ZW180-6 WHEEL LOADER OPERATOR'S MANUAL

PART NO. ENMPD8-NA1-4

HITACHI

Reliable solutions

Operator's Manual

ZW 180-6

Wheel Loader

Hitachi Construction Machinery Co., Ltd.
URL:https://www.hitachicm.com

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ENMPD8-NA1-4

Serial No. 005201 and up

INTRODUCTION

Read this manual carefully to learn how to operate and service your machine correctly. Failure to do so could result in personal injury or machine damage.

This standard specification machine can be operated under the following conditions without being modified.
Atmospheric Temperature: -20 °C to 45 °C (-4 °F to 113 °F)
Altitude: 0 m to 2000 m (0 ft to 6600 ft)

In case the machine is used under conditions other than described above, consult your authorized dealer.

This manual should be considered a permanent part of your machine and should remain with the machine when you sell it.

This machine is of metric design. Measurements in this manual are metric. Use only metric hardware and tools as specified.

Right-hand and left-hand sides are determined by facing in the direction of forward travel.

Write product identification numbers in the Machine Numbers section. Accurately record all the numbers to help in tracing the machine should it be stolen. Your dealer also needs these numbers when you order parts. If this manual is kept on the machine, also file the identification numbers in a secure place off the machine.

Use only diesel fuel with quality specified in JIS K-2204, EN-590 or ASTM D-975 which contents 15 ppm or lower sulfur.
Also use fuel that complies with solid contamination level of class 18/16/13 of ISO4406-1999 (solid contamination includes dust). If the fuel specified above is not used, exhaust gas that exceeds the regulation values may be discharged, causing serious problem on the engine. Consult your authorized dealer.

Warranty is provided as a part of Hitachi's support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate which you should have received from your dealer.

This warranty provides you with the assurance that Hitachi will back its products where defects appear within the warranty period. In some circumstances, Hitachi also provides field improvements, often without charge to the customer, even if the product is out of warranty.
Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied.
Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

Only qualified, experienced operators officially licensed (according to local law) should be allowed to operate the machine. Moreover, only officially licensed personnel should be allowed to inspect and service the machine.

PRIOR TO OPERATING THIS MACHINE, INCLUDING COMMUNICATION SYSTEM, IN A COUNTRY OTHER THAN A COUNTRY OF ITS INTENDED USE, IT MAY BE NECESSARY TO MAKE MODIFICATIONS TO IT SO THAT IT COMPLIES WITH THE LOCAL REGULATORY STANDARDS (INCLUDING SAFETY STANDARDS) AND LEGAL REQUIREMENTS OF THAT PARTICULAR COUNTRY. PLEASE DO NOT EXPORT OR OPERATE THIS MACHINE OUTSIDE OF THE COUNTRY OF ITS INTENDED USE UNTIL SUCH COMPLIANCE HAS BEEN CONFIRMED. PLEASE CONTACT HITACHI CONSTRUCTION MACHINERY CO., LTD. OR ANY OF OUR AUTHORIZED DISTRIBUTOR OR DEALER IF YOU HAVE ANY QUESTIONS CONCERNING COMPLIANCE.

In this manual, urea water is indicated as DEF/AdBlue®. "DEF" stands for the Diesel Exhaust Fluid. AdBlue® is a registered trademark of the Verband der Automobilindustrie e.V. (VDA).

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

All information, illustrations and specifications in this manual are based on the latest product information available at the time of publication. The right is reserved to make changes at any time without notice.

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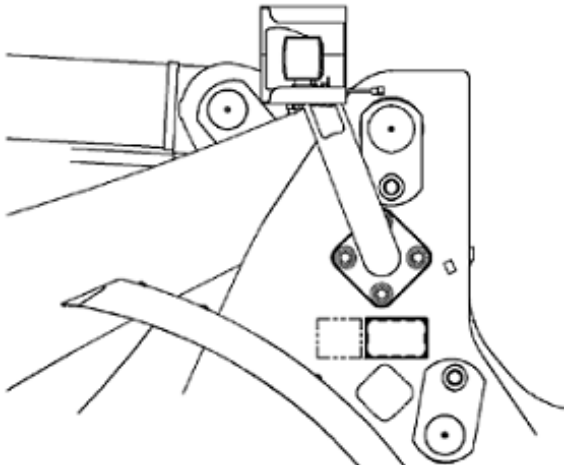
MEMO

MACHINE NUMBERS

The manufacturing Nos. explained in this group is the individual number (serial No.) given to each machine and hydraulic components. These numbers are requested when inquiring any information on the machine and/or components. Fill these serial Nos. in the blank spaces in this group to immediately make them available upon request.



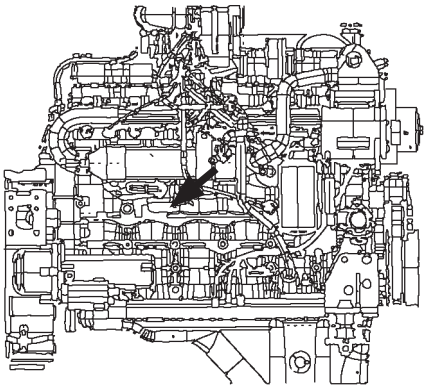
70MPD8-00-01

Machine

TYPE : _____

MACHINE
SERIAL NUMBER: _____

Engine



MNEC-00-001

TYPE : _____

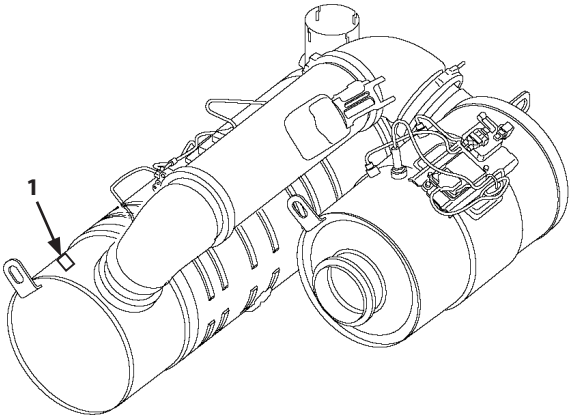
MFG. NO. : _____

Aftertreatment Device

1. SCR

TYPE : _____

MFG. NO. : _____

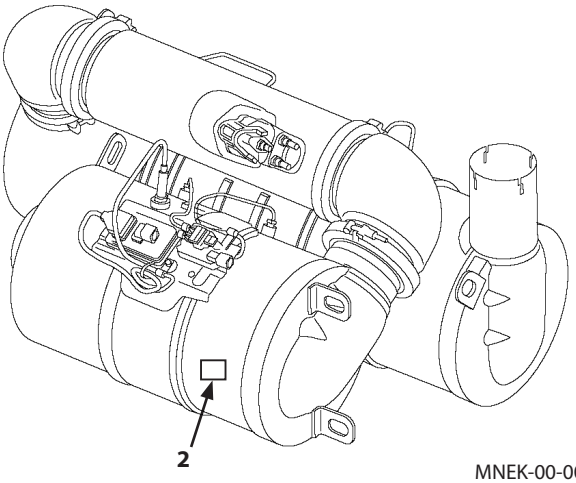


MNEK-00-003

2. DOC

TYPE : _____

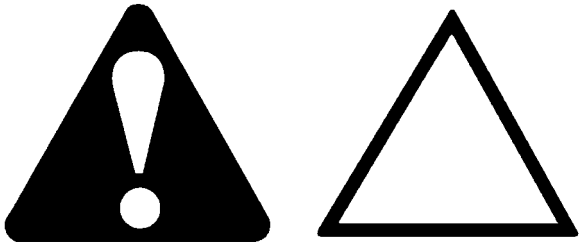
MFG. NO. : _____



MNEK-00-004

Recognize Safety Information

- These are the **SAFETY ALERT SYMBOLS**.
  - When you see these symbols on your machine or in this manual, be alert to the potential for personal injury.
  - Follow recommended precautions and safe operating practices.



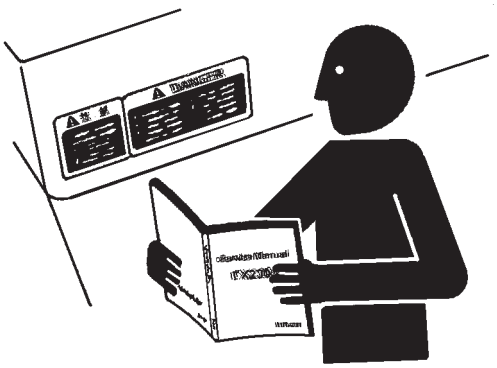
SA-2644

Understand Signal Words

- On machine safety signs, signal words designating the degree or level of hazard - DANGER, WARNING, or CAUTION - are used with the safety alert symbol.
  - **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
  - **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
  - **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
  - **DANGER or WARNING safety signs** are located near specific hazards. General precautions are listed on **CAUTION safety signs**.
  - Some safety signs do not use any of the designated signal words above after the safety alert symbol has been used on this machine.
- To avoid confusing machine protection with personal safety messages, a signal word **IMPORTANT** indicates a situation which, if not avoided, could result in damage to the machine.
- ***NOTE*** indicates an additional explanation for an element of information.

SA-1223

Follow Safety Instructions



SA-003

- Carefully read and follow all safety signs on the machine and all safety messages in this manual.

- Safety signs should be installed, maintained and replaced when necessary.
  - If a safety sign or this manual is damaged or missing, order a replacement from your authorized dealer in the same way you order other replacement parts (be sure to state machine model and serial number when ordering).

- Learn how to operate the machine and its controls correctly and safely.

- Allow only trained, qualified, authorized personnel to operate the machine.

- Keep your machine in proper working condition.
  - Unauthorized modifications of the machine may impair its function and/or safety and affect machine life.
  - Do not modify any machine parts without authorization. Failure to do so may deteriorate the part safety, function, and/or service life. In addition, personal accident, machine trouble, and/or damage to material caused by unauthorized modifications will void Hitachi Warranty Policy.
  - Never attempt to modify or disassemble the inlet/exhaust parts and the aftertreatment device. Avoid giving shocks on the aftertreatment device by striking elements with other objects or dropping the elements. Failure to do so may affect the exhaust gas purifying device, possibly damaging it or lowering its performance.
  - Do not use attachments and/or optional parts or equipment not authorized by Hitachi. Carefully read and follow all instructions for use and safety in the operator's manual for the attachment. Failure to do so may deteriorate the safety, function, and/or service life of the machine. In addition, personal accident, machine trouble, and/or damage to material caused by using unauthorized attachments and/or optional parts or equipment will void Hitachi Warranty Policy.

- The safety messages in this SAFETY chapter are intended to illustrate basic safety procedures of machines. However it is impossible for these safety messages to cover every hazardous situation you may encounter. If you have any questions, you should first consult your supervisor and/or your authorized dealer before operating or performing maintenance work on the machine.

Prepare for Emergencies

- Be prepared if a fire starts or if an accident occurs.
  - Keep a first aid kit and fire extinguisher on hand.
  - Thoroughly read and understand the label attached on the fire extinguisher to use it properly.
  - To ensure that a fire extinguisher can be always used when necessary, check and service the fire extinguisher at the recommended intervals as specified in the fire extinguisher manual.
  - Establish emergency procedure guidelines to cope with fires and accidents.
  - Keep emergency numbers for doctors, ambulance service, hospital, and fire department posted near your telephone.

SA-437

Wear Protective Clothing

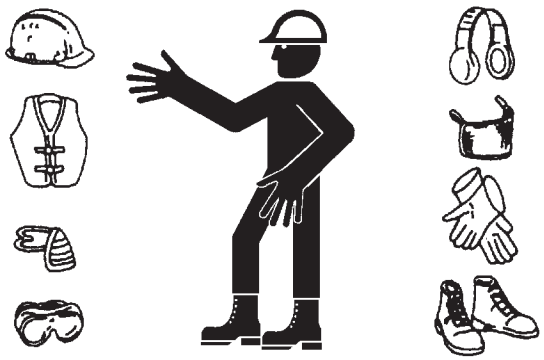
- Wear close fitting clothing and safety equipment appropriate to the job.

  You may need:
  - A hard hat
  - Safety shoes
  - Safety glasses, goggles, or face shield
  - Heavy gloves
  - Hearing protection
  - Reflective clothing
  - Wet weather gear
  - Respirator or filter mask.

Be sure to wear the correct equipment and clothing for the job. Do not take any chances.

- Avoid wearing loose clothing, jewelry, or other items that can catch on control levers or other parts of the machine.

- Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating the machine.



SA-438

Protect Against Noise

- Prolonged exposure to loud noise can cause impairment or loss of hearing.
  - Wear a suitable hearing protective device such as earmuffs or earplugs to protect against objectionable or uncomfortably loud noises.

SA-434

Inspect Machine

- Inspect your machine carefully each day or shift by walking around it before you start it to avoid personal injury.
  - In the walk-around inspection, be sure to cover all points described in the "Inspect Machine Daily Before Starting" section in the operator's manual.

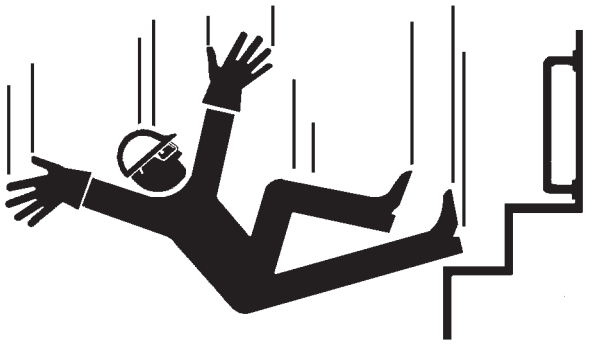
SA-435

General Precautions for Cab

- Before entering the cab, thoroughly remove all dirt and/or oil such as mud, grease, soil or stones that may mess up the cab from the soles of your work boots. If any controls such as a pedal is operated while with dirt and/or oil on the soles of the operator's work boots, the operator's foot may slip off the pedal, possibly resulting in a personal accident.
- Do not mess up around the operator's seat with parts, tools, soil, stones, obstacles that may fold up or turn over, cans or lunch box. The levers or pedals become inoperable if obstacle jams in operation stroke of the accelerator pedal, brake pedals, control lever lock handle or control levers, which may result in serious injury or death.
- Avoid storing transparent bottles in the cab. Do not attach any transparent type window decorations on the windowpanes as they may focus sunlight, possibly starting a fire.
- Refrain from listening to the radio, or using music headphones or mobile telephones in the cab while operating the machine.
- Keep all flammable objects and/or explosives away from the machine.
- After using the ashtray, always cover it to extinguish the match and/or tobacco.
- Do not leave cigarette lighters in the cab. When the temperature in the cab increases, the lighter may explode.
- Use proper floor mat dedicated to the machine. If another floor mat is used, it may be displaced and contact with the accelerator or brake pedals during operation, resulting in serious injury or death.

Use Handrails and Steps

- Falling is one of the major causes of personal injury.
  - When you get on and off the machine, always face the machine and maintain a three-point contact with the steps and handrails.
  - Do not use any controls as handholds.
  - Do not hold the door handle or lever as a handrail when getting on and off the machine.
  - Never jump on or off the machine. Never mount or dismount a moving machine.
  - Be careful of slippery conditions on platforms, steps, and handrails when leaving the machine.
  - Never get on and off the machine with tools in your hands.



SA-439

Never Ride Attachment

- Never allow anyone to ride attachment or the load. This is an extremely dangerous practice.

Adjust Operator's Seat

- A poorly adjusted seat for either the operator or the work at hand may quickly fatigue the operator leading to misoperations.
  - The seat should be adjusted whenever changing the operator for the machine.
  - The operator should be able to fully depress the pedals and to correctly operate the control levers with his back against the seat back.
  - If not, move the seat forward or backward, and check again.
  - Adjust the rear view mirror position so that the best rear visibility is obtained from the operator's seat. If the mirror is broken, immediately replace it with a new one.

SA-462

Ensure Safety Before Rising from or Leaving Operator's Seat

- Before rising from the operator's seat to open / close either side window or to adjust the seat position, be sure to first lower the front attachment to the ground and then move the control lever lock switch to the lock (🔒) position. Failure to do so may allow the machine to unexpectedly move when a body part unintentionally comes in contact with a control lever, possibly resulting in serious personal injury or death.

  - Before leaving the machine, be sure to first lower the front attachment to the ground and then move the control lever lock switch to the lock (🔒) position. Turn the parking brake switch ON, and the key switch OFF to stop the engine.
  - Before leaving the machine, close all windows, doors, and access covers and lock them up.

Fasten Your Seat Belt

- If the machine should overturn, the operator may become injured and / or thrown from the cab. Additionally the operator may be crushed by the overturning machine, resulting in serious injury or death.

  - Prior to operating the machine, thoroughly examine webbing, buckle and attaching hardware. If any item is damaged or worn, replace the seat belt or component before operating the machine.
  - Be sure to remain seated with the seat belt securely fastened at all times when the machine is in operation to minimize the chance of injury from an accident.
  - We recommend that the seat belt be replaced every three years regardless of its apparent condition.

SA-237

Move and Operate Machine Safely

- Bystanders can be run over.

  - Take extra care not to run over bystanders. Be advised that there may be blind spots with rear view camera. Confirm the location of bystanders before moving, swinging, or operating the machine by sight and mirrors as well as the rear view monitor.
  - Always keep the travel alarm and horn in working condition (if equipped). It warns people when the machine starts to move.
  - Use a signal person when moving, or operating the machine in congested areas. Coordinate hand signals before starting the machine.
  - Use appropriate illumination. Check that all lights are operable before operating the machine. If any faulty illumination is present, immediately repair it.
  - Ensure the cab door, windows, doors and covers are securely locked.
  - Check the mirrors and the monitor in the CAB for problems.
    If there is, replace the problem part(s) or clean the mirror, camera and the monitor.
    Refer to Rear View Monitor section on the cleaning of the camera and the monitor.

SA-398

Handle Starting Aids Safely

Starting fluid:

- Starting fluid is highly flammable.

  - Keep all sparks and flame away when using it.
  - Keep starting fluid well away from batteries and cables.
  - Remove container from machine if engine does not need starting fluid.
  - To prevent accidental discharge when storing a pressurized container, keep the cap on the container, and store it in a cool, well-protected location.
  - Do not incinerate or puncture a starting fluid container.

SA-293

Operate Only from Operator's Seat

- Inappropriate engine starting procedures may cause the machine to runaway, possibly resulting in serious injury or death.

  - Start the engine only when seated in the operator's seat.
  - NEVER start the engine while standing on the tire or on ground.
  - Do not start engine by shorting across starter terminals.
  - Before starting the engine, confirm that all control levers are in neutral.
  - Before starting the engine, confirm the safety around the machine and sound the horn to alert bystanders.

SA-431

Jump Starting

- Battery gas can explode, resulting in serious injury.

  - If the engine must be jump started, be sure to follow the instructions shown in the "OPERATING ENGINE" chapter in the operator's manual.
  - The operator must be in the operator's seat so that the machine will be under control when the engine starts. Jump starting is a two-person operation.
  - Never use a frozen battery.
  - Failure to follow correct jump starting procedures could result in a battery explosion or a runaway machine.

SA-032

Investigate Job Site Beforehand

- When working at the edge of an excavation or on a road shoulder, the machine could tip over, possibly resulting in serious injury or death.

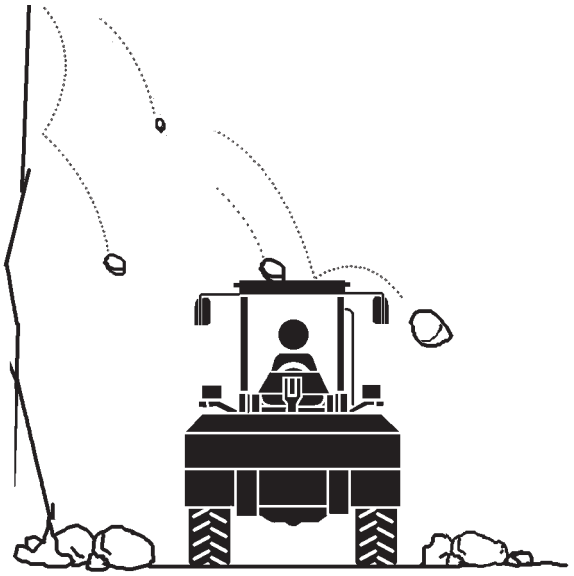
  - Investigate the configuration and ground conditions of the job site beforehand to prevent the machine from falling and to prevent the ground, stockpiles, or banks from collapsing.
  - Make a work plan. Use machines appropriate to the work and job site.
  - Reinforce ground, edges, and road shoulders as necessary. Keep the machine well back from the edges of excavations and road shoulders.
  - When working on an incline or on a road shoulder, employ a signal person as required.
  - Confirm that your machine is equipped with a FOPS cab before working in areas where the possibility of falling stones or debris exist.
  - When the footing is weak, reinforce the ground before starting work.
  - When working on frozen ground, be extremely alert. As ambient temperatures rise, footing becomes loose and slippery.
  - Beware of the possibility of fire when operating the machine near flammable objects such as dry grass.

SA-447

Equipment of Head Guard, ROPS, FOPS

In case the machine is operated in areas where the possibility of falling stones or debris exist, equip a head guard, ROPS, or FOPS according to the potential hazardous conditions. (The standard cab for this machine corresponds to ROPS and FOPS.) Any modification of the ROPS structure will modify its performances and its certification will be lost.

ROPS: Roll-Over Protective Structure
FOPS: Falling Object Protective Structure



SA-521

Provide Signals for Jobs Involving Multiple Machines

- For jobs involving multiple machines, provide signals commonly known by all personnel involved. Also, appoint a signal person to coordinate the job site. Make sure that all personnel obey the signal person's directions.

SA-481

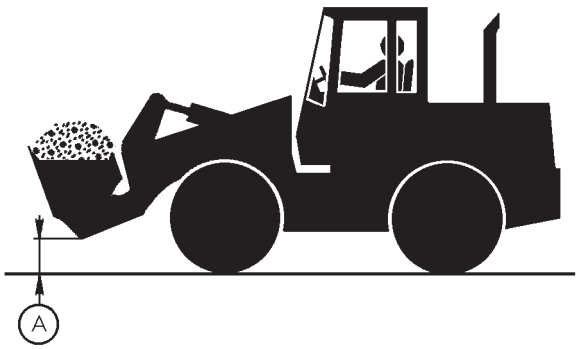
Keep Riders Off Machine

- Riders on machine are subject to injury such as being struck by foreign objects and being thrown off the machine.
  - Only the operator should be on the machine. Keep riders off.
  - Riders also obstruct the operator's view, resulting in the machine being operated in an unsafe manner.

SA-427

Drive Safely

- Beware of the possibility of slipping and / or turning over the machine when driving on a slope.
  - When driving on level ground, hold the bucket at mark (A) 300 mm (12 in) above the ground as illustrated.
  - Avoid traveling over any obstacles.
  - Drive the machine slowly when driving on rough terrain.
  - Avoid quick direction changes. Failure to do so may cause the machine to turn over.
  - If the engine stops while driving, the steering function becomes inoperative. Immediately stop the machine by applying the brake to prevent personal accident.



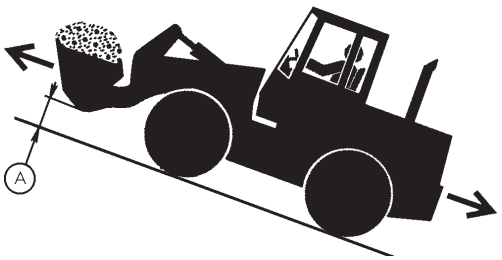
SA-448

Drive Machine Safely (Work Site)

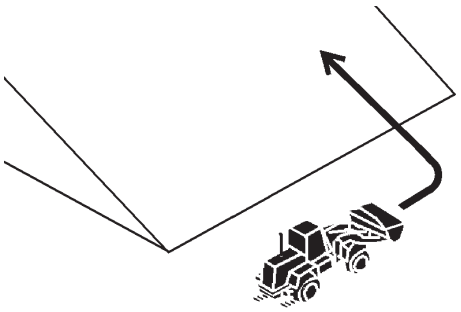
- Before driving the machine, always confirm that the steering wheel / and forward / reverse lever (switch) direction corresponds to the direction you wish to drive.
  - Be sure to detour around any obstructions.

- Driving on a slope may cause the machine to slip or overturn, possibly resulting in serious injury or death.
  - When driving up or down a slope, keep the bucket facing the direction of travel, approximately 200 to 300 mm (approx. 8 to 12 in) (A) above the ground.
  - If the machine starts to skid or becomes unstable, immediately lower the bucket to the ground and stop.
  - Before using the downshift switch (DSS) while driving down a slope, apply the brake to decrease the machine speed enough.

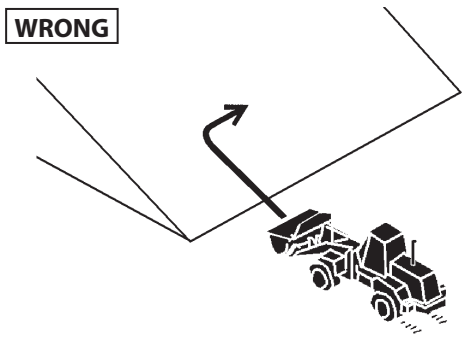
- Driving across the face of a slope or steering on a slope may cause the machine to skid or overturn. If the direction must be changed, move the machine to level ground, then, change the direction to ensure safe operation.



SA-449



SA-450



SA-451

Drive Safely with Bucket Loaded

- If the machine is operated incorrectly while driving with the bucket loaded, the machine may turn over. Be sure to follow all of the instructions indicated below.

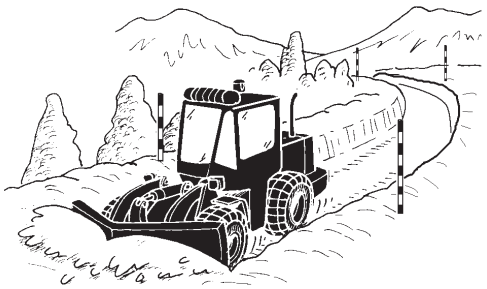
  - When driving the machine on a job site with the bucket loaded, hold the bucket as low as possible to keep the machine balanced and to have good visibility.
  - Do not exceed the rated load capacity. Always operate the machine within the rated load capacity.
  - Avoid fast starts, stops, and quick turns. Failure to do so may result in personal injury and / or death.
  - Avoid rapid drive direction changes which could possibly cause personal injury and / or death.

SA-400

Drive on Snow Safely

- Beware of the possibility of slipping or turning over the machine when driving on frozen snow surfaces.

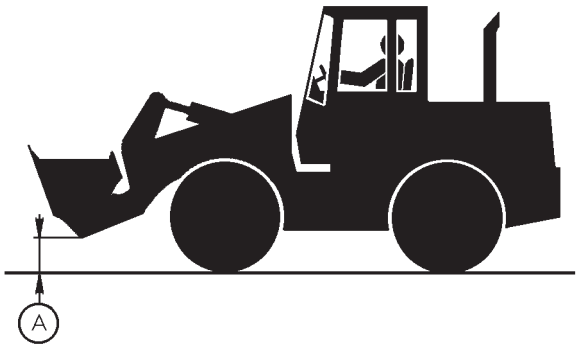
  - The machine may slip more easily than expected on frozen snow surfaces even if the incline is small. Reduce speed when driving. Avoid fast starts, stops and quick turns.
  - Road shoulder and / or set-up utilities covered with snow are difficult to locate. Be sure where they are before removing snow.
  - Be sure to use tire chains when driving on snow.
  - Avoid applying the brake for quick stops on snow. If a quick stop is required, lower the bucket to the ground.



SA-452

Travel on Public Roads Safely

- This machine is not allowed to drive on public roads with the bucket loaded.
  - Be sure to empty the bucket.
  - Hold the bucket at mark (A) 300 mm (12 in) above the road surface as illustrated.



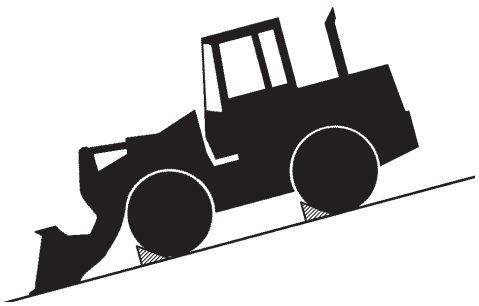
SA-453

Avoid Injury from Rollaway Accidents

- Death or serious injury may result if you attempt to mount or stop a moving machine.

To avoid rollaways:
- Select level ground when possible to park machine.
- Do not park the machine on a grade.
- Lower the bucket to the ground.
- Put the forward / reverse lever (switch) in neutral.
- Run the engine at low idle speed without load for 5 minutes to cool down the engine.
- Turn the control lever lock switch to the lock (🔒) position.
- Turn the parking brake switch ON.
- Stop the engine and remove the key from the key switch.
- Block both tires and lower the bucket to the ground.
- Position the machine to prevent rolling.
- Park at a reasonable distance from other machines.

SA-457



SA-458

Avoid Accidents from Backing Up and Turning

- Make sure no one is working under or close to the machine before backing up or turning the machine to avoid personal injury and / or death by being run over or entangled in the machine.
  - Keep all personnel away from the machine by sounding the horn and / or using hand signals. Use extra care to be sure no one is in from the articulation area before turning the machine.
  - Keep windows, mirrors, and lights in good condition.
  - Reduce travel speed when dust, heavy rain, fog, etc., reducing the visibility.
  - In case good visibility is not obtained, use a signal person to guide you.

SA-383

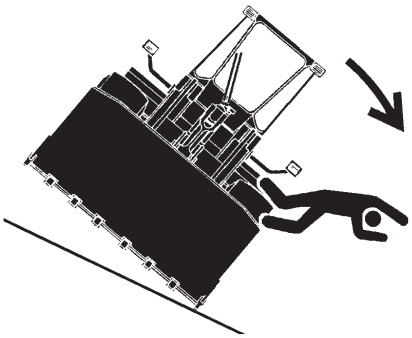
SA-312

Avoid Positioning Bucket or Attachment Over Anyone

SA-518

- Never allow the bucket or attachment to pass over co-workers and / or the dump truck operator's cab. Falling material from the bucket or contact with bucket or attachment may cause serious personal accidents and / or damage to the machine.
  - Avoid carrying the bucket or attachment over the co-workers to ensure safe operation.

Avoid Tipping



SA-463

DO NOT ATTEMPT TO JUMP CLEAR OF TIPPING MACHINE. MACHINE WILL TIP OVER FASTER THAN YOU CAN JUMP FREE, POSSIBLY RESULTING IN SERIOUS PERSONAL INJURY OR DEATH. IF TIPPING OVER OF THE MACHINE IS PREDICTED, SECURELY HOLD THE STEERING WHEEL TO PREVENT YOUR BODY FROM BEING THROWN OUT OF THE MACHINE.

MACHINE WILL TIP OVER FASTER THAN YOU CAN JUMP FREE

FASTEN YOUR SEAT BELT

- The danger of tipping is always present when operating on a grade, possibly resulting in serious injury or death.

To avoid tipping:

- Be extra careful before operating on a grade.
  - Prepare machine operating area flat.
  - Keep the bucket low to the ground and close to the machine.
  - Reduce operating speeds to avoid tipping or slipping.
  - Avoid changing direction when traveling on grades.
  - NEVER attempt to travel across a grade steeper than 5 degrees if crossing the grade is unavoidable.
  - Reduce speed as necessary when swinging loads.

- Be careful when working on frozen ground.
  - Temperature increases will cause the ground to become soft and make ground travel unstable.

Never Undercut a High Bank

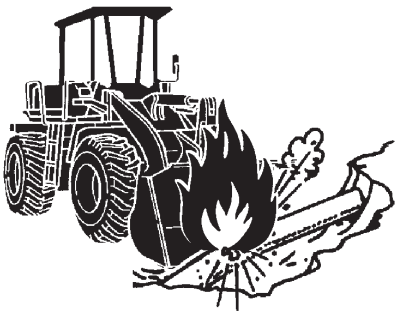
- The edges could collapse or a land slide could occur causing serious injury or death.

SA-519

Dig with Caution

- Accidental severing of underground cables or gas lines may cause an explosion and / or fire, possibly resulting in serious injury or death.

  - Before digging, check the location of cables, gas lines, and water lines.
  - Keep the minimum distance required by law, from cables, gas lines, and water lines.
  - If a fiber optic cable should be accidentally severed, do not look into the end. Doing so may result in serious eye injury.
  - Contact your local "diggers hot line" if available in your area , and / or the utility companies directly. Have them mark all underground utilities.



SA-396

Perform Truck Loading Safely

- Do not operate the machine involuntarily. Unexpected machine movement may cause personal injury and / or death.

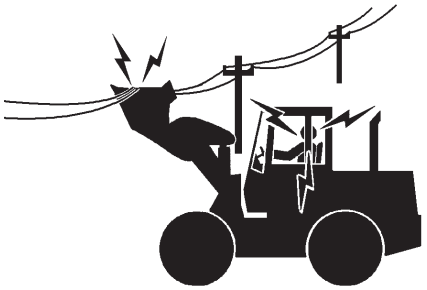
  - Do not lower the bucket with the lift arm control lever in the FLOAT position. The bucket may free fall, possibly causing personal injury and / or death.
  - Always select a level surface for truck loading.

SA-397

Avoid Power Lines

Serious injury or death can result from contact with electric lines.

Never move any part of the machine or load closer to any electric line than 3 m (10 ft) plus twice the line insulator length.



SA-455

Precautions for Operation

- If the front attachment or any part of the machine comes in contact with an overhead obstacle, both the machine and the overhead obstacle may become damaged, and personal injury may result.

  - Take care to avoid coming in contact with overhead obstacles with the bucket or arm during operation.

Precautions for Lightning

- Lightning may strike the machine.

  If lightning comes close, immediately stop the operation, and take the following action.
  - When you are around the machine or operating cab-less machine, evacuate to a safe place far away from the machine.
  - When you are in the cab, stay in the cab until lightning has passed and safety is secured. Close the cab doors and windows. Lower the bucket to the ground, and stop the engine. Put your hands on your lap to avoid contact with any metal surfaces. Never go out of the cab.

  If lightning strikes the machine or near the machine, check all of the machine safety devices for any failure after lightning has passed and safety is secured. If any trouble is found, operate the machine only after repairing it.

M4GB-0S-001

Object Handling

CRANING OPERATION USING THE MACHINE IS NOT ALLOWED.

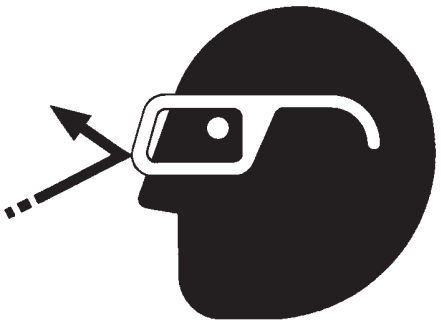
- If a lifted load should fall, any person nearby may be struck by the falling load or may be crushed underneath it, resulting in serious injury or death.

  Never attach a sling or chain to the bucket teeth or to the attachment (fork or grapple for example). They may come off, causing the load to fall.

SA-132

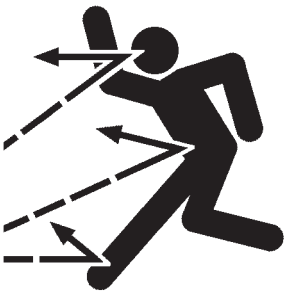
Protect Against Flying Debris and Falling Object

- During hammer operation, debris from earth, rock or metal may fly in all directions, resulting in a serious personal injury or death.
  - When driving the connecting pins in or out, wear goggles or safety glasses, hard hat and face shield.



SA-432

- During machine operation, debris from earth, rock or metal may fly off from the tire and bucket, resulting in a serious personal injury or death.
  - Ensure nobody presents in or around the work area while machine is operating.



SA-344

- Falling of accumulated earth or dirt onto people may result in a serious personal injury or death.
  - Before performing maintenance, remove accumulated debris.

SA-527

Park Machine Safely

To avoid accidents:

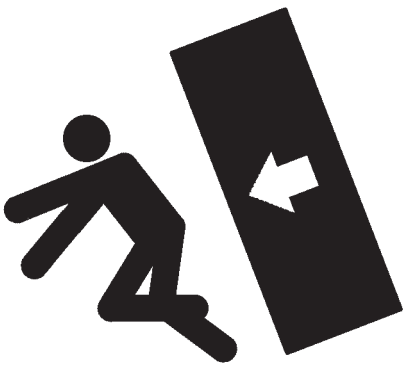
- Park the machine on a firm, level surface.
- Lower bucket to the ground.
- Put the forward / reverse lever (switch) in neutral, and turn the parking brake switch (lever) ON (parking brake) position.
- Run the engine at low idle speed without load for 3 minutes.
- Turn key switch to OFF to stop engine.
- Remove the key from the key switch.
- Turn the control lever lock switch to the lock (🔒) position.
- Close windows, roof vent, and cab door.
- Lock all access doors and compartments.

SA-456

Store Attachments Safely

- Stored attachments such as buckets, hydraulic hammers, and blades can fall and cause serious injury or death.

  - Securely store attachments and implements to prevent falling. Keep children and bystanders away from storage areas.



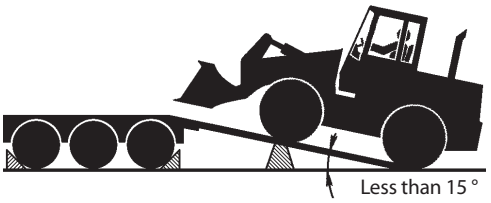
SA-034

Transport Safely

- Be careful because the machine may turn over when loading or unloading the machine on or off of a truck or trailer.

  - Observe the related regulations and rules for safe transportation.
  - Select an appropriate truck or trailer for the machine to be transported.
  - Be sure to use a signal person.
  - Always follow the following precautions for loading or unloading:

  1. Select solid and level ground.
  2. Always use a ramp or deck strong enough to support the machine weight.
  3. Use a low speed gear.
  4. Never steer the machine while being on the ramp. If the traveling direction must be changed while being on the ramp, unload the machine from the ramp, reposition the machine on the ground, then try loading again.
  5. After loading, install the lock bar (articulation stopper) to securely hold the articulation mechanism.
  6. Chock the front and rear of tires. Securely hold the machine to the truck or trailer deck with heavy chains of wire cables.



SA-454

Be sure to further follow the details described in the TRANSPORTING chapter.

Handle Fluids Safely–Avoid Fires

- Handle fuel with care; it is highly flammable. If fuel ignites, an explosion and / or a fire may occur, possibly resulting in serious injury or death.
  - Do not refuel the machine while smoking or when near open flame or sparks.
  - Always stop the engine before refueling the machine.
  - Fill the fuel tank outdoors.

SA-018

- All fuels, most lubricants, and some coolants are flammable.
  - Store flammable fluids well away from fire hazards.
  - Do not incinerate or puncture pressurized containers.
  - Do not store oily rags; they can ignite and burn spontaneously.
  - Securely tighten the fuel and oil filler caps.

SA-019

Practice Safe Maintenance

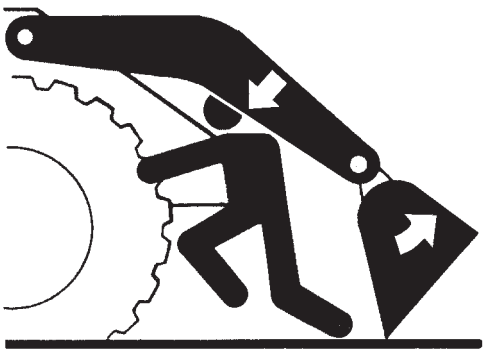
To avoid accidents:
- Understand service procedures before starting work.
- Keep the work area clean and dry.
- Do not spray water or steam inside cab.
- Never lubricate or service the machine while it is moving.
- Keep hands, feet and clothing away from power-driven parts.

SA-028

Before servicing the machine:
1. Park the machine on a level surface.
2. Lower the bucket to the ground.
3. Run the engine at low idle speed without load for 3 minutes.
4. Turn the key switch to OFF to stop engine. Wait for some seconds and turn the key switch to ON again.
5. Relieve the pressure in the hydraulic system by moving the control levers several times.
6. Turn the control lever lock switch to the LOCK ( ) position.
7. Turn the key switch to OFF, and remove the key from the key switch.
8. Attach a "Do Not Operate" tag on the control lever.
9. Connect the front and rear chassis with articulation stopper.
10. Allow the engine to cool.

SA-312

- Refer to page 7-8 "Preparations for Inspection and Maintenance".
- If a maintenance procedure must be performed with the engine running, do not leave machine unattended.
- Never work under a machine raised by the lift arm.
- Inspect certain parts periodically and repair or replace as necessary. Refer to the section discussing that part in the "MAINTENANCE" chapter of this manual.
- Keep all parts in good condition and properly installed.
- Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.
- When cleaning parts, always use nonflammable detergent oil. Never use highly flammable oil such as fuel oil and gasoline to clean parts or surfaces.
- Disconnect battery ground cable (-) before making adjustments to electrical systems or before performing welding on the machine.



SA-134

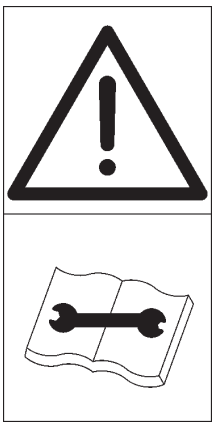
SA-527

- Sufficiently illuminate the work site. Use a maintenance work light when working under or inside the machine.
- Always use a work light protected with a guard. In case the light bulb is broken, spilled fuel, oil, antifreeze fluid, or window washer fluid may catch fire.

SA-037

Warn Others of Service Work

- Unexpected machine movement can cause serious injury.
  - Before performing any work on the machine, attach a "Do Not Operate" tag on the control lever. This tag is available from your authorized dealer.



SS2045102-4

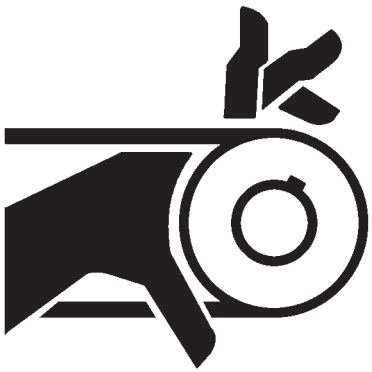
Support Machine Properly

- Never attempt to work on the machine without securing the machine first.
  - Always lower the attachment to the ground before you work on the machine.
  - If you must work on a lifted machine or attachment, securely support the machine or attachment. Do not support the machine on cinder blocks, hollow tires, or props that may crumble under continuous load. Do not work under a machine that is supported solely by a jack.

SA-527

Stay Clear of Moving Parts

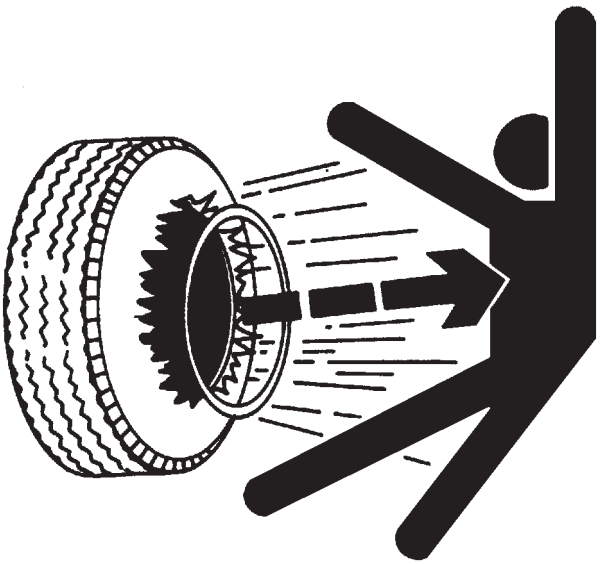
- Entanglement in moving parts can cause serious injury.
  - To prevent accidents, care should be taken to ensure that hands, feet, clothing, jewelry and hair do not become entangled when working around rotating parts.



SA-026

Support Maintenance Properly

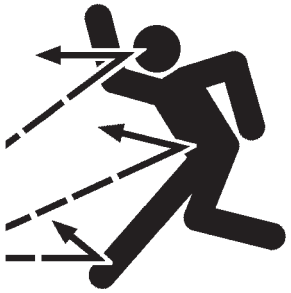
- Explosive separation of a tire and rim parts can cause serious injury or death.
  - Do not attempt to mount a tire unless you have the proper equipment and experience to perform the job. Have it done by your authorized dealer or a qualified repair service.
  - Always maintain the correct tire pressure. DO NOT inflate tire above the recommended pressure.
  - When inflating tires, use a chip-on chuck and extension hose long enough to allow you to stand to one side and not in front of or over the tire assembly. Use a safety cage if available.
  - Inspect tires and wheels daily. Do not operate with low pressure, cuts bubbles, damaged rims, or missing lug bolts and nuts.
  - Never cut or weld on an inflated tire or rim assembly. Heat from welding could cause an increase in pressure and may result in tire explosion.



SA-249

Prevent Parts from Flying

- Travel reduction gears are under pressure.
  - As pieces may fly off, be sure to keep body and face away from AIR RELEASE PLUG to avoid injury.
  - GEAR OIL is hot. Wait for GEAR OIL to cool, then gradually loosen AIR RELEASE PLUG to release pressure.



SA-344

Prevent Burns

Hot spraying fluids:

- After operation, engine coolant is hot and under pressure. Hot water or steam is contained in the engine, radiator and heater lines.
  Skin contact with escaping hot water or steam can cause severe burns.
  - Avoid possible injury from hot spraying water. DO NOT remove the radiator cap until the engine is cool. When opening, turn the cap slowly to the stop. Allow all pressure to be released before removing the cap.
  - The hydraulic oil tank is pressurized. Again, be sure to release all pressure before removing the cap.

SA-039

Hot fluids and surfaces:

- Engine oil, gear oil and hydraulic oil also become hot during operation.
  The engine, hoses, lines and other parts become hot as well.
  - Wait for the oil and components to cool before starting any maintenance or inspection work.

SA-225

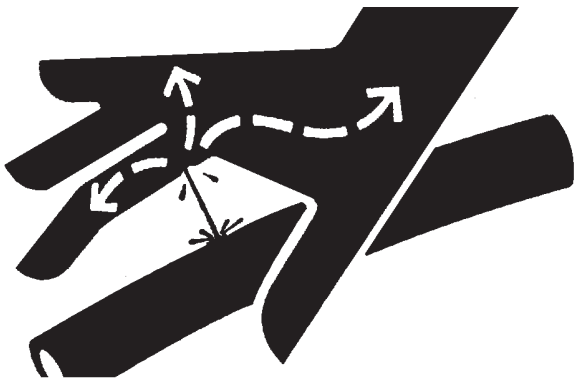
Replace Rubber Hoses Periodically

- Rubber hoses that contain flammable fluids under pressure may break due to aging, fatigue, and abrasion. It is very difficult to gauge the extent of deterioration due to aging, fatigue, and abrasion of rubber hoses by inspection alone.
  - Periodically replace the rubber hoses. (See the page of "Periodic replacement of parts" in the operator's manual.)
- Failure to periodically replace rubber hoses may cause a fire, fluid injection into skin, or the front attachment to fall on a person nearby, which may result in severe burns, gangrene, or otherwise serious injury or death.

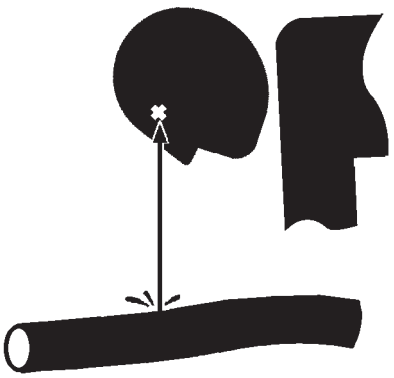
SA-019

Avoid High-Pressure Fluids

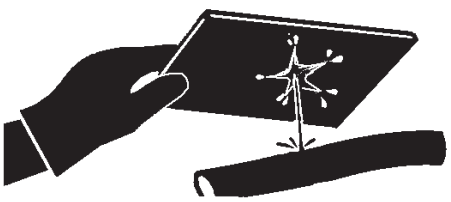
- Fluids such as diesel fuel or hydraulic oil under pressure can penetrate the skin or eyes causing serious injury, blindness or death.
  - Avoid this hazard by relieving pressure before disconnecting hydraulic or other lines.
  - Tighten all connections before applying pressure.
  - Search for leaks with a piece of cardboard; take care to protect hands and body from high-pressure fluids. Wear a face shield or goggles for eye protection.
  - If an accident occurs, see a doctor familiar with this type of injury immediately. Any fluid injected into the skin must be surgically removed within a few hours, or gangrene may result.



SA-031



SA-292



SA-044

Prevent Fires

SA-019

Check for Oil Leaks:
- Fuel, hydraulic oil and lubricant leaks can lead to fires.
  - Check for oil leaks due to missing or loose clamps, kinked hoses, lines or hoses that rub against each other, damage to the oil-cooler, and loose oil-cooler flange bolts.
  - Tighten, repair or replace any missing, loose or damaged clamps, lines, hoses, oil-cooler and oil-cooler flange bolts.
  - Do not bend or strike high-pressure lines.
  - Never install bent or damaged lines, pipes, or hoses.
  - Replace fuel hoses and hydraulic hoses periodically even if there is no abnormality in their external appearance.

Check for Shorts:
- Short circuits can cause fires.
  - Clean and tighten all electrical connections.
  - Check before each shift or after eight (8) to ten (10) hours operation for loose, kinked, hardened or frayed electrical cables and wires.
  - Check before each shift or after eight (8) to ten (10) hours operation for missing or damaged terminal caps.
  - DO NOT OPERATE MACHINE if cable or wires are loose, kinked, etc.
  - Never attempt to modify electric wirings.

Clean up Flammable Materials:
- Spilled fuel and oil, and trash, grease, debris, accumulated coal dust, and other flammable materials may cause fires.
  - Prevent fires by inspecting and cleaning the machine daily, and by removing adhered oil or accumulated flammable materials immediately. Check and clean high temperature parts such as the exhaust outlet and mufflers earlier than the normal interval.
  - Do not wrap high temperature parts such as a muffler or exhaust pipe with oil absorbents.
  - Do not store oily cloths as they are vulnerable to catching fire.
  - Keep flammable materials away from open flames.
  - Do not ignite or crush a pressurized or sealed container.
  - Wire screens may be provided on openings on the engine compartment covers to prevent flammable materials such as dead leaves from entering. However, flammable materials which have passed through the wire screen may cause fires. Check and clean the machine every day and immediately remove accumulated flammable materials.
    The temperature around the engine may tend to become higher with wire screens. Be careful of the overheat.

Check Key Switch:

- If a fire breaks out, failure to stop the engine will escalate the fire, hampering fire fighting.
  Always check key switch function before operating the machine every day:
  1. Start the engine and run it at low idle.
  2. Turn the key switch to the OFF position to confirm that the engine stops.
  - If any abnormalities are found, be sure to repair them before operating the machine.

Check Heat Shields:

- Damaged or missing heat shields may lead to fires.
  - Damaged or missing heat shields must be repaired or replaced before operating the machine.
  - If hydraulic hoses are broken while the engine cover is open, splattered oil on the high temperature parts such as mufflers may cause fire. Always close the engine cover while operating the machine.

Evacuating in Case of Fire

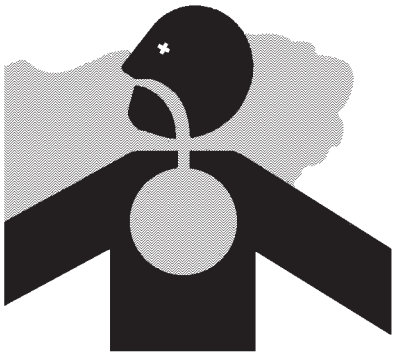
- If a fire breaks out, evacuate the machine in the following way:
  - Stop the engine by turning the key switch to the OFF position if there is time.
  - Use a fire extinguisher if there is time.
  - Exit the machine.
  - If the cab doors do not open, break them with a hammer to make an escapeway.
- If the cab door cannot be opened, break the window glass with the hammer.

SA-393

SS-1510

Beware of Exhaust Fumes

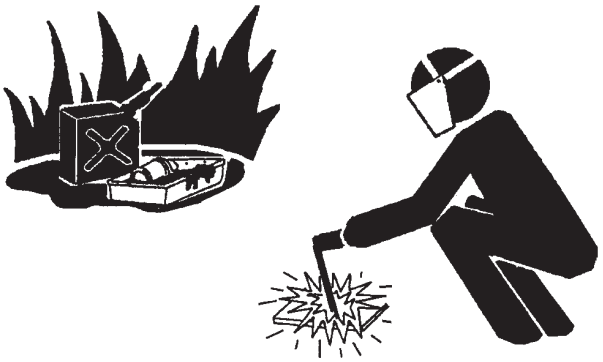
- Prevent asphyxiation. Engine exhaust fumes can cause sickness or death.
  - If you must operate in a building, be sure there is adequate ventilation. Either use an exhaust pipe extension to remove the exhaust fumes or open doors and windows to bring enough outside air into the area.
  - White smoke may be generated during aftertreatment device regeneration. Do not attempt to do aftertreatment device manual regeneration in a badly ventilated indoors.



SA-016

Precautions for Welding and Grinding

- Welding may generate gas and / or small fires.
  - Be sure to perform welding in a well ventilated and prepared area. Store flammable objects in a safe place before starting welding.
  - Only qualified personnel should perform welding. Never allow an unqualified person to perform welding.
- Grinding on the machine may create fire hazards. Store flammable objects in a safe place before starting grinding.
- After finishing welding and grinding, recheck that there are no abnormalities such as the area surrounding the welded area still smoldering.



SA-818

Avoid Heating Near Pressurized Fluid Lines

- Flammable spray can be generated by heating near pressurized fluid lines, resulting in severe burns to yourself and bystanders.
  - Do not heat by welding, soldering, or using a torch near pressurized fluid lines or other flammable materials.
  - Pressurized lines can be accidentally cut when heat goes beyond the immediate flame area. Install temporary fire-resistant guards to protect hoses or other materials before engaging in welding, soldering, etc..

SA-030

Avoid Applying Heat to Lines Containing Flammable Fluids

- Do not weld or flame cut pipes or tubes that contain flammable fluids.
- Clean them thoroughly with nonflammable solvent before welding or flame cutting them.

Precautions for Handling Accumulator and Gas Damper

High-pressure nitrogen gas is sealed in the accumulator and the gas damper. Inappropriate handling may cause explosion, possibly resulting in serious injury or death.

Strictly comply with the following items:

- Do not disassemble the unit.
- Keep the units away from open flames and fire.
- Do not bore a hole, do not cut by torch.
- Avoid giving shocks by hitting or rolling the unit.
- Before disposing the unit, sealed gas must be released. Consult your nearest authorized dealer.

Precautions for Diesel Exhaust Fluid (DEF)

- Diesel exhaust fluid (DEF), commonly referred to as AdBlue®, is an aqueous urea solution used as a consumable in selective catalytic reduction (SCR) to lower NOx concentration in the exhaust emissions from the engine. It is a non-flammable and non-hazardous solution, and harmful effects are not expected under normal conditions of use.

- In case of a fire, DEF/AdBlue® would decompose and generate ammonia gas when heated to 160 °C (320 °F) or higher.
  Ammonia gas may cause lung injury and potentially is fatal if inhaled. It is a corrosive gas and the liquefied gas can cause frostbite and corrosive injury to eyes and skin.
  In case of contact, immediately flush skin with plenty of water at least 15 minutes while removing contaminated clothing. Get medical attention if symptoms occur.

- DEF/AdBlue® is corrosive to steel, aluminium, copper and brass, etc. If DEF/AdBlue® is spilled on your vehicle, wipe off and rinse with water.

- For the handling of DEF/AdBlue®, follow handling precautions on Material Safety Data Sheet. Have suitable emergency equipment for fires, spills and leaks readily available. Practice good housekeeping. Maintain handling equipment. Comply with applicable regulations.

Remove Paint Before Welding or Heating

- Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch. If inhaled, these fumes may cause sickness.

  - Avoid potentially toxic fumes and dust.
  - Do all such work outside or in a well-ventilated area. Dispose of paint and solvent properly.
  - Remove paint before welding or heating:

  1. If you sand or grind paint, avoid breathing the dust.

     Wear an approved respirator.

  2. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.

SA-029

Beware of Asbestos and Silicon Dust and Other Contamination

- Take care not to inhale dust produced in the work site. Inhalation of asbestos fibers may be the cause of lung cancer.
  Inhalation of silicon dust and other contamination may cause sickness.

