Operation & Maintenance Manual

EENAM03882

HM300-5E0

ARTICULATED DUMP TRUCK

SERIAL NUMBERS
HM300-5E0 - 20053 and up

WARNING

Unsafe use of this machine may cause serious injury or death. Operators and maintenance personnel must read this manual before operating or maintaining this machine. This manual should be kept inside the cab for reference and periodically reviewed by all personnel who will come into contact with the machine.

ORIGINAL INSTRUCTIONS

KOMATSU

FOREWORD

⚠ WARNING

Komatsu recommends that any service parts used for maintenance, repair or replacement of emission control systems be genuine new Komatsu or Komatsu approved rebuilt parts or assemblies or others parts of equivalent quality, and that the engine be serviced by an authorized Komatsu distributor. Failure to follow these recommendations could result in ineffective service, damage to the product or safety risks (including personal injury or death).

CONTENTS

READ THIS MANUAL

This manual gives details of the operation and methods of inspection and maintenance for this machine that must be obeyed in order to use the machine safely. Most accidents are caused by the failure to follow fundamental safety rules for the operation and maintenance of machines.

Read, understand and follow all precautions and warnings in this manual and on the machine before performing operation and maintenance. Failure to do so may result in serious injury or death.

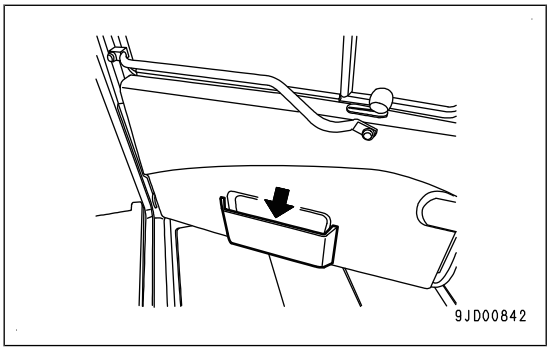
Komatsu cannot predict every circumstance that might involve a potential hazard when the machine is used. Therefore, the safety messages in this manual and on the machine may not include all possible safety precautions.

If you perform any operation, inspection, or maintenance under conditions that are not described in this manual, understand that it is your responsibility to take the necessary precautions to ensure safety. In no event should you or others engage in the prohibited uses or actions described in this manual. It is dangerous to perform improper operation and maintenance of the machine. It may cause serious injury or death.

If you sell the machine, be sure to give this manual to the new owner together with the machine.

Always keep this Operation and Maintenance Manual in the indicated location so that all relevant personnel can read it at any time.

Keep the Operation and Maintenance Manual inside of the left door.



If this manual is lost or damaged, contact Komatsu or your Komatsu distributor and tell them about the machine model name and the serial No. immediately to arrange for its replacement.

For details regarding the machine model name and the serial No., see the machine serial No. plate. In order to arrange the proper Operation and Maintenance Manual, you will need to provide the machine model name and the serial No.

This manual uses the International System of Units (SI) for units of measurement. For reference, units that have been used in the past are given in { }.

The explanations, values, and illustrations in this manual have been prepared based on the latest information available as of the date of its publication. Continuing improvements in the design of this machine may lead to additional changes that are not reflected in this manual. If there is any question or suggestion, consult your Komatsu distributor.

The numbers in the illustrations correspond to the numbers in ( ) in the text. (Example: 1 → (1))

Komatsu delivers machines that comply with all applicable regulations and standards of the country to which it has been shipped. If this machine has been purchased in another country, it may lack certain safety devices and specifications that are necessary for use in your country. If there is any question about whether your product complies with the applicable standards and regulations of your country, consult your Komatsu distributor before operating the machine.

Some of Komatsu machines have the software based on the Open Source Software (OSS).

By the license of the OSS, Komatsu publishes the license information of the software to be used in the website that follows.

https://www.komatsu.jp/en/ProductInfo/opensoft/

SAFETY INFORMATION

Make sure to obey the precaution and warning indications in the Operation and Maintenance Manual and on the machine to avoid personal injury in operation, inspection, or maintenance, and for the safety of the personnel around the machine.

In the Operation and Maintenance Manual or on the machine, the safety alert symbols are used to identify important messages.

Safety alert symbols show the risk of accidents that can cause serious injury or death. Obey the instruction of the safety alert symbol.

The signal words that follow are used to identify important safety messages in the Operation and Maintenance Manual or on the machine.

⚠ DANGER

Shows a very dangerous situation which, if not avoided, will result in serious injury or death.

⚠ WARNING

Shows a possibly dangerous situation which, if not avoided, can result in serious injury or death.

⚠ CAUTION

Shows a possibly dangerous situation which, if not avoided, can result in injury, or damage to the machine or the surrounding area.

The signal words that follow are used to tell you there is a possible danger that can cause damage to the machine.

NOTICE

Failure to follow the precautions results in damage to the machine or a personal injury or death.

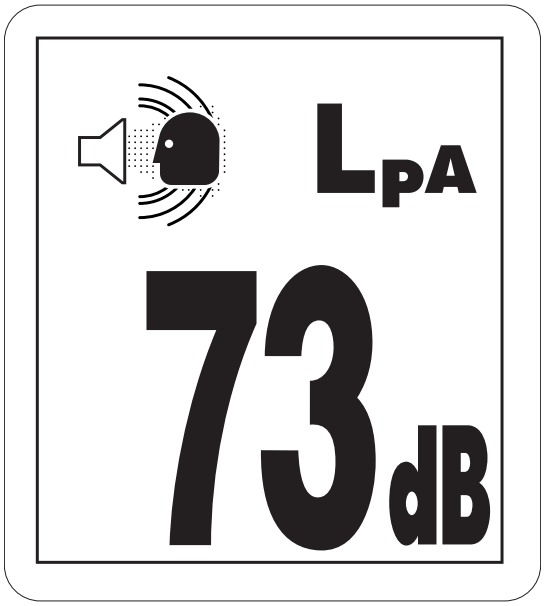
REMARK

Shows useful information.

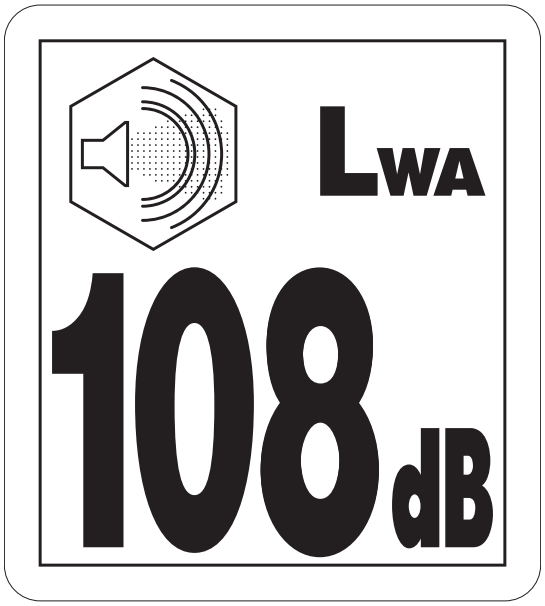
NOISE

Two labels indicating the machine noise level are affixed on the machine.

- Sound pressure level at the operator's station, measured according to ISO 6396 (Dynamic test method, simulated working cycle).
  The maximum value of the standard deviation of the measured time-averaged A-weighted emission sound pressure level at the operator's position is 2.5dB, in accordance with ISO 11201



- Sound power level emitted by the machine, measured according to ISO 6395 (Dynamic test method, simulated working cycle). This is the guaranteed value as specified in European directive 2000/14/EC.
  This value includes an uncertainty of 2 dB.



VIBRATION LEVELS

When used for its intended purpose, levels of vibration for the earth-moving machine transmitted from the operator's seat are lower than or equal to the tested vibrations for the relative machinery class in compliance with ISO 7096.

The actual acceleration value for the hands and arms is less than or equal to 2.5 m/s^2 , the uncertainty for this value is 0.78 m/s^2 according to EN12096:1997.

The actual acceleration value for the body is less than or equal to 0.5 m/s^2, the uncertainty for this value is 0.28 m/s^2 according to EN12096:1997.

These values were determined using a representative machine and measured during the typical operating condition indicated below according to the measurement procedures that are defined in the standards ISO 2631/1 and ISO 5349.

VIBRATION - OPERATING CONDITION

(Rigid/Articulate dumper:) Work cycle (including waiting, travelling, loading, travelling with load, unloading and travelling without load)

GUIDE TO REDUCE VIBRATION LEVELS ON MACHINE

The following guides can help an operator of this machine to reduce the whole body vibration levels:

1. Use the correct equipment and attachments.
2. Maintain the machine according to this manual
   - Tire pressures (for wheeled machines), tension of crawler (for crawler machines)
   - Brake and steering systems
   - Controls, hydraulic system and linkages
3. Keep the terrain where the machine is working and travelling in good condition
   - Remove any large rocks or obstacles
   - Fill any ditches and holes
   - Site manager should provide machine operators with machine and schedule time to maintain terrain conditions
4. Use a seat that meets ISO 7096 and keep the seat maintained and adjusted
   - Adjust the seat and suspension for the weight and size of the operator
   - Wear seat belt
   - Inspect and maintain the seat suspension and adjustment mechanisms
5. Steer, brake, accelerate, shift gears (for wheeled machines), and move the attachment levers and pedals slowly so that the machine moves smoothly
6. Adjust the machine speed and travel path to minimize the vibration level
   - When pushing with bucket or blade, avoid sudden loading; load gradually
   - Drive around obstacles and rough terrain conditions
   - Slow down when it is necessary to go over rough terrain
   - Make the curve radius of travelling path as large as possible
   - Travel at low speed when travelling around sharp curves
7. Minimize vibrations for long work cycle or long distance travelling
   - Reduce speed to prevent bounce
   - Transport machines long distances between worksites
8. The following guidelines can be effective to minimize risks of low back pain
   - Operate the machine only when you are in good health
   - Provide breaks to reduce long periods of sitting in the same posture

- Do not jump down from the cab or machine
- Do not repeatedly handle and lift loads

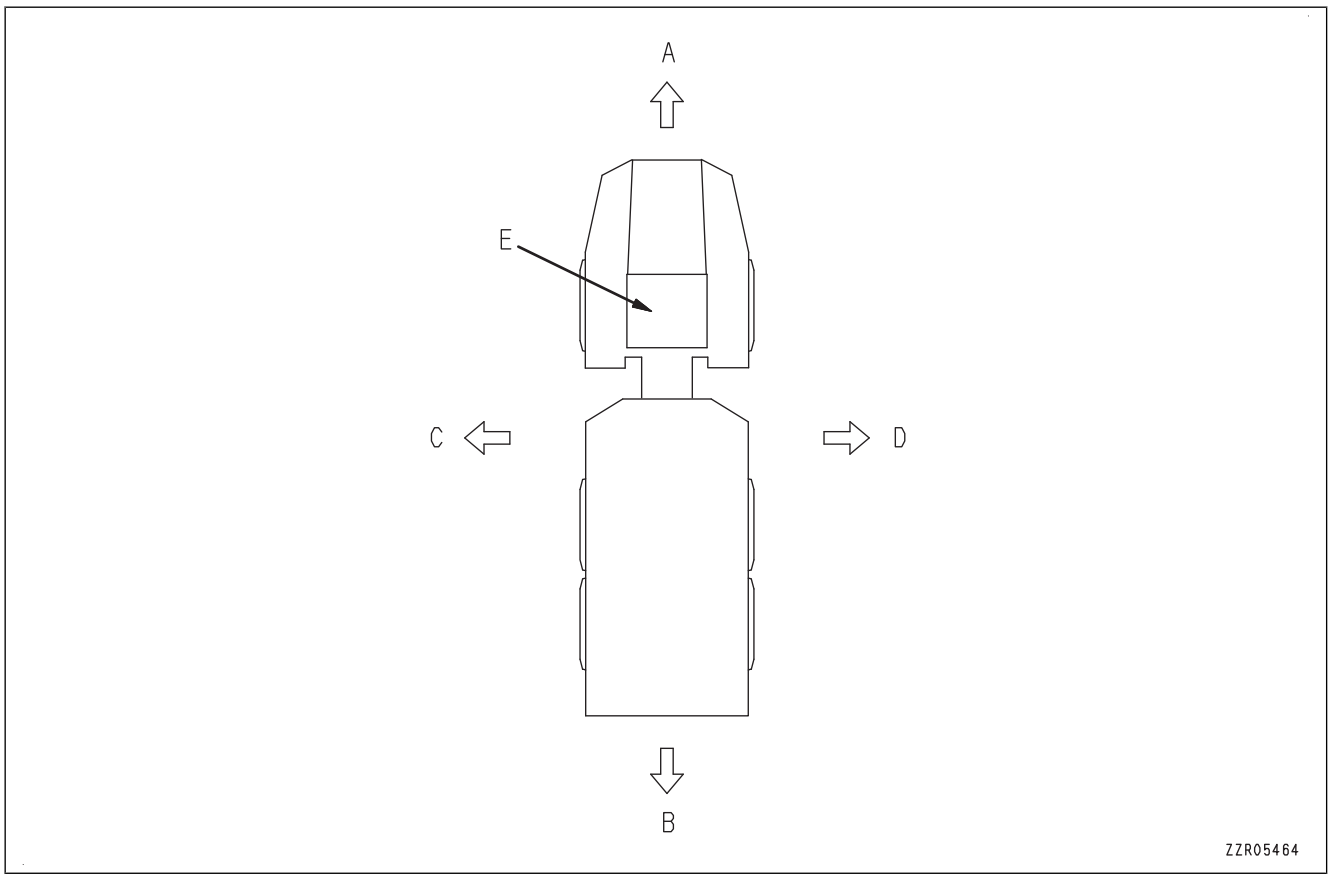
INTRODUCTION

MAIN USE OF MACHINE

This Komatsu machine is designed to be used mainly for the following work:

Traveling with a load

DIRECTIONS OF MACHINE



(A) Front

(B) Rear

(C) Left

(D) Right

(E) Operator's seat

In this manual, the directions of the machine (front, rear, left, right) are determined according to the view from the operator's seat in the direction of travel (front) of the machine.

VISIBILITY FROM OPERATOR'S SEAT

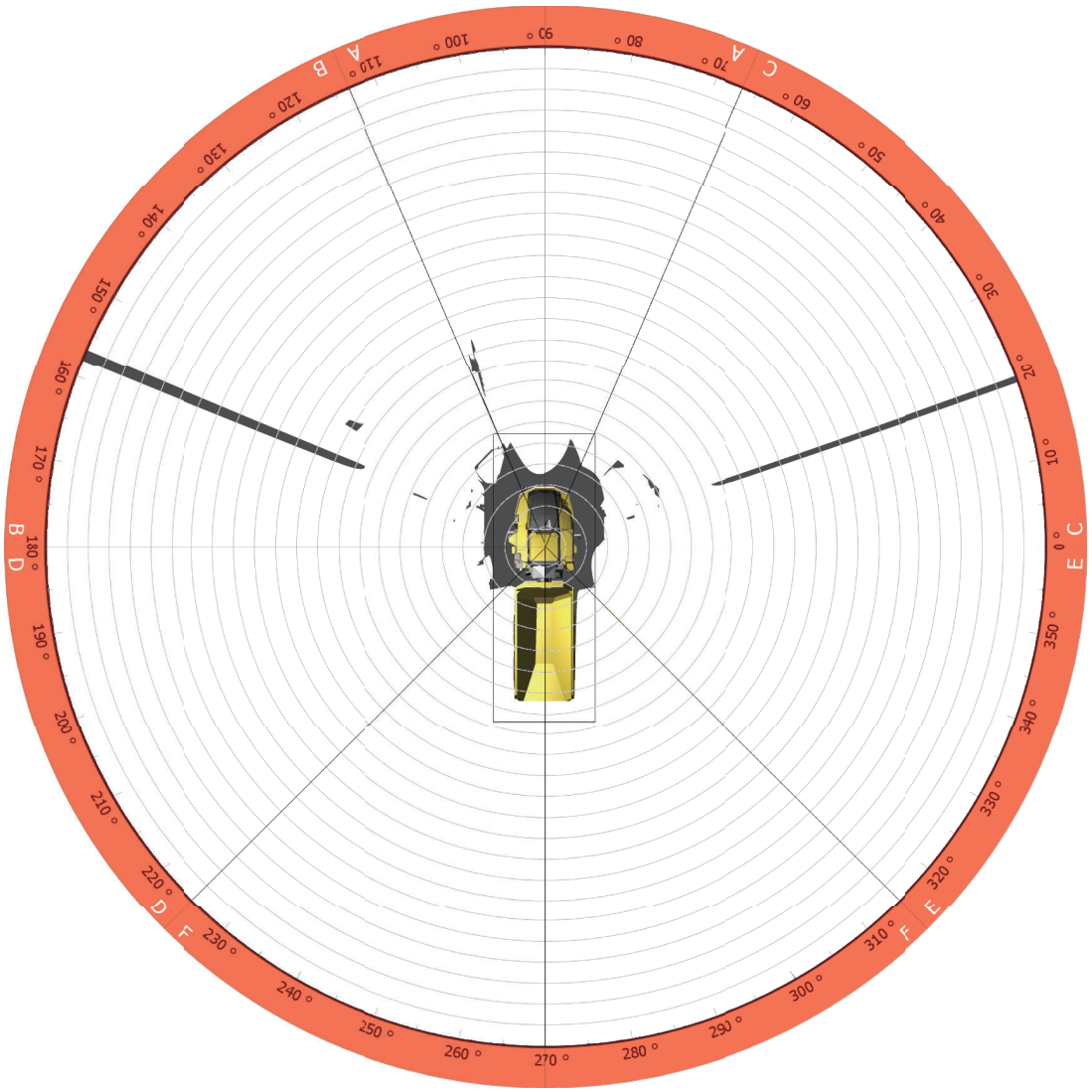
This machine performs risk-aseccment based on the visibility standard(ISO5006), and secures necessary visibility.

To assist with job site organisation during use of this machine, a visibility map is provided that shows an approximation of any masking to visibility between the 1 m rectangular boundary and the 24 m test circle.

Based upon the information supplied in the visibility map the site operator may wish to provide additional measures where it is felt necessary or provide additional instruction to personnel.

Specification of visibility map

- Machine Posture : In accordance with ISO5006
- Evaluation height : 1.2 m above the ground
- Scale-interval of the circles is 1 m.



ENGINE TECHNOLOGY TO CONFORM EXHAUST GAS EMISSION

About Engine Technology

This engine technology combines a Komatsu Diesel Particulate Filter (KDPF) and Komatsu's Urea Selective Catalytic Reduction (SCR) to conform EU Stage V emission regulation in the European Union. For the machines which have the engines with EU+EPA/CARB dual labelling name-plate, this engine technology also conforms to EPA Tier4 Final emission regulation in North America.

- Komatsu Diesel Particulate Filter (KDPF): A device which catches diesel particular matter or soot in the exhaust gas to clean exhaust gas. If soot is accumulated to a certain level in the filter, a purification step to burn the soot is done automatically to keep the filtering performance of KDPF high.
- Komatsu's Urea SCR system: A device which decomposes the poisonous nitrogen oxides (NOx) mixed in the exhaust gas into harmless nitrogen and water. When the reagent (Diesel Exhaust Fluid) is sprayed into the exhaust gas, a reaction occurs between the nitrogen oxides and ammonia discharged from the urea solution and the nitrogen oxides are decomposed into nitrogen and water.

REMARK

The catalyzer to clean the exhaust gas absorbs some materials. If the temperature of catalyzer rises immediately after the start or during the aftertreatment devices regeneration, the absorbed materials could come off and be discharged. At this time, the exhaust gas can has a color temporarily.

About Diesel Exhaust Fluid (DEF)

Diesel Exhaust Fluid is the reagent for the SCR system.

DEF is the abbreviation for Diesel Exhaust Fluid, and is represented as DEF throughout this manual.

DEF is a colorless transparent and aqueous urea solution made with 32.5 % urea (AUS32) and 67.5 % deionized water. Urea as main constituent is a material which is used for cosmetics, medical and pharmaceutical products, and fertilizer, etc.

Commercial DEF, commonly referred to as AdBlue® in the European Union, that quality standards are kept by DIN70070 and ISO 22241-1, to be used.

AdBlue® is a registered trade-mark of VDA (Verband der Automobilindustrie e.V.: Automobile Association of Germany).

When purchasing DEF in North America in the case of the Engine with EU+EPA/CARB dual labelling name-plate :

Commercial DEF, that is API (American Petroleum Institute) certified and satisfies the quality standards are based on ISO 22241-1. The certified DEF has the API DIESEL EXHAUST FLUID Certification Mark shown as follows. Look for the API DEF Certification Mark when you purchase DEF.

API Diesel Exhaust Fluid Certification Mark is the trademark of API (American Petroleum Institute).

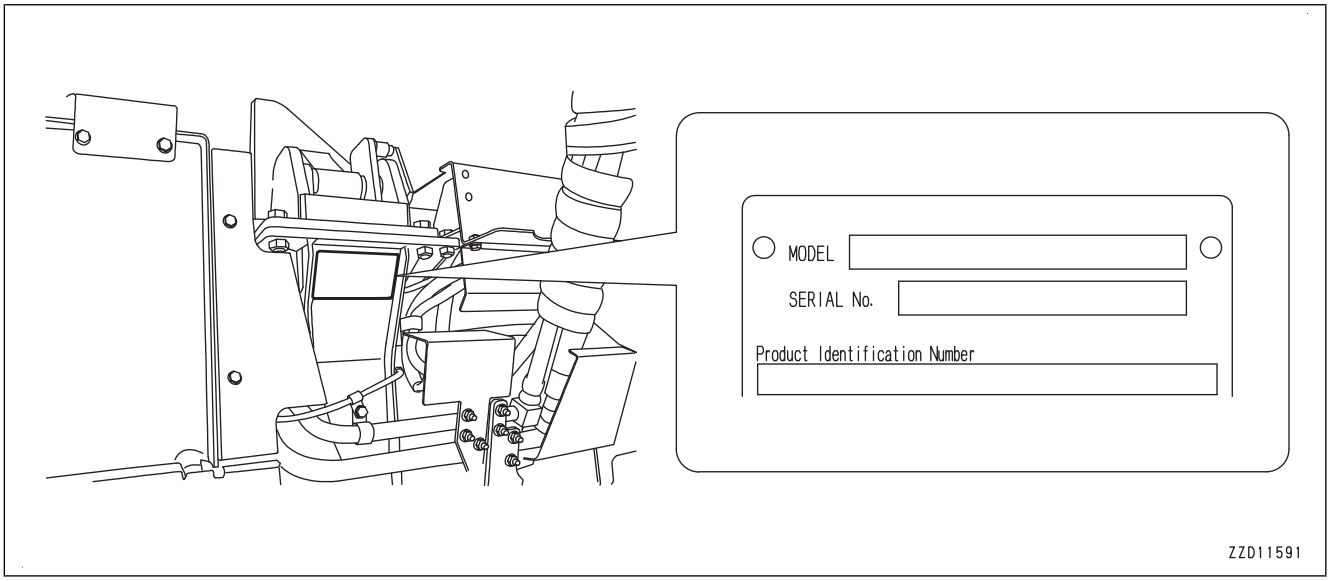
PRODUCT INFORMATION

When requesting service or ordering replacement parts, inform your Komatsu distributor of the following items.

LOCATION OF PRODUCT IDENTIFICATION NUMBER (PIN)/MACHINE SERIAL NO. PLATE

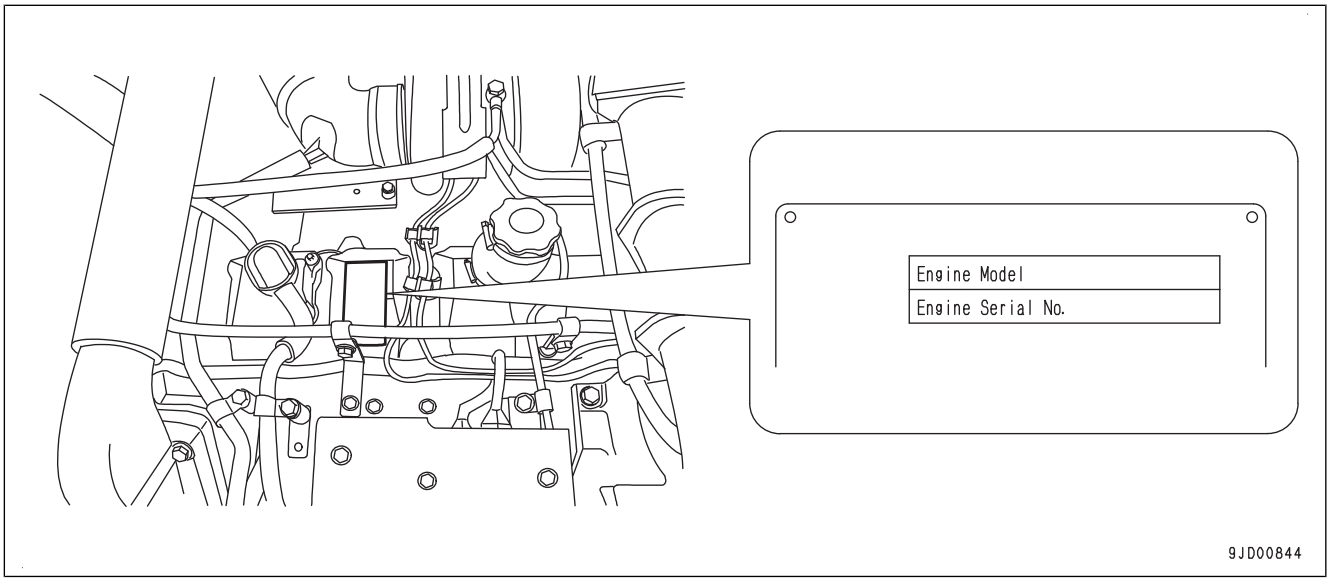
This is on the rear left side of the operator's cab.

The design of the nameplate differs according to the district.



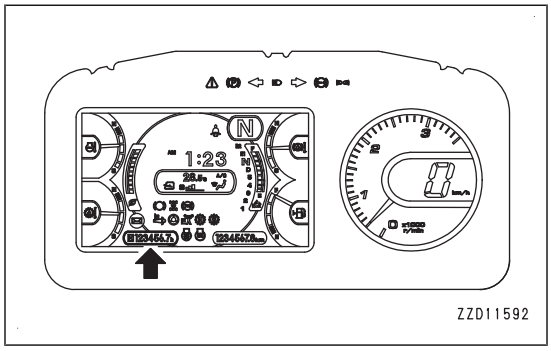
LOCATION OF ENGINE NUMBER PLATE

The is on the engine cylinder head.



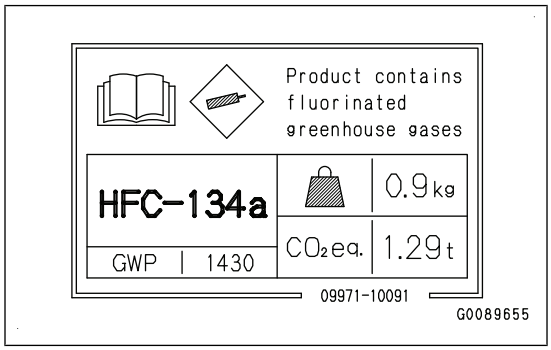
SERVICE METER LOCATION

In the initial state, it is on the left bottom of the machine monitor.



FLUORINATED GREENHOUSE GASES

Product contains fluorinated greenhouse gases.

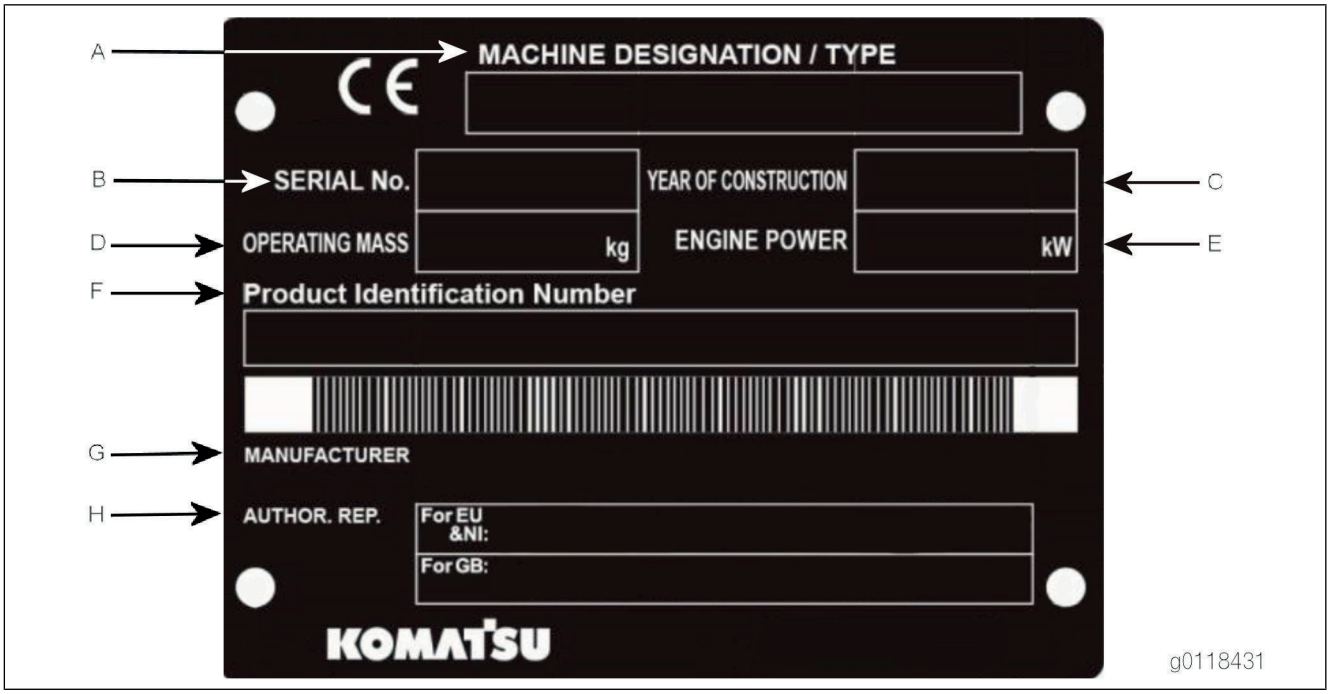


YOUR MACHINE SERIAL NUMBERS AND DISTRIBUTOR

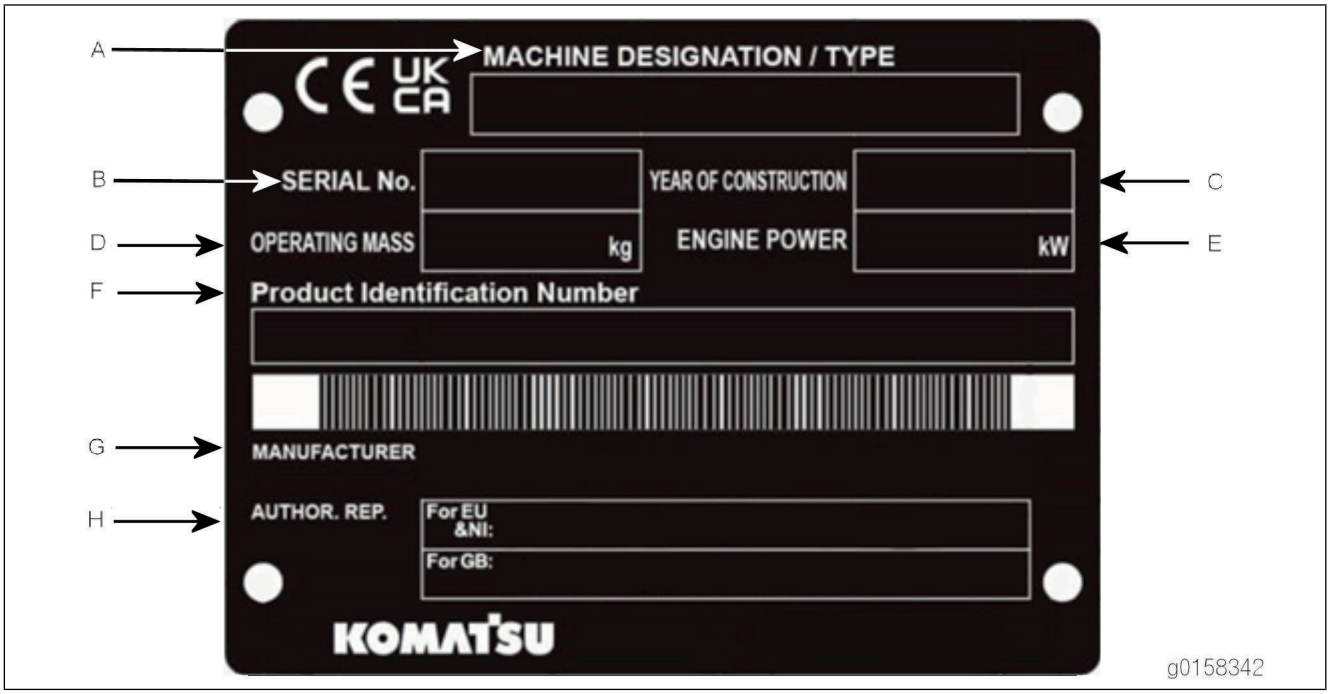
Machine serial No.	
Engine serial No.	
Product identification number (PIN)	
Manufacturers name	KOMATSU LTD
Address	2-3-6 Akasaka Minato-ku, Tokyo 107-8414 Japan
Authorised representative for EU & NI	KOMATSU EUROPE INT.
Addres	Mechelsesteenweg 586 B-1800 Vilvoorde Belgium
Authorised representative for GB	N/A
Phone/Fax	
Service personnel	

SERIAL PLATE

Machines that are CE marked have the serial plate shown below.



Machines that are CE and UKCA marked have the serial plate shown below.



A	MACHINE DESIGNATION/TYPE	E	ENGINE POWER
B	SERIAL NUMBER	F	PRODUCT IDENTIFICATION NUMBER
C	YEAR OF CONSTRUCTION	G	MANUFACTURER
D	WEIGHT	H	AUTHORISED REPRESENTATIVE

DECLARATION OF CONFORMITY

The Manufacturer/Authorised representative:

The Manufacturer:	Authorised representative:	
	for EU & NI:	for GB:
KOMATSU LTD. 2-3-6 Akasaka Minato-ku, Tokyo 107-8414 Japan	KOMATSU EUROPE INT. Mechelsesteenweg 586 B-1800 Vilvoorde Belgium	N/A

Declares that this machine:

HM300-5E0

Fulfils all the relevant provisions of the following EC Directives:

Machine Directive	2006/42/EC
Electro Magnetic Compatibility Directive	2014/30/EU
Outdoor Noise Directive	2000/14/EC amended by 2005/88/EC
Radio Equipment Directive	2014/53/EU

And, in the case where the machine bears the UKCA mark, fulfils all the relevant provisions of the following UK Regulations:

Supply of Machinery (Safety) Regulations 2008	UK SI 2008 No. 1597 and amendments
Electromagnetic Compatibility Regulations 2016	UK SI 2016 No. 1091 and amendments
Noise and Emission in the Environment by Equipment for Use Outdoors Regulations 2001	UK SI 2001 No. 1701 and amendments
Radio Equipment Regulations 2017	UK SI 2017 No. 1206 amendments

ABBREVIATION LIST

- This list of abbreviations includes the abbreviations for functions, devices, and parts which are used in the operation and maintenance manual.
- Commonly used abbreviations are not included.
- Special abbreviations which are not shown frequently are included in the text as additional information.

List of abbreviations used in the text

Abbreviation	Actual word spelled out	Explanation
ABS	Antilock Brake System	ABS is a function that prevents the lock-up of the tires when the brakes are applied.
AISS	Automatic Idling Setting System	AISS is a function that automatically adjusts the idle speed in response to the condition of the machine.
API	American Petroleum Institute	API is the abbreviation for American Petroleum Institute.
ARAC	Automatic Retarder, Accelerator Control	ARAC is a function that automatically activates the retarder on a downhill.
ARSC	Automatic Retarder Speed Control	ARSC is a function that automatically activates the retarder on a downhill to keep the travel speed constant on a downhill.
CAN	Controller Area Network	CAN is one of networks that communicate between the machine monitor and controllers.
DEF	Diesel Exhaust Fluid	DEF is a urea solution that is used for the SCR system.
EGR	Exhaust Gas Recirculation	EGR is a function that recirculates part of exhaust gas to the intake side to control NOx emissions.
FOPS	Falling Object Protective Structure	FOPS is a structure that protects operators from falling objects.
GNSS	Global Navigation Satellite System	GNSS is a general term for satellite positioning systems.
GPS	Global Positioning System	GPS is one of satellite positioning systems.
KCCV	KOMATSU Closed Crankcase Ventilation	KCCV is a function that isolates oil from blowby gas in the engine and returns the blowby gas to the intake side.
KDOC	KOMATSU Diesel Oxidation Catalyst	KDOC is a device that purifies exhaust gas.
KDPF	KOMATSU Diesel Particulate Filter	KDPF is a device that is composed of the KCSF and KDOC, and catches soot (Particulate Matter, PM) in exhaust gas.
KOWA	Komatsu Oil and Wear Analysis	KOWA is a preventive maintenance service that collects and analyzes oil in the machine at the specified interval so that wear of the machine and other problems can be found at short time.
KTCS	KOMATSU Traction Control System	KTCS is a function that prevents tire slip to keep the driving force.
PPC	Proportional Pressure Control	PPC is a function that controls the pressure of the hydraulic circuit in proportion to the degree of the lever operation.
PTO	Power Take Off	PTO is a mechanism that takes out the engine power.
ROPS	Roll-Over Protective Structure	ROPS is a structure that protects operators from falling objects or in the event of a machine roll-over.
SCR	Selective Catalytic Reduction	SCR is a device that purifies nitrogen oxides (NOx) in exhaust gas from the engine.

SAFETY

⚠ WARNING

Please read and make sure that you fully understand the precautions described in this manual and the safety labels on the machine. When operating or servicing the machine, always follow these precautions strictly.

SAFETY LABELS

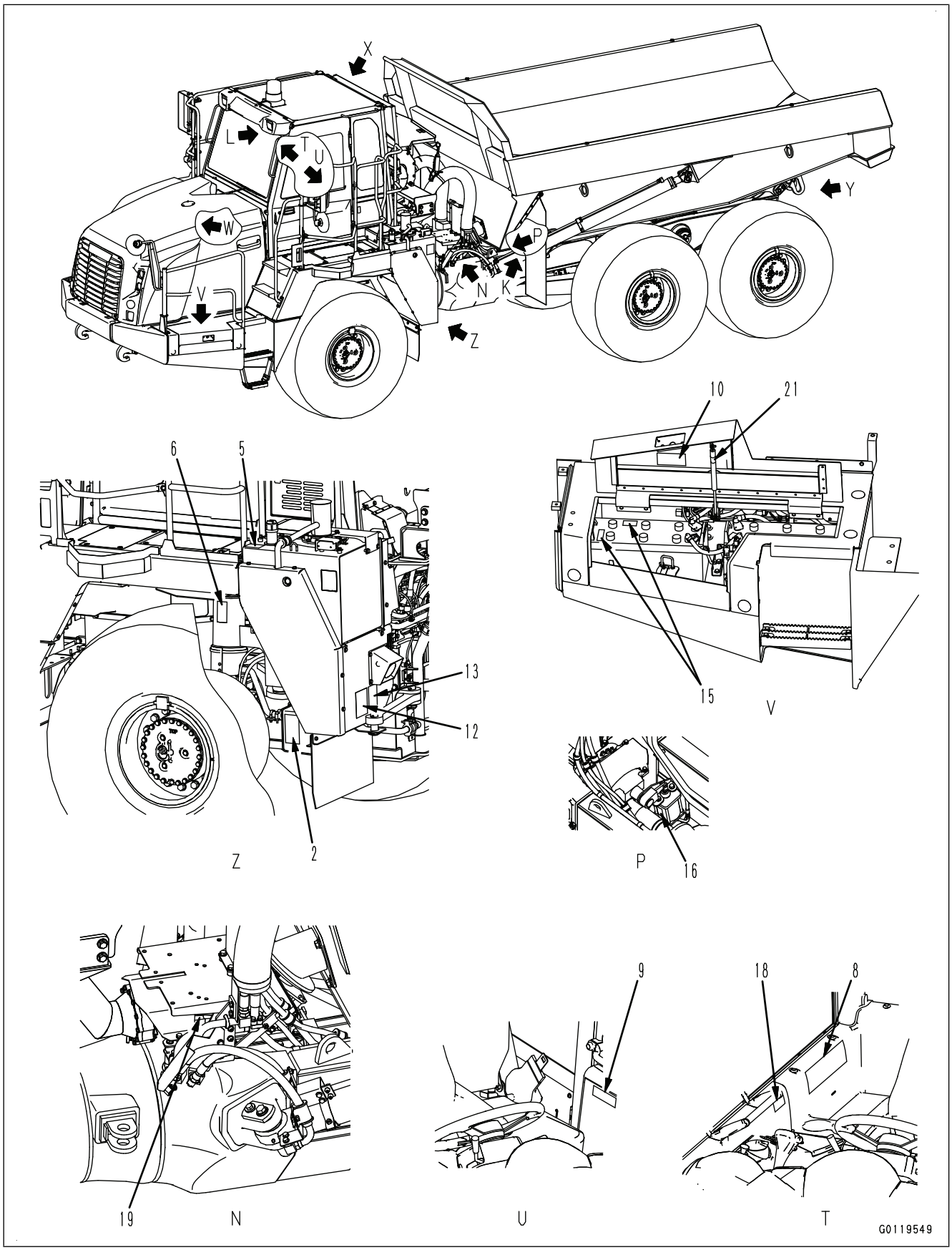
⚠ WARNING

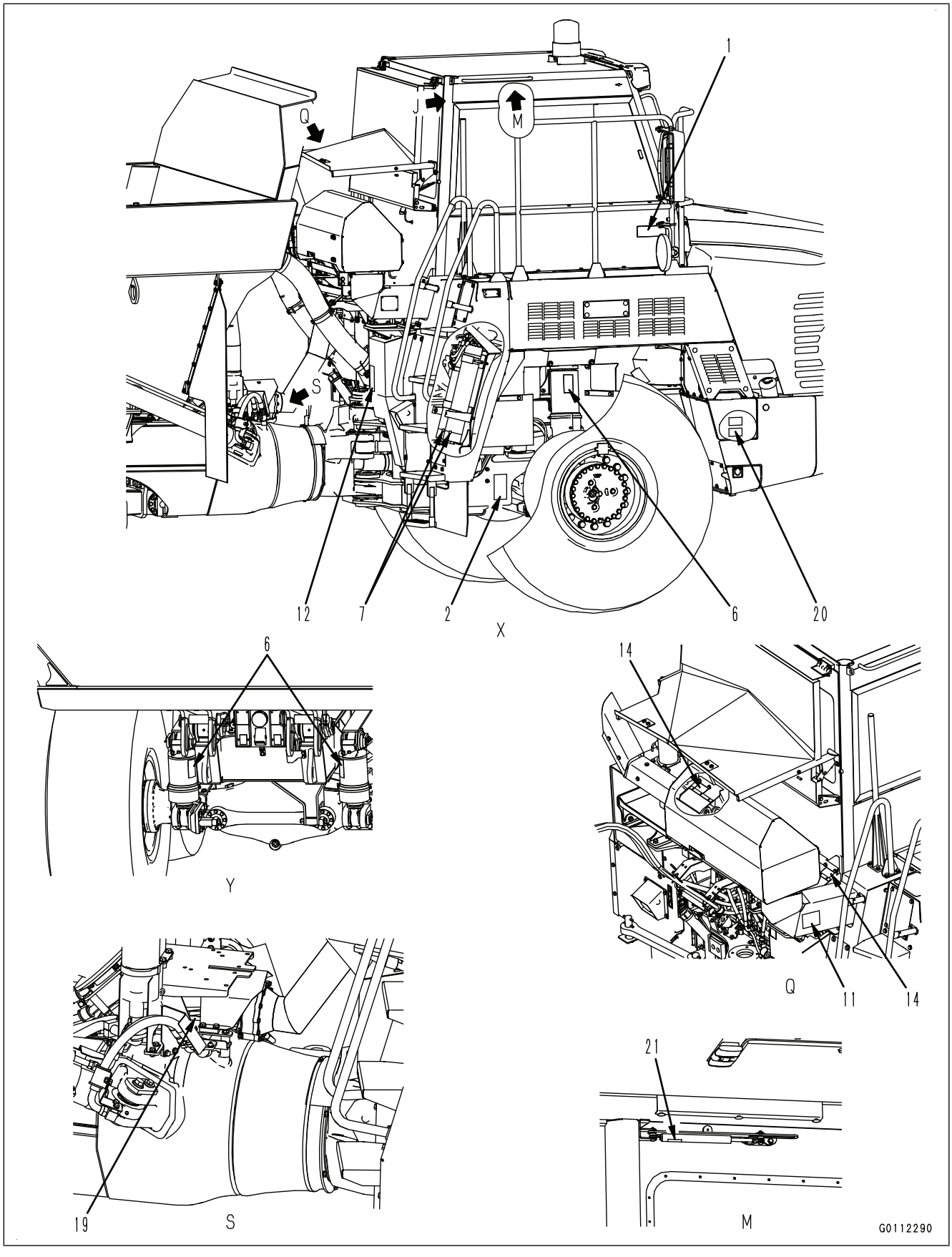
Be sure that you fully understand the correct position, content and how to avoid a danger shown in the safety labels.

Handle the warning signs and safety labels used on this machine as follows.

- Always keep the safety labels clean so that you can read it properly. When cleaning the safety labels, do not use organic solvents or gasoline. These may cause the labels to peel off.
- If the safety labels are damaged, lost, or cannot be read properly, replace them with new ones. For details of the part numbers for the safety labels, see this manual or the actual label, and place an order to your Komatsu distributor.
- There are also other labels in addition to the warning signs and safety labels. Handle those labels in the same way.

LOCATION OF SAFETY LABELS

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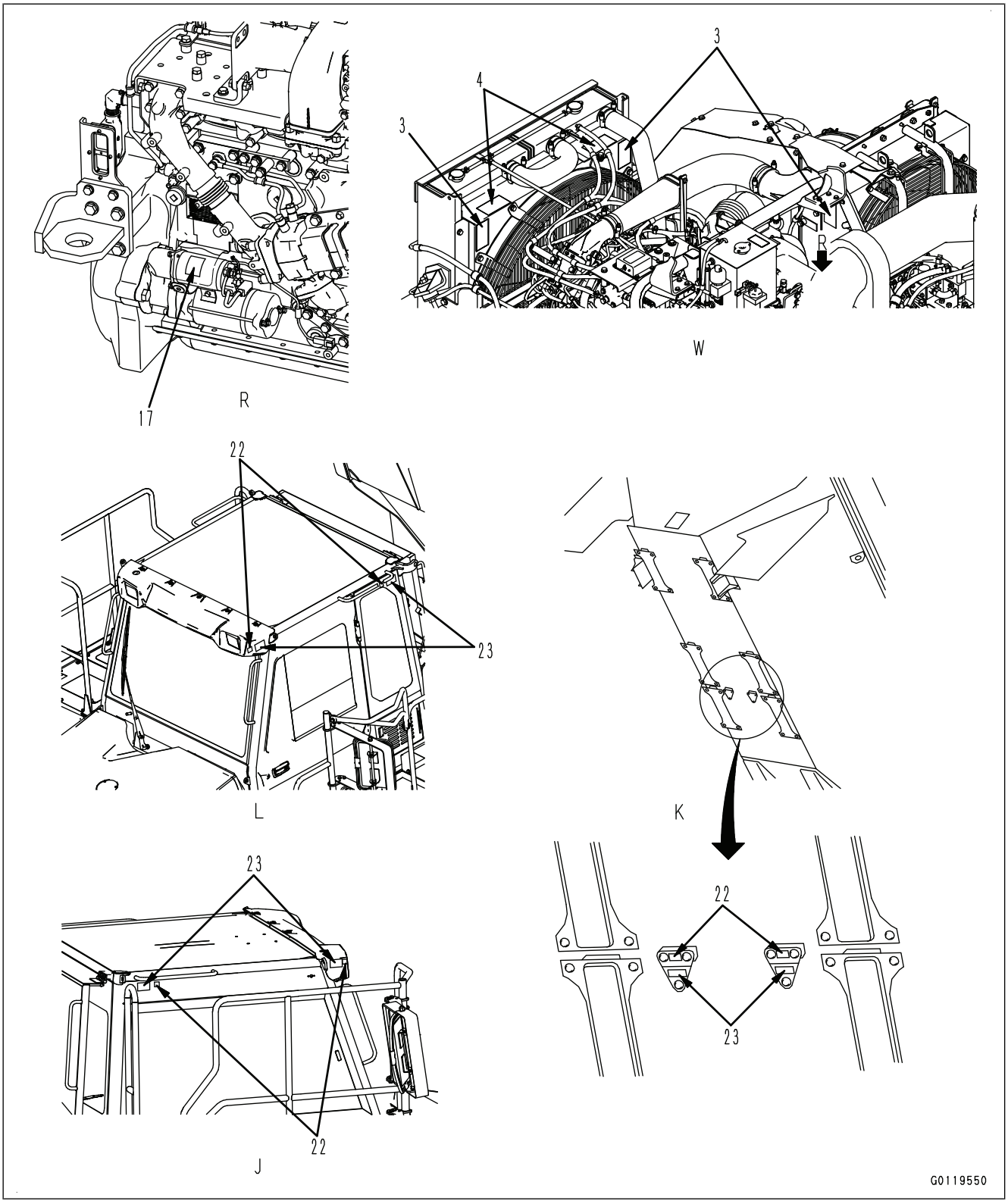


(1) Caution for modification of ROPS/FOPS

(2) Caution for rotating parts

(3) Caution when checking engine room

(4) Caution when releasing radiator cap

(5) Caution when opening hydraulic tank cap

(6) Caution for handling suspension

(7) Caution for handling accumulator

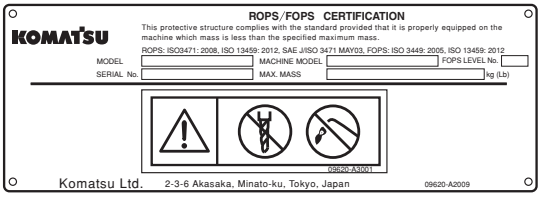
(8) Caution for electric cables, caution against falling when performing inspection and maintenance of dump body, caution for performing daily inspection, caution when leaving operator's seat and when stopping engine, caution for retarder oil temperature

(9) Caution before operating, caution when traveling in reverse, caution for operating hoist control lever

(10) Caution for handling battery cable
(11) Caution for hot exhaust pipe
(12) Prohibition of trespassing
(13) Caution for articulation lock
(14) Caution against falling
(15) Caution for handling battery
(16) Caution for parking brake
(17) Prohibition of start by short-circuiting (This plate is fixed to the starting motor.)
(18) Caution for blast site (only when equipped with KOMTRAX)
(19) Caution for high temperature (only for the machine with dump body heating specifications)
(20) Caution for handling DEF
(21) Caution for handling gas spring
(22) Prohibition of lifting operation
(23) Anchor point for tie-off

CONTENTS OF SAFETY LABELS

Caution for modification of ROPS/FOPS



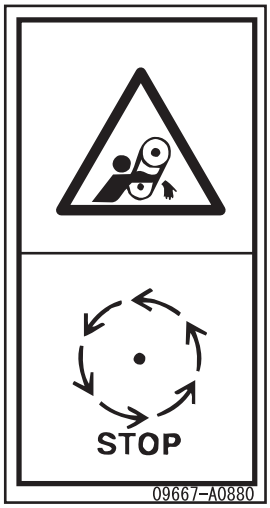
“09620–A2009”“09620–A3001”

- If any modification is applied to the ROPS or FOPS, it may affect the strength and may not comply with the standard. Do not drill, cut or weld on the ROPS or FOPS structure. Any modification is prohibited.
- ROPS or FOPS may provide less protection if it has been structurally damaged or involved roll-over. Consult Komatsu Distributor in that case.
- Always wear seat belt when moving.

Caution for rotating parts

“09667–A0880”

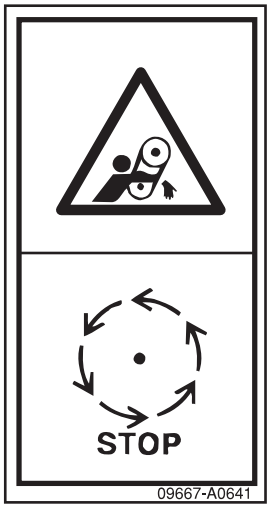
- Sign indicates a hazard of rotating parts, such as belt.
- Turn off before inspection and maintenance.



Caution when checking engine room

“09667–A0641”

- Sign indicates a hazard of rotating parts, such as belt.
- Turn off before inspection and maintenance.



Caution when releasing radiator cap

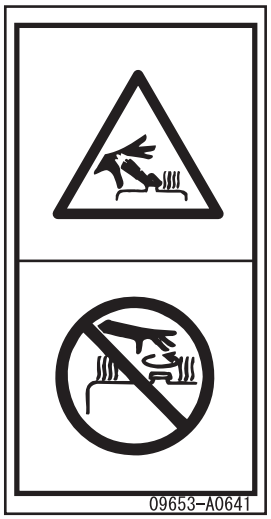
“09653–A0641”

- Sign indicates a burn hazard from spurting hot water or oil if radiator or hydraulic tank is uncapped while hot.
- Allow radiator or hydraulic tank to cool before removing cap.

Caution when opening hydraulic tank cap

“09653–A0641”

- Sign indicates a burn hazard from spurting hot water or oil if radiator or hydraulic tank is uncapped while hot.
- Allow radiator or hydraulic tank to cool before removing cap.



Caution for handling suspension

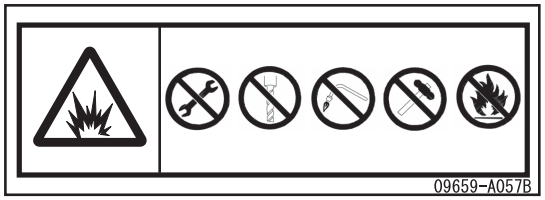
“09659–A0641”

- There is the hazard of explosion causing injury.
- Do not disassemble the suspension, make holes in it, weld it, cut it, hit it, roll it or bring it near flame.

Caution for handling accumulator

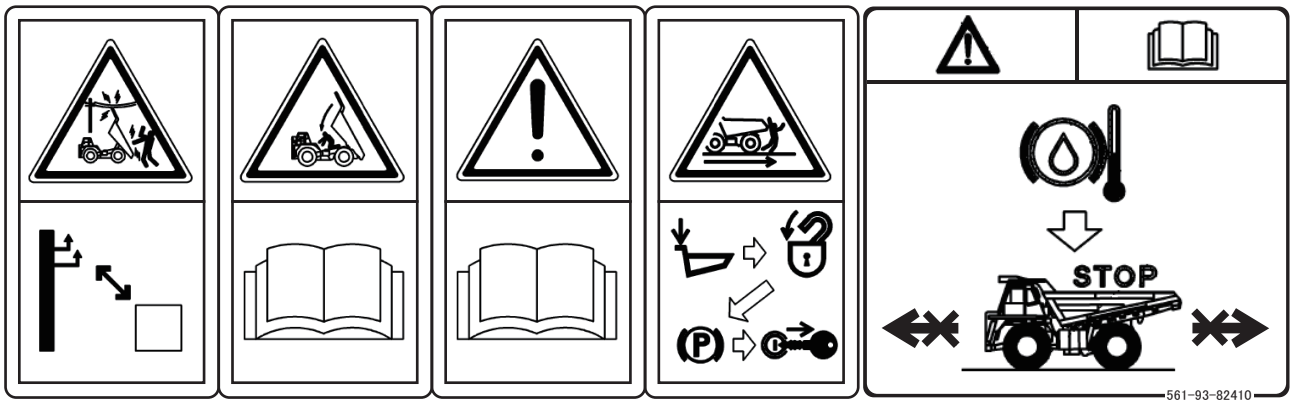
“09659–A057B”

- There is the hazard of explosion causing injury.
- Do not disassemble the accumulator, make holes in it, weld it, cut it, hit it, roll it or bring it near flame.



Caution for electric cables, caution against falling when performing inspection and maintenance of dump body, caution for performing daily inspection, caution when leaving operator's seat and when stopping engine, caution for retarder oil temperature

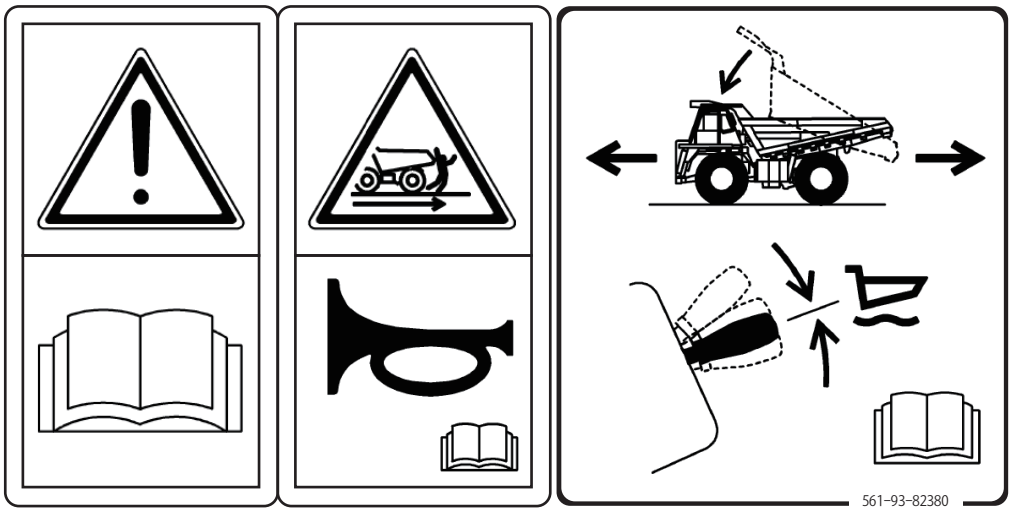
“561–93–82410”



- If the machine comes too close to electric cables, there is danger of electrocution. Always keep a safe distance from electric cables.
- There is danger that the dump body may come down. Before carrying out inspection or maintenance with the dump body raised, always read the Operation and Maintenance Manual and take the correct action.
- Always read the Operation and Maintenance Manual before carrying out operation, maintenance, disassembly, assembly, or transportation of machine.
- When leaving operator seat.
  1. Lower dump body.
  2. Park the machine on level ground.
  3. Stop engine and apply parking brake completely.
  4. Take out the key.
- If the retarder oil temperature caution lamp light up, stop machine immediately.
  Or the brakes will fail, set the shift lever to the N position.
  Run the engine under no load at a mid-range speed, and wait for the lamp to go out.

Caution before operating, caution when traveling in reverse, caution for operating hoist control lever

“561–93–82380”



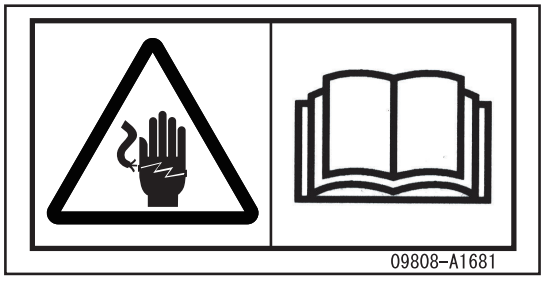
- Always read the Operation and Maintenance Manual before carrying out operation maintenance, disassembly, assembly, or translation of the machine.
- There is danger of service injury or death.
  Do the following before morning machine or its body.
  - Honk horn to alert people nearby.
  - Be sure no one is on near machine.
  - Use spotter if view is obstructed.

  Follow above even if machine equipped with back-up alarm and mirrors.
- Be sure to lower dump body and keep hoist control lever at the float position during travel.

Caution for handling battery cable

“09808–A1681”

- Sign indicates an electric hazard from handling the cable.
- Read manual for safe and proper handling.



Caution for hot exhaust pipe

“09817–A1103”

- Sign indicates a burn hazard from touching heated parts, exhaust pipe and body during or right after operation.
- Never touch when hot.

Prohibition of trespassing

“09162–C0881”

- Sign indicates a crush hazard between the articulating parts of vehicle.
- Keep away from the vehicle when it is moving.

Caution for articulation lock

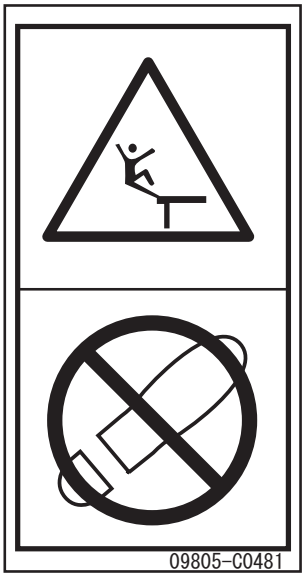
“09161–C0881”

- Sign indicates a crush hazard between the articulating parts of vehicle.
- Lock vehicle with lock bar to avoid movement of the vehicle during maintenance, transportation and traveling.

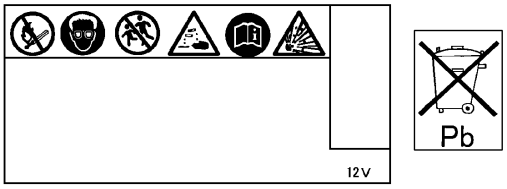
Caution against falling

“09805–C0481”

- There is the hazard of falling.
- Do not step here.



Caution for handling battery



- Never smoke or use any naked flame near the batteries, no sparks.
- Always wear protective eyeglasses when working with batteries.
- Keep children away from batteries.
- Caution battery acid.
- Read the operator's manual before working with batteries.
- Caution - explosive gases.

Caution for parking brake

“566–93–82320”

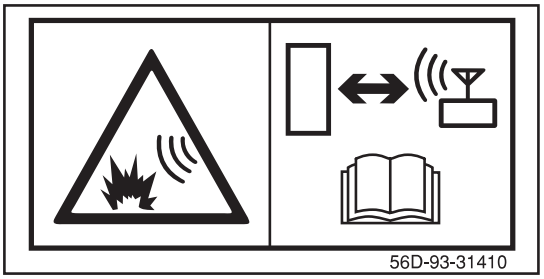
- Do not attempt to remove spring(s), saw, torch or modify this chamber, serious injury or death may result.

Prohibition of start by short-circuiting

“09842–A0481”

- 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.

Caution for blast site



“56D–93–31410”

- Sign indicates an explosion hazard caused by active radio transmitter at a blast zone.
- Keep machine at a safe distance from a blast zone and detonator.

Caution for high temperature

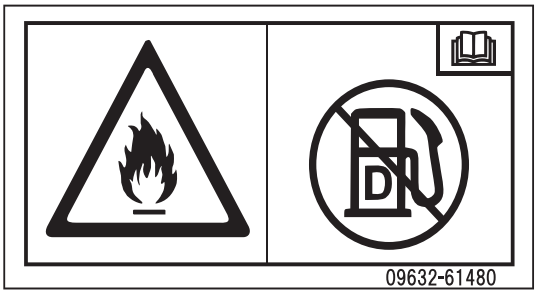
“09817–A1103”

- Sign indicates a burn hazard from touching heated parts, such as engine, motor, or muffler during or right after operation.
- Never touch when hot.

Caution for handling DEF

“09632–61480”

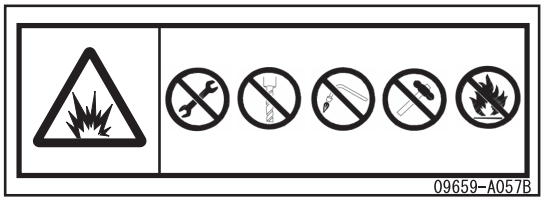
- DEF Only.
  To avoid engine damage or fire, fill with DEF only.
- Never use diesel fuel.



Caution for handling gas spring

“09659–A057B”

- There is the hazard of explosion causing injury.
- Do not disassemble the gas spring, make holes in it, weld it, cut it, hit it, roll it or bring it near flame.



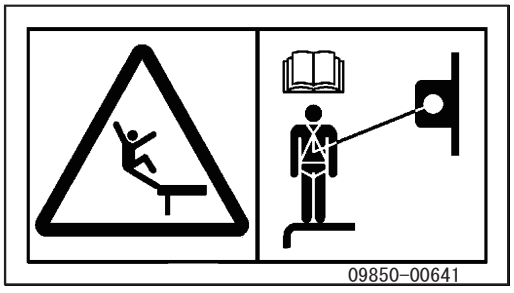
Prohibition of lifting operation

“09951-00281”

Anchor point for tie-off

“09850-00641”

Anchor point for personal fall-arrest equipment.



GENERAL PRECAUTIONS COMMON TO OPERATION AND MAINTENANCE

Mistakes in operation, inspection, or maintenance may result in serious personal injury or death. Before performing operation, inspection, or maintenance, always read this manual and the safety labels on the machine carefully and obey the warnings.

PRECAUTIONS BEFORE STARTING OPERATION

ENSURE SAFE OPERATION

- Only trained and authorized personnel can operate and maintain the machine.
- Follow all safety, precautions, and instructions in this manual when operating or performing inspection or 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 performing the operation.

UNDERSTAND THE MACHINE

Before operating the machine, read this manual thoroughly. If there is any place in this manual that you do not understand, ask the person in charge of safety for explanation.

PREPARATIONS FOR SAFE OPERATION

PRECAUTIONS FOR SAFETY-RELATED EQUIPMENT

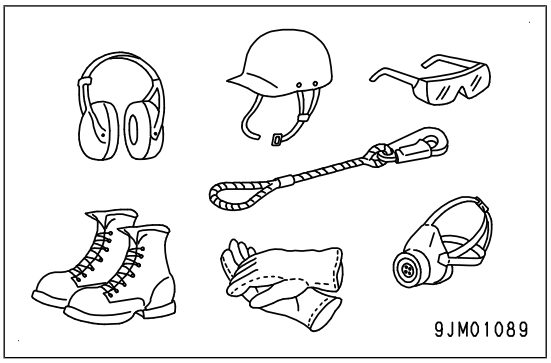
- Be sure that all guards, covers, cameras, and mirrors are in their proper position. Repair them immediately if they are damaged.
- Understand the using method of the safety related devices and use them properly.
- Never remove any safety related devices. Always keep them in good operating condition.

INSPECT MACHINE

Check the machine before starting operations. If any abnormality is found, do not operate the machine until repairs of the problem location have been completed.

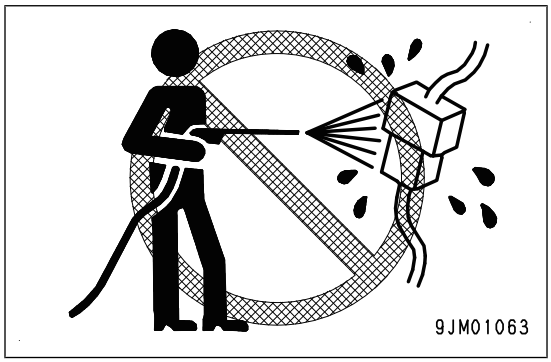
WEAR WELL-FITTING CLOTHES AND PROTECTIVE EQUIPMENT

- Do not wear loose clothes or any accessories. If any of these catch the control levers or protruding parts, it may cause the machine to move unexpectedly, it is extremely dangerous.
- Always wear a hard hat and safety shoes. Wear protective eyeglasses, mask, gloves, ear plugs, and personal fall-arrest equipment as appropriate for the work function.
- Long hair hanging out from the hard hat is dangerous that it may get caught up in the machine. Tie the hair up and be careful not to be caught.
- Check that all personal protective items function properly before using them.



KEEP MACHINE CLEAN

- If you get on or off the machine or perform inspection and maintenance on the machine with mud or oil, you may slip and fall, and it is dangerous. Wipe off any mud or oil from the machine. Always keep the machine clean.
- If water gets into the electrical system, electric devices will cause malfunctions, and the machine will cause error. If the machine cause error, it may move unexpectedly and cause serious personal injury or death. When washing the machine with water or steam, do not allow the water or steam to come into direct contact with electrical components.
- If high-pressure water is sprayed directly onto camera, it may cause failure. Do not allow the high-pressure water to get into camera directly. When cleaning the camera, wipe off any dirt with soft cloth.



- When cleaning camera and mirror, if you stand on an unstable place, or take an unstable posture, you may fall and be injured. Put proper stepladder or step on the level and firm ground, and clean the camera and mirror in secure posture.

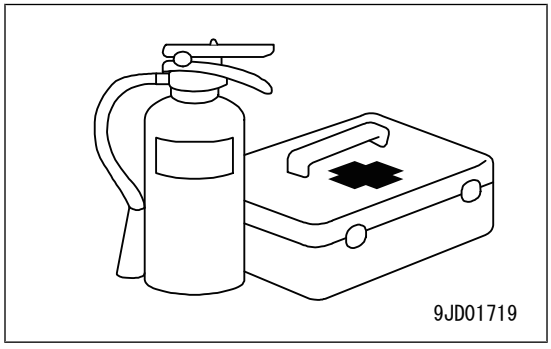
PRECAUTIONS FOR INSIDE OPERATOR'S COMPARTMENT

- 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 tools or machine parts lying around inside the operator's compartment. If tools or parts get into the control devices, it may obstruct operation and cause the machine to move unexpectedly, resulting in serious personal injury or death.
- Do not stick suction pads to the window glass. Suction pads act as a lens and may cause fire.
- Do not use a cellular phone when driving or operating the machine. This may lead to mistakes in operation, and may cause serious personal injury or death.
- Never bring any dangerous objects such as flammable or explosive items into the operator's compartment.

PROVIDE FIRE EXTINGUISHER AND FIRST AID KIT

Observe the following precautions to prepare for action if any serious personal injury or death 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 for the possibility of fires.
- Perform periodic inspection and maintenance to ensure that the fire extinguisher can always be used.
- Provide a first aid kit in the storage point. Perform periodic checks and add to the contents if necessary.



IF ANY PROBLEM IS FOUND

If you find any problem 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 take the necessary action. Do not operate the machine until the problem has been corrected.

PRECAUTIONS TO PREVENT FIRE

ACTIONS IF FIRE OCCURS

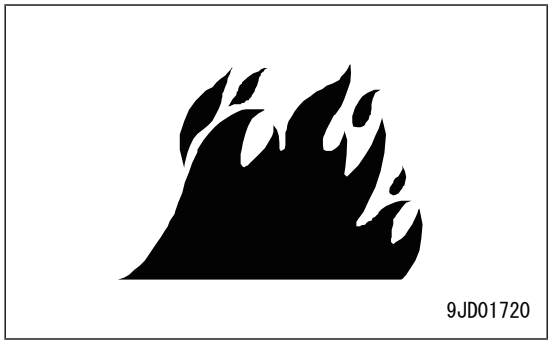
- Turn the starting switch to OFF position, and stop the engine.
- Use the handrails and steps to escape from the machine.

- Do not jump off the machine. There is the danger of falling and it may cause personal injury.
- The fume generated by a fire contains harmful materials which have a bad influence on your body when they are inhaled.
  Do not breathe the fumes.
- After a fire, harmful compounds may be left. If it touches your skin, it may have a bad influence on your body.
  Be sure to wear rubber gloves when handle the materials left after the fire.
  The material of the gloves, which is recommended is polychloroprene (Neoprene) or polyvinyl chloride (in the lower temperature environment).
  When wearing cotton work gloves, wear rubber gloves under them.

PREVENT FIRE

Fire caused by fuel, oil, coolant, or window washer fluid

Do not bring any open flame close to flammable substances such as fuel, oil, coolant, or window washer fluid. There is a danger that they may catch fire. Always observe the following.



- Do not smoke or use any open flame near fuel or other flammable substances.
- Shut down the engine before adding fuel.
- Do not leave the machine when adding fuel or oil.
- Tighten all the fuel and oil caps securely.
- Be careful not to spill fuel on overheated surfaces or on parts of the electrical system.
- After adding fuel or oil, wipe up any spilled fuel or oil.
- Put greasy rags and other combustible materials into a safe container to maintain safety at the workplace.
- When washing parts with oil, use a non-flammable oil. Do not use diesel fuel or gasoline. There is danger that they may catch fire.
- Do not weld or use a cutting torch to cut any pipes or tubes that contain combustible liquids.
- Determine well-ventilated areas for storing oil and fuel. Keep the oil and fuel in the specified place and do not allow unauthorized persons to enter.
- When performing grinding or welding work on the machine, move any flammable materials to a safe place before starting.

Fire caused by accumulation of combustible material

- Remove any dry leaves, chips, pieces of paper, coal dust, or any other combustible materials accumulated or affixed around the engine exhaust manifold, muffler, battery or dump body (for the machine with dump body heating specification).
- To prevent fires from spreading sparks or burning particles from other fires, remove any combustible materials such as dry leaves, chips, pieces of paper, coal dust, or any other combustible materials accumulated around the cooling system (radiator, oil cooler) or inside the undercover.

Fire coming from electric wiring

Short circuits in the electrical system can cause fire. Always observe the following.

- Keep all the electric wiring connections clean and securely tightened.
- Check the wiring every day for looseness or damage. Reconnect any loose connectors or refasten wiring clamps. Repair or replace any damaged wiring.

Fire caused from piping

Check that all the hose and tube clamps, guards, and cushions are securely fixed in position.

If they are loose, they may vibrate during operation and rub against other parts. This may lead to damage to the hoses and cause high-pressure oil to spurt out, leading to fire and personal injury.

Fire around the machine due to highly heated exhaust gas

This machine is equipped with Komatsu Diesel Particulate Filter (hereafter KDPF).

KDPF is a device to purify the soot in the exhaust gas. Exhaust gas temperature may increase during the purification process (regeneration). Do not bring any combustible material close to the outlet of the exhaust pipe.

When there are thatched houses, dry leaves or pieces of paper near the job site, set the system to the regeneration disable to prevent fire hazards due to highly heated exhaust gas during the aftertreatment devices regeneration.

If the following materials are loaded to the machine equipped with the dump body heating specification, fire may occur because the dump body becomes highly heated during the aftertreatment devices regeneration.

- Objects which contains many combustible industrial wastes
- Objects which mainly contains combustible materials such as dry leaves, chips, pieces of paper, and coal dusts

Take appropriate actions to prevent fire.

Explosion caused by lighting equipment

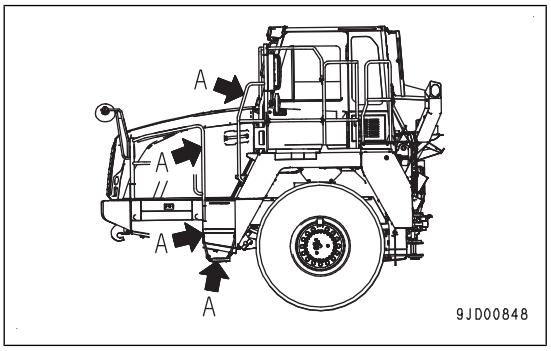
When checking fuel, oil, battery electrolyte, or coolant, always use lighting with anti-explosion specifications.

PRECAUTIONS WHEN GETTING ON OR OFF MACHINE

USE HANDRAILS AND STEPS WHEN GETTING ON OR OFF MACHINE

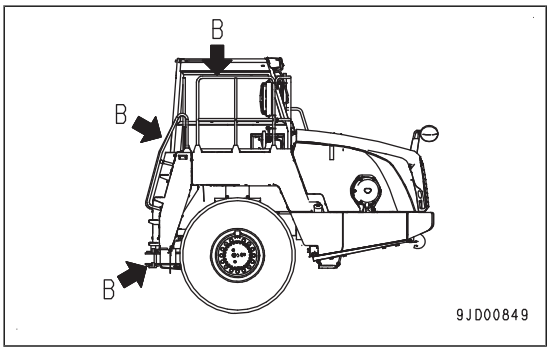
To prevent personal injury caused by slipping or falling off the machine, always observe the following.

- Use the handrails and steps indicated by arrow A in the figure when getting on or off the machine.

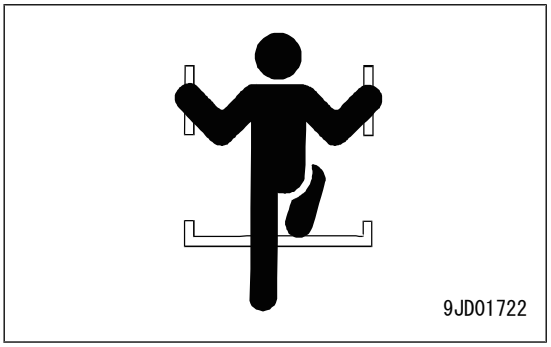


- The handrails and steps marked by arrows B are for escaping in emergencies.

  Use these only when escaping from the machine in a fire or other emergencies. Do not use them in normal situations.



- Always face the machine and maintain at least three-point contact (both feet and one hand, or both hands and one foot) with the handrails and steps to ensure that you support yourself.
- Before getting on and off the machine, check the handrails and steps if there is any oil, grease, or mud on them. Wipe it off immediately not to slip if any. In addition, tighten any loose bolt of the handrails and steps.
  If the handrails and steps are damaged or deformed, they need to be repaired immediately. Ask your Komatsu distributor to perform this work.



- Do not grip the control levers when getting on or off the machine.
- Never climb on the engine hood or covers where there are no non-slip pads.
- Do not get on or off the machine with tools in your hand.

NO JUMPING ON OR OFF MACHINE

Getting on or off the moving machine can cause serious personal injury or death. Always observe the following.

- Never jump on or off the machine. Never get on or off a moving machine.
- If the machine starts to move when there is no operator on the machine, do not jump on to the machine and try to stop it.

LIFTING OF PERSONNEL PROHIBITED

Under no circumstances should this machine be used for the lifting of personnel.

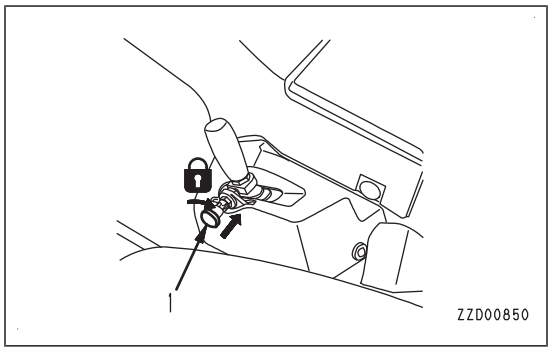
PEOPLE ON DUMP BODY

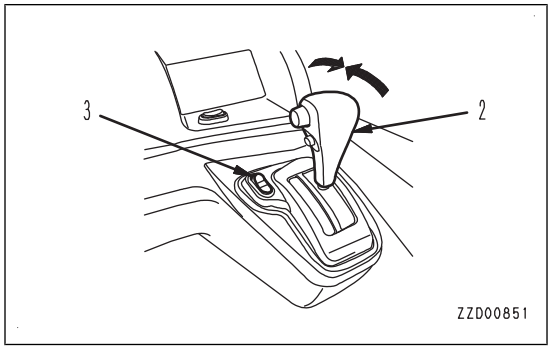
Never let anyone ride in the dump body. There is a hazard of falling and suffering serious personal injury or death.

WHEN STANDING UP FROM OPERATOR'S SEAT

Before standing up from the operator's seat to adjust the operator's seat, always lower the dump body completely, lock with dump lever lock knob (1), set gear shift lever (2) to NEUTRAL position (N), set parking brake switch (3) to “PARKING” position, then stop the engine.

If the control levers are touched by mistake, there is danger that the machine may suddenly move and cause serious personal injury or death.



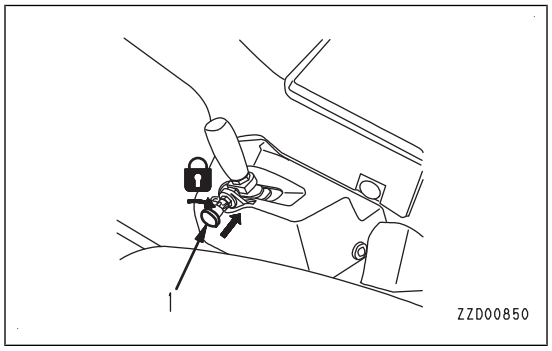


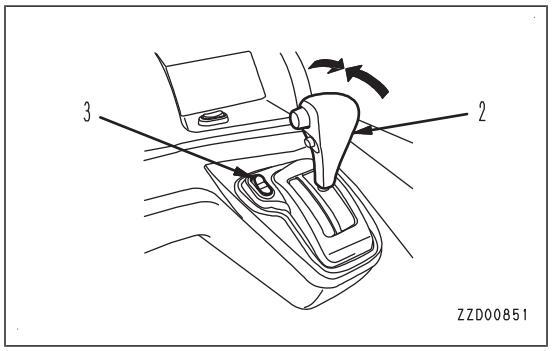
PRECAUTIONS WHEN LEAVING MACHINE

If the proper procedures are not taken when parking the machine, the machine may suddenly move off by itself, and this may lead to serious personal injury or death. Always observe the following.

When leaving the machine, always lower the dump body completely, lock with dump lever lock knob (1), set gear shift lever (2) to NEUTRAL position (N), set parking brake switch (3) to “PARKING” position, then stop the engine.

In addition, lock all places and always take the key with you and keep it in the specified location.





EMERGENCY EXIT FROM OPERATOR'S CAB

- If it should be impossible to open the door of the cab, break the window glass with the hammer supplied and use the window as an emergency escape.
- When escaping, remove all the pieces of glass from the window frame first and be careful not to cut yourself on the glass.
  Be careful also not to slip on the broken pieces of glass on the ground.

ELECTROMAGNETIC INTERFERENCE

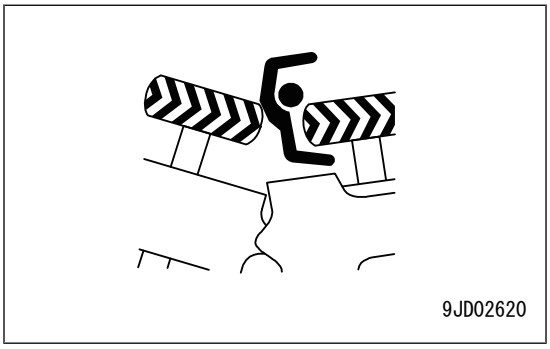
When the machine is operating close to a source of high electromagnetic interference, such as a radar station, some abnormal phenomena may be observed.

- The display on the monitor panel may behave erratically.
- The warning buzzer may sound.

These effects do not signify a malfunction and the machine will return to normal as soon as the source of interference is removed.

DO NOT GET CAUGHT IN WORK EQUIPMENT

- If the clearance at the articulating portion changes and you get caught in it, you will suffer serious personal injury or death. Do not allow anyone to come inside the articulation range.
- The clearance in the area around the dump body changes according to the movement of the dump body. If you are caught, this may lead to serious personal injury or death. Do not allow anyone near any of the rotating or telescopic parts.

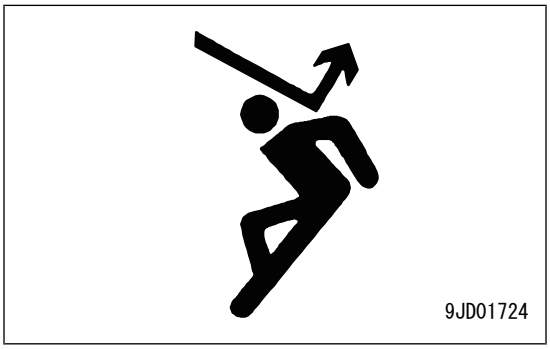


PRECAUTIONS RELATED TO PROTECTIVE STRUCTURES

The operator's compartment is equipped with a structure (such as ROPS, FOPS) to protect the operator by absorbing the impact energy.

As for the machine equipped with ROPS, if the machine weight (mass) exceeds the certified value (shown on ROLL-OVER PROTECTIVE STRUCTURE (ROPS) CERTIFICATION plate), ROPS will not be able to fulfill its function. Do not increase machine weight beyond the certified value by modifying the machine or by installing attachments to the machine.

Also, if the function of the protective equipment is impeded, the protective equipment will not be able to protect the operator, and the operator may suffer injury. Always observe the following.



- If the machine is equipped with a protective structure, do not remove the protective structure and perform operations without it.
- If the protective structure is welded, or holes are drilled in it, or it is modified in any other way, its strength may drop. Any modification is prohibited.
- If the protective structure is damaged or deformed by falling objects or by rolling over, its strength will be reduced and it will not be able to fulfill its function properly. In such cases, always consult your Komatsu distributor.
- Even if the protective structure is installed, always fasten your seat belt properly when operating the machine. If you do not fasten your seatbelt properly, it cannot display its effect.
  Always fasten your seat belt while operating the machine.

UNAUTHORIZED MODIFICATION

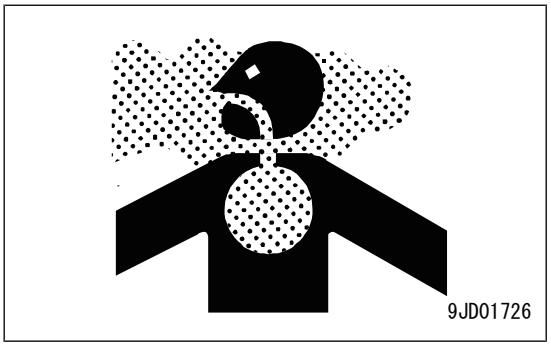
- Komatsu will not be responsible for any personal injuries, product failures, physical loss or damage, or influence on the environment resulting from modifications made without authorization from Komatsu.
- Any modification made without authorization from Komatsu can create hazards. Before making a modification, consult your Komatsu distributor.
- Do not try to increase the capacity of the dump body or make any other modifications. Such modifications will cause a drop in the braking efficiency, the balance of the machine will become poor, and this may lead to an unexpected accident.

PRECAUTIONS RELATED TO ATTACHMENTS AND OPTIONS

- Any personal injuries, product failures, physical loss or damage, or influence on the environment resulting from the use of unauthorized attachments or parts will not be the responsibility of Komatsu.
- When installing optional parts or attachments, contact your Komatsu distributor for advice to any potential problems or safety and legal requirements.
- When installing and using optional attachments, always read the instruction manual for the attachment, and the general information related to attachments in this manual.

PRECAUTIONS WHEN RUNNING ENGINE INSIDE BUILDING

The engine exhaust gas contains substances that may damage your health or even cause death. Start or operate the engine in a place where there is good ventilation. If the engine or machine must be operated inside a building or underground, where the ventilation is poor, take steps to ensure that the engine exhaust gas is removed and that ample fresh air is brought in.



PRECAUTIONS FOR OPERATION

PRECAUTIONS FOR JOBSITE

INVESTIGATE AND CONFIRM JOBSITE CONDITIONS

On the jobsite, there are various hidden dangers that may lead to serious personal injury or death. Before starting operations, always check the following to confirm that there is no danger on the jobsite.

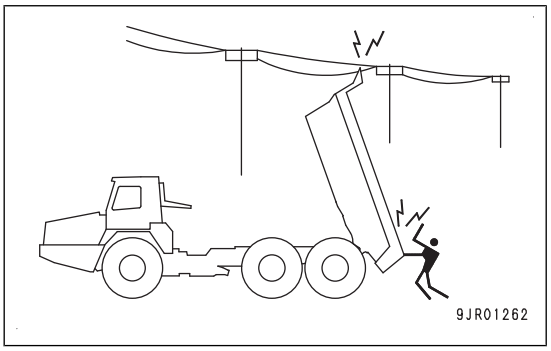
- Check the terrain and condition of the ground at the jobsite, and determine the safest method of operation. Do not operate in a dangerous area where landslides or rockfall may occur.
- Take necessary measures to prohibit the unauthorized person from coming close to the machine during operation.
- When traveling or operating in shallow water or on soft ground, check the water depth, speed of the current, condition of bedrock, and shape of the ground beforehand. Always avoid any place that will obstruct travel.
- Maintain the travel path on the jobsite so that there is no obstruction to travel operations.

PRECAUTIONS WHEN WORKING ON LOOSE GROUND

- Avoid driving or operating the machine near the edge of cliffs, road edges, and deep ditches. The ground may be weak in such areas. If the ground should collapse under the weight or vibration of the machine, there is a hazard that the machine may fall or tip over. Remember that the soil is weak in these areas, after heavy rain or blasting or after earthquakes.
- When working on embankments or near excavated ditches, there is a hazard that the weight and vibration of the machine will cause the soil to collapse. Before starting operations, take steps to ensure that the ground is safe and to prevent the machine from rolling over or falling.

DO NOT GO CLOSE TO HIGH-VOLTAGE CABLES

Do not drive or operate the machine near electric cables. There is a hazard of electric shock, which may cause serious personal injury or death. On jobsites where the machine may go close to electric cables, always observe the following.



- Before starting work near electric cables, inform the local power company of the work to be performed, and ask them to take the necessary action.
- Even going close to high-voltage cables can cause electric shock. Always maintain a safe distance (see the table) between the machine and the electric cable. Check with the local power company about the voltage of cables and safe operating procedure before starting operations.

Voltage of Cables	Safety Distance
100 V, 200 V	Min. 2 m
6600 V	Min. 2 m
22000 V	Min. 3 m
66000 V	Min. 4 m
154000 V	Min. 5 m
187000 V	Min. 6 m
275000 V	Min. 7 m
500000 V	Min. 11 m

- To prepare for any possible emergencies, wear rubber shoes and gloves. Lay a rubber sheet on the operator's seat, and be careful not to touch the chassis with any exposed part of your body.
- Use a signalman to give warning if the machine approaches too close to the electric cables.
- When performing operations near high voltage cables, prohibit anyone other than related persons to come close to the machine during operation.
- If the machine should come too close or touch the electric cable, to prevent electric shock, the operator should not leave the operator's compartment until it has been confirmed that the electricity has been shut off. Also, prohibit any other persons to come close to the machine.

ENSURE GOOD VISIBILITY

Although this machine is equipped with mirrors and cameras to ensure good visibility, there are places that cannot be seen from the operator's seat. Be careful when performing operation.

When traveling or performing operations in places with poor visibility, it is dangerous and may cause serious personal injury or death because it is difficult to check for obstacles and condition of the jobsite. When traveling or performing operations in places with poor visibility, always observe the following.

- Allocate a signalman for jobsite duty if there are areas where the visibility is poor.
- Only one signalman should give signals.
- When working in dark places, turn on the working lamp and headlamps installed to the machine, and set up additional lighting equipment in the work area if necessary.
- Stop operations if the visibility is poor because of mist, snow, rain, or dust.
- When checking the mirrors installed to the machine, remove all dirt and adjust the angle of the mirror before starting the work to ensure good visibility.
- When cleaning the camera, wipe off any dirt with soft cloth. Make sure that a clear view is displayed on the monitor.
  When cleaning camera, if you stand on an unstable place, or take an unstable posture, you may fall and be injured. Put proper stepladder or step on the level and firm ground, and clean the camera in secure posture.
- The rear view monitor is provided to secure the rear side visibility. If, however, an obstacle is detected on the monitor, you must confirm it with your eyes.

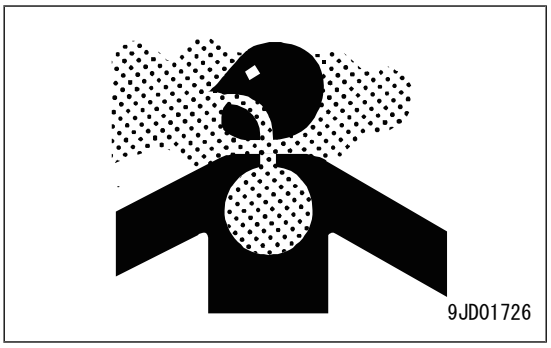
CHECK SIGNS AND SIGNALMAN'S SIGNALS

If signals and labels are not clear, serious personal injury can result from downward slip, overturn or accidental contact with nearby people or obstacles. Always observe the following.

- Set up labels to inform of road edges and soft ground. If the visibility is not good, position a conductor if necessary. Operator should pay careful attention to the labels and follow the instructions from the conductor.
- Only one signalman should give signals.
- Make sure that all workers understand the meaning of all signals, signs, and labels before starting work.

BEWARE OF ASBESTOS DUST

Asbestos dust in the air can cause lung cancer if it is inhaled. There is danger of inhaling asbestos when working on jobsite where demolition work is performed or industrial waste is handled. Always observe the following.



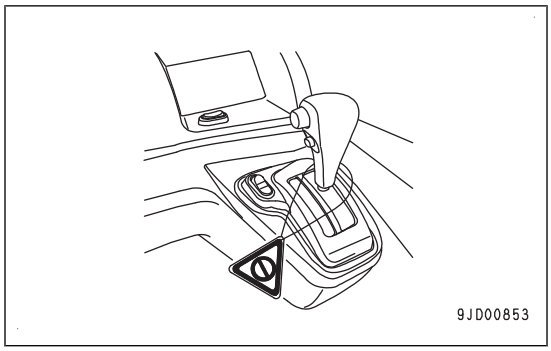
- Spray water to keep down the dust.
- Do not use compressed air.
- If there is danger that there may be asbestos dust in the air, always operate the machine from an upwind position, and make sure that all workers operate on the upwind side.
- All workers should use anti-dust masks.
- Prohibit other personnel from coming close to the machine during operation.
- Always observe the regulations for jobsite and environmental standards.

This machine does not contain asbestos, but any part which is not the genuine part, it has risk of containing asbestos. Always use Komatsu genuine parts.

START ENGINE

USE WARNING TAGS

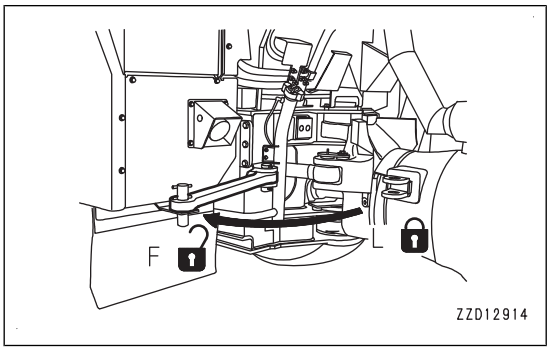
If there is a “DANGER! Do NOT operate!” warning tag displayed, it means that someone is performing inspection and maintenance of the machine. If the warning tag is ignored and the machine is operated, the person performing inspection or maintenance may be caught in the rotating parts or moving parts. It is dangerous and may cause serious personal injury or death. Do not start the engine or touch the levers.



CHECKS AND ADJUSTMENT BEFORE STARTING ENGINE

Perform the following checks before starting the engine at the beginning of the day's work to ensure that there is no problem with the operation of the machine. If these checks are not performed properly, problems may occur with the operation of the machine, and there is a danger that may lead to serious personal injury or death.

- Remove all dirt from the surface of the window glass to ensure a good view.
- Perform the walk-around check.
- Remove all dirt from the surface of the lens of the headlamps, working lamps, and combination lamps, and check that they light up correctly.
- Check the coolant level, fuel level, and oil level in engine oil pan, check for clogging of the air cleaner, and check for damage to the electric wiring.
- Adjust the mirrors so that the rear of the machine can be seen easily from the operator's seat.
- Adjust the operator's seat to a position where it is easy to perform operations, and check that there is no damage or wear to the seat belt or mounting clamps.
- Check that the gauges work properly, check the angle of the mirrors, and check that the gear shift lever is at NEUTRAL position and that the dump control lever is at HOLD position.
- Before starting the engine, check that the lock knob of the dump control lever is at LOCK position.
- Adjust the mirrors so that the rear of the machine can be seen easily from the operator's seat.
- Check that the parking brake switch is at “PARKING” position.
- Check that the articulation lock is fixed securely at FREE position (F).
- Adjust the angle of each camera so that the surrounding area can be seen clearly from the operator's seat.
- If snowfalls adhered to a camera, eliminate them with securing your safety by using a stepladder.
- Check that there are no people or obstacles above, below, or in the area around the machine.



PRECAUTIONS WHEN STARTING ENGINE

The machine may suddenly move off and this may lead to serious personal injury or death. Always observe the following.

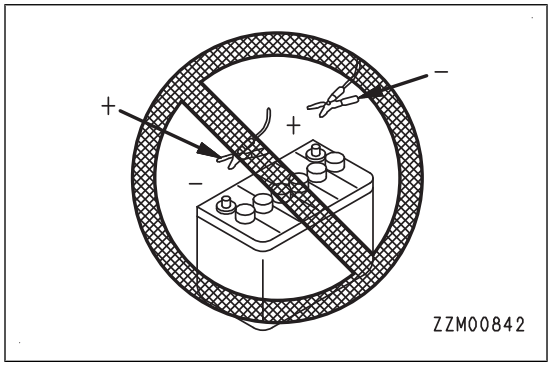
- Start the engine only while sitting down in the operator's seat.
- When starting the engine, sound the horn as a warning.
- If another person is allowed on the machine, that person may sit only in the assistant's seat.
- Do not attempt to start the engine by short-circuiting the engine starting circuit. This may cause fire, serious personal injury or death.
- Check that the backup alarm (alarm buzzer when machine travels in reverse) works properly.

IN COLD AREAS

- Perform the warming-up operation thoroughly. If the machine is not thoroughly warmed up before the control levers are operated, the reaction of the machine will be slow, and this may lead to unexpected accidents. Particularly in a cold weather, be sure the warm-up operation is completed.
- If the battery electrolyte is frozen, do not charge the battery or start the engine with a different power source. There is a hazard that this will ignite the battery and cause the battery to explode.
  Before charging or starting the engine with a different power source, melt the battery electrolyte and check that there is no leakage of electrolyte before starting.

START ENGINE WITH JUMPER CABLES

If any mistake is made in the method of connecting the jumper cables, it may cause the battery to explode, so always observe the following.



- Always wear protective eyeglasses and rubber gloves when starting the engine by using the jumper cables.
- When connecting a normal machine to a failed machine with the jumper cables, always use the normal machine with the same battery voltage as the failed machine.
- When starting the engine with the jumper cables, perform the starting operation with 2 workers (one worker sitting in the operator's seat and the other working with the battery).
- When starting from another machine, be careful that the normal machine does not contact with the failed machine.
- When connecting the jumper cables, turn the starting switch to OFF position for both the failed machine and the normal machine. If the failed machine has a battery disconnect switch, turn it to OFF position, and turn it ON again after connecting the cables.
  It is dangerous that the machine may move when the power is connected.
- Be sure to connect the positive (+) cable first when installing the jumper cables. Disconnect the negative (-) cable (ground side) first when removing them.
- When disconnecting the jumper cables, take care not to bring the clips in contact with each other or with the machine.

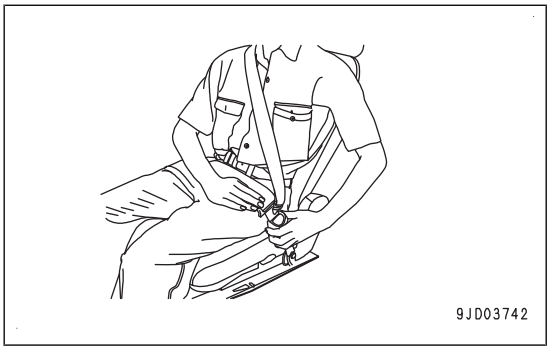
PRECAUTIONS FOR OPERATION

CHECKS BEFORE OPERATION

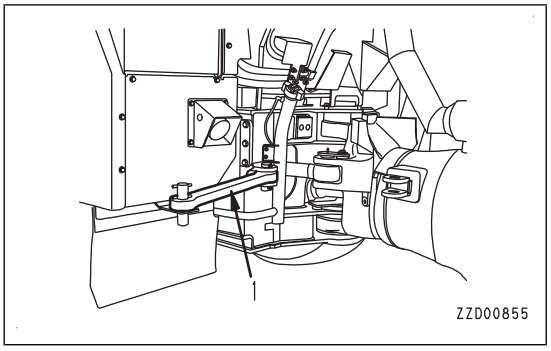
If the checks before starting are not performed properly, the machine will be unable to display its full performance. It is dangerous and may cause serious personal injury or death.

When performing the checks, move the machine to a wide area with no obstructions, and pay careful attention to the surroundings. Prohibit anyone other than the operator from coming close to the machine during checks.

- Fasten the seat belt. When the brakes are applied suddenly, the operator may be thrown out of the operator's seat. It is dangerous and may cause personal injury.
- Check the operation of travel, steering and brake systems, and dump body control system.
- Check for any problem in the sound, vibration, heat and smell of the machine, or abnormalities of instruments. Also check that there is no leakage of oil or fuel.
- If any problem is found, repair it immediately.

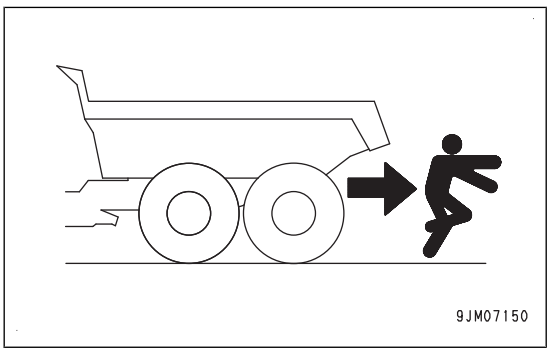


- Before starting to drive the machine or perform operations, check that articulation lock (1) is fixed securely at FREE position.



PRECAUTIONS WHEN TRAVELING IN FORWARD OR REVERSE

- Always lock all the doors and windows of the operator's compartment in position regardless of whether it is open or closed.
  Always close all the windows and doors on jobsites where there is danger of scattering fragments, and things which may intrude into operator's cab.
- If another person is allowed on the machine, that person may sit only in the assistant's seat.
- If there are any persons in the area around the machine, there is danger that they may be hit or caught by the machine, and this may lead to serious personal injury or death. Always observe the following before traveling.
  - Always operate the machine only when seated on the operator's seat.
  - Before starting to move, check again that there is no people or obstacle in the surrounding area.
  - Before moving, sound the horn to warn people in the surrounding area.



  - Check that the backup alarm (alarm buzzer when machine travels in reverse) works properly.
  - If there is an area in the rear of the machine which cannot be seen, allocate a conductor.

Always be sure to perform the above precautions even when the machine is equipped with mirrors and cameras.

WHEN TRAVELING

Serious personal injury or death can result from tipping over of the traveling machine or its accidental contact. Always observe the following.

- Never turn the key in the starting switch to OFF position when the machine is traveling. If the engine stops when the machine is traveling, the steering wheel becomes heavy to operate, and this will cause a wrong operation of the steering wheel and may lead to serious personal injury or death. If the engine stops, depress the brake pedal immediately to stop the machine.
- When driving the machine or performing operations, always keep a safe distance from people, structures, or other machines to avoid coming into contact with them.
- Try to avoid traveling over obstacles. If that is unavoidable, let the machine do that at a low speed. The machine tips over easily to the right or left. Do not drive it over obstacles which make the machine tilt largely to the right or left.
- When traveling on rough ground, drive the machine at low speed and avoid sudden changes in direction to prevent the machine from turning over.
- Do not load the dump body above the maximum payload. The brakes will lose their effect.
- Lower the dump body, setting the dump lever at “FLOAT” position, then drive the machine.
- When passing over bridges or structures, check first that the structure is strong enough to support the weight of the machine.
- 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 machine body or work equipment hit anything.
- 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 a large destructive force, and this may cause serious injury or death.
  If you are going to drive the machine continuously, consult your Komatsu distributor.
- When traveling, and particularly when traveling downhill, never set the gear shift lever to NEUTRAL position (N). If the gear shift lever is set to NEUTRAL position (N) while driving the machine at travel speed of above 4 km/h or traveling downhill, the gear speed is not changed to neutral. The centralized warning lamp flashes and the alarm buzzer sounds. Always set the gear shift lever in D to 1 position while traveling.

PRECAUTIONS WHEN TRAVELING ON SLOPES

To prevent the machine from tipping over or slipping to the side, always observe the following.

- When traveling downhill, use the retarder brake to reduce speed. Do not turn the steering wheel suddenly.
- Do not work on a slope covered with the steel plates. Even with slight slopes there is a hazard that the machine may slip.
- Drive the machine at low speed on the grass or fallen leaves. Even with slight slopes, there is a hazard that the machine may slip.
- If the engine should stop on a slope, immediately apply the brakes fully and apply the parking brake also to stopping the machine.
- When traveling downhill, do not drive the machine with the gear shift lever in NEUTRAL position (N).
  If the gear shift lever is set to NEUTRAL position (N) while driving the machine at travel speed of above 4 km/h or traveling downhill, the gear speed is not changed to neutral. The centralized warning lamp flashes and the alarm buzzer sounds. Always set the gear shift lever in D to 1 position while traveling.

PRECAUTIONS WHEN OPERATING MACHINE

- When using the machine, to prevent serious personal injury or death caused by the work equipment or by the machine tipping over due to overloading, do not use the machine beyond the permitted performance of the machine such as the maximum permitted load for the structure of the machine.
- When operating in tunnels, or under bridges or under electric wires, or in other places where the height is limited, operate slowly and be extremely careful not to let the dump body contact anything.
- To prevent accidents caused by hitting other objects, always operate the machine at a speed which is safe for operation, particularly in confined spaces, indoors, and in places where there are other machines.

WHEN LOADING ON DUMP BODY

- Do not load the dump body so that the load is on one side. Always perform loading that the load is spread uniformly.
- Do not leave or return to the operator's seat while the dump body is being loaded.

WHEN DUMPING

- Before starting the dumping operation, check to be sure there is no people or object behind the machine.
- Stop the machine in a right position, and check again that there is no people or object behind the machine. Give the determined signal, then slowly operate the dump body. If necessary, use chocks for the wheels or allocate a conductor.
- Do not perform dumping operations on slopes. The machine stability will become poor and it may tip over.
- Do not drive the machine with the dump body raised.
- When performing dumping operations, drive the machine in a straight line. If dumping operations are performed with the machine articulated, the machine stability will become poor and the machine may tip over.
- When the dump body is raised, the center of gravity of the machine varies continuously. If the ground is soft, this will affect the stability of the machine.
- Take extreme care when dumping sticky material (wet clay, frozen material, etc.) on a soft ground. The stability of the machine becomes worse and it may tip over.

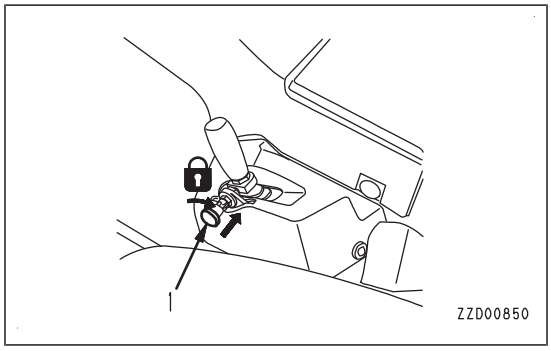
WHEN OPERATING ON SNOW OR FROZEN SURFACES

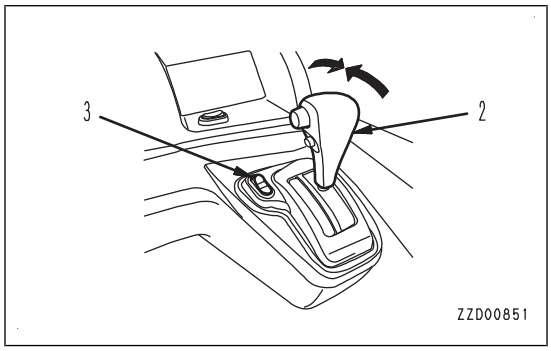
- Snow-covered or frozen surfaces are slippery, so be extremely careful when traveling or operating the machine, and do not perform abrupt lever operation. Machine may slip even on a slight slope. Be particularly careful when working on slopes.
- Frozen road becomes soft when the temperature rises, and the machine may tip over or be not able to escape. Be particularly careful when working on frozen road.
- When traveling on snow-covered roads, always fit tire chains.
- It is dangerous that the machine enters deep snow. The machine may tip over or become buried in the snow. Be careful not to go off the road or to get trapped in a drift of snow.
- When traveling on snow-covered slopes, never apply the foot brake suddenly. Reduce speed, use the braking force of the engine, and pump the brakes (depress the brake pedal several times) to stop the machine.
- Do not try to perform dumping operations when the load inside the dump body is frozen. There is danger that this may cause the machine to tip over.

WHEN PARKING MACHINE

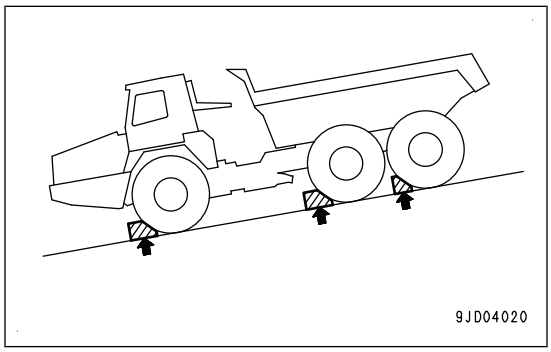
Unexpected move of the parked machine can cause serious personal injury or death. Always observe the following.

- Park the machine on a firm, level ground.
- Select a place where there is no hazard of landslides, falling rocks, or flooding.
- When leaving the machine, always lower the dump body completely, lock with dump lever lock knob (1), set gear shift lever (2) to NEUTRAL position (N), set parking brake switch (3) to “PARKING” position, 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 operating the machine. Always remove the key, take it with you, and keep it in the specified place.





- If it is necessary to park the machine on a slope, set blocks under the tires to prevent the machine from moving.



TRANSPORTATION

When the machine is transported on a trailer, serious personal injury or death may result because of the accident during transportation. Always observe the following.

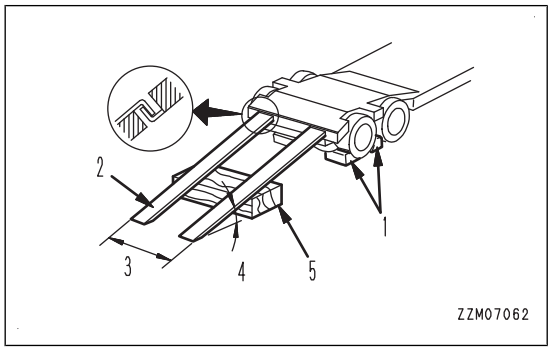
- Always check the machine dimensions carefully. Depending on the attachments installed, the machine weight, transportation height, and overall length may differ.
- Check beforehand that all bridges and other structures on the transportation route are strong enough to withstand the combined weight of the transporter and the machine being transported.
- This machine needs to be divided into components for transportation depending on the regulation. When transporting the machine, consult your Komatsu distributor.
- Lock the articulation lock to prevent the machine from articulating.

PRECAUTIONS WHEN LOADING AND UNLOADING

If handling is improper when loading or unloading the machine, it is dangerous that the machine may tip over or fall. It requires particular attention. Always observe the following.

- Perform loading and unloading on a firm, level ground only. Avoid road edge or place near the cliff.
- Always use ramps of adequate strength. Be sure that the ramps are wide, long, and thick enough to provide a safe loading slope. Take suitable steps to prevent the ramps from moving out of position or coming off.

  (1) Chocks
  (2) Ramp
  (3) Width of ramps: Same width as tires
  (4) Angle of ramp: Max. 15°
  (5) Block



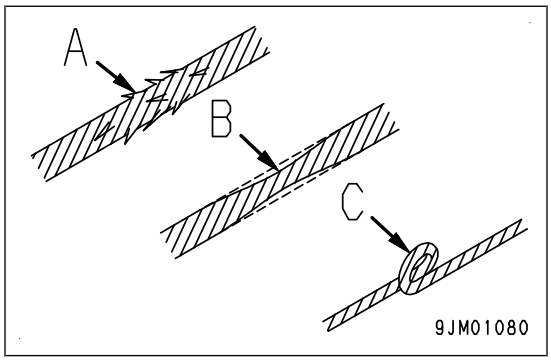
- Be sure the ramp surface and the platform of trailer are clean and free of grease, oil, ice, water and other loose materials. If any, remove them. Remove dirt around the undercarriage of the machine. On a rainy day, in particular, be extremely careful since the ramp surface is slippery.
- Run the engine at low idle and drive the machine slowly at low speed.
- Never correct your steering on the ramps. If necessary, drive off the ramps onto the ground, correct the direction, then enter the ramps again.
- When unloading to an embankment or platform, make sure that it has suitable width, strength, and grade.
- For machines equipped with a cab, always lock the door after loading the machine. To prevent the door from opening during transportation.
- When it is necessary to remove handrails and steps, take care not to lose removed handrails and steps. Install the removed handrails and steps securely.

TOWING AND BEING TOWED

PRECAUTIONS FOR TOWING AND BEING TOWED

Always use the correct towing equipment and towing method. Any mistake in the selection of the wire rope or drawbar or the method of towing a failed machine and being towed may lead to serious personal injury or death.

- Always confirm that the wire rope or drawbar used for towing has ample strength for the weight of the machine being towed.
- Never use the wire rope which has breaks in strands (A), reduced diameter (B), or kinks (C). There is a danger that the rope may break during the towing operation.
- Always wear leather gloves when handling the wire rope.
- Never tow a machine on a slope.
- During the towing operation, never stand between the towing machine and the machine being towed.



PRECAUTIONS FOR MAINTENANCE

PRECAUTIONS BEFORE STARTING INSPECTION AND MAINTENANCE

DISPLAY WARNING TAG DURING INSPECTION AND MAINTENANCE

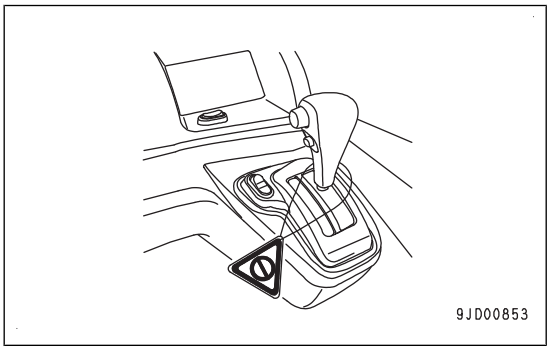
During inspection and maintenance, always display the “DANGER! Do NOT operate!” warning tag.

If there is a “DANGER! Do NOT operate!” warning tag displayed, it means that someone is performing inspection and maintenance of the machine. If the warning tag is ignored and the machine is operated, the person performing inspection or maintenance may be caught in the rotating parts or moving parts. It is dangerous and may cause serious personal injury or death. Do not start the engine or touch the levers.

If necessary, put up signs around the machine as well.

Warning tag part No. 09963-A1640

When not using this warning tag, keep it in the toolbox. If there is no toolbox, keep it in the pocket for Operation and Maintenance Manual.



KEEP WORK PLACE CLEAN AND TIDY

Do not leave hammers or other tools lying around in the work place. Wipe up all grease, oil, or other substances that will cause you to slip. Always keep the work place clean the tidy to enable you to perform operations safely.

If the work place is not kept clean and tidy, there is the danger that you will trip, slip, or fall over and injure yourself.

SELECT SUITABLE PLACE FOR INSPECTION AND MAINTENANCE

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

ONLY AUTHORIZED PERSONNEL

As long as maintenance of the machine is continued, do not allow unauthorized person to come near the workplace. They might get unexpected personal injury from, for instance, touching machine. Do not allow anyone except the workers concerned to enter the workplace. If necessary, employ a guard.

APPOINT LEADER WHEN WORKING WITH OTHERS

When repairing the machine or when removing and installing the work equipment, appoint a leader and follow his/hers instructions during the operation in order to prevent personal injuries caused by being caught or pinched.

STABILITY

- When dismantling or assembling the machine for the purpose of maintenance, repair or transportation, always ensure that at each stage of the process, care is taken to ensure that the machine remains stable. Failure to do this could result in serious injury or death.

GUARDS

- Guards are installed in the area of the engine to protect personnel from moving parts. These guards should only be removed by Komatsu service engineer unless specific instructions are given in this manual.

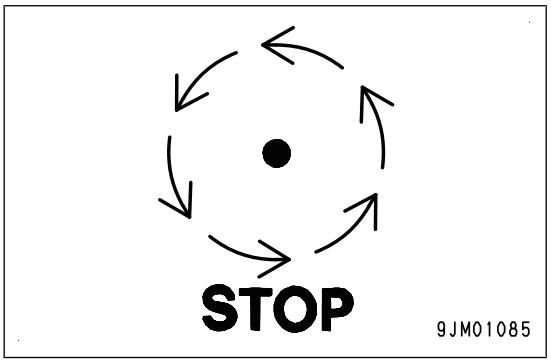
END OF SERVICE LIFE

- For safe dismantling of the machine at the end of service life, please contact your Komatsu distributor.

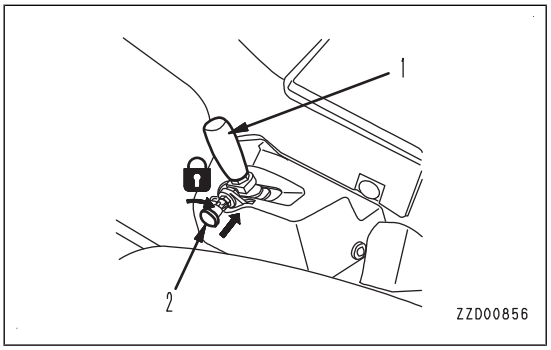
STOP ENGINE BEFORE CARRYING OUT INSPECTION AND MAINTENANCE

If you are caught or pinched between the work equipment during operation, or exposed to high-temperature or high-pressure liquids, it is dangerous and may cause serious personal injury or death. Always observe the following.

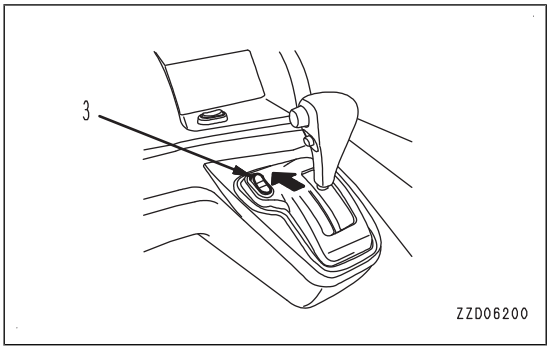
- Stop the engine before performing any inspection and maintenance.

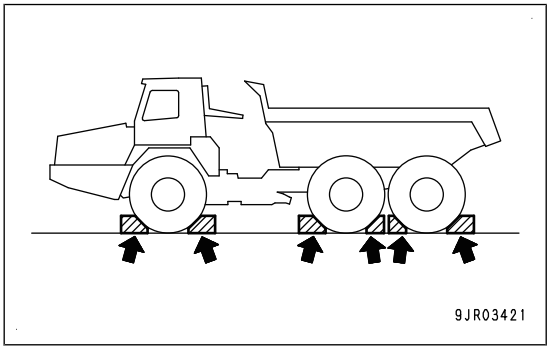


- Lower the dump body, set dump lever (1) to “HOLD” position, lock with dump lever lock knob (2), then stop the engine.

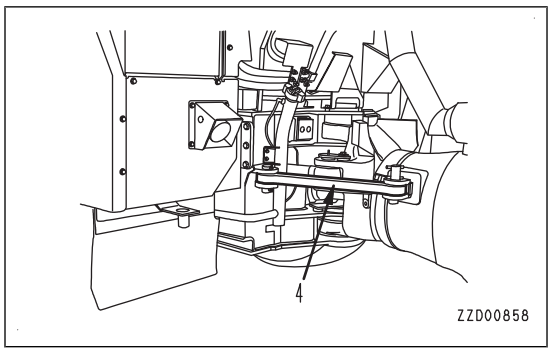


- Set parking brake switch (3) to “PARKING” position to apply the parking brake, then put blocks in front of and behind the tires to prevent the machine from moving.





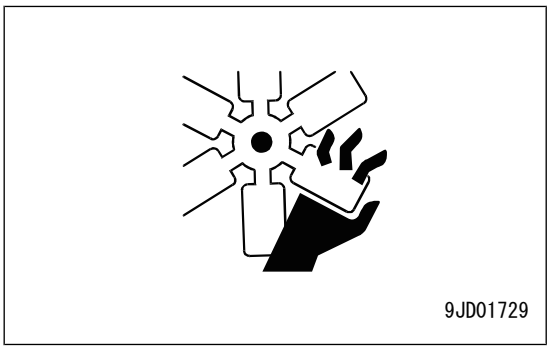
- Lock the front and rear frames with articulation lock (4).



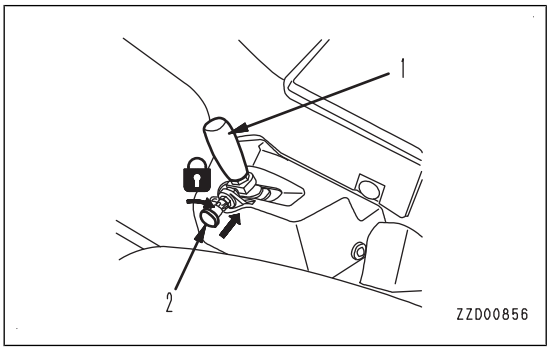
TWO WORKERS FOR MAINTENANCE WHEN ENGINE IS RUNNING

To prevent accident, do not perform maintenance with the engine running. When it is necessary to perform the maintenance with the engine running, always observe the following.

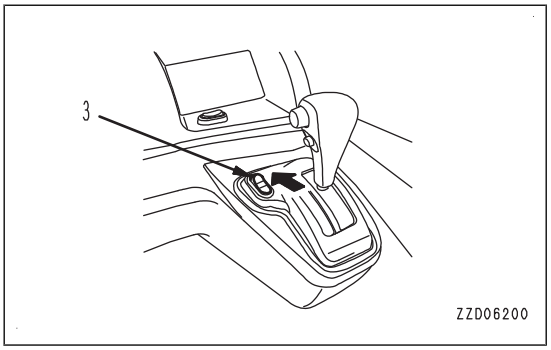
- One worker must always sit in the operator's seat and be ready to stop the engine at any time. All workers must maintain contact with the other workers.
  Do not leave the operator's seat during maintenance.
- Rotating parts such as the fan, fan belt are dangerous that they may easily catch a body part or an object someone wears. Be careful not to come close to the rotating part.
- Never drop or insert tools or other objects into the fan, fan belt, or other rotating parts. They may contact the rotating parts and break, and be scattered. It is dangerous.
- If the automatic active regeneration of KDPF starts during maintenance work, surroundings of KDPF become high temperature.
  When performing the maintenance work, stop the regeneration of KDPF.

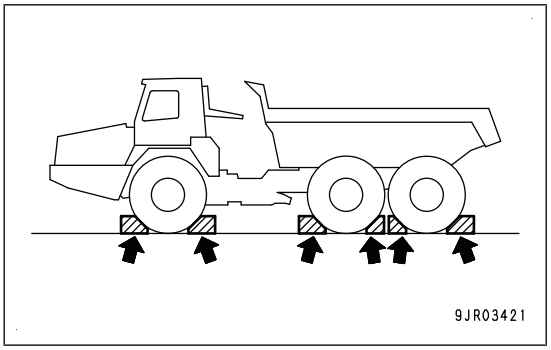


- Lower the dump body completely, set dump lever (1) to “HOLD” position, lock with dump lever lock knob (2) to prevent the dump body from moving.



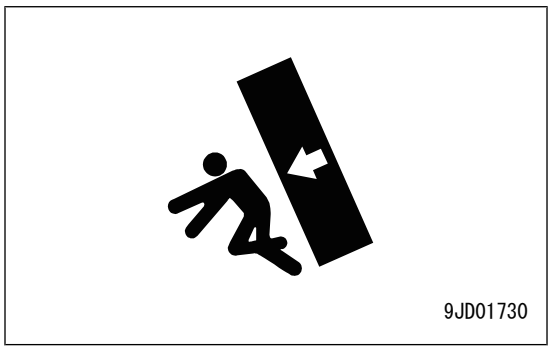
- Set parking brake switch (3) to “PARKING” position to apply the parking brake, then put blocks in front of and behind the tires to prevent the machine from moving.
- Do not touch any control levers. When it is necessary to operate the control levers or pedals, always give a signal to your fellow workers to evacuate them to a safe place.





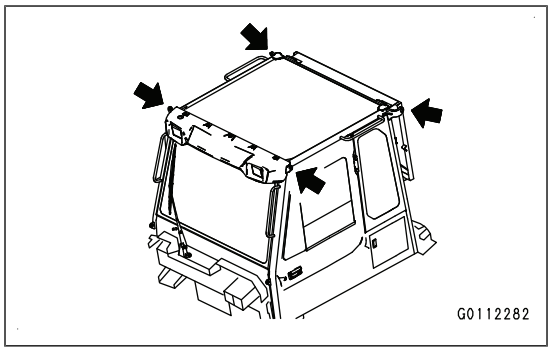
PRECAUTIONS WHEN INSTALLING, REMOVING, OR STORING ATTACHMENTS

- Appoint a leader before starting removal or installation operations for attachments.
- Place attachments that have been removed from the machine in a stable condition so that they do not fall. And take steps to prevent unauthorized persons from entering the storage area.

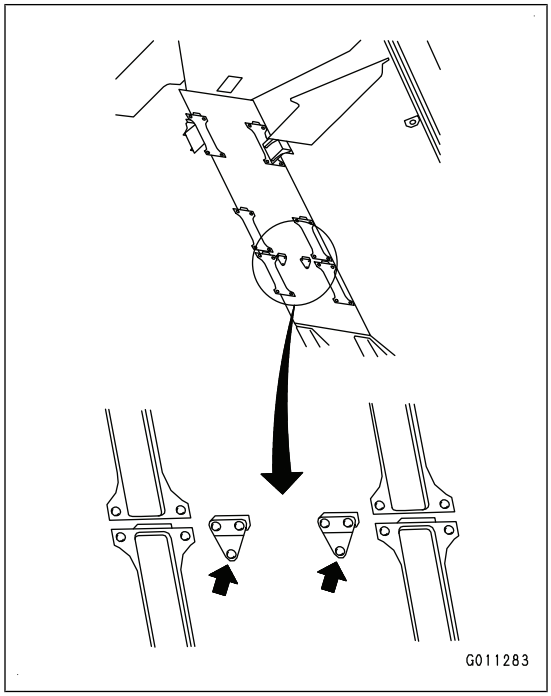


PRECAUTIONS FOR WORKING AT HIGH PLACES

- When working at high places, use a step ladder or other stand to ensure that the work can be performed safely.
  There is a danger falling from high place that can lead to serious personal injury or death.
- To prevent personal injury caused by slipping or falling off the machine, be sure to set the hook of the personal fall-arrest equipment on the anchor point for tie-off.
- The anchor points for tie-off are set to the positions that follow.
  - Cab (4 places)

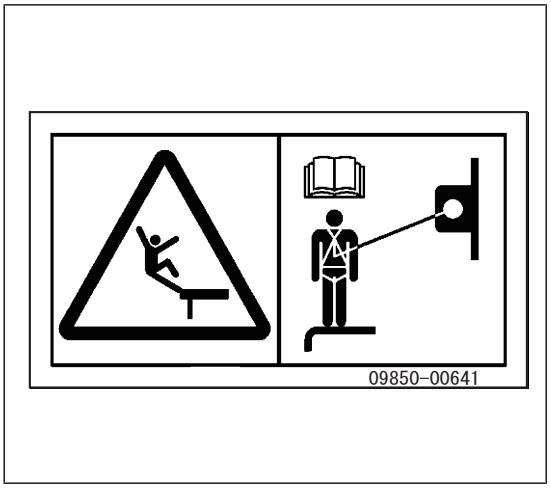


  - Dump body (2 places)

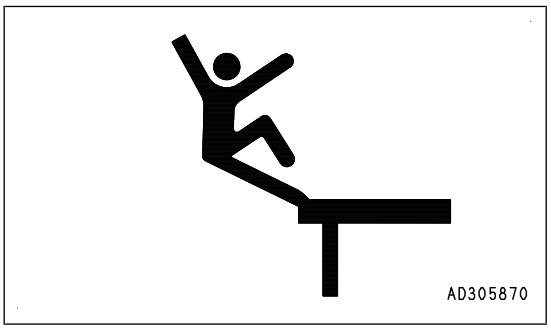


- Do not set other ones than the hook of the personal fall-arrest equipment to the anchor point for tie-off. The anchor points installed to the cab are also used as the cab lifting points. When you lift the cab, consult your Komatsu distributor.

- The safety label as shown in the figure is attached on the anchor point for tie-off.



PRECAUTIONS WHEN WORKING ON MACHINE



- When performing maintenance work on the machine, maintain the foothold clean and orderly to prevent falling. Always observe the followings.
  - Avoid spilling of oil and grease.
  - Do not litter the tools.
  - Watch your step when walking around on the machine.
  - Remove mud and greases stuck to the shoe sole.
- Never jump down from the machine. When getting on and off the machine, always face the machine and maintain at least three-point contact (both feet and one hand, or both hands and one foot) with the handrails and steps to ensure that you support yourself.
- You must walk along the access aisle for checking being paved with non-slip pads. Never climb on the engine hood and cover to prevent personal injuries from falling or failing over due to losing your footing.

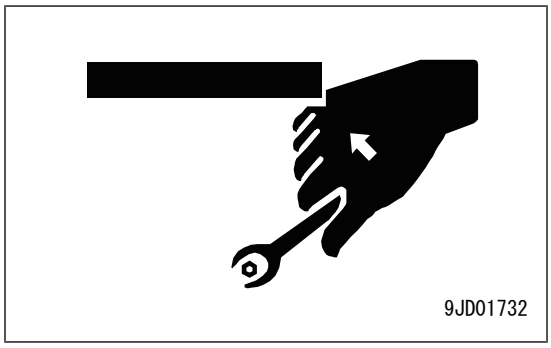
PRECAUTIONS WHEN WORKING UNDER MACHINE

Machine or dump body may fall, and it is dangerous that serious personal injury or death may occur. Always observe the following.

- When performing inspection with the dump body raised, always set the dump control lever to “HOLD” position, set the lock knob to LOCK position, then insert the body pivot pin. If the body pivot pin is not inserted, the dump body may go down when the dump control lever is operated, and catch or cause serious injury or even death to the person performing the inspection.
- Always perform the operation to remove or insert the body pivot pin with at least 2 workers. This operation is performed with the dump body raised, so if the dump body comes down during the operation, it may lead to serious injury or even death.
- Make sure the hoists or hydraulic jacks you use are in good repair and strong enough to handle the weight of the component. Never use hydraulic jacks at places where the machine is damaged, bent, or twisted. Never use if the strand of wire rope is frayed, twisted or pinched. Never use bent or distorted hooks.
- Never use concrete blocks for supports. Concrete blocks may break under even light loads.

USE PROPER TOOLS

Use the tools suited to the task and use them correctly. Using damaged, deformed, or low quality tools, or making improper use of the tools may cause serious personal injury or death.



PRECAUTIONS FOR CHECK AND MAINTENANCE

TURN BATTERY DISCONNECT SWITCH TO OFF POSITION

In the following cases, turn the starting switch to OFF position and check that the system operating lamp is off. Then set the battery disconnect switch to OFF position and remove the switch key.

If you check and handle battery without turning battery disconnect switch to OFF position, serious personal injury or death by such as an electric shock may occur.

- When storing the machine for a long time (more than 1 month)
- When repairing the electrical system
- When performing electric welding
- When handling the battery
- When replacing the fuse, etc.

PRECAUTIONS FOR WELDING

Welding operations must always be performed by a qualified welder and in a place equipped with proper equipment. There is a hazard of gas, fire, or electric shock when performing welding, so never allow any unqualified person to perform welding.

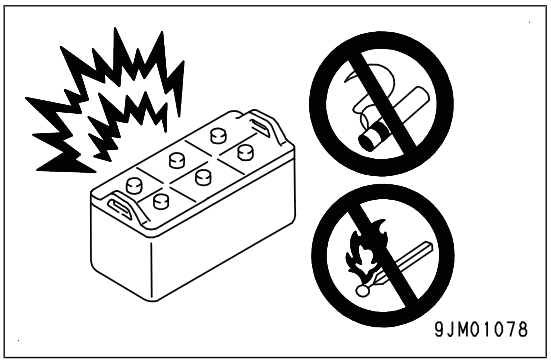
HANDLE BATTERY

Before inspecting or handling the battery, turn the key in the starting switch to OFF position and check that the system operating lamp is off. Then set the battery disconnect switch to OFF position and remove the switch key.

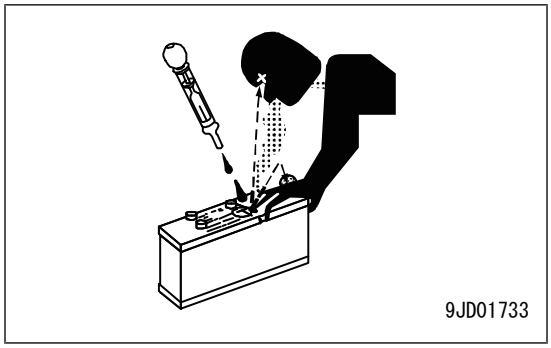
Danger of battery exploding

When the battery is being charged, flammable hydrogen gas is generated and may explode. In addition, the battery electrolyte includes dilute sulphuric acid. Any mistake in handling may cause serious personal injury, explosion, or fire, so always observe the following.

- Do not use or charge the battery if the battery electrolyte level is below the LOWER LEVEL line. It can cause explosion. Be sure to do the periodic inspection of the battery electrolyte level. In the case of a liquid stopper type, add purified water (such as a commercial battery fluid) to UPPER LEVEL line. For the Komatsu maintenance-free battery (if equipped), check the indicator display and follow the instructions. See "CHECK KOMATSU MAINTENANCE-FREE BATTERY INDICATOR" for how to read the indicator.
- Do not use a direct air blow or dry cloth to clean the battery. A wet cloth will prevent fire or explosion from static electricity.
- Do not smoke or bring any open flame close to the battery.
- Hydrogen gas is generated when the battery is being charged, so remove the battery from the machine, take it to a well-ventilated place, remove the battery caps, then perform the charging.
- After charging, tighten the battery caps securely.



Danger from dilute sulphuric acid



When the battery is being charged, flammable hydrogen gas is generated and may explode. In addition, the battery electrolyte includes dilute sulphuric acid. Any mistake in handling may cause serious personal injury, explosion, or fire. Always observe the following.

- When handling the battery, always wear protective eyeglasses and rubber gloves.
- If battery electrolyte gets into your eyes, immediately wash your eyes with large amounts of fresh water. After that, get medical attention immediately.
- If battery electrolyte gets on your clothes or skin, wash it off immediately with large amounts of water.

Danger of sparks

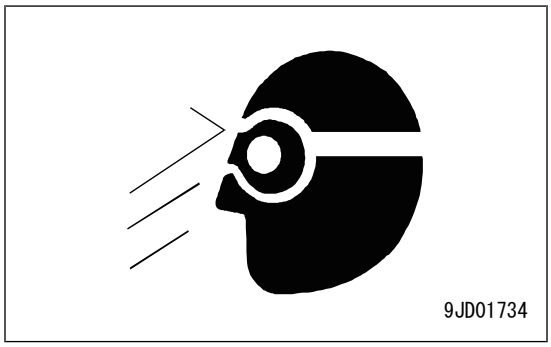
Sparks may be generated and they can cause a fire. Always observe the following.

- Do not let tools or other metal objects make any contact between the battery cables. Do not leave tools lying around near the battery.
- When removing the battery cables, turn the starting switch to OFF position and, after checking that the system operating lamp goes out, set the battery disconnect switch key to OFF position and pull it out.
  When removing the battery cables, remove the ground cable (negative (-) cable) first. When installing, connect the positive (+) cable first, then connect the ground.
- Tighten the battery cable terminals securely.
- Secure the battery firmly in the specified position.

WHEN USING HAMMER

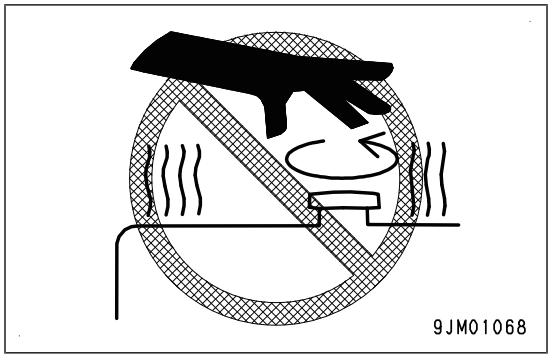
When using a hammer, pins may come out or metal particles may be scattered. It is dangerous and may cause serious personal injury or death. Always observe the following.

- When hitting pins, etc., broken pieces may be scattered, and it may cause personal injury to the people in the surrounding area. Always check that there is no one in the surrounding area.
- When hard metal parts such as pins or bearings are hit with a hammer, pieces may be scattered. It may cause serious personal injury or death. Always wear protective equipment such as protective eyeglasses and gloves.
- If the pin is hit with strong force, it may come out, and injure people in the surrounding area. Do not allow anyone to enter the surrounding area.



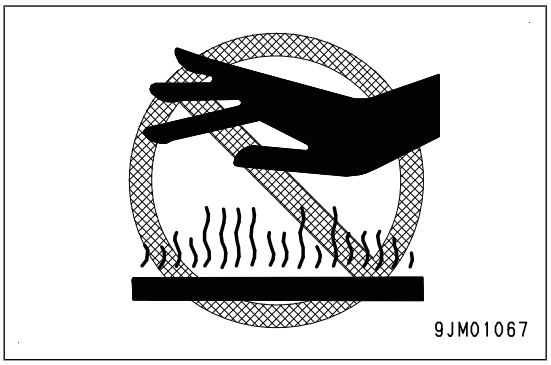
PRECAUTIONS FOR HIGH-TEMPERATURE COOLANT

To prevent burns from boiling water or steam spurting out when checking or draining the coolant, wait for the coolant to cool down to a temperature where the radiator cap can be touched by hand. Then loosen the cap slowly to release the pressure inside the radiator, and remove the cap.



PRECAUTIONS FOR HIGH-TEMPERATURE OIL

To prevent burns from hot oil spurting out or from touching high-temperature parts when checking or draining the oil, wait for the oil to cool down to a temperature where the cap or plug can be touched by hand. Then, loosen the cap or plug slowly to release the internal pressure and remove the cap or plug.



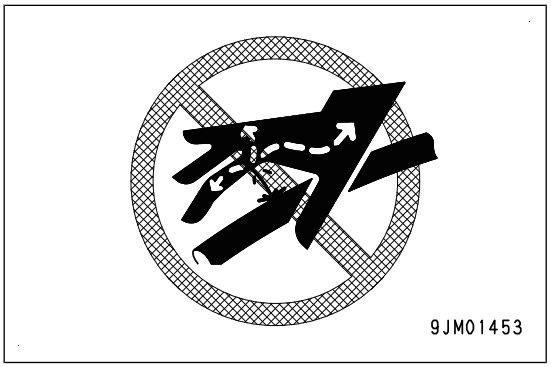
PRECAUTIONS FOR HIGH-TEMPERATURE PARTS

To prevent burns from touching high-temperature parts, when checking or performing maintenance after stopping engine, check the parts have been cooled down to touch with bare hand before checking or maintenance.

PRECAUTIONS FOR HIGH-PRESSURE OIL

The hydraulic system is always under internal pressure. In addition, the fuel piping is also under internal pressure when the engine is running and immediately after the engine is stopped. When performing inspection or replacement of the piping or hoses, check that the internal pressure in the circuit has been released. If this is not done, serious personal injury or death may occur. Always observe the following.

- Do not perform inspection or replacement work with the circuit under pressure.
- If there is any leakage from the piping or hoses, the surrounding area will be wet, so check for cracks in the piping and hoses and for swelling in the hoses.
  When performing inspection, wear protective equipment such as protective eyeglasses and leather gloves.
- High-pressure oil leaking from small holes is dangerous that may penetrate your skin and cause loss of sight if it contacts your skin or eyes directly. If a jet of high-pressure oil hit your skin or eyes, and suffer injury, wash the place with clean water, and consult a doctor immediately for medical attention.



PRECAUTIONS FOR HIGH-PRESSURE FUEL

While the engine is running, high-pressure is generated in the engine fuel piping. If you try to disassemble the piping before the internal pressure is released, serious personal injury or death can result. When performing inspection or maintenance of the fuel piping system, stop the engine and wait for at least 30 seconds to allow the internal pressure to go down before starting the work.

HANDLE HIGH-PRESSURE HOSES AND PIPING

If oil or fuel leaks from high-pressure hoses or piping, it may cause fire or defective operation. It is dangerous and may cause serious personal injury or death. If the hose or piping mounts are loose or oil or fuel is found to be leaking from the mount, stop operations and tighten to the specified torque.

If any damaged or deformed hoses or piping are found, consult your Komatsu distributor.

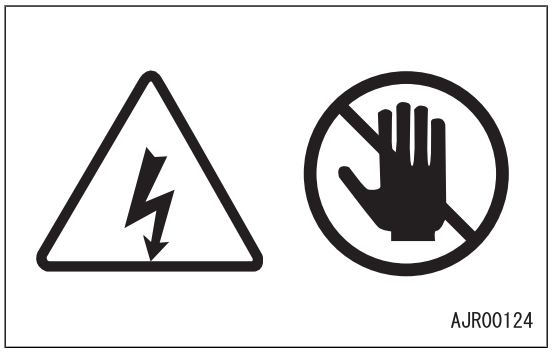
Replace the hose if any of the following problems are found.

- Damaged hose or deformed hydraulic fitting.
- Frayed or cut covering or exposed reinforcement wire layer.
- Covering swollen in places.

- Twisted or crushed movable portion.
- Foreign material embedded in covering.

PRECAUTIONS FOR HIGH VOLTAGE

When the engine is running and immediately after it is stopped, high voltage is generated inside the engine controller and the engine injector, and there is danger of electric shock. Never touch the inside of the engine controller or the injector part of the engine. If it is necessary to touch the inside of the engine controller or the injector part of the engine, consult your Komatsu distributor.



PRECAUTIONS FOR NOISE

When performing maintenance of the engine and you are exposed to noise for long periods of time, wear ear covers or ear plugs while working.

If the noise is too loud, it may cause temporary or permanent hearing problems.

HANDLE SUSPENSION CYLINDERS, ACCUMULATOR AND GAS SPRINGS

The suspension cylinders, accumulator, and gas springs are charged with high-pressure nitrogen gas. If any mistake is made in handling, there is danger that it may cause an explosion or serious personal injury or death. Always observe the following.

- Do not disassemble it.
- Do not bring it near open flame or dispose of it in fire.
- Do not make holes in it, weld it, nor use a cutting torch.
- Do not hit or roll it, or subject it to any impact.
- Ask your Komatsu distributor when sealing gas into the cylinder or replacing gas from it.
- When disposing of the accumulator, the gas must be released. Ask your Komatsu distributor to perform this work.

PRECAUTIONS FOR COMPRESSED AIR

- When performing cleaning with compressed air, there is a hazard of serious personal injury or death caused by flying dust or particles.
- When using compressed air to clean the filter element or radiator, wear protective eyeglasses, anti-dust mask, gloves, and other protective equipment.

MAINTENANCE OF AIR CONDITIONER

If air conditioner refrigerant gets into your eyes, it may cause loss of sight; if it contacts your skin, it may cause frostbite. Never loosen any parts of the cooling circuit.

CHEMICAL HAZARD

During maintenance or dismantling operations, where there is the risk of contact with hazardous chemical substances, relevant safety precautions should be taken.

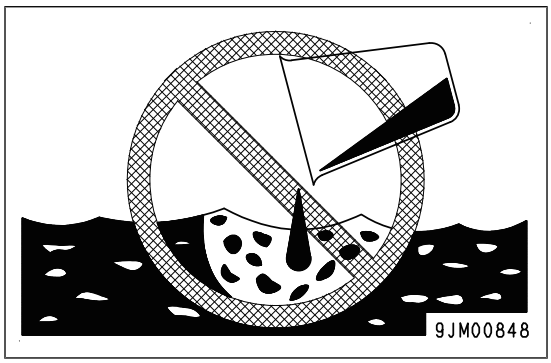
If any doubt exists, contact your Komatsu distributor.

See also “PRECAUTIONS FOR DISPOSING OF WASTE MATERIALS” and “MAINTENANCE OF AIR CONDITIONER”

PRECAUTIONS FOR DISPOSING OF WASTE MATERIALS

To prevent pollution, pay full attention to the way to dispose of waste materials.

- Always drain the oil from your machine in containers. Never drain the oil and coolant directly onto the ground or dump into the sewage system, rivers, seas, or lakes.
- Obey appropriate laws and regulations when disposing of harmful objects such as oil, fuel, coolant, solvent, filters, batteries, and DEF.



Avoid exposure to burning rubber or plastics which produce a toxic gas that is harmful to people.

- When disposing of parts made of rubber or plastics (hoses, cables, and harnesses), always comply with the local regulations for disposing industrial waste products.

METHOD FOR SELECTING WINDOW WASHER FLUID

Use an ethyl alcohol base washer liquid.

Methyl alcohol base washer liquid may irritate your eyes, so do not use it.

PERIODIC INSPECTION OF DEFINED LIFE PARTS

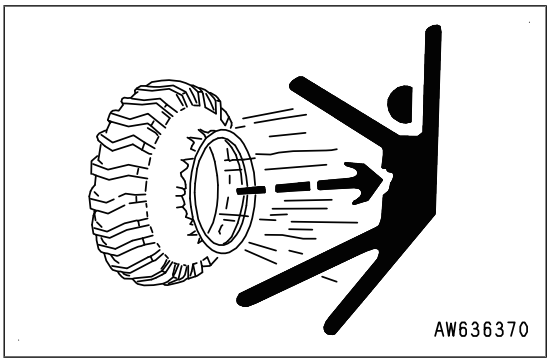
- To use the machine safely for a long period, be sure to periodically inspect the defined life parts that have an especially close relation to safety, such as hoses and the seat belt. If an abnormality is found, replace it immediately.
- The material of these components naturally changes over time, and repeated use causes deterioration, wear, and fatigue. As a result, there is a hazard that these components can fail and cause serious personal injury or death. It is not easy to judge the remaining life of these components but inspect them as much as possible before work and at the regular maintenance.
- Replace or repair the defined life parts if a defect is found by the check.

TIRES

HANDLE TIRES

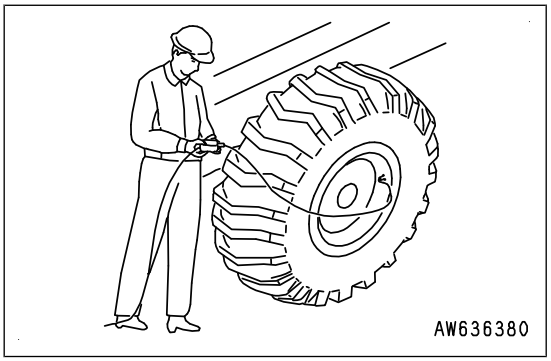
If tires or rims are handled mistakenly, there is danger that the tire may explode or be damaged, or that the rim may fly off and cause serious personal injury or death.

To ensure safety, always observe the following.



- Maintenance, disassembly, repair, and assembly of the tires and rims requires special equipment and special technology, so always ask your Komatsu distributor to perform these operations.
- Use only specified tires and inflate them to the specified pressure.
- When pumping up the tires, check that no other person is standing near the tire, and install an air chuck with a clip that can be secured to the air valve.

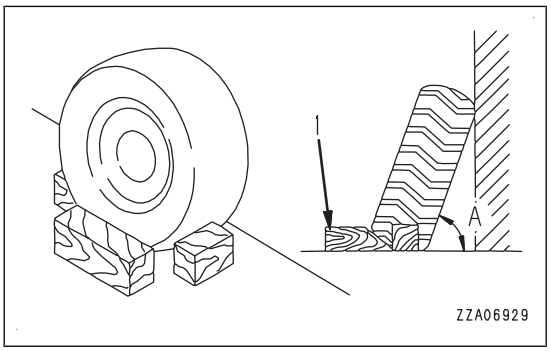
  To prevent the tire inflation pressure from becoming too high, measure the pressure from time to time with an air gauge while pumping up the tire.
- If the tire inflation pressure goes down abnormally or the rim parts do not fit the tire, there is a problem with the tire or rim parts. Always contact your Komatsu distributor for repairs.



- If the rim parts are not fitted properly when the tire is being pumped up, there is a danger that the rim parts may fly off, so set up a protective fence around the tire, and do not stand directly in front of the rim. Stand beside the tread when pumping up the tire.
- Do not adjust the tire inflation pressure immediately after traveling at high speed or operating under heavy load.
- Never perform welding or light a fire near the tire.
- Always release the inflation pressure from a tire prior to removing rim from tire.
- Before removing the tire from the machine for repairs, remove the valve partially to release the air from the tire gradually, then remove the tire.

PRECAUTIONS FOR STORING TIRES

Tires for construction equipment are extremely heavy, it may lead to serious personal injury or death. To maintain safety, always observe the following.



- As a basic rule, store the tires in a warehouse which unauthorized persons cannot enter.
  If the tires must be stored outside, always erect a fence and put up “No Entry” signs.
- Stand the tire at the angle of 60 to 70 ° (A) on a level ground, and block it securely (1) so that it cannot tip over or fall over if any person should touch it. Do not lay the tire on its side. This will deform the tire and cause it to deteriorate.
- If the tire should fall over, do not attempt to stop it. Get out of the way quickly.

PRECAUTIONS FOR DEF

GENERAL CHARACTER AND PRECAUTIONS FOR HANDLING

DEF is a colourless transparent 32.5% aqueous urea solution. Urea as main constituent is a material which is used for cosmetics, medical and pharmaceutical products, and fertilizer, etc. The following situations require immediate action:

- If it gets on your skin, it may cause inflammation. Immediately take the contaminated clothes or shoes off and wash it off with water. In addition, use a soap to wash it off thoroughly. If your skin becomes irritated or begins to hurt, immediately consult a doctor for treatment.
- Do not induce vomiting if swallowed. If swallowed, thoroughly rinse mouth with water and consult a doctor for treatment.
- Avoid contact with the eyes. If there is contact, flush with clean water for several minutes and consult a doctor for treatment.
- Wear protective eyeglasses when exposed to DEF to protect from solution splashing in your eyes. Wear rubber gloves when you perform work handling DEF to avoid skin contact.

PRECAUTIONS FOR ADDING

Do not put fluid other than DEF into DEF tank. If diesel fuel or gasoline is added into the tank, it can cause a fire. Some fluids or agents added can create and emit a toxic gas.

When opening the cap of DEF tank of the machine, the ammonia vapour may escape. Keep your face away from the filler port during opening or refilling.

PRECAUTIONS FOR STORING

If the temperature of DEF becomes high, a harmful ammonia gas may be emitted. Completely seal up its container for storage. Only open containers in a well-ventilated area.

When storing DEF, avoid direct sunlight. Always use the original container it came in. Do not exchange the container of DEF with another one. If DEF is stored in an iron or aluminum container, toxic gas may develop and a chemical reaction may corrode the container.

PRECAUTIONS FOR FIRE HAZARD AND LEAKAGE

DEF is non-flammable; however, in the case of a fire it may generate an ammonia gas.

If DEF is spilled, immediately wash and clean the area with water. If spilled DEF is left unattended and the area is not washed and cleaned, it can cause corrosion to the contaminated area and emit toxic gas.

OTHER PRECAUTIONS

When disposing of DEF, treat it as an industrial waste. The container for DEF is an industrial waste as well. It should be treated in the same way.

Never use an iron or aluminum container when disposing DEF, because toxic gas may develop and a chemical reaction may corrode the container. Use a container made of resin (PP, PE) or stainless steel when handling the fluid waste of DEF.

Do not touch any fluid discharged from urea SCR. This fluid becomes acid by the influence of sulphur in the fuel or built-in oxidation catalyzer. If it gets on your skin, thoroughly wash it off with water.

White powder (crystallized urea) may cover the exhaust pipe outlet of aftertreatment devices. When you wipe off the covered materials, discard the crystallized urea and the used cloth as industrial waste.

Never relocate or modify the exhaust gas aftertreatment devices. The harmful gas may be exhausted and it can cause serious damage to the environment as well as violation of laws.

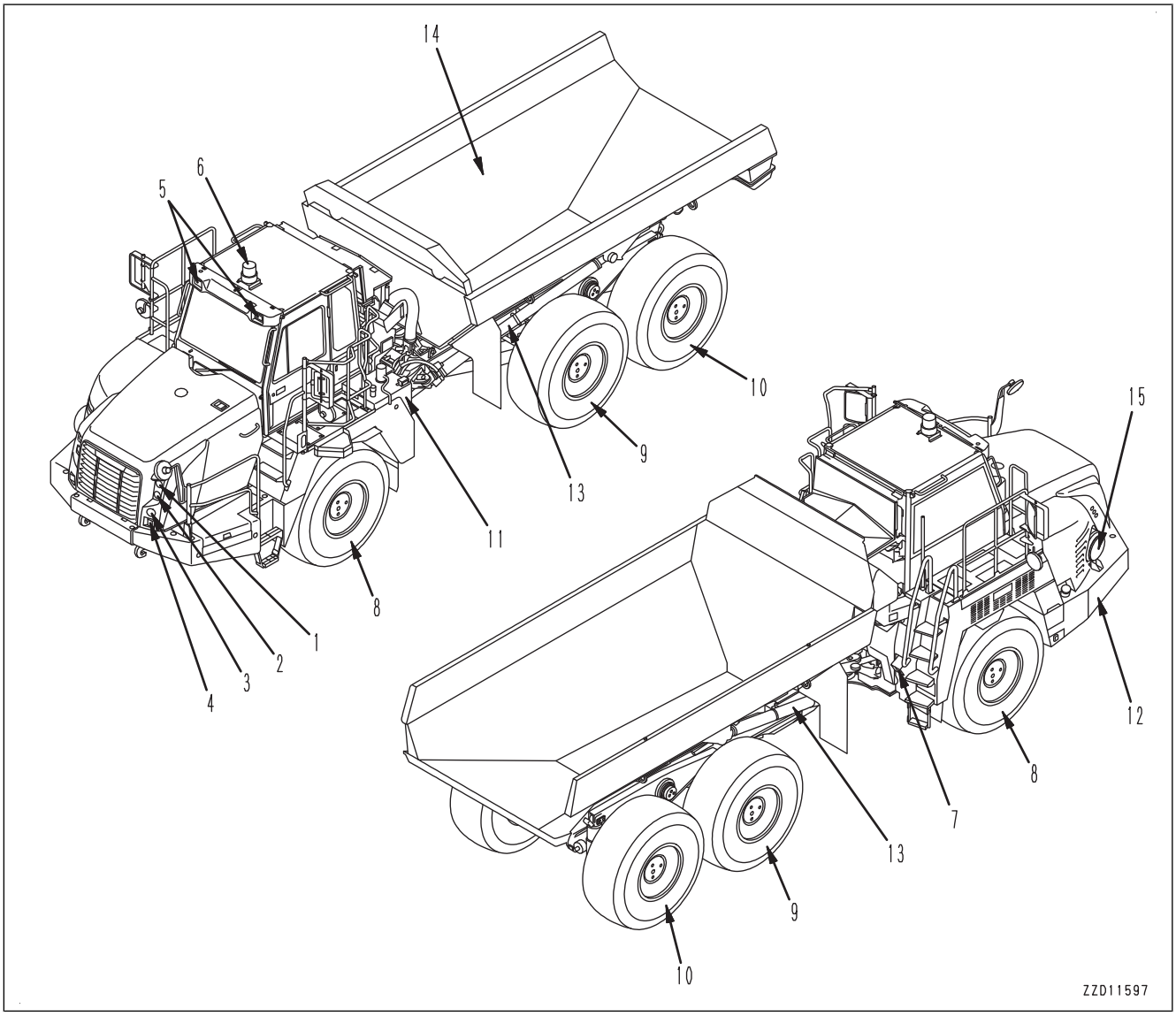
OPERATION

⚠ WARNING

Please read and make sure that you understand the SAFETY section before reading this section.

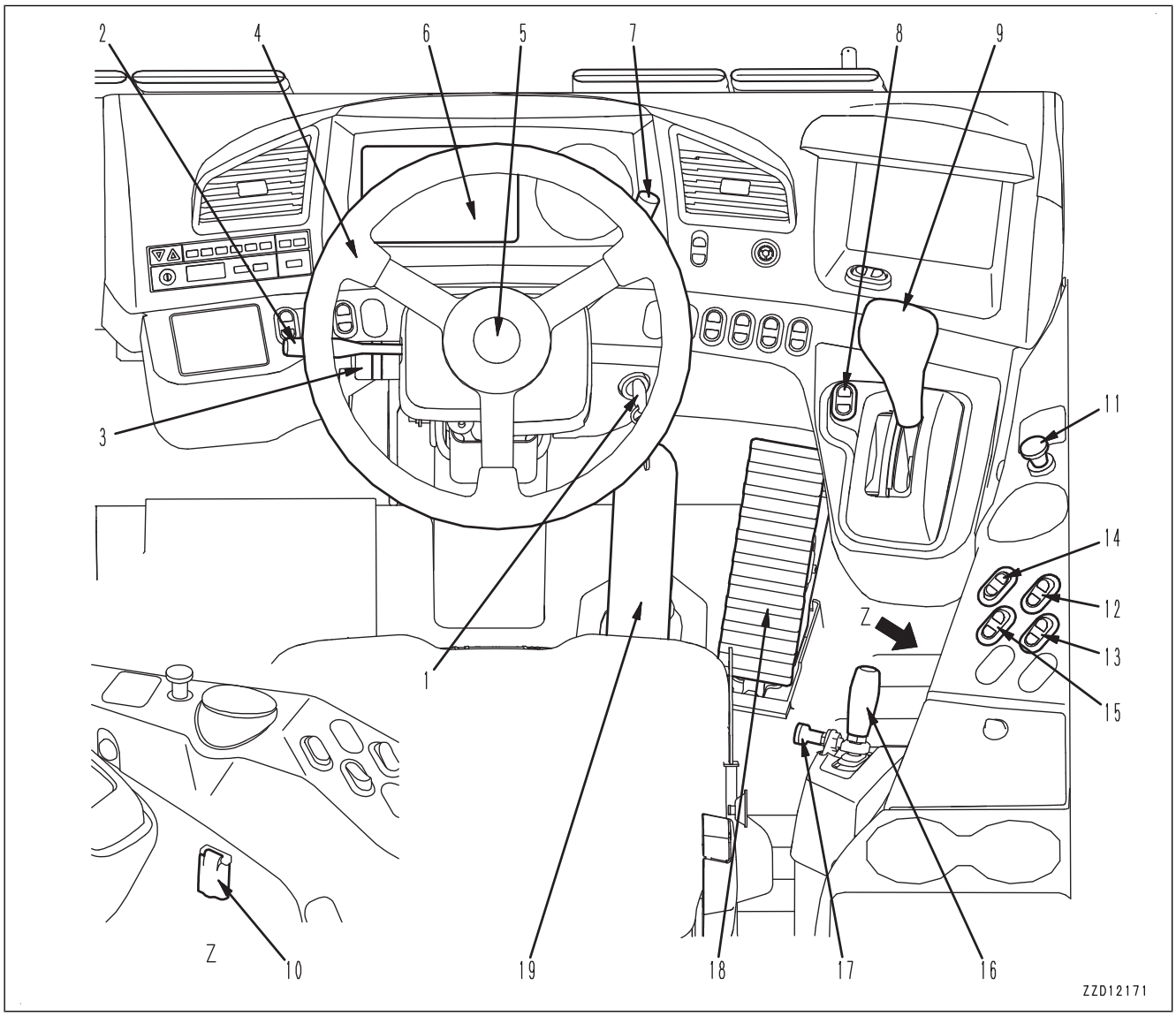
GENERAL VIEW

MACHINE EQUIPMENT NAME



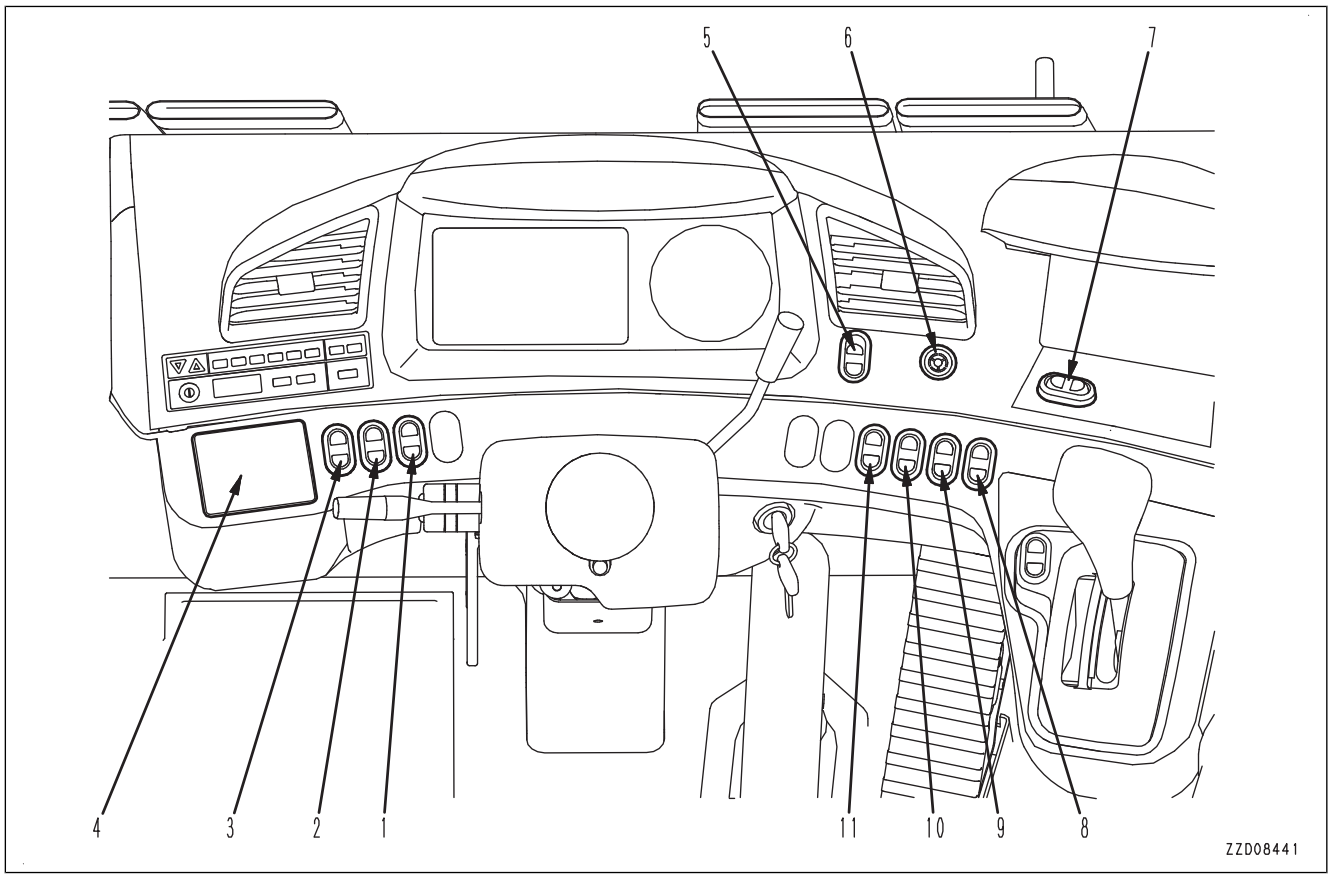
(1) Headlamp (high beam)
(2) Headlamp (low beam)
(3) Fog lamp (if equipped)
(4) Turn signal lamp and clearance lamp
(5) Working lamp
(6) Yellow revolving lamp (if equipped)
(7) Side lamp
(8) Front wheel
(9) Center wheel
(10) Rear wheel
(11) Hydraulic tank
(12) Fuel tank
(13) Hoist cylinder
(14) Dump body
(15) Air Cleaner

CONTROLS AND GAUGES NAMES



(1) Starting switch
(2) Lamp switch, dimmer switch, turn signal lever
(3) Wiper, window washer switch
(4) Steering wheel
(5) Horn button
(6) Machine monitor
(7) Retarder control lever
(8) Parking brake switch
(9) Gear shift lever
(10) Engine shutdown secondary switch
(11) Cigarette lighter
(12) Fog lamp switch (if equipped)
(13) Revolving lamp switch (if equipped)
(14) Power window switch
(15) Side lamp switch
(16) Dump lever
(17) Dump lever lock knob
(18) Accelerator pedal
(19) Brake pedal

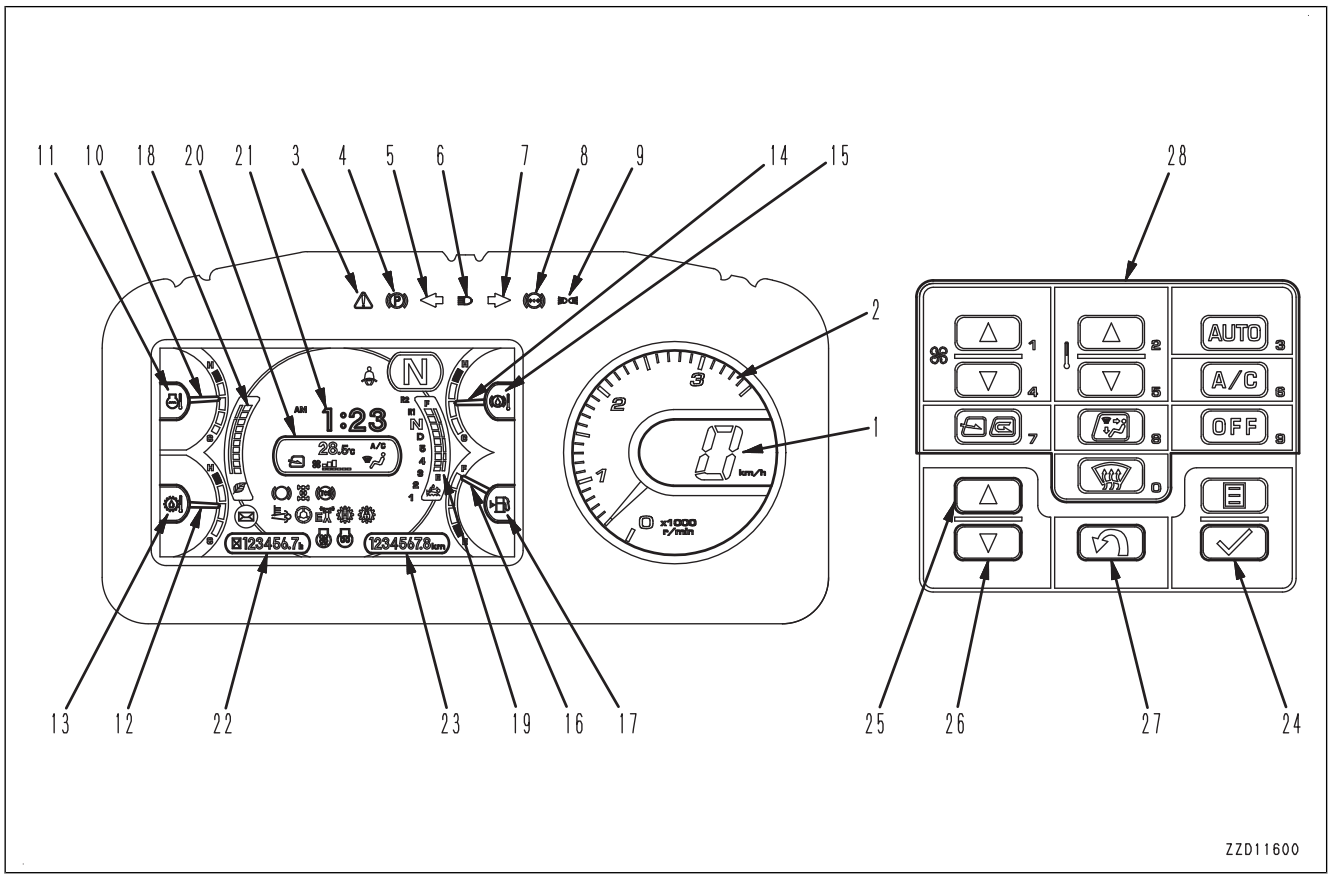
Enlargement of machine monitor



(1) Heated wire mirror switch (if equipped)
(2) Working lamp switch
(3) Monitor brightness selector switch
(4) Switch panel
(5) Hazard lamp switch
(6) Secondary steering switch
(7) Rear view monitor brightness adjustment switch
(8) Engine power mode selector switch
(9) AISS LOW switch
(10) Automatic retarder, accelerator linked control switch (if equipped)
(11) Inter-axle differential lock switch

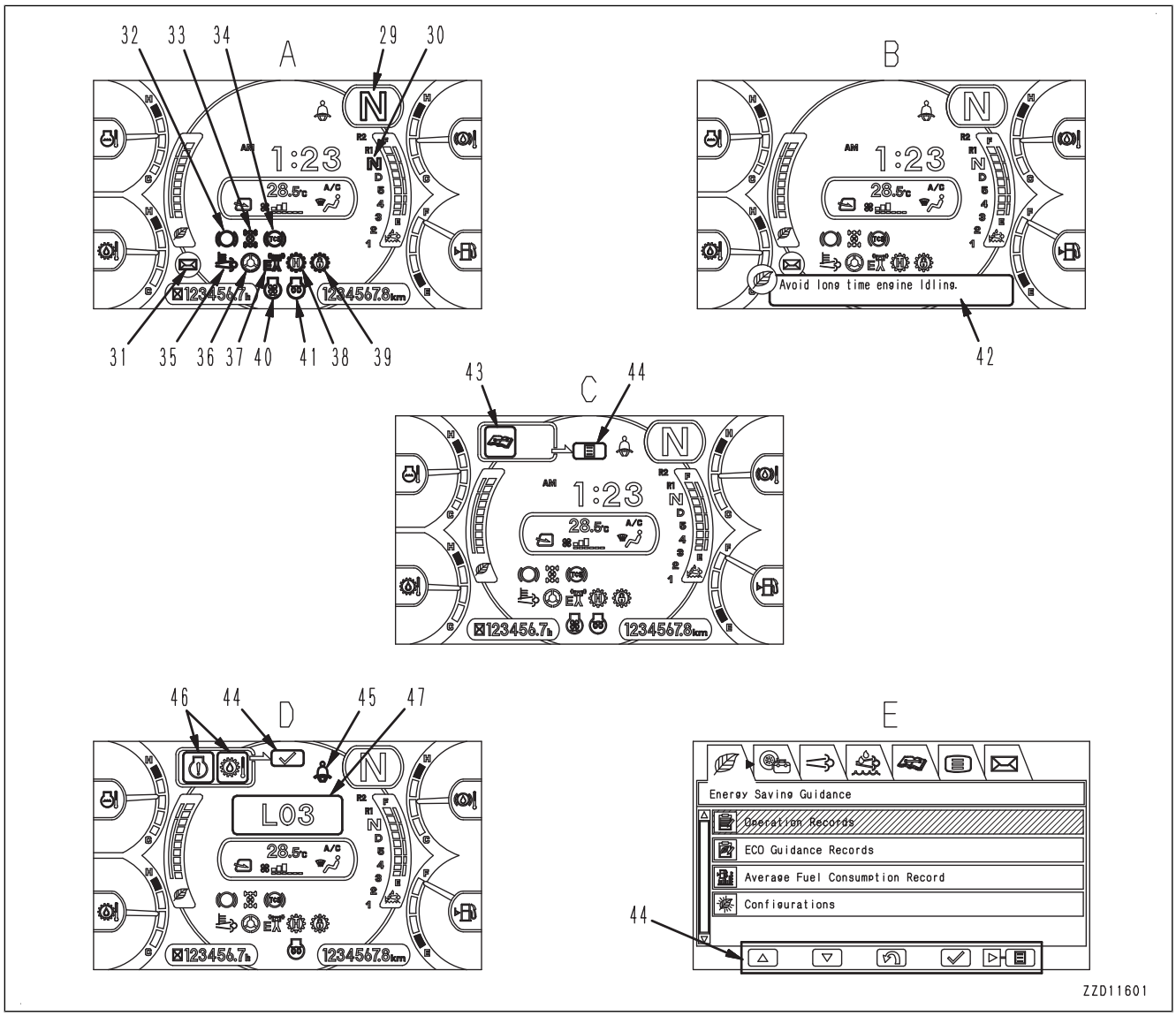
MACHINE MONITOR EQUIPMENT NAME

Machine monitor



(1) Speedometer
(2) Engine tachometer
(3) Centralized warning lamp
(4) Parking brake pilot lamp
(5) Turn signal lamp pilot lamp (L.H.)
(6) Headlamp (high beam) pilot lamp
(7) Turn signal lamp pilot lamp (R.H.)
(8) Brake oil pressure caution lamp
(9) Clearance lamp pilot lamp
(10) Engine coolant temperature gauge
(11) Engine coolant temperature caution lamp
(12) Torque converter oil temperature gauge
(13) Torque converter oil temperature caution lamp
(14) Retarder oil temperature gauge
(15) Retarder oil temperature caution lamp
(16) Fuel gauge
(17) Fuel level caution lamp
(18) ECO gauge
(19) DEF level gauge
(20) Air conditioner display section
(21) Clock
(22) L.H. meter
(23) R.H. meter
(24) Enter switch
(25) Up switch
(26) Down switch
(27) Return switch
(28) Air conditioner switches / Numeric keypad

Display of liquid crystal unit

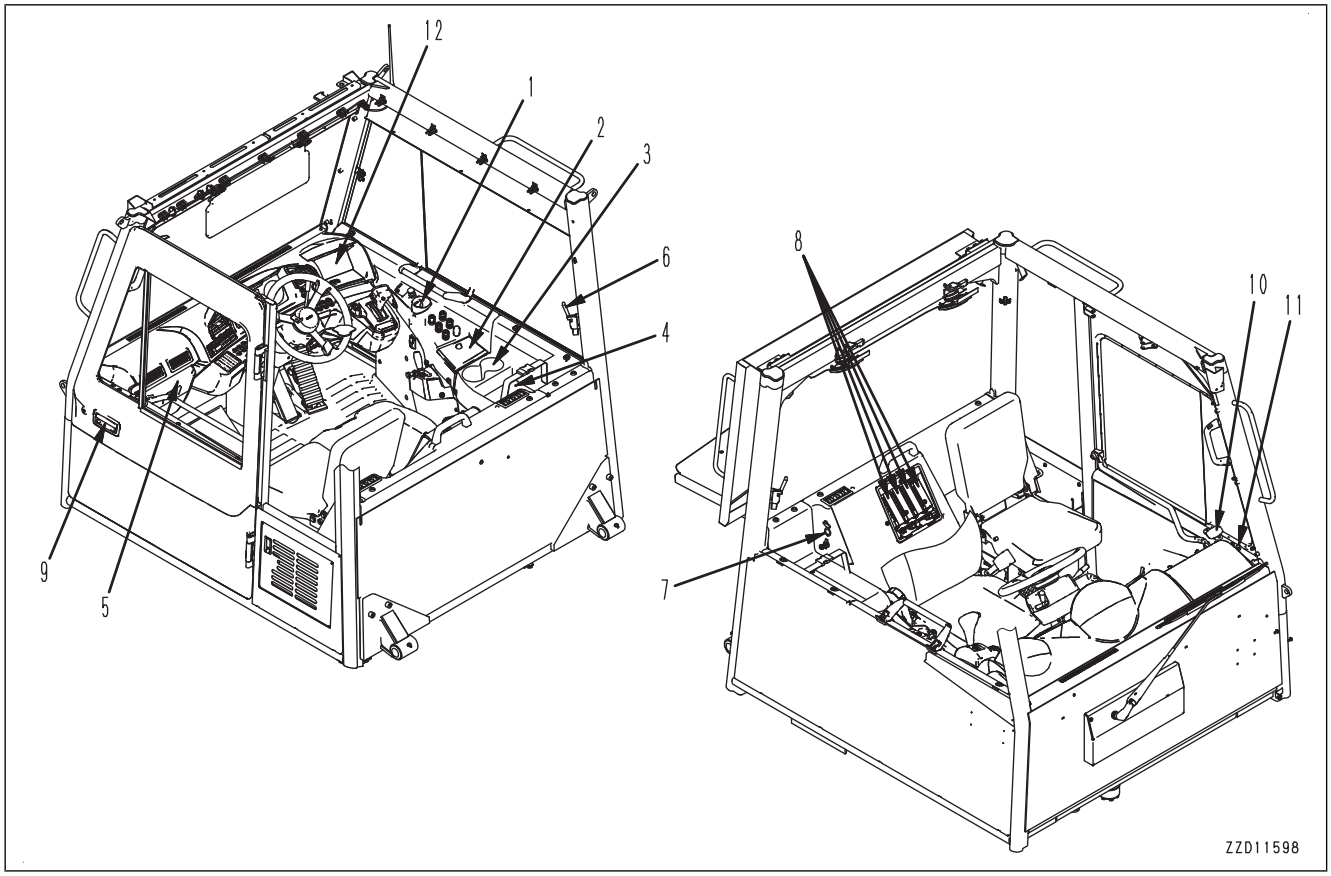


(A) Standard screen
(B) ECO guidance screen
(C) Maintenance time warning screen
(D) Warning screen
(E) User menu screen

(29) Shift indicator
(30) Shift lever position display
(31) Message display
(32) Retarder pilot lamp
(33) Inter-axle differential lock pilot lamp
(34) KTCS display
(35) Aftertreatment devices regeneration display
(36) Secondary steering pilot lamp
(37) Power mode display
(38) Shift hold pilot lamp
(39) Torque converter lockup pilot lamp
(40) Fan reverse pilot lamp
(41) Preheating pilot lamp
(42) ECO guidance
(43) Maintenance time caution lamp
(44) Guidance icon
(45) Seat belt caution lamp
(46) Warning display
(47) Action level display

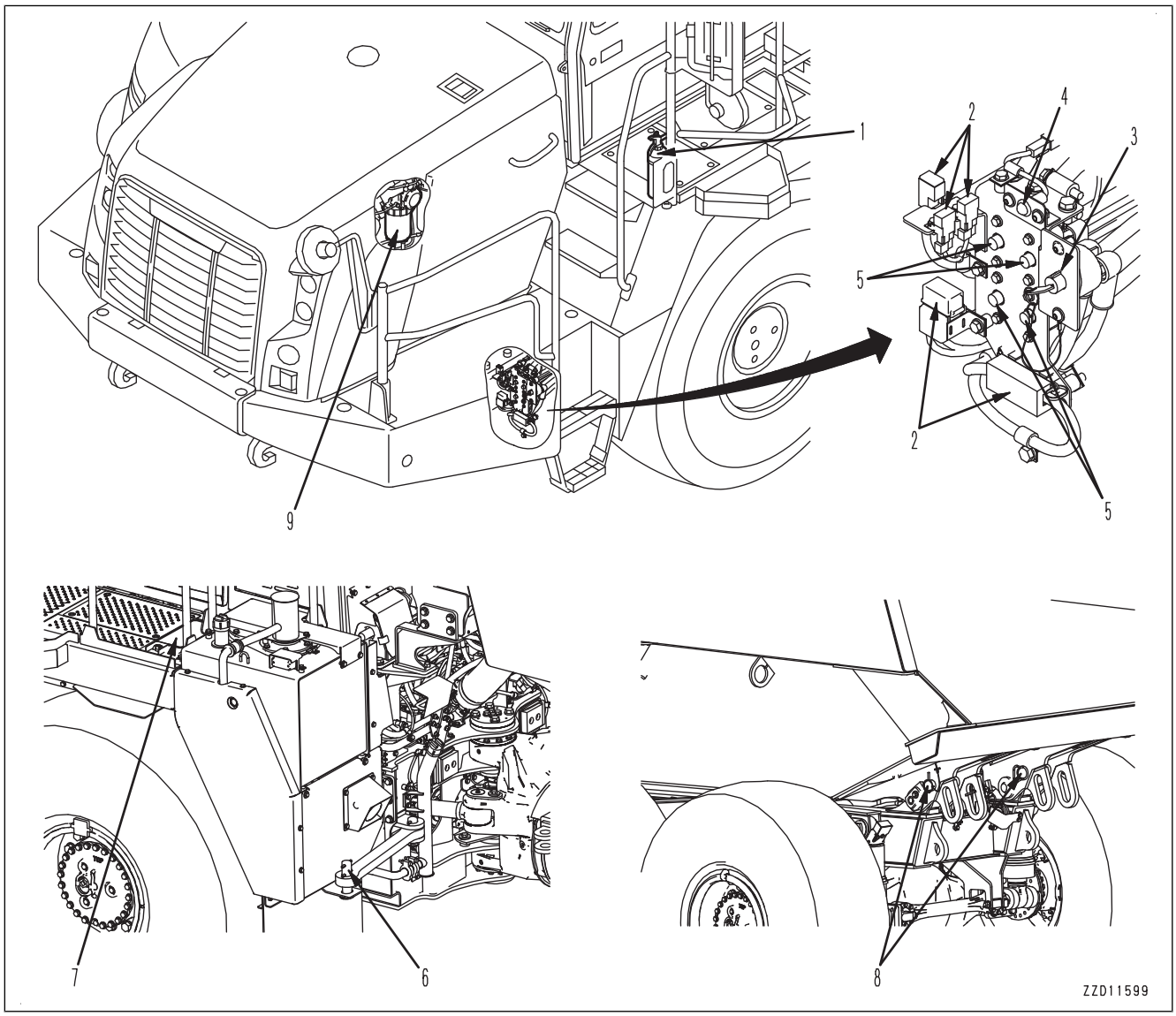
OTHER EQUIPMENT NAME

Inside of cab

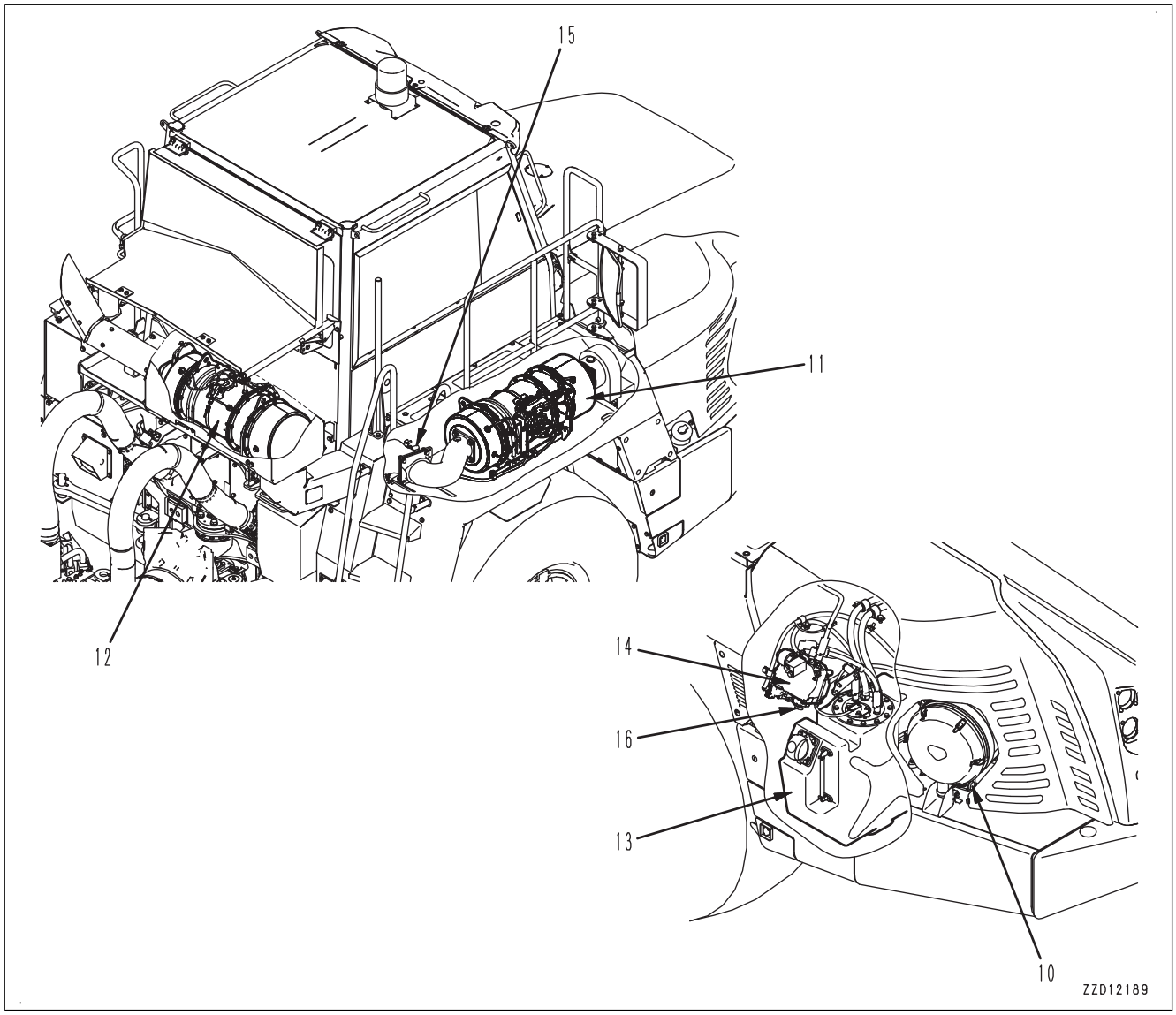


(1) Ashtray
(2) Drink box
(3) Cup holder
(4) Handy tray
(5) Magazine box
(6) Emergency escape hammer
(7) 12 V power supply
(8) Fuse
(9) Cab handle
(10) Open knob for cab door
(11) Cab door inner lock
(12) Rear view monitor

Outside of cab



(1) Fire extinguisher
(2) Fuse
(3) Battery disconnect switch
(4) System operating lamp
(5) Circuit breaker
(6) Articulation lock pin
(7) Toolbox
(8) Body pivot pin
(9) Komatsu Closed Crankcase Ventilation (hereafter KCCV) ventilator



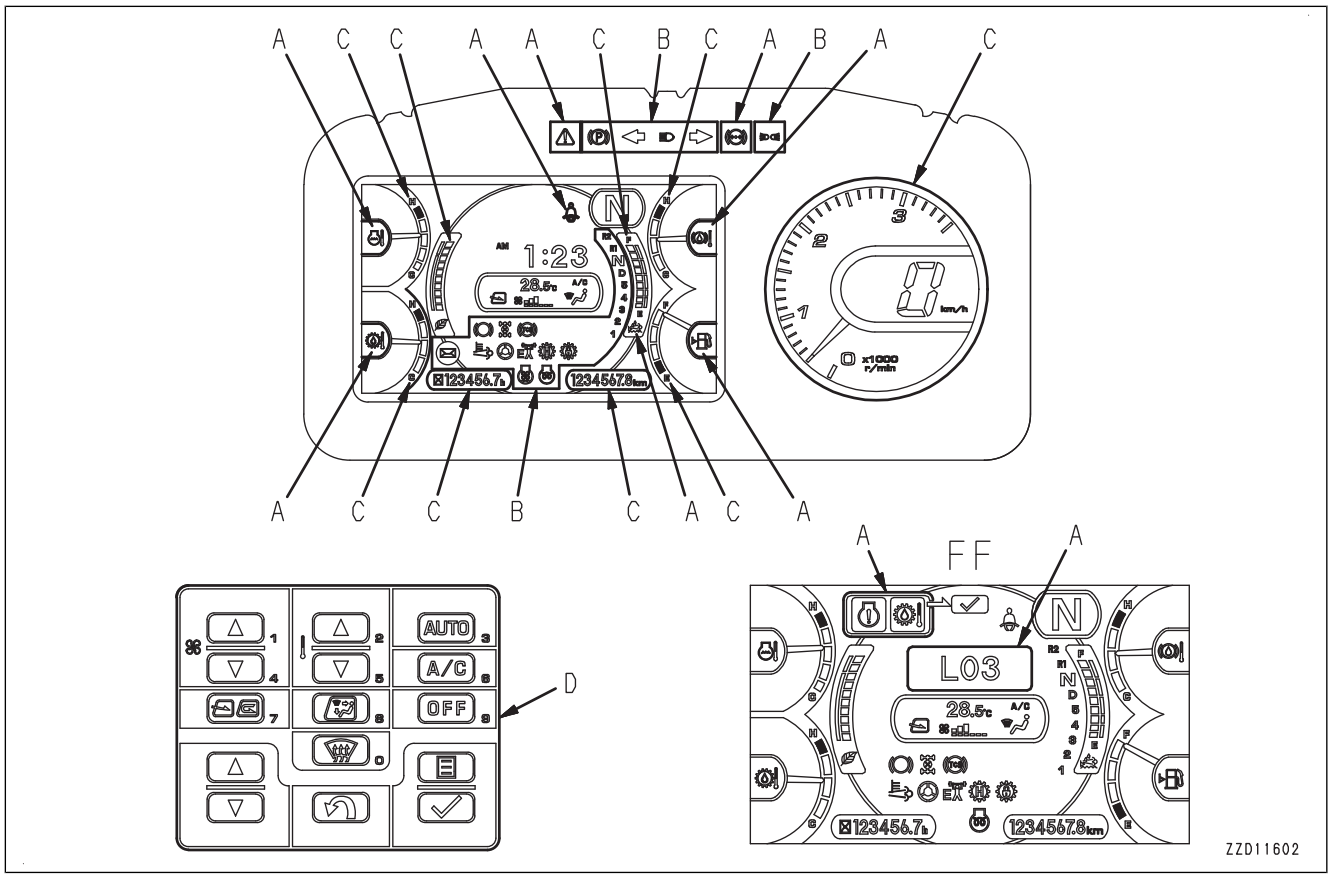
(10) Dust indicator
(11) KDPF
(12) SCR assembly
(13) DEF tank
(14) DEF pump
(15) DEF injector
(16) DEF filter

EXPLANATION OF COMPONENTS

The following is an explanation of devices necessary to operate the machine.

