

Feb. 26, 2015



1	Combine main Structure
2	Harvesting system common issues and settlement
3	Chassis system common issues and settlement
4	Hydraulic system common issues and settlement
5	Electric system common issues and settlement





## **4YZ-3A** main structure

- 1 Cutter header
- 2 Stalk chopper
- 3 Cabin
- 4 Chassis
- 5 Power section
- 6 Hydraulic system
- 7 Grain tank
- 8 Electrical apparatus control system
- 9 Grain elevator
- •10 Peeler









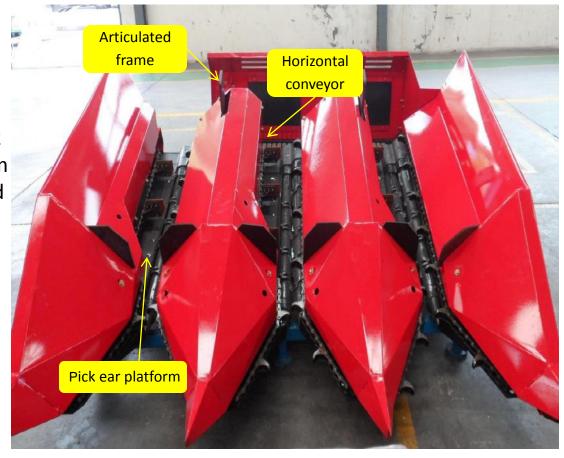
1	4YZ-3A main structure
1.1	Cutter header
1.2	Stalk chopper
1.3	Cabin
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1.6	Hydraulic system
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#### •1.1 cutter header

- •Cutter header parts includes articulated frame, pick ear platform, horizontal conveyor.
- •Cutter header is the main work mechanism of corn harvester machine, which complete the pick ears, separate the ear of corn from header, corn cob transmission and etc.
- •the best row spacing: 680mm
- •The adaptive spacing: 550-750mm
- plant lodging rate: <5%</li>
- •The grain moisture: 25%-35%
- •ear drop rate: <15%
- minimum ear height: >350 mm









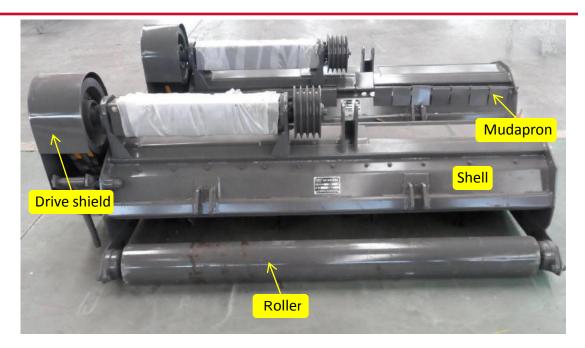
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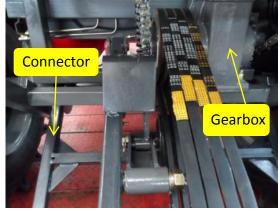


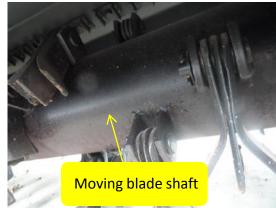


# •1.2 Stalk chopper

- •Stalk chopper includes connector, gearbox, shell, the moving blade shaft, roller, mudapron, drive shield etc.
- •Stalk chopper crushes the stalk to the field after picking.
  The hydraulic cylinder controls the chopper up and down, the roller controls the stubble height and also can suppress soil and keep moisture.













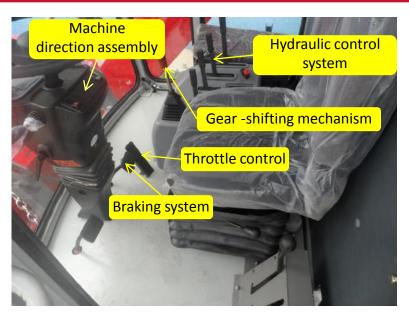
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## •1.3 Cabin

- •Cabin consists of machine direction assembly, hydraulic control system, gear -shifting mechanism, ladder, throttle control, braking system and cab etc.
- •Cabin is the place where operator works in and can complete all the harvesting work.









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#### •1.4 Chassis

- •Chassis includes the drive axle assembly, steering axle assembly, transmission and chassis etc.
- •Chassis is the carrier of the corn harvester which connects all the mechanism of the corn collector into an organic whole. Also it carries all mechanism walking together to achieve the machine speed change and steering.