  - Depending on the work site conditions, the risk of inhaling asbestos fiber, silicon dust or other contamination may exist. Spray water to prevent asbestos fibers, silicon dust or other contamination from becoming airborne. Do not use compressed air.
  - When operating the machine in a work site where asbestos fibers, silicon dust or other contamination might be present, be sure to operate the machine from the upwind side and wear a mask rated to prevent the inhalation of asbestos, silicon dust or other contamination.
  - Keep bystanders out of the work site during operation.
  - Asbestos might be present in imitation parts. Use only genuine Hitachi Parts.

SA-029

Prevent Battery Explosions

- Battery gas can explode.
  - Keep sparks, lighted matches, and flame away from the top of battery.
  - Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.
  - Do not charge a frozen battery; it may explode. Warm the battery to 16 °C (60 °F) first.
  - Do not continue to use or charge the battery when electrolyte level is lower than specified. Explosion of the battery may result.
  - Loose terminals may produce sparks. Securely tighten all terminals.
  - Connect terminals to the correct electrical poles. Failure to do so may cause damage to the electrical parts or fire.
- Battery electrolyte is poisonous. If the battery should explode, battery electrolyte may be splashed into eyes, possibly resulting in blindness.
  - Be sure to wear eye protection when checking electrolyte specific gravity.

SA-032

Service Air Conditioning System Safely

- If spilled onto skin, refrigerant may cause a cold contact burn.
  - Refer to the instructions described on the container for proper use when handling the refrigerant.
  - Use a recovery and recycling system to avoid leaking refrigerant into the atmosphere.
  - Never touch the refrigerant.

SA-405

Handle Chemical Products Safely

- Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with your machine include such items as lubricants, coolants, paints, and adhesives.

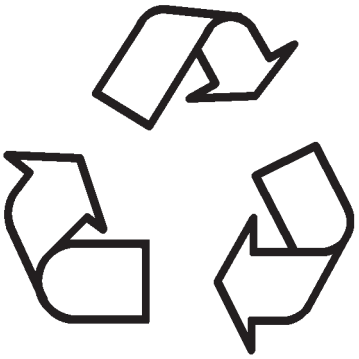
  - A Safety Data Sheet (SDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.
  - Check the SDS before you start any job using a hazardous chemical. That way you will know exactly what the risks are and how to do the job safely. Then follow procedures and use recommended equipment.
  - See your authorized dealer for SDS's (available only in English) on chemical products used with your machine.

SA-2579

Dispose of Waste Properly

- Improperly disposing of waste can threaten the environment and ecology. Potentially harmful waste used with Hitachi equipment includes such items as oil, fuel, coolant, brake fluid, filters, DEF/AdBlue®, and batteries.

  - Use leakproof containers when draining fluids. Do not use food or beverage containers that may mislead someone into drinking from them.
  - Do not pour waste onto the ground, down a drain, or into any water source.
  - Air conditioning refrigerants escaping into the air can damage the Earth's atmosphere. Government regulations require a certified air conditioning service center to recover and recycle used air conditioning refrigerants.
  - Inquire on the proper way to recycle or dispose of waste from your local environmental or recycling center, or from your authorized dealer.



SA-226

Notes for Aftertreatment Device

Urea SCR System

The aftertreatment device removes particulate matter (PM) and nitrogen oxide (NOx) from the exhaust gas. Follow the instructions below to prevent the aftertreatment device from being damaged.

WARNING: Exhaust gas from the aftertreatment device, muffler, exhaust piping and tail piping becomes hot during and just after engine running and regeneration of aftertreatment device. Be careful not to let your skin contact any part of exhaust system or hot gas from the exhaust piping. Otherwise, it may cause severe burns.

- White smoke may be generated during the aftertreatment device regeneration. Do not attempt to do aftertreatment device manual regeneration in a badly ventilated indoors.
- Do not directly touch water coming out of the aftertreatment device. The water is mildly-acidic by oxidation catalyst mounted in the aftertreatment device. If filter water spills on your skin, immediately flush it out with clean water.

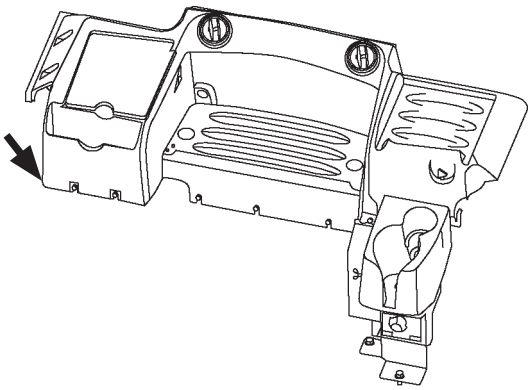
Precautions for Communication Terminal

Electrical wave transmitted from the communication terminal may cause malfunction of other electronic devices. Inquire the device manufacturer for electrical wave disturbance upon using an electronic device near the communication terminal.

Never attempt to disassemble, repair, modify or displace the communication terminal, antennas or cables. Failure to do so may result in damage and/or fire to the base machine or to the communication terminal. (When required to remove or install the communication terminal, consult your nearest Hitachi dealer.)

Do not pinch or forcibly pull cables, cords or connectors. Failure to do so may cause a short or broken circuit that may result in damage and/or fire to the base machine or to the communication terminal.

Precautions for Communication Terminal Equipment



MNEC-01-046

This machine is installed with a communication terminal emitting radio waves behind the operator's seat. There is a possibility that a medical device, including an implantable device such as a cardiac pacemaker, could be affected and malfunction due to the electrical waves emitted from the communication terminal.

For those who uses medical devices as above should adjust the operator's seat position to keep the distance between medical device and the communication terminal are at least 15 centimeters (6 inches) at all times. If this condition cannot be met, please contact your authorized dealer and have the person in charge stop the communication terminal from functioning completely and confirm that no radio waves are emitted before operating the machine.

The effect of radio waves from communication terminal on the human body can be evaluated by measuring Specific Absorption Rate ("SAR"), which is a measure of the amount of radio frequency energy absorbed by the body when using a wireless application such as a mobile phone.

All communication terminal installed in this machine comply with technical standards and international guidelines regarding the absorption of radio waves by the human body.

There are two SAR measurement method and the safety standards, 2.0 W/kg (measured by 10 g per unit) and 1.6 W/kg (measured by 1 g per unit), either one is adopted depending on the country.

This machine is equipped with a communication terminal model HPRO-100, HPRO-4G, or QConnect. Consult your authorized dealer for the model of communication terminal.

Specific Absorption Rate ("SAR") of communication terminal. The values in ( ) are based on Taiwanese regulations.

	HPRO-100	HPRO-4G*	QConnect *
1.6 W/kg (1 g/unit)	0.51 W/kg	0.91 W/kg	-
2.0 W/kg (10 g/unit)	0.12 W/kg	0.50 W/kg (0.31 W/kg)	- (0.25 W/kg)

This data was measured by having each type of communication terminal used with this machine, and a human body set apart by 3 centimeters (1.18 inches).

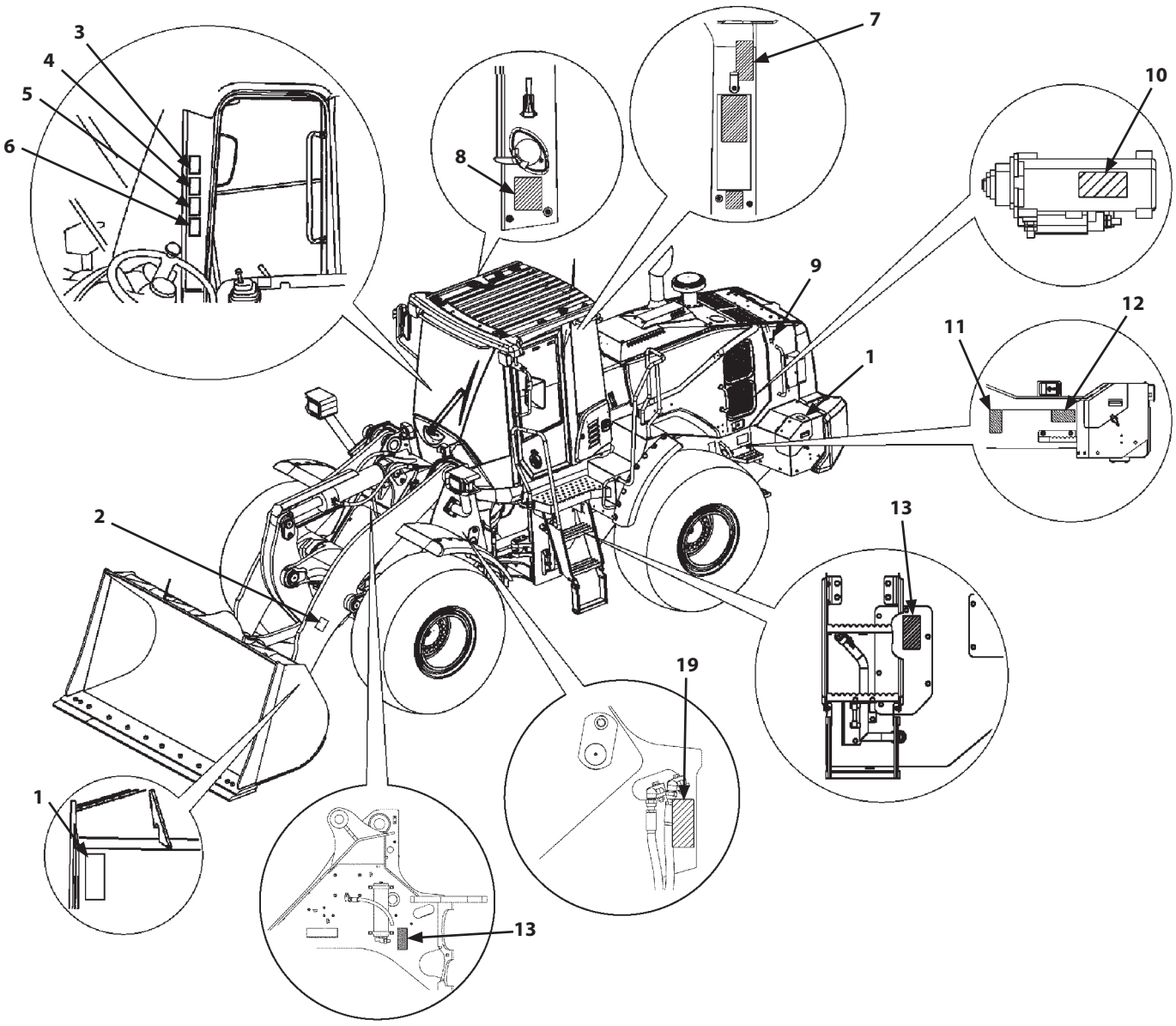
Precautions in Taiwan*: Under the Taiwanese regulations, the maximum SAR value is set as the standard value 2 W/kg. The actual measurement value is 0.25 W/kg using QConnect, and 0.31 W/kg using HPRO-4G.

- Do not attempt to disassemble, repair, modify or displace the communication terminal, antennas or cables. Failure to do so may result in damage and/or fire to the base machine or to the communication terminal. (Before removing or installing the communication terminal, consult your authorized dealer.)

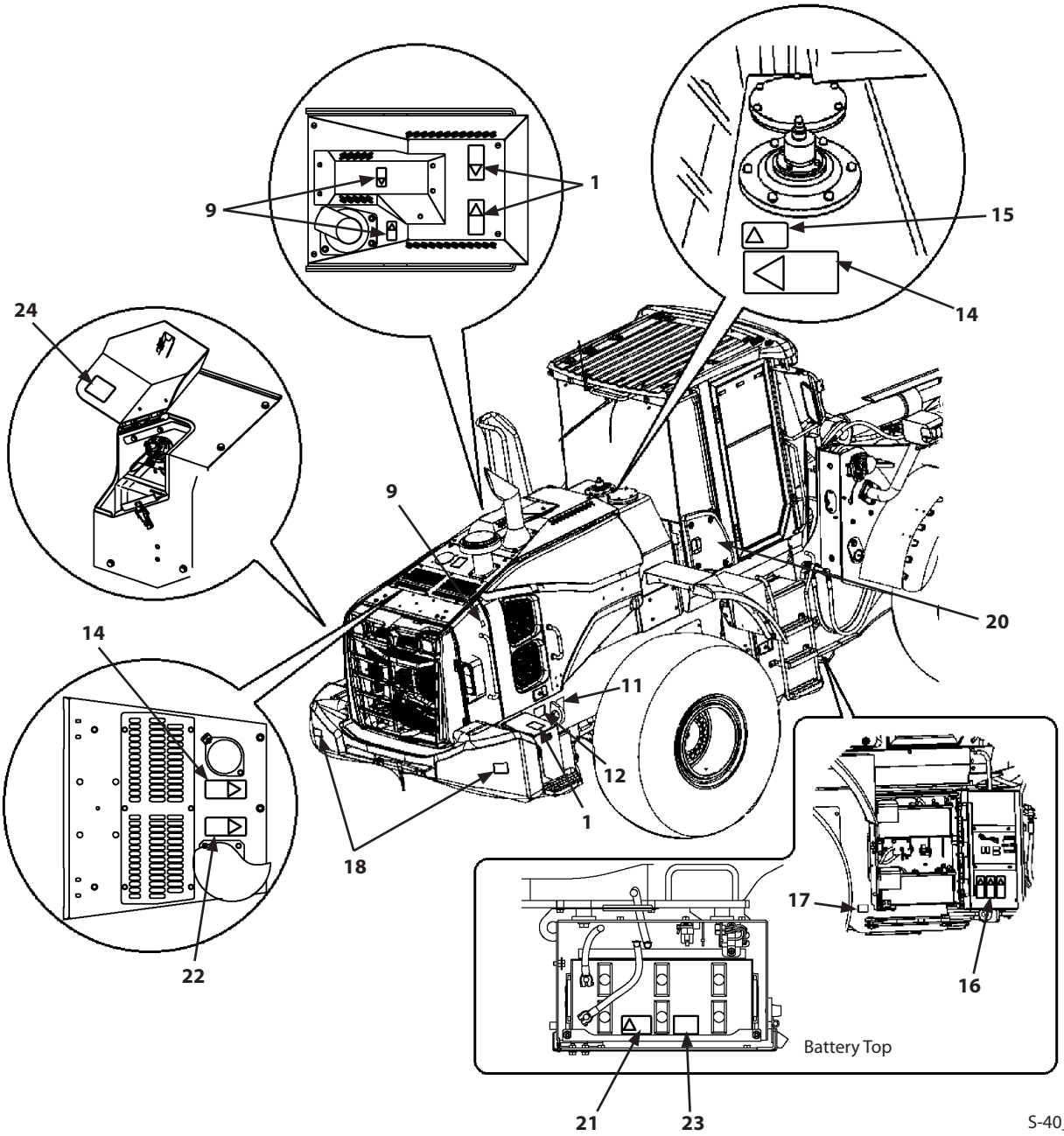
- Do not pinch or forcibly pull cables, cords or connectors. Failure to do so may cause damage or fire on the machine and the communication terminal due to short/broken circuit.

SAFETY LABELS

All safety signs and their locations on the machine are illustrated in this group. Become familiar with the contents of the safety labels by reviewing them on the machine and understanding them, to ensure safe machine operation.
Always keep the safety labels clean. In case a safety sign is lost or no longer readable, immediately-obtain a new replacement and affix it again in position on the machine. Use the part No. indicated under the bottom right corner of each safety label when placing an order for it to the authorized dealer.



S-39_180

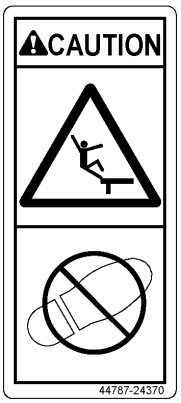


S-40_70Z7B

1. Bucket, Hood, Tool Box and DEF/AdBlue® Tank Cover

CAUTION: Sign indicates a fall hazard.

Do not step on or stand in this area.



4478724370

2. Both Sides of Lift Arm

DANGER: Crush Hazard

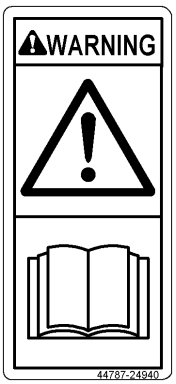
During operation, loads may spill from the bucket and/or the bucket may suddenly fall. Never allow anyone to approach the machine with lift arms raised.

4478724420

3. Cab Inside Right Front Column (First safety sign from the top)

WARNING

Prior to operation, maintenance, disassembling, and transportation of the machine, be sure to read and understand the Operator's Manual.

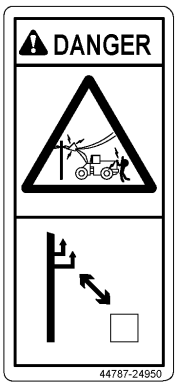


4478724940

4. Cab Inside Right Front Column (2nd safety sign from the top)

DANGER: Electrocution Hazard

Sign indicates an electrocution hazard if machine is brought too near electric power lines.
Keep a safe distance from electric power lines.

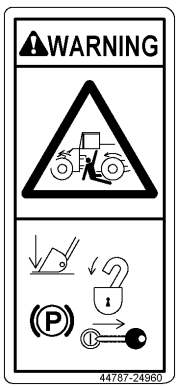


4478724950

5. Cab Inside Right Front Column (3rd safety sign from the top)

WARNING: Runover or Entanglement Hazard

If the parked machine starts moving unexpectedly, personal injury or death due to entanglement in moving parts or running over by the machine may result. Before leaving the machine, set the park brake to parking position, lower the front attachment to the ground, lock the control levers, and remove the key from the key switch.



4478724960

6. Cab Inside Right Front Column (4th safety sign from the top)

WARNING: Rollover Hazard

To minimize the injury due to an overturning accident, be sure to fasten the seat belt prior to operating the machine.

4478724970

7. Cab Inside Left Center Column

WARNING: Runover Hazard

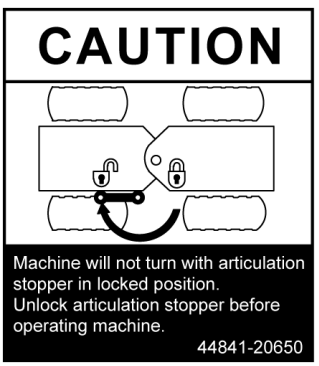
Be sure that the backup alarm is operable when the machine is put in reverse.

4478724680

8. Cab Inside Right Center Column

CAUTION: Steering Hazard

Unlock articulation stopper before operating machine.



label 44841-20650

9. Both Sides of Oil Cooler and Hood

WARNING: Burn Hazard

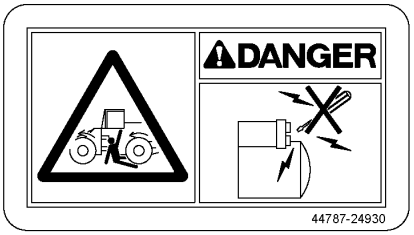
Avoid skin contact with highly heated parts such as the engine, muffler, etc. immediately after operation of the machine. Severe burns may result.

4478724990

10. Side of Engine Starter

DANGER: Runover Hazard

- If the engine is not started correctly the machine may suddenly start to move. Start the engine from the operator's seat only.



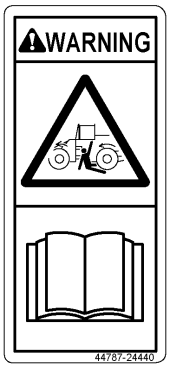
4478724930

11. Bottoms at Both Right and Left Side Covers of Rear Chassis

WARNING: Runover Hazard

- Machine movement, if engine starts in gear, could result in death or serious injury.
  - Do not start engine by shorting across starter terminals.
  - Do not start engine while standing on ground.

  Make sure to start engine only from operator's seat with transmission in neutral and parking brake applied.

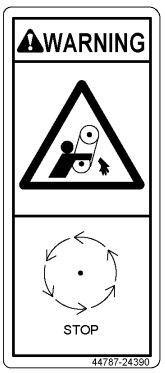


4478724440

12. Bottoms at Both Right and Left Side Covers of Rear Chassis

WARNING: Entanglement Hazard

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

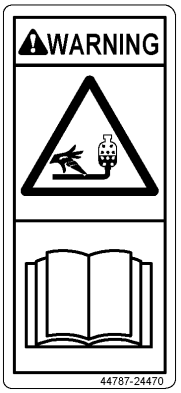


4478724390

13. Accumulator residual pressure

WARNING: Oil injection hazard.

Nitrogen accumulator contains compressed gas and fluid which could result in death or serious injury.
Release the oil pressure from all brake circuits before removing any oil lines or piping.
Do not attempt to service or repair an accumulator unless properly trained and equipped.

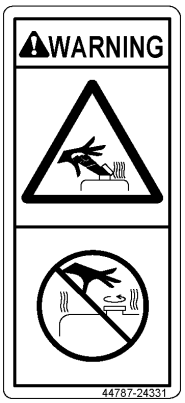


4478724470

14. Top of Coolant Reservoir Tank and Hydraulic Tank

WARNING: Burn Hazard

Pressurized system: spray of hot fluid could result in death or serious injury.
Allow system to cool and vent pressure slowly before servicing.

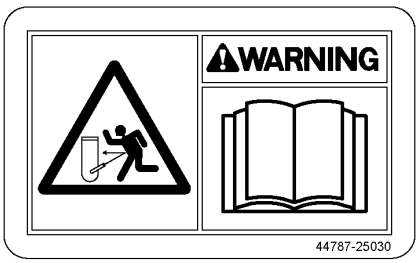


4478724331

15. Top of Hydraulic Oil Tank

WARNING: Burn Hazard

Sign indicates a burn hazard from the pressurized tank spurting hot oil if the oil inlet is uncapped during or right after operation.
Read manual for safe and proper handing.



4478725030

16. Inside Battery Box

A.

CAUTION: Shock Hazard

Sign indicates a possible shock hazard from handling battery terminals. Read manual for safe and proper handling.

4478724350

B.

CAUTION: Chemical Burn Hazard

Skin contact with electrolyte will cause burns. Splashed electrolyte into eyes will cause blindness. Do not touch or come in contact with electrolyte solution.

4478725000

C.

WARNING: Explosion Hazard

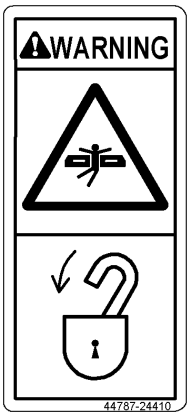
Sign indicates an explosion hazard. Keep fire and open flames away from this area.

4478724340

17. Articulation Stopper

WARNING: Crush Hazard

The articulation area becomes a pinch point when steering the machine. Be sure to install the articulate lock bar (stopper) during inspection/maintenance work and transportation of the machine.

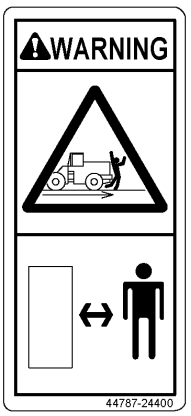


4478724410

18. Both Sides of Counterweight

WARNING: Runover Hazard

Avoid injury or fatality from being run over with the machine. Keep everyone away from the machine when operating.

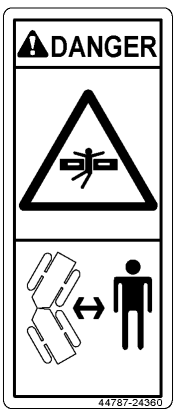


4478724400

19. Both Sides of Front Chassis

DANGER: Crush Hazard

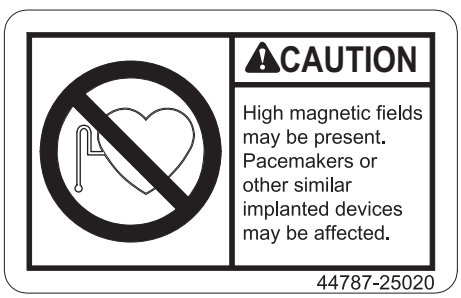
The articulation area becomes a pinch point when steering the machine. Keep all personnel away from the articulation area during operation of the machine.



4478724360

20. Cab Inside Right Console

To those persons fixed with any medical device. Including implantable device such as a cardiac pacemaker. Please read the instruction manual carefully and follow the instructions before using this machine.

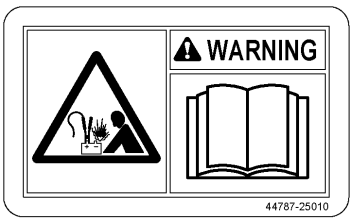


label 44787-25020

21. Top of Battery

DANGER: Explosion Hazard

Do not cause electrical arcing from jumper cables or accidental placement of metal objects on the battery terminals.
Read and understand the operator's manual.

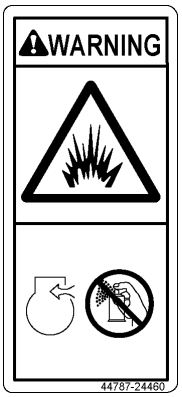


4478725010

22. Use no starting fluid

WARNING: Explosion Hazard

Do not use ether. This engine is equipped with electric heater starting aid.
Use of ether could cause explosion and could result in death or serious injury.

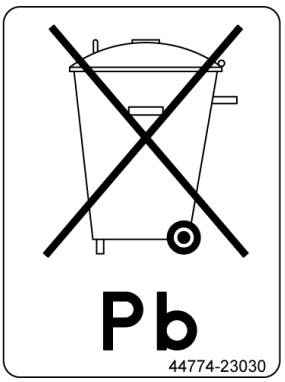


4478724460

23. Top of Battery

Recycle Batteries

Batteries contain lead and acid. Obey all local and federal laws and regulation on disposal of batteries and electrolyte solution.



label 44774-23030

24. Inside DEF/AdBlue® Tank Box

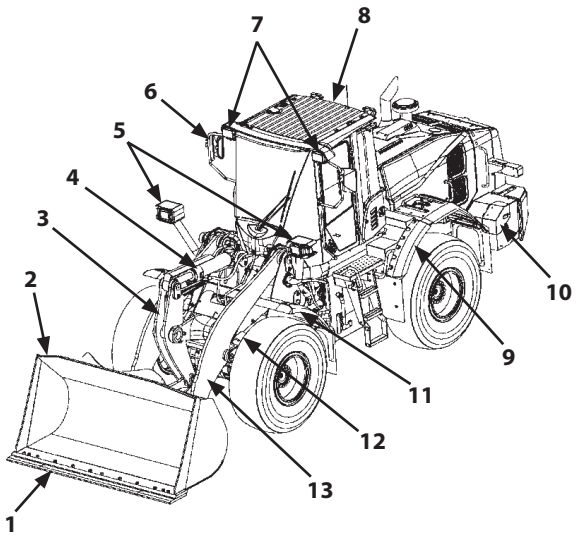
IMPORTANT: Avoid Contamination

- The DEF/AdBlue® tank should be filled with DEF/AdBlue® only. Do not mix any other liquid like water, oil, fuel.

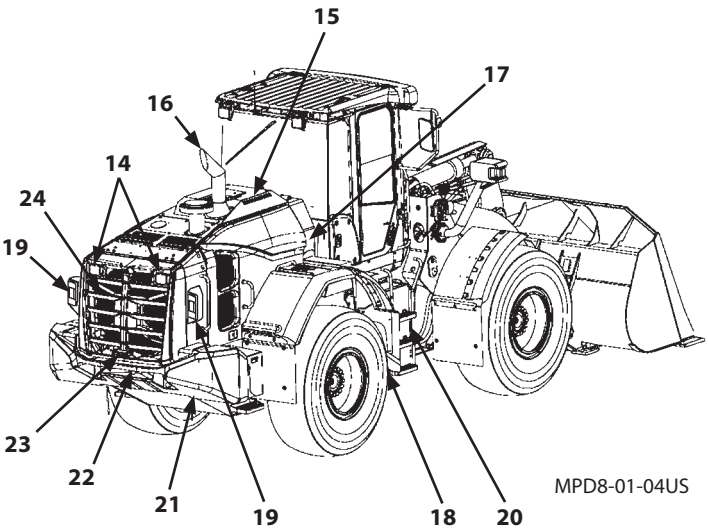
label 44774-27240

Components Name

1- Cutting Edge (BOC)
2- Bucket
3- Bell Crank (Lever)
4- Bucket Cylinder
5- Front Combination Light
(Headlight/Turn Signal/Clearance Light/Hazard Light)
6- Outside Rear View Mirror
7- Front Work Light
8- ROPS Cab
9- Rear Fender
10- DEF/AdBlue® Tank
11- Front Fender
12- Lift Arm (Boom) Cylinder
13- Lift Arm (Boom)
14- Rear Work Light
15- Aftertreatment Device
16- Exhaust Pipe
17- Hydraulic Oil Tank
18- Articulation Stopper (Lock Bar)
19- Rear Combination Light
(Turn Signal/Hazard Light/Tail Light/Brake Light/
Backup Light)
20- Battery
21- Counterweight
22- Towing Pin
23- Fuel Filler Port
24- Radiator/Oil Cooler

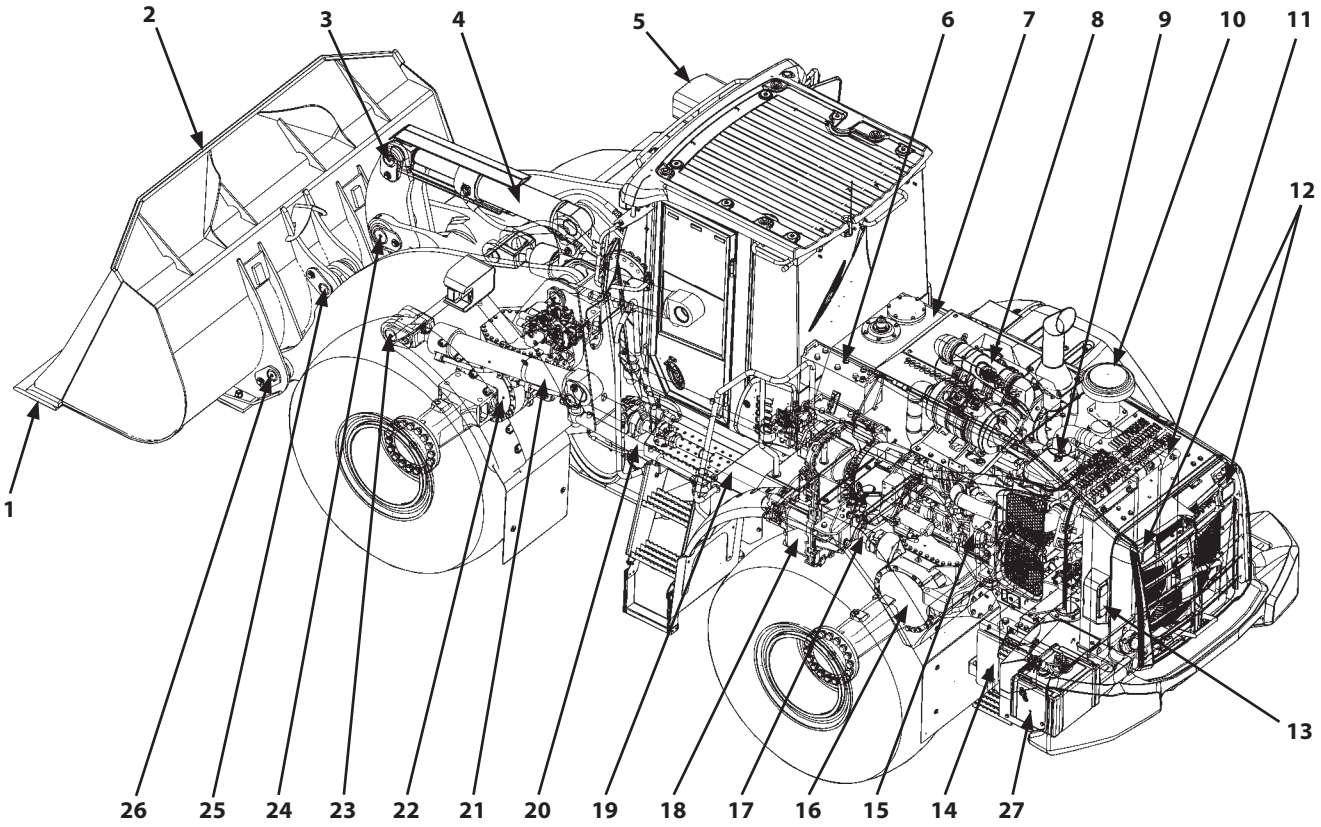


MPD8-01-003



MPD8-01-04US

COMPONENTS NAME



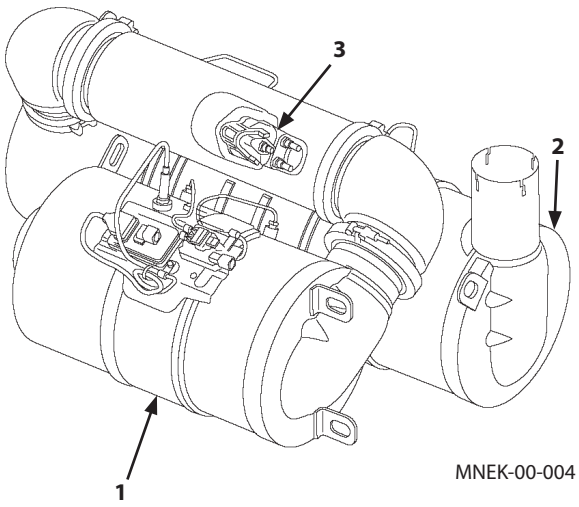
MNEK-07-001

1- Bolt on Cutting Edge
2- Bucket
3- Bucket Cylinder Rod Pin
4- Bucket Cylinder
5- Front Combination Lamp
6- Battery
7- Hydraulic Oil Tank
8- Aftertreatment Device
9- Sub Tank
10- Air Cleaner
11- Radiator, Oil Cooler, and Other Cooling System
12- Work Light
13- Rear Combination Lamp
14- Fuel Tank
15- Engine
16- Rear Axle
17- Third (Rear) Propeller Shaft
18- Transmission
19- Second (Center) Propeller Shaft
20- Steering Cylinder
21- Lift Arm (Boom) Cylinder
22- Front Axle
23- Lift Arm Cylinder Rod Pin
24- Bell Crank (Lever) Pin
25- Bucket Link Pin
26- Bucket Hinge Pin
27- DEF/AdBlue® Tank

Aftertreatment Device

The machine is equipped with the aftertreatment system combining Diesel Oxidation Catalyst (DOC) block (1) with Selective Catalytic Reduction (SCR) block (2) to remove nitrogen oxide (NOx) from the exhaust gas in order to meet governmental emissions regulations.

The DOC reduces harmful substances in exhaust gas by chemical reaction, then DEF\AdBlue® is injected in dosing module (injection chamber) (3) and mixed into the exhaust stream. DEF\AdBlue® decomposed to ammonia and CO_2. SCR catalyst converts NOx into harmless nitrogen gas and water vapor by accelerating chemical reaction with the ammonia. The remaining ammonia is decomposed into nitrogen and water by DOC in SCR block (2).



MNEK-00-004

Follow the instructions below to prevent the aftertreatment device from being damaged.

IMPORTANT:

- **Refer to 1-31 for further information.**
- **Exhaust gas from the aftertreatment device, and exhaust piping becomes hotter during and right after engine running and regeneration of aftertreatment device. Be careful not to let your skin contact any part of exhaust system or hot gas from the exhaust piping. It may cause severe burns.**
- **If flammable objects such as dried leaves or paper scraps are around the aftertreatment device, they may cause a fire.**
- **Before maintaining the machine, stop the engine and make sure the engine has cooled down sufficiently to prevent burns.**
- **Be sure to use fuel that complies with JIS K-2204, EN-590 and ASTM D-975 which contains 15 ppm or lower sulfur. If the fuel described above is not used, exhaust gas that exceeds the regulation values may be discharged and serious problems may arise on the engine.**

- **Refill DEF/AdBlue® which meets JIS or ISO (International Organization for Standardization). If improper liquid (diesel oil, kerosene or gasoline) is refilled in the DEF/AdBlue® tank, fire or system failure may result.**

- **Use only recommended engine oil. Using engine oil other than the recommended may result in malfunction of the aftertreatment device.**

- **Contaminated fuel, incorrect fuel additives, gasoline, kerosene or other incorrect fluids will damage the fuel injection system and will lead to engine malfunction, which is not covered by warranty. Incorrect fuels will also damage the aftertreatment device.**

  Use only clean Ultra Low Sulfur Diesel (ULSD) fuel without additives that contain metal elements, oil distillates or alcohol. These items will permanently damage the aftertreatment device and are not covered by warranty.

- **Do not modify the machine without authorization. Never attempt to modify the air inlet and exhaust parts such as the air duct, aftertreatment device and the exhaust outlet. Also never attempt to disassemble the aftertreatment device.**

- **Avoid giving shocks on the aftertreatment device by hitting elements with other objects or dropping the device. Failure to do so may affect the aftertreatment device, possibly damaging it or lowering its performance.**

- **It is normal to see white smoke appear during regeneration. It is not caused by a malfunction. Do not attempt to perform aftertreatment device manual regeneration indoors in an area that is not well ventilated or free from flammable materials.**

- **Consult your authorized dealer for checking or repairing the aftertreatment device.**

Automatic Regeneration

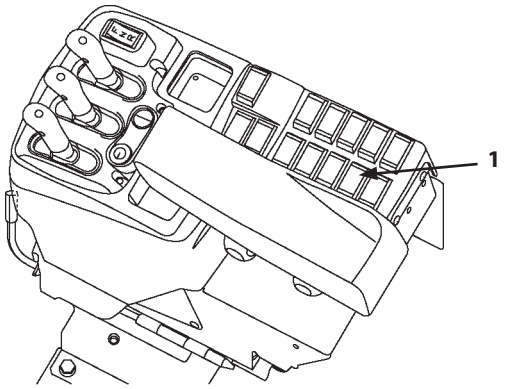
White deposition may accumulate inside the aftertreatment device. An automatic regeneration (Auto-regeneration) mode is designed to automatically clean the aftertreatment device at regular intervals. The auto-regeneration may start during operation of the machine; you can continue to operate the machine. (Refer to 1-34).

NOTE:

- *Usually, auto-regeneration starts 60 hours after the previous regeneration (either auto or manual).*
- *If auto-regeneration interval becomes shorter, consult your authorized dealer.*

Auto-regeneration may be "terminated" early (inhibited) when in the presence of flammable materials, such as flammable airborne debris, wood dust, grain dust, dried leaf debris, or other flammable risks.

However, when "early termination" (inhibiting regeneration) happens often, the system will sense this and eventually call for a manual regeneration using manual regeneration switch (1). The regeneration request symbol will show, indicating that manual regeneration is required. Refer to page 1-35 for further information.



MNEC-01-041

NOTE:

- *The auto-regeneration may be terminated depending on the machine operating condition.*
- *Do not stop the engine during regeneration unless it is absolutely necessary to do so.*

Repeated inhibiting of aftertreatment device cleaning

IMPORTANT: When the machine is operated without performing manual regeneration, the aftertreatment device may be damaged. Immediately move the machine to a safe area and perform manual regeneration.

- If auto-regeneration is inhibited or interrupted, the following auto-regeneration will be accompanied by the aftertreatment device manual regeneration request. It is required to perform manual regeneration as soon as requested.

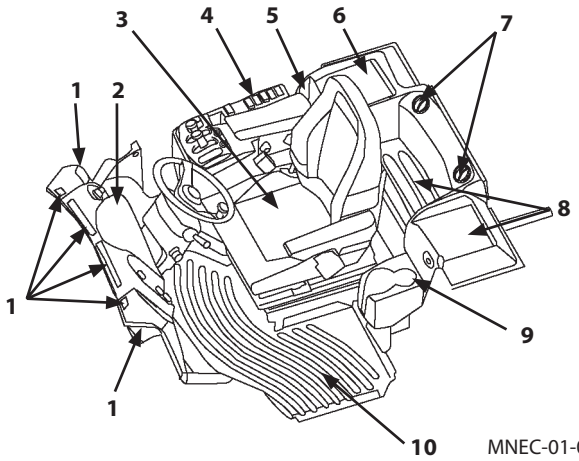
NOTE: The manual regeneration request indicator remains ON until a regeneration process completes successfully.

- When leaving machine without running aftertreatment device regeneration, gradual derate will be applied to the engine (refer to 1-35).
  If manual regeneration does not work, call your local authorized dealer to repair the aftertreatment device.

- When SCR system errors are accompanied, take required action immediately (refer to 1-32).

Cab Features

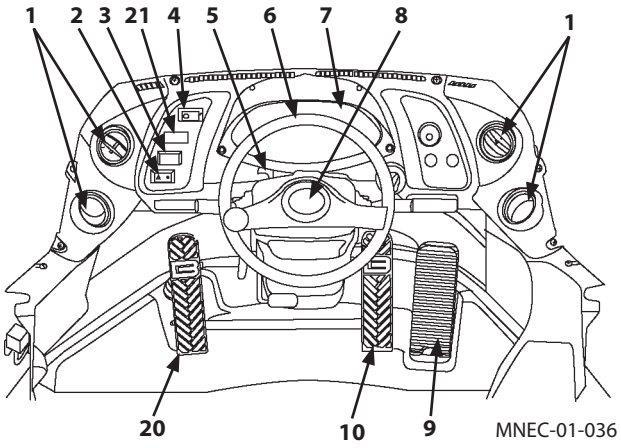
1- Front Defroster
2- Front Console
3- Operator's Seat
4- Right Console
5- Document Holder
6- Hot/Cool Box
7- Rear Defroster
8- Glove Compartment
9- Cup Holder
10- Floor Mat



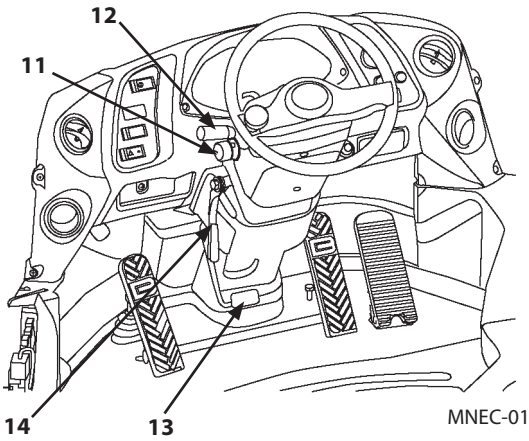
MNEC-01-035

Front Console

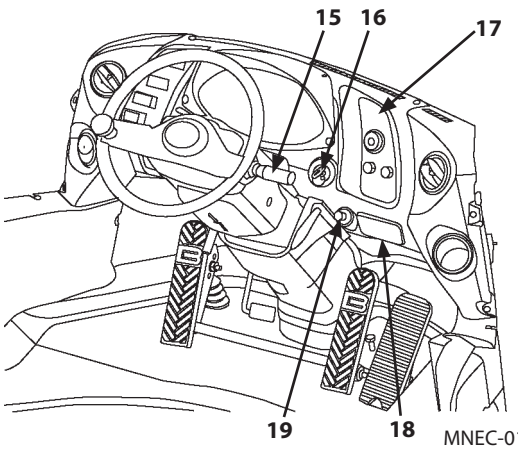
1- Air Conditioner Front Vent
2- Hazard Switch
3- Work Light Switch
4- Parking Brake Switch
5- Neutral Lever Lock (Forward/Reverse Lever)
6- Steering Wheel
7- Monitor Panel
8- Horn Switch
9- Accelerator Pedal
10- Brake Pedal
11- Front/Rear Window Wiper Switch
12- Forward/Reverse Lever/ Shift Switch
13- Steering Column Tilt Pedal
14- Tilt, Telescopic Lever
15- Turn Signal Lever/ Light Switch/ High-Low Beam Switch
16- Key Switch
17- Multi Function Monitor/Air Conditioner Switch Panel
18- Ash Tray
19- Cigar Lighter
20- Brake/Declutch Pedal
21- Auxiliary



MNEC-01-036



MNEC-01-037

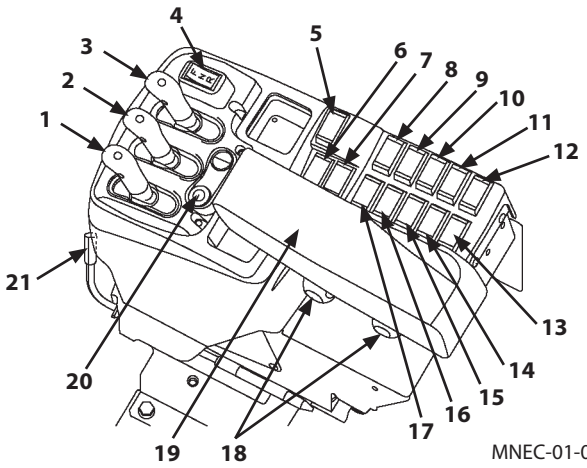


MNEC-01-038

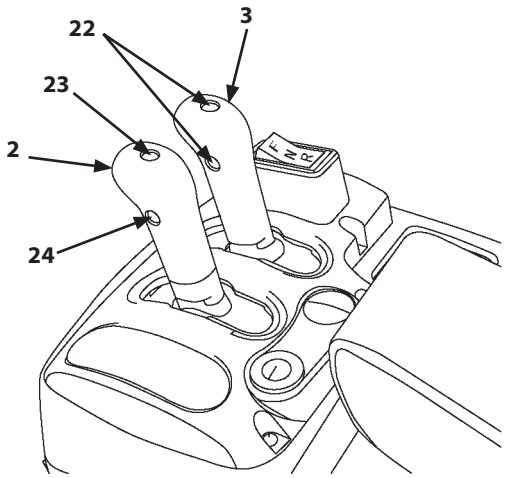
Right Console

Fingertip Control Type

1- Auxiliary Control Lever (Option)
2- Bucket Control Lever
3- Lift Arm Control Lever
4- Forward/Reverse Switch
5- Control Lever Lock Switch
6- Declutch Position Switch
7- Travel Mode Selector
8- Power Mode Selector
9- Forward/Reverse Selector Switch
10- Fan Reverse Rotation Switch
11- Auxiliary
12- Hydraulic Coupler Switch (Option)
13- Secondary Steering Operation Check Switch (Option)
14- Aftertreatment Device Regeneration Switch
15- Auxiliary
16- 1st Speed Fixed Switch
17- Ride Control Switch (Option)
18- Armrest Adjust Handle
19- Armrest
20- Hold Switch
21- Right Console Slide Lever
22- DSS (Down Shift Switch)
23- Horn Switch
24- Quick Power Switch



MNEC-01-041

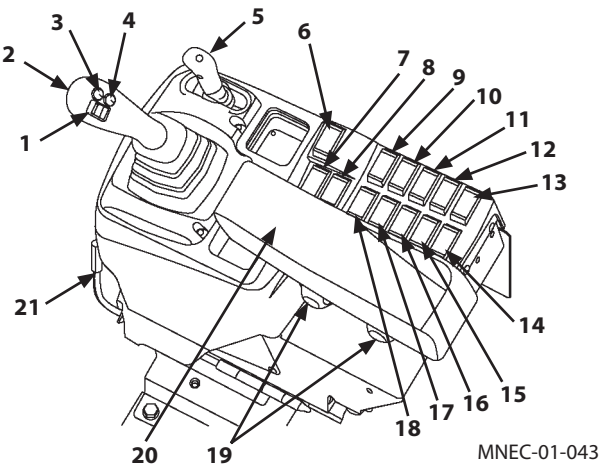


MNEC-01-042

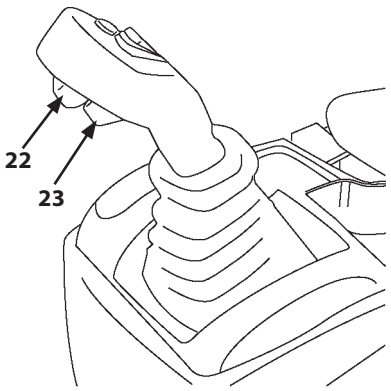
Right Console

Multi-Function Joystick Type

1- Forward/Reverse Switch
2- Multi-Function Joystick Lever
3- Quick Power Switch
4- DSS (Down Shift Switch)
5- Auxiliary Control Lever (Option)
6- Control Lever Lock Switch
7- Declutch Position Switch
8- Travel Mode Selector Switch
9- Power Mode Selector Switch
10- Forward/Reverse Selector Switch
11- Fan Reverse Rotation Switch
12- Auxiliary
13- Hydraulic Coupler Switch (Option)
14- Secondary Steering Operation Check Switch (Option)
15- Aftertreatment Device Regeneration Switch
16- Auxiliary
17- 1st Speed Fixed Switch
18- Ride Control Switch (Option)
19- Armrest Adjust Handle
20- Armrest Adjustment
21- Right Console Slide Lever
22- Hold Switch (Under the Lever)
23- Horn Switch (Under the Lever)

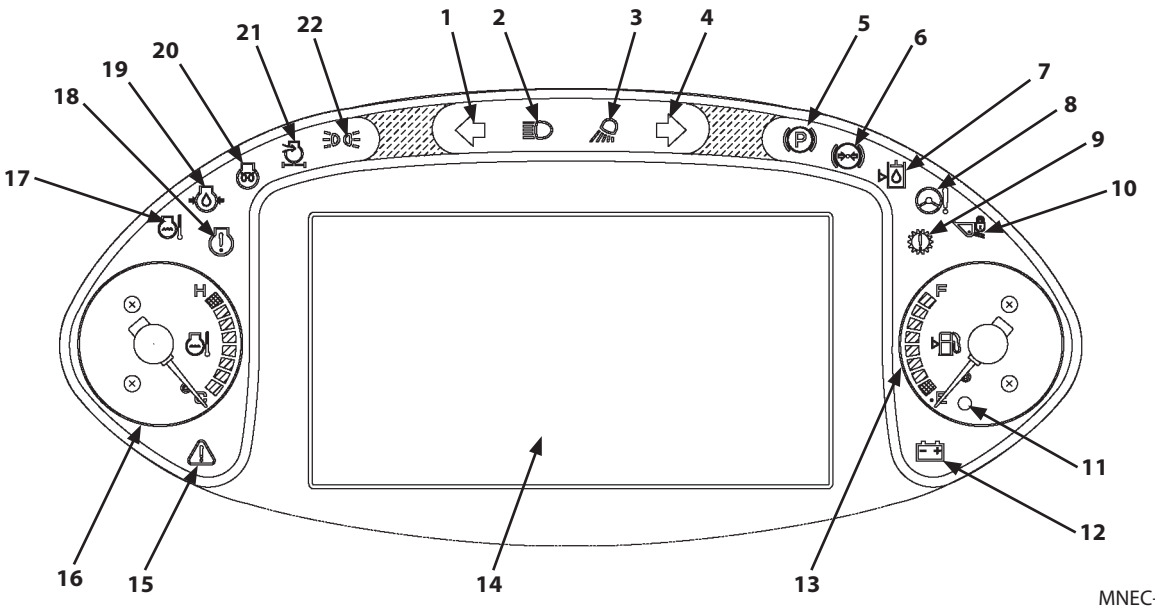


MNEC-01-043



MNEC-01-044

Monitor Panel



MNEC-01-001

1- Left Turn Signal Indicator
2- High Beam Indicator
3- Work Light Indicator
4- Right Turn Signal Indicator
5- Parking Brake Indicator
6- Brake Oil Low Pressure Indicator
7- Hydraulic Oil Level Indicator
8- Low Steering Oil Pressure Indicator (Option)
9- Transmission Warning Indicator
10- Control Lever Lock Indicator
11- Fuel Level Indicator
12- Discharge Warning Indicator
13- Fuel Gauge
14- Multi Function Monitor
15- Communication System Error Indicator
16- Coolant Temperature Gauge
17- Overheat Indicator
18- Engine Warning Indicator
19- Engine Oil Low Pressure Indicator
20- Preheat Indicator
21- Air Filter Restriction Indicator
22- Clearance Light Indicator

Parking Brake Indicator (Red)

M4GB-01-012

The parking brake indicator will light when the parking brake is applied.
If the forward/reverse lever is moved to either the forward (F) or the reverse (R) position when the parking brake is applied, the alarm buzzer will sound. Return the forward/reverse lever to neutral (N) and release the parking brake.

Brake Oil Low Pressure Indicator (Red)

WARNING: Stop machine operation if the brake oil pressure lowers. Failure to do so may result in personal injury or death. If the indicator comes ON, immediately stop machine operation.

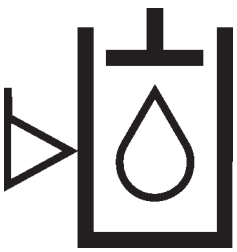
M4GB-01-013

If the brake oil pressure lowers, the brake oil low pressure indicator and the service indicator will light, and the alarm buzzer will sound.
Immediately move the machine to a safe area, set the machine in the park position and stop the engine. Inspect the brake system for any abnormality.
When the brake oil pressure is recovered, the buzzer stops and the indicator goes off.

NOTE: When the starter key is at ON position, this indicator will light but no alarm sounds.

Hydraulic Oil Level Indicator (Red)

WARNING: Stop machine operation if the hydraulic oil level lowers. Failure to do so may result in personal injury or death. If the red indicator comes ON, immediately stop machine operation.



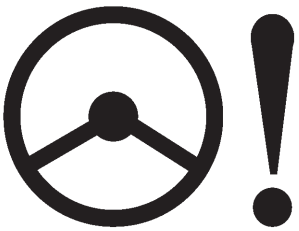
MNEC-01-057

If the hydraulic oil level lowers, the hydraulic oil level indicator and the service indicator will light, and the alarm buzzer will sound. Immediately move the machine to a safe area, set the machine in the park position and stop the engine. Check hydraulic oil level and any oil leaks from hydraulic circuit.

Low Steering Oil Pressure Indicator (Red) (Option)

IMPORTANT: The secondary steering system shall only be used temporarily when the steering oil pressure has dropped. If continuously used, it may damage the system.

If the steering oil pressure decreases, the low steering oil pressure indicator and the service indicator will light, and the alarm buzzer will sound. Immediately move the machine to a safe area, set the machine in the park position and stop the engine.



M4GB-01-016

Transmission Warning Indicator (Red)

If any serious abnormality occurs in the transmission and/or transmission related parts, the red indicator will light. If the transmission warning indicator and the service indicator light, immediately move the machine to a safe area, set the machine in the park position and stop the engine. Contact your nearest authorized dealer for machine inspection.

M4GB-01-024

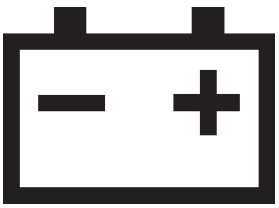
Communication Error Indicator (Yellow)

When communication system malfunction occurs, the communication error indicator lights.

M4GB-01-011

Discharge Warning Indicator (Red)

If low alternator voltage occurs, the discharge warning indicator will light. If high alternator voltage occurs, the discharge warning indicator and the service indicator will light. Inspect the alternator and the battery system.



M4GB-01-018

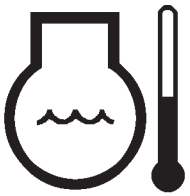
Engine Warning Indicator (Red)

If any serious abnormality occurs in the engine and/or engine related parts, the red indicator will light.
If the engine warning indicator and the service indicator light, immediately move the machine to a safe area, set the machine in the park position and stop the engine. Contact your nearest authorized dealer for machine inspection.

M4GB-01-019

Overheat Indicator (Red)

If the engine coolant temperature increases to an abnormally high range, the red indicator will light, the service indicator will flash, and the alarm buzzer will sound. Stop operation. Run the engine at slow idle speed to lower the coolant temperature.
When required, let engine cool, check coolant level, and add coolant if needed.



M4GB-01-020

Engine Oil Low Pressure Indicator (Red)

WARNING: If the engine is kept running with the engine oil pressure low, damage to the engine may result. Immediately stop machine operation and stop the engine if the indicator lights.

If the engine oil pressure becomes low, the low engine oil pressure indicator will light, the service indicator will flash, and the alarm buzzer will sound.
Immediately move the machine to a safe area, set the machine in the park position and stop the engine. Inspect the engine oil pressure system and the oil level.

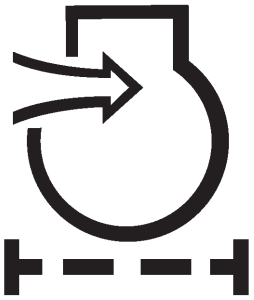
NOTE: Cold oil temperature or operating on a steep slope may also cause the indicator to light.

M4GB-01-021

Air Filter Restriction Indicator (Red)

If the air cleaner element becomes clogged,, the air filter restriction indicator and the service indicator light. Immediately stop the engine and inspect the air cleaner element. Replace the element, if necessary.