To perform suitable operations correctly and safely, it is important to completely understand methods of operating the equipment, and the meanings of the displays.

EXPLANATION OF MACHINE MONITOR EQUIPMENT



FF: Failure display screen

(A) Warning display

(B) Pilot display

(C) Meter display

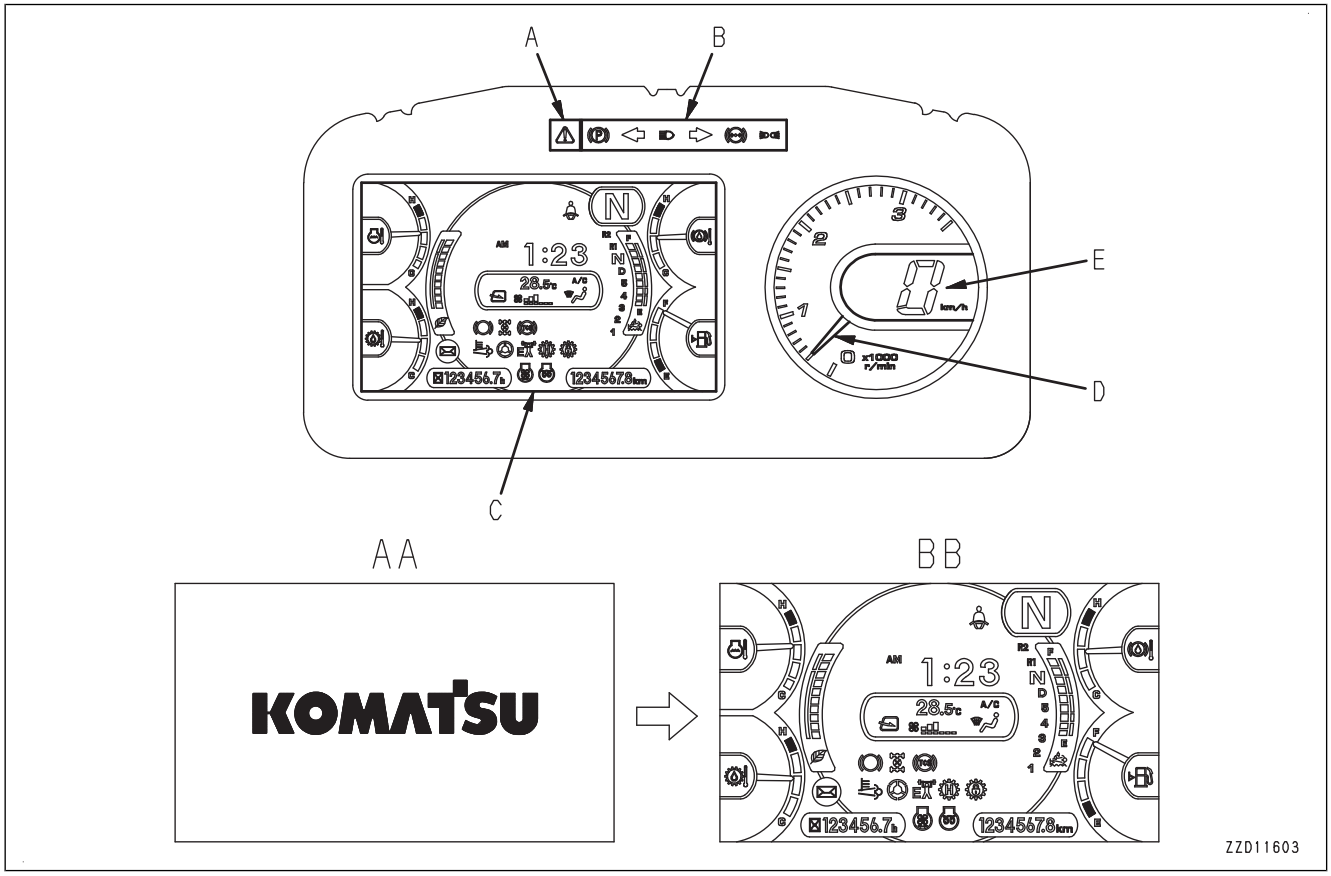
(D) Switch panel

REMARK

One of the features of liquid crystal display panels is that there may be black spots (spots that do not light up) or white spots (spots that stay lit) on the screen. When there are fewer than 10 black or white spots, this is not a failure or a defect.

BASIC OPERATION OF MACHINE MONITOR

BASIC OPERATION OF MACHINE MONITOR WHEN STARTING ENGINE IN NORMAL SITUATION



When the starting switch is turned to ON position, the machine monitor starts and operates as follows.

1. Centralized warning lamp (A) and pilot lamp (B) light up for 2 seconds and go out for 1 second.
2. Liquid crystal display (C) displays starting screen AA for 2 seconds, and then changes to standard screen BB.
3. The pointer of engine tachometer (D) moves one cycle.
4. Speedometer (E) displays “88” for 2 seconds.
5. The alarm buzzer sounds for 2 seconds, then stops under the normal condition.

NOTICE

If the lamps, alarm buzzer, etc. do not work, the machine monitor may be failed or the electric wiring may have breakage. In this case, ask your Komatsu distributor for repair.

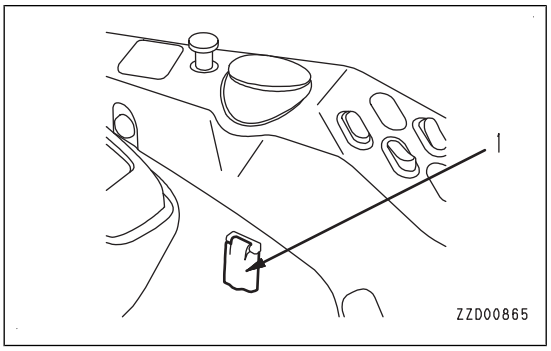
REMARK

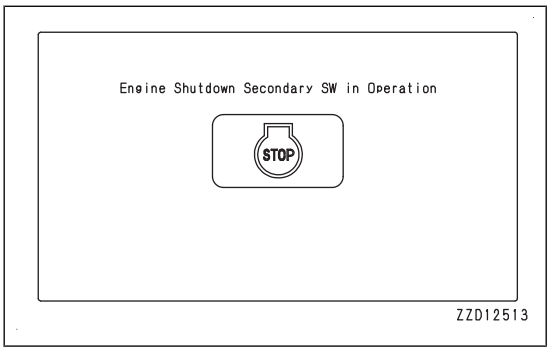
When the engine is started, the battery voltage may suddenly drop depending on the temperature and the battery condition.
In such case, the machine monitor may go out temporarily or restart, but it is not a trouble.

BASIC OPERATION OF MACHINE MONITOR WHEN STARTING ENGINE WHILE ENGINE SHUTDOWN SECONDARY SWITCH IS ON

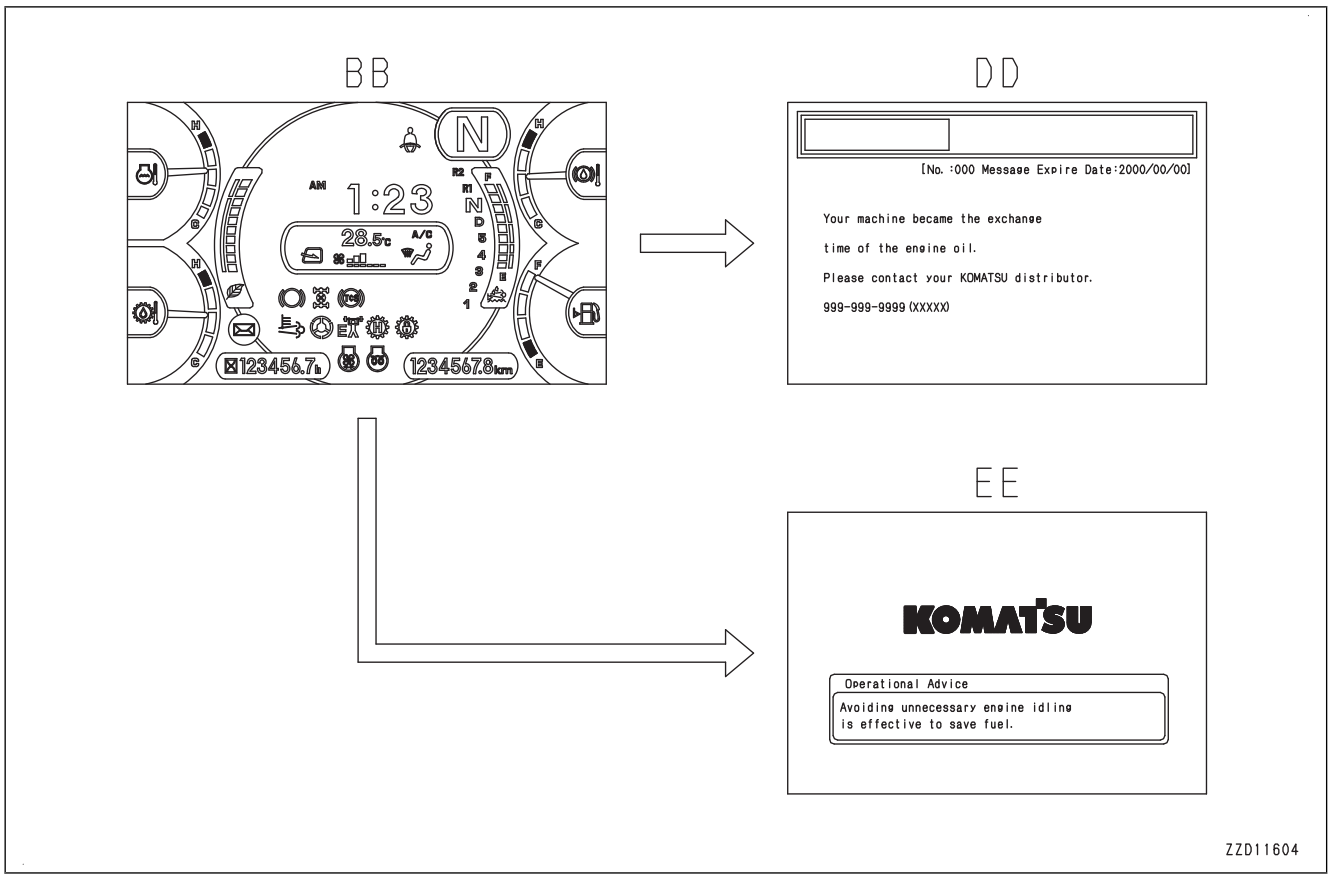
While engine shutdown secondary switch (1) is ON (engine is stopped), when the starting switch is turned to ON position, the screen shown in the figure is displayed and engine does not start.

If engine shutdown secondary switch (1) is turned OFF (normal), the machine monitor switches to the standard screen, and the engine can be started with usual starting switch key operation.





BASIC OPERATION OF MACHINE MONITOR WHEN STOPPING ENGINE IN NORMAL SITUATION



When starting switch is turned to OFF position, the screen goes out. In the following case, the end screen is displayed for 5 seconds, and then screen goes out.

End screen with message

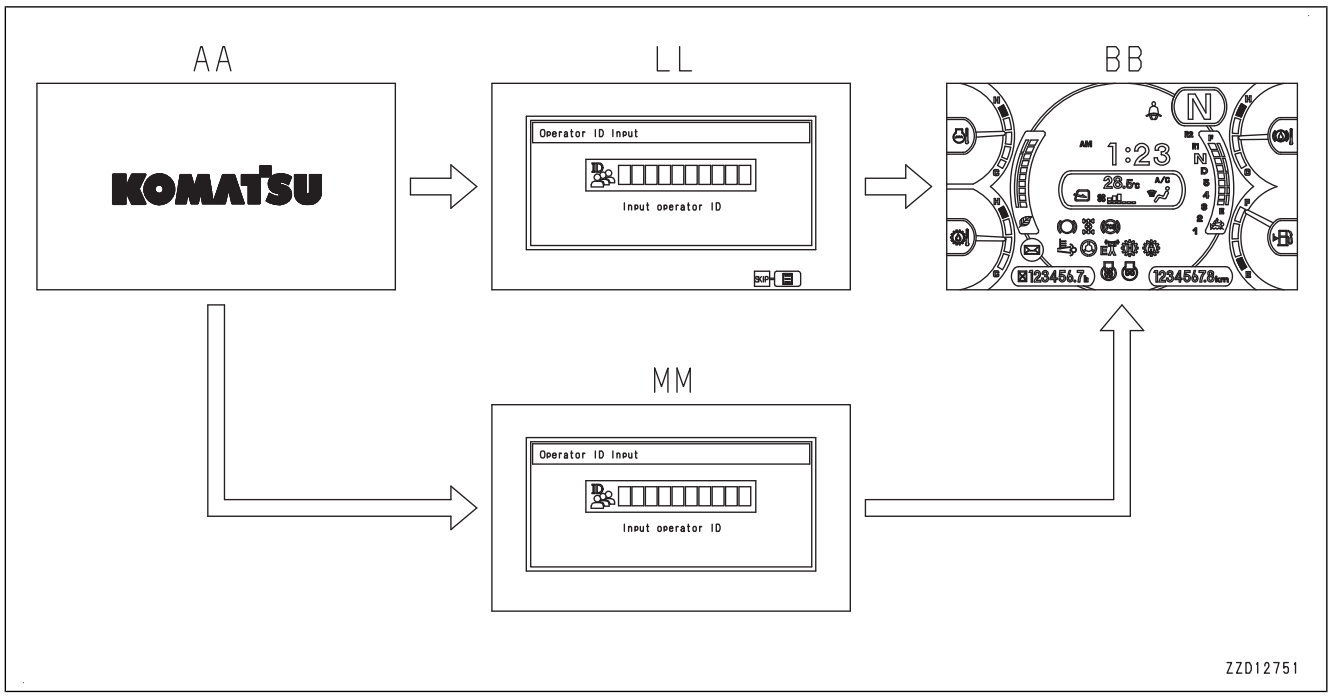
If there is any message from your Komatsu distributor, it is displayed on end screen DD for 5 seconds, and then the screen goes out.

In this case, turn the starting switch to ON position to re-check the message, and if it is the message requesting response, send back your reply.

End screen with “Operational Advice”

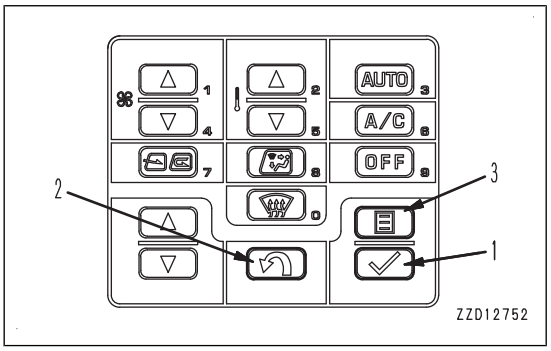
If there is any “Operational Advice”, “Operational Advice” is displayed on end screen EE for 5 seconds, and then the screen goes out.

BASIC OPERATION OF MACHINE MONITOR WHEN STARTING SWITCH IS ON WHILE OPERATOR ID INPUT IS SET



- If inputting ID number for operator identification function (with SKIP) is set, the opening screen AA switches to ID number input screen LL (with SKIP) when the starting switch is turned to ON position.
- If inputting ID number for operator identification function (without SKIP) is set, the opening screen AA switches to ID number input screen MM (without SKIP) when the starting switch is turned to ON position.
- On the ID number input screen LL (with SKIP) or MM (without SKIP), input the already registered ID number, and press enter switch (1). The screen changes to the Check Before Starting screen BB. If you input an incorrect ID number, press return switch (2), and clear an input character at a time.

  On the ID number input screen LL (with SKIP), press menu switch (3), and the screen changes to the Check Before Starting screen BB without inputting ID number.



REMARK

- Contact your Komatsu distributor for details of the method of setting, changing, or canceling the operator identification function.
- Depending on the set value of ID holding time, even if inputting ID number for operator identification function is set, the ID number input screen LL (with SKIP) or MM (without SKIP) may not be displayed while the starting switch is turned to ON position.

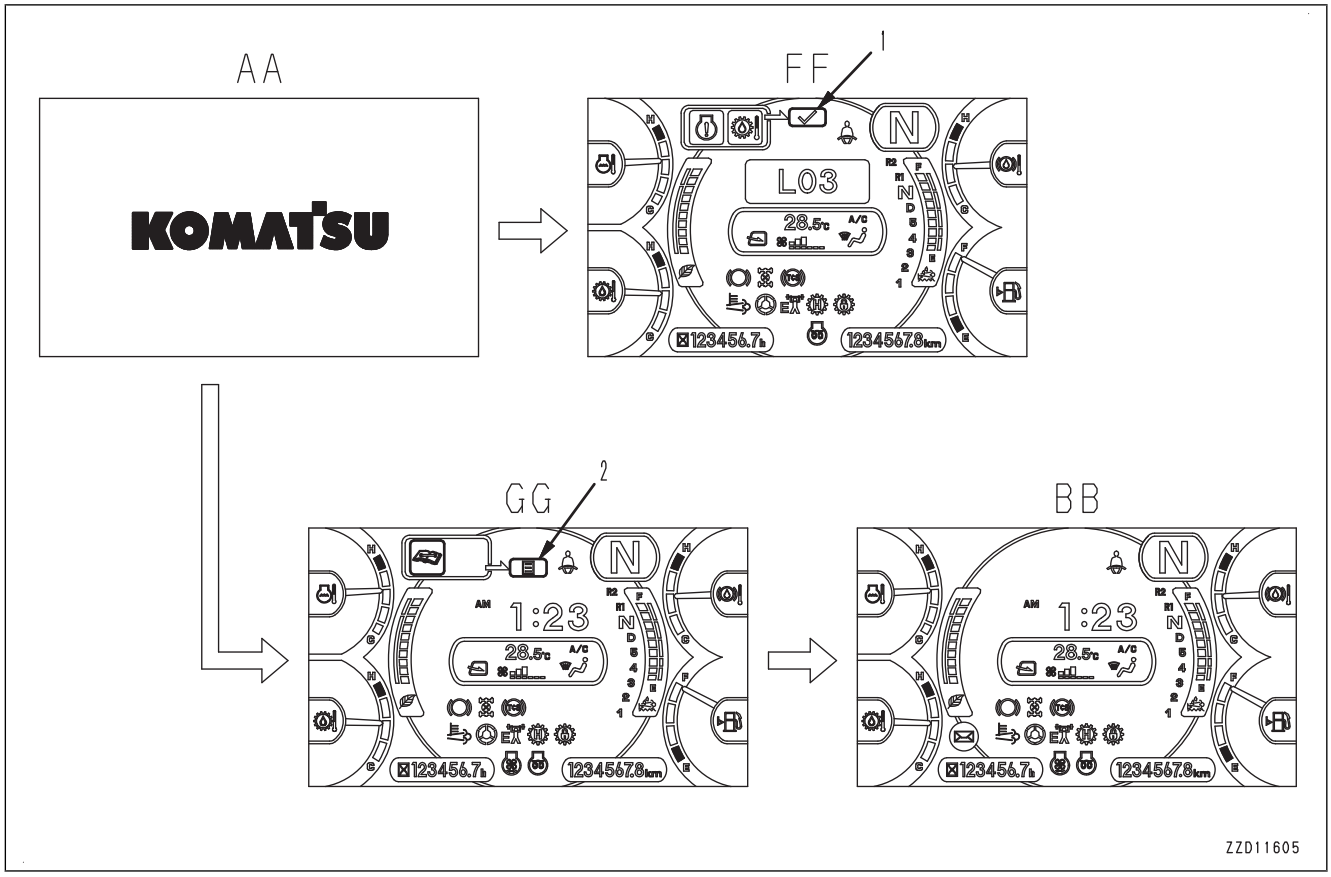
If inputting incorrect ID number for 3 times continuously, you cannot input ID number for 5 minutes. Wait for more than 5 minutes, try inputting ID number again.

As long as ID number input screen is displayed, the engine cannot be started. If you forget the ID number and cannot start the engine, confirm the person in charge of the machine.

NOTICE

Since the purpose of the operator identification function is neither security enhancement nor a protection against theft, it has no antitheft effect. Be careful not to use it for the purpose of security enhancement.
Komatsu cannot accept any responsibility for any loss or damage resulting from the wrong use of ID or unauthorized use of ID by a third person.

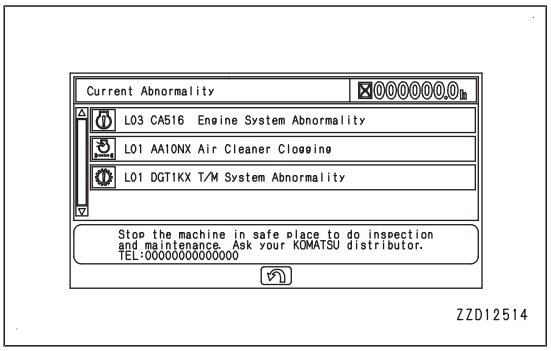
BASIC OPERATION OF MACHINE MONITOR WHEN STARTING ENGINE IN ABNORMAL SITUATION



When machine has abnormality

Starting screen AA is displayed for 2 seconds, and then failure display screen FF is displayed.

When the enter switch is pressed while guidance icon (1) is displayed, the “Current Abnormality” screen is displayed.

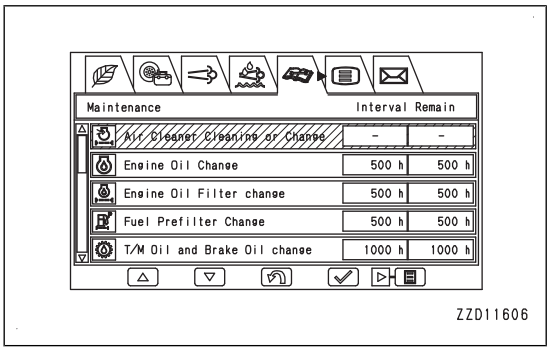


When time remaining to maintenance for any item is less than 30 hours

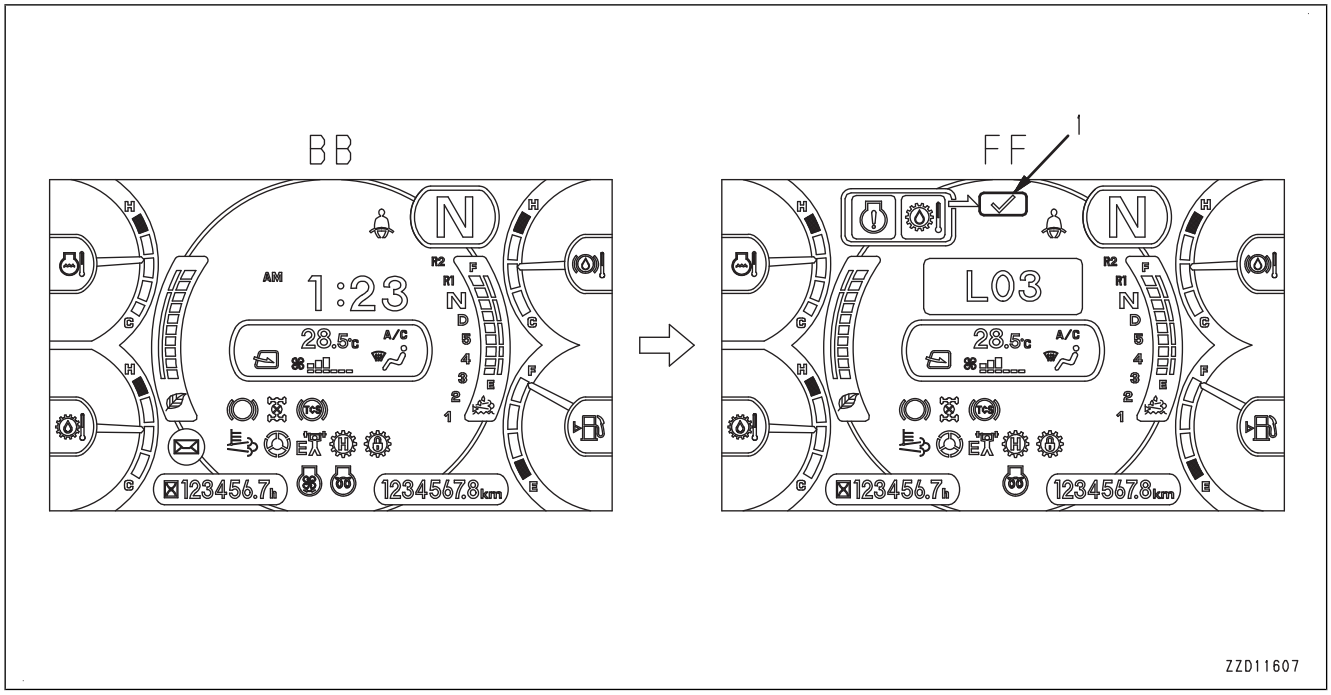
Starting screen AA is displayed for 2 seconds, and then Maintenance time warning screen GG is displayed.

When the menu switch displayed in guidance icon (2) is pressed, the “Maintenance” menu screen is displayed.

After displaying the maintenance time warning screen GG for 30 seconds, the screen returns to the standard screen BB.



BASIC OPERATION OF MACHINE MONITOR WHEN TROUBLE OCCURS WHILE OPERATING MACHINE

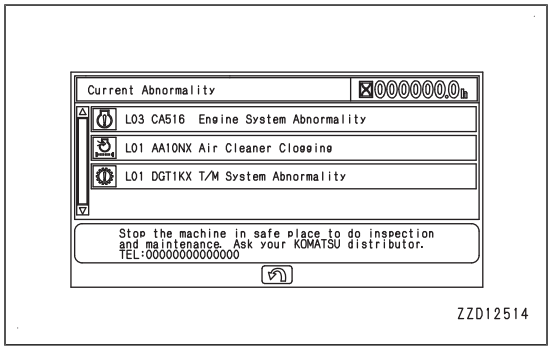


If any trouble occurs during operation, the standard screen BB changes to the failure display screen FF.

When the enter switch is pressed while guidance icon (1) is displayed, the “Current Abnormality” screen is displayed.

REMARK

Guidance icon (1) is displayed only while the machine is stopped completely.
Even when the enter switch is pressed while the machine is not stopped completely, the “Current Abnormality” screen is not displayed.

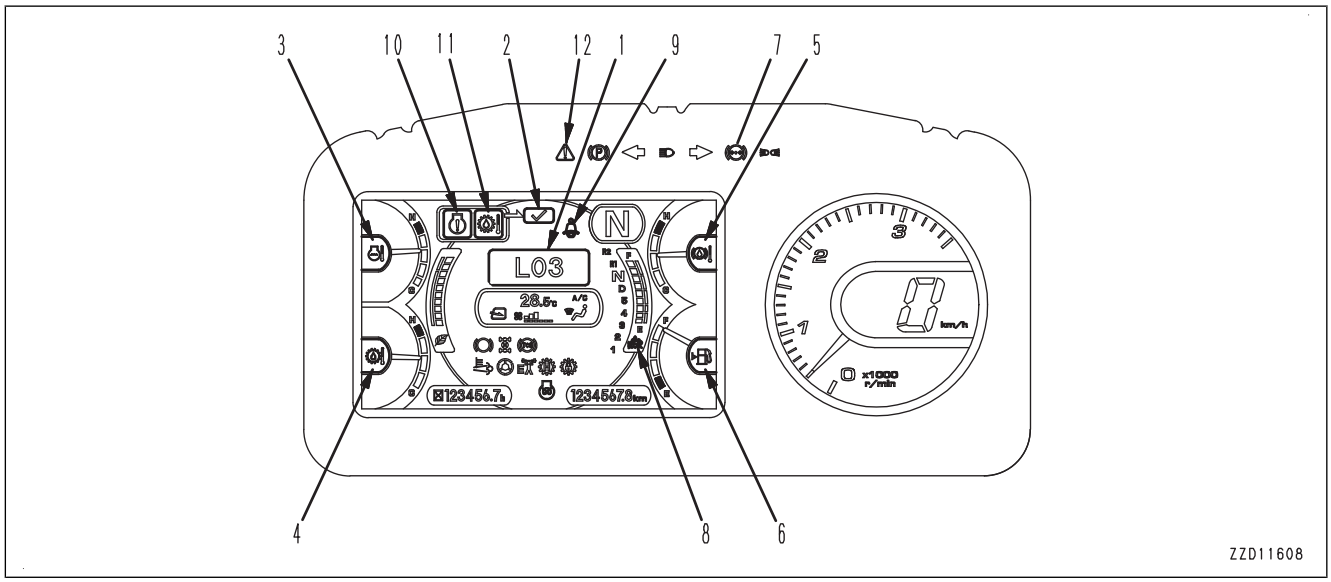


WARNING DISPLAY

NOTICE

Appearance of any of action levels “L01” to “L04” on the machine monitor indicates presence of an abnormality the machine.
Take appropriate actions following the list of action level displays and required actions.

- **These caution lamps do not guarantee the condition of the machine.**
  Do not simply rely on the caution lamp when performing checks before starting (start-up inspection). Always get off the machine and check each item directly.
- **When the caution lamp is displayed in red, if no action is taken, the machine can be seriously affected.**
  Take the action immediately.
- **The engine output or engine speed is limited and the machine operation speed may become slow, depending on the contents of the warning.**



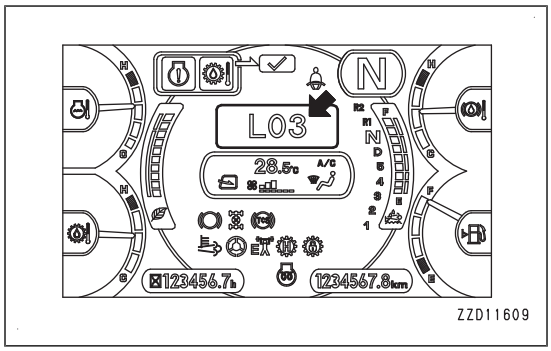
(1) Action level display
(2) Guidance icon
(3) Engine coolant temperature caution lamp
(4) Torque converter oil temperature caution lamp
(5) Retarder oil temperature caution lamp
(6) Fuel level caution lamp
(7) Brake oil pressure caution lamp
(8) DEF level caution lamp
(9) Seat belt caution lamp
(10) Warning display
(11) Warning display
(12) Centralized warning lamp

ACTION LEVEL DISPLAY

Action level display indicates the degree of urgency of the abnormality currently generated on the machine by “L01” to “L04”.

The larger the number in the table is, the more serious effects the abnormality may have on the machine if it is left with no action.

When the machine monitor displays an action level, take appropriate actions according to “List of action level displays and required actions”.

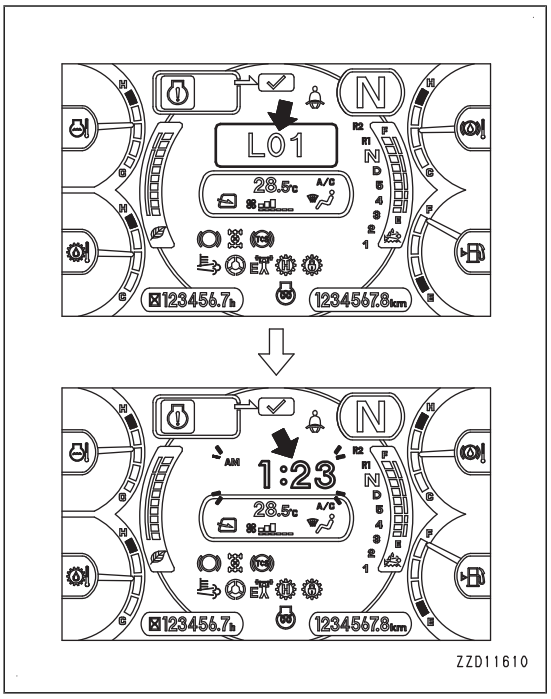


List of action level displays and required actions

Degree of urgency	Action level	Centralized warning lamp	Alarm buzzer	Color of caution lamp	Required action
High ↑ Low	L04	Lights up	Sounds continuously	Red	Stop the machine immediately and ask your Komatsu distributor for inspection and maintenance.
	L03	Lights up	Sounds intermittently	Red	Stop the operation and move the machine to a safe place, then ask your Komatsu distributor for inspection and maintenance.
	L02	Lights up	Sounds intermittently	Red	If there is an overrun related display, reduce the engine speed and machine travel speed while continuing operations. If there is an overheat related display, stop the machine at a safe place, and run the engine at medium speed with no load. If there is an secondary steering related display, avoid a long time usage of the secondary steering. If the condition is not improved, check the failure code and ask your Komatsu distributor for inspection and maintenance.
	L01	OFF	Does not sound	Yellow	Some functions may be restricted for use, but the machine can operate. When you finish the operation, always have the inspection and maintenance performed. As needed, ask your Komatsu distributor for inspection and maintenance.

REMARK

- When the action level display is “L01”, “L01” is displayed only for 2 seconds, and then it is turned OFF.
- If plural failures occur at the same time, the action level with the highest urgency (the greatest number) is displayed.



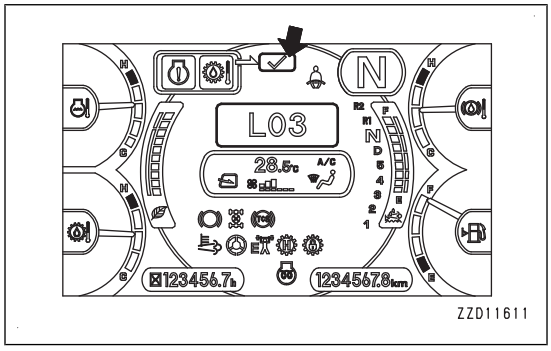
OCCURRED FAILURE CODE DISPLAY

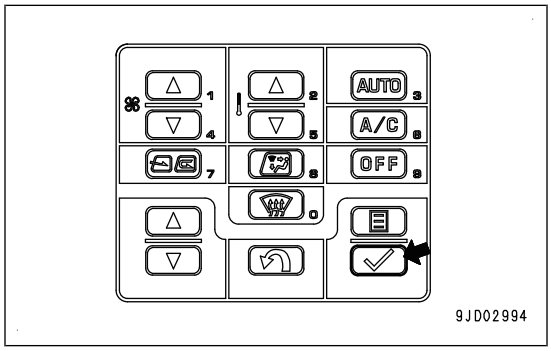
The monitor provides information on failures that occurred on the machine and necessary remedies for action levels that are displayed.

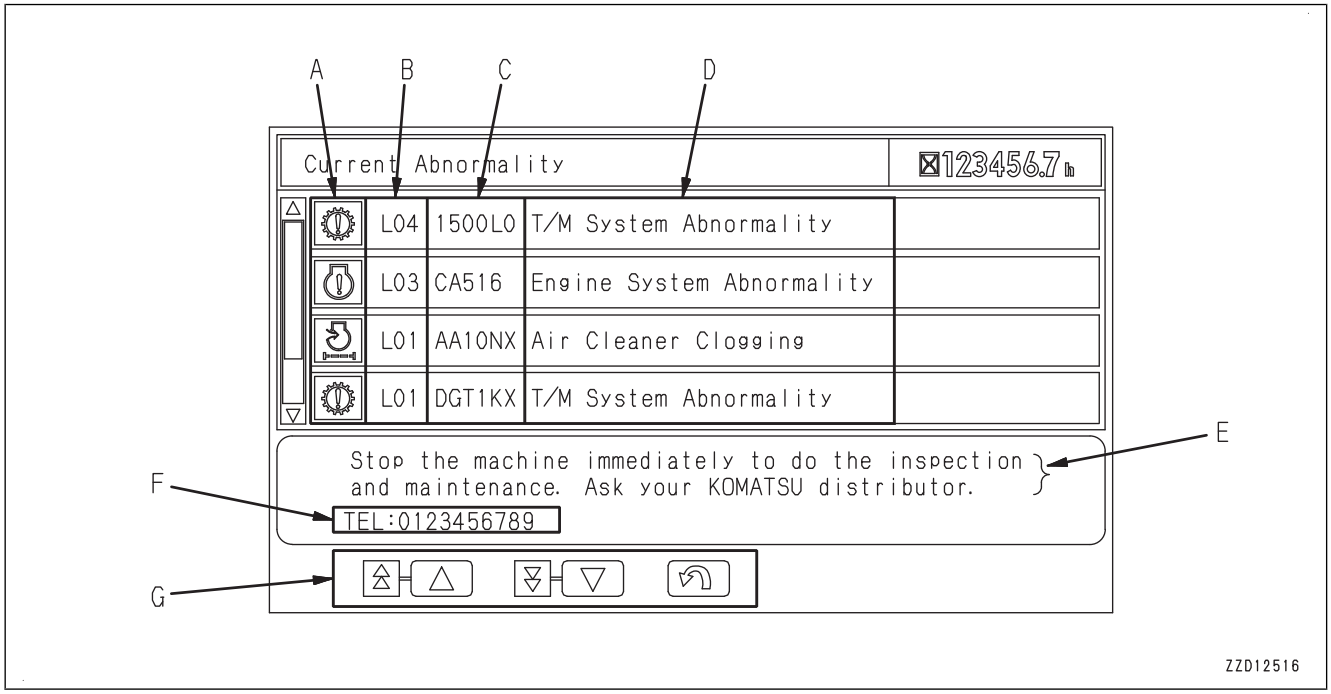
When the enter switch is pressed while the guidance icon is displayed, the screen changes to the “Current Abnormality” screen.

REMARK

The guidance icon is displayed only while the machine is stopped completely.
Even when the enter switch is pressed while the machine is not stopped completely, the “Current Abnormality” screen is not displayed.







(A) Caution lamp

(B) Action level

(C) Failure code

Code to indicate the content of the failure. Notify it when calling your Komatsu distributor.

(D) Failure name

(E) Message

Take appropriate remedies according to the displayed message.

(F) Contact telephone number

The telephone number of your Komatsu distributor is displayed.

If the telephone number of the contact has not been registered, it is not displayed.

Ask your Komatsu distributor for the telephone number registration if necessary.

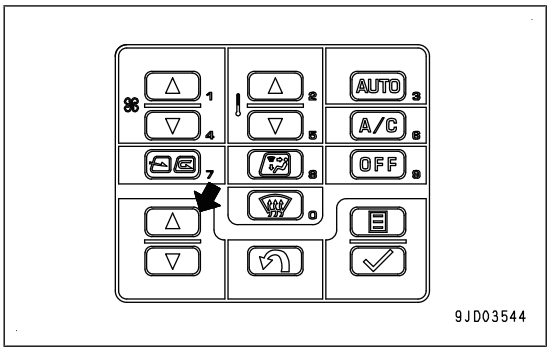
(G) Guidance icon

On the “Current Abnormality” list screen, the following switches displayed in guidance icon (G) can be operated.

UP switch

Move to the previous page.

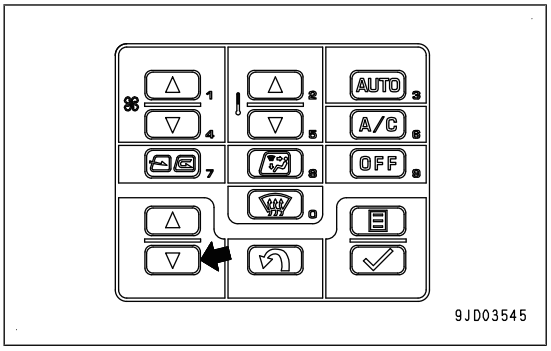
When on the first page, move to the last page.



DOWN switch

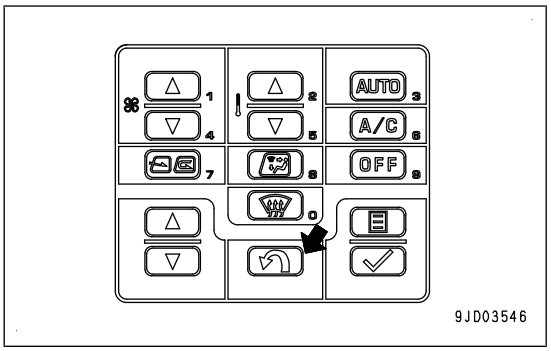
Move to the next page.

When on the last page, move to the first page.



RETURN switch

Return to the standard screen.



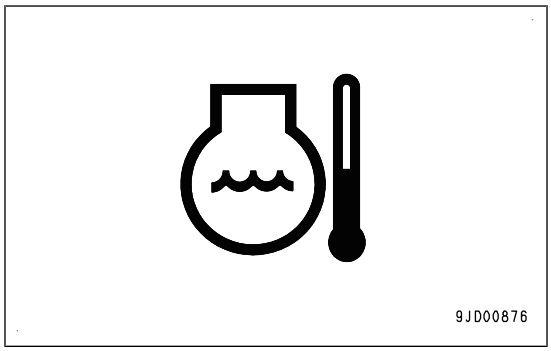
ENGINE COOLANT TEMPERATURE CAUTION LAMP

Engine coolant temperature caution lamp warns about overheating of the engine coolant.

If the engine coolant temperature is abnormally high, the caution lamp lights up in red and action level “L02” is displayed.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Place the machine in a safe place, set the gear shift lever to NEUTRAL position (N), and run the engine at a medium speed under no load until the caution lamp goes out.



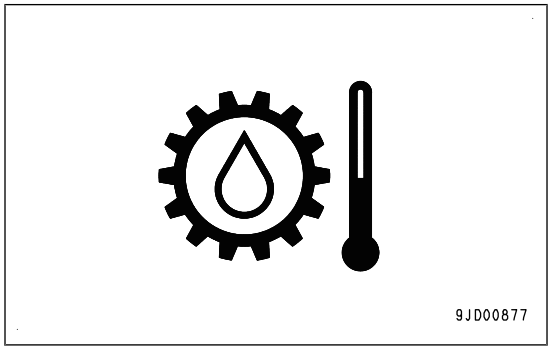
TORQUE CONVERTER OIL TEMPERATURE CAUTION LAMP

The torque converter oil temperature caution lamp warns about overheating of the torque converter oil.

If the torque converter oil temperature is abnormally high, the caution lamp lights up in red and action level “L02” is displayed.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Place the machine in a safe place, set the gear shift lever to NEUTRAL position (N), and run the engine at a medium speed under no load until the caution lamp goes out.



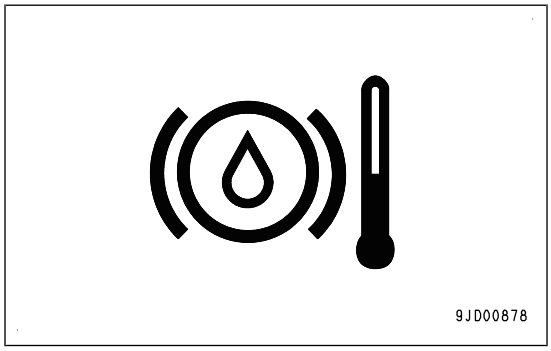
RETARDER OIL TEMPERATURE CAUTION LAMP

The retarder oil temperature caution lamp warns about overheating of the retarder oil.

If the retarder oil temperature increases abnormally high, the caution lamp lights up in red and action level “L02” is displayed.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Place the machine in a safe place, set the gear shift lever to NEUTRAL position (N), and run the engine at a medium speed under no load until the caution lamp goes out.

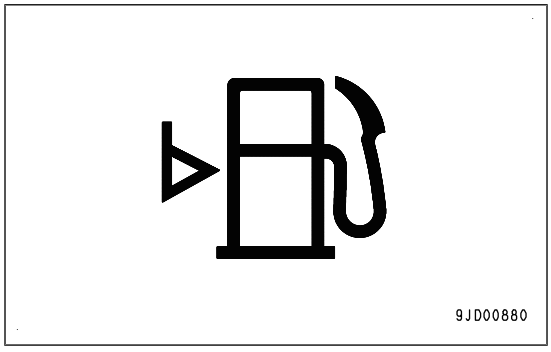


FUEL LEVEL CAUTION LAMP

The fuel level caution lamp warns about low remaining fuel level.

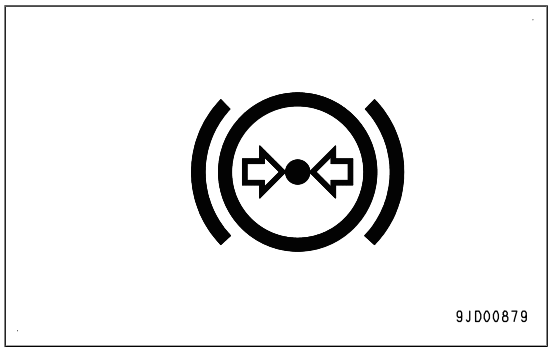
The lamp lights up in red if the fuel level is 67 ℓ or below.

Add fuel as soon as possible.



BRAKE OIL PRESSURE CAUTION LAMP

The brake oil pressure caution lamp warns that the brake oil pressure is below the specified value.



When action level “L03” is displayed

If the brake oil pressure drops below the specified value while the engine is running, the caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

Action level is not displayed and lamp lights up in red

If the brake oil pressure is below the specified value while the engine is stopped, the caution lamp lights up in red.

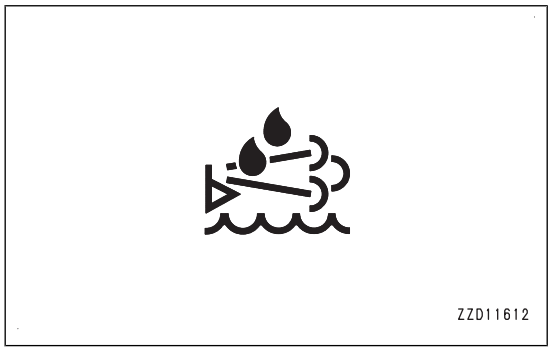
When the engine is started, the caution lamp lights up in red until the brake oil pressure rises above the specified value.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Wait until the caution lamp goes out, and then start the machine.

DEF LEVEL CAUTION LAMP

DEF level caution lamp alerts when DEF tank level becomes low.



Whenever the caution lamp lights up in red, immediately add DEF.

Fault conditions that result in activation of the Inducement strategy for engine derates to prompt to maintain or repair the emission control system.

When lamp lights up in red

With Action level “L04”, DEF tank level is too low. Inducement status is “Severe Inducement”. Engine power is under heavy deration.

With Action level “L03”, DEF tank level is low. Inducement status is “Low level Inducement / Mild Inducement”. Engine power is under deration.

With No Action level display. DEF tank level is lower. Inducement status is “Continuous Warning / Escalated Warning”. Need to add DEF immediately to avoid advancing to the next Inducement status.

With No Action level display. DEF tank level is becomes low. Warning starts. Inducement status is “Warning”. Need to add DEF immediately.

In the case of the Engine with EU+EPA/CARB dual labelling name-plate :

With Action level “L04”, DEF tank level is too low. Inducement status is “Final Inducement”. Engine speed is fixed at low idle.

With Action level “L04”, DEF tank level is too low. Inducement status is “Severe Inducement”. Engine power is under heavy deration.

With Action level “L03”, DEF tank level is low. Inducement status is “Low level Inducement / Mild Inducement”. Engine power is under deration.

With No Action level display. DEF tank level is lower. Inducement status is “Continuous Warning / Escalated Warning”. Need to add DEF immediately to avoid advancing to the next Inducement status.

With No Action level display. DEF tank level is becomes low. Warning starts. Inducement status is “Warning”. Need to add DEF immediately.

When lamp lights up in white

When fluctuation of DEF tank level is large, frozen, or not limited to, tank level sensing is not performed correctly.

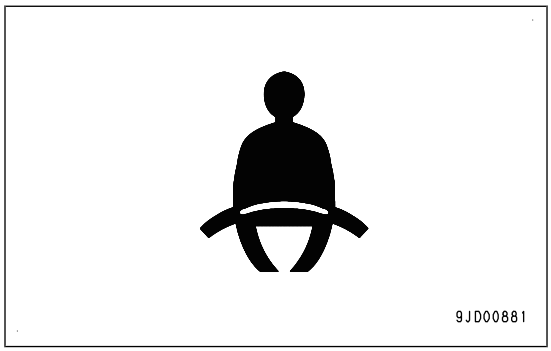
When DEF is added after engine starting switch turn to OFF.

When DEF tank level sensor is defective.

SEATBELT CAUTION LAMP

The seat belt caution lamp lights up in red when the seat belt is not fastened.

Always fasten the seat belt while traveling because there may be a possible danger.



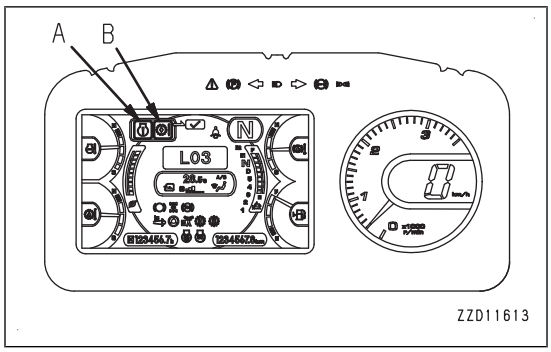
WARNING DISPLAY

The caution lamps displayed on the warning display section are as follows.

Take appropriate remedies as specified.

REMARK

- When 1 type of alarm is generated, it is displayed on caution lamp (A).
- When 2 types of alarm are generated, they are displayed on caution lamps (A) and (B).
- When 3 types of alarm are generated, they are displayed on caution lamps (A) and (B) alternately at intervals of 2 seconds.

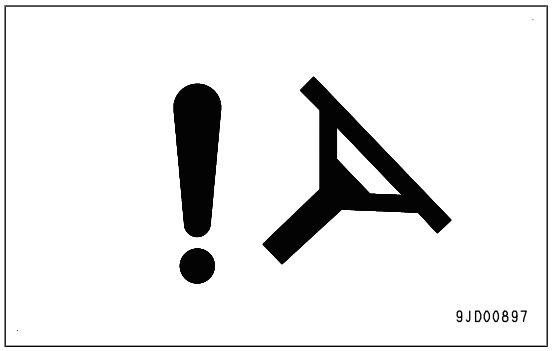


STEERING SYSTEM CAUTION LAMP

The steering system caution lamp warns about abnormality in the steering system.

If the caution lamp lights up in yellow and action level “L01” is displayed, always perform inspection and maintenance after the operation is finished.

Ask your Komatsu distributor for the inspection and maintenance as needed.



STEERING OIL PRESSURE CAUTION LAMP

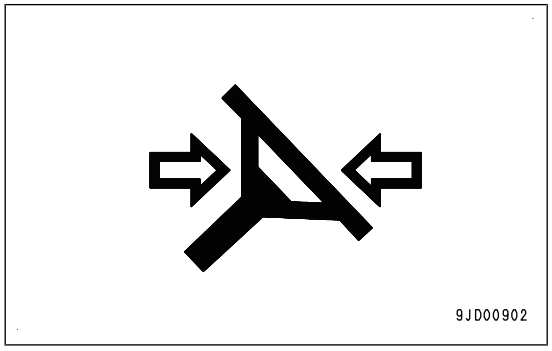
The steering oil pressure caution lamp warns the operator that the steering oil pressure is below the specified value.

When action level “L03” is displayed

If the steering oil pressure drops below the specified value while the engine is running, the caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.



Action level is not displayed and lamp lights up in red

When the engine is started, the caution lamp lights up in red until the steering oil pressure rises above the specified value.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Wait until the caution lamp goes out, and then start the machine.

Action level is not displayed and only lamp lights up in yellow

If the steering oil pressure is below the specified value while the engine is stopped, the caution lamp lights up in yellow.

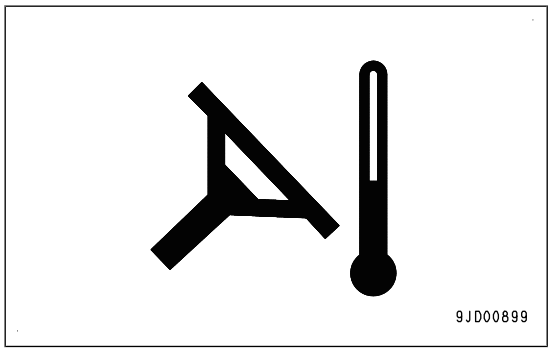
STEERING OIL TEMPERATURE CAUTION LAMP

The steering oil temperature caution lamp warns about overheating of the steering oil.

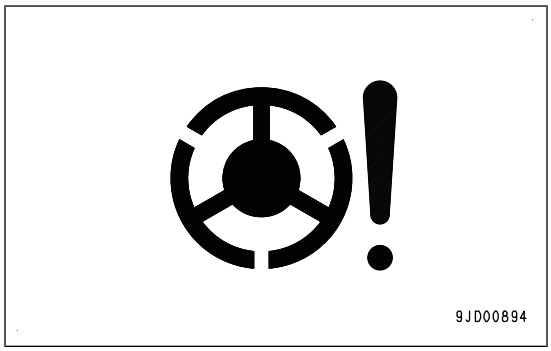
If the steering oil temperature increases abnormally high, the caution lamp lights up in red and action level “L02” is displayed.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Place the machine in a safe place, set the gear shift lever to NEUTRAL position (N), and run the engine at a medium speed under no load until the caution lamp goes out.



SECONDARY STEERING SYSTEM CAUTION LAMP



The secondary steering system caution lamp warns about abnormality in the secondary steering system.

When action level “L03” is displayed

The caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

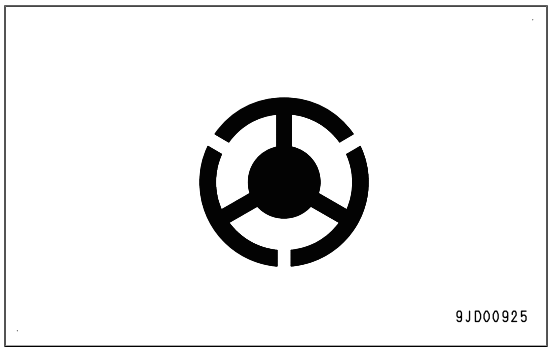
When action level “L01” is displayed

The caution lamp lights up in yellow.

When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for the inspection and maintenance as needed.

SECONDARY STEERING MOTOR CAUTION LAMP



The secondary steering motor caution lamp warns that the secondary steering motor has been operating for a long period.

The caution lamp lights up in red and action level “L02” is displayed.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Do not use the secondary steering for more than 90 seconds.

HOIST CONTROL SYSTEM CAUTION LAMP

The hoist control system caution lamp warns about abnormality in the hoist control system.

When action level “L03” is displayed

The caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

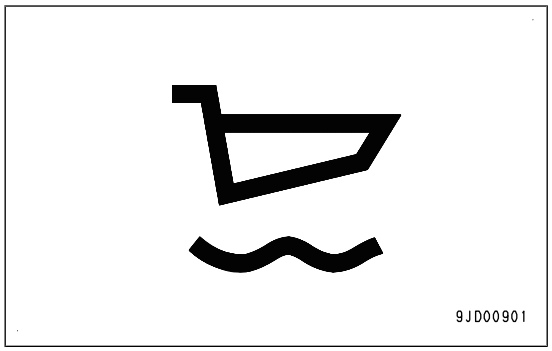
When action level “L01” is displayed

The caution lamp lights up in yellow.

When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for the inspection and maintenance as needed.

BODY FLOAT CAUTION LAMP



The dump body float caution lamp warns about the condition of the dump body.

When lamp lights up in red

The gear shift lever is turned to any position other than NEUTRAL position (N) while the dump lever is turned to any position other than “FLOAT” or the dump body is raised.

At the same time, the centralized warning lamp lights up and the alarm buzzer sounds intermittently.

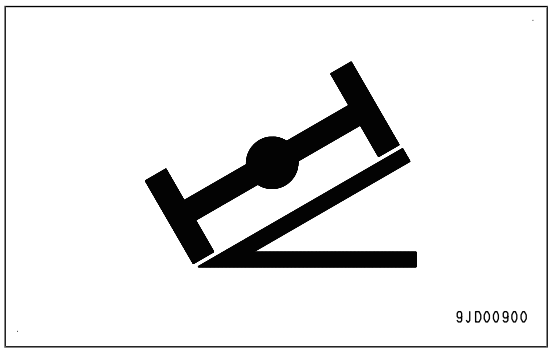
When lamp lights up in yellow

The dump lever is turned to any position other than “FLOAT” position or the dump body is raised.

REMARK

- The dump body float caution lamp lights up if above conditions are satisfied while the engine is running.
- If the engine stops, the dump body is held in HOLD condition, regardless of the position of the dump lever.

INCLINATION CAUTION LAMP



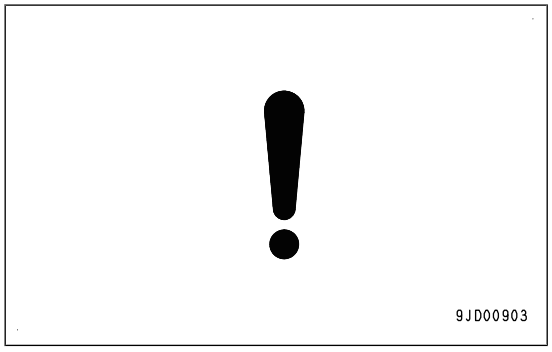
The inclination caution lamp warns about danger of tipping caused by inclination of the machine.

When the dump lever is in “RAISE” position, if the rear part of the machine is inclined more than the lateral stable range, the caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Lower the dump body and move the machine to a safe and level place.

SYSTEM CAUTION LAMP



The system caution lamp warns about abnormality in the machine system, including the sensors.

When action level “L03” is displayed

The caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

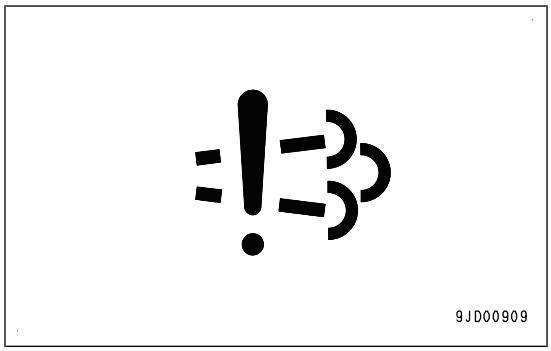
When action level “L01” is displayed

The caution lamp lights up in yellow.

When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for the inspection and maintenance as needed.

KDPF SYSTEM CAUTION LAMP



The KDPF system caution lamp warns about abnormality in the KDPF system.

When action level “L04” is displayed

The caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and the alarm buzzer sounds continuously.

Stop the machine immediately and ask your Komatsu distributor for inspection and maintenance.

When action level “L03” is displayed

The caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

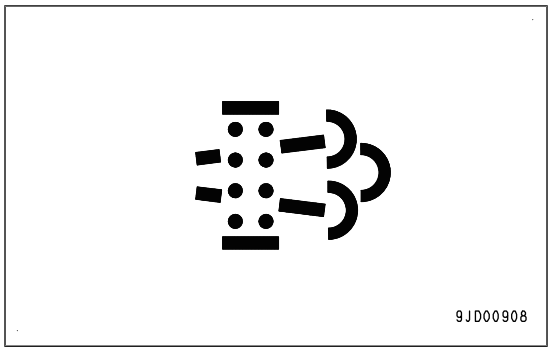
When action level “L01” is displayed

The caution lamp lights up in yellow.

When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for the inspection and maintenance as needed.

KDPF SOOT ACCUMULATION CAUTION LAMP



The KDPF soot accumulation caution lamp warns that soot is accumulated in KDPF or the filtering function of KDPF has lowered abnormally.

When action level “L03” is displayed

The caution lamp lights up in red if much soot is accumulated in KDPF or a system trouble such as lowering of the filtering function of KDPF occurs.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, and perform the manual stationary regeneration.

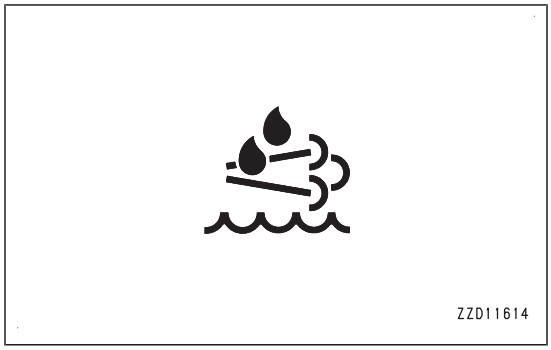
The manual stationary regeneration may start automatically to protect the KDPF system.

When action level “L01” is displayed

The caution lamp lights up in yellow if much soot is accumulated in KDPF.

After the operation is finished, move the machine to a safe place and perform manual stationary regeneration.

DEF SYSTEM CAUTION LAMP



DEF system caution lamp alerts when abnormality in the system are detected.

Whenever the caution lamp lights up in yellow or in red, take necessary actions by instructions.

Fault conditions that result in activation of the Inducement strategy for engine derates to prompt to maintain or repair the emission control system.

When lamp lights up in red

With Action level “L04”, Inducement status is “Severe Inducement”. Engine power is under heavy deration.

With Action level “L03”, Inducement status is “Low level Inducement / Mild Inducement”. Engine power is under deration.

In the case of the Engine with EU+EPA/CARB dual labelling name-plate :

With Action level “L04”, Inducement status is “Final Inducement”. Engine speed is fixed at low idle.

With Action level “L04”, Inducement status is “Severe Inducement”. Engine power is under heavy deration.

With Action level “L03”, Inducement status is “Low level Inducement / Mild Inducement”. Engine power is under deration.

When lamp lights up in white

With Action level “L01”, Inducement status is “ Warning” or “Continuous Warning / Escalated Warning”.

When “Continuous Warning / Escalated Warning”, If no maintenance, advancing to the next Inducement status. Engine power will be derated.

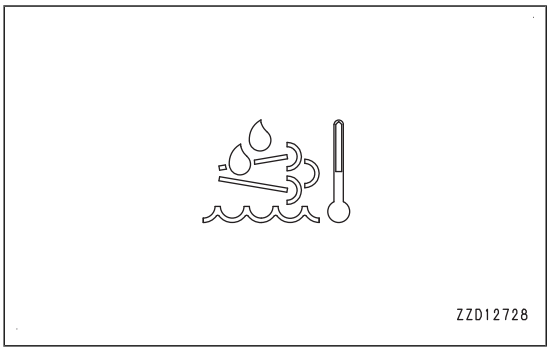
DEF SYSTEM HIGH TEMPERATURE STOP CAUTION LAMP

DEF system high temperature stop caution lamp alerts when the times of engine is shut down under the condition of high degree temperature of DEF system exceeds the defined number of times.

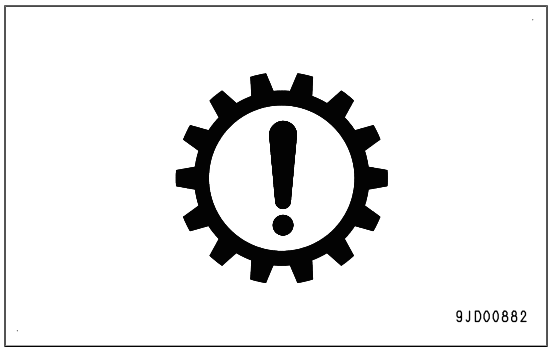
Whenever the caution lamp lights up in yellow, it is necessary to ask your Komatsu distributor to go off this caution lamp.

When stopping the engine, stop it after running it at low idle for approximately 5 minutes.

When stopping the engine during aftertreatment devices regeneration, stop the regeneration first, then stop the engine after running it at low idle for approximately 5 minutes.



TRANSMISSION SYSTEM CAUTION LAMP



The transmission system caution lamp warns about abnormality in the transmission system.

When action level “L04” is displayed

The caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and the alarm buzzer sounds continuously.

Immediately stop the machine and ask your Komatsu distributor for inspection and maintenance.

When action level “L03” is displayed

The caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

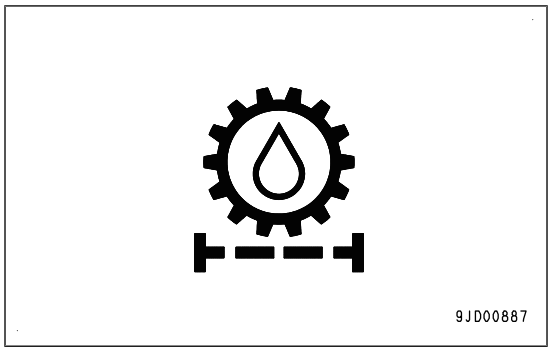
When action level “L01” is displayed

The caution lamp lights up in yellow.

When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for the inspection and maintenance as needed.

TRANSMISSION OIL FILTER CLOGGING CAUTION LAMP

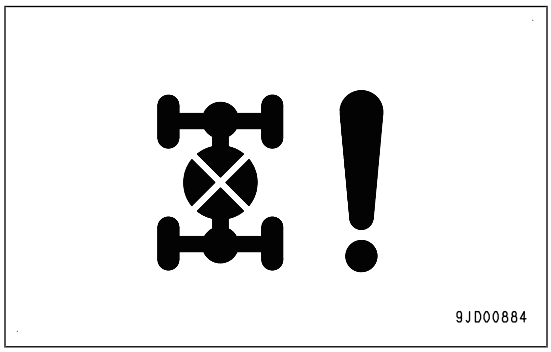


The transmission oil filter clogging caution lamp wans about clogging of the transmission oil filter.

If the caution lamp lights up in yellow and action level “L01” is displayed, stop the engine and check or replace the transmission oil filter.

See “METHOD FOR REPLACING TRANSMISSION OIL FILTER ELEMENT”.

INTER-AXLE DIFFERENTIAL LOCK SYSTEM CAUTION LAMP



The inter-axle differential lock system caution lamp warns about abnormality in the inter-axle differential lock system.

When action level “L03” is displayed

The caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

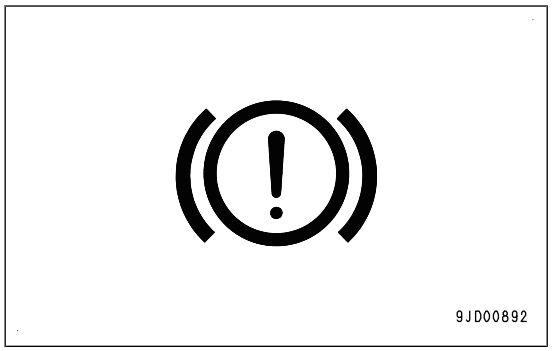
When action level “L01” is displayed

The caution lamp lights up in yellow.

When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for the inspection and maintenance as needed.

RETARDER SYSTEM CAUTION LAMP



The retarder system caution lamp warns about abnormality in the retarder system.

When action level “L03” is displayed

The caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

When action level “L01” is displayed

The caution lamp lights up in yellow.

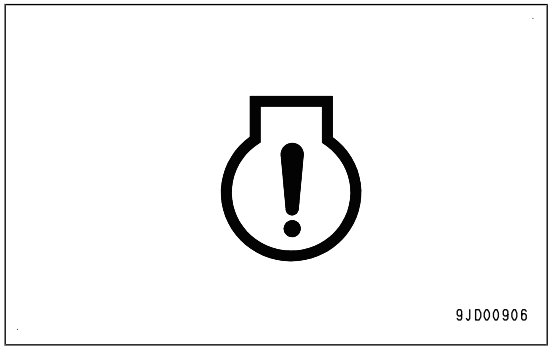
When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for the inspection and maintenance as needed.

ENGINE SYSTEM CAUTION LAMP

⚠ WARNING

If the operation is continued while the caution lamp is lit in red, accumulation and combustion of the soot in KDPF are accelerated, and consequently the temperature of KDPF and exhaust gas can increase high. Stop the engine immediately.



The engine system caution lamp warns about abnormality in the engine system.

When action level “L04” is displayed

The caution lamp lights up in red. At the same time, the centralized warning lamp lights up and the alarm buzzer sounds continuously.

Immediately stop the machine and ask your Komatsu distributor for inspection and maintenance.

When action level “L03” is displayed

The caution lamp lights up in red. At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

When action level “L01” is displayed

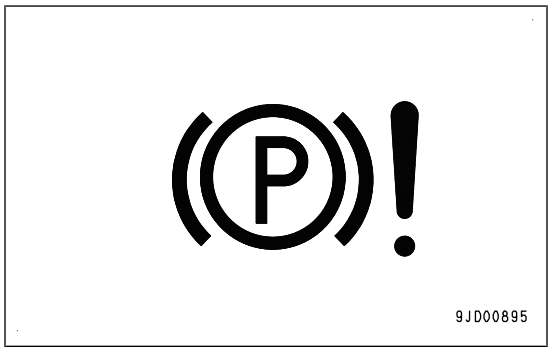
The caution lamp lights up in yellow.

When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for the inspection and maintenance as needed.

PARKING BRAKE SYSTEM CAUTION LAMP

The parking brake system caution lamp warns about abnormality in the parking brake system.



When action level “L03” is displayed

The lamp lights up in red. At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

When action level “L01” is displayed

The lamp lights up in yellow.

When you finish the operation, always perform the inspection and maintenance.

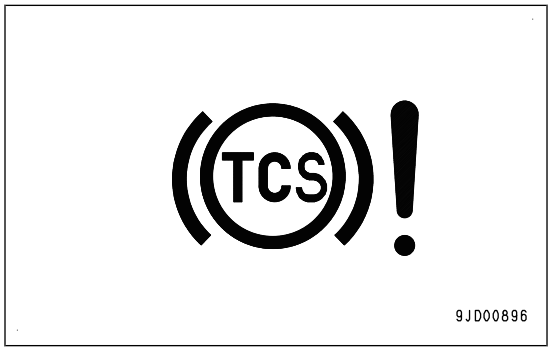
Ask your Komatsu distributor for the inspection and maintenance as needed.

KTCS SYSTEM CAUTION LAMP

The KTCS system caution lamp warns about abnormality in the KTCS system.

If the caution lamp lights up in yellow and action level “L01” is displayed, always perform inspection and maintenance after the operation is finished.

Ask your Komatsu distributor for the inspection and maintenance as needed.



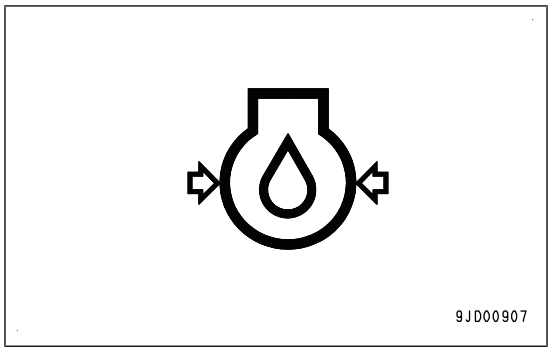
ENGINE OIL PRESSURE CAUTION LAMP

Engine oil pressure caution lamp warns about low engine lubricating oil pressure.

If the engine oil pressure drops below the specified value while the engine is running, the caution lamp lights up in red and action level “L03” is displayed.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.



ENGINE OIL LEVEL CAUTION LAMP

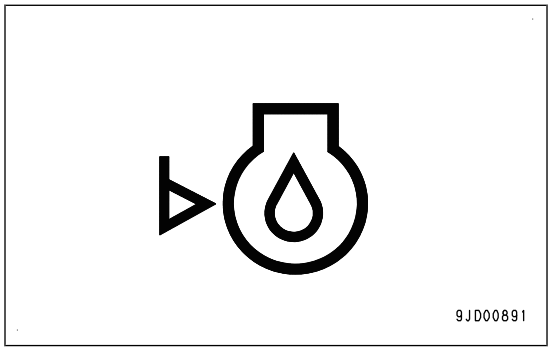
Engine oil level caution lamp warns about drop of engine lubricating oil level.

It displays only while the engine is stopped.

If the caution lamp lights up in yellow and action level “L01” is displayed, check the oil level in the oil pan and add oil.

See “METHOD FOR CHECKING OIL LEVEL IN ENGINE OIL PAN, ADDING OIL”.

If the oil level drops again in a short time, the engine oil may be leaking. Ask your Komatsu distributor for inspection and repair.



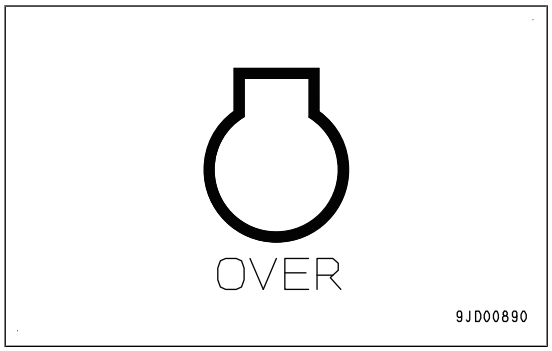
ENGINE OVERRUN CAUTION LAMP

The engine overrun caution lamp warns the operator that the engine speed is higher than the allowable range.

When the caution lamp lights up in red, the centralized warning lamp lights up and the alarm buzzer sounds intermittently.

If the engine speed increases more, action level “L02” is displayed.

Operate the machine with moderate engine speed and travel speed.



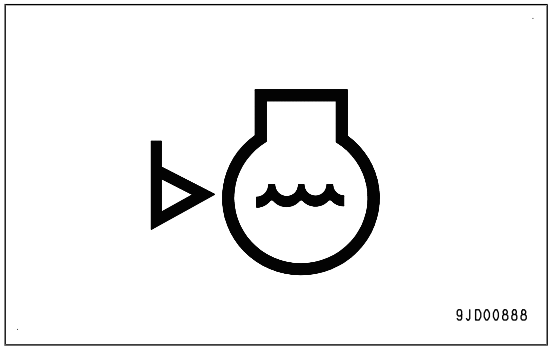
RADIATOR COOLANT LEVEL CAUTION LAMP

Radiator coolant level caution lamp warns about drop of radiator coolant level.

If the caution lamp lights up in yellow and action level “L01” is displayed, check the coolant level in the reservoir tank and add coolant.

See “METHOD FOR CHECKING COOLANT LEVEL, ADDING COOLANT (3-189)”.

If the operation is continued while coolant is not added, when the starting switch is turned to the ON position next, the action level “L02” is shown and the caution lamp lights up in red. At the same time, the centralized warning lamp lights up and the alarm buzzer operates intermittently.



If it occurs again in a short time, the coolant may be leaking from the radiator. Ask your Komatsu distributor for inspection and maintenance.

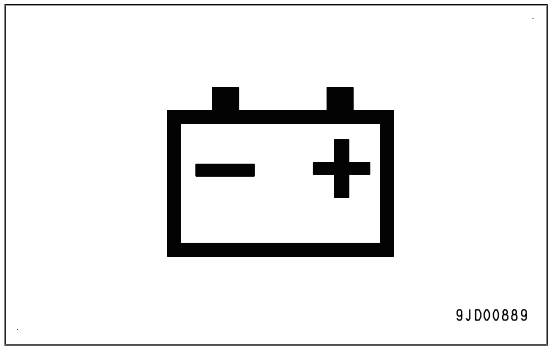
CHARGE LEVEL CAUTION LAMP

Charge level caution lamp warns about abnormality in the charging system while the engine is running.

If the battery is not charged properly while the engine is running, the caution lamp lights up in red.

When the action level “L03” is displayed at the same time, the centralized warning lamp lights up and the alarm buzzer sounds intermittently.

Stop the engine and check the alternator belt for damage, then ask your Komatsu distributor for inspection and maintenance.

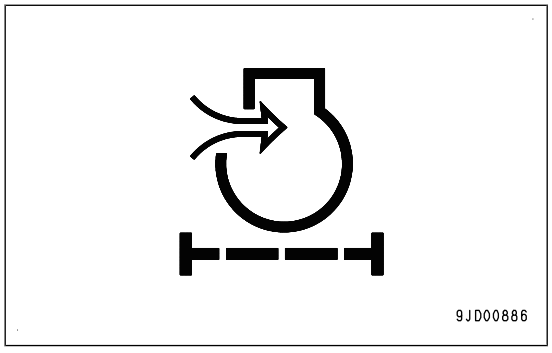


AIR CLEANER CLOGGING CAUTION LAMP

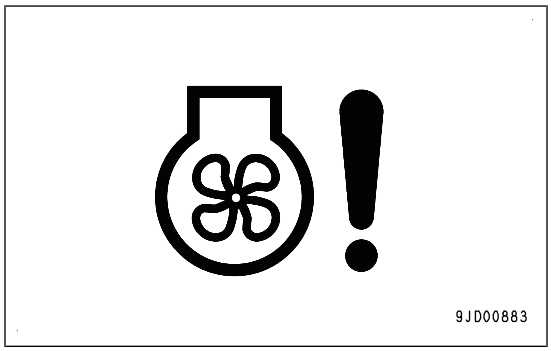
Air cleaner clogging caution lamp warns about clogging of the air cleaner.

If the caution lamp lights up in yellow and action level “L01” is displayed, stop the engine, then check and clean the air cleaner.

See “METHOD FOR CHECKING, CLEANING AND REPLACING AIR CLEANER”.



FAN CONTROL SYSTEM CAUTION LAMP



The fan control system caution lamp warns about abnormality in the fan control system.

When action level “L03” is displayed

The caution lamp lights up in red. At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Stop the operation, move the machine to a safe place, stop the engine, then ask your Komatsu distributor for inspection and maintenance.

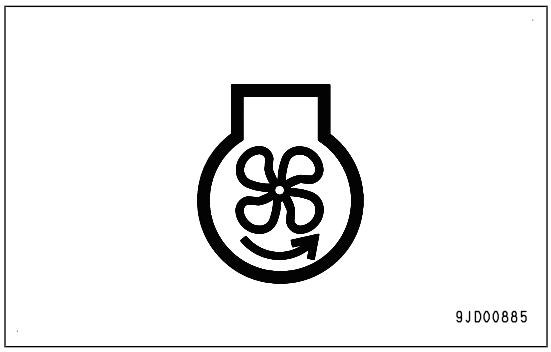
When action level “L01” is displayed

The caution lamp lights up in yellow.

When you finish the operation, always perform the inspection and maintenance.

Ask your Komatsu distributor for the inspection and maintenance as needed.

FAN-REVERSE OPERATION CAUTION LAMP



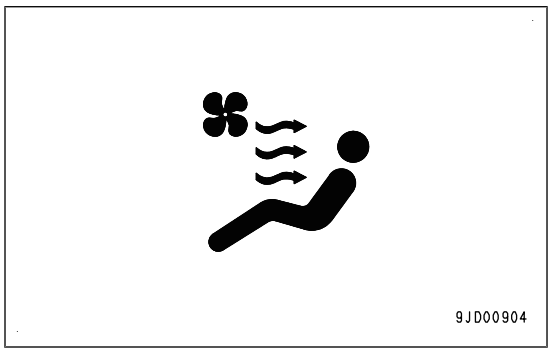
The wrong operation in fan reverse mode caution lamp warns about misoperation while the fan is rotating in reverse.

If the gear shift lever is set to any position other than NEUTRAL position (N) or the dump body is not seated while the fan (radiator or after cooler) is rotating in reverse, the lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Keep the gear shift lever in NEUTRAL position (N) and keep the dump body seated while the fan is rotating in reverse.

AIR CONDITIONER SYSTEM CAUTION LAMP

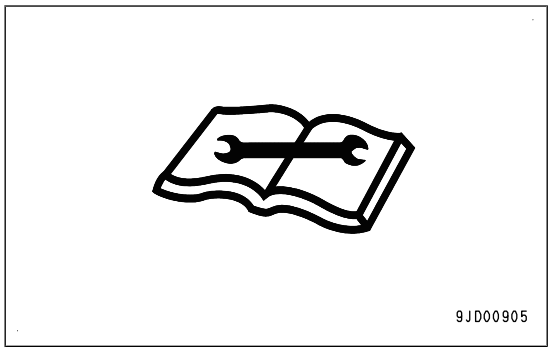


Air conditioner system caution lamp warns about abnormality in air conditioner system.

If the caution lamp lights up in yellow and action level “L01” is displayed, always perform inspection and maintenance after the operation is finished.

Ask your Komatsu distributor for the inspection and maintenance as needed.

MAINTENANCE TIME CAUTION LAMP



Maintenance time caution lamp displays notices and alarms concerning maintenance time.

This lamp lights up when the starting switch is turned to ON position. It goes out after 30 seconds and the display changes to the standard screen.

When lamp lights up in red

The maintenance due time is over.

If no action is taken, the machine performance will become worse and the machine life will be shortened.

Perform necessary maintenance as soon as possible.

When lamp lights up in yellow

The maintenance due time is approaching.

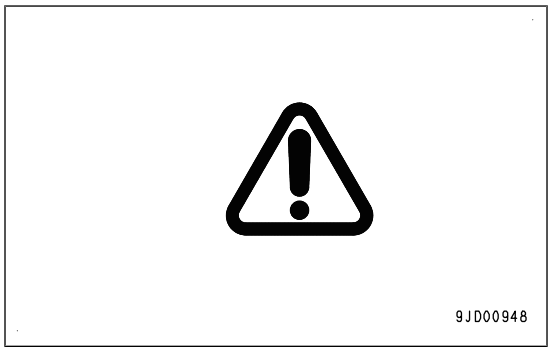
Prepare necessary parts for the maintenance.

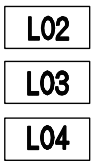
REMARK

- To check the items that need maintenance, see the “Maintenance” menu screen.
- On the standard screen, when the menu switch is pressed while the caution lamp is lit, the screen changes directly to the “Maintenance” menu screen.
- For operations on the “Maintenance” menu screen, see “MAINTENANCE SCREEN SETTING”.
- By default, the maintenance time caution lamp (yellow) is set to light up when the remaining time reaches 30 hours. However, you can change this setting.
  To change the setting, ask your Komatsu distributor.

CENTRALIZED WARNING LAMP

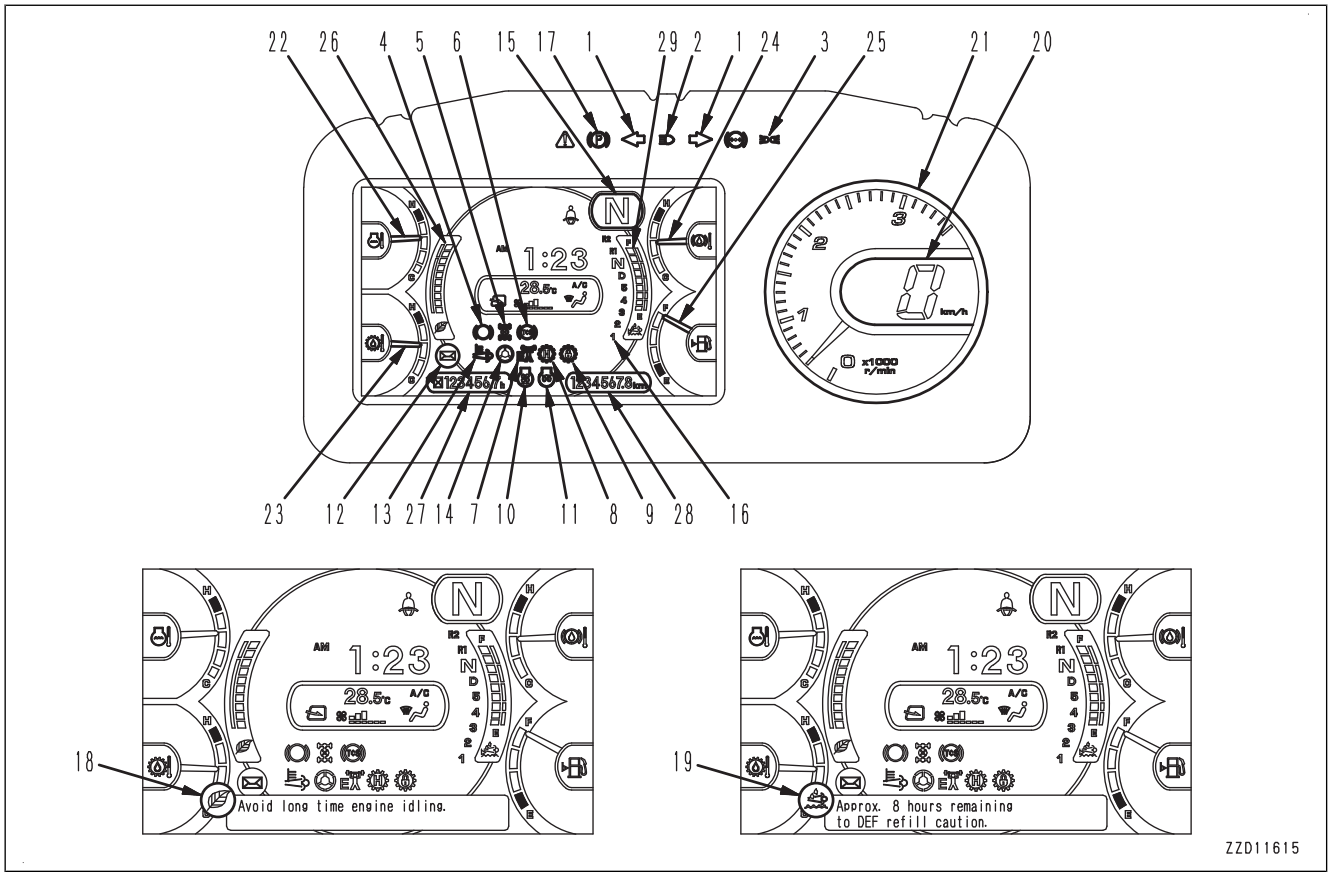
The centralized warning lamp lights up in red and at the same time the alarm buzzer sounds intermittently when the machine is in any of the following conditions.



Machine conditions under which centralized warning lamp lights up	Monitor display	
Action level When L02, L03, or L04 is displayed.		
When the engine overrun caution lamp is lit.		
When the wrong operation in fan reverse mode caution lamp is lit.		
When the dump body float caution lamp (red) is lit.		
When the inclination caution lamp is lit.		
When the charge voltage caution lamp is lit.		
When the brake oil pressure is below the specified value while the engine is running.		The brake oil pressure caution lamp lights up.
When the steering oil pressure is below the specified value while the engine is running.		The steering oil pressure caution lamp lights up.

Machine conditions under which centralized warning lamp lights up	Monitor display	
When the starting switch is turned to ON position while the gear shift lever is in the any position other than NEUTRAL position (N).		The current gear shift lever position flashes.
When all the signals from the gear shift lever are turned OFF.		
When the gear shift lever is set to NEUTRAL position (N) during traveling at travel speed above 4 km/h.		The current gear shift lever position flashes.
When the travel speed exceeds 4 km/h while the gear shift lever is in NEUTRAL position (N).		
When the gear shift lever is not in NEUTRAL position (N) while the parking brake is applied.		The parking brake pilot lamp is lit.
When the gear shift lever is in position D and the accelerator pedal is depressed while the brake is operated. (When F1 Start at D Position Setting is effective)		Shift indicator (F1) flashes.

PILOT DISPLAY AND METER DISPLAY



Pilot display

(1) Turn signal lamp pilot lamp
(2) Headlamp (high beam) pilot lamp
(3) Clearance lamp pilot lamp
(4) Retarder pilot lamp
(5) Inter-axle differential lock pilot lamp
(6) KTCS display
(7) Power mode display
(8) Shift hold pilot lamp
(9) Torque converter lockup pilot lamp
(10) Fan reverse pilot lamp
(11) Preheating pilot lamp
(12) Message display
(13) Aftertreatment devices regeneration display
(14) Secondary steering pilot lamp
(15) Shift indicator
(16) Shift lever position display
(17) Parking brake pilot lamp
(18) ECO guidance
(19) DEF low level guidance

Meter display

(20) Speedometer
(21) Engine tachometer
(22) Engine coolant temperature gauge
(23) Torque converter oil temperature gauge
(24) Retarder oil temperature gauge
(25) Fuel gauge
(26) ECO gauge
(27) L.H. meter
(28) R.H. meter
(29) DEF level gauge

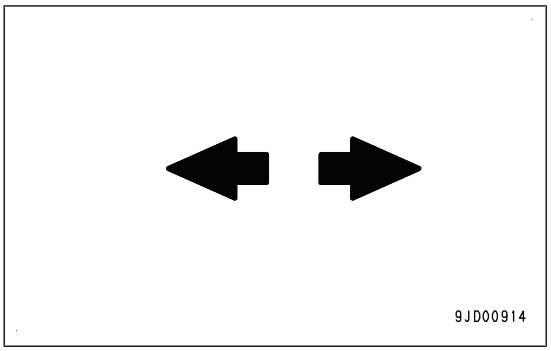
PILOT DISPLAY

The pilot display consists of the pilot lamps to check the actuation of each function.

When the starting switch is in ON position, the pilot lamps light up when the display items are functioning.

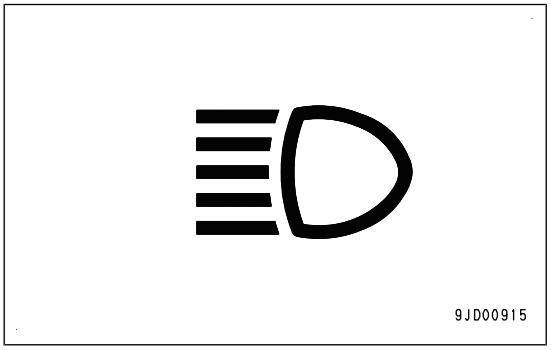
TURN SIGNAL PILOT LAMP

The turn signal pilot lamp flashes synchronously with the turn signal lamp, when it is turned on.



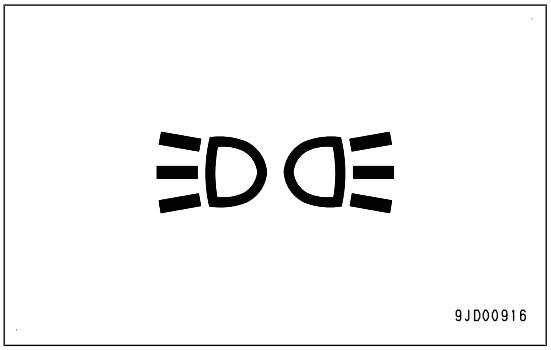
HEADLAMP (HIGH BEAM) PILOT LAMP

The headlamp (high beam) pilot lamp lights up when the headlamps are set to high beam.



CLEARANCE LAMP PILOT LAMP

The clearance lamp pilot lamp lights up when the clearance lamps are turned on.

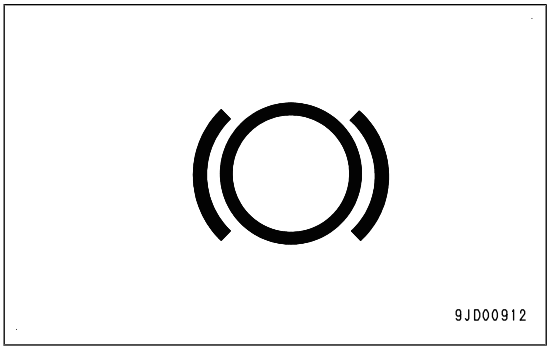


RETARDER PILOT LAMP

The retarder pilot lamp lights up when the retarder is in operation.

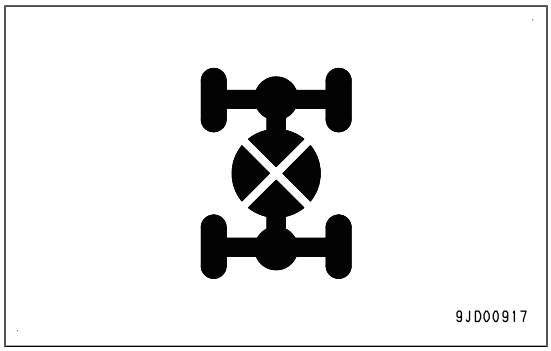
The retarder operates in the following cases.

- When the retarder control lever is pulled.
- When the automatic retarder, accelerator linked control system (ARAC) is in operation.



INTER-AXLE DIFFERENTIAL LOCK PILOT LAMP

The inter-axle differential lock pilot lamp lights up when the inter-axle differential lock is in operation.

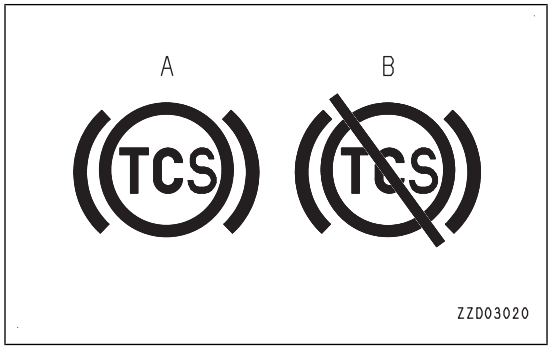


KTCS DISPLAY

KTCS display indicates the operating state of KTCS.

(A): Lights up when KTCS is in operation.

(B): Lights up when setting of KTCS is turned OFF.



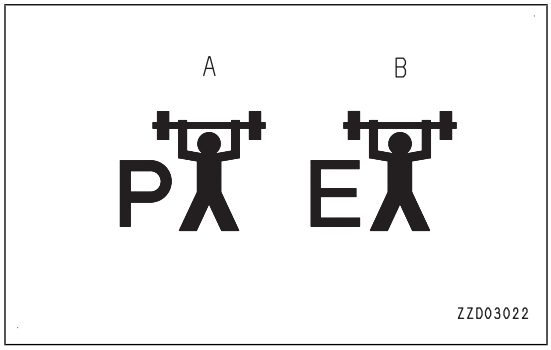
POWER MODE DISPLAY

The power mode display indicates the set state of the output mode.

By selecting engine power mode selector switch, one of the following lamps lights up.

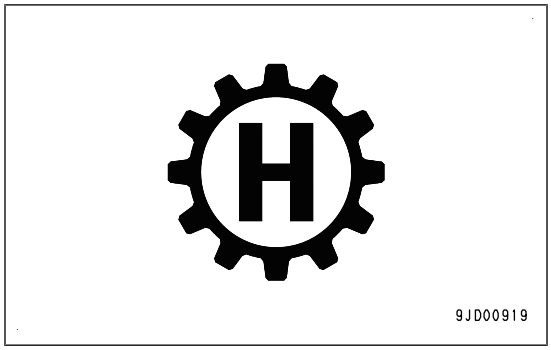
(A): Power mode

(B): Economy mode



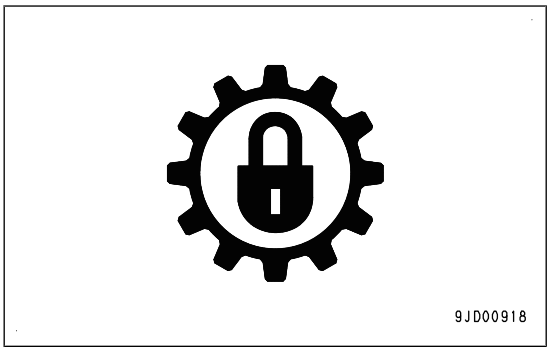
SHIFT HOLD PILOT LAMP

The shift hold pilot lamp lights up when the shift hold function works.



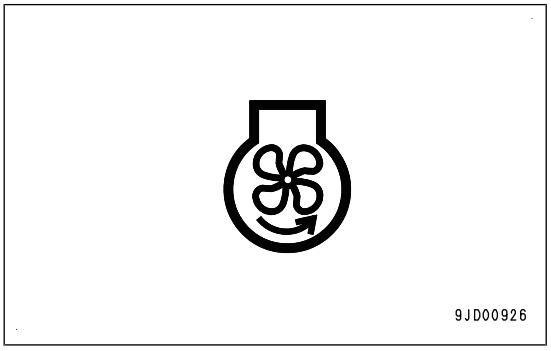
TORQUE CONVERTER LOCKUP PILOT LAMP

The torque converter lockup pilot lamp lights up when the torque converter lockup is actuated and the transmission is shifted to the direct drive.



FAN REVERSE ROTATION PILOT LAMP

The fan reverse rotation pilot lamp lights up when the radiator fan or aftercooler fan is set in fan reverse mode.

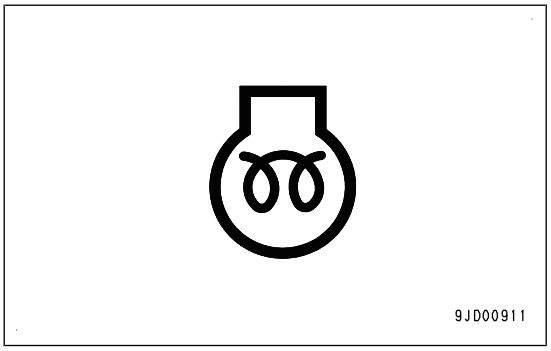


PREHEATING PILOT LAMP

The preheating pilot lamp lights up when the automatic preheating function of the engine is being actuated, and goes out when preheating is completed.

This lamp also lights up during manual preheating.

The electrical heater for engine preheating is actuated while this lamp is lit.



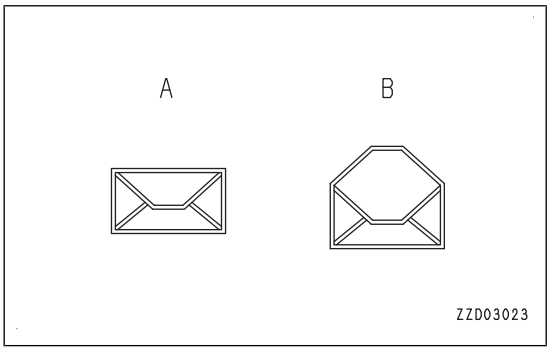
MESSAGE DISPLAY

The message display lights up when your Komatsu distributor sends out any information.

(A): There is unread message.

(B): There is any read message to which no reply is made.

To read the message, see “MESSAGE DISPLAY”.



AFTERTREATMENT DEVICES REGENERATION PILOT LAMP

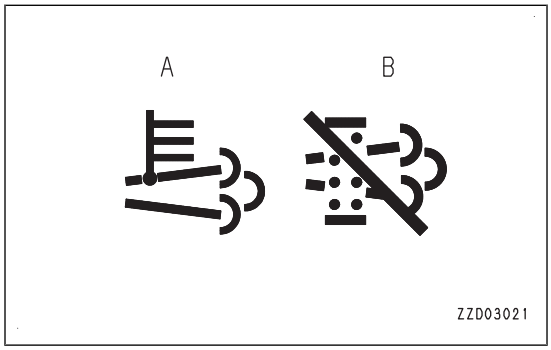
⚠ CAUTION

- **Exhaust gas temperature may increase higher than the previous models during the aftertreatment devices regeneration.**
  Stay away from the exhaust pipe outlet to prevent yourself from getting burnt.
  Also, keep combustible materials away from the exhaust pipe outlet to prevent a fire.
- **When there are thatched houses, dry leaves or pieces of paper near the job site, set the system to the regeneration disable to prevent fire hazards due to highly heated exhaust gas during the aftertreatment devices regeneration.**

Aftertreatment devices regeneration display indicates the regeneration state of the exhaust gas aftertreatment devices.

(A): Lights up during regeneration of the exhaust gas aftertreatment devices. It goes out when the regeneration is completed.

(B): Lights up when the exhaust gas aftertreatment devices are set to “Regeneration Disable”.

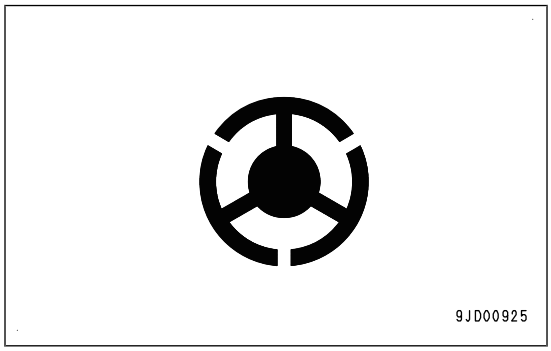


REMARK

- The lighting cycle becomes shorter when the ambient temperature is lower or working load is smaller.
- Even if regeneration disable of KDPF is set, when the manual stationary regeneration is necessary, soot accumulation caution lamp of KDPF lights up.
  If KDPF soot accumulation caution lamp lights up, cancel the regeneration disable setting and perform manual stationary regeneration.

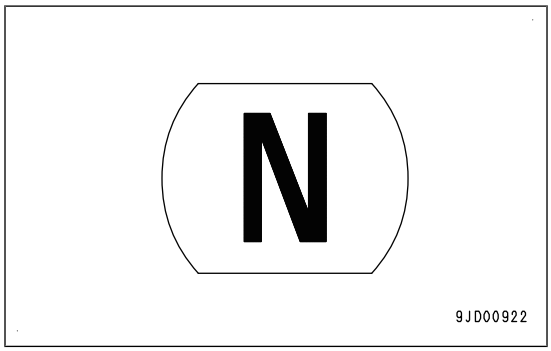
SECONDARY STEERING SYSTEM PILOT LAMP

The secondary steering pilot lamp lights up while the secondary steering is in operation.



SHIFT INDICATOR

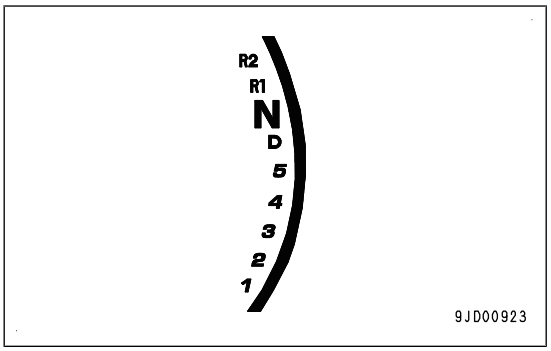
This indicator shows the transmission shift range (gear shift).



SHIFT LEVER POSITION DISPLAY

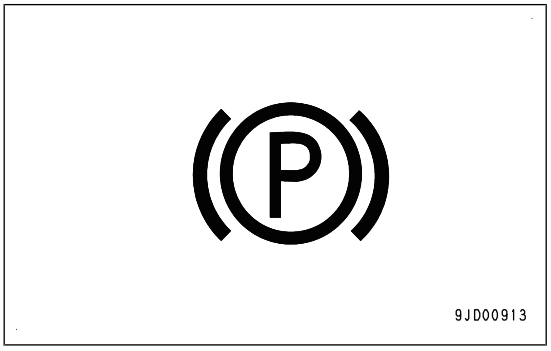
The gear shift lever position display indicates the gear shift lever position.

The character for the selected gear shift lever position is enlarged.



PARKING BRAKE PILOT LAMP

The parking brake pilot lamp lights up when the parking brake is applied.



ECO GUIDANCE

ECO guidance is displayed during the operation and supports the fuel saving operation.

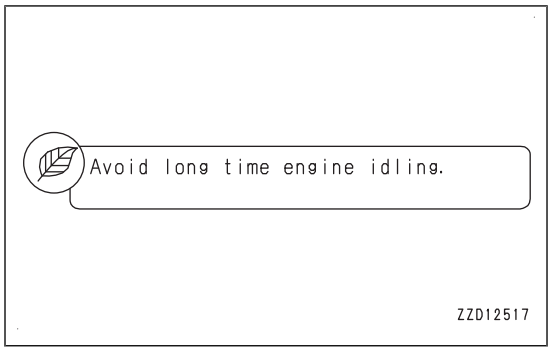
The details of the guidance are as follows.

EXCESSIVE IDLING GUIDANCE

If the engine continues running idle for more than 5 minutes, the excessive idling message is displayed on the machine monitor.

When waiting for loading or stopping operation for a short period, stop the engine to reduce unnecessary fuel consumption.

When the accelerator pedal is depressed or the machine starts traveling, the excessive idling message goes out.



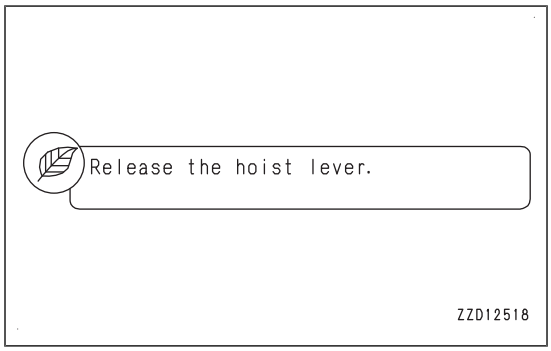
GUIDANCE TO AVOID HOIST RELIEF

When relief of the hoist oil pressure is continued for more than 5 seconds while the accelerator pedal is depressed, the hoist pressure relief deterrence message is displayed on the machine monitor.

Relief of the host oil pressure occurs if you set the dump lever to “RAISE” position while the dump body is raised to the maximum height or to “LOWER” position while the dump body is seated.

Return the dump lever to “HOLD” or “FLOAT” position to prevent unnecessary relief.

The hoist pressure relief deterrence message goes out automatically in 10 seconds.

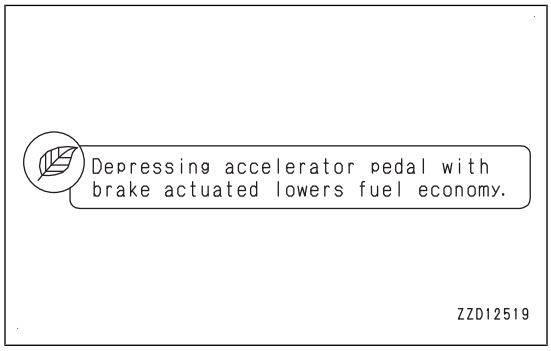


BRAKE DRAGGING PREVENTION GUIDANCE

If the accelerator pedal is depressed for more than 5 seconds while applying the brake during traveling, the brake dragging prevention message is displayed on the machine monitor.

If the accelerator is operated while the brake is used, fuel consumption is increased.

The brake dragging prevention message goes out automatically after 10 seconds.



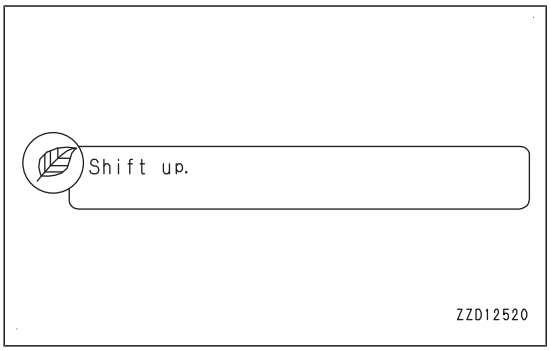
GUIDANCE TO RECOMMEND SHIFTING UP

Even when the engine speed reaches shift up speed during traveling, if the upshift disable condition continues more than 5 seconds, by gear shift lever or shift hold switch, the upshift recommendation message is displayed on the machine monitor.

This message is displayed in the reverse travel, as well. It is, however, not displayed in the downhill travel with retarder operation.

When traveling on a flat road, reduce the fuel consumption by shifting the gear up and decreasing the engine speed.

The upshift recommendation message goes out automatically after 10 seconds.

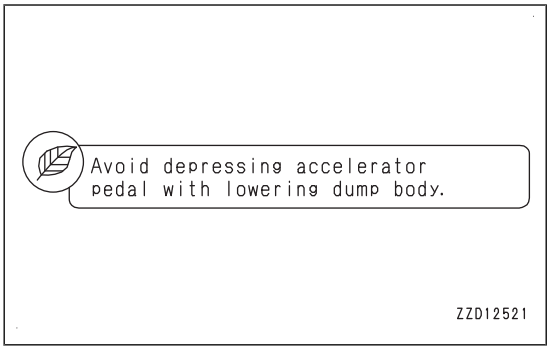


GUIDANCE TO AVOID ACCELERATION OPERATION DURING DUMP BODY LOWERING

If you depress the accelerator pedal for more than 5 seconds while the dump body is lowering, the message to restrict the accelerator operation during the dump body lowering operation is displayed on the machine monitor.

When the dump body is lowering, restrict the accelerator operation in order to reduce the fuel consumption.

The message to restrict the accelerator operation during dump body lowering operation goes out automatically after 10 seconds.



GUIDANCE TO AVOID STEERING RELIEF

If the steering oil pressure is relieved for more than 5 seconds, the steering relief restriction message is displayed on the machine monitor.

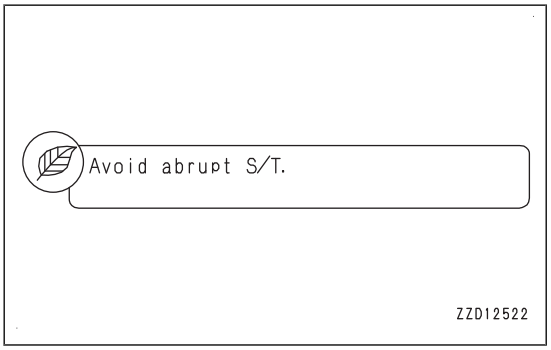
Relieving of steering oil pressure occurs when you steer the wheel fully to the right or left.

Restrict forcible steering operation to reduce the fuel consumption.

The steering relief restriction message goes out automatically after 10 seconds.

REMARK

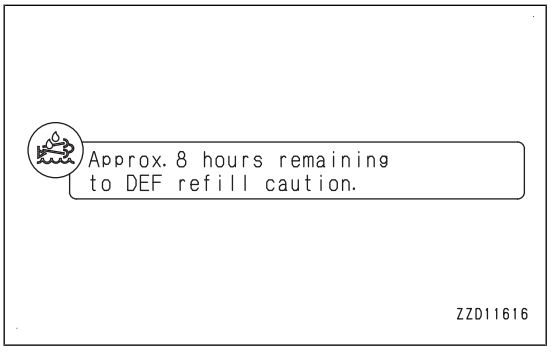
Display/Non-display of ECO guidance can be switched.



DEF LOW LEVEL GUIDANCE

If the operable time estimated from the current DEF level and the latest average DEF consumption is shorter than 8 hours, the low DEF level message is displayed.

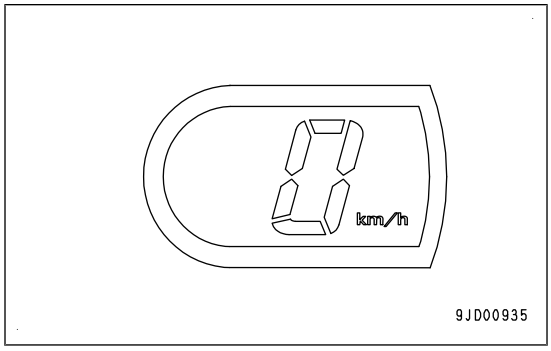
The low DEF level message goes out more than 10 seconds after or when the enter switch is pressed.



METER DISPLAY

SPEEDOMETER

The speedometer indicates the travel speed of the machine.



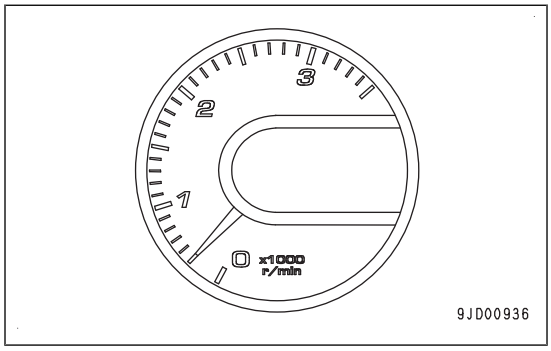
ENGINE TACHOMETER

The engine tachometer indicates the engine speed.

If the engine speed is higher than the allowable range during operation, the engine overrun caution lamp lights up in red.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

Operate the machine with moderate engine speed and travel speed.



ENGINE COOLANT TEMPERATURE GAUGE

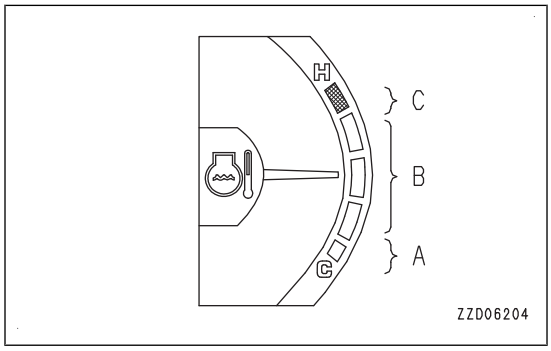
Engine coolant temperature gauge shows the engine coolant temperature.

When the indicator is in white range (A) or green range (B) during operation, it is normal.

If the indicator is in red range (C), the engine coolant temperature caution lamp lights up in red, and action level “L02” is displayed.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.

The engine output is then limited automatically.



Place the machine in a safe place, set the gear shift lever to NEUTRAL position (N), and run the engine at a medium speed with no load until the engine coolant temperature caution lamp goes out.

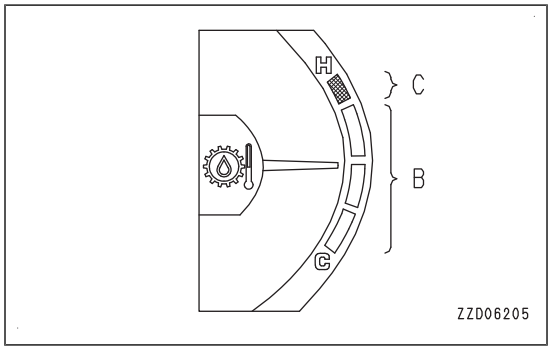
TORQUE CONVERTER OIL TEMPERATURE GAUGE

The torque converter oil temperature gauge indicates the torque converter oil temperature.

When the indicator is in green range (B) during operation, it is normal.

If the indicator is in red range (C), the torque converter oil temperature caution lamp lights up in red, and action level “L02” is displayed.

At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.



Place the machine in a safe place, set the gear shift lever to NEUTRAL position (N), and run the engine at a medium speed with no load until the torque converter oil temperature caution lamp goes out.

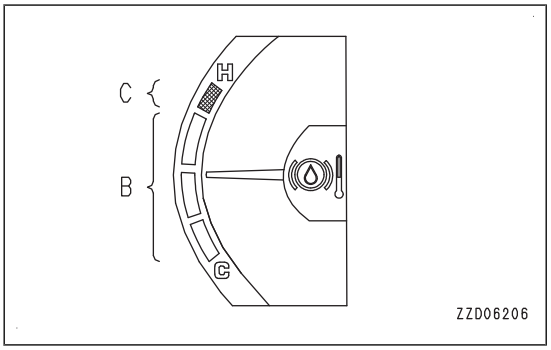
RETARDER OIL TEMPERATURE GAUGE

The retarder oil temperature gauge indicates the retarder oil temperature.

When the indicator is in green range (B) during operation, it is normal.

If the indicator is in red range (C), the retarder oil temperature caution lamp lights up in red, and action level “L02” is displayed.

Place the machine in a safe place, set the gear shift lever to NEUTRAL position (N), and run the engine at a medium speed with no load until retarder oil temperature caution lamp goes out.



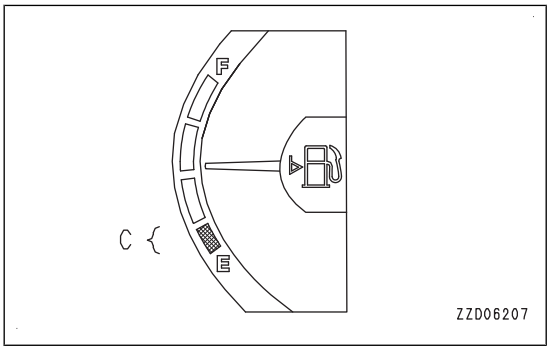
FUEL GAUGE

Fuel gauge shows the amount of fuel in the fuel tank.

If the indicator is in red range (C), the fuel level caution lamp lights up in red.

The fuel level is below 67 ℓ. Check the fuel level, and add fuel.

The fuel in the fuel tank shakes when traveling on the slopes or curves. For this reason, the display of the fuel gauge may go up and down, but it is not a trouble.



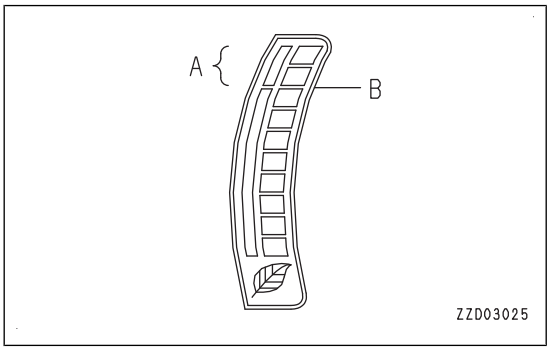
ECO GAUGE

ECO gauge indicates the instantaneous fuel consumption (fuel consumption rate at each moment).

The instantaneous fuel consumption varies depending on the operation ways (accelerator operation, travel speed, gear speed, etc.) and the given load during travel (load weight, slope, ground condition, etc.).

As the indication of ECO gauge is higher, the fuel consumption is higher.

Reduce the indication of gauge to the level where there is no adverse effect on the operation, it leads to energy saving operation to reduce the fuel consumption.



REMARK

Even if the indication of ECO gauge is in orange range (A), it is not a machine trouble.
Target fuel consumption (B) displayed by ECO gauge can be changed as necessary.

L.H. AND R.H. METER DISPLAY

The L.H. meter indicates either of the following which can be selected.

- Service meter
- Odometer
- Clock

The R.H. meter indicates either of the following which can be selected.

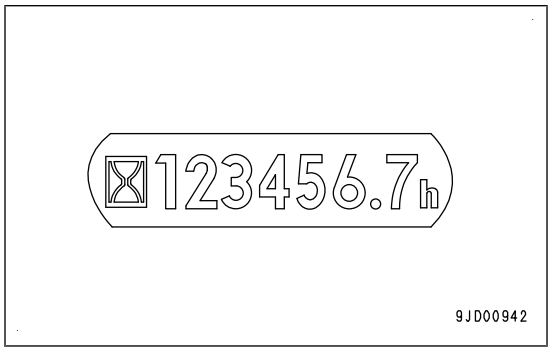
- Fuel consumption gauge
- Service meter
- Odometer
- Clock

Service meter display

Indicates the integrated operating hours of the machine.

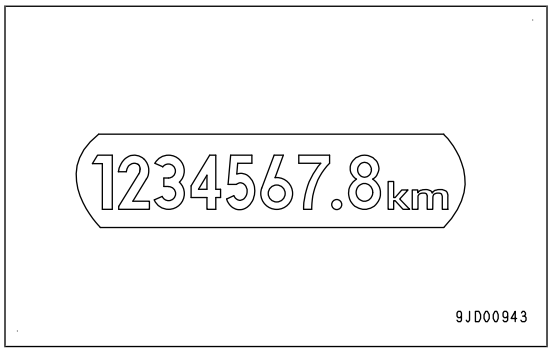
When the engine has run, the service meter advances even if the machine is not being operated.

The service meter advances by 0.1 for 6 minutes of engine running and by 1 for 1 hour of engine running, regardless of the engine speed.



Odometer display

Indicates the total distance that machine has traveled in unit of km.

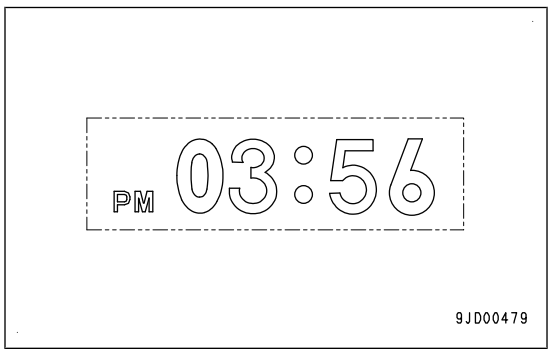


Clock display

Indicates the current time.

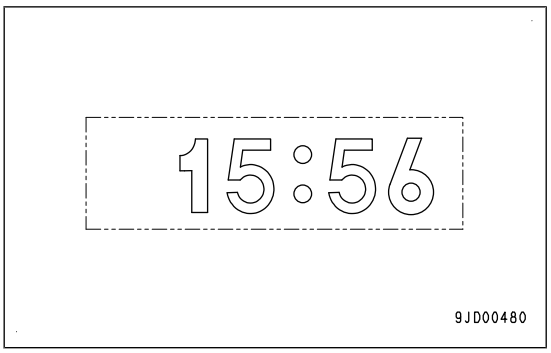
12-hour system display

The clock is displayed in 12-hour mode with am or pm.



24-hour system display

The clock is displayed in 24-hour mode.



REMARK

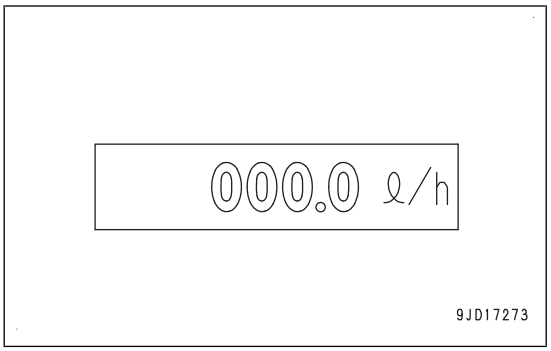
If the battery is disconnected for a long period for storage etc., the time information may be lost.

Fuel consumption gauge display

Indicates the average fuel consumption of the machine.

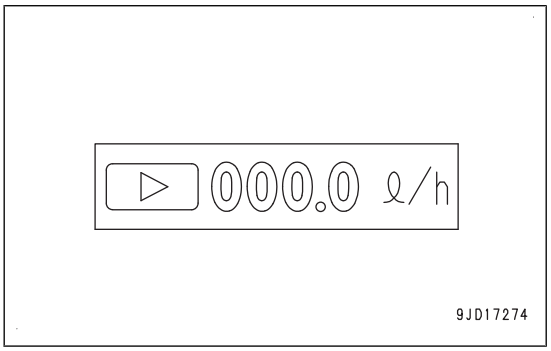
One day display

Displays the average fuel consumption of the period (from the operation starting time until now during 0:00 a.m. of the day through 0:00 a.m. of the next day).



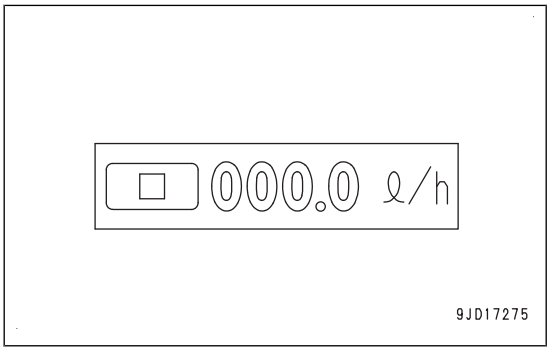
Split (under measurement) display

Displays the split fuel consumption under measurement.



Split (measurement is stopped) display

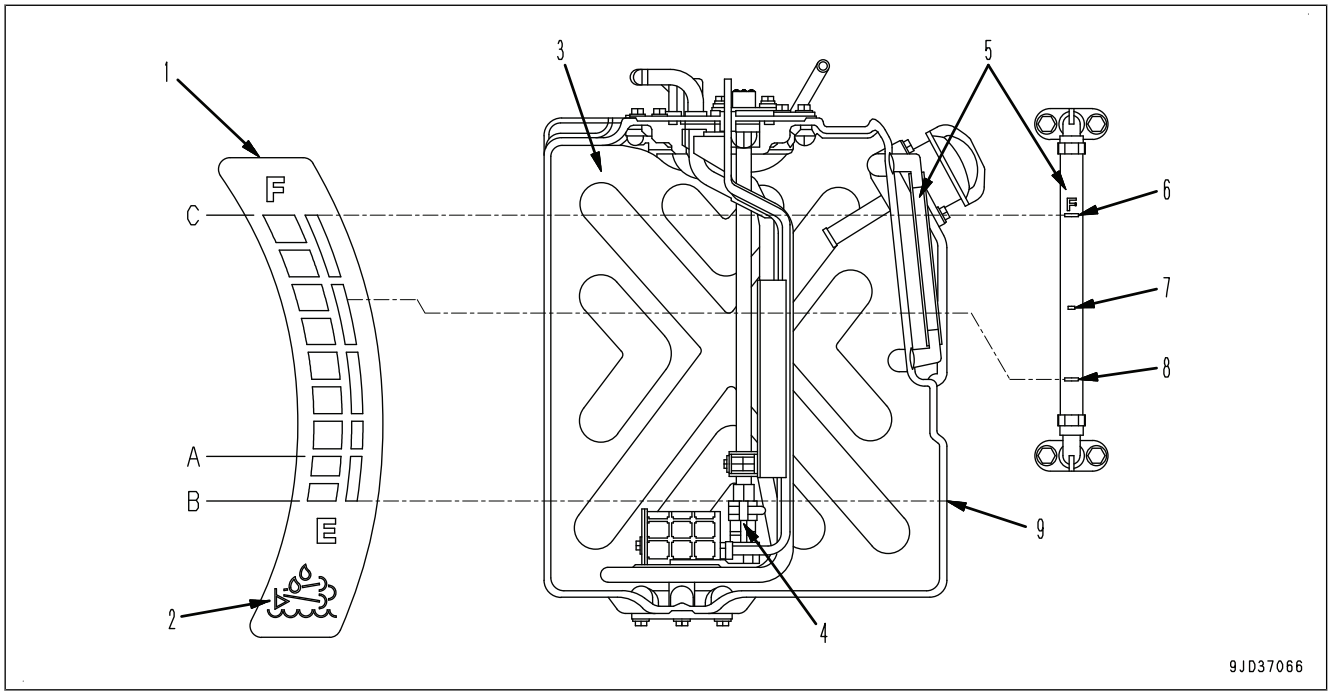
Displays the value after the measurement of split fuel consumption is stopped.



REMARK

Display on the fuel consumption gauge can be switched between the average fuel consumption per day and the average fuel consumption during a selected period (split fuel consumption).

DEF LEVEL GAUGE



(1) DEF level gauge
(2) DEF level caution lamp
(3) DEF tank
(4) DEF level sensor
(5) DEF tank sight gauge
(6) DEF level is at Full (33 ℓ)
(7) DEF level is 5ℓ below Full (28 ℓ)
(8) DEF level is at Full in cold weather (23 ℓ)
(8) DEF level is 10ℓ below Full (23 ℓ)
(9) DEF level is at Empty (10 ℓ)

The DEF level gauge (1) indicates the remaining level of DEF.

If the indicator is in green range during operation, it is normal.

If the indicator comes close to (A) of red range during operation, check and add DEF.

(A) to (B): Red range

(A) to (C): Green range

When the indicator is in red range from (A) to (B), the DEF level caution lamp (2) lights up in red.

If DEF level further decreases after the lamp lights up in red, the engine output power and engine speed are limited.

When remaining level of DEF cannot be detected, the DEF level caution lamp (1) lights up in white.

REMARK

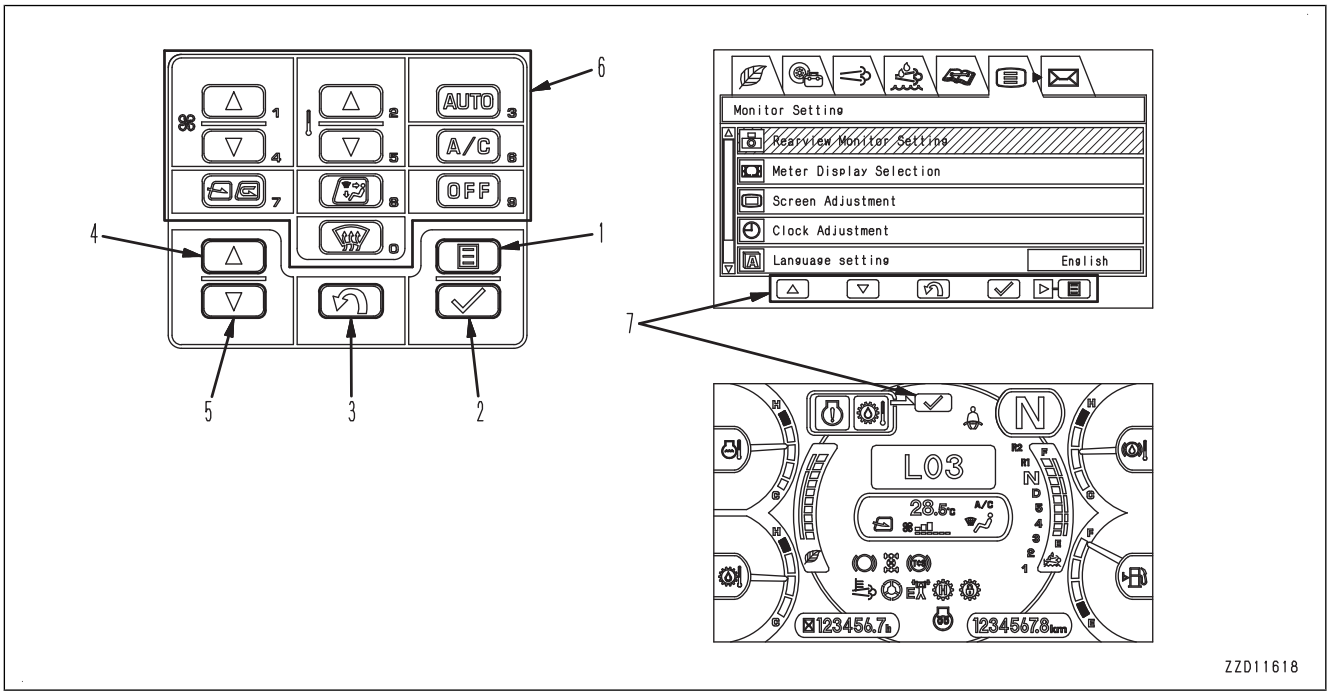
- Immediately after turning the starting switch to ON position and while the engine is running, the DEF level caution lamp (2) lights up in white. However, this does not indicate abnormality.
- In cold weather, DEF level cannot be detected and the DEF level caution lamp (2) lights up in white for approximately 1 hour. However, this does not indicate abnormality.
- Even if the DEF level caution lamp (2) is not lit in white, it may take a long time for the DEF level gauge (1) to display the correct position.
  Note that the following cases are not abnormal:
  - When DEF is added while the starting switch is kept at ON position.
  - When the starting switch is turned to ON position immediately after adding DEF (within approximately 30 seconds).

  Before adding DEF, turn the starting switch to OFF position. Wait for a while after adding, then turn the starting switch to ON position.

MONITOR SWITCHES

This is used for the operation of the machine monitor or air conditioner.

The function of each switch varies depending on the screen of the machine monitor being displayed when the switch is pressed.

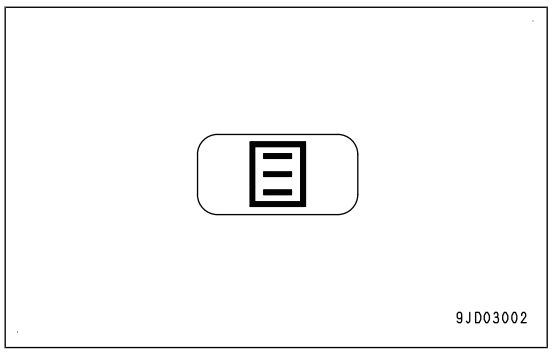


(1) Menu switch
(2) Enter switch
(3) Return switch
(4) Up switch
(5) Down switch
(6) Air conditioner switches / Numeric keypad
(7) Guidance icon

MENU SWITCH

When you push the menu switch on the standard screen, the user menu screen that follows is shown. But the user menu screen is not shown during the machine travel.

For the user menu, see “USER MENU”.



When normal

“Energy Saving Guidance” menu screen is shown.

When the KDPF soot accumulation caution lamp lights up

“Aftertreatment Devices Regeneration” menu screen is shown.

When the EGR system has a problem

“SCR Information” menu screen is shown.

When the maintenance caution lamp lights up

“Maintenance” menu screen is shown.

When the fan reverse rotation display lights up

“Machine Setting and Information” menu screen is shown.

When the message display lights up

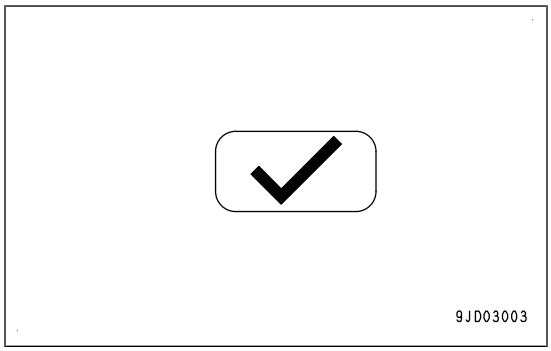
Message display menu screen is shown.

Push the menu switch on the user menu screen and the menu screen changes.

ENTER SWITCH

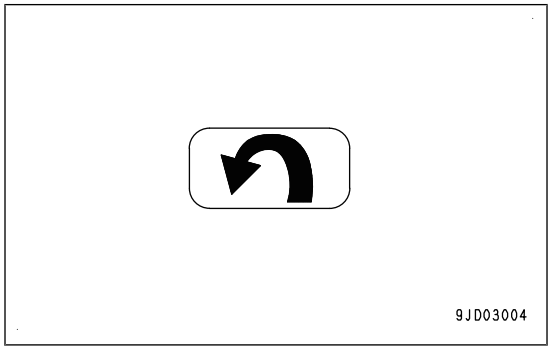
Pressing ENTER switch on the user menu screen decides any selection and changes, and proceeds to the next screen.

When ENTER switch is pressed on the standard screen with a warning message displayed, “Current Abnormality” screen is displayed.



RETURN SWITCH

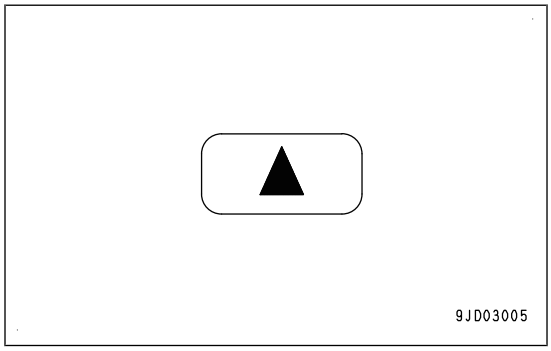
Pressing RETURN switch cancels a selection or changes, and returns the screen to the previous screen or the standard screen.



UP SWITCH

Pressing UP switch moves the cursor up by one item. When on the top line, the cursor moves to the bottom line.

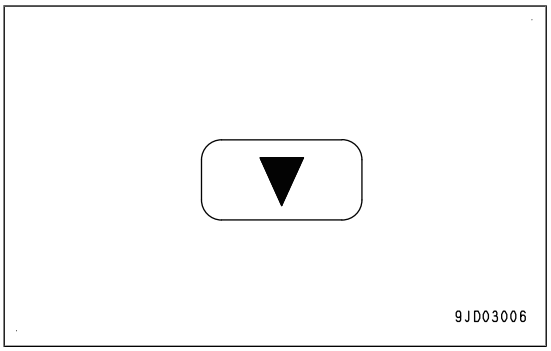
On the value input screen, the value is increased by one.



DOWN SWITCH

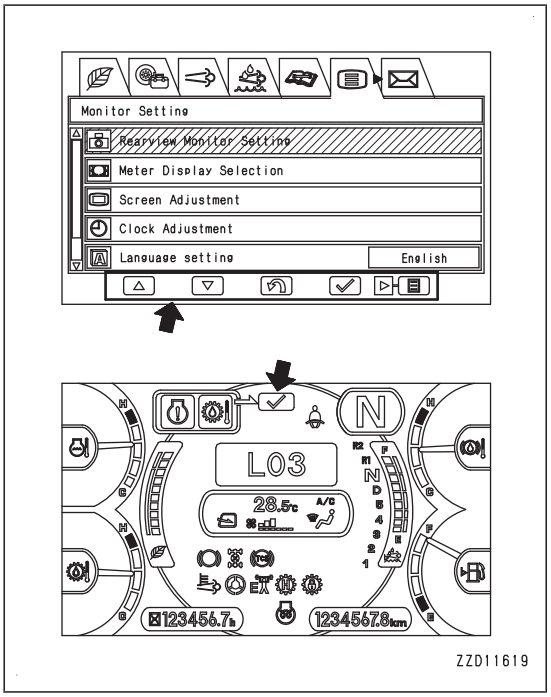
Pressing the down switch moves the cursor down by one item. When on the bottom line, it moves to the top line.

On the value input screen, the value is decreased by one.



REMARK

- The switches effective on each screen can be checked with the guidance icon.
- This function is not available when you press a switch not marked by the guidance icon or you press the guidance icon itself.



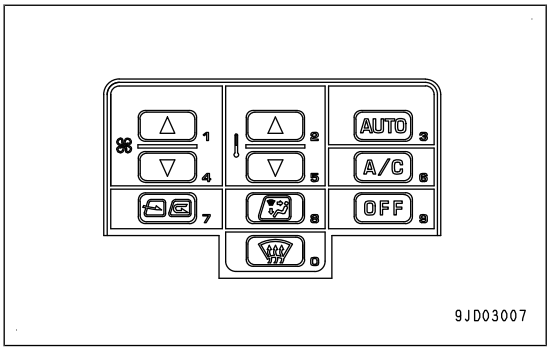
AIR CONDITIONER SWITCH / NUMERIC KEYPAD

The air conditioner switch, which is used for the operation of the air conditioner, consists of 10 switches.

For explanation of each switch, see “HANDLE AIR CONDITIONER”.

These switches can be used as a numeric keypad to enter a numeric value such as a password.

Press a desired switch to enter a numeric value “0” to “9”, which is indicated at the lower right of each switch.

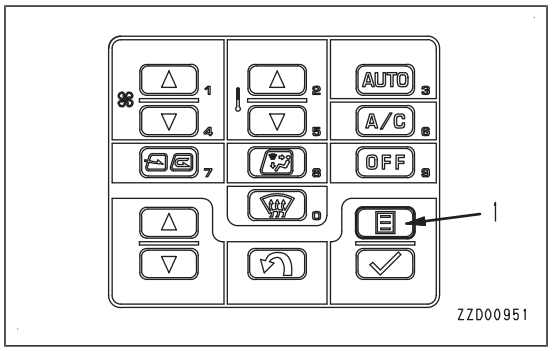


REMARK

The confirmation sound is heard when the switch is pressed, but a reaction is taken (the switch function is operated) when the switch is released.

USER MENU

When menu switch (1) is pressed on the standard screen while the machine is stopped, the user menu screen is displayed to enable you to configure and confirm machine settings.



The user menu consists of the following kinds. The menu screen can be changed by pressing the menu switch (1).

(A): “Energy Saving Guidance”

(B): “Machine Setting and Information”

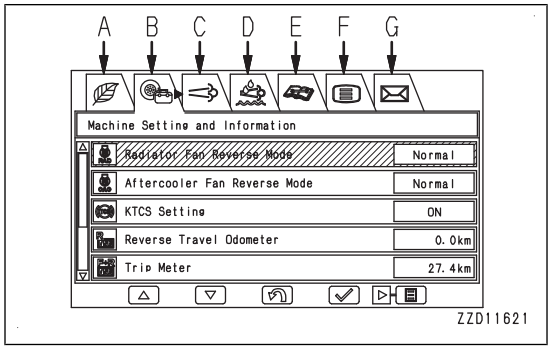
(C): “Aftertreatment Devices Regeneration”

(D): “SCR Information”

(E): “Maintenance”

(F): “Monitor Setting”

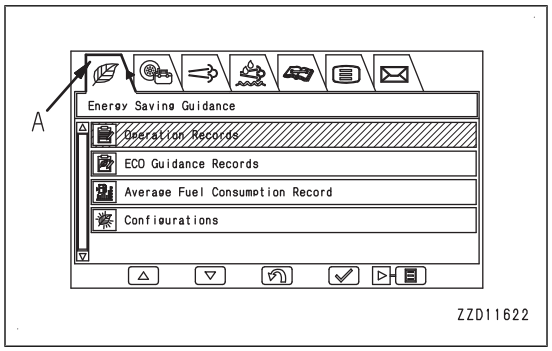
(G): Message Display



These menus (A) to (G) are for setting and confirming the following items:

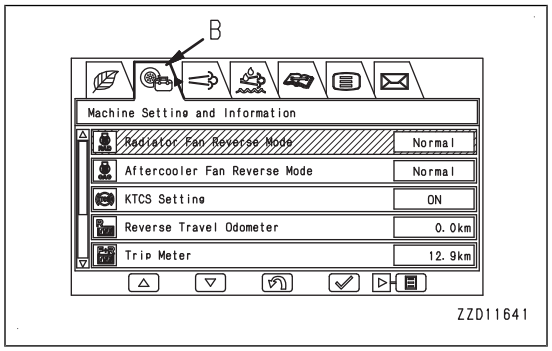
(A) “Energy Saving Guidance”

- Check of “Operation Records”
- Check of “ECO Guidance Records”
- Check and reset of “Average Fuel Consumption Record”
- “Configurations”



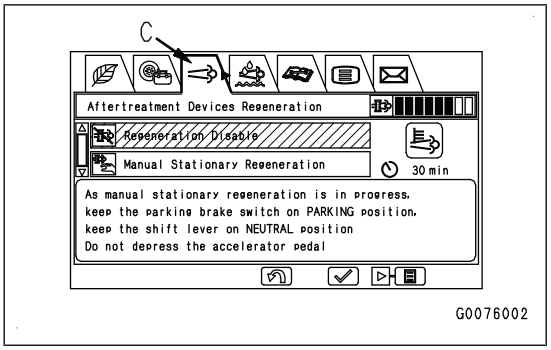
(B) “Machine Setting and Information”

- Setting of “Radiator Fan Reverse Mode”
- Setting of “Aftercooler Fan Reverse Mode”
- Display and setting of “Payload Meter”(if equipped)
- “KTCS setting”
- Display and resetting of “Dumping Counter”(if equipped)
- Display of “Reverse Travel Odometer”
- Display and resetting of “Trip Meter”
- “F1 Start at D Position Setting”
- “A/C ECO Mode Setting”
- “Retarder Lever Release Sound Setting”
- “Auto Idle Stop Timer Setting”



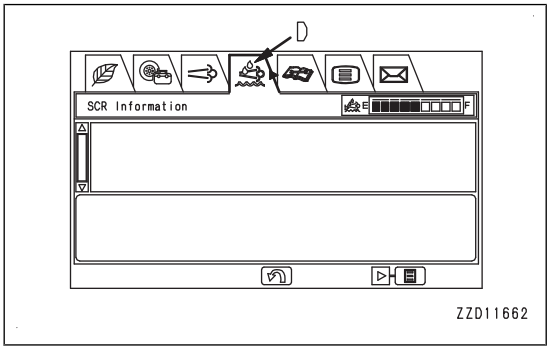
(C) "Aftertreatment Devices Regeneration"

- Setting "Regeneration Disable"
- Operation of "Manual Stationary Regeneration"



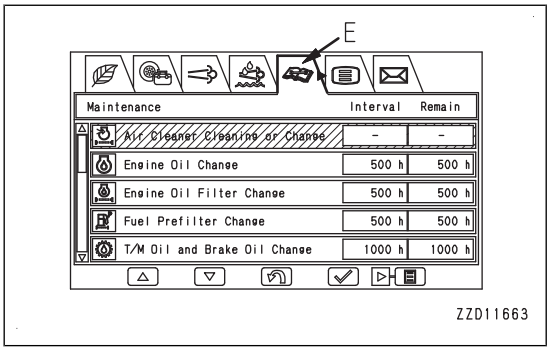
(D) "SCR Information"

- Check of DEF level
- Information on DEF system



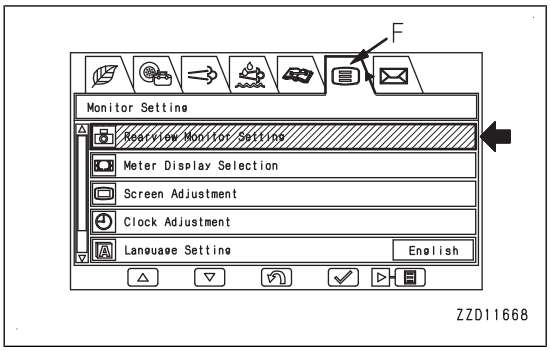
(E) "Maintenance"

- Check and reset of various maintenance remaining times



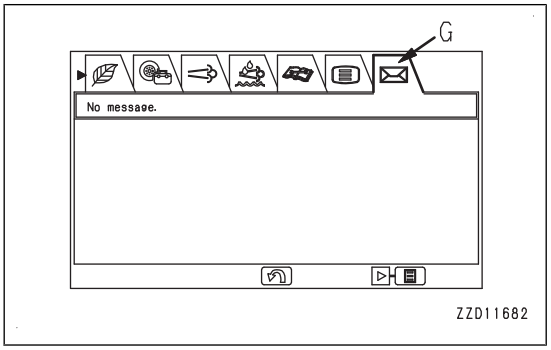
(F) "Monitor Setting"

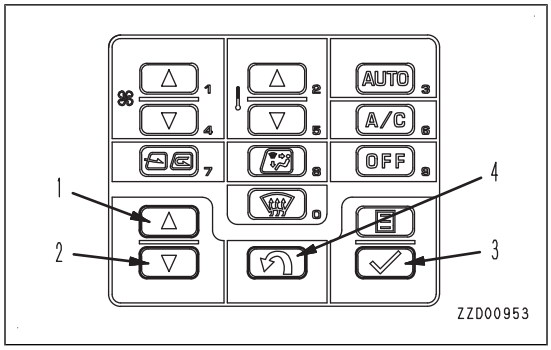
- "Rear View Monitor Setting"
- "Meter Display Selection"
- "Screen Adjustment"
- "Clock Adjustment"
- "Language Setting"
- "Operator ID"



(G) Message Display

- Check of message contents and reply to message





On the user menu screen, it is possible to perform the following operations with the switches.

(1) Up switch

Moves to the item above.

When on the first item, moves to the last item.

(2) Down switch

Moves to the item below.

When on the last item, moves to the first item.

(3) Enter switch

Enters any selection or changes and proceeds to the next screen.

(4) Return switch

Cancels a selection or changes, and returns to the previous screen or the standard screen.

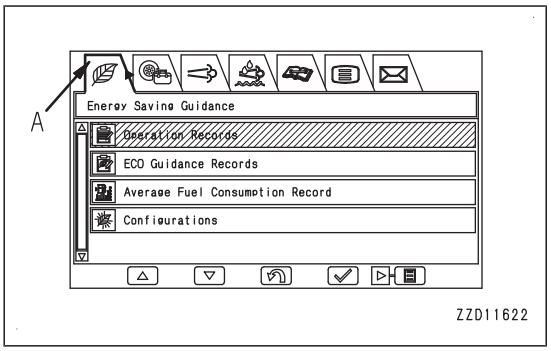
REMARK

- If no switch is operated for 30 seconds on the user menu screen, the screen automatically returns to the previous screen or the standard screen.
- The user menu screen is displayed only while the machine is stopped completely.
- If the machine travels while the user menu screen is displayed, the screen automatically returns to the standard screen.

ENERGY SAVING GUIDANCE

Each item of “Energy Saving Guidance” menu (A) is used for displaying and setting the notification relevant to energy saving.

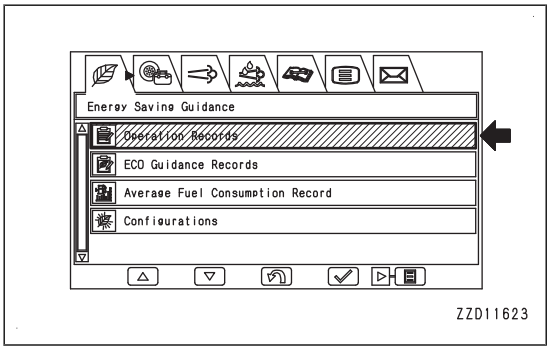
- “Operating Records”
- “Eco Guidance Records”
- “Average Fuel Consumption Records”
- “Configurations”



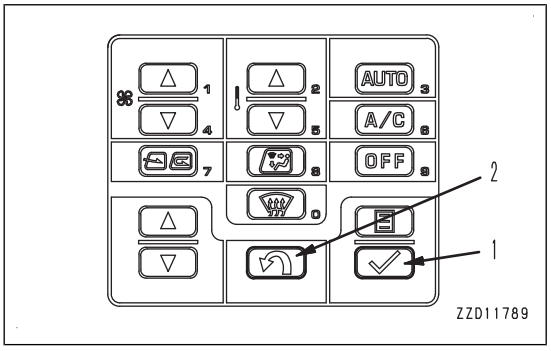
OPERATING RECORD

The “Operation Records” screen displays the following information on a daily basis or during the split measurement period.

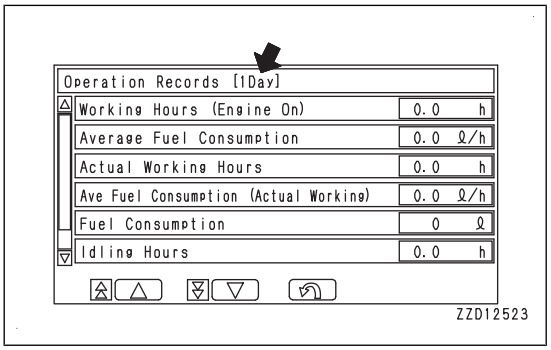
- “Working Hours (Engine On)”
- “Average Fuel Consumption”
- “Actual Working Hours”
- “Ave. Fuel Consumption (Actual Working)”
- “Fuel Consumption”
- “Idling Hours”
- “Economy Mode Ratio”



Select “Operation Records” from the “Energy Saving Guidance” screen, then press enter switch (1).



When the “Average Fuel Consumption Display” is set to “1 Day”

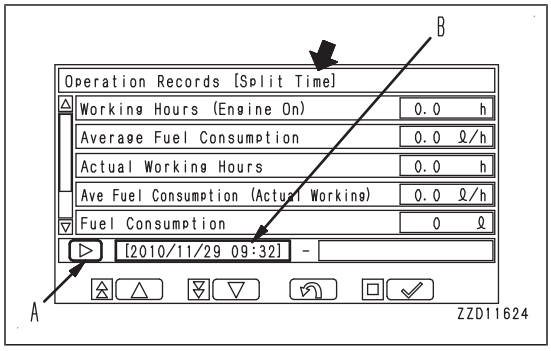


When “Average Fuel Consumption Display” is set to “Split Time” and split time is measured

(A) Display during measurement

(B) Date and time when the measurement is started

To stop the split measurement, see the guidance icon and press enter switch (1).



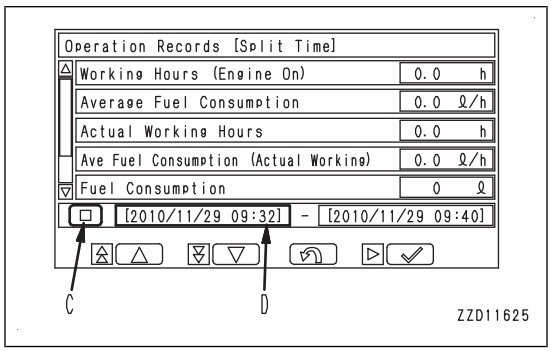
When “Average Fuel Consumption Display” is set to “Split Time” and split time measurement is stopped

(C) Display while measurement is stopped

(D) Dates and times when measurement is started and stopped

To start the split measurement, see the guidance icon and press enter switch (1).

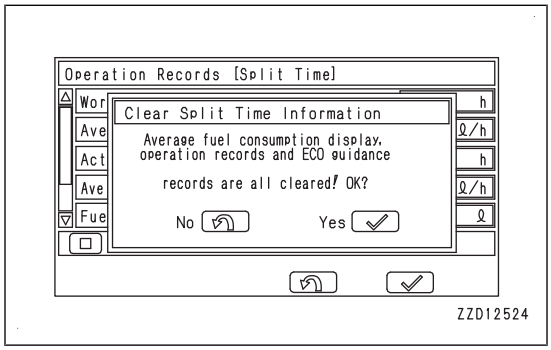
When the measurement is started, the previous split measurement results (“Average Fuel Consumption Display”, “Operation Records”, and “ECO Guidance Records”) are reset.



When the confirmation screen is displayed, press enter switch (1) again to start the split measurement, or press return switch (2) to cancel the start.

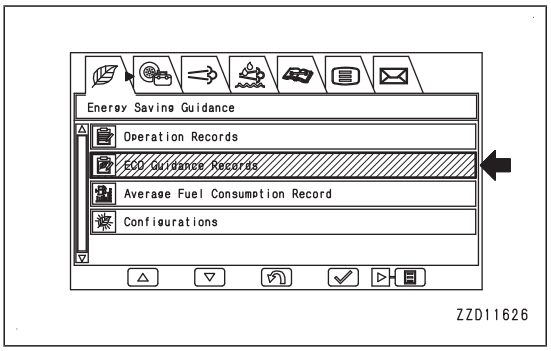
NOTICE

The displayed value of fuel consumption may differ from the actual value due to the operating conditions of the customers (fuel, weather or work contents, etc.).



ECO GUIDANCE RECORD

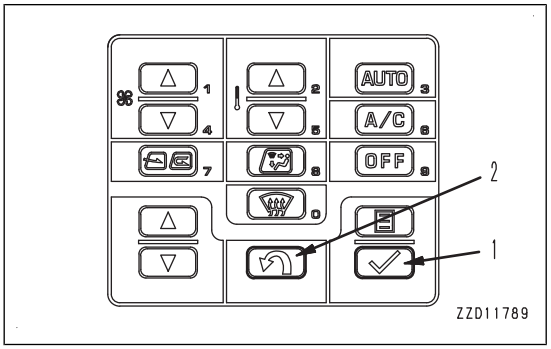
From the “ECO Guidance Records” screen, the frequency of display of the ECO guidance on a daily basis or during the split measurement period and “Operational Advice” are displayed.



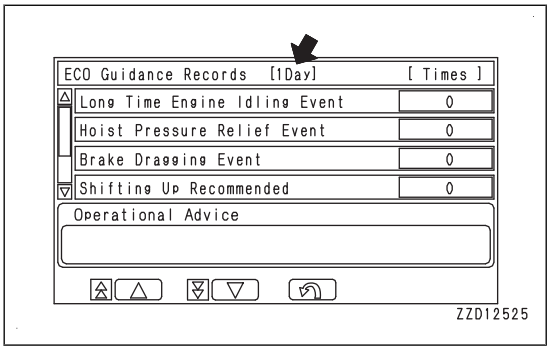
Select “ECO Guidance Records” from the “Energy Saving Guidance” menu screen, then press enter switch (1).

REMARK

In the one-point advice section, the advice to the ECO guidance that appeared most frequently is displayed.
The ECO guidance count increases when display conditions are satisfied even if the ECO guidance is not displayed.



When “Average Fuel Consumption Display” is set to “1 Day”

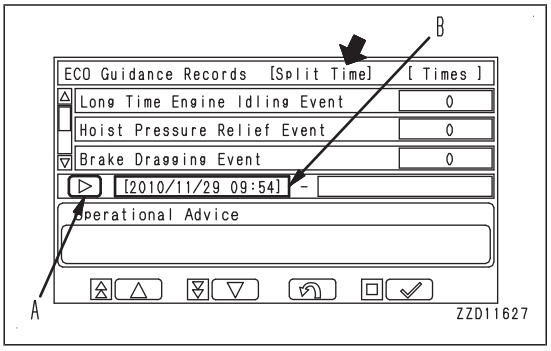


When “Average Fuel Consumption Display” is set to “Split Time”, and split time is mesured

(A) Display during measurement

(B) Date and time when measurement is started

To stop the split measurement, see the guidance icon and press enter switch (1).



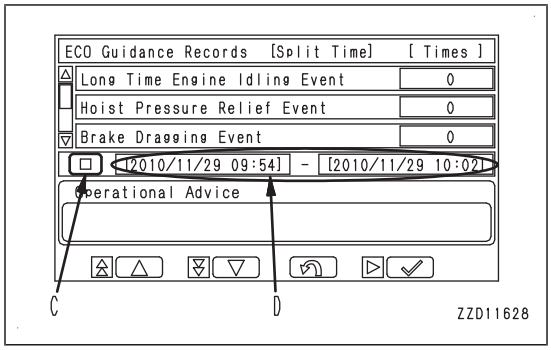
When display of “Average Fuel Consumption Display” is set to “Split Time”, and split time measurement is stopped

(C) Display while measurement is stopped

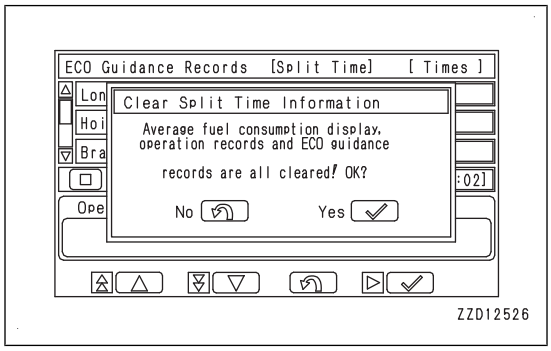
(D) Dates and times when the measurement is started and stopped

To start the split measurement, see the guidance icon and press enter switch (1).

When the measurement is started, the previous split measurement results (“Average Fuel Consumption Display”, “Operation Records”, and “ECO Guidance Records”) are reset.



When the confirmation screen is displayed, press enter switch (1) again to start the split measurement, or press return switch (2) to cancel the start.



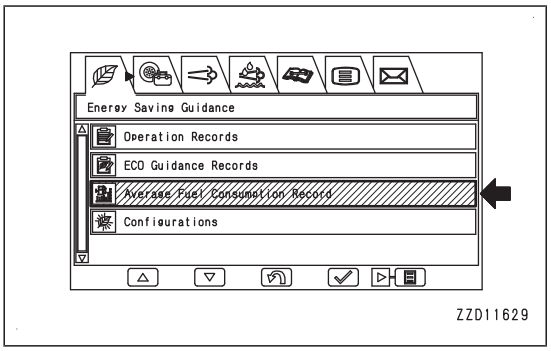
FUEL CONSUMPTION RECORD

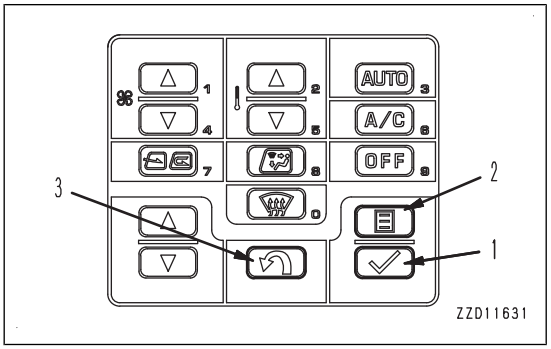
The “Average Fuel Consumption Record” screen alternately displays the following graphs.

- Average fuel consumption for the “Last 12 hours”
- Average fuel consumption for the “Last 7 days”.

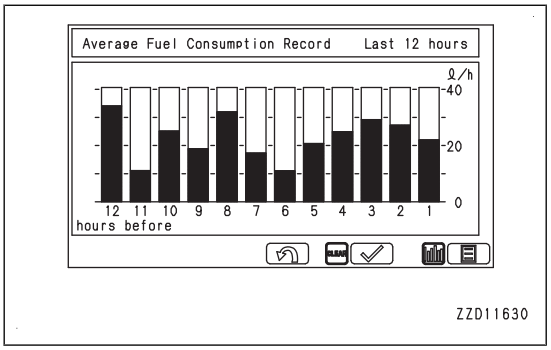
Select “Average Fuel Consumption Record” from the “Energy Saving Guidance” menu screen, then press ENTER switch (1).

To change a graph, see the guidance icon and press menu switch (2).