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1.6 1.7	Hydraulic system  Grain tank

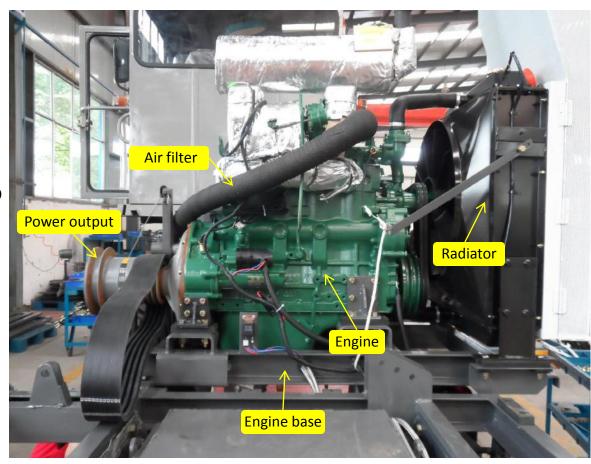






#### •1.5 Power section

- •Power section includes engine, power output, radiator, engine base and air filter assembly etc.
- •Engine is the power producer of the harvester that. It provides the power to all the mechanism.
- •The engine of the corn collector is unidirectional power output mechanism that the engine main clutch drives five- groove pulley work to achieve the working of cutting header, grain elevator and stalk chopper.









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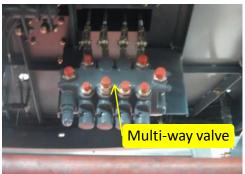


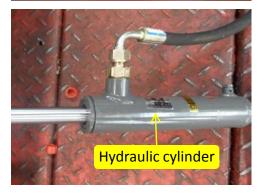


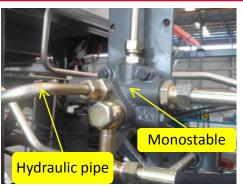
## •1.6 Hydraulic system

- Hydraulic system consists of two sub-systems, steering and operation system. The two sub-systems share a hydraulic oil tank and gear pump.
- Hydraulic system includes gear pump, steering gear, monostable valve, multi-way valve, hydraulic cylinder, hydraulic oil tank and hydraulic pipe etc.
- Hydraulic system ensure the steering of corn collector, up and down of the header, walk CVT high and low speed conversion, up and down of the stalk chopper and grain tank flip and reset action etc.



















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# • 1.7 Grain tank parts

- Grain tank is the storage of the ear, it will cluster together the ear be transported by grain elevator.
- When grain tank is full, the operator controls the unloading grain handle to make the granary side flip and unload grain.
- Gran tank reasonable design, the maximum unloading height is 1.7 meters, the volume is 3 cubic meters, which can meet the needs of all kinds of working environment.









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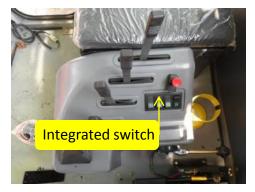


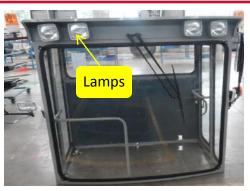
# •1.8 Electrical apparatus control system

- Electrical system includes battery, wiring harness, relays, panel assembly, lamps, speakers, power switch and integrated switch.
- Electrical system controls the starting, charging, lighting and turning signals etc.



















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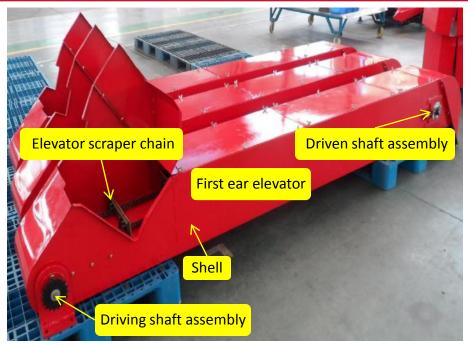


#### •1.9 Grain elevator

- •Grain elevator system includes first ear elevator, rear ear elevator and the bracket etc.
- •Grain elevator includes driving shaft assembly, driven shaft assembly, elevator scraper chain, and shell.
- •Elevator is the transportation mechanism of ear which can complete the ear transportation from cutter header to grain tank.

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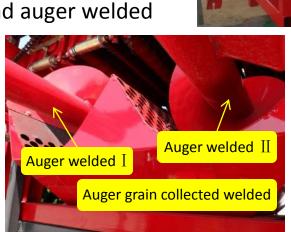
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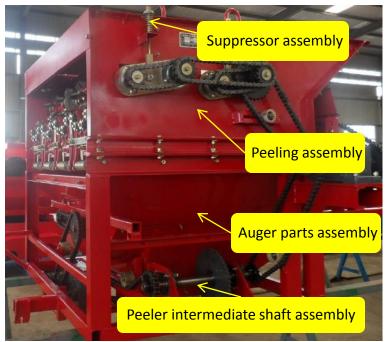


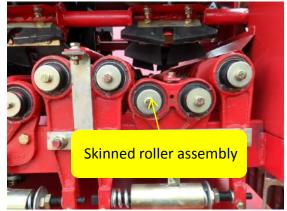


#### •1.10 Peeler

- Peeler consists of upper peeling assembly and bottom auger assembly.
- Peeling part assembly consists of peeler case body assembly, peeling roller assembly and suppressor assembly etc.
- •Auger parts assembly assist of auger grain collected welded, peeler intermediate shaft assembly, auger welded I and auger welded II etc.
- •Peeler part is the device that peel the ear off.











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2	Harvesting system common issues and settlement
2.1	Snapping roll jam
2.2	Harvester strenuous vibration
2.3	Conveying chain break down
2.4	Chopper cutter shaft entangled, bad crush results
2.5	Elevator chain break down
2.6	Heavy loss rate





## Harvesting system common issues and settlement

# •2.1 Snapping roll jam

•1. Issue: There are too many weeds that entangle the snapping roll.

