XS83/XS83PD VIBRATORY ROLLER
OPERATOR'S MANUAL

XCMG CONSTRUCTION MACHINERY CO.,LTD.

Foreword

Welcome to use XCMG XS83/XS83PD vibratory roller!

Our vast experience in connection with state-of-the-art production and testing methods, such as lifetime tests of all important components and highest quality demands guarantee maximum reliability of your machine.

This manual comprises:

1. Safety regulations,
2. Operating instructions,
3. Service and Maintenance instructions,
4. Transportation and storage
5. Technical specifications.

Fully understanding of the manual can make the operation smooth, safe and efficient.

Note:

◆ This manual will help you to become familiar with the machine and avoid malfunctions caused by unprofessional operation.

◆ Compliance with the maintenance instructions will enhance the reliability of the machine on construction sites, prolong the lifetime of the machine and reduce repair costs and downtimes.

◆ XCMG will not assume liability for the function of the machine if it is handled

in a way that does not comply with the usual modes of using, or if it is used beyond its set scope. XCMG will not be responsible for the injury and damage caused by force majeure.

◆No warranty claims can be lodged in case of damage resulting from incorrect operation, insufficient maintenance and wrong fuels and lubricants.

This manual is an important part of the machine, please read through it carefully before operation and maintenance, especially safety precautions. Please comply with the instructions during operation.

Unauthorized alterations to the machine may result in danger!

In the course of technical development we reserve the right for technical modifications without prior notification.

You can also get the guidelines about the correct usage of the machine from the manufacturer or dealer.

XCMG for Your Success!

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1. Safety Manual

1.1 General

1.1.1 Safety is absolutely important for you!

During the whole process of our machine designing, safety for you and your colleagues have been taken into consideration by our machine designers, so as to make sure that the machine you purchase from XCMG can perform properly and safely. However, the most important safety factor is yourself with strictly following the rules in this manual during operation, maintenance etc.

This safety manual reminds you and your colleagues the safety-related issues which may be encountered during the process of operating XCMG rollers.

1.1.2 Bear it in mind!

The machine must only be:

- Applied to carrying on compaction works on base courses and sub-base courses within earthworks, road and other construction projects.
- A complete and safe device;
- Given regular service and maintenance by professional personnel.

It is forbidden to be used under the following circumstances:

- Being operated by an untrained or unprofessional operator;
- Being used in explosive environments.
- Work with vibration on hard concrete roads.
- Dangerous building Surroundings

1.1.3 When reading the manual, pay special attention to safety decals contents.

Safety decals

⚠	**This safety warning sign contains important safety-related information. You should read carefully and strictly follow the rules here, while at the same time, inform other personnel who may be involved in the operation, maintenance or service of the machine.**
⚠ **HAZARD**	**Hazard! If not avoided, it will result in severe personal injury or death.**
⚠ **WARNING**	**If not avoided, the potential danger could result in death or severe injury.**
⚠ **CAUTION**	**If not avoided, the potential danger could result in minor or moderate injury.**

1.2 Safety regulations

1.2.1 Before operating the roller, the operator must read carefully and fully understand this manual especially the chapter of safety precautions.（Figure.1-1）.

Figure. 1-1

1.2.2 All operation done on the machine must be in line with the instructions and requirement as stated in this manual.

1.2.3 Do not operate the machine unless the operator is qualified and trained

professionally. Never use the machine to take passengers.

1.2.4 Do not use vibration function on high density material (hard concrete, cured bitumen layers).

1.2.5 Do not service or maintain the roller when it is in working condition.

1.2.6 Never climb onto or off the machine while it is in motion. Use grips and steps to climb onto or off the machine.

1.2.7 Make sure the machine is applied with ROPS device when travelling on an unknown road.

1.2.8 Slow down when make a turning.

1.2.9 Don't drive across the slope but travelling up and down along the slope direction.

1.2.10 In case the machine gets approaching the road edges or hollow holes during compacting the ground, make sure that 2/3 of the machine drums should be onto the compacted ground area.

1.2.11 Make sure there is no obstacle in moving direction, on the road, or in front of the vehicle.

1.2.12 Pay special attention while driving the roller on uneven roads.

1.2.13 Use safety device on the machine and fasten the seat belt.

1.2.14 Keep the machine clean and remove grease, oils, fuel, dirt, snow and ice from grips, steps and platforms. Keep all safety-related decals and warning tags clean and complete..

1.2.15Safety-related rules before filling oil:

——Shut down the engine.

——No smoking.

——Keep away from the open fire.

——Hold the nozzle of oil filling pipe at the port of the oil tank to avoid sparks.

1.2.16 Follow the instructions below before conducting any maintenance work

—— Wedge the front and rear drums by woods.

——Make sure the lock mechanism of the front and rear frames are locked up.

1.2.17 If the road roller has no operation cab, when the surrounding noise is beyond 85 DB, it is recommended to use hearing-protection device.

1.2.18 Never make any modifications to the machine which might affect safety without XCMG's approval

1.2.19 Start the machine according to the operation manual. In case of starting or driving a cold machine, the braking distance will be longer than usual. This is because the hydraulic system still remains cold at that time.

1.2.20 It is not allowed to tow the machine without any professional guidance.

1.2.21 It is prohibited to make any modification and change to the machine without authorization.

1.3 Safety operation

1.3.1 Preparation before driving

1.3.1.1 Be familiar with all the safety rules and regulations on the working site (as shown in Figure. 1-2).

Figure. 1-2

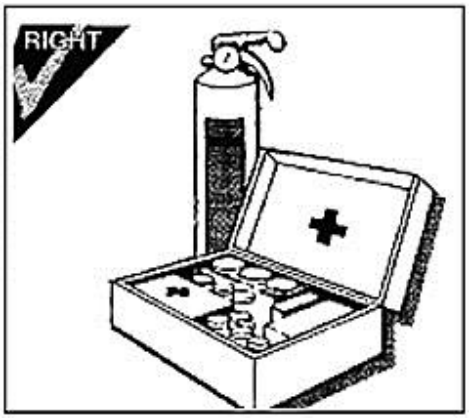


Figure. 1-3

1.3.1.2 Before starting or driving the machine for the first time, please read carefully and fully understand this manual.

1.3.1.3 Before driving or operating the machine to do compacting work, it is strictly prohibited to

drink alcohol, use stimulants or any other medicines.

1.3.1.4 Keep the fire-extinguisher, first-aid package and emergency call within reach. (Figure. 1-3)

1.3.1.5 Use the general knowledge to protect yourself and avoid any accident. In case any accident happens, don't be in a panic, what you should do is to take necessary measures to minimize the loss. Human lives are the first priority, and then take measures to prevent any material loss.

1.3.1.6 You should wear your personal protective outfit (as shown in Figure. 1-4) during working with the machine:

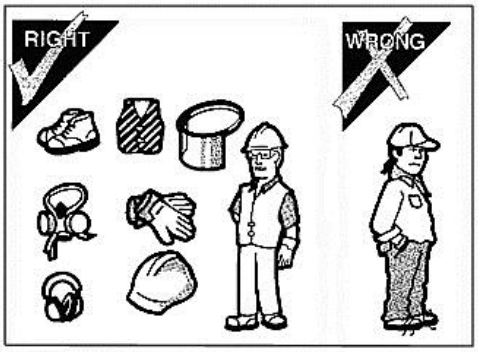


Figure. 1-4

——Safety helmet

——Safety boots (steel toe boots).

——goggles

——Reflective clothes

——Gloves

——hearing protectors

——mask (in dusty circumstance)

1.3.2 Checking the machine

1.3.2.1 Any signs of damage on the machine, such as: loosening or breaking part, or any part getting lost. If such sign of damage is found, it is not allowed to use the machine before it is repaired. (A warning tag should be attached to the machine and do not operate the machine until the tags are removed by authorized personnel.).

1.3.2.2 Keep the wind-shields and rear-view mirrors clean.

1.3.2.3 Keep all the tags and logos clean, intact and readable.

1.3.2.4 Keep all grips, steps, platforms, control levers, anti-sliding devices free of grease, oils, fuel, dirt, snow and ice.

1.3.2.5 Keep any tools and other staff away from the machine.

1.3.2.6 Make sure all oil are in normal level. Refill if necessary.

1.3.2.7 In case of replenishing the fresh oil, please refer to the section about replenishment.

1.3.2.8 Stay away from open fire and no smoking when checking oil levels and refill the machine.

1.3.2.9 Stop the machine immediately in the event of damage or malfunction in machine during operation. Report the malfunction to the proper authority so as to have the machine repaired in time.

1.3.2.10 Don't start the machine in the environment that might contain explosive gas such as narrow area or underground area without good ventilation. It should also be noted that the engine may generate dangerous smoke. Ensure good ventilation under any condition.

1.3.2.11 In case that the road surface material would produce dirt flying around the machine during compaction, it is recommended to equip ventilation device, or to sprinkle water onto road or to wear a respirator.

1.3.3 Requirements of the operator

1.3.3.1 The operators should be trained professionally and be familiar with the machine, including control elements, safety decals and symbols, etc. (as shown in Figure. 1-5)

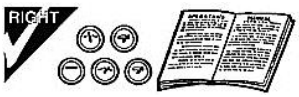


Figure. 1-5

1.3.3.2 The operators should know the capabilities and limitations of the machine, such as speed, gradeability, steering and braking, etc.

1.3.3.3The operator should also know how to park the machine under emergency condition, and know the location and the way how to avoid danger.

⚠	**Only trained and authorized personnel who above 18 yeas old can operate the machine.**

1.3.4 Personal safety

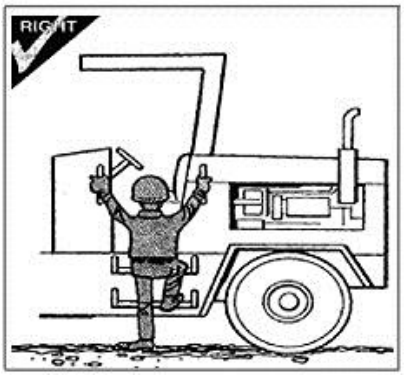


Figure. 1-6

1.3.4.1 Check for warning tags placed on the machine, indicating that it can't be used or it needs repairing.

1.3.4.2 Make sure the machine is not being repaired by technician.

1.3.4.3 Start the machine only from the operation board.

1.3.4.4 Fasten the seat belt.

1.3.4.5 Never climb onto or off the compactor while it is in motion. Use grips and steps to climb onto or off the machine. (Figure. 1-6)Never carry any passengers.

1.3.4.6 Don't adjust the driver's seat while driving, as the seat itself may possibly move to undesired direction if being adjusted. Therefore, get the seat secured while driving the machine. And always keep yourself seated during driving the machine.

1.3.4.7 Make sure there is on paint or flammable material on the machine.

1.3.4.8 Make sure there in no grease, oil, gas, dust, snow or ice on all armrests.

1.3.5 Working area

Figure. 1-7

1.3.5.1 Always make sure that no person or obstruction around the machine in working area before starting the machine.

1.3.5.2 Check for any cracks or hollows that may do damage to the machine (as shown in Figure. 1-7).

1.3.5.3 Also make sure the machine vibration performance won't cause damage to the equipment or surrounding buildings. Be kindly noted that any damage caused by the machine vibration will extend to a certain distance via the road base material.

1.4 Starting safety regulations

1.4.1 Before starting

1.4.1.1 Make sure parking brake system (emergency brake system) can function normally.

1.4.1.2 All control units can function normally.

1.4.1.3 Start the machine according to the instructions as stated in this manual. When the machine is just started up, the braking distance is longer than usual due to the low temperature of hydraulic oil.

1.4.2 After starting:

1.4.2.1 Make sure all instrumental gauges work properly.

1.4.2.2 Make sure all control devices function normally.

1.4.2.3stop the engine if there is any problems with the machine. Attach warning tags to the machine before leaving.

1.4.3 Starting in cold weather

1.4.3.1 if low temperature starting device is used in cold weather, please operate it according to rules provided by factory.

1.4.3.2 When applying cable starting, please operate according to the relevant regulations; otherwise, severe human injury or machine damage may occur. Battery explosion and acid leakage might also happen.

1.4.3.3 Be careful when connecting cable wires and avoid of sparks.

1.5 Driving safety regulations

1.5.1 Keep in mind!

●In case of leaving the machine while the engine is running, make sure the parking brake is applied.

●Keep the cab door closed while driving the machine.

●Drive the roller carefully.

●Always pay attention to road surface, especially when reversing the vehicle.

●Make sure the machine is in normal condition through your vision, hearing, and smell.

●Be aware of the potential danger of exhaust fumes.

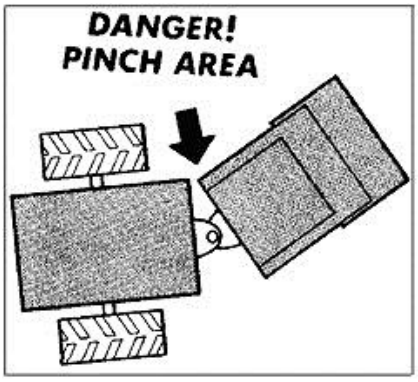


Figure. 1-8

●Drive slowly when make a turning, especially abrupt steering.

●Never allow anyone to stand within the danger area of roller's collision when the engine is running. (as shown in Figure. 1-8)

1.5.2 Driving on a slope

Drive up or down along the slope, (as shown in Figure. 1-9 and 1-10). Try not to drive across a slope; drive slowly and do not shift gears on a slope. Do not apply working mode (vibration mode) when driving on large gradient ramp.

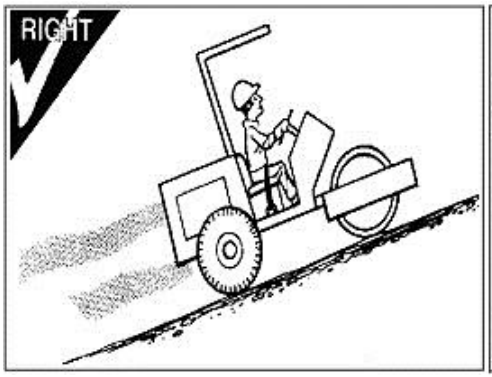


Figure. 1-9

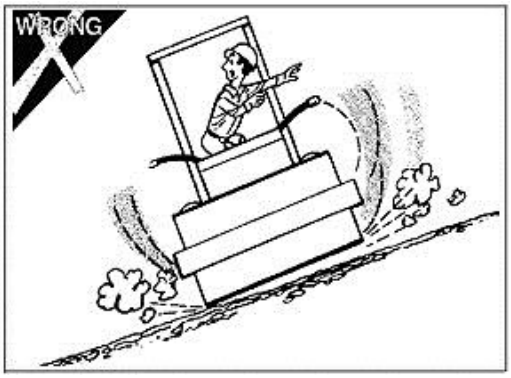


Figure. 1-10

1.5.3 Drive on an uneven road

●Avoid driving on road edges, trenches or places that could impair the stability of the machine. Please also be aware that wet and loose soils considerably affect the machine's load capacity. Always keep a sufficient distance when passing through under bridges, tunnels, electric power lines etc. (as shown in Figure. 1-11)

● In case you have to drive the machine on an uneven road, please get the ROPS system engaged and the safety belt fastened.

●In case the machine gets approaching the road edges or hollow holes during compacting the ground, make sure that 2/3 of the machine drums should be supported by the compacted ground area.

⚠	**Never attempt to drive a machine on a slope with inclination angel exceeding the tolerable maximum angle limitation. And always apply slow speed during driving on the slope up and down.**

Figure. 1-11

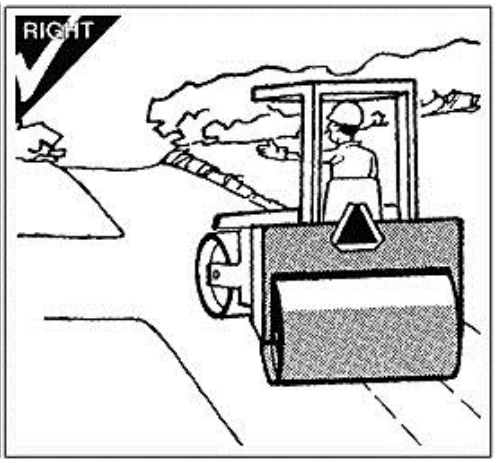


Figure. 1-12

1.5.4 Drive on public roads

●Read public traffic regulations carefully.

●follow traffic regulations when driving on public roads, i.e.: turn on the steering and front lamps, and attach a tag to the machine tail, telling others the machine is a slow-moving vehicle (this is required in some countries). Always drive the machine within the speed limit of the traffic regulations and pay attention to the braking distance (as shown in Figure. 1-12).

●Cross railway stably, and never allow drum to contact both rails in the meantime. Keep a sufficient distance when passing through high-voltage cables. If the roller

is surrounded by obstacles during working, then drive forward and crash those obstacles rather than stay motionless.

1.5.5 Shut down the Engine

● Stop the engine following the instructions in the manual. Never stop the engine while the machine is running.

● Remove the ignition key and prevent unauthorized person

starting the machine.

● Never climb onto or off the compactor while it is in motion. Use grips and steps to climb onto or off the machine. Jumping off the machine is forbidden (as shown in Figure. 1-13).

Figure 1-13

1.6 Transportation safety regulations

1.6.1 Personal Safety

●When loading/unloading the machine onto/off a transport vehicle, don't stand under the machine or at the surrounding. Never attempt to move or tow the machine by hand.

●Be ware of the danger of squashing when loading/unloading the machine.

1.6.2 Transportation Vehicle

● For transporting the rollers, the transport vehicle must meet the standards as required in terms of max loading capacity, engine power, braking performance and others. It is better to use special transport vehicle to transport the machine and loading ramps of sufficient load bearing capacity to load/unload the machine.

●The best way to move the machine for a longer distance is to use a trailer.

●Always use strong and stable loading ramps to load/unload the machine on/off the transport vehicle. Use metal ramps rather than deteriorated ones. Ensure that the ramps are located properly between the transport vehicle and the ground, and keep

⚠	**Be aware of the danger when loading /unloading rollers**

oil, dirt, snow, ice and silt away from it. (as shown in Figure.1-14)

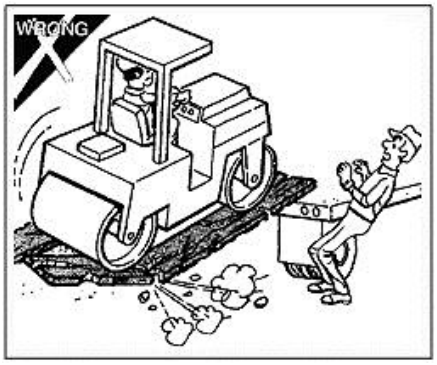


Figure. 1-14

●Use proper chock blocks in front of and behind the drums/wheels once loaded onto the transport vehicle, and make sure the draw bar is wedges by chock blocks. Connect the chain cable with the roller, and fix the winch on the transport vehicle. The used chain cable should be in proper size, and do not use rope.

●start up the winch to pull the roller onto trailer, and engage the emergency stop device on roller.The machine must be towed, loaded and transported only in accordance with the operating instructions. Make sure that no machine part is loosened.

1.6.3 Loading/Unloading the Machine with a Crane

⚠	**It is prohibited to tow the machine without any professional supervision!**

●For a light-duty road roller, a crane can be used to lift and load it onto the transport vehicle. Lifting eyes are available on the machine. The total weight is indicated on the machine identification plate located on the machine. Operate the crane according to its safety instructions.

1.6.4. Towing the Machine

●To tow the machine a maximum at over 300 meters. And abide by the local traffic regulations. Also don't tow the machine exceeding the allowed speed as stated in this manual. No persons on the roller during towing (as shown in Figure. 1-15)

●For the details, please refer to the related section on towing in this manual.

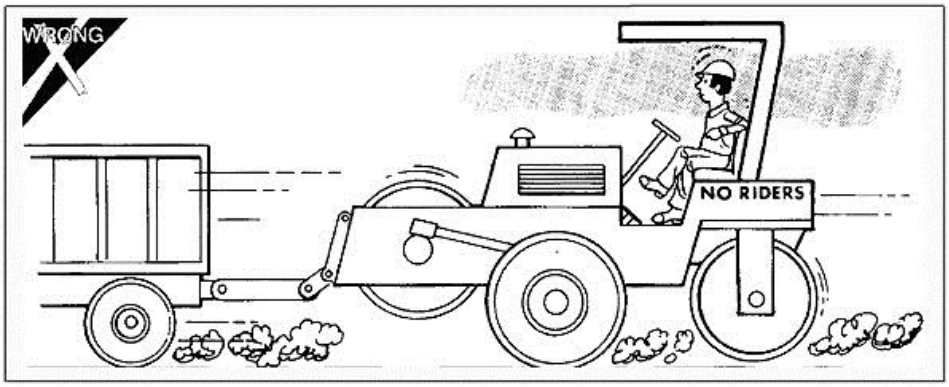


Figure. 1-15

1.7 Oil filling safety regulations

Following safety precautions should be followed when filling oil:

——Shut down the engine.

——No smoking.

——Keep away from the open fire.

——Hold the fill pipe nozzle against the opening of the oil tank to avoid electrostatic sparks.

——Fill in the qualified fuel to the normal level.

——Clean the area around the filler opening to keep it free of any fuel or oil before starting the engine.

——Make sure the filler cap on fuel tank is tightened to avoid fuel leakage causing accident.

⚠	**Do not fill oil in a closed room.** **Keep away from open fire and any fire sources.**
	Hold the fill pipe nozzle against the opening of the oil tank to avoid electrostatic sparks.
	Smoking and using cell phone during filling fuel is forbidden.

1.8 Maintenance and service regulations

⚠ **Hazard**	**Never operate the machine which has trouble or any risk of causing traffic accidents!**

●Maintenance worker must be well trained and authorized only.

●When do the maintenance work, please use the footrest, other safe ladders, and work platform of the machine if the working height exceeded the body height, do not use other parts as the footrest.

●Keep irrelevant personnel away from the machine.

●Before repairing the machine, know the location of fire-extinguisher, first-aid kits and emergent call. (Figure 1-3)

●Please wear personal protective outfit for your own safety. (Figure 1-4)

●Keep all unauthorized persons away from the machine.

●No smoking and keep away from open fire during maintenance. If need welding, please refer to Section 1.7.1 about the necessary preparation work before making machine service and maintenance.

1.8.1 Preparation before machine service and maintenance

●Attach a warning tag to the machine to show it is in service or maintenance. Turn

off the power switch and pull out the starter key (as shown in Figure. 1-16).

