SAFETY INFORMATION

To enable you to use this machine safely, safety precautions and labels are given in this manual and affixed to the machine to give explanations of situations involving potential hazards and of the methods of avoiding such situations.

Signal words

The following signal words are used to inform you that there is a potential hazardous situation that may lead to personal injury or damage.
In this manual and on machine labels, the following signal words are used to express the potential level of hazard.

⚠ DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. This word is used also to alert against unsafe practices that may cause property damage.

Example of safety message using signal word

⚠ WARNING

When standing up from the operator's seat, always place the lock lever in the LOCK position.
If you accidentally touch the control levers when they are not locked, this may cause a serious injury or death.

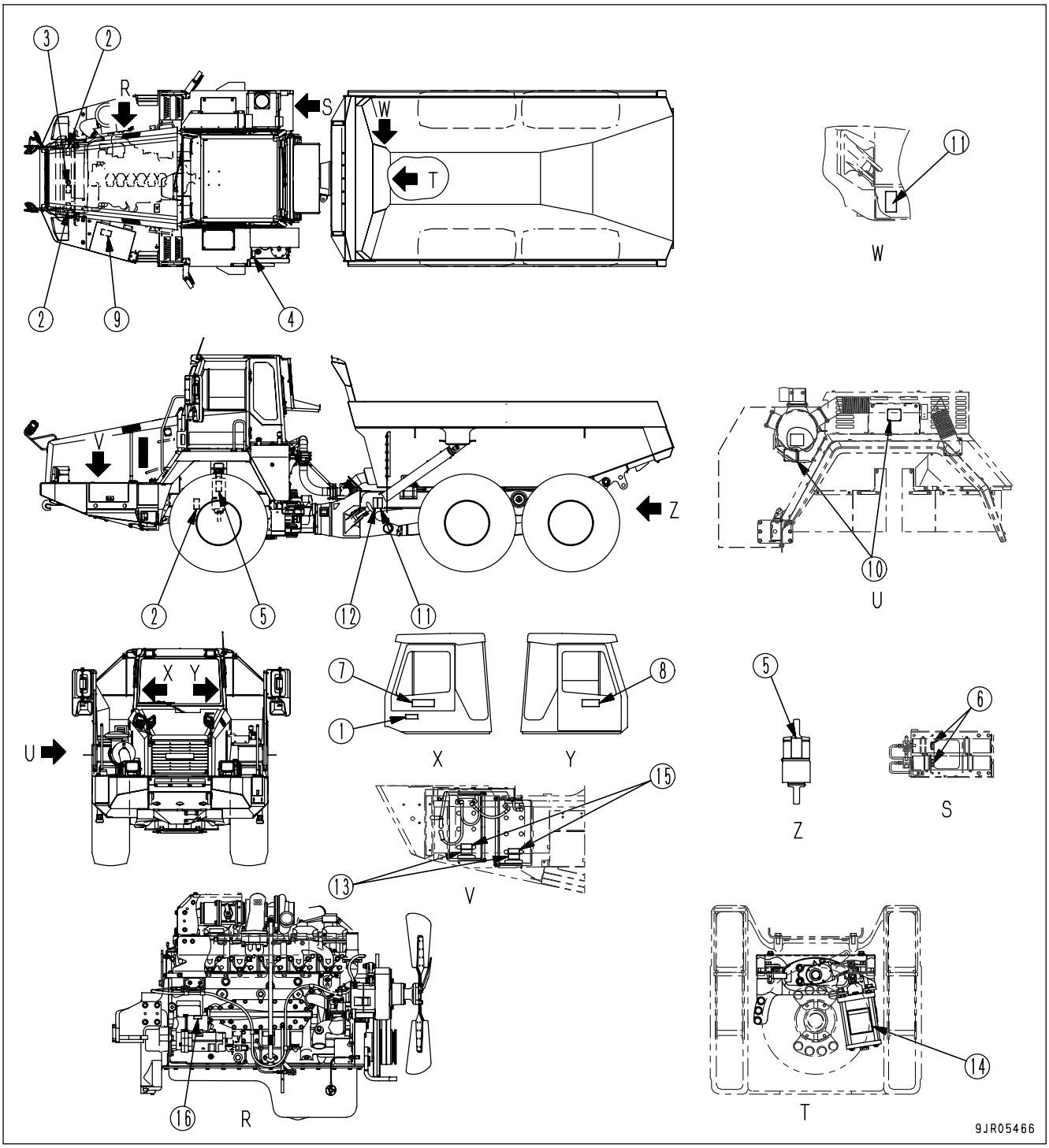
Other signal words

In addition to the above, the following signal words are used to indicate precautions that should be followed to protect the machine or to give information that is useful to know.

NOTICE This word is used for precautions that must be taken to avoid actions which could shorten the life of the machine.

REMARKS This word is used for information that is useful to know.

