

WARNING

Before operation and maintenance, the driver and maintenance personnel are required to read this manual thoroughly. Otherwise, fatal accident may occur. This manual shall be kept properly for future reference by the personnel concerned.

Operation and Maintenance Manual for RS8140H Road Roller

First edition, November 2021 First print

SHANDONG LINGONG CONSTRUCTION MACHINERY CO., LTD.



Foreword

Thanks for choosing the RS8140H road roller produced by Shandong Lingong Construction Machinery Co., Ltd.

This manual provides a guidance for the correct operation and maintenance of the machine, and thus please keep it in the net bag on the back of seat back in the cab or in the net bag on the inner side of door for reference by the personnel concerned when necessary. If this manual gets lost or becomes illegible due to damage, please contact SDLG or our dealers.

When this machine is to be resold, make sure to hand over this manual together with the machine to the new user.

All the parameters, pictures and descriptions covered in this manual apply only to the basic version, and for any variations, please contact SDLG or refer to related materials. (Note: The outline drawing in this manual is for illustration only.)

This manual briefly introduces the structure, performance, operation and maintenance of RS8140H road roller for your reference during operation, maintenance and technical management.

The RS8140H road roller will be continuously improved, and thus please attention that we will make changes to this manual without notice and the information contained in this manual may be different from the product that you have purchased.

We have always been committed to improve our products for their further advancement and higher reliability. We reserve the right to make changes, but disclaim introducing such changes to the delivered products. We also reserve the right to modify the data, machine and maintenance instructions, and the design as well as operation and maintenance instructions of the product are subject to change without prior notice. For the latest information of the machine or in case of any question about this manual, please consult us.

If any imperfection is found in the process of use, please do not hesitate to give us the feedback so that we can make continual quality improvement to better satisfy your demands.

This manual is the property of Shandong Lingong Construction Machinery Co., Ltd., and shall not be reproduced or reprinted without our written permission.



WARNING

Only the personnel who have been professionally trained and qualified are allowed to operate and maintain the machine.

Before operation or maintenance, please carefully read this manual. Otherwise, do not operate, maintain and repair this machine.

The operating procedures and precautions in this manual apply only to the intended use of the machine. If the machine is used for an operation that is out of the specification herein but not prohibited, always make sure that this operation will not cause personal injury to yourself or others.

Under no circumstances shall those operations and behaviors expressly prohibited herein be performed.



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Safety Notices

The operator shall understand and abide by the current national and local safety regulations. If such regulations are not available, the safety instructions in this manual shall prevail.

Most accidents are caused by failure to obey operation and maintenance specifications of the machine. To avoid unnecessary accident, please read and follow all warnings and precautions in this manual and on the machine before operation or maintenance.

The safety measures are detailed in Chapter 1 "Safety".

Considering the fact that not all possible hazards are foreseeable, it is impossible for safety notices in this manual and on the machine to cover all safety precautions. If it is necessary to take steps and operations not recommended herein, always protect the safety of yourself and others, and keep the machine from any damage. If the safety of some operations remains uncertain, please consult us or our dealers.

The operation and maintenance precautions referred to herein apply only to the intended use of this machine. If the machine is to be used for other purposes than those listed herein, it is the user or operator instead of us that shall take the safety liabilities therefrom.

In no case shall any operations expressly prohibited herein be performed.

For the purpose of this manual, the following signal words are applied to identify safety instructions:

DANGER - Indicating any existing dangers that, if not avoided, will cause serious injury or even death, and also serious machine damage.

WARNING - Indicating any potential dangers that, if not avoided, may cause death or serious injury, and also serious machine damage.

CAUTION - Indicating situations that, if not avoided, may cause minor or moderate injury, and also machine damage or shortened machine service life.



Identification number

Enter the identification number of the machine and the following components. Be sure to provide the identification number when negotiating with the manufacturer or ordering parts.

Manufacturer	SHANDONG LINGONG CONSTRUCTION MACHINERY CO., LTD.
Product Identification Number (PIN)	
Engine	
Transmission	
Rear axle	
Cab	

Safety

WARNING

Read and follow all safety precautions, otherwise; serious injury and death may occur.

Locations and descriptions of safety signs

Locations of safety signs for this machine are given in the table below. Please carefully read and follow the instructions given by all the safety signs on the machine. Keep the safety signs properly, and if a safety sign becomes lost, damaged or illegible, replace it immediately. To replace a part with safety sign, make sure that the newly placed part has the same safety sign as before.

Wipe the safety sign using cloth dipped with soapy water instead of detergent, gasoline or the similar.

1. Operation warning sign

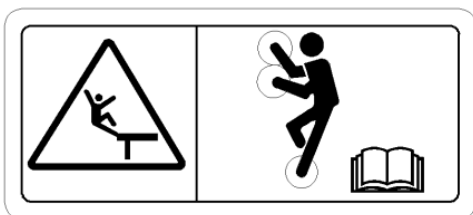
On the right window in the cab



2. Cab door warning sign

On the cab door





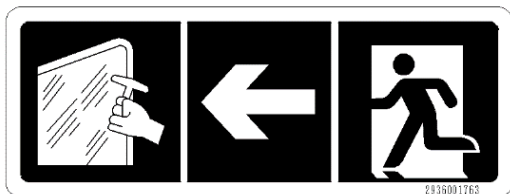
3. Three-point contact warning sign

On the left platform



4. "READ THE MANUAL" warning sign

On the cab door



5. Emergency exit sign

On the left window in the cab



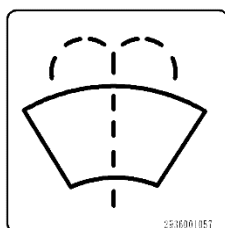
6. Lifting ring removal warning sign

On the cab ceiling, near the mounting position of lifting ring



7. Seat belt warning sign

On the left front window in the cab



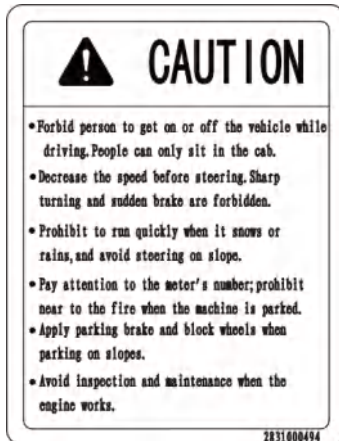
8. Windshield washer sign

On the left front window in the cab



9. Warning sign for operation of electronic control engine
(for China III engine)

At the right window in the cab



10. Driving safety sign

At the right window in the cab



11. Throttle sign

At the throttle knob in the cab



12. Safety distance warning sign

On both sides of engine hood



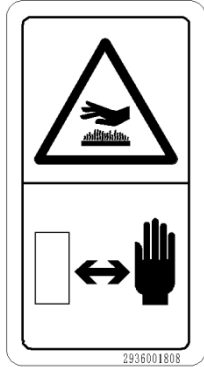
13. Machine touch warning sign

On both sides of engine hood



14. "NO TRAMPLING/WALKING" warning sign

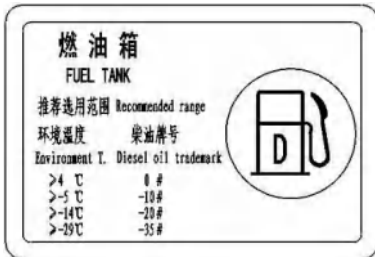
No trampling is allowed as it involves risk of falling



15. High-temperature scalding warning sign

Near the engine exhaust pipe

Keep an appropriate distance for fear of scalding



16. Fuel tank sign

On the fuel tank on the right side of the cab



17. Antifreeze sign

On the left door of cab and near the coolant filler



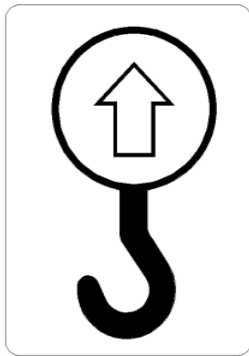
18. Antifreeze refilling warning sign

Near the coolant filler



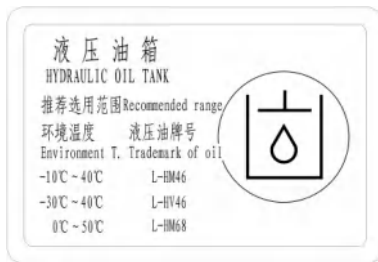
19. High-temperature fluid warning sign

Near the coolant filler



20. Lifting sign

On the front frame and on both sides above the counterweight



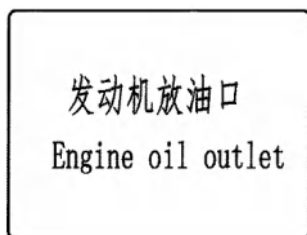
21. Hydraulic oil tank sign

On the hydraulic oil tank



22. Hydraulic oil tank sign

Near the oil dipstick of hydraulic oil tank



23. Engine oil outlet sign

At the oil drain plug on the left side of the rear frame



24. Battery explosion warning sign - NO SMOKING/FIRE

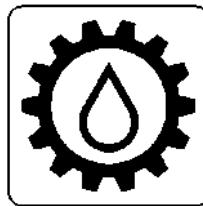
Near the battery



25. Articulated steering sign

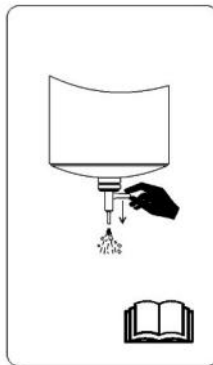
At the articulation of the machine

Keep a safety distance from the articulation of machine for fear of crushing



26. Transmission fluid sign

Near the transmission fluid filler



27. Air reservoir water drain indicating sign

At the drain valve of the air reservoir after the engine counterweight



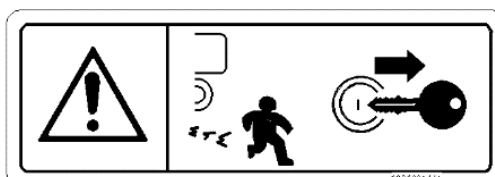
28. Air reservoir water drain warning sign

At the drain valve of the air reservoir after the engine counterweight



29. Main power switch warning sign

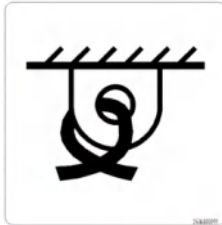
Near the main power switch



30. Start switch warning sign



31. Fire extinguisher mounting position sign



32. Lug sign

At the lifting position of frame: the lug is for securing the vehicle during transportation, and shall never be used for towing.



33. Vibration warning sign

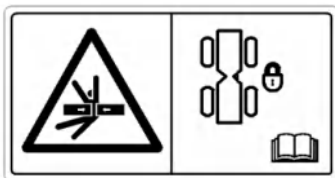
On both sides of the front frame



34. Warning sign for personal injury by fan

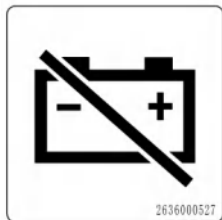
Near the engine fan

The rotating fan blades pose risk of hand injury, and thus during maintenance, keep a safe distance from the fan or shut down the engine.



35. Locking sign

Near the safety locking lever



36. Battery disconnection indication

On the battery box



EHS/MS	Electronically controlled hydraulic gear shift/mechanical gear shift
CV/OV	Closed vibration/open vibration

Safety regulations

The driver is responsible for the normal driving and operation safety of the road roller. Therefore, before driving and operation, be familiar with the performance, structure, operation method and technical maintenance of the road roller, and only by strictly following the safety operation regulation can safe production, full machine efficiency and longer service life of the machine be ensured.

Before operating the machine, get familiar with the positions and functions of controls, instruments and indicator. Develop the habit of observing instruments frequently during operation, so that any abnormalities can be detected in time.

1. Only the personnel who have been professionally trained and qualified are allowed to operate and maintain the machine.
2. Keep the road roller clean and ensure that all mechanisms are in good condition, and never operate a road roller with fault.
3. When the road roller works at night or in foggy days, ensure that the workplace is well illuminated.
4. Before startup, check the machine as specified and make necessary preparations. In case of any instrument abnormality or component abnormality, perform troubleshooting and repair before driving.
5. Do not crank the engine by towing the road roller.

6. After the engine of the road roller is started, ask other personnel to stay away from the vehicle, and prevent anybody from approaching the articulation of the frame so as to avoid personal accidents.
7. Do not drive or operate when the reading of air pressure gauge is below 0.4 MPa.
8. Before startup, check whether there are pedestrians and obstacles around the machine.
9. Do not sit in other places than the cab when the road roller is working.
10. Neither stop controlling nor leave the road roller when it is working.
11. Keep a distance of at least 3m from the road rollers before and after you in case of in-line fleet operation.
12. Avoid high-speed running and sharp turning upon startup, and slow down before driving through a sharp turn. On roads with poor road conditions, steep slope or many turns, it is only allowed to drive with transmission in gear I or gear II, and it is allowed to apply gear III on straight roads.
13. Always drive up/down a steep slope with transmission in gear I, and avoid gear shifting on the slope. Never coast with engine off and transmission in N, otherwise HPS failure or insufficient braking force may occur, causing severe accidents thereafter.
14. Before leaving the cab after operation, be sure to shut down the engine, apply the parking brake, put the shift

lever in N, and when necessary, place triangle wooden blocks or stones before and after the turning wheels and driving wheels.

15. Never operate or maintain the road roller unless you have been professionally trained and qualified. No personnel except for the operator or maintenance personnel is allowed to enter the working site.

16. Do not perform refueling and servicing when the road roller is working. When an inspection is necessary while the engine is running, ask a qualified operator and maintenance personnel to carry out such inspection.

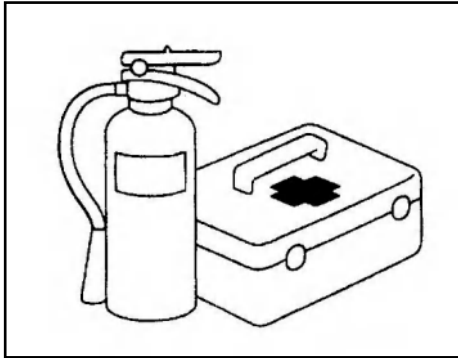
When a maintenance under the machine is necessary, be sure to shut down the engine and brake properly to ensure that the road roller will not move unexpectedly.

17. Cut off the power supply before servicing the engine or electrical system.

18. Always use the oil that meets the standards regarding grade and quality. Take appropriate fire prevention measures during refueling and maintenance of the road roller.

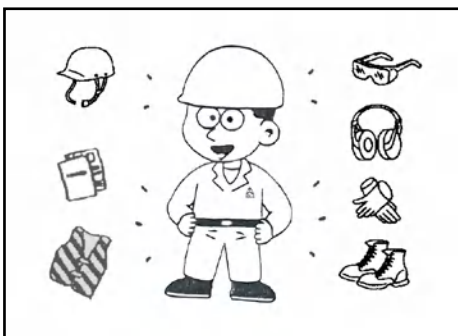
19. Unauthorized modifications are dangerous, and SDLG refuses to be responsible for any damage arising from such modification.

Fire extinguisher

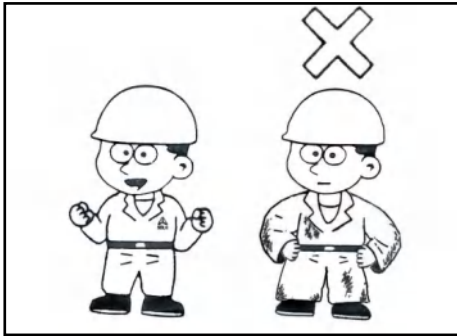


1. Be sure to install a suitable fire extinguisher for the machine, and carefully read the operation instructions for the fire extinguisher to know its operation method.
2. Always prepare a first aid kit on site, and check it on a regular basis, and if necessary, supplement the medicines. Be familiar with the emergency response measures in case of a fire or injury.
3. Select the telephone numbers of some emergency rescue personnel or organizations (such as doctors, emergency centers, fire stations and etc.) for contacting in case of emergency, and post these telephone numbers in specified places and ensure that all personnel know these numbers and the correct contact method.

Personal protection equipment



1. When operating or maintaining the machine, select the PPEs, including hard helmet, goggles, safety shoes, reflective vest, face mask, earplugs and thick gloves, as per the specific working condition.
2. When throwing metal chips and tiny objects, especially when using compressed air to clean foreign matters in the air filter, always wear goggles, hard helmet and thick gloves, and ensure that nobody stays near the machine.



3. Do not wear loose clothes, ornaments or long and loose hairs, as they may be caught by control levers and moving parts and thereafter cause serious injuries or even death.
4. Do not wear seriously oil-stained clothing, as it may catch fire accidentally.
5. As the compressed air is likely to cause personal injury, always wear face mask, safety clothing and safety shoes, and keep the maximum pressure of compressed air below 0.3 MPa.
6. Check that the PPEs to be used function well.

Unauthorized modification

1. Any modification without the permission of Shandong Lingong Construction Machinery Co., Ltd. may cause danger.
2. Please consult Shandong Lingong Construction Machinery Co., Ltd. or its designated dealer before modifying the machine.
3. Shandong Lingong Construction Machinery Co., Ltd. will not be responsible for any damage caused by unauthorized modification.

Safety operations

Getting familiar with the machine

1. Refer to the materials provided together with the machine to learn the structure and operation and

maintenance method of the machine, and be familiar with the position and function of buttons, control levers, instruments and alarms of the machine.

2. Get to know the operational rules and regulations and understand the hand signals given by the commander.

Wipe away any grease on and near operation position, as it poses risk of slipping.

3. Before and after the operation, always do necessary checks accurately. For example, check if all safety protections are in good condition; check for oil leakage, water leakage, air leakage, deformation, looseness, unusual noises and other defects on a regular basis, as any ignorance of such defect may lead to faults or serious accidents.

Before leaving the driver's seat

1. Place the parking brake lever in P position securely.
2. Place the shift lever in N position, shut down the engine, turn off the start switch, and block the front and rear wheels if necessary.
3. Lock the vehicle securely, and keep the key properly.

Getting on and off the machine

1. Check the handrails or steps before getting on or off the machine, and wipe away any oil, lubricant or mud on them timely to avoid slipping when you get on or off the machine. In addition, repair damaged parts and tighten loose bolts.



2. Never jump on or off the machine. Do not get on/off the machine when it is moving.
3. When getting on or off the machine, grasp the handrails and step on the steps, and keep your body contacting with the machine at three points at least (i.e. use two hands and one foot or one hand and two feet) to ensure that your body is securely supported.
4. Do not grip any control levers when getting on or off the machine.
5. Do not get on the machine through the steps at the rear end of the machine, or get off the machine through the wheel beside the cab.
6. Do not climb up or down the machine with tools or other articles in your hands, and instead, lift the required tools to the operating platform with a rope.

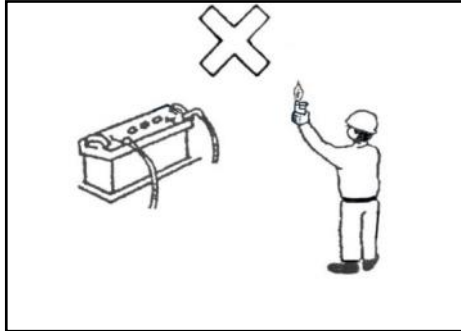
Fire prevention

The fuel and lubricating oil in the engine, the hydraulic oil in the hydraulic system, the hydraulic transmission oil and gear oil in the transmission system, and the antifreeze in the cooling system are flammable, and thus it is risky when the machine stays close to any smoke or fire. More attention shall be paid to the fuel for fire prevention. Therefore, always keep the followings in mind:

1. Keep fire sources away from the above-mentioned inflammable liquids.

2. Always perform refilling of the above-mentioned inflammable liquids at a well-ventilated place with engine shut down, and neither smoke nor get close to an open flame during refueling.
3. Tighten covers of reservoirs for all the above-mentioned inflammable liquids.
4. Contain the above-mentioned inflammable liquids in containers with corresponding marks, and store the containers at the designated places by category. Prevent any personnel other than working staffs from using such liquids.
5. Do not subject the pipes containing flammable fluids to welding or flame cutting, and if such electric welding or flame cutting becomes necessary, clean the involved pipeline by non-inflammable liquid in advance.
6. Remove such inflammables as wood chips, leaves and papers accumulated on engine and brake caliper thoroughly, clean up the fuel, lubricant or other chips from the road roller, and make sure that there is no oil-stained cloth or other inflammables.
7. Pay more attention when the engine is working with muffler exhaust port close to withered grasses, papers or other inflammables.
8. Before parking, pay attention to the environment around the machine and especially, keep muffler and other hot parts away from inflammables.

9. Check fuel, lubricating oil and hydraulic oil for leakage. If any, repair or replace the damaged element immediately, and do not operate the machine before clean-up.



10. Since the battery produces explosive gases around it, keep it away from smoking or fire, and always strictly follow the battery operation instruction for its maintenance and usage.

11. Never use open fire (like matches or lighter) for inspection in dark positions.

12. Prepare a fire extinguisher, get familiar with its operation method, and check and maintain it according to its operation instructions.

13. Never operate the machine near an open fire.

14. Prevent any short circuit.

Safety measures for high-temperature operations



1. Immediately after the machine stops working, the engine coolant, engine oil and hydraulic oil are all at high temperature and high pressure, and if you open the reservoir cover, drain oil/fuel or water or replace filter in this case, serious scalding may occur. Thus, always wait for a while until the temperature goes down, and follow the specified steps for operation.

2. Before removing the radiator cover, shut down the engine, and after the radiator cools down, unscrew the cover slowly to relieve the high pressure air inside.

Driving and operating on public roads

The operator of the vehicle is also considered as a road user, and thus shall be familiar with and follow the current traffic rules.

Always remember that the machine you are driving is slower and wider than other vehicles, and may cause traffic jams. Moreover, pay attention to the vehicles behind you and avoid overtaking.

It is recommended to use a SMV card (slow-moving vehicle card). In this case, place it in an easily visible place on the machine instead of on the rear window or other windows and at a height 0.6 m ~ 1.8 m (2ft ~ 6ft) from the ground (measured from the bottom edge of the card).

1. When driving on the highway:

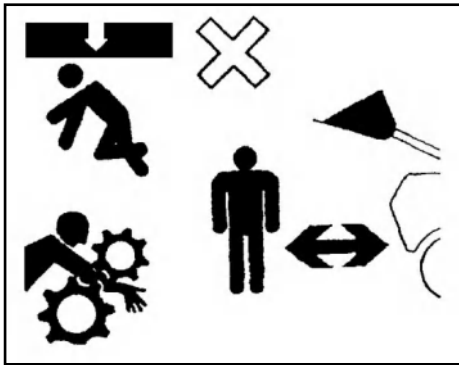
- a) turn off all work lights and warning lights.
- b) do not turn on the hazard warning lamp.
- c) do not use attachments that obstruct the line of sight, and ensure that large attachments will not obstruct the running lights. According to traffic rules, ensure that the area in front of the equipment is properly illuminated.

2. When operating (working) on the highway:

- a) always apply road markings, traffic restriction arrangements and other safety devices according to the speed and busyness of traffic or local conditions.

- b) pay special attention when moving equipment with suspension loads, and if necessary, turn to the signalman for help.
- c) use the warning light as follows:
During road maintenance, place the warning light on the vehicle for alerting.
When there is any attachment or connection protruding out of the width of the vehicle body, place the warning light on such attachment or connection.
Use the warning light when the machine poses obstruction or damage to other vehicles.
Use the warning light when the road roller is working on or beside the traffic lane:
- d) Observe for heavy fog, smoke or dust that will cause visual impairment.
- e) Investigate the working site in advance, and check the road for holes, obstacles, mud, snow and ice, etc.
- f) Thoroughly understand all operation requirements, and the meanings of various signal flags, signals and signs.