Figure. 1-16

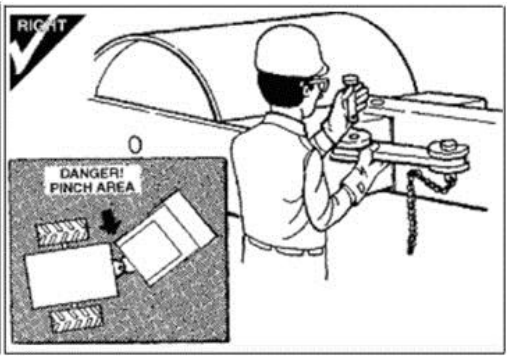


Figure. 1-17

●Make sure the articulation joint of the front and rear framework is locked up(as shown in Figure. 1-17).

●Drain the oil from the oil tank and dry the tank before doing welding or other operations that may generate a lot of heat or open fire.

●Never weld near plastic or rubber material, such as scraper which is made from polyurethane. These kinds of material will generate poisonous gases when being heated.

●Disconnect the battery cables while welding.

●Never use gasoline or other inflammable substances for cleaning. Dispose of the inflammable or hazardous substances environmentally. If necessary, wear a gas mask when dealing with those hazardous substances.

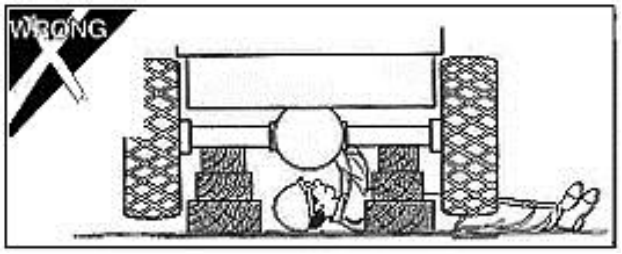


Figure. 1-18

●If servicing a machine being hoisted, please place a support under the machine to secure the machine from tilting or falling down. Supporting the machine only with

a jack is forbidden (as shown in Figure. 1-18).

●Don't conduct any maintenance while the machine is running. Also, close the engine hood while the engine is running. If the engine must be running during maintenance, please make sure the F/R control lever is placed in the neutral position and emergent brake is also applied. If starting the engine indoor, please connect a

	**Only use the genuine XCMG spare parts.**

	**Please read the engine manual carefully and thoroughly**

dust collector to the exhaust tube to emit the exhaust gas outdoor.

1.8.2 Maintenance of the engine

If possible, shut down the engine when conducting maintenance on the engine.

Don't wear loose clothes when repairing the running engine.

Pay special attention to the potential danger mentioned in the engine manual.

Cool down the engine before conducting any maintenance work to it. Danger of scalding!

	**It is very important to conduct regular maintenance on hydraulic system.**

1.8.3 Maintenance of the cooling system

If possible, allow the engine to cool down first. Remove the radiator cap very carefully when the engine is still heating. Do wear protective gloves, working outfit and safety goggles and keep a certain distance to the radiator cap. Remove the cap

slowly to relieve pressure first. Be careful when adding coolant to the water tank (as shown in Figure.1-19).

⚠	**Shut down the engine before checking the machine.**

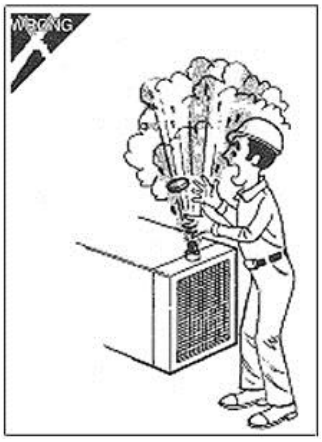


Figure. 1-19

1.8.4 Maintenance of the hydraulic system

●The roller works under high oil pressure, so tiny damage or crack on pipe or joint point might cause severe results. Please note that the hydraulic pipe is made of rubber, which will have crack after being used for a period. It should be replaced with new pipe provided by XCMG if you are not sure about the durability. Don't store the pipes for too long, because they are corrodible products!

●Relieve hydraulic pressures before working on hydraulic lines, for the hydraulic system may still keep pressure when the machine stops running.

●Please wear protective gloves and safety goggles when checking hydraulic systems and use a paper board instead of your hands when checking oil

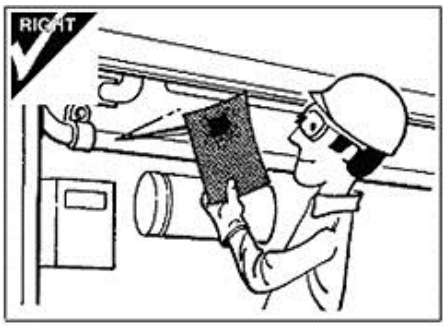


Figure. 1-20

leakage (as shown in Figure. 1-20). If the hydraulic oil penetrates into your skin or eyes, please consult a medical doctor immediately.

●Dispose of the leaked hydraulic oil environmentally.

●Make sure the system's pressure relief valves are correctly set. Be noted too high pressure setting can cause the oil hoses to be damaged, while too low pressure setting can make it harder to control the machine.

1.8.5 Maintenance of battery

There is causticizing sulfuric acid inside the battery. Please wear protective gloves during maintenance and avoid sulfuric acid coming in contact with skin, clothes or machine. If it is splashed onto your skin, flush off with clear water immediately for at least 15 minutes. If it is splashed into your eyes, flush off with clear water for at least 15 minutes and seek medical treatment at once. Keep cleaning the splashed area with flannel and sponge on the way to the doctor.

When changing battery, be careful to avoid the short circuit of battery cables. Always disconnect the negative poles first before disconnecting the battery cables. Cut off the power before connecting the battery cable to the charger when

Warning	**Gas accumulated inside the battery is highly explosive**

recharging battery with a charger,

1.8.6 Maintenance of tires

●Repairing of tires must only be performed in a qualified workshop.

Excessive air pressure inside the tire can cause most severe or even deadly injuries. Tire mounting and replacing must be done only by a qualified person equipped with special tools (as shown in Figure. 1-21).

●Tire inflation pressure should not exceed the specified maximum pressure. Be noted that tire pressure may increase due to exposure to the sun and friction.

●Do not open air-drainage valve with your own hands for tire pressure releasing (as shown in Figure. 1-22). Gradually adjust the tire pressure with an inflation needle.

⚠	**It is very important to check the tire wearing status periodically.**

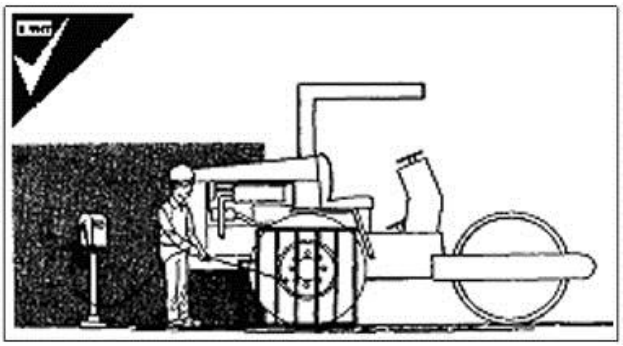


Figure. 1-21

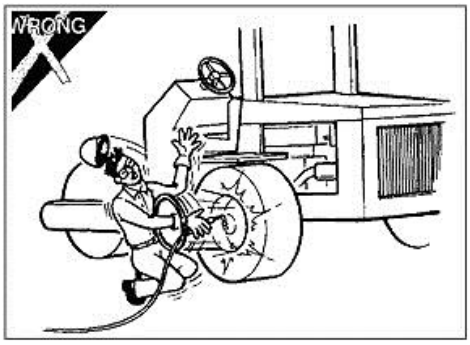


Figure. 1-22

1.8.7 Operation of ROPS

●It is highly recommended to check the ROPS status. The ROPS must not show any rust, damage, hair-line cracks or open fractures. All bolted connections must comply with the specifications and should be absolutely tight.(Figure.1-23) If finding the ROPS gets damaged or deformed, replace it with a new one.

●Do not install any additional parts on the machine by screw or welding, or drill

the machine without the manufacturer's permission, otherwise it will affect the frame strength.

●Also check the status of seat belt. Replace it with a new one if it is broken.

1.8.8 Air-conditioner system and pressure reservoir

●If the machine is equipped with an air-conditioner, then it is not allowed to make welding around the air conditioner, and all maintenance operation, including: replacing of cooling agent, should be done in a special workshop. (Figure. 1-24)

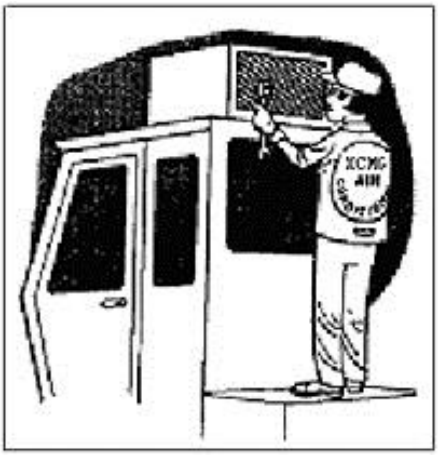


Figure. 1-23

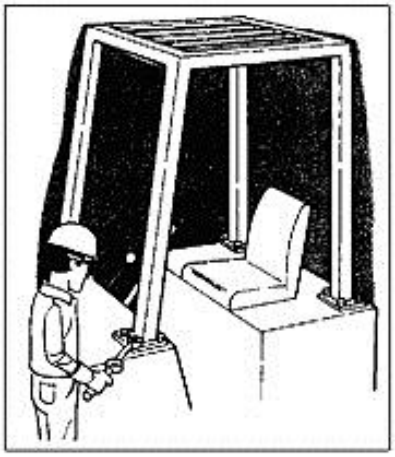


Figure. 1-24

2. Operator's Manual

2.1 General Instructions

2.1.1 Only the well trained and instructed persons are permitted to operate the roller

2.1.2 You should wear your personal protective outfit (as shown in Figure 1-4) during working with the machine:

——Safety helmet

——Safety boots (steel toe boots).

——Safety goggles

——Gloves

——Reflective clothes

—— Hearing-protection device

——Face mask (in dusty environment)

2.1.3 Before starting or driving the machine for the first time, please read carefully and fully understand this manual. If it is lost, please contact the authorized dealer to get new one.

2.1.4Safety decals

This safety warning sign contains important safety-related information!

	**You should read carefully and strictly follow the rules here, while at the same time, inform other personnel who may be involved in the operation, maintenance or service of the machine.**
 **DANGER**	**Indicate a hazard with a high level of risk which, if not avoided, will result in death or serious injury.**
 **WARNING**	**Indicate a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.**

⚠ CAUTION	**Indicate a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.**

2.2 Machine review and diagrams

2.2.1 Review（Figure 2-1）

Equipped with water-cooled and turbo-charged Cummins engine which meets EU Stage ⅢA emissions certified. The environment-friendly engine provides high torque reserve with low fuel consumption and low noise.

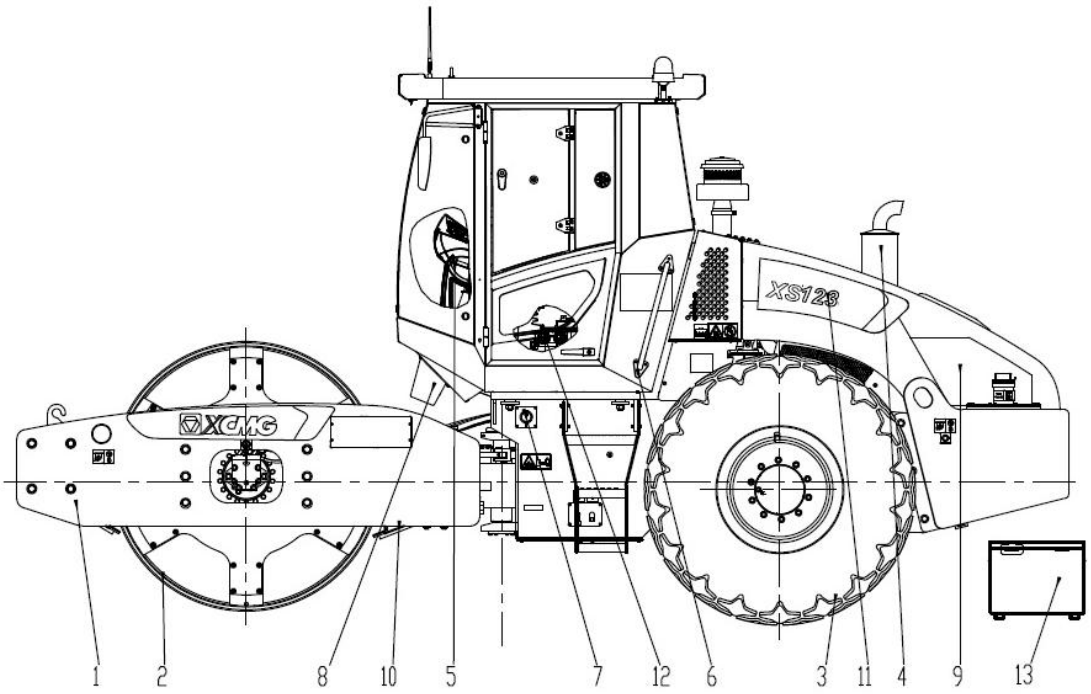


Figure 2-1

1. Front and rear frame 2. Front drum 3. Rear tire 4. Power system 5. Instrument box 6.Cab 7. Electrical system 8. Hydraulic system 9. Engine hood 10. Scraper 11. Symbol 12 .Air conditioner 13 Attach tools and parts

XS83 is a medium-sized, self-propelled, single drum, hydraulic vibratory roller. Having characteristics of high exciting force, high compaction efficiency, good compaction quality.

Four stroke, water-cooled line engine in compliance with StageⅢA emission regulations is equipped as standard.

With imported variable displacement piston pump and constant displacement hydraulic motor. Dual vibrating frequency and amplitude, coupled with optimized match of static linear load and centrifugal force enable the machine to deliver excellent compaction performance over materials of varied layer thickness.

Braking system is made up with drive axle, wet type brakes at front drum speed reducer, and brake of closed hydraulic system. It owns travelling, parking, and emergency braking functions to ensure driving safety.

Simple in structure, the inner cylindrical vibrating chamber provides high rigidity and strength. Imported high quality vibrating bearings are used on the machine to deliver long service life and high reliability.

Sound and light warning indicators on the instrument panel provide instant information on service and maintenance, preventing the machine from working with fault and avoid disastrous damages for minimum on-site downtime.

With ergonomics in mind during design, all indicators and instruments are arranged on the table instrument panel and throttle and travel levers located within the operator's easy reach for maximum operator comfort.

Roomy well-sealed cab equipped with ROPS, air-conditioning and heating, radio, cassette recorder, air-suspension seat and floor-to-ceiling glass for maximized visibility gives the operator comfortable and safe operating environment with increased productivity.

2.2.2 Application and scopes

The machine offers high centrifugal force for powerful performance on base courses, sub-base courses and gravel fills. The PD version is designed specifically for the compaction of clayed soils. It's ideal for applications such as high speed

railway construction, high grade highway, air field, road embankment filling, harbors, industrial site development, etc.

2.2.3 Safety and auxiliary identification

2.2.3.1 Layout of safety decals and auxiliary decals on machine（Figure 2-2）

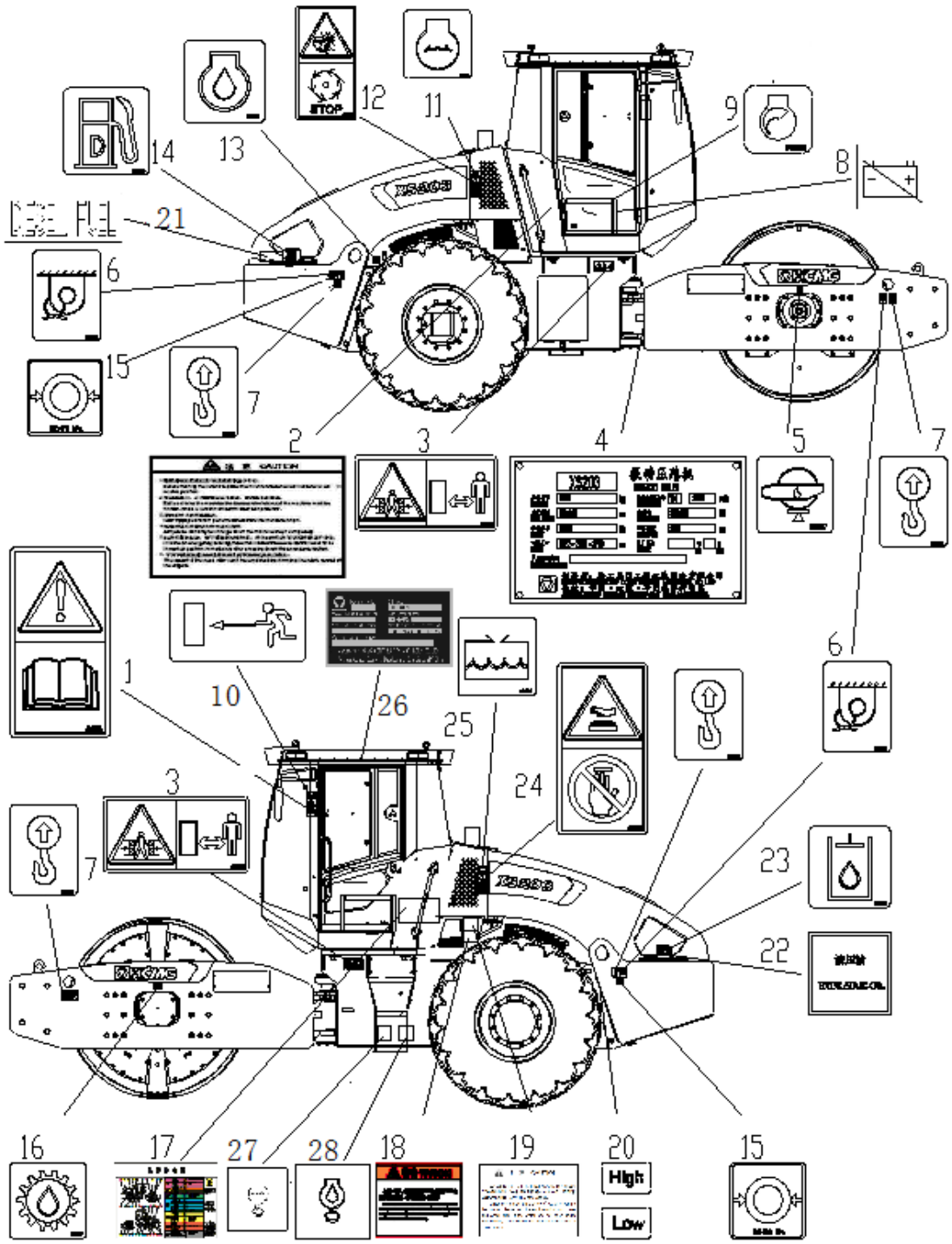
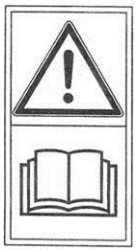
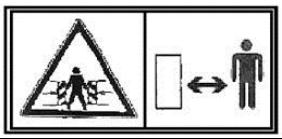
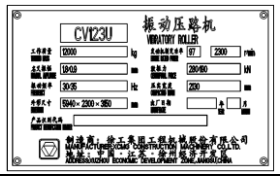
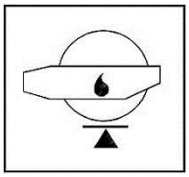
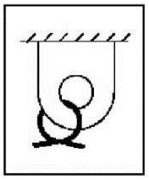
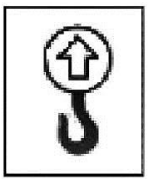
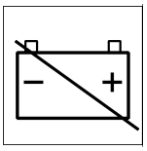
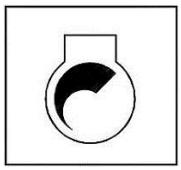
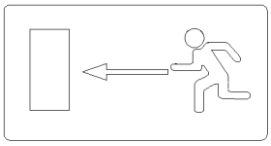
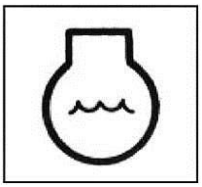
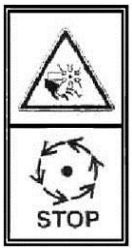
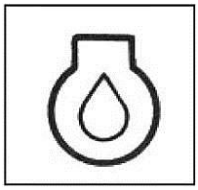
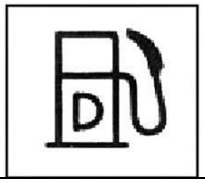
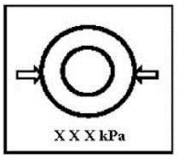
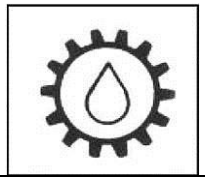
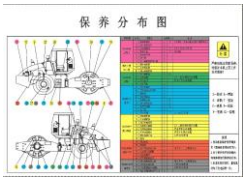


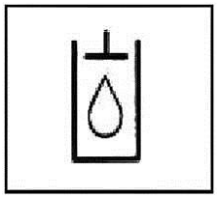
Figure 2-2

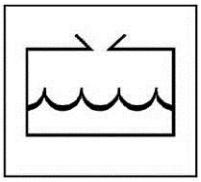
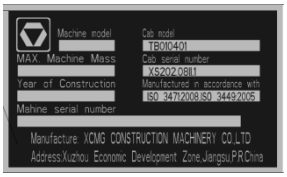
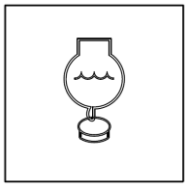
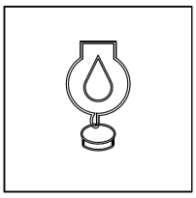
2.2.3.2 Description of safety and auxiliary decals（Table 2-1）

Table 2-1

No.	Graphic	Name	Instruction
1		Read mark of Operation Manual	Special tip to remind operator of carefully reading the operation manual before driving the road roller.
2		Operating instructions	Special tip to emphasize the main precautions for operating the road roller.
3		Danger sign in impact zone	Safety sign Danger of squeezing when the hinge connection of front/rear frame is
4		Nameplate	Including product type, main parameters, Product Identification Number(PIN code), etc.
5		Drum oil level	This mark is in the add/exhaust lubricating oil position of the drum chamber, for check the oil level
6		Fixing position mark	This is the fixing hole of the road roller. It is used for transporting the complete machine.
7		Lifting place sign	This is the lifting hole of the road roller. It is used for lifting the complete machine.
8		Battery main switch	This is the power main switch socket, when starting the whole machine, you need to use the power switch key to connect the power supply from this place

9		Throttle control sign	This is the position of throttle control handle of engine.
10		Emergency exit	Special note, emergency exit
11		Engine coolant mark	This is the position of water tank port; please add the mixed coolant of water and ethylene glycol.
12		Danger sign for moving fan	Safety sign Safety sign When the fan is moving, don't contact it with finger or arm.
13		Engine lubricating oil	This is the position for adding lubricant to engine.
14		Diesel filling port	This is the hydraulic oil feeding port, if necessary; add hydraulic oil through this port.
15		Tyre pressure	Check the tire pressure regularly to reach the marked value.
16		Transmission oil	This is the front drum reducer add/exhaust lubricating oil position, and check the oil level.
17		Maintenance layout plan	Identify the location and maintenance cycle of the whole machine

18		Cooler cleaning alarm	Special note, hydraulic oil temperature above 80℃ or above 100℃, should clean the condenser or radiators.
19		Cold water drainage mark	Special tip for low temperature water drainage
20		Hydraulic oil tank high and low mark	Shows the oil high or low level of hydraulic oil tank
21		Diesel mark	Fuel tank filling alarm
22		Hydraulic oil alarm mark	Remind that at this position shall add hydraulic oil.
23		Hydraulic oil filling mark	This is the hydraulic oil feeding port, if necessary; add hydraulic oil through this port.
24		Sign for high temperature and preventing burnt	Safety sign Safety sign The temperature of exhaust pipe and water tank etc. is high, don't contact them directly.