POSITION FOR ATTACHING SAFETY LABELS



GENERAL PRECAUTIONS

SAFETY RULES

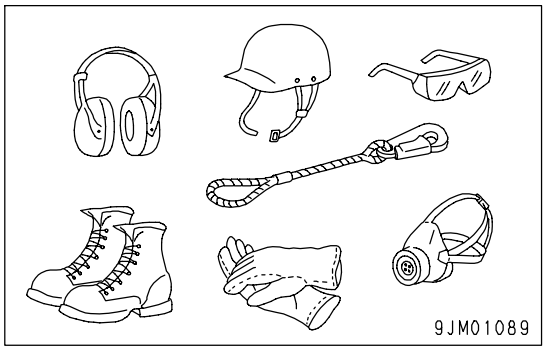
- Only trained and authorized personnel can operate and maintain the machine.
- Follow all safety rules, precautions and instructions in this manual when operating or performing maintenance on the machine.
- If you are not feeling well, or if you are under the influence of alcohol or medication, your ability to safely operate or repair your machine may be severely impaired, putting yourself and everyone else on your job site in danger.
- When working with another operator or with the person on the worksite traffic duty, discuss the content of the operation beforehand and use the determined signals when carrying out the operation.

IF PROBLEMS ARE FOUND

If you find any problems in the machine during operation or maintenance (noise, vibration, smell, incorrect gauges, smoke, oil leakage, etc., or any abnormal display on the warning devices or monitor), report to the person in charge and have the necessary action taken. Do not operate the machine until the problem has been corrected.

CLOTHING AND PERSONAL PROTECTIVE ITEMS

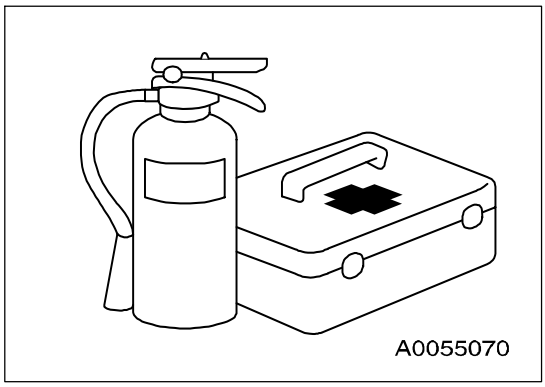
- Do not wear loose clothing and accessories. There is a hazard that they may catch on dump lever or other protruding parts.
- If you have long hair and it hangs out from your hard hat, there is a hazard that it may get caught up in the machine, so tie your hair up and be careful not to let it get caught.
- Always wear a hard hat and safety shoes. If the nature of the work requires it, wear safety glasses, mask, gloves, ear plugs, and safety belt when operating or maintaining the machine.
- Check that all protective equipment functions properly before using it.



FIRE EXTINGUISHER AND FIRST AID KIT

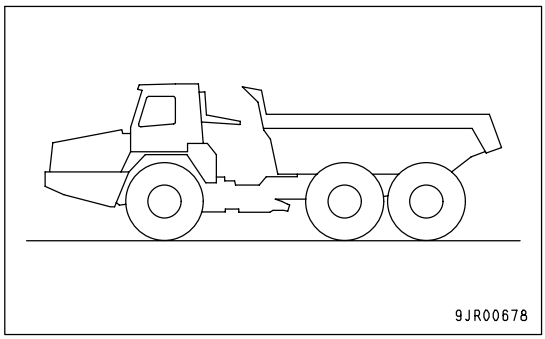
Always follow the precautions below to prepare for action if any injury or fire should occur.

- Be sure that fire extinguishers have been provided and read the labels to ensure that you know how to use them in emergencies.
- Carry out periodic inspection and maintenance to ensure that the fire extinguisher can always be used.
- Provide a first aid kit in the storage point. Carry out periodic checks and add to the contents if necessary.

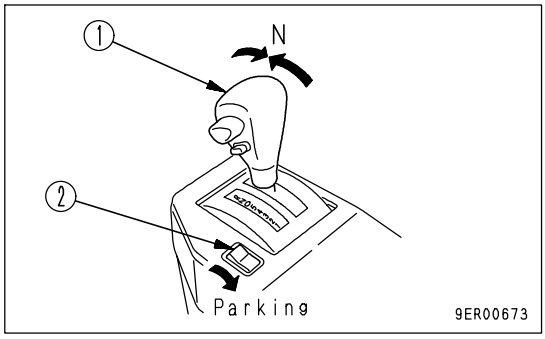


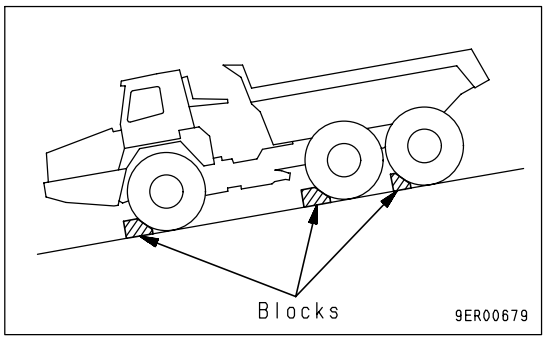
PARKING MACHINE

- Park the machine on firm, level ground.
- Select a place where there is no hazard of landslides, falling rocks, or flooding.



