# Service Manual

## LG918 COMPLETE APPLIANCE

SHANDONG LINGONG CONSTRUCTION MACHINERY CO.，LTD

# Complete Appliance Service Manual

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## SHANDONG LINGONG CONSTRUCTION MACHINERY CO.，LTD

Add：Lingong Industry Park,Linyi Economic Development Zone, Shandong, China
Tel：86-0539-8785624/86-0531-66590955
Fax：86-0539-8785618/86-0531-66590959
Web：www.sdlg.cn
Services Tel：86-0539-8785800

# PREFACE

This service manual, which shows the structure, principle and the maintenance technology of the loader, will help the maintenance persons understand the disassemble and assemble method of the loader more deeply and bring the maintenance persons solid technology basis of locating faults and maintaining correctly. Please read this manual first to make sure that it will play its role completely.

Main contents of the Service Manual:

## 1. Structure and working principle of the loader

This chapter shows the structures and functions of each kind of part, which establish the basis of assembling and disassembling loader. Furthermore, it also could be used as the reference of locating faults.

## 2. Disassembling and assembling of the loader

The steps how to disassembling and assembling the parts correctly and the points for attention in disassembling and assembling loader are shown in this chapter.

## 3. Standard of criterion for repairing and replacement of parts

The identification methods and standards of criterion of vulnerable parts are formulated in this chapter.

**ATTENTION**

Forgiving without further notice about the specification's changing of the parts in this manual, which are caused by the development of complete appliance. The latest information could be get from Shandong Lingong Construction Machinery CD., LTD.

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# CHAPTER I INTRODUCTION

## 1.1 Safety Considerations

**IMPORTANT SAFETY WARNING**

It's very important for operating the vehicle safely to keep maintenance and repairing. The related technologies about how to assemble and disassemble the transmission correctly are described in this manual.

The safety considerations, marked with and as the security label, should be paid more attention when operate it for avoiding hurting persons. Persons should keep themselves safe first and take some necessary measures when the potential dangers coming.

### Security Warning

On the process of assembling and disassembling, parts wear, life losing, properties failure would be caused by the incorrect operating methods. Meanwhile, there are unsafe factors. Please read the manual carefully when assemble and disassemble the transmission's parts.

1. The parameters, graphs and related contents in this manual are suitable to the standard configuration products. As to the deformed products, please consult our company or refer to the related data.

2. In repair workshop, the region for placing the single using or special parts after assembling and disassembling should be marked. Put the corresponding tools on the suitable region. The cleanness of operating region must be kept and make sure there is no oil or pollution in the operating region. Smoke in the specified region and

smoking is forbidden in the course of operation. And there are corresponding fire extinguishing equipments.

3. When welding operation is needed, it should be done by expert persons who are trained by professional welding training. Welding gloves, baffles, goggles, hats and other work clothes suitable for welding are essential during welding operation.

4. Before the complete appliance is disassembled, the appearance of which must been cleared up to avoid polluting the parts in the course of disassembling.

5. In the progress of operation, safety shoes and safety helmets must been worn. Working clothes which are not coincided with requirements are forbidden and the buttons on the working clothes must be attached. Goggles should be worn when persons knock the parts with copper rod.

6. The disassembled parts could be cleaned by petrol, gasoline and water-base oil cleaner.

7. Check the lifting tools whether they were broken before operating the cranes or other hoisting equipments. The lifting amount of the lifting equipments must be big enough. For avoiding collisions between parts, lifting equipments should use the specified lifting position and operated slowly. Make sure no one work under the part lifted.

8. When two or more persons work together, engage the operation procedure which should be implemented by everyone before work to avoid the accidence caused by out of steps.

9. All tools must be kept carefully, and familiar with their using method.

10. When align two holes, don’t put hands and figures in the holes. Pay attention to whether the hands would be extruded when assemble parts by hands directly.

11. The disassembled parts must be checked. The parts which have poor properties should be changed, and the standard of criterion can refer to Chapter Ⅹ: JUDGMENT STANDARD OF MAINTENANCE AND REPLACEMENT.

12. There should be no interference after assembling each part.

13. When assemble the oil seal and the seal ring, take protection measures if through the keyway, screw holes and steps to protect the oil seal and seal ring.

14. When assemble the parts, all tools must be suitable to the screw fasteners to protect the screw fasteners.

15. When tighten the screws, the tightening tools like the gas trigger are forbidden. Tighten them by hands first, and then tighten them with some specified wrest wrenches to reach the torque demanded.

16. Not all of the potential dangers could be previewed. So, the explanation about safety in this manual or on the loader would not include all the safety precautions. If the steps and operations, not recommended in the manual, are used, make sure that the people are safe and machine will not be damaged. If the safety of some operations could not be ensured, please consult our company or the distributors.

17. The positions such as bench and soft ladder used for treading and handing should not be polluted by mud and oil. Use the bench and soft ladder when getting on and off, don’t jump up or down. If bench and soft ladder can not be used, the steps on the safe place should be used.

18. When disassemble the plugs with hydraulic pressure, the plug should be loosen slowly to avoid the oil blowout; Eliminate the pressure when disassemble the pipeline with pressure.

19. The oil and water temperatures are very high when the engine is just to be flameout. The disassembling work of the oil and water pipeline should be done after the temperature comes down.

20. When disassemble the oil pipeline, prevent the fuel oil and hydraulic oil exuding. If the fuel and hydraulic oil drop on the part during the disassembling, clean them soon to avoid bringing potential danger.

21. The parts which have been disassembled, such as hydraulic pipeline, air pipeline and hydraulic oil, should be protected from pollution. For example, the disassembled hydraulic pipeline joints should be packed by clean plastic bags. Other protection method also could be implemented.

22. When tighten connection bolts in the section with many fastening bolts, the bolts had better be marked to avoid forgetting any bolt.

# 1.2 Oil Products and Coating Materials

| Type | Recommended Types and Standards | Capacity | Using Positions |
|---|---|---|---|
| Engine Oil | CALTEX Delo Gold Multi-grade Engine Oil 15W-40 or MOBIL HEIBAWANG 1300 （SAE15W-40） | 12L | Engine |
| hydraulic transmission oil | CALTEX Delo Gold Multi-grade Engine Oil 15W-40 or MOBIL HEIBAWANG 1300 （SAE15W-40） | 24L | Torque Converter and Gearbox |
| Gear Oil | Heavy Loading Vehicle Gear Oil(GL-5) SAE 85W-90 GB13895 | 2×9.6L | Axle Main Drive and Wheel Side Reducer |
| Hydraulic Oil | Super Temperature Range and Anti-wear Hydraulic Oil 46 Or MOBIL DTE25 | 95L | Hydraulic Oil Tank |
| Fuel | Ambient Temperature≥4℃ 0#Light Diesel Oil GB252 Ambient Temperature≥-5℃ -10#Light Diesel Oil GB252 Ambient Temperature≥-14℃ -20#Light Diesel Oil GB252 Ambient Temperature≥-29℃ -35#Light Diesel Oil GB252 | 60L | Fuel Tank |
| Brake Fluid | Auto Brake Fluid HZY3 (DOT3) GB12981 | 1.5L | Brake Oil Cup |
| Grease | 2# or 3# Lithium Based Grease GB7324 | 2kg | Pins in Every Joint Points of the Work Equipment |
| Coolant | Engine Coolant of Glycol Type SH0521 | 20kg | Radiator |

## Attachments:

Table 1: The recommended temperature range of light diesel oil

| Brand | Recommend employ range |
|---|---|
| 0# | The oil is used in the region where lowest temperature is more than 4°C , and whose risk rate is 10% |
| －10# | The oil is used in the region where lowest temperature is more than -5°C , and whose risk rate is 10% |
| －20# | The oil is used in the region where lowest temperature is more than -14°C , and whose risk rate is 10% |
| －35# | The oil is used in the region where lowest temperature is more than -29°C , and whose risk rate is 10% |

Table 2: The composition concentration of antifreeze as the coolant (when ambient temperature is below 0°C, antifreeze should be added into coolant)

| Name | Composition % | | | | | Freezing point≤℃ |
|---|---|---|---|---|---|---|
| | Glysol | Alcohol | Glycerin | Water | Units of Composition Ratio | |
| Glysol Antifreeze | 60 | | | 40 | Cubage Ratio | -55 |
| | 55 | | | 45 | | -40 |
| | 50 | | | 50 | | -32 |
| | 40 | | | 60 | | -22 |
| Alcohol Glycerin Antifreeze | Glycerin | 30 | 10 | 60 | Weight Ratio | -18 |
| | | 40 | 15 | 45 | | -26 |
| | | 42 | 15 | 43 | | -32 |

## Reference Table of Foreign and Domestic Oils

### ● Engine Oil

| Domestic Oils Brands | Similar Foreign Oil Brands (classified by SAE standard) | | | |
|---|---|---|---|---|
| | CALTEX | SHELL | MOBIL | ESSO |
| Diesel Engine oil CD and more than that. 15W-40 GB11122 | CALTEX Delo Gold Multigrade Engion Oil 15W-40 | RotellaSX 40; Rotella TX 40，20W/40; Rotella DX 40 | HEIBAWANG 1300 （SAE15W-40） （-15℃～50℃） | Essolube XT-3 ; Essolube XT-2 |
| Diesel Engine oil CD and more than that. 5W-30 GB11122 | | Rotella SX30, 10W/30;Rotella TX30; Rotella DX30 | HEIBAWANG 1300 （SAE10W-30） （-20℃～40℃）; DUOWEILI 1# （More than-40℃） | Essolube XT-5 |

### ● Hydraulic Oil

| Domestic Oils Brands | Similar Foreign Oil Brands | | | | |
|---|---|---|---|---|---|
| | CALTEX | MOBIL | SHELL | CASTROL | ESSO |
| Hydraulic Oil L-HM46 （-5℃～40℃） GB11118.1 | Super Temperature Range and Anti-wear Hydraulic Oil 46 RANDO HDZ46 （-25℃～40℃） | DTE25 （-10℃～40℃） | Tellus 27 Tellus 29 | Hyspin AWS 32 Hyspin AWS 46 | Nuto H46 |
| Hydraulic Oil L-HV 46 -30℃～40℃ GB11118.1 | | DTE15M （-26℃～40℃） | Hydro-kinetic Tellus T27 46 | Hyspin AWH46 Nuto | Vnivis N46 |

- **Hydraulic Transmission Oil (Torque Converter-Transmission Oil)**

| Domestic Oils Brands | Similar Foreign Oil Brands | | | | |
|---|---|---|---|---|---|
| | CALTEX | MOBIL | FUCHS | ESSO | SHELL |
| 8# Hydrostatic Transmission oil Q/SH303 064 | JINDELE Multilevel Engion Oil 15W-40 Delo Gold Multigrade 15W-40 | HEIBAWANG 1300 （SAE15W-40） | Titan universal HD15W-40 | Standard Torque Fluid G7 | Rotella 10W |

- **Gear Oil (Used in the Driving Axle)**

| Domestic Oils Brands | Similar Foreign Oil Brands（classified by U.S.SAE standard, GL-5） | | | | |
|---|---|---|---|---|---|
| | CALTEX | FUCHS | MOBIL | ESSO | SHELL |
| Heavy Loading Vehicle Gear Oil （GL-5）85W-90 GB13895 | Special Extreme-pressure Gear Oil 90 Thuban GL5 EP 90 | Titan Gear LS90 | MOBIL Gear Oil HD80W-90 (-20℃～40℃); MOBIL Gear Oil HD85W-90 (-10℃～50℃) | Gear Oil GX 85W-90 | Spirax EP Heavyduty HD90 HD80W-90 |

- **Brake Fluid**

| Domestic Oils Brands | Classify | Similar Foreign Oil Brands | | | |
|---|---|---|---|---|---|
| | | MOBIL | ESSO | British BP | SHELL |
| Auto Brake Fluid HZY3 GB12981 | SAE 1703C | Super Performance Brake Fluid DOT3 | Brake Fluid | Brake Fluid Disc-Brake fluid | Donax B |

- **Grease**

| Domestic Oils Brands | Similar Foreign Oil Brands | | | | | |
|---|---|---|---|---|---|---|
| | MOBIL | CALTEX | CASTROL | ESSO | British BP | SHELL |
| ZG-2 or ZG-3 Lithium Based Lubricant Grease GB7324 | Mobile Grease XHP222 | Marfak multi Purpose | LM grease | Ronex MP; Beacon EP 2 | Energrease L | Retinax A; Alvania |

## Precautions in changing the oil:

1. Stop the loader on the condition which is convenient for draining diesel oil and get the oil with special vessel. Open the oil outlet of the oil tank and drain diesel oil. After draining out all the oil, close the oil outlet. Add the corresponding brand of diesel oil. Clean up the excessive oil near the outlet with cotton yarn.
2. If the different brands of oil should be distinguished by oil marks, the corresponding brand oil mark should be changed. The stick position should be the same as the old one, and the stick trace of old one should be clean up.
3. If the diesel oil, which has been exchanged, would be reused, they must be stand and filtrated. The different brands of light diesel oil could not be used together.

| Name | Code | Application scope and function |
|---|---|---|
| Sealant | 1545 oxygen-weary type pipe-thread sealant | It's suitable to be used to seal the pipe-thread of hydraulic system and pneumatic system or be used on the surface with little oil. |
| | 1262 pipe-thread fixed sealant | It's used to fix and seal the M10~M20 screws and the ones be endured intense vibration and impact. |
| Grease | 2# or 3# lithium based grease GB 7324-1994 | It's suitable to be used to lubricate the fiction position, rolling bearing and sliding bearing of any kinds of engineering machinery between -20~120 ℃. |
| Cleaning agent | 1755 cleaning agent | It's used to clean the surface of metals and enhance the adhesion strength between repair agent, pope-thread fixed sealant and substrate. |

## 1.3 Tightening Torque and Correlation Criterion

Torque control classification table of the bolts of LG918 loader

| Importance | | | | | |
|---|---|---|---|---|---|
| A (Most Important) | | B (Important) | | C (Less important) | |
| Position | Size | Position | Size | Position | Size |
| Flanges of the Front Frame Articulated Hole | M10 | Top/bottom hinged pin connection blot | M12 | Balance Iron | M30 |
| Front and Rear Axle Bolts | M20 | Steering Cylinder Pin, Boom Cylinder Pin, Bucket Cylinder Pin, | M12 | Front/rear bearing seat | M12 |
| Bolt to Fix Multiple Valve | M12 | Sub frame Pin | M12 | Left/right handrails and benches | M12 |
| Front, Middle and Rear Transmission Shaft Fixing nut | M12 | Booster Assembly Fixing | M10 | Bucket indication lever, plate | M10 |
| Front transmission shaft fixing blots | M12 | Priority Valve fixing Bolts | M8 | Right and Left Front Headlights | M12 |
| Hub Nut | M18 | Battery Box supporting plate bolts | M16 | Right and Left Front Headlights | M10 |
| Main transmission shaft fixing blots | M12 | Valve blocks | M12 | Transmission operation device frame | M10 |
| | | Air Holder Assembly Fixing Bolts | M10 | Front fender | M12 |
| | | Filter assembly bolts | M10 | Rocker top/middle/bottom pins | M12 |
| | | Engine hood assembly | M12 | Boom pin | M12 |
| | | Fuel tank | M16 | Lever pin | M12 |
| | | Gearbox left/right fixing frame | M10 | Bucket pin | M12 |
| | | Steering device | M10 | | |
| | | Operation lever fixing frame and fixing seat | M10 | | |
| | | Fuel tank fixing | M20 ,24 | | |

Notes:

1. Class C (Less Important) includes the common bolts and screws less than M10 and the strength below 8.8. The torque of common bolts and screws below 8.8, should be referred to attached table “Table of the

Torque of Common Bolts".

2. The common bolts and screws, which are not mentioned in the table or the process of assembling, follow the class C. The tightening torque can refer to attached table 2 "Table of the Torque of Common Bolts" of the "Assembling Criterion of the Screw Fixing Part".
3. The torque of common bolts and screws, which fix the way of rubber hose and clips, is not required. Just tighten it and keep the hose deformed.
4. Torque of common bolts, whose diameter is more than 16, are shown as followed:

   A (Most important):

   1) Front and rear axle bolts M24: tightening torque: 450±50 Nm

   2) Hub bolts M18: tightening torque: 310±45 Nm

   B (Important):

   Oil tank bolts M20: tightening torque: 250~360 Nm

   M24: tightening torque: 320~480 Nm

   C (Less important):

   1) Balance iron M30: tightening torque: 480~640 Nm

   2) Lower joint pin notch nut: tightening torque: 480~640 Nm
5. If the assembly has some elastic parts, the torque of which should follow these regulation:

   a) Blots of engine and duplex transmission assembly
   b) M20: tightening torque: 120~200 Nm
   c) Radiator assembly bolts M12: tightening torque: 15~35 Nm

d) Cab assembly bolts M20: tightening torque: 120~200 Nm

6. The torque wrench in testing are: pointer-type torque wrench 0~350 Nm, 0~800 Nm.

   The bolts of A and B should be assembled follow the tightening torque as table 1 “Tables of the Torque of Common 8.8 Level Bolts” of the “Assembling Criterion of the Screw Fixing Part”.. Bolts of C should be assembled in the range of torque. In the process of test, it will be qualified if the torque in the range. And the error of torque wrench must be considered.

7. If the connection parts are made up from cast iron or aluminum, the torque should follow table 3 “Table of the Torque of Common Bolts for Cast Iron and Aluminum Connection Parts” of the “Assembling Criterion of the Screw Fixing Part”.

8. Before assembly, check each part and make sure the shape, dimension and type are all right. Furthermore, check the part whether they are clean or be scratched. Do not assemble the parts are not up to the mustard.

9. When assembling the hose, the right assembling situation requires that the hose will not bring distortion and torque after the connection between hose joint and oil port. So, the right assembly order is: tighten the hose curved end first and then tighten the straight end; If the hose is with joint, the joints should be tightened firstly. In the process of assembling, assembly order may be different from the order above. This order can be used without distortion and torque. Or, the principles above must be obeyed. Loosen the straight end first, tighten the pipes with curved end, and then tighten the other end.

10. When assembling the electrical wire, make the routing

more reasonable. After assembling, the wire could not extrude or friction with other pipelines.

11. When assemble the joint, 24° taper seal and joint bolts, the tightening torque should follow the table 4, 5, 6.

Table 1: Table of the Torque of Common 8.8 Level Bolts

| Nominal Diameter of Bolts: mm | Importance | | |
|---|---|---|---|
| | A | B | C |
| M6 | | | 12±3 |
| M8 | | 28±5 | 28±7 |
| M10 | 52±7 | 52±10 | 52±13 |
| M12 | 90±15 | 90±20 | 90±25 |
| M14 | 145±20 | 145±28 | 145±35 |
| M16 | 225±30 | 225±40 | 225±52 |

Table 2: Table of the Torque of Common Bolts

| Bolts Strength Grades | Yield Strength N/mm$^2$ | Bolts Nominal Diameter mm | | | | |
|---|---|---|---|---|---|---|
| | | 6 | 8 | 10 | 12 | 14 |
| | | Tightening torque N·m | | | | |
| 4.6 | 240 | 4~5 | 10~12 | 20~25 | 36~45 | 55~70 |
| 5.6 | 300 | 5~7 | 12~15 | 25~32 | 45~55 | 70~90 |
| 6.8 | 480 | 7~9 | 17~23 | 33~45 | 58~78 | 93~124 |
| 8.8 | 640 | 9~12 | 22~30 | 45~59 | 78~104 | 124~165 |
| 10.9 | 900 | 13~16 | 30~36 | 65~78 | 110~130 | 180~210 |
| 12.9 | 1080 | 16~21 | 38~51 | 75~100 | 131~175 | 209~278 |
| Bolts Strength Grades | Yield Strength N/mm$^2$ | Bolts Nominal Diameter mm | | | | |
| | | 16 | 18 | 20 | 22 | 24 |
| | | Tightening torque N·m | | | | |
| 4.6 | 240 | 90~110 | 120~150 | 170~210 | 230~290 | 300~377 |
| 5.6 | 300 | 110~140 | 150~190 | 210~270 | 290~350 | 370~450 |
| 6.8 | 480 | 145~193 | 199~264 | 282~376 | 384~512 | 488~650 |
| 8.8 | 640 | 193~257 | 264~354 | 376~502 | 521~683 | 651~868 |
| 10.9 | 900 | 280~330 | 380~450 | 540~650 | 740~880 | 940~1120 |
| 12.9 | 1080 | 326~434 | 448~597 | 635~847 | 864~1152 | 1098~1464 |
| Bolts Strength Grades | Yield Strength N/mm$^2$ | Bolts Nominal Diameter mm | | | | |
| | | 27 | 30 | 33 | 36 | 39 |
| | | Tightening torque N·m | | | | |
| 4.6 | 240 | 450~530 | 540~680 | 670~880 | 900~1100 | 928~1237 |
| 5.6 | 300 | 550~700 | 680~850 | 825~1100 | 1120~1400 | 1160~1546 |
| 6.8 | 480 | 714~952 | 969~1293 | 1319~1759 | 1694~2259 | 1559~2079 |
| 8.8 | 640 | 952~1269 | 1293~1723 | 1759~2345 | 2259~3012 | 2923~3898 |
| 10.9 | 900 | 1400~1650 | 1700~2000 | 2473~3298 | 2800~3350 | 4111~5481 |
| 12.9 | 1080 | 1606~2142 | 2181~2908 | 2968~3958 | 3812~5082 | 4933~6577 |

Table 3: Table of the Torque of Common Bolts for Cast Iron and Aluminum Connection Parts

| Bolts level and torque / Bolt type | 8.8 | | 10.9 | |
|---|---|---|---|---|
| | Torque（Nm） | | Torque （Nm） | |
| | Cast Iron | Aluminum | Cast Iron | Aluminum |
| M8 | 20～25 | 15～20 | 28～33 | 15～20 |
| M10 | 45～50 | 25～30 | 55～60 | 25～30 |
| M12 | 70～80 | 50～55 | 100～105 | 50～55 |
| M14 | 110～125 | 80～90 | 150～165 | 80～90 |
| M16 | 160～180 | 120～140 | 220～240 | 120～140 |
| M18 | 205～230 | 165～180 | 295～320 | 165～180 |

Table 4: Tightening Torque of the Joint

| Joint with copper pad seal or taper screw seal | | Joint with O-type seal | |
|---|---|---|---|
| Joint Type | Tightening torque Nm | Joint Type | Tightening torque Nm |
| M14、G1/4 | 34±5 | M12×1.5 | 35±3.5 |
| M18、G3/8 | 73±10 | M14×1.5 | 45±4.5 |
| M20、G1/2 | 93±10 | M16×1.5 | 55±5.5 |
| M24 | 142±20 | M18×1.5 | 70±7.0 |
| M27、G3/4 | 205±30 | M20×1.5 | 80±8.0 |
| M33、G1 | 421±49 | M22×1.5 | 110±10 |
| M42 | 872±98 | M27×2.0 | 170±17 |
| | | M33×2.0 | 310±31 |
| | | M36×2.0 | 310±31 |

Table 5: Tightening Torque of 24° Taper Seal

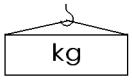
| Tightening torque of 24° Taper Seal Joint Nut | |
|---|---|
| Type | Tightening torque Nm |
| M12×1.5 | 15～20 |
| M14×1.5 | 25～30 |
| M16×1.5 | 30～35 |
| M18×1.5 | 35～45 |
| M20×1.5 | 40～50 |
| M22×1.5 | 45～65 |
| M24×1.5 | 45～65 |
| M26×1.5 | 65～85 |
| M30×2 | 85～110 |
| M36×2 | 120～145 |
| M42×2 | 170～210 |

Table 6: Tightening Torque of Joint Bolts

| Screw Type | Tightening torque (Nm) |
|---|---|
| M10×1 | 25～35 |
| M12×1.5 | 60～75 |
| M14×1.5 | 80～100 |
| M16×1.5 | 105～115 |
| M18×1.5 | 20～130 |
| M22×1.5 | 140～155 |
| M24×1.5 | 160～180 |
| M27×2 | 190～230 |
| M33×2 | 270～320 |

## 1.4 Marker

To emphasize the important of safety and quality more definitely, the followed signs are used as markers.

| Marker | Items | Remark |
|---|---|---|
|  | Safety | Specially take care of the safety during the operation. |
|  | | Specially take care of the internal pressure during the operation. |
|  | Attention | Pay attention to the technical requirements and make sure the operations reach the requirements in operation |
|  | Weight | Weight of assembly and equipment, and disassembling method.<br>Pay attention to choosing the right spreader and the position in operation. |
|  | Tightening torque | Pay more attention to the tightening torque of assembly in assembling. |
|  | Coating | Section where need coat adhesive and grease |
|  | Oil, Water | Adding some capacity of engine oil, water or fuel oil |
|  | Outpour | The part where outpour oil or water, and the outpour capacity |

## 1.5 Hoisting Explanation

1. When it is not easy to assemble the parts from complete

appliance，check the following items:

- Check that whether all of screws of the part have been assembled.
- Check whether the assembly is hindered by some other parts.

2. Tight Wire (could be replaced by rope which has the same carrying capacity)

1) Wire rope should be in the middle of the hook. If be in one end of the hook, the wire rope may drop from hook and that may cause serious accidence. The biggest strength is in the middle of the hook. As shown in figure 1-1.

2) One single wire rope is forbidden. Make sure that two or more ropes are used in hoisting the heavy.

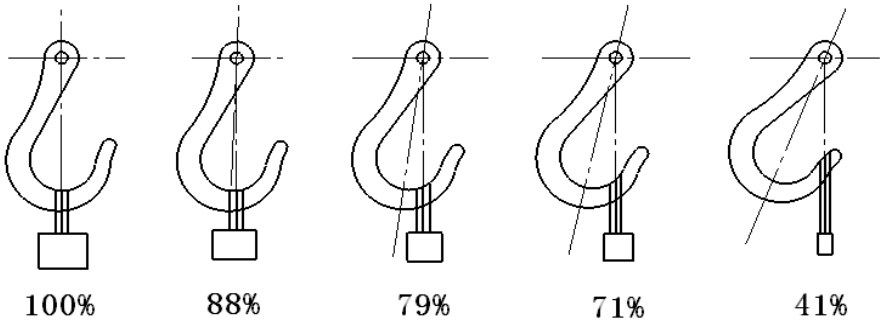



Fig. 1-1

⚠ Hoisting with one wire rope may cause the heavy rotates, and then the wire rope looses or the heavy slides from the fixed location which will cause serious accidence.

3) The hoisting angle between wire rope and hook should not be oversize when hoist the extremely heavy loading.

When the hook hoists heavy loading with two or more ropes, the bigger of angle between wire rope and hook is, the heavier of each rope loads. The figure 1-2 shows the changes of allowed loading (kg) in different angles when hoisting with two ropes (The limited vertical hoist

loading of each rope is 1000 kg). It can hoist 2000kg when two ropes in the vertical location. But when the angle reaches to 120°, the ropes can only hoist 1000kg. Another hand, the force of the ropes would be 4000kg when the angle reaches 150°, although the loading is only 2000kg.

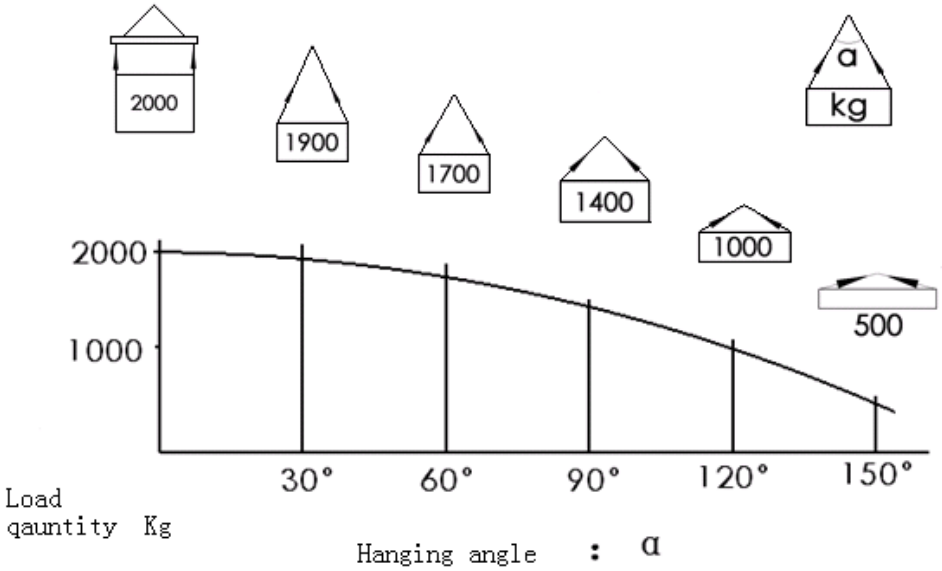



Fig. 1-2

## 1.6 Adjust Clearance of Typical Parts

| No | Description of Typical Parts | Adjustment Requirement | |
|---|---|---|---|
| | | Sleeve (Unilateral clearance) | Joint Bearing (Unilateral clearance) |
| 1 | Joint of Boom and Becket | 0.5～1.5 | \ |
| 2 | Joint of Boom and Front Frame | 0.5～1.5 | \ |
| 3 | Joint of Boom and Rocker Arm | 0.5～1.5 | \ |
| 4 | Joint of Boom Oil Cylinder and Boom | 0.5～1.5 | 1～2 |
| 5 | Joint of Boom Oil Cylinder and Front Frame | 0.5～1.5 | 1～2 |
| 6 | Joint of Boom Oil Cylinder and | 0.5～1.5 | 1～2 |

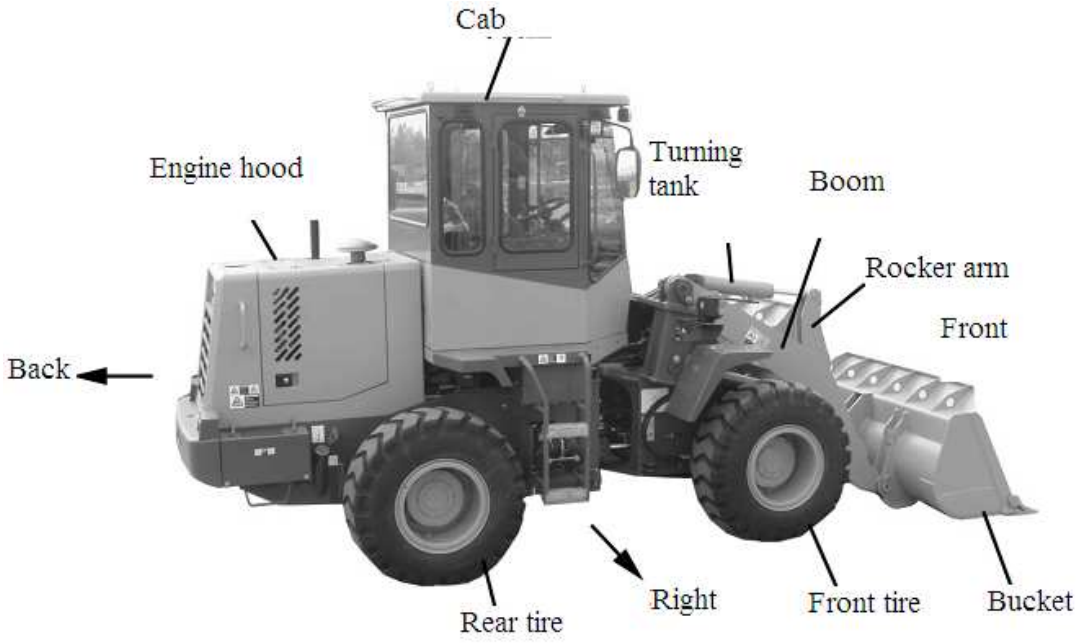
| | | | |
|---|---|---|---|
| | Back Frame | | |

# 1.7 Related Parameters of Electric Circuit

| No. | Name | Section Area（$mm^2$） | Color | Remark |
|---|---|---|---|---|
| 0 | Grounding Line | 5.0 | Black | |
| 0 | Grounding Line | 2.0 | Black | |
| **0** | Grounding Line | 0.85 | Black | |
| 1 | Starting Motor to Starting Relay Connection | 2.0 | Orange | |
| 2a | Generator charging wire | 5.0 | Yellow | |
| 2 | Accumulator Relay to Fuse Box Upper End Connection | 5.0 | Red | |
| 3 | Power Line of Whole Vehicle Line | 1.25 | Pink/ pale | |
| 4 | Back Headlight- High Beam Connection wires | 1.25 | Brown/black | |
| 4 | Plate switch to Rear Headlight --High Beam Connection wire | 1.25 | Brown/black | |
| 5 | Back Headlight-- Low Beam Connection | 1.25 | Blue/black | |
| 5 | Plate switch to Rear Headlight Low Beam Connection | 1.25 | Blue/black | |
| 6 | Right Turn Lamp wire | 0.85 | White/violet | |
| 7 | Left Turn Lamp wire | 0.85 | Green/orange | |
| 8 | Brake Lamp Wire | 0.85 | Yellow/brown | |
| 9 | Reversing Buzzer, Reversing Lamp Connection wire | 0.85 | Blue/yellow | |
| 10 | Front Headlight High Beam Connection | 1.25 | Brown/green | |
| 11 | Front Headlight Low Beam Connection | 1.25 | Brown/blue | |
| 12 | Horn Button Wire | 0.85 | Yellow/green | |
| 12 | Electric Horn Control Wire | 0.85 | Yellow/green | |
| 13 | Handy Brake Indictor Lamp Connection | 0.85 | White/yellow | |
| 13 | Hand Brake Switch Lamp Connection | 0.85 | White/yellow | |
| 14 | Engine Water Temperature Sensor Wire | 0.85 | White/Brown | |
| 14 | Engine Water Temperature Thermometer Signal Wire | 0.85 | White/Brown | |
| 15 | Torque Converter Oil Temperature Sensor Wire | 0.85 | White/green | |
| 18 | Brake Air Pressure Sensor Wire | 0.85 | Violet/green | |
| 19 | Oil level Signal Wire | 0.85 | Yellow/black | |
| 20 | Charge Alarm Lamp Wire | 0.85 | Purple/white | |
| 21 | Common Electrical Wire | 2.0 | Red/yellow | |
| 22 | Electric Lock to Starting Relay Connection | 0.85 | Blue/red | |
| 23 | Front Water Spraying Electromotor Wire | 0.85 | Purple | |
| 24 | Scraper Reposition Wire | 0.85 | Yellow/blue | |
| 25 | Scraper Low Speed Connection | 0.85 | Brown/yellow | |
| 26 | Scraper High Speed Connection | 0.85 | Brown/yellow | |
| 28 | Accumulator Relay “+” Wire | 0.85 | White/blue | |
| 28 | Accumulator Relay “+” to Electric lock | 0.85 | White/blue | |
| 31 | Engine Oil Pressure Alarm Wire | 0.85 | White/black | |
| 31 | Engine Oil Pressure Alarm Lamp Connection | 0.85 | White/black | |
| 32 | Brake Pressure Alarm Lamp Connection wire | 0.85 | Gray/black | |
| 33 | Flasher Signal Output-wire | 1.25 | Gray/pink | |
| 34 | Headlight Connection | 1.25 | Brown/white | |

| | | | | |
|---|---|---|---|---|
| 35 | Front Headlight Power Wire | 1.25 | Red/black | |
| 36 | Air-condition and Warm Wind Power Connection | 3.0 | Red | |
| 37 | Rain Scraper Power Wire | 1.25 | Orange/Red | |
| 39 | Headlight Power Wire | 1.25 | Black/Red | |
| 40 | Reversing Lamp and Braking Lamp Power Wire | 1.25 | Red /.Black | |
| 40 | Horn Power Wire | 1.25 | Purple | |
| 41 | Radio Recorder and CD Power Wire | 1.25 | Brown | |
| 42 | Solenoid Valve Power Wire | 1.25 | Blue | |
| 42 | Solenoid valve power Wire | 1.25 | Blue | |
| 43 | Timekeeper Power Wire | 0.85 | Ash-blue | |
| 44 | Combination Switch Power Wire | 1.25 | Red-black | |
| 45 | Rear Headlight Power Wire | 1.25 | Red-yellow | |
| 46 | Brake Solenoid Valve Power Wire | 1.25 | Purple | |
| 47 | Rear Headlight Power Wire | 1.25 | Purple | |
| 49 | High Beam Signal Wire | 0.85 | Brown | |
| 50 | Low Beam Signal Wire | 0.85 | Orange | |
| 53 | Heater Connection wire | 1.25 | Red | |
| 56 | Battery “+” pole | 5.0 | Red | |
| 56 | Battery to Battery Relay wire | 5.0 | Brown | |
| 57 | Power Cutting Off Signal Wire | 0.85 | Brown | |
| 60 | Starting Lock Power Wire | 0.85 | Brown | |
| 60 | Electrical Lock to proximity switch Wire | 0.85 | Gray | |
| 62 | Intermediate Relay to Solenoid Valve ( Boom ) wire | 0.85 | Gray | |
| 63 | Intermediate Relay to Solenoid Valve ( Bucket ) wire | 0.85 | Purple | |
| 64 | Proximity switch (Boom) Wire | 0.85 | Yellow | |
| 65 | Approaching Switch (Boom) Wire | 0.85 | Brown | |
| 71 | Rear Lamp Wire | 1.25 | Gray | |
| 73 | Timekeeper on the engine End Signal Wire | 0.85 | Gray | |
| 76 | Power Cutting-off and Reverse Gear Power Wire | 1.25 | White | |
| 77 | Standby Socket Power Wire | 1.25 | Green | |
| 80 | Power Wire of Gauge, Indicator Lamp and Rear Lamp | 1.25 | White | |
| 81 | Engine Speedometer Signal Wire | 0.85 | Green | |
| 81 | Engine Speed Sensor Wire | 0.85 | Green | |
| 85 | Rapid Changing Connection Wire | 0.85 | Purple | |
| 85 | Rapid Changing Signal Wire | 0.85 | Purple | |
| 86 | Rapid Changing Connection Wire | 0.85 | Gray | |
| 86 | Rapid Changing Signal Wire | 0.85 | Gray | |
| 87 | Rapid Changing Buzzer Connection Wire | 0.85 | Red | |
| 87 | Rapid Changing Buzzer Signal Wire | 0.85 | Red | |
| 90 | Rapid Changing Button Power Wire | 0.85 | Green | |
| 92 | Warm-up Control Box Power Wire | 1.25 | Red | |
| 121 | Electrical Lock Common Power Wire | 1.25 | Brown | |

# CHAPTER II STRUCTURE AND WORKING PRINCIPLE OF THE LOADER




## 2.1 Outside View

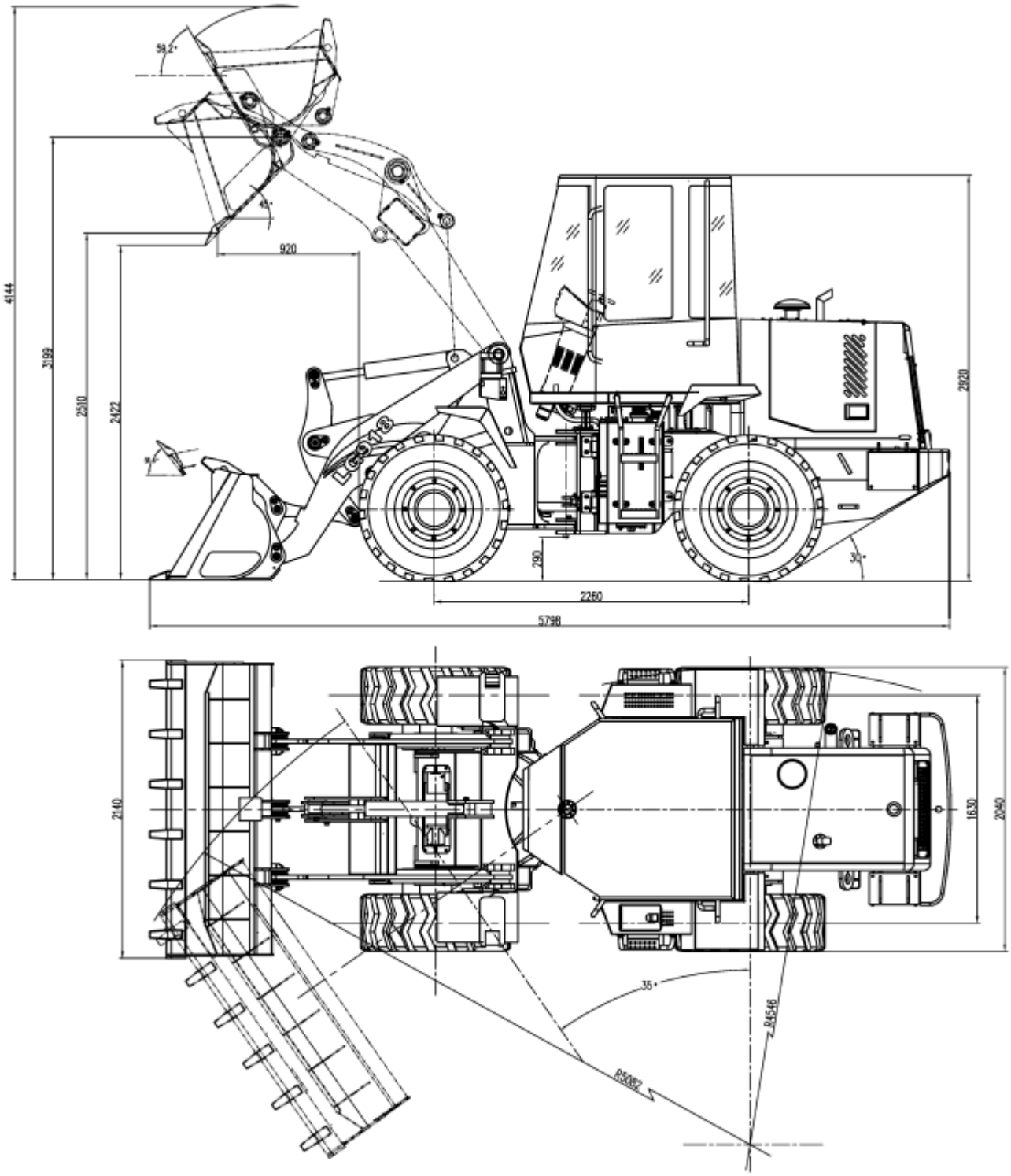
## 2.2 Complete Appliance Performance and Parameter

| | | | Configure Standard Boom |
|---|---|---|---|
| Bucket Capacity $m^3$ | | | 1.0 |
| Rated Loading Capacity N | | | 1800 |
| Lifting time (full load) S | | | ≤4.8 |
| Lowering time (empty bucket) S | | | ≤3.2 |
| Dumping time (empty bucket) S | | | ≤1.1 |
| Travel speed km/h | Forward | Gear I | 2.154 |
| | | Gear II | 0.768 |
| | Reverse | Gear I | 2.207 |
| | | Gear II | 0.785 |
| Max. Breakout force kN | | | ≥58.0 |
| Max. Tractive (rim-pull) force (supplied by engine) kN | | | ≥56.0 |
| Max. Tipping load (fully turning) kN | | | ≥36 |
| Max. Grade ability | | | 30° |
| Min. turning radius (outside of the rear wheel) mm | | | 4546 |
| Level passing radius (outside of bucket) mm | | | 5082 |
| Max. Angle of rotation | | | 35° |
| Wheel tire inflation pressure MPa | | 0.333～0.353 | 0.34±0.01 |
| | | 0.275～0.294 | 0.28±0.01 |
| The length of machine (The bucket keeps flat on ground) mm | | | 5798 |
| The width of machine (Outer flank of wheel) mm | | | 2040 |
| The width of bucket mm | | | 2140 |

| | |
|---|---|
| The height of vehicle mm | 2920 |
| Tread mm | 1630 |
| Wheel base mm | 2260 |
| Min. ground clearance mm | 290 |
| Max. unloading height（-45°Unloading angle）mm | 2510 |
| Unloading distance（-45°Unloading angle） mm | 920 |
| Unloading angle | ≥45° |
| Complete vehicle operation weight kg | 6200 |

# 2.3 General View

Unit: mm



# 2.4 Working Principles

## 2.4.1 Transmission System

The transmission mode of LG918 wheel loader is hydro-mechanical transmission, whose working parts are hydraulic torque converter. This kind of transmission has the following advantages:

1. Improve good automatic adaptability to the loader: Because of the use of hydraulic torque converter, it's possible that the traction force can change with the external resistance. This ensures that the engine can often work in the rated condition and avoid the flameout caused by the break of external resistance.