25		Water tank mark	This is the place where water tank is located.
26		ROPS/FOPS mark	For the certificated cabin or roof
27		Water discharging	Discharging the water from the engine and cooler
28		Oil discharging	Discharging the lubricating oil from engine sump

2.2.3.3 Requirements on decal protection

Keep signs legible. When cleaning is necessary, use clean cloth and soap water to clean. Do not use solvent or gasoline to clean.

Replace damaged or illegible signs in time.

Safety signs are very important, which should be checked regularly.

2.3 Display, control components graphic chart and function introduction

2.3.1 Display, control components graphic chart

Introductions in table 2-2. Control box components (Figure 2-3), electrical box components (Figure 2-4) and cabin indoor switch components (Figure 2-5).

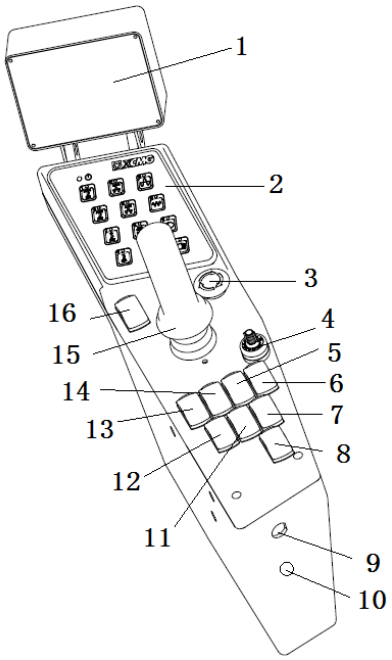


Figure 2-3

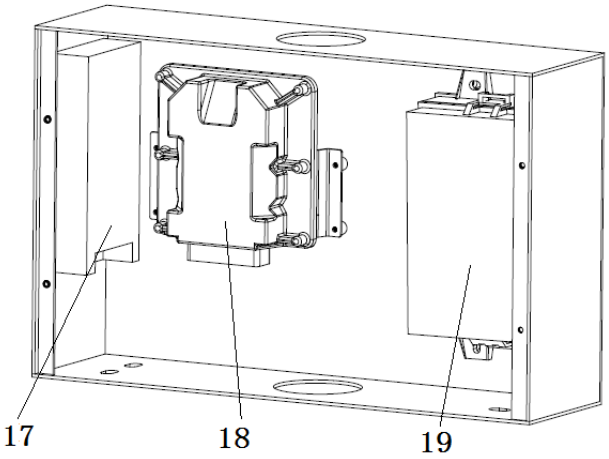


Figure 2-4

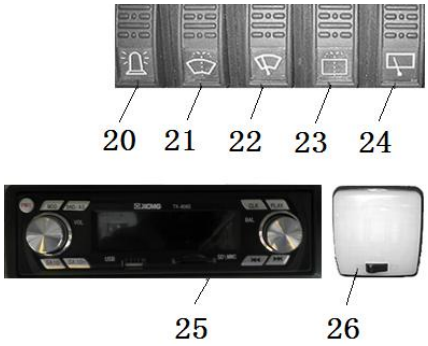


Figure 2-5

Table 2-2

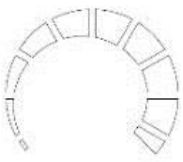
1	display	14	front working light
2	combination keyboard plate	15	joystick
3	emergency braking	16	RPM switch
4	limiting rotary knob	17	DC-DC shift power supply
5	rear working light	18	main controller
6	standby	19	central electric control box
7	horn	20	rotary alarm light
8	standby	21	front washer

9	key switch	22	front windscreen wiper
10	power supply socket(12V)	23	rear washer
11	engine flameout switch	24	rear windscreen wiper
12	direction light	25	radio and tape player
13	parking brake	26	indoor lamp

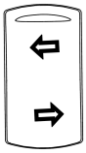
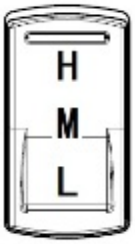
2.3.2 Function description of display and control components

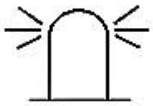
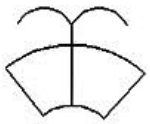
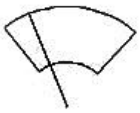
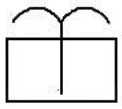
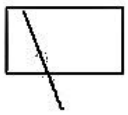
2.3.2.1 Function description of display and control components(Table 2-3)

Table 2-3

No.	Name	Symbol	Description
1	Display	-	Display and alarm of instruments of whole machine (See 2.3.2.2 display function description).
2	Combination keyboard plate	-	Details see the combination keyboard function description 2.3.2.3
3	Emergency braking		In emergency circumstances, press this button, roller implements emergency brake
4	Limiting rotary knob		The machine maximum speed limit, screw the knob at the required location, read speed on the display.

5	Rear working ligh		Press this switch, front working light is on.
6	standby	-	-
7	Horn switch		When pressed, the horn rings.
8	standby	-	-
9	Ignition key		Turn the switch, the whole vehicle circuit is connected. This switch has mechanical self-locking function, in the case of electricity, only allowing ignition for once. For twice ignition, shall cut off the power, then electrify again for ignition.
10	Emergency power supply	-	This standby for dc 12 V power socket specification, maximum current 15 a.
11	Engine flameout switch		Press this button, the engine stalled. Attention: this shall be operated under idle speed.

12	direction light		Press the switch upward, the left turn signal lamp will be on. Press the switch down, the right turn signal lamp will be on.
13	Parking brake		After roller is stopping, press this switch, realizing the parking brake.
14	front working light		Press this switch, front working light is on.
15	Forward/Reverse		Before starting the engine, the lever must be in neutral,otherwise the engine cannot be started. The forward/reverse lever control
16	Rpm switch, diesel engine		Three-position switche fpr idling(L),intermediate speed(M),and working speed(H) **NOTE: Rpm switch must be in neutral(L) position when starting the engine.**

17	DC-DC shift power supply	-	This shift power supply converts 24v DC to 12V DC.
18	Main controller	-	The vehicle electric central processing unit (CPU).
19	Central electric control box	-	Integrated vehicle circuit of fuse and relay circuit.
20	Rotating beacon		Activate the rotating beacon by pressing the switch.
21	Front washer switch		Spray water to the front glass.
22	Front windscreen wiper switch		Control the front windscreen wiper.
23	Rear washer switch		Spray water to the rear glass.
24	Rear windscreen wiper switch		Control the front windscreen wiper.
25	Radio and tape player	-	Cassette player interface.
26	Indoor lamp	-	The cab interior lighting.

2.3.2.2 Display function introduction

(* note: if the pictures of manual and instrument are different, subject to our actual display instrument)

When the system is powered on, XCMG Logo is shown for about 5 seconds, then enter the initial interface, this interface includes: fuel oil level, system voltage, the engine working time, vibration time, vehicle status, as shown in Figure 2-6:

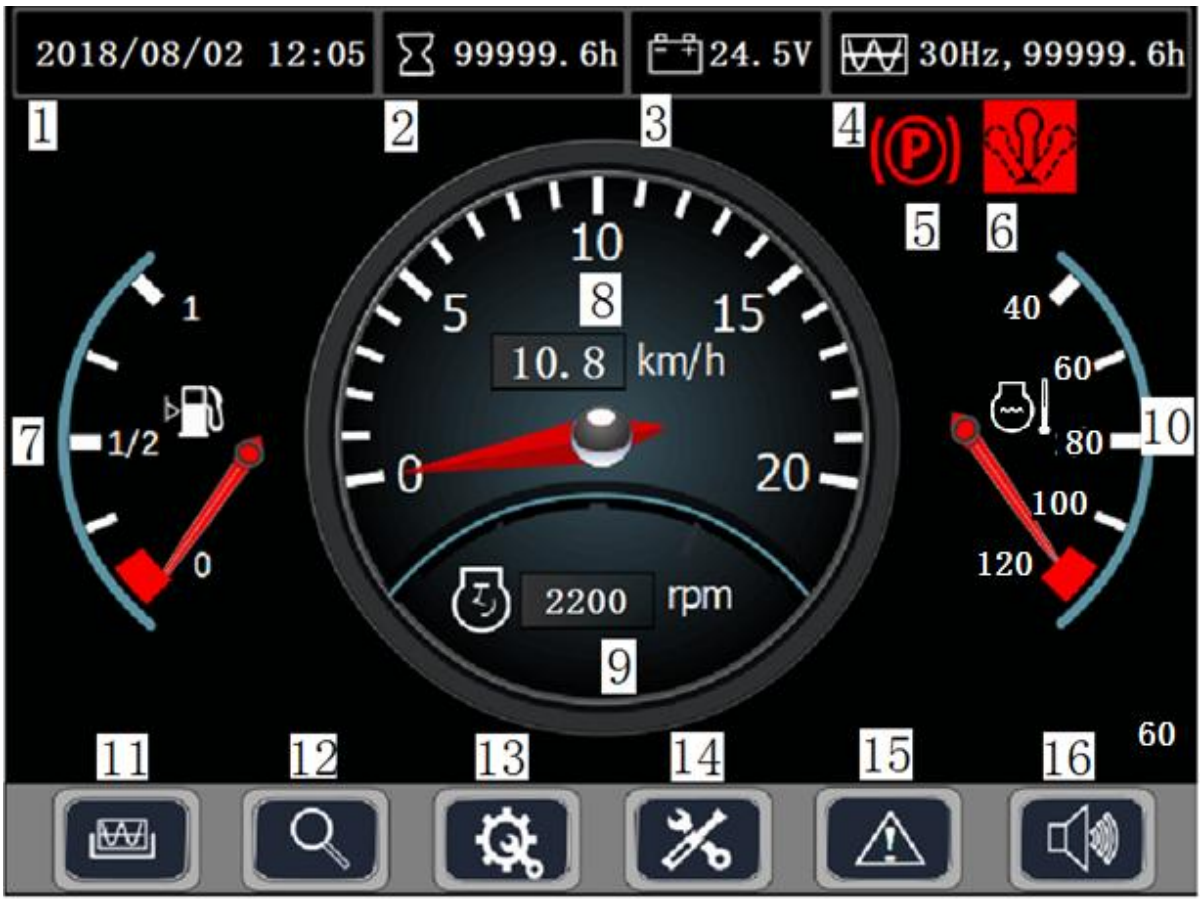


Figure 2-6 status screen

1	Date and time	9	Engine speed value
2	Fuel level	10	Engine coolant temperature
3	Voltage level	11	Automatic vibration control(AVC)
4	Vibration working time	12	Query
5	Parking Break	13	System setting
6	Joystick neutral position indicator	14	User Setting
7	Fuel level	15	Alarm
8	Speedometer	16	Voice alarm

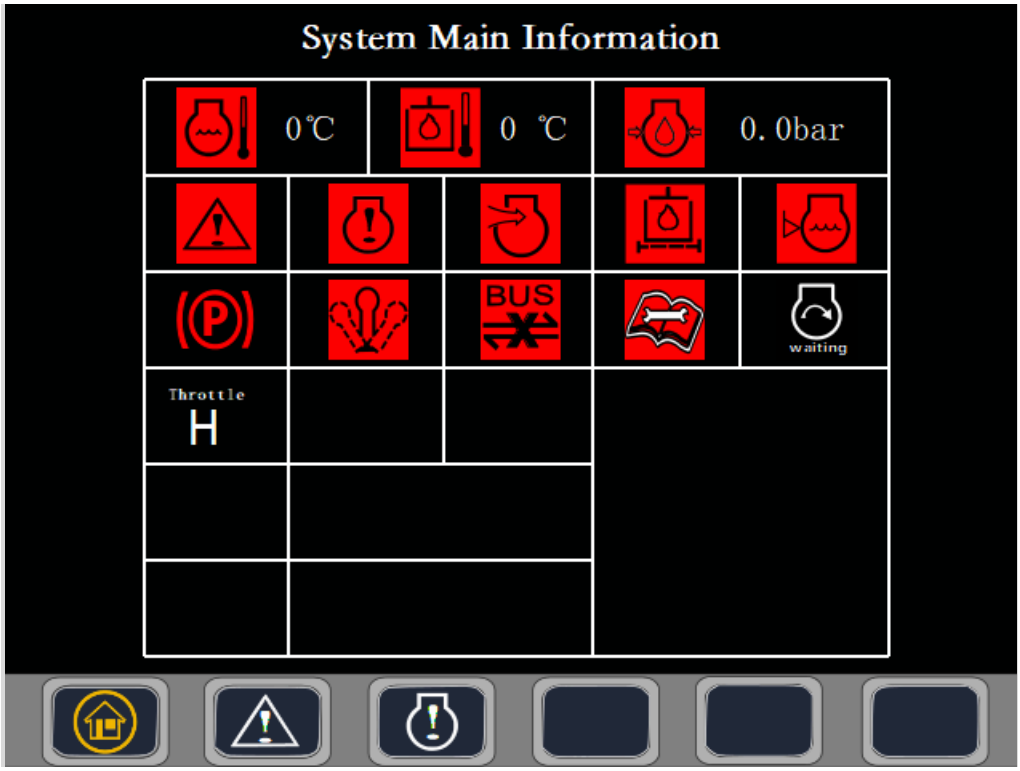
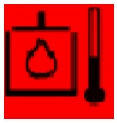
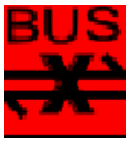


Figure 2-7 Machine alarm

Symbol	Designation	Function
	Warning symbol, engine coolant temperature	If this symbol is shown, the engine is too hot. Stop the engine immediately and locate the fault. Refer also to the engine manual.
	Warning symbol, hydraulic fluid temperature	This symbol is shown when the hydraulic fluid is too hot. Do not drive the roller; allow the fluid to cool by running the engine on idle, and then locate the fault.
	Warning symbol, low oil pressure, diesel engine	If this symbol is shown, the engine's oil pressure is too low. Switch off the engine immediately.
	alarm light of engine diagnosis	This indicator light is on, mean the engine has something wrong, should stop the operation of the vehicle and engine safely as soon as possible, do some troubleshooting to reduce the damage to the engine.
	Warning symbol, clogged air filter	If this symbol is shown when the engine is running at full speed, the air filter must be checked/replaced.

	Parking brake	If the light is on, it means the machine is under parking brake condition.
	Alarm of neutral gear	The light is on, meaning the gear is neutral.
	CAN BUS	If the light is on, it means the there is something wrong with CAN BUS system
	Maintenance	-
	Waiting for start of engine	When you start the engine, if the light is on,means waiting for air inflow heating in low temperature environment to complete preheating cycle, should wait for starting the vehicle.
	Engine speed level	-

2.3.2.3 Combination key penal function description(Figure 2-9)

Table 2-4 shows the key layout of the combination key penal

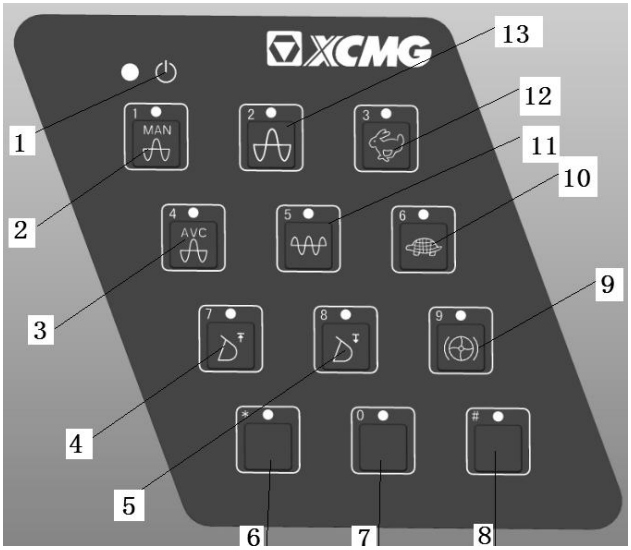
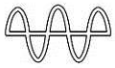
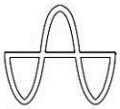


Figure 2-9

Table2-4 Function description of each button

No.	Name	Symbol	Function
1	power light	-	The ignition key switch is in the ACC, the power light is lit up.
2	Manual vibration		Pushing down this button, manual mode of vibration is selected, vibration starts when pressing the button in the lever, then press again to stop the vibration.
3	Auto vibration		Pushing down this button, auto mode of vibration is selected, when the speed is higher than the set vibration gear, the vibration starts automatically. Otherwise the vibration will stop.
4	Opening Hood		The hood rises when pressing the button, and stops rising when released
5	Closing Hood		The hood falls when pressing the button, and stops falling when released
6	standby	-	-
7	standby	-	-
8	standby	-	-
9	Anti-spin		During the roller driving, the drum or the wheel begin to slip due to muddy road, open the anti-spin switch to start the anti-slip function, which allowing forward and backward driving, at this point the machine

			traction force is lower, this function can be used to drive the roller forward and backward.
10	Working mode		Active the working mode
11	Low amplitude		Activate the low amplitude
12	Transport mode		Active the transport mode
13	High amplitude		Activate the high amplitude

 Attention	Before welding the frame, shall disconnect the connecting wire of the battery, disconnect the controller, combination instrument, electronic handle, and other connectors of the electronic components.

2.4 Operation regulations

This section describes the correct methods of use and safety precautions during machine start-up, operation and stop as well as prior to start-up and after machine stop. Measures to be taken to prevent and eliminate hazards that the operator may encounter when operating the machine in danger zones as well as problems to be considered for operation in special conditions are also described in this section.

2.4.1 Preparation before start-up

Prior to engine start-up, please make sure full preparation has been made.

2.4.1.1 Preparation work for the operator

- Well-trained, qualified, with drive license;
- Under no influence of alcohol, stimulant, drugs, etc;
- Get acquainted with the workplace environment, working conditions and target work;
- Familiarize yourself with rules and regulations as well as precautions at the workplace;
- Read carefully this operator's manual and become familiar with all operating conditions;
- Wear personal protective equipment;
- Become acquainted with the location of fire extinguisher and fast aid kit;
- No smoking;
- Inspect the machine yourself.

2.4.1.2 Workplace preparation and inspection

Inspect the workplace to see if it is suitable for roller compaction. Try to avoid operating the machine on damaged road surface;

Check to see if the road pavement, thickness, hardness comply with construction engineering requirements;

Check whether persons or obstructions are in front of or behind the machine to ensure construction safety.

Warning	**When performing compaction with this machine, keep it away from residential apartment and other buildings. When compacting with high amplitude, the centrifugal force has relatively big effect on buildings within 50 meters. When compacting with low amplitude, the centrifugal force has relatively big effect on buildings within 30 meters.**

2.4.1.3 Machine inspection and preparation

- Check all components for damages.
- Check fastenings for loosening.
- Check for oil, water and gas leakage.
- Check tire pressure.
- Check lights, rear view mirror, cab glasses for damage and dirt.
- Make sure the machine parts have necessary lubrication（please refer to table 3-1 for the recommended lubricants）
- Make sure hydraulic oil, fuel, water, etc. are filled to proper level（please refer to table 3-1 for the recommended oils）.
- Make sure all safety and warning signs in good conditions and eligible;
- Keep all grips, steps and platforms free of grease, oils, fuel, dirt, snow and ice to avoid slipping, make sure they are well secured.
- Make sure the locking device of front and rear frame are separated（Figure 2-10）.

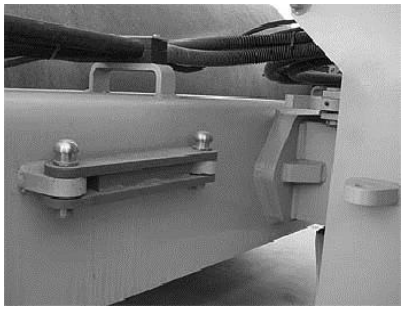


Figure 2-10

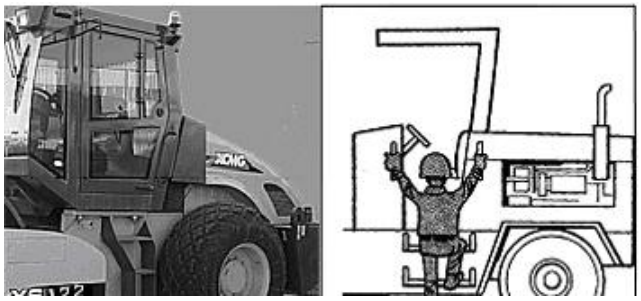


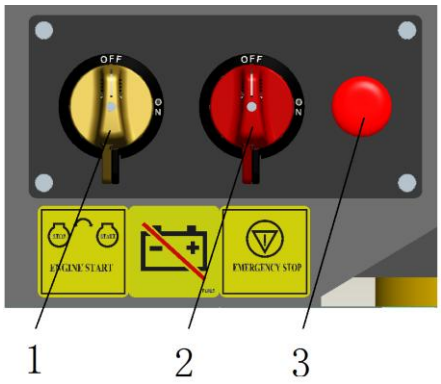
Figure 2-11

2.4.1.4 Cab get on/off, inspection and preparation

When getting on and off the machine, use three-point support (stamp foot on steps, hands grip guard rails).

⚠	**Get on and off the cab in correct way.(Figure. 2-11）**

2.4.2 Engine start-up



1.Engine start switch; 2.Master switch; 3.Emergency stop

Figure 2-12

Turn the power switch 2(red switch cap) to the "ON" position;

Turn engine start switch 1 to "ON" position;

Keep emergency stop 3 disactivated （Figure 2-12）.

