and relevant safe operation knowledge.

6、 Drivers must have the license of agricultural vehicles and tractors issued by local traffic department.

7、 Local safety rules and road traffic regulations shall be observed at any time for fear of unexpected accident.

8、 Tractor shall be used in accordance with requirements of this operation specification; Otherwise, it will probably lead to degradation or failure of tractor.

9、 This operation specification is not a quality warranty. Therefore users must not put forward any requirements on the basis of data, illustration or instruction in the operation specification.

10、 The contents said in this operation specification shall be subject to the published product structure. The contents are subject to change without further notice. Please users pay attention to it.

11、 The products in operation specification accord with the up-to-date standard before the date of manufacturing.

General Description

General Description

The operation specification introduces in detail the safe operation rules, operation precautions, main technical specification, and methods of wearing, operation, technical maintenance, adjustment, and trouble clearing etc. of series 80 of wheeled tractors for reference of tractor drivers and service man.

In this operation specification, safety sign  indicate important safety information. When seeing this sign, please pay attention to it to avoid possible injury. Read carefully the following information of the sign and inform other operators of it.

 Warning: denote that if not avoided, there will possibly be potential danger, such as casualties or serious personal injury.

 Attention: denote that if not avoided, there will be potential danger such as low and medium degree personal injury.

 Warning: denote that if not avoided, there will possibly be machinery breakdown or damage to environment.

Note: specifying supplementary information.

This operation specification is an important part of products. It will be supplied to users along with tractors. Please users keep it properly.

In case of incomprehension of part in the operation specification, you can dial service hotline for consultation.

Intended Use

This series of wheeled tractors are multipurpose agricultural wheeled tractors. This type of tractors is characterized by compact structure, convenience manipulation, flexible steering, great tractive force, wide application, and maintenance and repair convenience etc. if fitted with appropriate agricultural implements, the tractors will be able to conduct plowing, harrowing, sowing and harvesting operations etc. fitted with a trailer, they can be used for agricultural transportation; trailer and tractor mass ratio (specific value between gross mass of trailer and unladen mass of tractor) shall not be more than 3. By power output shaft, they can be coupled with straw returning machine to conduct straw returning operation. They can be also used as motive power of water pump and threshing machine. Please fit agricultural implements correctly as required in this operation specification for the sake of maximum economic benefit. Users shall closely comply with prescribed service, maintenance and repair conditions of manufactory, as well as basic requirements for intended use. The use for other operation will deviate from intended use of tractors.

The tractors can be only operated, maintained and repaired by persons familiar with their characteristics, as well as relevant safe operation knowledge.

Users must comply with the rules against unexpected accident, other safety regulations and road traffic regulations at any time.

Manufactory shall assume no responsibility for degradation of reliability, machinery breakdown or personal injury caused from random modification, or use for the operation going against intended use of tractors.

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Safety Precautions

1. Safety Precautions

1.1 Safety Rules and Precautions for Use

Read Before Operation

1. One must be fully read and understand the use and maintenance instructions and safety warning signs ;
2. Must remember the correct operation and working practices.

Qualified operator

1. When you to operate the machines, must have sufficient judgment ;
2. Bodily sensations, drink, lack of sleep, pregnant women, color blindness, and children under 18 years of age are not allowed to operate the machines ;
3. The driver should be trained to obtain a driver's license and acceptance testing on time ;
4. The initial operators should drive at low speed before familiar .

The driver's clothing requirements

In operation, the driver should wear proper tight-fitting clothes, not allowed to wear the loose jacket and shirt, and don't wear a tie.

The use of oil-bearing

1. The fuel is combustibles, fireworks is strictly prohibited when use the fuel ;
2. Should turn off the engine before filling the fuel ;
3. Don't smoking when you refueling or maintenance of fuel systems ;
4. When the fuel or oil overflow, use a clean rag cleaned ;
5. The quality of fuels and lubricants in strict accordance with the requirements of the Appendix provides.

Placement of waste oil

1. The oil replaced is waste oil, don ' t arbitrarily discarded ;
2. The replaced battery acid will pollute the environment, don ' t arbitrarily fly-tips.

Safety Precautions

When the pipeline leak

If high pressure oil leak from the pipeline, don't use hand to direct touch ; You can use the thick paper or slab to detect the site of the possible leakage.

Emergency disposal

1. When brake failure happens, should stabilize the steering wheel to reach a safe place , then, immediately turn off, turn off the engine ;
2. Failure of the steering wheel, should immediately brake, then turn off the engine ;
3. When the machine catch fire, should immediately turn off the engine. If you have fire extinguishers, use it point at the flame roots plunging; if without fire extinguishers, available sand for fire fighting ;
4. After a security incident, you should immediately call the local emergency center, hospital or fire department emergency telephone.



Warning :

1. For your life and property safety, to the happiness of your family, please security operation ;
2. In order to prevent the tractor suddenly started and the accident risk,when the tractor start, should pay attention to the road with or without obstructions, whether someonebetween tractors and farm implements or trailers, And whistle warning ;
3. Do not leave the driver's seat position to start and manipulate the tractor, when start the tractor, should ensure the gear lever in neutral position, Power take off joystick and the front drive lever in the separation of state, riser operating handle in the downward position to prevent the tractor suddenly starts and accident risk ;
4. Do not use the inter-terminal short circuit start the engine, otherwise, when the gearbox hanging , the tractor will automatically walk out of control, accident risk ;
5. The movement of the pedal should not be hindered, all pedal must be able to affect the back into place. On the floor, not placed under the pedal hindrance on the pedal travel, Not placed on the items will roll or slide to pedal. Pedal not be placed around

Safety Precautions

- the foot of carpet or other bedding material, so as not to affect the pedal risk of accidents ;
6. When the tractor was operating, not allow people moving up and down tractor, Not allowed to climb under the tractor do inspection and repair work when the engine is running, to prevent the risk of accidents ;
 7. After stopping, before the driver down from the tractor , be sure to remove the key, The shift lever should on the neutral position and lock the parking brake handle, To prevent the tractor suddenly start, have actions out of control, and accident risk ;
 8. The brake pedal must be chain together when do transport work. reasonable control of speed, when over the culverts, bridges, full attention to whether the ultra-high, when turning, must full deceleration in advance to avoid accidents from happening, cause rollover crash ;
 9. When driving on the hillside, you must use the lowest gear, and rational use of the throttle control, The tractor is strictly prohibited neutral gear or the clutch pedal is depressed sliding, in order to avoid roll-over risk when driving on the hillside, it is forbidden to change the shift ;
 10. Tractor shall not turning sharply at high speeds, can not use unilateral brake a sharp turn, it is forbidden to change the shift ;
 11. When tractor walking on the road, should pay attention to traffic signs, and strictly comply with traffic regulations, it is forbidden to change the shift ;
 12. When you transfer, you must strictly comply with traffic rules, it should be maintained between the two vehicles driving distance of at least 60m, in order to avoid the crash risk of accidents.
 13. When near the embankment of the ditch, hole, dams and other more vulnerable, the weight of the tractor may make it crash, by passing the driving ;
 14. The tractor shall not be overload; it is forbidden ultra-extreme working, in order to avoid mechanical overload, cause damage or even personal injury.

Safety Precautions

15. Operation of the tractor at night, you should have good lighting, so as not to affect the tractor work results, accidents dangerous occurrences.
16. When the tractors doing harvest or yard work, it should be installed mars eradication device on the exhaust pipe, to avoid the risk of accidental fires.
17. When you working in the rain and snow season, you must reduce the operating speed, to avoid roads, slippery floor, resulting in the roll-over risk.
18. When you operation power takeoff, you must ensure a reliable connection, reliable protection, to avoid moving parts pro lapse wounding.
19. When connection and traction implements, must ensure that each pin connection is reliable, solid, to avoid pin shedding caused by a collision hazard; when the torn off and mount the traction equipment, it should be ensure that the pin is all in state of separation, to avoid separated unclear cause damage machine and cause personal safety of dangerous.
20. When lifting, you must pay attention to the engine throttle control, to avoid lifting speed is too fast, resulting in the destruction of machinery or jeopardize the personal safety of dangerous;
21. When the battery charging, it should ensure that the liquid injection plug vent flow, away from open flame, when you fully charged, first off the power to prevent explosion.
22. To strictly observe the safety height allowed by the high-voltage transmission lines, in order to avoid accidents and dangerous occurrences.
23. When the tractor engaged in the operations of field harvesting, threshing, and transport of flammable goods, should be equipped with fire extinguishers, in order to avoid an accidental fire incidents;
24. When the tractor transport operations, the user should be equipped with fault warning signs. when the tractor failure, need for maintenance, you should placed failure warning signs in the direction of the vehicle coming, to warning the other vehicles here is a car need repair in front , to prevent danger.

Safety Precautions



Note :

1. Each of the connected parts of the bolts, nuts, and easily loose parts, such as front and rear driving wheel nut, steering tie rod coupling nut, steering wheel fastening nuts, should be inspected regularly, when the loosen happen, manner tighten in time , to avoid accidents dangerous occurrences.
2. When the tractor PTO shaft working, it must be installed PTO shaft guard, Prohibit people from approaching the PTO shaft, when the PTO shaft load, The tractor can not be a sharp turn to avoid damaging the universal joint or tractor PTO shaft, when you not use PTO shaft, the handle should in the separation position, to avoid accidents dangerous occurrences.
3. After stopping, before the engine does not turn off, the driver shall not leave the tractor, to prevent the tractor suddenly start, their own actions out of control, occur accident hazards.
4. Tractor slope on parking, be sure to use the parking brake (hand brake) and then plugged the rear wheel with a triangular plug, and change the shift (uphill location use forward shift, downhill position use reverse shift).
5. Tire installation and adjustment only can be doing by the experienced professionals use appropriate special tools , the tire installed not properly can cause serious accidents ;
6. When you clean-up tank, should be first turn off flame and turn off the engine and waiting the water tank cooling, then clean up, to avoid scalding injury and damage to the tank;
7. Before the installation of optional components, and changing parts or mount equipment, please note that the safety and carefully read the safety signs and instruction manual.

Note :

1. The new tractor or the tractor after the overhaul must be run-in according to tractor

Safety Precautions

run-in requirements ;

2.The tractor shall be strictly on request to use variety of solution. Fuel must have at least 48 hours precipitation purification, transfer system lubricants must be filtrated by the filter as the same upgrade filter as the raiser. Then, can filling ;

3.Tractors must check oil circuit, cooling water situation before the start, after the start, it is important to note the meter readings ;

4. Before using the PTO shaft-driven agricultural implements, should check the tractor and drive farm implements reasonable match. When farming, the angle of power take-off shaft and universal joint transfer shaft should less than 15° ; After enhance implements turning on the headland, The angle between PTO shaft\ implements output shaft and drive shaft should not bigger than 20° , now, the rotary tiller blade ground clearance is not less than 200mm ; Prohibit the rotavator buried at the start before start, which will causes rotary tiller and tractor clutch serious damage ;

5.When the tractor transferred with the implements, should spin out the decline adjust hand wheel (at driver's seat bottom) from counterclockwise direction, and locked farm implements to prevent the raiser operation handle be touched move and caused the accident of implements suddenly landing ; When the driver leave the tractor, be sure made the farm tools down to the ground ;

6.Winter temperatures below 0°C , you must use antifreeze.

7.Tractor front drive axle is only used in tire skid at field working and road mud conditions; other cases, prohibited use, or, will easily cause early wear and tear of tires and transfer system ;

8. When the tractor moving, the driver's foot is not allowed on the brake pedal or clutch pedal, in order to avoid the brake or clutch early damage.

9. When the tractor equipped with farm machinery for road transfer, should be hanging device on the rod adjusted to the shortest state, and adjust the limit lever to prevent farm implements from side to side, in the same time , need to tighten the lock nut on

Safety Precautions

the rod and limit rods, to ensure traffic safety, to avoid the resulting risk of the destruction of machinery and farm implements.

10. Maintenance of tractors, must be selected parts of acceptable quality.

Unscrew the radiator cap

When the engine is still in hot state, unscrew the radiator cap need very carefully, after a few minutes idle, and turn off the engine cooling, then loosen the radiator cap to the first shift location, after lose pressure and then unscrew the cover.

Maintenance of electrical components

1. Pull down the power lock switch key.
2. Disconnect the grounding line and the battery , then carry out electrical repairs.

When the tractor appears anomalies

1. Not allow the tractor "sick" work, particularly in the state of no oil pressure, low oil pressure, water temperature is too high or unusual noise, you should in time stop and check, and troubleshooting.
2. When you do lubrication maintenance and field adjustment, you should turn off the engine.

1.2 Safety warning signs



Note :

1. Safety warning signs should be kept clear and easy to see, if have dirty, use soapy water cleaning, and wipe clean with a soft sweeping movements cloth ;
2. Safety signs missing or unclear, should contact the manufacturer or the distribution department for replacement in time ;
3. If replace the parts which affixed safety warning signs, should replace safety warning signs at the same time ;

The content of safety warning signs comes to personal safety , must be strictly enforced.

Safety Precautions

Significance: the machine work to keep a distance from machine hot surfaces , otherwise it will burn accident occurred.

Stick place: muffler outside



Picture 1-1 Security warning signs

Significance: see picture 1-2

Stick place: right and left central fenders



Picture 1-2 Security warning signs

Significance: when you enhance the work of the rod control mechanism, away from the upgrade area, otherwise easily lead to personal injury.

Stick place: The rear of the left fender.



Picture 1-3 Security warning signs

Significance: before repair, maintenance and adjustment, you shall be in accordance with the manual requirements, shutting down the engine and out of key.

Stick place: The right side of the dashboard



Picture 1-4 Security warning signs

Safety Precautions

Significance: the driver must be in the driving seat to start the engine!

Stick place: near the starter motor.



Picture 1-5 Security warning signs

Significance: Please read the instruction manual to understand the Significance of no written security signs identity.

Stick place: The dashboard on the left.



Picture 1-6 Security warning signs

Significance: the differential lock signs.

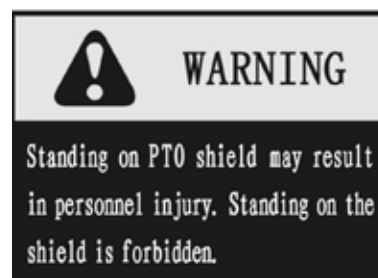
Stick place: differential lock pedal nearby.



Picture 1-7 Security warning signs

Significance : see picture 1-8

Stick place: near the PTO



Picture 1-8 Security warning signs

Safety Precautions

Significance : Fire ban warning signs
Stick place: the front of right fender



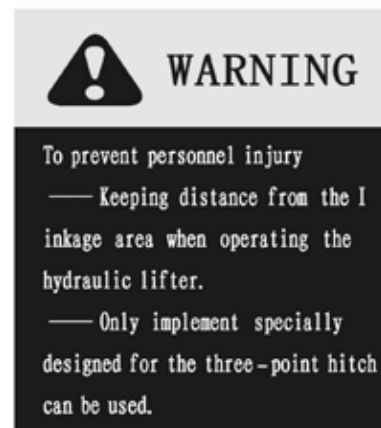
Picture 1-9 Security warning signs

Significance : Parking brake sign
Stick place: near the parking brake control handle nearby.



Picture 1-10 Security warning signs

Significance : Farm implements security operation sign
Stick place: left fender tail board.



Picture 1-11 Security warning signs

2. Operation Instruction

The proper operation of the tractor can make the performance of the tractor fully exerted, reduce the tractor abrasion and accident, and guarantee that the operation on farmland and road is completed in high-quality, high-efficiency, and low-consumption and safely by the operator.

2.1 Product description

The use, technical maintenance, adjustment, faults and troubleshooting method of the series tractors are described in the manual.

The series wheeled tractor, which is a kind of multi-purpose medium-sized agricultural wheeled tractor, is featured by compact structure, convenient for manipulation, flexible steering, large traction force, convenient for repair and maintenance.

2.2 Operating mechanism and instrument of tractor

2.2.1 Operating mechanism of tractor

The operating mechanism is arranged at the middle position of the tractor and the front, back, left and right side of the driver.

1. Power take off operating handle (left rear side of driver)
2. Front drive operating handle (left front side of driver)
3. Clutch pedal (front face and left side of driver)
4. Flameout wire handle (front face and left side of driver)
5. Left and right brake pedal (front face and right side of driver)
6. Foot throttle operating handle (right front side of driver)
7. Riser operating handle(right side of the driver, near the seat)
8. Hydraulic out put operating handle (right side of riser operating handle)
9. Main gear shift lever (right side of driver)
10. Sub gear shift lever (right side of driver)
11. Hand throttle operating handle (right side of driver)

2.2.2 Instrument and switches

The instrument cluster includes tachometer (including hour meter), fuel gauge, water temperature gauge, pressure indicator, left and right direction indicator lamp, high beam lamp, charge lamp, too low oil pressure indicator lamp, preheat indicator lamp, position indicator lamp, parking braking indicator lamp, etc.

Operation Instruction

2.3 Start of engine



Notes:

Before use, the tractor shall be subject to careful and full inspection, so as to eliminate hidden trouble and effectively prevent the occurrence of risk and accident.

2.3.1 Preparation before start of engine

- Ø Careful inspection shall be performed before start. The connection of various parts shall be firm and reliable; the operating mechanisms shall be able to work normally; the pipe joints of various parts shall be screwed down without such phenomenon as oil leakage, water leakage or air leakage;
- Ø Inspect the lubricating oil level in the engine oil sump, tractor gear box-rear axle and the hydraulic system. Sufficient cooling water shall be filled into the radiator of water tank; and there shall be enough fuel in the fuel tank;
- Ø Make the oil circuit switch handle of the fuel tank turned to the relevant consequent position, making the fuel oil circuit at the connected position;
- Ø Inspect the gear box operating lever and power take off operating handle; make the main gear shift lever, power take off operating handle and front drive operating handle placed at the neutral position, and make the lifter handle placed at drop position.
- Ø The hand throttle shall be at half-open status (half throttle position);
- Ø Pull the flameout stay wire locking device, let the flameout stay wire relax, at this time, the oil injection pump in a position of oil supply.
- Ø For the new tractor, the tractor given heavy repair or the tractor that has not been used for a long time, before start, the air in the oil circuit shall be removed firstly, so as to guarantee the smooth start of the diesel engine. The method is as follows: first, unscrew the air bleed screw of diesel filter; press the pump with hand; oil pumping will make the air in the oil circuit from the oil tank to diesel filter exhausted until the discharged fuel has no bubble. Then, screw down the air bleed screw of the diesel filter, and bleed air with the same method until the discharged fuel has no bubble.
- Ø Put the key into starting switch.