2. Lengthen the life of loader: The working medium of hydraulic transmission is liquid, which can improve the lubrication and damping effect to the parts, so the lives of corresponding parts are lengthened.

3. Improve the passing ability of the loader: The loader with hydraulic transmission device has good low speed stability and good passing ability. This kind of loader can be operated and drived in soft road, such as slob land, sandlot and snow land, and non-hard soil road.

4. Simplify the operation and improve the comfort of operation: The loader with hydraulic torque converter has the advantages of starting stably and accelerating rapidly. Hydraulic transmission makes the continuously variable to be possible in a large range, which brings advantages of reducing the number of changing gears, simplifies the operation, releases the driver's tiredness. In the process of driving, the hydraulic parts also could absorb and reduce the vibration, which improves the comfort of driving.

Generally, transmission system is made up of hydraulic torque converter, transmission, transmission shaft, front/

rear driving axle and wheel. The power of transmission system is supplied by engine. Power is passed by the connection between engine flywheel and elastic plate stud-bolt of the hydraulic torque converter. The transmission process of whole appliance can be described as followed: When the loader is working, Power is transferred from engine flywheel to hydraulic torque converter. Then, it is from hydraulic torque converter to transmission. By the front and rear flanges, the power from transmission transmits to the front and back driving axle to drive the axle and then to drive the wheel forward. The figure of transmission system principle is shown in Fig. 5-1

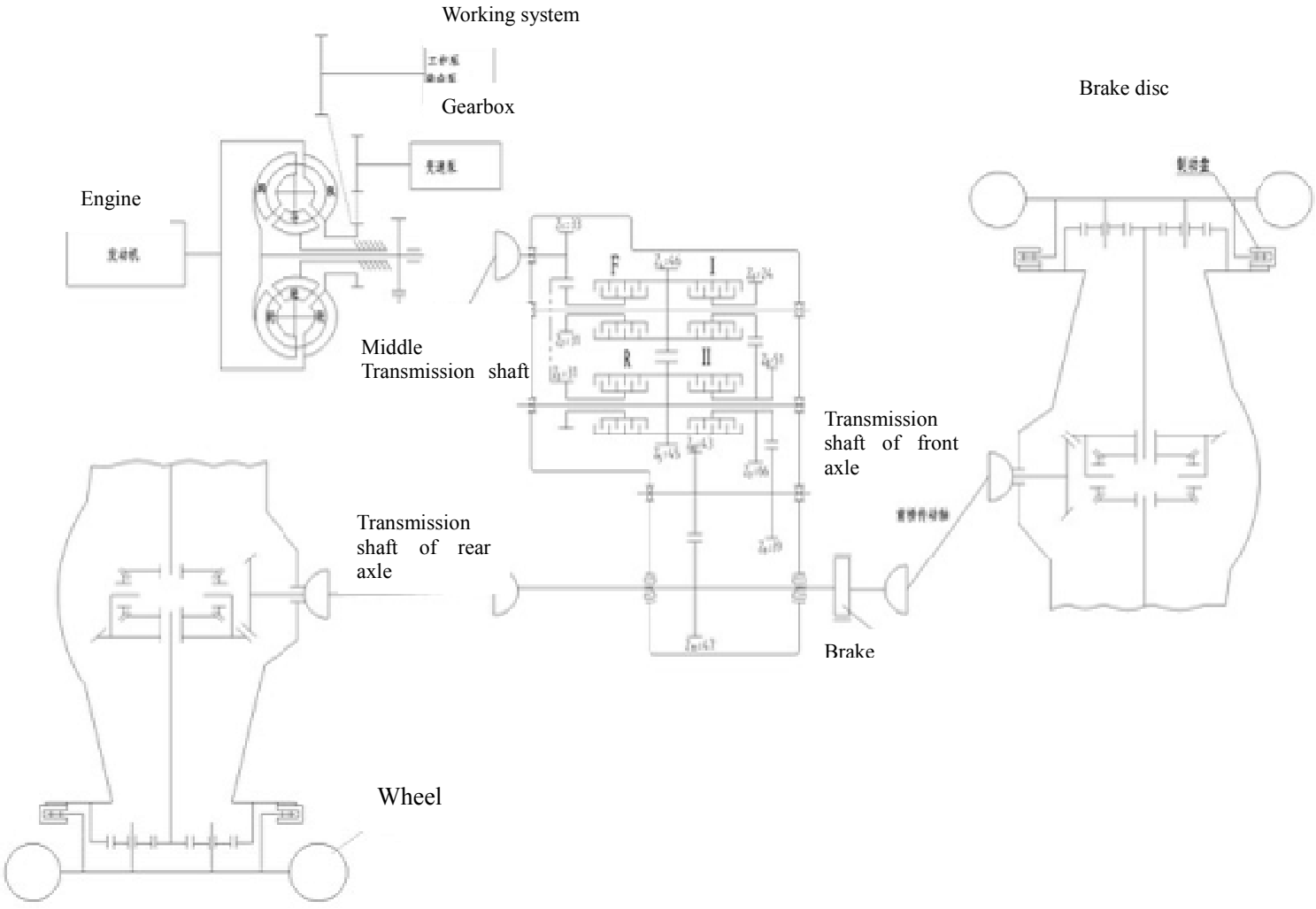


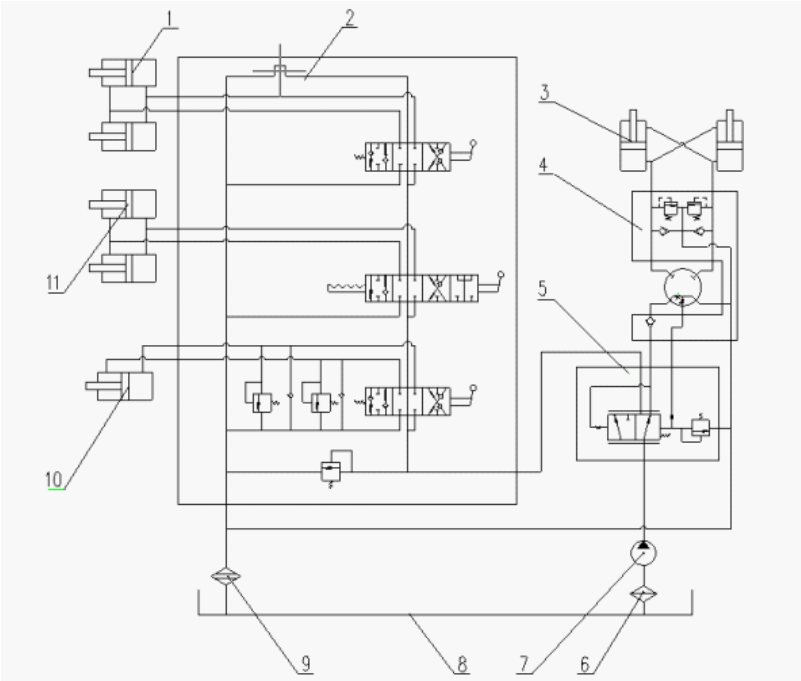
**Fig. 5-1 LG918 Transmission System**

## 2.4.2 Hydraulic System

As shown in Fig. 5-2, hydraulic system includes working device hydraulic system and steering hydraulic system, which is made up of working pump, multiple valve, pilot valve, pressure choosing valve, boom oil cylinder, turning bucket oil cylinder, hydraulic oil tank and pipeline accessory. ZL20DYL multiple valve includes three units. Turning bucket unit includes three positions: dumping, neutral, withdrawing; Boom unit includes four positions: float, lower, neutral, lift. They make the working operation of the loader working device to be true. The third kind of hydraulic function could be reserved. The adjustable pressure of hydraulic system safety valve is 17.5 MPa.

The complete hydraulic joints steering system is used in this appliance.

The steering system of LG918 includes hydraulic steering redirector, priority valve, steering oil cylinder, hydraulic oil radiator hydraulic oil tank and the pipeline accessory. Steering hydraulic system is independence load sensing hydraulic system. In steering, this system makes sure that supply oil to steering hydraulic system first, and the surplus oil return to tank by radiator. Safety valve is fixed on the priority valve, and the set pressure of which is 12 MPa.




1. Fork cylinder 2. Multiple valve

3. Steering oil cylinder 4. Redirector 5. Priority valve

6.oil absorbed filter 7. Double-unit pump

8. Hydraulic oil tank 9. Oil returning filter

10. Turning bucket cylinder 11. Boom cylinder

Fig. 5-2 LG918 Figure of Hydraulic System

## 2.4.3 Brake system

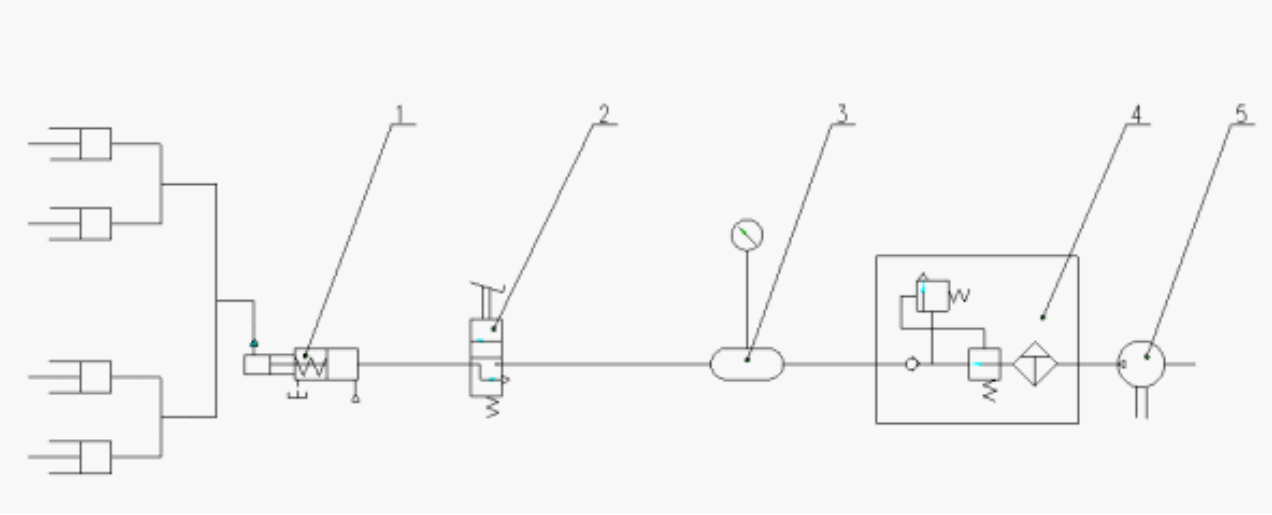
The brake system of wheel loader is the device to apply resistance to the driving loader for lowering it or stopping it, and, after loader stopping, to keep it in the original position, avoiding the movement caused by the road incline or effect from other outside forces.

Generally, wheel loader has two independence brake system: traveling brake system, emergency and parking brake system.

1. The brake system, which is used in traveling for deceleration and stopping the loader, is named traveling brake system. This kind of brake is controlled by the driver's foot in traveling, so it is also called foot brake system (foot brake in short). In foot brake system, brake devices are installed on the section near the wheel side deceleration in both ends of each driving axle. In braking process, break the wheel (brake disc) directly. The power of traveling brake system is generally from oil pressure. By the application of intensifier pump, the operation is more portable.

2. The brake system, which is used to keep the loader in the original position, is named parking brake system. This kind of brake is controlled by the driver's hand in braking, so it is also called hand brake system (hand brake in short). The brake of hand brake system is installed on the front output axis of transmission generally. When it works, pull the operation soft axis, by operating the lever, to distract the brake plate and stop the loader.

Principle is shown in Fig.5-3. The brake system includes traveling brake system, emergency and parking brake system.



1. Air intensifier pump 2. foot brake valve 3. Gasholder
4. Oil and water separator combination valve
5. Air compressor

Fig. 5-3 figure of brake system principle

## 2.4.4 Electric System

Electric system includes accumulator, starting motor, charging generator, instrument, switch, lamps, air condition circuit and other electric devices.

The complete appliance system pressure is DC 24V. The cathode connects iron. Circuit is single lead type. The relationship and working principle of each electric device would be found in Fig. 5-4.

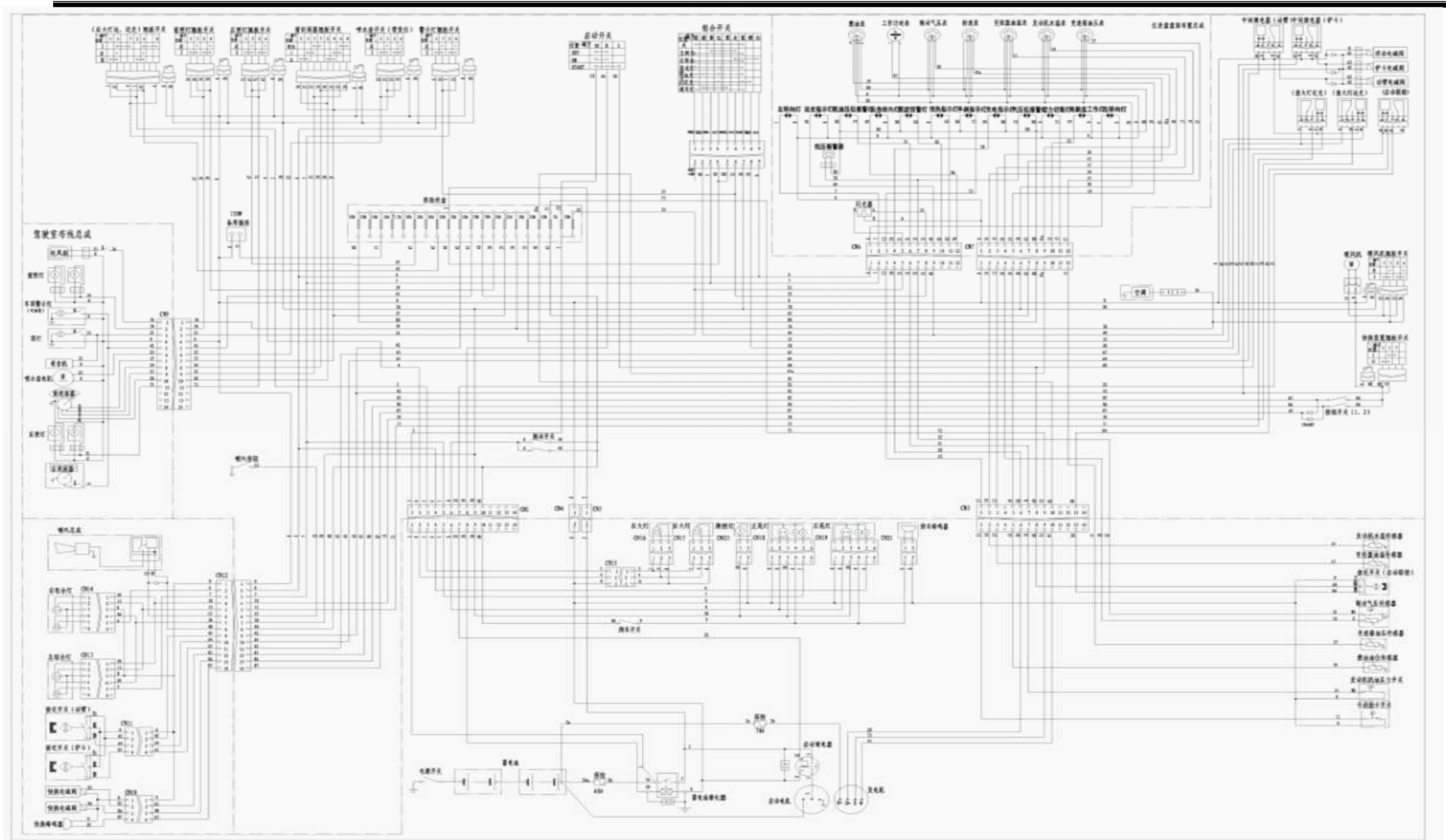
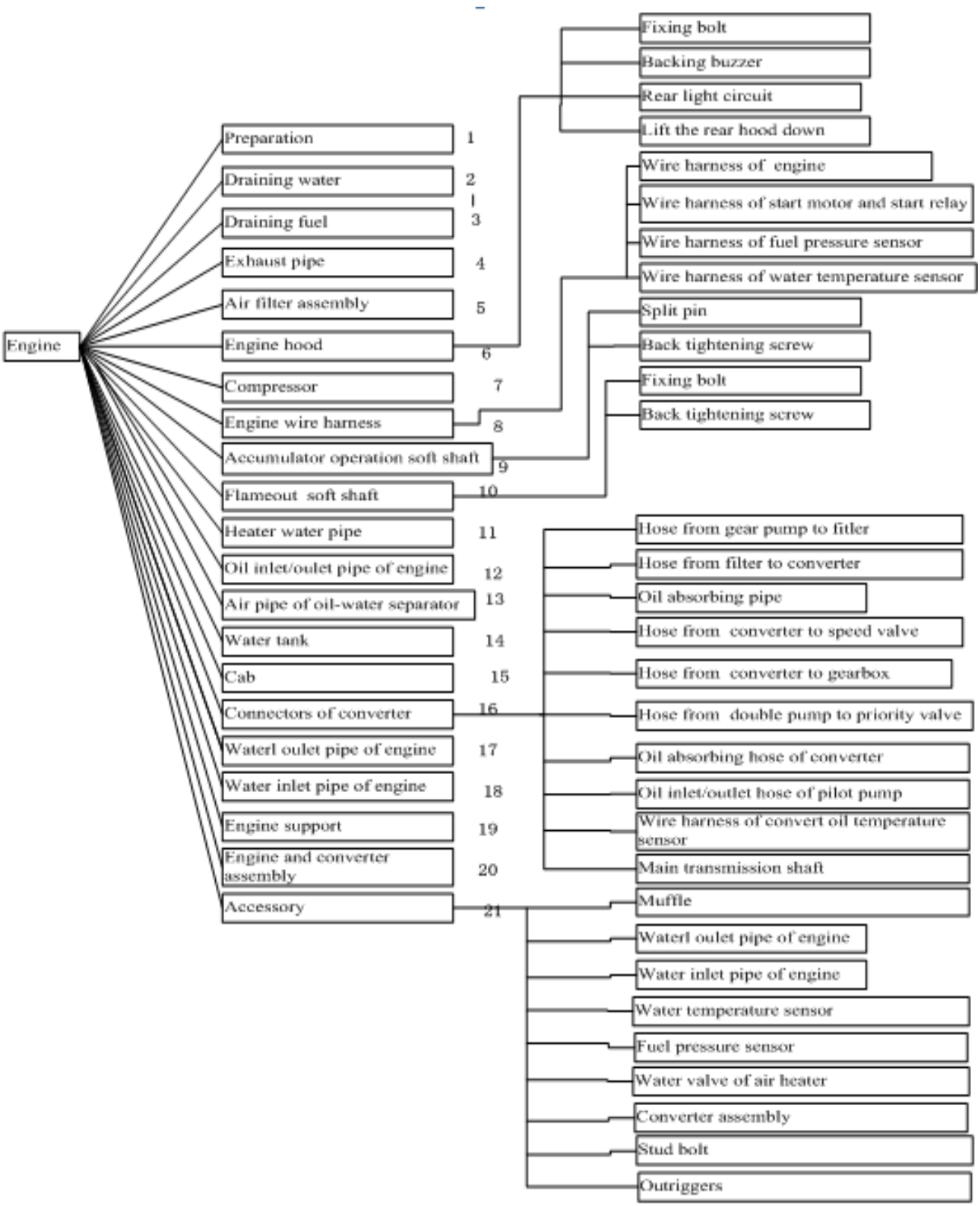


Figure 5-4 LG918 Electric System Principle Figure

# CHAPTER III DISASSEMBLY AND ASSEMBLY OF ENGINE SYSTEM

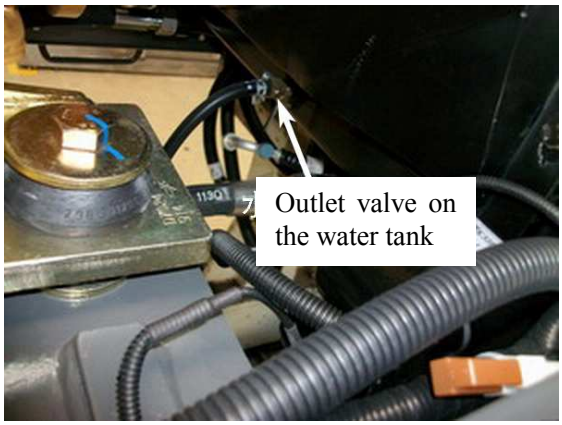
## 3.1 Disassembly and Assembly of Engine

**I Disassembly of Engine** (These following steps could be referred to changing engine, examining and repairing the interior of engine and disassembling the engine from complete appliance.)

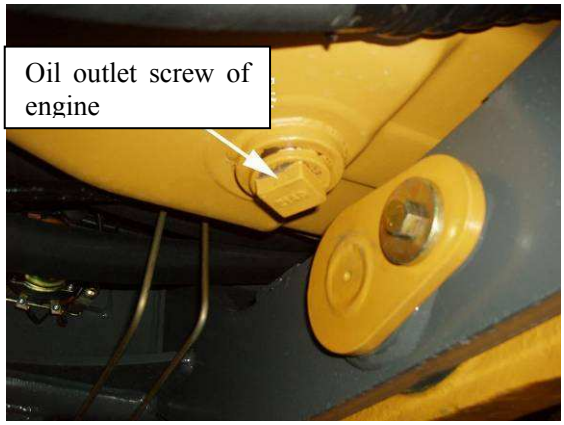

Engine
Preparation
1
Draining water
2
Draining fuel
3
Exhaust pipe
4
Air filter assembly
5
Engine hood
6
Compressor
7
Engine wire harness
8
Accumulator operation soft shaft
9
Flameout soft shaft
10
Heater water pipe
11
Oil inlet/oulet pipe of engine
12
Air pipe of oil-water separator
13
Water tank
14
Cab
15
Connectors of converter
16
Waterl oulet pipe of engine
17
Water inlet pipe of engine
18
Engine support
19
Engine and converter assembly
20
Accessory
21
Fixing bolt
Backing buzzer
Rear light circuit
Lift the rear hood down
Wire harness of engine
Wire harness of start motor and start relay
Wire harness of fuel pressure sensor
Wire harness of water temperature sensor
Split pin
Back tightening screw
Fixing bolt
Back tightening screw
Hose from gear pump to fitler
Hose from filter to converter
Oil absorbing pipe
Hose from converter to speed valve
Hose from converter to gearbox
Hose from double pump to priority valve
Oil absorbing hose of converter
Oil inlet/outlet hose of pilot pump
Wire harness of convert oil temperature sensor
Main transmission shaft
Muffle
Waterl oulet pipe of engine
Water inlet pipe of engine
Water temperature sensor
Fuel pressure sensor
Water valve of air heater
Converter assembly
Stud bolt
Outriggers

1. Start the complete appliance and drive it to the servicing place. Keep the bucket flat on ground. Press the parking brake switch on the operation box (red and mushroom head appearance). Rotate the key of the electrical lock one level anticlockwise to turn of the electrical power of the whole machine. Fix the front and back wheels with chocks stability.

★Remark: Do the operation after the loader to be cooling. In the process of disassembly, the joints of each pipeline should be band up to avoid the sundries entering into the pipeline.



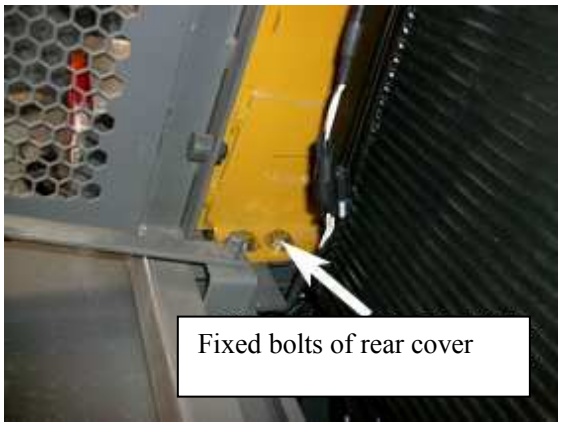

2. Open the outlet valves on the water tank and the engine. Drain the coolant and get them with clean vessel.




3. Open the oil outlet screw of engine oil bottom tank and drain the engine oil, being gotten with clean vessel.

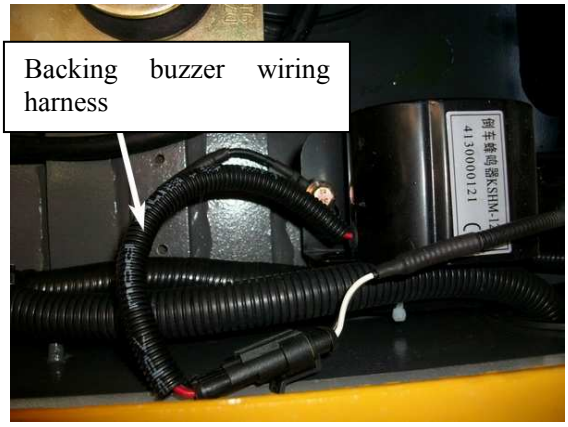
4. Loosen the fixed clamp connecting the engine exhaust pipe and get it off.

5. Loosen the clamp near the engine air filter. And get the engine air filter off from the pipe.




6. Remove the engine hood.

1)Loosen the tightening bolts of the engine hood.




2) Cut off the connection of the reverse buzzer wiring harness.


3) Cut off the connection of the rear light wiring harness.

4) Hang the engine hood off.

7. Cut off the connecting of the soft shaft of air-condition and the compressor. Remove the compressor from the support on the same time.

★ Keep the aeration of the maintain place. The workers please keep away when the refrigerant is released.

8. Disconnect the connection of the engine and the circuits.

1) Disconnect the connection of the engine and the circuits.

2)Disconnect the connection of the starting motor or relay and the circuits. Remove the starting relay and fixed support on the same time.

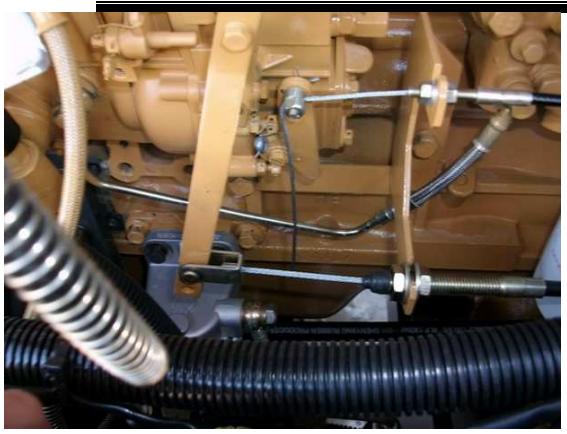
3) Disconnect the connection of the engine oil pressure sensor and the circuits.

4) Disconnect the connection of the water temperature sensor and the circuits.

9. Disconnect the connection of the gun operation soft shaft and the engine.

1) Loosen the split-pin of the gun operation soft shaft.

2) Loosen the back-tighten nuts of the soft shaft. Get the soft shaft off from the bracket.



10.Disconnect the connection of flameout soft shaft and engine.

1）Loosen the tightening bolt of the flameout soft shaft.

2）Loosen the back-tighten nuts of the soft shaft. Get the soft shaft off from the bracket.

11. Disconnect the connection of the unit heater water pipe and the engine.

Loosen off the tightening clamp of the unit heater water pipe on the engine end and get off the water pipe.

12. Loosen the connection bolts of the engine in and out oil pipes and disconnect them.

13. Disconnect the connection of the oil and water separator and the air compressor.

14. Dismount the water tank. (Refer to the disassembling of the water and oil tank)

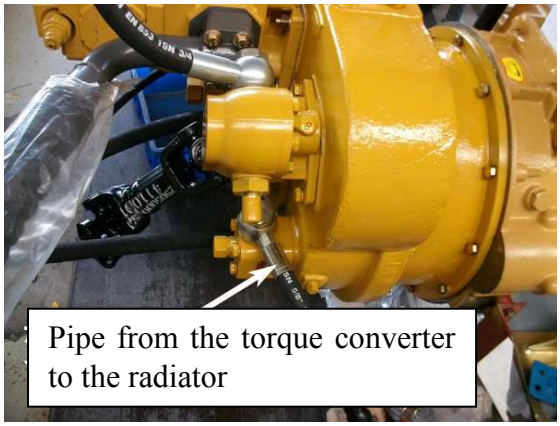
15. Dismount the cab.(Refer to the disassembling of the cab)

16. Disconnect the pipes, main transmission shaft and wiring harness with the torque converter.

1）Disconnect the pipe connecting gear box pump with transmission filter(on the side of gear box pump）.

2）Disconnect the pipe connecting the transmission filter with torque converter.

3）Disconnect the oil absorber pipes connecting the hydraulic oil tank with the double-connecting pump.



Pipe from the torque converter to the radiator

4 ） Disconnect the pipes connecting the torque converter with the radiator.

Pipe from the torque converter with gear valve

5 ） Disconnect the pipes connecting the torque converter with gear valve.

6）Disconnect the oil returning pipes connecting the torque converter with gear box box.

7）Disconnect the pipes connecting the double pump with prior valve.

8）Disconnect the pipe connecting the gear valve with the gear box box.（oil absorbing pipes of torque converter）.


9）Disconnect the oil inlet and outlet pipes of priority pump.

10）Disconnect the pressure sensor wiring harness of gear box box.

11）Disconnect the oil temperature sensor wiring harness of torque converter.

12）Remove the fixed bolt of main transmission shaft, and disconnect the connection with torque converter.

17、Loosen clip of engine's water outlet pipe（on the side of water tank），and remove the water pipe from the water tank's port.

18、Loosen clips of engine's water inlet pipe（on the side of water tank），and remove the water pipe from the water tank's port.

19、Remove the fixed bolt of engine's support.

20、Lift engine assembly and torque converter assembly down.

★Pay attention to turning when lifting the engine assembly down.

kg Engine

21. Disassembly of engine other accessory.

1) Disassemble the bolts which connect muffle pipe and engine. Then get off muffle.

2) Loosen the fastening clamp hoop of the water inlet pipe of engine. Remove the water inlet pipe.

3) Loosen the fastening clamp hoop of the water outlet pipe of engine. Remove the water outlet pipe.

3) Loosen the clamp hoops of the in and out water pipes and get off the in and out water pipe.

4) Disassemble the water temperature sensor.

5) Remove the engine oil pressure sensor.

6) Disassemble the unit heater water valve.

7) Disassemble the torque converter assembly

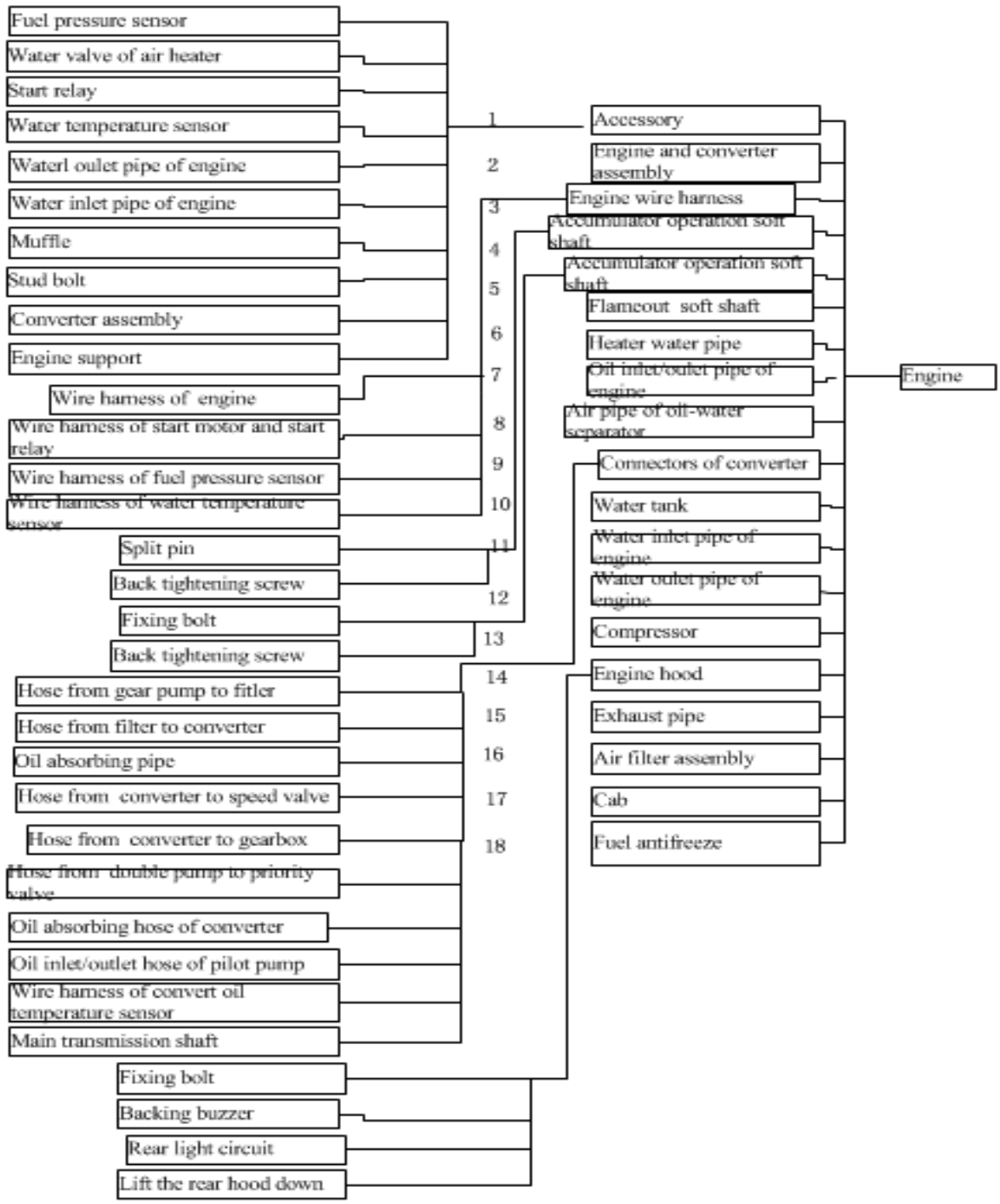
8) Loosen stud-bolt.

★**Notice**: The pliers are forbidden during loosening. loosen the two nuts comparatively. Remove the internal nuts with wrench.

9) Disassemble the fixed bolts of engine outrigger, and get off engine outrigger.

## II Assembly of Engine

(These following steps could be referred to changing engine, after examining and repairing the interior of engine, and assembling the engine to complete appliance.)



1. Assembly of engine accessory.

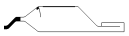
Coating process of 1545 oxygen-weary pipe screw sealant should be followed as these:

1) Clean the foreign body on the screw with no hair-falling towel.

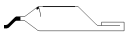
2) Coat the sealant on the outside screw about one circle. The width of it is about 3~5 circles screw. The sealant should be full of the teeth of screw. The beginning circle could not be coated sealant. Coat it while you will assemble. After the assembling, there should be a whole circle of sealant.

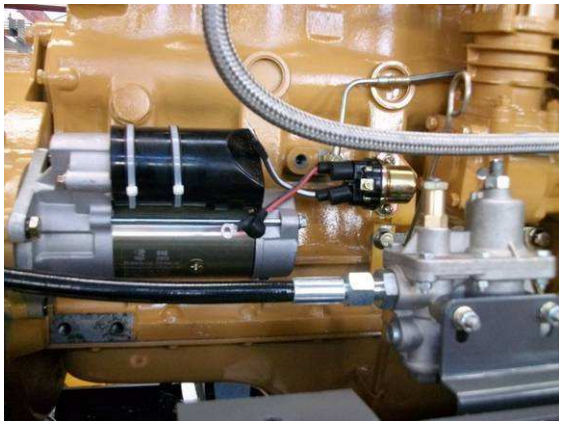
3) The coated part should be tightened with hand wrench but not impact wrench.

1) Assembling of the engine oil pressure sensor. Coat KESAIXIN 1545 sealant on the connection position of engine oil pressure sensor and assemble it on the correspond position of engine.

 1545 sealant

2) Assembling of heater unit valve. Coat KESAIXIN 1545 oxygen-weary pipe screw sealant on the heater unit valve and assemble it on the correspond position of engine.

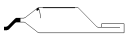
 1545 sealant



3) Assemble the starting relay

Assemble the fixed board of starting relay on the back of starting machine of engine with bolts M12×20，and assemble the starting relay on the fixed board of starting relay with screws, washers GB97.1-6EpZn-300HV and washers GB93-6-65Mn.

4) Assembly of the water temperature sensor. Coat KESAIXIN 1545 sealant on the water temperature sensor and assemble it on the correspond position of engine.

 1545 sealant

5）Assemble the water inlet hose of engine.

Assemble the water in and out rubber hose on engine and fix them with laryngeal hoop.

6)Assemble the water outlet hose of engine.

Assemble the water outlet rubber hose on engine and fix them with laryngeal hoop.

7) Assemble the muffle

Fix the muffle assembly on the engine.

8) Assemble stub-bolts.

Screw the stub-bolts on the engine flywheel plate.

9) Assemble the torque converter assembly

Connect torque converter assembly with flywheel cover of engine.

10) Assemble the engine bracket.

Screw the stub-bolts on the engine flywheel plate and fix them with been coated diesel engine oil.

★Screw in the thin screw end

★Assemble them with hand pliers and tighten them comparatively. Tighten them by rotating the outside nuts with wrench.

2. Hoist the engine and torque converter assembly to the rear frame. Fix engine with bolts.

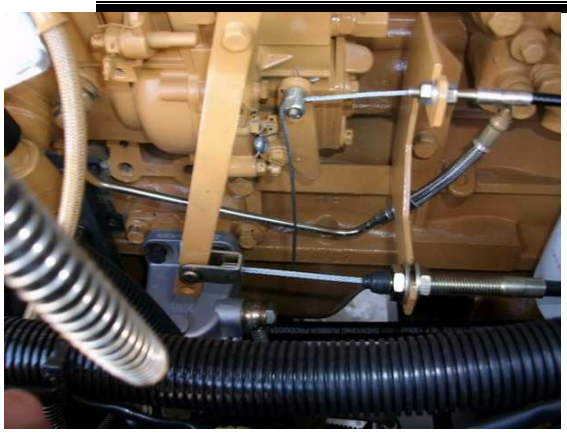
3. The connection of engine and circuits.

1) The connection of engine and circuits.

2) Connect the starting machine, starting relay and wiring harness together.

3) Connect the oil pressure sensor with wiring harness.

4) Connect the water temperature sensor with wiring harness.



4．Connecting the throttle operation flexible shaft with engine

1) Assemble the split pin of throttle operation flexible shaft.

2) Assemble the back-tightening nuts of flexible shaft, fix the flexible shaft on the support.

5．Connecting the flameout flexible shaft with engine

1）Put the flameout flexible shaft into the tightening screw, and tighten it deeply.

2） Place the flameout flexible shaft on the support, and tighten the back-tightening nuts.