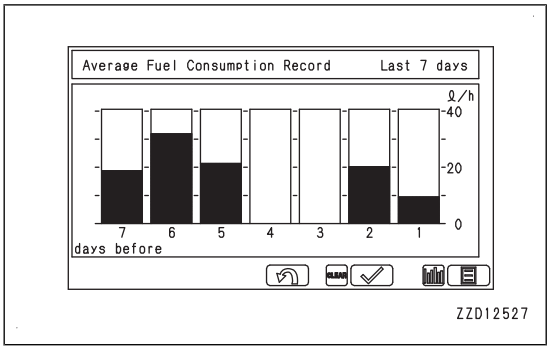




- When display of the “Last 12 hours” is selected



- When display of the “Last 7 days” is selected



REMARK

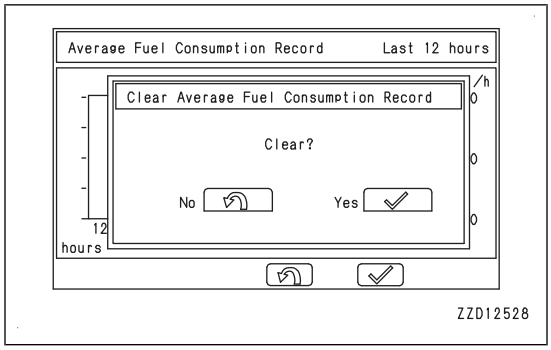
The graph of the “Last 12 hours” is updated every hour of the service meter reading.
The graph of the “Last 7 days” is updated every day.

To clear a graph, see the guidance icon and press ENTER switch (1).

When the confirmation screen is displayed, press ENTER switch (1) again to clear or press RETURN switch (3) to cancel clearing.

REMARK

If clearing is performed while the graph of the “Last 12 hours” is displayed, only the graph of the “Last 12 hours” is cleared.
If clearing is performed while the graph of the “Last 7 days” is displayed, both graphs of the “Last 12 hours” and “Last 7 days” are cleared.

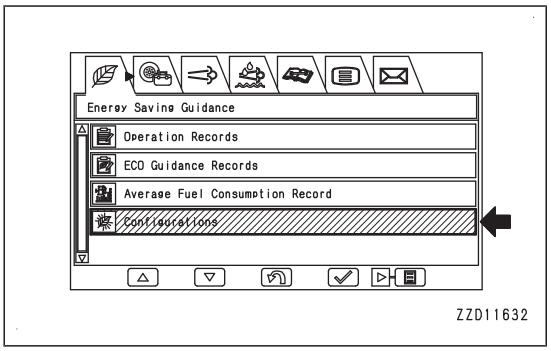


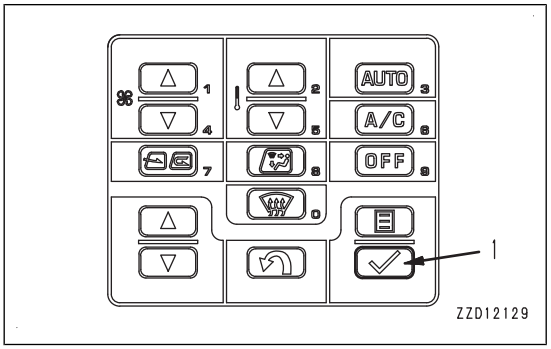
DISPLAY SETTING

On the “Configurations” menu, it is possible to perform following settings.

- Setting “Average Fuel Consumption Display”
- Switching ON/OFF of “ECO Gauge Display”
- Setting “ECO Gauge Display Fuel Target Value”
- Switching ON/OFF of ECO guidance
- Switching ON/OFF of “ECO Guidance Display at Key OFF”

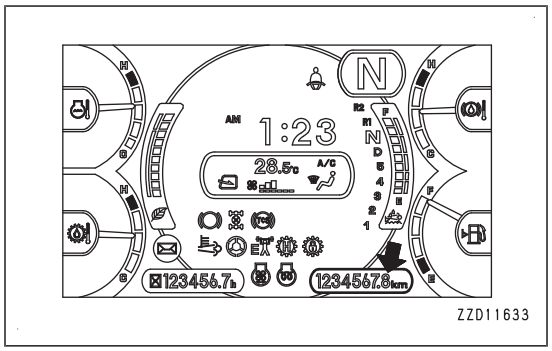
Select “Configurations” from “Energy Saving Guidance” menu screen, then press ENTER switch (1).



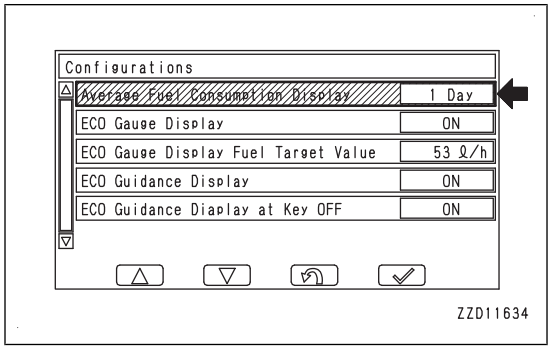


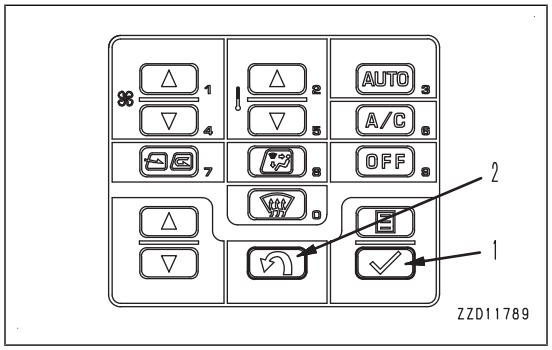
SET DISPLAY OF FUEL CONSUMPTION GAUGE

The display of the fuel consumption gauge can be set to the value on daily basis or during split measurement period.

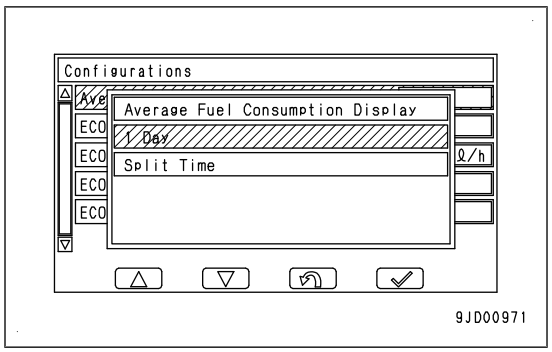


1. Select “Average Fuel Consumption Display” from “Configurations” menu, then press enter switch (1).





2. Select “1 Day” or “Split Time”, then press enter switch (1).
   The default is “1 Day”.
   To cancel, press return switch (2).



“1 Day”

Displays the average fuel consumption in 1 day from 0:00 a.m. of the day to 0:00 a.m. of the next day.

Reset at 0.00 a.m. of the next day.

“Split Time”

Displays the average fuel consumption during the split measurement period (after the measurement is started until it is finished).

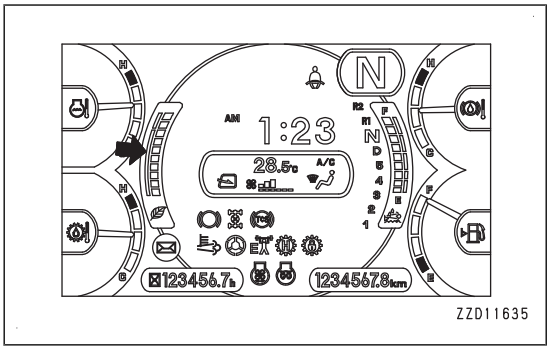
Select “Split Time” to start the split measurement automatically.

REMARK

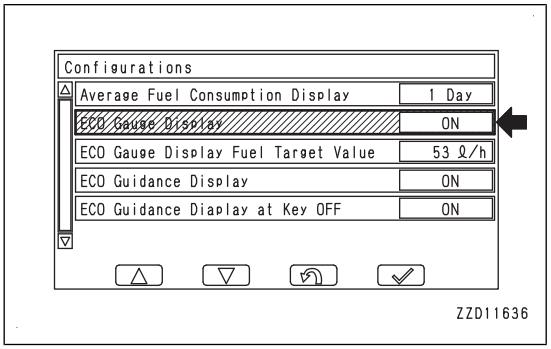
Setting of “1 Day” or “Split Time” is also applied to the display of the “Operation Records” and “ECO Guidance Records”.

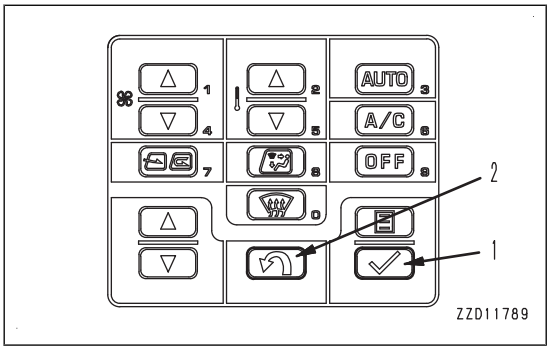
SWITCH DISPLAY/NON-DISPLAY OF ECO GAUGE

The is used to change ON/OFF of the ECO gauge.



1. Select “ECO Gauge Display” from the “Configurations” menu, then press enter switch (1).





2. Select “ON” or “OFF”, then press enter switch (1).

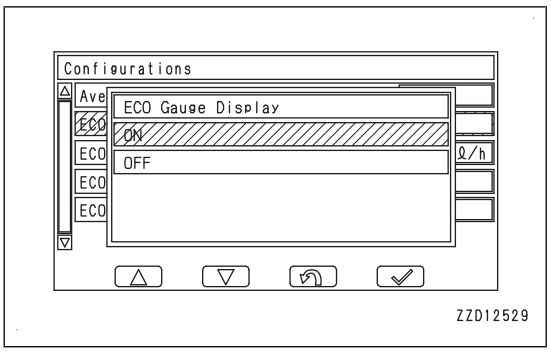
   “ON”

   Displays the ECO gauge.

   “OFF”

   Does not display the ECO gauge.

   To cancel sending, press return switch (2).
   The default is “ON”.

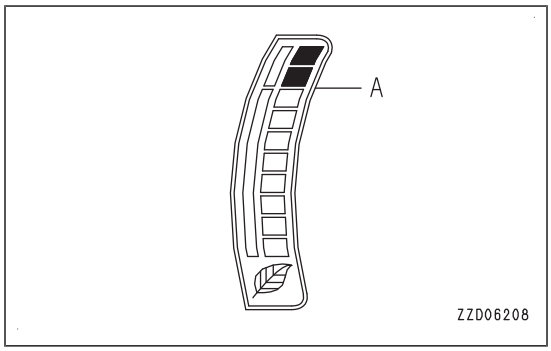


REMARK

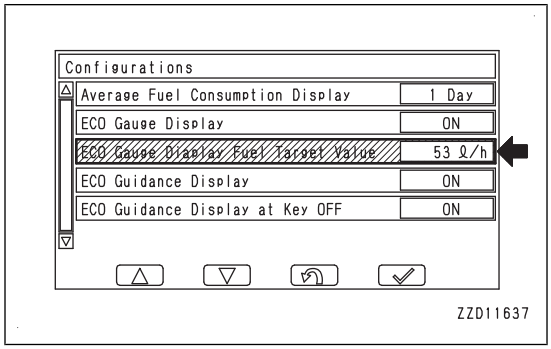
If the “ECO Gauge Display” is set to “OFF”, the items of “ECO Gauge Display Fuel Target Value” is not indicated.

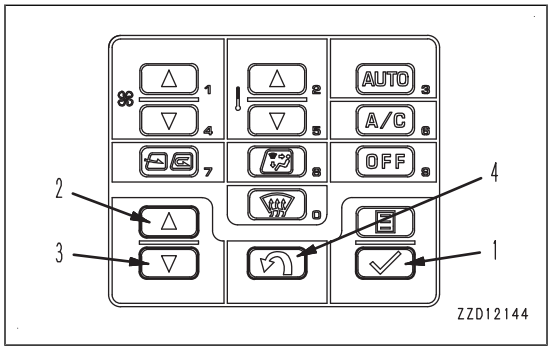
SET TARGET FUEL CONSUMPTION VALUE DISPLAYED IN ECO GAUGE

ECO Gauge Target Value (A) (the upper limit value of the green range) can be changed.



1. Select “ECO Gauge Display Fuel Target Value” from the “Configurations” menu, then press enter switch (1).





2. Using UP switch (2) or DOWN switch (3) to set the value, and press enter switch (1).

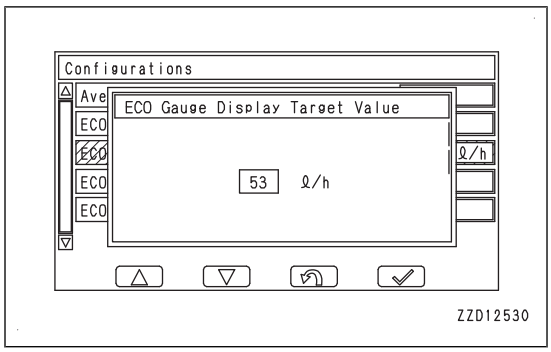
   (2) Up switch

   Increases the target fuel consumption value by 1 ℓ/h.

   (3) Down switch

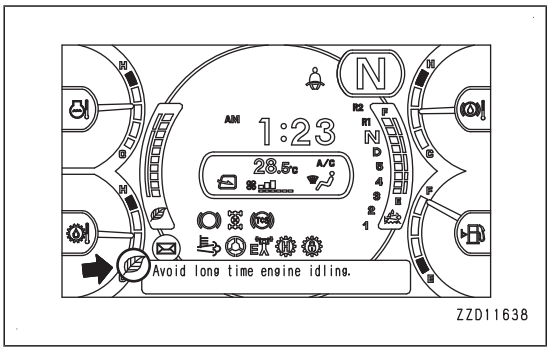
   Decreases the target fuel consumption value by 1 ℓ/h.

   To cancel sending, press return switch (4).
   The default is 53 ℓ/h.

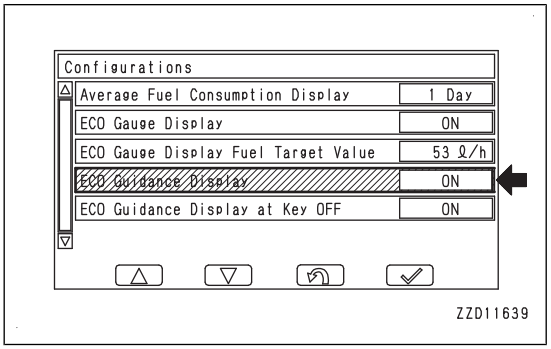


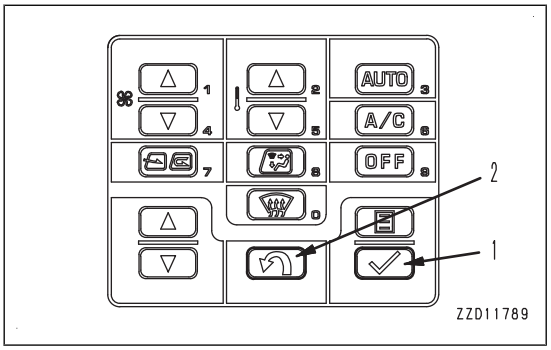
SWITCH DISPLAY/NON-DISPLAY OF ECO GUIDANCE

Display/non-display of ECO guidance indicated on the standard screen can be switched.



1. Select “ECO Guidance Display ” from the “Configurations” menu, then press enter switch (1).





2. Select “ON” or “OFF”, then press enter switch (1).

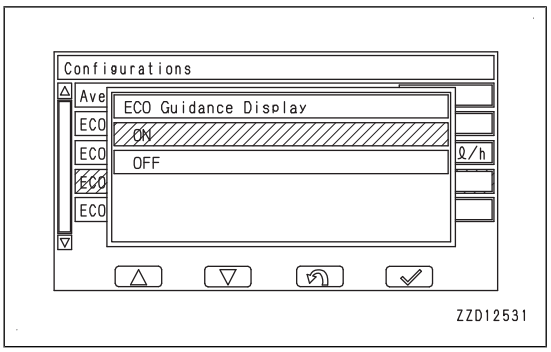
   “ON”

   Displays the ECO guidance.

   “OFF”

   Does not display the ECO guidance.

   To cancel, press return switch (2).
   The default is “ON”.

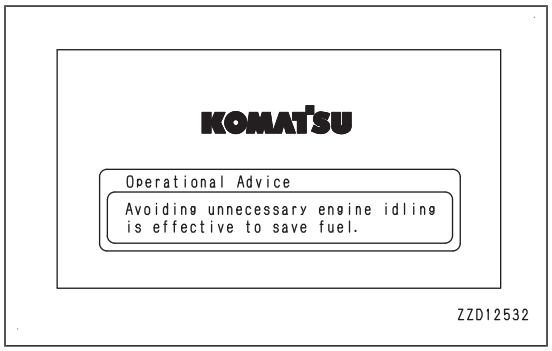


REMARK

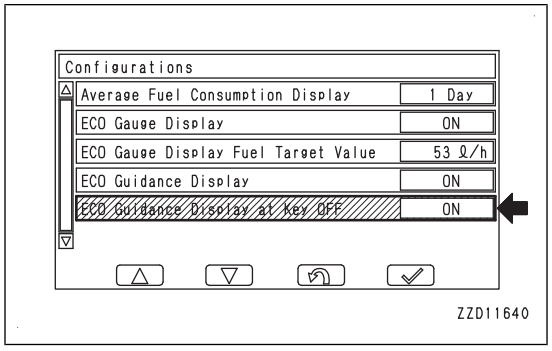
If the “ECO Guidance Display” is turned “OFF”, display of “ECO Guidance Display at Key OFF” and “ECO Guidance Record” do not appear when the starting key is turned “OFF”. The “ECO Guidance Record”, however, is not reset.

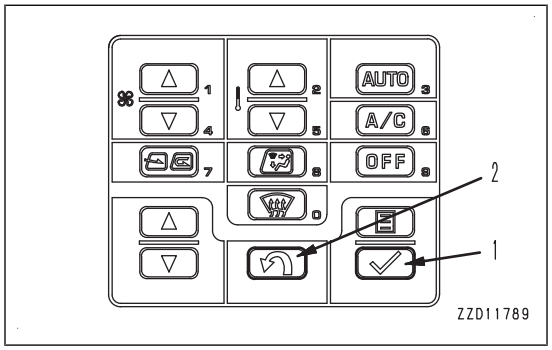
SWITCH DISPLAY/NON-DISPLAY OF GUIDANCE WHEN KEY IS OFF

Display/non-display of the “Operational Advice” indicated on the end screen when the key is turned to OFF position can be switched.



1. Select “ECO Guidance Display at Key OFF” from the “Configurations” menu, then press enter switch (1).





2. Select “ON” or “OFF”, then press enter switch (1).

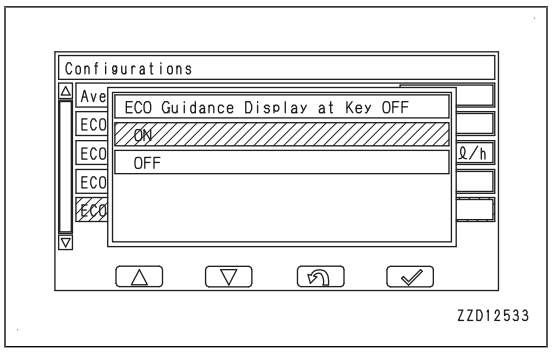
   “ON”

   Displays the one-point advice on the exit screen.

   “OFF”

   Does not display the one-point advice on the exit screen.

   To cancel, press return switch (2).
   The default is “ON”.

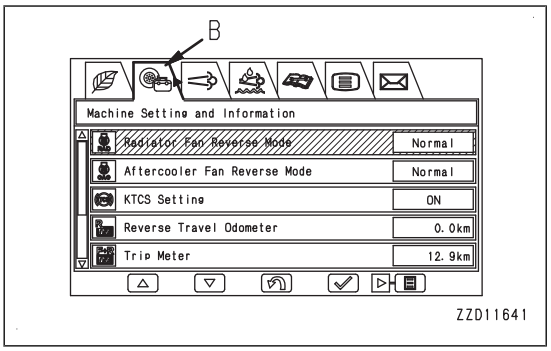


REMARK

In the “Operational Advice” section indicated on the end screen, the advice to the ECO guidance that was displayed most frequently after the starting switch is turned to ON position is indicated.

MACHINE SETTING AND INFORMATION

In each item of “Machine Setting and Information” menu (B), setting and information of the machine are checked or changed.



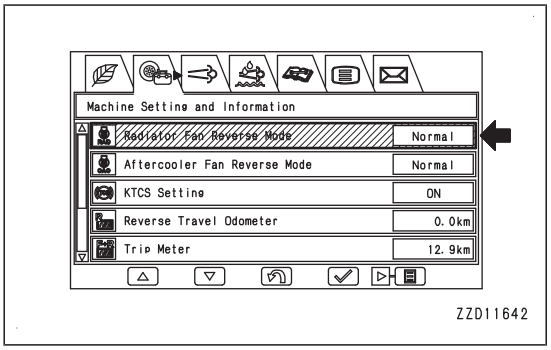
RADIATOR FAN REVERSE MODE

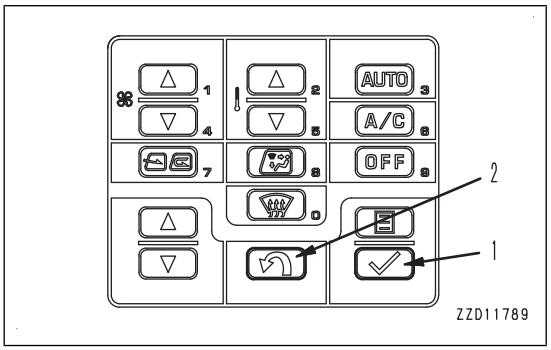
⚠ CAUTION

When rotating the fan in the reverse direction, beware extremely that dirt will not fly out and cloth, etc. will not be wound in the fan.
Since dust may blown up, check that there is no person around while the fan is rotating in reverse.

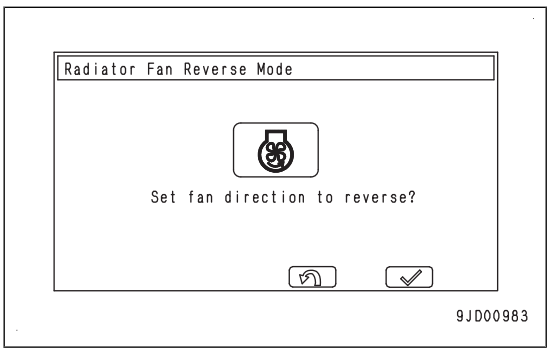
When cleaning the dirt or dusts stuck to the radiator, you can rotate the fan in the reverse direction.

1. Seat the dump body, stop the engine, and open the engine hood.
2. Turn the starting switch to ON position, select “Radiator Fan Reverse Mode” in the “Machine Setting and Information” menu, and press enter key (1).



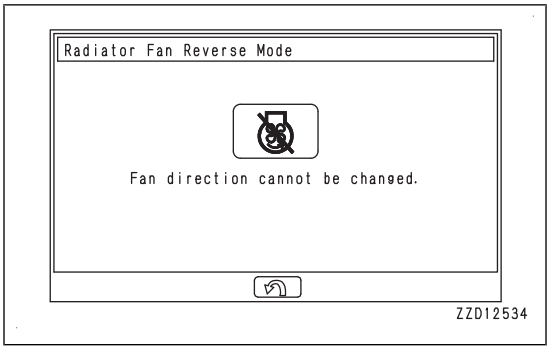


3. Press enter switch (1) to rotate the fan in the reverse direction, or press return switch (2) to cancel.



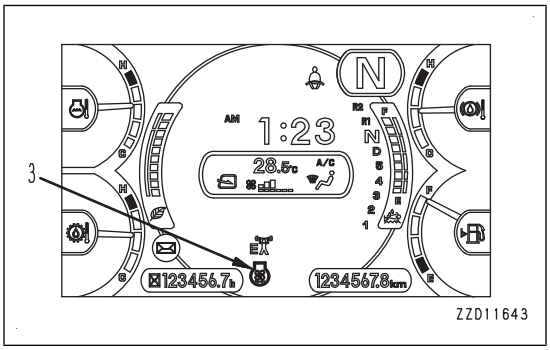
If the dump body is not seated or the engine is running, the screen as shown in the figure appears, and the fan rotation cannot be switched.

In this case, press return switch (2), and then repeat the procedure from the first.



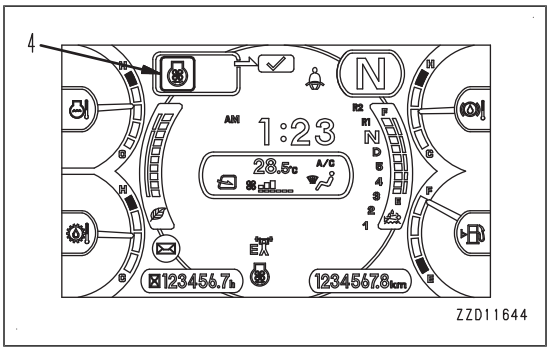
4. Fan automatic reverse display (3) lights up.

   Start the engine. The fan rotates in reverse.



If you start the machine travel or operate the dump body while the fan rotates in reverse, wrong operation in fan reverse mode caution lamp (4) lights up.

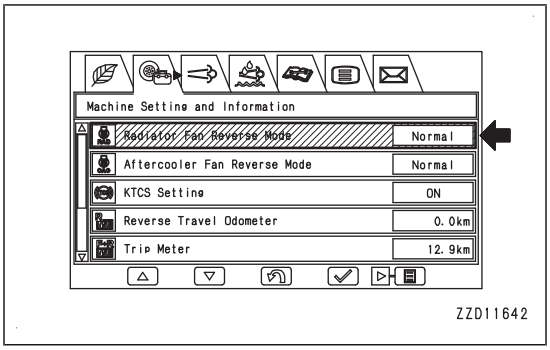
At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.



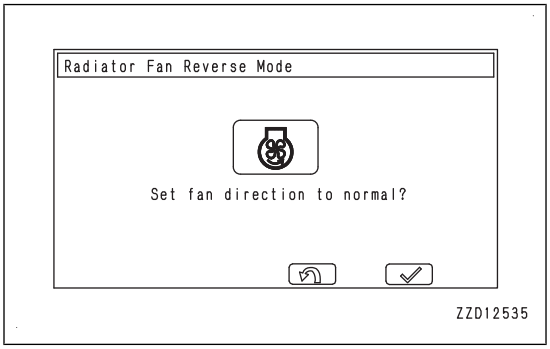
5. After finishing cleaning, stop the engine.
   A certain time after the starting switch key is turned to OFF position, the fan is returned to the normal rotation mode automatically.
   Check that fan automatic reverse display (3) is OFF when the starting switch is turned ON.

Use the following procedure when restoring the normal rotation manually.

1. Turn the starting switch to ON position again, select “Radiator Fan Reverse Mode” in the “Machine Setting and Information” menu, and press enter switch (1).



2. When the screen shown in the figure appears, press enter switch (1) to return the radiator fan to the normal rotation mode.



REMARK

When the aftercooler fan is set in the reverse mode, the radiator fan is returned to the normal rotation mode automatically.
If the engine compartment is heated high due to the reverse mode-based reverse rotation of the fan, the controller may stop the air conditioner to protect itself from being damaged.

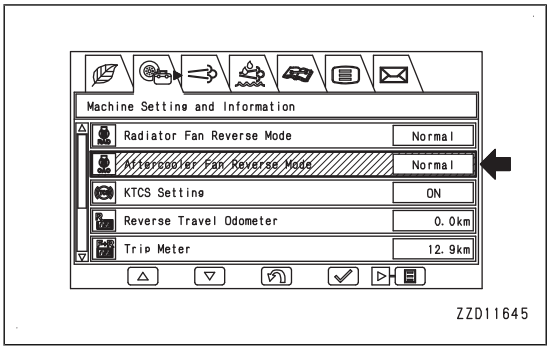
AFTER COOLER FAN REVERSE MODE

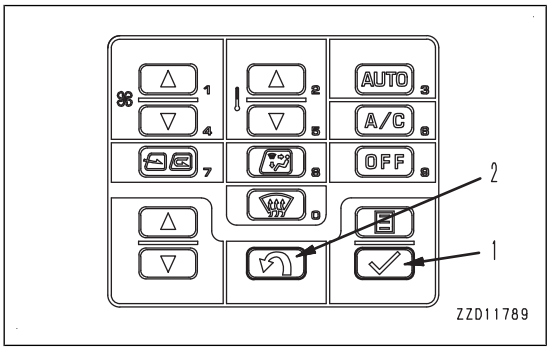
⚠ CAUTION

When rotating the fan in the reverse direction, beware extremely that dirt will not fly out and cloth, etc. will not be wound in the fan.
Since dust may blown up, check that there is no person around while the fan is rotating in reverse.

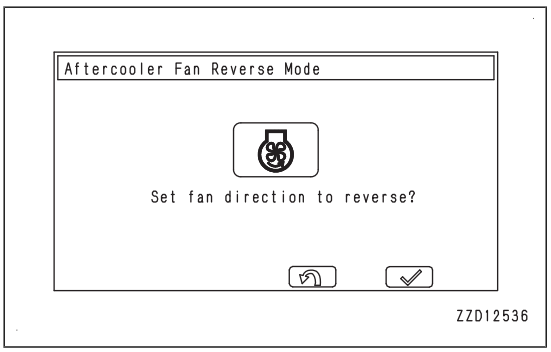
When cleaning the dirt or dusts stuck to the aftercooler, you can rotate the fan in the reverse direction.

1. Seat the dump body and stop the engine.
2. Turn the starting switch to ON position, select “Aftercooler Fan Reverse Mode” in the “Machine Setting and Information” menu, and press enter key (1).



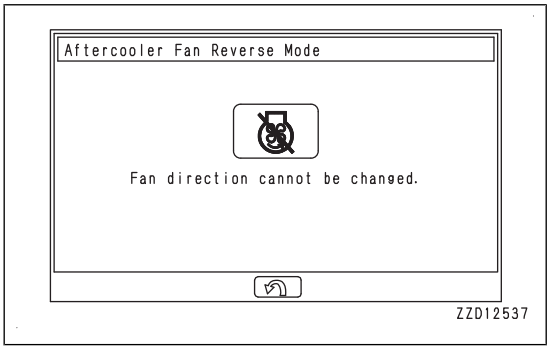


3. Press enter switch (1) to rotate the fan in the reverse direction, or press return switch (2) to cancel.

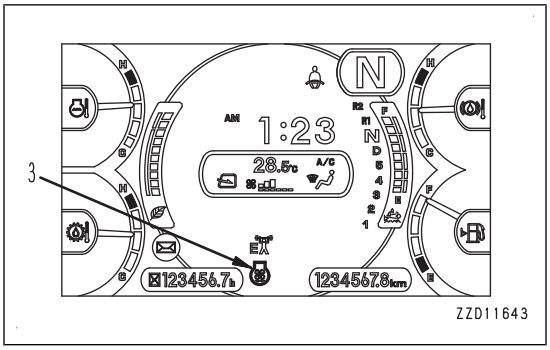


If the dump body is not seated or the engine is running, the screen as shown in the figure appears, and the fan rotation cannot be switched.

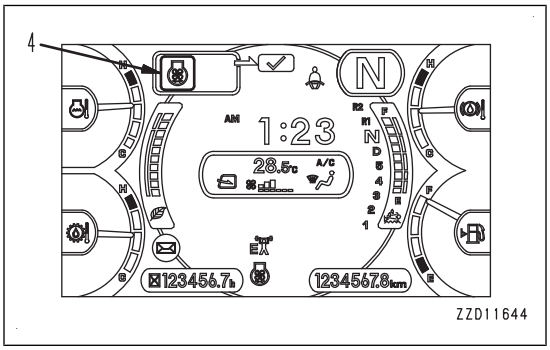
In this case, press return switch (2), and then repeat the procedure from the first.



4. Fan automatic reverse display (3) lights up.
   Start the engine. The fan rotates in reverse.



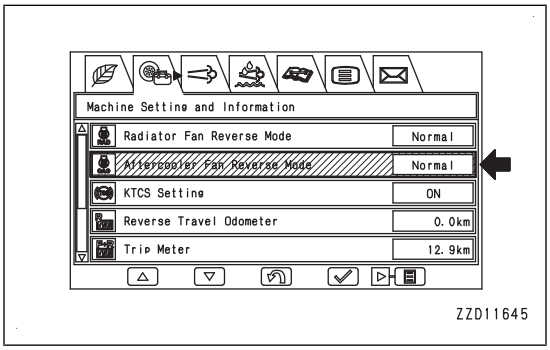
   If you start the machine travel or operate the dump body while the fan rotates in reverse, Wrong operation in fan reverse mode caution lamp (4) lights up.
   At the same time, the centralized warning lamp lights up and alarm buzzer sounds intermittently.



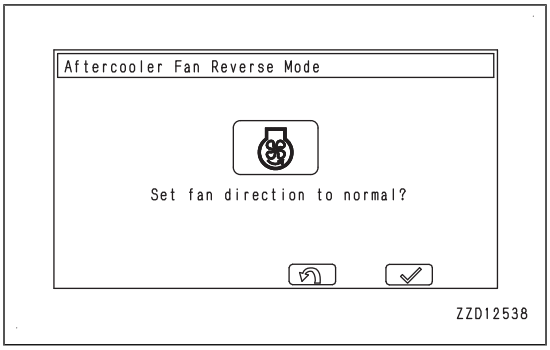
5. After finishing cleaning, stop the engine.
   A certain time after the starting switch key is turned to OFF position, the fan is returned to the normal rotation mode automatically.
   Check that fan automatic reverse display (3) is OFF when the starting switch is turned ON.

Use the following procedure when restoring the normal rotation manually.

1. Turn the starting switch to ON position again, select “Aftercooler Fan Reverse Mode” in the “Machine Setting and Information” menu, and press enter key (1).



2. When the screen shown in the figure appears, press enter switch (1) to return the aftercooler fan to the normal rotation mode.



REMARK

If the radiator fan is set in the reverse mode, the aftercooler fan is returned to the normal rotation automatically.

PAYLOAD METER

(if equipped)

You can display and set the following items related to the payload meter.

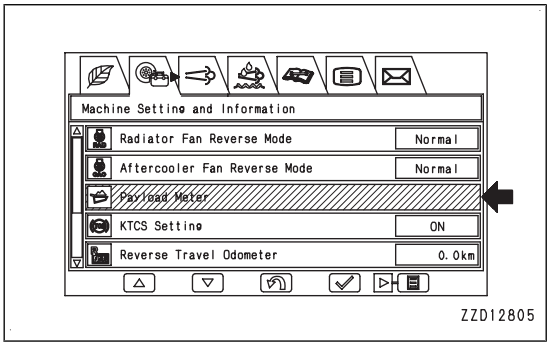
“Accumulated Payload and Total Cycles”

“Average Fuel Consumption Record”

“Machine ID Setting”

“Open ID Setting”

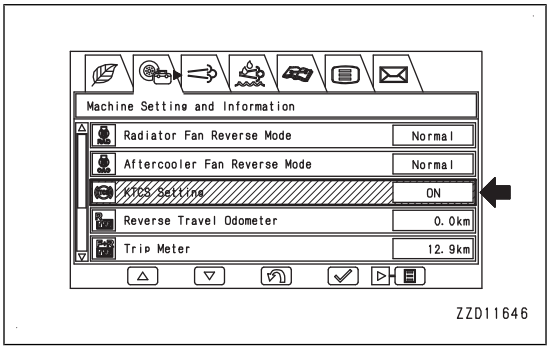
“Calibration”

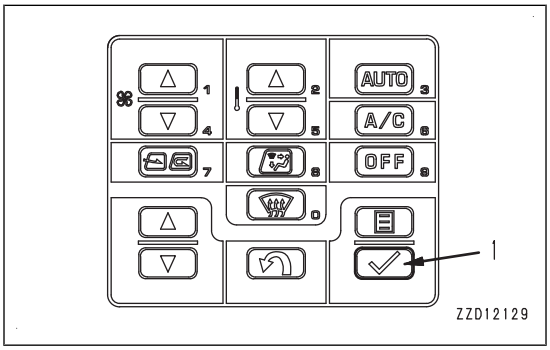


KTCS SYSTEM SETTING

Allows setting ON or OFF of the KTCS system.

1. Select “KTCS Setting”, then press enter switch (1).





2. Select “ON” or “OFF”, then press enter switch (1).

   “ON”

   KTCS operates automatically.

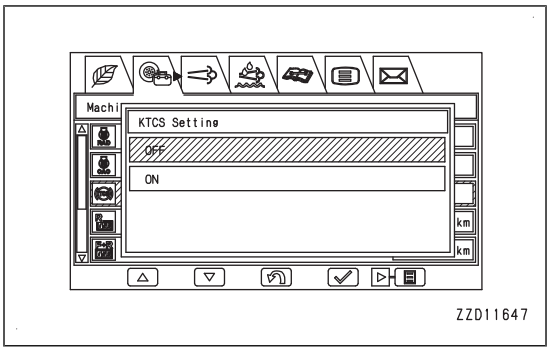
   “OFF”

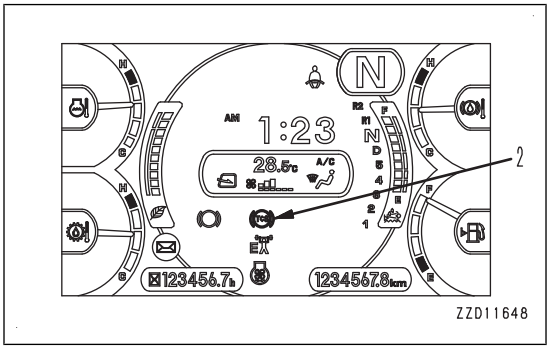
   KTCS does not operate.

   Display (2) of KTCS out of operation lights up.

REMARK

This setting is held even after the starting switch key is turned to OFF position.
The default is “ON”.





DUMPING COUNTER

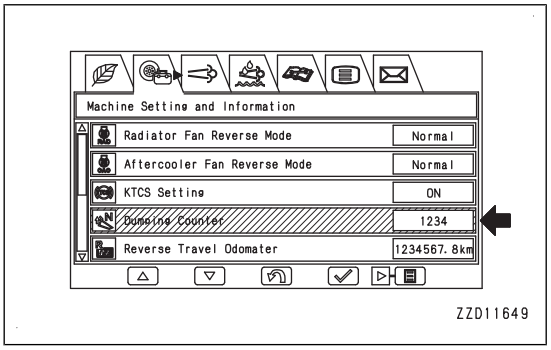
(if equipped)

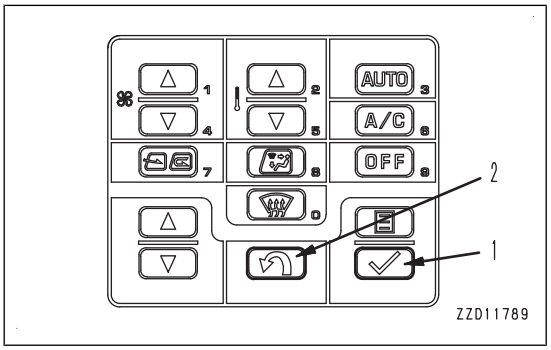
The dumping counter is the function that automatically counts and displays the number of loads dumped.

If the dumping counter is not installed on the machine, the “Dumping Counter” is not displayed.

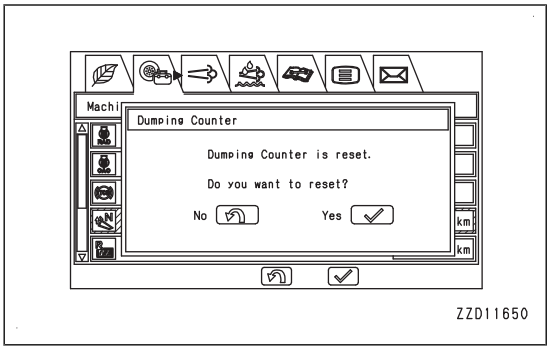
The number of times can be reset according to the following procedure.

1. Select “Dumping Counter”, then press enter switch (1).



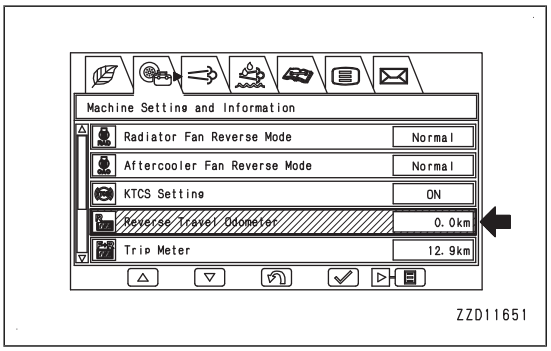


2. Press enter switch (1) to reset or press return switch (2) to cancel resetting.



REVERSE TRAVEL ODOMETER

The total reverse travel distance can be checked with the “Reverse Travel Odometer”.

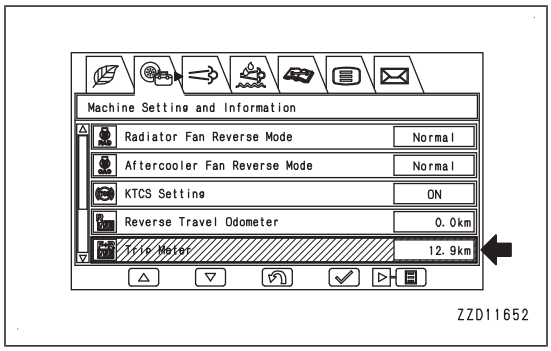


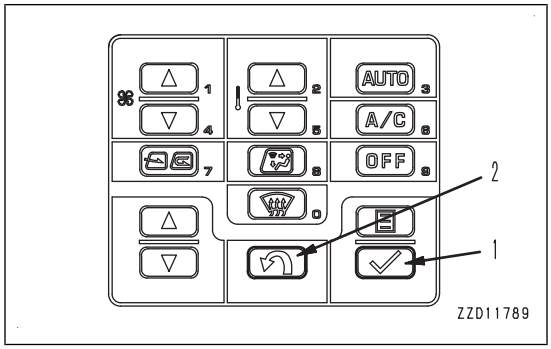
TRIP METER

The overall travel distance after the previous resetting can be checked by using the “Trip Meter”.

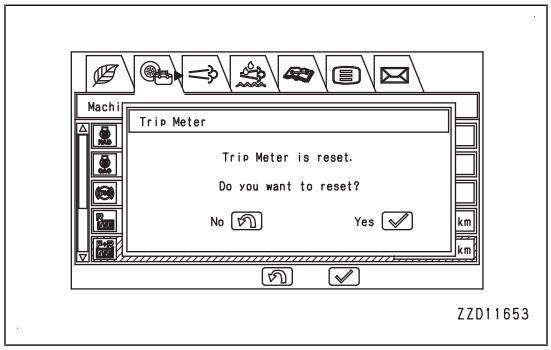
You can reset it according to the following procedure.

1. Select “Trip Meter”, then press enter switch (1).





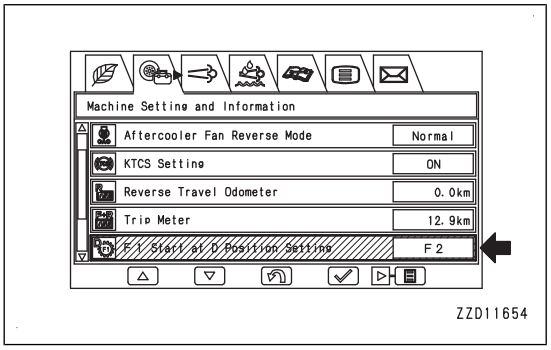
2. Press enter switch (1) to reset or press return switch (2) to cancel resetting.

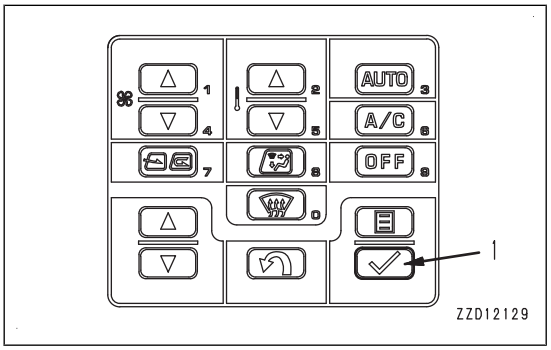


D RANGE F1 START SETTING

Use this setting to change the starting gear speed when the gear shift lever is set to D position.

1. Select “F 1 Start at D Position Setting”, then press enter switch (1).





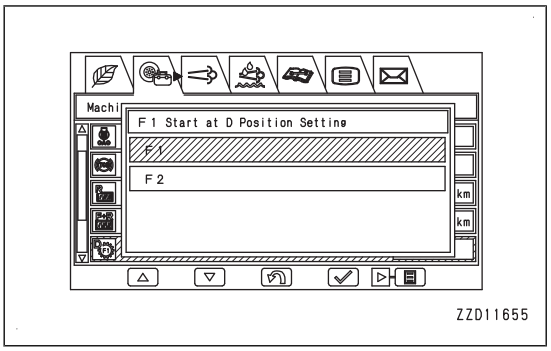
2. Select “F 1” or “F 2”, then press enter switch (1).

   “F 1”

   Starts the machine travel at 1st speed when the gear shift lever is set to D position.

   “F 2”

   Starts the machine travel at 2nd speed when the gear shift lever is set to D position. (Normal)



NOTICE

Select “F 2” usually.
If the machine travels in “F 1” while F1 is not necessary, the service life of the machine may be shortened.

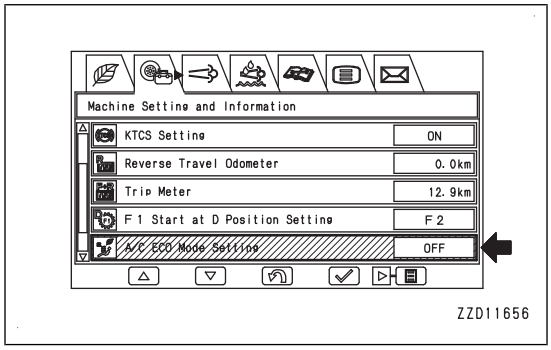
REMARK

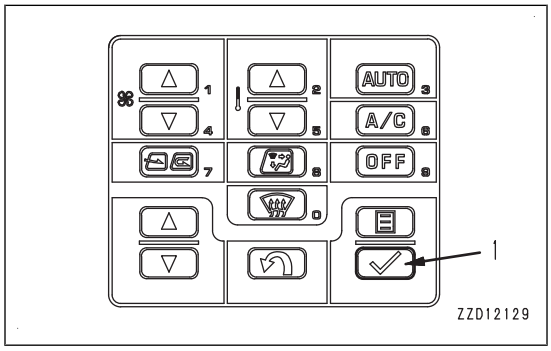
If the machine travels in “F 1” while the dump body is not seated, the gear speed is fixed to the 1st even if the gear shift lever is in D position.
This setting is held even if the starting switch is turned to OFF position.
The default is “F 2”.

AIR CONDITIONER ECO MODE SETTING

Turns ON or OFF the air conditioner mode that improves the fuel consumption by reducing efficacy of the air conditioner.

1. Select “A/C ECO Mode Setting”, then press enter switch (1).





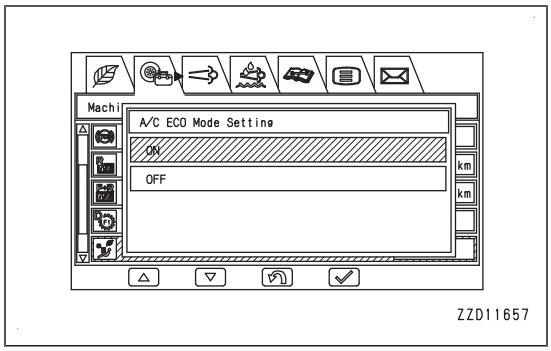
2. Select “ON” or “OFF”, then press enter switch (1).

   “ON”

   Sets the air conditioner to the ECO mode operation.

   “OFF”

   Turns on the normal air conditioner operation.



REMARK

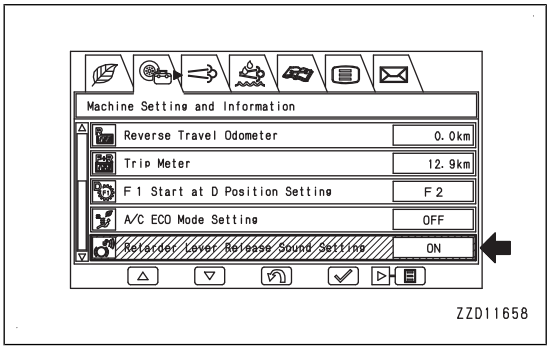
If the ambient temperature is above 30 °C or the set temperature of the air conditioner is 18 °C (maximum cooling), air conditioner may not be operated in the ECO mode, even if the “A/C ECO Mode Setting” is turned “ON”.

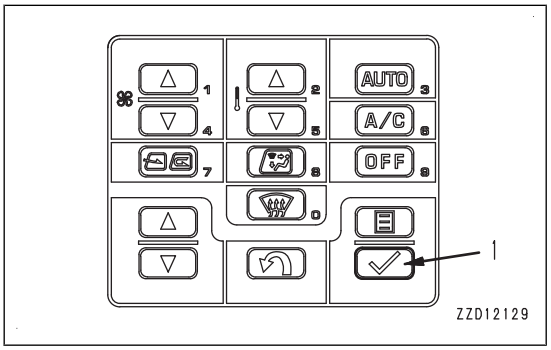
This setting is held even if the starting switch is turned to OFF position.
The default is “OFF”.

RETARDER CONTROL LEVER CANCEL SOUND SETTING

This is used for selecting ON or OFF of the cancel sound of the retarder control lever.

1. Select “Retarder Lever Release Sound Setting”, then press enter switch (1).





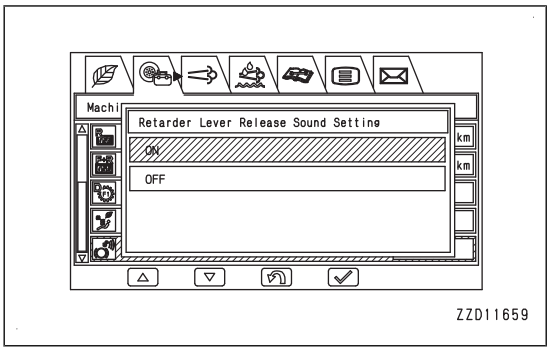
2. Select “ON” or “OFF”, then press enter switch (1).

   “ON”

   Generates the cancel sound.

   “OFF”

   Does not generate the cancel sound.



REMARK

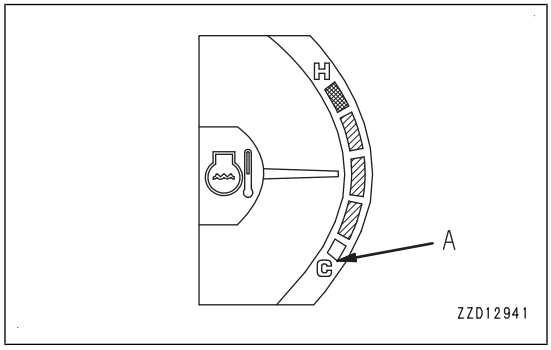
This setting is held even if the starting switch is turned to OFF position.
The default is “ON”.

AUTO IDLE STOP TIMER SETTING

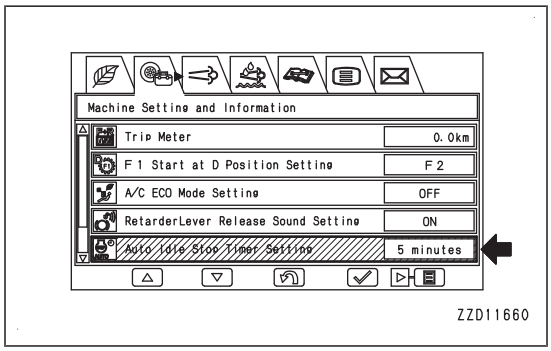
Stops the engine automatically when the idle state continued for a predetermined time.

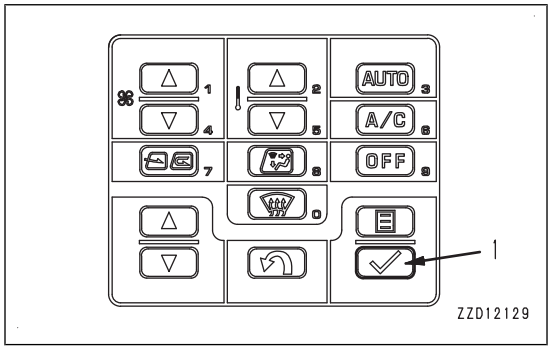
The auto idle stop works only when all of the following conditions are met.

- The accelerator pedal is not depressed.
- Gear shift lever is in NEUTRAL position (N).
- The dump lever is placed in “FLOAT” position and dump body is seated. (When the dump body float caution lamp is not lit)
- The machine is stopped.
- KDPF regeneration is not performed.
- There is no possibility of overheat.
- The indicator of the engine coolant temperature gauge is over position (A), and the warm-up operation is finished.



1. Select “Auto Idle Stop Timer Setting” on “Machine Setting and Information” menu, and press enter switch (1).

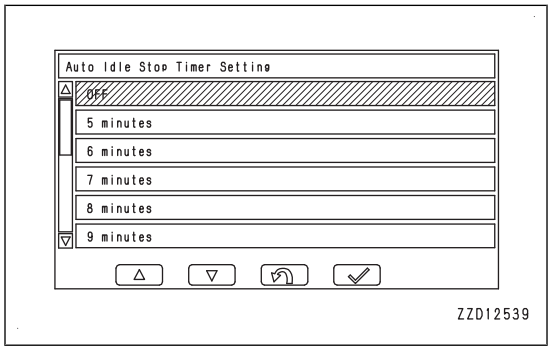




2. Select the operating time of the auto idle stop, and press enter switch (1).

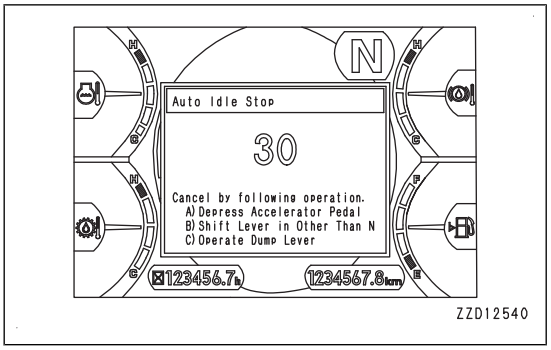
   REMARK

   Selecting “OFF” disables operation of the auto idle stop.



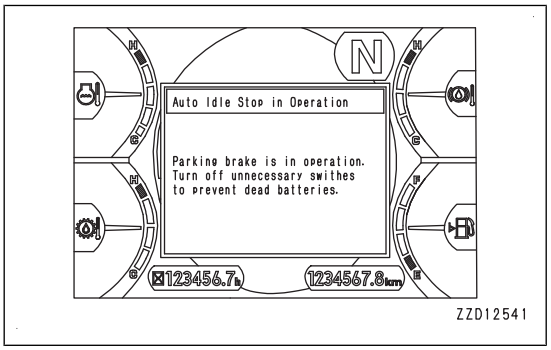
3. If the idle state is continued up to 30 seconds before the current auto idle stop timer setting , the countdown screen appears on the standard screen.

   If you increase the engine speed or set the gear shift lever to any position other than NEUTRAL position (N) at this point, the countdown is stopped and the screen returns to the standard screen.



4. If the idle state is further continued and the countdown reaches 0 second, the engine stops.

   At the same time the parking brake is applied.
   Turn unnecessary switches to OFF position to prevent the battery to run out.



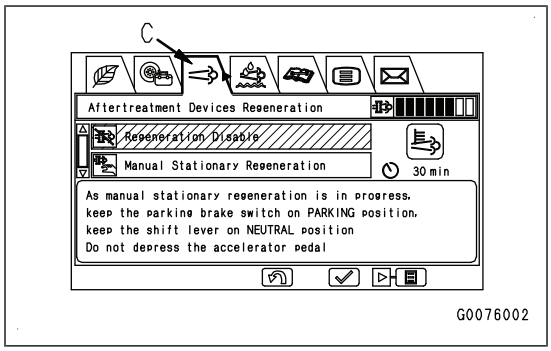
REMARK

When the auto idle stop operates while the parking brake is in “TRAVEL” position, set the parking brake switch to “PARKING” position and then to “TRAVEL” position again, and the parking brake is released.

When restarting the engine, turn the starting switch as usual.

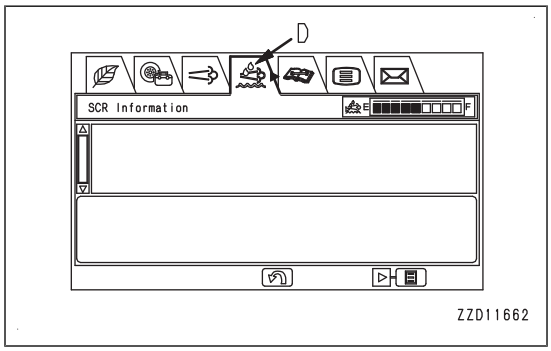
AFTERTREATMENT DEVICES REGENERATION

Each item of “Aftertreatment Devices Regeneration” menu (C) is for settings and operations of the aftertreatment devices regeneration.



SCR INFORMATION

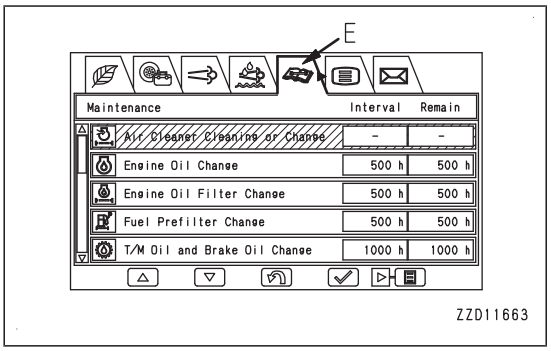
Each item in “SCR Information” menu (D) is for displaying information related to SCR and DEF.



MAINTENANCE SCREEN SETTING

Each item on “Maintenance” menu screen (E) is used for displaying and setting the notification relevant to maintenance.

On the “Maintenance” menu screen, the maintenance items in the table, their replacement intervals, and remaining time to the next replacement are displayed.



Maintenance item	Replacement interval (h) (Default)
Air Cleaner Cleaning or Change	-
Engine Oil Change	500
Engine Oil Filter Change	500
Fuel Prefilter Change	500
T/M Oil and Brake Oil Change	1000
T/M Oil Filter Change	1000
Brake System Oil Filter Change	1000
Brake Cooling Oil Filter Change	1000
Fuel Main Filter Change	1000
Hydraulic Oil Filter Change	1000
DEF Tank Breather	1000
Hyd Oil Tank Breather Change	2000
Differential Oil Change	2000
Final Drive Oil Change	2000
KCCV Filter Change	2000
DEF Filter	2000
Hydraulic Oil Change	4000
KDPF Filter Cleaning	4500
Fuel Doser Cleaning	4500
DEF Tank Cleaning	4500

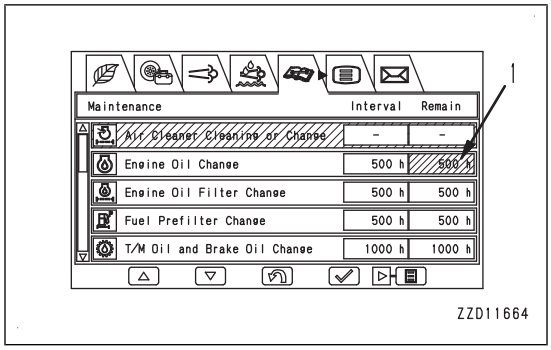
When the time remaining to the next maintenance for any item is less than the maintenance notice time (initial setting: 30 hours), the “Remain” (1) is highlighted in yellow.

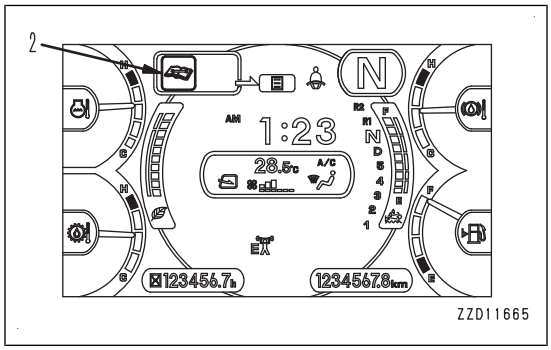
When the time remaining to the maintenance becomes 0 hours, the “Remain” (1) is highlighted in red. The time after the replacement interval is indicated with the negative symbol.

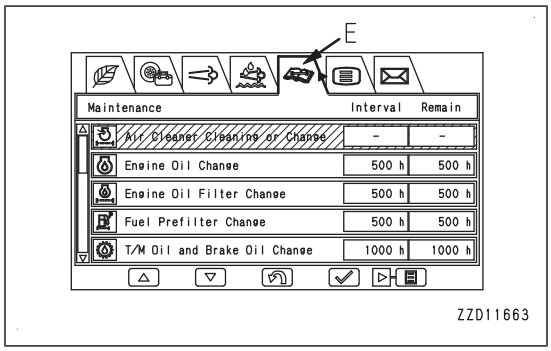
If any item is displayed in red, perform the maintenance for it immediately.

REMARK

The replacement interval in “Air Cleaner Cleaning or Change” is not set initially.
If you want to change the setting for the maintenance interval and the maintenance notice time, consult your Komatsu distributor.
When the maintenance time caution (2) is lit on the standard screen, press the menu switch, and the screen automatically displays the “Maintenance” menu screen (E).







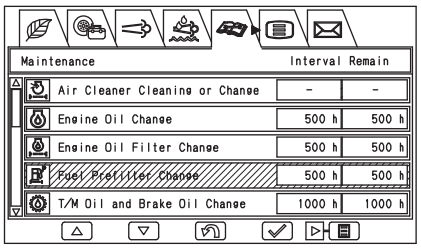
RESET REMAINING TIME FOR MAINTENANCE

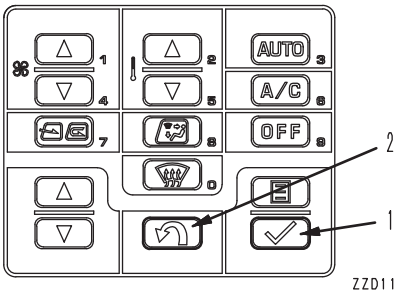
After performing maintenance, reset the remaining time for maintenance according to the following procedure.

1. On the “Maintenance” menu screen, select an item to reset the remaining time, then keep pressing enter switch (1) for more than 1.5 seconds.

   REMARK

   If enter switch (1) is not pressed for enough time, the switch operating sound can be heard, but the screen does not switch to the screen for resetting the remaining time for maintenance.



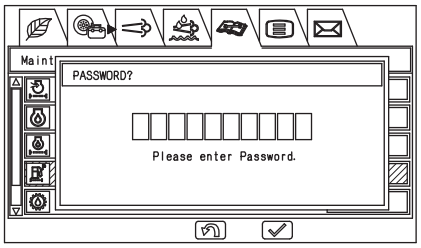


   When a password for restriction of use has been set, the password input screen is displayed.

   Input the password for restriction of use by using the numeric keypad, then press enter key (1).

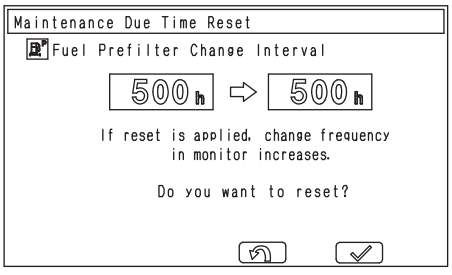
   REMARK

   For the setting, changing, or canceling the password, ask your Komatsu distributor.



2. The screen changes to “Maintenance Due Time Reset” screen.

   When enter switch (1) is pressed, the following reconfirmation screen is displayed.
   To cancel, press return switch (2).

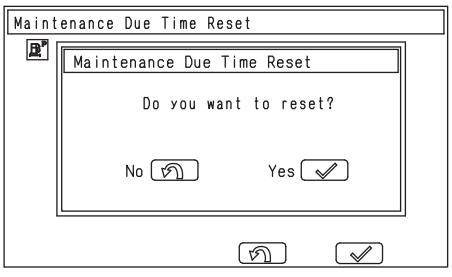


3. On the re-confirmation screen shown in the figure, when enter switch (1) is pressed again, the remaining time is reset and the screen returns to the “Maintenance” menu screen.

   To cancel, press return switch (2).

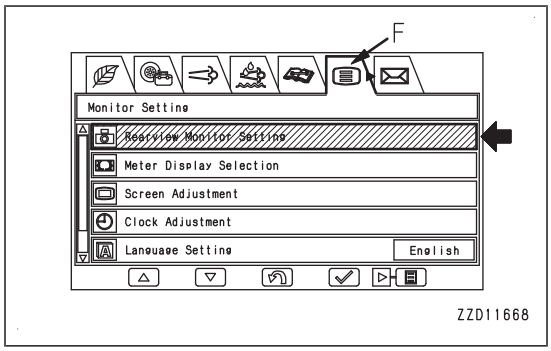
   REMARK

   If the remaining time and the replacement interval are the same, the remaining time cannot be reset.



MONITOR SETTINGS

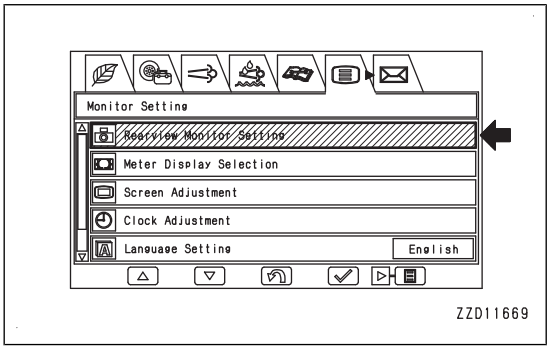
Each item of “Monitor Setting” menu (F) is to make settings for the machine monitor.

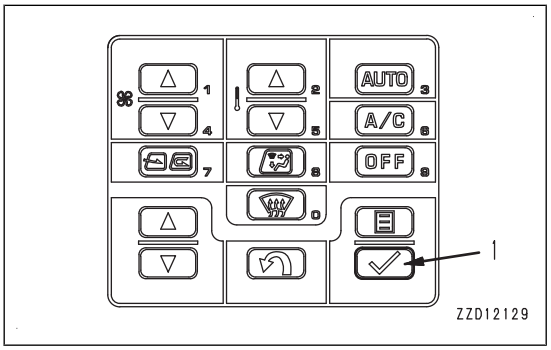


REAR VIEW MONITOR SETTING

This is used to set the rearview monitor.

Select “Rearview Monitor Setting” on the “Monitor Setting” menu screen, and press enter switch (1).

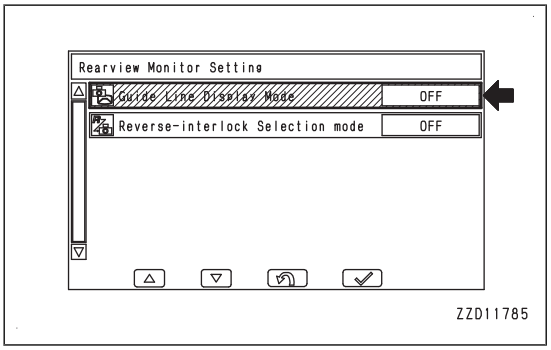




Reference line display

The is used to change ON/OFF of the reference line on the rearview monitor.

1. Select “Guide Line Display Mode” from the “Rearview Monitor Setting” menu, and press the enter switch.



2. Select “ON” or “OFF”, then press enter switch (1).

   “ON”

   Displays the reference line.

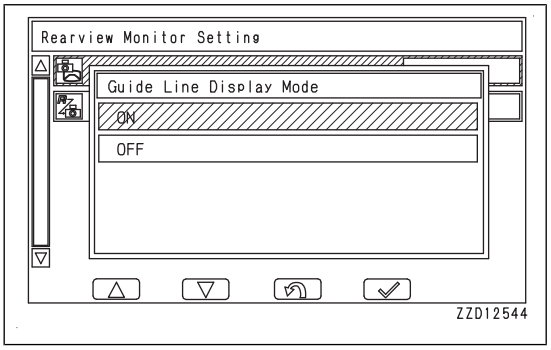
   “OFF”

   Hides the reference line.

REMARK

This setting is held even if the starting switch is turned to OFF position.

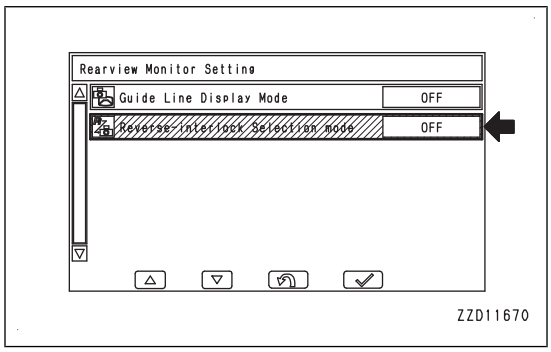
The default is “ON”.

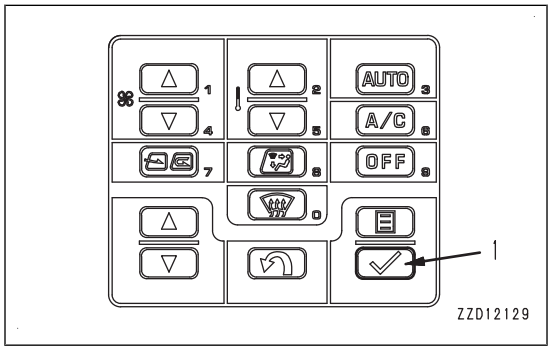


REVERSE-INTERLOCK ENABLED MODE

In this mode, display method of rear view monitor can be changed by switching ON/OFF.

1. Select “Reverse-interlock Selection mode” on the “Rear-view Monitor Setting” menu, then press ENTER switch (1).





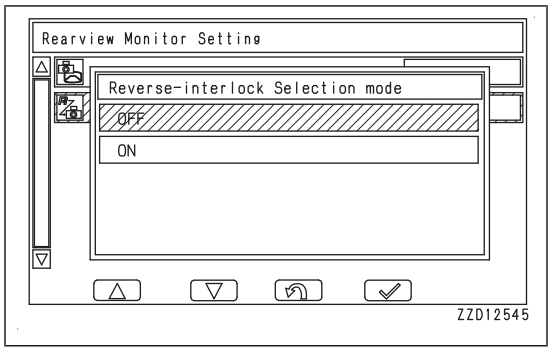
2. Select “ON” or “OFF”, then press ENTER switch (1).

   “ON”

   Displays images on the rear view monitor only when traveling in reverse.

   “OFF”

   Always displays images on the rear view monitor.

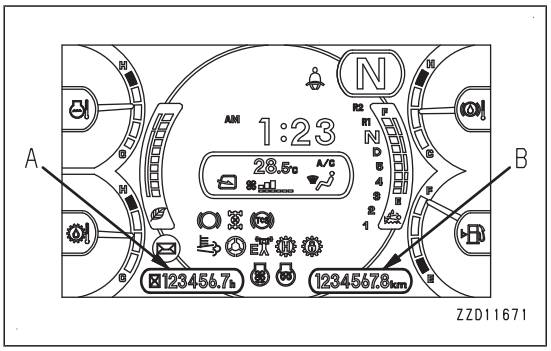


REMARK

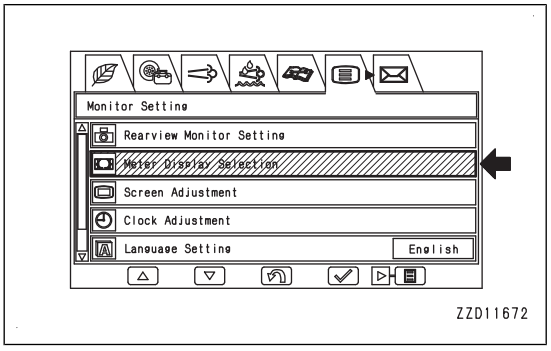
This setting is held even if the starting switch is turned to OFF position.
The default is “ON”.

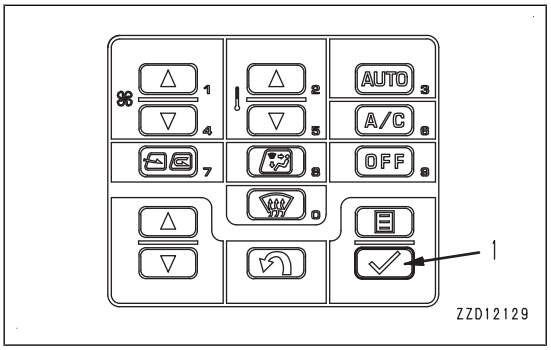
METER DISPLAY SELECTION

This is used for the selection of the items to be displayed on L.H. meter display (A) or R.H. meter display (B).



"Meter Display Selection" on the "Monitor Setting" menu screen, then press enter switch (1).

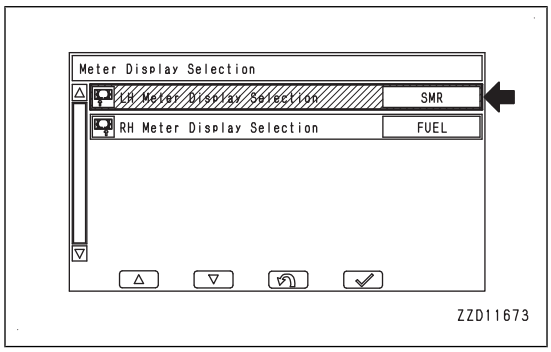


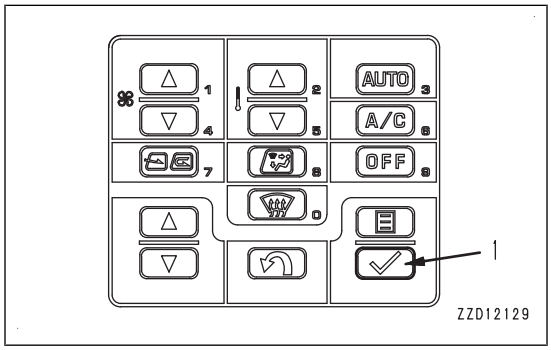


SELECT L.H. METER DISPLAY

This is used for the selection of the items to be displayed on the L.H. meter display.

1. Select “LH Meter Display Selection” on the “Meter Display Selection” menu, then press enter switch (1).

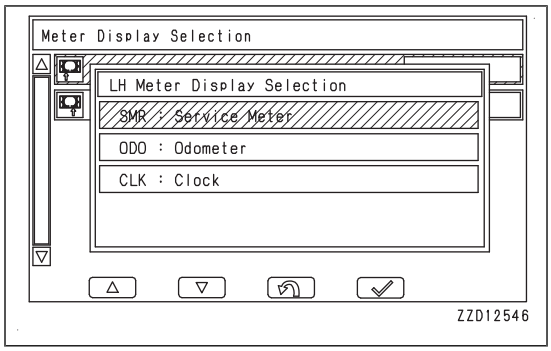




2. Select the items to be displayed, then press enter switch (1).

   The following 3 items can be selected.

   - “SMR: Service Meter”
   - “ODO: Odometer”(Odometer)
   - “CLK: Clock”



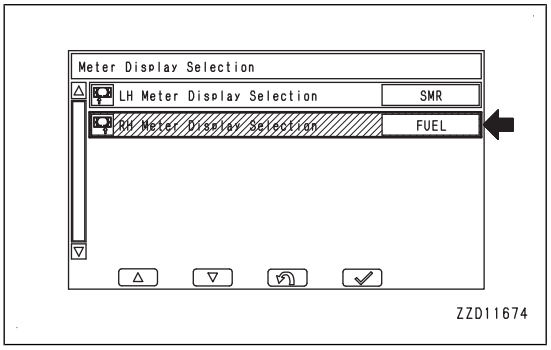
REMARK

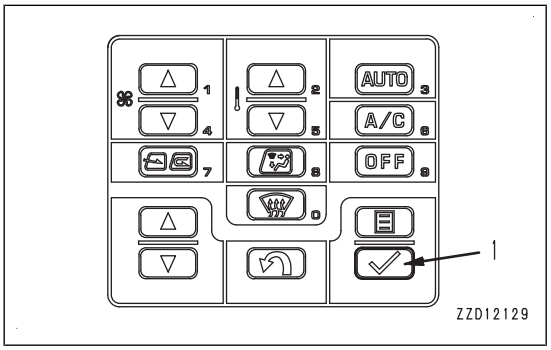
The default of L.H. meter is “SMR: Service Meter”.

SELECT R.H. METER DISPLAY

This is used for the selection of the items to be indicated on the R.H. meter display.

1. Select “RH Meter Display Selection” on the “Meter Display Selection” menu, then press enter switch (1).

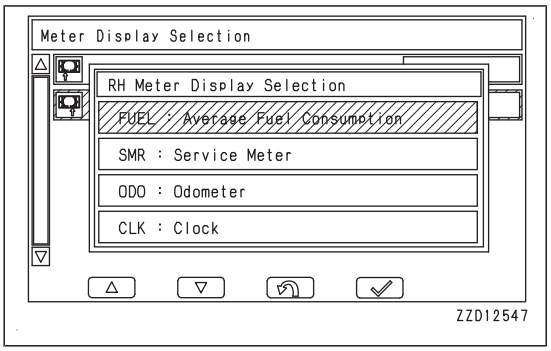




2. Select the items to be displayed, then press enter switch (1).

   The following 4 items can be selected.

   - “FUEL: Average Fuel Consumption”
   - “SMR : Service Meter”
   - “ODO : Odometer”(Odometer)
   - “CLK: Clock”



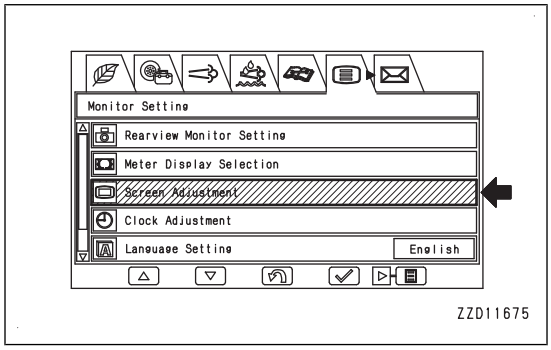
REMARK

The default of R.H. meter is “FUEL: Average Fuel Consumption”

SCREEN ADJUSTMENT

This function is used for the adjustment of brightness of the machine monitor.

1. Select “Screen Adjustment” on the “Monitor Setting” screen, then press enter switch (5).



2. Adjust the brightness by using the switch panel.

   The brightness can be adjusted individually in the day and night modes.

   (1) Menu switch

   Brightness is set to default.

   (2) Up switch

   Brightness increases. (Moves the indicator to the right by one division.)

   (3) Down switch

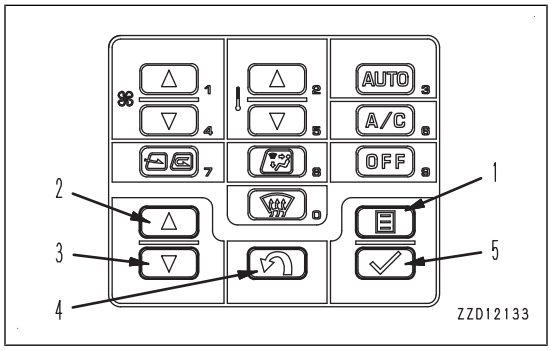
   Brightness decreases. (Moves the indicator to the left by one division.)

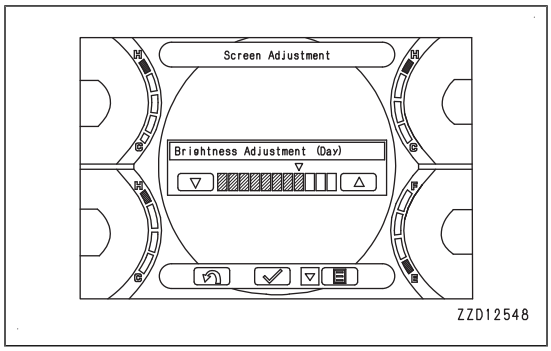
   (4) Return switch

   Cancels the change and returns to “Monitor Setting” menu.

   (5) Enter switch

   Accepts the change and then returns to “Monitor Setting” menu.





REMARK

When the screen is adjusted while the lamp switch is turned OFF, the brightness in the day mode can be adjusted.
Turn the lamp switch ON, then adjust the screen when the the monitor brightness selector switch is set to the night mode, the brightness in the night mode can be adjusted.
The brightness of night illumination for the switch panel, gear shift lever, and operation switches is adjusted synchronously with the brightness of the machine monitor.

CLOCK ADJUSTMENT

On the clock adjustment menu, you can change the setting of the clock displayed on the standard screen.

The following items can be changed.

“GPS Synchronization”

“Calendar”

“Time”

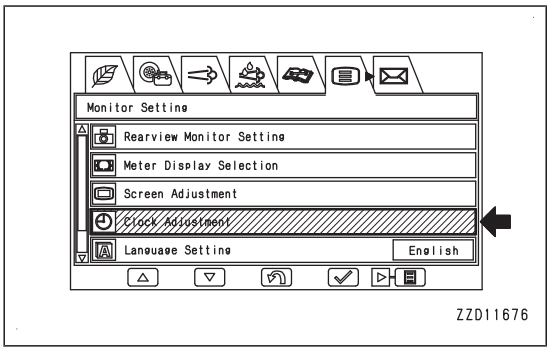
“12hour or 24hour Mode”

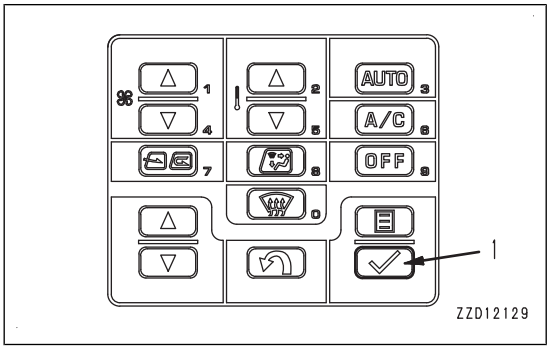
“Daylight Saving Time”

Select “Clock Adjustment” on the “Monitor Setting” menu screen, then press ENTER switch (1).

REMARK

After a long-term storage of the machine, Calendar and Time are reset, so you must readjust them.
When the “GPS Synchronization” is set to “ON”, the above are automatically readjusted.

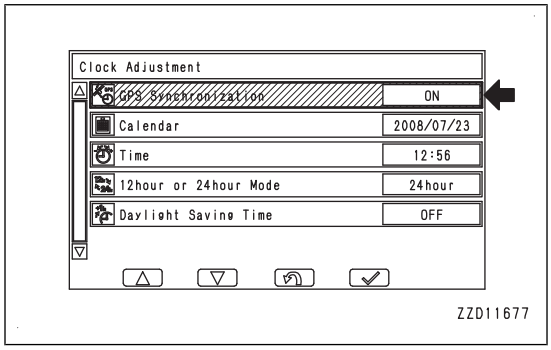


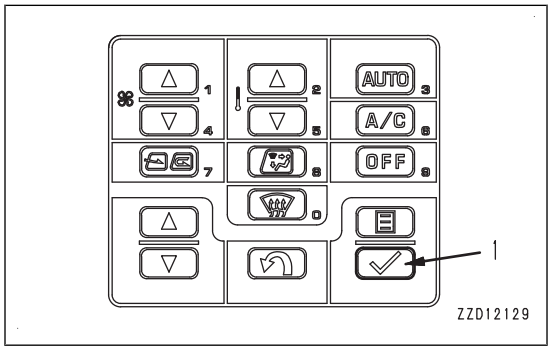


GPS SYNCHRONIZATION

On the machines equipped with KOMTRAX, you can configure automatic setting of the machine monitor's date and time in accordance with the GPS's clock.

1. Select “GPS Synchronization” from the “Clock Adjustment” menu, then press enter switch (1).





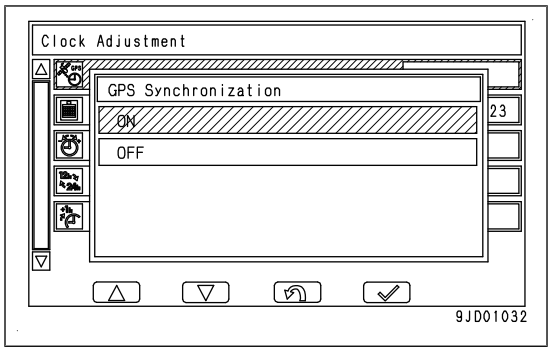
2. Select “ON” or “OFF”, then press enter switch (1).

   “ON”

   Sets the date and time automatically.

   “OFF”

   Does not set the date and time automatically. (Can be set manually.)



REMARK

This setting is held even if the starting switch is turned to OFF position.
The default is “OFF”.
When the machine is in the environment where the radio waves from GPS cannot be received, the automatic setting function might be disable.
Turning the “GPS Synchronization”“ON” disables selecting the “Calendar” and “Time”.

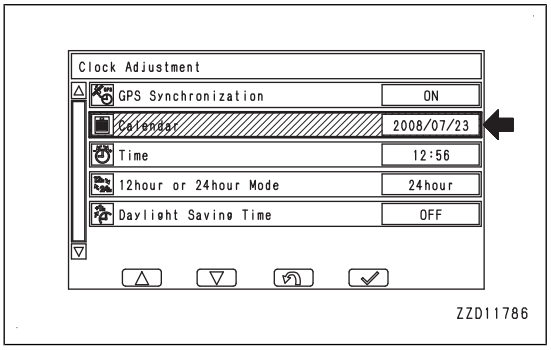
CALENDAR SETTING

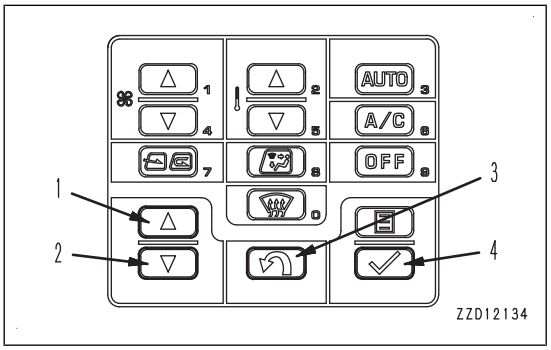
Adjust the date of the machine monitor.

1. Select “Calendar” from the “Clock Adjustment” menu, then press enter switch (4).

   REMARK

   As long as “ON” is selected for the “GPS Synchronization”, “Calendar” is not selectable.





2. The “Calendar” screen is displayed.

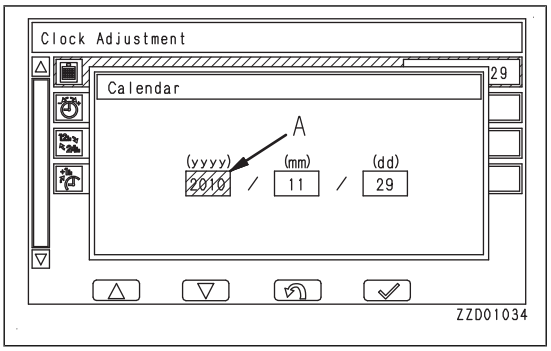
   When year display (A) is highlighted in yellow, operate the switches as follows to change year display.
   When it is not necessary to change the year setting, press enter switch (4).

   (1) Up switch

   Advances calendar one year.

   (2) Down switch

   Put Calendar back one year.



   (3) Return switch

   Cancels the change and returns the screen to “Clock Adjustment” menu.

   (4) Enter switch

   Proceeds to setting for month.

3. When month display (B) is highlighted in yellow, operate the switches as follows to change month display.

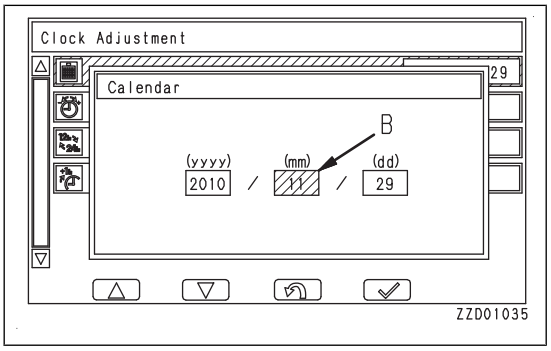
   When it is not necessary to change the month setting, press enter switch (4).

   (1) Up switch

   Advances calendar one month.

   (2) Down switch

   Put calendar back one month.



   (3) Return switch

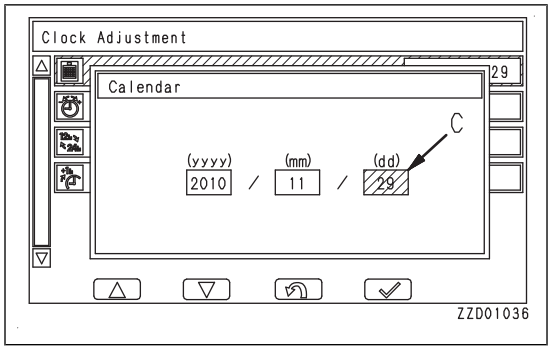
   Cancels change and returns to setting for year.

   (4) Enter switch

   Proceeds to setting for day.

4. When day display (C) is highlighted in yellow, operate the switches as follows to change day display.

   When it is not necessary to change the day setting, press enter switch (4).



   (1) Up switch

   Advances calendar one day.

   (2) Down switch

   Put calendar back one day.

   (3) Return switch

   Cancels change and returns to setting for month.

   (4) Enter switch

   Accepts change and returns the screen to the “Clock Adjustment” screen.

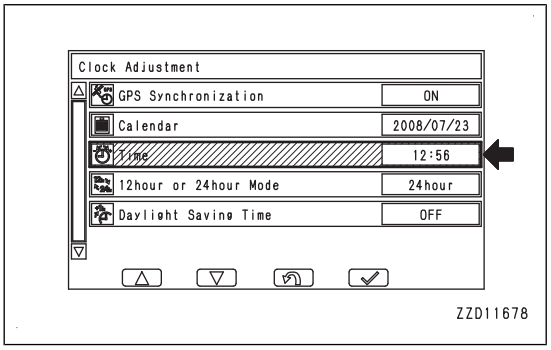
TIME SETTING

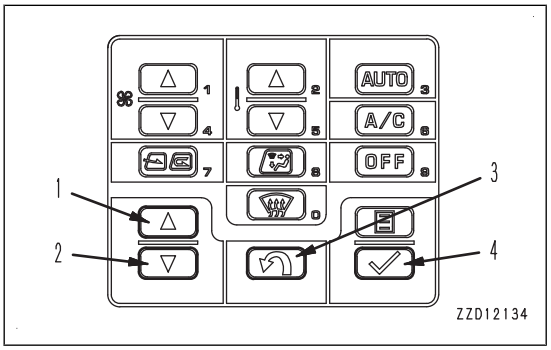
Adjust the time of the machine monitor clock.

1. Select “Time” from the “Clock Adjustment” menu, and press enter switch (4).

   REMARK

   If “ON” is selected for the setting of “GPS Synchronization”, you cannot select the “Time”.





2. The “Time” screen is displayed.

   When time display (D) is highlighted in yellow, operate the switches as follows to change time display.
   When it is not necessary to change the time setting, press enter switch (4).

   (1) Up switch

   Advances time one hour.

   (2) Down switch

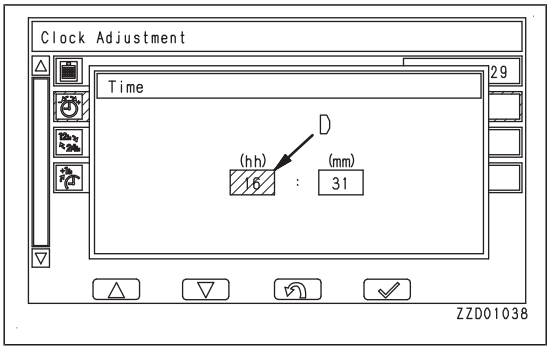
   Puts time back one hour.

   (3) Return switch

   Cancels change and returns screen to “Clock Adjustment” menu.

   (4) Enter switch

   Proceeds to setting for minute.



3. When minute display (E) is highlighted in yellow, operate the switches as follows to change minute display.

   When it is not necessary to change the minute setting, press enter switch (4).

   (1) Up switch

   Advances time 1 minute.

   (2) Down switch

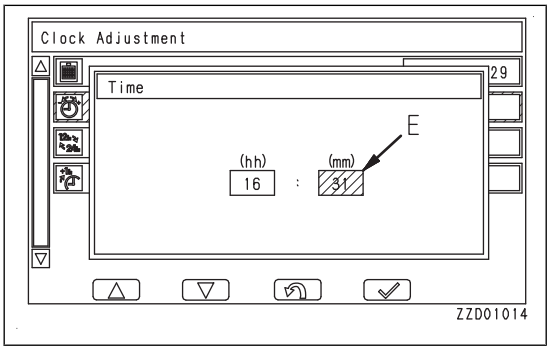
   Puts time back 1 minute.

   (3) Return switch

   Cancels change and returns to the time setting screen.

   (4) Enter switch

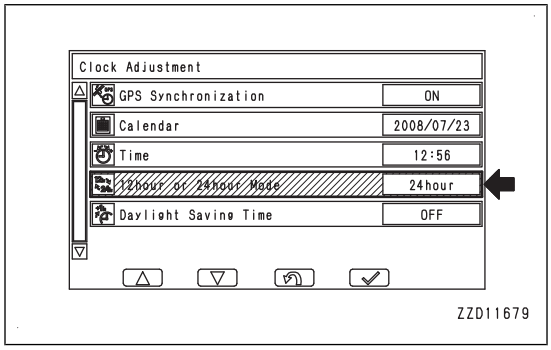
   Accepts change and returns the screen to the “Clock Adjustment” screen.

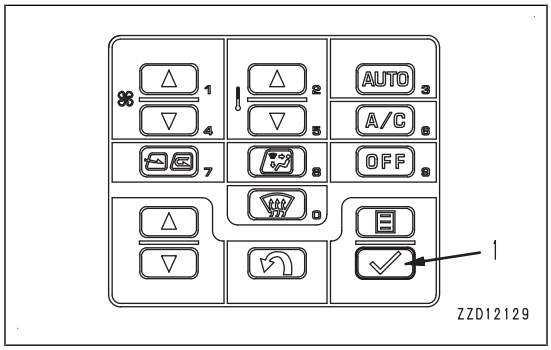


12-HOUR AND 24-HOUR DISPLAY MODE

Choose either a 12-hour display (am/pm) or a 24-hour display.

1. Select “12hour or 24hour Mode” from the “Clock Adjustment” menu, then press enter switch (1).





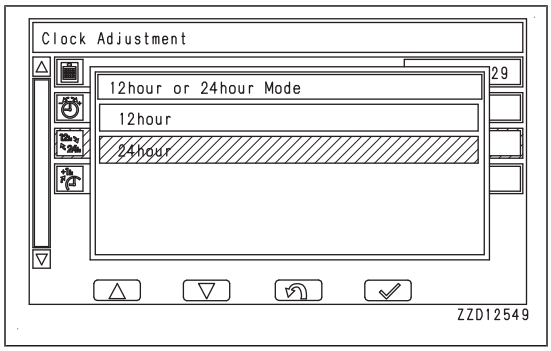
2. Select “12hour” or “24hour”, then press enter switch (1).

   “12hour”

   Select 12H display (AM, PM).

   “24hour”

   Select 24H display.



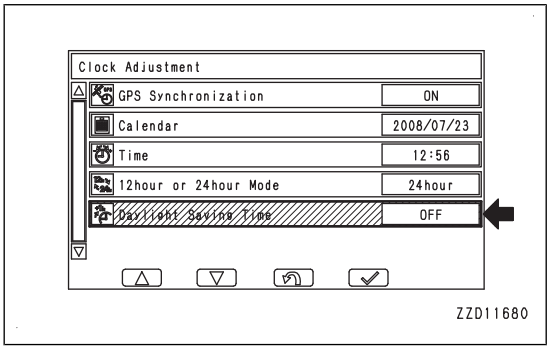
REMARK

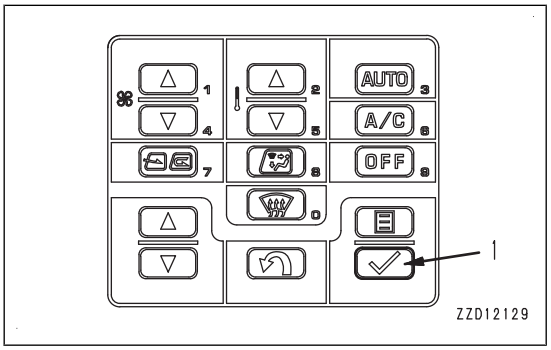
This setting is held even if the starting switch is turned to OFF position.
The default is “24hour”.

DAYLIGHT SAVING TIME (SUMMER TIME)

Set the clock display based on the Daylight Saving Time.

1. Select “Daylight Saving Time” from the “Clock Adjustment” menu, then press enter switch (1).





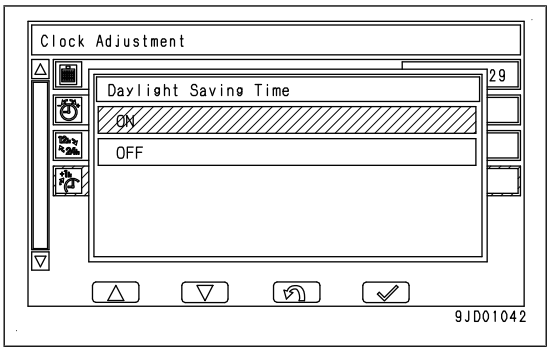
2. Select “ON” or “OFF”, then press enter switch (1).

   “ON”

   Displays the time 1 hour earlier.

   “OFF”

   Returns the time to the original.



REMARK

Daylight saving time (summer time) means setting the clock ahead 1 hour to make the better use of daytime for everyday life.
This setting is held even if the starting switch is turned to OFF position.
The default is “OFF”.

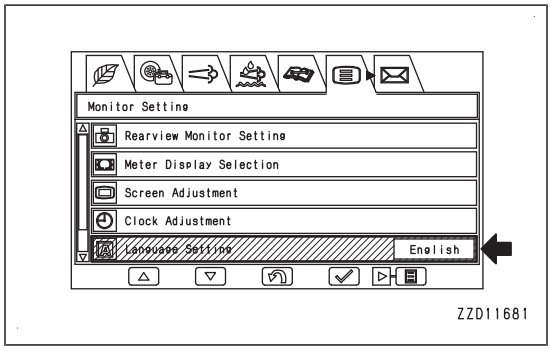
LANGUAGE SETTINGS

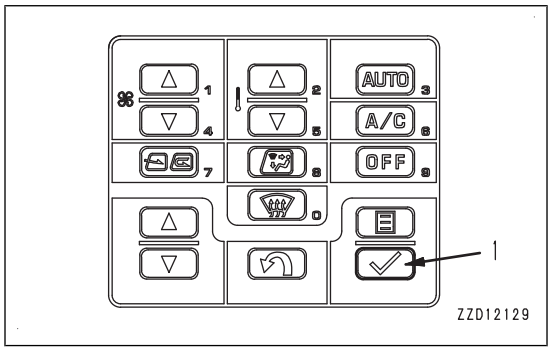
The language displayed on the machine monitor can be selected.

The languages that can be selected are as follows.

English, Japanese, French, Spanish, Portuguese, Italian, German, Swedish, Dutch, Danish, Norwegian, Finnish, Icelandic, Czech, Hungarian, Polish, Slovak, Slovene, Romanian, Croatian, Estonian, Latvian, Lithuanian, Bulgarian, Greek, Serbian, Turkish

1. Select “Language Setting” on the “Monitor Setting” menu screen, then press ENTER switch (1).

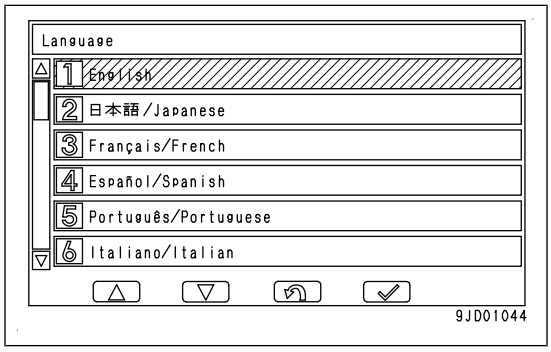




2. Select the language to be displayed, then press ENTER switch (1).

REMARK

This setting is held even if the starting switch is turned to OFF position.



OPERATOR ID

You can check and change the “Operator ID” which is under identification on the “Operator ID” menu.

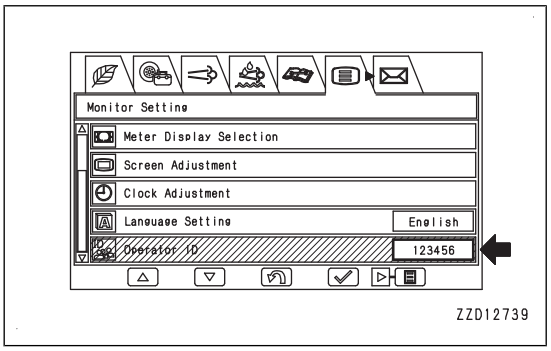
The “Operator ID” menu is not displayed when the operator identification function is disabled.

REMARK

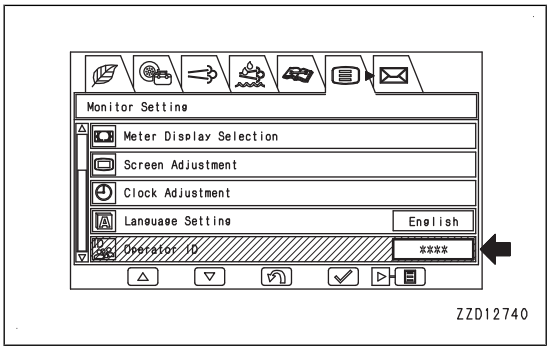
Contact your Komatsu distributor for details of the method of setting, changing, or cancelling the operator identification function.

WHEN OPERATOR IDENTIFICATION FUNCTION IS AVAILABLE WITH SKIP

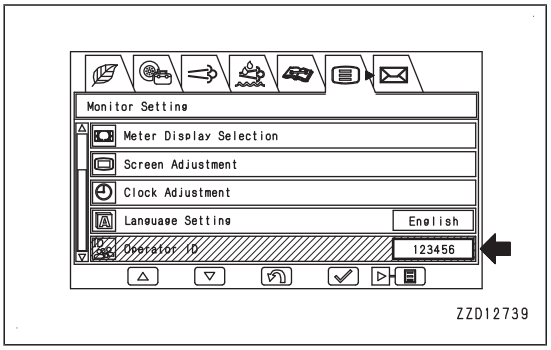
When the starting switch is ON and ID is inputted, the identified ID is displayed in the column of “Operator ID” on the “Monitor Setting” menu screen.

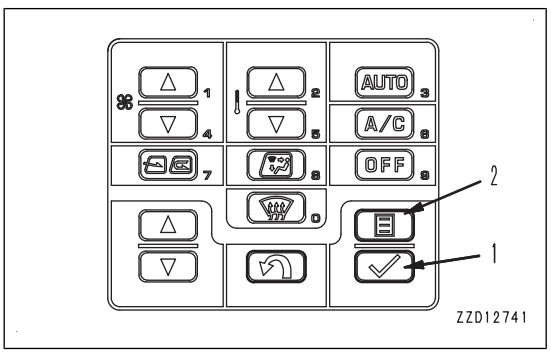


When the starting switch is ON and “SKIP” is selected, “****” is displayed in the column of “Operator ID” on the “Monitor Setting” menu screen.

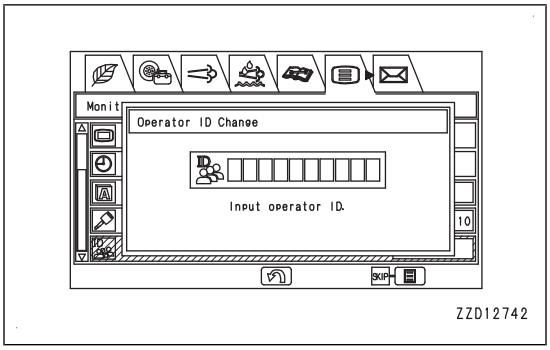


1. Select “Operator ID” on the “Monitor Setting” menu screen, then ENTER switch (1) for 1 second.



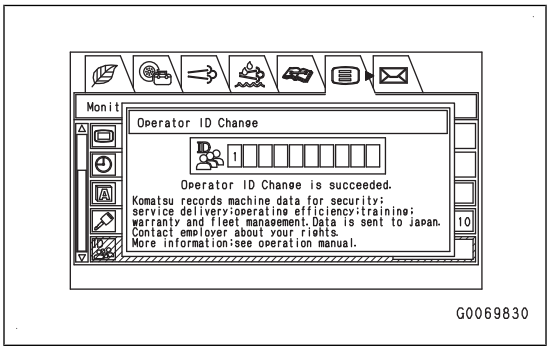


2. The “Operator ID Change” screen is displayed.



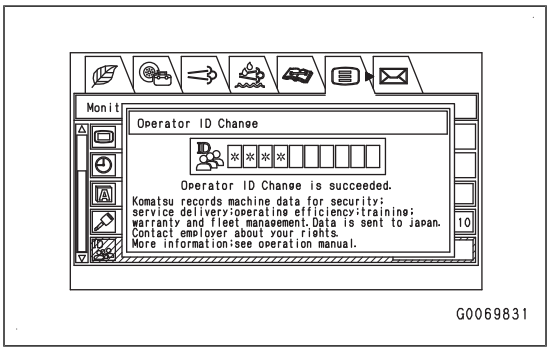
- Input the already registered ID on the “Operator ID Change” screen and press ENTER switch (1). Then, the identified ID can be changed.

  A message is displayed below and the screen returns to the “Monitor Setting” menu screen.
  On the “Monitor Setting” menu screen, the inputted ID is displayed in the column of “Operator ID”.



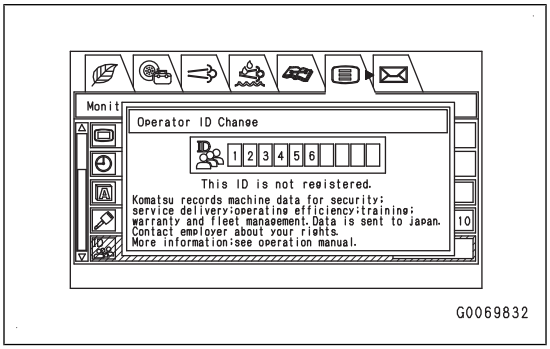
- When you press menu switch (2) on the “Operator ID Change” screen, a message is displayed below and the screen returns to the “Monitor Setting” menu screen.

  On the “Monitor Setting” menu screen, as the same way when the starting switch is ON and “SKIP” is selected, “****” is displayed in the column of “Operator ID”.
  In this case, the operator ID is not identified.



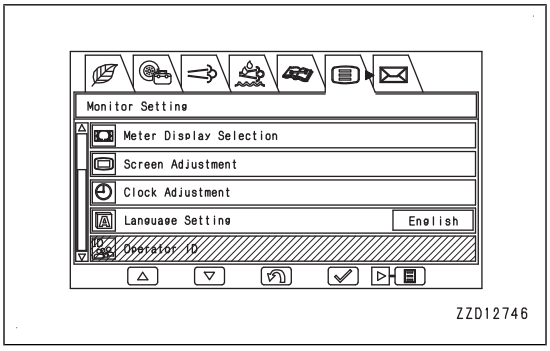
- When you press ENTER switch (1) after inputting the ID which is not registered to the “Operator ID Change” screen, a message is displayed below and the screen returns to the “Monitor Setting” menu screen.

  In this case, the identified ID is not changed.
- On the “Operator ID” screen, if no switch is operated for more than 30 seconds, the screen automatically changes to the “Monitor Setting” menu screen.
  In this case, the identified ID is not changed.

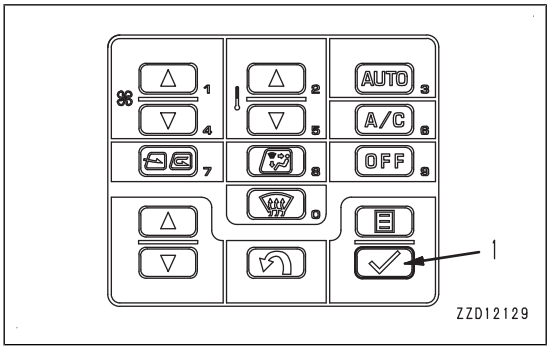


WHEN OPERATOR IDENTIFICATION FUNCTION IS AVAILABLE WITHOUT SKIP

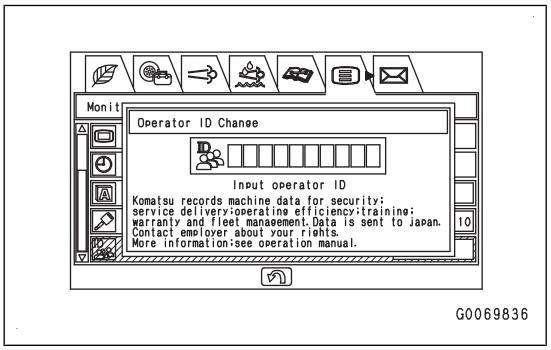
When the operator identification function is available without SKIP, the identified ID number is not displayed in the “Operator ID” column of “Monitor Setting” screen.



1. Select “Operator ID” on the “Monitor Setting” menu screen, then ENTER switch (1) for 1 second.

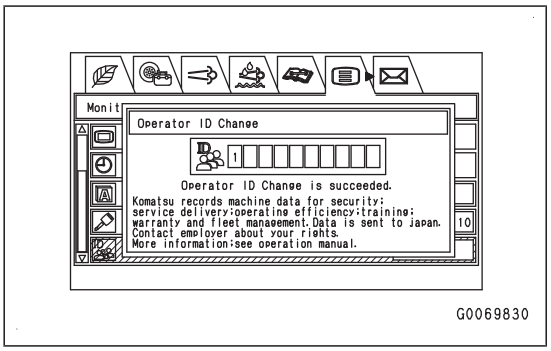


2. The “Operator ID Change” screen is displayed.



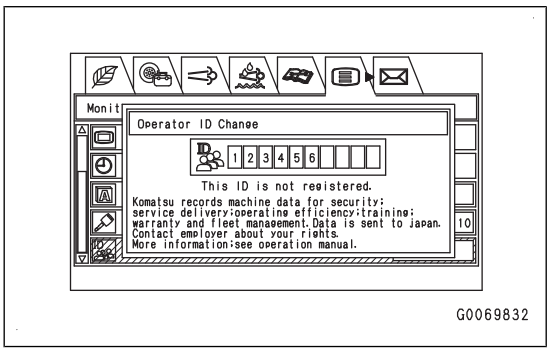
- Input the already registered ID on the “Operator ID Change” screen and press ENTER switch (1). Then, the identified ID can be changed.

  A message is displayed below and the screen returns to the “Monitor Setting” menu screen.



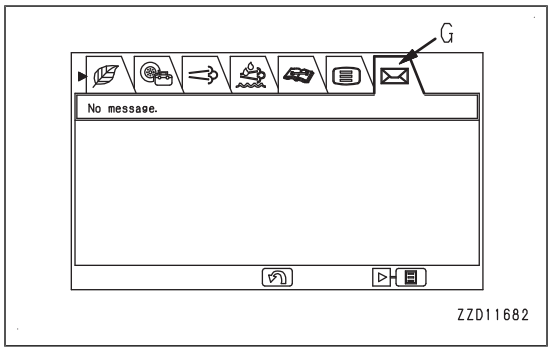
- When you press ENTER switch (1) after inputting the ID which is not registered to the “Operator ID Change” screen, a message is displayed below and the screen returns to the “Monitor Setting” menu screen.

  In this case, the identified ID is not changed.
- On the “Operator ID” screen, if no switch is operated for more than 30 seconds, the screen automatically changes to the “Monitor Setting” menu screen.
  In this case, the identified ID is not changed.

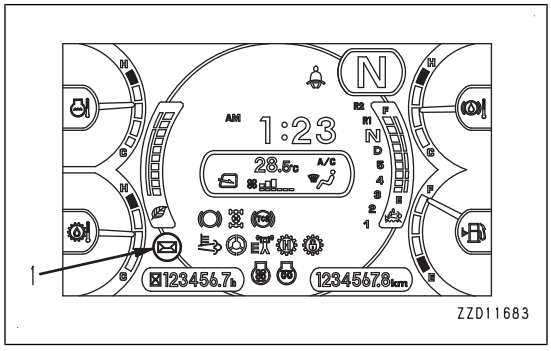


MESSAGE DISPLAY

On machines equipped with KOMTRAX, you can see the messages from your Komatsu distributor on this User Message menu (G).



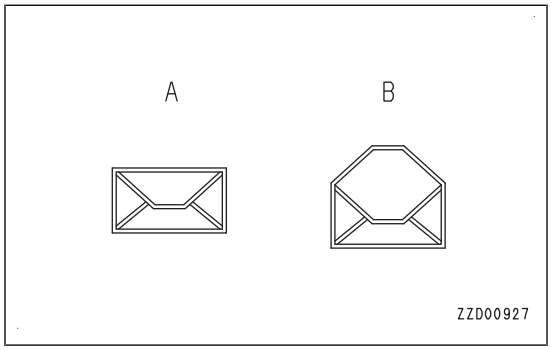
When there is any message, message display (1) of the standard screen lights up.



(A): There is unread message.

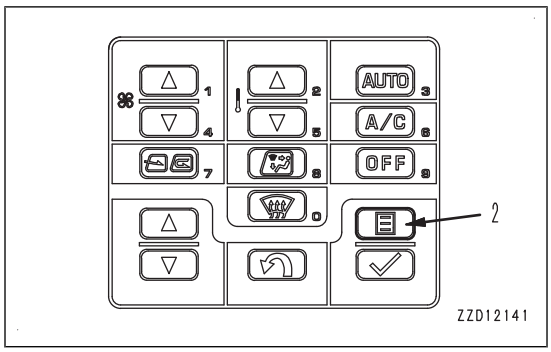
(B): There is any read message to which no reply is made.

Reply to the message in accordance with the replying method mentioned later.



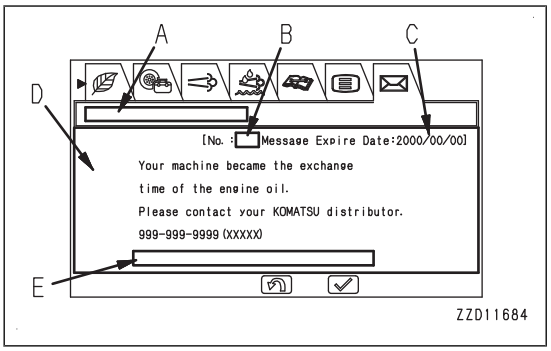
REMARK

- While message display (1) is lit on the standard screen, when menu switch (2) is pressed, message display menu screen (G) appears automatically.
- When the starting switch is turned OFF while there is any unread message, the message is displayed on the end screen, and when the monitor is started next time, the message changes to a read message.
- The message is deleted when it becomes out of date or when a new message reaches.



CHECK MESSAGE

Select message display menu screen (G), and you can read the arrived message.



(A) Subject of message

When no message has been received, “No message.” is displayed.

(B) Serial No. of message

(C) Validity

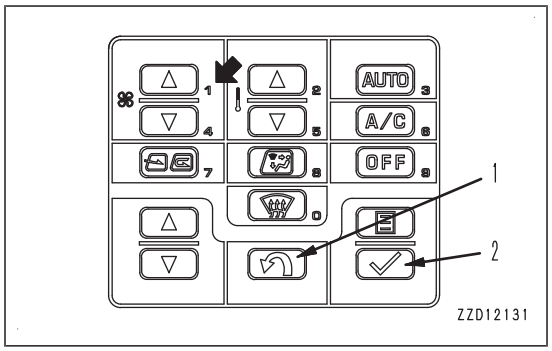
(D) Text

(E) Reply field

In case of a message requesting for reply, the “Numeric Input: [ ]” is displayed. Make any reply to the message.

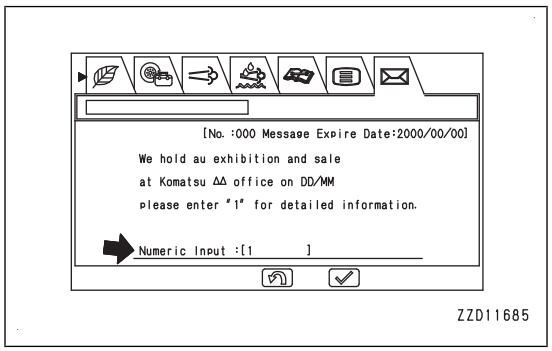
REPLY TO MESSAGE

1. When replying to a message, input the selected item number shown in the text of the message by using the switch panel.
   - Each switch of the switch panel corresponds to the number shown on the lower right of the switch.
   - The input number is displayed in “Numeric Input: [ ]”of the reply field.
   - If you input an incorrect number, press RETURN switch (1), and you can clear an input character at a time.



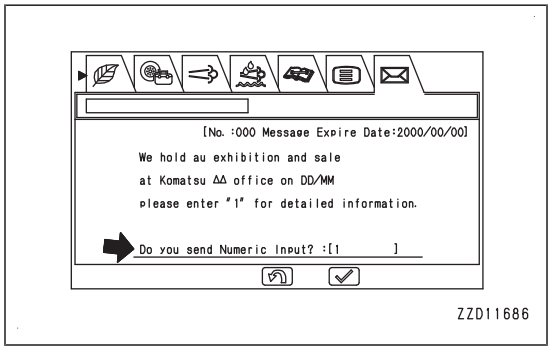
   - If RETURN switch (1) is pressed while no number is entered, the display returns to the standard screen.

2. After inputting a selected item number, press ENTER switch (2).



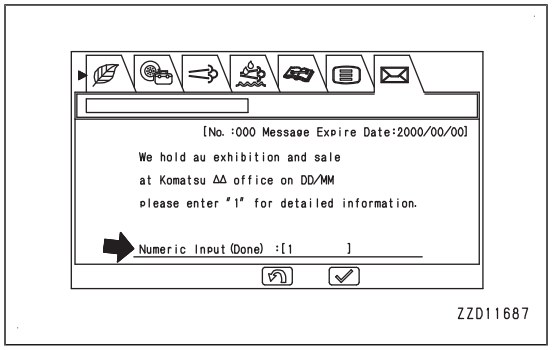
3. “Do you send Numeric Input?” When this message is displayed, press ENTER switch (2) again.

   The input value will be sent out.
   To cancel, press RETURN switch (1).
   The input number is cleared.



REMARK

If the message is replied, “Numeric Input (Done)” is displayed for it.

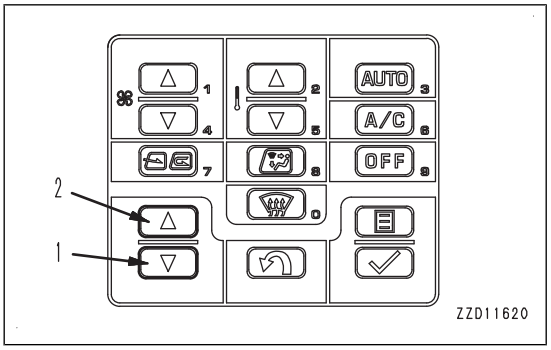


OTHER FUNCTIONS OF MACHINE MONITOR

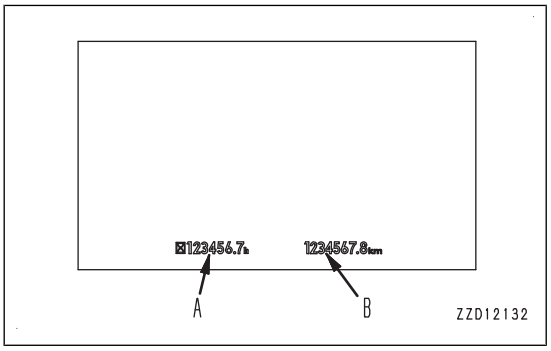
Confirm the service meter or odometer when the starting switch key is set to OFF position

The service meter and odometer can be displayed even if the machine monitor is not turned ON.

1. Press UP switch (2) while holding down DOWN switch (1) when the starting switch is in OFF position.



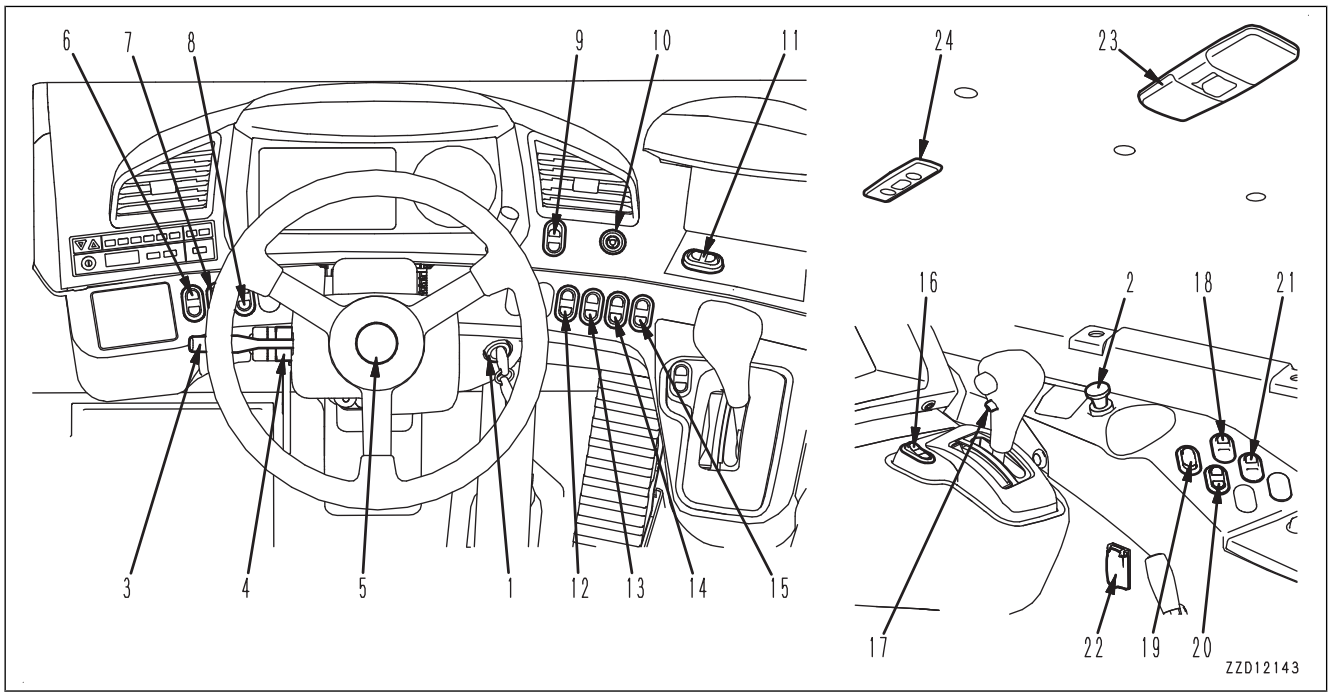
   Service meter (A) and odometer (B) are displayed while both switches are held down.



NOTICE

If the monitor screen is displayed during other operations while the starting switch is at OFF position, there is probably a failure in the equipment, so ask your Komatsu distributor for inspection.

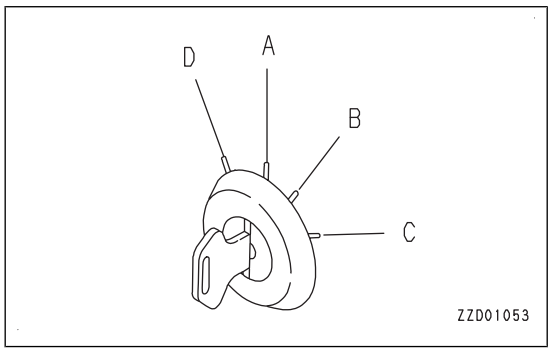
SWITCHES



(1) Starting switch
(2) Cigarette lighter
(3) Lamp switch, dimmer switch, turn signal lever
(4) Windshield wiper and window washer switch
(5) Horn button
(6) Monitor brightness selector switch
(7) Working lamp switch
(8) Mirror heater switch (if equipped)
(9) Hazard lamp switch
(10) Secondary steering switch
(11) Brightness adjustment switch of rear view monitor
(12) Inter-axle differential lock switch
(13) Automatic retarder and accelerator linked control switch (if equipped)
(14) AISS LOW switch
(15) Engine power mode selector switch
(16) Parking brake switch
(17) Shift hold switch
(18) Fog lamp switch (if equipped)
(19) Power window switch
(20) Side lamp switch
(21) Revolving lamp switch (if equipped)
(22) Engine shutdown secondary switch
(23) Room lamp 1 switch
(24) Room lamp 2 switch

STARTING SWITCH

Starting switch is used to start or stop the engine.



(A) OFF position

The key can be removed from the starting switch, the electrical current to the electrical system is cut, and the engine stops.

REMARK

Even when the starting switch is at OFF position, the horn, hazard lamp, secondary steering, and room lamp 1 operate.

(B) ON position

The electrical current flows to the electrical system.

Keep the starting switch key at ON position while the engine is running.

Controller may detect a failure if the starting switch is held at a position between ON and OFF when turning the starting switch to ON or OFF position.

In such case, return the starting switch to OFF position, then turn it to ON position again.

In cold weather, when the key is turned to ON position, engine preheating starts automatically and the preheating pilot lamp lights up.

When preheating is completed, the preheating pilot lamp goes out.

(C) START position

This is the position to start the engine.

Hold the key at this position while cranking, and release it immediately after the engine starts.

The key will return to ON position when released.

(D) PREHEAT position

While the key is at PREHEAT position, the engine is preheated manually.

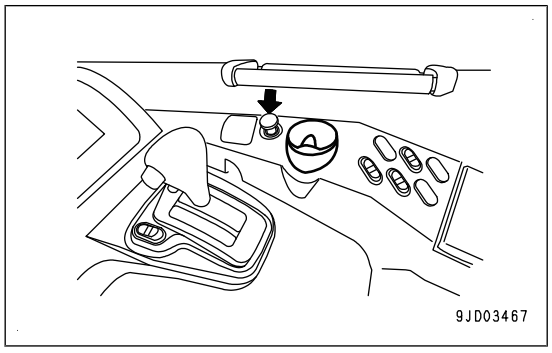
The preheating pilot lamp lights up while the engine is preheated.

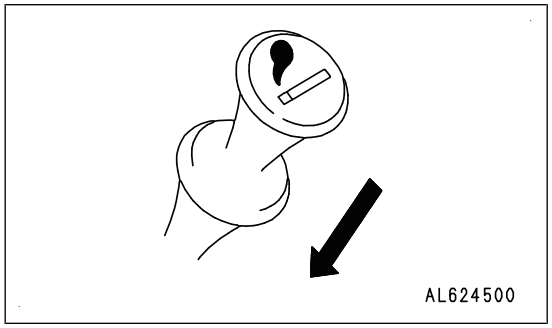
CIGARETTE LIGHTER

The cigarette lighter is used to light cigarettes.

When the cigarette lighter is pushed in, it will return to its original position after several seconds, then pull it out and use it to light your cigarette.

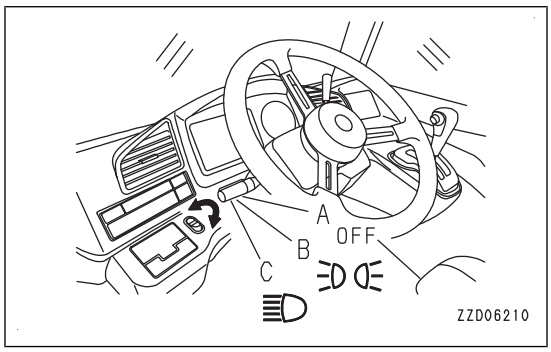
If the cigarette lighter is removed, the socket can be used as an 84 W (12 V x 7 A) power supply.





LAMP SWITCH

The lamp switch is used to turn ON and OFF the headlamp (low beam), clearance lamp, and tail lamp.



(A): OFF position

The lamps go out.

(B): ON position

Clearance lamp and tail lamp light up.

(C): ON (headlamp lighting) position

Clearance lamp, tail lamp and headlamp (low beam) light up.

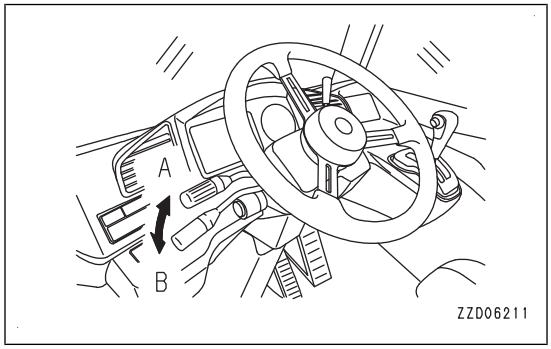
When the lamp switch is turned ON, the clearance pilot lamp and the night lamp for switches light up.

When the monitor brightness selector switch is set to the night mode, the machine monitor and rear view monitor are dimmed.

The lamp switch can be switched regardless of the position of the turn signal lever.

DIMMER SWITCH

The dimmer switch is used to turn the headlamps (high beam) ON or OFF.



When the lamp switch is ON

Each time the dimmer switch is operated up to (A), the headlamp (high beam) is turned ON or OFF alternately. When the switch is released, it automatically returns to original position (B).

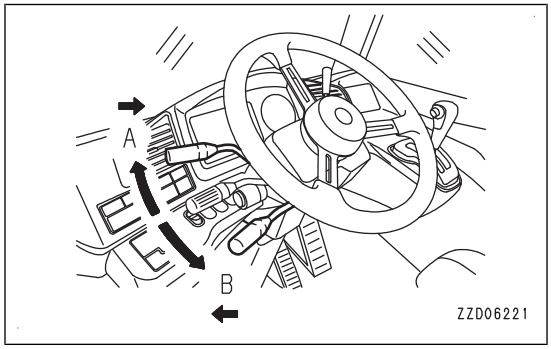
When the lamp switch is OFF

Only the headlamp (high beam) lights up while the dimmer switch is operated up to (A).

When the headlamps (high beam) are lit, the headlamp (high beam) pilot lamp lights up.

TURN SIGNAL LEVER

The turn signal lever is used to flash the turn signal lamps.



(A) Turn to right

Push the lever forward

(B) Turn to left

Pull the lever back to this side

When the lever is operated, the turn signal pilot lamp also flashes.

The lever returns automatically when the steering wheel is turned back. If the lever does not return, move it by hand.

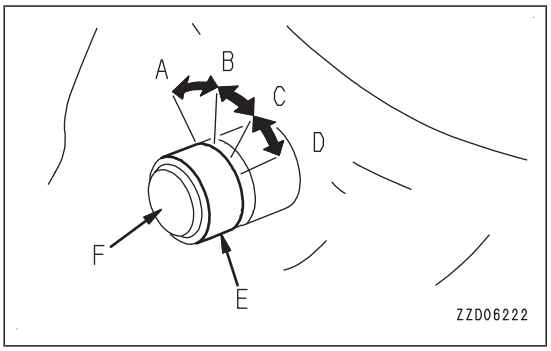
WIPER, WINDOW WASHER SWITCH

The windshield wiper and window washer switch is used to operate the wiper for the front glass and rear glass.

NOTICE

Using the wiper when the glass is dry will scratch the glass. Spray with window washer fluid before actuating the wiper.

Front wiper



Turn lever (E), and the front wiper operates.

Position (A) (OFF)

Stop

Position (B) (INT)

The wiper operates at intervals of 4 to 7 seconds.

Position (C) (LOW)

The wiper operates at low speed.

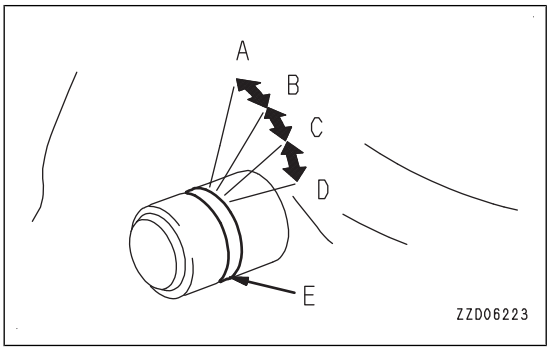
Position (D) (HI)

The wiper operates at high speed.

When button (F) at the tip of the switch is pressed, washer fluid is sprayed out.

Do not keep pressing the window washer switch for more than 10 seconds.

Rear wiper



Turn lever (E), and the rear wiper operates.

Position (A)

Washer fluid is sprayed out.

Position (B) (OFF)

Stop

Position (C)

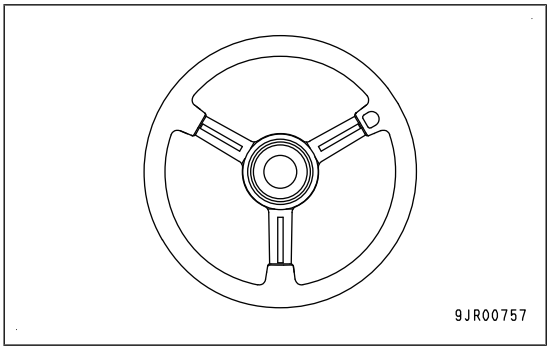
The windshield wiper operates.

Position (D)

Wiper operates and washer fluid is sprayed out simultaneously.

HORN BUTTON

When the horn button at the center of the steering wheel is pressed, the horn sounds.



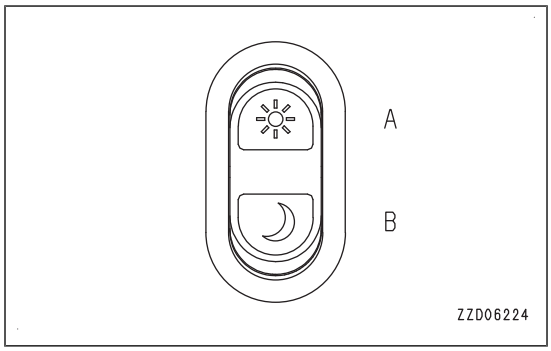
NOTICE

If the horn is sounded continuously (the horn button is kept pressed), its service life is shortened.
Avoid continuous use except in an emergency.

MONITOR BRIGHTNESS SELECTOR SWITCH

The monitor brightness selector switch is used to select the brightness (luminosity) of the machine monitor and rear view monitor while lamp switch is turned ON.

When operating the machine with the headlamp lighting up during the day, if this switch is set to Day mode, monitor screen does not loose the brightness.



(A) Day position

The monitor screen is set to the day mode.

(B) Night position

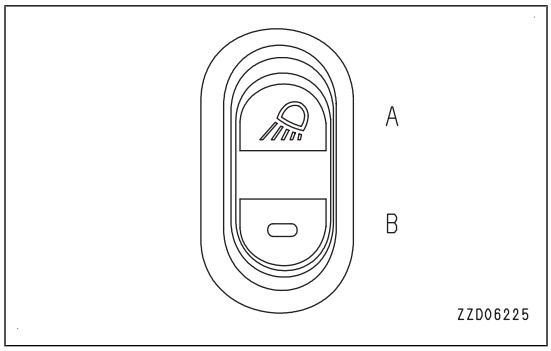
The monitor screen is set to the night mode.

REMARK

When the lamp switch is turned to OFF position, operating this switch does not change the brightness.

WORKING LAMP SWITCH

The working lamp switch is used to turn the working lamp ON or OFF.



Position (A)

Working lamp lights up.

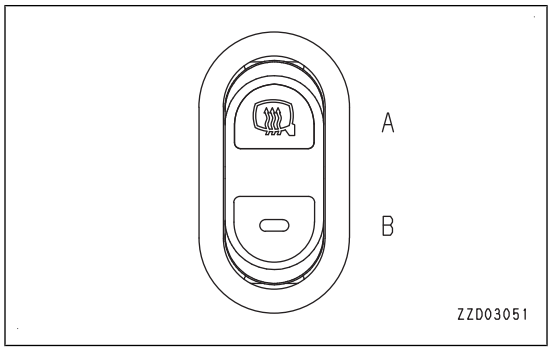
Position (B)

Working lamp goes out.

SWITCH FOR MIRROR WITH HEATED WIRE

(if equipped)

Heated mirror switch is used to turn the heater for side view mirrors ON or OFF.



Position (A)

Wire heater ON

Position (B)

Wire heater OFF

REMARK

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

HAZARD LAMP SWITCH

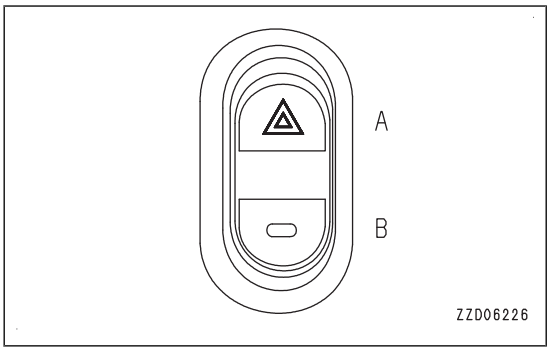
The hazard lamp switch is used to flash the R.H. and L.H. turn signal lamps.

Position (A)

The turn signal lamps and the turn signal pilot lamp flash.

Position (B)

The turn signal lamps and the turn signal pilot lamp go out.



SECONDARY STEERING SWITCH

⚠ WARNING

Do not use the secondary steering pump for more than 90 seconds.
If it is used continuously for more than that, motor may get burn out or get damaged, or that it may cause a fire.

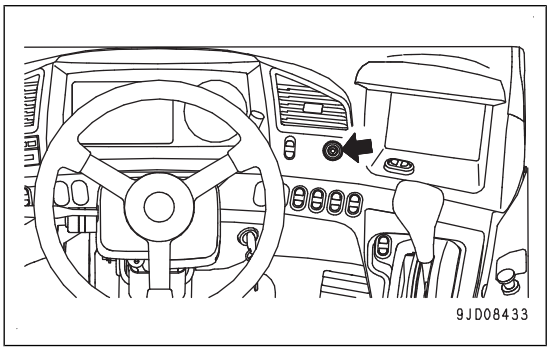
The secondary steering switch is used to operate the secondary steering.

When this switch is pressed, the secondary steering operates and the operator can steer the machine.

When this switch is turned ON or the secondary steering operates automatically, the pilot lamp (red) in the switch and the secondary steering pilot lamp light up.

When using the secondary steering, limit the travel speed to 5 km/h .

The secondary steering operates automatically in the following cases.



- When the steering oil pressure drops abnormally
- When the engine stops during operation

When the secondary steering operates, stop the machine immediately and check it.

When the engine stops, if the starting switch is at ON position and the parking brake switch is at “TRAVEL” position, the secondary steering operates automatically after 1 second. To prevent this, set the parking brake switch to “PARKING” position.

REARVIEW MONITOR BRIGHTNESS ADJUSTMENT SWITCH

The rearview monitor brightness adjustment switch is used to adjust the brightness of the rearview monitor.

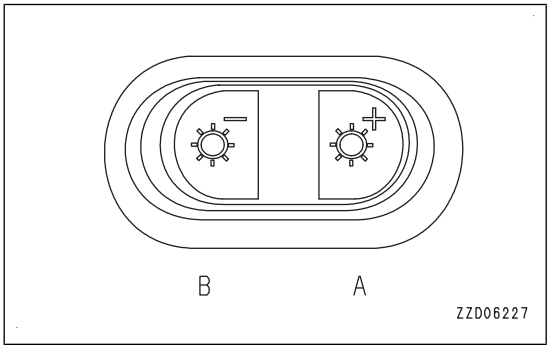
The brightness in the day and night modes can be adjusted individually.

Position (A)

The rearview monitor becomes brighter.

Position (B)

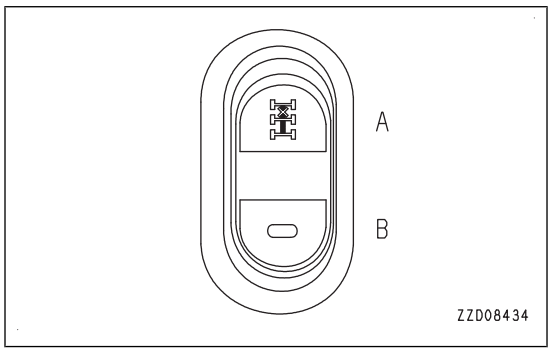
The rearview monitor becomes darker.



INTER-AXLE DIFFERENTIAL LOCK SWITCH

The inter-axle differential lock switch is used to select the operation mode of the inter-axle differential lock.

Set it to AUTO when traveling on a normal ground.



(A) MANUAL

The inter-axle differential lock is actuated while the shift range (gear speed) is at F3, F2, F1, R1, or R2, and the machine is not turning.

On dry sandy ground, etc., if the tires slip and the machine bounces up and down, or on muddy ground, etc., if the travel speed lowers largely because the tires slip and sink into mud. Before these cases, set it to the MANUAL.

Operation mode is shifted to AUTO mode when the steering angle becomes more than the specified angle during turning.

(B) AUTO

Ability to travel through or escape from soft ground is improved when KTCS operates. The inter-axle differential lock operates automatically to stabilize the machine when the brake is applied or the gear is shifted.

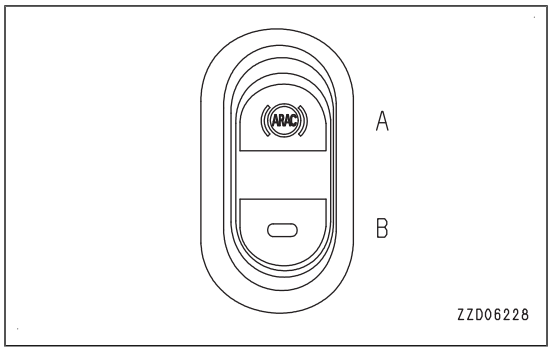
REMARK

Regardless of the position of the switch, when the inter-axle differential lock operates, the inter-axle differential lock pilot lamp lights up.

AUTOMATIC RETARDER, ACCELERATOR LINKED CONTROL SWITCH

(if equipped)

The automatic retarder and accelerator linked switch is used to turn ON or OFF the ARAC (Automatic Retarder Accelerator Control).



Position (A)

The automatic retarder, accelerator linked control system operates and the retarder pilot lamp lights up.

Position (B)

The automatic retarder, accelerator linked control system does not operate.

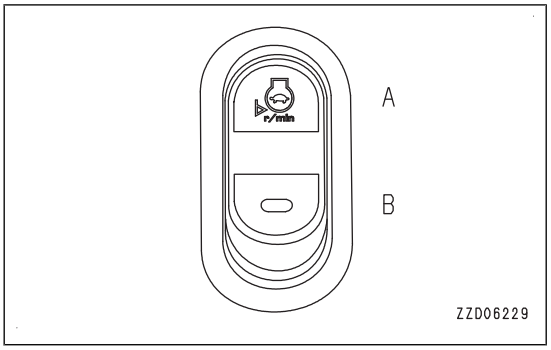
AISS LOW SWITCH

NOTICE

During the aftertreatment devices regeneration, the idle speed is set rather high regardless of ON or OFF of AISS LOW switch.

AISS LOW switch is used to switch the AISS functions.

AISS (Automatic Idling Setting System) adjusts the low idle speed automatically depending on the engine coolant temperature and operating situations.



(A) AISS LOW switch ON

Use this switch position when fine start control is needed such as when putting the machine into the garage.

The low idle speed is fixed to a rather low level.

REMARK

When the automatic warm-up is turned on, this switch position stops it, and set a low idle speed to a rather low level.

(B) AISS LOW switch OFF

Use this switch position for the normal operation.

AISS function is actuated to produce the states described below.

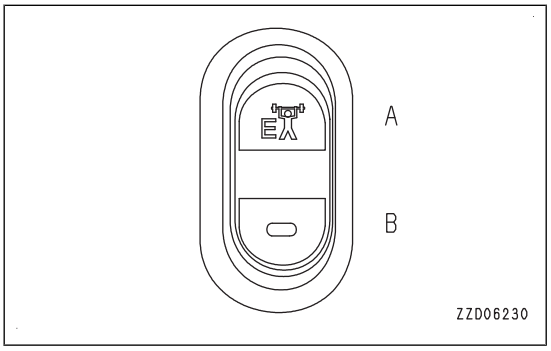
- When the engine coolant temperature is low, this switch position automatically sets the idle speed to a higher level. (Automatic warm-up function)
- When the parking brake or retarder brake is applied, the idle speed is automatically set to a rather low level in order to reduce fuel consumption when the machine is stopped.

REMARK

While the automatic warm-up is turned on, the idle speed is not set low even if the parking brake or retarder brake is applied.

ENGINE POWER MODE SELECTOR SWITCH

The engine power mode selector switch is used to shift the optimum power mode for economical operation depending on the operation condition..



(A): Economy mode (operations on a flat ground)

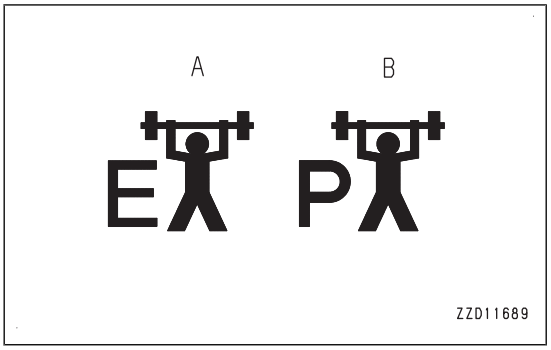
Use this mode for the operation with emphasis on fuel consumption, such as operation on flat ground where the maximum power is not needed.

The economy mode pilot lamp lights up on the machine monitor.

(B): Power mode (general operations)

Use this mode for the normal standard operation.

The power mode pilot lamp lights up on the machine monitor.

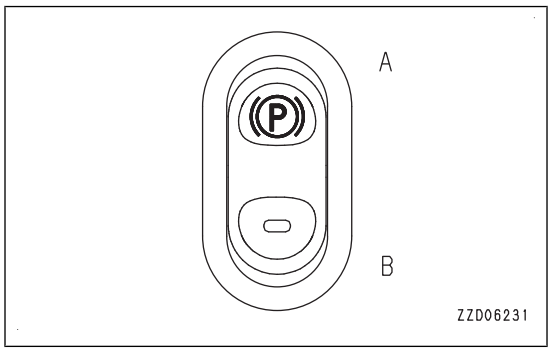


PARKING BRAKE SWITCH

⚠ WARNING

When parking or leaving the machine, always apply the parking brake.

The parking brake switch is used to actuate and release the parking brake.



(A) Parking

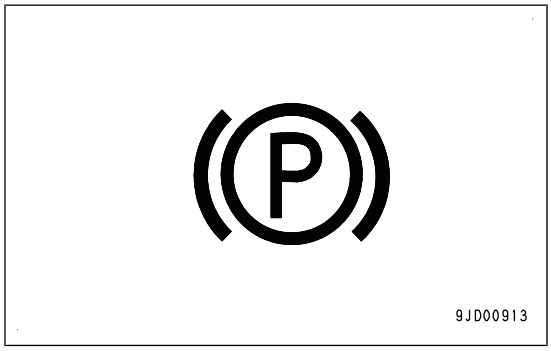
The parking brake is applied.

When this switch is set to PARKING position, the parking brake pilot lamp lights up on the machine monitor.

When the switch is set to PARKING position, if the gear shift lever is at any position other than NEUTRAL position (N), the centralized warning lamp flashes and the alarm buzzer sounds intermittently.

(B) Travel

The parking brake is released.



REMARK

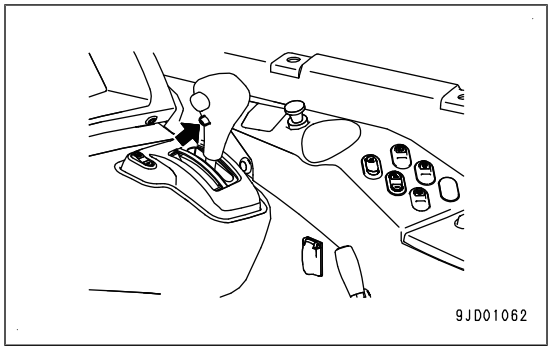
If the engine is stopped when the parking brake switch is set to TRAVEL, the parking brake is applied automatically.
When starting the engine again, set the parking brake switch to PARKING, and then set it back to TRAVEL to release the parking brake.

NOTICE

During loading operations, do not apply the parking brake. Apply the retarder brake.

SHIFT HOLD SWITCH

The shift hold switch is used to actuate the shift hold function.



When the shift hold switch is pressed once, the shift hold pilot lamp lights up and the shift hold function is actuated.

When the shift hold function is actuated, the gear speed is not shifted up from the current level.

The shift hold function can be canceled by setting the gear shift lever to another position or pressing the shift hold switch once more.

If the travel speed drops excessively when the shift hold function is being actuated, the transmission shifts down, but when the travel speed increases, the transmission is held at the original speed range

When the travel hunts (it is shifted up and down repeatedly at short intervals), depending on the road condition, uphill grade, or loading condition, fix the transmission to a lower gear speed to improve the operator comfort and protect the transmission.

FOG LAMP SWITCH

(if equipped)

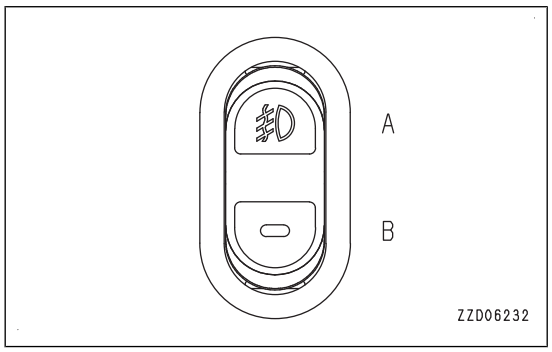
The fog lamp switch is used to turn the fog lamp ON or OFF.

Position (A)

Fog lamp lights up.

Position (B)

Fog lamp goes out.



POWER WINDOW SWITCH

⚠ WARNING

When closing the window glass, be careful not to catch anyone's hands or head in the window. There is a danger of serious injury if anyone is caught in the window glass.

⚠ CAUTION

After fully opening or fully closing the window glass, do not keep operating the switch. If the switch is kept operated, it may cause failure of the power window.

The power window switch is used to open and close L.H. window glass. This switch can only be used when the starting switch is at ON position.

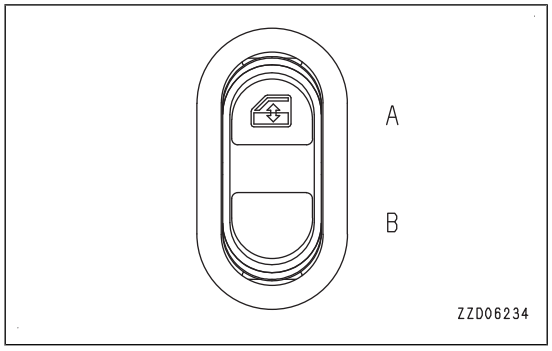
Position (A)

Glass goes up.

Position (B)

Glass goes down.

When the glass reaches the top or bottom and stops, release the switch.



SIDE LAMP SWITCH

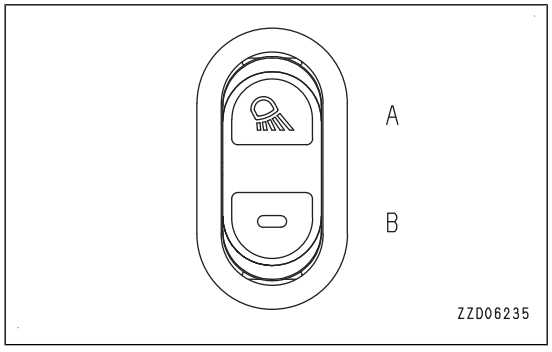
The side lamp switch is used to turn on and off the side lamp.

Position (A)

Side lamp lights up.

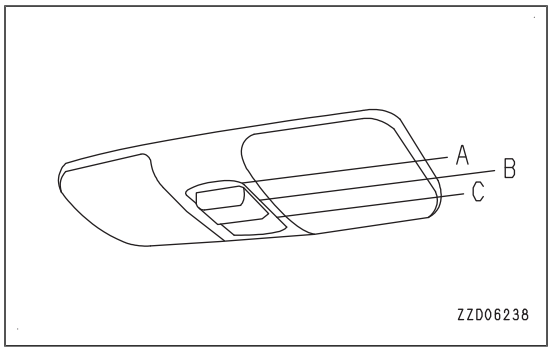
Position (B)

Side lamp goes out.



ROOM LAMP1 SWITCH

Room lamp 1 switch is used to turn room lamp 1 ON or OFF.



Position (A)

OFF

Position (B)

Lights up when the cab door opens.

Position (C)

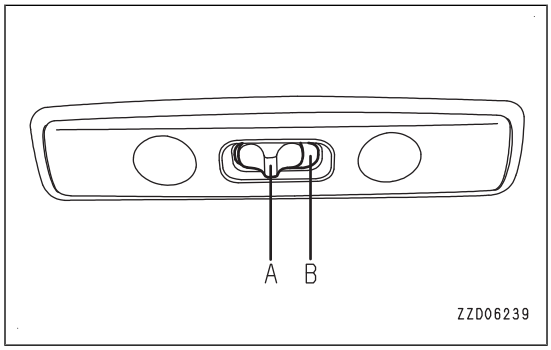
Lights up

REMARK

- The room lamp lights up even when the starting switch is at OFF position, so when leaving the operator's compartment, set the switch to position (A) or (B).
- When performing operations with the door fully opened, set the switch to position (A).

ROOM LAMP2 SWITCH

Room lamp 2 switch is used to turn on and off the room lamp 2.



Position (A)

Lamp goes out.

Position (B)

Lamp lights up.

REVOLVING LAMP SWITCH

(if equipped)

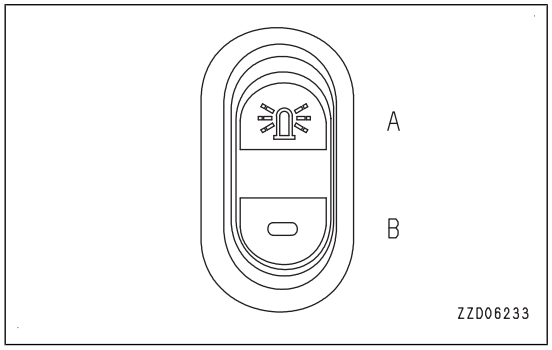
The revolving lamp switch is used to turn the yellow revolving lamp ON or OFF.

Position (A)

Yellow revolving lamp lights up.

Position (B)

Yellow revolving lamp goes out.

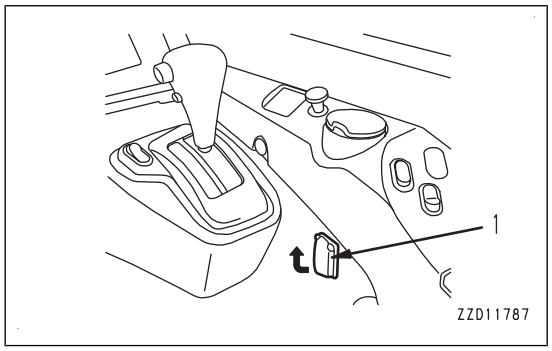


ENGINE SHUTDOWN SECONDARY SWITCH

NOTICE

The engine shutdown secondary switch is used to stop the engine when the starting switch is turned to OFF position but the engine does not stop.
Do not use it except for emergency. Contact your Komatsu distributor for repair immediately when there is any abnormality on this switch.

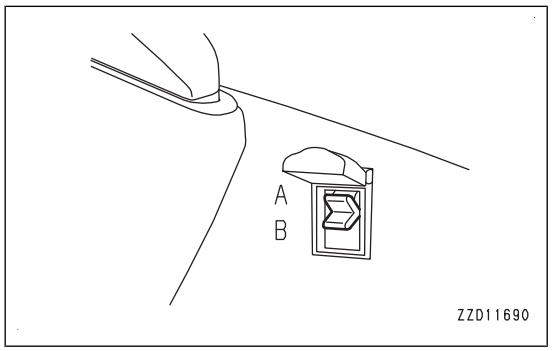
1. Raise cover (1) and open it.



2. When the engine shutdown secondary switch is set to the STOP ENGINE position, the engine stops, and after 3 seconds, “Engine Shutdown Secondary SW in Operation” is displayed on the machine monitor, and the alarm buzzer sounds intermittently.

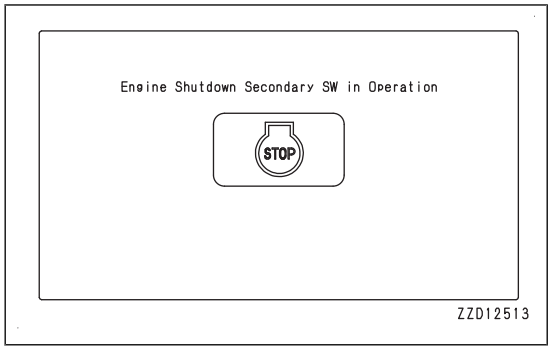
   (A): STOP ENGINE (when abnormal)

   (B): Normal

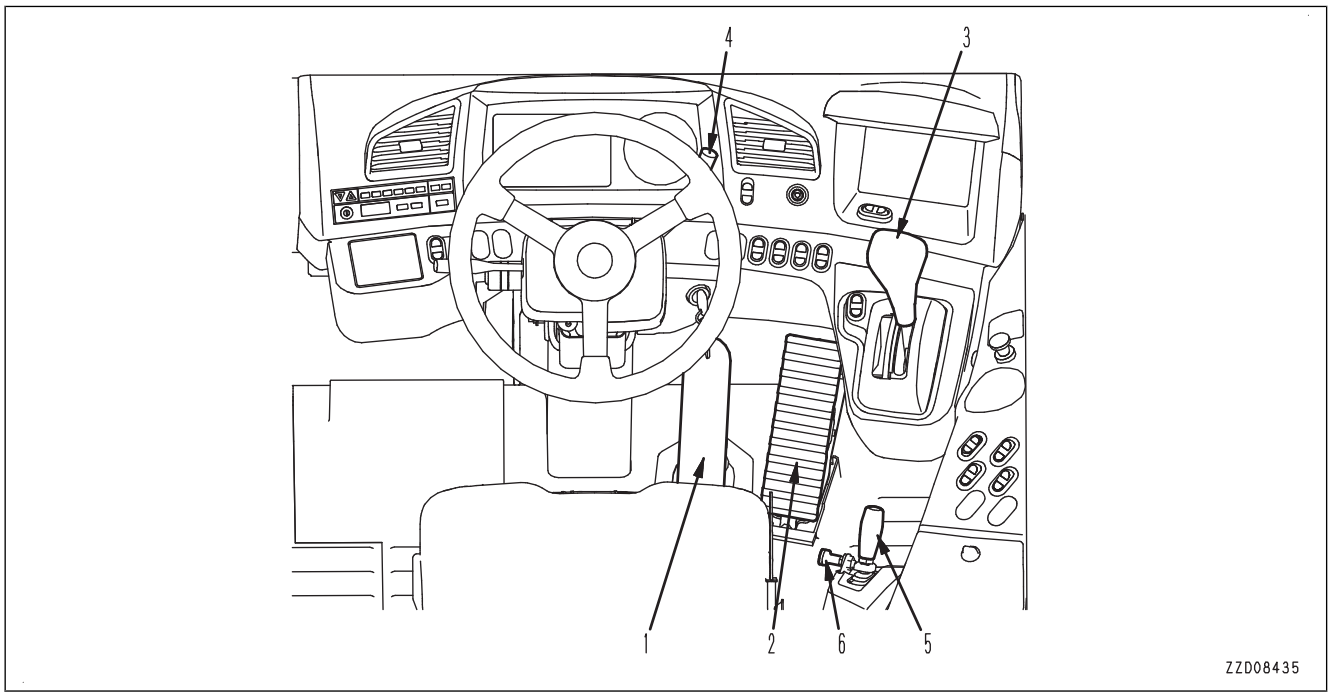


REMARK

- When cover (1) is closed, the engine shutdown secondary switch automatically returns to NORMAL position (B).
- While engine shutdown secondary switch is at the STOP ENGINE position, if the starting switch is turned ON, “Engine Shutdown Secondary SW in Operation” is displayed, and the alarm buzzer sounds intermittently.
  If this message is displayed when the machine is normal, check that the switch cover is closed and the engine shutdown secondary switch is in NORMAL position. If not, set it to NORMAL position.



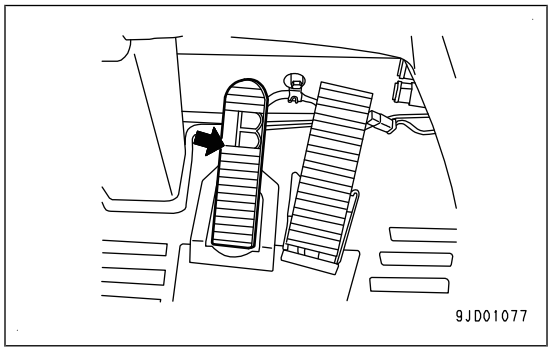
CONTROL LEVERS AND PEDALS



(1) Brake pedal
(2) Accelerator pedal
(3) Gear shift lever
(4) Retarder control lever
(5) Dump lever
(6) Dump lever lock knob

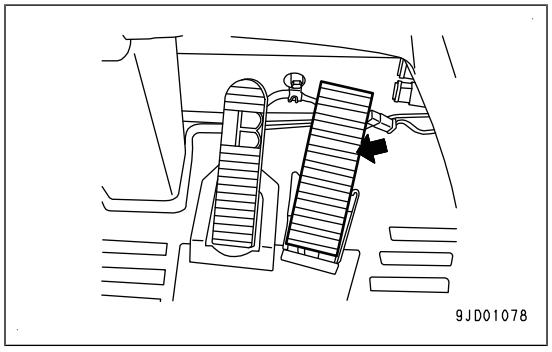
BRAKE PEDAL

The brake pedal is used to apply the wheel brakes.



ACCELERATOR PEDAL

Use the accelerator pedal to control the engine speed.
It can be operated freely from low idle to full throttle.

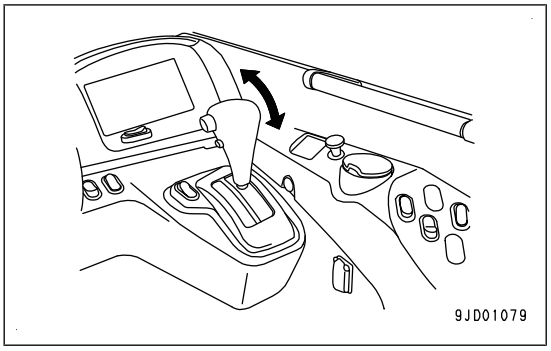


GEAR SHIFT LEVER

NOTICE

When you clean the indicator on the side of the gear shift lever, use a cloth wet with water or warm water.
Do not use a cloth with alcohol. The indicator can have damage.

Select the gear shift range with the gear shift lever according to the travel conditions.



Position D

This is used for the normal travel.

When position D is used, the transmission is set automatically between 2nd or 1st torque converter drive and 6th gear according to the travel speed.

Transmission is fixed to 2nd or 1st speed and is not changed while the dump body is raised. Keep the dump body lowered during travel.

The maximum travel speed in position D is 58.6km/h.

Positions 5 to 1

Use these positions when traveling on soft ground or places where it is difficult to travel at high speed, when starting uphill with the machine loaded, or when traveling downhill with engine brake.

Transmission is fixed to the 1st speed and is not changed while the dump body is raised.

Keep the dump body lowered during the travel.

Position R1

This is used when traveling in reverse.

Transmission is fixed in reverse 1st and the travel is performed in torque converter drive or direct drive according to the travel speed while position R1 is used.

The maximum travel speed in position R1 is 7.6km/h.

Position R2

This is used when traveling in reverse.

Transmission is fixed in reverse 2nd and the travel is performed in torque converter drive or direct drive according to the travel speed while position R2 is used.

The maximum travel speed in position R2 is 18.1km/h.

The machine cannot travel in reverse while the dump body is raised.

Lower the dump body, set the dump lever to “FLOAT”, then operate the gear shift lever to R1 or R2.

REMARK

If driving the machine with the dump body not seated, the speed range is fixed at 2nd or 1st in D position, and transmission can not be shifted. In position 5 to 1, the speed range is fixed at 1st position, and transmission can not be shifted. (This conforms to EU safety standard (EN474-6 5.1.3).

Automatic gear shifting range in each position

Position	Speed range	Max. speed (km/h)
R2	R2 torque converter to direct	18.1
R1	R1 torque converter to direct	7.6
D	2nd or 1st torque converter to 6th direct	58.6
5	1st torque converter to 5th direct	38.4
4	1st torque converter to 4th direct	25.5
3	1st torque converter to 3rd direct	16.2

Position	Speed range	Max. speed (km/h)
2	1st torque converter to 2nd direct	10.7
1	1st torque converter to 1st direct	6.8

The machine moves off at 2nd speed or 1st speed when the gear shift lever is set to D position.

Do not set the gear shift lever to NEUTRAL position (N) position during the travel.

When performing directional selection, stop the machine completely and run the engine at low idle.

When starting the engine, if the gear shift lever is in any position other than NEUTRAL (N), the engine will not start.

When the starting switch is turned from OFF position to ON position, if the gear shift lever is in any position other than NEUTRAL (N), the shift lever position pilot lamp flashes, the centralized warning lamp lights up, and the alarm buzzer sounds. If the gear shift lever is turned to NEUTRAL (N) position, the lamps will go out and the buzzer will stop.

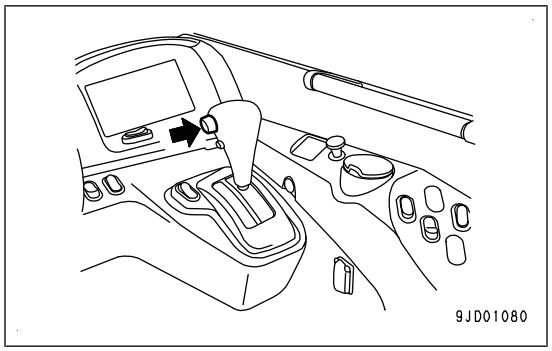
When the parking brake is applied, if the gear shift lever is in any position other than NEUTRAL (N), the centralized warning lamp will light up and the alarm buzzer will sound.

If the gear shift lever is set to any position other than NEUTRAL (N) when the dump lever is at a position other than “FLOAT” or the dump body is still raised, the centralized warning lamp will light up and the alarm buzzer will sound.

Always place the gear shift lever securely in position when operating it.

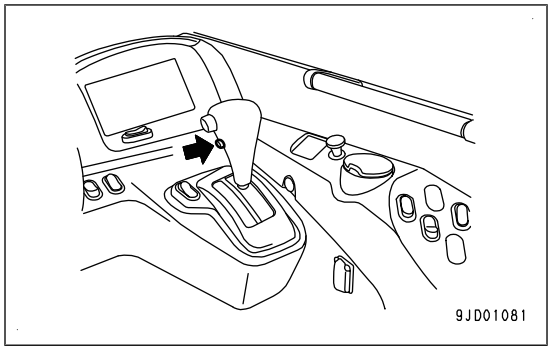
If the gear shift lever is not placed securely in position, the shift lever position pilot lamp on the machine monitor may start flashing and the centralized warning lamp may light up, and the alarm buzzer may sound.

When shifting the gear shift lever from NEUTRAL (N) to D (FORWARD) or R1 (REVERSE), release the accelerator pedal, set the engine speed at low idle, then press the lock button of gear shift lever to operate.



Pressing the shift hold switch actuates the shift hold function.

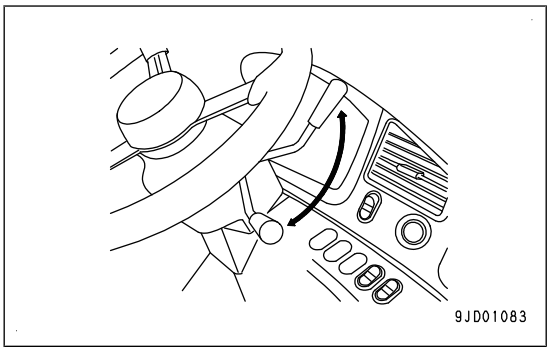
For details of the shift hold function, see “SHIFT HOLD SWITCH”.



RETARDER CONTROL LEVER

⚠ CAUTION

The retarder must not be used as a parking brake.



The retarder control lever is used to operate the retarder when traveling downhill.

The more the retarder control lever is pulled toward you, the greater the braking force becomes.

When the retarder operates, the retarder pilot lamp lights up on the machine monitor.

When leaving the operator's seat, always apply the parking brake.

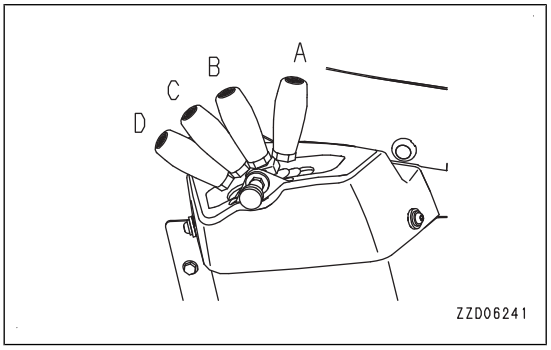
REMARK

While the ARAC (Automatic Retarder Accelerator Control) is in operation, a certain play is induced at start when the retarder control lever is pulled. Such play is not because the retarder is out of action. It is within the range employed in the ARAC (Automatic Retarder Accelerator Control).

DUMP LEVER

⚠ CAUTION

To prevent damage to the dump body caused by vibration from the road, always lower the dump body when traveling and set the dump lever to "FLOAT" position.



The dump lever used for operating the dump body.

(A) RAISE

(B) HOLD: The dump body remains in the position where it was stopped.

(C) FLOAT: The dump body moves freely under external force.

(D) LOWER

Always set it to "FLOAT" position when traveling.

The machine cannot be driven in reverse when the dump body is raised.

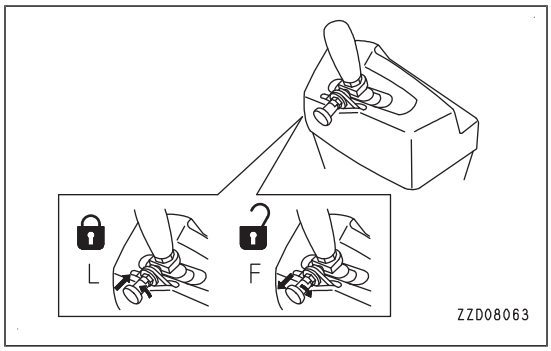
If the engine stops, the dump body is held in "HOLD" condition, regardless of the position of the dump lever.

When the engine is started again, the dump body is held in HOLD condition and the dump body float caution lamp lights up.

DUMP LEVER LOCK KNOB

⚠ WARNING

When performing inspection with the dump body raised, always set the dump lever to HOLD position, lock it with the dump lever lock knob, and use the body pivot pin.



The dump lever lock knob is a locking device for the dump lever.

To set it to FREE position (F), pull the lock knob out fully, then turn it to hold it in position.

To set it to LOCK position (L), pull the lock knob out and turn it to remove it from the fixed position.

The knob is pushed into the lock hole in the dump lever by the force of the spring, and the dump lever is locked.

Check that the dump lever is securely locked.

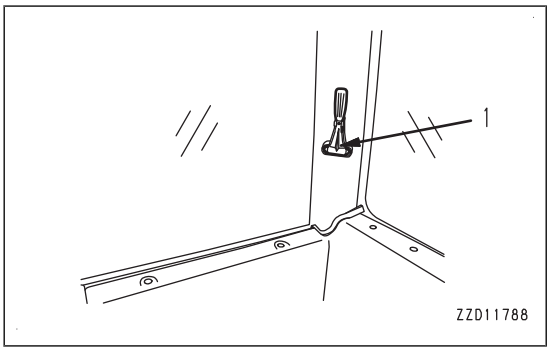
OTHER EQUIPMENT

EMERGENCY ESCAPE HAMMER

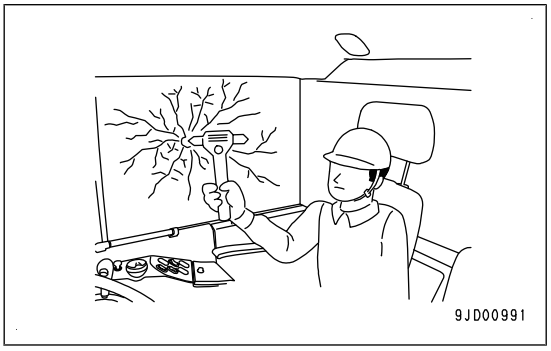
⚠ CAUTION

- **If it is necessary to break the window glass with the hammer, be extremely careful not to get injured with scattered pieces of broken glass.**
- **To prevent injury, remove the broken pieces of glass remaining in the frame before escaping through the window. Be careful also not to slip on the broken pieces of glass on the ground.**

If it should become impossible to open the cab door for any reason, and it is necessary to make an emergency escape from the operator's compartment, use hammer (1) to escape.



To escape from the operator's cab, use hammer (1) to break the glass and escape through the window.

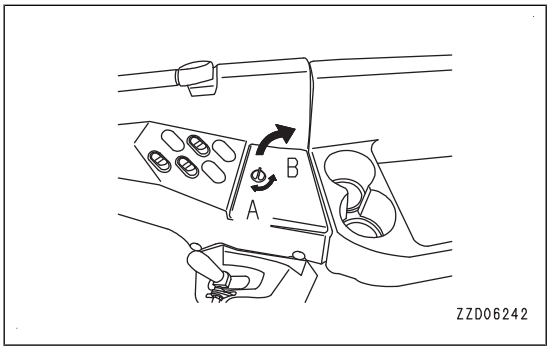


DRINK BOX

The drink box is provided on the right side of the operator's seat to store drinks.

Hot or cold air blows into the box according to the setting of the air conditioner.

Turn the knob counterclockwise and pull the cover up and open it.



Position (A)

Close (Lock)

Position (B)

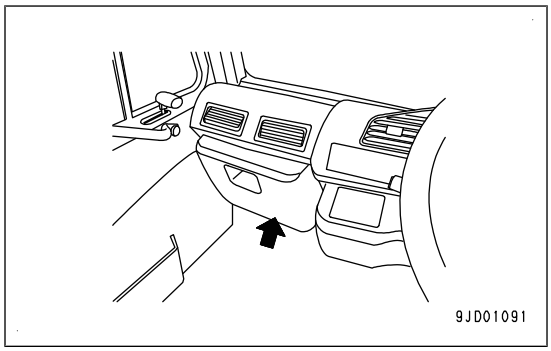
Open (Unlock)

When closing the cover, lock it by turning the knob clockwise while pressing the cover.

