

Service Manual

LG938 COMPLETE APPLIANCE

**SHANDONG LINGONG CONSTRUCTION
MACHINERY CO., LTD**

Complete Appliance Service Manual

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Service Manual

Concise Guide

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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.

Table of Contents

PREFACE.....	III
CHAPTER I INTRODUCTION	1
1.1 Safety Considerations.....	1
1.2 Oil Products and Coating Materials	4
1.3 Tightening Torque and Correlation Criterion	8
1.4 Marker	14
1.5 Hoisting Explanation.....	14
1.6 Adjust Clearance of Typical Parts	16
1.7 Related Parameters of Electric Circuit	16
CHAPTER II STRUCTURE AND WORKING PRINCIPLE OF THE LOADER	19
2.1 Outside View	19
2.2 Complete Appliance Performance and Parameter	20
2.3 General View	22
2.4 Working Principles	23
2.4.1 Transmission System.....	23
2.4.2 Hydraulic System	24
2.4.3 Brake system	25
2.4.4 Electric System.....	27
CHAPTER III DISASSEMBLY AND ASSEMBLY OF ENGINE SYSTEM	29
3.1 Disassembly and Assembly of Engine	29
3.2 Disassembly and Assembly of Fuel Oil Tank.....	48
3.3 Disassembly and Assembly of Water Tank and Oil Tank.....	51
CHAPTER IV DISASSEMBLY AND ASSEMBLY OF TRANSMISSION SYSTEM.....	56
4.1 Disassembly and Assembly of Duplex-Transmission	56
4.2 Disassembly and Assembly of Transmission Shaft.	81
4.3 Disassembly and Assembly of Assistant Frame	85
4.4 Disassembly and Assembly of Front Axle.....	89
4.5 Disassembly and Assembly of Rear Axle.....	95
4.6 Disassembly and Assembly of Wheels.....	105
CHAPTER V DISASSEMBLY AND ASSEMBLY OF HYDRAULIC SYSTEM.....	112
5.1 Disassembly and Assembly of Working Pump.....	112
5.2 Disassembly and Assembly of Turning Pump.....	120
5.3 Disassembly and Assembly of Hydraulic Oil Tank.....	125
5.4 Disassembly and Assembly of Priority Valve.....	132
5.5 Disassembly and Assembly of Multi-way Valve	136
5.6 Disassembly and Assembly of Boom Cylinder	142
5.7 Disassembly and Assembly of Turning Bucket Cylinder	148
5.8 Disassembly and Assembly of Steering Gear.....	155

LG938 Complete Appliance Service Manual

5.9 Disassembly and Assembly of Steering Cylinder.....	159
CHAPTER VI DISASSEMBLY AND ASSEMBLY OF BRAKING SYSTEM.....	163
6.1 Disassembly and Assembly of Foot Brake Valve.....	163
6.2 Disassembly and Assembly of Oil-water Separator	173
6.3 Disassembly and Assembly of Gasholder	184
6.4 Disassembly and Assembly of Front Intensifier Pump.....	187
6.5 Disassembly and Assembly of Rear Intensifier Pump.....	200
CHAPTER VII DISASSEMBLY AND ASSEMBLY OF WORKING DEVICE.....	203
7.1 Disassembly and Assembly of Bucket	203
7.2 Disassembly and Assembly of Linkage.....	207
7.3 Disassembly and Assembly of Boom.....	210
7.4 Disassembly and Assembly of Rocker	217
CHAPTER VIII DISASSEMBLY AND ASSEMBLY OF CAB.....	221
8.1 Disassembly and Assembly of Cab Assembly.....	221
8.2 Disassembly and Assembly of Air Conditioning.....	229
8.3 Disassembly and Assembly of Operation Box	236
8.4 Disassembly and Assembly of Seat.....	242
CHAPTER IX DISASSEMBLY AND ASSEMBLY OF ELETRIC SYSTEM.....	243
9.1 Disassembly and Assembly of Rear Frame Wiring Harness	243
9.2 Disassembly and Assembly of Front Frame Wiring Harness	251
9.3 Disassembly and Assembly of Back Cover Wiring Harness	254
9.4 Disassembly and Assembly of Taillight	256
9.5 Disassembly and Assembly of Headlight.....	260
CHAPTER X JUDGMENT STANDARD OF MAINTENANCE AND REPLACEMENT.....	262
Appendix: Tool Lists of Disassembling and Assembling Complete Appliance	264

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 be cleared up to avoid polluting the parts in the course of disassembling.
5. In the progress of operation, safety shoes and safety helmets must be 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 accident 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)	25L	Torque Converter and Gearbox
Gear Oil	Heavy Loading Vehicle Gear Oil(GL-5) SAE 85W-90 GB13895	2×13L	Axle Main Drive and Wheel Side Reducer
Hydraulic Oil	Super Temperature Range and Anti-wear Hydraulic Oil 46 Or MOBIL DTE25	122L	Hydraulic Oil Tank
Fuel	Ambient Temperature $\geq 4^{\circ}\text{C}$ 0#Light Diesel Oil GB252 Ambient Temperature $\geq -5^{\circ}\text{C}$ -10#Light Diesel Oil GB252 Ambient Temperature $\geq -14^{\circ}\text{C}$ -20#Light Diesel Oil GB252 Ambient Temperature $\geq -29^{\circ}\text{C}$ -35#Light Diesel Oil GB252	120L	Fuel Tank
Brake Fluid	Auto Brake Fluid HZY3 (DOT3) GB12981	2L	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	35L	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≤°C
	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	30	10	60	Weight Ratio	-18
Glycerin		40	15	45		-26
Antifreeze		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°C~50°C)	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°C~40°C) ; DUOWEILI 1# (More than-40°C)	Essolube XT-5

LG938 Complete Appliance Service Manual

● **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-pr essure 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 °C.
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 LG953 loader

Importance					
I (Most Important)		II (Important)		III (Less important)	
Position	Size	Position	Size	Position	Size
Flanges of the Front Frame Articulated Hole	M12	Multi-way Valve Fixed Plate	M12	Balance Iron	M30
Front and Rear Axle Bolts	M24	Steering Cylinder Chuck Plate	M12	Lower Joint Pin Bolts	M12
Fixed Multi-way Valve	M12	Sub frame Pin	M12	Upper Joint Pin Bolts	M12
Front, Middle and Rear Transmission Shaft Locknuts	M14	The Big and Small steel Tubes of the Boom Cylinder	M10	The Assembling of Right and Left Benches	M12
The Middle Supporting Bolts of the Transmission Shaft	M14	The Covers of the Multi-way Valve and the Bolts of Oil Returning Steel Tube	M10	The Assembling of the Front Armrest	M12
Hub Nut	M18	Booster Assembly	M10	Bucket Indicating and Fixing Plates	M10
		Priority Valve fixing Bolts	M8	The Right and Left Front Headlights	M10
		Battery Box	M16	The Right and Left Light Frames	M12
		Bolts of Fixing Air Tank Assembly	M12	The Right and Left Front Supporting Base of the Cab	M12
		Turning Pump Oil Absorbing Tube Covering Bolts	M10	Front Fender	M12
		Multi-way Pump Oil Returning Tube Covering Bolts	M10	Bolts of Rocker Pin	M16
		Engine Cover Assembly Assembling Bolts	M12	Other Pin Bolts of the Work Equipment	M12
		Engine Oil Assembling Bolts	M16	Bolts of Window Edge	M10
		Steel Tube of the Bucket Big Cylinder	M10	Upper Cover Board of the Engine Cover	M10
		The Assembly of Hydraulic Operation System Assembly	M6	Armrest of the Engine Cover	M12

Explain:

1. Class III (Less Important) includes the common bolts and screws which are less than M10 and the strength of which are below 8.8 level. The torque of common bolts and screws, whose strength are below 8.8 level, 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 circular.
4. Torque of common bolts, whose diameter is more than 16, are shown as followed:
 - I (Most important):
 - 1) Front and rear axle bolts M24: tightening torque: 450 ± 50 Nm
 - 2) Hub bolts M18: tightening torque: 310 ± 45 Nm
 - II (Important):

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

M24: tightening torque: 320~480 Nm
 - III (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) Bolts of engine and duplex transmission assembly M20: tightening torque: 120~200 Nm
 - b) Radiator assembly bolts M12: tightening torque: 15~35 Nm
 - c) 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 I and II 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 III 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 assemble the hose, the true assembling situation require that after the connection between hose joint and oil port, the hose will not bring distortion and torque. So, the

true assembly order is: tighten the hose curved end first and then tighten the straight end; Hose with joint should be tightened the joint end first. In the process of assembling, order may be different from the above order. No distortion and torque occur other orders could be used. On contrast, the order above must be obeyed. Loosen the straight end first, after tightening the curved end, tighten the other end.

10. When assemble electrical wire, make sure that the routing to be more reasonable. After assembling, the wire could not extrude or rub other pipeline.
11. When assemble the joint, 24° taper seal and joint bolts, the tightening torque should follow the table 4, 5, 6.

LG938 Complete Appliance Service Manual

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

LG938 Complete Appliance Service Manual

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

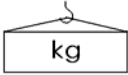
Tightening torque of 24° Taper Seal Joint Nut	
Type	Tightening torque Nm
M12×1.5	15~20
M14×1.5	25~30
M16×1.5	30~35
M18×1.5	35~45
M20×1.5	40~50
M22×1.5	45~65
M24×1.5	45~65
M26×1.5	65~85
M30×2	85~110
M36×2	120~145
M42×2	170~210

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. 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 accident. 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.

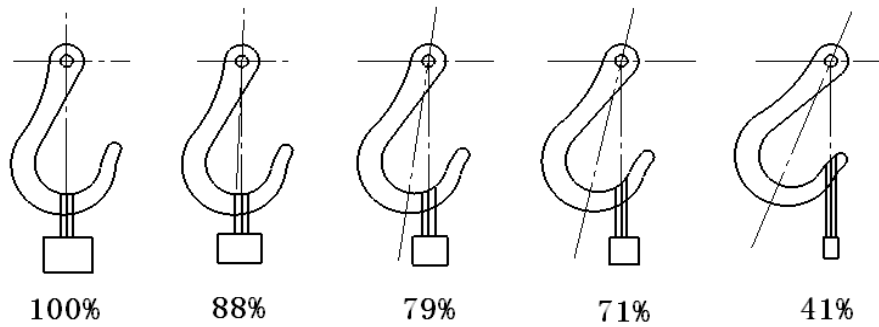


Fig. 1-1

⚠ 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 accident.

3) The hoisting angle between wire rope and hook should not be oversized 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.

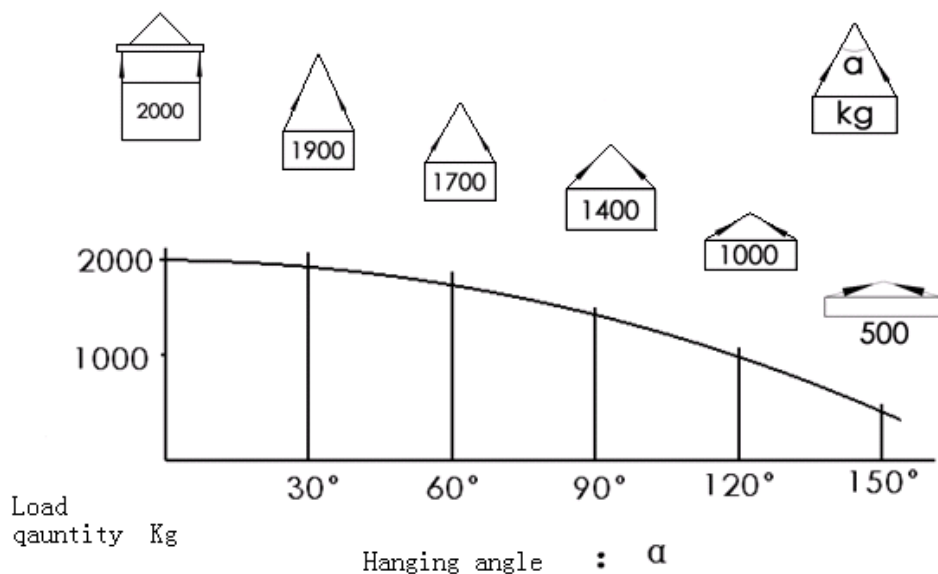


Fig. 1-2

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 Back Frame	0.5~1.5	1~2

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	
1	Starting Motor to Starting Relay Connection	2.0	Orange	
2a	Generator charge wire	5.0	Yellow	
2	Accumulator Relay to Fuse Box Upper End Connection	5.0	Red	
3	Power Supply Line of Whole Vehicle Line	1.25	Green	
4	Back Headlight High Beam Connection	1.25	White	
4	Prying Plate to Back Headlight High Beam Connection	1.25	White	
5	Back Headlight Low Beam Connection	1.25	Red	
5	Prying Plate to Back Headlight Low Beam Connection	1.25	Red	
6	Right Turn Lamp wire	0.85	Yellow	
7	Left Turn Lamp wire	0.85	Blue	
8	Brake Lamp Wire	0.85	White	
9	Reversing Buzzer, Reversing Lamp Connection	0.85	Green	
10	Front Headlight High Beam Connection	1.25	Purple	
11	Front Headlight Low Beam Connection	1.25	Orange	
12	Horn Button Wire	0.85	White	
12	Electric Horn Control Wire	0.85	White	
13	Hand Brake Indicator Lamp Connection	0.85	Ash	
13	Hand Brake Switch Lamp Connection	0.85	Ash	
14	Engine Water Temperature Sensor Wire	0.85	Brown	
14	Engine Water Temperature	0.85	Brown	

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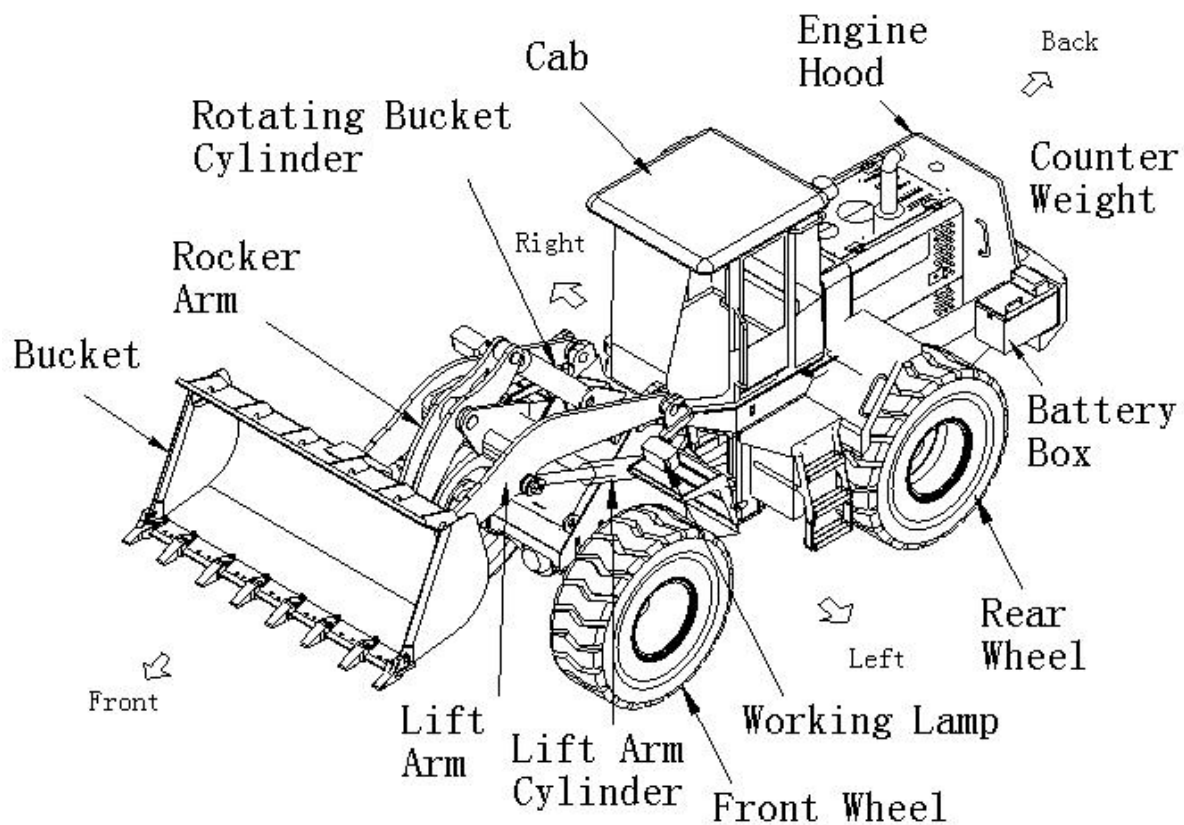
	Thermometer Signal Wire			
15	Torque Converter Oil Temperature Sensor Wire	0.85	Yellow	
18	Brake Air Pressure Sensor Wire	0.85	Brown	
19	Oil level Signal Wire	0.85	Red-black	
20	Charge Alarm Lamp Wire	0.85	Purple	
21	Common Electrical Wire	2.0	Brown	
22	Electric Lock to Starting Relay Connection	0.85	Green-white	
23	Front Water Spraying Electromotor Wire	0.85	Purple	
24	Scraper Reposition Wire	0.85	Black	
25	Scraper Low Speed Connection	0.85	white	
26	Scraper High Speed Connection	0.85	Blue	
27	Power Supply wire	1.25	Blue-black	
28	Accumulator Relay Loop Anode Wire	0.85	Red-green	
28	Accumulator Relay Loop Connection	0.85	Red-green	
29	Wire From Oil-cutting Valve Relay to Oil-cutting Valve	0.85	White	
30	Indicating Width Lamp and Backlight Wire	0.85	Red	
30	Wane Indicating Width Lamp and Backlight Connection	1.25	Red	
30	Indicating Width Lamp Wire	1.25	Red-purple	
31	Engine Oil Pressure Alarm Wire	0.85	White-black	
31	Engine Oil Pressure Alarm Lamp Connection	0.85	White-black	
32	Air Pressure Alarm Lamp Connection	0.85	White-green	
33	Flasher Signal Out-wire	1.25	White	
34	Headlamp Connection	1.25	Orange	
35	Front Headlight Power Wire	1.25	Red	
36	Air-condition and Warm Wind Power Connection	3.0	Green	
37	Scraper Power Wire	1.25	Red	
39	Headlamp Power Wire	1.25	Red	
40	Reversing Lamp and Braking Lamp Power Wire	1.25	Purple	
40	Horn Power Wire	1.25	Purple	
41	Radio Recorder and CD Power Wire	1.25	Brown	
42	Electrical Valve Power Wire	1.25	Blue	
42	Fuse Box Outlet Wire	1.25	Blue	
43	Stopwatch Power Wire	0.85	Ash-blue	
44	Combination Switch Power Wire	1.25	Red-black	
45	Back Headlamp Power Wire	1.25	Red-yellow	
46	Brake Electrical Valve Power Wire	1.25	Purple	
47	Rear Lamp Power Wire	1.25	Purple	
48	Gear Box Control Box Power Wire	1.25	Red	
49	High Beam Signal Wire	0.85	Brown	
50	Low Beam Signal Wire	0.85	Orange	
53	Heater Unit Connection	1.25	Red	
54	Wire From Emergency Brake to Hand Brake	1.25	Orange	
55	Wire From Brake Electrical Valve to Hand Brake	1.25	Green	
56	Relay Anode Connection	5.0	Red	

LG938 Complete Appliance Service Manual

56	Wire From Battery to Battery Relay	5.0	Brown	
57	Power Cutting Off Signal Wire	0.85	Brown	
58	Reverse Gear Signal Wire	0.85	Gray	
59	Starting Unit Lock Signal Wire	0.85	Blue	
60	Starting Unit Lock Power Wire	0.85	Brown	
60	Wire From Electrical Lock to Approaching Switch	0.85	Gray	
62	Wire From Middle Relay to Electrical Valve (Boom)	0.85	Gray	
63	Wire From Middle Relay to Electrical Valve (Bucket)	0.85	Purple	
64	Approaching Switch (Boom) Wire	0.85	Yellow	
64	Electrical Valve (Boom) Signal Wire	0.85	Yellow	
64	Wire From Boom Switch to Middle Relay	0.85	Yellow	
65	Approaching Switch (Boom) Wire	0.85	Brown	
65	Electrical Valve (Boom) Signal Wire	0.85	Brown	
65	Wire From Bucket Switch to Middle Relay	0.85	Brown	
71	Rear Lamp Wire	1.25	Gray	
73	Signal Wire of Stopwatch on the Dynamo End	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	Speedometer Signal Wire	0.85	Green	
81	Engine Rotating Speed Sensor Wire	0.85	Green	
83	Warm-up Signal 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	
128	Left Brake light Switch Wire	0.85	Red	
129	Power Cutting-off Indicator Lamp Power Wire	0.85	Purple	
130	Relay Wire	0.85	Gray	

CHAPTER II STRUCTURE AND WORKING PRINCIPLE OF THE LOADER

2.1 Outside View



2.2 Complete Appliance Performance and Parameter

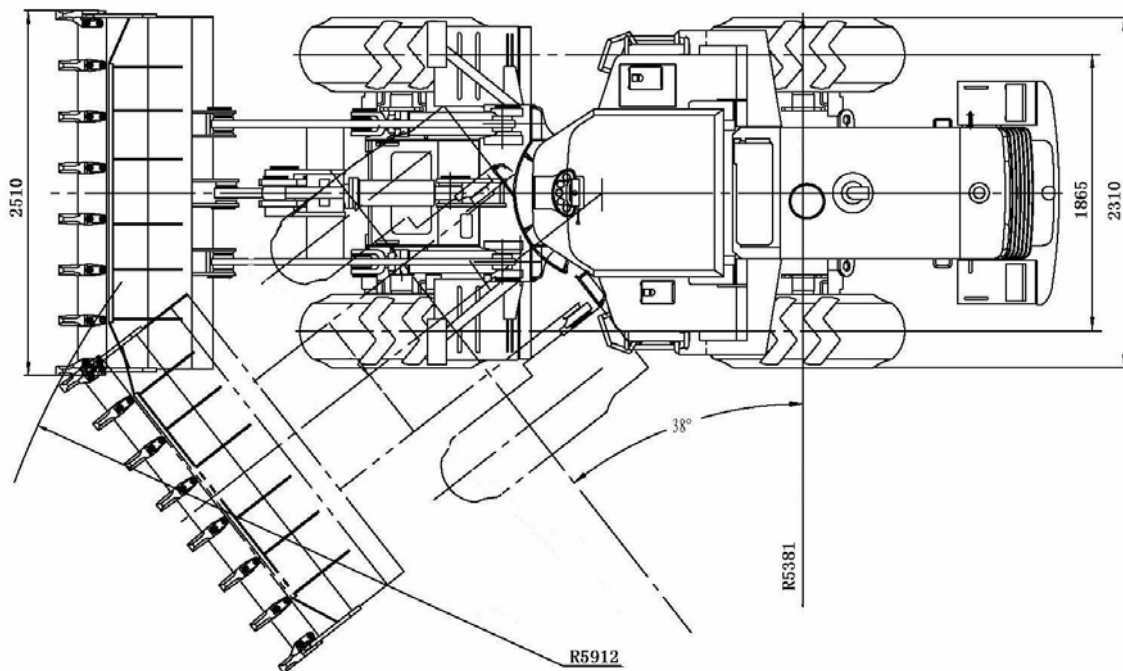
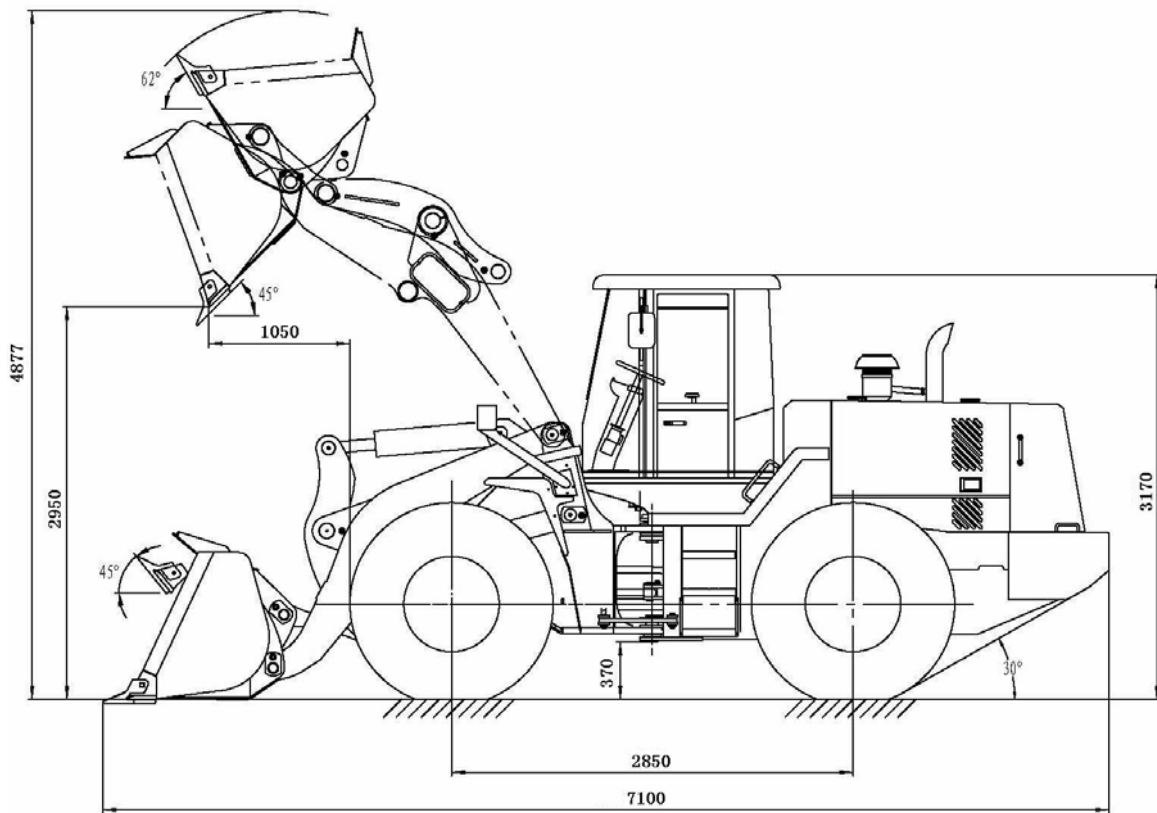
			Configure Standard Boom	Configure Lengthening Boom
Bucket Capacity m ³			1.8	1.6
Rated Loading Capacity N			3000	2700
Lifting time (full load) S			≤5.3	≤5.3
Lowering time (empty bucket) S			≤2.9	≤2.9
Dumping time (empty bucket) S			≤1.0	≤1.0
Travel speed km/h	Forward	Gear I	0~7	0~7
		Gear II	0~12	0~12
		Gear III	0~27	0~27
		Gear IV	0~36	0~36
	Reverse	Gear I	0~7	0~7
		Gear II	0~12	0~12
		Gear III	0~27	0~27
Max. Breakout force kN			≥96	≥96
Max. Tractive (rim-pull) force (supplied by engine) kN			≥105	≥105
Max. Tipping load (fully turning) kN			≥66	≥66
Max. Grade ability			30°	30°
Min. turning radius (outside of the rear wheel) mm			5381	5381
Level passing radius (outside of bucket) mm			5912	6073
Max. Angle of rotation			38°	38°
Wheel tire inflation pressure MPa		0.333~0.353	0.333~0.353	0.333~0.353
		0.275~0.294	0.275~0.294	0.275~0.294
The length of machine (The bucket keeps flat on ground) mm			7100	7266
The width of machine (Outer flank of			2310	2310

LG938 Complete Appliance Service Manual

wheel) mm		
The width of bucket mm	2510	2510
The height of vehicle mm	3170	3170
Tread mm	1865	1865
Wheel base mm	2850	2850
Min. ground clearance mm	370	370
Max. unloading height (-45°Unloading angle) mm	2950	3278
Unloading distance (-45°Unloading angle) mm	1050	1020
Unloading angle	$\geq 45^\circ$	$\geq 45^\circ$
Complete vehicle operation weight kg	10700	10700

2.3 General View

Unit: mm



2.4 Working Principles

2.4.1 Transmission System

The transmission mode of LG953 wheel loader is hydro-mechanical transmission, whose working parts are hydraulic torque converter. This kind of transmission has the following advantages:

1. Bring favorable automatic adaptability to the loader: Because of the hydraulic torque converter, it's possible for the traction force to 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 bring lubrication and absorption 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 favorable low speed stability and good passing ability. This kind of loader can operate and drive in soft road, such as slob land, sandlot and snow land, and non-hard soil road.
4. Predigest 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, simplifying the operation, releasing the driver's tiredness. In the process of driving, the hydraulic parts also could absorb and reduce the vibration, which improve the comfort of driving.

Generally, transmission system is made up of hydraulic torque converter, transmission, transmission shaft, front/back 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 transmit from engine flywheel to hydraulic torque converter. Then, it is from hydraulic torque converter to transmission. By the front and back flanges, the power from transmission transmit to the front and back driving axle in the way of driving axis, to drive the wheel forward. The figure of transmission system principle is shown in figure 5-1.

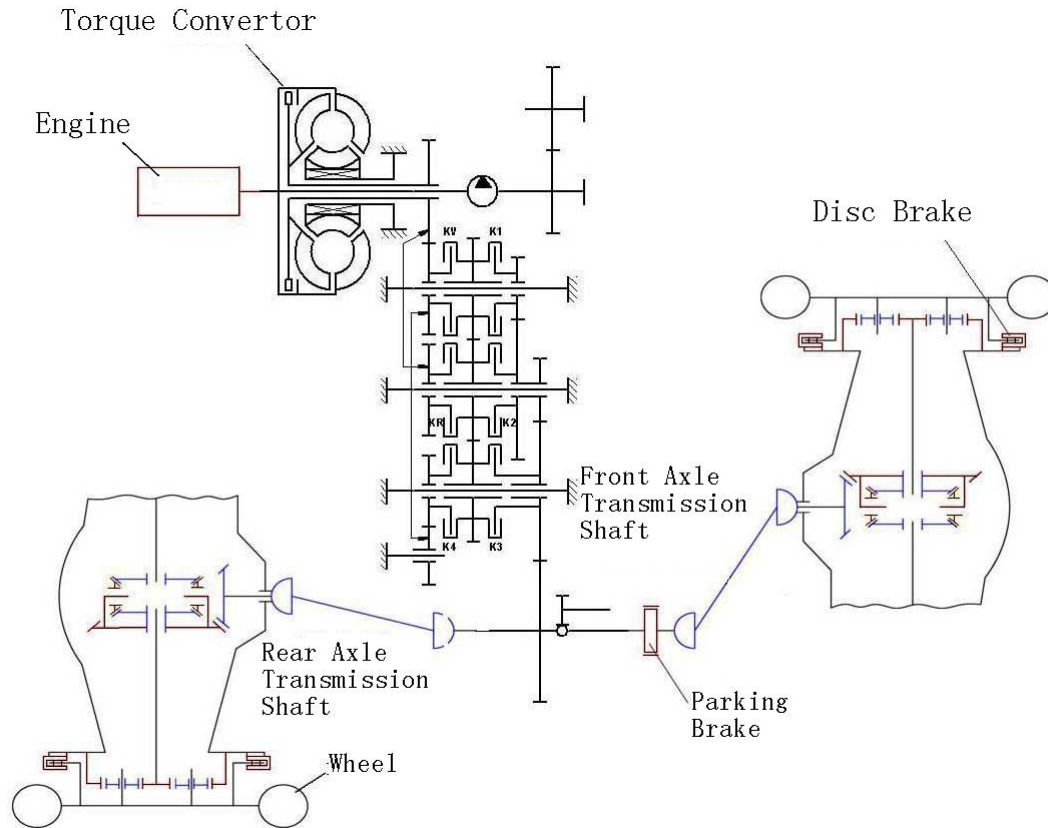


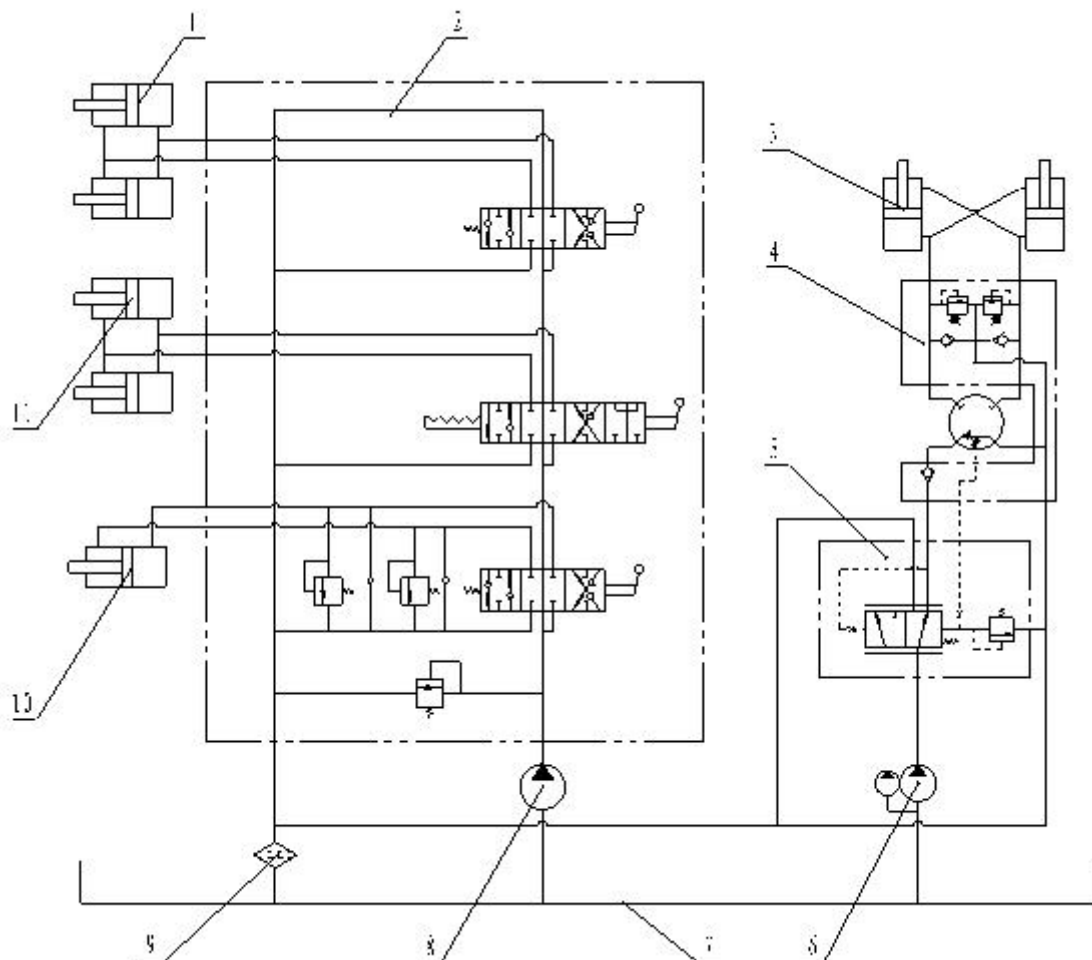
Figure 5-1 LG938 Transmission System Figure

2.4.2 Hydraulic System

As shown in figure 5-2, hydraulic system includes working device hydraulic system and steering hydraulic system, which is made up of working pump, multi-way valve, pilot valve, pressure choosing valve, boom oil cylinder, turning bucket oil cylinder, hydraulic oil tank and pipeline accessory. D32A multi-way valve includes three units. Turning bucket unit includes three positions: dumping, neutral, tilt-back; 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 16~16.5 MPa. The overload pressure of turning bucket bigger cavity is 18 MPa and smaller cavity is 12 MPa.

The complete hydraulic joints steering system is used in this appliance. The steering system of LG938 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. Multi-way valve 3. Steering oil cylinder 4. Redirector 5. Priority valve
6. Steering shifting double-unit pump 7. Cylinder oil tank 8. Working pump
9. Oil returning filter 10. Turning bucket cylinder 11. Boom cylinder

Figure 5-2 LG938 Figure of Hydraulic System Principle

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.

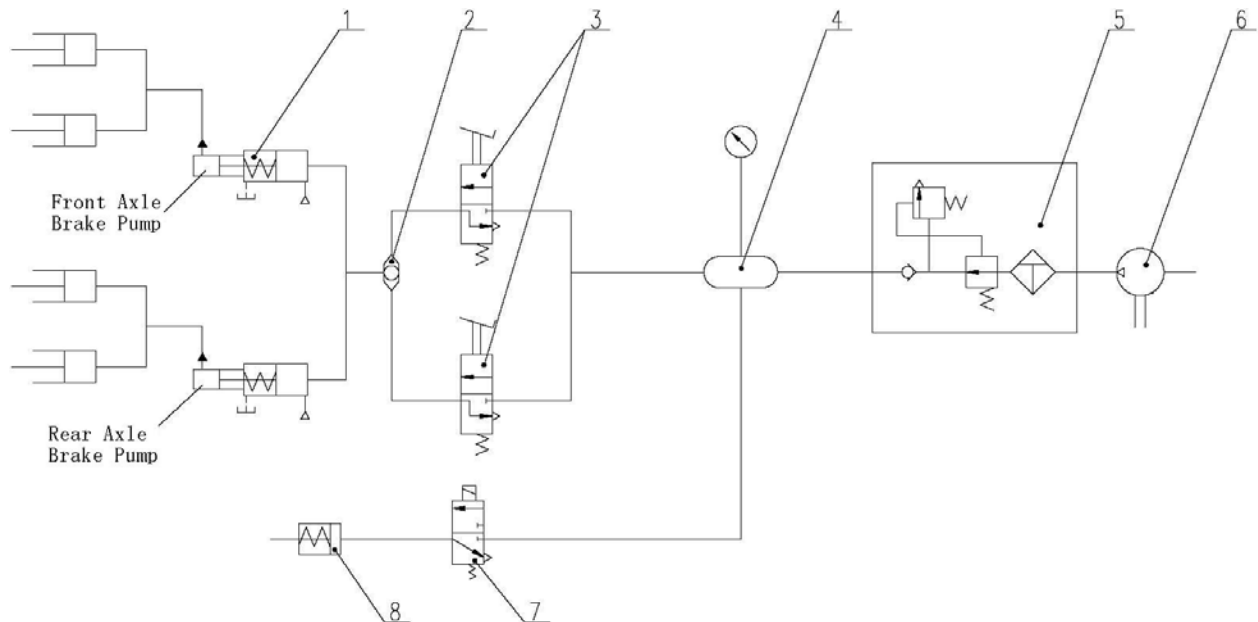
Generally, wheel loader has two independence brake system: traveling brake system, emergency and parking brake system.

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 figure 5-3. The brake system includes traveling brake system, emergency and parking brake system.



1. Air intensifier pump 2. Shuttle valve 3. Air brake valve 4. Gasholder
5. Oil and water separator combination valve 6. Air compressor
7. Brake electrical valve 8. Parking brake air ventricle

Fig 5-3 LG938 Brake System

1. Traveling Brake System:

Traveling brake system of LG938 is made up of double braking pedal and air-pushing-oil four wheels clamp-disc equipment. There are four, two front and two rear, braking clamps, which improve the safety of the complete machine.

In traveling, after treading the left pedal, the compressed air in the gasholder 4 enters into the air cavity of air intensifier pump 1 by brake valve 3 and shuttle valve 2. Then, it pushes the piston of air intensifier pump and transmits to the oil pipeline (oil pressure is about

14MPa). Brake oil pushes the piston of the pliers disc brake to press the friction plate to brake plate to brake the wheels, achieving the aim of deceleration or stop. At the same time the air pressure signal is sent out and the power of the gear box is cut off.

In traveling, after treading the right pedal, the principle of braking is the same as the left pedal. But the power of the gear box will not be but off.

Loosen the brake plate, and the compress air in the intensifier pump is discharged to the atmosphere by the brake valve. Then the brake relieves.

2. Parking Brake System:

This system is the electrical pneumatic control internal shoe type brake system.

In the process of driving, rotating the button of the braking electrical valve 7, the button will spring automatically. The compressed air in the gasholder 4 enters into the parking brake air ventricle 8 by the braking electrical valve 7, which will make the spring push the piston and release the arrester. The braking situation will be ended. In the process of parking, pressing the button of the braking electrical valve 7, the compressed air in the parking brake air ventricle 8 will be released to the environment by the vent of the braking electrical valve. Under the function of spring force, the arrester will be pulled and the machine will brake. At the same time, the air pressure signal will be sent out, which will turn on the parking brake indicator lamp. And the power of gear box will be cut off.

When the system air pressure is lower than 0.4 Mpa, the braking electrical valve will cut down automatically, which causes the compressed air in the parking brake air ventricle 8 releases to the environment, and the emergency brake will come true and the safe of machine and human will be ensured.

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 Figure 5-4 (electric system circuit principle figure).

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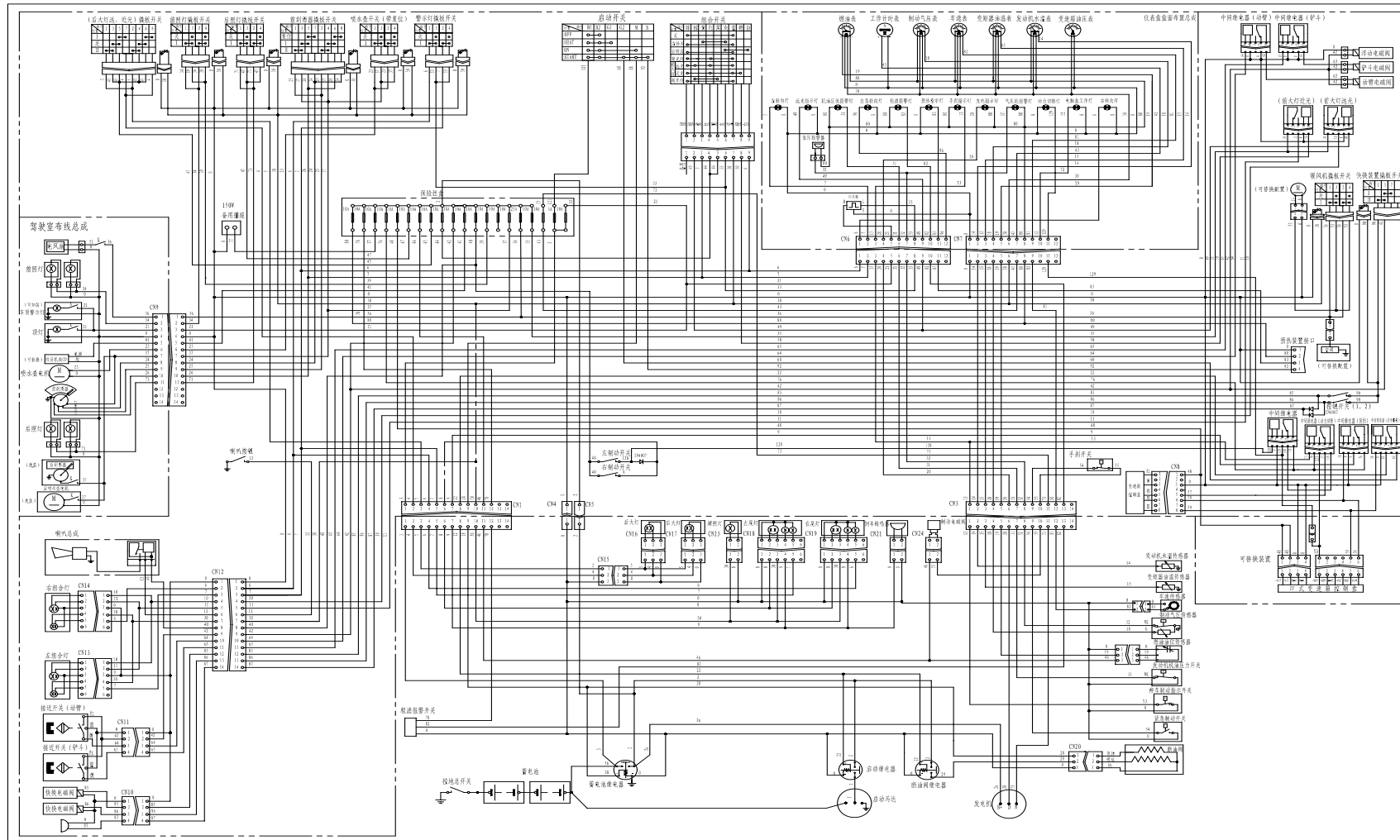
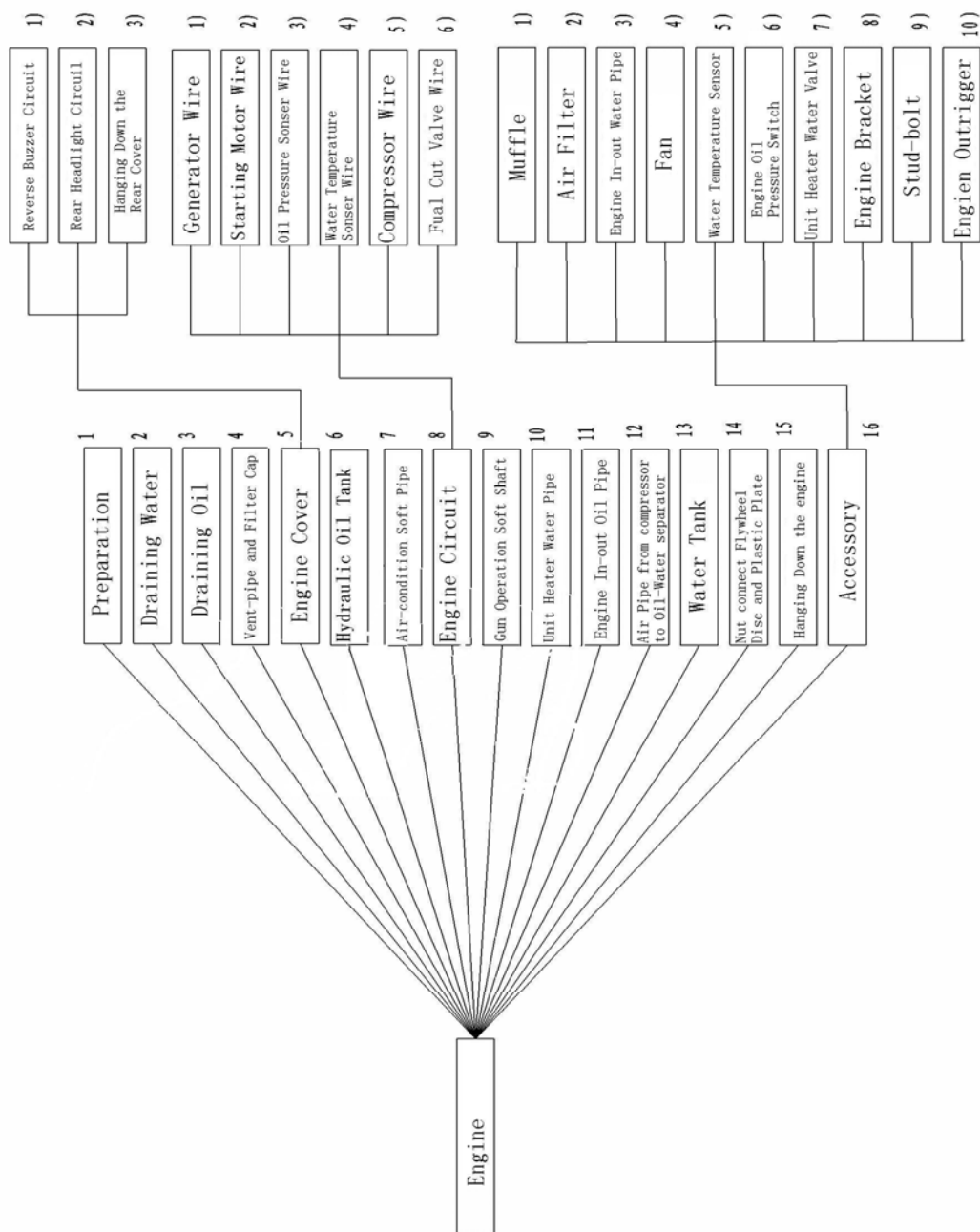


Figure 5-4 LG938 Electric System Principle Figure

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.)