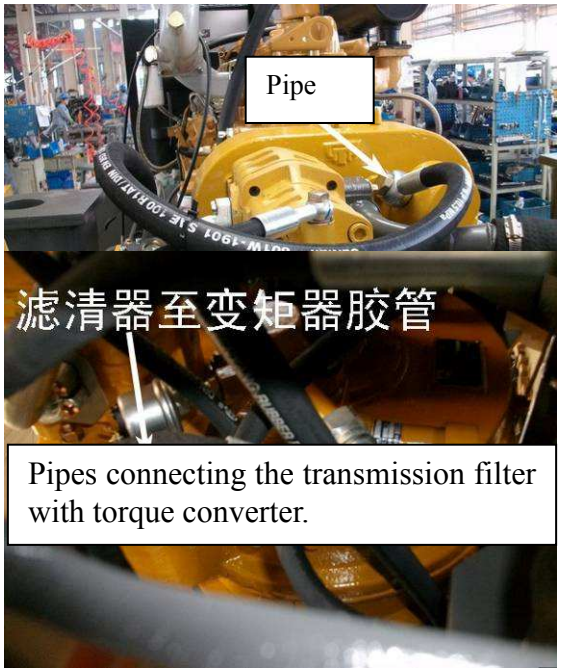
6．Connecting the water inlet and outlet pipes of warm wind machine with the water valve.

Assemble the pipe of the warm wind machine on the water valve of engine, and tighten the throat hoop.

7．Connect the oil inlet and outlet pipes of engine on the relevant position of engine, and tight the relevant bolts.

8．Connecting the gas pipes of oil and water separator and air compressor

★ Smear appropriate amount of thread tighten sealing 1272

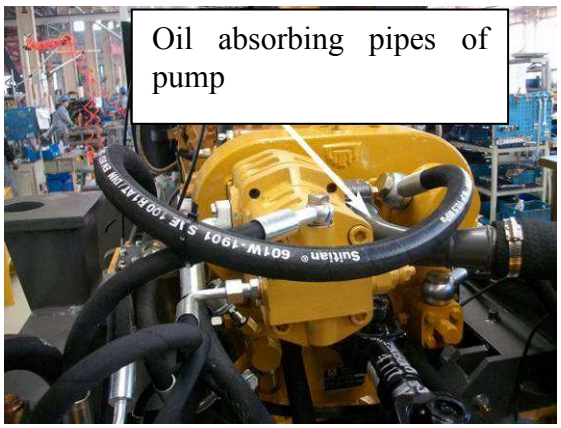



9. Connect the pipes, main transmission shaft and wiring harness with the torque converter.

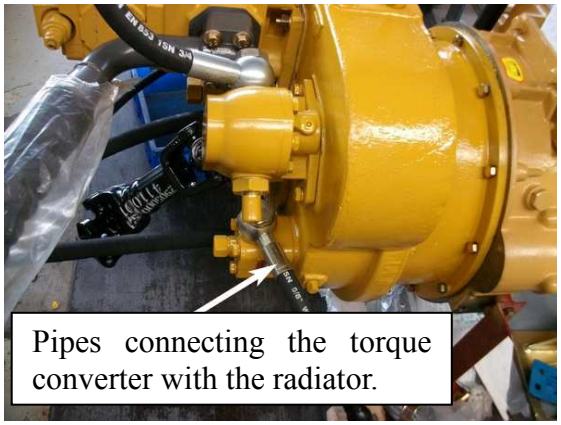
1）Connect the pipes connecting gear box pump with transmission filter(on the side of gear box pump）.

2）Connect the pipe connecting the transmission filter

with torque converter.




3）Connect the oil absorbing pipes of pump connecting the hydraulic oil tank with the double pump.



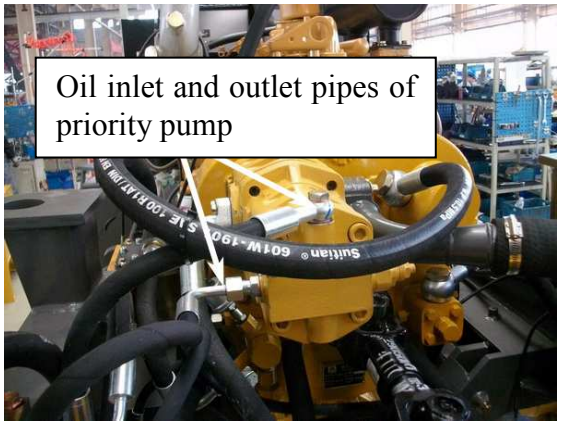

4）Connect the pipes connecting the torque converter with the radiator.


5）Connect the pipes connecting the torque converter with gear valve.

6）Connect the oil returning pipes connecting the torque converter with gear box box.

7）Connect the pipes connecting the double pump with prior valve.

8）Connect the pipes connecting the gear box pump with the gear box box.（oil absorber pipes of torque converter）。




9）Connect the oil inlet and outlet pipes of priority pump.

10）Connect the pressure sensor wiring harness of gear

box box.

11）Connect the oil temperature sensor wiring harness of torque converter.

12）Assemble the fixed bolt of main transmission shaft.

10．Assemble water tank.（Refer to “assembly of water tank and oil radiator”）

11．Assemble the water outlet pipe of engine on the water tank, and tight the throat hoop.

12．Assemble the water inlet pipe of engine with the water outlet port of water tank, and tight the throat hoop.

13．Assemble the compressor on the support, and connect belt of air conditioner, flexible pipes and wiring harness.

★ 1、Force which is amount of 98N on the belt. It is better to pull the belt down 10～12mm.

2、Please assemble with special tools and pay attention to the safety.

14. Assemble the engine hood.

1) Hang engine hood assembly above the engine. Lower it to the rear frame gently. Pay attention to avoid it bumping engine and water tank in the lowering process. And install it to be as rear as possible to avoiding influencing insert draught pin.

kg Engine cover


2) After adjusting it, fix it to the rear frame with six M12×30 bolts.

kgm Tightening torque 78~104 Nm.

★ Notice: When tightening the bolts of the engine hood assembly, the engine hood assembly should be symmetry to the center line of the frame. After adjusting each clearance of the engine hood assembly, tighten the bolts by 2-3 times.


3). Connection of the backing buzzer wiring harness.


4). Connection of the rear light wiring harness.

| |
|---|
| Wiring harness of rear headlight |

15．Assemble the air exhausting pipe on the muffle, and fix it with hoop.

16．Connect air filter with air inlet port of engine with pipe, and tighten it with hoop.

17．Install the cab（Refer to “Assembly of the cab”）

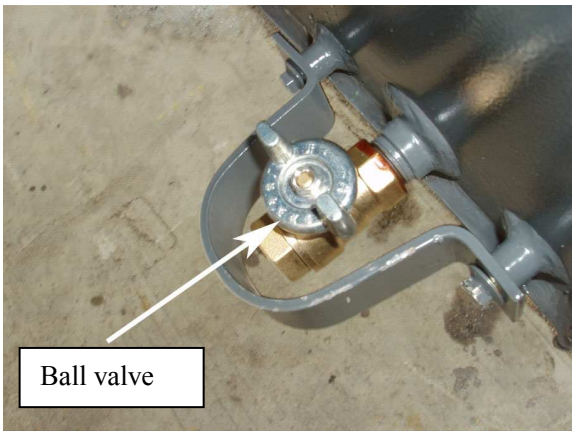
18. Add engine oil into the engine. Add coolant into the water tank. Check whether it is enough. Add it when it is lack.

## 3.2 Disassembly and Assembly of Fuel Oil Tank

Ⅰ Disassembly of fuel oil tank (change oil tank or disassemble it from complete appliance could be referred the following steps)

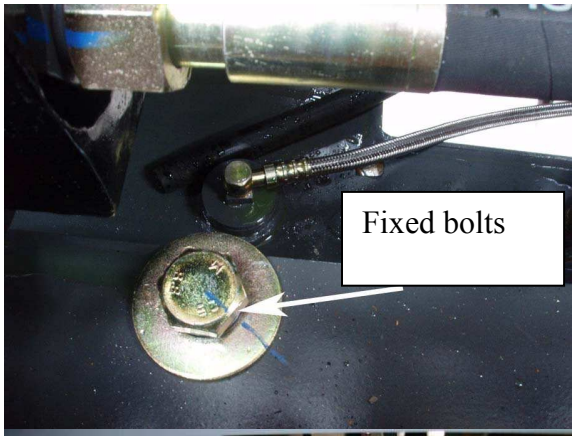
1. Start the complete appliance and drive it to the capacious place. Keep the bucket flat on ground. Pull the stop brake. Fix the front and back wheel with chocks stability.

Remark: Do the operation after the loader to be cooling.



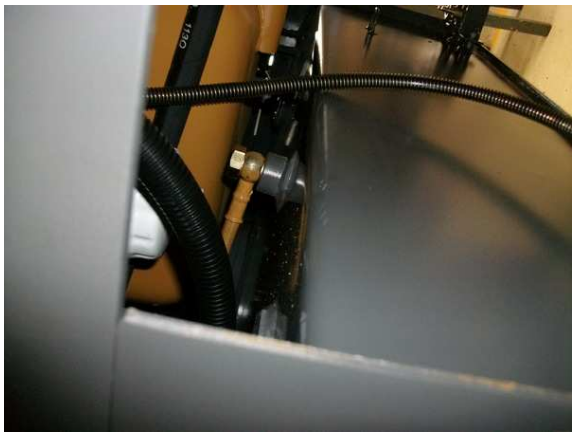

2. Get off the flange on the bottom of tank and drain the oil. Get oil with clean vessel. Cover the vessel to avoid falling sundries.

★Remark: Fuel oil is inflammable. In the process of servicing, the fire is forbidden and the place should be far away from fire. At the same time, prevent the generation of fire, for example: Bumping brings spark.



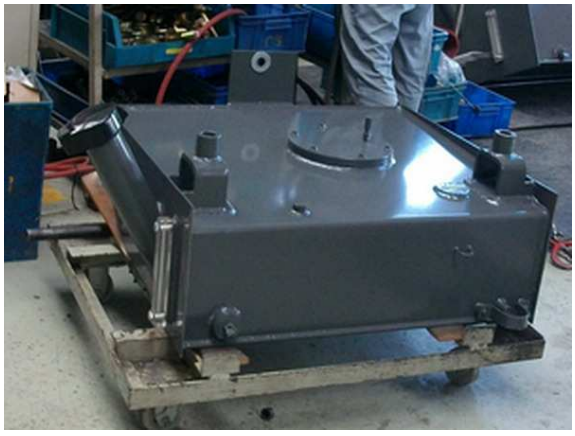

3. Loosen the fixed bolts of the fuel oil tank.

4. Dismount the inlet oil pipes of the fuel oil tank.



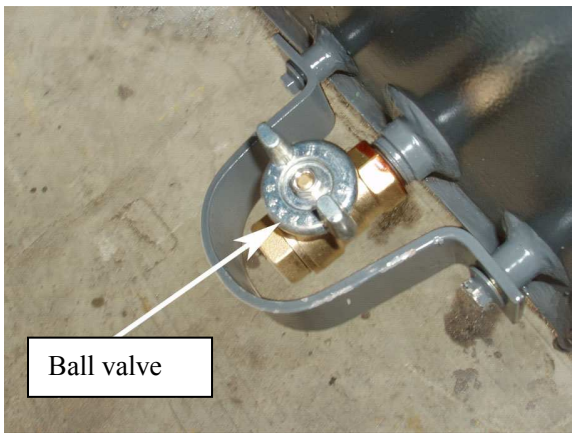
5. Dismount the outlet oil pipes of the fuel oil tank.

6. Unplug the connecting circuit of the oil level sensor and disassemble the oil level sensor.



7. Hoist the fuel oil tank off.

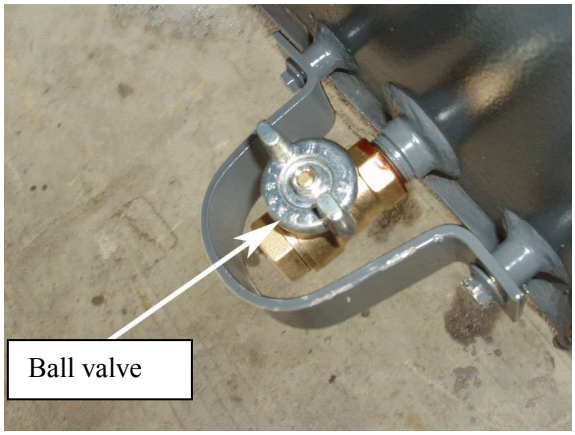
kg Fuel Oil Tank




8. Dismount the ball valve.

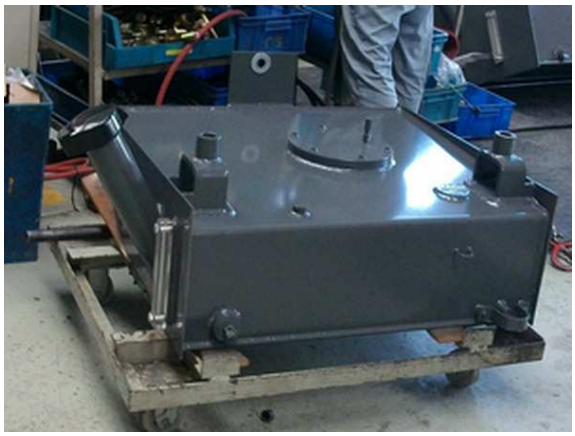
kgm

Ⅱ Assembly of fuel oil tank (change oil tank or assemble it to complete appliance could be referred the following steps)




1. Assembling of the fuel oil tank

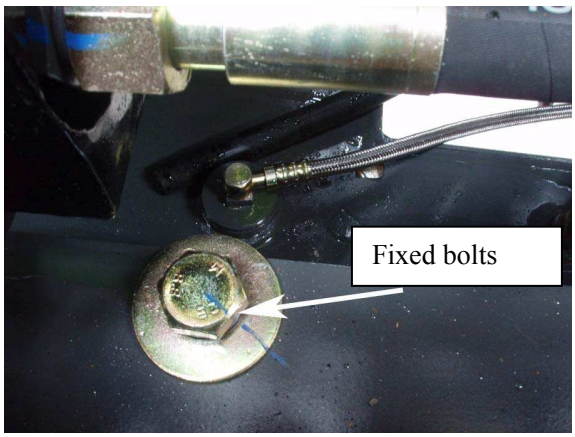
Connect the rubber pipe to the oil tank with hoop. Disassemble the protecting plate of the oil tank. Coat KESAIXIN 1545 oxygen-weary pipe screw sealant on the ball valve and Fix it to the box body. Fix the protecting plate again.



2. Lifting of oil tank.

Hang the oil tank assembly to the bottom of rear frame.

kg Oil tank



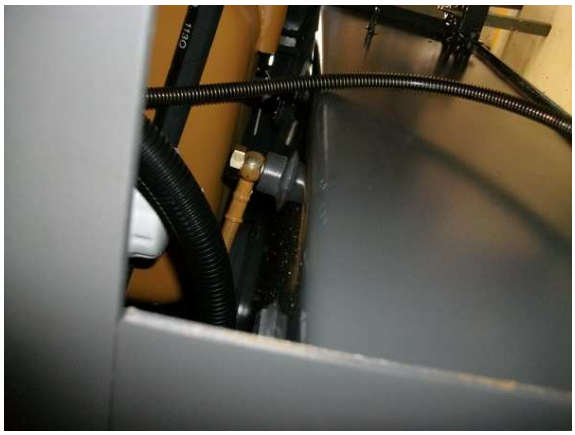

3. Fixation of the fuel oil tank.

Fix the oil tank on the rear frame with bolts and gaskets.

kgm M20: 250-360 Nm

M24: 320-480 Nm

4. Screw down the engine fuel oil inlet pipe on the fuel oil tank with bolts and gaskets.



5. Screw down the engine fuel oil outlet pipe on the fuel oil tank with bolts and gaskets.


6. Fix the oil level sensor on the fuel tank and insert the connection-peg into the interface of the rear frame.

7. Add fuel oil into the oil tank.

Add light diesel oil (GB252-2000) 120L into the oil tank.

Ambient Temperature≥4℃

0#Light Diesel Oil

Ambient Temperature≥-5℃

-10#Light Diesel Oil

Ambient Temperature≥-14℃

-20#Light Diesel Oil

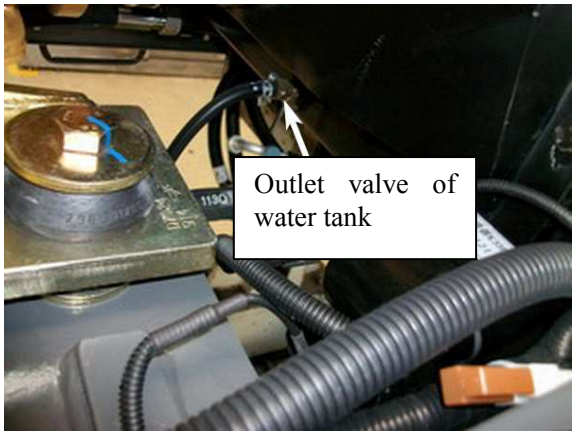
Ambient Temperature≥-29℃

-35#Light Diesel Oil

## 3.3 Disassembly and Assembly of Water and Oil Radiator

Ⅰ：Disassembly of water and oil radiators (change water and oil radiators or disassemble them from complete appliance could be referred the following steps)

1. Start the complete appliance and drive it to the capacious, hard and plane place. Keep the bucket flat on ground. Pull the stop brake. Make sure that all the levers are in the mid position. Pull the parking brake lever and make the engine flameout. Fix the front and back wheel with chocks stability.



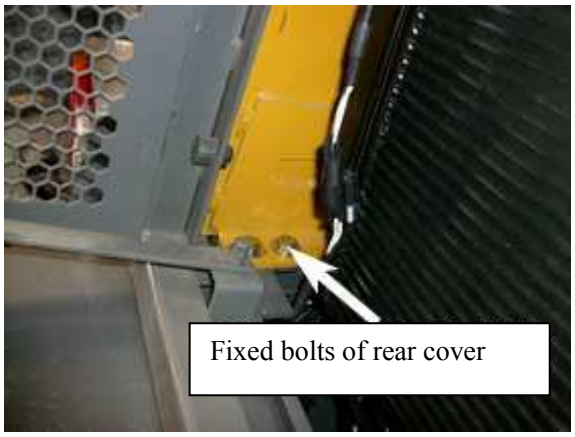

★**Notice**: 1) Do the operation after the loader to be cooling.

2) In the process of disassembly, the joints of each pipeline should be band up to avoid the sundries entering into the pipeline.

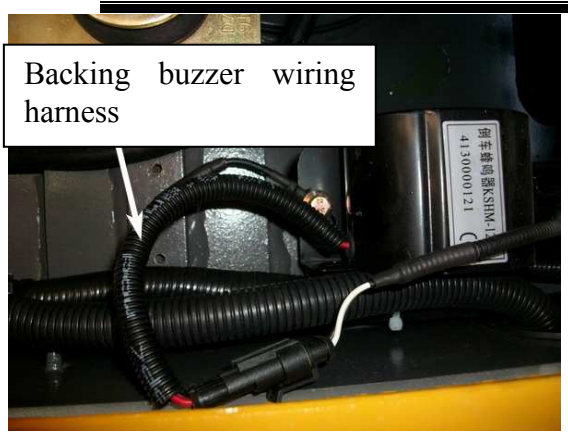
2. Open the draining valve on the bottom of water tank. Drain out the coolant and get them with clean vessel.

3. Remove the engine cover

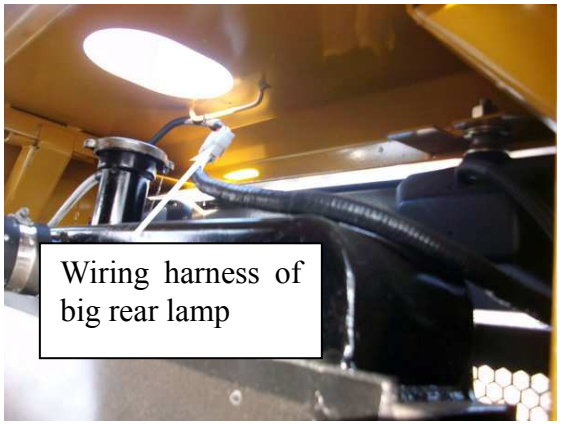
1）Remove the hoop near the air filter, and remove the air filter from pipe.




2）Remove the fixed bolts of engine cover.




3) Disconnect the connecting of backing buzzer wiring harness.

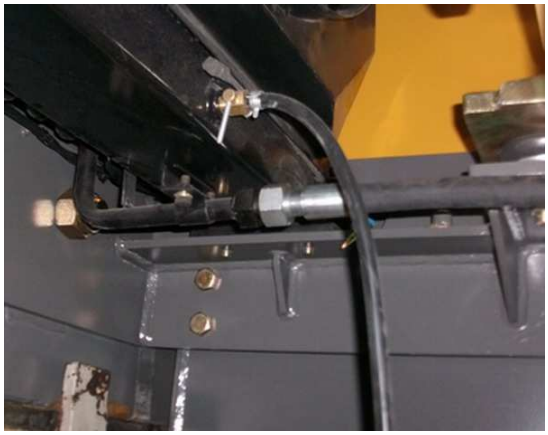



4) Disconnect the connecting of big rear lamp wiring harness.

5) Hang away the engine rear hood assembly.

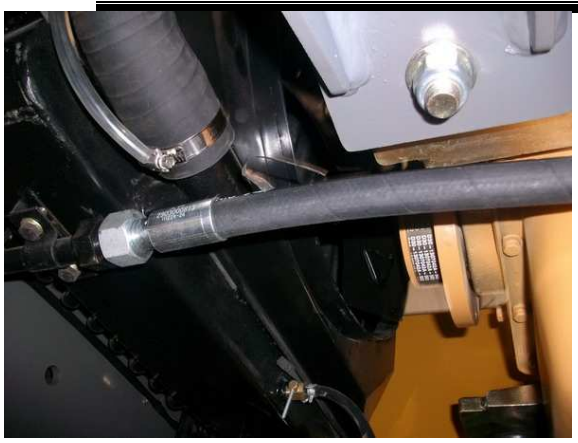
kg Engine hood

★Remark: In the process of hanging, do not bump the handrail on the engine hood. Make the stability of the hood and prevent the accident cause by incline of hanged hood.



4. Disconnect the connections of the oil inlet pipe of transmission oil radiator. Get the transmission oil with clean vessel.

★**Notice**: When disassemble the hydraulic connection, do not loosen the connection bolts or the flange fixed bolts completely to avoid the oil bursting out. Loosen them off a little while the oil overflowing, and then disconnect them completely.



5. Disconnect the connections of the oil outlet pipe of transmission oil radiator. Get the transmission oil with clean vessel.

★**Notice**: When disassemble the hydraulic connection, do not loosen the connection bolts or the flange fixed bolts completely to avoid the oil bursting out. loosen them off a little while the oil overflowing, and then disconnect them completely.

6. Loosen the tightening hoop of the connection water pipe of the water tank and the engine. Disconnect it.

7. Loosen the fixed pipe clamp of engine's water inlet pipe on the water tank, and remove the pipe clamp.

8. Loosen the tightening clamp hoop of water returning pipe, and disconnect the connecting.

9.The disassembly of condenser(refer to "disassembly of air conditioner")

**Notice**: Loosen the fixed bolts of condenser on the condition that do not remove the condenser pipes, place the condenser on the safe area.

10. Lift the water tank with traveling crane. loosen of the fixing bolts of the water tank.

11. Lift the water tank off with traveling crane.

★**Notice:** When hanging down the water tank, move the tank to back certain distance first, to avoid the wind guide cover hit the engine fan blade.

**Ⅱ Assembly of water tank and oil radiator (change water tank and oil radiator or assemble them to complete appliance could be referred to the following steps)**

1. Lift the radiator on the rear frame with vehicle, place the washer on the relevant position, and fix it on the frame with bolt.

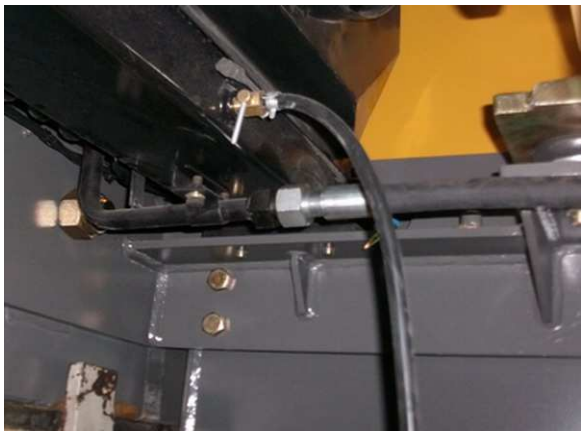
**Notice**：a、move the radiator back certain distance in case the wind-baffle cover of water tank touches the fan vane of engine when lifting and assembling the radiator.

b、Do not tighten the bolts first. Adjust the position. Make sure that the distance between engine fan and water tank wind guide cover is the same as 1/3～1/2 of the fan thickness. Adjust the radial distance of the wind guide cover and the fan to be equal and tighten the bolts.

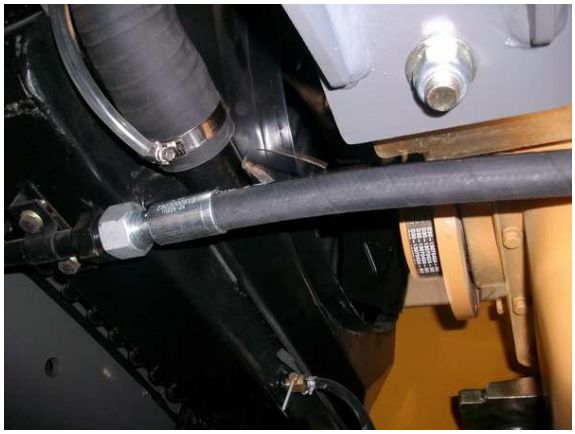
2. Install the water returning pipe of engine on the water inlet port of radiator and tight it with throat hoop.

3. Install the water inlet pipe of engine on the water outlet port of radiator and tight it with throat hoop.

4. Fix the water inlet pipe of engine on the radiator with pipe clamp.



5. Connect oil inlet pipe of transmission oil radiator with radiator.



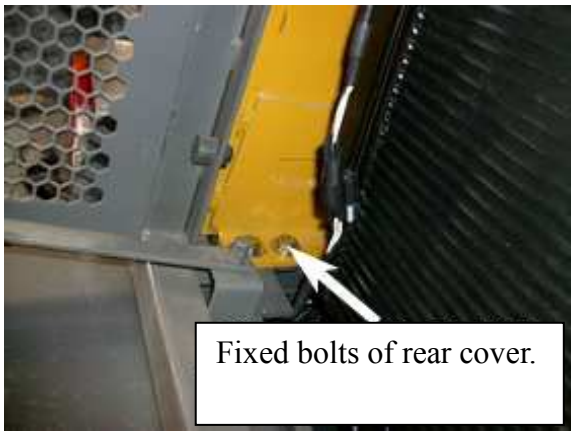
6. Connect oil returning pipe of transmission oil radiator with radiator.

7. Assemble the engine cover by lifting

kg The rear cover of engine cover.

★ Notice： Do not touch the handrail on the engine cover and make sure the stability of rear cover when lifting and assembling in case of occupying the accident.

1）Connect air filter pipe with air inlet port of engine, and tight it with throat hoop.




2）Tight the fixed bolts of engine cover.


3）Connect wiring harness of backing buzzer wiring harness.


4）Connect wiring harness of big rear lamp wiring harness.

8. Add coolant into the water tank. Check the hydraulic oil level. Add oil if it is lack.

1) Add glycol coolant (31±2L), which is use in the temperature -35℃ into the water tank. Add the coolant still the level reaches the lower edge of the inside of the water port.

2) Start the engine and let it work in lower speed for several minutes. Turn it out and check the level of the hydraulic oil tank. While the level does not rise, check whether the level is always between the ±2 ranges of middle graduation. If the level is lower than the -2 graduation, that to say the oil pressure is in deficiency, add the corresponding hydraulic oil please.

# CHAPTER IV DISASSEMBLY AND ASSEMBLY OF TRANSMISSION SYSTEM

## 4.1. Disassembly and Assembly of the torque converter

一：Disassembly of torque converter assembly（These following steps could be referred to changing torque converter assembly, examining and repairing the interior of torque converter assembly and disassembling the torque converter assembly from complete appliance.）

Drain oil:

Start the complete appliance and drive it to the capacious place. Raise the boom to the highest position. Tilt the bucket backward to the extreme position, and then close the engine.

Pull the bucket operation handle forward (or pull the operation handle by single handle to right). Make the bucket turn forward at the effect of self-weight. So drain the oil in the rotating oil cylinder.

When the bucket rotates to the position, pull the boom lever forward (or operate the handle by single handle). Make the boom turn forward at the effect of self-weight. So drain the oil in the boom oil cylinder. Keep the bucket flat on ground. Then operate the boom lever from the lower position to raise position 5~6 times. Operate the bucket lever from the forward tilt to rear tilt 5~6 times.

Fix the loader wheels with wood chocks stability.

Notice: 1) Disassemble it after the torque torque converter becomes cool.

2) In the process of disassembly, the joints of each pipeline should be band up to avoid the sundries entering into the pipeline.

3) Get the oil with clean vessel and cover the vessel to avoid sundries falling into it.

4) Pay attention to the oil splashing.

1. Disassemble the cab.

As shown in “Disassembly of cab assembly”.

2. Disconnect the pipes, main transmission shaft and wiring harness with the torque converter.

1）Disconnect the pipe connecting gear box pump with transmission filter(on the side of gear box pump）.


2）Disconnect the pipe connecting the transmission filter with torque converter.


3）Disconnect the oil absorber pipes connecting the hydraulic oil tank with the double-connecting pump.

4）Disconnect the pipe connecting the torque converter with the radiator.

5）Disconnect the pipe connecting the torque converter with gear valve.

6）Disconnect the oil returning pipe connecting the torque converter with gear box box.

7 ） Disconnect the pipe connecting the double-connecting pump with prior valve.

8）Disconnect the pipe connecting the gear valve with the gear box box.（oil absorber pipe of torque converter）.

9）Disconnect the oil inlet and outlet pipes of priority pump.

10）Disconnect the pressure sensor wiring harness of gear box box.

11）Disconnect the oil temperature sensor wiring harness of torque converter.

12）Remove the fixed bolt of main transmission shaft, and disconnect the connecting with torque converter.

3. Loosen the fixed bolt connecting the torque converter with engine, but do not remove it for the moment.

4. Loosen the fixed bolts of watch window cover of torque converter, and remove them.

5. Remove the nuts connecting the elastic plate of torque converter with engine flywheel through the watch hole.

6. Lift the hook of the torque converter with vehicle, lift it up slowly, then remove the bolts connecting with engine flywheel, operate the torque converter with hand slowly, and lift down the torque converter assembly.

7. Disassembly of torque converter other accessory.

1）Remove the fixed nut of double-connecting pump.

2）Remove the stud-bolt。

3）Remove oil temperature sensor of torque converter.

4) Remove the pressure sensor of the gear box.

## II Assembly of torque converter assembly

（These following steps could be referred to changing torque converter assembly, examining and repairing the interior of torque converter assembly and disassembling the torque converter assembly from complete appliance.）

Preparation: 1) Clean the corresponding parts

2) The process of the sealant coating: (1) Coat the sealant on the outside screw about one circle. The width of it is about 3~5 circles screw. The sealant should be full of the teeth of screw. The beginning circle could not be coated sealant. Coat it while you will assemble. After the assembling, there should be a whole circle of sealant. (2) The coated part should be tightened with hand wrench but not impact wrench.

1.Assembly of the torque converter other accessory.

1）Assemble the stud-bolt and place the paper cushion.

★a. Clean the paper cushion before assembly.

b. Check carefully whether the sealing cushion is smooth, or has pimple, fissure and bubble, or exist the impurity and the defect effecting the sealing cushion or exist the quality defects like toughness is bad and it is broken off easily.

2）Assemble the double-connecting pump on the torque converter, and fix the nuts.

★Clean the paper cushion before assembly.

kgm M10：45～59 N.m

3）Assemble the oil temperature of torque converter twined the pipe on the torque converter.

4) Smear sealant on the pressure sensor of gear box and assemble the sensor on the torque converter.

KESAIXIN 1545 oxygen-weary pipe screw sealant

2.Lift the hook of the torque converter with vehicle on the rear frame, operate the torque converter with hand slowly, then connect the bolts connecting the torque converter assembly with engine.

★ Tight bolts by the principle of sympeda, when connect the flexible plate, do not allow sundry insets the torque converter.

3. Assemble the nuts connecting the elastic plate of torque converter with engine flywheel through the watch hole.

4. Install the watch window cover of the torque converter, and tight the bolt.

5. Connect the pipes, main transmission shaft and wiring harness with the torque converter.

1）Connect the pipe connecting gear box pump with transmission filter(on the side of gear box pump）.


2）Connect the pipe connecting the transmission filter with torque converter.


3）Connect the oil absorber pipes connecting the hydraulic oil tank with the double-connecting pump.

4）Connect the pipe connecting the torque converter with the radiator.

5）Connect the pipe connecting the torque converter with gear valve.

6）Connect the oil returning pipe connecting the torque converter with gear box box.

7）Connect the pipe connecting the double-connecting pump with prior valve.

8）Connect the pipe connecting the gear box pump with the gear box.（oil absorber pipe of torque converter）。

9）Connect the oil inlet and outlet pipes of priority pump.

10）Connect the pressure sensor wiring harness of gear box box.

11）Connect the oil temperature sensor wiring harness of torque converter.

12）Assemble the fixed bolt of main transmission shaft.

## 4.2. Disassembly and Assembly of the gear box

一：（These following steps could be referred to changing gear box assembly, examining and repairing the interior of gear box assembly and disassembling the gear box assembly from complete appliance.）

Drain oil:

Start the complete appliance and drive it to the capacious place. Raise the boom to the highest position. Tilt the bucket backward to the extreme position, and then close the engine.

Pull the bucket operation handle forward (or pull the operation handle by single handle to right). Make the bucket turn forward at the effect of self-weight. So drain the oil in the rotating oil cylinder.

When the bucket rotates to the position, pull the boom lever forward (or operate the handle by single handle). Make the boom turn forward at the effect of self-weight. So drain the oil in the boom oil cylinder. Keep the bucket flat on ground. Then operate the boom lever from the lower position to raise position 5~6 times. Operate the bucket lever from the forward tilt to rear tilt 5~6 times.

Fix the loader wheels with wood chocks stability.

Notice: 1) Disassemble it after the torque torque converter becomes cool.

2) In the process of disassembly, the joints of each pipeline should be band up to avoid the sundries entering into the pipeline.

3) Remove oil spilling plug screw of gear box，and catch the oil with clear container, cover it well in case the sundries entering into the pipeline..

4) Pay attention to the oil splashing.

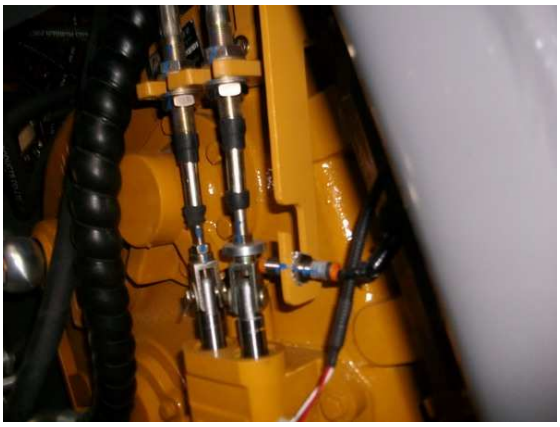
1. Disassemble the cab.

As shown in “Disassembly of cab assembly”.

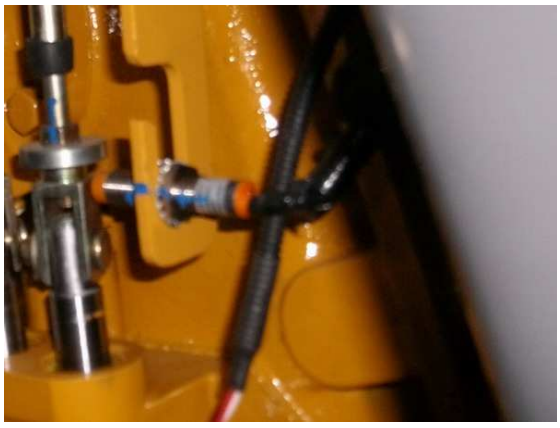
2. Disconnect the connecting main transmission shaft with the gear box.

★ First, flatten the stopping gasket, then loosen the connecting bolts.

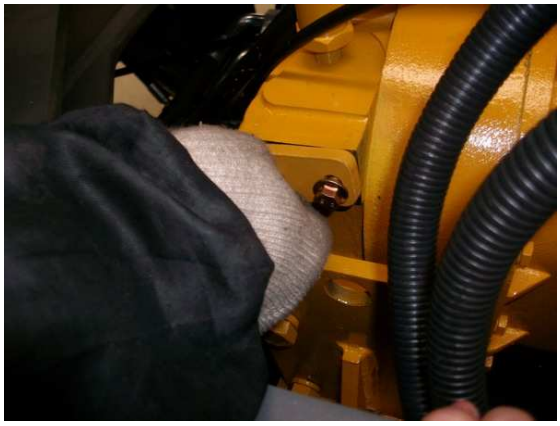
3. Disconnect the connecting wiring harness of the septum-type pressure switch.



4. Disconnect the connecting flexible shaft with the gear box.



5. Remove the proximity switch from the support.



6. Remove the fixed support.

7. Disconnect the connecting pipe which is between the torque converter and gear valve with gear box.

8. Disconnect the connecting pipe which is between the radiator and gear box with gear box.

9. Disconnect the connecting oil returning pipe which is between the torque converter and gear box with gear box.

10. Disconnect the adding oil pipe assembly of gear box.

11. Disconnect the connecting pipe which is between the torque converter and gear box with gear box.

12. Disconnect the connecting the rear transmission shaft with gear box.

13. Disconnect the connecting the main transmission shaft with gear box.

14. Loosen the fixed bolts of gear box assembly.

15. Lift the gear box assembly down.

kg gear box assembly

16. Disassembly of the gear box other accessory.

1） Remove the oil returning pipe joint from torque converter to gear box.

2） Remove the septum-type pressure switch.

二、（These following steps could be referred to changing gear box assembly, examining and repairing the interior of gear box assembly and disassembling the gear box assembly from complete appliance.）

1. Assembly of the gear box other accessory

1） Assemble the oil returning joint from torque converter to gear box.

2） Assemble the septum-type pressure switch

1545 screw sealant

2. Lift the gear box assembly on the rear frame.


gear box assembly

3. Fix the gear box assembly with fixed bolts, and tight it deeply.

4. Connect the main transmission shaft and inlet shaft of gear box with bolts and nuts, and tight them.


Tightening torque：90±15N.m

5. Connect the rear transmission shaft and rear outlet flange plate of gear box with bolts and nuts, and tight them.


Tightening torque:90±15N.m

6. Connect the pipe from torque converter to gear box with the connector of gear box, and tight it with throat hoop

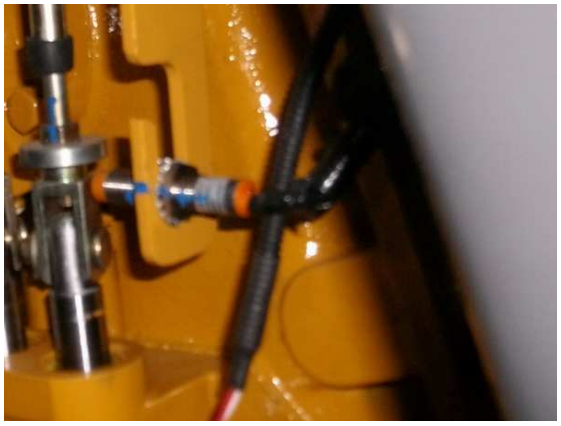
7. Fix the adding oil pipe assembly of gear box on the gear box with bolts and flange plates.

8. Connect the oil returning pipe from torque converter to gear box with gear box.

9. Connect the pipe from torque converter to gear valve with gear box.

10. Connect the pipe from radiator to gear box with gear box.

11. Assemble the fixed support of flexible shaft on the gear box.



12. Install the proximity switch on the support.

★ Pay attention to the direction installing the proximity switch.

13. Assemble the flexible shaft on the support, and connect with connecting bar of gear valve.

★ Shafting the gears should be flexible and no the phenomenon of loosing and slipping after assembly.

14. Connect the connecting wiring harness of septum-type pressure switch.

15. Connect the main transmission shaft with gear box with bolts and gaskets.

★Perk the stopping gasket in case the bolt loosing.

16. Assembly of the cab（refer to“ Assembly of the cab”）

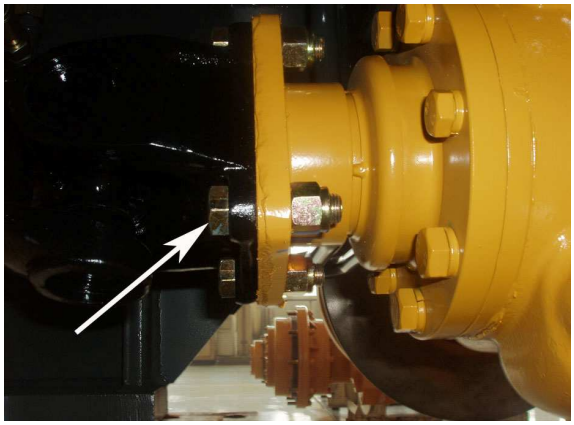
# 4.3 Disassembly and Assembly of Transmission Shaft.

## I Disassembly of Transmission Shaft

In the chapter, how to change the transmission shaft will be shown. The steps are shown as follow:

Preparing work:

Low the bucket on the ground before disassemble transmission shaft. Push the hand brake to the breaking location.



Disassemble the front and middle transmission shafts.

1.1 Loosen the connection bolts and locking nuts of front transmission shaft and the front axle.

★Remark: Do not get off the bolts when loosen them and do that after the disassembly is complete.

1.2 Get off the bolts and locking nuts of the front transmission shaft and the main transmission shaft.

1.3 Remove the fixed bolts on the fixed seat of front transmission shaft, remove the fixed seat and front transmission shaft.

1.4 Level the locking washer. Loosen the connection bolts of the main transmission shaft and the export flange on the front of the gear box. Remove the main transmission shaft.