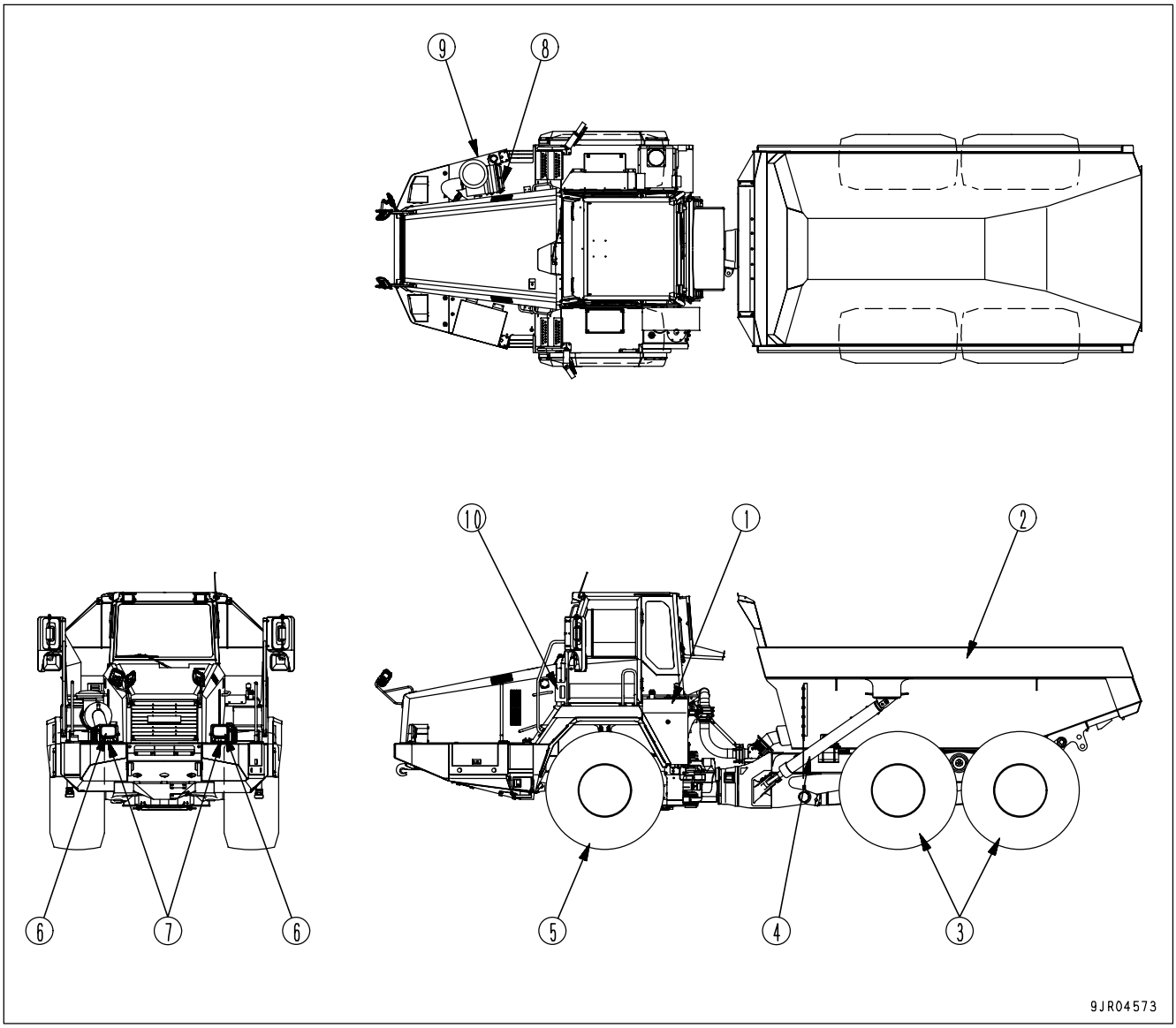
- When leaving the machine, always place shift lever (1) at neutral and set parking brake switch (2) to the PARKING position. Lower the dump body, set the dump lever to the HOLD position, lock with the dump lever lock knob, then stop the engine.
- Always close the operator's cab door, and use the key to lock all the equipment in order to prevent any unauthorized person from moving the machine. Always remove the key, take it with you, and leave it in the specified place.
- If it is necessary to park the machine on a slope, set blocks under the wheels to prevent the machine from moving.





GENERAL VIEW

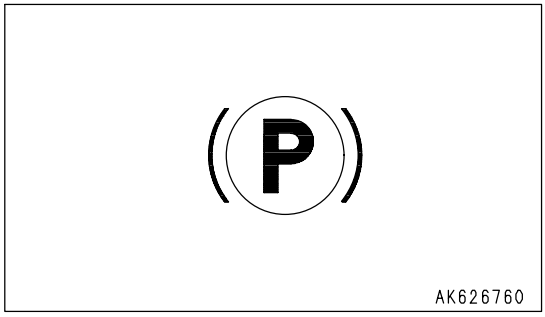
GENERAL VIEW OF MACHINE



(1) Hydraulic tank
(2) Dump body
(3) Rear wheel
(4) Hoist cylinder
(5) Front wheel
(6) Turn signal lamp
(7) Head lamp
(8) Air cleaner
(9) Fuel tank
(10) Fire extinguisher (if equipped)

PARKING BRAKE PILOT LAMP

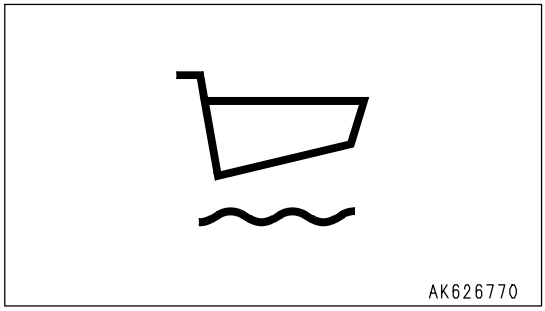
This monitor (2) lights up when the parking brake is applied.