2.4.3 Seat Adjustment

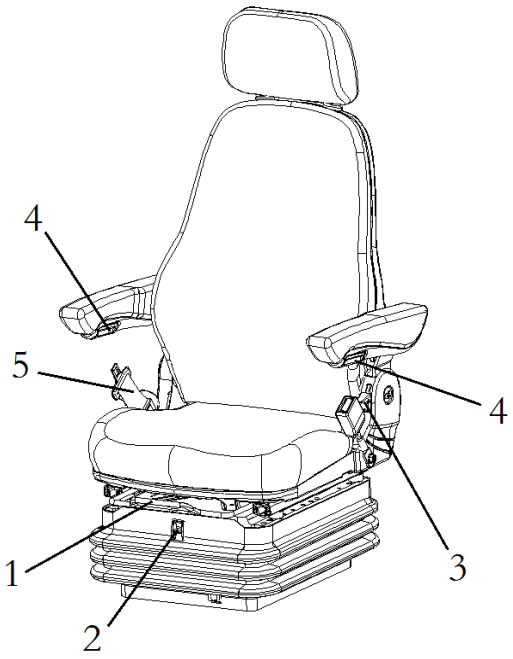


Figure 2-13

1.Forward-rear adjustment 2.Weightadjustment

3 Back support angle 4 hand support adjustment

5.Seat belt

（Figure 2-12）

⚠	**Always ensure that the seat is locked in position before operating the roller.**
⚠	**Adjust all setting when the machine is stationary**
⚠	**Do not forget to use the seatbelt(5)**

2.4.4 Steering wheel Adjustment

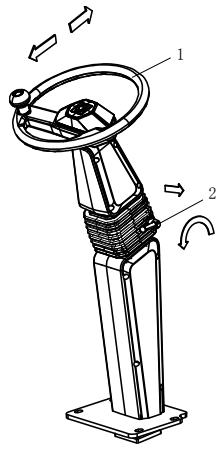


Figure 2-14

1.Steering wheel
2. Adjustment handle

Adjust the handle, until the steering wheel is easy operating（Figure 2-14）.

2.4.5 Starting

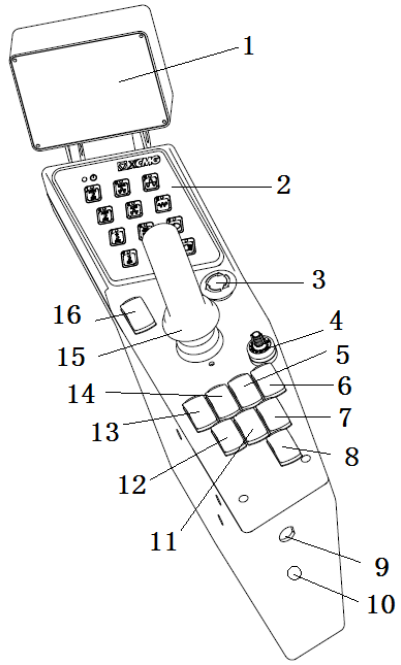
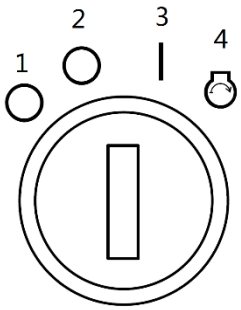


Figure 2-15



Ignition key

Figure 2-16

1	Display	9	key switch
2	Combination keyboard	10	power supply socket(12V)
3	emergency stop	11	engine flameout
4	limiting rotary knob	12	direction light
5	rear working light	13	Parking brake
6	standby	14	front working light
7	Horn	15	joystick
8	Standby	16	RPM switch

Make sure that the emergency stop (3) is OFF and the Parking switch(13) ON

Set the joystick (15) in neutral position, and set the RPM switch(16) in the idling position(L).

The diesel engine cannot be started in any other position of the controls

Turn the ignition key (9) right to position 3 and wait for the start screen (Figure 2-15,2-16).Then engage the starter by turning it full right. Release back to position 3 as soon as the engine starts.

	The operator must be seated inside the machine during all operation
	Make sure that the area in front and behind the roller is clear.
	Do not run the starter motor for too long(max. 30 seconds).If the engine will not start, wait a minute before trying again
	Ensure that there is good ventilation (air extraction) if the engine run in doors. Risk of carbon monoxide poisoning.

 Figure 2-17	While the engine is warming up, check that the fuel indicator show the a sufficient level and the charge (Figure 2-17).
	When starting and driving a machine that is cold, remember that the hydraulic fluid is also cold and that braking distances can be longer than normal until the machine reaches the working temperature.

2.4.6 Driving

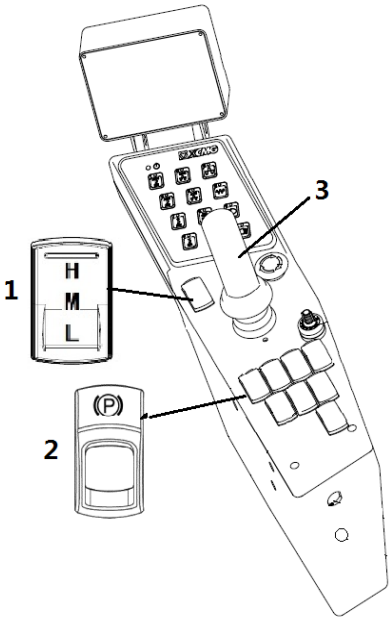


Figure 2-18

1.RPM switch 2.Parking brake
3.Forward/reverse

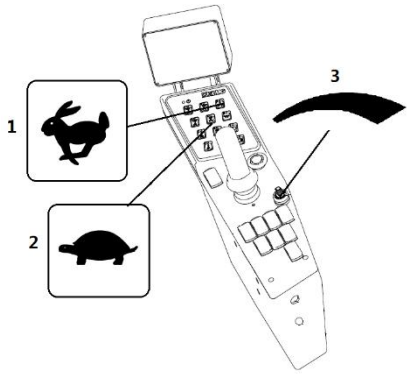


Figure 2-19

1.Transport mode 2.Working mode
3.Speed limiter

Shown in Figure 2-18, Figure 2-19.

Activate the RPM switch to H position.

If the machine is only to be transported, M position can be selected instead.

Check that the steering is working correctly by turning the steering wheel once to the right and once to the left while the roller is stationary.

Check whether the braking system is reliable. Locate the Forward/reverse lever in neutral position, press parking brake switch, the roller is in the braking state, and then push Forward/reverse lever slowly, if the roller cannot move, indicating that the roller has good braking performance; otherwise shall repair it.

Release the parking brake

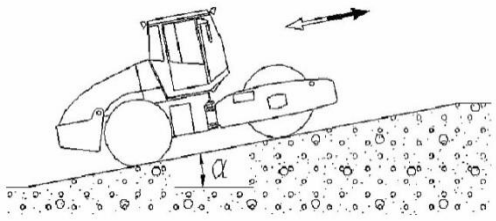
Carefully move the forward/reverse lever (2) forwards or backwards, depending on which direction of travel is required.

-	<table><tr><td>Working Mode</td><td>Transport mode</td></tr><tr><td>  </td><td>  </td></tr><tr><td>0~5.5 km/h</td><td>0~11.2 km/h</td></tr></table>

The speed increases as the lever is moved away from the neutral position.

Set the speed limiter for variable speed setting in the required mode.

Drive on inclinations

 Figure 2-20	The roller is designed with a theoretical climbing ability of 45%(α≈24°）.During actual construction, the gradient is usually not larger than 20%（α≈11.3°）. Therefore, it's safe enough for the operator to drive the machine up and down the inclinations as long as he can follow the operating instructions.

Hazard	**When driving on a slope, it's only allowed to drive up and down the slope in the arrow direction (see Figure 2-20）. It's prohibited to drive the roller across the slope.** **Slow down when driving on a slope. Never shift! Never make a turn!**

	The operator must be seated inside the machine during all operation

2.4.7 Vibration

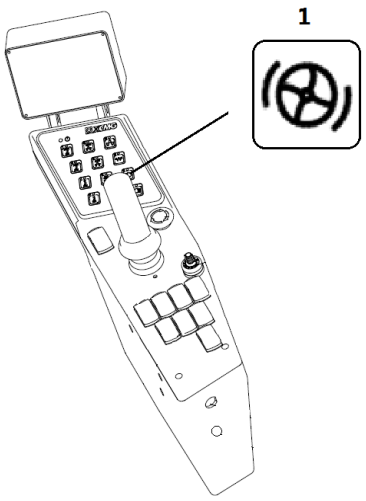


Figure 2-21

1.Anti-spin switch

Shown in Figure 2-21

If there is wheel-spin on drum or tire due to splashy road, please active anti-spin switch right to turn on anti-spin function, and it can realize moving forward and reverse. The drawbar pull performance is under usual level. This function can be applied during moving both forward and backward.

This function doesn't ensure fully elimination of wheel-spin atmosphere.

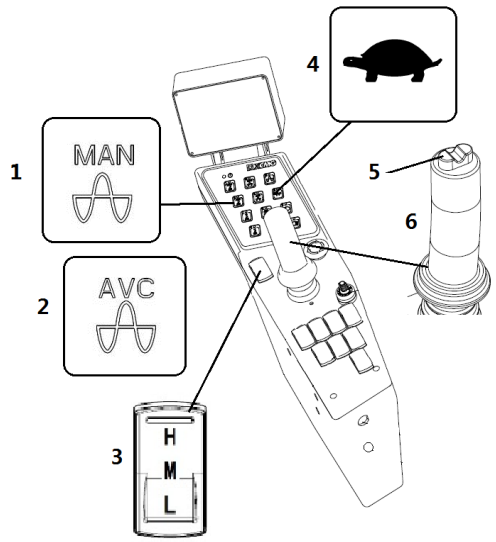


Figure 2-22

1.Manual mode 2.Automatic mode

3.RPM switch 4.Working mode

5.Vibration ON/OFF

6.Forward/reverse lever

Manual/Automatic vibration(Figure 2-22)

Active the button for working mode.

Manual or automatic vibration can be selected by operator.

In manual mode (MAN), the operator activates vibration using the switch on the forward/reverse lever.

In automatic mode (AVC), vibration is activated when the speed is ≥ 1.5 km/h (0.9 mph) and turns off at a speed ⩽1.2 km/h (0.75 mph).

Activation of vibration for the first time, as well as disconnection of automatic vibration, are performed with the switch on the forward/reverse lever.

Never activate vibration when the roller is stationary. This can damage both the surface and the machine.

Engage and disengage vibration using the switch on the front of the forward/reverse lever. Always switch off vibration before the roller comes to a

Stand still.

⚠	• **During vibration operation, check at any moment the meter reading, if there is any abnormal phenomenon, please stop operation immediately.** • **It is forbidden to vibrate on a hard road surface, otherwise will** • **damage the machine.** • **Transport mode is not allowed for compaction operations.**

2.4.8 Braking

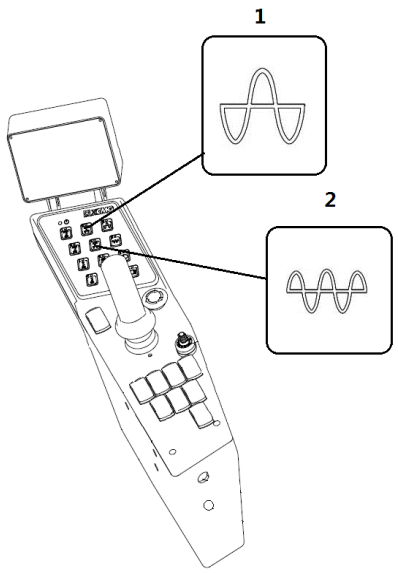


Figure 2-23

1.High amplitude 2.Low amplitude

Amplitude – Changeover(Figure 2-23)

The amplitude setting must not be change when vibration is in operation

Switch the vibration off and wait until vibration stops before changing amplitude.

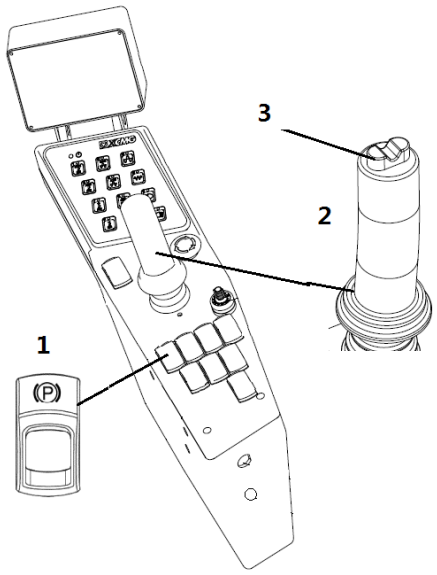


Figure 2-24

1.Parking brake

2.Forward/reverse lever

3 Vibration ON/OFF switch

Normal braking(Figure 2-24)

Press the switch (3) to switch off the vibration.

Move the forward/reverse lever to the neutral position to stop the roller.

Always activate the parking brake , before leaving the operator platform.

When starting and driving a machine that is cold, remember that the hydraulic fluid is also cold and that braking distances can be longer than normal until the machine reaches the working temperature.

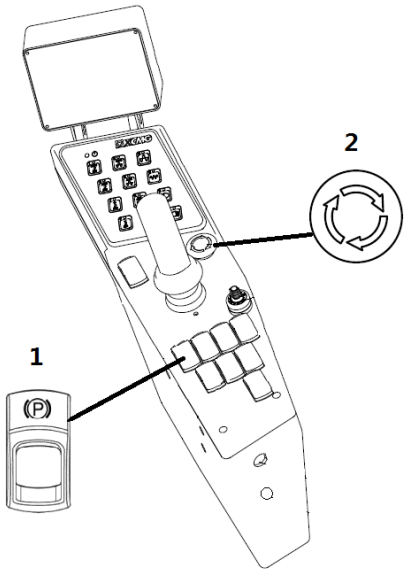


Figure 2-25

1.Parking brake 2.Emergency brake

Emergency braking(Figure 2-25)

Braking is normally activated using the forward/reverse lever. The hydrostatic transmission retards and slows the roller when the lever is moved towards the neutral position.

A disc brake in each drum motor/drum gear and the rear axle also acts a secondary brake when in motion, and as a parking brake when stationary. Activated with the parking brake.

The Diesel engine will stop and must be restarted.

After emergency braking, return the forward/reverse lever to neutral and deactivate the emergency stop.

For emergency braking, press the emergency stop , hold the steering wheel firmly and be prepared for a sudden stop. The engine stops.

2.4.9 Switching off

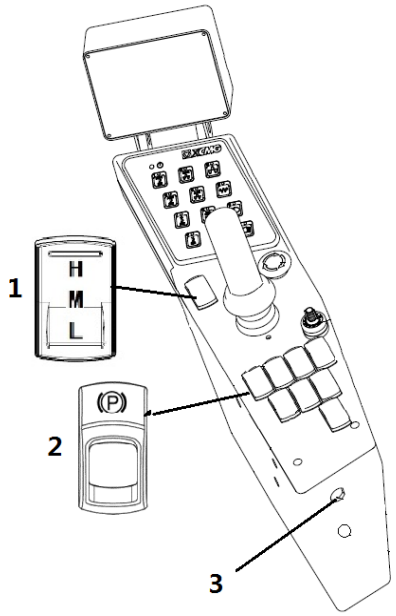


Figure 2-26

1.RPM Switch 2.Parking brake

3.Ignition key

Shown in Figure 2-26.

Set the RPM switch(1)in idling position(L) and allow theengine to idle for a few minutes to cool down.

Check the display to see if any faults are indicated.Switch off all lights and other electrical functions.

Activate the parking brake (2) and then turn theignition key (3) to the left to the off position.

2.4.10 Parking

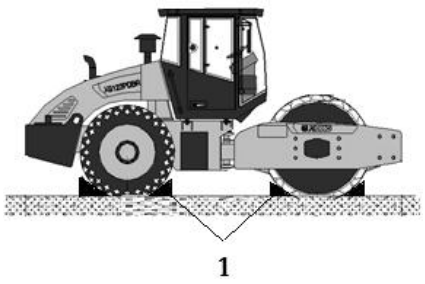


Figure 2-27

1.Chocks

Chocking the drums(Figure 2-27)

Make sure the rear engine hood is dropped down.

Before leaving the roller for the day, make sure the master switch (2) to the disconnected the power(Figure 2-28).

Turn the engine start switch to "OFF" position

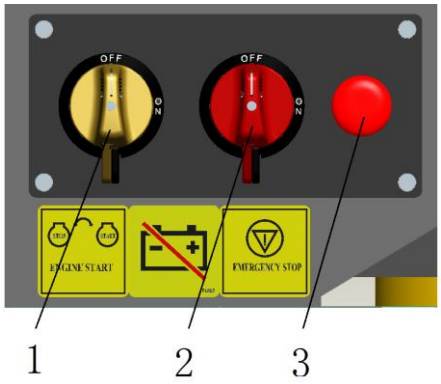


Figure 2-28

1.Engine start switch; 2.Master switch;3.Emergency stop

This will prevent battery discharging and will also make it difficult for unauthorized persons to start and operate the machine.

Make sure the rear engine hood is dropped down.

Remember the risk of freezing during the winter..

⚠	Never disembark from the machine when the is engine running, unless the parking brake is activated.
⚠	Make sure that the roller is parked in a safe place with respect to other road users. Chock the drums if the roller is parked on sloping ground.

2.4.11 Open and close the engine hood

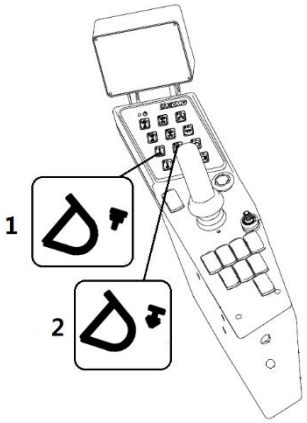


Figure 2-29

1. Opening hood switch

2.Closing hood switch

Two ways for opening and closing the hood(Figure 2-29& Figure 2-30).

1.The hood rises when pressing the Opening hood switch (1), and stops rising when released. The hood falls when pressing the button, and stops falling when released

2. Manual operating the engine hood

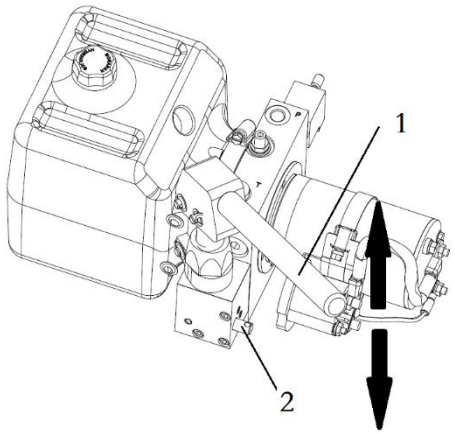


Figure 2-30

1. control level 2.Release valve

If power system or hydraulic pump breaks down, and the engine hood cannot be opened manually.

Using the control level to open the hood .

Screw the release valve counter-clockwise

2.4.12 Other operations

For engine operating conditions and safety precautions please refer to "Engine Operation and Maintenance Instructions".

For air-conditioner operation conditions and safety precautions please refer to "Air-conditioner Operating and Maintenance Instructions".

3. Service and Maintenance

3.1 General

Service the roller according to manual, which not only can prolong the service life of the machine, but also can ensure the normal operation.

Only well-trained and qualified personnel are allowed to service this machine.

Take personal protection when service and maintain the machine (Figure 1-4).

Please read through this manual before carrying out any maintenance and repair work.

Safety is absolutely important! Pay more attention when you see the sign in this manual.

⚠	**This safety warning sign shows you the very important information about the safety! When you see the sign in this manual, please read the item beside the sign and obey with the item strictly, and inform it to other people. Ignorance to safety warning can cause serious injuries and casualties.**

Safety warning signs	Explanation
⚠ **DANGER**	**Indicate a hazard with a high level of risk which, if not avoided, will result in death or serious injury.**
⚠ **WARNING**	**Indicate a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.**
⚠ **CAUTION**	**Indicate a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.**

Pay attention to environmental protection! During maintenance work catch all

oils and fuels with a container and do not let them seep into the ground or into the sewage system. Dispose of oils and fuels environmentally.

Keep a record of service work performed.

For engine operating conditions and safety precautions please refer to "Engine Operation and Maintenance Instructions".

For air-conditioner operating conditions and safety precautions please refer to "Air-conditioner Operation and Maintenance Instructions".

3.2 Service point diagram

3.2.1 Some service points layout

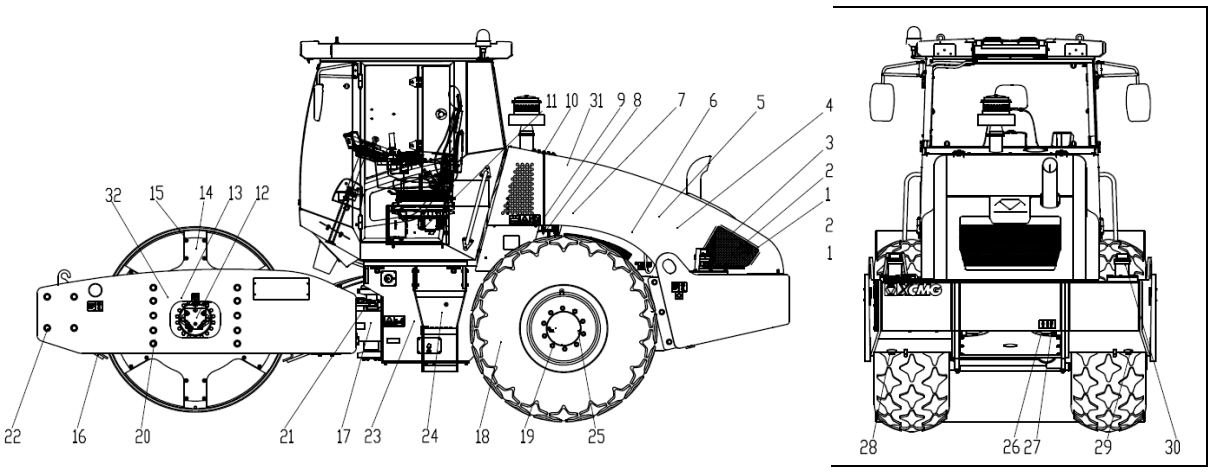


Figure 3-1 Service point layout

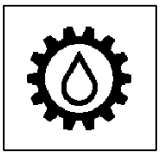
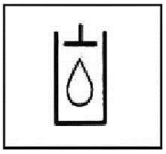
1	Hydraulic oil filter	19	Rim nut
2	Fuel pre filter	20	Vibration drum mounting bolt
3	Hydraulic oil level view	21	steering cylinder
4	Engine oil level	22	Front beam mounting bolt
5	Engine oil filter	23	Battery
6	Fuel filter	24	hydraulic pump station
7	Air filter	25	Drive axle
8	Water cooler	26	Water drainage
9	Hydraulic fluid cooler	27	Machine oil discharging port
10	Engine hood hinges	28	Hydraulic oil tank discharging port

11	Air conditioning	29	Fuel tank discharging port
12	Drum gearbox	30	Fuel filling port
13	Vibration drum oil filling (discharging)	31	Hood support cylinder
14	Vibration drum rubber damping block	32	Vibration drum vent plug
15	Vibration drum damping block bolt		
16	Scraper plate		
17	Articulation		
18	Tire pressure		

3.2.2 The oil used by this machine

The following are the lubricating oil, hydraulic oil, coolant and so on used by this machine. It is recommended to use oil of the same or higher grade. For usage in special environment, please refer to 3.5

Table 3-1

Name	Specification	Applications	Fluid Volume	F
Lubrication oil	85W/90 Gear oil	Vibration chamber of front drum	45L	
		Decelerator of front drum	2.5L	
		Axle	16.4L	
Engine oil	CH-4 15W/40	Engine	11L	
Hydraulic oil	XCMG Special Hydraulic oil 40-1	Hydraulic system	200L	
Diesel oil	0#(ambient temperature 0℃—40℃) -10#(ambient temperature -10℃—0℃) -35#(ambient temperature -35℃— -10℃)	Fuel Tank	200L	

Coolant	-45#	radiator	30L	
Lubrication grease	0# Lithium-base	Articulation, bearing of front drum frame, the keys in the vibratory chamber of front drum.	-	
	Auto purpose, Lithium-base	Steering cylinder, hinge of rear hood, oil cup of lift cylinder.	-	

	If the roller is working under the condition of high or severe cold temperature, special lubricant must be used. Contact XCMG agent or after-sale service department is recommended.
	If cannot meet the above lubricant requirements, please contact XCMG agents or XCMG after-sales service department.