1.5 Loosen the connection bolts of the main transmission shaft and the import flange on the front of the gear box. Remove the main transmission shaft. Do not remove the fixed bolt for the time being.

1.6 Get off the connecting bolts of the main transmission shaft and torque converter. Get off the main transmission shaft.

2. Disassemble the rear transmission shaft.

2.1 loosen the connection bolts and nuts of the rear transmission shaft and the rear axle.

★**Notice**: When disassemble the bolts, loosen them first and get them off after both sides of it have been disassembled.

2.2 loosen the connection bolts and locking washers of the rear transmission shaft and the export flange on the rear of the gear box. Remove the rear transmission shaft.

## Ⅱ Assembly of the transmission shaft

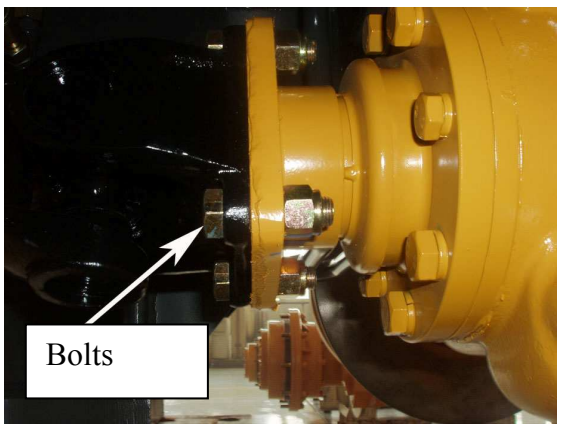
1. Assemble the front and main transmission shaft.

1.1Fix the front transmission shaft on the front frame with bolts and fixed base.

★Justify the balance locating arrowhead. The oil port of the cross shaft should be at the side with the cross oil port of the sleeve after assembling. Add lubricant.

1.2 Connect one end of the front transmission shaft with the front axel with and nuts.

kgm Tightening torque: 90±15 Nm




1.3Connect the other end of the front transmission shaft with the main transmission shaft with bolts and nuts.

kgm Tightening torque: 90±15 Nm

1.4Connect the other end of main transmission shaft with

the front export flange of the gear box with bolts and locking washers. Cock the part of the locking washer and make it cling to the bolt face.

kgm Tightening torque: 90±15 Nm

1.5Connect the main transmission shaft with the front import flange of the gear box with bolts and locking washers.

kgm Tightening torque: 90±15 Nm

1.6Connect the main transmission shaft with the export flange of torque converter with bolts and locking washers.

kgm Tightening torque: 90±15 Nm

2. Assembling of rear transmission shaft.

2.1 Connect one end of the rear transmission shaft with the rear axle by bolts and washers.

★Justify the balance locating arrowhead. The oil port of the cross shaft should be at the side with the cross oil port of the sleeve after assembling. Add lubricant.

kgm Tightening torque: 90±15 Nm

2.2 Connect one end of rear transmission shaft with the

rear export flange of the gear box with bolts and nuts.


Tightening torque: 90±15 Nm

# 4.4 Disassembly and Assembly of Assistant Frame

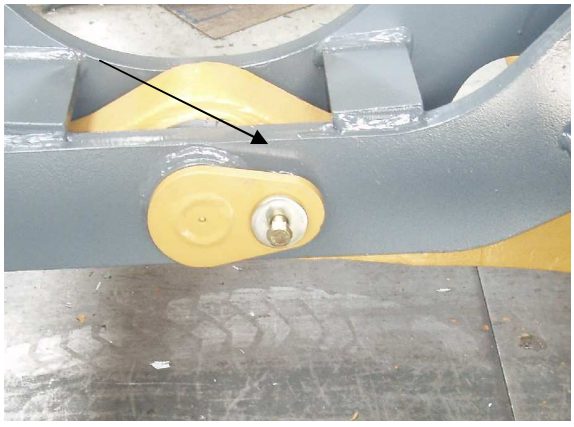
## I Disassembly of Assistant Frame

In the chapter, how to change assistant frame will be shown. The steps are shown as follow:

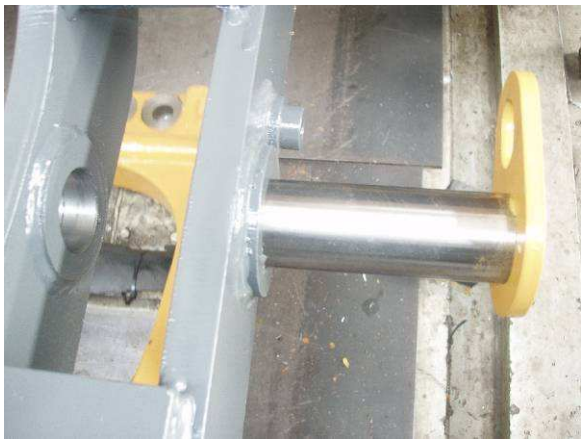
Raise the bucket a certain distance, and fix the rear wheel stability by the wood chock to avoid the wheel rotating.

1. Get off the connection bolts and nuts of assistant frame and rear axle.

2. Loosen the oil bolts and gaskets fixed on the adding oil hose of assistance frame pin shaft.



3. Loosen the fixed bolts and gaskets of pin shaft.

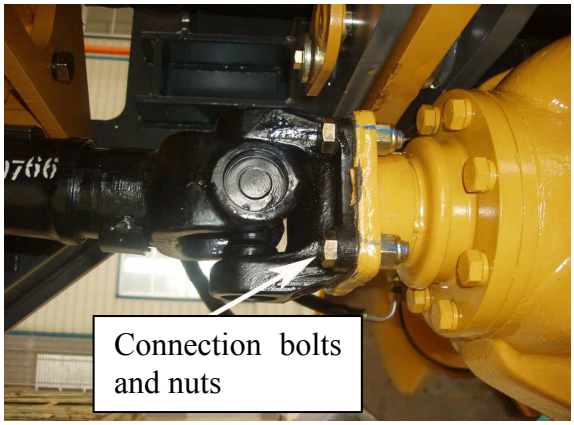


4. Knock the pin shaft with tools such as copper stick. Get off the pin shaft and gasket.

★ Hold the pin shaft while it is almost knocked down to avoid accident caused by falling down.

5. Get off the rear axle brake oil hose of the T-joint.

★Remark: Get the brake fluid with a vessel below. Protect the disassembled joint.




6. Loosen the connection bolts and nuts of rear transmission shaft and rear axle.

7. Hang up the frame and get it off. Put support frame under the bottom of counterweight. The support should have wood underlay with rubber coating.

★Remark: The coat of the support should be rubber to protect the paint of the counterweight surface.

kg Frame

8. Hang the assistant frame to the dolly and then push away the dolly.

kg Assistant Frame

## II Assembly of the Assistant Frame

1. Hang the installed assistant frame to the dolly and then push the dolly under the rear frame.

★ When Fix the sleeve of the assistant frame, keeps the intersection of the X shape oil groove in the sleeve and the wind oil groove facing down.

2. Align the assistant frame to the corresponding holes of the rear frame. Connect them with pin shaft and adjusting washers. Fix the pin shaft of assistant frame with bolts and washers.

kgm Tightening torque: 90±20 Nm

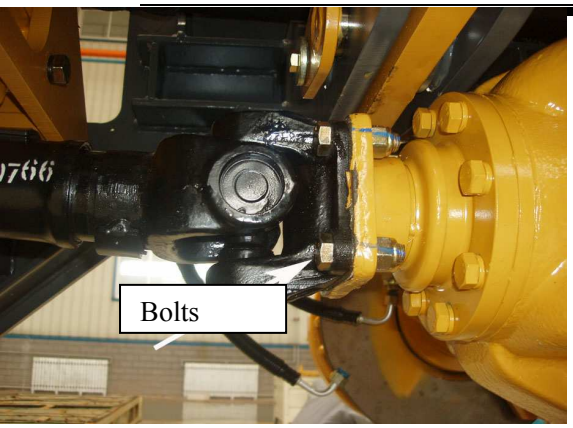
(1) The three kinds of adjusting washers are selection parts. When the assistant frame relies to one side of the rear frame, keep the clearance of the other side be no larger than 0.5 by different adjusting washers.

(2) After assembling, push the assistant frame with hands and the rotating should be agility but not difficult.

3. Install the oil pipeline on the assistant frame pin shaft with oil bolts and gaskets.

4. Hang up the rear frame, and get off the support frame. Lower the rear frame still the assistant frame installing holes facing the rear frame installing holes. Install the bolts and nuts of assistant frame and rear axle.

kgm Tightening torque: 420±40 Nm




5. Install the rear transmission shaft to the rear frame.

kgm Tightening torque: 90±15 Nm

6. Install the rear frame brake oil hose to the T-joint.

Get off the hanging rope and holding wood block.

7. Add brake liquid and drain up the air of the brake.

Add full of HZY 3 brake liquid in brake oil cup (GB/T12981-2003). Start the engine. After the barometer getting the appointed pressure, drain the air up in the booster pump. The people out of the loader loosen the deflating mouth on the brake clamp. The people in the loader tread the brake valve to drain the air still the complete liquid without air bladder drains from the mouth. After that, tighten the deflating mouth. In the deflating process, add brake oil into oil cup in time. At last, add oil to the middle-higher level of the oil cup and install oil cup cover. Pay attention to that the deflating mouth should be tightened by torque wrench.

## 4.5 Disassembly and Assembly of Front Axle

In the chapter, how to change front and rear axles will be shown. The steps are shown as follow:

### I Disassembly of Front Axle

1. Start the complete appliance. Operate the handle to raise the boom. Then, lower the bucket on the wood block slowly. (It is better to lay wood block under each tooth)

Operate the handle and lift the front wheel away the ground.

Put support frame under the front frame to support the front frame. Let the engine to be flameout.

2. Get off the front frame cover.

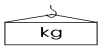
3. Get off the front axle brake oil hose of the T-joint.

★Pay attention to get the brake liquid with vessel under the axle. Protect the disassembled joint.

4. Loosen the connection bolts of front transmission and front axle.

5. Get off the two wheels of the front axle. As shown in “Disassembly of front wheel”.

6. Hang the axle end hub bolts with hanging tool.




Front Axle

7. Loosen the bolts and nuts of axle and frame.

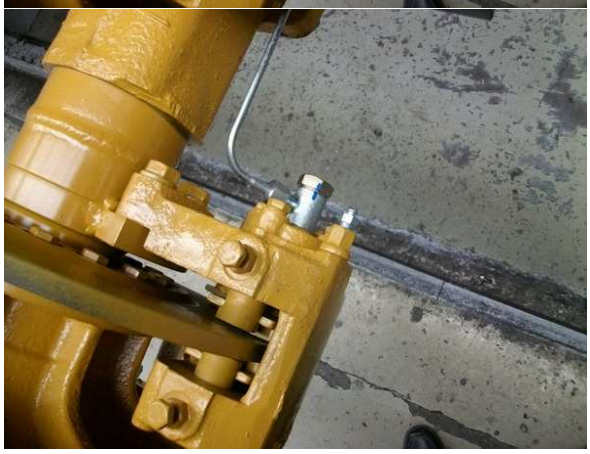
8. Lower the hanging rope slowly still the axle achieves the dolly. Get off hanging rope and push out the dolly.

9. Get off the deflating mouth of the axle.

Remark: Pay attention to get the brake liquid with vessel under the axle. Protect the disassembled joint.

10. Get off the brake oil hose of the axle brake clamp.

Remark: Pay attention to get the brake liquid with vessel under the axle. Protect the disassembled joint.



11. Disconnect the connecting the brake oil pipe with tee joint, and remove the brake oil pipe.

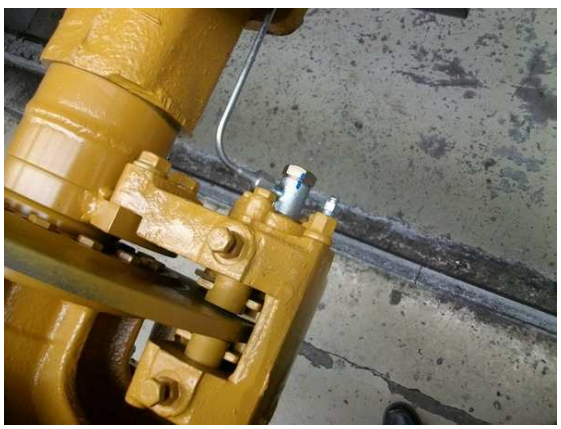
12. Loosen the fixed bolts of tee joint, and remove the tee joint.

## II Assembly of Front Axle

1. Fix the tee joint on the fixing block of front axle with bolts

★Notice: Pay attention to the fitting direction of the tee joint, the end connects the oil pipe of intensifier pump should face forward.

2. Screw the brake oil pipe of front axle on the port of tee joint and do not tighten them. Then Fix the brake oil pipe of front axle on the left and right axle brake clamp with pipe joint and washers. Tighten the brake oil pipe of front axle on one end of the tee joint.



3. Fix the brake oil pipe on the left and right axle brake clamp with bolts and washers.

4. Install the deflating mouth on the brake clamp. Tighten two lower deflating mouths. And the higher two should not be tightened but make sure they won't fall down.

5. Hang up the front axle with hanging tool. Adjust the left and right position of the axle still installing holes on the axle and frame facing together. Tighten the bolts and nuts by hand.

kg Diving axle assembly

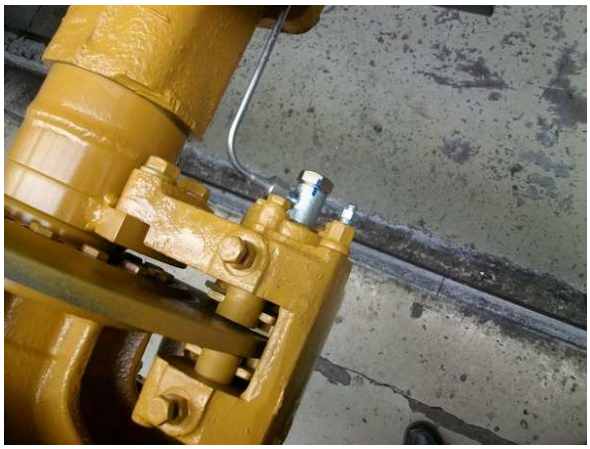
5. Tighten the connection bolts and nuts of axle and frame by tools.

6. Install the front transmission shaft on the front axle.

7. Install the front axle brake oil hose on the axle T-joint.

8. Install the front frame cover plate.

9. Install the front wheels. As shown in “Assembling of front wheels”.



10. Add brake liquid and drain up the air of the brake.

Add full of HZY 3 brake liquid in brake oil cup (GB/T12981-2003). Start the engine. After the barometer getting the appointed pressure, drain the air up in the booster pump. The people out of the loader loosen the deflating mouth on the brake clamp. The people in the loader tread the brake valve to drain the air still the complete liquid without air bladder drains from the mouth. After that, tighten the deflating mouth. In the

deflating process, add brake oil into oil cup in time. At last, add oil to the middle-higher level of the oil cup and install oil cup cover. Pay attention to that the deflating mouth should be tightened by torque wrench.

# 4.6 Disassembly and Assembly of Rear Axle

## I Disassembly of Rear Axle

In the chapter, how to change front and rear axles will be shown. The steps are shown as follow:

1. Get off the two wheels of the rear axle.

★As shown in “Disassembly of rear wheel”. The support method is the same as the one of front wheels.

2. Get off the front axle brake oil hose of the T-joint.

★Pay attention to get the brake liquid with vessel under the axle. Protect the disassembled joint.

3. Loosen the connection bolts and nuts of rear transmission and rear axle.

4. Hang the rear axle end hub bolts with hanging tool.

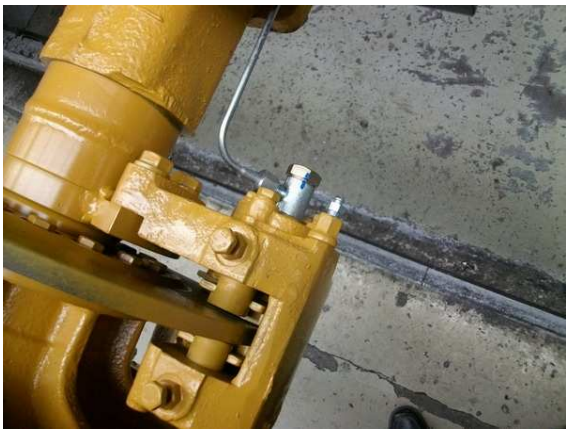
5. Loosen the bolts and nuts of rear axle and assistant frame.

6. Lower the hanging rope slowly still the axle achieves the dolly. Get off hanging rope and push out the dolly.

kg

Driving axle assembly

7. Get off the deflating mouth of the axle.



★ Remark: Pay attention to get the brake liquid with vessel under the axle. Protect the disassembled joint.

8. Get off the brake oil hose of the axle brake clamp.

★ Remark: Pay attention to get the brake liquid with vessel under the axle. Protect the disassembled joint.

9. Disconnect the connecting the brake oil pipe with tee joint, and remove the brake oil pipe.

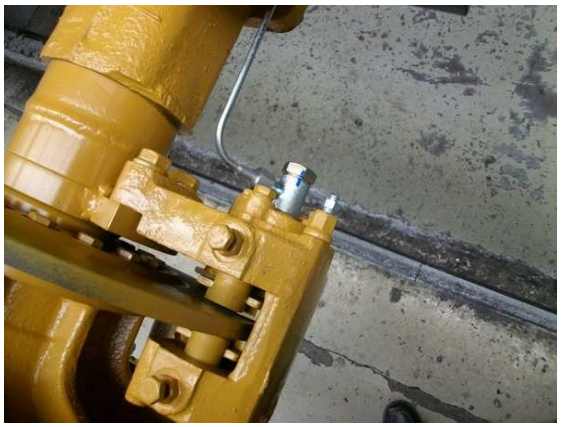
10. Loosen the fixed bolts of tee joint, and remove the tee joint.

## II Assembly of Rear Axle

1. Fix the tee joint on the fixing block of rear axle with bolts

★Notice: Pay attention to the fitting direction of the tee joint, the end connects the oil pipe of intensifier pump should face forward.

2. Screw the brake oil pipe of rear axle on the port of tee joint and do not tighten them. Then Fix the brake oil pipe of rear axle on the left and right axle brake clamp with pipe joint and washers. Tighten the brake oil pipe of rear axle on one end of the tee joint.



3. Fix the brake oil pipe on the left and right axle brake clamp with bolts and washers.

4. Install the deflating mouth on the brake clamp. Tighten two lower deflating mouths. And the higher two should not be tightened but make sure they won't fall down.

3. Put the assembled axle on the dolly and put the dolly under the frame.

kg Driving axle assembly

4. Hang up the rear axle with hanging tool. Adjust the left and right position of the axle still installing holes on the axle and frame facing together. Tighten the bolts and nuts by hands.

kg Diving axle assembly

5. Install the bolts connecting the rear transmission shaft with the rear axle.

6. Install the rear axle brake oil hose on the axle T-joint.

7. Install the rear wheels. As shown in “Assembly of rear wheels”.

8. Add brake liquid and drain up the air of the brake.

Add full of HZY 3 brake liquid in brake oil cup (GB/T12981-2003). Start the engine. After the barometer getting the appointed pressure, drain the air up in the booster pump. The people out of the loader loosen the deflating mouth on the brake clamp. The people in the loader tread the brake valve to drain the air still the complete liquid without air bladder drains from the mouth. After that, tighten the deflating mouth. In the deflating process, add brake oil into oil cup in time. At

last, add oil to the middle-higher level of the oil cup and install oil cup cover. Pay attention to that the deflating mouth should be tightened by torque wrench.

### 4.6.1 Disassembly and Assembly of Brake Clamp Assembly

**I Disassembly of Brake Clamp Assembly**

1. Get off the deflating mouth.


2. Get off the deflating mouth seat.


3. Get off the seal cover.


4. Get off the upper tank's piston.


5. Get off the dustproof cover.


6. Method NO.1：Get off the piston of down cylinder with air valve.

Method NO.1：If no the air valve, get off the piston of down cylinder with plank or washer lightly.


7. Get off the rectangle ring.

**II Assembly of Brake Clamp Assembly**


1. Install the rectangle ring.


2. Install the dustproof cover.

3. Smear the brake liquid on the place of rectangle ring and dustproof cover.


4. Install the piston.

5. Install O-shape rings on the seal cover.



6. Install the seal cover with O-shape rings.

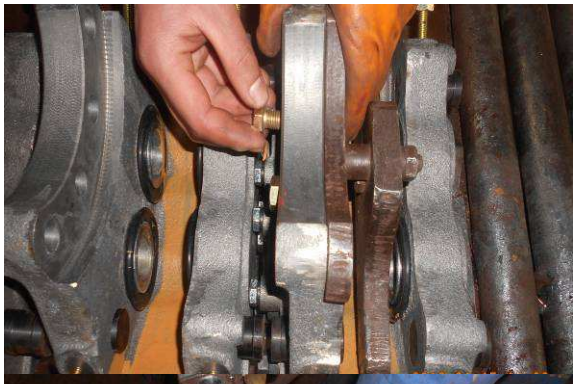
7. Tight the bolts with pneumatic spanner.

kgm Tightening torque：50N • m


8. Assemble the deflating mouth seat and sealing up washer.


9. Assemble the deflating mouth.


10. Assemble the bolt of pin shaft.



11. Assemble the fixture locating the pin shaft.


12. Assemble the pin shaft and tightening bolt.

13. Loosen the tightening bolts of fixture, and remove the fixture.

## 4.7 Disassembly and Assembly of Wheels

In the chapter, how to change wheels will be shown. The steps are shown as follow:

**I Disassembly of Front Wheels**

Start the completer appliance and stop it to the proper position.

1. Loosen the hub nuts by impact wrench or socket wrench.

2. Put wood block under the bucket. Operate the boom lever to let it turn outside and support the front wheels. Leave the front wheels away the ground a little.

Hold the rear wheels by wood chock to avoid reversing.

3. Put support frame under the front frame to support the front frame. Let the engine to be flameout.

4. Hang the wheels and rock it around. Move wheel assembly out slowly.

kg Wheel assembly

**II Disassembly of Rear Wheels**

Start the completer appliance and stop it to the proper position. Operate the boom lever to let it turn outside and support the front wheels. Leave the front wheels away the ground a little.

★ Make sure that while the rear wheel away from the ground, the bucket won't touch the ground. And let the engine misfire.

1. Hang the rear frame by the hanging rope tied on the counterweight draft key with crane (or other loader). Leave the rear wheels away the ground a little and put support frame under the counterweight. Lower the hanging tool down and make sure the rear frame fall on the wood pat coating rubber. The rear wheels could leave the ground a little.

★ Remark: The support should have the wood pad coating rubber bearing. The outmost shell is rubber bearing and to avoid scratching the paint on the counterweight.

2. Put suitable wood block between the axle inside and frame of the end where the wheel need disassemble. Avoiding one end unwrapping, which make it impossible to install new wheel assembly, cause by the different weights of the two ends, when disassemble the wheels assembly.

3. Loosen the hub nuts by impact wrench or socket wrench.

4. Hang the wheels and rock it around. Move wheel assembly out slowly.

Wheel assembly

**Ⅲ Assembly of the wheels**

1. Hang the wheel and rock it around to make the installing face on the hub touching the installing face on the axle and closing up to the installing position of the axle. Make the hub bolts appearing from the hub face.

1) The wheels have the difference of the front and the rear. The wheel marked “F” is front wheel.

2) The ball end of the hub nut faces to the inside.

Wheel assembly

2. Tighten the hub nuts by hands previously.

3. Tighten the hub bolts by impact wrench or socket wrench. Tighten the hub nuts by diagonal principle.

4. Get off the hanging and supporting tools

4.1 Get off the hanging rope. Start the complete appliance and operate the handle. Raise the front wheel support parts a little and get out the support frame. Operate the handle to lower the front wheel to the ground and then let the engine misfire.

4.2 Hang up the rear frame and put out the support frame. Lower the spreader still the rear wheels touch the ground. Get off the spreader.

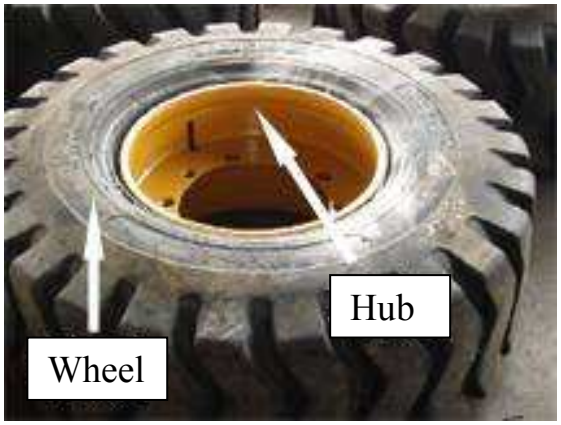
## 4.7.1 Disassembly and Assembly of the Wheel Assembly

**I Disassembly of the Wheel Assembly**

1. Deflate the wheels first and get off the locking rings with crow.

2. Get off the locking ring.

3. Get off the outside flange.




4. Hang up the wheel by crane and get off hub.

5. Get off the hub pad rubber.

6. Get off the internal wheel.

**II Assembly of the Wheel Assembly**

1. Put the wheel body on the ground with the smaller end to be up. Lay the internal wheel in the external wheel uniformly. (Inflation the internal wheel still it just bulges the external wheel)

★ Remark: Before install the internal wheel, clean up the foreign body and dirt. Coat the talc in the inside of external wheel.

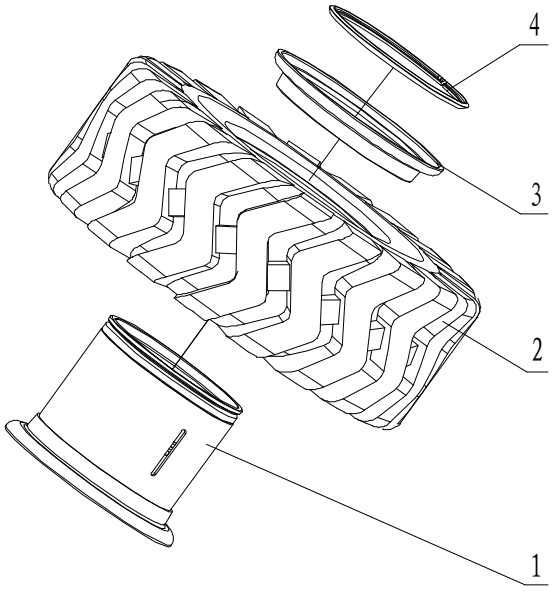
2. Put the pad rubber around the internal wheel.

★ Remark: Coat talc on the inside of pad rubber before installing the hub. Make sure the air tap be in middle.

3. Enwrap the wheel, which is installed with internal wheel, around on the hub body (Part 1).

4. Buckle the external flange (Part 3).

5. Buckle the locking ring (Part 4).



6. Inflate the wheel.

Inflation: Front wheel: 0.33~0.35 M Pa

Rear wheel: 0.27~0.29MPa

Install the air tap cap and tighten it.

# CHAPTER V DISASSEMBLY AND ASSEMBLY OF HYDRAULIC SYSTEM

## 5.1 Disassembly and Assembly of Working Pump

**I Disassembly of the Working Pump** (The steps of changing working pump as followed)

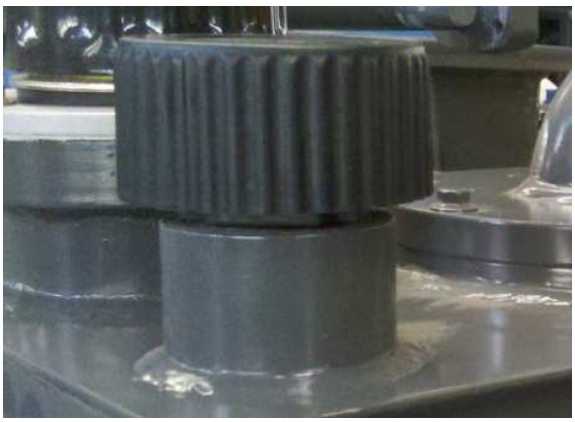
1. Draining oil

Start the complete appliance and drive it to the capacious place. Raise the boom to the highest position. Tilt the bucket backward to the extreme position, and then close the engine.

Turn the power switch to the “ON” position. Push the control handle of the pilot valve to the right side gently. Make the bucket to be forward by the deadweight to drain the oil in rotating cylinder.

After the bucket rotating moving to the position, push forward the handle gently. Make the boom turn forward at the effect of self-weight. So drain the oil in the boom oil cylinder. Keep the bucket flat on ground. Then operate the boom lever from right to left, and from forward to rear title position 5~6 times to drain the internal oil pressure of the system.

Fix the loader wheels with wood chocks stability.



Open the breathable cap of the pressure oil tank.

2. Put vessel under the rotating pump which needs to be changed.

3. Disconnect the connection of the oil returning pipe of hydraulic tank and the transition steel pipe of oil returning and other oil returning pipes.

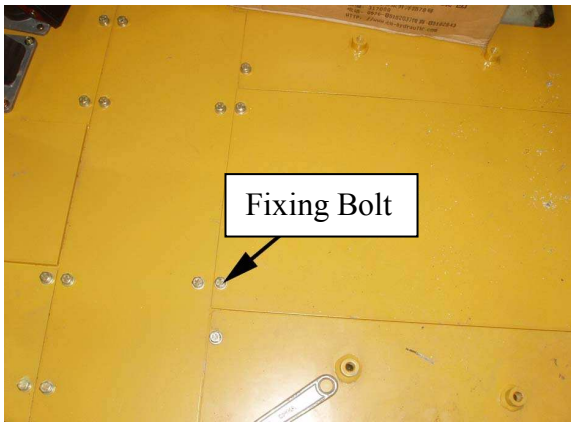
★ In the process of the disassembling, protect the ports and the pipe to avoid the dust and sundries enter into the pipe.

★ In the process of the disassembling, do not loosen the connection bolts or the flange fixed bolts completely to avoid the oil bursting out. loosen them off a little while the oil overflowing, and then disconnect them completely.

4. Unplug the connecting of the working pump and the oil inlet pipe of the pilot valve, oil returning pipe.

5. Loosen the fixing bolts connecting the oil inlet pipe of the working pump and the working pump. Disconnect the connection of the oil inlet pipe and the working pump.

6. Disassemble the seat and bracket (refer to the “Disassembly and assembly of the seat”)




7. Loosen the bolts on the maintaining hood of the cab bench and get off the cover.

8. Loosen the fixing bolts connecting the oil outlet rubber pipe of the working pump and the connecting flange of the working pump. Disconnect the connection of the oil outlet rubber pipe and the working pump.

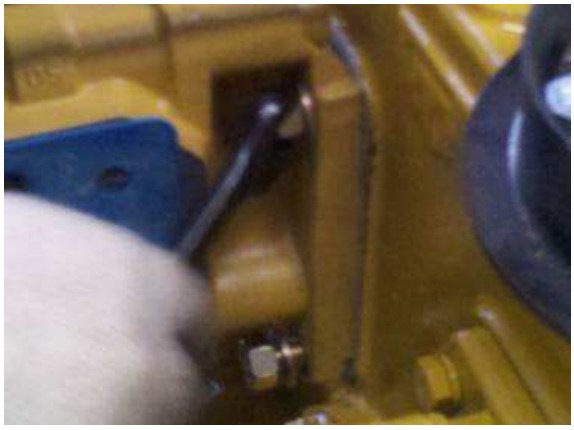
9. Loosen the fixing bolts of the working pump and get off the nuts and washers. Get off the working pump and sealing washer.

10. Disassemble the joints of the two pipes of the pilot valve.

**II Assembly of the Working Pump** (Install the working pump, which has been changed or repaired, by the steps as followed)

1. Fix the straight joint added washer to the overflowing port and oil outlet port on the front of the duplex pump.

kgm Tightening torque: 30~35 Nm



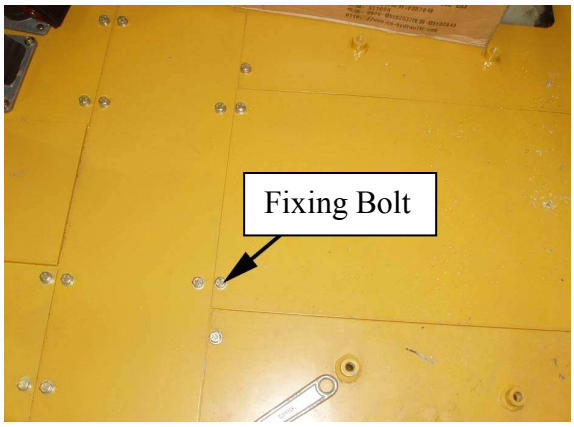
2. Tighten four M12×35 bolts of working pump again. Lay pump sealing washer and Fix the duplex pump. Tighten them with four M12 bolts and four 12 washers.

kgm Tightening torque: 78~104 Nm

kg Working Pump

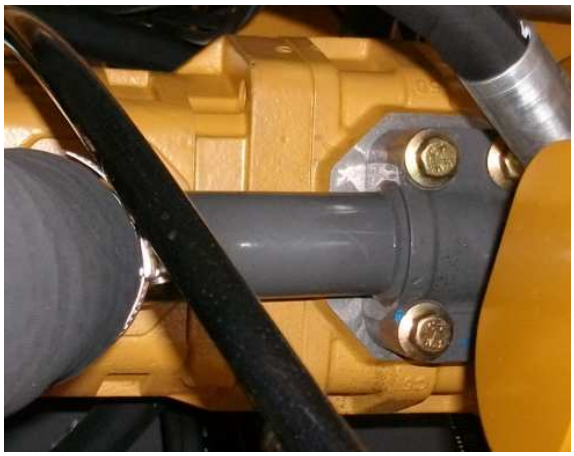
3. Fix O shape ring on the end of oil outlet rubber pipe of duplex pump. Fix it on the oil outlet port of duplex pump with four M8×30 bolts and fission flange.

kgm Tightening torque: 22~30 Nm




4. Fix the hood of maintaining the cab bench to the cab bench with bolts.

5. Assemble the seat and bracket. (Refer to the "Disassembly and Assembly of Seat")



6. Fix O shape ring on the end port of oil absorbing steel pipe of duplex pump. Fix it on the oil absorbing port of steering pump with four M12×55 bolts and fission flange.

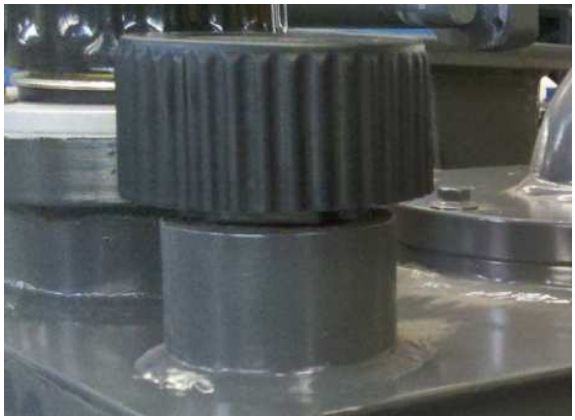
kgm Tightening torque: 78~104 Nm

7. Fix O shape ring on the O shape groove of oil returning rubber pipe of multiple pump. Fix it on the oil returning transition steel pipe with four M8×30 bolts and fission flange.

kgm Tightening torque: 22~30 Nm

8. Connect the connecting of the working pump and the oil inlet pipe of the pilot valve, oil returning pipe.

kgm Tighten torque: 30~35 Nm



9. Fix the breathable cap of hydraulic oil tank. Check the pressure oil level and add it if lack.

## 5.2 Disassembly and Assembly of Hydraulic Oil Tank

### I Disassembly of the Hydraulic Oil Tank (The steps of disassembling hydraulic oil tank are as follow)

1. Drain oil (Drain the oil in the system)

Open the draining valve of the pressure oil tank to drain the hydraulic oil. Get the oil with clean vessel. (Open the cap of the tank to accelerate the draining speed)

2. Loosen the connecting of the handrail and the platform.


3. Loosen the connecting of the hydraulic oil tank and handrail. Remove the handrail.

4. Disconnect the connection of the pipes of the hydraulic oil tank.

1) Loosen the tightening hoop of the oil outlet rubber pipes of the hydraulic oil tank.

2). Disconnect the connection between the pipes of the

hydraulic oil tank and the oil tank.

4. Lift the hydraulic oil tank with rope steadily and loosen the eight tightening bolts of the tank. Lift away the tank. (In the process of lifting away the tank, disconnect the connection between the oil outlet pipe of hydraulic oil tank and the oil tank)


Hydraulic Oil Tank

## II Assembly of the Hydraulic Oil Tank

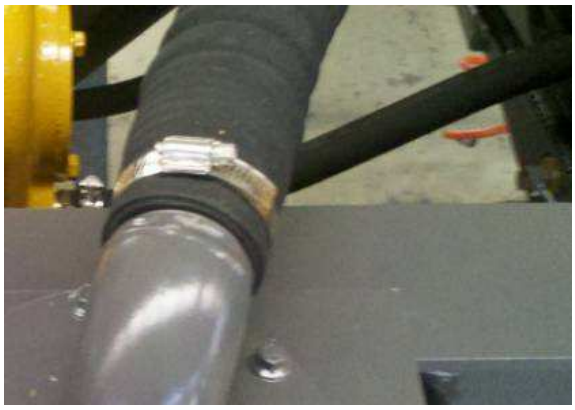
(Changing the hydraulic oil tank and installing the tank to the complete appliance could follow these steps)

1. Disassemble the lift and right profile plates. Lift the tank above the rear frame and adjust the position. Fix it on the rear frame with bolts.

Cover two hoops on the oil absorbing pipe of working pump. Coat certain hydraulic oil on the inside of the rubber pipe and Fix them on the oil outlet port of the tank in the Lifting process.

kgm Tightening torque: 193-257 Nm

Connect the pipes of the oil returning ports of the hydraulic oil tank.

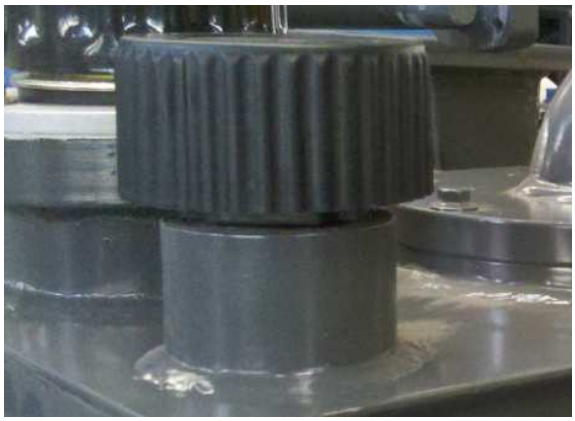


2. Fix the oil absorbing pipe of working pump on the hydraulic oil tank with hoops.

3. Assemble the oil pipes on the oil returning steel pipe of hydraulic oil tank.

4. Put wear-resistant hydraulic oil L-HM46# which mount is 97L into the hydraulic oil tank，after starting the machine， operate the boom some times， then put wear-resistant hydraulic oil L-HM46# into the hydraulic oil tank again.

## 5.3 Disassembly and Assembly of Priority Valve

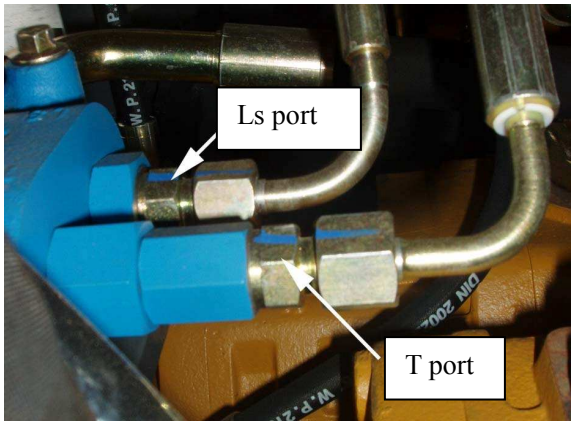


**I Disassembly of Priority Valve** (Disassembling priority valve from complete appliance can refer to the following steps)

1. Start the complete appliance and run to the leveling, spacious and solid ground, and turn the steering wheel to run straightly, and then stop after placing properly. Put the bucket on ground horizontally and stop the engine. Turn the steering wheel clockwise and anticlockwise for 5~6 times. Fix the tire of loader with wood wedge stability.

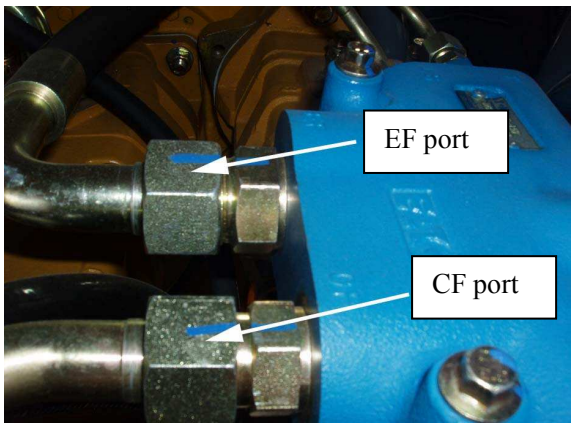
Open the air exchange filter of oil tank.

2. Put oil holder under the priority valve to catch the leaking hydraulic oil.



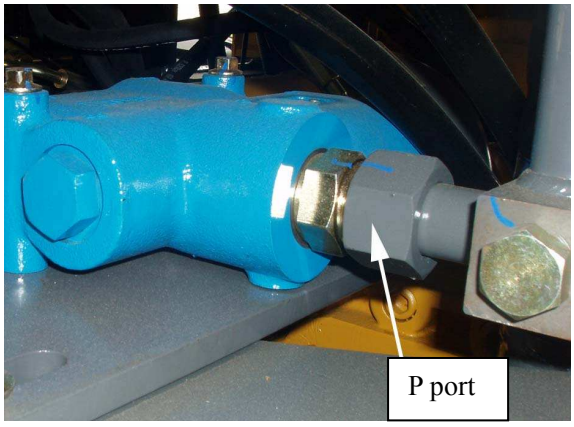

3. Disconnect the connection between priority valve oil returning pipe and T port of priority valve, and disconnect the connection between priority valve oil feedback pipe and Ls port of priority valve.