**Settlement:** Reduce the harvesting speed, not more than 7km/h, or adjust the cutting direction.

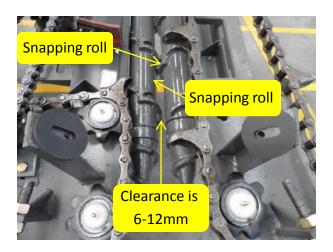
•2. Issue: The clearance between the grass cutter and snapping roll is too big.

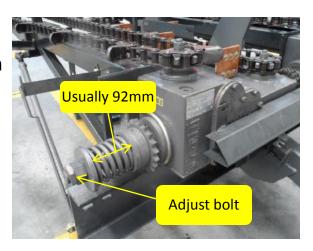
**Settlement**: Adjust the clearance, should be 0.5-1.5mm

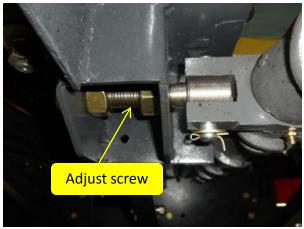
•3. Issue: The clearance between the two snapping rolls is two small.

**Settlement**: When the average diameter of the corn crop is usually 20mm, adjust this clearance to 6-12mm.















## Harvesting system common issues and settlement

# •2.1 Snapping roll jam

•4. **Issue**: The working speed is not correct.

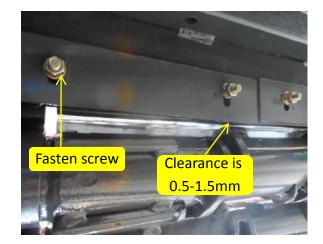
**Settlement**: Adjust the working speed, usually should work in first gear.

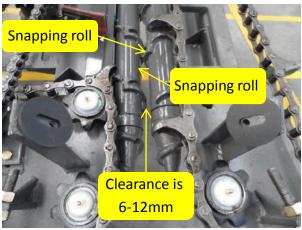
•5. Issue: Conveying chain doesn't work

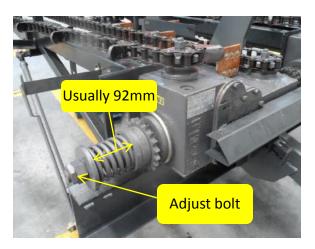
**Settlement**: Check the transmission system.

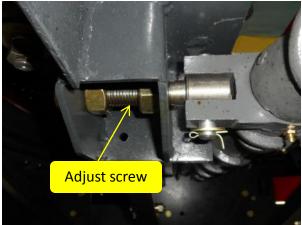
•6. **Issue**: The pressure of snapping box safety clutch spring is low.

**Settlement**: Adjust the pressure, usually the spring length should be 92mm.















2	Harvesting system common issues and settlement
2.1	Snapping roll jam
2.2	Harvester strenuous vibration
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2.6	Heavy loss rate





## Harvesting system common issues and settlement

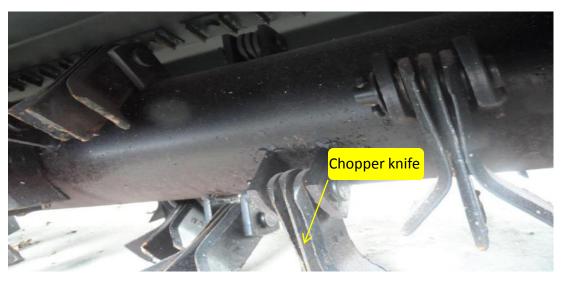
# •2.2 Heavy strenuous vibration

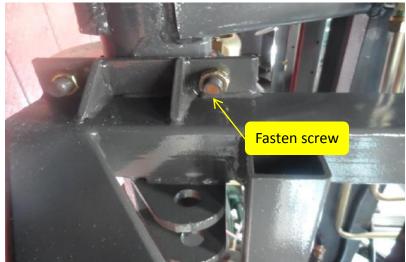
•1. **Issue:** Chopper driving shaft is unbalance.

**Settlement**: Perhaps the chopper blade is broken or comes off. Replacement.

•2. **Issue**: The fasten screw is loosen.

**Settlement**: Fasten the screw.











2	Harvesting system common issues and settlement
2.1	Snapping roll jam
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2.3	Convoying chain brook down
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2.4	Chopper cutter shaft entangled, bad crush results





## Harvesting system common issues and settlement

## •2.3 Conveying chain break down

•1. Issue: The conveying chain hits the ground.

**Settlement**: Raise the header when harvesting. Usually the vertical distance between the header and ground should be not less than 400mm.

•2. **Issue**: The conveying chain sprocket is blocked by the weeds.

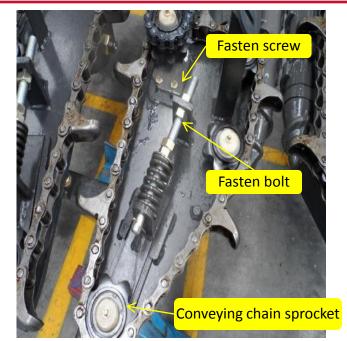
**Settlement**: Clear away the weeds.