NOTE: This indicator may unexpectedly light when the coolant temperature gauge indicates the center or lower position.
It turns off automatically when the coolant temperature increases.



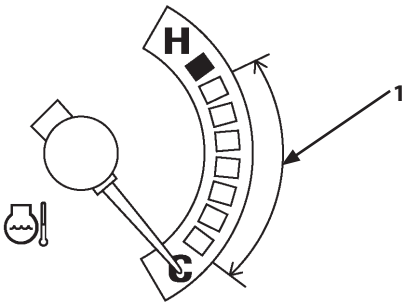
M4GB-01-023

Preheat Indicator (Yellow)

The engine is being preheated as long as the preheat indicator stays ON. When the preheat indicator goes OFF, engine preheating is completed.

M4GB-01-031

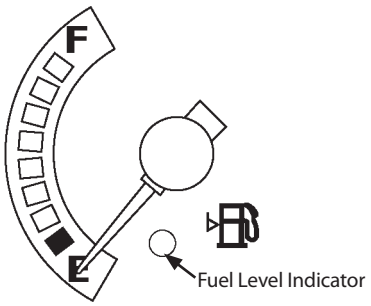
Coolant Temperature Gauge



M4GB-01-028

The engine coolant temperature is indicated with a needle. When the needle stays in the range (1) during operation, the coolant temperature is normal.
If the engine coolant temperature becomes abnormally high, the service indicator will flash and the alarm buzzer will sound.
Stop machine operation and run the engine at low idle to lower the coolant temperature. After the coolant temperature lowers, stop the engine for inspection. Visually inspect coolant level in reservoir. In case the needle does not move at all, error in the electrical system is suspected. Contact your nearest authorized dealer for machine inspection.

Fuel Gauge



MNEC-01-002

The fuel level is indicated by the needle. Refuel before the needle reaches in the red range "E". When the needle reaches in the red range (E), the fuel level indicator lights.

NOTE: The fuel level indicator may light even if the indicator needle does not reach the red range (E), depending on the tilt angle of machine.

Turn Signal Indicator (Green)

When the turn signal lever is operated, the turn signal and the turn signal indicator start flashing.

M4GB-01-032

High Beam Indicator (Blue)

When the head lights are used at the high beam position, the indicator will light.

M4GB-01-033

Work Light Indicator (Yellow)

When the work lights are turned ON, this indicator will light.

MNDB-01-052

Clearance Light Indicator (Green)

When the clearance lights are turned ON, this indicator will light.

M4GB-01-035

Control Lever Lock Indicator (Red)

When the control lever lock switch is in ON position, the control lever lock indicator will light.

MNEC-01-004

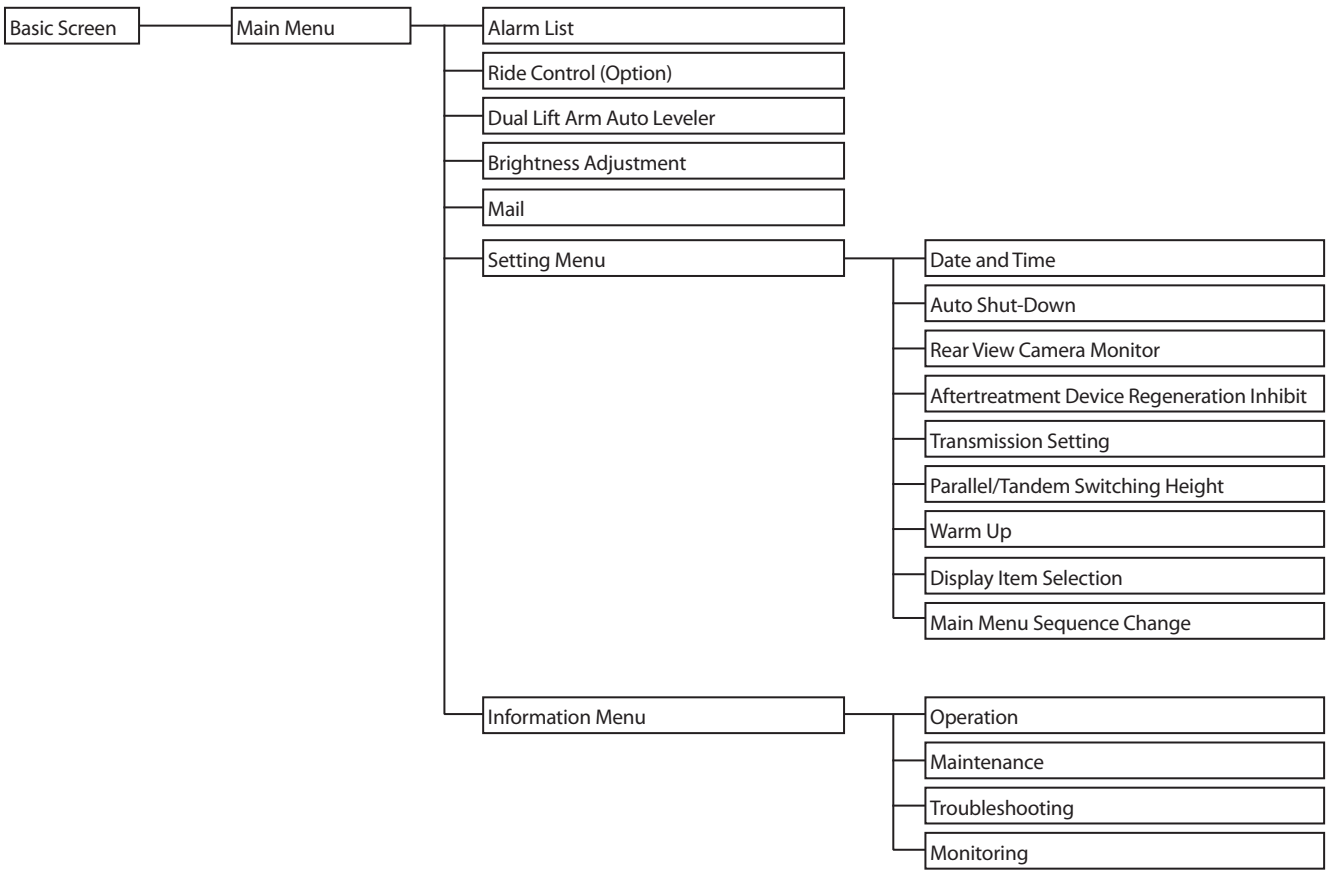
Multi Function Monitor

Feature

The multi function monitor displays various meters, indicators, operation mode selection and maintenance screen.

Screen Configuration

The multi function monitor consists of the following screens.
There are 7 menus, and a further 13 sub menus.



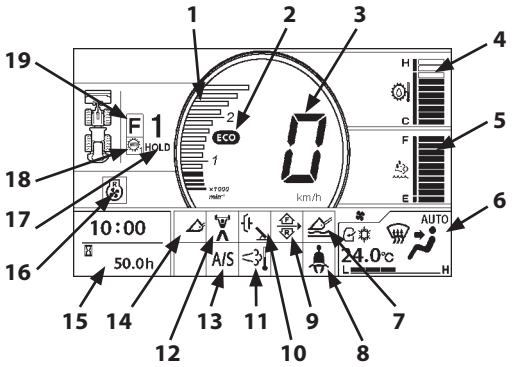
Default Setting

Function	Item	Default
Auto Shut-Down	ON/OFF of auto idling-stop function	ON
	Time period for auto shut-down activation	5 min
Rear View Camera Monitor	ON (Constant display) OFF (No display) AUTO (Display at reverse operation only)	AUTO
Aftertreatment Device Regeneration Inhibit	Inhibit regeneration	OFF
Shift Change Delay Mode (Transmission Setting)	ON/OFF of travel speed (shift) change delay mode	OFF
Parallel/Tandem Switching Height	Height at parallel or tandem circuit operation are switched	Lift arm is level to the ground
Warm Up	Increases engine speed at engine start to help warm up in cold environment	OFF

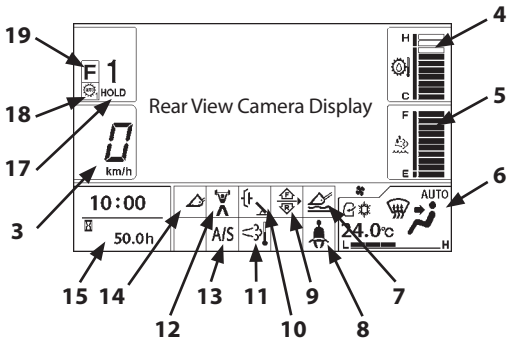
NOTE: Typical functions are shown in the table. Check the initial values of other functions on each monitor screen.

Basic Screen

1- Engine Tachometer
2- Economy (ECO) Indicator
3- Speedometer
4- Transmission Oil Temperature Gauge
5- DEF/AdBlue® Level Gauge
6- Air Conditioner Display
7- Ride Control Indicator (Option)
8- Seat Belt Indicator
9- Forward/Reverse Selector Switch Indicator
10- Declutch Indicator
11- Aftertreatment Device Indicator
12- Power Mode Indicator
13- Auto Idling Stop Indicator
14- Dual Lift Arm Auto Leveler Indicator
15- Clock, Hour Meter, Odometer
16- Fan Reverse Rotation Indicator
17- Shift HOLD Display
18- Transmission Auto-shifting Indicator
19- F-N-R/Shift Position Indicator



MPD8-01-100EN



Operating Rear View Monitor

MPD8-01-101EN

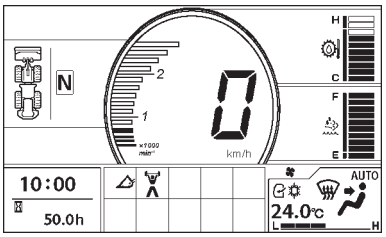
How to Use Screens

Displaying Basic Screen

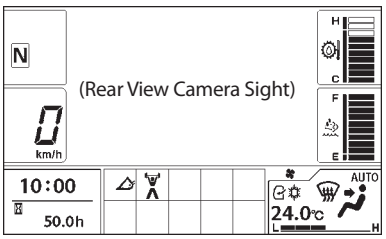
IMPORTANT: Start the engine after the basic screen is displayed.

When the key switch is turned to the ON position, the starting screen displays for about two seconds and the basic screen displays.

Starting Screen MNEK-01-102EN



Basic Screen MNEK-01-103EN



Basic Screen MNEK-01-104EN

(When Rear View Monitor is Operative)

- Engine Tachometer (1)
  Engine tachometer (1) indicates the speed of currently running engine in a gauge form. (200 min^{-1} step or "RPM")
  If the engine overspeeds, the color of the gauge changes.

- ECO Indicator (2)
  ECO indicator (2) lights when the engine runs in energy efficient condition.
  It turns OFF when the driving speed is 2 km/h (1.2 mph) or lower or under heavy driving load.

NOTE: You may push the down shift switch when the ECO indicator goes OFF while operating on a slope or operation such as snow removal. (Refer to DSS (Down Shift Switch) section)

- Speedometer (3)
  Speedometer (3) indicates the present driving speed.

- Transmission Oil Temperature Gauge (4)
  Transmission Oil Temperature Gauge (4) depicts transmission oil temperature as a gauge. When the bar reaches the red range, the oil temperature is abnormal.
  If the oil temperature becomes abnormally high, the alarm buzzer will sound and the warning indicator will be displayed.

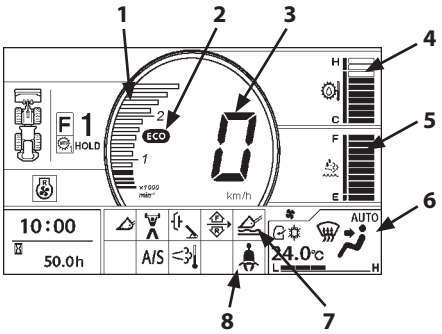
- DEF/AdBlue® Level Gauge (5)
  DEF/AdBlue® level gauge (5) displays the remaining DEF/AdBlue® amount. When DEF/AdBlue® level becomes low, the last segment turns yellow.

IMPORTANT: If the engine runs with low DEF/AdBlue® level, the engine power reduces gradually. When the gauge turns yellow, immediately refill DEF/AdBlue®. (See page 1-31 for the alarm level.)

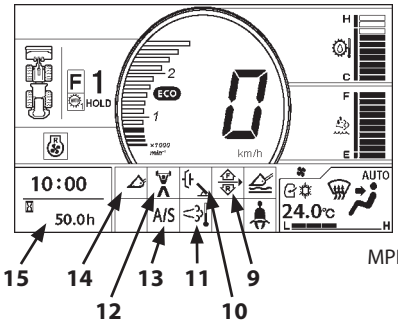
- Air Conditioner Display (6)
  Air conditioner display (6) displays operating condition of the air conditioner.

- Ride Control Indicator (7) (Option)
  Ride control indicator (7) is displayed when the ride control switch is in ON position.

- Seat Belt Indicator (8)
  The indicator turns ON when the key switch is turned ON, and turns OFF 5 seconds after the engine starts.



MPD8-01-100EN



MPD8-01-100EN

- Forward/Reverse Selector Switch Indicator (9)
  The forward/reverse indicator lights when the forward/reverse switch on the right console or on the multi-function lever is usable.

- Declutch Indicator (10)
  The declutch indicator lights when the declutch position switch on the right console is in ON position.

- Aftertreatment Device Indicator (11)
  Displays condition of the aftertreatment device.

- Power Mode Indicator (12)
  Power mode indicator shows symbol ( ) when the power mode is activated (ON).

- Auto Idling Stop Indicator (A/S) (13)
  When the auto idling stop is turned ON from the menu screen, the auto idling stop indicator is displayed.
  When the key switch is turned ON while the auto idling stop down is enabled, the auto idling stop indicator blinks for 10 seconds.

- Dual Lift Arm Auto Leveler Indicator (14)

- Clock, Hour Meter, Odometer (15)

Clock	:	Indicates the present time. 24-h/12-h display can be selected. (Refer to "Date and Time" for switching the display mode.)
Hour Meter	:	Total (accumulated) machine operation hours counted since the machine started working, are displayed in hours (h). One digit after the decimal point indicates tenths of an hour (6 minutes).
Odometer	:	Total machine traveling distance is indicated by changing display mode.

- Fan Reverse Rotation Indicator (16)
  Displays rotating direction of the fan.

Normal Rotation	→	The icon is not displayed.
Changing Rotational Direction	→	The icon blinks.
Reverse Rotation	→	The icon lights ON.

- HOLD Display (17)
  Hold display (17) is displayed when the hold switch on the side console is in ON position.

- Transmission Auto-shifting Indicator (18)
  Transmission auto-shifting indicator (18) displays condition of the travel mode switch. It is not displayed at manual mode.

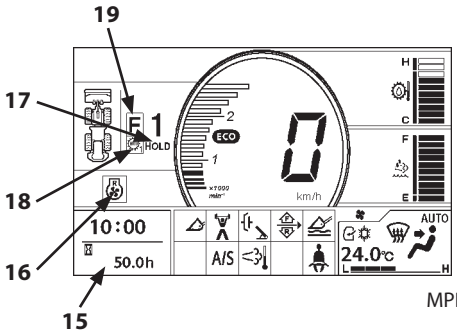
- F-N-R/Shift Position Indicator (19)
  F-N-R/Shift Position Indicator (19) displays machine operating condition (status of the transmission).

  F-N-R Display
  F-N-R indicator displays status of the transmission.

Forward	→	F
Neutral	→	N
Reverse	→	R

  Shift Position Indicator
  It displays currently engaged gears. It is not displayed at neutral position.

Forward	:	1st - 5th
Reverse	:	1st - 3rd

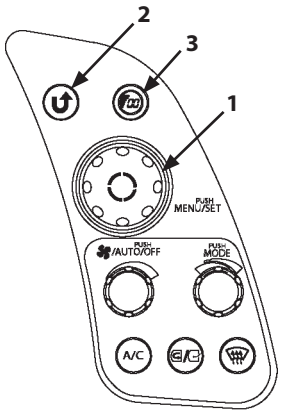


MPD8-01-100EN

Monitor Operation

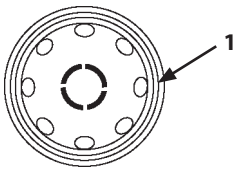
- Select/Confirm Knob (1)

Push : Push this switch while the basic screen is displayed, the Main Menu Screen opens. Push this switch after the menu screen, the action is confirmed.
Rotate : Cursor moves.



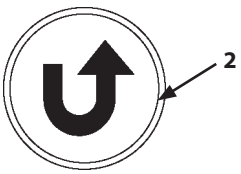
MNEC-01-006

Multi Function Monitor/Air Conditioner Switch Panel



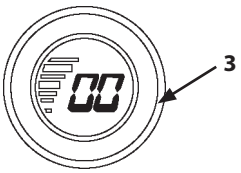
MNEC-01-078

- Return to Previous Screen (2)
  Push this switch to return to the previous screen.



MNEC-01-079

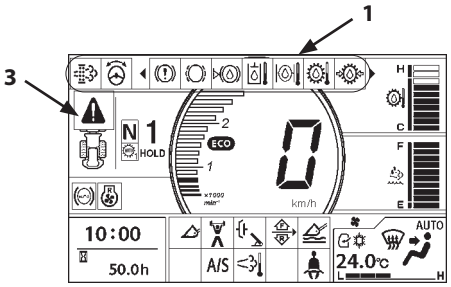
- Return to Basic Screen (3)
  Allows any screen to return to the basic screen.



MNEC-01-080

Alarm Occurrence Screen

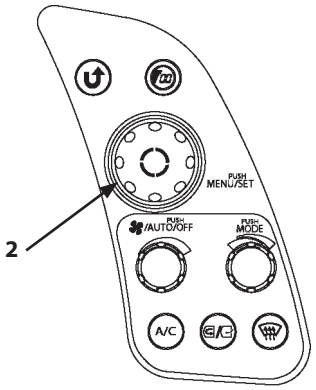
In case any abnormality occurs, alarm symbols (1) and service indicator (3) are displayed on the basic screen.



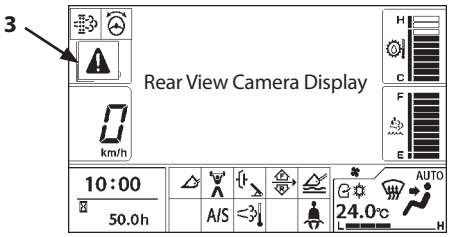
Basic Screen MPD8-01-290EN

If 8 or more alarms are generated, the alarm symbols (1) can be scrolled by rotating selector knob (2).
When the rear view monitor is operating, service indicator (3) is displayed.

NOTE: When any of the warning indicators light on, service indicator (3) also appears.



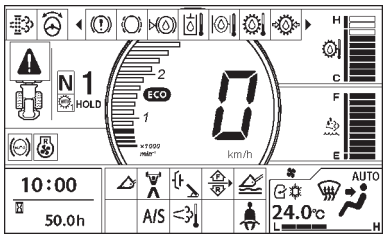
MNEC-01-006



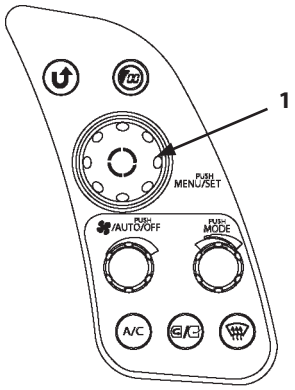
Basic Screen MPD8-01-291EN
(Operating Rear View Monitor)

Follow the procedure below to display detailed information for an alarm.

1. Push selector knob (1) on the basic screen to display the main menu.



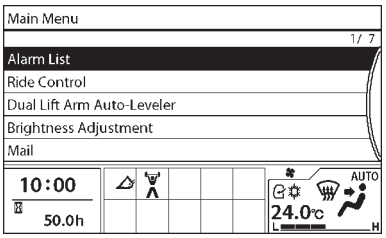
MPD8-01-290EN



MNEC-01-006

2. Rotate selector knob (1) to select the alarm list, and push selector knob (1).

NOTE: The main menu displays the alarm list (faults) only when an alarm occurs.



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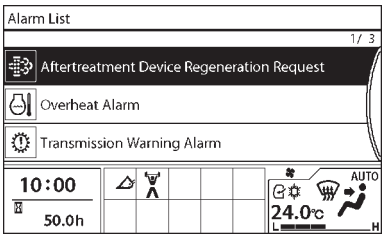
3. Rotate selector knob (1) to select a required alarm from the alarm list, and push selector knob (1).

NOTE: The alarm list contains only active faults or alarms.



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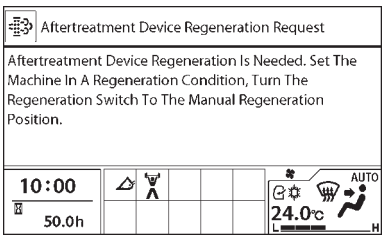
4. Detailed information of the selected alarm will be displayed.



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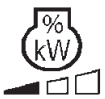
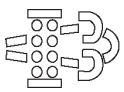
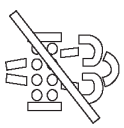
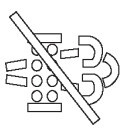
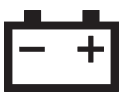
Remedy

Display	Contents of Alarms	Remedy
	System Failure Alarm	Communication system is abnormal. Consult your nearest authorized dealer.
	Brake Oil Pressure Alarm	Brake oil pressure has decreased. Immediately stop the machine and check the brake system.
	Low Steering Oil Pressure Alarm	Steering oil pressure has decreased. Immediately stop the machine and check the steering system.
	Secondary Steering Alarm (Blinking)	The secondary steering oil pressure does not reach the specified pressure. Inspect the secondary steering system.
	Hydraulic Oil Level Alarm	Hydraulic oil level is low. Immediately stop the machine, check hydraulic oil level and any oil leaks from hydraulic circuit.
	Urea Alarm	DEF/AdBlue® level is low or urea SCR system is abnormal. Refill DEF/AdBlue® if level is low. Contact your nearest authorized dealer for system malfunction.
	Engine Output Restriction	Engine output is restricted.
	Aftertreatment Device Alarm (Blinking) (Red)	Aftertreatment device is abnormal. Immediately set the machine in the park position, stop the engine, apply parking brake, and contact your authorized dealer.
	Aftertreatment Device Regeneration System Failure	Aftertreatment device is abnormal. Immediately set the machine in the park position, stop the engine, apply parking brake, and contact your authorized dealer.
	Aftertreatment Device Regeneration Request (Blinking) (Yellow)	The aftertreatment device needs regeneration. Apply control lever lock and run the engine at slow idle speed. Make the machine possible to perform regeneration, and set the aftertreatment device switch to the regeneration position.
	Aftertreatment Device Regeneration Inhibit Alarm (Lighting) (Yellow)	Manual regeneration was tried but not possible as it is inhibited by setting. Move the machine to a safe area, turn regeneration inhibition OFF, and perform manual regeneration. Refer to page 1-56 to turn regeneration inhibition OFF.
	Aftertreatment Device Auto Regeneration Inhibit Alarm (Lighting) (Yellow)	Auto regeneration was tried but not initiated as it is inhibited by setting. Refer to page 1-56.

Display	Contents of Alarms	Remedy
	Engine Overheat Alarm	Coolant temperature is above normal. Stop operation. Run the engine at slow idle speed to lower the coolant temperature. When needed, add coolant.
	Hydraulic Oil Overheat Alarm	Hydraulic oil temperature is above normal. Stop operation. Run the engine at slow idle speed to lower the oil temperature.
	Axle Oil Temperature Alarm	Axle oil temperature is above normal. Check if the service brake drags.
	Transmission Oil Temperature Alarm	Transmission oil temperature is above normal. Stop operation. Run the engine at slow idle speed to lower the oil temperature. Use correct range for machine operation, and do not stall torque converter.
	Engine Warning Alarm (Yellow)	Engine or engine related parts are abnormal. Immediately set the machine in the park position, apply parking brake, stop the engine and contact your authorized dealer.
	Engine Trouble Alarm (Red)	Engine or engine related parts are abnormal. Immediately set the machine in the park position, apply parking brake, stop the engine and contact your authorized dealer.
	Transmission Alarm	Transmission or transmission related parts are abnormal. Immediately set the machine in the park position, apply parking brake, stop the engine and contact your authorized dealer.
	Engine Oil Pressure Alarm	Engine oil pressure has decreased. Immediately stop the engine, and apply parking brake. Check the engine oil system and oil level.
	Main Pump Oil Pressure Alarm	Main pump oil pressure has decreased. Stop machine operation, and apply parking brake. Check the piping of front attachment for oil leaks.
	Battery Charge Alarm	Electrical system charge is abnormal. Inspect the alternator and the battery system.
	Air Cleaner Clogging	Air filter elements are clogged. Clean or replace air cleaner element.
	Water Separator Alarm (Option)	Water separator is full. Drain water.

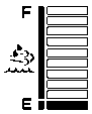
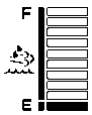
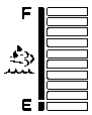
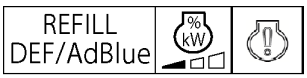
DEF/SCR System Alarm

When the DEF/AdBlue® level becomes low and/or the Urea SCR system malfunctions, the engine performance is controlled depending on the status.
The operator is alerted with alarm indicators.
Move and park the machine in a safe place and follow the displayed message, or troubleshooting guide for the accompanied alarms.

DEF/AdBlue® Level Alarm

Display of the DEF/AdBlue gauge changes depending on the DEF/AdBlue level.
The engine speed and output level control is as follows.

NOTE: Set the FNR controller to neutral or apply the parking brake to show the alarm message on the monitor.

Level Gauge	Alarm Indicator		Status/Inducement
 (Yellow)	 (Red, light)		DEF/AdBlue® level is low. Refill DEF/AdBlue®.
 (Red)	 (Red, slow blink)		DEF/AdBlue® is insufficient. Refill DEF/AdBlue®. Engine output is restricted.
 (Red)	 (Red, slow blink)		DEF/AdBlue® tank is empty. Refill DEF/AdBlue®. Engine output and speed are restricted.
	 (Red, fast blink)		
	 (Red, fast blink)		

CAUTION: When /AdBlue tank becomes empty, the engine runs but machine operation is disabled until DEF/AdBlue is supplied.

Urea SCR System Malfunction

Alarm Indicator		Status/Inducement
(Red, light)		Urea SCR system is broken.
(Red, slow blink)		Urea SCR system is broken. Engine output is restricted.
(Red, slow blink)		Urea SCR system is broken. Engine output and speed are restricted. Contact your authorized dealer for service.
(Red, fast blink)		
(Red, fast blink)		

Aftertreatment Device Regeneration

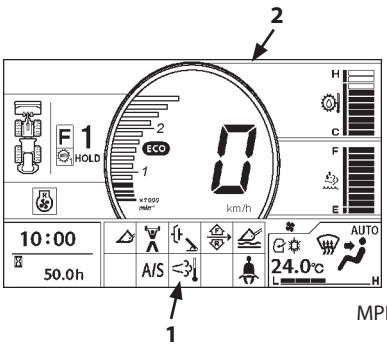
To keep the system working correctly, periodically, the collected deposit is removed by purging it at a high temperature. This process is known as "regeneration".

The regeneration is done in three ways; automatic regeneration (abbreviated as auto-regeneration), manual regeneration, and service regeneration.

Aftertreatment Device Regeneration Status Display

Aftertreatment device display (1) displays the regeneration level of the aftertreatment device.

This symbol indicates that the exhaust temperature is higher than normal during the aftertreatment device regeneration. It lights while auto-regeneration or manual regeneration is in process.)



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Automatic Regeneration (Auto-Regeneration)

The machine automatically increases the exhaust temperature during normal operation to purge the deposit.
There are no actions on the part of the operator when auto-regeneration is performed.

- *Auto-regeneration may start while operating the machine, and there is no need to stop the machine when this happens.*
- *Engine speed may change and white smoke may occur. This is not abnormal.*
- *Auto-regeneration is a normal maintenance process, and is not a malfunction.*
- *Do not stop the engine or regeneration once auto-regeneration has started, unless it is absolutely necessary.*

Auto-regeneration may not be completed due to system limitations while operating the machine. If this occurs, the aftertreatment device regeneration request will appear on the monitor panel. Refer to page 5-11 to perform manual regeneration.

This symbol indicates that the aftertreatment device regeneration is set to the "inhibited" position. Regeneration can not be performed while this indicator is shown.

IMPORTANT: Set the aftertreatment device regeneration to "inhibited" while operating in a flammable environment (Refer to page 1-56).

Manual Regeneration

When the deposit level increases to a level that is more than an auto-regeneration can remove, a manual regeneration is required.
The yellow regeneration symbol (shown below)(1) and service indicator (2) appear to make the operator aware that this is required.

(Blinking, Yellow)

This symbol indicates that the aftertreatment device manual regeneration is required.
Perform manual regeneration (Refer to page 5-11 for the procedure.)

(Lighting, Yellow)

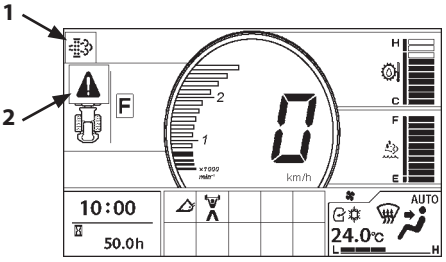
This symbol indicates that the aftertreatment device regeneration is inhibited.
It is displayed when the manual regeneration is requested while regeneration "inhibited" feature has been applied.
Move the machine to a safe place.
Perform manual regeneration by pressing manual regeneration switch (3).
(Refer to page 1-56 for more information.)

The manual regeneration must be performed as soon as possible, and it will take the loader out of service for about 10~20 minutes.
Refer to page 5-11 for the manual regeneration procedure.

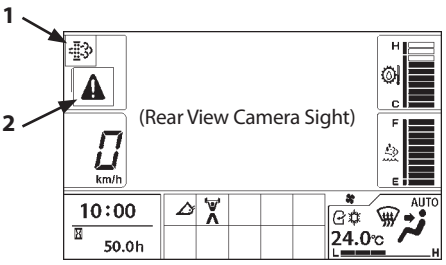
NOTE: When the manual regeneration starts, regeneration indicator (4) turns ON. If it does not appear when pressing switch (3), the manual regeneration is not activated. Contact your authorized dealer for repair.

(Lighting, Yellow)

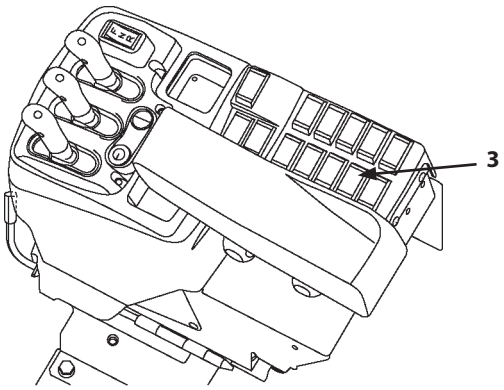
The engine trouble alarm (in yellow) may occur if the machine is being operated without performing a manual regeneration.
It may be necessary to clean, repair or replace the aftertreatment device after removing the device depending on its condition.
Immediately set the machine in the park position, apply parking brake, stop the engine and consult your authorized dealer.



Basic Screen MNEK-01-280EN



Basic Screen MNEK-01-281EN
(Operating Rear View Monitor)



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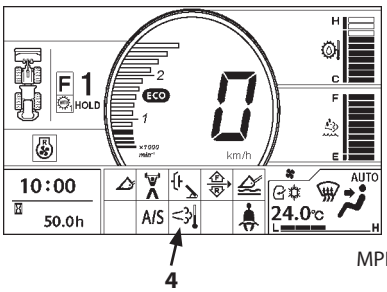

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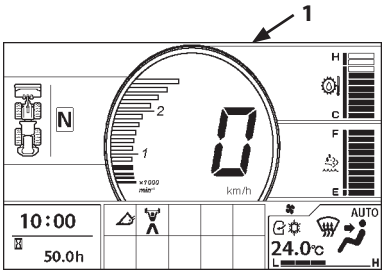
Main Menu

IMPORTANT: If the forward/reverse lever is in the forward or reverse position, the basic screen is displayed. (You can not change to the other screen.) When the forward/reverse lever is changed to forward or reverse position while displaying the main menu screen, the screen changes back to the basic screen.



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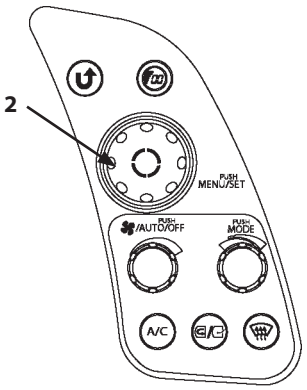
Press selector knob (2) while displaying basic screen (1) to display Main Menu screen (3).
The main menu screen contains the items shown in the figure to the right. The alarm list is displayed only when an alarm is generated.
Ride control (option) and Mail (option) menus will not be displayed unless they are set beforehand.



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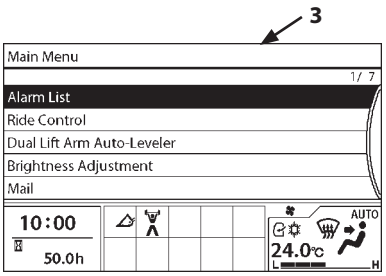

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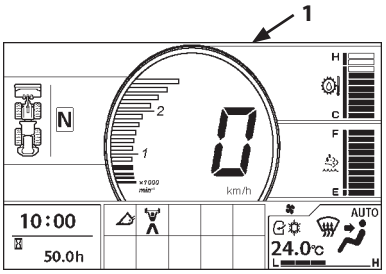
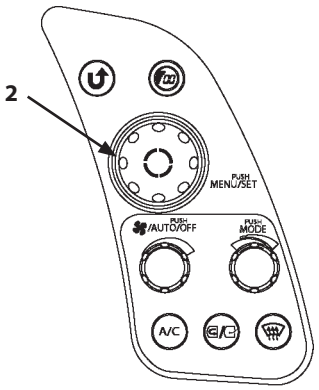
Ride Control Drive Speed Setting (Option)

1. Press selector knob (2) while displaying basic screen (1) to display Main Menu screen (3).



MNEK-01-103EN



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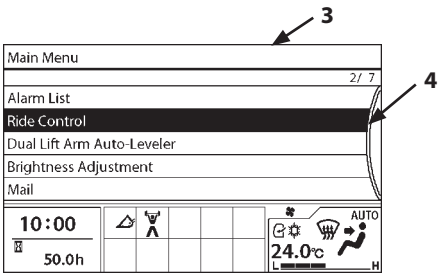
2. Rotate selector knob (2) to highlight Ride Control (4).

3. Press selector knob (2) to display Ride Control Drive Speed Setting screen (5).



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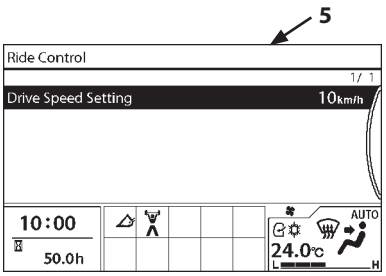
4. Press selector knob (2) once and then rotate it clockwise to increase set speed at 1 km/h (0.6 mph) interval. Rotate the selector knob (2) counterclockwise to decrease set speed at 1 km/h (0.6 mph) interval.

   (The set vehicle speed can be changed within the set range.)



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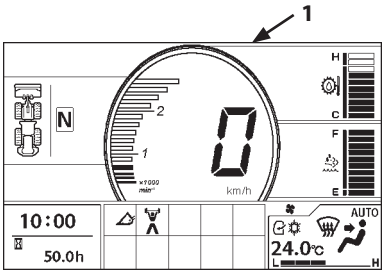
NOTE: When the speed is at 0 km/h (0 mph), the ride control function is constantly ON.

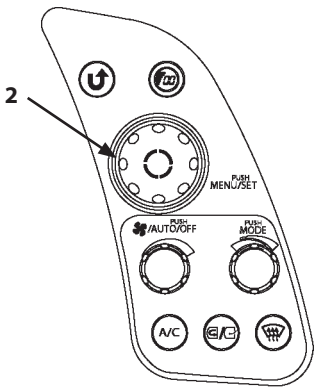
5. Press selector knob (2) to complete the changes of setting.

Dual Lift Arm Auto-Leveler

1. Press selector knob (2) while displaying basic screen (1) to display Main Menu screen (3).



MNEK-01-103EN



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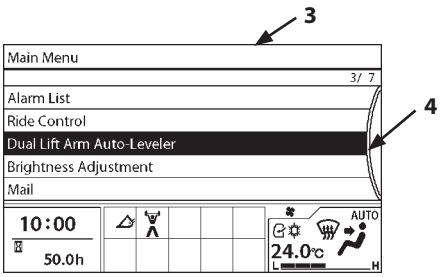
2. Rotate selector knob (2) to highlight Dual Lift Arm Auto-Leveler (4).



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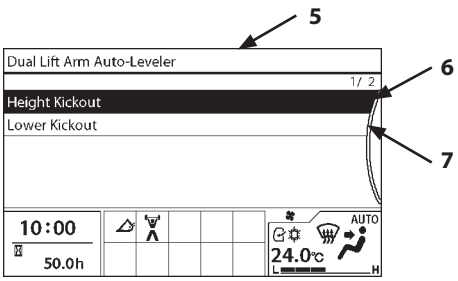
3. Press selector knob (2) to display Dual Lift Arm Auto-Leveler screen (5).
4. Rotate selector knob (2) to select Height Kickout (6) or Lower Kickout (7).
5. Press selector knob (2).



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Height Kickout ON/OFF, Stop Height Setting

- Rotate selector knob (2) to highlight ON (8).
- ON/OFF Selection

  Press selector knob (2) to turn ON (enabled).
  (A box next to ON turns green.)

  This enables the setting of the lift arm height.

  Press selector knob (2) again to turn OFF (disabled).

  When the height kickout is ON (enabled), indicator (12) will be displayed on the monitor.

- Display content

  Segment (10) indicates current set value of the height kickout.

  Segment (11) indicates current height of the lift arm.

- Setting Operation

  When the height kickout is ON (enabled), the lift arm stop height can be set.

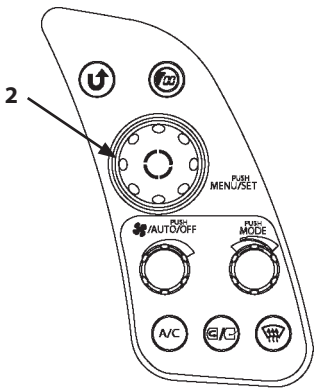
  When the lift arm height changes by operating the lift arm control lever, the height is displayed on segment (11).

  When the lift arm height is within the setting range, the mark ✔ (9) will be displayed.

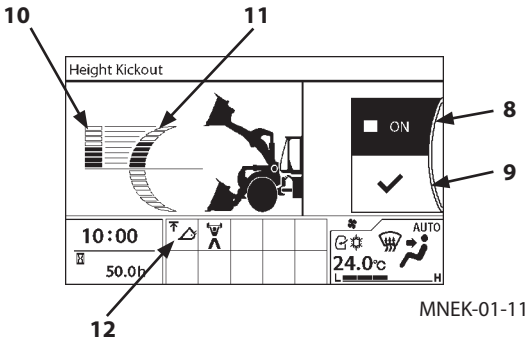
  Rotate selector knob (2) to highlight ✔ (9).

  Press selector knob (2) to change the height kickout setting value.

  When the height kickout set value changes, the value displayed on segment (10) will change accordingly.



MNEC-01-006



MNEK-01-112EN

Lower Kickout ON/OFF, Stop Height Setting

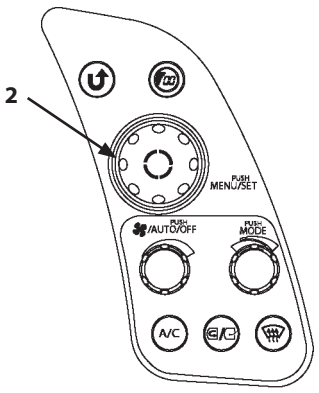
- Rotate selector knob (2) to highlight ON (8).
- ON/OFF Selection

  Press selector knob (2) to turn ON (enabled).
  (A box next to ON turns green.)

  This enables the setting of the lift arm height.

  Press selector knob (2) again to turn OFF (disabled).

  When the lower kickout is ON (enabled), indicator (12) will be displayed on the monitor.



MNEC-01-006

- Display content

  Segment (10) indicates current set value of the lower kickout.

  Segment (11) indicates current height of the lift arm.

- Setting Operation

  When the lower kickout is ON (enabled), the lift arm stop height can be set.

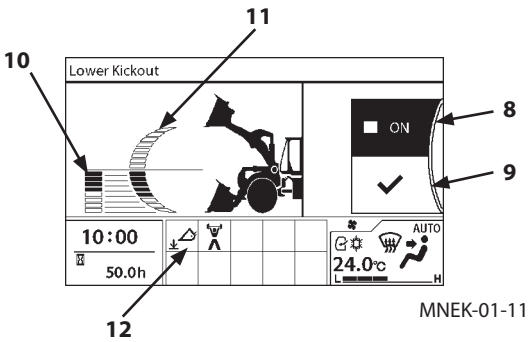
  When the lift arm height changes by operating the lift arm control lever, the height is displayed on segment (11).

  When the lift arm height is within the setting range, the mark ✔ (9) will be displayed.

  Rotate selector knob (2) to highlight ✔ (9).

  Press selector knob (2) to change the lower kickout setting value.

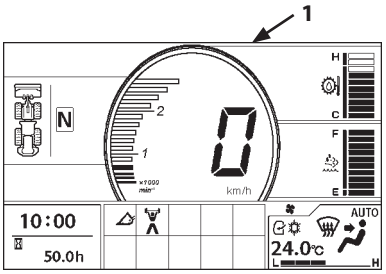
  When the lower kickout setting value changes, the value will be displayed on segment (10).



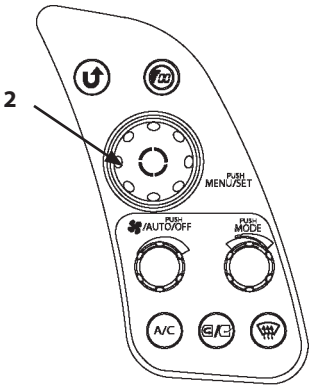
MNEK-01-113EN

Brightness Adjustment

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

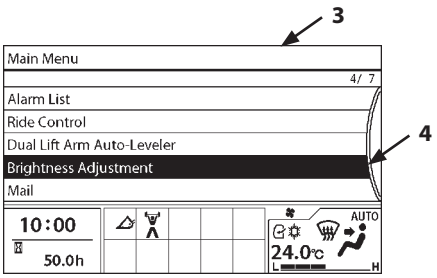


MNEK-01-103EN



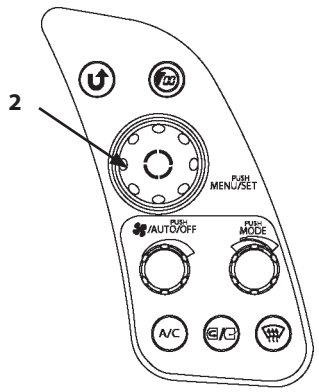
MNEC-01-006

2. Rotate selector knob (2) to highlight Brightness Adjustment (4).



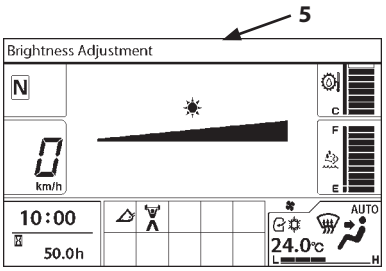
MNEK-01-120EN

3. Press selector knob (2) to display Brightness Adjustment screen (5).



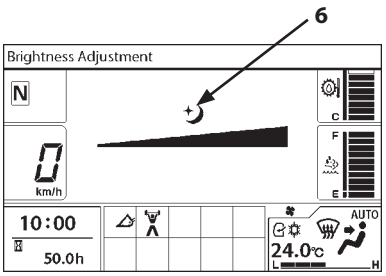
MNEC-01-006

4. Rotate selector knob (2) clockwise to make the screen brighter, counterclockwise to make the screen darker.



MNEK-01-121EN

NOTE: When the machine's head light switch is turned ON, the monitor screen changes to night mode and mark (6) is displayed. Brightness can be adjusted for day mode and night mode respectively.

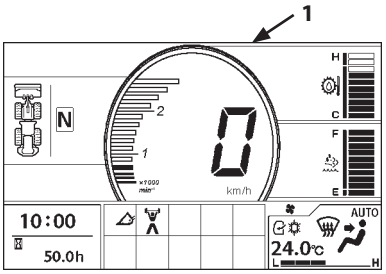


MNEK-01-122EN

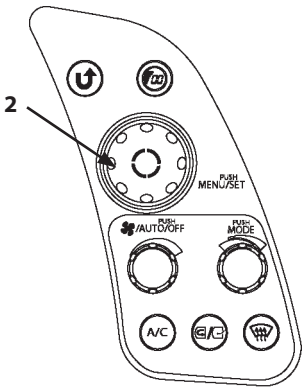
Mail (Option)

IMPORTANT: This function is available only to a machine equipped with a communication terminal. When using the mail function, consult your nearest authorized dealer.

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

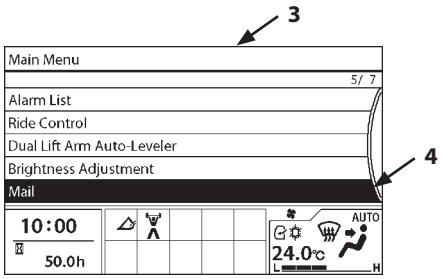


MNEK-01-103EN



MNEC-01-006

2. Rotate selector knob (2) to highlight Mail (4).

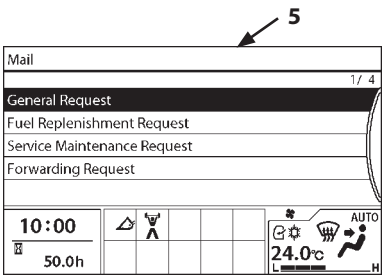


MNEK-01-130EN

3. Press selector knob (2) to display Mail screen (5).

4. Rotate selector knob (2) to highlight desired request.

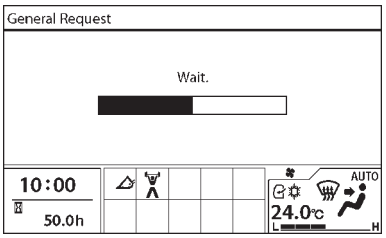
5. Press selector knob (2) to send mail information to the communication terminal.



MNEK-01-131EN

- General Request
- Fuel Replenishment Request
- Service Maintenance Request
- Forwarding Request

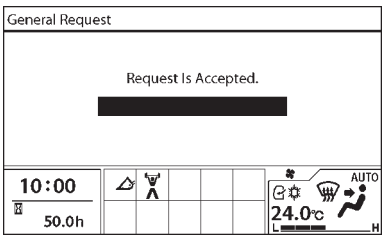
6. While mail information is sent to the communication terminal, the message "Wait." is displayed on the screen.



MNEK-01-132EN

7. When the communication terminal completes receiving mail information, the message "Request Is Accepted." is displayed on the screen.

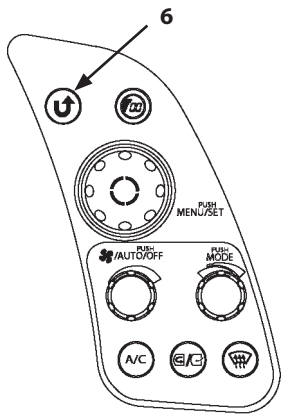
   Push back key (6) to return to the Mail screen.



MNEK-01-133EN

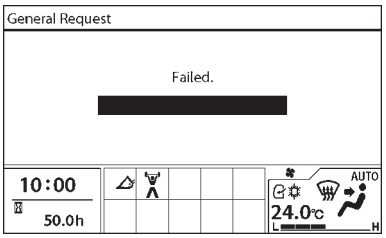
8. Then, a mail is sent from the communication terminal to the central server.

NOTE: Depending on the machine's operating environment or signal strength, the mail may not be sent.



MNEC-01-006

NOTE: When the communication terminal could not receive the mail, the message "Failed." is displayed on the screen.

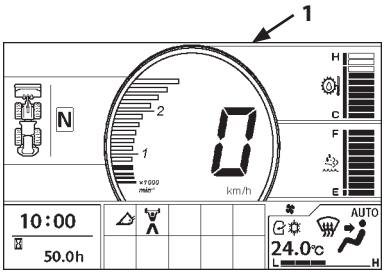


MNEK-01-134EN

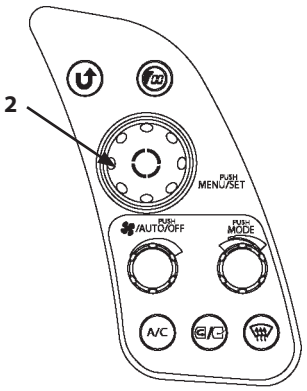
Setting Menu

Setting menu consists of date and time setting, auto idling stop setting (option), and rear view camera monitor setting.

1. Press selector knob (2) while displaying basic screen (1) to display Main Menu screen (3).

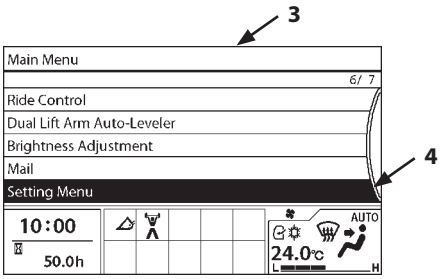


MNEK-01-103EN



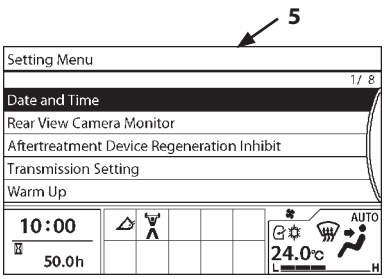
MNEC-01-006

2. Rotate selector knob (2) to highlight Setting Menu (4).



MNEK-01-140EN

3. Press selector knob (2) to display Setting Menu screen (5).



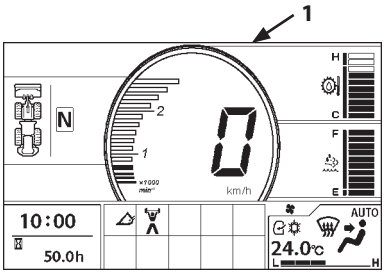
MPD8-01-141EN

Date and Time

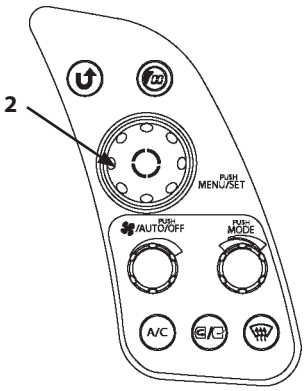
Time, date and display mode can be set on this screen. Year-month-day format and 24h/12h display mode are selected in the display setting.

Time Adjustment

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

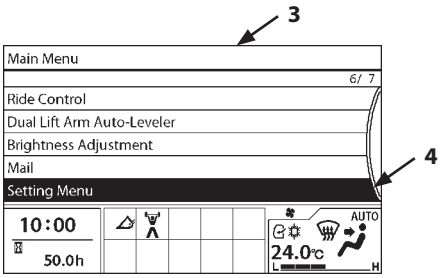


MNEK-01-103EN



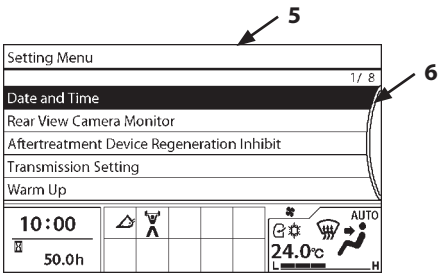
MNEC-01-006

2. Rotate selector knob (2) to highlight Setting Menu (4).



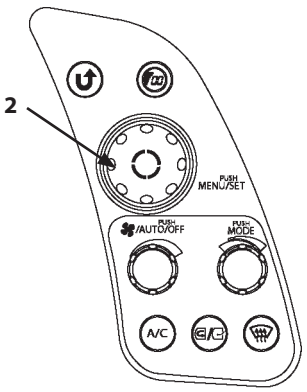
MNEK-01-140EN

3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Date and Time (6).



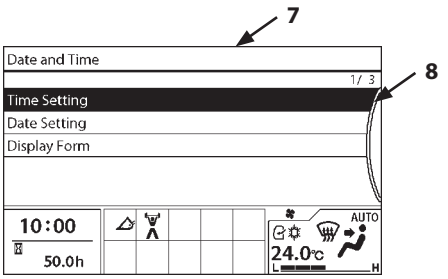
MPD8-01-141EN

5. Press selector knob (2) to display Date and Time screen (7).



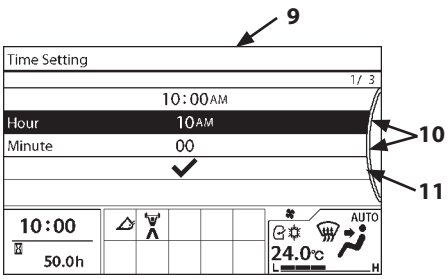
MNEC-01-006

6. Rotate selector knob (2) to highlight Time Setting (8).
7. Press selector knob (2) to display Time Setting screen (9).

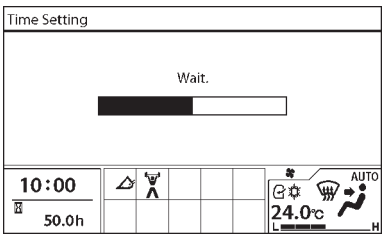


MNEK-01-142EN

8. Rotate selector knob (2) to highlight Hour or Minute and push selector knob (2).
9. Rotate selector knob (2) to adjust the clock. Rotate clockwise to adjust the number upwards, and counterclockwise to decrease it.
10. Push selector knob (2) to end the time setting procedure.
11. Rotate selector knob (2) to highlight ✔ (11). Push selector knob (2) to make the change.



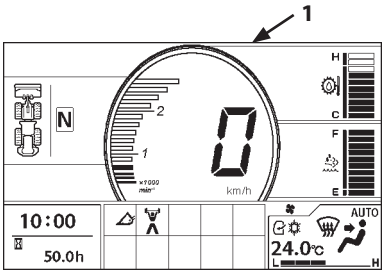
MNEK-01-143EN



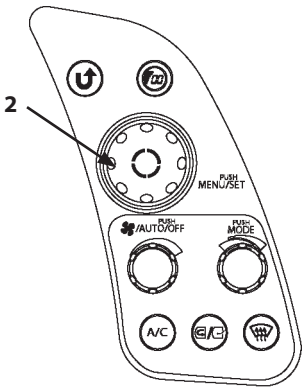
MNEK-01-144EN

Date Adjustment

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

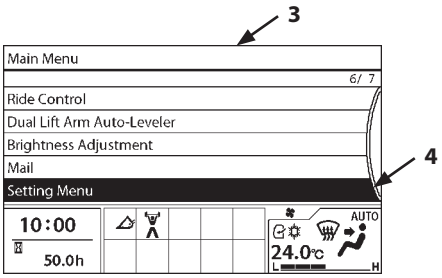


MNEK-01-103EN



MNEC-01-006

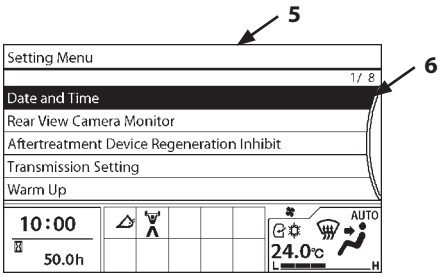
2. Rotate selector knob (2) to highlight Setting Menu (4).



MNEK-01-140EN

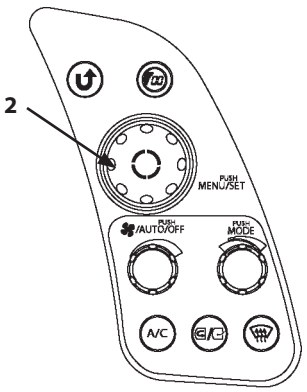
3. Press selector knob (2) to display Setting Menu screen (5).

4. Rotate selector knob (2) to highlight Date and Time (6).



MPD8-01-141EN

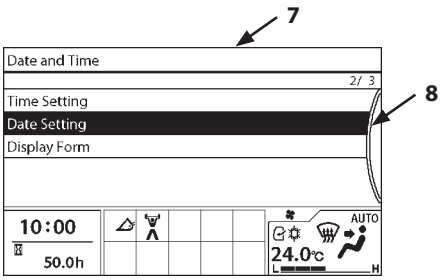
5. Press selector knob (2) to display Date and Time screen (7).