★ In process of disassembling hydraulic pipeline, do not unload the connecting bolt of oil port completely. loosen it off a little until there is oil overflowing, and then remove it to prevent the oil from bursting out due to oil unloading not completely.

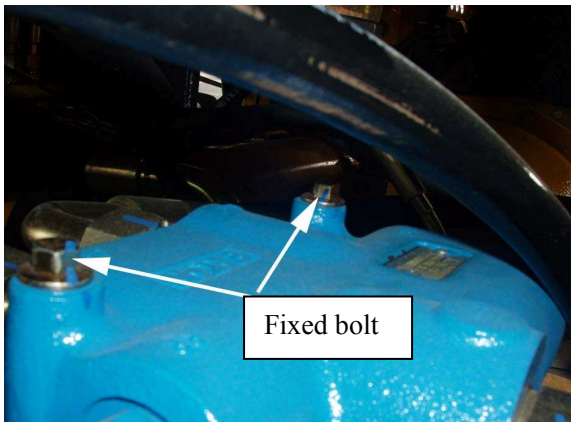



4. Disconnect the connection between steering gear oil inlet pipe and CF port of priority valve, and disconnect the connection between radiator oil inlet pipe and EF port of priority valve.

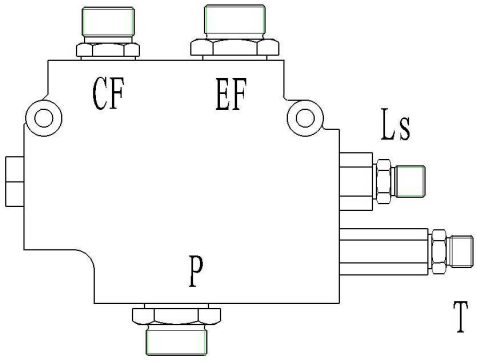
★ In process of disassembly, pay attention to protecting every pipeline and oil port. Prevent the dust and sundries from entering the pipeline.




5. Disconnect the connection between priority valve oil inlet steel and P port of priority valve.

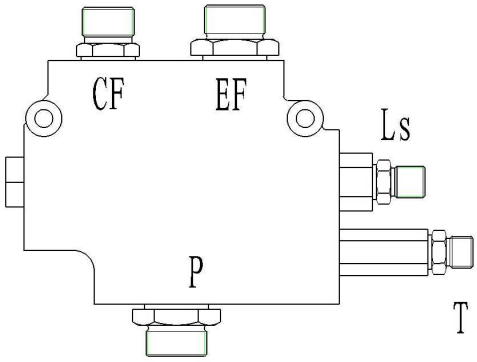



6. Remove the fixed bolt of priority valve, and then take down the priority valve.

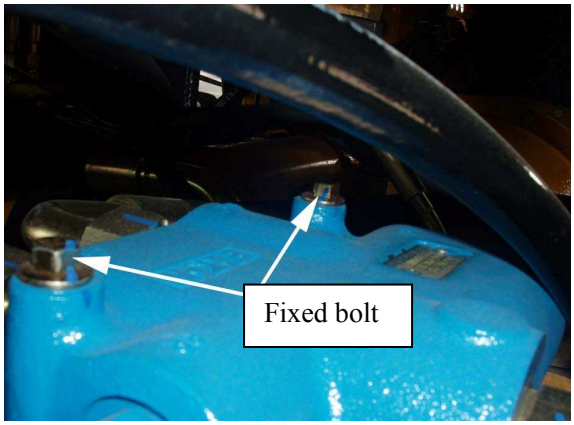



7. Remove the joint and O-ring on each oil port of priority valve.

**II Assembly of priority valve** (Assembling priority valve on complete appliance can refer to the following steps)

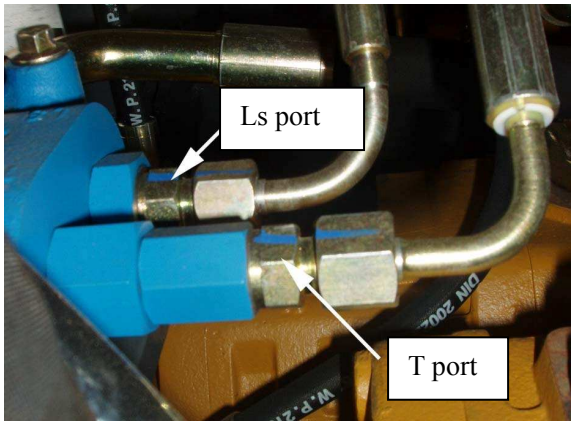



1. Install every straight joint adding an O-ring on the oil port of priority valve.




2. Fix the priority valve on the left fixed plate of rear frame with two bolts M8×75.

kgm Tightening torque: 22~30Nm

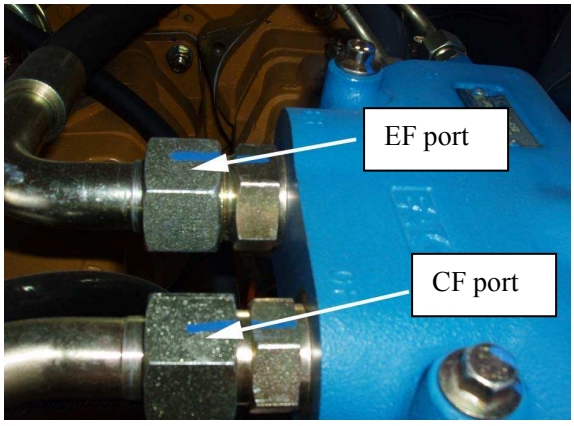



3. Connect priority valve oil returning pipe on the T port of priority valve, and connect priority valve oil feedback pipe on the Ls port of priority valve.

kgm Tightening torque:

Priority valve oil feedback pipe-25~35Nm

Priority valve oil returning pipe-25~35Nm

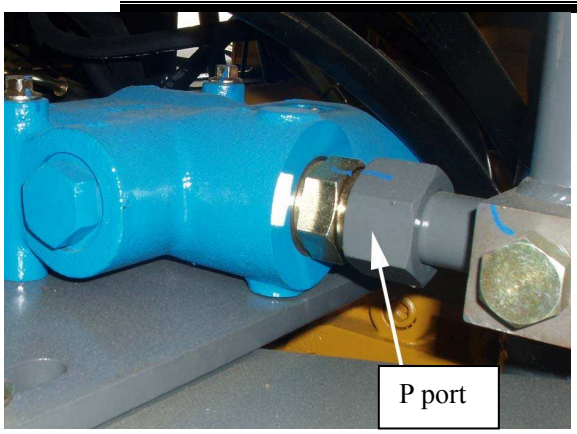



4. Connect steering gear oil inlet pipe on the CF port of priority valve, and connect radiator oil inlet pipe on the EF port of priority valve.

kgm Tightening torque:

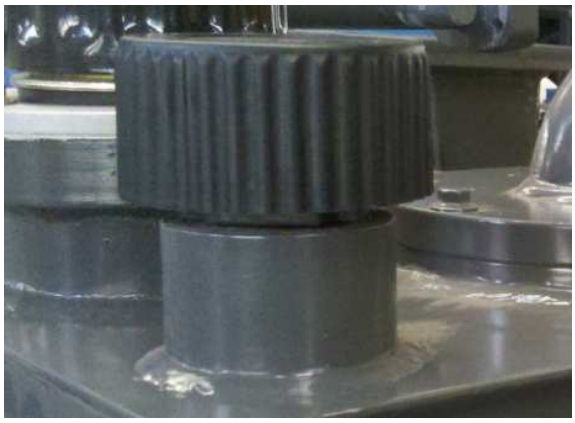
Steering gear oil inlet pipe-75~95Nm

Radiator oil inlet pipe-100~130Nm



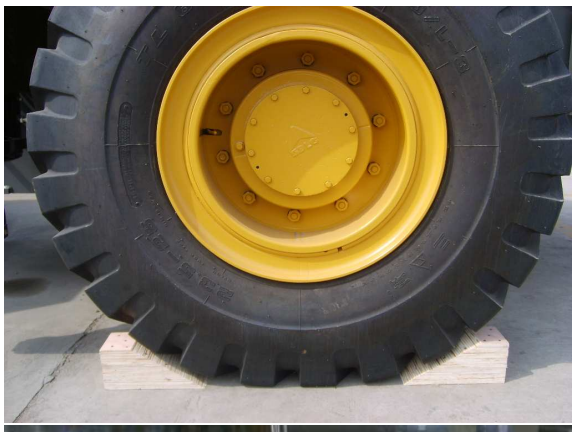

5. Connect priority valve oil inlet steel on the P port of priority valve.

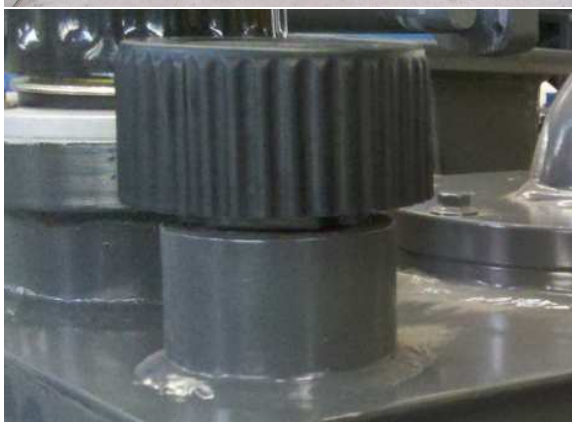
kgm Tightening torque: 100~130Nm



6. Install the permeable cap of hydraulic cylinder, and check the amount of hydraulic oil. Add hydraulic oil when it is not enough.

## 5.4 Disassembly and Assembly of Multiple Valve





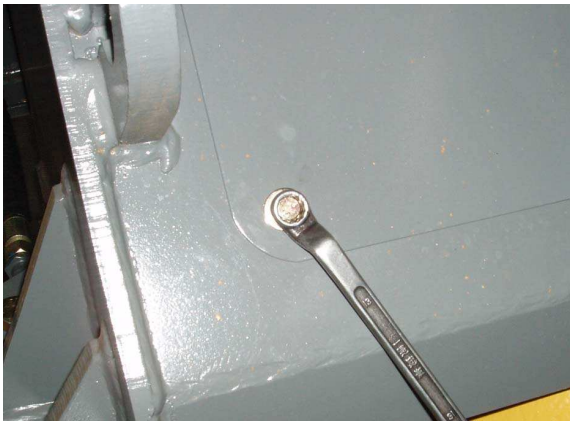
**I Disassembly of Multiple Valve** (Disassembling multiple valve from complete appliance can refer to the following steps)

1. Start the complete appliance and run to the front of supporting frame (The supporting frame is put on the spacious ground), and adjust the position of complete appliance. Lift the lift arm to the highest position and tilt the bucket backward to the maximum position, and then stop the engine. Turn the power switch to the position of “on”, and move the operating handle right slightly to tilt the bucket to the end slowly. Then push the handle forward slowly to put the lift arm on supporting frame slowly. Move the operating handle around for five or six times, and then remove the oil pressure in the system.

Fix the tire of loader with wood wedge stability.

Open the air exchange filter of hydraulic oil tank.

2. Put oil holder under the multiple valve.

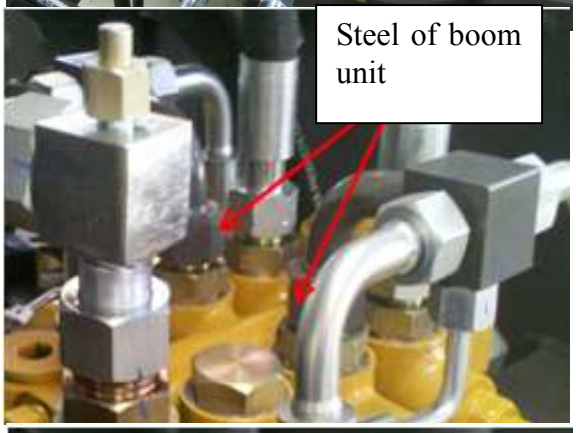


3. Remove the fixing bolts on front end plate and take the front end plate down.

4. Disconnect each hose on the pilot unit

Disconnect the connection between multiple valve and boom unit, turning bucket unit, pilot oil pipe of floating unit. Then remove the oil pipe of auxiliary unit.

★ In process of disassembly, pay attention to protecting every pipeline and oil port. Prevent the dust and sundries from entering the pipeline.




5. Remove the flange connecting the multiple valve with big and small cavity tee steel of boom unit.

★ In process of disassembly, do not unload the connecting flange on the oil port completely. Loosen it off a little until there is oil overflowing, and prevent the oil from bursting out due to oil unloading not completely.


6. Remove the flange connecting the multiple valve with big and small cavity steel of steering bucket unit. Then disconnect the connection between steel and multiple valve.

7. Remove the flange connecting the multiple valve with oil inlet and return steel of multiple valve. Disconnect the connection between steel and multiple valve.

8. Remove the pipe joint connecting the auxiliary unit. Then remove the four fixed bolts connecting the multiple valve with front frame. Hoist the multiple valve down.

kg Multiple valve

## II Assembly of multiple valve (Assembling multiple valve on complete appliance can refer to the following steps)

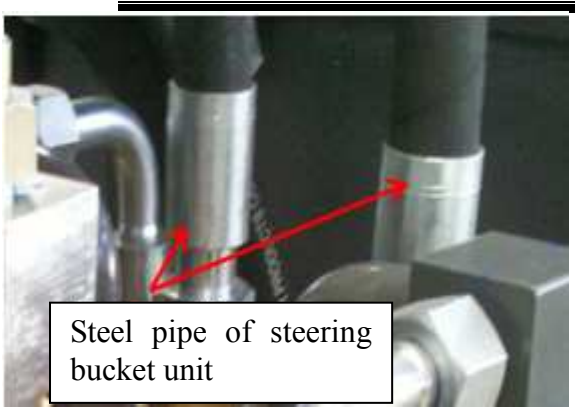
1. Hoist the multiple valve

Fall the multiple valve on the front frame, then put bolts from up to down, and then fix with washers and nuts.

kgm Tightening torque: 78~104Nm

2. Assemble a straight joint on the place of multiple valve's oil inlet port, assemble the oil inlet pipe on the multiple valve. Assemble the oil returning pipe on the multiple valve on the same method.

kgm Tightening torque：85～110Nm



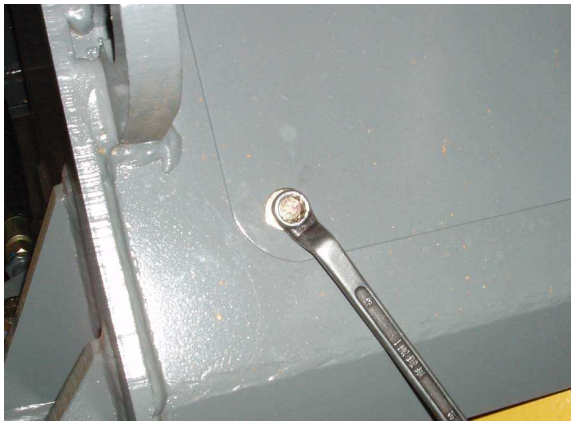

3. Fix the big and small cavity's pipe of turning bucket unit on the multiple valve assembly.

kgm Tightening torque：45～65Nm

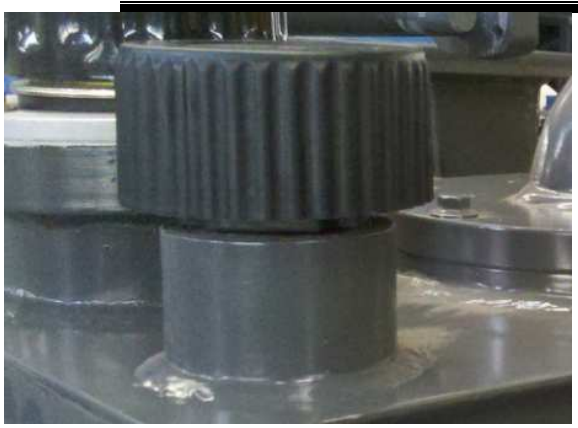

4. Put an O-ring in the port of small cavity tee steel on the boom unit, and install it on the relevant port. Install big cavity tee steel of boom unit on the port at the left back of multiple valve in the same method.

kgm Tightening torque: 85~110Nm

5. Install four front piloting steels on the multiple valve.

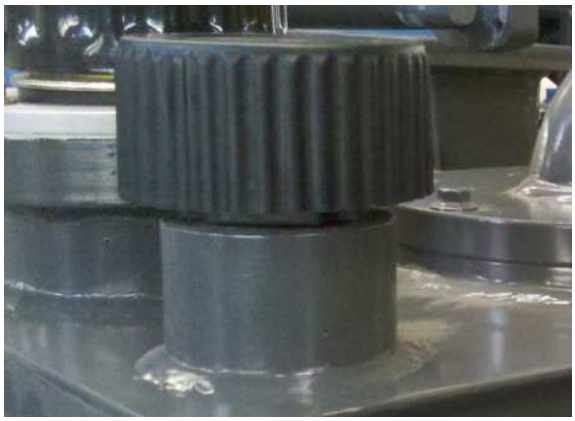


6. Fix the cover board on the front frame with four bolts M8×16 and washers 8.



7. Install the permeable cap on the hydraulic cylinder, and check the amount of hydraulic oil. Add hydraulic oil when it is not enough.

## 5.5 Disassembly and Assembly of Boom Cylinder



**I Disassembly of boom cylinder** (Disassembling boom cylinder from complete appliance can refer to the following steps)

1. Unload the oil

Start complete appliance and run to the front of supporting frame (The supporting frame is put on the spacious ground), and adjust the position of complete appliance. Lift the lift arm to the highest position and tilt the bucket backward to the maximum position, and then stop the engine. Turn the power switch to the position of “on”, and move the operating handle of pilot valve right slightly to tilt the bucket forward to the end slowly. Then push the handle forward slowly to put the lift arm on supporting frame slowly. Move the operating handle around for five or six times, and then remove the oil pressure in the system.

Fix the tire of loader with wood wedge stability.

Open the air exchange filter of hydraulic oil tank.

2. Put proper oil holder under the cylinder which will be replaced.


3. Disconnect the connection between the big and small cavity oil inlet hose of boom and the big and small oil inlet steel at the end of boom.

★ In process of disassembly, do not unload the fixed bolt on the oil port completely. Loosen it off a little until there is oil overflowing, and prevent the oil from bursting out due to oil unloading not completely.

★ Pay attention to protecting every pipeline and oil port. Prevent the dust and sundries from entering the pipeline.

4. Hoist the cylinder with lifting rope, and then remove the fixed bolt which connects the boom cylinder with boom connecting pin.

Remove the front pin of boom cylinder. Take the adjusting gasket down. Never destroy the pin in process of operation.

5. Remove the fixed bolt which connects the boom cylinder with front frame connecting pin, and hold the boom cylinder, then remove the back pin of boom cylinder with rubber hammer. Hoist the boom cylinder down.

6. Remove big and small cavity oil inlet steel of boom cylinder.

## II Assembly of boom

1. Hoist the boom cylinder

Clean the assembling hole, and coat proper amount of lubricating grease on the surface of boom cylinder pin. Hoist the cylinder assembly to the front frame, and make the tail of cylinder to fall into the wing box of front frame. Adjust the cylinder to align the tail hole of cylinder to the joint hole of front frame wing box boom cylinder. Then install the pin.

Fix the pin of boom cylinder with bolt M12×25 and washer.

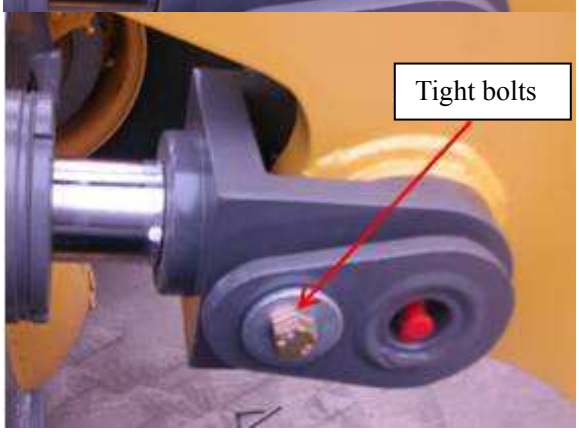
kgm Tightening torque: 78~104Nm

★ Pay attention to locating the small cavity pipeline outside after assembling completely. Never install contrarily.


2. Connect the big and small cavity oil inlet hose of boom cylinder.

kgm Tightening torque: 100~130Nm

★Arrange the hose in order, and never distort.




Clean the assembling hole, and coat a little amount of lubricating grease on the front pin of boom cylinder. Start the complete appliance and operate the boom cylinder. Adjust the expansion amount of boom cylinder piston rod to make sure the assembling hole of boom cylinder

aligns to that of boom. Then connect the boom cylinder and boom with front pin of boom cylinder, and put gasket on the joint end surface. Select the gasket according to model, number and installation position to make sure the fit clearance between boom cylinder and boom is 0.5~1.5mm. Then fix the front pin of boom cylinder with bolt M12×25 and washer.

kgm Tightening torque: 78~104Nm

★Pay attention to the wire holder on the boom cylinder piston rod locating outside; Adjust the number of gaskets to make sure the clearance between the front of boom cylinder and boom is 0.5~1.5mm.

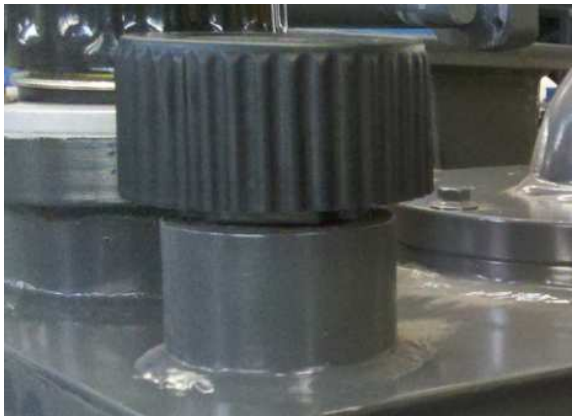

3. Coat lubricant grease on the connecting position of each pin until there is lubricant grease overflowing from the mating surface.

Lubricant grease

4. Install the permeable cap on the hydraulic cylinder, and check the amount of hydraulic oil. Add hydraulic oil when it is not enough.

# 5.6 Disassembly and Assembly of Steering Bucket Cylinder

## I Disassembly of Steering Bucket Cylinder



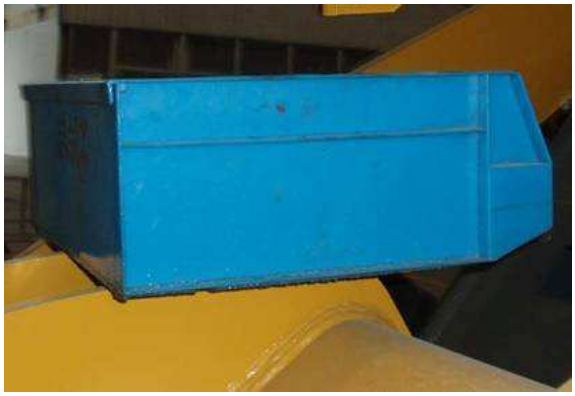
(Disassembling steering bucket from complete appliance can refer to the following steps)

1. Unload the oil

Start the complete appliance and run on the leveling and spacious ground, and lift the lift arm to the highest position and tilt the bucket backward, and then stop the engine. Turn the power switch to the position of “on”, and move slowly the pilot valve operating handle right to tilt the bucket forward under the dead weight slowly. Pull out the oil in the turning bucket cylinder. After turning the bucket in place, push the handle forward slowly to make the boom to drop slowly under the dead-weight. Pull out the oil in the boom cylinder. Put the bucket on the ground horizontally and move the operating handle around for five or six times, and then remove the oil pressure in the system.

Fix the tire of loader with wood wedge stability.

Open the air exchange filter of hydraulic oil tank.



2. Put proper oil holder under the turning bucket cylinder.

3. Remove the fixed bolt of turning bucket indicator pole, and then remove the washer and turning bucket indicator pole.

4. Shear the proximity switch wiring harness.

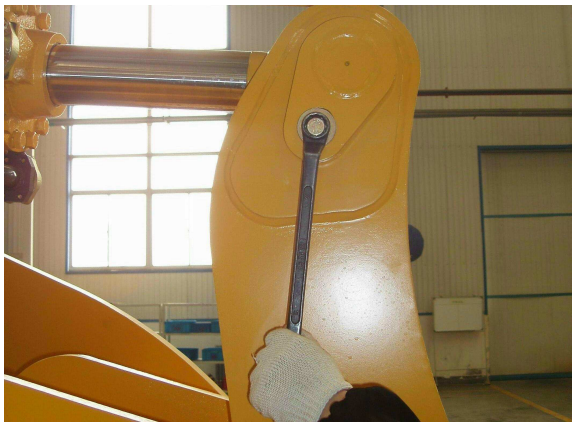
5. Remove the connecting flange of big oil inlet hose on the turning bucket cylinder. Disconnect the connection between turning bucket cylinder big cavity oil inlet hose and turning bucket cylinder.

★ In process of disassembly, do not unload the fixed bolt of connecting flange on the oil port completely. loosen it off a little until there is oil overflowing, and prevent the oil from bursting out due to oil unloading not completely.

6. Remove the connecting flange of small oil inlet hose on the turning bucket cylinder. Disconnect the connection between turning bucket cylinder small cavity oil inlet hose and turning bucket cylinder.

★Pay attention to protecting every pipeline and oil port. Prevent the dust and sundries from entering the pipeline.


7. Remove the proximity switch and supporting frame.



8.Hoist the turning bucket and keep certain pre-tightening force on the hoisting rope. Remove the fixed bolt which connects turning bucket with connecting pin of rocker.

Remove the connecting pin with rubber hammer.

9. Hoist the turning bucket cylinder up to make the cylinder to tend to be vertical. Remove the fixed bolt between turning bucket cylinder and front frame connecting pin, and then remove the connecting pin.

kg Turning bucket cylinder

10. Hoist the turning bucket cylinder down, and then remove the big cavity oil inlet steel of turning bucket cylinder.

## II Assembly of Turning Bucket Cylinder

(Assembling turning bucket cylinder on complete appliance can refer to the following steps)

1. Connect turning bucket cylinder big cavity steel with the joint on the turning bucket cylinder, then tight it.

kgm Tightening torque: 65～85Nm

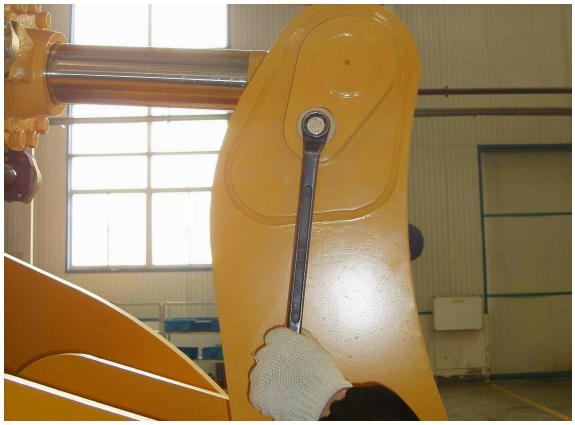
2. Clean the antirust oil pollution in the pin hole, and coat proper amount of lubricating grease on the pin. Hoist the turning bucket cylinder assembly and connect it with the front frame with pin, then put gasket on the joint end surface. Select the gasket according to model, number and installation position to make sure the fit clearance of end surface is 0.5~1.5mm. Then fix the pin with bolt M12×25 and washer.

kgm Tightening torque: 78～104Nm

kg Turning bucket cylinder

3. Connect the big and small cavity's flexible pipe of turning bucket with the big cavity's steel pipe and small cavity's connector, and tight them. Connect with small cavity's oil port of turning bucket.

kgm Tightening torque: 65～85Nm




4. Start the complete appliance. Hoist the turning bucket cylinder body. Operate the turning bucket cylinder to align the connecting hole between the piston rod and rocker. Connect the turning bucket cylinder and rocker with turning bucket pin and put gasket on the joint end surface. Select the gasket according to model, number and installation position to make sure the fit clearance between turning bucket cylinder and rocker is 0.5~1.5mm. Then fix the turning bucket pin with bolt M12×25 and washer.

   kgm Tightening torque: 78～104Nm

5. Install the proximity switch and supporting frame on the front end on turning bucket cylinder with two bolts M12×20.

   kgm Tightening torque: 78～104Nm

6. Install the turning bucket indicator pole on the end of piston rod of turning bucket cylinder with two bolts M14×35 and nut M14.

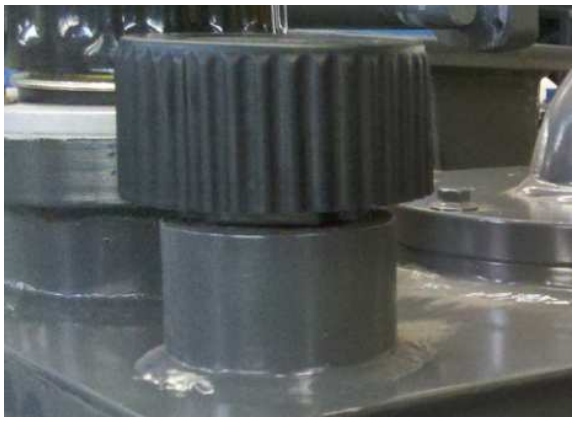
Make the axis of turning bucket indicator plate parallel to the axis of turning bucket cylinder piston rod.

kgm Tightening torque: 124～165Nm

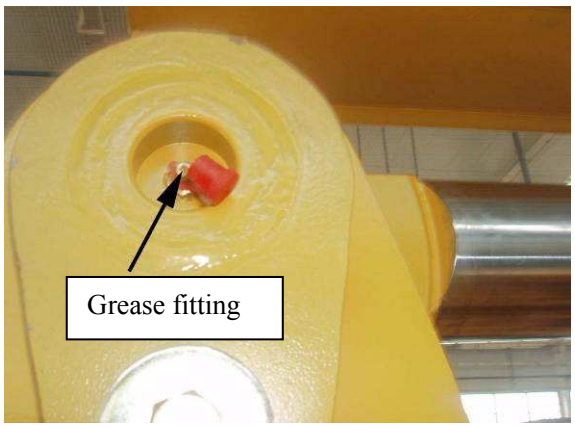
Fix the horizontal guard plate on the end of turning bucket cylinder piston rod with two bolts M10×20 and washer 10.

Tightening torque: 45～59Nm


7. Connect the proximity switch wire again according to the color of wiring harness and bind the wiring harness on the hose with ligature.



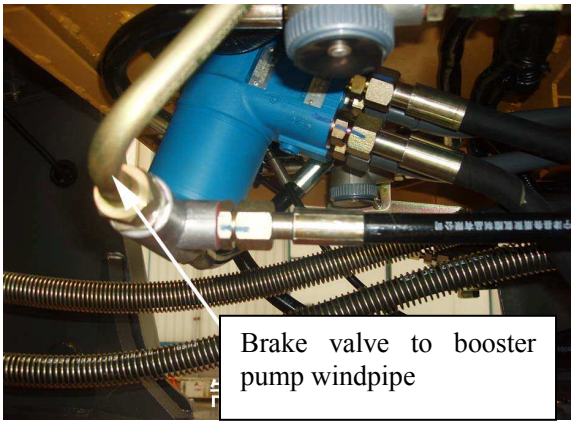
8. Install the air exchange filter of hydraulic oil tank.




Load lubricant grease on each jointing position until there is lubricant grease extruding in the fit clearance. Check the amount of hydraulic oil and add hydraulic oil when it is not enough.

Lubricant grease

## 5.7 Disassembly and Assembly of Steering Gear




**I Disassembly of Steering Gear** (Disassembling steering gear from complete appliance can refer to the following steps)

★ In process of disassembly, do not unload the connecting nut on the oil port completely. loosen it off a little until there is oil overflowing, and prevent the oil from bursting out due to oil unloading not completely.

1. Start the complete appliance and run to the leveling, spacious and solid ground, and turn the steering wheel to run straightly, then stop after placing properly. Put the bucket on the ground horizontally and stop the engine. Turn the steering wheel clockwise and anticlockwise for 5~6 times. Fix the tire of loader with wood wedge stability.

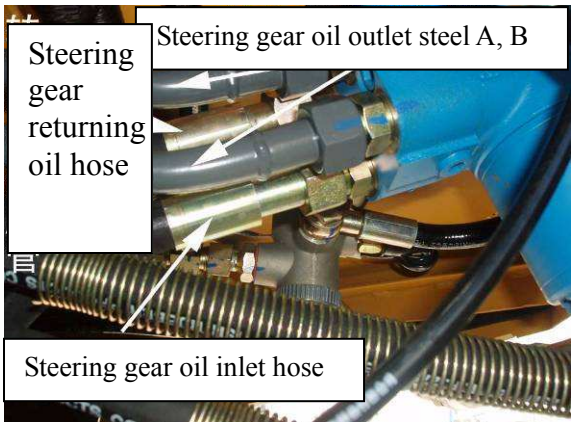
2. Put clean oil holder under the steering gear to prevent the overflowing oil from spilling on the ground.

3. Open the drain valve of gasholder to release pressure in the gasholder.

4. Loosen the connection of foot brake valve to rear intensifier pump windpipe (Not necessary to remove). Rotate it to a certain angle so that the steering gear can be removed.

5. Loosen the connecting nut which connects the prior valve feedback oil pipe with the straight joint on the right oil port of steering gear. Disconnect the connection between the feedback oil pipe and steering gear.

★ Protect each pipeline and oil port.

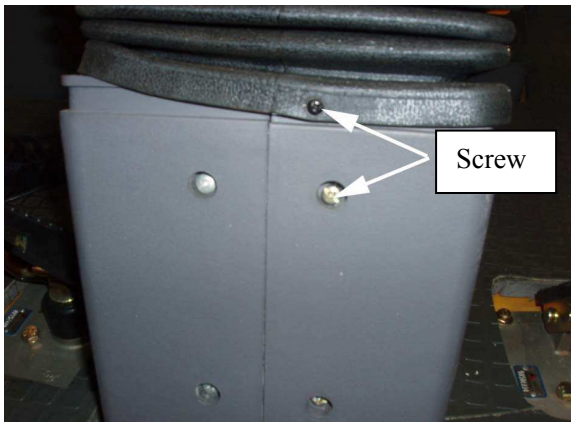



6. Disconnect the connection between steering gear sucker, oil returning pipe, steering gear oil outlet steel and the steering gear.

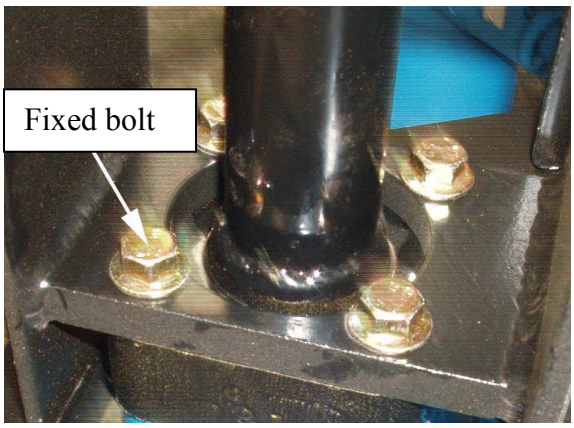
★ Protect each pipeline and oil port.

7. Remove each joint on the steering gear.

★ Protect each pipeline and oil port.

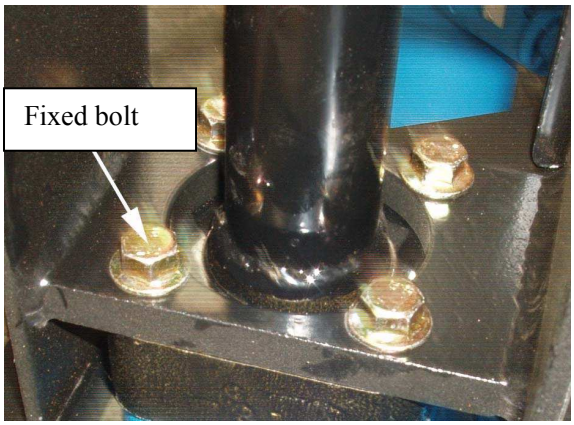



8. Remove fixed screw on the left and right baffles under the instrument desk. Then remove the baffle.




9. Remove four fixed bolts of steering gear, and then remove the steering gear.

★ **Notice:** Hold the steering gear with hand and something to prevent falling.

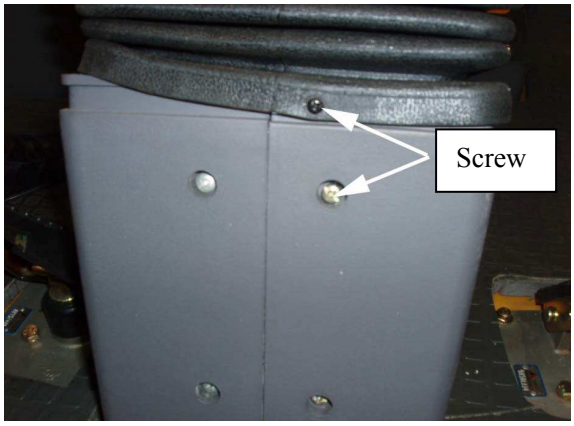



## II Assembly of Steering Gear (Assembling steering gear on complete appliance can refer to the following steps)

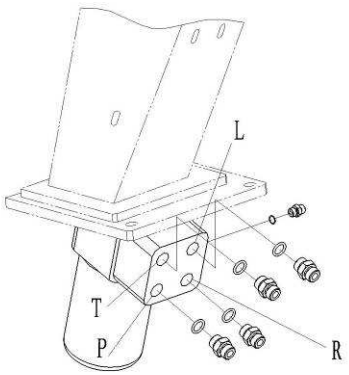
1. Put cross block in the steering gear, and then lift the steering gear to dock with steering column (turn steering wheel slightly to align it). Then fix with bolt.

★ Tighten for 2~3 times on the principle of symmetric and cross to prevent occurring.

kgm Tightening torque: 45～59Nm

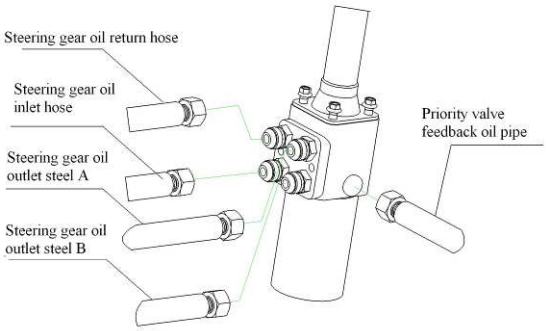



2. Install the left and right baffles under instrument desk.




3. Install each joint on the steering gear

Install the straight joint of feedback oil pipe adding an O-ring on the right oil port of steering gear. Install four straight joints each adding an O-ring on the steering gear.




4. Connect each oil pipe of steering gear

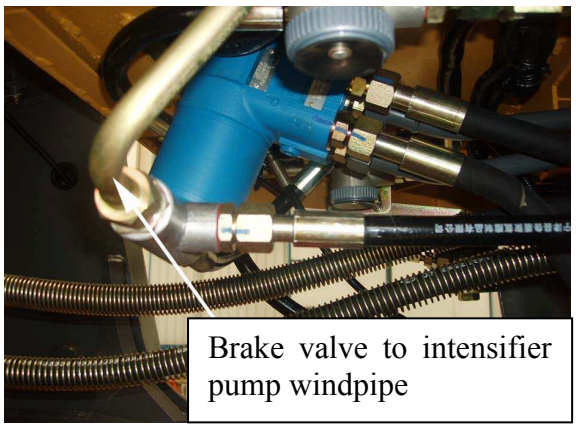
Put an O-ring in O-shape groove of steering gear oil outlet steel A and B respectively. Then install and fix steering gear oil outlet steel A and B on straight joint at upper-right and down-right of steering gear respectively.

Arrange the steering gear oil return flexible pipe in order and no distortion, then twist them on straight joint at upper-left (T port) of steering gear; Arrange the steering gear oil inlet flexible pipe in order and no distortion, then twist them on straight joint at upper-left oil inlet port (P port) of steering gear. Then tighten.

Twist the prior valve feedback oil pipe on straight joint at right of steering gear. Bind each oil pipe with ligature in the proper position.

kgm Tightening torque: 75~95Nm

Prior valve feedback oil pipe 25~35 Nm




5. Turn back the windpipe of brake valve to rear intensifier pump, and tighten again.

6. Check the amount of hydraulic oil and add hydraulic oil when it is not enough.

## 5.8 Disassembly and Assembly of Steering Cylinder

### I Disassembly of Steering Cylinder

(Disassembling steering cylinder from complete appliance can refer to the following steps)

1. Start the complete appliance and run to the leveling and spacious ground, and turn the steering wheel to run to the converse direction of steering cylinder which will be replaced and deflect a certain distance so that remove it easily. Fix the tire of loader with wood wedge stability. Put the bucket on the ground horizontally and stop the engine. Turn the steering wheel clockwise and anticlockwise for 5~6 times to release oil pressure in the steering system.

2. Put clean oil holder under the cylinder which will be replaced.

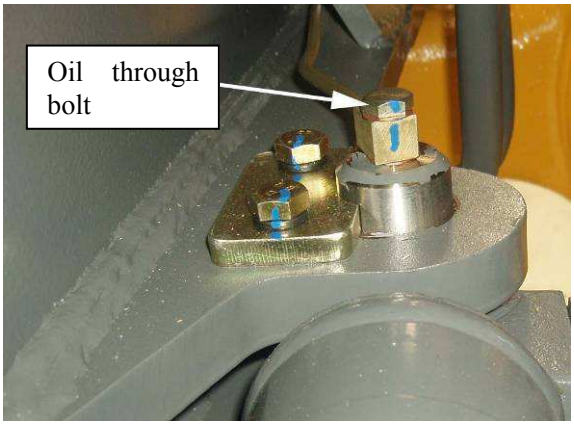
3. Remove the oil through bolt of steering cylinder small cavity oil inlet steel. Disconnect the connection between steering cylinder small cavity oil inlet hose and steering cylinder.