DUMP BODY PILOT LAMP

This monitor (3) lights up when the dump body is raised or the dump body lever is at any position other than "FLOAT".

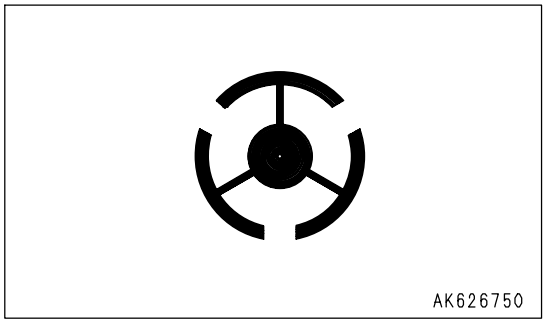
After the starting switch has been turned to the ON position, the dump body is held in position regardless of the position of the dump lever, so when canceling, turn the lamp off (see "CANCELING DUMP BODY HOLD CONDITION (PAGE 3-88)" for details).



EMERGENCY STEERING PILOT LAMP

This monitor (4) lights up when the emergency steering is actuated.

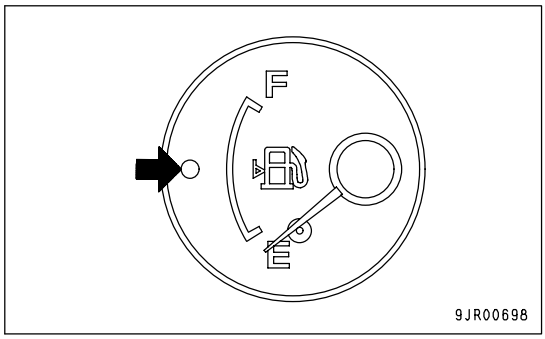
If any abnormality should occur in the steering oil pressure circuit when the machine is traveling, the auto emergency steering is actuated and the related lamp lights up.



FUEL LEVEL CAUTION LAMP

This monitor (5) lights up when the level of the fuel remaining in the fuel tank goes below 57 liters (15.06 US gal).

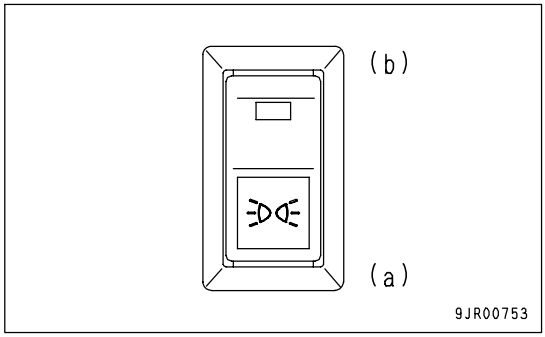
If it lights up, check the fuel level and add fuel.



SIDE LAMP SWITCH
(If equipped)
This switch (12) is used to switch on the side lamp.

(a): Side lamp goes out
(b): Side lamp lights up

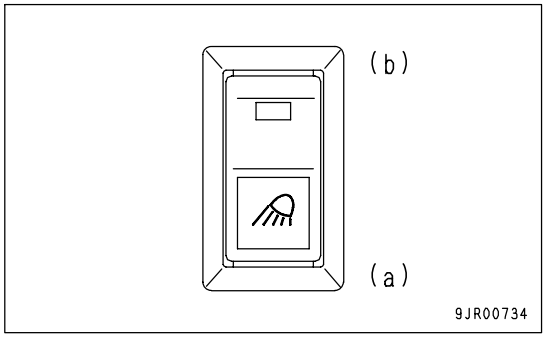
When working at night, the symbol inside the switch lights up regardless of the selected position of the switch.



WORKING LAMP (FRONT) SWITCH
This switch (13) is used to switch on the working lamp (front).

(a): Working lamp goes out
(b): Working lamp lights up

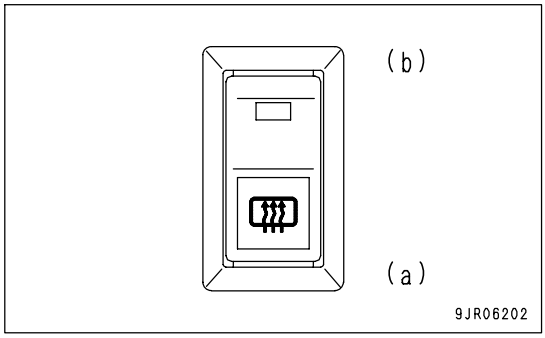
When working at night, the symbol inside the switch lights up regardless of the selected position of the switch.



SWITCH FOR REAR WINDOW GLASS WITH HEATED WIRE
Use this switch (14) to turn the heater for the rear glass ON/OFF.
(a): Wire heater OFF
(b): Wire heater ON

When working at night, the symbol inside the switch lights up regardless of the selected position of the switch.

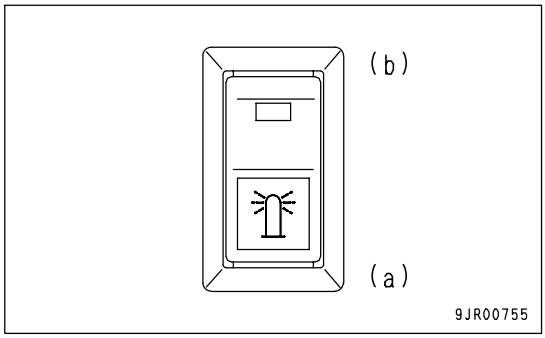
REMARK
The wire heater does not automatically turn OFF when it becomes hot, so when it is not needed, turn the switch manually to the OFF position.