MNEC-01-006

6. Rotate selector knob (2) to highlight Date Setting (8).

7. Press selector knob (2) to display Date Setting screen (9).



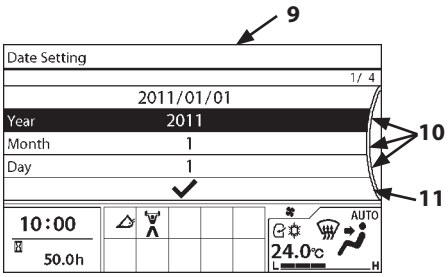
MNEK-01-145EN

8. Rotate selector knob (2) to highlight Year, Month or Day and push selector knob (2).

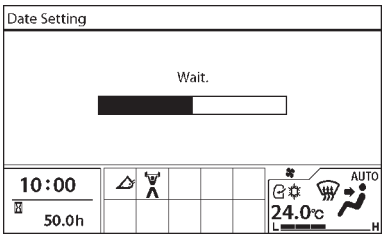
9. Rotate selector knob (2) to adjust the date. Rotate clockwise to adjust the number upwards, and counterclockwise to decrease it.

10. Push selector knob (2) to end the date setting procedure.

11. Rotate selector knob (2) to highlight ✔ (11). Push selector knob (2) to make the change.



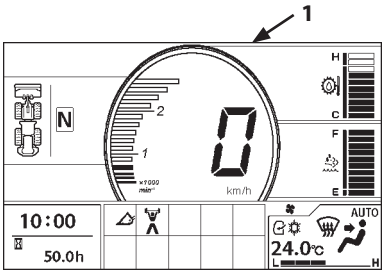
MNEK-01-146EN



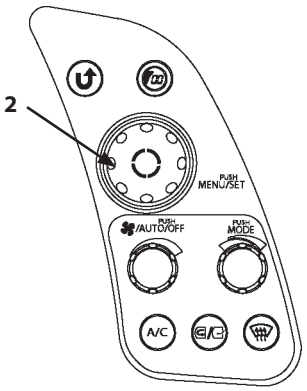
MNEK-01-147EN

Display Mode Setting

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

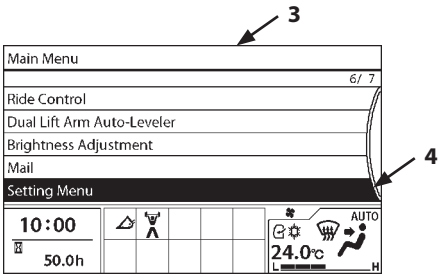


MNEK-01-103EN



MNEC-01-006

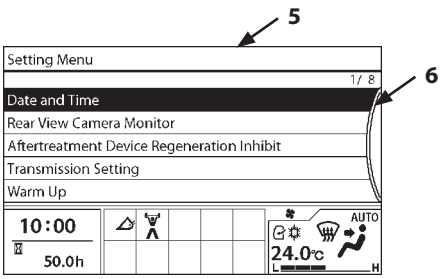
2. Rotate selector knob (2) to highlight Setting Menu (4).



MNEK-01-140EN

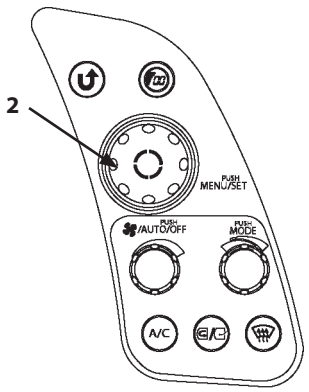
3. Press selector knob (2) to display Setting Menu screen (5).

4. Rotate selector knob (2) to highlight Date and Time (6).



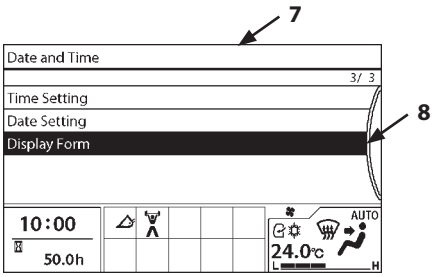
MPD8-01-141EN

5. Press selector knob (2) to display Date and Time screen (7).



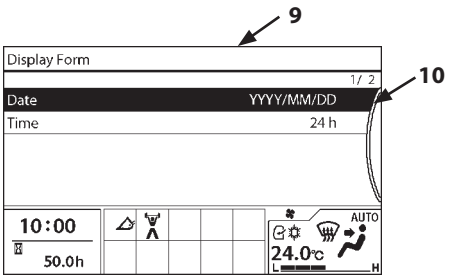
MNEC-01-006

6. Rotate selector knob (2) to highlight Display Form (8).



MNEK-01-148EN

7. Press selector knob (2) to display Display Form screen (9).



MNEK-01-149EN

8. Rotate selector knob (2) to highlight Date (10) and push selector knob (2).

Date : Each time selector knob (2) is pushed, the date format is changed as follows: YYYY/MM/DD → MM/DD/YYYY → DD/MM/YYYY → YYYY/MM/DD.

MNEK-01-302EN

MNEK-01-303EN

MNEK-01-304EN

Time : Each time selector knob (2) is pushed, the time format is changed as follows: 12 h → 24 h → 12 h.

MNEK-01-300EN

MNEK-01-301EN

Auto Idling Stop

WARNING: This function automatically idles, then stops the engine. Take extra care on the work and environment when using this function.

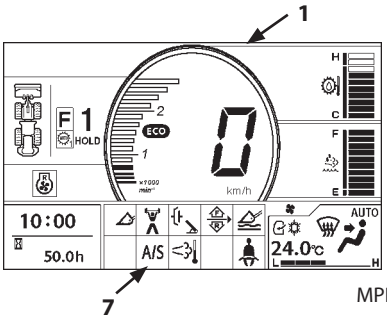
The auto Idling Stop (Shut Down) function can be set in this screen. Set the auto Idling Stop time and enable the function beforehand (set to ON).
The engine automatically stops after the preset time when machine is parking under the following conditions:
- Parking brake switch: ON (parking brake is applied)
- Service brake pedal: released (service brake pedal is not applied)
- Throttle pedal: released
- Transmission position: Neutral
- No steering wheel or loading lever operation

30 seconds before the engine stops, the monitor displays a message that the engine will be stopped and the indicator (7) starts flashing. The buzzer also sounds. The buzzer sounds once at 30 seconds before, intermittently sounds from 15 seconds, and then stops after 15 seconds. When the machine is in the operating state or any of the above listed conditions is not satisfied before stopping the engine, the auto idling stop is disabled and the engine will not stop.

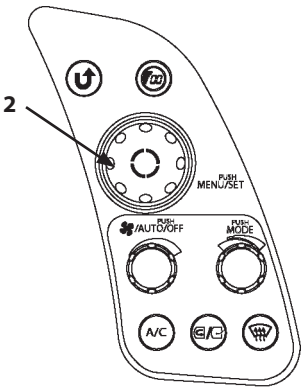
IMPORTANT: Do not leave the machine after auto idling stop. Failure to do so may discharge the batteries.

Auto idling stop: ON/OFF

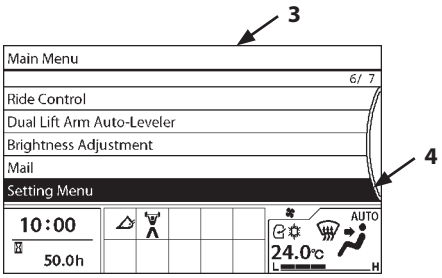
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Auto Shut-Down (6).



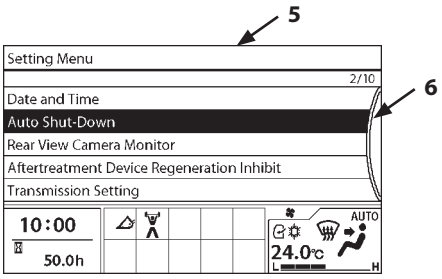
MPD8-01-100EN



MNEC-01-006

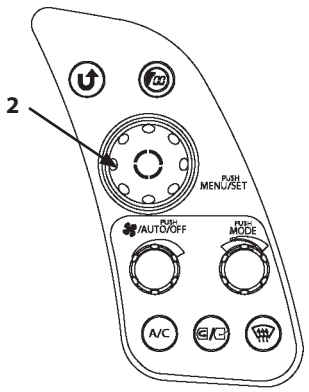


MNEK-01-140EN



MNEK-01-150EN

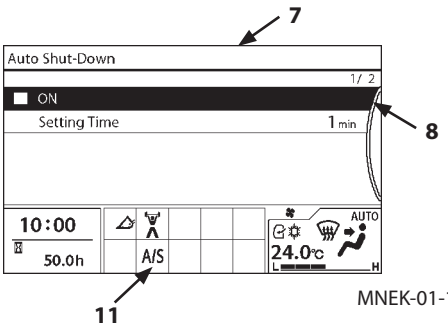
5. Press selector knob (2) to display Auto Shut-Down screen (7).



MNEC-01-006

6. Rotate selector knob (2) to highlight ON (8).
7. Press selector knob (2) to set the auto idling stop function ON and indicator (11) will be lit. Press selector knob (2) again to set the auto idling stop function OFF and indicator (11) goes off.

NOTE: When the function is ON, the mark "■" is displayed in green. When the function is OFF, the mark "■" is displayed in gray.

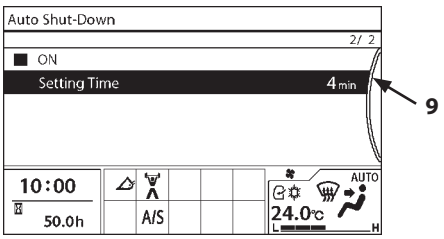


MNEK-01-151EN

Acting Time Setting

1. On the Auto Shut-Down screen, rotate selector knob (2) to highlight Time (9) and push selector knob (2).
2. Rotate selector knob (2) clockwise to extend idle time by 1 minute steps.

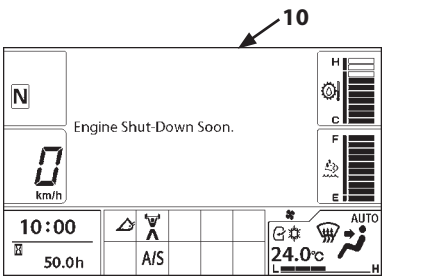
   Rotate selector knob (2) counterclockwise to decrease idle time by 1 minute steps.
3. Press selector knob (2) to make the change.



MNEK-01-152EN

NOTE: The idle time can be set to 1, 2, 3, 4, 5, 7, 10, 15, 20, 25 or 30 minutes. Observe local and federal engine idling regulations.

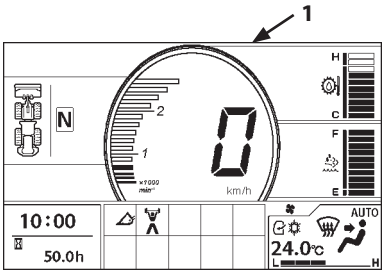
NOTE: 30 seconds before the engine stops, the monitor will display "Engine Shut-Down Soon." message (10).



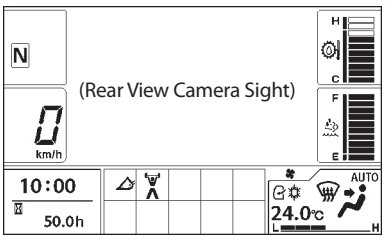
MNEK-01-153EN

Rear View Camera Monitor

IMPORTANT: The image displayed on the rear view monitor is meant only as an aid. Actual position and distance of people and objects in the rear view monitor will be different from the actual view. When operating the machine, pay thorough attention to the surroundings with use of mirrors and windows.

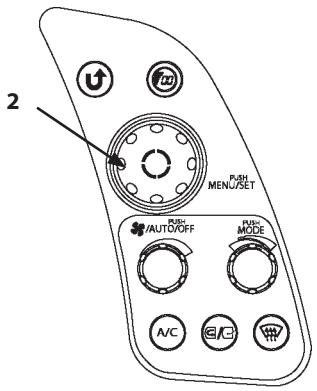


MNEK-01-103EN



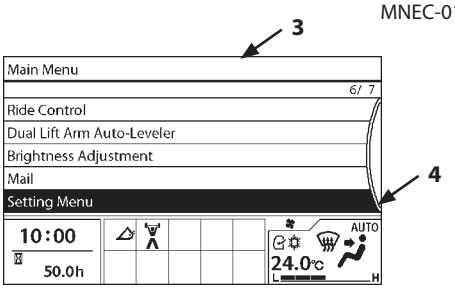
Operating Rear View Monitor MNEK-01-104EN

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).



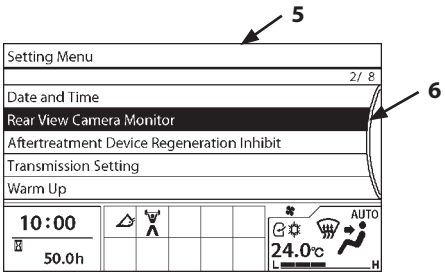
MNEC-01-006

2. Rotate selector knob (2) to highlight Setting Menu (4).



MNEK-01-140EN

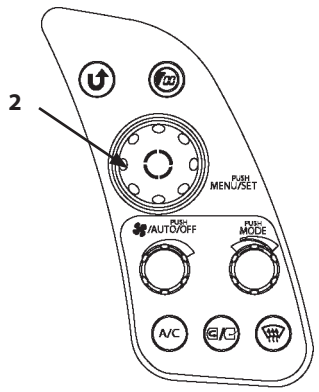
3. Press selector knob (2) to display Setting Menu screen (5).



4. Rotate selector knob (2) to highlight Rear View Camera Monitor (6).

MPD8-01-160EN

5. Press selector knob (2) to display Rear View Camera Monitor screen (7).

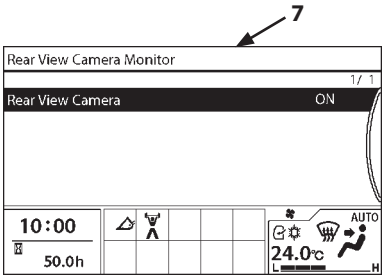


MNEC-01-006

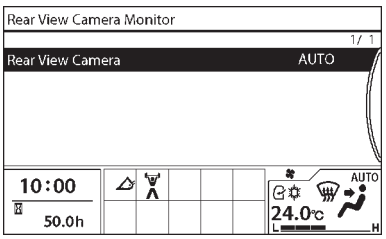
6. Press selector knob (2) to turn the rear view camera monitor ON/OFF/AUTO.
7. When the rear view camera monitor is ON, rear view image is continuously displayed on the basic screen.

   When the rear view camera monitor is AUTO, rear view image is displayed on the basic screen only at reverse travel.

   When the rear view camera monitor is OFF, rear view image is not available.

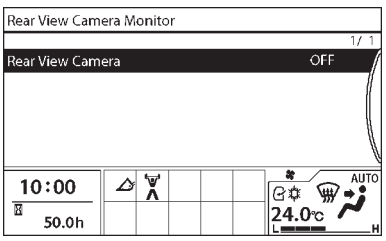


MNEK-01-161EN



MNEK-01-162EN

IMPORTANT: In order to obtain a clear image, clean the camera lens and the monitor display before operating the machine. In bad weather or extreme dust, more frequent cleaning will be required.



MNEK-01-163EN

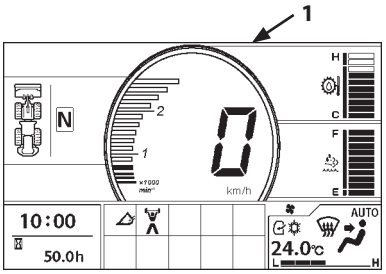
NOTE: The monitor and camera lens surface is a resin (plastic) product. Lightly wipe the surface with a wet clean cloth. Never use an organic solvent.

IMPORTANT:

- **Never attempt to change the mounting position of the rear view camera.**
- **Consult your authorized dealer if any abnormality is found on the rear view image.**

Aftertreatment Device Regeneration Inhibit

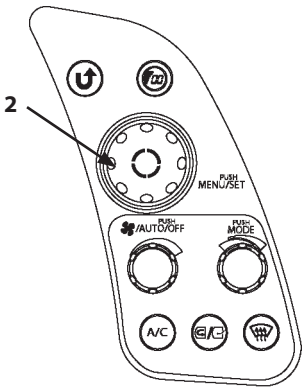
IMPORTANT: The aftertreatment device regeneration can be inhibited at this screen to prevent auto regeneration while operating the machine in a flammable area or indoors.



MNEK-01-103EN

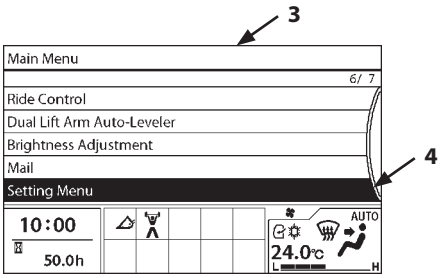
Setting Procedure

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).



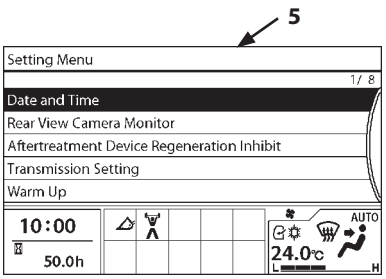
MNEC-01-006

2. Rotate selector knob (2) to highlight Setting Menu (4).



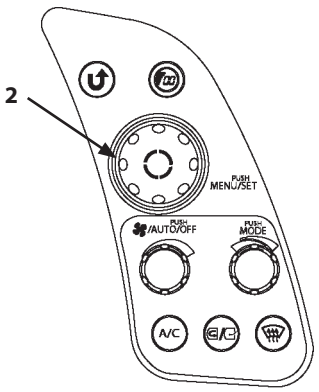
MNEK-01-140EN

3. Press selector knob (2) to display Setting Menu screen (5).



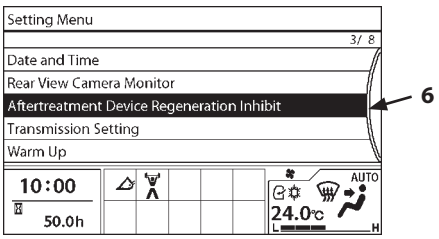
MPD8-01-141EN

4. Rotate selector knob (2) to highlight Aftertreatment Device Regeneration Inhibit (6).



MNEC-01-006

5. Press selector knob (2) to display Aftertreatment Device Regeneration Inhibit screen (7).



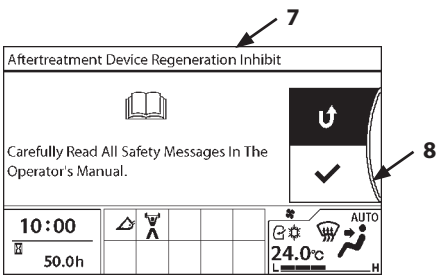
MPD8-01-170EN

6. Rotate selector knob (2) to highlight ✔ (8), and press selector knob (2) to display Aftertreatment Device Regeneration Inhibit screen (9).

7. Rotate selector knob (2) to highlight ON (10). Confirmation screen is added.

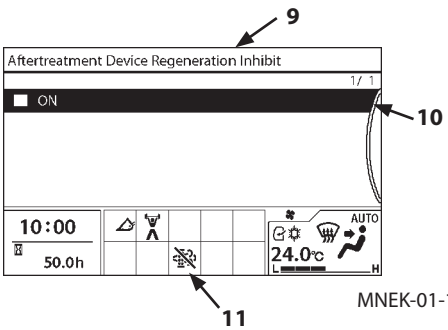
   Press selector knob (2) to turn Aftertreatment Device Regeneration Inhibit ON. Press selector knob (2) again to turn Aftertreatment Device Regeneration Inhibit OFF.

   When ON is selected, regeneration inhibit icon (11) will be displayed on the monitor.



MNEK-01-171EN

NOTE: When the function is ON, the mark "■" is displayed in green. When the function is OFF, the mark "■" is displayed in gray.



MNEK-01-172EN

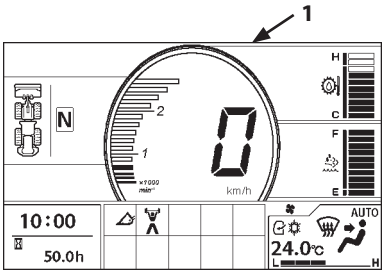
IMPORTANT: This procedure will inhibit both automatic and manual regeneration.
When the machine is operated with the aftertreatment device regeneration inhibited, the aftertreatment device becomes clogged more quickly than expected. When the aftertreatment device regeneration request is displayed, move the machine to a safe place. Perform the manual regeneration following the specified procedure. Failure to do so may damage the aftertreatment device. Refer to page 5-11 for the manual regeneration.

Transmission Setting

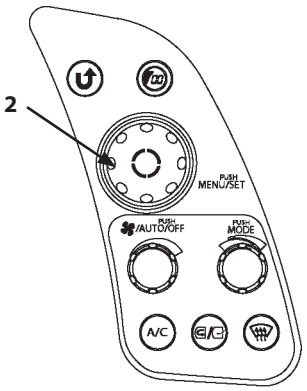
Shift Change Delay Mode Setting

Refer to page 4-6 for Shift Change Delay Mode.

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

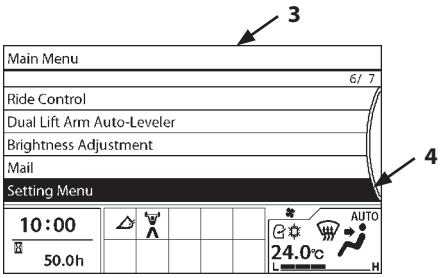


MNEK-01-103EN



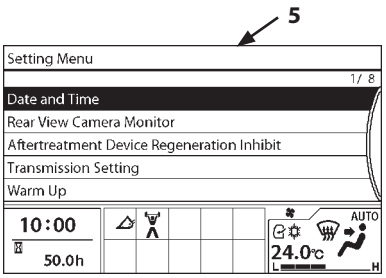
MNEC-01-006

2. Rotate selector knob (2) to highlight Setting Menu (4).



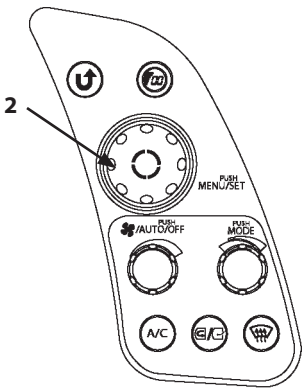
MNEK-01-140EN

3. Press selector knob (2) to display Setting Menu screen (5).



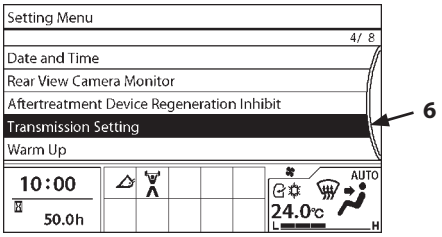
MPD8-01-141EN

4. Rotate selector knob (2) to highlight Transmission Setting Menu (6).



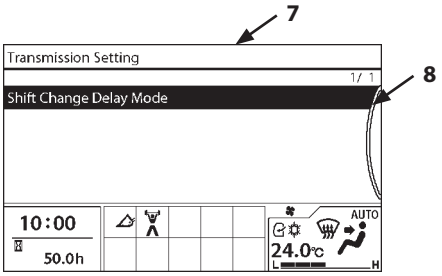
MNEC-01-006

5. Press selector knob (2) to display Transmission Setting screen (7).



MPD8-01-180EN

6. Rotate selector knob (2) to highlight Shift Change Delay Mode (8).



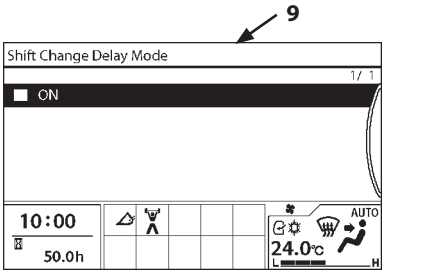
MNEK-01-181EN

7. Press selector knob (2) to display Shift Change Delay Mode screen (9).
8. Press selector knob (2) to turn ON (enabled).

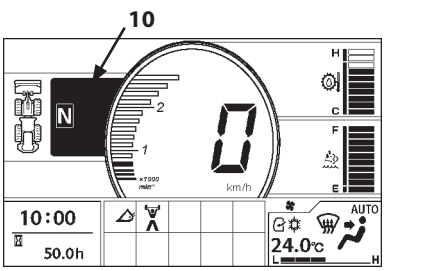
   When ON (enabled) is selected, background of the Speed Gear Stage display (10) turns blue.

   Press selector knob (2) again to turn OFF (disabled).

NOTE: When the function is ON, the mark "■" is displayed in green. When the function is OFF, the mark "■" is displayed in gray.



MNEK-01-182EN

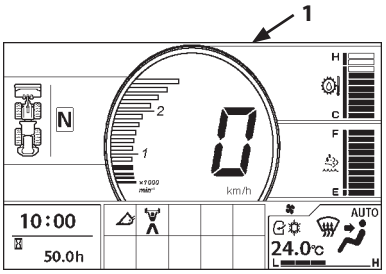


MNEK-01-183EN

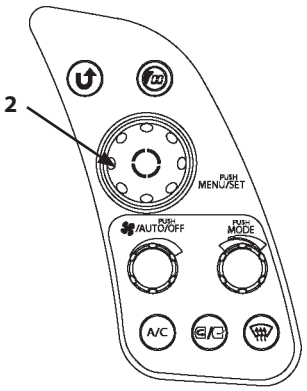
Warm Up Operation

Refer to "Cold Weather Warm Up" (page 3-12) for the operation when using this setting.

1. Press selector knob (2) while displaying basic screen (1) to display main menu screen (3).

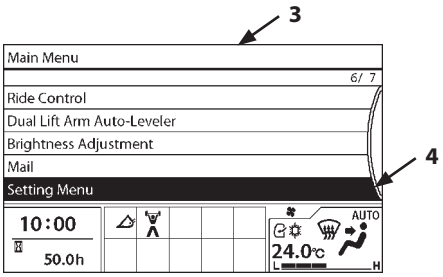


MNEK-01-103EN



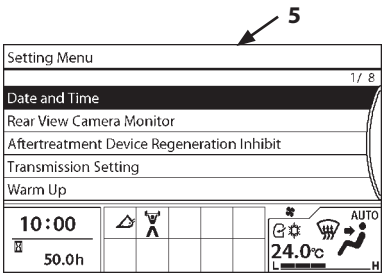
MNEC-01-006

2. Rotate selector knob (2) to highlight Setting Menu (4).



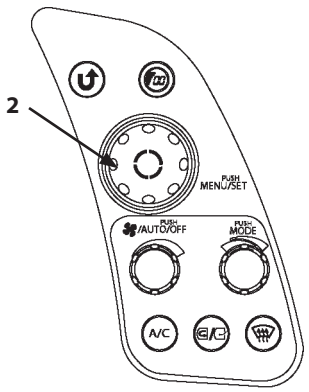
MNEK-01-140EN

3. Press selector knob (2) to display Setting Menu screen (5).



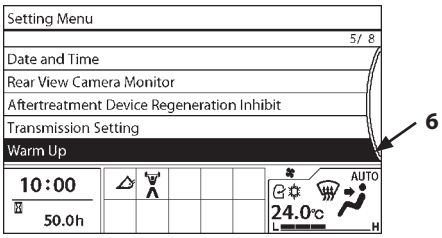
MPD8-01-141EN

4. Rotate selector knob (2) to highlight Warm Up (6).



MNEC-01-006

5. Press selector knob (2) to display Warm Up Setting screen (7).

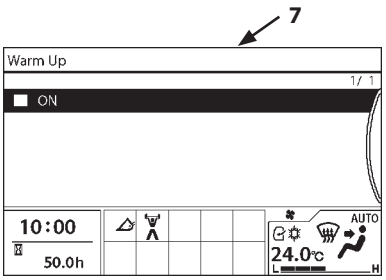


MPD8-01-200EN

6. Press selector knob (2) to turn ON (enabled).

   Press selector knob (2) again to turn OFF (disabled).

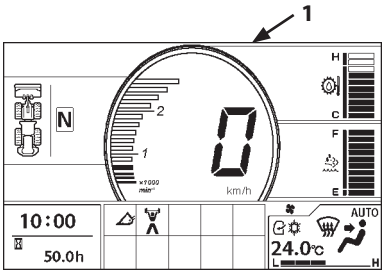
NOTE: When the function is ON, the mark "■" is displayed in green. When the function is OFF, the mark "■" is displayed in gray.



MNEK-01-201EN

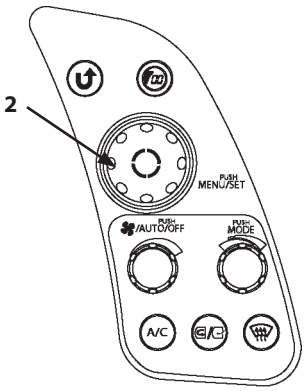
Display Item Selection

Unit system displayed on the monitor can be selected in this screen.



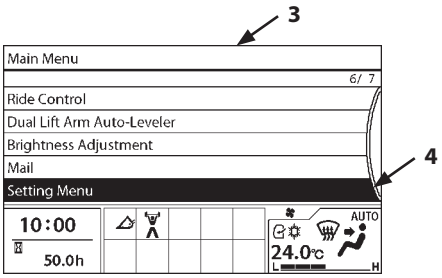
MNEK-01-103EN

1. Press selector knob (2) while displaying basic screen (1) to display main menu screen (3).



MNEC-01-006

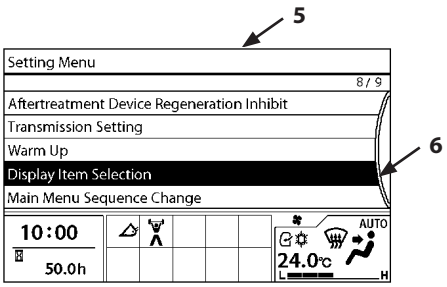
2. Rotate selector knob (2) to highlight Setting Menu (4).



MNEK-01-140EN

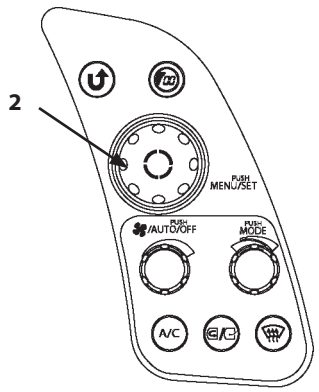
3. Press selector knob (2) to display Setting Menu screen (5).

4. Rotate selector knob (2) to highlight Display Item Selection (6).



70MPD8-01-220EN

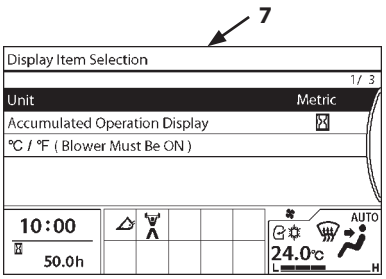
5. Press selector knob (2) to display Display Item Selection screen (7).



MNEC-01-006

6. Rotate selector knob (2) to highlight Unit. Press selector knob (2) to set the unit (Metric or US system).

7. Rotate selector knob (2) to highlight Accumulated Operation Display. Press selector knob (2) to set the display ☒ (hour meter) or ODO (odometer).

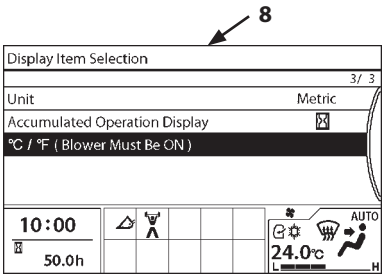


MNEK-01-221EN

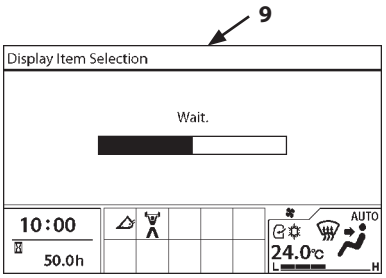
8. Before changing °C and °F, turn the blower of the air conditioner ON.

   Rotate selector knob (2) to highlight desired unit system (°C or °F) (8). Press selector knob (2) to set the unit.

   When pressing selector knob (2), "Wait." will be will be displayed (9) and then the change will be completed.



MNEK-01-222EN

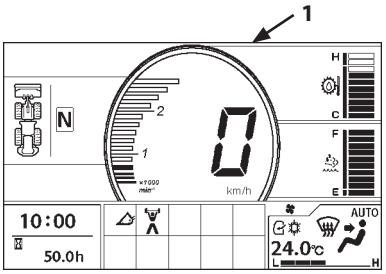


MNEK-01-223EN

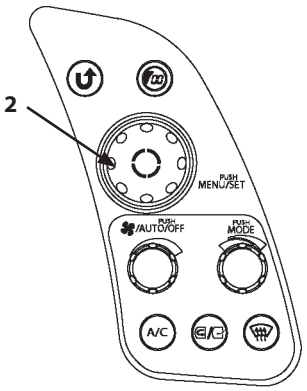
Main Menu Display Order Change

Menu sequence of "Ride Control" (option), "Dual Lift Arm Auto Leveler", "Brightness Adjustment" and "Mail" can be changed in this screen. Frequently used menu can be located on top of the screen.

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

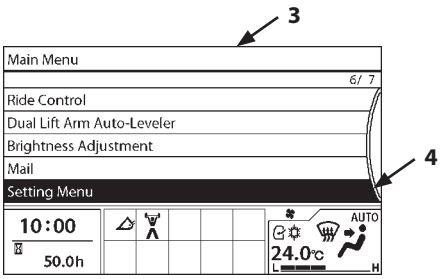


MNEK-01-103EN



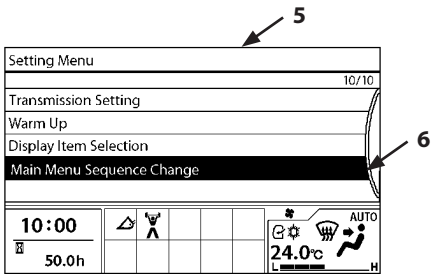
MNEC-01-006

2. Rotate selector knob (2) to highlight Setting Menu (4).

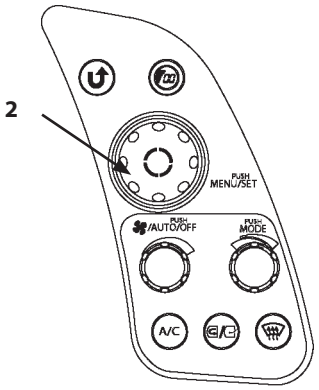


MNEK-01-140EN

3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Main Menu Sequence Change (6).

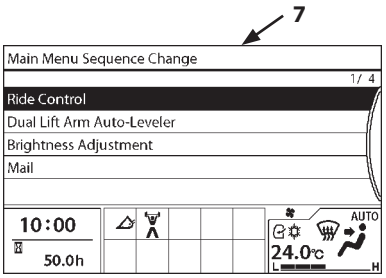


70MPD8-01-230EN



MNEC-01-006

5. Press selector knob (2) to display Main Menu Sequence Change screen (7).
6. Rotate selector knob (2) to highlight a menu to be on the top of the screen. Press selector knob (2) to set the menu to the top of the screen.

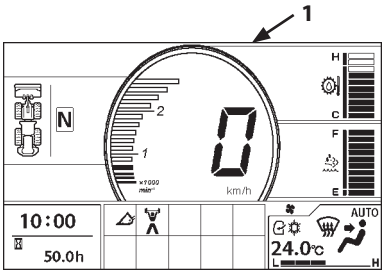


MNEK-01-231EN

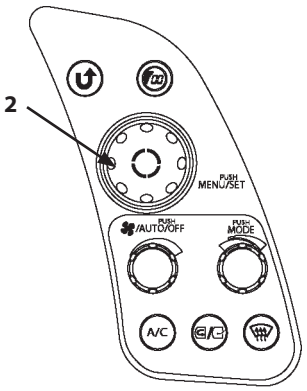
Information Menu

The information menu includes Operation, Maintenance, Troubleshooting and Monitoring.

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

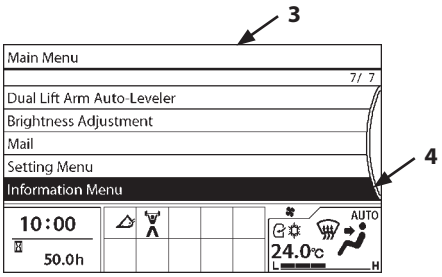


MNEK-01-103EN



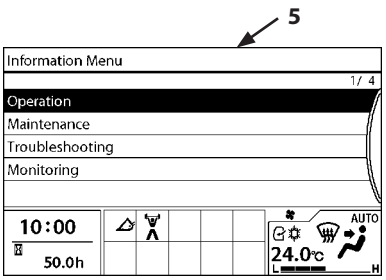
MNEC-01-006

2. Rotate selector knob (2) to highlight Information Menu (4).



MNEK-01-240EN

3. Press selector knob (2) to display Information Menu screen (5).

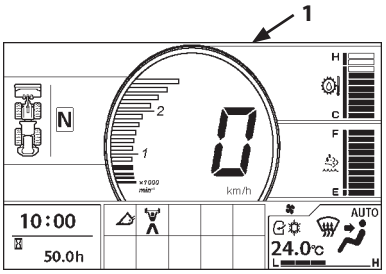


MNEK-01-241EN-KC

Operation Condition

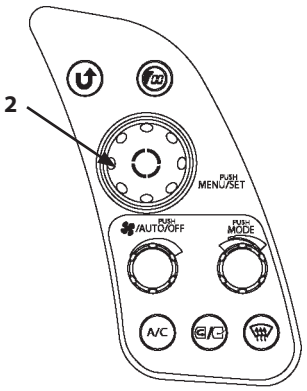
The Operation screen displays fuel consumption, operating hours, and fuel consumption rate from resetting of the monitoring unit.

Fuel Consumption



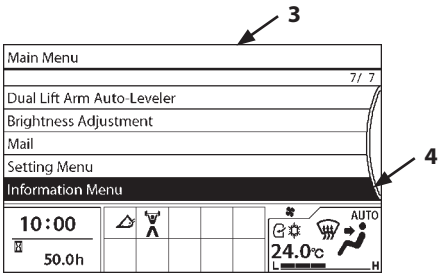
MNEK-01-103EN

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).



MNEC-01-006

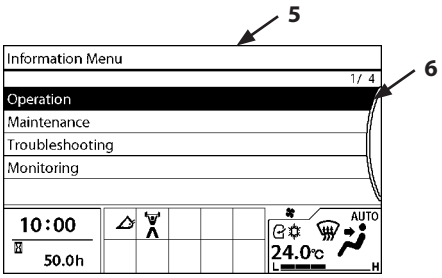
2. Rotate selector knob (2) to highlight Information Menu (4).



MNEK-01-240EN

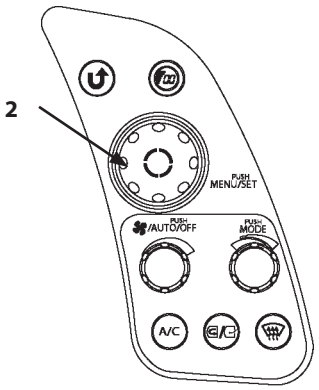
3. Press selector knob (2) to display Information Menu screen (5).

4. Rotate selector knob (2) to highlight Operation (6).



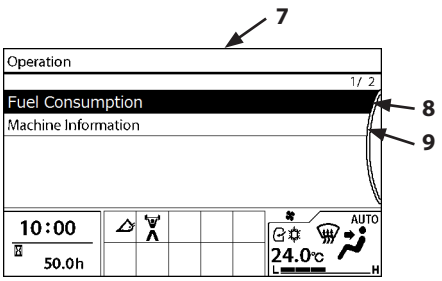
MNEK-01-241EN-KC

5. Press selector knob (2) to display Operation screen (7).



MNEC-01-006

6. Rotate selector knob (2) to highlight Fuel Consumption (8) or Machine Information (9).

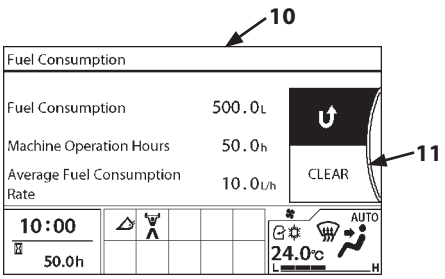


MNEK-01-242EN-KC

7. Press selector knob (2) while selecting Fuel Consumption (8) to display Fuel Consumption screen (10).

   The Machine Operation Hours, Fuel Consumption, and Average Fuel Consumption Rate can be checked on Fuel Consumption screen (10).

   Push selector knob (2) to return the previous screen. To clear the fuel consumption and machine operation hours, rotate selector knob (2) to highlight CLEAR (11), and then press selector knob (2).



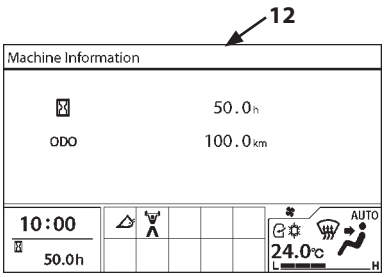
MNEK-01-243EN

IMPORTANT: Total fuel consumption and fuel consumption rate depend on the operating environment and the operation method of the machine.

The values shown on the screen are just for reference.

A difference could arise between actual fuel consumption and fuel consumption as displayed on the monitor unit.

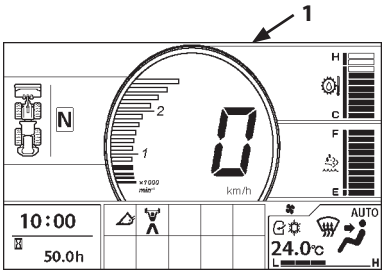
8. Press selector knob (2) while selecting Machine Information (9) to display Machine Information screen (12).



MNEK-01-244EN

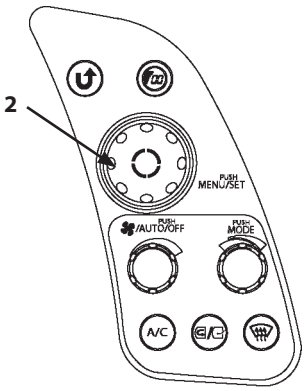
Maintenance

The maintenance screen includes maintenance notice, remaining hours until the next maintenance, and maintenance intervals.



MNEK-01-103EN

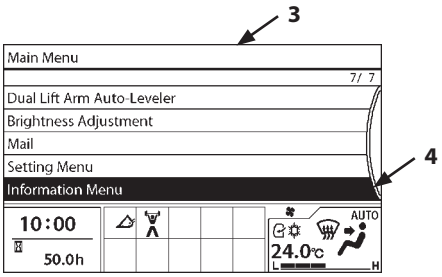
Maintenance Items
- Engine Oil
- Engine Oil Filter
- Hydraulic Oil
- Hydraulic Oil Pilot Filter
- Hydraulic Oil Return Filter
- Transmission Oil
- Transmission Oil Filter
- Front Axle Oil
- Rear Axle Oil
- Fuel Filter
- Air Cleaner Filter Element
- Air Conditioner Filter
- DEF/AdBlue® Supply Module Main Filter
- Fuel Solenoid Pump Filter
- Oil Separator (Crankcase Air Breather Element)
- User Setting 1
- User Setting 2



MNEC-01-006

Maintenance Notice

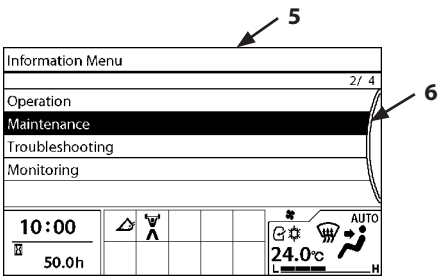
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).



MNEK-01-240EN

2. Rotate selector knob (2) to highlight Information Menu (4).

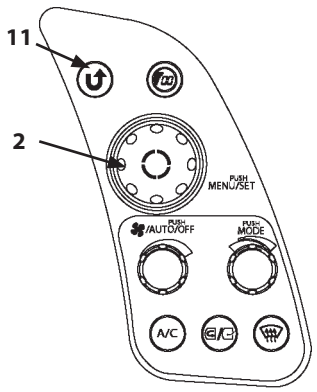
3. Press selector knob (2) to display Information Menu screen (5).



MNEK-01-245EN-KC

4. Rotate selector knob (2) to highlight Maintenance (6).

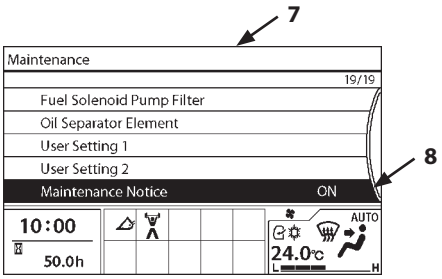
5. Press selector knob (2) to display Maintenance screen (7).



MNEC-01-006

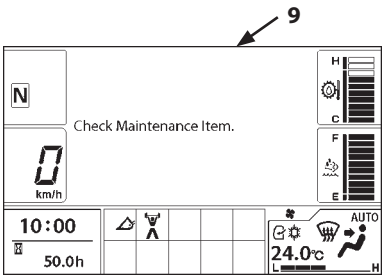
6. Rotate selector knob (2) to highlight Maintenance Notice (8).
7. Press selector knob (2) to turn the Maintenance Notice ON. Press selector knob (2) again to turn the Maintenance Notice OFF.

   ON : When the required interval is reached, an information message is displayed on the screen.
   OFF : No notification message is displayed.

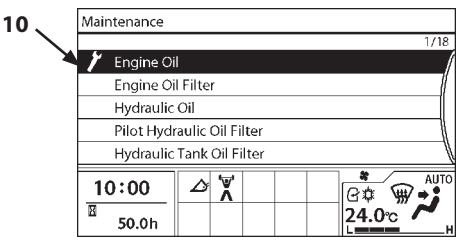


MPD8-01-246EN

NOTE: When the required interval for an item is reached, screen (9) is displayed for 10 seconds when the key is switched ON. Press back key (11) to delete the notification. When checking the maintenance items from the menu, an item where the set time has been reached are marked with a wrench (10).



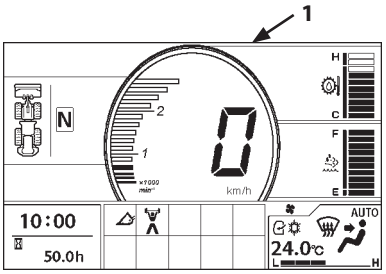
MNEK-01-247EN



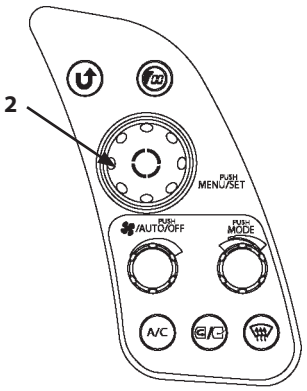
MNEK-01-248EN

Time Remains and Maintenance Interval

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

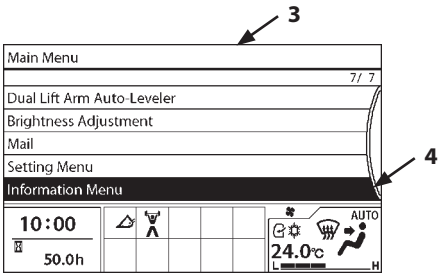


MNEK-01-103EN



MNEC-01-006

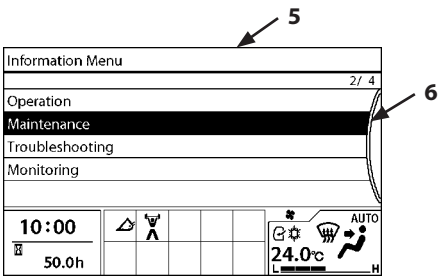
2. Rotate selector knob (2) to highlight Information Menu (4).



MNEK-01-240EN

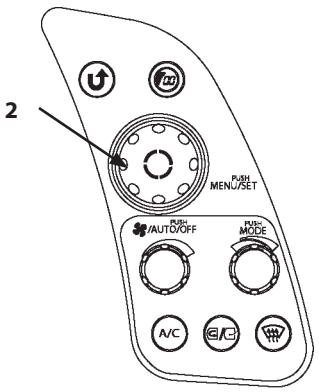
3. Press selector knob (2) to display Information Menu screen (5).

4. Rotate selector knob (2) to highlight Maintenance (6).



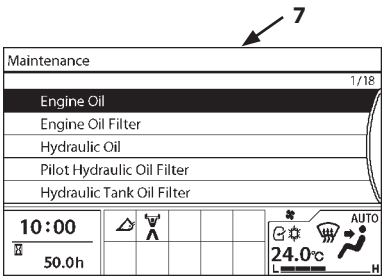
MNEK-01-245EN-KC

5. Press selector knob (2) to display Maintenance screen (7).



MNEC-01-006

6. Rotate selector knob (2) to highlight a maintenance item to be checked (8). (In the right example, Engine Oil is selected.)
7. Press selector knob (2) to display the time remaining for the selected maintenance item.



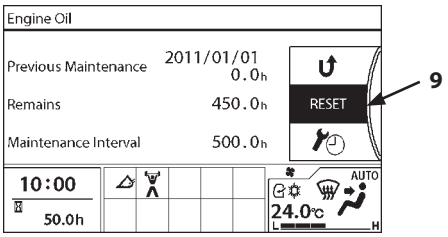
MNEK-01-251EN

Resetting Data

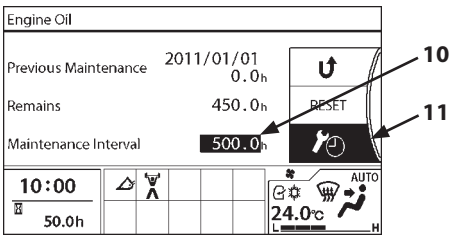
To reset the remaining time data, rotate selector knob (2) to highlight RESET (9), and then push selector knob (2). The value of the remaining hours is reset to that of the maintenance interval. The previous change date/hour is updated with the current date and time.

Maintenance Interval Setting

To change the maintenance interval, rotate selector knob (2) to highlight [ ] (11), and then press selector knob (2). The background color of Maintenance Interval (10) changes, then turn selector knob (2) to adjust the time, and then push selector knob (2) to enable the change.



MNEK-01-249EN

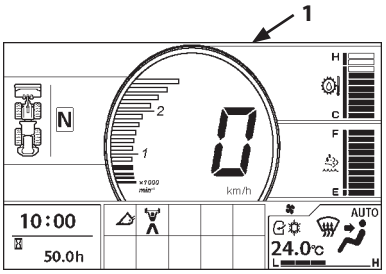


MNEK-01-250EN

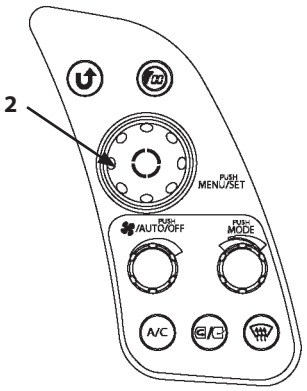
Troubleshooting

An active fault code generated by the controller connected to the controller area network is displayed on this screen.

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

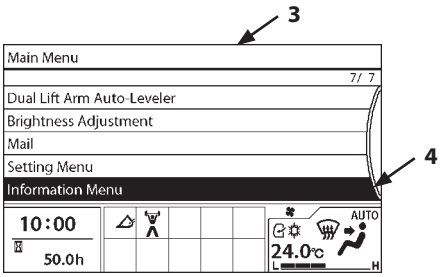


MNEK-01-103EN



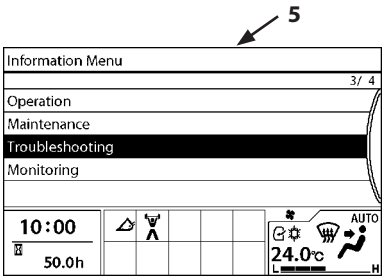
MNEC-01-006

2. Rotate selector knob (2) to highlight Information Menu (4).



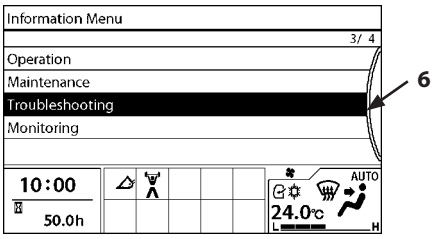
MNEK-01-240EN

3. Press selector knob (2) to display Information Menu screen (5).

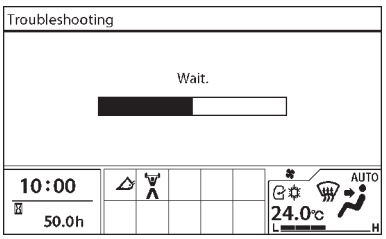


MNEK-01-260EN-KC

4. Rotate selector knob (2) to highlight Troubleshooting (6).

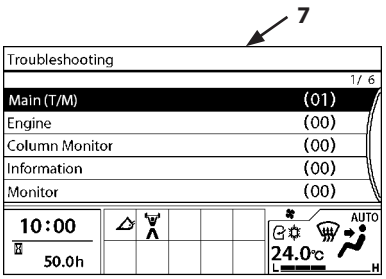


MNEK-01-260EN-KC



MNEC-01-261EN-KC

5. Press selector knob (2) to start troubleshooting. After displaying "Wait." message, the screen displays controller troubleshooting (7).

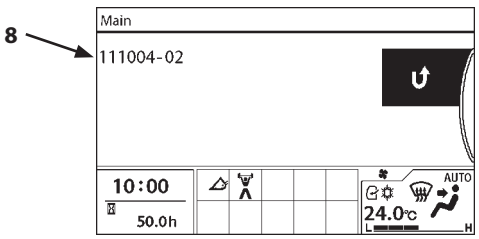


90MNEC-01-262EN

6. Active fault codes are displayed at the right side of each item. Rotate selector knob (2) to highlight an item displaying the fault codes.
7. Press selector knob (2) to display active fault code (8).

   Up to 20 fault codes can be displayed.

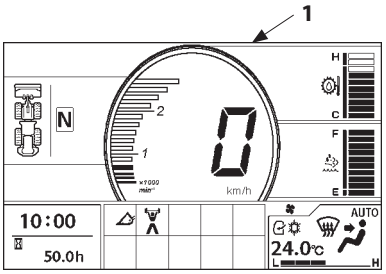
IMPORTANT: Send the troubleshooting result to your nearest authorized service representative as soon as possible.



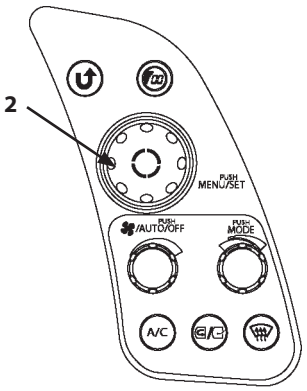
MNEC-01-263EN-KC

Monitoring

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).

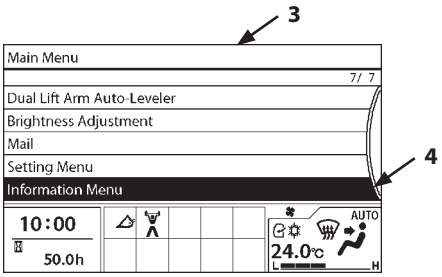


MNEK-01-103EN



MNEC-01-006

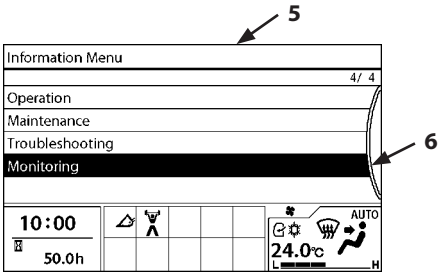
2. Rotate selector knob (2) to highlight Information Menu (4).



MNEK-01-240EN

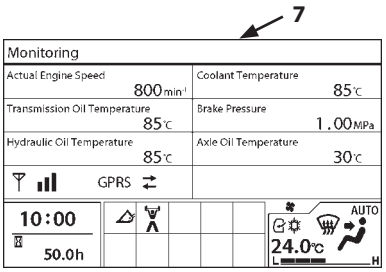
3. Press selector knob (2) to display Information Menu screen (5).