Important notes:

- 1. The sundries in the water tank meshes shall be cleaned away periodically, so as to prevent the failure of engine caused by poor heat dissipation;**
- 2. When the tractor carries out field work under poor heat dissipation conditions, to guarantee the long-time continuous work of the engine, it is suggested to make auxiliary**

Operation Instruction

heat dissipation device installed at the proper position of the tractor.

2.3.2 Start of engine



Notes:

Before the engine is started, shall be ensured that the main and sub gear shift levers and the front drive operating lever are at the neutral position; and the lifter operating lever is at drop position, so as to prevent accident and risk caused by sudden start of the tractor.

Important notes:

1. After the engine is started, loosen your grip immediately to let the key automatically rebound to “ON” position, otherwise the started engine will drive the start of motor, which will cause motor damage;

2. The continual start time of each time shall not exceed 5s, and the start interval shall be 15s at least. To maintain the charge performance of the storage battery, the continual start times shall not exceed 3. If the start fails after three times' continual start, find out the reasons and then start again.

1) Start of storage battery:

- Ø Start under normal temperature (above -5°C): Make the key rotated to “ON” position at clockwise direction to connect the circuit; then, make the key rotated to “ST” position to start the engine; after the engine is started, loosen your grip immediately to let the key automatically rebound to “ON” position. If there is safe start switch, then the main clutch pedal shall be treaded firstly, and then rotate the key to start the engine.
- Ø Start under low temperature (below -5°C): In cold winter, before the engine is started, the hot water of above 90°C shall be added into the water tank; close the water drain valve until hot water flows from the water drain valve of the cylinder, and then make the whole cooling system filled with hot water. Make the machine oil in the oil sump discharged (it is better to make the oil discharged when flameout of last time); make the oil dumped into a container with a cover and heated to (70-90) °C, and then make the oil filled into the oil sump. It is forbidden to bake the oil sump with fire.

2) Using assistant battery start:

When the battery is not enough, should use assistant battery to start the tractor, (the assistant battery volume should the same as the battery in the tractor). When start, should parallel the two batteries, (positive pole connect positive pole, cathode connect cathode). When the battery needs use outside charger, use the same way to charge the battery. If not take down the battery, should take down the earth wire.

Operation Instruction



Notes:

The electrical equipment system is cathode earth wire; the battery connection should ensure the polarity correct. If wrong, it will break the electric equipment. Usually, first connect the positive pole, and then connect the cathode pole. When take off the engine, start motor and other electric equipment, should take off the cathode earth wire first.

3) Start by making use of pull tractor:

When the start is performed by making use of pull tractor, high III stage or high IV stage shall be applied to the pulled tractor. To guarantee the safety, the speed of the pull tractor shall not be higher than 15km/h.

Important notes: When the start is performed by making use of pull tractor, once the engine runs, the main clutch pedal shall be treaded immediately and the throttle should be reduced, so as to prevent the engine flameout.

2.3.3 Operation of engine

- Ø After the engine is started, the throttle shall be reduced immediately to make the engine at idle running status. Inspect the engine oil pressure at this time; it shall be ensured that the machine oil pressure is no less than 98 kPa. At this time, the oil pressure indicator lamp goes out.
- Ø After the engine is started, full-load running shall not be performed immediately; and the engine shall be subject to intermediate speed no-load running for heating. When the temperature of the cooling liquid is above 60°C, the revolution speed can be increased to the maximum speed for full-load running.
- Ø The revolution speed and load of engine shall be slowly increased or reduced. In particular, for the engine that is just started, sudden high speed running is unallowable.
- Ø When engine running, the pressure of machine oil and temperature of cooling liquid shall be inspected frequently.

2.4 Start of tractor

- Ø When the engine is under low speed status, tread the clutch pedal, and then make the gear shift lever of gear box placed at the needed stage;
- Ø Push the locating detent rocker arm downwards, and loosen the parking brake;
- Ø Whistling sound shall be made and observe whether there is barrier around;
- Ø Gradually increase the revolution speed of engine and slowly loosen the clutch pedal to make the tractor start smoothly. After the tractor starts moving, quickly loosen the clutch pedal, so as

Operation Instruction

to avoid the slipping of clutch.

- Ø Gradually increase the throttle to make the tractor reach the needed working speed;
- Ø During the use process, the driving speed of tractor shall not be reduced by adopting the method of semi-combination of clutch. During the driving process, the feet shall not be always placed on the clutch pedal, so as to avoid the accelerated abrasion of disengaging lever and friction plate. Clutch pedal; avoid the slipping of clutch.

Important notes:

- 1. To prevent collision of teeth of drive gear of gear box and the early damage of clutch, high stage start is forbidden;**
- 2. The parking brake must be loosened before the tractor starts moving, so as to prevent the damage of other working parts;**
- 3. When putting into gear or gear shift, the clutch pedal must be treaded to separate the main clutch, so as to prevent collision of teeth of drive gear of gear box and the early damage of clutch.**

2.5 Steering of tractor

When steering of tractor on road, the horn switch on the instrument panel shall be operated firstly; whistling sound shall be made for warning, and then make a turn. If the speed is high, reduce the speed firstly. In case of shallow turn, steer early and slowly; in case of sharp turn, steer late and quickly.

When the tractor have little steering or steering on the soft field, because of the front wheel side slip cause the steering unavailable , can steering the steering wheel and tread the pedal at the same time to help steering.



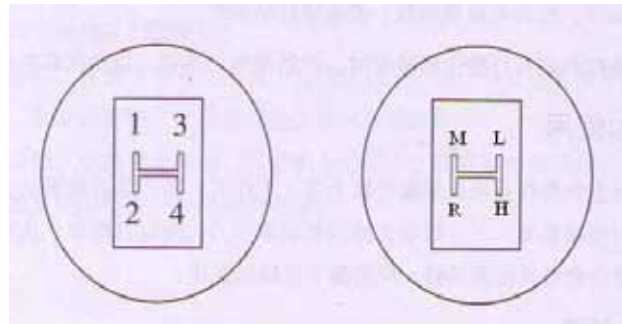
Warning:

- 1. When the tractor is driving at a high speed, making a sharp turn by adopting unilateral braking is unallowable. When the front wheel make a wide turn, if there is squeak when the safety valve works, the steering wheel shall be withdrawn a little, so as to avoid the damage caused by long-time overload of hydraulic steering system and steering failure accident;**
- 2. When making a turn or head back during field work, the working parts of agricultural implement inserted into soil must be lifted above ground, so as to avoid damage of agricultural implement or personal injury.**

Operation Instruction

2.6 Gear shift of tractor

The main and sub gear shift is respectively operated by 2 operating levers, realizing 12 forward shift stages and 4 reverse gear stages. The main gear shift lever may get 4 gears (1, 2, 3, 4); the sub gear shift lever may get 3 forward speed areas (L: low speed area, M: medium speed area, H: high speed area) and 1 Reverse area: R.



Main gear shift lever A Sub gear shift lever B

Figure 2-1 Gear shift of tractor

Tread the main clutch pedal; operate the sub gear shift lever B to make it pushed leftwards from the neutral position; and then pushed forwards to get the Medium stage M; if it is pushed backwards, then Reverse stage R will be gotten. If it is pushed rightwards from the neutral position and then pushed forwards, then Low stage L will be gotten; if it is pushed backwards, then high stage H will be gotten

Tread the main clutch pedal; make the main gear shift lever A moved leftwards from the neutral position; and then pushed backwards to get stage 2; and stage 1 will be gotten if it is pushed forwards. If it is moved rightwards from the neutral position and then pushed backwards, stage 4 will be gotten; and stage 3 will be gotten if it is pushed forwards.

The optimal production efficiency and economical efficiency can be obtained if the proper driving speed of tractor is selected, and the service life of the tractor can be prolonged. The tractor shall not often work under overload condition, and the engine shall have certain power reserve. As to selection of driving speed when working in the field, the diesel engine shall work under about 80% load. When the tractor works under light load and the driving speed is not high, High 1 stage small throttle work can be selected to save fuel.

The basic gear stage for field work: Low stage 4, medium stage 1, 2 and 3 for plough; low stage 1, 2 and 3 for rotary tillage. Low stage 4, medium stage 2 and low stage 3 for harrowing. When the diesel engine is deep-voiced and has speed drop and black smoke during operation, it shall be changed over to low stage 1 and small throttle, so as to prevent tractor overload. When the load is light and the working speed shall not be too high, high stage 1 and small throttle can be selected, so as to save fuel.

Important notes:

Operation Instruction

- 1. When engine running, before gear shift, the main clutch pedal shall be treaded to floor, and the gear shift shall be performed after several seconds, so as to prevent poor engagement of sliding sleeve of gear box (which will lead to “collision of teeth”);**
- 2. The tractor only can be at back gear stage when it is still;**
- 3. Do not make the hands placed on the gear shift lever when the tractor is driving, or the hand pressure will be transmitted to the gear shift fork in the gear box, which will lead to premature wear of the shift fork.**

2.7 Operation of Differential Lock

During the operation or working process of tractor, if the tractor can not move forward due to sticking or the unilateral driving wheel is slipping, the differential lock can be connected according to the following steps to rigidly connect the left driving wheel and the right driving wheel so as to drive the tractor out of the slipping section at the same speed.

- Ø Step on the main clutch pedal and operate the gear shift lever to change to low gear;
- Ø Turn the throttle operating handle to the maximum oil-supply position;
- Ø Step on the differential lock operating pedal by the right foot;
- Ø Loosen the clutch pedal smoothly, so as to make the tractor start smoothly;
- Ø Loosen the differential lock pedal after driving out of the slipping section, and the differential lock will be disengaged automatically.

Important matters: it is forbidden to use the differential lock when the tractor is driving normally and turning in case of damaging the machine component and wearing the acceleration tire.

2.8 Using of Front Drive Axle

This series of four-wheel drive tractor works in farm fields under heavy load or works on humid and soft soil; if only driven by the rear wheel, the traction property of the tractor may present insufficiently; at this time, hanging the front drive axle can increase the traction force of the tractor and reduce the slipping rate, thereby improving the working adaptability of the tractor. In order to be convenient for connecting and separating the front drive axle, the following operation procedures shall be followed:

2.8.1 Hanging of the Front Drive Axle

Step on the main clutch pedal, hang the position of the gear-box well, and then loose the clutch pedal slowly, wait for the slighting moving of the tractor and timely pull the front drive axle operation handle upward, so as to change two-wheel drive to four-wheel drive.

2.8.2 Disconnection of the Front Drive Axle

When it is necessary to disconnect the front drive axle, step on the main clutch pedal and push the front axle operation handle downward, so as to separate the front drive axle

Important matters:

1. When the tractor is conveying on a hard roadway for ordinary transportation, it is forbidden to connect the front drive axle, otherwise it will cause early stage abrasion of the front wheel and increase oil consumption. Only when the roadway is slipping and the back wheel can easily slip after climbing large slope during raining or snowing day, the front drive axle be connected. After the tractor drives out of the difficult section, the front drive axle shall be separated.

2. When the tractor is conveying, the front tire wears faster and the tire treads at the left and right side of the tire wear unevenly; the left tire and right tire can be exchanged for use according to the condition.

2.9 Braking of the Tractor

Generally, firstly decrease the throttle, step on the clutch pedal, and then gradually step on the brake pedal according to the condition to steadily pause the tractor.

For emergency stop, you shall simultaneously step on the clutch and the brake pedal and cannot solely step on the brake pedal, so as to prevent rapid abrasion of the brake friction plate or causing engine stop.

When a trailer is added for braking, you shall adjust the length of the brake valve hang rod to firstly brake the trailer and then brake the main engine.

When the tractor is running on road, you shall lock the left brake pedal and the right brake pedal together by the chain board.



Warning:

1. Before departure of each time, you shall uniformly check the oil level of the brake oil tank as well as whether there is oil leakage generated at the brake piping or not; if the oil level of the oil tank is too low or there is oil leakage generated at the brake piping, you shall timely find out the reason, repair it, otherwise major incident like brake failure will be raised.

2. When the tractor is running on road, you must interlock the left brake pedal and the right brake pedal together, so as to prevent off tracking and even overturning of the tractor when braking.

2.10 Stopping of Tractor Stop and Flameout of Engine

Flameout of the tractor and stopping of the tractor shall follow the following procedures:

- Ø Decrease the throttle, and reduce the running speed of the tractor.
- Ø Step on the clutch pedal, then step on the brake pedal and place the gear shift lever at the position of neutral gear after the tractor stops
- Ø Loosen the clutch and brake pedal, and then decrease the throttle to lead the engine run under idle speed.
- Ø Pull the flameout pull rod back, the oil pump stops supplying oil and the engine shuts down immediately, and then push it to the position of oil supply
- Ø Turn the power switch to the off position, and shut down all the power sources.



Notices:

1. After stopping and before flameout of the engine, the driver is forbidden to leave the tractor, so as to prevent the tractor from starting suddenly, which will cause accidental risk.
2. If the tractor must stop at a slope land, you shall engage the gear (engage the forward gear at upslope position, and engage the backward gear at downslope position), and must use parking brake and plug the back wheels by triangle brake shoes, so as to prevent the tractor from suddenly starting and out of control automatically, which will cause accidental risk.

Important matters:

1. When the temperature is lower than zero DEG in winter, turn on the drain valve of the water tank and the drain switch of the engine of the tractor, which does not use antifreeze when the engine is running under idle speed, to discharge cooling water out, and then shut down the engine, so as to prevent freezing of the cooling water which will crack the engine body through frosting;
2. After discharging water in winter, in order to prevent residual water in the outlet pipe of the water tank from cracking the water pipe through frosting, suggest the user to turn on the water discharge switch of the engine after the engine stops, position the flameout handle at the position of flameout and drag the engine to run 2 to 3 times for 15 second with a interval of 2 to 3 minutes, so as to prevent discharging all of the water in the water pipe.

Operation Instruction

2.11 Adjusting of tread

2.11.1 Front wheel tread adjusting:

2.11.1.1 Two wheeled drive tractor front wheel tread adjusting:

Use the lifting jack uplift the front axle, remove the left and right main and sub sleeve bolt 1 and 2 (See photo 2-2), then, turn down the locking bolt 3 (see photo 2-2) and oil cylinder pin shaft 5, adjust the position of sub-sleeve pipe and oil cylinder, adjust the tie rod to required, then, refit the bolt which have been removed. When adjust the oil cylinder, must remove the oil cylinder fixing pin shaft 5 (see photo 2-2) to the corresponding wheel tread adjusting hole 4 (see photo 2-2). (The wheel tread have 6 choices: 1400mm, 1500mm, 1600mm, 1700mm, 1800mm, 1900mm) .

Note: When adjusting the wheel tread, previous oil cylinder pipe will not be use again, please match yourself.

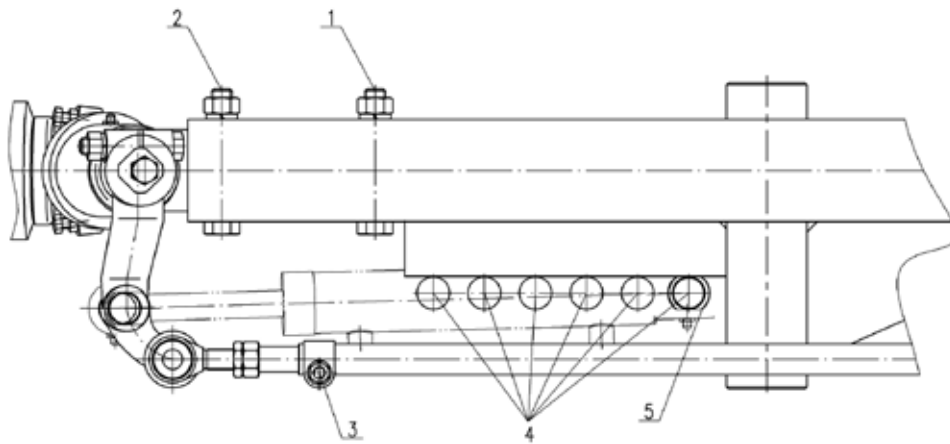


Photo 2-2 front wheel tread adjusting

2.11.1.2 Four wheeled drive tractor front wheel tread adjusting:

According to change the connect position of radials and rims, can get different wheel tread.

2.11.2 Rear Driving wheel treads adjusting:

According to change the connect position of radials, hubs and rims, can get different wheel tread.

Note:

1. When rear wheel tread was adjusted, maybe it will cause the rear ballast can't be used, the user should have choice very carefully.

2. When adjusting the rear wheels, should make the tire upper signal or the pattern shape type direct to the tractor forward direction, the 2 front wheels and rear wheels should always symmetry with tractor centre line. When adjusting, should choose proper rear wheel tread, then choose front wheel tread.

2.11.3 Inspection of Front axle toe-in.

The front wheel toe-in should be 0-10mm. This number can measured at the two rims, see photo 2-3. Eddy the tie rod, can adjust the front tie-in.

Operation Instruction

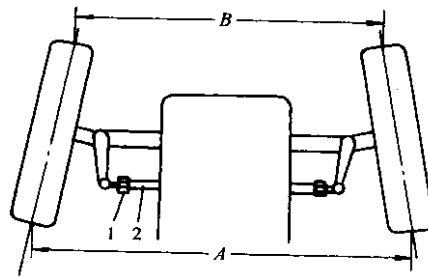


Photo 2-3 Front wheel toe-in adjusting

2.12 Using, Dismounting and Mounting of Tire

2.12.1 Using of Tire

Tire is the main wearing part of the tractor; and attention must be paid to the using and maintenance of the tire, so as to possibly prolong the service life.

All the tires have regulated load values; overburden will deform the tire excessively, bend the tire side excessively and crack the tire easily; moreover, glue will be easily separated from the tire body fabric and the buffer layer; the fabric layer is loosen until the tire is broken, especially when the tractor is running on uneven roadway or is impacted by barrier, the tire will be broken more easily.