★ In process of disassembly, do not unload the connecting nut on the oil port completely. loosen it off a little until there is oil overflowing, and prevent the oil from bursting out due to oil unloading not completely.

★ Pay attention to protecting every pipeline and oil port. Prevent the dust and sundries from entering the pipeline.

4. Remove the oil through bolt of steering cylinder big cavity oil inlet steel, and then disconnect the connection between big cavity oil inlet hose and steering cylinder.

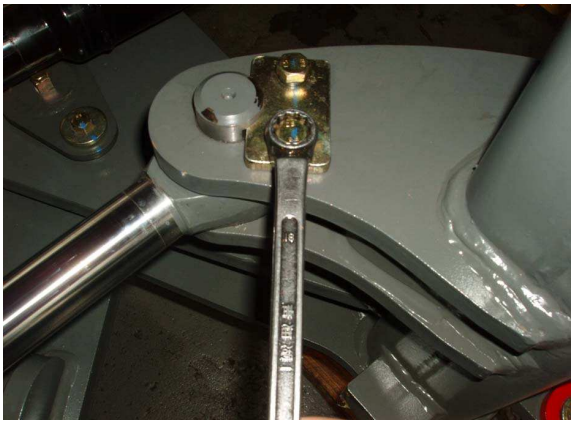
★ In process of disassembly, do not unload the connecting nut on the oil port completely. loosen it off a little until there is oil overflowing, and prevent the oil




from bursting out due to oil unloading not completely.

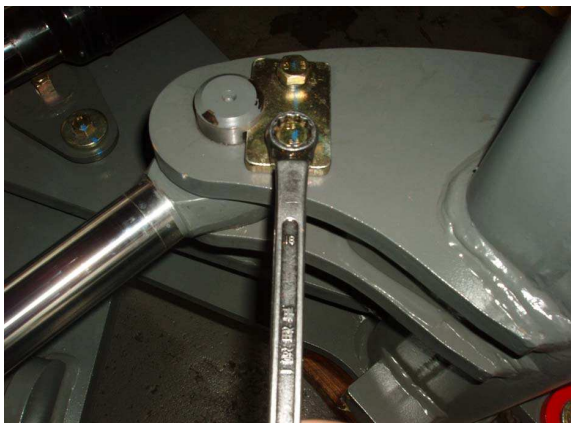
5. Remove the oil through bolt and washer of butter pipe at the front of steering cylinder.

6. Remove the fixed bolt on the front and back steering pin snap-gauge of steering cylinder. Take down the bolt, washer and snap-gauge (Don't confuse front and back snap-gauge).



7. Remove the back steering pin with copper hammer beating slightly from up to down (Notice: don't destroy the grease fitting). Then remove front steering pin with copper hammer beating slightly from up to down

8. Remove the steering cylinder.



**II Assembly of Steering Cylinder** (Assembling steering cylinder on complete appliance can refer to the following steps)

1. Draw part of steering cylinder piston rod out to make the whole length equal to the distance between two jointing holes. Then put end of steering cylinder body in the steering cylinder installing seat of front frame.

★ The joint oil port of steering cylinder toward inside.

2. Put steering cylinder on the joint position to align the front joint position, and then fix steering cylinder on the front frame with front steering pin and snap-gauge, then fix with two bolts M12×25 and two washers 12.

★ Notice: Select the snap-gauge. When assembling, firstly install the end from which the distance to hole centerline is bigger in the groove of steering pin.

kgm Tightening torque: 78~104Nm

3. Adjust the extension elongation of piston rod to align the rear joint position, and then fix it on the rear frame with rear steering pin, gasket and snap-gauge, then fix with two bolts M12×25 and two washers 12.

★ Notice: Select the snap-gauge. When assembling, firstly install the end from which the distance to hole centerline is bigger in the groove of steering pin. Adjust the end face clearance to be 0.5~1.5 by selecting proper category and number.

kgm Tightening torque: 78~104Nm

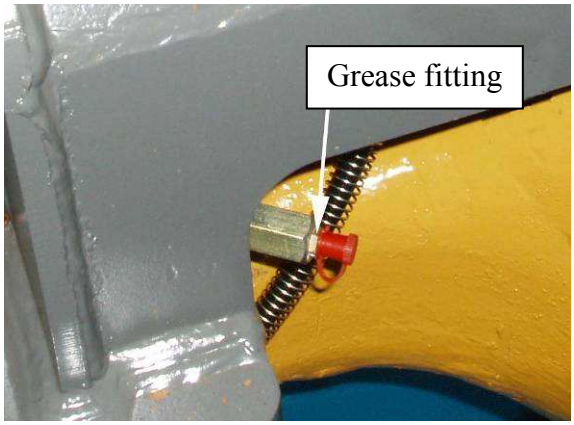
4. Install the steering cylinder oil inlet steel on the steering cylinder big cavity oil port with one oil through bolt M18×40.

kgm Tightening torque: 120~130Nm

5. Connect the steering cylinder small cavity oil inlet hose on the small cavity oil port

★ The hose never distort.

kgm Tightening torque: 22~30Nm




6. Load lubricant grease on each jointing position until there is lubricant grease extruding in the fit clearance.

Lubricant grease

7. Check the amount of hydraulic oil and add hydraulic oil when it is not enough.

# CHAPTER VI DISASSEMBLY AND ASSEMBLY OF BRAKING SYSTEM

## 6.1 Disassembly and Assembly of Foot Brake Valve

### I Disassembly of Foot Brake Valve

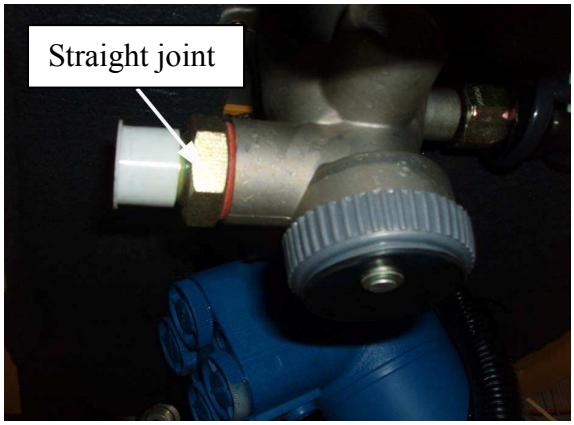
(Disassembling foot brake valve from complete appliance can refer to the following steps)

1. Open the water drain valve of gasholder to release the internal pressure.

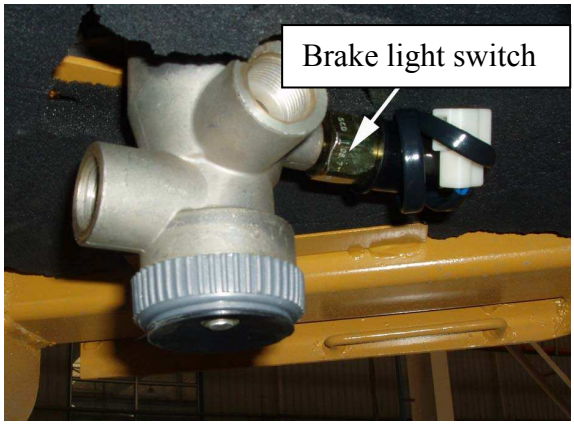
2. Disconnect the connection between foot brake valve to intensifier pump windpipe and brake valve. Then take the bolt and washer down.

★Pay attention to protecting each pipeline and port. Prevent the dust and sundries from entering the pipeline.

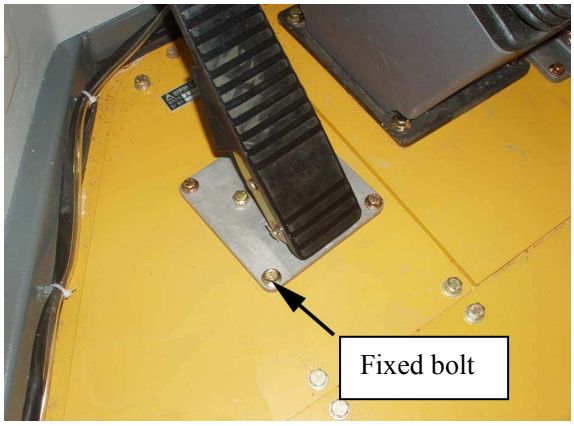
3. Disconnect the connection between gasholder to foot brake valve windpipe and brake valve.



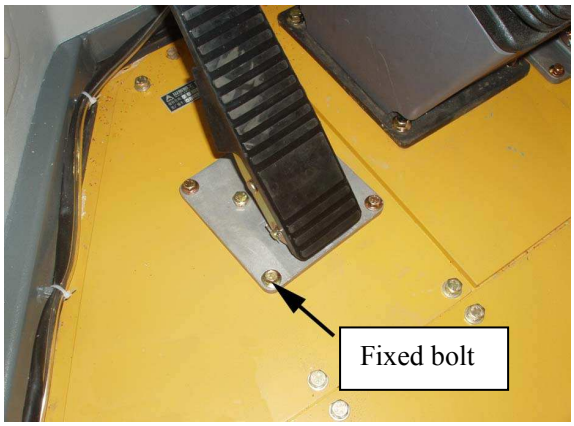

4. Remove the straight joint.




5. Remove the switch of brake light.

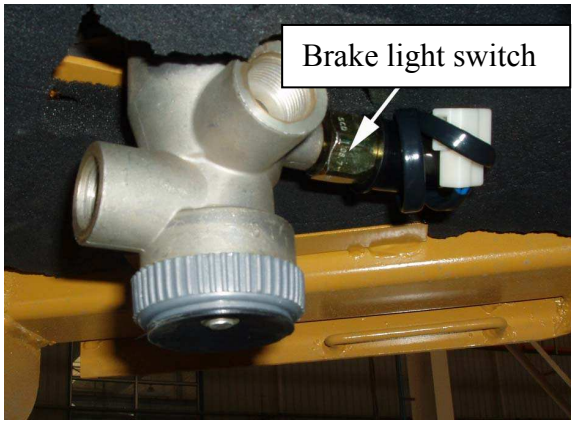



6. Remove the four bolts which fix the brake valve, and then take down the foot brake valve.



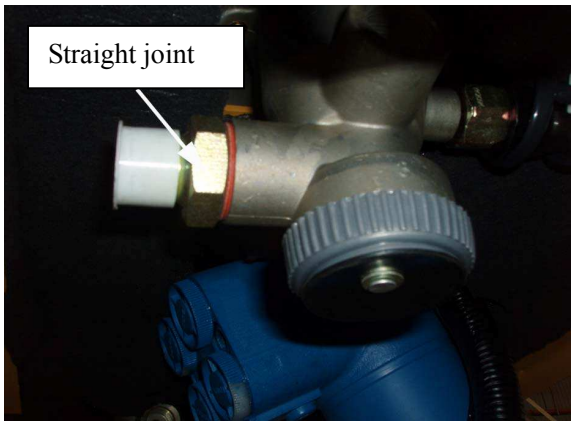

**II Assembly of Foot Brake Valve** (Assembling foot brake valve on complete appliance can refer to the following steps)

1. Fix foot brake valve in the cab with four bolts.




2. Coat the KESAIXIN 1545 oxygen-weary type pipe thread sealant on the switch of brake light, then tighten on the front port of pneumatic brake valve.

1545 sealant

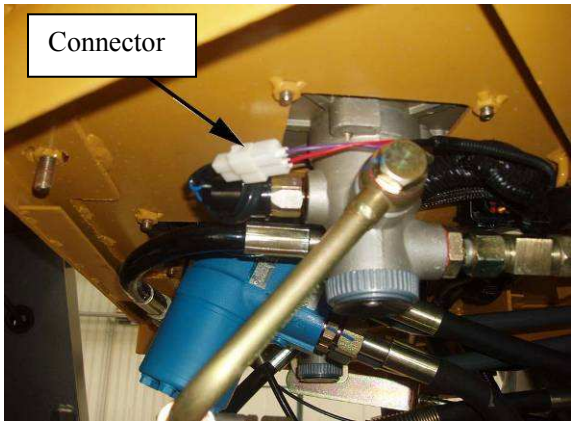



3. Coat the KESAIXIN 1545 oxygen-weary type pipe thread sealant on the straight joint, then fix it on the back end of brake valve after adding a washer.

1545 sealant

4. Tighten the three-way joint added a washer on the two-way joint.

5. Connect the foot brake valve to intensifier pump windpipe on the brake valve with a bolt and two washers.




6. Connect power cord on the switch of foot brake light.

★ Disassemble and assemble another foot brake valve in the same method.

## 6.1.1 Disassembly and Assembly of Brake Assembly

### Ⅰ Disassembly of Brake Valve

1. Remove the fixed bolt on the fixed plate, and then take the fixed plate down.

★ Notice: Register the installation position and installation size.

2. Remove the oriented column.

7. Remove the spring seat and ratio small spring assembly.

4. Remove the valve core.

5. Take out the return spring.

6. Remove the O-ring on the valve core.

7. Remove the cushion at the bottom of valve body.

8. Remove the shield circle with circle pliers.

9. Take down the gasket.

10. Remove the small valve core assembly and O-ring.

11. Remove O-ring in the valve body.

## Ⅱ Assembly of Brake Valve

1. Install O-ring in the lower valve body.

2. Coat small amount of brake fluid in the lower valve body. Then install small valve core assembly in lower valve body.

3. Install the gasket.

4. Install the internal circle pliers.

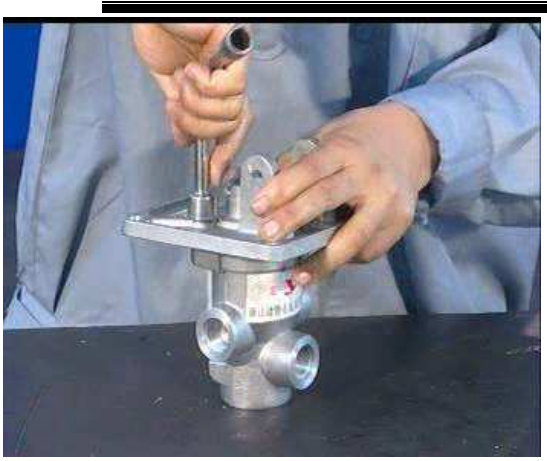
5. Install the cushion.

6. Install O-ring in the valve core.

7. Install spring in the valve body.

8. Coat small amount of brake fluid on the surface of valve core, and install valve core in the valve body. Press the valve core to check the return reliability of valve core.

9. Install ratio small spring assembly in the valve body.



10. Install the fixed plate.

★ Notice: The speed-limiting screw is opposite air inlet.

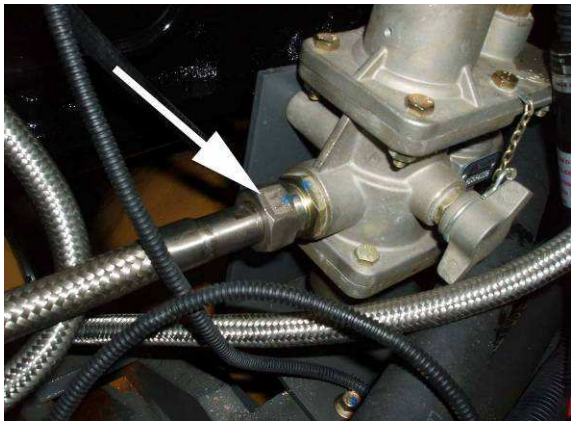
11. Install ejector pins and dust cover.

## 6.2 Disassembly and Assembly of Oil-water Separator

### Ⅰ Disassembly of Oil-water Separator (The disassembling steps for replacing the oil-water separator are as follow)

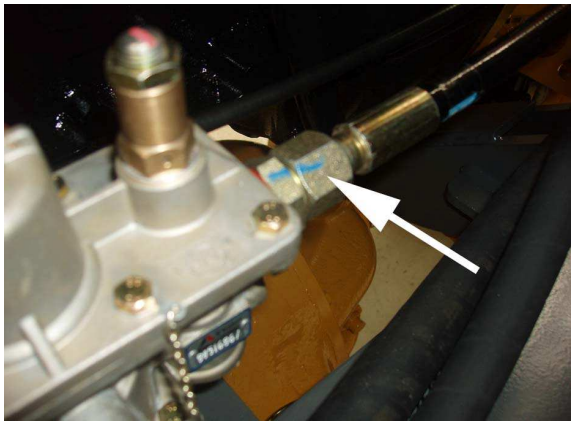
1. Start the complete appliance and run to the leveling, spacious and solid ground, then stop after placing properly. Put the bucket on the ground horizontally and place the operating handle in neutral position. Press down the parking brake joystick and stop the engine. Fix the tire of loader with wood wedge stability.

2. Before disassembling, release the pressure firstly. Open the water drain valve on the gasholder to release the internal pressure.

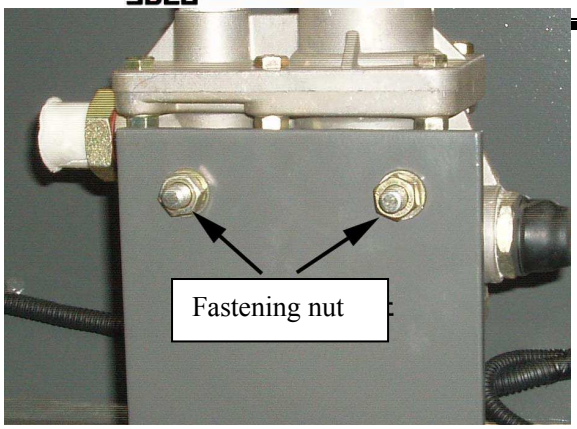


3. Open the side door. Remove the metal flexible hose at the end of air compressor to oil-water separator from two-way joint of oil-water separator.

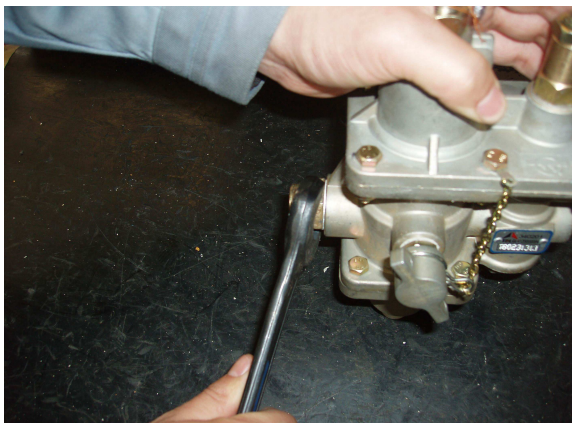
★ Pay attention to protecting each pipeline and port. Prevent the dust and sundries from entering the pipeline.



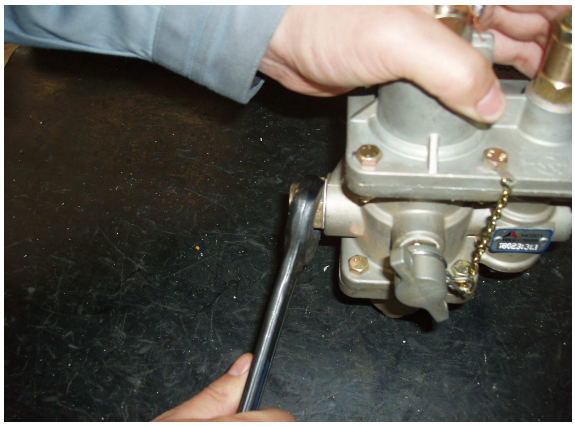
4. Remove the windpipe at the end of oil-water separator to gasholder from straight joint of oil-water separator.




5. Remove the fixed nut and washer of oil-water separator. Then remove oil-water separator from the support of oil-water separator.



6. Remove two-way joint and washer from oil-water separator respectively.

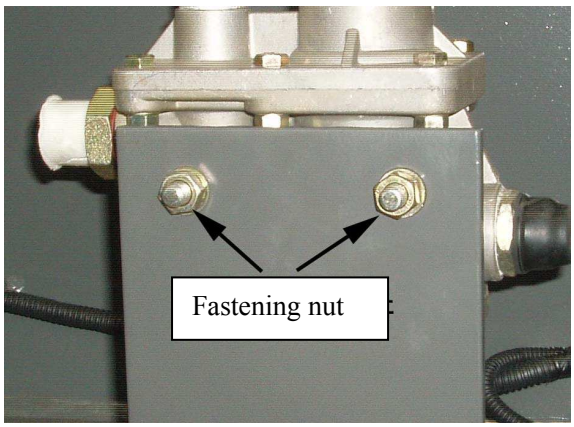


## Ⅱ Assembly of Oil-water Separator (Install according to the following steps after replacing and repairing completely)

1. After coating 1545 sealant on the two-way joint, add a washer and tighten on the oil-water separator.

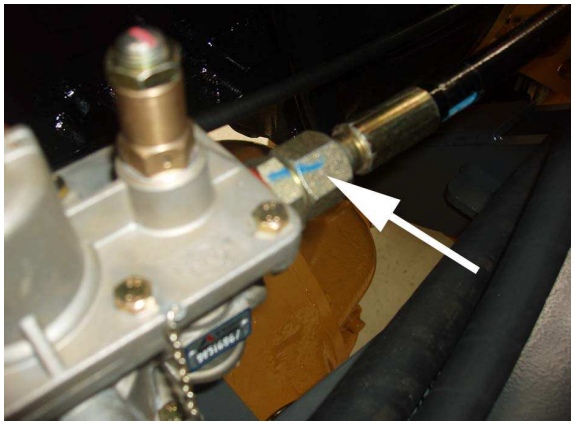
1545 sealant

kgm Tightening torque: 70~90Nm




2. Fix oil-water separator on the support of oil-water separator with self-bring nut and washer.

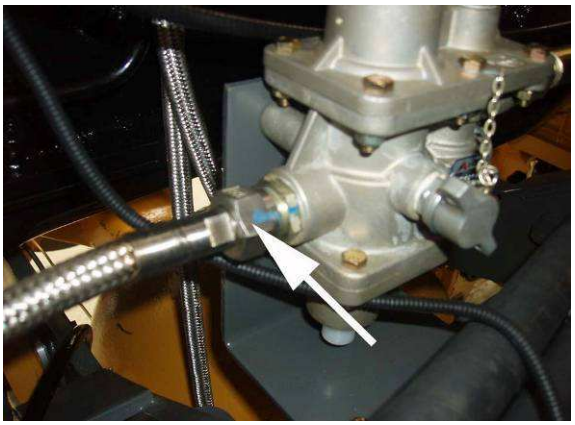
kgm Tightening torque: 22~30Nm



3. Tighten the windpipe at the end of oil-water separator to gasholder on two-way joint after adding a washer.

★ Never distort the flexible hose.

kgm Tightening torque: 50~65Nm



4. Coat 1272 screw lock fix sealant on the two-way joint of oil-water separator. Connect the metal flexible hose with oil-water separator adding a washer. Tighten after adjusting the angle.

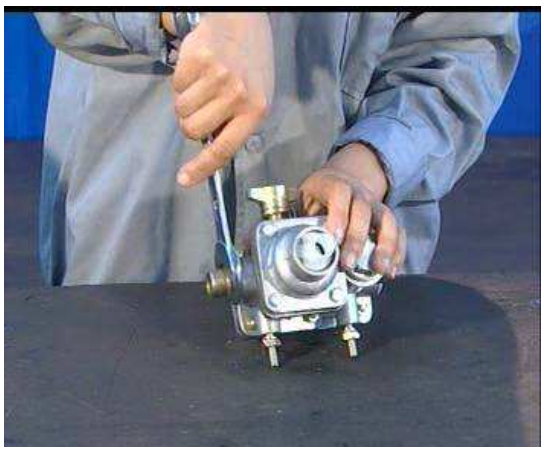
Tightening torque: 40~60Nm

kgm 1272 screw lock fix sealant

★ Notice: The metal flexible hose can be bended randomly and not rebound. Never contact and rub with other parts when assembling.

## 6.2.1 Disassembly and Assembly of Oil-water Separator Assembly

### Ⅰ Disassembly of Oil-water Separator



1. Remove the pipe joint and washer.

2. Remove the upper lock nut. Then loosen the regulating screw with screwdriver.

3. Remove the fixed bolt connecting upper cover with mid-body. Take down the upper cover.

4. Take down the regulating spring seat. Then take down one-way valve and return spring.

5. Take down the control piston assembly. Then take down the regulating valve rod.

6. Take down the pressure regulating valve.

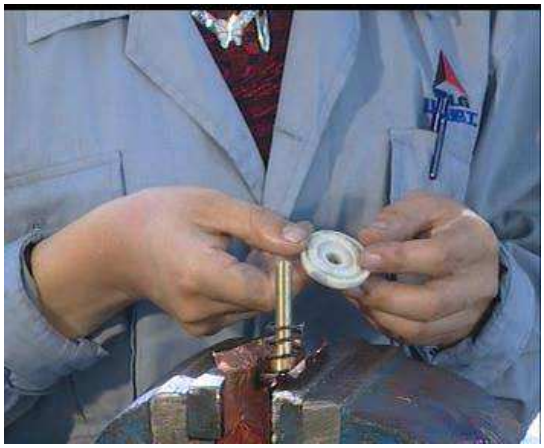
7. Turnover 180°, and then take down the shield ring and water drain joint.

8. Loosen the fixed bolt connecting lower shell with mid-body.

9. Take down the lower shell assembly.

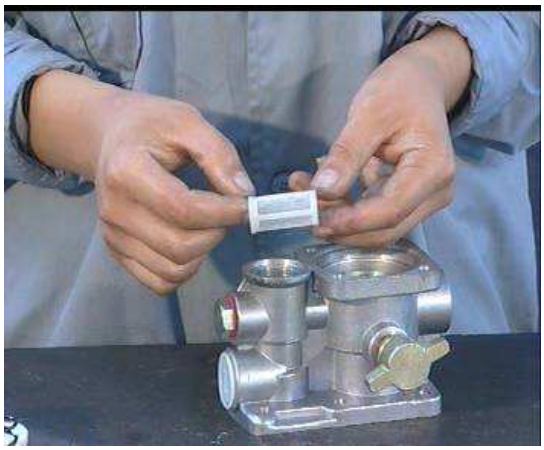
10. Remove the O-ring of lower shell.


11. Fix the lower shell assembly on the bench clamp, and then remove the valve core bolt and cushion. Take down the lower shell.



12. Take down the collector plate and the parts on it, and then take down the spring and O-ring of valve core.

13. Loosen the filter element plug, and then take down the O-ring.



14. Take down the air filter element.

15. Remove the wing nut.

## Ⅱ Assembly of Oil-water Separator

1. Clean every part for assembling.

2. Install O-ring on the valve core. Check the spring and install in place.

3. Install collector plate and the parts under it. Then install the lower shell.

4. Install the valve core bolt and cushion. Tighten the bolt.

5. Put the middle valve body horizontally and the fixing surface with lower shell is upward. Install the O-ring and lower shell assembly.

6. Put the air filter element in the midbody. Install the O-ring, plug and then tighten.

7. Install the bolt and washer connecting middle valve body with lower shell, and then tighten.

8. Install the regulating valve and regulating valve rod, and then install the control piston assembly in place.

9. Install the pressure regulating spring and spring seat, and then install the one-way valve return spring.

10. Install O-ring on the upper cover, and then install upper cover on the mid-body.

11. Assemble the mid-body and upper cover. Install the bolt and washer, then tighten.

12. Install the wing nut.

13. Install the regulating screw and lock nut, and then pre-load the nut.

14. Install the pipe joint washer, and then tighten.

15. Install the water drain joint and washer.

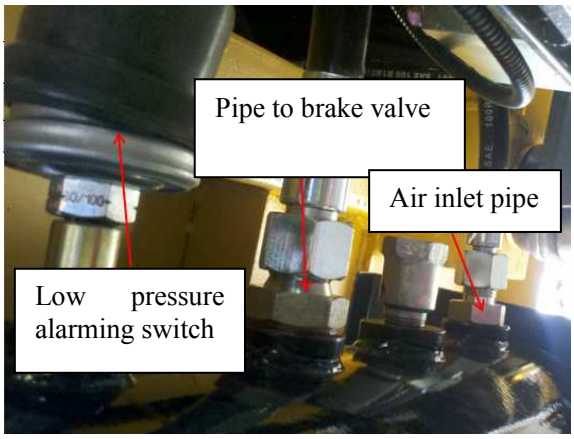
★The setting pressure on the complete appliance is 0.8Mpa.

## 6.3 Disassembly and Assembly of Gasholder

**Ⅰ Disassembly of Gasholder** (Disassembling foot brake valve from complete appliance can refer to the following steps)

1. Open the water drain valve to release the internal pressure.

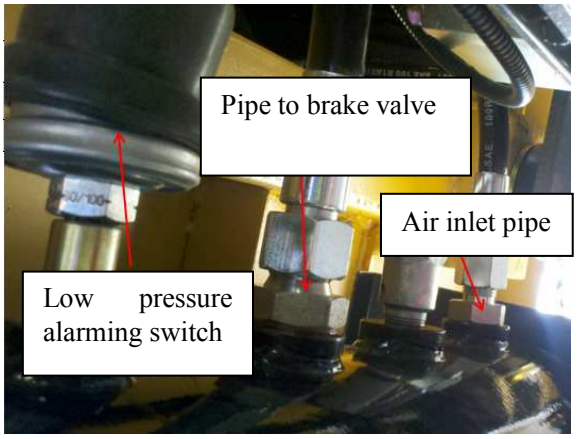
2. Remove the fixed bolt of gasholder cover, and then take down the gasholder cover.

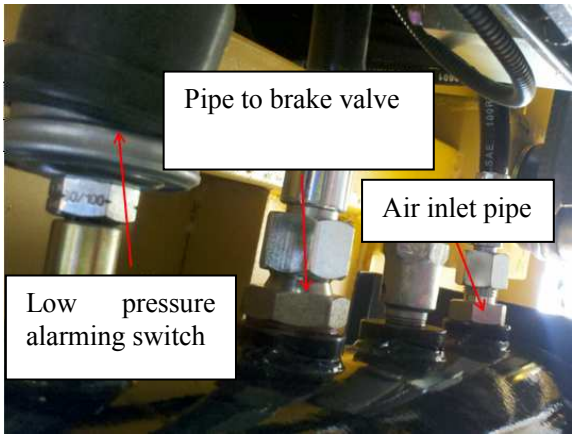



3. Disconnect low pressure alarming switch and gasholder oil inlet pipe, and disconnect the connection between brake valve oil inlet pipe and gasholder.

★In process of disassembly, pay attention to protecting each pipeline and port. Prevent the dust and sundries from entering the pipeline.

4. Remove the fixed bolt of gasholder and platform, and then take down the gasholder.




5. Remove the low pressure alarming switch, brake valve flexible pipe connector box and air inlet flexible pipe connector from the gasholder.

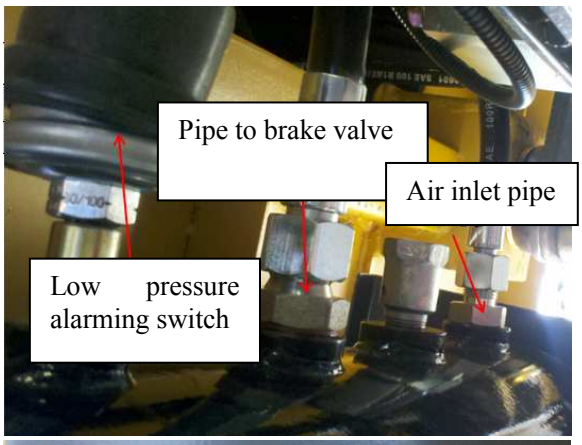
## II Assembly of Gasholder (Assembling gasholder on complete appliance can refer to the following steps)

1. Install tire pipe valve adding a washer on the gasholder. Then install pressure switch adding a washer on the gasholder. Install braking pressure sensor on the gasholder. Install two-way joint adding a washer on the gasholder. Coat KESAIXIN 1545 oxygen-weary type pipe thread sealant on gasholder safety valve, tire pipe valve, pressure sensor, plug, pressure switch and two-way joint. The requirement for daubing process is as follow: (1) Clean the position of screw with towel not losing fur. (2) Coat a circle of sealant on outside thread of part. The width of daubing sealant is 3~5 pitches screw, and the sealant should be full of thread profile. Don't coat sealant on the first pitch of screw, and coat instantly during assembling. After assembling completely, there should be a rounded circle of glue line on the outside thread and peritreme of screw. (3) Don't tighten each part daubing sealant with impact wrench, which should be tightened with wrench by hand. (4) The solidification time should be more than 30mins at least after assembling.

1545 oxygen-weary type pipe thread sealant

2. Install gasholder assembly on the rear frame with four bolts M10×30 and nuts M10.

kgm Tightening torque: 45~59Nm




3. Install a washer added the joint of gasholder to brake valve windpipe and gas inlet flexible pipe on the two-way joint of gasholder;

4. Install guard cover on the platform's lower ladder assembly with four bolts M10×25.

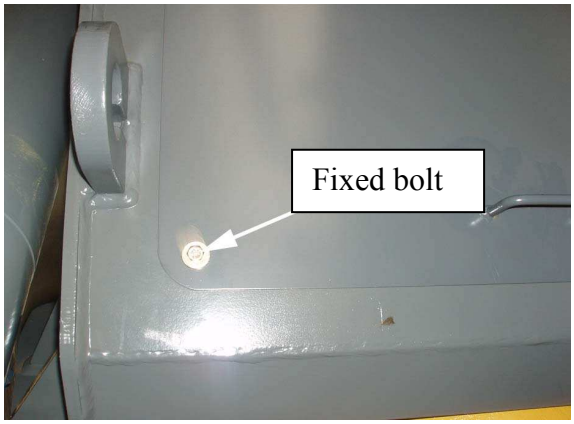
kgm Tightening torque: 45~59Nm

## 6.4 Disassembly and Assembly of Intensifier Pump

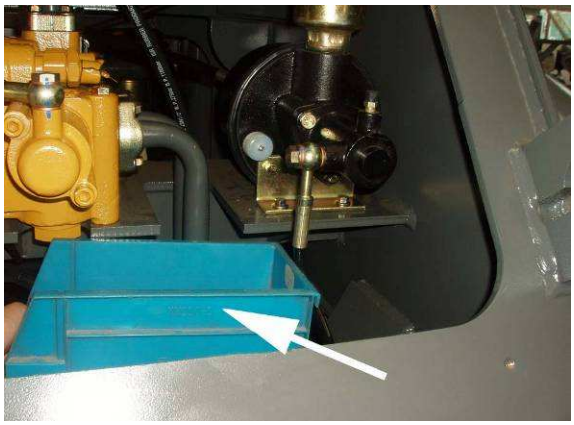
### Ⅰ Disassembly of Intensifier Pump (The disassembling steps for replacing the intensifier pump are as follow)

★ In process of disassembly, pay attention to protecting the flexible pipe and joint which are disassembled. Prevent the dust and sundries from entering the pipeline.

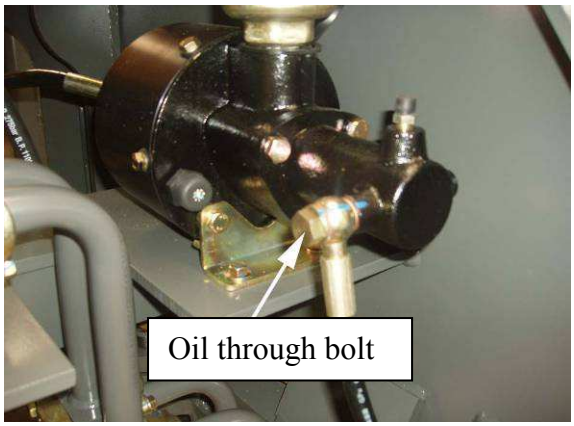
1. Start the complete appliance and run to the leveling, spacious and solid ground. Put the bucket on the support and place the operating handle in neutral position. Press down the parking brake joystick and stop the engine. Fix the tire of loader with wood wedge stability.




2. Remove the fixed bolt on the cover plate of front frame, and then take down the front cover plate.



3. Put oil holder under the intensifier which will be replaced.

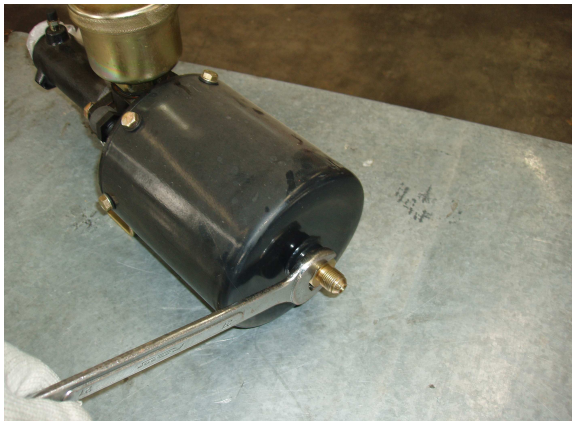



4. Remove the oil through bolt of front axle oil pipe to intensifier pump flexible pipe. Disconnect the connection between flexible pipe and intensifier pump.

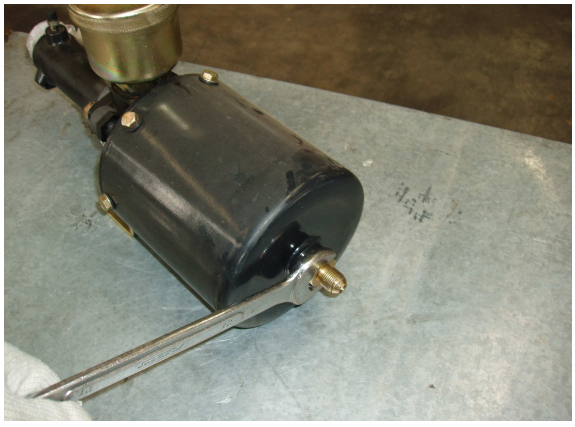
★The braking fluid has causticity, and pay attention to protecting body and machine.

5. Remove the flexible pipe at the end of foot brake valve to intensifier pump from the straight joint of intensifier pump.

6. Remove the fixed bolt of intensifier pump, and then take down the intensifier pump from front frame.



7. Remove the two-way joint on the intensifier pump.



**Ⅱ Assembly of Intensifier Pump** (Assemble according to the following steps after replacing and repairing completely)

1. Coat KESAIXIN 1545 oxygen-weary type pipe thread sealant on two-way joint, and then install the two-way joint adding a washer on the intensifier pump.

2. Install the front intensifier pump assembly on the intensifier pump support of front frame with two bolts M10 × 20. The bigger end of intensifier should be backward.

kgm Tightening torque: 45~59Nm

3. Connect the front axle oil pipe to flexible pipe of intensifier pump on the intensifier pump with oil through bolt and copper washer (the smaller copper washer is near to the intensifier pump).

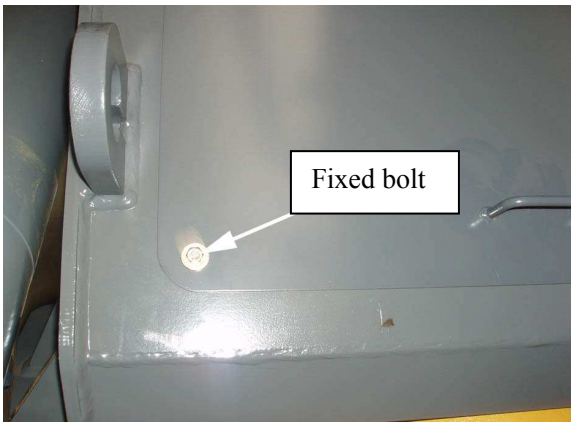
★ Never distort the flexible pipe.

4. Connect the foot brake valve to front intensifier pump flexible pipe adding a washer on the two-way joint of front intensifier pump.

★ Never distort the flexible pipe.

5. Load braking fluid and discharge the brake.

Load full of HZY3 braking fluid (GB/T12981-2003) in the brake oil cup, and then start the engine. When the reading of barometer rises to the specified pressure, loosen the deflating valve at top of brake shaft by the person who isn't on the loader. The person who is on the loader steps on the brake valve to exhaust gas until there is not bubble in the exhausting full line of fluid. Tighten the deflating valve after exhausting completely. Add braking fluid in the brake oil cup in time when




exhausting gas. Finally add braking fluid to the top of middle position of oil cup, and then install the cover of oil cup and tighten. Notice to tighten the deflating valve with wrest wrench.

kgm Tightening torque: 25~35Nm

6.Fix the front cover plate on front frame with four bolts M8×16 and washer.

kgm Tightening torque: 22~30Nm

★The braking fluid has causticity, so please clean the braking fluid falling on body and machine in time.

## 6.4.1 Disassembly and Assembly of Intensifier Pump Assembly

### Ⅰ Disassembly of Intensifier Pump Assembly

1. Discharge braking fluid in the intensifier pump completely, and then remove the oil storage cup assembly.

2. Remove the cover of oil cup and seal ring, and then remove filter screen.

3. Remove the air relief cock.

4. Remove the fixed bolt of intensifier cylinder.

5. Separate the intensifier cylinder from intensifier pump body.

6. Remove the O-ring on the intensifier cylinder.

7. Remove bolt on the intensifier cylinder body.

8. Remove the fixed plate.

9. Remove the respirator.

10. Separate the intensifier pump body from intensifier cylinder body.

11. Disassemble the intensifier pump body:

1) Press the spring with vice slowly, and then remove the spring retainer ring.

2) Remove the push rod seat and braking piston.

3) Remove the oil inlet valve of push rod seat.

4) Remove the skeleton oil seal of braking piston.

5) loosen vice slowly, and then separate push rod from push rod piston.

6) Remove the return spring and push rod piston assembly.

7) Take out the rubber band of push rod piston.

8) Remove the shield ring, washer and oil seal in the intensifier pump body.

## Ⅱ Disassembly of Intensifier Pump

1. Clean every part for installing.

2. Install the piston rubber band o the push rod piston.

3. Install the seal ring, gasket and shield ring in the intensifier pump body.

4. Coat small amount of braking fluid on the surface of push rod. Assemble the push rod piston, return spring and intensifier pump body, and then press with vice slowly.