4. Rotate selector knob (2) to highlight Monitoring (6).



MNEK-01-270EN-KC

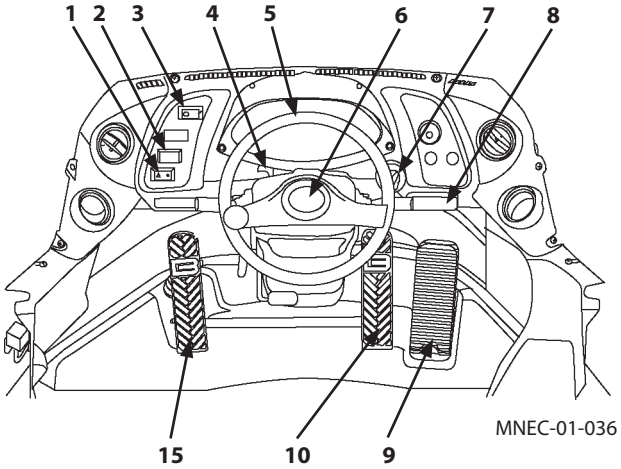
5. Press selector knob (2) to display Monitoring screen (7).



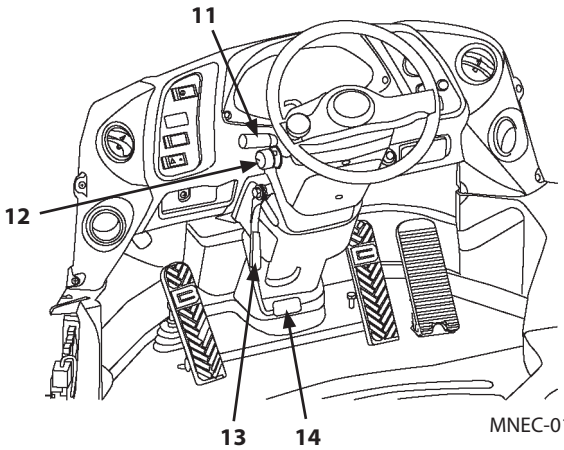
MNEK-01-271EN

Switches, Steering Wheel and Pedals

1- Hazard Switch
2- Work Light Switch
3- Parking Brake Switch
4- Neutral Lever Lock (for the Forward/Reverse Lever)
5- Steering Wheel
6- Horn Switch
7- Key Switch
8- Turn Signal Lever/ Light Switch/ High-Low Beam Switch
9- Accelerator Pedal
10- Brake Pedal
11- Forward/Reverse Lever/ Shift Switch
12- Front and Rear Window Wiper Switch
13- Tilt, Telescopic Lever
14- Steering Column Tilt Pedal
15- Brake/Declutch Pedal



MNEC-01-036



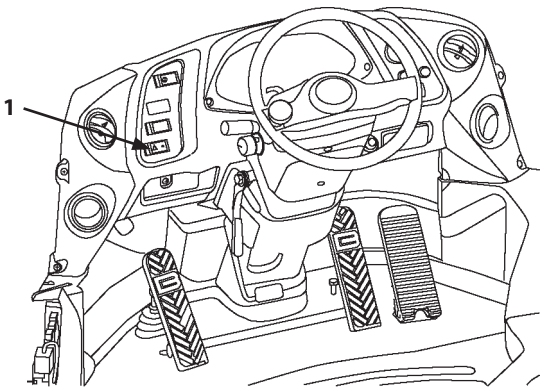
MNEC-01-037

Hazard Switch

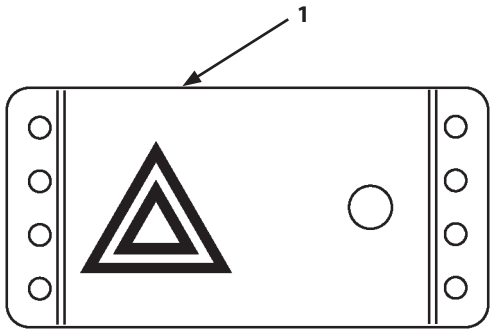
IMPORTANT: Do not leave the hazard switch (1) in the "⚠" or "ON" position for a long time with the engine stopped. The batteries will become discharged.

When a machine failure occurs, use this switch to inform other vehicles that the machine is in an emergency situation.

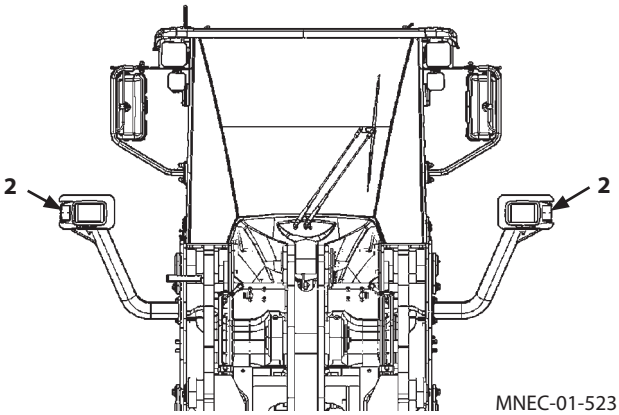
When the "⚠" on hazard switch (1) is pressed, front and rear turn signals (hazard light) (2) on both right and left sides start flashing.
Press the opposite side of hazard switch (1) to turn the hazard signals OFF.



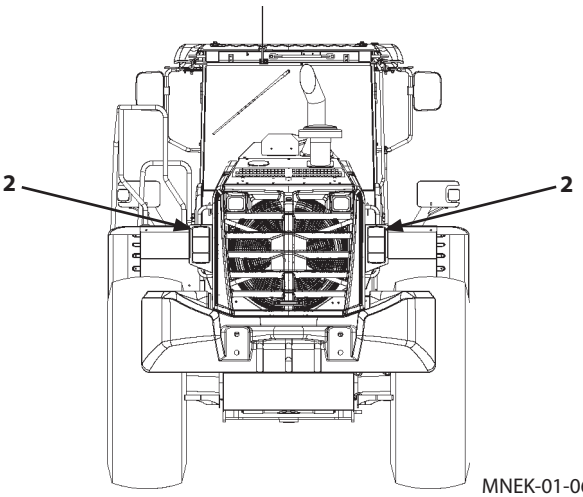
MNEC-01-037



M4GB-01-065



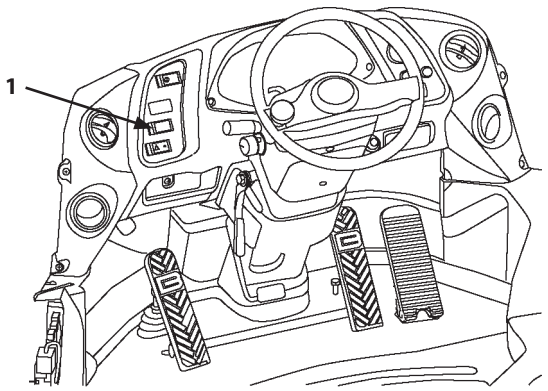
MNEC-01-523



MNEK-01-06US

Work Light Switch

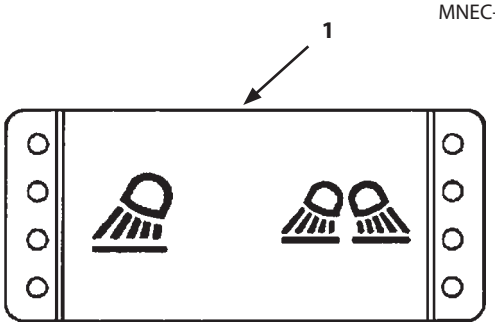
Press the mark on switch (1) while the light switch is in "" or "" position to turn front work lights (2) ON. Rear work lights (3) stay OFF.



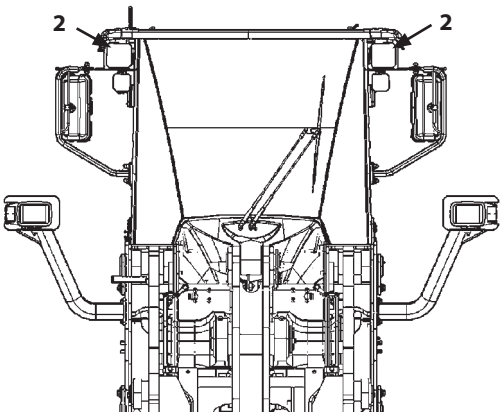
MNEC-01-037

When the side with mark on switch (1) is pressed, all front work lights (2), rear work lights (3), and rear cab lights (4) turn ON.

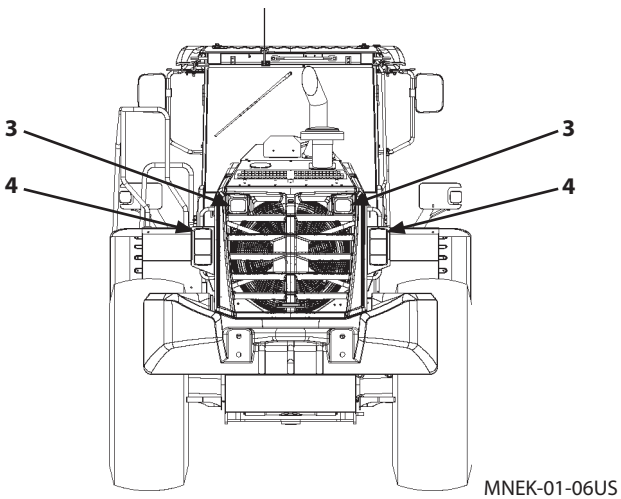
CAUTION: Do not turn the work lights ON while driving on a public road.



MNFA-01-011



MNEC-01-523



MNEK-01-06US

Parking Brake Switch

WARNING:

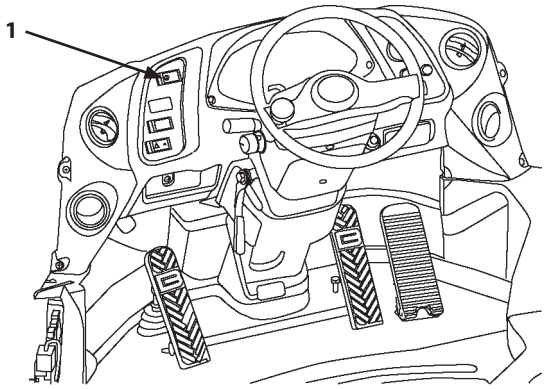
- **To prevent accidents due to rolling away of the machine, after parking the machine or before leaving the machine, be sure to apply the parking brake.**
- **Never apply the parking brake while the machine is moving except in an emergency.**
- **Apply the parking brake only after the machine has stopped.**
- **Failure to do so may cause sudden deceleration of the machine travel speed, possibly creating a dangerous situation. Also, premature wear and/or damage to the parking brake may result. After the parking brake has been applied in an emergency while moving the machine, have the parking brake checked at your nearest authorized dealer.**

When parking brake switch (1) is turned ON, the parking brake is applied; parking brake indicator (2) will be shown. Press the OFF side of parking brake switch (1) to release the parking brake. Check that parking brake indicator (2) goes OFF by pressing the switch firmly clicks.

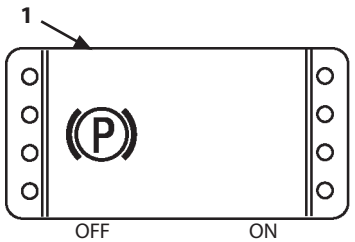
NOTE:

- *The parking brake is released by hydraulic pressure only when the engine is running.*
- *To ensure safe operation, when the parking brake is applied, with the forward/reverse lever moved to the forward (F) or reverse (R) position, the machine should not travel.*
- *To ensure safe operation, when the engine is stopped, the parking brake is applied even if parking brake switch (1) is in the OFF or released position.*

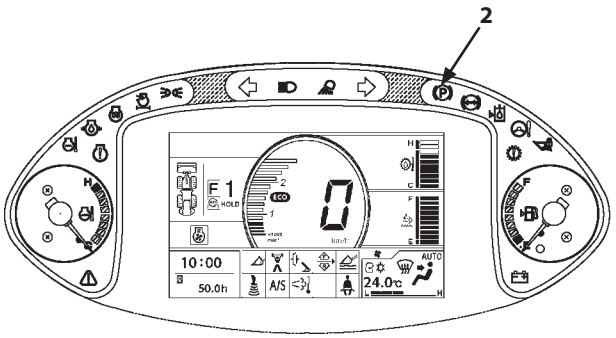
  Before restarting the engine, ensure the forward/reverse lever and forward/reverse switch (3) are in "Neutral" position, and forward/reverse selector switch (4) is in OFF position for safety.
- *The parking brake will apply when the key is turned OFF.*



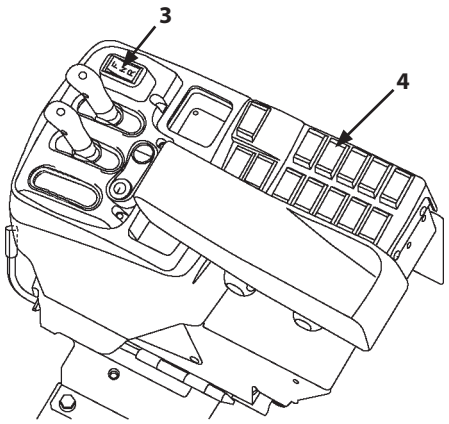
MNEC-01-037



MNEC-01-058



MNEK-01-500



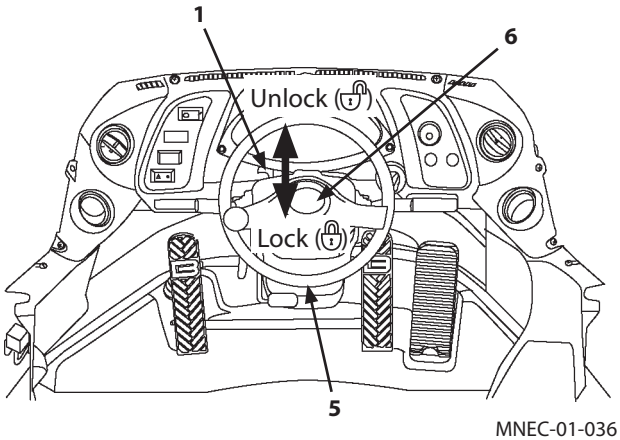
MNEC-01-526

Neutral Lever Lock (for the Forward/Reverse Lever)

WARNING: When the machine is parked or serviced, be sure to place the neutral lever lock (red lever) in the lock (🔒) position.

The neutral lever lock makes the forward/reverse lever immovable so that the machine does not start moving even if a body part comes in contact with the forward/reverse lever by mistake.
Before starting or stopping the engine, set neutral lever lock (1) in the lock (🔒) position.

Pull : Unlock (🔓)
Push : Lock (🔒)



MNEC-01-036

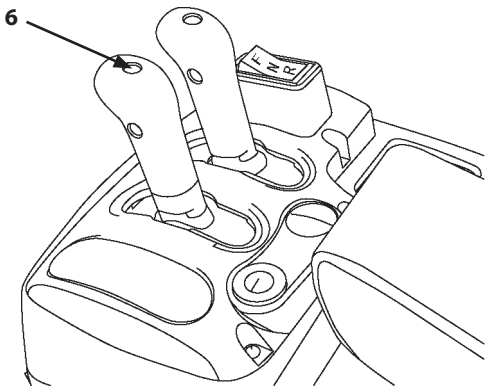
Steering Wheel

WARNING: CRUSH HAZARD
Keep personnel out of area of articulation joint.

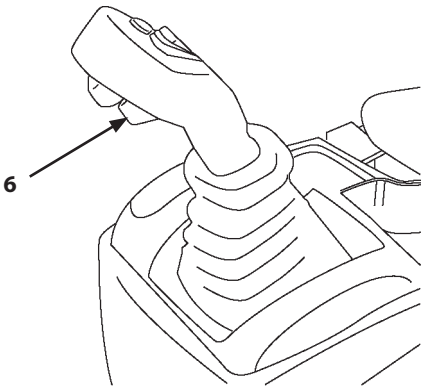
IMPORTANT: When steering wheel (5) is fully turned, the front and the rear chassis come in contact with the stoppers so that the steering wheel does not rotate further. If the steering wheel is forcibly turned moreover, the engine may stall or malfunction of the steering system may result.

Horn Switch

Press horn switch (6) to sound the horn.
The horn switch is provided also on the control lever to improve operator comfort.



Fingertip Control Type
MNEC-01-042

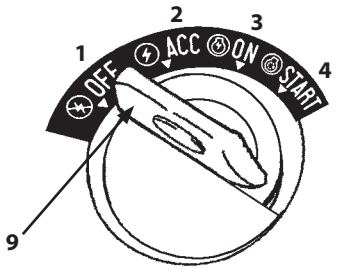


Multi-Function Joystick Type
MNEC-01-044

Key Switch

WARNING: Before starting the engine, return the forward/reverse lever and forward/reverse switch to neutral (N), apply the parking brake, lock the neutral lever lock, and lock the control lever. Refer to the descriptions in the OPERATING ENGINE section for the detail information.

WARNING: Never turn key switch (9) OFF while moving the machine. Failure to do so will result in inoperable steering wheel and brake pedal functions, and the parking brake will suddenly apply.



M4GB-01-089

1- OFF (Engine Off)

2- ACC (Radio)

3- ON (Power ON)

4- START (Engine Start)

NOTE: Engine pre-heating is controlled automatically by the engine control system.

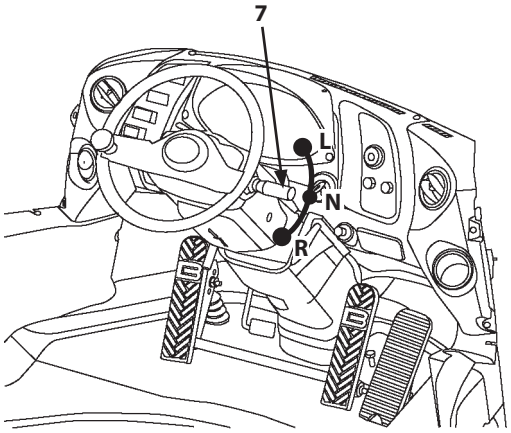
Turn Signal Lever

Indicates the drive change direction to persons and/or other vehicles by operating turn signal lever (7). Return turn signal lever (7) to neutral manually.

L- Left Turn

R- Right Turn

NOTE: The lever does not return automatically when the steering wheel is returned to center.



MNEC-01-038

Light Switch

Light switch (1) has three positions, OFF, Small, and Main. As shown below, each light comes ON (☼) or OFF (✕) according to the selected position of the light switch.

2- Headlight

3- Turn Signal / Hazard Light / Clearance Light

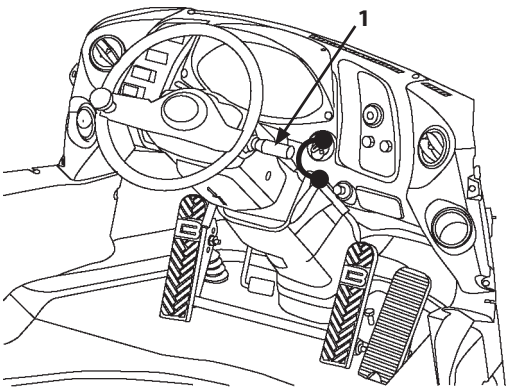
4- Turn Signal/Hazard Light

5- Brake Light/Tail Light

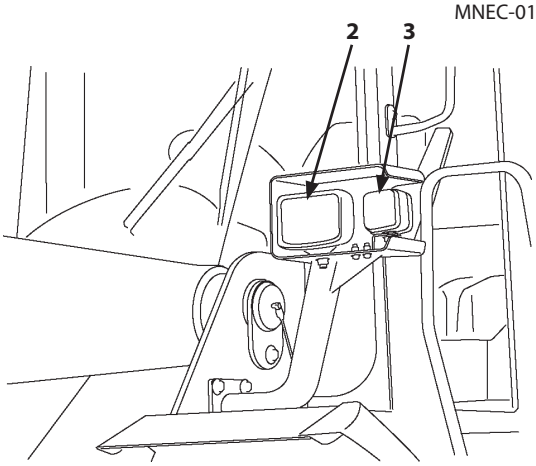
Light Switch Position	Headlight	Clearance Light	Tail Light	Monitor Panel Light
OFF	✕	✕	✕	✕
≡D	✕	☼	☼	☼
≡D	☼	☼	☼	☼

NOTE: The light switch position ≡D keeps lit even if the key switch is turned OFF. It is used as a parking light when parking the machine by a public road.

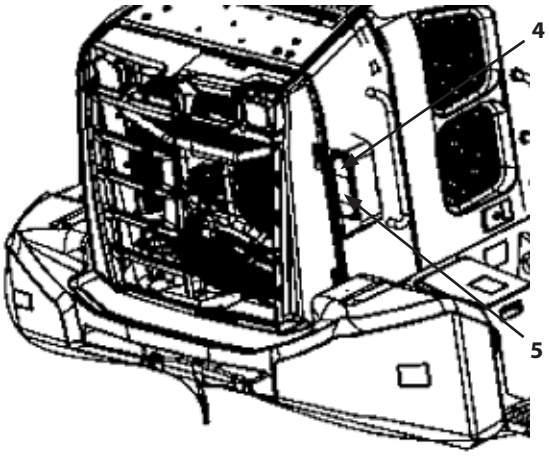
IMPORTANT: Do not hold the switch position at "ON" for a long time with the engine stopped. The batteries will become discharged.



MNEC-01-038



M4GB-01-153



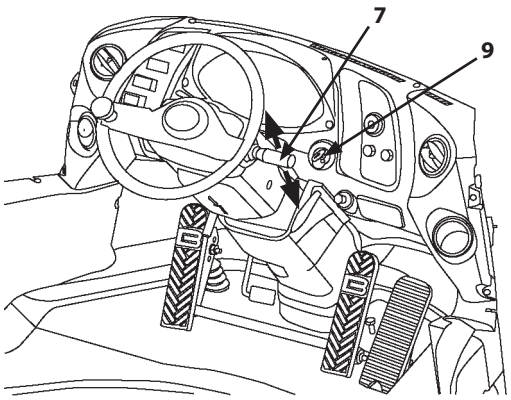
70MPD8-01-02

High-Low Beam Switch

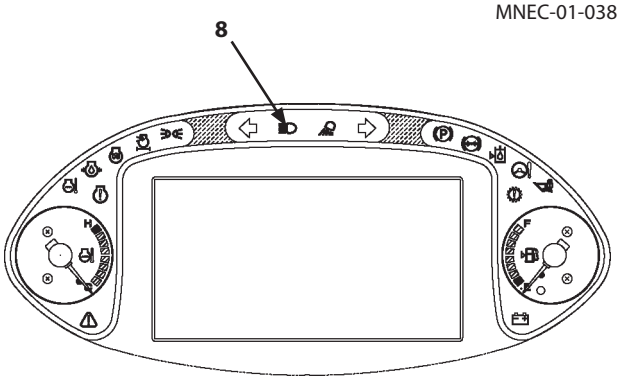
Shifts the headlight beam between high and low.

CAUTION: Travel the machine with the headlight in the low beam position when other vehicles are present in the vicinity.

By bringing down the signal lever (7) with the headlight ON, the headlight beam turns upward, and the high beam indicator (8) comes ON. By bringing up the signal lever (7), the headlight beam turns downward, and the high beam indicator (8) goes OFF.



MNEC-01-038

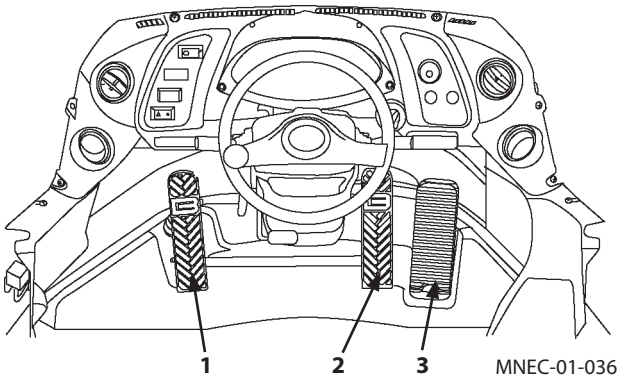


MNEC-01-073

Accelerator Pedal

When accelerator pedal (3) is applied, the engine speed increases. When released, the engine speed decreases.

NOTE: The engine speed may change due to the machine control regardless of the operation of the accelerator pedal.



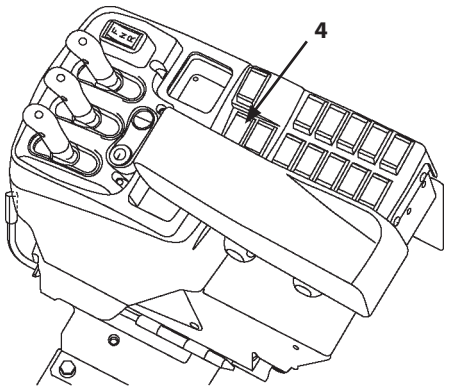
MNEC-01-036

Brake Pedal

WARNING:

- **Avoid sudden brake application when moving machine, possibly creating a hazardous situation. The machine may lose its balance.**
- **Unless necessary, do not rest your foot on the brake pedal to prevent the brake pads, discs, and clutch from wearing out prematurely.**
- **Keep the areas around the brake pedals clean to prevent dust and/or grit from accumulating. The brake may not be fully released and become inoperable.**

Left and right brake pedals (1), (2) can function as the service brake. Left pedal (1) also functions as declutch brake by switching declutch position switch (4).



Fingertip Control Type

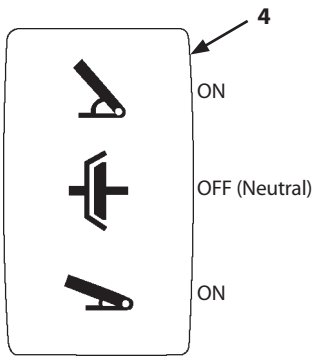
MNEC-01-041

Service Brake

Brake pedals (1), (2) function as normal brake by setting declutch position switch (4) to OFF (Neutral) position. Be sure to turn clutch cut position switch (4) OFF (Neutral) before traveling down or on a slope.

Declutch Brake

Brake pedal (1) functions as a declutch brake by setting declutch position switch to the ON . Use this mode when performing loading work or while stopping machine.



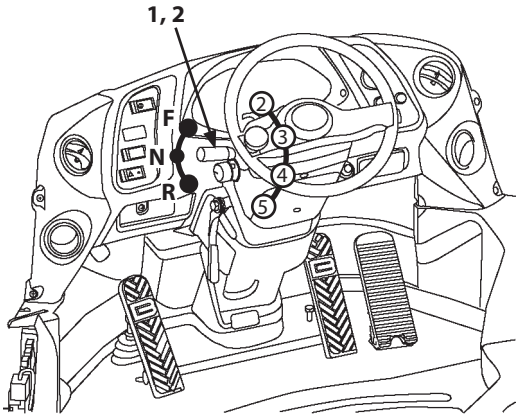
MNEC-01-025

Forward/Reverse Lever/ Shift Switch

Forward/Reverse Lever

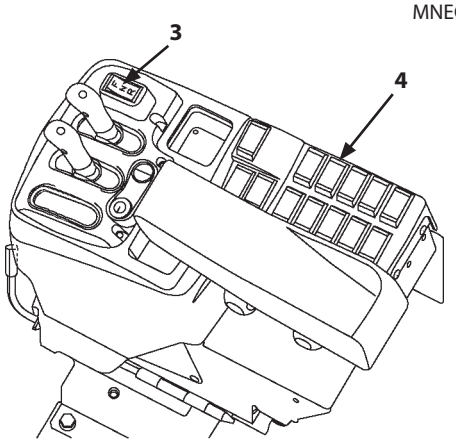
Changes the machine drive direction from forward to reverse and vice versa.
Move forward/reverse lever (1) to the F position to travel the machine forward.
Move forward/reverse lever (1) to the R position to drive the machine in reverse.

IMPORTANT: Never attempt to shift forward/reverse lever (1) while letting the machine travel at high speed (3rd, 4th or 5th speed). Failure to do so will cause engine to have excessively high RPM's, leading to hazardous situation. Also, it may cause damage to the transmission.



MNEC-01-037

NOTE: The engine will not be started unless the forward/ reverse switch (3) and forward/reverse lever (1) are in the neutral position. For safety, turn the forward/reverse selector switch (4) in the OFF position. Refer to page 1-97 for forward/reverse selector switch (4).



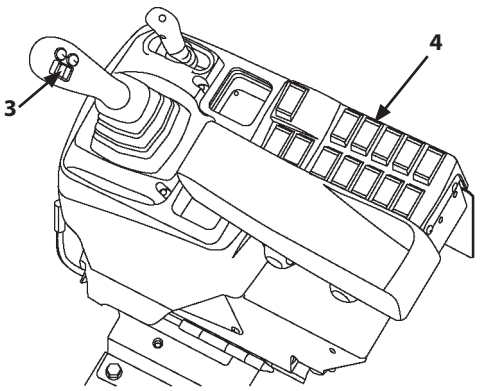
Fingertip Control Type
MNEC-01-526

Shift Switch

Rotate shift switch (2) to shift the gear.
Forward : 2nd-5th Speed
Reverse : 2nd-3rd Speed

Select a proper shift for the work.

IMPORTANT: The forward/reverse lever and shift switch are designed to operate with low effort.
Do not press and twist the lever and switch firmly.
Damage to the lever and switch may result.



Multi-Function Joystick Type
MNEC-01-043

Wiper Switch

Wiper Operation

IMPORTANT: The windshield surface, the wiper blade, the wiper motor and the relay may be damaged due to dry or frozen condition of the wiper blade and the windshield.

- Before operating the windshield wiper, remove snow, ice or dust heavy debris from the windshield surface. If the windows are frozen over, defrost them.
- Use anti-freeze type washer fluid in freezing weather.
- Squirt windshield washer fluid on the dry windshield before operating the wiper. Besides, continuous operation of the wiper with windshield at semiarid condition (sprinkling of snow or rain) may cause failure of the wiper. Use wiper intermittently to protect it from damage.
- In case of machine equipped with hot-wire heater (for windshield), continuous operation of the windshield wiper with the heater switch kept ON for a long time may cause the wiper blades to be burnt damaged by heat.
- Inspect the wiper blades weekly. Replace as necessary.

Front/Rear Wiper Switch

Operate wiper switch (1) to move the front and rear windshield wipers.

IMPORTANT: The washer motor may become damaged if washer fluid is continuously used for more than 20 seconds or the washer motor pump switch is operated with no fluid in the washer tank. Take care about the switch operation time and the fluid level in the washer tank.

Do not operate the washer motor for too long and keep the washer fluid at the correct level. In freezing weather, use windshield washer solvent that will not freeze.

: The front windshield wiper operates at fast speed.

: The front windshield wiper operates at slow speed.

INT : The front windshield wiper intermittently operates.

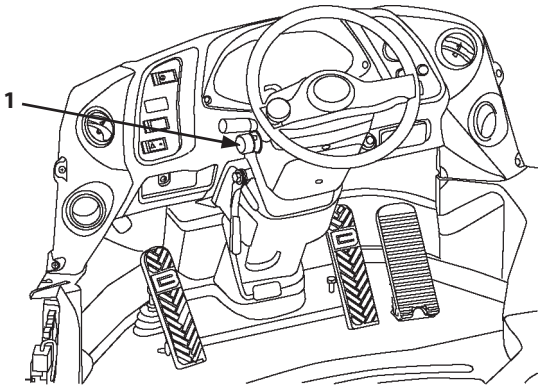
OFF : The front windshield wiper stops moving and the wiper blade is returned to the pre-start position.


: Washer fluid squirts from the front nozzle and the front windshield wiper operates.

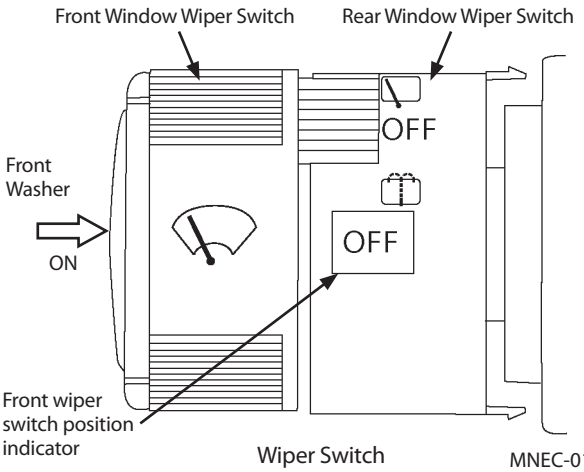

: Washer fluid squirts from the rear nozzle and the rear windshield wiper operates.


: Rear windshield wiper operates.

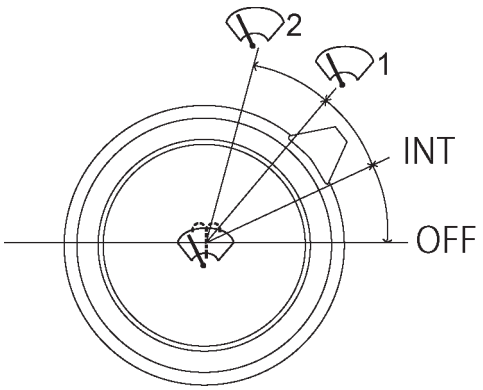

: Washer fluid squirts from the rear nozzle.



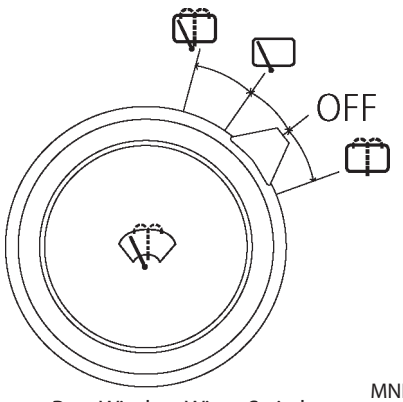
MNEC-01-037



Wiper Switch
MNEC-01-075

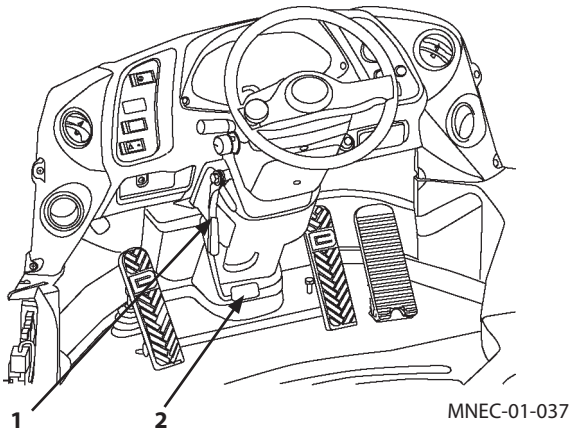


Front Window Wiper Switch
MNEC-01-076



Rear Window Wiper Switch
MNEC-01-077

Tilt, Telescopic Lever/Steering Column Tilt Pedal



MNEC-01-037

WARNING:

- **Before operating the machine, be sure that the steering wheel is locked.**
- **Do not operate the tilt, telescopic lever (1) and steering column tilt pedal (2) during operation.**

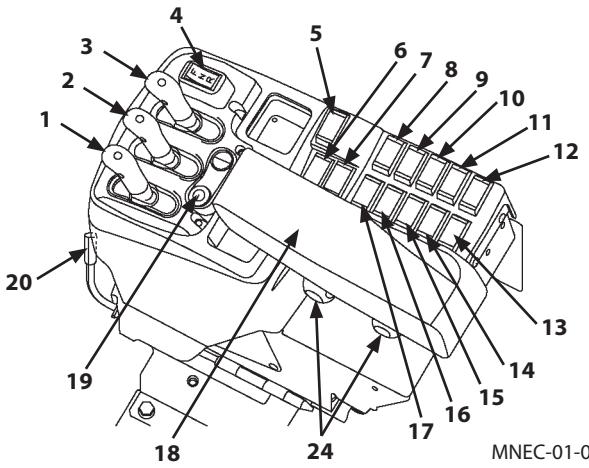
- Before operating the machine, adjust the steering column inclination so as to match the operator's needs.
  Pull lever (1) to set the steering column inclination to the desired position. Push lever (1) until it contacts the stopper, ensuring the steering column is locked.
- By depressing steering column tilt pedal (2), the steering column moves forward, and the distance between the operator's seat and the steering wheel increases, allowing operator to get in and out of the machine easily.
- After moving the steering column forward, pull the steering wheel toward the operator. The steering column will be automatically locked in the regular position and the machine becomes operable.

CAUTION: Never attempt to drive the machine while moving the steering column.

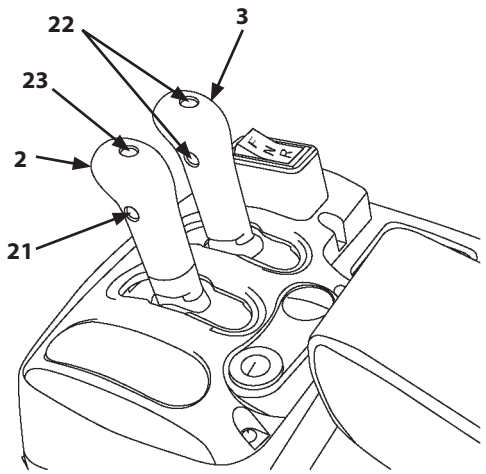
Right Console / Switches

Fingertip Control Type

1- Auxiliary Control Lever (Option)
2- Bucket Control Lever
3- Lift Arm Control Lever
4- Forward/Reverse Switch
5- Loading Control Lever Lock Switch
6- Declutch Position Switch
7- Travel Mode Selector Switch
8- Power Mode Selector Switch
9- Forward/Reverse Selector Switch
10- Fan Reverse Rotation Switch
11- (Not used)
12- Hydraulic Coupler Switch (Option)
13- Secondary Steering Operation Check Switch (Option)
14- Aftertreatment Device Regeneration Switch
15- (Not used)
16- 1st Speed Fixed Switch
17- Ride Control Switch (Option)
18- Armrest
19- Hold Switch
20- Right Console Slide Lever
21- Quick Power Switch
22- DSS (Down Shift Switch)
23- Horn Switch
24- Armrest Adjust Handle



MNEC-01-041



MNEC-01-042

Loading Control Levers

The lift arm control lever and the bucket control lever are used to operate the lift arm and/or bucket.

Lift Arm Control Lever (1)

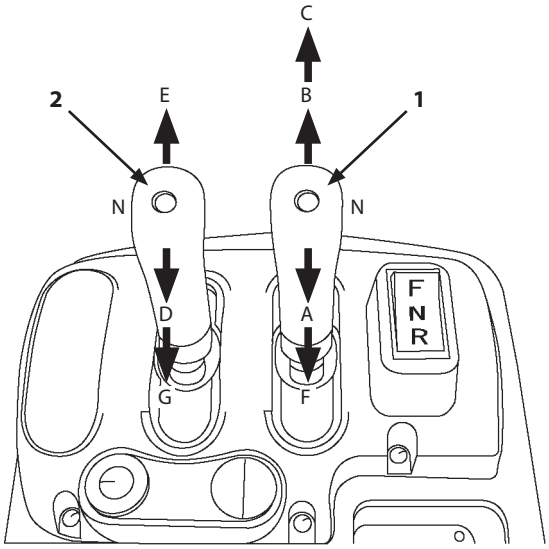
Lever Position	Lift Arm Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied. The lever will stay in this position.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position with the detent.

Bucket Control Lever (2)

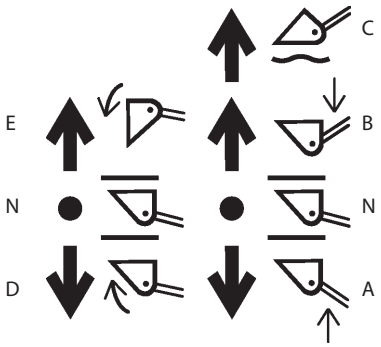
Lever Position	Bucket Operation
E	Bucket Dump: The bucket is tilted forward to dump the bucket.
N	Hold: The bucket is stopped and held in that position.
D	Bucket Tilt (or roll back): The bucket is tilted back; (also this is the transportation position).
G	Detent: When the bucket control lever is moved from the bucket dump position to the bucket tilt (or roll back) position, the bucket control lever is held in this position with the detent.

NOTE:

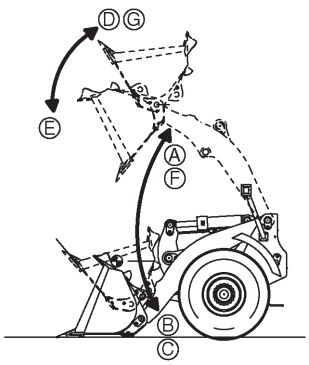
- *When applying the lift arm control lever (1) in the "Raise" position (A), the lever is moved (F) until the lift arm reaches the position set at the height kickout. When the lift arm moves to the preset position, lift arm control lever (1) automatically moves to "Neutral" (N) position.*
- *When applying the bucket control lever (2) in the "Tilt" position (D) after bucket dump operation; the lever is moved (G) until the bucket moves to the position preset by the bucket auto leveler. When the bucket moves to the preset position, bucket control lever (2) automatically moves to "Neutral" (N) position.*



MNEC-03-003



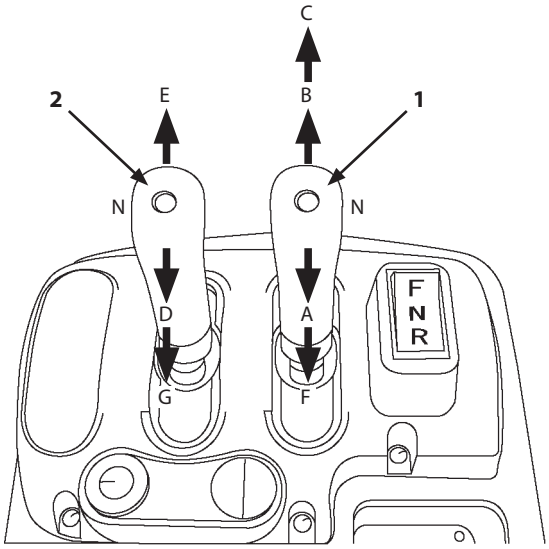
M4GB-01-072



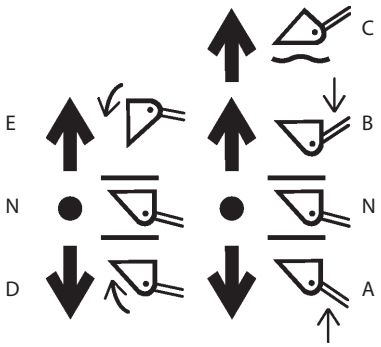
M4GB-01-073

- *When pushing down the lift arm control lever to the "Float" position (C), the lift arm moves to the position preset at lower kickout and is held in that position. When the lift arm moves to the preset position, the lift arm control lever automatically moves to "Neutral" (N) position.*

NOTE: When operating the machine in the Float (C) position, lower the bucket on the ground by setting the lift arm lower position (B), and then tilt the lever to the Float position.

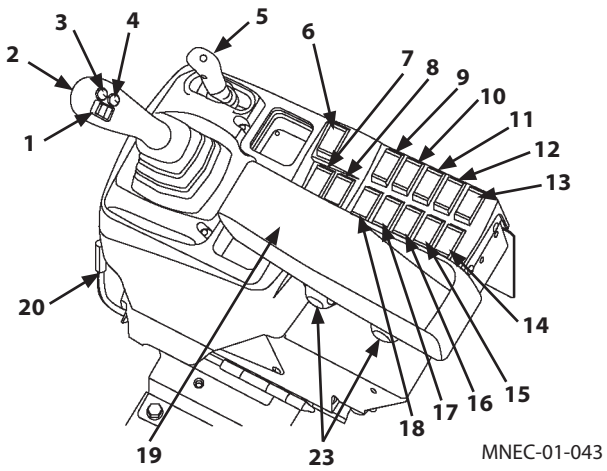


MNEC-03-003

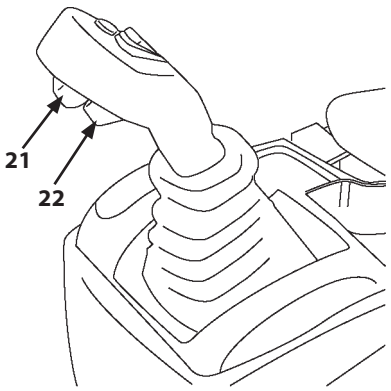


M4GB-01-072

Right Console / Switches



MNEC-01-043



MNEC-01-044

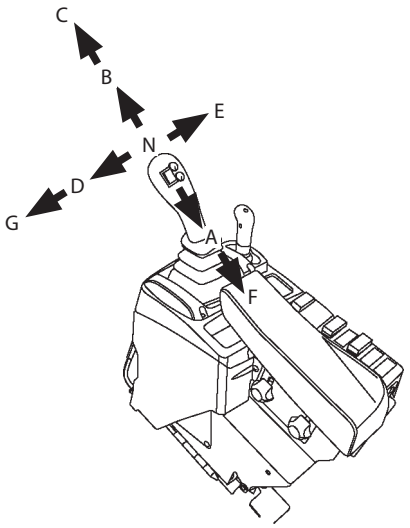
Multi-Function Joystick Type

1- Forward/Reverse Switch
2- Multi-Function Joystick Lever
3- Quick Power Switch
4- DSS (Down Shift Switch)
5- Auxiliary Control Lever (Option)
6- Loading Control Lever Lock Switch
7- Declutch Position Switch
8- Travel Mode Selector Switch
9- Power Mode Selector Switch
10- Forward/Reverse Selector Switch
11- Fan Reverse Rotation Switch
12- (Not used)
13- Hydraulic Coupler Switch (Option)
14- Secondary Steering Operation Check Switch (Option)
15- Aftertreatment Device Regeneration Switch
16- (Not used)
17- 1st Speed Fixed Switch
18- Ride Control Switch (Option)
19- Armrest
20- Right Console Slide Lever
21- Hold Switch (Under the Lever)
22- Horn Switch (Under the Lever)
23- Armrest Adjust Handle

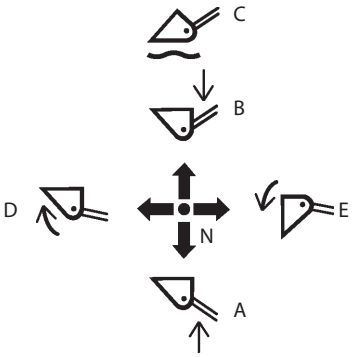
Loading Multi-Function Joystick Lever (Option)

The multi-function joystick lever is used to operate the lift arm and/or bucket.

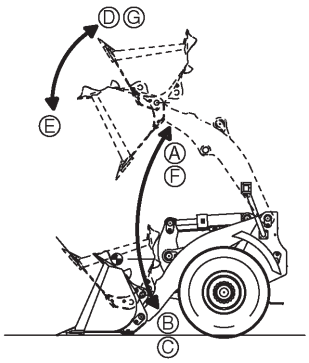
Lever Position	Bucket Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied. The lever is held in this position.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position.
G	Detent: When the multi-function joystick lever is moved from the bucket dump position to the bucket tilt position, the multi-function joystick lever is maintained in this position.
D	Bucket Tilt: The bucket is tilted back, taking the transportation position.
N	Hold: The bucket is stopped and held in that position.
E	Bucket Dump: The bucket is tilted forward to dump the bucket load.



MNEC-01-059



M4GB-01-074

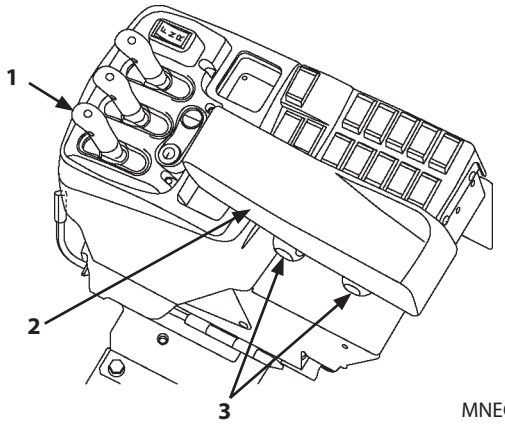


M4GB-01-073

Auxiliary Control Lever (Option)

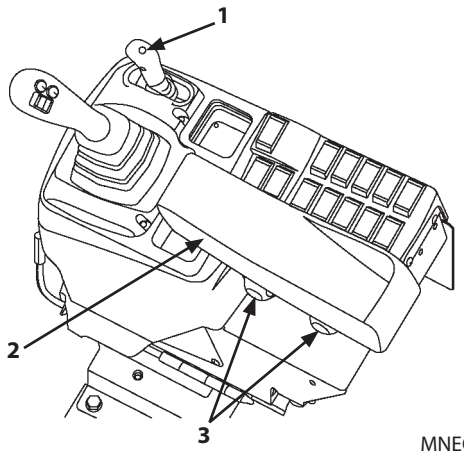
An optional control lever (1) can be installed to control the attachment.

Refer to the operator's manual for the attachment how to use this lever.



MNEC-01-041

Fingertip Control Type



MNEC-01-043

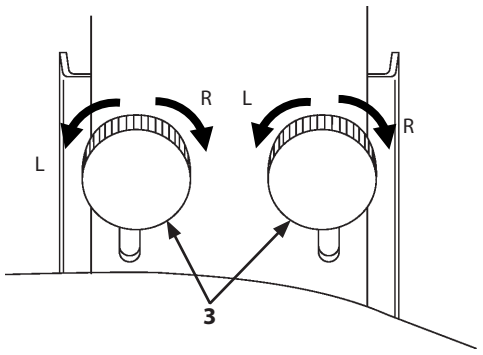
Multi-Function Joystick Type

Armrest Adjust Handle

Armrest (2) is provided so that the operator can operate the lever with an arm on it for comfort and ease.

Loosen handle (3) and position the armrest height to fit the operator's preference, tighten handle (3) to fix armrest (2).

L : Loosen
R : Tighten



M4GB-01-077

Forward/Reverse Selector Switch

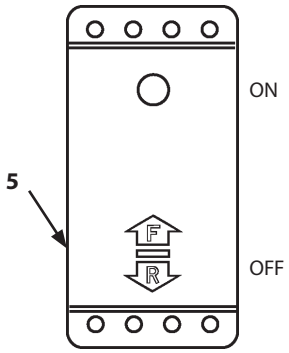
Forward/reverse selector switch (5) is a switch that activates forward/reverse switch (23). When forward/reverse selector switch (5) is in ON position, the machine travels in the forward or reverse direction by selecting the (F) or (R) side of forward/reverse switch (23).

Operational Procedure

1. Turn the parking brake switch OFF.

WARNING: At this time, be sure to depress the brake pedal to ensure safety.

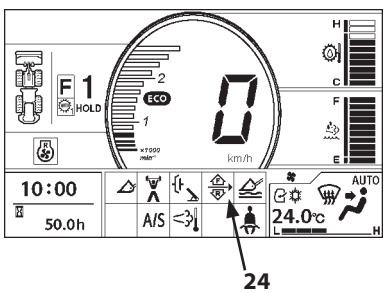
2. When forward/reverse selector switch (5) is turned ON while both forward/reverse lever (22) and forward/reverse switch (23) are in the neutral (N) position, forward/reverse indicator (24) is shown.



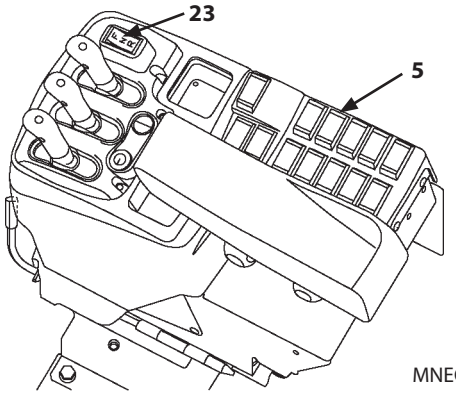
M4GB-01-083

3. Set forward/reverse switch (23) to (F) or (R).

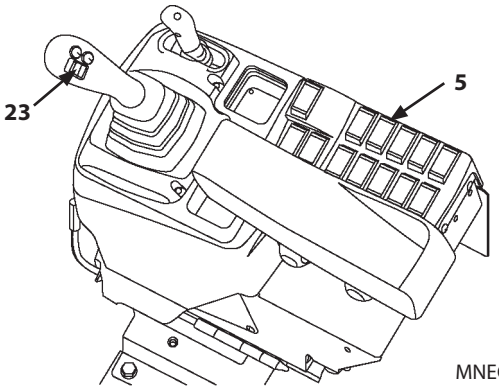
NOTE: The forward/reverse lever (22) has priority over the forward/reverse switch (23). When the forward/reverse lever (22) is applied while the forward/reverse switch (23) is engaged, priority is given to the lever (22), not the switch (23).
Perform step 2 above to use the forward/reverse switch (23).



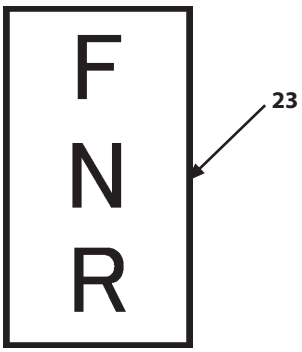
MPD8-01-100EN



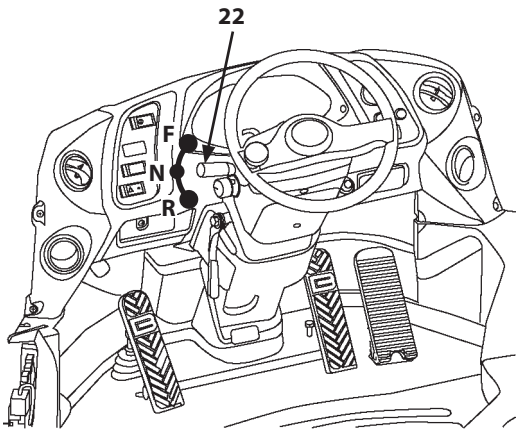
MNEC-01-041



MNEC-01-043



M4GB-01-084



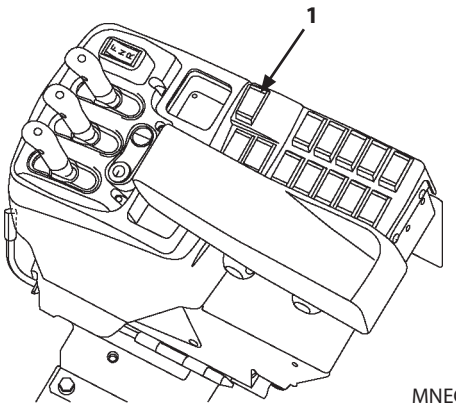
MNEC-01-037

Loading Control Lever Lock Switch

WARNING:

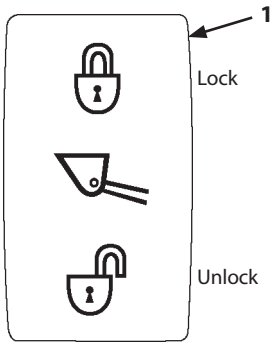
- **Before leaving the operator's seat, be sure to stop the engine. Place the boom and bucket in a level, safe position. Then, set control lever lock switch (1) to the lock (🔒) position.**
- **Always check to be sure that the control lever lock switch is set in the lock (🔒) position before transporting the machine or leaving the machine at the end of the shift.**

Refer to page 5-4 for details.



MNEC-01-041

Control lever lock switch (1) is provided to prevent unexpected machine operation, if the operator mistakenly comes in contact with the bucket and/or lift arm control lever when getting on or off the machine.
When control lever lock switch (1) is placed to unlock (🔓) position, the loading control lever becomes operable.



MNEC-01-015

Declutch Position Switch

Declutch position switch (2) changes the function of left brake pedal.
Operating declutch position switch (2) turns the declutch function ON and OFF.

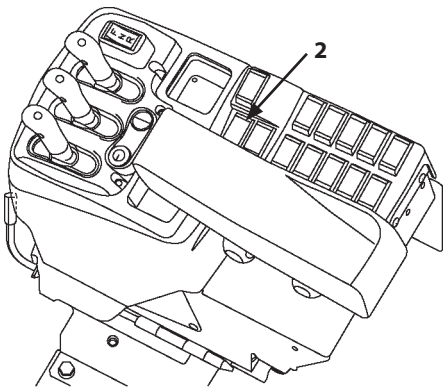
- Declutch ON
  By depressing left brake pedal, the clutch is disengaged and brake is applied without transmitting the drive power to the tires.

  : Clutch disengages while lightly depressing the left brake pedal: (Suitable for loading work on a level surface.)

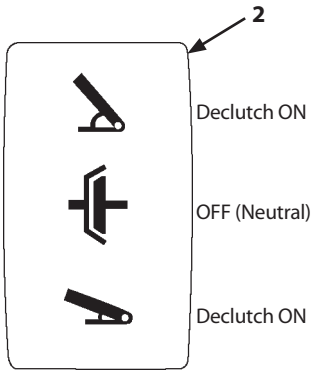
  : Clutch disengages while deeply depressing the left brake pedal: (Suitable for work on a slope.)

- Declutch OFF
  When depressing left or right brake pedal, brake is applied while driving power is transmitting to the tires.

