

Operation & Maintenance Manual

GALEO WA200PT-5L

WHEEL LOADER

SERIAL NUMBERS **WA200PT-5L** **A89001** and UP

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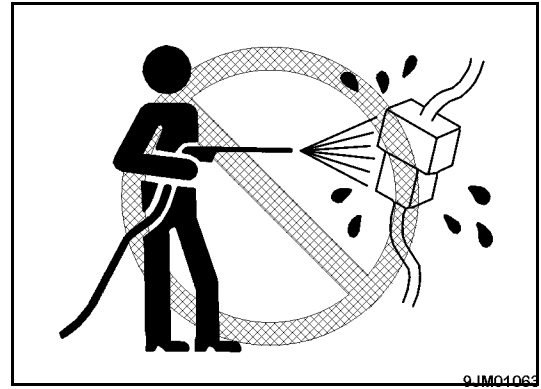
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SAFETY

KEEP THE MACHINE CLEAN

- If water gets into the electrical system, there is a hazard that it will cause malfunctions or misoperation. Do not use water or steam to wash the electrical system (sensors, connectors).
- If inspection and maintenance is performed when the machine is still dirty with mud or oil, there is a hazard that you will slip and fall, or that dirt or mud will get into your eyes. Always keep the machine clean.

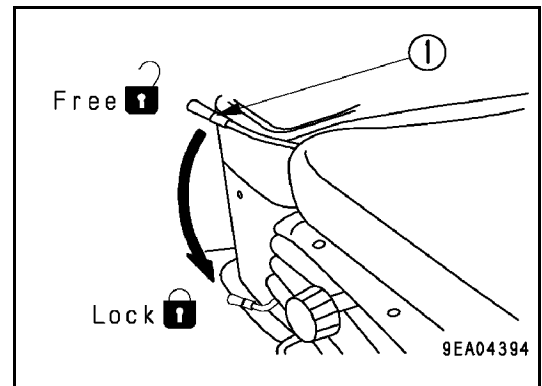


INSIDE OPERATOR'S COMPARTMENT

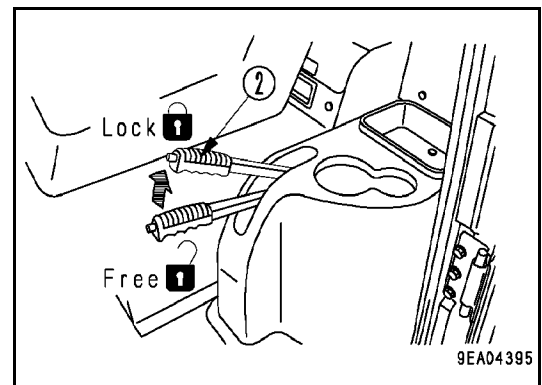
- When entering the operator's compartment, always remove all mud and oil from the soles of your shoes.
- If you operate the pedal with mud or oil affixed to your shoes, your foot may slip and this may cause a serious accident.
- Do not leave parts or tools lying around the operator's compartment.
- Do not stick suction pads to the window glass. Suction pads act as a lens and may cause fire.
- Do not use cellular telephones inside the operator's compartment when driving or operating the machine.
- Never bring any dangerous objects such as flammable or explosive items into the operator's cab.

ALWAYS APPLY LOCK WHEN LEAVING OPERATOR'S SEAT

- Before standing up from the operator's seat, always place safety lock lever to the LOCK position (1) and parking brake switch (2) to the ON position securely. If you accidentally touch the work equipment levers when they are not locked, the work equipment may suddenly move and cause serious injury or damage.



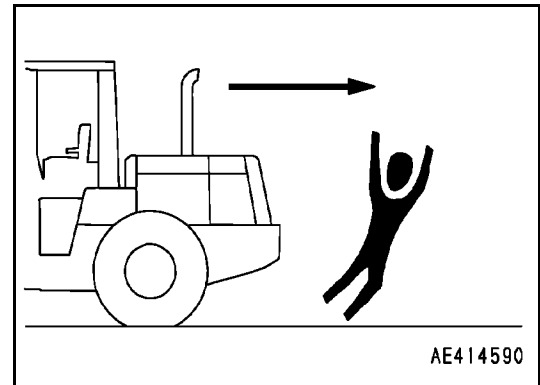
- When leaving the machine, always lower the work equipment to the ground, set safety lock lever (1) to the LOCK position and parking brake switch (2) to the ON position, then stop the engine. Lock all compartments and always take the key with you and leave it in the specified location.



SAFETY

PRECAUTIONS BEFORE MOVING FORWARD OR BACK

- Before travelling, check again that there is no one in the surrounding area, and that there are no obstacles.
- Before travelling, sound the horn to warn people in the area.
- Always operate the machine only when seated.
- Do not allow anyone apart from the operator to ride on the machine.
- Check that the back-up alarm (alarm buzzer when machine travels in reverse) works properly.
- Always lock the door and windows of the operator's compartment in position (open or closed).
- On job sites where there is a hazard of flying objects or of objects entering the operator's compartment, check that the door and windows are securely closed.

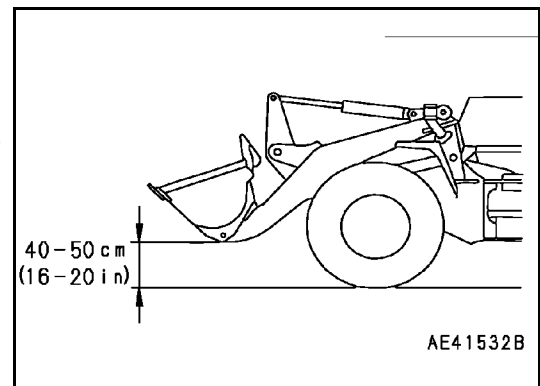


- If there is an area to the rear of the machine which cannot be seen, position a signal person. Take special care not to hit other machines or people when turning or swinging the machine.

Always be sure to heed the above precautions even when the machine is equipped with mirrors.

PRECAUTIONS WHEN TRAVELING

- Never turn the key in the starting switch to the OFF position while traveling. It is dangerous if the engine stops when the machine is traveling, because the steering becomes heavy. If the engine stops, depress the brake pedal immediately to stop the machine.
- When traveling on level ground, keep the work equipment at height of 40 to 50 cm (16 to 20 in.) from the ground.
- When traveling, do not operate the work equipment control levers. If the work equipment control levers have to be operated, stop the machine first, then operate the levers.
- When traveling on rough ground, travel at low speed and do not operate the steering suddenly. There is danger that the machine may turn over. The work equipment may hit the ground surface and cause the machine to lose its balance, or may damage the machine or structures in the area.

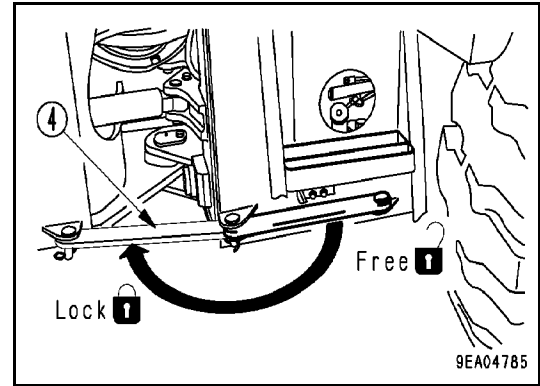


- Avoid traveling over obstacles when possible. If the machine has to travel over an obstacle, keep the work equipment close to the ground and travel at low speed. Never travel over obstacles which make the machine tilt sharply to one side.
- When traveling or carrying out operations, always keep a safe distance from people, structures, or other machines to avoid coming into contact with them.
- When passing over bridges or structures, check first that the structure is strong enough to support the weight of the machine. When traveling on public roads, check first with the relevant authorities and follow their instructions.
- When operating in tunnels, under bridges, under electric wires, or other places where the height is limited, operate slowly and be extremely careful not to let the work equipment hit anything.
- Always obey the traffic regulations when traveling on public roads. This machine travels at a lower speed than normal automobiles, so keep to the side of the road and be careful to leave the center of the road free for other vehicles.
- If you drive the machine at high speed continuously for a long time, the tires will overheat and the internal pressure will become abnormally high. This may cause the tires to burst. If a tire bursts, it produces an extremely large destructive force, and this may cause serious injury or accident.