5. Install the oil inlet valve in push rod seat.

6. Assemble the braking piston, push rod seat and push rod with shield ring. loosen vice.

7. Coat small amount of braking fluid on push rod piston and intensifier pump body. Assemble the intensifier cylinder body and intensifier pump body.

Install the bolt and washer.

8. Install seal ring in the braking piston.

9. Install O-ring in the braking cylinder body, and then load small amount of braking fluid.

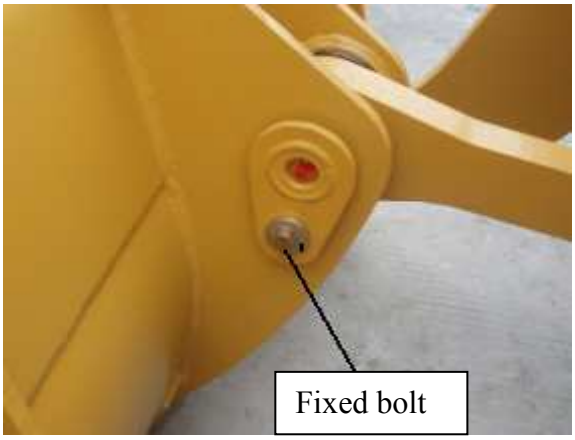
10. Assemble the intensifier braking cylinder body and intensifier pump body. Install the bolt and washer.

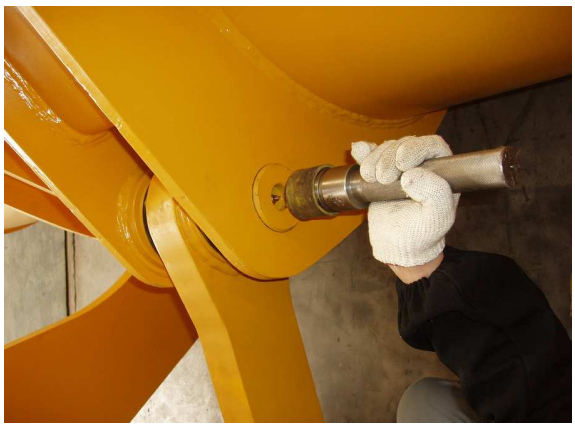
11. Install the air relief cock

12. Install the fixed plate with bolt and washer.

13. Install the intensifier cylinder respirator.

14. Install the oil storage cup and filter screen. Load small amount of braking fluid in the oil cup. Then install O-ring and oil cup cover.



# CHAPTER VII DISASSEMBLY AND ASSEMBLY OF WORKING DEVICE

## 7.1 Disassembly and Assembly of Bucket

**I Disassembly of Bucket** (Removing the section of bucket from complete appliance can refer to the following steps when replace bucket)

1. Start the complete appliance, run to the leveling, spacious and solid ground, and stop when place properly. Put the bucket on ground horizontally, and place all operating bars in the neutral position and pull up the operating bar of parking brake, then stop the engine and wedge the tire of loader with wooden wedge.
2. Remove the pin connecting linkage and bucket. Then remove the fixed bolt of pin.

Take down the pin with soft hammer.

★**Notice:** Fix the linkage with rope to avoid dropping to hurt foot or destroy ground when take down the pin.

3. Remove the fixed bolts of pins connecting left and right bucket with boom respectively.

Take down the pins on both sides with soft hammer.

4. Hang off the bucket or drive away from the complete appliance.

1. Remove bucket or away from the machine
2. Start the complete appliance, and lift the boom to certain position (the distance between front end of boom and ground is 0.3 meters). Clean filth in the shaft hole, and inject proper amount of grease in each hole.
3. Put O-shape dust ring on both ends of boom pin hole respectively.

★ **Notice:** Take care of hands when install the O-shape dust ring.

Hang the bucket, and adjust the position of bucket to align pin hole connecting bucket with boom.

kg Bucket

Connect bucket with boom with pin and gasket, then adjust the thickness and number of adjusting gasket to make sure the assembly clearance between bucket and end surface of boom is 0.5~1.5 mm.

Put the O-shape dust ring in the connecting clearance between bucket and boom.

Then fix the pin with two bolts and two washers.

kgm Tightening torque: 90±20Nm.

4. Start the complete appliance, then manipulate boom cylinder and fall the bucket to the ground. Lift the linkage, and manipulate dump cylinder to make linkage align to axle hole of connecting pin. Put one O-shape dust ring in both end of linkage axle hole. Make sure not hurt by O-ring.

kg Linkage

Connect bucket with linkage assembly with a pin, then fix the pin with a bolt M12×25 and a washer.

kgm Tightening torque: 90±20Nm.

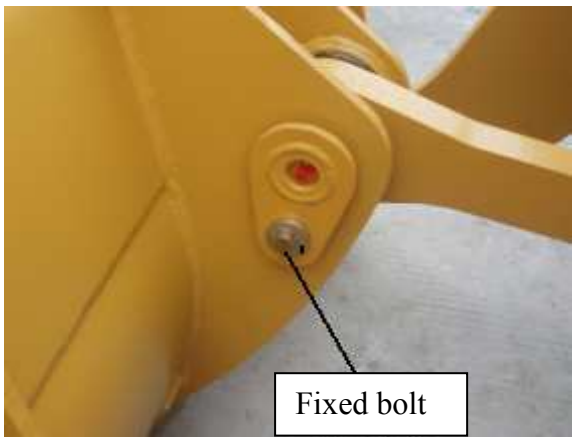
Load proper amount of lubricant grease in the pin connecting position with grease injector.

 Lubricant grease

## 7.2 Disassembly and Assembly of Linkage

**I Disassembly of linkage** (Removing the section of linkage from complete appliance can refer to the following steps when replace linkage)

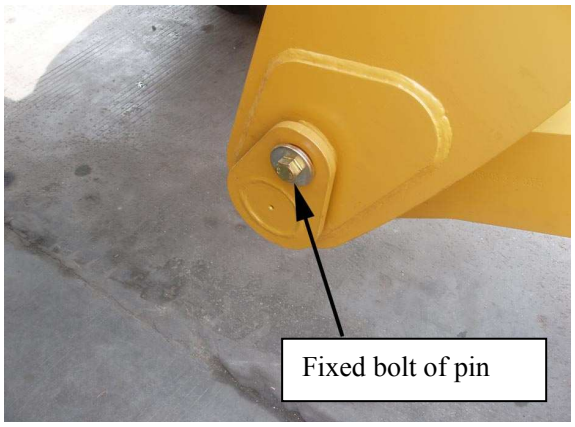
1. Start the complete appliance and run to the leveling, spacious and solid ground, and stop when place properly. Put the bucket on ground horizontally, place all operating bars in the neutral position and pull the operating bar of parking brake up, then stop the engine and wedge the tire of loader with wooden wedge.




2. Remove the pin connecting linkage with bucket. Then remove the fixed bolt of pin.

Take down the pin with soft hammer.

★**Notice:** Hang the linkage with joist barrow to avoid dropping to hurt foot or destroy ground when take down the pin.

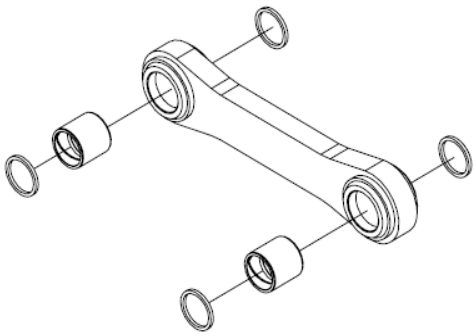



3. Remove the pin connecting linkage with rocker arm.

1) Remove the fixed bolt of pin.

2) Take down the pin with soft hammer.

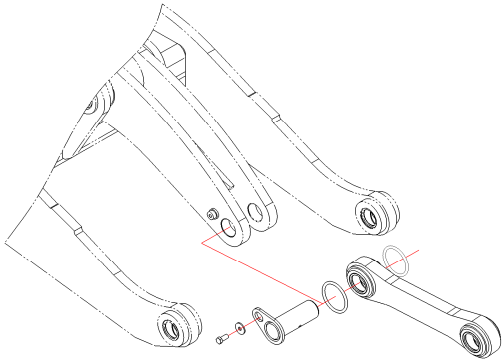
★ Notice: Predict the moving trace of linkage to prevent injury.



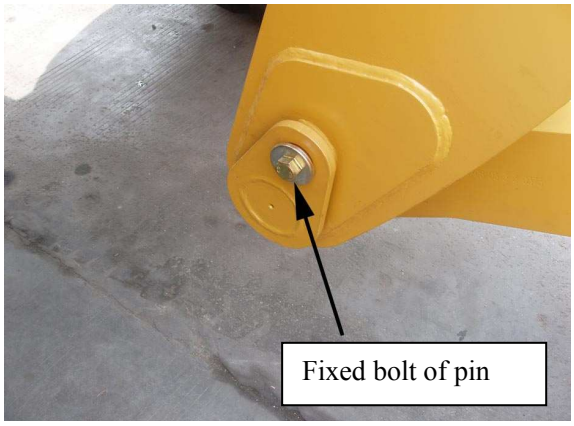
## Ⅱ Disassembly of linkage (Assembling the section of linkage on complete appliance can refer to the following steps when replace linkage)

1. Clean the antirust oil pollution in the shaft sleeve holes at both ends of linkage, and then install two sleeves in the hole at both ends of linkage with copper rod. And install two dust rings in the joint hole at both ends respectively.

★ **Notice:** Assemble the sleeve after it is frozen for 4 hours. Make sure wear protective gloves when take out sleeve from low temperature test box so as not to hurt hands.



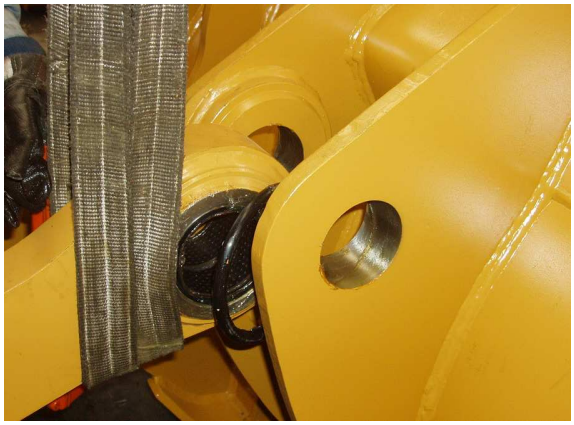
Load proper amount of lubricant grease in each hole when clean pollution.




2. Hang the linkage, and connect the linkage assembly on the rocker assembly with a pin and two O-shape dust rings.

Then fix the pin on rocker arm with bolt M12×25 and washer.

kgm Tightening torque: 90±20Nm.



3. Start complete appliance and hang the linkage. At the same time, manipulate the dump cylinder to align the hole of pin connecting linkage with bucket. Before linkage contacts with bucket, put an O-shape dust ring at both ends of linkage shaft hole. **Never** scratch the O-ring.

kg Linkage

Connect the bucket with linkage assembly with a pin, and then fix the pin with a bolt and a washer.

kgm Tightening torque: 90±20Nm.

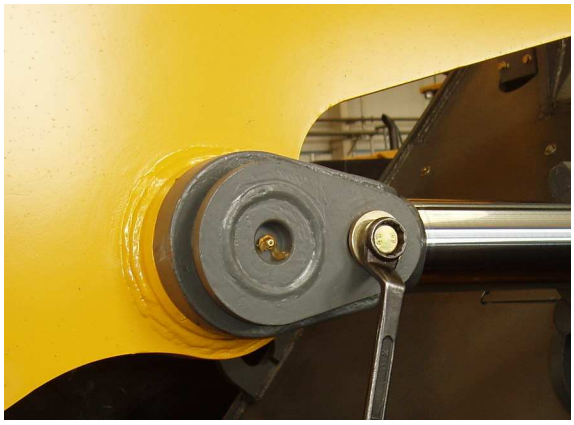
4. Load proper amount of lubricant grease in the pin connecting position with grease injector.

Lubricant grease

## 7.3 Disassembly and Assembly of Boom

**I Disassembly of boom** (the disassembling steps of replacing boom are as follow)

1. Start complete appliance and run to the leveling, spacious and solid ground, and stop when place properly. Put the bucket on ground horizontally, and place all operating bars in the neutral position and pull the operating bar of parking brake up, then stop the engine and wedge the tire of loader with wooden wedge.
2. Bucket (Disassembly and assembly of bucket is shown in 7.1).
3. Rocker (Disassembly and assembly of rocker is shown in 7.4).
4. Start the engine, and lift the boom to a certain distance. Put same height wood block under left and right boom cylinders to make sure disassemble the pin conveniently. Hang the boom with hoisting rope.



★ **Notice:** Keep the hoisting rope balance and keep the height of wood under left and right boom cylinders same.

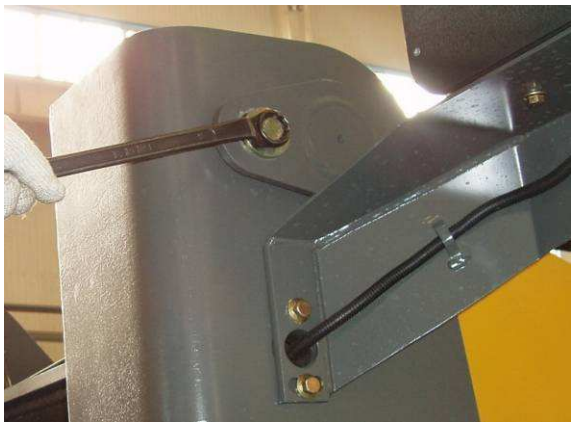
5. Remove the fixed bolt of pin connecting boom cylinder with boom.

6. Strike slightly and take out the pin.

7. Remove the left and right big lamps

★ Only remove the upper fixed bolt when assembly, loosen the down fixed bolt, make the lamp has an angle with the support to protect the circuitry from damaging.

8. Remove the fixed bolt of pin connecting front frame with boom.



9. Strike the pin slightly and take it out.

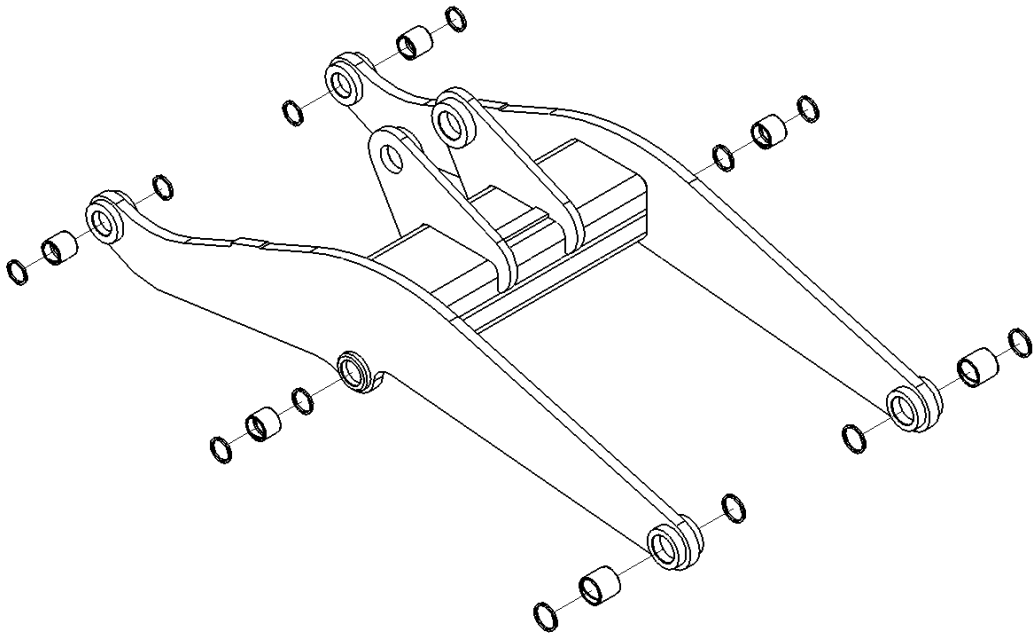
10. Lift the boom down.

★ Keep the boom balance in process of hang.

## Ⅱ Assembly of boom (Assemble according to the following steps after replacement and maintenance)

1. Clean the antirust oil pollution in each shaft sleeve hole, and coat proper amount of grease in each hole of boom. Lead two sleeves into the hole jointing boom and front frame with copper rod, and install four dust rings in jointing hole; Lead two sleeves into the hole jointing boom and boom cylinder, and install four dust rings in jointing hole; Lead two sleeves into the hole jointing boom and bucket, and install four dust rings in jointing hole and make sure the sleeves not tilt.

★**Notice:** Assemble the sleeves and joint bearings after frozen for 4 hours. Make sure wear protective gloves when take out sleeve from low temperature test box so as not to hurt hands.



2. Clean the filth. Check whether internal holes (oil duct) of each pin are clean and keep them unblocked. Then load proper amount of grease. First, install the rocker assembly on boom assembly with pin.

★ The clearance between rocker and end surface of boom is 0.5~1.5 mm after adding gasket. The two surfaces are basically symmetric.

Then fix the pin on boom with bolt and washer.

kgm Tightening torque: 90±20Nm.

3. Connect linkage assembly on the rocker assembly with a pin and two O-shape dust rings.

Then fix the pin on rocker with bolt and washer.

kgm Tightening torque: 90±20Nm.

4. Connect the bucket and boom assembly with two pins, two groups of gasket and four O-shape dust rings.

★ The assembling clearance between end surfaces is 0.5~1.5mm.

Fix the pin with two bolts and two washers.

kgm Tightening torque: 90±20Nm.

5. Connect the bucket and linkage assembly with a pin and two O-shape dust rings, then fix the pin with a bolt and a washer.

kgm Tightening torque: 90±20Nm.

6. Hoist the boom, rocker and bucket assembly smoothly.

★ **Notice:** Keep the hoisting object balance during hoisting and make sure not destroy the surface of pin.

7. Connect the boom, rocker arm and bucket assembly on the front frame with two boom pins and gaskets. Then fix the pins with a bolt and a washer respectively.

★ Make sure the assembling clearance between boom and front frame is 0.5~1.5mm by selecting gasket and installation position.

kgm Tightening torque: 90±20Nm.

8. Lift the boom to a certain distance, and take down the wood of same height under left and right boom cylinders, then hoist the boom with hoisting rope.

★ **Notice:** Keep the hoisting rope balance.

9. Start the engine to adjust the expansion amount of piston rod. Align the pin holes of piston rod and boom combined with hoisting rope. Then connect two boom cylinders on boom with two boom cylinder front pins and gaskets, and then fix the pins with a bolt and a washer respectively.

kgm Tightening torque: 90±20Nm.

★a. Make sure the unilateral clearance between front end of boom cylinder and boom is 0.5~1.5mm by adjusting the number of gaskets.

b. During assembling the gasket, try to make the center line of boom collinear with center line of front frame in order to make the clearances between external side of boom jointing hole and front frame are uniform. Then adjust the clearance between internal side of boom jointing hole and front frame by selecting corresponding adjusting gasket according to requirement.

10. Lift the dump cylinder to a certain distance, and then take down the wood under the dump cylinder.

11. Start the engine to adjust the expansion amount of piston rod. Align the pin holes of piston rod and rocker arm combined with hoisting rope. And connect the dump cylinder on the rocker arm with a pin, then fix the pin with a bolt and a washer.

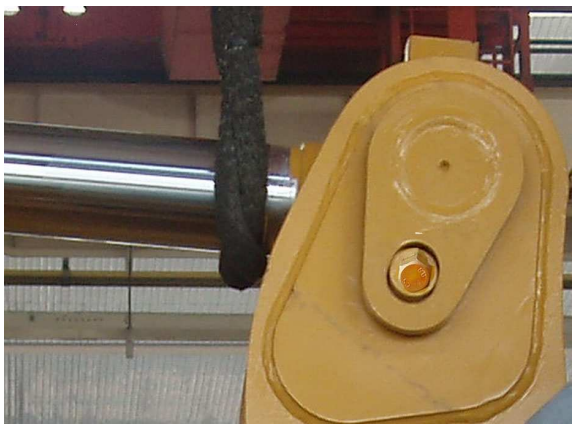
kgm Tightening torque: 90±20Nm.

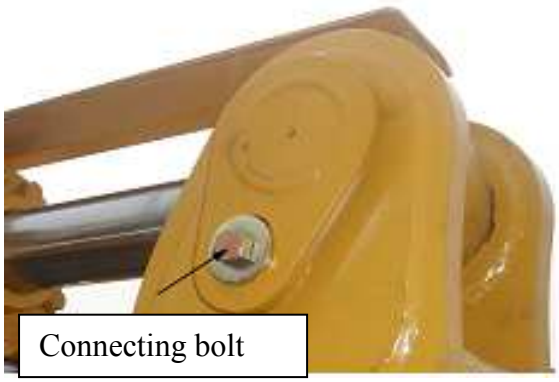
12. Assemble the left and right big lamps, tight the relevant fixed bolts.

13. Load proper amount of grease in the pin connecting position with grease injector.

★ **Notice:** The specific method in assembling linkage and bucket can refer to correlated chapter.

Grease





Connecting bolt

## 7.4 Disassembly and Assembly of Rocker

**Ⅰ Disassembly of Rocker Arm** (The disassembling steps of replacing rocker are as follow)

1. Start the complete appliance and run to the leveling, spacious and solid ground, and stop when place properly. Put the bucket on ground horizontally, place all operating bars in the neutral position and pull the operating bar of parking brake up, then stop the engine and wedge the tire of loader with wooden wedge.
2. Lift the dump cylinder with hoisting rope which should have certain pre-tightening force. Prevent the dump cylinder from dropping down when take down the pin.

kg Dump cylinder

★ Keep the hoisting rope in use clean, and make sure not destroy the piston rod. The best position to hoist is the front end of cylinder body.

Remove the pin connecting rocker with dump cylinder. And remove the connecting bolt of pin

Strike the pin down with soft hammer, and take down the gasket.

3. Lift the dump cylinder to a certain distance, and put a wood block at the bottom of dump cylinder, then set up the dump cylinder.

★ Make sure there is not oil pollution on the supporting position and place the wood block firmly.

4. Hoist the rocker with hoisting rope (through the pin hole).

★ Keep the hoisting rope in use clean, and make sure not destroy the pin hole of rocker.

5. Remove the pin connecting rocker and linkage, and then remove the fixed bolt of pin.

Strike the pin down with soft hammer and take down the O-shape dust ring.

★**Notice:** Before taking down the pin, apply certain pre-tightening force on linkage with hoisting rope to avoid dropping to hurt foot or destroy the ground when take down the pin.

6. Remove the pin connecting the rocker arm with boom. Then remove the fixed bolt of pin.

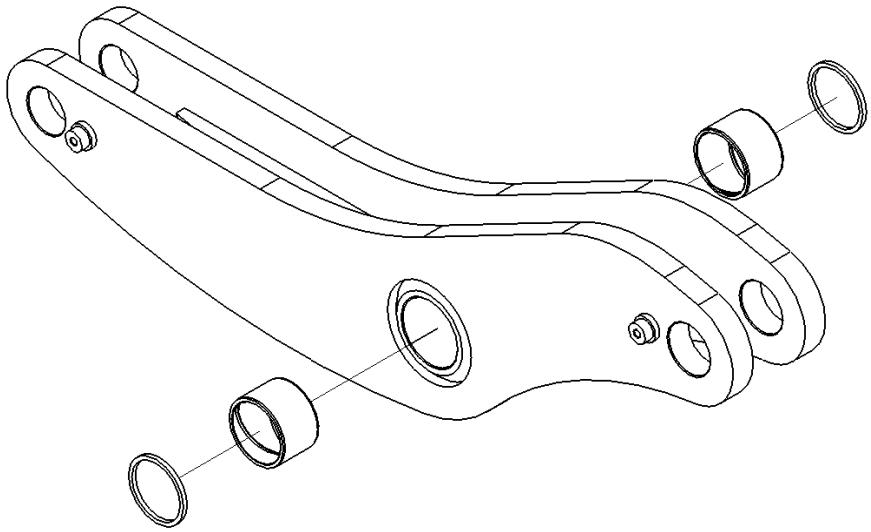
Strike the pin down with soft hammer and take down the gasket. Hang the rocker arm down and put it on the clean leather

kg Rocker arm

## Ⅱ Assembly of Rocker (Assemble according to the following steps after replacement and maintenance)

1. Clean the antirust oil pollution in each shaft sleeve hole, and coat proper amount of grease in each hole of boom. Lead two sleeves into the hole jointing boom and front frame with copper rod, and install the dust rings in jointing hole, Pay attention to the oil holes of two sleeves is level or not.

★**Notice:** Assemble the sleeves and joint bearings after

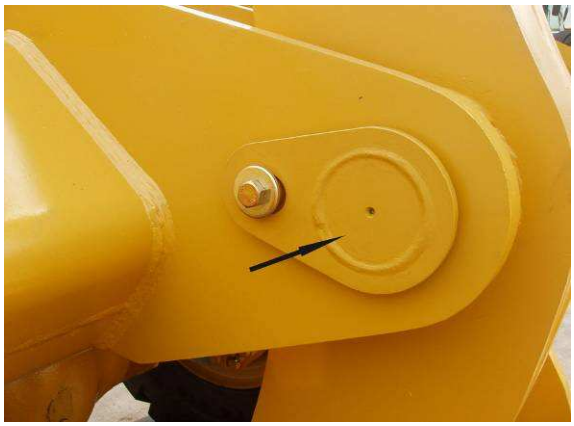


frozen for 4 hours. Make sure wear protective gloves when take out sleeve from low temperature test box so as not to hurt hands.

2. Clean the filth. Check whether internal holes (oil duct) of each pin are clean and keep them unblocked. Lift rocker with hoisting rope (through the upper pin hole)

★ Keep the hoisting rope in use clean, and make sure not destroy the pin hole on rocker..

kg Rocker



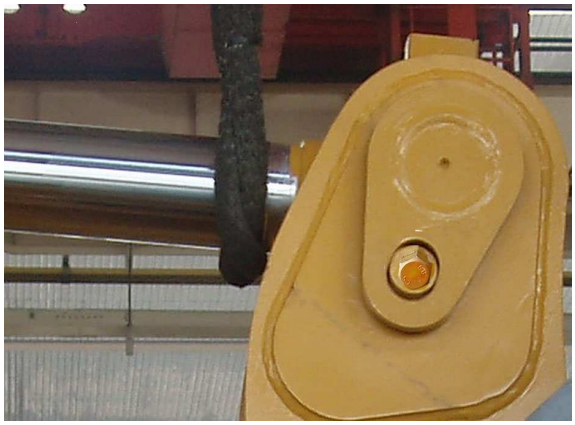
3. Align the two pin holes of hoisting rocker and boom, then install the pin and gasket on boom, and fix the pin with bolt, and adjust the clearance of rocker.

★ Add adjusting gaskets according to the clearance between end surface of rocker arm and boom. Make sure the unilateral clearance between end surface of rocker arm and end surface of boom is 0.5~1.5mm by selecting gaskets. The two surfaces are basically symmetric.

kgm Tightening torque: 90±20Nm.


4. Lift the dump cylinder and keep the rocker steady. Then take down the supporting wood block under dump cylinder.

kg Dump cylinder



5. Remove the hoisting rope in the pin hole of rocker, then hang the dump cylinder with hoisting rope (the best hoisting position is the front end of cylinder body). Start the engine to adjust the expansion amount of piston rod and align the pin holes on piston rod and rocker combined with hoisting rope. Connect dump cylinder on the rocker with a pin and put gasket on the jointing surface. The gasket should be selected according to type and installation position to make sure the assembling

clearance is 0.5~1.5mm. Tighten the pin with a bolt M16 ×25 and a washer.

kgm Tightening torque: 90±20Nm.

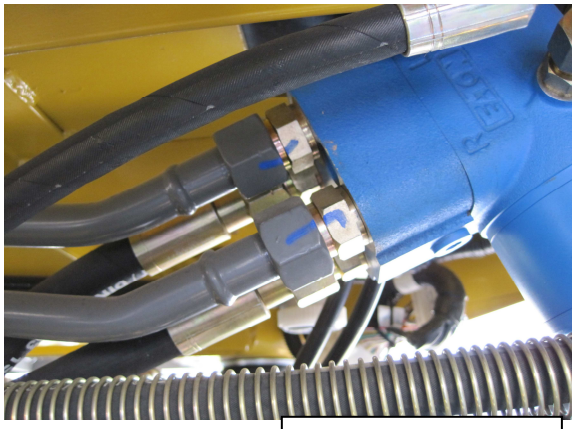
6. Lift the linkage with hoisting rope. Start the engine to adjust the expansion amount of rocker piston rod, and adjust the position of linkage and rocker to align the pin holes on rocker and linkage combined with hoisting rope. Connect the linkage assembly on the rocker assembly with a pin and two O-shape dust rings, then fix pin on the rocker with bolt M12×30 and washer.

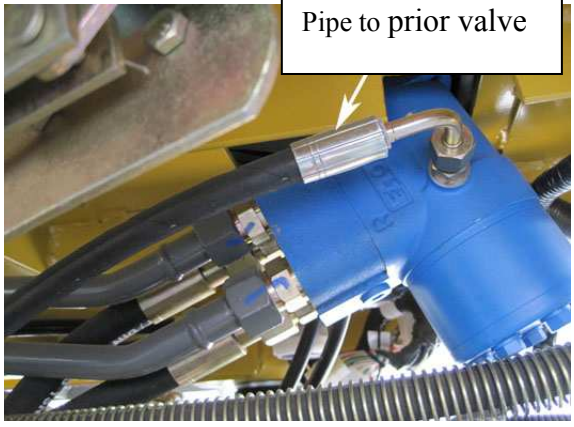
kgm Tightening torque: 90±20Nm.

7. Load proper amount of grease in the pin connecting position with grease injector.

Grease

# CHAPTER Ⅷ DISASSEMBLY AND ASSEMBLY OF CAB






## 8.1 Disassembly and Assembly of Cab Assembly

(This section mainly introduces how to replace the cab assembly, the replacing steps are as follow)

### Ⅰ Disassembly of cab assembly

Start the machine and run to the leveling, spacious and solid ground. Rotate the steering wheel to run in straight line and stop when place properly. Put the bucket on ground horizontally, and then stop the engine. Rotate the steering wheel for five or six times clockwise and anticlockwise. Release the oil pressure and wedge the tire of loader with wooden wedge.

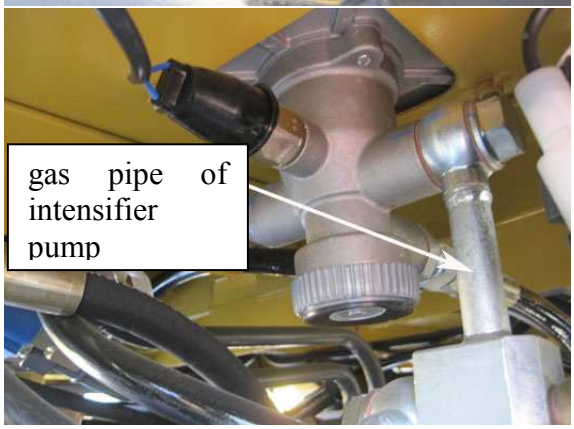
1. Put the oil holder under the steering gear.

2. Remove the four hydraulic oil pipelines of steering gear .and pipe of steering gear to prior valve.

★ **Notice:** In process of disassembly, do not unload the connecting nut on the oil port completely. loosen it a little until there is oil overflowing, and prevent the oil from bursting out due to oil unloaded not completely. Then disassemble the oil pipe completely. Protect the jointing surface of disassembling oil pipe, jointer etc. and keep them clean.

3. Disassemble the pipeline connecting on the brake valve.

3.1 Open deflation valve on the gasholder, and release the pressure gas completely.

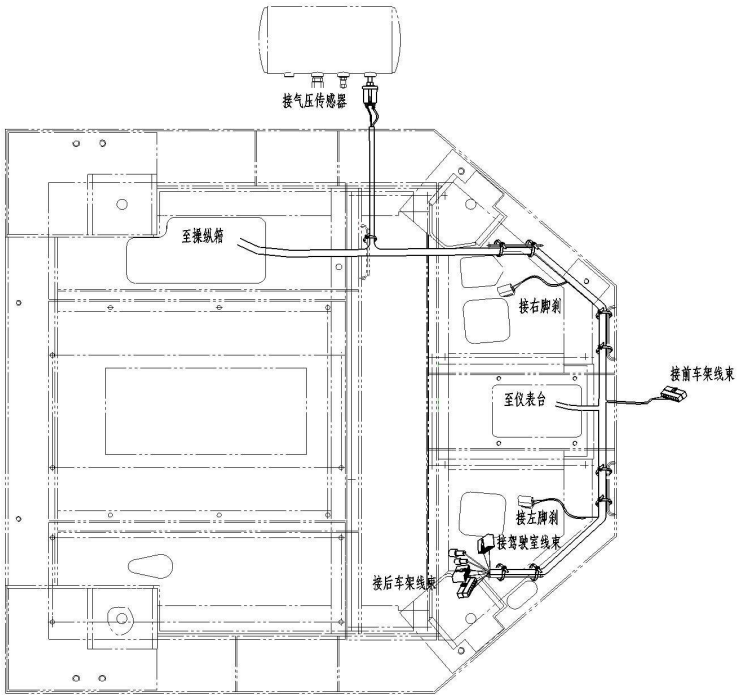



3.2 Remove the gas pipe of brake valve to intensifier pump.

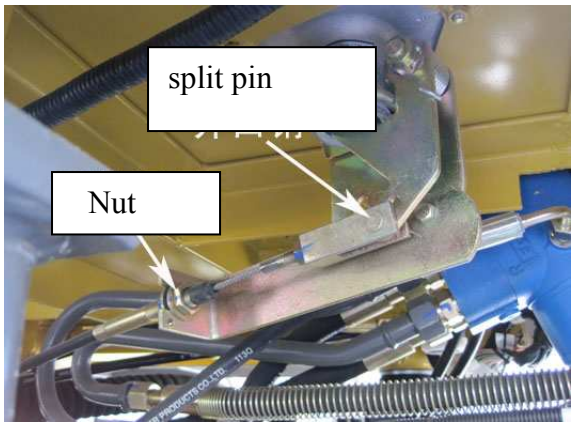
3.3 Remove the gas pipe of gasholder to brake valve.

★ Protect the jointing surface of disassembling oil pipe, jointer etc. And keep them clean.

4. Unplug the connector connecting the cab. as is shown below figure.




5.




Remove wire connecting with the pilot valve and the operation box (refer to the disassembly and assembly of operation box).

6. Remove the throttle flexible shaft of engine.

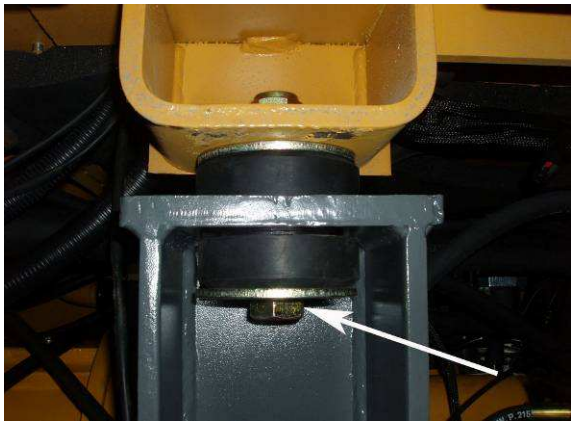
Remove the split pin of throttle operating flexible shaft connecting to the pedal, then loosen dorsal-compact nut of engine throttle flexible shaft .Remove the throttle and operate the flexible shaft.

7. Close the inlet and outlet water valve of engine, and then remove the two water pipes at left of air conditioner evaporator, and then remove the air conditioner hose connecting with compressor and liquid storage tank (refer to the disassembly and assembly of air conditioner).

★ The place of maintenance should be airy.


8. Remove connecting blots of the lift and right handrails and the cab.

9. Lift the cab until the hoisting rope is not loosen, but not too tight.



10. Remove the four bolts on the fixed cab.

11. Lift the cab away from frame and put on the proper position.

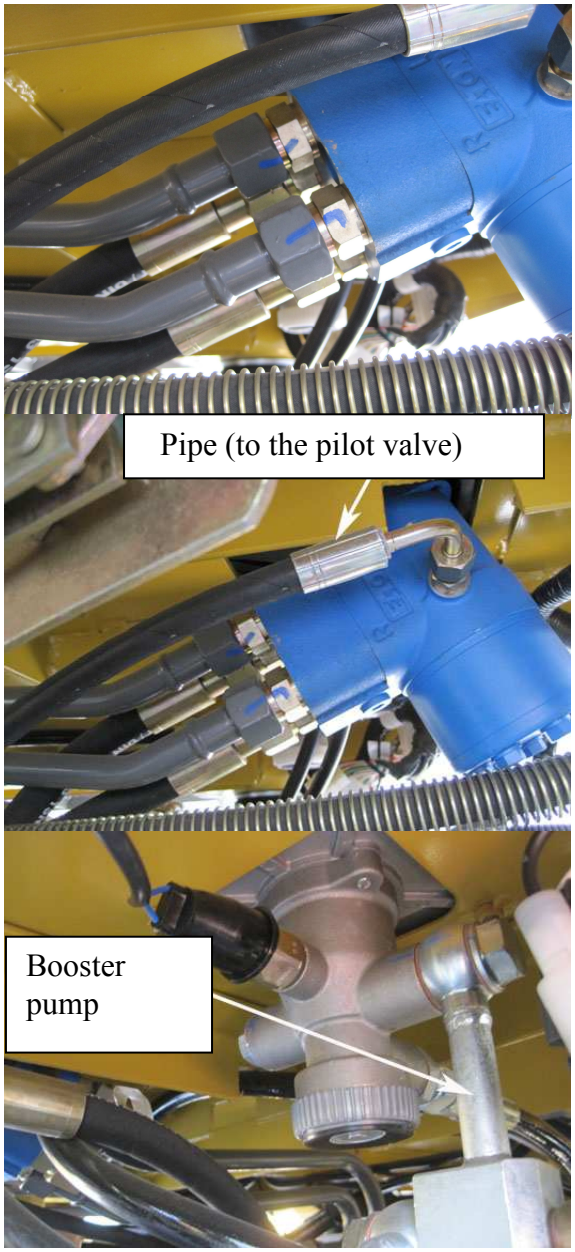
kg Cab assembly

## Ⅱ Assembly of Cab

1. Put four shock absorbers and four washers on the cab support of rear frame. Lift the cab assembly to rear frame support. During falling, four bolts will be through four washers and four shock absorbers from up to down under the support. Adjust the position of cab assembly .After adjusting properly, install four washers and four nuts, then tighten the bolts in principle of diagonal. When fall the cab assembly, pay attention to the pipe and wire below.

kgm The bolt of cab assembly M20: Tightening torque: 120~200Nm

2. The connection of pilot valve pipes(refer to the disassembly and assembly of operation box).



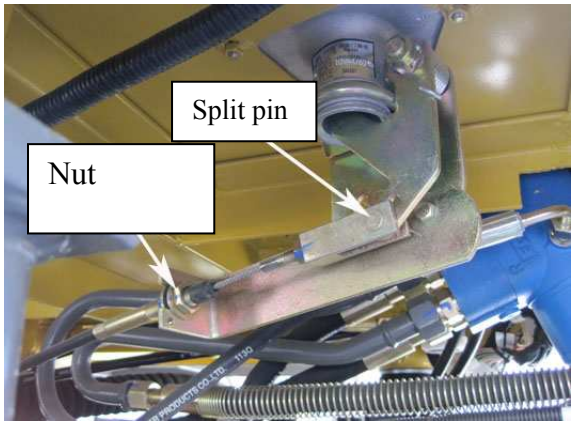

3. Connect four oil pipes of steering gear.

4. The connection of steering gear to the pilot valve.

5. The connection of pipes on the brake valve.

5.1 Assemble the windpipe of brake valve to intensifier pump.

5.2 Assemble the windpipe of gas storage tank to brake valve.




6. The connection of throttle flexible shaft

Connect throttle flexible shaft with throttle manipulation mechanism and adjust the dorsal-compact nut. After assembling, press flexible shaft by hand to test whether the tightness is suitable

11. The installation of air conditioner (shown in the disassembly and assembly of air conditioner).
12. The connection of electric instrument.

Connect the wire of cab with other wires according to the

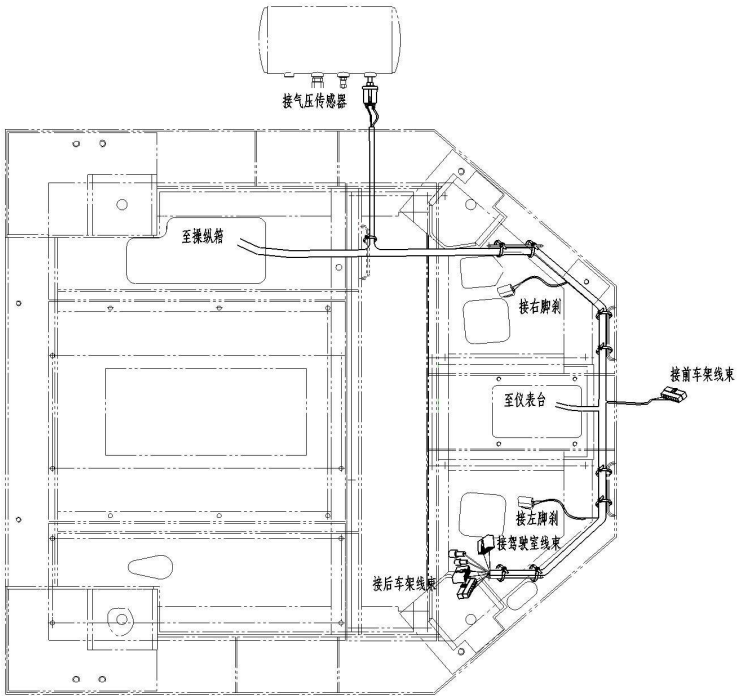


figure below.