The inflation pressure of the tire must meet the regulations; both lower pressure and higher pressure will affect the service life of the tire. Lower pressure will deform the tire excessively, which will accelerate the wearing of the tread, and even quickly grind the tire casing and cut off the inflating valve as well as increase the running resistance at the same time. If the pressure of the front tire is too low, it needs more force to operate; higher inflating pressure will crack the tire body because of excessive stretching, accelerate the wearing of the tread, and increase machine body vibration. The pressure of the tire shall be properly lower when the tractor is working in farm field; and the pressure shall be properly higher if the tractor is running for road transportation for a long term. The tire pressure shall be checked by barometer under normal temperature, so as to prevent inaccurate measurement because of heat emitting of the tire after working. Improper driving operation will also lead the wear or damage of the tire at an early period. Crossing barrier, at high speed, sudden brake or quick turn shall be prevented when running. Tire slippage shall be avoided when the tractor is running on macadam.

Don't adhere chemical corrosive like oil, acid or alkali on the tire when using and avoid insolation under burning sun as much as possible, so as to prevent ageing and modification of rubber. Regularly check whether the front wheel orientation and toe-in are right or not, so as to prevent eccentric wear of the tire. When the wear of the tire figure is uneven, exchange the left tire and the right tire for use.

Note : The pressure charge for 4wd tractor front and back tire should keep same, or the tire will have abnormity abrasion

Operation Instruction

2.12.2 Dismounting and Mounting of the Tire

Dismounting of the tire

Special tools shall be used for dismounting the tire and it is forbidden to use hard tools (like screwdriver) and sledge hammer to beat the tire, so as to prevent puncturing the tire or damaging the tire edge and rim section.

When dismounting the tire, you shall discharge the air at first, and press the tire edge at two sides of the tire casing into the groove of the rim section; then use a crowbar to pry the tire edge at one side out of the rim section from the position near the inflating valve; and then use two crowbars alternately pry the whole tire edge out. After taking the inner tire out, use the same method to pry out the tire edge at the other side, and take down the tire casing.

Mounting of the tire

When mounting the tire, firstly check whether the rim section and the tire are matched or not, and there shall be no burrs and serious deformation at the edge of the rim section; then eliminate rust on the rim section, check whether there is breakage on the tire or not. After wiping up each spare part, coat a thin layer of talcum powder between the inner tire and the tire casing during mounting. Lay the rim section flat, mount the tire casing and step by foot or pry it into the rim section by crowbar.

Put the inner tire in (slightly underlay the tire casing) and use galvanized wire to fix the inflating valve in the inflating valve hole of the rim section to prevent slipping. Use a crowbar to pry one side of the tire casing into the rim section (it will spend most force at the last section and use a hand hammer to slightly knock the crowbar). Finally, check whether the position of the inflating valve is inclined or not and whether the rim edge and the rim section are closely fitted or not. When inflating, recheck whether the inner tire is broken or not by prying, inflate and at the same time knock the tire casing by the hand hammer, after inflating to the regulated pressure, then discharge half of the air, so as to make the inner tire expand normally and eliminate cockle phenomenon.

When mounting the tire onto the tractor, you shall also pay attention to the direction of the tire figure; otherwise, the adhering property and abrasion performance will be influenced, and mud will be deposited.



Warning: it is forbidden to dismount the connecting bolts of the tire, the drive hub and the hub; otherwise they will fly out and hurt people.

2.13 Using of Balance Weight

2.13.1 Rear balance weight

When the tractor is working in farm field, the quantity of the balance weight can be selected

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according to different working patterns in order to improve the working performance of the tractor. Each piece of cast iron balance weight weighs 50kg, and at most 3 pieces can be mounted at one side (150kg).



Notice: Before dismounting the rear wheel which is provided with the rear balance weight from the tractor, you shall firstly dismount the back balance weight from the tire, so as to prevent the risk of losing balance.

2.13.2 Front balance weight

In order to adjust the relation between the front balance weight and the back balance weight of the tractor, it is necessary to mount the front balance weight block at the front part of the tractor. For plough work under heavy load or hanging machines like large scale seeding machinery, in order to guarantee the head of the tractor does not raise and run safely, the front balance weight with sufficient weight must be mounted.

The front ballast weight 130Kg.

At most 10 pieces of cast iron front balance weights can be selected and mounted on the tractor [each piece weighs 40kg].



Notice:

Attach the big implements at the rear of tractor, in order to keep your safety, must fit with enough front ballast, or will have turn over dangerous.

2.14 Adjustment of the Driver's Seat

2.14.1 Adjusting Seat front and rear.

Loosen bolt under the seat. The driver can adjust the seat according to his/her height. After adjustment, tighten the bolt.

2.14.2 Stiffness of the driver's seat adjustment

According to the operator's height, weight adjustment to adjust the driver's seat hand wheel



Notice:

1. To safety, seat adjustment must be implemented when the tractor is under static condition, so as to prevent accidental risk.

2. Seat stiffness can not be stressed too soft, when you driving on rugged roads, you should pay more attention to this point, in order to avoid risk of accident.

2.15 Covering Panels of the Tractor

The covering panels mainly comprise an engine cover, a driving cab, a splash guard, an instrument desk, a floor, accessories, etc.

2.15.1 Engine cover

The engine cover of the tractor adopts a streamline move-in structure which has an elegant appearance.

2.15.2 Instrument desk

The electrical appliance switches and instrument clusters of the tractor are uniformly mounted on the instrument desk; and the instrument desk mainly takes the effects of bracket of the control switch as well as decoration and seal.

2.15.3 Cab (Options)

The cab of the tractor is manufactured by a framework which is welded by tubular-shaped profiled materials and inlayed by large area of spatial curved glass.

2.15.4 Fan of the cab (Options)

The cab is provided with interior trim and fan.

2.15.5 Interior trim of the cab (Options)

The interior trim comprises a splash guard interior trim, a floor mat, an instrument desk, an interior cresting, etc.

2.16 Using of the working device of the tractor

This series of tractors mainly have the working devices as follows: (Partially selected and installed)

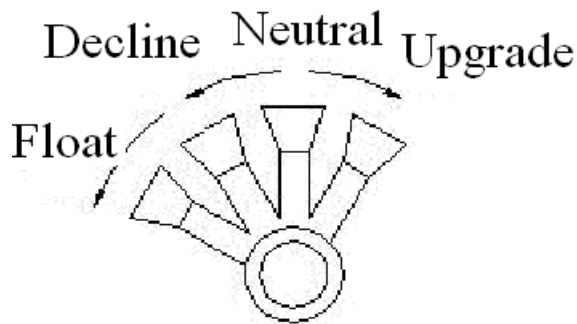
- Ø Hydraulic raiser : shall preferentially adopt force position comprehensive adjustment when working with plough so as to guarantee the working effect.
- Ø Hydraulic output device : can be used for hydraulic reversible plow, hydraulic harrow, etc. ;
- Ø Suspension mechanism : is mainly used for the hanging and connecting of hanging agricultural machineries.
- Ø Power output device : is mainly used for agricultural machineries which needs power drive.
- Ø Pendulum traction apparatus : is mainly used for demand heavy duty harrow, mower, traction seeder, single axle trailer, etc.
- Ø Traction frame : is mainly used for double axle trailer, etc.

2.16.1 Operation of hydraulic raiser

Operation Instruction

Raiser of this series of tractor is of push-in-soil type, has the advantages of simple structure and strong practicability. The multi-way valve handle at the right side of the driver is the operation handle of the raiser.

- Ø When the operation handle (picture photo 2-4 "E") is turned to the forepart from the 'neutral' position (obviously feel that the operation handle is orientated), the suspension mechanism starts to rise; when it rises to the terminal, the operation handle automatically resets (go back to the neutral position);
- Ø When the operation handle is held and turned backward from the 'neutral' position (at this time the operation is not at the final position), the suspension mechanism starts to drop, at this time, if the operation handle is loosened, the operation handle will timely rebound to 'neutral' position, and the dropping will stop.
- Ø When the operation handle is turned from the 'neutral' position to the final position (obviously feel the operation handle is orientated), the suspension mechanism is at 'float' condition after dropping to the final position.



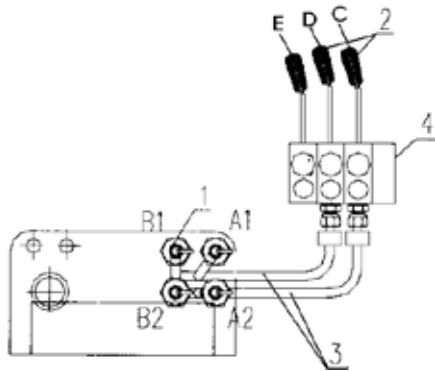
Picture 2-4 The use of hydraulic raiser

2.16.2 Operation and use of hydraulic output device

One or two of hydraulic output multi-valve can be selected for this series of tractors according to the necessity. Two valve operated by C/D two operate handle to control 2 double-disc cylinder on the implements. Each control valve provided with two M24 X 1.5 quick-change coupler male connectors A1\ B1 and A2\B2 (show the picture 2-5); when it is not used, it shall be covered well by sealed cap. When using, connect the backup female connector (put in the spare part case) and the male connector of the quick-change coupler and then communicate it with the oil inlet and oil outlet of the oil cylinder of hydraulic agricultural implements. The hydraulic operation handle C controls the first hydraulic output A1\B1. The hydraulic operation handle D controls the second hydraulic output A2\B2. If connect the single action cylinder, the cylinder oil pipe should connect with A1 or A2. Up and down operate handle C \ D, single or double action cylinder can do the corresponding work. Both two hydraulic output valves can achieve single and double action hydraulic output through squashing in and squashing out the single-double action transforming bolt which is arranged on the multi-way valve. Withershins twist to looser and exit the bolt can

Operation Instruction

achieve hydraulic output of single action; on the contrary, to totally twist the bolt in can achieve double action hydraulic output.



Picture 2-5 Hydraulic Output equipment

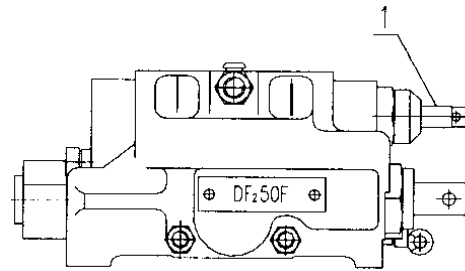
1. Quick-change coupler

2. Hydraulic output operation handle

3. Multi-valve oil pipe

4. Multi-valve

Assembly E: Lifter operation handle



Picture 2-6 Multi-valve Assembly

1. single-double action transforming bolt

When using hydraulic quick-change coupler to implement connection, the following work need to be finished at first, and then the male connector on the agricultural machinery can be inserted into connector assembly:

- Ø Stop the engine;
- Ø Drop the suspension agricultural machinery;
- Ø Move the hydraulic output valve operation handle front and end, so as to eliminate pressure in the hydraulic quick-change connector assembly;
- Ø Take down the seal cap of the quick-change connector, and clear the quick-change connector.

Important matters:

1. When the quick-change connector is not used, the assembly hole must be covered well by dust cover to prevent dust from entering;
2. The raiser and the hydraulic output valve can not be used simultaneously;
3. After the operation of the hydraulic output valve is finished, the operation handle must go back to the neutral position; otherwise overheating of the hydraulic system will be caused.

2.16.3 Using of suspension mechanism

This series of tractor is connected with agricultural machinery by adopting 、 Class2 type three-point linkage.

2.16.3.1 Connection of the lower pull rod

There are two connection holes on the lower pull rod and the lifting rod: front hole and back hole. Generally, the front hole will be connected during normal operation; For PTO shaft-driven

Operation Instruction

machines and the large duplex operating farm implements (such as rotary tiller, etc.) are normally connected back holes.

2.16.3.2 Connecting of the lifting rod

Generally, the length of the lifting rod shall be adjusted at the central position. The adjustment of the left lifting rod and the right lifting rod shall be uniformly implemented through rotating the welding of the central lifting rod conduit. To adjust the lifting rod is mainly to adjust the lateral level position of the agricultural machinery.

2.16.3.3 Connection of the upper pull rod

To adjust the height of the upper pull rod is mainly used to adjust the longitude horizontal position of the agricultural machinery. And bearings to connect the two holes for the selection. It can choose the most suitable location to connect the farm implements column height.

2.16.3.4 Adjustment of the limit rod

The limit rod is mainly used to limit the lateral oscillating quantity of the agricultural machinery (namely the lower pull rod). To insert the lock pin into the round hole at the front of the limit sleeve can fix the limit rod without moving. To rotate limit sleeve with threads can adjust the length of the limit rod. The round hole at the back side is a jack socket for placing the lock pin when adjusting the length of the limit rod.

The amount of movement of the limit rod can be selected according to the working type of the agricultural machinery. A certain amount of movement shall be maintained for the limit rod when the tractor is equipped with plow, harrow, etc, which can maintain the tractor with good operation performance. The limit rod shall be fixed without moving when the tractor is equipped with rotary cultivator, mower, etc.

Requirements of suspension mechanism :

(1)、When you operations, allowing farm implements relatively tractor smaller swing。 It is suitable for a smaller load, the small farm implements requirements of lateral swing. Such as cultivators, seed drills rotary tiller.

(2), When the tractors with a support wheel mounted implements work, multiple valve must use a "floating" position work.

(3), When the tractor turning at the edge of a farm , you must be upgraded the hanging tools off the ground, then begin turning; After turn around, into the straight-line driving, and then fall down the agricultural implements.

(4) , When the tractors with mounted implements long-distance transport, adjust the suspension rods short, and rose to the highest position, limit rods can not be free to expand. And also need to tighten the lock nut on the rod and limit rod.

(5),When the tractors with mounted implements transportation or headland turn, it doesn't allow high-speed steering and high-speed obstacle.

(6),When there is no safety measures, it is prohibited to adjust, clean or do other work below

Operation Instruction

the upgrade farm tools.

2.16.4 Operation of the power output device

The power output shaft of this series of tractor is of a postposition detached type. When the assorted machinery equipment of the tractor needs power output, the operation shall follow the procedures as follows:

- Ø Put the farm implements and hitch connection;
- Ø Pull the vice clutch control handle, pace the power output operation handle at the middle neutral position;
- Ø Dismount the traction frame and the cover of the power output shaft, and then connect the universal joint on the agricultural machinery and the power output shaft;
- Ø Mount the power output shield well.
- Ø Riser manipulation of the handle placed in the "upgrade" position, to enhance agricultural implements;

- Ø Again to pull the vice clutch control handle, according to the power output shaft speed. To press the power output operation handle downward can obtain high speed which is 1000r/min(or 850 r/min、 or 760r/min); if lifting upwards, low speed which is 760r/min (or 540r/min) can be obtained; When don't need power output, power output manipulation of the handle should be in the middle of the neutral position, and power output shaft sleeve tube re-installed on the screw.



Warning:

It is forbidden to get close to the agricultural machinery when the power output is connected in case of danger.

2.16.5 Operation of towing device

2.16.5.1 Pendulum type draw bar

The pendulum type draw bar is only used for the trailed implements. The rear end of the drawbar is connected to the farm tools through the towing pin and the drawbar can swing laterally for the convenience of the connection with the farm tools. During operation, the drawbar can swing left and right. However, when the tractor wants to draw the farm tools back, it is necessary to insert two locating pins into the holes of draw plate to prevent the drawbar from swinging. To change the height of towing point, it is allowed to turn the drawbar to create the towing height applicable to the farm tools.

2.16.5.2 Hook bracket

The hook is applied to various trailers, not used with the pendulum type draw bar.



Warning:

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- 1. The overload is not allowed at the towing operation and the operation with trailer.**
- 2. When braking, the trailer shall be braked slightly prior to the tractor.**

2.16.6 Operation and adjustment of electric system

For this tractor, the electric system has the voltage of 12V and uses the silicon rectification generator, cathode earthing and double-line system. The system is composed of engine starting device and lighting signaling device, of which the engine starting device consists of starting motor and silicon rectification generator. For the operation and maintenance of above devices, see Engine Operation and Maintenance Manual. The lighting signaling device consists of front combined lamp, rear lamp, roof lamp of driver cap, handrail lamp (turning, position), rear tail lamp (turning, position and braking), instrument cluster, horn, fuse box, etc.

2.17 Running-in of tractor

Before the tractor is put into operation, it shall operate for some time under the specified lubrication, rotation speed and load conditions, and it shall be subject to necessary inspection, adjustment and maintenance to reach its normal technical condition. This work is known as running-in.

2.17.1 Preparation before running-in

- Ø During running-in, the tractor shall be subject to the American and every 50h (hour) technical maintenance; and every 50h (hour) technical maintenance;
- Ø Check and fasten the bolts, nuts and screws outside the tractor;
- Ø Fill the grease onto each lubricating point;
- Ø Check the engine, gear case, front driving axle, steering gear and lifter for oil level, and fill it if insufficient;
- Ø Fill up the fuel and cooling fluid in accordance with the label;
- Ø Check the tire pressure for normal condition;
- Ø Check the electrical line for normal and reliable connection;
- Ø Check whether the battery needs being charged;
- Ø Place the control handles at their neutral position.

2.17.2 Running-in of engine at idle speed

The diesel engine shall be subject to 15min running-in at idle speed. Start the engine as the sequence specified in “ Diesel Engine Operation and Maintenance Manual ”, and from low speed (small throttle), medium speed (medium throttle) to high speed (large throttle), operate the engine for 5min in turn.

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During the running-in of diesel engine at idle speed, carefully check the engine, air compressor and hydraulic oil pump for normal operation, check whether there is abnormal phenomenon or noise, check whether there is water leakage and oil leakage, and check the instrument for normal operation. If any, shut down the tractor for troubleshooting and then conduct running-in again.

The following running-in can be done only after the engine operates normally.

2.17.3 Running-in of power take-off shaft at no load

Place the engine throttle control handle at its position of medium throttle to make the engine operate at medium speed, respectively the power take-off shaft at low speed and high speed for 5min, and check whether there is abnormal phenomenon. After running-in, be sure to place the power take-off shaft at its neutral position.

2.17.4 Running-in of hydraulic system

Start the engine, place the throttle control handle at its position of medium throttle, control the distributor handle (lifter operation handle), lift and lower the suspension mechanism for several times, check whether there is abnormal phenomenon, hang the applicable farm tools about 600kg onto the suspension mechanism, operate the engine at high speed, control the distributor handle, lift and lower the suspension mechanism at its full travel for 20 times at least, check whether the suspension mechanism can stay at its highest position or required position, check the lift/lower time and check whether there is leakage.