NOTE: When starting to ascend a slope, turn declutch position switch (2) OFF (neutral), depress the left brake pedal. Gradually release the left brake pedal while depressing the accelerator pedal to easily start ascending the slope.

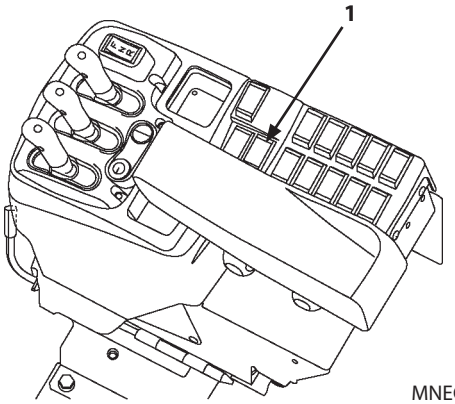


MNEC-01-041



MNEC-01-025

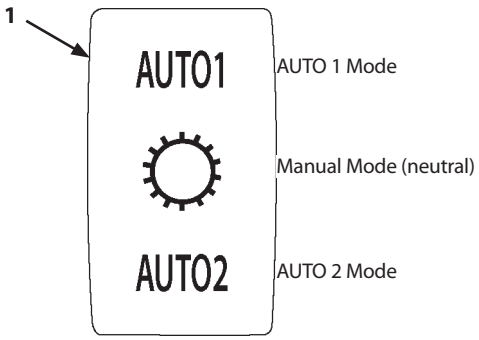
Travel Mode Selector Switch



MNEC-01-041

Travel mode selector switch (1) selects the travel mode. Selecting the manual mode "☼" by using travel mode selector switch (1) switch 1 sets the transmission to manual mode, which allows manual shift change by using shift switch (2). AUTO 1 and AUTO 2 are choices selectable at auto-shift mode. Select the most efficient mode for the travel and work condition.
Be sure to stop the machine and set forward/reverse lever (2) in the neutral (N) position before operating travel mode selector switch (1).

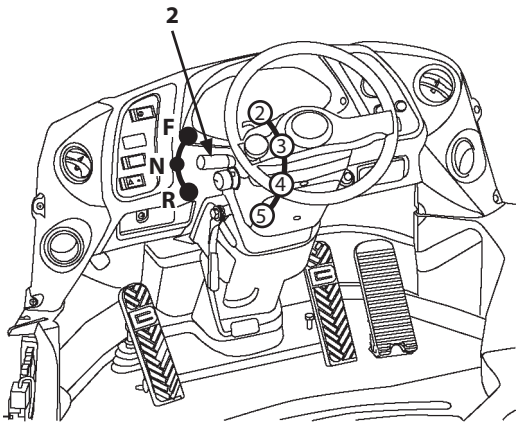
Manual Mode	:	Manual gear shift (The gear shifts according to the shift switch.)
AUTO 1 Mode	:	Starts out traveling at 2nd speed. When traveling load increases, it automatically shifts from 2nd to 1st speed. (Auto DSS function) This mode is suited for heavy digging work or climbing a slope.
AUTO 2 Mode	:	Starts out traveling at 2nd speed. This mode shifts between 2nd ~ 3rd ~ 4th ~ 5th speeds. This mode is suited for loading loose material, removing snow or a similar application.



MNEC-01-024

Refer to "MOVING THE MACHINE" section.

NOTE: The AUTO 1 mode shifts up to the set shift lever position. When the shift switch lever is set to 4th speed, auto-shift range is 1st to 4th speed. When the shift switch in set to 3rd speed, auto-shift range is 1st to 3rd speed.



MNEC-01-037

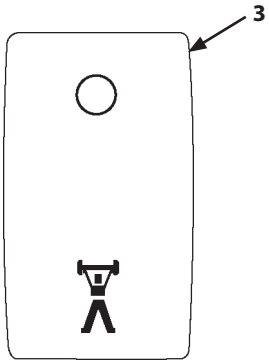
Power Mode Selector Switch

Two operation modes are available and can be selected by power mode selector switch (3) depending on the applications.

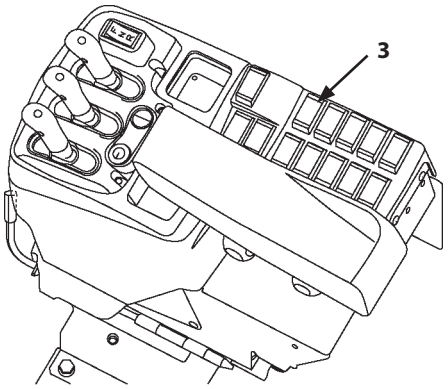
Each time the switch is pressed, the power mode is activated (ON) and deactivated (OFF) alternately.

Power mode (ON)	:	The power mode is suitable for heavy digging work prioritizing work effectiveness. Under auto shifting mode, the gear is shifted in regular engine RPM's (min^{-1}) and shift mapping.
Power mode (OFF)	:	When the power mode is turned OFF, the machine operates putting more emphasis on lowering fuel consumption. Under auto shifting mode, the gear is shifted with lower engine RPM's (min^{-1}) and shift mapping.

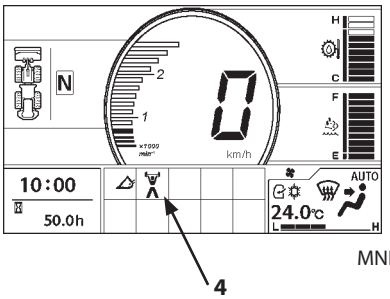
When the power mode is activated, the power mode indicator ( ) (4) is displayed on the monitor screen.



MNEC-01-016

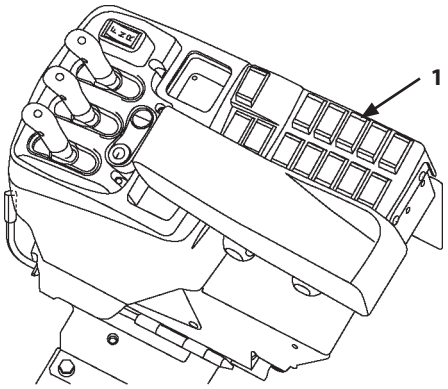


MNEC-01-041



MNEK-01-103EN

Fan Reverse Rotation Switch



MNEC-01-041

Fan reverse rotation switch (1) reverses the hydraulic driven fan. In case the radiator is clogged, rotate the hydraulic driven fan in reverse direction to blow out the clogged dust. It is recommended to carry out the fan reverse rotation regularly to prevent the cooling system from clogging.

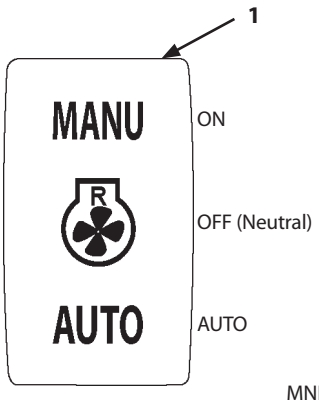
OFF

When fan reverse rotation switch (1) is set to OFF position, the fan turns in normal direction.

AUTO

When fan reverse rotation switch (1) is set to AUTO position, the fan automatically reverses rotation and then return to the normal direction.
Normal rotation → Reverse rotation → Normal rotation →
The fan rotates in the normal direction for 10 minutes for the first time.
After that it keeps normal rotation for 30 minutes. The reverse rotation time is 60 seconds (1 minute). (90 seconds (1.5 minutes) at low temperature)

In case abnormal situation occurs such as engine coolant overheating or high refrigerant pressure of the air conditioner, the duration time of reverse rotation may be shortened to protect devices from damage.



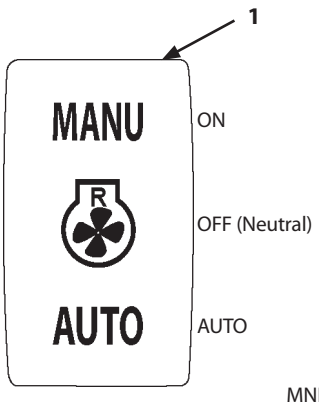
MNEC-01-019

NOTE: After depressing the AUTO side of this switch, the fan auto-reversing function remains activated as the switch position is kept being depressed until it is manually returned to OFF or ON position.

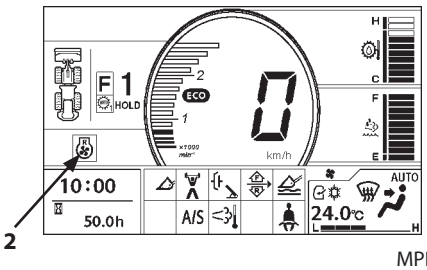
Manual Operation

IMPORTANT:

- **Fan rotating direction can be manually changed when the engine is running. Each time the ON side of fan reverse rotation switch (1) is pressed, the fan's rotating direction switches alternatively. While switching the fan rotating direction, fan reverse rotation indicator (2) flashes. When the fan rotates in reverse direction, indicator (2) stays ON. When fan reverse rotation switch (1) is pressed while fan reverse rotation indicator (2) turns ON, indicator (2) starts flashing. When the fan rotates in normal direction, fan reverse rotation indicator (2) goes OFF. Do not press fan reverse rotation switch (1) while indicator (2) is flashing.**
- **Always operate the switch while parked with the parking brake. When the parking brake is released, the fan reverse condition is automatically canceled after 1 minute. In case abnormal situation occurs such as engine coolant overheating, reverse rotation may forcibly be stopped, or fan reverse rotation switch may be disabled.**



MNEC-01-019



MPD8-01-100EN

1. Close the side cover and the rear grille before operating the switch.
2. Start the engine. Be sure to confirm that the parking brake is applied. Press ON side of fan reverse rotation switch (1) once. Fan reverse rotation indicator (2) should start flashing. Approximately 1 minute later, the fan rotates in reverse direction, and fan reverse rotation indicator (2) stays ON.
3. After operation, press fan reverse rotation switch (1) again to return the fan rotation to the normal direction.

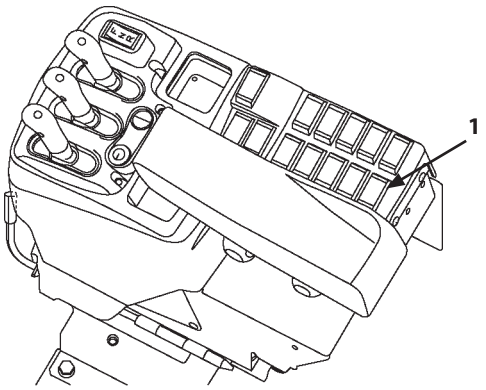
Hydraulic Coupler Switch (Option)

An optional hydraulic coupler switch can be installed. Refer to the operator's manual for the optional switch for information.

Secondary Steering Operation Check Switch (Option)

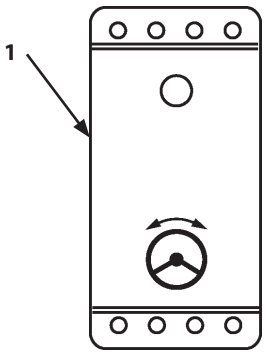
Use this switch to check if the secondary steering pump is operable.
While the ON side of switch (1) is being pressed, secondary steering pump operates.
Secondary steering indicator (2) lights ON while the pump is operating.
After checking, release switch (1) to turn it OFF.

IMPORTANT: Conduct test only within 2 second.

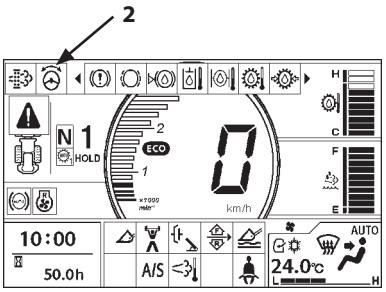


Fingertip Control Type

MNEC-01-041



M4GB-01-088



MPD8-01-290EN

Aftertreatment Device Regeneration Switch

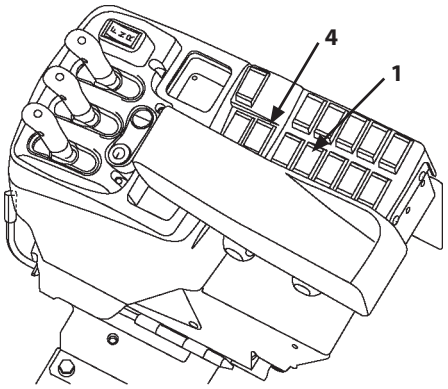
Use this switch to start the aftertreatment device manual regeneration procedures when it is requested.
Refer to page 5-11 for details.

1st Speed Fixed Switch

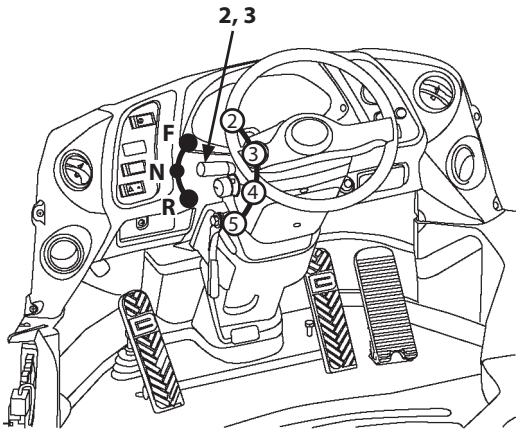
Turning this switch ON fixes the transmission gear to the 1st speed. Be sure to stop the machine and set forward/reverse lever (2) in the neutral (N) position before operating 1st speed fixed switch (1).

1st Speed Fixed (ON):
Set shift switch (3) to 2nd speed.
Push the ON side of 1st speed fixed switch (1).
The transmission gear is fixed to 1st speed regardless of the position of travel mode selector (4).

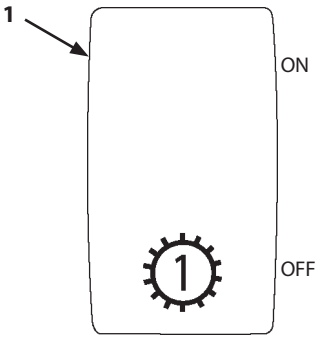
1st Speed Fixed (OFF):
Push the OFF side of 1st speed fixed switch (1).



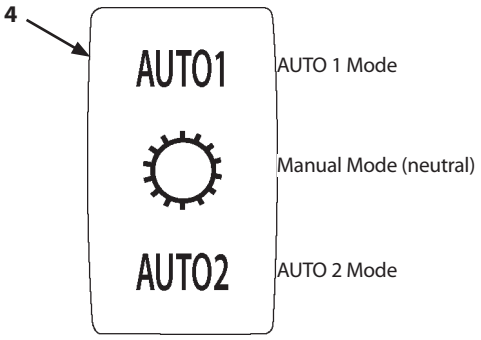
MNEC-01-041



MNEC-01-037



MNEC-01-502



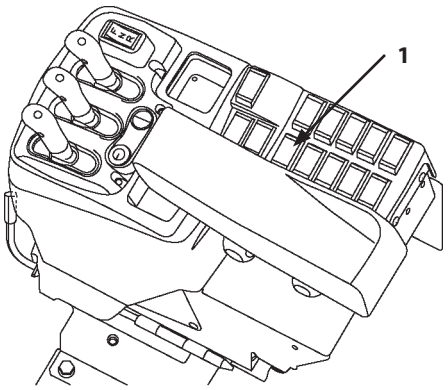
MNEC-01-024

Ride Control Switch (Option)

WARNING:

- **To ensure safety, operate the ride control switch only after parking the machine with the bucket lowered to the ground.**
- **When operating the machine with the front attachment in the float position (scooping, grading, or snow removal), always turn the ride control switch OFF. Failure to do so may allow the front attachment to unexpectedly move up or down when the ride control system is activated.**
- **When operating the machine with the ride control ON, control the machine speed so as not to cause sudden impacts to the machine. Ride control accumulator will carry high pressure causing gas leakage.**

The ride control system dampens the vertical movement of the front attachment during operation so that comfortable machine ride quality is obtained. As stable drive operation is achieved, bucket load spill can be lessened.



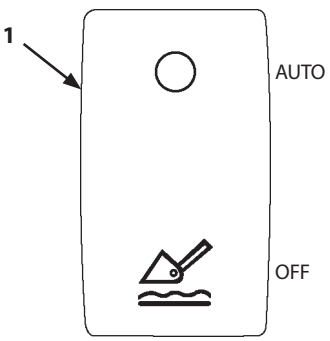
MNEC-01-041

AUTO

When ride control switch (1) is turned to AUTO, the drive speed sensor and the controller is activated. Then, when the drive speed increases above the preset travel speed, the ride control system automatically operates.
When the drive speed decreases below the preset travel speed, the ride control system becomes inoperable.
When ride control switch (1) is turned to AUTO mode, the ride control indicator (2) on the monitor display comes ON.

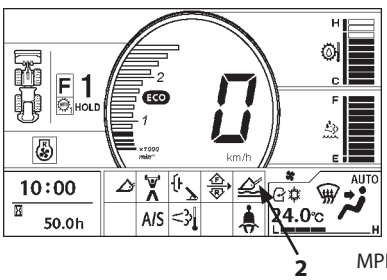
OFF

When ride control switch (1) is turned OFF, ride control indicator (2) on the monitor display goes OFF and the ride control system becomes inoperable.
When the key switch is in the OFF position, the ride control system does not operate even if ride control switch (1) is in the AUTO position. When the engine is stopped while ride control switch (1) is in AUTO, the ride control is turned OFF.



Only AUTO is provided

MNEC-01-022



MPD8-01-100EN

Hold Switch

Press hold switch (1) while letting the machine travel in the auto shift mode, and the machine holds the speed gear range that is currently displayed on the monitor.
Operate one of the following to release the hold function: Press the hold switch again, Change the gear range, Change the travel mode, or Press DSS (down shift switch).

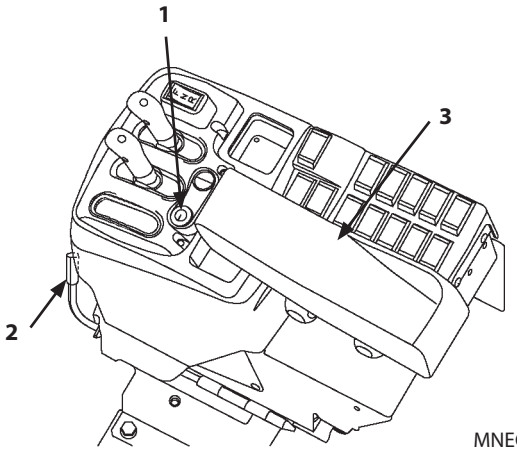
Right Console Slide Lever

Adjust the position of the right console as follows.

1. While tilting lever (2) to the right, adjust the position of the right console by sliding it back or forth. Holding and moving armrest (3) maybe easier to move the console.

   Slide quantity: 90 mm (3.5 in)

2. After the adjustment, put back lever (2) to the original position.



MNEC-01-526

Quick Power Switch

By pressing quick power switch (4) when the power mode is OFF, the power mode is temporarily activated. (The power mode indicator on the monitor shows symbol ( ).)

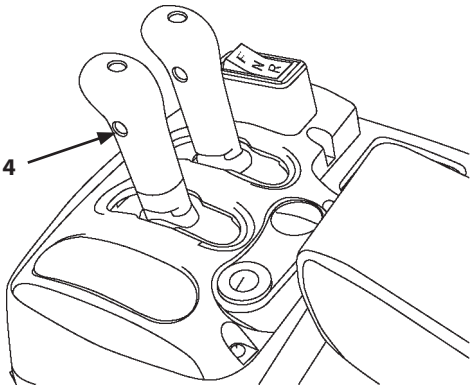
NOTE: The quick power switch is operable only in the following cases.

- *An added push is needed during digging (tractive) operation.*
- *Need a little more acceleration or travel speed while ascending on a slope.*

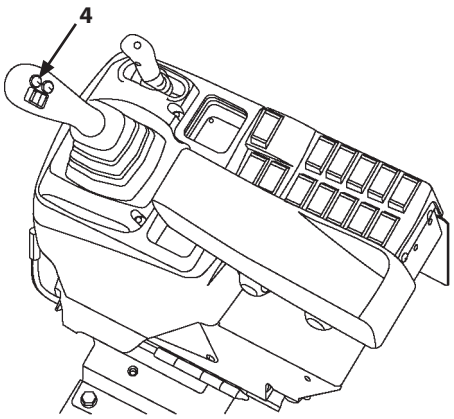
When operating under low load or the forward/reverse lever is in "Neutral" (N) position, the mode will not change to power mode even if quick power mode switch is pressed. The switch selection is ruled invalid.

Also, even if the machine is in the power mode, it is canceled when the following conditions are met.

- When operating load is decreased while digging.
- When the quick power mode switch is pressed.
- The forward/reverse lever or forward/reverse switch is shifted.
- While driving in the auto-shift mode, the gear shifts up to the selected gear stage.



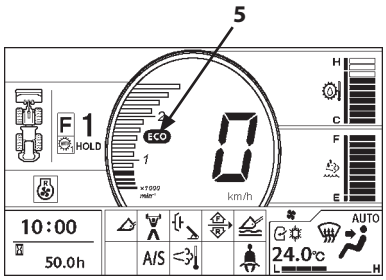
MNEC-01-042



MNEC-01-043

DSS (Down Shift Switch)

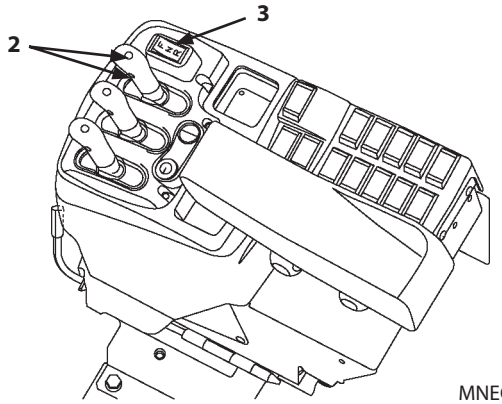
Press DSS (2) to down shift the gear.
Set the shift gear to 2nd speed for normal operation.
By pressing DSS (2) while digging with the machine in forward, the gear automatically shifts to 1st speed, which increases drive force and digging force.
Once the forward/reverse lever (4) or forward/reverse switch (3) is set to reverse (R), the gear returns to 2nd speed.



MPD8-01-100EN

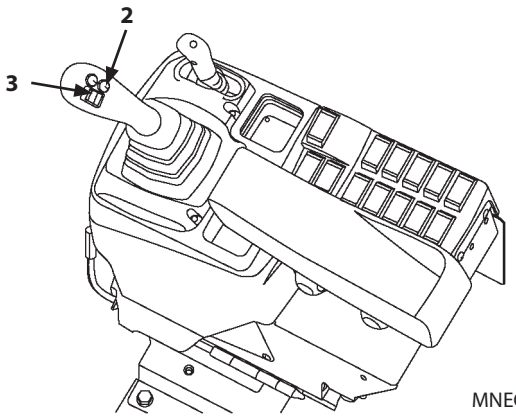
Press DSS (2) when ECO indicator (5) turns OFF while operating on a slope or during snow removal.
In this case, the gear temporarily shifts down to 1st speed by pressing DSS (2), but it automatically returns to 2nd speed when traveling load is reduced.

NOTE: When in auto shift mode or manual shift mode, each time DSS (2) is pressed, the gear down shifts to 1st speed. When in auto shift mode, press and hold DSS (2) to down shift from 5th speed, 4th speed, 3rd speed, 2nd speed, and then to 1st speed.



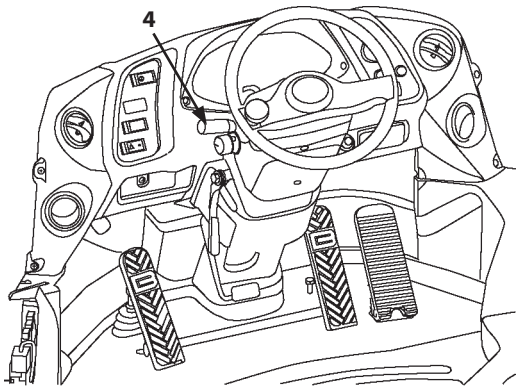
MNEC-01-041

Fingertip Control Type



MNEC-01-043

Multi-Function Joystick Type

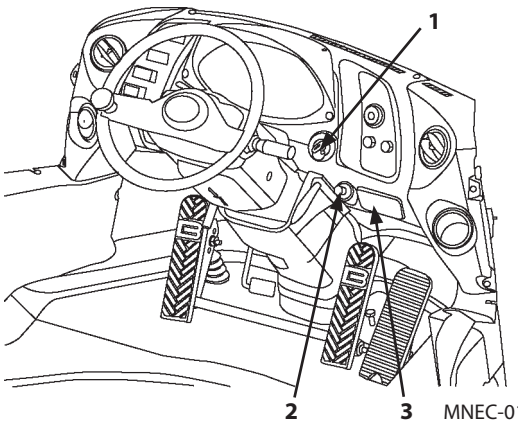


MNEC-01-037

Horn Switch

Press horn switch to sound the horn. Refer to page 1-85 for more information.

Cigar Lighter (24 V DC Electrical Outlet)



MNEC-01-038

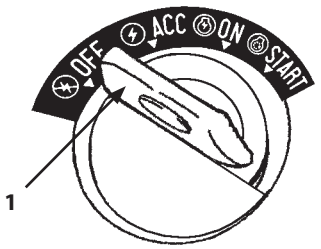
Using Cigar Lighter

WARNING: Never touch other than insulated the knob part. Otherwise, it may result in severe burns.

CAUTION: Do not power anything other than a genuine Hitachi Construction Machinery electrical device from the cigar lighter port.

IMPORTANT: In case the cigar lighter does not pop out automatically after 30 seconds after pushing the cigar lighter in, pull out the cigar lighter manually. Then, consult the your nearest authorized dealer.

1. Turn the key switch (1) ON.
2. Press and release the lighter knob (2).
3. The cigar lighter knob will return to the original position when the lighter becomes hot. Pull the cigar lighter out to use.
4. After using the cigar lighter, insert the cigar lighter into the panel until the knob is seated in the original position and not pressed in.



M4GB-01-089

Ash Tray

WARNING: Take precautions against fires.

Use this ash tray (3) when smoking in the cab.

Auto Air Conditioner

Feature

- Full Auto-Temperature Control:
  Automatically controls the cab temperature to maintain the temperature set by the temperature control switch regardless of outside air temperature and insolation.

- Max. Cooling and Heating:
  Maximum cooling or heating can be obtained by rotating the temperature control switch clockwise (32 °C)(90°F) or counterclockwise (18 °C)(64°F) respectively.

- Preheating:
  During preheating the cab in winter with the foot vent selected, the air volume is reduced to Low until the coolant temperature rises to prevent cool air from entering the cab.

NOTE: Even in the summer season, the engine high idle speed may be higher when cool than the normal operating temperature speed due to quick warm-up mode.

Components Name

1- Monitor

2- Control Panel

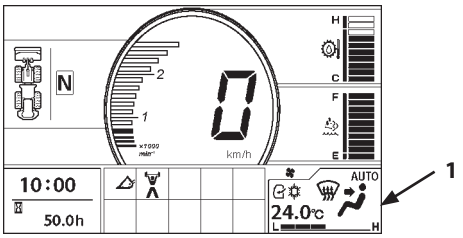
3- Temperature Control Switch (Rotate)/Mode Switch (Press)

4- Defroster Switch

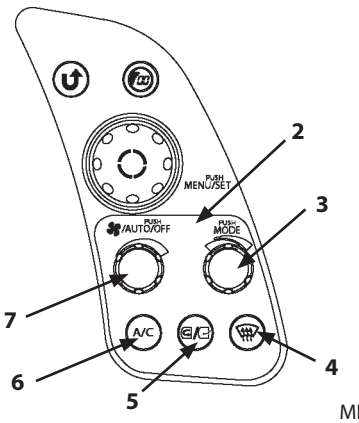
5- Circulation/Fresh Air Switch

6- Air Conditioner ON/OFF Switch

7- Fan (Rotate)/Auto Switch (Press)



MNEK-01-103EN



MNEC-01-006

8- Defroster Vent

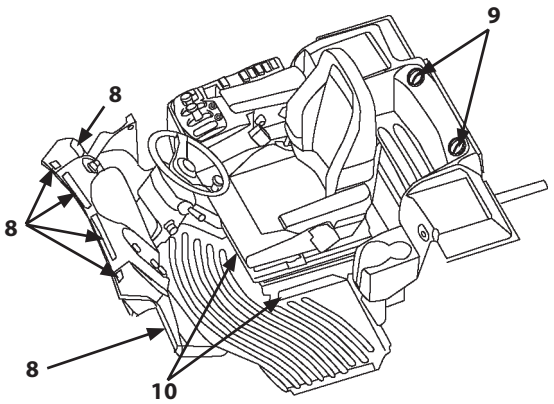
9- Rear Vent

10- Foot Vent

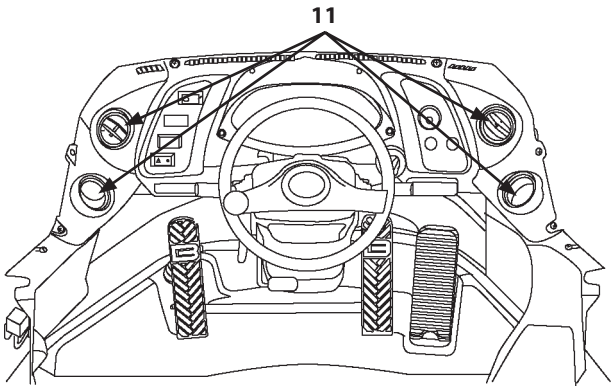
11- Air flows out of front vent and the defroster vents.

NOTE:

- *Except for the foot vent (10) and defroster vent (8), all vents are provided with louvers to adjust the air flow direction.*
- *In addition, the louvers on front vent (11) and rear vent (9) can be completely opened and closed by hand.*



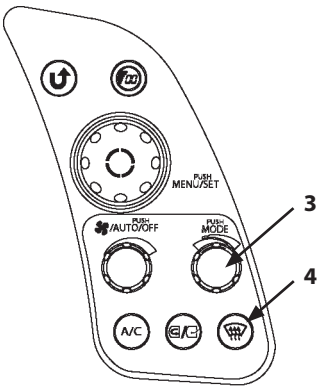
MNEC-01-035



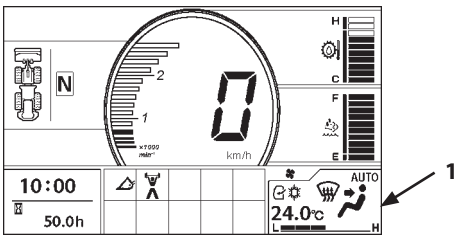
MNEC-01-036

Controller Part Name and Function

Mode/Temperature Control Switch



MNEC-01-006



MNEK-01-103EN

- Mode Switch (3)
  Selects the air vent. The selected air vent is indicated on monitor (1).

  : Front Vent Mode

  : Front/Rear Vent Mode

  : Front/Rear/Foot Vent Mode

  : Foot Vent Mode

  : Foot/Defroster Vent Mode

  : Defroster Vent Mode

Each time mode switch (3) is pressed, the vent location can be changed in 6 stages as illustrated below.

AUTO→ → → → → →

Press defroster switch (4) to change defroster vent mode.

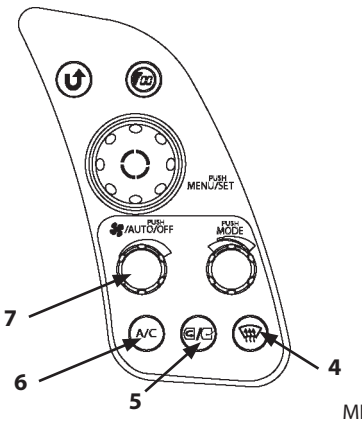
- AUTO mode
  The air vent location is automatically selected.

- Temperature Control Switch (3):
  Sets temperature in the cab.
  Temperature in the cab can be set from 18.0 to 32.0 °C (64 to 90 °F) by rotating temperature control switch (3).
  Temperature can be set by 0.5 °C (32.9 °F) increments.
  The set-temperature is displayed on monitor (1).

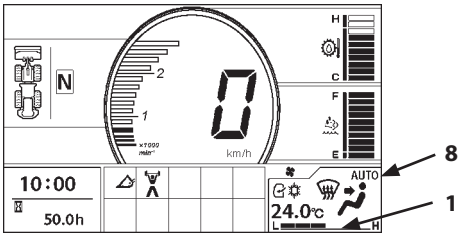
Fan/AUTO Switch

- Blower Switch (7)
  - When the AUTO indicator (8) is ON, the blower speed is automatically controlled.
  - When AUTO indicator (8) is OFF, the blower speed is controlled in 6 steps.
    Rotate blower switch (7) clockwise to increase blower speed. Rotate blower switch (6) counterclockwise to decrease blower speed.
    The monitor (1) indicates the corresponding blower fan speed.

- AUTO Switch (7)
  Press AUTO Switch (7) while the air conditioner OFF, it turns AUTO. Press AUTO switch (7) while operating the air conditioner, it stops operation.



MNEC-01-006



MNEK-01-103EN

Air Conditioner ON/OFF Switch (6)

The air conditioner (cooling, dehumidifying) will turn on and the air conditioner indicator will be displayed on the monitor when air conditioner ON/OFF switch (6) is pressed.

Circulation/Fresh Air Switch (5)

It switches over the air intake port to recirculation mode and fresh air mode.
Icon of the selected mode will be displayed on the monitor. Recirculation mode , Fresh air mode: .

IMPORTANT:

- **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 a case, open the window and turn the lever to Fresh for a while for ventilation and cooling to drive smoke out.**

Defroster Switch (4)

Press defroster switch (4) to select defroster vent mode and the icon will be displayed on the monitor.

Cab Heater Operation

1. AUTO switch (7):

   According to signals sent from various sensors, the air conditioner amplifier automatically selects the air flow inlet ports, and air temperature, and controls the blower speed.

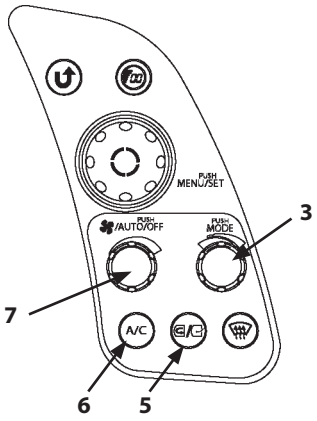
2. Temperature Control Switch (3):

   Adjust the temperature in the cab by using temperature control switch (3).

3. Other Functions and Operations

- Operate Mode switch (3) to manually select the air vent.
- Operate blower switch (7) to manually control the blower speed.
- Operate circulation/fresh air switch (5) to maintain the air vent in the fresh air mode or circulation mode.

Usually the cab heater turns the dehumidifier function OFF, however, it turns ON by turning A/C ON by using air conditioner ON/OFF switch (6).



MNEC-01-006

Cooling Operation

1. AUTO switch (7):

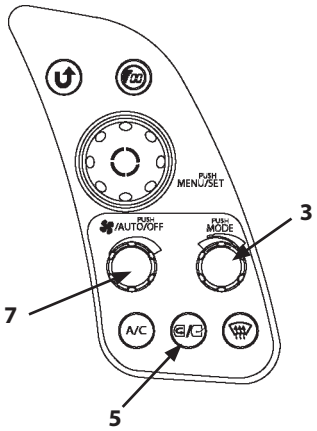
   Press AUTO switch (7) to set the air conditioner AUTO mode. According to signals sent from various sensors, the air conditioner amplifier automatically selects the air flow-in vents, air suction ports, and air flow-in temperature at the vent, and controls the blower speed.

2. Temperature Control Switch (3):

   Adjust the temperature in the cab by using temperature control switch (3).

3. Other Functions and Operations

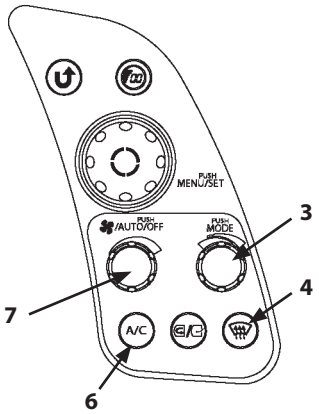
- Operate Mode switch (3) to manually select the air vent.
- Operate blower switch (7) to manually control the blower speed.
- Operate circulation/fresh air switch (5) to maintain the air vent in the fresh air mode or circulation mode.



MNEC-01-006

Defroster Operation

1. Press defroster switch (4) to change defroster vent mode; the fresh air mode and air conditioner will turn ON.
2. Temperature in the cab can be adjusted by operating temperature control switch (3).
3. Operate fan switch (7) to adjust flow.
4. Operate mode switch (3) to change foot/defroster mode.



MNEC-01-006

Cool Head/Warm Feet Operation

Cool and warm air is simultaneously supplied to the head vents and feet vents respectively.

1. Rotate blower switch (7) to adjust the blower speed.
2. Press MODE switch (3) to display the front and rear vent mark on the monitor.

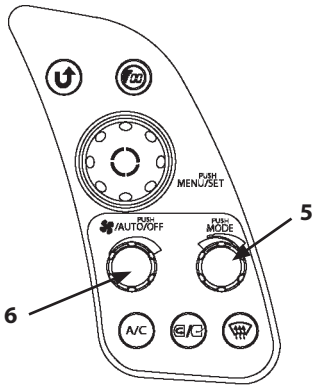
   Turn A/C ON by using air conditioner ON/OFF switch (6).

Control air temperature inside the cab by using temperature control switch (3).

Tips for Optimal Air Conditioner Usage

For Rapid Cooling

Temperature in the cab may rise over 80 °C (176 °F) when the machine is exposed to sun light in the summer.
In this case, ventilate air in the cab first by opening the windows for rapid cooling.
After starting the engine, press AUTO switch (6).
Set temperature to "18.0" on the monitor by using temperature control switch (5). Turn circulation mode ON from air conditioner setting screen on the monitor.
Close the window when the cab cools down to the ambient temperature.



MNEC-01-006

When Windows Become Fogged

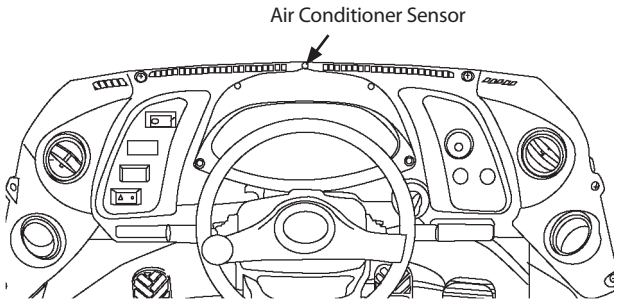
If the insides of the windows become fogged during rainy weather or on humid days, operate the air conditioner to aid in keeping the windows clear.
When the atmosphere is very damp, and if the air conditioner has run excessively, the outside of the windows may become fogged. If this happens, turn up the air temperature selection to adjust the temperature in the cab.

Off-Season Air Conditioner Maintenance

To protect each part of the compressor from a lack of lubricant, operate the air conditioner at least once a month for several minutes with the engine running at a slow speed during off-season.

IMPORTANT:

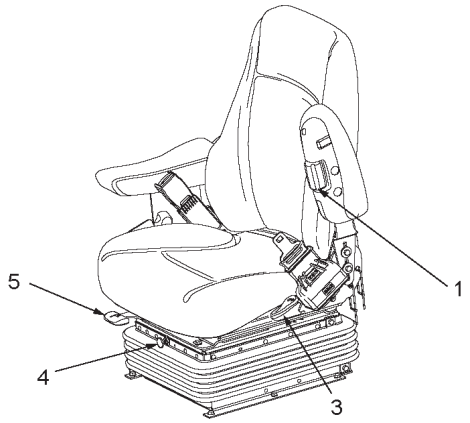
- **Refer to the item "Check Air Conditioner Filter" in the Maintenance Section for maintenance of the air conditioner filters.**
- **Always clean the auto air conditioner sensor for effective air conditioner performance. Avoid placing any obstructions around the sensor.**



MNEC-01-086

Adjusting Operator's Seat (Air Suspension Type Seat)

Adjust the seat for comfort and so that the pedals may be pushed fully down when the operator's back is fully against the seat back.



90Z7-1-117-1

Components Name

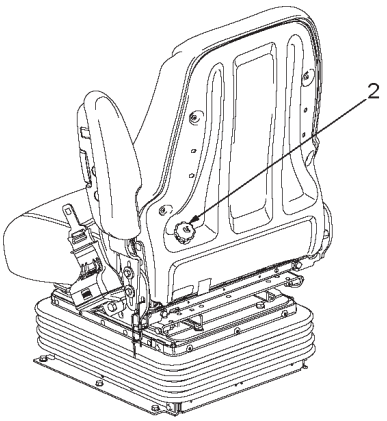
1- Armrest Angle Adjustment

2- Lumbar Support Adjustment

3- Reclining Angle Adjustment

4- Damper Adjustment

5- Fore-Aft Position Adjustment



90Z7-1-117-2

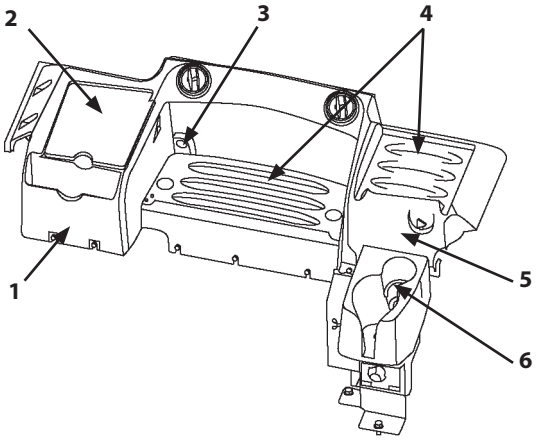
1. Rotate control knob (1) to select desired angle. The armrests will pivot up and parallel with backrest when not in use.
2. Turn adjustment knob (2) for desired lumbar support.
3. Lift handle (3) and allow the back cushion to angle forward, or lean backward into the cushion. Release the handle at desired position.
4. With the key turned "ON" push the knob (4) to increase the air pressure. This will raise the seat and make a firmer ride. Pull the knob (4) to reduce the air pressure (air will be vented). This will lower the seat and make a softer ride.

   When properly adjusted the seat will not "bottom out" over rough terrain.
5. Lift handle (5) and move the seat forward or backward.

   Release handle (5) at one of the several positions.

Rear Tray

1- Document Holder
2- Hot/Cool Box
3- Electric Power Output (12 VDC, 5 A)
4- Glove Compartments
5- Fuse Box
6- Cup Holder



MNEC-01-046

Electric Power Output (12 VDC Electrical Outlet)

Use the electric power output (Max. 5A) such as electric power to an instrument used for inspection/ maintenance work such as an illumination light.

IMPORTANT: DC 12 volt electric power can be utilized. Never connect accessories that use power other than 12 V. Damage to the batteries and accessories may result. Do not supply power to accessories for a long time without running the engine. The batteries may be discharged.

1. Remove the cover.
2. Insert the socket of the accessory to be used into the electric power output port.
3. Turn the key switch (6) ON. Power is supplied to the connected accessory.
4. After completing operation of the accessory, disconnect the accessory. Reinstall the cover.

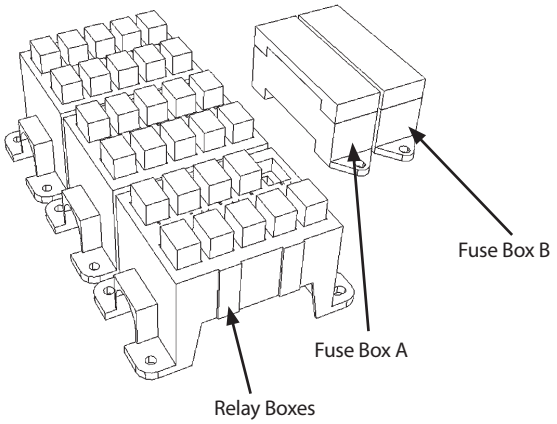
M4GB-01-089

Fuse Box

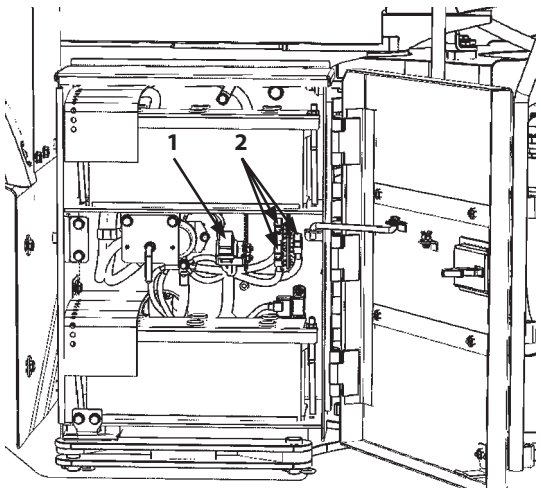
IMPORTANT: If a fuse blows, turn the key switch OFF. After checking and correcting the cause of the trouble, replace the fuse with a new one.

The slow blow fuses (fusible links) (1 and 2) function as a "safety valve" to prevent excess current from flowing through, and to protect the electrical system.
The fuse capacity varies depending on its corresponding circuit. Be sure to replace the blown fuses only with the specified one.
When checking fuses, check the fuse A, B and slow blow fuses in the battery box (1 and 2) in this order.

1- 70 A, 140 A
2- 45 A, 65 A (2 used)



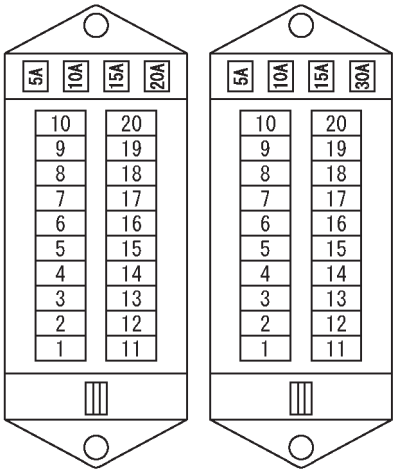
MNEK-07-017



MNEK-01-015

Fuse Box A

10- PARKING 5 A
9- AC1 10 A
8- STOP LAMP 5 A
7- BACKUP ALARM 5 A
6- HEAD LAMP LH 5 A
5- WORKING LAMP FRONT 20 A
4- WIPER FRONT 15 A
3- 24 V CIGAR SOCKET 10 A
2- HEAD LAMP RH 5 A
1- FUEL PUMP 5 A
20- OPTION 4 (JSS) (10 A)
19- OPTION 3 (ACC2) (15 A)
18- DEF HEATER 15 A
17- DEF SUPPLY 15 A
16- DEF SENSOR 15 A
15- AC2 20 A
14- ROTARY BEACON 10 A
13- SEAT HEATER 20 A
12- OPTION 2 (ACC1) (20 A)
11- RADIO (USA) 10 A



Fuse Box A Fuse Box B

MNEC-01-031

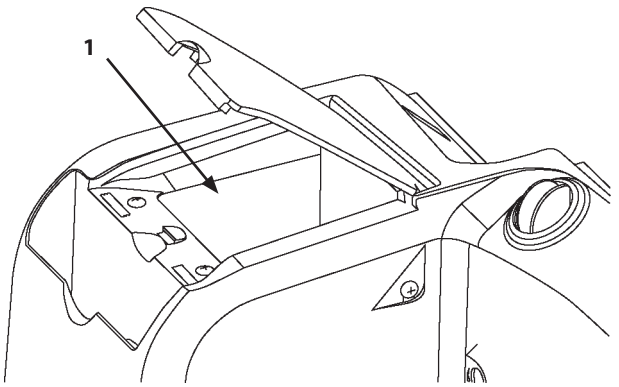
Fuse Box B

10- ECM 30 A
9- TCU 10 A
8- CONTROLLER 10 A
7- FLASHER 10 A
6- HORN 10 A
5- OPT C/U 5 A
4- OPTION 1 (BT) (15 A)
3- CAB DOME LAMP 5 A
2- LIGHTING SW 10 A
1- DC/DC POWER ON 20 A
20- SECONDARY STEERING 5 A
19- HIGH BEAM 10 A
18- WIPER REAR 10 A
17- WORKING LAMP REAR 20 A
16- LOADER CONTROL 5 A
15- MC 10 A
14- TCU POWER 10 A
13- POWER ON 10 A
12- POSITION 2 5 A
11- POSITION 1 5 A

Hot/Cool Box

Cool or warm air from the air conditioner or heater is routed to hot & cool box (1) so that food or a drink can be temporarily stored.
Use a container with a tight cap in the hot/cool box.

- If the A/C is on, cool air is sent into the box.
- If the heater is on, warm air is sent into the box.



MNEC-01-048

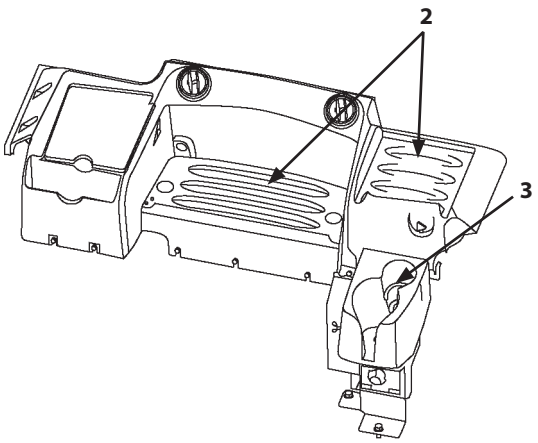
Tray and Drink Holder

IMPORTANT: Tray (2) is not waterproof type. Be careful not to spill liquid on the tray.

Place a bottle with a plug or cap on drink holder (3).

Wipe up any spills with a damp cloth.

Secure anything stored in this area to avoid loose objects in the cab.

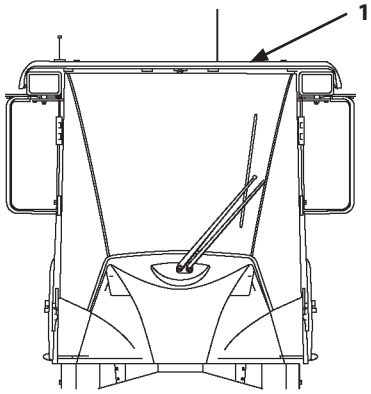


MNEC-01-046

ROPS Cab

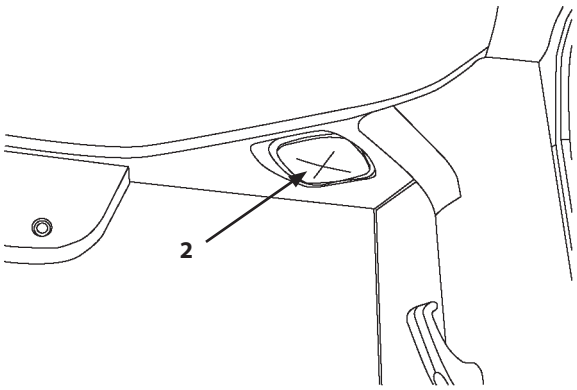
ROPS cab (1) is standard equipment.

1- ROPS Cab



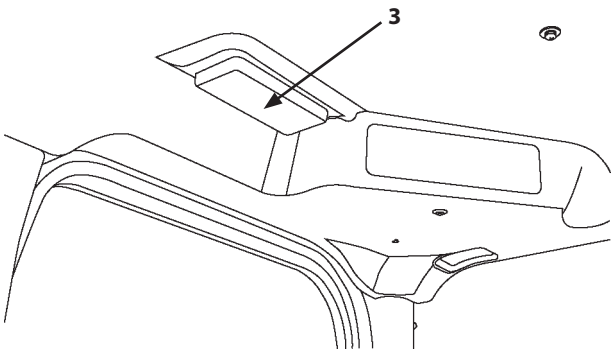
MNEC-01-049

2- Speakers



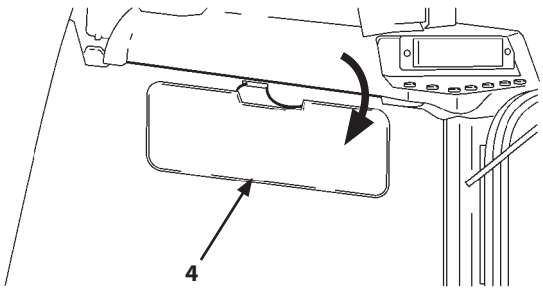
MNEC-01-050

3- Front Interior Light



MNEC-01-051

4- Sun Visor

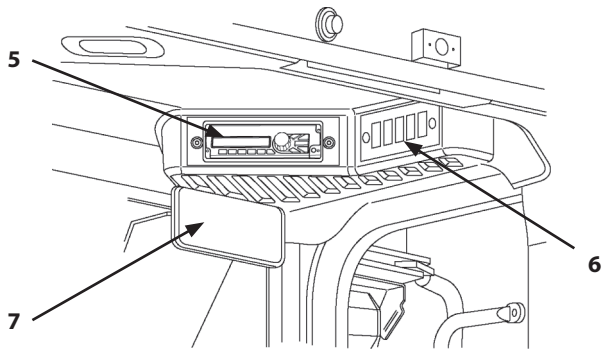


M4GF-01-010

5- Radio

6- Cab Switch Panel (Option)

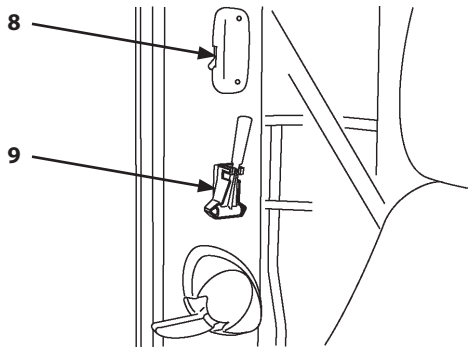
7- Inside Rear View Mirror



Z7_US_radio

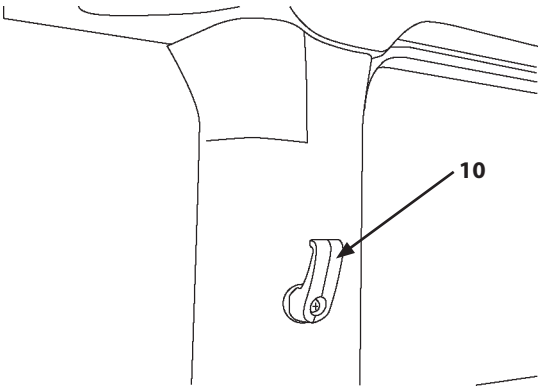
8- Rear Interior Light

9- Emergency Exit Hammer



M4GB-01-117

10- Coat/Hat Hook

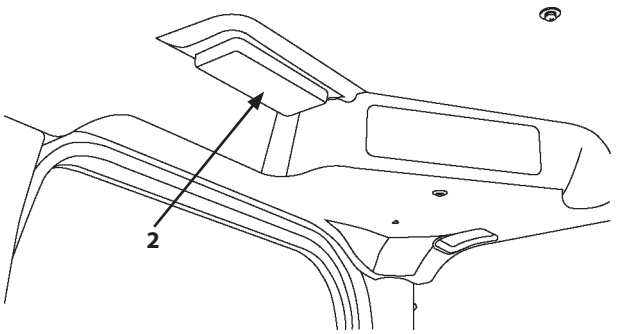


MNEC-01-053

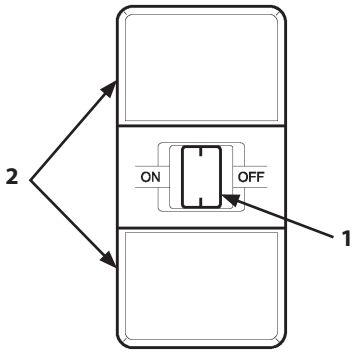
Front Interior Light

Press ON side of switch (1) to turn the interior light ON. The front interior light switch has three operation positions.

- ON: The light (2) comes and stays ON.
- Neutral: When the cab door is opened, the light (2) comes ON. When closed, the light (2) goes OFF.
- OFF: The light (2) goes OFF.



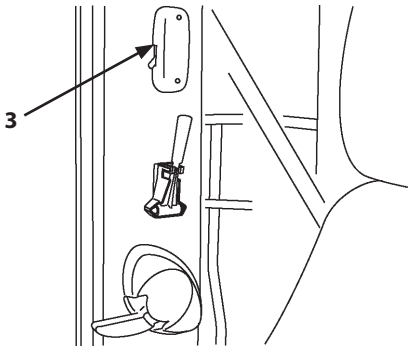
MNEC-01-051



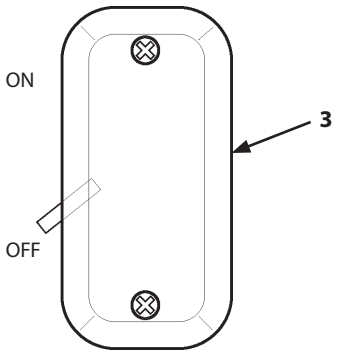
M4GB-01-119

Rear Interior Light

Switch (3) ON: Rear interior light (3) comes and stays ON.
Switch (3) OFF: Rear interior light goes OFF.