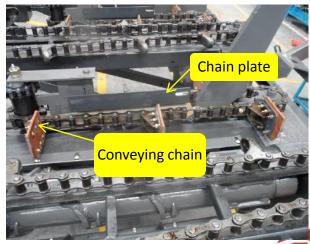
•3. **Issue**: The conveying chain is loosen and catch on the chain plate.

**Settlement**: Adjust the tension of the conveying chain. When adjusting, first loosen all the fasten screws and blots, then adjust the conveying chain.

Suitable tension: using the screwdriver to prize the chain, the swing angle is not more than 20-30 degree.

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2	Harvesting system common issues and settlement
2.1	Snapping roll jam
2.2	Harvester strenuous vibration
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2.4	Chopper cutter shaft entangled, bad crush results  Elevator chain break down





## Harvesting system common issues and settlement

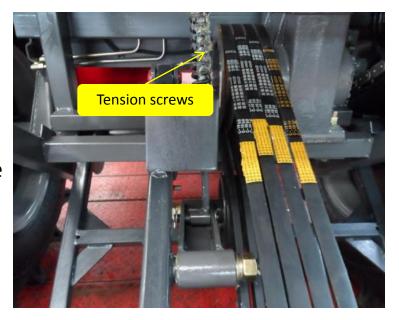
# •2.4 Chopper cutter shaft entangled, bad crush results

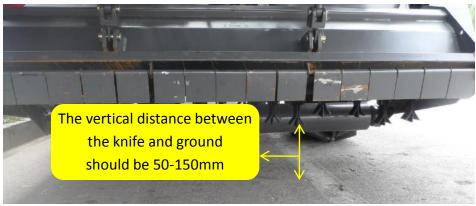
•1. Issue: The transmission belt is loosen.

**Settlement**: Adjust the tension of the belt. After adjustment, press the middle of the belt, the deflection should be 0.5-1% of the belt length(the belt is C1950, the deflection should be 9.75-19.5mm)

•2. **Issue**: The knife hit the ground.

**Settlement**: Raising the chopper to 50-150mm above the ground.











2	Harvesting system common issues and settlement
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2.6	Heavy loss rate





## Harvesting system common issues and settlement

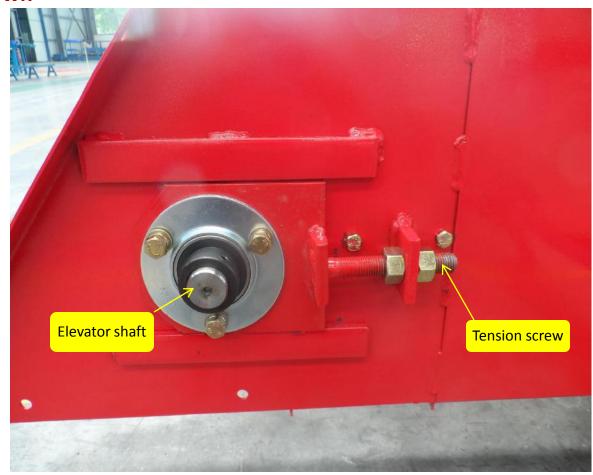
## •2.5 Elevator chain break down

•1. Issue: The chain came off or two shafts and wheels broken.

Settlement: Adjust the tension of the chain or replace the broken parts. The suitable tension of chain: lift the middle of the chain with 200N (about 20KG), the lift distance should be 30-50mm.

• 2. **Issue**: There are impurities in the elevator.

**Settlement**: Clean off the impurities.









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#### Harvesting system common issues and settlement

# •2.6 Heavy loss rate

•1. Issue: It's too early to turn around in the edge of field.

**Settlement**: Turn around at the suitable time.

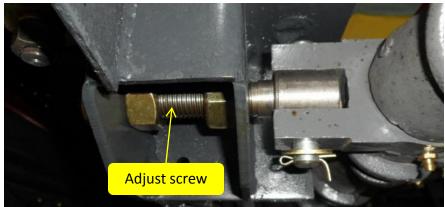
•2. **Issue**: Corn crops is fallen; the corn cobs are dropped.

**Settlement**: Do harvesting working at the suitable time, the max droop rate 10%.

•3. **Issue:** The clearance between two snapping rollers is two small.

**Settlement**: When the average diameter of the corn crops is usually 20mm, adjust the clearance of two snapping rolls to 6-12mm.









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3	Chassis system common issues and settlement
3.1	Walking clutch slipping
3.2	Shift difficult or off
3.3	Can't reach the speed change range
3.4	Drive gear has abnormal sound





### **Chassis system common issues and settlement**

# •3.1 Walking clutch slipping

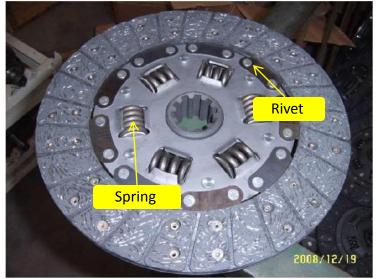
•1. **Issue**: There are too many oils in the gear box and oils leakage into friction discs.