When the tractor is at rest, operate the engine at low speed, medium speed and high speed, stably control the steering wheel leftwards and rightwards for 10 times, check the front wheels of tractor for their leftward, rightward and steering operation, check whether the sound is normal, and check whether the steering wheel is controlled conveniently and stably.

If any fault is found during running-in, it is necessary to find out the reason and eliminate the fault.

2.17.5 Running-in of tractor without and with load

After the idle running-in and the running-in of power take-off shaft and hydraulic system, when the technical condition of tractor is correct, it is necessary to conduct the running-in of complete machine as per the following form 2-1 sequence and time. Total running-in is 60h. During the running-in at no load, conduct the turning operation and properly use the brake at single side at low speed, and check the emergency brake at high speed.

After the running-in at no load, conduct the running-in under load when the tractor has completely normal technical condition. During the running-in, the load must be from small to large and the gear must be from low speed to high speed. For the tractor fitted with the creeper gear, it is allowed to conduct the running-in under the creeper gear.

Running-in precautions:

- Ø Check the electrical equipment and instrument for normal readings;

Operation Instruction

- Ø Check the engine for normal operation;
- Ø Check the clutch for easy combination and thorough separation;
- Ø Check whether the gear of gear case is shifted conveniently and whether there is disorder engagement and spontaneous out-of-gear;
- Ø Check the brake for reliable operation;
- Ø Check the differential lock for reliable combination and separation;
- Ø Check the driving axle for reliable combination and separation ;

If any fault is found during running-in, it is necessary to find out the reason, eliminate the fault and continue the running-in.

Table 2-1 Running-in specifications

Drawbar load (kN)				0	3 ~ 4	7~8	10.5~11.5
The Working item				idle driving	Traction trailer with 4t goods transport	Pull plough working on sandy soil (resistivity 30-35KPA, plough depth 20CM)	Pull plough working on clay soil (resistivity 45-50KPA, plough depth 20CM)
Throttle opening				75%	75%	100%	100%
Direction	Creeper gear	Range gear	Main gear				
Forward gears	L	L	1	0.5			
			2				
			3				
			4				
		H	1				
			2	0.5			
			3				
			4				
	H	L	1	0.5			
			2	0.5			
			3	0.5	2	4	8
			4	0.5	2	4	5
		H	1	0.5	4	4	5
			2	0.5	4	4	
			3	0.5	4		
			4	0.5	3		
Reverse	L	R	1	0.5			

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gear			2	0.5			
			3	0.5			
			4	0.5			
	H	R	1	0.5			
			2	0.5			
			3	0.5			
			4	0.5			
	Total time (h)			7	19	16	18

2.17.6 Technical maintenance after running-in

After the running-in of tractor, there may be some filings or dirt in the drive system, lubrication system and hydraulic system, so it is necessary to clean and replace all the lubrication oils and the oil used for the hydraulic system and to conduct the necessary technical maintenance before the tractor is put into normal operation.

The technical maintenance after running-in is as follows:

Ø After shutdown, discharge the engine oil from the engine oil sump and the oil tank of steering system immediately, clean the oil pan, engine oil filter screen, diesel filter, engine oil filter, air cleaner and filter screen in steering tank, replace the filter element of diesel filter and engine oil filter and refill the lubrication oil as required.

Ø Discharge the oil from the transmission system, lifter and front driving axle immediately, and fill the proper light diesel oil or coal oil, do not start the engine, make the tractor run forwards or backwards at low speed for about 3min, lift the front and rear tires from the ground, rotate the front and rear tires along tow directions for about 3min, immediately discharge the cleaning liquid, and remove the oil suction filter of lifter for cleaning, reassemble it, and refill the oil to drive system, lifter and front driving axle as required.

Ø Conduct the technical maintenance for the diesel engine according to Diesel Engine Operation and Maintenance Manual.

Ø Discharge the cooling water, clean the engine with clean water, and refill the cooling liquid.

Ø Check the toe-in of front wheel, clutch and brake for their free travel, and adjust them when necessary.

Ø Check and fasten all the external bolts, nuts and screws.

Ø Fill the grease onto each position of tractor according to Operation and Maintenance Manual.

Operation Instruction

2.18 Frequent faults and solutions of tractor

2.18.1 Faults and solutions of chassis

2.18.1.1 Faults and solutions of clutch

Symptom	Reason	Solutions
1. The clutch slips.	1.The friction plate and pressure plate has oil stains; 2.The friction plate has too many abrasions or is burn down; 3.The pressure of butterfly spring reduces; 4.The free travel of pedal is too small or absent; 5. The driven disk of clutch has severe distortion.	1. Clean it with gasoline, find out the reason and eliminate the fault. 2. Replace the friction plate. 3. Replace the butterfly spring. 4. Readjust the free travel of pedal as required. 5. Replace the driven disk of clutch.
2. The clutch cannot separate thoroughly and the gear engagement has noise.	1.The free travel of pedal is too large, but the operating travel is too small; 2.The driven disk of clutch warps severely; 3. The heads of three releasing levers are not in one plane.	1.Adjust the free travel of pedal to 25~30mm. 2. Replace the driven disk. 3. Adjust it as required.
3. The tractor has vibration at starting.	1. The ends of three releasing levers are not in one plane. 2. The friction plate and driven plate have oil stains. 3. The driven disk warps severely. 4. The clamping screw of flywheel and clutch housing is loose.	1. Adjust it as required. 2. Clean the friction plate and driven plate. 3. Replace the driven plate. 4. Shut down the tractor immediately for troubleshooting.
4. Main and vice clutch not separation	1. Clutch manipulation of the flexible shaft out 2. Clutch separation claw badly worn or broken 3. Disc spring failure or fracture	1.Replace 2.Replacing the clutch separation claw 3. Replacing the disc spring
5. Auxiliary clutch not separate	1. flexible shaft misalignment 2. Outer operation lever out of shape, buckling	1.Adjusted as required 2.Repair

2.18.1.2 Faults and solutions of gearbox

Symptom	Reason	Solutions
1. The gear is difficult or fails to be engaged.	1. The clutch fails to separate thoroughly. 2. The end face of shift sleeve and gear is worn or broken.	1. Eliminate it according to the clutch fault solutions. 2. Replace or repair it.
2. There is spontaneous out-of-gear.	1. The locating slot of fork shaft is worn severely. 2. The locking spring of fork shaft has insufficient pressure. 3. The spline of shift sleeve is worn.	1. Replace the fork shaft. 2. Adjust or replace the locking spring. 3. Replace the shift sleeve.
3. The gear case has noise or beat.	1. The gear is worn severely, the tooth face is peeled or the gear teeth is broken. 2. The bearing is worn severely or damaged. 3. The lubrication oil is insufficient or fails to conform to the relevant specification.	1. Replace the gear. 2. Replace the bearing. 3. Fill or replace the lubrication oil.

Operation Instruction

2.18.1.3 Faults and solutions of rear axle and brake

Symptom	Reason	Solutions
1. The main drive has large noise.	1. The bearing clearance of bevel pinion is too large. 2. The gear fails to engage normally. 3. The bearing or gear of bevel gear pair is damaged. 4. The differential shaft is worn or locked. 5. The planet gear or washer is worn. 6. The differential bearing is worn or damaged.	1. Adjust it as required. 2. Readjust it as required. 3. Replace the bearing or gear. 4. Replace the differential shaft. 5. Replace the planet gear or washer. 6. Replace the differential bearing.
2. The bearings of bevel pinion and differential are too hot.	1. The pretightening force is too large. 2. The lubrication is poor. 3. The backlash of bevel gear pair is too small.	1. Readjust the pretightening force of bearing. 2. Check the lubrication oil level, and refill it when insufficient. 3. Readjust the backlash.
3. The final drive has abnormal sound.	1. The bolts of planet carrier are loose, and the retaining washer is damaged. 2. The bearing, gear or shaft is damaged.	1. Fasten the fixing bolts of planet carrier as required, and replace the retaining washer. 2. Replace the bearing, gear or shaft.
4. The brake is in failure.	1. The free travel of brake pedal is too large. 2. The friction plate is worn severely or partly.	1. Readjust the free travel of pedal. 2. Replace the friction plate.
5. The tractor wanders when braking.	1. The free travel of left and right brake pedal is different. 2. The braking friction place at one side is damaged. 3. The air pressure of two rear tires is different.	1. Adjust it. 2. Replace the friction plate. 3. Check it and charge the tire as required.

Operation Instruction

2.18.1.4 Faults and solutions of running system

Symptom	Reason	Solutions
1. The front tire is worn severely.	1. The front wheel rim or web has severe distortion. 2. The toe-in fails to be adjusted properly. 3. The steering knuckle and two oil cylinder pins are worn severely. 4. The tire pressure is insufficient during transportation. 5. The front driving axle fails to separate during transportation. 6. The front driving wheel tread is installed as per inverse direction.	1. Correct the front wheel rim or web. 2. Adjust the toe-in. 3. Replace the pin. 4. Check it and charge the tire as required. 5. Disconnect the front driving axle. 6. Reassemble the tire as required.
2. The front wheels sway.	1. The toe-in fails to be adjusted properly. 2. The bearing has too large clearance or is worn severely. 3. The steering king pin is worn severely. 4. The front wheel rim has severe distortion.	1. Adjust the toe-in. 2. Adjust or replace the bearing. 3. Replace the steering king-pin. 4. Correct the front wheel rim.
3. There is large noise.	1. The engagement mark of front main drive gear is bad. 2. The main drive bearing has too large clearance or is damaged. 3. The differential shaft is worn or damaged. 4. The planet gear or washer is damaged. 5. The final drive gear pair fails to engage properly.	1. Readjust the engagement mark. 2. Adjust or replace it. 3. Replace the differential shaft. 4. Replace the planet gear or washer. 5. Adjust the final drive gear.
4. The driving shaft and protective sleeve are hot.	1. The driving shaft has friction due to severe bend and distortion. 2. The middle support bearing seat is loose.	1. Correct or replace the driving shaft. 2. Fasten it as required.
5. The transfer case has large noise.	1. The speed is too high. 2. The bearing or gear is worn severely.	1. Apply the low speed gear. 2. Replace or repair it.

Operation Instruction

2.18.1.5 Faults and solutions of hydraulic steering system

Symptom	Reason	Solutions
1. There is oil leakage.	1. The rubber ring of pipe joint is damaged or the bolt is loose. 2. The rubber ring of junction plane of valve body, partition disk, stator and rear cover is damaged. 3. The rubber ring of journal is damaged. 4. The bolts of coupling position of steering gear are loose.	1. Replace the rubber ring or fasten the bolt. 2. Clean it and replace the rubber ring. 3. Replace the rubber ring. 4. Fasten the bolt.
2. The steering operation is heavy.	1. The gear oil pump fails to provide sufficient oil, the gear oil pump has internal leakage, the filter screen of steering tank is blocked, the slow steering operation is light and the quick steering operation is heavy. 2. The steering system has air, and the oil cylinder moves sometimes when rotating the steering wheel. 3. The steering tank has insufficient oil level. 4. The safety valve spring force becomes poor, or the steel ball fails to be sealed properly, the steering operation is light when light load but becomes heavy when increasing load. 5. The oil viscosity is too large. 6. The steel ball one-way valve of valve body is in failure, the steering wheel is heavy whether quick steering or slow steering, and the steering is powerless. 7. The steering system has oil leakage, including internal leakage (oil cylinder) and external leakage.	1. Check the gear oil pump, clean the filter screen. 2. Discharge the air from the system, check whether the oil suction pipe has air. 3. Fill oil to the specified oil level. 4. Clean the safety valve and adjust its spring pressure. 5. Adopt the specified oil. 6. Clean, repair or replace the component. 7. Check and eliminate the oil leakage point.
3. The steering gear is in failure.	1. The pin is broken or has distortion. 2. The opening of universal driving shaft is broken or has distortion. 3. The position of rotor and universal driving shaft is incorrect. 4. The piston or piston seal ring of steering oil cylinder is damaged.	1. Replace the pin. 2. Replace the universal driving shaft. 3. Reassemble it. 4. Replace the piston or seal ring.
4. There is no manual steering.	1. The clearance between rotor and stator is too large. 2. The sealing property of oil cylinder piston is too poor; for power steering, the driver fails to feel the end point obviously when the oil cylinder piston reaches its extreme position; for manual steering, the oil cylinder fails to move when rotating the steering wheel.	1. Replace the rotor and stator. 2. Replace the piston seal ring.
5. The steering operation is insensitive.	1. The clearance between valve core and valve bush is too large. 2. The clearance between universal driving shaft and pin is too large. 3. The clearance between universal driving shaft and rotor is too large. 4. The return spring is broken or too soft.	1. Replace it. 2. Replace it. 3. Replace it. 4. Replace it.

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2.18.1.6 Faults and solutions of hydraulic suspension system

Symptom	Reason	Solutions
1. It fails to conduct the lifting operation under light and heavy duty.	1. The oil level of lifter housing is too low. 2. The oil filter screen is blocked severely. 3. The oil suction pipe has air. 4. The gear oil pump is in failure. 5. The spring pin outside and inside the control handle falls off. 6. The pendulum bar in distributor falls off. 7. The main control valve is blocked at its neutral or lowering position or the oil return valve is locked at its opening position. 8. The main control valve is blocked. 9. The lowering valve is blocked. 10. The lowering valve fails to open because the pin becomes short or the lowering valve assembly becomes loose and screws out. 11. The oil way to the oil cylinder in the cylinder head is closed.	1. Fill oil to the specified oil level. 2. Clean or replace the oil filter screen. 3. Check the pipe joint. 4. Check, repair or replace the gear oil pump. 5. Reassemble the spring pin. 6. Open the distributor, assemble the pendulum bar. 7. Disassemble the distributor, clean the valves. 8. Clean the main control valve. 9. Clean the lowering valve. 10. Take off the plug of lowering valve, readjust the pin clearance of lowering valve or fasten the lowering valve assembly. 11. Open the oil way.
2. It can conduct the lifting operation under light duty, but under the heavy duty, it cannot conduct the lifting operation or lifts slowly.	1. The oil suction inhales or has air. 2. The set pressure of the system safety valve is too low. 3. The set pressure of oil cylinder safety valve is too low. 4. The pressure is poor due to the severe abrasion of gear oil pump. 5. The oil cylinder seal has oil leakage.	1. Check the oil suction pipe and oil filter. 2. Adjust or replace the system safety valve, 3. Adjust or replace the safety valve of oil cylinder. 4. Repair or replace the gear oil pump. 5. Replace the oil cylinder seal ring.
3. The farm tools shakes during the lifting and the lifting is slow.	1. The oil filter is blocked. 2. The oil suction pipe has air. 3. The gear oil pump is in failure. 4. The hydraulic oil level is too low.	1. Clean or replace the filter element. 2. Eliminate the air leakage of joint and O-ring. 3. Replace the gear oil pump. 4. Fill the lubrication oil as required.
4. The farm tools frequently shakes its head after lifted, and the static drop is quick after the engine shuts down.	1. The one-way valve of distributor fails to be sealed properly. 2. The lowering valve fails to be sealed properly. 3. The oil cylinder safety valve has oil leakage or fails to be adjusted properly. 4. The piston O-ring of oil cylinder has oil leakage due to damage. 5. The seal ring between the distributor or cylinder head and the lifter housing oil inlet falls off or is damaged due to improper installation.	1. Clean the one-way valve; adopt the fine antiscuffing paste when necessary. 2. Clean or face up the lowering valve. 3. Repair or readjust the safety valve of oil cylinder. 4. Replace the O-ring. 5. Check and replace the seal ring.
5. The cylinder head has no hydraulic output or the output is powerless.	1. The oil cylinder oil inlet way fails to be cut. 2. The taper body and taper hole before the lowering speed control valve fails to be sealed properly.	1. Clockwise fasten the control handwheel of lowering speed. 2. Face up the taper body and taper hole before the lowering speed control valve, or replace the lowering speed control valve.

Operation Instruction

2.18.1.7 Faults and solutions of air brake system

Symptom	Reason	Solutions
1. Atmospheric pressure less	1) Pipeline leak 2) Air Pump inlet and exhaust valve wear or spring damage 3) Pump piston ring and cylinder liner wear serious 4) Safety valve closed lax	1) Check the leakage and solutions 2) Replace 3) Replace the piston rings, cylinder liners 4) Check or replace the safety valve
2. Breathe brake valve does not return	1) Breathe brake valve into the dust 2) Breathe brake valve into the oil or water	1) Cleansing breathe brake valve 2) Release the gas cylinder oil or water, and scrub breathe brake valve
3. Breathe brake valve does not exhaust	1) Tappet card died 2) Return spring breaks or stretch weakened	1) Maintenance, tappet mobile and flexible, no catching 2) Replace the return spring

2.18.2 Faults and solutions of electric system

2.18.2.1 Faults and solutions of start motor

Symptom	Reason	Solutions
1. Start motor is out of operation	1. The battery capacity is not enough; 2. The battery poles are too dirt and the cable is loose; 3. The cable joint is loose and the earth wire is rusty; 4. The start switch or any other control circuit is disconnected; 5. The carbon brush and the commutator are in loose contact; 6. An open circuit or short circuit occurs inside start motor.	1. Charge the battery as required; 2. Remove the dirt and fasten the connecting piece; 3. Fasten the joint and remove the rust; 4. Inspect circuit to make connection reliable; 5. Adjust the spring pressure of carbon brush and clean the commutator; 6. Inspect and repair the start motor.
2. Start motor starts weakly and fails to start engine	1. The battery capacity is not enough; 2. The conductors are in loose contact; 3. The commutator surface is burned or stained with oil; 4. The carbon brush is worn excessively or the spring pressure of carbon brush is not enough to make it in loose contact with commutator; 5. Main contact of electromagnetic switch is burned out and it is in bad contact; 6. The bearing is worn severely and the armature rubs against shell.	1. Charge the battery; 2. Fasten the joint of conductors; 3. Polish the commutator surface or remove the oil stain; 4. Replace the carbon brush or adjust the spring pressure of carbon brush; 5. Polish it with 0# non-metal sand paper; 6. Replace the bearing.