MAGAZINE BOX

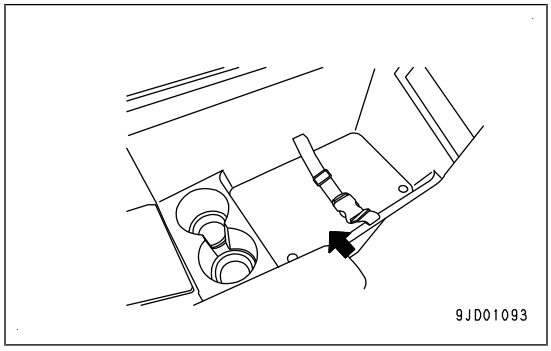
The magazine box is provided on the front left side of operator's seat for storing an A4-size binder and such.

Do not put in heavy things such as tools.



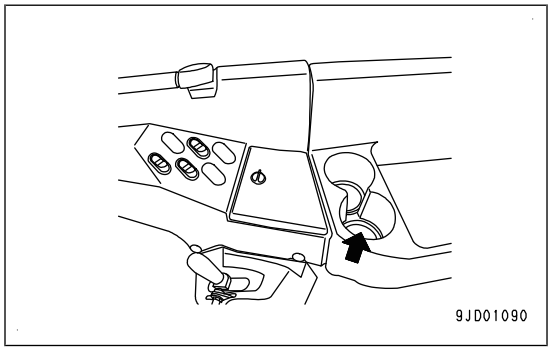
HANDY TRAY

The handy tray is provided in the rear right of the operator seat.



CUP HOLDER

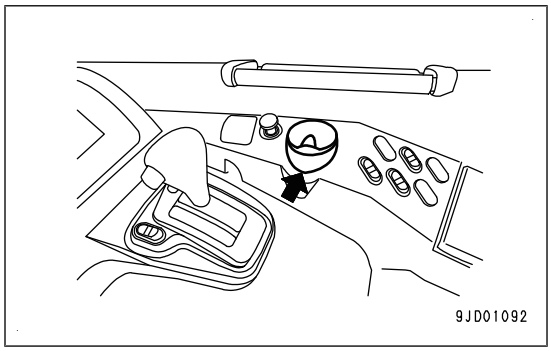
The cup holder (2 pieces) are provided on the rear side of the drink box.



ASHTRAY

The ashtray is provided on the top of the console box on the right side of the operator seat.

Always put out your cigarette before putting it in the ashtray and be sure to close the lid.

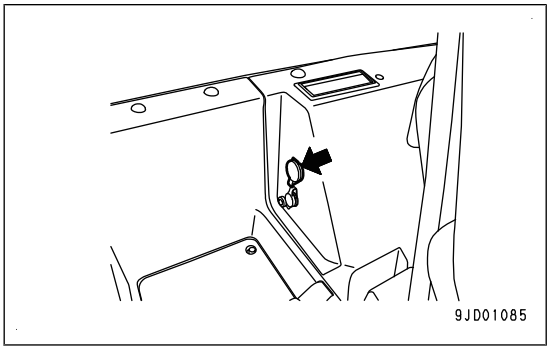


POWER SUPPLY OUTLET

12V POWER SOURCE

The outlet for 12 V power is provided in the rear right side of the operator seat.

Capacity of this power supply is 60 W (12 V x 5 A).

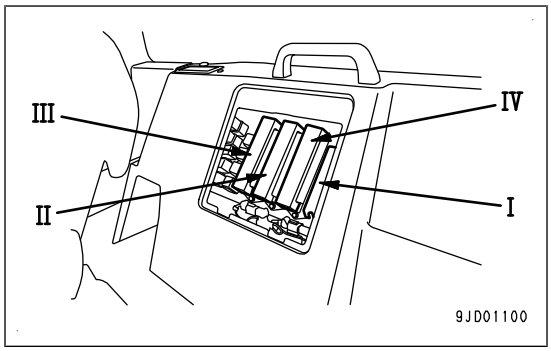


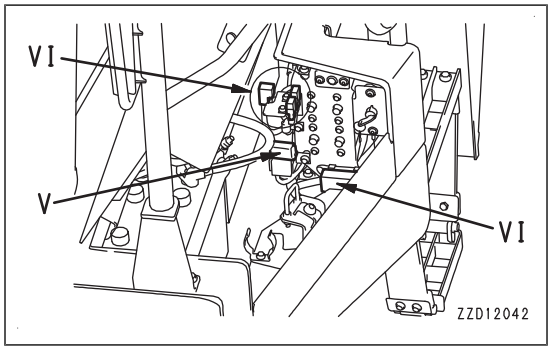
FUSE

NOTICE

Before replacing a fuse, be sure to turn the starting switch to OFF position, then turn the battery disconnect switch to OFF position.

- The fuses protect the electrical component and wiring from burning out.
- If a fuse is corroded and coated with white powder, or there is any play between the fuse and fuse holder, replace the fuse.
- When replacing the fuse, always use a fuse of the same capacity and type.

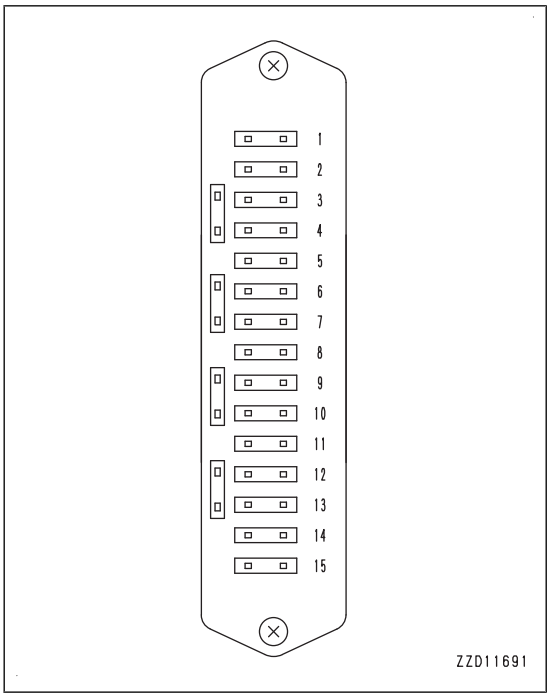




FUSE CAPACITIES AND CIRCUIT NAMES

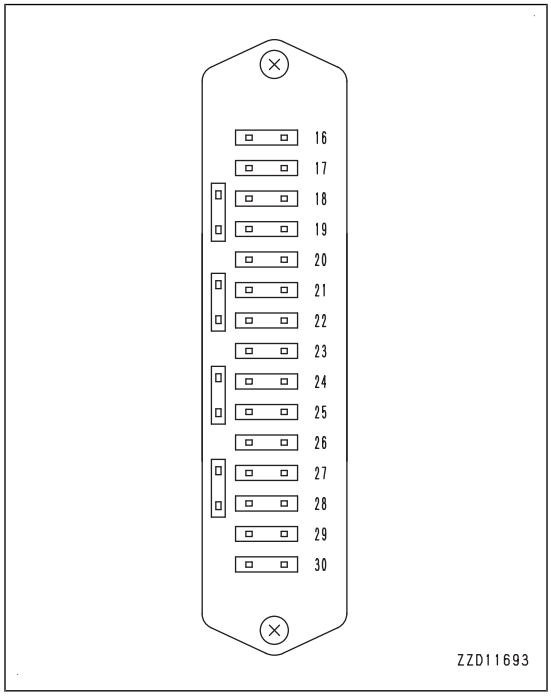
Fuse box I (BT1)

No.	Capacity	Name of circuit
(1)	15 A	Retarder controller
(2)	10 A	Automatic secondary steering
(3)	10 A	3rd Party
(4)	5 A	Switch panel
(5)	5 A	Shift lever, personal code relay
(6)	10 A	Preheater relay
(7)	20 A	Air conditioner (blower motor)
(8)	10 A	Air conditioner (compressor clutch)
(9)	10 A	Heated wire mirror (right) (option)
(10)	10 A	Heated wire mirror (left) (option)
(11)	20 A	DEF heater (continuous power supply)
(12)	10 A	DEF pump (continuous power supply)
(13)	10 A	Smart sensor 1 (continuous power supply)
(14)	20 A	Smart sensor 2 (continuous power supply)
(15)	10 A	3rd Party (continuous power supply)



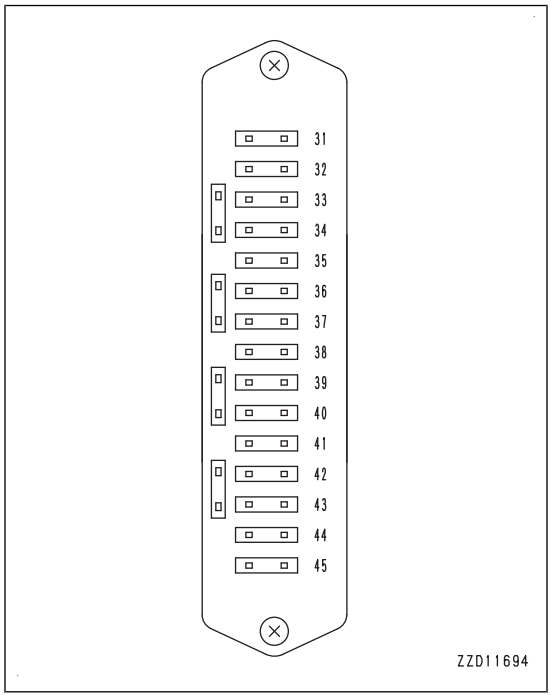
Fuse box II (BT2)

No.	Capacity	Name of circuit
(16)	5 A	Air conditioner (continuous power supply)
(17)	15 A	Terminal B
(18)	15 A	Transmission controller
(19)	5 A	Retarder controller (continuous power supply)
(20)	10 A	Machine monitor controller (continuous power supply)
(21)	10 A	GW controller (continuous power supply)
(22)	10 A	Payload meter (option)
(23)	10 A	Download (continuous power supply)
(24)	5 A	Radio (continuous power supply)
(25)	10 A	Hazard
(26)	5 A	Room lamp 1
(27)	15 A	Horn
(28)	-	-
(29)	5 A	Rearview monitor
(30)	20 A	Spare (continuous power supply)



Fuse box III (BT3)

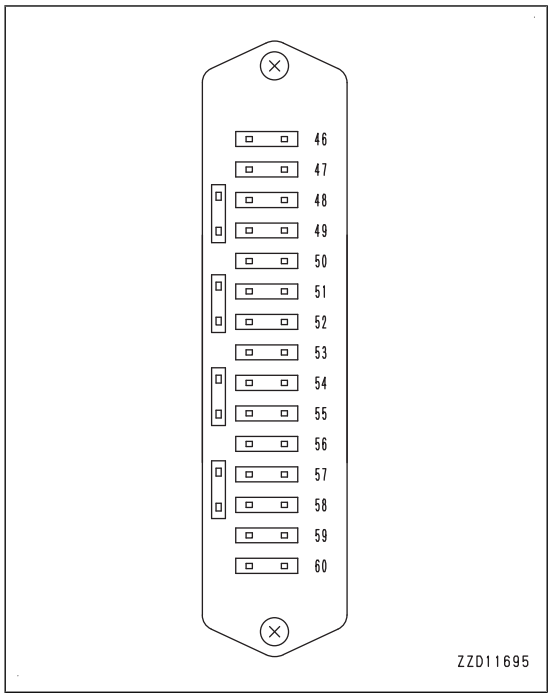
No.	Capacity	Name of circuit
(31)	15 A	Headlamp (high beam)
(32)	15 A	Headlamp (low beam)
(33)	10 A	Clearance lamp
(34)	10 A	Stop lamp
(35)	15 A	Fog lamp (option)
(36)	10 A	Radio
(37)	10 A	Turn signal lamp
(38)	20 A	Air suspension seat
(39)	15 A	Backup lamp, backup buzzer
(40)	10 A	Room lamp 2, door solenoid
(41)	15 A	Working lamp
(42)	15 A	Side lamp
(43)	20 A	Rear glass heater
(44)	30 A	Heated wire mirror power supply (option)



No.	Capacity	Name of circuit
(45)	20 A	Spare

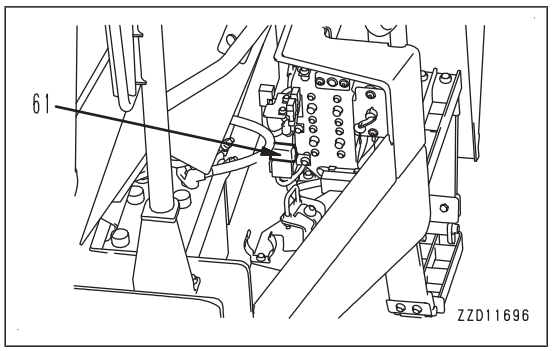
Fuse box IV (BT4)

No.	Capacity	Name of circuit
(46)	20 A	Power window
(47)	20 A	Front wiper
(48)	10 A	Rear wiper
(49)	20 A	DC converter
(50)	10 A	Revolving lamp
(51)	10 A	Payload meter external pilot lamp
(52)	5 A	Heated wire mirror switch (option)
(53)	5 A	Controller (ACC signal)
(54)	5 A	Air conditioner (ACC signal)
(55)	10 A	Download (ACC signal)
(56)	10 A	Parking brake
(57)	30 A	Engine controller
(58)	10 A	Manual secondary steering
(59)	5 A	System operating lamp
(60)	10 A	Cab power tilt (option)



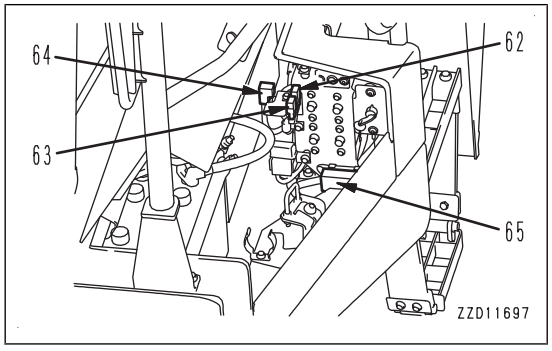
Fuse box V (in battery case)

No.	Capacity	Name of circuit
(61)	120 A	Power supply for engine heater



Fuse box VI (in battery case)

No.	Capacity	Name of circuit
(62)	15 A	Power supply for secondary steering
(63)	15 A	Power supply for fuel feed pump (continuous power supply)
(64)	65 A	Power supply for urea SCR system



No.	Capacity	Name of circuit
(65)	200 A	Cab power tilt main power supply (continuous power supply, option)

Precautions when electrical component is changed

⚠ CAUTION

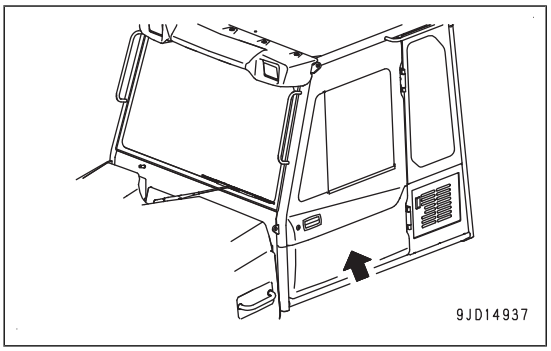
If the electrical equipment system is changed, problems can occur in the machine control. Do not change the electrical system.

If you want to change the electrical system, consult your Komatsu distributor.

OPEN AND CLOSE CAB DOOR

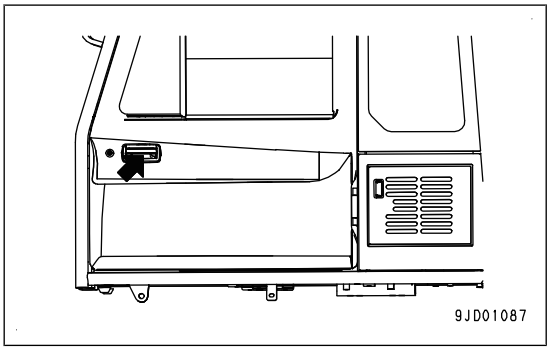
⚠ CAUTION

- **Make sure that the cab door is locked.**
- **Always place the machine on a level ground when opening or closing the door.**
- **Avoid opening or closing the door on a slope, since there is a danger that the operating effort may suddenly change.**
- **Hold the door handle and knob whenever opening or closing the door.**
- **Be careful not to get your hands caught between the front pillar or center pillar.**
- **When there is anyone inside the cab, always call out a warning before opening or closing the door.**



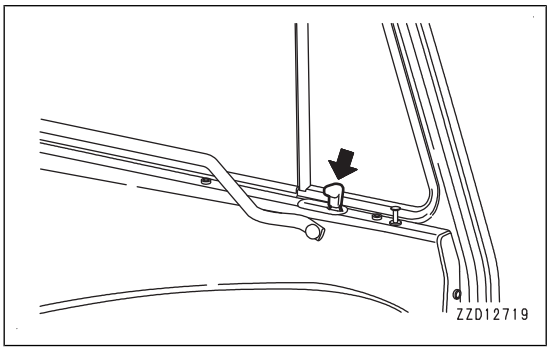
CAB DOOR HANDLE

While the cab door handle is not locked with the key, pull door handle, and the door opens to the full open position.



OPEN KNOB FOR CAB DOOR

Pull the open knob for the cab door, and the door opens to the full open position.



CAB DOOR INNER LOCK

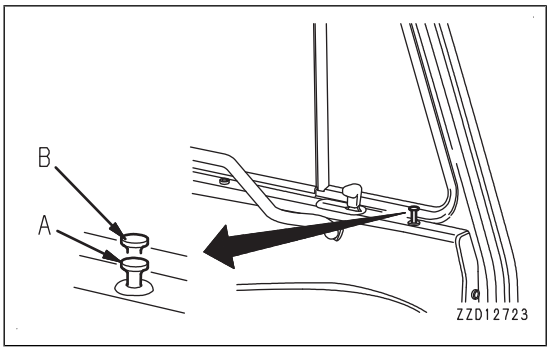
When the cab door inner lock is pressed, the door is locked.

Position (A):

Lock

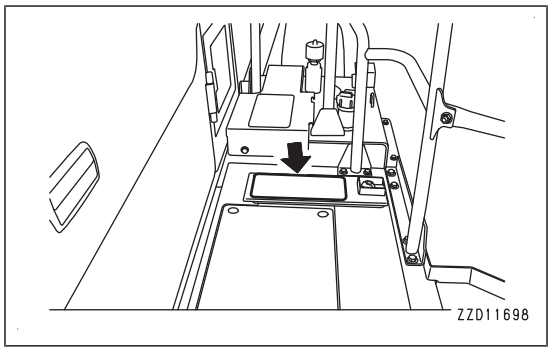
Position (B):

Canceled



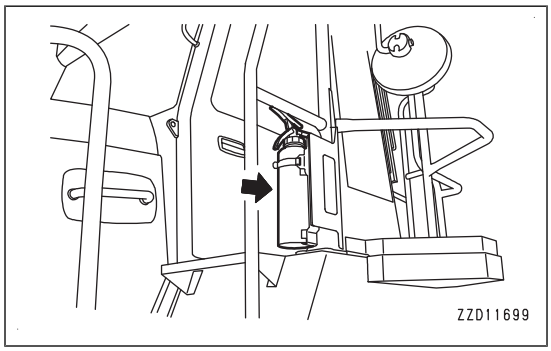
TOOL BOX

The toolbox is stored in the front side of the hydraulic tank on the left side of the machine.



FIRE EXTINGUISHER

The fire extinguisher is installed to the left front of the machine.



BATTERY DISCONNECT SWITCH

⚠ CAUTION

- **Do not operate the battery disconnect switch while the engine is running.**
  The large current generated by the alternator may burn the electric parts and cause a fire.
  When operating the battery disconnect switch, always stop the engine.
- **If the battery disconnect switch is turned to OFF position, always remove the switch key.**
  If someone turns the key to ON position carelessly, this is extremely dangerous.

NOTICE

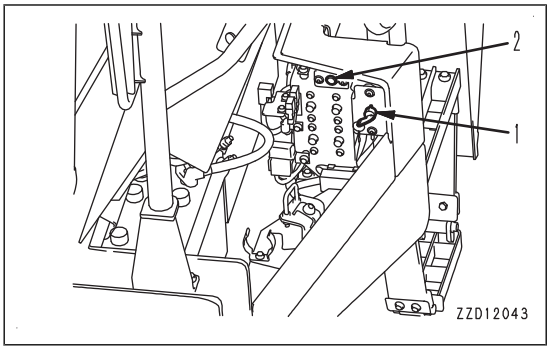
- **Keep battery disconnect switch in ON position except the following cases.**
  - **When the machine is stored for a long time (more than a month)**
  - **When repairing the electrical system**
  - **When performing electric welding**
  - **When handling the battery**
  - **When replacing a fuse**
- **Do not turn battery disconnect switch to OFF position while the system operating lamp is lit.**
  If the battery disconnect switch is turned OFF while this lamp is lit, the data in the controller may be lost.
- **If this switch is turned to OFF position, all the electrical system is cut out and the functions of KOMTRAX stop.**
  In addition, the time information of the clock and the radio tuning information may be lost.
  In this case, set the information again. For detail, see "CLOCK ADJUSTMENT" and "HANDLE RADIO".

Battery disconnect switch (1) is in the battery box on the left side of the machine.

Battery disconnect switch (1) is used to cut out the electricity from the battery.

REMARK

Operate this switch while system operating lamp (2) is OFF.



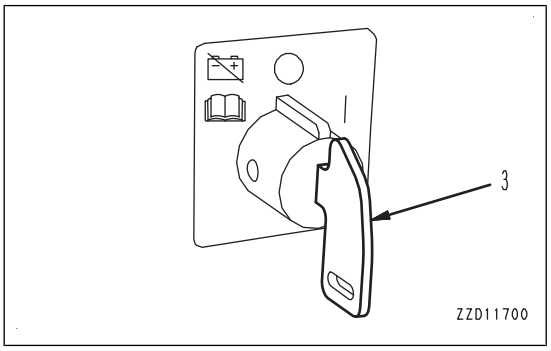
(O) OFF position

Switch key (3) can be pulled out (and inserted) and the current from the battery is cut out.

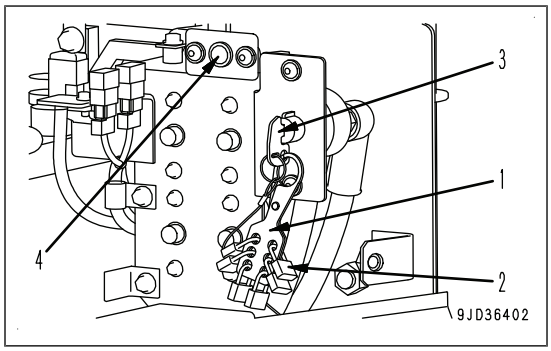
(I) ON position

The current from the battery flows into the circuit.

Before starting the machine, be sure to set the switch to ON position.



OPERATE BATTERY DISCONNECT SWITCH

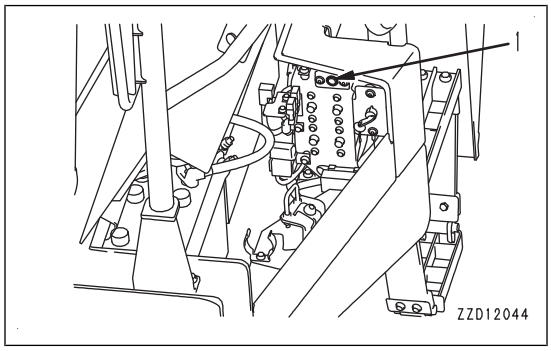


Battery disconnect switch can be locked out by using the hasp (1) and padlock (2) at the position where the switch key (3) is in OFF.

NOTICE

- **Prepare an appropriate padlock (2) by yourself in advance.**
- **Purchase a hasp (1) of part number (17A-54–55280), or procure it locally.**
- **Be sure to check the following before performing the lockout. Lockout the battery disconnect switch by using the hasp (1) and padlock (2). Check that the switch key does not move nor the system operating lamp (4) does not light up in the lockout condition.**

SYSTEM OPERATING LAMP



System operating lamp (1) indicates that the controller mounted on the machine is turned ON.

System operating lamp (1) lights up in green when the controller is turned ON and goes out in 1 to 2 minutes after the power for the machine is turned OFF.

Before operating the battery disconnect switch, check that system operating lamp (1) is turned OFF.

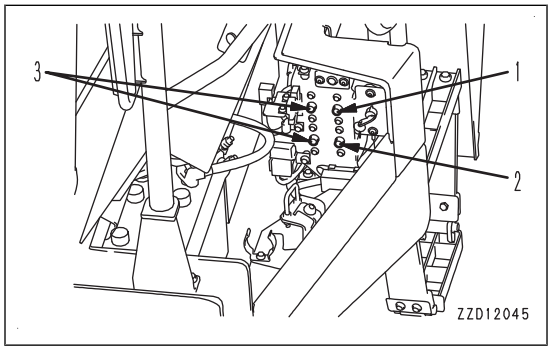
NOTICE

If the battery disconnect switch is turned OFF while the system operating lamp is lit, the data in the controller may be lost.

REMARK

- Even if the starting switch is in OFF position, the controller may operate. The system operating lamp lights up at this time, but it is not a failure.
- After the starting switch has been turned OFF, the system operating lamp may stay lit for a long time. In such case, consult your Komatsu distributor.
- The system operating lamp may look slightly luminous in the dark after it is turned off. It is due to the minute leakage of current and not an abnormal phenomenon.

CIRCUIT BREAKER



When the circuit breaker operates, it can be reset by pushing in the reset button.

If the reset button pops up soon after it is pushed in, there may be a short circuit in the electric circuit. In such case, ask your Komatsu distributor for repair.

(1) For primary power supply (40 A)

(2) For primary power supply (direct) and engine controller (30 A)

(3) For secondary power supply (accessory power) (80 A)

(105 A for the machine equipped with large capacity alternator (if equipped))

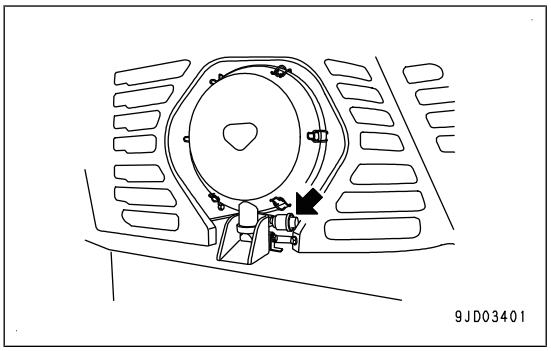
DUST INDICATOR

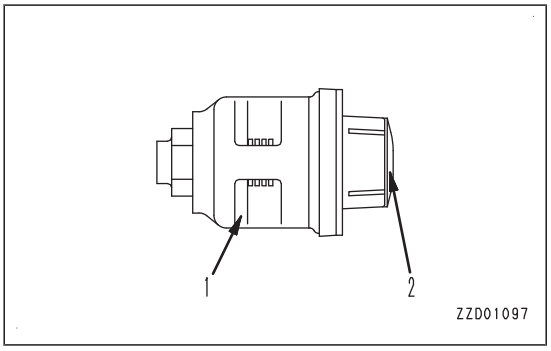
This device indicates clogging of the air cleaner.

Depending on the degree of clogging of the element, red line (1) appears in the transparent portion.

If red line (1) indicates 7.5 kPa {0.076 kgf/cm^2}, clean the element immediately.

After cleaning, press the top part (2) of the indicator, and the red line (1) returns to its original position.





ARTICULATION LOCK

⚠ WARNING

If the machine is transported or lifted without applying the articulation lock, the machine may suddenly bend.
This may cause serious personal injury or death in the surrounding area.

- **When transporting or raising the machine, always apply the articulation lock.**
- **Apply the articulation lock if necessary when performing maintenance.**

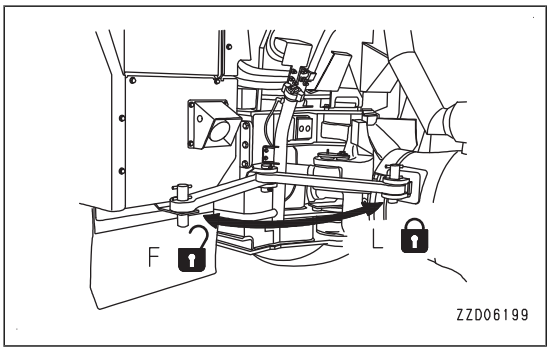
The articulation lock is a device to lock the front frame and rear frame to prevent the machine from articulating.

LOCK position (L)

Always set the lock to this position before starting transportation or lifting operation. Set the lock to this position if necessary when performing maintenance.

FREE position (F)

Always set the lock to this position when traveling.



BODY PIVOT PINS

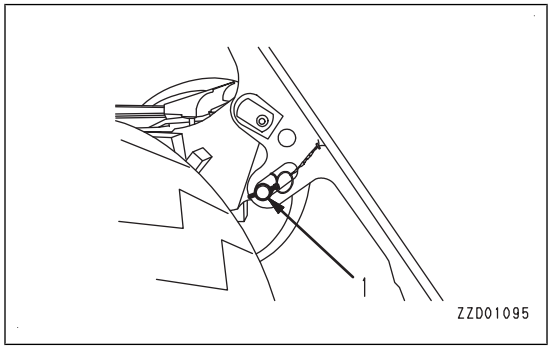
⚠ WARNING

When performing inspection of the machine with the dump body raised, always set the dump lever to HOLD position, lock with the dump lever lock knob, then use the body pivot pin.

The body pivot pin is a safety device for the dump body. Use it when performing inspection and maintenance with the dump body raised.

Raise the dump body fully, insert body pivot pins (1).

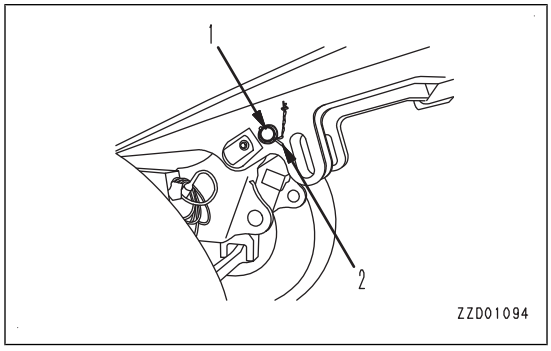
Always insert the body pivot pin on both sides.



STORAGE FOR BODY PIVOT PIN

The body pivot pin is stowed under the rear portion of the body.

Insert body pivot pin (1), then insert lock pin (2) to stow the body pivot pin.

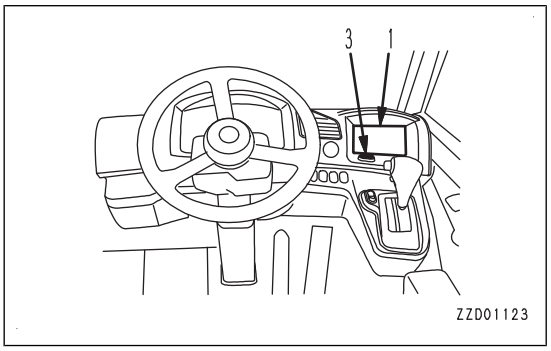


HANDLE REAR VIEW MONITOR

⚠ WARNING

- **Never perform the switch operation while traveling.**
  If you do so, there is the fear that you may make an error in the truck operation, or neglect to watch the hauling road ahead for safety, and this may lead to serious personal injury or death.
- **The rear view monitor is an supporting aid for checking obstacles in the rear or surroundings.**
  An image displayed on the monitor is limited. So when traveling in reverse, do not rely solely on the monitor, but be sure to make a visual check for safety.
  Never rely solely on the monitor when traveling in reverse.
- **An image on the rear view monitor does not show an actual distance, so drive the machine slowly, when backing it up.**
- **The distortion different from the actual state appears on an image on the rear view monitor.**
  So, look at the center of the screen as a reference.

Actuate the rearview monitor (1) when driving the machine in reverse so that it can be used to assist a visual check to ensure safety.

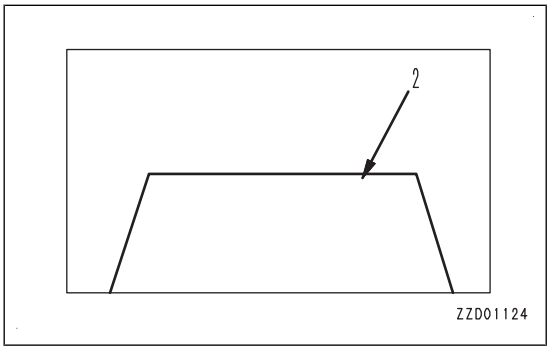


Reference line (2) on the rearview monitor can be used to check the approximate width and rear end position of the machine.

Reference line is set for the machine with no load on the flat ground.

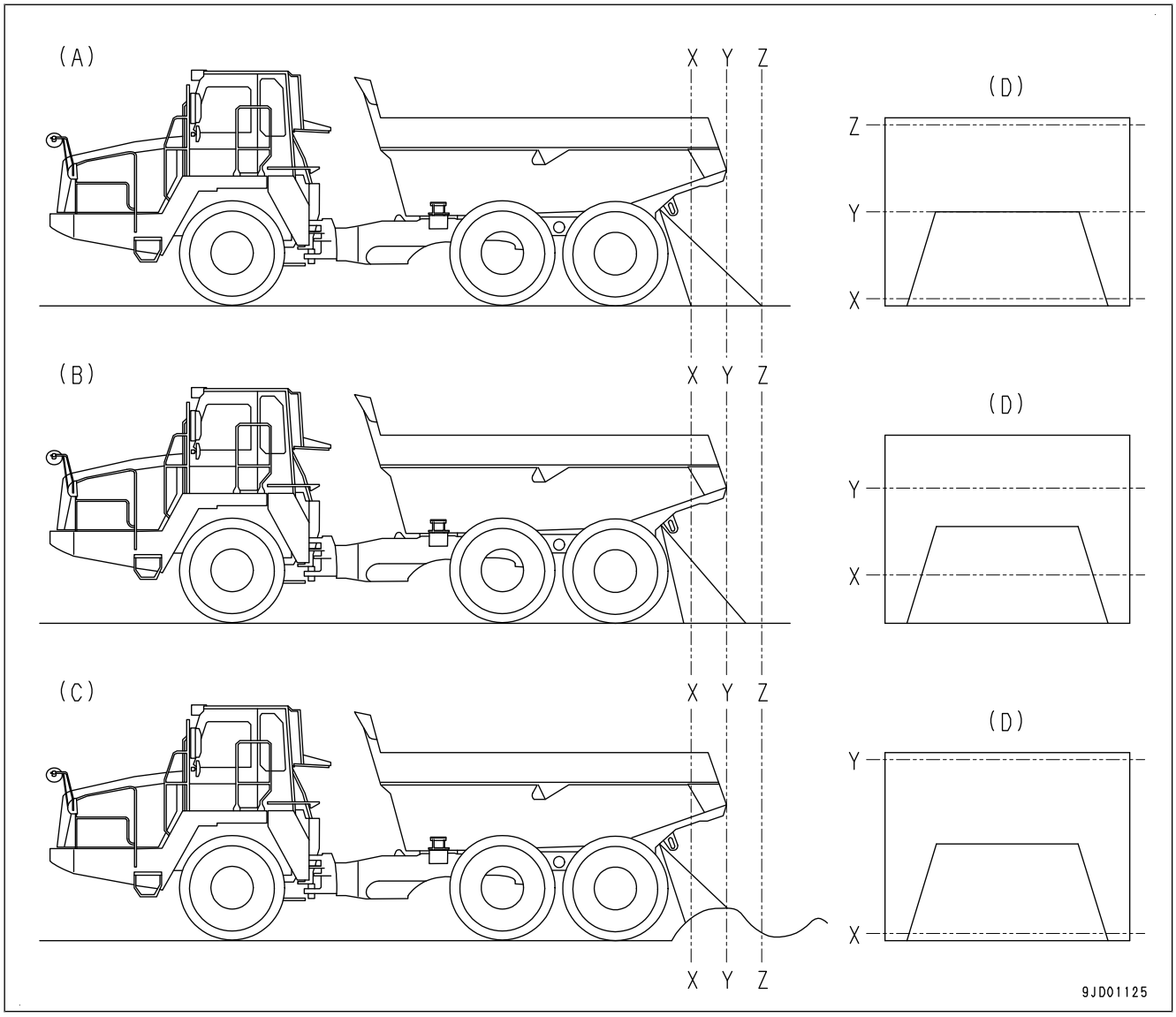
When the machine is loaded or the road surface is uneven, the reference line deviates from the actual machine position. In that case, adjustment is necessary for the reference line and of the rearview monitor angle.

For the other settings of the rearview monitor and setting of the reference line, see “REAR VIEW MONITOR SETTING”.



REMARK

- The screen may be hard to see in the dark place at night, but it is not a trouble.
- The guide line does not synchronize with the steering angle.
  The guide line does not indicate the actual moving direction or travel path.



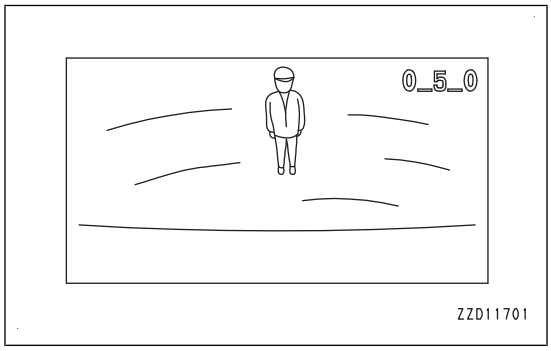
(A) When unloaded
(B) When loaded
(C) When road surface is uneven
(D) Display on rearview monitor

SELF-CHECK FUNCTION FOR REAR VIEW MONITOR

When the starting switch is turned to ON position, the rearview monitor starts and the camera image is displayed for 5 seconds, regardless of the display mode (reverse travel interlock, constant display) of the rearview monitor or the position of the gear shift lever.

During this period, the version No. of the rearview monitor is displayed at the top right of the rearview monitor.

After the camera image is displayed on the rearview monitor for 5 seconds, the rearview monitor displays the camera image according to the display mode (reverse travel interlock, constant display) and the gear shift lever position.



If the rearview monitor or the camera does not work, ask your Komatsu distributor for repair since it has a failure or open circuit in electric wiring.

PRECAUTIONS FOR USING REAR VIEW MONITOR

⚠ WARNING

- **Do not disassemble or modify the rearview monitor.**
  There is a danger of electric shock or fire.
- **Do not open the back cover of the rearview monitor.**
  There is a danger of electric shock, as high voltage power is conducted internally.
- **Do not use the rearview monitor while it is broken.**
  There is a danger of electric shock or fire, should it be used in spite of a defect. In that case, ask your Komatsu distributor for repair or replacement.
- **If foreign materials enter into the rearview monitor, or if the rearview monitor gets wet, or if smoke comes out of it or it gives a bad smell, stop using it immediately.**
  It poses a big danger to use the monitor when any such abnormality exists. In that case, consult your Komatsu distributor.
- **When replacing a fuse, be sure to use one with the specified capacity of 5 A.**

  Should a fuse with a higher- than- specified capacity be used, it can cause fire.

- As a general rule, the rear view monitor should be replaced after a total usage time of approximately 3000 hours (or approximately 3 years), though this may differ according to usage conditions.
- When cleaning the rearview monitor, use dry soft cloth or wet cloth after having well wrung the water out.
  If it is very dirty, use neutral detergent.
  Do not use thinner or alcohol.
- Sometimes an image on the rearview monitor display is blurred due to the camera lens being smeared.
  In that case, clean the camera lens with dry soft cloth or wet cloth after having well wrung the water out.

HANDLE Komatsu Diesel Particulate Filter (KDPF)

⚠ CAUTION

- **In this machine, the exhaust gas temperature during the aftertreatment devices regeneration will be higher than that of the previous models, and the temperature possibly remains high even after the regeneration is finished.**
  Stay away from the exhaust pipe outlet to prevent burn injury.
  Do not let the flammable materials come near the exhaust pipe outlet to prevent a fire.
- **When there are thatched houses, dry leaves or pieces of paper near the job site, set the system to the regeneration disable. It is because to prevent the fire hazards caused by highly heated exhaust gas occurred during the aftertreatment devices regeneration.**
- **The dump body of the body heating specification machine becomes hot during the aftertreatment devices regeneration. Stay away from the dump body to prevent burn injury.**
  If the loads that follow are on the machine, a fire can occur.
  - **Objects which contain many flammable industrial wastes**
  - **Objects which mainly contain flammable materials like dry leaves, chips, pieces of paper, and coal dusts**

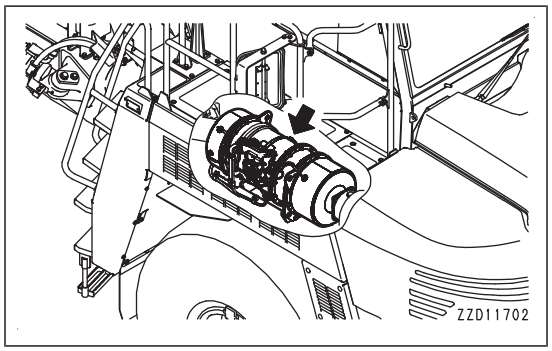
  When you load the flammable materials on the machine, change the machine specification to the specification without dump body heating.
- **Do not go away from the operator's seat during the aftertreatment devices regeneration.**

KDPF is a device to capture soot in the exhaust gas to clean the exhaust gas.

If soot is accumulated to a certain level in the filter, a purification process to burn the soot is done automatically to keep the filtering performance of KDPF high.

This purification treatment is called “regeneration”.

If operations which lower the purification function of KDPF continues for long hours, the regeneration is done to protect the KDPF system, regardless of the quantity of the accumulated soot.

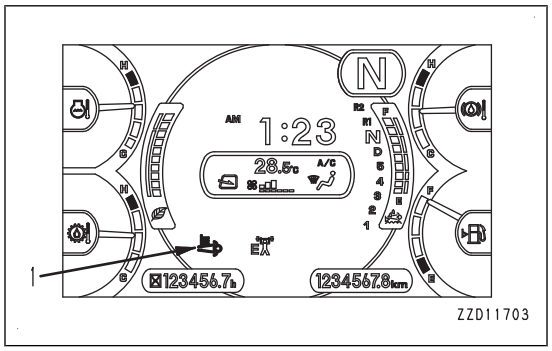


NOTICE

During the KDPF regeneration, the aftertreatment devices regeneration display (1) lights up on the machine monitor and the idle speed is set to rather high regardless of ON or OFF of AISS LOW switch.
After the automatic regeneration is finished, the aftertreatment devices regeneration display (1) goes off, and the idle speed goes back to the level in response to the AISS LOW switch.

REMARK

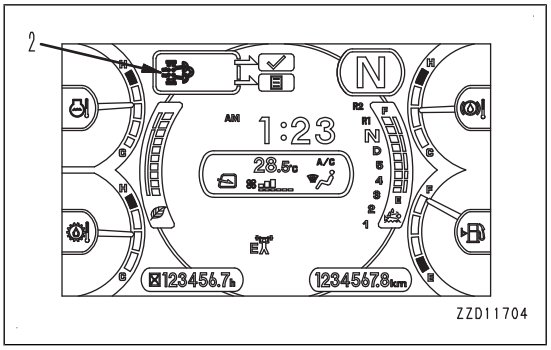
- Even if the aftertreatment devices regeneration display (1) lights up, you need not stop the machine, and you can continue the work as long as the KDPF soot accumulation caution lamp (2) does not light up.
- You can check the accumulation amount of soot by soot accumulation level (3) on “Aftertreatment Devices Regeneration” screen.
  Operate the menu switch on the standard screen to show “Aftertreatment Devices Regeneration” screen.
- Automatic regeneration against accumulation of soot starts when the soot accumulation level increases “3” or above, and stops a while after the soot accumulation level decreases to “0”.



The KDPF regeneration is done automatically, but the accumulated soot is not be burned sufficiently in some cases, and the filtering function is not improved in certain operating conditions.

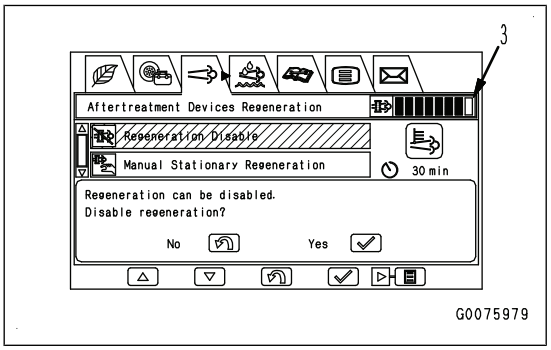
In that case, KDPF soot accumulation caution lamp (2) lights up. If this lamp lights up, stop the machine in a safe area and do the manual stationary regeneration.

There are 2 types of alarm display which require the manual stationary regeneration in response to the level of urgency.



NOTICE

If the work is continued while the KDPF soot accumulation caution lamp (2) stays lit in red, KDPF or the engine can have trouble.
If the KDPF soot accumulation caution lamp (2) is shown, be sure to do the manual stationary regeneration.

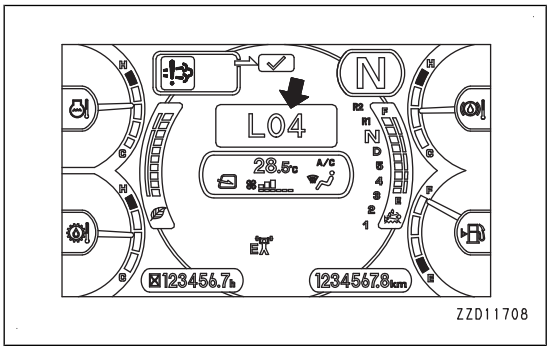


REMARK

- When the gear shift lever is set to the NEUTRAL position (N), and the parking brake switch is set to “PARKING” position, the manual stationary regeneration is possibly started automatically to protect the KDPF.
- If the KDPF soot accumulation caution lamp (2) lights up in red, to protect the engine and KDPF system, the maximum engine output power and maximum engine speed will be limited.

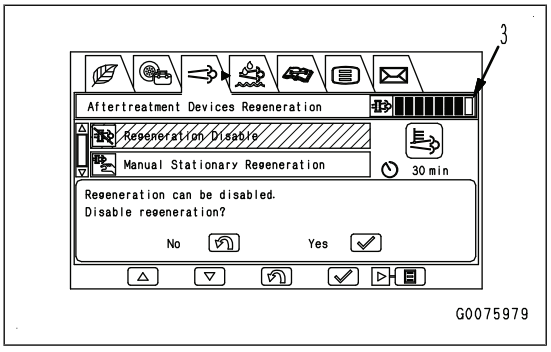
NOTICE

If the work is continued without the manual stationary regeneration, and the quantity of soot exceeds the allowable limit, action level “L04” lights up.
In this case, the machine needs to be repaired by your Komatsu distributor.
To protect the engine and KDPF system, the maximum engine output power and maximum engine speed will be limited.



REMARK

- You can check the soot accumulation level (3) with the “Aftertreatment Devices Regeneration” screen. Push the menu switch on the standard screen to show the “Aftertreatment Devices Regeneration” screen of the user menu.
- The soot accumulation quantity decreases in some cases without the regeneration in response to the operating condition. It is because the high-performance catalyst and high-temperature exhaust heat burns the soot in the filter of KDPF.

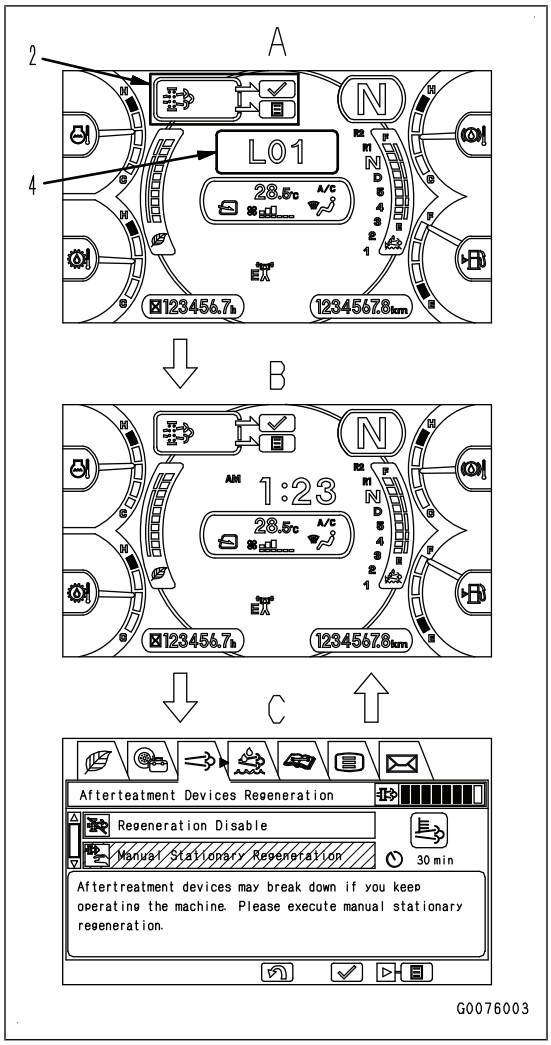


- Even when the soot accumulation level is low, the automatic regeneration is done and the manual stationary regeneration is requested to protect the system in some cases.
  If you run the engine at idle continually, the regeneration is done frequently, but this is not a problem.
- Even just after the regeneration is completed, the soot accumulation level does not become “0”. This is caused by the accumulated non-flammable material in the exhaust gas, and this is not a problem.
- It is necessary to clean or replace the filter at the specified interval since non-flammable material which cannot be burned by the regeneration is accumulated in the KDPF. Consult your Komatsu distributor to clean the inside of KDPF.

- The engine speed or engine sound changes during or after the regeneration. This is caused by the control for better regeneration, and this is not a problem.
- The smell of the exhaust gas is different from that of the conventional diesel engine because of the exhaust gas filtering function.
- White smoke is discharged for a short time just after the engine is started or during the regeneration in the cold season, but this is not a problem.
- Komatsu recommends the use of Komatsu genuine engine oil for KDPF.
  If the engine oil other than Komatsu genuine oil for the KDPF is used, the cleaning interval of the KDPF filters can become short or there can be bad effects on the engine such as reduced lubrication function by deteriorated oil and it can cause machine failure.
  In addition, the regeneration interval is shortened and the fuel consumption increases in some cases.
- Ash is easy to be accumulated in KDPF when the biofuel is used. Thus, the regeneration of KDPF can possibly become more frequent if the mixing ratio of the biofuel is high.

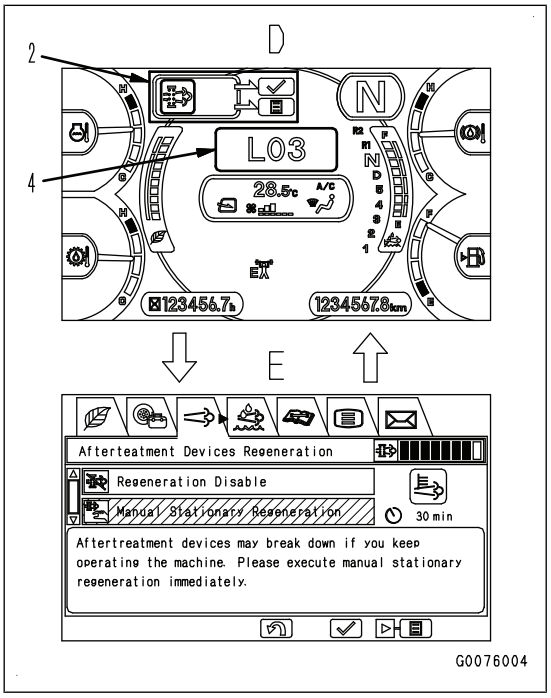
When the degree of urgency is low

- If the KDPF soot accumulation caution lamp (2) lights up in yellow (action level (4): “L01”), screen (A) is shown first.
- The action level goes off 2 seconds after and the screen changes to the standard screen (B).
- If the machine is completely stopped, the display switches to “Aftertreatment Devices Regeneration” screen (C) after 3 seconds only the first time. But if the manual stationary regeneration is not done, the display goes back to the standard screen (B) after 30 seconds.
  Then, if the accumulated soot does not decrease, the “Aftertreatment Devices Regeneration” screen (C) is shown for 30 seconds every 2 hours.
- If the KDPF soot accumulation caution lamp (2) lights up in yellow, stop the machine in a safe area after you finish the work, and do the manual stationary regeneration.



When the degree of urgency is high

- If KDPF soot accumulation caution lamp (2) lights up in red (action level (4): “L03”), screen (D) is shown.
- If the machine is stopped fully, the screen changes to “Aftertreatment Devices Regeneration” screen (E) after 3 seconds.
  Then, “Aftertreatment Devices Regeneration” screen (E) and the standard screen (D) are automatically shown alternately in response to the machine stop, until the manual stationary regeneration is done.
- If the KDPF soot accumulation caution lamp (2) lights up in red, immediately stop the machine in a safe area and do the manual stationary regeneration.

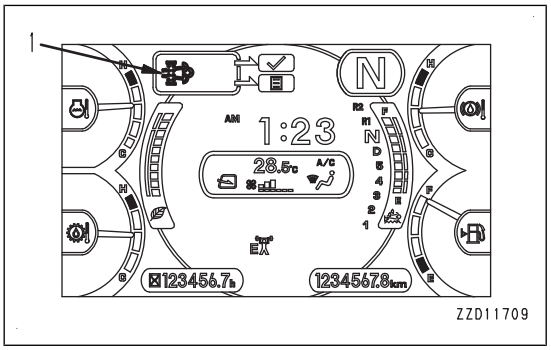


MANUAL STATIONARY REGENERATION

⚠ CAUTION

- **During the aftertreatment devices regeneration, the exhaust gas temperature can become higher than the conventional models.**
  Stay away from the exhaust pipe outlet to prevent burn injury.
  Do not let the flammable materials come near the exhaust pipe outlet to prevent a fire.
- **The dump body of the body heating specification machine becomes hot during the aftertreatment devices regeneration.**
  Stay away from the dump body to prevent burn injury.
- **Do not go away from the operator's seat during the aftertreatment devices regeneration.**

The manual stationary regeneration can be done while the KDPF soot accumulation caution lamp (1) is lit.

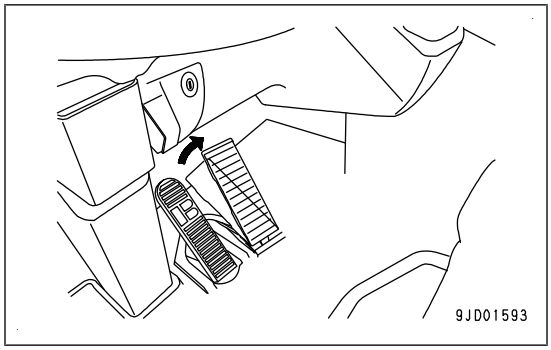


REMARK

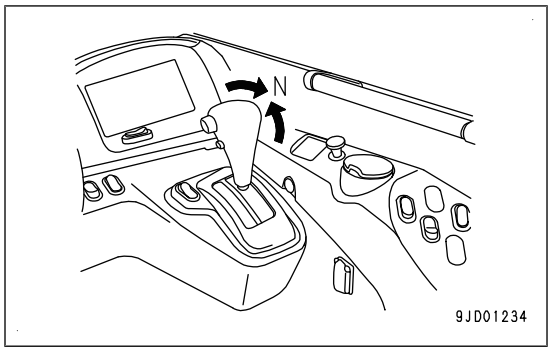
- On this machine, the manual stationary regeneration can be done when soot accumulation level is “1” or more.
- If a failure of action level “L02” or more occurs or the fuel level caution lamp is lit, it cannot be done.

1. Move the machine to a safe place and stop it while the engine is running.
2. Check that there is no person or flammable material around the machine (espcially in the direction of the exhaust gas flow).

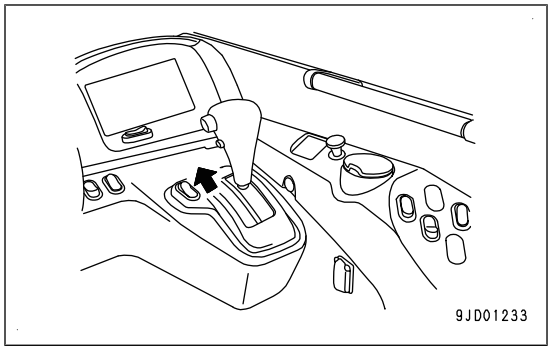
3. Release the accelerator pedal.



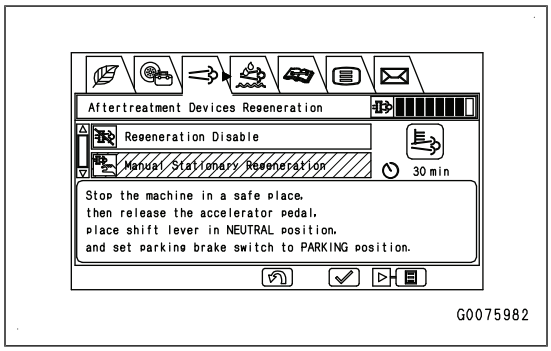
4. Set the gear shift lever to the NEUTRAL position (N).



5. Set the parking brake switch to “PARKING” position to apply the parking brake.



6. Push the menu switch to show “Aftertreatment Devices Regeneration” screen.



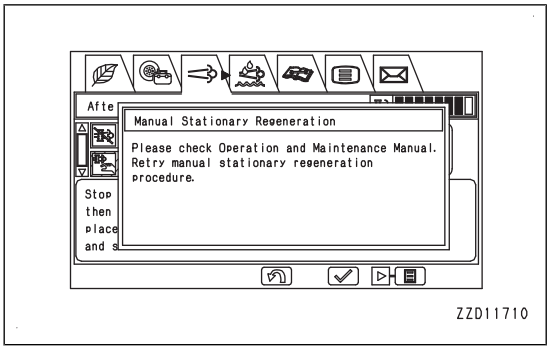
7. Select “Manual Stationary Regeneration”, check again safety of the area around the machine and make sure there is no person or flammable material, then push the ENTER switch.
If the machine needs to be moved again for the safety, move it to a safe area and do the procedure from the step 1 again.

REMARK

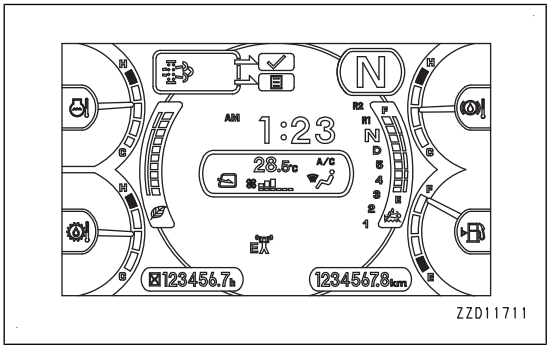
When you do the manual stationary regeneration, lower the dump body and set the fan rotation in the normal direction.
If the dump body is operated during the manual stationary regeneration, the regeneration possibly stops.

REMARK

After you push the ENTER switch in the step 7, the screen of the figure can be shown. This shows that the operations in the steps 1 to 5 were not done correctly or there is a failure other than the KDPF soot accumulation abnormality. Make sure that the engine is running, the accelerator pedal is not pushed, the gear shift lever is turned to the NEUTRAL position (N), and the parking brake switch is in "PARKING" position, then do the procedure again from the step 7.
Even if the manual stationary regeneration cannot be done, go back to the standard screen, push the ENTER switch to check the contents of other occurred troubles, stop the work, and do the inspection and maintenance.



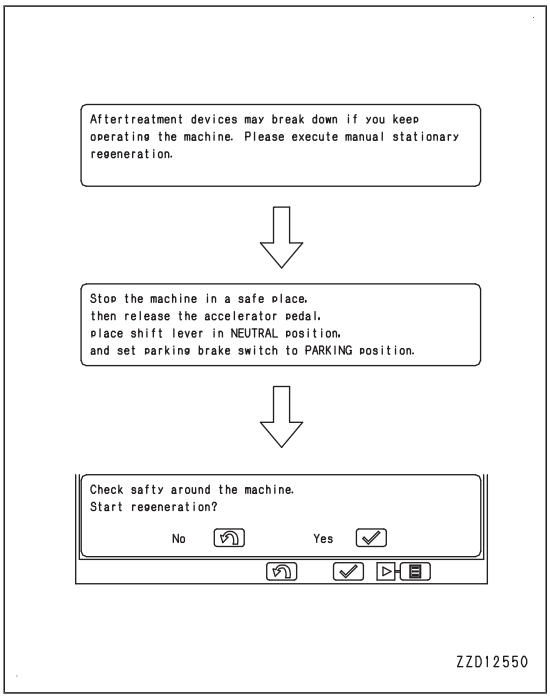
ZZD11710



ZZD11711

REMARK

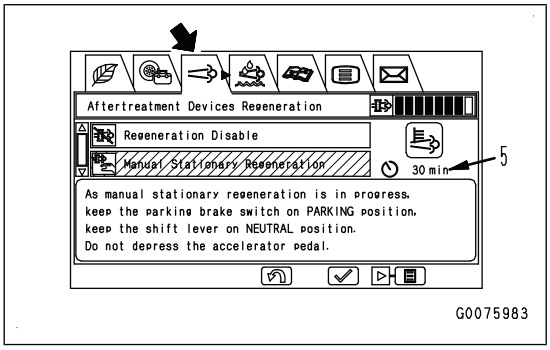
The explanation of the manual stationary regeneration is shown in 3 parts on the machine monitor. When you push the ENTER switch, the regeneration is started immediately regardless of which part is shown.
When you push the RETURN switch, the display goes back to the standard screen.
If no machine monitor switch is operated, the explanation of the manual stationary regeneration is shown for 30 seconds and the screen goes back to the standard screen.
At this time, if you want to see the explanation of the manual stationary regeneration again, push the menu switch on the standard screen to show "Aftertreatment Devices Regeneration" screen.



ZZD12550

REMARK

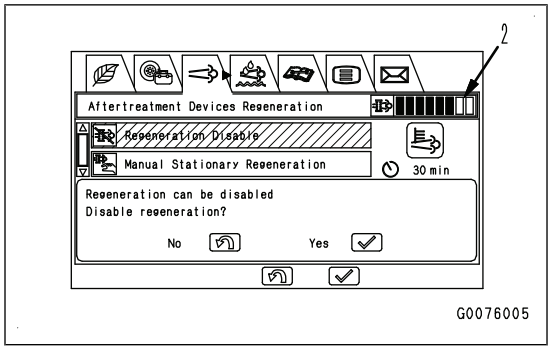
- The approximate remaining time until the manual stationary regeneration is finished is shown on (5). The remaining regeneration time (5) can be different from the actual regeneration time because the regeneration time of the manual stationary regeneration changes with the machine condition.
- The remaining regeneration time is shown when the manual stationary regeneration is possible, or during the manual stationary regeneration.
- You can change display/non-display of the remaining regeneration time. If it is necessary to change it, consult your Komatsu distributor.

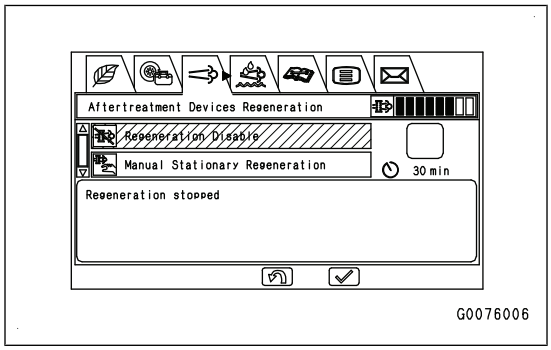


G0075983

8. This screen is shown during the manual stationary regeneration.

   It takes more than 40 minutes in some cases to complete the manual stationary regeneration. Do not operate the switches on the screen or the accelerator pedal until the regeneration is completed and the standard screen is shown again.





   REMARK

   During the manual stationary regeneration, idle speed is set rather high.

   - You can check the progress of the manual stationary regeneration being done when soot is accumulated by the number of lighting lamps of the soot accumulation level (2).
     The manual stationary regeneration starts at the soot accumulation level “4” or higher, and it is completed when all the level lamps go off.
   - The time required for the manual stationary regeneration is different by the soot accumulation level or the ambient temperature when it is started. If the regeneration starts at soot accumulation level “6” or higher, it possibly takes approximately 2 hours to finish.
   - The manual stationary regeneration for protection of the system can start in some cases even when the soot accumulation level is “0” to “3”.
     In this case, the soot accumulation level does not decrease, but this is not a failure.
     Current status is not shown on the machine monitor, but it will be completed in approximately 10 minutes.
   - If the accelerator pedal, gear shift lever, or parking brake switch is operated during the manual stationary regeneration, the regeneration is stopped automatically.
     Release the accelerator pedal, turn the gear shift lever back to the NEUTRAL position (N), turn the parking brake back to “PARKING” position, and then do the procedure again from the step 7.
   - If the machine needs to be moved during the manual stationary regeneration, stop the regeneration temporarily, and move the machine. See the procedures below to stop the aftertreatment devices regeneration and to cancel the aftertreatment devices regeneration disable.
     When you start the manual stationary regeneration again, keep the safety of the machine and around it, then cancel the regeneration disable.

9. After the manual stationary regeneration is completed, the screen automatically goes back to the standard screen.

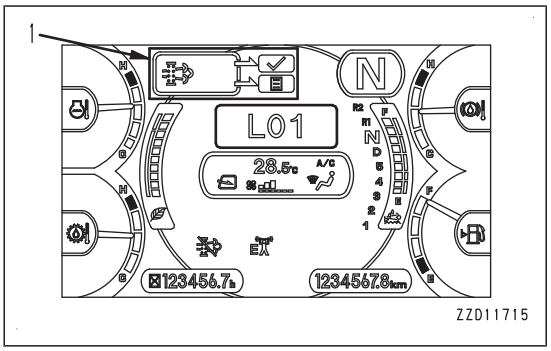
PROCEDURE FOR AFTERTREATMENT DEVICES REGENERATION DISABLE SETTING

If there is combustible material around the machine and the active regeneration that increases the exhaust temperature must not be performed, the automatic active aftertreatment devices regeneration can be disabled.

Also, the regeneration in progress can be stopped.

NOTICE

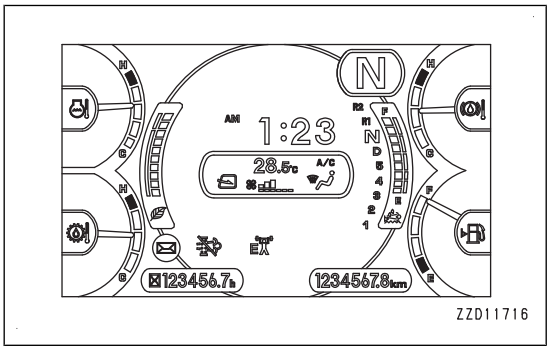
Even if the regeneration is disabled, KDPF soot accumulation caution lamp (1) lights up if soot is accumulated and the manual stationary regeneration is required.
If KDPF soot accumulation caution lamp lights up, move the machine to a safe place and perform manual stationary regeneration.
If the operation is continued without performing the manual stationary regeneration, it may cause the failure of KDPF or the engine.



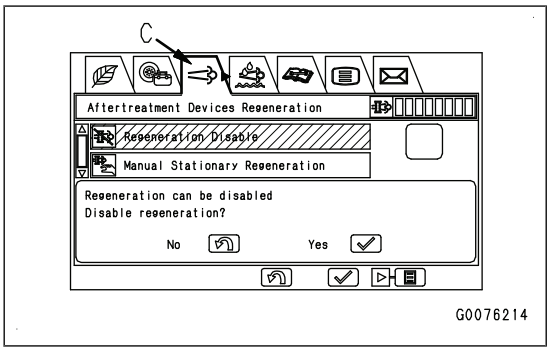
WHILE REGENERATION IS NOT BEING PERFORMED: SETTING PROCEDURE FOR REGENERATION DISABLE

(When the aftertreatment devices regeneration display is not lit on the standard screen)

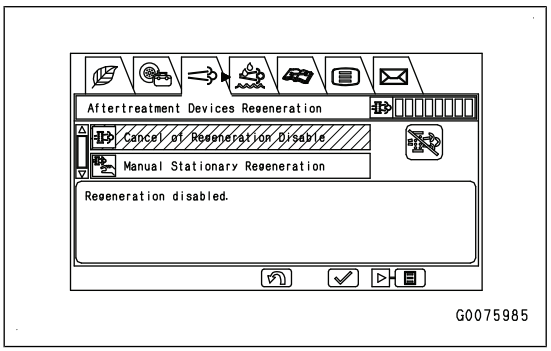
1. Press the menu switch on the standard screen.



2. Operate the menu switch to select “Aftertreatment Devices Regeneration” menu (C) and display the “Aftertreatment Devices Regeneration” screen.

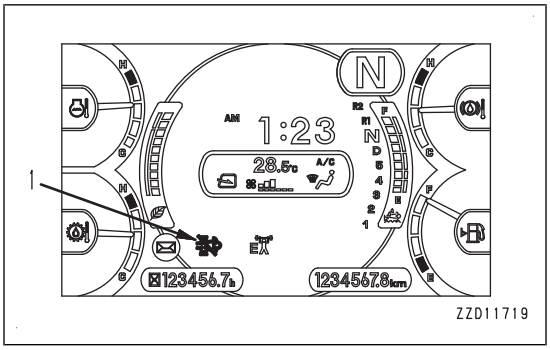


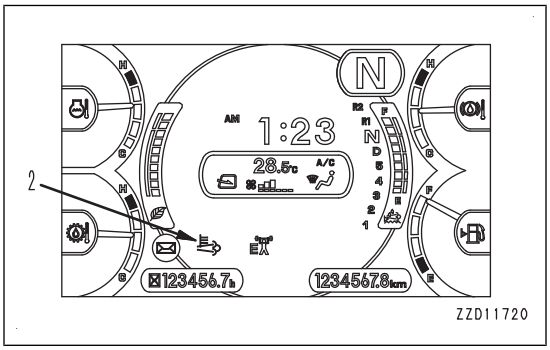
3. Select “Regeneration Disable” and press the enter switch. The regeneration function is disabled and the regeneration is not performed.

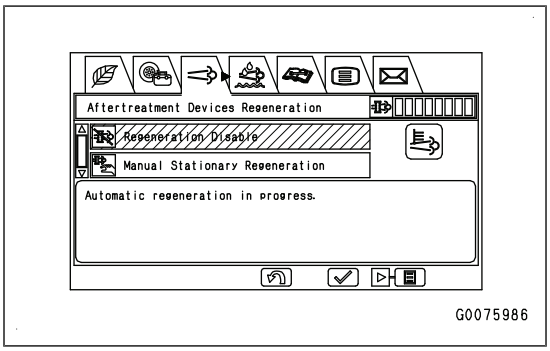


REMARK

- When the regeneration is disabled, aftertreatment devices regeneration disable pilot lamp (1) is displayed with hatch on the standard screen.
- The setting of Regeneration Disable is canceled by turning starting switch to OFF position. When the automatic regeneration needs to be kept disabled, perform the above procedure each time you start the engine.
- During the regeneration to protect the system, even if the regeneration disable is set, aftertreatment devices regeneration display (2) may light up, but this does not indicate abnormality. Also, during the regeneration to protect the system, the Regeneration Disable cannot be operated.
- When the regeneration is performed to protect the system, the exhaust temperature is lower than that of when the regeneration is performed to burn soot, and is almost the same level as the normal exhaust gas temperature.



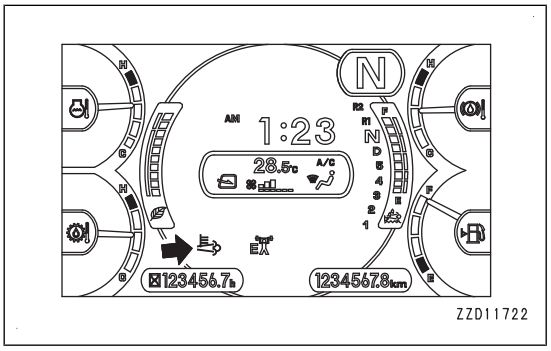




WHILE REGENERATION IS BEING PERFORMED: STOPPING PROCEDURE FOR REGENERATION

(When the aftertreatment devices regeneration display is lit on the standard screen)

1. When the menu switch is pressed on the standard screen, the “Aftertreatment Devices Regeneration” screen is displayed.



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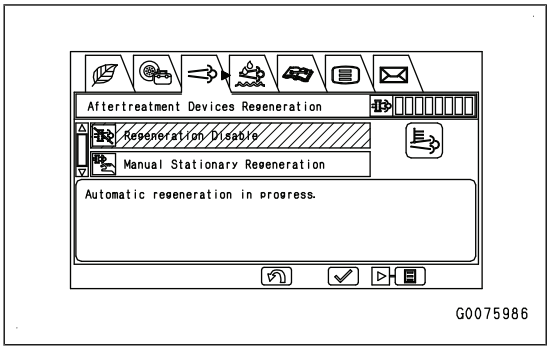
2. Press the enter switch after selecting “Regeneration Disable”, and the regeneration stops.

REMARK

The regeneration performed to protect the system may not be stopped, but this is not a failure.



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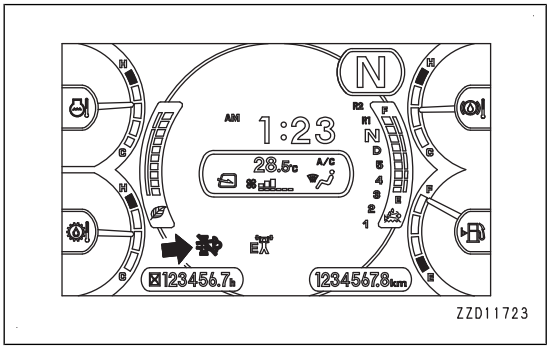

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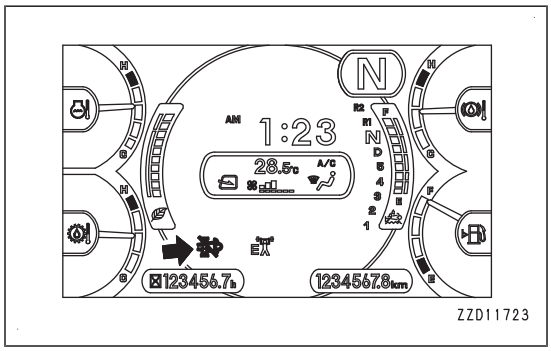
PROCEDURE FOR CANCEL OF AFTERTREATMENT DEVICES REGENERATION DISABLE SETTING

⚠ CAUTION

When canceling the Regeneration Disable, move the machine to a safe place and check that there is no person or combustible matter around the machine, and start the cancel operation.

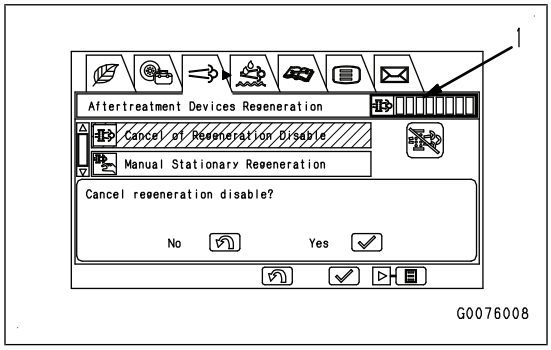
1. When the menu switch is pressed on the standard screen, the “Aftertreatment Devices Regeneration” screen is displayed.

   (If the “Aftertreatment Devices Regeneration” screen is not displayed, display it by pressing the menu switch several times.)



2. Select “Cancel of Regeneration Disable” and press the enter switch, and the regeneration disable is canceled.

   If soot accumulation level (1) lights up 3 or more, the regeneration may be started automatically.

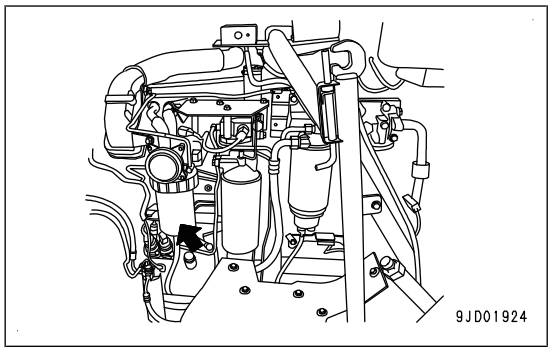


REMARK

- When canceling the regeneration disable, release the accelerator pedal, set the gear shift lever in NEUTRAL position (N), set the parking brake switch to “PARKING” position, then cancel the regeneration disable.
- The regeneration disable setting is also canceled by turning the starting switch to OFF position to stop the engine.

Komatsu Closed Crankcase Ventilation (KCCV)

KCCV is a device to clean the gas discharged from the engine crankcase with the filter element and return it to the engine air intake system.



NOTICE

- **The KCCV filter element needs to be replaced every 2000 hours.**
- **If the engine is operated without KCCV filter element or if a filter element other than the Komatsu genuine element is used, the engine sucks oil and foreign material which can cause a failure.**
  Always install Komatsu genuine KCCV filter element.
- **The filter element cannot be flushed.**
  Never reuse the filter element. Even if it is cleaned, its filtering performance may decrease and it can cause an engine failure.

HANDLE UREA SCR SYSTEM WARNING

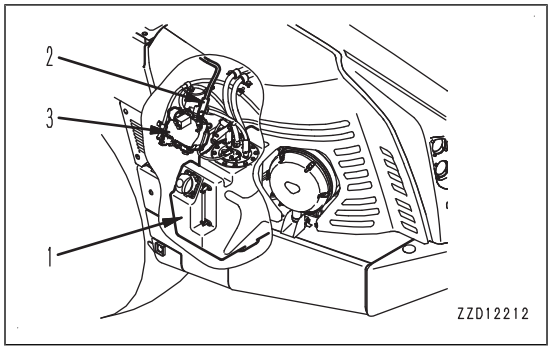
Urea SCR system is a device which converts poisonous nitrogen oxides (NOx) in the exhaust gas into harmless nitrogen and water. By spraying the DEF into the exhaust gas, it decomposes and hydrolyzes to form ammonia (NH3) and the ammonia selectively reacts with nitrogen oxides for the conversion to nitrogen and water.

Urea SCR system has functions to monitor the system operation and to save the information of the abnormal state. The information is used for system diagnostics and also for Inducement required by the authorities on engine systems that use Urea SCR systems. The inducement level is shown to the operator in a visual warning and by buzzer sound. The inducement of the engine corrects the inappropriate behavior of the urea SCR system. Warnings in Inducement of the Komatsu Urea SCR System goes step by step from starting visual indications on the machine monitor and alarm sounds to engine power derate to avoid getting into unsafe conditions.

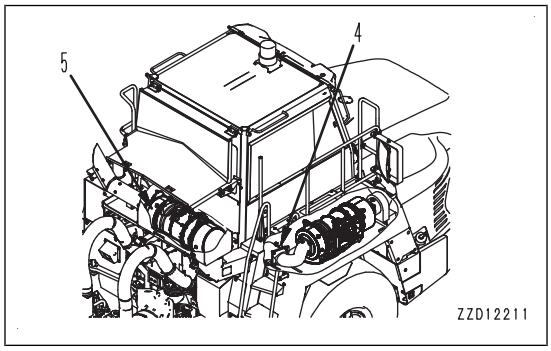
The Komatsu Urea System also monitors recurrences of abnormalities of the system. Inducement in the recurrences is activated when other abnormality occurs within 40 hours after the first abnormality is fixed.

The Komatsu's Urea SCR System is composed of two major systems, which are the DEF system and the SCR assembly.

DEF is supplied from DEF system into the exhaust system. DEF system consists of DEF tank (1), DEF hose (2), DEF pump (3), and DEF injector (4). SCR assembly is shown by (5).



In the event that indications of potential degradation of nitrogen oxides conversion efficiency are sensed, the active regeneration is started to rejuvenate Urea SCR system even if the amount of soot accumulated in the KDPF did not reach to the regeneration thresholds.



⚠ WARNING

Do not put the fluid other than DEF into DEF tank. Foreign material in the DEF system or urea deposits caused by evaporation leads to incorrect operation of the devices.

NOTICE

- **Do not do the work other than replacement of the DEF filter. Do not disassemble and make modification of the devices of the DEF system.**
- **Do not paint the injector or pump, since painting can deteriorate the devices. When you paint the surrounding areas, be careful not to let the paint get on the injector and the supply pump.**
- **Always use DEF that agrees with the quality standard. If additional additive agents or water are mixed in DEF and that mixture is used, the devices will not function correctly, and conformance to the exhaust gas regulations will be lost. In addition, it can cause failures in the engine system. If DEF out of the standard is filled or used by mistake, consult your Komatsu distributor.**

About the operation of Urea SCR system

The Urea SCR System automatically starts operating as soon as the engine is started.

Even after the engine starting switch is turned to the OFF position, the devices will be in operation for several minutes to purge the DEF in the lines, in the injector and in the supply pump to the DEF tank. It is not a problem. If DEF goes back to the tank, the devices stop automatically.

Do not turn OFF the battery disconnect switch while the devices are in operation. When the devices complete their shutdown procedure, the system operating lamp will go off, and the battery disconnect switch can be disconnected.

About the operation in cold weather

DEF freezes at -11 °C.

A heating system to thaw frozen DEF is installed to the Urea SCR system, if it is frozen, for example, during parking and to prevent that DEF freezes during operation.

In case DEF freezes during parking, when the engine starts running the heating system automatically starts providing heat to thaw frozen DEF. The pump and the injector start working only after DEF is thawed. This is a delay in the start of function of the pump and the injector.

The heating system is also activated automatically during operation to prevent freezing of DEF when the ambient temperature drops below a certain threshold where DEF in the system possibly freezes. In the event that the ambient temperature drops further than a temperature where the heating system is capable of keeping fluidity of DEF, the DEF system automatically starts purging the remaining DEF back to the tank and stops pumping and injection while heating continues. When the ambient temperature rises above a temperature where DEF system becomes functional, operation starts again automatically.

Short duration of white smoke given off from the tail pipe can be seen at and shortly after engine start-up in cold weather, but this is not malfunction.

Inducement strategy when the DEF tank level becomes low

When the quantity of DEF in the tank goes low, the Inducement strategy will be activated.

If Inducement starts, add DEF to the DEF tank immediately.

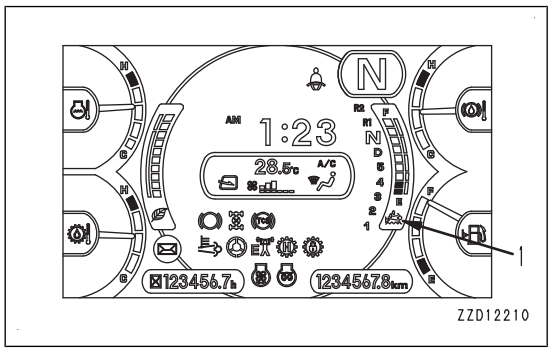
The DEF level caution lamp (1) on the monitor lights up, the audible alert starts, and the action level is displayed, and Inducement strategy is activated. Inducement strategy includes engine output deration, speed limitation, or other warning actions intend to prompt the operator to maintain or repair SCR system.

The Inducement strategy progresses in 4 levels from “Warning”, “Continuous Warning / Escalated Warning”, “Low level Inducement / Mild Inducement” and “Severe Inducement”.

In the case of the Engine with EU+EPA/CARB dual labelling name-plate :

The Inducement strategy progressed in 5 levels from “Warning”, “Continuous Warning / Escalated Warning”, “Low level Inducement / Mild Inducement”, “Severe Inducement” and “Final Inducement”.

The DEF level caution lamp (1) on the machine monitor will light up, audible alert will start, then action level will be displayed on the machine monitor, and engine power will be derated in steps.



In action level “L03 (Low level Inducement / Mild Inducement)” and “L04 (Severe Inducement)” engine power will be derated. When action level “L03” or “L04” is displayed, move the machine to a safe place and add DEF.

In the case of the Engine with EU+EPA/CARB dual labelling name-plate :

In action level “L03 (Low level Inducement / Mild Inducement)” and “L04 (Severe Inducement and Final Inducement)” engine power will be derated. When action level “L03” or “L04” is displayed, move the machine to a safe place and add DEF.

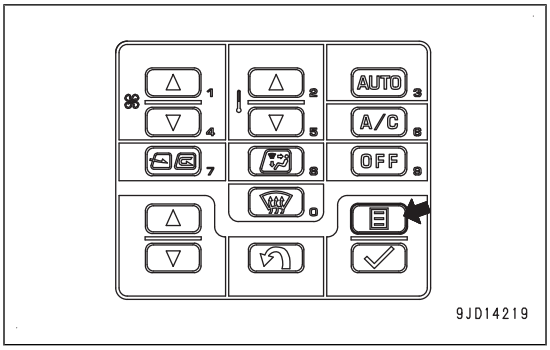
If operation is continued further without adding DEF at “Severe Inducement”, engine speed will be fixed at low idle. (“Final Inducement”)

The content of the warning can be checked on the “SCR Information” screen of the user menu.

Do the procedure that follows.

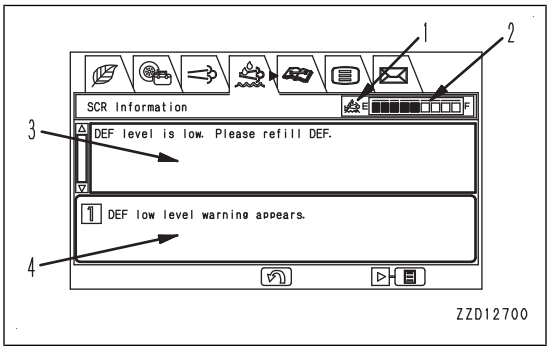
Push the menu switch on the standard screen to show the “SCR Information” screen of the user menu.

3 seconds after the machine is stopped, “SCR Information” screen is shown.



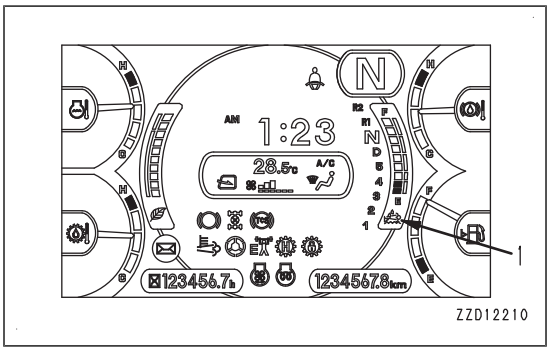
“SCR Information” screen shows the DEF level caution lamp (1), the DEF level gauge (2), information on the Urea SCR System condition (3), and the current status of Inducement (4).

If Inducement starts, stop the machine in a safe area and add DEF.



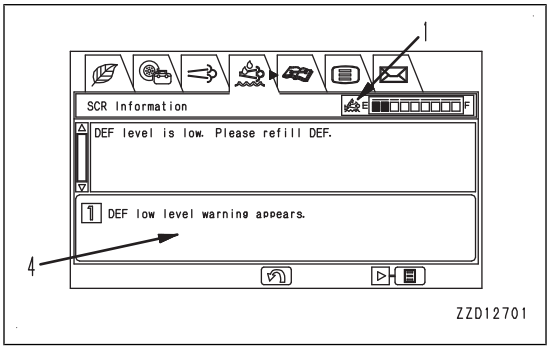
- Warning:

  2 gradations of the DEF level gauge light up in red.
  The DEF level caution lamp (1) lights up in red.
  No alarm sound.
  No action level is shown.
  Push the menu switch to show the “SCR Information” screen.

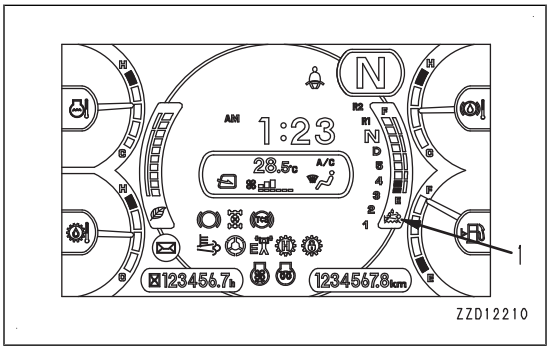


  Inducement status (4): 1 “DEF low level warning appears.”

  Add DEF to the DEF tank immediately.

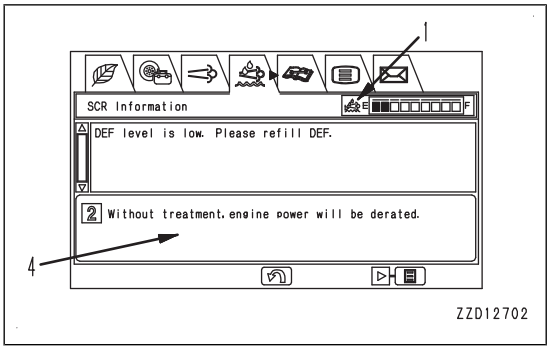


- Continuous Warning / Escalated Warning:
  The alarm buzzer operates in “Intermittent alarm”.
  2 gradations of the DEF level gauge light up in red.
  The DEF level caution lamp (1) lights up in red.
  No action level is shown.
  Push the menu switch to show the “SCR Information” screen.

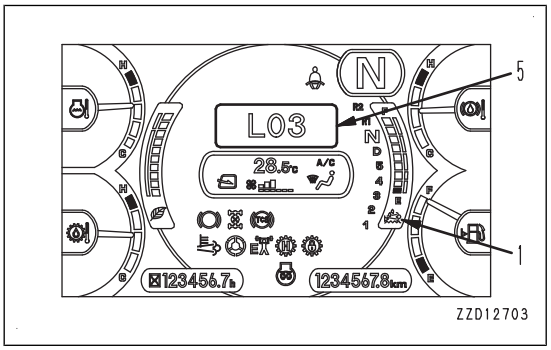


Inducement status (4): 2 “Without treatment, engine power will be derated.”

Add DEF to the DEF tank immediately.

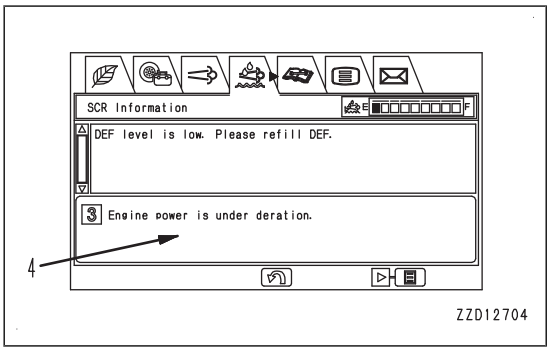


- Low level Inducement / Mild Inducement:
  The alarm buzzer operates in “Intermittent alarm”.
  1 gradations of the DEF level gauge light up in red.
  The DEF level caution lamp (1) lights up in red.
  The action level “L03” is shown in red (5).
  Push the menu switch to show the “SCR Information” screen.

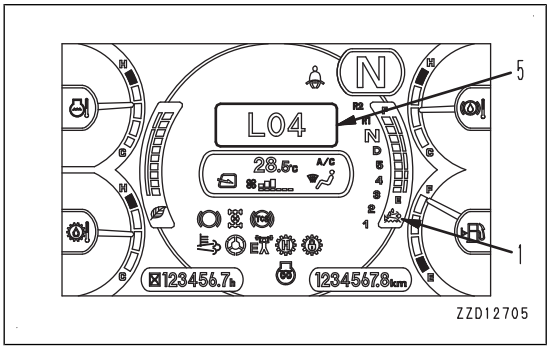


Inducement status (4): 3 “Engine power is under deration.”

Add DEF to the DEF tank immediately.

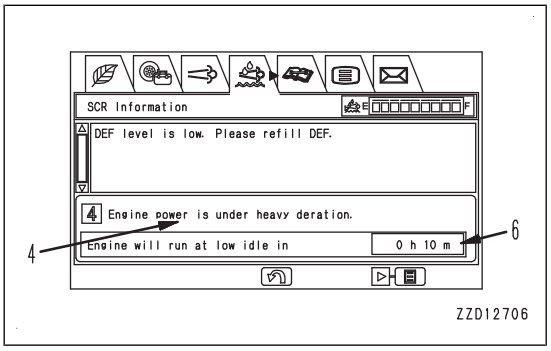


- Severe Inducement:
  The alarm buzzer operates in “Continuous alarm”.
  No gradation of the DEF level gauge lights up.
  The DEF level caution lamp (1) lights up in red.
  The action level “L04” is shown in red (5).
  Push the menu switch to show the “SCR Information” screen.
  When all gradations of the DEF level gauge go off, DEF refilling quantity is 23ℓ to fill up the DEF tank.



Inducement status (4): 4 “Engine power is under heavy deration.”

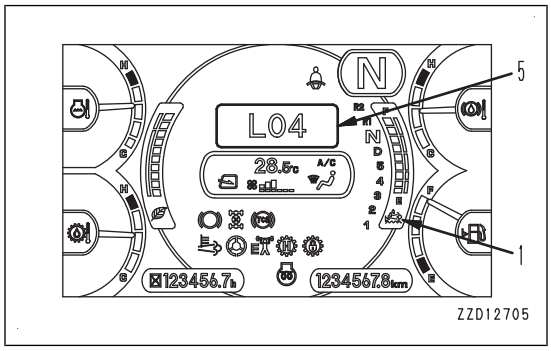
In the case of the Engine with EU+EPA/CARB dual labelling name-plate :
The remaining time (Hours and Minutes) to the Final Inducement is displayed in the column (6) of the “SCR Information” screen. If no DEF is added during the “Severe Inducement”, Inducement advances to “Final Inducement” within 1 hour. At “Final Inducement”, engine speed is fixed at low idle.



Engine power can be restored temporarily from power derate. This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily to the power deration of “Low level Inducement / Mild Inducement”. For the engine power restoration procedure, see the section of

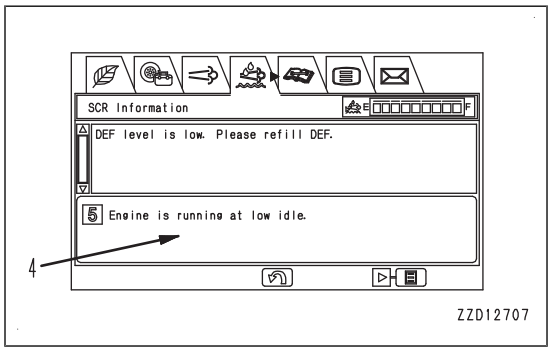
"Temporary Restoration from Inducement" in this manual. Once in "Severe Inducement" and it becomes necessary to restore engine power, use the engine power restoration function to move the machine to a safe area and add DEF.

- Final Inducement:
  (In the case of the Engine with EU+EPA/CARB dual labelling name-plate)
  The audible alert sounds in "Continuous alarm".
  No gradation of the DEF level gauge light up.
  The DEF level caution lamp (1) lights up in red.
  The action level "L04" is shown in red (5).
  Push the menu switch to show the "SCR Information" screen.



Inducement status (4): 5"Engine is running at low idle."

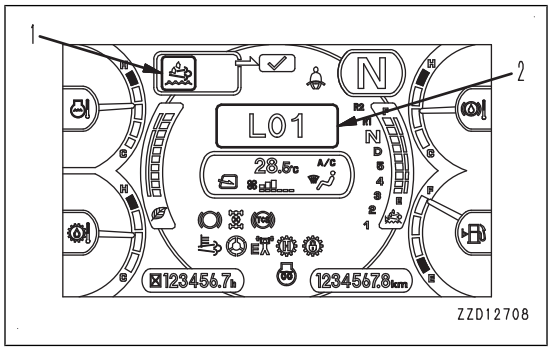
Engine speed is fixed at low idle to disable practical machine operation.
Add DEF to the DEF tank immediately.
In case the system does not come out of Inducement even if DEF is added in the tank, contact your Komatsu distributor.



Inducement strategy when abnormalities are sensed in the Urea SCR System devices (Except abnormalities in the KDPF and the EGR system)

If one of the abnormalities (DEF quality abnormality, SCR system abnormality, DEF injection abnormality (other than KDPF system abnormality)) is sensed, the inducement strategy starts.

The Inducement strategy moves in 4 levels, "Warning", "Continuous Warning / Escalated Warning", "Low level Inducement / Mild Inducement" and "Severe Inducement". The Inducement strategy includes visual warning by the DEF system caution lamp on the machine monitor (1), and action level shown on the machine monitor (2), and buzzer sound and stepwise engine power deration that continues to speed limitation to low idle. The engine power deration starts with action level "L03 (Low level Inducement / Mild Inducement)" and goes to further deration when "L04 (Severe Inducement)" is shown. If "L03" is shown, move the machine to a safe area and consult your Komatsu distributor.

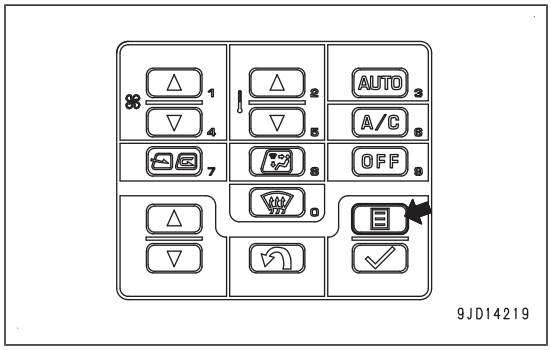


The content of the warning can be checked on the "SCR Information" screen of the user menu.

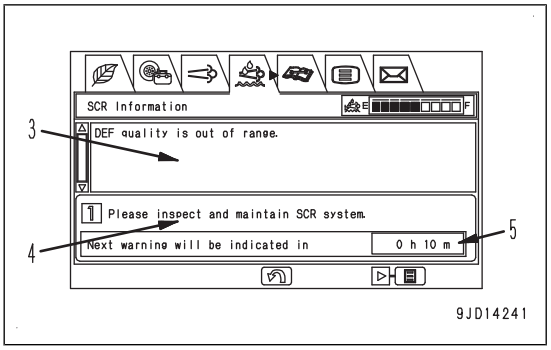
Do the procedure that follows.

Push the menu switch on the standard screen to show the "SCR Information" screen of the user menu.

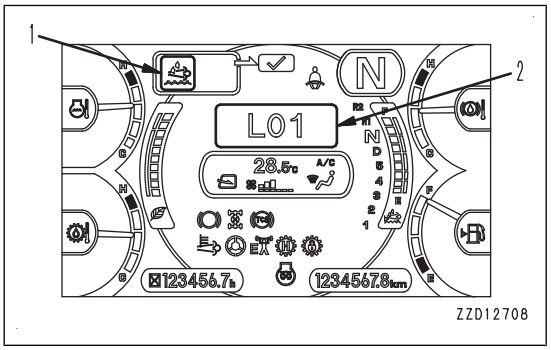
3 seconds after the machine is stopped, "SCR Information" screen is shown.



“SCR Information” screen shows remaining time to the next Inducement status in the column (5), and information on the Urea SCR System condition (3), and the current status of Inducement (4).

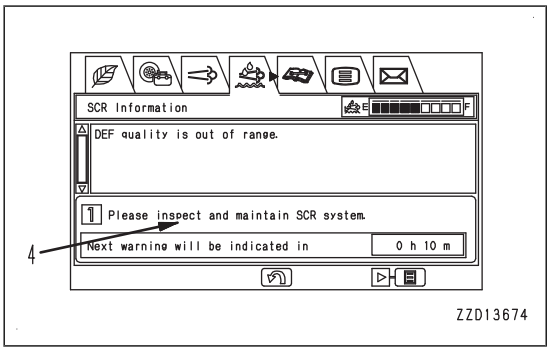


- Warning:
  No alarm sound.
  The DEF system caution lamp (1) lights up in yellow.
  Note: Action level “L01” shows up on the machine monitor (2) for 2 seconds and goes off.
  Push the menu switch to show the “SCR Information” screen.

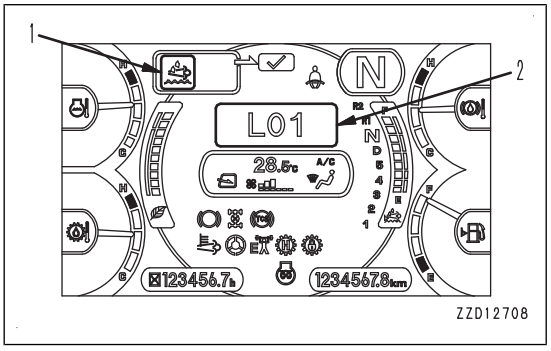


“SCR information” screen message (4): 1 “Please inspect and maintain SCR system.”

Move the machine to the safe area and consult your Komatsu distributor.
If operation continues for 5 hours after “Warning” started without taking any actions instructed by the action level table, Inducement advances to “Continuous Warning / Escalated Warning”.

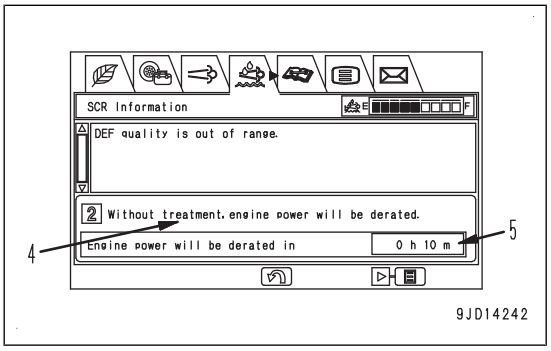


- Continuous Warning / Escalated Warning:
  The alarm buzzer operates in “Intermittent alarm”.
  The DEF system caution lamp (1) lights up in yellow.
  If operation continues for 5 hours after “Warning” started with no actions instructed by the action level table, Inducement goes to “Continuous Warning / Escalated Warning”.
  Push the menu switch to show the “SCR Information” screen.

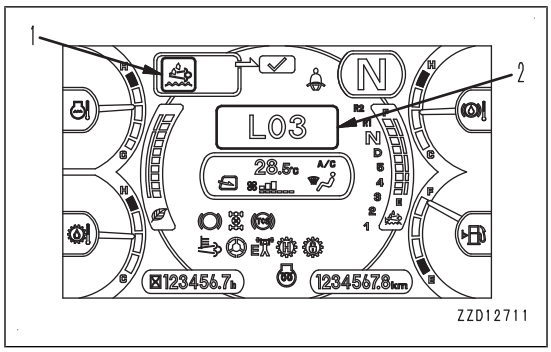


“SCR Information” screen message (4): 2 “Without treatment, engine power will be derated.”

Move the machine to the safe area and consult your Komatsu distributor.
The duration time of “Continuous Warning / Escalated Warning” is 5 hours. The remaining time (hours and minutes) to “Low level Inducement / Mild Inducement” is shown in the column (5) of “SCR Information” screen.
In “Low level Inducement / Mild Inducement”, engine power will be derated.

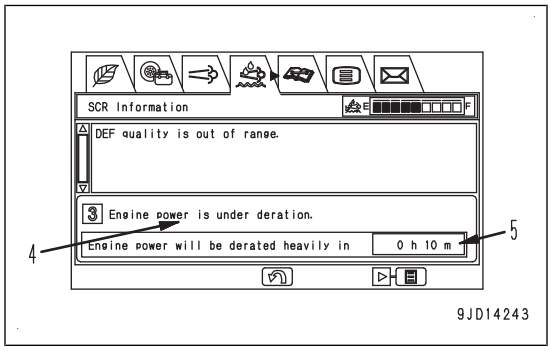


- Low level Inducement / Mild Inducement:
  The alarm buzzer operates in “Intermittent alarm”.
  The DEF system caution lamp (1) lights up in red.
  The action level “L03” is shown in red (2).
  Push the menu switch to show the “SCR Information” screen.

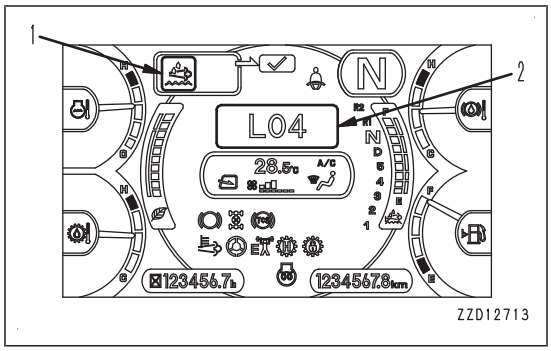


  “SCR information” screen message (4): 3 “Engine power is under deration.”

  Because of the reduction of engine power, the machine normal operation will be limited.
  Move the machine to the safe area and consult your Komatsu distributor.
  The duration time of “Low level Inducement / Mild Inducement” is 10 hours. The remaining time (hours and minutes) to “Severe Inducement” is shown in the column (5) of “SCR Information” screen.
  In “Severe Inducement”, engine power will be derated further.

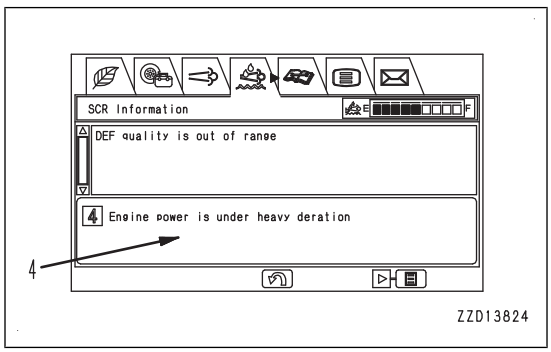


- Severe Inducement:
  The alarm buzzer operates in “Continuous alarm”.
  The DEF system caution lamp (1) lights up in red.
  The action level “L04” is shown in red (2).
  Push the menu switch to show the “SCR Information” screen.



  “SCR Information” screen message (4): 4 “Engine power is under heavy deration.”

  Because of the further deration of engine power, the machine operation will be limited further.
  “Severe Inducement” is the final status of Inducement.
  Unless all the “SCR system” abnormalities are corrected, engine power will be kept derated.



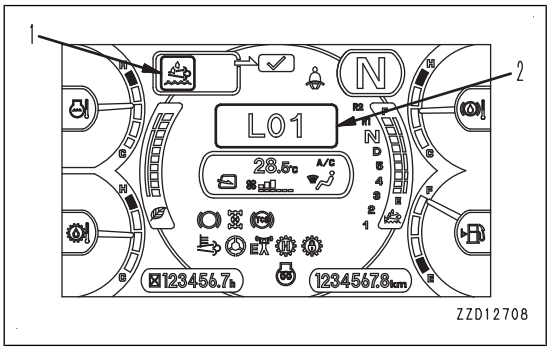
  Engine power can be restored temporarily from power derate. If Inducement goes to “Severe Inducement” and it becomes necessary to restore engine power, use the engine power restoration function to move the machine to a safe area and consult your Komatsu distributor. This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily to the power deration of “Low level Inducement / Mild Inducement”. The operator can restore engine power through the machine monitor. For the engine power restoration procedure, see the section of “Temporary Restoration from Inducement” in this manual.

Inducement strategy when abnormalities are sensed in the Urea SCR System devices (Except abnormalities in the KDPF and the EGR system)

(In the case of the Engine with EU+EPA/CARB dual labelling name-plate)

If the DEF quality abnormality or the SCR system abnormality (other than the KDPF system abnormality) is sensed, the inducement strategy starts.

The inducement strategy progresses in 5 levels, “Warning”, “Continuous Warning / Escalated Warning”, “Low level Inducement / Mild Inducement”, “Severe Inducement” and “Final Inducement”. The Inducement strategy includes visual alert by the DEF caution lamp, the KDPF system caution lamp or the Engine system caution lamp (1), and Action Level displayed on the machine monitor (2), and the audible alert by a buzzer and stepwise engine power deration that advances to speed limitation to low idle. Engine power deration starts with Action Level “L03 (Low level Inducement / Mild Inducement)” and advances to further deration when “L04 (Severe Inducement and Final Inducement)” is displayed. Once the system advances to “Final Inducement”, the engine speed is fixed to low idle. If “L03” is displayed, move the machine to a safe place and contact your Komatsu distributor.

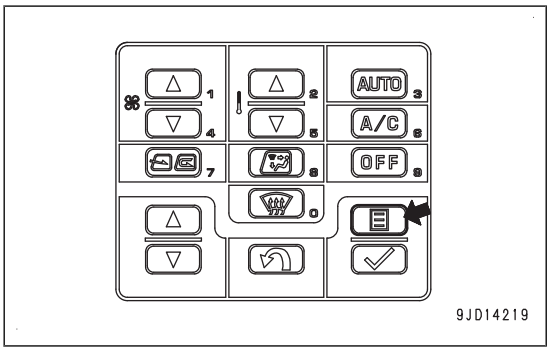


The content of the warning can be checked on the “SCR Information” screen of the user menu.

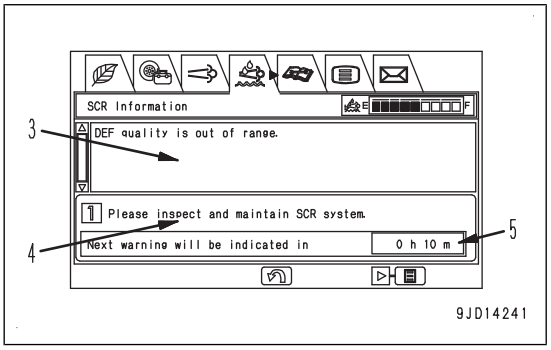
Perform the following procedure.

Press the menu switch on the standard screen to display the “SCR Information” screen of the user menu.

After a lapse of 3 seconds to stop the machine, “SCR Information” screen is displayed.

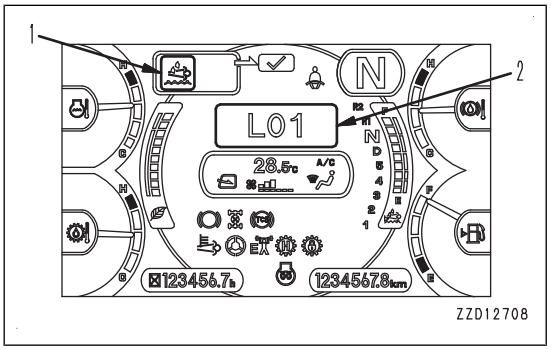


“SCR Information” screen displays remaining time to the next Inducement status in the column (5), and information on the Urea SCR System condition (3), and the current status of Inducement (4).



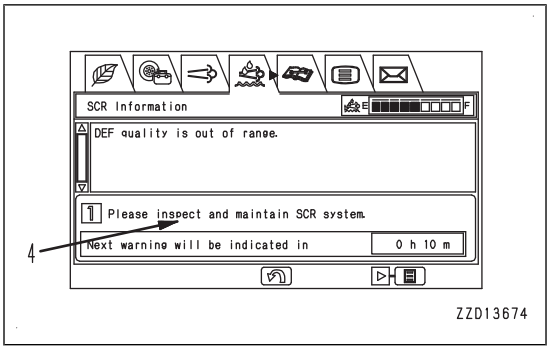
- Warning:

  No audible alert.
  The DEF system caution lamp (1) lights up in yellow.
  Note: Action Level “L01” once shows up in yellow on the machine monitor (2) for two seconds and goes out.
  Press the menu switch to display the “SCR Information” screen.



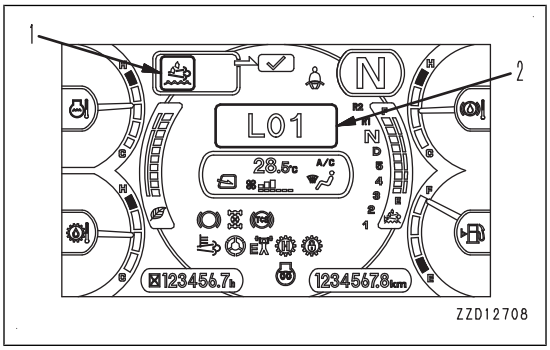
“SCR Information” screen message (4): 1 “Please inspect and maintain SCR system.”

Move the machine to the safe place and contact your Komatsu Distributor.
If operation continues for 1 hour after “Warning” started without taking any actions instructed by the Action Level table, Inducement advances to “Continuous Warning / Escalated Warning”.



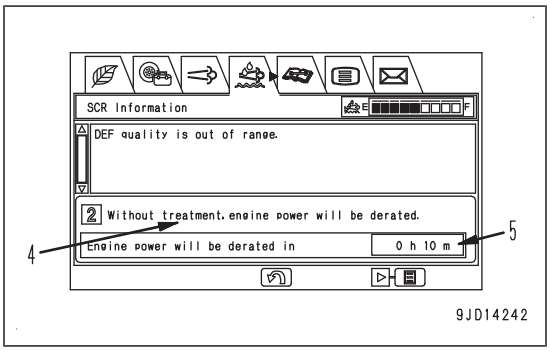
- Continuous Warning / Escalated Warning:

  The audible alert sounds in repetition of “Intermittent alarm”.
  The DEF system caution lamp (1) lights up in yellow.
  If operation continues for 1 hour after “Warning” started without taking any actions instructed by the Action Level table, Inducement advances to “Continuous Warning / Escalated Warning”.
  Press the menu switch to display the “SCR Information” screen.



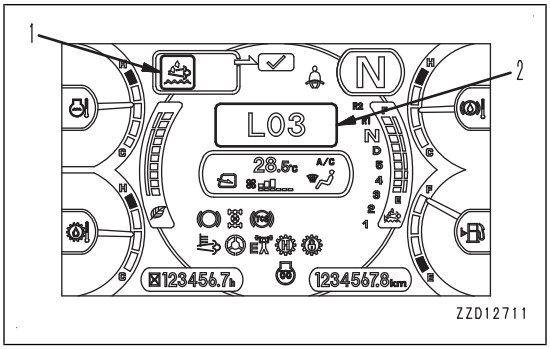
“SCR Information” screen message (4): 2 “Without treatment, engine power will be derated.”

Move the machine to the safe place and contact your Komatsu Distributor.
The duration of “Continuous Warning / Escalated Warning” is 1 hour. The remaining time (hours and minutes) to “Low level Inducement / Mild Inducement” is displayed in the column (5) of the “SCR Information” screen.
In “Low level Inducement / Mild Inducement”, engine performance will be derated.



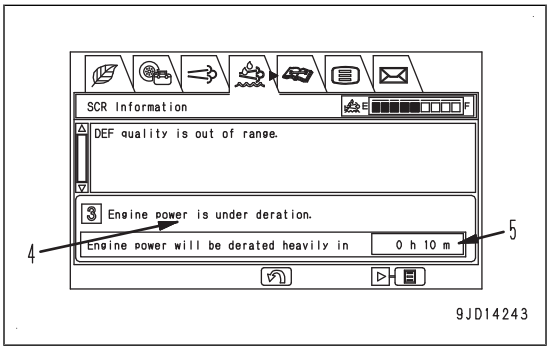
- Low level Inducement / Mild Inducement:

  The audible alert sounds in “Intermittent alarm”.
  The DEF system caution lamp (1) lights up in red.
  Action level “L03” lights up in red at action level display (2) and stays on.
  Press the menu switch to display the “SCR Information” screen.



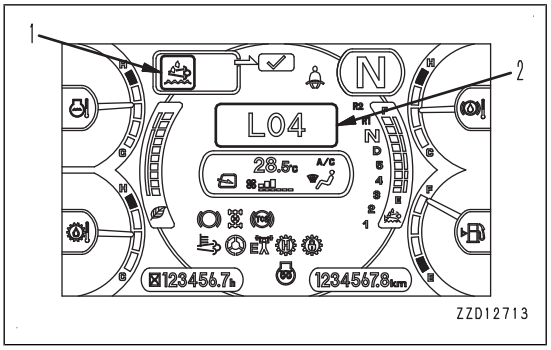
“SCR Information” screen message (4): 3 “Engine power is under deration.”

Due to the engine power deration, capability of the machine will be limited.
Move the machine to the safe place and contact your Komatsu Distributor.
The duration of “Low level Inducement / Mild Inducement” is 1 hour. The remaining time (hours and minutes) to “Severe Inducement” is displayed in the column (5) of the “SCR Information” screen.
In “Severe Inducement”, engine power will be derated further.



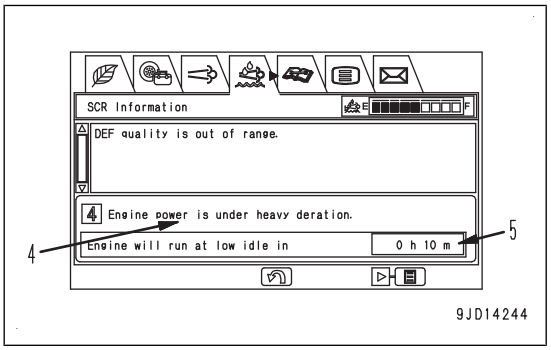
- Severe Inducement:

  The audible alert sounds in “Continuous alarm”.
  The DEF system caution lamp (1) lights up in red.
  Action level “L04” lights up in red (2).
  Press the menu switch to display the “SCR Information” screen.



  “SCR Information” screen message (4): 4 “Engine power is under heavy deration.”

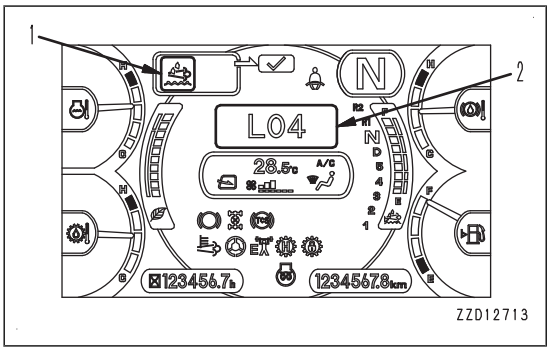
  Due to the further deration of engine power, capability the machine will be limited further.
  Move the machine to the safe place and contact your Komatsu Distributor.
  The duration of “Severe Inducement” is 1 hour. The remaining time (hours and minutes) to “Final Inducement” is displayed in the column (5) of the “SCR Information” screen.
  In “Final Inducement”, engine speed will be fixed at low idle.



  Engine power can be restored temporarily from power derate. If Inducement advances to “Severe Inducement” and it becomes necessary to restore engine power, use the engine power restoration function to move the machine to a safe place and contact your Komatsu distributor. This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily to the power deration of “Low level Inducement / Mild Inducement”. The operator can restore engine power through the machine monitor. For the engine power restoration procedure, refer to the section of “Temporary Restoration from Inducement” in this manual.

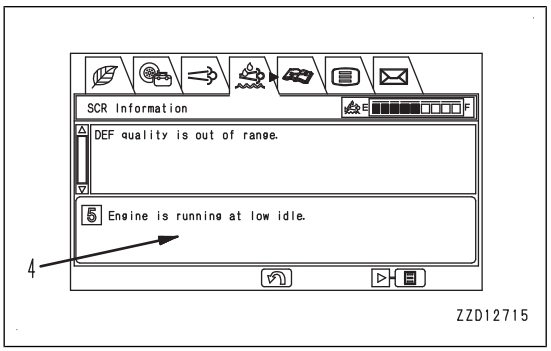
- Final Inducement:

  The audible alert sounds in “Continuous alarm”.
  The DEF system caution lamp (1) lights up in red.
  Action level “L04” lights up in red (2).
  Press the menu switch to display the “SCR Information” screen.



  “SCR Information” screen message (4): 5 “Engine is running at low idle.”

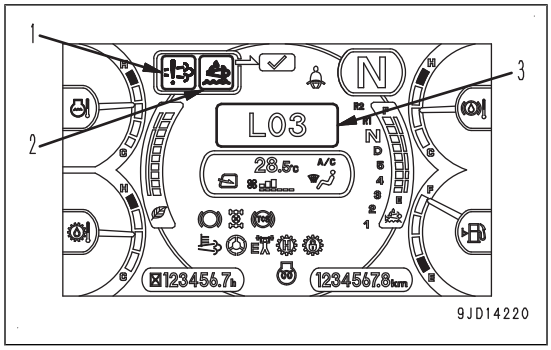
  Engine speed is fixed at low idle to disable practical machine operation.
  Move the machine to a safe place and contact your Komatsu Distributor.



Inducement strategy when abnormality is found in the KDPF System by the Urea SCR system

If the DEF injection abnormality caused by the KDPF system abnormality is sensed in the urea SCR system, the inducement strategy starts.

The Inducement strategy moves in 4 levels, “Warning”, “Continuous Warning / Escalated Warning”, “Low level Inducement / Mild Inducement” and “Severe Inducement”. The Inducement strategy includes visual warning by the KDPF system caution lamp (1), DEF system caution lamp (2), and action level shown on the machine monitor (3), and buzzer sound and stepwise engine power deration that continues to speed limitation to low idle. The engine power deration starts with action level “L03 (Low level Inducement / Mild Inducement)” and goes to further deration when “L04 (Severe Inducement)” is shown. When the system goes to “Severe Inducement”, the engine power will be further derated. When action level “L03” is shown, move the machine to a safe area and consult your Komatsu distributor.

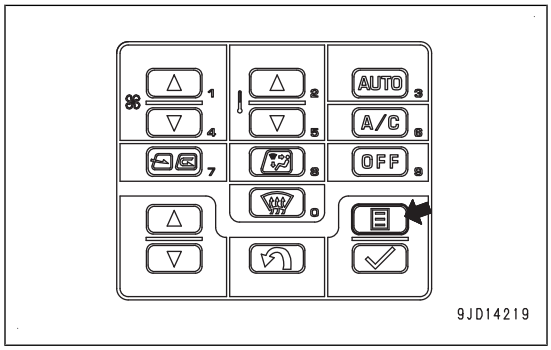


The content of the warning can be checked on the “SCR Information” screen of the user menu.

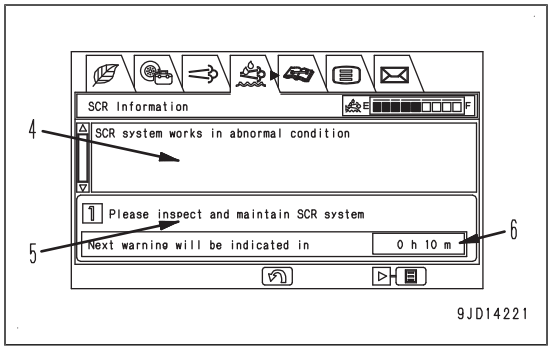
Do the procedure that follows.

Push the menu switch on the standard screen to show the “SCR Information” screen of the user menu.

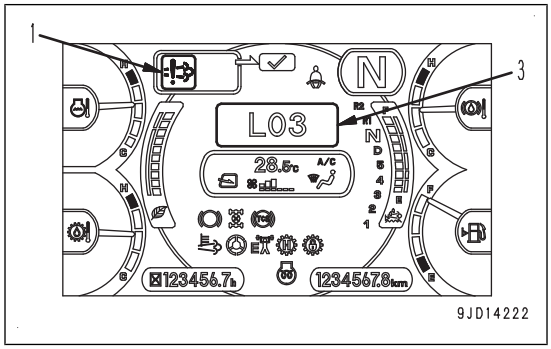
3 seconds after the machine is stopped, “SCR Information” screen is shown.



“SCR Information” screen shows remaining time to the next Inducement status in the column (6), and information on the Urea SCR System condition (4), and the current status of Inducement (5).

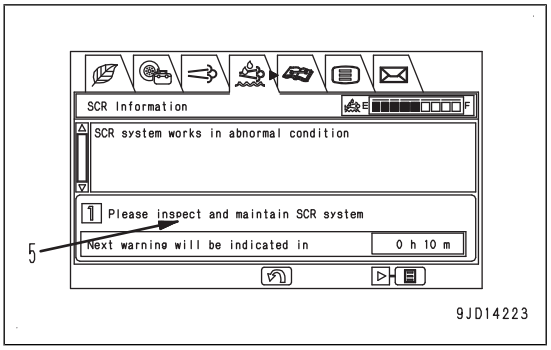


- Warning:
  The alarm buzzer operates in “Intermittent alarm”.
  The KDPF system caution lamp (1) lights up in red.
  The action level “L03” is shown in red (3).
  Push the menu switch to show the “SCR Information” screen.

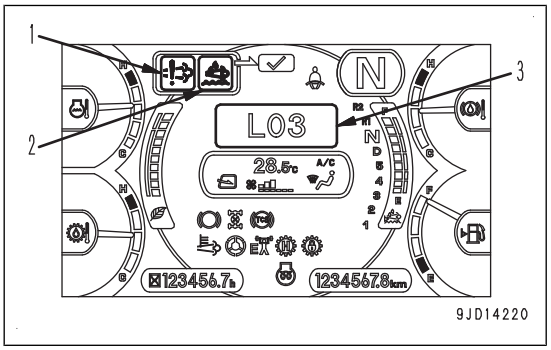


“SCR information” screen message (5): 1 “Please inspect and maintain SCR system.”

Engine power is derated.
Move the machine to the safe area and consult your Komatsu distributor.
If operation continues for 5 hours after “Warning” started with no actions instructed by the action level table, Inducement goes to “Continuous Warning / Escalated Warning”.

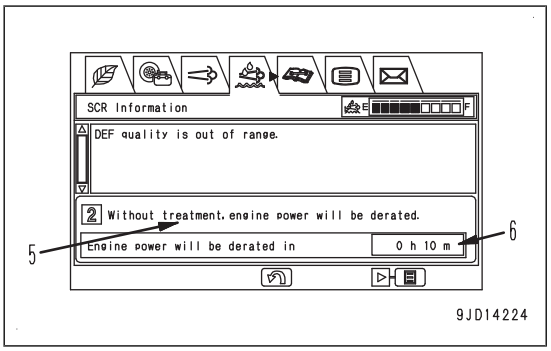


- Continuous Warning / Escalated Warning:
  The alarm buzzer operates in “Intermittent alarm”.
  The KDPF system caution lamp (1) lights up in red.
  The DEF system caution lamp (2) lights up in yellow.
  The action level “L03” is shown in red (3).
  Push the menu switch to show the “SCR Information” screen.

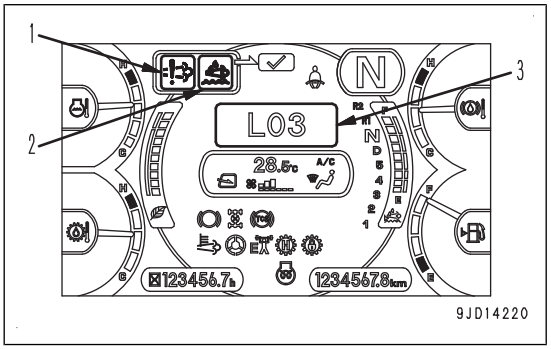


“SCR Information” screen message (5): 2 “Without treatment, engine power will be derated.”

Move the machine to the safe area and consult your Komatsu distributor.
The duration time of “Continuous Warning / Escalated Warning” is 5 hours. The remaining time (hours and minutes) to “Low level Inducement / Mild Inducement” is shown in the column (6) of “SCR Information” screen.
In “Low level Inducement / Mild Inducement”, engine power will be derated.

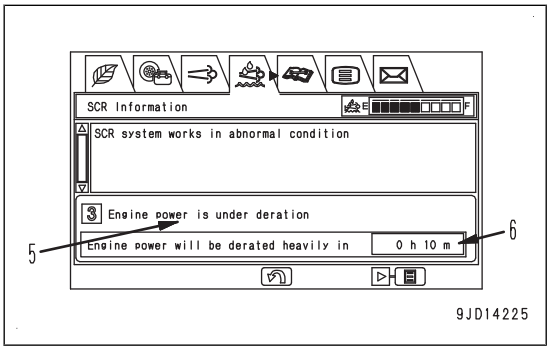


- Low level Inducement / Mild Inducement:
  The alarm buzzer operates in “Intermittent alarm”.
  The KDPF system caution lamp (1) lights up in red.
  The DEF system caution lamp (2) lights up in red.
  The action level “L03” is shown in red (3).
  Push the menu switch to show the “SCR Information” screen.

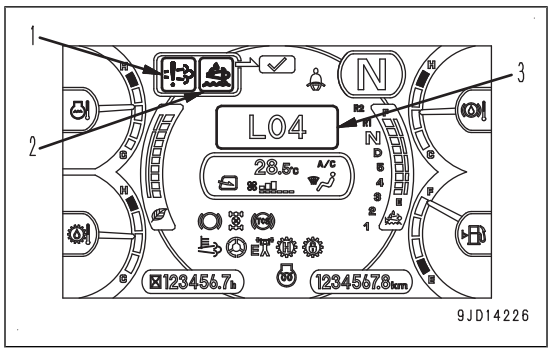


“SCR information” screen message (5): 3 “Engine power is under deration.”

Because of the reduction of engine power, the machine normal operation will be limited.
The duration time of “Low level Inducement / Mild Inducement” is 10 hours. The remaining time (hours and minutes) to “Severe Inducement” is shown in the column (6) of “SCR Information” screen.
In “Severe Inducement”, engine power will be derated further.
Move the machine to the safe area and consult your Komatsu distributor.

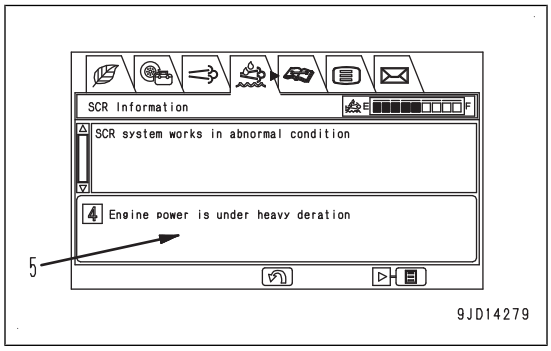


- Severe Inducement:
  The alarm buzzer operates in “Continuous alarm”.
  The KDPF system caution lamp (1) lights up in red.
  The DEF system caution lamp (2) lights up in red.
  The action level “L04” is shown in red (3).
  Push the menu switch to show the “SCR Information” screen.



“SCR Information” screen message (5): 4 “Engine power is under heavy deration.”

Because of the further deration of engine power, the machine operation will be limited further.
If the restoration of the KDPF system abnormality is not done, engine power will kept be derated.

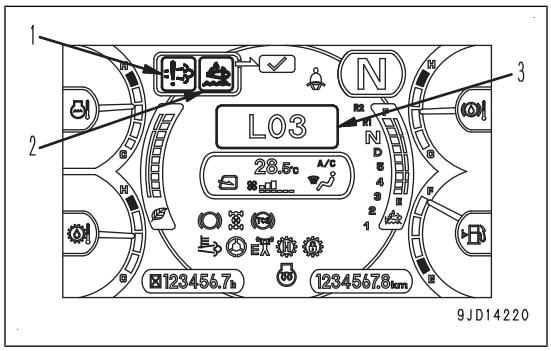


Engine power can be restored temporarily from power derate. This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily. This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily to the power deration of “Low level Inducement / Mild Inducement”. The operator can restore engine power through the machine monitor. For the engine power restoration procedure, see the section of “Temporary Restoration from Inducement” in this manual. If Inducement goes to “Severe Inducement” and it becomes necessary to restore engine power temporarily, use the engine power restoration function to move the machine to a safe area and consult your Komatsu distributor for inspection and maintenance.

Inducement strategy when abnormality is found in the KDPF System by the Urea SCR system

(In the case of the Engine with EU+EPA/CARB dual labelling name-plate)

If the SCR system abnormality caused by the KDPF system abnormality is sensed in the urea SCR system, the inducement strategy starts.



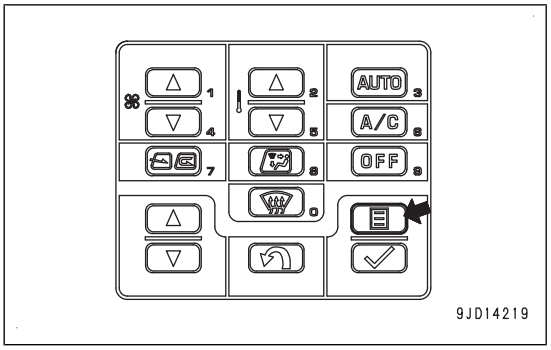
The inducement strategy progresses in 5 levels, “Warning”, “Continuous Warning / Escalated Warning”, “Low level Inducement / Mild Inducement”, “Severe Inducement” and “Final Inducement”. The Inducement strategy includes visual alert by the KDPF System caution lamp (1), DEF system caution lamp (2), and Action Level displayed on the machine monitor (3), audible alert by a buzzer and stepwise engine power deration that advances to speed limitation to low idle. Engine power deration starts with Action Level “L03 (Low level Inducement / Mild Inducement)” and advances to further deration when “L04 (Severe Inducement and Final Inducement)” is displayed. Once the system advances to “Final Inducement”, the engine speed is fixed to low idle. If “L03” is displayed, move the machine to a safe place and contact your Komatsu distributor.

The content of the warning can be checked on the “SCR Information” screen of the user menu.

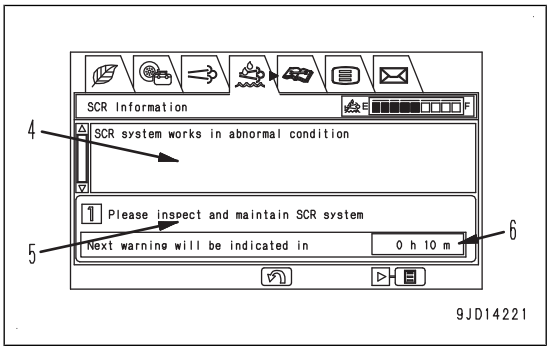
Perform the following procedure.

Press the menu switch on the standard screen to display the “SCR Information” screen of the user menu.

After a lapse of 3 seconds to stop the machine, “SCR Information” screen is displayed.

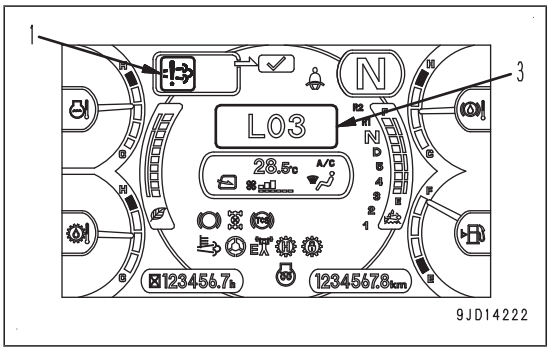


“SCR Information” screen displays remaining time to the next Inducement status in the column (6), and information on the Urea SCR System condition (4), and the current status of Inducement (5).



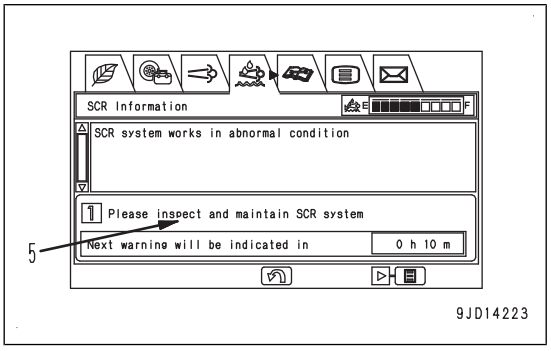
- Warning:

  The audible alert sounds in “Intermittent alarm”.
  The KDPF system caution lamp (1) lights up in red.
  The action level “L03” lights up in red at action level display (3).
  Press the menu switch to display the “SCR Information” screen.



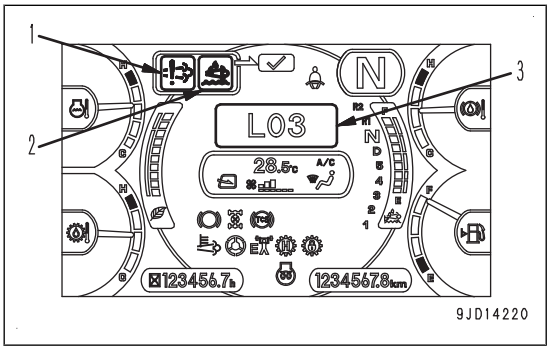
  “SCR Information” screen message (5): 1 “Please inspect and maintain SCR system.”

  Engine power is derated.
  Move the machine to the safe place and contact your Komatsu Distributor.
  If operation continues for 1 hour after “Warning” started without taking any actions instructed by the Action Level table, Inducement advances to “Continuous Warning / Escalated Warning”.



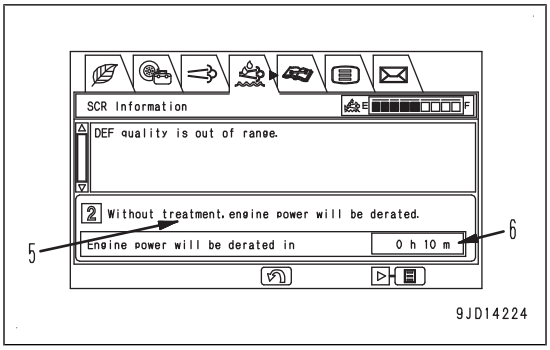
- Continuous Warning / Escalated Warning:

  The audible alert sounds in repetition of “Intermittent alarm”.
  The KDPF system caution lamp (1) lights up in red.
  The DEF system caution lamp (2) lights up in yellow.
  The action level “L03” lights up in red at action level display (3).
  Press the menu switch to display the “SCR Information” screen.



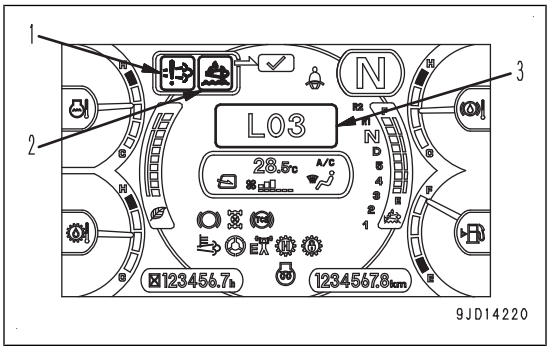
“SCR Information” screen message (5): 2 “Without treatment, engine power will be derated.”

Move the machine to the safe place and contact your Komatsu Distributor.
The duration time of “Continuous Warning / Escalated Warning” is 1 hour. The remaining time (hours and minutes) to “Low level Inducement / Mild Inducement” is displayed in the column (6) of “SCR Information” screen.
In “Low level Inducement / Mild Inducement”, engine performance will be derated.



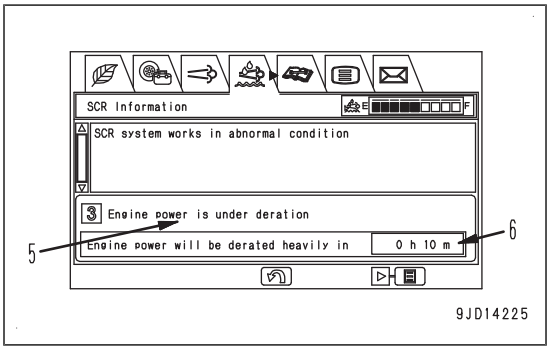
- Low level Inducement / Mild Inducement:

  The audible alert sounds in “Intermittent alarm”.
  The KDPF system caution lamp (1) lights up in red.
  DEF system caution lamp (2) lights up in red.
  The action level “L03” lights up in red at action level display (3).
  Press the menu switch to display the “SCR Information” screen.



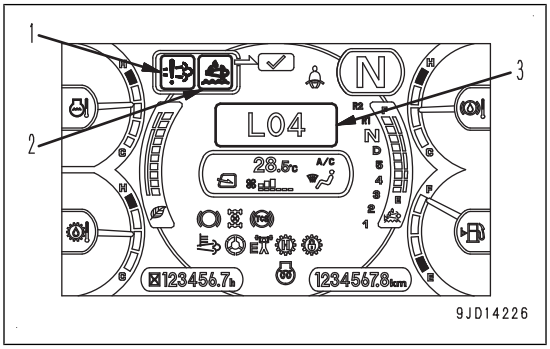
“SCR Information” screen message (5): 3 “Engine power is under deration.”

Due to the reduction of engine power, the machine normal operation will be limited.
The duration time of “Low level Inducement / Mild Inducement” is 1 hour. The remaining time (hours and minutes) to “Severe Inducement” is displayed in the column (6) of “SCR Information” screen.
In “Severe Inducement”, engine power will be derated further.
Move the machine to the safe place and contact your Komatsu Distributor.



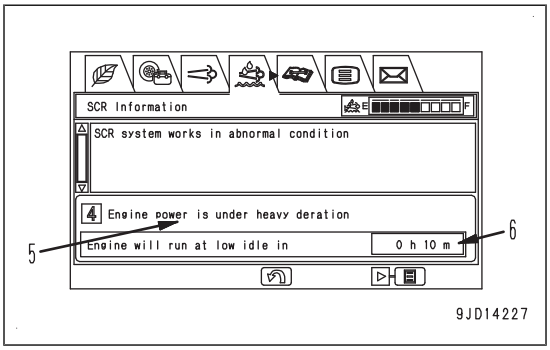
- Severe Inducement:

  The audible alert sounds in “Continuous alarm”.
  The KDPF system caution lamp (1) lights up in red.
  DEF system caution lamp (2) lights up in red.
  Action level “L04” lights up in red at action level display (3).
  Press the menu switch to display the “SCR Information” screen.



“SCR Information” screen message (5): 4 “Engine power is under heavy deration.”

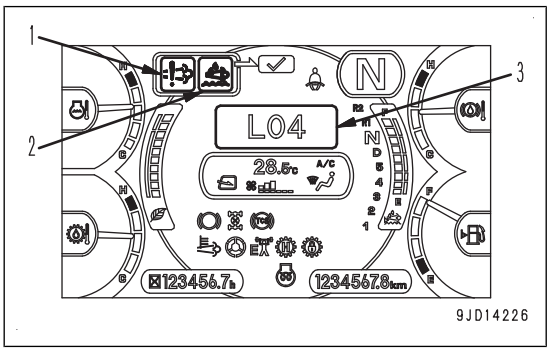
Due to the further deration of engine power, capability the machine will be limited further.
The duration time of “Severe Inducement” is 1 hour. The remaining time (hours and minutes) “Final Inducement” is displayed in the column (6) of “SCR Information” screen.
In “Final Inducement”, engine speed will be fixed at low idle.
Engine power can be restored temporarily from power derate. If Inducement advances to “Severe Inducement” and it becomes necessary to restore engine power, use the engine power restoration function to move the



machine to a safe place and contact your Komatsu distributor. This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily to the power deration of “Low level Inducement / Mild Inducement”. For the engine power restoration procedure, refer to the section of “Temporary Restoration from Inducement” in this manual.

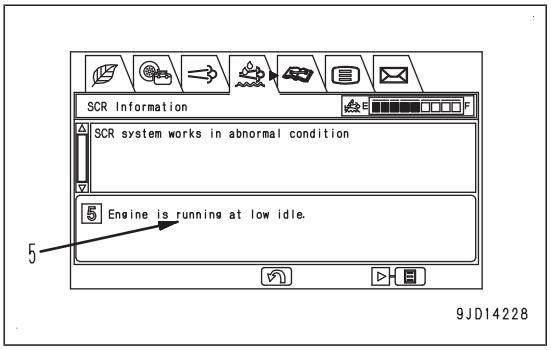
- Final Inducement:

  The audible alert sounds in “Continuous alarm”.
  The KDPF system caution lamp (1) lights up in red.
  The DEF system caution lamp (2) lights up in red.
  Action level “L04” lights up in red (3) at action level display.
  Press the menu switch to display the “SCR Information” screen.



“SCR Information” screen message (5): 5 “Engine is running at low idle.”

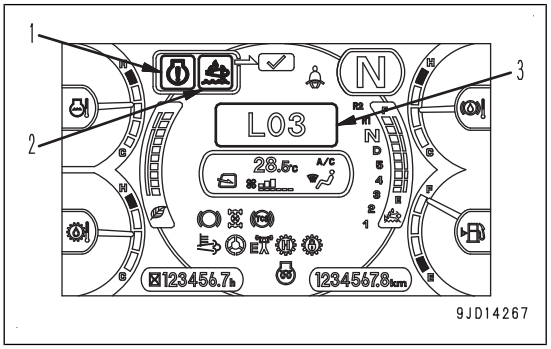
Engine speed is fixed at low idle to disable practical machine operation.
Move the machine to a safe place and contact your Komatsu Distributor.



Inducement strategy when abnormality is found in the Urea SCR system by the EGR Valve System

If an abnormality by the EGR Valve System is sensed in the the Urea SCR system, the Inducement strategy is activated.

The Inducement strategy moves in 4 levels, “Warning”, “Continuous Warning / Escalated Warning”, “Low level Inducement / Mild Inducement” and “Severe Inducement”. The Inducement strategy includes visual warning by the engine system caution lamp (1), DEF system caution lamp (2), and action level shown on the machine monitor (3), and buzzer sound and stepwise engine power deration that continues to speed limitation to low idle. The engine power deration starts with action level “L03 (Low level Inducement / Mild Inducement)” and goes to further deration when “L04 (Severe Inducement)” is shown. When action level “L03” is shown, move the machine to a safe area and consult your Komatsu distributor.

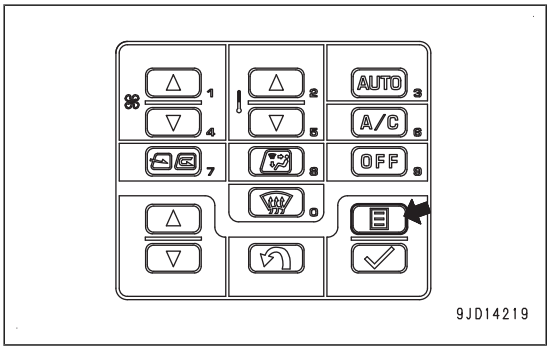


The content of the warning can be checked on the “SCR Information” screen of the user menu.

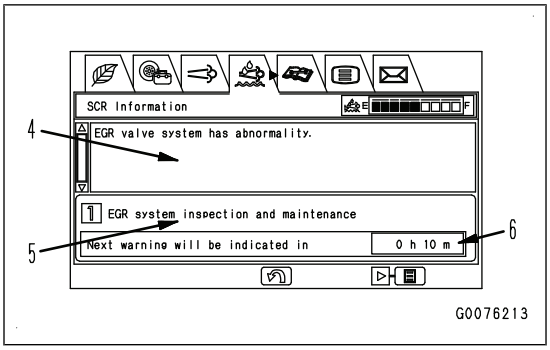
Do the procedure that follows.

Push the menu switch to show the “SCR Information” screen.

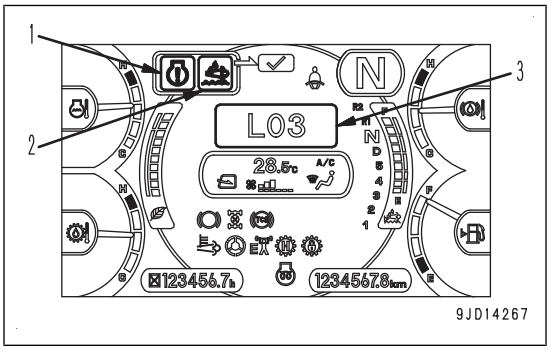
3 seconds after the machine is stopped, “SCR Information” screen is shown.



“SCR Information” screen shows remaining time to the next Inducement status in the column (6), and information on the Urea SCR System condition (4), and the current status of Inducement (5).

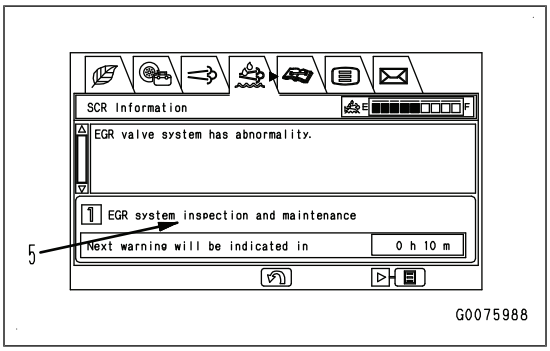


- Warning:
  The alarm buzzer operates in “Intermittent alarm”.
  The engine system caution lamp (1) lights up in red.
  The action level “L03” is shown in red (3).
  Push the menu switch to show the “SCR Information” screen.

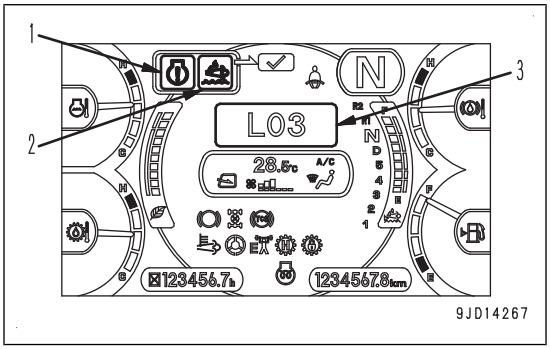


“SCR Information” screen message (5): 1 “EGR system inspection and maintenance”

Engine power is derated.
Move the machine to the safe area and consult your Komatsu distributor.
If operation continues for 5 hours after “Warning” started with no actions instructed by the action level table, Inducement goes to “Continuous Warning / Escalated Warning”.

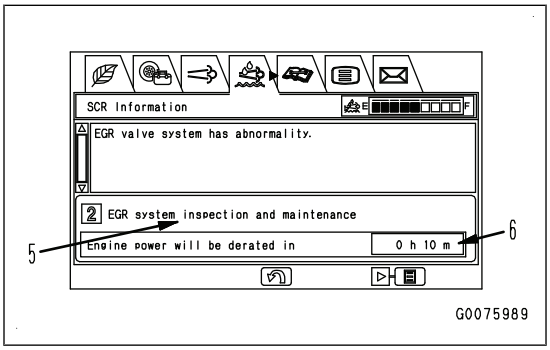


- Continuous Warning / Escalated Warning:
  The alarm buzzer operates in “Intermittent alarm”.
  The engine system caution lamp (1) lights up in red.
  The DEF system caution lamp (2) lights up in yellow.
  The action level “L03” is shown in red (3).
  Push the menu switch to show the “SCR Information” screen.

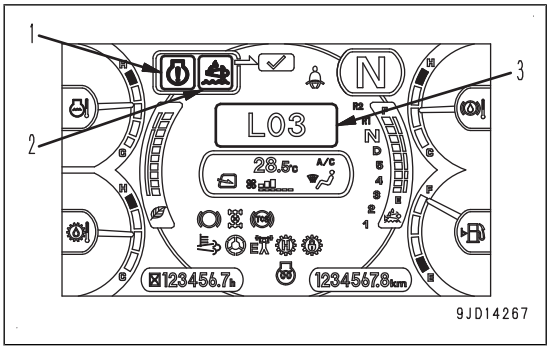


“SCR Information” screen message (5): 2 “EGR system inspection and maintenance”

Move the machine to the safe area and consult your Komatsu distributor.
The duration time of “Continuous Warning / Escalated Warning” is 5 hours. The remaining time (hours and minutes) to “Low level Inducement / Mild Inducement” is shown in the column (6) of “SCR Information” screen.
In “Low level Inducement / Mild Inducement”, engine power will be derated.

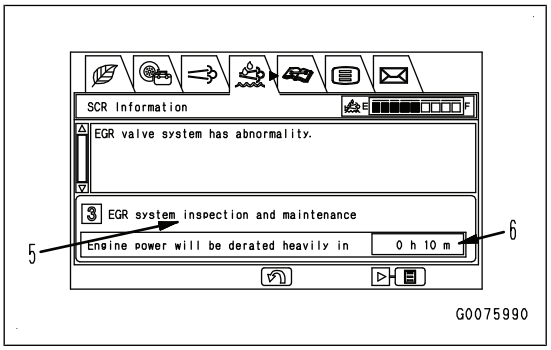


- Low level Inducement / Mild Inducement:
  The alarm buzzer operates in “Intermittent alarm”.
  The engine system caution lamp (1) lights up in red.
  The DEF system caution lamp (2) lights up in red.
  The action level “L03” is shown in red (3).
  Push the menu switch to show the “SCR Information” screen.

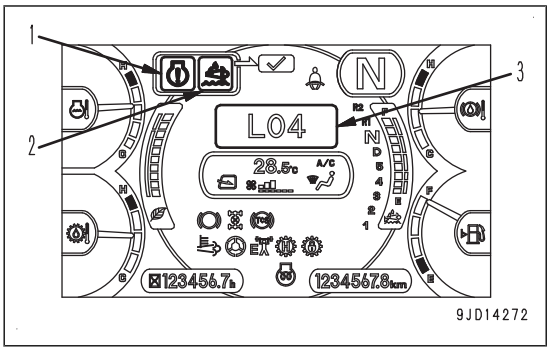


  “SCR Information” screen message (5): 3 “EGR system inspection and maintenance”

  Because of the reduction of engine power, the machine normal operation will be limited.
  The duration time of “Low level Inducement / Mild Inducement” is 10 hours. The remaining time (hours and minutes) to “Severe Inducement” is shown in the column (6) of “SCR Information” screen.
  In “Severe Inducement”, engine power will be derated further.
  Move the machine to the safe area and consult your Komatsu distributor.

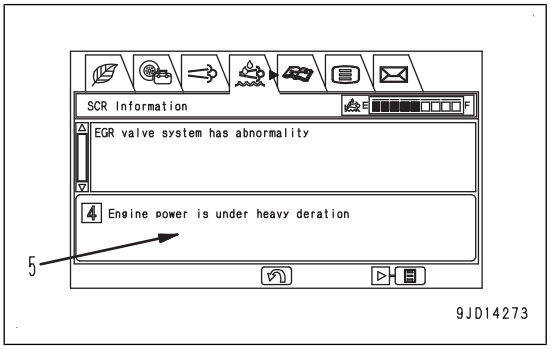


- Severe Inducement:
  The alarm buzzer operates in “Continuous alarm”.
  The engine system caution lamp (1) lights up in red.
  The DEF system caution lamp (2) lights up in red.
  The action level “L04” is shown in red (3).
  Push the menu switch to show the “SCR Information” screen.



  “SCR Information” screen message (5): 4 “Engine power is under heavy deration.”

  Because of the further deration of engine power, the machine operation will be limited further.
  If the restoration of the EGR system abnormality is not done, engine power will kept be derated.



  Engine power can be restored temporarily from power derate. If Inducement advances to “Severe Inducement” and it becomes necessary to restore engine power, use the engine power restoration function to move the machine to a safe place and contact your Komatsu distributor. This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily to the power deration of “Low level Inducement / Mild Inducement”. For the engine power restoration procedure, refer to the section of “Temporary Restoration from Inducement” in this manual.

Temporary Restoration from Inducement

Temporary Restoration from Inducement is one of the Inducement strategies allowed to be included in Urea SCR systems.

In case the Urea SCR system goes to “Severe Inducement”, engine power is derated heavily. This can cause difficulties of moving the machine to a safe area to add DEF or troubleshoot and correct the abnormalities of the

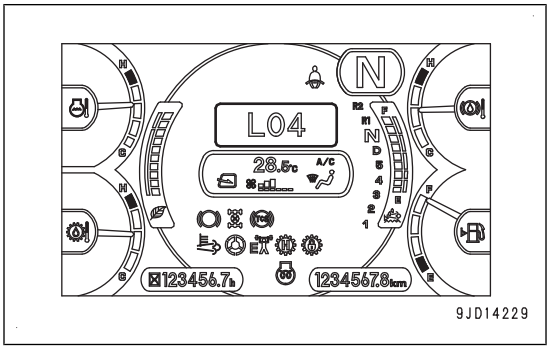
Urea SCR system. For temporary remedies from these difficulties the operator can restore engine power for a short time to the deration of “Low level Inducement / Mild Inducement” through the machine monitor. “Temporary Restoration from Inducement” does not regain full engine power.

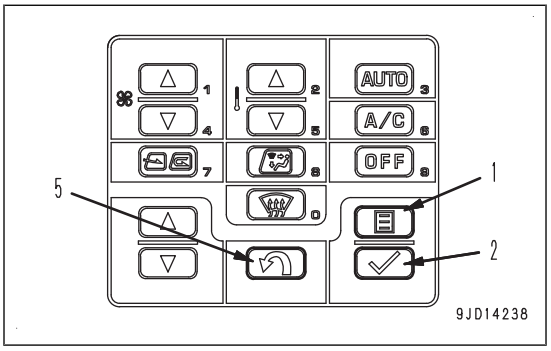
“Temporary Restoration from Inducement” can be activated only when the Urea SCR system is in “Severe Inducement”. The maximum duration is limited to 30 minutes in each restoration operation, and only 3 operations are allowed unless all the abnormalities of the Urea SCR system are corrected.

If the system goes to “Severe Inducement”, use “Temporary Restoration from Inducement” immediately.

Procedure to activate “Temporary Restoration from Inducement”

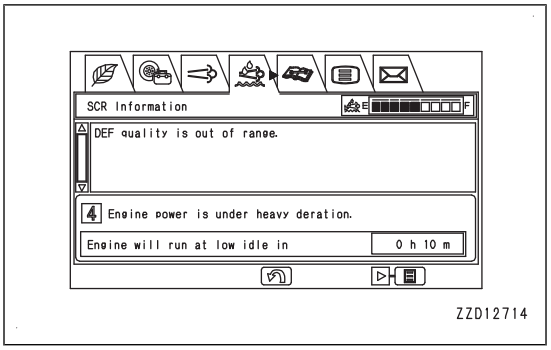
1. Push the menu switch (1) to show the “SCR Information” screen when the standard screen is shown, only when the Urea SCR system is in “Severe Inducement”.





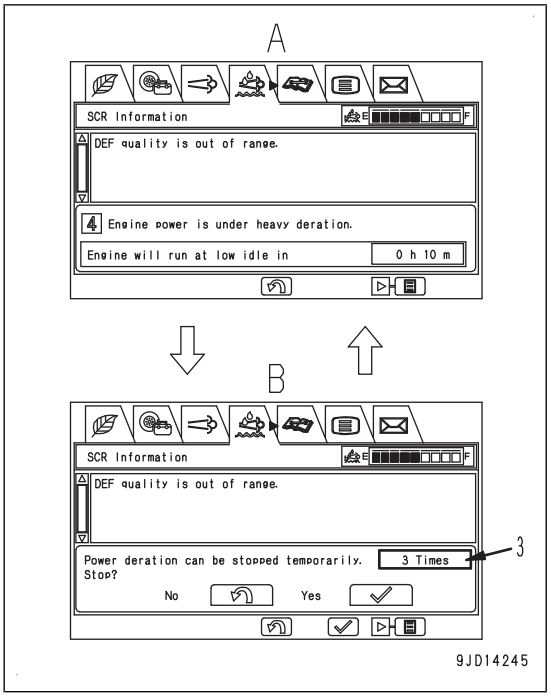
2. Push the ENTER switch (2) to show the menu windows popping up in the bottom half of the “SCR Information”.

   The menu windows popping up in the bottom half of the “SCR Information” screen change every 15 seconds as shown in the graphics A and B.



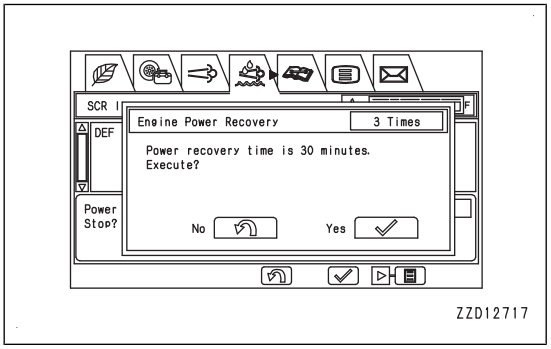
3. Push the ENTER switch (2) while the pop-up menu screen B is shown.

   “Engine Power Recovery” window will be shown.
   If the ENTER switch (2) is not pushed for 30 seconds, “standard screen” will be shown, and push the menu switch (1) to start again.
   The remaining number of operations of “Temporary Restoration from inducement” is shown in the column (3) of the pop-up menu window B.

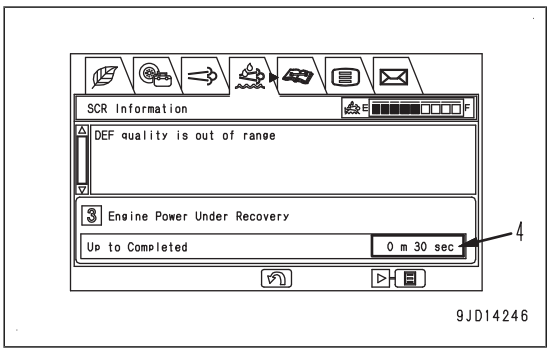


4. Push the ENTER switch (2) while the “Engine Power Recovery” window is shown.

   “Temporary Restoration from Inducement” is activated and engine power deration is relieved to the deration of “Low level Inducement / Mild Inducement” for the maximum of 30 minutes.



   The remaining time (minutes and seconds) of “Temporary Restoration from Inducement” is shown in the column (4) on the “SCR Information” screen.

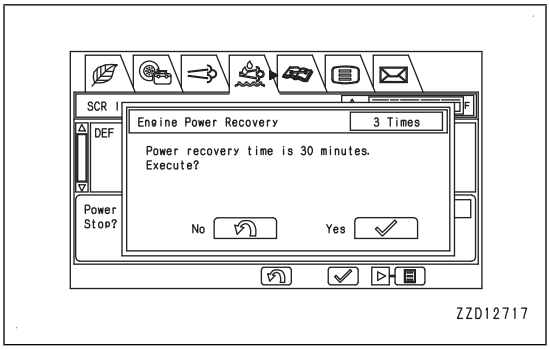


If it is decided NOT to activate “Temporary Restoration from Inducement” from the “Engine Power Recovery” window, follow the steps explained in this section.

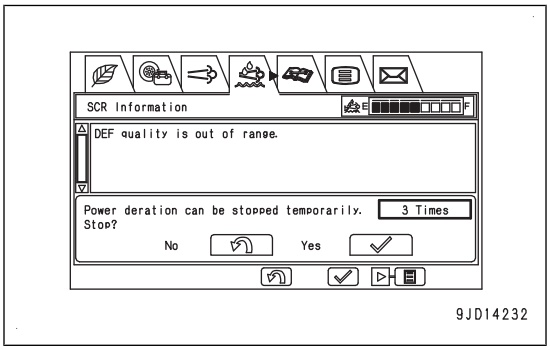
To deactivate “Temporary Restoration from Inducement” function

1. Push the RETURN switch (5) while the “Engine Power Recovery” window is shown.

   This procedure is split from the procedure 4 in “Temporary Restoration from Inducement”.

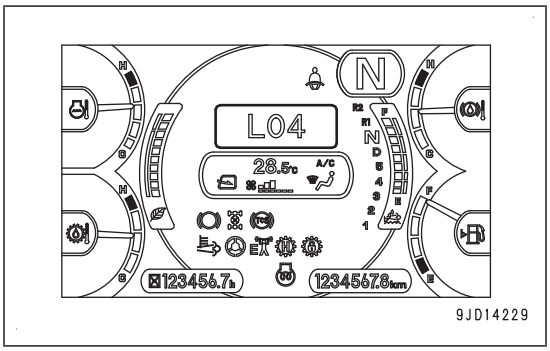


   “SCR Information” screen is shown.



2. Move the machine and “standard screen” will be shown.

   “Temporary Restoration from Inducement” is deactivated.



Temporary Restoration from Inducement

(In the case of the Engine with EU+EPA/CARB dual labelling name-plate)

Temporary Restoration from Inducement is one of the Inducement strategies allowed to be included in Urea SCR systems.

In case the Urea SCR system advances to “Severe Inducement”, engine power is derated heavily. This may cause difficulties of moving the machine to a safe place for adding DEF or troubleshooting and correcting abnormalities of the Urea SCR system. For temporary remedies from these difficulties the operator can restore engine power for a short time to the deration of “Low level Inducement / Mild Inducement” through the machine monitor. Note that “Temporary Restoration from Inducement” does not regain full engine power.

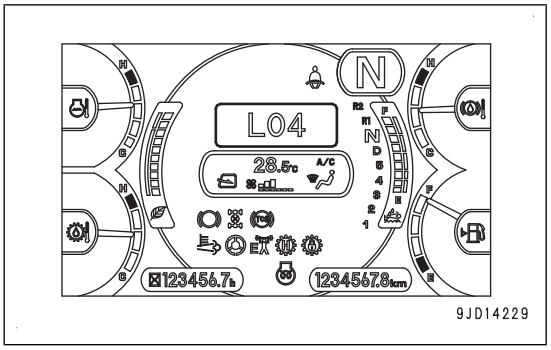
“Temporary Restoration from Inducement” can be activated only when the Urea SCR system is in “Severe Inducement”. The maximum duration is limited to 30 minutes in each restoration operation, and 3 operations are allowed, but “Temporary Restoration from Inducement” is turned off whenever the system advances to “Final Inducement” even if either 30 minutes or 3 operations are not used up.

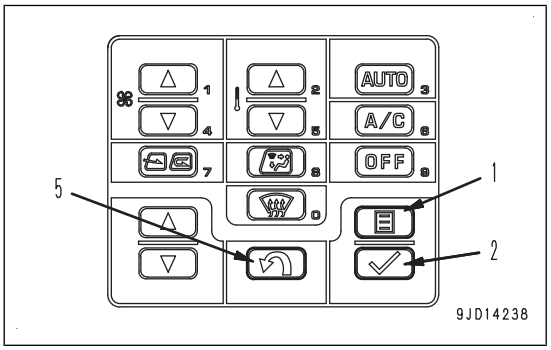
All the abnormalities of the Urea SCR system need to be corrected to regain another restoration capability.

If all the abnormalities of the Urea SCR system are not corrected when the system is in “Severe Inducement”, the system advances to “Final Inducement” in 1 hour after “Severe Inducement” started and engine speed will be fixed to low idle to disable practical machine operation. If the system advances to “Severe Inducement”, utilize “Temporary Restoration from Inducement” immediately.

Procedure to activate “Temporary Restoration from Inducement”.

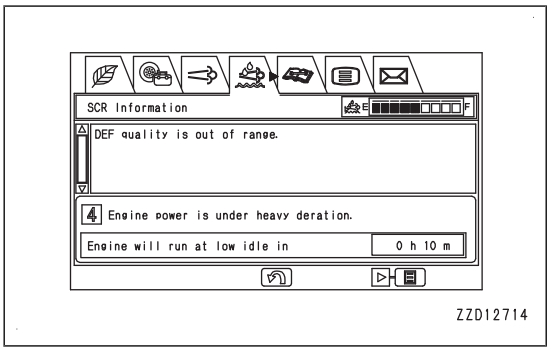
1. Press the menu switch (1) to display the “SCR Information” screen when the Standard screen is on, only when the Urea SCR system is in “Severe Inducement”.





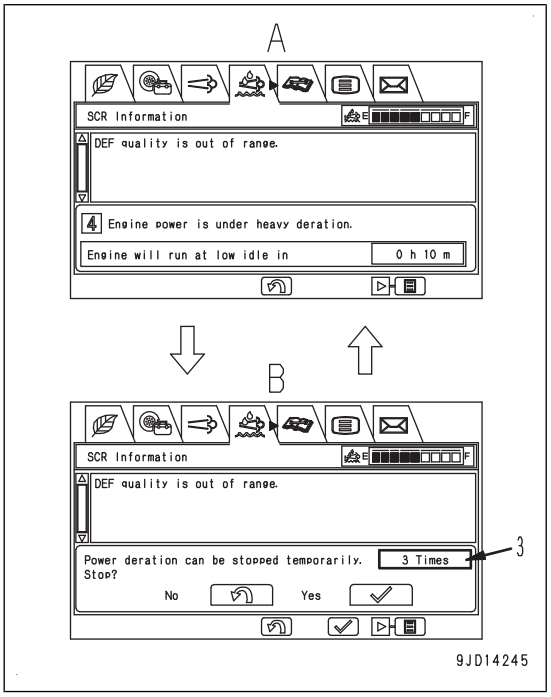
2. Press the enter switch (2) to display the menu windows popping up in the bottom half of the “SCR Information”.

   The menu windows popping up in the bottom half of the “SCR Information” screen alternate every 15 seconds as shown in the graphics A and B.



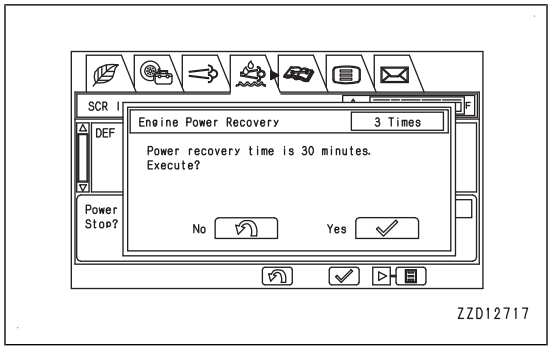
3. Press the enter switch (2) while the pop-up menu screen B is displayed.

   The “Engine power Recovery” window will be displayed.
   If the enter switch (2) is not pressed for 30 seconds, “Standard Screen” will be displayed, and start again by pressing the menu switch (1).
   The remaining number of operations of Temporary Restoration from inducement is displayed in the column (3) of the pop-up menu window B.

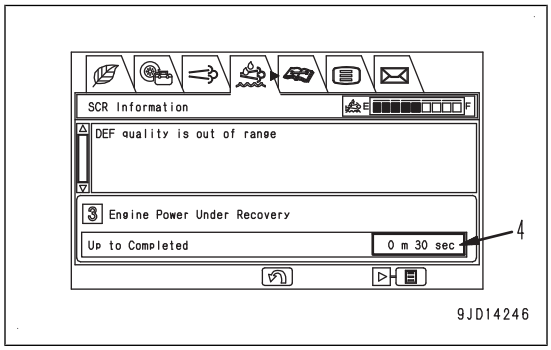


4. Press the enter switch (2) while the “Engine power Recovery” window is displayed.

   Temporary Restoration from Inducement is activated and engine power deration is relieved to the deration of “Low level Inducement / Mild Inducement” for the maximum of 30 minutes as long as there is sufficient remaining time to “Final Inducement”.
   Note that whenever Inducement advances to “Final Inducement” Temporary Restoration from Inducement will be turned off.



   The remaining time (minutes/seconds) of “Temporary Restoration from Inducement” is displayed in the column (4) on the “SCR Information” screen.

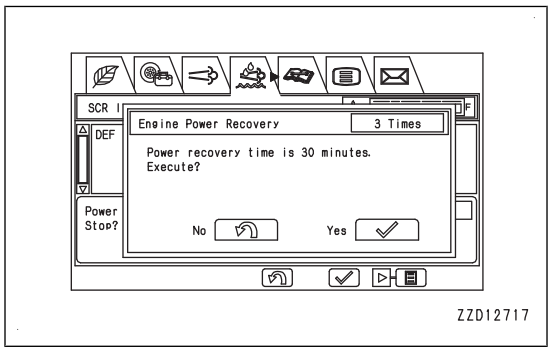


If it is decided NOT to activate “Temporary Restoration from Inducement” after having progressed to the “Engine Power Recovery” window, follow the steps explained in this section.

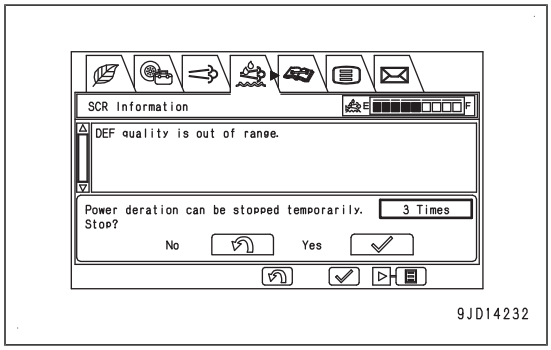
To deactivate “Temporary Restoration from Inducement” function.

1. Press the return switch (5) while the “Engine Power Recovery” window is displayed.

   This procedure is split from procedure 4 in “Temporary Restoration from Inducement”.

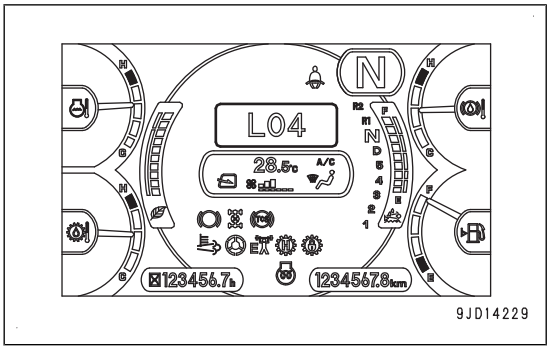


   “SCR Information” screen is displayed.



2. Move the machine to display the to display “Standard Screen”.

   “Temporary Restoration from Inducement” is deactivated.



Inducement Strategy for abnormalities recurrences within 40 hours

Urea SCR system has functions to monitor the system operation and to save the information of the abnormal state. The stored information is used to monitor recurrences of abnormalities by “Abnormality Recurrence Counter”. “Abnormality Recurrence Counter” is required by the authorities. The recurrence monitoring continues 40 hours and it monitors the abnormalities that cause Inducement other than the quantity of DEF in the tank.

If an abnormality occurs in the Urea SCR system and it is restored, and after the abnormality of the same type occurs again within 40 hours, the recurrence monitoring function senses that a failure code is a recurrence even though the failure code is different from the previous one.

The warning level of the recurrence is as follows.

- When an abnormality occurs again after the restoration from the level of “Severe Inducement”, it becomes “Low level Inducement / Mild Inducement”.
  - If the SCR system abnormality or the EGR valve system abnormality occurs again, the remaining time is 1 hour at the level of “Low level Inducement / Mild Inducement”.
  - If one of the abnormalities (DEF quality abnormality, DEF injection abnormality, KDPF system abnormality) occurs again, the remaining time is 2 hours at the level of “Low level Inducement / Mild Inducement”.

  If all the abnormalities are not corrected, the inducement goes to “Severe Inducement”, and the engine output is lowered more.
- When an abnormality occurs again after the restoration from the levels of “Warning”, “Continuous Warning / Escalated Warning”, “Low level Inducement / Mild Inducement”, the inducement status goes back to that of the restoration from the previous abnormality. The remaining time becomes the time from the previous inducement to the next one. The inducement status starts again from the previous inducement.

If the inducement strategy is done, move the machine to a safe area and consult your Komatsu distributor.

This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily to the power deration of “Low level Inducement / Mild Inducement”. For the engine power restoration procedure, refer to the section of “Temporary Restoration from Inducement” in this manual.

Inducement Strategy for abnormalities recurrences within 40 hours

(In the case of the Engine with EU+EPA/CARB dual labelling name-plate)

The Urea SCR system continuously monitors its operation conditions and stores information on inappropriate operations including malfunctions. The stored information is utilized to monitor recurrences of abnormalities, “Abnormality Recurrence Counter”. “Abnormality Recurrence Counter” is required by the U.S. Environmental Protection Agency. The recurrence monitoring spans 40 hours and it monitors the abnormalities that trigger Inducement other than the amount of DEF in the tank.

If an abnormality occurs in the Urea SCR system and it is restored, and after the abnormality of the same type occurs again within 40 hours, the recurrence monitoring function senses that a failure code is a recurrence even though the failure code is different from the previous one.

The warning level of the recurrence is as follows.

- If one of the abnormalities (SCR system abnormality, DEF quality abnormality, KDPF system abnormality) occurs again, the inducement status goes to “Severe Inducement”.
  If this occurs, utilize “Temporary Restoration from Inducement” and move the machine to a safe place, and contact your Komatsu distributor.