If you are going to travel continuously, please consult your Komatsu distributor.

SAFETY

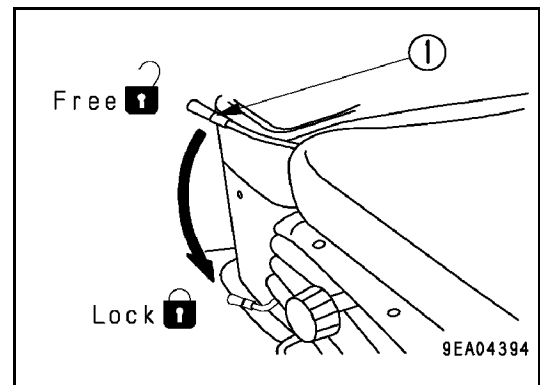
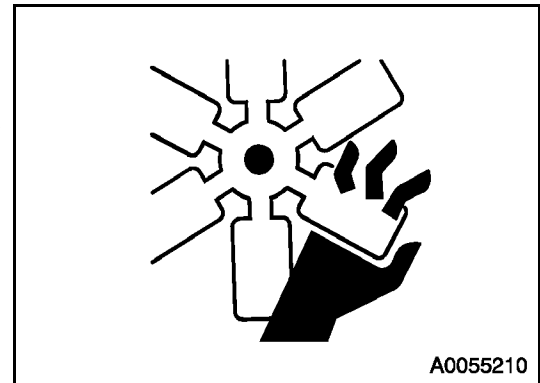
- Lock the front and rear frames with safety bar (4).



TWO WORKERS FOR MAINTENANCE WHEN ENGINE IS RUNNING

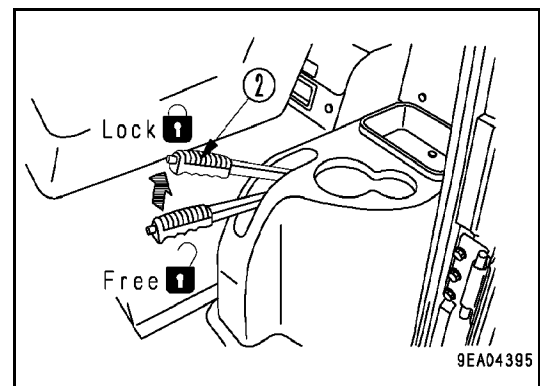
To prevent injury, do not perform maintenance with the engine running. If maintenance must be carried out with the engine running, use at least two workers and do as follows.

- One worker must always sit in the operator's seat and be ready to stop the engine at any time. All workers must maintain contact with the other workers.
- When carrying out operations near the fan, fan belt, or other rotating parts, there is a hazard of being caught in the parts, so be careful not to come close.
- Never drop or insert tools or other objects into the fan or fan belt. Parts may break or be sent flying.
- Set safety lock lever (1) to the LOCK position to prevent the work equipment from moving. Then pull parking brake lever (2) to the position to prevent the machine from moving.
- Do not touch any control levers. If any control lever must be operated, give a signal to the other workers to warn them to move to a safe place.



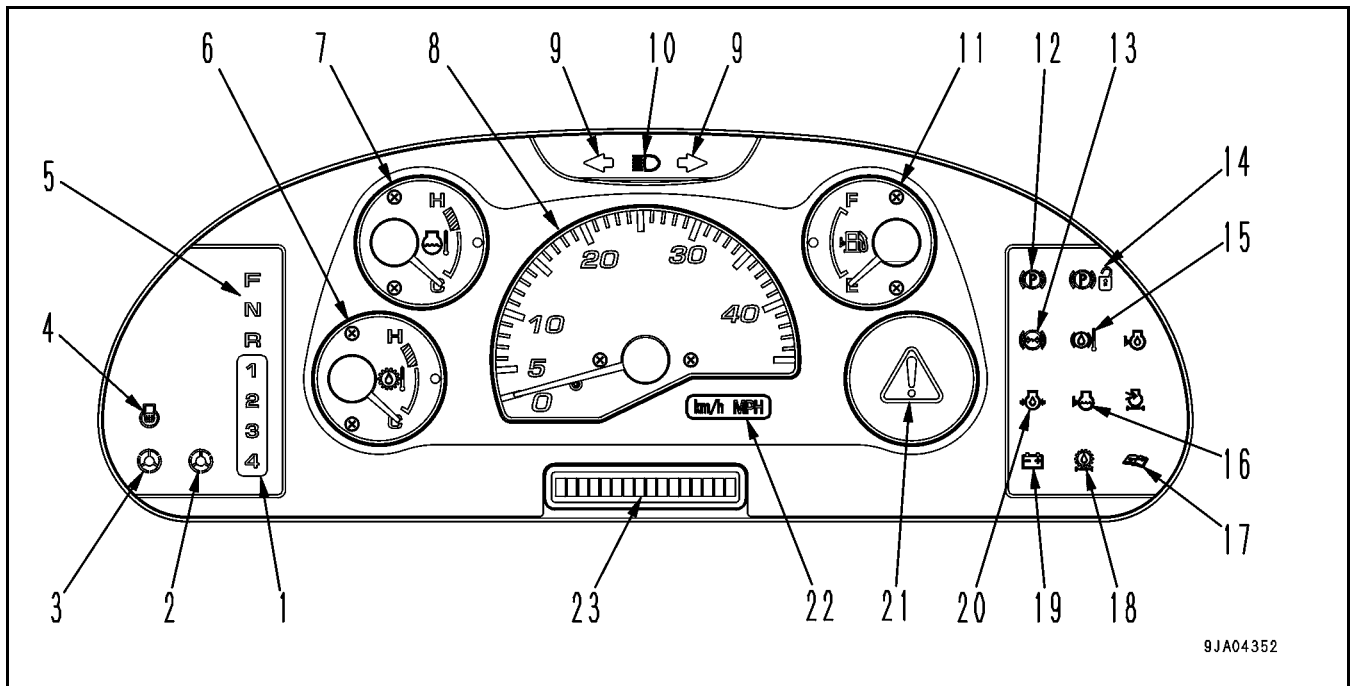
INSPECTION AND MAINTENANCE AFTER TURNING E.C.S.S. SWITCH OFF

For machines equipped with a E.C.S.S. lower the bucket to the ground, turn the E.C.S.S. switch OFF, and stop the engine before starting inspection or maintenance. NEVER turn the switch ON during inspection or maintenance.