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 off 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 tightening bolts connect the engine exhaust pipe and the cap of engine air filter. And get it off from the engine.



5. Loosen the tightening bolts of the engine hood.



1) Cut off the connection of the reverse buzzer circuit.



2) Cut off the connection of the rear headlight circuit.



Hang the engine hood off.



6. Disassemble the hydraulic oil tank (refer to the disassembling and assembling of the hydraulic oil tank).



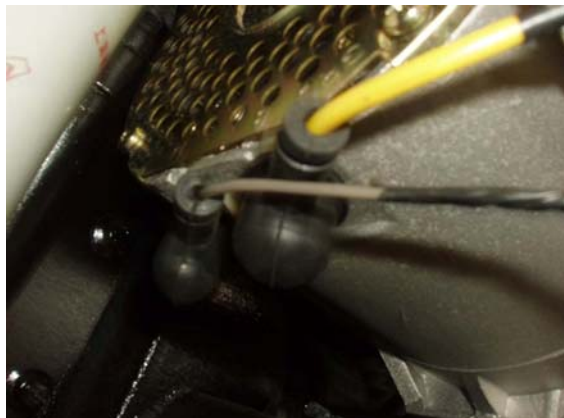
7. Cut off the connecting of the soft shaft of air-condition and the compressor.

★ 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.



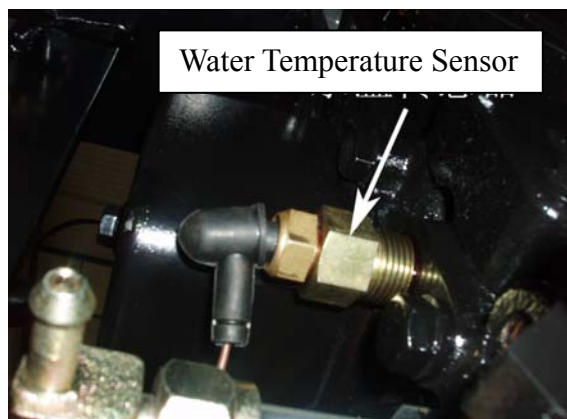
Disconnect the connection of the starting motor and the circuits.



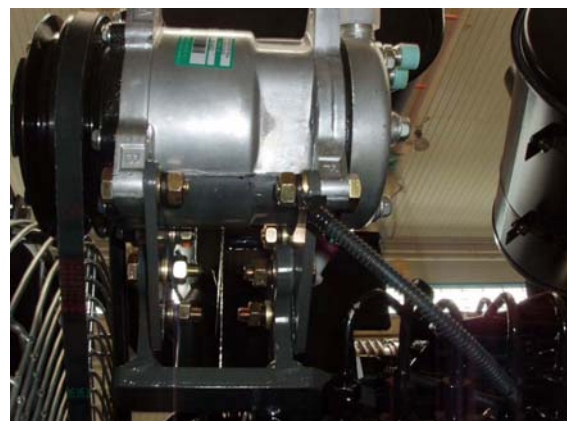
3) Disconnect the connection of the engine oil pressure sensor and the circuits.



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



5) Disconnect the connection of the air compressor and the circuits.



6) Disconnect the connection of the oil cut valve and the circuits.



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

1) Loosen the tightening bolts of the gun operation soft shaft

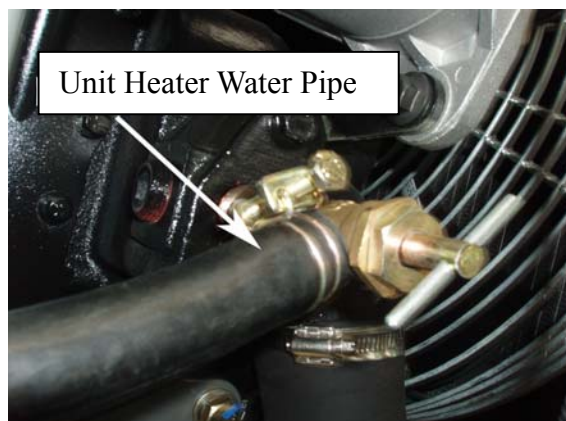


2) Loosen the back-tighten nuts of the soft shaft. Get the soft shaft off from the bracket.



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

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



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



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

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

14. Lift engine with rope and open the cover plate of torque converter. Then loosen the nuts and gaskets connecting the flywheel plate and torque converter elastic plate.

★ **Notice:** Before opening the torque converter, the cable pin of the computer control box must be pulled out. (Cut off the circuit to the computer control box)



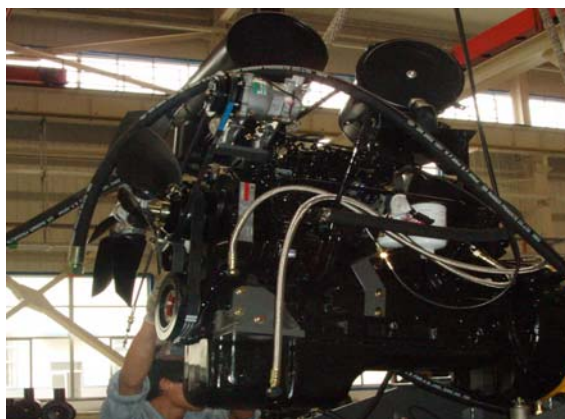
15. Loosen the engine fixed bolts.



Lift off the engine.

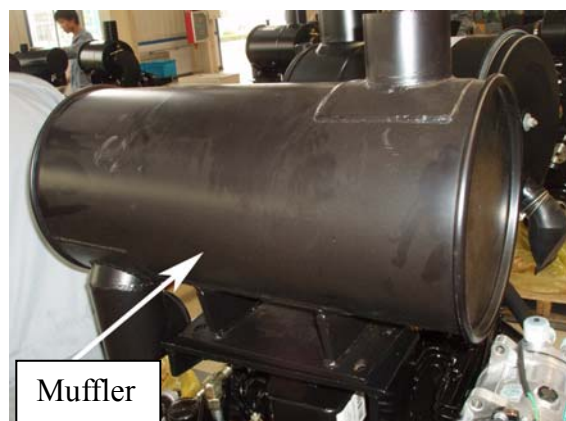


Engine



16. Disassembly of engine other accessory.

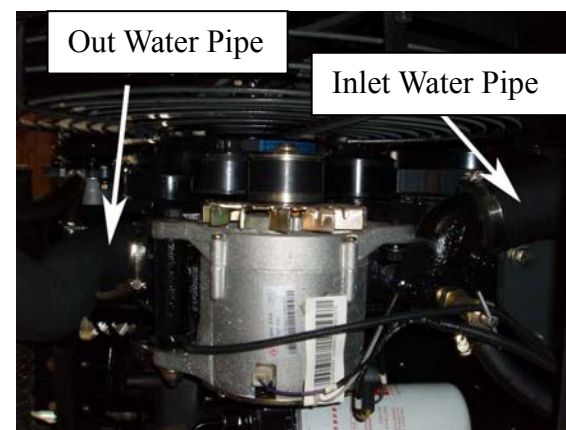
1) Disassemble the bolts which connect muffler pipe and engine, muffler pipe and muffler, muffler and frame independence. Then get off muffler and muffler pipe.



2) Loosen the fastening clamp hoop connect the air filter and compressor rubber hose, the air filter and engine air entering rubber hose. Remove the bolts connect air filter and frame and get off air filter.



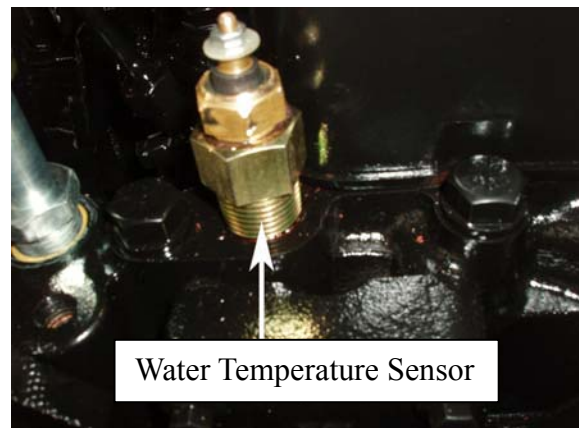
3) Loosen the clamp hoops of the in and out water pipes and get off the in and out water pipe.



4) Dismount the fan.



5) Disassemble the water temperature sensor.



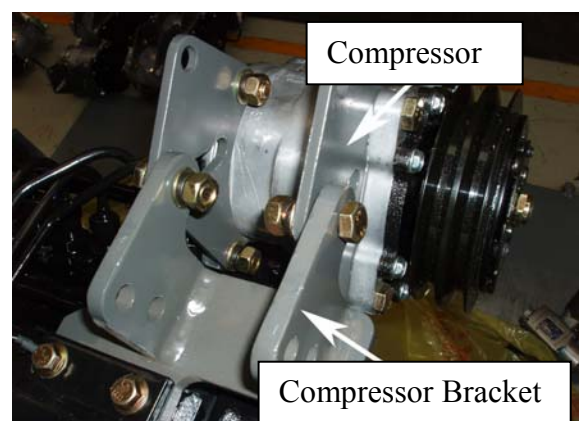
6) Remove the engine oil pressure sensor.



7) Disassemble the unit heater water valve.



8) Disassemble the compressor and its bracket

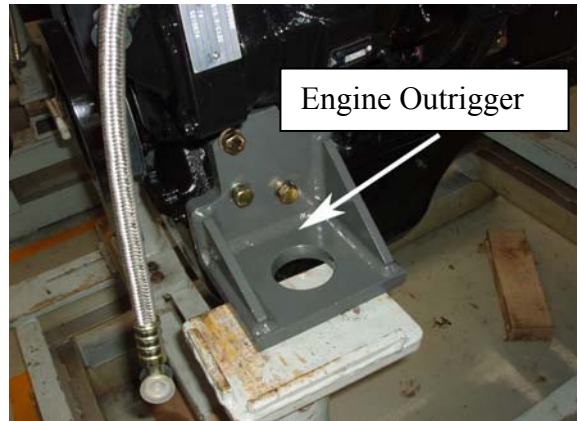


9) Loosen stud-bolt.

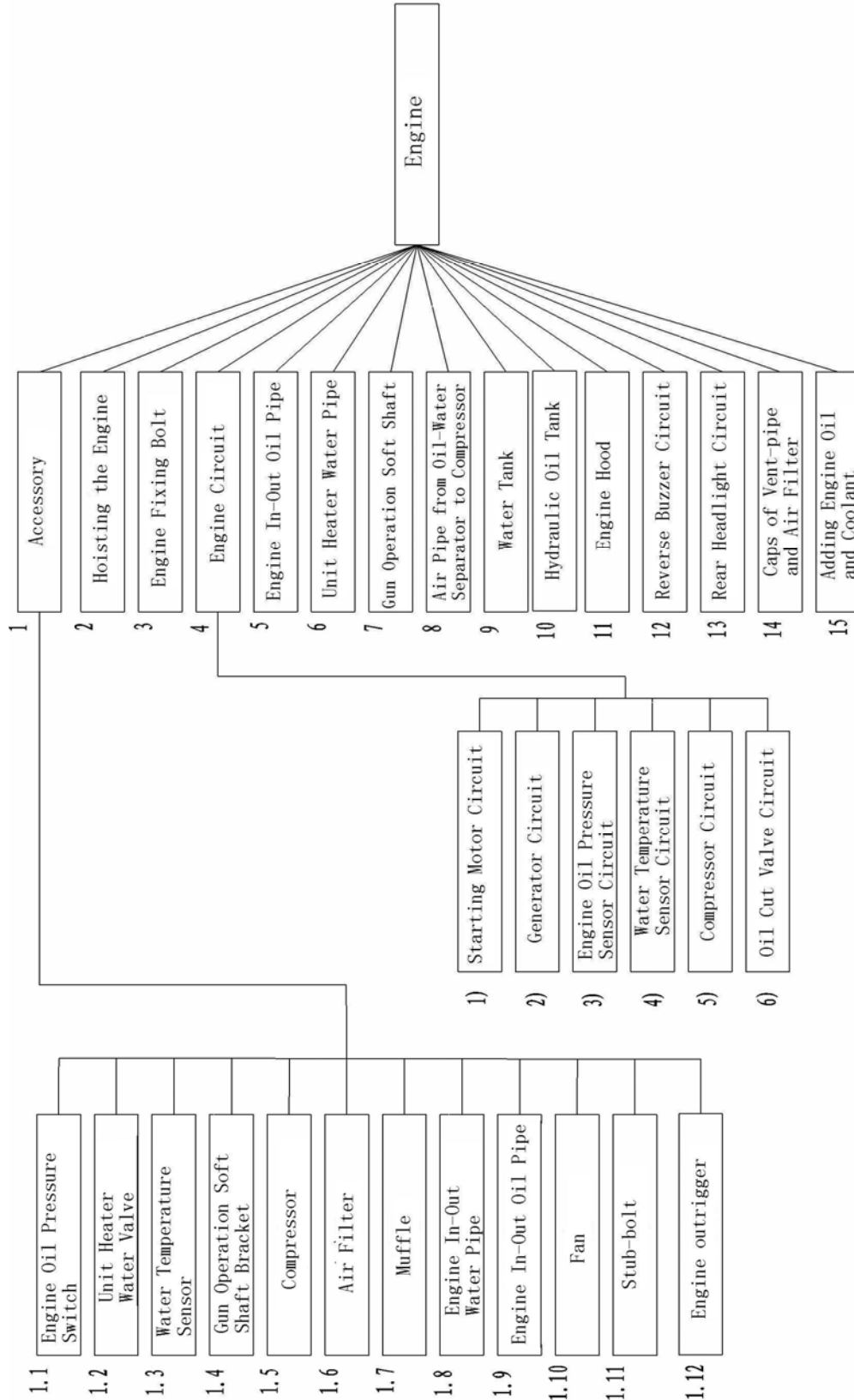
★**Notice:** The pliers are forbidden during loosening. Loosen the two nuts comparatively. Remove the internal nuts with wrench.



10) 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-wear 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.

1.1 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



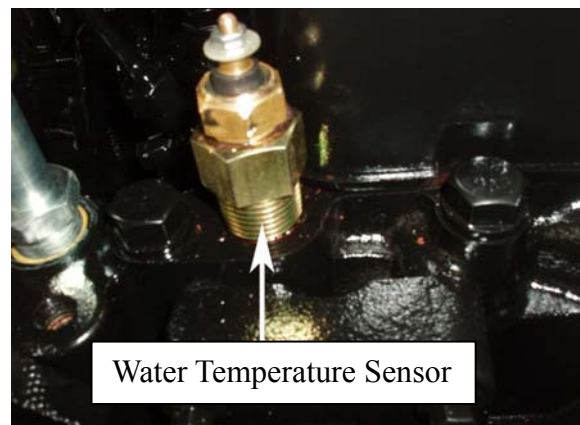
1.2 Assembling of heater unit valve. Coat KESAIXIN 1545 oxygen-wear pipe screw sealant on the heater unit valve and assemble it on the correspond position of engine.

 1545 sealant



1.3 Assembling 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



1.4 Assembling of flameout operation soft frame.

Fix it on the correspond position of engine with the attached bolts.

1.5 Assemble the compressor

Fix the compressor bracket and the grounding line on the engine with the bolt taken by the engine. Fix the splint on the compressor bracket. Connect the two transmission wheels of the engine and compressor with triangle zone. Fix them with bolts.

★ **Notice:** 1. The belt grooves of the compressor clutch and the engine should be in the same plane. The elasticity of the belt should be suitable that, when the 98N force loaded on it, the belt will lower 10-12mm.

2. The hexagon head end of the bolt should be forwarded outside.

1.6 Assemble the air filter

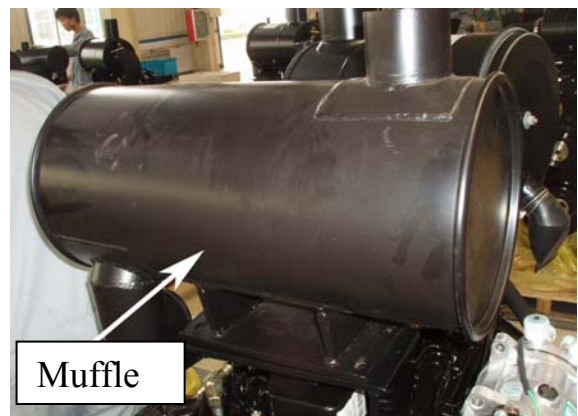
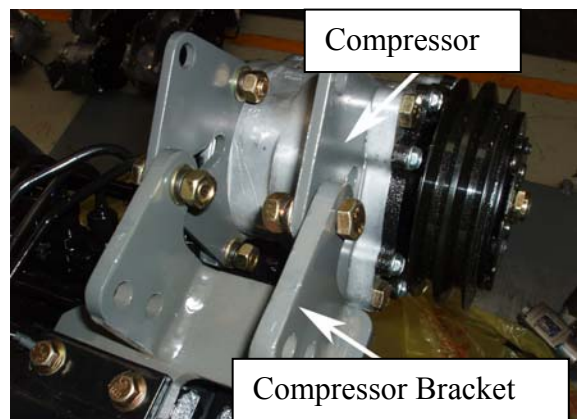
Fix the air filter on the bracket and fix them with bolts. Fix the turbocharger inlet air pipe on the air filter interface with T shape hoop. The other end fixes on the engine interface with T shape hoop.

 Tightening torque 45~59 Nm.

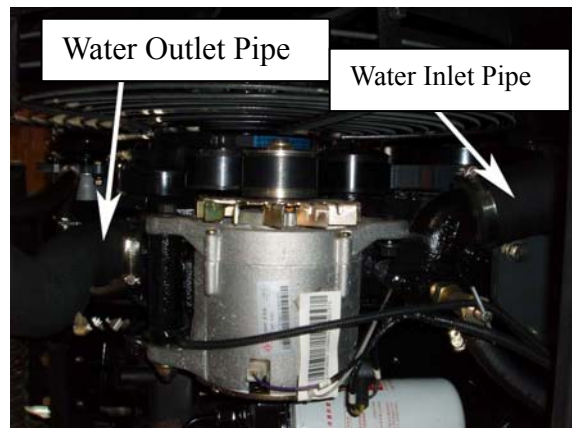
1.7 Assemble the muffler

Fix the muffler bracket on the engine. Fix the muffler assembly on the bracket. Fix the bellow on the interface of the muffler and the engine with two V shape hoop.

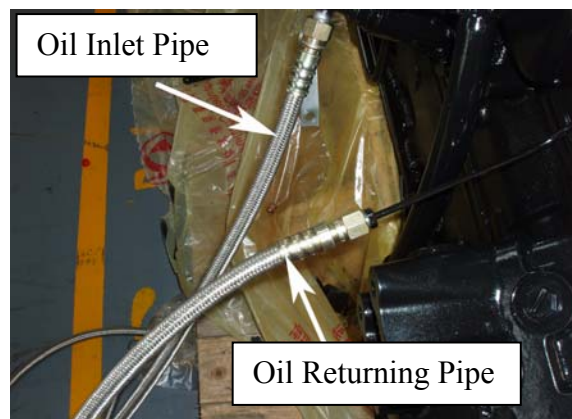
 Tightening torque 45~59 Nm.



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



1.9 Assemble the oil in and out hose of engine.



1.10 Assemble the fan.



1.11 Assemble stub-bolts.

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.



1.12 Assemble the engine bracket.

Fix the left and right brackets on the engine with six M12×35 bolts.

 kgm Tightening torque 78~104 Nm.

2. Take apart the engine top cover and hang the assembly of engine and torque converter. Connect duplex-transmission and engine flywheel shell with bolts and washers. Pay attention to that the connection face must be separated by seal gasket. Screw nuts and washers on the stub-bolts to connect the engine flywheel and elastic plate of torque converter together. Tighten the nuts and the connection bolts connecting engine flywheel and duplex-transmission.

Check out and install the top window cover of torque converter and tighten it. Coat the sealant around the window.

 609 sealant

★ Remark: Tighten the bolts in the method of circle grouping bolts. While connecting the elastic plate, sundries could not be into the torque converter.

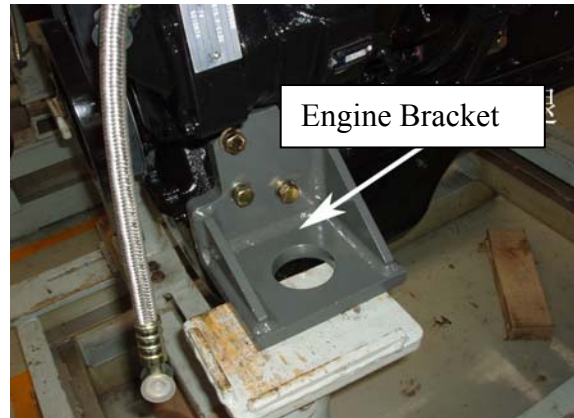
 kgm Tightening torque: M10: 45~59 Nm.

M12: 78~104 Nm.

3. Hoist the engine to the rear frame. Fix engine with bolts.

 kgm Tightening torque: 120~200 Nm.

 kg Engine



4. The connection of starting motor electric circuit.

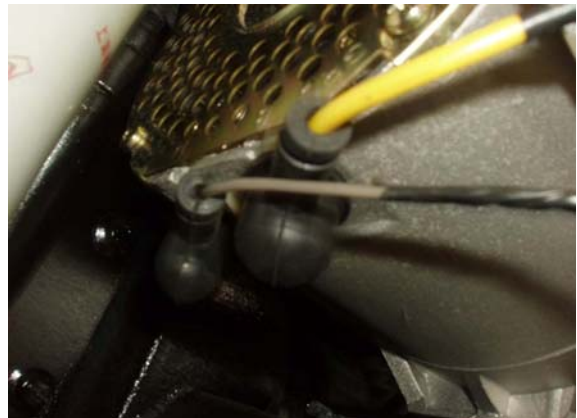
1) The connection of starting motor circuit.

Connect the No.1 wire of rear frame wires to the starting motor loop and the starting relay.



2) Connect engine electric circuit.

No 2a-wire connects with B+ terminal; No. 20-wire connects with D+ terminal; No. 73-wire connects with W terminal.



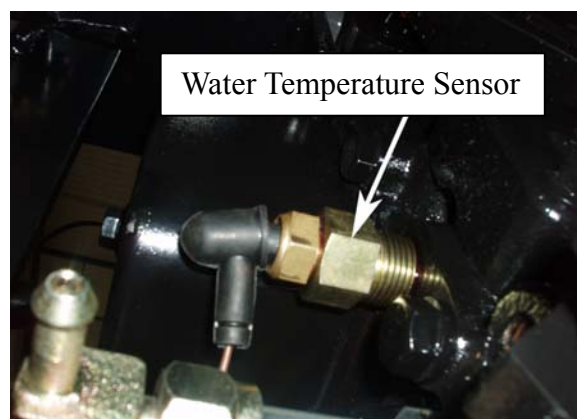
3) Connect electric circuit of engine oil pressure sensor.

Connect the No.31 and No. 0 wire to the corresponding terminals of the engine oil pressure sensor.

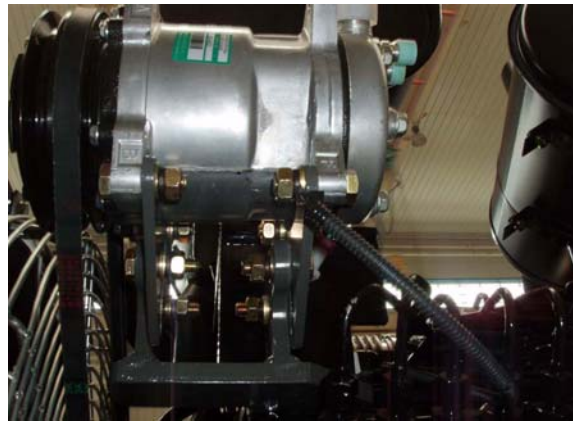


4) Connect electric circuit of water temperature sensor.

Connect the No.14 wire to the engine water temperature sensor.



5) Connection of the compressor circuit.



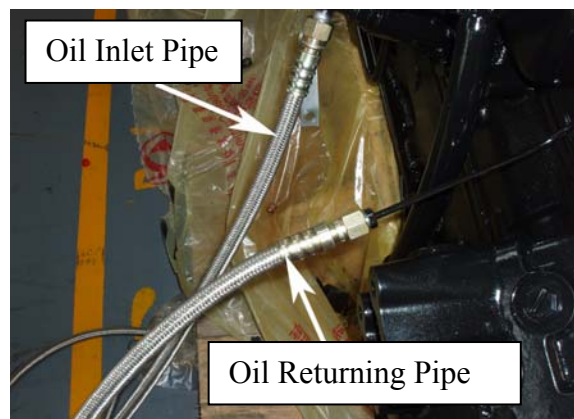
6) Connection of oil cut valve circuit.

Insert the CN20 connection-peg of the rear frame wire to the oil cut valve pin.



5. Connection of engine oil in and out pipes and the fuel tank.

★Notice: When disassemble or assemble the oil bolts of oil absorbing and out hoses, the oil absorbing transition joint, on the engine, should be fixed with wrench. It should be tightened again if it is flexible. The washers, on the two ends of oil absorbing hose joint, should be replaced by the new ones taken by engine.



6. Connection of heater unit water pipe.

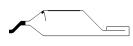


7. Connection of engine gun operation soft axis.

Fix one end of the soft shaft on the engine with B6×22pin shaft and 2×16 pin.



8. Connection of metal soft pipe between oil-water separator and air compressor.

 1272 screw locking sealant.



9. Assemble the water tank. (Refer to the “assembly of water and oil tank”)

10. Assemble the hydraulic oil tank.



11. Assemble the engine hood.

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.

 Engine cover



After adjusting it, fix it to the rear frame with eight M12×25 bolts. And fix it with the hydraulic oil tank with four M12×25 bolts.

 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.

12. Connection of the reverse buzzer circuit.



13. Connection of the rear headlight circuit.



14. Install the caps of engine vent-pipe and air filter. Install cap on the air filter with pipe clip and install chimney on the muffle with pipe clip too.

15. Add engine oil into the engine. Add coolant into the water tank. Check whether the oil level 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.

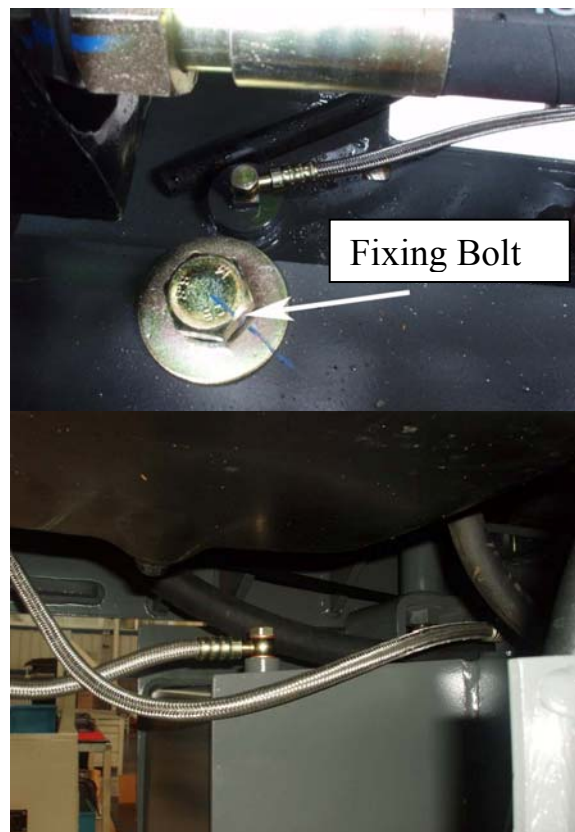
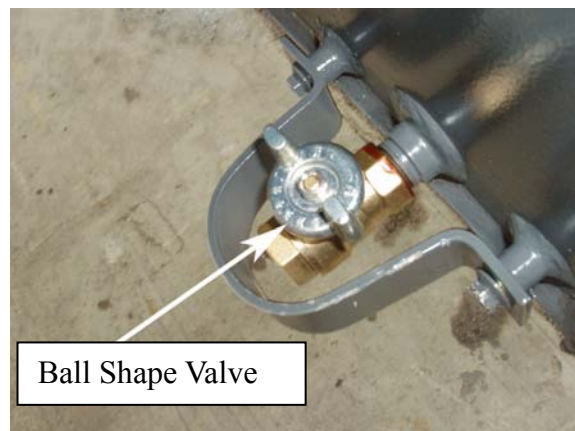
Remark: Do the operation after the loader to be cooling.

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 in and out oil pipes of the fuel oil tank.



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



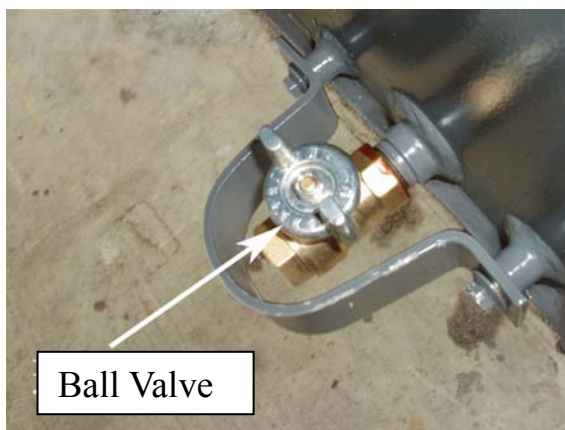
6. Hoist the fuel oil tank off.



Fuel Oil Tank



7. Dismount the ball valve.



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.



Oil tank



3. Fixation of the fuel oil tank.

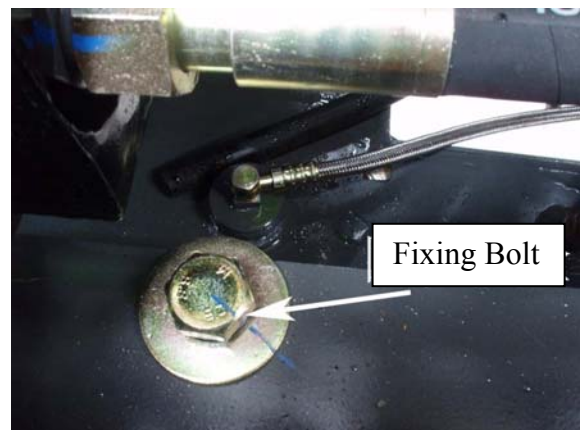
Fix the oil tank on the rear frame with bolts and gaskets.



M20: 250-360 Nm

M24: 320-480 Nm

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



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

6. Add fuel oil into the oil tank.

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

Ambient Temperature $\geq 4^{\circ}\text{C}$

0#Light Diesel Oil

Ambient Temperature $\geq -5^{\circ}\text{C}$

-10#Light Diesel Oil

Ambient Temperature $\geq -14^{\circ}\text{C}$

-20#Light Diesel Oil

Ambient Temperature $\geq -29^{\circ}\text{C}$

-35#Light Diesel Oil



3.3 Disassembly and Assembly of Water Tank and Oil Tank

I : Disassembly of water and oil tank (change water and oil tank 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.

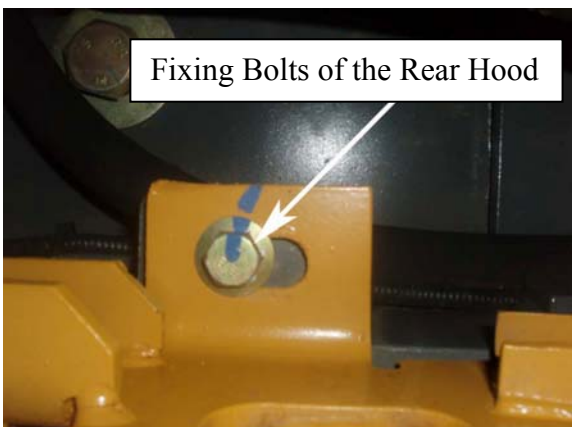
2) In the process of disassembly, the joints of each pipeline should be band up to avoid the sundries entering into the pipeline.

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

3. Disassemble the engine rear hood.

1) Disconnect the connection of the rear hood circuit.

2) Disassemble the fixed bolts on the bottom and fixing the hydraulic oil tank.



3) Hang away the engine rear hood assembly.

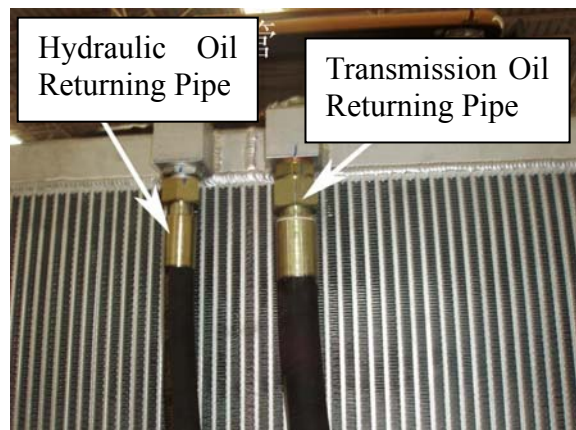


Engine rear hood

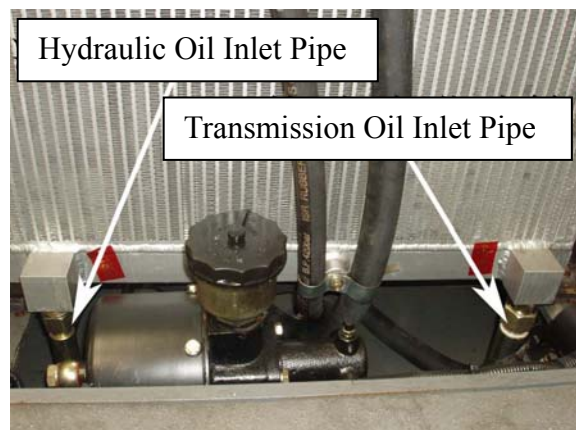
★Remark: In the process of hanging, do not bump the handrail on the engine hood. Make the stability of the hood and prevent the accident cause by incline of hanged hood.



4. Disconnect the connections of the oil pipe and the hydraulic oil radiator and the transmission oil radiator. Get the hydraulic oil and 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. Loosen the tightening hoop of the connection water pipe of the water tank and the engine. Disconnect it. Loosen the fixing bolts of the fan cover and get off the cover.



6. Lift the water tank with traveling crane.
Loosen of the fixing bolts of the water tank.

7. 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.

8. Dismount the wind guide cover of the water
tank and the hydraulic oil radiator.



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. Lay O shape ring in the O shape ring of the
transition steel pipe. Fix the transition steel
pipe on the oil cooler with fission flange and
bolts.

2. Loosen the bolts of the wind guide cover.
Fix the oil cooler between the radiator and the
wind guide cover. Fix the joint unit on the
transmission oil radiator after adding gasket.

Then fix the radiator on the behind of the water radiator.



3. Fix the radiator on the rear frame with four bolts and Fix the fan cover.

★**Notice:** 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 $1/3 \sim 1/2$ of the fan thickness. Adjust the radial distance of the wind guide cover and the fan to be equal and tighten the bolts.

Tighten Torque: 15-35Nm

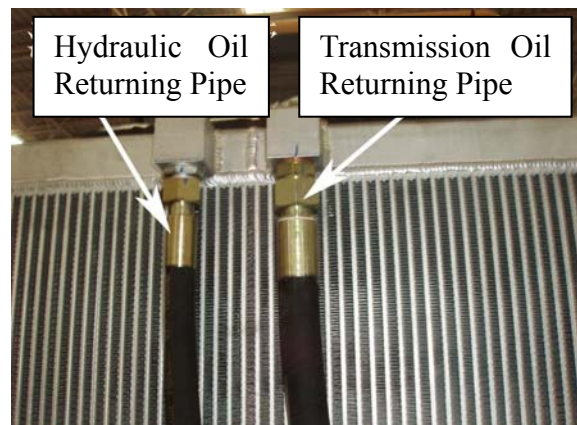


4. Tighten the water pipe of the water tank

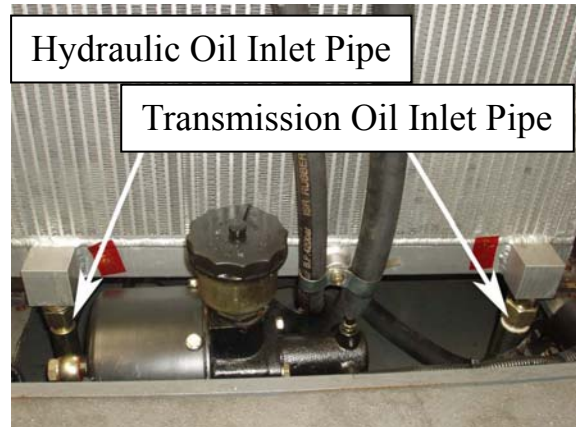
Fix one end of the engine water inlet pipe to the lower draining port of the radiator with hoop. Fix the other end of the engine water inlet pipe to the upper returning port of the radiator with hoop.



5. Fix the oil returning pipes of the hydraulic and transmission oil on the corresponding oil ports of the transmission and hydraulic oil radiator and tighten them.



6. Fix the oil inlet pipes of the hydraulic and transmission oil on the corresponding oil ports of the transmission and hydraulic oil radiator and tighten them.



7. Assemble the engine rear hood.

1) Lift the rear hood to the corresponding position and fix it with bolts.



The rear one of the engine hood



Tighten torque: 78-104 Nm

★**Notice:** Pay attention to the stability of the cover in the hanging process. Do not touch the connection part of rear cover and cover in the lowering process.



2) Insert the rear headlight wire into the rear frame wire.



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

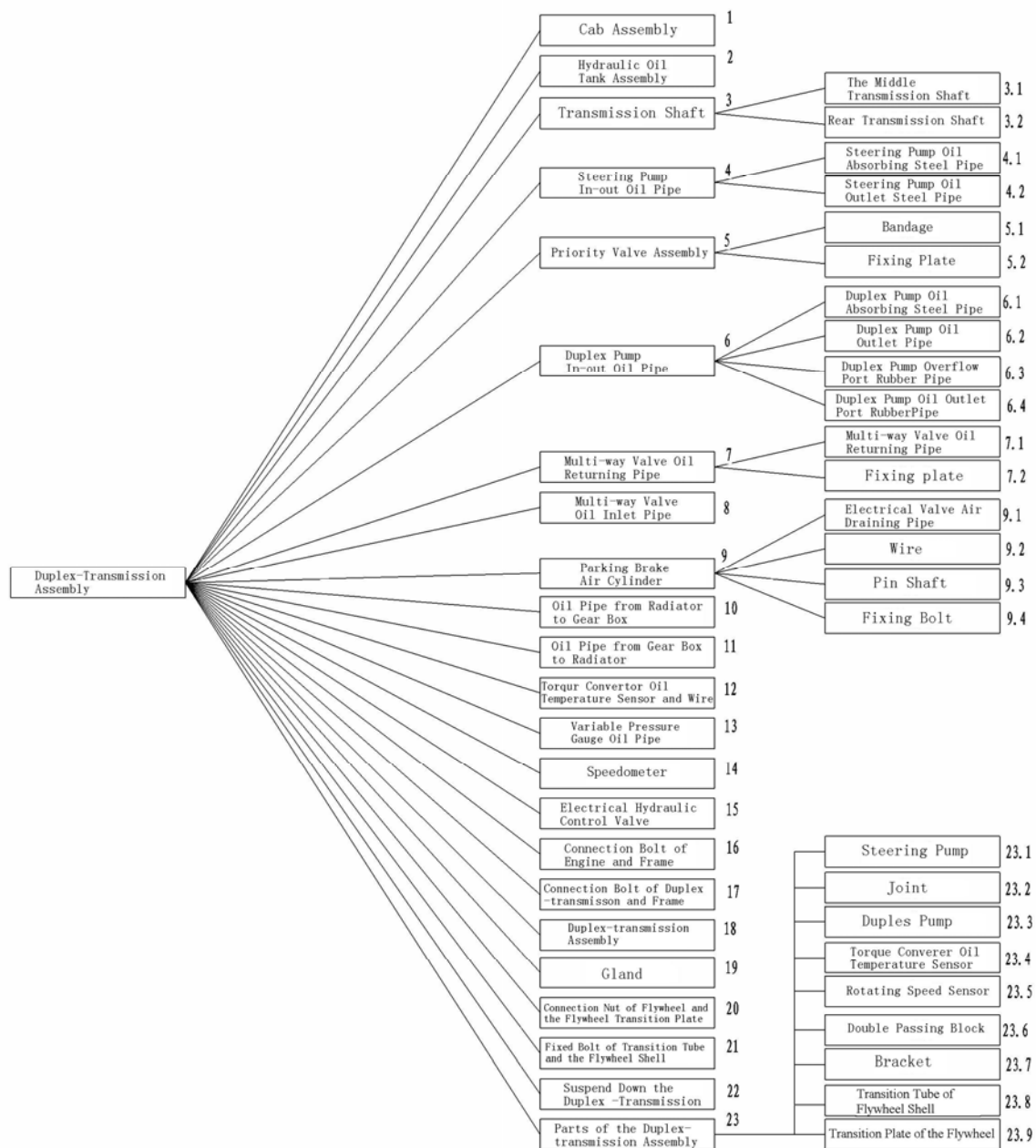
1) Add glycol coolant ($31\pm 2L$), which is use in the temperature $-35^{\circ}C$ into the water tank. Add the coolant still the level reaches the lower edge of the inside of the water port.

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 Duplex-Transmission

I Disassembly of the Duplex-Transmission (These following steps could be referred to changing duplex-transmission, examining and repairing the interior of duplex-transmission and disassembling the duplex-transmission 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.



Remark: 1) Disassemble it after the 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.

Preparation work: Loosen the draining plug at the bottom of the gear box and drain the hydraulic transmission oil.

★**Notice:** 1) Get the oil with clean vessel and cover the vessel to avoid sundries falling into it.

- 2) Pay attention to the oil splashing.

1. Disassemble the cab.

As shown in “Disassembly of cab assembly”.



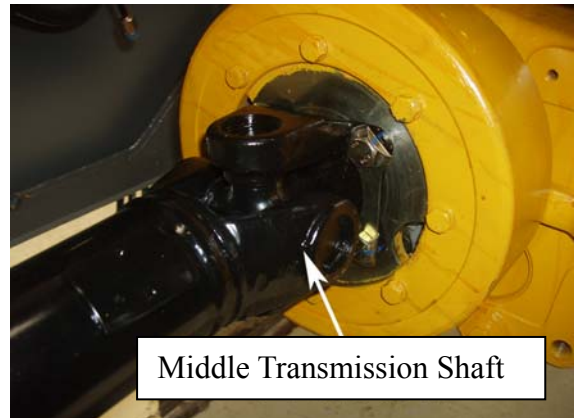
2. Disassemble the hydraulic oil tank.

As shown in “Disassembly of hydraulic oil tank assembly”.