**Settlement**: Remove and clean the friction discs. Check the oils level that the oil can reach spilling mouth and not overflow.

•2. **Issue**: The friction disc is worn out and the spring press reduce, or the rivet is fallen off.

**Settlement**: Replace the friction disc and spring.









3	Chassis system common issues and settlement
3.1	Walking clutch slipping
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3.3	Can't reach the speed change range





### **Chassis system common issues and settlement**

#### •3.2 Shift difficult or off

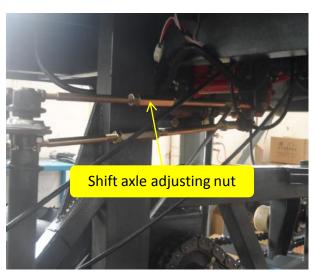
•1. **Issue**: The clutch is not fully separated.

**Settlement**: Adjust the length of clutch rod, confirming the free stroke of the clutch pedal is between 20-30mm.

•2. **Issue**: Shift axle is lengthened.

**Settlement**: Adjust the shift axle adjusting nut.









3	Chassis system common issues and settlement
3.1	Walking clutch slipping
3.2	Shift difficult or off
3.3	Can't reach the speed change range
3.4	Drive gear has abnormal sound





#### Chassis system common issues and settlement

# •3.3 Can't reach the speed range

•1. **Issue**: The oil cylinder can't reach the working stroke.

**Settlement**: Replace.

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•2. **Issue**: When working, the oil cylinder can't locate.

**Settlement**: Replace bcz of Inside leaking.

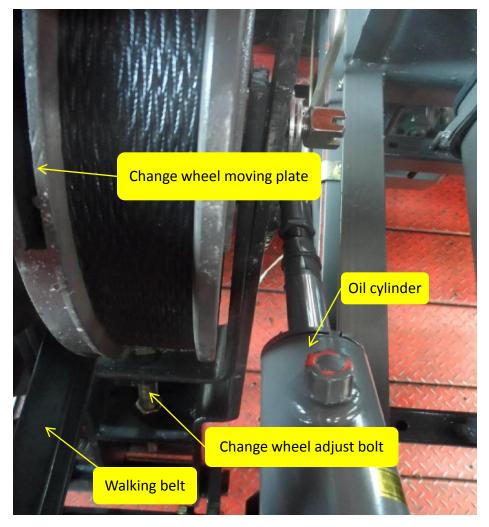
•3. **Issue**: The moving plate is blocked because of oil lacking.

**Settlement**: Do lubricating timely.

•4. **Issue**: The walking belt is stretched and slipping.

**Settlement**: Adjust the tension bolt.

The suitable tension: Press the middle of belt with 125N (about 12kg), the deflection should be 16-24mm.







3	Chassis system common issues and settlement
3.1	Walking clutch slipping
3.2	Shift difficult or off
3.3	Can't reach the speed change range
3.4	Drive gear has abnormal sound





### **Chassis system common issues and settlement**

# •3.4 Drive gear has abnormal sound

•1. **Issue**: Edge reduction axle shaft motion.

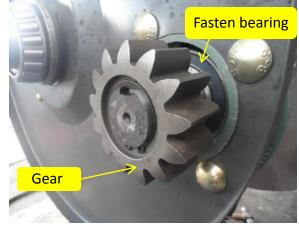
**Settlement**: Check whether the fasten bearing or big axle fasten bolt is loosen. If so, fasten them.

•2. **Issue**: The axle is short of oil or it is damaged because of mud in it.

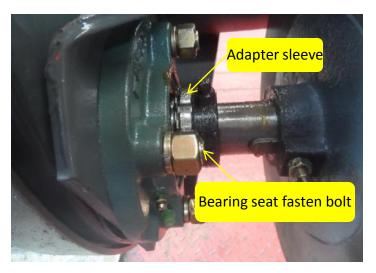
**Settlement**: Replace and clean the gear.

•3. **Issue**: Bearing seat fasten bolt or adapter sleeve is not fastened.

Settlement: Fasten.













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4	Hydraulic system common issues and settlement
4.1	All the oil cylinder don't work
4.2	Header and chopper up and down slowly or only up
4.3	Header and chopper up and down speed isn't stable
4.4	Header and chopper drop automatically





### Hydraulic system common issues and settlement

## •4.1 All the oil cylinder don't work

•1. Issue: Oil level is too low.

Settlement: Check oil level, add enough hydraulic oil that oil level height should be not less than 60mm to the upper level.

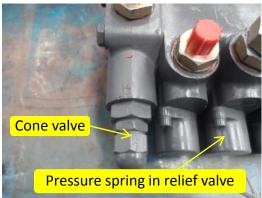
•2. **Issue**: Relief valve working pressure is too low or the cone valve surface is jammed.