OPERATION

MACHINE MONITOR



1. Pilot lamp for speed range selector switch position
2. Steering oil pressure caution lamp (Auxiliary steering device)
3. Auxiliary steering pilot lamp (Auxiliary steering device)
4. Preheating pilot lamp
5. Directional lever position pilot lamp
6. HST oil temperature gauge
7. Engine coolant temperature gauge
8. Speedometer
9. Turn signal pilot lamp
10. Head lamp high beam pilot lamp
11. Fuel gauge
12. Parking brake pilot lamp
13. Brake oil pressure caution lamp
14. Parking brake reminder caution lamp
15. Axle oil temperature caution lamp
16. Radiator coolant level caution lamp
17. Maintenance caution lamp
18. HST oil filter clogging caution lamp
19. Battery charge circuit caution lamp
20. Engine oil pressure caution lamp
21. Central warning lamp
22. Meter display pilot lamp
23. Character display

OPERATION

ENGINE OIL PRESSURE CAUTION LAMP

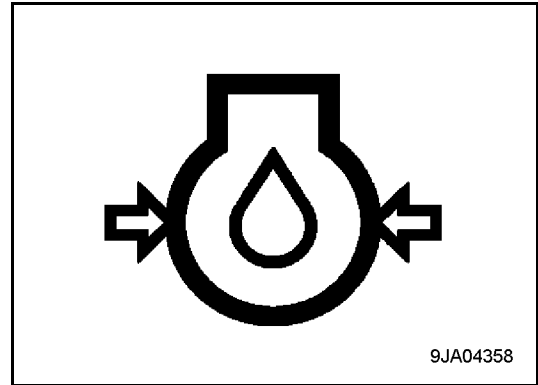
This lamp (2) lights up to warn the operator that the engine lubricating oil pressure has dropped.

During checks before starting (starting switch at the ON position, engine stopped) the lamps are lighted up, and when the engine is started, the lamps go out.

During operation (engine running)

If the engine lubricating oil pressure goes down during operation, the engine lubricating oil pressure caution lamp and central warning lamp light up and the alarm buzzer sounds intermittently.

At the same time, “E03 CALL” and “CHECK RIGHT NOW” are displayed on the character display in turn, so stop the machine immediately in a safe place, then stop the engine and carry out inspection.



BATTERY CHARGE CIRCUIT CAUTION LAMP

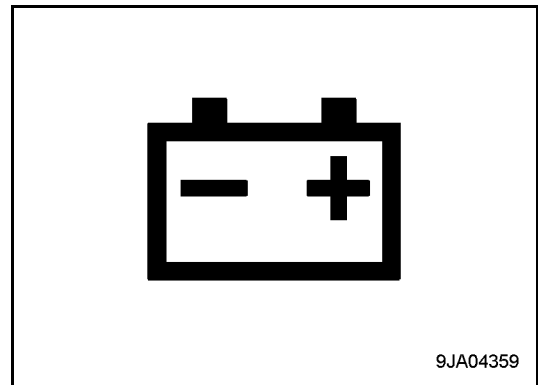
This lamp (3) lights up when the engine is running to warn the operator that an abnormality has occurred in the charging circuit.

During checks before starting (starting switch at the ON position, engine stopped) the lamps are lighted up, and when the engine is started, the lamps go out.

During operation (engine running)

If an abnormality occurs in the charging circuit during operation, the battery charge circuit caution lamp and central warning lamp light up and the alarm buzzer sounds intermittently.

At the same time, “E03 CALL” and “CHECK RIGHT NOW” are displayed on the character display in turn. Stop the machine immediately in a safe place, then stop the engine and carry out inspection.



STEERING OIL PRESSURE CAUTION LAMP - RED

(Auxiliary steering device)

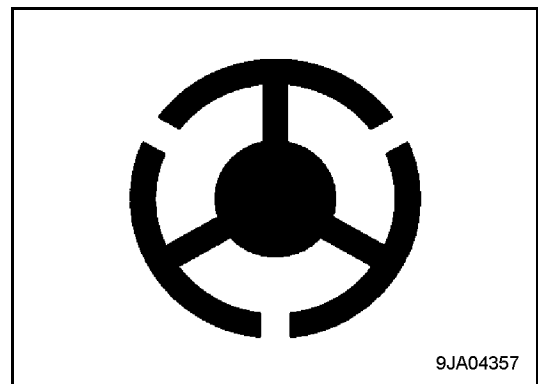
This monitor (4) glows red to warn the operator that the steering oil pressure has dropped.

During checks before starting (starting switch at the ON position, engine stopped) the lamps are lighted up, and when the engine is started, the lamps go out.

During operation (engine running)

If the steering oil pressure goes down during operation, the steering oil pressure caution lamp and central warning lamp light up and the alarm buzzer sounds intermittently.

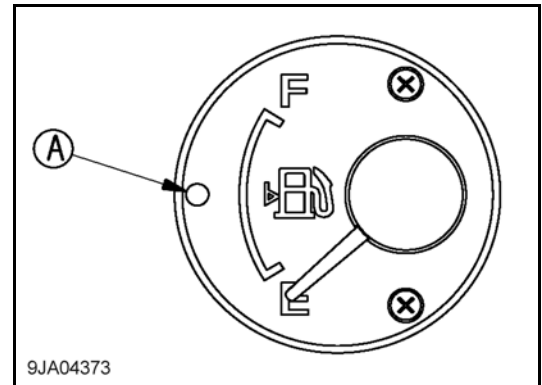
At the same time, “E03 CALL” and “CHECK RIGHT NOW” are displayed on the character display in turn, so stop the machine immediately in a safe place, then stop the engine and carry out inspection.



OPERATION

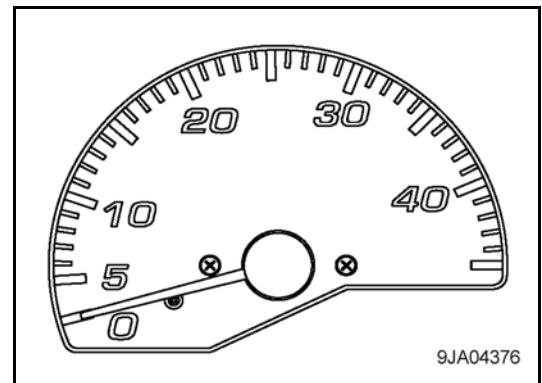
FUEL GAUGE

This meter (3) indicates the amount of fuel remaining in the fuel tank. If the indicator is at the F position, it indicates that the tank is full. If the indicator is at the E position, it indicates that there is little fuel remaining. When the amount of remaining fuel goes below 26 liters (6.87 US gal), caution lamp (A) inside the fuel gauge lights up. If it lights up, check the fuel level and add fuel.



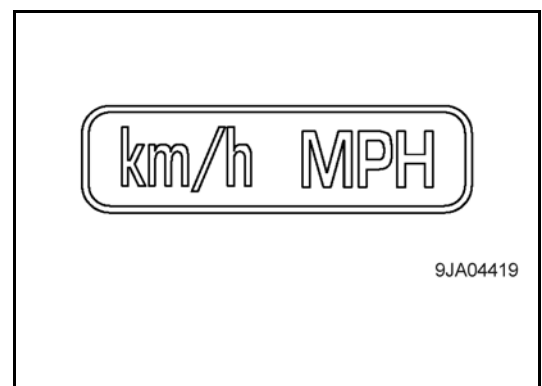
SPEEDOMETER

This meter (4) indicates the travel speed of the machine.



METER DISPLAY PILOT LAMP

This lamp (5) displays the unit for the travel speed.



OPERATION

REAR WORKING LAMP SWITCH

WARNING

Always turn the working lamp off before traveling on public roads.

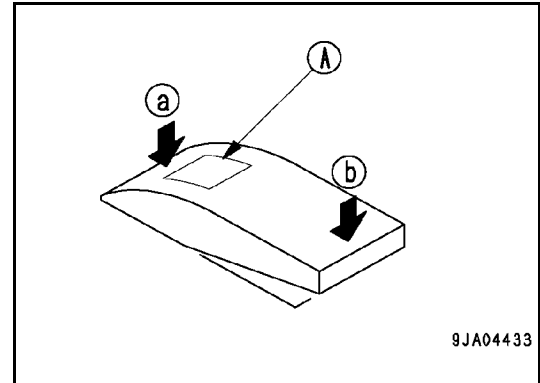
This switch (12) is used to light up the rear working lamp.

Position (a): Working lamp and pilot lamp (A) light up

Position (b): Working lamp goes out

Remark

If the lamp switch is not at the ON position for the side clearance lamp or head lamp, the working lamp will not light up.