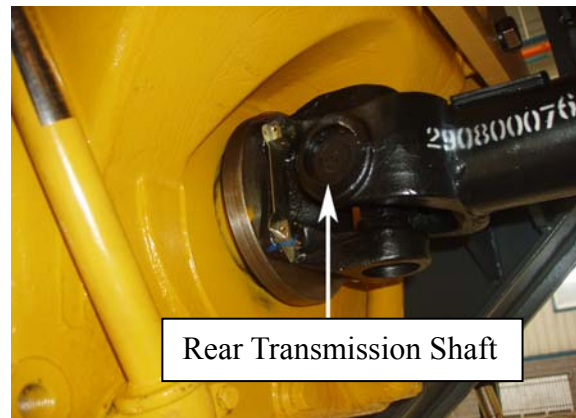


3. Disassembling of the transmission.

3.1 Level the lock washer of the middle transmission shaft. Get off the fixing bolts and the lock washers connecting the middle transmission shaft and the gear box.



3.2 Level the lock washer of the rear transmission shaft. Get off the fixing bolts and the lock washers connecting the rear transmission shaft and the gear box.



★ The connections of the transmission with the middle support and the rear axle should not be disassembled.

4. The inlet and outlet oil pipe of steering pump.

4.1 Disassemble the connection bolts and fission flange of the absorbing steel pipe of the steering pump. Get off the O shape ring.



4.2 Disassemble the connection bolts and fission flange of the outlet steel pipe of the steering pump. Get off the O shape ring.



5. Priority Assembly

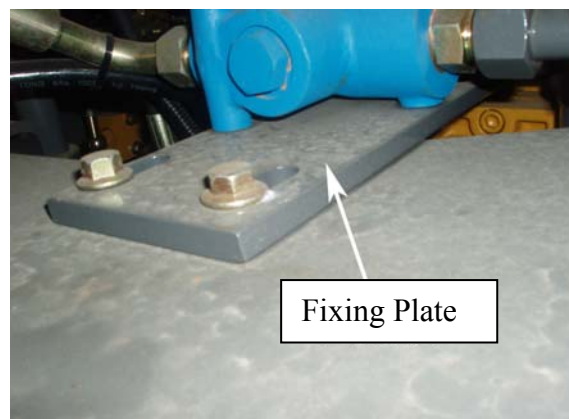
5.1 Cut off the bandage.



5.2 Loosen the fixing bolts of the fixing plate.

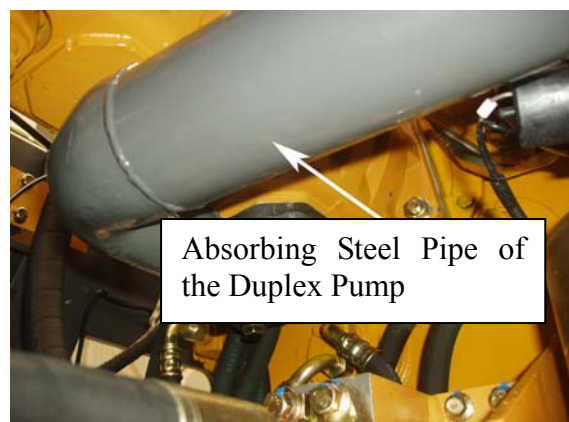
★ 1) The priority valve should not be disassembled from the fixing plate.

2) The connection pipes of the priority valve should not be disassembled

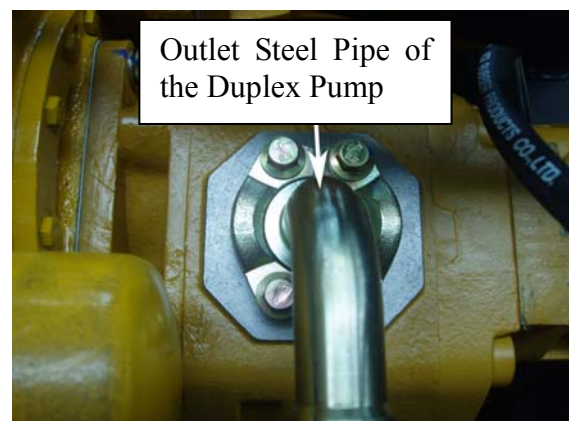


6. The inlet and outlet oil pipe of duplex pump.

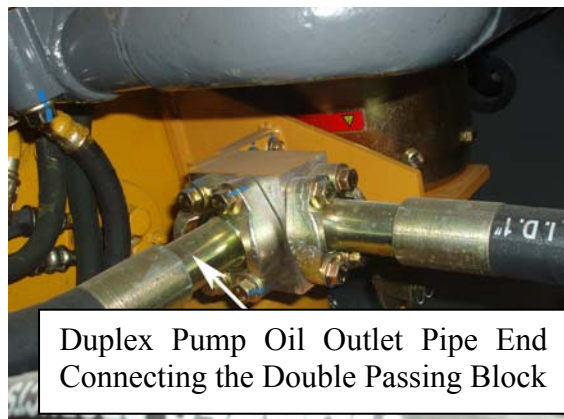
6.1 Disassemble the connection bolts and fission flange of the absorbing steel pipe of the duplex pump. Get off the O shape ring.



6.2 Disassemble the connection bolts and fission flange of the outlet steel pipe of the duplex pump. Get off the O shape ring.



Disassemble the connection bolts and the fission flange of the duplex pump outlet oil pipe and the double passing block. Get off the O shape ring.



6.3 Get off the connection rubber pipe of the duplex pump overflow port.

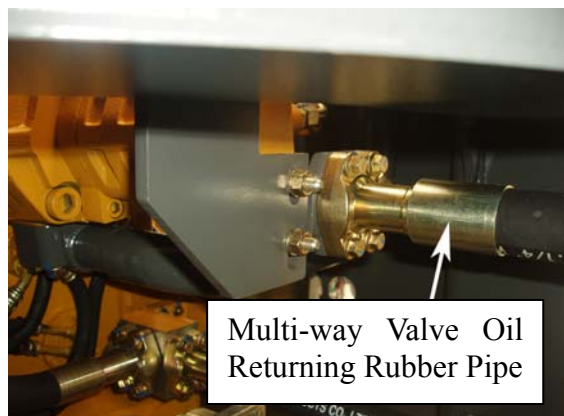


6.4 Get off the connection rubber pipe of the duplex oil outlet port.



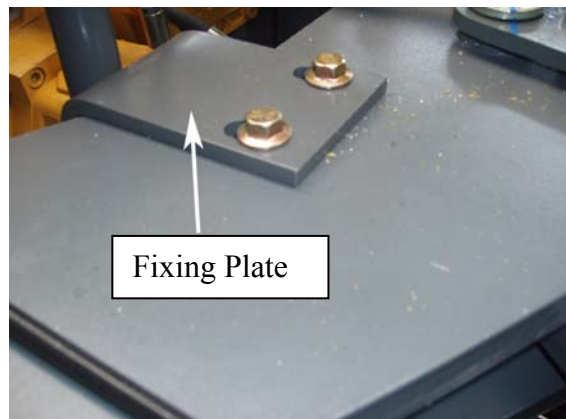
7. Oil returning pipe of the multi-way valve

7.1 Disconnect the connection of the multi-way valve oil returning rubber pipe and the steel pipe.

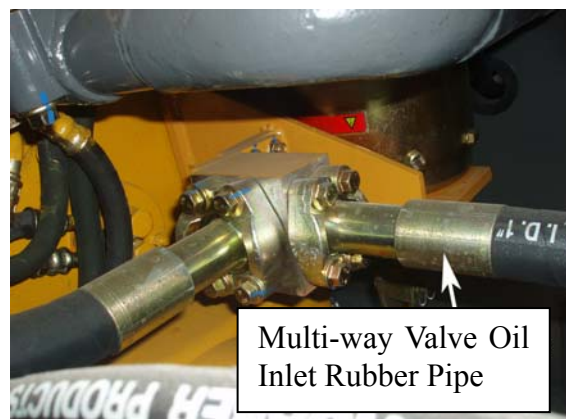


7.2 Disassemble the fixing plate of the multi-way valve oil returning steel pipe.

★ The returning steel pipe should not be disassembled from the fixing plate.



8. Disconnect the connection of the multi-way valve oil inlet rubber pipe and the double passing block.



9. Parking brake air cylinder.

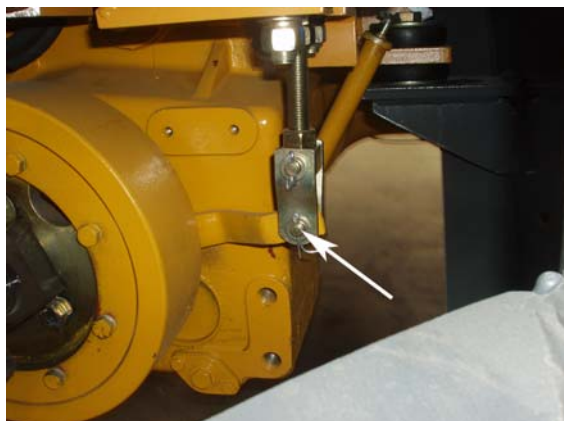
9.1 Disconnect the connection of the parking brake air cylinder and the electrical valve air draining pipe.



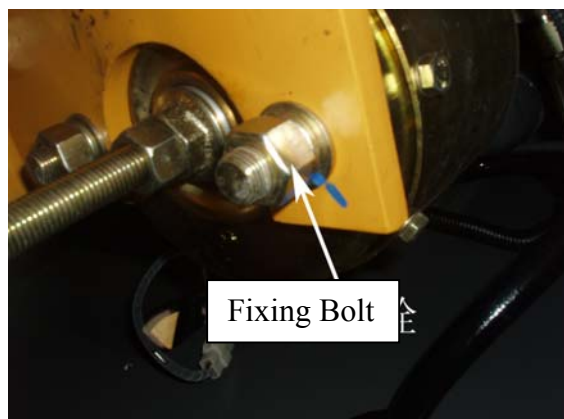
9.2 Disconnect the connection of the parking brake air pressure signal and the wire.



9.3 Disconnect the connection pin of the brake drum and the brake air cylinder.



9.4 Loosen the fixing bolts of the parking brake air cylinder and get off the brake air cylinder assembly.



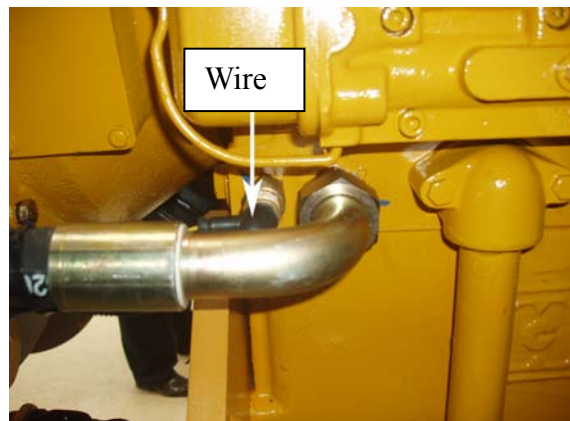
10. Disconnect the connection of the oil pipe, from the radiator to gear box, with the gear box.



11. Disconnect the connection of the oil pipe, from the gear box to radiator, with the gear box.



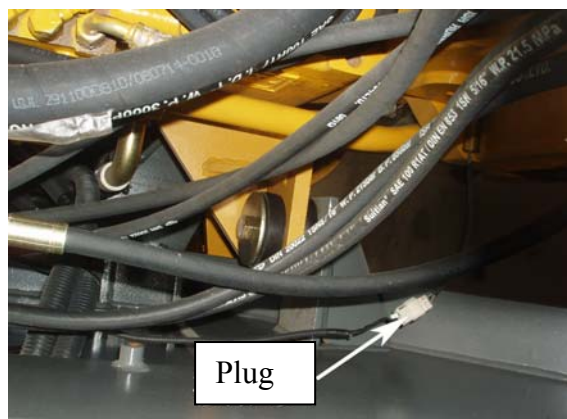
12. Disconnect the connection of the torque converter oil temperature sensor and the wire.



13. Disassemble the shifting pressure gauge oil pipe.



14. Disconnect the plug of the speed gauge.



15. Disconnect the wire connection of the electrical hydraulic control valve.



16. Loosen the connection bolts of the engine and the frame (do not get it off). The nuts screw to the end of the bolts.



17. Loosen the connection bolts of the duplex-transmission and the frame.

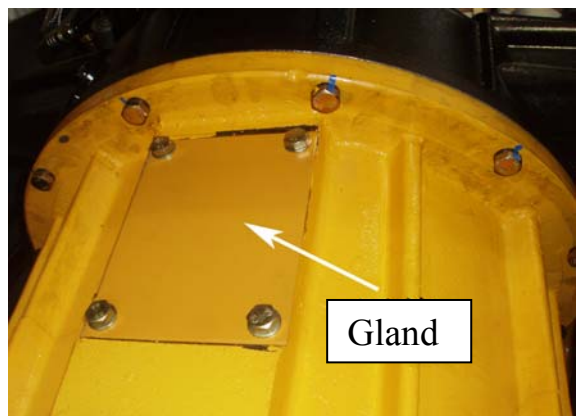


18. Hang the duplex-transmission up a certain distance. Fill a wood block between engine and assistant frame to keep the engine be stability.

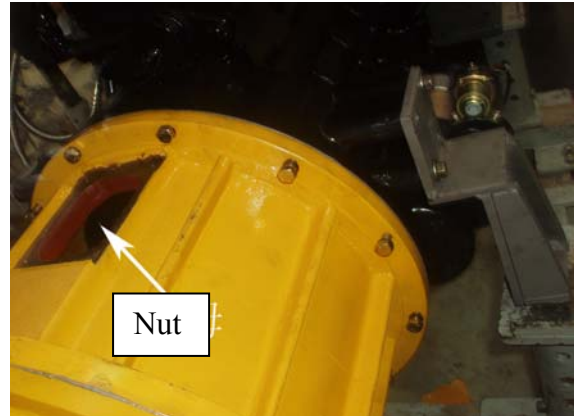
★**Notice:** 1) Choose the suitable size of wood block. Do not let the engine air filter cap bump the engine cover. There is a certain obliquity at the power output end of the engine to assemble the duplex-transmission more conveniently.
2) After filling the wood block, some certain perforce should be kept between hanging rope and duplex-transmission.



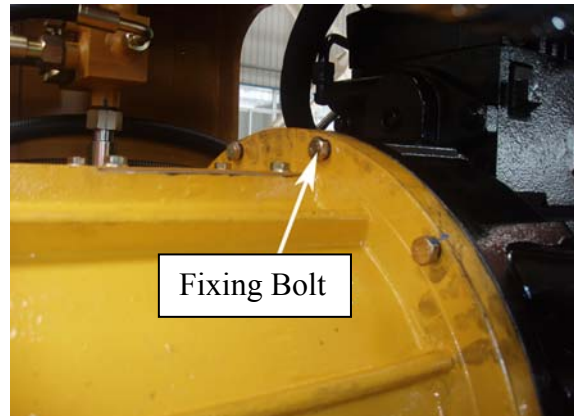
19. Loosen the fixing bolts of the gland, and get off the gland and washers.



20. By the holds in the gland, loosen the connection nuts and washers of the engine flywheel and the flywheel transition plate.



21. Loosen the fixing nuts and washers of the flywheel shell transition tube and the flywheel shell.



22. Joggle the duplex-transmission slowly to make it away from connection of engine. Move the duplex transmission assembly forward a distance to keep a clearance between the flywheel transition plate and the engine. Hang up duplex-transmission assembly slowly. Pay attention to the position of each part and pipeline. Do not be bumped by the duplex-transmission assembly.



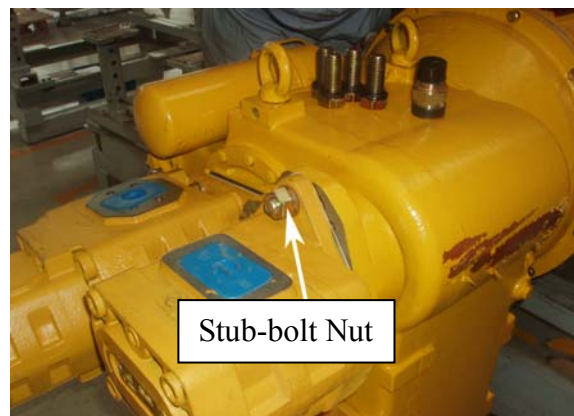
Duplex-transmission Assembly



23. Parts of the duplex-transmission assembly.

23.1 Loosen the fixing bolts of the steering pump. Get the pump and gasket off. Then disassemble the stub-bolt.

★**Notice:** Do not disassemble the stub-bolt with hand pliers. Tighten it with two comparative nuts. Screw the internal nut with spanner to disassemble it.



23.2 Disassemble the joint of the duplex pump.

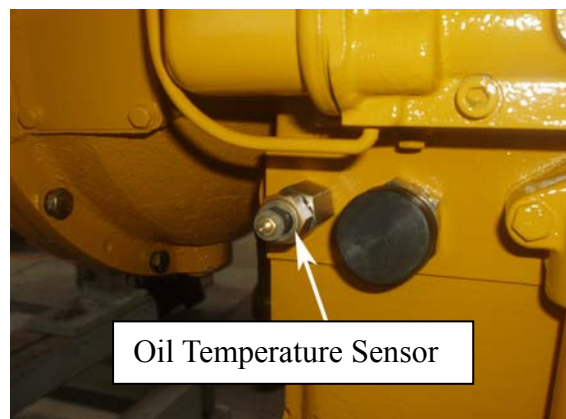


23.3 Disassemble the fixing bolts of the duplex pump. Get off the duplex pump and the gasket. Then loosen the stub-bolt.

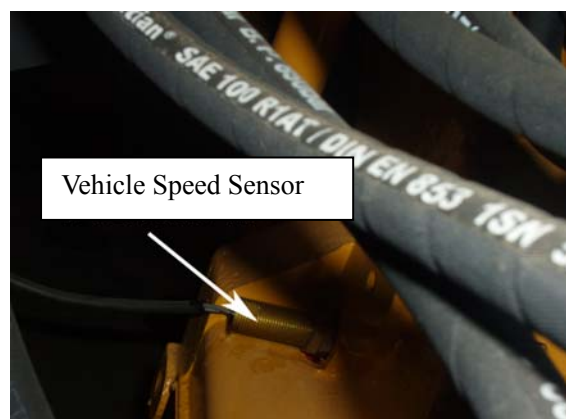
★**Notice:** Do not disassemble the stub-bolt with hand pliers. Tighten it with two comparative nuts. Screw the internal nut with spanner to disassemble it.



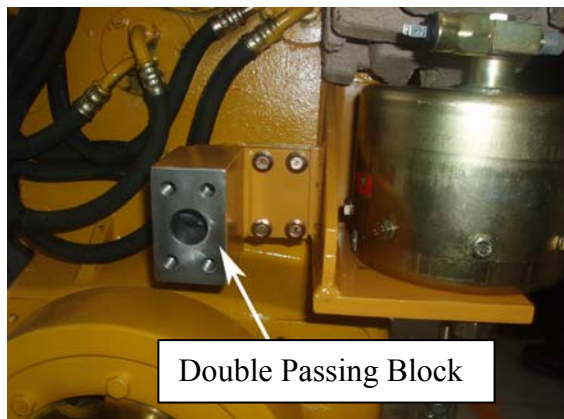
23.4 Get off the torque converter oil temperature sensor.



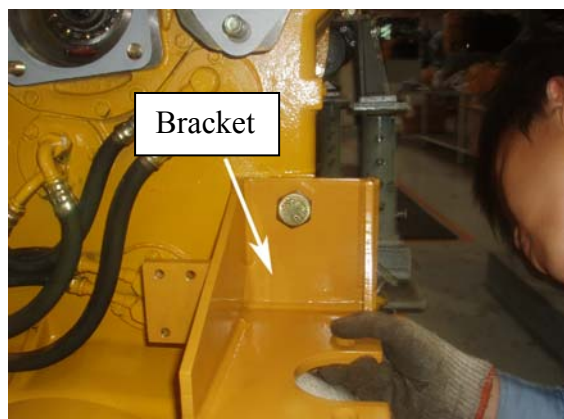
23.5 Get off the rotating sensor.



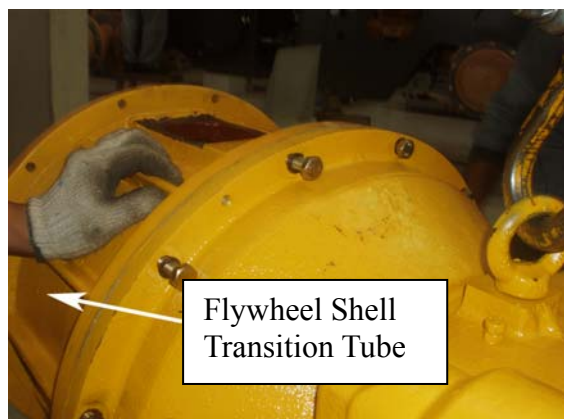
23.6 Loosen the fixing bolts of the double passing block from bracket.



23.7 Loosen the fixing bolts of the bracket and get off the bracket.



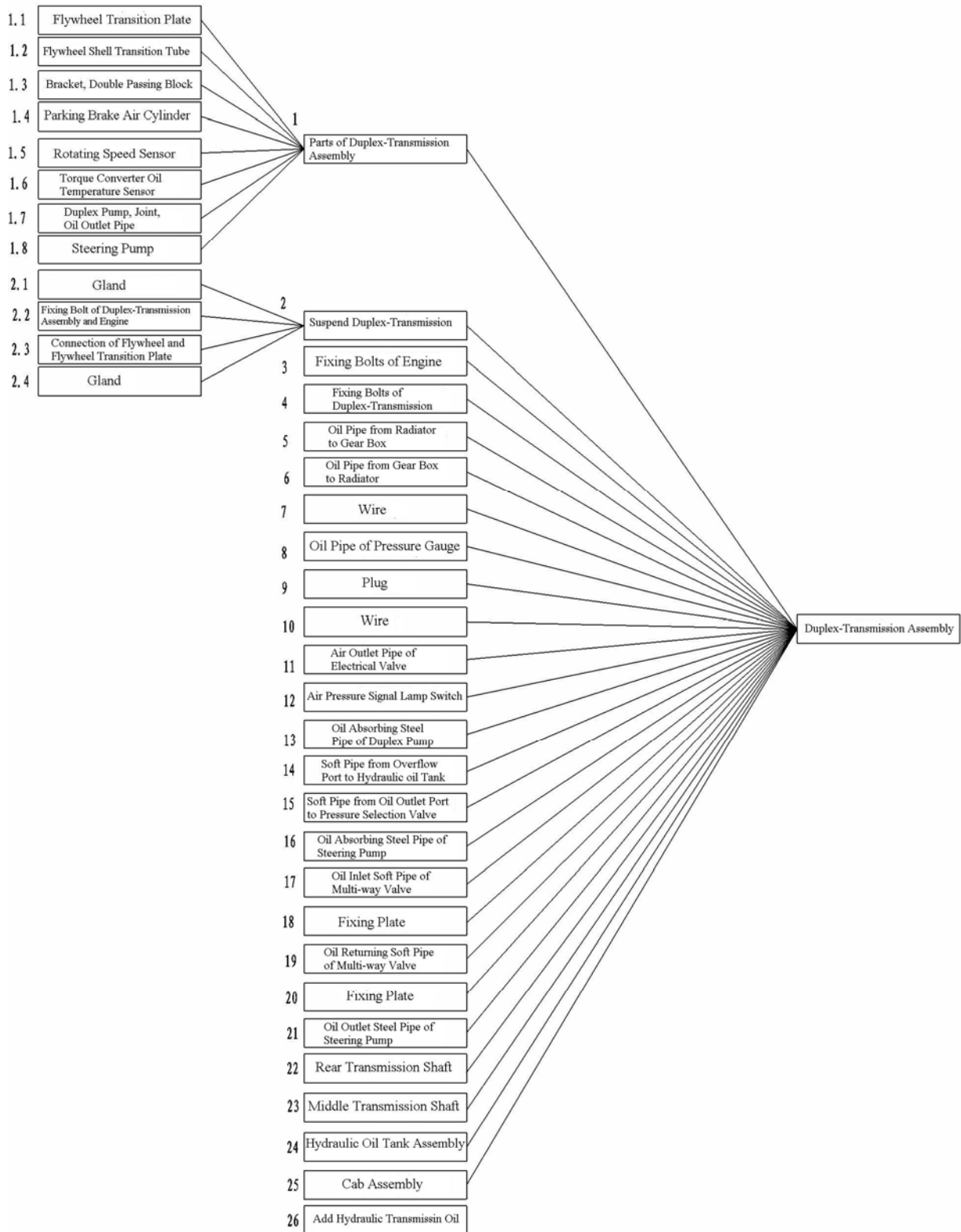
23.8 Loosen the connection bolts of the flywheel transition shell and get it off.



23.9 Loosen the connection bolts of the flywheel transition plate and get off the plate and the diaphragm.

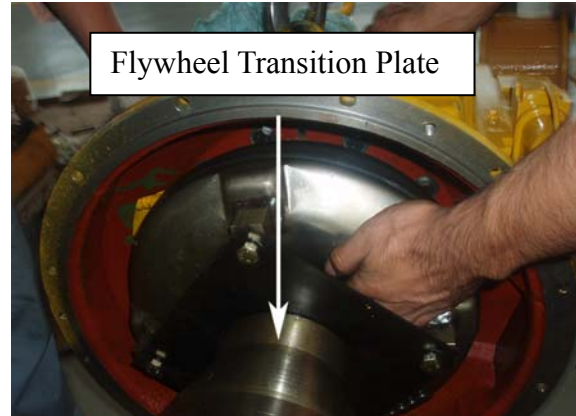


II Assembly of Duplex-Transmission (These following steps could be referred to changing duplex-transmission, examining and repairing the interior of duplex-transmission and assembling the duplex-transmission to complete appliance.)



Preparation: 1) Clean the corresponding parts

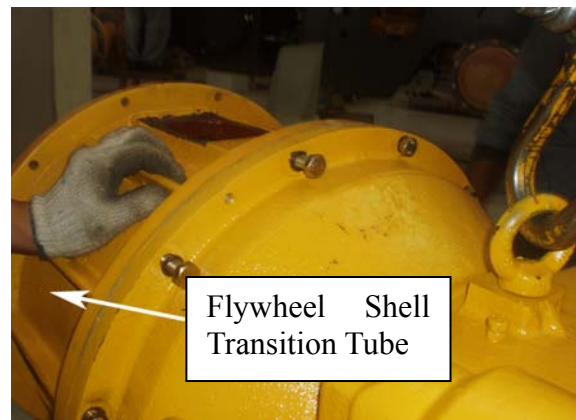
2) The process of the sealant coating: (1) Coat the sealant on the outside screw about one circle. The width of it is about 3~5 circles screw. The sealant should be full of the teeth of screw. The beginning circle could not be coated sealant. Coat it while you will assemble. After the assembling, there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



1. Parts of the duplex-transmission assembly.

1.1 Fix the diaphragm and the flywheel transition plate on the gear box with bolts and washers.

 kgm M10: 45-59 Nm

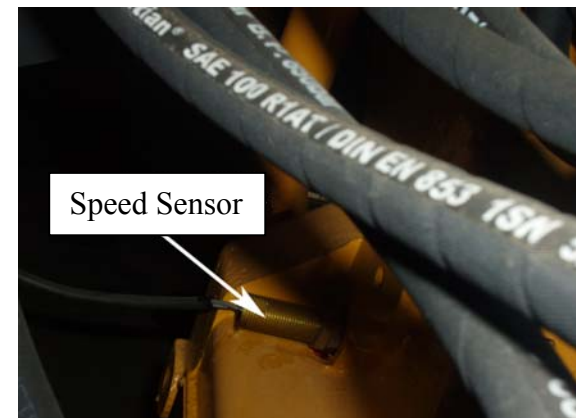


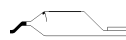
1.2 Coat certain silicone rubber plane sealant on the connection of the flywheel shell transition tube and the gear box. And connect them with bolts and washers.

The window of the flywheel shell transition tube should be kept on the farther end of the gear box. Keep the vertical distance of the end face of the transition plate and the transition tube to be 39.6 ± 0.5 .

 kgm M10: 45-50 Nm

Silicone rubber plane sealant



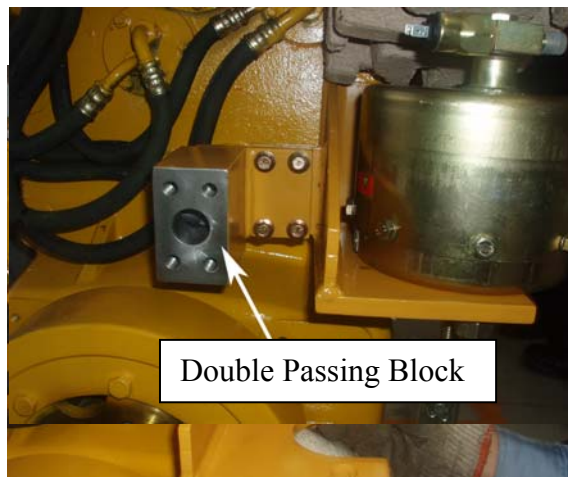
1.3 Fix the bracket on the corresponding position of the duplex-transmission assembly with  bolts.

 kgm M20: 376-502 Nm

Fix the double passing block on the bracket with bolts.

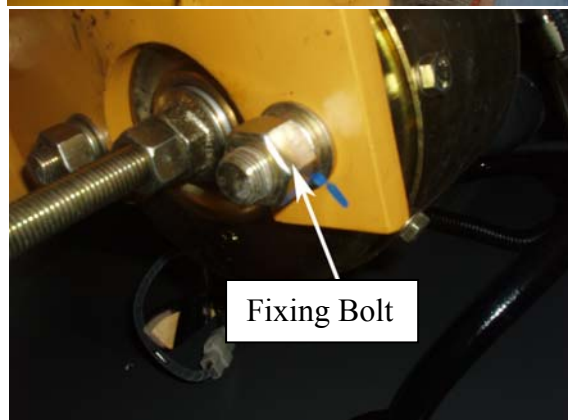


M8: 22-30 Nm

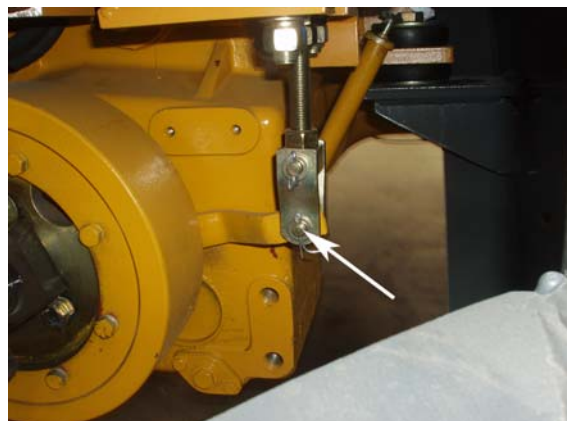


1.4 Fix the parking brake air cylinder on the bracket

★The tee joint block and the air pressure signal lamp switch have been fixed.



Connect the parking brake air cylinder and the parking arrester with pin shaft.



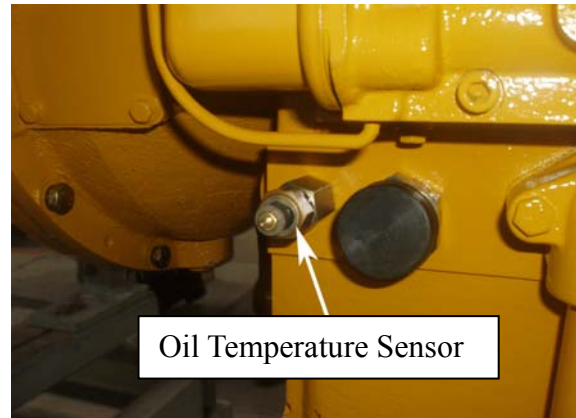
1.5 Coat the KESAIXIN 1545 oxygen-wear pipe screw sealant on the rotating speed sensor and screw it to the lower port on the profile of the gear box.



KESAIXIN 1545 oxygen-wear pipe screw sealant

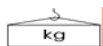
★After tightening the rotating speed sensor rotate it at least half or three fourth circle.

1.6 Clean the torque converter oil temperature sensor with KESAIXIN 1755 high efficient cleaner. And screw the sensor coated with KESAIXIN 1545 oxygen-weary pipe screw sealant on the joint of the oil thermometer. KESAIXIN 1545 oxygen-weary pipe screw sealant



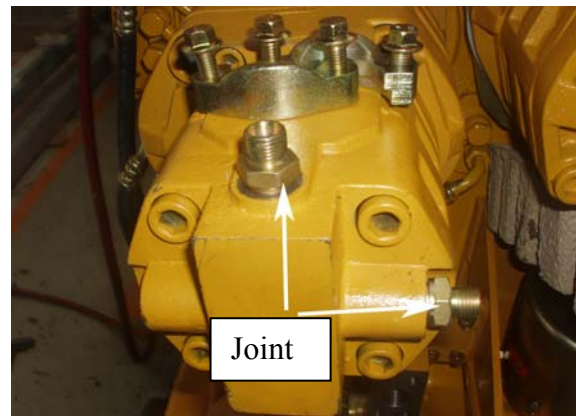
1.7 Screw the stub-bolt on the gear box. Put the pump washer on it and Fix the duplex pump. Then tighten them with bolts and washers.

★Do not assemble the stub-bolt with hand pliers. Tighten the two nuts comparatively. Tighten them by rotating the outside nuts with wrench.



Duplex Pump

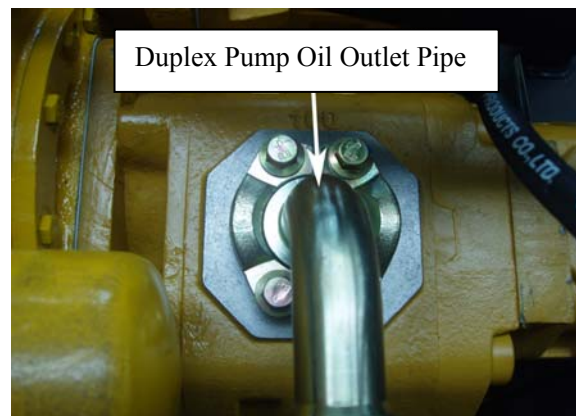
Fix the straight passing joints, added washers, to the overflow port and the oil outlet port on the front of duplex pump.



Fix O shape ring on the outlet pipe of the duplex pump. Then Fix it on the duplex pump with bolts and fission flange.

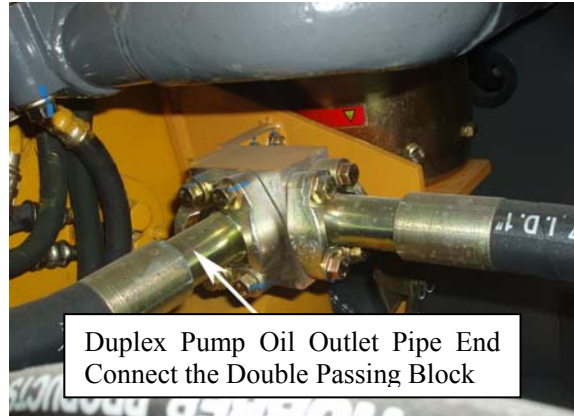


M10: 45-59 Nm



Fix O shape ring on the outlet pipe of the duplex pump. Then Fix it on the double passing block with bolts and fission flange.

 M10: 45-59 Nm



1.8 Screw the stub-bolt on the gear box. Put the pump washer on it and Fix the steering pump. Then tighten them with bolts and washers.

★Do not assemble the stub-bolt with hand pliers. Tighten the two nuts comparatively. Tighten them by rotating the outside nuts with wrench.

 Steering Pump



2. Lift the duplex transmission assembly and Fix it with engine.

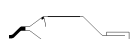
2.1 Loosen the fixing bolts of the gland. Get off the gland and the washers.

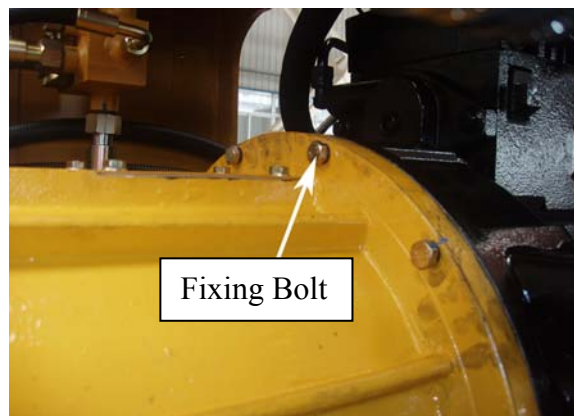
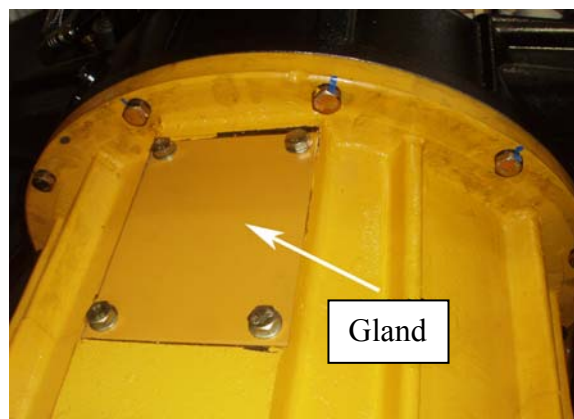
2.2 Coat certain silicon rubber sealant on the appearing face of the flywheel transition tube and the connecting face of the flywheel shell. Connect the duplex transmission assembly and the engine with bolts and washers.

1) Avoid bump and scratch in the process of lowering the duplex transmission assembly.

2) Justify the stub-bolt on the engine flywheel to the flywheel transition plate of the duplex transmission completely.

 Duplex Transmission Assembly

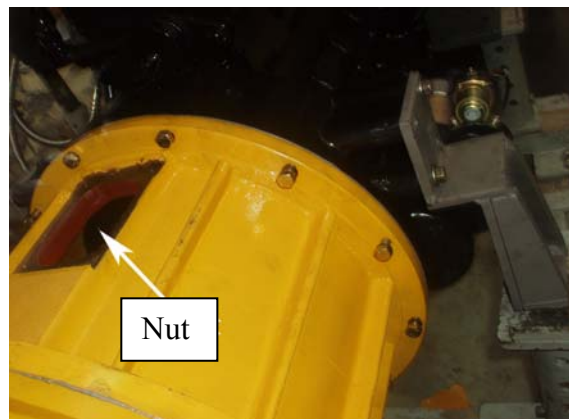
 Silicone Rubber Plane Sealant



2.3 Rotating the engine fan, screw the nuts and washers on the stub-bolt, by which connect the engine flywheel and the flywheel transition plate of the duplex-transmission assembly. Then tighten them.



M10: 45-59 Nm

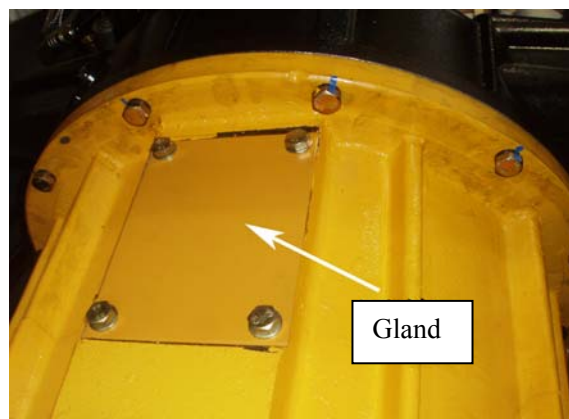


2.4 Fix the fixing bolts of the gland and tighten them.

★Lift the duplex-transmission up a little to get away the wood block under the engine.



M8: 22-30 Nm



3. Tighten the fixing bolts of the engine.



M20: 120-200 Nm



4. Lay washer and damping block on the support base of the gear box first. And then tighten them with bolt, washer and nuts.



M20: 120-200 Nm



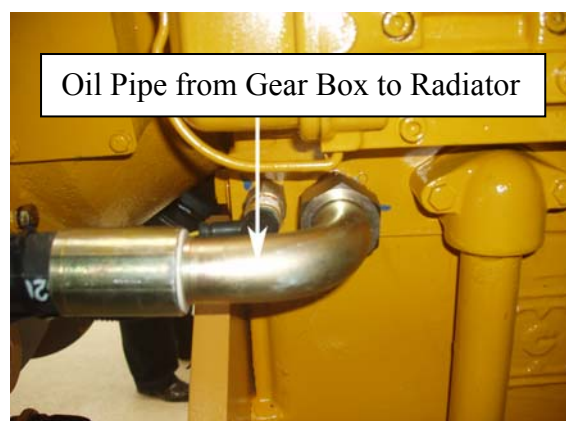
5. Fix the oil pipe from radiator to gear box to the corresponding port of the gear box.

★Order the trend of the pipe before tightening them. Make it to be forward to the engine.

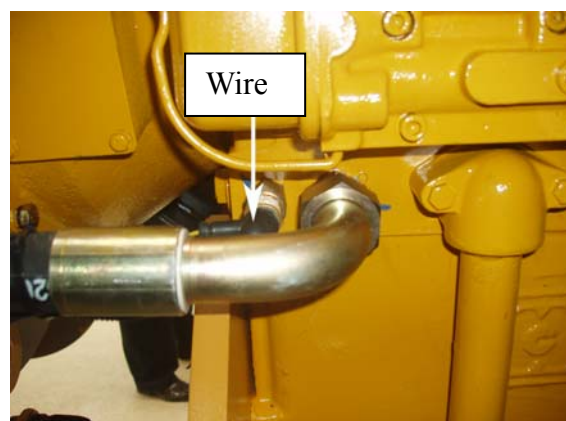


6. Fix the oil pipe from gear box to radiator to the corresponding port of the gear box.

★Order the trend of the pipe before tightening them. Make it to be forward to the engine.



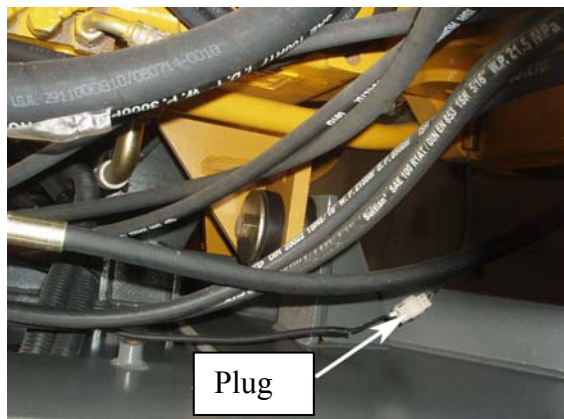
7. Connect the oil temperature sensor with the corresponding wire.



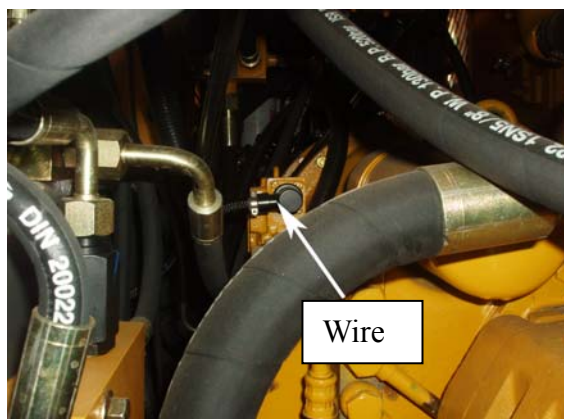
8. Connect the pressure gauge oil pipe to the corresponding position of the shifting valve.



9. Connect the plug of the vehicle speed gauge.



10. Connect the wire of electrical hydraulic control valve to the corresponding position of the valve.



11. Connect the air outlet port of electrical hydraulic valve to the corresponding position of the parking brake air cylinder.



12. Connect the switch of parking brake air pressure signal lamp to the corresponding wire.

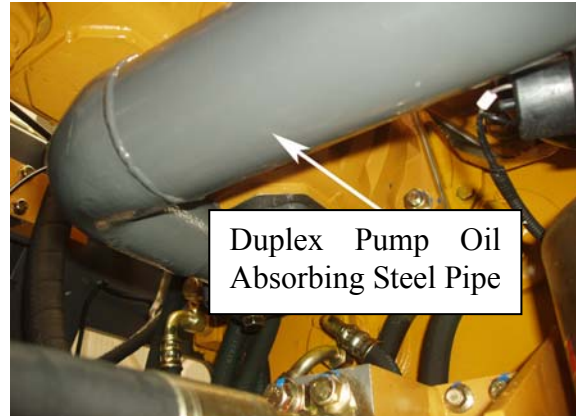


13. Lay O shape ring in the port of the duplex pump oil absorbing steel pipe (with oil absorbing rubber pipe). Fix it on the working pump oil absorbing port with bolts.



M12: 78-104 Nm

★Make another end to be forward to the engine.



14. Fix the elbow end of the soft pipe, from overflow port to pressure oil tank, to the straight joint of the overflow port on the front profile of the duplex pump.



15. Fix the soft pipe from oil outlet port to pressure selection valve to the straight joint on the front profile of the duplex pump.



16. Lay O shape ring in the O shape groove of the steering pump oil absorbing steel pipe (with oil absorbing rubber pipe). Fix it on the steering pump oil absorbing port with bolts and fission flanges.



M10: 45-59 Nm



17. Lay O shape ring in the O shape groove of the multi-way valve oil inlet soft pipe. Fix it on the double passing block with bolts and fission flanges.