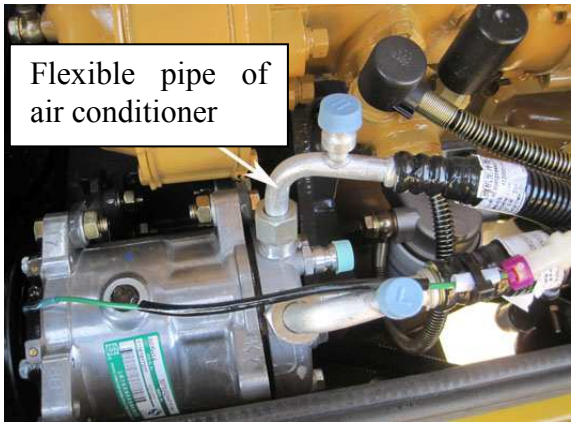
9. Assemble the connecting bolts of lift and right platforms and cab.


## 8.2 Disassembly and Assembly of Air Conditioner

(This section mainly introduces how to replace the air conditioner, the replacing steps are as follow)

### Ⅰ Disassembly of Air Conditioner Evaporator

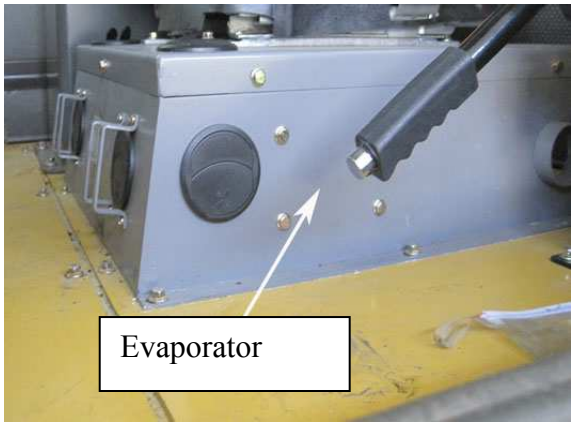
1. Close the inlet and return water pipe of air conditioner evaporator on the engine.




2. Loosen the connection of compressor with air conditioner flexible pipe, and then discharge the refrigerant in the refrigeration system.

★ The place of maintenance should be airy and the maintenance personnel should be far away during discharging.

3. Remove the seat assembly (shown in the disassembly and assembly of seat).



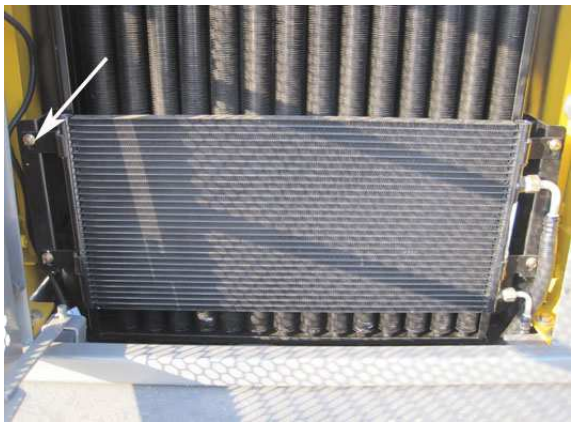

4. After removing the air conditioner evaporator, remove water heating pipes and the pipes connecting with the liquid storage tank and compressor. Open the connector of connecting evaporator with the air conditioner's faceplate , power lines ,compressor and liquid storage tank.

★ **Notice:** Discharge the storage water of water heating pipe in the underside vessel.

## Ⅱ Disassembly of Air Conditioner Condenser

1. Open the rear window. Remove the flexible pipe connecting condenser with compressor.

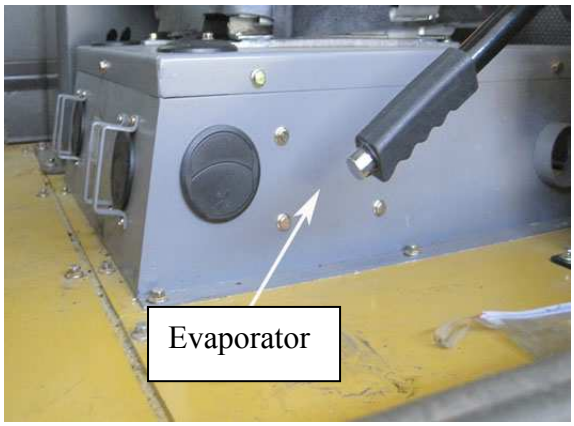
2. Remove the flexible pipe connecting condenser with liquid storage tank.

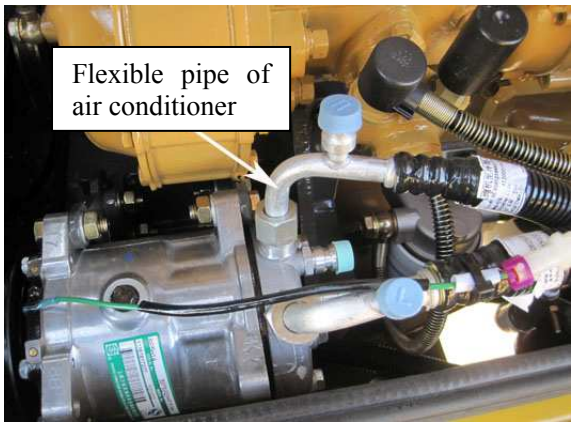


3. Remove the four connecting bolts, remove the condenser.

## Ⅲ Assembly of Air Conditioner Evaporator

1. Connect the pipes of water heating pipe ,liquid storage tank and compressor with evaporator. Connect the connector of connecting evaporator with the air conditioner's faceplate, power lines , compressor and liquid storage tank.





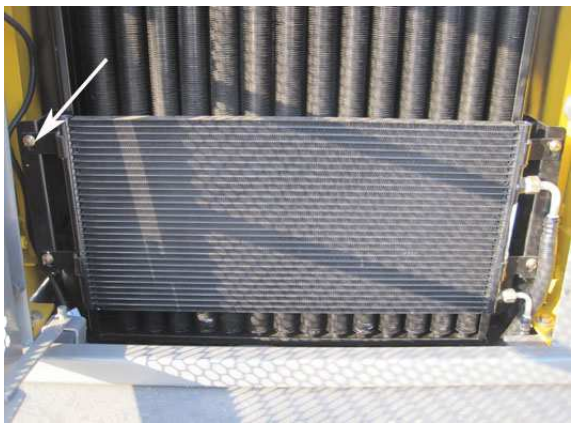

2. Place the evaporator on the platform of cab, and fix it with four bolts.

3. Assemble the seat on the evaporator (refer to the disassembly and assembly of seat)

4. Connect flexible pipe with compressor.

5. Open the inlet return water pipe valve of air conditioner evaporator on the engine.

## Ⅳ Assembly of Air Conditioner Condenser



1. Fix the air conditioner condenser on the support with four bolts .

2. Connect the flexible pipe connecting with liquid storage tank with the underside port of condenser.

3. Connect the flexible pipe connecting with compressor with the upper port of air conditioner condenser.

4. Close the rear window.

## 8.3 Disassembly and Assembly of Operation Box

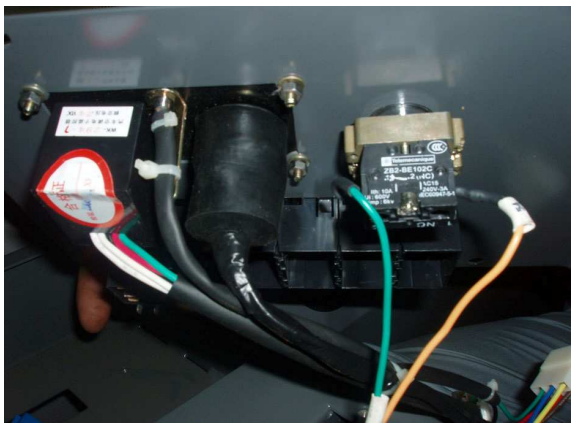
(This section mostly introduces how to replace the operation box; the replacing steps are as follow)

### I Disassembly of Operation Box

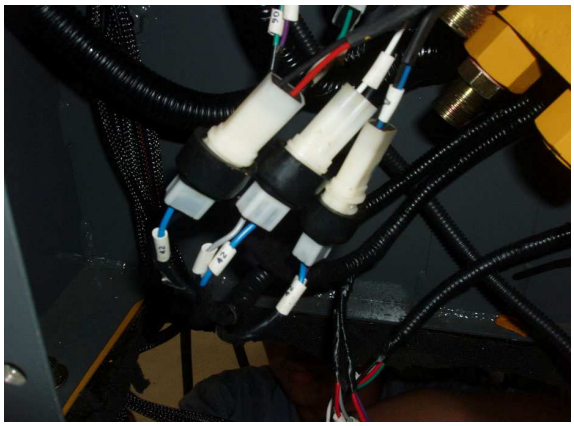
1. Remove the fastening bolt on cover plate at side of operation box.

2. Remove the cover plate at side of operation box.

3. Disconnect the connection of instrument desk wiring harness with air conditioner control plate wiring harness.

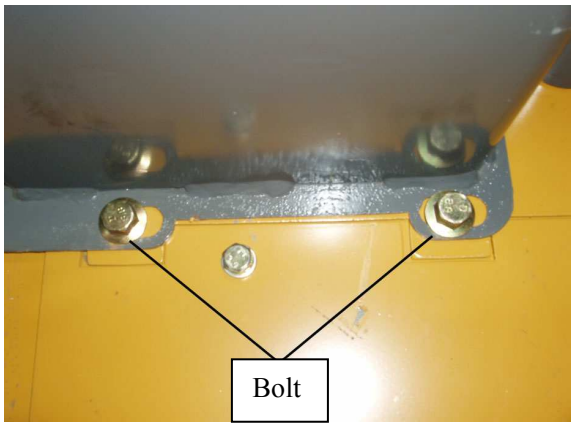


4. Disconnect the connection of instrument desk wiring harness with pilot valve button switch wiring harness.



5. Unplug the connector of intermediate relay with instrument desk. Remove the intermediate relay.

6.Remove the straight joint, inlet and return oil pipe connecting with pilot valve (In process of disassembly, do not unload the connecting nut on the oil port completely. loosen it off a little until there is oil overflowing. Notice to catch and mark each straight joint).




7. Remove the four bolts fixing the operation box.

8.Take out the operation box.

9. Remove the fixed bolt on the back cover plate and upper cover plate of operation box.

10. Take down the upper cover plate and back cover plate.

11. Remove bolts fixing pilot valve.

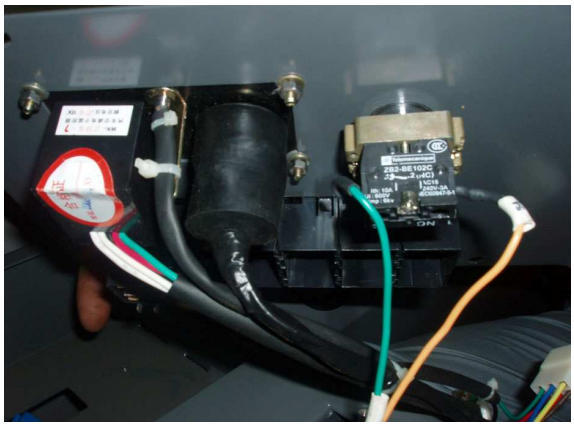
12. Take down the pilot valve.

## Ⅱ Installation of Operation Box

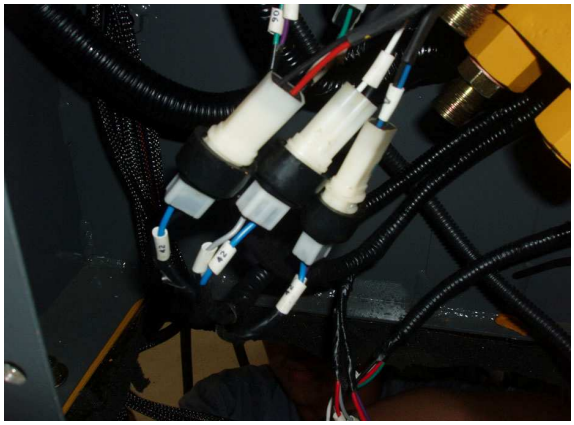
1. Fix the pilot with two bolts on the corresponding position of operation box.

2. Install the hand brake switch, rubber sleeve and air conditioner control plate on the corresponding position of upper cover plate of operation box, and then put the upper cover plate after installing on corresponding position of operation box.

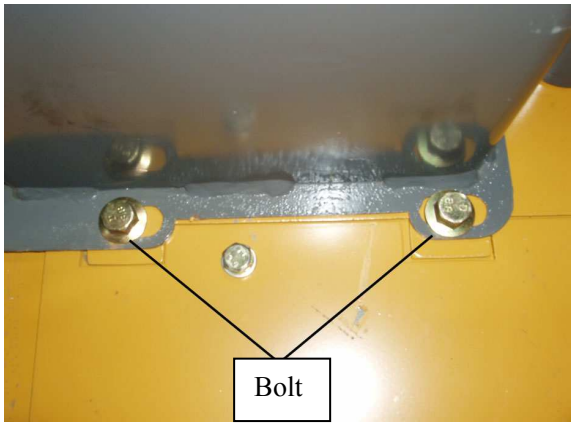
3. Fix intermediate relays on the operation box. Connect with corresponding connector of instrument desk wiring harness.



4. Connect the connector of instrument desk wiring harness with connector of air conditioner control plate wiring harness.



5. Connect the instrument desk wiring harness with pilot valve button switch wiring harness.




6. Fix the operation box on the proper position of cab with bolts .

7. Connect the flexible pipe and straight joint of pilot valve on the pilot valve.

8. Close the cover plate at side of operation box.

9. Tighten the side cover plate with four bolts.

## 8.4 Disassembly and Assembly of Seat

(This section introduces how to replace the seat. The replacing steps are as follow).

### Ⅰ Disassembly of seat

1. Remove the seat assembly.

Remove the four bolts connecting seat with evaporator.

2. Take out the seat assembly.

### Ⅱ Installation of seat

1. Place seat on the evaporator, and then fix it with four bolts.

## 8.5 Disassembly and assembly of electric equipment in the Cab (This section introduces how to replace the window wiper and front lamp. The replacing steps are as follow)

一. Disassembly of electric equipment in the cab

1. Cut off the power switch.

2. Disassemble the window wiper.

2.1 Disassemble the tightening bolts on the window wiper.

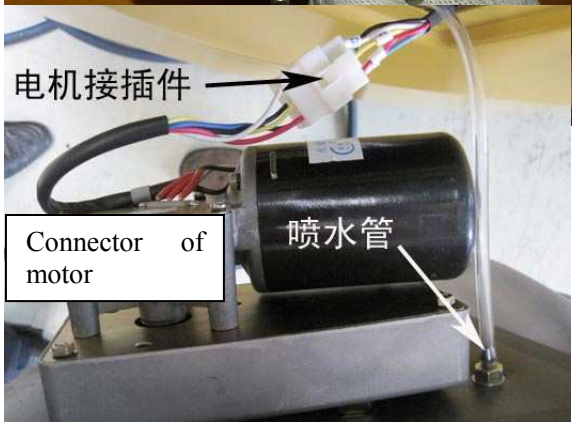
2.2 Remove the pendulum bar of the window wiper.

2.3 Remove the protecting cover.

2.4 Remove the nuts.

2.5 Remove the fixed board.

2.6 Remove the motor and operating mechanism of the window wiper




2.7 Unplug the connector of motor, and remove the

spilling water pipe.

| |
|---|
| spilling water pipe |

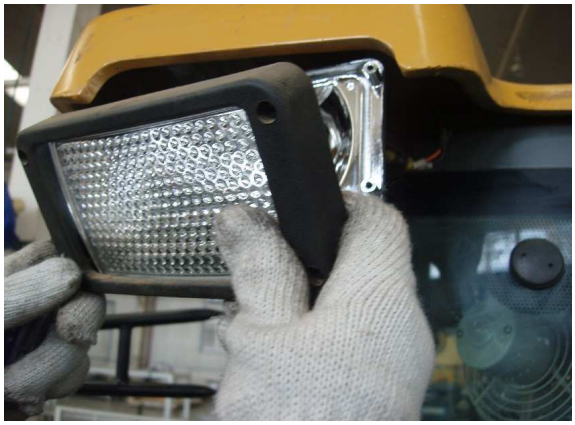
3. Disassemble the front lamp in the cab.

3.1 Unplug the connector of front lamp.

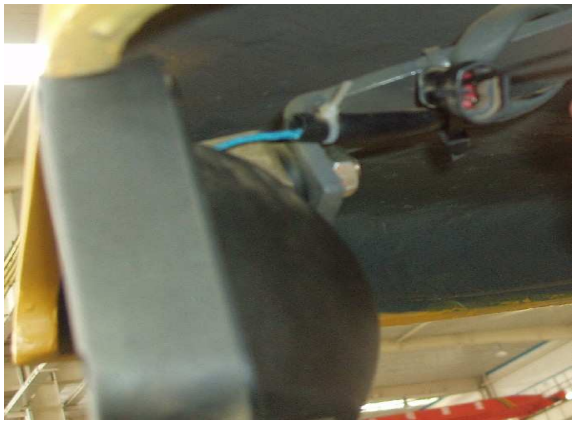
3.2 Remove the front lamp.

3.3 Take the front lamp apart.

3.3.1 Remove the screw on the lamp.

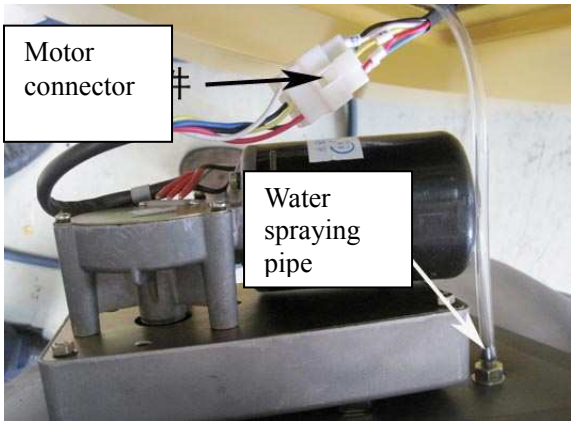


3.3.2 Remove the glass and fixed crust.



3.3.3 Seek out the power wire's post in the connector.

3.3.4 Remove the lamp.




二． Assembly of electric equipment in the cab

1． Assembly of the window wiper

1.1 Assemble the connector of motor and connect the spilling water pipe.

1.2 Assemble the motor and operating mechanism of the window wiper

1.3 Assemble the cover board, and tight the back-tightening nuts.

1.4 Assemble the protecting cover.

1.5 Assemble the fixed board on the cab.

1.6 Assemble the pendulum bar of window wiper.

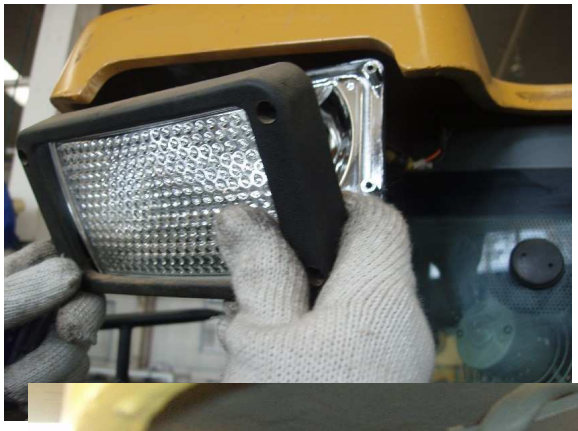
1.7 Fix the pendulum bar of window wiper.

★ Pre-tight the fixed nut of the pendulum bar, turn on the window wiper switch, adjust the position of the pendulum bar according to the working area of the window wiper, tight the nut.

2. Assembly of the front lamp

2.1 Assemble the lamp.

2.2 Fix the glass of front lamp.



2.3 Connect the power wire of the lamp with the

connector.

2.4 Fix the front lamp on the support of the cab.

3. Assemble the connector of front lamp.

4. Turn on the power switch.

# CHAPTER Ⅸ DISASSEMBLY AND ASSEMBLY OF ELETRIC SYSTEM

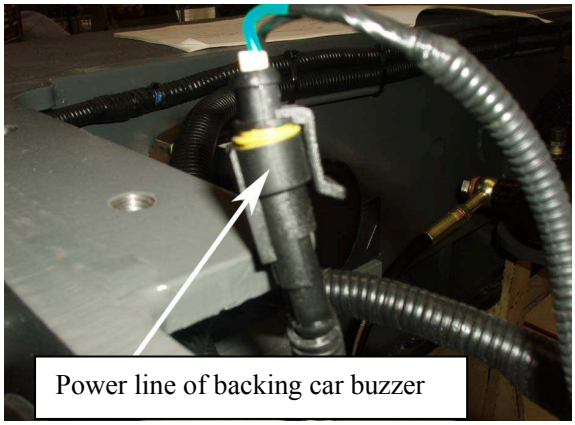
## 9.1 Disassembly and Assembly of Rear Frame Wiring Harness

(This section introduces how to replace the rear frame wiring harness. The replacing steps are as follow)

### Ⅰ Disassembly of rear frame wiring harness

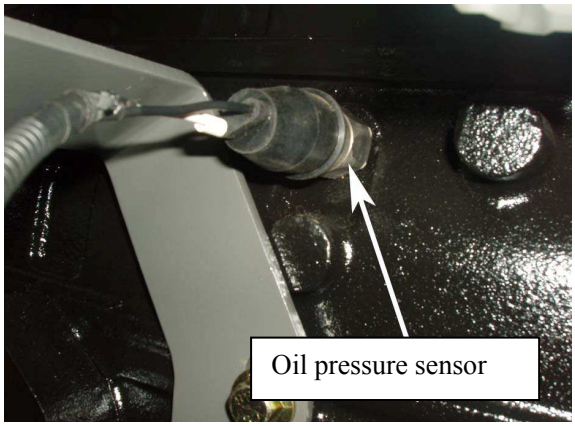

1. Turn off the power main switch. Open the battery cover. Get off the No.56a line on the place of battery positive pole of rear frame's wiring harness.

2. Unplug the connector of tail lamp at left and right of storage battery.




3. Unplug the plug of backing car buzzer.

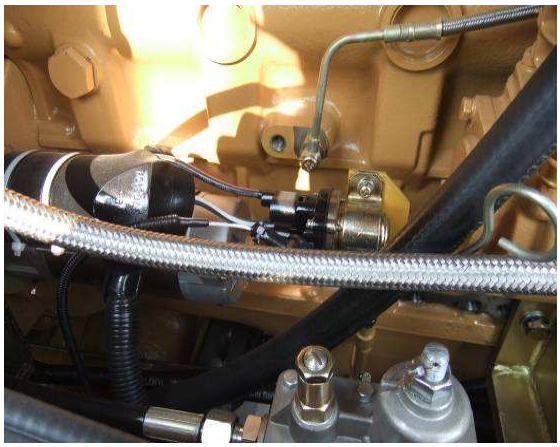
4. Remove the connection of engine oil pressure sensor.




5. Remove the connection of engine water temperature sensor.

6. Remove the connection of generator on the engine.

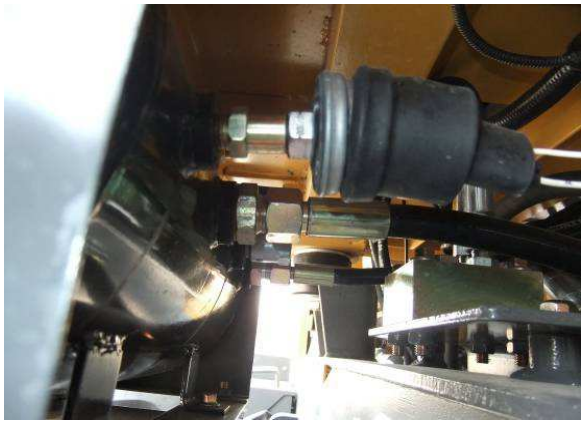
7. Remove the connection on the starting motor.



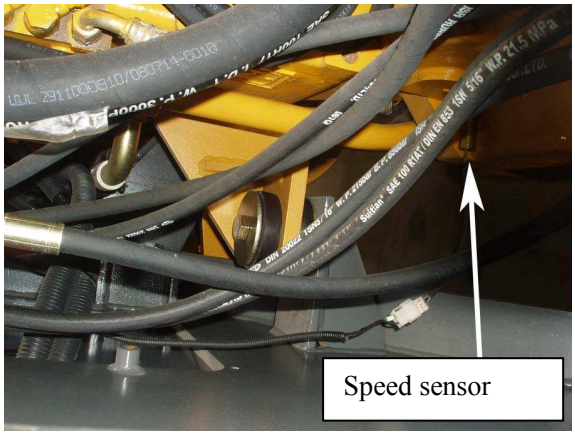
8. Remove the connection of backing switch.

9. Unplug the plug of fuel level sensor.

10. Unplug the connector of rear frame's and rear cover's wiring harness.



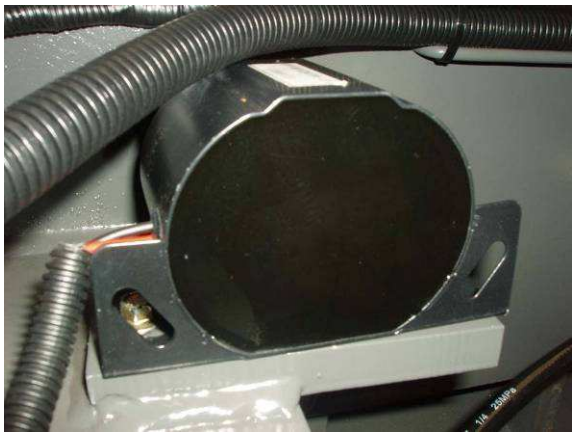
11. Disconnect the wiring harness of braking air pressure sensor and pressure switch.




12. Unplug the plug of speed sensor.

13. Unplug the connector which instrument desk wiring harness connects with rear frame wiring harness each other.

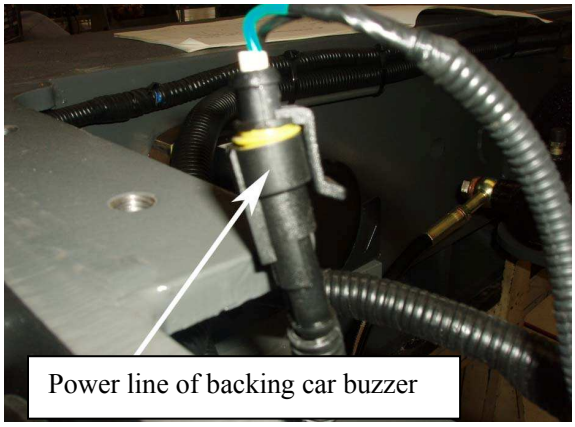
14.Shear break the ligature on frame wiring harness. Then take down the rear frame wiring harness.



## Ⅱ Assembly of Rear Frame Wiring Harness

1. Install the backing car buzzer on rear frame with two bolts M8×16.

2. Connect No. 0 and 9 plug of rear frame wiring harness with plug of backing car buzzer.




3. Connect rear frame wiring harness and starting motor wiring harness on the storage battery relay.

4. Pave rear frame wiring harness and starting motor wiring harness at left of rear frame, and then bind wiring harness with ligature and fix.

5. Remove the connection of backing switch.

6. Connect the wiring harness on engine.

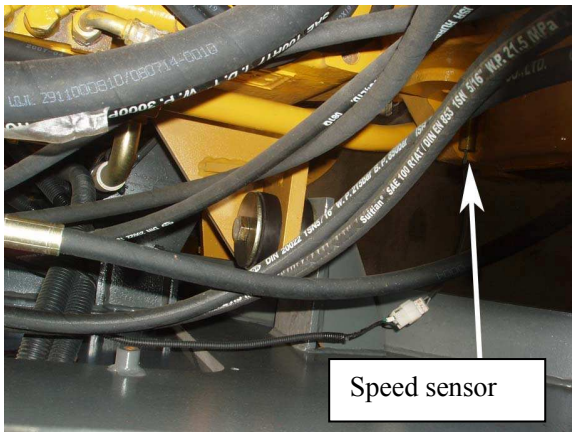

7. Connect oil pressure sensor with circuit.

8. Connect water temperature sensor with circuit.

13. Connect oil cut-off valve with circuit.

14. Connect the rear frame wiring harness with rear cover wiring harness each other.

10. Connect fuel level sensor with circuit.




11. Connect speed sensor with circuit.

12. Connect rear frame wiring harness with pressure

switch and air pressure sensor.

13. Connect the connector of left and right battery with connector of tail light.

14. Plug the connectors of rear frame wiring harness and cab wiring harness.

★ Notice: 1) When assembling the rear frame wiring harness, take the position of storage battery relay as datum point to fix. Fix every wire loop with two ligatures (one for each end of wire loop).

2) When assembling each wiring harness, arrange the wires in order. Don't wind and extrude each other.

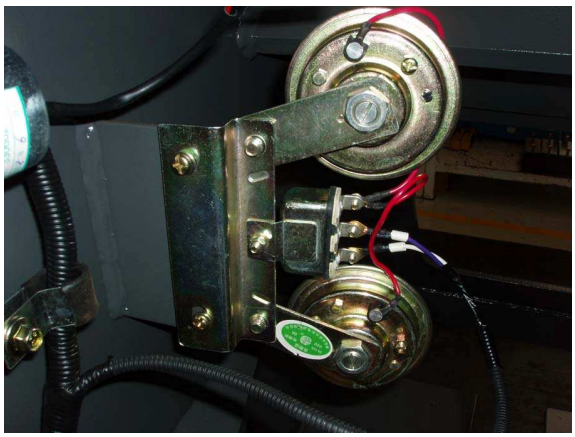
## 9.2 Disassembly and Assembly of Front Frame Wiring Harness

(This section introduces how to replace the front frame wiring harness; the replacing steps are as follow)

### Ⅰ Disassembly of Front Frame Wiring Harness

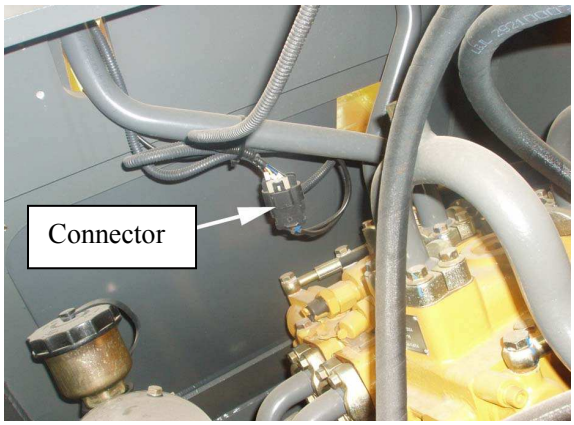
1. Unplug the connectors of left and right combination headlights.

2. Remove the pipe clamp fixing on the frame wire seat.



3. Remove the connecting wire on the horn relay.

4. Remove the connecting wire of backing car annunciator.

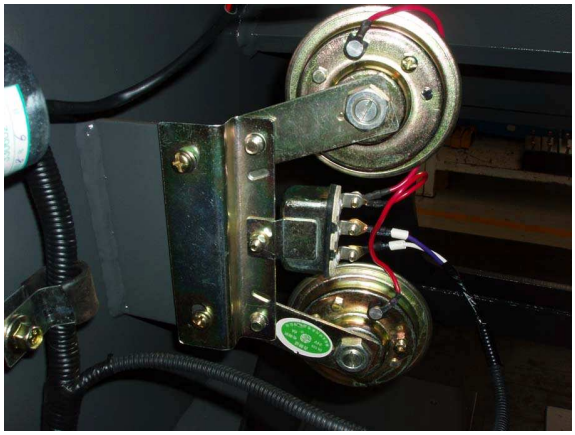



5. Unplug the connector of front frame wiring harness and proximity switch wiring harness.

6.Unplug the connector of front frame wiring harness and cab wiring harness.

7.Shear break ligature of front frame wiring harness on the pipeline. Unplug the connectors of front frame wiring harness and rear frame wiring harness. Then take down the front frame wiring harness.

## Ⅱ Assembly of Front Frame Wiring Harness



1. Arrange the front frame wiring harness in order and put through left and right routing rubber jackets.

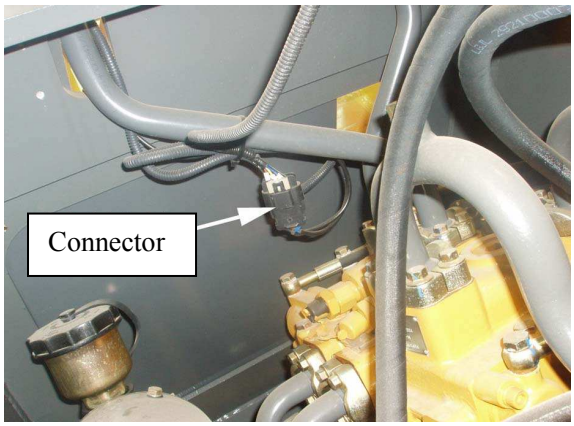
2. Install two-tone bascine horn on the front frame with two bolts M6×10 and washer 6, and connect No.12 and 40 of front frame wiring harness with horn wire.

3. Fix backing alarming on the frame, and connect with front frame wiring harness.

4. Fix the front frame wiring harness with five pipe clamps and five bolts M8×16.

★ Notice: When assembling front frame wiring harness, take bifurcation of left and right combination lamps as datum, and fix the front end of bifurcation on the middle wire seat.

5. Plug the connector of front combination lamp.




6. Plug the connector of front frame wiring harness and pilot switch wiring harness.

7. Plug the connector of front frame wiring harness and cab wiring harness.

## 9.3 Disassembly and Assembly of Back Cover Wiring Harness

(The main purpose of this section is to replace back cover wiring harness. The replacing steps are as follow)

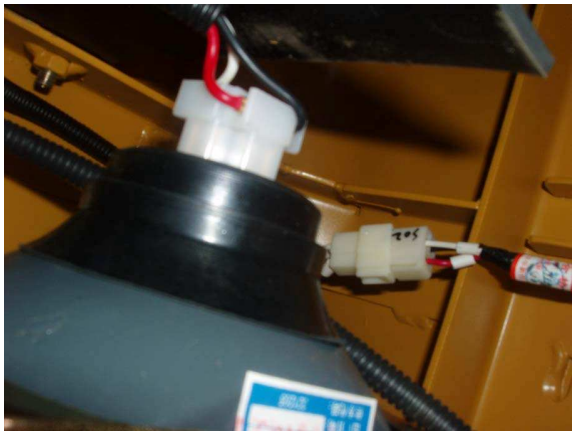
### Ⅰ Disassembly of Back Cover Wiring Harness


1. Turn off the power main switch.

2. Unplug the connector of back cover wiring harness and back frame wiring harness..

3. Unplug the connector of backlight, and then take down the back cover wiring harness.

## Ⅱ Assembly of Back Cover Wiring Harness



1. Connect the back cover wiring harness with taillight respectively.

2. Put the back cover wiring harness through the engine hood.

3. Plug the connector of back cover wiring harness and rear frame.

## 9.4 Disassembly and Assembly of Taillight

(This section introduces how to replace the taillight. The replacing steps are as follow)

### Ⅰ Disassembly of Taillight

1. Unplug the connector of taillight and rear frame wiring harness.

2. Remove the fixed screw on the back cover of taillight.

3. Remove the back cover of taillight.

4. Remove the fixed bolt fixing on the taillight hood, and take down the taillight.

5. Remove the nut which fixes the taillight.

6. Disassembly of taillight bulb

1) Remove the plastic lampshade at front of taillight.

2) Take down the bulb in taillight.

## Ⅱ Assembly of Taillight

1. Replace the bulb in taillight

2. Install plastic lampshade at front of taillight.

3. Install the taillight in taillight hood, and tighten the nuts on taillight to fix the taillight.

4.Install lamp frame on the battery box with four bolts M8×16 and nut M8.

5.Install backboard on the lamp frame with four bolts M8×16.

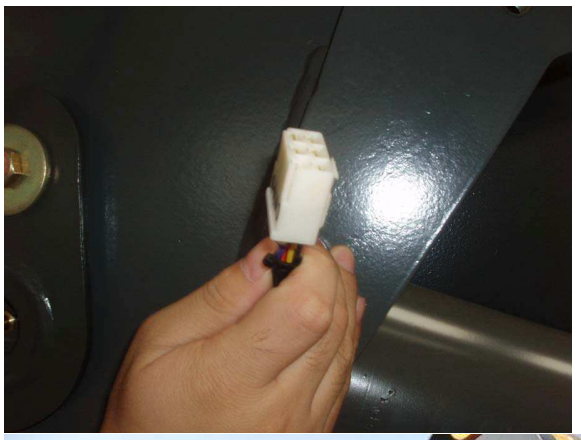
Notice: The left and right taillights can be confused.

6. Connect left and right taillight wires with CN19 and CN18 plug on rear frame wiring harness respectively.

## 9.5 Disassembly and Assembly of Headlight

(This section mainly introduces how to replace the bulb of headlight; the replacing steps are as follow)

### Ⅰ Disassembly of Headlight



1. Unplug the connector of headlight.

2. Remove the baffle at back of headlight.

3. Unplug the connector of bulb.

4. Remove the bulb.

5. Remove the bulb of turn light in the same method.

## Ⅱ Installation of Headlight

1. Put the bulb on.

2. Plug the connector of bulb.
3. Install the turn light in the same method.

4. Fix the baffle on the shell.

5. Plug the connector of headlight.

# CHAPTER X JUDGMENT STANDARD OF MAINTENANCE AND REPLACEMENT

**I. After disassembling, identify the parts whether discard or not. The identifying basis is whether the part totally lose the function (service performance) and unrepairable or not.**

**II. Two kinds of methods are used to identify the disassembled parts:**

1. Visual measurement, touching by hand;
2. Dimension measurement.

**III. Judge the disassembled parts by visual and touching firstly, the parts in the following condition must be replaced:**

1. **Never** further use the parts which are seriously dump, having fracture and crack, or losing function.

2. **Never** further use the oil seals, dust ring, O-ring and seal gasket disassembled owing to leakage and because of low reliability and short service life in repeated use.

3. **Never** further use the bolts, nuts, washers, plug screws, pipe joints if they have serious corrosion, the screw doesn't work well in tightening operation, or the screw is damaged, worn out or slipping.

4. **Never** further use locking steel wire in the connection of bolt after disassembled.

5. **Never** further use the bearings if they could not be turned smoothly by hand, crack exists on their components or the ball race is seriously worn.

6. **Never** further use the gears and the teeth of spline with crack, sheet exfoliation, collision or over-wearing.

7. **Never** further use the shell with crack, bearing holes

with crack, wear, elliptic or sheet exfoliation, and screw damaged which doesn't work well in tightening operation.

8. **Never** further use bearing chock, oil seal pedestal with crack, wear, elliptic, collision or sheet exfoliation on the mating surface and spigot.

9. **Never** further use the pins with serious wear, collision or crack.

**IV. Judgment method of oil service performance**

1. Judge the oil by visual and touching primarily, it should be replaced if hydraulic oil appears the following situation in the process of use and inspection: present milk white in color, accompany with acid stink, turn yellow or appear turbidity.
2. If the condition allowed, regular sampling inspection is carried out on hydraulic oil according to China Petroleum and Chemical industry standard: SH/T0599-94 Oil-change Index for L-HM Hydraulic Oil.

**V. If it is hard to identify by watching or touching, check it by measurement. The common easily wear parts are listed in the following table.**

Unit: mm

| Part Category | Check Items | Judgment Standard | | Oversize Measures |
|---|---|---|---|---|
| | | Dimension (Tolerance) | Allowable Limit | |
| Bearing | ID tolerance | About 0~ -0.02 | +0.02 | Replace |
| | OD tolerance | About 0~ -0.02 | -0.04 | |
| Gear Class | Wear loss of teeth thickness | About 0~ 0.10 | 12 percent of the reference circle thickness (usually 1.2~1.4) | Replace |
| Common Part | OD used in common assembly | Tolerance denoted by T | Recommend: 0.3T less than lower limit | Replace |
| | ID used in common assembly | Tolerance denoted by T | Recommend: 0.3 T more than upper limit | |
| Multiple | The mating clearance | | >0.02 | Replace |

| | | | | |
|---|---|---|---|---|
| valve | between valve core and valve hole | | | |
| Steering gear | The mating clearance between valve core and valve hole | | >0.02 | Replace |
| | Stator and rotor | | >0.08 | Replace |
| Monostable valve | The mating clearance between valve core and valve hole | | >0.02 | Replace |
| Priority valve | The mating clearance between valve core and valve hole | | >0.02 | Replace |

# Appendix: Tool Lists of Disassembling and Assembling Complete Appliance

| General Tools | Specification | Number | Using Position |
|---|---|---|---|
| Gas trigger | BQ8, BQ10, BQ16, BQ30, MI-17HE | 1 group | Select different specification according to the size of assembly bolts |
| Sleeve | 10, 13, 15, 16, 18, 21, 24, 36, 46 | 1 group | Select different specification according to the size of assembly bolts |
| Soft hammer | | 1 | Lightly beat the parts with assembly magnitude of interference |
| Solid wrench | 5.5×7, 8×10, 10×13, 11×13, 12×14, 13×15, 13×16, 14×16, 16×17, 16×18, 17×19, 18×24, 18×21, 22×24, 24×27, 24×30, 27×32, 30×34, 36×41, 41×46 | 1 group | Select different specification according to the size of assembly bolts |
| Copper rob | | 1 | Lightly beat the parts with assembly magnitude of interference |
| Feeler gauge | | 1 group | Adjust measuring the position of clearance. |
| Slotted screwdriver | | 1 | Slotted screw |
| Phillips screwdriver | | 1 | Phillips screw |
| Pliers | | 1 | |
| Adjustable wrench | | 1 | |
| Crowbar | | 1 | |
| **Special Tool** | **Specification** | **Number** | **Using Position** |
| Support | Prepare disassembly support yourself without it | Two kinds | Disassembly and assembly work device and axle assembly |
| Trolley | | 1 | Disassembly and assembly the axle assembly |
| Wood wedge | | 1 | Fix the complete appliance when maintenance |