Prevention from crushing or cutting



1. Do not stretch your hand, arm or any other body part between moving parts (for example, the space between vehicle body and working device and at the articulation between front and rear frames), because along with the motion of working device, the space at linkages will increase or reduce, causing serious accident or personal injury. Therefore, if it is necessary to access the space between moving parts, always shut down the engine and lock all working devices securely.
2. Unless otherwise specified, do not make adjustment when the machine or engine is running.
3. Keep away from all the rotating or moving parts.
4. Keep engine fan blade free of foreign matters, as it can throw out or cut off tools falling onto or pushed into it.
5. It is risky and principally prohibited to carry out checks and maintenance with engine running.

Precautions for using FOPS & ROPS (falling object protection system & rollover protection system)

(if equipped)

For products of Shandong Lingong Construction Machinery Co., Ltd., the rollover protection system (ROPS) and falling object protection system (FOPS) are installed on the outer side of the cab frame structure to prevent heavy objects from falling while the machine is working and to protect the operator in case the machine overturns. ROPS can not only support the load but also absorb the impact energy when the machine rolls over. For the use of FOPS & ROPS, please pay attention to the following:

1. If FOPS/ROPS is damaged due to falling objects or roll-over, its strength will be reduced and cannot work for normal protection. In this case, contact Shandong Lingong Construction Machinery Co., Ltd. or its designated dealer to obtain a new ROPS or FOPS, and never repair it without authorization.
2. The design of the cab meets the protection requirements for falling objects, whose weight is consistent with that applied in the test methods for configuration with FOPS.
3. Even if ROPS is installed, an effective protection is possible only when the operator fastens the seat belt. Therefore, be sure to fasten the seat belt when operating the machine, and get the seat belt replaced

every three years even if no abnormality is found.

4. Never perform drilling or electric welding on the inner side and outer side of ROPS, as such drilling or electric welding may damage or reduce the strength of ROPS.

5. The cab can protect the operator of road roller, and meets the requirements of "ROPS" according to the test standard. Therefore, if the road roller overturns, the injury can be reduced by taking the following actions:

- a) hold the steering wheel firmly;
- b) tilt your body;
- c) press your feet against the cab bottom plate;
- d) never jump off the machine.

Note: If the ROPS is deformed or damaged due to an accident or other causes, always replace with a new ROPS. To obtain a new ROPS, please contact the nearest SDLG dealer.

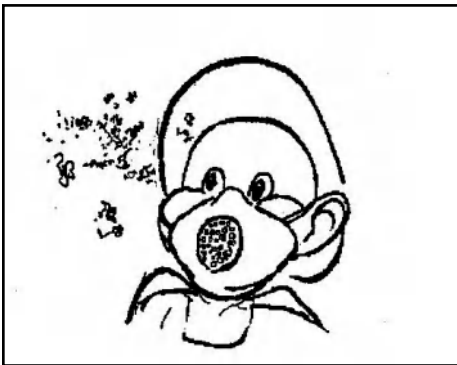
Ether (if your machine is equipped with ether cold start device)

1. Ether is a toxic and combustible substance.
2. Inhalation of ether vapor or frequent contact of the skin with ether may cause injuries.
3. The place where ether is used should be well ventilated.
4. Do not smoke when changing the ether cylinder.
5. Pay attention to fire prevention when using ether.
6. Do not store the ether cylinder in the living area or in the cab.



7. Do not place the ether cylinder in direct sunlight or a place where the temperature exceeds 39°C (102F).
8. Put the waste ether cylinder in a safe place and do not perforate or grill it.
9. Keep the ether cylinder away from the staff.

Prevent asbestos dust hazards



1. Inhalation of asbestos dust is harmful to health.
2. SDLG products do not use asbestos. If you want to process materials containing asbestos fibers, please follow the guidelines below:
3. Never use compressed air when cleaning.
4. Clean with water to sink the dust.
5. It is dangerous if the air contains asbestos dust. If possible, the machine should be operated at the upwind.
6. If necessary, use an acceptable mask.

Safe starting

Before starting

Site safety

1. Before starting the machine, carefully check the surrounding for any abnormality that may result in dangers.
2. Check the terrain, soil property and ground condition of the work site, and determine the best and safest operating method.



3. While operating on the road, designate a special person to direct the traffic, put up rail fence to which a “KEEP OUT” mark shall be pasted, so as to ensure the safety of pedestrians and the road roller.
4. For places where such facilities as water pipe, gas pipe and high voltage cable duct are buried, please contact the competent department to determine the locations of the buried facilities, and note not to damage these facilities during construction so as to ensure construction safety.
5. While working in a closed site (indoor etc.), always ensure effective ventilation.

Check before engine start

1. Before daily operation, check the machine carefully. If any abnormality is found, report to the manager immediately and do not start the operation until the abnormality is eliminated. Ensure that the roller is in good condition, and all kinds of faults that will cause accidents should be eliminated in advance.
2. Perform routine maintenance. If it is winter, please make sure that the freezing point of the coolant is much lower than the temperature of cold weather, and that the lubricating oil is suitable for use in winter.
3. Check the engine and battery surrounding for combustibles such as accumulated wood chips, leaves and papers etc. and remove them prevent a fire.

4. Check the machine for oil/water leakage, bolt looseness, unusual noise, and part damage and loss etc.
5. Check the cab floor, rearview mirror, control lever, pedal and handrail for oil stain, grease, snow or other dirt. Wipe them off immediately, if any.
6. Check the coolant level, fuel level and engine oil sump level for normality. Check the air filter for blockage.
7. Adjust the operator's seat to a proper position. Check the seat belt and its anchorage for damage. Always replace the seat belts after being used for three years.
8. Check the instruments for normal working and control levers (handles) for parking position.
9. Remove the dirt from the cab windows and all lamps to ensure good visibility.
10. Adjust the rearview mirror to a proper position to ensure good field of view for operators. If the rearview mirror glass is damaged, replace it with a new one immediately.
11. Do not place or leave the parts and tool around the operator seat. Because the vibration produced by walking and operation can make these objects fall off and damage the control lever or switch; or move the control lever of the working device to start the working device, which will cause an accident.
12. Check all lighting and signal light for normality. In

case of any abnormality, repair it.

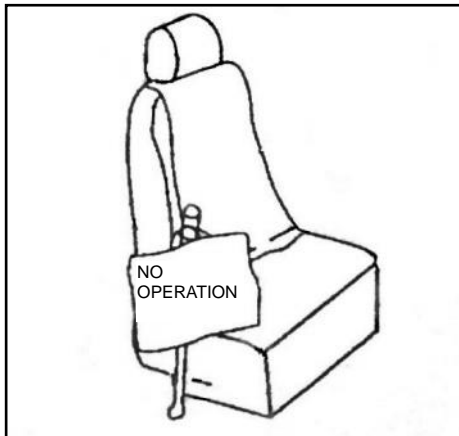
13. Check and determine whether the front and rear frame locking rods are disengaged or locked.

14. Remove the grease from the handrail and steps, as well as the sludge and fine grits stuck to the shoes to avoid slippage while getting in the road roller or affecting operation.

15. Check the tires for wear or damage, and the assembling bolts and nuts for looseness. Pay special attention to check the rim nuts for looseness. If any abnormality is found, please repair or replace the damaged part in time.

When the engine gets started

1. Before boarding, look over the machine again to check whether there are any persons or obstacles above, below or near it, and note whether there is any person in the working area. Ask them to leave if any.
2. If “NO OPERATION” warning label is attached to the control lever of the working device or the transmission control lever, it is forbidden to start the engine.
3. Take seat properly, and fasten the buckle-down seat belt or the 3-point seat belt.
4. The driver's hands should be kept away from parts that may squeeze hands, such as covers, doors and windows.
5. The door should be firmly closed and locked.
6. Check that the auxiliary devices are properly



connected and locked.

7. Be familiar with the warning devices, instruments and control mechanisms on the instrument panel.

8. Make sure that parking brake handle is braked, and all control mechanisms are set to NEUTRAL.

9. Honk the horn for warning.

10. Start the engine.

11. Start the engine in the cab only. It is strictly forbidden to make the starter motor short circuit to start the engine. Otherwise, the engine will be started via the bypass starting system, thus causing damage to the circuit system of the machine; moreover, this operation is very dangerous.

12. When it is necessary to use ether to cool the start device, read the instructions in advance. Pay attention to fire prevention as ether is flammable.

13. When the engine is equipped with a plug-like pre-heater, the use of ether is prohibited.

Check after engine start

1. Do inspection in a spacious place without any obstacles. No one shall approach the machine.

2. Check the engine running for unusual noise or vibration. If any, the machine may be faulty, and do not start the operation until the abnormality is removed.

3. Check the control of engine speed in NEUTRAL position.

4. Observe the meters, instruments and warning lamps to make sure that they can work normally and are within the designated working range.
5. Operate the gear control mechanism to make sure that the forward/neutral/reverse gears of the machine are accurate and all control levers can work smoothly.
6. Check whether the foot brake valve and throttle control valve work normally according to the Operating Instruction. Test whether the leftward and rightward turning at a low speed is flexible.
7. Before the machine travels, make sure that the parking brake handle is set to DEACTIVATE position.

Safe traveling

Mind your and others' safety

1. For everyone's personal safety, it is necessary to develop good operating habits.
2. Select a level ground to park the machine as far as possible.
3. Do not park in a slope. If the machine has to be parked in a slope, the gradient shall be smaller than 20%. Meanwhile, place the wedge below the wheels in case the machine moves.
4. When the road roller is faulty or needs to be parked at a place with traffic jam, set up the fences, signals, flags or warning lamp, or other necessary signals to make sure that the driver of the passing vehicles can see this

machine clearly. Moreover, prevent the machine, fence and flag from hindering the traffic.

5. While parking the roller, shut down the engine, pull up the parking brake control lever and set it to the braking position. Lock all devices before removing the key.

While getting off the road roller, face the road roller and climb down slowly. Always make sure that your body keeps three-point contact to the handrail and ladder. Do not jump down the roller.

6. Concentrate on operating, and never be absent-minded. Great attention should be paid to the people in the direction of travel and working in the surrounding area, and the horn should be sounded to warn them when there is a danger.

7. During driving, the cab door should be securely fixed. Do not walk when the door is not locked.

8. It is dangerous for people to ride in the machine. There should be no other people in the cab except the operator. No one is allowed to sit on the machine body.

9. On ordinary roads, the operator should abide by the traffic rules and not cause obstacles to road traffic, especially at railway crossings, the operator should drive the machine fast.

10. Drive the machine aside on the road, make concessions for other vehicles, and keep a proper distance from them.

11. If the engine stalls during driving, apply the brake immediately and stop the machine.

Precautions for driving in cold area

1. After the completion of operation, remove the water, snow or sludge from the wires, wire connector, switch or sensor, and their coverings. Otherwise, the moisture will freeze, and the machine will malfunction which may lead to an unexpected accident.
2. If the battery electrolyte is frozen, neither charge the battery, nor start the engine with other powers. This is dangerous, and it will set the battery on fire.

Transportation and storage

Machine loading and unloading

1. Take extreme care because the machine loading and unloading are always accompanied with potential hazard. During the loading and unloading, run the engine and drive the machine at a low speed.
2. The machine loading and unloading shall be done on a solid and level ground. A safe distance shall be kept to the roadside.
3. When loading/unloading the machine, always fix the tires of the carrier vehicle properly to make sure that the carrier vehicle will not move, and wedge the spring board.

4. Use a sloping panel with sufficient strength. Make sure that the panel is wide and long enough to provide a slope for safe loading and unloading. The included angle between the panel and the ground shall not exceed 15°. The distance between the panels shall correspond to the roller wheel tread.
5. Make sure that the sloping panel is located firmly with the same height on both sides.
6. Make sure that the panel surface is clean without any lubricant, oil stain, ice and loose materials.
7. **Never turning on the sloping panel.** If necessary, drive the road roller off the panel to adjust the direction properly, and then go up the panel again.
8. After the loading, lock the connected steering mechanism, wedge the front and rear wheels of the machine, and fix and tighten the machine with rope.

Road transportation

1. To deliver this machine with a trailer, abide by the state and local regulations and laws concerning the weight, height, width and length and also all the relevant traffic rules.
2. Take consideration of the machine weight, height, width and length when determining the transportation route.

3. While passing through the structure on the bridge or private field, check whether it is strong enough to support the weight of the machine at first. While traveling in a public road, make sure the machine is subject to the relevant specifications at first, and obey these specifications.

4. When the transportation distance is below 20 km, the driver can run the road roller by himself/herself. Driving at a high speed for a long time is strictly forbidden.

Lifting

Use the lifting rings on the front and rear frames to move the road roller to the carrier when necessary.

Select an appropriate hanger according to the weight of the road roller. Pay special attention that the load limit of the hanger shall not be exceeded; otherwise, it can be extremely dangerous.

Lifting precautions:

1. Before lifting, the road roller shall be in transportation state, and the front and rear frames shall be centered and fixed with the frame fixing rod (at the hinge of front and rear frames) to prevent front and rear frames from rotating during lifting.

2. All control levers shall be set to NEUTRAL positions.

3. Shut down the engine, and lock all devices properly before removing the key.

4. No one shall get access to the cab.

5. It is forbidden to use a section of steel wire to connect the two lifting hooks of the front frame for lifting.

6. Lifting can be done by four steel wires with the same length (no less than 7 m).

7. Make sure that the machine can be kept in a horizontal state after the lifting.

8. Note to prevent the engine hood, cab and hydraulic pipeline from damage.

9. During lifting, no pedestrians or vehicles are allowed to pass from the underside of the lifted road roller.

10. After the completion of lifting, always retract the frame locking rod before rotating the road roller.

After ship (car) loading, use the frame locking rod to lock the connected steering mechanism, wedge the front and rear wheels of road roller, and fix and tighten it with the rope of sufficient strength in case that the road roller moves during the transportation.

Dragging

Do not drag the road roller unless an emergency is occurred. During the drag, the following shall be noted:

1. When the engine is available, do not turn a corner or apply brake unless the engine is in running.

2. If the steering and braking systems are faulty, do not drag the road roller. Dragging is not allowed when the engine cannot run!

3. Do not drag the road roller for a long distance. The max. dragging distance shall not exceed 500 m and the max. speed shall not exceed 5 km/h.

CAUTION! The maximum allowable dragging force is 382.2kN.

Storage

1. Each time after operating the road roller, always remove the dirt and dust from the machine, and pay special attention to the cleanliness of the diesel engine, alternator, starter motor, fuel injection pump, hydraulic pump, hydraulic motor and hydraulic pipelines.

2. If the road roller will not be used temporarily, park it in the storehouse or work shed to prevent it from exposure to the sun and rain. If the road roller has to be stored in the open air, always cover it with a piece of waterproof cloth, and park it on a dry and level ground.

3. If the road roller has to be stored for a long time, always clean it, fill grease to all filler ports, and apply anti-rust oil to the unpainted metal surface. Start the machine every three months to run the diesel engine at a low speed for 10-15 min.

△!CAUTION: Before the use of the vibratory road roller stored for a long time (more than 100 days), unseal it as the following:

1. Remove anti-rust oil from the surface of each part;
2. Install a fully charged battery and adjust the fan belt;

3. Add fuel and water as specified, and check the engine oil sump, transmission and driving axle for lubricant capacity and quality;
4. Start the machine according to the provisions on the trial run and driving preparation defined above.

Air reservoir

Draining method of air reservoir: Park the machine on a level ground, press the parking brake switch or pull up the parking brake control lever, depress and release the service brake pedal successively to release air pressure in the reservoir, and then open the water drain valve on the bottom of the reservoir to drain water.

NOTE: Drain the air reservoir daily, and in winter, drain it at least once every day. Check that the water drain valve is closed before starting the machine.

Please maintain the air reservoir in strict accordance with the identification on the reservoir.

The air reservoir contains high-pressure gas and thus should be subject to visual inspection frequently to ensure anti-corrosive coating and weld are in good condition and the reservoir can be used safely.

Excessive pressure of the reservoir, if any, can be released automatically through the relief valve on the reservoir.

Avoid causing environmental damage

During maintenance, care should be taken to protect the environment. Draining oil/fluid that is harmful to the environment into the environment will pollute the environment. The degradation of oil in water and sediment is very slow. One liter of oil is enough to pollute millions of liters of drinking water.

CAUTION

For the following points, all waste must be sent to an officially approved waste management company for processing.

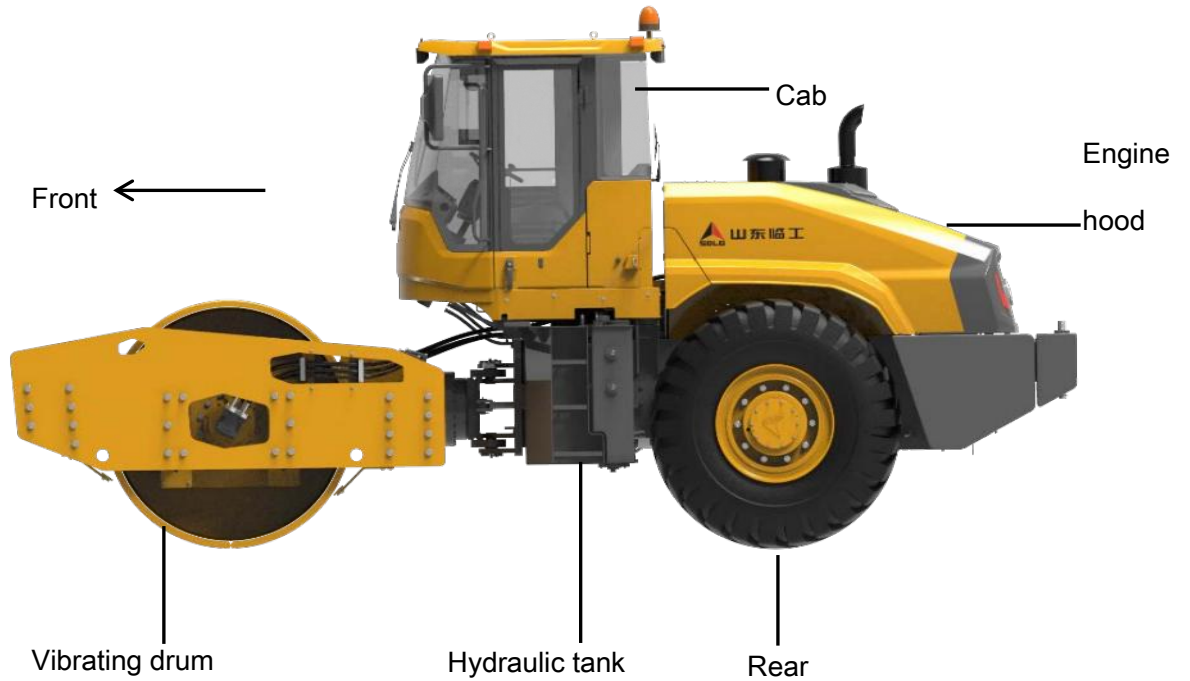
1. The oil must be collected in a suitable container and measures to prevent overflow must be taken during draining.
2. Before disposing of the used filter, all the working fluid in it must be drained. If the machine is working in an environment that contains asbestos or other dust that is harmful to health, put the used filter of the machine in the sealed bag that comes with the new filter.
3. The battery contains substances harmful to personal health and the environment. The used battery must be disposed of as environmentally hazardous waste.
4. Consumables such as used rags, gloves, bottles and cans may also be contaminated by oil/fluid that is harmful to the environment. These consumables must also be treated as environmentally hazardous waste.



5. When the product needs to be scrapped, please follow the local laws, regulations and environmental protection policies.

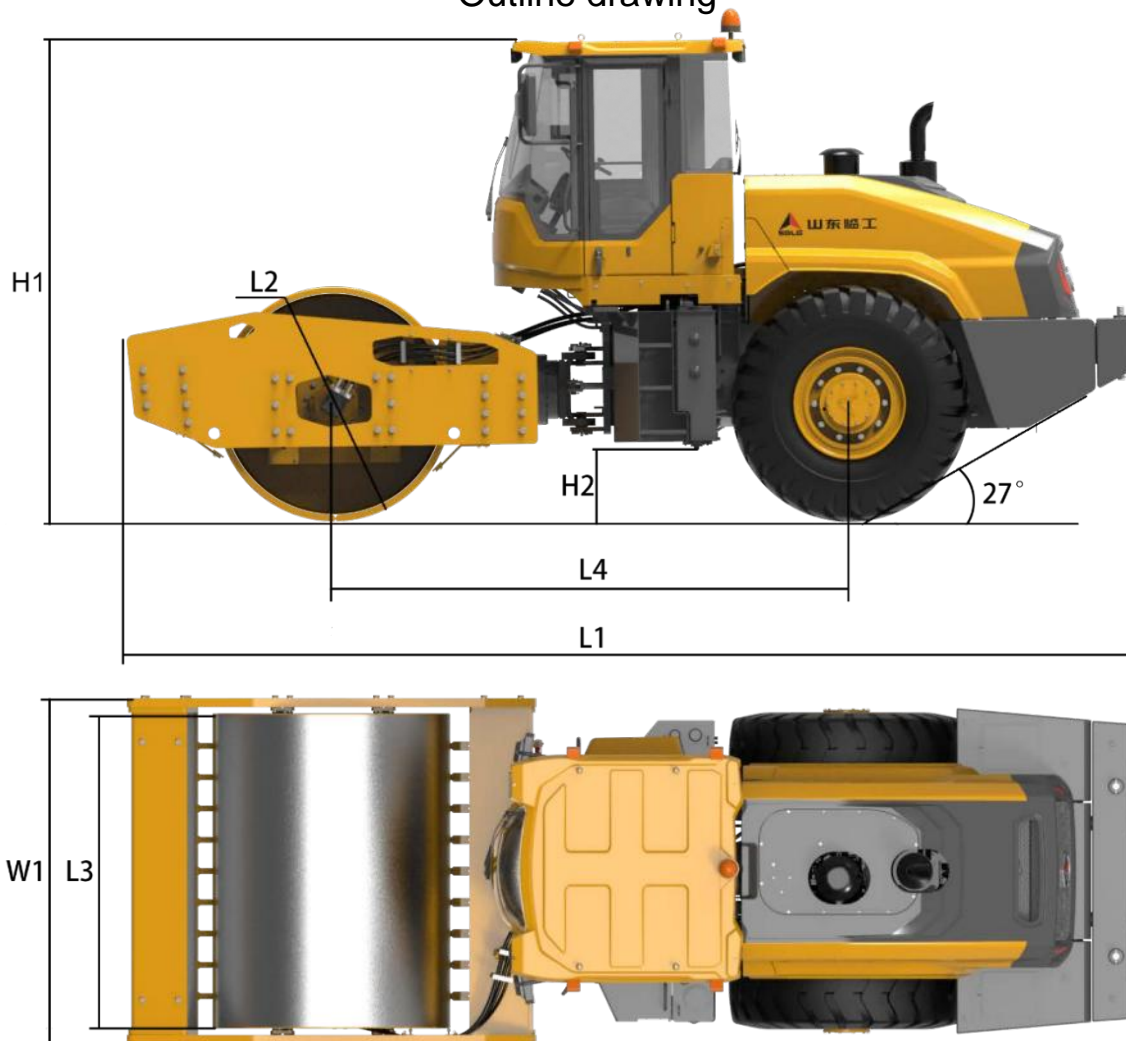
Product Introduction

Outline drawing and parts name



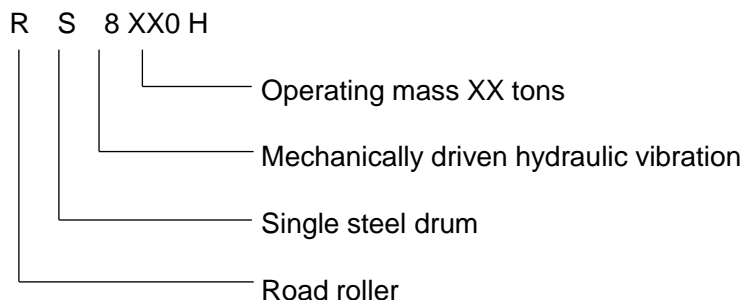
Outline drawing and parts name

Outline drawing



Item (mm)	Parameter	Item (mm)	Parameter
Maximum length L1	6120	Vibrating drum width L3	2130
Maximum width W1	2316	Wheelbase L4	3303
Maximum height H1	3170	Min. turning radius (outside) L5	6400
Ground clearance H2	350		
Vibrating drum diameter L2	1500		

Makeup and meaning of product model



Identification plate

The identification plate of the machine is nailed to the left side of the rear end of the front frame to indicate the vehicle model, product number, date of manufacture, and manufacturer. The identification plate type is shown in the figure.