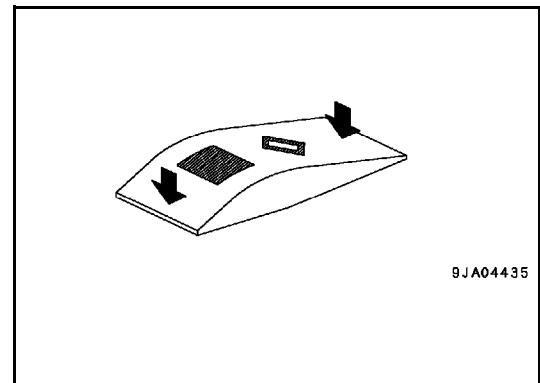
MONITOR PANEL MODE SELECTOR SWITCH 1

This switch (13) is used to switch the function of the character display. When the switch is released, it automatically returns to its original position.

The basic operation is as follows.

Position (◇): Press here to select (confirm) each mode or operation

Position (■): Press here to cancel each mode or operation



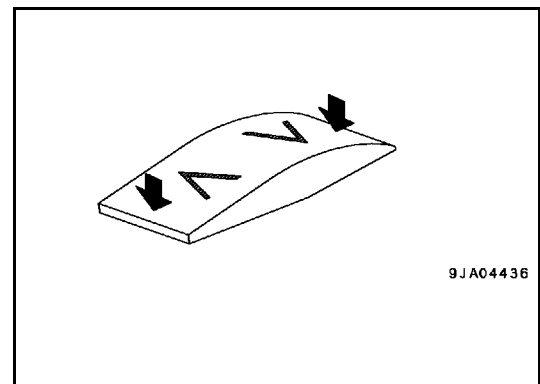
MONITOR PANEL MODE SELECTOR SWITCH 2

This switch (14) is used to switch the function of the character display. When the switch is released, it automatically returns to its original position.

The basic operation is as follows.

Position (>): Press here to go on to the next screen, or to move the cursor forward, or to increase the number when entering numerals

Position (<): Press here to go back to the previous screen, or to move the cursor back, or to reduce the number when entering numerals



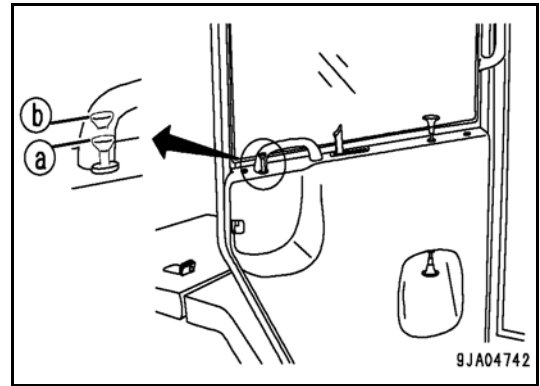
OPERATION

CAB DOOR INNER LOCK

Press cab door inner lock to lock the door.

Position (a): Lock

Position (b): Release



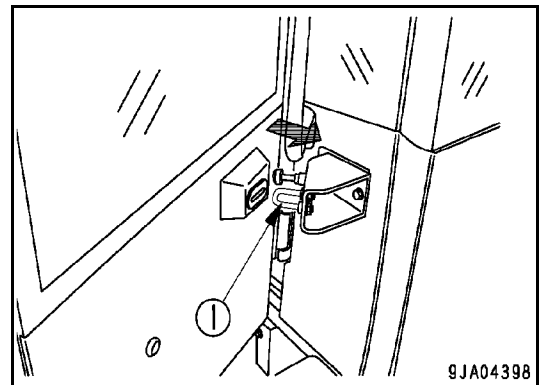
CAB DOOR OPEN LOCK

When getting in or out of the operator's compartment, or when operating with the door open, use this lock to hold the door in position.

Push the door against catch (1) to lock it in position.

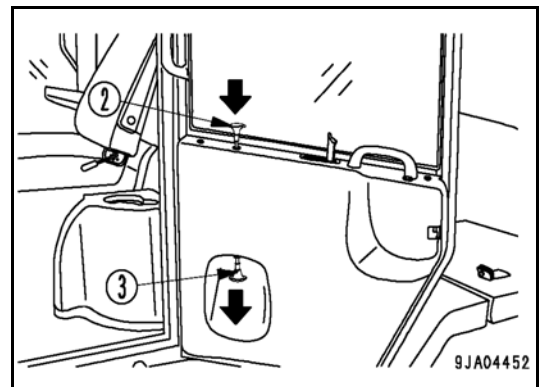
When attaching the door in position, lock it firmly to the catch.

When getting on or off the machine, hold the handrail on the inside.



When closing the door from the operator's seat, push knob (2) to release the catch.

When closing the door after getting off the machine, pull knob (3) to release the catch.

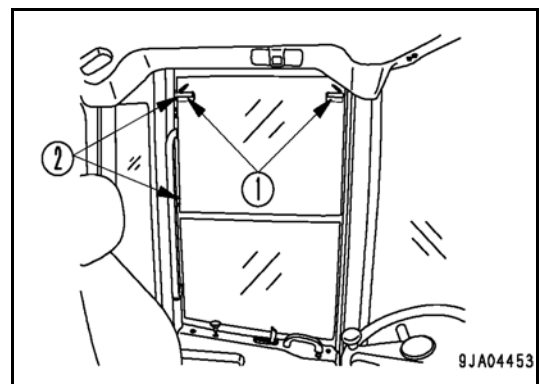


CAB WINDOW OPEN LOCK CANCEL KNOB

Use this knob when you want to move the door window glass up or down to open or close it.

Grip lock cancel knob (1) to release the lock, and move it down to a lower lock position. Release lock cancel knob (1).

There is 1 point for lock position (2).



OPERATION

LISTENING TO RADIO

1. Turn the starting switch ON, then turn power switch (1) ON.
2. Use band selector button (2) to select MW (AM), FM1 or FM2.
3. Select the station with the preset buttons (3).

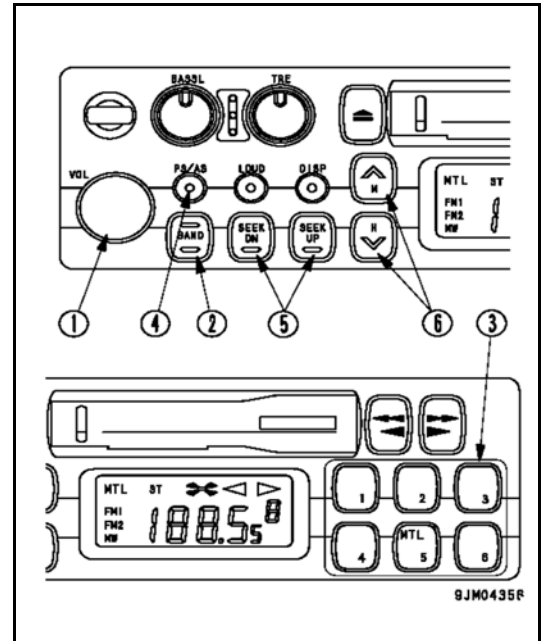
Remark

In case you do not promptly remember the number assigned to a certain preset station, press auto-store/preset scan button (4) for less than 0.5 second. The preset six stations will broadcast one after another for five seconds each. When the desired station broadcasts, press the button again and scan tuning stops.

4. If you want to tune in to a station that is not preset, use either seek tuning button (5) or manual tuning button (6).
5. Adjust the volume, balance, and tone as desired.
6. When turning the radio OFF, turn power switch (1) to the left until it clicks.