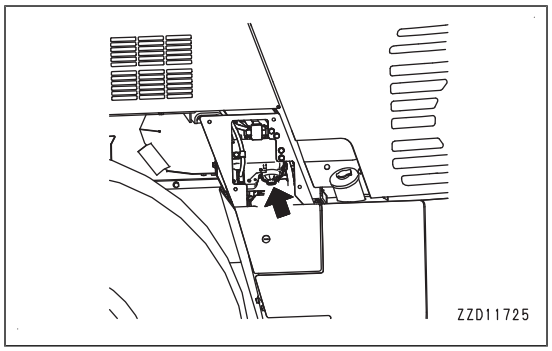
In the recurrence, the remaining time is 30 minutes at the level of “Severe Inducement”.
If all the abnormalities are not corrected, the inducement goes to “Final Inducement”. The engine speed is fixed to low idle to disable the machine operation.“Temporary Restoration from Inducement” is canceled, and its function will be recovered when all the abnormalities are corrected.

- The warning level of the recurrence of the EGR valve system abnormality is as follows.
  - When an abnormality occurs again after the restoration from the level of “Severe Inducement”, it becomes “Low level Inducement / Mild Inducement”.
    In the recurrence, the remaining time is 1 hour at the level of “Low level Inducement / Mild Inducement”.
    If all the abnormalities are not corrected, the inducement goes to “Severe Inducement”, and the engine output is lowered more.
  - When an abnormality occurs again after the restoration from the levels of “Warning”, “Continuous Warning / Escalated Warning”, “Low level Inducement / Mild Inducement”, the inducement status goes back to that of the restoration from the previous abnormality. The remaining time becomes the time from the previous inducement to the next one. The inducement status starts again from the previous inducement.

If the inducement strategy is done, move the machine to a safe area and consult your Komatsu distributor.
This engine power restoration works only when the Inducement status is “Severe Inducement” and relieves back temporarily to the power deration of “Low level Inducement / Mild Inducement”. For the engine power restoration procedure, refer to the section of “Temporary Restoration from Inducement” in this manual.

DEF FILTER

DEF filter is an filter element to clean DEF sucked from the DEF tank by DEF pump, and to supply it to DEF injector.



NOTICE

- **The DEF filter element needs to be replaced every 2000 hours..**
- **If the machine is operated without DEF filter attached, or with the filter other than Komatsu genuine parts, foreign materials may enter into DEF pump and DEF injector which will cause failure of the machine. Never operate the machine without DEF filter attached, nor use the filter other than Komatsu genuine parts.**
- **DEF filter cannot be flushed. Flushing or regenerating of it will degrade the performance of DEF filter, and will contaminate DEF pump and DEF injector which will cause the failure of the machine. Never reuse the DEF filter.**

KOMTRAX

⚠ WARNING

- **Never disassemble, repair, modify, or move the wireless communication terminal, antenna, or cables. This may cause failure or fire on the wireless equipment or the machine itself.**
- **Near the blasting jobsite, there may be a danger of unexpected explosion due to use of the wireless equipment and resulting serious personal injury or death.**
  If you have to operate the machine within 12 m from the remote-controlled blasting device, the power supply cable of the wireless communication device must be disconnected in advance.

KOMTRAX is a vehicle management system that remotely manages the machines equipped with the KOMTRAX device by using satellite communication or portable radio communication.

The GPS (Global Positioning System), receiver, and communication system are equipped in the vehicle management system.

The machine information such as the machine maintenance, maintenance management, operating situation management, and machine location management is gathered from the inside network of the machine. It can be useful for you to perform the machine management by yourself. Your Komatsu distributor uses the above machine information for supply of service to the customers, improvement of our products and service, etc.

The type of information which is sent from the machine may vary depending on the machine. For the radio station establishment of KOMTRAX, consult your Komatsu distributor.

POWER SUPPLY FOR KOMTRAX

- Even when the starting switch key is in OFF position, KOMTRAX system consumes a small amount of electric power.
  It is recommended to start the engine periodically to charge the battery.
- When using the battery disconnect switch, turn the starting switch to OFF position, and after checking that the system operating lamp is not lit, set the battery disconnect switch key to OFF position and pull it out.
  When the battery disconnect switch is turned to OFF position, it prevents the battery power from being consumed, but the functions of KOMTRAX stop at the same time.
- If the power supply cable of KOMTRAX system device has to be disconnected, contact your Komatsu distributor.

OBSERVANCE OF THE APPLICABLE LAWS AND REGULATIONS, EXEMPTION

The KOMTRAX equipment is a wireless device using radio waves, so it is necessary to obtain authorization and conform to the laws of the country or territory where the machine equipped with KOMTRAX is being used. Observe the applicable laws and regulations of the country or region in which the machine is used.

Always contact your Komatsu distributor before exporting this machine equipped with KOMTRAX or using it in a foreign country.

The KOMTRAX may already have been registered and used if the machine is purchased as second-hand. For the registration and usage records of KOMTRAX, consult your Komatsu distributor.

If the machine has been lent out by the customer, the borrower or another third party may have been using the KOMTRAX. Confirm with the lessor about using condition of KOMTRAX.

Komatsu may suspend KOMTRAX communication in the following cases.

- When Komatsu judges that KOMTRAX is used by an unregistered customer.
- When Komatsu judges that KOMTRAX is used in a country or region where its use is not authorized.
- In other cases that Komatsu or Komatsu distributor judges that it is necessary to suspend KOMTRAX communication.

If you do not observe the above rules, neither Komatsu nor your Komatsu distributor shall be held liable for any resulting impacts or damages.

NOTICE

For more information on KOMTRAX and the Radio Equipment Directive (2014/53/EU), please refer to the Komatsu Europe website.
https://www.komatsu.eu/Komtrax-Radio-Equipment-Directive

MACHINE OPERATIONS AND CONTROLS

CHECKS AND ADJUSTMENT BEFORE STARTING ENGINE

METHOD FOR WALK-AROUND CHECK

Walk around the machine and look at the underside of chassis for anything unusual like loose bolts and nuts, leakage of fuel, oil and coolant before starting the engine. Also check the condition of the work equipment and the hydraulic system.

Check also for loose wiring, play, and accumulation of dust in places that get very hot and are exposed to extremely high temperatures.

⚠ WARNING

- **Always hang the warning tag from the gear shift lever.**
- **Any combustible materials accumulated around the exhaust pipe, aftertreatment devices, turbocharger, or other high temperature engine parts or dump body (equipped with dump body heating specifications) or the battery, and leakage of fuel or oil will cause the machine to catch fire.**
  Check carefully, and if any problem is found, repair and clean it or contact your Komatsu distributor.
- **The lamps may become hot. Wait until they have cooled down before starting any work.**

If the machine is inclining, make it level before checking.

Always perform the following inspections and cleaning every day before starting engine for the day's work.

1. Check the dump body, frame, tires, cylinders, linkage, and hoses for cracks or excessive wear or play.

   Check the dump body, frame, tires, cylinders, linkage, and hoses for cracks or excessive wear or play, and perform repairs if any problem is found.

   To check the dump body, see “METHOD FOR CHECKING DUMP BODY”.
2. Remove dirt and debris from around the engine, battery, radiator, and aftercooler.

   Check that there is no dirt or dust accumulated around the engine, radiator or aftercooler. Check also that there is no combustible material (dry leaves, twigs, etc.) accumulated around the battery, or muffler, turbocharger, or other high temperature parts of the engine or dump body (equipped with dump body heating specification). Remove any dirt or combustible materials that are found.
3. Check around the engine for coolant and oil leakage.

   Check for oil leakage from the engine and coolant leakage from the cooling system. If any problem is found, repair it.

   When you open the engine hood for the check, see “METHOD FOR CHECKING FOR LOOSENESS OF ENGINE INTAKE PIPE CLAMP”.
4. Check the fuel line for leakage.

   Check for leakage of fuel or damage to the hoses and tubes. If any problem is found, repair it.
5. Check DEF line for leakage.

   Check DEF tank, pump, injector, and hoses and their connections for leakage. If any problem is found, ask your Komatsu distributor for repair.
6. Remove dirt from around the aftertreatment devices.

   Check for dirt and combustible materials (dry leaves, twigs, etc.) accumulated around the aftertreatment devices. If any dirt or combustible materials are found, remove them.
7. Check around the aftertreatment devices for exhaust gas leakage.

   Check the pipe connecting the turbocharger to the aftertreatment devices and also KDPF connections for leakage of exhaust gas (and deposition of soot).

   If any problem is found, ask your Komatsu distributor for repair.

8. Check the hose to KCCV and oil drain hose.

   Check the hose to the KCCV and the oil drain hose for breakage and leakage.

   If there is breakage or leakage, the emission standards are not satisfied. Ask your Komatsu distributor for repair.

9. Check around SCR for exhaust gas leakage.

   Check the pipe between the KDPF and SCR and also the SCR connections for leakage of exhaust gas (and urea deposit). If any problem is found, ask your Komatsu distributor for repair.

10. Check for oil leakage from the transmission case, differential case, final drive case, hydraulic tank, brake control oil tank, hoses, and joints.

    Check for oil leakage. If any problem is found, repair the place where the oil is leaking.

    Check for oil leakage from the undercover and oil drop trace on the ground.

11. Check the tires, wheels, and wheel hub bolts and nuts for damage and wear, and check the wheel hub bolts and nuts for looseness.

    Check for cracks or peeling of the tires and for cracks or wear to the wheels (side ring, rim base, lock ring). If any loose wheel hub bolts or hub nuts are found, retighten them.

    If any problem is found, repair or replace the part.

    If any valve cap is missing, install a new one.

12. Check the air cleaner mounting bolts for looseness.

    Check the bolts for looseness. Retighten them if any loose bolts are found.

13. Check the dump body mount rubbers.

    Check for any cracks, caught foreign objects, or loose bolts.

    To check the dump body mount rubber, see “METHOD FOR CHECKING DUMP BODY”.

14. Check for damage to the handrail and loose bolts.

    If any breakage is found, repair it, and retighten the bolts.

15. Check the lamp and rearview camera for damage.

    If any part is damaged, replace it with new one.

    Clean off any dirt on the surface.

    If any problem is found in headlamps, ask your Komatsu distributor for repair.

16. Check the side mirror and under view mirror.

    Check that the mirrors are not damaged. If any one is damaged, replace it with a new one.

    Clean the surfaces of the mirrors and adjust the angle according to “METHOD FOR ADJUSTING MIRRORS”.

17. Check the machine monitor and rearview monitor for abnormality.

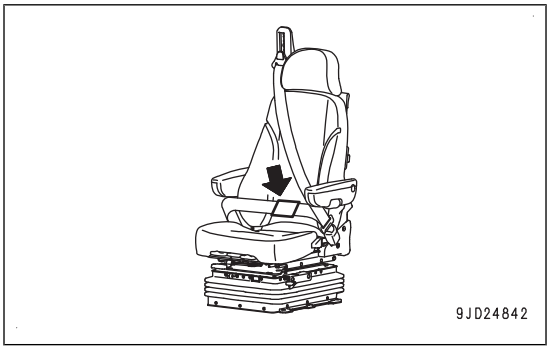
    Check the machine monitor and rearview monitor for abnormality. If any abnormality is found, replace the failed monitor.

    Clean off any dirt on the surface.

18. Check the seat belt and mounting hardware.

⚠ WARNING

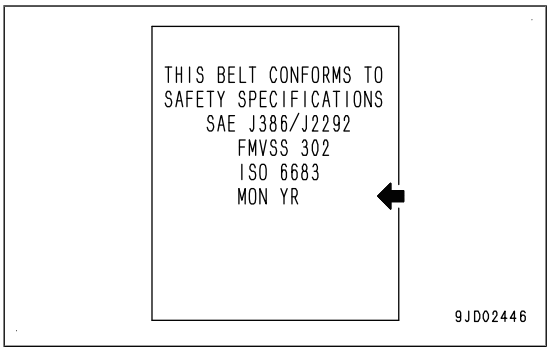
Even if no problem can be seen on the appearance of the seat belt, replace it in accordance with the following schedule whichever date comes sooner.
5 years after the date of seat belt manufacture, or every 3 years after the start of actual usage.



REMARK

The date indicated on the seat belt is the manufactured date. It is the start of the 5-year period.

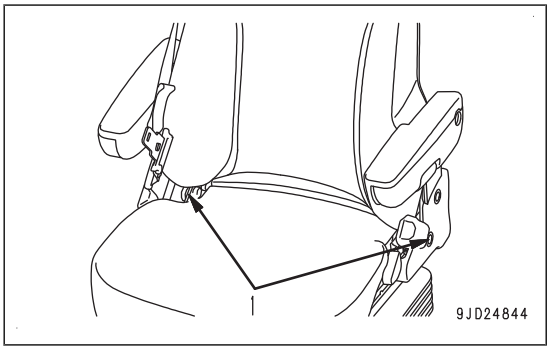
The manufactured date of the seat belt is printed on the label indicated by the arrow in the figure.



Check the seat belt and mounting hardware (1) (2 places) for abnormality.

If any part is damaged, replace it with a new one.

- Check for looseness of the bolts (1) (2 places) of mounting hardware which is installed to the machine. Retighten them if any loose bolts are found.
  Tightening torque: 37.3 to 41.2 Nm {3.8 to 4.2 kgfm}
- If the seat belt is scratched or frayed, if any fitting is broken or deformed, replace the seat belt.



19. Check the tires.

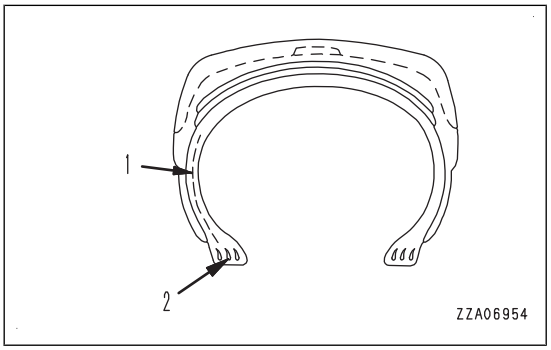
⚠ WARNING

If worn or damaged tires are used, they may burst and cause serious injury or death.
To ensure safety, do not use the following tires.
Wear

- **Tires with the tread groove depth of 15 % or less of that of a new tire**
- **Tires with the abnormal wear such as uneven wear or stepped wear**

Damage

- **Tires with damage that has reached cords (1), or with cracks in the rubber**
- **Tires with cut or broken cords (1)**
- **When tires are peeled (separated)**
- **Tires with damaged bead (2)**
- **Air leaking tubeless tires or improperly repaired tires**
- **Deteriorated, deformed or abnormally damaged tires, which do not seem usable**



20. Check the wheel rims.

Check that the wheel rims and rings are free from deformation, damage caused by corrosion, and cracks.

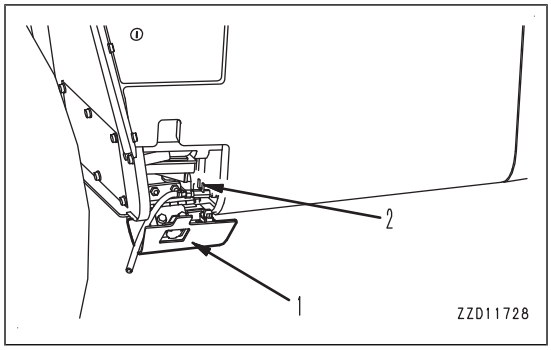
In particular, check the side rings, lock rings and rim flanges thoroughly.

METHOD FOR CHECKING BEFORE STARTING

Always check the items in this section before starting the engine each day.

METHOD FOR DRAINING WATER AND SEDIMENT FROM FUEL TANK

1. Open fuel drain valve cover (1).
2. Place a container to receive drained oil under drain valve (2) at the bottom of the fuel tank.
3. Loosen drain valve (2) to drain all the sediment and water accumulated at the bottom together with fuel.
4. When clean fuel flows out, close drain valve (2).



METHOD FOR CHECKING LOOSENESS OF WHEEL HUB BOLTS, RETIGHTENING BOLTS

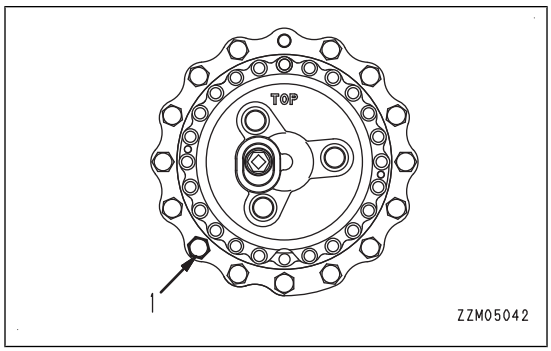
Check wheel hub bolts (1) for breakage or looseness.
If any wheel hub bolt (1) of a wheel is broken, replace all the wheel hub bolts for that wheel.

If any bolt is loose, retighten it.

Tightening torque: 824 to 1030Nm {84 to 105kgfm}

Insert a socket wrench in a pipe, then apply a force of 932N {95kgf} at point 1m from the fulcrum. This will give a tightening torque of 932Nm {95kgfm}.

When the hub bolts are tightened after the tires are replaced, travel for 5 to 6km, then check for loose hub bolts.



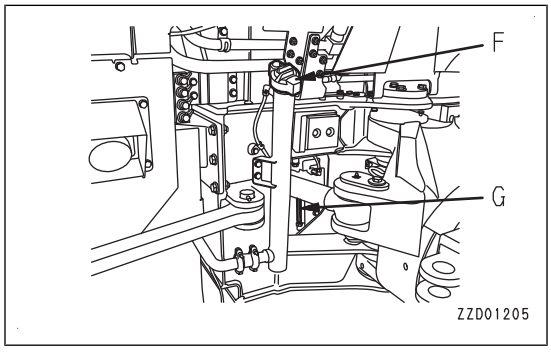
METHOD FOR CHECKING OIL LEVEL IN TRANSMISSION CASE, ADDING OIL

1. Start the engine.
2. Run the engine at low idle and check the oil level using the “LOW TEMPERATURE” scale on sight gauge (G).

   If the oil level is low, add oil through oil filler port (F).

   NOTICE

   - **The oil level changes according to the oil temperature, so check the oil level after completing the warming-up operation.**
   - **During operations or when idling the engine after operations, check the oil level using the “HIGH TEMPERATURE” scale.**



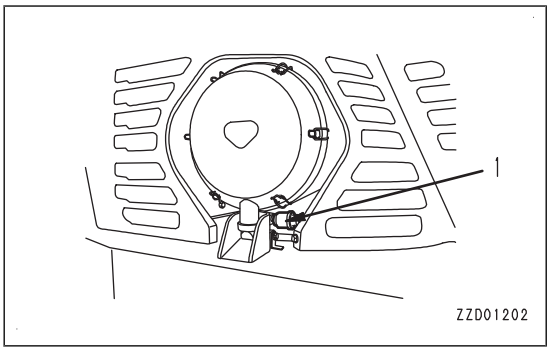
METHOD FOR CHECKING DUST INDICATOR

1. Check that the red line in the transparent portion of dust indicator (1) does not indicate 7.5 kPa {0.076 kgf/cm^2}.

   If the red line indicates 7.5 kPa {0.076 kgf/cm^2}, clean or replace the air cleaner element immediately.

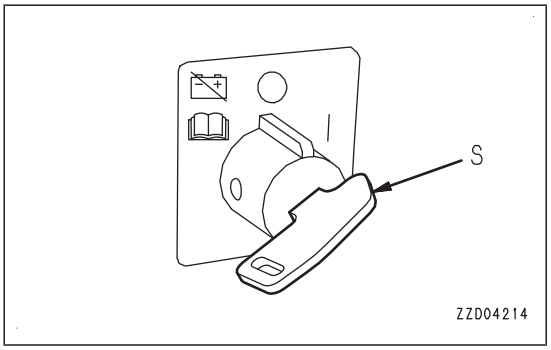
   For the cleaning method of the element, see “METHOD FOR CHECKING, CLEANING AND REPLACING AIR CLEANER”.

2. After cleaning or replacing, press the top of dust indicator (1) to return the red line to its original position.



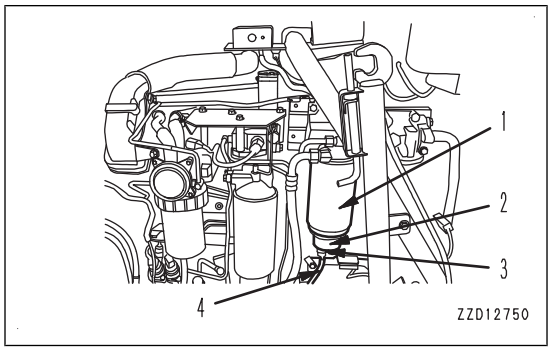
METHOD FOR CHECKING BATTERY DISCONNECT SWITCH

Check that battery disconnect switch (S) is in ON position (I).



METHOD FOR CHECKING WATER SEPARATOR, DRAINING WATER AND SEDIMENT

The water separator forms one unit with fuel prefilter (1).



1. Check for water and sediment.

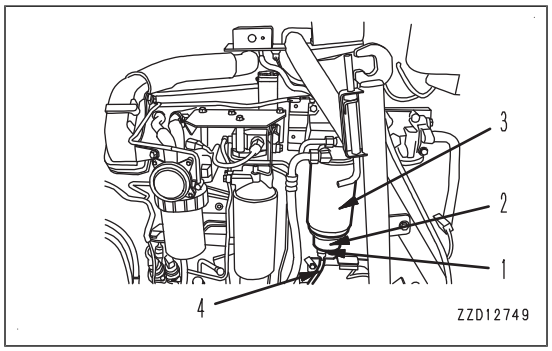
   The water level and sediment are seen through transparent cup (2).
2. Put a container to receive the water under drain hose (4).
3. Loosen drain valve (3) and drain the water.
4. When fuel starts draining from drain hose (4), tighten valve (3) immediately.

REMARK

- If transparent cup (2) is dirty or it is difficult to see the inside, clean transparent cup (2) when replacing fuel prefilter cartridge (1).
- When the drain valve (3) has been removed during the cleaning operation, coat O-ring with grease and tighten until it contacts the bottom.

METHOD FOR ADJUSTING DRAIN VALVE

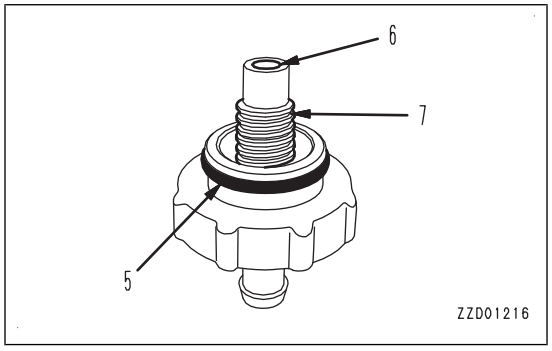
1. Place a container under the fuel prefilter cartridge to receive the fuel.
2. Loosen drain valve (1) and drain water and sediments from transparent cup (2), and also drain all the fuel from filter cartridge (3).
3. Check that nothing more comes out from drain hose (4), then remove drain valve (1).



4. Apply a suitable amount of grease to O-ring (5).

   When doing this, be careful not to allow the grease to adhere to water drain port (6) and threaded portion (7) of the drain valve.
5. Tighten drain valve (1) by hand until it contacts the bottom of transparent cup (2).
6. Remove the fuel container.
7. Fill the fuel tank with fuel.
8. Bleed air from the fuel system.

   For the air bleeding procedure of the hydraulic circuit, see “PROCEDURES FOR BLEEDING AIR FROM FUEL CIRCUIT”.

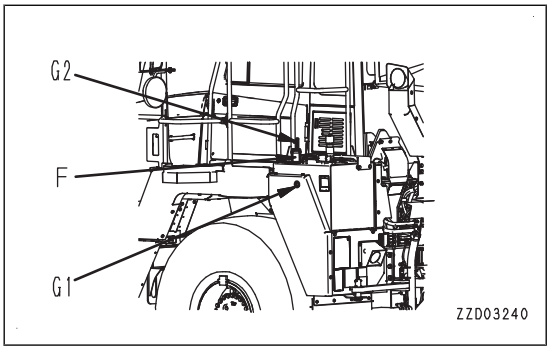


METHOD FOR CHECKING OIL LEVEL IN HYDRAULIC TANK, ADDING OIL

⚠ WARNING

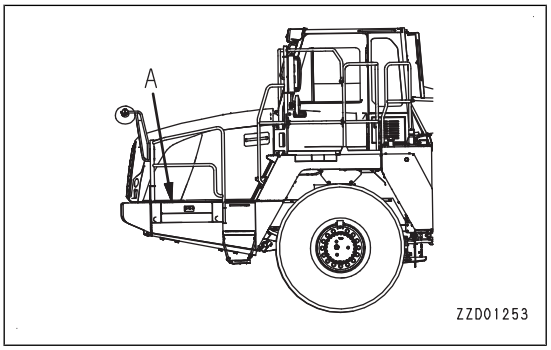
- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down, and then start the work.
- **When the oil filler cap is removed, the oil may spurt out. Accordingly, rotate it slowly to release the internal pressure, then remove it with care.**

1. Check with sight gauge (G1).
   If the oil level does not reach the window of gauge (G1), add oil through oil filler port (F).
2. When checking the oil level after adding oil, check with dipstick (G2).
   The oil should be between H and L marks on dipstick (G2).
   If the oil level is below L mark, add oil again through oil filler port (F).

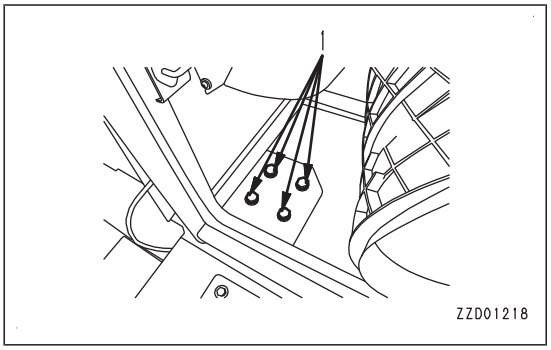


METHOD FOR CHECKING CAB MOUNTING BOLTS AND PINS

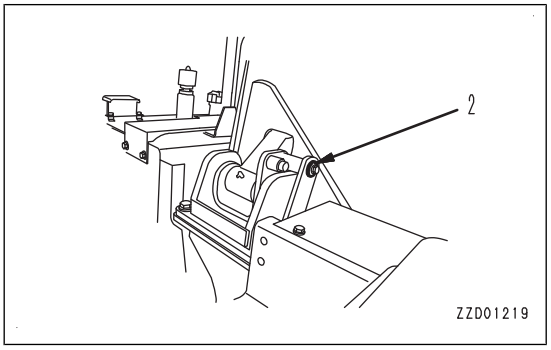
When getting on or off the machine with carrying a tool etc., place it once in part (A) to ensure your safety.



1. Check cab mount bolts (1) (4 pieces each on right and left) for looseness.
   If any bolt is loose, retighten it.
   Tightening torque: 245 to 309 Nm {25 to 31.5 kgfm}



2. Check that there are no loose or broken cab mount pins (2) (right and left: 1 place each).



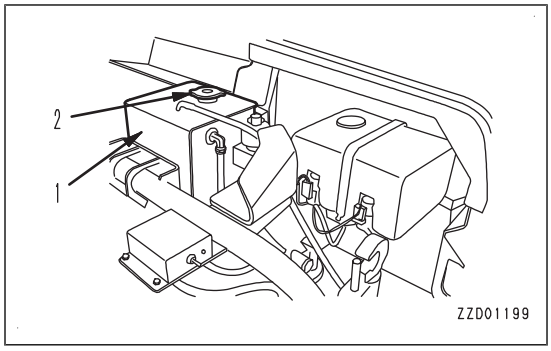
METHOD FOR CHECKING COOLANT LEVEL, ADDING COOLANT

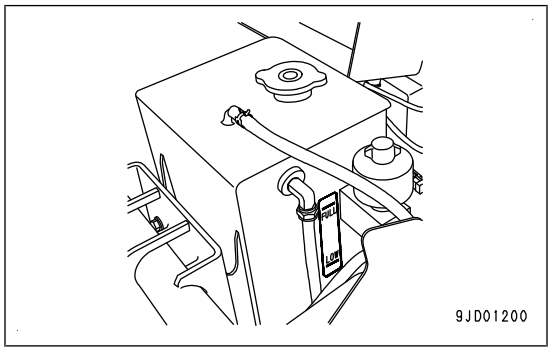
⚠ WARNING

- **Do not open the radiator cap unless necessary.**
  When checking the coolant level, check the reservoir tank when the engine is cold.
- **Immediately after the engine is stopped, the coolant is hot and pressure is accumulated in the radiator.**
  If the cap is removed in this condition, it is dangerous that you may get burn injury.
  Always wait for the temperature to go down, turn the cap slowly to release the pressure, then remove the cap with care.

1. Open the engine hood.
2. Check that the coolant level in reservoir tank (1) is between FULL and LOW marks.

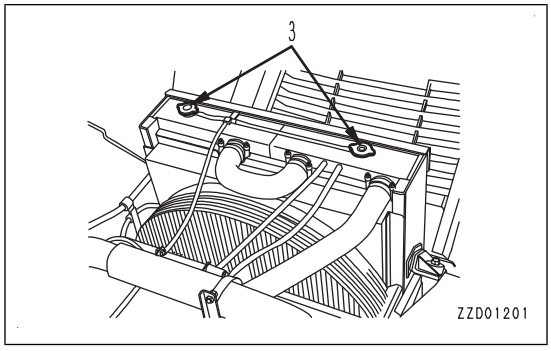
   If the level is below LOW, remove cap (2) and add the coolant up to FULL mark.





   If no coolant is left in reservoir tank, add coolant to the radiator through water filler port (3) on the top of the radiator and also to the reservoir tank.

   If more coolant is added than normal, then check for water leakage.



3. Check that there is no oil in the engine coolant or any other problem.
4. After refilling with coolant, tighten the cap securely.
5. Close the engine hood.

METHOD FOR CHECKING OIL LEVEL IN ENGINE OIL PAN, ADDING OIL

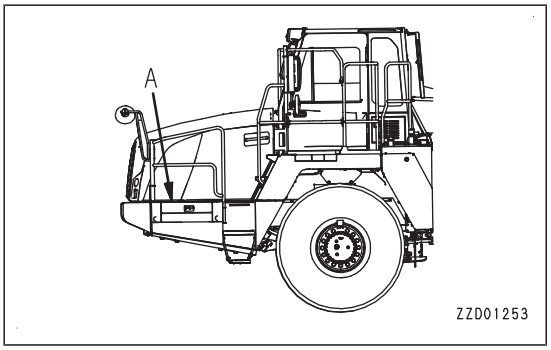
⚠ WARNING

Immediately after the engine is stopped, its parts and oil are still very hot, and may cause burn injury. Accordingly, wait until they have cooled down before starting the work.

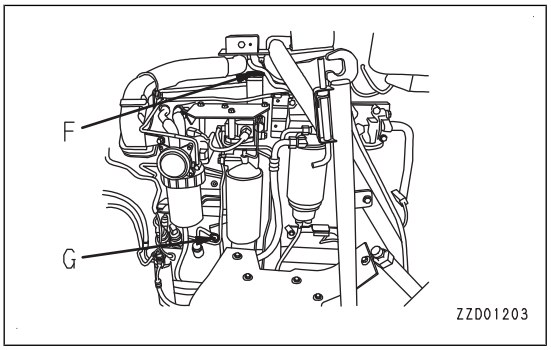
REMARK

- When checking the oil level after the engine has been operated, wait for at least 15 minutes after stopping the engine before checking.
  If the machine is inclining, make it level before checking.
- When the ambient temperature is low, water or emulsified matter may stick to the dipstick, filler cap, etc. or the drained oil may be milky white because of water vapor in the blowby gas. However, if the coolant level is normal, it is not a problem.

When getting on or off the machine with carrying oil, place it once in part (A) to ensure your safety.



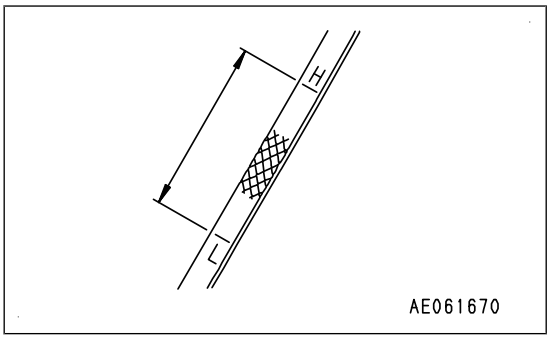
1. Open the engine hood.
2. Pull out dipstick (G) and wipe the oil off with a cloth.
3. Fully insert dipstick (G) into the dipstick pipe, then remove it.



4. Check if the oil is sticking up to between marks H and L on dipstick (G).

   It is appropriate if the oil level is between marks H and L.

   If the oil level is below L mark, add oil through oil filler port (F).

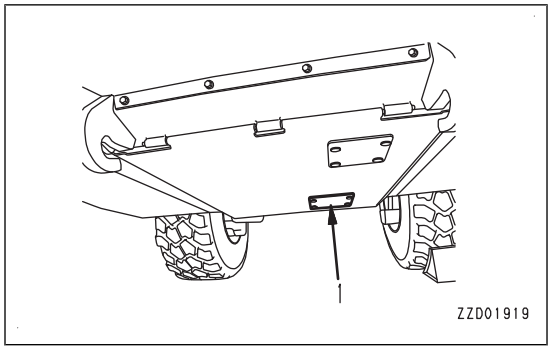


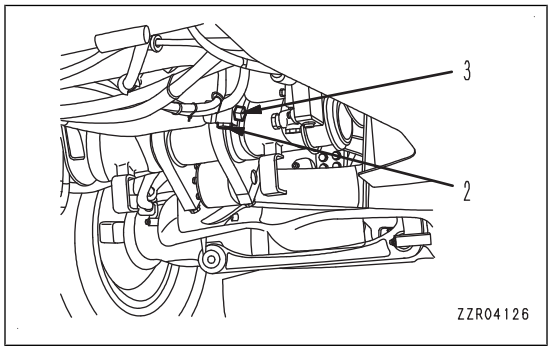
If the oil level is higher than H, decrease it to a proper level according to the following procedure.

1) Remove the bolts, and remove cover (1).
2) Place the oil container right under the drain plug to receive the drained oil.
3) Remove drain plug (2).
4) Install the drain hose on the back of the hydraulic tank cover.
5) Loosen drain valve (3) gradually with care not to get splashed with drained oil, and drain the excess oil.
6) Check the oil level again.

   If the oil level is correct, tighten the oil filler cap securely.

5. Close the engine hood.





METHOD FOR CHECKING ELECTRIC WIRING

⚠ CAUTION

- **If fuses are frequently blown or if there are traces of short-circuiting on the electrical wiring, promptly ask your Komatsu distributor to locate the cause of it and to make the repair.**
- **Keep the top surface of the battery clean and check the vent hole in the battery cap. If it is clogged with dirt or dust, wash the battery cap with water to clear the vent hole.**

NOTICE

Perform inspection for the piping of “battery”, “starting motor”, and “alternator” with particular care.

- Perform inspection to confirm that the fuses have no defect and their capacity is proper.
- Perform inspection to confirm that there is no disconnection or trace of short-circuiting in the electric wiring and no damage to the coating.
- Perform inspection to confirm that there is no loose terminals, and tighten any loose parts if found.
- Check if there is any accumulation of combustible material around the battery, and remove such combustible material.

METHOD FOR CHECKING FUEL LEVEL, ADDING FUEL

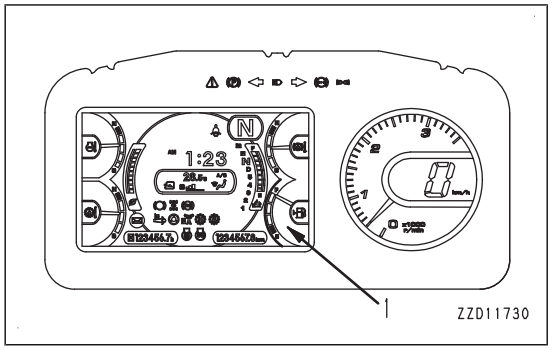
⚠ WARNING

- **When adding fuel, be careful not to let the fuel overflow.**
  This may cause fire.
  Always wipe up all the spilled fuel.
- **If fuel spills onto dirt and sand sticking to the machine, remove it and dirt and sand together.**
- **Fuel is highly flammable and dangerous. Keep fire away.**

1. Turn the starting switch to ON position.
2. When the fuel level caution lamp lights up in red, check the fuel level with fuel level gauge (1) on the machine monitor.

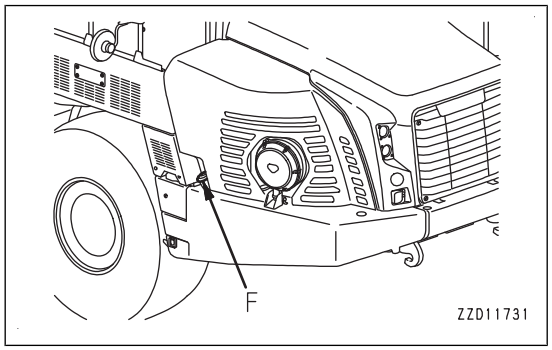
   When the fuel gauge pointer reads the red range, the fuel quantity is 67 ℓ or less.

   The fuel level is low. Add fuel.
3. After checking, return the starting switch to OFF position.



4. Open fuel filler cap (F) of the fuel tank.
5. Add fuel through the fuel filler.

   Fuel tank capacity: 390 ℓ
6. After adding fuel, close fuel filler cap (F) of the fuel tank.



After finishing the work, fill the fuel tank.

REMARK

- If the breather hole in the cap is clogged, the pressure inside the tank will go down and this may cause the fuel to stop flowing. To prevent this, clean the breather hole from time to time.
- To prevent air from being sucked into the engine, always pay careful attention to the fuel level in the tank.

METHOD FOR CHECKING DEF LEVEL, ADDING DEF

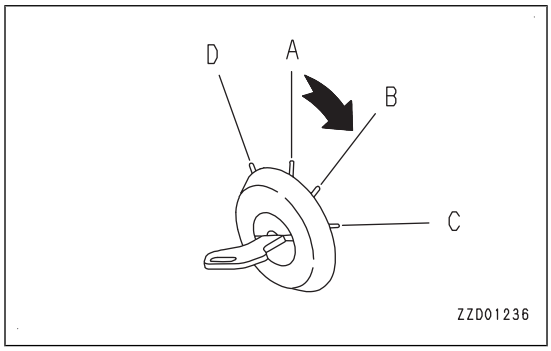
⚠ WARNING

- **Do not put fluid other than DEF into DEF tank.**
- **When opening the cap of DEF tank of the machine, the ammonia vapor may escape. Keep your face away from the filler port.**
- **Foreign materials in the DEF system or urea deposits caused by precipitation of urea may hinder operation of the devices. Before removing the filler cap, wipe off the dirt from around the filler port. Before inserting the filler nozzle into the filler port, wipe off dirt from it.**
- **If DEF is spilled, immediately wipe and wash the area with water. If spilled DEF is left unattended and the area is not washed and cleaned, it can cause corrosion to the contaminated area and emit toxic gas.**

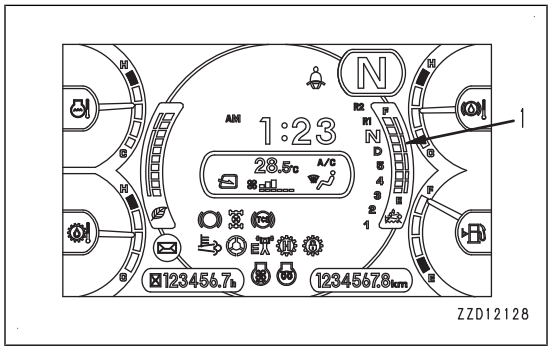
NOTICE

- **Do not add DEF more than line F of sight gauge (4). DEF may leak through the breather. When the ambient temperature is low and DEF may freeze, do not add it more than line (8) of sight gauge (4). Be careful of the DEF line to be added when performing operations on a slope or traveling on a rough ground. When the remaining DEF level is low, it may become the warning level if DEF pump sucks air or if DEF level suddenly drops.**
- **If DEF is stored in unspecified container, foreign material may mix in it and toxic gas or corrosive substance may be produced by chemical reactions. When adding DEF, do not transfer it to another container.**
- **Do not use a funnel when to add DEF. The strainer may be broken.**
- **When using a portable DEF refill container, use up DEF each time. If any of DEF is left, remove foreign material, if there is any.**
- **Do not wash the adding nozzle in city water. Minerals may clog the devices.**
- **Do not dilute DEF with water.**
- **If you add fluid other than DEF (diesel fuel, low concentration DEF, etc.) by mistake, the caution lamp lights up and the audible alert sounds to warn the abnormality. In this case, ask your Komatsu distributor for draining of the wrong fluid and for inspection. DEF injector and/or DEF pump may need to be replaced.**

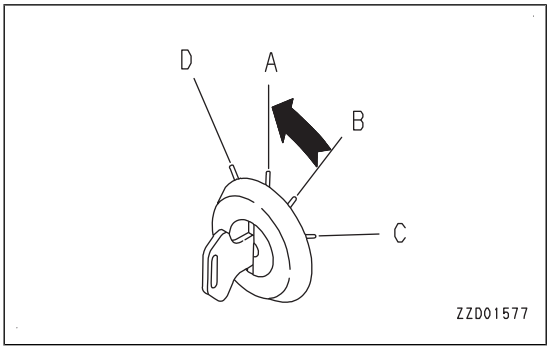
1. Turn the starting switch to ON position (B).



2. Check the DEF level gauge (1) on the machine monitor.



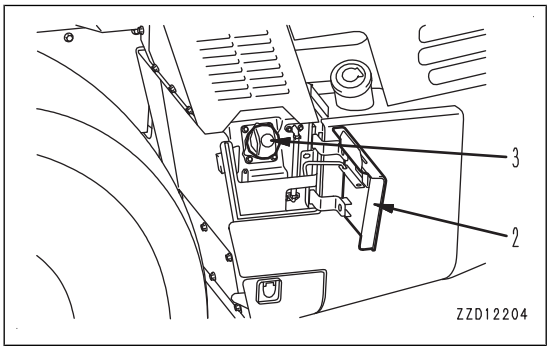
3. After checking, turn the starting switch back to OFF position (A).



4. Open up cover (2) at the right side of the machine, clean blue DEF tank filler cap (3) and surrounding area.

   Turn the cap (3) counterclockwise.

   The caps of DEF tanks are blue, as required by emission regulations.



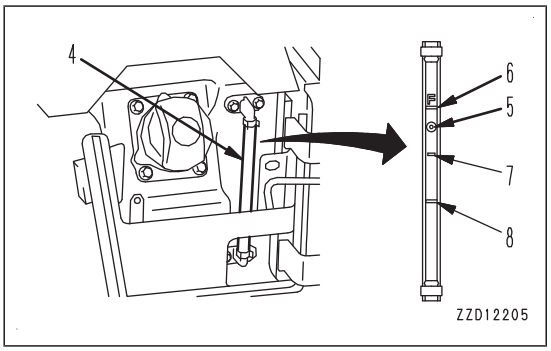
5. By sight gauge (4), add DEF through the filler port until float (5) reaches line F (6).

   Line (7) in the sight gauge indicates approximately 5 ℓ below line F, and line (8) indicates approximately 10 ℓ .

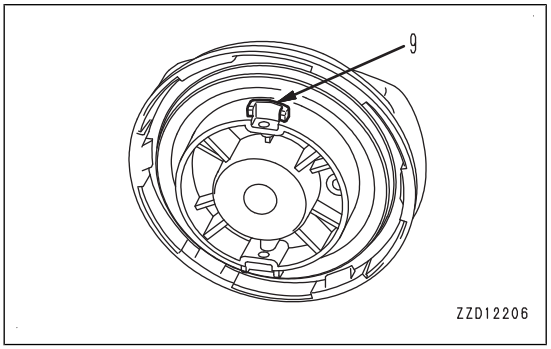
   Line (8) is the max adding line when DEF may freeze in cold weather.

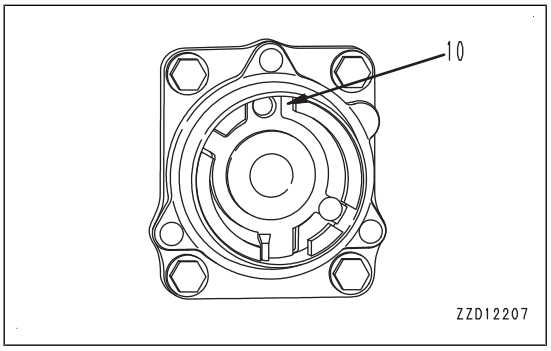
   REMARK

   When all gradations of the DEF level gauge go off, DEF refilling amount is approximately 23 ℓ to fill up the DEF tank.



6. After adding, align claw (9) of the cap with groove (10) of the filler port and close the cap securely by turning it clockwise by 90 °.





REMARK

- It is recommended to use a nozzle having a diameter and a length specified by ISO 22241-4 and an auto stop function to add DEF. When the specified nozzle is used, the magnet installed inside the filler port of the tank cancels the wrong fluid addition prevention device, and you can add DEF. This mechanism prevents addition of DEF into the fuel tank, addition of fuel into DEF tank, and spill of DEF from the filler port.
- When using a nozzle which is not conformed to ISO 22241-4, hold it in your hand and add DEF carefully while checking the sight gauge.
- Add only DEF in clearly marked DEF tanks that have the blue cap.

METHOD FOR CHECKING TIRE PRESSURE

Check the tire inflation pressure while the tires are cold before starting the work.

1. Measure the air pressure with an air pressure gauge.
2. Adjust the inflation pressure properly.

   The proper inflation pressure is shown below.

Tire size	Inflation pressure kPa {kgf/cm^2}		
	Front tire	Center tire	Rear tire
23.5-R25 (standard)	441 {4.5}	441 {4.5}	441 {4.5}
750/65 R25 (30/65 R25) (optional)	340 {3.5}	400 {4.13}	400 {4.1}

NOTICE

If the tires are used when the inflation pressure is less than the value given in the table above, the rim may be damaged.
Always keep the tire inflation pressure within ±10 kPa {0.1 kgf/cm^2} of the value in the table above.

3. Check the tires and the rims for wear or damage, and check the hub bolts for loosening.

METHOD FOR CHECKING CENTRALIZED WARNING LAMP, ALARM BUZZER, PILOT LAMPS, AND METERS

1. Before starting the engine, turn the starting switch to ON position.
2. Check that the machine monitor operates as follows.
   - Centralized warning lamp (A) and pilot lamp (B) light up for 2 seconds and go out for 1 second.
   - Liquid crystal display (C) displays the starting screen AA for 2 seconds, and then changes to the standard screen BB.
   - Pointer of engine tachometer (D) swings once.
   - Speedometer (E) displays “88” for 2 seconds.
   - Alarm buzzer sounds for 2 seconds, then stops under the normal condition.

   If the machine monitor does not work, there is probably a failure in the machine monitor system, so ask your Komatsu distributor to perform inspection.
3. After checking, turn the starting switch back to OFF position.

METHOD FOR CHECKING BRAKE

Check that the parking brake, foot brake, and retarder brake work sufficiently.
If any abnormality is found, ask Komatsu distributor to repair.

METHOD FOR CHECKING SECONDARY STEERING

⚠ WARNING

Do not use the secondary steering motor for more than 90 seconds.
If it is used continuously for more than that, the motor may get burnt or get damaged, or a fire may be caused.

Self-check function for secondary steering

⚠ CAUTION

If the machine is steered during self-check, it may move.
Do not steer the machine during self-check.

The secondary steering is started automatically when the starting switch is turned to ON position to check the secondary steering functions.

If defective operation of the secondary steering motor is found, ask your Komatsu distributor for repair.

Self-check of the secondary steering is not performed in the following cases.

In this case, perform “Check of automatic secondary steering”.

- When you turn the starting switch to ON position, and turn it to OFF position without starting the engine, then turn it to ON position again
- When the engine preheating is operated
- When the ambient temperature is low (-10 °C or lower)

REMARK

The battery voltage may drop sharply when the self-check is started due to the low temperature or condition of the given battery.
In such case, the machine monitor may go out temporarily or restart, but it is not a trouble.

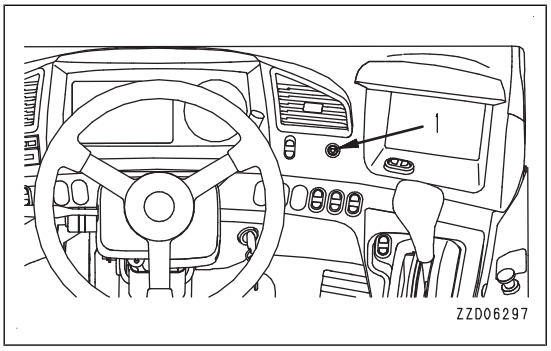
METHOD FOR CHECKING MANUAL SECONDARY STEERING

⚠ WARNING

Do not use the secondary steering motor for more than 90 seconds.
If it is used continuously for more than that, motor may get burn out or get damaged, or that it may cause a fire.

1. Turn the starting switch key to ON position.
2. Turn secondary steering switch (1) ON.
3. Turn the steering wheel and check that the steering is operated.

   If the steering is not operated when the steering wheel is turned, ask your Komatsu distributor for repair.

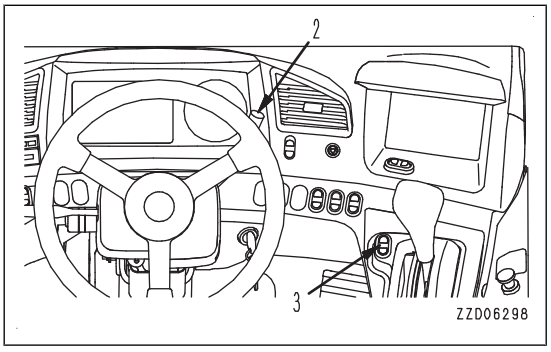


METHOD FOR CHECKING AUTOMATIC SECONDARY STEERING

⚠ WARNING

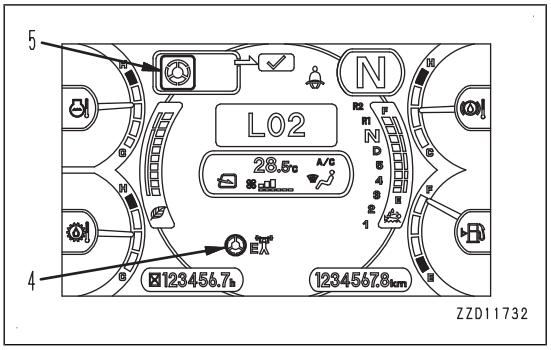
Do not use the secondary steering motor for more than 90 seconds.
If it is used continuously for more than that, motor may get burn out or get damaged, or that it may cause a fire.

1. Turn the starting switch to START position and start the engine.
2. Check that the brake oil pressure caution lamp is turned OFF.
3. Pull retarder control lever (2) fully.
4. Stop the engine.
5. Turn the starting switch key to ON position.
6. Set parking brake switch (3) to “TRAVEL” position, and check that the secondary steering motor operates in 1 second.
7. After checking set parking brake switch (3) to “PARKING” position.
8. Turn the starting switch to OFF position.

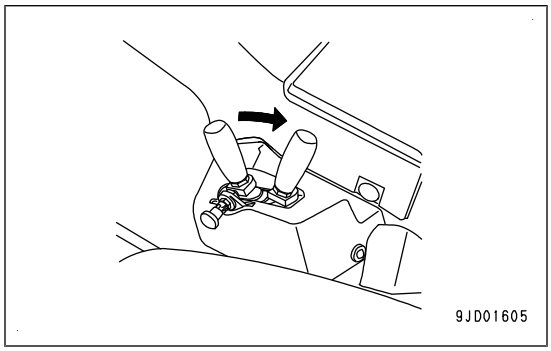


REMARK

While the secondary steering motor is in operation, secondary steering pilot lamp (4) lights up.
If the secondary steering motor operates 1 minute or longer, secondary steering motor long-operation caution lamp (5) lights up.
Do not operate the secondary steering motor for a long time.



METHOD FOR CHECKING DUMP BODY POSITIONER OPERATION



1. Turn the starting switch to START position and start the engine.
2. Set the dump lever to “RAISE” position and release it.
3. Check that the dump body stops before the stroke end.

   REMARK

   If the dump body positioner is not actuated, you can feel the shock due to the dump body contact when the dump body reaches to the stroke end. The dump body stops without shock since the dump body positioner is actuated.
4. Lower the dump body and set the dump lever to “FLOAT” position.
5. Turn the starting switch to OFF position and stop the engine.

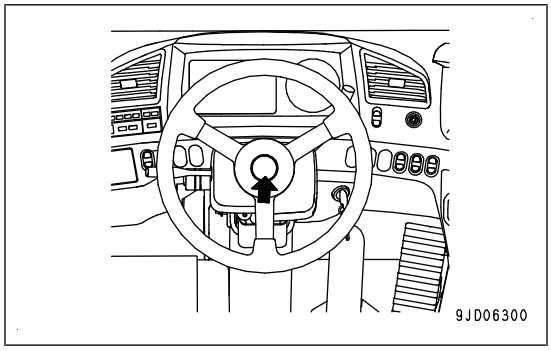
METHOD FOR CHECKING BACKUP ALARM OPERATION

1. Turn the starting switch to ON position.
2. Place the gear shift lever in R position and check that the backup alarm sounds.
3. After checking, turn the starting switch back to OFF position.

METHOD FOR CHECKING HORN OPERATION

1. Turn the starting switch to ON position.
2. Check that the horn sounds immediately when the horn button is pressed.

   If the horn does not sound, ask your Komatsu distributor for repair.
3. After checking, turn the starting switch back to OFF position.



ADJUST BEFORE OPERATION

METHOD FOR ADJUSTING OPERATOR'S SEAT

⚠ WARNING

- **When adjusting the operator's seat, stop the machine on a safe place and set the parking brake to "PARKING" position beforehand.**
- **Adjust it before starting operation or when operators change shift.**
- **Adjust the position of the operator's seat so that you can depress the brake pedal fully with your back against the seat backrest.**

METHOD FOR ADJUSTING SEAT UNIT IN FORE-AND-AFT DIRECTION

Operate the fore-aft adjustment lever upward, set the seat to the desired position, then release the fore-aft adjustment lever.
Adjustment amount: 152.4 mm

Number of stages for adjustment: 12 stages

Adjustment amount per 1 stage: 12.7 mm

If the seat backlash is found, ask your Komatsu distributor for adjustment.

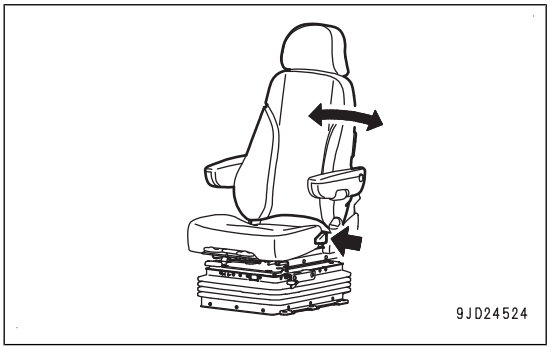
METHOD FOR RECLINING SEAT

Pull up the reclining adjustment lever, and move the back cushion forward or backward.
Sit with your back against the backrest when adjusting the reclining angle. If your back is not on the backrest, it may suddenly return to the original position.

Adjustment amount

Forward tilt: 21 ° (any degree is acceptable if it is 21 ° or more.)

Backward tilt: 15 °

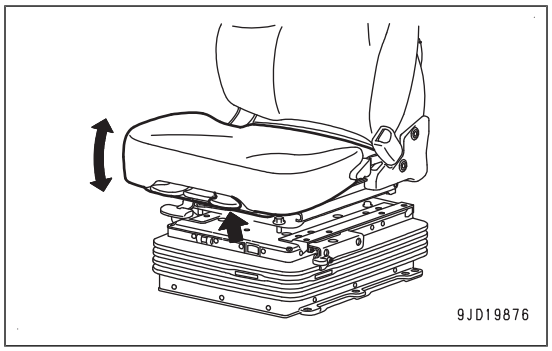


METHOD FOR TILTING SEAT

Operate the tilt adjustment lever upward, move the front of the seat cushion up and down to adjust it to the desired position, then release the tilt adjustment lever.
Adjustment amount

Forward tilt: 5 °

Backward tilt: 5 °



ADJUST SEAT HEIGHT

NOTICE

Do not operate the height adjustment switch continuously for 1 minute or more. If you do so, it will cause a failure of the air compressor.

Turn the starting switch to the ON position when you adjust the seat since the air compressor built in the seat is used for this adjustment.

The seat height can be adjusted pneumatically without step.

Push the height adjustment switch, adjust the seat to the desired position, and release the height adjustment switch.

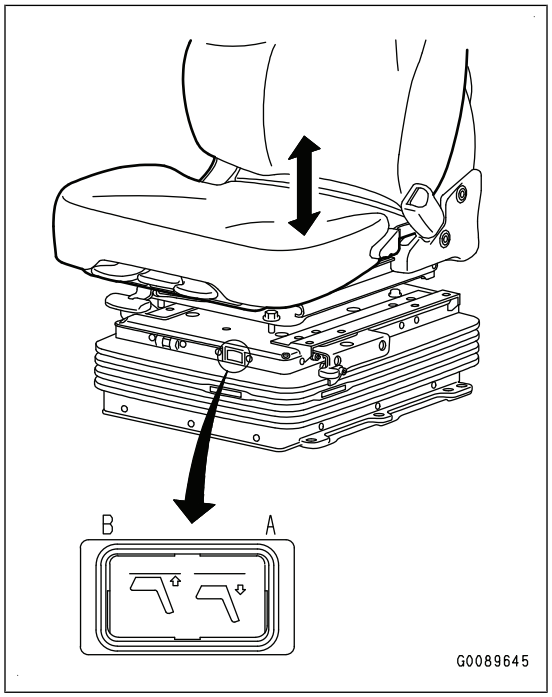
(A) RAISE position

Seat moves up.

(B) LOWER position

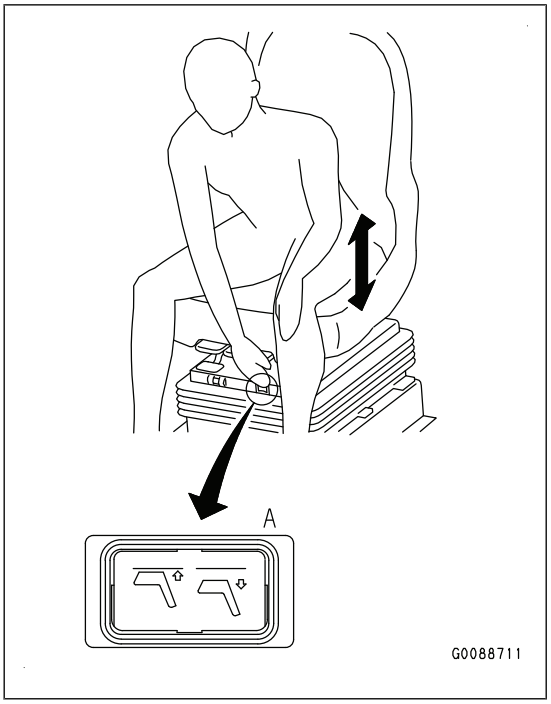
Seat moves down.

Adjustment: 152mm



REMARK

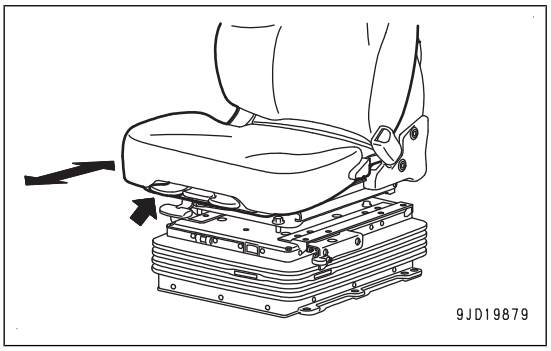
While you sit on the seat, move your hip up and down while you push the RAISE position (A) of the height adjustment switch.
Move the suspension up and down by force. Air comes into it more easily and you can adjust it to the desired position faster.



METHOD FOR ADJUSTING SEAT CUSHION IN FORE-AFTER DIRECTION

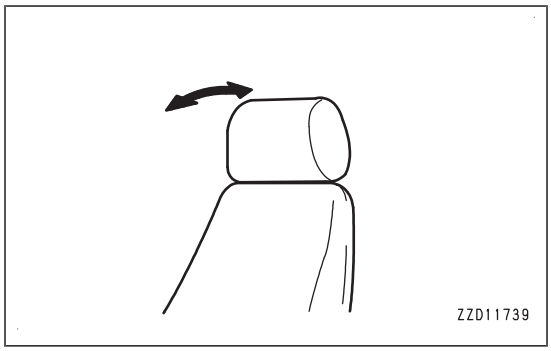
Pull up the fore-and-aft adjustment lever, set the seat cushion to the desired position, then release the fore-and-aft adjustment lever.
Fore-aft adjustment range: 60 mm

If the seat backlash is found, ask your Komatsu distributor for adjustment.



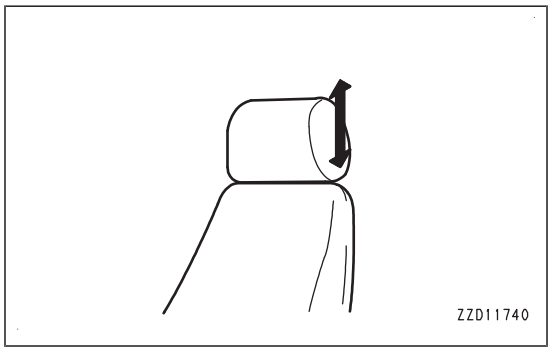
METHOD FOR ADJUSTING HEADREST ANGLE

Move the headrest back and forth to set it to the desired angle.
Adjustment amount: 30 °



METHOD FOR ADJUSTING HEADREST IN VERTICAL DIRECTION

Move the headrest up or down to the desired height.
Adjustment amount: 108 mm

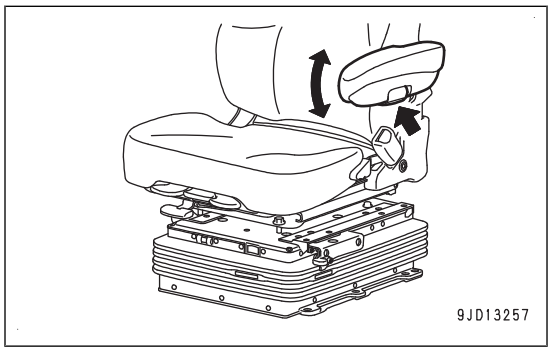


METHOD FOR ADJUSTING ARMREST ANGLE

Turn the knob to adjust the armrest angle.
Adjustment amount: 35 ° (Forward tilt 12 °, backward tilt 23 °)

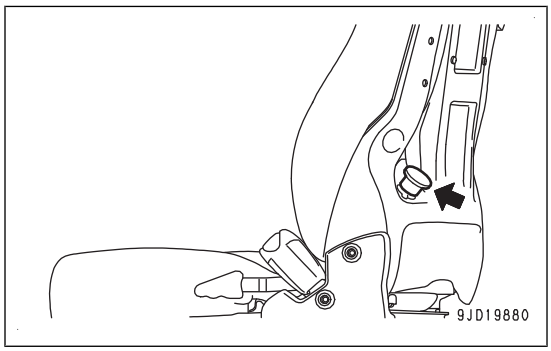
REMARK

You can flip up the armrest.



METHOD FOR ADJUSTING LUMBAR SUPPORT

Turn the lumbar support adjustment knob to the right or left, and give proper tension to the waist part.



METHOD FOR ADJUSTING SUSPENSION DAMPER HARDNESS

Adjust the damping force of the suspension damper by operating the suspension damper hardness adjustment knob.

(a), (b) Low position

The suspension damper becomes softer and its damping force is reduced.

The shock to the seat is further decreased.

(c) Recommended position

Normally, this position is recommended.

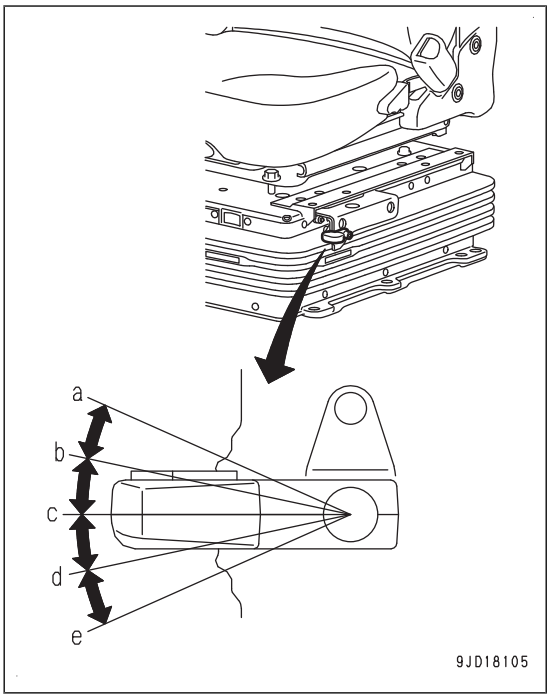
It is preset as the best position for the operator comfort.

(d), (e) High position

The suspension damper becomes harder and its damping force is increased.

Decreases the vertical movement of the suspension.

Adjustment amount: 5 steps



METHOD FOR USING SEAT HEATER

⚠ CAUTION

- **Using the heater for a long time may cause low temperature burn (blister, etc.).**
- **Do not put heavy luggage on the cushion. Do not stick the cushion with needles, nails, etc.**
- **Do not put blanket, cushion, or other heat-retaining material on the seat cushion. Doing so may cause overheat.**
- **If water or beverage, etc. spills on the seat cushion, immediately wipe it off with soft cloth, etc., and dry out the seat cushion before using it.**

REMARK

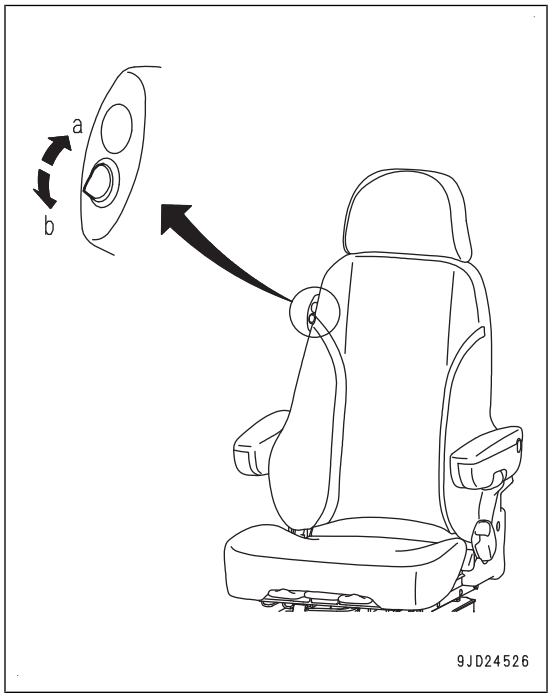
The seat heater has no timer function and is not turned off automatically. Be sure to turn off the seat heater switch soon after using the heater.

1. Turn the seat heater switch to ON position (a).

   The heater in the seat cushion operates, and the seat cushion and backrest become warm.

2. Turn the seat heater switch to OFF position (b) when the temperature of cushion becomes suitable.

   The heater in the seat cushion stops.

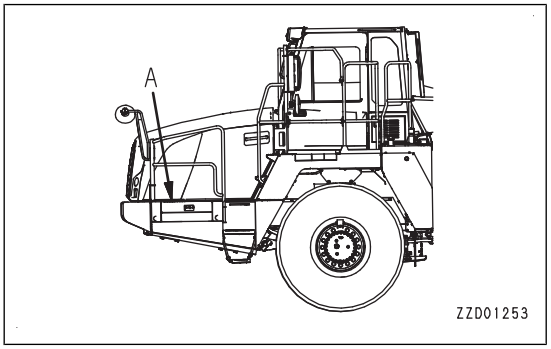


METHOD FOR ADJUSTING MIRRORS

⚠ WARNING

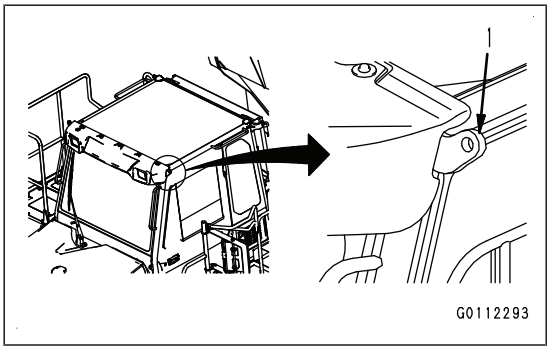
Be sure to adjust the mirrors before starting work. If they are not adjusted properly, you cannot secure the visibility and may be injured or may lead to a serious personal injury or death.

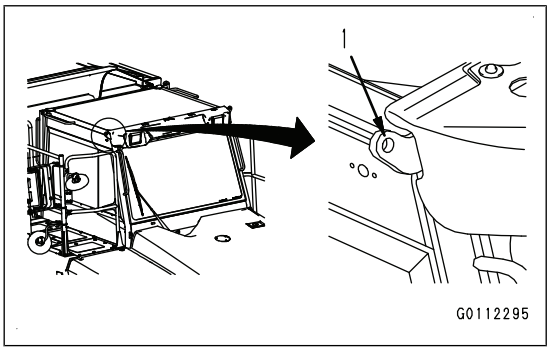
When getting on or off the machine with carrying a tool etc., place it once in part (A) to ensure your safety.



1. Install the personal fall-arrest equipment to the anchor point for tie-off (1).

   The anchor point for tie-off (1) is on the right and left sides (2 places) of the cab.





2. Loosen mirror mounting bolt (2) and nut (3), then adjust the mirror to the position that assures the best view from the operator's seat.
   - Adjust the position and angle of each mirror so that it reflects a sight 200 mm (7.9 in) above the ground and up to 1,500 mm (4 ft 11 in).

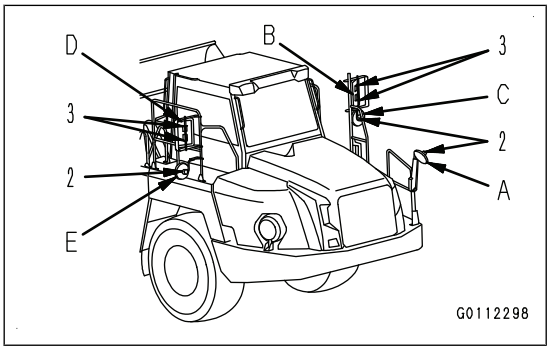
     In the adjustment, make sure that a part of the machine also comes into view.
   - View range

     Mirror A

     Hatched area (A) must be in view.

     Mirror B

     Hatched area (B), tire's ground contact point (B') and ground (B") must be in view.



Mirror C

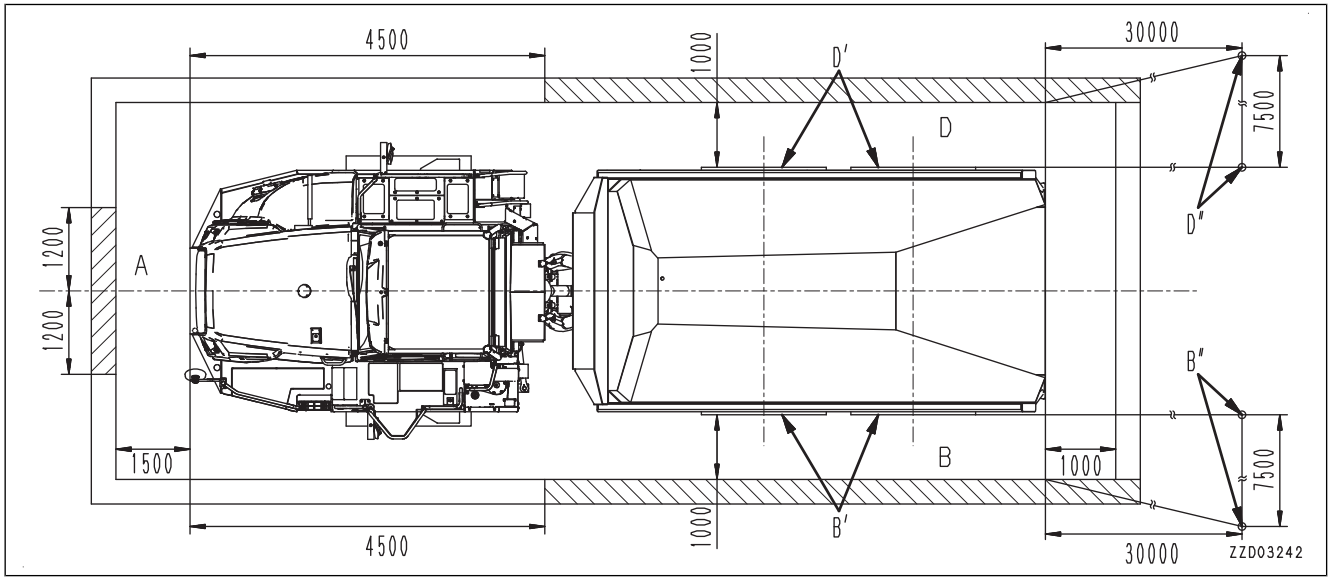
Machine's left side must be in view.

Mirror D

Hatched area (D), tire's ground contact point (D') and ground (D'') must be in view.

Mirror E

Machine's right side must be in view.



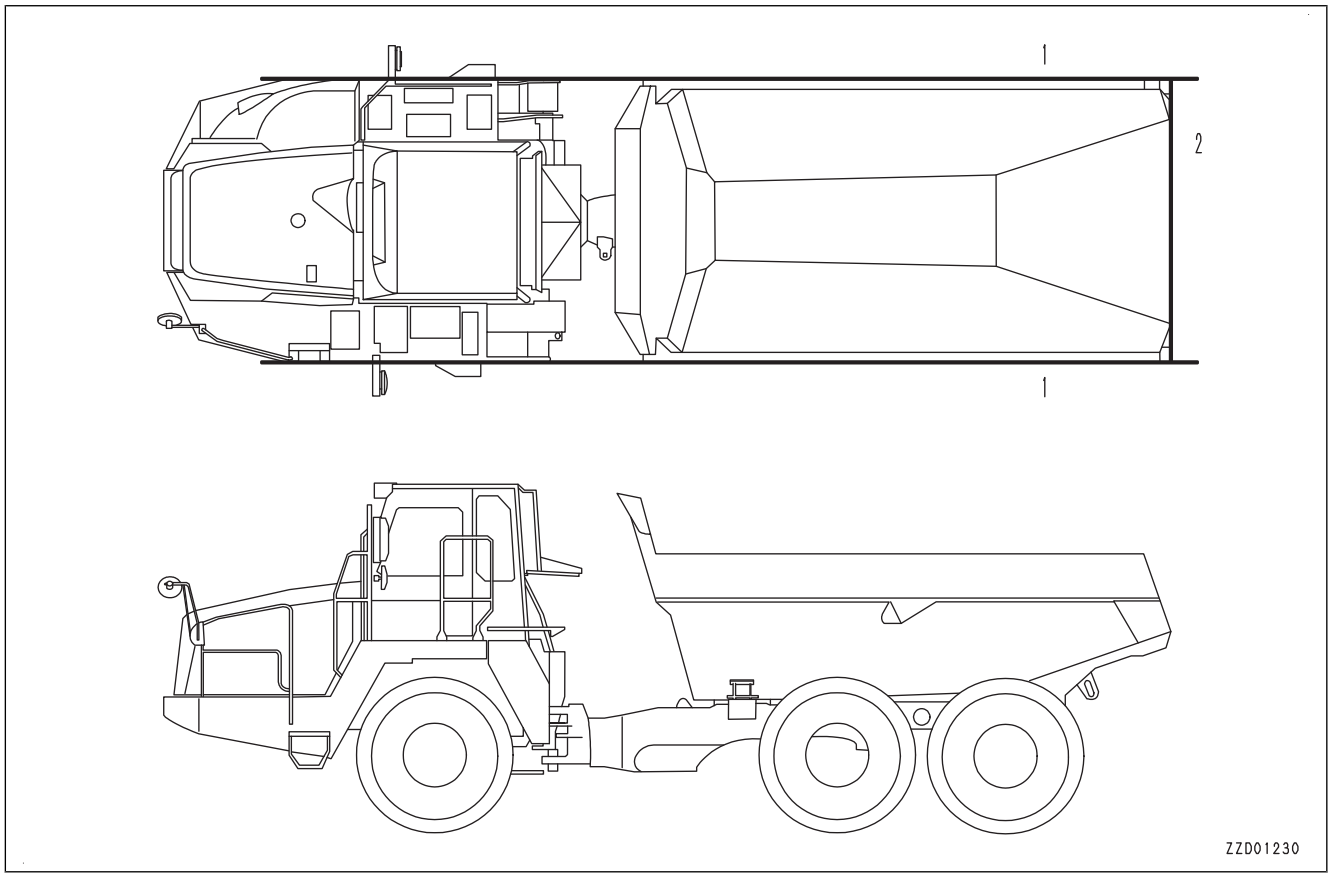
METHOD FOR ADJUSTING REAR VIEW CAMERA ANGLE

⚠ WARNING

- **When the direction of the camera is changed due to an accident, setting must be done again. Contact your Komatsu distributor.**
- **Install only the Komatsu genuine camera.**

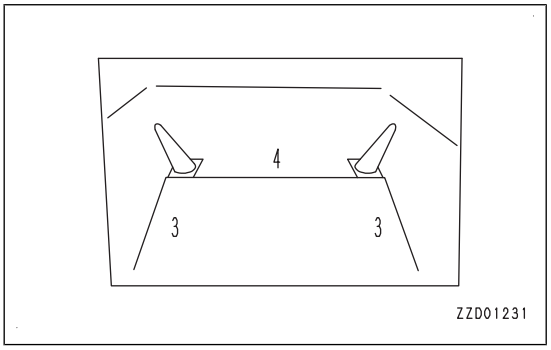
As shown in the figure, park the unloaded machine on a flat ground directing it straight forward.

When the machine dimensions are changed due to replacement of tires or installation of an optional attachment, set the guide lines to the non-display mode, and then contact your Komatsu distributor.



Make sure that the images on the rear view monitor are normal as shown in the illustration. Then, confirm that machine width guide line (3) matches with tire outside width (1) and distance guide line (4) matches with body rear end (2).

When the reference line is abnormal, change its setting to Non-display and contact your Komatsu distributor.



ADJUST SEAT BELT

⚠ WARNING

- **Before fastening the seat belt, check that there is no problem in the belt mounting bracket or belt. If it is worn or damaged, replace it.**
- **Even if no problem can be seen in the belt, replace it in accordance with the following schedule: 5 years after the date of seat belt manufacture, or every 3 years after the start of actual usage, whichever date comes sooner.**
- **Adjust and fasten the seat belt before starting to travel.**
- **Always fasten the seat belt when traveling.**
- **Make sure that the seatbelt is not twisted.**

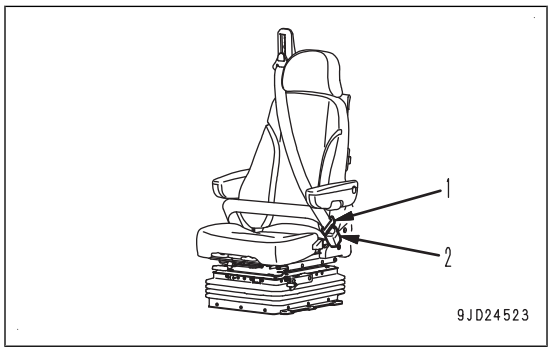
REMARK

The date indicated on the seat belt is the manufactured date.
It is the start of the 5-year period.
It is not the start of the 3-year period of actual usage.

METHOD FOR FASTENING AND UNFASTENING SEAT BELT

Fit the seat belt so that it fits tightly, without being too tight.

1. Sit on the seat and depress the brake pedal fully. Under this condition, adjust the seat so that your back is fitted to the backrest.



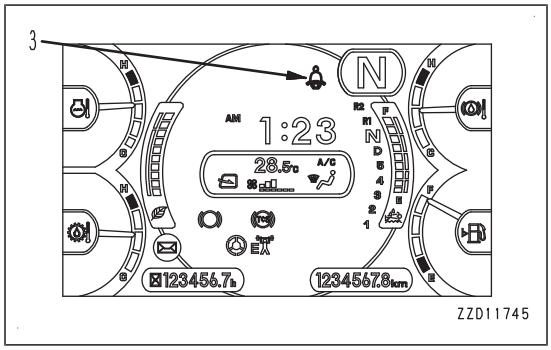
2. Sit on the seat, pull the right side of the belt, then insert the buckle tongue (1) into buckle (2) until it “clicks”.

   Fit the belt along your body without twisting.

   When unfastening the belt, press the red button on buckle (2) to free the belt.

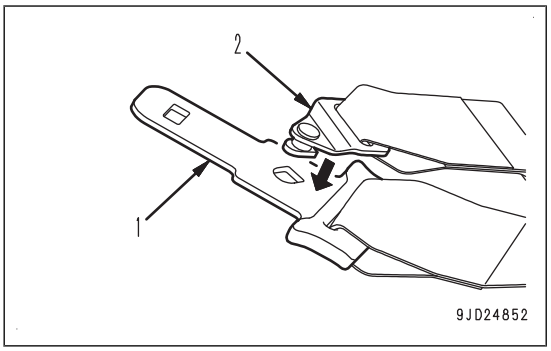
   REMARK

   If the seat belt is not inserted to buckle (2), seat belt caution lamp (3) is displayed on the machine monitor. Be sure to fasten the seat belt.

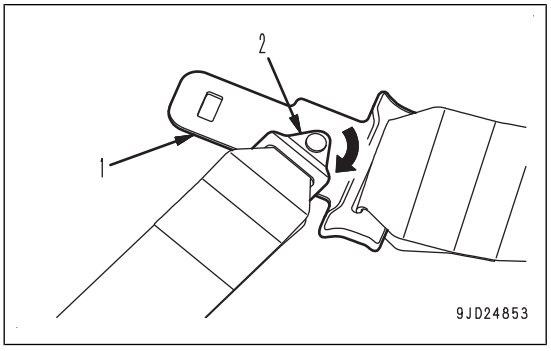


METHOD FOR CONNECTING SHOULDER BELT AND WAIST BELT

1. Insert the tongue (2) of the shoulder belt into the buckle tongue (1) of the waist belt.



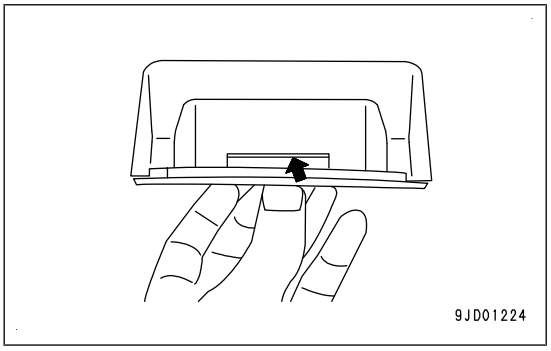
2. Rotate the tongue (2) of the shoulder belt and make sure that it is securely fixed to the buckle tongue (1) of the waist belt.



METHOD FOR RELEASING SEAT BELT RETRACTOR STOPPER

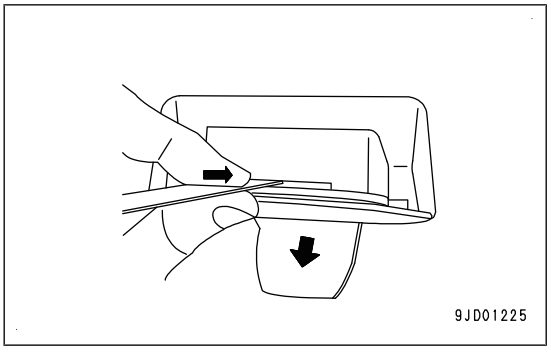
1. Remove the retractor from the seat.

   A fitting can be seen from the bolt side through the oblong hole as shown in the figure.



2. Pull the belt while pushing in the fitting with a ruler or such.

   The stopper is released and you can untwist the belt if it is twisted.

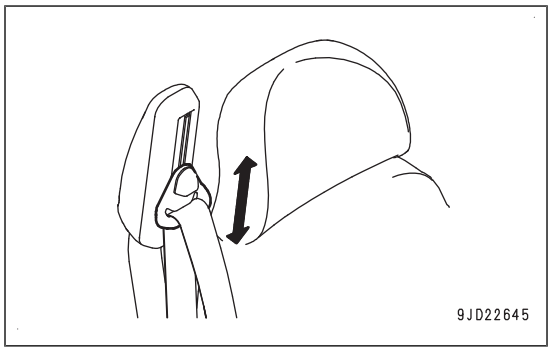


METHOD FOR ADJUSTING SEAT BELT ANCHOR

Move the seat belt anchor up and down to adjust it to the desired height.
Adjustment amount: 100 mm

Number of stages for adjustment: 6 stages

Adjustment amount per 1 stage: 20 mm



METHOD FOR ADJUSTING TILT OF STEERING WHEEL

⚠ WARNING

Stop the machine before adjusting the tilt of the steering wheel.
If this operation (adjustment) is performed while the machine is traveling, it may lead to a serious personal injury or death.

NOTICE

Do not operate the steering tilt lock lever with excessive force. (Operating effort of steering tilt lock lever: 147 to 176N(15 to 18kgf)
The steering tilt lock lever may become loosened or the angle of the steering tilt lock lever may be misaligned.
Ask your Komatsu distributor for inspection in such case.

You can adjust the tilt position and height of the steering wheel.

1. Raise the steering tilt lock lever to FREE position (F), and adjust the steering wheel to a desired position.

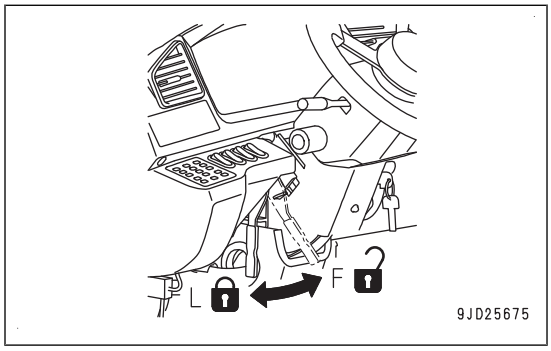
   Tilt adjustment amount

   Forward: 5°, backward: 10°

   Telescopic adjustment amount

   Upward: 20mm, downward: 20mm

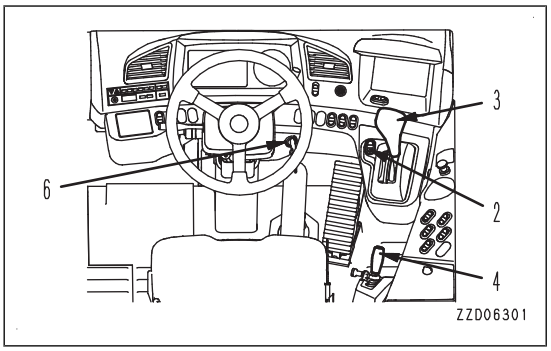
2. Push down the steering tilt lock lever to LOCK position (L), and fix the steering wheel securely.

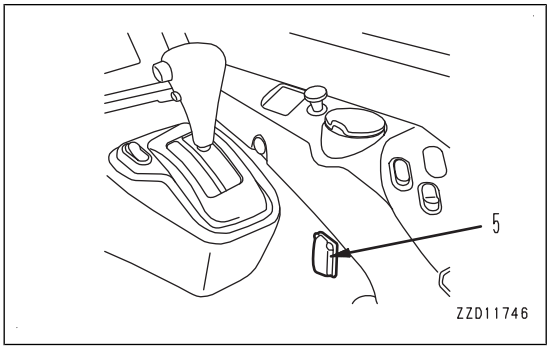


METHOD FOR OPERATIONS AND CHECKS BEFORE STARTING ENGINE

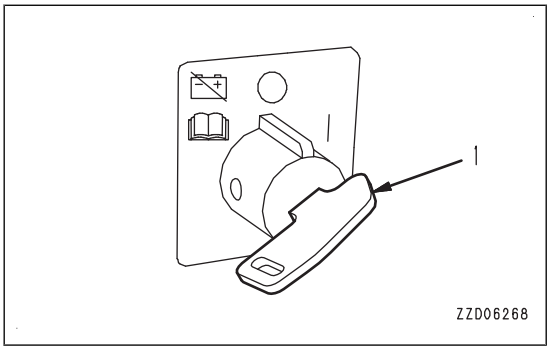
⚠ WARNING

- **When starting the engine, check that the gear shift lever is set to NEUTRAL position (N) and that the parking brake switch is in “PARKING” position.**
- **Before standing up from the operator's seat, be sure to set the parking brake switch to “PARKING” position.**

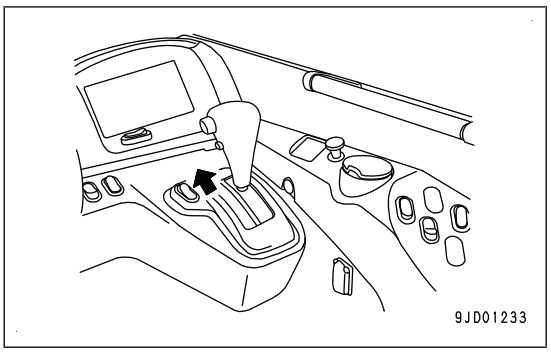




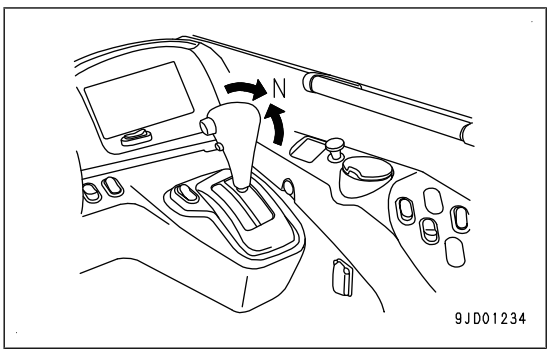
1. Check that battery disconnect switch (1) is in ON position (I).



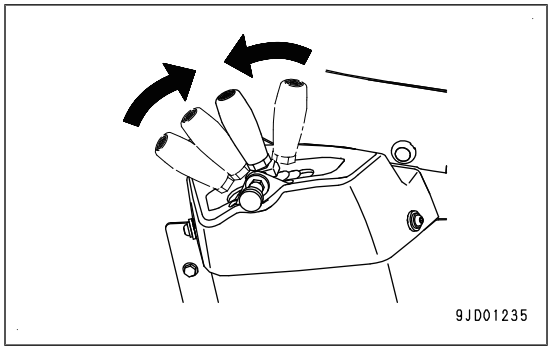
2. Check that parking brake switch (2) is in “PARKING” position.



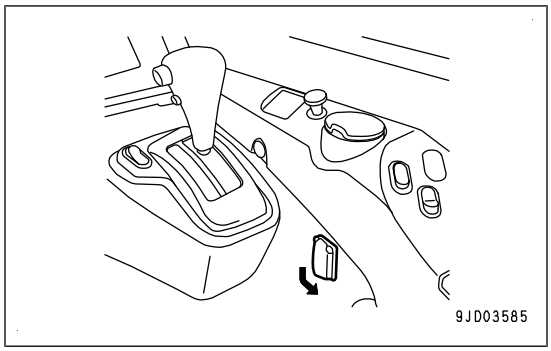
3. Check that gear shift lever (3) is in NEUTRAL position (N).



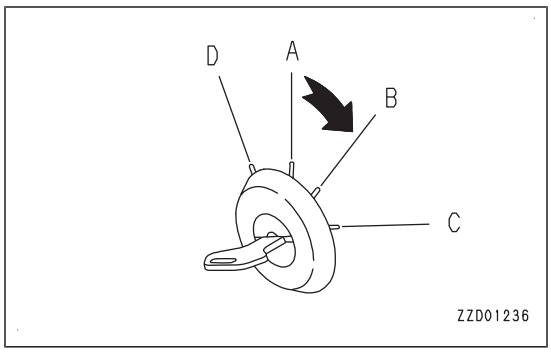
4. Check that dump lever (4) is in “HOLD” position.



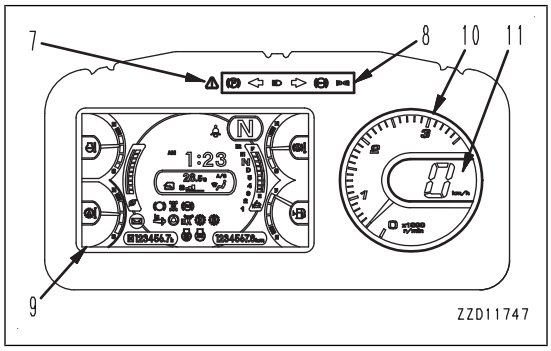
5. Check that engine shutdown secondary switch (5) is in NORMAL position (the cover is closed).



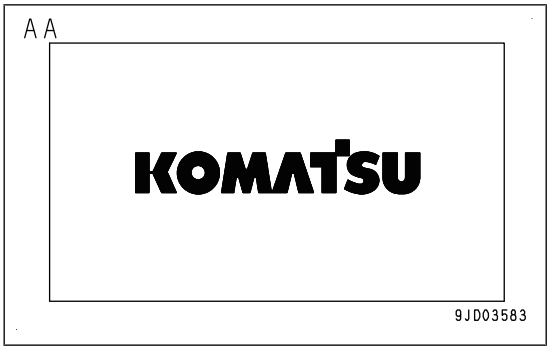
6. Insert the key into starting switch (6) and turn it to ON position (B).



7. Check that the machine monitor operates as follows.
   1) Centralized warning lamp (7) and pilot lamp (8) light up for 2 seconds and go out for 1 second.

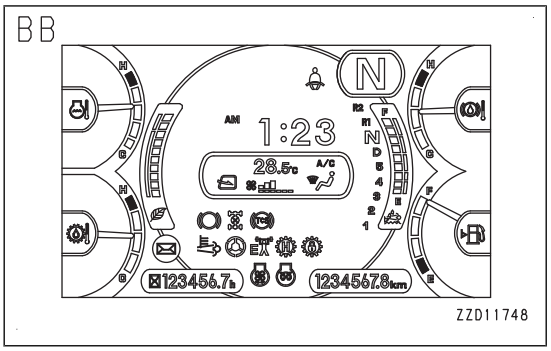


2) Machine monitor (9) displays start screen AA for 2 seconds, and then changes to standard screen BB.
3) The pointer of engine tachometer (10) swings once.
4) Speedometer (11) displays “88” for 2 seconds.
5) The alarm buzzer sounds for 2 seconds, then stops under the normal condition.



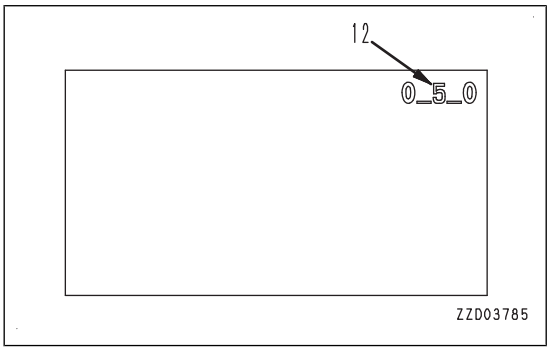
NOTICE

If the lamps, alarm buzzer, etc. do not work, the machine monitor may be defective or the electric wiring may have breakage.In this case, ask your Komatsu distributor for repair.



REMARK

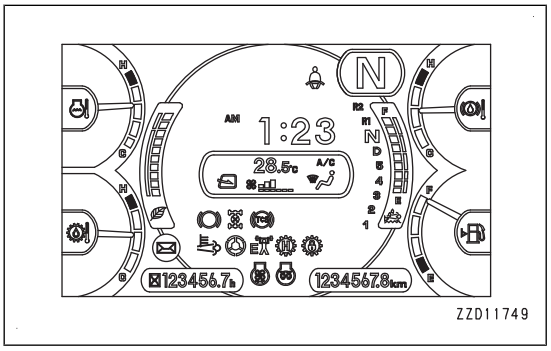
- When the engine is started, the battery voltage may suddenly drop depending on the temperature and the battery condition.
  In such case, the machine monitor may go out temporarily or restart, but it is not a trouble.
- In approximately a second, the rear view monitor displays soft version (12) for 5 seconds.



6) In 2 seconds, machine monitor (9) displays the standard screen.

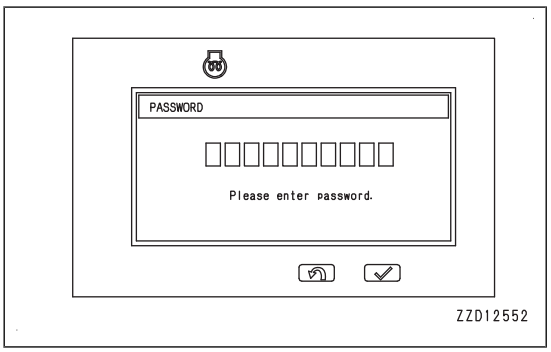
   If a password has been set, the password input screen will be displayed on the monitor screen.

   After inputting the password, press the enter switch.



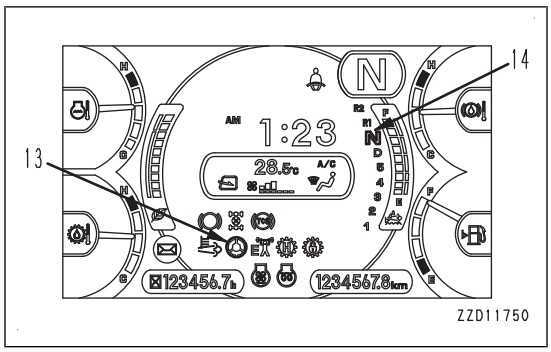
REMARK

For details of the password setting, changing or canceling, see the separate “Password Change and Cancel Procedure”.



- When the starting switch is turned ON, the secondary steering self-check function may operate.

  When the standard screen is displayed while the self-check is turned on, the secondary steering pilot lamp (13) lights up.



REMARK

While the secondary steering self-check function is turned on, the machine monitor may go out temporarily or restart, but it is not a trouble.

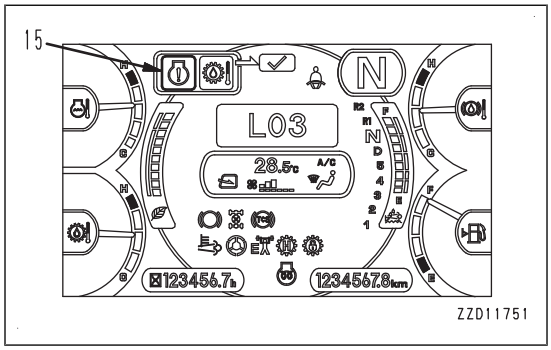
If the gear shift lever is in any position other than NEUTRAL position (N) when the starting switch is turned to ON position, the shift lever position pilot lamp (14) of that position starts flashing, the centralized warning lamp lights up, and the alarm buzzer sounds intermittently.

Turning the starting switch to START position in this state does not start the engine.

Turn the gear shift lever to NEUTRAL (N) position, and the centralized warning lamp goes out, the alarm buzzer stops sounding, and the engine can be started.

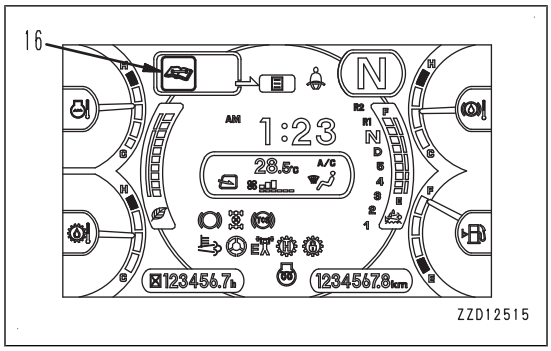
8. If caution lamp (15) remains lit, press the enter switch to identify the item lit in red, and check it immediately.

   For details of contents and check methods for caution lamp, see “WARNING DISPLAY”.



9. If the maintenance time of that item has been reached, maintenance time caution lamp (16) lights up in red for 30 seconds. Press the menu switch and check that item, and then perform maintenance immediately.

   For details of the method of checking the maintenance interval, see “MAINTENANCE SCREEN SETTING”



METHOD FOR STARTING ENGINE

⚠ WARNING

- **Start the engine only while sitting down in the operator's seat.**
- **Do not attempt to start the engine by short-circuiting the engine starting circuit. Doing so may cause a fire or serious personal injury or death.**
- **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.**

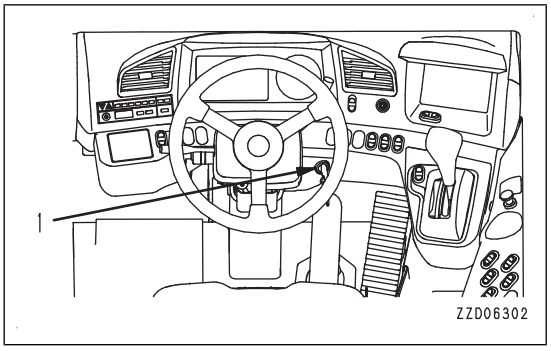
NOTICE

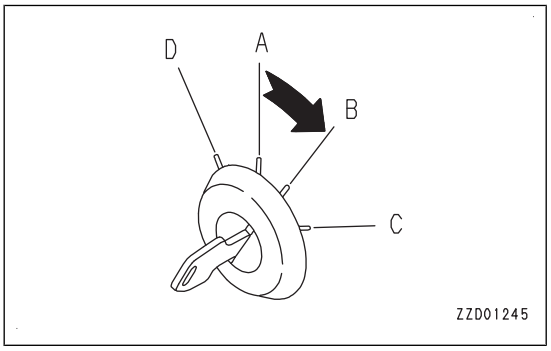
- **Do not accelerate the engine abruptly until it is warmed up.**
- **Do not turn the starting motor continuously for more than 20 seconds.**
- **If the engine does not start, wait for 2 minutes or so, and then try to start the engine again.**
- **When starting the engine, do not depress the accelerator 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.**

This machine is equipped with an engine automatic preheating device that functions to start the engine preheating automatically.

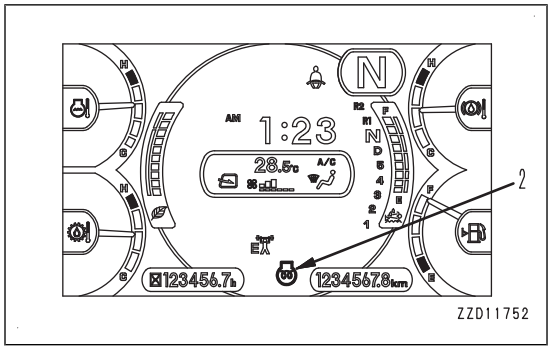
When the engine coolant temperature is low, preheating pilot lamp (2) lights up when the key in starting switch (1) is turned to ON position to inform the operator that preheating has been started automatically.

1. Turn the key in starting switch (1) to ON position (B).





If the engine coolant temperature is low, preheating pilot lamp (2) lights up and the automatic preheating starts.



2. Keep the key in starting switch (1) at ON position (B) until preheating is completed and the preheating pilot lamp goes out.

   The following shows the rough preheating time.

Engine coolant temperature	Preheating time
Min. –5 °C (23 °F)	-
–5 to –20 °C (23 to –4 °F)	20 to 40 seconds
Max. –20 °C (–4 °F)	40 seconds

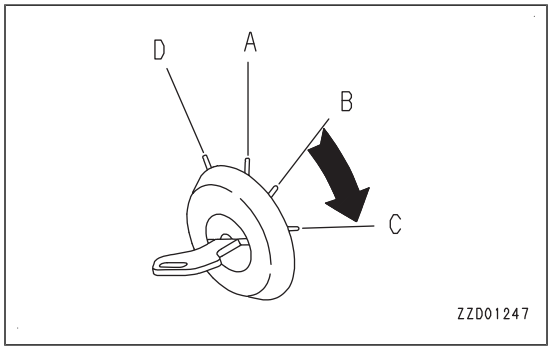
REMARK

If the engine coolant temperature is –5 °C (23 °F) or above, when the starting switch is turned to ON position (B), preheating of the engine is not performed.

In this case, it is possible to start the engine immediately.

3. If the preheating pilot lamp does not light up, or it lights up and then goes out to inform that the engine preheating has been completed, turn the key in starting switch (1) to START position (C).

   The engine starts.

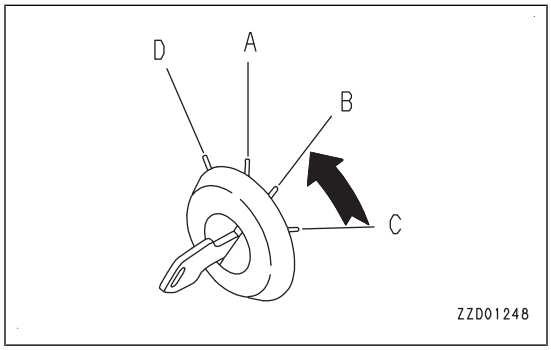


REMARK

If the ambient temperature is low, the engine may not start even when the key in starting switch (1) is kept at START position for 20 seconds.
In such case, return the key in starting switch (1) to OFF position once, then in approximately 2 minutes, repeat the operation from the start.
If the starting switch is not returned to OFF position, the automatic preheating does not start.

4. After the engine starts, release the key in the starting switch (1).

   The key returns to ON position (B) automatically.



REMARK

When the engine is started, the battery voltage may suddenly drop depending on the temperature and the battery condition.
In such case, the machine monitor may go out temporarily or restart, but it is not a trouble.

5. Do not operate the accelerator pedal immediately after starting the engine. Run the engine for at least 15 seconds at low idle.

   When the engine is started for the first time after the engine oil or engine oil filter is replaced, continue the low idle run for at least 20 seconds to circulate the engine oil in the engine.

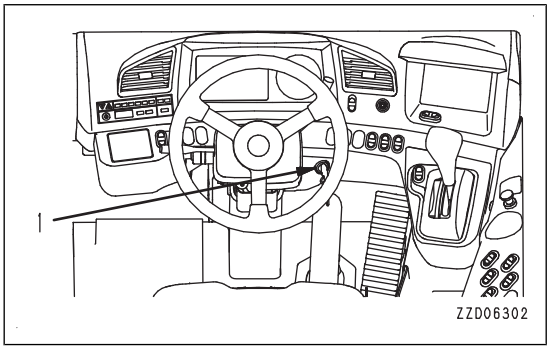
METHOD FOR MANUAL PREHEATING WHEN STARTING ENGINE

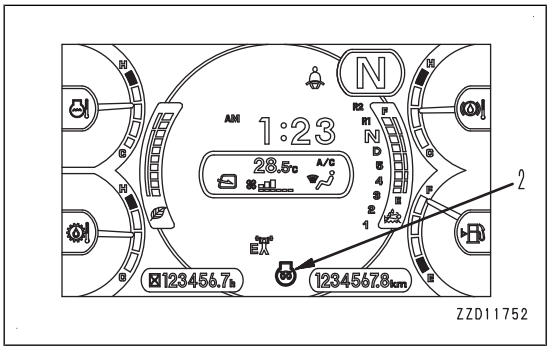
Manual preheating of the engine is available regardless of the ambient temperature.

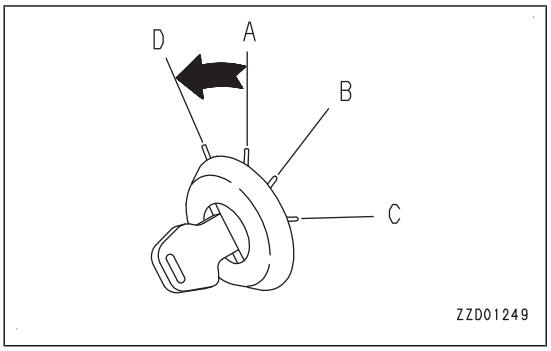
1. Turn starting switch (1) from OFF position (A) to PREHEAT position (D).

   Preheating pilot lamp (2) lights up and the preheating of the engine starts. (Preheating continues while the key in starting switch (1) is held counterclockwise.)

   While preheating is being performed, preheating pilot lamp (2) lights up to show that preheating is being performed.



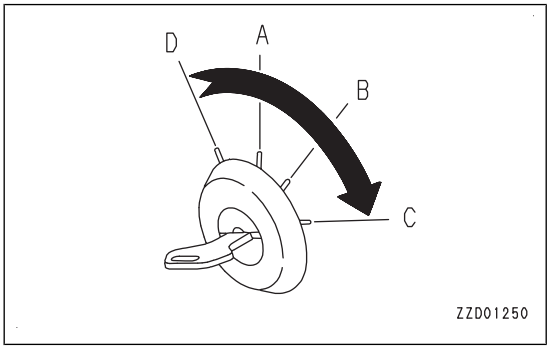




2. After the preheating time passes, turn starting switch key (1) to START position.

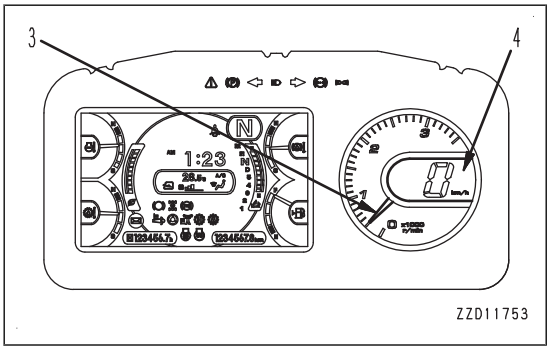
   The engine starts.

   If the engine cannot be started with the above procedure, wait for at least 2 minutes, then repeat the procedure again from step 1.



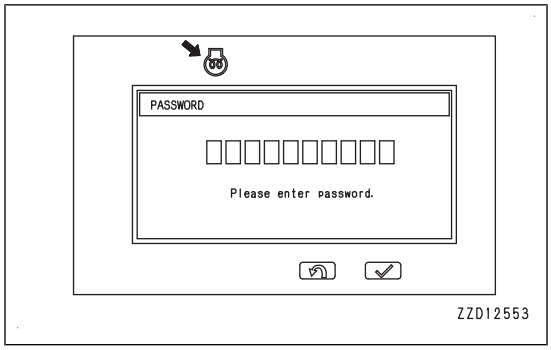
REMARK

When the key in starting switch (1) proceeds through OFF position, the indicator of tachometer (3) may swing once and “88” may be displayed on speedometer (4). It is, however, not a trouble.



REMARK

If a password is set, the password enter screen is displayed on the monitor screen, but the preheating pilot lamp lights up as on the standard screen.



TURBOCHARGER PROTECTION FUNCTION

Since the turbocharger is a device that rotates at a very high speed, seizure results if it is not lubricated well.

In order to protect above trouble, the turbo protect function restricts increase of the engine speed immediately after the engine is started until its oil pressure reaches an appropriate level.

- While the turbo protect function is operating, increase of the engine speed is restricted even if the accelerator pedal is depressed.
- The turbo protect function operates for up to 20 seconds.

METHOD FOR OPERATIONS AND CHECKS AFTER STARTING ENGINE

METHOD FOR CANCELING TO HOLD DUMP BODY

⚠ WARNING

If HOLD is canceled when the dump body is raised, the body will go down under its own weight. This is very dangerous.
Always lower the dump body before stopping the engine.

If the engine is stopped, the body will stay in “HOLD” condition, regardless of the position of the dump lever.

If the engine is started in this condition, the dump body float caution lamp will light up.

Return the dump control lever to “HOLD” position, then move it to “FLOAT” position to cancel the dump body “HOLD” condition.

When the dump body is set to “FLOAT” condition, the body float caution lamp will go out.

METHOD FOR CHECKING STARTING CONDITION AND UNUSUAL NOISE OF ENGINE

- When starting the engine, check that the engine causes no abnormal noise and that it starts up easily and smoothly.
- Check that there is no abnormal noise when the engine is idling or when the engine speed rises slightly.

When there is an abnormal noise at the engine startup and if that condition continues, the engine may be damaged. In that case, ask your Komatsu distributor to check the engine as soon as possible.

METHOD FOR CHECKING LOW-SPEED RUN AND ACCELERATION OF ENGINE

⚠ CAUTION

- **Perform these checks in a safe place, watching out for danger in the surroundings.**
- **When the engine performs very badly at low idle and in the acceleration and if that condition continues, it may damage the engine or confuse the operator's sense of driving or lower the braking efficiency, and as a result lead to an unexpected accident. In that case, ask your Komatsu distributor to check the engine as soon as possible.**

- When stopping the machine during the normal traveling operation, check that the engine does not hunt or stop suddenly.
- When the accelerator pedal is depressed, check that the engine speed rises smoothly.

REMARK

- The smell of the exhaust gas is different from that of the conventional diesel engine because of the exhaust gas filtering function.
- White smoke may be discharged for a short time immediately after the engine is started or during the after-treatment devices regeneration in the cold season, but this is not a failure.

METHOD FOR RUNNING-IN THE NEW MACHINE

NOTICE

Your Komatsu machine has been thoroughly adjusted and tested before shipment. However, operating the machine under severe conditions at the beginning can adversely affect the performance and shorten the machine life. Be sure to run in the machine for the initial 100 hours (as indicated by the service meter).

Make sure that you fully understand the descriptions in this manual, then run in the machine while paying attention to the following points.

- Perform warm-up operation for 5 minutes after starting it up.
- Avoid operation with heavy loads or at high speeds.
- Immediately after starting the engine, avoid sudden starts, sudden acceleration, unnecessary sudden stops, and sudden changes in direction of the machine.

AUTOMATIC WARM-UP FUNCTION

NOTICE

When you are forced to urgently cancel the automatic warm-up operation, run the engine at full speed for 3 seconds, then automatic warm-up operation is canceled.
During KDPF regeneration, the idle speed is set to rather high regardless of the engine coolant temperature.

This machine is equipped with the automatic warm-up function.

While the AISS LOW switch is in OFF position or when the engine coolant temperature is low, the low idle speed is automatically increased to cut down the warm-up time.

REMARK

Turning AISS LOW switch to ON position stop the automatic warm-up and decreases the idle speed.
If the engine coolant temperature is low and AISS LOW switch is returned to OFF position within a specific time after engine is started, the automatic warm-up is resumed.

METHOD FOR WARM-UP OPERATION

NOTICE

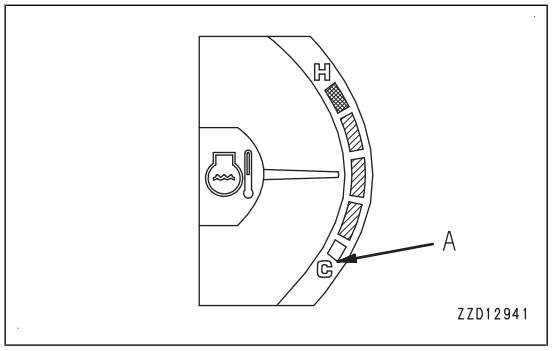
- **Do not accelerate the engine sharply during the warm-up operation.**
  It can shorten the service life of the engine parts.
- **Do not continue the low idle or high idle operation for more than 20 minutes.**
  It does not only adversely affect environment but also cause oil leakage from the turbocharger.

1. After the engine starts, run it for 5 minutes in the range between low idle and medium speed to warm it up.
2. Check if the indicator of the engine coolant temperature gauge is over position (A).

   When it is over position (A), the warm-up operation is completed.

   If the indicator does not move from position (A), perform the warm-up operation further
3. After finishing the warm-up operation, check that the machine monitor is normal.

   If any of them is abnormal, ask your Komatsu distributor for inspection and repair.



4. Check that the steering operation is normal, the lamps light up and go out normally, the horn sounds, and the exhaust gas color, sound, and vibration are normal.

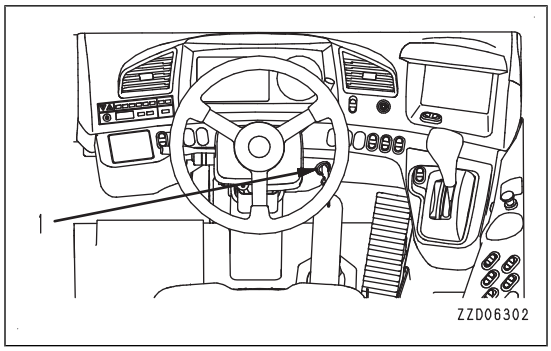
   If any of them is abnormal, ask your Komatsu distributor for inspection and repair.

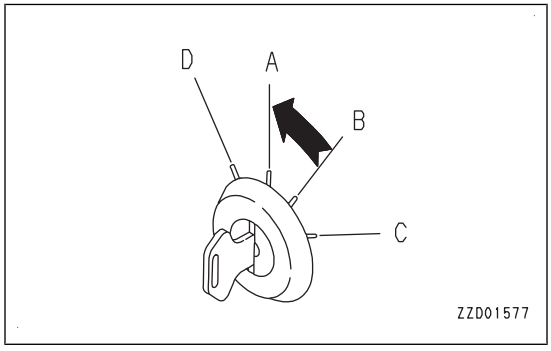
METHOD FOR STOPPING ENGINE

NOTICE

- **If the engine is suddenly stopped without allowing it to cool down, there is danger that the life of the engine parts will be shortened, so never stop the engine suddenly except in emergency. Allow the engine to cool down gradually before stopping it.**
- **Always lower the dump body and set the dump lever to “FLOAT” position, then stop the engine.**

1. Set the gear shift lever to NEUTRAL position (N), and set the parking brake switch to “PARKING” position.
2. Lower the dump body and set the dump lever to “FLOAT” position.
3. Run the engine at low idle for approximately 5 minutes to cool it down gradually.
4. Turn the key in starting switch (1) to OFF position (A).
   The engine will stop.
5. Remove the key from starting switch (1).





METHOD FOR CHECKING AFTER STOPPING ENGINE

1. Walk around the machine and check the work equipment, machine exterior, and undercarriage, also check for any leakage of oil or coolant. If any problems are found, repair them.
2. Fill the fuel tank.
3. Check the engine compartment for paper and debris. Clean out any paper and debris to avoid a fire hazard.
4. Remove any mud affixed to the undercarriage.

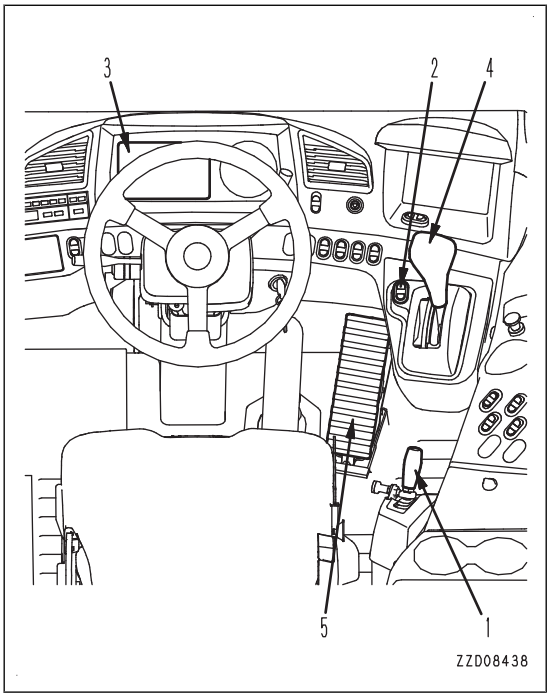
START MACHINE (TRAVEL FORWARD AND REVERSE) AND STOP MACHINE

METHOD FOR MOVING MACHINE

⚠ WARNING

- **When moving the machine off, check that the area around the machine is safe, then sound the horn before starting.**
- **Keep people away from the machine.**
- **Clear any obstacles from the travel path.**
- **There is a blind spot behind the machine, so be extremely careful when driving the machine in reverse.**

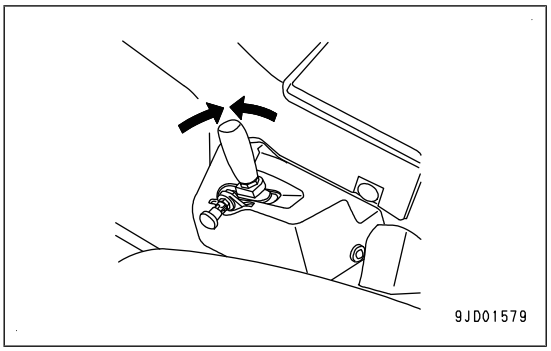
1. Check that there is no warning display on the machine monitor.
2. Fasten the seat belt.



3. Set dump lever (1) to FLOAT position.

   Check that the dump body float caution lamp is OFF.

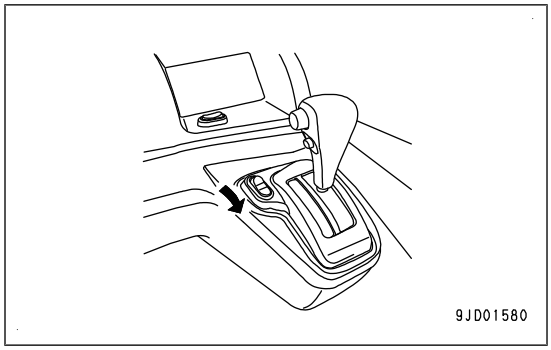
   If the dump body float caution lamp is lit, operate the dump lever to “HOLD” position, then operate it to “FLOAT” position to cancel the dump body HOLD condition.
4. Depress the brake pedal fully.



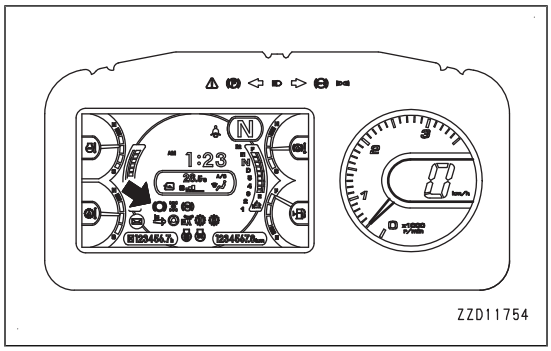
5. Then set parking brake switch (2) to “TRAVEL” position to release the parking brake.

REMARK

If the engine is stopped with the parking brake switch at “TRAVEL”, the parking brake will be automatically applied even though the parking brake switch is at “TRAVEL”. In this case, operate the switch to “PARKING”, and then move it back to “TRAVEL” to release the parking brake.



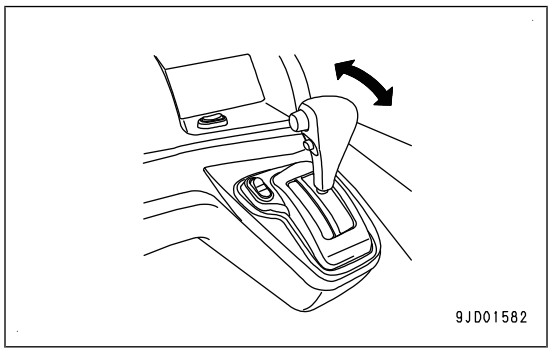
6. Check that retarder pilot lamp (3) is not lit.



7. Set gear shift lever (4) to a desired position.

NOTICE

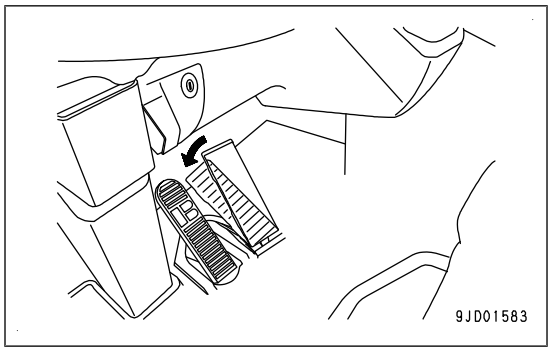
- **Always place the gear shift lever securely in position when operating it. If the gear shift lever is not placed securely in position, the shift lever position pilot lamp on the machine monitor may start flashing and the centralized warning lamp may light up, and the alarm buzzer may sound.**
- **Always release the accelerator pedal when moving the gear shift lever from positions NEUTRAL (N) to REVERSE (R) or FORWARD (D or F).**



8. Depress accelerator pedal (5) to start the machine.

NOTICE

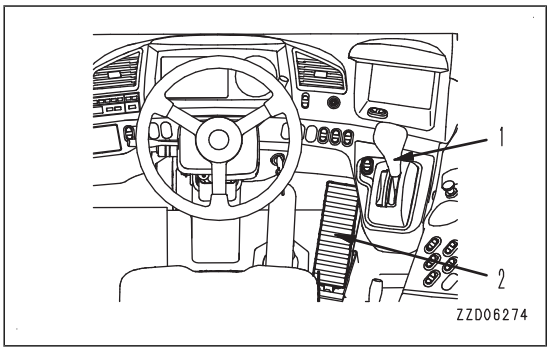
- **If the gear shift lever is shifted to a position other than NEUTRAL position (N) when the parking brake has not been released, the centralized warning lamp will light up and the alarm buzzer will sound.**
- **If the gear shift lever is shifted to a position other than NEUTRAL (N) when the dump lever is in a position other than “FLOAT” or the dump body is raised, the centralized warning lamp lights up, the body float caution lamp lights up in red, and the alarm buzzer sounds.**
- **Do not operate the gear shift lever with the accelerator pedal depressed.**
  This will cause a big shock, and will also reduce the service life of the machine.



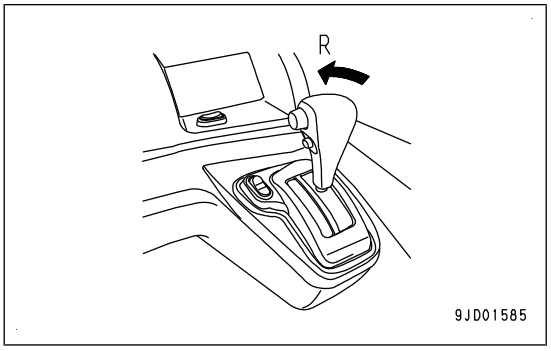
METHOD FOR TRAVELING REVERSE

⚠ WARNING

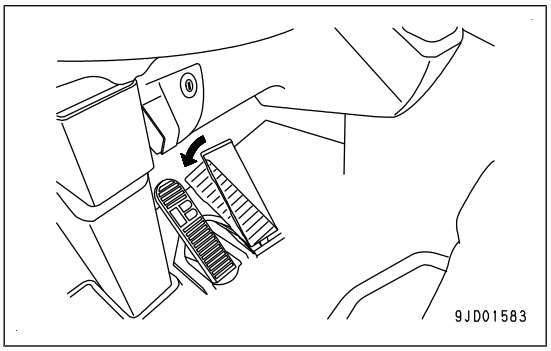
- **When switching the travel direction, confirm the safety in the direction to select.**
  There is a blind spot behind the machine, so be extremely careful when driving the machine in reverse.
- **Always stop the machine completely before switching the travel direction.**



1. Set gear shift lever (1) to “R1” or “R2” position.



2. Depress accelerator pedal (2) gradually to start the machine.



NOTICE

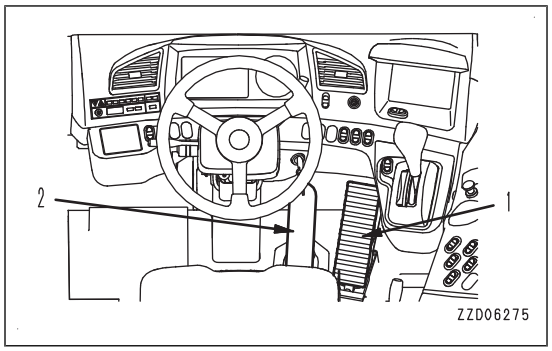
- **The machine cannot be driven in reverse when the dump body is raised. Lower the dump body, set the dump lever to “FLOAT” position, then operate the gear shift lever to “R1” or “R2”.**
- **When switching between Forward and Reverse, stop the machine completely and run the engine at low idle when shifting the direction of travel.**
  After moving the gear shift lever, do not accelerate until it is detected that the transmission clutch is engaged.
- **Do not operate the gear shift lever with the accelerator pedal depressed.**
  This will cause a big shock, and will also reduce the service life of the machine.

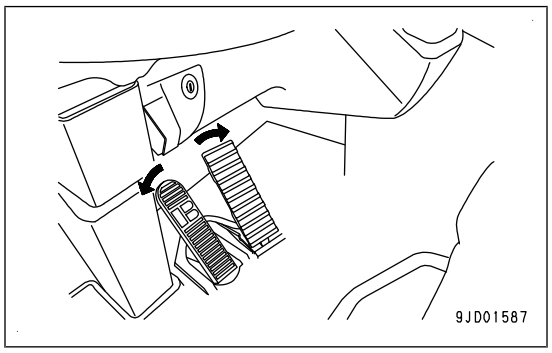
METHOD FOR STOPPING MACHINE

⚠ WARNING

- **Avoid a sudden stop. Stop the machine gradually.**
- **If the foot brake is used repeatedly or is kept depressed for a long time, the brake may overheat and its life will be shortened.**
- **If the parking brake is used to stop the machine, the parking brake will be damaged.**
  Do not use the parking brake except when stopping in emergency or when parking the machine after stopping it.

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





METHOD FOR STOPPING MACHINE IN EMERGENCY

If the machine is not stopped by depressing the brake pedal, perform the following.

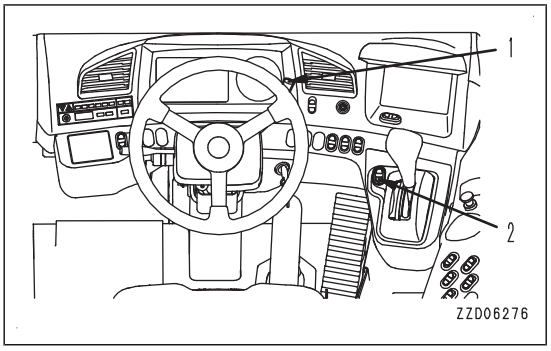
⚠ WARNING

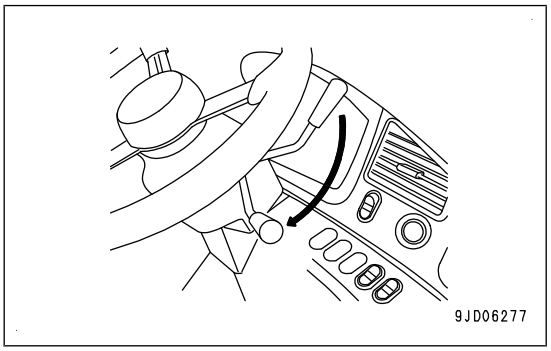
- **When the machine stops, chock the wheels immediately.**
- **If the parking brake is used to make an emergency stop, the performance of the parking brake may drop below the standard value, so it is necessary to repair and adjust the parking brake. Ask your Komatsu distributor to perform this work.**

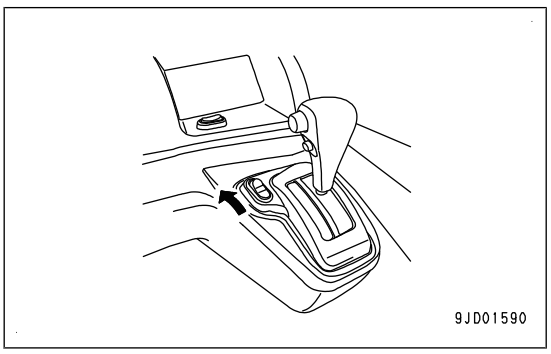
1. Pull retarder control lever (1) fully to apply the retarder.

   If operating retarder control lever (1) does not give enough braking force, set parking brake switch (2) to “PARKING” position to apply the parking brake.
2. When the machine stops in emergency, chock the tires immediately.

   Find out the cause and repair on the spot, when possible.



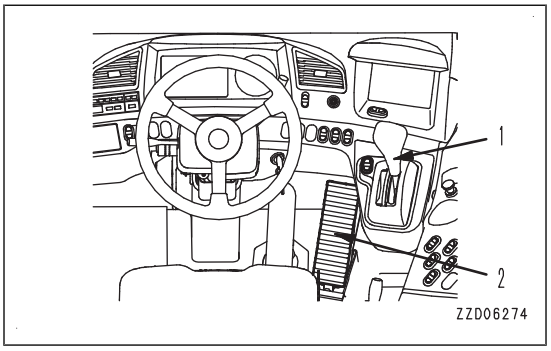




METHOD FOR SHIFTING GEARS

⚠ WARNING

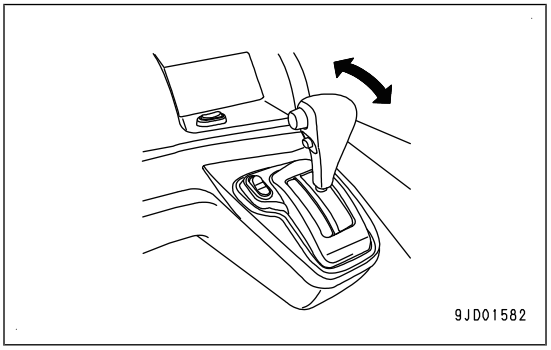
When traveling, and particularly when traveling downhill, never set the gear shift lever to NEUTRAL position (N).
If the gear shift lever is set to NEUTRAL position (N) while driving a machine at travel speed of above 4 km/h or traveling downhill, the gear speed is not changed to neutral. The centralized warning lamp flashes and the alarm buzzer sounds. Always set the gear shift lever in D to 1 position while traveling.



Shift gear as follows.

Set gear shift lever (1) to a desired position.
This machine is equipped with automatic transmission, so the transmission will shift automatically to match the travel speed.

When the dump body is raised, if the gear shift lever is at D position, the transmission is fixed in 2nd or 1st speed, and if it is at positions 1 to 5, the transmission is fixed in 1st speed. Keep the dump body lowered when traveling.



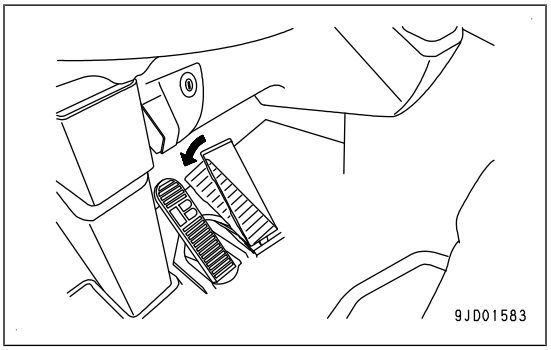
NOTICE

- **When switching direction (FORWARD or REVERSE), stop the machine completely and run the engine at low idle, then select the direction of travel.**
  After moving the gear shift lever, do not accelerate until it is detected that the transmission clutch is engaged.
- **Do not operate the gear shift lever with the accelerator pedal depressed.**
  This will cause a big shock, and will also reduce the service life of the machine.

Upshift (acceleration)

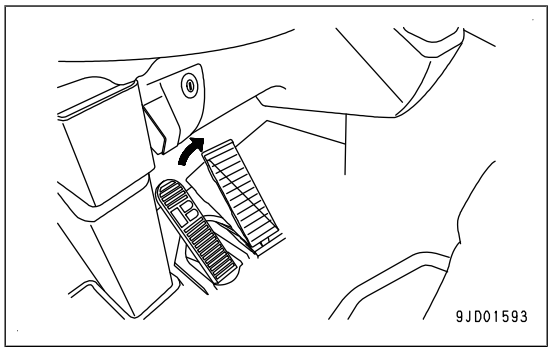
Depress accelerator pedal (2) gradually to accelerate the machine.
The lockup clutch is engaged and the direct drive starts.

If the machine is accelerated further, the transmission will automatically shift up.



Downshift (deceleration)

Release decelerator pedal (2).
The machine is decelerated and the transmission automatically shifts down.



Downshift inhibit

If the gear shift lever is operated when the machine is traveling, the travel speed may be faster than the maximum speed allowed for the new speed range. In this case, do not shift gear immediately. Reduce the travel speed and then shift down. This will prevent the engine from overrunning.

Downshift when brake pedal is used

When using the brake pedal to reduce speed, the 3rd speed is held for longer than normal to reduce the shock when shifting gear.

Engine overrun prevention function

If the engine speed exceeds the allowable range while traveling, the engine overrun caution lamp and the centralized warning lamp light up and the alarm buzzer sounds intermittently.

If the travel speed and engine speed continue to rise, the brake is automatically applied to prevent the engine speed from rising too far.

Neutral coast prevention function

If the gear shift lever is set to NEUTRAL position (N) while driving a machine at travel speed of above 4 km/h , the gear shift cannot be changed to neutral. The centralized warning lamp flashes and the alarm buzzer sounds intermittently.

If a travel speed exceeds 4 km/h while going downhill with the gear shift lever in NEUTRAL position (N), the centralized warning lamp flashes and the alarm buzzer sounds intermittently.

When the travel speed exceeds 23 km/h the gear speed is automatically shifted to the gear speed optimum to the current travel speed.

When traveling, and particularly when traveling downhill, never set the gear shift lever to NEUTRAL position (N). Always set the gear shift lever in D to 1 position while traveling.

METHOD FOR 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.

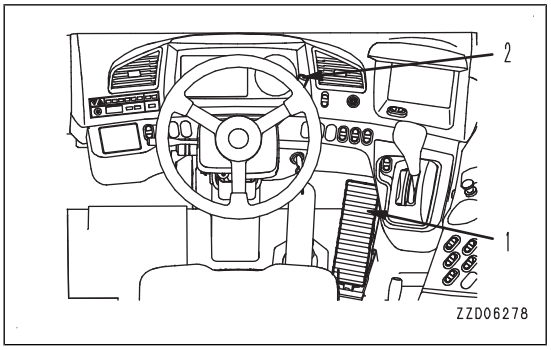
⚠ WARNING

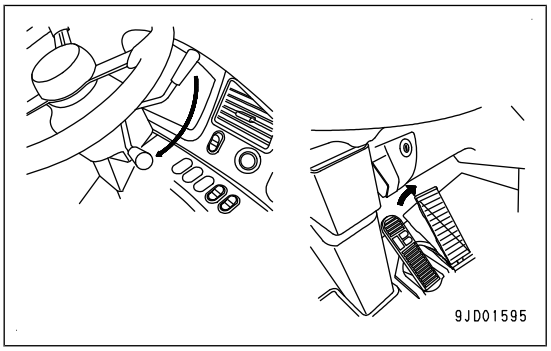
- **When the machine stops, chock the tires immediately.**
- **For the maximum permissible speed when traveling downhill using the retarder brake, see the brake performance curve for the downhill distance and grade.**
  Traveling continuously downhill at a speed greater than the maximum permitted speed on the brake performance curve 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.**
  (In this case, the centralized warning lamp lights up and alarm buzzer sounds.)
  It the retarder oil temperature caution lamp does not go out even when the transmission is shifted down, stop the machine immediately, set the gear shift lever to NEUTRAL position (N), run the engine at 1800 rpm and wait the retarder oil temperature caution lamp goes out.
- **If the retarder brake loses its effect when it is used for traveling downhill, do as follows.**
  1. **Return the retarder control lever to its original position once completely, then operate the retarder control lever again.**
  2. **If the retarder still has not effect even when the retarder control lever is operated again, return the retarder control lever completely to the "RELEASE" position, then depress the brake pedal to stop the machine, then contact your Komatsu distributor for repair.**
- **Operate the retarder control lever gradually.**
  Sudden braking might cause an accident due to tire slip.
- **When traveling, and particularly when traveling downhill, do not set the gear shift lever to NEUTRAL position (N).**
  If the gear shift lever is set to NEUTRAL position while driving the machine at 4 km/h or traveling downhill, the gear range is not changed to NEUTRAL. The centralized warning lamp flashes and the alarm buzzer sounds. Always set the gear shift lever in D to 1 position while traveling.

NOTICE

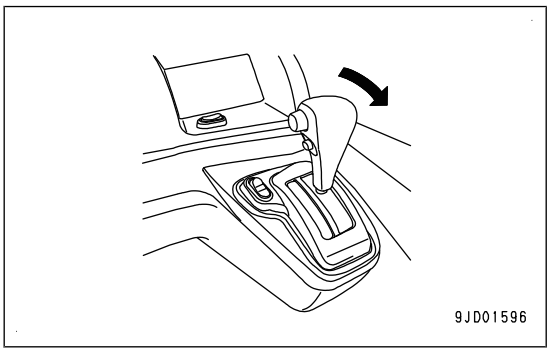
- **If the retarder control lever is operated when traveling downhill, the transmission can be shifted down sooner than with normal deceleration.**
  It is also possible to travel without shifting up.
- **Do not accelerate or shift up when using the retarder.**
  The engine speed rises and the alarm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

1. Return accelerator pedal (1) before entering a downhill slope.
2. Operate retarder control lever (2) to decelerate the machine.

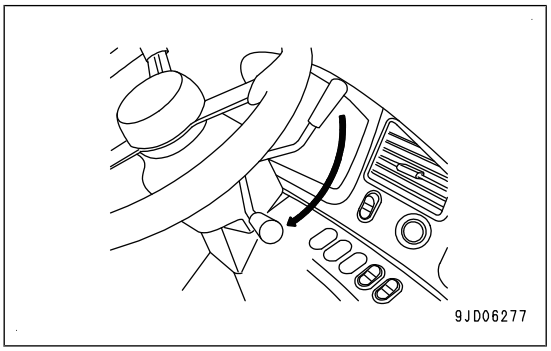




3. Move the gear shift lever to the position (5, 4, 3, 2) that matches the maximum permitted speed on the brake performance curve.



4. When traveling downhill, operate retarder control lever (2) to set the engine speed to above 1800 rpm and drive the machine so that the indicator of the retarder oil temperature gauge comes within the white range.



BRAKE PERFORMANCE CURVE

How to read the graph

Example: Downhill distance: 1500 m

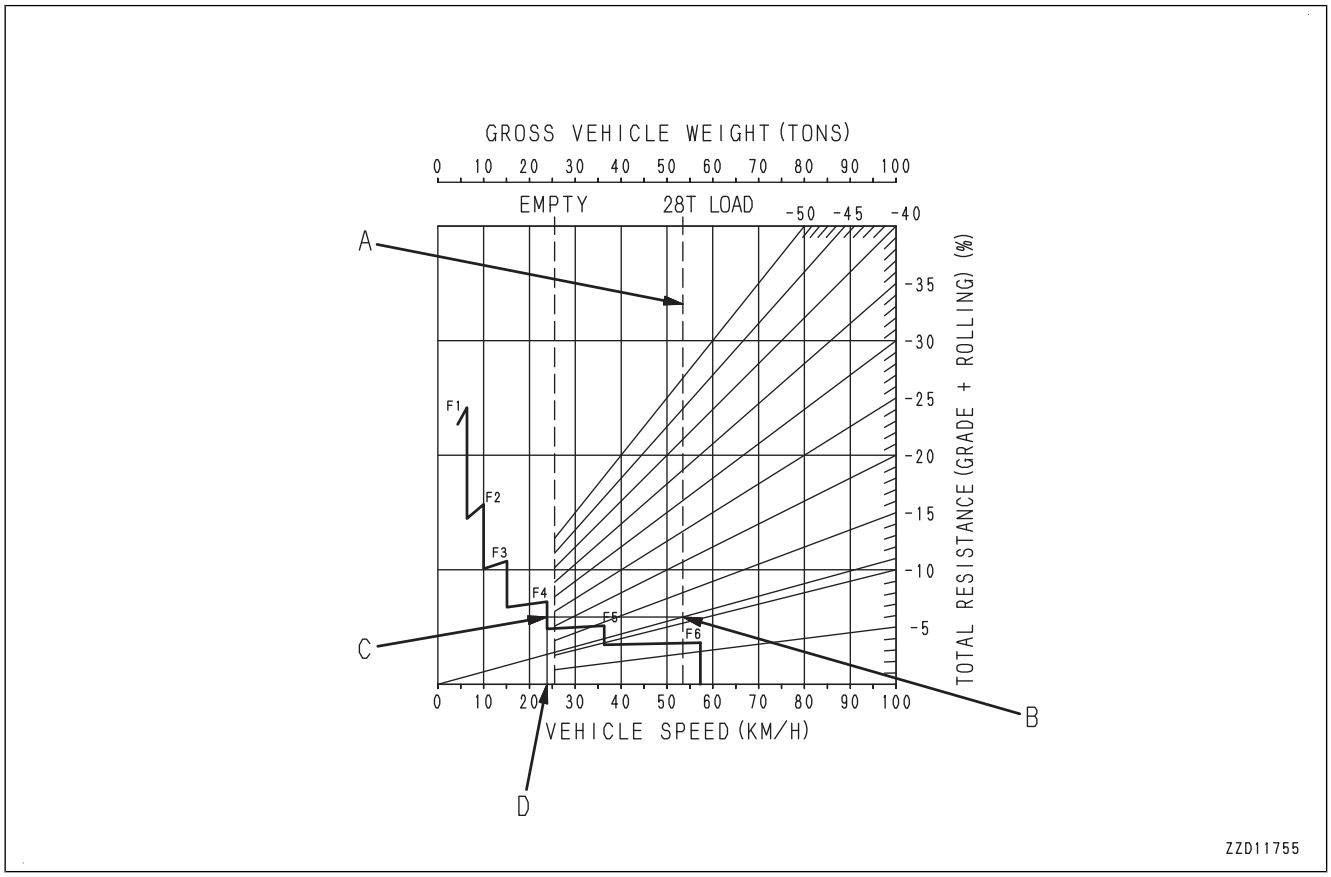
Traveling resistance: –11 % (Grade resistance: –13 %, rolling resistance: 2 %)

Payload: 28 t

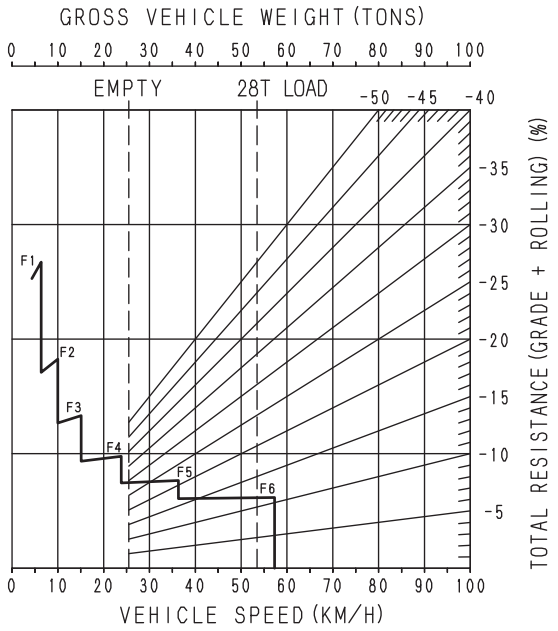
Obtain the maximum permissible speed and the gear speed range from the graph when traveling downhill under the above conditions.

1. Use the brake performance curve for downhill distance of 1500 m .
2. Starting from point (A) which corresponds to the overall weight of the machine, draw a perpendicular line down.
3. Take the point where it crosses the line for travel resistance 1500 m as (B) and draw a horizontal line.
4. Take the point where it crosses the performance curve as (C), and draw a perpendicular line down. Take the point where this line crosses the travel speed scale as (D).
5. The following information can be obtained from this procedure.
   From point (D): Maximum permissible speed = “ 24 km/h ”
   From point (C): Speed range = “F4”

This maximum permissible speed is one guideline determined from the retarder brake performance, so on an actual jobsite, determine a safe travel speed below the maximum permissible speed to match the conditions of the jobsite so that the retarder brake oil temperature gauge is always in the white range when traveling.



Brake performance “Downhill distance: 450 m ”



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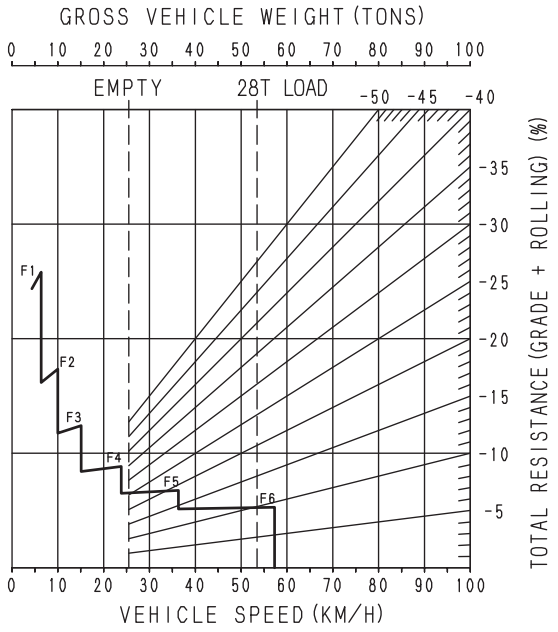
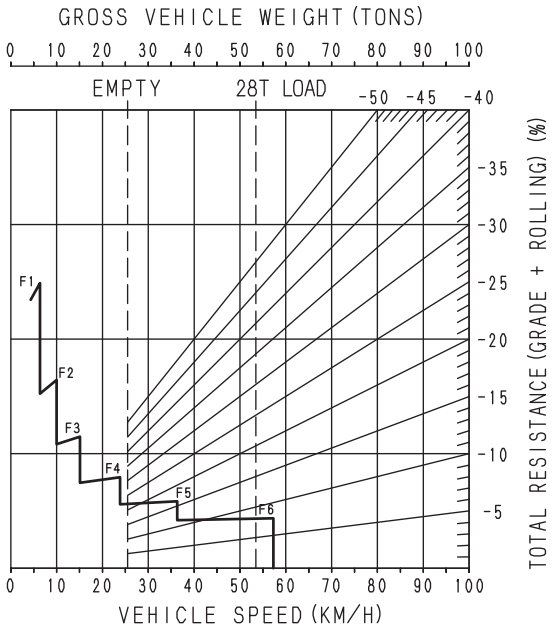
Brake performance “Downhill distance: 600 m ”



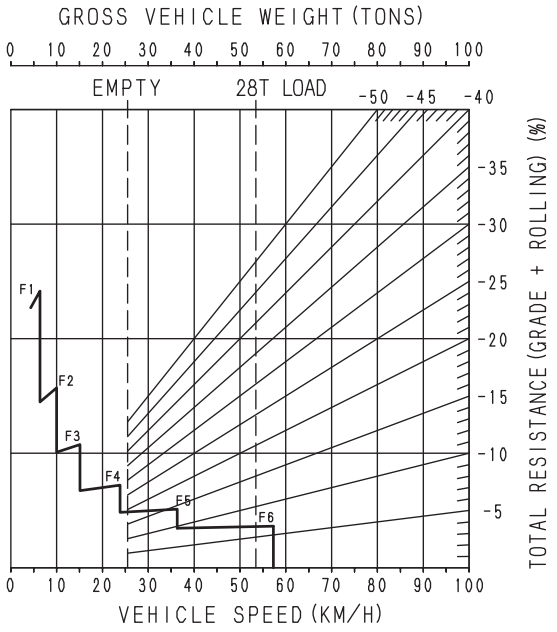
ZZD11757

Brake performance “Downhill distance: 900 m ”



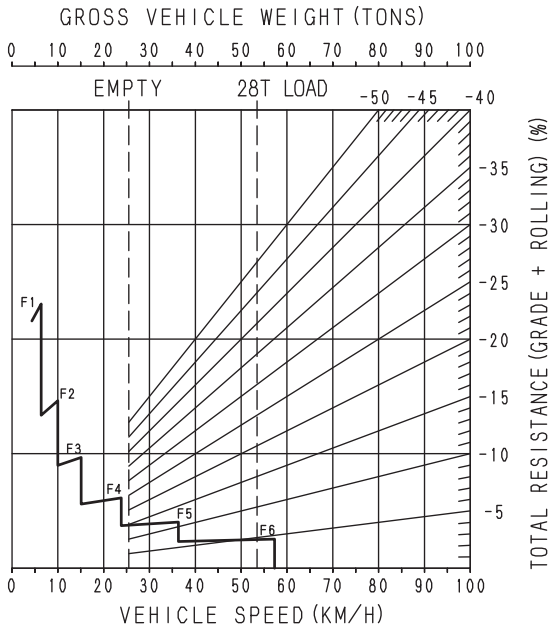
ZZD11758

Brake performance “Downhill distance: 1500 m ”



ZZD11759

Brake performance “Downhill distance: Continuous”



PAY ATTENTION TO DEF LEVEL

Before working on a slope or traveling on a rough ground, check DEF tank and add sufficient amount of DEF as necessary. If the remaining DEF level becomes low, sudden drop of its level or abnormality in urea SCR system may be detected. If DEF level caution lamp or DEF system caution lamp lights up in red, move the machine to a level place immediately and add DEF.

METHOD FOR TURNING MACHINE

⚠ WARNING

If the machine is turned at high speed or on a steep slope, there is danger that it will tip over, so do not operate the steering in such conditions.

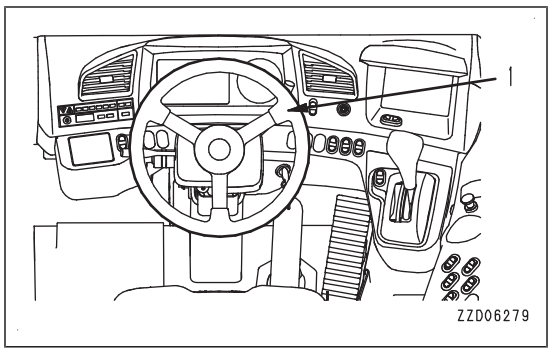
⚠ CAUTION

- **If the steering wheel has been turned fully to the right or left, do not continue to apply force to turn it further.**
  The oil temperature inside the steering hydraulic circuit will rise and cause overheating.
- **When the steering nears the end of the turn on the left or right, turn the steering wheel more slowly. Turning the steering wheel suddenly to the end of the turn will cause damage to the machine.**

When the machine is traveling, turn steering wheel (1) in the desired direction.
The machine turns.

On roads where there are curves, let the accelerator pedal back before coming to the curve, shift down to the lowest speed range possible then depress the accelerator pedal again to continue driving.

Do not coast at high speed on a curved road.



REMARK

- The angle of the steering wheel may change (the position of the spoke may change slightly) when the machine is traveling, but this is not a failure.
- If force is applied to the steering wheel when the tires have been turned fully to the right or left, the steering wheel will turn a little at a time, but this is not a failure.

OPERATE WITH INTER-AXLE DIFFERENTIAL LOCK

On dry sandy ground, etc., if the tires slip and the machine bounces up and down, or on muddy ground, etc., if the travel speed lowers largely because the tires slip and sink into mud. In these cases, use the inter-axle differential lock function when you drive the machine.

NOTICE

Do not use inter-axle differential lock.
If inter-axle differential lock is used,

- **It will be more difficult to operate the steering wheel.**
- **It will become more difficult to turn than it should be when the inter-axle differential lock is not used, and in some cases, it may not be possible to steer around curves which were previously possible.**

How to use inter-axle differential lock

Set the inter-axle differential lock switch to the MANUAL before you go into the dry sandy ground or the muddy ground, and activate the inter-axle differential lock.

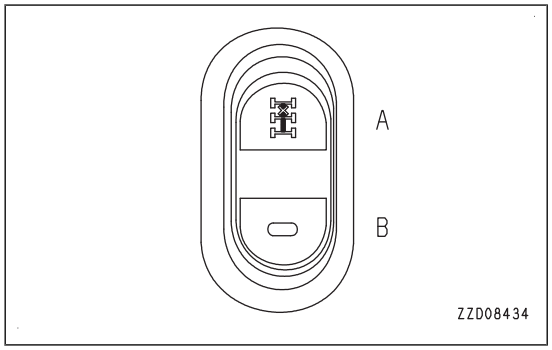
Set it to AUTO when traveling on a normal ground.

(A) MANUAL

The inter-axle differential lock (1) is actuated while the shift range (gear speed) is at F3, F2, F1, R1, or R2, and the machine is not turning.

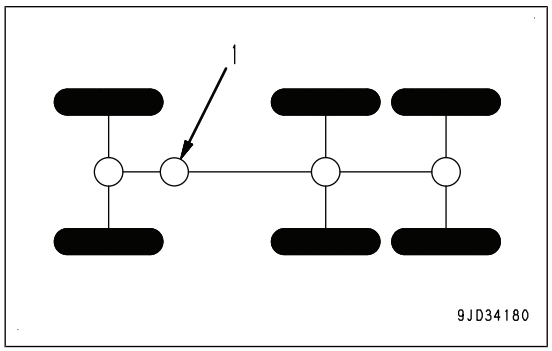
On dry sandy ground, etc., if the tires slip and the machine bounces up and down, or on muddy ground, etc., if the travel speed lowers largely because the tires slip and sink into mud. Before these cases, set it to the MANUAL.

Operation mode is shifted to AUTO mode when the steering angle becomes more than the specified angle during turning.



(B) AUTO

Ability to travel through or escape from soft ground is improved when KTCS operates. The inter-axle differential lock (1) operates automatically to stabilize the machine when the brake is applied or the gear is shifted.



HANDLE AUTOMATIC RETARDER, ACCELERATOR CONTROL (ARAC)

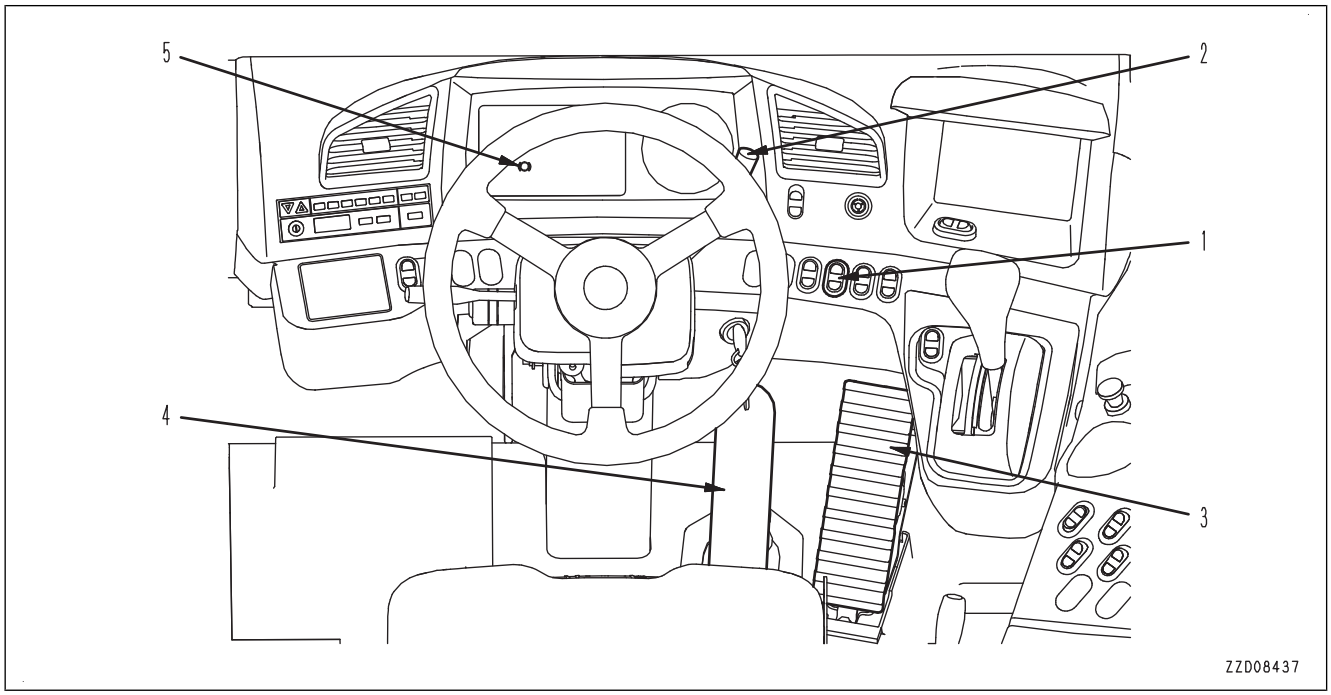
This is a system to automatically activate the retarder when an operator wants to use it on a downslope or slow down on a flat hauling road.

It enables the retarder to automatically function according to the present selected gear speed and engine revolution, thus making it easier for an operator to use the retarder.

⚠ WARNING

- **The ARAC system begins to function when the automatic retarder, accelerator control switch is in ON position.**
  Check that automatic retarder, accelerator linked control switch is turned ON before running down on a slope.
- **The ARAC system may not assure thorough braking force to slow down, depending on a slope inclination, load weight and selected gear speed.**
  In that case, use the retarder control lever and brake pedal to slow down to a safe speed.
- **The tires may be locked when the dump truck is running on a slippery hauling road and the ARAC system is in service.**
  If that happens, stop using the ARAC system.
- **If some abnormalities occur in the ARAC system and the machine cannot be controlled securely, the alarm buzzer sounds and the system is turned OFF to release ARAC. In that case, keep control of the machine by using the retarder control lever and brake pedal, stop it in a safe place, and turn the automatic retarder, accelerator linked control switch to OFF position.**
- **ARAC system does operate when the gear shift lever is in NEUTRAL position (N).**
  When ARAC operates, if the gear shift lever is set to NEUTRAL position (N), the retarder pilot lamp goes out, and ARAC is released.

Explanation of components



(1) Automatic retarder, accelerator linked control switch
(2) Retarder control lever
(3) Accelerator pedal
(4) Brake pedal
(5) Retarder pilot lamp

Automatic retarder, accelerator linked control switch

Automatic retarder, accelerator linked control switch is used to turn ON or OFF the ARAC system.

Retarder control lever

The retarder can be operated with the retarder control lever even while ARAC system is in operation.

REMARK

When the ARAC system is in operation, the retarder control lever has some play at the start of stroke.
It does not mean that the retarder brake does not work, but that it is the range of ARAC system operation.

Accelerator pedal

ARAC system functions only while the accelerator pedal is released.

Brake pedal

The wheel brakes can be operated with the brake pedal even while ARAC system is in operation.

Retarder pilot lamp

The retarder pilot lamp lights up when ARAC system operates and when the retarder is operated with the retarder control lever.

(If the engine speed is low, even when ARAC system is actuated, the retarder pilot lamp may not light up.)

OPERATION OF ARAC SYSTEM

The ARAC system is actuated when the automatic retarder, accelerator linked control switch is turned to ON position.

When the automatic retarder, accelerator linked control switch is turned to ON position, the retarder is automatically actuated according to the travel speed and engine speed at that point.

If the accelerator pedal is depressed when the ARAC system is being actuated, actuation of the ARAC stops and the machine speed increases.

If the brake pedal or retarder control lever are actuated while the ARAC is being actuated, the machine can be slowed down or stopped in the same way as for normal brake operations.

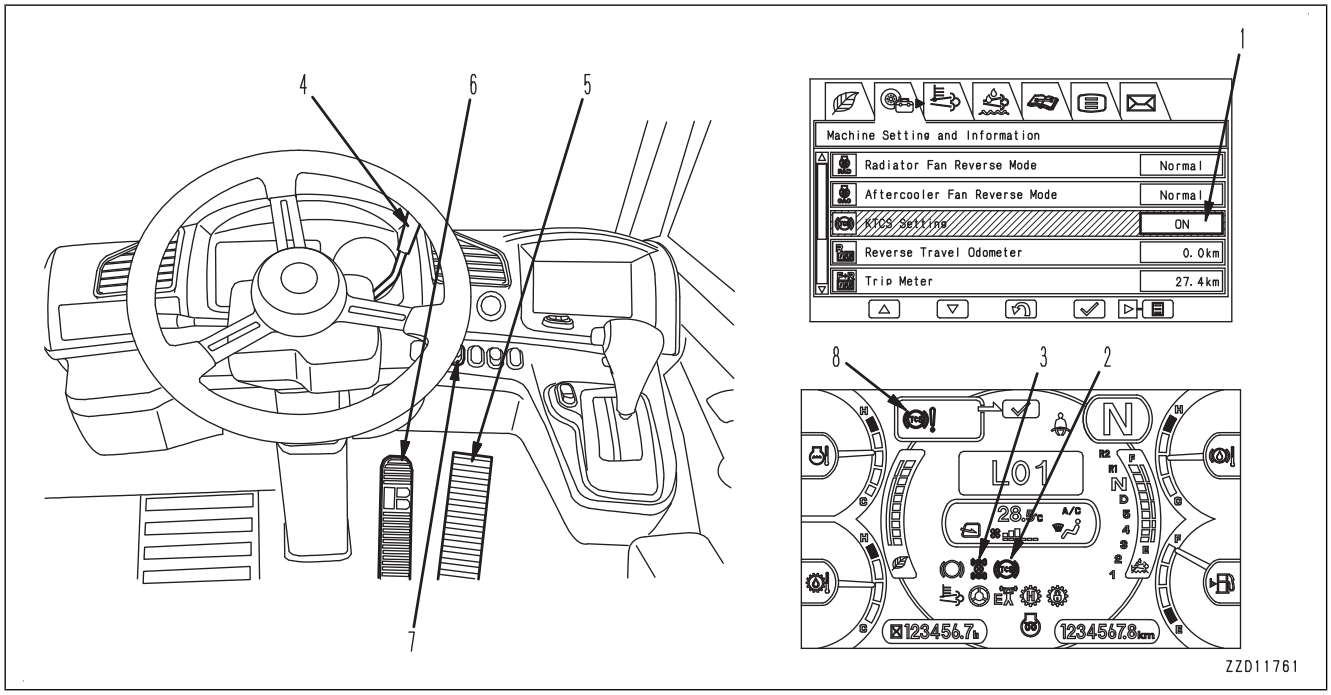
HANDLE KOMATSU TRACTION CONTROL SYSTEM (KTCS)

KTCS is a system to prevent slipping of the drive wheels caused by excessive torque and improve starting and traveling ability on soft or slippery ground.

⚠ WARNING

- **KTCS system is enabled when the “KTCS Setting” is turned ON.**
- **If the system has trouble and cannot be controlled securely, the machine monitor displays an action level and the system may stop operation depending on the failure condition.**
- **The machine may not travel safely on an extremely slippery road or a steep slope even if the KTCS operates.**
- **If a wheel is stuck in the ground and the machine cannot escape while the KTCS operates, pull out the machine with a bulldozer, etc.**

Explanation of components



(1) KTCS setting
(2) KTCS display
(3) Inter-axle differential lock pilot lamp
(4) Retarder control lever
(5) Accelerator pedal
(6) Brake pedal
(7) Inter-axle differential lock switch
(8) KTCS system caution lamp

KTCS system setting

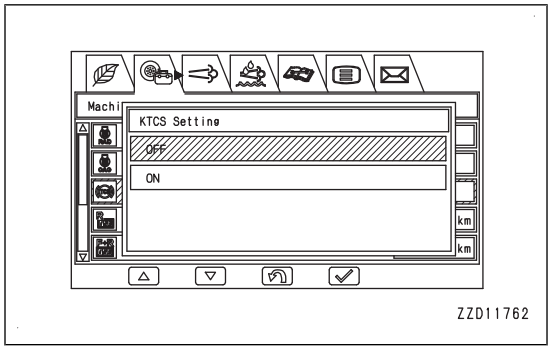
KTCS system can be set ON or OFF with “KTCS Setting”.

“OFF”

KTCS system does not operate.

“ON”

KTCS system operates.



KTCS display/ Inter-axle differential lock pilot lamp

KTCS display/ inter-axle differential lock pilot lamp lights up when the system detects slipping of a front or a center wheel while the KTCS setting is ON and the KTCS operates.

Retarder control lever

If the retarder is operated with retarder control lever while the KTCS is in operation, the KTCS system stops operation.

Accelerator pedal

The KTCS system can operate while accelerator pedal is depressed and the gear speed is any of F1, F2, F3, R1, and R2.

If the accelerator pedal is released while the KTCS is in operation, the KTCS system stops operation.

Brake pedal

If the brake pedal is depressed while the KTCS is in operation, the KTCS system stops operation.

KTCS system caution lamp

If the KTCS system has a trouble, caution lamp is displayed on the machine monitor.

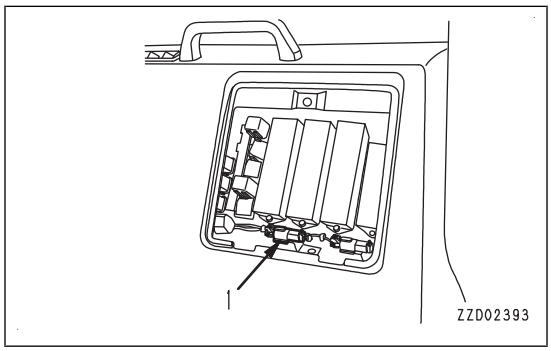
OPERATION OF KTCS SYSTEM

The KTCS system is enabled when the “KTCS Setting” is turned “ON”.

When KTCS system senses slip of the front wheel or center wheel, KTCS operates. At this time, KTCS display or inter-axle differential lock pilot lamp lights up.

OPERATION IF TROUBLES ON SYSTEM OCCUR

When failure code DBIRKR, CA131, CA132, or DK30KX occurs, operate KTCS according to the following procedure.



1. Use the brake pedal to reduce the travel speed and stop the machine at a safe place.
2. Set the gear shift lever to NEUTRAL position (N) position, and set the parking brake switch to “PARKING” position.
3. Turn the starting switch to ON position or start the engine.
4. Disconnect (pull out) the secondary KTCS operation connectors (1) (No. TC1 (male), TC2 (female)), and then connect (insert) them again.

   Then, KTCS can operate.
5. Set the parking brake switch to TRAVEL position and move the machine to a safe place.

OPERATION IF TIRES ARE STUCK IN GROUND

If any wheel is stuck, operate the KTCS.

If it is impossible to get the machine out even when repeating the procedure below, use a bulldozer to tow the machine out.

1. Check that the “KTCS Setting” is “ON”.

   When the “KTCS Setting” is “ON”, the KTCS operates automatically.
2. Set the gear shift lever to position “5” and increase the engine speed.
3. Release the accelerator pedal and brake pedal.
4. Set the gear shift lever to position “R1” and increase the engine speed.
5. Repeat steps 1 to 4 to move the machine backwards and forwards until it can escape.

METHOD FOR LOADING

⚠ WARNING

Do not load the truck while its dump body is raised.

NOTICE

- **When traveling, always set the dump lever to "FLOAT" position, regardless of whether the machine is loaded or not loaded.**
- **If the gear shift lever is shifted to a position other than NEUTRAL position (N) when the dump lever is not at "FLOAT" position, the centralized warning lamp will light up and the alarm buzzer will sound.**
- **During loading operations, do not apply the parking brake. Apply the retarder brake.**
- **To maintain the operation of the retarder brake, do not stop the engine during loading work.**

If large rocks are loaded directly onto the dump body by using a large-sized loader, etc., the dump body may be deformed locally.

1. When loading large rocks, load soil and sand first as cushion material.
2. After loading the soil and sand, load the rock onto them.

   The impacts to the dump body are reduced by this method.

In addition, when loading rocks that exceed the following conditions, install the optional body reinforcement plate.

- Rocks with one side of more than 0.3 m
- Rocks of hardness more than 4.5 (Mohs scale)
- Rocks with weight of more than 150 kg
- When transporting steel ingots

HANDLE TAILGATE

(if equipped)

⚠ WARNING

When hauling rocks or sticky materials, always remove the tailgate.

⚠ CAUTION

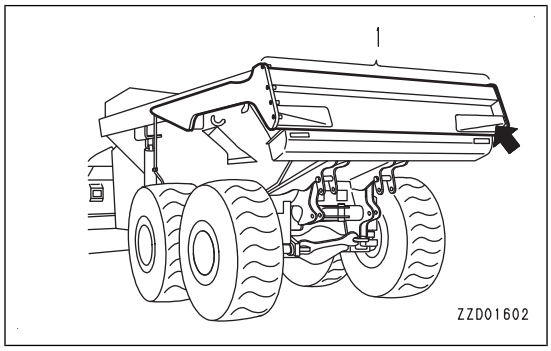
Soil and sand accumulated on tail gate top (1) may fall. When approaching for testing or maintenance, check that no soil or sand is accumulated.

NOTICE

Do not use a tailgate if the dump body is loaded with rocks, gravel, or sticky material such as clay. There is a danger that the tailgate may be damaged, the operator's cab may be pushed up by the loaded material caught in the tailgate during dumping operations.

Install a tailgate when hauling fluid materials such as finely crushed soil.

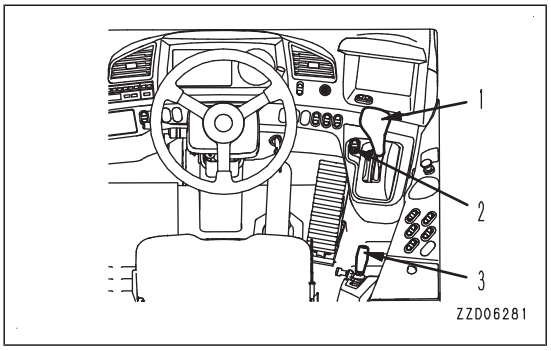
When removing or installing the tailgate, consult your Komatsu distributor.



METHOD FOR DUMPING

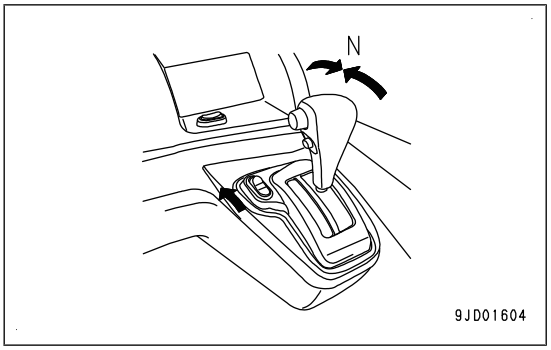
⚠ WARNING

- **Always follow the instructions of the signalman when performing dumping operations.**
- **When dumping large rocks, operate the dump body slowly.**
- **When performing inspection or maintenance with the dump body raised, always use the body pivot pin and lock the dump lever at "HOLD" position.**



Operate the dump body as follows.

1. Set gear shift lever (1) to NEUTRAL position (N), and set parking brake switch (2) to "PARKING" position.



2. Move dump lever (3) to "RAISE" position, then depress the accelerator pedal.

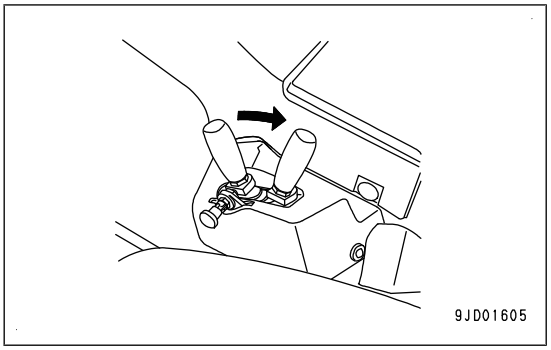
   The dump body rises.