Operation Instruction

2.18.2.2 Faults and solutions of generator

Symptom	Reason	Solutions
1. Generator fails to generate electricity	1. The connection is in error or broken, or it is in bad contact; 2. The rotor coil is broken; 3. The rectifier diode is damaged; 4. The carbon brush is in bad contact; 5. The adjuster is damaged.	1. Inspect and repair circuit; 2. Inspect and repair or replace generator assembly; 3. Replace the diode; 4. Remove dirt or replace the carbon brush; 5. Repair or replace the adjuster.
2. Generator is undercharged	1. V-transmission belt is loose; 2. The carbon brush is in bad contact and the slip ring is stained with oil; 3. The adjuster is damaged; 4. The battery has been aged.	1. Adjust the V-transmission belt make it tight; 2. Adjust the carbon brush and clean the slip ring; 3. Replace the adjuster; 4. Replace the battery.
3. Charging current of generator is too strong and the bulb is prone to be burned out	1. The adjusting voltage of adjuster is too high; 2. The magnetizing coil of adjuster is sealed off and has lost adjusting action.	1. Adjust the voltage to an appropriate value as required; 2. Inspect and repair the magnetizing coil and reweld the points of weld.

2.18.2.3 Faults and solutions of battery

Symptom	Reason	Solutions
1. The battery capacity is not enough and it is hard to start engine	1. The electrolyte level is too low; 2. It is short circuit between pole plates; 3. The pole plates are vulcanized; 4. The circuit joints are in bad contact and there are many oxides on terminals to make battery undercharged.	1. Add distilled water or 1:1 dilute sulfuric acid solution; 2. Remove deposits and replace electrolyte; 3. Charge and discharge again and again to remove vulcanization; 4. Fasten the joints and remove oxides, and apply Vaseline to terminals.

2.18.2.4 Faults and solutions of instrument

Symptom	Reason	Solutions
1. The indicator of water temperature gauge always indicates low temperature	1. The circuit is broken and the socket joint is in bad contact; 2. The water temperature sensor is damaged.	1. Inspect and repair the circuit and remove the dirt in the socket joint; 2. Replace the water temperature sensor.
2. The indicator of water temperature gauge always indicates high temperature	1. The water temperature sensor is in short circuit and damaged; 2. A short circuit fault occurs.	1. Replace the water temperature sensor; 2. Inspect and remove the short circuit fault.
3. The indication of oil pressure or air pressure gauge is abnormal	1. A short circuit or open circuit occurs; 2. The sensor is in open circuit, or in short circuit or in bad contact.	1. Inspect and remove the short circuit or open circuit; 2. Inspect and repair or replace the sensor.

Operation Instruction

2.18.2.5 Lamplight faults and clearance methods

Symptom	Reason	Solutions
1.Head lamp has no high and low beams	1.The circuit is broken or open and the fuse is blown out; 2.The lamp switch is in bad contact or damaged; 3. The lamp filament is burned out.	1.Inspect and repair to make circuit closed; 2.Inspect and repair or replace the lamp switch; 3. Replace with a high-quality bulb.
2.Tail lamp is off	1.The circuit is broken; 2. The tail lamp switch is in bad contact or damaged.	1.Inspect and repair to make circuit closed; 2. Inspect and repair or replace the lamp switch.

2.18.2.6 Electrical of the cab faults and clearance methods

Symptom	Reason	Solutions
1. Cab electrical components do not work	1.Circuit breaker short-circuit the fuse blows 2.Light switch is bad contact,、 damaged	1.Overhaul connected 2.Repair and replacement

3. Accessories, Spare Parts and Quick-Wearing Parts

3.1 Accessories

The accessories of the tractor include fan heater, pendulum type draw bar, etc.

3.1.1 Fan heater (optional)

The fan heater on the tractor is installed in the front upper part in the driver's cab. The fan heater switch is installed on the fan heater. The fan heater will be in operation as long as the fan heater switch is turned on, to make working temperature comfortable in cab.

When it needs to be ventilated in the cab (especially in summer), nothing remains but to shut off the hot circulating water outlet valve of the fan heater on engine and turn on the fan heater switch; here the fan of fan heater will be in operation.

The two small flop gates on both left and right sides of fan heater are used to regulate air stream circulation.

3.1.2 Pendulum type draw bar (optional)

The pendulum type draw bar is only used in trailed implement. Rear end of the draw bar is connected with farm implement by draw pin. The draw bar can swing transversely and it is relatively easy to connect with farm implement. The draw bar in operation can swing left and right, but when the tractor draws farm implement to go backward, the locating pin must be inserted in the hole of draw plate to prevent draw bar swinging.

The height of traction point can be changed by turning draw bar to make traction height suitable to the farm implement.

Warning:

For the tractor with fan heater or air conditioner installed, anti-freezing solution must be applied to the cooling system of engine to protect fan heater or air conditioner from frost crack.

Accessories, Spare Parts and Quick-Wearing Parts

3.2 Spare parts

3.2.1 Spare parts

Table 3-1 Spare parts

No.	Code	Name	Quantity	Remark
1		Spare parts for engine	1	
2	SZ1204.58.033A	Quick –change couplings (female)	2	Optional, used in 1 pair hydraulic output model
			4	Optional, used in 2 pairs hydraulic output model
3	SKB904-1/2-BM	Quick-change couplings	2	Optional, used in 1 pair hydraulic output model
			4	Optional, used in 2 pairs hydraulic output model

3.2.2 Attached tools

Table 3-2 Attached tools

No.	Code	Name	Quantity	Remark
1	QB/T 2564.4	Screwdriver for slotted head screws6×150	1	Put in the tool bag
2	QB/T 2564.5	Screwdriver for cross-recessed head screws6×150	1	Put in the tool bag
3	GB/T 3390.1	Socket 18	1	Put in the tool bag
4	GB/T 3390.1	Socket 21	1	Put in the tool bag
5	GB/T 3390.1	Socket 27	1	Put in the tool bag
6	GB/T 3390.3	Sliding handle	1	Put in the tool bag
7	GB/T 3390.4	Connecting rod 250	1	Put in the tool bag
8	JB/T 7942.1	Lever type grease gun A200	1	Put in the tool bag
9	JB/T 3411.47	Pincer B2.5	1	Put in the tool bag
10	JB/T 3411.48	Pincer A2.5	1	Put in the tool bag
11	GB/T 5356	Hexagon socket screw keys 8	1	Put in the tool bag
12	QB/T 3001	Open ended wrenches 8×10	1	Put in the tool bag
13	QB/T 4388	Open ended wrenches 10×12	1	Put in the tool bag
14	QB/T 3001	Open ended wrenches 13×16	1	Put in the tool bag
15	QB/T 3001	Open ended wrenches 18×21	1	Put in the tool bag
16	QB/T 3001	Open ended wrenches 24×27	1	Put in the tool bag
17	QB/T 3001	Open ended wrenches 30×34	1	Put in the tool bag
18		Attached tools for engine	1	From the engine factory

Accessories, Spare Parts and Quick-Wearing Parts

3.2.3 List of attached documents

Table 3-2 List of attached documents

No.	Name of documents	Quantity	Remark
1	Attached technical documents relating to engine	1	From the engine factory, placed in archival bag
2	Product qualification certificate	1	Placed in archival bag
3	Three—guarantee service certificate	1	placed in archival bag
4	Operator's manual for air conditioner	1	Optional, used for the model with air conditioner
5	Operator's manual for fan heater	1	Optional, used for the model with fan heater
6	Parts catalogue for tractor	1	placed in archival bag
7	User's manual for tractor	1	placed in archival bag
8	Engine qualification certificate	1	From the engine factory, placed in archival bag

Note: Attached tools, spare parts and documents relating to engine should be checked before acceptance according to the diesel engine packing list.

3.3 Quick-wearing parts

The quick-wearing parts of the tractor are described as table 3-4.

Table 3-4 Lists of Quick-Wearing Parts

No.	Parts code	Parts Name	Quantity / unit	Remark
1		Safety lever 5A	2	
2		Safety lever 10A	8	
3		Safety lever 15A	2	
4		Safety lever 20A	3	
5		Distance light 2-filament bulb	2	
6		Steering Bulb	6	
7		Location Bulb	6	
8		Top working Bulb	4	
9		Braking bulb	2	

Warning:

1. The above listed spare parts, tools and quick-wearing parts are special parts of the tractor, so they should be kept well for use in the operation and maintenance of the tractor. If any part is lost, it may affect the functional service and performance of the tractor.

2. For maintenance, standard fittings as manufacturer requires should be used. If non-standard fittings are used, it may affect the function, service performance and service life of the tractor.

4. Maintenance Instructions

Such technical maintenance measures as regularly cleaning, inspecting, lubricating, adjusting or replacing some parts of the tractor are generally called technical maintenance. Good technical maintenance can decelerate the deterioration of technical conditions of parts, reduce faults, extend service life and make tractor in good condition all the time.

Warning:

- 1. All maintenance work must be carried out by the operators that are trained professionally and familiar with features of the tractor, to protect it from damage;**
- 2. The technical maintenance rules must be strictly complied with to make tractor in normal working and extend its service life.**
- 3. During warranty period, any damage to tractor due to the operators those are unfamiliar with features of the tractor, carrying out operation and maintenance, or failing to carry out related maintenance work as required within maintenance period specified by the manufacturer, will be excluded from related guarantee service of the tractor;**
- 4. It is strictly prohibited to adjust without permission the opening pressure of safety valve of engine and hydraulic system, the opening pressure of safety valve of air brake system and the opening pressure of water tank cover, or else a damage may be caused to the tractor and service performance of the tractor will be affected, and moreover, it will be excluded from related three-guarantee service.**

4.1 Technical maintenance rules

The technical maintenance period of the wheeled tractor is determined according to cumulative operating hours. The technical maintenance includes shift technical maintenance (10h), 50h technical maintenance, 200h technical maintenance, 400h technical maintenance, 800h technical maintenance, 1600h technical maintenance, special technical maintenance in winter and technical maintenance for long-time storage.

4.1.1 Shift technical maintenance

- Ø Remove the dust and oil stain on the tractor;
- Ø Inspect and tighten external fasteners of tractor; if there is any looseness, it should be fastened in time, in particular the fastening bolts of front and rear wheels;
- Ø Inspect the liquid level of engine oil sump, water tank, fuel tank, hydraulic steering tank, travel brake oil tank and hydraulic lifter, and inject fuel or water if not enough; before the liquid level of oil sump is inspected, the tractor must be parked on a horizontal ground

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and the engine stops work 15min;

- Ø Inject grease according to table 4-1;
- Ø Inspect air pressure of front and rear tires and inflate tires as required if not enough;
- Ø Inspect and adjust free travel of main and auxiliary clutches and travel brake pedal;
- Ø Inspect whether there are three leakages: air leakage, oil leakage and water leakage; if there is any leakage, remove it;
- Ø Maintain the diesel engine in accordance with the requirements of Routine Shift Technical Maintenance specified in the Operation and Maintenance Manual for Diesel Engine.

4.1.2 50h technical maintenance

- Ø Finish the shift technical maintenance;
- Ø Inject grease according to table 4-1;
- Ø Inspect oil surface of oil bath type air cleaner and remove dust;
- Ø Maintain the diesel engine in accordance with the requirements of Primary Technical Maintenance specified in the Operation and Maintenance Manual for Diesel Engine.

4.1.3 200h technical maintenance

- Ø Finish the 50h technical maintenance;
- Ø Inject grease according to table 4-1;
- Ø Replace the lubricating oil of diesel engine oil sump;
- Ø Clean and maintain the oil basin of oil bath type air cleaner;
- Ø Clean the hydraulic oil filter of lifter, and replace the filter element when necessary ;
- Ø Maintain the diesel engine in accordance with the requirements of Secondary Technical Maintenance specified in the Operation and Maintenance Manual for Diesel Engine.

4.1.4 400h technical maintenance

- Ø Finish the 200h technical maintenance;
- Ø Inject grease according to table 4-1 ;
- Ø Inspect the main drive and final drive oil level of front driving axle, and inject oil when necessary;
- Ø Inspect the oil level of transmission system and lifter, and inject oil when necessary;
- Ø Inspect the free travel of parking brake handle, and adjust it when necessary;
- Ø Clean and maintain the filter of hydraulic steering tank;
- Ø Maintain the diesel engine in accordance with the requirements of Secondary Technical Maintenance specified in the Operation and Maintenance Manual for Diesel Engine.

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4.1.5 800h technical maintenance

- Ø Finish the 400h technical maintenance;
- Ø Inject grease according to table 4-1;
- Ø Replace the transmission hydraulic oil for hydraulic steering system;
- Ø Replace the transmission hydraulic oil for transmission system and lifter;
- Ø Inspect the valve clearance of diesel engine;
- Ø Inspect and adjust the injection pressure of oil injection pump;
- Ø Clean and maintain the fuel tank;
- Ø Maintain the diesel engine in accordance with the requirements of Tertiary Technical Maintenance specified in the Operation and Maintenance Manual for Diesel Engine.

4.1.6 1600h technical maintenance

- Ø Finish the 800h technical maintenance;
- Ø Inject grease according to table 4-1;
- Ø Clean and maintain the cooling system of diesel engine;
- Ø Replace the main drive and final drive lubricating oil of front driving axle;
- Ø Inspect, adjust and maintain the start motor;
- Ø Maintain the diesel engine in accordance with the requirements of Tertiary Technical Maintenance specified in the Operation and Maintenance Manual for Diesel Engine.

4.1.7 Special technical maintenance in winter

- Ø Replace with winter lubricating oil and fuel;
- Ø The anti-freezing solution must be applied when the air temperature in winter is below zero;
- Ø Prior to shift work, the engine should be started according to winter requirements;
- Ø The discharge rate of battery should not be more than 25% and the battery should keep a relatively high charge rate;
- Ø After end of operation, the tractor should be parked in a warm shed that takes shelter from wind.

4.1.8 Technical maintenance for long-time storage

If the storage period of tractor is less than one month and the replacement period of engine oil is not more than 100 operating hours, special protective measures need not to be taken. If the storage period of tractor is more than one month, special technical maintenance must be carried out in accordance with "5 Storage" in this manual.

Maintenance Instructions

4.2 Technical maintenance operation

4.2.1 Tractor maintenance

Table 4-1 Tractor Maintenance

No.	Maintenance part	Operation content	Number of points	Maintenance period
1	Engine oil sump	Inspect liquid level	1	Per shift
2	Oil bath type air cleaner	Inspect oil level	1	Per shift
3	Battery	Inspect oil level	1	Per shift
4	Hydraulic steering tank	Inspect oil level	1	Per shift
5	Radiator (water tank)	Inspect oil level	1	Per shift
6	Water pump shaft of engine	Inject grease	1	Per shift
7	Oil injection pump	Inspect oil level	1	Per shift
8	Main clutch	Adjust free travel	1	Per shift
9	Auxiliary clutch	Adjust free travel	1	Per shift
10	Fan belt	Inspect tightness	1	Every job 50h
11	Steering cylinder	Inject grease	1	Every job 50h
12	Master pin bushing of front shaft	Inject grease	2	Every job 50h
13	Pendulum shaft of front axle with 4WD	Inject grease	2	Every job 50h
14	Central pendulum pin bushing of front shaft	Inject grease	1	Every job 50h
15	Rotary mounted oil filter	Replace filter	1	Every job 200h
16	Hydraulic oil suction filter of lifter	Clean or replace filter element	1	Every job 200h
17	Oil injection pump	Replace lubricating oil	1	Every job 200h
18	Engine oil sump	Replace lubricating oil	1	Every job 200h
19	Oil basin of oil bath type air cleaner	Maintain and clean oil basin	1	Every job 200h
20	Transmission system and lifter	Inspect oil level	1	Every job 400h
21	Breather filter element	Clean filter element	2	Every job 100h
22	Main drive of front drive axle	Inspect oil level	1	Every job 400h
23	Oil cup of master pin of front drive axle	Inject grease	2	Every job 400h
24	Final drive of front driving axle	Inspect oil level	2	Every job 400h
25	Hydraulic steering tank	Replace lubricating oil	1	Every job 800h
26	Fuel tank	Clean and maintain fuel tank	1	Every job 800h
27	Engine inlet and outlet valves	Adjust valve clearance	8	Every job 800h
28	Oil injection pump	Adjust injection pressure	4	Every job 800h
29	Transmission system and lifter	Replace lubricating oil	1	Every job 800h
30	Engine cooling system	Clean and maintain it	1	Every job 1600h
31	Main drive of front drive axle	Replace lubricating oil	1	Every job 1600h
32	Final drive of front drive axle	Replace lubricating oil	1	Every job 1600h

Maintenance Instructions

4.2.2 Technical maintenance operation

4.2.2.1 Battery maintenance

This series tractors use maintenance free battery, usually does not require special maintenance. Observed hydrometer view hole, sufficient electricity for the green, gray for the electricity shortage, no electricity for the black. The batteries are in need of additional charge when the view hole shows the gray; the batteries need to be replaced when the view hole shows the black.



Warning:

1. When charged, the battery should be away from open flame and indoor air should be kept unobstructed. After end of charge, the power supply should be cut off before disconnected from terminals, to prevent striking a flame and causing a fire or explosion;
2. The battery should be stored in a clean, dry and ventilated warehouse between 0°C and 40°C. The battery should be handled with care and kept upright
3. The battery terminals and power supply wire joints should be connected firmly to prevent fusing terminal when starting. The Vaseline should be applied to connection terminals to protect from oxidation etching;
4. External terminals of battery should be kept clean. The exhaust hole on battery should be inspected regularly to make it unobstructed;
5. The charge mark on battery should be inspected regularly. The battery should be charged when necessary.

4.2.2.2 Inspection and maintenance of brake oil tank

The brake oil tank is on the right side of hood bracket. Brake fluid oil level should be higher (10~15) mm than the middle convex plate, when less than this value should identify the causes of Brake fluid spills and to exclude, and then add Brake fluid.



Note:

1. The correct brake fluid oil level is vital to braking system to normal operation;
2. Hydraulic brake must be synthetic oil, may not be used instead of the brake oil with alcohol or other mechanical oil.

4.2.2.3 Inspection and maintenance of steering oil tank

The steering oil tank is on the engine. Open the tank cover and observe oil level; if the oil is

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not enough, inspect and find out the cause of oil leakage, and then inject oil. The steering cylinder, oil pipe and joints should be free from oil leakage, or else the steering may fail to function. The filter screen in the steering oil tank should be cleaned or replaced regularly.

When inspecting oil level, the breather valve in central position on tank cover should be inspected to make its rise and fall unobstructed; if affected by oil stain, the breather valve should be cleaned to remove oil stain.