YELLOW ROTATING LAMP SWITCH
(If equipped)
This switch (15) is used to switch the yellow rotating lamp on and off. When the lamp is switched on, it lights up and rotates.

(a): Yellow rotating lamp goes out
(b): Yellow rotating lamp lights up

When working at night, the symbol inside the switch lights up regardless of the selected position of the switch.

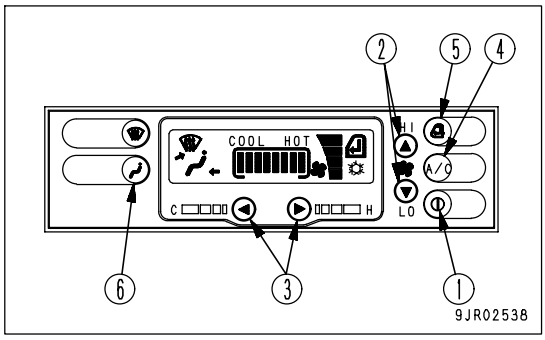


METHOD OF OPERATION

With the FACE vents, it is possible to adjust the direction of the air flow and to turn it on or off.
However, do not set to the FACE mode with the vents closed.

COOLING

1. Press ON/OFF switch (1) to turn on the air conditioner power.
2. Press fan switch (2) to set the air flow to the maximum.
3. Press temperature control switch (3) to lower the temperature.
4. Press air conditioner switch (4) to set to COOLING.
5. Press RECIRC/FRESH selector switch (5) to set to RECIRC.
6. Press mode selector switch (6) to set the vents to FACE.
7. When the temperature inside the cab goes down, set to the desired temperature and air flow.



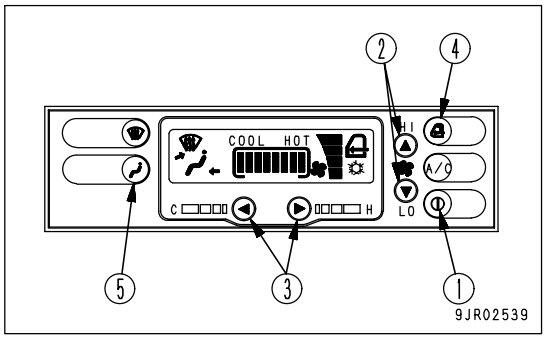
NOTICE

If operations are continued for a long time with the air conditioner set to the lowest temperature and minimum air flow, there is danger that the receiver drier may freeze.

If it freezes and no cold air comes out, stop using the cooling, and set to a higher temperature and the maximum air flow. Run for a short time under these conditions, then return to the cooling operation.

HEATING

1. Press ON/OFF switch (1) to turn on the air conditioner power.
2. Press fan switch (2) to set the air flow to the maximum.
3. Press temperature control switch (3) to raise the temperature.
4. Press RECIRC/FRESH selector switch (4) to set to FRESH.
5. Press mode selector switch (5) to set the vents to FOOT.
6. When the temperature inside the cab goes up, set to the desired temperature and air flow.



REMARK

The heating uses the heat from the engine cooling water, so it is effective only when the cooling water is hot.

STARTING ENGINE

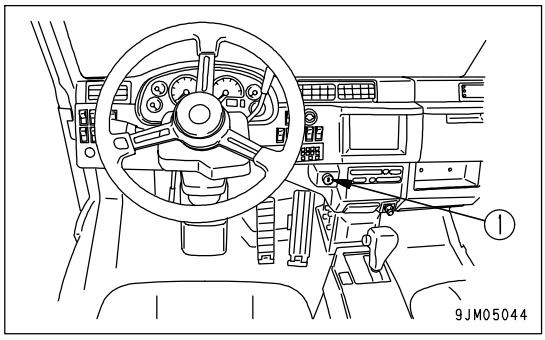
⚠ WARNING

- **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 a 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.**
- **Never use starting aid fluids as they may cause explosions.**
- **Exhaust gas is toxic. When starting the engine in confined spaces, be particularly careful to ensure good ventilation.**

NOTICE

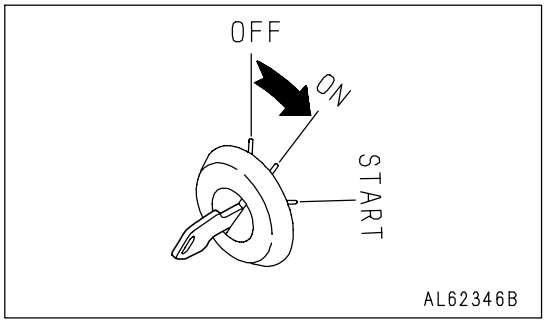
- **Do not accelerate the engine sharply until it is warmed up.**
- **Do not operate the starting motor continuously for more than 20 seconds.**
- **If the engine fails to start, wait for 2 minutes or so, and then try to start again.**
- **When starting the engine, do not depress the accelerator pedal. Even if the accelerator pedal is depressed just after the engine is started, the engine speed is limited by the turbo protect function. After the turbo protect time, however, the engine speed rises sharply and the turbocharger may be damaged.**

1. Turn the key of starting switch (1) to the ON position.
   The preheater pilot lamp lights up, depending on the engine water temperature, and the engine is preheated. After the pre-heating time, the preheater pilot lamp goes off.