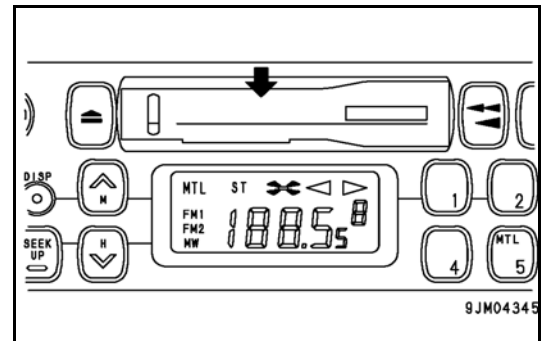
Remark

*To switch to the radio when listening to a cassette, press the cassette eject button to stop the tape.
If you insert a cassette when listening to the radio, the tape will start to play.*

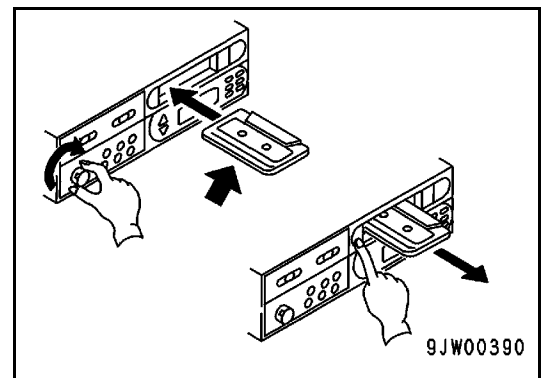


LISTENING TO CASSETTE TAPE

1. Turn the starting switch ON, then turn power switch (1) ON.
2. Set the cassette with the exposed portion of the tape on the right side and push it past the cassette door. The tape will automatically start playing. If the arrow indicating the direction of play is pointing to the right, the top side is being played; if the arrow is pointing to the left, the bottom side is being played. When the tape reaches the end, it is automatically reversed and the other side starts to play.



3. When finishing with the tape, press the cassette eject button to eject the tape and automatically switch to the radio.



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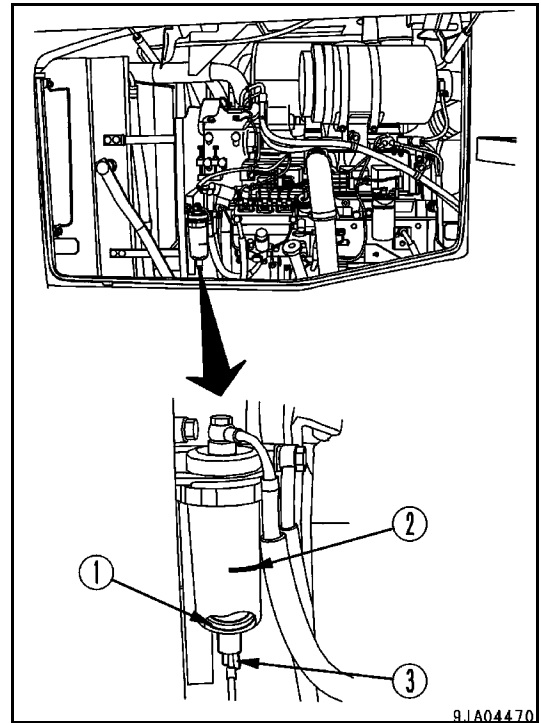
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OPERATION

CHECK WATER SEPARATOR

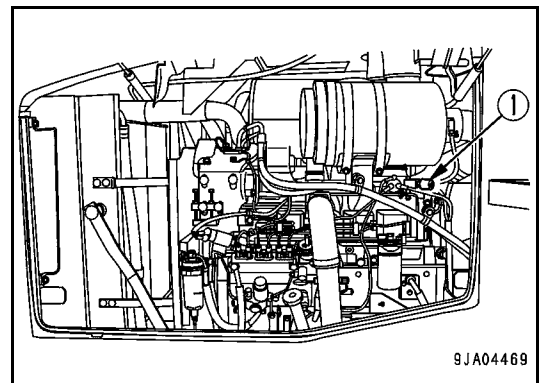
The water separator separates water mixed in the fuel. If float (1) goes above water drain line (2), drain the water as follows.

1. Loosen drain plug (3) and drain the accumulated water until the float (1) reaches the bottom.
2. Tighten drain plug (3).
3. If the air is sucked into fuel line when draining water, be sure to bleed air in the same manner as for the fuel filter. See "REPLACE FUEL FILTER CARTRIDGE" on page 3-41.

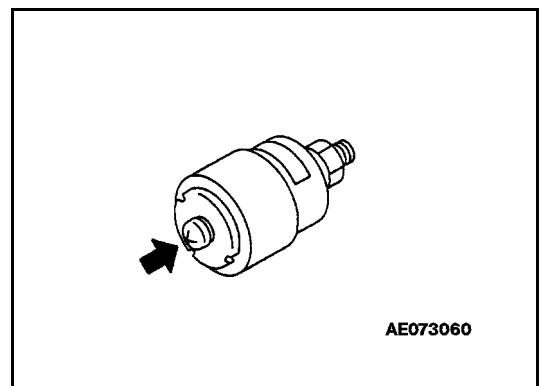


CHECK DUST INDICATOR

1. Check that the red piston has not appeared in the transparent portion of dust indicator (1).
2. If the red piston has appeared, clean or replace the element immediately.
For details of the method of cleaning the element, see "CHECK, CLEAN OR REPLACE AIR CLEANER ELEMENT" on page 3-16.



3. After checking, cleaning, and replacing, press the knob of dust indicator (1) to return the red piston to its original position.

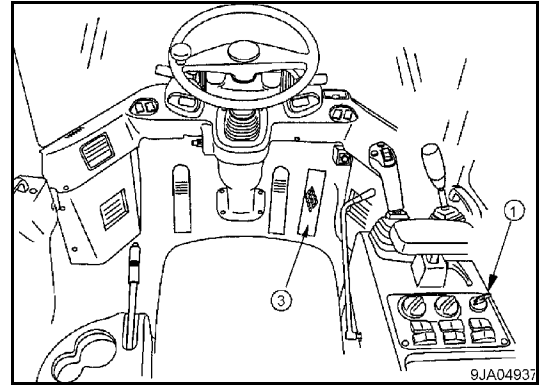


OPERATION

STARTING ENGINE

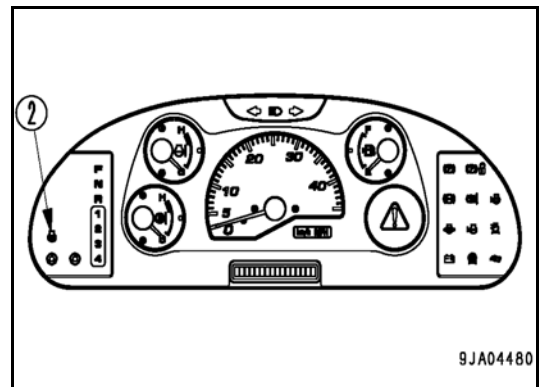
⚠ WARNING

- Start the engine only after sitting down in the operator's seat.
- Do not attempt to start the engine by short-circuiting the engine starting circuit. Such an act may cause serious bodily injury or fire.
- Check that there are no persons or obstacles in the surrounding area, then sound the horn and start the engine.
- Exhaust gas is toxic. When starting the engine in confined spaces, be particularly careful to ensure good ventilation.

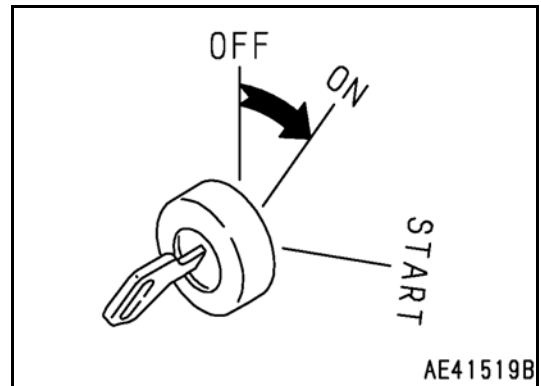


NOTICE

- Do not start the engine with the accelerator pedal fully depressed. There is danger that the engine parts may be damaged.
- Do not keep the starting motor rotating continuously for more than 20 seconds.
- If the engine does not start, wait for at least two minutes before trying to start the engine again.