4.2.2.4 Operation and maintenance of oil bath air cleaner

Open hooks of the filter, and then remove the bottom of the oil basin, dump the dirty oil and clean with kerosene or diesel fuel, while cleaning filter, then add new oil to the oil height, and then re-installed.

Important matters:

Correct operation and maintenance of air cleaner have the direct bearing on service life of engine, so air cleaner must always be kept clean. During farmland work, air cleaner should be inspected and cleaned prior to shift work. After maintained, the filter element of air cleaner must tightly join with air cleaner to avoid any crack and prevent dust or soil from entering into engine to cause engine scuffing, abnormal wear and severe downward exhaust, etc.

4.2.2.5 Adjustment of fan belt tightness

Press down middle part of fan belt with thumb; the force applied is 29.4~49.0N and the press-down distance is 15±3 mm. If the requirements are not met, it should be adjusted by the method below:

Firstly, release the fixing nuts on generator adjusting bracket; secondly, pull the generator outward to tighten belt; finally, fasten the fixing nuts on generator bracket.

4.2.2.6 Inspection of oil level of engine oil sump and oil replacement

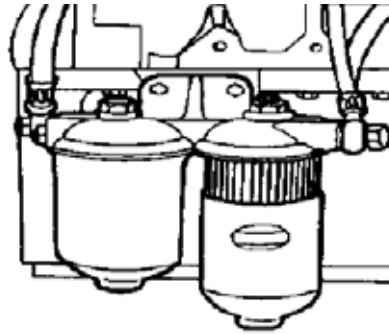
Draw out the oil dipstick in the left front of engine oil sump and inspect whether oil level is between upper and lower scales. If oil level is below lower scale, open the filler cap on engine timing gear case cap of and inject oil.

Prior to replacement of oil, screw off the oil drain plug at the bottom of oil sump and drain off dirty oil, and clean it; then inject new oil.

4.2.2.7 Maintenance of the fuel filter

As follow picture 4-1. The engine uses two filters series connection, Left for the 1st, right for the 2nd. Paper filter does not allow cleaning, the engine work every 200 hours, replace the 1st filter. When you replacement, you can put 2nd filter installed in the 1st filter, Replaced with a new filter in 2nd filter..

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Picture 4-1 Fuel filter

4.2.2.8 Maintenance of the spin-oil filter

Spin-oil filter is located in the lower left side of the engine , the engine work every 200 hours should be replace as the technical requirements.

The spin-oil filter adapt to overall change, the installation must be tightened.

4.2.2.9 Maintenance of the hydraulic oil filter

Riser hydraulic oil absorption filter located in the engine right side below. Do maintenance as the technical requirements. As follows: Unscrew the hydraulic filter rear end cap, remove the comb filter, use gasoline to clean and compressed air blowing. When the filter is difficult to clean or damaged, you should be replaced with new filter. the oil return filter is located in lifter case left side, 100 hours of each work should be cleaned, When the filter is difficult to clean or damaged, you should be replaced with new filter.

4.2.2.10 Front end drive axle transmission oil surface check

Front end drive axle transmission oil surface check plug is located in the front wheel hub, make the plug mouth in a horizontal position, and inject the new oil to the plug mouth.

4.2.2.11 Front drive axle housing oil surface check

Should always check the fluid levels during the tractor working, to ensure that the shell oil surface in the normal position.

4.2.2.12 Front wheel lubricant injection

The lubrication of this series tractor front wheel is charge lubrication at the inside of the front wheel hub cup.

4.2.2.13 Lubrication of master pin of front drive axle

There is an oil cup respectively at both ends of middle pendulum shaft of front driving axle of the tractor. The oil cups should be lubricated with grease regularly. Generally, the oil cups should be lubricated with grease once 400h.

4.2.2.14 Maintenance of transmission system

When inspecting oil level, park the tractor on level ground and stall engine; screw out and clean the oil dipstick on the right of main gear lever and then insert it; if oil level is below lower scale of dipstick, inject transmission oil between upper and lower scales of dipstick (measure it

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5min after injecting engine oil). When replacing lubricating oil, dismount the oil drain plug at the bottom of transmission case and drain off dirty oil; clean with diesel oil; then screw up the oil drain plug and inject new engine oil.

4.2.2.15 Maintenance of lifter

Park the tractor on level ground; lower lift arm to extreme lower position; stall engine; screw off the oil dipstick with cover on lifter and inspect oil level; if oil level is below lower scale, inject oil between upper and lower scales. When replacing hydraulic oil, dismount the plug and drain off dirty oil; clean and then inject new engine oil as required.

4.2.2.16 Maintenance of fuel tank

Park the tractor on level ground and stall engine; dismount the oil drain plug under fuel tank and drain off the deposits at the bottom of fuel tank. The fuel tank is used to store fuel and deposit water and impurities, so it should be cleaned regularly in use to remove dirt.

4.2.2.17 Inspection of tire inflation pressure

The tire pressure is inspected by barometer and the tire inflation pressure is referred to technical specifications for tractor. Extremely high or low tire pressure will reduce tire life and have an adverse impact on travel control of tractor.

4.2.2.18 Maintenance of engine cooling system

Engine coolant can be boiled tap water or anti-freezing solution. The validity period of anti-freezing solution is two years or 1600h. When it is beyond the period of validity, anti-freezing solution should be replaced and the cooling system should be cleaned; then new anti-freezing solution is injected.

Precautions for use of radiator:

- Ø Before start, inspect whether cooling water in radiator has been filled up and whether there is water leakage. Inspect whether radiator cover is fastened.
- Ø Irregularly inspect radiator core; if it is blocked by weed, dust or oil stain, the weed, dust or oil stain should be removed.
- Ø Regularly remove incrustation scale in cooling system to guarantee heat dissipation of heat exchange surface.
- Ø Regularly inspect thermostat performance to make it in good condition, or else it will affect circulation of cooling water and reduce cooling effect.

Cleaning of cooling system:

Clean the exterior of radiator. Before cleaning, remove weeds and impurities; then wet the core body with warm water (or steam); finally dry it with compressed air.

When the radiator is dismounted for cleaning, the detergent is applied and the radiator is immersed in 1~2% water solution. The solution temperature is 80~100°C and the radiator is shaken continuously in solution to remove dirt easily; then the radiator is cleaned with clean water.

Removal of incrustation scale in cooling system: The shift prior to maintenance fills up cooling

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system with solution prepared with 750g caustic soda and 150g kerosene in 10L water. The engine runs 5~10min at medium speed and the solution stays 10~12h (attention: In winter, must do heat preservation to prevent freezing); then restart engine and make it run 20min at medium speed, and then stop engine and drain cleaning liquid. After the engine is cooled, insert water pipe into water tank to flush it, and here the water drain valve at the bottom of water tank should be opened. After end of cleaning, close the water drain valve; inject water and make engine run several minutes, and then drain water. After the engine is cooled, inject new anti-freezing solution or cooling water as required.

Important matters:

- 1. In winter, the concentration of anti-freezing solution shall be checked frequently according to weather conditions. If inappropriate, the solution shall regain normal concentration immediately. As for tractors free of anti-freezing solution, water shall be exhausted under the circumstance of idle running of engine when water temperature drops below 70°C (Celsius), for fear of frost cracking of machine body arising by frozen cooling water.**
- 2. To prevent blocking in the inner of water pipe of radiator core, and formation of incrustant, it is sure that the anti-freezing solution of qualified manufactory must be used.**
- 3. The radiator must not contact any acid, alkaline or other corrosive substances for fear of being corroded.**
- 4. Radiator must be installed and washed carefully without damage or bruising.**

4.2.2.19 Maintenance of breathers

After tractor closes down, breathers will be detached one after another, and washed with clean diesel oil before carried on tractor. The air in the oil circuit must be removed while installation.

4.2.2.20 Exhaust of fuel system

When a tractor has been idle for long, diesel filter core is being replaced or when the air in oil tank is exhausted, air will probably enter oil circuit. The air in fuel system will make engine start-up difficult. Therefore, it must be removed according to the following steps when the oil tank is full and oil circuit breaker is in the on position, i.e. loose the air bleed screw of oil filter, put the draw knob of oil transfer pump hand pump up and down until there is no bubble in the diesel oil flowing out of air bleed screw; screw down air bleed screw again and loose air bleed screw on injection pump, put draw knob of oil transfer pump hand pump up and down until there is no bubble in the diesel oil flowing out of air bleed pump; then tighten air bleed screw again.

Important matters:

- 1. The engine must be provided with high-quality light diesel oil in accordance with**

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operation specification. Generally, 0# light diesel oil is used in summer, while -10# light diesel oil is used in winter (see diesel engine operation specification for details). Diesel oil must be pure, and be subject to at least 48-hour purification by precipitation before use.

2. The lubricated face of ZHB type injection pump shall be frequently checked. The lubricating oil must be added up to the position of scribed line in time in case of shortage. Lubricating oil must be replaced once when engine has worked for 200 hours. The grade of lubricating oil used for injection pump must be same with that used for diesel engine.

4.2.2.21 Exhaust of brake system

Brake system tubing is being demolished, or check the ride (synchronization), the brake system must exhaust.

Exhaust should follow these steps:

First, fill up the brake oil tank, and slowly depresses the left brake pedal to the end so that the establishment of brake pressure.

Loose the bleeder plug on the top of brake housing half a lap to allow air to spill. Fastening the bleeder plug, repeat the above-mentioned actions until there is no air bubble emitting.

Further step on brake pedal to establish oil pressure, when the pedal reaches the normal travel, the oil pressure fully established (up to the required pressure).

Clean the oil on the drive shaft housing to prevent the paint off.

According to the above-mentioned steps, exhaust the air on the other side of the brake. Finally, fill up the brake fluid to specified level.



Warning: If the air is not exhausted, the brake system may act up!

4.3 Tractor chassis adjustments

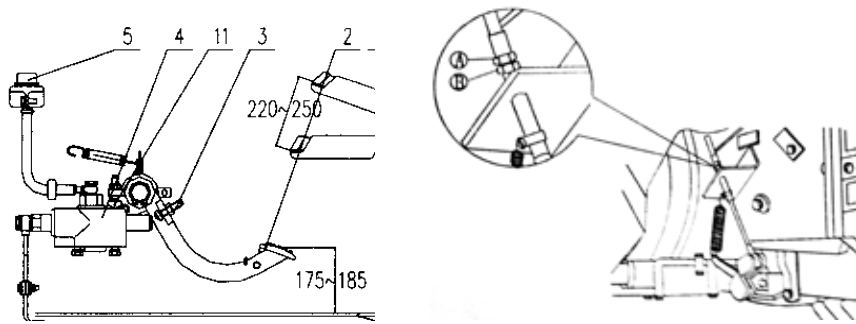
4.3.1 Brake manipulation of the institutions adjustment

Brake adjustment is shown as in the picture 4-2.

By adjusting the limit screws 11, to ensure the height (between pedal center and floor) is in 175mm~185mm ;By adjusting the limit screws 3 to ensure the space (between limit screws 3 and between the brake pump 4) is in 3mm ~ 4mm, so that pedal free stroke in 20 mm~ 26 mm and pedal working stroke in 110 mm ~ 120 mm. The hand brake operation handle work stroke in 220mm~250mm. Adjust the length of hand brake pull rod, ensure can achieve parking brake within the working stroke. The adjusting way as below: put the hand brake operation handle in the initial position (put the operation rod horizontal), take off the pin, draw out the pin shaft 7, loosen the nut

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9, turning the rod fork 8, to adjust the length of hand brake pull rod until the working stroke meet the requirement.



Picture 4-2 Brake adjustment

2- Pedal 3- Limit screw 4- Brake pump 5- Brake tank 11- Limit screw



Note:

1. The left and right brake pedal free stroke must be consistent, otherwise the tractor will be a sharp tilt to one side when emergency braking, thus causing the accident;
2. in order to be reliable, after the brake control restructuring, but also brake testing, the steps are: chain around the brake pedal, the tractor to open a dry, flat ground, in the case of high-speed straight driving, separation After the primary clutch, with brake emergency brake, and then check the driving wheel parking slip prints in the road. If the left and right driven wheel in the same road on the prints (prints both sides into a straight line, parallel to each other, equal in length), indicating that the appropriate adjustment, or need to re-adjust. If repeatedly adjust well, check the brake inside.

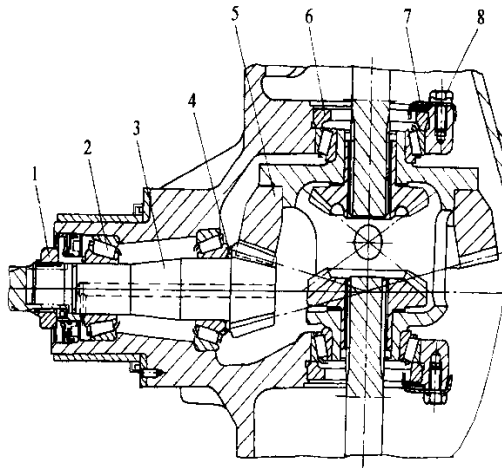
4.3.2 Front drive axle adjustment

4.3.2.1 Adjustment of the front drive axle center drive

Adjustment of the front drive axle center drive, see the picture 4-3,

There are 2 tapered roller bearings on the front drive bevel gear shaft and the left and right two tapered bearings are preloaded in the differential case, in the process of using, due to bearing wear, the small bevel gear shaft and differential case have the axial clearance, so we should regularly checked (The maintenance of every 1600h)。Small bevel gear shaft bearing adjustment by adjusting the nut 1. When you adjustment, first tighten the nut 1, and then go back to 1/10 ~ 1/6 turn, finally locking the nut. Differential case bearing adjustment, you should adjust the left and right adjustment screw ring 6 at the same time, make the central drive bevel gear meshing clearance at (0.15 - 0.3) mm range, finally, adjust the screw ring 6 use lock piece 7 tighten. Side gear clearance and meshing imprint detection methods with the detection of the central drive of the rear axle consistency。

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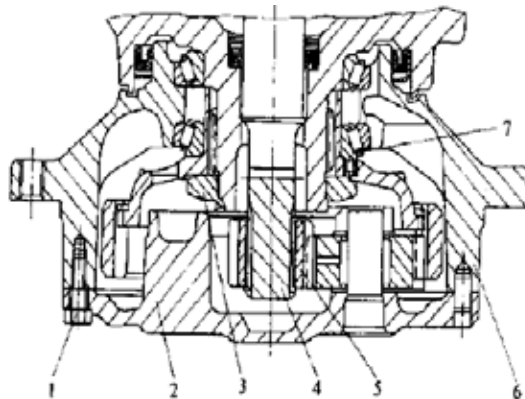


Picture 4-3 Adjustment of the front drive axle center drive

1. Adjust nut 2. Tapered roller bearings 3. A small cone of the gear shaft 4. Adjusting pads 5. Large bevel gear 6. Adjust coil 7. Locking pieces 8. Bolt

4.3.2.2 Adjustment of the front drive axle final drive

Adjustment of the front drive axle final drive, see the picture 4-4. The 2 tapered roller bearing (7) of the front drive axle final transmission are preloaded. When you check and adjust, first remove the bolt 1, remove the planetary gear 2, adjusting nut 3 tighten, and then go back to 1 / 10 ~ 1 / 6 turn, make the front wheel hub 6 to rotate flexibly, Finally, the removed parts re-assembly to tighten.



Picture 4-4 Adjustment of the front drive axle final drive

1. Bolt 2. Planetary gear 3. Adjust nut 4. Drive shaft 5. Sun gear
6. Front wheel hub 7. Tapered roller bearings

4.3.3 The clutch lever system adjustment

4.3.3.1 The main clutch lever system adjustment

The main clutch pedal adjustment as below step:

Loose the locking nut, turn the adjust nut anticlockwise, turn the nut one circle equals to the pedal displacement 9mm; ensure the pedal in the elimination of free stroke from the ground height is 190mm, if you install the cab, from rubber floor height is 170mm.

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4.3.3.2 The vice clutch lever system adjustment

Check the joystick system of free stroke should be 3.5 ~ 3.7mm, the manipulation of the handle measured is 55 ~ 60mm. When the free stroke of the joystick is less than 1.5mm, should be adjusted according to the following steps:

loosen the lock nut, counter clockwise rotation adjustment nut, Each turn is equivalent to 1mm joystick of the trip; Make sure the joystick free stroke is 3.5mm, tighten the locking nut.

4.3.4 Gearbox adjustment

4.3.4.1 Axis adjustment

Use a feeler to measure the axis components of the axial gap initiative satisfies (0.1 to 0.2) mm range value, Otherwise it should be removed to the driving shaft bearing caps, to ensure that by adjusting the driving shaft adjustment shim thickness.

4.3.4.2 Vice transmission axis adjustment

Use a feeler to measure the vice transmission axis of the axial gap initiative satisfies (0.09 to 0.18) mm range value; otherwise it should be removed vice transmission bearing cap baffle. Driving shaft by adjusting the vice transmission shaft ends to adjust the shim thickness to ensure.

4.3.5 Adjustment of the rear axle

4.3.5.1 Small bevel gear bearing adjustment

The two tapered roller bearings of the small bevel gear shaft are preloaded .During use due to bearing wear small cone gear shaft axial clearance. When you re-adjust, After the round nut is tightened, turning the separate rotating pinion single, and made it has preload (1 ~ 2) Nm of moment of resistance 【you can use the rope wrapped around the small cone gear shaft sleeve separated put 2 or 3 ring, the spring balance pulling the rope in a small cone axis rotation, The spring tension is (33 - 66) N】 , If out of range ,you should adjust the thickness of the front-end gasket which on the small bevel gear shaft to meet the preload moment of resistance requires.

4.3.5.2 Differential bearing adjustment

Differential left and right bearings are preloaded, during use due to bearing wear; make the large bevel gear axial clearance increased. Preload decreases, therefore should be checked and adjustment regularly. When you adjustment , you must first remove the small bevel gear shaft assembly, Separate measurement of the frictional torque of the rotation of the differential assembly required is (1.0 ~ 1.5) Nm 【you can use the rope wrapped around the differential caseΦ187 put 2 or 3 ring, rotation of the differential assembly with spring balance pulling the rope, Spring balance rally is (11 ~ 17) N】 If the preload is less than 11N or greater than 17N., Left / right bearing on both sides, respectively, an equivalent increase or decrease the adjusting pads , until the preload adjusted to the specified range. Differential bearing preload adjustment is completed, they should be removed parts are reassembled into the differential housing.