3.2.3 Tightening torque

The recommended values of tightening torque for dry bolt by torque wrench are shown in table 3-2 (except special requirement), tightening torque of lubricating bolt generally take 90% of the recommended value.

Table 3-2

Tightening torque recommendation form (N.m）				
performance rate		8.8	10.9	12.9
Thread specification	M6	10~12	14~17	17~20
	M8	25~30	34~41	41~48
	M10	49~59	68~81	81~96
	M12	86~103	119~141	141~167

	M12×1.25	90~108	124~147	147~174
	M14	137~164	189~224	224~265
	M14×1.5	149~179	206~243	243~289
	M16	214~256	295~350	350~414
	M16×1.5	228~273	314~372	372~441
	M18	294~353	406~481	481~570
	M20	417~500	576~683	683~808
	M20×1.5	463~555	640~758	758~897
	M24	722~864	998~1195	1167~1397
	M24×2	785~940	1086~1300	1269~1520
	M27	1056~1264	1461~1749	1707~2044
	M30	1434~1717	1984~2375	2318~2775

3.3 Service intervals

3.3.1 Daily service (for every 10 operating hours)

Table 3-3

Service points	Specifications
30	3.4.1.1 Fill diesel oil.
3	3.4.1.2 Check the hydraulic oil level
4	3.4.1.3 Check the engine oil level.
8	3.4.1.4 Check the coolant level
16	3.4.1.5 Scrapers-check、adjustment

32	3.4.1.6 Check the breathing plug
15、19、20、22	3.4.1.7 Check and fasten bolts and nuts in key positions.
7	3.4.1.8 Inspect the filter element in the air cleaner

3.3.2 Maintenance content for first 50 hours

Table 3-4

Service points	Maintenance content
1	3.4.5.3 Replacing hydraulic oil filter
13	3.4.7.2 Change the drum cartridge oil
15、19、20、22	3.4.1.7 Check and fasten bolts and nuts in key positions
18	3.4.3.2 Check the pressure of tires.
12	3.4.7.3 Change the oil in the drum gearbox

3.3.2 Weekly service (for every 50 operating hours)

Table 3-5

Service points	Specifications
-	Check that hoses and couplings are not leaking
17, 21	3.4.3.1 Lubricate articulation mechanism joints
18	3.4.3.2 Check tires pressure

3.3.3 Monthly service (for every 250 /750/1250/1750 hours of operation)

Table 3-6

Service points	Specifications
13	3.4.4.1 Check the oil level of front drum.

12	3.4.4.2 Check the oil in the drum gearbox
14	3.4.4.3 Check rubber elements of front drum.
25	3.4.4.4 Check the oil level in rear axle.
8、9	3.4.4.5 Check and clean the radiator.
-	3.4.4.6 Check the air inhaling pipe.
11	3.4.4.7 Service the air-conditioner.

3.3.4 Quarterly service (for every 500/1500 hours of operation)

Table 3-7

Service points	Specifications
2、6	3.4.5.1 Replace the fuel filter.
5	3.4.5.2 Replace the engine oil and filter.
1	3.4.5.3 Replace the hydraulic oil filters.
10、31	3.4.5.4 Lubricate the hinge of rear hood.
25	3.4.5.4 Check the oil level of drive axle.
25	3.4.5.5Check the oil level in rear axle
23	3.4.5.6 Service the battery.
7	3.4.5.7 Air cleaner checking

3.3.5 Half a year service (for every 1000 operating hours)

Table 3-8

Service points	Specifications
28	3.4.6.1 Discharge the condensed water and sediments from the

	hydraulic oil tank.
29	3.4.6.2 Discharge the condensed water and sediments from the diesel fuel tank.
28	3.4.6.3 Replace the hydraulic oil in the hydraulic pump.
-	3.4.6.4 Check engine valve clearance
-	3.4.6.5 Check the tension of engine belt.
7	3.4.5.7 Inspect the filter element in the air cleaner.Replace as required
12	3.4.6.6 Replace the oil in the drum gearbox

3.3.6 Annual service (for every 2000 operating hours)

Table 3-9

Service points	Specifications
28	3.4.7.1 Replace the hydraulic oil.
13	3.4.7.2 Replace the lubrication oil in front drum.
25	3.4.5.4 Replace the oil level of drive axle.

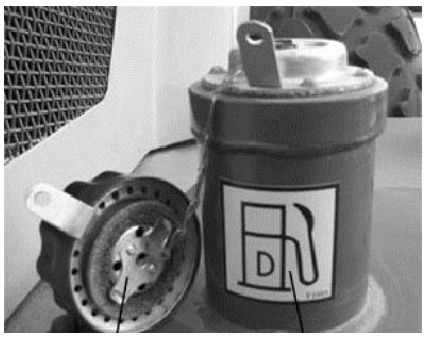
3.4 Service and methods

3.4.1Daily service (every 10 operating hours)

	**Park the roller on a level surface. The engine must be switched off and the parking brake activated when checking or adjusting the roller,**
	**Ensure that there is good ventilation (air extraction) if the**

	engine is run indoors. Risk of carbon monoxide poisoning.

3.4.1.1 Fill diesel oil（Figure 3-2）

 Figure 3-2	The liquid volume of the fuel tank can satisfy the need for one working day. Check the diesel oil level before everyday work. Fill the diesel oil in case the diesel oil is insufficient. Unscrew the cap and fill fuel with the oil filling gun. Check the oil through the values of the oil filling gun or the oil level gauge. Watch the level when fill the fuel.

3.4.1.2 Check hydraulic oil level（Figure 3-3）

Figure 3-3

Inspect the hydraulic oil level. Fill hydraulic in case the level is lower than the middle line of window.

3.4.1.3 Check engine oil level（Figure 3-4）

	Take care not to touch any hot parts of the engine or the radiator when removing the dipstick. Risk for burns.

	When opening the rear engine hood, use safety device to support it. (Figure 3-5)

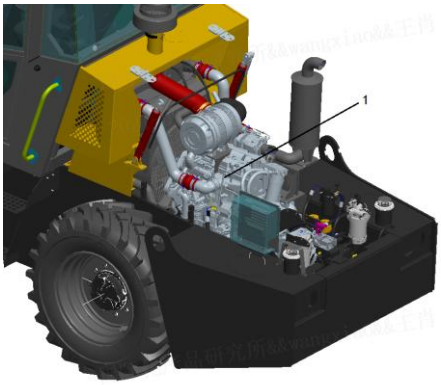


Figure 3-4

1. Dipstick

Figure 3-5

（1）Open the engine hood.

（2）Pull out the dipstick and clean it, then insert it again.

（3）Take out dipstick to check that the oil level should be between the upper and lower mark. If the level is below lower mark, you should fill oil in time.

3.4.1.4 Check the coolant level（Figure 3-6）

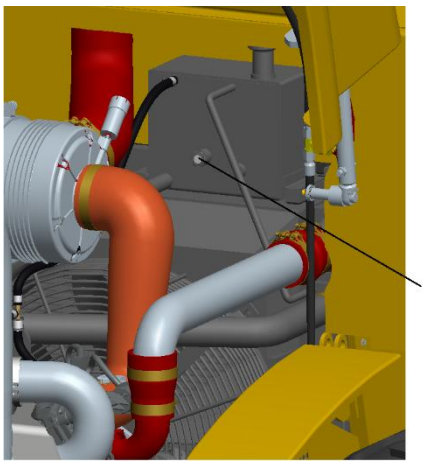


Figure 3-6

1.Level mark

Check the coolant level.

Fill with a mixture of 50% water and 50% anti freeze as required.

	**Observe great caution if the cap has to be opened while the engine is hot. Wear protective gloves and goggles.**

3.4.1.5 Scrapers-check,adjustment（Figure 3-7，3-8）

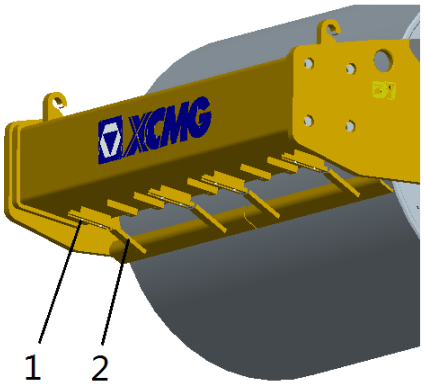


Figure 3-7

1.Screws 2.Scraper blade (×4)

It is important to consider movement of the drumwhen the machine turns, i.e., the crapers can bedamaged or wear of the drum may increase ifadjustment is made closer than the values stated.

If necessary, adjust distance to the drum as follows:

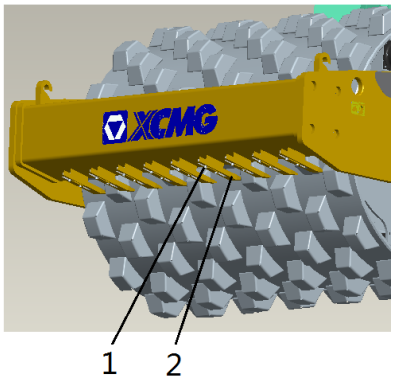


Figure 3-8

1.Screws 2.Scraper teeth(×18)

Loosen the screws (1) on the scraper attachment.

Then adjust the scraper blade (2) to 25 mm (1 in) fromthe drum.

Tighten the screws (2).Repeat the procedure for the other scraper blades (x4).

Scrapers, Pad-drum

Undo the screws (1), then adjust each scraper tooth(2) to 25 mm (1.0 in) between scraper tooth and drum.

Center each scraper tooth (2) between the pads.Tighten the screws (1).

3.4.1.6Check the breathing plug（Figure 3-9）

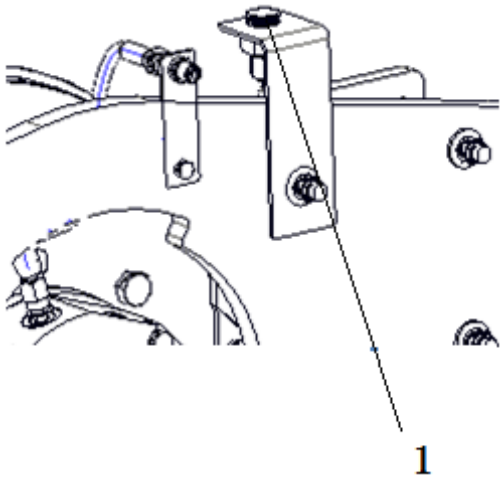
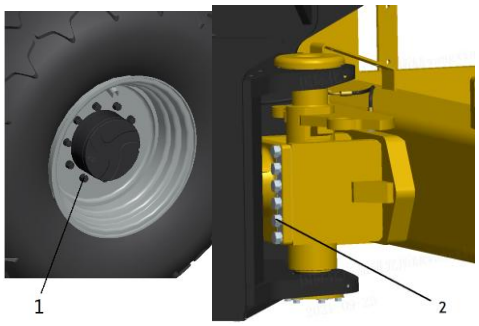


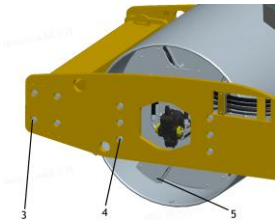
Figure 3-9

1. Breather pipe

The breather pipe is located on the right side of the drum, it is used to exchange the air when vibrating. Check whether the breather pipe is blocked or not. Clear the mud if necessary.

3.4.1.7Check and fasten bolts and nuts in key positions（Figure 3-10）





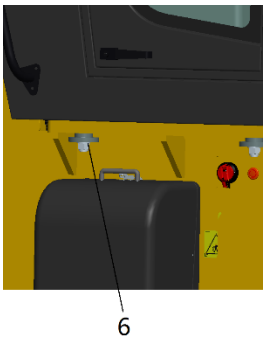
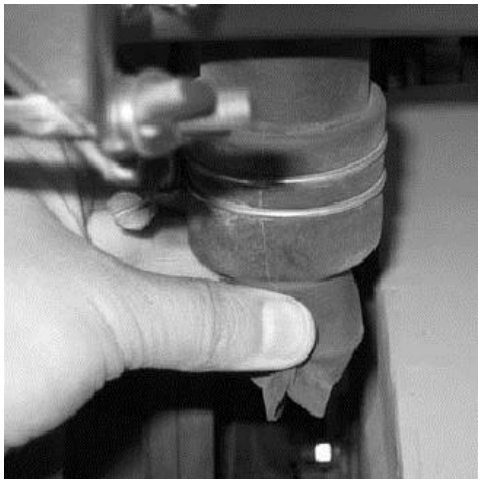


Figure 3-10

1.Nuts 2.Screws(×12)
3.Screws(×8) 4.Srews(×6)
5.Srews(×40) 6.Nuts(×4)

Check bolts and nuts of the key parts and tighten them.

3.4.1.8 Inspect the filter element in the air cleaner（Figure 3-11）

 Figure 3-11	Remove dust from the dust collector of the air filter

	Never refuel while the engine is running. Do notsmoke andavoid spilling fuel.

3.4.2 First 50 operating hours service

Please refer to Monthly and Quarterly service

3.4.3 Weekly service (every 50 operating hours)

3.4.3.1 Lubricate articulation mechanism joints（Figure 3-13）

Figure 3-13
1. Grease cups(×2)

（1）Turn the steering wheel fully to expose grease cups.

（2）Wipe out dirt around the grease cup.

（3）Use the grease gun to fill each nipple with five strokes of grease.(see the machine attached tools). Inject grease to grease cups, with each cup for 5 travels. (or judge it by the overflowed grease)

Hazard

Notice the safety decals (see Fig 3-13)! For any lubrication, shut off the engine then press down the brake button.

3.4.3.2 Check tires pressure（Figure 3-14）

Figure 3-14

Check the tire pressures using a pressure gauge.

Recommended pressure:

Diamond Tire: 170~200 kpa

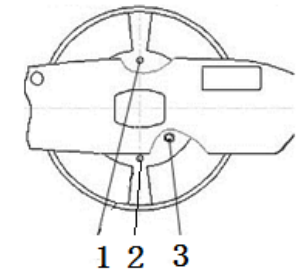
Agricultural tires: 150~170 kpa

When changing the tires it is important that both

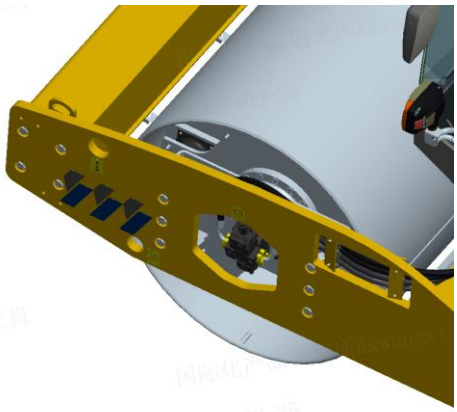
of them have the same rolling radius. This is necessary to ensure proper functioning of the anti-slip in the rear axle.

3.4.4Monthly service (every 250 /750/1250/1750 operating hours)

3.4.4.1 Check theoil level of front drum (Figure 3-15)

 Figure 3-15 1 Oil fill plug 2 Oil drain plug 3 Oil level plug	(1)Operate the machine until the position shown in the Figure 3-16.Park the machine on a flat ground, and press down the brake button; (2)Disassemble the oil level plug(3).When the oil outflow, that means the oil is enough, otherwise fill gear oil until it outflow. (3)Tighen the plugs and clean the surface.

3.4.4.2 Check the oil in the drum gearbox（Figure 3-16）

	（1）Park the machine on level surface and press brake button, stop the engine. （2）Wipe clean the around part and unscrew off the plug. the oil level must approach the lower edge of the oil plug hole. If the oil is insufficient, please fill clean gear oil until the oil flow out. （3）Wipe out the outside of plug and screw up the oil plug.

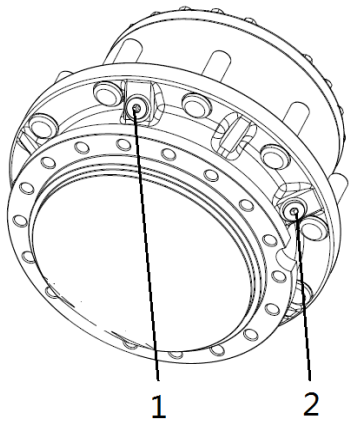
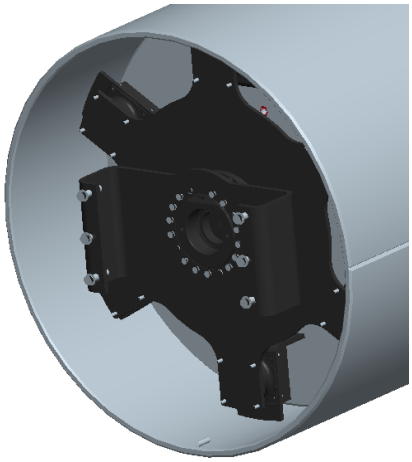


Figure 3-16
1 Oil fill plug
2 Oil level plug

The capacity is about 3 liters

3.4.4.3 Check rubber elements of front drum（Figure 3-17）



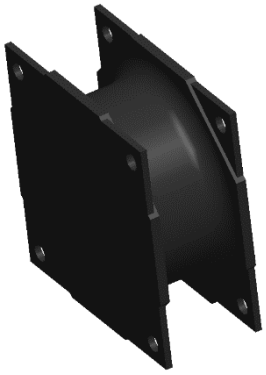


Figure 3-17

（1）Check the left and right rubber damping blocks of the front wheel. If there are obvious cracks, replaced it in time.

（2）When more than 3 rubber damping blocks have 10 - 15 mm deep cracks (the crack depth can be measured with a blade or other sharp instrument) on one side, all the rubber damping blocks need to be replaced. The left and right rubber damping blocks are of different stiffness, so they can't be exchanged.

3.4.4.4 Check the oil level in rear axle (Figure 3-18)

⚠	**Never work under the machine while the engine is running!**

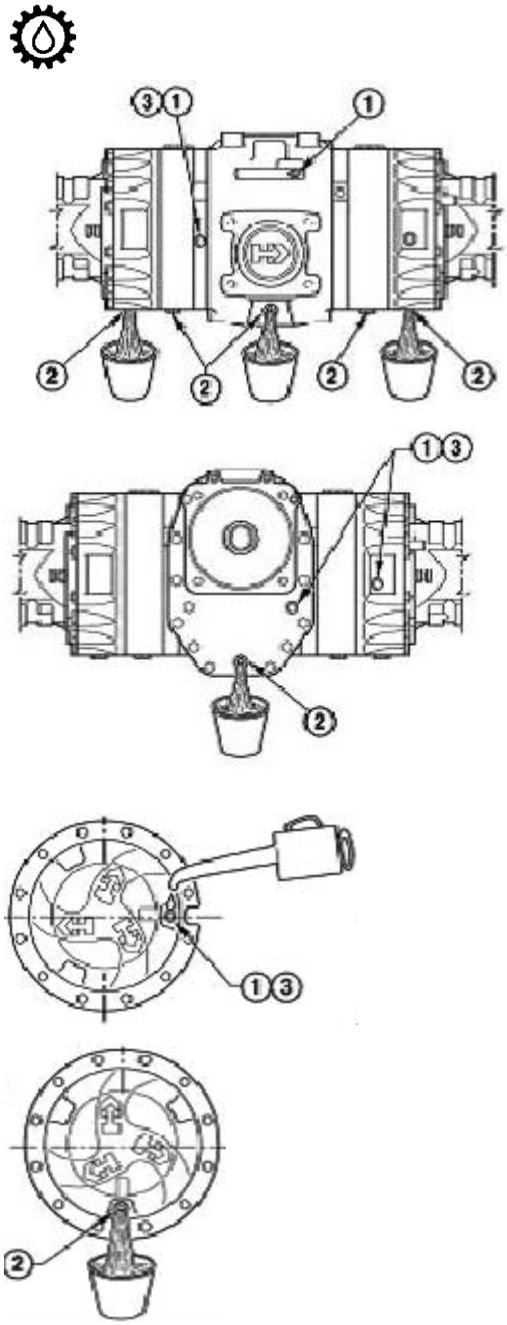
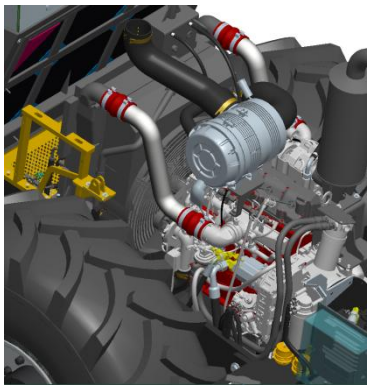


Figure 3-18
1. Fill the oil
2. Drain the oil
3. Check the oil level

（1）park the roller on the road and press the brake button.