1. Turn the key of starting switch (1) to the ON position. The automatic preheating will start and the preheating pilot lamp (2) will light up.



OPERATION

TURNING

WARNING

- Operating the steering wheel suddenly at high speed or operating the steering wheel on steep slopes is dangerous. Do not operate the steering wheel in such situations.
- If the engine stops when the machine is traveling, the steering becomes heavy, so never stop the engine while traveling.

It is particularly dangerous if the engine stops when the machine is traveling on slopes, so never let the engine stop when traveling on slopes.

If the engine stops, stop the machine immediately at a safe place.

When traveling, use steering wheel (1) to turn the machine.

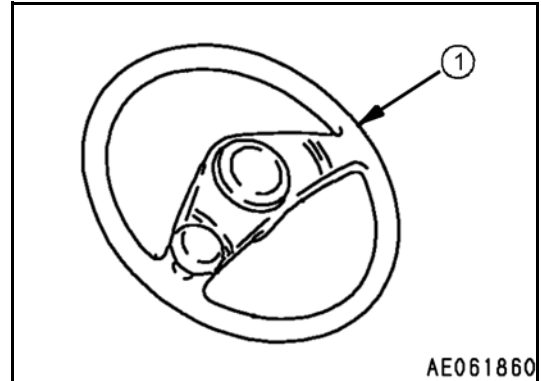
With this machine, the front frame is joined to the rear frame at the center of the machine by the center pin. The front and rear frames bend at this point, and the rear wheels follow in the same track as the front wheels when turning.

Turn the steering wheel lightly to follow the machine as it turns.

NOTICE

When the steering wheel is turned fully, if it reaches the end of its stroke, do not try to turn it further.

Check that there is a play of 50 to 100 mm (2.0 to 3.9 in) in the steering wheel. Check also that the steering works properly. If any abnormality is found, please contact your Komatsu distributor for inspection.



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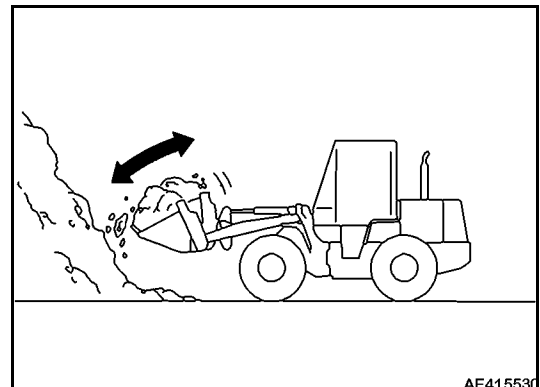
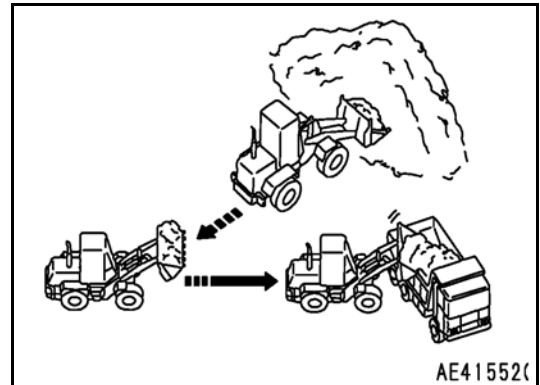
OPERATION

V-SHAPE LOADING

Position the dump truck so that the direction of approach of the wheel loader is approximately 60° from the direction of approach to the stockpile. After loading the bucket, drive the wheel loader in reverse, then turn it to face the dump truck and travel forward to load the dump truck.

The smaller the turning angle of the wheel loader is, the more efficient the operation becomes.

When loading a full bucket and raising it to the maximum height, first shake the bucket to stabilize the load before raising the bucket. This will prevent the load from spilling to the rear.



PRECAUTIONS WHEN PILING UP LOADS

When forming products into a pile, be careful not to let the rear counterweight come into contact with the ground. Do not set the bucket to the DUMP position when piling-up loads.

PRECAUTIONS FOR OPERATION

PERMISSIBLE WATER DEPTH

When working in water or on swampy ground, avoid water levels higher than the bottom of the axle housing.

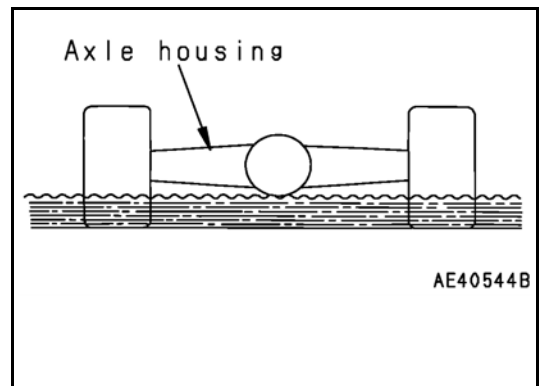
After finishing the operation, wash and check the lubricating points.

IF WHEEL BRAKE DOES NOT WORK

If the machine is not stopped by depressing the brake pedal, use the parking brake to stop the machine.

Remark

If the parking brake has been used as an emergency brake, contact your Komatsu distributor to have the parking brake checked for any abnormality.



OPERATION

If the wheel loader exhibits excessive bouncing and pitching while traveling, rear tire pressures can be reduced to 80-90% of the front tire pressures (within the limits shown in the table).

Tire size (Pattern)	Inflation pressure MPa (kgf/cm ² , PSI)			When shipped from factory
	Soft ground (sandy ground)	Normal road		
		Stockpile	Digging	
17.5-25-12PR (L2 Traction)	0.18 - 0.31 (1.8 - 3.2, 25.6 - 45.5)	0.18 - 0.34 (1.8 - 3.5, 25.6 - 49.7)	0.20 - 0.34 (2.0 - 3.5, 28.4 - 49.7)	Front and Rear Tire: 0.29 (3.0, 42.6)
17.5-25-12PR (L3 Rock)	0.18 - 0.31 (1.8 - 3.2, 25.6 - 45.5)	0.18 - 0.34 (1.8 - 3.5, 25.6 - 49.7)	0.20 - 0.34 (2.0 - 3.5, 28.4 - 49.7)	Front and Rear Tire: 0.29 (3.0, 42.6)
20.5-25-12PR (L2 Traction)	0.19 - 0.32 (1.9 - 3.3, 27.0 - 46.9)	0.19 - 0.32 (1.9 - 3.3, 27.0 - 46.9)	0.21 - 0.34 (2.1 - 3.5, 29.8 - 49.7)	Front and Rear Tire: 0.27 (2.8, 39.8)
20.5-25-12PR (L3 Rock)	0.19 - 0.32 (1.9 - 3.3, 27.0 - 46.9)	0.19 - 0.32 (1.9 - 3.3, 27.0 - 46.9)	0.21 - 0.34 (2.1 - 3.5, 29.8 - 46.9)	Front and Rear Tire: 0.27 (2.8, 39.8)

Stockpile operations mean the loading of sand and other loose materials.

PRECAUTIONS FOR USING LOAD AND CARRY METHOD

Choose the correct tires to match the operating conditions, or choose the operating conditions to match the tires, especially when traveling continuously with load and carry operations. If this is not done, the tires will be damaged. Be sure to contact your Komatsu distributor or tire dealer when selecting tires.

TROUBLESHOOTING

WHEN MACHINE RUNS OUT OF FUEL

WARNING

When starting the engine again, check carefully that the area around the engine is safe before cranking the engine.