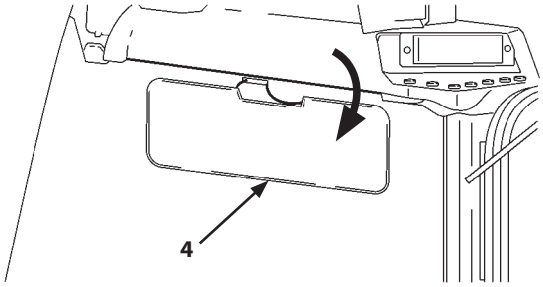
M4GB-01-117



M4GB-01-120

Sun Visor

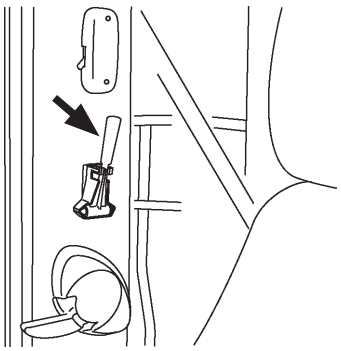
When sunlight is strong, use sun visor (4) by hanging its edge from the cab top down to a desired place.



M4GF-01-010

Emergency Exit Hammer

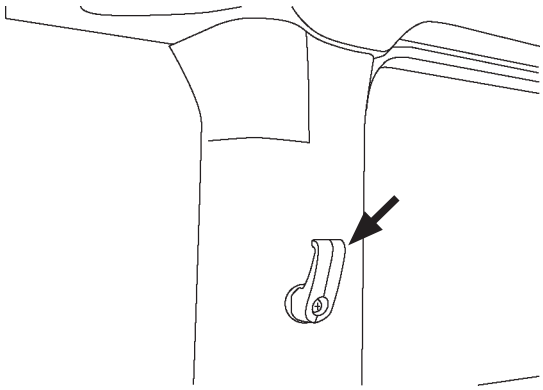
In case the cab door becomes difficult or impossible to open if an emergency situation occurs, exit machine by breaking the windowpane using the provided hammer.



M4GB-01-117

Coat/Hat Hook

Use to hang your coat, hat, etc.



MNEC-01-053

Upper Switch Panel (Option)

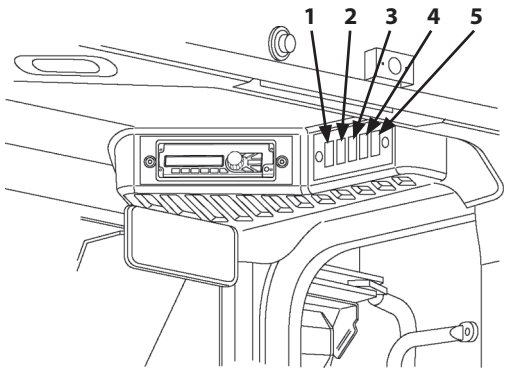
1- Rotary Light Switch

2- Auxiliary

3- Auxiliary

4- Auxiliary

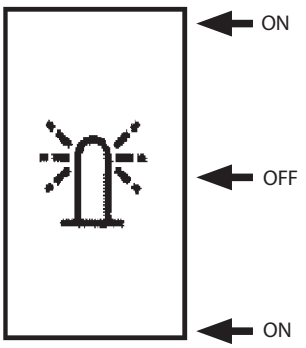
5- Auxiliary



Z7_US_radio

Rotary Light Switch (Option)

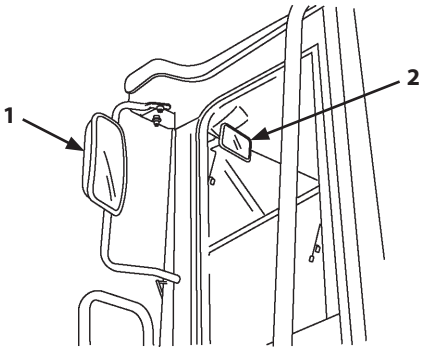
Press either upper part or lower part of the switch to turn the rotary light ON. Press middle part of the switch to turn OFF.



M4GB-01-125

Outside Rear View Mirror

WARNING: Do not move the machine in reverse by relying on only the range of vision the rear view mirror (1) provides. Use the rear view mirror only as a visual aid during travel. Be sure to confirm safety by looking to the rear when moving the machine in reverse.



(Standard)

M4GB-01-126

Comfortably adjust seat, then adjust the rear view mirrors so that good rear vision can be obtained.
Adjust the mirrors so that persons standing on left and right back-end of the machine (or object with height of 1 m and 30 cm in diameter) can be recognized from the operator's seat.
Always keep the mirrors clean.

NOTE: Optional extensions and other mirror types are available.

Inside Rear View Mirror

Always keep room rear view mirrors (2) clean.

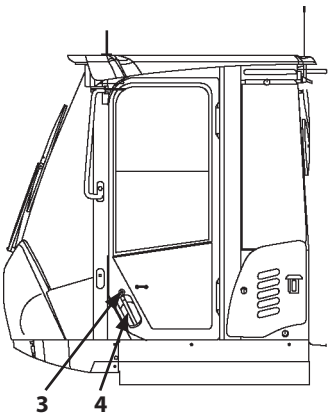
Cab Door

CAUTION: When entering or leaving the cab, securely close the doors.

NOTE: Unless the cab door is securely closed, the room light switch keeps the room light ON. Securely close the cab door.

3- Door Lock (Starter key is used)

4- Door Open/Close Lever

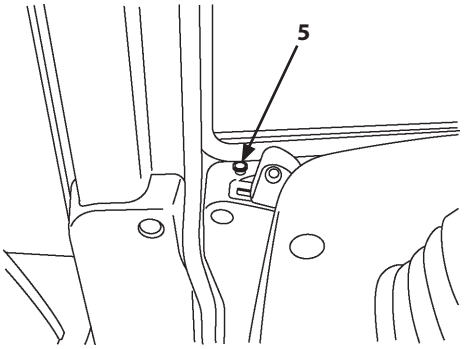


MNEC-01-054

Door Lock Knob

CAUTION: After closing the door, always check that the door lock is securely engaged.

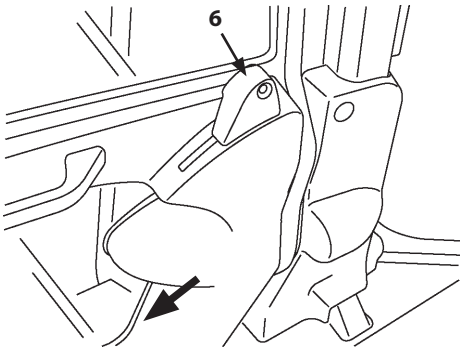
Depress door lock knob (5) to engage the door lock.



M4GB-01-128

Door Open/Close Lever

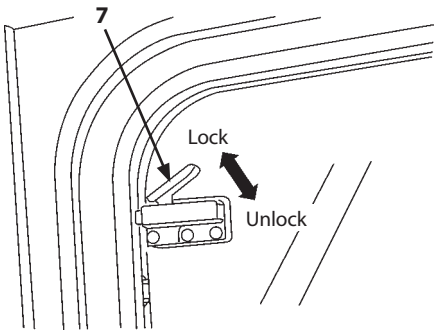
When opening the door, while lifting door lock knob (5), pull lever (6) to disengage the door lock.



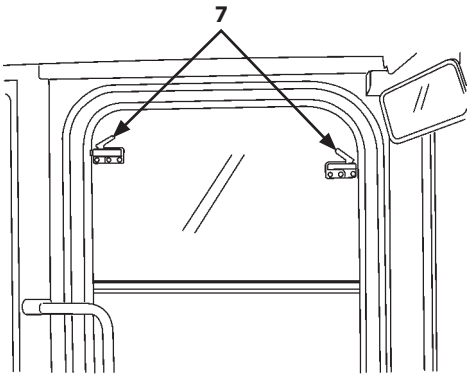
M4GB-01-129

Window Open/Close Levers

When window open/close levers (7) on both sides are simultaneously pressed, the window is unlocked, allowing the windowpanes to move.
When window open/close levers (7) are released, stoppers are engaged in the nearest steps so that the window is locked in that position.



M4EK-01-048

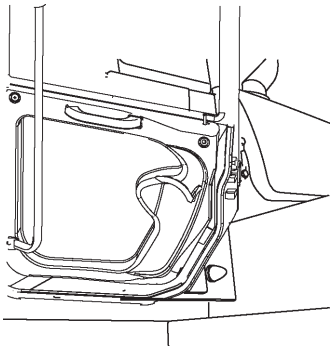


M4FJ-01-016

When Fully Opening the Door

WARNING: Before getting in or out the cab while using the handrails, check that the cab door is securely latched. If entering the cab without latching the door securely, the door latch may loose, possibly causing an accident.

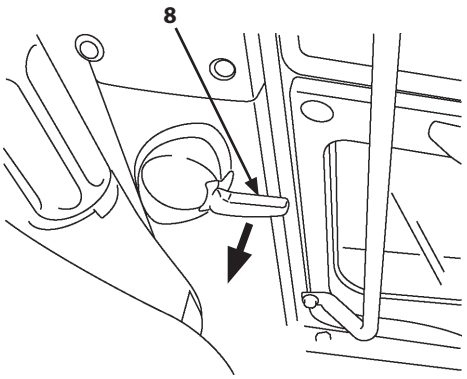
Push the door toward the outside of the cab to fully open the door (180°).



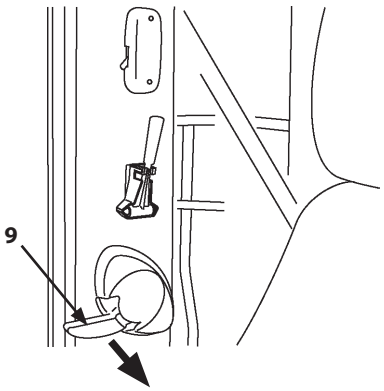
M4GB-01-132

Cab Door Release Lever

CAUTION: When keeping the door open, open the door until latch (10) on the cab securely locks the door. When disengaging the door lock, push door lock disengage lever (8) or (9) downward.

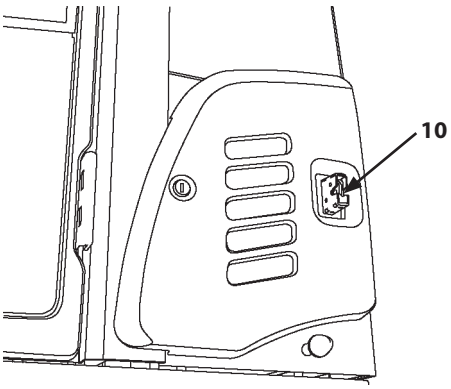


Left Door Lock Disengage Lever M4GB-01-133



M4GB-01-117

Right Door Lock Disengage Lever



MNEC-01-055

Battery Disconnect Switch

IMPORTANT: Never attempt to turn the battery disconnect switch OFF while engine running. Failure to do so may damage the electrical system.

WARNING: After stopping the engine, the DEF/AdBlue® pump keeps operating to return the DEF/AdBlue® in piping to the DEF/AdBlue® tank. Do not turn the battery disconnect switch OFF while pump running. Failure to do so may damage the SCR system.

The battery disconnect switch is different from the engine start key switch. When the battery disconnect switch is turned OFF, the electrical system will completely be isolated from the battery. No current will flow through the entire electrical system.

Before turning the battery disconnect switch OFF, be sure to turn the key switch OFF and wait 5 minutes or more after the engine stops before turning battery disconnect switch. Because controllers communicate with each other and record information after the engine stops, battery power is required for a minimum of 5 minutes.

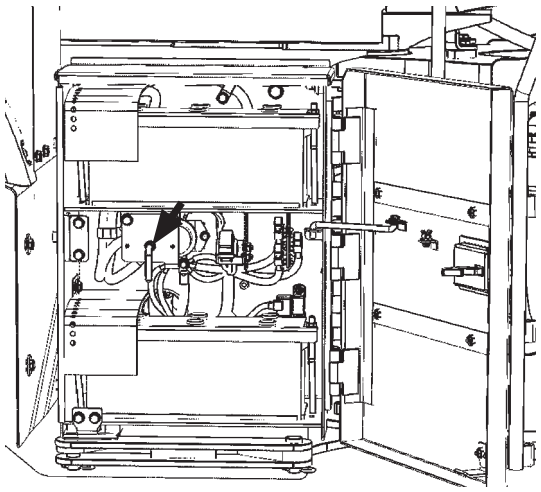
Use the battery disconnect switch only for the following purposes; otherwise, turn it ON.

- Before maintaining and repairing the electrical system
- Before storing the machine for long period (to save the battery)
- Theft prevention after use.

Turn the battery disconnect switch ON before starting the engine.

NOTE: The radio station and the clock setting may be required.

The battery disconnect switch is located inside of the battery box.



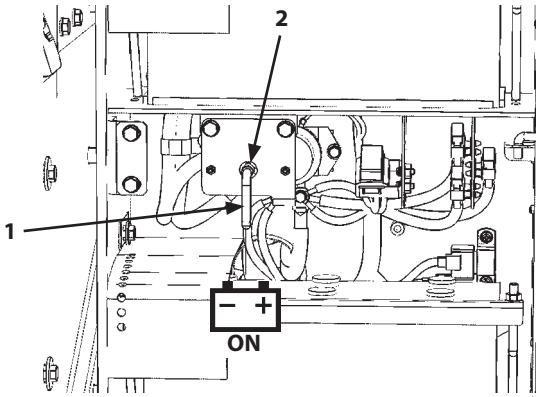
MNEK-01-015

Switch Operation

1. Open the battery box cover.

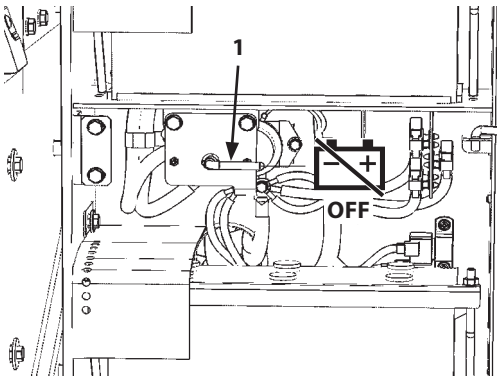
   When lever (1) is vertical to the ground, battery disconnect switch (2) turns ON. The lever can not be removed when lever (1) points downward.

   When operating the machine with battery disconnect switch (2) ON, close the cover.



MNEK-01-016

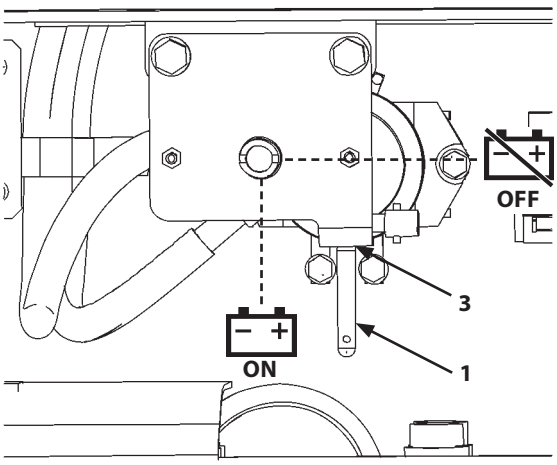
2. When turning lever (1) 90° counterclockwise (the lever is lateral to the ground), battery disconnect switch (2) turns OFF. Lever (1) can be removed from battery disconnect switch (2) when it is in OFF position.



MNEK-01-017

3. Insert lever (1) removed from switch (2) into hole (3) of the holder.

4. Close the cover.



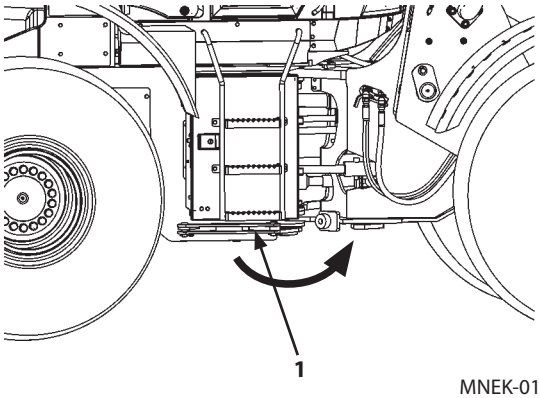
MNEK-01-346

Articulation Stopper (Lock Bar)

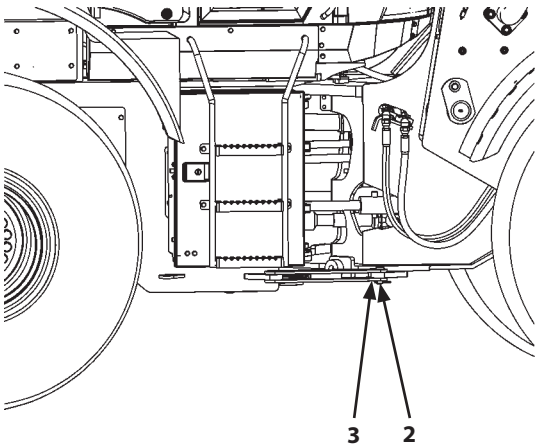
WARNING:

- **Before servicing or transporting the machine, be sure to engage lock bar (1).**
- **Before operating the machine, be sure to disengage lock bar (1) from front chassis (4) and fasten the lock bar to rear chassis (2) with β-form lock clip (3).**

Articulation lock bar (1) locks the front and rear chassis to prevent articulation between the front and rear chassis when servicing or transporting the machine.



MNEK-01-018



MNEK-01-019

Towing Pin

WARNING: Since towing is a potentially dangerous operation, perform only when there is an emergency or crisis situation.

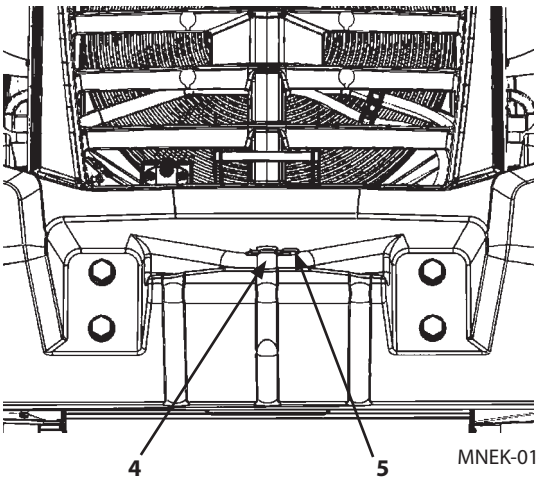
IMPORTANT: To prevent excessive wear of tires and for safety, avoid towing requiring more than the available towing force, and keep the specified speed during towing.

Available towing force: 120.0 kN (26980 lbf)

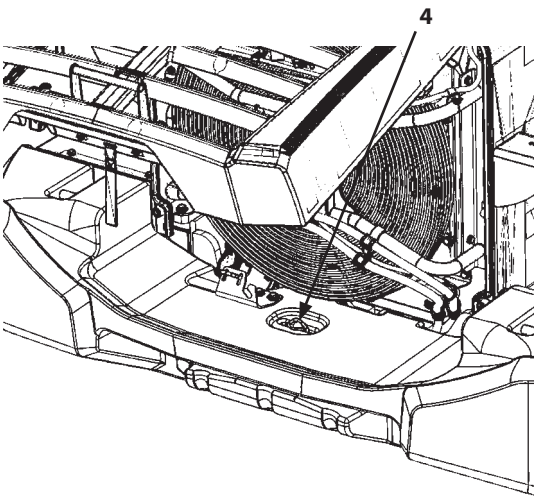
Towing speed: 10 km/h (6.2 mph) or less

Towing pin (4) is located on the back end of the machine. It is used for towing another machine, being towed from the rear side, or fastening the machine on a trailer deck for transportation.

Tie or loop the towing rope, strap, or cable and let it pass through the hole. Secure it with the β-shaped lock pin (5).



MNEK-01-007



MNEK-01-008

Inspection/Maintenance Side Access Cover

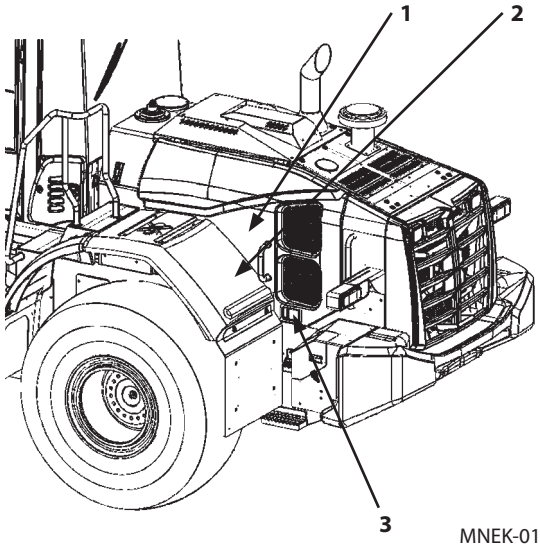
CAUTION:

- **Never attempt to stand on fender (2) if side cover (1) is provided with fender (2).**
- **Always close side covers (1) when moving and/or operating machine.**
- **Do not keep the side cover open on a slope or when a strong wind is blowing.**
  Failure to do so may be dangerous because the side cover may unexpectedly move or close.
- **Take care not to pinch fingers when opening/ closing side cover (1).**
- **When side cover (1) is opened, the cover may move suddenly. Be careful not to come in contact with the cover.**
- **Before inspecting around the engine, be sure to secure side cover (1) with holding rod (4).**

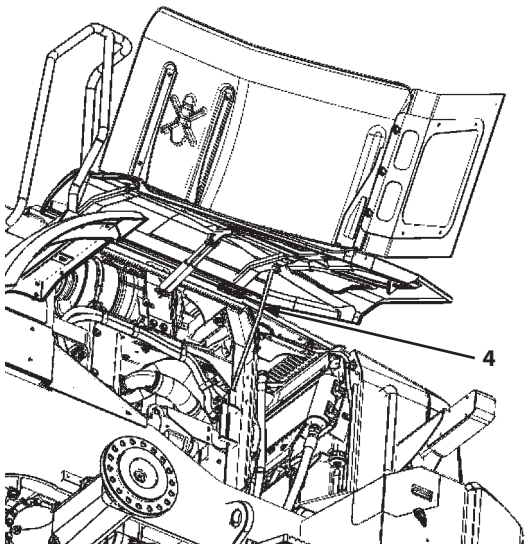
When opening side cover (1), pull latch (3).

NOTE: When servicing the machine for a long time with side cover (1) kept open, lock side cover (1) using the holding rod (4) located inside the side cover.

Side cover (1) has a holding groove. Engage the holding rod (4) in the holding groove securely.



MNEK-01-009

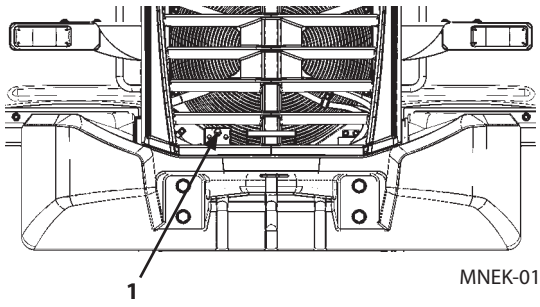


MNEK-01-010

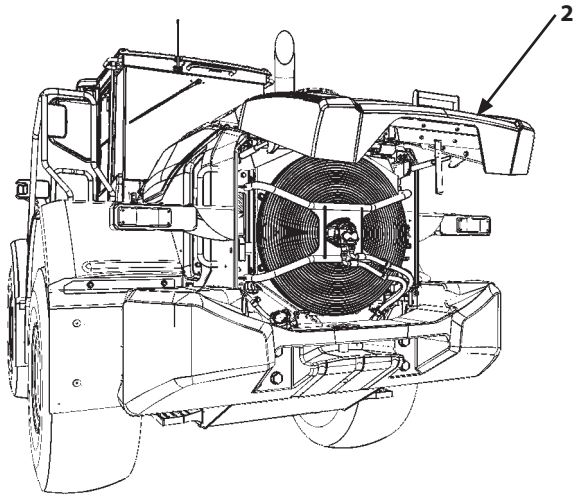
Rear Grille

WARNING: Open or close rear grille (2) only after stopping the engine. It is very dangerous if you are entangled in the cooling fan. Before driving the machine, always check that the rear grille will not open.

Push rear grille (2) open/close button (1) to allow the rear grille to open upward so that refilling the fuel tank or cleaning of the cooling fan can be conducted.
When closing rear grille (2), while supporting rear grille (2), slowly lower and push in the rear grille until a click sound is heard.



MNEK-01-020



MNEK-01-021

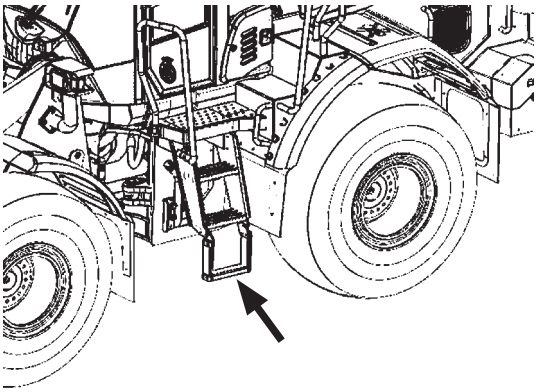
Steps

WARNING: When getting on and off the machine, use steps and handrails to support your body with at least three points of contact. Getting on and off the machine with less than three support points may cause you to slip, possibly resulting in a falling accident.

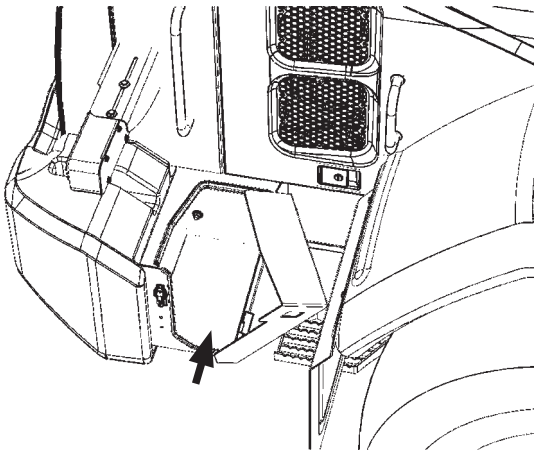
Although the steps are provided on both sides of the machine, only use the steps on the left side for cab entry. The control levers are located on the right side, obstructing easy access.

Right side steps are for emergency exit only.

Inspect the steps and handrails daily. Immediately repair or replace any that are missing, loosen or damaged.
Clean the steps of any mud, snow or ice before entering or exiting the cab.



MNEK-01-011



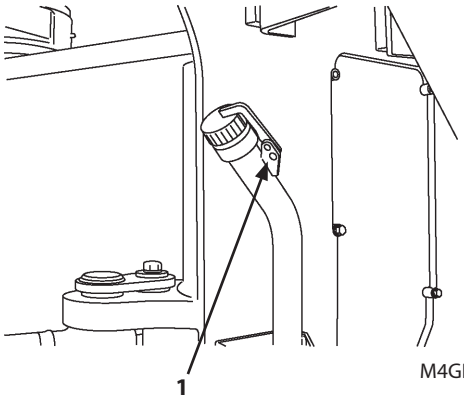
MNEK-01-012

Tool Box

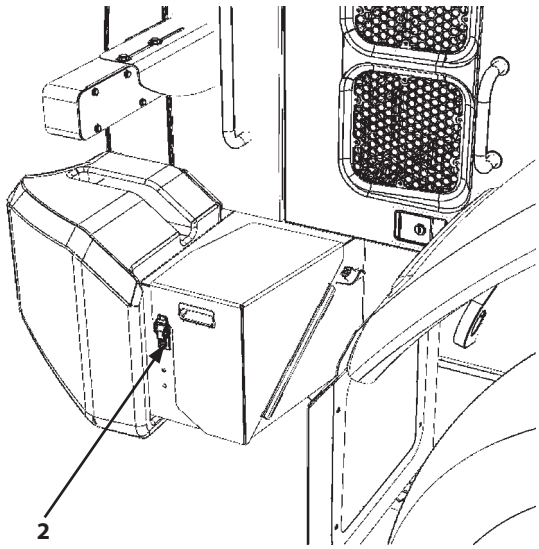
Use tool box to store tools.

Vandal-Resistant Devices

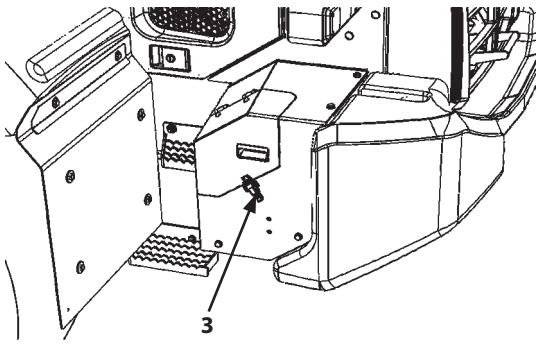
Locks can be installed to transmission oil inlet cap cover (1), tool box cover (2), and DEF/AdBlue tank cover (3).



M4GB-01-147



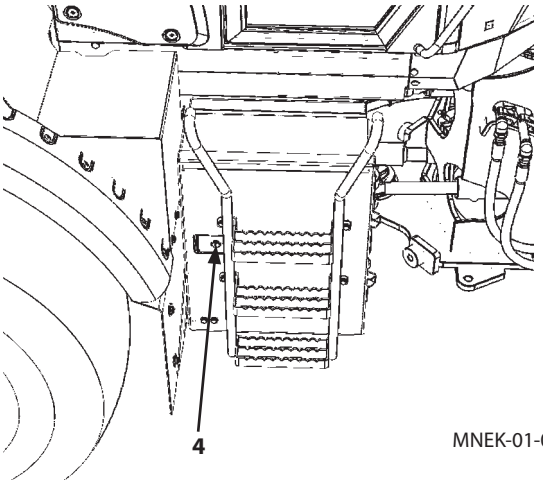
MNEK-01-022



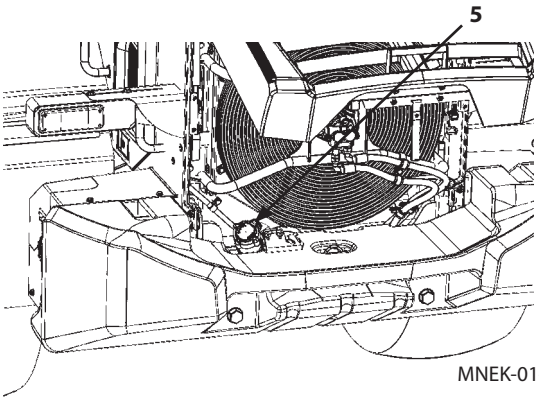
MNEK-01-023

Vandal-Resistant Devices (continue from previous page)

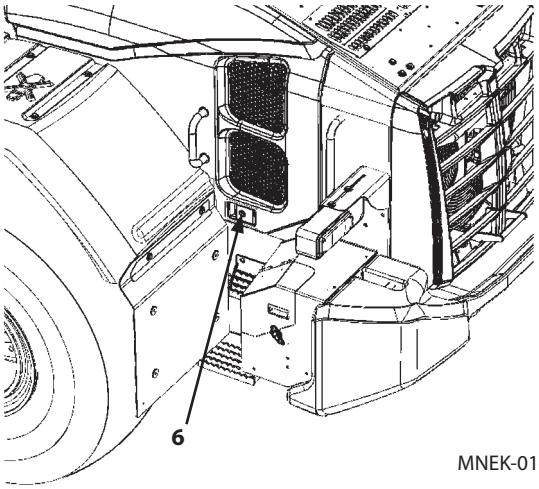
Battery box cover (4), fuel tank cap (5), side covers (6), and air conditioner fresh air filter (7) can be locked with the starter key.



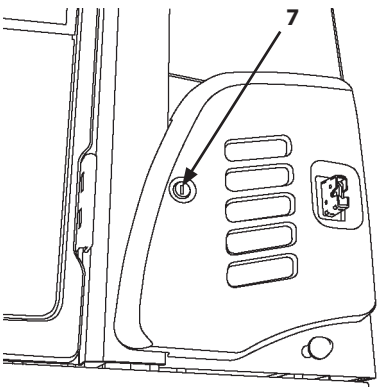
MNEK-01-024



MNEK-01-013



MNEK-01-014

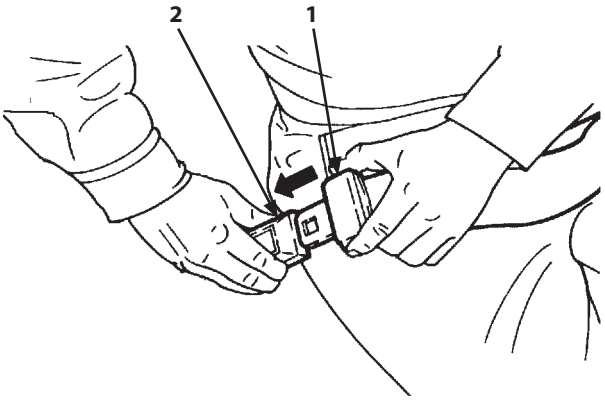


MNEC-01-055

Seat Belt

WARNING:

- **Be sure to use seat belt (1) when operating the machine.**
- **Before operating the machine, be sure to examine seat belt (1) and attaching hardware for any failure. If any damage and/or wear are found, replace the part concerned.**
- **Replace seat belt (1) every 3 years regardless of appearance.**

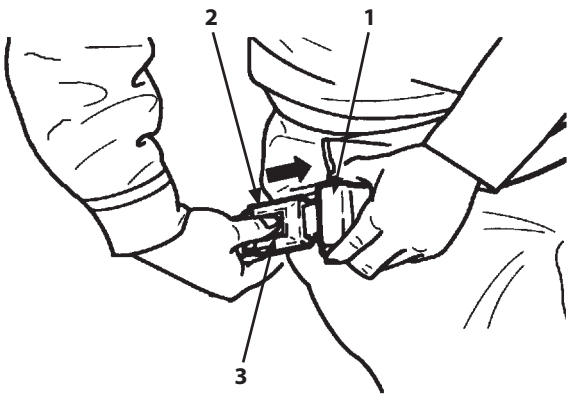


M1U1-01-031

Seat Belt

1. Confirm that seat belt (1) is not twisted. Securely insert the end of seat belt (1) into buckle (2). Lightly pull on the belt to confirm that the buckle latches securely.
2. Push button (3) on buckle (2) to unfasten seat belt (1).

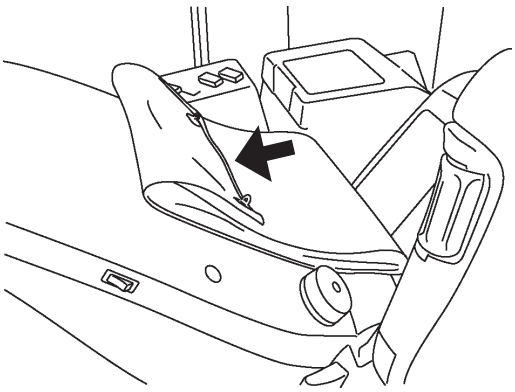
Replace seat belt (1) if it is damaged or worn, or if the machine is involved in an accident which puts severe stress on the seatbelt.



M1U1-01-032

Seat Pocket

A pocket is provided on the back of the operator's seat. Store the Operator's Manual in this pocket.



M4GB-01-139

Break-in Period for New Machine

Machine life and performance will be greatly affected by the treatment during operation and maintenance of the machine, but especially so during the initial operation.

IMPORTANT: Always correctly warm the machine up to operating temperatures before running the machine ! This is always a requirement for good machine life.

IMPORTANT: The machine must be operated appropriately as the new parts start to wear during the "break-in" period.

If the new machine is abused, especially during the beginning break-in period, it will significantly reduce the operative life of the machine.

This abuse can be in many forms, including, but not limited to, the following.

- Overloading in any from:
  - Bucket
  - Ballast
  - At drawbar
  - Others
- Hitting unmovable objects
- Using brakes during operation and burning friction material
- Running hydraulic system pressure over relief setting pressures too often and heating the oil excessively
- Tractively twisting the boom arms or chassis
- Running through impassible terrain
- Not decelerating while changing machine direction
- Scaling out heavy materials like heavy rock while in forward motion, causing the bucket to catch and break free, and catch materials again
- Other types of poor treatment

The machine must never be abused, and must be treated carefully while during the break-in period.

- Operate and maintain the machine well
- Generously lubricate it, especially during the first 100 hours

Work Mode for Break-in

For the first 100 hours of operation, avoid using the power mode and perform the following:

- Thoroughly walk around and inspect the machine for damage
- Warm up the machine after engine start up
- Avoid sudden starts and stops
- Moderately load the machine and operate modestly at below 2/3 capacity

NOTE: Refer to page 1-104 for the power mode.

MEMO

Inspect Machine Daily Before Starting

Perform the required daily check before starting the engine.

- Refer to "Maintenance" section for detailed information.

Check Points	Check Contents
1. Brake System	1. The brake pedal stroke is appropriate, brake performance is sufficient, and the brakes apply evenly.
	2. The parking brake performance is good and holds on grades.
2. Tires	1. Tire pressure is appropriate.
	2. No cracks and damage observed.
	3. No excessive wear observed.
	4. No metal pieces, stones or other foreign material found.
3. Wheel Disk	Mounting condition of the wheel disk is correct.
4. Lights and Turn Signals	They light up or flash normally, with clear view and no lens damage.
5. Outside Rear View Mirror and Inside Rear View Mirror	Appropriate visibility
6. Reflectors and Registration Plate	Clearly visible and no damage found.
7. Previously reported damage.	Repaired.
8. Engine	1. Oil level
	2. Oil condition - no antifreeze or contaminates present
	3. Coolant level
	4. All drive belts
	5. Starts easily
	6. Exhaust does not smoke excessively
	7. No excess noise from exhaust
	8. No fluid leaks; no oil or antifreeze under engine
	9. No hose or line damage
	10. All coolers clean and clear, not clogged
	11. No missing or loose bolts in engine area
	12. Check crankcase breather tube.
	13. Drain water and sediment from fuel filter.
	14. Check dust ejection valve.

Check Points	Check Contents
9. Chassis	1. Oil leaks of the transmission and the axle 2. Level, leaks and contamination of the fuel tank. Drain water from fuel tank. 3. Level and leaks of the hydraulic oil tank 4. Operation, play and operating force of control levers and steering wheel 5. Operation of hydraulic equipment. Oil leaks and damage to piping and hoses 6. Deformation, damage, and abnormal noise of chassis parts 7. Washer fluid level 8. Level, leaks and contamination of the DEF/AdBlue® tank 9. DEF/AdBlue® leaks of pipe lines and hoses 10. Clean around the aftertreatment device.
10. Loader	1. Oil leaks and damage to cylinders, pipe lines and hoses 2. Loose, worn and missing cutting edges 3. Wear and damage to the bucket 4. Lubrication of the loader parts 5. Damage to the pin lock bolts, stoppers and links 6. Loose and missing mounting bolts/nuts
11. Others	1. Operation of instruments, switches, lights and buzzer/horn 2. Damage and deformation to the ROPS cab 3. Abnormal outside appearance of machine 4. Looseness of the battery terminals 5. Wear, damage and expiration date of the seat belt 6. Damaged to the steps and handrails

Check Before Starting

CAUTION: If your machine is equipped with forward/reverse selector switch (7), be sure to turn the switch in the OFF position before starting the engine to ensure safety.

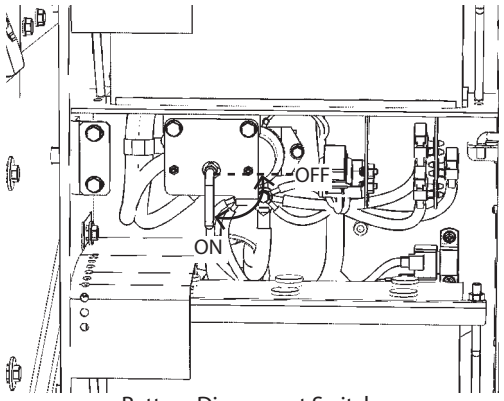
1. If your machine is equipped with the battery disconnect switch, check that the switch is in the ON position.
2. Check that both forward/reverse lever (2) and forward/reverse switch (4) are in the neutral (N) position and neutral lever lock (3) is in the lock (🔒) position.

   If your machine is not equipped with forward/reverse switch (4), set only forward/reverse lever (2) in the neutral (N) position.

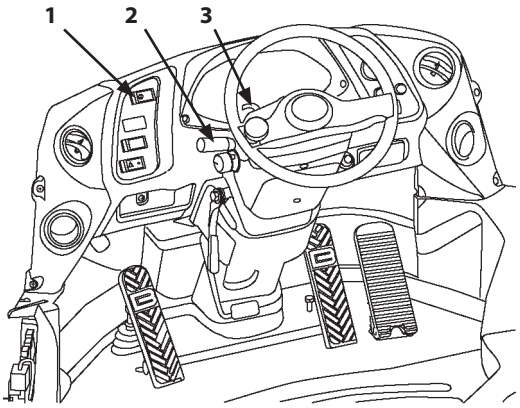
NOTE: Unless forward/reverse lever (2) and forward/reverse switch are in neutral (N), the engine will not start.

3. Check that parking brake switch (1) is in the ON position.

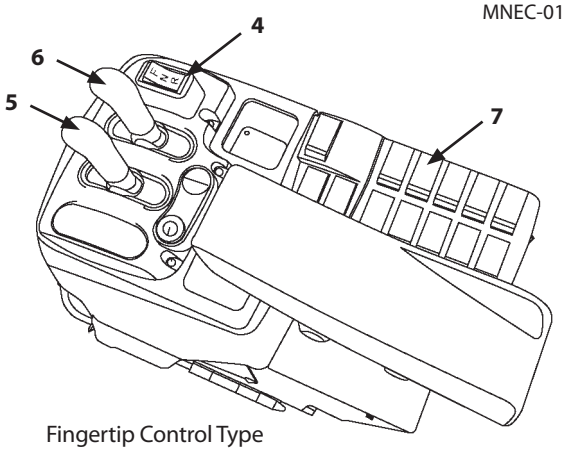
   After the engine starts and checking indicator bulbs and display (refer to page 3-5), check that parking brake indicator is ON.
4. Check that bucket control lever (5) and lift arm control lever (6) are in the neutral (N) position.



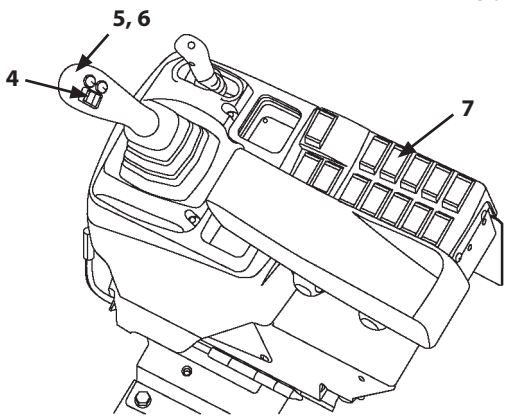
Battery Disconnect Switch MNEK-01-016



MNEC-01-037

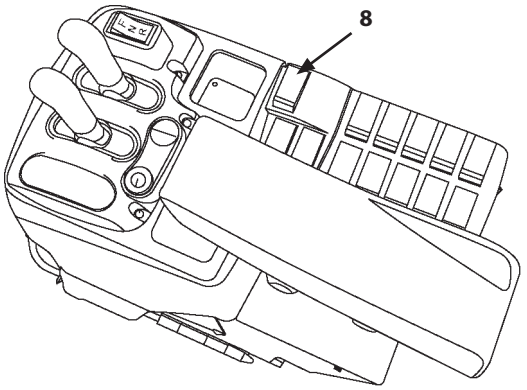


Fingertip Control Type MNEC-07-001



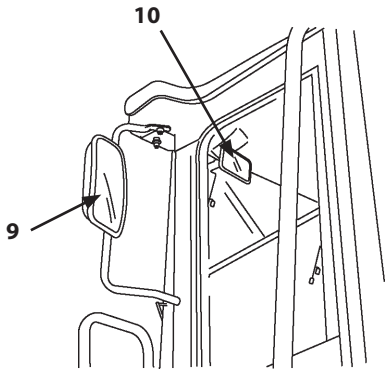
Multi-Function Joystick Type MNEC-01-043

5. Check that control lever lock switch (8) is in the locked (🔒) position.



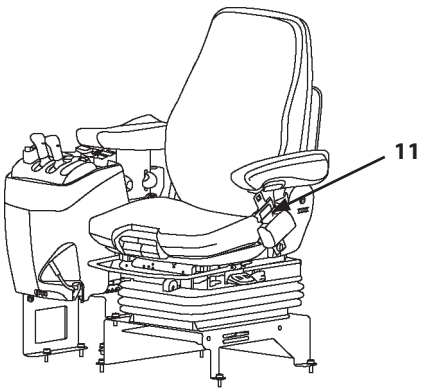
MNEC-07-001

6. Adjust the position of outside rear view mirror (9) and inside rear view mirror (10) so that the best rear visibility can be obtained.



M4GB-01-126

7. While seated on the operator's seat with your back in contact with the backrest, adjust each function of the seat so that the brake pedal can be fully applied.
8. Fasten seat belt (11) along your body without kinking or twisting it. Be sure the buckle firmly snaps when coupled and works as it should, and the retractor and anti-synch mechanism work as designed.
9. Inspect seat belt (11).



MNEC-01-045

Starting Engine

Follow the following steps to start the engine.
Do not depress accelerator pedal (3).

1. Check that both forward/reverse lever (8) and forward/reverse switch (9) are in the neutral (N) position and neutral lever lock (10) is in the LOCK position.
2. Check that parking brake switch (1) is ON, with parking brake set.
3. Turn the key switch (2) ON.
4. Check indicator bulbs and display.

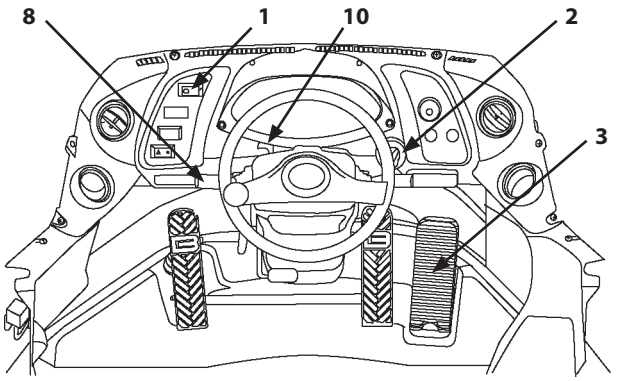
   When key switch (2) is turned ON, all indicators and the warning lights come and stay ON for 2 seconds. Then, they go OFF afterward. Any indicator and/or warning light that fails to light at this time is a burned bulb.

   However, the indicators for brake oil pressure (4) (When the brake pressure is low) and discharge warning indicator (5) will continue to stay ON, and it will go OFF only after the engine is started and circuits are filled.

   Preheating will automatically start with the key switch ON. The preheat indicator (6) will automatically come ON when needed.

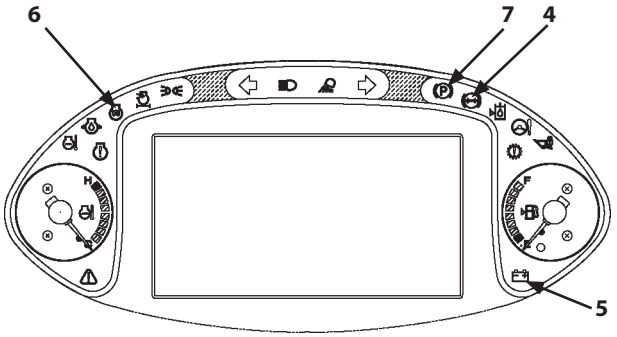
NOTE: When the key switch is turned ON, the maintenance notification for the item whose maintenance interval has expired displays for 10 seconds. The display will disappear when the Return switch is pressed, forward/reverse lever (8) or the forward/reverse switch is set in Forward (F) or Reverse (R) position.

5. Check that parking brake indicator (7) is ON. When the preheat lamp goes OFF (the engine has preheated), sound the horn to clear any personnel away from the area surrounding the machine.

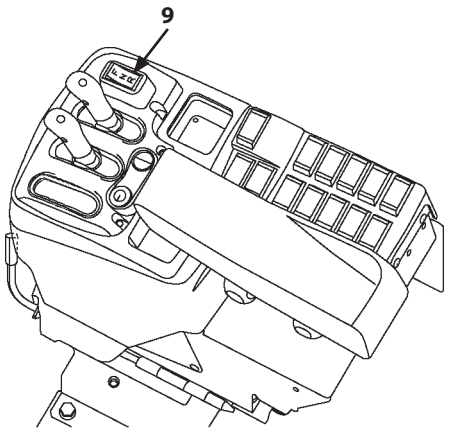


MNEC-01-036

M4GB-01-089



MNEC-01-073



MNEC-01-526

IMPORTANT: Never operate the starter for more than 15 seconds at a time. If the engine fails to start, return key switch to OFF. Wait for more than 2 minutes, then try again.

Failure to do so may damage the starter or discharge the batteries.

6. Turn key switch (2) to START position to rotate the starter. The engine will start. Do not step on accelerator pedal (3).
7. As soon as the engine starts, release the key switch.

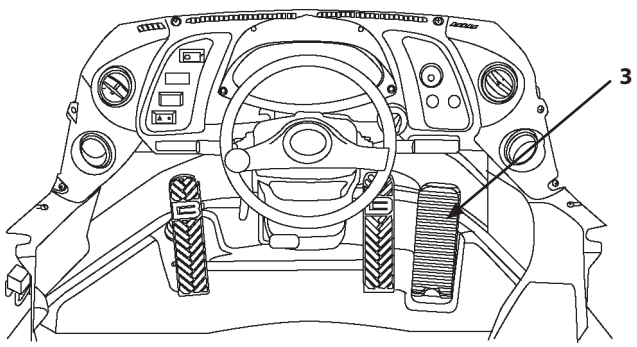
   The key switch will automatically return to the ON position. Run the engine at low idle without applying accelerator pedal (3).

M4GB-01-089

IMPORTANT: At starting the engine, the engine RPM (min^{-1}) is kept at low idle for maximum 35 seconds when the coolant, transmission oil or hydraulic oil temperature is low, or for 3 seconds if these temperatures are in the acceptable operation range. After this period, the engine RPM will increase by applying the accelerator pedal (3).

WARNING: Do not operate the machine while the engine RPM is being kept at low idle, otherwise, the machine or the front attachment could unexpectedly move that may result in serious injury.

8. Perform checks to be done after starting the engine and warm up by referring to page 3-8.



MNEC-01-036

NOTE:

- *If the machine is equipped with the secondary steering, the secondary steering auto-check sound may be heard after starting the engine.*
- *White smoke may occur for several minutes after the engine starts, this is not a malfunction.*

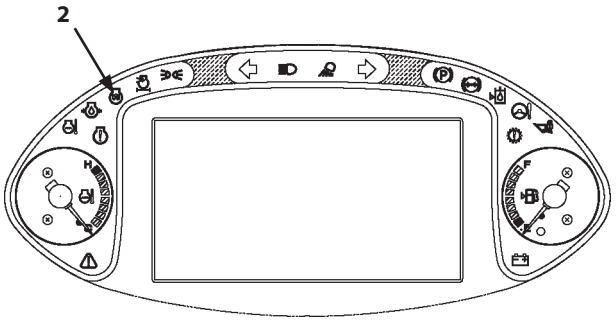
Starting in Cold Weather

Preheating

1. Turn the key switch (1) ON. The ambient temperature sensor is activated so that the engine is automatically preheated.
2. Preheat indicator (2) should turn ON. As long as the preheat indicator stays ON, the engine is being heated.

M4GB-01-089

NOTE: Preheating time varies depending on the ambient temperature.

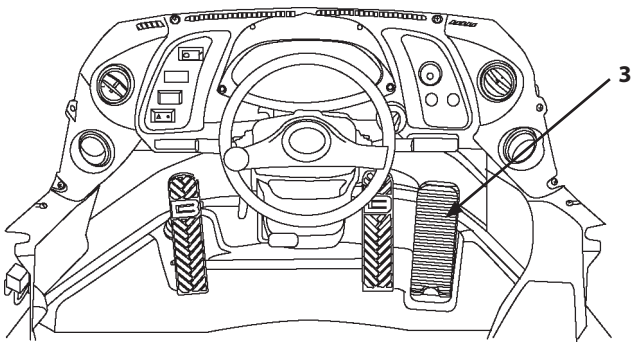


MNEC-01-073

3. As soon as preheat indicator (2) turns OFF, turn key switch (1) to START position to rotate the starter. As soon as the engine starts, release the key switch. The key switch will automatically return to the ON position.
   Run the engine at low idle without applying accelerator pedal (3).

IMPORTANT: At starting the engine, the engine RPM (min^{-1}) is kept at low idle for maximum 35 seconds to warm up the coolant, hydraulic oil, etc. After this period, the engine RPM will increase by applying the accelerator pedal (3).

WARNING: Do not operate the machine while the engine RPM is being kept at low idle, otherwise, the machine or the front attachment could unexpectedly move that may result in serious injury.



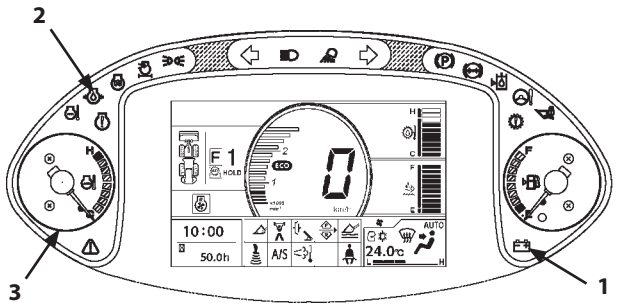
MNEC-01-036

4. Perform checks to be done after starting the engine by referring to the following section.

NOTE: Headlights, working lights or room light may become dim during engine preheating in the cold environment.

Check After Starting

IMPORTANT: If any abnormality is found in the monitor functions, immediately stop the engine and investigate the cause of the trouble.



MNEK-01-500

Check the monitor operation:

1. Check that discharge warning indicator (1) is OFF.

   In case the discharge warning indicator stays ON, immediately stop the engine. Inspect the alternator and battery system for problems.

2. Check that low engine oil pressure indicator (2) is OFF.

   In case the low engine oil pressure indicator stays ON, immediately stop the engine. Inspect the engine oil pressure system and the oil level.

3. Check that engine coolant temperature gauge (3) is within the normal (green) range.

NOTE: To check indicator bulbs and the buzzer function, when the key switch is turned ON, monitor indicators come ON and continue to stay ON for approx. 2 seconds.

Check Engine Noise and Exhaust Gas Color

Check that the engine noise and exhaust gas color is normal.

NOTE: Check the exhaust gas color as follows. (After warm-up operation, run the engine with no loads.)

Clear or light blue	:	Normal (Perfect combustion)
Black	:	Abnormal (Imperfect combustion, abnormal aftertreatment device, abnormal fuel system)
White	:	Abnormal (Oil is leaking into the combustion chamber, abnormal aftertreatment device, abnormal fuel system)

NOTE: White smoke may occur for several minutes after the engine starts; this is not a malfunction.

Using Booster Batteries

IMPORTANT: The machine electrical system is a 24 volt negative (-) ground. Use only 24 volt booster batteries with sufficient capacity.

SA-032

WARNING:

- **An explosive gas is produced while batteries are in use or being charged. Keep open flames and sparks away from the battery area. Do not continue to use or charge the battery when electrolyte level is lower than specified. Explosion of the battery may result.**
- **Park the machine and a machine with the booster batteries on a dry or concrete surface, not on steel plates. If the machine is parked on steel plates, the machine is equivalent to a continuously grounded machine so that dangerous unexpected current flow may result.**
- **Never connect a positive terminal to a negative terminal, as a dangerous short circuit will occur.**

If the machine batteries are completely discharged so that when starting the engine using booster batteries is necessary, do the following procedure.