   If the dump lever is released when it is at "RAISE" position, it is held at "RAISE" position and the dump body will continue to rise.

   The dumping speed increases in proportion to the engine speed.

   When the dump body rises to the previously set position, dump lever (3) returns to "HOLD" position.

   The dump body is then held at that position.

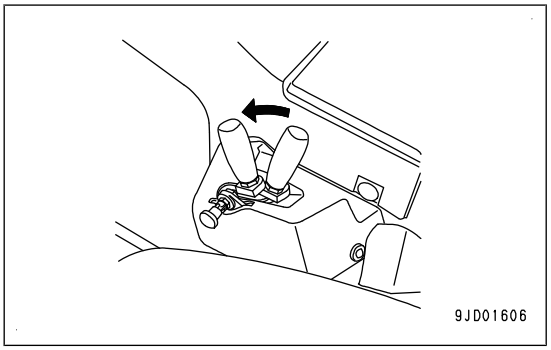


3. If it is necessary to raise the dump body further, operate dump lever (3) to "RAISE" position.

   The dump body rises further.

   If dump lever (3) is released, dump lever (3) will return to "HOLD" position and the dump body will stop at that position.

   While raising the dump body, when the dump body approaches the maximum tilt angle, release the accelerator pedal in order to avoid any impact load on the hydraulic circuit or hoist cylinder.



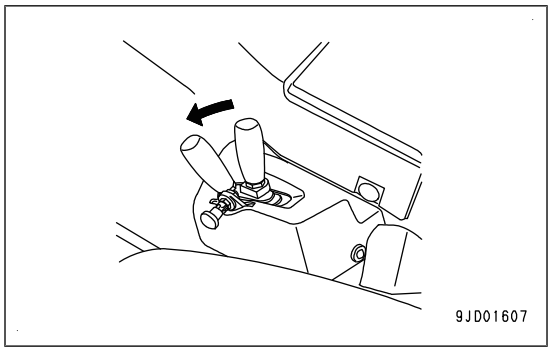
REMARK

- When the dump body is not seated, the engine speed is limited to 2000 rpm or below to protect the work equipment pump.

  And if the dump body is not lowered when the steering oil temperature is low (25 °C or below), the engine speed is limited to 1500 rpm or below.
- During the dump body “RAISE” operation, if you set the dump lever to any position other than “RAISE” once and set it to “RAISE” again, the dump body RAISE operation is delayed.
- To raise the dump body fastest, depress the accelerator pedal fully while the dump body is seated and then set the lever to “RAISE” position.
  (Above cuts the time shorter than depressing down on the accelerator after setting the dump lever to RAISE position.)

4. Set dump lever (3) to “LOWER” position.

   The dump body starts lowering.



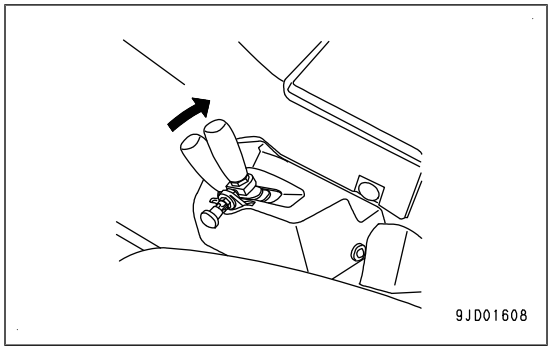
5. When the dump body has moved down a certain distance, move dump lever (3) to “FLOAT” position.

   (When you release the lever, it returns to “FLOAT” position.)

   The dump body will then move down under its own weight.

   REMARK

   If the dump body is not seated, when the gear shift lever is at “D” position, the transmission is fixed in 2nd or 1st speed, and when it is at positions 1 to 5, the transmission is fixed in 1st speed. Keep the dump body lowered when traveling.



METHOD FOR OPERATING CAB TILT

⚠ WARNING

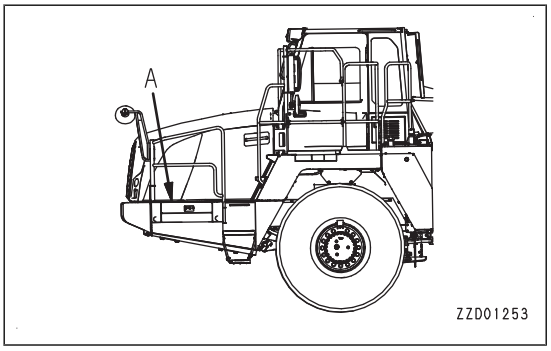
To prevent serious injury or death if the cab comes down, always observe the following strictly when tilting the cab.
Precautions before starting the cab tilt operation

- **Perform the cab tilt operation on a flat place.**
- **When performing the cab tilt operation, set the machine facing directly to the front to prevent contact between the cab and dump body, and secure the front and rear frames with the articulation lock.**
- **Set the parking brake switch to "PARKING" position to apply the parking brake.**
- **Lock the dump control lever with the dump lever lock knob.**
- **Chock the tires to prevent the machine from moving.**
- **Always remove the pin from rear mounting position and insert it in the position for tilting, before removing the cab mount.**
- **Do not perform the cab tilt operation in the strong wind.**

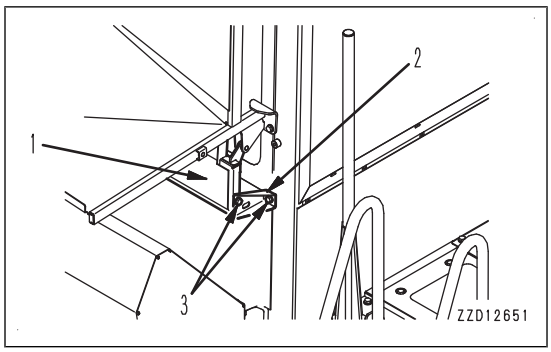
Precautions for cab tilt operation

- **Do not perform the cab tilt operation when the machine is loaded.**
- **Do not stand under the cab during the cab tilt operation.**
- **When the cab is tilted up, lock it securely in position with the lock bar.**
- **When installing the lock bar, do not enter under the cab but install it from the side of the cab.**
- **While the cab is tilted up, do not get on or off it.**
- **While the cab is tilted up, do not operate the gear shift lever nor dump lever.**
- **While the cab is tilted up, do not start the engine.**
  If it is necessary to start the engine when performing the inspection, check first that there is no one under the cab.
- **While the cab is tilted up, do not give a large impact to the machine.**
- **When using the cab power tilt function to lower the cab, do not open the valve quickly but open it gradually while adjusting the lowering speed.**
- **The lock bar is set on the left inside of the engine hood. After using it, be sure to restore it.**

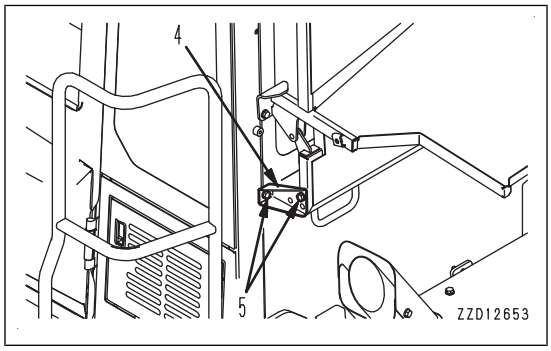
When getting on or off the machine with carrying a tool, etc., place it once in the part (A) to ensure your safety.



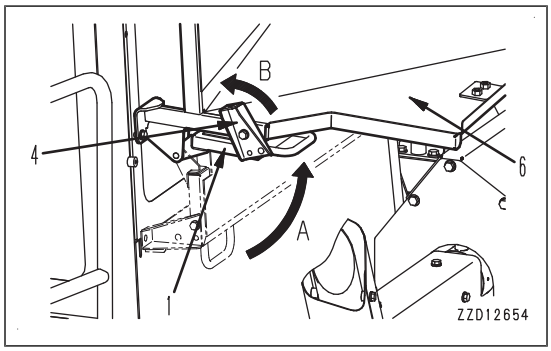
1. Tilt the guard (1) at the rear of the cab according to the following procedure, and fix it.
   1) Remove the mounting bolts (3) of R.H. bracket (2).



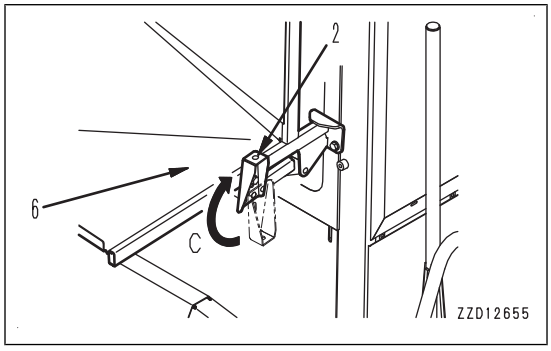
   2) Remove the mounting bolts (5) of L.H. bracket (4).



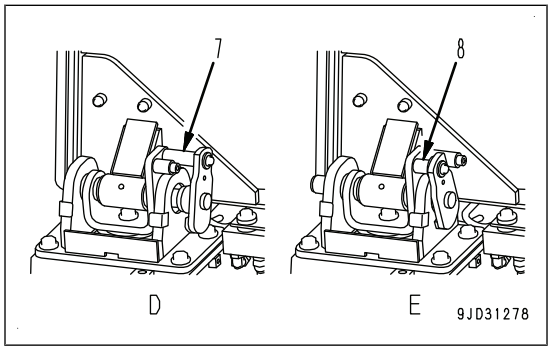
   3) Flip up the guard (1) to the direction (A).
   4) Turn the L.H. bracket (4) to the direction (B) and hitch it on the rear guard (6).
   5) Fix the L.H. bracket (4) with the bolts.



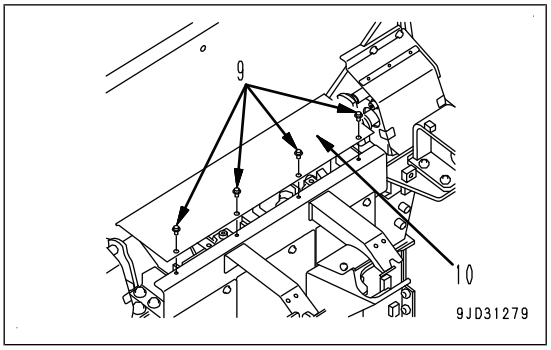
   6) Turn the R.H. bracket (2) to the direction (C) and hitch it on the rear guard (6).
   7) Fix the R.H. bracket (2) with the bolts.



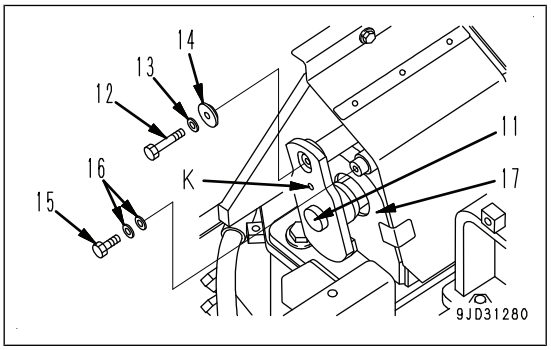
2. Remove the pin (7) in the mount at the rear of the cab, and insert the pin (8) instead. (each of the right and left)
   D: For traveling
   E: For tilting



1) Remove the bolts (9), and remove the piping cover (10).

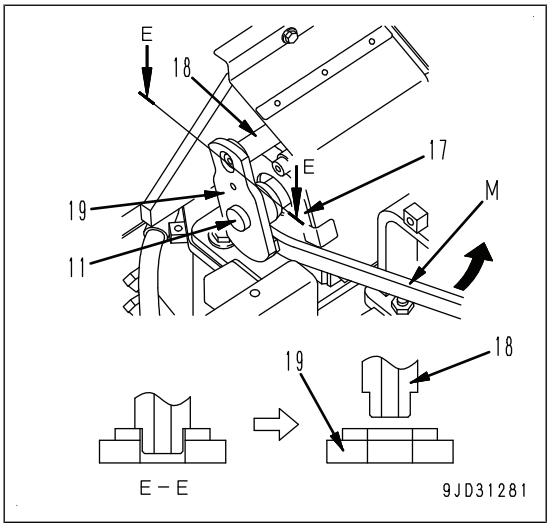


2) Remove the fixing bolt (12), washer (13), and collar (14) of the tilt pin (11).
3) Remove the bolt (15) and washers (16).
4) Install the bolt (12) to the tap hole (K).
5) Turn the bolt (12) until its tip touches the stopper bracket (17) and turn it further. Then pull out the tilt pin (11).

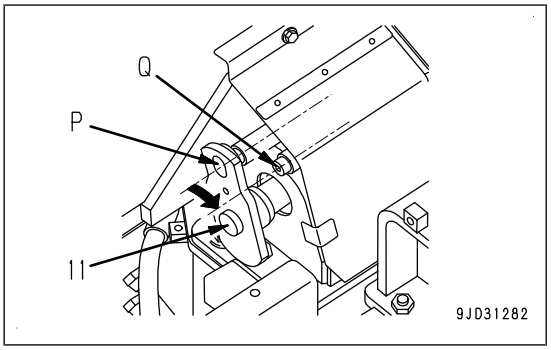


REMARK

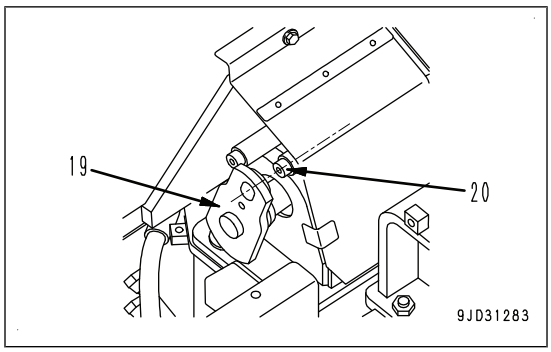
- When using the bar (M), pull out the tilt pin (11) by using the bar (M) until the tilt pin lock plate (19) comes off from the stepped boss (18).
- Use the stopper bracket (17) as a fulcrum, and pull out the tilt pin (11) with the bar (M).

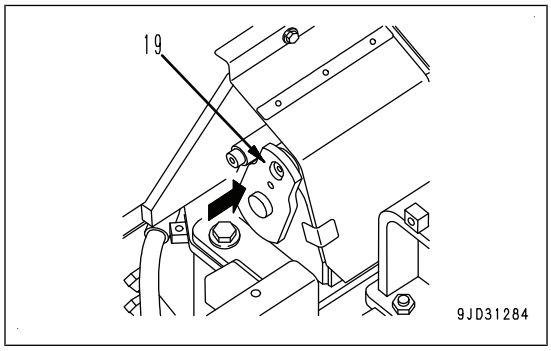


6) Turn the tilt pin (11) from the plate position at traveling (P) to the plate position at cab tilting (Q).



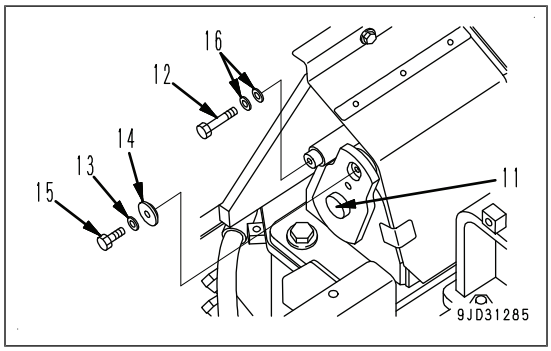
7) Insert the tilt pin (11) until the tilt pin lock plate (19) touches the stepped boss (20).



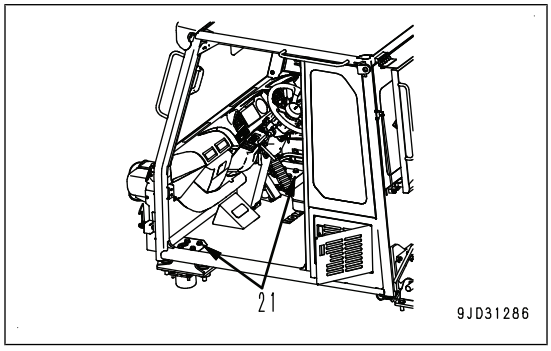


8) Install the bolt (15), washer (13), and collar (14), and fix the tilt pin (11).

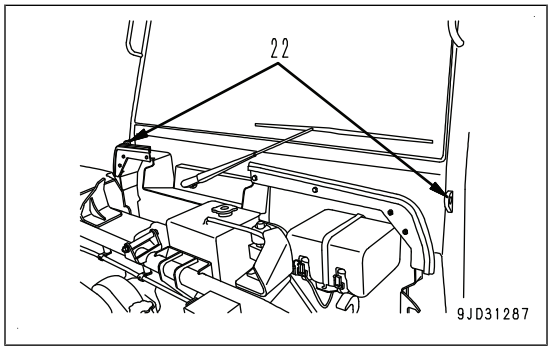
9) Install the bolt (12) and washers (16).



3. Remove the cab mounting bolts (21) (8 pieces).
4. Open the engine hood.



5. Install the sling to hooks (22) installed to the front of the cab (on both right and left sides).
6. Lift up the cab.

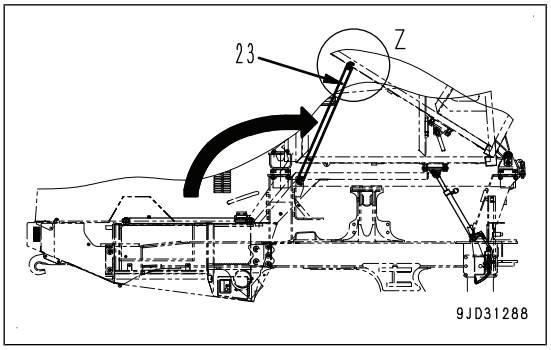


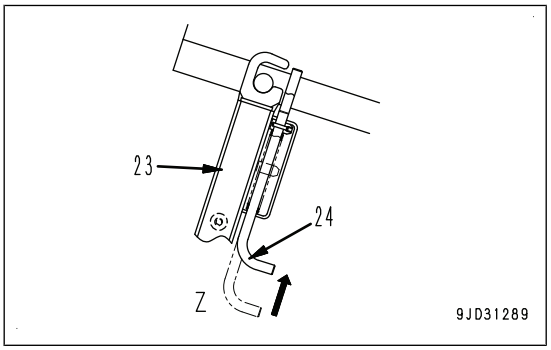
7. After tilting up the cab, fix it in position with the lock bar (23).

   Make sure that the lock bar (23) is installed in the correct direction and lock it securely with the lock (24).

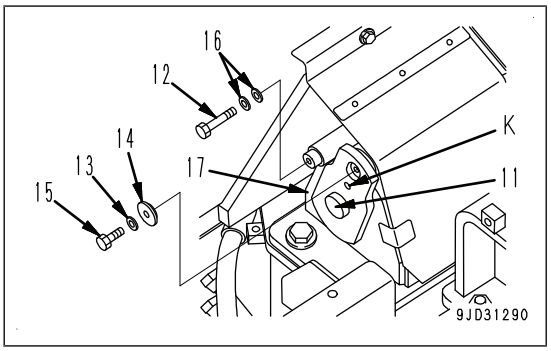
8. After restoring the cab to the original position, close the engine hood.

9. Install the mounting bolts (21) (8 pieces).



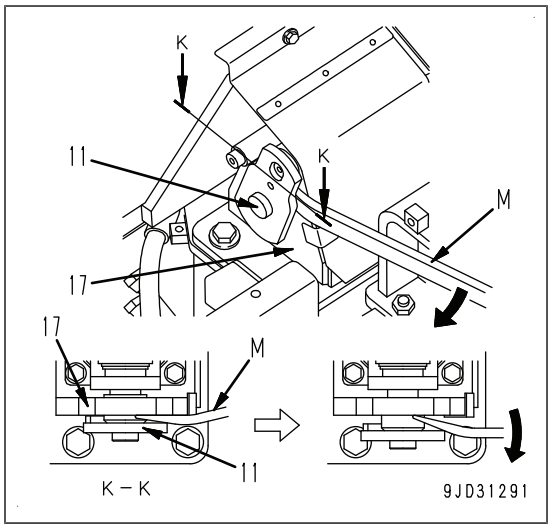


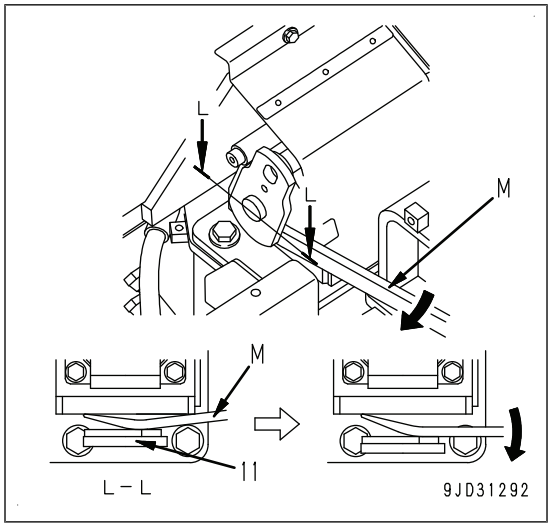
10. Remove the pin (8) and insert the pin (7) instead.
    1) Remove the fixing bolt (15), washer (13), and collar (14) of the tilt pin (11).
    2) Remove the bolt (12) and washers (16).
    3) Install the bolt (12) to the tap hole (K).
    4) Turn the bolt (12) until its tip touches the stopper bracket (17) and turn it further. Then pull out the tilt pin (11).



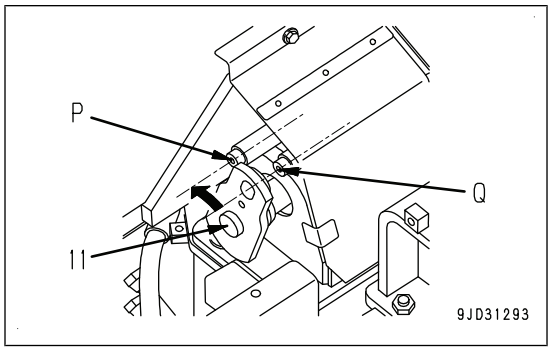
REMARK

- When using the bar (M), insert the bar between the tilt pin (11) and stopper bracket (17), and pull out the tilt pin.
- Change the inserting position of bar (M), and pull out the tilt pin (11).

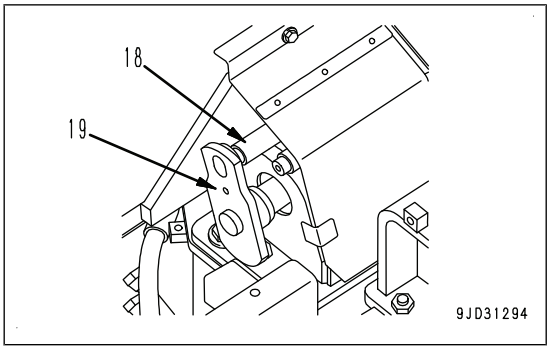


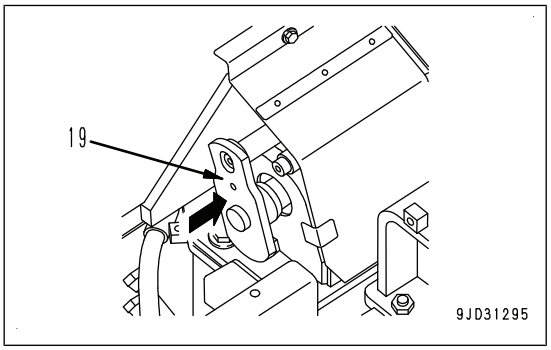


5) Turn the tilt pin (11) from the plate position at cab tilting (Q) to the plate position at traveling (P).

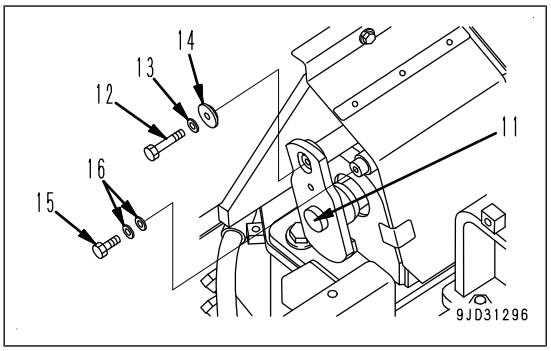


6) Insert the tilt pin until the tilt pin lock plate (19) touches the stepped boss (18).

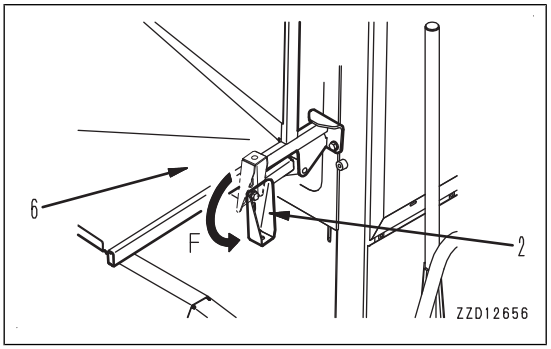




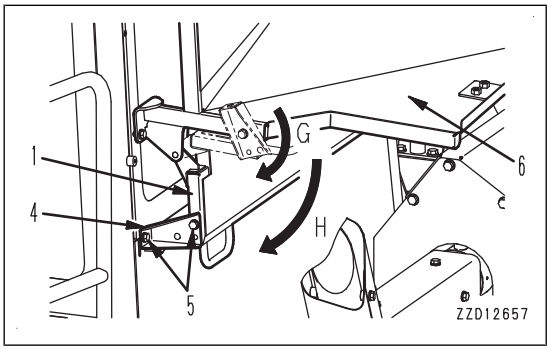
7) Install the bolt (12), washer (13), and collar (14), and fix the tilt pin (11).
8) Install the bolt (15) and washers (16).
9) Install the piping cover (10) with bolts (9).



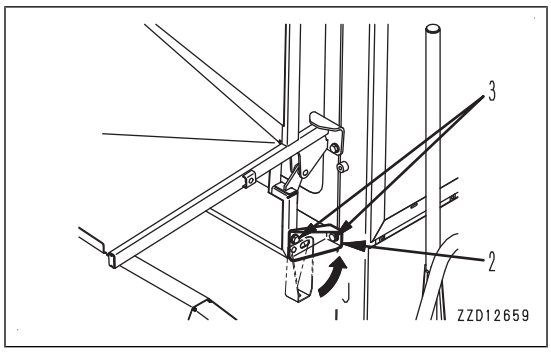
11. Return the guard (1) at the rear of the cab according to the following procedure.
1) Remove the bolts of R.H. bracket (2).
2) Turn the R.H. bracket (2) to the direction (F) and remove it from the rear guard (6).



3) Remove the bolts of L.H. bracket (4).
4) Turn the L.H. bracket (4) to the direction (G) and remove it from the rear guard (6).
5) Lower the guard (1) to the direction (H).
6) Fix the L.H. bracket (4) with the mounting bolts (5).
At this time, install the guard (1) while it is lowered. Do not install it while it is being raised.



7) Turn the R.H. bracket (2) to the direction (J) and fix it with the mounting bolts (3).



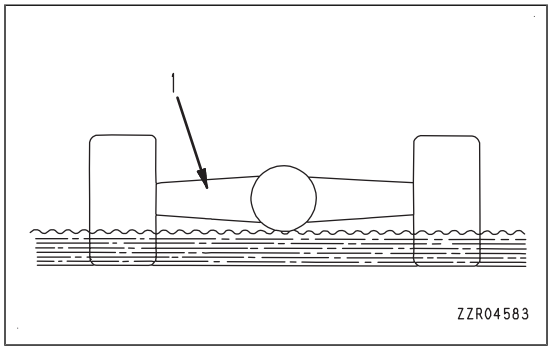
PRECAUTIONS FOR OPERATION

- When traveling on roads in rain or snow, or when traveling on muddy or soft ground, consider the loaded condition of the machine and be extremely careful not to let the tires slip or the machine spin and sink into the ground.
- If the engine should stop when the machine is traveling, stop the machine immediately, then move the gear shift lever to NEUTRAL position (N), and start the engine again.
- If the centralized warning lamp and pilot lamp for any “EMERGENCY” item on the machine monitor should flash and the buzzer sounds during operation, stop the machine immediately and investigate the cause.
- When loading, be careful to load the dump body uniformly, and be particularly careful to avoid loading too much at the front.
- When traveling on a slippery road, use the accelerator pedal as long as possible since KTCS operates.

PERMISSIBLE WATER DEPTH

Do not go into water or swampy ground where the water is deeper than the permissible water depth (up to the bottom surface of differential case (1)).

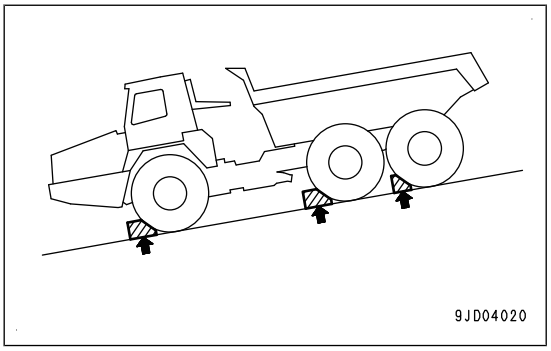
After completing operations, wash the machine and lubricate the parts where water has entered.



METHOD FOR PARKING MACHINE

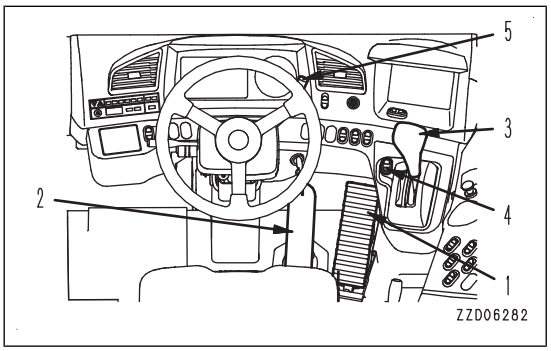
⚠ WARNING

- **Avoid a sudden stop. Stop the machine gradually.**
- **Place the machine on a firm, level ground.**
  Do not park the machine on a slope.
  If it is unavoidably necessary to park the machine on a slope, set the parking brake switch to "PARKING" position, and chock the wheels to prevent the machine from moving.
- **If the gear 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 "PARKING" position.
- **The retarder must not be used as a parking brake.**

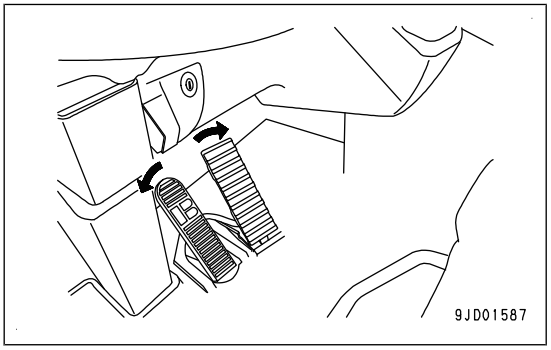


⚠ CAUTION

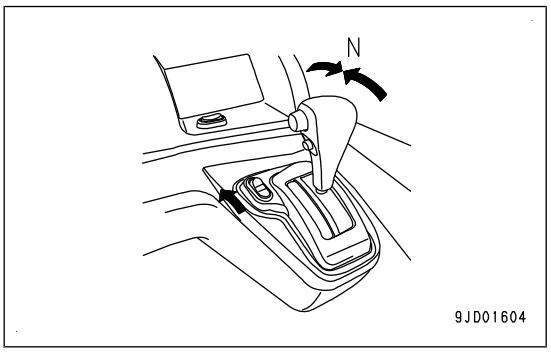
To prevent damage to the parking brake, apply the parking brake only when parking the machine or performing dumping operations.



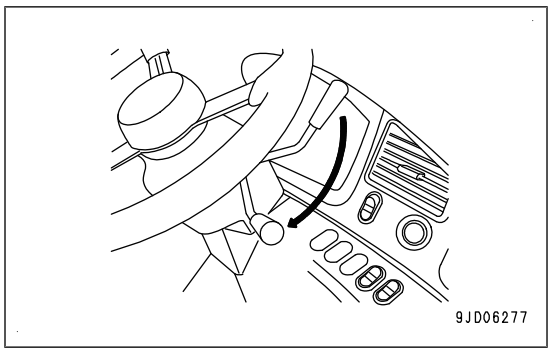
1. Release accelerator pedal (1), then depress brake pedal (2) to stop the machine.



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



3. When in the operator's compartment, pull retarder control lever (5) fully to apply the retarder.



METHOD FOR CHECKING AFTER FINISHING WORK

- Check the engine coolant temperature, engine oil pressure, and fuel level with the machine monitor.
- If the engine has overheated, do not stop the engine suddenly. Run it at a mid-range speed to cool it gradually before stopping.

LOCK

Always lock the following places.

(1) Fuel tank filler cap

(2) Engine hood

(3) Battery box

(4) DEF filler cover

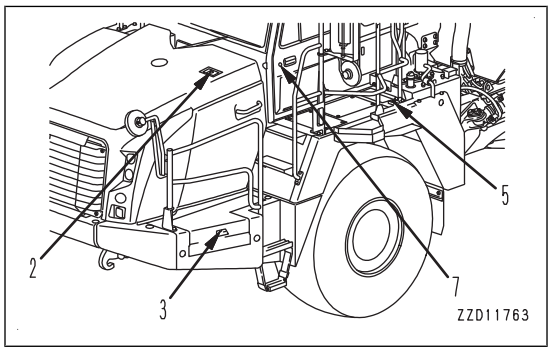
(5) Tool box

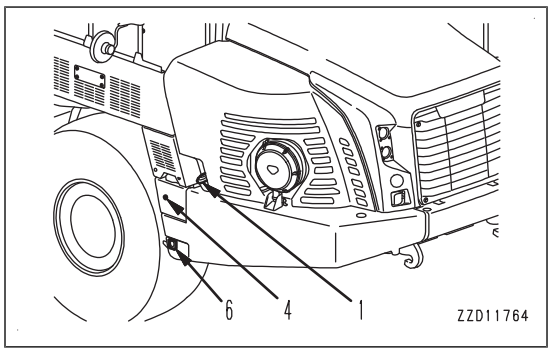
(6) Fuel drain valve cover

(7) Cab door

REMARK

Use the starting switch key to lock and unlock all these places.

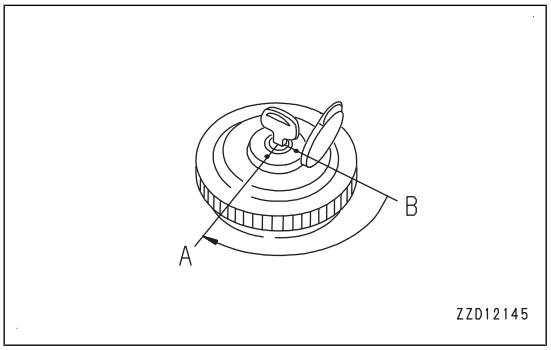




METHOD FOR OPENING AND CLOSING FUEL FILLER PORT CAP

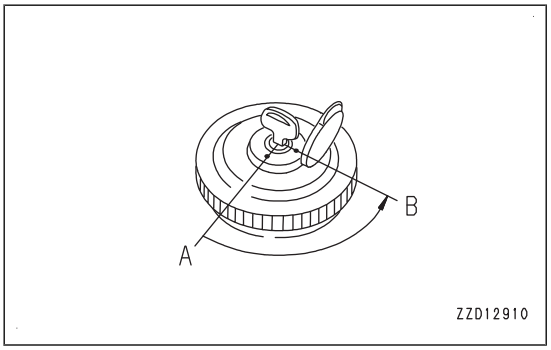
PROCEDURES FOR OPENING FUEL FILLER PORT CAP

1. Insert the key into the key slot.
2. Turn the key clockwise to unlock.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)
3. Turn the cap clockwise and remove it.



PROCEDURES FOR CLOSING FUEL FILLER PORT CAP

1. Screw in the cap until it becomes tight, then insert the key into the key slot.
2. Turn the key counterclockwise and remove it.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)



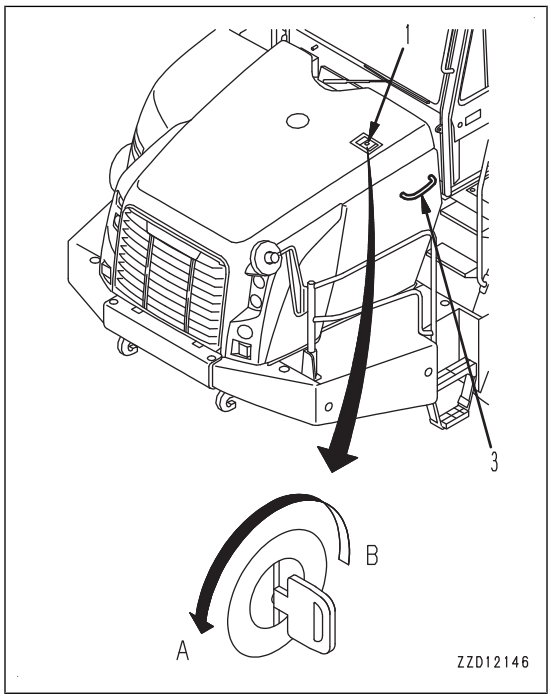
METHOD FOR OPENING AND CLOSING ENGINE HOOD

⚠ CAUTION

- **When opening or closing the engine hood, place the machine on a level ground, and stop the engine.**
- **When opening the engine hood, do not release the handle until the lock plate is set in LOCK position securely.**
- **When closing the engine hood, hold the handle securely since the engine hood may moves down because of its own weight.**
  If the engine hood is not locked, it may close suddenly because of wind, etc.
- **Immediately after the engine is stopped, the engine hood and the aftertreatment devices are still hot. Accordingly wait until they have cooled down before opening or closing the engine hood.**

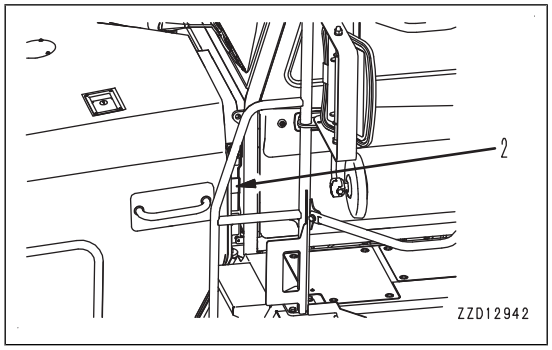
METHOD FOR OPENING ENGINE HOOD

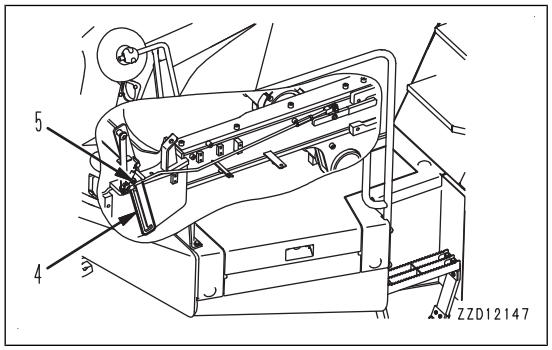
1. Insert the key into the key slot.
2. Turn the key counterclockwise and remove it.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)
3. Pull grip (1) toward you and unlock it.



4. Keep lever (2) depressed, hold handle (3) of the hood, and pull it up to open.

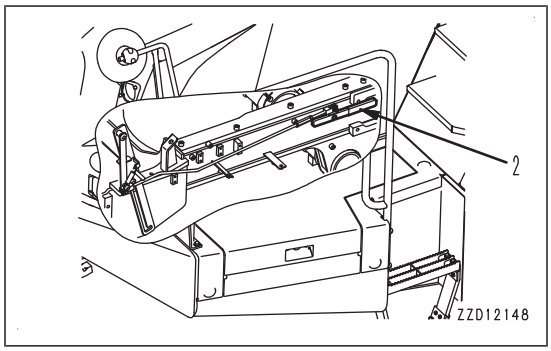
   Open the engine hood until lock plate (4) is fixed by pin (5) securely.



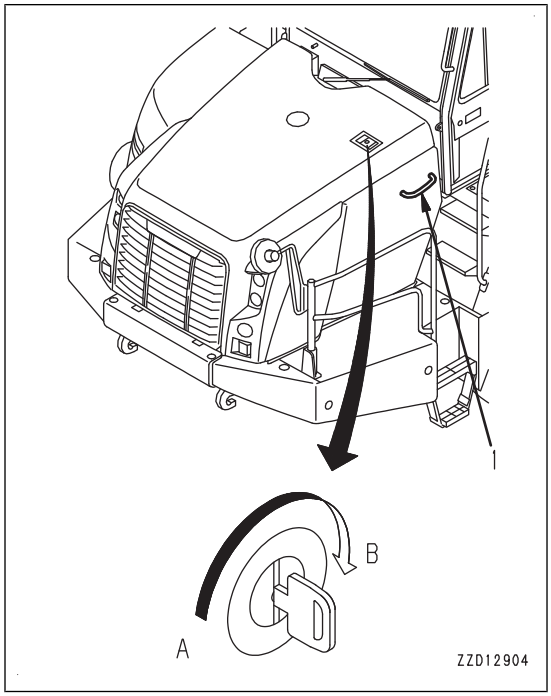


METHOD FOR LOCKING ENGINE HOOD

1. Hold hood knob (1), operate lever (2), and unlock.
2. Lower the hood.
3. Insert the key into the key slot.



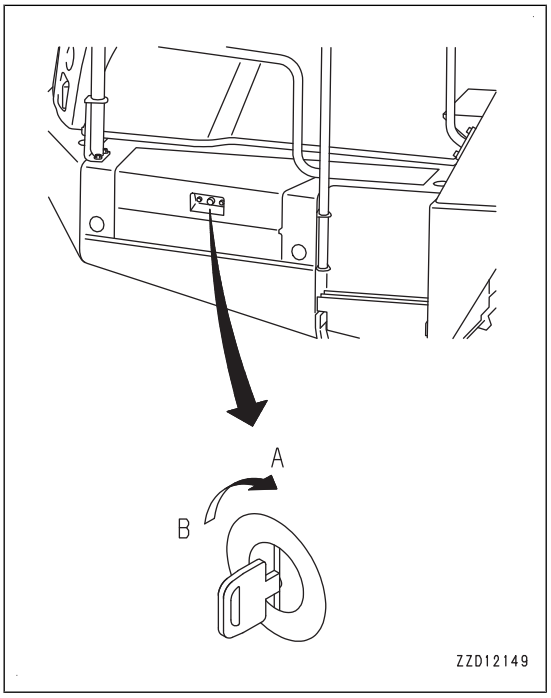
4. Turn the key clockwise and remove it.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)



METHOD FOR OPENING AND CLOSING BATTERY INSPECTION COVER

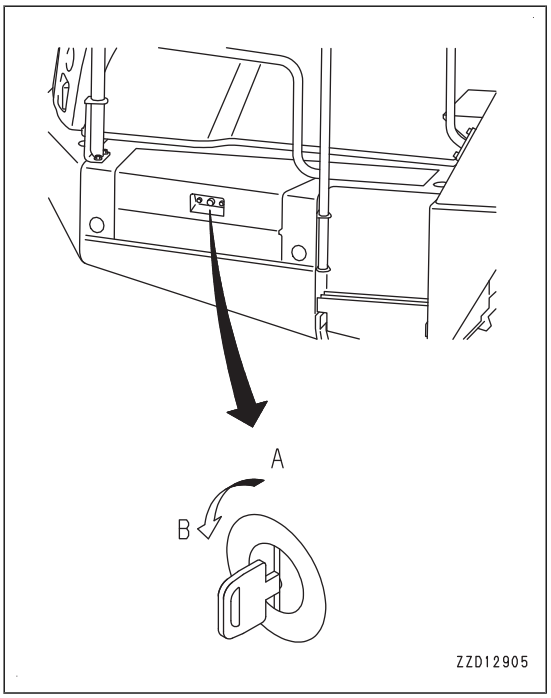
METHOD FOR OPENING BATTERY INSPECTION COVER

1. Insert the key into the key slot.
2. Turn the key clockwise to unlock.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)
3. Push in the key groove and open up the cover.



METHOD FOR LOCKING BATTERY INSPECTION COVER

1. Close the cover and insert the key into the key slot.
2. Turn the key counterclockwise and remove it.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)



METHOD FOR OPENING AND CLOSING DEF TANK FILLER CAP COVER

⚠ CAUTION

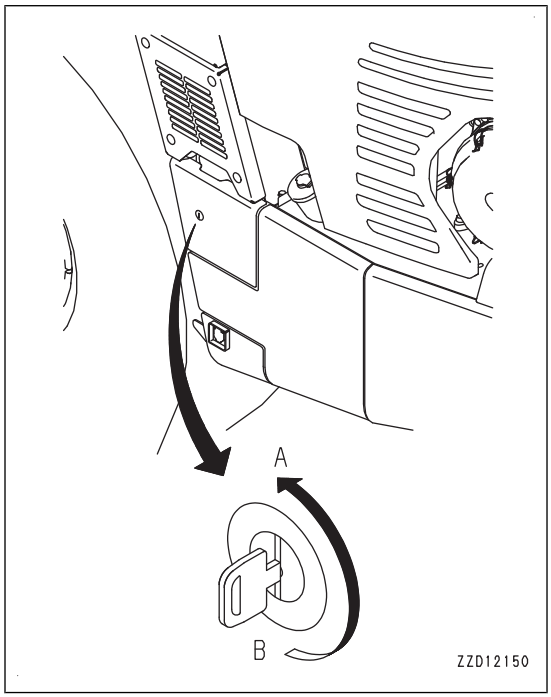
- **When opening or closing the DEF tank filler cap cover, place the machine on a level ground, and stop the engine.**
- **When opening it, do not release the handle until the stay is set in the lock position securely.**
- **When closing it, hold the handle securely since the DEF tank filler cap cover may move down because of its own weight.**
  If it is not locked, it may close suddenly because of wind, etc.

METHOD FOR OPENING DEF TANK FILLER PORT COVER

1. Insert the key into the key slot.
2. Turn the key counterclockwise and open the cover by pulling it.

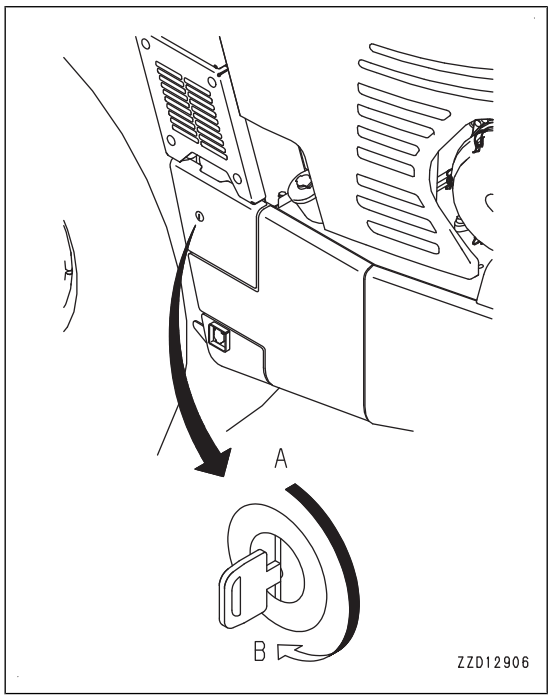
   Position (A): OPEN

   Position (B): CLOSE (LOCK)



METHOD FOR LOCKING DEF TANK FILLER PORT COVER

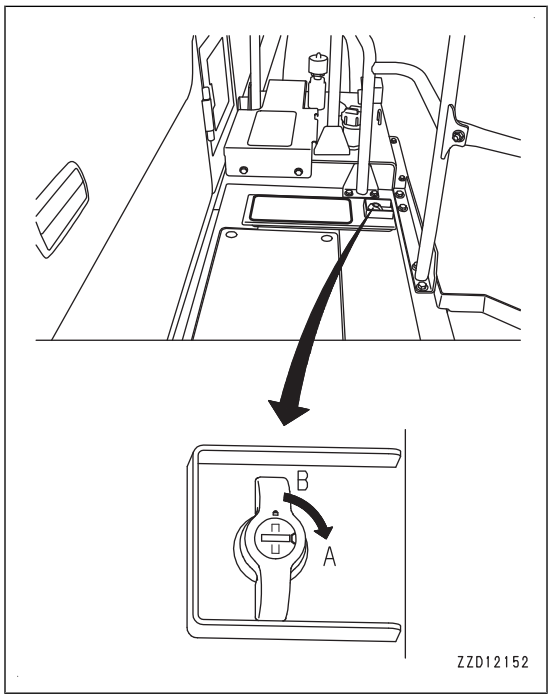
1. Close the cover and insert the key into the key slot.
2. Turn the key clockwise and remove it.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)



METHOD FOR OPENING AND CLOSING TOOL BOX COVER

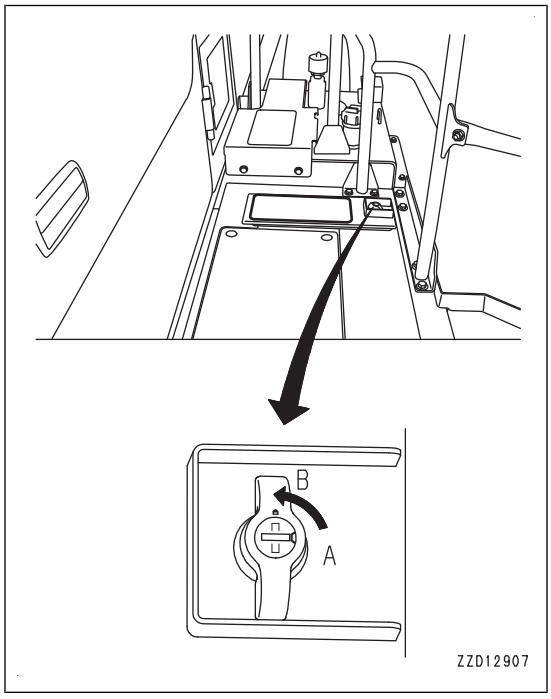
PROCEDURES FOR OPENING TOOL BOX COVER

1. Insert the key into the key slot.
2. Turn the key clockwise to unlock.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)
3. Turn the handle counterclockwise, and then open the cover.



PROCEDURES FOR LOCKING TOOL BOX COVER

1. Close the cover and turn the handle clockwise.
2. Insert the key into the key slot.
3. Turn the key counterclockwise and remove it.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)



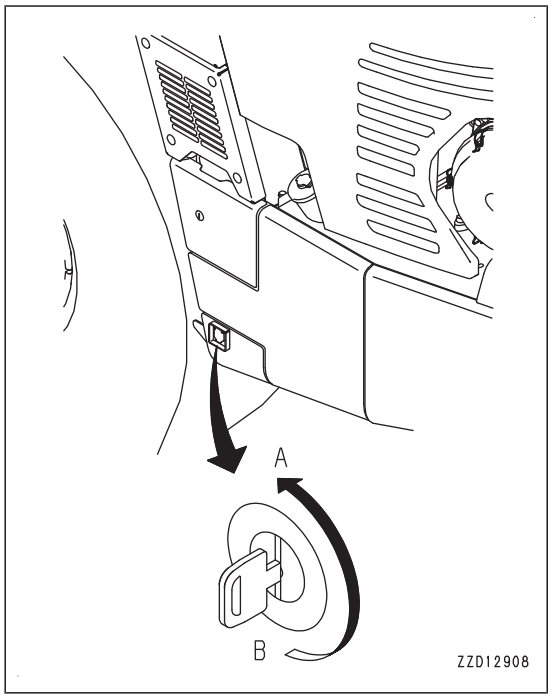
METHOD FOR OPENING AND CLOSING FUEL TANK DRAIN VALVE COVER

PROCEDURES FOR OPENING FUEL TANK DRAIN VALVE COVER

1. Insert the key into the key slot.
2. Turn the key counterclockwise and open the cover by pulling it.

   Position (A): OPEN

   Position (B): CLOSE (LOCK)

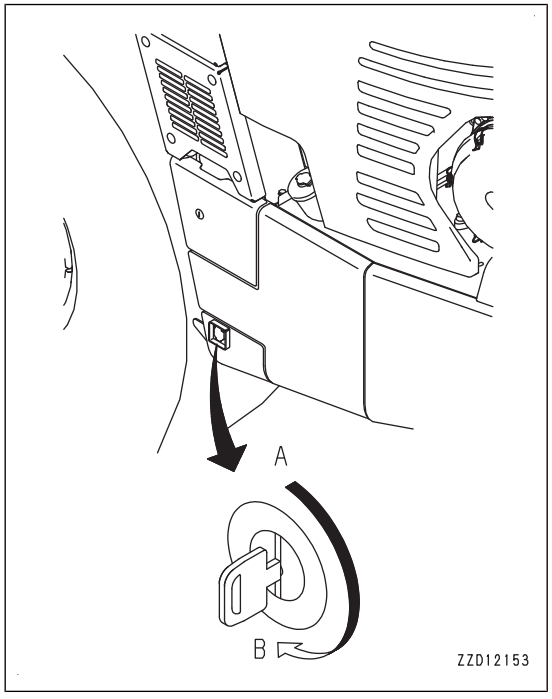


PROCEDURES FOR LOCKING FUEL TANK DRAIN VALVE COVER

1. Close the cover and insert the key into the key slot.
2. Turn the key clockwise and remove it.

   Position (A): OPEN

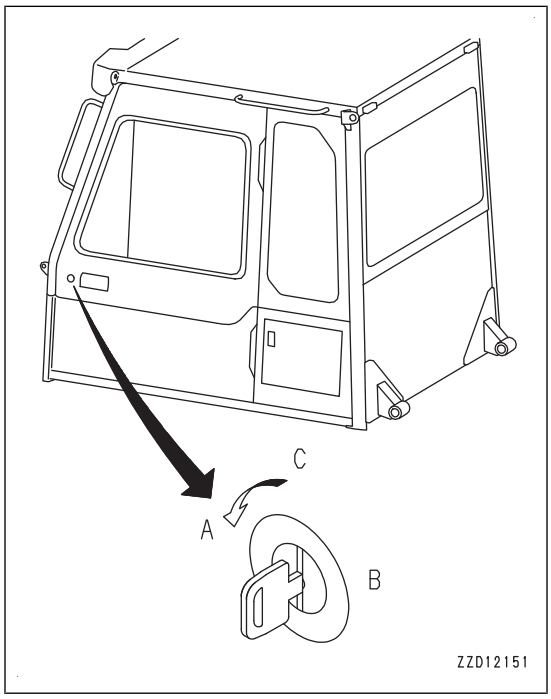
   Position (B): CLOSE (LOCK)



METHOD FOR OPENING AND CLOSING OPERATOR CAB DOOR LOCK

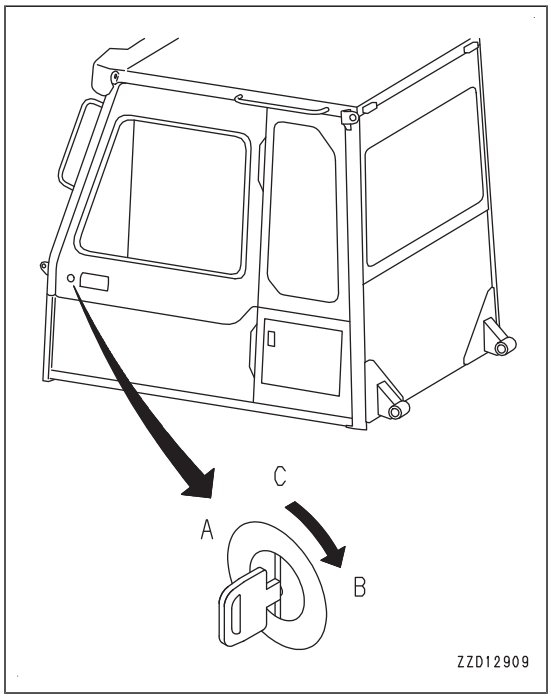
When opening the door (locked door)

1. Insert the key into the key slot.
2. Turn the key counterclockwise, and the door is unlocked.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)
   The key returns to position C automatically.
3. Pull the door handle, and the door opens.



When locking

1. Close the door and insert the key into the key slot.
2. Turn the key clockwise, and the door is locked.
   Position (A): OPEN
   Position (B): CLOSE (LOCK)
   The key returns to position C automatically.
3. After locking, pull out the key.



HANDLE TIRE

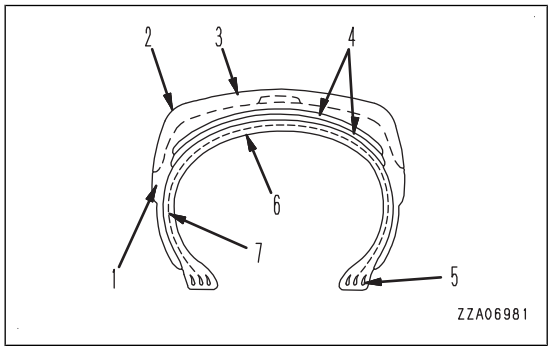
PRECAUTIONS WHEN HANDLING TIRES

⚠ WARNING

To ensure safety, the defective tires given below must be replaced with new tires.

- **Tires where the bead wire has been cut, broken, or greatly deformed**
- **Excessively worn tires where more than 1/4 of the circumference of the carcass ply (excluding the breaker) is exposed**
- **Tires where damage to the carcass exceeds 1/3 of the tire width**
- **Tires where ply separation has occurred**
- **Tires where radial cracks extend to the carcass**
- **Deteriorated, deformed or abnormally damaged tires, which do not seem usable.**

(1) Side wall
(2) Shoulder
(3) Tread
(4) Breaker or belt (cord layer)
(5) Bead
(6) Inner liner
(7) Cord



Contact your Komatsu distributor when replacing the tires. It is dangerous to jack up the machine without taking due care.

PRECAUTIONS FOR LONG DISTANCE TRAVEL

If the machine travels continuously at high speed for a long distance, there will be a remarkable increase in the generation of heat in the tire. This may cause premature damage to the tire, so observe the following.

- Travel only unloaded.
- Check the tire inflation pressure before starting for the day when the tires are cold, and adjust to the following inflation pressure.
- Do not reduce the tire inflation pressure when traveling.

Tire size	Inflation pressure kPa {kgf/cm^2}		
	Front tire	Center tire	Rear tire
23.5-R25 (standard)	441 {4.5}	441 {4.5}	441 {4.5}
750/65 R25 (30/65 R25) (optional)	340 {3.5}	400 {4.1}	400 {4.1}

NOTICE

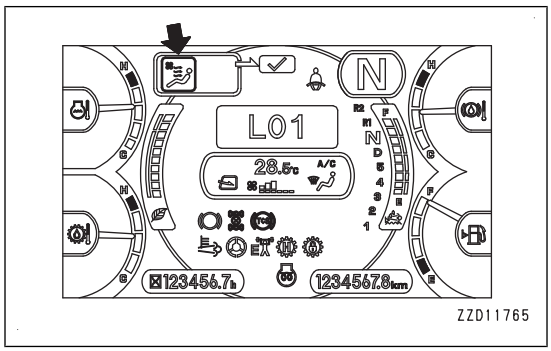
If the tires are used when the inflation pressure is less than the value given in the table above, the rim may be damaged.
Always keep the tire inflation pressure within ±10 kPa {0.1 kgf/cm^2} of the value in the table above.

- The maximum travel speed must be kept to less than 40 km/h . Stop for at least 1 hour for every 1 hour of travel to allow the tires and other components to cool down.
- Never drive the machine with “water” or “dry ballast” in the tires.

HANDLE AIR CONDITIONER

NOTICE

- **When running in the air conditioner, always start with the engine running at low speed. Never start the air conditioner when the engine is running at high speed.**
  It will cause failure of the air conditioner.
- **If water gets into the control panel, it may lead to unexpected failure, take care not to let water get on it.**
  In addition, never bring any open flame near it.



- When the air conditioner is not used every day, to prevent loss of the film of oil at various parts, run the air conditioner with the engine at low speed from time to time and perform cooling or dry heating for several minutes.
- When the temperature inside the cab is low, the air conditioner may not work. In this case, circulate recirculation air to warm the inside of the cab. After that, turn the air conditioner switch ON, the air conditioner will work.
- If any abnormality is detected in any equipment or sensor used on the air conditioner, the air conditioner system caution lamp lights up on the monitor screen. If the air conditioner system caution lamp lights up, ask your Komatsu distributor for inspection and repair.

Ventilation

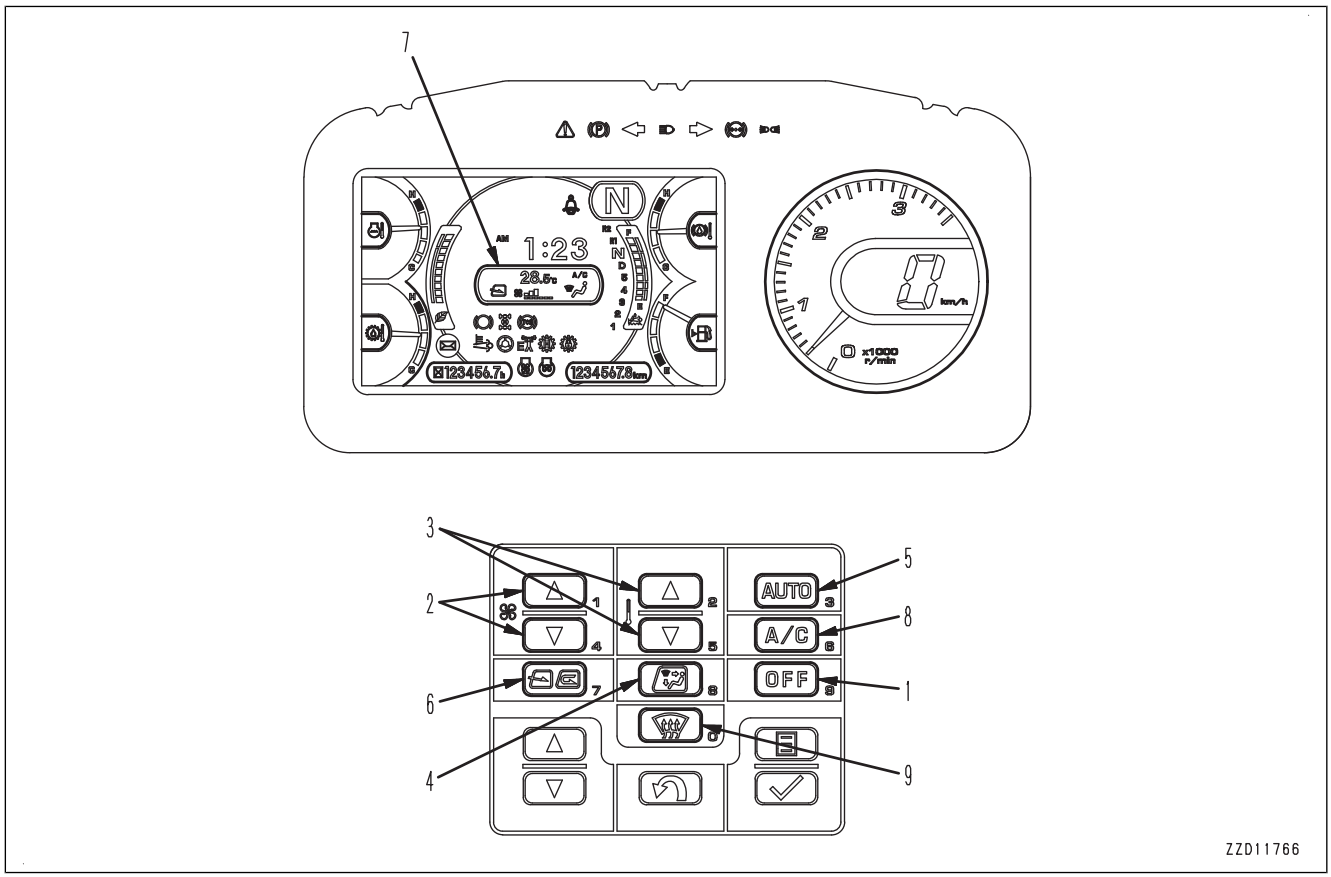
- When running the air conditioner for a long time, turn the lever to FRESH position once an hour to perform ventilation and cooling.
- If you smoke when the air conditioner is on, the smoke may hurt your eyes. In such case, open the window and turn the lever to FRESH for a while for ventilation and cooling to drive smoke out.

Temperature control

For reasons of health, the optimum setting for cooling is considered to be when it feels slightly cool (5 to 6 °C lower than the ambient temperature) when you enter the cab.

Be careful to select the appropriate temperature.

EXPLANATION OF AIR CONDITIONER EQUIPMENT



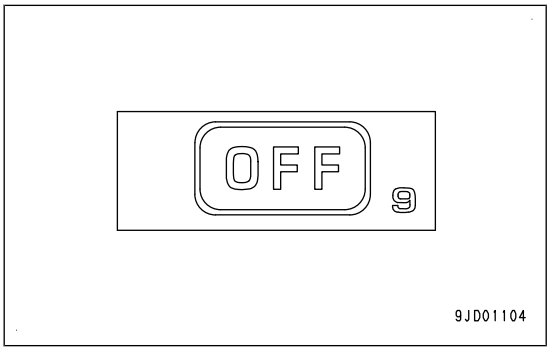
(1) OFF switch
(2) Fan switch
(3) Temperature control switch
(4) Vent selector switch
(5) Auto switch
(6) FRESH/RECIRC air selector switch
(7) Display monitor
(8) Air conditioner switch
(9) Defroster switch

OFF SWITCH

The OFF switch is used for stopping the fan and air conditioner.

REMARK

Even if this OFF switch is pressed, the monitor screen does not switch to the air conditioner adjustment screen.

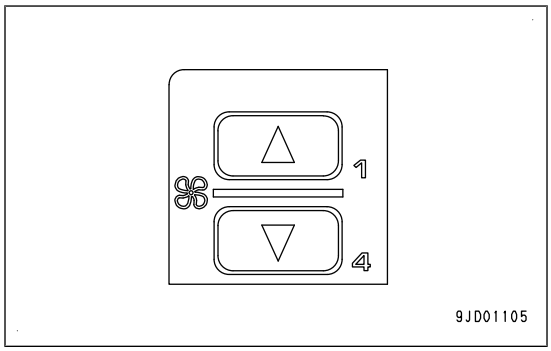


FAN SWITCH

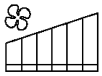
You can adjust the air flow by using the fan switch.

The air flow can be adjusted to 6 levels.

- Press the △ switch to increase the air flow; press the ▽ switch to decrease the air flow.
- During auto operation, the air flow is automatically adjusted.



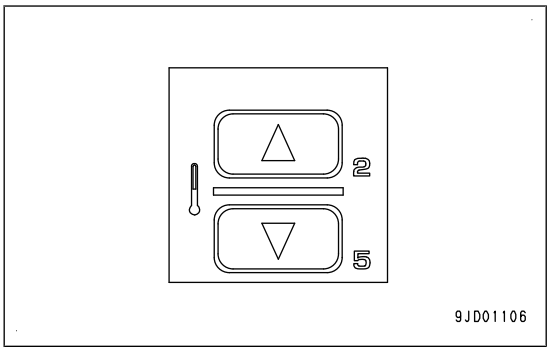
Monitor display and air flow

Monitor display	Air flow rate
	Air flow “low”
	Air flow “medium 1”
	Air flow “medium 2”
	Air flow “medium 3”
	Air flow “medium 4”
	Air flow “high”

TEMPERATURE CONTROL SWITCH

Use the temperature control switch to adjust the temperature inside the cab. The temperature can be set between 18 to 32 °C.

- Press the △ switch to raise the set temperature; press the ▽ switch to lower the set temperature.
  The set temperature is indicated on the display monitor.
- The temperature is generally set at 25 °C.
- The temperature can be set in stages of 0.5 °C.



Monitor display and function

Monitor display	Set temperature
18 °C	Max. cooling
18.5 to 31.5 °C	Adjusts temperature inside cab to set temperature
32 °C	Max. heating

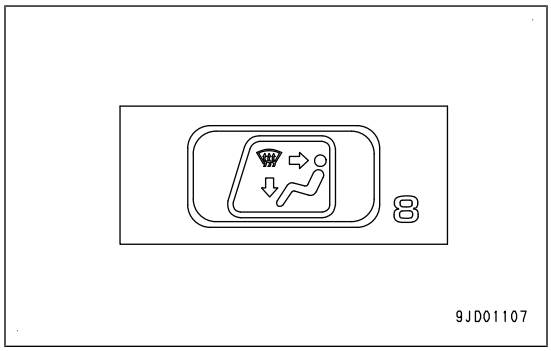
REMARK

If the mode is set to auto mode and the temperature setting is set to 18 °C or 32 °C, the air flow from the fan is always set to “HIGH” and does not change even when the temperature reaches the set temperature.

VENT SELECTOR SWITCH

The vent selector switch is used to select the vents.

- When vent selector switch is pressed, the LC display on the monitor display switches and air blows out from the vents displayed.
- During automatic operation, the vents are automatically selected.

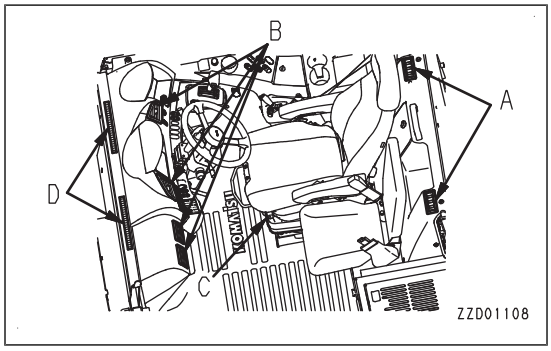


(A): Rear window glass vent (2 places)

(B): Face vent (4 places)

(C): Foot vent (1 place)

(D): Front window glass vent (2 places)



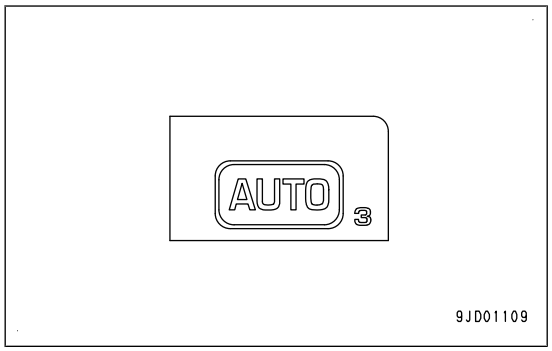
LCD display	Air vent mode	Vent				Remarks
		(A)	(B)	(C)	(D)	
	Face vent		○			-
	Face vent, foot vent		○	○		-
	Foot vent			○		-
	Foot vent Defroster vent	○		○	○	Not selected in auto mode

Air blows out from the vents marked with ○.

AUTO SWITCH

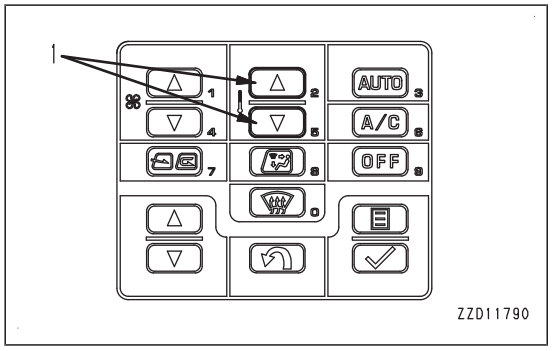
Use the auto switch for automatic selection of the air flow, vents, and air source (FRESH/RECIRC) according to the set temperature.

- Press the auto switch, then use temperature control switch (1) to set the temperature, and run the air conditioner under automatic control.
- When switching from automatic operation to manual operation, it is possible to use the switches to select the vents and air source (FRESH/RECIRC).



REMARK

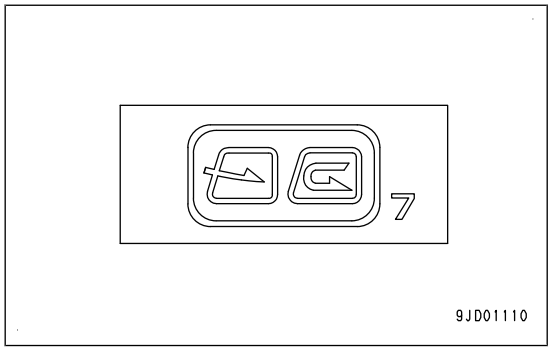
When Auto Mode is selected, if the set temperature is set to 18 °C or 32 °C , the air flow is always set to “High”, but this is not a problem.



FRESH/RECIRC AIR SELECTOR SWITCH

Use FRESH/RECIRC air selector switch to switch the air source between recirculation of the air inside the cab and intake of fresh air from the outside.

During automatic operation, the selection of inside air (RECIRC) and outside air (FRESH) is performed automatically.



RECIRC

Outside air is shut off and only air inside the cab is circulated.

Use this setting to perform rapid cooling of the cab or when outside air is dirty.

FRESH

Outside air is taken into the cab.

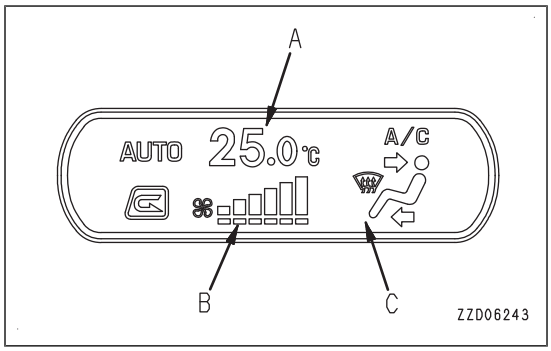
Use this setting to take in fresh air or to demist the window glass.

REMARK

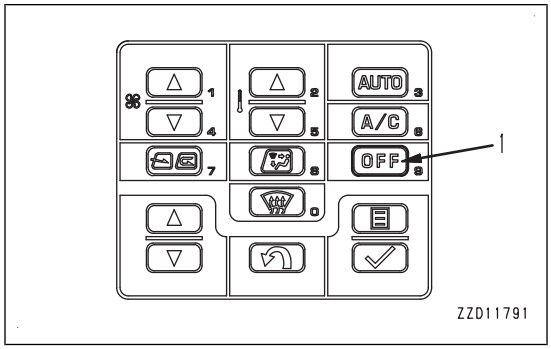
Intake of external air (FRESH) is automatically selected when the door is opened. Selection by use of the switch is not available.
The setting mode is restored after the door is closed.

DISPLAY MONITOR

This monitor display displays the status of temperature setting (A), air flow (B), and vents (C).

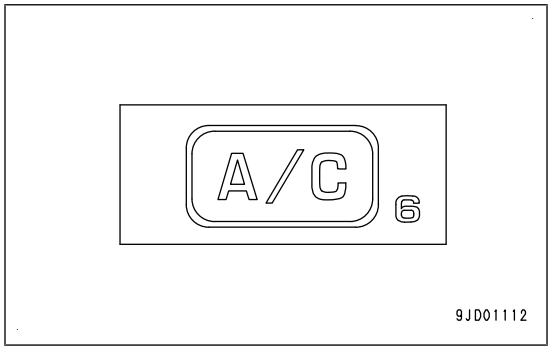


When OFF switch (1) is pressed, the display of temperature setting (A) and air flow (B) goes out, and operation stops.

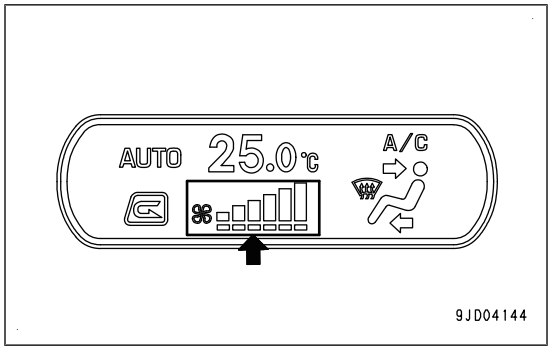


AIR CONDITIONER SWITCH

Use the air conditioner switch to start and stop the cooling, heating, or drying function.

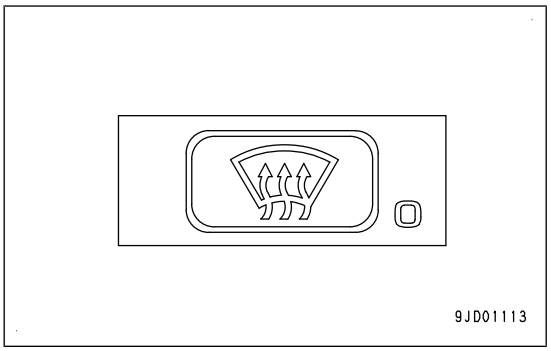


- Press the air conditioner switch when the fan is operating (when the air flow level is shown on the display monitor). The air conditioner is turned on, and starts operating. Press the switch again to stop the air conditioner.
- Air conditioner cannot be operated while the fan is not operating.



DEFROSTER SWITCH

This defroster switch is used to select the defroster mode.



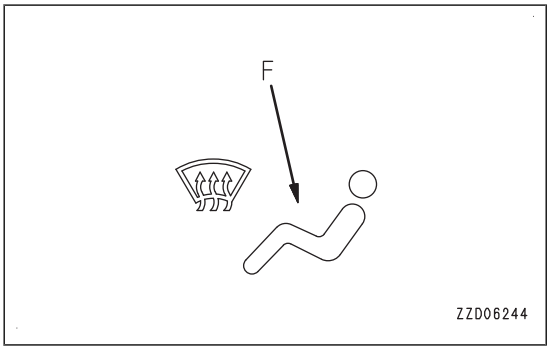
When this switch is pressed, the display on the display monitor changes to (F).

When the defroster switch is pressed, the defroster mode is selected, from any mode of FACE, FACE/FOOT, and FOOT.

When the defroster switch is pressed again, the mode before the defroster mode is selected.

REMARK

Air also blows out from the FOOT vent even in the defroster mode.

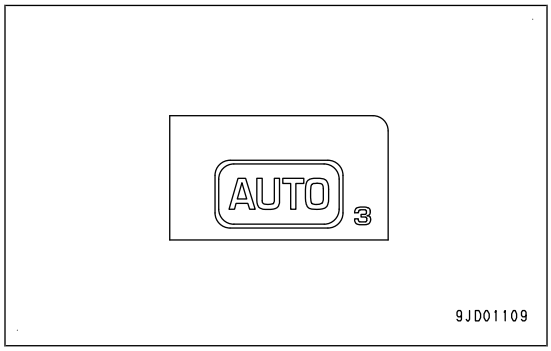


METHOD FOR OPERATING AIR CONDITIONER

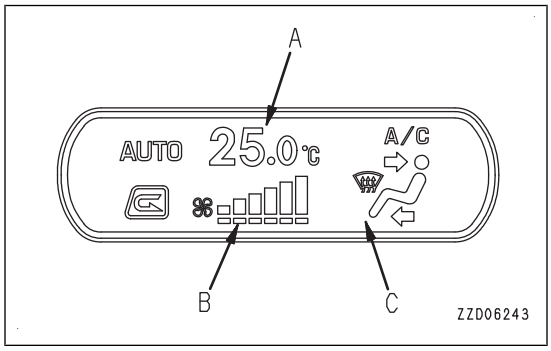
The air conditioner can be operated automatically or manually. Select the method of operation as desired.

METHOD FOR AUTOMATIC OPERATION

1. Turn the auto switch ON.

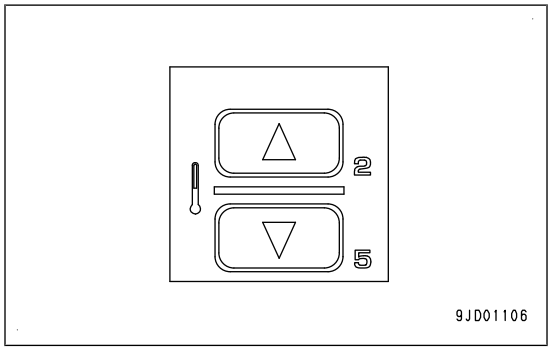


Set temperature (A) and air flow (B) are displayed.



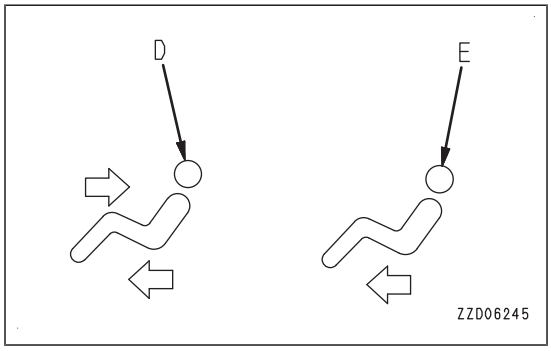
2. Use temperature control switch to set to the desired temperature.

   The air flow, combination of vents, and selection of fresh or recirculated air is automatically selected according to the set temperature, and the air conditioner is operated automatically to provide the set temperature.



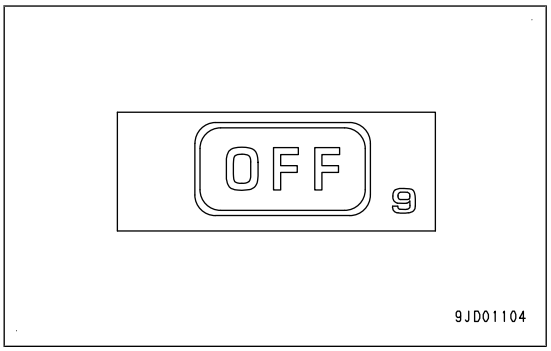
REMARK

When vent display monitor (C) displays (D) or (E), and engine coolant temperature is low, the air flow is automatically limited to prevent cold air from blowing out.



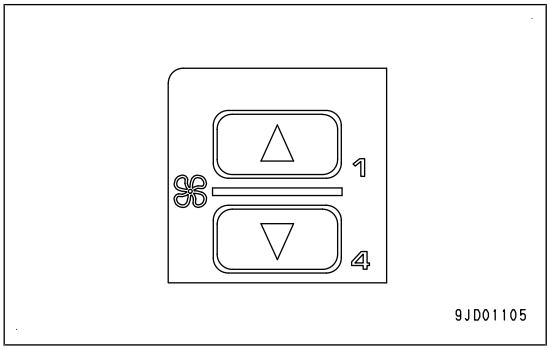
METHOD FOR STOPPING AUTOMATIC OPERATION

Press OFF switch.
The air conditioner stops.

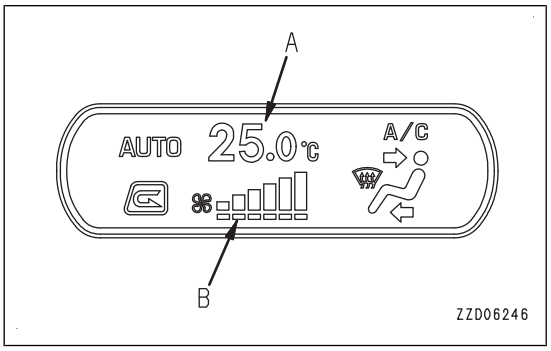


METHOD FOR MANUAL OPERATION

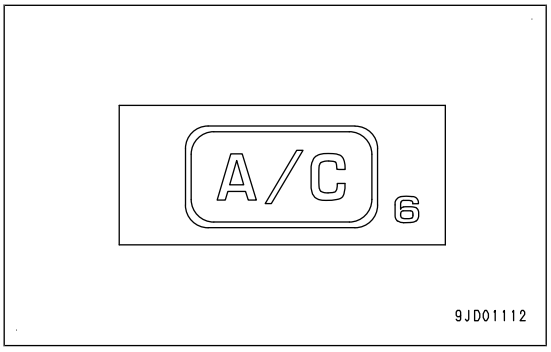
1. Press fan switch and adjust the air flow.



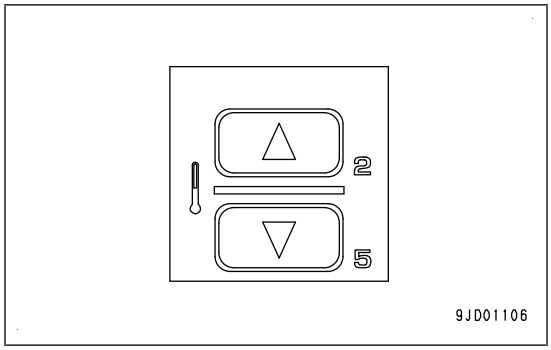
When doing this, check that temperature setting (A) and air flow (B) are displayed.



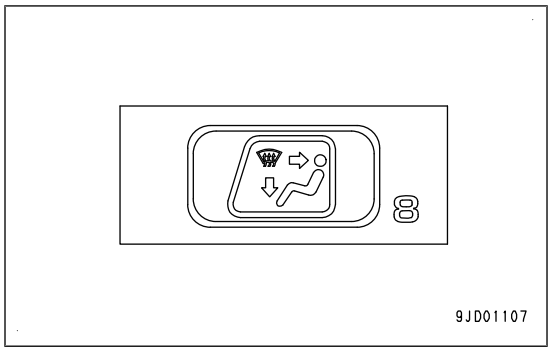
2. Turn air conditioner switch ON.



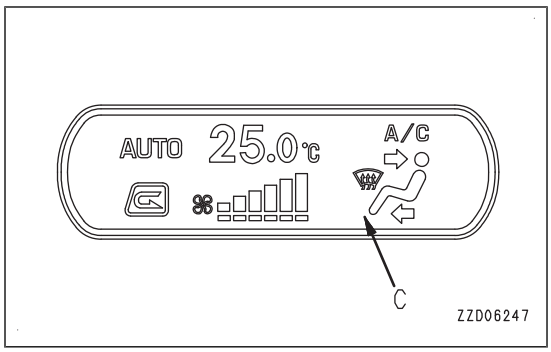
3. Use temperature control switch to set to the desired temperature.



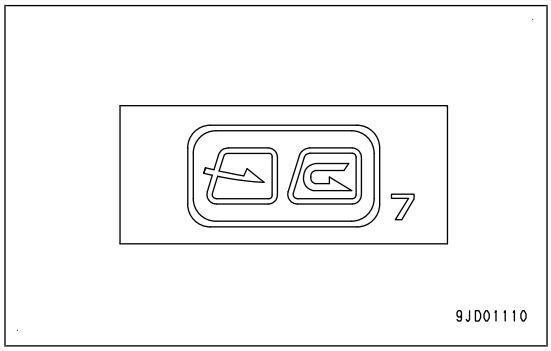
4. Press vent selector switch and select the desired vents.



When this is done, the display for vent (C) of the monitor changes according to the selection.

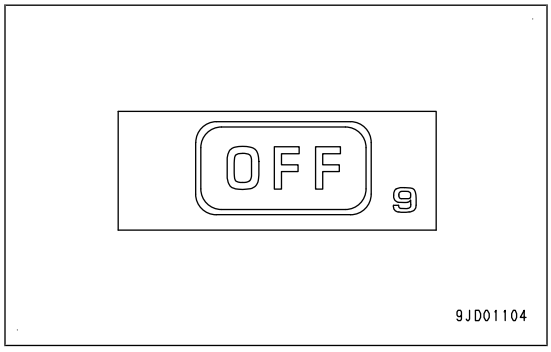


5. Press FRESH/RECIRC air selector switch and select recirculation of the air inside the cab (RECIRC) or intake of fresh air from outside (FRESH).



METHOD FOR STOPPING MANUAL OPERATION

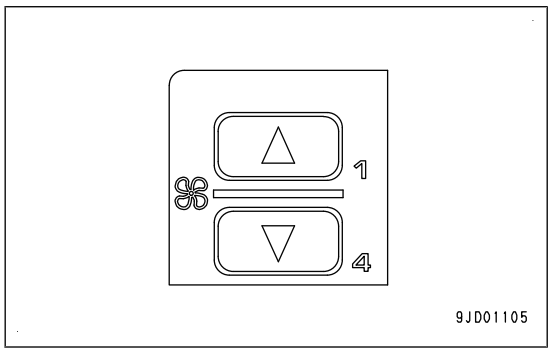
Press OFF switch.
The air conditioner stops.



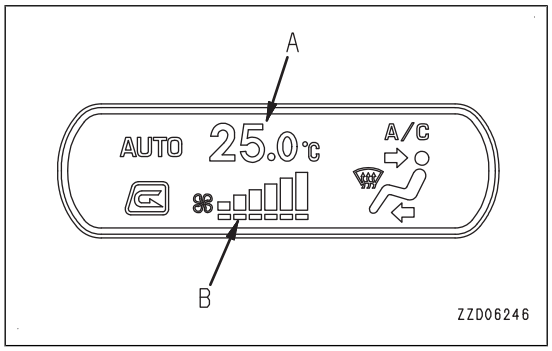
METHOD FOR OPERATING WITH COLD AIR TO FACE AND WARM AIR TO FEET

To operate with cold air blowing to the face and warm air blowing to the feet, set as follows.

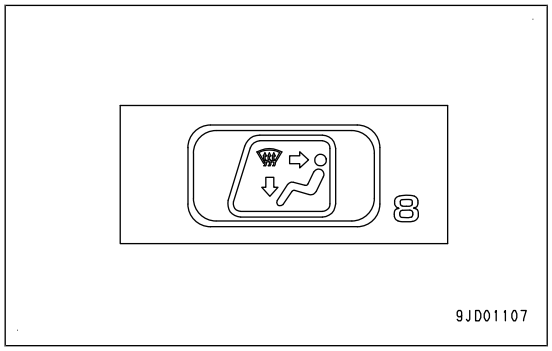
1. Press fan switch and adjust the air flow.



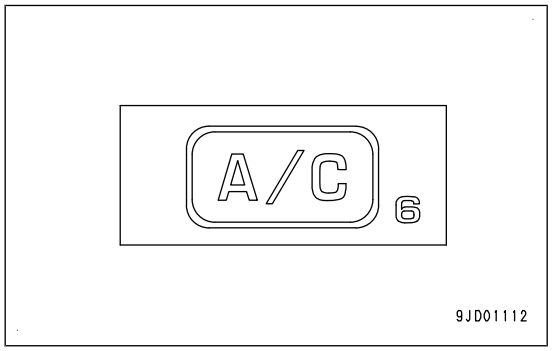
When doing this, check that temperature setting (A) and air flow (B) are displayed on the monitor.



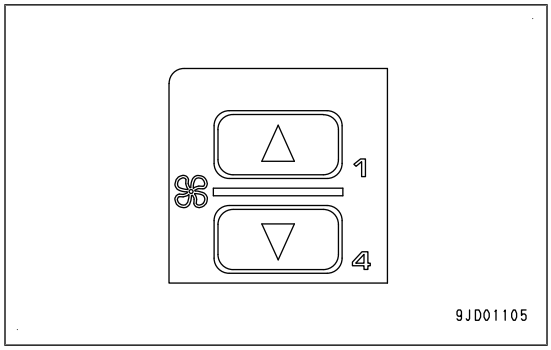
2. Press vent selector switch and set the vent display on the display monitor to the display shown in the figure.

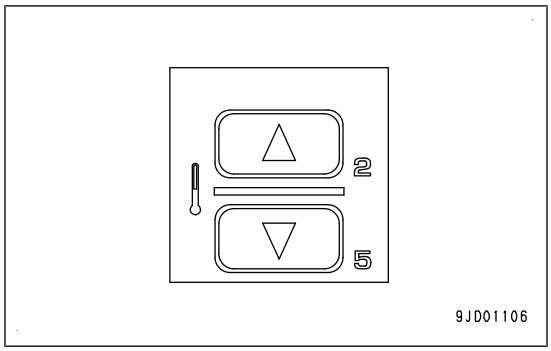


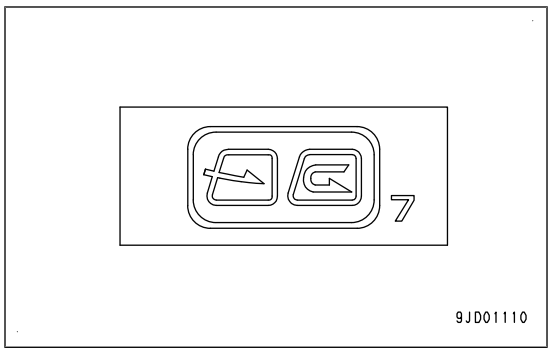
3. Turn air conditioner switch ON.



4. Adjust fan switch, temperature control switch and FRESH/ RECIRC air selector switch to the desired positions.

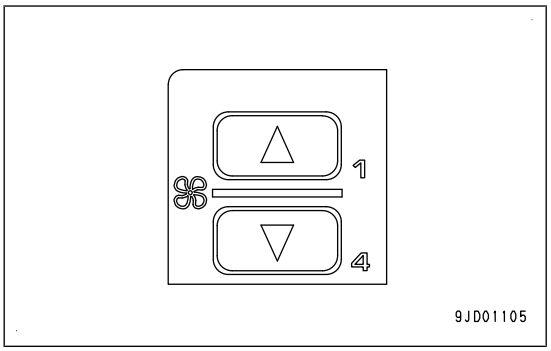




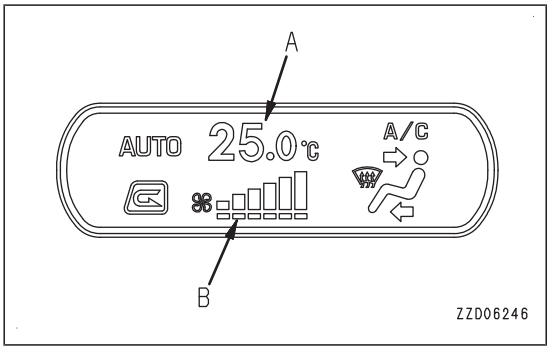


METHOD FOR OPERATING DEFROSTER

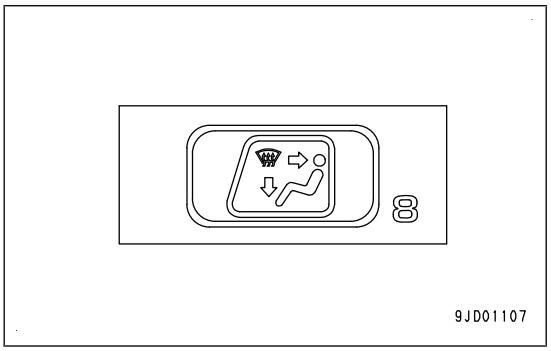
1. Press fan switch and adjust the air flow.

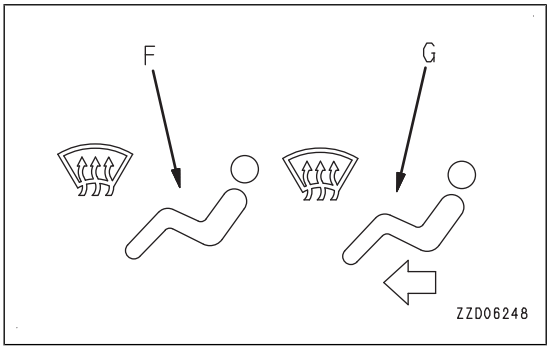


When doing this, check that temperature setting (A) and air flow (B) are displayed on the monitor.

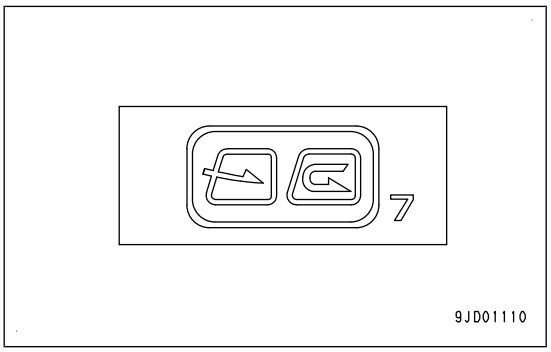


2. Press the vent selector switch or defroster switch and set vent display on the display monitor to (F) or (G) as shown in the figure.

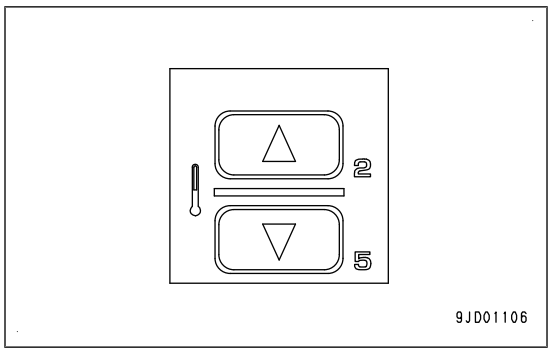




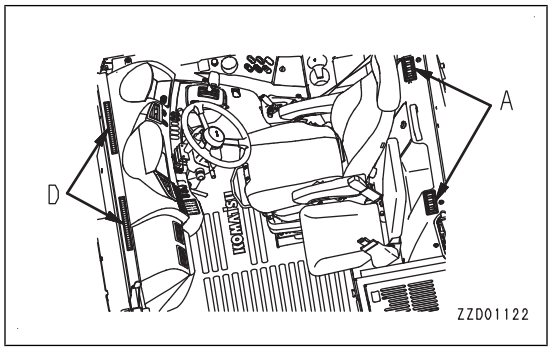
3. Press FRESH/RECIRC air selector switch and set it to FRESH mode.



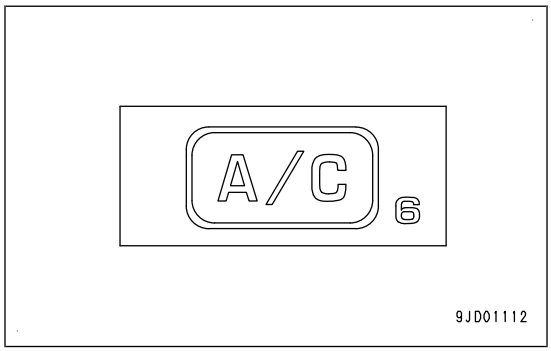
4. Press temperature control switch and set temperature on the display monitor to 32 °C of maximum heating.



5. Adjust vents (A) so that the air blows onto the window glass.
(Vent (D) is fixed.)



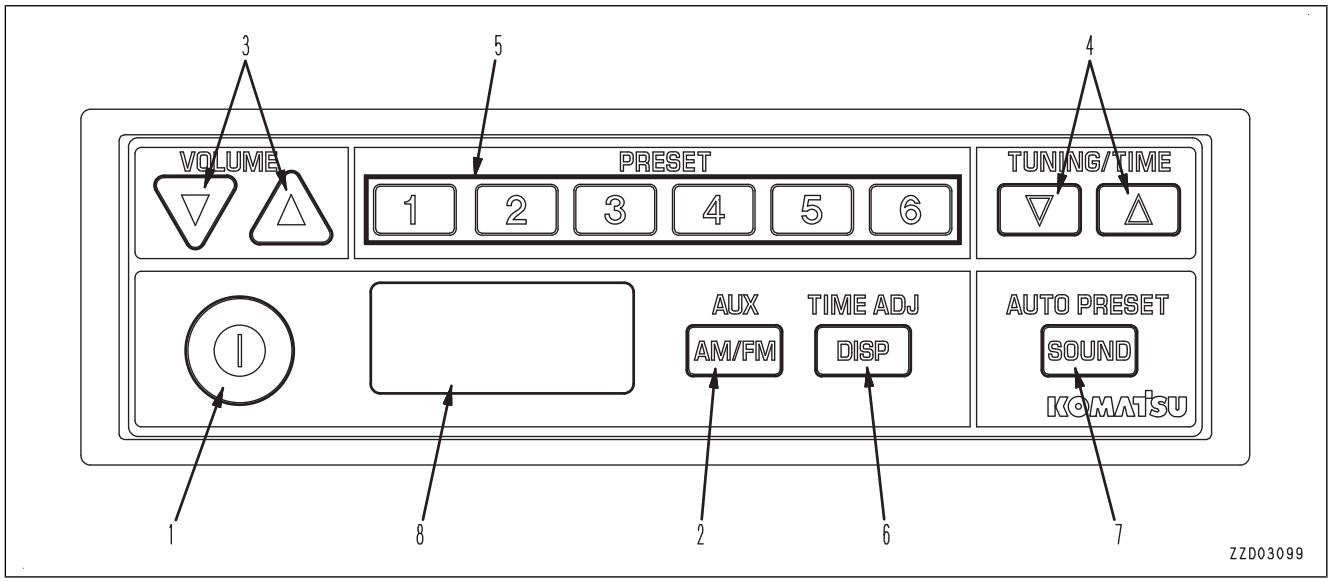
6. When operating in the rainy season or when it is desired to remove the mist from the window glass or to dehumidify the air, turn air conditioner switch ON.



HANDLE RADIO

- To ensure safety, always keep the volume to a level where you can hear the outside sounds during operation.
- If water gets into the speaker case or radio, it may lead to failure.
  Take care not to let water get on them.
- Do not wipe the display or buttons with solvent such as benzene or thinner.
  Wipe with a dry soft cloth.
- When the battery disconnect switch is turned to OFF position or the power for the machine is turned off for the replacement of the battery, the clock may be initialized. In such a case, set it again.

EXPLANATION OF RADIO EQUIPMENT



(1) Power button
(2) Band/AUX selector button
(3) Volume control button
(4) Tuning/time adjustment button
(5) Preset button
(6) Display selector button
(7) Sound control button
(8) Display

POWER BUTTON

Press the power button to supply the power to the radio and the frequency is shown on display. As long as AUX is selected, display indicates AUX on it. Press the button again to turn the power off.

BAND/AUX SELECTOR BUTTON

Press band/AUX selector button to select the desired band or AUX.

Each time the button is pressed, the band changes FM → AM → AUX → FM...

VOLUME CONTROL BUTTON

Use the volume control button to control the volume.

Press the △ button, and the volume increases. Press the ▽ button, and the volume decreases. The range for the volume is 0 to 32.

Hold down this button, and you can change the volume continuously.

TUNING/TIME ADJUSTMENT BUTTON

Use the tuning/time adjustment button to select frequency and step for sound adjustment and to adjust time.

PRESET BUTTON

If you register desired stations to the preset button beforehand, you can select each station by touching this button once.

It is possible to preset 6 stations each for both AM and FM.

DISPLAY SELECTOR BUTTON

Use the display selector button to change frequency and clock shown on the display.

Each time you press this button, frequency, clock and band are shown on the display in this order.

If 1.5 seconds passes while a band is shown, a frequency will be displayed.

As long as AUX is selected, this button alternately switches the display between AUX and the clock.

SOUND CONTROL BUTTON

Press the sound control button, and the sound adjustment is ready.

Each time this button is pressed, BAL (Balance), TRE (Treble) and BAS (Bass) will be selected in this order.

If this button is pressed while BAS is displayed, the sound adjustment will be canceled.

DISPLAY

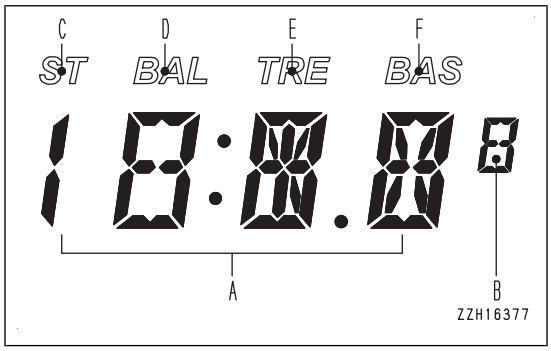
(A): Band name, “AUX”, frequency, clock and other character/ numeric information are displayed.

(B): Frequencies are displayed at steps of 50 kHz in certain areas.

(C): Lights up when a stereo broadcasting is heard while a FM station is selected.

(D): Lights up at the time of balance adjustment in the sound adjusting condition.

(E): Lights up at the time of treble adjustment in the sound adjusting condition.

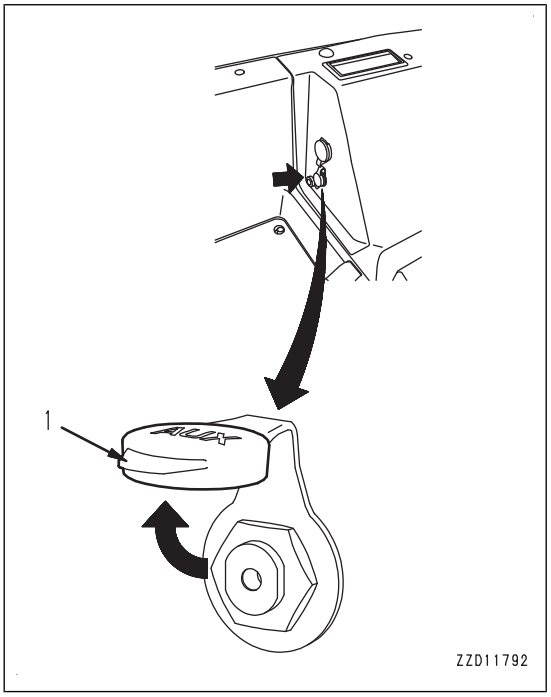


(F): Lights up at the time of bass adjustment in the sound adjusting condition.

AUX

You can hear the sound through the speaker of the machine when you connect a commercially available portable audio equipment to the machine.

1. Open cap (1).
2. Connect a portable audio equipment by using an commercially available audio cable.
3. Press the band/AUX selector button and select AUX.

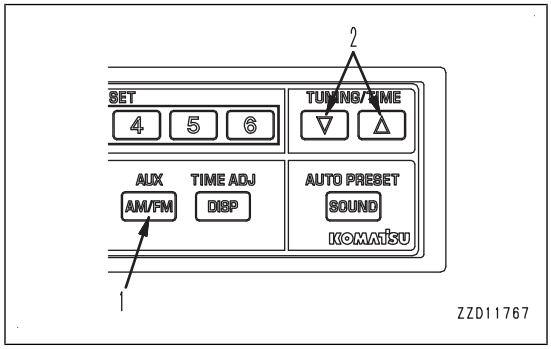


NOTICE

- **A stereo miniature plug can be connected.**
  Read the instruction manual of the equipment to connect carefully.
- **As a power source for the equipment to connect, use the battery attached to that equipment.**
  If you use an electric power supply installed to the machine, the noise may occur.
- **The noise may occur if you pull out the input plug when AUX is selected, or if you push in or pull out the plugs of the equipment to connect.**

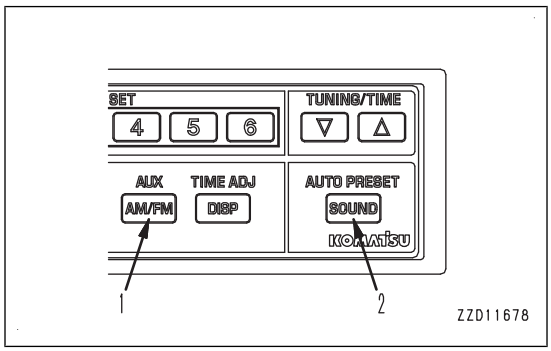
METHOD FOR CONTROLLING RADIO

METHOD FOR ADJUSTING FREQUENCY



1. Press band/AUX selector button (1) and select FM or AM.
2. Press tuning/time adjustment button (2) to adjust the frequency.
   - Press the △ button, and the frequency increases; press the ▽ button, and the frequency decreases.
   - Hold down the △ button, and the frequency increases continuously; hold down the ▽ button, and the frequency decreases continuously.
   - Hold down the △ button and release it, then the frequency increases continuously. Hold down the ▽ button and release it, then the frequency decreases continuously as an auto seek. When a proper frequency is picked up, the tuning automatically stops.

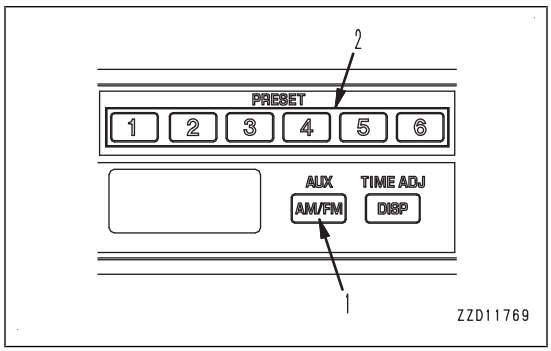
METHOD FOR ADJUSTING FREQUENCY (AUTO PRESETTING)



1. Press band/AUX selector button (1) and select FM or AM.
2. Hold down sound control button (2).

   When a proper frequency is picked up, it is automatically registered to preset memories 1 to 6.

METHOD FOR CALLING PRESET



1. Press band/AUX selector button (1) and select FM or AM.
2. Press one of 1 to 6 of preset button (2).

   The frequency registered in the preset number of the pressed button is called up and received.

   “Example”
   While a frequency is displayed, press button 1 of preset button (2), and the preset number “P-1” is displayed on the display.

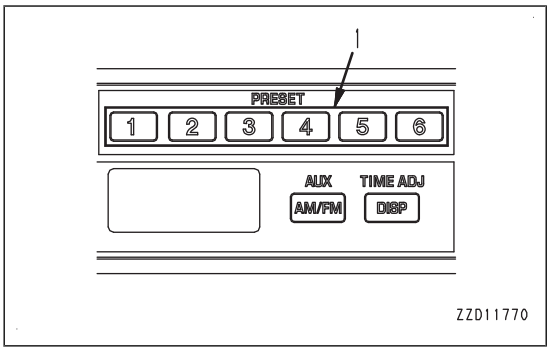
   The preset number is shown for 0.5 seconds, and then the frequency is displayed.

METHOD FOR REGISTERING PRESET

Hold down one of 1 to 6 of preset button (1) while listening to the radio.
The currently received frequency is registered to the preset number corresponding to the pressed button.

"Example"
While a frequency is displayed, keep pressing button 1 of preset button (1), and the preset number "P-1" is displayed.

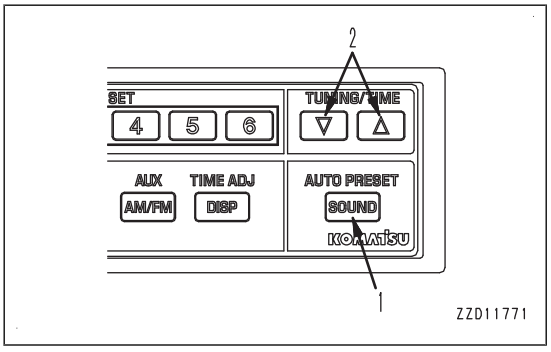
After the preset number flashes 3 times, the frequency is displayed and then registered to preset number "P-1".



METHOD FOR ADJUSTING SOUND BALANCE

1. Press sound control button (1) to light up "BAL" on the display.

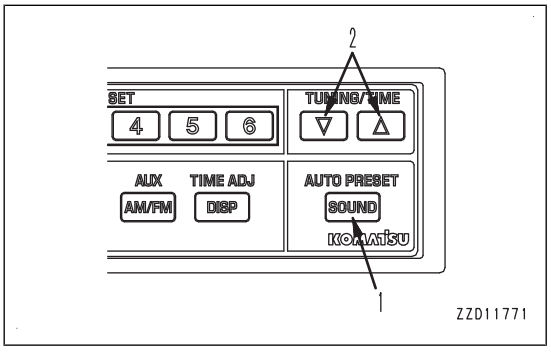
   You can adjust the sound (balance).
2. Press tuning/time adjustment button (2) to adjust the sound (balance).
   - Press the △ button, and the speaker output on the R side increases by 1. (R1 to R7)
   - Press the ▽ button, and the speaker output on the L side increases by 1. (L1 to L7)



METHOD FOR ADJUSTING HIGH REGISTER RANGE (TREBLE)

1. Press sound control button (1) to light up "TRE" on the display.

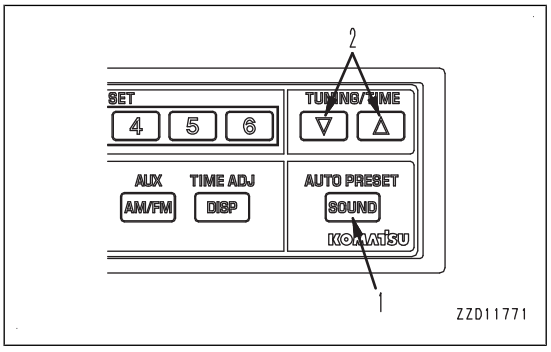
   You can adjust the sound (treble).
2. Press tuning/time adjustment button (2) to adjust the sound (treble).
   - Press the △ button, and the treble level increases by 1. (Maximum +7)
   - Press the ▽ button, and the treble level decreases by 1. (Minimum -7)



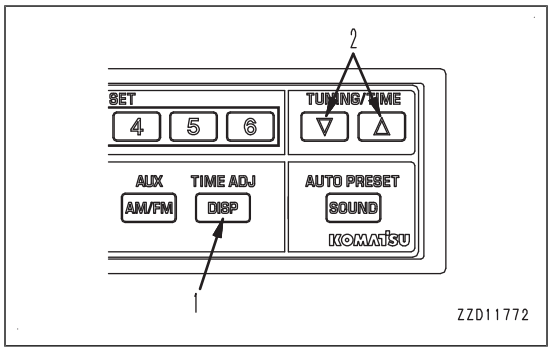
METHOD FOR ADJUSTING LOW REGISTER RANGE (BASS)

1. Press sound control button (1) to light up "BAS" on the display.

   You can adjust the sound (bass).
2. Press tuning/time adjustment button (2) to adjust the sound (bass).
   - Press the △ button, and the bass level increases by 1. (Maximum +7)
   - Press the ▽ button, and the bass level decreases by 1. (Minimum -7)



METHOD FOR ADJUSTING CLOCK



1. Press display selector button (1) to display the time.
2. Hold down display selector button (1) to flash the “HOUR” display portion.

   You can adjust the hour.
3. Press tuning/time adjustment button (2) to adjust the hour.
   - If you press △ button, “HOUR” display increases by 1.
   - If you press ▽ button, “HOUR” display decreases by 1.
4. Press display selector button (1) to flash the “MINUTE” display portion.

   You can adjust the minute.
5. Press tuning/time adjustment button (2) to adjust the minute.
   - If you press △ button, “MINUTE” display increases by 1.
   - If you press ▽ button, “MINUTE” display decreases by 1.
6. Press display selector button (1) to cancel time adjustment.

   The screen returns to the clock display.

DUMP BODY HEATING SPECIFICATIONS

The dump body heating is a function to improve the removal of soil from the dump body by heating the dump body with the exhaust gas.

If the dump body heating specification is employed, the machine can obtain outstanding easiness of dumping when the operation is performed in the freezing area.

After the aftertreatment devices regeneration, the temperature of dump body may rise 250 °C or higher because of the exhaust gas.

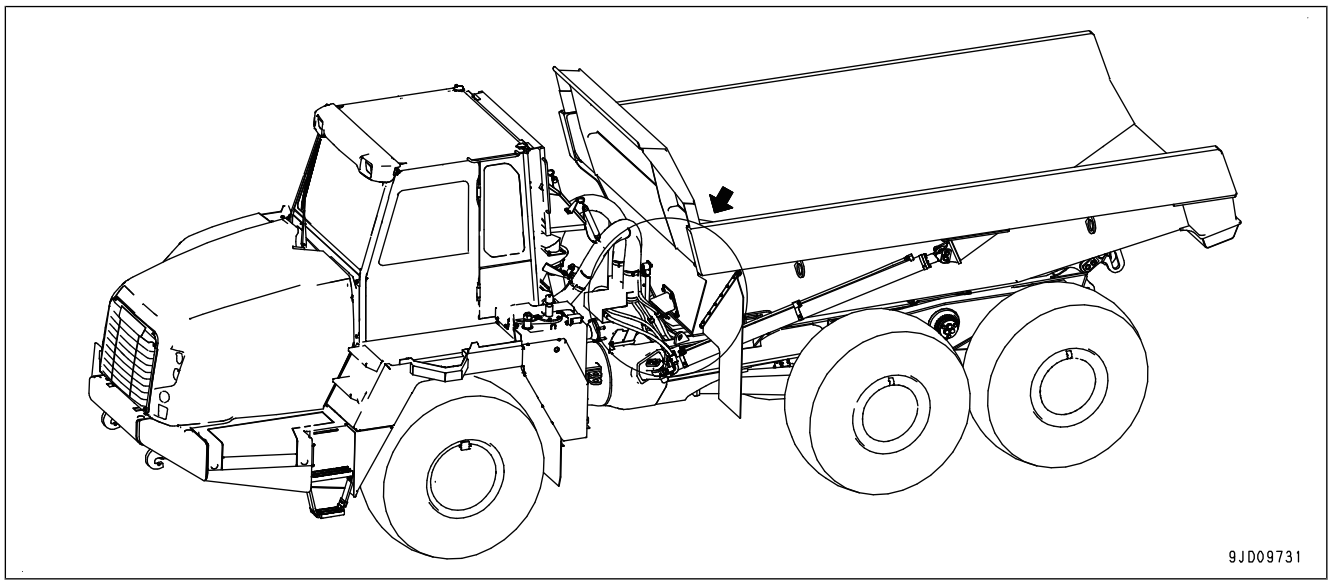
⚠ CAUTION

For the machines equipped with dump body heating specification, the dump body becomes highly heated during the aftertreatment devices regeneration.
Stay away from the dump body to prevent yourself from getting burnt.
If the following objects are loaded, fire may occur.

- **Objects which contains many combustible industrial wastes**
- **Objects which mainly contains combustible materials such as dry leaves, chips, pieces of paper, and coal dusts**

Take appropriate actions to prevent fire.

The temperature around the dump body becomes high as shown in the figure.



Remedy to prevent fire

When loading the combustible materials, change the machine specification to the specification without dump body heating.

Contact your Komatsu distributor for changing the machine specification to the specification without dump body heating.

In case the combustible materials are loaded, momentarily avoid a fire in the following procedure.

1. Avoid the automatic regeneration by performing regeneration disable operation after the engine is started.
2. After finishing the work, perform the manual stationary regeneration while the machine is unloaded.

REMARK

Mixing a large amount of soil into the combustible materials helps to decrease the fire.

DETERMINE AND MAINTAIN TRAVEL ROAD

Determining and performing maintenance of the road in the jobsite are the extremely important factors both for reasons of safety and for reducing the cycle time.

To ensure safety in operations, do as follows.

Determine travel road

- As far as possible, restrict the travel road to one-way travel.
- If it is impossible to keep one-way traffic, make the road with ample width to enable trucks traveling in opposite directions to pass each other.
  If it is impossible to provide a sufficient road width, provide passing places at various points along the road.
- Always design the road so that the loaded truck passes on the side closest to the hill face.
- If there are curves with poor visibility along the road, set up mirrors.
- In a place where the road shoulder is weak or likely to collapse, set up a sign at a point at least 1.5 m from the road shoulder to warn of the danger.
- It is important to set up lighting or reflectors on the road to enable the traveling at night.
- The grade of slope should be kept within 10 % (approximately 6 °) as far as possible, and emergency escape points should be set up on downhill slopes in case of any brake failure.
- Increase the number of places where the road continues in a straight line. If there are curves in high-speed travel areas, make the radius of the curve as large as possible.
- Small S curves are particularly dangerous, so avoid such curves. The radius of the curve must be a minimum of 12 m to 15 m .
- Make the radius of curves as large as possible.
- Make the road wider at curves than it is in straight areas.
- Make the surface of the road slightly higher on the outside of curves.
- Be particularly careful to strengthen the road shoulder on the outside of curves.
- Design the travel road as far as possible so that it does not cross any other travel road.
  In particular, when roads cross at an angle on slopes, there is danger that a difference in height will be created in the road, and this will make the machine sway strongly when traveling at high speed.
- Cut the slope face to provide a special road for the trucks.

Maintain travel road

Perform the necessary action according to the conditions to insure that the road can always be traveled in safety.

- Remove any unevenness in the travel surface, sloping to the left or right, or drooping of the road shoulder. Make the road of ample strength and remove such obstacles as rocks and tree stumps.
- Maintain the road with a bulldozer or motor grader from time to time.
- Spray the road with water at suitable intervals to prevent dust from rising and reducing the visibility.

TRANSPORTATION

PRECAUTIONS FOR TRANSPORTATION

Always obey the traffic regulations when transporting the machine by road.

⚠ WARNING

This machine may need to be divided into components for transportation depending on the regulation. When transporting the machine, consult your Komatsu distributor.

PRECAUTIONS FOR TRANSPORTING MACHINE

SELECT TRANSPORTATION METHOD

As a basic rule, always transport the machine on a trailer.

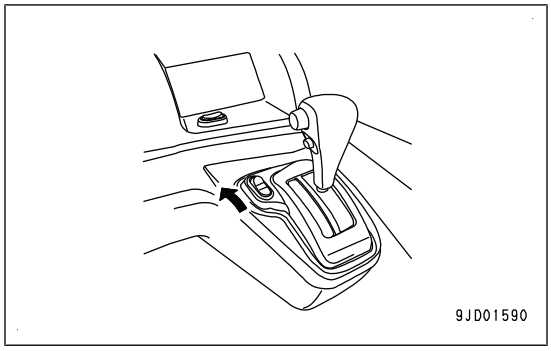
When selecting the trailer, refer to the weight and dimensions of the machine.

Note that the machine “SPECIFICATIONS” (weight and dimensions) vary depending on the kind of tires, dump body, or other equipment.

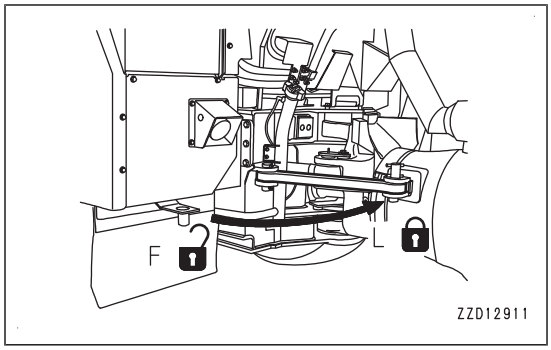
METHOD FOR SECURING MACHINE

After loading the machine in the specified position, secure it in place as follows.

1. Set the parking brake switch to “PARKING” position to apply the parking brake.
2. Turn the starting switch key to OFF position, and stop the engine.
3. Remove the key from the starting switch.



4. Set the articulation lock to LOCK position (L) to lock the front and rear frames.

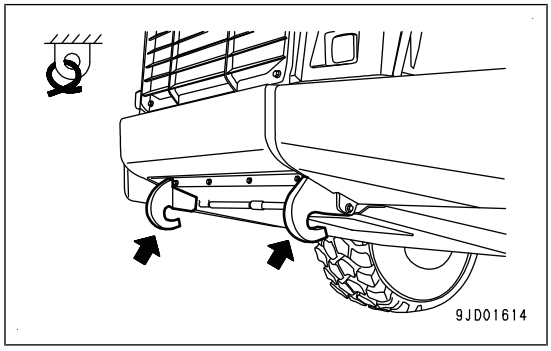


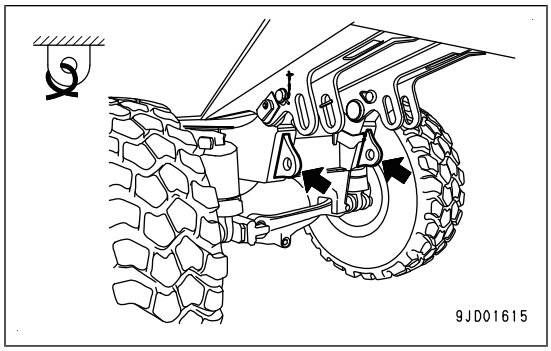
5. Put blocks in front of and behind the tires and secure the machine with chains or wire rope of a suitable strength to prevent the machine from moving during transportation.

   In particular, fix the machine securely to prevent it from slipping sideways.

   NOTICE

   Always retract the antenna.
   Reassemble the mirrors so that they are within the width of the machine.





PRECAUTIONS FOR LIFTING MACHINE

When lifting the machine at a port or any other place, always use the following procedure to lift it.

⚠ WARNING

- **The person using the crane to perform lifting operations must be a qualified crane operator.**
- **Do not lift the machine with someone in it.**
- **Always use a wire rope that has ample strength for the weight of the machine being lifted.**
- **When lifting, keep the machine horizontal.**
- **Before starting the lifting operation, always stop the engine, apply the parking brake, and use the articulation lock to prevent the front frame from articulating.**
- **Never enter the area under or around a lifted machine.**

Never try to lift the machine in any other posture or by using any other lifting equipment than those given in the following procedures.

There is a danger that the machine loses its balance.

NOTICE

This method of lifting applies to the standard specification machine.
The method of lifting differs depending on the attachments and options installed.
For details of the procedure for machines that are not the standard specification, consult your Komatsu distributor.

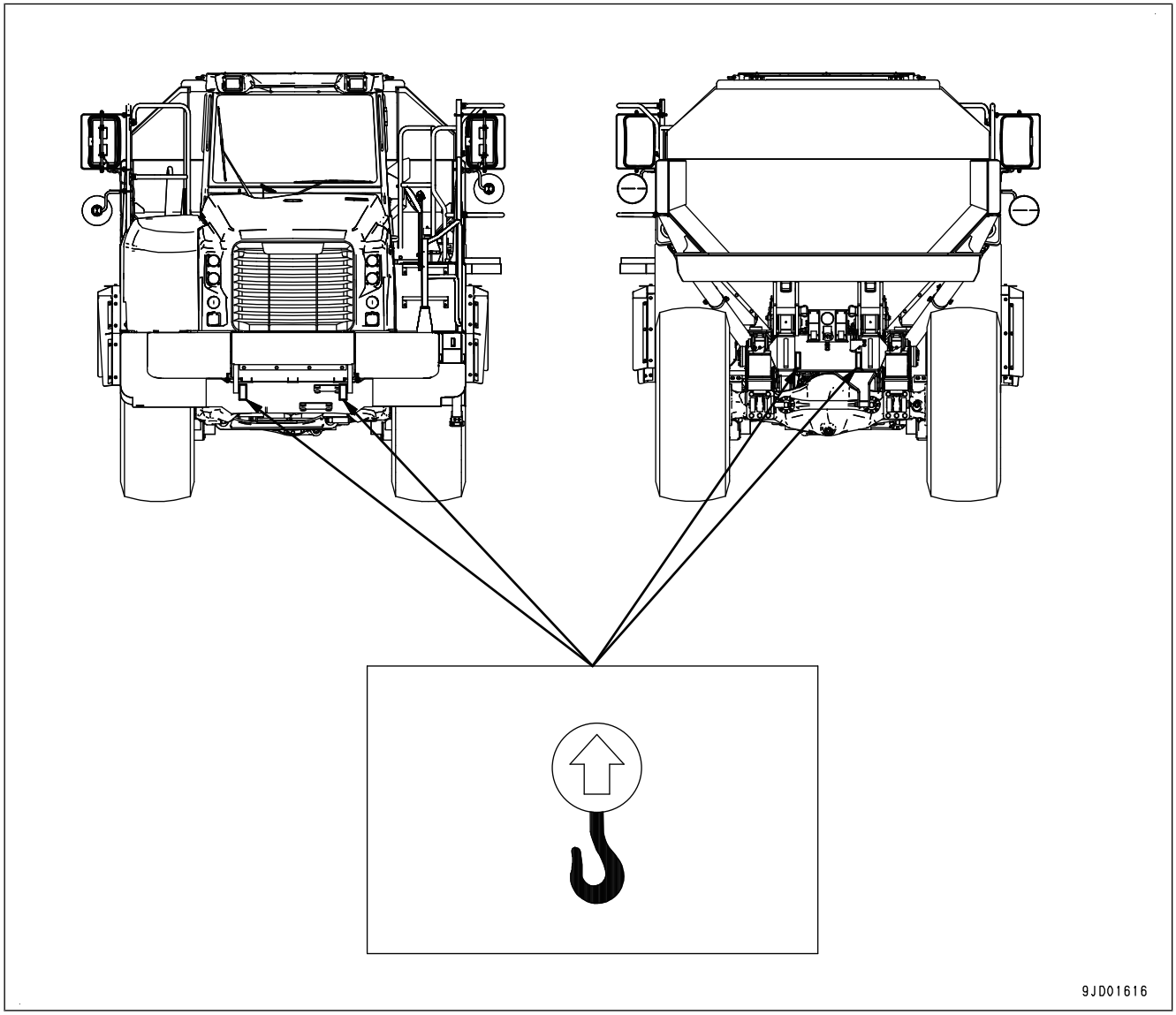
For the weight of standard specification machine, see “WEIGHT TABLE”.

NOTICE

- **Use protectors, etc. so that the wire ropes will not be broken at sharp edges or narrow places.**
- **When using a spreader beam, select an ample width to prevent contact with the machine.**

Consult your Komatsu distributor before performing lifting work.

LOCATION OF LIFTING POSITION MARK



WEIGHT TABLE

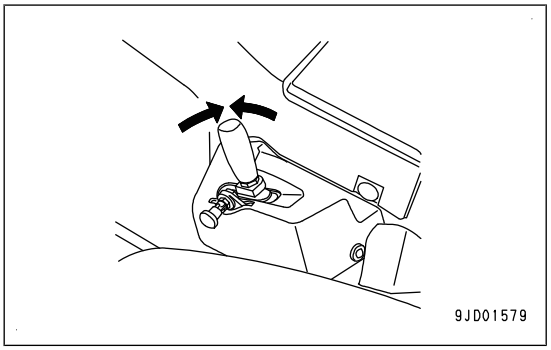
	Machine weight	Load on front axle	Load on center axle	Load on rear axle	Center of gravity (from front axle)
HM300-5E0	25395 kg (55996 lb)	14935 kg (32932 lb)	5730 kg (12635 lb)	4730 kg (10430 lb)	2001 mm (6 ft 4 in)

PROCEDURE FOR LIFTING MACHINE

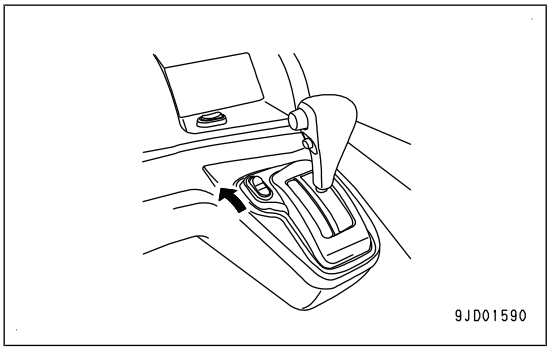
Lifting work of only machines having lifting marks is allowed.

When performing the lifting operation, place the machine on a firm, level ground, and do as follows.

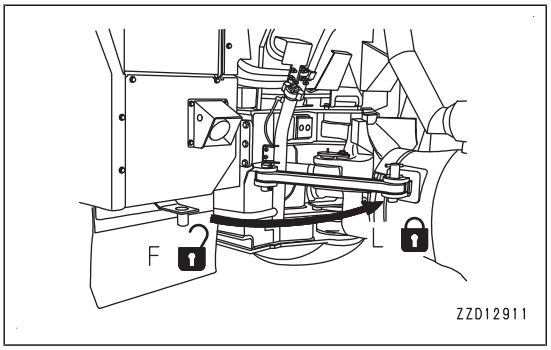
1. Start the engine set the machine in the straight travel posture.
2. Set the dump lever to “FLOAT” position and check that the dump body float caution lamp goes out.



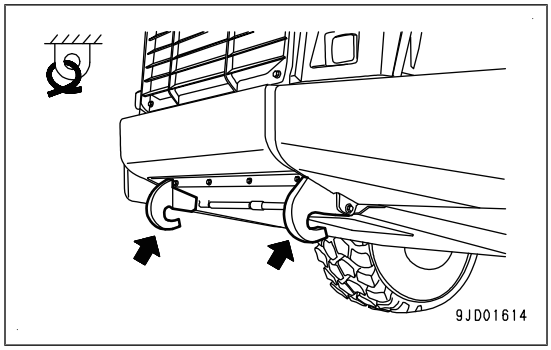
3. Stop the engine and apply the parking brake.

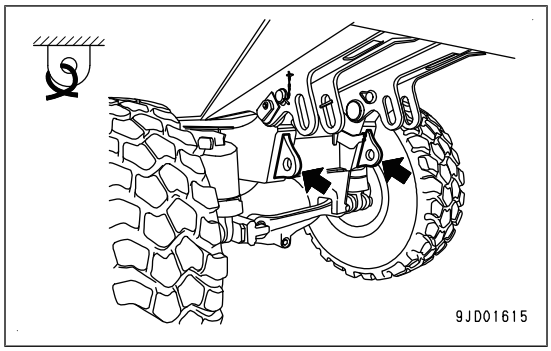


4. Check the safety around the operator's compartment, set the articulation lock to LOCK position (L) to prevent the front frame and rear frame from articulating.



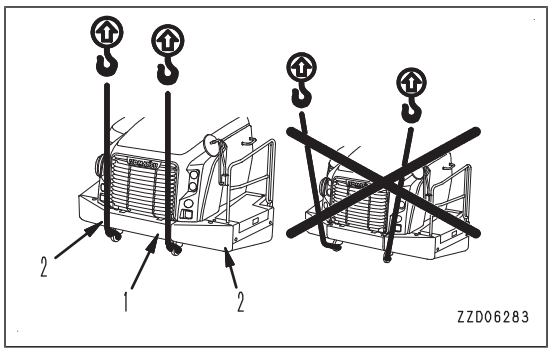
5. Select wire ropes, slings, spreader beams and other lifting tool to match the weight of the machine, and fit the wire ropes to the lifting hooks (at lifting hook marks) at the front of the front frame and the rear of the rear frame.



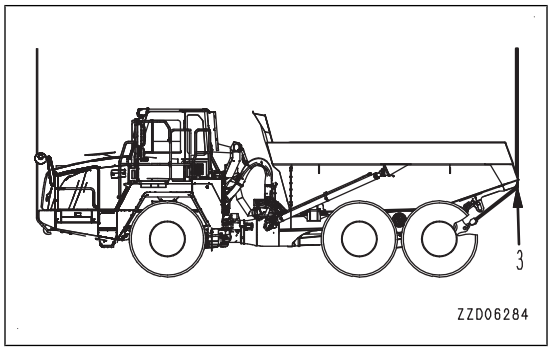


For the front portion of the front frame, install the sling, passing it through center bumper (1) as shown in the figure.

If the sling is passed through side bumper (2), the bumper may be damaged.



6. Fit protector blocks at contact points (3) between the lifting tool and the dump body to prevent damage to the lifting tool.
7. When the machine comes off the ground (raised 100 to 200 mm), stop the lifting operation, check carefully that the machine is balanced and that the wire ropes are not loose, then continue the lifting operation slowly.



COLD WEATHER OPERATION

COLD WEATHER OPERATION INFORMATION

If the ambient temperature becomes low, it becomes difficult to start the engine, and the coolant may freeze. Follow the instructions described as follows.

FUEL AND LUBRICANTS

Change the fuel and oil with ones of low viscosity for all components.

For the specified density, see “METHOD FOR USING FUEL, COOLANT AND LUBRICANTS ACCORDING TO AMBIENT TEMPERATURE”.

COOLANT

⚠ WARNING

- **Coolant is toxic. Be careful not to get it into your eyes or on your skin. If it should get into your eyes or on your skin, wash it off with large amount of fresh water and see a doctor immediately.**
- **When handling the cooling water containing coolant that has been drained during changing the coolant or repair of radiator, request a qualified company to perform the operation or contact your Komatsu distributor. Coolant is toxic, so never pour it into drainage ditches or drain it onto the ground surface.**

NOTICE

Komatsu recommends the use of Non-Amine Engine Coolant (AF-NAC) as coolant.

Non-Amine Engine Coolant (AF-NAC) is already diluted with distilled water, so it is not flammable.

For details on the coolant change interval and the density of Non-Amine Engine Coolant (AF-NAC), see “METHOD FOR USING FUEL, COOLANT AND LUBRICANTS ACCORDING TO AMBIENT TEMPERATURE”.

DEF

NOTICE

- **DEF freezes at –11 °C.**

  If DEF in DEF tank freezes, it may expand and the devices in the tank may be broken or the parts may be affected. Add DEF to the specified amount for cold weather (below the level of when DEF may freeze).
- **If DEF or the machine equipped with DEF system is stored at the outside temperature lower than –11 °C, DEF in the tank may freeze. Ask your Komatsu distributor for discharging of DEF, and keep it in the condition free from freezing.**

BATTERY

⚠ WARNING

- **Do not bring any open flame near the battery. Otherwise, it may explode since the battery generates the flammable gas.**
- **Battery electrolyte is dangerous object. If it gets in your eyes or on your skin, wash it off with a large amount of water and consult a doctor.**
- **Battery electrolyte dissolves paint. If it gets on the bodywork, wash it off immediately with water.**
- **Do not charge the battery or start the engine with a different power source if the battery electrolyte is frozen. Battery may explode.**
- **Battery electrolyte is toxic. Do not let it flow into drainage ditches or spray it on to the ground surface.**

When the ambient temperature drops, the capacity of the battery will also drop. Maintain the battery charging rate as close as possible to 100 %. Insulate it against cold temperature to ensure that the machine can be started easily in the next morning.

REMARK

Measure the gravity of the electrolyte and calculate the charging rate from the following conversion table.

For the Komatsu maintenance-free battery (if equipped), check the indicator display and follow the instructions. See "CHECK KOMATSU MAINTENANCE-FREE BATTERY INDICATOR " for how to read the indicator.

Electrolyte Temperature Charging Rate (%)	20 °C	0 °C	-10 °C	-20 °C
100	1.28	1.29	1.30	1.31
90	1.26	1.27	1.28	1.29
80	1.24	1.25	1.26	1.27
75	1.23	1.24	1.25	1.26

- When the ambient temperature is low, the capacity of the battery considerably drops. Cover it, or remove it from the machine to place it in the warm place. Restore it again before the operation.
- If the electrolyte level is low, add distilled water in the morning before beginning the work. Do not add water after the day's work to prevent diluted electrolyte in the battery from freezing during the night.
  For the Komatsu maintenance-free battery (if equipped), check the indicator display and follow the instructions. See "CHECK KOMATSU MAINTENANCE-FREE BATTERY INDICATOR " for how to read the indicator.

PRECAUTIONS AFTER DAILY WORK COMPLETION IN COLD WEATHER

To prevent mud, water, or the undercarriage from freezing and making it impossible for the machine to move on the following morning, observe the following precautions.

- Remove all the mud and water from the machine body. In particular, wipe the hydraulic cylinder rods clean to prevent damage to the seal caused by mud, dirt, or drops of water on the rod from getting inside the seal.
- Place the machine on a firm, dry ground.
  If this is impossible, park the machine on boards.
  The boards prevent the tracks from freezing to the ground, and allow the machine to move the next morning.
- Open the drain valve at the bottom of the fuel tank to drain the water accumulated in the fuel system and prevent it from freezing.
- In cold weather condition, add DEF to the defined level strictly.
  If adding more than the defined level, it may expand to break the devices in the tank when it freeze.
  If DEF tank level is lower than the defined level for the cold weather, DEF may freeze easily to damage the parts in DEF system.
  If the filler cap freeze, de freeze and open.
- The battery function decreases remarkably at low temperature.
  Cover it, or remove it from the machine to place it in the warm place. Restore it again before the operation.
- If the electrolyte level is low, add distilled water in the morning before beginning the work.
  Do not add water after the day's work to prevent diluted electrolyte in the battery from freezing during the night.

AFTER COLD WEATHER SEASON

When the season changes and the weather becomes warmer, do as follows.

- Replace the fuel and oil for all equipment with the ones of the specified viscosity by referring to “METHOD FOR USING FUEL, COOLANT AND LUBRICANTS ACCORDING TO AMBIENT TEMPERATURE”.
- If the machine is parked for long time in the cold weather condition, quality of DEF may be affected by repeated freeze, ask your Komatsu distributor to inspect.

PRECAUTIONS FOR LONG-TERM STORAGE

PREPARATION FOR LONG-TERM STORAGE

When putting the machine in storage for a long time (more than one month), do as follows.

- Clean and wash all the parts of the machine and store the machine indoors.
  If the machine has to be stored outdoors, select a level ground and cover the machine with waterproof sheet.
- Fill up the fuel tank.
  This prevents dew condensation.
- Fill up DEF tank (Except cold weather condition).
  If the inside dries up, urea is deposited and it may cause failures in component operation.
- Grease the machine and change the oil before storage.
- Coat the exposed portion of the hydraulic cylinder piston rod with grease.
- Turn the starting switch to OFF position, then turn the battery disconnect switch key to OFF position, and remove it.
  When storing the battery, cover it.
- Keep the parking brake applied.
- 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 OFF position.
- Set the gear shift lever to NEUTRAL position (N).
- To prevent rust, fill the cooling circuit with Non-Amine Engine Coolant (AF-NAC) to give a density of 30 % or more for the engine coolant.

MAINTENANCE DURING LONG-TERM 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 storage, operate and move the machine for a short distance once a month so that a new film of oil will coat moving parts. At the same time, charge the battery as well.
- When operating the work equipment, wipe off all the grease from the hydraulic cylinder rods.
- If the machine is equipped with an air conditioner, operate the air conditioner for 3 to 5 minutes once a month to lubricate all parts of the air conditioner compressor. Always run the engine at low idle when doing this. In addition, check the refrigerant level twice a year.

STARTING MACHINE AFTER LONG-TERM STORAGE

NOTICE

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

Perform the following items when using the machine after long-term storage.

- Wipe off the grease from the hydraulic cylinder piston 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.
- Insert the battery disconnect switch key and turn it to ON position.
- If the machine is stored for a long period with the battery disconnect switch at OFF position or the battery terminal disconnected, the clock information and radio tuning information may be lost. In this case, set the clock and radio again
- When starting the engine, perform the engine warm-up operation thoroughly.

If the machine has been stored for more than 2 months, do as follows.

- Before starting the engine, replace the DEF filter and fill up the DEF tank.
- Start the engine and check correctly.
  If SCR system has any abnormality, warning is displayed on the monitor screen and the audible alert sounds.
  If SCR system has any abnormality, stop the engine, and then start it again.
  If SCR system still has abnormality after the engine is restarted, contact your Komatsu distributor.
- If the DEF is kept in the DEF tank for more than 1 year, replace it.
  Dispose of the drained DEF according to the local regulations and rules.
  Aged DEF may have smell of ammonia.
  Replace the DEF in a well-ventilated place and take care not to inhale its vapor.

PREPARATION BEFORE TRAVELING AFTER LONG-TERM STORAGE

1. Check all the oil and water levels before traveling.
2. Do not accelerate suddenly. Before the machine starts normal travel, operate the machine in the forward direction at a speed of 10 to 15 km/h for 5 minutes, and then operate the machine in the forward direction at a speed of 30 km/h or below for approximately 30 minutes.

TROUBLES AND ACTIONS

ACTIONS WHEN RUNNING OUT OF FUEL

When starting the engine again after running out of fuel, fill with fuel, and bleed the air from the fuel system before starting the engine.

Always check the fuel level to prevent running out of fuel.

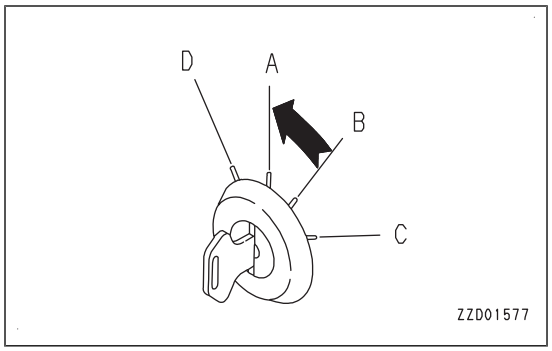
If the engine has stopped due to run out of fuel, all air must be sufficiently bled from the fuel circuit.

PROCEDURES FOR BLEEDING AIR FROM FUEL CIRCUIT

⚠ CAUTION

When using the fuel feed pump, do not loosen the air bleeding plug of the fuel circuit.
The fuel circuit is pressurized while the fuel feed pump is operated. If the air bleeding plug is loosened at this time, fuel may spout out and it is dangerous.

1. Turn the starting switch key to OFF position (A) and stop the engine.



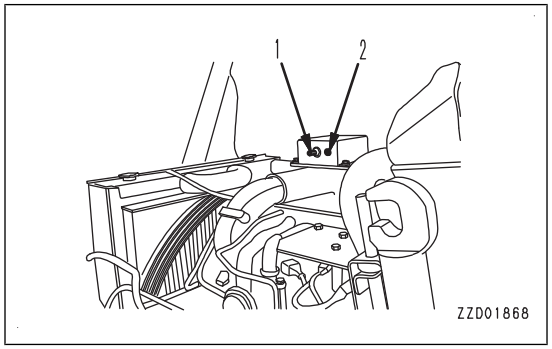
2. Tilt switch for the fuel feed pump (1) to ON position.

   Lamp (2) flashes and the fuel feed pump operates.

   After the specified time (approximately 7 minutes), lamp (2) goes out automatically and the fuel feed pump stops.

3. If the engine stopped because of running out of fuel or if the supply pump is replaced after servicing of the fuel hoses and tubes, the fuel circuit is empty. In such a case, set fuel feed pump switch (1) to ON position again after the fuel feed pump stops (the lamp goes out) automatically.

   When the lamp goes out, air bleeding is completed.



4. Start the engine.

   If the engine does not start, air may not be bled completely. In this case, repeat the operations of steps 1 to 4.

ACTIONS IF TRANSMISSION HAS TROUBLE

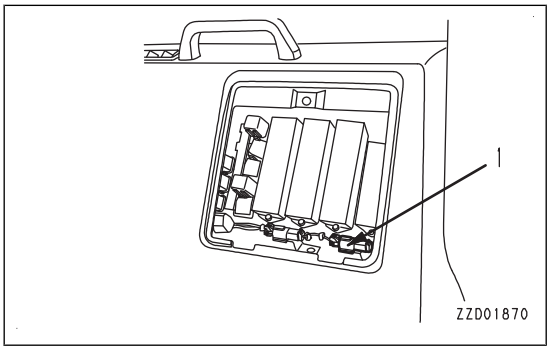
If the transmission has any trouble, operate the machine according to the following procedure.

1. Use the brake pedal to reduce the travel speed and stop the machine at a safe place.
2. Set the gear shift lever to NEUTRAL position (N) position, and set the parking brake switch to “PARKING” position.

   In some trouble modes, the gear is not shifted even if the shift lever is operated.

   In this case, perform the following procedure.

   1) Turn the starting switch to ON position or start the engine.
   2) Disconnect (pullout) emergency escape connector (1) (No. A1 (female), A1 (male), white 1-pole connector), and then connect (insert) it again.
   3) Set the parking brake switch to the “TRAVEL” position.
   4) Operate the gear shift lever to move the machine to a safe place without depressing the accelerator pedal.



If the gear shift lever is operated with the accelerator pedal depressed, the emergency escape function will not work.

In addition, the emergency escape function may not work for some failure codes.

While the emergency escape function is actuated, the machine monitor shift indicator displays “E” and the transmission shift range in turn.

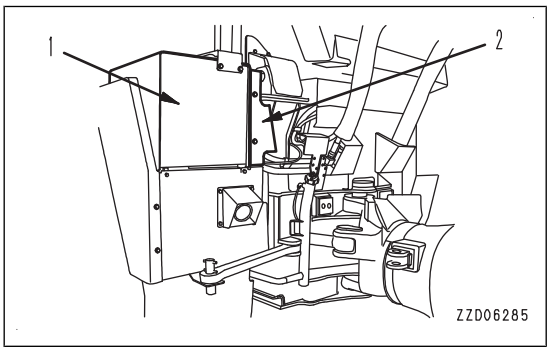
METHOD FOR LOWERING DUMP BODY IN EMERGENCY

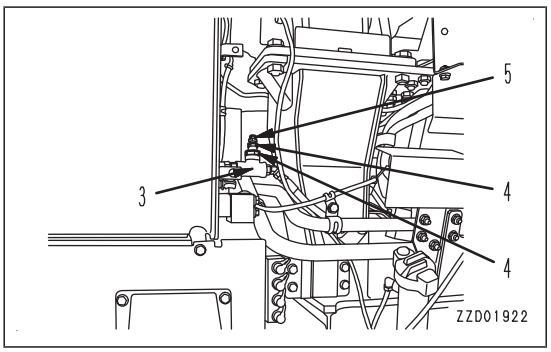
When the dump body needs to be lowered to the seat while the engine cannot be started for some trouble, perform the following procedure.

1. Remove cover (2) from the rear of hydraulic tank (1).
2. Loosen locknut (4) of manual lower valve (3).
3. Turn grip (5) of valve (3) counterclockwise.

   The oil in the hoist cylinder is drained into the hydraulic tank and the dump body lowers.
4. Tighten grip (5) and lock nut (4).
5. Install cover (2).

   If the dump body does not go down even when the above method is used, consult your Komatsu distributor.



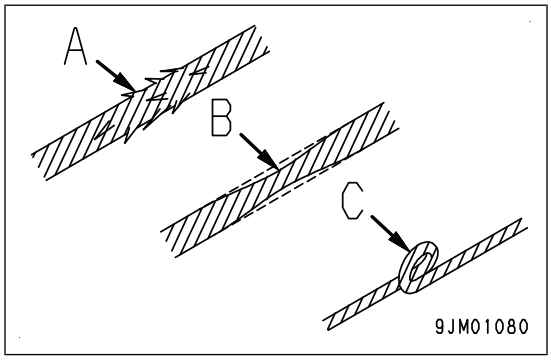


PRECAUTIONS FOR TOWING MACHINE

⚠ WARNING

Injury or death could result if a disabled machine is towed incorrectly or if there is a mistake in the selection of the wire rope or drawbar.

- **Always confirm that the wire rope or drawbar used for towing has ample strength for the weight of the machine being towed.**
- **Never use the wire rope which has cut strands (A), reduced diameter (B), or kinks (C). There is a danger that the rope may break during the towing operation.**
- **Always wear leather gloves when handling the wire rope.**
- **Never tow a machine on a slope.**
- **During the towing operation, never stand between the towing machine and the towed machine.**
- **If the machine moves suddenly, a load is applied suddenly to the towing wire or drawbar, and the towing wire or drawbar may break.**
  Move the machine gradually to a constant speed.
- **Be extremely careful if there is a failure in the engine or brake system: the brakes will not work.**
- **If the steering and the brakes on the disabled machine cannot be operated, do not let anyone ride on the disabled machine.**



NOTICE

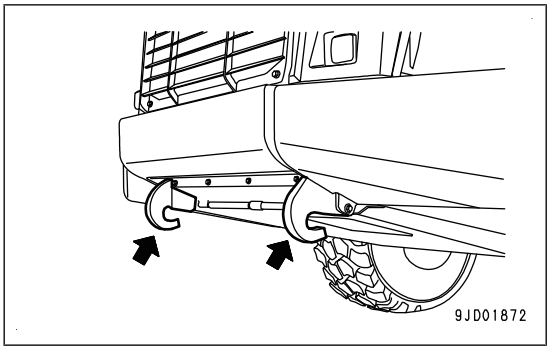
- **The allowable traction force of one towing device is 187340 N {19103 kgf}. Do not tow with load more than this.**
- **Towing is only permitted in order to move a disabled machine to a place where it is possible to perform inspection and maintenance.**
  Do not tow it a long distance.
- **Consult your Komatsu distributor for information about towing a disabled machine.**

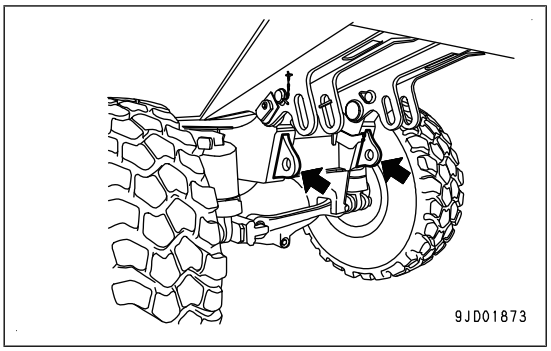
This machine must not be towed except in emergencies.However, if it is avoidable to tow the machine, take the following precautions.

- For the failed machine, make the dump body seated in the unloaded state.
- When towing a machine, tow it at a low speed of less than 2 km/h, and for a distance of a few meters to a place where repairs can be performed. This method is applied only in emergencies. If the machine must be moved long distances, use a transporter.
- Use a towing machine 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, set the articulation lock of the towed machine to LOCK position.
  However, when towing in places where it is needed to steer, set the articulation lock to FREE position. Use 2 towing machines of the same class or larger than the machine being towed: connect one machine each to the front and rear of the machine being towed.
- Use the specified hook for both the towing machine and the machine being towed.
- To protect the operator if the towing wire or towing bar breaks, install protective plates on both the towing machine and the machine being towed.

- There are towing hooks under the front frame and at the rear of the rear frame.

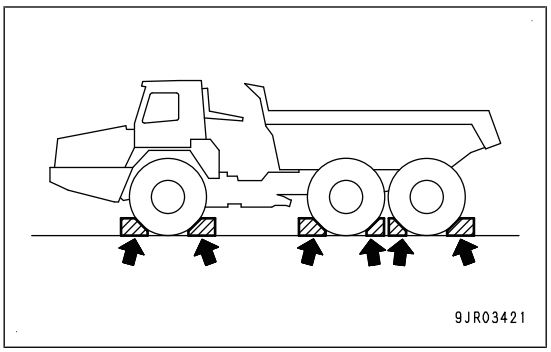
  Use only these hooks when towing. Do not use any other place for towing.
- When fitting the towing wire, check the condition of the hook to make sure that there is no problem.
- Keep the angle between the towing wire and machine 20° or below, and make it small as possible.
- Towing may be performed under various differing conditions, so it is impossible to determine beforehand the requirements for towing.
  Towing on flat level roads will require the minimum rim pull, while towing on slopes or on uneven road surfaces will require the maximum rim pull.
- Always release the parking brake before towing.





- Before releasing the parking brake, always chock the all wheels.

  If the wheels are not chocked, there is a danger that the machine may move suddenly.
  Connect with the towing wire or drawbar, and remove the blocks from the wheels when the towed machine is in a condition where it cannot run away.
- When releasing the parking brake, check that the surrounding area is safe.
- If the parking brake is released, the brakes will not work, so pay careful attention to safety.



- When towing down a slope, use 2 towing machines. One machine should be uphill from the disabled machine and should be connected with towing wire or a drawbar to pull the disabled machine back and keep it stable. The other machine should tow the disabled machine downhill.

WHEN ENGINE RUNS

- If the transmission and steering wheel can be operated, and the engine is running, it is possible to tow the machine out of mud or to move it for a “short distance” to the edge of the road.
- Check the effect of the brakes, and if the brakes do not work properly, take the action given in “WHEN ENGINE DOES NOT RUN”.
- Check if it is possible to steer the machine. If the machine cannot be steered, follow the procedure given in “WHEN ENGINE DOES NOT RUN”.
- The operator should sit on the machine being towed and operate the steering in the direction that the machine is towed.
- Always run the engine to allow the steering and brakes to be used.

IF ENGINE DOES NOT START

- The brakes will not work, so be extremely careful.
- Connect the towing machine securely to the towed machine.
  Use 2 towing machines of the same class or larger than the machine being towed: connect one machine each to the front and rear of the machine being towed.

- If it is necessary to change the direction of the machine being towed, it is possible to use the secondary steering, but it can be used for a maximum of only 90 seconds.
- If the secondary steering cannot be used, disconnect 2 hydraulic hoses each on the left and right from the steering cylinders, then perform the towing operation.
  When removing the hoses, block the hoses with plugs and fit oil containers to the mouthpiece of the cylinder to prevent oil from draining to the ground.

METHOD FOR RELEASING PARKING BRAKE

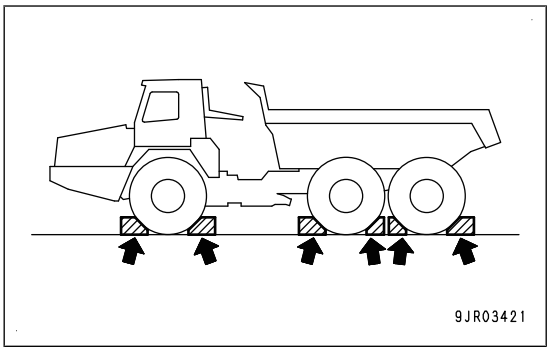
When it is necessary to tow or move the machine, the parking brake must be released. Release the parking brake as follows.

Ask your Komatsu distributor to release the parking brake.

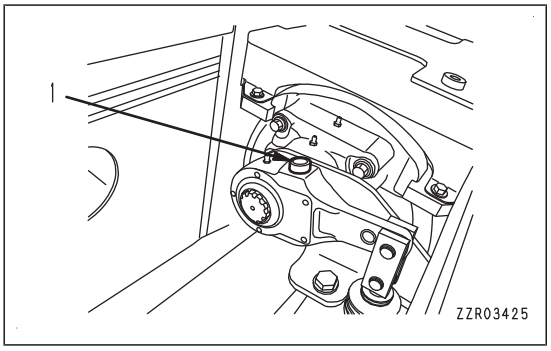
⚠ WARNING

- **If any problem occurs in the brake hydraulic system, there is a high probability that the wheel brakes will not work properly, so when towing, always travel at low speed.**
- **When releasing the parking brake, check that the surrounding area is safe and always chock the all wheels before starting the work.**
  If the wheels are not chocked, there is a danger that the machine may move suddenly.
- **Always stop the engine before starting the operation to release the parking brake.**

1. Stop the engine.
2. Chock the wheels.



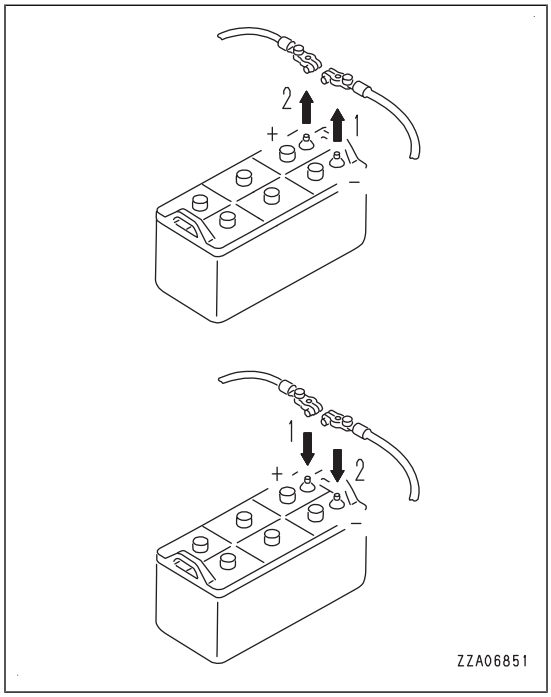
3. Push down the lock portion of parking brake adjustment screw (1), then turn adjustment screw (1) clockwise.
4. Check that there is a clearance between the parking brake pad and brake disc.
5. When the parking brake is released, tow the machine immediately to a safe place.



PRECAUTIONS FOR DISCHARGED BATTERY

⚠ WARNING

- **It is dangerous to charge a battery when installed on a machine. Make sure that it is removed before charging.**
- **When checking or handling the battery, stop the engine and turn the starting switch and battery disconnect switch keys to OFF positions.**
- **The battery generates hydrogen gas, and it is dangerous that it may explode. Do not bring open flame such as lighted cigarettes near the battery, or do nothing that will cause sparks.**
- **Battery electrolyte is dilute sulphuric acid, and it will attack your clothes and skin. If it gets on your clothes or on your skin, immediately wash it off with a large amount of clean water.**
  If it gets in your eyes, wash the eyes immediately with clean water, then consult a doctor for medical treatment.
- **When handling batteries, always wear protective eyeglasses and rubber gloves.**
- **When removing the battery, first disconnect the cable from the ground (normally the negative (-) terminal). When installing, first connect the cable to the positive (+) terminal.**
  If a tool touches the positive terminal and the chassis, it is dangerous that it may cause a spark. Be extremely careful.
- **If the terminals are loose, it is dangerous that the defective contact may generate sparks, and it may cause an explosion.**
  Install the cable terminals securely.
- **When removing or installing the cable terminals, check which is the positive (+) terminal and which is the negative (-) terminal.**
- **For the removal and installation of battery, see "PRECAUTIONS FOR REMOVING AND INSTALLING BATTERY".**



PRECAUTIONS FOR REMOVING AND INSTALLING BATTERY

⚠ CAUTION

- **Before removing the battery, remove the ground cable (normally connected to the negative (-) terminal).**
  If any tool touches between the positive (+) terminal and the chassis, there is a hazard of sparks being generated.
- **When installing the battery, connect the ground cable last.**

When replacing the battery, fix the battery body with the battery mounting fixtures.

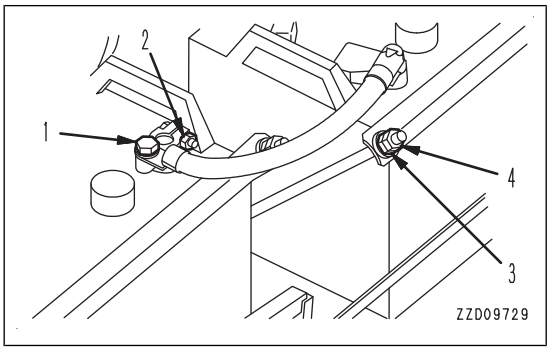
Securely tighten the terminal to the following tightening torque.

Tightening torque of wiring harness terminal (1): 11.8 to 19.6 Nm {1.2 to 2.0 kgfm}

Tightening torque of battery terminal (2): 9.81 to 11.8 Nm {1.0 to 1.2 kgfm}

Tightening torque of 1st nut (3) of mounting fixture: 6.96 to 9.02 Nm {0.71 to 0.92 kgfm}

Tightening torque of 2nd nut (4) of mounting fixture: 35 to 45 Nm {3.57 to 4.59 kgfm}

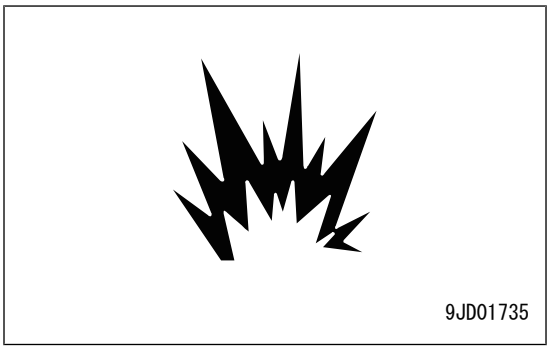


PRECAUTIONS FOR CHARGING BATTERY

⚠ WARNING

When charging the battery, if the battery is not handled correctly, it is dangerous that the battery may explode. Always follow the instruction manual accompanying the charger, and observe the following.

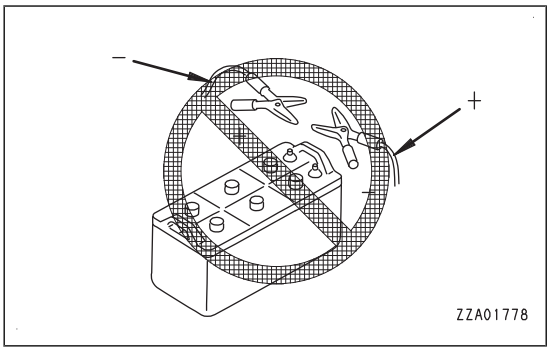
- **Set the voltage of the charger to match the voltage of the battery to be charged. If the correct voltage is not selected, the charger may overheat and cause an explosion.**
- **Connect the positive (+) charger clip of the charger to the positive (+) terminal of the battery, then connect the negative (-) charger clip of the charger to the negative (-) terminal of the battery. Be sure to attach the clips securely.**
- **In the case of a liquid stopper type, set the charge current to 1/10 or less of the value of the rated battery capacity. When you do the fast charging, set it to less than the rated battery capacity.**
  When you do the fast charging, set it to less than the rated battery capacity.
  For the Komatsu maintenance-free battery (if equipped), the charging current is less than 1/10 of the rated capacity of the battery. Do not do the fast charging.
  If the charger current is too high, the electrolyte will leak or dry up, and this may cause the battery to catch fire and explode.
- **If the battery electrolyte is frozen, do not charge the battery or start the engine with a different power source.**
  There is a danger that this will ignite the battery electrolyte and cause the battery to explode.
- **Do not use or charge the battery if the battery electrolyte level is below the LOWER LEVEL line. It can cause explosion. Be sure to do the periodic inspection of the battery electrolyte level. In the case of a liquid stopper type, add purified water (such as a commercial battery fluid) to UPPER LEVEL line.**
  For the Komatsu maintenance-free battery (if equipped), check the indicator display and follow the instructions. See "CHECK KOMATSU MAINTENANCE-FREE BATTERY INDICATOR " for how to read the indicator.



START ENGINE WITH JUMPER CABLES

⚠ WARNING

- **When connecting the cables, never connect the positive (+) and negative (-) terminals.**
- **Always wear protective eyeglasses and rubber gloves when starting the engine by using the jumper cable.**
- **Do not bring the normal machine into contact with the failed machine.**
  The sparks caused near the battery could ignite the hydrogen gas generated from the battery, so be careful not to let it happen.
- **Make sure that there is no mistake in the jumper cable connections.**
  When the final connection of the cables is done to the engine block of the failed machine, sparks will be generated. So, connect to a place as far as possible from the battery.
- **When disconnecting the jumper cable, take care not to bring the clips in contact with each other or with the machine.**



NOTICE

- **The starting system for this machine uses 24 V. Accordingly, the normal machine must be equipped with a 24 V power supply.**
- **The sizes of the jumper cables and clips should be suitable for the battery size.**
- **The battery of the normal machine must be the same capacity as that of the failed machine.**
- **Check the cables and clips for damage or corrosion.**
- **Make sure that the cables and clips are firmly connected.**
- **To prevent damage of the electric devices of the failed machine, turn the starting switch of the failed machine to OFF position, and then turn the battery disconnect switch key to OFF position before connecting the jumper cables.**

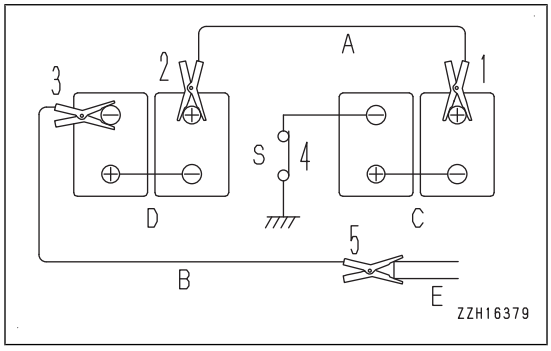
REMARK

If the battery disconnect switch is turned to OFF position, all the electrical system is cut out and the functions of KOMTRAX stop.
In addition, the time information of the clock and the radio tuning information may be lost.
In this case, set the clock and radio again

PROCEDURE FOR CONNECTING JUMPER CABLES

Turn the starting switch and battery disconnect switch of the failed machine, and the starting switch of the normal machine to OFF position.

1. Connect the clip of jumper cable (A) to the positive (+) terminal of battery (C) on the failed machine.
2. Connect the clip at the other end of jumper cable (A) to the positive (+) terminal of battery (D) on the normal machine.
3. Connect the clip of jumper cable (B) to the negative (-) terminal of battery (D) on the normal machine.
4. Turn the battery disconnect switch (S) of the failed machine to ON position.
5. Connect the clip at the other end of jumper cable (B) to engine block (E) of the failed machine.



METHOD FOR STARTING ENGINE

1. Check that the parking brake switches of both normal machine and failed machine are set to “PARKING” position

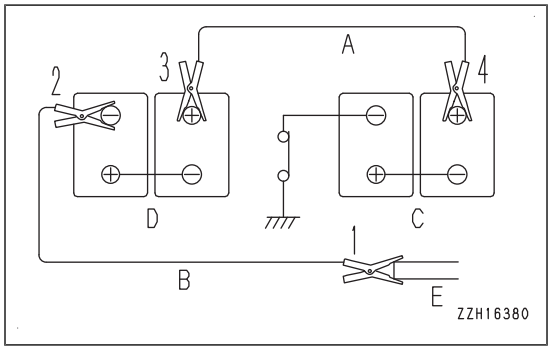
   In addition, check that the gear shift levers are in NEUTRAL position (N).
2. Make sure the clips are firmly connected to the battery terminals.
3. Start the engine of the normal machine and run it at full speed (Max. speed).
4. Turn the starting switch of the failed machine to START position and start the engine.

   If the engine does not start, try again after at least 2 minutes.

PROCEDURE FOR DISCONNECTING JUMPER CABLES

After the engine has started, disconnect the jumper cables in the reverse of the order in which they were connected.

1. Remove the clip of jumper cable (B) from engine block (E) on the failed machine.
2. Remove the clip of jumper cable (B) from the negative (-) terminal of battery (D) on the normal machine.
3. Remove the clip of jumper cable (A) from the positive (+) terminal of battery (D) on the normal machine.
4. Remove the clip of jumper cable (A) from the positive (+) terminal of battery (C) on the failed machine.



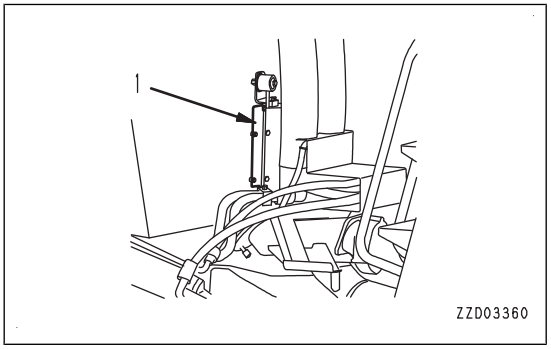
ACTIONS IF DUMP BODY HEATING EXHAUST PIPING IS BROKEN

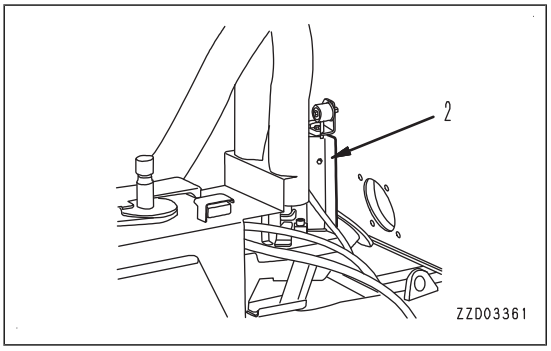
⚠ CAUTION

Immediately after the engine is stopped, the parts around the exhaust pipe are still very hot, and may cause burn injury.
Wait until they have cooled down before starting the work.

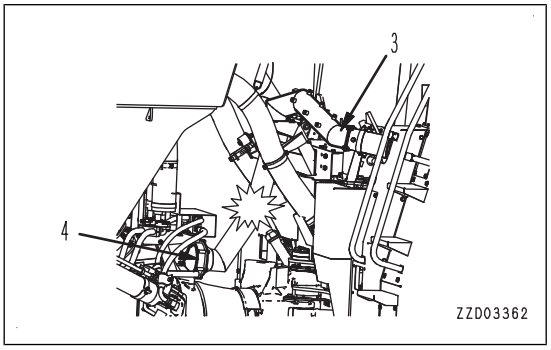
If the dump body heating exhaust pipe is broken at the sliding portion, reassemble it as explained below to continue travel.

1. Remove fire prevention covers (1) and (2) in front of the dump body.

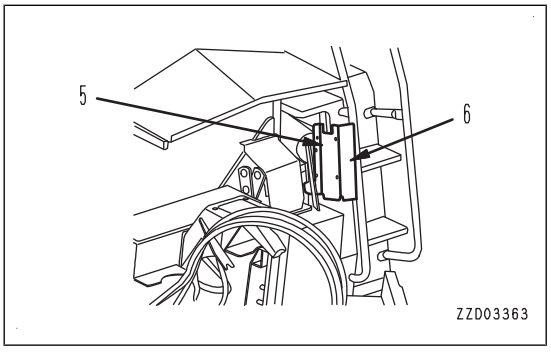




2. Remove the sliding portion of the exhaust pipe at positions (3) and (4).



3. Install fire prevention covers (1) and (2) removed in step 1 to positions (5) and (6) of the exhaust pipe.
4. Continue travel and ask your Komatsu distributor for repair as soon as possible.



NOTICE

If the machine travels without fire prevention covers, the machine body may be damaged due to highly heated exhaust gas.

OTHER TROUBLE

PHENOMENA AND ACTIONS FOR ELECTRICAL SYSTEM

- For the remedies indicated with (*) in the remedy column, always contact your Komatsu distributor.
- In cases of problems or causes which are not listed below, ask your Komatsu distributor for repairs.

Problem	Main causes	Remedy
Lamp does not glow brightly even when the engine runs at high speeds.	Defective wiring	Check and repair loose terminals, open circuit. (*)
	Insufficient battery charge	Charge, add distilled water.
	Loosening and damage of belt	Check alternator belt tension and replace.
Lamp flickers while engine is running.	Defective wiring	Check and repair loose terminals, open circuit. (*)
	Insufficient battery charge	Charge, add distilled water.
	Loosening and damage of belt	Check alternator belt tension and replace.
Battery charge level caution lamp lights up while engine is running.	Defective alternator	Replace. (*)
	Defective wiring	Check, repair. (*)
Unusual noise is generated from alternator	Defective alternator	Replace. (*)
	Loosening and damage of alternator belt	Check alternator belt tension and replace.
Starting motor does not rotate even when starting switch is turned to START position.	Defective wiring	Check, repair. (*)
	Defective starting switch	Replace switch (*)
	Insufficient battery charge	Charge battery.
	Defective battery relay	Replace relay. (*)
	Battery disconnect switch is turned OFF	Turn ON.
	Engine shutdown secondary switch is at “STOP ENGINE” position.	Set it to “NORMAL” position. Close the cover.
Starting motor incapable of cranking engine smoothly.	Defective wiring	Check, repair. (*)
	Insufficient battery charge	Charge battery.
Starting motor disengages before engine starts. (Rattles)	Defective wiring	Check, repair. (*)
	Insufficient battery charge	Charge battery.
When startability at low temperature is poor, if you touch the outside of the electric heater by hand after preheating, it is not felt warm.	Defective wiring	Check, repair. (*)
	Wire breakage in electrical intake air heater	Replace. (*)
	Defective operation of heater relay	Replace. (*)
	Blown fuse of heater	Replace. (*)

PHENOMENA AND ACTIONS FOR CHASSIS

- For the remedies indicated with (*) in the remedy column, always contact your Komatsu distributor.
- In cases of problems or causes which are not listed below, ask your Komatsu distributor for repairs.