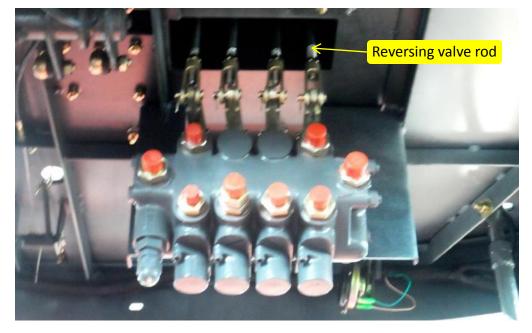
**Settlement**: Adjust the spring pressure of relief valve as required, or remove the cone valve to clean mechanical impurities.

•3. **Issue**: The reversing valve rod stroke does not reach the designated position.

**Settlement**: Adjust the reversing valve rod length in the normal work stroke.













4	Hydraulic system common issues and settlement
4.1	All the oil cylinder don't work
4.2	Header and chopper up and down slowly or only up
4.3	Header and chopper up and down speed isn't stable
4.4	Header and chopper drop automatically





### Hydraulic system common issues and settlement

•4.2 Header and chopper up and down

slowly or only up①

•1. **Issue**: The overflow valve pressure is low.

**Settlement**: Adjust the relief valve spring pressure according to the requirement.

•2. Issue: It has airs in the oil.

**Settlement**: Exhaust in time.

•3. **Issue**: Hydraulic oil filter is jammed.

Settlement: Clean it.

•4. **Issue**: Gear pump is

internal leakage.

**Settlement**: Replace.















### Hydraulic system common issues and settlement

•4.2 Header and chopper up and

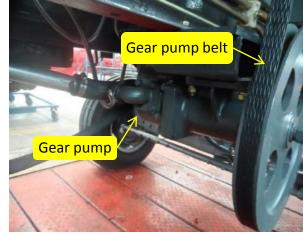
down slowly or only up 2

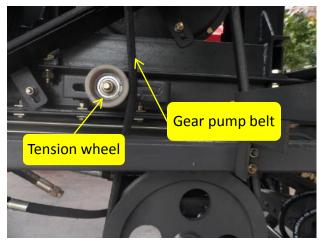
•5. **Issue**: Gear pump driving belt doesn't tension.

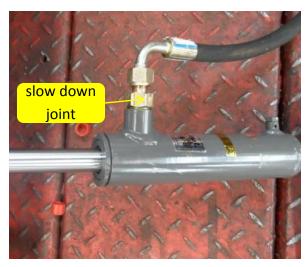
**Settlement**: Should adjust tension wheel position, and tension belt.

•6. **Issue**: Oil cylinder slow down joint orifice is jammed.

**Settlement**: Remove orifice and clean it.















4	Hydraulic system common issues and settlement
4.1	All the oil cylinder don't work
4.2	Header and chopper up and down slowly or only up
4.3	Header and chopper up and down speed isn't stable
4.4	Header and chopper drop automatically





### Hydraulic system common issues and settlement

•4.3 Header and chopper up and down speed isn't stable

•1. Issue: There is air in the oil

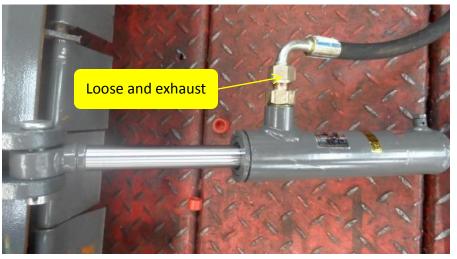
line.

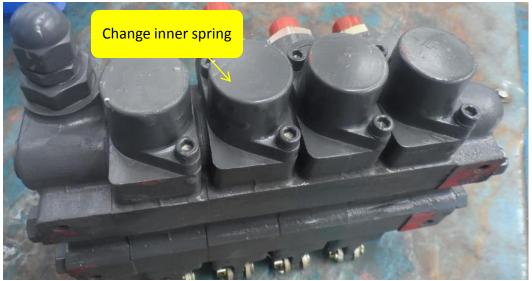
**Settlement**: Exhaust in time.

•2. Issue: The overflow valve

spring works unstably.

**Settlement**: Replace.









4	Hydraulic system common issues and settlement
4.1	All the oil cylinder don't work
4.2	Header and chopper up and down slowly or only up
4.3	Header and chopper up and down speed isn't stable
4.4	Header and chopper drop automatically





### Hydraulic system common issues and settlement

# 4.4 Header and chopper drop automatically

•1. **Issue**: Oil cylinder seal is failure.

**Settlement**: Replace oil cylinder seal ring or replace oil cylinder.

•2. Issue: Valve body and valve wear or injury caused the clearance increased and inside leaking.

**Settlement**: Replace control valve.











1	Combine main Structure
2	Harvesting system common issues and settlement
3	Chassis system common issues and settlement
4	Hydraulic system common issues and settlement
5	Electric system common issues and settlement





5	Electric system common issues and settlement
5.1	Can't start
5.2	Start weakly
5.3	Can't charge
5.4	Charging current is too large
5.5	Light isn't bright
5.6	Meter doesn't show
5.7	Horn doesn't ring





# •5.1 Can't start(1)

•1. Issue: Check whether the fuse and fusible line in the starting circuit is damaged or not.

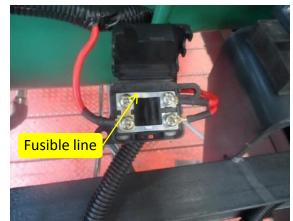
**Settlement**: Replace.