（2）Check the oil level via the inspection hole, all the oil level inspection holes shall be checked, no omission is allowed. If the oil level is low, add clean gear oil in time. Some oil level inspection holes are also oil fillers, and refuel until it spills out of the oil port.

3.4.4.5 Check and clean the radiator（Figure 3-19）



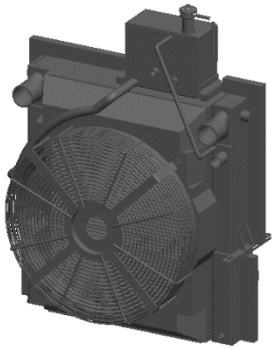


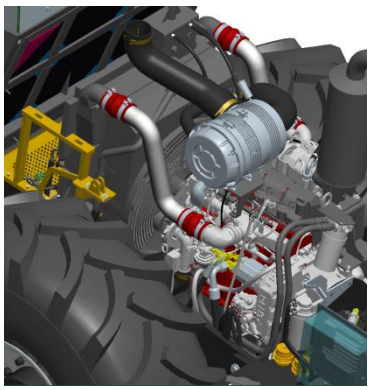
Figure 3-19

Check the radiator periodically. If the radiating effect is not good, check the radiator surface. The radiator can be washed by compressed air if necessary, but the pressure should not exceed 500kPa.

Be careful when using a high-pressure washer do not place the nozzle too close to the radiator.

⚠	**Wear protective goggles when working with compressed air or high-pressure water jets**

3.4.4.6 Check the air inhaling pipe（Figure 3-20）

 Figure 3-21	Check if the air pipe has crack or not and the pipe connector is solid or not. Replace the air pipe or pipe connector if necessary.

3.4.4.7Service the air-conditioner（Figure 3-21）

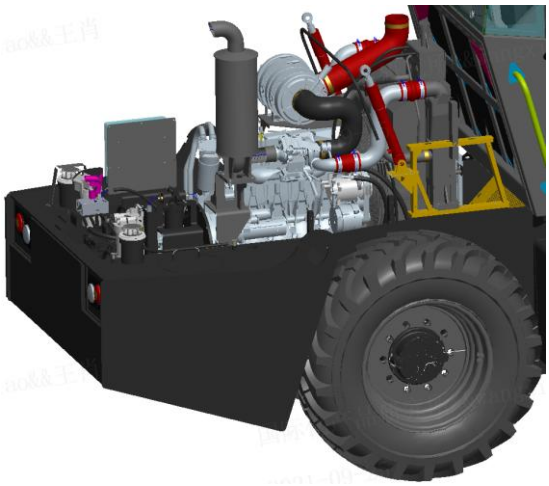
 Figure 3-21	Conduct periodic service (see Table3-8) to the cooling system, air compressor and electric circuit system according to the Air-conditioner Instruction Manual. Inspect refrigerant hoses and connections and make sure that there are no signs of an oil film that can indicate a refrigerant leakage.

Table 3-8

Components		Specification	Service intervals		
			Month	Half of year	Year
Condensing system	Condenser tubes	Check for wear and chafing		※	
	Joints	Check for leakage			※
	Condenser	Check the cooling fin		※	
	Fluid reservoir	Check for leaks and change if necessary.			※
	Coolant	Check coolant level	※		
	Air conditioner body part	Check fastening			※
	Sealing system	Check seals for leaks and change in time.			※
Air compressor	Magnetic clutch	Check the suction state		※	
	Belt	Check belt tension			※
	Fixing bracket	Check bracket mounting			※
	Air compressor	Check for abnormal sound	※		
Circuit system	Wiring	Check for damage and chafing.		※	
	Connector clip	Check plugs for damage		※	
	Control switch	Check control unit for damage		※	

3.4.5 Quarterly Maintenance (Working for 500/1500 hours)

3.4.5.1 Replacing the fuel filter (Figure 3-23)

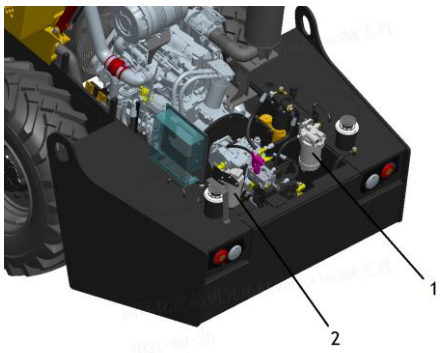


Figure 3-22

1.Fuel prefilter 2.Fuel filter

Please refer to《Engine manual》.

3.4.5.2 Replace the engine oil and filter (Figure 3-23)

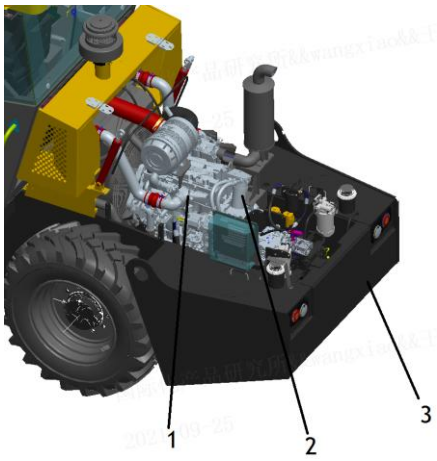


Figure 3-23
1.Dipstick 2.Oil filter 3.Drain plug

Please refer to《Engine manual》.

The oil drain plug (3) can be accessed most easily from the right rear underside of the tractor frame, and is installed with a hose in the engine.

Drain the oil when the engine is warm. Place a receptacle that holds 19 liters (5 gal) under the drain plug.

Replace the engine oil filter (2) at the same time.

Take great care when draining warm fluid and oil. Wear protective gloves and goggles.

3.4.5.3 Replace the hydraulic oil filters（Figure 3-24）

Figure 3-24
1.Hydraulic oil filter
2.Level of hydraulic oil

The hydraulic system has two filters.

The filter replacing process as follows:

（1）Open the rear hood.

（2）Wipe out the around part (especially the screw connection area)and screw down the filter.

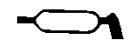
（3）Clean the seal surface of filter seat.

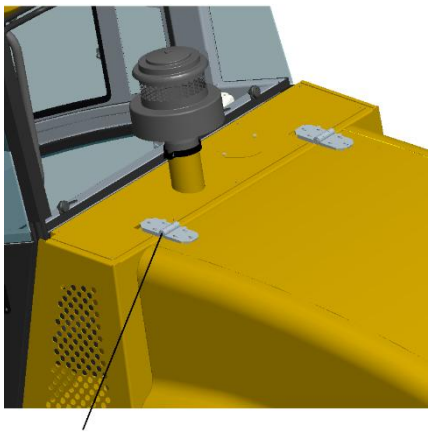
（4）Coat a thin layer of oil on the surface of the rubber gasket.

（5）Install the filter by hand, first screw the rubber gasket to joint with the filter base, then screw it half round.

（6）Start the engine to check the filter leaks oil or not, at the same time check the oil level of hydraulic oil tank.

3.4.5.4 Lubricate the hinge of rear hood（Figure 3-25）





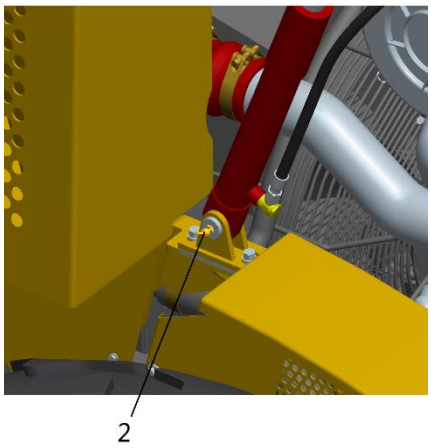


Figure 3-25
1.Grease cup(×2)
2. Grease cup(×4)

Use the grease pump and grease pump hose nozzle (see the attached tools) to add grease to the oil cups at the rear hood hinge(Figure A) and rear hood hoist cylinder (Figure B), etc.. Add about 3 routes for each (or judge it according to the grease spilling conditions).

3.4.5.5 Check the oil level in rear axle（Figure 3-19）

Please refer to Monthly service (every 250 /750/1250/1750 operating hours)

3.4.5.6 Battery –Check condition（Figure 3-26）

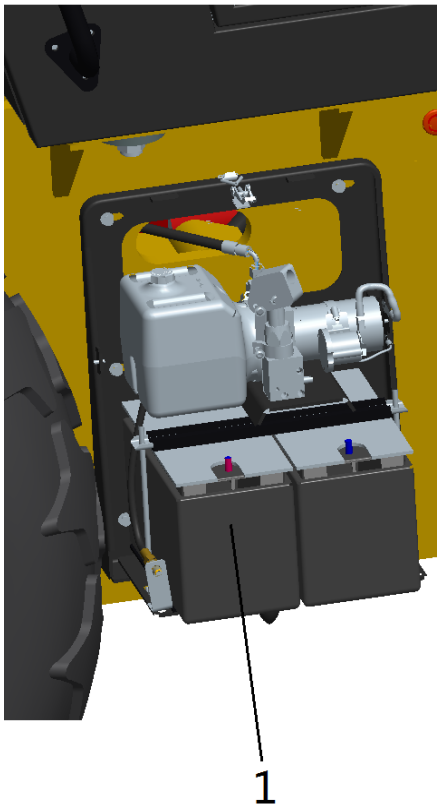


Figure 3-26
1.Battrys(×2)

The batteries are sealed and maintenance-free.

Check battery meter through status indicator：

Green： Full battery for normal use

Black： Low battery in need of charging

White: Battery rejected in need of change.

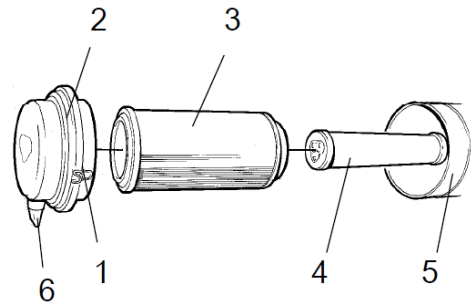
When disconnecting the battery, always disconnect the negative cable first. When connecting the battery, always connect the positive cable first.

The cable shoes should be clean and tightened.

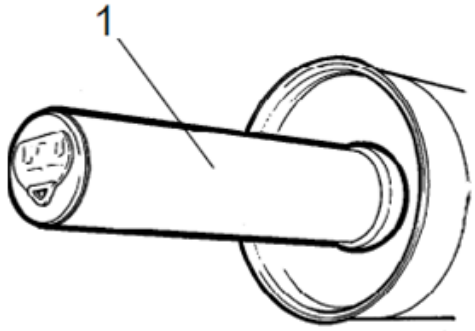
Corroded cable shoes should be cleaned and greasedwith acid-proof Vaseline.

	**Make sure there is no open flame in the vicinity when checking the electrolyte level. Explosive gas is formed when the alternator charges the battery.**
	**If short circuit occurs, cut off the circuit immediately with insulated material. Do not touch it with hands.** **Keep great ventilation while charging the battery under normal temperature.**

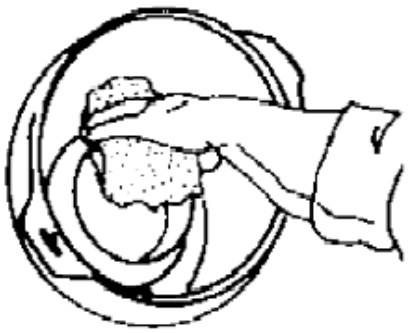
3.4.5.7 Air cleaner checking (Figure 3-27)



1.Clips 2.Cover 3. Main filter 4.Backup filter 5.Filter housing 6.Dust valve



1. Backup filter



Change the main air filter

Change the air cleaner's main filter when the warning lamp on the display lights when the diesel engine is operating at full speed.

Release the clips (1), pull off the cover (2), and pull out the main filter (3).

Do not remove the backup filter (4).

Clean the air cleaner if necessary, see section Air cleaner - Cleaning.

When replacing the main filter (3), insert a new filter and refit the air cleaner in the reverse order.

Check the condition of the dust valve (6); replace if necessary.

When refitting the cover, make sure that the dust valve is positioned downwards.

Backup filter-Change

Change the backup filter with a new filter after

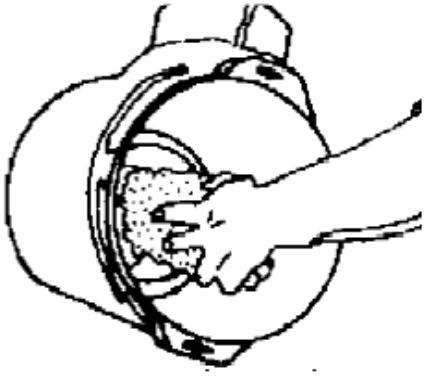


Figure 3-27

every second replacement of the main filter.

To change the backup filter (1), pull the old filter out of its holder, insert a new filter and reassemble the air cleaner in the reverse order.

Clean the air cleaner if necessary, see section **Air cleaner - Cleaning.**

Wipe clean the inside of the cover (2) and the filter housing (5). See the previous illustration.

Wipe also both surfaces for the outlet pipe; see adjacent Figure.

3.4.6Every six months Service (Every 1000 operating hours)

3.4.6.1 Discharge the condensed water and sediments from the hydraulic oil tank(Figure 3-28).

Figure 3-28
1.Drain plug

（1）Park the machine on level surface and press brake button;

（2）Unscrew the plug(A vessel with the volume of about 15 liters shall be placed under it), drain out condensation and sediment in the tank until there is clean hydraulic oil flowing out, and then screw the plug back on immediately.

Draining out the condensation and sediment should be carried out after the machine stops working for min. 10 hours.

3.4.6.2 Discharge the condensed water and sediments from the diesel fuel tank(Figure 3-29).

Figure 3-29
1.Drain plug

Water and sediment in the fuel tank are removed via the drainage plug in the bottom of the fuel tank.

Drain the roller after it has been stationary for a longtime, e.g. after standing overnight. The fuel level should be as low as possible.

3.4.6.3 Change hydraulic oil in the hydraulic pump station（Figure 3-30）

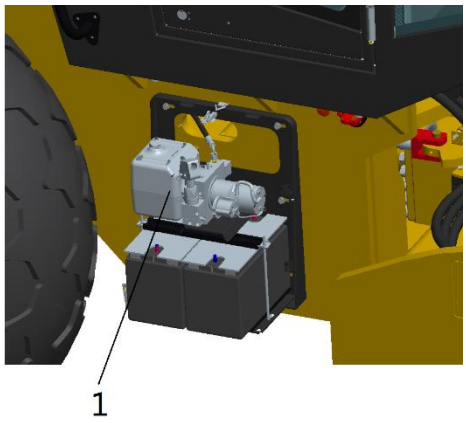


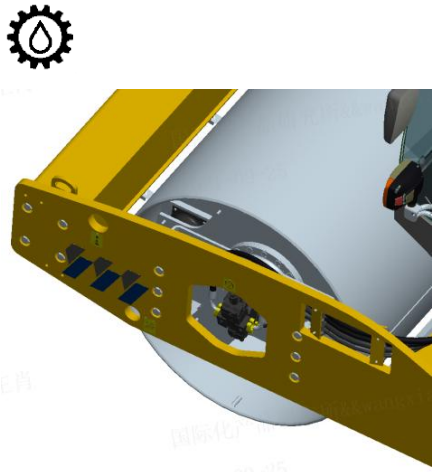
Figure 3-30
1.Hydraulic pump station

It is necessary to change the hydraulic oil in the pump for engine hood lifting and lowering. During replacing, you must drain off the residual oil inside the pump and its loop. And fill with clean hydraulic oil. Firstly, have the engine hood support cylinder raised /lowered for one stroke, then fill hydraulic oil to the level with 3cm away from the fill plug (After unscrew the extension fitting).

3.4.6.4 Check engine valve clearance. Please refer to Engine service manual.

3.4.6.5 Checking the engine belt tension . Please refer to Engine service manual.

3.4.6.6 Change the oil in the drum gearbox（Figure 3-31）



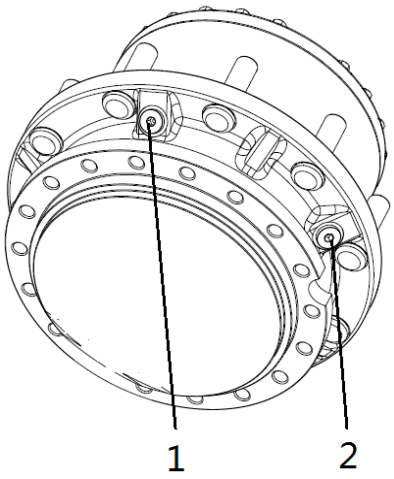


Figure 3-31
1 Oil fill plug
2.Oil level plug

The annual service needs replace all the lubrication oil in front drum reducer, the replacing process as follows.

（1）Park the machine on level surface and press brake button.

（2）Take down the oil discharge plug and discharge all lubrication oil in the reducer (please place a container of 3L under the port). Clean the plug and assembly it again.

（3）Add clean gear oil from the oil filler until the oil level hole is spilling, then reinstall and tighten the oil plug.

3.4.7Annual Service (every 2000 operating hours)

3.4.7.1 Replace the hydraulic oil（Figure 3-32）

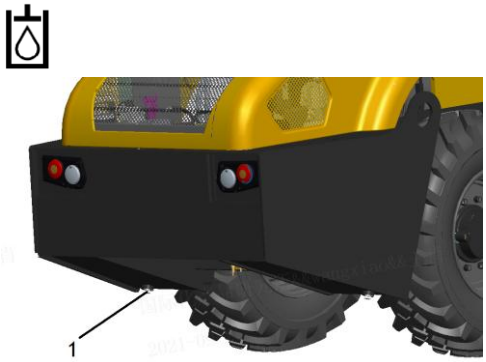


Figure 3-32

Obtain a container for collecting the used fluid. The container should be able to hold at least 150 liters (40 gal).

Fill up with fresh hydraulic fluid as per the instructions under the heading "Hydraulic reservoir - Check fluid level". Replace the hydraulic fluid filters at the same time.

Start the diesel engine and operate the various hydraulic functions.

Check the fluid level and top up if necessary.

Observe care when draining hot hydraulic fluid.Wear protective gloves and goggles.

Save the oil and hand in to an environment-friendly waste disposal station.

3.4.7.2Replace the lubrication oil in front drum.（Figure 3-33）

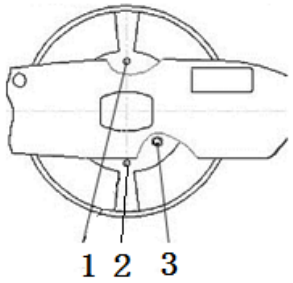


Figure 3-33
1 Oil fill plug
2 Oil drain plug
3 Oil level plug

Park the roller on a flat ground (this operation need two people, one operates the roller, the another stands beside the machine to watch and act as director), keep the filler plug at upper position. Park the roller and press down the brake button.

Unscrew the oil draining plug and drain all the gear oil in the vibration chamber (place a container of 60L under the draining port). Wipe off the dirt from the oil plug.

Operate the front drum to make the oil discharge/fill plug at upper position. Park the roller and press down the brake button.

Fill gear oil, at the same time watch the oil level through oil plug hole. After filling, tighten the oil plug.

Save the oil and hand in to an environment-friendly waste disposal station.

3.5 Other service description

3.5.1 Cleaning with pressurized washer

When cleaning with pressurized washer, never take pressurized water onto fill caps of fuel tank and hydraulic oil tank directly! Cover the fill cap the oil tank with plastic bag and seal it with rubber envelope to avoid water entering into the tank.

Never take pressurized water onto electrical components and instrument panel directly.

3.5.2 ROPS/FOPS

Never do welding of drilling on an ROPS or a safe cab.

Never try to repair broken ROPS or safety cab; instead, it should be replaced by a new one immediately.

3.6 Trouble shooting

Table 3-10

Parts	Fault conditions	Fault cause	Remedies
Engine	difficult to start up	Insufficient fuel.	Fill fuel.
		Oil line being clogged.	Check, clean or replace filter
		Oil pump defective.	Repair or replace.
		Spraying nipple defective.	Repair or replace.
		Insufficient battery power	Charge or replace.
		Something wrong with electrical circuit.	Repair or replace.
	Abnormal emission	Excessive load.	Select proper gear for driving.
		There is air inside oil circuit.	Air bleeding.
		Fuel mixed with water.	Replace fuel.
		Air filter being clogged.	Check, clean or replace.
		Excessive fuel feeding.	Check and adjust oil supply.
		Engine temperature being too low.	Check the thermometer or cooling system.
	Engine over-heating or alarming	Loose or worn fan belt.	Check, tighten or replace.
		Too high temperature of cooling air, thermo-circulation gas or ambient temperature.	Check or stop the machine for some time.
		Too high or too low engine oil lever.	Reduce or increase.
		Leaks with air intake.	Check, adjust or replace.
		Radiator of the engine being damaged or blocked.	Replace or clean.
		Something wrong with air filter or turbo-charger.	Check, adjust or replace.
		Vent being blocked.	Check or adjust.
	Excessive engine oil consumption	Leaks from external lubrication system	Check, tighten the sealing.
		Leaks from the cooling system	Check, repair or replace.
		Turbo-charger problem.	Repair or replace.

		Air compressor (Oil flowing into air compressor)	Repair or replace.
	Lower engine oil pressure	Too low or too high oil level.	Check oil level, fill or drain out the oil.
		Pressure gauge or sensor works improperly.	Check or replace.
		Engine oil filter being clogged.	Check, clean or replace.
		Pressure regulator doesn't work.	Repair or replace.
		Oil suction pipe being not sealed.	Repair or replace.
	Higher engine oil pressure	Pressure gauge or sensor works improperly.	Repair or replace.
		Working temperature of the engine being too low.	Check the cooling system, repair or replace.
		Incorrect engine oil specification	Replace the engine oil with correct one.
		Adjusting valve problem	Repair or replace.
	Engine shuts off.	There are sediments or water inside the fuel system	Drain off dirty water, clean the pipe and replace the filter.
		There is air inside the oil supplying system.	Check the fuel system for leakage and bleed air.
		Oil pump problem	Replace oil supply pump.
Vibrating drum	No vibration.	Electrical components malfunction	Check and repair
		Something wrong with hydraulic vibrating system.	Check and repair
		Transmission spline sleeve or shaft gets worn	Check and replace
		Vibrating bearing gets burnt.	Check and replace
		Something wrong with hydraulic vibrating system.	Check and repair
		Eccentric block get blocked or torn out.	Check and replace
Hydraulic driving system	There is no oil feeding pressure.	Oil level inside oil tank being too low.	Fill oil to correct level.
		Oil-feeding pump defective.	Repair or replace.
		Serious internal leaks with pump and motor	Repair or replace pump (motor).