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4.3.5.3 Central drive bevel gear mesh adjustment

The process of using , the side gear clearance due to gear wear and tear caused by the increase will not affect the gear work properly. When the bearing wear bevel gear leaving the original engagement position, in general, just do not affect the normal working of the gears , In the process of using can not adjust, but when overhaul and gear does not work or replacement of bearings (Differential bearings and tapered bearings) and spiral bevel gear pair, Meshing adjustment should be carried out(Should after the bearing preload).

4.3.5.3.1 Check the side gear clearance

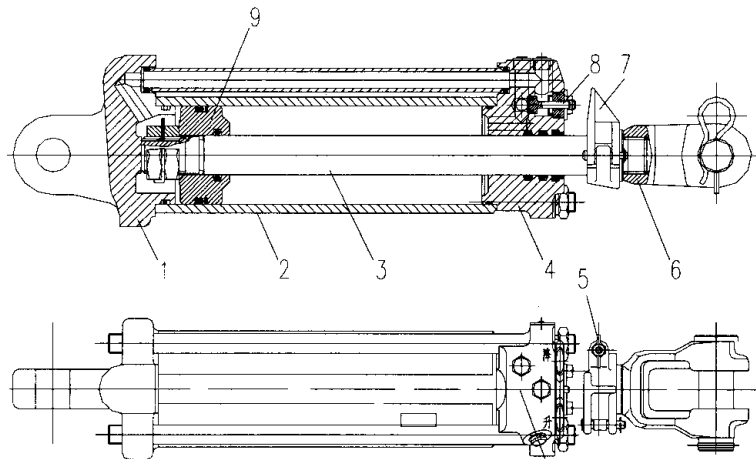
Lead sheet inserted into the big and small bevel gear interdental, the gears extruded lead sheets, then remove the lead piece, taken adjacent to the two lead sheets, measurement chip thinnest thickness of the two lead(Side gear clearance) should in (0.15 to 0.30) mm range, this gear the week on a uniform measurement of three-point, choose the mean value. If the engagement of the backlash is out of range, by adjusting the differential bearing adjustment shim thickness to achieve. When the gap is large, then the right side of the gasket out plus on the left. on the contrary, is the left side of the gasket out plus on the right. Correct meshing imprint should near the tooth height and middle section of cone and was a bit higher than the small end away from the side edge shall be not less than (3~4) mm, its length not less than 50% of tooth length, tooth height not less than 50% of the tooth height.

4.3.5.3.2 Check the mesh imprint

On the large bevel gear shaft gear convex coated with a layer of thin the uniform red pigment, this time the small bevel gear shaft concave force, turn the gear, it can get the small bevel gear shaft meshing imprint. Correct meshing imprint near the tooth height and middle section of cone and was a bit higher than the small end away from the side edge shall be not less than (3~4) mm, its length not less than 50% of tooth length, tooth height not less than 50% of the tooth height. Adjustment by changing the small cone gear shaft near tooth side to adjust the thickness of the gasket and make the small bevel gear shaft axial movement and change the pads of both ends of the differential bearing adjustment to achieve the axial movement to the large bevel gear. In order not to damage the differential bearing preload, the reduced side of the bearing pads the number added to the other side of the bearing. so that the left and right bearing adjust shim thickness remained unchanged.

4.4 Adjustment of hydraulic suspension system

4.4.1 The adjustment of the riser cylinder



Picture 4-5 The adjustment of the riser cylinder

1- Under cover 2- Cylinder 3- Piston rod 4- On cover 5- Wing nut

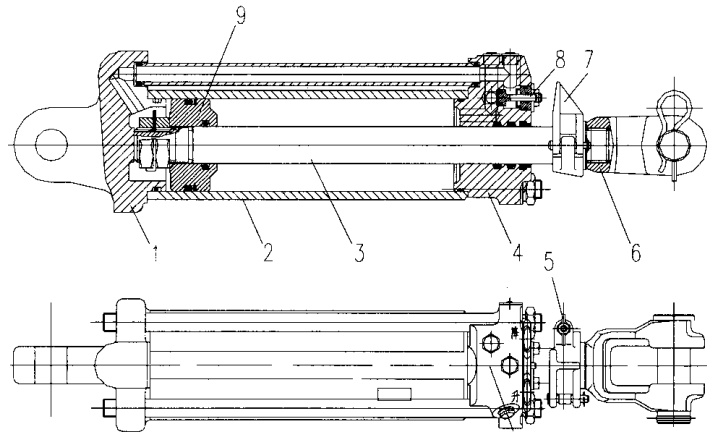
6- Piston rod connected fork 7- Positioning clamp 8- Positioning valve 9- Piston

In order to ensure the farm implements safe and reliable during transport, when the farm implements rose to the highest point should be adjusted to locate the clamp positioning valve 8 pressure in the end, by positioning the valve, occlusion of the cavity under the fuel tank oil, so can not be on the decline.

4.4.2 Fuel tank to drop height degree of adjustment

Drop height by positioning valve on the fuel tank and the positioning clamp. Positioning clamp block on the piston rod up and down adjustment ,the more the lower, the amount of decline smaller, conversely, the amount of decline greater. During descent, when positioning clamp pressure positioning valve, then stop the decline. Note: when you adjust the positioning clamp with positioning valve distance, to maintain the alignment of two fuel tanks, the error is 0 ~ 0.5 mm.

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Picture 4-6 Fuel tank assembly

7- Positioning clamp 8- Positioning valve

4.5 Full hydraulic steering system using of notes

This series tractors adopt full hydraulic steering. Before the tractor out of the factory, the steering system are properly adjusted. The user in the process should note the following:

- I Regular checks of the threaded connections, and in a timely manner tighten if loose. Full hydraulic steering system work connections may not have oil leakage phenomenon;
- I Regular checks of steering tank liquid level, if not enough added as required;
- I Daily use, such as catching a heavy feeling when turning the steering wheel, When the existence of turning hidden danger, shall not be forced fierce pull the steering wheel, must analyze the reasons , after troubleshooting ,so you can use it, otherwise it will damage the steering device; Prohibited the engine flameout glide, because the steering pump to lose power cannot be oil, and now the steering wheel to make the steering failure;
- I When you install the full hydraulic steering system , the steering should ensure that the steering shaft coaxial , and steering should be gap. After installation, check whether the steering wheel and flexible;
- I Must ensure that the oil clean. This should always check the filter elements and oil. Check methods: put the oil drop on the blotting paper, if the traces of oil have a black center , then should be replaced the oil;
- I After replacement of the new oil, drained the tank of gas. Exhaust method: Steering cylinder bolt joints loosen, so that the pump low speed to deflated , until the outflow of oil-free foam.

Important note:

1. Before leaving the factory ,constant current overflow pump relief valve safety relief

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pressure has been fine, do not disassemble, adjust;

2. The constant current overflow pumps are precision components, generally not allowed any demolition, must be removed should be in a clean place. and washing with clean gasoline or kerosene.

5. Storage

If the tractor should be disused for a long time after finishing the field work or due to other reasons, it will be necessary to properly seal and store the tractor.

The tractor should be thoroughly cleaned before being sealed and stored. All connectors must be adjusted and fixed, and the technical service should be done in accordance with working hours, so that the tractor will be kept in good state.

Important matters:

Scientific storage and special maintenance and service are very important during disuse. Otherwise, the deterioration speed of tractor's technical state will be higher than that in working period.

5.1 Reasons for damage of tractor during storage period

- Ø Corrosion: during the storage period, the dust and vapor in the air will easily enter into the machine through gap and orifice, and the parts will be polluted and corroded. Other parts such as piston, valve, bearing and gear, if they are kept in a position for a long time, they will lose the protection from lubricant film that flows and has pressure, thus the erosion, rust, cement blocking or clamping stagnation will occur, and the tractor will be scraped.
- Ø Aging: The rubber, plastic and other parts will get aging, degenerated, brittle, corroded, and decayed or lose effect.
- Ø Deformation: plastic deformation occurs in transmission belt, tire and other parts after they sustain force for long time.
- Ø Others: electric parts are affected with damp, the storage battery automatically discharges, and etc.

5.2 Sealing and storing the tractor

- Ø 5.2.1 Carefully examine the tractor before sealing and storing it, eliminate the existing failure, keep good technical state, and clean up the appearance of tractor.
- Ø 5.2.2 Exhaust the antifreeze and antirust in radiator, air cylinder and water pump, the engine oil in lubrication system and the engine oil in hydraulic system.
- Ø 5.2.3 Remove the storage battery, and coat the terminal post with lubricant. Store the battery in shady room with fine ventilation and at the temperature of more than 10°C.
- Ø 5.2.4 Exhaust the oil in engine and add new engine oil. Operate the engine throttle for several minutes, so that the engine oil will accrete to the surface of moving components.
- Ø 5.2.5 Add grease in each lubricating point.

Deposit

- Ø 5.2.6 Coat the electric contacts, connectors and the surface of unpainted metal parts with dehydrate Vaseline (which should be heated at 100°C to 200°C) .
- Ø 5.2.7 Loosen the engine fan belt, if necessary, the belt should remove, package and stored separately, the pulley groove spraying rust inhibitor. If the tractor surface have stripping, should painting.
- Ø 5.2.8 Exhausted the diesel of diesel tank and clean the fuel tank
- Ø 5.2.9 Use protective materials (such as canvas, tarpaulin, or greaseproof paper, etc.) seal not closed spout of engine, such as inlet and exhaust ports, to prevent foreign matter, dust, moisture from entering.
- Ø 5.2.10 All joystick should in the neutral position (including the switching of the electrical system and parking brake), put the tractor front wheels, suspension rods placed in the lowest position.
- Ø 5.2.11 Support the tractor off ground with dry wood frame, so that the load can be removed from tire. Regularly examine the air pressure in tire.
- Ø 5.2.12 The tractor should be stored in dry warehouse or shed with good ventilation. It can not be stored with corrosive goods and liquid. If the tractor is stored outdoor, select the higher and dry platform, and cover the tractor with tarpaulin.
- Ø 5.2.13 Clean the parts dismantled from tractor and the tools, pack them and store them in dry warehouse.

5.3 Service during the period of sealing and storing tractor

- Ø All the above mentioned requirements for sealing and storing tractor should be satisfied.
- Ø It is necessary to examine whether the corrosion, aging, deformation and other abnormal phenomenon occur in the tractor and components. The problems should be removed in time.
- Ø The crankshaft of engine should be swerved for 10 to 15 circles every two months, in order to prevent rust. For the lubricating parts where grease needs to be added, clear away the old grease and replace new grease.
- Ø Start up tractor one every three months, and drive it with low speed for 20 to 30 minutes to examine whether abnormal phenomenon occurs in each part.
- Ø Regularly wipe the dust on the surface of storage battery with dry cloth, and maintain it regularly by following the Use Manual of Storage Battery.

Important matters:

If the tractor is unused for several months or longer, the engine oil should be replaced at least. Clean the element of engine oil filter. Start up tractor one every three months, and drive it with low speed for 20 to 30 minutes to examine whether abnormal phenomenon occurs in each part. Keep the exterior clean and dry.

5.4 Unsealing tractor

- Ø Clear away the grease.
- Ø Open the closed nozzle, and clean the tractor.
- Ø Add coolant, engine oil, diesel, and add lubricant in each lubricating point.
- Ø Install the storage battery by following the requirements of Storage Battery Use Manual, and coat the terminal post with Vaseline.
- Ø Clear away the antirust in the groove of fan belt, and mount the belt. Adjust the tightness degree of transmission belt in line with technical requirements (see the Use and Service Manual of Engine).
- Ø Examine the security of electric circuits and pipelines.
- Ø Connect the battery and Vaseline on the terminals.
- Ø Operate the tractor as manual required.

Notes: Finishing the regular technical maintenance of diesel engine.

6 . Delivery, Acceptance and Transportation

6.1 Delivery and acceptance

When the user purchases a tractor, he should mainly examine the following aspects:

Ø Whether the documents of the tractor are complete or not.

The documents include: Use and Service Manual of Tractor, Certificate of Quality, Warranty Card, Catalogue of Tractor's Parts, List of Accessories (Spare Parts), List of Service Stations for User and Technical Document of Engine (from the manufacturer of engine) .Check whether the corresponding number on Certificate of Quality, Warranty Card and Technical Document of Engine tally with the material objects.

Ø Whether the goods of the tractor are complete or not.

Check the goods in line with List of Accessories (Spare Parts), and they should include spare parts and tools.

Ø Whether the tractor is in good state.

The technical state of tractor may be changed through consignment or movement, thus the user shall further confirm the tractor's state.

6.2 Transportation

If the tractor is transported by driving, the traffic rules must be strictly complied with, and the distance between two vehicles shall be kept as 60m at least. Collision caused by accidents must be avoided. If the tractor is transported by being loaded on a truck, the following points shall be done:

Ø The tractor should be loaded and unloaded on level ground.

Ø The special unloading deck should be used when loading and unloading the tractor.

Ø The assistant must give guidance at site, and unrelated persons can not be close to the site.

Ø Put the hitch rod on the lower position after loading the tractor, pull the hand brake, engage the reverse gear, and pull out the startup key.

Ø Keep the tire stable with blocks.

Ø Adjust the rear-view mirror downward, and take it off if necessary (dismount the muffler as far as possible).

Ø When passing culvert and bridge, caution whether the tractor on truck exceeds the height. Reduce the speed when turning a corner.

Ø The hand brake should be relieved first when unloading, then engage the forward gear, and drive the tractor with minimum speed from the truck.



Notes:

1. The brake of truck should be clamped in loading and unloading the tractor, in order to avoid the tractor rolling or driver dropping risk of truck suddenly start.

2. The tractor should run with minimum speed in loading and unloading, in order to avoid the rolling or dropping risk of high speed.

Technical Specification

7. Technical Specification

7.1 Product execution standard

Product execution standard : Q/LYBM 005-2011 70-100 Wheeled Tractor series

7.2 Products Indication location

- 1.The chassis No. of this series are indicated at the left upper side of rear axle housing.
- 2.The tractor nameplate of this series are indicated at the left side of instrument panel.

Technical Specification

7.3 Product Specifications

7.3.1 Parameters of the tractor

Model		Unit	Technical Parameters			
			BOMR-700/750/800/850/900/950/1000	BOMR-704/754	BOMR-804	BOMR-854/904/954/1004
Type		—	4×2 Wheeled	4×4 Wheeled		
Rated drawbar pull		kN	13.1/14.0/14.9/15.5/16.0/16.5/18.7	15.4/16.5	17.6	18.7/19.8/20.9/24.0
Maximum PTO power		kW	44.0/47.0/50.2/53.2/56.3/59.4/64.3	44.0/47.0	50.2	53.2/56.3/59.4/64.3
Overall dimensions	Length (Include front ballast and rear suspension)	mm	4520/4531			
	Width (standard tyre and the full ballast)	mm	2100	2145	2100	2170
	Height	mm	2700 (to the Base)	2705	2884	2884
Wheel tread	Front wheel	mm	1400 ~ 1900	1560 ~ 2005	1620 ~	1620 ~ 1960
	Rear wheel	mm	1500 ~ 2100	1500 ~ 2100	1500 ~	1520 ~ 2120
Wheel base		mm	2342/2353	2314/2325	2314/2325	2314/2325
Minimum ground clearance		mm	360	370	430	440
Minimum turning radius		m	4.1±0.3	5.6±0.3	5.6±0.3	5.6±0.3
Minimum operation mass		kg	3030	3540	3675	3920
Mass distribution	Front shaft	kg	1100	1490	1580	1595
	Rear shaft		1930	2050	2095	2325
Ballast	Front ballast (option)	kg	400	400		
	Rear ballast (option)	kg	300	300		
Remark		—	The parameter for the tractor with Rons.		The parameter for the tractor with Cabin.	

Technical Specification

7.3.2 Engine

Model		Unit	Technical Parameter						
			BOMR -700/704	BOMR -750/754	BOMR -800/804	BOMR -850/854	BOMR -900/904	BOMR -950/954	BOMR-1000/1004
ENGINE	Model	—	4JR3AT70X/YT4B2-23	4JR3AT75X/YT4B4-23	4JR3ABT80Y/YT4B4-23	4JR3ABT85X/LR4B5-23	QC4112TD/LR4M5-23	QC4115T/LR4M5-23	QC4115T/LR4V5-23
	Type	—	In-line, water-cooled, and four-stroke diesel						
	Number of cylinders	—	4						
	BORE × STROKE	mm	105×135/108×120	105×135/108×130	108×135/108×130	108×135	112×135	115×135	115×135
	Rated power	kW	51.5	55.0/55.1	59.0/58.8	62.5	66.2	70.0	73.5
	Rated Revolution	r/min	2200/2300	2200/2300	2200/2300	2400/2300	2300	2300	2300
	Maximum torque	N·m	300/257	320/274	350/285	370/325	325/345	360/365	345
	Maximum Revolution	r/min	1600~1800/1500~1700	1600~1800/1500~	1600~1800/1500~	1600~1800/1500~	1600~1800/1500~	1600~1800/1500~1700	1600~1800/1500~1700
	Torque reserve	—	≥20%	≥20%	≥20%	20% ~ 25%	20% ~ 25%	20% ~ 25%	20% ~ 25%
	Rated fuel consumption rate	g/(kW·h)	≤242	≤242	≤242	≤242	≤242	≤242	≤242
	Rated oil consumption rate	g/(kW·h)	≤1.36/≤1.63	≤1.36/≤1.63	≤1.36/≤1.63	≤1.36/≤2.04	≤1.36/≤2.04	≤1.36/≤2.04	≤1.36/≤2.04
	Method of lubrication	—	Pressure type	Pressure type	Pressure type	Pressure type	Pressure type	Pressure type	Pressure type
	Starting mode	—	Electric starting	Electric starting	Electric starting	Electric starting	Electric starting	Electric starting	Electric starting

Note : In the form, left side of the “/” is QUANCHAI engine, Right side of the “/” is YTO engine.