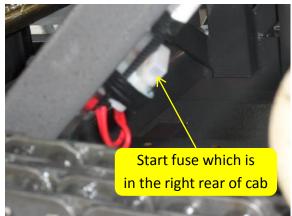
•2. **Issue**: Check whether the connection point is loose or fall off.

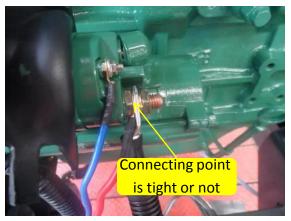
**Settlement**: Fasten.

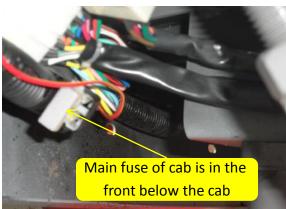
•3. **Issue**: Check whether the battery is deficient.

Settlement: Charging in time.













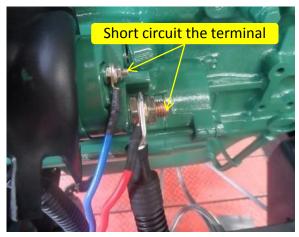
# •5.1 Can't start2

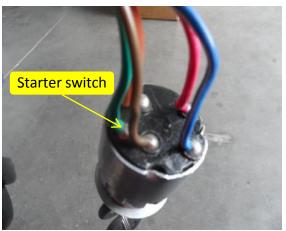
•4. Issue: Short circuit with starter's two terminal. If can start, the starter relay or starter switch is damaged. Short circuit with start switch, if can start, the starting switch is damaged. if can't start, the relay is damaged.

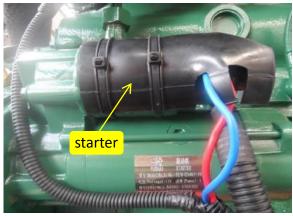
**Settlement**: Replace the damaged part.

•5. Issue: Check the starter. If sometimes can start, sometimes can't start, maybe internal electromagnetic switch is damaged. When starting, have a little voice, if battery isn't short of electricity, maybe motor is damage.

Settlement: Replace.















5	Electric system common issues and settlement
5.1	Can't start
5.2	Start weakly
5.3	Can't charge
5.4	Charging current is too large
5.5	Light isn't bright
5.6	Meter doesn't show
5.7	Horn doesn't ring



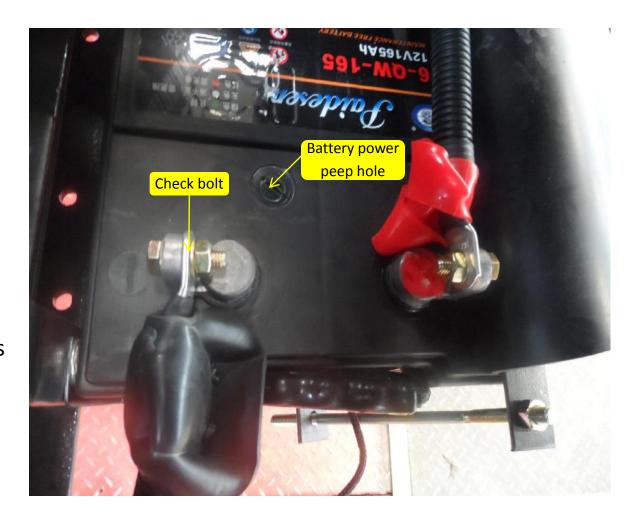


# •5.2 Start weakly

•1. Issue: Check whether the battery connection point contact well or not. Settlement: fasten.

•2. **Issue**: Check whether the battery power is enough or not.

Settlement: Open all the lights and horn switch. If the lights and horn sound is normal, the power is enough, otherwise the battery is low, need to charge in time.









5	Electric system common issues and settlement
5.1	Can't start
5.2	Start weakly
5.3	Can't charge
5.4	Charging current is too large
5.4 5.5	Charging current is too large  Light isn't bright





# •5.3 Can't charge

•1. Issue: Check whether the generator belt is loose, or sliding.

**Settlement**: If loose, tension the belt.

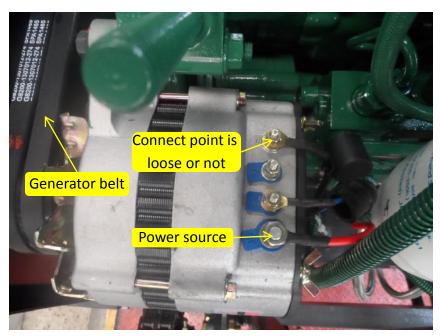
•2. Issue: Check whether the connection point loose or fall off.

**Settlement**: Fasten.

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- •3. Start the machine and turn on the headlight. Shut off the key switch, if the throttle is bigger, then the headlight is more light. If light isn't bright, the generator is damaged.
- •4. Check instrument (use current or voltage meter) has failure or not.
- •5. Wire one end connected to the generator power binding post, start the engine. Using wire another end to brush generator shell, if there is spark, generator is normal, if without spark, generator has fault.