The pre-heating times are as shown below.

Engine water temperature	Pre-heating time
above - 5˚C (23˚F)	–
- 5˚C to - 20˚C (23˚F to - 4˚F)	20 to 40 sec
below - 20˚C (- 4˚F)	40 sec



REMARK

When the key of the starting switch is turned to the ON position, if the engine water temperature is -5 °C or higher, the engine is not pre-heated. At this time, the engine can be started without pre-heating operation.

TRAVELING DOWNHILL

When traveling downhill, travel at a safe speed which matches the width of the road, the condition of the road surface, and other conditions of the jobsite.

⚠ WARNING

- **When the machine stops, put blocks under the tires immediately.**
- **For the maximum permissible speed when traveling downhill using the retarder, see the brake performance graph for the downhill distance and grade. Traveling continuously downhill at a speed greater than the maximum permitted speed on the brake performance graph is dangerous as the retarder brake may be damaged.**
- **If the retarder oil temperature caution lamp on the machine monitor lights up when the retarder is being used, shift down to travel downhill. (When this happens, the central warning lamp lights up and the alarm buzzer sounds.)**
  If the caution lamp does not go out even when the transmission is shifted down, stop the machine immediately, set the shift lever to the N position, run the engine at 1800 rpm, and wait for the caution lamp to go out.
- **If the retarder loses its effect when it is used for traveling downhill, do as follows.**
  1. Release the retarder control lever completely, then operate the retarder control lever again.
  2. If the retarder still has no effect even when the retarder control lever is operated again, return the retarder control lever completely to the released position, then depress the brake pedal to stop the machine, and contact your Komatsu distributor for repairs.
- **Operate the retarder slowly. If the brake is applied suddenly, there is danger that the tires will slip.**
- **Do not move the gear shift lever to the N position when the machine is traveling or when it is traveling down a slope. Always place the transmission in gear before traveling.**
  o If the transmission is in Neutral, the engine cannot provide any braking effect and the steering wheel will become heavier. In addition, there will be lack of cooling oil for the retarder, so there is danger that it will overheat or that the actuation of the brake will be poor.
  o There may also be damage to the transmission or other parts of the power train, and there is danger of unexpected accidents.

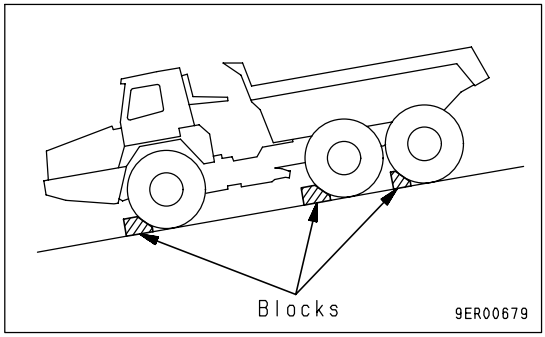
NOTICE

- **If the retarder control lever is operated when traveling downhill, the transmission can be shifted down sooner than with normal deceleration. It is also possible to travel without shifting up.**
- **Do not accelerate or shift up when using the retarder. The engine speed will rise and this may cause the alarm buzzer to sound and the central warning lamp to flash.**

PARKING MACHINE

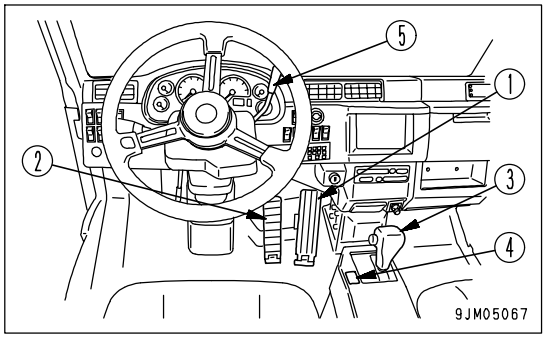
WARNING

- **Avoid stopping suddenly. Give yourself ample room when stopping.**
- **Park the machine on firm, horizontal ground.**
  Do not park the machine on a slope.
  If it is unavoidably necessary to park the machine on a slope, put blocks under the tires to prevent the machine from moving.
- **If the shift lever is touched by mistake, the machine may move suddenly, and this may lead to a serious injury or death. Before standing up from the operator's seat, always set the parking brake switch securely to the PARKING position.**
- **The retarder must not be used as a parking brake.**
- **Do not use the retarder for long-term parking, regardless of the engine speed.**

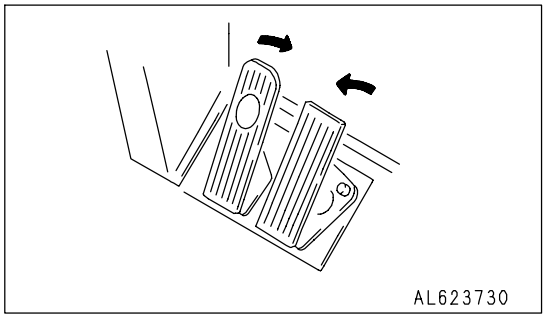


CAUTION

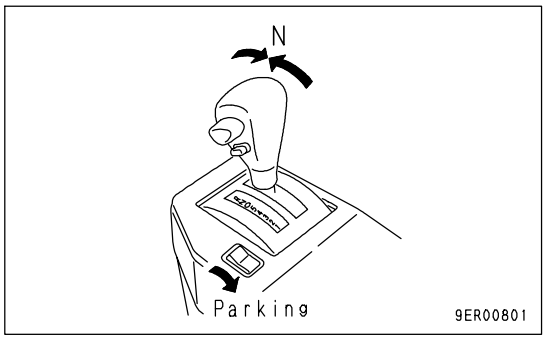
To prevent damage to the parking brake, apply the parking brake only when parking the machine or carrying out dumping operations.