Technical Specification

7.3.3 Transmission system

Model			Unit	Technical Parameters	
				BOMR -700/750/800/850/900/950/1000	BOMR -704/754/804/854/904/954/1004
Transmission	Connection type of engine and transmission system		—	Direct connection	
	Rear axle	Clutch	—	Dry, single, Double-acting, Separate operate	
		Gear Box	—	Compound transmission: 4×(3+1),12 forward gears,4 reverse gears , Main speed-change helical gear, Vice speed-change spur gear , Main and Vice speed-shift sleeve shift	
		Transmission	—	Spiral bevel gear	
		Differential	—	Closed, four planetary bevel gear	
		Differential lock	—	Latch-type	
		Final drive	—	Single-stage , outside, planetary gear type	
	Front	Transfer Shaft	—	/	Central transmission shaft

Technical Specification

	Drive axle	Front Center transfer	—	/	Spiral bevel gear
		Front differential	—	/	Closed,2 planetary bevel gears
		Front final transfer	—	/	Single-stage Planetary bevel gear type

7.3.4 Running system ,steering system, braking system

Model			Unit	Technical Parameters			
				BOMR -700/750/800/850/900/950/1000	BOMR -704/754	BOMR -804	BOMR -854/904/954/1004
Running System	Frame		—	Frameless	Frameless	Frameless	Frameless
	Front suspension		—	—	—	—	—
	Front axle		—	Telescopic	—	—	—
	Tire	Standard: front/rear	—	6.50-16/14.9-30	11.2-24/16.9-30	11.2-28/13.6-38	13.6-24/16.9-34
		Option: front/rear	—	6.50-20/14.9-30	9.5-24/11-32(paddy) 12.4-28/13.6-38(Paddy)	9.5-24/11-32(paddy) 12.4-28/13.6-38(Paddy)	9.5-24/11-32(paddy) 12.4-28/13.6-38(Paddy)

Technical Specification

		Pattern(front/rear)		—	F / R	R / R (Dry land) or PR/PR (Paddy)	R/R (Dry land) or PR/PR (Paddy)	R/R (Dry land) or PR/PR (Paddy)
		Number(front /rear)		—	2/2	2/2	2/2	2/2
		pressure	front/rear	kPa	196 ~ 250/147 ~ 196	transport : 147 ~ 196/147 ~ 196 ; in the field : 98 ~ 118/98 ~ 118	transport : 147 ~ 196/147 ~ 196 ; in the field : 98 ~ 118/98 ~ 118	transport : 147 ~ 196/147 ~ 196 ; in the field : 98 ~ 118/98 ~ 118
Braking system	Running Brake			—	Hydrostatic, disc type, wet type			
	Parking brake			—	Independent hand braking			
	Trailer brake			—	Pneumatic braking			
Steering system	Steering method			—	Front wheel steering			
	Steering gear			—	Hydrostatic steering			

Note : When option the paddy wheel type, the running speed should less than 10km/h and can't working in dry farmland working !

7.3.5 Working system

Model			Unit	Technical parameters	
				BOMR -700/704/750/754/800/804/850/854/900/904/950/954/1000/1004	
Hydraulic system	Type		—	Semi-separation	
	Hydraulic System		—	Open center	
	Rated pressure of safety valve		MPa	20.5-21.5	
	Hydraulic pump		—	Gear pump , CBN-F320	
	distributor		—	Slide Valve	
	Cylinder	Diameter*stroke	mm	φ110×128	
		Form	—	Double-acting	
	Linkage		mm	Rear-mounted three-point linkage, categories 2	
	Plow depth adjusting method		—	Composite control and floating control	

Technical Specification

	Maximum force exerted in full range		kN	12.4/12.4/13.3/13.3/14.2/14.2/15.0/15.0/15.9/15.9/16.8/16.8/17.6/17.6
	External Hydraulic service	Form	—	Rear-mounted type
		Specification	—	13.5mm
		Number	—	1 pair or 2 pairs
		Flow	MPa	19
		Flow	L/min	50
PTO shaft	Form		—	Rear-mounted, stand-alone
	Specification		—	φ38 , 8 tooth rectangular spline shaft(option:φ35 , 6tooth or φ35 , 21 teeth)
	Revolution		r/min	Standard : 760/1000 ; Option : 540/1000、 760/850、 540/760
Towing evice and Trailer Coupling	Towing device		—	Fork with adjustable traction
	Trailer Coupling		—	Height can be adjusted six kinds of location
Cab			—	Optional, simple cab or comfort cab(With fan or heater or air-conditioned)
Seat			—	Mechanical suspension seat, PVC surface, Height-adjustable, Front-rear adjustable

7.3.6 Electrical appliances and instruments

Model		Unit	Technical parameters	
			BOMR -700/704/750/754/800/804/850/854	BOMR -900/904/950/954/1000/1004
Type of earthling		—	12V Negative Ground	12V Negative Ground
Generator	Mode	—	See engine manual	See engine manual
	Voltage	V	14	14
	Power	kW	≥0.9	≥0.9
Relay	Model	—	See engine manual	See engine manual
	Regulating tage	V	14	14
Starting motor	Model	—	See engine manual	See engine manual
	Voltage	V	12	12

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	Power	kW	≥3.7	≥3.7
Battery	Model	—	6-QW-120	
	Voltage	V	12	
	Capacity	A·h	120	
	Quantity	—	1	
	Quantity	—	1	
Lighting and Signal device	Front lamps	—	2	
	Rear Lamps	—	2	
	Rear working lamp	—	2	
	Armrests signal lamp	—	2	
	Trailer plug	—	7 hole plug , 1	
Monitoring and Warning device	Instruments cluster	—	1 with a tachometer,a water temperature gauge,a oil pressure gauge,a ammeter	
	Warning device	—	Instrument, warning , indicating lamp : Left and right turning indicating lamp、high beam、Charge indicating lamp、Oil pressure indicating lamp、Preheat indicating lamp、Location indicating lamp、Parking brake indicating lamp ; Signal lamp and device : Brake lamp、Left and right turning lamp、Front and rear location lamp、reflector、Safety warning identify	

7.3.7 Oil and water injection volume

Model		Unit	Technical Parameters	
			BOMR -700/750/800/850/900/950/1000	BOMR -704/754/804/854/904/954/1004
Injection volume	Radiator	L	16	
	Fuel tank	L	145	
	Engine oil pan	L	15	
	Oil bath air cleaner	L	1.0	

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	Hydraulic steering	L	1.2	
	Brake system	L	0.44	
	Transmission system	L	49.2	
	Hydraulic lifter	L	17	
	Front main drive	L	/	8.8
	Front final drive	L	/	1.36 (each side)

7.3.8 Theoretical speed of tractor

BOMR -700/704/750/754/800/804/850/854 wheeled tractor theoretical speed

Unit : km/h

Model			BOMR -700/750/800/850	BOMR -704/754/804/854				
Gears			12F+4R- Rear tire 14.9-30	12F+4R- Rear tire 16.9-30	12F+4R- Rear tire 13.6-38	12F+4R- Rear tire 16.9-34	12F+4R- Rear tire 11-32 (paddy)	12F+4R- Rear tire 13.6-38 (paddy)
Direction	Vice shift	Main shift						
Forward	Low speed	1	1.84/1.92/2.01	1.48/1.54/1.61	1.55/1.63/1.70	1.57/1.65/1.72	1.48/1.55/1.61	1.70/1.78/1.85
		2	2.83/2.96/3.09	2.27/2.38/2.48	2.40/2.50/2.61	2.43/2.54/2.65	2.28/2.38/2.49	2.62/2.74/2.86

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		3	3.47/3.63/3.78	2.78/2.91/3.04	2.93/3.07/3.2	2.97/3.11/3.24	2.79/2.92/3.05	3.20/3.35/3.50
		4	5.52/5.77/6.02	4.43/4.63/4.83	4.67/4.88/5.09	4.73/4.94/5.16	4.44/4.64/4.85	5.10/5.33/5.56
	Middle speed	1	4.29/4.49/4.68	3.45/3.60/3.76	3.63/3.80/3.96	3.68/3.84/4.01	3.46/3.61/3.77	3.97/4.15/4.33
		2	6.61/6.92/7.22	5.31/5.55/5.79	5.59/5.85/6.10	5.67/5.92/6.18	5.33/5.57/5.81	6.11/6.39/6.67
		3	8.10/8.47/8.84	6.50/6.80/7.09	6.85/7.16/7.47	6.94/7.25/7.57	6.52/6.82/7.12	7.49/7.83/8.17
		4	12.89/13.47/14.06	10.34/10.81/11.28	10.9/11.39/11.89	11.04/11.54/12.04	10.38/10.85/11.32	11.91/12.45/12.99
	High	1	10.11/10.57/11.03	8.11/8.48/8.85	8.55/8.94/9.33	8.66/9.05/9.45	8.14/8.51/8.88	9.34/9.77/10.19
		2	15.57/16.28/16.99	12.50/13.07/13.63	13.17/13.77/14.37	13.34/13.95/14.55	12.54/13.11/13.68	14.39/15.05/15.70
		3	19.07/19.94/20.8	15.30/16.00/16.69	16.13/16.86/17.59	16.33/17.08/17.82	15.36/16.05/16.75	17.62/18.42/19.22
		4	30.34/31.72/33.1	24.35/25.45/26.56	25.66/26.82/27.99	25.99/27.17/28.35	24.43/25.54/26.65	28.04/29.31/30.58
Reverse	Reverse	1	4.78/5.00/5.22	3.84/4.01/4.19	4.04/4.23/4.41	4.10/4.28/4.47	3.85/4.03/4.20	4.42/4.62/4.82
		2	7.37/7.70/8.04	5.91/6.18/6.45	6.23/6.52/6.80	6.31/6.60/6.89	5.93/6.20/6.47	6.81/7.12/7.43
		3	9.02/9.43/9.84	7.24/7.57/7.90	7.63/7.98/8.33	7.73/8.08/8.43	7.27/7.60/7.93	8.34/8.72/9.10

Note: The theoretical speed of the "/" before and after the turn corresponding to the engine speed 2200r/min, 2300r/min, 2400r/min models of speed

BOMR -900/904/950/954/1000/1004 wheeled tractor theoretical speed

Unit : km/h

Model			BOMR -900/950/1000	BOMR -904/954/1004		
Gears			12F+4R- Rear tire 14.9-30	12F+4R- Rear tire 16.9-34	12F+4R- Rear tire 11-32 (Paddy)	12F+4R- Rear tire 13.6-38 (Paddy)
Direction	Vice shift	Main shift				
Forward	Low speed	1	1.87	1.60	1.51	1.73
		2	2.94	2.52	2.37	2.72

Technical Specification

		3	3.55	3.04	2.86	3.28
		4	5.58	4.78	4.49	5.16
	Middle speed	1	4.45	3.81	3.58	4.11
		2	6.99	5.99	5.63	6.46
		3	8.42	7.22	6.78	7.78
		4	13.26	11.36	10.68	12.25
	High	1	10.30	8.82	8.29	9.51
		2	16.18	13.86	13.03	14.95
		3	19.50	16.70	15.70	18.02
		4	30.69	26.29	24.71	28.36
Reverse	Reverse	1	4.87	4.17	3.92	4.50
		2	7.66	6.56	6.16	7.07
		3	9.23	7.90	7.43	8.53
		4	14.52	12.44	11.69	13.42

Note: The theoretical speed corresponding to the engine speed 2300r/min.

8 . Disassembly and Disposal

When the service life of the entire machine is run out, for the sake of personal safety and protection of social environment, please transfer the machine to processional recovery company with permit of disassembly for disposal.

The machine shall be disassembled from up to bottom, from outside to inside. The object of bulk mass or weight must be disassembled by specialized lifting appliance. Battery shall be transferred to professional recovery company of battery. The waste engine oil etc. shall be disposed centrally and properly, instead of being random poured to pollute environment.



Warning:

As battery electrolyte is corrosive, be careful not to make it into eyes, on skin or clothes. If contacting acid liquor, make sure to wash the part infected immediately with clean water, and rush to hospital for treatment for fear of unexpected injury.

Important matters:

- 1. The replaced battery acid must not be poured randomly for fear of pollution of environment.**
- 2. The replaced engine oil, which belongs to waste oil, cannot be discarded randomly for fear of pollution of environment.**

Our company hereby reminds you of possible personal injury arising from improper arrangement of above things during and after disassembly under the circumstance of absence of professional disassembly tools and experience in practical operation.



Warning:

The object of bulk mass or weight must be disassembled by specialized lifting appliance! Pay attention to personal safety!

9. Warranty

9.1 Basis of warranty

The warranty of this series of wheeled tractors is based on the following documents and regulations.

Regulations on Responsibilities for Repair, Replacement and Return of Agricultural Machinery Products

Law of the People's Republic of China on Product Quality

Law of the People's Republic of China on the Consumer Protection

9.2 Situations beyond warranty

According to relevant laws and regulations, there are some situations beyond warranty. See related chapter sections of Certificate of Guarantee Service for details.

Note: Some conducts may lead to invalidity of warranty conditions. See Certificate of Guarantee Service for details.

Note: If user modifies tractor randomly or uses it for the purpose other than operation specification, it will not be within the manufacturer's warranty. Please make sure to pay attention.

Note:

1. When users receive the maintenance, should show the warranty documents, please safe keeping;
2. If the tractor have problems, when contact repair, should tell the distributor below details: tractor model, tractor code, engine type and no., and other nameplate content, how long have been used, and problem details;
3. Please use the special parts and oil for the tractor.

Appendix

10 . Appendix

10.1 Oil and solution for tractors

Table 10-1 Oil and solution for tractors

Part	Oil and Solution						
Fuel tank	National standard	GB 252 Light Diesel Fuel	>20℃	(4~20)℃	(-5~4)℃	(-14~-5)℃	(-29~-14)℃
			10#	0#	-10#	-20#	-35#
	International standard	ASTM D-975 Light Diesel Fuel	≥5℃: 2-D; <5℃: 1-D				
Engine Oil pan、 Oil bath air cleaner	National standard	GB 11122 Diesel engine oils Turbo engine use CF grade diesel oil	≥-10℃		(-10~-25)℃		<-25℃
			CD 15W/40		CD 10W/30		CD5W/30
	International standard	≥-5℃	Viscosity grade :SAE 15W/40; Quality grade :API				
		<-5℃	Viscosity grade :SAE 10W; Quality grade :API				
Water radiator	>4℃: clean soft water ; <4℃: antifreeze >-15℃: -25# Long-acting Antifreeze ; >-25℃: -25# Long-acting Antifreeze ; >-35℃: -35# Antifreeze ;						
Gear box、 Rear axle、 Hydraulic lifter Front driving axle	National standard	N100D ; Dual-purpose oil for tractor transmission and hydraulic system					
	International standard	Massey Ferguson company: MF1135 or Ford company: M2C 86A, or John Deer company: J20A (Include steering oil tank)					
Steering tank	National standard	L-HM32 antifriction hydraulic oil					
Oil ring	National standard	GB/T 7324 General purpose lithium lubricating grease					
	International standard	D-217 grease lubricant ,meet the requirements of National Lubricating Grease Institute (USA), viscosity grade: 2.					
Brake system	National standard	The three-purpose oil for tractor transmission, hydraulic and brake system					
	International standard	Viscosity grade :SAE 10W; Quality grade :API CD					
Windshield	Used for wind shield cleaner. -10℃: --45# Antifreeze (SH/T0521)						

Important matters:

1. The three-purpose oil for tractor transmission, hydraulic and brake system, diesel oil, and diesel engine oil must go through at least 48h sedimentation before it is put into service.
2. It is forbidden to mix oil of different grades and from different manufactures.
3. In winter, the tractor with heating system or air-conditioning system must use antifreeze.

Appendix

10.2 Tightening torque table of main bolts and nuts

Table 10-2 Tightening torque table of main bolts and nuts

Connection Parts	Thread specification	Tightening Torque(N·m)
Connecting bolts and nuts between engine and gearbox housing	M12×1.5	90-110
Connecting bolts between gear box and rear axle housing	M12×1.5	90-110
Connecting nuts between driving axle housing and rear axle housing	M14×1.5	160-200
Connecting bolts between engine and clutch	M10	65-79
Large bevel gear bolts	M14×1.5	160-200
Connecting bolts between driving wheel hub and wheel plate	M18×1.5	397-457
Connecting bolts between front wheel hub and wheel plate	M16×1.5	200-260
Connecting bolts between front support and engine	M16	182-245
Front wheel bolts	M18×1.5	200-260
Connecting nuts between steering circle and steering column	M16×1.5	130-150
Connecting bolts between front rear swing pin bracket and front bracket	M18×1.5	182-245(392)
Connecting bolts between transfer case housing and rear axle	M12×1.5	90-110
Connecting bolts and nuts between lift housing and rear axle housing	M12×1.5	90-110

Note: main bolts and nuts of tractor must be tightened with torque wrench.

Appendix

10.3 Implements and accessories for wheel tractor

Table 10-3 implements and accessories for wheel tractor

Type	Matching Implements	Model	Main Technical Parameter	Remark
Plough machinery	Suspended plow	1L-430	Plowing depth 22-28cm Plowing width 120cm	
	Suspension AM hydraulic flip plow	1LF-335	Plowing depth 10-26cm Plowing width 105cm	
	Suspension amplitude modulation plow	1LYF-435	Plowing depth 18-26cm Plowing width 100~180cm	
	Suspension five plow	1LYF-430	Plowing depth （1-24）cm	
	Rotary cultivator	1GQN-250S	Plowing depth (20-26)cm	
Sowing machiner y	20 suspension In rake	1BJX-2.2	Rake depth （12-14）cm	
	24 suspension in rake	1BJBX-2.5	Rake depth （12-14）cm	
	28 half-hanging light rake	1BQX-3.1	Rake depth （12-14）cm	
	24 hydraulic offset heavy rake	1BZBX-2.0/2.5	Rake depth （14-16）cm	
Straw returning machine	Straw shredding returning machine	4Q-2.5	Working width: 1.8m/2.0m Stubble height: 2-8cm	
Trailer	Agricultural trailer	7C-7	Load capacity：7t	
	Agricultural side-tipping trailer	7C-7		

Warning :

1. Before buying agricultural machinery, select initially the types of matching agricultural implements in reference to the list according to operational conditions (soil resistance and agricultural requirements etc.) of operation area, and consult the dealer.

2. Lease determine model of agricultural implements and other main technical parameters according to power of tractor, operational conditions (soil resistance and agricultural requirements etc.) of operation area as well as advisory opinions so as to achieve reasonable matching. In case of unreasonable matching, it will bring adverse effect on the unit.

3. Please users determine operating speed and working width etc. according to local operational conditions for fear of influence on operation efficiency and service performance of machinery.