M10: 45-59 Nm

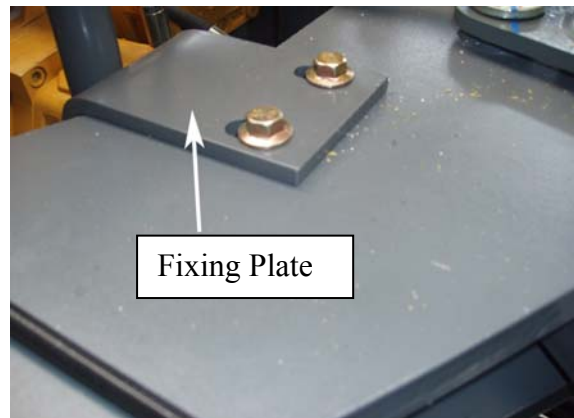


18. Fix the fixing plate of multi-way valve oil returning steel pipe to the frame.



M10: 45-59 Nm

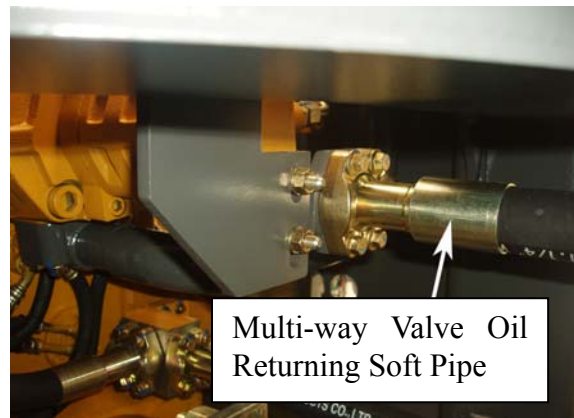
★In disassembling the oil returning steel pipe and the fixing plate is a whole and the same as in assembling.



19. Lay O shape ring in the O shape groove of the fixing end of the multi-way valve oil returning soft pipe. Fix the other end of it on the oil returning steel pipe.



M10: 45-59 Nm

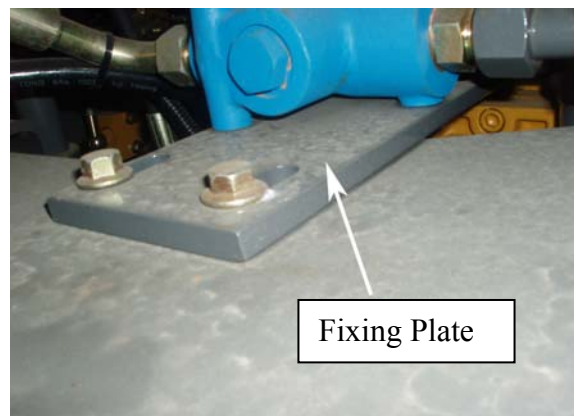


20. Fix the priority valve fixing plate on the rear frame with two bolts.



M12: 78-104 Nm

★In disassembling the priority valve and the fixing plate is a whole and the same as the pipes on them.



21. Lay O shape ring in the O shape groove of the steel pipe of the steering pump. Fix it on the oil outlet port of the steering pump.



M10: 45-59 Nm

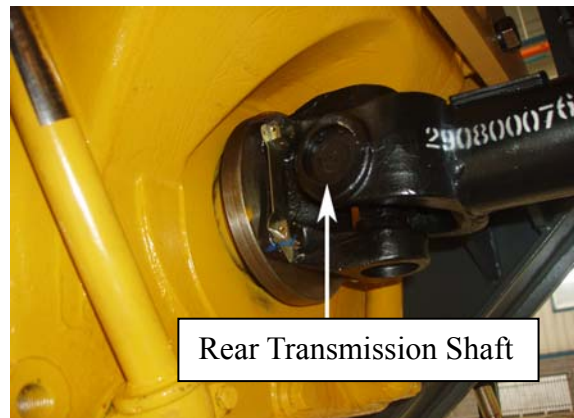


22. Connect the rear transmission shaft to the rear export flange of the gear box with shafting bolts and locking washers. Cock the part of the locking washer and make it cling to the bolt face.

★Justify the balance locating arrowhead. The outside end of the spline is in the front. Connect it with rear export flange of gear box. Add lubricant to the oil port of the cross shaft after assembling.



M12: 145±20 Nm



23. Connect the middle transmission shaft to the front export flange of the gear box with shafting bolts and locking washers. Cock the part of the locking washer and make it cling to the bolt face.

★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.



M12: 145±20 Nm



24. Assemble the hydraulic oil tank assembly. Please refer to the “Assembling of the hydraulic oil tank assembly”.



25. Assemble the cab assembly.

Please refer to the “Assembling of the cab assembly”.



26. Add hydraulic transmission oil.

Add the shifting oil (25L) in the gear box: 6 #
hydraulic transmission oil Q/SH018.44.03-1994.

Check the oil level: Start the engine and keep it running in idle speed for several minutes.

Check whether the oil gauge is suitable. Add or drain oil by the result of checking.

4.2 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.

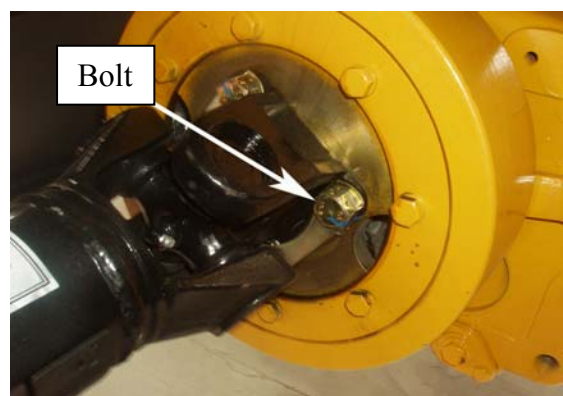
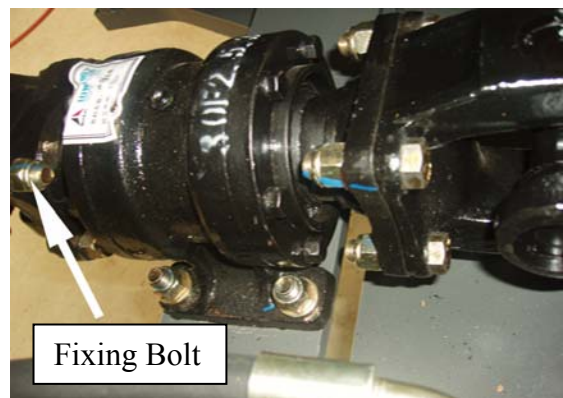
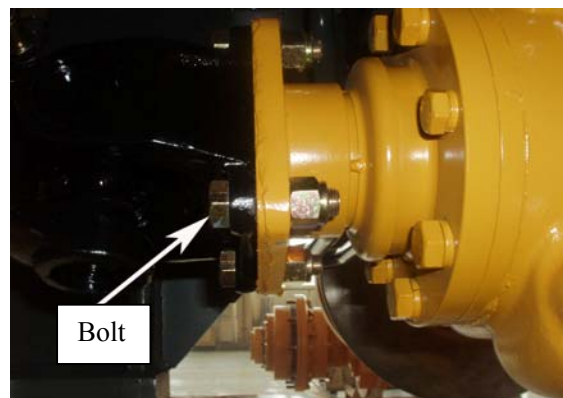
Disassemble the front and middle transmission shafts.

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

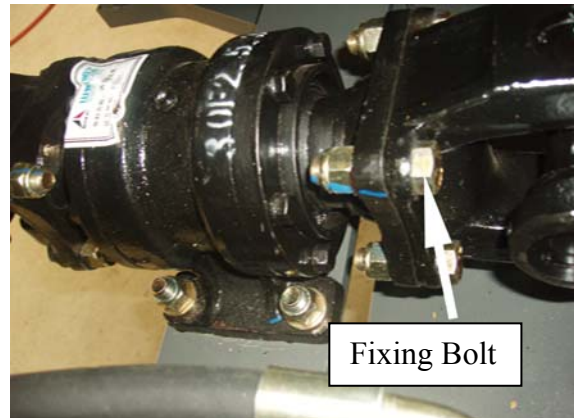
★Remark: Do not get off the bolts when loosen them and do that after the disassembly is complete.

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

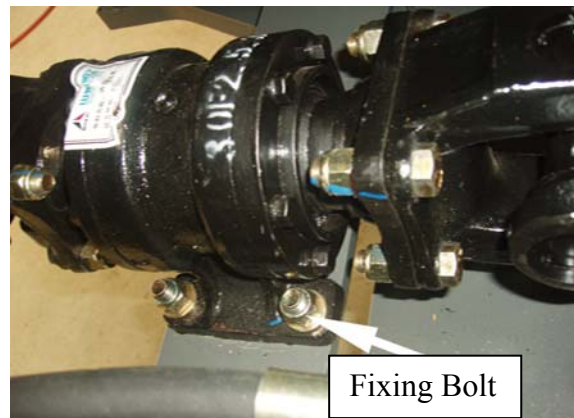
1.3 Level the locking washer. Loosen the connection bolts of the middle transmission shaft and the export flange on the front of the gear box.



1.4 Get off the bolts and locking nuts of the middle transmission shaft and the middle support. Get off the middle transmission shaft.



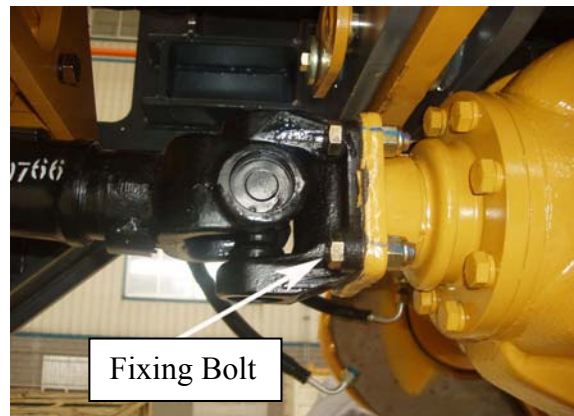
1.5 Get off the fixing bolts of the middle support. Get off the middle support assembly.



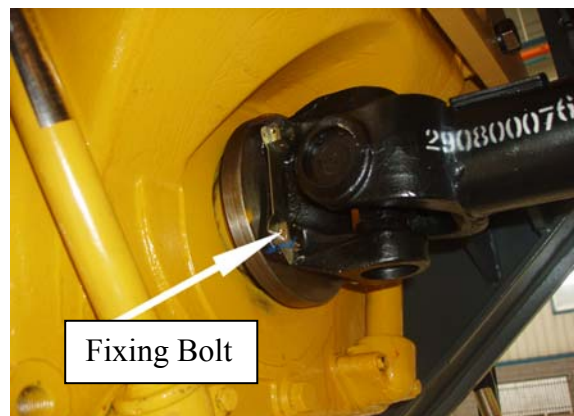
2. Disassemble the rear transmission shaft.

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 Level the locking washer. Loosen the connection bolts and locking washers of the rear transmission shaft and the gear box.

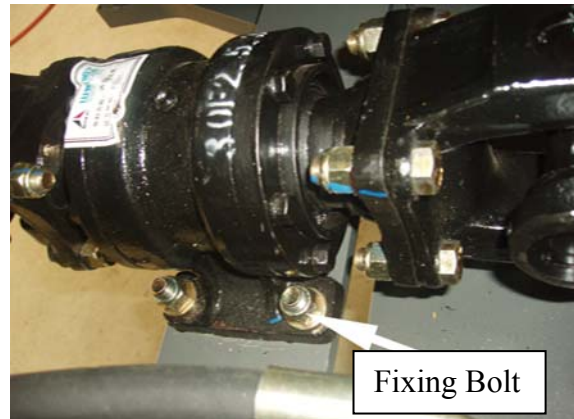


II Assembly of the transmission shaft

1. Fix the middle support

Fix the middle support on the fixing plate of the front frame with bolts, washers and nuts.

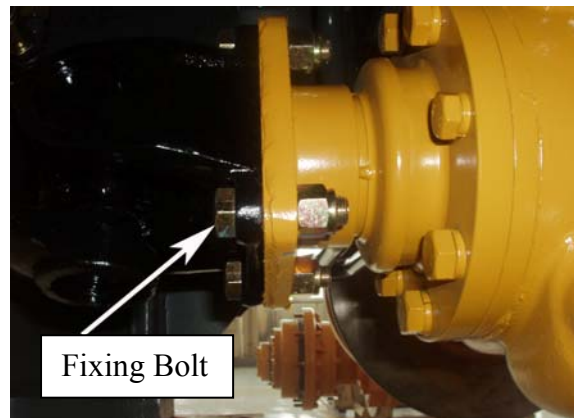
M14: 145 ± 20 Nm



2. The front and middle transmission shaft.

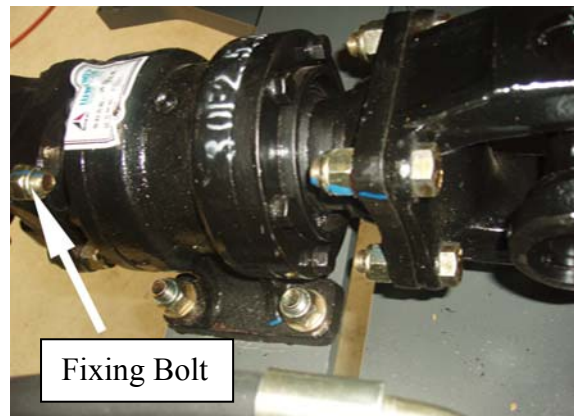
2.1 Connect one end of the front transmission shaft with the middle support with bolts and nuts.

M14: 145 ± 20 Nm



2.2 Connect one end of the front transmission shaft with the input flange of the front axle with bolts and nuts.

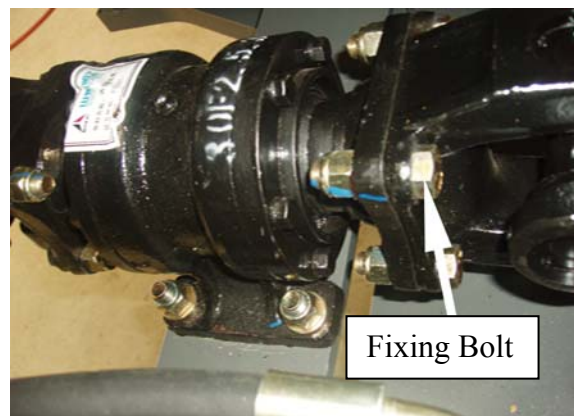
M14: 145 ± 20 Nm



2.3 Connect one end of the middle transmission shaft (outside end of the spline) with the middle support with bolts and nuts.

★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.

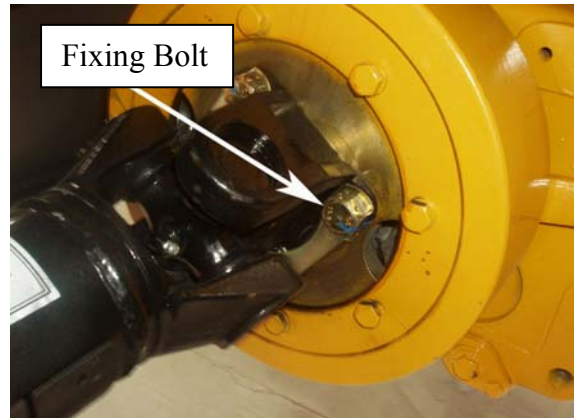
M14: 145 ± 20 Nm



2.4 Connect the middle transmission shaft to the export flange of the gear box with shafting bolts and locking washers. Cock the part of the locking washer and make it cling to the bolt face.



M12: 145±20 Nm



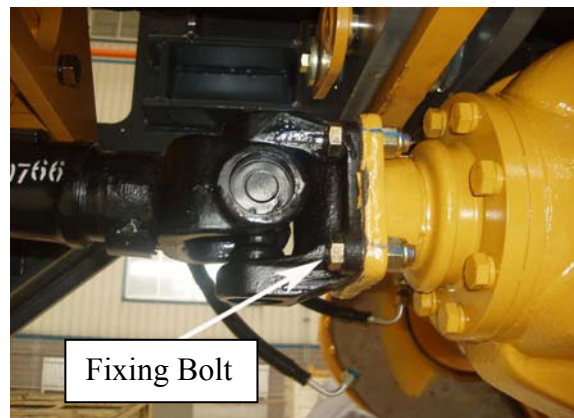
3. Assembling of rear transmission shaft.

3.1 Connect one end of the 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.



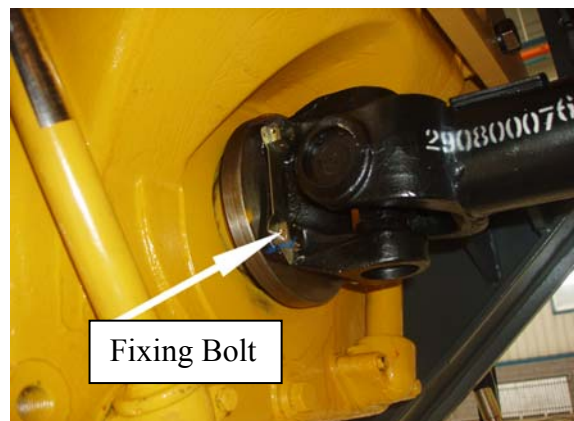
M12: 145±20 Nm



3.2 Connect the one end of the transmission shaft to the rear export flange of the gear box with shafting bolts and locking washers. Cock the part of the locking washer and make it cling to the bolt face.



M12: 145±20 Nm



4.3 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.

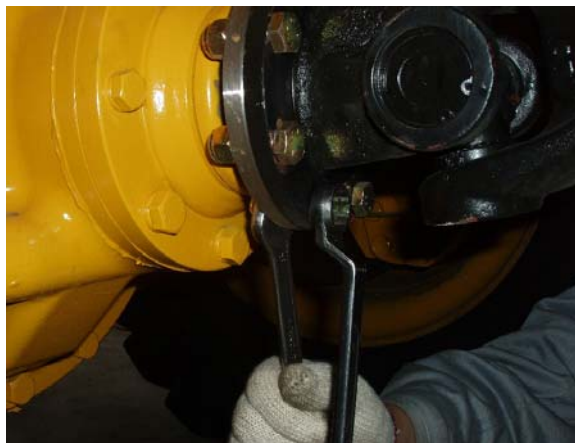


5. Get off the rear axle brake oil hose of the T-joint.

★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.



Frame



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



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.



M12: 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.



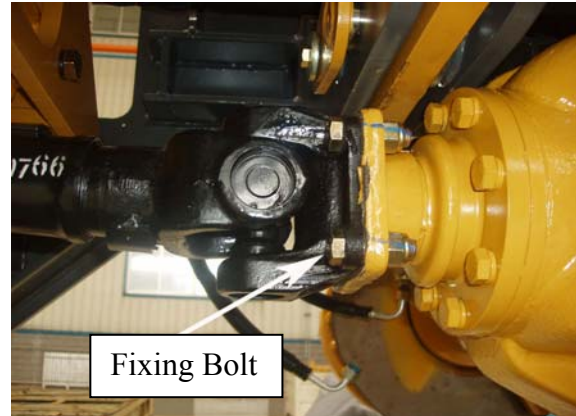
Tightening torque: 730±70 Nm



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



M14: 145±20 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.



Tightening torque: 25~35 Nm

4.4 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”.



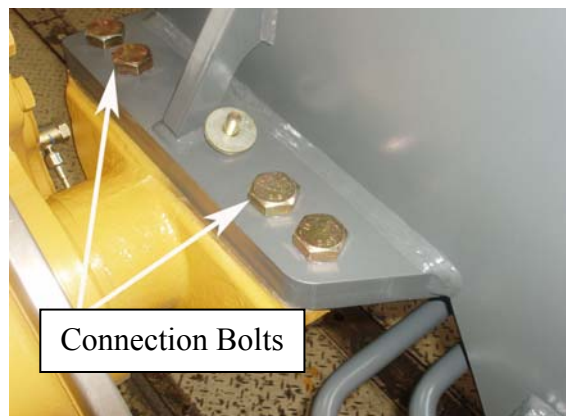
6. Hang the axle end hub bolts with hanging tool.



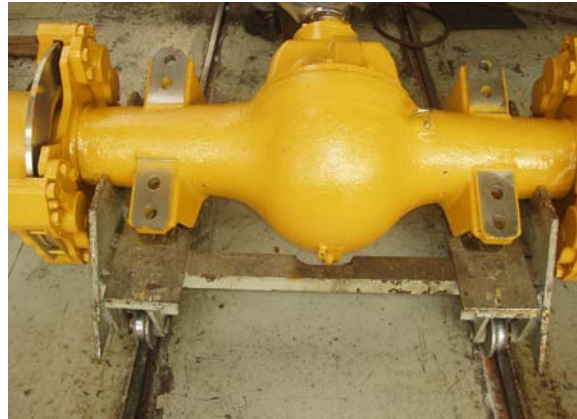
Front Axle



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.



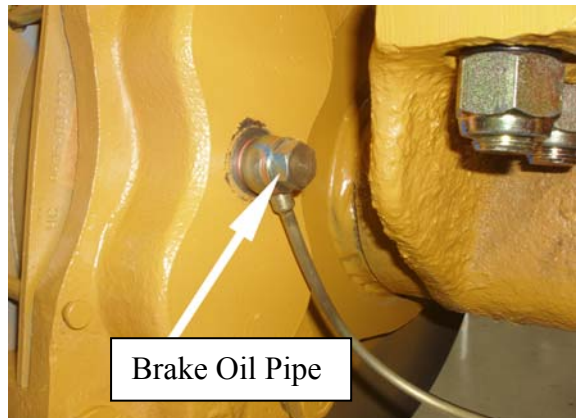
9. Get off the deflating mouth of the axle.

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.



II Assembly of Front Axle

1. 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. Fix the tee joint on the fixing block of front axle with bolts. Tighten the brake oil pipe of front axle on one end of the tee joint.

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



M8: 22-30 Nm

2. 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.



Driving axle assembly



4. 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.



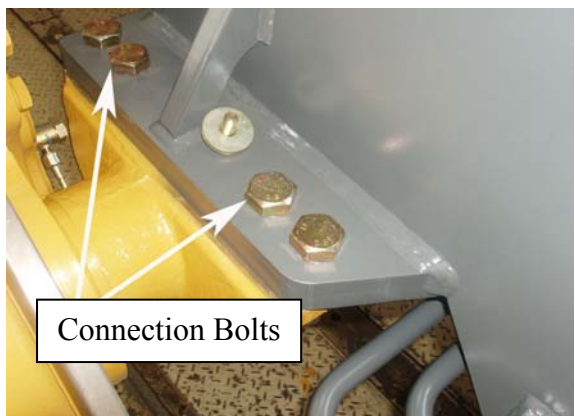
Diving axle assembly



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



M24: 450±50 Nm



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



M14: 145±20 Nm



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.



Tightening torque: 25~35 Nm

4.5 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.



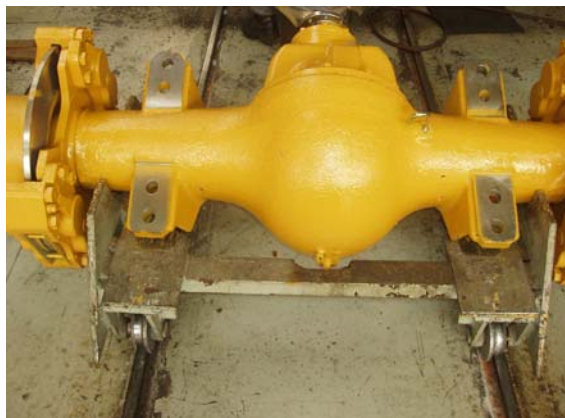
5. Loosen the bolts and nuts of rear axle and assistant frame.



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



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.



II Assembly of Rear Axle

1. Screw the left and right brake oil pipe of rear axle on the port of tee joint and do not tighten them. Fix the tee joint on the screw base of rear axle shell with bolts. 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.

M8: 22-30 Nm

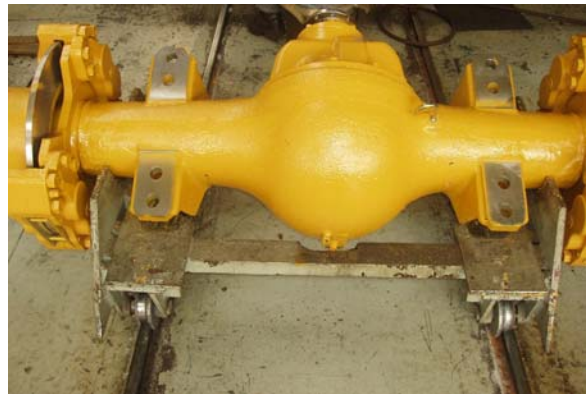
2. Install the deflating mouth on the brake clamp. Tighten two lower deflating mouths. And the higher two should not be tightened but make sure they won't fall down.



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



Driving axle assembly



4. 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 hands.



Diving axle assembly



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



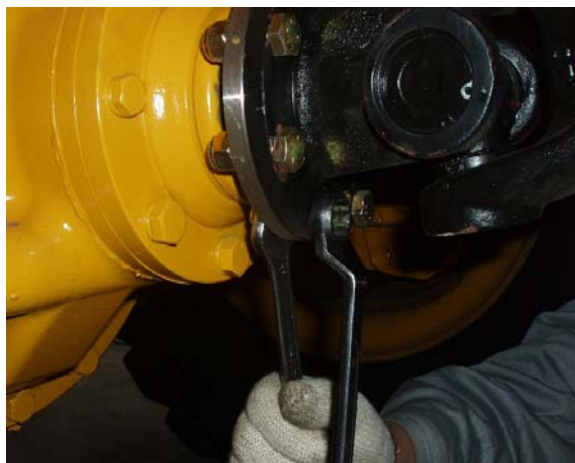
M24: 450 ± 50 Nm



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



M14: 145 ± 20 Nm



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



Tightening torque: 30~40 Nm



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



11. 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.

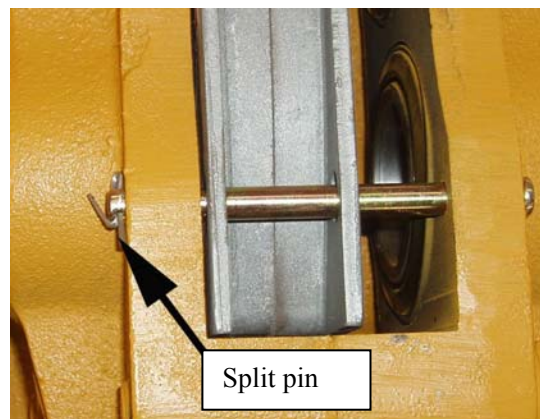


Tightening torque: 25~35 Nm

4.5.1 Disassembly and Assembly of Brake Clamp Assembly

I Disassembly of Brake Clamp Assembly

1. Get off the fixed split pin of friction plate connection pin shaft.



2. Get off the pin shaft.



3. Get off the brake plate.



4. Get off the bolts and washers of the internal and external clamp.



5. Separate the internal clamp and external clamps. Get off the O-shape ring of the internal and external clamps.



6. Get off the clip ring of internal clamp.



7. Get off the dustproof cover.



8. Get off the piston.



9. Get off the rectangle seal ring.

10. Get off the external clamp parts in the same method.



II Assembly of Brake Clamp Assembly

1. Clean every part and prepare for installing.
2. Install the rectangle seal ring.



3. Coat certain brake liquid on the surface of piston and the holes. Install the piston.



4. Install the dustproof cover.



5. Install the clip ring.



6. Install the internal and external clamps O-shape rings.



7. Install the external clamp in the same installing method of internal clamp.

8. Lay the external around and put the internal on the external.



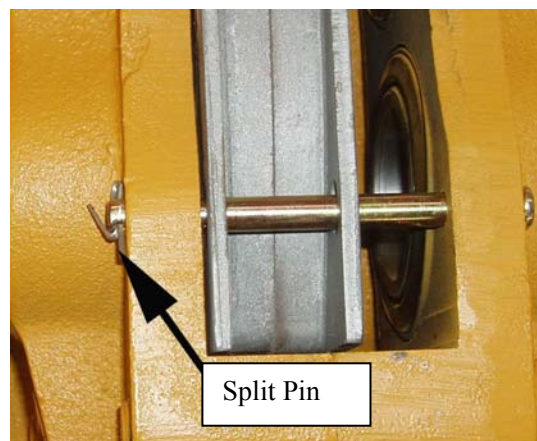
9. Install the connection bolts of internal and external clamps.



10. Install the friction plate.



11. Install the connection pin shaft of friction plate and the split pin.



4.6 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.



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.

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



M20: 310±45 Nm



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.



4.6.1 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.



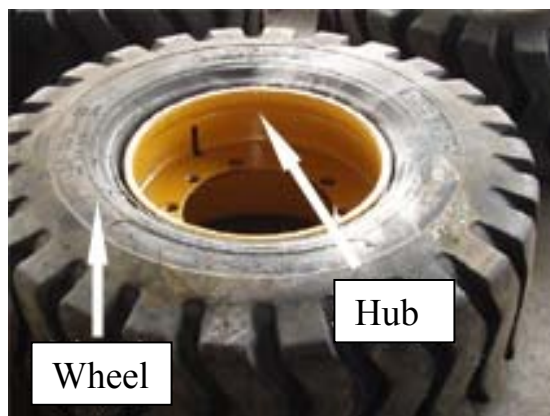
2. Get off the locking ring.



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.

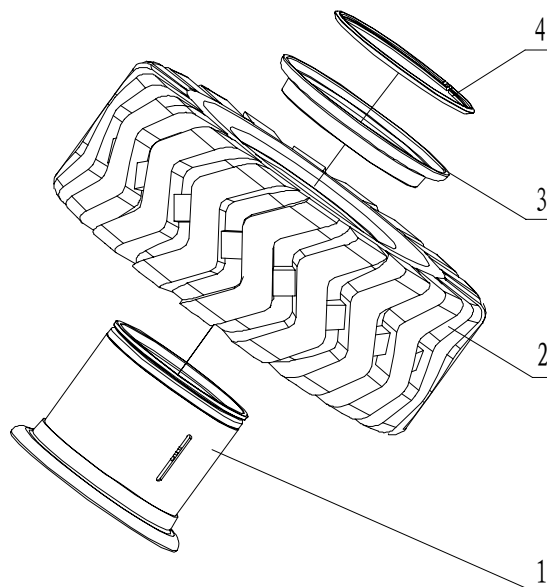
★ Remark: Coat talc on the inside of pad rubber before installing the hub. Make sure the air tap be in middle.



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: 0.333~0.353 MPa

Rear wheel: 0.275~0.294 MPa

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.

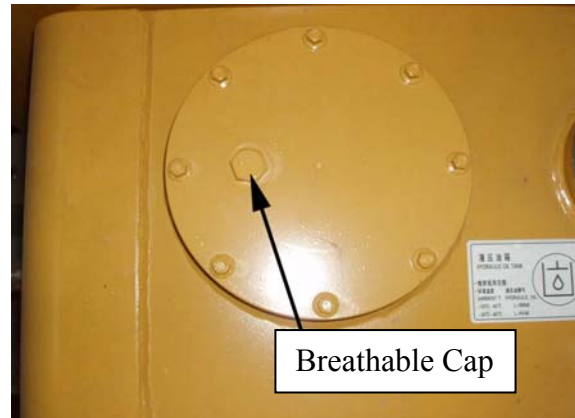


After the bucket rotating moving to the position, push forward the handle gently. Make the boom turn forward at the effect of self-weight. So drain the oil in the boom oil cylinder. Keep the bucket flat on ground. Then operate the boom lever from right to left, and from forward to rear title position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



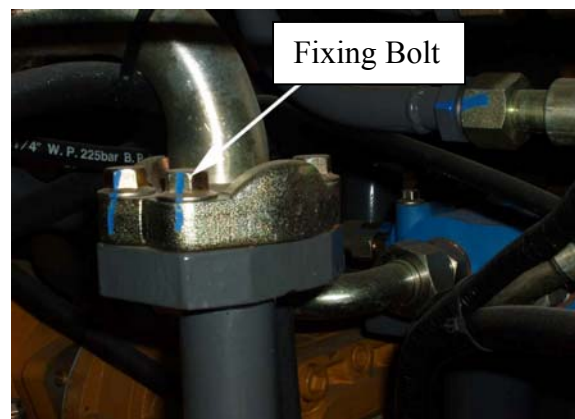
2. Put vessel under the rotating pump which needs to be changed.



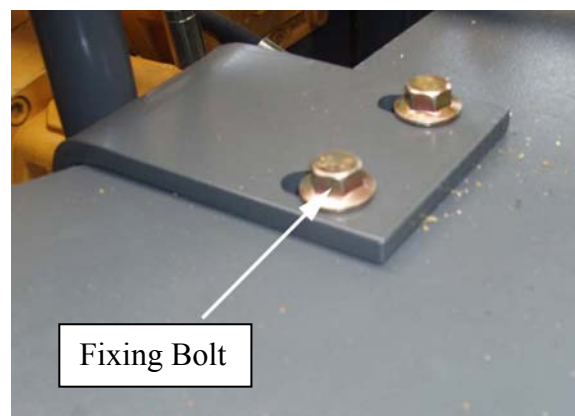
3. Disconnect the connection of the oil returning pipe of hydraulic tank and the transition steel pipe of oil returning.

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

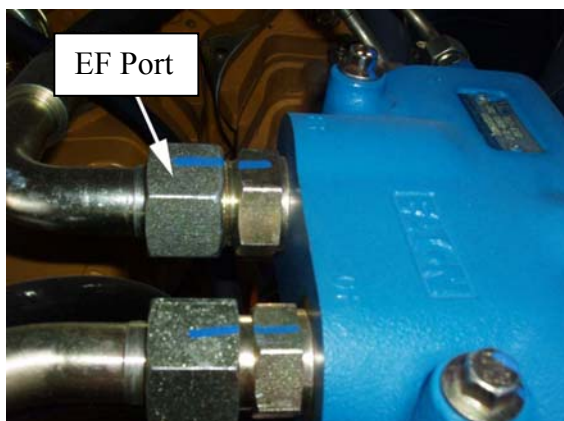
★ In the process of the disassembling, do not loosen the connection bolts or the flange fixed bolts completely to avoid the oil bursting out. Loosen them off a little while the oil overflowing, and then disconnect them completely.



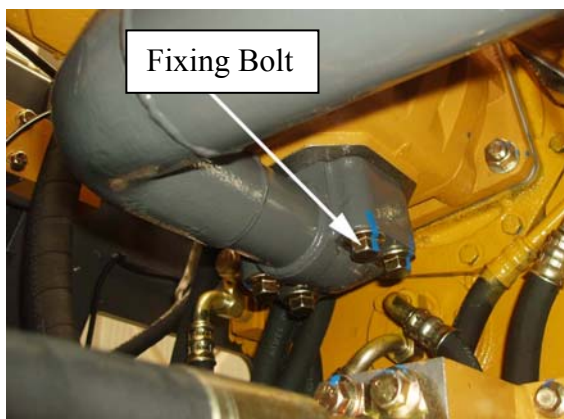
4. Loosen the fixing bolts of the bracket of the transition steel pipe of oil returning. Move the bracket and the steel pipe to another side in order to disassemble the working pump.



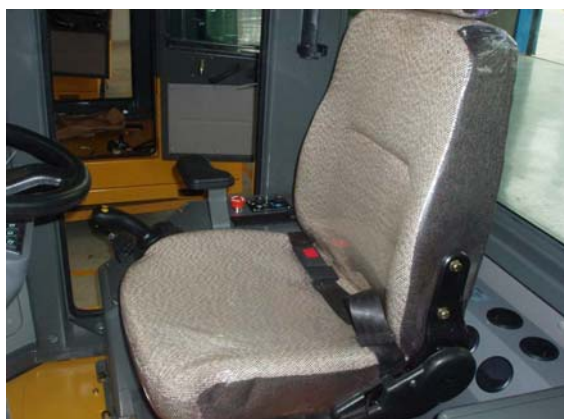
5. Disconnect the connection of the oil inlet pipe of the radiator and the EF port of the priority valve.



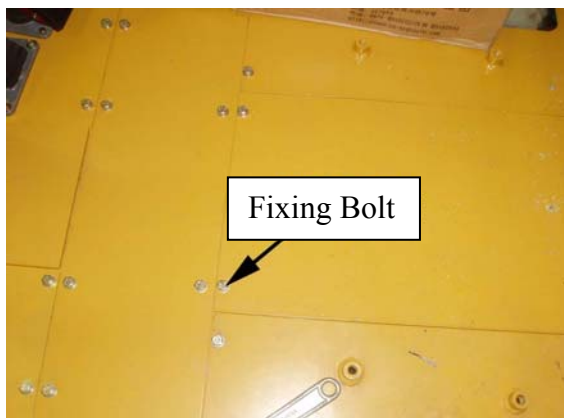
6. Loosen the fixing bolts connecting the oil inlet pipe of the working pump and the working pump. Disconnect the connection of the oil inlet pipe and the working pump.



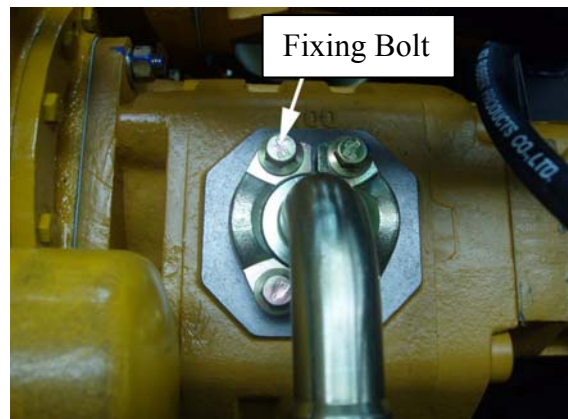
7. Disassemble the seat and bracket (refer to the “Disassembly and assembly of the seat”)



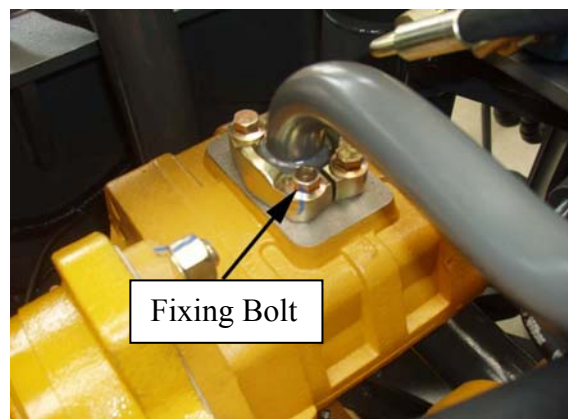
8. Loosen the bolts on the maintaining hood of the cab bench and get off the cover.



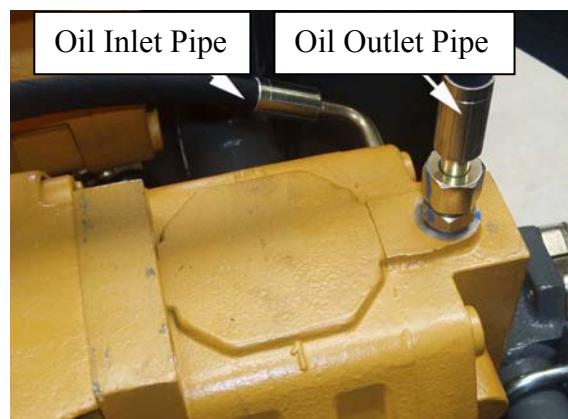
9. Loosen the fixing bolts connecting the oil outlet rubber pipe of the working pump and the connecting flange of the working pump. Disconnect the connection of the oil outlet rubber pipe and the working pump.



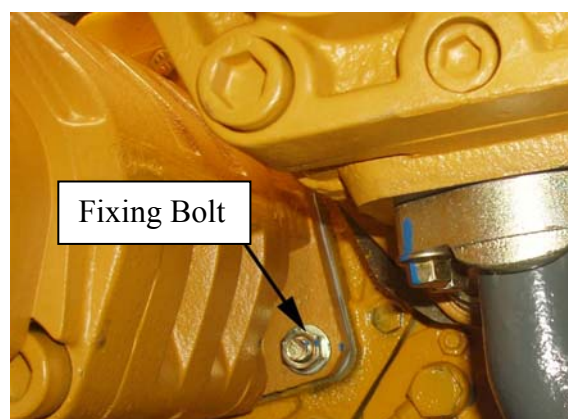
10. Loosen the fixing bolts connecting the oil outlet steel pipe of the working pump and the connecting flange of the working pump. Disconnect the connection of the oil outlet steel pipe and the working pump.



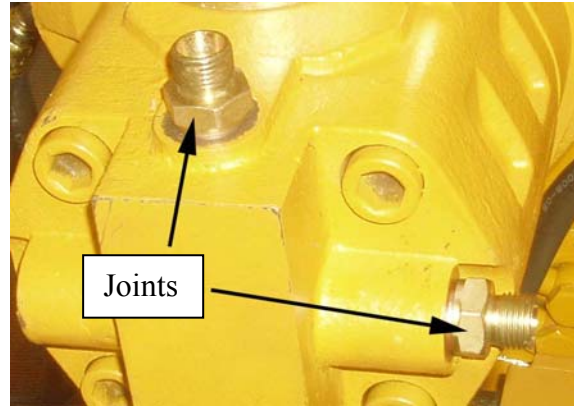
11. Disconnect the connection of the oil inlet and outlet pipe and the working pump.



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



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

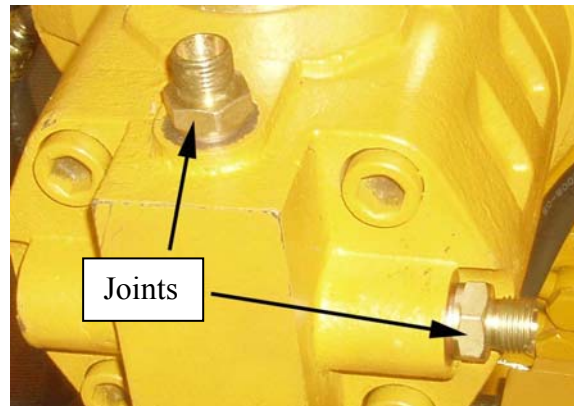


II Assembly of the Working Pump (Install the working pump, which has been changed or repaired, by the steps as followed)

1. Fix the straight joint added washer 14 to the overflowing port and oil outlet port on the front of the duplex pump.



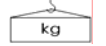
Tightening torque: 40.5~49.5 Nm



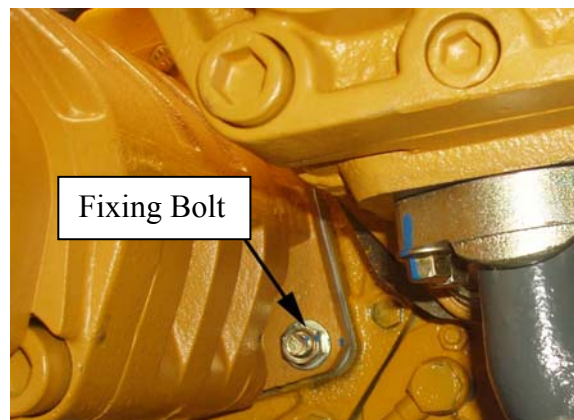
2. Tighten four M12×35 bolts of working pump again. Lay pump sealing washer and Fix the duplex pump. Tighten them with four M12 bolts and four 12 washers.



Tightening torque: 78~104 Nm



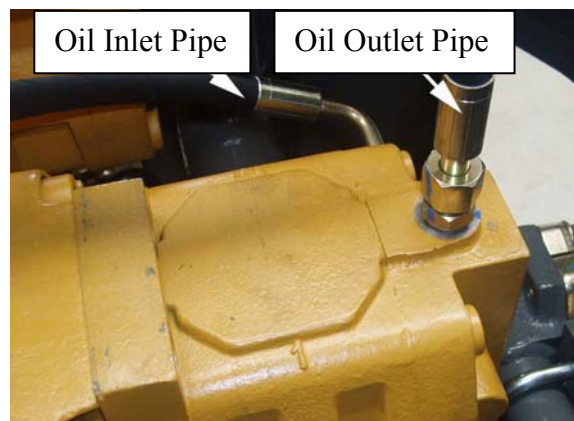
Working Pump



3. Connect the oil outlet and returning rubber pipe of pilot valve to the corresponding joints.



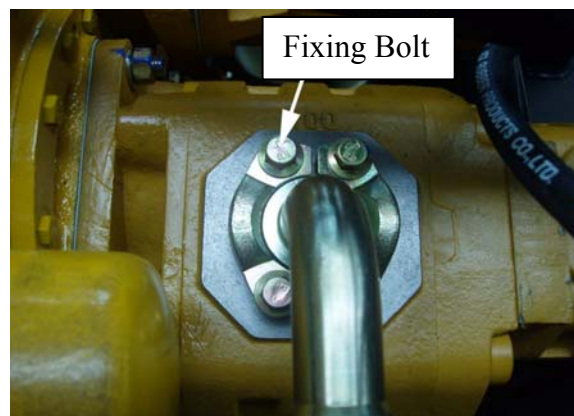
Tightening torque: 30~40 Nm



4. 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 M10×30 bolts and fission flange.