1. Release accelerator pedal (1), then depress brake pedal (2) to stop the machine.



2. Move shift lever (3) to the N position, then set parking brake switch (4) to the PARKING position to apply the parking brake.



LONG-TERM STORAGE

BEFORE STORAGE

When keeping in long-term storage (more than one month), store as follows.

- After every part is washed and dried, house the machine in a dry building. Never leave it outdoors. In case it is indispensable to leave it outdoors, park the machine on the flat ground and cover it with canvas etc.
- Completely fill the fuel tank. This prevents moisture from collecting.
- Lubricate and change the oil before storage.
- Coat the exposed portion of the hydraulic cylinder piston rod with grease.
- Disconnect the negative terminals of the battery and cover it or remove it from the machine and store it separately.
- Apply the parking brake.
- Set the tire inflation pressure for each tire to within the range of the specified inflation pressure for the type of tire.
- Push the retarder control lever forward to the OFF position.
- Place the gear shift lever at the N position and turn the starting switch OFF.
- To prevent corrosion, be sure to fill the cooling system with Supercoolant (AF-NAC) or permanent type antifreeze (density between 30% and 68%).

DURING STORAGE

⚠ WARNING

If it is necessary to perform the rust-prevention operation while the machine is indoors, open the doors and windows to improve ventilation and prevent gas poisoning.

During the storage period, operate the machine once a month to prevent loss of the oil film at the lubricated parts. At the same time, charge the battery.
Before operating the work equipment, wipe off all the grease from hydraulic piston rods.

AFTER STORAGE

NOTICE

If the machine has been stored without carrying out the monthly rust-prevention operation, consult your Komatsu distributor before using it.

When using the machine after long-term storage, do as follows before using it.

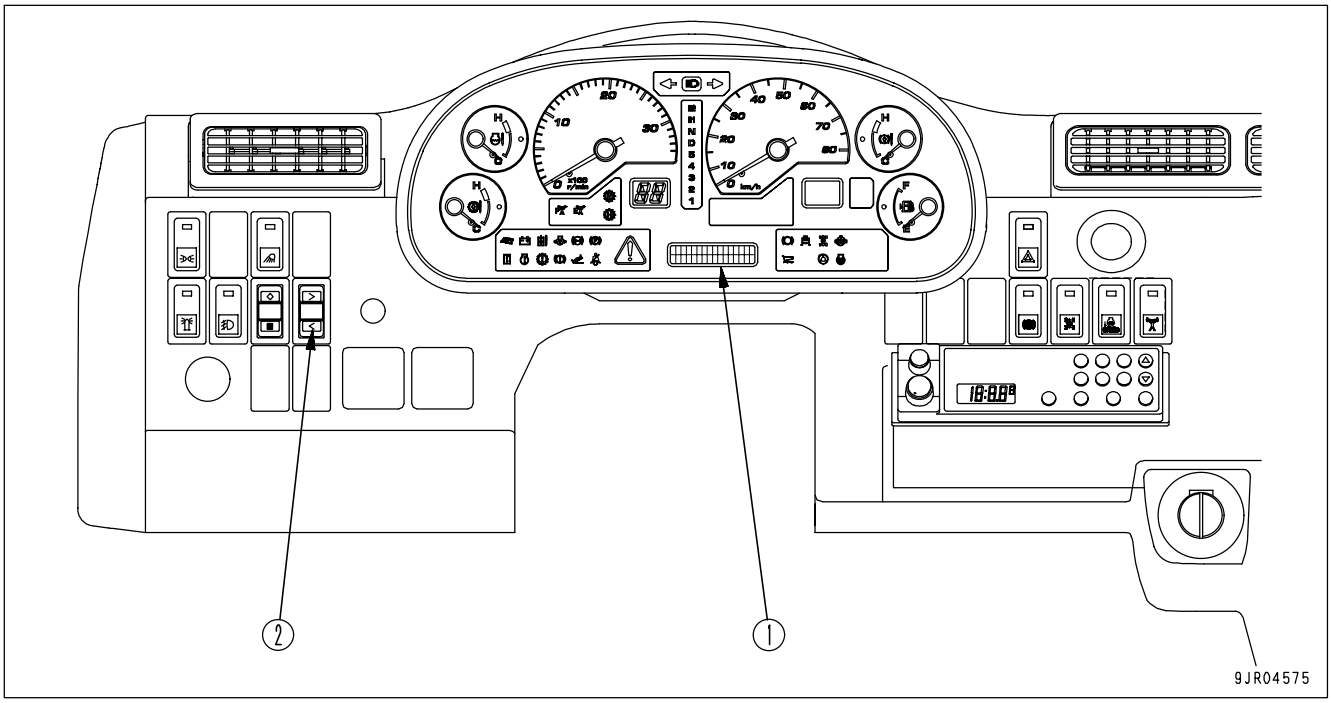
- Wipe off the grease from the hydraulic cylinder rods.
- Add oil and grease at all lubrication points.
- When the machine is stored for a long period, moisture in the air will mix with the oil. Check the oil before and after starting the engine. If there is water in the oil, change all the oil.