		<div style="border: 1px solid black; width: 100px; height: 30px; margin: 0 auto;"></div>	振动压路机 VIBRATORY ROLLER	
工作质量 <small>Operating Mass</small>	<input type="text"/> kg	激振力 <small>Centrifugal Force</small>	<input type="text"/> kN	
振动频率 <small>Vibration Frequency</small>	<input type="text"/> Hz	名义振幅 <small>Nominal Amplitude</small>	<input type="text"/> mm	
压实宽度 <small>Compacting Width</small>	<input type="text"/> mm	发动机额定功率 <small>Engine Rated Power</small>	<input type="text"/> kW	
外形尺寸 <small>Dimension</small>	<input type="text"/> mm	发动机额定转速 <small>Engine Rated Speed</small>	<input type="text"/> r/min	
产品识别代码 <small>Product Identification Number</small>	<input type="text"/>		制造年度 <small>Manufacturing Year</small>	<input type="text"/>
山东临工工程机械有限公司 <small>SHANDONG LINGONG CONSTRUCTION MACHINERY CO.,LTD.</small>				
中国·山东·临沂经济技术开发区临工工业园 <small>LINGONG INDUSTRY PARK,ECONOMIC & TECHNOLOGICAL DEVELOPMENT AREA,LINYI,SHANDONG,P.R.CHINA</small>				
<small>2831000341</small>				

Engine nameplate

It is located on the side or top of the engine.

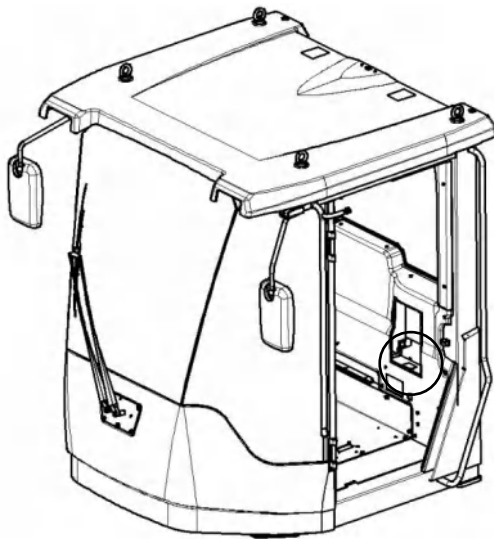
It shows the engine model and part code.

Transmission nameplate

It is located on the gearbox body.

It shows the gearbox model and part code.

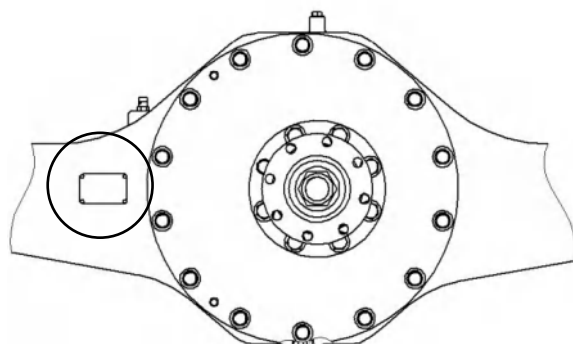
Cab nameplate



It is located at the rear of the cab.

It shows the material code and factory number of the cab.

Rear drive axle nameplate



It is located on the rear drive axle housing.

It shows the material code and factory number of the drive axle.

Purposes

The RS8140H vibratory road roller is a hinged self-propelled vibratory road roller, featuring greater centrifugal force and static linear pressure, good compaction effect, large influence depth and high production efficiency. It is applicable to the compaction of a foundation layer and a subfoundation layer, filled with all kinds of noncohesive soil, cobblestones and blasted-out rocks in a large scale construction project, and not applicable to the surface layer compaction. It is widely used in the compaction of highway subgrade, railway embankment, building foundation, airport runway, port and embankment etc.

Requirements for working environment

This machine is suitable to work under following conditions:

Altitude: ≤ 1500 m;

Ambient temperature: $-15^{\circ}\text{C} \sim +40^{\circ}\text{C}$;

Fording depth: ≤ 500 mm.

As a common construction machine, this roller is employed in all applications stated in this manual under normal conditions. However, if it is required for other purposes or in any environment with possible risk, including inflammable and explosive air or area containing asbestos dust etc., some special safety regulations shall be abided by, and besides, devices for the corresponding purpose must be equipped for the machine.

Features

1. Weichai three-stage in-line, water-cooled, 4-stroke, direct-injection diesel engine.
2. Equipped with low-speed, high-torque China II engine, strong power and high reliability. (Tier 2)
3. The transmission system is equipped with a mechanical gearbox with reliable structure.
4. Slewing bearing type articulated front and rear frame, full hydraulic steering, small steering radius, light and flexible operation.
5. The vibration system uses a quantitative gear vibration pump and a vibration motor to ensure the reliability of the vibration hydraulic system.
6. Newly designed appearance, fully enclosed cab with A/C, spacious and bright, wide field of view, and comfortable operation.
7. The open system is selected for the vibration system of the roller to ensure the reliability of the vibration hydraulic system.

Technical performance and parameters

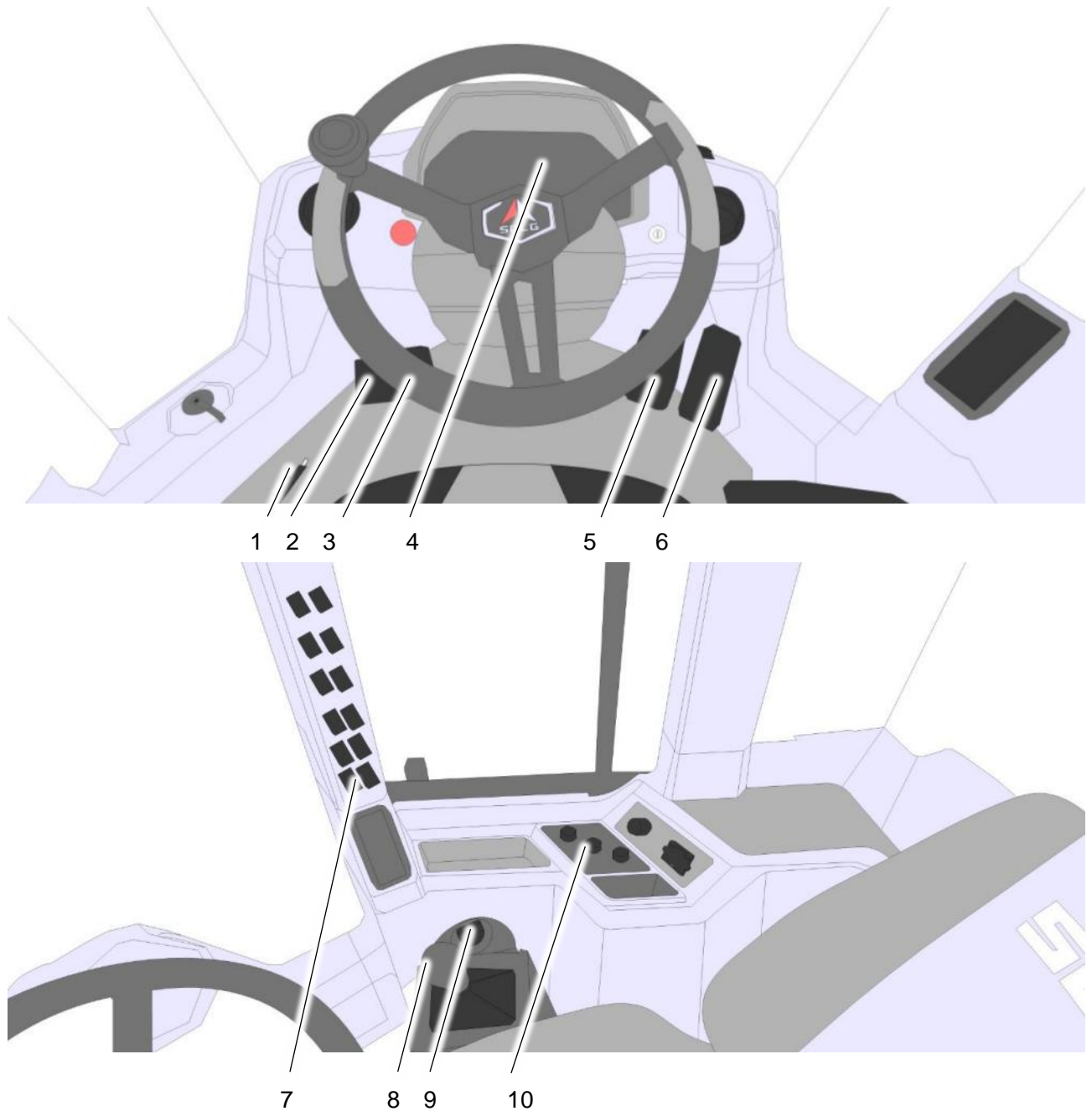
Model		RS8140H	
Item			
Operating mass (kg)		14000	
Overall dimensions (mm, L × W × H)		6120*2316*3170	
Vibrating drum width (mm)		2130	
Static linear pressure (N/cm)		322	
Speed (km/h)	Forward	I	0~2.4
		II	0~4.7
		III	0~9.2
	Reverse	I	0~2.4
		II	0~4.7
	Mechanical gearbox		
Vibration frequency (hz)		30	
Amplitude (mm)	Large amplitude		1.9
	Small amplitude		1.0
Centrifugal force (kN)		261/145	
Min. turning radius (mm)		6400	
Max. gradeability		30%	
Max. turning angle (°)		35	

Standard

Q/LGJ 002-2019 Self-propelled Vibratory Road Roller

Monitoring and control devices

Getting familiar with the machine



1. Parking brake
2. Clutch pedal
3. Steering wheel
4. Instrument panel
5. Brake pedal
6. Accelerator pedal
7. Rocker switch
8. Transmission control lever
9. Hand throttle
10. Right panel

Instrument panel




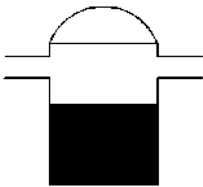

Introduction to instruments and control mechanism






Below are the description of the instruments and control mechanism serving for machine operation. Make sure to acquaint yourself with their operation methods and functions.






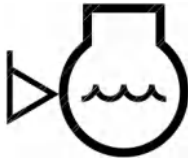





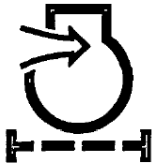


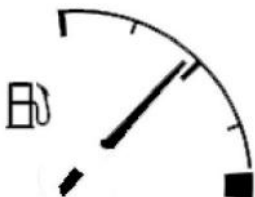


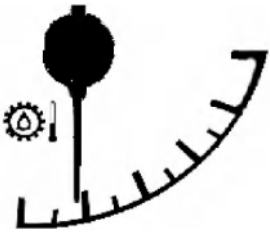
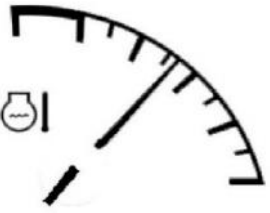
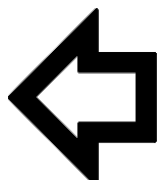


S/N	Name	S/N	Name
1	High beam	19	Coolant level warning lamp
2	Mute indicator lamp	20	Seat belt indicator lamp
3	Transmission fluid prefilter warning lamp	21	Fuel prefilter warning lamp
4	Hydraulic oil filter element indicator lamp	22	Differential lock
5	Water separator warning lamp	23	Axle cooling indicator lamp
6	Preheating indicator lamp	24	Air cleaner blockage warning lamp
7	Cooling fault indicator lamp	25	Centralized lubrication
8	Engine MIL	26	Fan reversal
9	Transmission fault indicator lamp	27	Tachometer
10	Charging indicator lamp	28	Fuel quantity
11	Low engine oil pressure warning lamp	29	Transmission fluid temperature gauge
12	Parking brake lamp	30	Engine coolant temperature gauge
13	Low brake pressure warning lamp	31	Left turn signal lamp
14	Low transmission pressure warning lamp	32	Central warning lamp
15	Power cut off indicator lamp	33	General indicator lamp
16	-	34	Right turn signal lamp
17	Safety unlock	35	
18	Hydraulic oil temperature warning lamp	36	

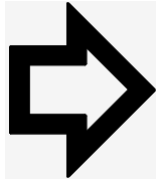
	<p>1. High beam indicator lamp (blue)</p> <p>The lamp will come on when the headlamp is in the high beam position and the signal power supply is connected.</p>
	<p>2. Mute indicator lamp (yellow)</p> <p>When some faults occur, an audible alarm will be issued; the audible alarm will be stopped, and this lamp will come on if the mute switch is turned on.</p>
	<p>3. Transmission fluid prefilter warning lamp (yellow)</p> <p>The warning symbol will be on if the water content of the transmission fluid is higher than the set value and the switch is turned on.</p>
	<p>4. Hydraulic oil filter element indicator lamp</p>
	<p>5. Water separator warning lamp (yellow)</p> <p>With the key set to "ON" and too much water in the water separator, this lamp will come on when the switch is turned on. When this lamp is on, pay attention to the drainage of the water separator.</p>
	<p>6. Preheating indicator lamp (yellow)</p> <p>This lamp will come on when the cold start device is installed and the start switch is turned on to the preheating position; this lamp will go out when the start switch is turned on to the non-preheating position.</p>

	<p>7. Cooling fault indicator lamp (yellow)</p> <p>This lamp will come on when the cooling system fails.</p>
	<p>8. Engine MIL (yellow)</p> <p>The symbol will be always on, and the sound alarm will be issued when the engine is faulty and the signal is grounded.</p>
	<p>9. Transmission fault indicator lamp (yellow)</p>
	<p>10. Charging indicator lamp (red)</p> <p>This lamp will come on when the start switch is turned on; this lamp will go out after the engine is started. Otherwise, it means that the battery charging system is malfunctioning and should be inspected and repaired.</p>
	<p>11. Low engine oil pressure warning lamp (red)</p> <p>This lamp will immediately come on when the start switch is turned on; this lamp will go out after the engine is started. Otherwise, it means that the lubricating oil level is too low or the lubrication system is malfunctioning, and the engine should be turned off immediately and inspected.</p>
	<p>12. Parking brake lamp (red)</p> <p>This lamp will flash if the parking brake button is pressed to apply the brake; this lamp will go out turn if the parking brake button is turned up to release the brake.</p>

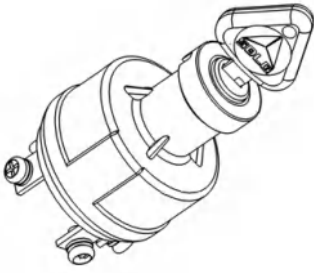
	<p>13. Low brake pressure warning lamp (red)</p> <p>This lamp will flash and the buzzer will sound when the service brake pressure is lower than the warning point.</p>
	<p>14. Low transmission fluid pressure warning lamp (red)</p> <p>After starting, this lamp will come on, the symbol flash will flash and the buzzer will sound when the pressure is low, the switch is turned on, and the signal is grounded; the symbol will not be on when the switch is turned off.</p>
	<p>15. Power cut off indicator lamp (red)</p> <p>The symbol will be on when the transmission travel power is cut off and the signal power supply is connected.</p>
	<p>16.-</p>
	<p>17. Safety unlock</p> <p>This lamp will come on and the buzzer will sound when the lock switch is turned on and the working device is in a free state.</p>
	<p>18. Hydraulic oil temperature warning lamp</p> <p>This lamp will come on when the hydraulic oil temperature is higher than the set value.</p>
	<p>19. Coolant level warning lamp</p>

	20. Seat belt indicator lamp
	21. Fuel prefilter warning lamp (yellow) If the lamp is on, it means that the fuel prefilter is blocked and should be cleaned or replaced.
	22. Differential lock
	23. Axle cooling indicator lamp (yellow) Standby.
	24. Air cleaner blockage warning lamp (yellow) When the engine is running, this lamp will come on, indicating that the air cleaner is blocked and needs to be cleaned or replaced.
	25. Centralized lubrication
	26. Fan reversal
	27. Tachometer This tachometer shows the current engine speed.
	28. Fuel level gauge This gauge shows the amount of fuel remaining in the fuel tank. When the pointer falls into the red

	<p>zone (0~1/8), fuel should be added in time.</p>
	<p>29. Transmission fluid temperature gauge</p> <p>When the transmission fluid temperature is within the green zone (40°C~120°C), the transmission fluid temperature is normal. When the pointer reaches the red zone, stop and check the engine.</p>
	<p>30. Engine coolant temperature gauge</p> <p>This gauge shows the temperature of engine coolant. When the pointer of the coolant temperature gauge is within the green zone (40°C~104°C), the coolant temperature is normal.</p> <p>Note: If the engine coolant temperature gauge point enters the red zone, stop and check the engine.</p>
	<p>31. Left turn signal lamp</p> <p>This lamp will come on and the symbol will flash when the warning lamp or left turn signal lamp switch is turned on.</p>
	<p>32. Central warning lamp (red)</p> <p>Before starting, the oil pressure and charging indicator lamps are on, and the lamp does not come on. If other faults occur, this lamp will flashes.</p>
	<p>33. Central warning lamp (yellow)</p> <p>Standby.</p>

	<p>34. Right turn signal lamp</p> <p>This lamp will come on and the symbol will flash when the warning lamp or the right turn signal lamp switch is turned on.</p>

Start electric lock



Start switch

This switch is used to turn on or turn off the electrical system of the machine and start the engine.

1. Position O

The key can be inserted into or pulled out from this position. If the key is turned to this position, the circuit will be off.

2. Position I

The electrical system of the machine can be turned on. Always keep the key in the ON position when the engine is running.

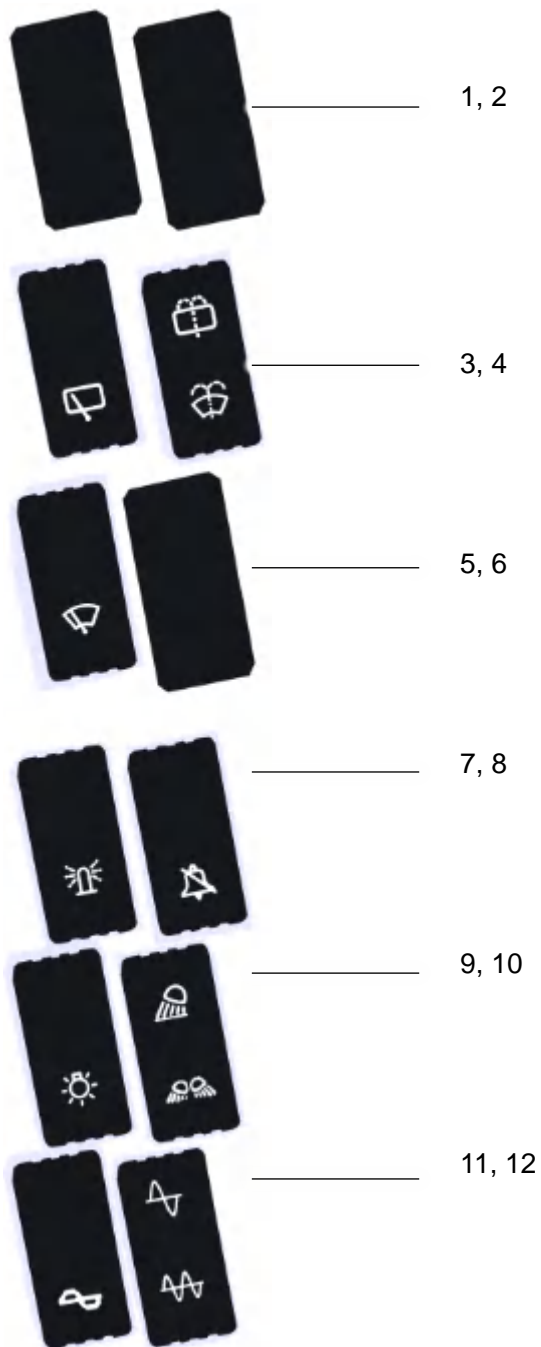
3. Position ST

The engine can be started. Always keep the key in this position during startup.

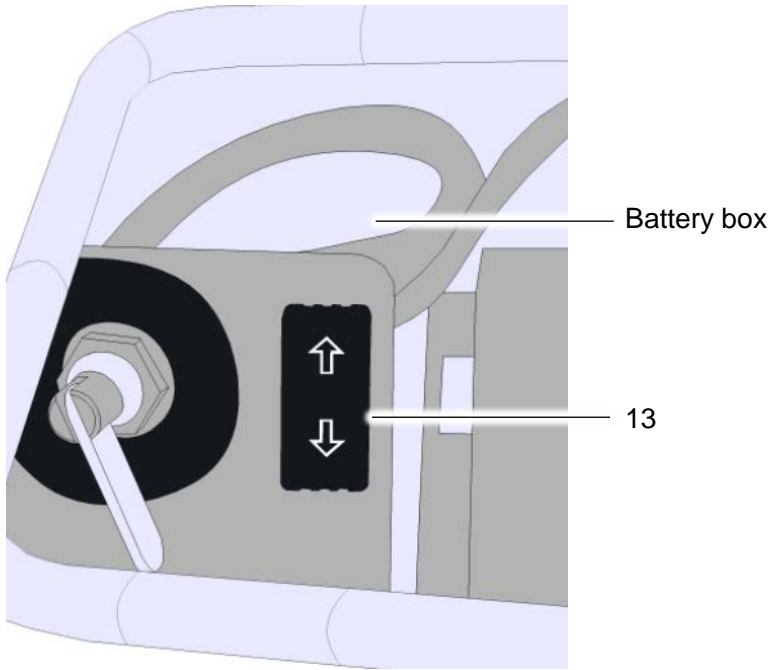
Release the key immediately after the engine is started.

In this case, the key will return to the ON position automatically.

Rocker switch



Note: The position of the rocker switch shall be subject to the actual configuration.



S/N	Name	S/N	Name
1	Reserved	9	Backlight switch
2	Reserved	10	Front/rear working lamp switch
3	Wiper switch	11	Vibration switch
4	Spray switch	12	High and low frequency selector switch
5	Wiper switch	13	Engine hood lift switch (in the battery box)
6	Reserved	14	
7	Top warning lamp switch	15	
8	Mute switch	16	

1. Reserved

2. Reserved

3. Wiper switch

The switch is designed with three positions. Press the upper end of the switch to stop the front wiper; set the switch in the middle position to operate the front wiper at a low speed; press the lower end of the switch to operate the front wiper at a high speed.