When starting the engine after running out of fuel, fill with fuel and bleed the air from the fuel system before starting. For details of bleeding the air, see “REPLACE FUEL FILTER CARTRIDGE” on page 3-41.

TOWING THE MACHINE

WARNING

Check that the wire rope is of ample strength for the weight of the machine being towed.

Do not apply a load to the wire rope suddenly.

If there is a failure in the brake line, the brakes cannot be used, so be extremely careful when towing.

NOTICE

- **Towing is for moving the machine to a place where inspection and maintenance can be carried out, and not for moving it long distances.**
- **The machine must not be towed for long distances.**
- **For details of the procedure for towing a machine when it has broken down, please contact your Komatsu distributor.**

This machine must not be towed except in emergencies. When towing the machine, take the following precautions.

- Before releasing the brakes, put blocks under the wheels to prevent the machine from moving. If the wheels are not blocked, the machine may suddenly move.
- When towing a machine, tow it at a low speed of less than 2 km/h (1.2 MPH), and for a distance of a few meters to a place where repairs can be carried out. The machine should be towed only in emergencies. If the machine must be moved long distances, use a transporter.
- To protect the operator if the towing rope or bar should break, install a protector plate to the machine being towed.
- If it is impossible to operate the steering and brakes of the machine being towed, do not let anyone ride on the machine.
- Check that the tow rope or bar is of ample strength for the weight of the machine being towed. If the machine being towed must travel through mud or up hills, use a tow rope or bar of a strength of at least 1.5 times the weight of the machine being towed.
- Keep the angle of the tow rope as small as possible. Keep the angle between the center lines of the two machines to within 30°.
- If the machine is moved suddenly, the tow rope or bar will be subjected to an excessive load, and it may break. Start the machine gradually and travel at a constant speed.
- The towing machine should normally be of the same class as the machine being towed. Check that the towing machine has ample braking power, weight, and rimpull to allow it to control both machines on slopes or on the tow road.
- When towing a machine downhill, use a larger machine for towing to provide ample rimpull and braking power, or connect another machine to the rear of the machine being towed. This way it is possible to prevent the machine from losing control and turning over.
- Towing may be carried out under various differing conditions, so it is impossible to determine beforehand the requirements for towing. Towing on flat horizontal roads will require the minimum rimpull, while towing on slopes or on uneven road surfaces will require the maximum rimpull.

MAINTENANCE

- When fuel sulphur content is less than 0.5%, change oil in the oil pan according to the periodic maintenance hours described in this manual.
- Change oil according to the following table if fuel sulphur content is above 0.5%.
- When starting the engine with an atmospheric temperature of lower than 0°C (32°F), be sure to use engine oil of SAE10W, SAE10W-30 and SAE15W-40, even though the atmospheric temperature goes up to 10°C (50°F) more or less during the day.
- Use API classification CD as engine oil and if API classification CC, reduce the engine oil change interval to half.
- There is no problem if single grade oil is mixed with multigrade oil (SAE10W-30, 15W-40), but be sure to add single grade oil that matches the temperature range in the table.
- We recommend Komatsu genuine oil which has been specifically formulated and approved for use in engine and hydraulic work equipment applications.

Specified capacity: Total amount of oil including oil for components and oil in piping.

Refill capacity: Amount of oil needed to refill system during normal inspection and maintenance.

ASTM: American Society of Testing and Material

SAE: Society of Automotive Engineers

API: American Petroleum Institute

Fuel sulphur content	Change interval of oil in engine oil pan
0.5 to 1.0%	1/2 of regular interval
Above 1.0%	1/4 of regular interval

No.	Supplier	Engine Oil [CD or CE] SAE10W, 30, 40 10W30, 15W40 (The 15W40 oil marked * is CE)	Gear Oil [GL-4 or GL-5] SAE80, 90, 140	Grease [Lithium-Base] NLGI No.2	Antifreeze Coolant [Ethylene Glycol Base] Permanent Type
1	KOMATSU	EO10-CD EO30-CD EO10-30CD EO15-40CD	GO90 GO140	G2-LI G2-LI-S	AF-ACL AF-PTL AF-PT(Winter, one season type)
2	AGIP	Diesel sigma S super diesel multi-grade *Sigma turbo	Rotra MP	GR MU/EP	---
3	AMOCO	*Amoco 300	Multi-purpose gear oil	PYKON premium grease	---
4	ARCO	*Arcofleet S3 plus	Arco HD gear oil	Litholine HEP 2 Arco EP moly D	---
5	BP	Vanellus C3	Gear oil EP Hypogear EP	Energrease LS-EP2	Antifreeze
6	CALTEX	*RPM delo 400 RPM delo 450	Universal thuban Universal thuban EP	Marfak all purpose 2 Ultra-duty grease 2	AF engine coolant

MAINTENANCE

Min. atmospheric temperature	°C	Above - 10	- 15	- 20	- 25	- 30
	°F	Above 14	5	- 4	- 13	- 22
Amount of antifreeze	Liter	5.25	6.12	6.97	7.82	8.50
	US gal	1.35	1.62	1.84	2.07	2.25
Amount of water	Liter	11.90	10.88	10.03	9.18	8.50
	US gal	3.14	2.87	2.65	2.42	2.24

WARNING

Antifreeze is flammable. Keep antifreeze away from sparks and flame.

Antifreeze is toxic. Be careful when removing the drain plug not to get water containing antifreeze on you. If it gets in your eyes, flush your eyes with large amount of fresh water and see a doctor at once.

Use city water for the coolant water.

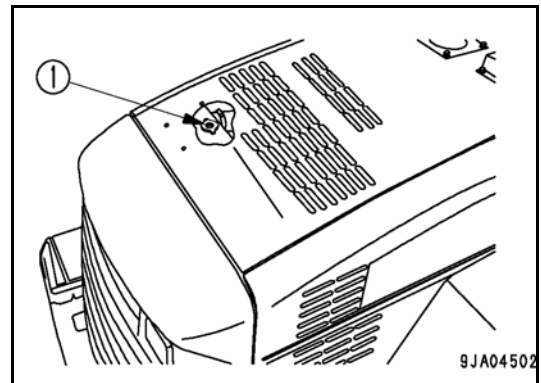
If river water, well water or other such water supply must be used, contact your Komatsu distributor.

We recommend use of an antifreeze density gauge to control the mixing proportions.

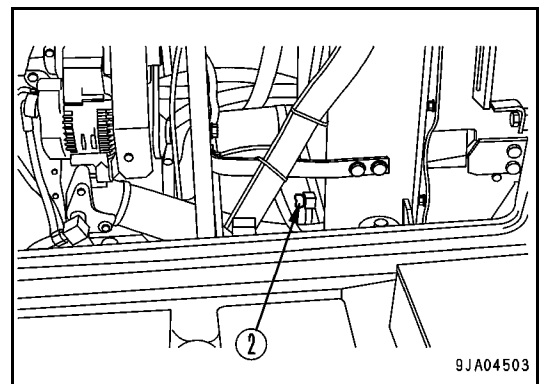
Prepare the following:

- Container to mix the coolant: Minimum 17 liters (4.49 US gal) capacity
- Prepare a water inlet hose.

1. Stop the engine.
2. Check that the cooling water temperature has gone down enough to make it possible to touch the radiator cap surface by hand, then turn radiator cap (1) slowly until it contacts the stopper to release the pressure.
3. Following this, push radiator cap (1), turn it until it contacts the stopper, then remove it.



4. Set a container in position to catch drained antifreeze mixture, then open valve (2) under the radiator to drain cooling water.
5. After draining the water, close drain valve (2) and fill with tap water.
6. When the radiator is full, start the engine, and run it at low idling. Keep the engine running at low idling for 10 minutes until the water temperature reaches more than 90°C (194°F).
7. Stop the engine, open drain valves (2), drain the water, then tighten them again.
8. After draining the water, clean the cooling system with cleaning agent. For the cleaning method, see the instructions for the cleaning agent.
9. Add cooling water until it overflows from the water filler. Determine the proportions of antifreeze and water according to the table for the mixing rate of water and antifreeze.