	When being in neutral position, oil-feeding pressure is too low.	Oil-feeding relief valve defective.	Repair or replace.
	When working, oil-feeding pressure is too low.	Flushing valve defective.	Repair or replace.
	The performance of the driving system is abnormal in neutral position	Something wrong with pump control connection	Repair or replace.
		Something wrong with Servo-valve.	Repair, adjust or replace
		Something wrong with pump.	Repair or replace.
		Something wrong with pump control	Repair or replace.
	Abnormalities in single direction control	Something wrong with Servo-valve.	Repair or replace.
		Something wrong with single direction valve	Repair or replace.
		Oil level inside oil tank being too low	Fill oil to correct level
		Something wrong with pump control.	Repair or replace.
		Something wrong with Servo-valve.	Repair or replace.
		Something wrong with single direction valve	Repair or replace.
	Both forward and reverse abnormal.	Oil level inside oil tank being too low.	Fill oil to correct level.
		Something wrong with pump control.	Repair or replace.
		Servo-valve defective.	Repair or replace.
	Too low motor output torque	Working pressure of motor being too low.	Adjust system pressure.
		Motor displacement abnormal.	Adjust, repair or replace.
		Too much leakage inside pump and motor.	Adjust, repair or replace.
	Motor output speed being	Oil level inside the oil tank being too low.	Fill oil to correct level.

	abnormal	Oil-feeding pressure being abnormal.	Adjust pressure setting.
		The pump output flow being abnormal.	Adjust flow setting.
		Motor displacement control being abnormal.	Adjust, repair or replace.
		Engine rotation speed being too low.	Adjust to proper value.
	Slow system response	System pressure being abnormal	Adjust or replace
		Oil suction filter defective	Replace
		Oil feeding pressure is abnormal.	Adjust pressure setting.
		Too much leakage inside pump and motor.	Adjust, repair or replace.
Hydraulic vibrating system	The system has no vibration.	Too low oil level inside oil tank	Fill oil to correct level.
		Overflow valve of pump defective.	Repair or replace.
		Pump and motor get damaged	Replace.
	Low vibration frequency	Too low oil level inside oil tank.	Fill oil to correct level.
		Pump output flow is abnormal.	Adjust flow setting.
	Vibration could not be switched off.	Solenoid valve being blocked or damaged.	Repair or replace.
		Check-valve being clogged.	Clean.
Steering system	It is a little difficult or heavy to make slow or rapid steering.	Insufficient oil supply from pump.	Check the pump.
		Too low oil level inside oil tank.	Fill oil to correct level..
		Oil viscosity being too large.	Use recommended oil.
	It is easy to make steering if without load, while it is heavy to make steering if with load.	Pressure of relief valve for steering system being low.	Adjust.
		Relief valve being blocked	Repair or replace.
	Steering system not functioning	Steering wheel problem	Repair or replace.
Braking system	Can't release the brake disc	Low brake system pressure	Check
		Brake disc burnt	Replace
	No braking	High brake system pressure	Check
		Too large disc clearance	Adjust
		Brake spring broken	Replace

3.7 Schematic of the hydraulic system and electrical system

3.7.1 Schematic of the hydraulic system

Schematic of the hydraulic system is as follows（Figure 3-36）

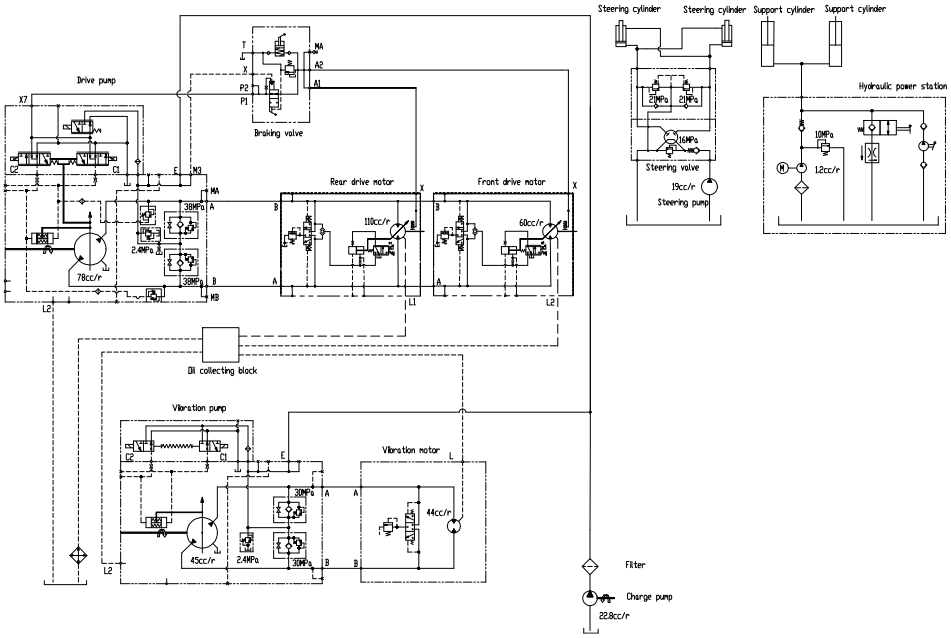


Figure 3-36

3.7.2 Schematic of the Electrical system

Schematic of the Electrical system is as follows（Figure 3-37—Figure 3-41）

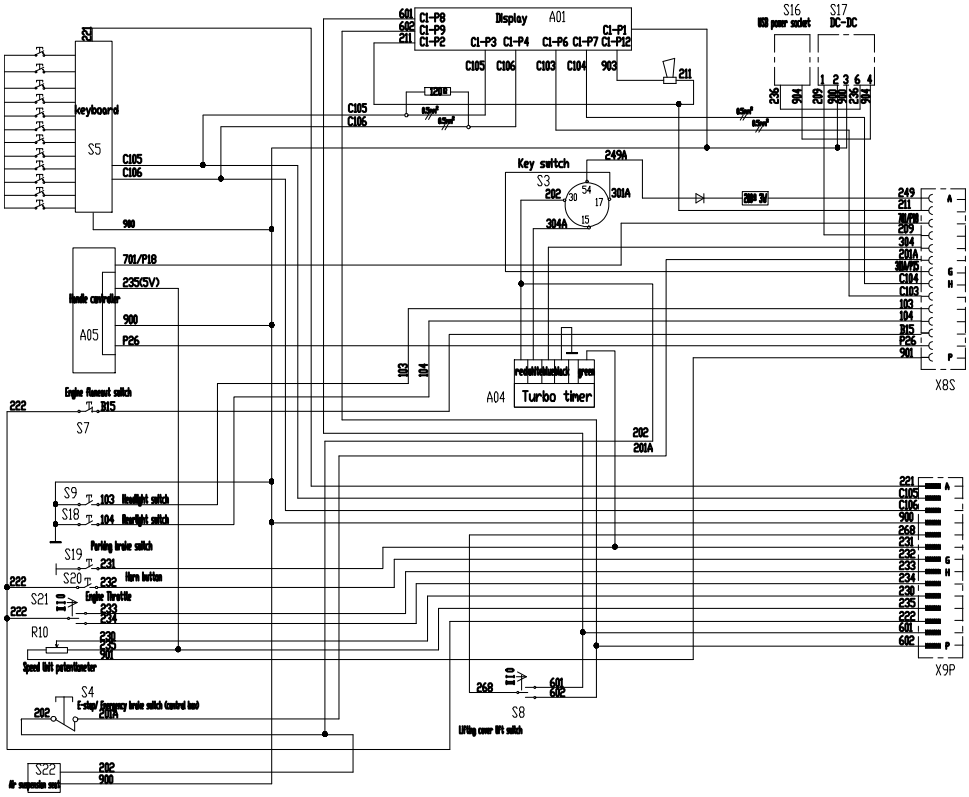


Figure3-37

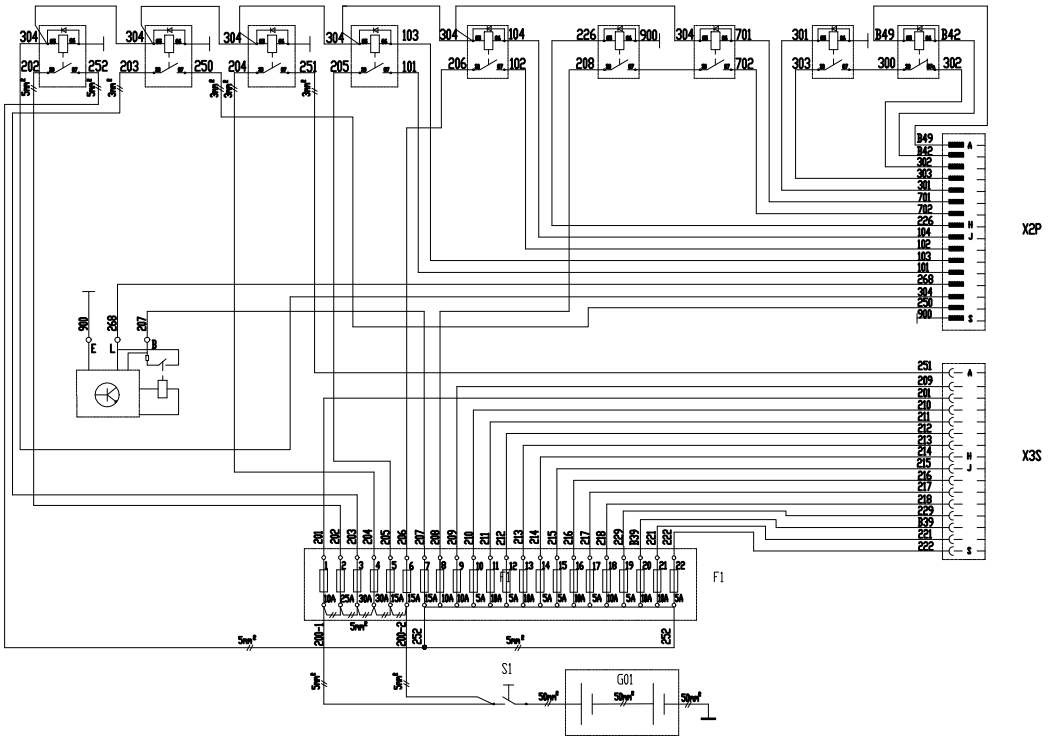

X2P
X3S
F1
S1
G01

Figure3-38

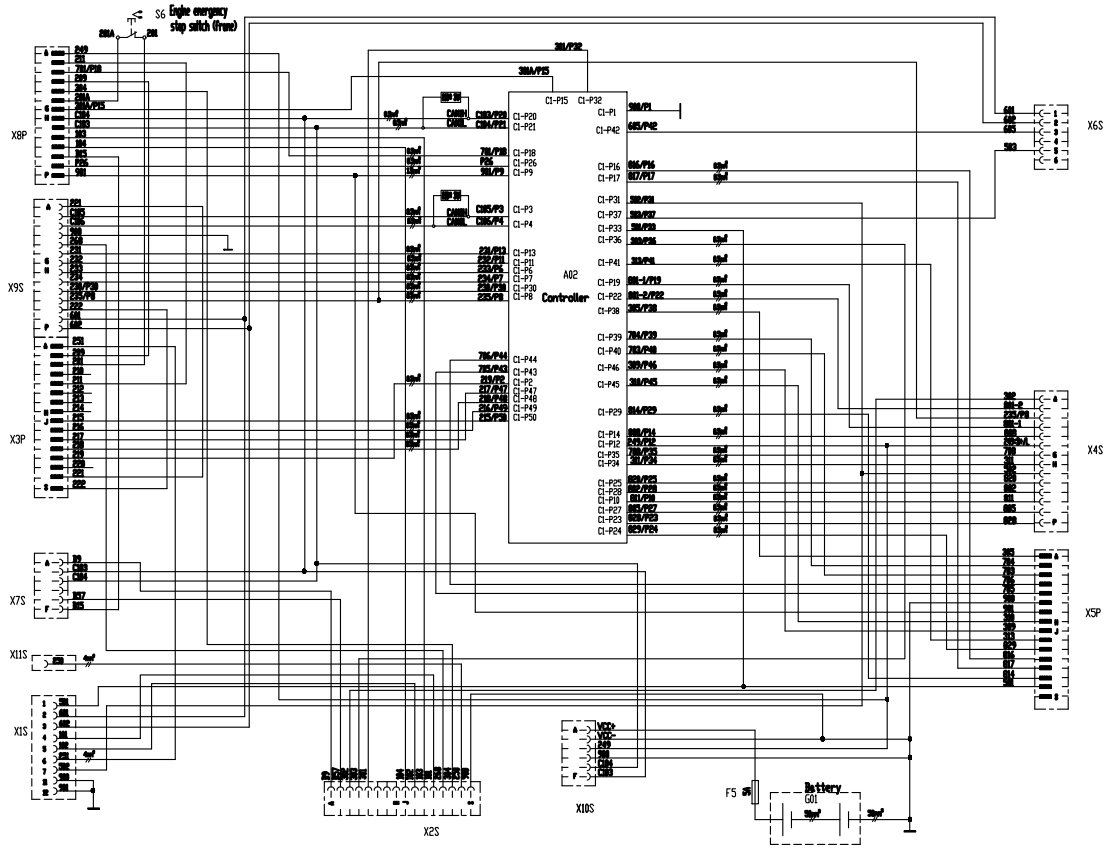

S6 Engine emergency stop switch (front)
X8P
X9S
X3P
X7S
X11S
X1S
X2S
X10S
X6S
X4S
X5P
A02
Controller
F5
Battery
G01

Figure3-39

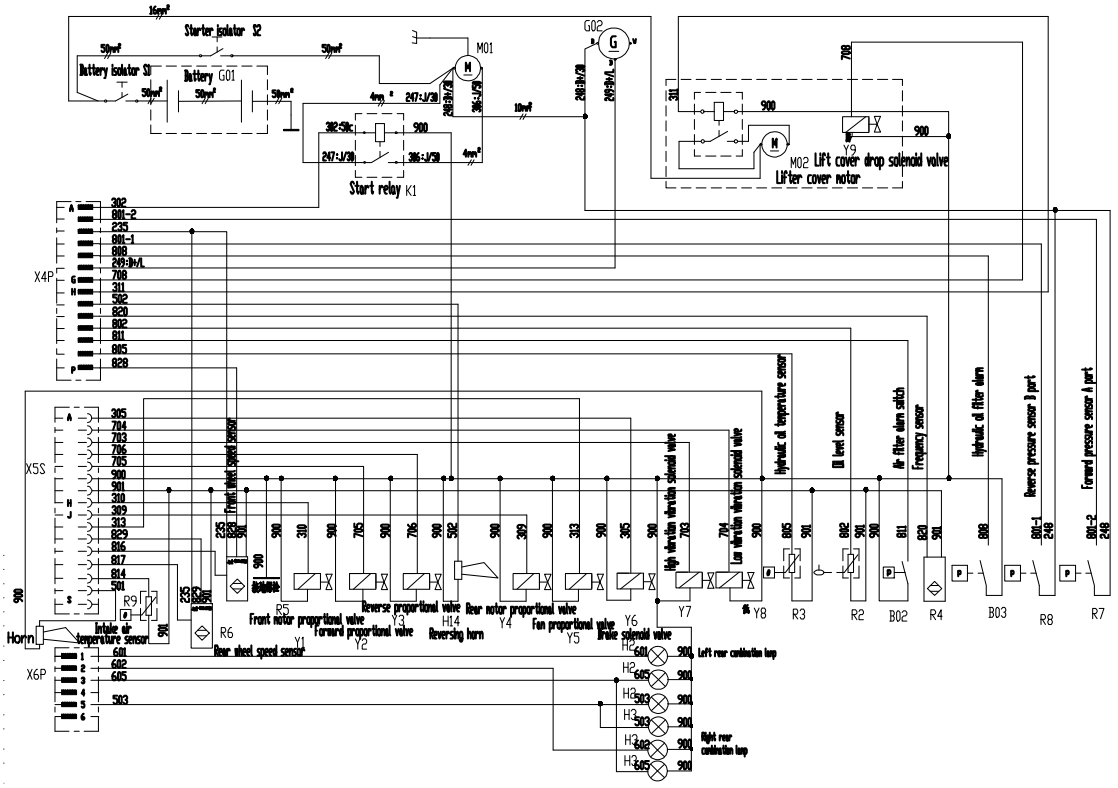
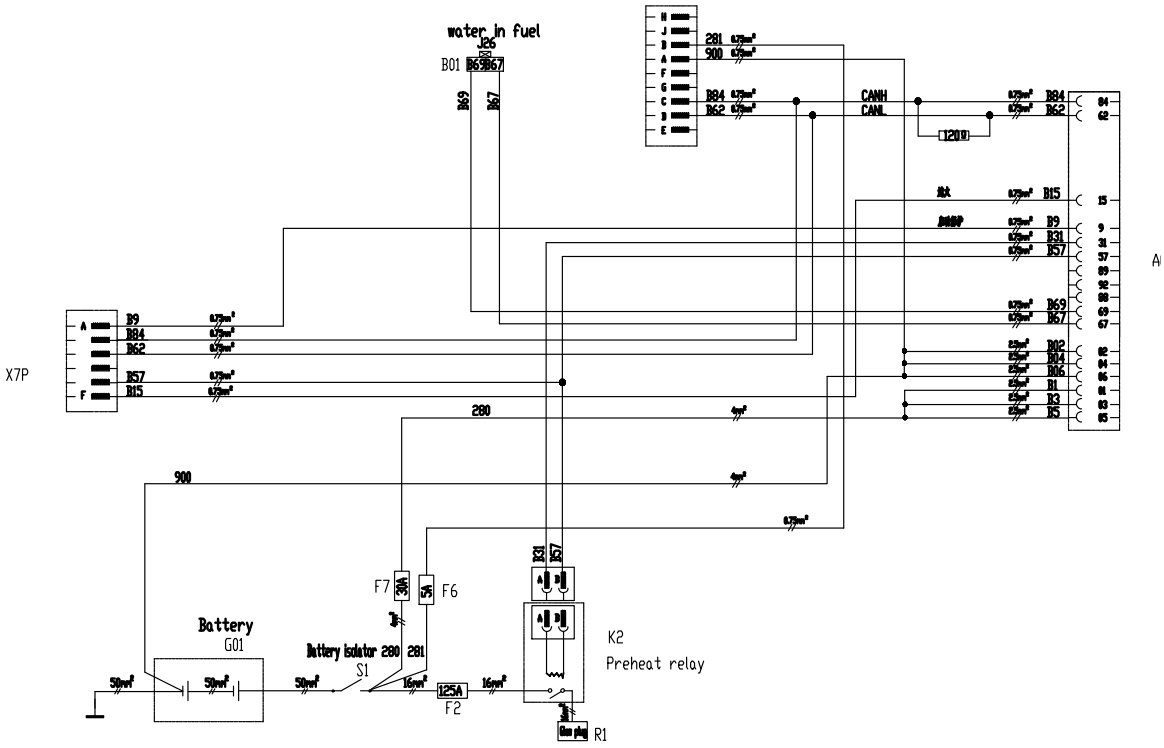


Figure3-40



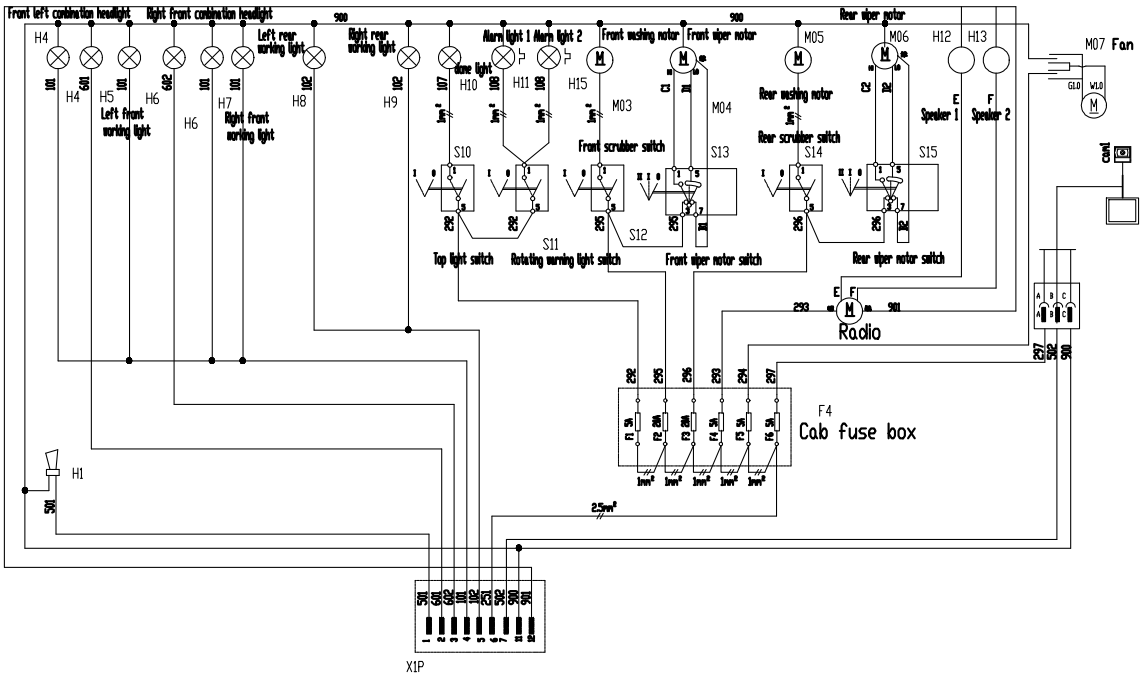

Front left combination headlight
Right Front combination headlight
Left rear working light
Right rear working light
Alarm light 1
Alarm light 2
Front washing motor
Front wiper motor
Rear wiper motor
M07 Fan
H4
H5
Left front working light
H6
H7
Right front working light
H8
H9
dome light
H10
H11
H15
M03
M04
M05
M06
H12
H13
Rear washing motor
Front scrubber switch
Rear scrubber switch
Speaker 1
Speaker 2
S10
S11
S12
S13
S14
S15
Top light switch
Rotating warning light switch
Front wiper motor switch
Rear wiper motor switch
Radio
F4
Cab fuse box
H1
X1P

Figure3-41

3.8 Components review

3.8.1 Front and rear frame

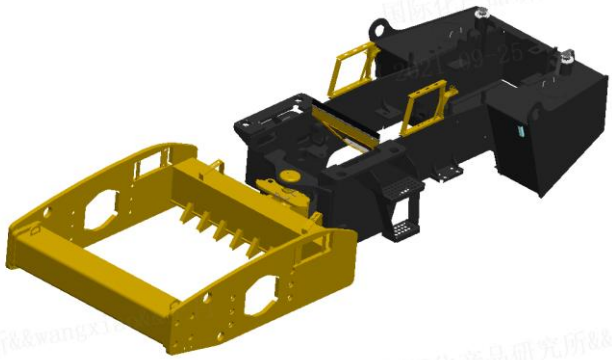


Figure 3-42

Frame consists of front frame, rear frame and articulated mechanism, etc.