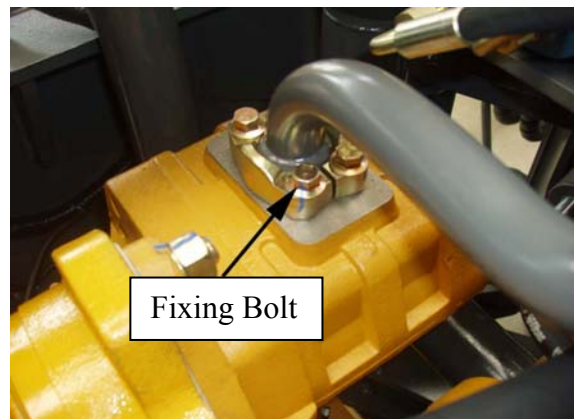
Tightening torque: 45~59 Nm



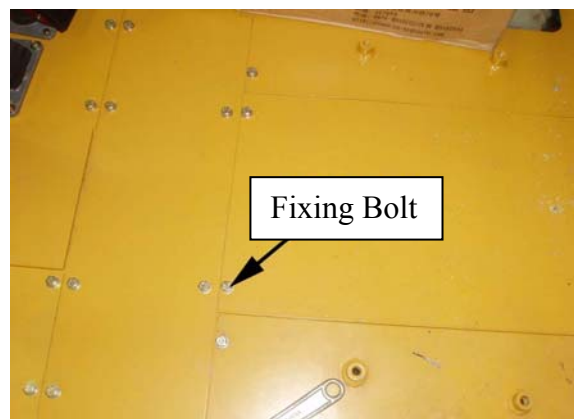
5. Fix O shape ring on the O shape groove of oil outlet rubber pipe of steering pump. Fix it on the oil outlet port of steering pump with four M10×30 bolts and fission flange.



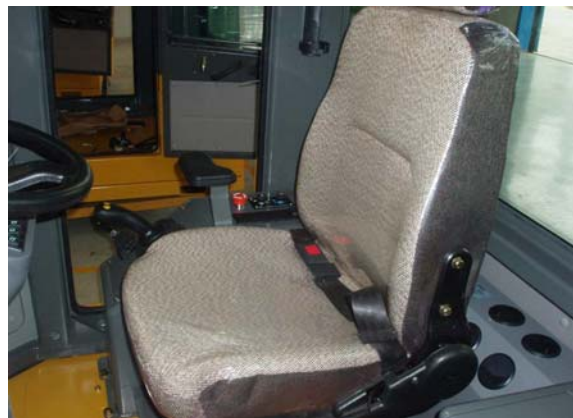
Tightening torque: 45~59 Nm



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



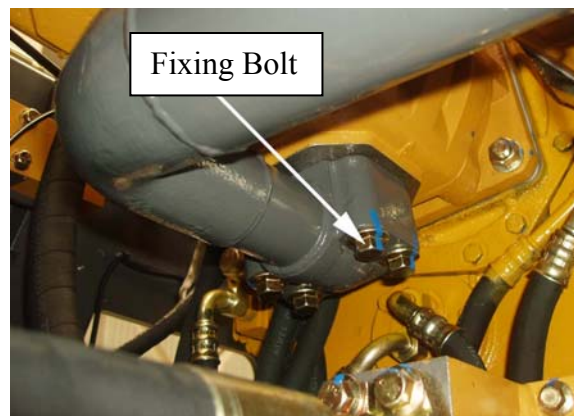
7. Assemble the seat and bracket. (Refer to the “Disassembly and Assembly of Seat”)



8. 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 M12×60 bolts and fission flange.



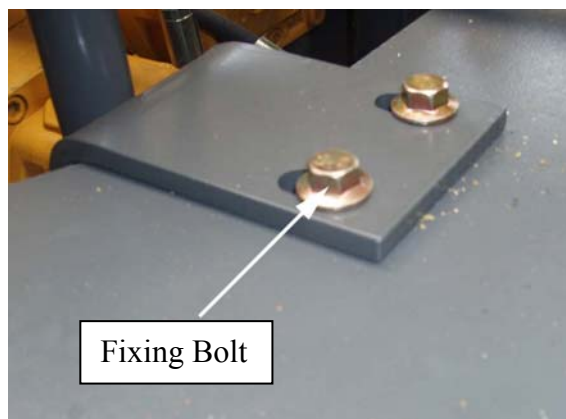
Tightening torque: 78~104 Nm



9. Tighten the bracket of transition steel pipe to the corresponding position with bolts.



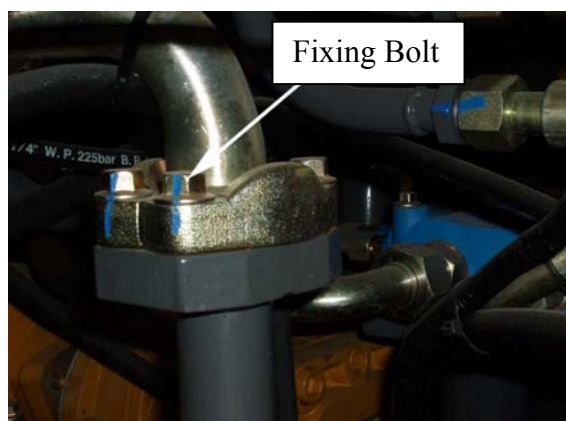
Tighten torque: 45-59 Nm



10. Fix O shape ring on the O shape groove of oil returning rubber pipe of multi-way pump. Fix it on the oil returning transition steel pipe with four M10×30 bolts and fission flange.



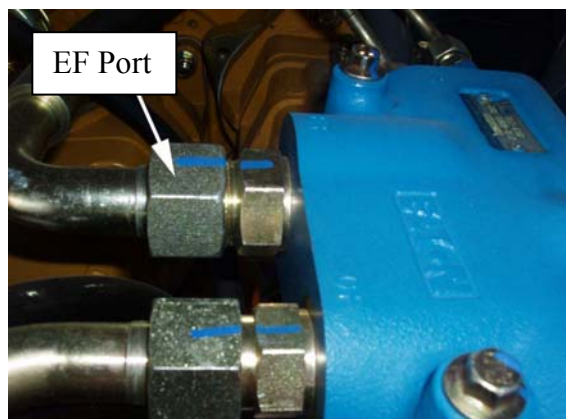
Tightening torque: 45~59 Nm



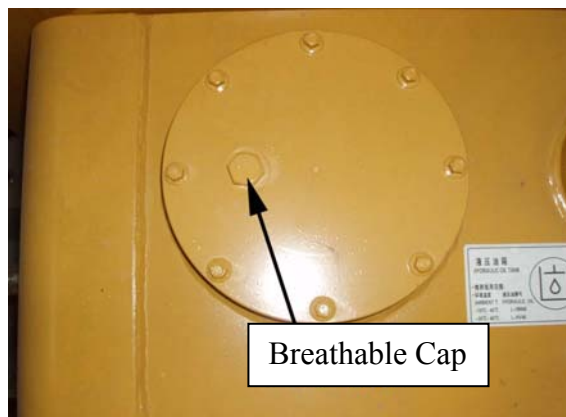
11. Fix the oil inlet pipe of radiator on the EF port of priority valve.



Tighten torque: 100-130 Nm



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



5.2 Disassembly and Assembly of Turning Pump

I Disassembly of the Turning Pump

(The steps of changing Turning pump as followed)

1. Draining oil

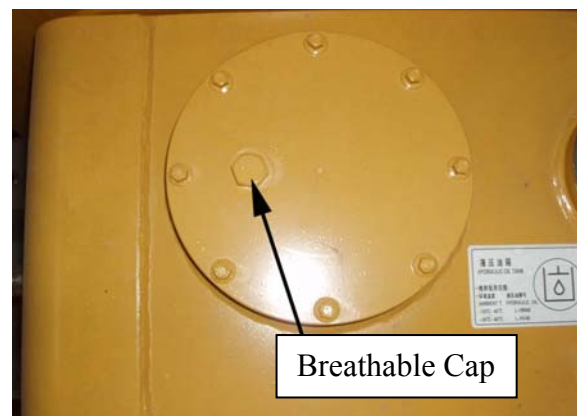
Start the complete appliance and drive it to the capacious place. Raise the boom to the highest position. Tilt the bucket backward to the extreme position, and then close the engine.

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.

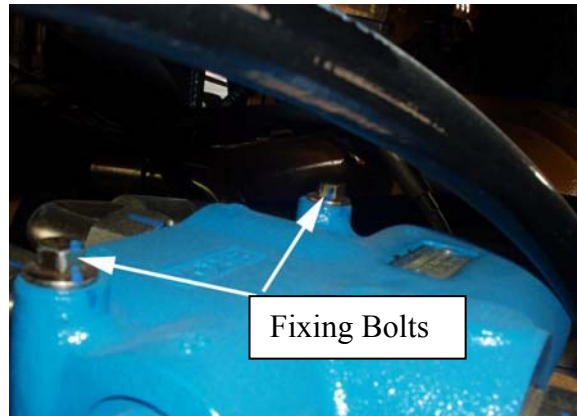
Open the breathable cap of the pressure oil tank.



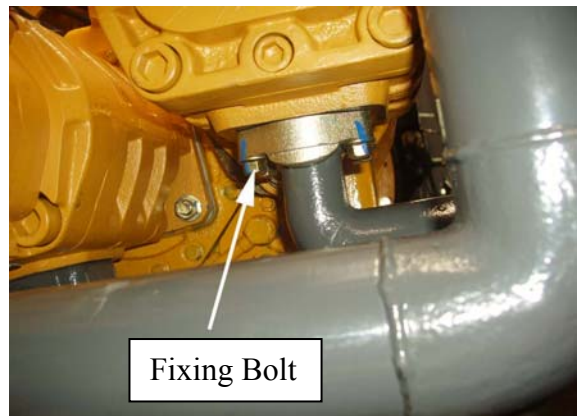
2. Put vessel under the turning pump which needs to be changed.



3. Loosen the fixing bolts of the priority valve. Turn the priority valve to one side.

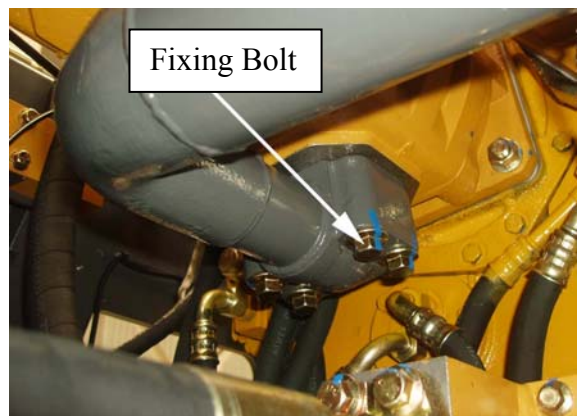


4. Loosen the fixing bolts connecting the oil inlet steel pipe and the steering pump. Disconnect the connection of the oil inlet pipe and the steering pump.



★ 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.

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

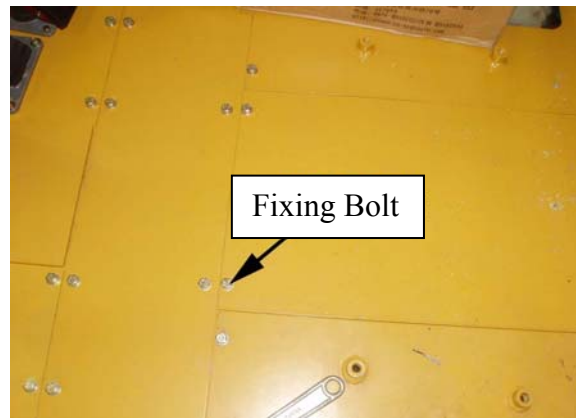


★ In the process of the disassembling, protect the ports and the pipe to avoid the dust and sundries enter into the pipe.

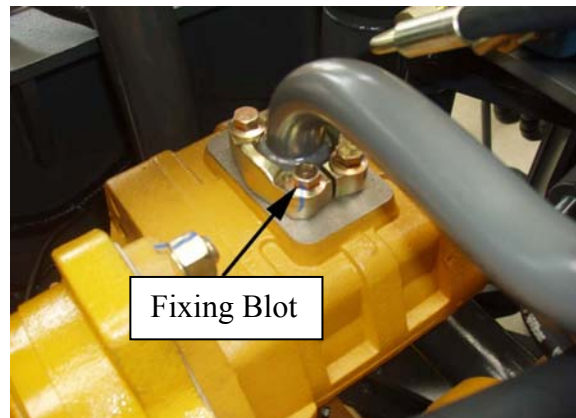
6. Disassemble the seat and bracket (refer to the “Disassembly and assembly of the seat”)



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 steel pipe of the steering pump and the connecting flange of the steering pump. Disconnect the connection of the oil outlet rubber pipe and the steering pump.

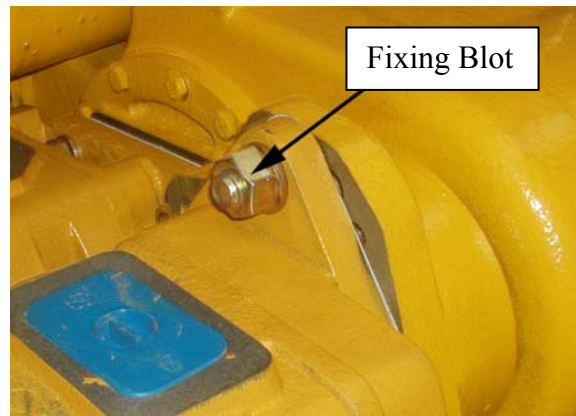


9. Loosen the fixing bolts of the steering pump and get off the nuts and washers. Get off the working pump and sealing washer.

In the process of getting off the steering pump, keep Lifting the steering pump steadily to avoid falling down hurts the machine.



Steering Pump



II Assembly of the Turning Pump

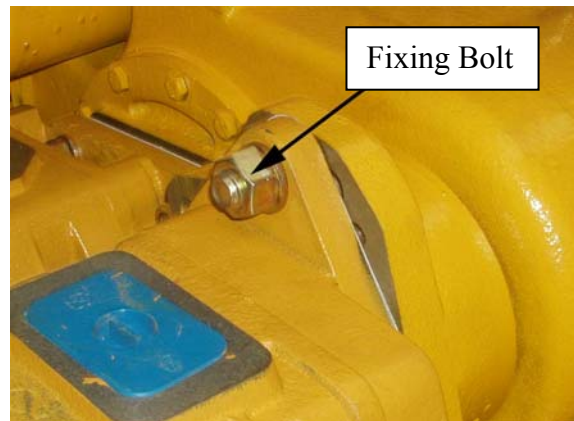
(Install the turning pump, which has been changed or repaired, by the steps as followed)

1. Tighten the fixed steering pump of the gear box with bolts. Fix the steering pump, added pump gasket, on the end face of gear box with nuts and washer. Pay attention to adjust the position of the spline of steering pump in order to fix it.



Tightening torque: 193~257 Nm

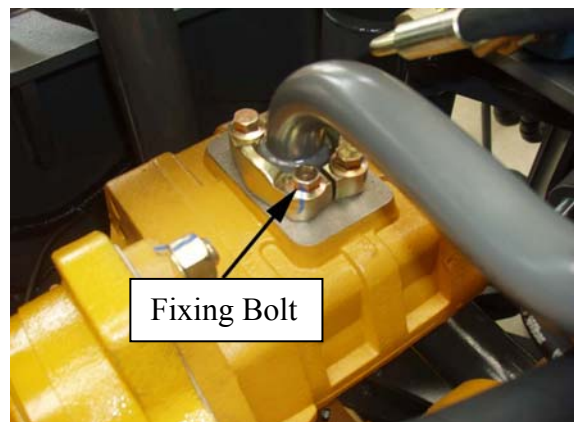
Steering Pump



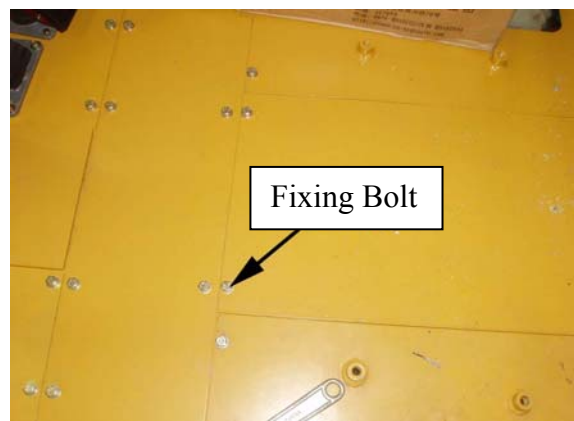
2. Fix O shape ring on the O shape groove of oil outlet steel pipe of steering pump. Fix it on the oil outlet port of the steering pump with four M10×30 bolts and fission flange.



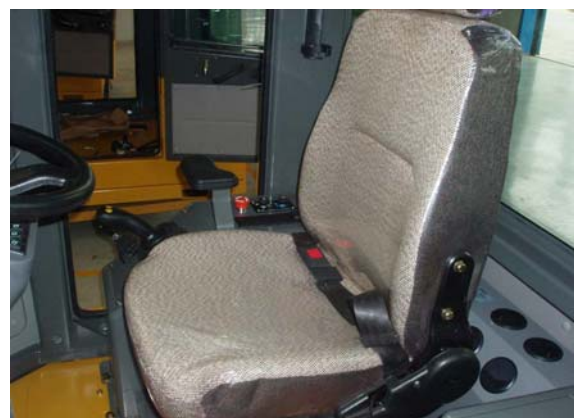
Tightening torque: 45~59 Nm



3. Fix the maintaining hood on the cab bench with bolts.



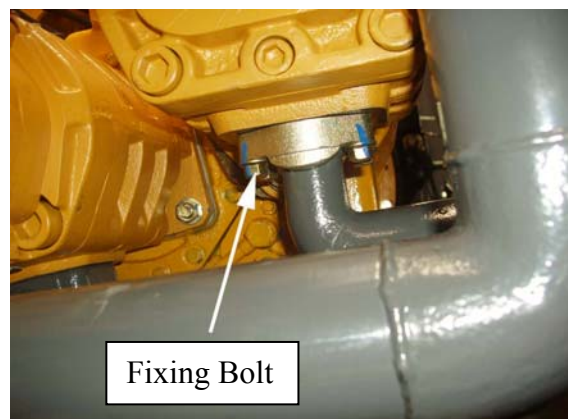
4. Fix seat and bracket. (Refer to the “Assembly of the Seat”)



5. Fix O shape ring on the O shape groove of oil absorbing steel pipe of steering pump. Fix it on the oil absorbing port of the steering pump with four M10×30 bolts and fission flange.



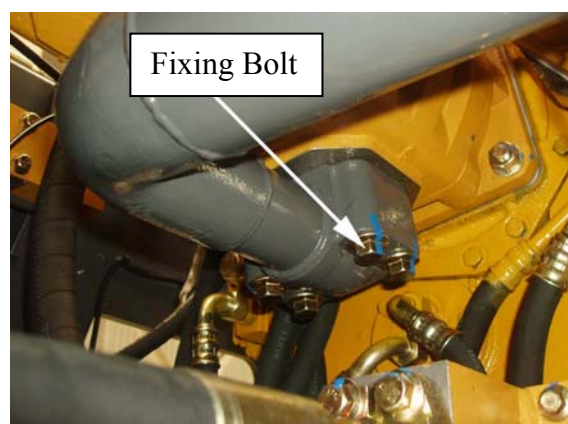
Tightening torque: 45~59 Nm



6. Lay O shape ring on the port of the oil absorbing steel pipe of steering pump. Fix it on the oil absorbing port of the steering pump with four M12×60 bolts



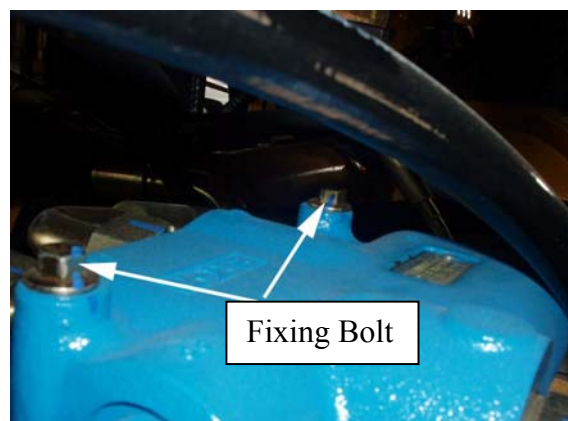
Tighten Torque: 78-104 Nm



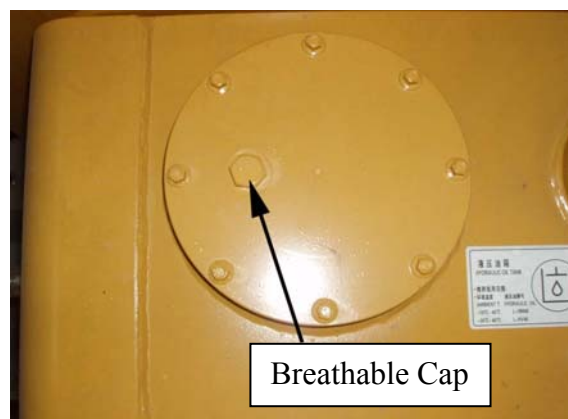
7. Fix the priority valve on the left fixing plate again.



Tighten Torque: 22-30 Nm



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



5.3 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)
2. Connect a soft pipe on the oil draining valve. 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)

★ Cover the drained oil to protect it.

3. Get off the four rubber plugs of the rear window bar. Get off the inner hexagonal bolts and the window bar.

4. Loosen the tightening hoop of the air filter and get the filter off.

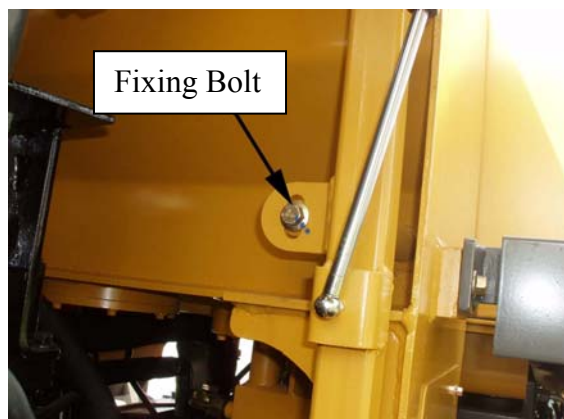
Loosen the tightening hoop of the engine vent-pipe and get engine off.



5. Disconnect the connection of the rear headlight power wire.



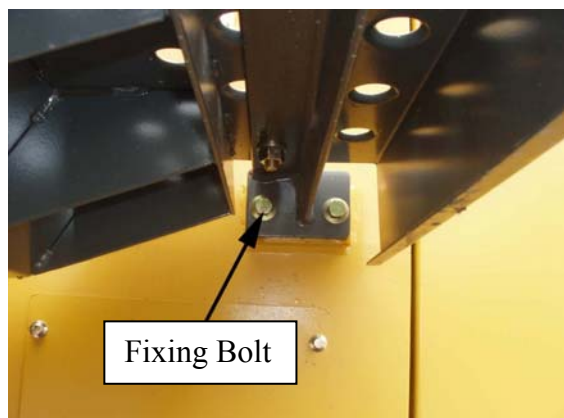
6. Loosen the fixing bolts of the engine hood. Lift away the engine hood.



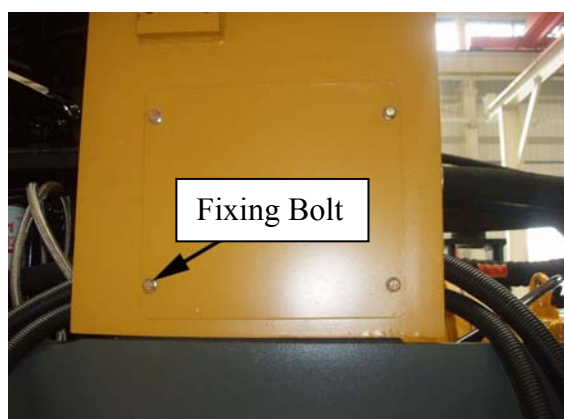
7. Loosen the fixing bolts of the left and right benches and Lift away them.



Left and Right Benches

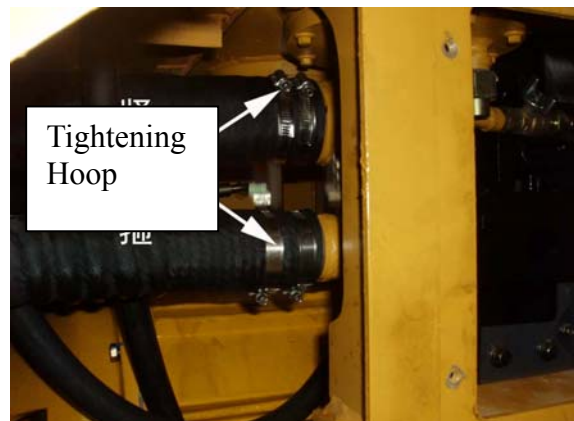


8. Loosen the fixing bolts of the left and right profile plates of the hydraulic oil tank and get off them.



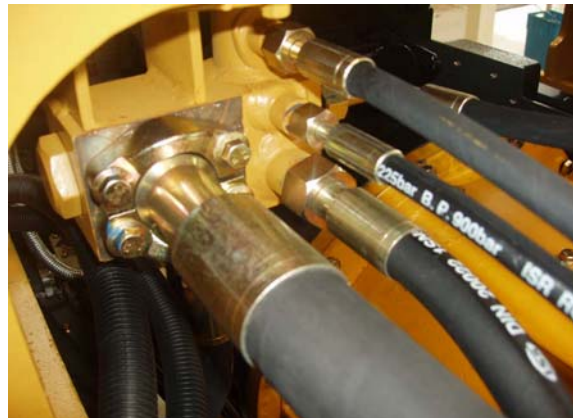
9. Disconnect the connection of the pipes of the hydraulic oil tank.

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



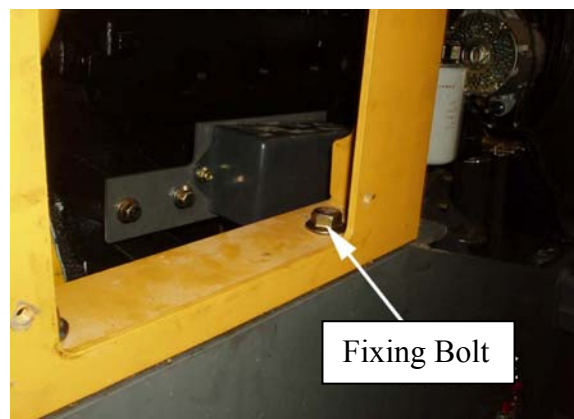
2). Disconnect the connection between the ★ pipes of the hydraulic oil tank and the oil tank.

Protect the pipes and the port of them to avoid the dust and sundries entering the pipes.

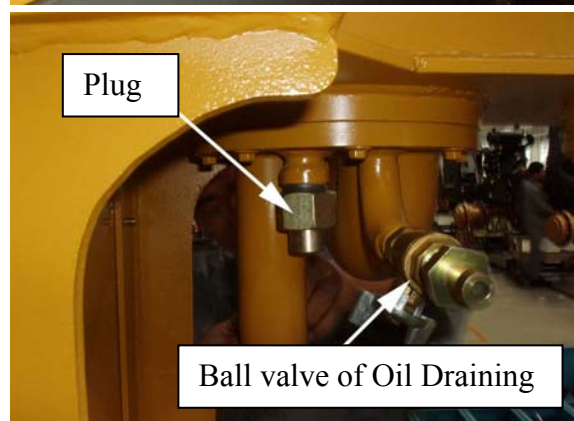


10. Lift the hydraulic oil tank with rope steadily and loosen the four tightening bolts of the tank. Lift away the tank. (In the process of lifting away the tank, disconnect the connection between the oil outlet pipe of hydraulic oil tank and the oil tank)

Hydraulic Oil Tank



11. Loosen the oil draining valve and plug.



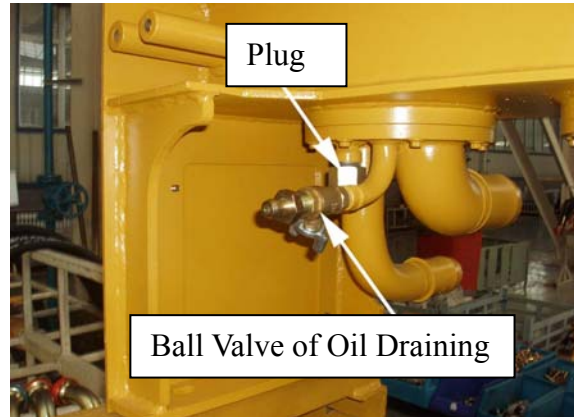
II Assembly of the Hydraulic Oil

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

1. Fix the oil draining valve and the plug on the tank. Disassemble the lift and right profile plates first. Coat the ball valve with KESAIXIN 1545 screw sealant. Fix the ball valve and the oil draining joint on the screw base of the tank together. Fix the screw plug added O shape ring on the oil port on the left bottom of the oil tank.

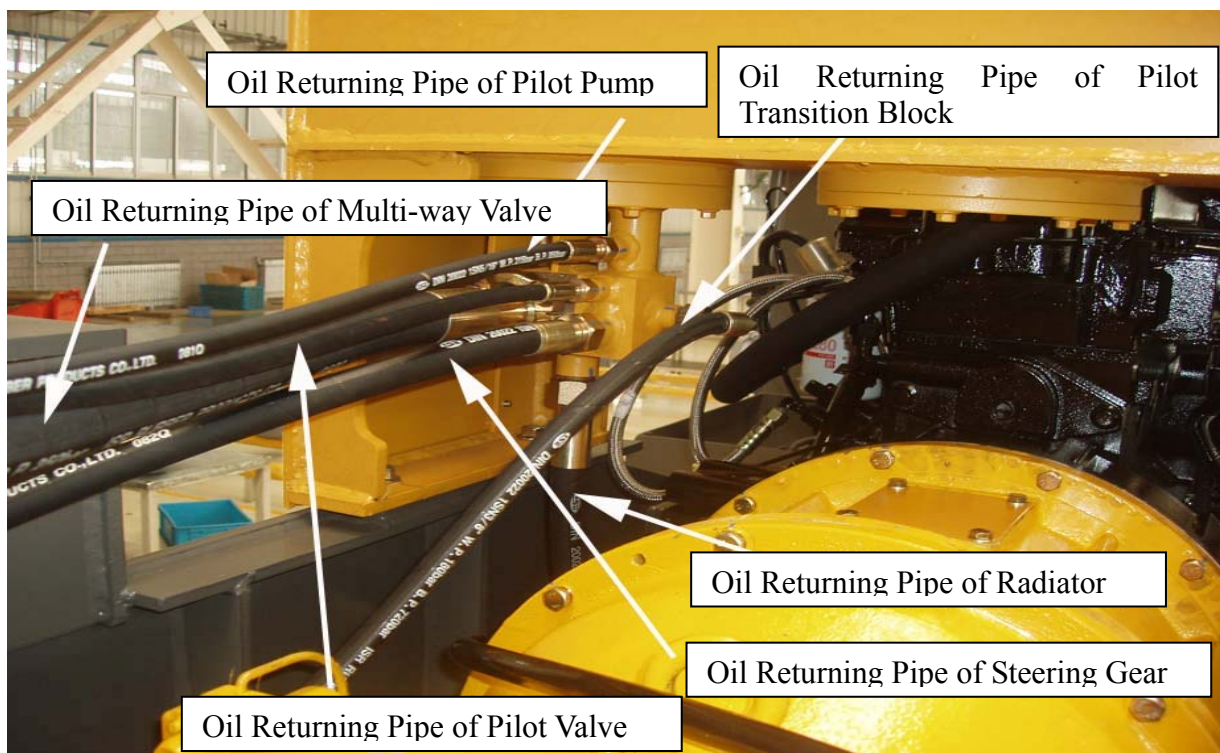
2. Disassemble the lift and right profile plates. Lift the tank above the rear frame and adjust the position. Fix it with four M16×35 bolts.

Cover two hoops on the oil absorbing pipe of working pump and the steering 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.

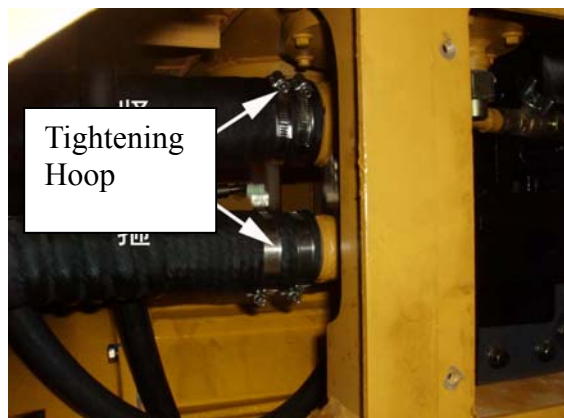


Tightening torque: 193-257 Nm

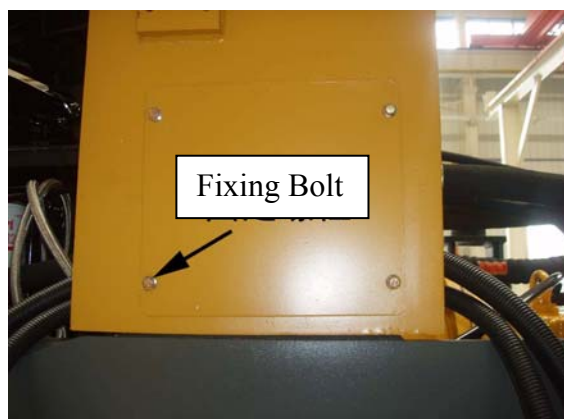
3. Connect the pipes of the oil returning ports of the hydraulic oil tank.



4. Fix the oil absorbing pipe of working pump and the steering pump on the hydraulic oil tank with two hoops.



5. Fix the left and right profile plates.



6. Lift the assembly of engine hood to the above of the engine and lower it to the rear frame gently. Pay attention to avoid hitting the engine and water tank in the lowering process. After adjusting it being suitable, fix it with rear frame with eight M12×25 bolts and with hydraulic oil tank with four M12×25 bolts.



Tightening torque: 78-104 Nm



Engine hood



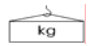
7. Connect the wire of rear hood with wire of rear frame by CN 15 pin.



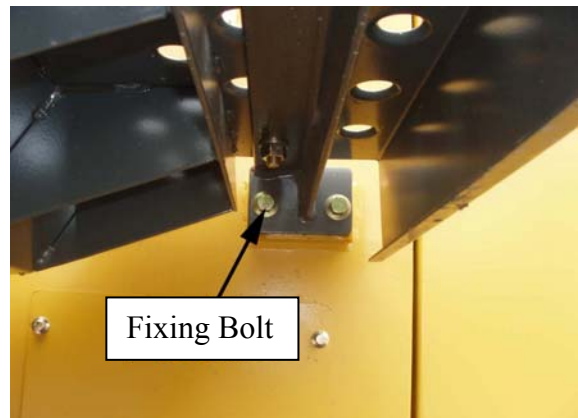
8. Fix the left and right benches on the rear frame with bolts.



Tightening torque: 78-104 Nm



Left and Right benches



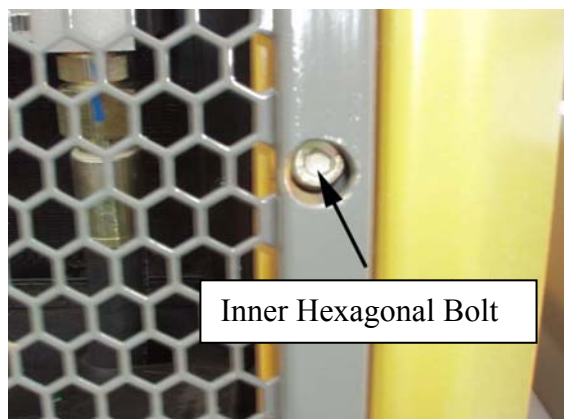
9. Fix the vent-pipe and the basin-type raw filter

Fix the basin-type raw filter on the air filter with hoop and Fix the vent-pipe on the muffler with hoop.

Notice: The touching distance of the two parts should be between 40-50 mm in the process of fixing basin-type raw filter. Adjust the vent port to be rear. And the two hoops should face the same position.



10. Fix the window bar on the engine hood with M8×16 bolts and fix the rubber plugs.



11. Load 122L Mobil DTE25 hydraulic oil in the hydraulic cylinder until the reading of oil level indicator is 12~13. Start the complete appliance, and then load Mobil DTE25 hydraulic oil in the hydraulic cylinder to satisfy the above liquid level.

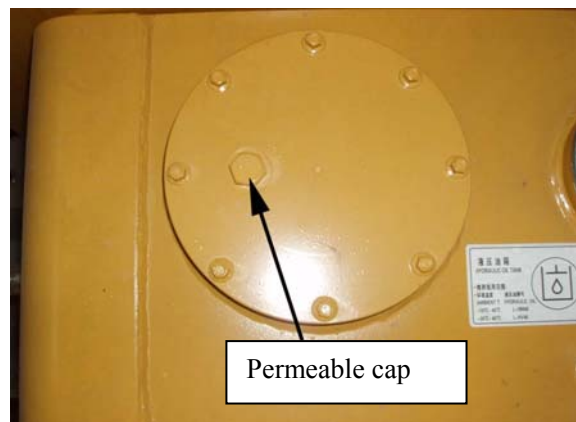
5.4 Disassembly and Assembly of Priority Valve

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 permeable cap of hydraulic cylinder.

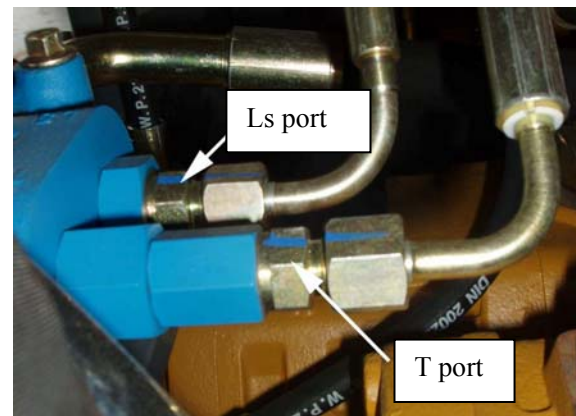


2. Put oil holder under the priority valve to catch the leaking hydraulic oil.



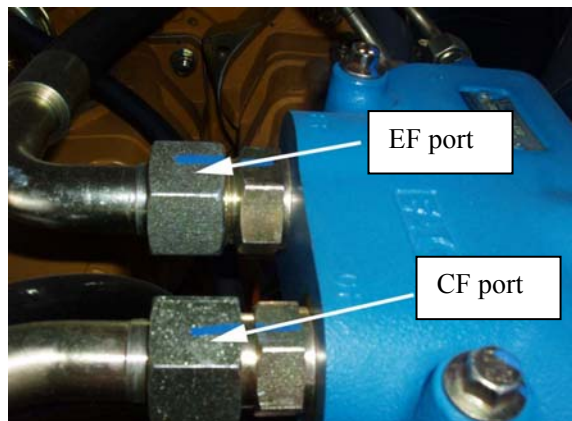
3. Disconnect the connection between priority valve oil returning pipe and T port of priority valve, and disconnect the connection between priority valve oil feedback pipe and Ls port of priority valve.

★ 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.

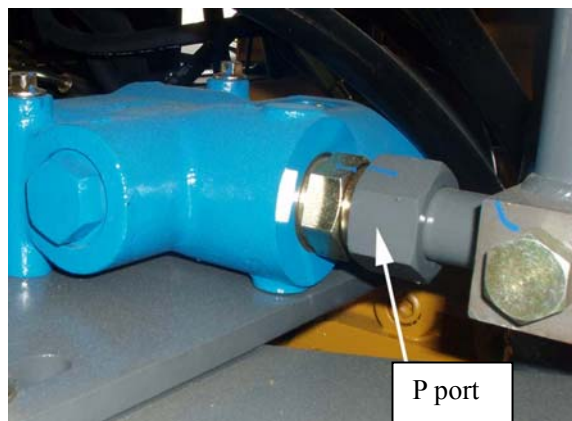


4. Disconnect the connection between steering gear oil inlet pipe and CF port of priority valve, and disconnect the connection between radiator oil inlet pipe and EF port of priority valve.

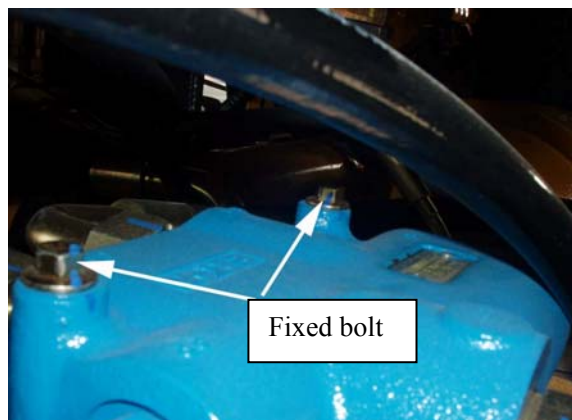
★ In process of disassembly, pay attention to protecting every pipeline and oil port. Prevent the dust and sundries from entering the pipeline.



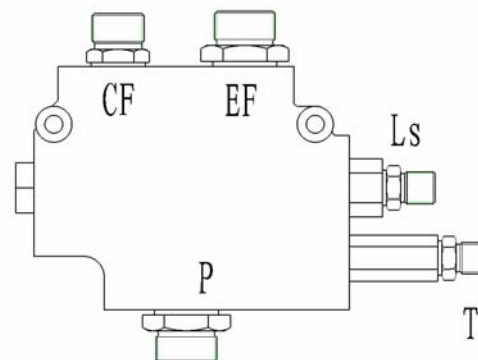
5. Disconnect the connection between priority valve oil inlet steel and P port of priority valve.



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



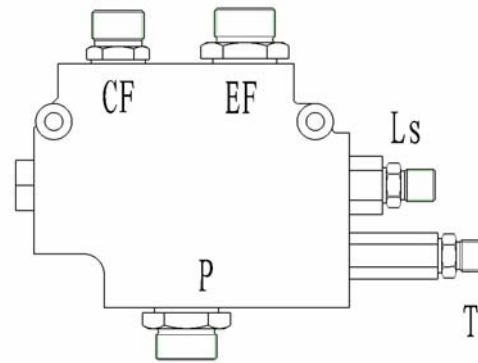
7. Remove the joint and O-ring on each oil port of priority valve.



II Assembly of priority valve

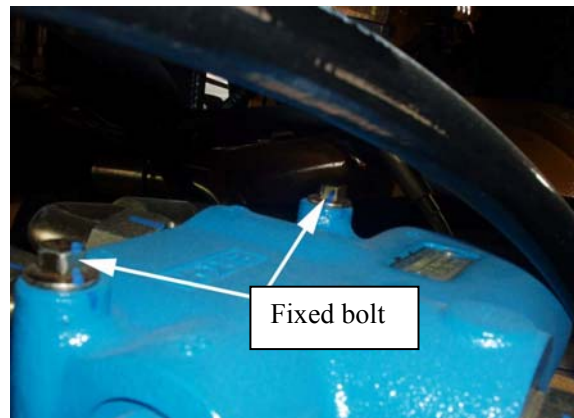
(Assembling priority valve on complete appliance can refer to the following steps)

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

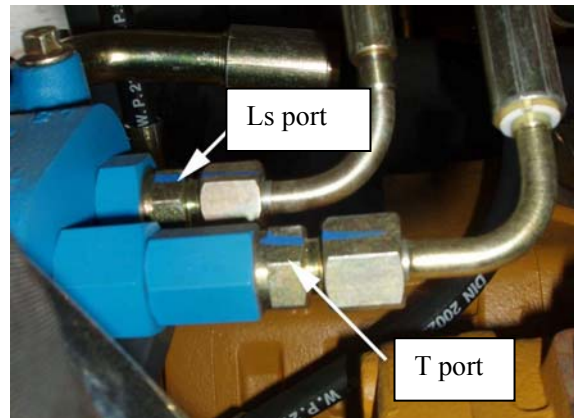


3. Connect priority valve oil returning pipe on the T port of priority valve, and connect priority valve oil feedback pipe on the Ls port of priority valve.

 kgm Tightening torque:

Priority valve oil feedback pipe-25~35Nm

Priority valve oil returning pipe-25~35Nm

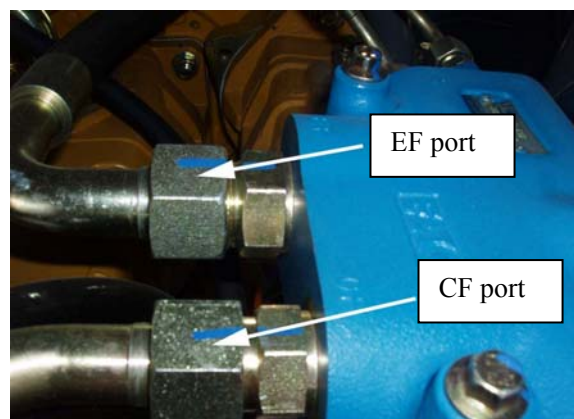


4. Connect steering gear oil inlet pipe on the CF port of priority valve, and connect radiator oil inlet pipe on the EF port of priority valve.

 kgm Tightening torque:

Steering gear oil inlet pipe-75~95Nm

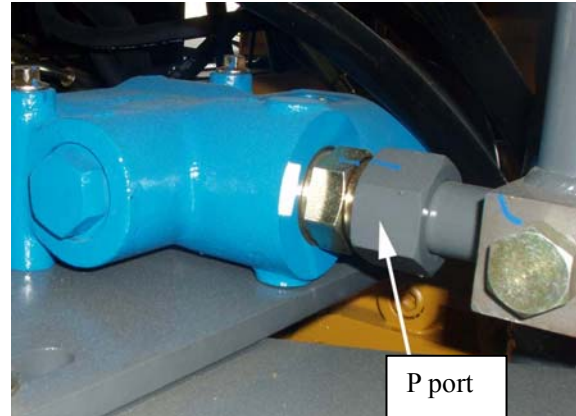
Radiator oil inlet pipe-100~130Nm



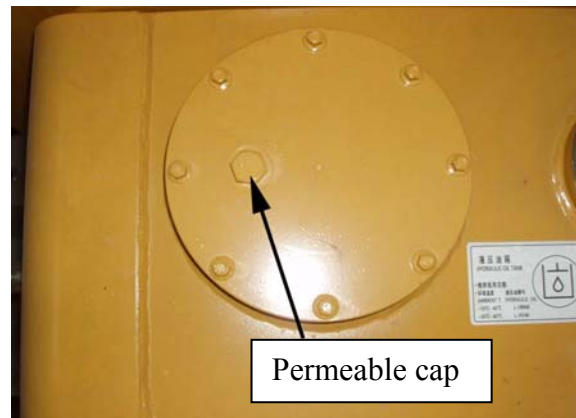
5. Connect priority valve oil inlet steel on the P port of priority valve.