4. Spray switch

Press the lower end of the switch to spray water to the front windscreen of the cab. Release the lower end of the switch; in this case, the switch will return to the original position automatically, and spray will be stopped.

5. Wiper switch

The switch is designed with three positions. Press the

upper end of the switch to stop the front wiper; set the switch in the middle position to operate the front wiper at a low speed; press the lower end of the switch to operate the front wiper at a high speed.

6. Reserved

7. Top warning lamp switch

Press the lower end of the switch to turn on the rotating warning lamp; press the upper end of the switch to turn off the rotating warning lamp.

8. Mute switch

When the buzzer sounds on the instrument panel, press the switch (as marked) to deactivate the buzzer on the instrument panel .

9. Backlight switch

Press the lower end of the switch to turn on the backlight; press the upper end of the switch to turn off the backlight.

10. Front/rear working lamp switch

Press the upper end of the switch to turn on the front working lamp; press the lower end of the switch to turn on the front and rear working lamps.

11. Vibration switch

Before the machine starts vibration, press the high and low frequency selector switch and the vibration switch successively. Then, the machine will start vibration after 5 min.

CAUTION: Keep the engine running at a high speed

before vibration.

12. High and low frequency selector switch

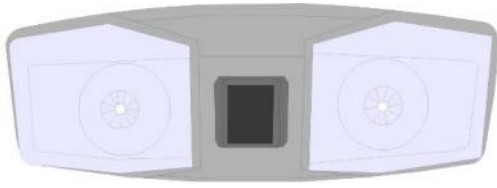
The upper, middle and lower positions of the switch denote low amplitude (high frequency), vibration stop and high amplitude (low frequency) respectively.

CAUTION: Before vibration, press the high and low frequency selector switch and the vibration switch successively, otherwise the vibratory drum won't work. Before vibration, set the accelerator control lever to the highest gear. Do not perform vibration on a hard ground, so as to avoid damaging the bearing. Be sure to stop vibration in case of any change in the traveling direction of the machine. If the high and low frequencies are switched directly, the vibration of the vibratory drum will be delayed, which is a normal phenomenon.

13. Engine hood lift switch

The switch has an automatic return function. Press the upper end of the switch to lift the engine hood; press the lower end of the switch to lower the engine hood; when the switch is released, it will return to the neutral position automatically, and the engine hood will be stopped in the current position.

Other control switches

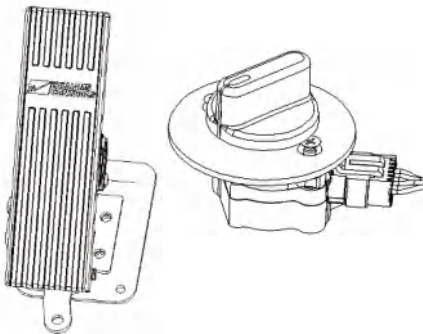


Ceiling lamp switch

The switch is installed in the middle of the ceiling lamp in the cab. Press the switch to turn on the ceiling lamp, and press it again to turn off the ceiling lamp. Be sure to turn off the ceiling lamp while driving.

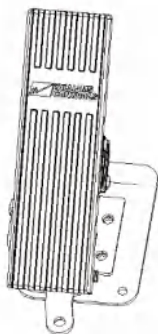
Horn switch

Press the switch in the center of the steering wheel to sound the horn. Release the switch to stop sounding the horn.



Throttle control (Stage III engine)

The electronic engine is adopted, and the throttle is controlled electronically in two modes, reducing the labor intensity. The throttle opening is determined by the maximum opening of the two control devices.



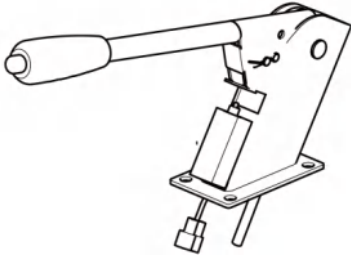
Throttle control (Stage II engine)

Two throttle control modes are designed, reducing the labor intensity. The throttle opening is determined by the maximum opening of the two control devices.

Foot throttle - the longer the travel, the larger the throttle opening.

Hand throttle - push it forward to decrease the speed; pull it backward to increase the speed.

CAUTION: When the hand throttle is operated, the foot throttle will act together; when the foot throttle is operated, the travel of the hand throttle won't change.



Parking brake control lever

Pull up the control lever to apply the parking brake of the rear wheels, and press it to release the parking brake.

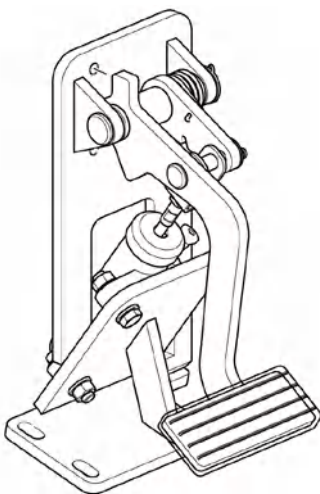


Brake pedal

It is used to control the service brake to stop or decelerate the machine.

Gearshift lever

It is used to control the traveling direction and speed of the machine.

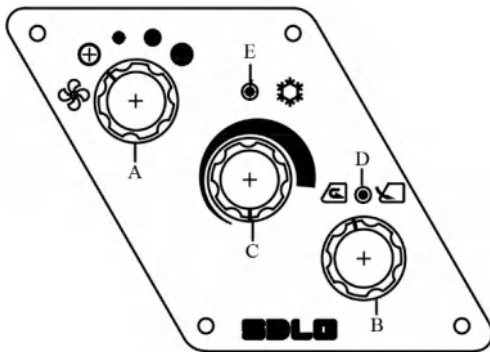


Clutch pedal

It is used to control the disengagement and engagement of the clutch.

CAUTION: Do not put your foot on the clutch pedal during normal driving. Do not keep the clutch in the semi-linkage state for a long time, so as not to burn the friction lining and release bearing of the clutch.

A/C panel



1. Panel appearance

Panel of the air conditioning is on the right side of the driver's seat.

2. Function of operating components

A. Blowing rate switch

It is system switch, and controls rotation speed of evaporating fan. It is divided into three gears including high, medium and low gears, and power switch, so as to choose proper blowing rate and open or close the air conditioning system.

B. Fresh air change-over switch

It controls operation of fresh air actuator, and controls air intake through inner and outer circulation.

C. Cooling starting change-over switch

Through clockwise rotation, it opens cooling system and regulates refrigerating capacity.

D. Fresh air opening indicator light.

E. Cooling starting indicator light.

3. Operation method

a) Cooling

- Start the engine.
- Turn on the blowing rate switch, and you can feel that the system has started to be in the blowing state. Turn on cooling change-over switch to cooling gear, and then the cooling indicator light is lit, and the system is in the cooling state.
- Rotate the blowing rate switch, and choose different gears, so as to obtain air volume at three gears including high, medium and low gears.
- When lowering the temperature to the required one, slowly rotate the cooling starting change-over switch anticlockwise until the indicator light goes out and the compressor stop working, and at this time, the temperature in the cab is the set temperature. When the indoor temperature is higher than this temperature, the indicator light will be lit, the compressor will automatically start, and the system will start cooling; when the indoor temperature is lower than this temperature, the indicator light will go out, and the system will stop working

b) Heating

- Before use, adjust the cooling starting change-over switch to "off" state first.
- Start the engine, and rotate switch of hot water valve

clockwise.

- Turn on the blowing rate switch of the fan, choose a gear, and regulate the blowing rate to the required one.



Attention: please close hot water valve at the time of cooling in summer, and close temperature control switch at the time of cooling in winter.

Seat adjustment

Horizontal adjustment

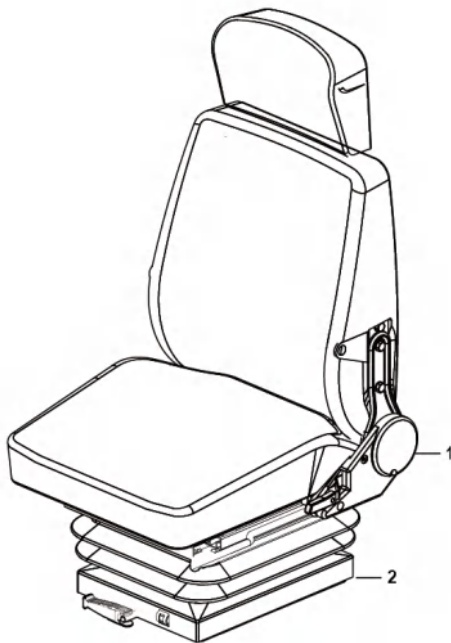
Adjust the handle leftward and rightward to move the seat forward and backward, and release it after adjusting the seat to a position suitable for operation. For example, in case of deep excavation, move the seat forward to improve the sight in the front lower direction of the machine.

Backrest adjustment

The operator pulls the handle backward while sitting on the driver's seat, and releases it after adjusting the backrest to a proper position.

CAUTION: When adjusting the seat, be sure to park the machine in a safe place and shut down the engine.

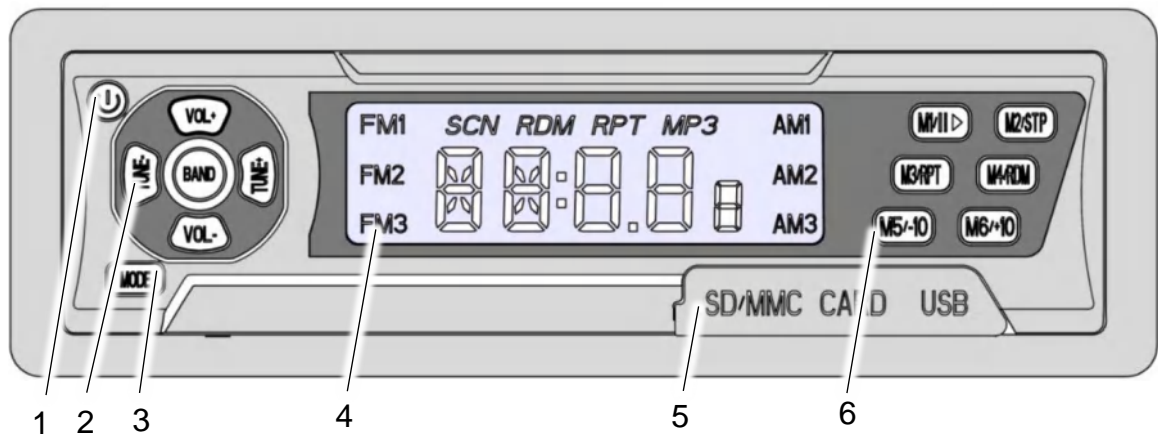
Before changing the driver or operating the machine, always adjust the driver's seat to obtain the most comfortable seating position. Do not adjust the seat while operating the machine.



1 Angle adjuster

2 Base slide rail

Radio/MP3/WMA player



The radio is installed in the upper left position near the driver.

1. Power switch

2. Radio operation area

TUNE: Channel switching

VOL: Volume increase and decrease

BAND: Band selection

3. Switching between radio and music player

4. LCD display

5. Interface for installation of the storage media such as SD and USB flash disk in the radio for reading internal MP3 files. The USB interface can be used for mobile phone charging.

6. Music player operation area

Instructions for operation

WARNING

In order to ensure the correct and safe running/operation of the machine, the operator shall observe the relevant provisions on operation and safety contained in this chapter and the national, provincial and municipal laws of transport, traffic and industry safety, labor welfare, etc. and fulfill the responsibilities and obligations specified therein.

Rules of safety during operation

Operator's obligations

The driver is responsible for the normal driving and operation safety of the road roller. Therefore, before driving and operation, be familiar with the performance, structure, operation method and technical maintenance of the road roller, and only by strictly following the safety operation regulation can safe production, full machine efficiency and longer service life of the machine be ensured.

1. Only the personnel who have been professionally trained and qualified are allowed to operate and maintain the machine.
2. The operator must abide by the rules and recommendations in the Operation and Maintenance Manual, and pay attention to laws, regulations, and special requirements and precautions for the workplace.

3. The operator must have a good rest and maintain good mental and physical conditions, and shall not operate the machine after drinking or taking drugs and other narcotics. The operator shall know about the operational rules and regulations and understand the hand signals given by the commander.

4. The operator shall get familiar with and know about the positions and functions of control devices, instruments and indicators before operating the machine. Develop the habit of observing instruments frequently during operation, so that any abnormalities can be detected in time.

5. The operator must thoroughly know about the condition of the workplace of the machine and prevent any personnel from passing by or standing near the machine, which is essential to avoidance of serious personal injury or property loss and possible fatal accident.

6. The operator shall prevent any personnel from entering or staying in the dangerous area within 7m away from the machine. If any person is present, the operator must be extremely careful and operate the machine only when seeing the person or knowing where he or she is.

7. If there is a risk of slippage due to the grease in the operating position and its surrounding area, remove the grease immediately.

8. In case of any abnormality (noise, vibration, smell,

incorrect instrument display, smoke, oil leakage, etc., or any abnormal display on the alarm device or monitor) during operation or maintenance, report it to the supervisor and take necessary measures. Do not operate the machine until the fault is corrected.

Safety provisions

1. Eliminate the fault or defect that affects the safety before startup.
2. Wear clothes suitable for safe operation and a hard hat for head protection.
3. Do not use communication equipment during driving, otherwise the signal may interfere with important electronic devices of the electrical system in the machine.
4. Always sit on the seat when starting the engine.
5. Keep your hands away from places where there is a risk of pinching (such as covers, doors and windows) to avoid pinching of hands or fingers.
6. Sit on the seat and fasten the seat belt.
7. When getting on or off the machine, face toward the machine, use steps and handrails rather than gripping any control levers, and contact with the machine on at least three points, i.e. use two hands and one foot or one hand and two feet. Do not jump.
8. Close the door of the cab during operation.
9. Only use the inspection passage with anti-skid pads to climb onto the top of the machine. Do not climb onto the

engine hood or cover without anti-skid pads.

10. Check the handrails and steps before getting on or off the machine. If there is oil, grease or mud on the handrails or steps, remove it promptly. Keep the handrails and steps clean. In case of any damage, repair the handrails or steps and tighten the loose bolts.

11. Use external passage devices such as portable platform and ladder if the maintenance needs to be performed above the counterweight.

Running-in of new machine

Subject the new machine to running-in within 50h after initial use. Select a road in good conditions within the running-in period. Avoid sudden acceleration when starting the engine, and increase the engine coolant temperature to 50°C or higher before driving. During driving, do not speed up the machine abruptly to drive it onto an uphill road; avoid applying emergency braking or using the brake for a long time. Be sure to maintain the machine as specified before, during and after running-in.

IMPORTANT! Check the oil level frequently.

Preparation for running-in

1. Clean the external part of the machine.
2. Check the fasteners of the exposed parts for looseness, loss and damage.

3. Check the control levers and pedals for connection looseness and rod system damage.
4. Check the level and quality of lubricating oil, brake fluid, fuel and coolant, and if necessary, add or change lubricating oil, brake fluid, fuel and coolant.
5. Check the battery discharge. Check if the battery cable connector is connected firmly.
6. Check the tire pressure, and inflate the tire if the pressure is lower than required value.
7. Check whether the engine fan belt has proper tension and whether the generator works normally.
8. Check all pipes such as oil and gas pipes and their joints for damage, looseness and leakage.
9. Check the braking effect, and make an adjustment in case of any nonconformity.

Trial run in the no-load state (2h)

Pull the gearshift lever to N and the parking brake control lever to the braking position, keep the engine idling at 750 ± 30 r/min for 3~5min before gradual speed increase and loading, and check whether the instruments, indicators and machine running sound are normal. After releasing the parking brake, drive the machine forward in gears I, II and III for about 1h and backward in gears I and II for about 1h. Check all systems for water, oil and air leakage, check whether the brake is applied flexibly, whether the readings are

displayed normally on the instruments, and whether the lamps and signals are normal.

Trial run in the compaction state (10h)

Carry out the trial run in the compaction state on a soft road, and keep the engine running at a speed of 2,000r/min. Do not start or stop the vibration or shift the gear too suddenly or violently.

Trial run in the compaction state (38h)

1. The machine subjected to the initial 10h trial run can be operated for compaction after being judged normal through the inspection.
2. The provisions on regular technical maintenance must be implemented during the 38h trial run.
3. Normal working can be started as specified only after the parts are judged normal through the inspection after the 38h trial run.
4. After running-in for 50h, the maintenance shall be performed according to the provisions on regular technical maintenance. It is required to comprehensively check the tightening of bolts and nuts of all parts, especially engine cylinder head bolts, intake/exhaust pipe bolts, rear axle bolts, connecting bolts of vibratory drum and front frame, connecting bolts of drive shaft, etc., and clean the engine oil filter and fuel filter.

Engine running-in

1. The new engine (or overhauled engine) must be subjected to running-in in advance to improve the matching condition of the friction pairs and enhance the working capability, which is essential to the working reliability and service life of the engine.
2. The engine shall be subjected to running-in for 40~60h during which the power and speed shall be increased gradually on the promise that the maximum power isn't higher than 80% of the rated power.
3. It is required to change oil and replace the oil filter after running-in.
4. Do not subject the engine to running-in at idle speed and low speed for a long time, otherwise faults such as early wear and nozzle burning may occur. (Some users think that normal running-in means running-in at idle speed, therefore, they subject the engine to running-in at idle speed for a long time, which is wrong actually. The machine is allowed to work during running-in as long as it isn't overloaded.)

Working in dangerous areas

Working near the high-altitude high-voltage cables

1. If there is a risk of contact of the machine with the cables in the workplace, it is required to contact with SGCC to know about the voltage of the cables and judge whether the action determined in accordance with the

current relevant laws and regulations is feasible before working.

2. If the machine is close to the high-voltage cables, personnel may get an electric shock because the current can be conducted from the cables in spite of no direct contact.

3. All personnel shall be prevented from approaching the machine in case of working near the high-voltage cables.

4. It is necessary to wear rubber boots and gloves. A rubber pad shall be placed on the driver's seat, and any exposed parts of the body shall not touch the metal chassis.

5. A signaller shall be appointed to send a warning signal if the machine is too close to the cables.

6. For the sake of safety, the minimum distance between the machine and the high-voltage cable is shown in the table on the left side.

7. Once the working device contacts with the cables, the operator shall not leave the cab, move on the seat or touch the machine until another person on the ground disconnects the power supply safely.

Voltage	Minimum safety distance from the cable
0~1kV	2m (7ft)
1~55kV	4m (13ft)
55~500kV	6m (20ft)

Working in an area where overhead cables are intended for use by electric trains

1. Contact the railway authority to obtain the operation approval before loading or unloading the machine.
2. Contact the railway authority again if the operation is resumed after interruption.

Working in an area where cables and pipes are laid under the ground

1. Contact the departments in charge of underground cables and pipes and follow their instructions before operating the machine.
2. Appoint a signaller in case that it is difficult to take handling measures due to the complexity of the cable or pipe locations or the operator cannot see the actual working point in the workplace.

Working in an area with a limited space

1. Check whether the space is enough before operation.
2. Perform the operation slowly.

Working on a slope or in other dangerous areas

1. Turn on the warning lamp (optional, with reserved wires) on the top of the cab in case that the machine impedes or endangers the traffic or the width of the device connected to the machine is more than that of the machine.

2. When hanging the load, be careful to move the machine, and appoint a signaller if necessary.
3. Use road markings when working on or near the road.
4. Be extremely careful when operating the machine in areas marked to be dangerous.
5. Do not work near the edges of facilities such as piers and skew bridges.

Machine startup

Before initial use

1. Operate and maintain the engine in strict accordance with the requirements of this manual.
2. Do not overload the engine or keep it running at idle speed for more than 10min.
3. Use qualified antifreeze for the cooling system.
Otherwise, the Company will not bear any responsibility for the resulting faults.
4. Do not use oil at different grades supplied by different manufacturers, so as not to lower oil quality.
5. Clean the oil pan with clean kerosene or diesel, replace the oil filter element and change oil completely after running-in of the engine.
6. Do not run the engine without an air cleaner, otherwise the engine will not work normally due to early wear caused by ingress of unfiltered air.
7. Connect the wires of the electrical devices correctly and firmly; do not remove the wires when the generator is running, so as to avoid accidents.
8. Provide protective devices for all exposed rotating parts and install them firmly, so as to avoid personal accidents.
9. Remove all tools, wires and other articles from the engine before starting it.

10. Remove the spilled lubricating oil, fuel, coolant or other fluids.
11. Adopt proper methods for safe and reliable disposal of waste oil.
12. Store the cloth for oil removal in a fireproof container rather than throwing it on the engine.
13. Do not store flammable liquids near the engine.
14. Disconnect the battery ground wire and wrap it with insulating tapes before maintenance of the engine, so as to prevent accidental startup.

During use

1. After the engine is started, always run it at idle speed for 3~5min and make sure that the instruments work normally before driving. Do not increase the speed abruptly when the engine is in the cold state, otherwise damage of instruments and their corresponding parts, accelerated wear of moving parts of the engine and damage of the turbocharger will occur, thereby shortening the service life of the engine.
2. After the engine is started, run it in the no-load state for 3~5min before running it by increasing the speed and load gradually.
3. When replacing the oil filter during maintenance, fill the new oil filter with oil before installation. After the new oil filter is installed, start the engine, run it at idle speed for 2~3min and at medium speed for 1~3min

respectively, get off the machine, and carefully observe whether the oil filter is leaky. Eliminate the leakage in time if any. Otherwise, the crankshaft, bearing shell and other moving pair parts will be burned due to lack of oil.

4. Keep your body away from the engine to avoid scalding due to the high temperature of the turbocharger, exhaust pipe, muffler, radiator and other parts during working of the engine.

5. Due to the high pressure inside the radiator during working of the engine, stop the machine as required, and fully reduce the coolant temperature before adding the coolant, so as to avoid scalding caused by spillage of the high-temperature fluid.

6. Stop the machine for inspection and troubleshooting in case of too low or no oil pressure, too high coolant temperature or abnormal noise inside the engine.

7. Protect the engine against fire, and keep it away from open flames. As the exhaust temperature of the engine is also very high, install a spark arrester at the outlet of the exhaust pipe or muffler as required if the machine is used in an environment with flammable materials nearby.

8. Drain water out of the primary fuel filter, clean or replace the primary fuel filter element assembly and replace the secondary fuel filter element assembly as specified.

9. Frequently check the intake pipe for leakage and the air cleaner for blockage. If any, maintain the machine in time. Otherwise, faults such as turbocharger damage and cylinder scoring may occur; meanwhile, the engine power will drop so that the machine can only be driven at a low speed.

10. Before adjusting or overhauling the engine and its driving device, be sure to shut it down.

11. Be prepared to cut off the oil circuit or block the intake system when starting the engine that has just been repaired. Cut off oil or gas and stop the engine promptly in the event of runaway after the engine is started.

After use

1. When the engine runs at a high speed under the high load condition, do not shut it down suddenly, instead, run it at idle speed for 3~5min before shutdown.

Otherwise, the turbocharger and other moving parts will be damaged, thereby shortening the service life of the engine.

2. Remove the connecting wire between the engine and the battery when the engine is stopped for a long time or maintained, so as to prevent accidental startup.

3. Drain coolants out of the radiator and engine completely if the ambient temperature is possibly lower than 0°C and antifreeze isn't used.