PRECAUTIONS BEFORE TRAVELING AFTER LONG-TERM STORAGE

1. Check all the oil and water levels before traveling.
2. When traveling after long-term storage, travel forward at a speed of 10 to 15 km/h (6.2 to 9.3 MPH) for 5 minutes or 1 km to run the machine in, then change to normal travel.

ACTION CODE

If any problem occurs, stop the machine, apply the parking brake and check the service code, then contact your Komatsu distributor for repairs.



If action code "E03" is displayed on the character display (1), or if an action code is displayed after taking the remedy when action code "E02" was displayed, or if "MAINTENANCE" is displayed together with action code "E01", do as follows to check the failure code.

1. If an action code is displayed, pressed the top (>) portion of machine monitor mode selector switch (2) and check the failure code. The failure code is displayed on character display (1).
2. Press the top (>) portion of machine monitor mode selector switch (2) again. The service meter and odometer will be displayed for several seconds, and the screen will then return to the action code screen.
   If more than one failure has occurred, the next failure code is displayed.
3. Check the failure code, then contact your Komatsu distributor for repairs.

REMARK

- The 6-digit code displayed on the left of the line at the top of the character display is the failure code.
- The code displayed at the right side of the failure code shows the controller that detected the failure code.
  MON: Machine monitor
  TM: Transmission controller
  ENG: Engine controller
  BK: Retarder controller
- The line at the bottom of the character display shows the system where the failure was generated.

USE OF FUEL, COOLANT AND LUBRICANTS ACCORDING TO AMBIENT TEMPERATURE

Reservoir	Fluid Type	Ambient Temperature, degrees Celsius -22 -4 14 32 50 68 86 104 122 °F -30 -20 -10 0 10 20 30 40 50 ℃	Recommended Komatsu Fluids
Engine oil pan	Engine oil	(Note.1)	Komatsu EOS0W30
		(Note.1)	Komatsu EOS5W40
			Komatsu EO10W30DH
			Komatsu EO15W40DH
			Komatsu EO30DH
Transmission Case (incl. brake oil tank)	Power train oil (Note.2)		TO10
Hydraulic tank	Power train oil		TO10
	Hydraulic oil		HO46-HM HO-MVK
Front suspension Rear suspension	Hydraulic oil		HO-MVK
Front differential case Center differential case Rear differential case Front final drive case Center final drive case Rear final drive case	Axle oil		AXO80
Grease fitting	Hyper grease (Note.3)		G2-T, G2-TE
	Lithium EP grease		G2-LI
Cooling system	Supercoolant AF-NAC (Note.4)		AF-NAC
Fuel tank	Diesel fuel		ASTM Grade No.1-D S15 ASTM Grade No.1-D S500
			ASTM Grade No.2-D S15 ASTM Grade No.2-D S500

- ASTM: American Society of Testing and Material

When deciding the ratio of antifreeze to water, check the lowest temperature in the past, and decide from the mixing table given below.
It is actually better to estimate and temperature about 10°C (18°F) lower when deciding the mixing ratio.
The mixing ratio depends on the ambient temperature, but it should always be a minimum of 30% by volume (antifreeze/total amount of coolant x 100).
The freezing temperature of undiluted antifreeze is -15°C (5°F). Do not store undiluted antifreeze at a temperature of below -15°C (5°F).

Mixing rate of water and antifreeze

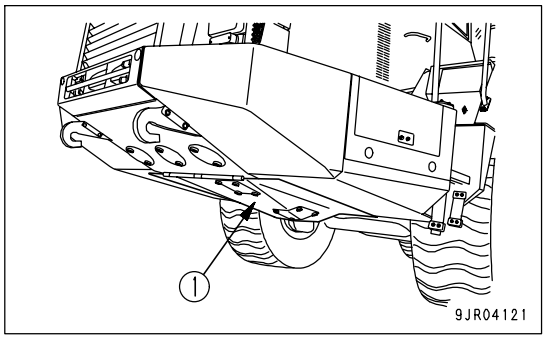
Min. atmospheric temperature	°C	-10	-15	-20	-25	-30
	°F	14	5	-4	-13	-22
Amount of antifreeze	Liters	17.5	20.5	23.5	26.5	29.5
	US gal	4.62	5.42	6.21	7.00	7.79
Amount of water	Liters	41.5	38.5	35.5	32.5	29.5
	US gal	10.97	10.17	9.38	8.59	7.80
Volume ratio	%	30	35	40	45	50

⚠ WARNING

Antifreeze coolant is flammable, so keep it away from flame.
Antifreeze coolant is toxic. When removing the drain plug, be careful not to get water containing antifreeze coolant on you. If it gets in your eyes, flush your eyes with large amount of fresh water and see a doctor at once.

Use antifreeze and appropriate water for diluting (for details, see "COOLANT AND WATER FOR DILUTION (PAGE 4-5)")
We recommend use of an antifreeze density gauge to control the mixing proportions.
Prepare a container whose capacity is larger than the specified coolant volume to catch drained coolant.
Prepare a hose to supply antifreeze coolant and water.

1. Stop the engine.
2. Open the underguard (1) of the engine and take out coolant drain hoses (3 pieces).



3. Turn and close valve (2) of the corrosion resistor.