5	Electric system common issues and settlement
5.1	Can't start
5.2	Start weakly
5.3	Can't charge
5.4	Charging current is too large
<b>5.4</b> 5.5	Charging current is too large  Light isn't bright





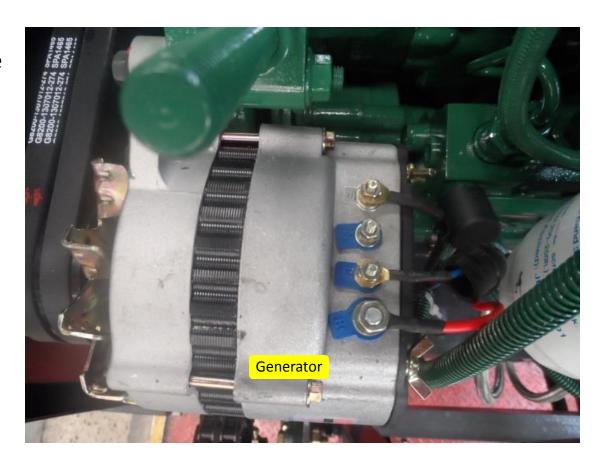
# •5.4 Charging current is too large

•1. **Issue**: Battery electrolyte consume fast.

**Settlement**: Often add battery electrolyte.

•2. **Issue**: Lighting bulb is often burned.

**Settlement**: This breakdown is often cause by generator internal fault. Should repair or replace the generator.









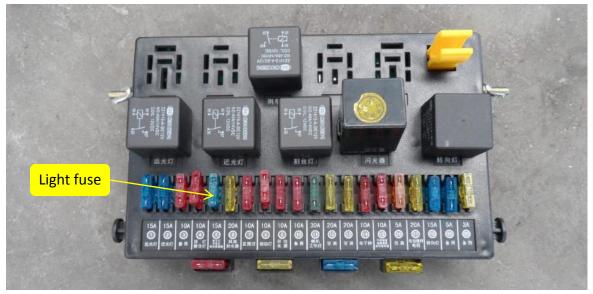
5	Electric system common issues and settlement
5.1	Can't start
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5.3	Can't charge
5.4	Charging current is too large
5.5	Light isn't bright
5.6	Meter doesn't show

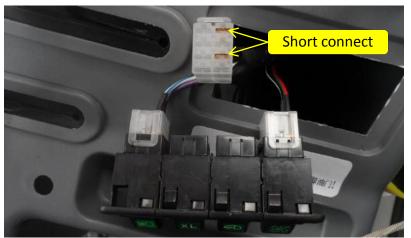




# •5.5 Light isn't bright

- •1. Check whether the lighting circuit fuse is damaged or not, if don't damage, can check whether the light bulb and the wire connector is damage and poor contact.
- •2. Short connect the corresponding lighting switch wire, if the light is bright, so switch is damaged, If light isn't bright, so bulb is damaged.











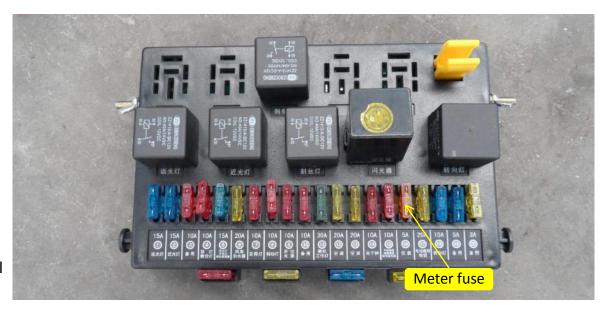
5	Electric system common issues and settlement
5.1	Can't start
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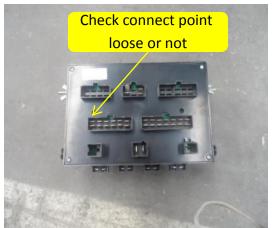


#### •5.6 Meter doesn't show

- •1. Check whether fuse is damaged or not, change the new fuse.
- •2. Remove the instrument, check whether plugin is loose, fall off or not.
- •3. If water thermometer can't indicate. then short circuits water temperature sensor. If water thermometer indicate, it shows the sensor is damage, otherwise instrument is damage; Replace the instrument.
- •4. If engine oil pressure gauge can't indicate, can remove the signal line of oil pressure sensor (G end). If the oil pressure gauge indicate full range, the sensor is damage. If can't indicate, the instrument is damage; Replace the breakdown parts.
- •5. If engine tachometer can't indicate, firstly check whether the joint loose or fall off: Then check whether the gap between the end of the sensor and the top of engine flywheel large is large(gap with 0.75 mm available); If the above are all normal, then use multi meter to check whether the sensor or instrument is















5	Electric system common issues and settlement
5.1	Can't start
5.2	Start weakly
5.3	Can't charge
5.4	Charging current is too large
5.5	Light isn't bright
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5.7	Horn doesn't ring





# •5.7 Horn doesn't ring

- •1. Check whether the fuse is damaged or not.
- •2. Issue: Short circuit the horn button. If ring, which shows horn button is damage. If not, which shows horn is damage.

**Settlement**: Replace the breakdown parts.