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.



5.5 Disassembly and Assembly of Multi-way Valve

I Disassembly of Multi-way Valve

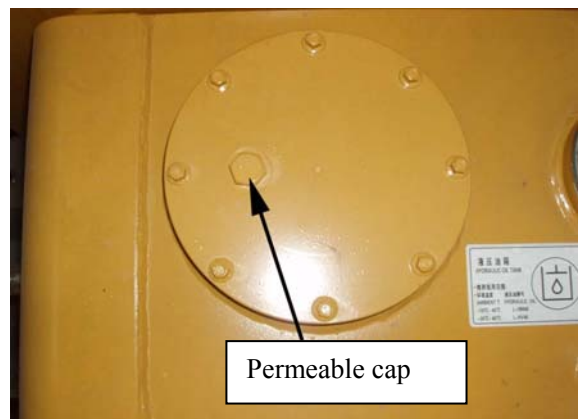
(Disassembling multi-way valve from complete appliance can refer to the following steps)

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 permeable cap of hydraulic cylinder.

2. Put oil holder under the multi-way valve.

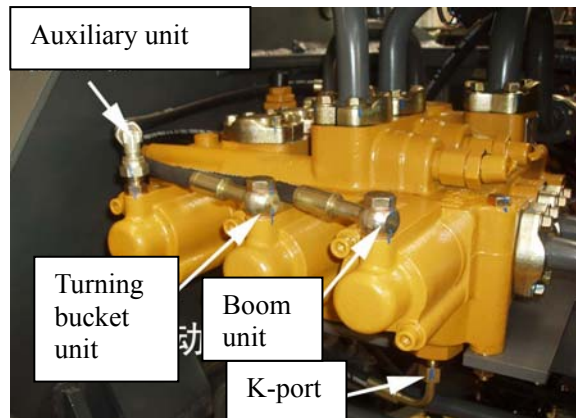


3. Remove the fixing bolts on front end plate and take the front end plate down.



4. Disconnect each hose on the pilot unit
Disconnect the connection between multi-way 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.

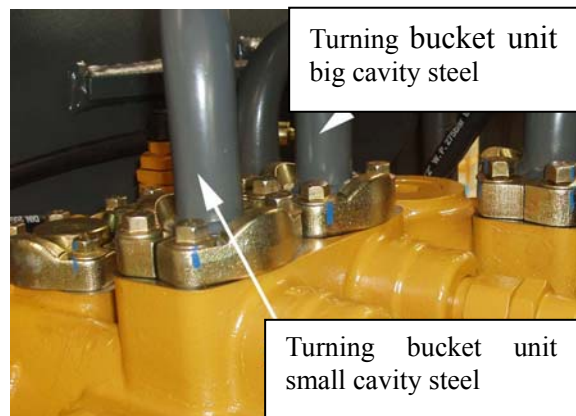


5. Remove the flange connecting the multi-way valve with big and small cavity tee steel of boom unit.

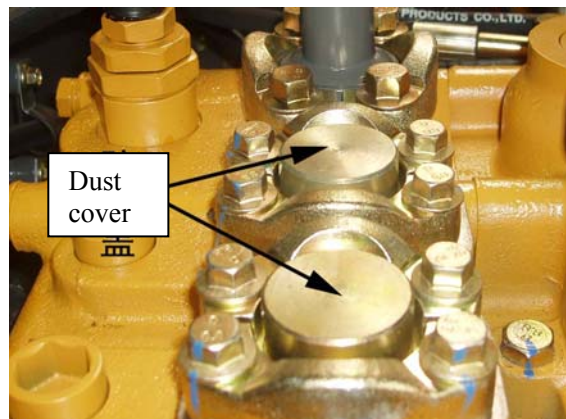
★ In process of disassembly, do not unload the connecting flange on the oil port completely. Loosen it off a little until there is oil overflowing, and prevent the oil from bursting out due to oil unloading not completely.



6. Remove the flange connecting the multi-way valve with big and small cavity tee steel of turning bucket unit. Then disconnect the connection between steel and multi-way valve.



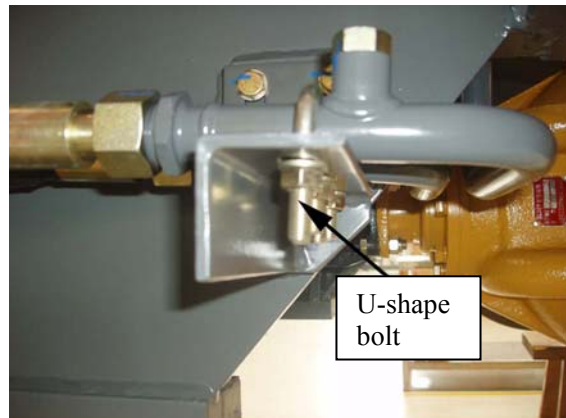
7. Remove the flange and dust cover of auxiliary unit on the multi-way valve.



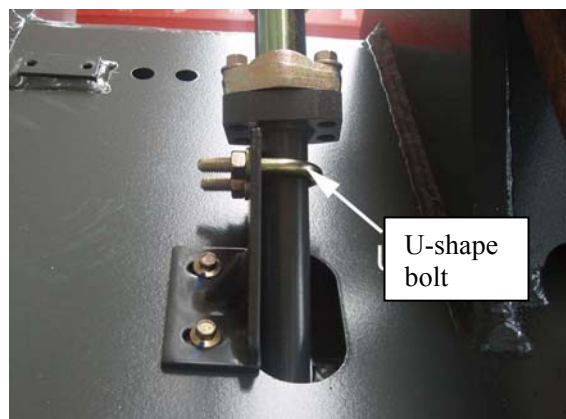
8. Remove the flange connecting the multi-way valve with oil inlet and return steel of multi-way valve. Disconnect the connection between steel and multi-way valve.



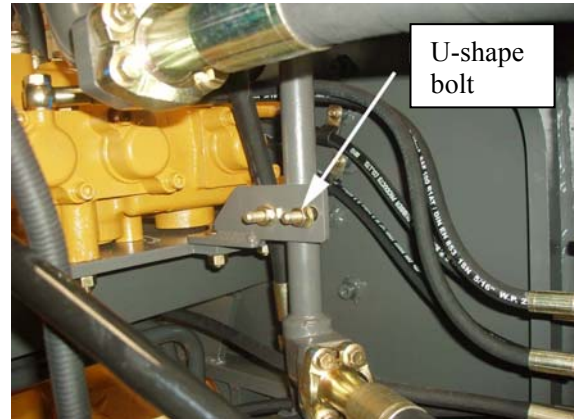
9. Loosen the U-shape fixed bolts of big and small cavity oil inlet steel on the boom unit. (But not necessary to remove)



10. Loosen the U-shape fixed bolts of big and small cavity oil inlet steel on the turning bucket unit. (But not necessary to remove)



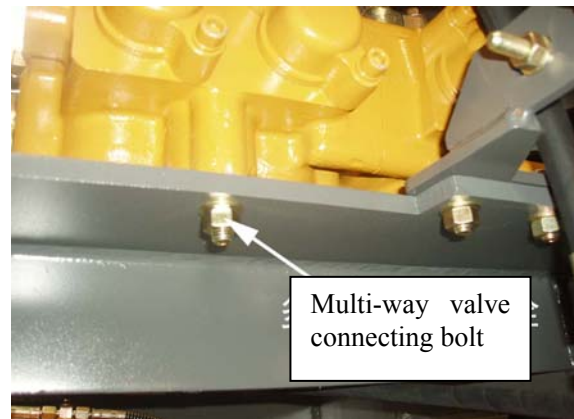
11. Loosen the U-shape fixed bolts of oil inlet steel on the multi-way valve. (But not necessary to remove)



12. Remove the pipe joint connecting the auxiliary unit with K-port. Then remove the three fixed bolts connecting the multi-way valve with front frame. Hoist the multi-way valve down.



Multi-way valve



II Assembly of multi-way valve

(Assembling multi-way valve on complete appliance can refer to the following steps)

1. Hoist the multi-way

Fall the multi-way valve on the front frame, then put two bolts M12×165 and one bolt M12×145 from up to down, and then fix with three washers 12 and three nuts M12. Install the pipe joint connecting auxiliary unit with K-port.



Tightening torque: 78~104Nm

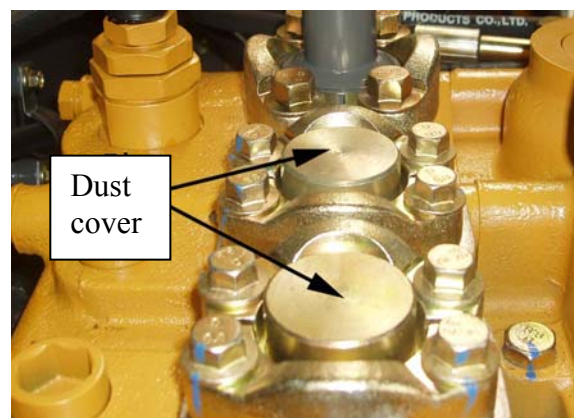
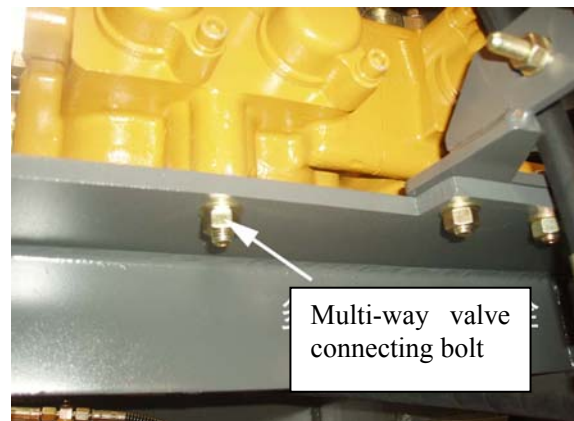


Multi-way valve

2. Install the O-rings on the dust cover, and then fix it on the oil port of auxiliary unit with bolt M10×30 and split type flange.



Tightening torque: 45~59Nm



3. Put an O-ring in the O-shape groove of oil inlet steel on the multi-way valve, and install the oil inlet steel of multi-way valve on the multi-way valve with a split type flange and four bolts M12×35. Install the oil return steel of multi-way valve on the multi-way valve in the same method.



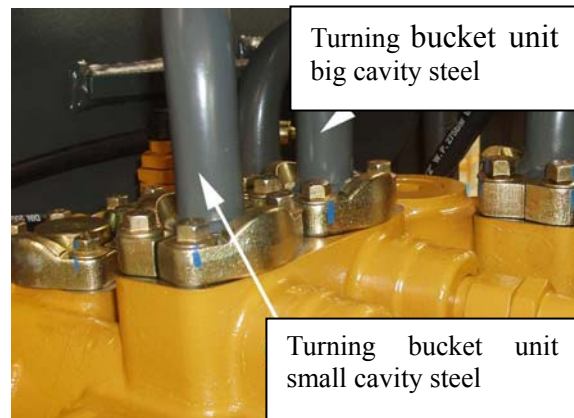
Tightening torque: 78~104Nm



4. Put an O-ring in the O-shape groove of small cavity steel on the turning bucket unit, and fix small cavity steel of turning bucket unit on the multi-way valve assembly with four bolts M10×30 and a split type flange. Install big cavity steel of turning bucket unit in the same method.



Tightening torque: 45~59Nm



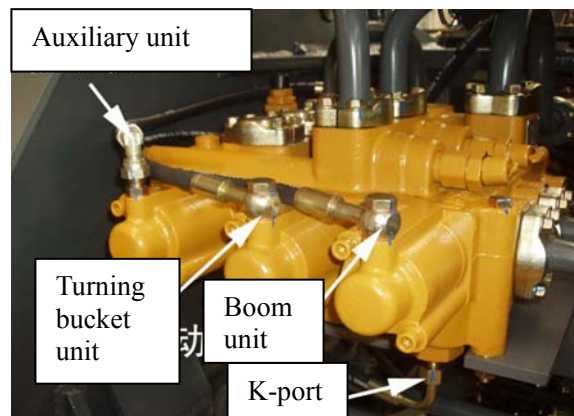
5. Put an O-ring in the port of small cavity tee steel on the boom unit, and install it on the port at the left front of multi-way valve with a split type flange and four bolts M10×30. Install big cavity tee steel of boom unit on the port at the left back of multi-way valve in the same method.



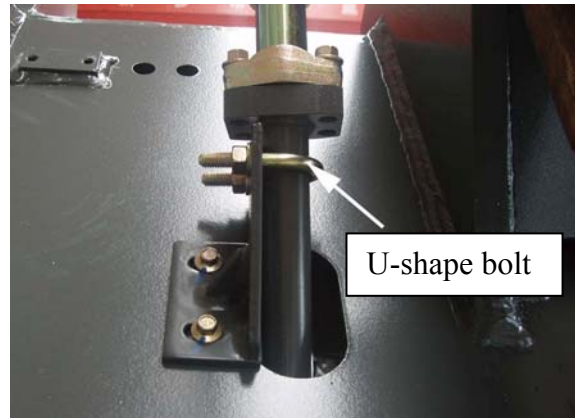
Tightening torque: 45~59Nm



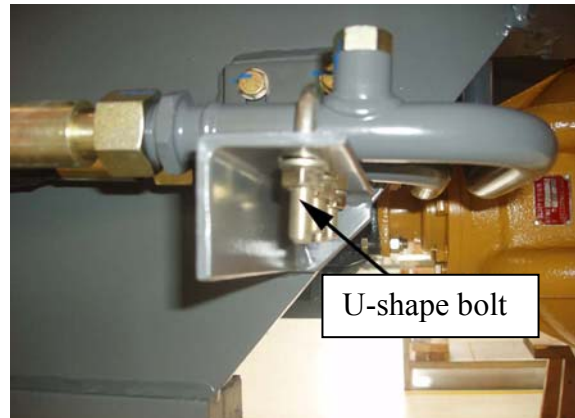
6. Install four front piloting steels on the multi-way valve with four bolts M14×1.5×32 and eight washers. Connect the K-port hose of the multi-way valve. Connect the front and back oil port with a hose.



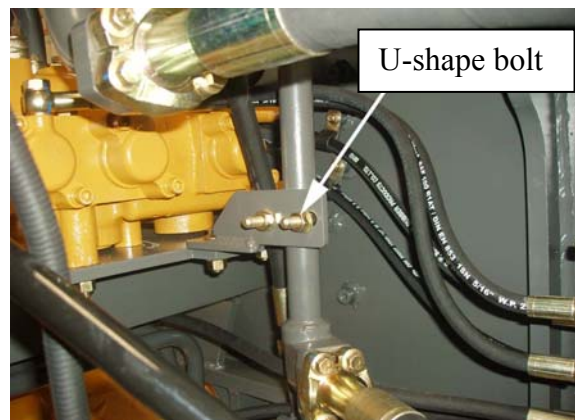
7. Fix the U-shape fixed bolts of big and small cavity oil inlet steel on the turning bucket unit.



8. Fix the U-shape fixed bolts of big and small cavity oil inlet steel on the left and right boom unit.



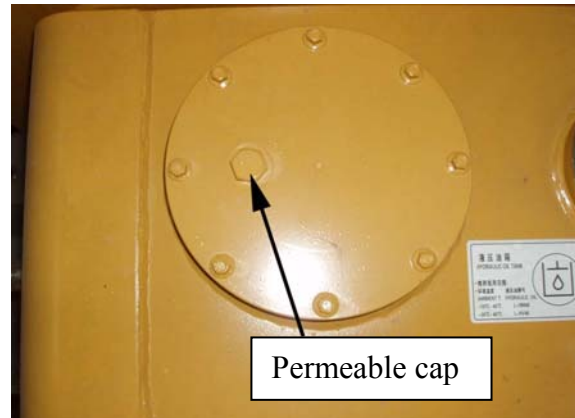
9. Fix the U-shape fixed bolts of oil inlet steel on the multi-way valve.



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



11. 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 Boom Cylinder

I Disassembly of boom cylinder

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

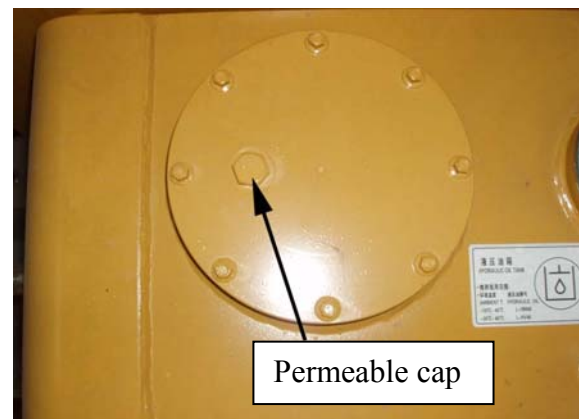
1. Unload the oil

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 permeable cap of hydraulic cylinder.

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. Take down the protective cover of big cavity steel of boom cylinder, and put O-ring 25×3.55G in the O-shape cycle groove, then fix them on the big cavity oil port of boom cylinder with bolt M10×50 and bolt M10×35. Install small cavity steel of boom cylinder on the small cavity oil port of boom cylinder in the same method, and fix them with pipe clamp and bolt M8×20. Fix the boom cylinder big cavity steel on the boom cylinder with bolt M10×20.



Tightening torque: M8-22~30Nm

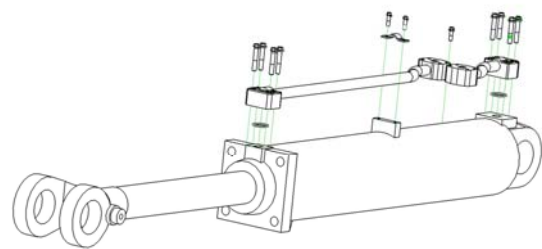
M10-45~59Nm

2. 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.



Tightening torque: 78~104Nm



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

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



Tightening torque: 100~130Nm

★ Arrange the hose in order, and never distort.



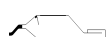
4. Clean the assembling hole, and coat a little amount of lubricating grease on the front pin of boom cylinder. Start the complete appliance and operate the boom cylinder. Adjust the expansion amount of boom cylinder piston rod to make sure the assembling hole of boom cylinder aligns to that of boom.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



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.

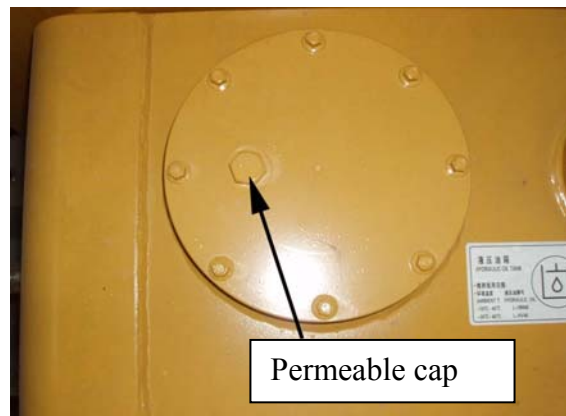
5. Coat lubricant grease on the connecting position of each pin until there is lubricant grease overflowing from the mating surface.



Lubricant grease



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



5.7 Disassembly and Assembly of Turning Bucket Cylinder

I Disassembly of Turning Bucket Cylinder

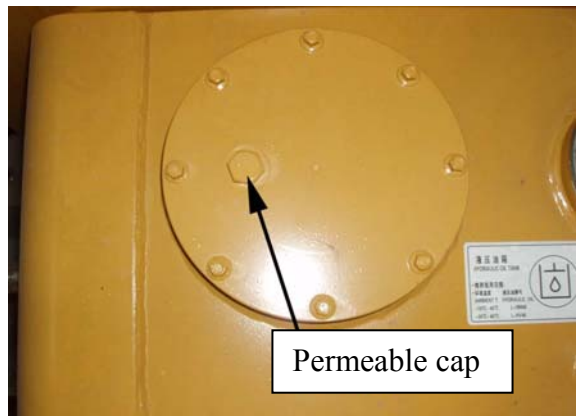
(Disassembling turning bucket from complete appliance can refer to the following steps)

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 deadweight. 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 permeable cap of hydraulic cylinder.



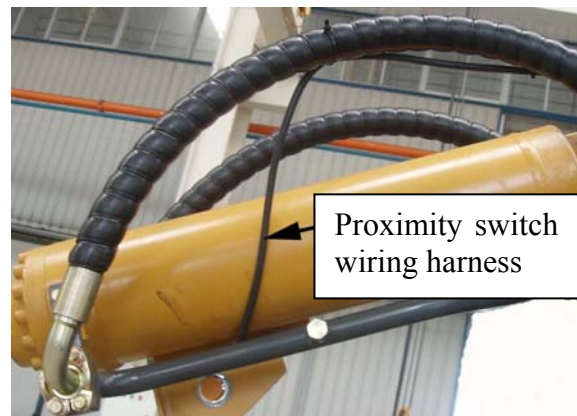
2. Put proper oil holder under the turning bucket cylinder.



3. Remove the fixed bolt of horizontal guard plate, and then remove the washer and horizontal guard plate.



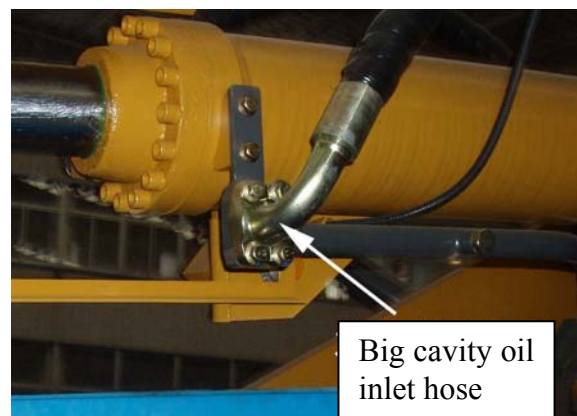
4. Shear the proximity switch wiring harness.



5. Remove the connecting flange of big oil inlet hose on the turning bucket cylinder.

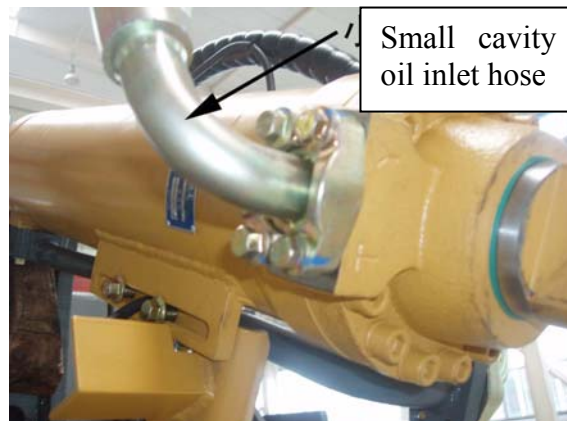
Disconnect the connection between turning bucket cylinder big cavity oil inlet hose and turning bucket cylinder.

★ 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.

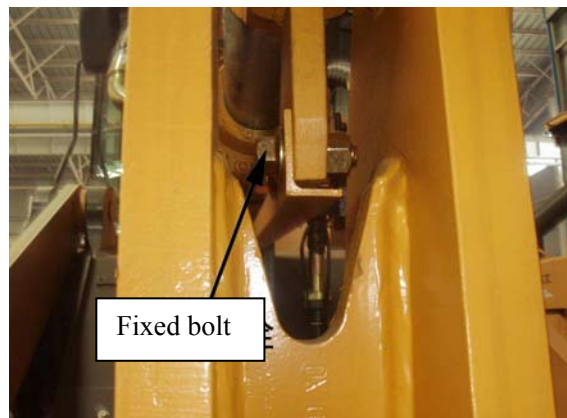


6. Remove the connecting flange of small oil inlet hose on the turning bucket cylinder. Disconnect the connection between turning bucket cylinder small cavity oil inlet hose and turning bucket cylinder.

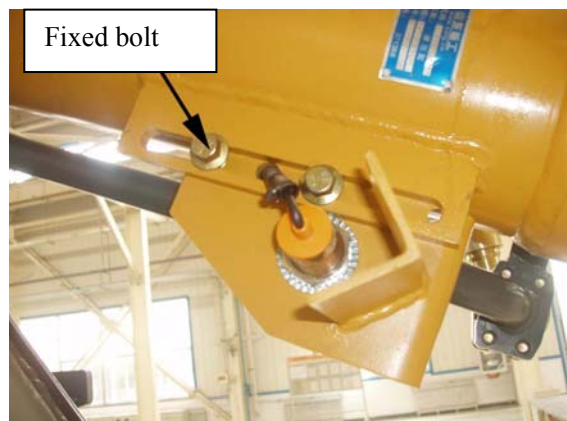
★Pay attention to protecting every pipeline and oil port. Prevent the dust and sundries from entering the pipeline.



7. Remove the fixed bolt of turning bucket indicator plate, and remove the turning bucket indicator plate.



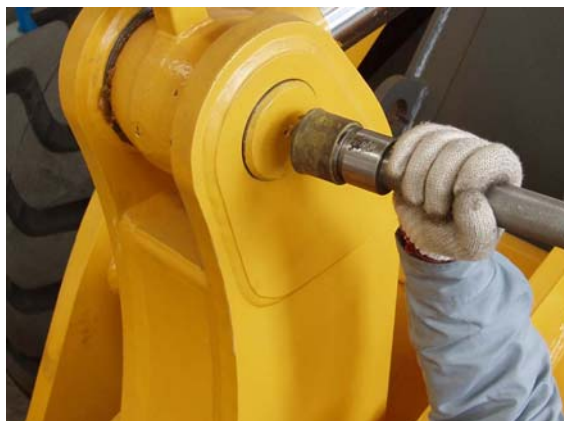
8. Remove the proximity switch and supporting frame.



9. 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.



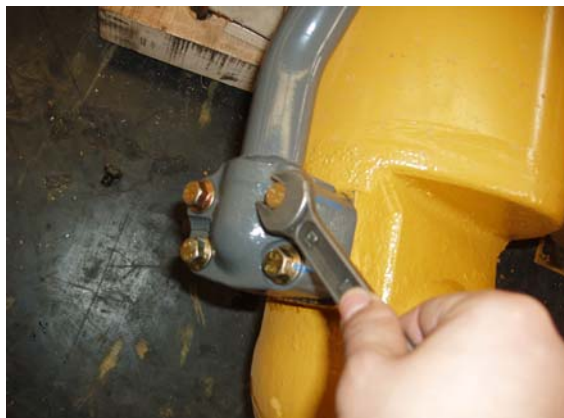
10. Hoist the turning bucket cylinder up to make the cylinder to tend to be vertical. Remove the fixed bolt between turning bucket cylinder and front frame connecting pin, and then remove the connecting pin.



Turning bucket cylinder



11. 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. Put an O-ring 32.5×3.55G in the groove at the end of turning bucket cylinder big cavity steel, then install them on the turning bucket cylinder with two bolts M10×50 and two bolts M10×55. Fix the front end of turning bucket cylinder big cavity steel on the wire holder of turning bucket cylinder with two bolts M10×16 and washer 10 to fix the turning bucket cylinder big cavity steel.

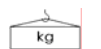


 kgm Tightening torque: 45~59Nm

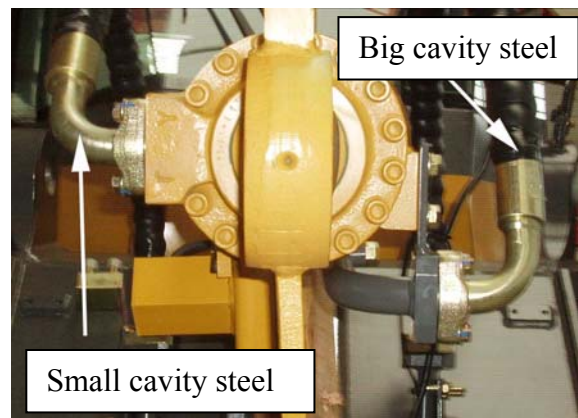
2. Clean the antirust oil pollution in the pin hole, and coat proper amount of lubricating grease on the pin. Hoist the turning bucket cylinder assembly and connect it with the front frame with pin, then put gasket on the joint end surface. Select the gasket according to model, number and installation 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

 Turning bucket cylinder

3. Put O-ring in the joint of turning bucket cylinder flexible hose, then connect it with turning bucket cylinder big cavity steel and turning bucket cylinder small cavity oil port respectively with split type flange and bolt M10×30.



 kgm Tightening torque: 45~59Nm

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.



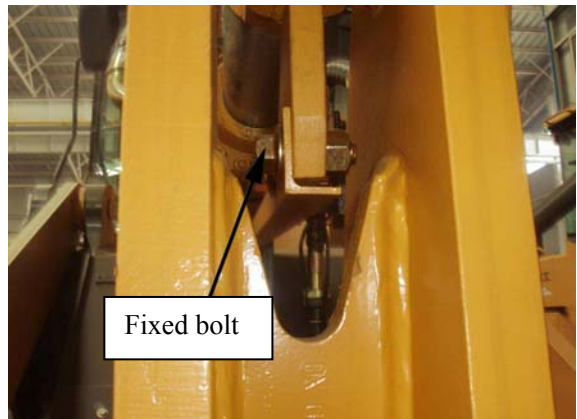
Tightening torque: 78~104Nm



5. Install the proximity switch and supporting frame on the front end under turning bucket cylinder with two bolts M12×30.



Tightening torque: 78~104Nm



6. Install the turning bucket indicator plate 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.



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.

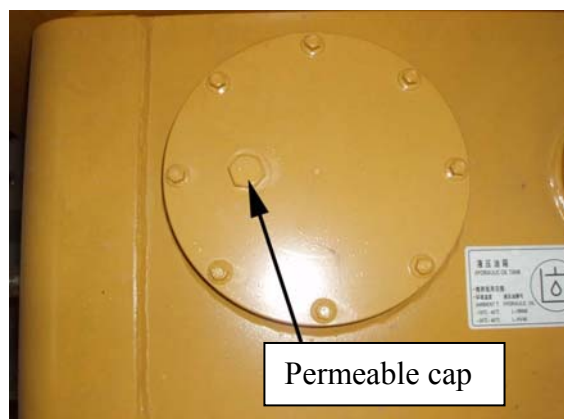
Tightening torque: 45~59Nm



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

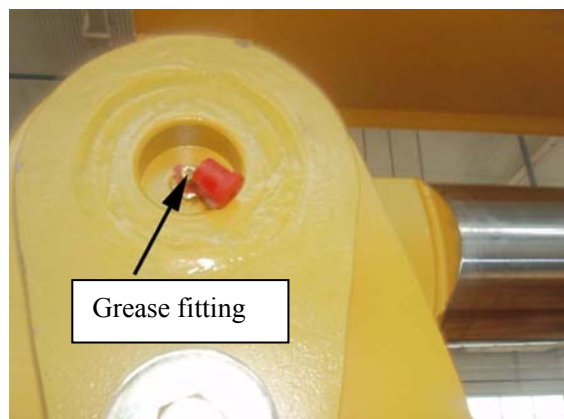


8. Install the permeable cap of hydraulic oil tank.



9. 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



5.8 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.



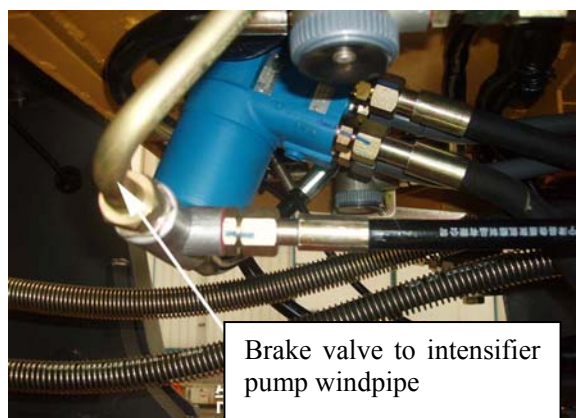
2. Put clean oil holder under the steering gear to prevent the overflowing oil from spilling on the ground.



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.



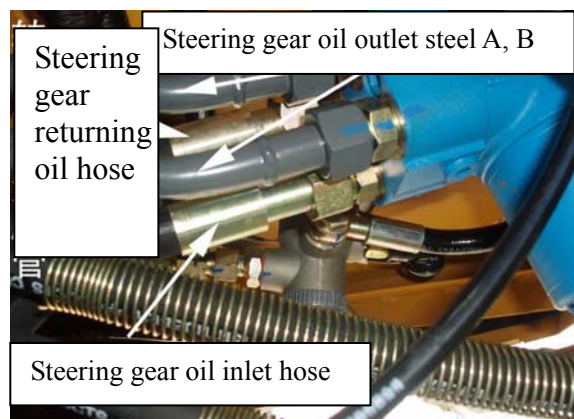
5. Loosen the connecting nut which connects the prior valve feedback oil pipe with the straight joint on the right oil port of steering gear. Disconnect the connection between the feedback oil pipe and steering gear.

★ 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.

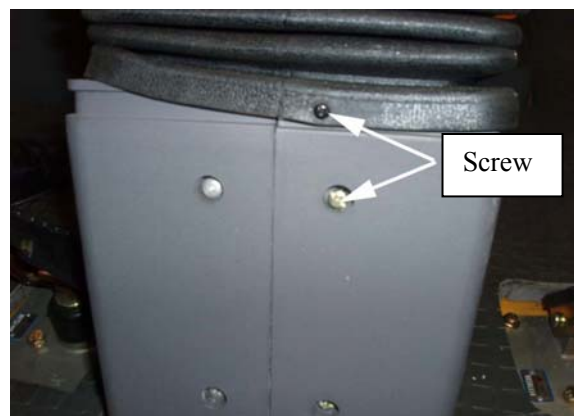


7. Remove each joint on the steering gear.

★ Protect each pipeline and oil port.

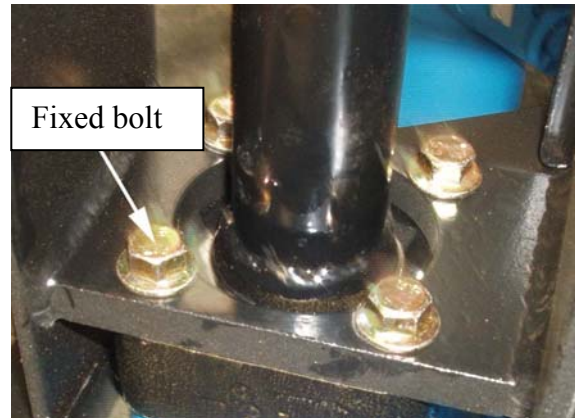


8. Remove fixed screw on the left and right baffles under the instrument desk. Then remove the baffle.



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.



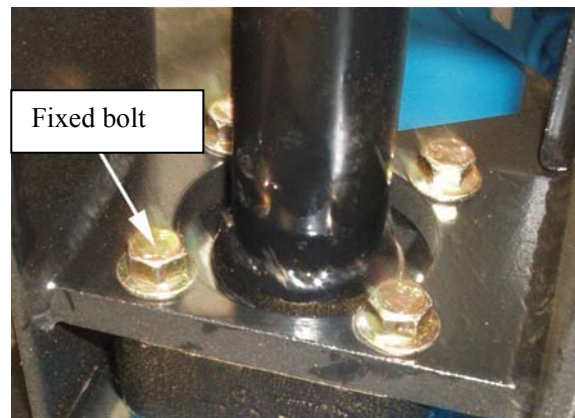
II Assembly of Steering Gear

(Assembling steering gear on complete appliance can refer to the following steps)

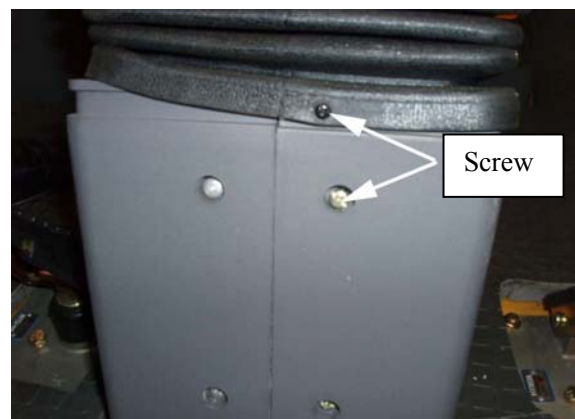
1. Put cross block in the steering gear, and then lift the steering gear to dock with steering column (turn steering wheel slightly to align it). Then fix with bolt.

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

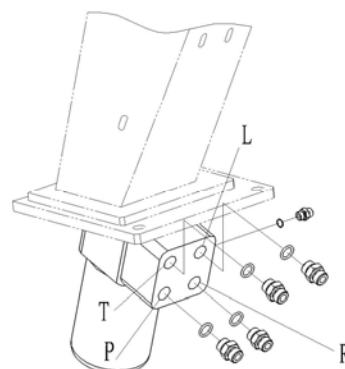
 kgm Tightening torque: 45~59Nm



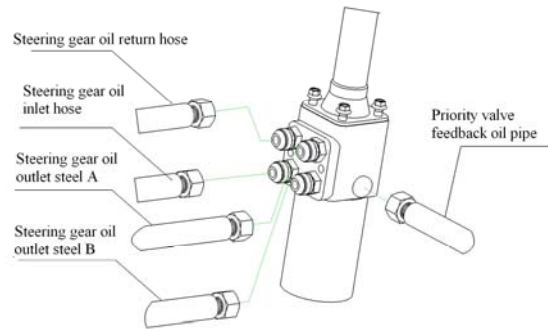
2. Install the left and right baffles under instrument desk.



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.

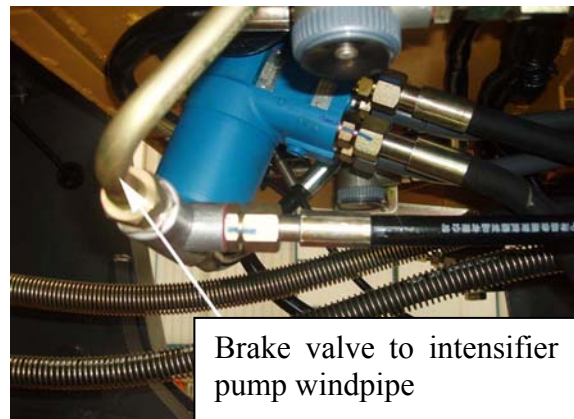
Twist the prior valve feedback oil pipe on straight joint at right of steering gear. Bind each oil pipe with ligature in the proper position.



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.

5.9 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.

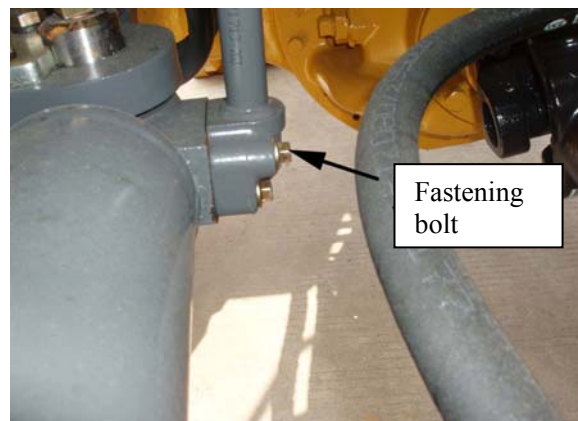
2. Put clean oil holder under the cylinder which will be replaced.

3. 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.

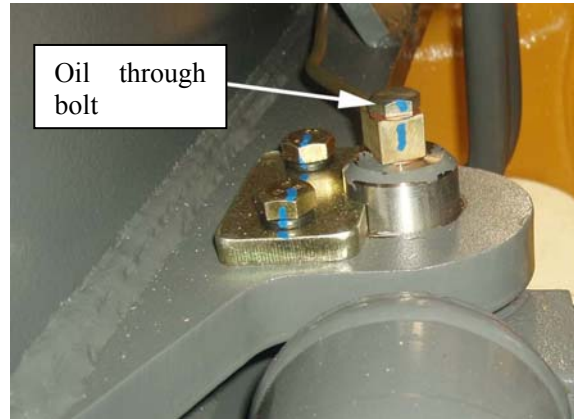
4. Remove the fixed bolt of steering cylinder big cavity oil inlet steel, and then disconnect the connection between big cavity oil inlet



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.



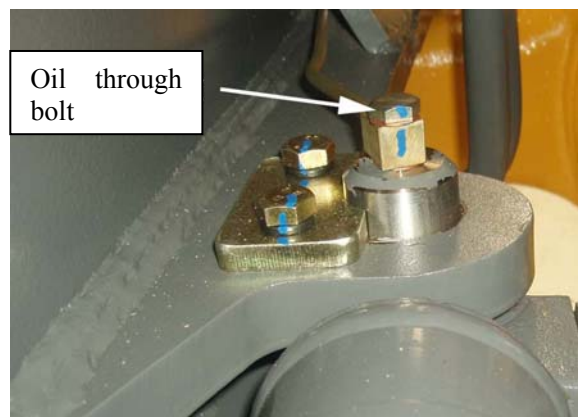
★ Notice: Select the snap-gauge. When assembling, firstly install the end from which the distance to hole centerline is bigger in the groove of steering pin.

 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.



Tightening torque: 78~104Nm

4. Connect the front grease pipe with oil through bolt and two gaskets.
5. Install the steering cylinder oil inlet steel on the steering cylinder big cavity oil port with two bolts M8×30 and two bolts M8×40.



Tightening torque: 22~30Nm

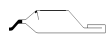
6. Connect the steering cylinder small cavity oil inlet hose on the small cavity oil port

★ The hose never distort.



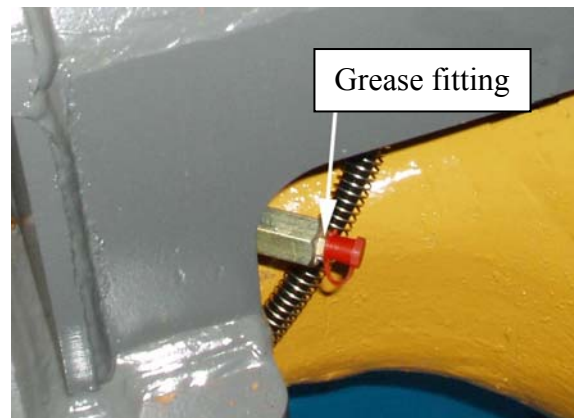
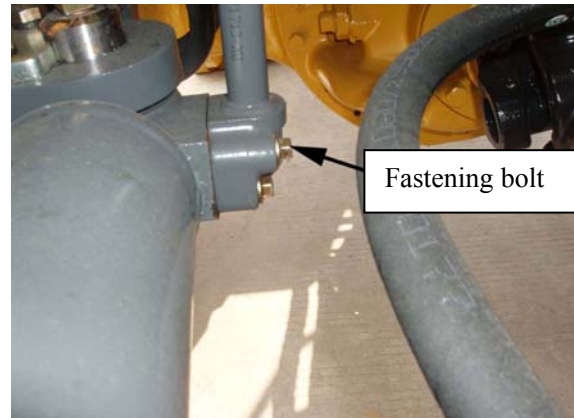
Tightening torque: 55~75Nm

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



Lubricant grease

8. 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

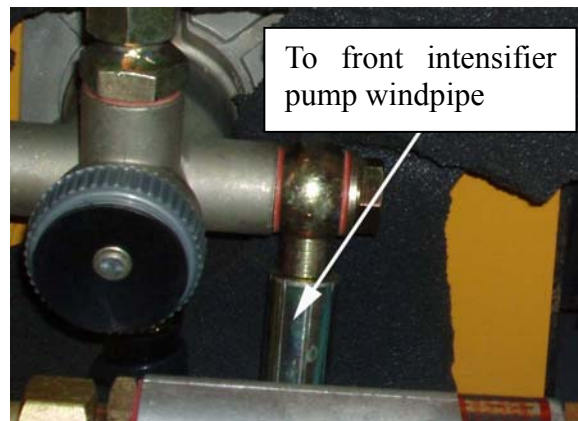
(Disassembling foot brake valve from complete appliance can refer to the following steps)

1. Open the water drain valve of gasholder to release the internal pressure.
2. Disconnect the connection between foot brake valve to rear 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 foot brake valve to front intensifier pump windpipe and brake valve. Then take the bolt and washer down.

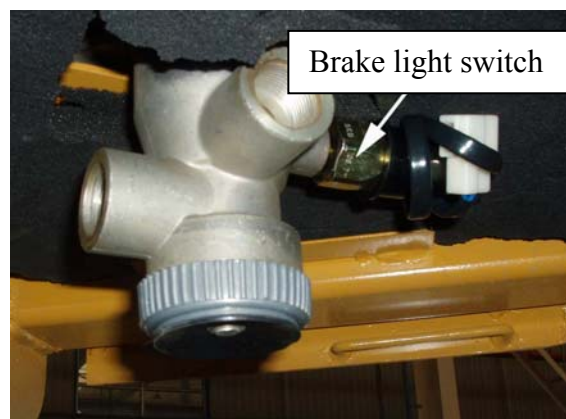
4. Disconnect the connection between gasholder to foot brake valve windpipe and brake valve.