In case of a fault

1. Do not clean the radiator or intake intercooler with corrosive detergents. Otherwise, the engine cooling system will be damaged severely.
2. Do not overhaul or maintain the engine without permission from the authorized maintenance station of the manufacturer if a major engine accident occurs.
3. Contact the local customer service department in case of no or too low oil pressure, too high coolant temperature, leakage from the intake system or abnormal noise inside the engine. Do not run the engine in case of a fault.

Overall inspection before startup

Check the bottom and periphery of the machine, check for bolt looseness, dirt, oil and coolant leakage or part damage through observation, and check the conditions of accessories and hydraulic parts.

Inspection before startup

1. Check the fuel level of the fuel tank; bleed the fuel pipe completely;
2. Check if the connectors of the intake and exhaust pipes of the engine are sealed and installed firmly;
3. Check if the coolant pump belt has proper tension; Apply a 4-5kg force downward in the middle of the two pulleys of the coolant pump and the charger until the belts sink by 10-15mm.

4. Check the wires of the engine for looseness, contact and damage;
5. Check the engine for oil, water and air leakage;
6. Check the instruments and sensing components for defect;
7. Check if the battery is fully charged;

Engine startup

Precautions for engine startup

1. Start the engine only after making good startup preparations and confirming that the requirements are satisfied (warm up the engine in winter before startup).
2. Do not start the engine continuously for more than 10s; make sure that the time interval between two startup operations isn't shorter than 1min; if the engine cannot be started after three continuous operations, find out the cause and eliminate the fault before further startup.
3. Startup of the Weichai engine with an electronically controlled flame preheater: If the engine coolant temperature is lower than 23°C, turn the ignition key clockwise to ON. At this time, the preheating indicator lights up and the glow plug is energized for preheating. After 50s, the preheating indicator flashes automatically, and the glow plug is heated to 850~950. Then, turn the ignition key clockwise to START. At this time, the starter is started, the solenoid valve opens the oil circuit

automatically to supply oil to the glow plug to start the engine through the flame preheater. With the flame preheater, the engine can be started smoothly at -25°C . For the engine used in severe cold areas, be sure to take special measures, e.g. thermal insulation of engine, and use of low-temperature batteries or oil and fuel of special specifications.

4. After starting the engine in the cold state, increase its speed slowly rather than running it at a high speed suddenly or at idle speed for a long time.

5. If the oil pressure is too low, the engine won't be lubricated properly, resulting in wear of the moving pairs.

6. Check that the coolant pump is in good working condition, and check for oil, water and air leakage or abnormal noise.

7. Check the working condition of the instruments of the machine. In case of any abnormality, stop the machine immediately for inspection and troubleshooting, and have it maintained if necessary.

8. Do not run the engine at idle speed for a long time: after starting the engine, keep it running at idle speed for 3~5min (generally for no more than 10min).

Otherwise, faults such as burning of the nozzle and wear of the cylinder liner piston ring may occur.

After engine startup

1. After starting the engine in the cold state, do not run it at a high speed under the high load condition, instead, raise the engine speed gradually, increase the coolant temperature above 60°C, fully lubricate the engine and heat it uniformly before normal operation.
2. Do not stop the machine immediately after operation under the high load condition, instead, run the engine at a low speed under the no-load condition for 5-10min before stopping the machine.
3. Always observe the condition of the instruments and know about the operation of the engine at any time. In case of any abnormality, be sure to stop the machine promptly for inspection and troubleshooting, and have it maintained if necessary.
4. Run the engine at a low speed. If the oil pressure gauge doesn't indicate the normal range within 10s, find out the cause before startup. Otherwise, the engine will be faulty.
5. If the engine speed is too high when the specified oil pressure isn't reached, the turbocharger will be damaged.
6. In order to heat the hydraulic components quickly, use the working device control lever cyclically to circulate the preheated hydraulic oil in the hydraulic cylinders and pipes.

7. After starting the engine, run it at idle speed for a few minutes, gradually increase its speed to 1,000~1,200r/min, and run it in the partial load state. Always observe the change in the reading displayed on the instrument.
8. Do not run the engine at a high or low speed in the neutral position for more than 20min.
9. If it is necessary to run the engine in the neutral position, load the engine constantly or run it at a medium speed.

Machine operation

Inspection before driving

1. Check the engine oil level which is required to be between MAX and MIN of the oil dipstick. Meanwhile, pay attention to the oil quality;
2. Check whether the radiator is full of coolant;
3. Check the fuel level in the fuel tank;
4. Check the oil level in the hydraulic oil tank and keep it higher than half of the hydraulic oil tank;
5. Check the connectors of all parts for looseness.
6. Check whether the instruments and the engine work normally;
7. Check whether the sound of the engine running at a medium speed is normal;
8. Check whether the headlamp, turn signal lamp, horn, wiper, brake lamp, etc. are normal;

9. Turn the steering wheel to check if the steering system is normal;
10. Check whether the parking brake is normal, and whether the clutch is engaged and disengaged normally;
11. Check whether the hydraulic vibration system works normally, and whether the oil levels on both sides of the vibratory drum are normal;

Driving of the machine

1. Be sure to complete the above inspection before startup of the machine. Note that the high and low frequency selector switch and gearshift lever shall be set in the middle position.
2. Release the parking brake control lever to release the parking brake completely.
3. Turn the key switch to ON.
4. Turn the key clockwise to START to start the starter motor.

CAUTION: Release the ignition key immediately after starting the switch, so as not to damage the gears and burn the starter motor!

5. Ensure that the meshing time of the starter motor isn't longer than 10s and the time interval between two continuous startup operations is 1min, so as to avoid damaging the starter motor.

6. Keep the engine idling at 750r/min for 3~5min before running it by increasing the load gradually. Do not run the diesel engine under the increased speed and load conditions immediately after starting it.

Start of the machine

1. After starting the engine, run it at idle speed until the coolant temperature is above 50°C and ensure that the instruments work normally before driving.
2. Check the conditions of the parts around, above and under the machine, and observe the steering position of the vibratory drum.
3. Release the parking brake, and observe the areas in front of, to the left/right of and above the machine and the rearview mirrors to check for any interference with the start.
4. Depress the clutch pedal, select the traveling direction, pull the gearshift lever to gear I, increase the speed gradually and release the clutch pedal slowly to drive the machine forward and backward. Pull the gearshift lever to gear II after start.
5. Hold the steering wheel firmly.

CAUTION: Do not start the machine in gear III!

Start of the machine on a hill

It is not recommended to stop or start the machine on a hill. If necessary, adopt the following operation methods:

Start on an uphill road

After starting the engine, depress the clutch pedal, pull the gearshift lever to the forward gear I, increase the speed appropriately, hold the parking brake control lever firmly with one hand and the steering wheel in the right direction with the other hand, and release the clutch pedal and the parking brake control lever slowly to start the machine stably. When the machine slips backward, pull up the parking brake control lever promptly, and depress the clutch pedal to stop the machine. Start the machine again.

Start on a downhill road

Depress the clutch pedal, release it slowly, release the parking brake control lever, and increase the speed gradually.

Driving and gearshift of the machine

1. Do not put your left foot on the clutch pedal during normal driving. Otherwise, early wear of the clutch release bearing will occur.
2. Do not release the clutch pedal or increase the speed abruptly in case that the machine is stuck. Otherwise, the clutch will be damaged more severely and the parts of the transmission system will be impacted, resulting in gear damage.
3. Shift the gear from the low range to the high range as follows:

After the machine is started, it is allowed to increase the

speed gradually under the permissible road and terrain conditions. If the machine is driven at such a speed that it is appropriate to engage a higher gear, release the accelerator pedal promptly, depress the clutch pedal until the clutch is disengaged, pull the gearshift lever to the desired gear, release the clutch pedal immediately, and increase the speed gradually.

4. Shift the gear from the high range to the low range as follows:

While releasing the accelerator pedal, depress the clutch pedal to disengage the clutch, pull the gearshift lever to a low gear, release the clutch pedal promptly, and increase the speed gradually.

5. Select the gear according to the road conditions.

Engage a low gear in advance under poor road conditions.

6. In case of driving in a severe cold season, drive the machine slowly in a low gear at the beginning, and shift the gear to the high range gradually after the transmission parts are lubricated properly, so as to avoid damaging the transmission parts.

7. Stop the machine completely before shifting from the forward gear to the reverse gear or vice versa.

Otherwise, the gears may be damaged due to violent impact.

Steering

The machine is equipped with a full-hydraulic steering gear which is operated in a similar way to the general mechanical steering gear. But it should be noted that the steering fluid from the steering fluid pump will be reduced and the steering speed will also be affected when the engine speed is decreased, especially when the engine is shut down, the steering fluid pump won't supply the steering fluid. In this case, a steering failure will occur. In case of a sharp turn, be sure to drive the machine at a low speed, and avoid an excessive decrease in the engine speed especially engine shutdown.

DANGER: Do not shut down the engine and coast down on a downhill road, otherwise you will lose control of steering.

Additionally, pay attention to the following precautions for steering:

1. Ensure that the front exterior part of the front frame doesn't impact on other obstacles or the exterior part of the vibratory drum doesn't extend beyond the road.
2. Decrease the speed, avoid turning or returning the steering wheel abruptly, and try to avoid braking especially emergency braking during turning. Be extremely careful while driving on muddy or icy roads, so as to avoid sideslip which will cause loss of control of the machine.

3. Do not turn the steering wheel too fast, otherwise the steering gear will be damaged.

Operation

Perform the operation in strict accordance with the construction process. Before operation, clean the workplace to avoid crushing or impacting the parts.

Check the condition of the workplace to prevent the machine from getting stuck. The requirements for operation are described below:

1. Control vibration using the vibration switch after driving the machine stably.
2. Stop vibration in case of a change in the traveling direction of the machine.
3. Stop vibration if the machine is stopped or transferred.
4. Observe the speed regulation: Speed I or II - working speed for vibration, and speed III - travel speed.
5. Do not perform vibration on a hard road or in a place sensitive to vibration.
6. In case of switching between high and low amplitudes, operate the amplitude (frequency) selector switch to stop vibration, and press the desired amplitude switch to start vibration.
7. Be alert to faults.

CAUTION: Set the highest engine speed before pressing the amplitude (frequency) selector switch to

start vibration.

After operation

Stop and engine shutdown

1. Before stopping the machine, slow it down, use hand signals to inform the drivers of vehicles behind and the pedestrians nearby, and drive the machine slowly to the right side of the road or the parking place.
2. Avoid stopping the machine on unsafe roads such as narrow roads, steep slopes and soft roads.
3. Select a level ground to park the machine as far as possible. If you have to stop the machine on a hill, choose a safe place. After stopping the machine, pull up the parking brake control lever, put the gearshift lever to a proper gear (gear I if the front end of the machine is kept on an uphill road; reverse gear if the front end of the machine is kept on a downhill road), and put wedges or stones in front of and behind the vibratory drum to prevent slippage.
4. When stopping the machine on a roadside at night, make safety signs to avoid a collision.
5. If you need to shut down the engine, reduce the load gradually, decrease the engine speed to about 600r/min slowly, and turn the key switch to OFF (STOP) to stop the engine.

CAUTION: Do not stop the machine suddenly when the engine is in the full load state.

6. After shutting down the engine, pull up the parking brake control lever and put it in the braking position. Lock all devices before removing the key. Remove the ignition key. While getting off the road roller, face the road roller and climb down slowly. Always make sure that your body keeps three-point contact to the handrail and ladder. Do not jump down the roller.

WARNING! Do not get on or off the machine during driving.

Parking of the machine

IMPORTANT! Park the machine on a flat ground. If you need to park the machine on a slope, put wedges or stones in front of and behind the vibratory drum to prevent slippage.

1. Each time after operating the road roller, always remove the dirt and dust from the machine, and pay special attention to the cleanliness of the diesel engine, alternator, starter motor, fuel injection pump, hydraulic pump, hydraulic motor and hydraulic pipelines.
2. If the road roller will not be used temporarily, park it in the storehouse or work shed to prevent it from exposure to the sun and rain. If the road roller has to be stored in the open air, always cover it with a piece of waterproof cloth, and park it on a dry and level ground.
3. Park the machine in a place where there is no risk of rockfall, landslide or flooding.

4. Pay attention to the weather conditions and take appropriate measures to prevent the machine from freezing on the ground, so as not to cause sinkage or any other undesirable consequences.
5. When parking the machine in case of a fault, place fences, signals, flags or warning lamps and other necessary signals to ensure that the drivers of passing vehicles can see the machine clearly. Moreover, prevent the machine, fence and flag from hindering the traffic.
6. When leaving the machine after shutting down the engine, pull up the parking brake control lever.
7. Close the window, lock the cab and all covers, remove the key, take it with you, and put it in the designated place.
8. Turn off the main power switch.
9. In case that the machine is stored for a long time, clean it, grease all fillers once, apply anti-rust oil to the unpainted metal surfaces, check the performance of antifreeze, drain the fluid completely if necessary, cover the air vent (in the outdoor environment), inflate the tires to the recommended pressure, and fill the fuel tank and hydraulic oil tank until the MAX mark is reached. Start the machine every three months to run the diesel engine at a low speed for 10-15 min.

CAUTION: If a vibratory roller is stored for a long time (more than 100 days), start it according to the following regulations:

Remove anti-rust oil from the surface of each part;

Install a fully charged battery and adjust the fan belt;

Add fuel, hydraulic oil and coolant as specified, and check the capacity and quality of lubricating oil in the oil pan, transmission and drive axle;

Start the machine according to the provisions on the trial run and driving preparation defined above.

Operation procedures

Operation rules

Precautions

WARNING

The operator must sit on the driver's seat during compaction. No personnel except the operator are allowed to be present in the cab during operation of the machine. No one is allowed to sit on the machine body.

1. Before operation, carefully study the workplace drawings and local rules, know about the conditions of the ground and dangerous areas of the workplace, cut off the gas, power and water if necessary, and mark the locations of underground cables and pipes.
2. Put fences and "No Entry" signs around the machine if there is a risk of unauthorized approach.
3. Release the pedal and control lever and shut down the engine promptly in case of loss of control of the machine.
4. Shut down the engine promptly and find out the cause if the red warning lamp lights up and the buzzer sounds.
5. Do not equip the machine with other working devices.
6. In the event of a fire, turn off the main power switch (set it to "0") when possible.

Operation under special conditions

Operation in case of poor visibility

WARNING

Check whether the machine can be operated safely when the visibility becomes poor.

If the visibility exceeds the safety limit, stop the operation immediately and park the machine in a safe place after the visibility gets better.

1. Ensure that enough working lamps and reflective parts are installed in case of operation in buildings and tunnels.
2. Do not operate the machine under the poor visibility conditions, e.g. on foggy, snowy or rainy days.
3. Set up a road warning sign or turn on the top warning lamp (if installed) in case of operation on roads.

Operation in cold weather

WARNING

Avoid direct contact of unprotected skin with very cold metal parts because the skin may be frozen on the metal parts.

The hydraulic system of the machine will respond very slowly at an extremely low temperature, therefore, be very careful before the normal operating temperature of the system is reached, so as to avoid accidents.

Remove ice and snow on the window before operation.

1. The snow-covered or frozen surface is very slippery.

Therefore, when driving or operating the machine on such a surface, be extremely careful, and do not operate the control lever suddenly. Take great care in spite of operation on a very gentle slope.

2. The frozen ground will become soft when the temperature rises, which will cause rollover of the machine.

3. If the machine is driven through deep snow, it may be turned upside down or covered by snow. Be careful not to drive the machine away from the road shoulder or get stuck in snow.

Safety during maintenance

WARNING

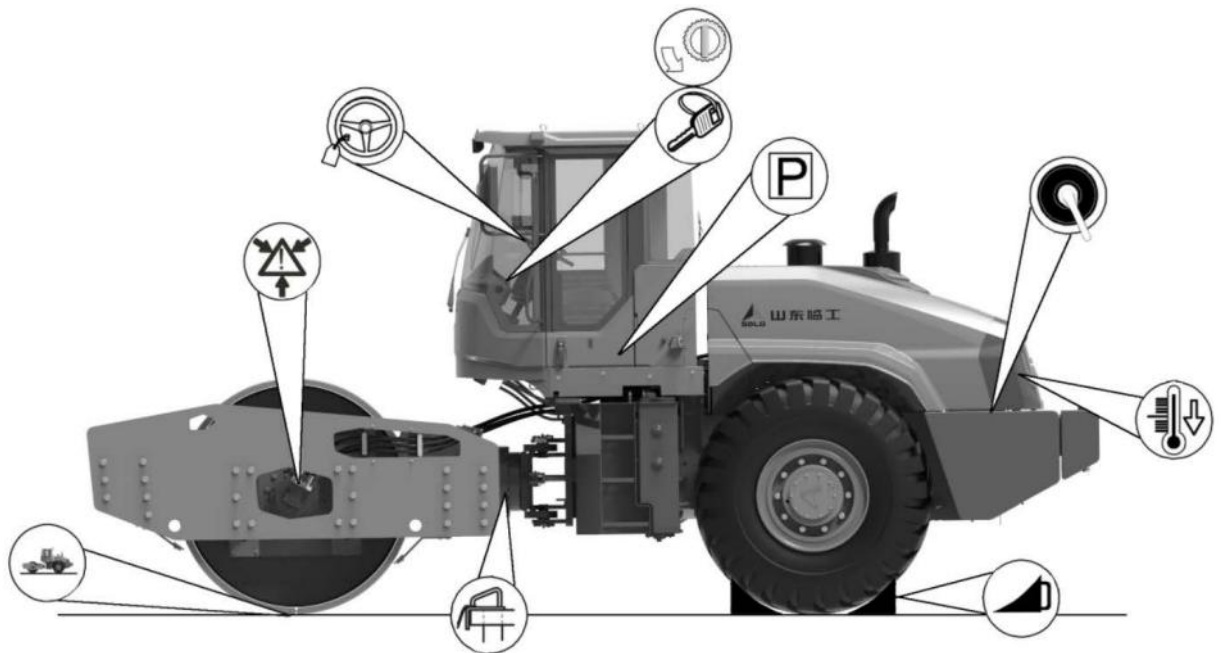
If maintenance is required before cooling of the machine, be extremely careful, so as not to get burned by hot liquids and parts.

The general safety provisions are covered in this chapter and shall be followed during inspection and maintenance of the machine. The safety provisions and warning texts for operation of the machine are described in different chapters.

Maintenance location

Before maintenance, park the machine on a flat ground, and make preparations for maintenance as follows:

1. Place the machine on a flat solid ground.
2. Shut down the engine and remove the ignition key.
3. Pull up the parking brake control lever.
4. Release the pressure in the boost pipe and container gradually to avoid dangers.
5. Place the warning sign near the Engine Start/Stop button to prevent anyone from starting the engine during maintenance.
6. Cool down the machine.



Getting on or off the machine

WARNING:

Always take care.

1. Check the handrails or steps before getting on or off the machine. If there is oil, lubricant or mud, remove it promptly to avoid slipping when you get on or off the machine.
2. Do not grip any control levers when getting on or off the machine.
3. Never jump on or off the machine. Do not get on/off the machine when it is moving.
4. When getting on or off the machine, use the steps and handrails to support your body, and contact with the machine on at least three points (i.e. use two hands and one foot or one hand and two feet) to ensure that your body doesn't shake.
5. Always face towards the machine.
6. Do not use the outer handle of the cab as a handrail for getting on or off the machine because it is intended for closing of the cab door.
7. Do not climb up or down the machine with tools or other articles in your hands, and instead, lift the required tools to the operating platform with a rope.

Safety provisions

Preventing personal injury

1. It is very dangerous to adopt incorrect maintenance methods. Make sure that you have sufficient knowledge, correct information and suitable tools and equipment for maintenance of the machine.
2. Read all labels, signs and marks on the machine and the Operation and Maintenance Manual before maintenance of the machine. Important information about machine maintenance is contained in the instructions.
3. When working on the machine, do not wear loose clothes such as headscarf or jewelry which may be caught, otherwise personal injury will be caused.
4. Be sure to wear hard hat, goggles, gloves, protective shoes and other required PPE.
5. Ensure that enough ventilation equipment is provided when starting the engine indoors.
6. Do not stay in front of or behind the machine when the engine is running.
7. Shut down the engine and make sure that the tools or other articles which may cause damage aren't left in the machine before opening the engine hood, radiator housing, etc.
8. Open all pressure vessels carefully, and release any residual pressure. Residual pressure is still accumulated in the system after the engine is shut down. In case of

opening before release of the pressure, the fluid will be ejected under a high pressure. Similarly, the tightness of leaky connections and joints can be checked only after the pressure is released from the system completely.

9. Check for leakage with paper or wood chips rather than by hand directly.

10. Make sure that the surfaces to be stepped on, handrails and non-slip surfaces are free of oil, diesel, dust, ice, etc. Do not step on the machine surfaces that shouldn't be stepped on.

11. When maintaining the machine, be sure to shut down the engine, unless otherwise stated on the label or in this manual.

12. Any unauthorized modification may lead to dangers. Before modification of the machine, be sure to consult us or our designated dealers. We won't bear responsibility for any damage caused by unauthorized modification.

Preventing machine damage

1. It is very dangerous to adopt incorrect maintenance methods. Make sure that you have sufficient knowledge, correct information and suitable tools and equipment for maintenance of the machine.

2. Hoist or support the machine or its parts using the equipment with a sufficient lifting or supporting capacity.

3. All lifting devices must comply with the corresponding national regulations. We won't bear responsibility for any failure to use the lifting devices, tools or working methods specified in this manual.
4. Release the pressure from the hydraulic system before working.
5. If the machine is used in contaminated areas (in contaminated environments and/or unsanitary areas), maintain it as per special methods. Additionally, always observe special safety regulations when maintaining the machine.
6. In case of repair or replacement, use the parts designated by us; in case of maintenance, use the oil and grease designated by us, and select the oil and grease with proper viscosity according to the ambient temperature.
7. Never use oil of different brands. If only one type of oil is provided and it is different from the oil being used, change the current oil completely.
8. When pouring/draining oil or fuel, avoid spillover. In case that the fluid cannot be drained into the container directly, use a pump or connect a hose to drain it safely. Oil spilled onto the ground will pollute the environment and cause a fire. Any used oil and other fluids shall always be disposed of by an authorized waste management company.

9. Make sure that all covers on the machine are closed before starting the engine.

Preventing environmental pollution

In case of maintenance of the machine, take into account the possibility of environmental pollution. Oil and other fluids harmful to the environment cannot be drained directly.

CAUTION: All waste shall be handed over to a qualified waste management company for disposal.

1. When draining oil and other fluids, collect them in a suitable container, take splash-proof measures, and hand them over to a waste management company for disposal.
2. Do not discard the used battery, because it contains substances harmful to the environment and health. Hand it over to a waste management company for disposal.
3. Do not discard the rags, gloves and bottles stained with oil directly, otherwise the environment will be polluted. Hand them over to a waste management company for disposal.

Fire prevention

WARNING

If the machine is used in an environment prone to fire, e.g. in an explosive environment, special equipment shall be provided.

If you clean the machine using a high-pressure nozzle, be extremely careful, because electrical components and wires may be damaged even at very low water pressure and temperature. Protect the electrical components and wires properly. Meanwhile, shut down the engine and turn off the main power switch.

Fuel and lubricating oil in the engine, hydraulic oil in the hydraulic system, hydraulic transmission fluid and gear oil in the transmission system, brake fluid in the braking system and antifreeze in the cooling system are flammable. More attention shall be paid to the fuel for fire prevention. Therefore, always keep the followings in mind:

1. When adding the above-mentioned flammable fluids, make sure that the site is ventilated, and shut down the engine. Do not smoke or get close to open flames when adding oil or opening the fuel tank.
2. Contain the above-mentioned inflammable liquids in containers with corresponding marks, and store the containers at the designated places by category. Prevent any personnel other than working staffs from using such liquids.
3. Be alert to fire hazards. Learn how to use the fire extinguisher and know where it is stored so that you can find it if required.
4. Do not use diesel to clean the machine because it is flammable. Use approved solvents.