10. Remove the air from the cooling system: run the engine with the radiator cap off for five minutes at low idling, and for another five minutes at high idling.

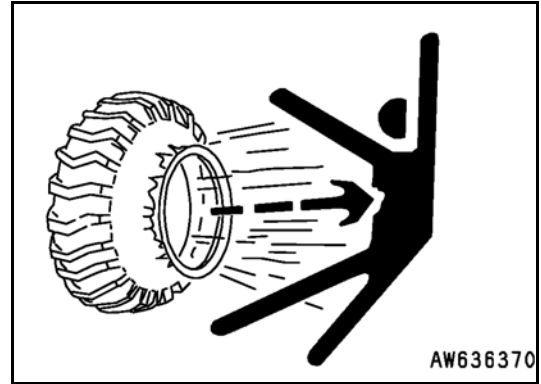
MAINTENANCE

SELECTION AND INSPECTION OF TIRES

⚠ WARNING

If a tire or a rim is mishandled, the tire may burst or may be damaged and the rim may be broken and scattered. Flying pieces can cause serious injury or death.

- Since maintenance, disassembly, repair and assembly of the tires and rims require special equipment and skill, be sure to ask a tire repair shop to carry out the work.
- Do not heat or weld the rim to which the tire is installed. Keep heat and/or fire away from the tire.



SELECTION OF TIRES

⚠ WARNING

Select the tires according to the conditions of use and the weight of the attachments on the machine. Use only specified tires and inflate them to the specified pressure.

Select the tires according to the conditions of use and the weight of the attachments of the machine. Use the following table. Since the travel speed indicated on the speedometer varies with the tire size, consult your Komatsu distributor when using optional tires.

		Maximum load [kg (lb)]	Tire size
Standard	Front and Rear	6,070 (13,384)	17.5-25-12PR
If equipped	Front and Rear	6,775 (14,939)	20.5-25-12PR

MAINTENANCE

EVERY 500 HOURS SERVICE

Maintenance for every 50, 100 and 250 hours service should be carried out at the same time.

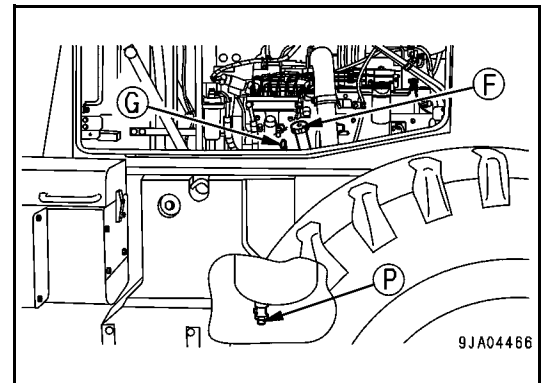
CHANGE OIL IN ENGINE OIL PAN, REPLACE ENGINE OIL FILTER CARTRIDGE

WARNING

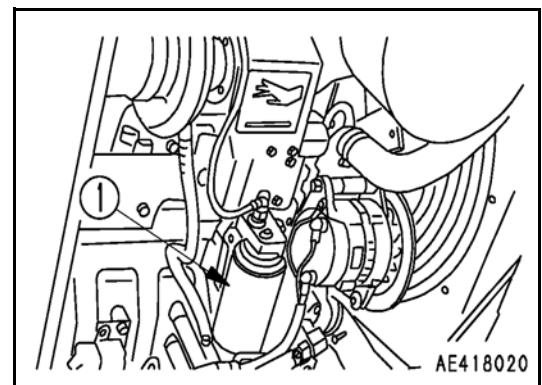
- The parts and oil are at high temperature after the engine is stopped, and may cause burns. Wait for the temperature to go down before starting the work.
- When removing the oil filler cap, turn it slowly to release the internal pressure, then remove it.

- Refill capacity: 19.5 liters (5.15 US gal)
- Filter wrench

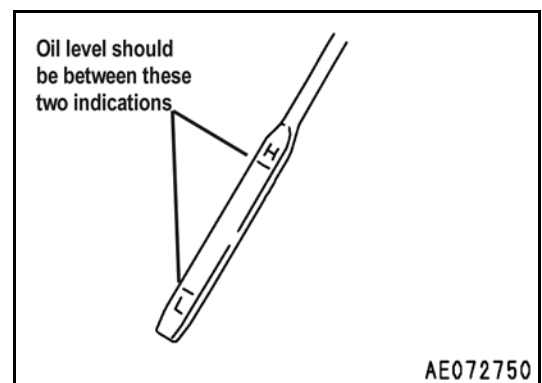
1. Open the engine side cover on the right side of the chassis.
2. Open oil filler (F).
3. Place a container to catch the oil under drain plug (P).
4. Loosen drain plug (P) and drain the oil. Be careful not to get oil on yourself.
5. Check the drained oil, and if there are excessive metal particles or foreign material, please contact your Komatsu distributor.
6. Tighten drain plug (P).



7. Open the engine side cover on the left side of the chassis.
8. Using the filter wrench, turn filter cartridge (1) counterclockwise to remove it.
9. Clean the filter holder, fill the new filter cartridge with engine oil, then coat the seal and thread of the filter cartridge with engine oil (or coat thinly with grease) and install.
10. When installing the seal, tighten it so its surface comes into contact with the filter holder, then tighten another 3/4 turn.



11. After replacing the filter cartridge, add engine oil through oil filler (F) until the oil level is between the H and L marks on the dipstick (G).
12. Run the engine at idling for short time, then stop the engine, and check that the oil is between the H and L marks on the dipstick. For details, see "CHECK OIL LEVEL IN ENGINE OIL PAN, ADD OIL" on page 2-63.



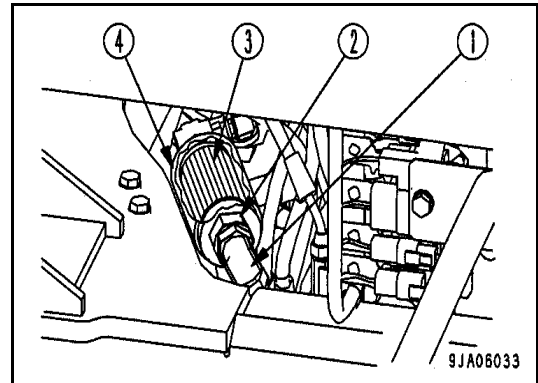
MAINTENANCE

CLEAN BRAKE CIRCUIT STRAINER

WARNING

- After the engine is stopped, the parts and oil are at high temperature, and may cause burns. Wait for the temperature to go down before starting operation.
- When the rubber hose is removed, oil may spurt out, so turn it slowly to release the internal pressure, then remove it carefully.

1. Remove a cover under the floor frame at the left side of the machine.
2. When rubber hose (1) and flange (2) are removed, oil will spill out, so set a container (capacity: approximately 300 cc) in position to catch the oil.
3. Remove rubber hose (1) and flange (2).
4. Remove strainer (3) and wash it in clean diesel oil.
5. Assemble strainer (3) in strainer case (4) with the strainer protrusion side (O-ring side) facing the front and fix it with flange (2).
6. Install rubber hose (1).
7. Install the cover.



CHECK ALTERNATOR, STARTING MOTOR

The brush may be worn or have no grease on the bearing, so contact your Komatsu distributor for inspection or repair. If the engine is started frequently, carry out inspection every 1000 hours.

CHECK ENGINE VALVE CLEARANCE, ADJUST

As special tool is required for removing and adjusting the parts, request your Komatsu distributor for service.

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