Front frame is connected to the vibration drum by the connecting bolts at both sides of the vibration drum. The weight of front frame accounts for about one third of the total machine weight. Front beam and frame can be separated by dismantling the connecting bolt of front beam, vibration drum and front frame can be separated by dismantling the connecting bolt of vibration drum.

At the left and right side of the end of rear frame are respectively the hydraulic oil tank, diesel tank, the middle part is welded with drive axle installation plate, the front hinged plate is welded with joint plate, diesel engine mounting plate, steering cylinder plate, cabin mounting plate, etc.

Front and rear frameis connected by hinged mechanism. Articulated mechanism works as articulated steering, frame swinging, etc.

3.8.2 Drum

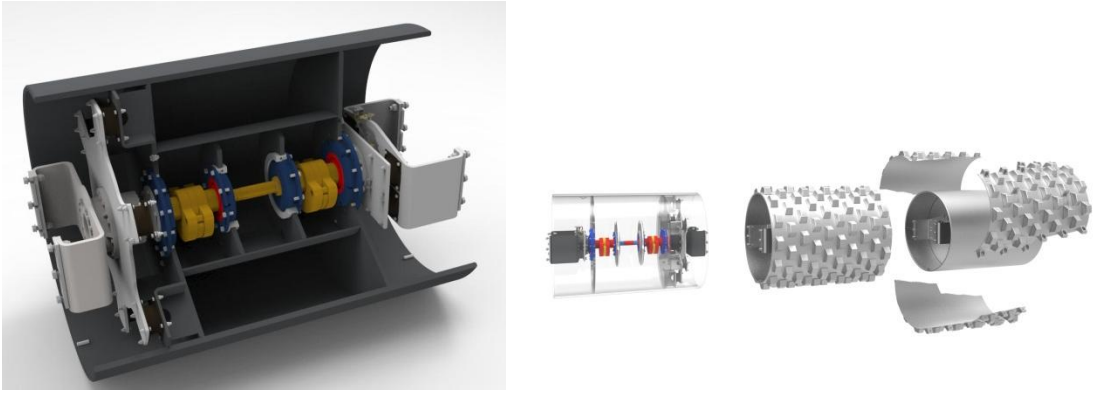


Figure 3-43

Vibration drum is not only the propelling wheel, but also the main work device of roller. Left, right mounting bracket and front frame are connected. The other end of left mounting bracket is connected to front wheel reducer, drive the front drum rolling through the drive plate and left rubber damping block. Vibration drum drive side and vibration side rubber damping block are not interchangeable due to different rigidity.

Left and right exciters are located on the bearing seat supported by vibration bearing. Vibration chamber is filled with a certain capacity of gear oil, when the front drum is moving, gear oil is dripping along the inwall from top to bottom, thus to lubricate the bearing.

CV83U vibration drum is of high reliability and high compaction ability. The conjunction of the three key properties ensures high amplitude uniformity, avoiding polarization, achieving best possible compaction effect; Four-point supporting structure makes equal exciting force for four bearings, greatly improving the service life of the bearing! Double framework oil seal structure avoids oil leakage, ensuring the reliability of vibratory drum.

3.8.3 Axle and Tire

Figure 3-44

Smooth drum roller is equipped with " Diamond Tire " low-pressure wide base tires, tire pressure is 200 kPa, rhombus block light patterns are distributed on the surface, achieving good damping performance. Convex block type roller is equipped with agricultural tires， the tire pressure is 170 kpa. Drive rim utilizes DW20 standard rim. Rim and drive axle is connected by bolts and nuts. Bolt and drive axle are fixed together, cannot be disassembled, nut is special ball nut for axle. Drive axle adopts heavy type, anti-slip axle.

Front and rear drum double drive, anti-slip drive axle, low-pressure wide tires ensure that the roller has good driving performance and high gradeability, theoretical gradeability can reach up to 45%.

3.8.4 Engine system

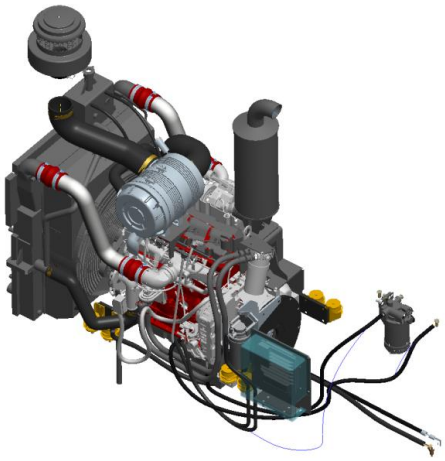


Figure 3-45

Power system utilizes Stage IIIA/ Tier 3 Cummins engine, including the following subsystems:

Suspension system: vibration cushion reduces the vibration of the engine.

Power output: elastic element flange coupling transfers the flywheel output power to drive pump and vibration pump. Front gear train drive interface connects to the steering pump.

Air intake system: utilizing the two-stage filtration; the pre-filter filters larger size dust, preventing rainwater flowing into pipe, then the air filter further purifies the air, to ensure clean air for engine. Compared with natural air intake engine, turbocharged engine has larger air inflow, also higher power. Due to the high rotation speed of the turbocharger, the engine has also a high sensitivity to the dust, so the sealing of intake pipe is more important.

Fuel system: diesel oil tank stores diesel for whole working day.

Starting and electrical system: starter voltage is 24V, generator voltage is about 28V.

3.8.5 Hydraulic system

Hydraulic Drive sytem

The hydraulic system uses axial variable displacement piston pump that features swash plate to vary the displacement. The pump provides an infinitely variable flow rate between zero and maximum. The internal charge pump provides flow to make up internal leakage and maintain positive pressure in the main circuit, provides flow for cooling and filtration and make up any leakage losses from external hydraulic valve or auxiliary systems, and provides flow and pressure for the control system.

The motor provides a relatively high maximum to minimum displacement ratio and high output speed capability.

The front and rear drums adopt plunger piston motor. The motor starts to work from maximum displacement so as to provide maximum starting torque and meet the requirement of the system for high acceleration.

Variable displacement pump and variable displacement motor form a closed-loop hydraulic system, which are combined with other elements in the system to transfer and control hydraulic power. Both drive motors one on the drum, the other on the rear axle) feature a two-position hydraulic control for the creation of four speed ranges. The variable displacement pump provides infinitely variable speed in both forward and reverse to suit different operating conditions.

Hydraulic vibration system

Adopt axial variable displacement piston pump and 90 series axial fixed displacement piston motor to form a closed type hydraulic system. The direction of the oil port changes with the swash plate to realize the change of the direction of the motor output, namely dual frequency. The exciters on the left and right sides have different eccentric moments when rotating in forward and reverse directions, resulting in different vibrating amplitudes, namely two amplitudes. Dual vibrating frequency and amplitude allow the machine to deliver excellent performance over

the compaction of a wide range of materials of varied layer thickness.

Hydraulic Steering system

The steering hydraulic system is an open loop hydraulic system incorporating gear pump, full hydraulic steering gear and steering cylinders. Steering is convenient and effortless.

Hydraulic lift system

A hydraulic pump station is designed to provide pressurized hydraulic oil flow to the engine hood lift cylinders. Raising and lowering of the engine hood can be controlled from a switch located on the instrument panel. The function of manual control in raising and lowering makes it convenient to open the hood for repair when there is breakdown.

Hydraulic brake system

The machine is designed with travelling brake, parking brake and emergency brake.Service braking is activated when the drive pump's swash plate is moved to neutral position.

Spring applied and hydraulically released multi-disc brakes are mounted on the drum gear reducer and within the drive axle for parking braking. When parking braking is activated, the drum and rear wheels are unable to move because the hydraulic fluid has been released and the brake discs closed.

In emergency case, when the emergency stop button on the instrument panel is pressed down, pressurized hydraulic fluid is relieved and brake discs closed, causing the drum and rear wheels in travelling to stop abruptly. You should, in the meanwhile, place the propulsion lever to neutral position.

Warning	**Emergency stop button shall only be used for emergency case! For it may damage the brake and affect the braking performance.**

3.8.6 Cab

Figure 3-46

Have the ROPS and FOPS functions to ensure operators' personal safety.

The control console of the cab is assembled by bolts, which is removable and convenient for maintenance and transportation.

The damper is equipped between the cab and frame, which alleviates the effect of the vibration to the driver and improves the driving comfort.

Equipped with large area of safety glass to deliver a wide view, movable glass of the door can open 180°, the spring block fixes the position, which are convenient to observe pinch drums' working condition.

3.8.7 Air-conditioning system

Air-conditioning and heating are available. Heating is produced by the circulation of hot engine water. The evaporator of the air-conditioner is located under the seat and the condenser is in the behind of cabin. The air compressor is connected via the

engine belt.

3.8.8 Electrical system

The electrical system supplies power to the whole machine, including the starting circuit, power circuit, stopping circuit, working status indication of key components, fault warning systems, etc. Sound and light warning indicators on the instrument panel provide instant information on service and maintenance, preventing the machine from working with fault and avoid disastrous damages for minimum on-site downtime.

4. Transportations and Storage

4.1 Transportations

4.1.1 Load or unload the roller by using a slope

Drive the roller onto a carrier vehicle as the Figure 4-1. The angle of incline should be less than 20% (α≈11.3°). The incline can be made of rock and concrete or metal surface.（the surface is like the washboard）.

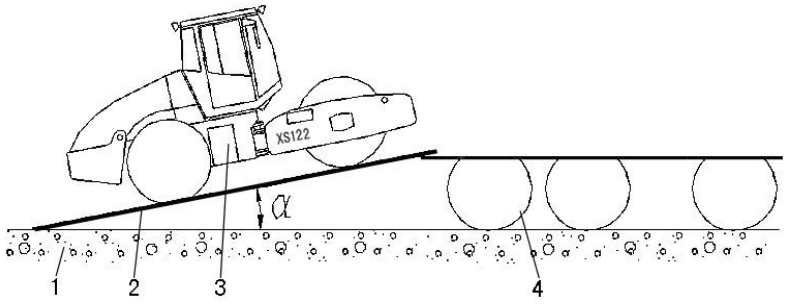


Figure 4-1
1. Road surface 2. Metal incline 3.Roller 4.Transport vehicle

Hazard	**Any deteriorated or rusty incline can not be used!** **Make sure that the incline has been correctly fixed between the carrier vehicle and road surface.** **Make sure that there is free of oil, snow, ice or mud on the incline.**

4.1.2 Fixing in transportation

Fix the roller on carrier by rope (anchor the transportation vehicle) according to Figure 4-2, but don't tight the machine too strict. Meanwhile wedge the front and rear drum to prevent any machine rolling or movement.

Make sure the front and rear chassis are locked up (Figure 4-3).

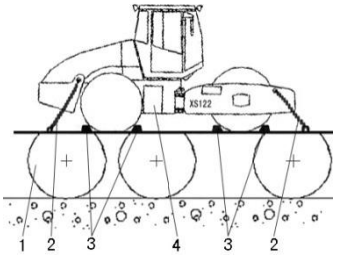


Figure 4-2
1Transport vehicle 2 Ropes
3 Wedge 4Roller

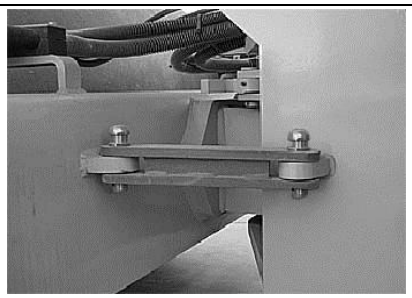


Figure 4-3

4.1.3 Hoisting the Machine

Lifting the machine must be according to the Figure 4-4. The limited max. lifting weight is marked on the machine plate.

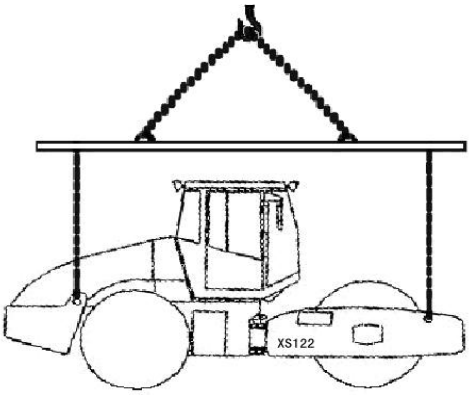


Figure 4-4

Hazard	**Lock the front and rear chassis before lifting the roller (Figure 4-3).**

4.1.4 Towing Machine

4.1.4.1 Short distance towing with the engine running

	Activate the parking brake, and temporarily stopthe engine. Chock the wheels to prevent the rollerfrom moving.

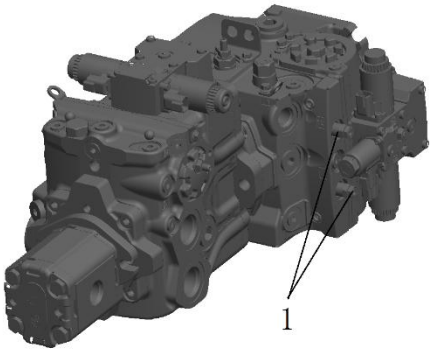


Fig 4-5

1.By-pass valve

Open the hood and make sure that the propulsionpump is accessible.

On the pump there are two by-pass valves (1) (hexscrews), which should be turned three turns anticlockwise to put the system in by-pass mode. This function enables a machine to be moved.

Start the engine and allow it to idle.

Place the Forward/Reverse lever in the forward orreverse position. If the lever is in neutral, the brakes inthe hydraulic motors are activated.

The roller can now be towed and can also be steeredif the steering system is otherwise functioning.

To disengage the by-pass mode, turn back the by-pass valves (1) three turns clockwise.

Warning	The machine must not be moved at a speedhigher than 1 km/h, and no more than300 meters. Otherwise there is a riskof damaging the drives. Be sure to reset thetowing valves (by turning them three turnsclockwise) after towing.
Hazard	**The rope should be used when tow the machine upgrade or to an even road. A hard towing stick should only be used when tow the machine downgrade.**

4.1.4.2Short distance towing with the engine is inoperative

⚠	**Activate the parking brake, and temporarily stopthe engine.** **Chock the wheels to prevent the rollerfrom moving.**

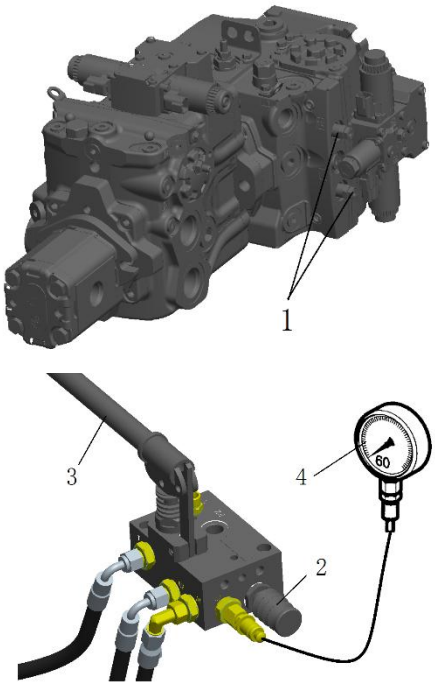


Fig 4-5

1.By-pass valve 2.Brake release button
3.Pump arm 4.Pressure gauge

Open the hood and make sure that the propulsion pump is accessible.

On the pump there are two by-pass valves (1) (hexscrews), which should be turned three turnsanticlockwise to put the system in by-pass mode.This function enables a machine to be moved.

Press the break release button (2).

Connect 60bar pressure gauge to the pressure test port.

Pump with the arm (3) until thepressure gauge shows value 24bar, then the brakes are released.

The roller can now be towed.

After towing, pull the brake release button (2) up.

To disengage the by-pass mode, turn back the hex screws (1) three turns clockwise.

4.2 Storage and Protection

4.2.1 Daily Machine Storage and Protection

At the end of daily work, park the machine onto a flat ground. If it is just a case of having to leave the machine onto a slope, then block the machine's both front and rear drums (wheels) with stones or wood wedges, so as to prevent any accident happening

Before leaving the machine unattended, please have its braking system engaged and shut off the engine.

Switch off the power system and have the parts with locking-key securely locked (such as cab door, engine hood, etc.), and keep the keys well.

4.2.2 Short-Term Storage（Within Three Months）

- Clean the machine to keep it free of dirt and dust, especially clean the engine, generator, injecting pump of start motor, injector, hydraulic pump and motor as well as hydraulic hoses. After cleaning, wipe them with dry and soft cloth.
- Clean every lubrication point with coal oil and fill lubrication grease.

4.2.3 Long-term Storage

4.2.3.1 Storage site

- Normally, the machine should be placed in a storage room with nice ventilation.
- If the machine has to be placed outdoor, park it on a concrete road, which has a sewerage system. Cover the machine with some plastic sheets (Figure 4-9). In addition, the storing place.

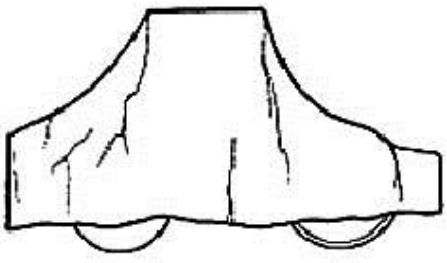


Figure 4-9

should not be exposed to natural disaster, corrosive and hazardous substance

and gas.

4.2.3.2 Storage

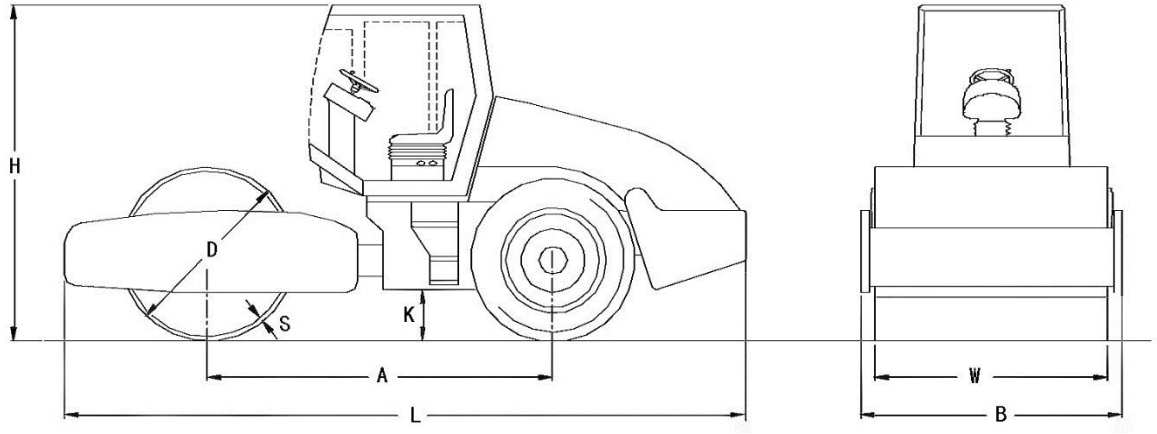
- Start the machine every month and rotate it at low speed about half an hour to make all systems lubricate, at the same time, grease all nipples.
- Regularly check the machine status, protective cover and anti-corrosion substance on the machine.
- In the winter, before storing the roller for a long time, you must drain out the coolant in the radiator to avoid the radiator being damaged due to frozen water.

4.2.4 Preparations for restarting after long time storage

- Remove the plastic sheets.
- Clean the protective substance coated on the uncover area of the machine.
- Charge the battery and connect its wires.
- Drain out the oil in the rim decelerator.
- Replace the lubricating oil in vibrating drum.
- Drain out the sediments and water mixed in hydraulic oil tank and fuel tank.
- Grease each articulation joints.
- Before operating the machine, carry out inspection according to the operator's manual.

5 Technical Specifications

XS83\ XS83PD



Dimension (mm)	A	B	D	H	K	L	S	W
XS83	2680	1860	1220	3040	270	5355	20	1680
XS83PD	2680	1860	1220	3120	330	5355	20	1680

	Unit	XS83	XS83PD
Mass			
Operating Weight	kg（lbs）	8000（17600）	8430（18546）
Load on front drum	kg（lbs）	3800（8360）	4230（9306）
Load on rear drum	kg（lbs）	4200（9240）	4200（9240）
Static linear load	kg/cm（lb/in）	22.1（123.5）	-
Travelling performance parameter			
Travel speed Ⅰ	km/h（mph）	0~5（0~3.1）	0~5（0~3.1）
Travel speed Ⅱ	km/h（mph）	0~11（0~6.84）	0~11（0~6.84）
Gradeability in Theory	%	50	46
Minimum turning radius	mm（in）	5360（211.0）	5360（211.0）
Power system			
Engine manufacturer		Cummins	Cummins
Model		QSF3.8	QSF3.8
Cooling type		Water cooled	Water cooled
Number of cylinder		4	4
Rated power	kW（hp）	74（99）	74（99）
Rated rotation speed	rpm	2200	2200
Fuel		Diesel oil	Diesel oil
Voltage	V	24	24

	Unit	XS83	XS83PD
Drive system			
Drive type		Static hydraulic-closed type	Static hydraulic-closed type
Brake system			
Travel brake		Hydraulic	Hydraulic
Parking brake		Mechanical/hydraulic	Mechanical/hydraulic
Emergency brake		Mechanical/hydraulic	Mechanical/hydraulic
Steering system			
Steering type		Articulated	Articulated
Steering control		Hydraulic	Hydraulic
Vibration system			
Vibration type		Static hydraulic-closed type	Static hydraulic-closed type
Vibration frequency	Hz（vpm）	30/35（1800/2100）	30/35（1800/2100）
Nominal amplitude	mm（in）	1.8/0.9(0.071/0.035)	1.6/0.8(0.063/0.031)
Excitation force	kN（lbs）	125/85(28100/19108)	125/85(28100/19108)
Tire			
Specification		405/70-24-14PRR1TL	405/70-24-14PRR1TL
Grade		12	12
Air pressure	kPa	380-400	380-400
Volume			
Engine oil	L（gal）	11(2.91)	11(2.91)
Fuel tank	L（gal）	200(52.8)	200(52.8)
Hydraulic oil tank	L（gal）	200(52.8)	200(52.8)
Coolant	L（gal）	20(5.28)	20(5.28)
Vibration chamber of front drum	L（gal）	40(11.88)	40(11.88)
Reducer for front drum	L（gal）	2.5(0.66)	2.5(0.66)
Axle	L（gal）	16.4(4.4)	16.4(4.4)

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