5. Certain solvents can cause rashes and potential fire hazards. Therefore, do not breathe in vapor of these solvents.

6. Keep the maintenance site clean. Cleanliness is essential to the normal operation of all systems in the machine. If oil or water is accumulated, the ground and steps will be slippery, and the relevant electrical systems and power tools will also be affected adversely. Clothes covered with oil or cloth dipped in grease will bring about serious potential fire hazards.

7. Check the machine and equipment on a daily basis to make sure that there is no dirt and oil on the guard plates, which can reduce the risk of fire and help you find out the faulty or loose parts more easily.

8. When working in sensitive environments (e.g. sawmill, garbage dump or similar places), keep the machine clean. When operating the machine in such environments, equip the machine with proper equipment (e.g. muffler cover, radiator partition, high-power fan or primary filter) to reduce the possibility of accumulation of flammable materials.

9. Ensure that any fire extinguishing equipment on the machine is in the working state. Some additional devices can also be used by the operator for firefighting in the event of a fire, but they cannot substitute the fire prevention work that shall be done by the operator.

10. Check the wires especially when they aren't connected with fuses, and confirm that they aren't and won't be damaged due to friction.

11. After disconnecting the wires that aren't connected with fuses, check them, and confirm that they are connected and clamped in such a way that they aren't affected by friction. Meanwhile, ensure that these wires don't rest on oil and fuel pipes.

12. Check the fuel hose, hydraulic system and brake hose, and confirm that they aren't damaged due to friction. In case of leakage, repair or replace the damaged components immediately, and clean the repaired components before operation.

13. Do not subject the pipes containing flammable fluids to welding or flame cutting. and if such electric welding or flame cutting becomes necessary, clean the involved pipeline by non-inflammable liquid in advance.

14. Only carry out welding and grinding in clean places. Do not weld or grind the parts filled with compressed air or flammable fluids (e.g. fuel tank and hydraulic pipe). Be careful to weld and grind the parts near flammable objects. Do not discard batteries, plastics and other materials that may endanger the environment. Ensure that they are disposed of in such a way that the environment won't be polluted.

Measures in the event of a fire

1. Drive the machine to a safe place to prevent the fire from spreading.
2. Turn the start switch to “OFF”, and leave the cab.
3. Turn off the main power switch.
4. Try to extinguish the fire. If necessary, call the fire department for rescue.

Measures after a fire

1. Wear thick rubber protective gloves and goggles.
2. Do not touch the parts by hand directly, so as not to get burned. Use lime water for thorough cleaning.
3. Dispose of hot fluorocarbon rubber.

Disposal of hazardous materials

Heated paint

WARNING

When paint is heated, it will be decomposed, and irritating compounds will be formed. Working in this environment for a long time is very harmful to health.

Heated paint will emit toxic gas. Therefore, remove paint in surrounding areas 10cm (4in) away from the machine before welding, grinding or gas cutting, otherwise your health and the welding quality will be affected adversely.

Methods and precautions for removal of paint

1. Powerful blowing. In case that this method is adopted, wear respiratory protective equipment and goggles.
2. Paint remover or other chemicals. In case that this method is adopted, use a portable air pump, and wear respiratory protective equipment and goggles.
3. Machine grinding. In case that this method is adopted, use a portable air pump, and wear respiratory protective equipment, gloves and goggles. Do not discard these devices after use. Hand them over to a qualified department for disposal.

Heated rubber and plastic

CAUTION! When polymeric materials are heated, the compounds that have a bad effect on your health and the environment may be formed.

1. Do not weld or cut the parts near the polymer materials (plastic and rubber parts) that aren't subjected to thermal insulation in advance.
2. Do not burn polymer materials when removing them.
3. Be careful when handling the machine that has been burnt or exposed to high heat.
4. Always use gloves, goggles and respiratory protective equipment.

Heated fluorocarbon rubber

WARNING

When fluorocarbon rubber is heated to a high temperature, it will be decomposed into hydrogen fluoride and hydrofluoric acid which are very corrosive to the skin and respiratory tract.

A series of measures shall be taken to handle the machine that has been burnt or exposed to high heat.

1. Wear thick rubber gloves and goggles.
2. After rubber gloves, rags, etc. get into contact with heated fluorocarbon rubber, wash them with lime water and discard them.
3. Decontaminate the surrounding area thoroughly and adequately with hydrated lime after the parts that may be made of fluorocarbon rubber are subjected to high heat.
4. Dispose of all seals (O-rings or oil seals) as fluorocarbon rubber products for the purpose of prevention.

5. Note that hydrofluoric acid may remain on the machine for several years after the fire.
6. Seek medical care immediately in case of swelling, redness or tingling after contact with heated fluorocarbon rubber.
7. As hydrofluoric acid cannot be washed away from the skin, treat it with medicine, and seek medical care.

Battery

WARNING

The battery contains sulfuric acid which is very corrosive to the skin.

1. Do not smoke near the battery which will release explosive gas.
2. Make sure that metal objects (such as tools, rings and watch bands) don't contact the battery poles, otherwise personal injury or fire may be caused.
3. Make sure that protective components are always installed on the battery poles.
4. Do not place the battery upside down or horizontally or subject it to any mechanical shock or heavy load.
5. Do not connect a discharged battery with a fully charged battery in series, otherwise explosion may be caused.
6. Disconnect the ground wire first when removing the battery and connect it last when installing the battery, so as to reduce the risk of sparks.

7. The battery contains substances that are harmful to health and pollute the environment. Therefore, dispose of the waste battery in accordance with relevant local/national regulations.

8. Charge the battery.

9. Do not smoke or light the fire near the battery because explosive gas will be generated near it. Maintain and use the battery in strict accordance with the product manual.

Maintenance

The machine shall be cleaned regularly.

IMPORTANT! Avoid cleaning the machine with corrosive cleaners or chemicals to prevent damage to the paintwork of the machine.

CAUTION! Clean the machine parts with flammable materials such as wood chips, leaves and paper on a daily basis, and remove fuel and lubricating oil from the machine to ensure that there are no oily cloth or other flammable articles.

Precautions for cleaning of the machine:

Make sure that the water temperature isn't higher than 60°.

Use a soft sponge.

Lubricate the machine again after cleaning.

Repair paint if necessary.

Clean the cab every day if the machine works in an environment with heavy dust or potential fire hazards.

Check and clean the machine at least once a week in case of operation in other environments.

WARNING

When cleaning the cab, do not keep the engine running, because rotating parts will cause personal injury.

It is recommended to clean the machine before parking after the work is completed.

Wear personal protective equipment such as goggles, gloves and breathing mask.

After cleaning, check for leakage, and repair the leaky parts if any.

Close all covers.

Maintenance of the paintwork

The machine is more prone to rust in a humid and corrosive environment. It is recommended that the paintwork of the machine should be maintained every six months.

Maintenance of systems and parts

Engine

The schematic diagram may be different from the actual product which shall prevail.

CAUTION

In case of change of oil and replacement of the oil filter, take care because oil may be at a high temperature, so as to avoid personal injury.

Do not drain oil when the engine is cold. The reason is as follows: When the engine is cold, the impurities suspending in oil are deposited on the bottom of the oil pan and stick to the inner surface of the oil pan so that they cannot be discharged together with oil. When oil is warm, these impurities can be discharged together with it.

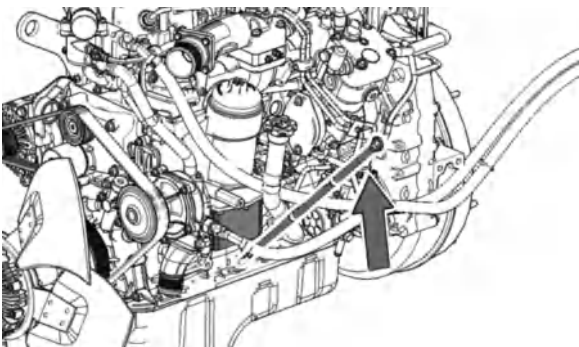
Dispose of used oil properly to protect the environment!

Checking the oil level

CAUTION

Check the oil level before operation or after engine shutdown for 15min.

1. Stop the machine on a flat ground, pull the gearshift lever to N, apply the parking brake, and put stoppers in front of and behind the wheels.
2. Pull out the oil dipstick, wipe it, insert it into the original position (to the bottommost part), and pull it out to check it (at least twice).



3. If the oil level is lower than the lower limit (“Min” or “ADD”) of the oil dipstick, add oil; if the oil level is higher than the upper limit (“Max” or “FULL”) of the oil dipstick, find out the cause, and eliminate the fault; if the oil level is between the upper limit (“Max” or “FULL”) and the lower limit (“Min” or “ADD”) of the oil dipstick, it indicates that there is a proper amount of oil. At this time, put the oil dipstick back, and close the side door of the engine hood.

Changing oil

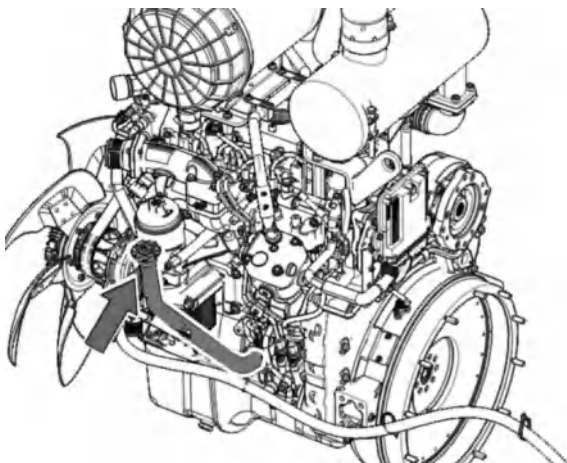
1. Stop the machine on a flat ground, pull the gearshift lever to N, apply the parking brake, put stoppers in front of and behind the wheels, start the engine, keep it running at idle speed, and shut it down after the oil temperature is up to 20°C~40°C.

2. Unscrew the drain plug at the bottom of the engine, drain oil and collect it in a container.

3. Drain the used oil completely, and screw on the drain plug

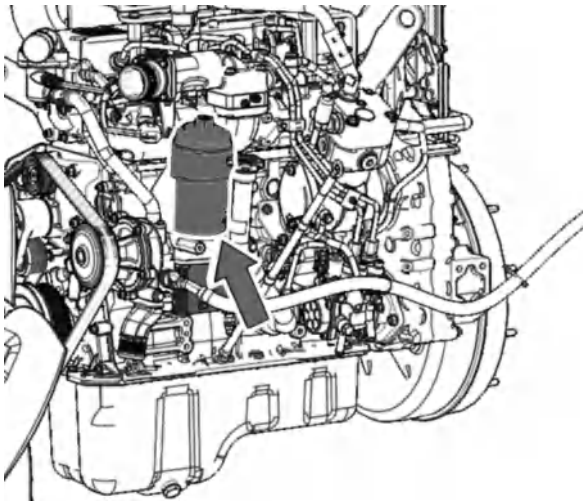
CAUTION

After draining oil, check whether iron filings generated during running-in are absorbed by the magnet of the drain plug. If abnormal iron blocks are adsorbed by the magnet, contact the maintenance personnel to check the moving parts of the engine for abnormal wear or falling-off, analyze the cause and take corresponding measures before adding new oil for normal use.



1. Add the specified oil from the engine oil filler, run the engine at idle speed, and check the oil filter and the drain plug for leakage.

2. Shut down the engine for about 15min, ensure that oil fully flows back to the oil pan, and check the engine oil level again.



Replacing the oil filter element

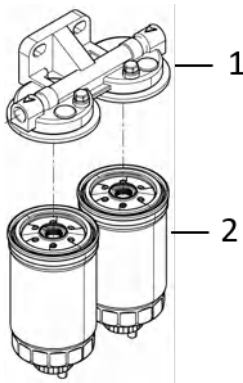
CAUTION

After replacing the filter element, run the engine at a low idle speed for at least 1min to ensure that it is lubricated before being put into operation.

Mechanical overtightening may damage the thread or the seal of the oil filter element.

Dispose of used oil properly to protect the environment!

1. Clean the area near the oil filter mounting seat, and remove the filter cartridge with a filter element wrench.
2. Remove the filter element.
3. Collect oil in a container.
4. Clean the sealing surface of the filter mounting seat, and ensure that all the used gaskets are removed, otherwise poor sealing will be caused.
5. Fill the filter element with oil, and apply a small amount of oil to the rubber seal ring.
6. Screw on the new filter element by hand until it fits with the gasket.
7. Further tighten the filter element for "1/2" circle or "3/4~1" circle after the seal ring touches the base.



Weichai Stage II engine

1 Filter seat

2 Secondary fuel filter element

8. Check the oil level and pressure.

9. Start the engine, and check if the gasket is sealed. If not, remove the filter element, and check the sealing surface.

Replacing the secondary fuel filter element

The schematic diagram may be different from the actual product which shall prevail.

1. Clean the area near the fuel filter mounting seat, and remove the filter cartridge with a filter element wrench.

2. Remove the filter element.

3. Collect fuel in a container.

4. Clean the sealing surface of the filter mounting seat, and ensure that all the used gaskets are removed, otherwise poor sealing will be caused.

5. Fill the filter element with fuel, and apply a small amount of fuel to the rubber seal ring.

6. Screw on the new filter element by hand until it fits with the gasket.

7. Further tighten the filter element for "1/2" circle or "1/2~3/4" circle after the seal ring touches the base.

8. Check for leakage.

9. Start the engine, and check if the gasket is sealed. If not, remove the filter element, and check the sealing surface.

Cooling system

If the coolant level is normal but the engine temperature

becomes high, the radiator must be cleaned.

IMPORTANT! Be careful not to damage the chip of the radiator.

Checking the coolant level

WARNING

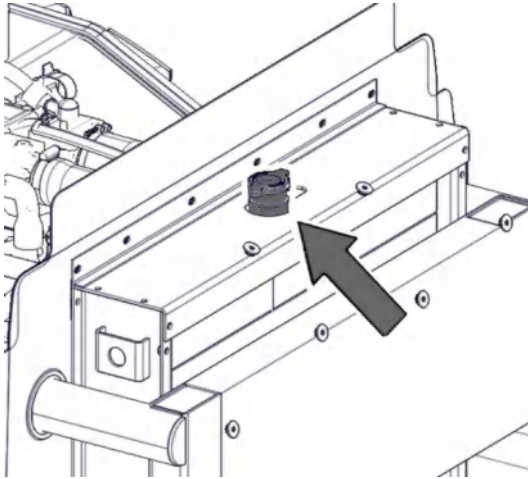
Do not open the radiator cap before cooling of the coolant.

Open the radiator cap slowly to release the internal pressure.

1. Open the engine hood.
2. Add the coolant to the specified level from the filler if it is insufficient.

IMPORTANT! Be sure to use the antifreeze specified by us rather than water as the engine coolant throughout the year, so as to avoid scale deposits which will block the radiator or affect the heat dissipation performance.

3. Tighten the filler cap.
4. Important! Do not fill a hot engine with cold coolant, otherwise the cylinder block and cylinder head may be cracked.



Changing the coolant

CAUTION

The engine coolant is hot and pressurized at the operating temperature.

Steam will cause personal injury.

The coolant level can be checked only when the radiator cap isn't felt hot through touching by hand after the engine is stopped.

Unscrew the radiator cap slowly to release the pressure.

Avoid contact of the skin and eyes with the coolant to prevent personal injury.

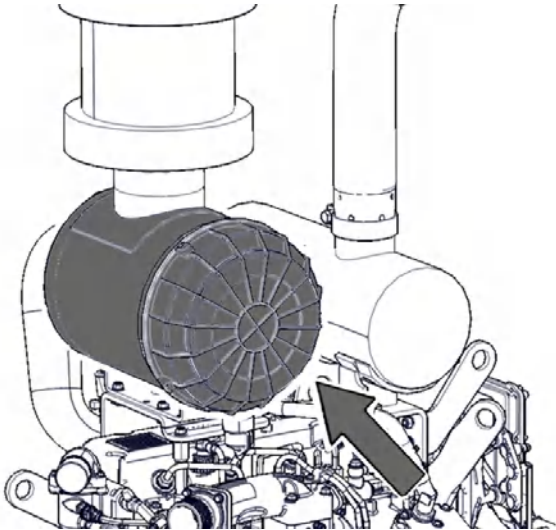
1. Loosen the radiator cap slowly to release the pressure, and remove it.
2. Unscrew the drain valve on the radiator.
3. Unscrew the drain valve on the engine block.

If the engine is equipped with a transmission fluid cooler and an air pressure pump (water-cooled), unscrew their drain valves to drain the coolant out of the cooling system completely.

4. Clean the cooling system according to the above requirements.
5. Add the coolant from the radiator cap.
6. Add the coolant to the level that is 10-15mm below the bottom of the radiator cap.
7. Start the engine before closing the radiator cap. Add the coolant as needed after the coolant level becomes stable.



8. Stop the engine, and tighten the radiator cap. Check and tighten all drain valves again.



Air cleaner

The air cleaner can prevent ingress of dust and other impurities into the engine. The degree of engine wear largely depends on the cleanliness of the intake air. Therefore, the air cleaner shall be checked regularly and maintained properly.

IMPORTANT! Do not start the engine without an air cleaner or with a damaged air cleaner under any circumstances.

Regularly check the hose and pipe connections from the air cleaner to the engine suction pipe for leakage.

Prepare a spare air cleaner, and store it in a dust-proof place.

Hydraulic system

IMPORTANT! A high degree of cleanliness shall be maintained during operation of the hydraulic system. Even small particles can damage or block the system.

IMPORTANT! In order to avoid oil leakage and personal injury caused by injection of high-pressure fluid, do not repair the clamped rubber hose (or hose) by yourself in case of damage and use it, instead, replace it as a whole.

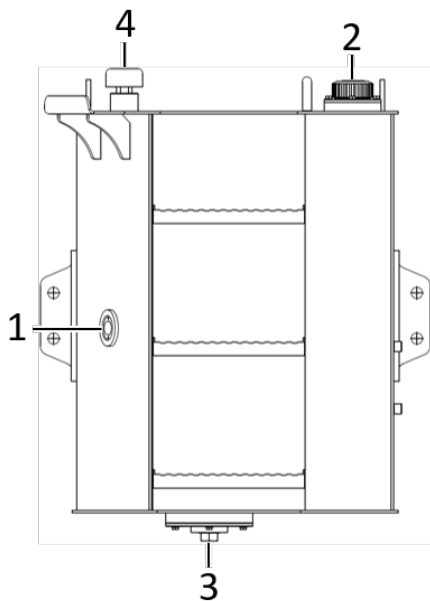
Checking the hydraulic oil level

1. Park the machine on a flat solid ground.
2. Operate the working device joystick to its end in all directions to release the internal pressure in the hydraulic circuit.
3. Pull up the parking brake control lever.
4. Check the hydraulic oil level with a level gauge.
5. If the oil level is in the middle of the round oil level sight glass, it indicates that the oil level is normal. If the oil level is below the round oil level sight glass, open the oil filler cap on the top of the hydraulic oil tank, and add the specified hydraulic oil.

IMPORTANT! Do not add hydraulic oil to a level that is higher than the normal level, because excessive hydraulic oil may overflow or cause damage to the hydraulic circuit. Do not use hydraulic oil at different grades.

Changing hydraulic oil

1. Park the machine on a flat solid ground.
2. Shut down the engine, and pull up the parking brake control lever.
3. Release the pressure from the hydraulic oil tank through the oil filter 2.
4. Remove the cover plate under the hydraulic oil tank.
5. Place a container under the drain plug.
6. Drain hydraulic oil through the drain port at the bottom of the hydraulic oil tank, and collect it in a container.



- 1 Round oil level sight glass
- 2 Oil filler
- 3 Drain plug
- 4 Breather

7. Unscrew the oil filter to speed up oil draining.
8. Drain hydraulic oil completely, and install the drain plug.
9. Reinstall the suction filter after cleaning it thoroughly.
10. Add hydraulic oil, and tighten the filler cap.
11. Check the oil level with the round oil level sight glass.
Add oil if it is insufficient.

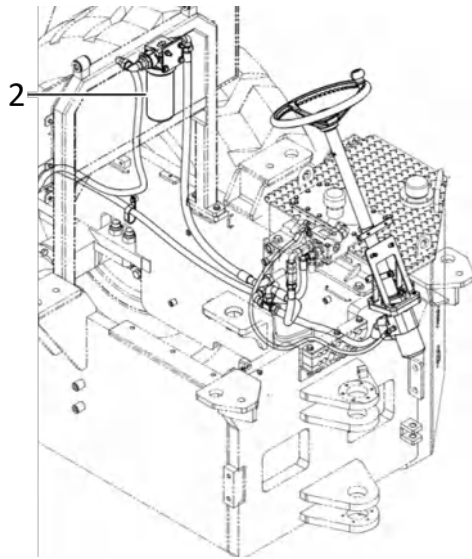
Replacing the ventilation filter element

1. Loosen the bolts on the ventilation filter, and pull out the filter element.
2. Replace the ventilation filter element.

Releasing the pressure in the hydraulic oil tank

IMPORTANT! There is always pressure in the hydraulic circuit. Before releasing the pressure, do not add or drain oil or maintain or check the machine. Stand by the machine to loosen the hydraulic oil tank cover and hose joint slowly.

Releasing the pressure from the hydraulic oil tank: Press the ventilation filter for several times to release the pressure from the hydraulic oil tank.

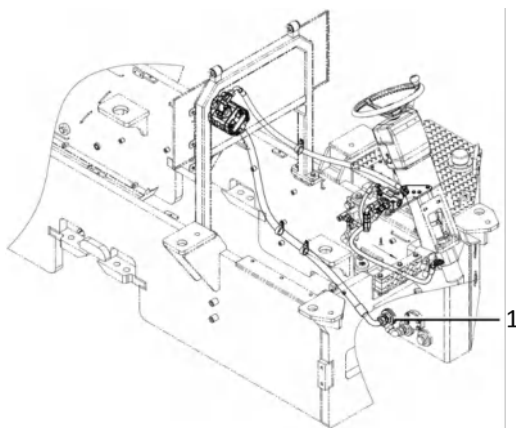


2 Steering system filter element

Replacing the hydraulic system filter element

Replacing the steering system filter element

1. Park the machine on a flat solid ground.
2. Shut down the engine, and pull up the parking brake control lever.
3. Remove the hydraulic filter element from the steering system. Be careful not to dump the leaked oil randomly.
4. Install a new filter element.
5. Start the machine, and check for leakage.



1 Hydraulic oil suction filter element

Replacing the hydraulic oil suction filter element

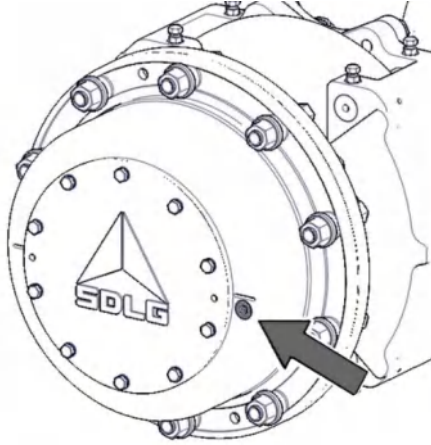
1. Park the machine on a flat solid ground.
2. Shut down the engine, and pull up the parking brake control lever.
3. Remove the cover plate from the hydraulic oil tank.
4. Take out the hydraulic oil suction filter element.
5. Install a new filter element. Be careful not to pollute oil in the hydraulic oil tank.