Problem	Main causes	Remedy
Torque converter oil temperature caution lamp flashes.	Leakage of oil or entry of air due to damage or defective tightening of oil pipe, pipe joint	Check, repair. (*)
	Wear, scuffing of gear pump	Check, repair. (*)
	Lack of oil in transmission case	Add oil to specified level. See CHECK BEFORE STARTING.
	Clogged oil cooler	Clean or replace (*)
	Long distance traveled in torque converter range	Drive in direct range
	Disconnected, broken wiring to sensor	Repair, connect wiring (*)
Steering wheel is heavy	Insufficient greasing of link	Lubricate.
	Internal leakage inside steering cylinder	Replace cylinder seal. (*)
Steering wheel is out of control.	Tire inflation pressure not uniform on left and right	Make tire inflation pressure uniform. See CHECK BEFORE STARTING.
	Dragging, pulling of front brake	Check wear of brake disc (*)
Braking effect is poor when brake pedal is depressed	Disc has reached wear limit.	Replace disc. (*)
	Insufficient oil pressure	Charge to specified pressure.
	Insufficient brake oil	Add oil to the transmission case. See CHECK BEFORE STARTING.
	Air in brake circuit	Bleed air. See WHEN REQUIRED.
Brake pulls to one side.	Disc has reached wear limit.	Replace disc. (*)
	Insufficient oil pressure	Charge to specified pressure.
	Insufficient brake oil	Add oil to the transmission case. See CHECK BEFORE STARTING.
	Air in brake circuit	Bleed air. See WHEN REQUIRED.
Dump body speed is slow.	Defective piston pump	Replace piston pump. (*)
	Insufficient oil	Add oil to specified level. See CHECK BEFORE STARTING.
Suspension is hard.	Soil or sand entering through damaged dust seal has damaged U-packing, causing leakage of gas.	Replace U-packing. (*)
	Gas leaking from valve core	Replace valve core. (*)

Problem	Main causes	Remedy
Wheel on one side tends to slip.	Air in brake circuit (between slack adjuster and brake)	Bleed air from brakes (R.H. and L.H.). See WHEN REQUIRED.
	Excessive difference in wear between right and left tires	Replace tire. (*)
	Excessive difference in division of load between left and right wheels (unbalanced load)	Make load uniform.
	Excessive deformation of disc	Overhaul brake. (*)

When accelerator pedal has failed

The accelerator pedal is equipped with a potentiometer that detects the amount that the accelerator pedal is depressed. In addition, there is a switch that judges if the accelerator pedal is being depressed or if it has been released.

If it is impossible to detect correctly the amount that the accelerator pedal is depressed because of breakage of the accelerator pedal or defective wiring, the engine controller controls the engine in accordance with the signal from this judgment switch.

When the accelerator pedal is being depressed, the engine speed is set to 1500 rpm; when the accelerator pedal is released, the engine speed is set to low idle speed.

The speed differs according to the load.

Operate the accelerator pedal to move the machine to a safe place, then check the failure code and contact your Komatsu distributor.

When operating the accelerator pedal, release the pedal to turn it to OFF position (low idle) or depress it fully to set it to 1500 rpm.

If the accelerator pedal is depressed half way, it may be impossible to judge if the accelerator pedal is being operated.

REMARK

If the engine controller cannot correctly receive the signal for the amount that the accelerator pedal is depressed, the centralized warning lamp lights up, the alarm buzzer sounds intermittently, the engine system caution lamp lights up and action level “L03” is displayed on the machine monitor.

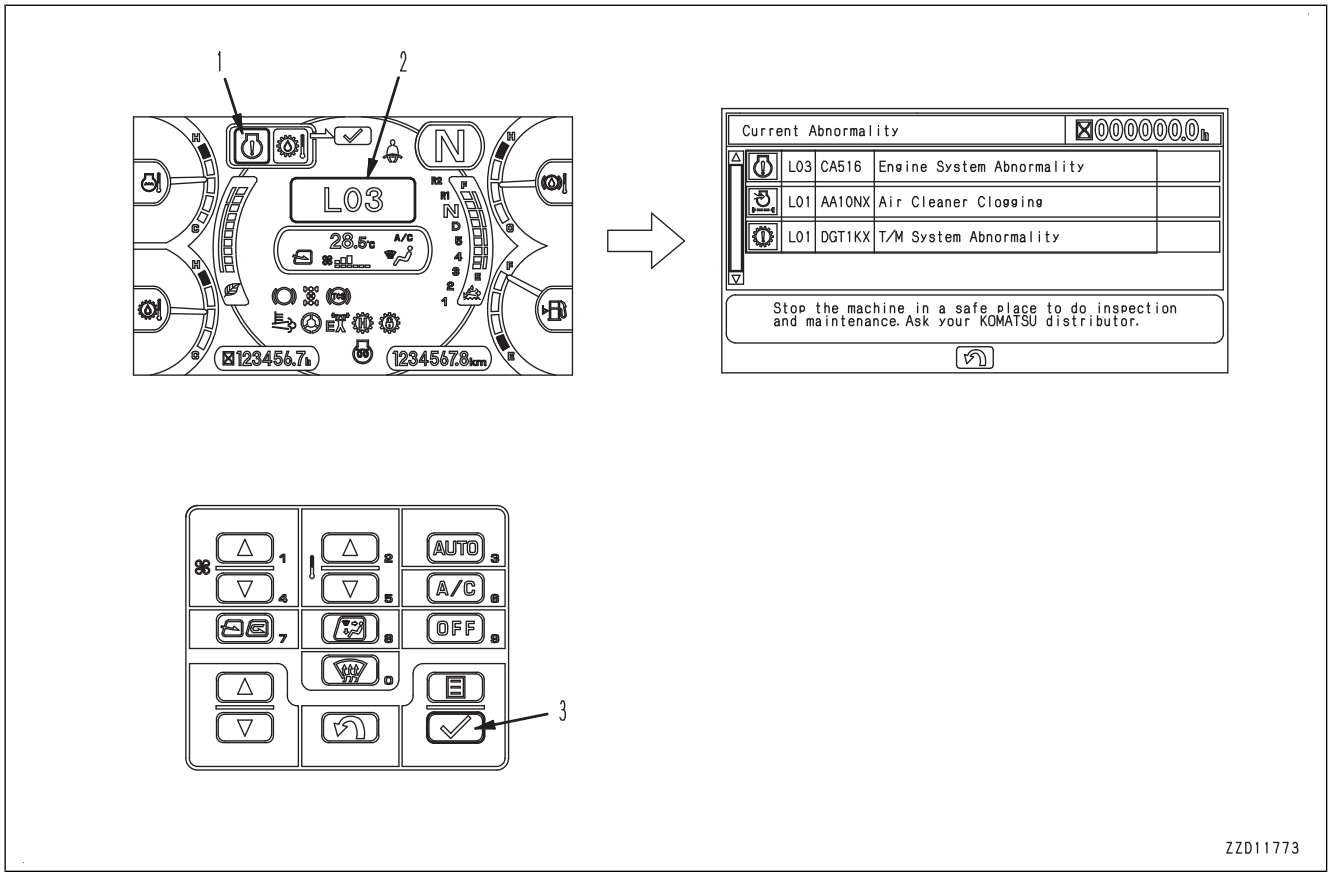
PHENOMENA AND ACTIONS FOR ENGINE RELATED PARTS

- For the remedies indicated with (*) in the remedy column, always contact your Komatsu distributor.
- In cases of problems or causes which are not listed below, ask your Komatsu distributor for repairs.

Problem	Main causes	Remedy
Engine oil pressure caution lamp lights up.	Insufficient oil in oil pan	Add oil to specified level. See CHECKS BEFORE STARTING.
	Improper oil is used (viscosity is improper)	Replace oil. See METHOD FOR USING FUEL, COOLANT AND LUBRICANTS ACCORDING TO AMBIENT TEMPERATURE and RECOMMENDED FUEL, COOLANT, AND LUBRICANT.
	Clogged oil filter cartridge	Replace cartridge. See EVERY 500 HOURS MAINTENANCE.
	Oil leakage due to improper tightening or breakage of oil pan, pipe joint.	Check, repair. (*)
	Disconnected, broken wiring to sensor	Repair, connect wiring. (*)
Steam spurts out from top of radiator (pressure valve).	Lowered coolant level, leakage of coolant	Check, add coolant. See CHECKS BEFORE STARTING.
The coolant level caution lamp lights up and the machine monitor displays low coolant level as L01.	Dirt or scale accumulated in cooling system	Change coolant, clean inside of cooling system. See WHEN REQUIRED.
Indicator of engine coolant temperature gauge is in red range. (Engine coolant temperature caution lamp lights up.)	Clogged radiator fins or damaged fin	Clean or repair. See EVERY 500 HOURS MAINTENANCE.
	Defective coolant temperature gauge	Replace coolant temperature gauge. (*)
	Defective thermostat	Replace thermostat. (*)
	Defective sealing of thermostat	Replace thermostat seal. (*)
	Loose radiator filler cap	Tighten or replace cap.
	Disconnected, broken wiring to sensor	Repair, connect wiring. (*)
Indicator of engine coolant temperature gauge stays at lowest position and does not rise.	Defective coolant temperature gauge	Replace coolant temperature gauge. (*)
	Defective thermostat	Replace thermostat. (*)
Starting motor turns but engine does not start.	Lack of fuel	Add fuel. See CHECKS BEFORE STARTING.
	Air in fuel system	Repair place where air is sucked. (*)
	No fuel in fuel filter	Fill filter with fuel. See EVERY 500 HOURS MAINTENANCE.
	Starting motor turns engine sluggishly.	See PHENOMENA AND ACTIONS FOR ELECTRICAL SYSTEM.
	Starting motor does not turn.	See PHENOMENA AND ACTIONS FOR ELECTRICAL SYSTEM.
	Defective valve clearance (defective compression)	Adjust valve clearance. (*)
	Gear shift lever is in any position other than N (NEUTRAL).	Place gear shift lever to N (NEUTRAL) position.

Problem	Main causes	Remedy
Fuel supply occasionally stops.	Clogged fuel tank breather tube	Replace breather tube. (*)
Excessive oil consumption	Oil leakage	Check, repair. (*)
Exhaust gas color is white or bluish.	Excessive oil in oil pan	Set oil to specified level. See CHECKS BEFORE STARTING.
	Worn piston, ring, cylinder liner	Replace. (*)
	Low grade fuel being used	Replace with specified fuel.
	Defective turbocharger	Check, replace. (*)
	Water entry in the aftertreatment device	Check, repair. (*)
	Breakage of the aftertreatment devices	Replace the aftertreatment devices. (*)
Exhaust gas is black.	Clogged air cleaner element	Clean or replace. See WHEN REQUIRED.
	Worn piston, ring, cylinder liner	Check, repair. (*)
	Defective compression	See adjustment of clearance above.
	Defective turbocharger	Check, replace. (*)
	Breakage of the aftertreatment devices	Replace the aftertreatment devices. (*)
	Defective injector	Check, replace, repair. (*)
Engine hunts.	Air entering suction side of fuel line	Repair place where air is sucked. (*)
Combustion makes breathing sound from time to time.	Defective nozzle	Replace nozzle. (*)
There is knocking (combustion or mechanical)	Low grade fuel being used	Replace with specified fuel.
	Overheating	See “Indicator of engine coolant temperature gauge is in red range” above.
	Breakage of inside of the aftertreatment devices	Replace the aftertreatment devices. (*)
DEF level caution lamp lights up.	Lowering of DEF level	Add DEF.

IF MACHINE MONITOR SHOWS WARNING DISPLAY



When caution lamp (1) is displayed on the machine monitor, or any of “L04”, “L03”, “L01” is displayed at action level (2) part of the failure display screen, or action level “L02” is displayed once and an action level is still displayed after performing remedies, do as follows.

Apply the parking brake and press enter switch (3).

“Current Abnormality” screen is displayed.

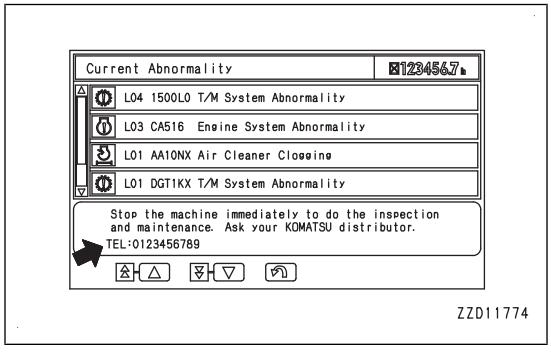
Take actions according to the message shown on the monitor, and check the failure code, and then ask your Komatsu distributor for repair, as necessary.

Telephone number for the point of contact if an error occurs

When the guidance icon is displayed on the monitor, press the enter switch, and the “Current Abnormality” screen is displayed and the telephone number for the point of contact is shown in the message column at the bottom of the screen.

REMARK

If no point of contact telephone number is registered, no telephone number is displayed.
Ask your Komatsu distributor for the telephone number registration if necessary.



MAINTENANCE

⚠ WARNING

Please read and make sure that you understand the SAFETY section before reading this section.

PRECAUTIONS FOR MAINTENANCE

Do not perform any inspection and maintenance operation that are not found in this manual.

CHECK SERVICE METER READING

Check the service meter reading every day to see if the maintenance time has come for any necessary maintenance item to be performed.

KOMATSU GENUINE REPLACEMENT PARTS

Komatsu recommends using Komatsu genuine parts specified in Parts Book as replacement parts.

KOMATSU GENUINE LUBRICANTS

For lubrication of the machine, Komatsu recommends using Komatsu genuine lubricants. Moreover use oil of the specified viscosity according to the ambient temperature.

ALWAYS USE CLEAN WASHER FLUID

Use automobile window washer fluid, and be careful not to let any dirt get into it.

FRESH AND CLEAN LUBRICANTS

Use clean oil and grease. Also, keep the containers of the oil and grease clean. Keep foreign materials away from oil and grease.

CHECK DRAINED OIL AND USED FILTER

At the replacement of the filters when oil is changed, check the old oil and filters for metal particles and foreign materials. If large quantity of metal particles or foreign materials are found, always report to the person in charge, and perform suitable action.

PRECAUTIONS FOR REFILLING OIL OR FUEL

If your machine is equipped with a strainer, do not remove it while filling oil or fuel.

PRECAUTIONS FOR ADDING DEF

Do not remove the strainer while adding DEF.

It is recommended to use a nozzle having a diameter and a length specified by ISO 22241-4 and an auto stop function to add DEF.

PRECAUTIONS FOR WELDING

- When conducting weld repair, turn the starting switch to OFF position and, after confirming that the system operating lamp is turned off, set the battery disconnect switch key to OFF position and pull it out.
- Do not apply a voltage higher than 200 V continuously.
- Connect grounding cable within 1 m of the area to be welded.

  If grounding cable is connected near instruments, connectors, etc., the instruments may malfunction.
- Prevent seals, bearings or bushings from entering the space between the weld zone and grounding point. Seals and the like can cause damage to the nearby parts by catching fire from sparks.
- Do not connect the grounding cable around a pin or to a hydraulic cylinder. Sparks generated there can damage the plated portion.

DO NOT DROP THINGS INSIDE MACHINE

- When opening the inspection windows or the oil filler port of the tank to perform inspection, be careful not to drop nuts, bolts, or tools inside the machine.
  If such things are dropped inside the machine, it may cause damage and/or malfunction of the machine, and will lead to failure. If anything drops, be sure to take it out.

- Do not put unnecessary things in your pockets. Carry only things which are necessary for inspection.

PRECAUTIONS FOR KDPF

When performing inspection and maintenance during or just after regeneration, take care of the high temperature parts.

Even after the engine stops the parts around KDPF may be at high temperature.

PRECAUTIONS FOR SCR ASSEMBLY

Be careful for the high temperature parts when performing inspection and maintenance. Even after the engine stops the parts around SCR device may be at high temperature.

DUSTY JOBSITES

When working at dusty jobsites, observe the following.

- Inspect the dust indicator frequently to see if the air cleaner is clogged.
  Clean the air cleaner element at a shorter interval than specified.
- Clean the radiator fins, aftercooler fins, air conditioner condenser fins, and other parts of the heat exchange equipment more frequently, and take care not to let the fins become clogged.
- Replace the fuel filter more frequently.
- Clean electrical components, especially the starting motor and alternator, to avoid accumulation of dust.
- When checking and replacing the oil or filters, move the machine to a place where there is no dust and take care to prevent dust from entering the system.

AVOID MIXING OIL

Never mix different brand or grade of oil. If a different brand or grade of oil has to be added, drain the old oil and replace all the oil with the new brand or grade of oil.

LOCK INSPECTION COVERS

Lock inspection cover securely into position with the lock bar, etc. If inspection or maintenance is performed with inspection cover not locked in position, there is a danger that it may be suddenly shut by the wind and cause personal injury.

BLEED AIR FROM HYDRAULIC CIRCUIT

When hydraulic equipment is repaired or replaced, or the hydraulic piping is disconnected, the air must be bled from the circuit.

PRECAUTIONS WHEN INSTALLING HYDRAULIC HOSES

- When removing parts at locations where there are O-rings or gasket seals, clean the mounting surface, and replace them with new parts.
  When doing this, be careful not to forget to assemble O-rings and gaskets.
- When installing the hoses, do not twist them or bend them sharply.
  If they are installed so, their service life will be extremely shortened and they may be damaged.

CHECKS AFTER INSPECTION AND MAINTENANCE

If you forget to perform the inspection and maintenance, unexpected problems may occur, and this may lead to personal injury. Always observe the following.

Checks after operation (with engine stopped)

- Have any inspection and maintenance points been forgotten?
- Have all inspection and maintenance items been performed correctly?
- Have any tools or parts been dropped inside the machine? It is particularly dangerous if parts are dropped inside the machine and get caught in the lever linkage mechanism.
- Are there any leakage of coolant or oil? Have all nuts and bolts been tightened?

Checks while the engine is running

- For the checks when the engine is running, see SAFETY, “TWO WORKERS FOR MAINTENANCE WHEN ENGINE IS RUNNING” and pay attention to safety.
- Increase the engine speed to check for the leakage of fuel or oil.
- Check if the inspected and serviced area is normally operated.

FUEL AND LUBRICANTS TO MATCH THE AMBIENT TEMPERATURE

It is necessary to select fuel or lubricant according to the ambient temperature.

OUTLINE OF MAINTENANCE

- Komatsu recommends using Komatsu genuine parts for replacement parts, grease or oil.
- When changing the oil or adding oil, do not mix different types of oil. When changing the type of oil, drain all the old oil and fill completely with the new oil. Always replace the filter at the same time. (There is no problem if the small amount of oil remaining in the piping mixes with the new oil.)
- Unless otherwise specified, when the machine is shipped from the plant, it is filled with the oil and coolant listed in the table below.

Item	Type
Engine oil pan	Engine oil EO15W40-LA (Komatsu genuine)
Transmission case (Incl. brake oil tank)	Power train oil TO10 (Komatsu genuine)
Hydraulic tank	Power train oil TO10 (Komatsu genuine)
Front suspension Rear suspension	Hydraulic oil HO-MVK (Komatsu genuine)
Front differential Center differential case Rear differential case Front final drive case Center final drive case Rear final drive case	Axle oil AXO80 (Komatsu genuine parts)
Radiator	Non-Amine Engine Coolant (AF-NAC) (Komatsu genuine) (density: 30% or above)

HANDLE OIL, FUEL, COOLANT, AND PERFORMING OIL CLINIC

OIL

- Oil is used in the engine and hydraulic equipment under extremely severe conditions (high temperature, high pressure), and deteriorates with use.
  Always use oil that matches the grade and maximum and minimum ambient temperatures recommended in Operation and Maintenance Manual.
  Even if the oil is not dirty, always change the oil at the specified interval.
- Oil corresponds to blood in the human body, always be careful when handling it to prevent any impurities (water, metal particles, dirt, etc.) from getting in.
  The majority of failures with the machine are caused by the entry of such impurities.
  Take particular care not to let any impurities get in when storing or adding oil.
- Never mix oils of different grades or brands.
- Always add the specified amount of oil.
  Having too much oil or too little oil are both causes of failures.
- If the oil in the work equipment is not clear, there is probably water or air getting into the circuit. In such cases, consult your Komatsu distributor.
- When changing the oil, always replace the related filters at the same time.
- We recommend that you have an oil analysis periodically to check the condition of the machine. For those who wish to use this service, consult your Komatsu distributor.
- When using commercially available oil, it may be necessary to reduce the oil change interval. We recommend that you use the Komatsu oil clinic to check the characteristics of the oil in detail.

NOTICE

Komatsu recommends using Komatsu genuine engine oil for KDPF. If engine oil other than Komatsu genuine oil for KDPF is used, it may shorten cleaning interval of KDPF filters, adversely affect the engine such as deteriorated oil may reduce lubricating function, and it may cause failure, shortening of the machine life, lowering of performance and increase of fuel consumption.

FUEL

- To prevent the moisture in the air from condensing and forming water inside the fuel tank, always fill the fuel tank with fuel after completing the day's work.
- The fuel pump is a precision equipment, and if fuel containing water or dirt is used, it cannot work properly.
- Be extremely careful not to let impurities get in when storing or adding fuel.
- Always use the fuel specified for the temperature that is described in Operation and Maintenance Manual.
  - If the fuel is used at the temperatures lower than the specified temperature (particularly at temperatures below -15 °C), the fuel will solidify.
  - If the fuel is used at temperatures higher than the specified temperature, the viscosity will drop, and it may result in troubles such as a drop of output.
- Before starting the engine, or after 10 minutes of adding fuel, drain the sediment and water from the fuel tank.
- If the engine runs out of fuel, or if the filters are replaced, it is necessary to bleed the air from the circuit.
- If there is any foreign material in the fuel tank, wash the tank and fuel system.

NOTICE

The fuel used must be ultra low-sulfur diesel fuel. (≤10 ppm)

To ensure good fuel consumption characteristics and exhaust gas characteristics, the engine mounted on this machine uses an electronically controlled high-pressure fuel injection device and emission gas control system (KDPF). Since the high-pressure fuel injection device requires high precision parts and lubrication, if low viscosity fuel with low lubricating ability is used, its durability may drop considerably. And using fuel with high sulfur content can deteriorate the engine parts and KDPF catalyzer, inducing failures, decrease of the life and degradation in performance.
The ASTM diesel fuel recommended by Komatsu may contain 5 % or less of biofuel. The EN diesel fuel may contain 7 % or less of it. Use the fuel which is filled into the storage tank or the fuel tank of the machine as soon as possible.
When the diesel fuel is changed to the one mixed with the bio-fuel, replace the fuel prefilter cartridge and the fuel main filter cartridge with new ones.

PARAFFIN-BASED FUEL

The paraffin-based fuel is generated by natural gas, coal, vegetable oil, and animal and plant fat, and its main constituent is paraffin.

The paraffin-based fuel has almost the same characteristics as the diesel fuel.

Vegetable oil and fat-derived fuel are called renewable diesel (RD) and hydrogenated vegetable oil (HVO).

The fuel synthesized from natural gas is called gas-to-liquid (GTL).

NOTICE

Use the paraffin-based fuel which agrees with EN15940:2016 and ASTM D975.
As long as the fuel agrees with EN15940:2016 and ASTM D975, its mixing ratio can be up to 100%.

The energy density of the paraffin-based fuel becomes lower up to 10% with that of the diesel fuel. Thus, fuel consumption and output can possibly be lowered.

COOLANT AND WATER FOR DILUTION

- The coolant has the important function of preventing corrosion as well as preventing freezing.
  Even in the areas where freezing is not an issue, the use of coolant is essential.
  Komatsu machines are supplied with Non-Amine Engine Coolant (AF-NAC). Non-Amine Engine Coolant (AF-NAC) has excellent anti-corrosion, antifreeze and cooling properties and can be used continuously for 2 years or 4000 hours.
  Komatsu recommends the use of Non-Amine Engine Coolant (AF-NAC). If you use another coolant, it may cause serious problems, such as corrosion of the engine and aluminum parts of the cooling system.
- When using antifreeze, always observe the precautions given in Operation and Maintenance Manual.
- Non-Amine Engine Coolant (AF-NAC) is already diluted with distilled water, so it is not flammable.
- The coolant density needs to be changed in accordance with the ambient temperature.
  Even in areas where it is not considered necessary to prevent freezing, always use Non-Amine Engine Coolant (AF-NAC) with a density of 30 % or more in order to prevent corrosion of the cooling system.

  Non-Amine Engine Coolant (AF-NAC) is diluted with distilled water that does not contain any ions or water-hardening substances. Never dilute it with water.
- If the engine overheats, wait for the engine to cool down before adding coolant.
- If the coolant level is low, it will cause overheating, and will also cause problems with corrosion due to air entering the coolant.

DEF

- If DEF gets on your skin, it may cause inflammation. Immediately take the contaminated clothes or shoes off and wash it off with water. In addition, use a soap to wash it off thoroughly. If your skin becomes irritated or begins to hurt, immediately consult a doctor for treatment.
- Do not induce vomiting if swallowed. If swallowed, thoroughly rinse mouth with water and consult a doctor for treatment.
- Avoid contact with the eyes. If there is contact, flush with clean water for several minutes and consult a doctor for treatment.
- Wear protective eyeglasses when exposed to DEF to protect from solution splashing in your eyes. Wear rubber gloves when you perform work handling DEF to avoid skin contact.
- When opening the cap of DEF tank of the machine, the ammonia vapour may escape. Keep your face away from the filler port.
- Do not put fluid other than DEF into DEF tank. If diesel fuel or gasoline is added into the tank, it can cause a fire. Some fluids or agents added can create and emit a toxic gas.
- DEF is non-flammable; however, in the case of a fire it may generate an ammonia gas.
- If DEF is spilled, immediately wash and clean the area with water. If spilled DEF is left unattended and the area is not washed and cleaned, it can cause corrosion to the contaminated area and emit toxic gas.
- When disposing of DEF, treat it as an industrial waste. The container for DEF is an industrial waste as well. It should be treated in the same way.
- Never use an iron or aluminum container when disposing DEF, because toxic gas may develop and a chemical reaction may corrode the container. Use a container made of resin (PP, PE) or stainless steel when handling the fluid waste of DEF.

NOTICE

If you add any additional additive agents or water to DEF, the devices in the Urea SCR system may be defective, and conformance to the exhaust gas regulations will be lost.

GREASE

- Grease is used to prevent seizure and noises at the joints.
- This construction equipment is used under heavy-duty conditions. Komatsu recommends using the recommended grease and follow the replacement intervals and recommended ambient temperatures given in this Operation and Maintenance Manual.
- Grease fittings not included in the periodic maintenance section are the grease fittings for overhaul, so they do not need grease.
  If any part becomes stiff after being used for long time, add grease.
- Always wipe off all of the old grease that is pushed out when greasing.
  Be particularly careful to wipe off the old grease in places where sand or dirt sticking in the grease would cause wear of the rotating parts.

PERFORM KOWA (Komatsu Oil Wear Analysis)

KOWA is a maintenance service that makes it possible to prevent machine failures and downtime. With KOWA, the oil is periodically sampled and analyzed. This enables early detection of wear of the machine drive parts and other problems.

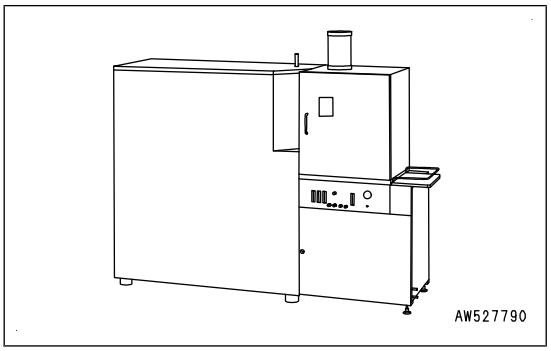
Thanks to long term experience and ample data accumulated, we can grasp condition of your machine accurately and provide proper recommendation.

We strongly recommend you to use this service. The oil analysis is performed at actual cost, so the cost is low, and results of the analysis and recommendations are reported promptly.

KOWA analysis items

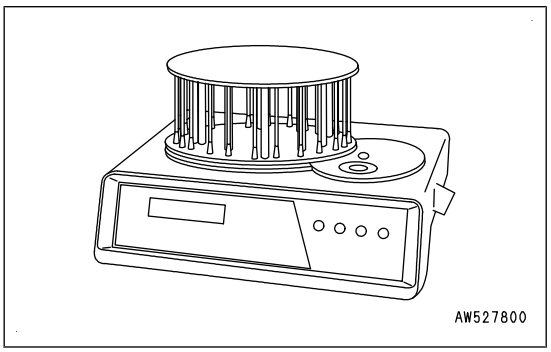
Measurement of metallic powder concentration

An ICP (Inductively Coupled Plasma) analyzer is used for measuring the concentration of iron, copper, and other metal powder in the oil.



Measurement of quantity of iron particles

A PQI (Particle Quantifier Index) measuring instrument is used for measuring the quantity of iron particles of 5 μm or more, enabling early detection of failures.



Others

Measurements are made of items such as the ratio of water, coolant, and fuel in the oil, and dynamic viscosity, if necessary, to enable a highly precise diagnosis of the machine and the components' condition.

Oil sampling interval

500 hours

Precautions when sampling

- Make sure that the oil is well mixed before sampling.
- Perform sampling at regular fixed intervals.
- Do not perform sampling on rainy or windy days when water or dust can get into the oil.

For further details of KOWA, contact your Komatsu distributor.

STORE OIL AND FUEL

- Keep oil and fuel indoors to prevent any water, dirt, or other impurities from getting in.
- When keeping drum cans for a long period, lay the drums so that the filler ports of the drums are located in the lower part of the side to prevent moisture from being sucked in. If drums have to be stored outside, cover them with a waterproof sheet or take other measures to protect them.
- To prevent any change in quality during long-term storage, be sure to use in the order of first in - first out (use the oldest oil or fuel first).

STORE DEF

- Completely seal up its container for storage. Only open containers in a well-ventilated area.
- When storing DEF, avoid direct sunlight. Always use the original container. Make sure that transfer equipment and tank must meet DEF compatible material specification. If DEF is stored in an iron or aluminum container, toxic gas may develop and a chemical reaction may corrode the container.
- The relationship between the upper limit of storage temperature and the storage period of DEF is shown in the table.

Temperature of storage area	Storage period
Max.10 °C	Up to 36 months
Max.25 °C	Up to 18 months
Max.30 °C	Up to 12 months
Max.35 °C	Up to 6 months

*: Do not store DEF in the temperature of 35 °C or above.

FILTER

- Filters are extremely important safety parts. They prevent impurities in the oil, fuel, and air circuits from entering important equipment and causing problems. Replace all filters periodically. For details, see Operation and Maintenance Manual.
  However, when working in severe conditions, replace the filters at shorter intervals according to the oil and fuel (sulfur content) being used.
- Never try to clean and use again the filters (cartridge type). Always replace them with new filters.
- When replacing oil filters, check if any metal particles are attached to the old filters.
  If any metal particles are found, consult your Komatsu distributor.
- Do not open packages of spare filters until just before they are to be used.
- Komatsu recommends using Komatsu genuine filters.

HANDLE ELECTRICAL COMPONENTS

⚠ WARNING

- **When the battery disconnect switch key is turned to OFF position for the maintenance work, always pull out the key and keep it with you. If the key is left in the switch, someone may turn on the power by mistake. It is dangerous that causes an electric shock.**
- **It is extremely dangerous if the electrical component becomes wet or the covering of the wiring is damaged. This will cause an electrical leakage and may lead to malfunction of the machine.**
  Do not wash the inside of the operator's cab with water.
  When washing the machine, be careful not to let water get into the electrical components.

- Wipe off the water drops stuck around connectors before removing the connectors and do not let water drops get into the connectors when removing the connectors of electrical components after washing the machine or in the rain.
- Checking and maintenance items are the checking fan belt tension, the checking damage of the fan belt, and the checking battery fluid level.
- Komatsu recommends installing electric components specified by Komatsu.
- External electro-magnetic interference may cause malfunction of the control system controller. Accordingly, consult your Komatsu distributor before installing a radio receiver or other wireless equipment to the machine.
- When working at the seashore, keep the electrical component clean to prevent corrosion.
- When installing electrical component, connect it to the special power supply connector.
  Do not connect the optional power supply to the fuse or starting switch or battery relay, etc.

STANDARD TIGHTENING TORQUE FOR BOLTS AND NUTS

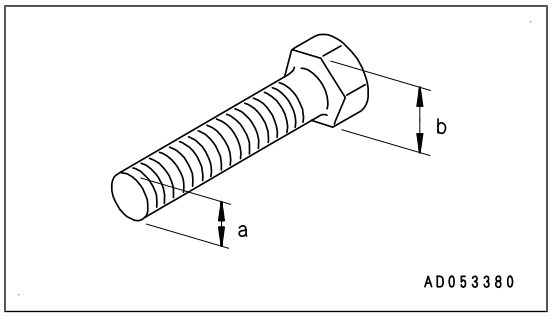
Tightening torque list

⚠ CAUTION

If nuts, bolts, or other parts are not tightened to the specified torque, it will cause looseness or damage to the tightened parts, and this will cause failure of the machine or problems with operation.
Always be careful when tightening parts.

Unless otherwise specified, tighten the metric nuts and bolts to the torque shown in the table below.

If it is necessary to replace any nut or bolt, Komatsu recommends using Komatsu genuine part of the same size as the part that is removed.

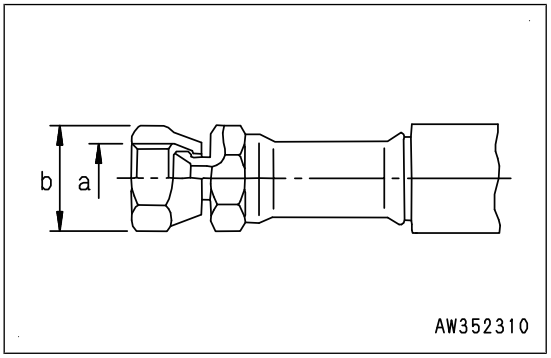


Outside diameter of the thread portion “a” (mm)	Width across flats “b” (mm)	Tightening torque (Nm {kgfm})	
		Target value	Allowable range
6	10	13.3 {1.35}	11.8 to 14.7 {1.2 to 1.5}
8	13	31 {3.2}	27 to 34 {2.8 to 3.5}
10	17	67 {6.8}	59 to 74 {6 to 7.5}
12	19	111 {11.3}	98 to 123 {10 to 12.5}
14	22	172 {17.5}	153 to 190 {15.5 to 19.5}
16	24	260 {26.5}	235 to 285 {23.5 to 29.5}
18	27	360 {37}	320 to 400 {33 to 41}
20	30	510 {52.3}	455 to 565 {46.5 to 58}
22	32	688 {70.3}	610 to 765 {62.5 to 78}
24	36	883 {90}	785 to 980 {80 to 100}
27	41	1295 {133}	1150 to 1440 {118 to 147}
30	46	1715 {175}	1520 to 1910 {155 to 195}
33	50	2205 {225}	1960 to 2450 {200 to 250}
36	55	2745 {280}	2450 to 3040 {250 to 310}
39	60	3260 {333}	2890 to 3630 {295 to 370}

Tighten the hoses to the torque shown in the table.

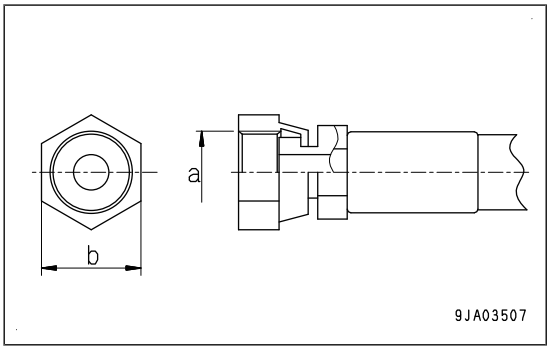
Taper seal

Hose nominal number	Thread size “a” (mm)	Width across flats “b” (mm)	Tightening torque (Nm {kgfm})	
			Target value	Allowable range
02	14	19	44 {4.5}	34 to 63 {3.5 to 6.5}
03	18	24	78 {8.0}	59 to 98 {6.0 to 10.0}
04	22	27	103 {10.5}	84 to 132 {8.5 to 13.5}
05	24	32	157 {16.0}	128 to 186 {13.0 to 19.0}
06	30	36	216 {22.0}	177 to 245 {18.0 to 25.0}
10	33	41	216 {22.0}	177 to 245 {18.0 to 25.0}



Face seal

Hose nominal number	Width across flats “b” (mm)	Tightening torque (Nm {kgfm})	
		Target value	Allowable range
02	19	44 {4.5}	34 to 54 {3.5 to 5.5}
03	22	74 {7.5}	54 to 93 {5.5 to 9.5}
04	27	103 {10.5}	84 to 132 {8.5 to 13.5}
05	32	157 {16.0}	128 to 186 {13.0 to 19.0}
06	36	216 {22.0}	177 to 245 {18.0 to 25.0}



MAINTENANCE SCHEDULE

- When using the engine oil for cold district, the maintenance intervals of the engine oil and filter cartridge are changed to for every 250 hours.
- If the currently used diesel fuel which does not include the bio-fuel is changed to the one mixed with the bio-fuel, the replacement interval of the fuel filter is changed as well. See “MAINTENANCE INTERVAL WHEN DIESEL FUEL MIXED WITH BIO-FUEL IS USED”.
- Ask your Komatsu distributor for changing the maintenance interval of the machine monitor.

MAINTENANCE SCHEDULE TABLE

MAINTENANCE INTERVAL WHEN DIESEL FUEL MIXED WITH BIO-FUEL IS USED

If the diesel fuel which does not include the bio-fuel is changed to the diesel fuel mixed with bio-fuel, set the maintenance interval as follows.

Replace the fuel prefilter cartridge

When the machine is operated first 250 hours after the diesel fuel has been changed to the diesel fuel mixed with bio-fuel, and when the machine is operated further 250 hours.

After that, replace it within 500 hours as a periodic replacement by the service meter reading.

Replace the fuel main filter cartridge

When the machine is operated first 250 hours after the diesel fuel has been changed to the diesel fuel mixed with bio-fuel, and when the machine is operated further 250 hours.

After that, replace it within 1000 hours as a periodic replacement by the service meter reading.

Maintenance interval after the diesel fuel has been changed to the diesel fuel mixed with bio-fuel

	Operating hours of the machine			Service meter			
				Every 500 hours		Every 1000 hours	
	When changed	250 hours after changing	500 hours after changing	Within 500 operating hours after changing	After 500 operating hours after changing	Within 500 operating hours after changing	After 500 operating hours after changing
Fuel prefilter cartridge	Replace.	Replace.	Replace.	-	Replace.	-	Replace.
Fuel main filter cartridge	Replace.	Replace.	Replace.	-	-	-	Replace.

MAINTENANCE PROCEDURE

INITIAL 250 HOURS MAINTENANCE (ONLY AFTER THE FIRST 250 HOURS)

Perform the following maintenance only after the first 250 hours.

- Replace transmission filter element (valve side, brake cooling side)
- Change oil in transmission case
- Change oil in brake oil tank, replace brake oil filter element
- Change oil in final drive case
- Change oil in differential case

For details of the method of replacement or maintenance. See EVERY 1000 HOURS MAINTENANCE and EVERY 2000 HOURS MAINTENANCE.

WHEN REQUIRED

METHOD FOR CHECKING, CLEANING AND REPLACING AIR CLEANER

After the outer element has been cleaned 6 times, or if the air cleaner element has been used for 1 year, replace the outer element, inner element, and O-ring.

If the air cleaner clogging caution lamp flashes and the machine monitor displays action level “E01” during operation immediately after the outer element is cleaned, replace the element even if the outer element has not been cleaned 6 times or the air cleaner element has not been used more than 1 year.

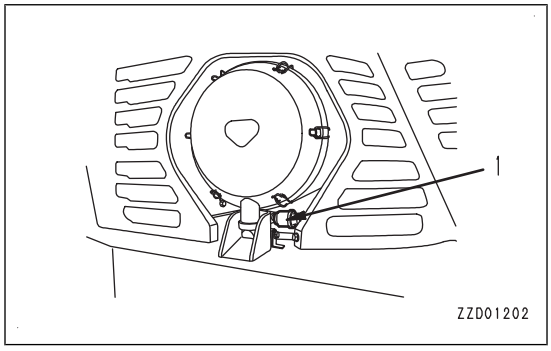
METHOD FOR CHECKING AIR CLEANER

NOTICE

Do not clean the outer element until the red line of the dust indicator is at 7.5 kPa {0.076 kgf/cm^2}.

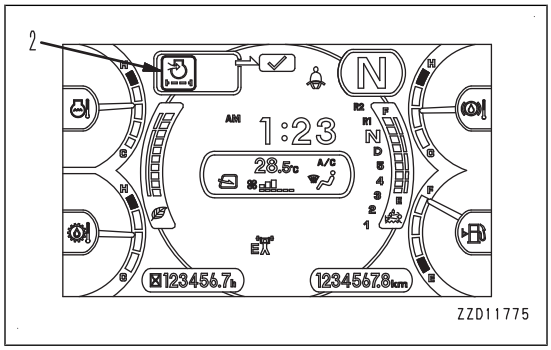
If the element is cleaned frequently, the filtering efficiency of the air cleaner will drop and this will reduce the service life of the engine.

Check if the red line of dust indicator (1) is at 7.5 kPa {0.076 kgf/cm^2}.
If it is at 7.5 kPa {0.076 kgf/cm^2}, clean the outer element.



REMARK

Air cleaner clogging caution lamp (2) is on the machine monitor.
If the air cleaner clogging caution lamp lights up and the machine monitor displays “L01” during operation, the air cleaner is clogged. Clean the outer element in this case, as well.



METHOD FOR CLEANING AIR CLEANER OUTER ELEMENT

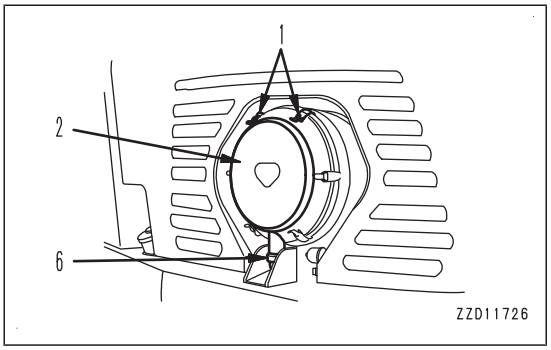
⚠ WARNING

- **Dirt will fly if compressed air is used for cleaning.**
  If dirt gets into your eyes it may cause blindness, and if you breathe in the dust it may damage your lungs.
  To prevent these problems, always wear protective eyeglasses, dust mask, and other protective equipment.
- **When pulling out the outer element from the air cleaner body, make sure that you are standing on a firm place.**
  If your footing is not secure when you perform the operation, there is danger of falling and suffering injury.

NOTICE

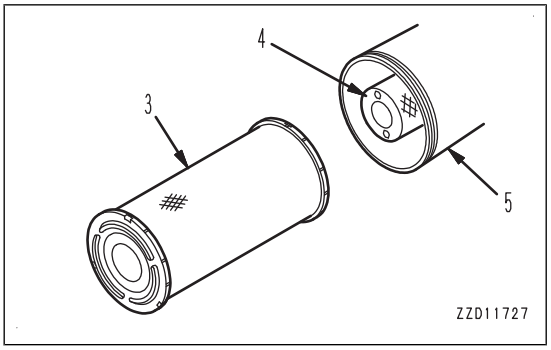
- **Never remove the inner element.**
  If it is removed, dirt will enter and can cause an engine trouble.
- **Do not use a screwdriver or other tool.**
- **When cleaning the element, do not hit it or hit anything with the element.**
- **Before and after cleaning the element, do not leave or keep it under direct sunlight.**

1. Stop the engine.
2. Undo hooks (1) (6 places) and remove cover (2).



3. Hold the outer element (3), rock it lightly up and down and to the right and left, and pull it out while turning it to the right or left.
4. When outer element (3) is removed, check that inner element (4) does not come off or incline.

   If it is at an angle, push it straight to the bottom with your hand.
5. After removing outer element (3), cover the inner element (4) with a clean cloth or tape to prevent dirt or dust from entering.



6. Clean dusts in inside and on cover (2) of air cleaner body (5) by using a clean cloth or brush.
7. If any dust is attached to vacuator valve (6) installed to cover (2), remove it.

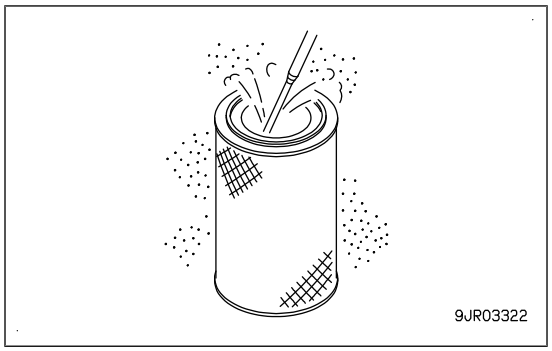
   Check that the lip of vacuator valve (6) has no crack.

   If there is any crack, replace.

   NOTICE

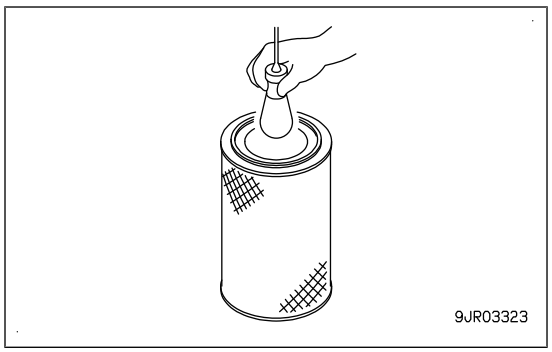
   - **If a damaged element is used, air will pass the air cleaner filter and will be sucked into the engine. Do not damage the element, when cleaning it. If the element is damaged, replace it with a new element.**
   - **When cleaning the element, do not tap it or hit it against something.**
   - **Do not use the element with damaged pleats or a damaged gasket or seal.**

8. When the outer element has been cleaned 6 times or used for 1 year, replace it.
   - When the element needs to be replaced
     Replace the inner and outer elements with new ones.
   - When the element does not need to be replaced
     Clean the outer element. Continue the cleaning procedure.
9. Blow dry compressed air (Max. 0.2 MPa {2.1 kgf/cm^2}) from the inside of outer element (3) along the pleats.
10. Blow along the pleats from the outside, then blow again from the inside.



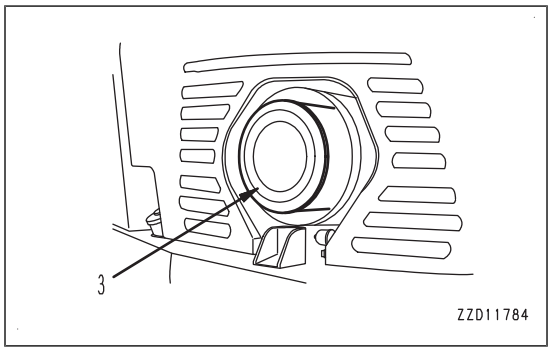
11. After cleaning, illuminate the inside of outer element (3) with an electric bulb to check.

    If any hole or thin place is found, replace the outer element.
12. Remove the cover of cloth or tape attached to inner element (4).
13. Check the seal of the cleaned or new element for sticking of dusts and oil and wipe them off, if any.



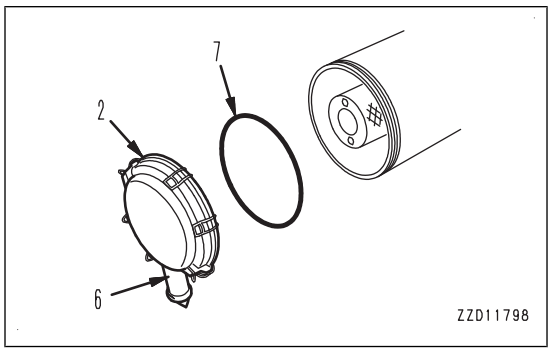
14. Push outer element (3) straight into air cleaner body (5) with your hand.

    Hold outer element (3), and rock it lightly up and down and to the right and left while pushing it in, and you can insert it easily.
15. Install cover (2) as follows.



1) Check that O-ring (7) is fitted to cover (2).
2) Align cover (2) with the element.

   Insert cover (2) with vacuator valve (6) at the bottom into air cleaner body (5)

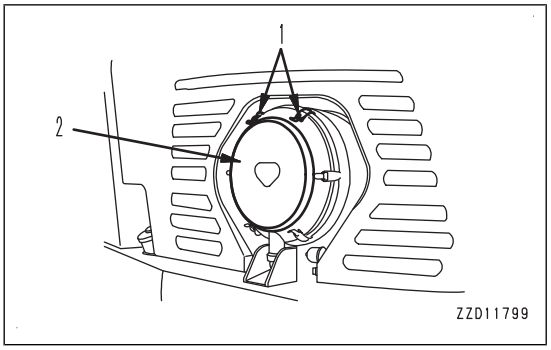


3) Lock the tips of hooks (1) (6 places) on the protrusion of the air cleaner body (5).

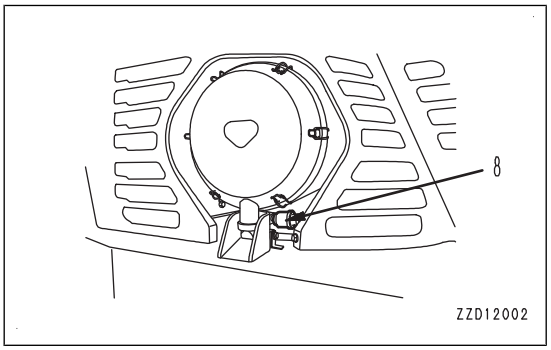
   Lock hooks (1) diagonally, (top and bottom, right and left) in the same way as when tightening bolts.

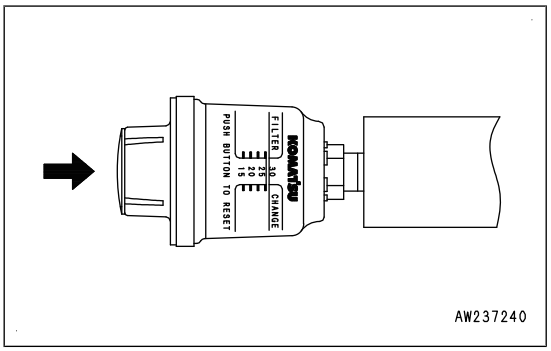
4) When cover (2) is installed, check that the clearance between air cleaner body (5) and cover (2) is not too large.

   If the clearance is too large, remove cover (2), and then install it again.



16. Push the head of dust indicator (8) to return the red line to its original position.



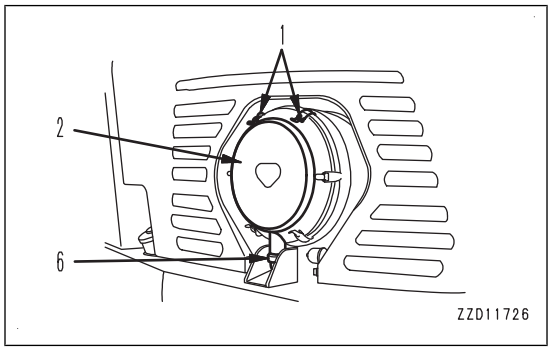


METHOD FOR REPLACING AIR CLEANER ELEMENT

⚠ WARNING

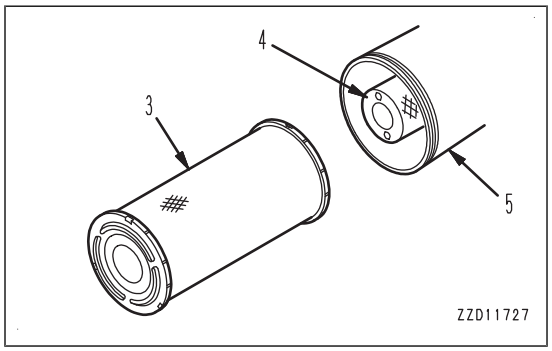
When pulling out the outer element from the air cleaner body, make sure that you are standing on a firm place.
If your footing is not secure when you perform the operation, there is danger of falling and suffering injury.

1. Stop the engine.
2. Undo hooks (1) (6 places) and remove cover (2).



3. Hold the outer element (3), rock it lightly up and down and to the right and left, and pull it out while turning it to the right or left.
4. When outer element (3) is removed, check that inner element (4) does not come off or incline.

   If it is at an angle, push it straight to the bottom with your hand.
5. After removing outer element (3), cover the inner element (4) with a clean cloth or tape to prevent dirt or dust from entering.



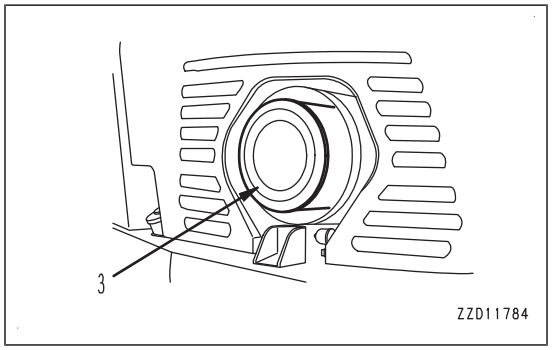
6. Clean dusts in inside and on cover (2) of air cleaner body (5) by using a clean cloth or brush.
7. If any dust is attached to vacuator valve (6) installed to cover (2), remove it.

   Check that the lip of vacuator valve (6) has no crack.

   If there is any crack, replace.
8. Remove inner element (4), then quickly install the new inner element.

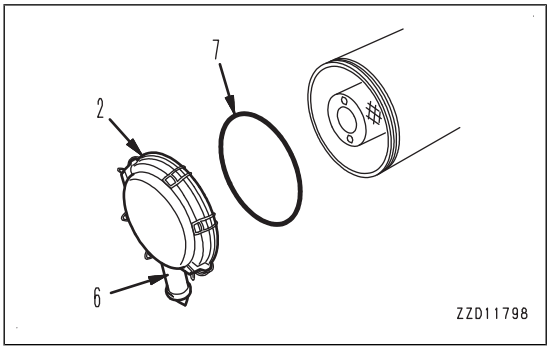
   Install the inner element securely so that it does not move.
9. Push new outer element (3) in straight with your hand into the air cleaner body.

   Hold the element, and rock it lightly up and down and to the right and left while pushing it in, the element can be inserted easily.
10. Install cover (2) as follows.



1) Replace O-ring (7) with a new one.
2) Align cover (2) with the element.

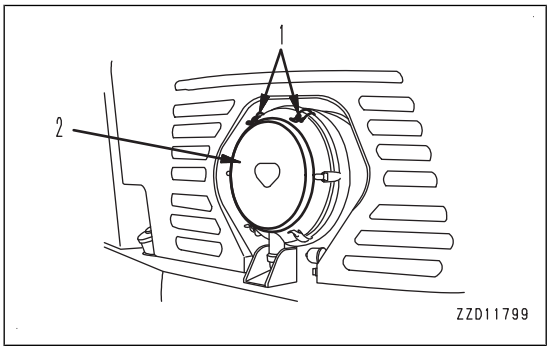
   Insert cover (2) with vacuator valve (6) at the bottom into air cleaner body (5)



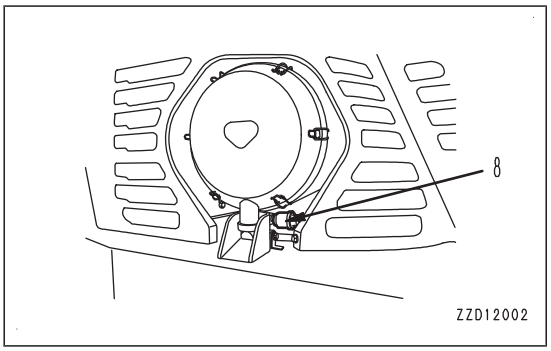
3) Lock the tips of hooks (1) (6 places) on the protrusion of the air cleaner body (5).

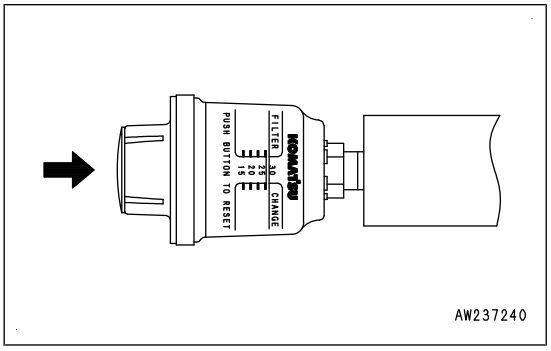
   Lock hooks (1) diagonally, (top and bottom, right and left) in the same way as when tightening bolts.
4) When cover (2) is installed, check that the clearance between air cleaner body (5) and cover (2) is not too large.

   If the clearance is too large, remove cover (2), and then install it again.



11. Push the head of dust indicator (8) to return the red line to its original position.





METHOD FOR CLEANING INSIDE OF COOLING SYSTEM

⚠ WARNING

- **Immediately after the engine is stopped, the coolant is still hot and the pressure is accumulated in the radiator.**
  If the radiator cap is removed in this condition and the coolant is drained, it may cause burns.
  Accordingly, wait until the coolant temperature drops, then turn the cap slowly to release the pressure.
- **Start the engine and clean the inside of the cooling system.**
  When standing up or leaving the operator's seat, set the gear shift lever to NEUTRAL position (N) and set the parking brake switch to "PARKING" position.
- **When the undercover is removed, there is a danger of touching the fan.**
  Never enter in the rear part of the machine when the engine is running.

Place the machine on a level ground when cleaning or changing the coolant.

Clean the inside of the cooling system, change the coolant according to the table below.

Coolant	Interval for cleaning inside of cooling system and changing coolant
Non-Amine Engine Coolant (AF-NAC)	Every 2 years or 4000 hours, whichever comes sooner

The coolant has the important function of preventing corrosion as well as preventing freezing.

Even in the areas where freezing is not an issue, the use of coolant is essential.

Komatsu machines are supplied with Non-Amine Engine Coolant (AF-NAC).

Non-Amine Engine Coolant (AF-NAC) has excellent anti-corrosion, antifreeze and cooling properties and can be used continuously for 2 years or 4000 hours.

Komatsu recommends the use of Non-Amine Engine Coolant (AF-NAC).

If you use another coolant, it may cause serious problems, such as corrosion of the engine and aluminum parts of the cooling system.

To maintain the anti-corrosion properties of Non-Amine Engine Coolant (AF-NAC), always keep the density of Non-Amine Engine Coolant between 30 % and 64 %.

Non-Amine Engine Coolant (AF-NAC) is already diluted with distilled water. When using coolant, investigate the lowest temperature in the past and decide the density for the coolant from the coolant density table below.

When deciding the density for the coolant, set it for a temperature 10 °C (50 °F) below the actual lowest temperature in the working area.

The coolant density varies according to the ambient temperature, but it must be over 30 % at least.

Coolant density table

Min. atmospheric temperature	°C	Min. -10	-15	-20	-25	-30	-35	-40	-45	-50
	°F	Min. 14	5	-4	-13	-22	-31	-40	-49	-58
Density (%)		30	36	41	46	50	54	58	61	64

⚠ WARNING

- **Coolant is toxic.**
  When opening the drain valve, be careful not to get coolant on you.
  If it gets in your eyes, flush your eyes with large amount of fresh water and see a doctor immediately.
- **When handling the cooling water containing coolant that has been drained during changing the coolant or repair of radiator, contact your Komatsu distributor or request a qualified company to perform the operation.**
  Coolant is toxic, so never pour it into drainage ditches or drain it onto the ground surface.

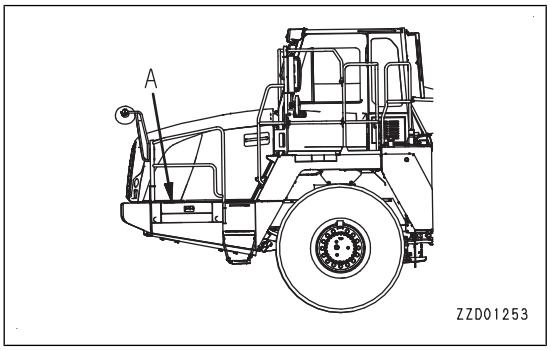
Non-Amine Engine Coolant (AF-NAC) is already diluted with distilled water, so it is not flammable.

Check the density with a coolant tester.

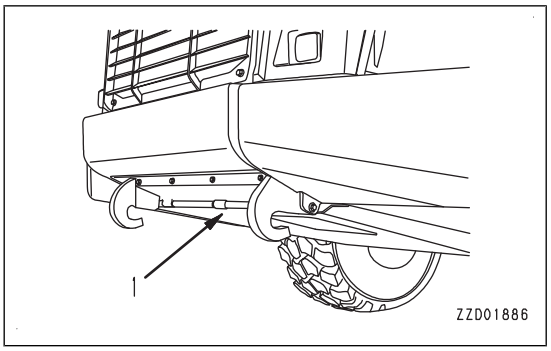
Items to be prepared

- A container to receive drain coolant more than the specified amount of coolant
- A hose to add coolant

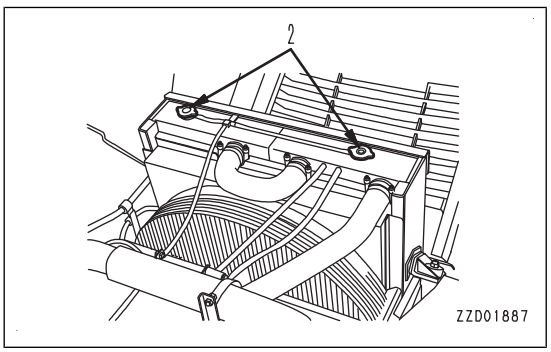
When getting on or off the machine with carrying coolant, place it once in part (A) to ensure your safety.



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



3. Check that the radiator (2) cap is cooled enough to touch by bare hands and turn it a little to release the pressure, and then turn it slowly to remove it.
4. Place the container to receive the coolant.



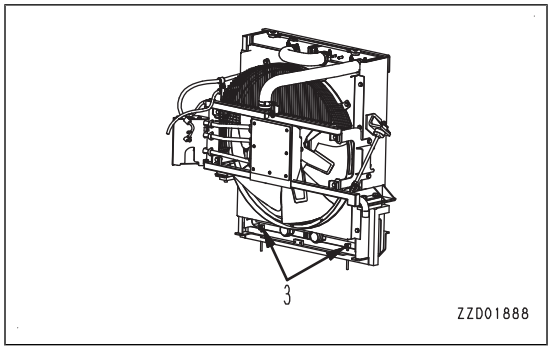
5. Open drain valve (3) at the bottom of the radiator and drain valve (4) of the oil cooler and drain the coolant.
6. After draining the coolant, close drain valves (3) and (4) and fill with city water.

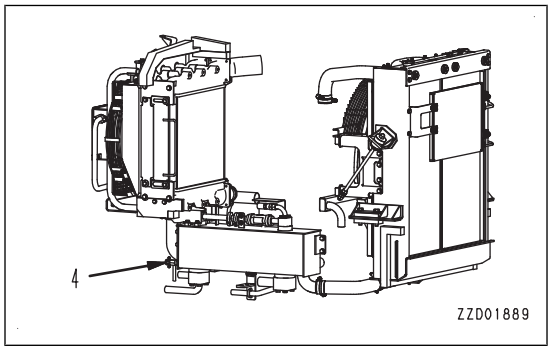
   Add water until it fills the radiator.
7. Start the engine.

   Run the engine at low idle for 10 minutes.
8. Stop the engine and open drain valves (3) and (4) to drain the water.
9. After draining the water, close drain valves (3) and (4).
10. Fill with coolant through the coolant filler port up to the mouth of the port.

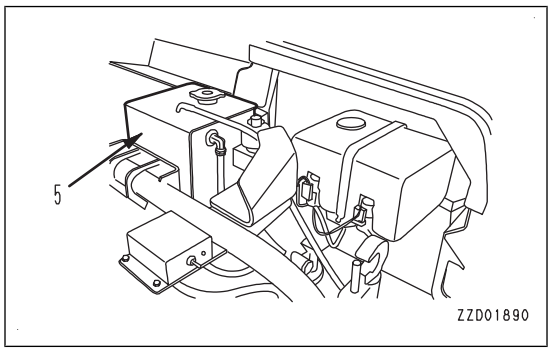
    For the concentration of Non-Amine Engine Coolant (AF-NAC) , see “Coolant density table”.
11. Run the engine at low idle for 5 minutes to remove the air from the coolant, then run at high idle for a further 5 minutes.

    At this time, remove radiator cap (2).





12. Stop the engine.
13. Approximately 3 minutes after stopping the engine, add coolant to near the mouth of the water filler port.
14. After adding the coolant, tighten radiator cap (2).
15. Drain the coolant in reservoir tank (5).
16. Clean the inside of reservoir tank (5).
17. Add coolant up to the middle between FULL and LOW.



CHECK KOMATSU MAINTENANCE-FREE BATTERY INDICATOR

(if equipped)

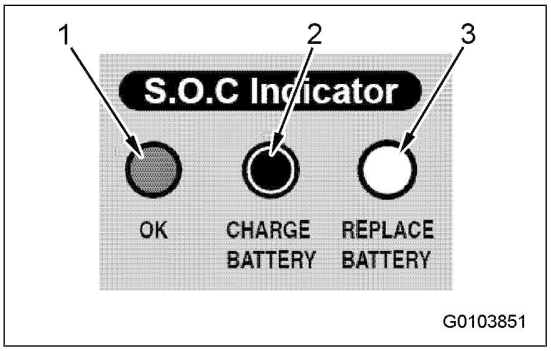
Perform this check before operating the machine.

⚠ WARNING

- **Do not let an open flame be near the battery. The battery releases the flammable gas, and it can cause an explosion.**
- **Battery electrolyte is dangerous object. Be careful not to let it get in your eyes or on your skin. If it gets on you, wash it off with a lot of water and consult a doctor.**
- **Battery electrolyte cannot be topped up.**

- Indicators that show the charging state and battery electrolyte level are located on the top of the battery.
- Check the display status and follow the instructions.
- The indicator display can not be correct at low temperatures.

1. Green: Normal
2. Black: Charging is required. Follow the instruction manual for the battery charger and charge it correctly.
3. White: Battery electrolyte is insufficient. Replace the battery with a new one. Battery electrolyte cannot be topped up.

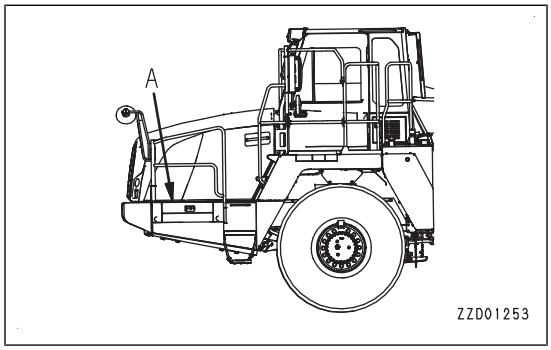


CLEAN HYDRAULIC TANK STRAINER

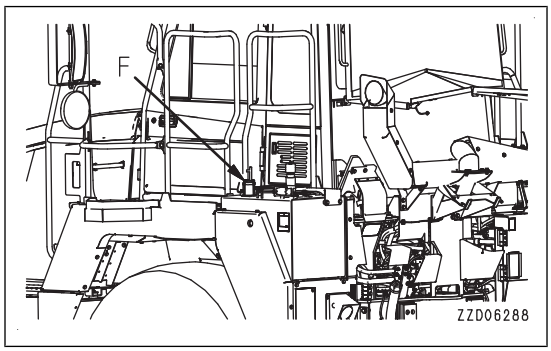
⚠ WARNING

- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **When removing the oil filler cap, the oil may spurt out. Rotate it slowly to release the internal pressure, then remove it with care.**

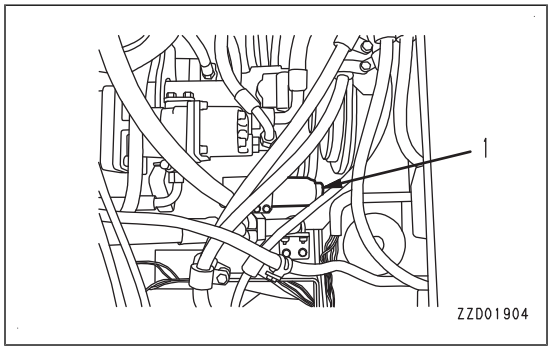
When getting on or off the machine with carrying a strainer, a tool, etc., place it once in part (A) to ensure your safety.



1. Raise the front section of the cab. For details, see “METHOD FOR OPERATING CAB TILT”.
2. Turn the cap of oil filler port (F) to release the internal pressure before removing the cap.



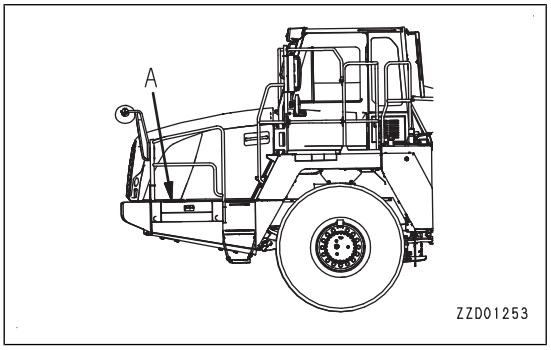
3. Remove hydraulic oil strainer cap (1).
4. Take out the strainer from the strainer case.
5. Wash the strainer and strainer case.
6. After checking and cleaning, set the strainer to the strainer case.
7. Tighten hydraulic oil strainer cap (1).
   When doing this, replace O-ring.
8. Install the cap of oil filler port (F).
9. Lower the cab. For details, see “METHOD FOR OPERATING CAB TILT”.



METHOD FOR CHECKING WINDOW WASHER FLUID LEVEL, ADDING FLUID

Perform this check if there is air in the window washer fluid.

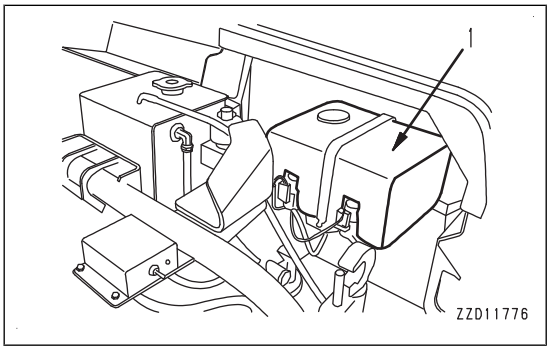
When getting on or off the machine with carrying window washer fluid, place it once in part (A) to ensure your safety.



Check the fluid level in window washer tank (1).
If the level is low, add window washer fluid for automobile.

Be careful not to let dirt or dust get in when adding fluid.

When operating at below freezing point, use fluid with antifreeze.



METHOD FOR CHECKING AND MAINTENANCE AIR CONDITIONER

METHOD FOR CHECKING REFRIGERANT LEVEL FOR AIR CONDITIONER (GAS)

⚠ WARNING

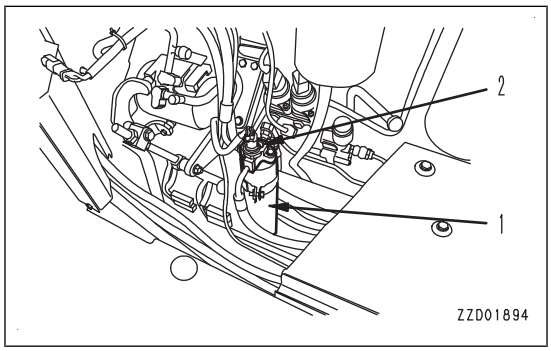
If the refrigerant used in the air conditioner gets into your eyes or on your hands, it may cause loss of sight or frostbite.
Never touch the refrigerant.
Do not loosen any part of the refrigerant circuit.
Do not bring any open flame close to any point where the refrigerant gas is leaking.

If the cooling effect is poor, there is probably lack of refrigerant gas (Hydrofluorocarbons HFC-134a).

1. When checking the refrigerant gas (Hydrofluorocarbons HFC-134a) level, set the machine under the following condition.
   1) Start the engine and run it at approximately 1500 rpm.
   2) Press the fan switch and set the air flow of the air conditioner to the maximum.
   3) Turn air conditioner switch ON.
   4) Press the temperature control switch and set the temperature to the lowest level.
   5) Press FRESH/RECIRC air selector switch and set it to FRESH mode.
   6) Fully close the doors and windows.
2. Check sight glass (2) of receiver drier (1) on the left side of the engine.

   If the condition of sight glass (2) is “correct” as shown in the figure below, the condition is normal.

   If the condition of sight glass (2) is “overfilling” or “insufficient” as shown in the figure below, ask your Komatsu distributor for service.

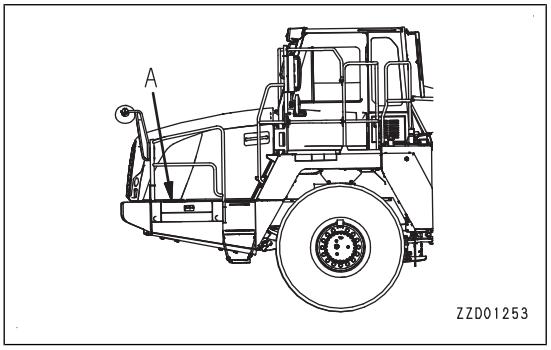


	Quantity of refrigerant	Condition
 9JD01895	Correct	Only few bubbles are contained. Bubbles disappear and the refrigerant becomes transparent when the engine speed is increased gradually from idle to 1500 rpm.
 9JD01896	Overfilling	No bubble is contained. In this case, both high and low pressures are high and cooling efficiency is low.
 9JD01898	Insufficient	Bubbles pass continuously.

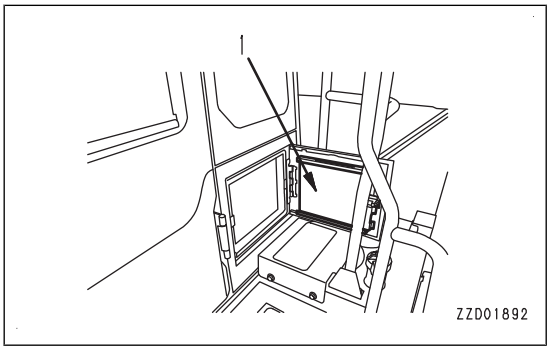
METHOD FOR CLEANING AIR CONDITIONER AIR FILTERS

If the air filter at the suction port of the air conditioner unit or the air filter at the fresh air intake port become clogged, the cooling or heating capacity will drop, so clean the filters.

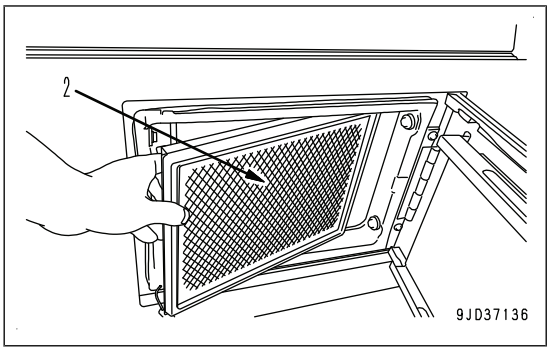
When getting on or off the machine with carrying a nozzle and a brush, place it once in part (A) to ensure your safety.



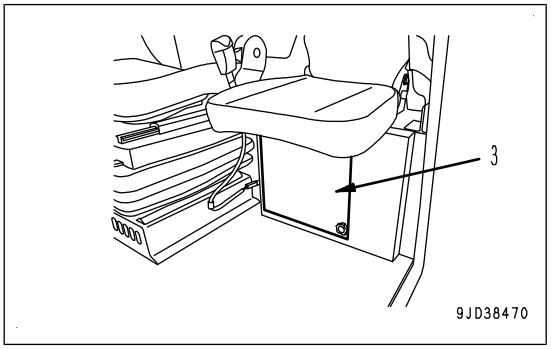
1. Open the cover (1) on the side of the cab.



2. Pull up the left end part of the air filter (fresh air filter) (2). Pull it out at an angle.
3. Blow compressed air from the inside of the air filter (fresh air filter) (2) along the pleats.



4. Open the cover (3) at the rear left of the operator's seat.
5. Pull out the air filter (recirculation air filter).
6. Blow compressed air from the inside of the air filter (recirculation air filter) along the pleats.



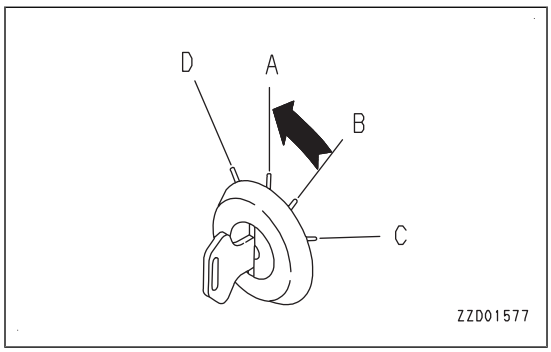
METHOD FOR REPLACING SLOW-BLOW FUSE

NOTICE

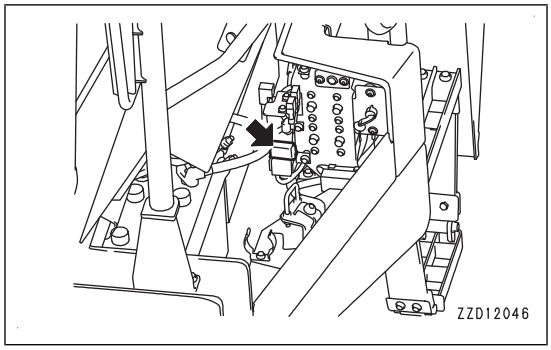
- **Before replacing the slow blow fuse, be sure to turn the starting switch to OFF position (A) and turn the battery disconnect switch to OFF position.**
- **Replace the slow blow fuse with the one of the same capacity.**

Should the slow-blow fuse is blown, investigate the cause and take necessary actions.

1. Turn the starting switch to OFF position (A).
2. Check that the system operating lamp is OFF.
3. Turn the battery disconnect switch to OFF position.



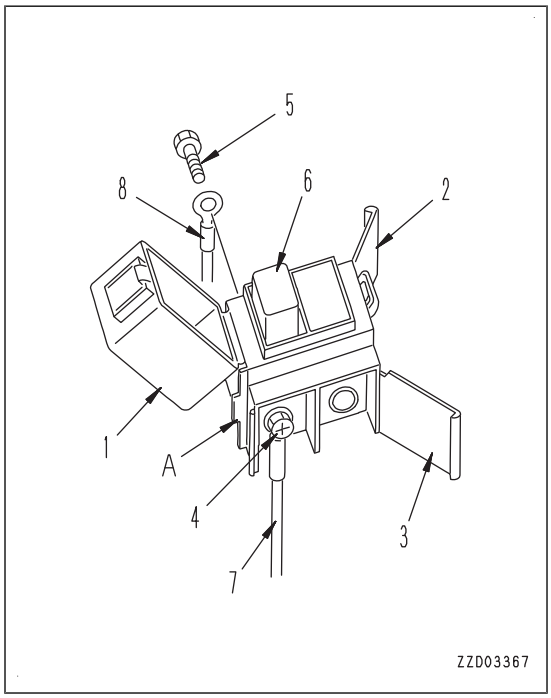
4. Remove the slow-blow fuse box from the machine body.



5. Open covers (1), (2) and (3) of the slow-blow fuse box.

   You can remove the box easily by removing the covers (2) and (3) with a flat-head screwdriver using projection (A) as a fulcrum.
6. Loosen and remove screws (4) and (5).

   When you remove screws (4) and (5), slow-blow fuse (6) comes off along with electric wiring (7) and (8).
7. Install a new slow-blow fuse to the slow-blow fuse box along with electric wiring (7) and (8) with screws (4) and (5).
8. Close covers (1), (2), and (3).
9. Install the slow-blow fuse box to the machine.



METHOD FOR CHECKING DUMP BODY

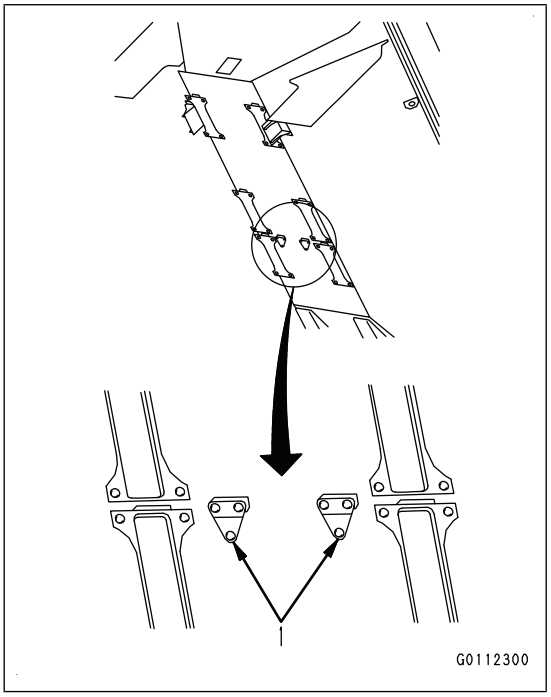
Check that there are no cracks in the dump body.

1. Install the personal fall-arrest equipment to the anchor point for tie-off (1).

   The anchor point for tie-off (1) is on the dump body side (2 places).
2. Clean the dump body so that you can check it easily.
3. Check each portion of the dump body for damage.

   If any cracks or abnormal wear are found, perform repairs.

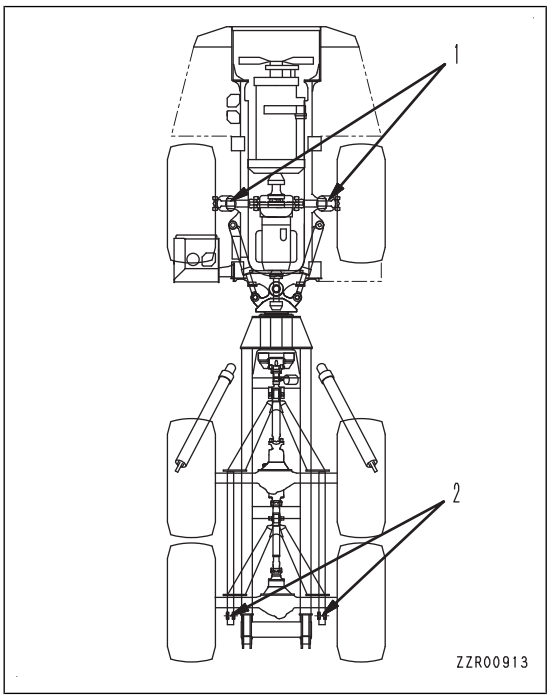
   Contact your Komatsu distributor for details of the repair procedure.



METHOD FOR CHECKING LENGTH OF SUSPENSION CYLINDER

If the machine reacts to the rough ground conditions when traveling, such as making high bounds or the cylinder retracting and hitting the stopper, check the following.

Check front suspension (1) and the rear suspension (2) with the machine unloaded.

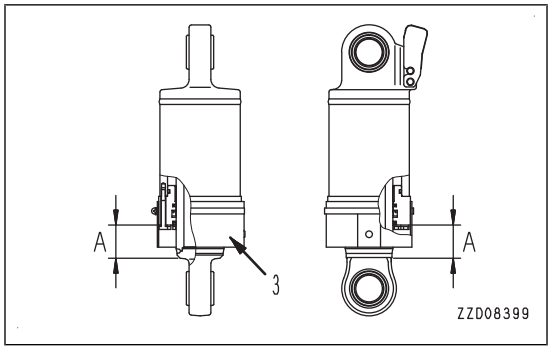


1. Remove cover (3) of the suspension.
2. Measure distance (A) from the shoulder at the head end of the suspension cylinder rod to the top surface of the flange.

   Front suspension dimension (A) : 153 to 173 mm

   Rear suspension dimension (A) : 96 to 106 mm

   If any abnormality is found when checking the front and rear suspension, ask your Komatsu distributor for inspection.



METHOD FOR BLEEDING AIR FROM BRAKE CIRCUIT

⚠ WARNING

Stop the machine on a flat place, turn the parking brake switch to “PARKING” position, chock the tires, and then bleed air.

When any brake circuit device is repaired or replaced, or the hydraulic piping is disconnected, bleed air from the brake circuit.

Always bleed air from the brake circuit in the order of the slack adjuster and wheel brake.

To make it easier to bleed the air, warm the oil up to a temperature of at least 40 °C before bleeding the air.

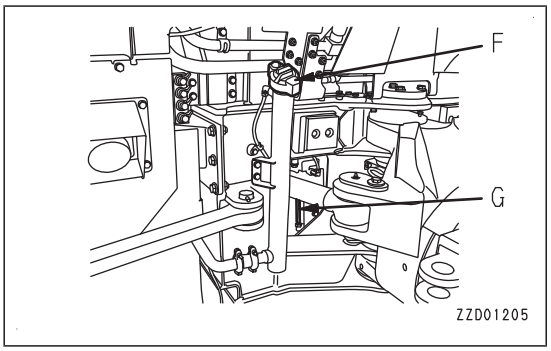
Bleed the air from the slack adjuster, front brakes, and center blades in the same way on both the right and left sides.

Items to be prepared

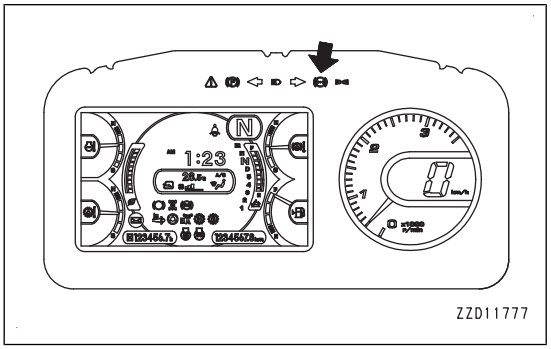
- Vinyl hose
- Container with oil in it

1. Start the engine.
2. Check that the oil level in the transmission case is at the specified level with sight gauge (G).

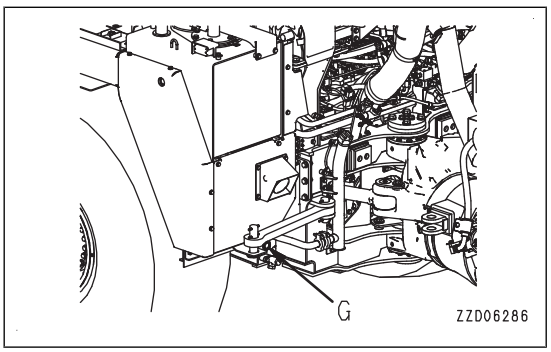
   If the oil level is low, add oil through oil filler port (F).



3. Check if the brake oil pressure caution lamp is OFF.



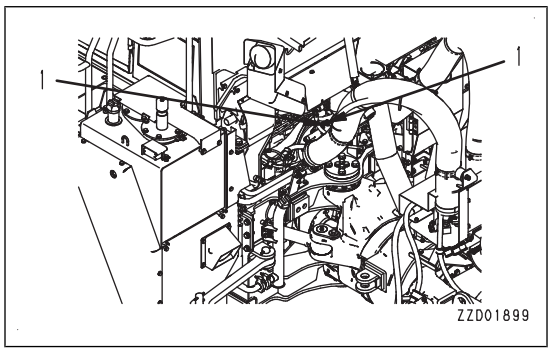
   - If the brake oil pressure caution lamp is OFF, bleed air from the slack adjuster.
   - If the brake oil pressure caution lamp is ON, check the oil level in the brake oil tank with sight gauge (G). If the caution lamp is ON while the oil level is at the specified level, call your Komatsu distributor.



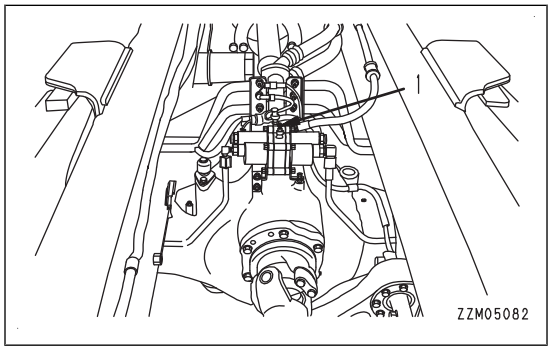
METHOD FOR BLEEDING AIR FROM SLACK ADJUSTER

1. Remove the cap of bleeder screw (1) of slack adjuster.

   Front



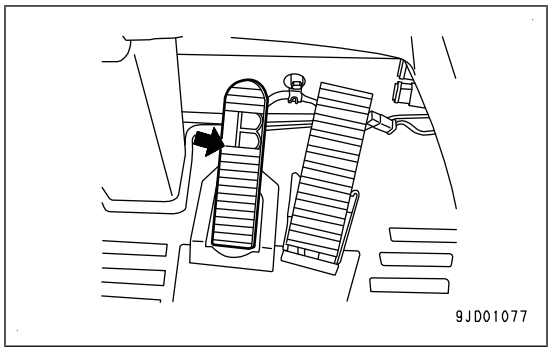
   Center



2. Connect a vinyl hose to either of the right and left bleeder screws (1).

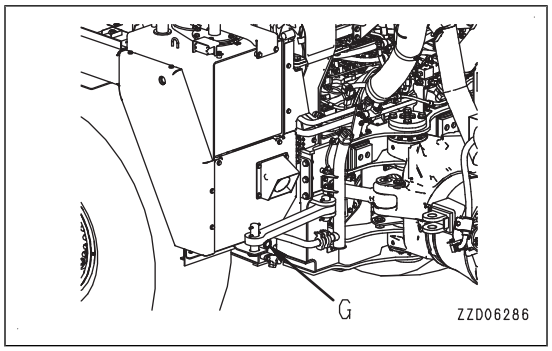
   Use a commercially available vinyl hose.
3. Place a container with oil in it
4. Put the other end in the oil in the container approximately 50 mm .
5. Depress and hold the brake pedal.
6. Loosen bleeder screw (1) approximately 3/4 turns.

   Oil containing air is discharged.



- If the brake oil pressure caution lamp lights up while air is being bled from the front slack adjuster, perform the following procedure.
  1) Tighten bleeder screw (1).
  2) Depress the brake pedal 8 to 10 times.
     Increase the oil pressure in the accumulator.
  3) Use sight gauge (G) to check if there is oil remaining in the brake oil tank.

     If there is no oil in the tank, stop the engine.
     When the engine is stopped, the oil level rises and oil is automatically supplied to the brake oil tank.

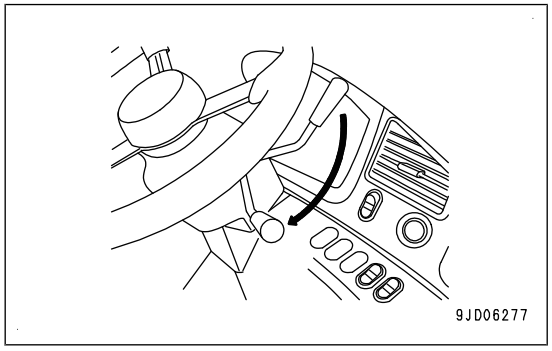


- If the brake oil pressure caution lamp lights up while air is being bled from the center slack adjuster, perform the following procedure.
  1) Tighten bleeder screw (1).
  2) Use sight gauge (G) to check if there is oil remaining in the brake oil tank.
     If there is no oil in the tank, stop the engine.
     When the engine is stopped, the oil level rises and oil is automatically supplied to the brake oil tank.

7. Keep depressing the brake pedal and check that no bubble comes out through the vinyl hose.
8. Next, pull and hold the retarder control lever.
9. Loosen bleeder screw (1) approximately 3/4 turns.

   Oil containing air is discharged.

   Keep pulling the retarder control lever. When no bubble is discharged through the vinyl hose, all air is bled.
10. Tighten bleeder screw (1) securely.
11. Install the cap to bleeder screw (1).
12. Bleed air from bleeder screw (1) on the opposite side according to steps 1 to 11.

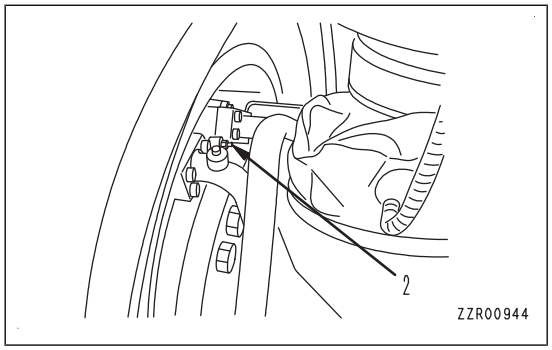


Next, bleed air from the wheel brake.

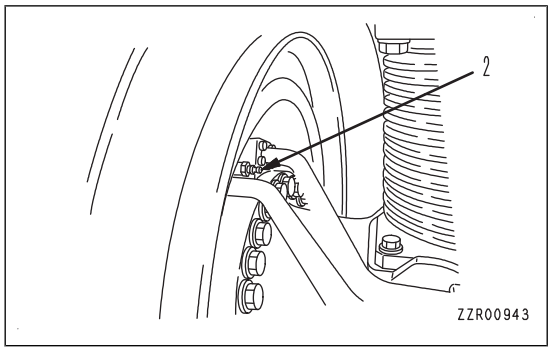
METHOD FOR BLEEDING AIR FROM WHEEL BRAKE

1. Remove the cap of bleeder screw (2).

   Front



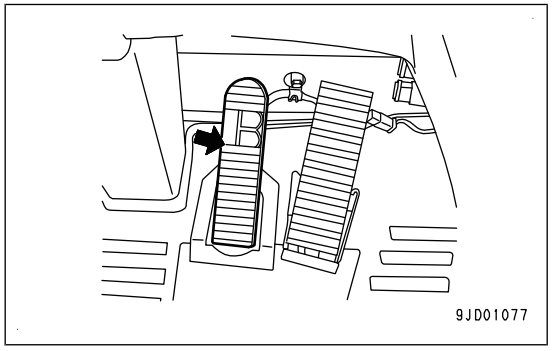
   Center



2. Connect a vinyl hose to bleeder screw (2).

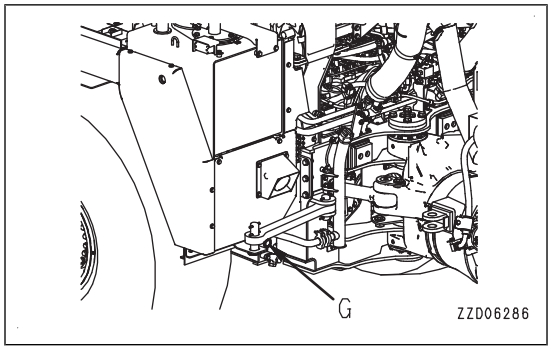
   Use a commercially available vinyl hose.
3. Place a container with oil in it
4. Put the other end in the oil in the container approximately 50 mm .
5. Depress and hold the brake pedal.
6. Loosen bleeder screw (2) approximately 3/4 turns.

   Oil containing air is discharged.



- If the brake oil pressure caution lamp lights up while air is being bled from the front brake, perform the following procedure.

1) Tighten bleeder screw (2).
2) Depress the brake pedal 8 to 10 times.
   Increase the oil pressure in the accumulator.
3) Use sight gauge (G) to check if there is oil remaining in the brake oil tank.
   If there is no oil in the tank, stop the engine.
   When the engine is stopped, the oil level rises and oil is automatically supplied to the brake oil tank.



- If the brake oil pressure caution lamp lights up while air is being bled from the center brake, perform the following procedure.
  1) Tighten bleeder screw (2).
  2) Use sight gauge (G) to check if there is oil remaining in the brake oil tank.
     If there is no oil in the tank, stop the engine.
     When the engine is stopped, the oil level rises and oil is automatically supplied to the brake oil tank.

7. Keep depressing the brake pedal and check that no bubble comes out through the vinyl hose.
8. Tighten bleeder screw (2) securely.
9. Install the cap to bleeder screw (2).
10. Bleed air from bleeder screw (2) on the opposite side according to steps 1 to 9.

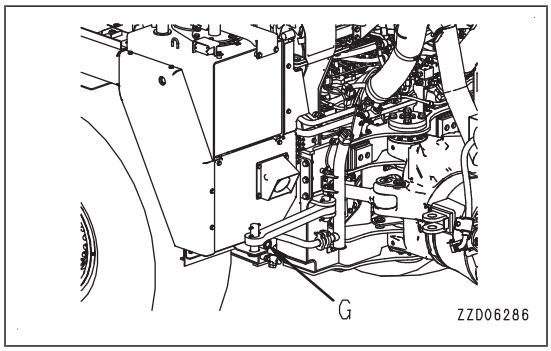
After bleeding air, check the oil level in the transmission.

ACTIONS AFTER BLEEDING AIR

Adjust the oil level in the transmission case to the specified level.

1. Stop the engine for 2 to 3 minutes.

   When the engine is stopped, the oil level will rise and oil will be automatically supplied to the brake oil tank.
2. Check the oil level in the brake oil tank with sight gauge (G).
3. Adjust the oil level in the transmission case to the specified level.



METHOD FOR BLEEDING AIR FROM HYDRAULIC CIRCUIT

When hydraulic equipment is repaired or replaced, or the hydraulic piping is disconnected, the air must be bled from the circuit.

NOTICE

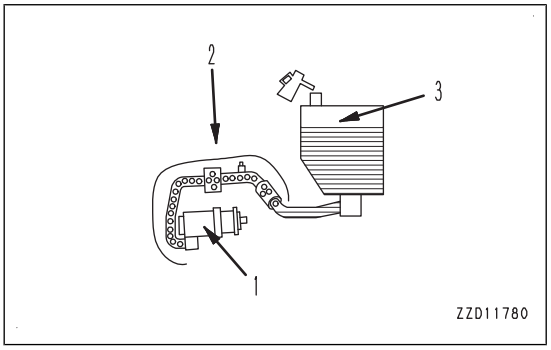
If the air is not bled, it stays in the suction piping and can damage the pump.
When filling the tank with oil after draining the hydraulic oil with the pump suction piping disconnected, be sure to bleed air.

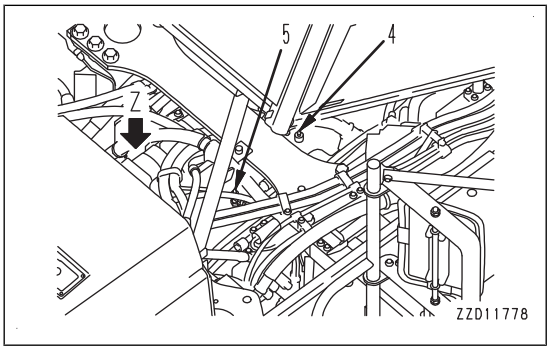
(1) Pump

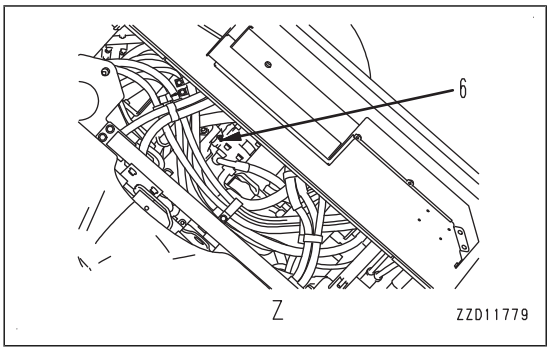
(2) Air stays in intake piping

(3) Hydraulic tank

1. Raise the front section of the cab. For details, see “METHOD FOR OPERATING CAB TILT”.
2. Bleed air through bleeders (4) to (6).
3. After bleeding air, lower the cab. For details, see “METHOD FOR OPERATING CAB TILT”.







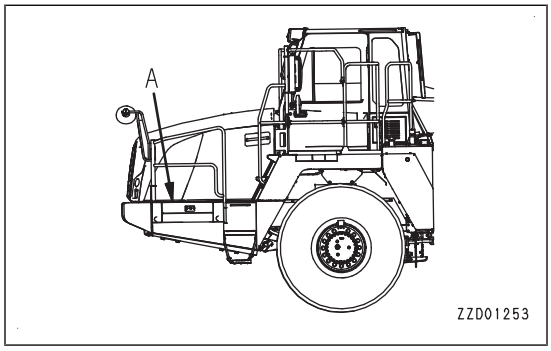
METHOD FOR CHECKING PLAY OF OUTPUT COUPLING OF OUTPUT SHAFT

⚠ WARNING

To prevent the machine from moving, set the parking brake switch to "PARKING", stop the engine, then chock the wheels.

If any unusual noise occurs around the output shaft (1) or front drive shaft (2), the rubber inside the output shaft may be deteriorated or damaged, so check the play of coupling (3) as follows.

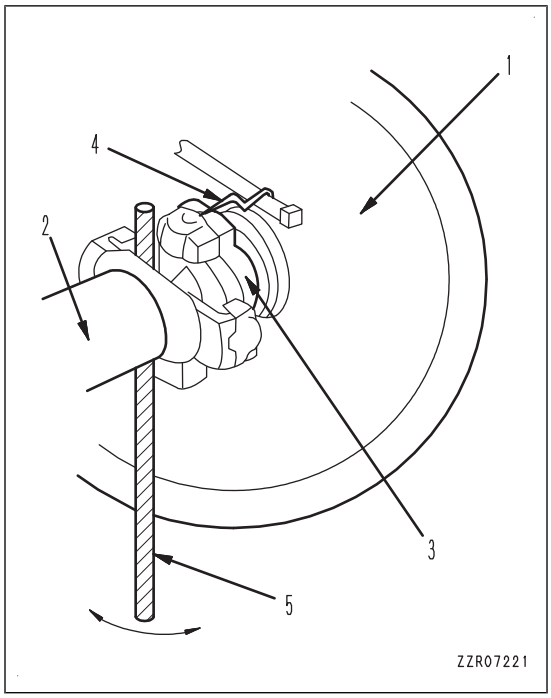
When getting on or off the machine with carrying a wire, a tool, etc., place it once in part (A) to ensure your safety.



1. Install wire (4) as shown in the figure.
2. By using the tip of the wire as a benchmark, measure the amount of movement (L) of the coupling.
3. Rotate the coupling at a force of approximately 49 N {5 kgf} to the circumferential direction with bar (5), etc.
4. Mark the position of the wire.
5. Check that the engine crankshaft is not rotating.

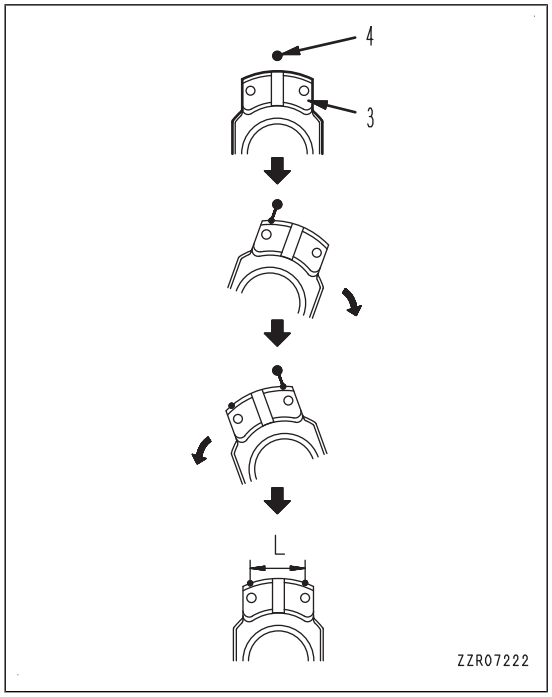
   REMARK

   If excessive force is applied in rotating the coupling, the engine rotates at idle and it becomes impossible to judge accurately.



6. Rotate the coupling in the reverse direction from step 3.
7. Mark the position of the wire similarly to Step 3.
8. Measure the amount of movement (L) of the coupling by using the marks made in steps 4 and 7.

   If amount of movement (L) is more than 12 mm (0.5 in), the rubber inside the output shaft may be deteriorated or damaged, so ask your Komatsu distributor for disassembly and inspection of the internal parts of the output shaft.

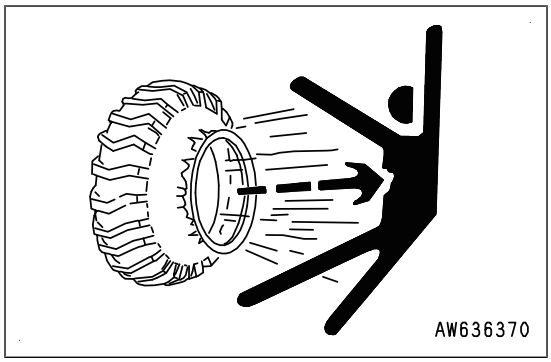


SELECT AND CHECK TIRES

⚠ WARNING

If a tire or a rim is handled improperly, the tire may burst or may be damaged and the rim may be broken and scattered, and that 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 do the work.
- Never perform welding or light a fire near the tire.



TIRE SELECTION

⚠ 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.

The speed display varies with the tire size.

Consult your Komatsu distributor when using optional tires.

	Maximum load (kg)	Size (standard)	Size (option)	Remarks
Front tire	8300	23.5–R25	750/65R25(30/65R25)	For construction machinery, type 1
Center tire	9300	23.5–R25	750/65R25(30/65R25)	
Rear tire	9300	23.5–R25	750/65R25(30/65R25)	

METHOD FOR CHECKING AND INFLATING TIRE

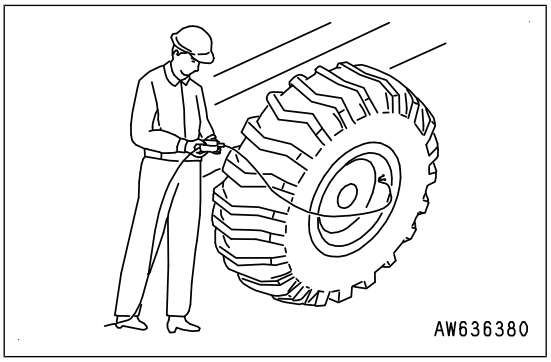
⚠ WARNING

- **When inflating the tire, check that no one can enter the area around the tire, and always use an air chuck with a clip that can be fixed to the air valve.**
- **To prevent the tire inflation pressure from becoming too high, measure the pressure from time to time with an air gauge while pumping up the tire.**
- **If the rim is not fitted normally, it may be broken and scattered while the tire is inflated. Accordingly, place a guard around the tire and do not work in front of the rim but work on the tread side of the tire.**
- **Abnormal drop of inflation pressure and abnormal fitting of the rim indicate a trouble in the tire or rim. In this case, be sure to ask a tire repair shop for repair.**
- **Be sure to observe the specified inflation pressure.**
- **Do not adjust the tire inflation pressure immediately after traveling at high speed or operating under heavy load.**

Check the tire inflation pressure before starting work while the tires are cold.

When inflating a tire, use an air chuck which can be fixed to the air valve of the tire as shown in the figure.

Do not work in front of the rim but work on the tread side of the tire.



1. Measure the inflation pressure with a tire inflation pressure gauge.
2. Adjust the inflation pressure properly.
   The proper inflation pressure is shown below.

Tire size	Inflation pressure kPa {kgf/cm^2}		
	Front tire	Center tire	Rear tire
23.5–R25 (Standard)	441 {4.5}	441 {4.5}	441 {4.5}
750/65R25(30/65/R25) (Option)	340 {3.5}	400 {4.1}	400 {4.1}

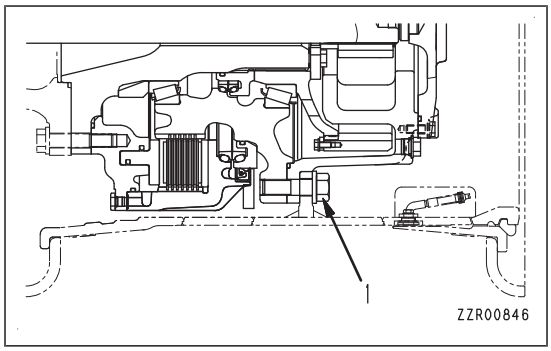
NOTICE

If the tires are used when the inflation pressure is less than the value given in the table above, the rim may be damaged.
Always keep the tire inflation pressure within ±10 kPa {0.1 kgf/cm^2} of the value in the table above.

PRECAUTIONS FOR REPLACING TIRES

After tightening hub bolts (1) when replacing the tire, travel for 5 to 6 km , tighten the bolts again to settle all the contacting parts.

In particular, there are more contacting parts on the rear wheels than on the front wheels, so it will take time for the parts to settle. For this reason, repeat the tightening process during the first 50 hours after installation.



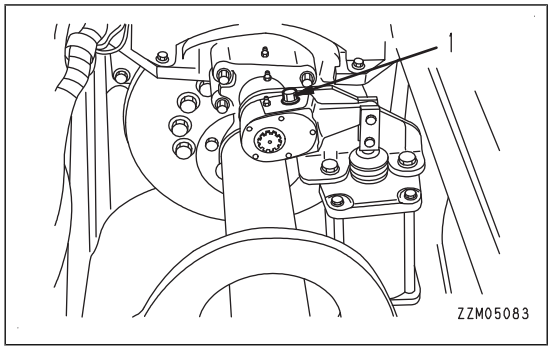
METHOD FOR ADJUSTING PARKING BRAKE

⚠ WARNING

- **To prevent the parking brake from being automatically applied during the adjustment operation, raise the brake oil pressure to a sufficiently high level and hang a warning tag that can be seen clearly to prevent any other person from operating the parking brake switch.**
- **Never put any oil or grease on the surface of the pad or disc.**

If the parking brake effect is poor, adjust as follows.

1. Check that the brake oil pressure caution lamp is OFF (the brake accumulator pressure is sufficiently high).
2. Release the parking brake.
3. Push down the lock of adjustment screw (1).
4. Turn adjustment screw (1) counterclockwise and fit the pad to the disc.
5. Push down the lock of adjustment screw (1).



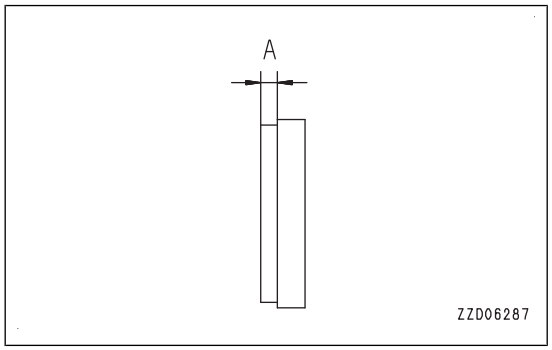
6. Return 240±15 ° (2/3 turns).

   Measure thickness (A) of the pad, and if it is 1.5 mm or less, contact your Komatsu distributor to have it replaced.

   When performing the first adjustment after replacing the pad, push down the lock portion of adjustment screw (1) and turn it back clockwise 360±15° (1 turn).
7. After adjustment, check the parking brake performance.

   For the performance check method for the parking brake,see “METHOD FOR CHECKING PARKING BRAKE PERFORMANCE”.

   If the machine moves, ask your Komatsu distributor for inspection.



METHOD FOR CHECKING AND ADJUSTING BODY MOUNT

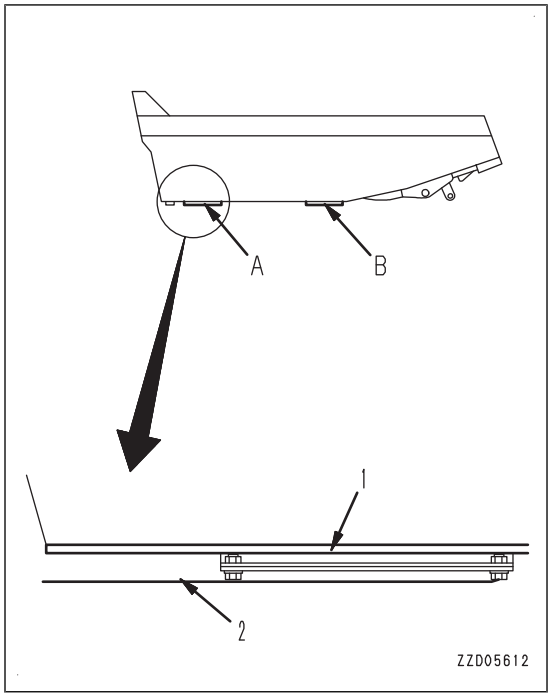
⚠ WARNING

When performing inspection of the machine with the dump body raised, always set the dump lever to HOLD position, lock with the dump lever lock knob, then use the body pivot pin.

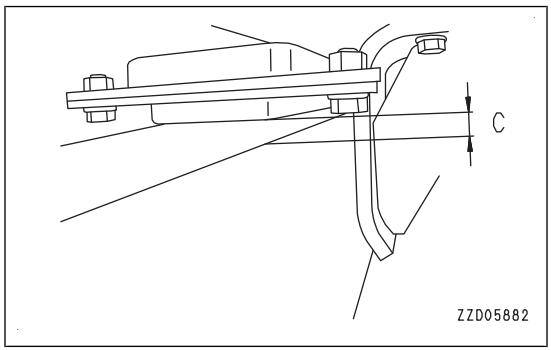
If the dump body mounting is not adjusted correctly, the frame may be damaged. Check and adjust it correctly.

1. Clean the dump body and frame to make them easier to check.
2. Check that bottom face (1) of the bottom mounting of dump body is set evenly on top face (2) of the frame.

   Check 4 places in total at (A) and (B) on right and left.



   If there is clearance (C) between bottom face (1) of the bottom mounting and top face (2) of the frame, ask your Komatsu distributor for adjustment.
3. Lower the dump body and check that all 4 places of the bottom face of the bottom mounting are set evenly on top face (2) of the frame.



CHECKS BEFORE STARTING

For the following items, see OPERATION, “METHOD FOR CHECKING BEFORE STARTING”.

- Drain water and sediment from fuel tank
- Check looseness of wheel hub bolts, and retighten bolts
- Check oil level in transmission case, add oil
- Check dust indicator
- Check battery disconnect switch
- Check water separator, drain water and sediment
- Check oil level in hydraulic tank, add oil
- Check cab mounting bolts and pins
- Check coolant level, add coolant
- Check oil level in engine oil pan, add oil
- Check electric wiring
- Check fuel level, add fuel
- Check DEF level, add DEF
- Check tire pressure
- Check centralized warning lamp, alarm buzzer, pilot lamps, and meters
- Check brake
- Check secondary steering
- Check manual secondary steering
- Check automatic secondary steering
- Check dump body positioner operation
- Check backup alarm operation
- Check horn operation

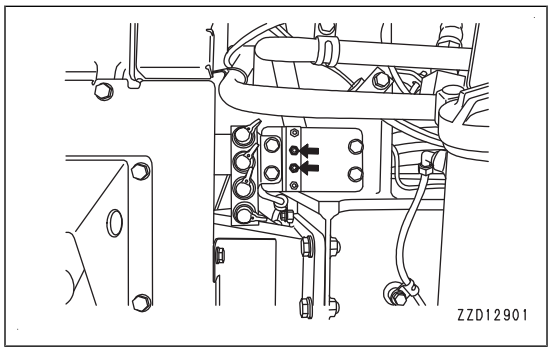
EVERY 50 HOURS MAINTENANCE

METHOD FOR LUBRICATING

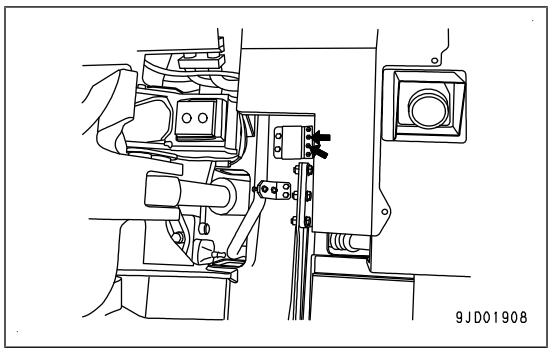
1. Stop the engine.
2. By using a grease pump, pump in grease through the grease fittings.
3. Check visually that the greasing has been performed properly.
4. After greasing, wipe off any old grease that is pushed out.

Perform the greasing work every day when operating in places where the grease flows out easily, such as when traveling through mud or water.

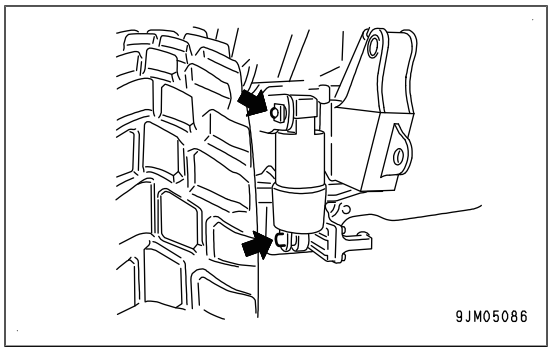
Front suspension (left) (2 places)



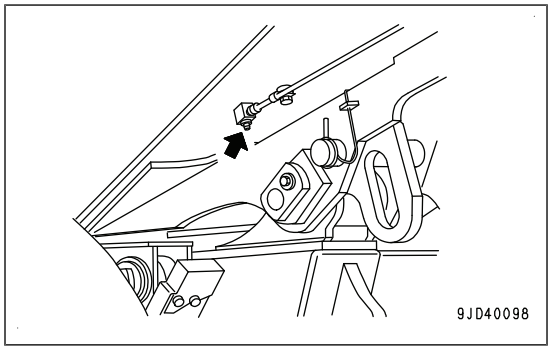
Front suspension (right) (2 places)



Rear suspension (right and left: 2 places each)



Tail gate hinge pin (right and left) (1 place each)
(if equipped)



EVERY 250 HOURS MAINTENANCE

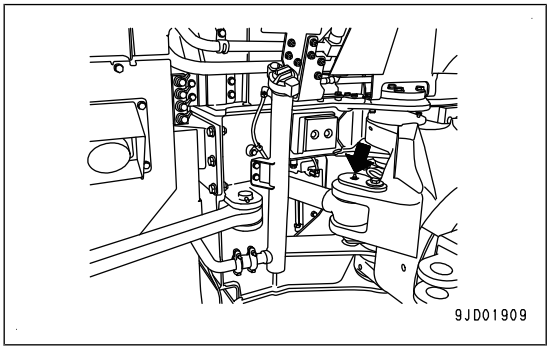
Maintenance for every 50 hours service should be performed at the same time.

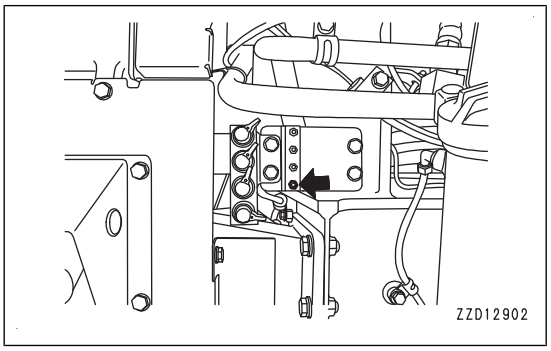
METHOD FOR LUBRICATING

1. Stop the engine.
2. By using a grease pump, pump in grease through the grease fittings.
3. Check visually that the greasing has been performed properly.
4. After greasing, wipe off any old grease that is pushed out.

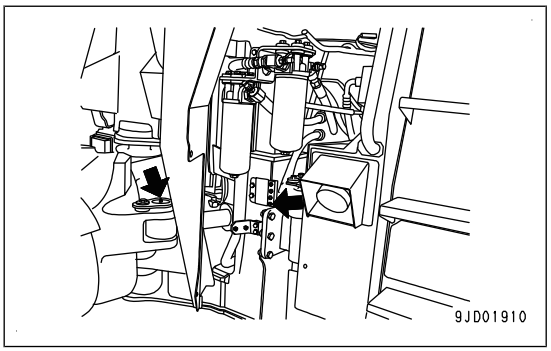
Perform the greasing work every day when operating in places where the grease flows out easily, such as when traveling through mud or water.

Steering cylinder (left) (2 places)

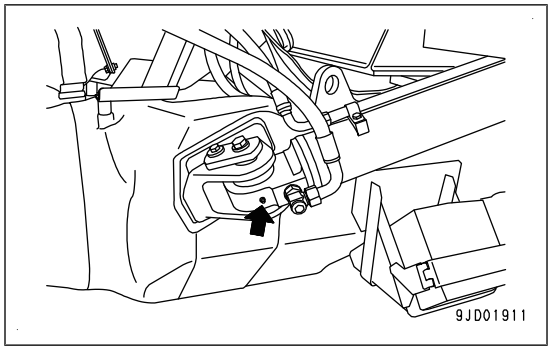


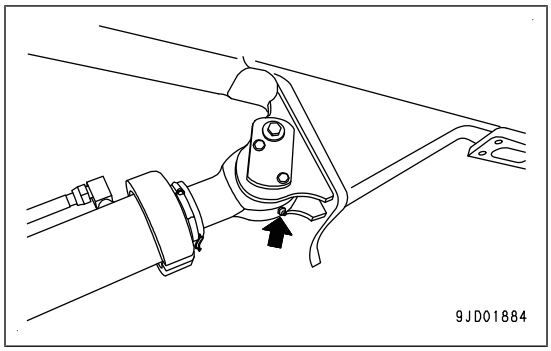


Steering cylinder (right) (2 places)

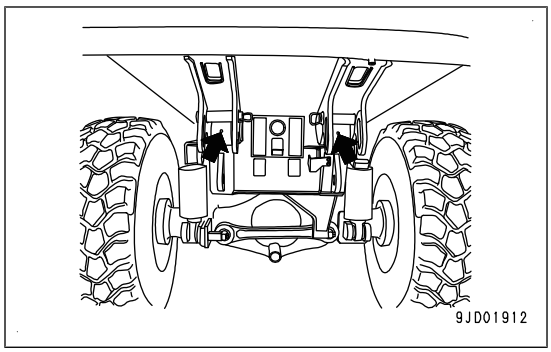


Hoist cylinder (right and left: 2 places each)

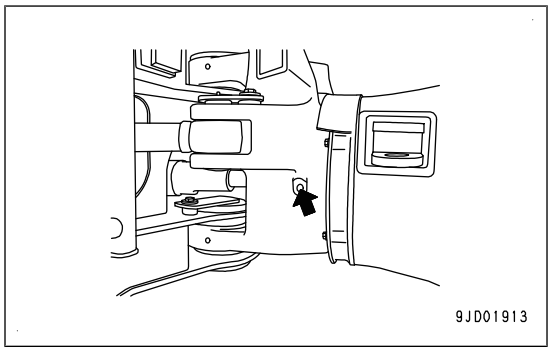


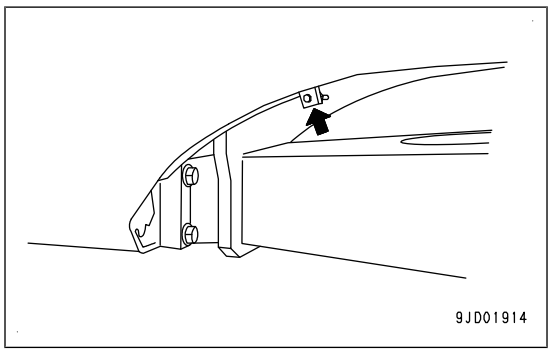


Dump body hinge pin (2 places)



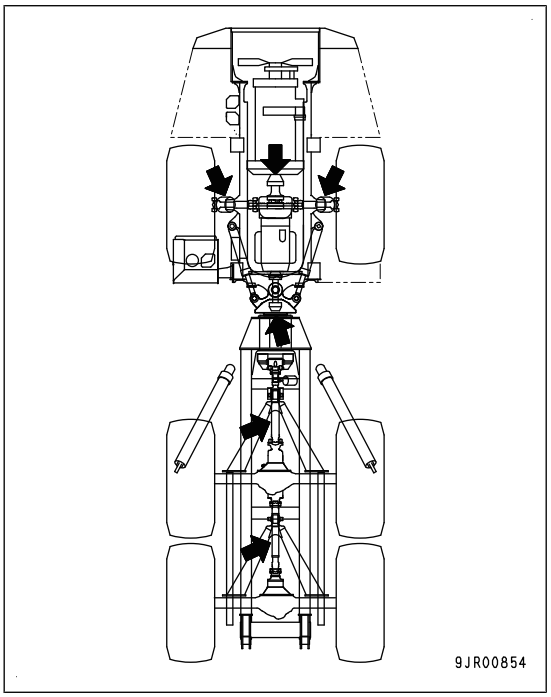
Hitch bearing (2 places)





METHOD FOR CHECKING DRIVE SHAFT

Check for abnormality such as loose connection of the drive shaft, play in the splines and bearings, runout of the shaft, etc.
If any problem is found, ask your Komatsu distributor for repair.



METHOD FOR CLEANING OVERFLOW HOSE

⚠ WARNING

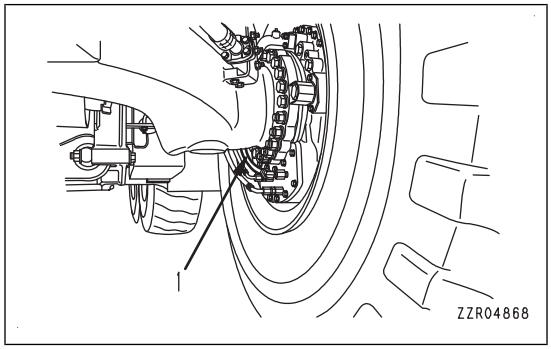
When using compressed air, there is a danger that dirt may scatter and cause personal injury. Always wear protective equipment such as protective eyeglasses and dust mask.

The overflow hoses are installed to the front and center wheels.

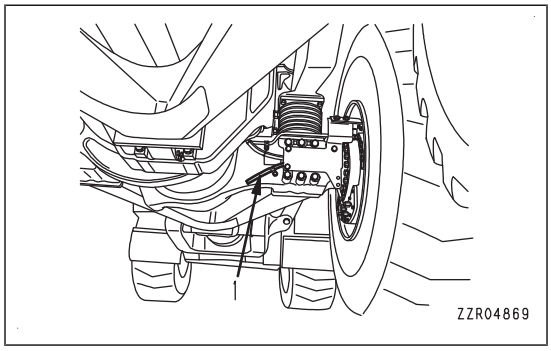
Remove and clean all of the 4 hoses.

1. Disconnect overflow hose (1).

   Front



   Center



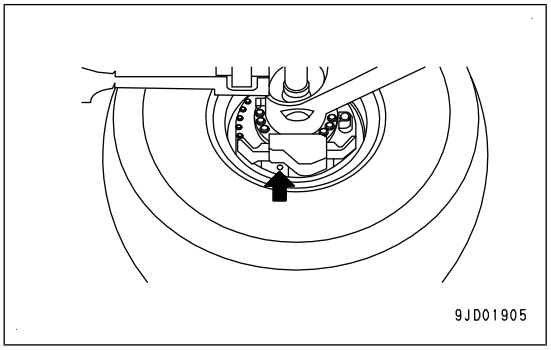
2. Remove the soil and sand from inside of the disconnected hose with compressed air, etc.
3. Install overflow hose (1).

METHOD FOR COLLECTING LEAKED OIL FROM FLOATING SEAL

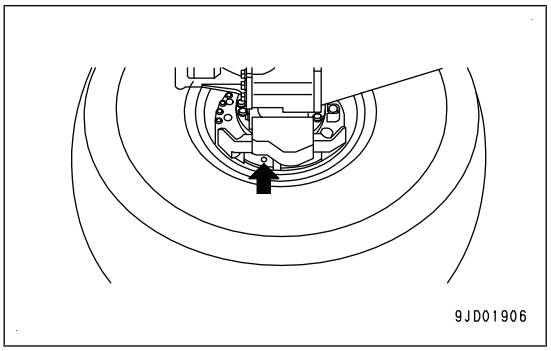
REMARK

Whenever oil flows out of the overflow hose, collect the oil.

1. Place the oil container to catch the oil just under the drain plug.
2. Remove the drain plug and drain the oil.
   There are drain plugs (4 places).
   Collect the oil through all the drain holes.
   Front axle (right and left)



   Center axle (right and left)



3. After draining the oil, tighten the drain plug.

METHOD FOR CHECKING BATTERY ELECTROLYTE LEVEL

Perform this procedure before operating the machine.

Inspect the battery electrolyte level according to the standard at least once a month.

⚠ WARNING

Do not use the battery if the battery electrolyte level is below LOWER LEVEL line.
If you do so, it will reduce the service life of the battery. In addition, it may cause an explosion.
The battery generates flammable gas and there is a danger of explosion. Do not bring any open flame near the battery.
Battery electrolyte is dangerous object.
If it gets in your eyes or on your skin, wash it off with a large amount of water and consult a doctor.
Do not use a direct air blow or dry cloth to clean the battery. A wet cloth will prevent fire or explosion from static electricity.

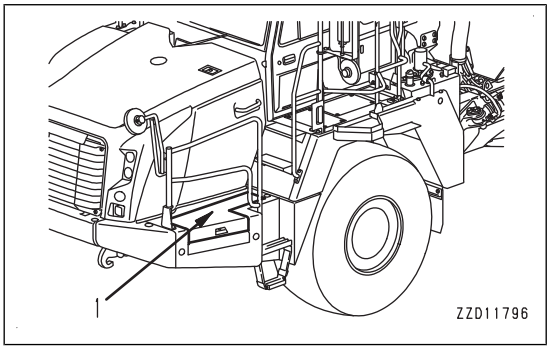
NOTICE

Do not add the electrolyte to the battery exceeding UPPER LEVEL line.
If the electrolyte level is too high, it may leak and cause damage to the paint surface or corrode other parts.
If there is a fear that the battery water may freeze after refilling with purified water (such as a commercial battery fluid), do the replenishment before the day's work on the next day.

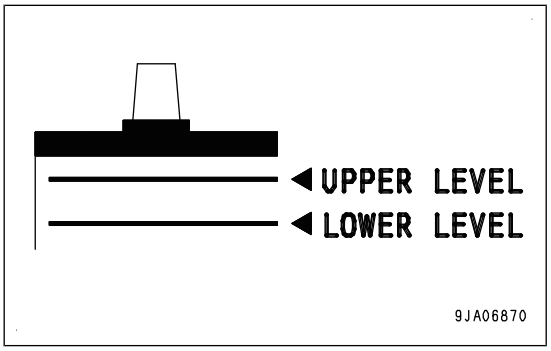
METHOD FOR CHECKING ELECTROLYTE LEVEL FROM SIDE OF BATTERY

If it is possible to check the electrolyte level from the side of the battery, check as follows.

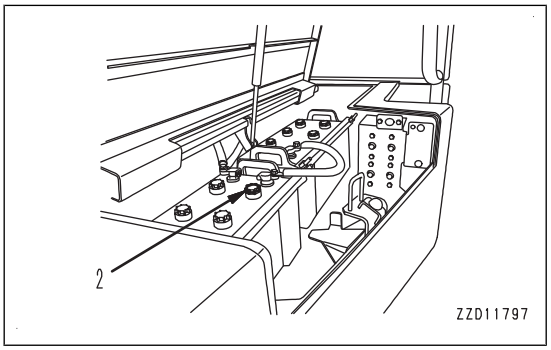
1. Open the battery box cover (1).



2. Use a wet cloth to clean the area around the electrolyte level lines and check that the electrolyte level is between UPPER LEVEL and LOWER LEVEL lines.



3. If the electrolyte level is below the middle between UPPER LEVEL and LOWER LEVEL lines, immediately remove cap (2) and add purified water (e.g. commercially available replenishment water for a battery) to UPPER LEVEL line.
4. After adding the purified water, tighten cap (2) securely.
5. Close the battery box cover (1).



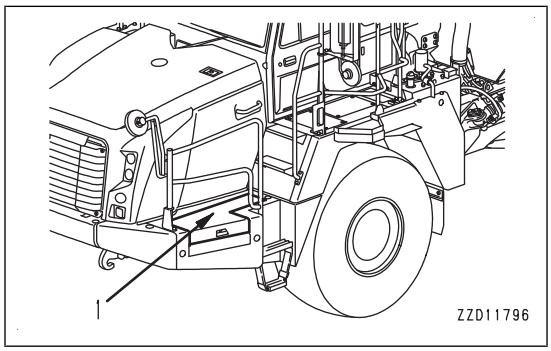
REMARK

If the purified water is added to above UPPER LEVEL line, remove the fluid by using a syringe to lower the level to UPPER LEVEL line.
Neutralize the removed fluid with baking soda (sodium bicarbonate), then flush it away with a large amount of water.
If necessary, consult your Komatsu distributor or a battery manufacturer.

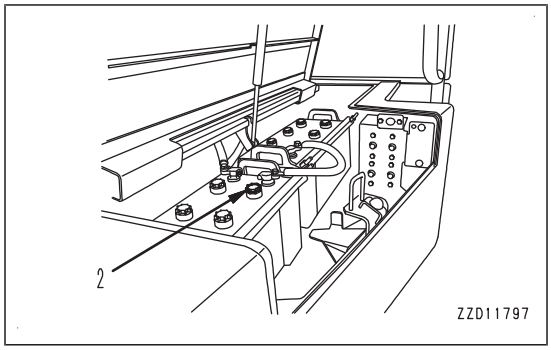
METHOD FOR CHECKING ELECTROLYTE LEVEL WHEN IT IS IMPOSSIBLE TO CHECK FROM SIDE OF BATTERY

If it is impossible to check the electrolyte level from the side of the battery, or there is no UPPER LEVEL line on the side of the battery, check as follows.

1. Open the battery box cover (1).



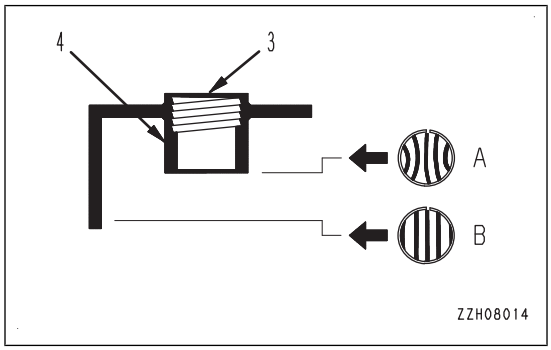
2. Remove cap (2) at the top of the battery and check the electrolyte level through electrolyte filler port (3).



3. If the electrolyte does not reach the sleeve (4), always add the purified water (e.g. commercially available replenishment water for a battery) so that the level reaches the bottom of the sleeve (UPPER LEVEL line).

   (A) Correct level: Electrolyte level is up to bottom of sleeve, so surface tension causes electrolyte surface to bulge and pole plate appears to be warped.

   (B) Low level: Electrolyte level does not reach the bottom of sleeve, so pole plate appears straight and not to be warped.



4. After adding the purified water, tighten cap (2) securely.
5. Close the battery box cover (1).

REMARK

If purified water is added to above the bottom tip of the sleeve, use a syringe to remove electrolyte.
Neutralize the removed fluid with baking soda (sodium bicarbonate), then flush it away with a large amount of water.
If necessary, consult your Komatsu distributor or your battery manufacturer.

METHOD FOR CHECKING ELECTROLYTE LEVEL ON INDICATOR ETC

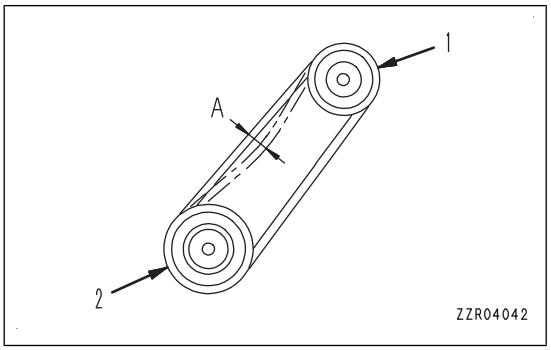
If it is possible to use an indicator to check the electrolyte level, follow the instructions given.

In the case of the Komatsu maintenance-free battery (if equipped), indicators that show the charging state and battery electrolyte level are installed to the top of the battery. See "CHECK KOMATSU MAINTENANCE-FREE BATTERY INDICATOR " for how to read the indicator.

METHOD FOR CHECKING AND ADJUSTING AIR CONDITIONER COMPRESSOR BELT TENSION

METHOD FOR CHECKING AIR CONDITIONER COMPRESSOR BELT

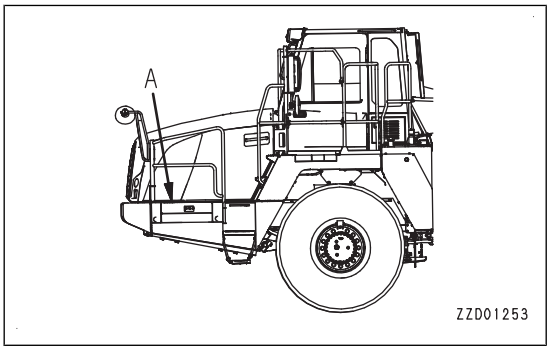
1. Open the engine hood.
2. Press the belt at a point midway between air conditioner compressor pulley (1) and drive pulley (2) with your finger, and measure deflection amount (A) of the belt.
   - Belt press force: Approximately 58.8 N {6 kgf}
   - Belt deflection amount (A): Approximately 10 mm (0.4 in).
3. After checking, close the engine hood.



METHOD FOR ADJUSTING AIR CONDITIONER COMPRESSOR BELT

If the belt deflection is improper, adjust it according to the following procedure.

When getting on or off the machine with carrying a tool etc., place it once in part (A) to ensure your safety.

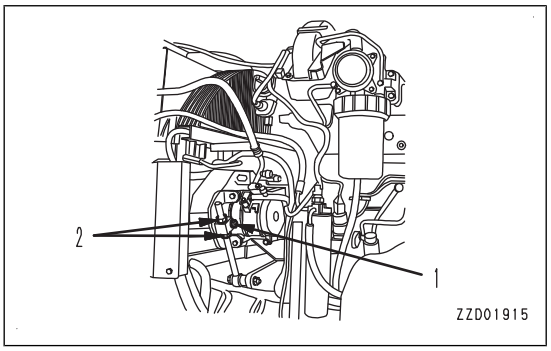


1. Open the engine hood.
2. Loosen bolt (1).
3. Press the belt at a point midway between the air conditioner compressor pulley and drive pulley with a finger pressure of (approximately 58.8 N {6 kgf}) and turn nut (2) to adjust so that the deflection is approximately 10 mm (0.4 in).
4. Tighten bolt (1) and nut (2) to secure the compressor in position.
5. Check each pulley for breakage and wear of the V-groove and check the V-belts for wear.

   In particular, check carefully that the V-belt is not in contact with the V-groove bottom.

   If the V-belt is so lengthened that it cannot be adjusted any more or if it has any cuts or cracks, replace it.

   If the V-belt has been replaced with a new part, there will be initial elongation, so adjust the belt again after operating for 2 to 3 days.
6. After adjusting, close the engine hood.



METHOD FOR CHECKING FRAME AND A-ARM

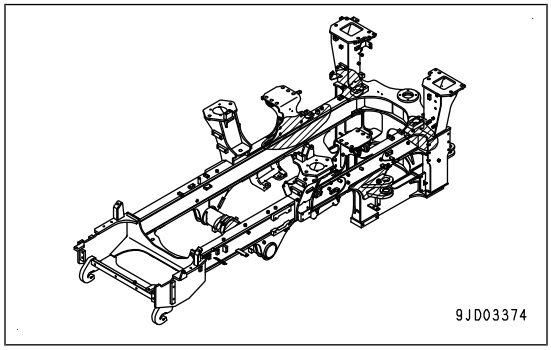
⚠ WARNING

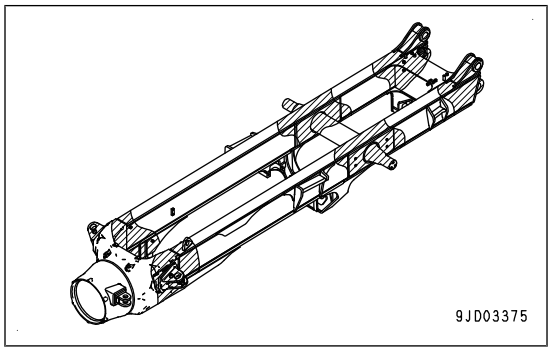
When performing inspection with the dump body raised, always set the dump lever to HOLD position, lock it with the dump lever lock knob, and use the dump body pivot pin.

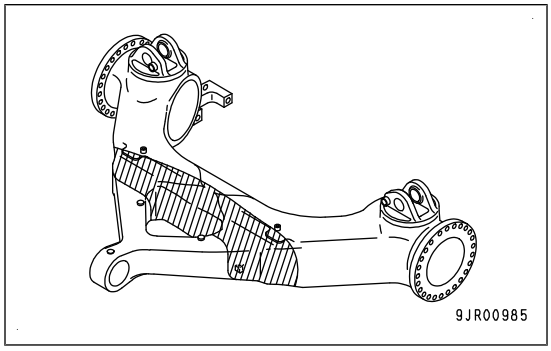
1. Clean the frame and A-arm so that you can check them easily.
2. Check that there is no damage to the frame or A-frame.

   In particular, check the hatched area in the figure. If any cracks or other damage are found, perform repairs.

   Contact your Komatsu distributor for details of the repair procedure.







METHOD FOR CHECKING FOOT BRAKE PERFORMANCE

⚠ WARNING

If the machine moves when the braking capacity is being checked, it may lead to serious personal injury or death.
If the machine moves, lower the engine speed immediately, set the gear shift lever to NEUTRAL position (N) and set the parking brake switch to “PARKING” position.

NOTICE

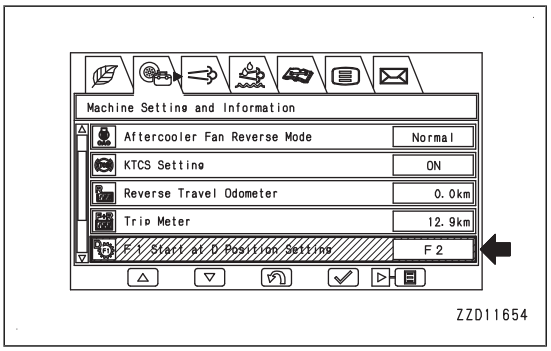
When checking, be sure to select “F2” in “F 1 Start at D Position Setting”, and then set the gear shift lever to position “D”. Neglecting this can damage the inside of the transmission.

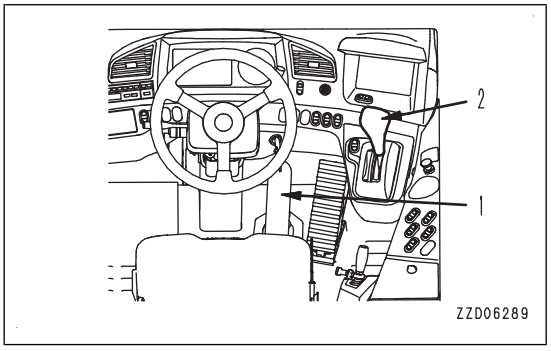
Check the braking capacity of the foot brake as follows.

1. Check that “F2” is selected on “F 1 Start at D Position Setting” of user menu of the machine monitor.
2. Place the machine on flat ground and depress brake (1).
3. Set gear shift lever (2) in position “D” and increase the engine speed gradually.

   If the machine does not move when the engine speed is increased to 1470 rpm, the retarder brake is normal.

   If any problem is found, ask your Komatsu distributor for repair.
4. Decrease the engine speed and set the gear shift lever to NEUTRAL position (N).
5. Set the parking brake switch to “PARKING” position to apply the parking brake.





METHOD FOR CHECKING RETARDER BRAKE PERFORMANCE

⚠ WARNING

If the machine moves when the braking capacity is being checked, it may lead to serious personal injury or death.
If the machine moves, lower the engine speed immediately, return the gear shift lever to NEUTRAL position (N) and depress the foot brake.

NOTICE

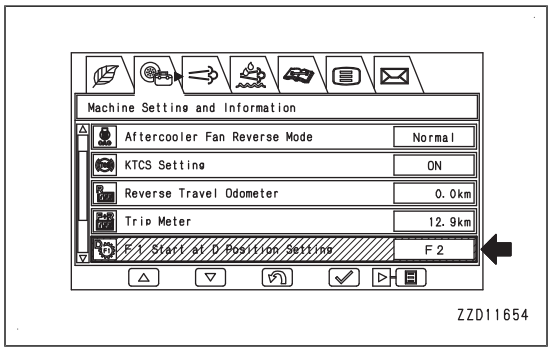
When checking, be sure to select “F2” in “F 1 Start at D Position Setting”, and then set the gear shift lever to position “D”. Neglecting this can damage the inside of the transmission.

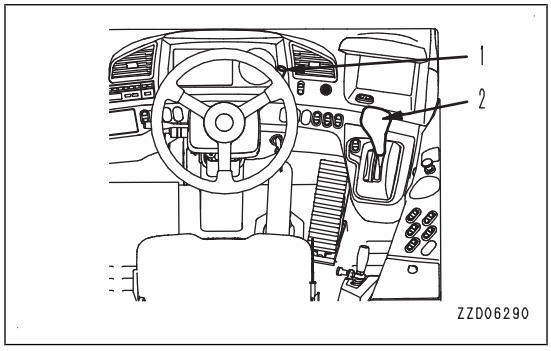
Check the braking capacity of the retarder brake as follows.

1. Check that “F2” is selected on “F 1 Start at D Position Setting” of user menu of the machine monitor.
2. Stop the machine on flat ground and pull retarder control lever (1) fully.
3. Set gear shift lever (2) in position “D” and increase the engine speed gradually.

   If the machine does not move when the engine speed is increased to 1470 rpm, the retarder brake is normal.

   If any problem is found, ask your Komatsu distributor for repair.
4. Decrease the engine speed and set the gear shift lever to NEUTRAL position (N).





METHOD FOR CHECKING PARKING BRAKE PERFORMANCE

⚠ WARNING

If the machine moves when the braking capacity is being checked, it may lead to serious personal injury or death.
If the machine moves, lower the engine speed immediately, return the gear shift lever to NEUTRAL position (N) and depress the foot brake.

NOTICE

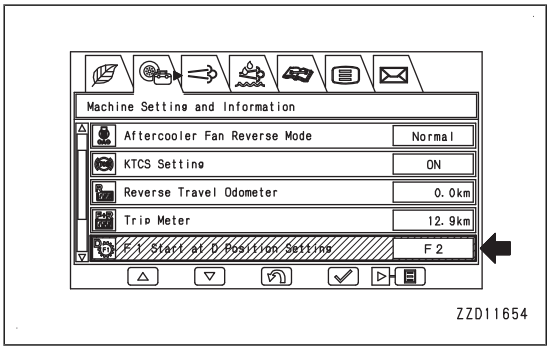
When checking, be sure to select “F2” in “F 1 Start at D Position Setting”, and then set the gear shift lever to position “D”. Neglecting this can damage the inside of the transmission.

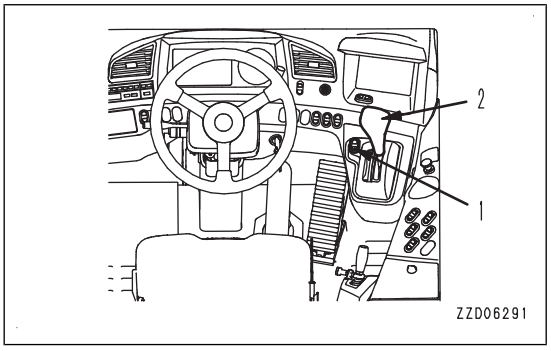
Check the braking capacity of the parking brake as follows.

1. Check that “F2” is selected on “F 1 Start at D Position Setting” of user menu of the machine monitor.
2. Set parking brake switch (1) to “PARKING” position on a flat ground.
3. Set gear shift lever (2) in position “D” and increase the engine speed gradually.

   If the machine does not move when the engine speed is increased to 1550 rpm, the retarder brake is normal.

   If any problem is found, ask your Komatsu distributor for repair.
4. Decrease the engine speed and set the gear shift lever to NEUTRAL position (N).



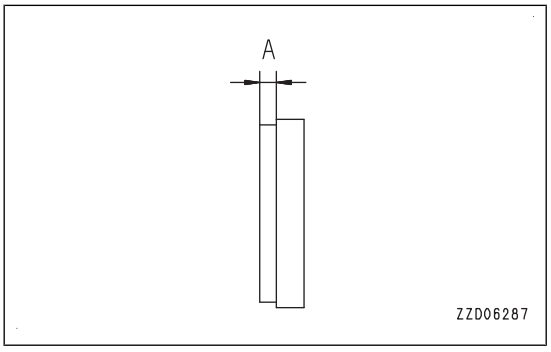


METHOD FOR CHECKING WEAR OF PARKING BRAKE PADS

⚠ WARNING

Never put any oil or grease on the surface of the pad or disc.

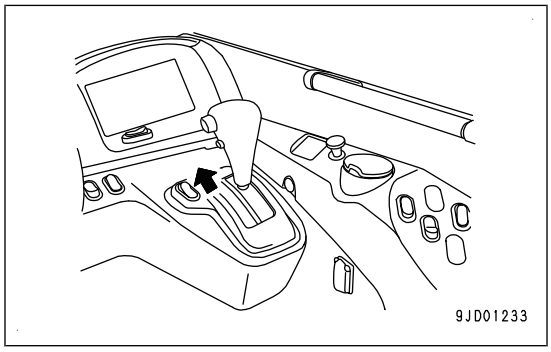
Measure the thickness of pad (1).
If thickness (A) is 1.5 mm or less, contact your Komatsu distributor.



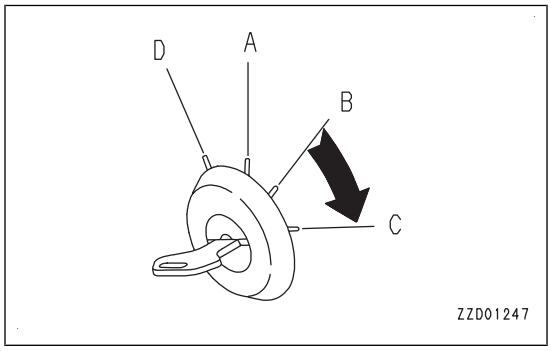
METHOD FOR CHECKING FUNCTION OF ACCUMULATOR

If the engine stops during travel, the brake can be operated with the oil pressure in the accumulator temporarily.

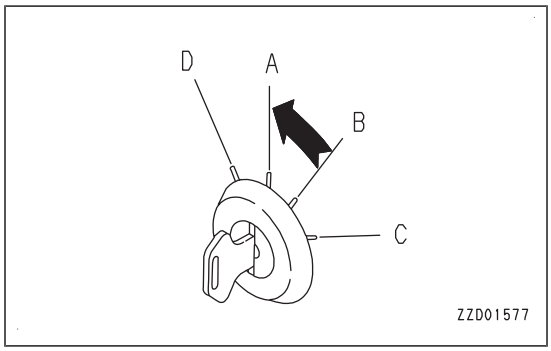
1. Stop the machine on a flat ground.
2. Set parking brake switch (1) to “PARKING” position.



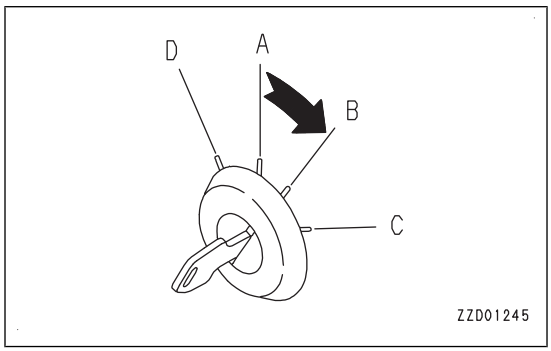
3. Start the engine.



4. Run the engine at a medium speed for 1 minutes, and then stop it.



5. Turn the starting switch to ON position.



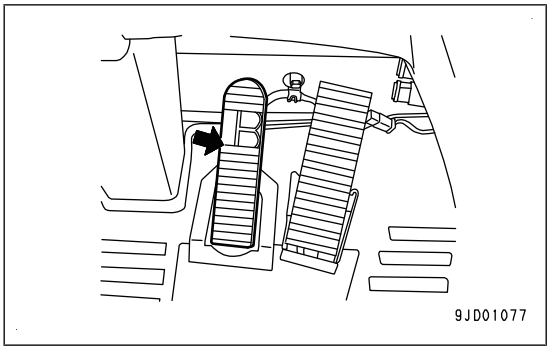
6. Depress the brake pedal several times.

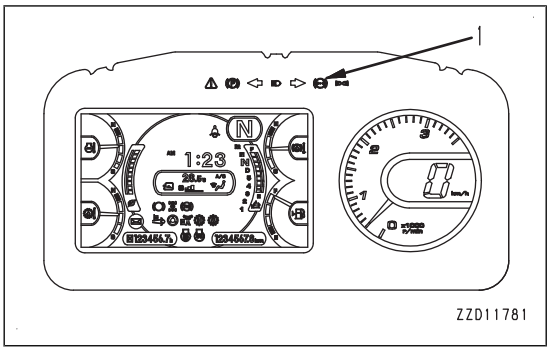
   After the brake pedal is depressed some times, the brake oil pressure caution lamp (1) lights up.

   - If the brake oil pressure caution lamp lights up when the brake pedal is depressed 4 times or less, the gas pressure in the accumulator may be low. Ask your Komatsu distributor for inspection.
   - If the brake oil pressure caution lamp does not light up when the brake pedal is depressed 5 times, the gas pressure in the accumulator is normal.

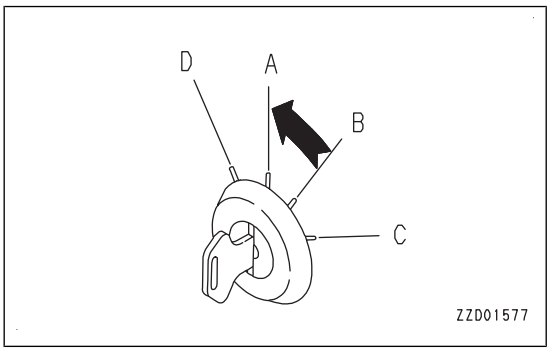
   REMARK

   Check the function within 5 minutes after stopping the engine.
   If the engine is kept stopped, the gas pressure in the accumulator lowers and cannot be checked.





7. After checking, turn the starting switch to OFF position.



EVERY 500 HOURS MAINTENANCE

Maintenance for every 50 and 250 hours should be performed at the same time.

METHOD FOR CHANGING OIL IN ENGINE OIL PAN, REPLACING ENGINE OIL FILTER CARTRIDGE

⚠ WARNING

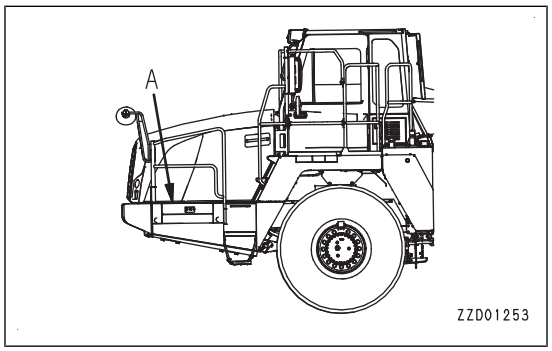
Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury. Accordingly, wait until they have cooled down before starting the work.

Refill capacity of engine oil pan: 35 ℓ

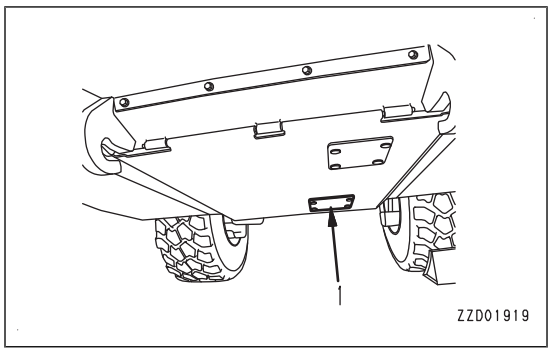
Items to be prepared

- Container to receive drained oil
- Filter wrench

When getting on or off the machine with carrying a filter, oil container, a tool, etc., place it once in part (A) to ensure your safety.



1. Remove the bolts, and remove cover (1).
2. Place the oil container under the drain plug to catch the drained oil.

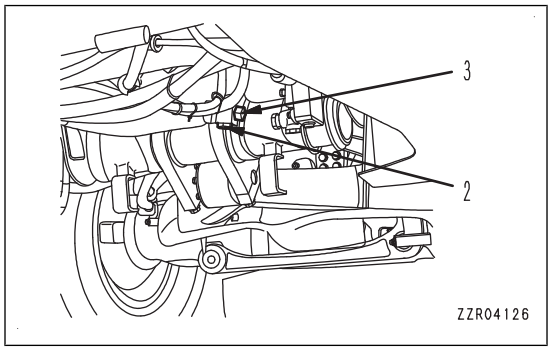


3. Remove drain plug (2).
4. Install the drain hose on the back of the hydraulic tank cover.
5. When draining the oil, loosen drain valve (3) slowly so that you will not get oil on yourself.

   Be careful not to loosen the drain valve too far and deform the stopper pin inside the valve.
6. Inspect the drained oil.

   If there are excessive metal particles or foreign material, contact your Komatsu distributor.
7. Tighten drain valve (3) and drain plug (2).

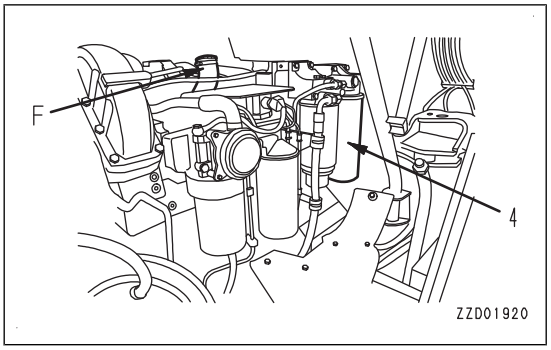
   Tightening torque: 68.6 ± 9.8 Nm {7 ± 1 kgfm}



8. Turn filter cartridge (4) counterclockwise by using the filter wrench, and remove it.

   When doing this, to prevent get splashed with drained oil, do not perform this operation from directly under the cartridge.

   In particular, if this work is performed immediately after stopping the engine, a large amount of oil will come out, so wait for 10 minutes before starting the work.



9. Clean the filter head.
10. Fill the new filter cartridge with clean oil.
11. Apply oil (or thinly apply grease) to the packing surfaces and thread portion.
12. Install the filter cartridge.

    When doing this, be careful not to damage the outside cylinder of the cartridge.

    When installing the filter cartridge, tighten until the packing face is in contact with the filter head, then tighten a further 3/4 to 1 turn.
13. Add the specified amount of oil through oil filler port (F).
14. Run the engine at low idle for a while.
15. Check that the engine oil level is in the specified range.

REMARK

When the ambient temperature is low, water or emulsified matter may stick to the dipstick, oil filler cap, etc. or the drained oil may be milky white because of water vapor in the blowby gas. However, if the coolant level is normal, it is not a problem.
There is no problem even if the emulsified matter cannot be removed completely after changing oil.

METHOD FOR REPLACING FUEL PREFILTER CARTRIDGE

⚠ WARNING

- **Just after the engine stops, all parts are still very hot, so do not replace the filter immediately. Wait until all of parts cool down before starting the work.**
- **High pressure is generated inside the engine fuel piping system when the engine is running. When replacing the filter, wait for at least 30 seconds after stopping the engine to let the internal pressure go down before replacing the filter.**
- **Do not bring any open flame close.**

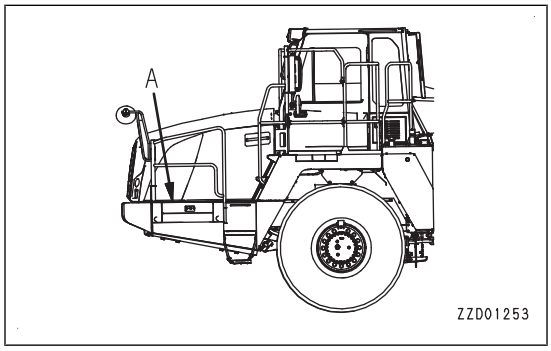
NOTICE

- **Komatsu genuine fuel filter cartridges use a special filter that has highly efficient filtering ability. When replacing parts, Komatsu recommends using Komatsu genuine parts.**
- **The common rail fuel injection system used on this machine consists of more precise parts than those in the conventional injection pump and nozzles.**
  If any cartridge other than a Komatsu genuine filter cartridge is used, dust or dirt may get in and cause problems with the injection system.
  Never use a substitute.
- **When performing the inspection or maintenance of the fuel system, pay more attention than normal to the entry of dirt. If dirt sticks to any part, use fuel to wash it off completely.**

Items to be prepared
- Container to receive drained fuel
- Filter wrench

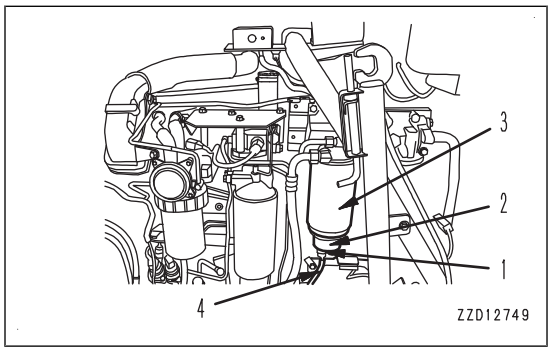
When replacing the fuel main filter cartridge (every 1000 hours), replace the fuel prefilter cartridge first.

When getting on or off the machine with carrying a filter, a tool, etc., place it once in part (A) to ensure your safety.



1. Open the engine hood.
2. Place a container under the fuel prefilter cartridge to receive the fuel.
3. Loosen drain valve (1) and drain water and sediments from transparent cup (2), and also drain all the fuel from filter cartridge (3).
4. Remove drain hose (4).
5. Turn filter cartridge (3) counterclockwise by using the filter wrench, and remove it.
6. Make sure that drain valve (1), which is provided in the lower part of the transparent cup of the new filter cartridge, is firmly tightened.

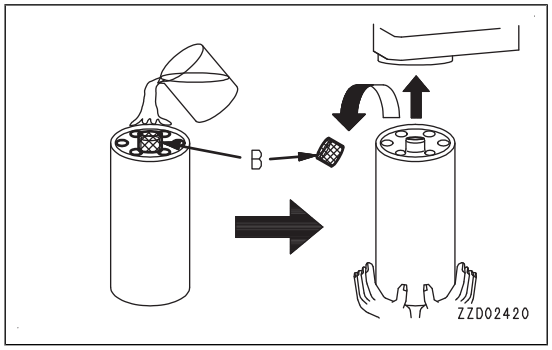
   Tightening torque: 2.5 to 3.4 Nm {0.25 to 0.35 kgfm}
7. Clean the filter head.

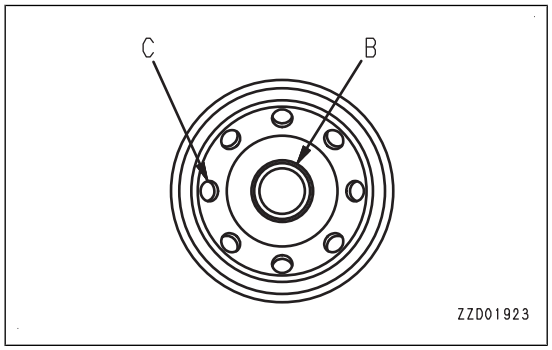


8. Fill the new filter cartridge with clean fuel.

   NOTICE

   - **When filling the filter cartridge with fuel, do not remove cap (B) at the center. Always fill with fuel from small holes (C) (8 places) on the dirty side.**
   - **After filling with fuel, remove cap (B) and install the fuel filter.**
   - **Always fill with clean fuel. Be careful not to let any dirt or dust get into the fuel.**
     In particular, center portion is the clean side, so do not remove cap (B) when filling with fuel. Be careful not to let dirt or dust get into the center portion on the clean side.





9. Thinly apply oil to the packing surfaces.
10. Remove filter cartridge cap (B) and install it to the filter head.

    When installing the cartridge, tighten it until the packing surface contacts the sealing surface of the filter head, then tighten it 1/2 to 3/4 turn.

    If the filter cartridge is tightened too far, the packing will be damaged and this will lead to leakage of fuel. If the filter cartridge is tightened too loose, fuel will also leak from the packing, so always tighten to the specified angle.

    When tightening with a filter wrench, be extremely careful not to dent or damage the filter cartridge.
11. Install drain hose (4).
12. After replacing the filter cartridge, start the engine and run it at low idle for 10 minutes.
13. Check the filter seal surface and the mounting face of the transparent cup for fuel leakage.
14. If there is any leakage of fuel, check the fastening condition of the filter cartridge.

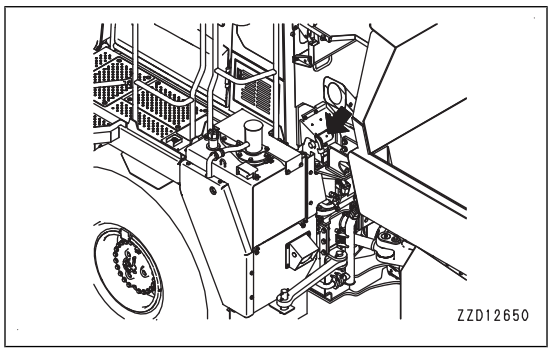
    If there is fuel leakage, repeat steps 1 to 5 to remove the filter cartridge, and if any damage or pinched foreign material on the packing surface is found, replace it with a new cartridge and repeat steps 6 to 11 to install it.

METHOD FOR LUBRICATING CAB MOUNTING PINS

(1 place each on right and left sides)

1. Stop the engine.
2. By using a grease pump, pump in grease through the grease fittings.
3. Check visually that the greasing has been performed properly.
4. After greasing, wipe off any old grease that is pushed out.

   Perform the greasing work every day when operating in places where the grease flows out easily, such as when traveling through mud or water.

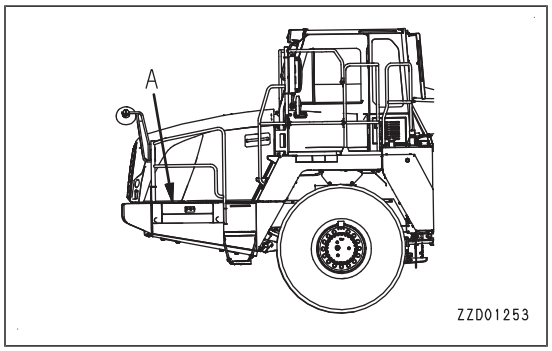


METHOD FOR CHECKING AND ADDING OIL IN DIFFERENTIAL CASE

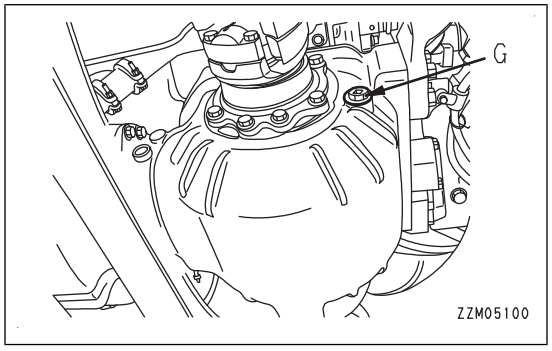
⚠ WARNING

- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **If the plug is removed, oil may spurt out, so turn it slowly to release the internal pressure, then remove it carefully.**

When getting on or off the machine with carrying oil, a tool, etc., place it once in part (A) to ensure your safety.

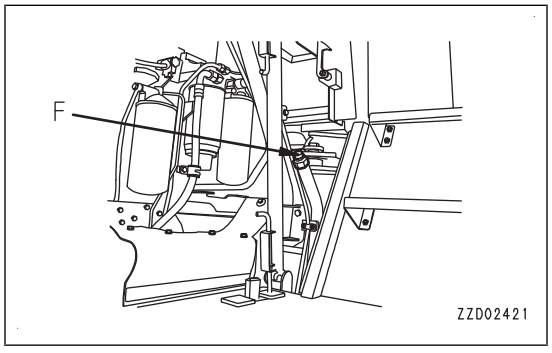


1. Remove plug (G).
2. Check that the oil level is near the lower edge of the plug hole.



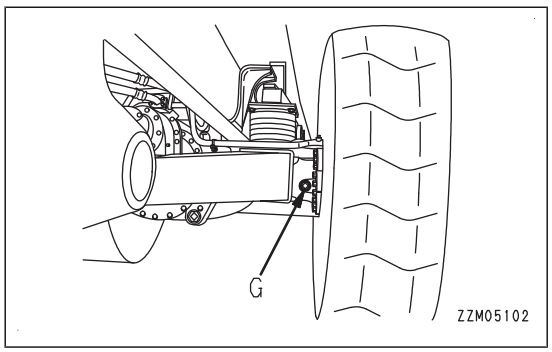
   1) If the oil level in the front differential case is low, add oil through oil filler port (F).

      Add oil until it overflows from the plug hole.

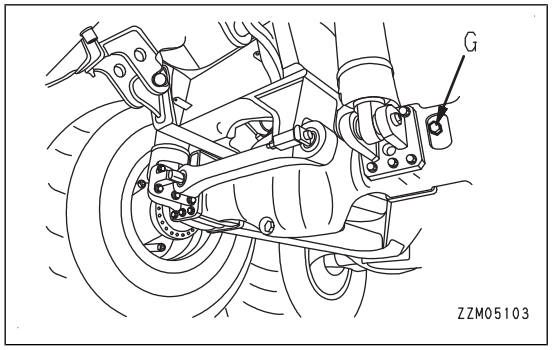


2) If the oil level in the center or rear differential case is low, add oil through the plug hole.
Add oil until it overflows from the plug hole.

Center



Rear



METHOD FOR CHECKING AND CLEANING RADIATOR FINS, AFTERCOOLER FINS, AND AIR CONDITIONER CONDENSER FINS

Perform this procedure if there is any mud or dirt stuck to the fins of the radiator, aftercooler, or air conditioner condenser.

REMARK

Check the rubber hoses. If they are cracked or fragile, replace them. Check the hose clamps for looseness as well.

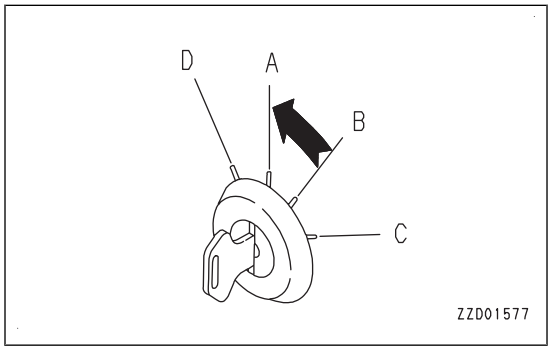
METHOD FOR CLEANING FINS BY ROTATING COOLING FAN IN REVERSE

⚠ CAUTION

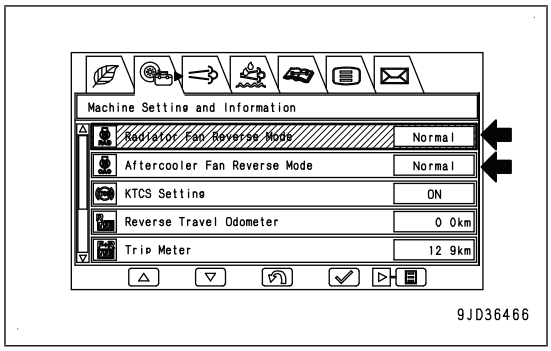
When rotating the fan in the reverse direction, beware extremely that dirt will not fly out and cloth, etc. will not be wound in the fan.
Since dust may be blown up, check that there is no people around while the fan is rotating in reverse.

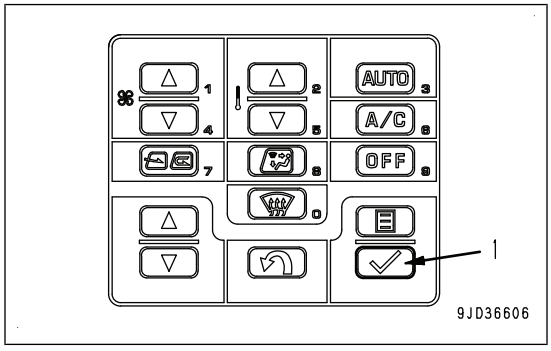
The dust and dirt stuck to the radiator and cooler can be blown out by rotating the cooling fan in the reverse direction.

1. Seat the dump body and stop the engine.
2. Open the engine hood.
3. Turn the starting switch to ON position (A).

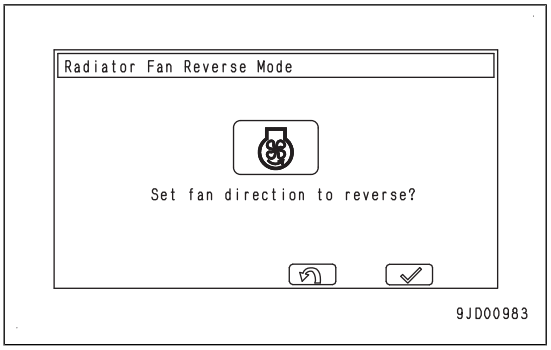


4. Select “Radiator Fan Reverse Mode” or “Aftercooler Fan Reverse Mode” on “Machine Setting and Information” menu, then press ENTER switch (1).



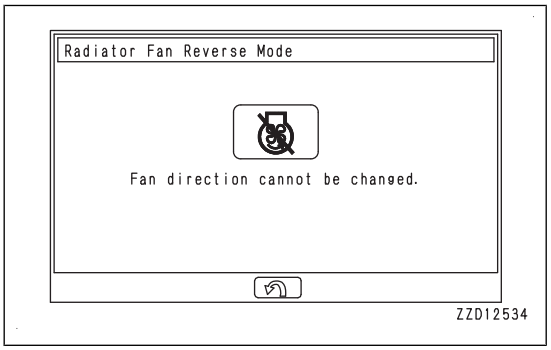


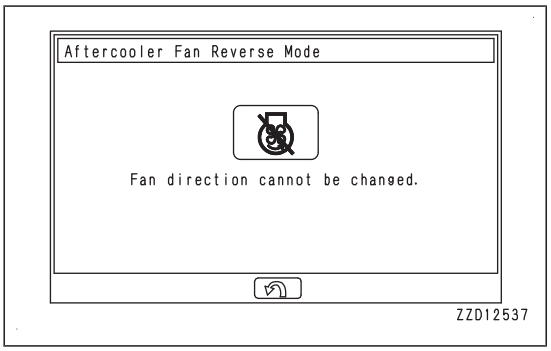
5. Press ENTER switch (1) to rotate the fan in the reverse direction.



REMARK

When the dump body is not seated or when the engine is running, even if the fan reverse mode is set, the direction of rotation of the fan does not change.
The screen in the figure is displayed to inform the operator that the direction of rotation of the fan has not been changed.
Stop the engine once and perform the procedure again from the step 3.





6. Start up the engine.

   The cooling fan rotates in reverse.

7. After finishing cleaning, stop the engine.

   A certain time after the starting switch is turned to OFF position, the fan is returned to the normal rotation mode automatically.

8. Close the engine hood.

REMARK

- Blow off the dirt stuck in the radiator fins.
- In a cold circumstance, perform the cleaning by cooling fan reverse rotation within less than 5 minutes.
  If the fan reverse rotation is performed for a long time, the DEF hose may freeze.