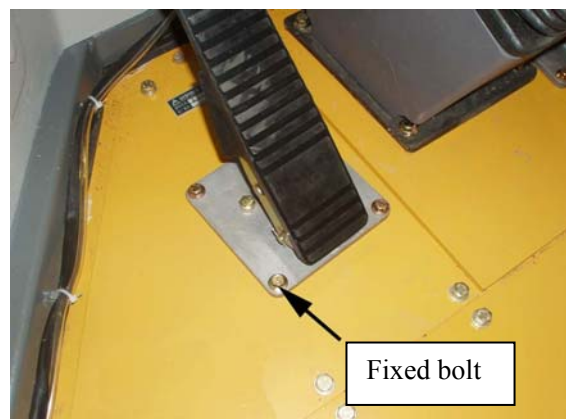
5. Remove the straight joint.



6. Remove the switch of brake light.



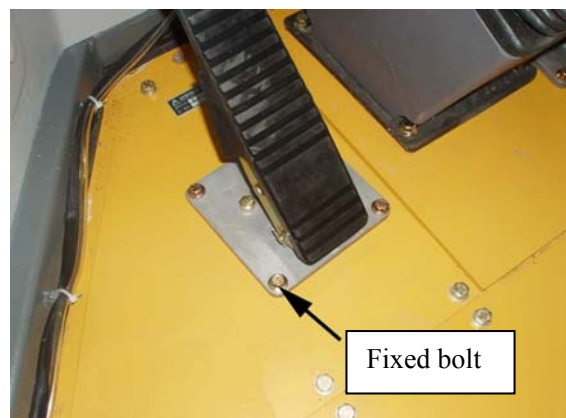
7. Remove the four bolts which fix the brake valve, and then take down the foot brake valve.



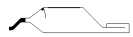
II Assembly of Foot Brake Valve

(Assembling foot brake valve on complete appliance can refer to the following steps)

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



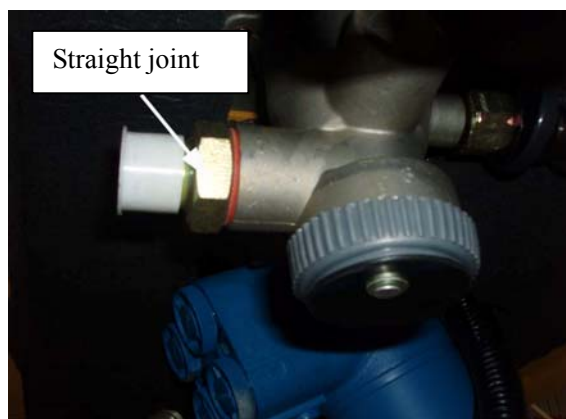
2. Coat the KESAIXIN 1545 oxygen-wear type pipe thread sealant on the switch of brake light, then tighten on the front port of pneumatic brake valve.

 1545 sealant



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

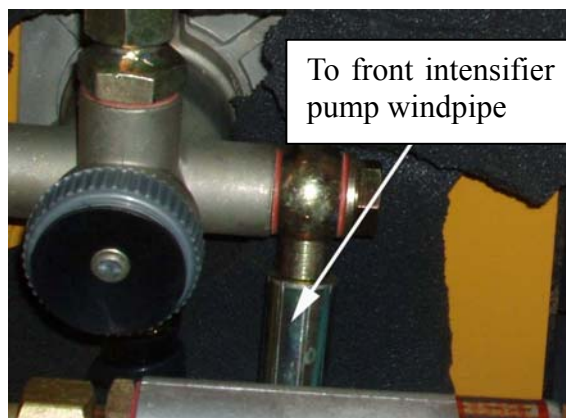
 1545 sealant



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



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

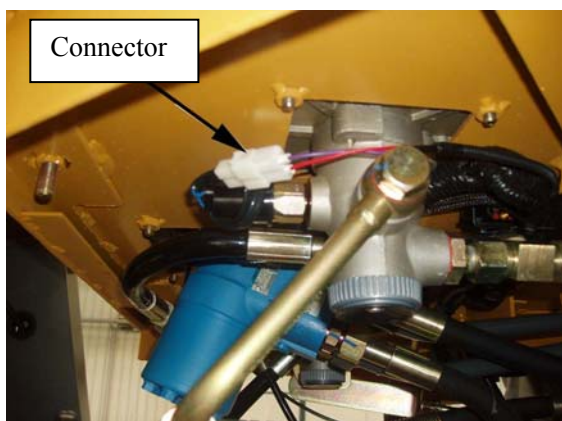


6. Connect the foot brake valve to rear intensifier pump windpipe on the brake valve with a bolt and two washers.



7. 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.



3. 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 with circlip 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 circlip pliers.



5. Install the cushion.



6. Install O-ring in the valve core.



7. Install spring in the valve body.



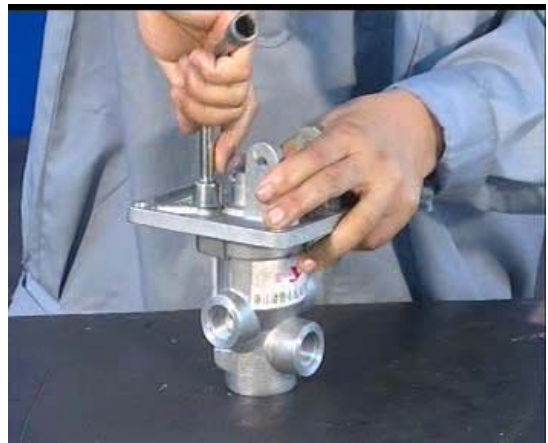
8. Coat small amount of brake fluid on the surface of valve core, and install valve core in the valve body. Press the valve core to check the return reliability of valve core.



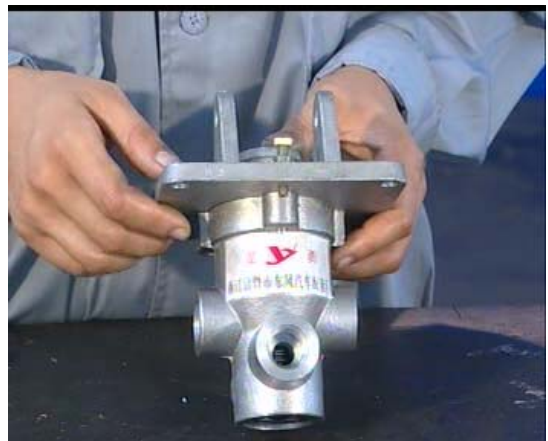
9. Install ratio small spring assembly in the valve body.



10. Install the fixed plate.



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



11. Install ejector pins and dust cover.

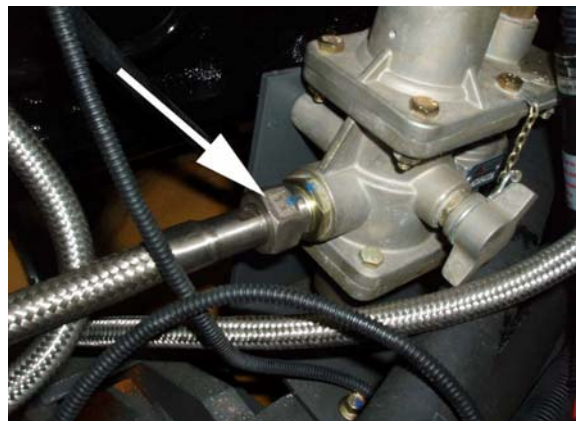


6.2 Disassembly and Assembly of Oil-water Separator

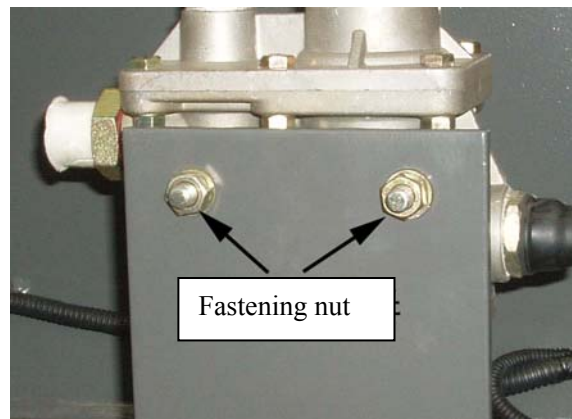
I Disassembly of Oil-water Separator

(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.



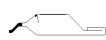
6. Remove two-way joint and washer from oil-water separator respectively.



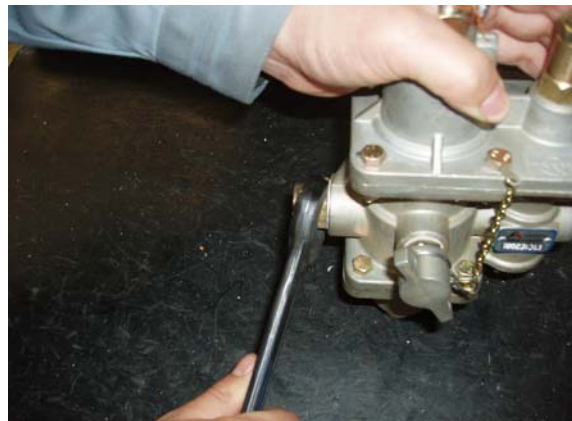
II Assembly of Oil-water Separator

(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.

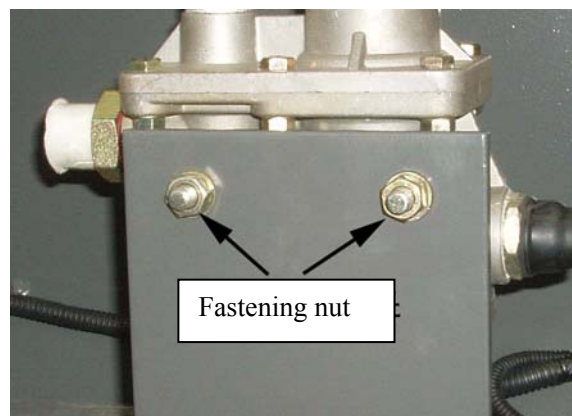
 1545 sealant

 Tightening torque: 70~90Nm



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

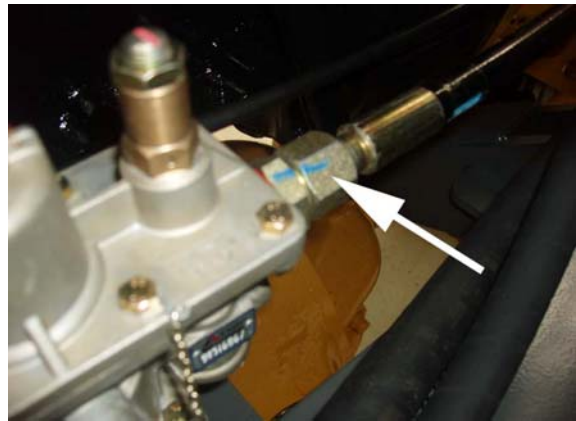
 Tightening torque: 22~30Nm



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.

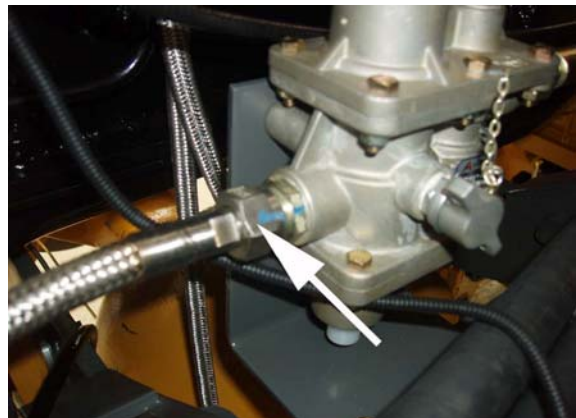
 kgm Tightening torque: 50~65Nm



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.

 kgm Tightening torque: 40~60Nm

 1272 screw lock fix sealant

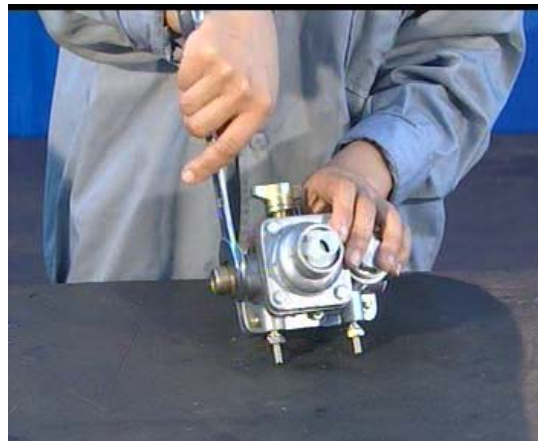


★Notice: The metal flexible hose can be bended randomly and not rebound. Never contact and rub with other parts when assembling.

6.2.1 Disassembly and Assembly of Oil-water Separator Assembly

I Disassembly of Oil-water Separator

2. Remove the pipe joint and washer.
3. Remove the upper lock nut. Then loosen the regulating screw with screwdriver.
4. Remove the fixed bolt connecting upper cover with midbody. Take down the upper cover.
5. Take down the regulating spring seat. Then take down one-way valve and return spring.



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



7. Take down the pressure regulating valve.



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



9. Loosen the fixed bolt connecting lower shell with midbody.



10. Take down the lower shell assembly.



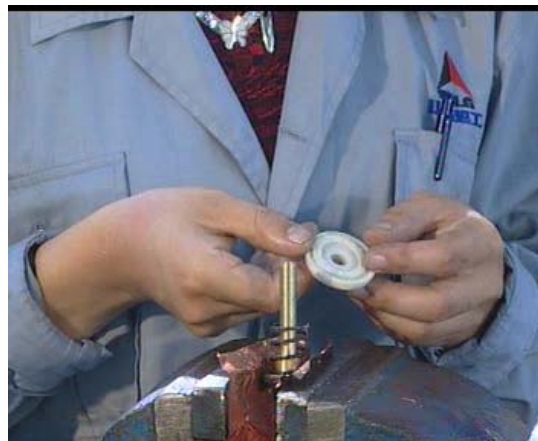
11. Remove the O-ring of lower shell.



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



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



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



15. Take down the air filter element.



16. 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.



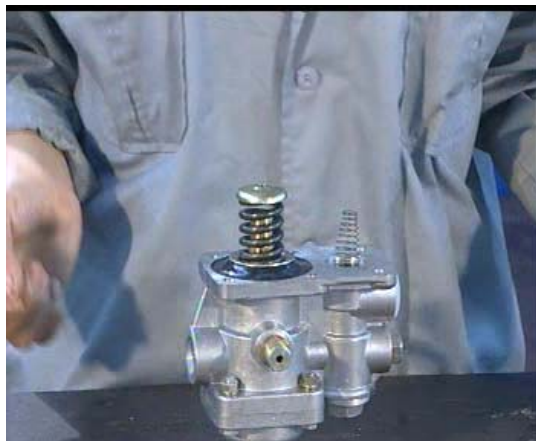
7. Install the bolt and washer connecting middle valve body with lower shell, and then tighten.



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 midbody.



11. Assemble the midbody and upper cover. Install the bolt and washer, then tighten.



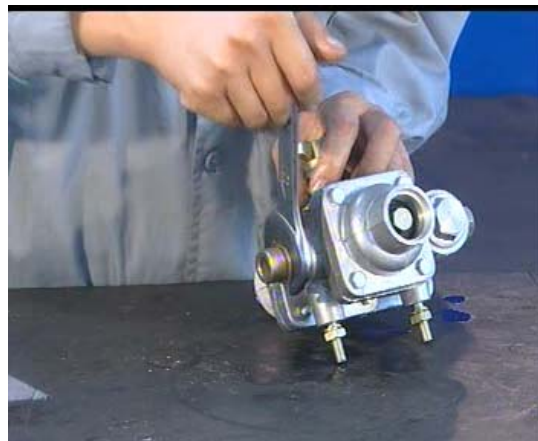
12. Install the wing nut.



13. Install the regulating screw and lock nut, and then preload 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

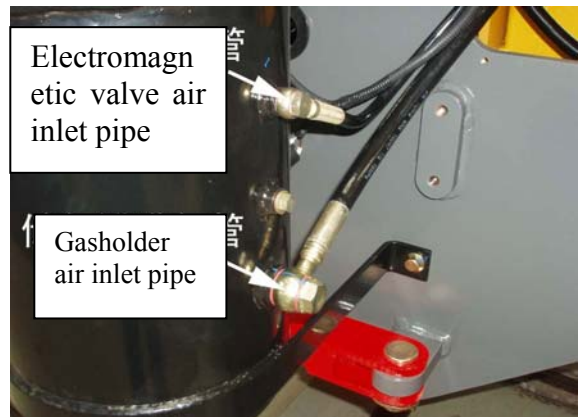
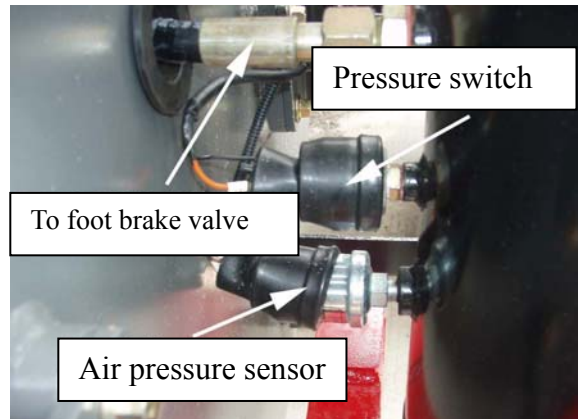
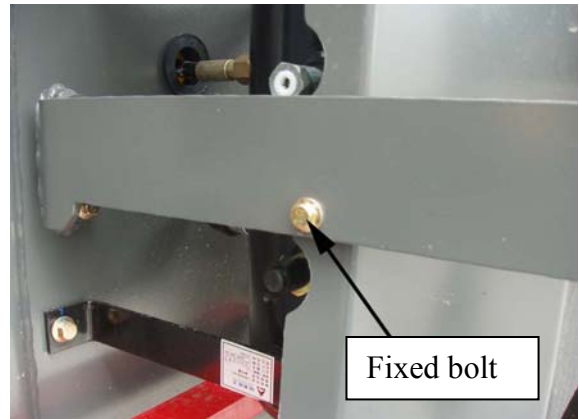
I Disassembly of Gasholder

(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 cover.
3. Disconnect the connection between braking pressure sensor and pressure switch wiring harness, 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.

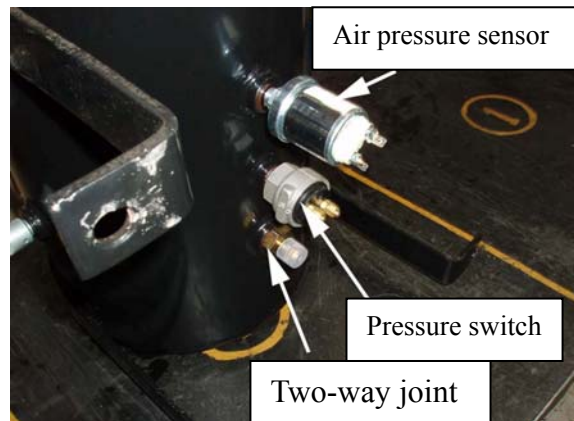
4. Disconnect the connection between electromagnetic valve oil inlet pipe, gasholder oil inlet pipe and gasholder.



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

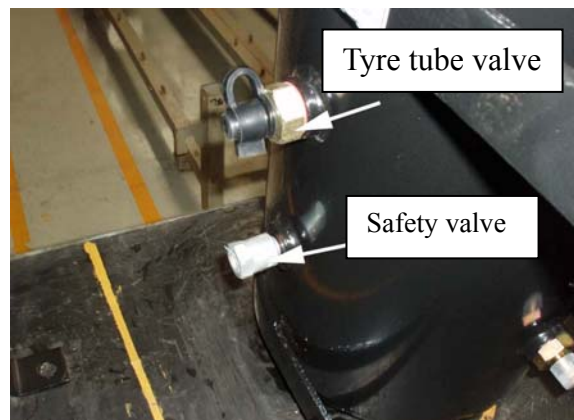


6. Remove the accessories such as gasholder safety valve, tyre tube valve, pressure sensor, plug, pressure switch, two-way joint and etc. from gasholder.



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

1. Install tyre tube 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, tyre tube 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 M12×25.

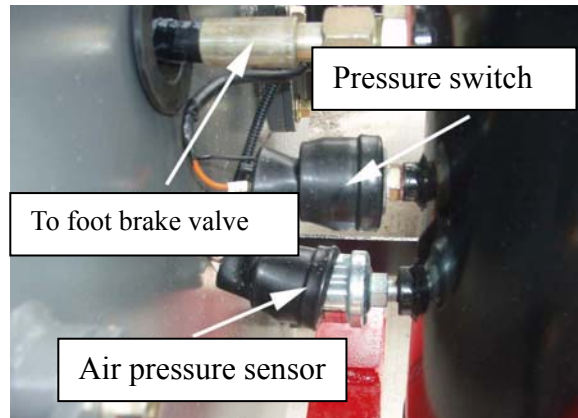
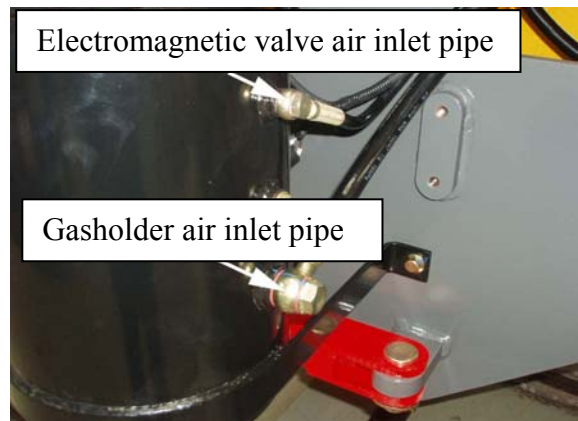
 Tightening torque: 78~104Nm

3. Install oil-water separator to gasholder windpipe on the gasholder with bolt and two washers. Install electromagnetic valve air inlet pipe on the gasholder with bolt and two washers.

4. Install the joint of gasholder to brake valve windpipe adding a washer on the two-way joint of gasholder; Connect No.18 and No. 32 wire with terminal marked “G” and “WK” of braking pressure sensor respectively; Connect No.0 and No. 54 wire on the pressure switch of gasholder.

5. Install guard cover on the left lower ladder assembly with three bolts M10×20.

 Tightening torque: 45~59Nm



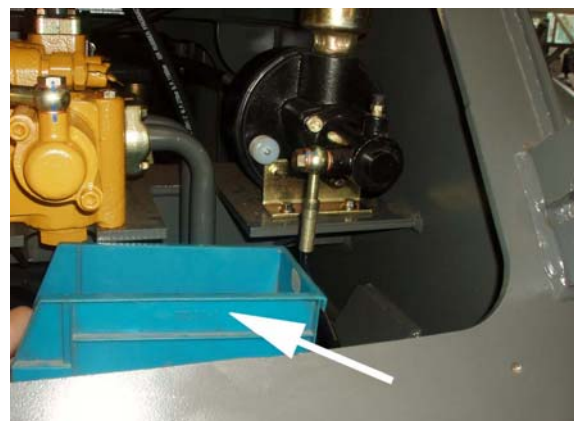
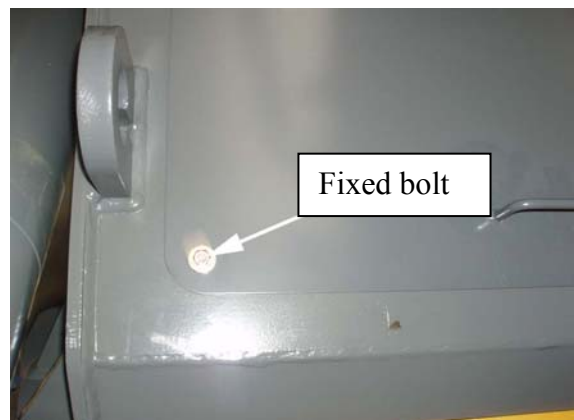
6.4 Disassembly and Assembly of Front Intensifier Pump

I Disassembly of Front Intensifier

Pump (The disassembling steps for replacing the front intensifier pump are as follow)

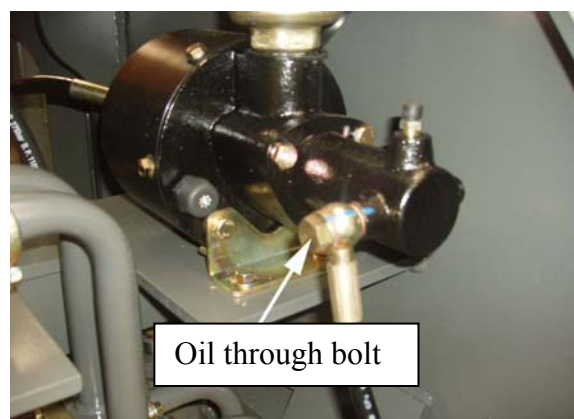
★ In process of disassembly, pay attention to protecting the flexible pipe and joint which are disassembled. Prevent the dust and sundries from entering the pipeline.

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.

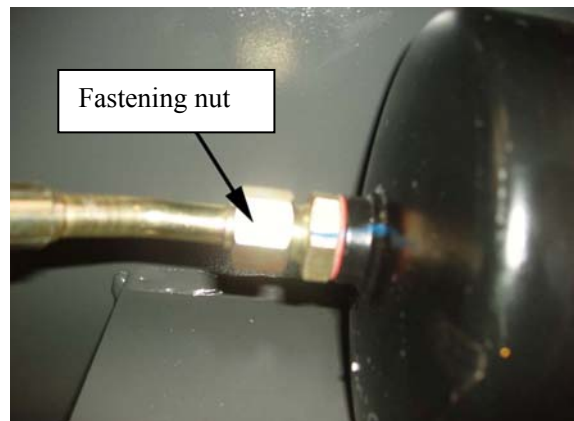


4. Remove the oil through bolt of front axle oil pipe to front intensifier pump flexible pipe. Disconnect the connection between flexible pipe and intensifier pump.

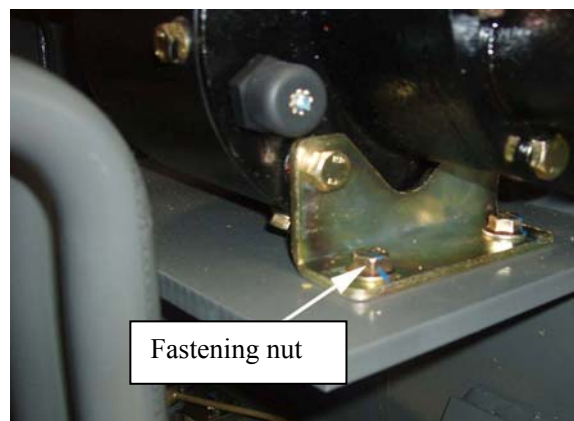
★The braking fluid has causticity, and pay attention to protecting body and machine.



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



6. Remove the fixed bolt of front 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 Front Intensifier

Pump (Assemble according to the following steps after replacing and repairing completely)

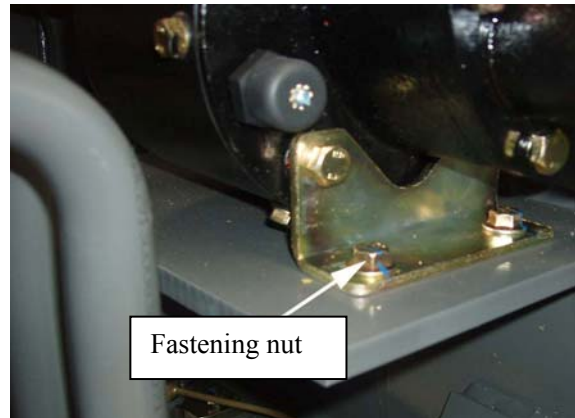
1. Coat KESAIXIN 1545 oxygen-wear type pipe thread sealant on two-way joint, and then install the two-way joint adding a washer on the intensifier pump.



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.

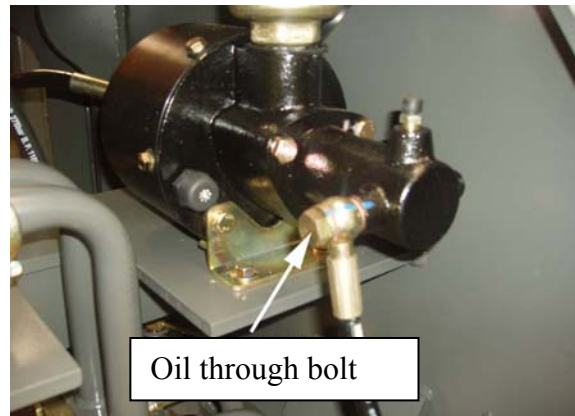


Tightening torque: 45~59Nm



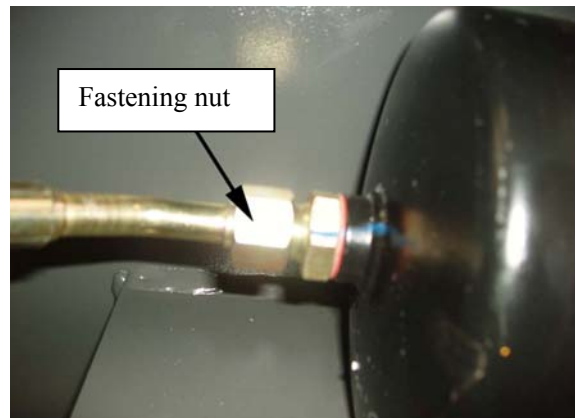
3. Connect the front axle oil pipe to flexible pipe of intensifier pump on the intensifier pump with oil through bolt and copper washer (the smaller copper washer is near to the intensifier pump).

★ 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.



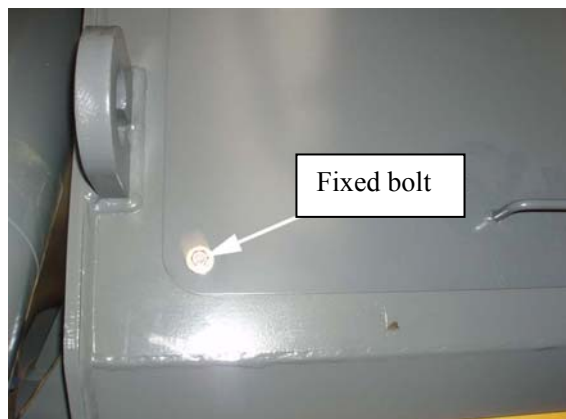
Tightening torque: 25~35Nm

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



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.



6.5 Disassembly and Assembly of Rear Intensifier Pump

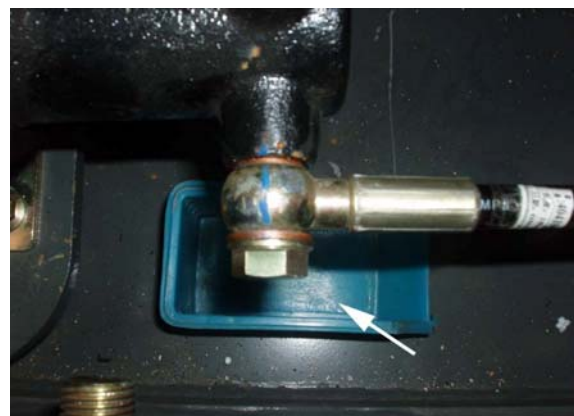
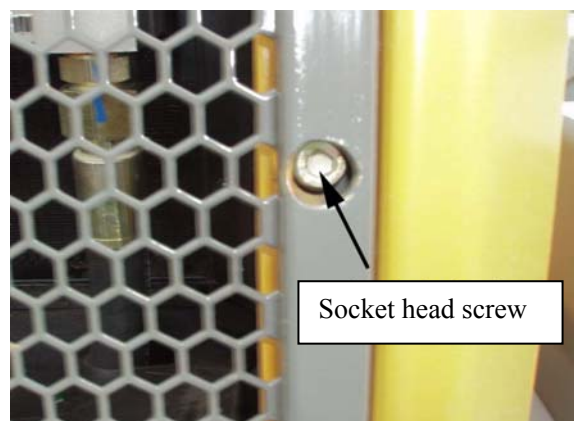
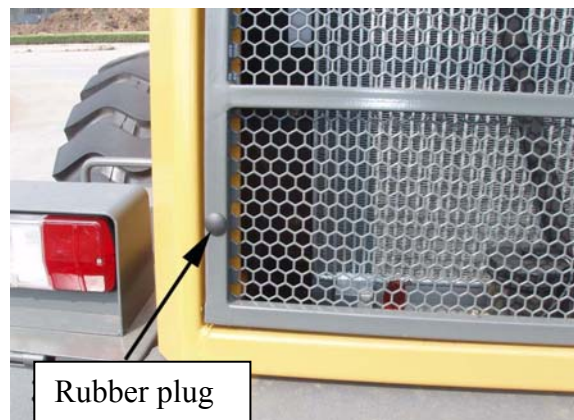
I Disassembly of Rear Intensifier

Pump(Disassembling rear intensifier pump from complete appliance can refer to the following steps)

- ★ 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 ground and place the operating handle in neutral position. Press down the switch of parking brake and stop the engine. Fix the tire of loader with wood wedge stability.
- 2. Remove the four rubber plugs on the rear mullion.

Remove the inner hexagonal fixed screw on rear mullion, and then take down the rear mullion.

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

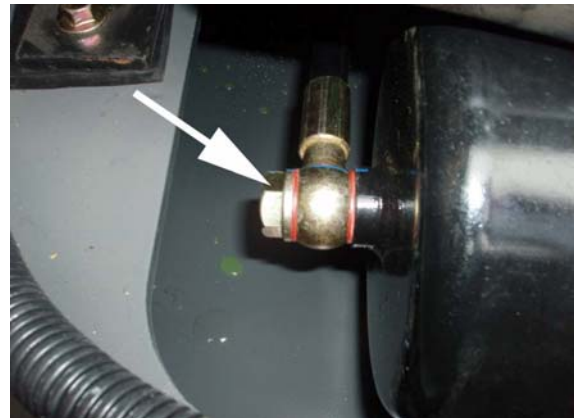


4. Remove the oil through bolt of rear intensifier pump to rear axle oil pipe flexible pipe and washer. Disconnect the connection between flexible pipe and intensifier pump.

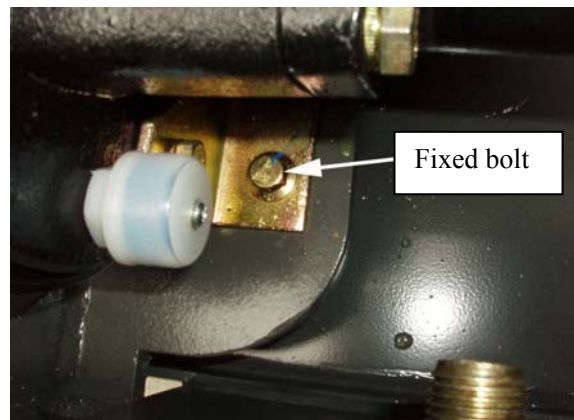
★ The braking fluid has causticity, and pay attention to protecting body and machine.



5. Remove the connecting bolt of foot brake valve to rear intensifier pump flexible pipe and washer. Disconnect the connection between flexible pipe and intensifier pump.



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

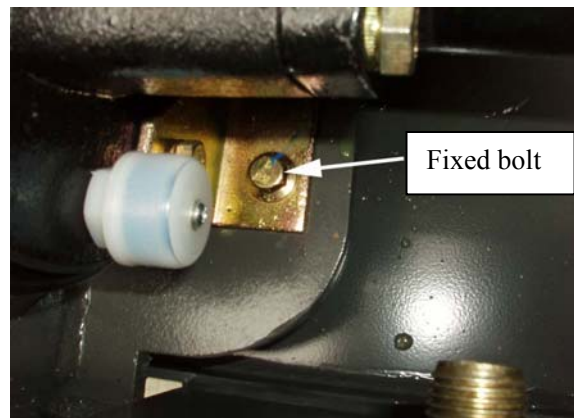


II Assembly of Rear Intensifier

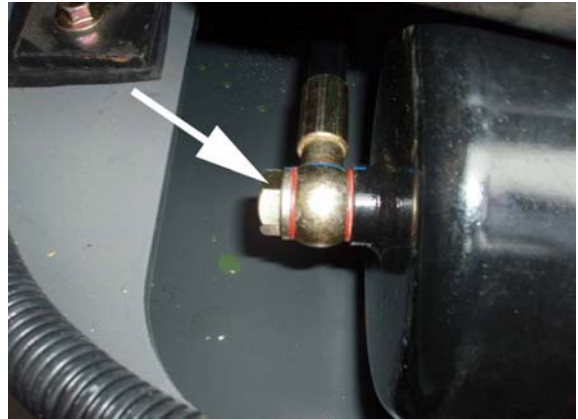
Pump (Assembling the rear intensifier pump assembly on complete appliance can refer to the following steps)

1. Install the rear intensifier pump assembly on the rear frame with two bolts M10×20.

 Tightening torque: 45~59Nm



2. Install the gas pipe of foot brake valve to rear intensifier pump on the intensifier pump with a bolt and two washers.



3. Install the flexible pipe of rear intensifier pump to rear axle on intensifier pump with intensifier pipe joint and two washers.



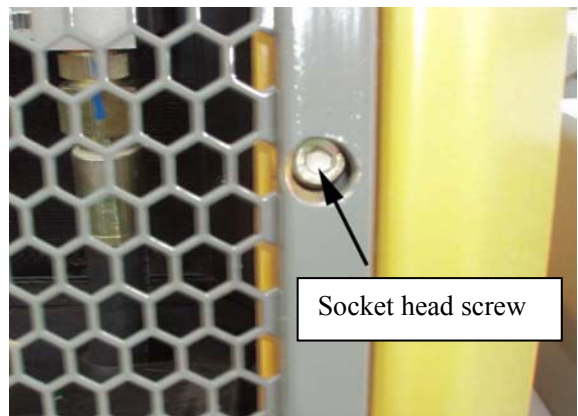
4. Load braking fluid and discharge the brake. Load full of HZY3 braking fluid (GB/T12981-2003) in the brake oil cup, and then start the engine. When the reading of barometer rises to the specified pressure, loosen the deflating valve at top of brake shaft by the person who isn't on the loader. The person 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.



 Tightening torque: 25~35Nm

5. Install the rear mullion and fix with screw, and then plug the rubber plug.

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



CHAPTER VII DISASSEMBLY AND ASSEMBLY OF WORKING DEVICE

7.1 Disassembly and Assembly of Bucket

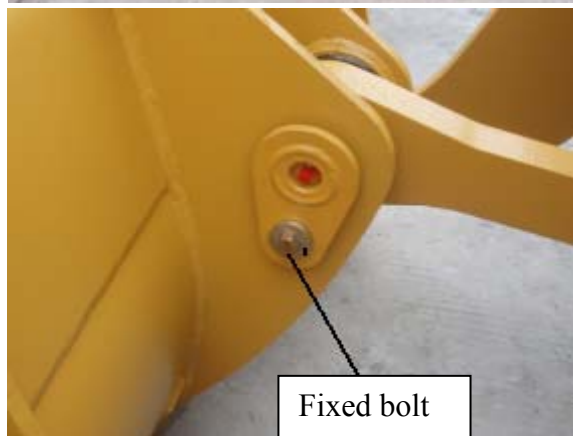
I Disassembly of Bucket (Removing the section of bucket from complete appliance can refer to the following steps when replace bucket)

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.



II Assembly of Bucket (Assembling the section of bucket on complete appliance can refer to the following steps when replace bucket)

1. 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.
2. 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.



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.



Tightening torque: 78~104Nm.



3. 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.



Linkage



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



Tightening torque: 78~104Nm.



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



Lubricant grease



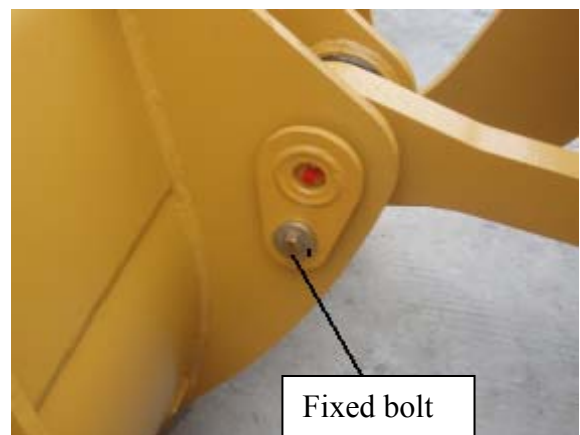
7.2 Disassembly and Assembly of Linkage

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.



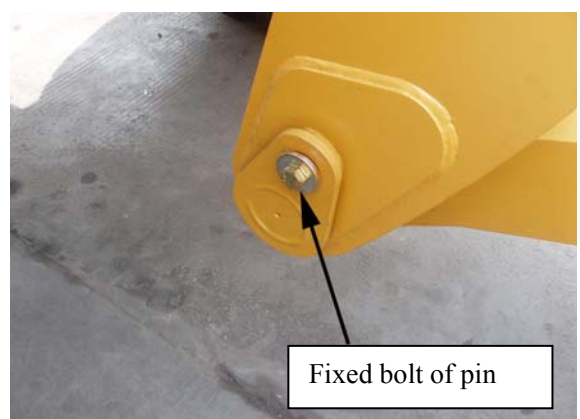
Take down the pin with soft hammer.

★**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.



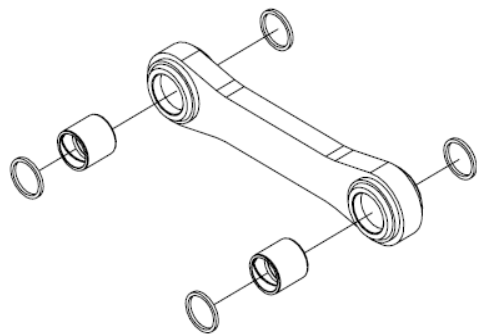
2) Take down the pin with soft hammer.

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



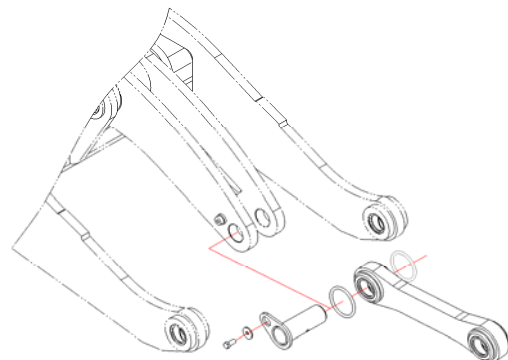
II Disassembly of linkage (Assembling the section of linkage on complete appliance can refer to the following steps when replace linkage)

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.

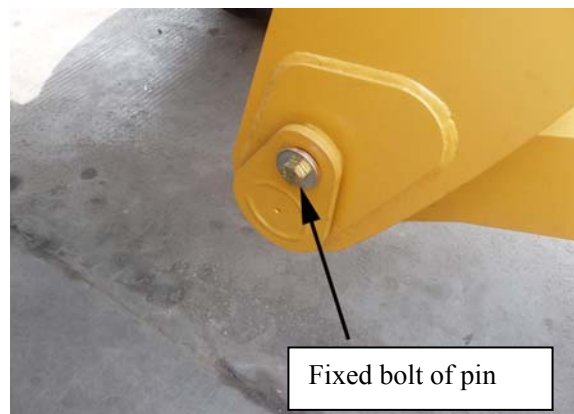
Load proper amount of lubricant grease in each hole when clean pollution.



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.

 Tightening torque: 78~104Nm.



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.



Linkage



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



Tightening torque: 78~104Nm.



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



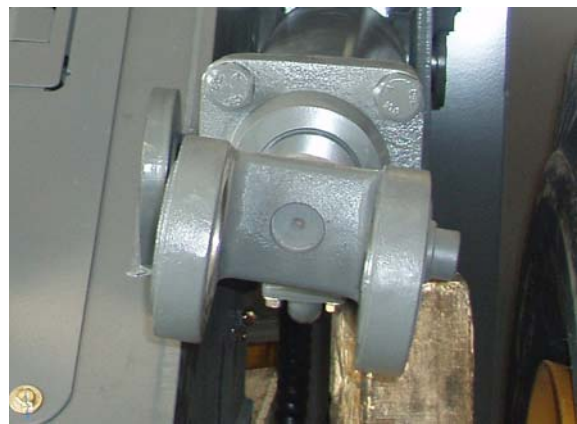
Lubricant grease



7.3 Disassembly and Assembly of Boom

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

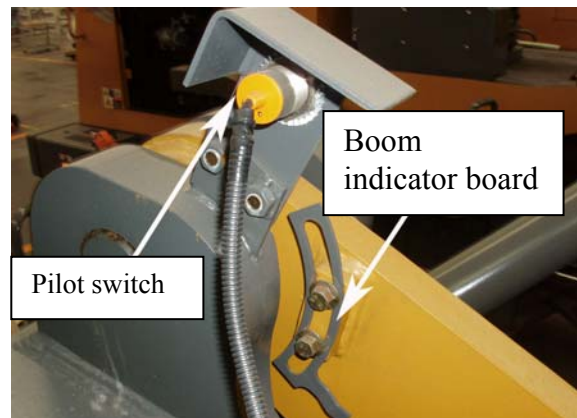
1. Start complete appliance and run to the leveling, spacious and solid ground, and stop when place properly. Put the bucket on ground horizontally, and place all operating bars in the neutral position and pull the operating bar of parking brake up, then stop the engine and wedge the tire of loader with wooden wedge.
 2. The disassembly between bucket and boom (Disassembly and assembly of bucket is shown in 7.1).
 3. The disassembly between rocker and boom (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 fixed bolt of pin connecting front frame with boom.