Maintenance of axles

Checking the oil level

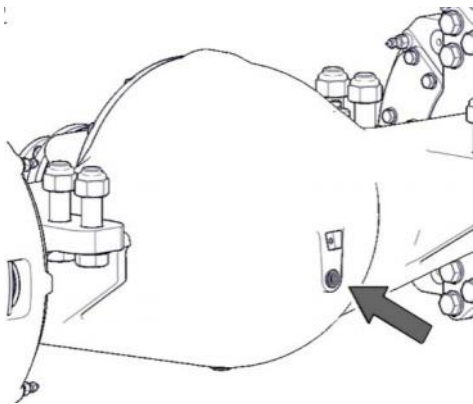
Checking oil of the wheel rim

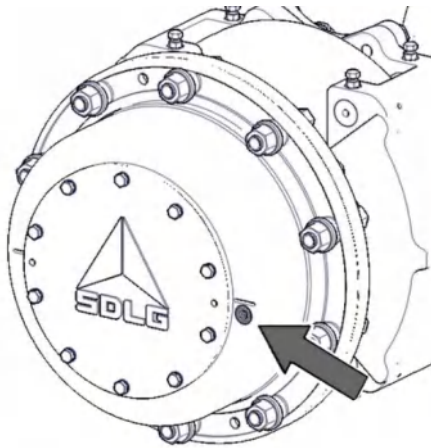
1. Park the machine on a flat solid ground.
2. Shut down the engine, and pull up the parking brake control lever.
3. Ensure that the oil level sight glass is below the horizontal line.
4. Remove the oil check screw plug. If a small amount of oil overflows, it means that there is a proper amount of gear oil in the wheel rim. Add oil if it is insufficient.
5. Remove the spilled oil, and install the screw plug.



Checking oil of the main drive

1. Park the machine on a flat solid ground.
2. Shut down the engine, and pull up the parking brake control lever.
3. Remove the oil check screw plug. If a small amount of oil overflows, it means that there is a proper amount of gear oil in the wheel rim. Add oil if it is insufficient.
4. Remove the spilled oil, and install the screw plug.

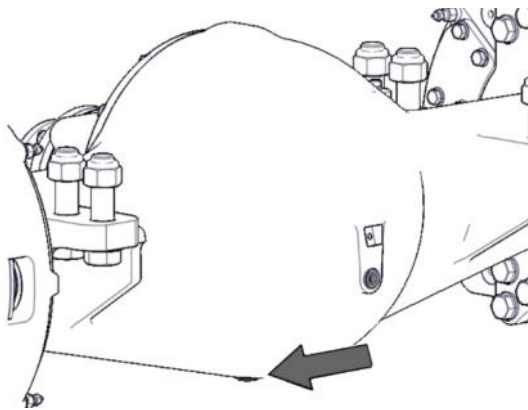




Adding gear oil to the axle

Adding gear oil to the wheel rim

1. Park the machine on a flat solid ground.
2. Rotate the oil level sight glass of the wheel rim to the lowermost part.
3. Shut down the engine, and pull up the parking brake control lever.
4. Remove the screw plug of the oil level sight glass, and collect the drained gear oil in a suitable container.
5. Rotate the wheel rim to ensure that the oil level sight glass is below the horizontal line.
6. Add gear oil to the oil level sight glass until a small amount of oil overflows.
5. Remove the spilled oil, and install the screw plug.



Adding oil to the main drive

1. Park the machine on a flat solid ground.
2. Shut down the engine, and pull up the parking brake control lever.
3. Remove the drain plug at the lower part of the main drive of the rear axle, drain the gear oil, and collect the drained gear oil in a suitable container.
4. Install the drain plug,
5. Add gear oil to the oil level sight glass until a small amount of oil overflows.
6. Remove the spilled oil, and install the screw plug.

Maintenance of the vibratory drum

During maintenance of the vibratory drum, pay attention to the following two points:

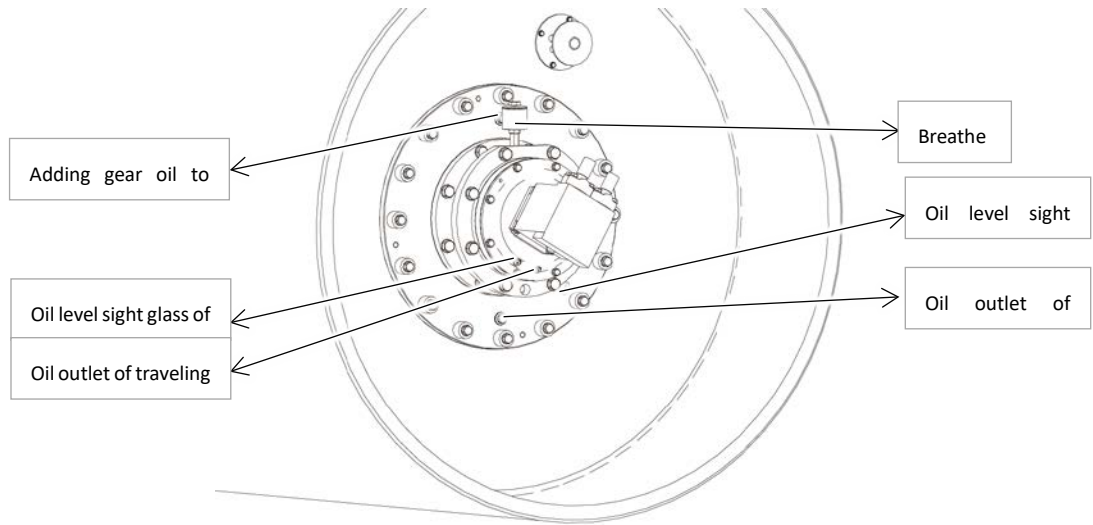
1. Change oil inside the vibratory drum.
2. Change oil and replace the breather for the traveling bearing of the vibratory drum.

Checking the oil level

1. Park the machine on a flat solid ground.
2. Shut down the engine, and pull up the parking brake control lever.
3. Rotate the vibratory drum to the position shown in the figure (place the oil filler at the top), and remove the oil level sight glass. If a small amount of oil overflows, it means that there is a proper amount of oil in the vibratory drum.
4. Remove the spilled oil, and install the oil check screw plug.

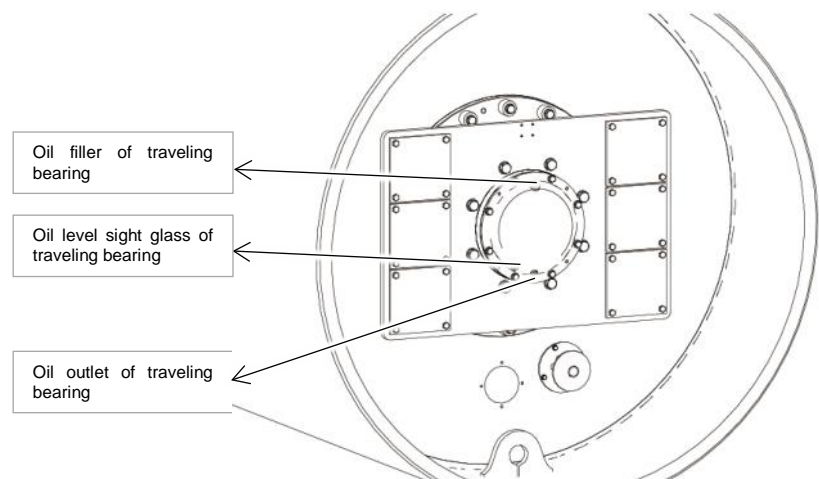
Adding oil to the vibratory drum

1. Park the machine on a flat solid ground.
2. Shut down the engine, and pull up the parking brake control lever.
3. Rotate the oil level sight glass to the bottom, remove the oil check screw plug, drain oil out of the vibratory drum, and collect the drained oil in a suitable container.
4. Rotate the vibratory drum to the top of the oil filler, and add oil from the oil filler until a small amount of oil overflows from the oil level sight glass.



Adding oil to the traveling bearing

The vibratory drum traveling bearing of the machine is lubricated with gear oil which is added from the filler shown in the figure below.



CAUTION: After removing the breather, you can add gear oil to the traveling bearing.

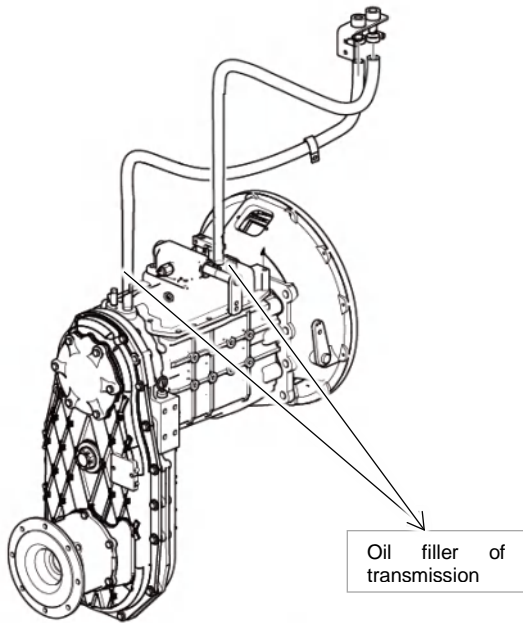
Replacing the vibratory drum breather

Note that the number of the breather varies according to the drive mode.

The machine is equipped with two breathers which shall be replaced simultaneously.

Maintenance of the transmission

Adding oil to the transmission



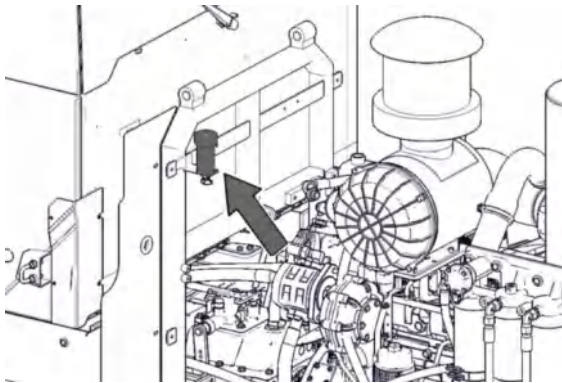
1. Park the machine on a flat solid ground.
2. Shut down the engine, and pull up the parking brake control lever.
3. Open the engine hood.
4. Drain gear oil out of the transmission, collect the drained oil in a suitable container, and install the drain plug.
5. Add gear oil from the rear frame.

CAUTION: The transmission of the machine is designed with two gear oil fillers. 7L and 6L of gear oil shall be added to the primary and auxiliary transmissions respectively.

Clutch system

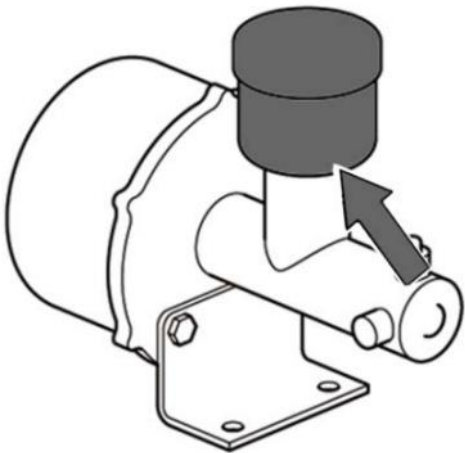
CAUTION:

Bleeding: Tighten the bleed bolt, and step on the clutch pedal successively for several times to drive the air to the booster. After the position where the clutch pedal becomes hard is higher, keep the clutch pedal in a position where it cannot be depressed, maintain it, loosen the bolts to discharge air together with the brake fluid, tighten the bleed bolt, and lift your foot to return the clutch pedal. Repeat the operation for several times until the brake fluid without bubbles is injected. During this period, pay attention to the oil level of the oil reservoir, and add the brake fluid in time.



Brake system

The brake fluid filler of the brake system is designed on the fluid reservoir in the upper part of the booster.



Electrical system

Specifications for maintenance of the electrical system

In case of use of wires in a humid environment or damage of insulators, the electrical system will be prone to leakage, leading to an accident.

Maintenance of components related to the electrical system:

- 1) Check the tightness of the fan belt, and check for damage;
- 2) Check the level of electrolyte in the battery.

Do not remove any installed electrical components randomly.

Unless otherwise specified by us, any additional electrical components shall not be installed.

The electrical system shall be kept dry in case that the machine is cleaned or used on rainy or snowy days.

The electrical system shall be protected against corrosion by seawater in case of construction on the seaside.

Battery charging

WARNING

When the battery is charged rapidly, remove the battery cover first. During charging of the battery, explosive hydrogen-oxygen mixtures may be generated, which may lead to a powerful explosion in case of short circuit

or use of open flames nearby.

The battery cover is equipped with an indicator showing the state of charge of the battery. If the indicator turns green, the battery can be used normally. If the indicator turns black, the battery shall be charged in time, and if the indicator turns white, the battery shall be replaced promptly.

The battery may explode if it isn't handled correctly during charging. Therefore, the battery handling procedures and the charging procedures in the manual shall be followed, and the following precautions shall be observed:

Hydrogen and oxygen will be generated during battery charging, leading to an explosion in case of use of open flames or blockage of the air vent. Therefore, the battery shall be kept away from the open flames to prevented from short circuits.

Remove all screw plugs to ensure proper ventilation during charging. Do not keep fire or sparks close to the battery, so as to avoid an explosion.

When charging the battery, connect the positive and negative terminals of the charger to the cathode and anode of the battery respectively. Avoid reverse charging.

As gas will be generated during battery charging, regularly check the air vent on the battery to ensure that it is unblocked so as to avoid an explosion of the

battery.

If the temperature of the battery electrolyte is higher than 45°C during charging, reduce the charging voltage or charging current as appropriate to avoid splashing of the electrolyte due to overtemperature.

Remove the cable from the anode of the battery before charging. Otherwise, a high voltage will be generated, leading to damage of the alternator.

Connect the positive and negative terminals of the charger to the cathode and anode of the battery respectively. Do not charge the battery through connection in series (24V).

It is recommended to charge the battery using a charger with a constant voltage of 16.0V (maximum limit: 16.2V. If the maximum limit is exceeded, a large amount of water will be electrolyzed. As a result, the electrolyte level will drop, and the indicator will turn white. In this case, the battery shall be scrapped.) and a limited current of 25A until the charging current is lower than 2A and the indicator turns green.

Stop charging immediately and find out the cause if a large amount of acid sprays from the air vent of the battery during charging.

Check the indicator status on an hourly basis during battery charging. If the battery indicator turns green, the battery is fully charged and charging is stopped.

The voltage of the battery that has just been charged

may be above 13V, but this is a floating charge voltage which will disappear after the battery is kept still for a few days or discharged for several times.

After the battery is charged and tested to be qualified, it is recommended to apply grease to the terminal to prevent electrical corrosion.

Switch off the charger immediately after charging.

Overcharging will cause the following problems: battery overheating; electrolyte decrease; electrode plate damage.

Precautions for welding

Welding must be performed by welders with the corresponding qualification and skill in a place equipped with appropriate equipment. Gas will be generated during welding, which may lead to a fire and an electric shock during operation. Therefore, welding must not be carried out by unqualified personnel. The following precautions must be observed in case of welding:

Before welding, turn off the main power switch.

Disconnect the terminals of the battery to avoid an explosion of the battery.

If the ZF control unit is installed, disconnect the wire connector from the transmission computer control panel before welding to prevent the computer control panel from being damaged by the surge current during welding; be sure to connect the wire connector to the

computer control panel as required after repair, otherwise the machine cannot be started or driven.

CAUTION! Disconnect all harnesses connected to the engine ECU.

Remove the paint from the part to be welded (in the surrounding area at least 10cm away from the welding spot) so as not to generate any harmful gas.

If welding is performed on or near the hydraulic equipment or pipe, flammable steam and sparks will be generated, leading to a risk of fire or explosion.

Therefore, avoid welding in such a place.

Sparks splashed during welding will directly fall onto the rubber hoses, wires or pressurized pipes, which may cause pipe crack and wire insulation damage.

Therefore, these parts shall be covered with fireproof baffles.

Wear protective clothes for welding.

Ensure that the welding site is ventilated.

Remove all flammable materials, and provide fire extinguishers in the workplace.

Do not may any modification that affects the performance, safety and strength of the machine and working device.

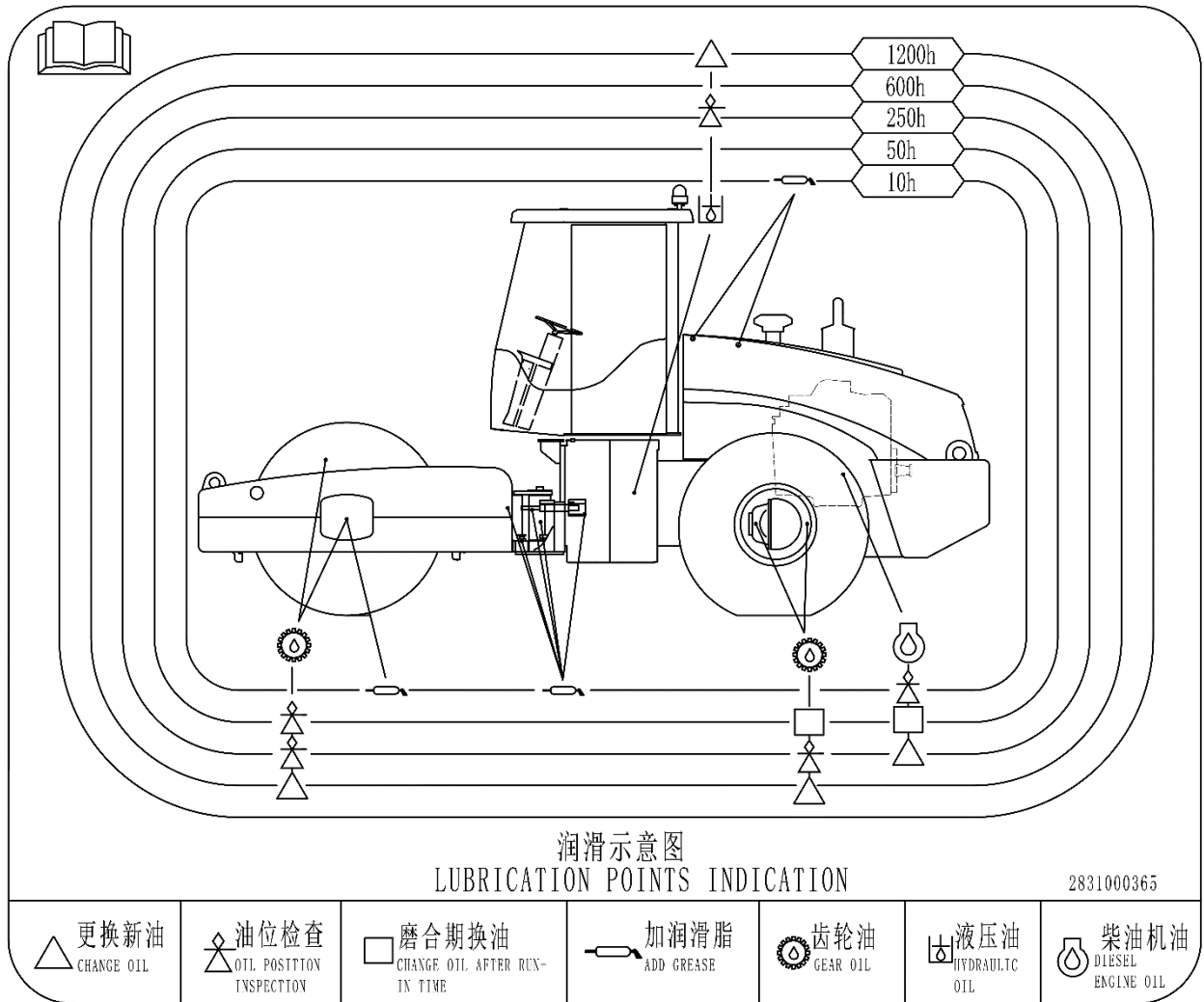
Replacement of fuse

IMPORTANT! When replacing the fuse, turn the start switch to “OFF” and be sure to use the fuse of the same



specification.

Lubrication points indication



Lubrication cycle table

Lubrication of the machine

Correct lubrication can greatly reduce the frictional resistance and wear of the parts of the machine, ensuring good performance and prolonged service life for the machine. The working oil in the hydraulic system and vibratory drum is also intended for lubrication and cooling. Therefore, regular oil filling and change are of special significance for the normal use of the machine.

See the table for the parts to be lubricated and their

lubrication cycle.

Note:

In addition to the routine inspection and oil filling before driving every day, oil shall be added and changed according to the lubrication cycle table. The lubrication cycle includes: every 50h, 250h, 500h and 1,000h. If oil is found to be deteriorated through inspection, change it promptly. In case of oil deterioration within a short period of time after oil change, find out the cause and take handling measures in time.

For detailed engine lubrication methods, refer to the engine manual.

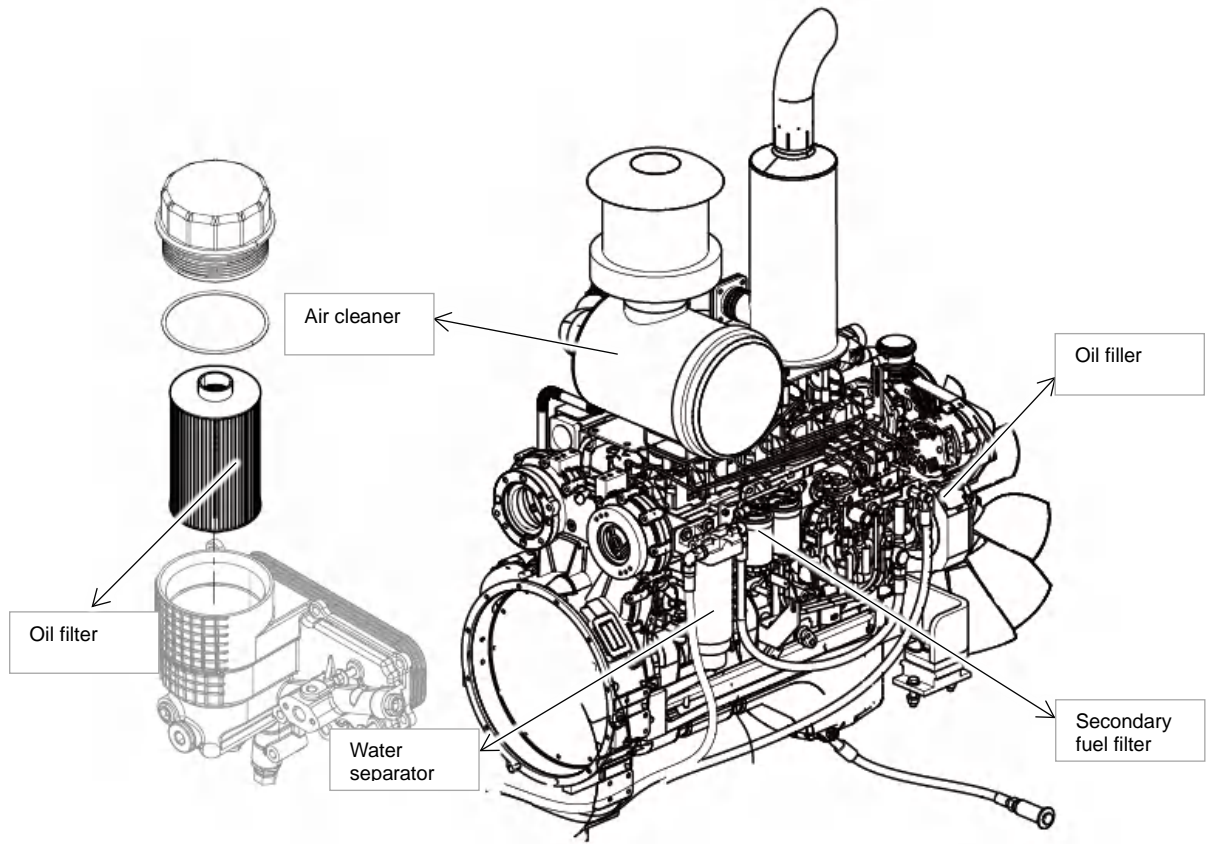
The four joint bearings on the slewing bearing type articulation frame are lubricated with lithium-based grease through four oil cups M10×1 respectively. A small amount of grease shall be left on the oil cup to prevent grease contamination due to ingress of dust into the oil cup after the grease is added. If the grease cannot be applied to the bearings, a jack needs to be used to reduce the load on the bearings before application of the grease.