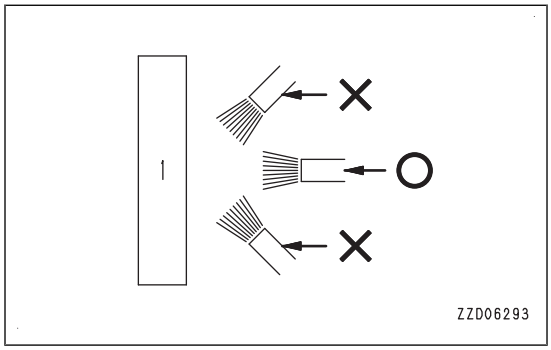
METHOD FOR CLEANING FIN WITH COMPRESSED AIR

⚠ WARNING

- **If compressed air, high-pressure water, or steam hits your body directly or dirt is scattered by the compressed air, high-pressure water, or steam, there is a danger of personal injury. Always wear protective equipment such as protective eyeglasses and dust mask.**
- **When performing cleaning, always stop the engine and check that the fan is not rotating. If you touch the fan when it is rotating, it will cause serious personal injury or death.**

NOTICE

- **When using compressed air for cleaning, blow it keeping some distance to avoid damaging fins (1). Damage on the fins can cause water leakage and overheating. In a dusty job site, check the fins every day, regardless of the maintenance interval.**
- **When using compressed air or steam, keep the nozzle at a right angle (90 °) to the radiator, aftercooler, or air conditioner condenser.**



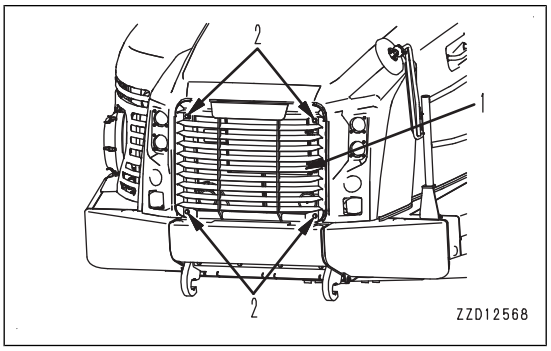
METHOD FOR CLEANING RADIATOR FIN AND AIR CONDITIONER CONDENSER FIN

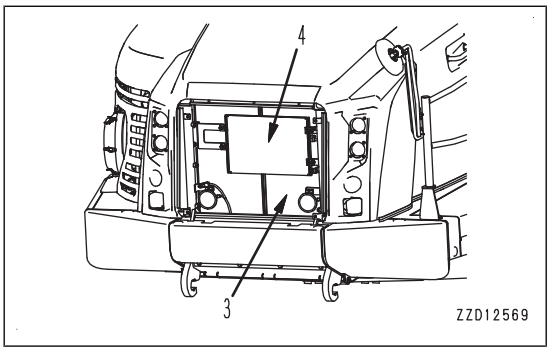
1. Remove mounting bolts (2) of radiator grille (1).
2. Remove radiator grille (1).
3. Blow off mud, dirt, leaves, etc. in radiator fins (3) and air conditioner condenser fins (4) with compressed air.

   Steam or water may be used instead of compressed air.

   However, when performing powerful steam cleaning (high-pressure machine washing) of the heat exchanger (radiator), maintain sufficient distance from the machine.

   If steam cleaning (high-pressure machine wash) is performed at close distance, there is a danger that the internal fins of the heat exchange equipment may be deformed, and this will cause early clogging and breakage of the equipment.
4. Perform the following check.
   - Check the rubber hoses. If they are cracked or fragile, replace them.
   - Check the hose clamps for looseness.





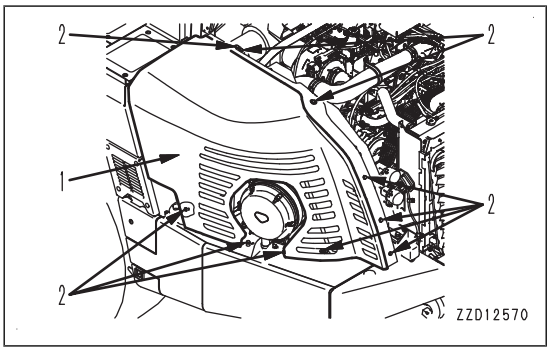
METHOD FOR CLEANING AFTERCOOLER FIN

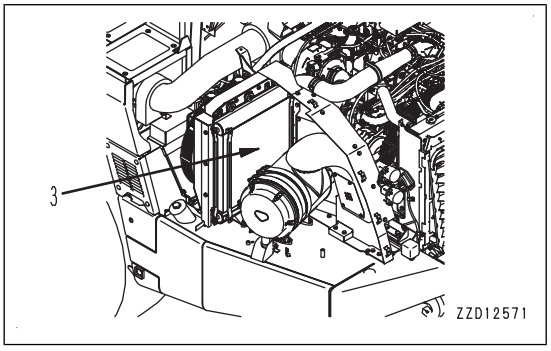
1. Open the engine hood.
2. Remove mounting bolts (2) of cover (1) on the right side of the machine.
3. Remove cover (1).
4. Blow off mud, dirt, leaves, etc. in aftercooler fins (3) with compressed air.

   Steam or water may be used instead of the compressed air.

   However, when performing powerful steam cleaning (high-pressure machine washing) of the heat exchanger (radiator), maintain sufficient distance from the machine.

   If steam cleaning (high-pressure machine wash) is performed at close distance, there is a danger that the internal fins of the heat exchange equipment may be deformed, and this will cause early clogging and breakage of the equipment.
5. Perform the following check.
   - Check the rubber hoses. If they are cracked or fragile, replace them.
   - Check the hose clamps for looseness.





METHOD FOR CHECKING OIL LEVEL IN FINAL DRIVE CASE, ADDING OIL

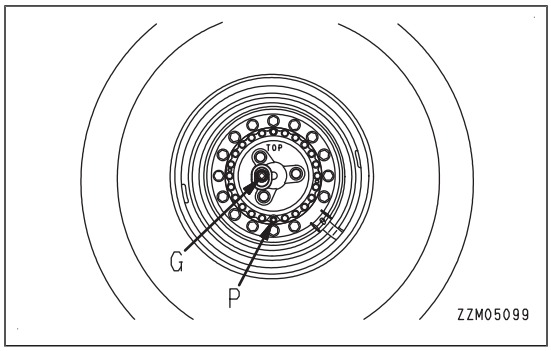
⚠ WARNING

- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **If there is remaining pressure inside the case, the oil or plug may jump out.**
  Turn the plug slowly to release the pressure, then remove it carefully.

Check the oil level and add oil to all the final drive cases (front, center, rear).

1. Stop the machine so that the TOP embossed mark is at the top and drain plug (P) is at the bottom.
2. Remove plug (G).
3. Check that the oil level is near the lower edge of the plug hole.

   If the oil level is too low, add oil through the plug hole until the it overflows.



EVERY 1000 HOURS MAINTENANCE

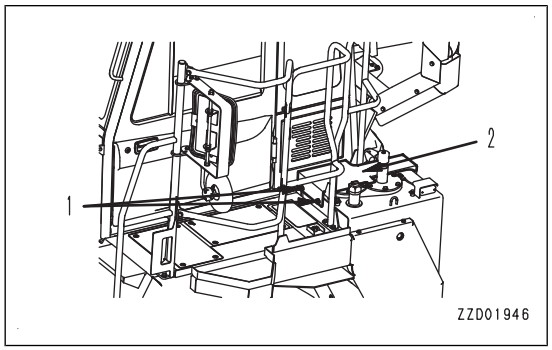
Maintenance for every 50, 250 and 500 hours should be performed at the same time.

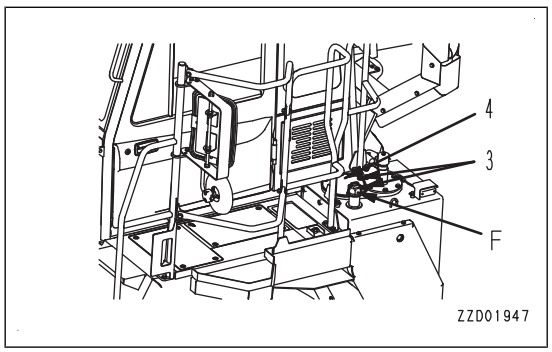
METHOD FOR REPLACING HYDRAULIC OIL FILTER ELEMENT

⚠ WARNING

- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **When removing the oil filler cap, the oil may spurt out. Rotate it slowly to release the internal pressure, then remove it with care.**

1. Remove bolts (1), and remove cover (2).
2. Turn the cap of oil filler port (F) to release the internal pressure before removing the cap.
3. Remove bolts (3), and remove cover (4).
4. Remove the element.
5. Clean the inside of the case and removed parts.
6. Install the new element.
7. Install cover (4) with bolt (3).
8. Install cover (2) with bolt (1).





METHOD FOR REPLACING FUEL MAIN FILTER CARTRIDGE

⚠ WARNING

- **After the engine stops, all parts are still very hot, so do not replace the filter immediately. Wait until all of parts cool down before starting the work.**
- **High pressure is generated inside the engine fuel piping system when the engine is running. When replacing the filter, wait for at least 30 seconds after stopping the engine to let the internal pressure go down before replacing the filter.**
- **Do not bring any open flame close.**
- **When using the fuel feed pump, do not loosen the air bleeding plug of the fuel circuit. The fuel circuit is pressurized while the fuel feed pump is operated. If the air bleeding plug is loosened at this time, fuel may spout out and it is dangerous.**

NOTICE

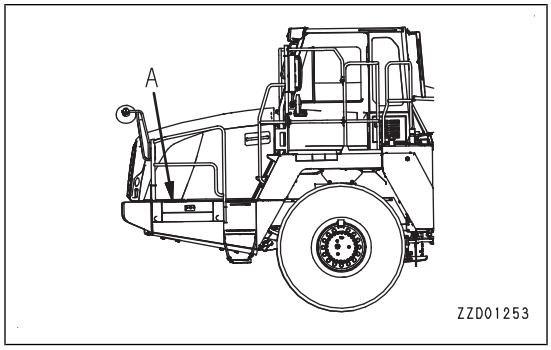
- **Komatsu genuine fuel filter cartridges use a special filter that has highly efficient filtering ability. When replacing parts, Komatsu recommends using Komatsu genuine parts.**
- **The common rail fuel injection system used on this machine consists of more precise parts than those in the conventional injection pump and nozzles. If any cartridge other than a Komatsu genuine filter cartridge is used, dust or dirt may get in and cause problems with the injection system. Always avoid using substitute parts.**
- **When performing the inspection or maintenance of the fuel system, pay more attention than normal to the entry of dirt. If dirt sticks to any part, use fuel to wash it off completely.**

Items to be prepared

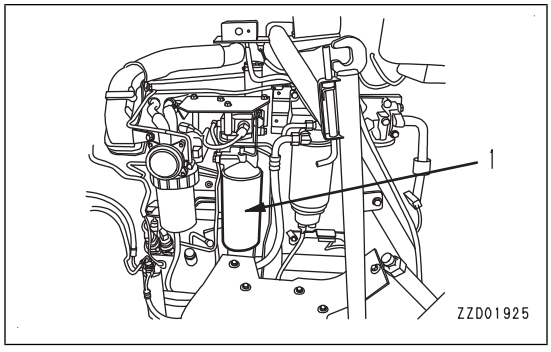
- Container to receive drained fuel
- Filter wrench

After replacing the fuel prefilter cartridge, replace the fuel main filter cartridge.

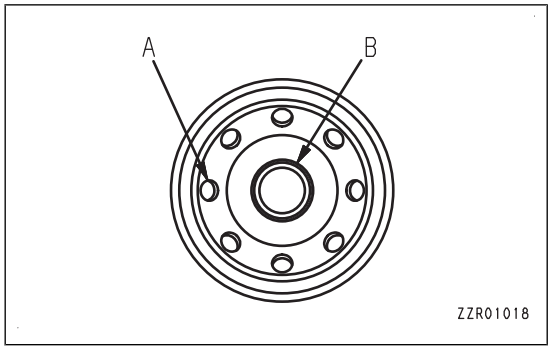
When getting on or off the machine with carrying a filter, a tool, etc., place it once in part (A) to ensure your safety.



1. Open the engine hood.
2. Place a container under the filter cartridge to receive fuel.
3. Turn filter cartridge (1) counterclockwise by using the filter wrench, and remove it.
4. Clean the filter head.
5. Coat the packing surface of the new filter cartridge with oil.



6. Install the new filter cartridge to the filter head.



NOTICE

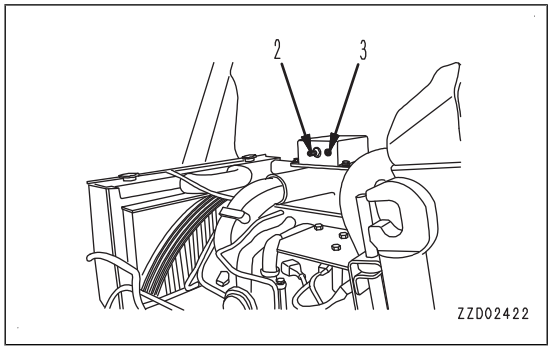
- **Do not fill the new filter cartridge with fuel.**
- **Remove cap (B) at center and install the filter cartridge.**

When installing the cartridge, tighten it until the packing surface contacts the sealing surface of the filter head, then tighten it 1/2 to 3/4 turn.

If the filter cartridge is tightened too far, the packing will be damaged and this will lead to leakage of fuel. If the filter cartridge is too loose, fuel will also leak from the packing, so always tighten the correct amount.

When tightening with a filter wrench, be extremely careful not to dent or damage the filter.

7. Fill the fuel tank with fuel.
8. Tilt switch for the fuel feed pump (2) to ON position.



Lamp (3) flashes and the fuel feed pump operates.

After the specified time (approximately 7 minutes), lamp (3) goes out automatically and the fuel feed pump stops.

When the lamp goes out, air bleeding is complete.

9. Start the engine.

If the engine does not start, air may not be bled completely. In this case, repeat the operations of steps 8 to 9.

10. After replacing the filter cartridge, start the engine and check that there is no leakage of fuel from the filter seal surface.

If there is any leakage of fuel, check the tightening condition of the filter cartridge.

If there is still leakage of fuel, follow steps 2 and 3 to remove the filter cartridge, then check the packing surface for damage or foreign material. If any problem is found, replace the cartridge with a new part, then repeat steps 4 to 9 to install the filter cartridge.

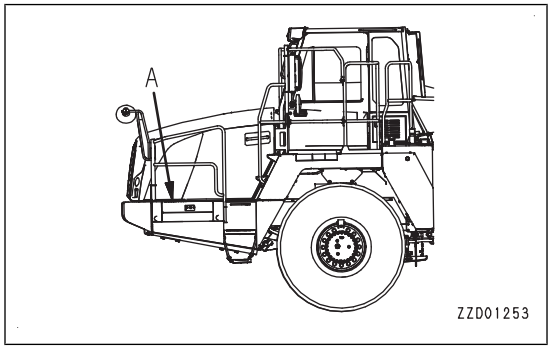
11. Close the engine hood.

METHOD FOR REPLACING FUEL TANK BREATHER ELEMENT

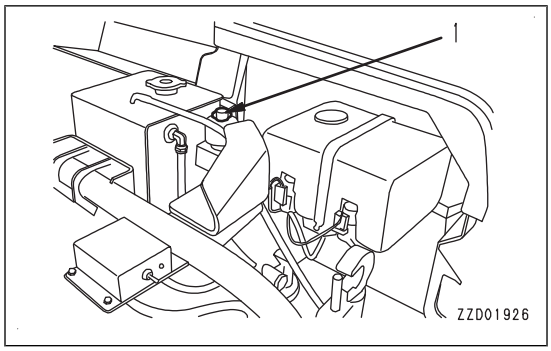
⚠ WARNING

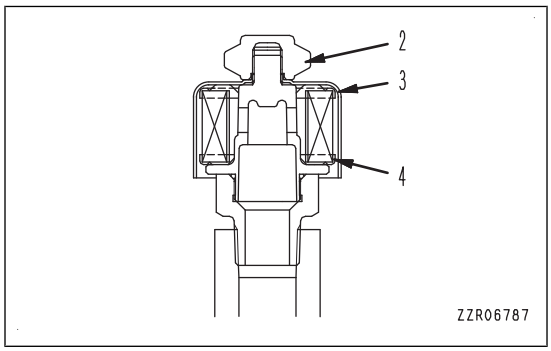
Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury. Accordingly, wait until they have cooled down before starting the work.

When getting on or off the machine with carrying an element, a tool, etc., place it once in part (A) to ensure your safety.



1. Open the engine hood.
2. Remove nut (2) of breather assembly (1).
3. Remove cover (3).
4. Replace breather element (4) with a new one.
5. Install cover (3) and nut (2).
6. Close the engine hood.





METHOD FOR REPLACING TRANSMISSION OIL FILTER ELEMENT

⚠ WARNING

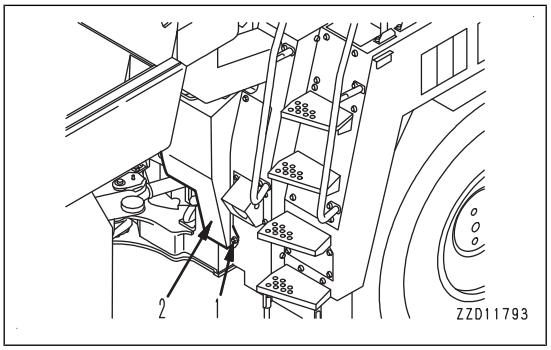
- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **When removing the oil filler cap, turn it slowly to release the internal pressure, then remove it.**

VALVE SIDE

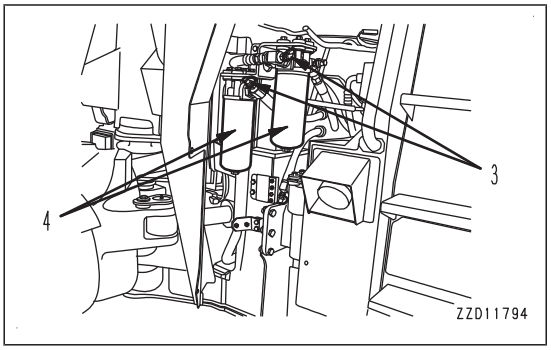
Items to be prepared

- Container to receive drained oil
- Filter wrench

1. Remove bolts (1) (4 pieces), then open cover (2).
2. Place a container under the filter case to receive drained oil.



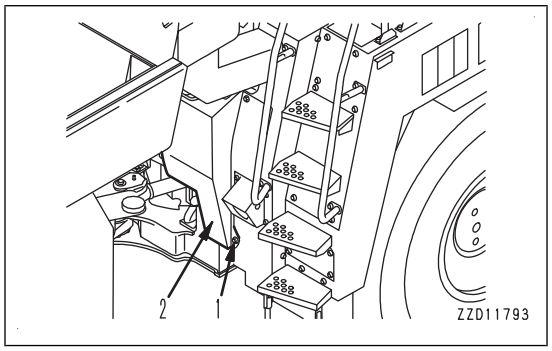
3. Remove drain plug (3) of the filter head and drain the oil.
4. After draining the oil, tighten drain plug (3).
5. Turn filter cartridge (4) counterclockwise by using the filter wrench, and remove it.
6. Clean the filter head.
7. Apply clean oil to the sealing surface of the new filter cartridge.
8. Install the new filter cartridge.
   Tightening torque: 49 to 59 Nm {5.0 to 6.02 kgfm}



9. Adjust the oil level in the transmission case to the specified level.
10. Fix cover (2) with bolts (1).

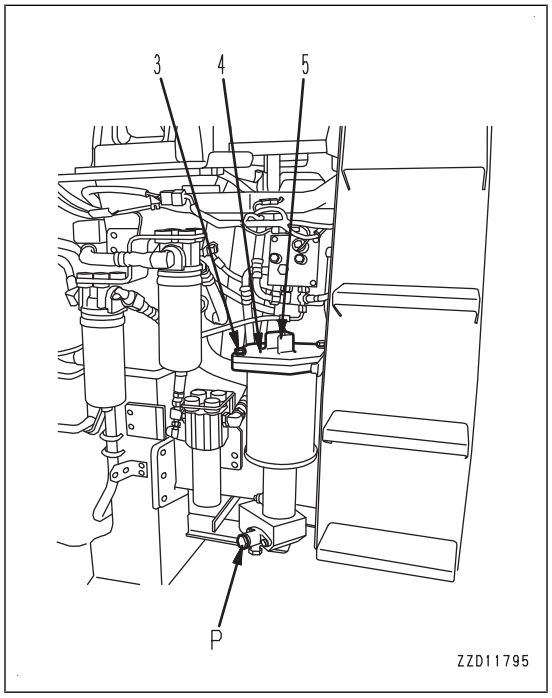
BRAKE COOLING SIDE

1. Remove bolts (1) (4 pieces), then open cover (2).



2. Remove bolts (3), and remove cover (4).
3. Place the oil container under the drain plug to catch the drained oil.
4. Remove drain plug (P) and drain the oil.
5. After draining the oil, tighten drain plug (P).
6. Remove the element.
7. Wash the inside of the filter case, strainer at the bottom of the filter case, and removed parts.
8. Install the new element.
9. Install cover (4) with bolt (3).
10. Adjust the oil level in the transmission case to the specified level.
11. Remove the cap of bleeder screw (5).
12. Insert a vinyl hose to bleeder screw (5).
13. Prepare a container with oil in it, and put the other end of the hose approximately 50 mm into the oil.

    (Use a commercially available vinyl hose.)



14. Start the engine.
15. Loosen bleeder screw (5) approximately 3/4 turns and run the engine at low idle until fewer bubbles come out from the vinyl hose.
16. Tighten bleeder screw (5) securely, then install the cap.
17. Check that the oil level in the transmission case is up to the specified level.

    If the oil level is low, add oil.

    REMARK

    When the air is bled from inside the case, the transmission oil level becomes stable.
18. Fix cover (2) with bolts (1).

METHOD FOR CHANGING OIL IN TRANSMISSION CASE

METHOD FOR CHANGING OIL IN BRAKE OIL TANK, REPLACE BRAKE OIL FILTER ELEMENT

⚠ WARNING

- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **When removing the oil filler cap, the oil may spurt out. Rotate it slowly to release the internal pressure, then remove it with care.**

- Refill capacity of transmission case: 80 ℓ (including transmission case, brake oil tank, and filter cases.)

Perform the following items at the same time in order to drain oil completely.

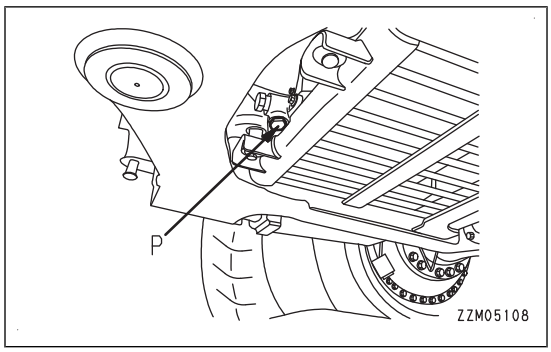
- “METHOD FOR REPLACING TRANSMISSION OIL FILTER ELEMENT”
- “METHOD FOR CHANGING OIL IN TRANSMISSION CASE”
- “METHOD FOR CHANGING OIL IN BRAKE OIL TANK, REPLACE BRAKE OIL FILTER ELEMENT”

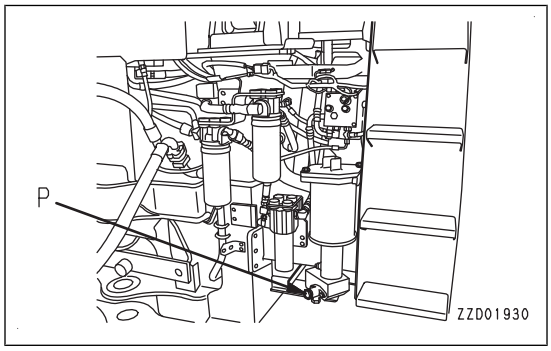
Items to be prepared

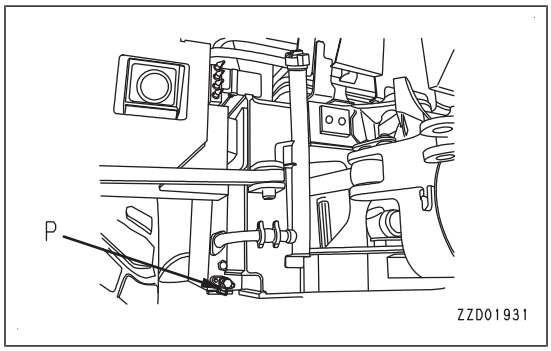
- Container to catch drained oil
- Filter wrench

1. Depress the brake pedal at least 20 times to reduce the pressure inside the brake control accumulator to 0.

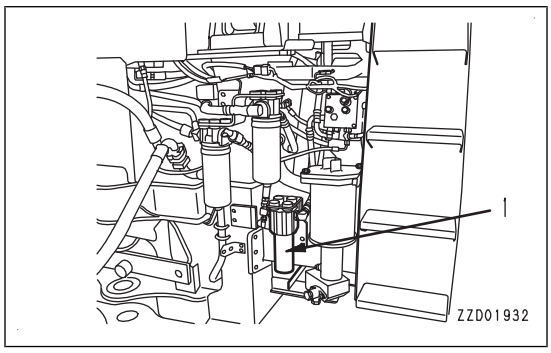
2. Place the oil container under drain plug (P) to catch the drained oil.
3. Remove drain plug (9) and drain the oil.
4. After draining the oil, tighten drain plug (P).







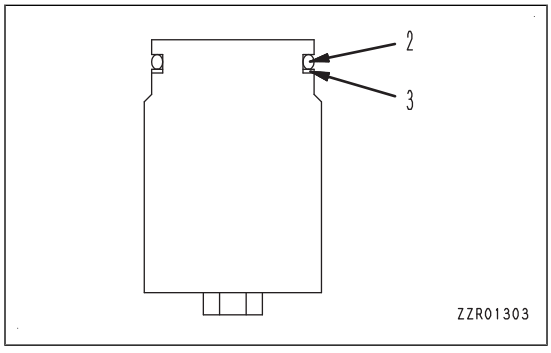
5. Place the oil container under filter case (1) to catch the drained oil.
6. Remove filter case (1).



7. Remove the element.
8. Clean the inside of the filter case

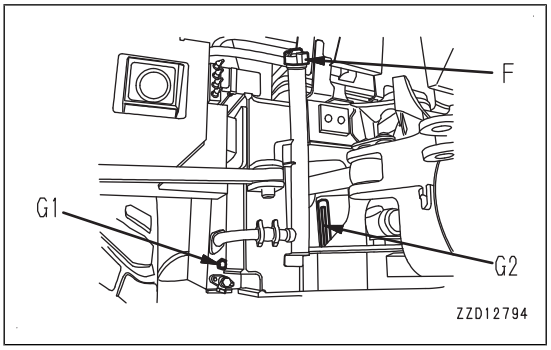
   Replace O-ring (2) and backup ring (3) on the filter case with new parts, apply thin film of clean oil to them, then install them to filter case.
9. Install the new element to the filter case.
10. When installing the element, thinly apply clean oil to its O-ring.

    Tightening torque: 78.4 to 98 Nm {7.99 to 9.99 kgfm}



11. Before starting the engine, add 80 ℓ of oil through oil filler port (F).

    When oil is added, the level will temporarily go above the oil level on sight gauge (G2), but this does not indicate any abnormality.



12. Start the engine, and run it at low idle.

    NOTICE

    Do not start the engine before filling with oil.
    If the engine is started when there is no oil in the system, it will cause damage to the transmission and hydraulic pump.

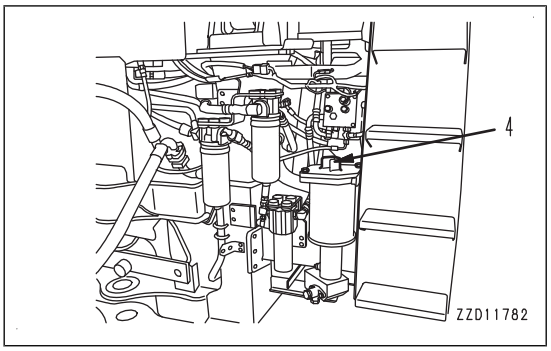
13. Add oil through oil filler port (F) until the oil level is between H and L marks on sight gauge (G2).

    When running the engine at idle, be careful not to let the oil level in the brake oil tank go below sight gauge (G1).

    If the oil level goes below sight gauge (G1), stop the engine to raise the oil level in the brake oil tank.

14. Remove the cap from bleeder screw (4) and insert a vinyl hose.

    (Use a commercially available vinyl hose.)



15. Prepare a container with oil in it, and put the other end of the vinyl hose approximately 50 mm into oil.
16. Loosen bleeder screw (4) approximately 3/4 turns.
17. Run the engine at low idle until no bubble comes out through the vinyl hose.
18. When fewer bubbles come out, tighten bleeder screw (4) securely, remove the vinyl hose, then install the cap.
19. Perform the warm-up operation of the engine until the torque converter oil temperature gauge goes to 40 °C or above.
20. When the torque converter oil temperature gauge rises to 40 °C , bleed the air from the brakes.

    For the procedure to bleed air from the brake, see “METHOD FOR BLEEDING AIR FROM BRAKE CIRCUIT”.

    NOTICE

    - **Do not re-use the oil drained when bleeding the air.**
      It will cause damage to the equipment.
    - **Be careful not to let the oil level in the brake oil tank go below sight gauge (G1) during the air bleed operation.**
      This will cause damage to the pump.

21. After completely bleeding the air from the brakes, stop the engine for approximately 2 to 3 minutes.
22. After stopping the engine for approximately 2 to 3 minutes, check the oil level in the transmission case, and adjust it to the specified level.

    For the method to check the oil level in the transmission case and add oil, see “METHOD FOR CHECKING OIL LEVEL IN TRANSMISSION CASE, ADDING OIL”.

METHOD FOR LUBRICATING PARKING BRAKE

⚠ WARNING

- **When performing maintenance, raise the brake oil pressure sufficiently to prevent the parking brake from being automatically applied. In addition, hang a warning tag that can be seen clearly to prevent any other person from operating the parking brake switch.**
- **Never put any oil or grease on the surface of the brake disc or pad.**

1. Stop the machine on a level place.
2. Chock the wheels.
3. Raise the dump body.
4. Fix the dump body with the dump body pivot pin.
5. Before starting operations, raise the brake oil pressure sufficiently to prevent the parking brake from being automatically applied, and check that the brake oil pressure caution lamp is not lit.
6. Release the parking brake.
7. Stop the engine.
8. Using a grease pump, pump in grease through fittings (1) and (2) (2 places) in the parking brake body and fitting (3) (1 place) in the slack adjuster.

   NOTICE

   Do not use air pressure or oil pressure to perform high-pressure greasing.
9. After completing the greasing operation, remove fitting (1).
10. If grease comes out, wipe off all the grease that comes out.

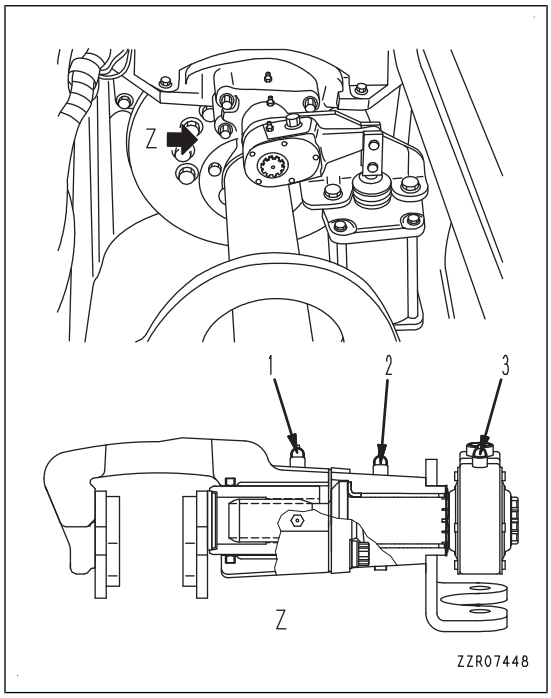
    REMARK

    Removing fitting (1) makes it possible to release the abnormal internal pressure created by excessive greasing.
11. If no grease comes out, install fitting (1).
12. Check the parking brake performance.

    For the performance check method for the parking brake, see “METHOD FOR CHECKING PARKING BRAKE PERFORMANCE”.

    If the machine moves during performance check, adjust the parking brake.

    For the method to adjust the parking brake, see “METHOD FOR ADJUSTING PARKING BRAKE”.

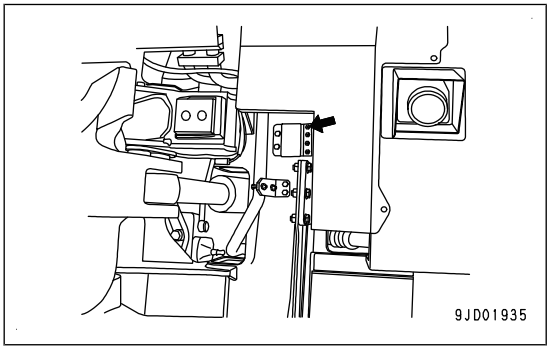


METHOD FOR LUBRICATING

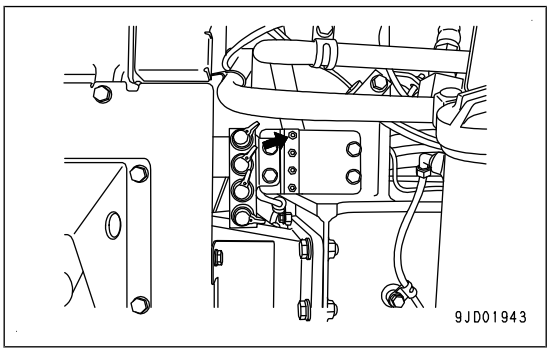
1. Stop the engine.
2. By using a grease pump, pump in grease through the grease fittings shown by arrows.
3. Check visually that the greasing has been performed properly.
4. After greasing, wipe off any old grease that is pushed out.

   Perform the greasing work every day when operating in places where the grease flows out easily, such as when traveling through mud or water.

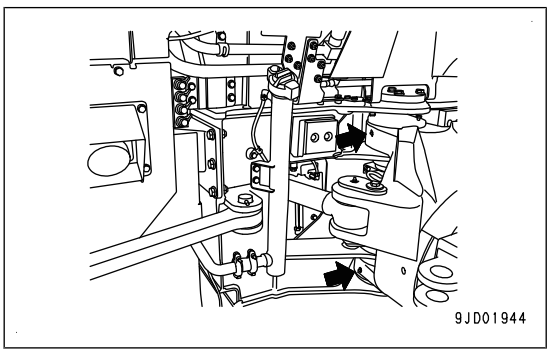
Transmission front trunnion (1 place)



Transmission rear trunnion (1 place)



Center hinge pin (2 places)



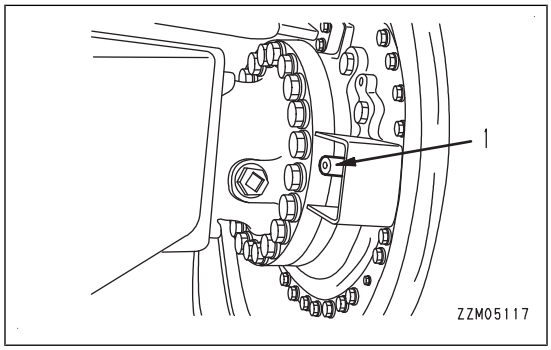
METHOD FOR CHECKING BRAKE DISC WEAR AMOUNT

⚠ WARNING

- **Perform this check when the brake oil temperature is 60 °C or below.**
- **If the disc wear approaches the wear limit, check the condition frequently, regardless of the maintenance interval.**
  In addition, check the retarder capacity carefully.

1. Stop the machine on a flat place.
2. Set parking brake switch to “PARKING” position.
3. Chock the tires to prevent the machine from moving.
4. Check that nothing is actuated other than parking brake.
5. Turn the starting switch to ON position and check that the brake oil pressure caution lamp is not lit.

   If the brake oil pressure caution lamp is lit, start the engine, and run it at 2000 rpm. When the lamp goes out, turn the starting switch to OFF position.
6. Remove cap nut (1).
7. Depress the brake pedal and keep it.



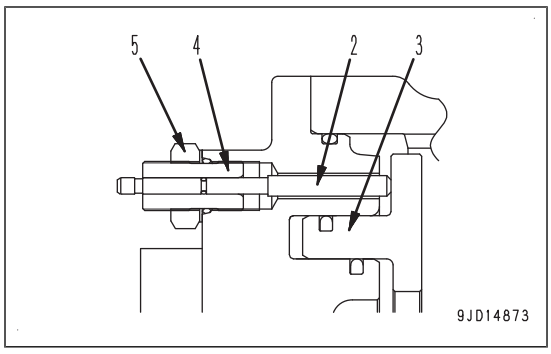
8. Push in shaft (2) of gauge until it contacts piston (3).

   Portion (a): Shows the default value of thickness of brake disc.

   Portion (b): Shows the wear limit of thickness of brake disc.

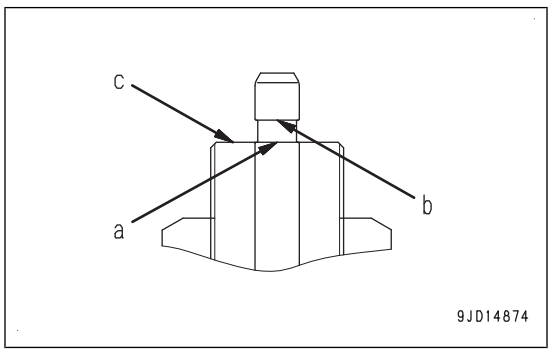
   If it has reached the wear limit, ask your Komatsu distributor for inspection and maintenance.
9. Install cap nut (1) removed in step 6.

   Tightening torque: 29.4 to 39.2 Nm {3.0 to 4.0 kgfm}



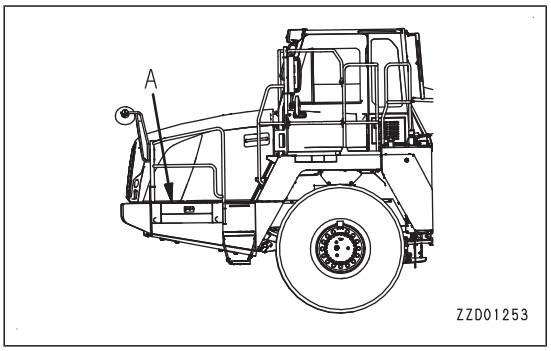
REMARK

- With new machines, the positions are adjusted so that groove underline (a) of shaft (2) matches to upper surface (c) of the guide. So do not loosen locknut (5) except when replacing the disc.
- Perform the operation with 2 workers. One worker depresses the brake pedal and the other pushes in the rod.
- If shaft (2) is pushed in when the engine is running, shaft (2) will be pushed back by the brake cooling oil pressure. So always perform this operation with the engine stopped.



METHOD FOR CHECKING FOR LOOSENESS OF ENGINE INTAKE PIPE CLAMP

When getting on or off the machine with carrying a tool etc., place it once in part (A) to ensure your safety.

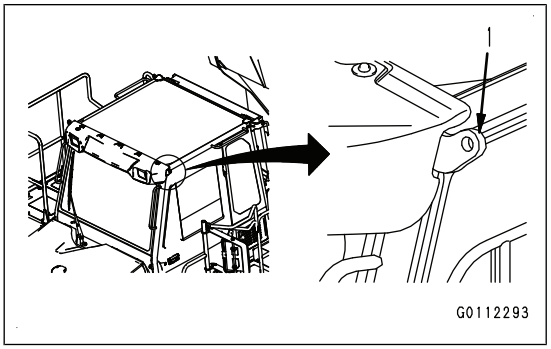


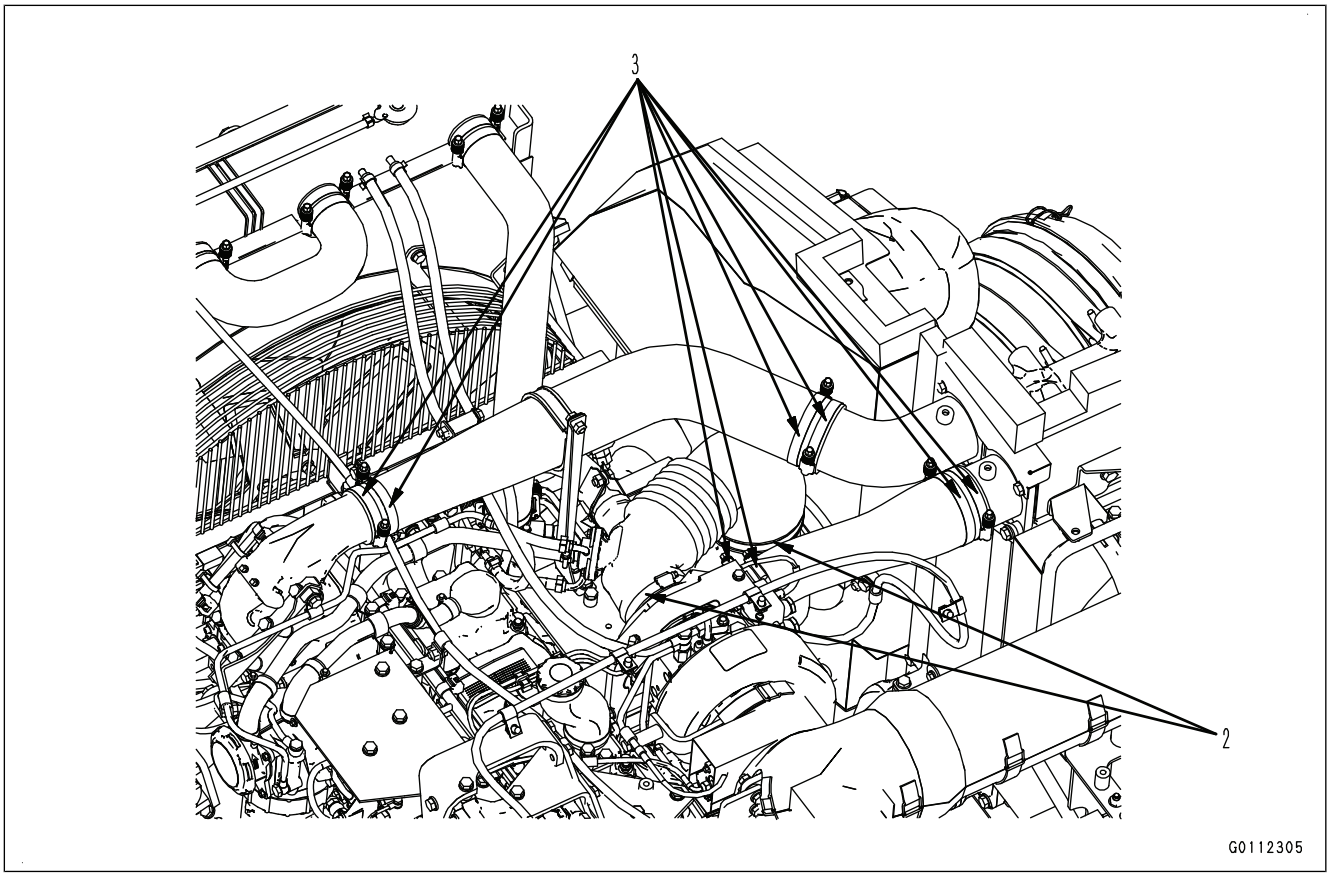
1. Install the personal fall-arrest equipment to the anchor point for tie-off (1).

   The anchor point for tie-off (1) is on the left side of the cab.
2. Check for looseness in the air intake piping clamps between the air cleaner, turbocharger, aftercooler, and engine.
3. Tighten any loose clamps.

   Tightening torque of clamp (2): 8.8±0.5Nm {0.9±0.05kgfm}

   Tightening torque of clamp (3): 9.8±0.5Nm {1.0±0.05kgfm}





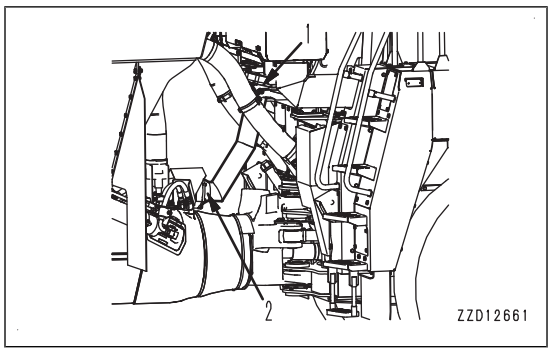
METHOD FOR APPLYING LUBRICANT ON EXHAUST PIPE SPHERICAL SURFACE JOINT PORTION

⚠ WARNING

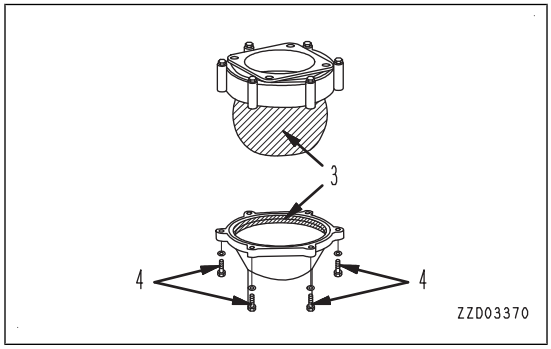
Immediately after the engine is stopped, the parts around the exhaust pipe are still very hot, and may cause burn injury.
Accordingly, wait until they have cooled down before starting the work.

Apply lubricant to the spherical sliding portion of the exhaust pipe of the dump body heating unit (if equipped).

There are 2 spherical sliding portions, (1) and (2). Apply lubricant to both of them.



1. Clean hatched portion (3) thoroughly.
2. Apply dry film lubricant until the base metal is invisible.
3. Dry for 1 hour.
4. When tightening bolts (4) (6 pieces), apply seizure prevention and rust prevention lubricant to the underhead of the bolts.
5. Install bolts (4) (6 pieces).
6. Slide the spherical portions to spread the lubricant thoroughly.



METHOD FOR REPLACING DEF TANK BREATHER ELEMENT

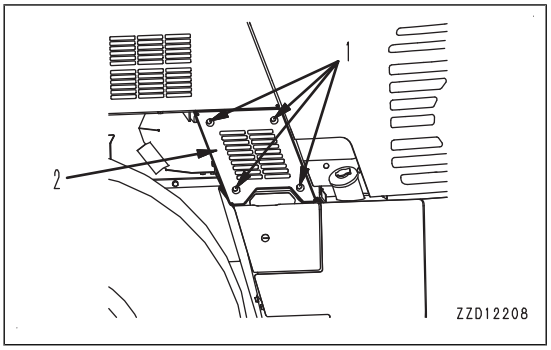
⚠ WARNING

Do not replace the element immediately after engine is stopped.

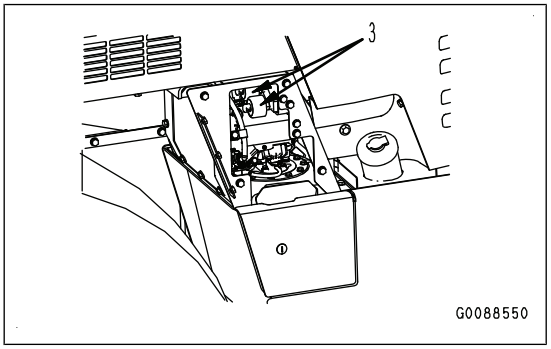
NOTICE

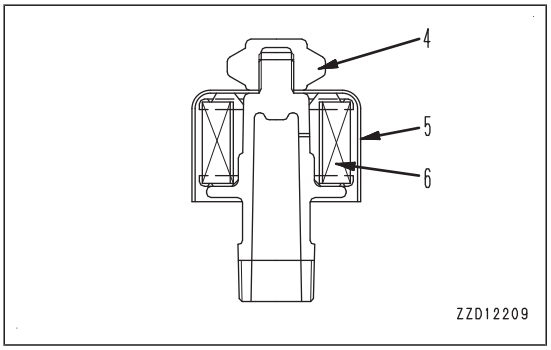
- **Komatsu recommends using Komatsu genuine parts for replacement parts.**
- **If the machine is operated without DEF tank breather element attached, or with the element other than Komatsu genuine parts, foreign materials may enter into DEF pump and DEF injector which will cause failure of the machine. Never operate the machine without DEF tank breather element attached, nor use the element other than Komatsu genuine parts.**
- **Do not flush DEF tank breather element. Flushing or regenerating of it will degrade the performance of element, and will cause the breakage of DEF tank. Never reuse the DEF element.**
- **Always stop the engine and clean around DEF tank before replacing.**
- **After the engine is stopped, DEF system devices automatically purge DEF in DEF injector and DEF pump and return it to DEF tank to prevent malfunction of the devices caused by freezing of DEF or deposition of urea.**
  After the engine is stopped, the devices are operated for a few minutes. Replace the element after DEF system devices stop.
- **Improper assembly of DEF tank breather element may cause leakage of DEF. Replace the element in the correct procedure.**

1. Remove bolts (1), and remove cover (2).



2. Remove nut (4) of breather assembly (3) at the top of DEF tank, then remove cover (5).
3. Replace breather (6) with a new one.
4. Install cover (5) and nut (4).
5. Install cover (2) with bolt (1).





METHOD FOR CHECKING ALTERNATOR BELT TENSION AND REPLACING ALTERNATOR BELT

Special tools are required for inspection and replacement of the alternator belt. Ask your Komatsu distributors for inspection and replacement.

REMARK

As the auto alternator belt tensioner is installed, no belt tension adjustment is required.

EVERY 2000 HOURS MAINTENANCE

Maintenance for every 50, 250, 500 and 1000 hours service should be performed at the same time.

METHOD FOR CHANGING OIL IN FINAL DRIVE CASE

⚠ WARNING

- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **If there is remaining pressure inside the case, the oil or plug may jump out.**
  Turn the plug slowly to release the pressure, then remove it carefully.

- Front final drive case (Both R.H. and L.H.): 3.5 ℓ
- Center final drive case (Both R.H. and L.H.): 3.5 ℓ
- Rear final drive case (Both R.H. and L.H.): 4.5 ℓ

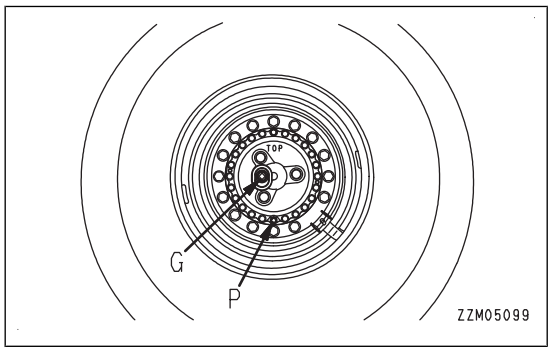
Items to be prepared

Container to receive drained oil

Change the oil of all the final drive cases (front, center, rear).

Change the oil according to the following procedure.

1. Stop the machine so that the TOP embossed mark is at the top and drain plug (P) is at the bottom.
2. Remove drain plug (P) and drain the oil.
3. After draining the oil, tighten the drain plug.
4. Add the specified amount of oil through the hole of plug (G).
5. After adding oil, check that the oil level is in the specified range.



METHOD FOR CHANGING OIL IN DIFFERENTIAL CASE

⚠ WARNING

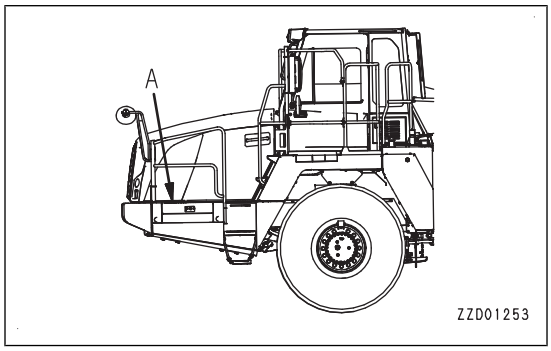
- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **If there is remaining pressure inside the case, the oil or plug may jump out.**
  Turn the plug slowly to release the pressure, then remove it carefully.

- Refill capacity of front differential case: 14.0 ℓ
- Refill capacity of center differential case: 27.5 ℓ
- Refill capacity of rear differential case: 30.0 ℓ

Items to be prepared

Container to receive drained oil

When getting on or off the machine with carrying oil, a tool, etc., place it once in part (A) to ensure your safety.

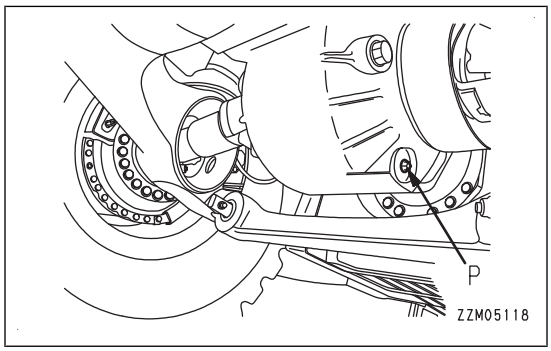


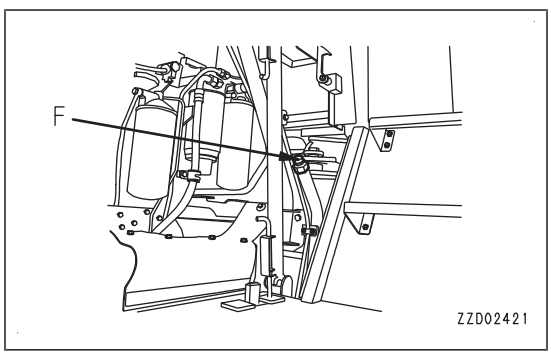
Change the oil in all the differential cases (front, center, rear).

Change the oil according to the following procedure.

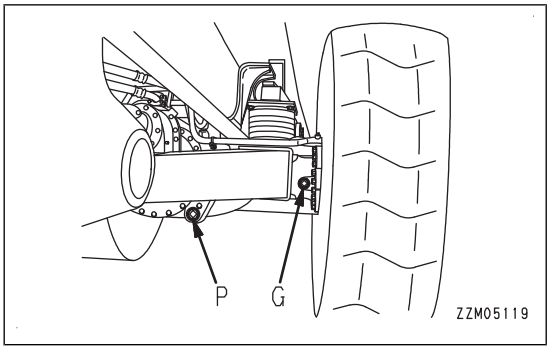
1. Remove drain plug (P) and drain the oil.
2. After draining the oil, tighten the drain plug.
3. Refill with oil to the specified level through the hole for plug (G) or oil filler port (F).
4. After adding oil, check that the oil level is in the specified range.

Front

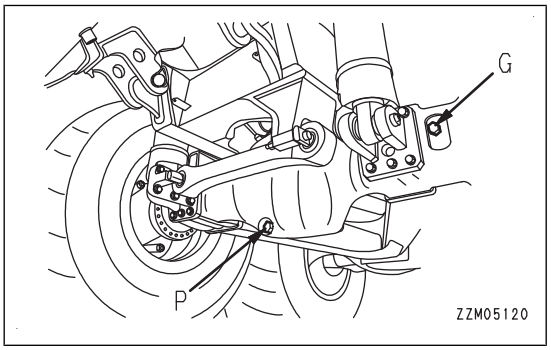




Center



Rear

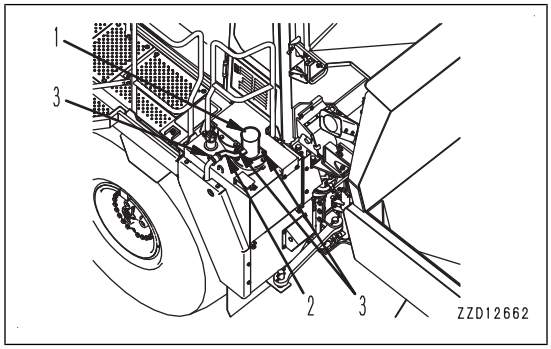


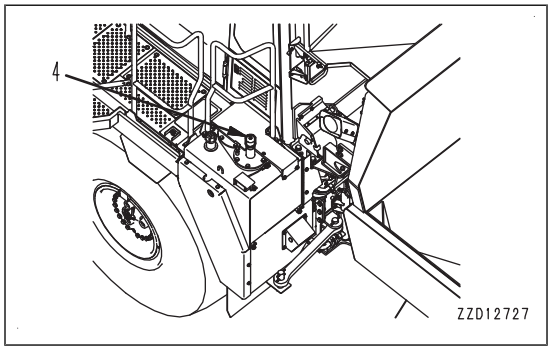
METHOD FOR REPLACING HYDRAULIC TANK BREATHER ELEMENT

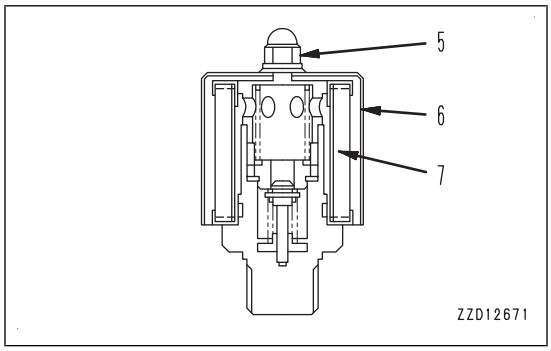
⚠ WARNING

Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury. Accordingly, wait until they have cooled down before starting the work.

1. Remove mounting bolts (3) of hydraulic tank top cover (1) and hose (2).
2. Remove cover (1).
3. Remove nut (5) of breather assembly (4).
4. Remove cover (6).
5. Replace breather element (7) with a new one.
6. Install cover (6) and nut (5).
7. Install cover (1) and hose (2) with mounting bolts (3).







METHOD FOR CLEANING TRANSMISSION CASE STRAINER

⚠ WARNING

- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **When removing the oil filler cap, the oil may spurt out. Rotate it slowly to release the internal pressure, then remove it with care.**

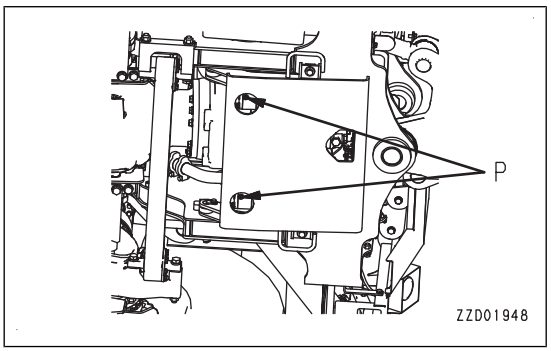
Items to be prepared

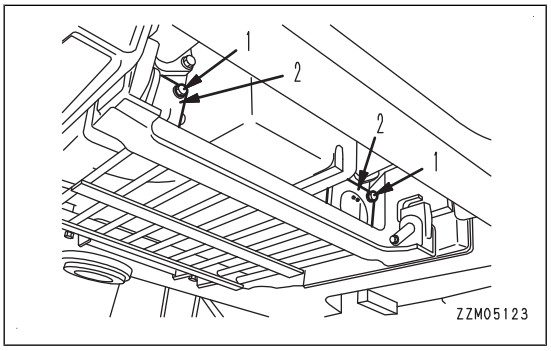
Container to receive drained oil

1. Drain the oil in the transmission case.

   For the method to drain the oil from the transmission case, see “METHOD FOR CHANGING OIL IN TRANSMISSION CASE”.
2. Place the oil container under drain plug (P) to catch the drained oil.
3. Remove drain plug (P) and drain the oil.
4. Remove bolts (1), and remove cover (2).
5. Take out the strainer.
6. Remove all dirt from the strainer, then wash it in clean diesel fuel or flushing oil.

   If the strainer is damaged, replace it.
7. Install the drain plug and strainer in their original positions.
8. Install cover (2) with bolt (1).



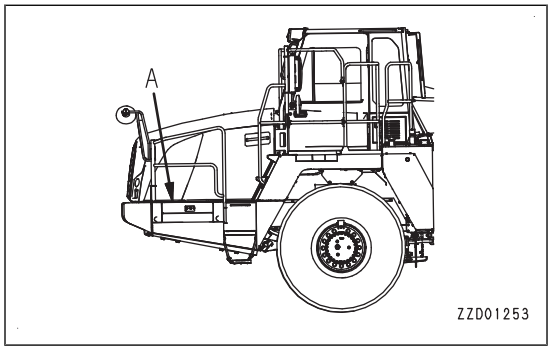


METHOD FOR CLEANING BREATHER

⚠ WARNING

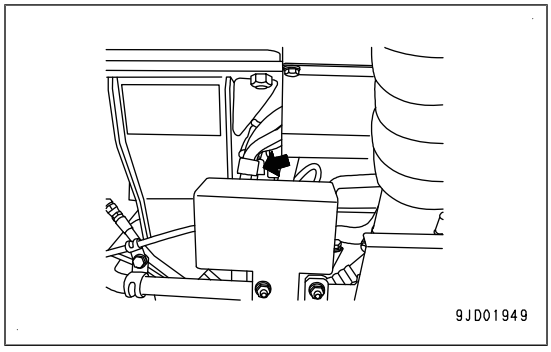
- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **When using compressed air, there is a danger that dirt may scatter and cause personal injury.**
  Always wear protective equipment such as protective eyeglasses and dust mask.

When getting on or off the machine with carrying breather, a tool, etc., place it once in part (A) to ensure your safety.



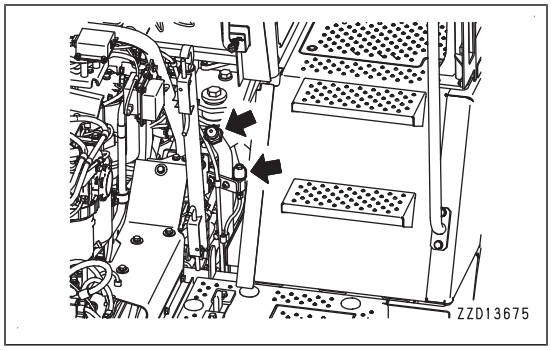
1. Remove mud and dirt around the breather.
2. Remove the breather.
3. Rinse the breather in clean diesel fuel or cleaning oil, and remove dirt from inside.

Transmission

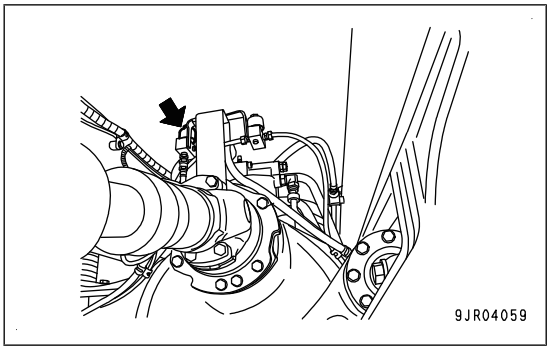


Front differential

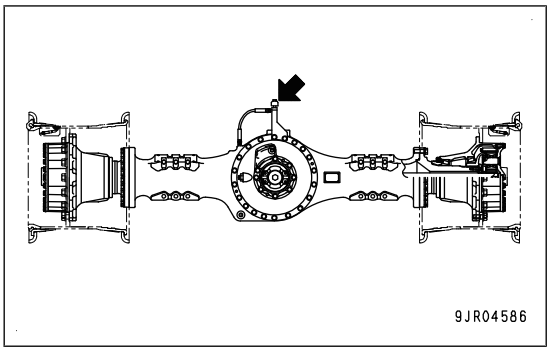
Breather for bleeding air from pump



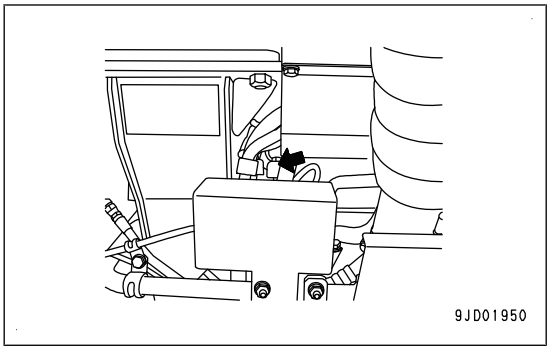
Center differential case



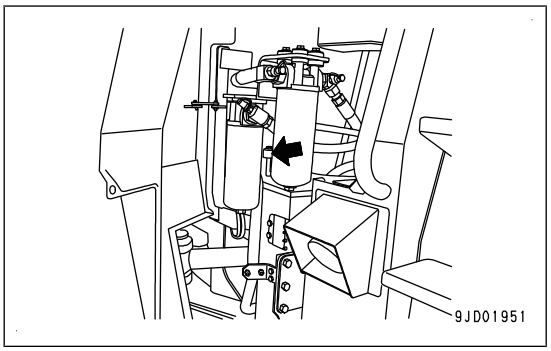
Rear differential case



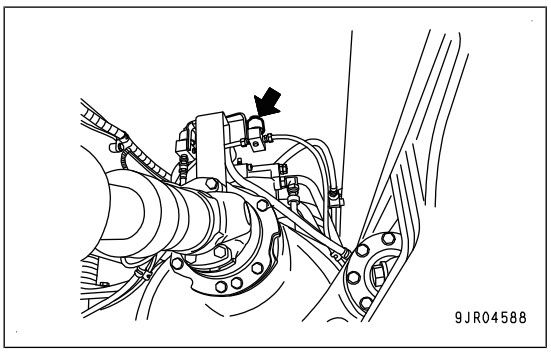
Front final drive case (left)



Front final drive case (right)



Center final drive case



METHOD FOR CHECKING ACCUMULATOR GAS PRESSURE

Contact your Komatsu distributor to have the gas pressure checked when making periodically replacement of safety parts or performing the legally required 2000 hour or every year service.

METHOD FOR CHECKING ALTERNATOR

The brush may be worn and the grease in the bearings may have dried out.

Ask your Komatsu distributor for inspection and repair.

METHOD FOR CHECKING AND ADJUSTING ENGINE VALVE CLEARANCE

Special tools are necessary for inspection and maintenance. Ask your Komatsu distributor to perform this work.

METHOD FOR REPLACING KCCV FILTER ELEMENT

⚠ WARNING

After the engine has been operated, all of parts are still very hot. Do not replace the filter element immediately.
Perform it after each portion is cooled.

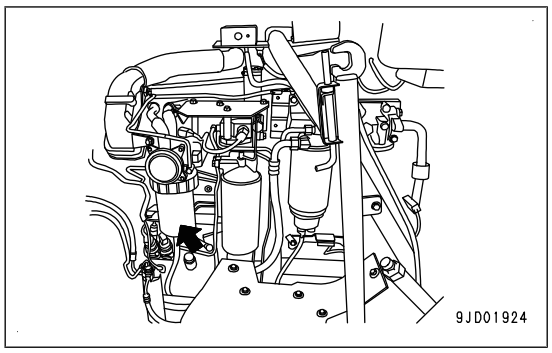
NOTICE

- **If the engine is operated without the filter element, the turbocharger and aftercooler become dirty and their performance will lower and that can cause engine problems such as overrun caused by suction of oil. Therefore, do not start the engine without the filter element.**
- **The filter element cannot be flushed.**
  Flushing or regenerating of the filter element will degrade performance of the filter. As a result, the turbocharger and aftercooler become dirty and the performance lowers or the crankcase pressure increases.
  Never reuse the filter element since it can cause an engine failure.
- **After the filter element is replaced, if KCCV is not assembled correctly, oil or blowby gas may leak. Replace the filter element in the correct procedure.**

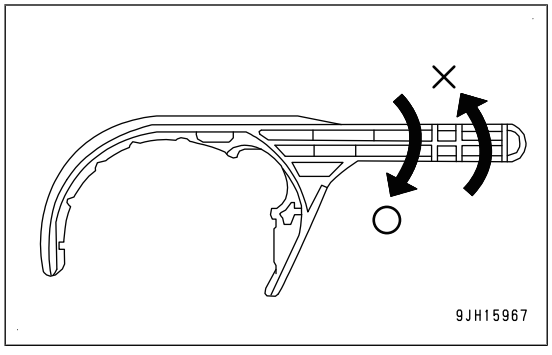
Items to be prepared

- Special wrench for KCCV
- Container to receive drained oil

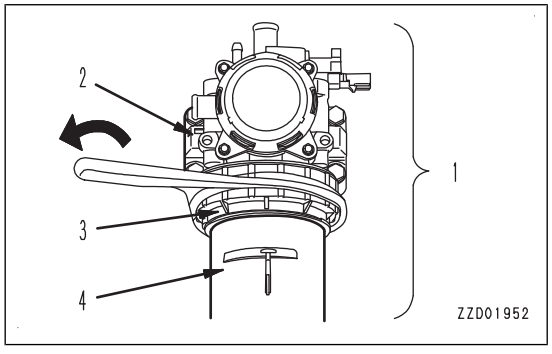
The KCCV ventilator is located in the positions shown in the figure.



For the use of the special KCCV wrench, see the figure.



1. By using the special KCCV wrench, loosen ring (3) of KCCV ventilator (1).

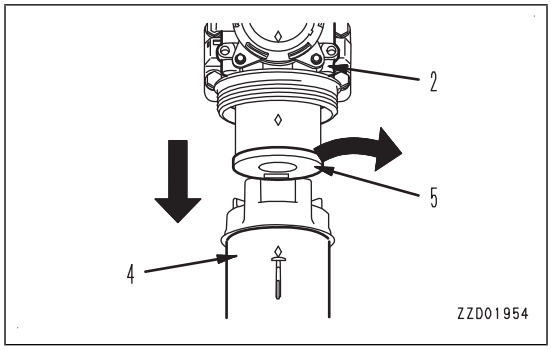


2. After ring (3) comes off, remove case (4) from body (2) and remove element (5).

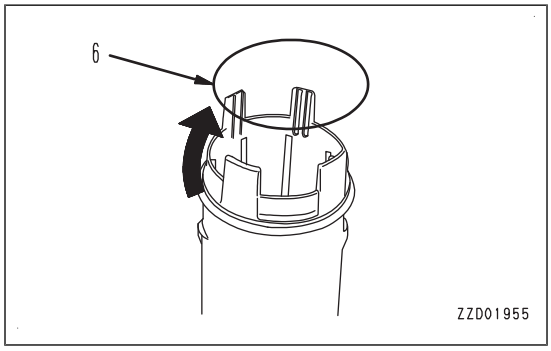
   Oil may be accumulated in or sticking to the case and element. When replacing the element, take care that the oil will not spill out.

   REMARK

   When the ambient temperature is low, water or emulsified matter may stick to the inside of KCCV because of condensation of water vapor in the blowby gas. However, as far as the coolant level is normal, it is not a problem.



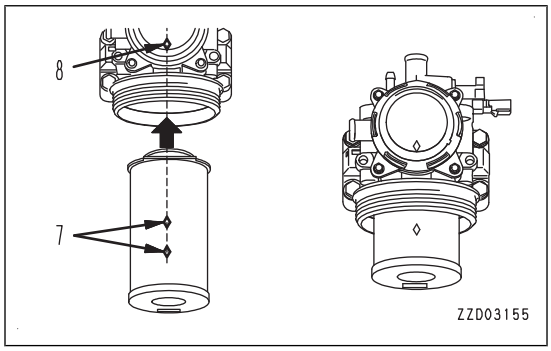
3. Remove used O-ring (6) sticking to case (4) and install a new O-ring contained in the service kit.

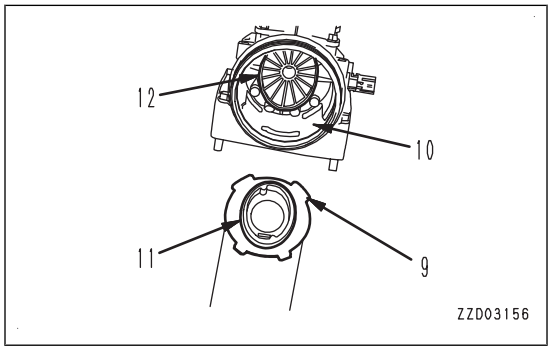


4. While matching ◇ marks (7) of the new element with ◇ mark (8) of the body label, insert the element firmly into the end of the body.

   The element can be installed only when its claws (9) are correctly inserted in grooves (10) of the filter body.

   Bases (11) and (12) are oval. Take extreme care so that those bases are matched with each other.

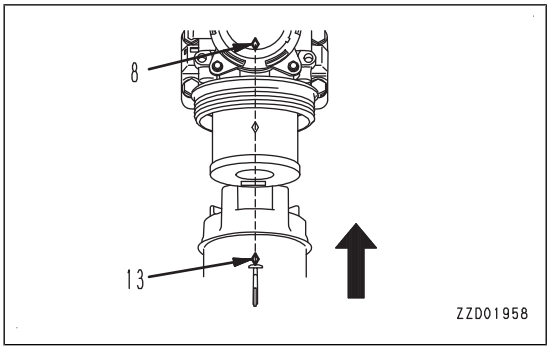


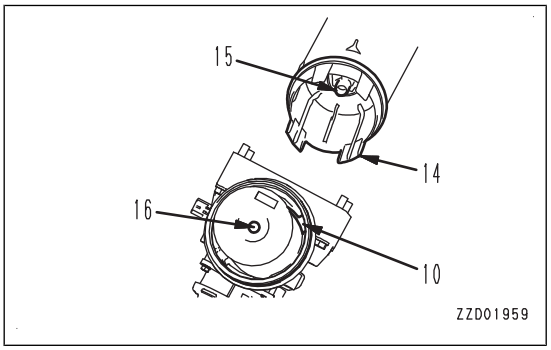


5. Align the position of ◇ mark (13) on the case with that of ◇ mark (8) of the filter body label, then install the case to the filter body.

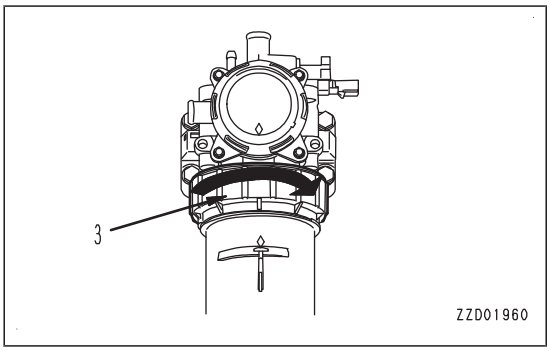
   The case can be installed only when its claws (14) are correctly inserted in grooves (10) of the filter body.

   When inserting, take extreme care so that protrusion (15) in the case is joined together with rubber lip (16) of the element.



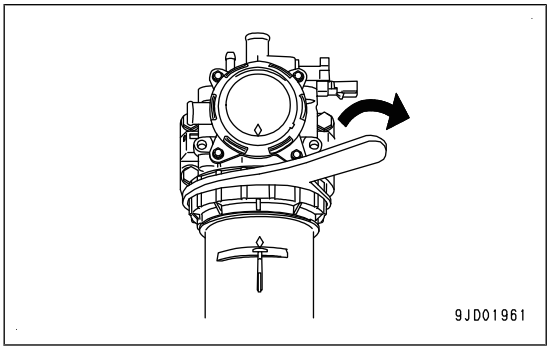


6. Fit ring (3) to the threaded part of the body and tighten it with the hand firmly until it stops.



7. By using the special KCCV wrench, further tighten the ring 1/15 to 2/15 turns (1 to 2 ridges of the ring).

   If the engine is operated with the ring tightened insufficiently, oil and blowby gas may leak.



Check the KCCV hose for leakage, crack, and loose clamp, and replace it if necessary.

METHOD FOR REPLACING DEF FILTER

⚠ WARNING

Immediately after the engine is stopped, the parts are still very hot. Do not replace the filter immediately. Wait until all of parts cool down before starting the work.

NOTICE

- **Komatsu recommends using Komatsu genuine parts for replacement parts.**
- **If the machine is operated without DEF filter attached, or with the filter other than Komatsu genuine parts, foreign materials may enter into DEF pump and DEF injector which will cause failure of the machine. Never operate the machine without DEF filter attached, nor use the filter other than Komatsu genuine parts.**
- **DEF filter cannot be flushed. Flushing or regenerating of it will degrade the performance of filter, and will cause the breakage of DEF tank. Never reuse the DEF element.**
- **Improper assembly of DEF filter may cause leakage of DEF. Replace the DEF filter in the correct procedure.**
- **DEF freezes at –11 °C . If it is frozen, replacement of the filter becomes difficult. Replace the filter when the temperature around DEF pump is higher than -11 °C , and in the condition that DEF is not frozen.**

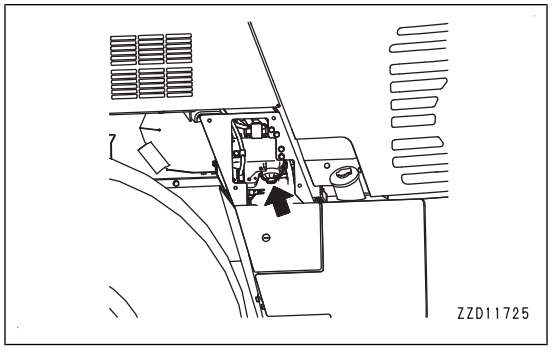
After the engine is stopped, DEF system devices automatically purge DEF in DEF injector and DEF pump and return it to DEF tank to prevent malfunction of the devices caused by freezing of DEF or deposition of urea.

After the engine is stopped, the devices are operated for a few minutes. Before replacing the filter, clean around the DEF pump first after DEF system devices stop.

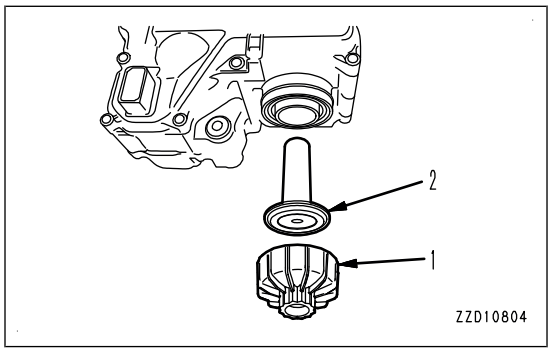
Items to be prepared

- DEF filter removal tool
- Torque wrench

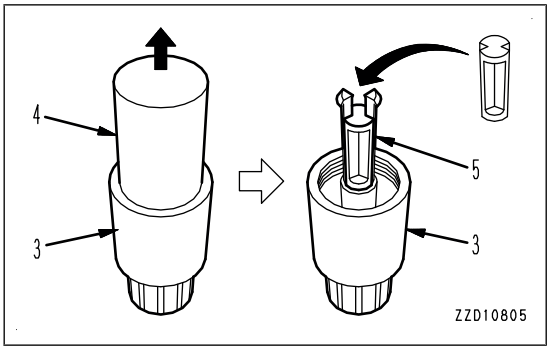
The DEF filter is located at the positions shown in the figure.



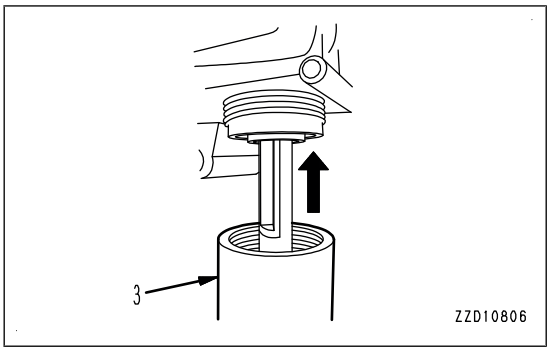
1. Remove filter cap (1) at the bottom of DEF pump, and remove equalizing element (2).



2. Turn cap (4) of filter removal tool (3) and remove it.
3. Check the installation of spacer (5).

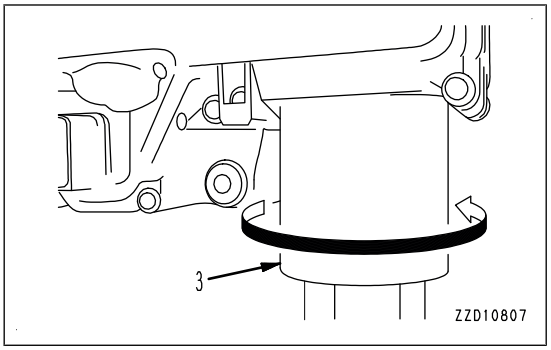


4. Insert filter removal tool (3) into the bottom of the DEF pump and thrust in with hand.



5. Check that filter removal tool (3) is fully inserted to the end.

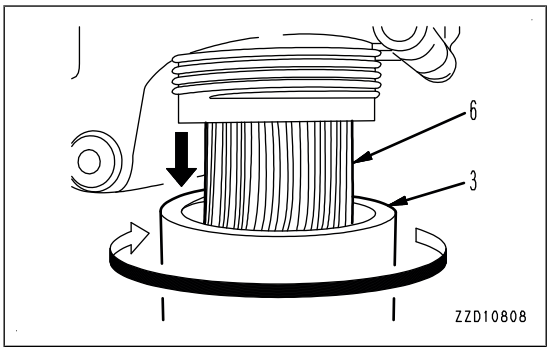
   Insert the filter to the end where you cannot thrust it in any further.



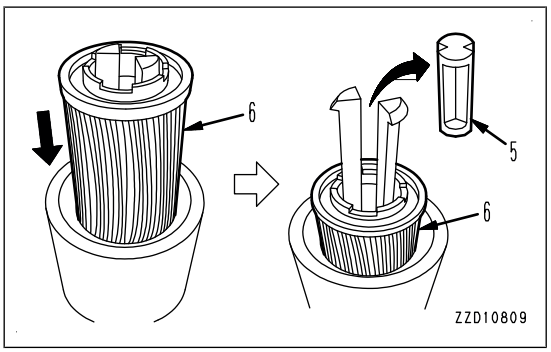
6. Turn filter removal tool (3) in reverse, and remove filter (6).

   Filter (6) is removed and you can take it out together with filter removal tool (3).

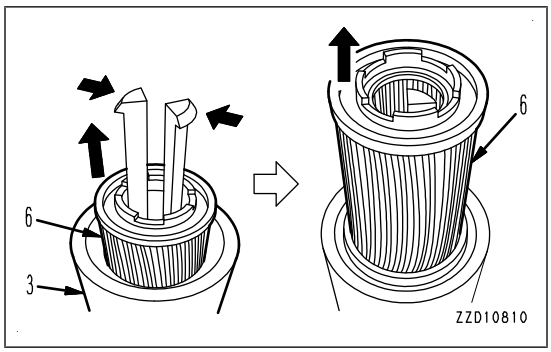
   If filter (6) cannot be removed from DEF pump, grip filter removal tool (3), pull it down, then it will be removed.



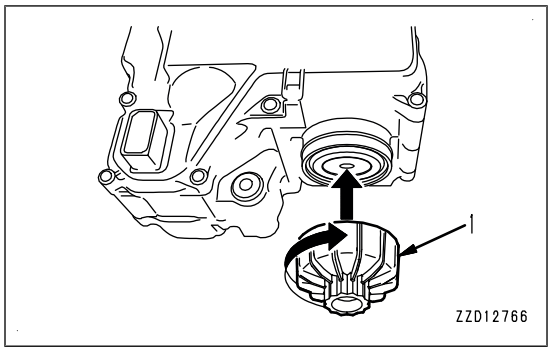
7. Slide filter (6) down, and remove spacer (5) from filter removal tool (3).



8. Pull filter (6) up while pushing in the tip of filter removal tool (3), and remove it.
9. Return the removed spacer (5) to filter removal tool (3), and keep them.
10. Insert a new filter and a new equalizing element into the bottom of DEF pump, and lightly tighten them with hand.



11. Tighten filter cap (1).
    Tightening torque: 20 to 25 Nm {2.0 to 2.5 kgfm}



EVERY 4000 HOURS MAINTENANCE

Maintenance for every 50, 250, 500, 1000 and 2000 hours service should be performed at the same time.

METHOD FOR CHANGING OIL IN HYDRAULIC TANK

⚠ WARNING

- **Immediately after the engine is stopped, its parts and oil are still very hot and may cause burn injury.**
  Accordingly, wait until they have cooled down before starting the work.
- **When removing the oil filler cap, the oil may spurt out. Rotate it slowly to release the internal pressure, then remove it with care.**

NOTICE

When filling the tank with oil after draining the hydraulic oil with the pump suction piping disconnected, be sure to bleed air through the bleeder.
If the air is not bled, it stays in the suction piping and can damage the pump.

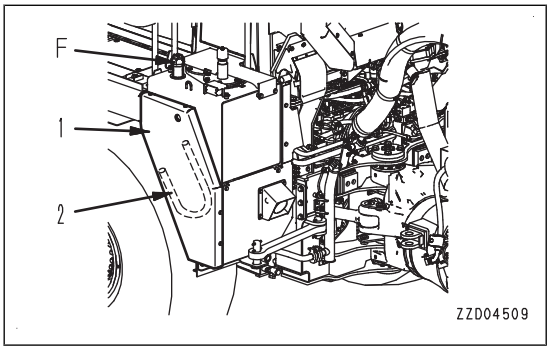
Hydraulic tank refill capacity: 103 ℓ

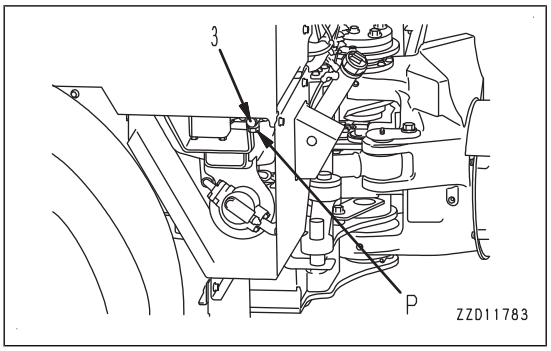
Items to be prepared

Container to receive drained oil

1. Lower the dump body and stop the engine.
2. Turn the cap of oil filler port (F) to release the internal pressure before removing the cap.
3. Remove hydraulic oil tank cover (1) to take oil drain hose (2) out from inside.
4. Remove drain plug (P) to install oil drain hose (2).
5. Place the container to receive the drained oil.
6. Loosen drain valve (3) and drain the oil.
7. After draining the oil, tighten drain valve (3).
8. Remove oil drain hose (2) and install drain plug (P).
9. Stow oil drain hose (2) and install hydraulic tank cover (1).
10. Add the specified amount of oil through oil filler port (F).
11. After adding oil, check that the hydraulic oil is at the specified level.
12. Bleed air from the hydraulic circuit.

    For the air bleeding procedure of hydraulic circuit, see “METHOD FOR BLEEDING AIR FROM HYDRAULIC CIRCUIT”.





METHOD FOR CHECKING WATER PUMP

Check around the water pump for water leakage.

If any part is leaking, ask your Komatsu distributor for inspection/repair.

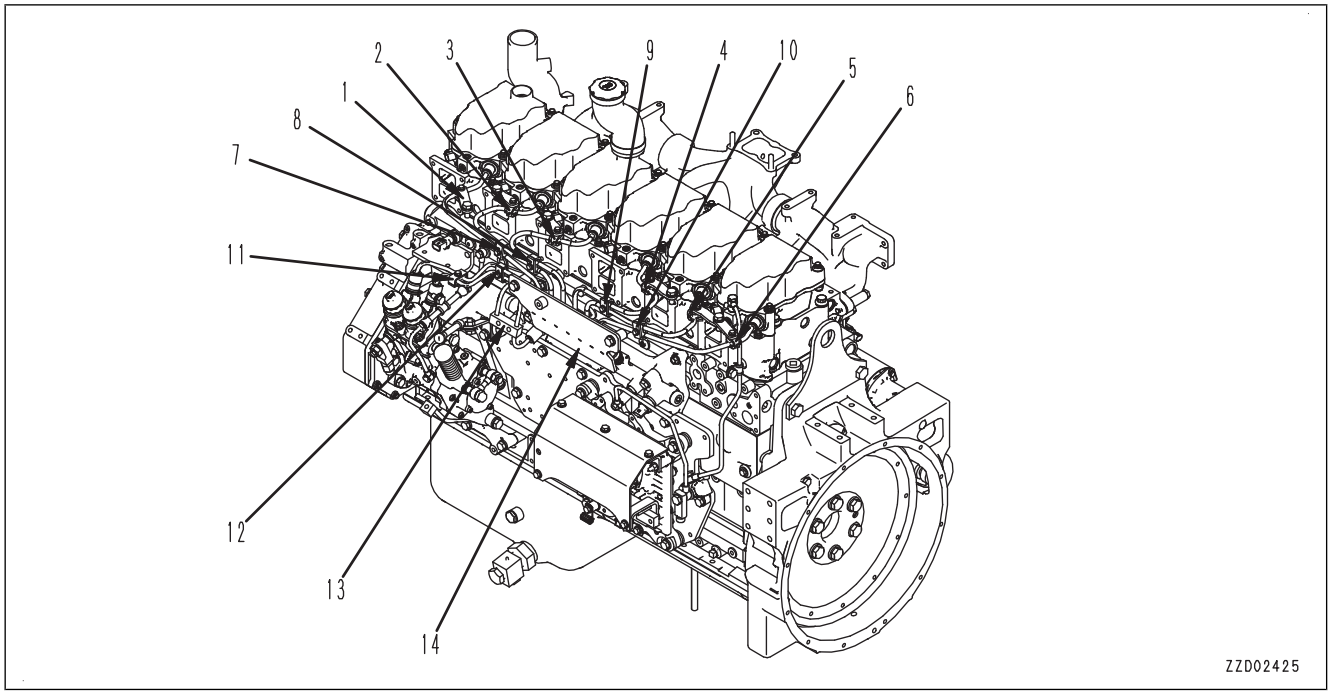
METHOD FOR CHECKING STARTING MOTOR

The brush may be worn and the grease in the bearings may have dried out.

Ask your Komatsu distributor for inspection and repair.

If the engine is started frequently, have this inspection performed every 1000 hours.

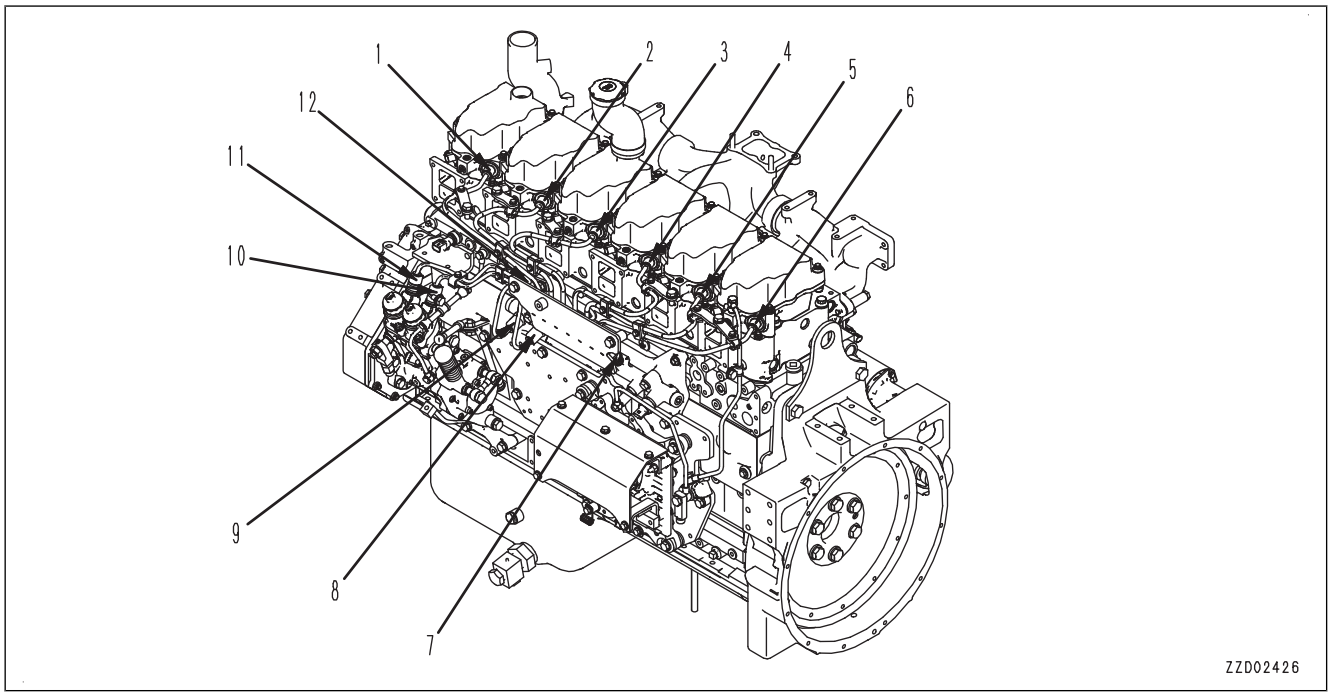
METHOD FOR CHECKING FOR LOOSENESS OF ENGINE HIGH-PRESSURE PIPING CLAMP, HARDENING OF RUBBER



Check clamps (1) to (14) visually and with your fingers that there are no loose bolts or hardening of the rubber.

If there is any loose bolt or hardened rubber, ask your Komatsu distributor for replacement.

METHOD FOR CHECKING FOR MISSING FUEL SPRAY PREVENTION CAP, HARDENING OF RUBBER



Check for any missing fuel spray prevention caps (1) to (11) or fuel spray prevention cover (12), and check also for any hardened rubber portions.

If there are any missing caps or cover or the rubber is hardened, ask your Komatsu distributor for installation or replacement.

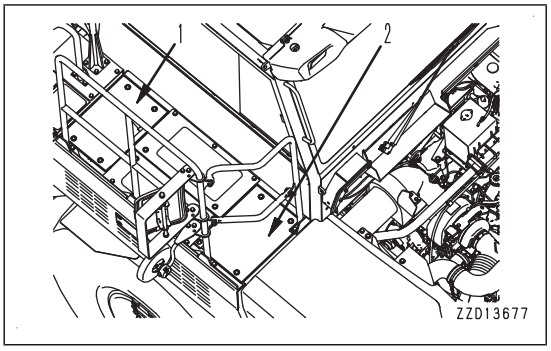
METHOD FOR CHECKING EXHAUST PIPE FIRE PREVENTION COVER

⚠ WARNING

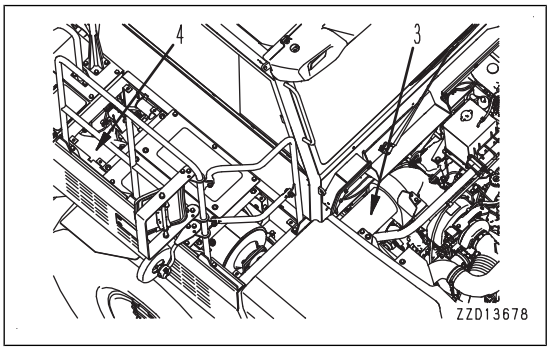
Immediately after the engine is stopped, all the parts are still very hot, and may cause burn injury. Accordingly, wait until they have cooled down before starting the work.

Exhaust pipe fire prevention covers (3) and (4) may suffer material deterioration or damage depending on the conditions of use and the operating environment of the machine.

1. Open the engine hood.
2. Remove covers (1) and (2).



3. Check exhaust pipe fire prevention covers (3) and (4).
   If any part is deteriorated or damaged, ask your Komatsu distributor for replacement.
4. Install covers (1) and (2).
5. Close the engine hood.



EVERY 4500 HOURS MAINTENANCE

Maintenance for every 50, 250 and 500 hours should be performed at the same time.

METHOD FOR CLEANING KDPF

Contact your Komatsu distributor for cleaning of the KDPF.

REPLACE DEF TANK FILLER PORT FILTER

⚠ WARNING

Immediately after the engine is stopped, all the parts are very hot. Do not replace the filter immediately. Wait for all of parts to cool down before you start the work.

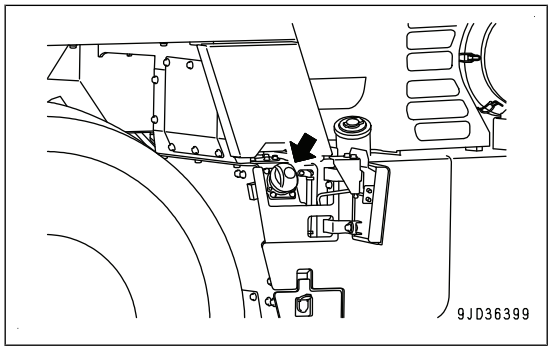
NOTICE

- **If the filter other than Komatsu genuine parts is used, entry of foreign materials to the DEF pump and DEF injector can occur, and it causes failure of the machine. Komatsu recommends the use of Komatsu genuine parts for replacement parts.**
- **DEF tank filler port filter cannot be cleaned. Cleaning or regeneration of the filter will degrade the performance of filter, and will cause the breakage of the DEF pump. You must not use the filter again.**
- **If the DEF tank filler port filter cannot be assembled correctly, it can cause leakage of DEF. Replace the DEF tank filler port filter in the correct procedure.**
- **DEF freezes at -11 °C. If it is frozen, replacement of the filter is not easy. Replace the filter when the temperature around the DEF pump is higher than -11 °C in the condition that the DEF will not freeze.**
- **Before you start the work, clean around the DEF tank filler port, and be careful not to let dirt get into the tank during the work.**
- **If it is not easy to supply DEF because of clogging of the DEF tank filler port filter, replace it even if it is less than 4500 h.**
- **When you replace the DEF tank filler port filter, park the machine on a level ground. Do not replace it if DEF tank is full.**
- **Remove the filter carefully since DEF in the DEF tank filler port filter can spill out.**

Items to be prepared

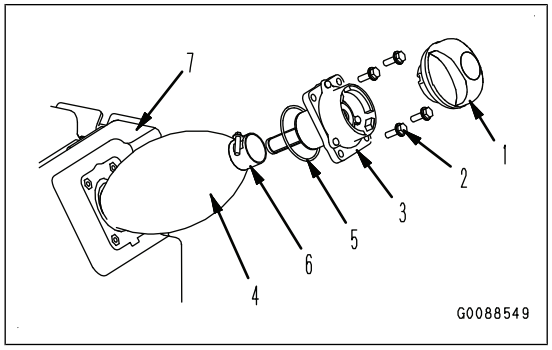
- Distilled water
- Torque wrench

DEF tank filler port filter is located at the position shown in the figure.



1. Remove the DEF tank filler port cap (1).
2. Remove the DEF tank filler port mounting bolt (2), and remove the DEF tank filler (3) and DEF tank filler port filter (4).
3. Loosen the band (6), and remove the DEF tank filler port filter (4) from the DEF tank filler (3).
4. Remove the O-ring (5).
5. Install a new DEF tank filler port filter to the DEF tank filler (3) with the band (6).

   Tightening torque: 4.4±0.49 Nm{0.45±0.05 kgfm}

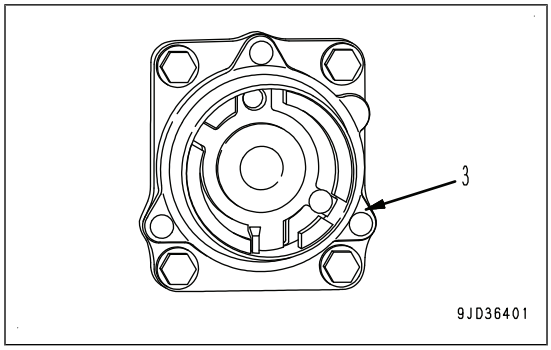


6. Lightly apply the distilled water to a new O-ring and install it to the DEF tank (7).

7. Install the DEF tank filler (3) and DEF tank filler port filter (4) with the DEF tank filler port mounting bolt (2).

   When you install them, be careful about the direction of DEF tank filler (3).

   Tightening torque: 4.9 to 5.9Nm {0.5 to 0.6kgfm}



METHOD FOR CLEANING DEF TANK

Ask your Komatsu distributor for cleaning of the DEF tank.

METHOD FOR CLEANING FUEL DOSER

For cleaning the fuel doser, ask your Komatsu distributor.

METHOD FOR CHECKING FOR MISSING FUEL SPRAY PREVENTION CAP ON FUEL DOSER PIPING, HARDENING OF RUBBER

The fuel spray prevention cap acts to prevent the fuel from coming into contact with high-temperature parts of the engine and causing a fire if the fuel should leak or spray out.

Check visually and touch by hand to check that there are no missing caps, loose bolts or hardening of the rubber.
If there are any problems, the parts must be replaced. Ask your Komatsu distributor for replacement.

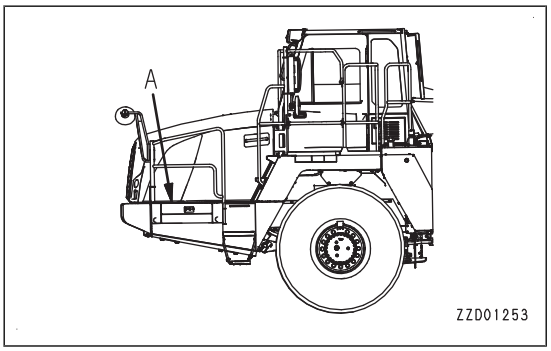
EVERY 6000 HOURS MAINTENANCE

Perform the periodic maintenance work of every 50, 250, 500, 1000 and 2000 hours of operation at the same time.

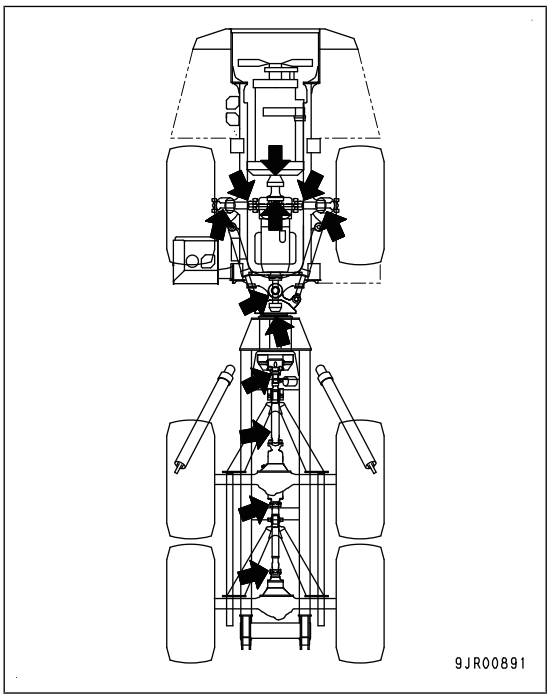
METHOD FOR LUBRICATING DRIVE SHAFT

When greasing, use lithium grease (G2-LI), and perform the greasing for every 6000 hours or every 2 years whichever comes sooner.

When getting on or off the machine with carrying grease, a tool etc., place it once in part (A) to ensure your safety.



1. Stop the engine.
2. By using a grease pump, pump in grease through the grease fittings shown by arrows.
3. Grease the spider portion until grease comes out from the cap seal.
4. Check visually that the greasing has been performed properly.
5. After greasing, wipe off any old grease that is pushed out.



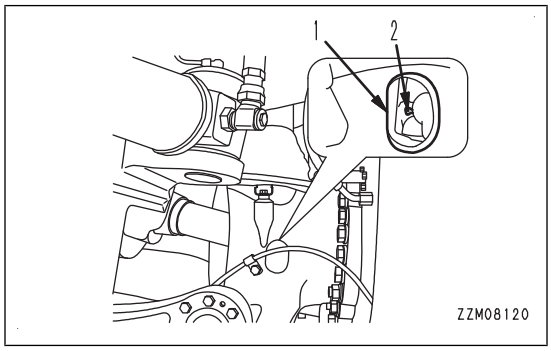
METHOD FOR CHECKING LOCATION OF FRONT DRIVE SHAFT GREASE FITTING

⚠ WARNING

When checking the positions of the grease holes and grease fittings, ensure that the machine is stopped.
It is very dangerous to check the positions of the grease holes and grease fittings while the machine is running.

Check that grease hole (1) of the A-arm (at the rear of the machine) is matched with grease fitting (2) of the spider.
If grease hole (1) is not matched with grease fitting (2) of the spider, match them according to the following procedure.

1) Move the machine backward or forward.
   Do not go under the machine at this time.
2) Stop the engine.
3) Chock the wheels.
4) Check that grease hole (1) is matched with grease fitting (2).
   If grease hole (1) is not matched with grease fitting (2), match them by repeating steps 1) to 3).



EVERY 8000 HOURS MAINTENANCE

Maintenance for every 50, 250, 500, 1000, 2000 and 4000 hours service should be performed at the same time.

METHOD FOR REPLACING ENGINE HIGH-PRESSURE PIPING CLAMP

Special techniques and tools are required for this work.

Ask your Komatsu distributor for replacement of the engine high-pressure piping.

METHOD FOR REPLACING FUEL SPRAY PREVENTION CAP

Ask your Komatsu distributor for replacement of the fuel spray prevention caps.

METHOD FOR OVERHAULING STARTING MOTOR AND ALTERNATOR

Ask your Komatsu distributor to perform this work.

EVERY 9000 HOURS MAINTENANCE

Maintenance for every 50, 250, 500, 1000 and 4500 hours service should be performed at the same time.

METHOD FOR REPLACING DEF HOSE

Ask your Komatsu distributor for replacement of the DEF hose.

METHOD FOR REPLACING FUEL SPRAY PREVENTION CAP ON FUEL DOSER PIPING

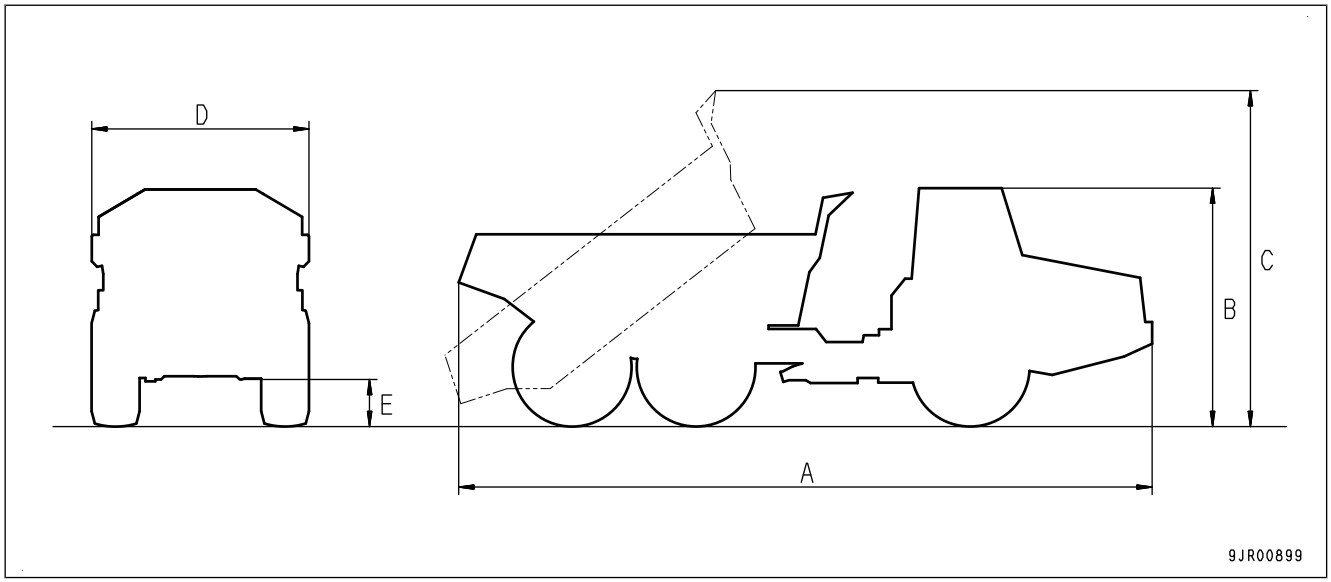
Special techniques and tools are required for this work.

Ask your Komatsu distributor for replacement of the fuel spray prevention cap on fuel doser.

SPECIFICATIONS

SPECIFICATIONS

	Item			Unit	HM300-5E0
	Overall weight (unloaded weight + max. payload + 1 operator (80 kg))			kg	53475
	Unloaded weight			kg	25395
	Max. payload			kg	28000
	Dump body capacity	Struck		m^3	13.4
		Heaped (2 : 1)		m^3	17.1
	Dumping speed (2000 rpm) (raised)			sec	10.5
	Engine model			-	Komatsu SAA6D125E-7 diesel engine
	Engine rated horsepower • SAE J1995 (gross) • ISO14396 • ISO9249 / SAE J1349 (Net)			kW {HP}/ min^{-1} {rpm}	 248 {332}/ 2000 {2000} 248 {332}/ 2000 {2000} 242 {324}/ 2000 {2000}
	Engine max. torque			Nm {kgfm}/ rpm	1660 {169}/ 1400
A	Overall length			mm	10275
B	Overall height			mm	3510
C	Overall height when dumping			mm	6440
D	Overall width			mm	2900
E	Min. ground clearance (bottom of rear-front axle)			mm	498
	Min. turning radius			mm	8100
	Travel speed	Forward	1st	km/h	6.8
			2nd	km/h	10.7
			3rd	km/h	16.2
			4th	km/h	25.5
			5th	km/h	38.4
			6th	km/h	58.6
		Reverse	1st	km/h	7.6
			2nd	km/h	18.1
	Operating temperature range			°C	-20 to 40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ATTACHMENTS AND OPTIONS

⚠ WARNING

Before reading this chapter, read and understand the SAFETY.

HANDLE CAB POWER TILT

⚠ WARNING

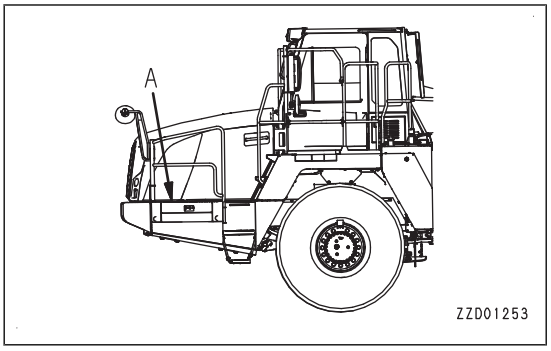
To prevent serious injury or death if the cab comes down, always observe the following strictly when tilting the cab.
Precautions before starting cab tilt operation

- **Perform the cab tilt operation on a flat place.**
- **When performing the cab tilt operation, set the machine facing directly to the front to prevent contact between the cab and dump body, and secure the front and rear frames with the articulation lock.**
- **Set the parking brake switch to "PARKING" position to apply the parking brake.**
- **Lock the dump control lever with the dump lever lock knob.**
- **Chock the tires to prevent the machine from moving.**
- **Always remove the pin from rear mounting position and insert it in the position for tilting, before removing the cab mount.**
- **Do not perform the cab tilt operation in the strong wind.**

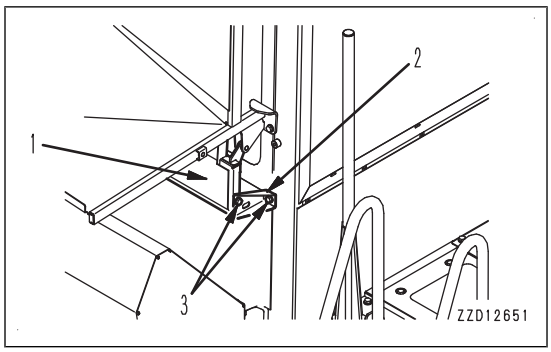
Precautions for cab tilt operation

- **Do not perform the cab tilt operation when the machine is loaded.**
- **Do not stand under the cab during the cab tilt operation.**
- **When the cab is tilted up, lock it securely in position with the lock bar.**
- **When installing the lock bar, do not enter under the cab but install it from the side of the cab.**
- **While the cab is tilted up, do not get on or off it.**
- **While the cab is tilted up, do not operate the gear shift lever nor dump lever.**
- **While the cab is tilted up, do not start the engine.**
  If it is necessary to start the engine when performing inspection, check first that there is no one under the cab.
- **While the cab is tilted up, do not give a large impact to the machine.**
- **When using the cab power tilt function to lower the cab, do not open the valve quickly but open it gradually while adjusting the lowering speed.**
- **The lock bar is set on the left inside of the engine hood. After using it, be sure to restore it.**

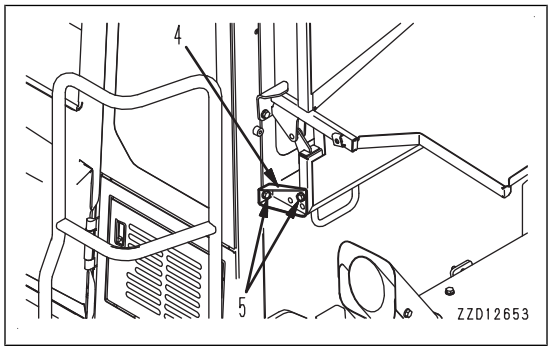
When getting on or off the machine with carrying a tool etc., place it once in part (A) to ensure your safety.



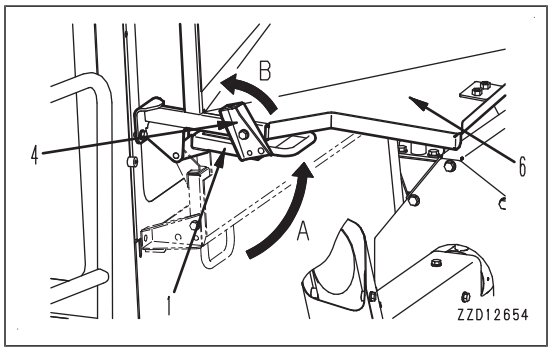
1. Tilt guard (1) at the rear of the cab and fix it according to the following procedure.
   1) Remove mounting bolts (3) of R.H. bracket (2).



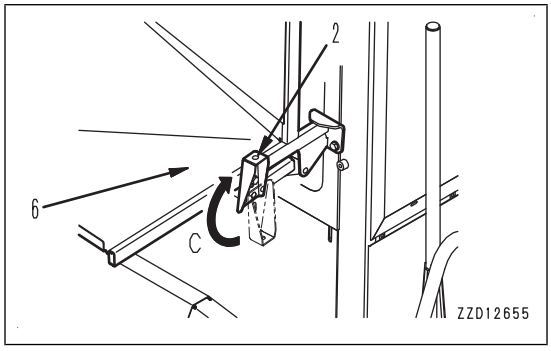
   2) Remove mounting bolts (5) of L.H. bracket (4).



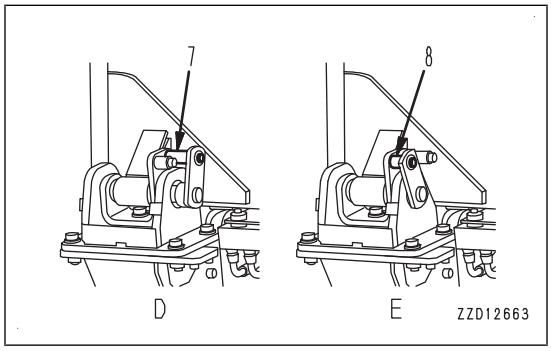
   3) Flip up guard (1) to direction (A).
   4) Turn L.H. bracket (4) to direction (B) and hitch it on rear guard (6).
   5) Fix L.H. bracket (4) with the bolts.



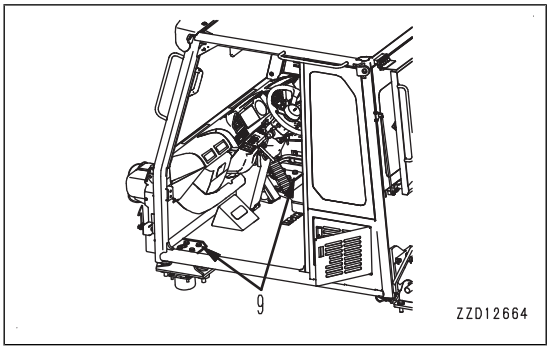
   6) Turn R.H. bracket (2) to direction (C) and hitch it on rear guard (6).
   7) Fix R.H. bracket (2) with the bolts.



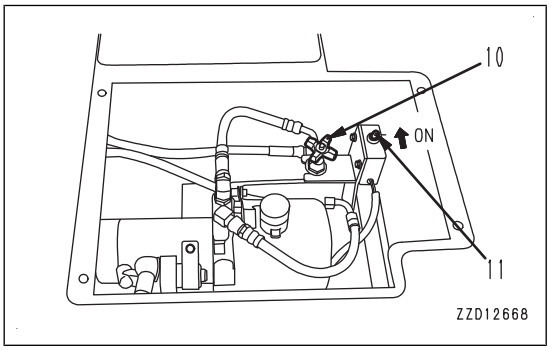
2. Remove pin (7) in the mount at the rear of the cab, and insert pin (8) instead. (each of the right and left)
   D: For traveling
   E: For tilting



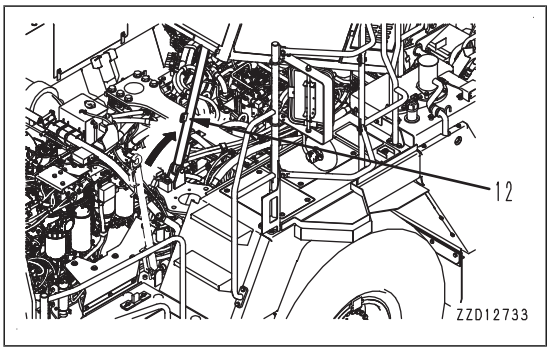
3. Remove cab mounting bolts (9) (8 pieces).



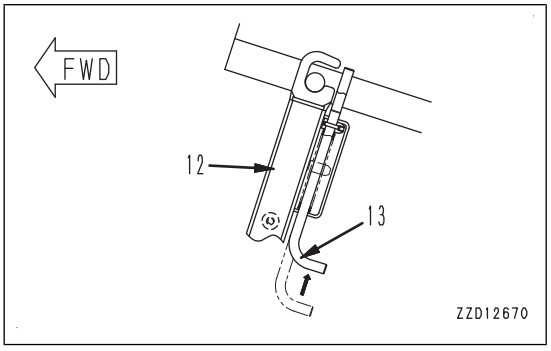
4. Open the cab power tilt unit on the L.H. fender.
5. Turn valve (10) clockwise and close it fully.
6. Set switch (11) to ON position to raise the cab.



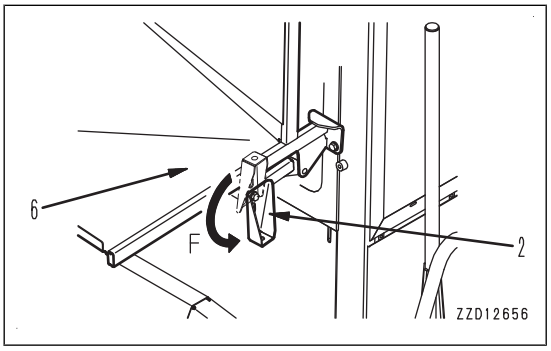
7. After tilting up the cab, fix it in position with lock bar (12).
   Make sure that lock bar (12) is installed in the correct direction and lock it securely with lock (13).



8. When lowering the cab, remove lock bar (12).
9. Turn valve (10) counterclockwise and open it gradually.
   The cab lowers slowly.
10. After returning the cab to its original position, remove pin (8) and insert pin (7) instead.
11. Install mounting bolts (9) (8 pieces).

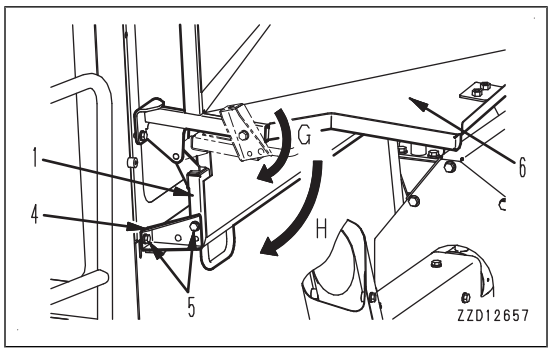


12. Return guard (1) at the rear of the cab according to the following procedure.
    1) Remove the bolts of R.H. bracket (2).
    2) Turn R.H. bracket (2) to direction (F) and remove it from rear guard (6).

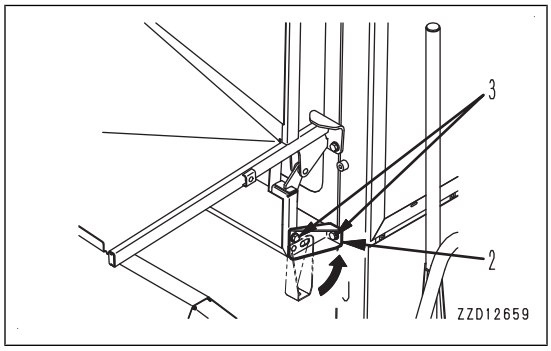


3) Remove the bolts of L.H. bracket (4).
4) Turn L.H. bracket (4) to direction (G) and remove it from rear guard (6).
5) Lower guard (1) to direction (H).
6) Fix L.H. bracket (4) with mounting bolts (5).

   At this time, install guard (1) while it is lowered. Do not install it while it is being raised.



7) Turn R.H. bracket (2) to direction (J) and fix it with mounting bolts (3).



HANDLING PAYLOAD METER

OUTLINE OF SYSTEM

The payload meter detects the signals from the pressure sensors, clinometer, body float detection, neutral detection, and travel speed detection, and calculates the payload by using the microcomputer built in the controller.

Also, it displays the calculated payload on the machine monitor and indicates the loading state with the external display lamps.

You can download the data saved in the payload meter to a personal computer by using the special software (if equipped). The measurement is performed by statistically processing the signals from the pressure sensors, etc.

The road surface roughness, sudden acceleration, and sharp braking can decrease the accuracy.

For higher accuracy, maintain the road surface and smoothly accelerate and decelerate.

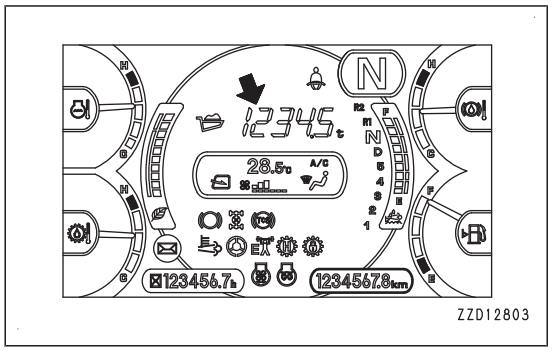
Although the following functions are installed, you do not need to change them for the standard operation. If setting is required, ask your Komatsu distributor.

Setting of Loading End Travel Dist

The payload meter judges that loading is completed when the machine travels continuously 160 m from the loading pit. If the machine dumps within 160 m , the controller does not judge that dumping is performed, thus the cycle data is not completed at this time. This is used to change Loading End Travel Dist when the distance between the loading pit and dumping pit is very short.

Display section of payload

While the machine monitor is displaying the standard screen, the payload is displayed as shown in the figure.

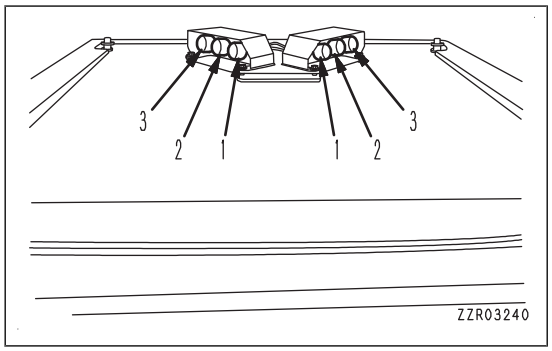


External display lamp

The external display lamps are on top of the cab.

To make them visible for the digging operator or wheel loader, there are 2 sets of external display lamps: Each set consists of 3 lamps ((1) green, (2) yellow, (3) red).

The display of the external display lamps changes according to the payload.

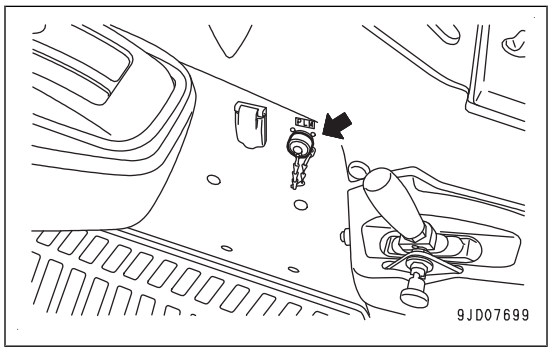


Download connector

The communication cable connection port is on the side of the engine shutdown secondary switch.

When not using the communication cable connection port, fit the download connector cap.

You can download the data saved in the payload meter to a personal computer through the download connector.



NORMAL OPERATION DISPLAY

The normal operation is displayed by 2 methods of the machine monitor display which notifies the machine condition and the external display lamps.

The machine motor and external display lamps indicate the machine states of unloaded, during loading, loaded, and during dumping, each of which is classified into the stopped and traveling states.

Machine state		Display on machine monitor	External display lamp
When starting switch is in ON position		-	Lights up for 30 seconds
When unloaded	Stopped (*1)	Clock display	OFF
	Traveling	Clock display	OFF
During loading	Stopped	Payload display (*2)	Payload display
	Traveling	Clock display	OFF
When loaded	Stopped	Payload display	Payload display
	Traveling	Clock display	OFF
During dumping	Stopped	Payload display	Payload display
	Traveling	Payload display	OFF

(*1) The “Stopped” means state in which the gear shift lever is in NEUTRAL position (N) or the travel speed signal is zero.

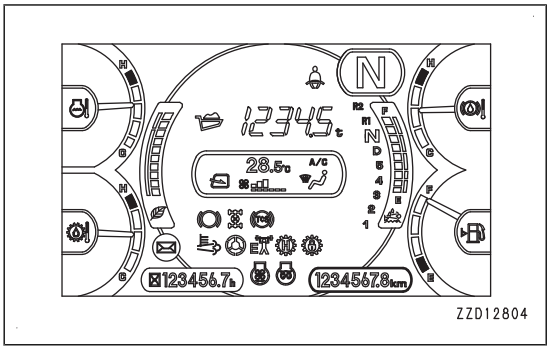
(*2) To change the state from “Unloaded” to “Loaded”, the payload must be approximately 15 % of the rated payload or more and the machine must wait for the payload to be stabilized in the stopped state.

The payload is checked and saved by statistically processing the data sampled during travel from the loading pit to the dumping pit.

The payload displayed on the machine monitor is the value before the above statistic processing. The accuracy of this value may be lower than that of the payload in the saved data.

Use the value displayed on the machine monitor for reference only.

Example of payload display



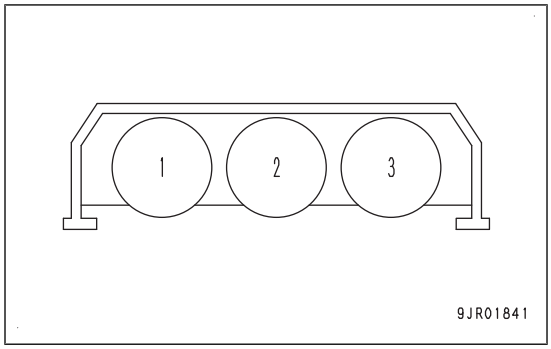
Example of payload display when an error occurs

- When an error occurs in the suspension pressure sensor, clinometer sensor, etc., “-----” is displayed, since the payload cannot be calculated.
- The payload displayed in the loading pit (just after loading) may be a little different from the value displayed in the dumping pit.
  This is caused by the effect of the frictional force of the suspension, and cannot be eliminated.
  A little change of the displayed value between measurement places is not caused by a trouble in the payload meter.

EXTERNAL DISPLAY LAMP

The external display lamps display the payload as follows.

	Color of lamp	HM300
1	Green	14 t or more
2	Yellow	25.2 t or more
3	Red	29.4 t or more



- Lighting of the red lamp (3) indicates the overloaded state.
- If there is difference between the payload and the lighting of the external display lamp, the model setting may be wrong.
  In such case, consult your Komatsu distributor.

Display of prediction

Loading state and prediction are indicated by the lamps in different colors and their lighting status (lighting up or flashing).

When the load changes in steps for each bucket loaded, the payload meter automatically estimates the predicted total payload if one more bucket is loaded, and indicates the predicted payload by flashing of the appropriate lamp. Flashing of the red lamp (3) indicates that it will be overloading with the next loading.

The predicted load display and actual payload display are shown at the same time.

Predicted number of bucket loads: 4

Payload display and predicted payload when loading of 7.0 t per one bucket is loaded onto HM300.

1st time

- The payload is 7.0 t, and the predicted total payload at the next loading is 14.0 t.
- All lamps are not lit.

2nd time

- The payload is 14.0 t, and the predicted total payload at the next loading is 21.0 t.
- Green lamp (1) flashes, and it indicates that the predicted total payload of the 3rd loading is 14.0 t or more.

3rd time

- The payload is 21.0 t, and the predicted total payload at the next loading is 28.0 t.
- Green lamp (1) lights up, and it indicates that the total payload is 14.0 t or more.

  Yellow lamp (2) flashes, and it gives a warning that the predicted total payload of the 4th loading is 25.2 t or more.

4th time

- The payload is 28.0 t, and the predicted total payload at the next loading is 35.0 t.
- Green lamp (1) and yellow lamp (2) light up, and they give a warning that the total payload is 25.2 t or more.

  Red lamp (3) flashes, and it warns that the predicted total payload of the 5th loading is 29.4 t or more.

  Perform the loading carefully so that the red lamp (3) does not light up.

DETAILS OF DATA STORED IN MEMORY OF PAYLOAD METER

The payload meter records the data of the dumping cycle (from each dumping to the next dumping).

Cycle data items

Dumping Month/Day	Travel time with no load	Stopped time for loading	Stopped time with load
Time to start dumping	Travel time with no load	Travel time with load	Dumping time
Machine ID	Travel speed with no load (Max.)	Travel distance with load	Limited travel speed
Open ID	Travel speed with no load (Average)	Travel speed with load (Max.)	Warning items for each cycle
Payload	Stopped time with no load	Travel speed with load (Average)	

- The payload which is a saved data corresponds to the weight carried in each cycle.
- The maximum limit for saving cycle data is 2900 cycles. If the data in memory exceed 2900 cycles, the newest data are written over the oldest data.
- Download the recorded data through RS232C port to a personal computer installed with special software (if equipped).
  The downloaded data are saved in the text form (CSV type) in a certain place on the personal computer.
  For details, see the operation and maintenance manual for the special software.
  You can take in and check the downloaded data with the text file read function of the commercially available spreadsheet software.

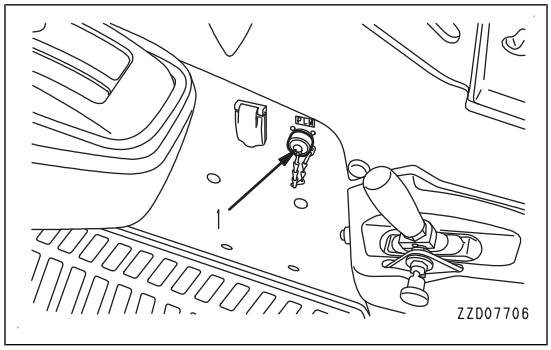
METHOD FOR DOWNLOADING DATA FROM CONNECTOR FOR DOWNLOAD

⚠ WARNING

- **When handling the cables, be careful not to damage them or pull them by force.**
- **Do not leave the connectors disconnected.**
- **Be careful to prevent dirt from entering the connector portion.**
- **Do not let any metal objects touch the connector portion.**

- Download the data by means of serial communication (RS232C).
  For computers without an RS232C port, it may be possible to use a third party USB-RS232C conversion adapter.
  However, this does not guarantee the operation.
  The download software supports COM1 and COM2, so check which port it can be connected to.
- Download the recorded data to a personal computer installed with special software (optional).
- When you need to correct the date and time in the downloaded data, consult your Komatsu distributor.
- There is some error in the directory where the data is downloaded by the special software, there may be a mistake in the setting for the machine.
  In such case, consult your Komatsu distributor.

1. Remove cap (1).
2. Connect the download cable attached to the special software to the download connector.
3. Connect the other end of the download cable to RS232C port of the personal computer.
4. Turn the starting switch to ON position.

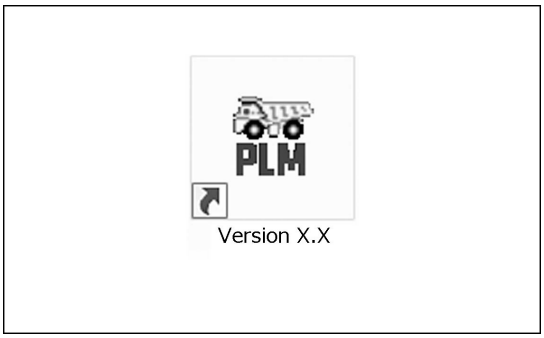


5. Start up the personal computer and use the special software to download the data.

   You can use the card type payload meter download software for HM300 as it is.

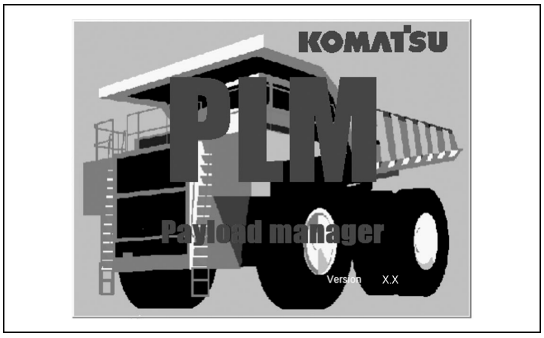
   For details of installing the software, see the instruction manual provided with the download software.

   When the installation is completed, the icon shown in the figure is created.



   1) Double-click the icon.

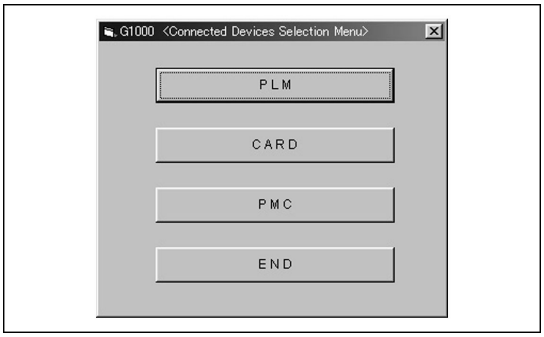
      The download software is started and the screen shown in the figure is displayed.



   2) When screen “G1000” is displayed, click “PLM”.

      Screen “G2000” is displayed.

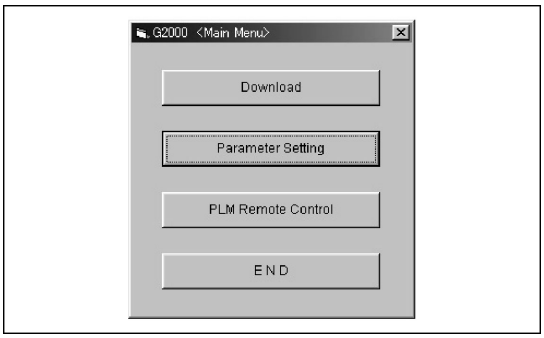
      Do not click “CARD” and “PMC”, since they are not used.



   3) Click “Parameter Setting” on screen “G2000”.

      Screen “G2200” is displayed.

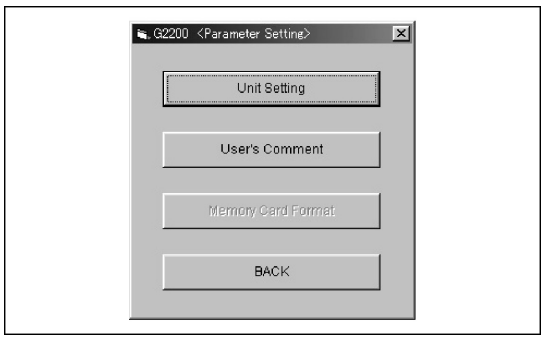
      Do not click “PLM Remote Control”, since it is not used.



4) Click “Unit Setting” on screen “G2200”.

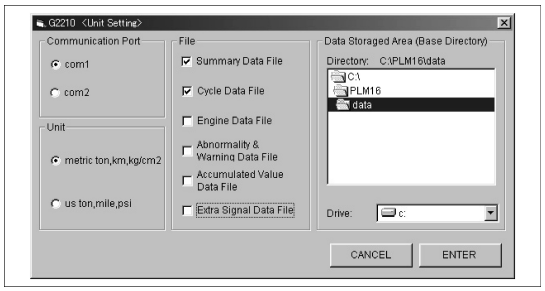
Screen “G2210” is displayed.

Do not click “User’s Comment”, since it is not used.



On screen “G2210”, you can select communication ports (COM1, COM2), specify the place to save the downloaded data, specify the file to be made, and select the unit for the made data.

For details, see the instruction manual provided for the download software.

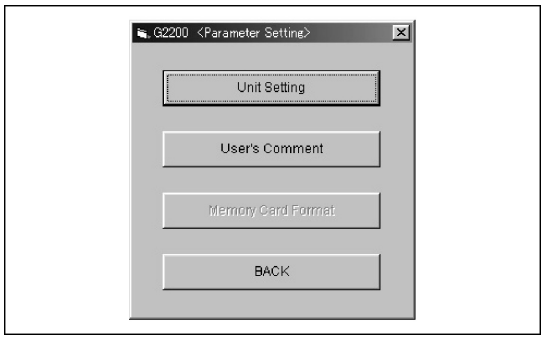


5) Check “Summary Data File” and “Cycle Data File” of “File”.

In HM300, only “Summary Data File” and “Cycle Data File” are handled.

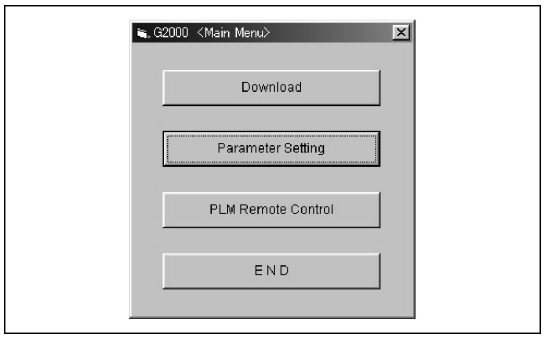
Once a setting has been made, there is no need to set it again when performing the next download.

6) Click “ENTER” to return to screen “G2200”.



7) On screen “G2200”, click “BACK” to return to screen “G2000”.

8) Click “Download” on screen “G2000”.



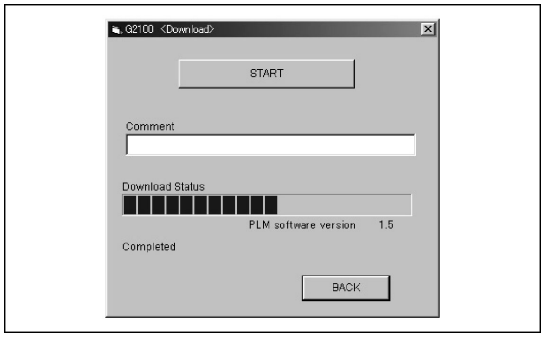
9) When screen “G2100” is displayed, click “Start”.

Downloading starts.

When downloading is finished, close the screen.

REMARK

Screen “G2101 < Down load - File ID” is displayed, depending on the software version.
In this case, input the file ID, then click “OK”, and downloading starts.



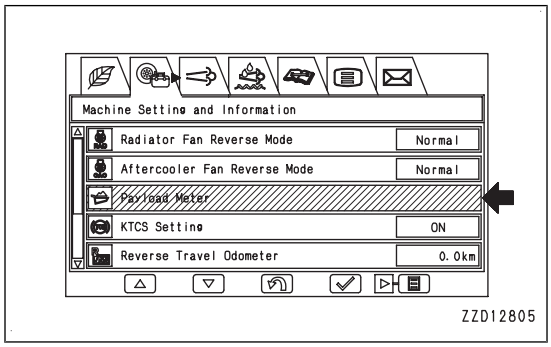
6. After finishing downloading, be sure to return the cable.

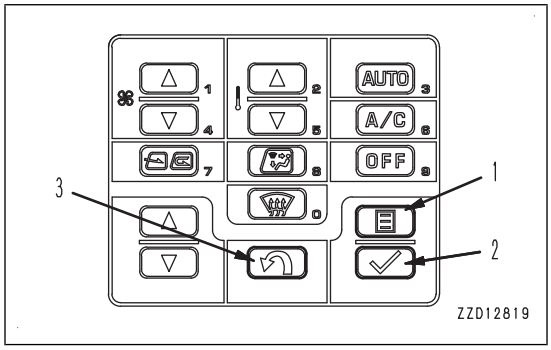
DISPLAY TOTAL PAYLOAD AND NUMBER OF CYCLES

You can display the accumulated payload and the total number of cycles which are integrated at each dumping.

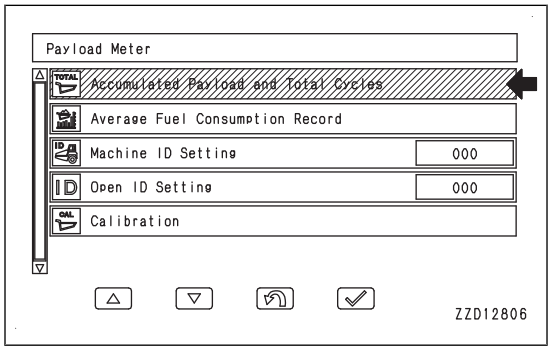
You can reset those values as well.

1. Press menu switch (1) on the standard screen and display “Machine Setting and Information” menu. Select “Payload Meter” and press enter switch (2).

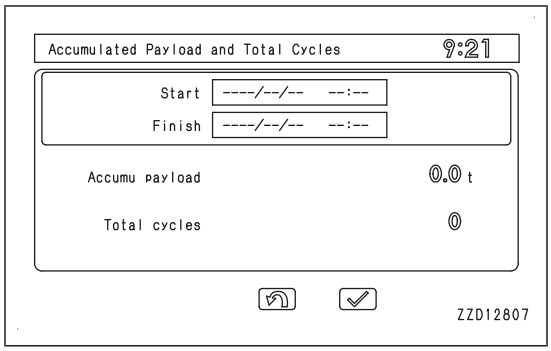




2. Select “Accumulated Payload and Total Cycles” and press enter switch (2).



The accumulated payload and the total number of cycles are displayed as shown in the figure.

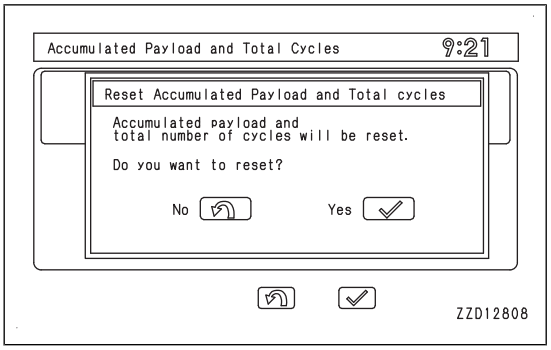


- The data and time of start are those when “Accumulated Payload and Total Cycles” were reset last time.
- The date and time of finish are those of the last dumping.
- “Accumulated Payload and Total Cycles” are the integrated values after the previous resetting.
- The display range is from 0 to 99999999.9t and 0 to 999999 cycles respectively. When they reach the upper limits, they are kept at the upper limits until they are reset.

3. Press enter switch (2).

   The pop-up window of the data reset is displayed.
   Press return switch (3), and the screen returns to “Payload Meter” menu.

4. Press enter switch (2) while the pop-up window shown in the figure is displayed.
   “Accumulated Payload and Total Cycles” are reset and the pop-up window closes.
   If you press return switch (3), nothing is done and the pop-up window closes.

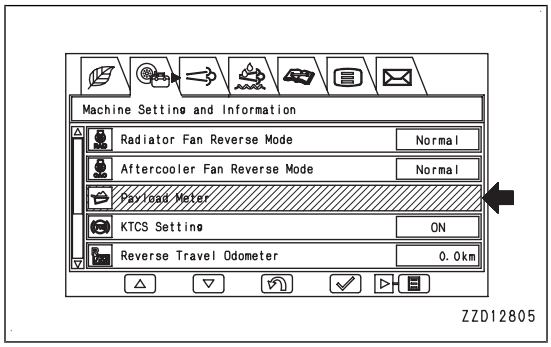


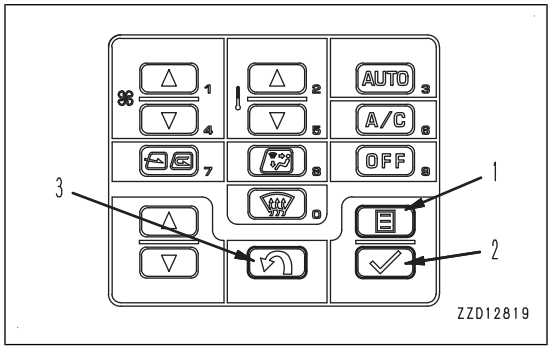
DISPLAY FUEL CONSUMPTION RECORD

You can display the average daily working fuel consumption (ton/l) in the last 1 week.

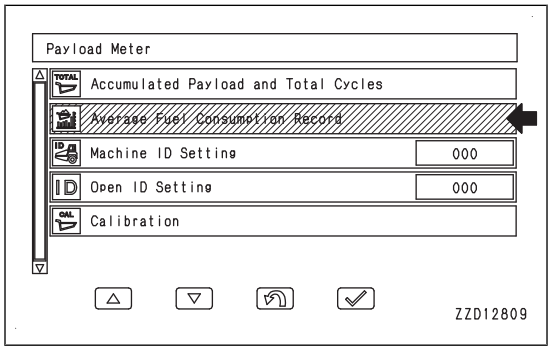
You can reset that value.

1. Press menu switch (1) on the standard screen and display “Machine Setting and Information” menu. Select “Payload Meter” and press enter switch (2).

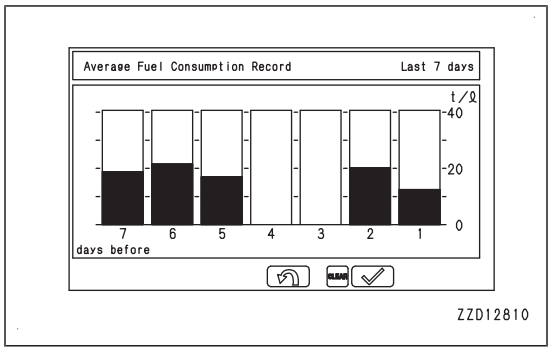




2. Select “Average Fuel Consumption Record” and press enter switch (2).



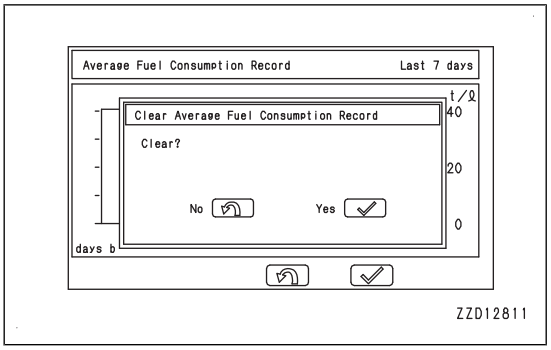
The average value of the daily working fuel consumption in the last 1 week is displayed as shown in the figure.



3. Press enter switch (2).

   The pop-up window of the data reset is displayed.
   Press return switch (3), and the screen returns to “Payload Meter” menu.

4. Press enter switch (2) while the pop-up window shown in the figure is displayed.
   “Average Fuel Consumption Record” is reset and the pop-up window closes.
   If you press return switch (3), nothing is done and the pop-up window closes.

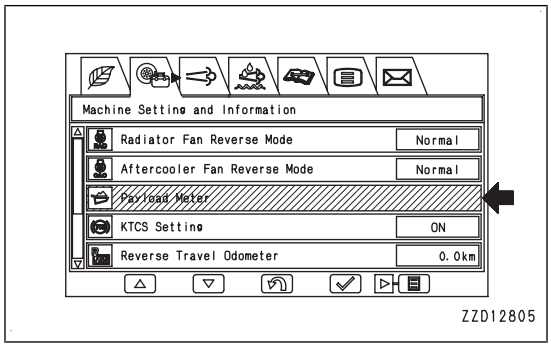


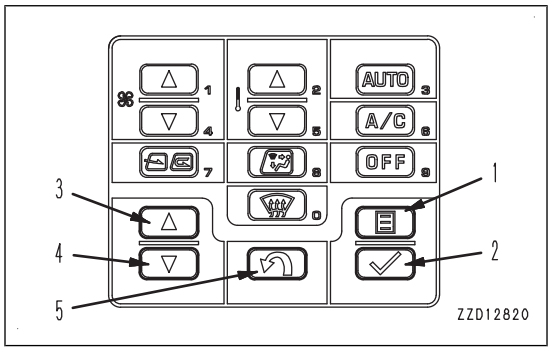
SETTING MACHINE ID AND OPEN ID

You can change the setting of the machine ID and open ID which are items in the cycle data.

You can check the operator and load of each cycle by setting the machine No. as the machine ID and setting the operator and the load type as the open ID.

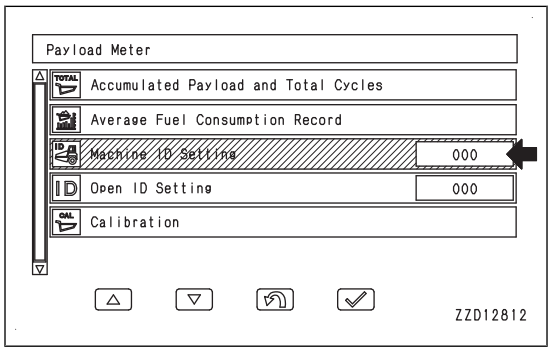
1. Press menu switch (1) on the standard screen and display “Machine Setting and Information” menu. Select “Payload Meter” and press enter switch (2).





2. Select “Machine ID Setting”.

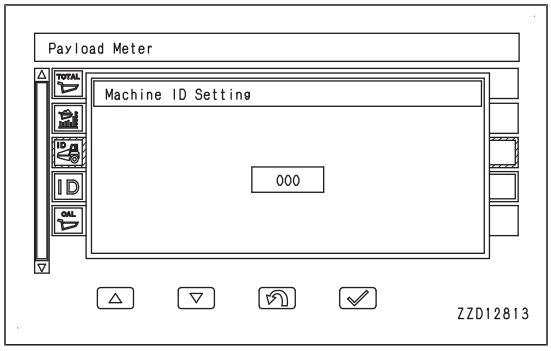
   The set machine ID is displayed on the right side.



3. Press enter switch (2).

   The pop-up window opens and displays the currently set machine ID. Input the machine ID.

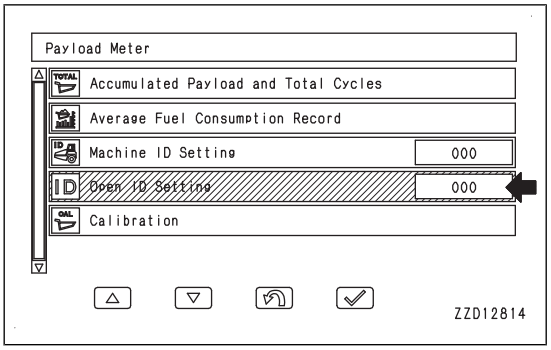
   - The settable range is from 0 to 200.
   - Each time Up switch (3) is pressed, ID increases by 1. Each time Down switch (4) is pressed, ID decreases by 1.
   - If Up switch (3) is held down, ID increases rapidly. If Down switch (4) is held down, ID decreases rapidly.
   - If UP switch (3) is pressed when 200 is displayed as ID, ID returns to 0. If Down switch (4) is pressed when 0 is displayed as ID, it becomes 200.



4. After inputting the machine ID, press enter switch (2).
   The value at this time is set as ID, and the windows closes.
   If you press return switch (5), the window closes without changing the value of ID.

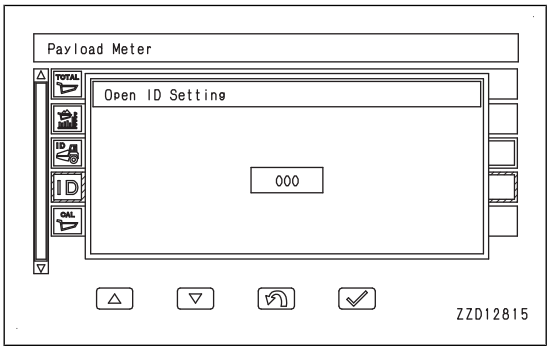
5. When setting an open ID, select “Open ID Setting” on the screen of step 2.

   The set open ID is displayed on the right side.



6. The setting procedure for the open ID is the same with the machine ID.

   Set the open ID.



METHOD FOR PERFORMING CALIBRATION

Perform calibration in the following cases.

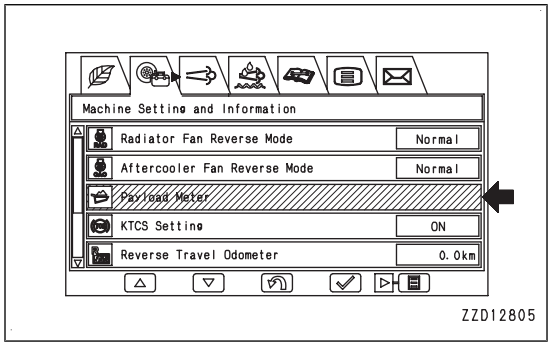
- When the machine or payload meter is delivered
- Once a month
- When the suspension cylinder gas pressure and oil quantity are adjusted (When the suspension is adjusted)
- When the suspension pressure sensor is replaced
- When the machine is modified and the empty weight of the machine changes by 100 kg or more.

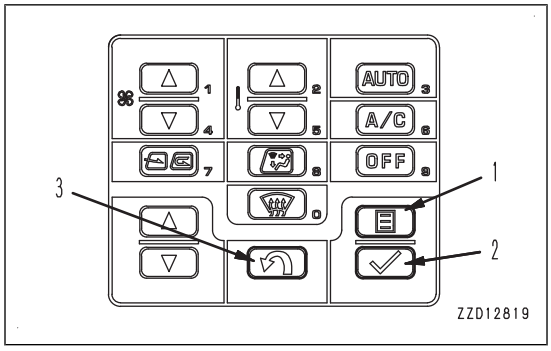
NOTICE

- **Perform calibration on a level place.**
- **Perform calibration while traveling straight.**
  A straight road approximately 100 m long is necessary for calibration.
- **Do not perform calibration while an error is generated.**
- **When performing calibration, seat the dump body and set the dump lever to "FLOAT" position.**
  You can check that the dump body is seated by checking that the dump body float caution lamp is turned OFF.

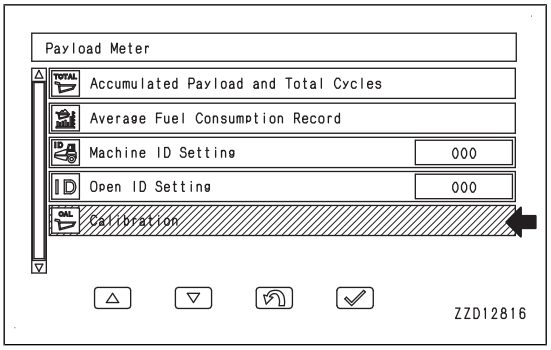
1. Empty the machine.

   Be sure to completely remove all the soil remaining inside the dump body.
2. Run in the machine.
3. While running the engine, set the gear shift lever to NEUTRAL position (N), and stop the machine.
4. Prepare for calibration according to the following procedure.
   1) Press menu switch (1) on the standard screen and display "Machine Setting and Information" menu. Select "Payload Meter" and press enter switch (2).

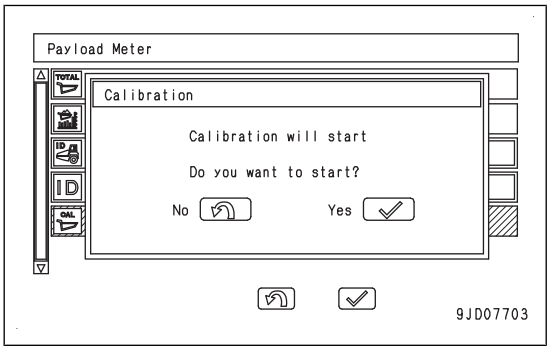




2) Select “Calibration” and press enter switch (2).
The pop-up window of starting calibration is displayed.



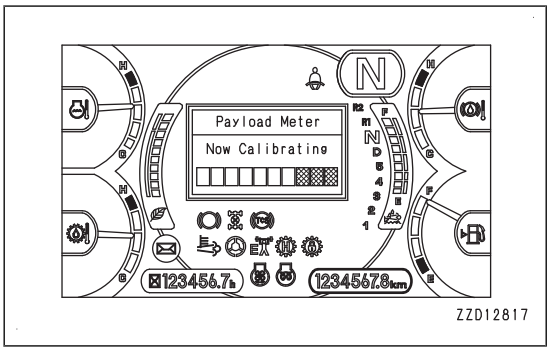
3) Press enter switch (2) while the pop-up window shown in the figure is displayed.
If you press return switch (3), the window closes without starting calibration.



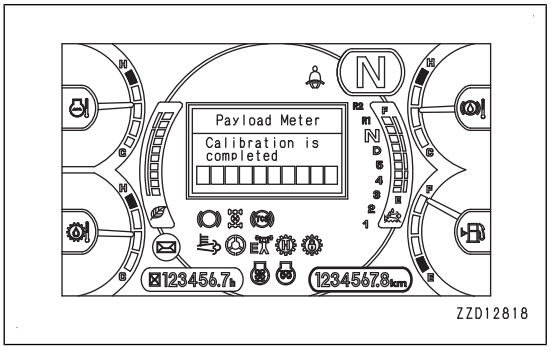
5. When the display becomes as shown in the figure, drive the machine at speed of 10 km/h.

REMARK

To cancel at this time, press return switch (3) while the screen in the figure is displayed.



6. Continue driving the machine at speed of 10 km/h.
Keep the travel speed at 10 km/h during the travel.
The display changes as shown in the figure in approximately 30 seconds, and the calibration is completed.



REPLACEMENT PARTS

DEFINED LIFE PARTS

- For using the machine safely for a long period, always perform periodic inspection of the defined life parts that have a particularly close relation to safety, such as hoses and the seat belt.
- The material of these components naturally changes over time, and repeated use causes deterioration, wear, and fatigue. As a result, there is a hazard that these components may fail and cause serious personal injury or death. Check if there is any abnormality in wear or deterioration on them before work and at the regular maintenance.
- Replace immediately the hose if any defect is found by checking. If any of the hose clamps show deterioration like deformation or cracking, replace the clamps at the same time as the hoses.
- Tighten all loose hoses and replace defective hoses, as required. When replacing hoses, always replace O-rings, gaskets, and other such parts at the same time.

DEFINED LIFE PARTS LIST

<table>
<tr><th>No.</th><th colspan="2">Target parts</th><th>Inspection /Replacement interval</th></tr>
<tr><td rowspan="2">1</td><td rowspan="2">Fuel system</td><td>Fuel hose</td><td>Every 2 years or every 4000 hours, whichever comes sooner.</td></tr>
<tr><td>Spill hose</td><td rowspan="13">Replace if any of the damages were found when the daily check or periodical maintenance.</td></tr>
<tr><td>2</td><td>Engine lubrication system</td><td>Turbocharger lubrication hose
Engine oil filter hose</td></tr>
<tr><td>3</td><td>Steering system</td><td>High pressure circuit hose</td></tr>
<tr><td>4</td><td>Brake system</td><td>Brake oil pressure hose</td></tr>
<tr><td>5</td><td>Torque converter, transmission system</td><td>Transmission circuit hose</td></tr>
<tr><td rowspan="6">6</td><td rowspan="6">Work equipment hydraulic system</td><td>Main pump delivery hose</td></tr>
<tr><td>Main pump delivery hose other than described above</td></tr>
<tr><td>Pump branch hose</td></tr>
<tr><td>Main pump LS hose</td></tr>
<tr><td>Hose for hydraulic drive fan</td></tr>
<tr><td>External work equipment hose
• Hoist circuit hose</td></tr>
<tr><td>7</td><td rowspan="2">Others</td><td>PPC accumulator</td></tr>
<tr><td>Seat belt</td><td>Every 3 years from start of usage or 5 years after manufacturing of seat belt, whichever comes sooner.</td></tr>
</table>

CONSUMABLE PARTS

Replace consumable parts such as the filter element or air cleaner element at the time of periodic maintenance or before they reach the wear limit. The consumable parts should be replaced correctly in order to ensure more economic use of the machine. When replacing parts, Komatsu recommends using Komatsu genuine parts.

As a result of our continuous efforts to improve product quality, the part number may change. Inform your Komatsu distributor of the machine serial number and check the latest part number when ordering parts.

CONSUMABLE PARTS LIST

The parts in parentheses are to be replaced at the same time.

Item	Part No.	Part name	Q'ty	Replacement interval
Engine oil filter	600-211-1340	Cartridge	1	500 hours
Fuel prefilter	600-319-4800	Cartridge	1	
Fuel main filter	600-319-3841	Cartridge	1	1000 hours
Transmission oil filter (valve side)	714-07-28713	Cartridge	2	
Transmission oil filter (brake cooling side)	207-60-71183 (07000-F5190)	Element (O-ring)	1 (1)	
Brake oil filter	569-43-83920 (07000-12065) (07001-02065)	Element (O-ring) (Back-up ring)	1 (1) (1)	
Fuel tank breather	421-60-35170	Element	1	
Hydraulic oil filter	207-60-71183 (07000-15195)	Element (O-ring)	1 (1)	
DEF tank breather	421-60-35170	Element	2	
KCCV filter	600-331-1900	Element	1	2000 hours
Hydraulic tank breather	419-60-15250 (419-60-15270)	Element (O-ring)	1 (1)	
DEF filter	6540-71-2320	Filter kit	1	
DEF tank filler port filter	56D-02–57690 (07000–G2075)	Filter (O-ring)	1 (1)	4500 hours
Air cleaner	600-185-6100	Element assembly	1	-

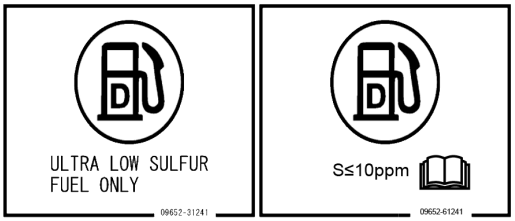
RECOMMENDED FUEL, COOLANT, AND LUBRICANT

NOTICE

- **Komatsu genuine oils are adjusted to keep the reliability and durability of Komatsu construction equipment and components.**
  To keep your machine in the best condition for long period of time, follow the instructions in this Operation and Maintenance Manual.
- **Failure to follow these recommendations can cause shortened life or excessive wear of the engine, power train, cooling system, and other components.**
- **Commercially available lubricant additives can be good or bad for the machine. Komatsu does not recommend the commercially available lubricant additive.**
- **Komatsu recommends you to use Komatsu genuine engine oil for KDPF. The use of oil other than Komatsu genuine engine oil for KDPF will have bad effects to the engine components such as reduced KDPF filter cleaning interval or reduced lubrication function by deterioration of the engine oil. This can cause failure, decrease of the service life, degradation in performance, or increase of fuel consumption of the machine.**
- **Use the fuels, oils, and lubricants which are recommended in response to the ambient temperature.**
- **If the machine is operated at a temperature of -20 °C or less, separate devices are needed, so consult your Komatsu distributor.**

NOTICE

Be sure to use the ultra-low sulfur diesel fuel. (≤10 ppm)



To get good fuel consumption characteristics and exhaust gas characteristics, an electronically controlled high-pressure fuel injection device and emission gas control system (KDPF) are used for the engine of this machine. The high-pressure fuel injection device requires high precision parts and lubrication. If low viscosity fuel with low lubrication quality is used, its durability can decrease significantly. Also, if fuel with high sulfur content is used, it can deteriorate the engine parts and KDPF catalyzer, and can cause failures, decrease of the service life, and degradation in performance.
There are possibilities that the ASTM diesel fuel recommended by Komatsu contains 5 % or below of bio-fuel and the EN diesel fuel contains 7 % or below of bio-fuel. Use the fuel in the storage tank or the fuel tank of the machine in a short time.

When the diesel fuel is changed to the one mixed with the bio-fuel, replace the fuel prefilter cartridge and fuel main filter cartridge with new ones.
For the fuel, do not use additive agents that contain metal component.
Metal component in the additives will not be burned during the KDPF regeneration, and can cause abnormal conditions in the exhaust gas aftertreatment devices.

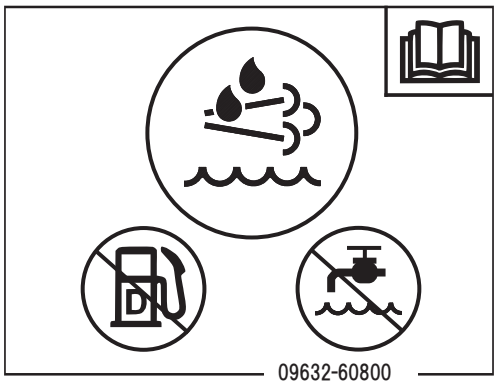
NOTICE

Use the paraffin-based fuel which agrees with EN15940:2016 and ASTM D975.
As long as the fuel agrees with EN15940:2016 and ASTM D975, its mixing ratio can be up to 100 %.

NOTICE

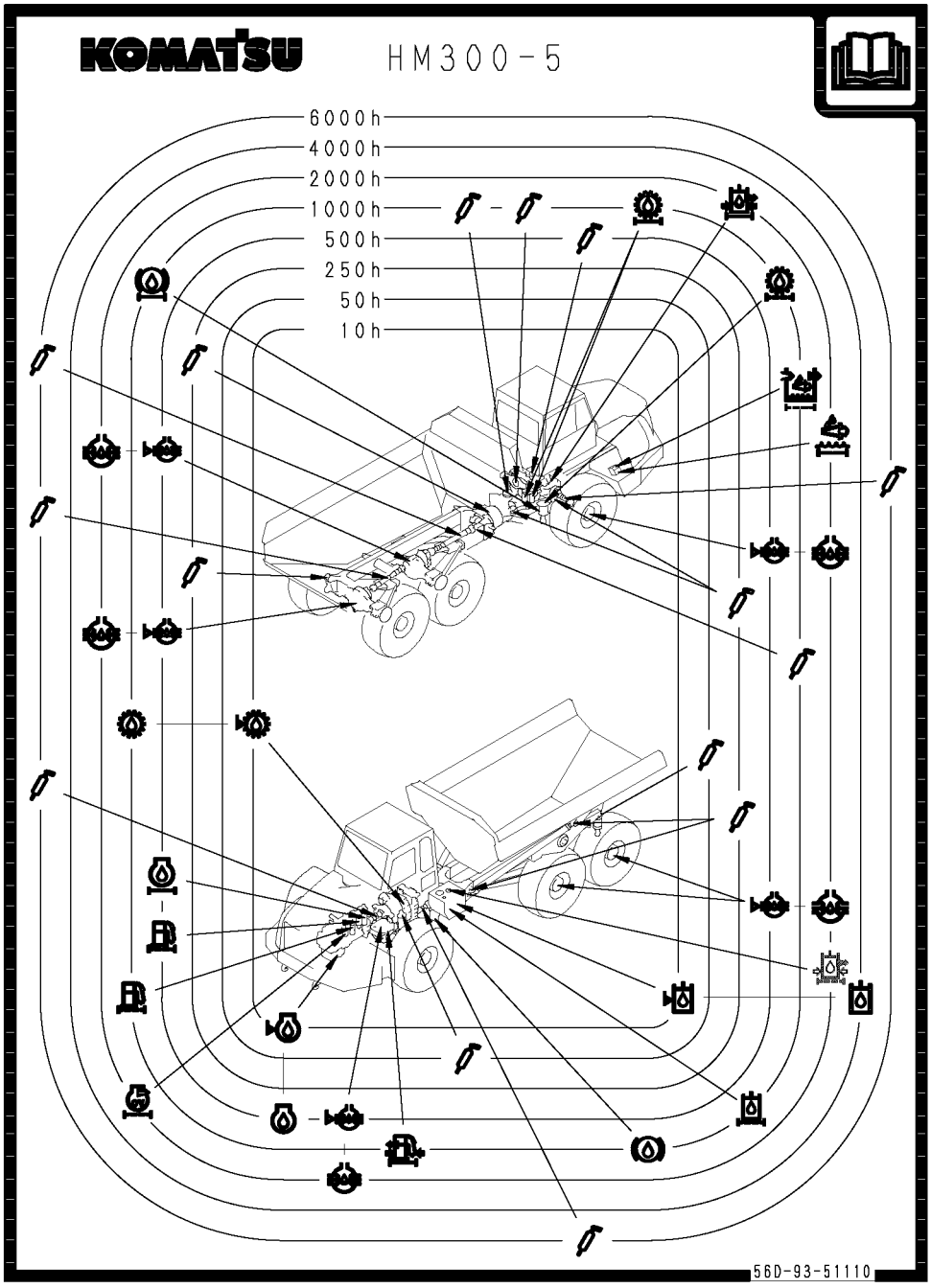
Use DEF as the aqueous urea solution for urea SCR system.
DEF is a colorless transparent 32.5 % aqueous urea solution.

The quality of DEF is provided in ISO22241-1. Always use DEF that agrees with this quality standard.
In Europe, use the AdBlue®.



LUBRICATION CHART

- Lubrication chart uses symbols to show the lubrication points and types of lubricant by each lubrication interval.
  Keep this chart in the magazine box inside the cab so that the people concerned can refer it any time during lubrication.
- Even if the same symbol is used in the lubrication chart, the recommended genuine oil may differ according to the lubrication points and the ambient temperature.



- The symbols used in the lubrication chart are explained as follows.

Symbol	Meaning of the symbol	Symbol	Meaning of the symbol
	Read the Operation and Maintenance Manual.		Greasing of the grease
	Change of the engine oil		Check oil level in engine oil pan
	Change hydraulic oil		Change hydraulic oil
	Change power train oil		Change power train oil
	Change engine oil filter		Change hydraulic oil filter
	Change breather element in hydraulic tank		Change fuel filter
	Change KCCV filter breather element		Change axle oil
	Check axle oil level		Power train oil filter
	Change breather element in fuel tank		Change brake fluid/oil
	Change oil filter		Change DEF tank breather element
	Change DEF filter		

METHOD FOR USING FUEL, COOLANT AND LUBRICANTS ACCORDING TO AMBIENT TEMPERATURE

Reservoir	Fluid type	Recommended Komatsu Fluids	Ambient temperature °C	
			Min.	Max.
Engine oil pan	Engine oil for KDPF used in cold terrain (Oil change interval 250 hours) (Note.1)	EOS0W40-LA (KES)	-30	40
	Engine oil for KDPF (Oil change interval 500 hours)	EO10W30-LA (KES)	-20	40
		EO15W40-LA (KES)	-15	50
Transmission Case (incl. brake oil tank)	Power train oil (Note. 2)	TO10 (KES)	-30	50
Hydraulic tank	Power train oil	TO10 (KES)	-30	50
	Hydraulic oil	HO46-HM (KES)	-20	50
		HO-MVK (KES)	-30	50
Front suspension Rear suspension	Hydraulic oil	HO-MVK (KES)	-30	50
Front differential case Center differential case Rear differential case Front final drive case Center final drive case Rear final drive case	Axle oil	AXO80 (KES)	-30	50
Grease fitting	Hyper grease (Note. 3)	G2-TE (KES)	-20	50
	Lithium EP grease	G2-LI (KES)	-20	50
	Lithium grease	G2-LI-S (KES)	-30	40
		GLT2-LI (KES)	-30	30
Spherical joint (Body heating)	Air-curing dry lubricant	MOLYKOTE D321R (56B-98–21370)	-30	50
Stainless bolt (Body heating)	Lubricant for burning and rusting prevention	LC-G (KES)	-30	50
Cooling system	Non-Amine Engine Coolant (AF-NAC) (Note.4)	AF-NAC (KES)	-30	50
Fuel tank	Diesel fuel	EN 590 Class2	-30	20
		EN 590 Grade D	-10	50
DEF tank	DEF (Note.5)	DEF	-30	50

	Specified capacity	Refill capacity
	ℓ	ℓ
Engine oil pan	45	35
Transmission case (including brake oil tank)	154	80
Hydraulic tank	180	103
Front suspension (each of right and left)	3.0	3.0
Rear suspension (each of right and left)	2.2	2.2
Front differential case	14.0	14.0
Front final drive case (each of right and left)	4.0	3.5
Center differential case	28.0	27.5
Center final drive case (each of right and left)	4.0	3.5
Rear differential case	30.5	30.0
Rear final drive case (each of right and left)	5.0	4.5
Fuel tank	390	-
Cooling system	67	61
DEF tank	33.0	-

REMARK

Specified capacity means the total amount of fluid including the fluid in the tank and the piping. Refill capacity means the amount of oil needed to refill the system during inspection and maintenance.

Note 1: KDPF engine oil for cold district is deteriorated easily than that for normal area (replace every 500 hours), so replace oil and filter cartridge every 250 hours. For changing the maintenance time of machine monitor, ask your Komatsu distributor to perform the work.

Note 2: Power train oil has different properties from engine oil. Be sure to use the recommended oils.

Note 3: Hyper grease (G2-TE) has high performance.

When it is necessary to improve the lubricating ability of the grease in order to prevent squeaking of pins and bushings, the use of G2-T or G2-TE is recommended.

Note 4: Non-Amine Engine Coolant (AF-NAC)

1. The coolant has the important function of preventing corrosion as well as preventing freezing.
   Even in the areas where freezing is not an issue, the use of coolant is essential.
   Komatsu machines are supplied with Non-Amine Engine Coolant (AF-NAC).
   Non-Amine Engine Coolant (AF-NAC) has excellent anti-corrosion, antifreeze and cooling properties and can be used continuously for 2 years or 4000 hours.
   Non-Amine Engine Coolant (AF-NAC) is strongly recommended wherever available.
2. The concentration of Non-Amine Engine Coolant (AF-NAC) is as shown in the following table.

Coolant density table

Min. atmospheric temperature	°C	-10 or more	-15	-20	-25	-30	-35	-40	-45	-50
Density (%)		30	36	41	46	50	54	58	61	64

Non-Amine Engine Coolant (AF-NAC) is supplied already diluted.
In this case, add the pre-diluted fluid to keep the tank full. (Never dilute the coolant with ordinary water.)

Note 5: DEF freezes at –11 °C. If thawing is necessary, DEF system is automatically heated and thawed after the engine is started.

RECOMMENDED BRANDS AND QUALITIES OTHER THAN KOMATSU GENUINE OILS

When using commercially available oils other than Komatsu genuine oil, consult your Komatsu distributor.

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HM300-5E0 ARTICULATED DUMP TRUCK

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