8. Remove boom indicator board on the boom.



9. Strike the pin slightly and take it out.



10. Lift the boom down.

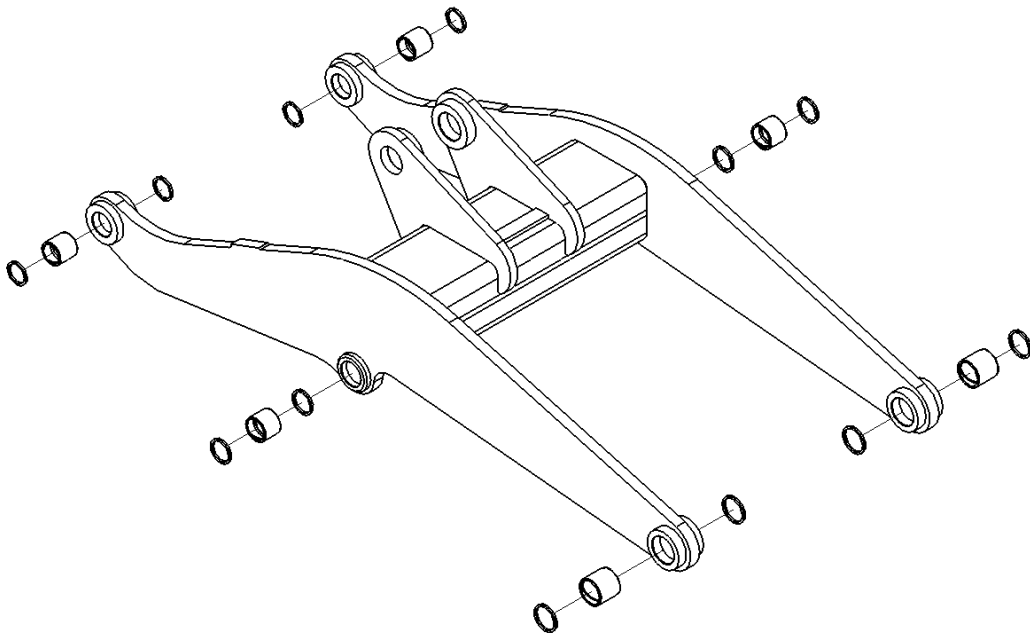
- ★ Keep the boom balance in process of hang.



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.



Tightening torque: 193~257Nm.



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.



Tightening torque: 78~104Nm.



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.



Tightening torque: 78~104Nm.



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.



Tightening torque: 78~104Nm.



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.

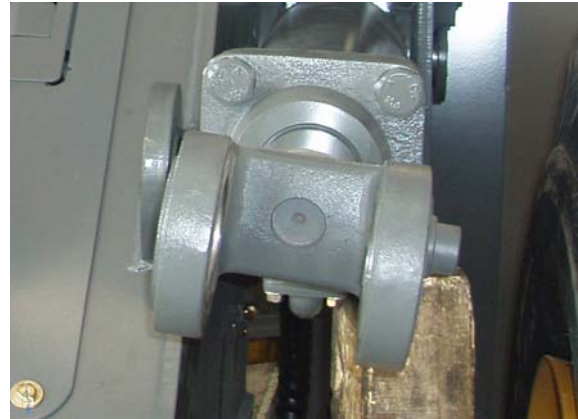


Tightening torque: 78~104Nm.



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: 78~104Nm.

- ★ 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.

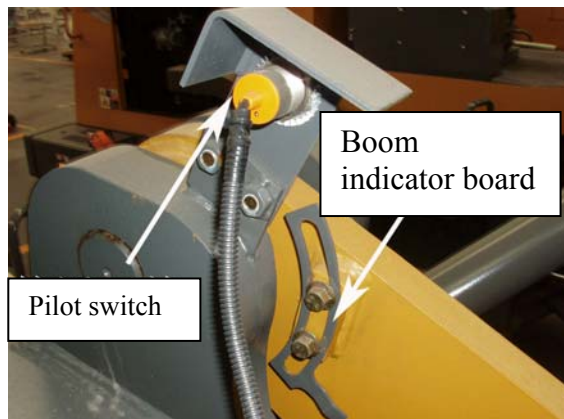


11. Start the engine to adjust the expansion amount of piston rod. Align the pin holes of piston rod and rocker arm combined with hoisting rope. And connect the dump cylinder on the rocker arm with a pin, then fix the pin with a bolt and a washer.



Tightening torque: 78~104Nm.

12. Install the boom indicator board.



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



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.

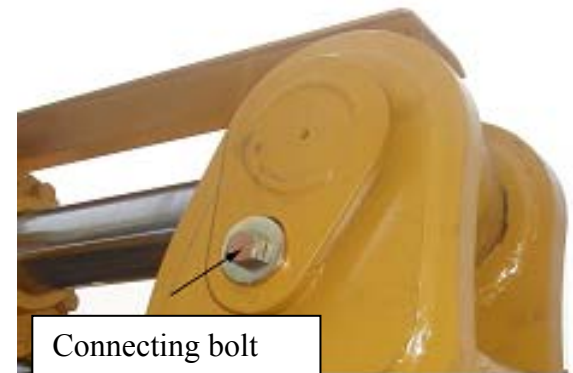


Dump cylinder

★ 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



Rocker arm

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

1. 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..



Rocker

2. 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.



Tightening torque: 193~257Nm.



3. Lift the dump cylinder and keep the rocker steady. Then take down the supporting wood block under dump cylinder.



Dump cylinder

4. 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 M12×25 and a washer.



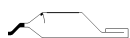
Tightening torque: 78~104Nm.

5. 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.



Tightening torque: 78~104Nm.

6. 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 complete appliance 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

★ **Notice:** 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. 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 front and rear 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 cab wiring harness and instrument desk wiring harness with which connects the wiring harness of rear frame.



5. Unplug the connector connecting rear frame wiring harness with cab wiring harness.

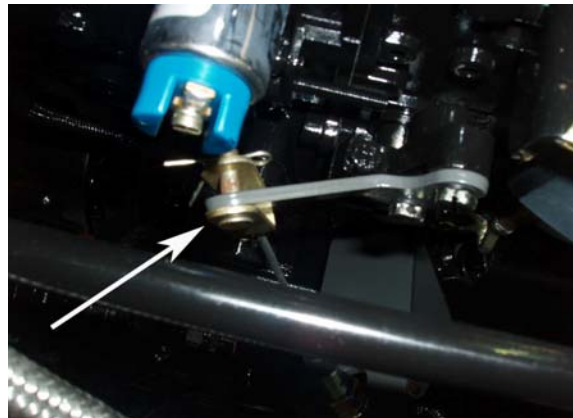


6. Unplug the connector connecting cab wiring harness and instrument desk wiring harness with which connects the wiring harness of front frame.



Remove the side cover plate of operative box (refer to the disassembly and assembly of operative box).

7.2 Unplug the connector of parting brake switch wiring harness in the operative box (refer to the disassembly and assembly of operative box).



7.3 Remove the pilot oil pipe connecting with the pilot valve in the operative box (refer to the disassembly and assembly of operative box).

7.4 Unplug the connector of power wiring harness in the operative box (refer to the disassembly and assembly of operative box).

8.1 Remove the split pin of throttle operating flexible shaft.



8.2 Loosen dorsal-compact nut of engine throttle flexible shaft on the support of engine.

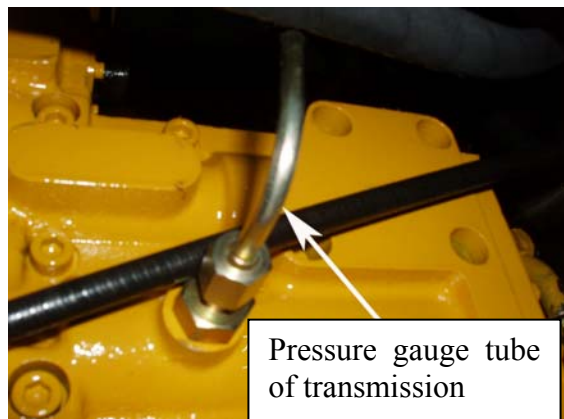
9. Close the inlet and outlet valve of engine, and then remove the two water pipes at left of air conditioning evaporator, and then remove the air conditioner hose connecting with compressor and liquid storage tank at the right



side (refer to the disassembly and assembly of air conditioning).

★ The place of maintenance should be airy.

10. Remove pressure gauge tube on the transmission.



11. Lift the cab until the hoisting rope is not loose, but not too tight.



12. Remove the four bolts which fix the cab.

12.1 Remove the left and right baffles of cab.



12.2 Remove the four bolts on the front and back of cab.



13. Lift the cab away from frame and put on the proper position.



Cab assembly

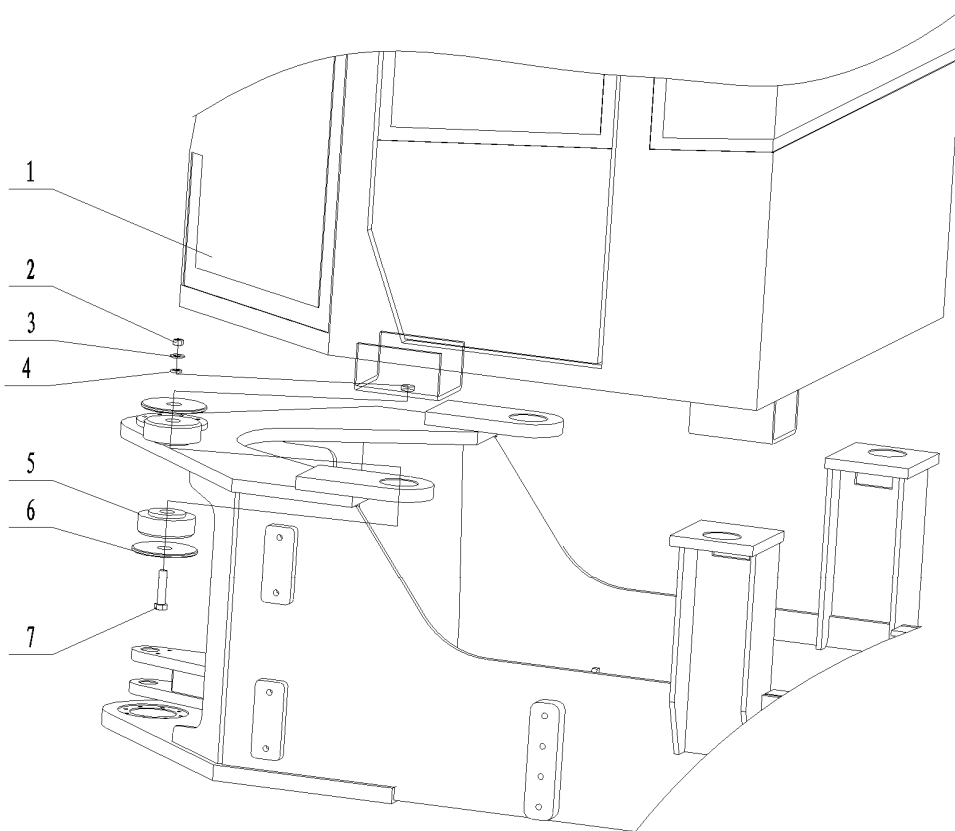


II Assembly of Cab

1. Put four shock absorbers (part 5) and four washers (part 6) on the cab support of rear frame. Lift the cab bench assembly (part 1) to rear frame support. During falling, four bolts (part 7) through four washers (part 6) and four shock absorbers (part 5) from up to down under the support. Adjust the anterior/posterior direction of cab bench assembly to make it lie as back as possible and the clearance between it and engine hood is uniform. After adjusting properly, install four washers (part 3, 4) and four nuts (part 2), then tighten the bolts in principle of diagonal.



The bolt of cab assembly M20: Tightening torque: 120~200Nm



2. The connection of speed change mechanism

Put the operating flexible shaft through fixing frame under the instrument desk in order, and then fix it on the speed change operating handle with self-bring fasteners of operating flexible shaft. Put the speed change operating handle in the position of reverse gear.

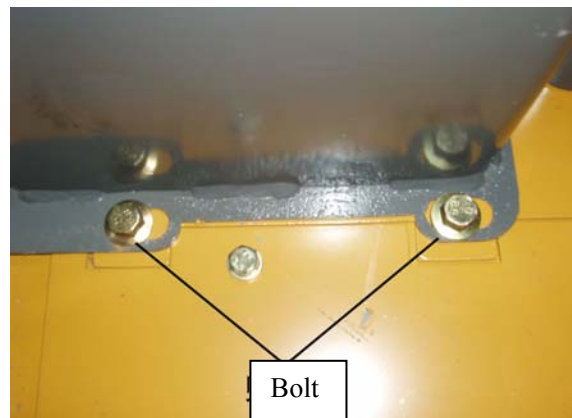


3. The connection of manipulation mechanism

3.1 Install the pilot valve assembly, hand brake switch, air conditioning control board and etc. on the corresponding position of operation box (specific operation can refer to the disassembly and assembly of operation box).



Install the manipulation mechanism assembly after connected on the corresponding position of bench of cab with four bolts (M10×25).

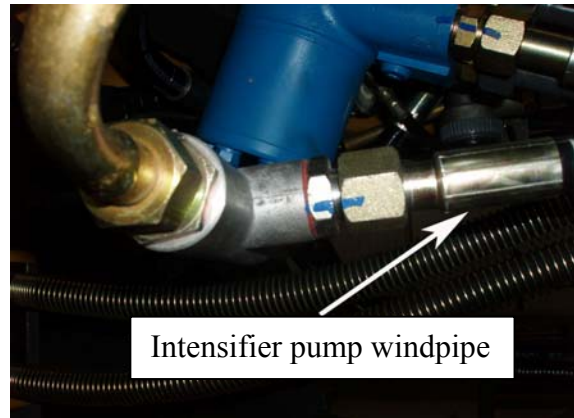


4. The connection of steering gear oil pipe

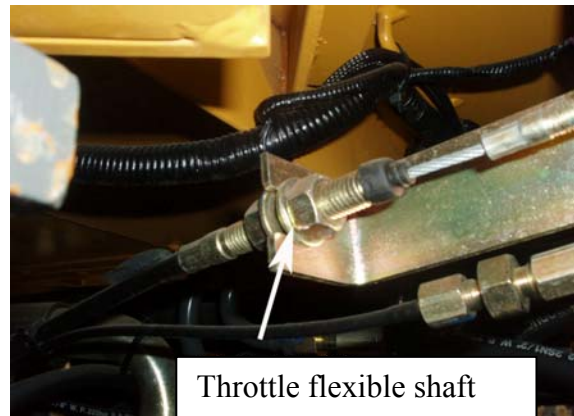
The specific operation is shown in the installation instruction of steering gear.



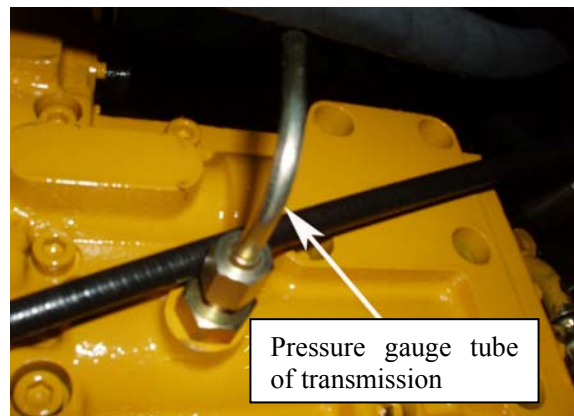
5. The connection of foot brake valve windpipe (brake valve air inlet pipe, connection of front and rear intensifier pump).



6. The connection of throttle flexible shaft
Connect throttle flexible shaft with throttle manipulation mechanism. After assembling, press flexible shaft by hand to test whether the tightness is suitable



7. The installation of air conditioning (shown in the disassembly and assembly of air conditioning).
8. Connect the end of speed change pressure oil pipe with transmission, and then tighten. Arrange the oil pipe in order and no distortion.



9. Plug in the connector of plugboard.
9.1 Plug in the connector connecting cab wiring harness and instrument desk wiring harness with which connects the wiring harness of rear frame.



9.2 Plug in the connector connecting rear frame wiring harness with cab wiring harness.



9.3 Plug in the connector connecting front frame wiring harness with cab wiring harness.



8.2 Disassembly and Assembly of Air Conditioning

(This section mainly introduces how to replace the air conditioning, the replacing steps are as follow)

I Disassembly of Air Conditioning Evaporator

1. Close the inlet and return water pipe of air conditioning evaporator on the engine.

2. Loosen the connection of compressor with air conditioning 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 three bolts M12×25 connecting toolbox with bench.

Take out the toolbox.

4. Remove seat assembly (shown in the disassembly and assembly of seat).

5. Remove operation box (shown in the disassembly and assembly of operation box).

6. Remove two water heating tubes at the left of air conditioning evaporator.

★ **Notice:** Discharge the storage water of water heating tube in the underside vessel.



Air conditioning flexible pipe



7. Remove the pipeline connecting liquid storage tank with compressor at the right of air conditioning evaporator.



8. Unplug the power connector of air conditioning evaporator.



9. Remove the four bolts at the bottom of air conditioning evaporator.



10. Take out the air conditioning evaporator.

II Disassembly of Air Conditioning Condenser

1. Remove the bench at the right of cab.



2. Remove the baffle at the right of cab.



3. Remove the flexible pipe connecting condenser with compressor.



4. Remove the flexible pipe connecting condenser with liquid storage tank.



5. Unplug the power connector of air conditioning condenser.



6. Remove the four connecting bolts which connect air conditioning condenser with front and rear support board.



7. Take down the air conditioning condenser.



III Assembly of Air Conditioning Evaporator

1. Put the air conditioning evaporator on the corresponding position inside the cab. Then fix with four bolts (M12×25).



2. Draw up the water heating tube from the two circular holes at left of air conditioning condenser.



3. Connect two water heating tubes on the air conditioning evaporator with hoop.

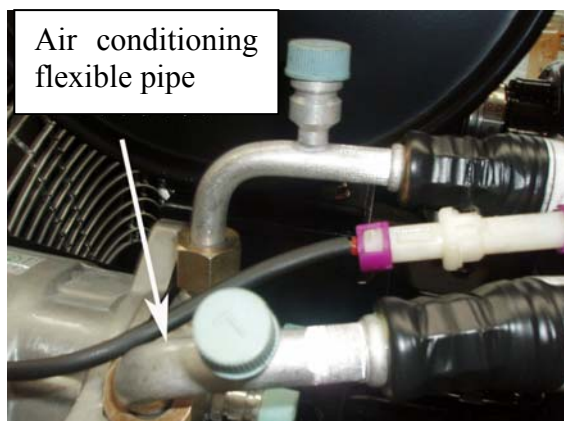
4. Connect flexible pipe connecting compressor with liquid storage tank at right of air conditioning evaporator on the air conditioning evaporator.



5. Plug in the power connector of air conditioning.



6. Connect the other end of one air conditioning flexible pipe on the compressor.



7. Connect the other end of another air conditioning flexible pipe on the liquid storage tank.



IV Assembly of Air Conditioning Condenser

1. Fix the air conditioning condenser on front and rear support board with four bolts (M10×25).



2. Connect the power connector of air conditioning condenser.



3.1 Connect the flexible pipe connecting with liquid storage tank on the underside port of condenser.



3.2 Connect the other end of flexible pipe on the right end of liquid storage tank.

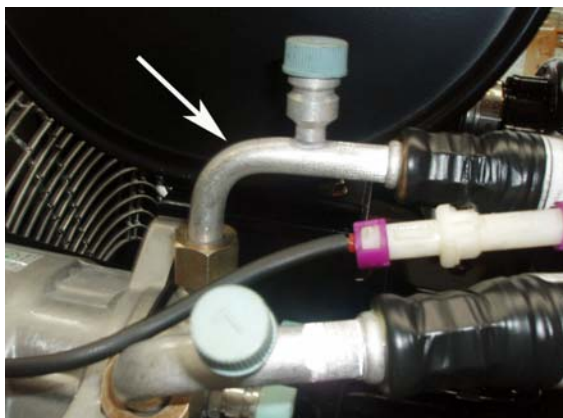


LG938 Complete Appliance Service Manual

4.1 Connect the flexible pipe connecting with compressor on the upper port of air conditioning condenser.



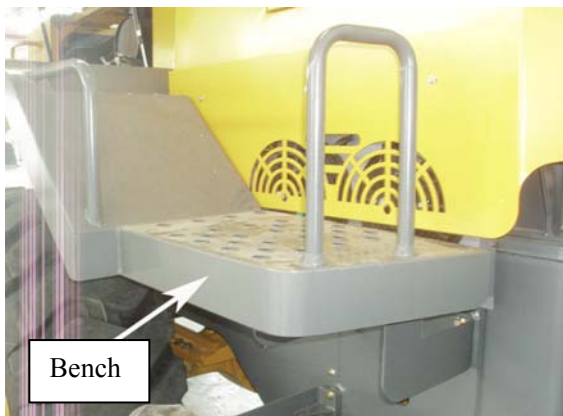
4.2 Connect the other end of flexible pipe on the compressor.



5. Install the right baffle of cab.



6. Install the right bench.

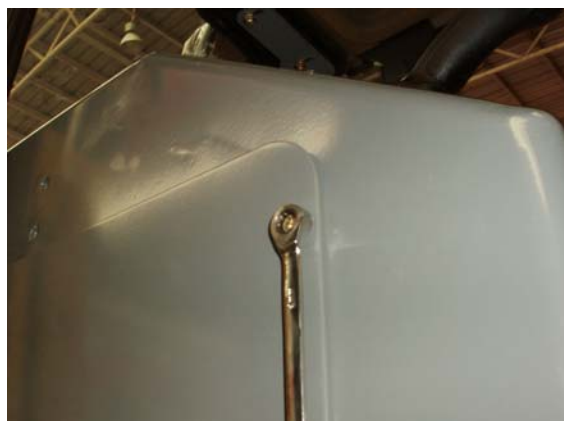


8.3 Disassembly and Assembly of Operation Box

(This section mostly introduces how to replace the operation box; the replacing steps are as follow)

I Disassembly of Operation Box

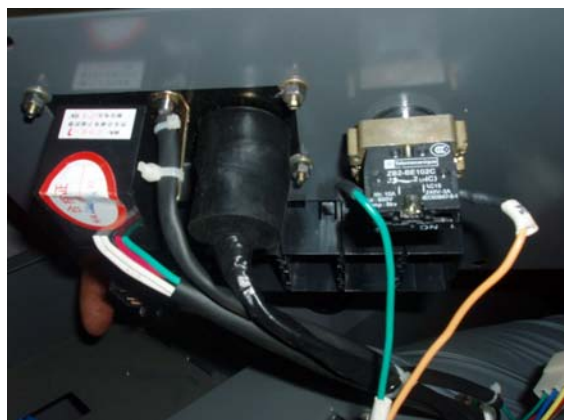
1. Remove the fastening bolt on cover plate at side of operation box.



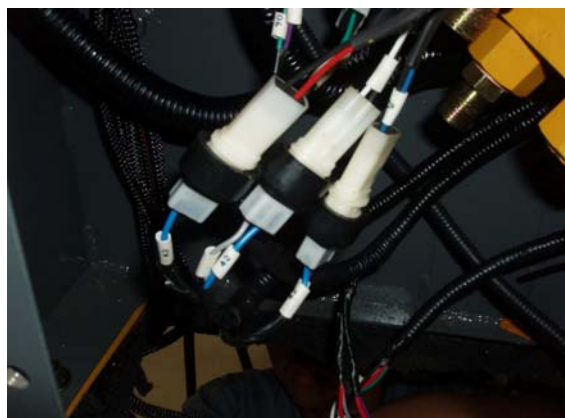
2. Remove the cover plate at side of operation box.



3. Disconnect the connection of instrument desk wiring harness with air conditioning control plate wiring harness.



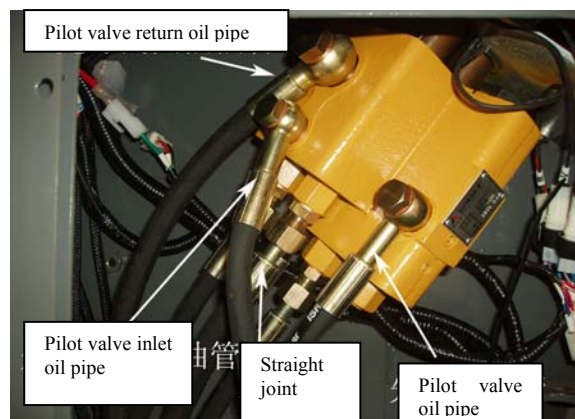
4. Disconnect the connection of instrument desk wiring harness with pilot valve button switch wiring harness.



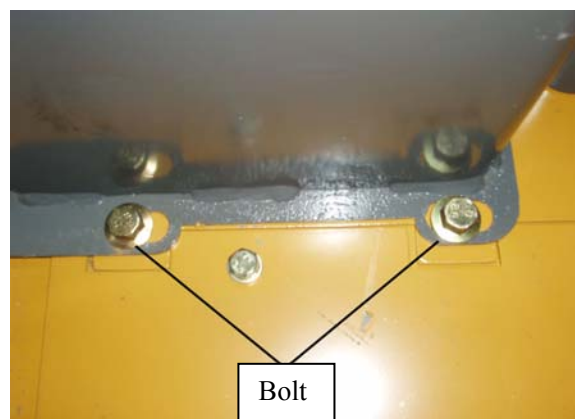
5. Unplug eight connectors of intermediate relay with instrument desk.



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 the four bolts fixing pilot valve.



12. Take down the pilot valve.

II Installation of Operation Box

1. Fix the four bolts (M10×20) using by pilot assembly on the corresponding position of operation box.
2. Install the hand brake switch, rubber sleeve and air conditioning 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 the eight intermediate relays in operation box with screw (M5×12) and washer.



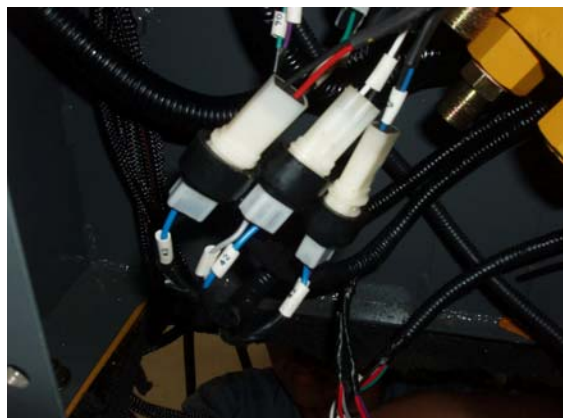
4. Connect the intermediate relay in operation box with corresponding connector of instrument desk wiring harness.



5. Connect the connector of instrument desk wiring harness with connector of air conditioning control plate wiring harness.



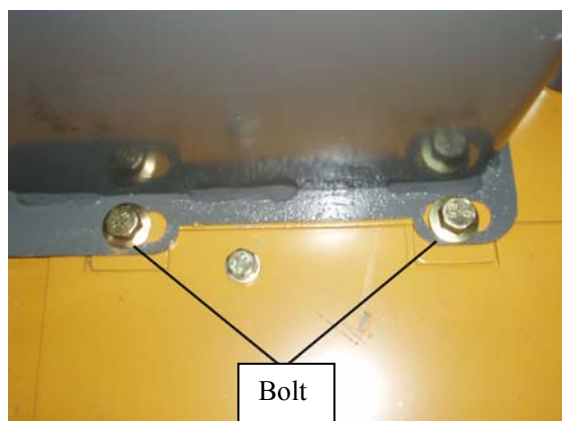
6. Connect the instrument desk wiring harness with pilot valve button switch wiring harness.



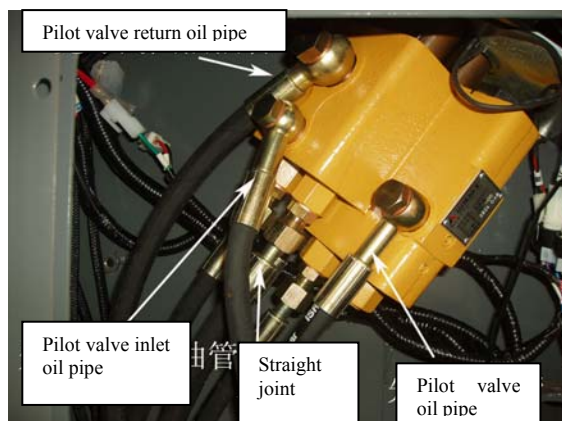
7. Fix the upper cover plate and back cover plate of operation box on the operation box with twelve bolts (M6×16).



8. Fix the operation box on the proper position of cab with four bolts (M10×25).



9. After adding washer, fix four straight joints on the underside oil port of pilot valve oil pipe, and connect the inlet and return oil pipe of pilot valve on the pilot valve.



10. Close the cover plate at side of operation box.



11. 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.

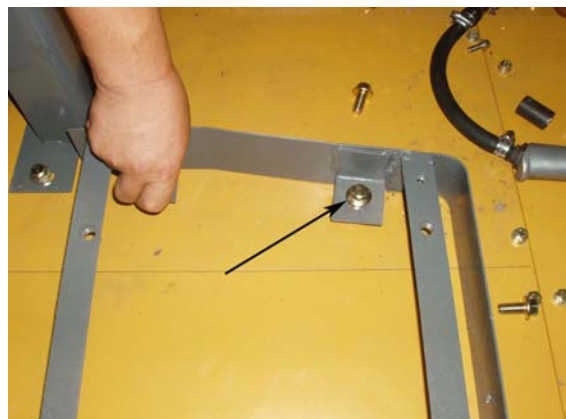
Remove the four bolts connecting seat with seat support cover plate.



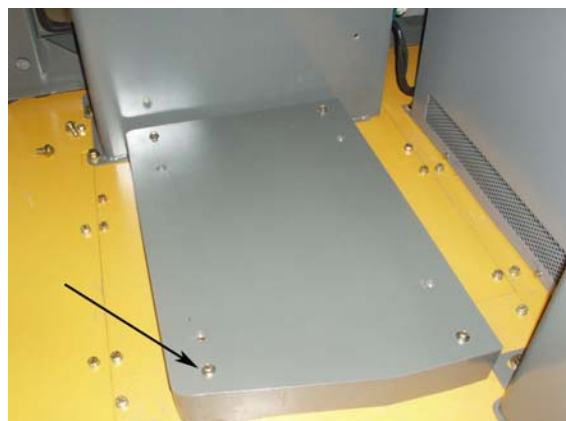
2. Take out the seat assembly.

II Installation of seat

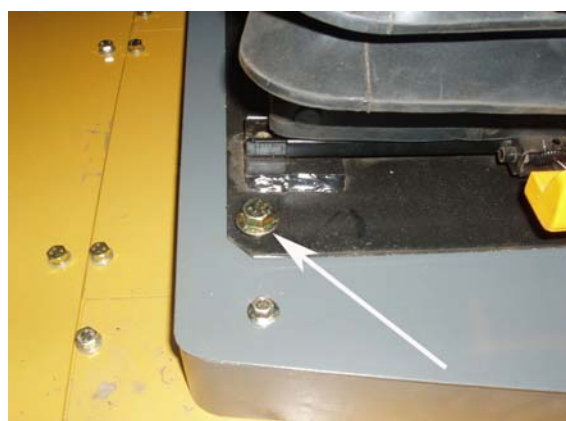
1. Place seat support frame on the corresponding position of cab bench, and then tighten with four bolts.



2. Place seat support frame cover plate on the seat support frame, and fix with four bolts.



3. Place the seat assembly on the seat support frame cover plate, and tighten with four bolts (M12×20).



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

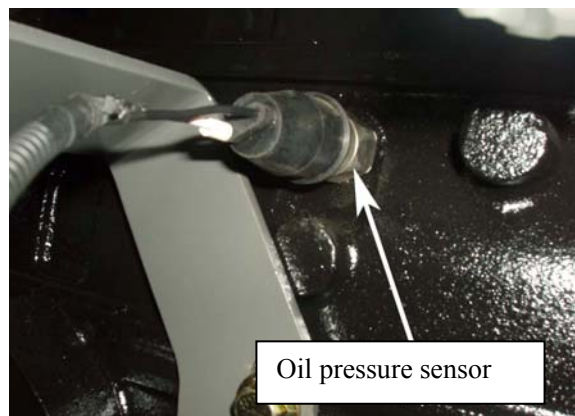
1. Turn off the power main switch.
2. Unplug the connector of tail lamp at left and right of storage battery.



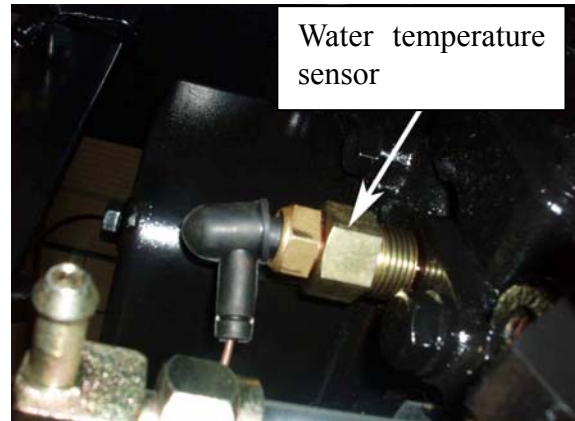
3. Unplug the plug of backing car buzzer.



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.



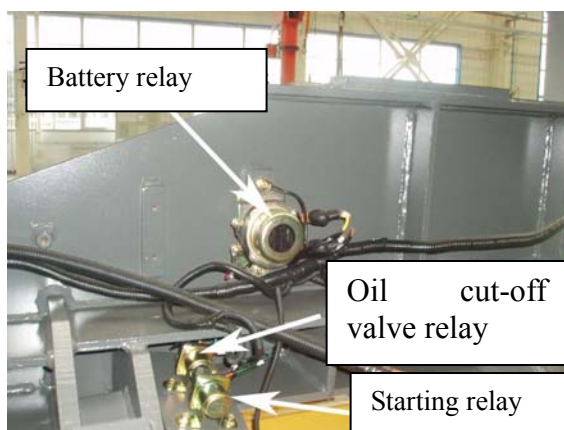
8. Remove the connection of oil cut-off valve on the engine.



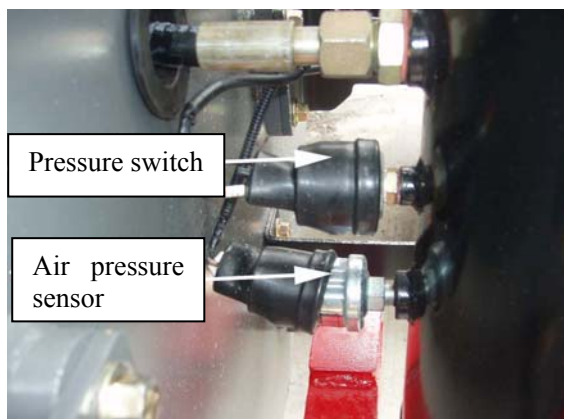
9. Unplug the plug of fuel level sensor.



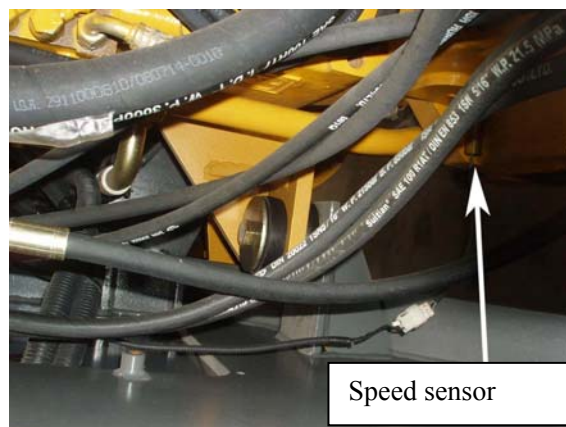
10. Remove the connection of starting relay, and storage battery relay.



11. Disconnect the wiring harness of braking air pressure sensor and pressure switch.



12. Unplug the plug of speed sensor.



13. Unplug the connector between cab wiring harness and instrument desk wiring harness which connects with rear frame wiring harness.



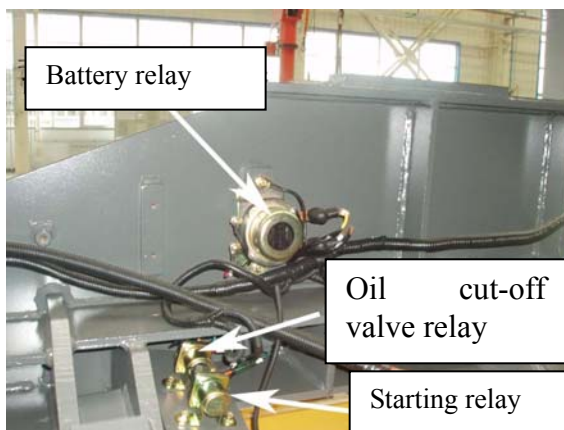
14. Unplug the connector between rear frame wiring harness and cab wiring harness.

15. Shear break the ligature on frame wiring harness. Then take down the rear frame wiring harness.



II Assembly of Rear Frame Wiring Harness

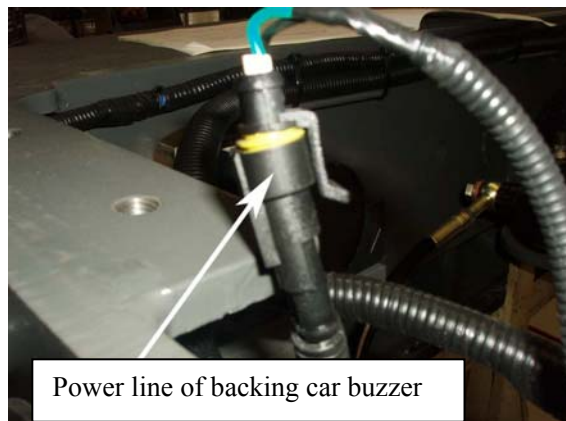
1. Fix the storage battery relay on rear frame with two bolts M8 × 16.



2. Install the backing car buzzer on rear frame with two bolts M8 × 16.



3. Connect No. 0 and 9 plug of rear frame wiring harness with plug of backing car buzzer.

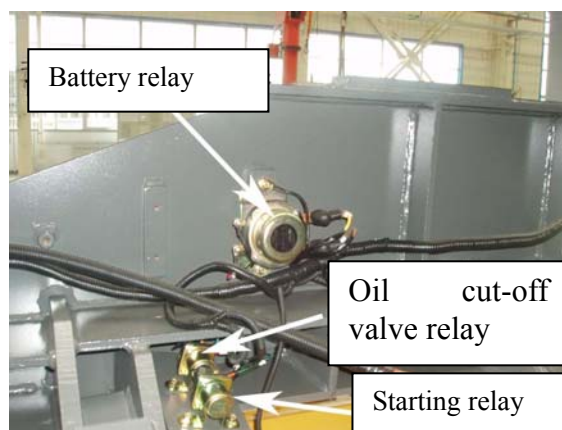


4. Connect rear frame wiring harness and starting motor wiring harness on the storage battery relay.

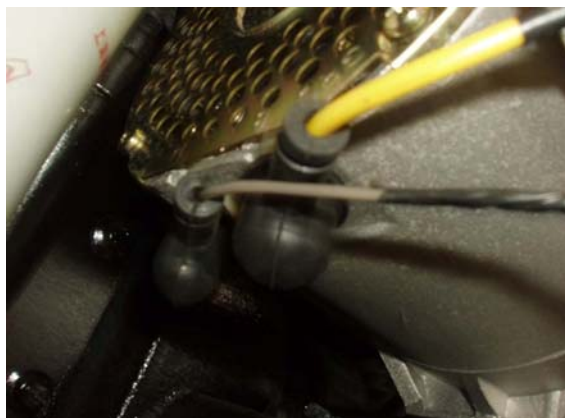


5. Pave rear frame wiring harness and starting motor wiring harness at left of rear frame, and then bind wiring harness with ligature and fix.

6. Connect starting motor with wiring harness of oil cut-off valve relay.



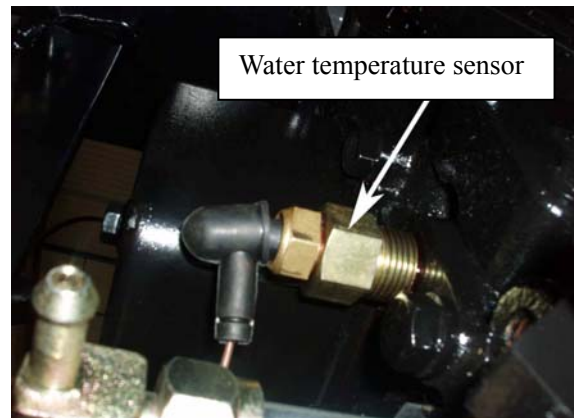
7. Connect the wiring harness on engine.



8. Connect oil pressure sensor with circuit.



9. Connect water temperature sensor with circuit.



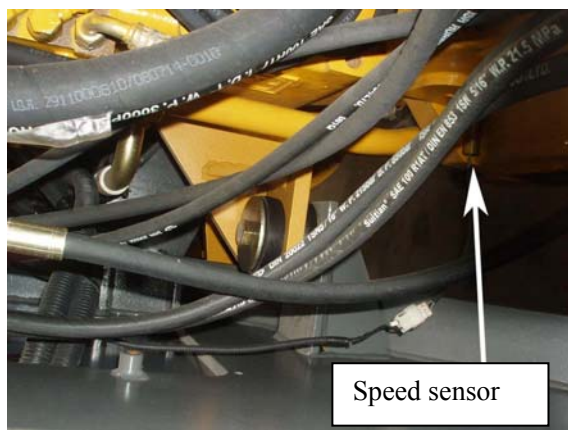
10. Connect oil cut-off valve with circuit.



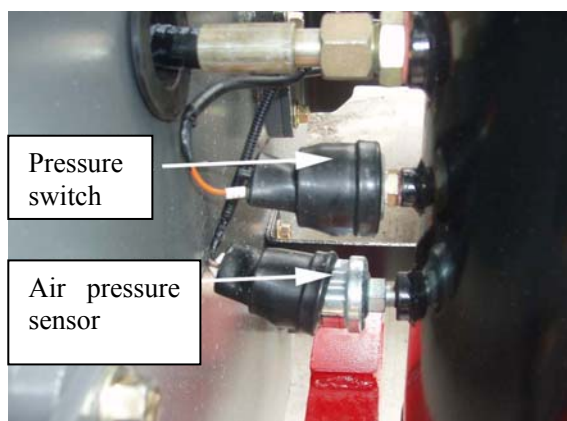
11. Connect fuel level sensor with circuit.



12. Connect speed sensor with circuit.



13. Connect rear frame wiring harness with pressure switch and air pressure sensor.



14. Connect the connectors of left and right battery with connector of tail light.



15. Plug the connectors of cab wiring harness and instrument desk wiring harness which connects with rear frame wiring harness.



16. 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.



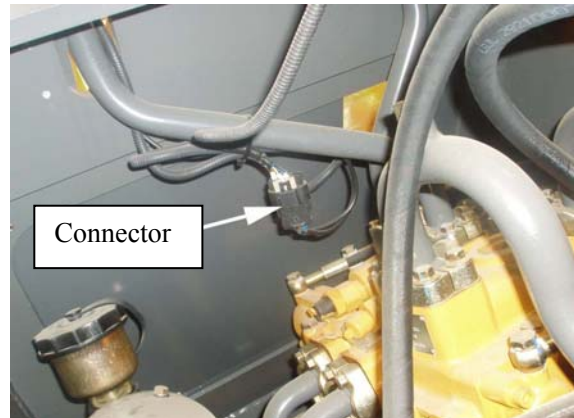
3. Remove the connecting wire on the horn relay.



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 basic 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 car annunciator 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.

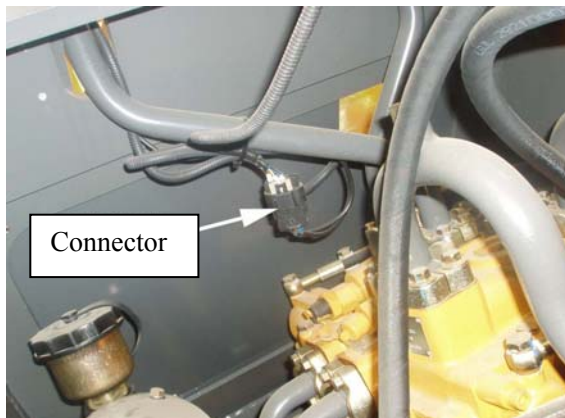
★ Notice: When assembling front frame wiring harness, take bifurcation of left and right combination lamps as datum, and fix the front end of bifurcation on the middle wire seat.



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

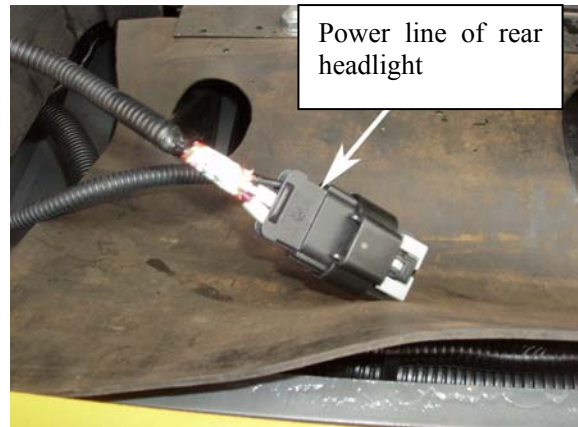
1. Connect the back cover wiring harness with taillight respectively.



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	Dimension (Tolerance)	Judgment Standard Allowable Limit	Oversize Measures
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	
Multi-way valve	The mating clearance between valve core and valve hole		>0.02	Replace
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