Lubrication is an important part of maintenance. If the machine is lubricated in a correct way, the service life of washers, bearings and bearing pins can be greatly extended. The lubrication points indication can make the lubrication work easier and reduce the risk of forgetting to fill any lubrication point.

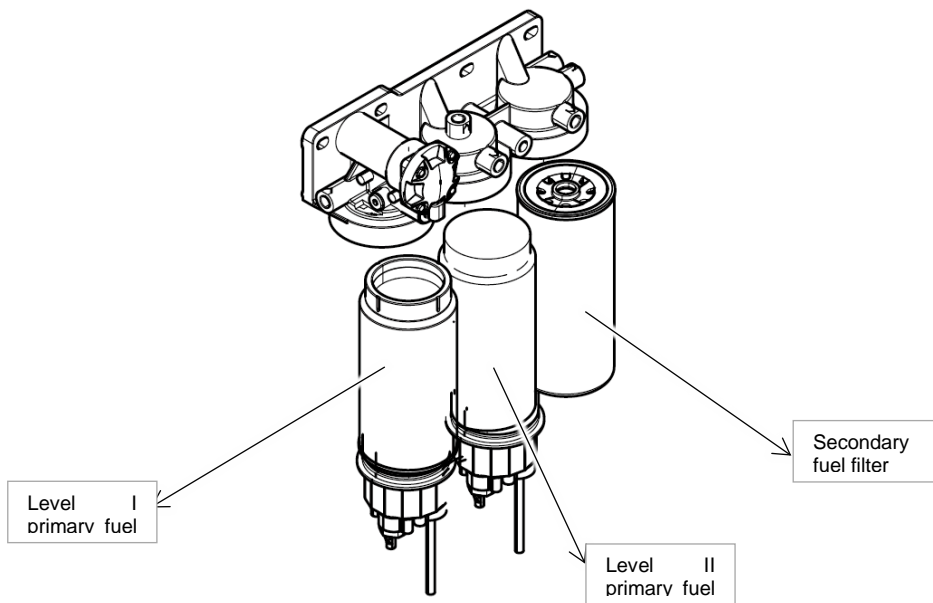
Through lubrication, grease can be supplied to bearings to reduce the wear between the bearing pin and the bearing bush; and any used and dirty grease can be changed.

IMPORTANT! Before adding grease, clean the grease nozzle and grease gun to avoid ingress of sand and dirt during filling.

Maintenance reference diagram



Stage II engine



Stage III engine

Regular maintenance content

Oil change cycle table

Maintenance item	50h	100h	250h	500h	1000h	2000h
Engine oil		▲		●		
Engine oil filter element		▲		●		
Secondary fuel filter				●		
Primary fuel filter				●		
Engine air cleaner				●		
Coolant						●
Transmission (if installed) gear oil		▲			●	
Drive axle (if installed) gear oil		▲			●	
Hydraulic oil filter element				▲	●	
Hydraulic oil						●
Reducer (if installed) gear oil					●	
Traveling bearing gear oil					●	
Vibratory drum gear oil					●	
First maintenance ▲ Periodic oil change ●						

Note: The maintenance cycle of Weichai Stage II engine is as follows: first 100h, thereafter every 250h for oil and oil filter element; 250h for secondary fuel filter. Reducer gear oil is generally used for RS7 full hydraulic rollers; transmission gear oil is generally used for RS8 rollers; DANA drive axle gear oil is generally used for RS7 rollers; SDLG drive axle gear oil is generally used for RS8 rollers.

The grease lubrication points are lubricated according to the lubrication points indication.

Maintenance content

In order to extend the service life and ensure better performance of the machine, it is recommended to perform maintenance according to the following maintenance cycle and content. The mandatory maintenance cycle and content are subject to our warranty manual.

The regular maintenance cycle includes every 10h (daily), every 50h (weekly), every 250h (monthly), every 500h (quarterly), every 1,000h (semi-annual) and every 2,000h (annual).

Maintenance on a daily basis or every 10h

Check the fuel level in the fuel tank and the coolant level in the radiator, and fill the fuel tank and radiator until they are full.

Check the hydraulic oil level, and add hydraulic oil as needed.

Check for oil, water, and gas leakage.

Check the fixing and sealing conditions of the engine, transmission, oil pump, motor, vibratory drum and hydraulic steering gear, and check for overheating.

Check whether the connecting bolts of the drive shaft and pin shaft are loose or missing.

Carry out necessary cleaning to remove oil, mud, debris, etc. from the exterior part of the machine.

Check the parts for abnormal noise or other abnormalities during operation.

Check whether the control levers and pedals in the cab can be operated flexibly and whether there is a free stroke.

Check the brake, steering system and other parts closely related to driving safety.

Add grease according to the lubrication points indication of the machine.

Maintenance on a weekly basis or every 50h

Perform it together with the maintenance every 10h.

Add and change oil according to the lubrication cycle table.

Add a proper amount of grease from the grease filler of the clutch until the grease gun has a little resistance, but do not add too much grease.

Check the tightness of the fan and engine belt.

Check the discharge of the battery.

Check the wear pattern of the disc brake pads, and determine whether the brake of the service brake system needs to be bled according to the actual situation.

Check whether the gearshift lever and the parking brake control lever are normal and flexible. Check whether the

parking brake is reliable.

Check the tightness of fastening bolts of the shock absorber and fixing nuts of the tire.

Remove the dust from the radiator fin (especially when the working environment is very dirty).

Check and add oil of the clutch booster system.

Maintenance on a monthly basis or every 250h

Perform it together with the maintenance every 10h and 50h.

Check tire pressure and wear pattern

Clean the oil filter in the hydraulic oil tank.

Check the oil level of the drive axle, transmission and other parts according to the lubrication cycle table.

Add grease to the coolant pump bearing and drive shaft according to the lubrication cycle table.

Check the level and quality of lubricating oil applied to the vibratory drum (initially within 20h after running-in).

Check and tighten the fastening bolts of the rear axle wheel housing and brake.

Check the important structural parts such as front and rear frames and vibratory drum for damage, and check the tightness of the connecting bolts.

Check and tighten the connecting bolts of the vibratory drum bearing seat, damping block and side plate.

Maintenance on a quarterly basis or every 500h

Perform it together with the maintenance every 10h, 50h

and 250h.

Check the electrical equipment, wires and connectors.

Clean the fuel tank and fuel pipe.

Check, clean and unblock all vent plugs and holes.

Check all parts of the service brake system, and adjust and repair them necessary.

Check the working condition of the steering cylinder, and repair it if necessary.

Check the rubber damping block of the vibratory drum for damage.

Disassemble, clean and check the clutch master cylinder and booster, and change oil of the clutch booster system.

Maintenance on a semi-annual basis or every 1,000h

Perform it together with the maintenance every 10h, 50h, 250h and 500h.

Clean the engine oil pan, fuel tank and their pipes.

Carry out comprehensive cleaning and oil change according to the lubrication cycle table.

Check the wear pattern of the parking brake, and adjust or repair the parking brake.

Check the instruments and lamps.

Check the starter motor, charging generator and lubricating bearing, and adjust or replace them if necessary.

Check all parts of the engine, and repair or replace them

if necessary.

Maintenance on an annual basis or every 2,000h

Perform it together with the maintenance every 10h, 50h, 250h, 500h and 1,000h.

Check and measure the engine comprehensively, and determine the scope of repair based on the result.

Add grease to the traveling bearing, but do not add too much grease.

Check and measure the drive axle and vibratory drum according to the actual situation, and repair or replace the damaged part.

Check and measure the parking brake system comprehensively, and repair or replace damaged part.

Check the vibratory drum and frame for deformation, crack or damage. If any, repair them in time.

Check the steering gear, and repair or replace the damaged part.

Use of oil products

Specifications for use of oil and coolant

CAUTION

Oil is prone to deterioration because the machine is generally used under harsh conditions (high temperature and pressure) in a dusty environment.

Once oil is found to be deteriorated or contain many impurities, change it in time.

Add a specified amount of oil. If too much or too little oil is added, a fault will be caused.

Clean or replace the relevant oil filter when changing oil.

Fuel

1. The fuel pump is a precision device. If fuel contains water or dirt, the fuel pump won't work properly.

2. Be very careful to change or add fuel, so as to prevent ingress of impurities.

3. Use fuel at the grade specified in this manual.

4. Change fuel according to the ambient temperature because it will be frozen at a low temperature (especially below -15°C).

5. Fill the fuel tank until it is full after the work it is completed, so as to avoid ingress of water coagulated by water vapor in the air into the fuel tank.

If fuel cannot be sucked during startup or the oil filter has just been replaced, discharge the air from the circuit first.

Oil

1. Different brands of oil have different formulas. If they are mixed, the engine will be affected adversely.
2. Do not use low-quality oil, otherwise the engine will be damaged severely, and the resulting fault won't be covered by the warranty.
3. In case that oil becomes thin, thick or black or loses viscosity, change it in time. The recommended change cycle is 250h.
4. When changing oil, replace the oil filter at the same time. Please use a high-quality oil filter.

Coolant

1. Be sure to use the antifreeze specified by us rather than water as the engine coolant throughout the year, so as to avoid scale deposits which will block the radiator or affect the heat dissipation performance.
2. Cool down the engine before adding the coolant in case of overheating.
3. Add the coolant to the specified level. If the coolant level is too low, problems such as engine overheating and cooling system corrosion will be caused.
4. Keep away from open flames when adding antifreeze because it is flammable.
5. Do not use 100% antifreeze as the coolant.

Lubricating oil

1. Lubricating oil can prevent the wear and noise of the

joint surface.

2. The connectors (e.g. joints and connecting sleeves) not covered herein don't need to be lubricated because they will be handled in case of overhauling. If some parts are inflexible due to long-time use, add lubricating oil.

3. When adding lubricating oil, remove the spilled lubricating oil.

Use of oil products

1. Use a specified amount of oil at the grade specified in this manual.

2. When adding fuel, hydraulic system working oil and grease, clean the oil gun and container and the part to be filled with oil, so as to prevent ingress of water, mud and impurities into oil.

3. When adding the oil products except grease, use a filter.

4. Add grease until it overflows from the gap of the part to which it is added. Remove the spilled grease.

5. In case of oil change, drain dirty oil in hot state after working of the machine, add cleaning oil, run the engine in the no-load state for a few minutes, stop the engine, drain cleaning oil out of the parts, add clean oil, run the engine at a low speed, and add oil to the required level. Clean the fuel tank regularly.

6. Change the types of working oil and lubricating oil

according to actual situation and service requirements in different seasons.

7. Keep the machine horizontal when adding oil products or checking their levels. Add oil to the drive axle, vibrating chamber of vibratory drum and transfer case until oil overflows from the oil level plug unless an oil dipstick or indicator is provided.

Precautions for use of oil product

1. Refill the fuel tank in time to prevent it from being empty. Check the fuel tank for contamination and deposits once a month, and clean the fuel filter. Change diesel on a regular basis because its mechanical impurities will increase over time for the following reasons: products formed after oxidation and wear of parts, combustion residues in the cylinder and dust from the outside. When the content of these impurities is up to 0.4~0.5%, diesel will turn black, with a decline in physicochemical indicators. Be sure to change diesel in hot state.

2. Check the cleanliness of hydraulic oil regularly.

Method: Take out a few drops of hydraulic oil from the hydraulic oil tank and drop it on 240 mesh filter paper. If a light yellow circle appears on the filter paper, it indicates that hydraulic oil can be used; if an obvious yellow circle with a black center appears on the filter paper, it indicates that hydraulic oil is contaminated and

needs to be changed. Add new hydraulic oil by filtering it with an oil filter rather than adding it into the hydraulic oil tank directly. Do not mix different types of hydraulic oil. In case of oil change, wash away the used hydraulic oil completely.

Oil product reference table

Type	Season	Standard oil product		Applicable part	Quantity (L)
		Standard code and name	Grade		
Engine Fuel	Winter	GB 19147 Common diesel	-50 -35 -20 -10	Fuel tank	270
	Summer		0 10		
Engine Oil	All year round	GB11122-2006 Diesel engine oil	CH-4 15W/40 (Weichai Stage III) CD 15W/40 (Weichai Stage II)	Diesel engine oil pan	16
Hydraulic working oil	All year round	Hydraulic oil	L-HM46	Steering system, vibratory hydraulic system	100
Gear oil	All year round	Gear oil for heavy-duty machine	GL-5 85W/90	Drive axle	13+2*2.5
Transmission	All year round	Gear oil for heavy-duty machine	GL-5 85W/90	Transmission	7 (primary transmission) + 6 (auxiliary transmission)
Brake fluid	All year round	GB12981-2012 Synthetic brake fluid	DOT4	Brake system	2.0
Clutch oil				Clutch booster system	2.0
Gear oil	All year round	Industrial closed gear oil	CKD220	Vibration chamber of vibratory drum	22
Gear oil	All year round	Industrial closed gear oil	CKD220	Rolling bearing	2x0.1
Grease	All year round	GB7324—2010 Lithium-based	3#	Hinge pin	—



		grease			
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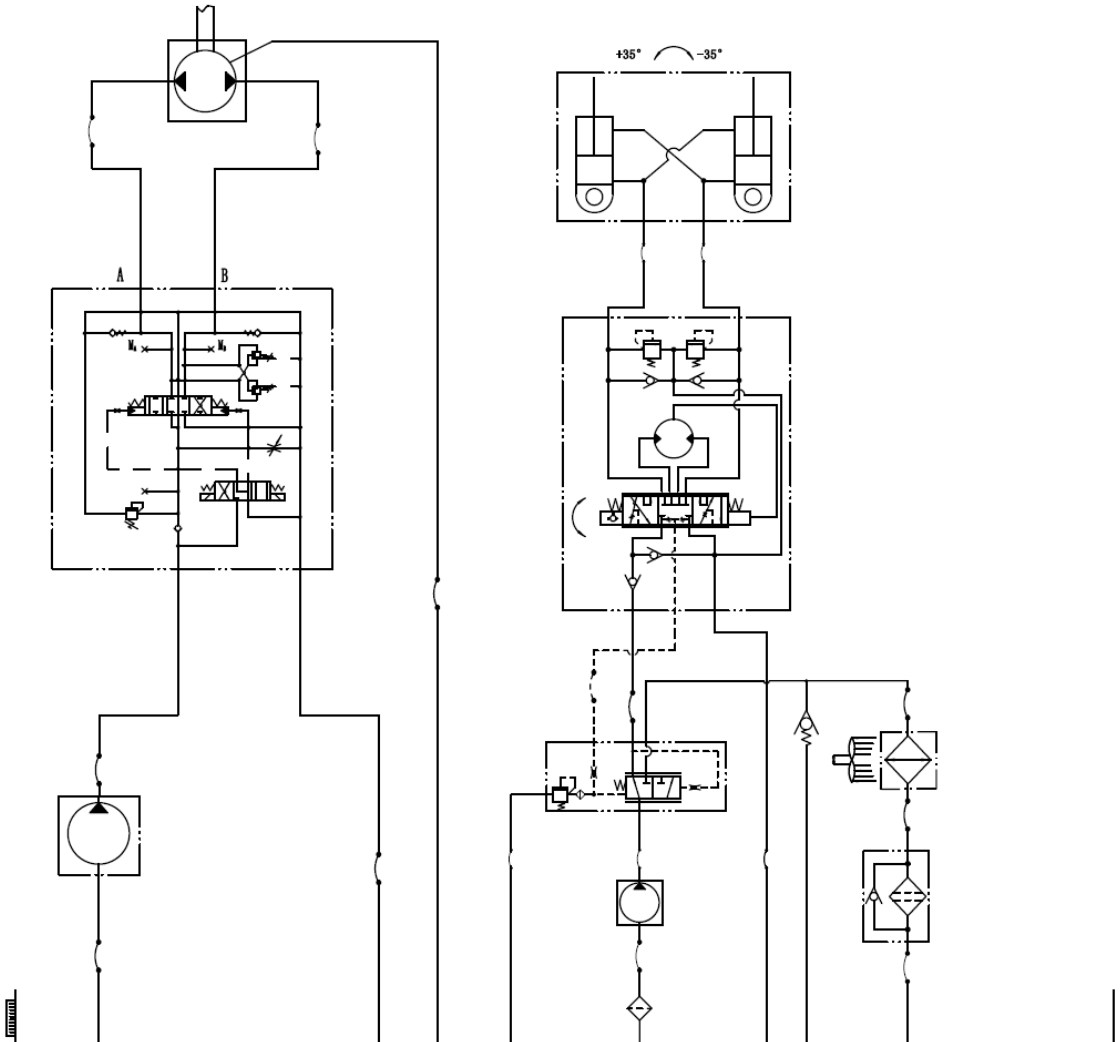


Coolant	All year round	SNB/SH/T 0521-2010 Ethylene glycol and propylene glycol engine coolant	Ethylene glycol engine coolant	Radiator	23
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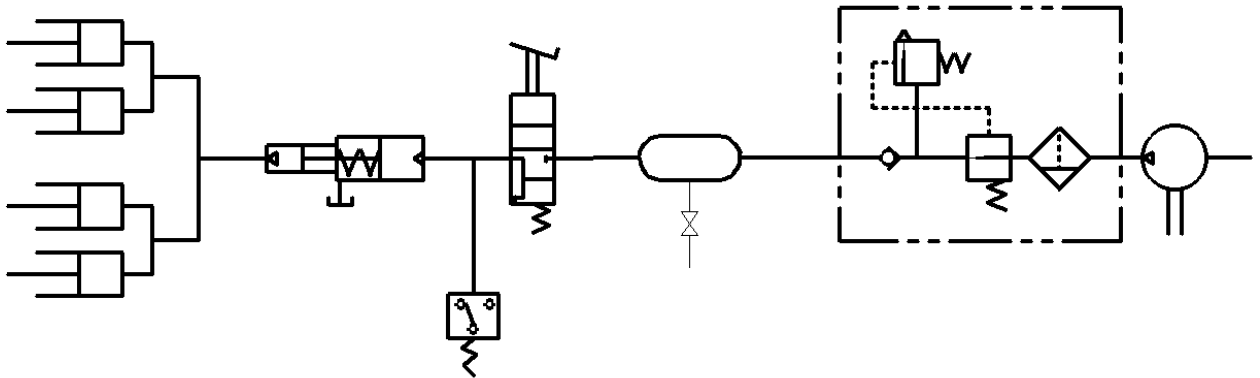
CAUTION! The quantity is for reference only, and shall be subject to the actual situation.

Principle description

Hydraulic schematic diagram

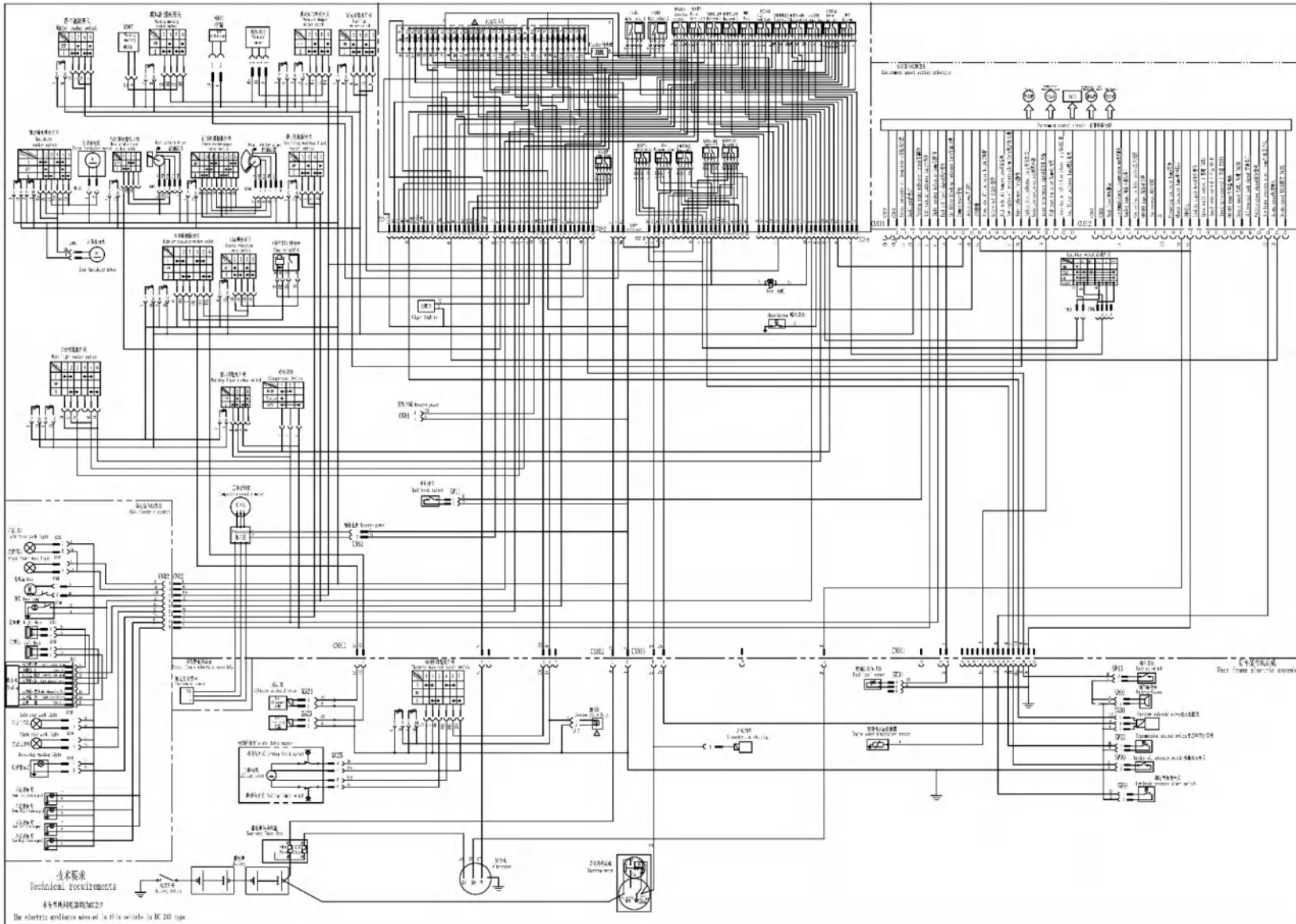


Braking schematic diagram



The service brake is intended for use by the driver to decelerate and stop the machine through the foot brake valve assembly during driving. The machine is equipped with an air over hydraulic dry disc brake which is mainly composed of air compressor, water separator combination valve, booster pump, brake caliper, air reservoir and pipeline.

Electrical schematic diagram



Electrical schematic diagram of Stage II engine