1. Connecting the booster batteries

1.1 Stop the engine on the booster battery mounted machine.

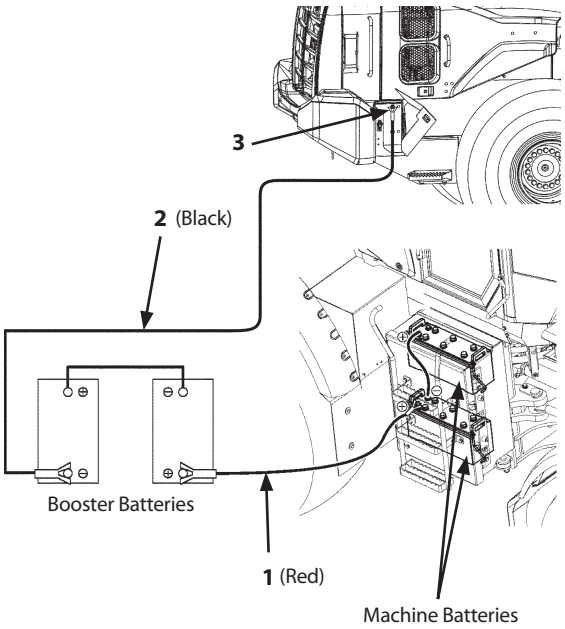
1.2 Connect one end of red booster cable (1) to the positive (+) terminal of the machine battery, and the other end to the positive (+) terminal of the booster battery.

1.3 Connect one end of black booster cable (2) to the negative (-) terminal of the booster batteries, and then connect the other end of the cable to the bolt inside tool box (3) that connects to the ground. In the last connection to the bracket, sparks may fly so keep the machine batteries as far away as possible from the bracket.

1.4 After securely connecting the booster cables, start the engine on the booster battery mounted machine.

1.5 Start the engine on the machine.

1.6 After the engine starts, leave the booster batteries connected long enough so as not to overload alternator, then disconnect booster cables (1 and 2) in the following steps.



MNEK-03-003

2. Disconnecting the booster cables

2.1 Disconnect black negative (-) cable (2) from the bolt inside tool box (3).

2.2 Disconnect the other end of black booster cable (2) from the negative terminal of the booster batteries.

2.3 Disconnect one end of red booster cable (1) from the positive terminal of the booster battery.

2.4 Disconnect the other end of red booster cable (1) from the positive terminal of the machine battery.

IMPORTANT: Make sure to connect/disconnect booster cables (1 and 2) following the steps below. Connect the booster cables one by one. Do not hold both cables at the same time to avoid short-circuit.

Warm Up

IMPORTANT: At starting the engine, the engine RPM (min^{-1}) is kept at low idle for maximum 35 seconds to warm up the coolant, transmission oil or hydraulic oil. After this period, the engine RPM will increase by applying the accelerator pedal (3).

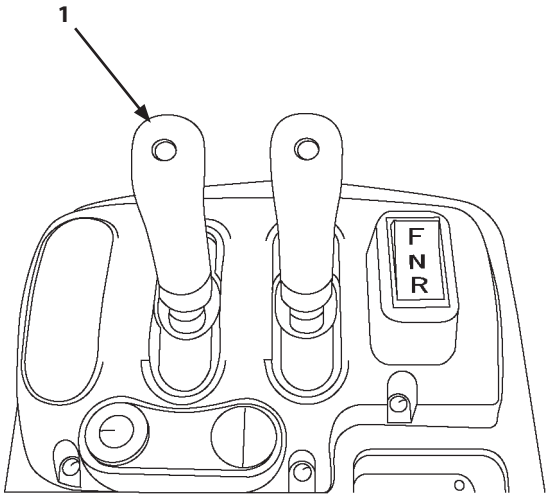
WARNING: Do not operate the machine while the engine RPM is being kept at low idle, otherwise, the machine or the front attachment could unexpectedly move that may result in serious injury.

CAUTION: Operating the machine without warm up causes damage to the engine and hydraulic components. Be sure to perform warm up not only to protect the hydraulic components from being damaged but also to ensure safe operation.

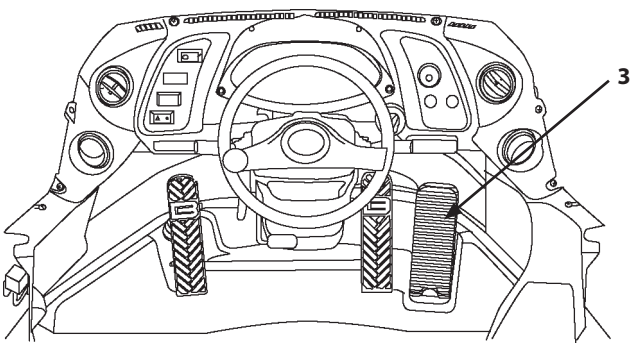
If the machine is operated with the hydraulic oil temperature below 20 °C (68 °F), damage to the hydraulic components may result. After starting the engine, perform warm up as described below before operating the machine until the hydraulic temperature is above 20 °C (68 °F).

1. While releasing accelerator pedal (3), run the engine at low idle speed for about 3~5 minutes with no load.
2. Increase the engine revolutions to 1200 min^{-1} (RPM's). Raise the bucket above the ground and hold bucket control lever (1) in the tilt position for 10 seconds. (Do not operate control levers other than the bucket control lever at this time.)

IMPORTANT: Excessively repeated operation of bucket control lever (1) could generate abnormal surge pressure, damaging in hydraulic parts.



MNEC-03-003



MNEC-01-036

Cold Weather Warm Up

IMPORTANT: At starting the engine, the engine RPM (min^{-1}) is kept at low idle for maximum 35 seconds to warm up the coolant or hydraulic oil. After this period, the engine RPM will increase by applying the accelerator pedal (3).

WARNING: Do not operate the machine while the engine RPM is being kept at low idle, otherwise, the machine or the front attachment could unexpectedly move that may result in serious injury.

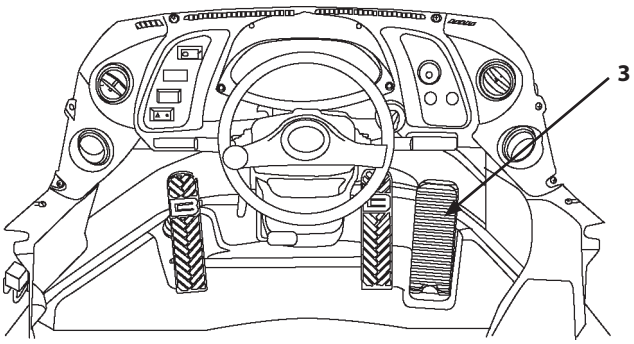
CAUTION: In case the hydraulic oil temperature is low, perform cold weather warm up. Operate the machine only after loading linkage speed is normal. Operating the machine without warming up first causes damage to the engine and hydraulic components. Be sure to perform warm up, not only to protect the hydraulic components from being damaged, but also to ensure safe operation.

1. Run the engine at slow idle speed for more than 5 minutes to warm up without stepping on accelerator pedal (3).

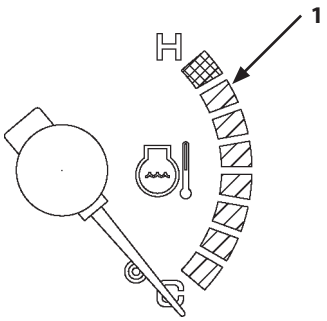
   If the [Warm Up Operation] in the multi-monitor setting menu is set to "ON" (enabled), the engine speed automatically increases from slow idle to 1000 min^{-1} (rpm) and enters warm-up mode when hydraulic oil temperature is 0 °C (32 °F) or lower.

   Further, when either hydraulic oil temperature reaches 30 °C (86 °F) or higher, or engine coolant temperature reaches 40 °C (104 °F) or higher, the warm-up mode is automatically canceled, and the engine runs in slow idle mode.

   (Do not operate the machine until the needle of coolant temperature gauge (1) starts moving.)



MNEC-01-036



MNEC-03-002

IMPORTANT:

- **Do not subject the engine to sudden acceleration until the end of the warm-up period.**
- **Do not idle the engine for excessively long periods of time to prevent engine performance decrement.**
- **Long periods of idling (more than 10 minutes) can damage an engine because combustion chamber temperatures drop so low the fuel can not burn completely. This will cause carbon to form in the injector spray holes and on the piston rings and can result in stuck valves.**

2. Keep the engine running at low to medium speed for about 5 minutes more.

NOTE: At this time, do not operate the engine in slow or fast speed. Use medium engine speeds for safe and quick warm up.

3. Fully extend the bucket cylinder.

NOTE: Do not continuously operate the bucket control lever for more than 10 seconds at a time. Do not bang linkage when cold.

4. Slowly and fully retract the bucket cylinder.

NOTE: Do not continuously operate the bucket control lever for more than 10 seconds at a time. Do not bang linkage when cold.

5. Repeat steps 2 to 4 above until the loading linkage speed is normal. When the air temperature is lower than 0 °C (32 °F), extend the warm up time by running the engine at about 1200~1500 min^{-1} (RPM's).

6. Slowly and fully turn the steering wheel while running the engine at low idle as needed.

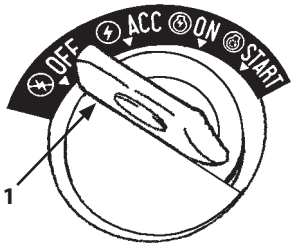
NOTE: Headlights, working lights or room light may become dim during engine preheating in the cold environment.

Stopping Engine

Stop the engine in the following manner.

IMPORTANT: Never stop the engine while moving the machine.

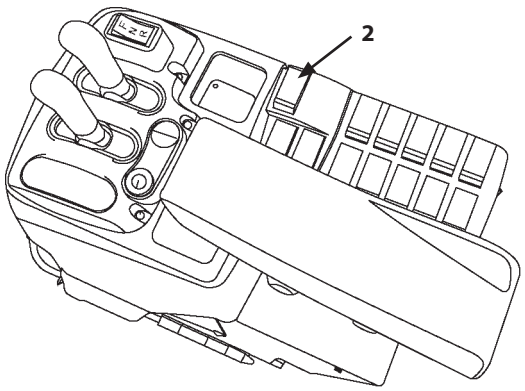
If the engine stops, the steering system may become inoperable, or it may cause other malfunctions or seizure of parking brake.



M4GB-01-089

1. Lower and level the bucket before stopping the engine.

IMPORTANT: If an engine equipped with a turbocharger is stopped without first cooling down at low rpm's, the lubricant on the turbocharger bearing and seal surfaces may be dissipated due to the intense heat inside the turbocharger, possibly damaging the turbocharger.



MNEC-07-001

2. Run the engine at low idle speed for 5 minutes to cool the engine.
3. Turn the key switch (1) to OFF position to stop the engine.
4. Press LOCK (🔒) side of control lever lock switch (2).
5. Make sure that the light switch is turned OFF.

NOTE: Do not idle for excessively long periods. Observe local and federal engine idling regulations.
When stop the machine, refer to page 4-16 for further procedures.
When park the machine, refer to page 4-18 for further procedures.

IMPORTANT: After stopping the engine, the DEF/AdBlue® pump keeps operating to return the DEF/AdBlue® in piping to the DEF/AdBlue® tank. Do not turn the battery disconnect switch OFF while pump running. Failure to do so may damage the SCR system.

Driving the Machine

Correct operation will result in extending the service life of each part and component as well as saving fuel and oil. Always be sure to safely and efficiently operate the machine while paying attention to the following points.

Precautions for starting to move

1. Perform a thorough walk-around inspection. Conduct correct start-up procedure.

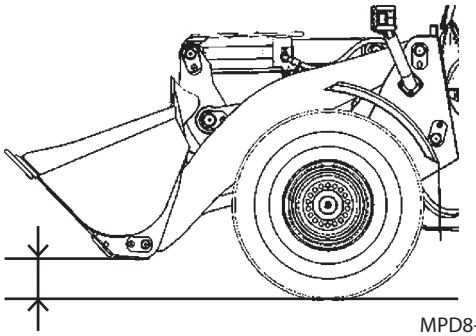
2. After raising the lift arm, set the lift arms and bucket in the operating position.

3. Before driving on public roads, set the machine to the driving position as illustrated to the right.

4. Be sure to press lock (🔒) side of control lever lock switch (1) so that the linkage will not move even if the control levers are accidentally moved.

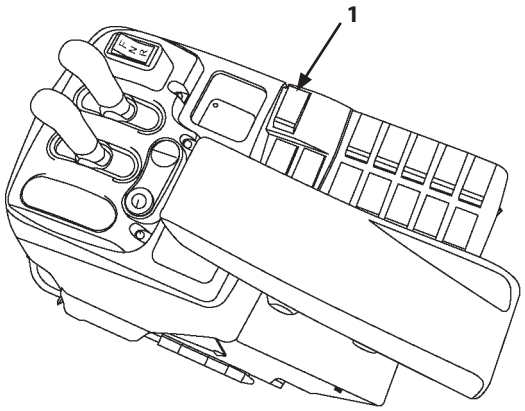
5. After starting the engine, be sure to run the engine at slow idle speed to warm up the machine before starting to move. Do not depress the accelerator pedal when starting the engine and idling operation.

   Refer to pages 3-11 and 3-12 for the warming up operation.



MPD8-04-002

A Driving Position
A: 300 mm



MNEC-07-001

Starting to Move

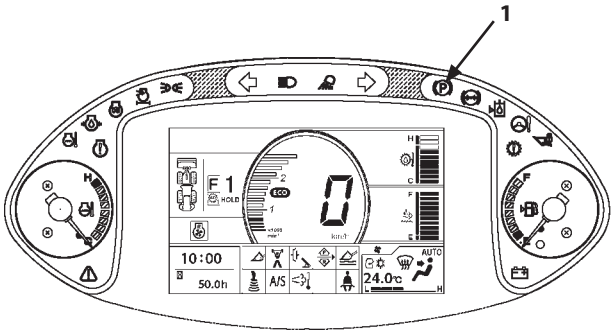
WARNING: Start to move the machine only after checking that no personnel and/or obstacles are present around the machine.

Never turn ride control switch (4) (option) to ON position when traveling the machine or raising the bucket. Before turning the ride control switch (4) ON, stop the machine and confirm that no one is around the bucket. Avoid turning ride control switch (4) to ON position while moving the machine. Failure to do so may automatically move the lift arm up or down.

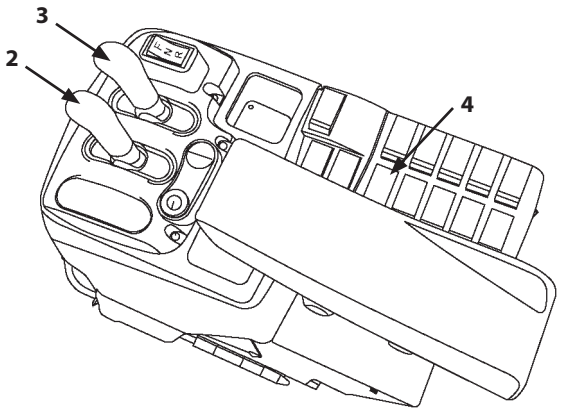
NOTE: Refer to page 1-105 for detailed information of ride control switch (4).

1. Check that none of the warning indicators except parking brake indicator (1) on the monitor panel are ON when engine is running.

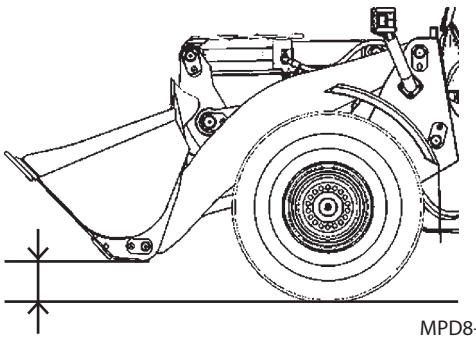
2. Set the front attachment in the driving position by operating control levers (2) (3).



MNEK-01-500



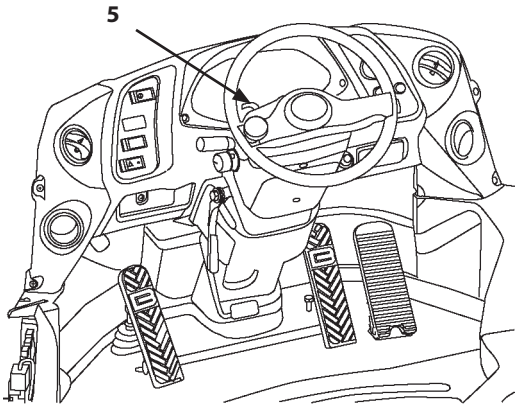
MNEC-07-001



MPD8-04-002

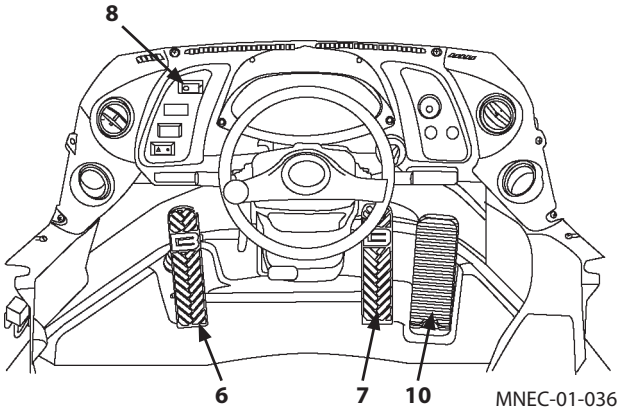
A Driving Position
A: 300 mm

3. Turn neutral lever lock (5) to the unlock position.



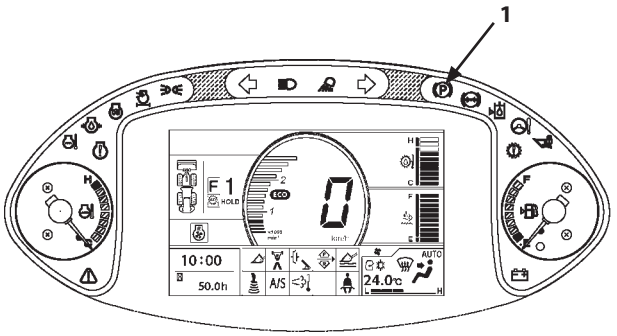
MNEC-01-037

4. Step on brake pedal (6) or (7) and press parking brake switch (8) to the OFF position to release the parking brake.



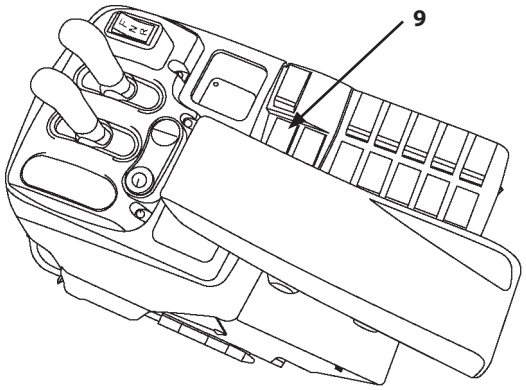
MNEC-01-036

Check that at this time parking brake indicator (1) goes OFF.



MNEK-01-500

NOTE: When starting to ascend a slope, turn declutch switch (9) (⊣) OFF (clutch engaged), and depress brake pedal (6). Gradually release brake pedal (6) while depressing accelerator pedal (10) to easily start ascending a slope.



MNEC-07-001

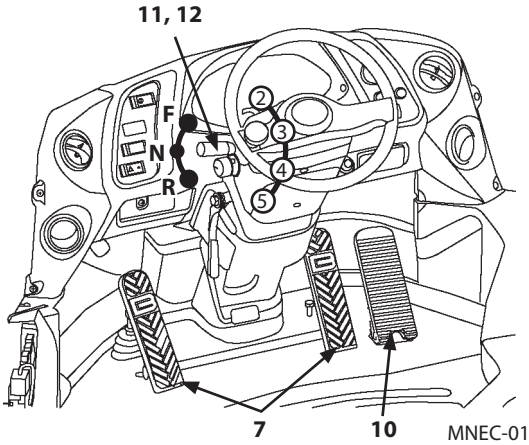
5. Manual Shift (M)

   After moving forward/reverse lever (11) to either forward (F) or reverse (R) position, move the shift switch (12) to the desired position. The transmission gear position can be shifted in 5 ranges in the forward and 3 ranges in the reverse mode. Select the most appropriate transmission range position according to the operating conditions.

   Manual Mode:

   Manual shift mode.
   The transmission gear is shifted according to the shift switch position.

   To fix the transmission gear to manual 1st speed, turn the shift switch to 2nd speed, and then push 1st speed fixed switch regardless of the position of travel mode selector (12). Refer to the page 1-104 for detailed information.



MNEC-01-037

6. Auto Shift

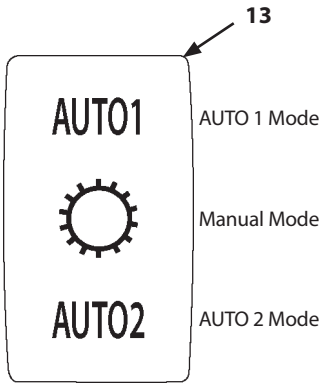
   Set forward/reverse switch (11) to (F) or (R). Select the most appropriate transmission range position according to the operating conditions. Select the most appropriate travel pattern by operating travel mode selector (13).

   AUTO 1 Mode:

   This mode sets 1st range as the minimum speed gear stage.
   Start traveling with 2nd range. When driving load increases, it automatically shifts to 1st range.
   This mode is suited for heavy digging work or ascending on a slope.

   AUTO 2 Mode:

   This mode sets 2nd range as the minimum speed gear stage.
   This mode is suited for removing snow or lighter applications.



MNEC-01-024

NOTE:

- *Avoid operating this switch while machine is moving.*
- *Do not use this switch on a slope. Use of the Quick Power Switch is recommended to have more acceleration while ascending on a slope.*

  (Refer to page 1-107 for Quick Power Switch.)

7. Release brake pedals (7) and step on accelerator pedal (10) to start traveling.

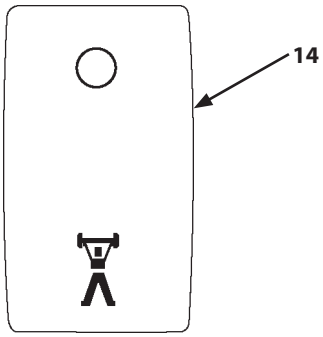
Shift Range of Auto Transmission

	Shift Switch Position	Shift Range at Forward	Shift Range at Reverse
AUTO 1	2nd Speed	1st Speed ↔ 2nd Speed	1st Speed ↔ 2nd Speed
	3rd Speed	1st Speed ↔ 2nd Speed ↔ 3rd Speed	1st Speed ↔ 2nd Speed ↔ 3rd Speed
	4th Speed	1st Speed ↔ 2nd Speed ↔ 3rd Speed ↔ 4th Speed	1st Speed ↔ 2nd Speed ↔ 3rd Speed
	5th Speed	1st Speed ↔ 2nd Speed ↔ 3rd Speed ↔ 4th Speed ↔ 5th Speed	1st Speed ↔ 2nd Speed ↔ 3rd Speed
AUTO 2	2nd Speed	Only 2nd speed	Only 2nd speed
	3rd Speed	2nd Speed ↔ 3rd Speed	2nd Speed ↔ 3rd Speed
	4th Speed	2nd Speed ↔ 3rd Speed ↔ 4th Speed	2nd Speed ↔ 3rd Speed
	5th Speed	2nd Speed ↔ 3rd Speed ↔ 4th Speed ↔ 5th Speed	2nd Speed ↔ 3rd Speed

NOTE: When AUTO 1 is selected, the machine starts with 2nd speed and the gear automatically shifts to 1st speed depending on the load. However, the gear will not shift in 1st speed while depressing the brake pedal.

Power Mode Selector

Pressing power mode selector switch (14) alternately activates (ON) and deactivates (OFF) the power mode. When the power mode is activated (ON), the indicator "" appears on the monitor display.
The power mode is suited for heavy digging work prioritizing work effectiveness. Under auto shifting mode, the gear is shifted in regular RPM's (min^{-1}) and shift mapping.



MNEC-01-016

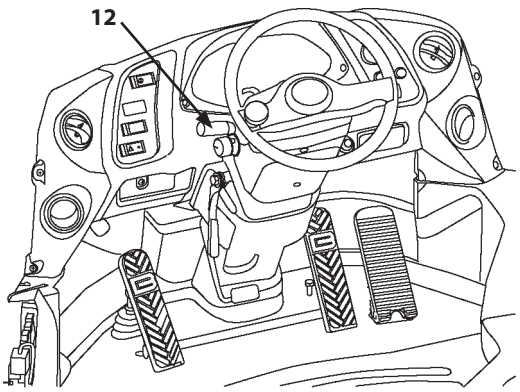
NOTE: When the power mode is OFF, the machine operates prioritizing fuel consumption. Under auto shifting mode, the gear is shifted in early timing.

Shift Change Delay Mode

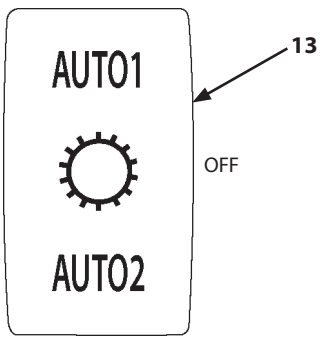
When travel mode selector (13) is set in AUTO 1 or AUTO 2 while shift switch (12) is in 3rd, 4th, or 5th range position, the shift up timing in 2nd range → 3rd range is delayed.
Loading work can be easily done in 2nd range position.

Shift Up Delay

Forward movement	:	The gear shifts up when moving the machine at high speed in 2nd range for 4 seconds or longer. The gear will not shift while the lift arm is raising. The shift up delay will operate only one time when the bucket is in the operating position. When the bucket is lower at digging position, the shift delay always operates.
Reverse movement	:	The gear shifts up when operating the machine at high speed in 2nd range for 5 seconds or longer. The shift up delay always operates.



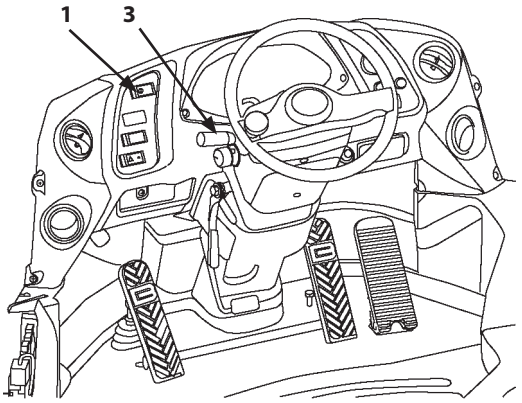
MNEC-01-037



MNEC-01-024

Capability to activate or not activate the shift change delay mode is selected at the transmission setting screen on the monitor.
(Refer to page 1-58, Shift Change Delay Mode Setting.)

Parking Brake Switch



MNEC-01-037

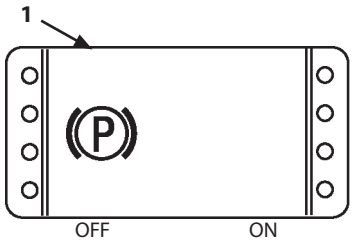
WARNING:

- **To prevent accidents due to running away of the machine, after parking the machine or before leaving the machine, be sure to apply the parking brake.**
- **Never apply the parking brake switch (1) while moving the machine except in an emergency. Premature wear and/or damage to the parking brake may result. After the parking brake has been applied in an emergency while moving the machine, have the parking brake checked at your nearest authorized dealer.**

1. Press the OFF side of parking brake switch (1) to release the parking brake. Check that parking brake indicator (2) goes OFF by pressing the switch firmly twice.

   Press the ON side of parking brake switch (1) to apply the parking brake.

   Operate the parking brake after stopping the machine on level ground.

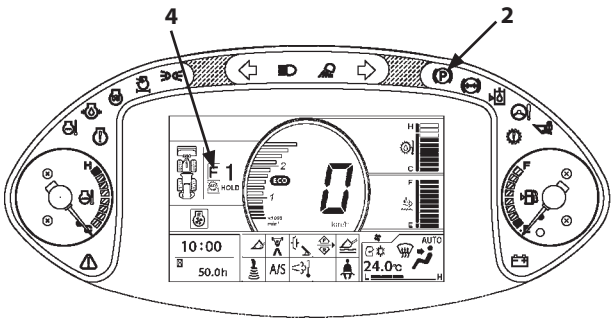


MNEC-01-058

NOTE: While running the engine, when the parking brake is applied with forward/reverse selector switch lever (3) in neutral, parking brake indicator (2) comes ON.

2. While running the engine, when the parking brake is applied with forward/reverse lever (3) in either the forward (F) or reverse (R) position, parking brake indicator (2) comes ON, and the alarm buzzer sounds. F-N-R display (4) of the monitor display indicates "N" not "R". The display will not indicate "F" and "R" until the parking brake is released.
3. To ensure safe operation, when the engine is stopped, the parking brake is applied even if parking brake switch (1) is in the OFF position.

   In this case even after the engine is restarted, the parking brake will not be released. After starting the engine, push the ON position of parking brake switch (1) once. Then, push the OFF position parking brake switch (1) to release the parking brake.



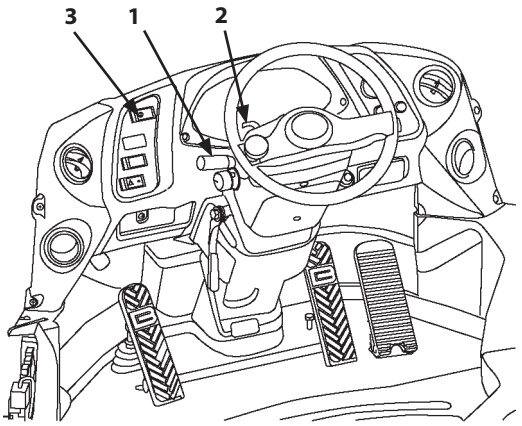
MNEK-01-500

Drive Speed Change

The transmission gear range of 1st, 2nd, 3rd and 4th can be selected by turning shift switch (1).
Refer to item 6 on page 4-4 for the auto-shifting mode.

1st and 2nd ranges	:	To be used for excavation and loading work
3rd, 4th and 5th ranges	:	To be used for traveling over long distances.

NOTE: Avoid rapid gear changes using shift switch (1) while traveling at high speed. Shift the gear range only after reducing the travel speed by releasing the accelerator pedal.



MNEC-01-037

Changing Forward/Reverse Drive Direction

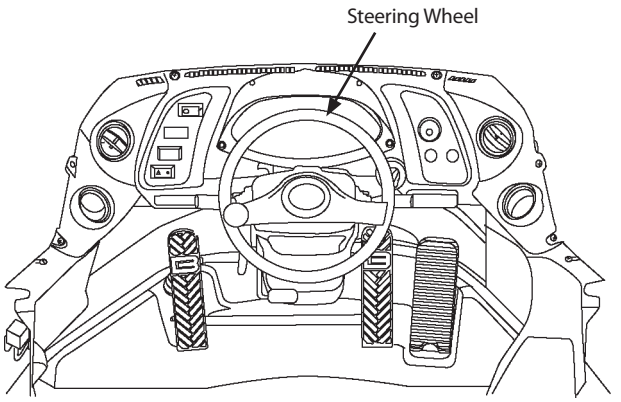
WARNING:

- **Before changing the forward/reverse drive direction, confirm that the direction of drive is clear.**
- **To ensure operator's safety and ensure the longevity of the power train, change the machine drive direction only after sufficiently slowing machine down to 13 km/h (8 mph) or slower.**

1. Pull neutral lever lock (2) to the unlock position.
2. Press the OFF position of parking brake switch (3).
3. Move forward/reverse selector switch lever (1) to the desired position.

   F : Forward Driving
   N : Neutral
   R : Reverse Driving

Steering Wheel



MNEC-01-036

WARNING:

- **Avoid sudden steering while moving the machine at high speeds, while moving on a steep slope, or while raising the lift arms. Failure to do so may cause the machine to turn over.**
- **Never attempt to stop the engine while steering the machine. If the engine is stopped, the steering wheel will lock and the parking brake will be applied so that steering will be impossible. Never stop the engine while moving the machine.**
- **Never steer while raising the lift arm high as it is extremely dangerous and may cause the machine to turn over.**

IMPORTANT: When the steering wheel is fully turned, the front and the rear chassis come in contact with the stoppers so that the steering wheel does not rotate further. If the steering wheel is forcibly turned further, the engine may stall or steering system problems may result.

Turn the steering wheel toward the direction you intend to steer the machine during operation.

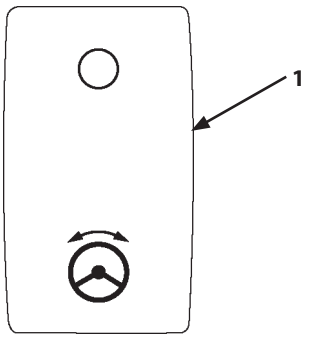
NOTE: This machine has an articulated frame design. The front and rear chassis are coupled by connection pins (center pins) so that the rear wheels follow the tracks of the front wheels.

Turn the steering wheel slowly so as to follow the motion of the machine.

Secondary Steering (Option)

If the oil pressure in the steering system lowers, the secondary steering system is activated so that steering operation can be achieved. If the secondary steering system is activated, the secondary steering indicator lights and the buzzer sounds. Immediately park the machine in a safe location. Then, contact your nearest authorized dealer. The secondary steering can be used for 60 seconds.

IMPORTANT: The secondary steering system is provided for an emergency use. If continuously used for more than 60 seconds, damage to the system may result.



MNEC-01-020

Even though the machine is equipped with the secondary steering system, if the steering function becomes inoperable while moving machine, press secondary steering check switch (1) on the right console to activate the secondary steering system. Then, immediately park and stop the machine in a safe location.

NOTE:

- *The secondary steering auto-check sound may be heard for two seconds after starting the engine.*
- *Before operating the machine, press secondary steering check switch (1) to confirm that the secondary steering pump operates normally.*

Emergency Stop and Restart of Operation

Follow the tips described below when required to stop or restart operation when an emergency has occurred.

1. Slowly release the accelerator pedal. Depress the service brake pedal to stop the machine.
2. Slowly depress the accelerator pedal while releasing service brake pedal to move the machine again.
3. In case the machine is required to park the machine for a long period of time, return the forward/reverse lever to neutral (N), turn the parking brake switch ON, and apply the parking brake to ensure safety.
4. During long load and carry applications, the lift arm position may lower due to inner hydraulic oil leaks. When required to adjust the lift arm position, temporarily stop machine, return the forward/ reverse selector switch lever to neutral, apply the parking brake by turning the parking brake switch ON. Then, after repositioning the position of lift arm and bucket, begin moving the machine again. Always allow the machine to maintain correct drive position.

Precautions for Traveling

When operating, observe the previously noted operating precautions along with the others shown below to ensure safe and correct operation.

⚠ WARNING:

- **In case a tire is punctured while driving, securely hold the steering wheel and slowly reduce the drive speed.**

  If the service brake is suddenly applied while a tire is punctured, steering may lose control, possibly creating an accident. Never apply the brake quickly if a tire is punctured.

- **Never mount or dismount a moving machine. Never allow any personnel other than the operator to ride on the machine when operating.**

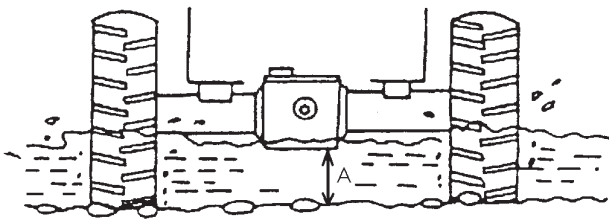
- Even after break-in is complete, avoid running the engine at high RPM's (min^{-1}) under no load.
- If any abnormal condition such as an abnormal noise, vibration, or smell is noticed while operating, immediately stop the engine and inspect the machine for any trouble.
- Avoid using sudden steering or braking as much as possible because your machine and other machines may become involved in a hazardous condition.
- Road speeds of this machine are lower than most automobiles. Always give the right of way to automobiles.
- Make it a habit to periodically scan the gauges and instruments. If any abnormality is recognized, immediately stop the machine and check the machine for the cause of the trouble.
- When required to drive on the road shoulder or in tight spaces, use a signal person or signal car.
- Slowly approach a crossing while paying attention to the visibility ahead and in the opposite lane.

Operating in Water or on Soft Ground

IMPORTANT: If the axles, transmission, etc. should become submerged under water to the point that water enters into them, they must be reconditioned immediately, otherwise the inner gears may wear excessively, or the machine may become damaged. Contact your nearest authorized dealer for inspection and maintenance.

- Do not submerge the front and rear axles, transmission, or front and rear propeller shafts in water or mud. Avoid operating in water as much as possible.
- If operating in water or mud is unavoidable, do not allow the machine to be submerged deeper than allowable depth (A) (up to the bottom of the axle housing). Reduce the allowable depth in case the river bed is feared to be rugged or water is flowing fast.
- When operating on muddy ground, mud can easily accumulate on the chassis even if the chassis is not heavily submerged in mud. Check regularly and clean as necessary.

NOTE: After operation is complete, be sure to wash and lubricate all areas which were submerged.



M4GB-04-003

Precautions for Driving on Slopes

WARNING:

- **Never allow the machine to descend a slope with the forward/reverse lever in neutral (N). This will not only cause the excessive engine revolutions to malfunction but also cause other engine and machine troubles.**
- **When descending a slope, use normal resistance to travel as exerted by the engine through the drive train. Apply the brakes only when absolutely required. If the brake is continuously used while descending a slope, the brake temperature will increase, possibly decreasing braking performance.**

  If overheating of the brake system is noticed, immediately park the machine in a safe location. Restart and operate the machine only after the brake system is sufficiently cooled.
- **When descending a slope, do not operate the machine at a speed faster than the maximum travel speed. Failure to do so may damage the machine and/or a serious accident may result.**

When steering on a slope, lower the loader front to increase the machine stability. Do not steer on a steep slope since this may cause the machine to turn over.

When descending a slope, descend in a low drive range with engine resistance applied.

Do not operate the machine at a speed faster than the maximum travel speed.

In case the engine stalls on a slope, immediately step on the service brake pedal, lower the loader arms to the ground and stop the machine. The parking brake is automatically applied when the engine is stopped regardless of the position of the parking brake switch. Before restarting engine, return the Forward/Reverse lever to neutral (N) and turn the parking brake switch ON.

- Before descending a slope, confirm that the service and parking brake systems work normally.
- In case the hydraulic oil and lubricant temperatures are low, the machine gradability may decrease. Before climbing a steep slope, warm up the machine.

Precautions to be Taken if Machine Failure Occurs

- Keep alert. While paying attention to the vehicles following you, slowly reduce the travel speed and park the machine on the road shoulder away from flow of traffic.
- Lower the lift arms.
- Set the parking brake.
- Indicate that the machine is disabled. Unless a sign is used, collision with a following vehicle from behind may result. Be sure to indicate that the machine is disabled by one or more of the following methods.
  - Use disabled machine triangles.
  - Turn the hazard lights ON.
  - Use an emergency signal instrument (emergency signal light or reflective triangles).

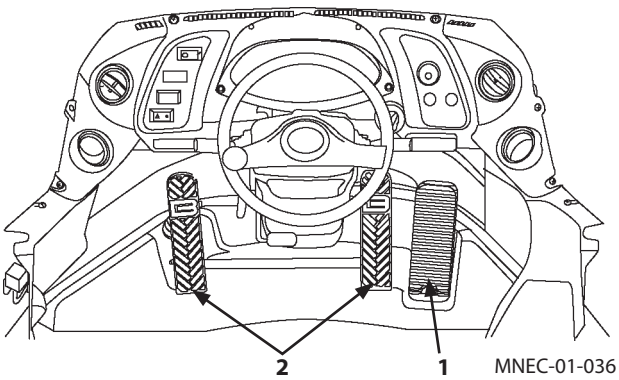
WARNING: Do not spill oil on the road surface. Oil spillage may cause another vehicle to slide, possibly creating a serious accident.

- In case of hydraulic oil leaks, immediately repair the machine. If oil gets on the road surface, take the highest priority to notify the following vehicles of this danger. Then, remove the leaked oil as soon as possible.
- In case the repairing the machine by yourself is impossible, contact your nearest authorized dealer.

Stop

1. Avoid sudden deceleration. Smoothly reduce operating speed.

   Release accelerator pedal (1) and step on brake pedal (2) to stop the machine.

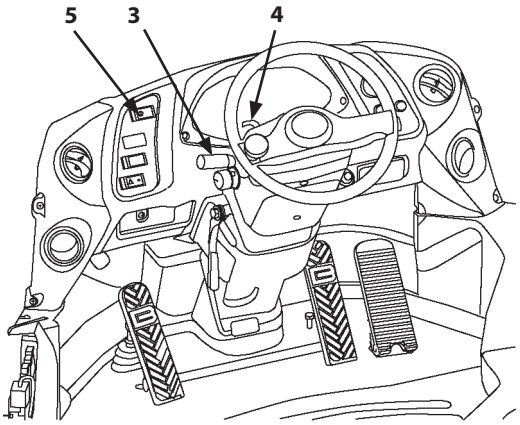


MNEC-01-036

2. Return forward/reverse lever (3) to neutral (N).

   Place neutral lever lock (4) to the lock (🔒) position.

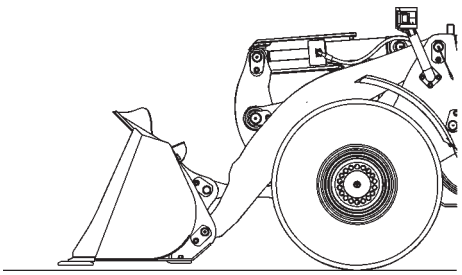
3. Press the ON position of parking brake switch (5).

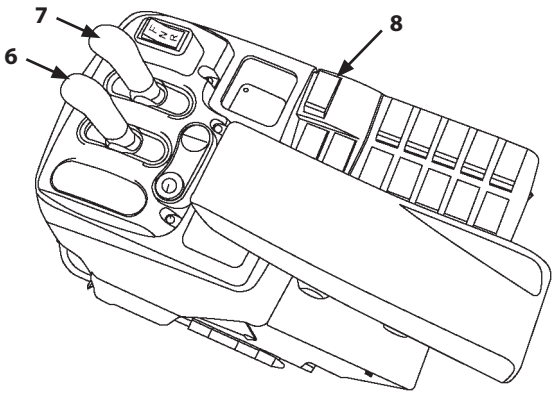


MNEC-01-037

4. Level the bucket with the surface of the ground and lower the bucket to the ground by operating bucket control lever (6) and lift arm control lever (7).

5. Press lock (🔒) side of control lever lock switch (8).


Stop and Parking Position MPD8-04-001



MNEC-07-001

IMPORTANT: This machine is equipped with a turbocharged engine. Therefore if the engine is stopped without first cooling down at low RPM's, the lubricant on the turbocharger bearing and seal surfaces may be dissipated due to the intense heat present inside turbocharger, possibly damaging the turbocharger.

6. Run the engine at slow idle speed for 5 minutes to cool the engine.

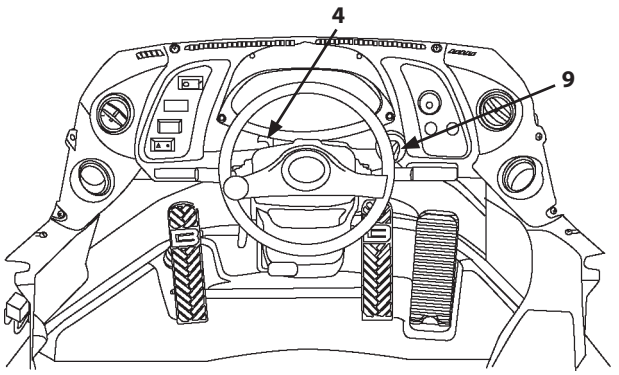
NOTE: Do not idle for excessively long periods. Observe local and federal engine idling regulations.

IMPORTANT: Do not leave the machine with key switch (9) in ACC position. This may discharge the batteries.

Be sure to turn key switch to OFF position before leaving the machine.

7. Turn key switch (9) to OFF position to stop the engine. Remove the key from the switch. Place neutral lever lock (4) to the lock (🔒) position. Turn OFF the light switch.

8. Before leaving the machine, close and lock all the windows, cab doors, and covers.



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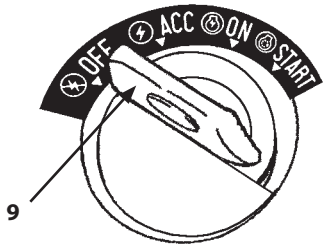
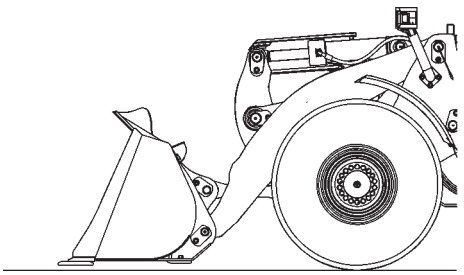


M4GB-01-089

Parking

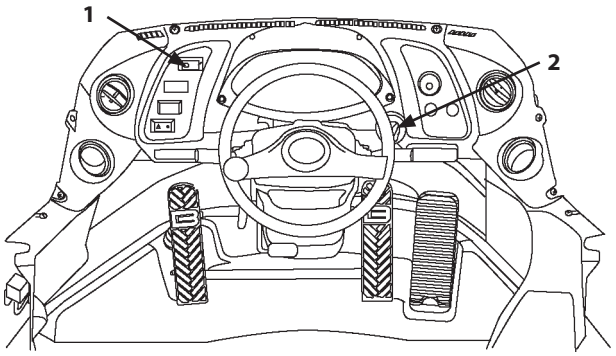
IMPORTANT: When parking the machine with cab door and windows open, cab electrical components may be damaged by bad weather. Always close windows, roof vent and cab doors when parking the machine.

1. Stop and park the machine on level surface. Lower the bucket to the ground.



Stop and Parking Position MPD8-04-001

2. Turn parking brake switch (1) ON.



MNEC-01-036

IMPORTANT: This machine is equipped with a turbocharged engine. Therefore if the engine is stopped without first cooling down at low RPM's, the lubricant on the turbocharger bearing and seal surfaces may be dissipated due to the intense heat present inside turbocharger, possibly damaging the turbocharger.

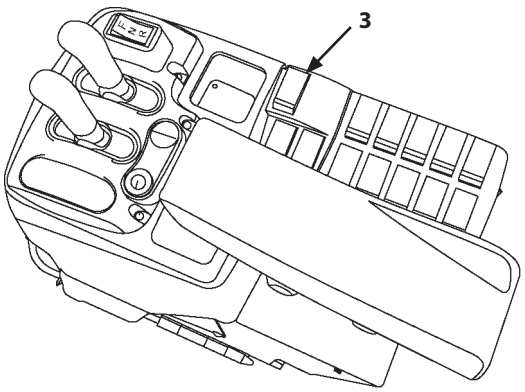
3. Run the engine at low idle speed to cool the engine for a few minutes.

NOTE: Do not idle for excessively long periods. Observe local and federal engine idling regulations.

4. Turn key switch (2) to OFF position to stop the engine. Remove the key from the switch.

5. Press lock side of control lever lock switch (3). Turn OFF the light switch.

6. Before leaving the machine, close and lock all the windows, cab doors, and covers.



MNEC-07-001

Emergency Stopping

When the engine has stalled during operation:

Pressurized oil in the accumulator acts on the brake when the brake pedal is depressed. Immediately park and stop the machine in a safe location. At this time, do not repeatedly apply the brake pedal.
The brake oil pressure will be quickly reduced so that the brakes become inoperable.

If the machine does not stop even if the brake pedal is applied, press the parking brake switch ON side to stop the machine.

The steering wheel will become hard to rotate as the hydraulic system becomes inoperable.

In the event any above mentioned symptom occurs, immediately trace the cause of the problem.
In case a complicate failure has occurred, consult your nearest authorized dealer.

MEMO

Loading Control Levers

Fingertip Control Type

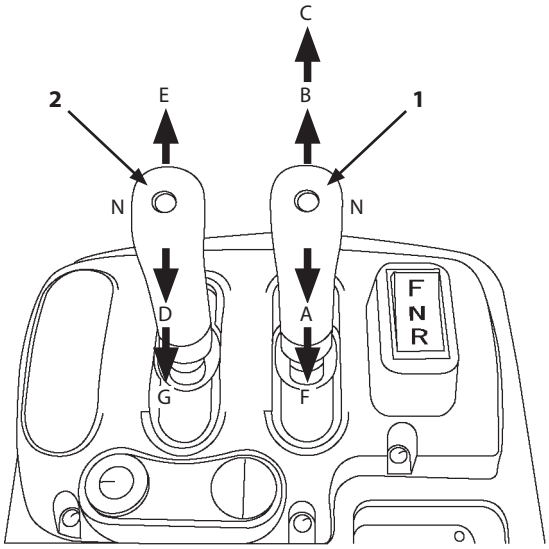
The fingertip control lever is used to operate the lift arm and/or bucket.

Lift Arm Control Lever (1)

Lever Position	Lift Arm Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied. The lever will stay in this position.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position with the detent.

Bucket Control Lever (2)

Lever Position	Bucket Operation
E	Bucket Dump: The bucket is tilted forward to dump the bucket.
N	Hold: The bucket is stopped and held in that position.
D	Bucket Tilt (or Roll Back): The bucket is tilted back; (also this is the transportation position.)
G	Detent: When the bucket control lever is moved from the bucket dump position to the bucket tilt position, the bucket control lever is held in this position with the detent.



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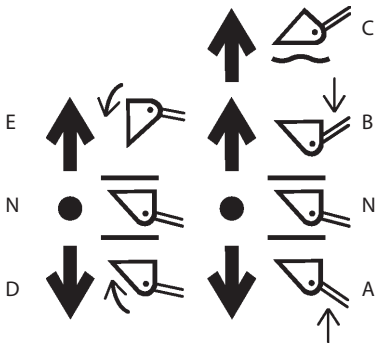

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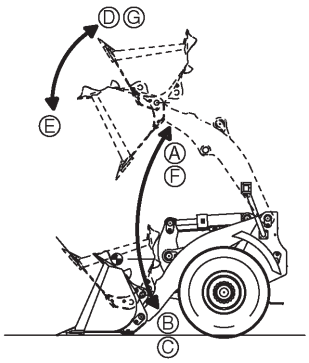


M4GB-01-073

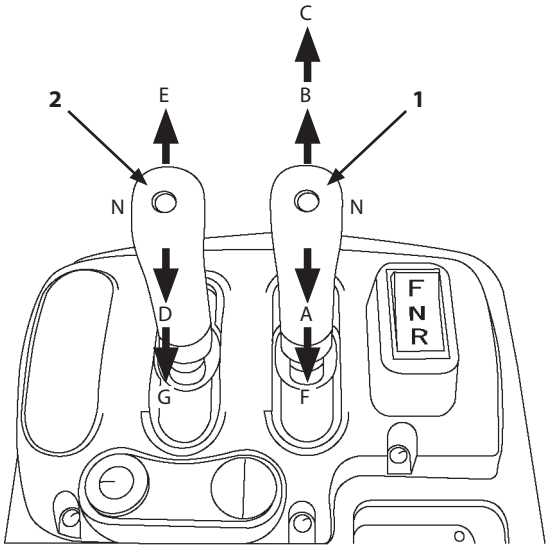
NOTE:

1. When applying lift arm control lever (1) in the "Raise" position (A), the lever is moved (F) until the lift arm reaches the position preset by the lift arm kickout. When the lift arm moves the preset position, lift arm control lever (1) automatically moves to the Neutral (N) position.

2. When applying bucket control lever (2) in the "Tilt" position (D) after bucket dump operation, the lever is moved (G) until the bucket reaches the position preset by the bucket auto leveler. When the bucket reaches the preset position, bucket control lever (2) automatically moves to the Neutral (N) position.

3. When pushing down lift arm control lever (1) to the "Float" position (C), the lift arm moves to the position preset by lift arm auto-leveler system and is held in that position. When the lift arm moves to the preset position, lift arm control lever (1) automatically moves to the "Neutral" (N) position. (Machine is equipped with the lift arm auto-leveler system)

NOTE: When operating the machine in Float (C) position, first hold the lift arm at the float position; then further tilt the lever to the Float position, and lower the lift arm on the ground.



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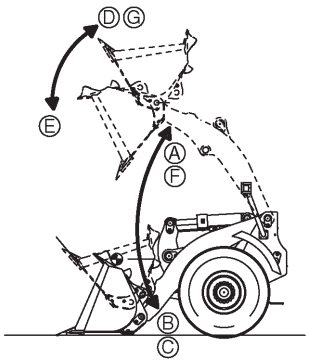
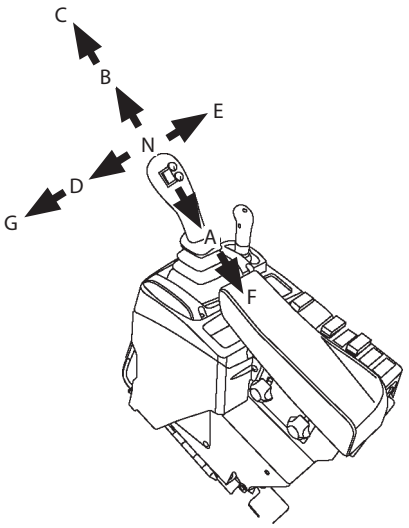


M4GB-01-073

Loading Multi-Function Joystick Lever (Option)

The multi-function joystick lever is used to operate the lift arm and/or bucket.

Lever Position	Lift Arm/Bucket Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied. The lever will stay in this position.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position with the detent.
G	Detent: When the multi-function joystick lever is moved from the bucket dump position to the bucket tilt position, the multi-function joystick lever is held in this position with the detent.
D	Bucket Tilt (or Roll Back): The bucket is tilted back, taking the transportation position.
N	Hold: The bucket is stopped and held in that position.
E	Bucket Dump: The bucket is tilted forward to dump the bucket load.



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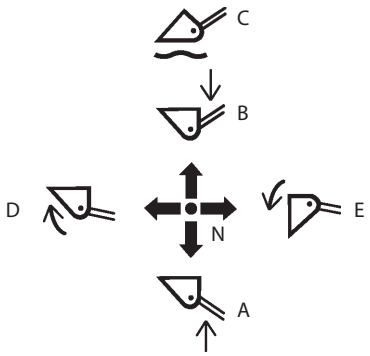

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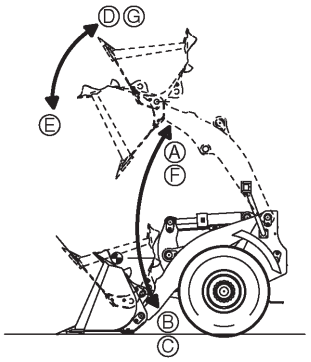
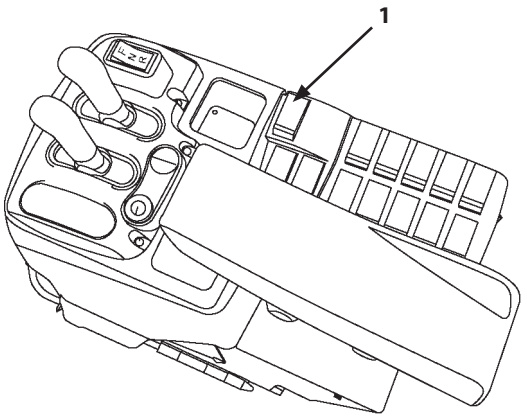


M4GB-01-073

Control Lever Lock

WARNING:

- **Be sure to press lock (🔒) side of control lever lock switch (1).**
- **Before leaving the operator's seat, be sure to stop the engine. Then, set control lever lock switch (1) to the lock (🔒) position.**
- **Always check to be sure that the control lever lock switch is set in the lock (🔒) position before transporting the machine or leaving the machine at the end of the shift.**



MNEC-07-001

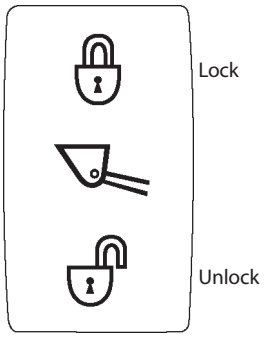
Control lever lock switch (1) is provided to prevent unexpected machine operation if the operator were to mistakenly come in contact with the bucket and/or lift arm control lever when getting on or off the machine. When control lever lock (1) is placed in unlock (🔓) position, the control lever becomes operable.

Control Lever Lock Operation

- When leaving the operator's seat:

1. Park the machine on solid level ground. Lower the bucket to the ground. Return all levers to neutral. Set the parking brake. Stop the engine.
2. Press lock (🔒) side of control lever lock switch (1).

- Before starting operation:
  Before starting operation, check that control lever lock switch (1) is in the unlock (🔓) position.



MNEC-01-015

Declutch Position Switch

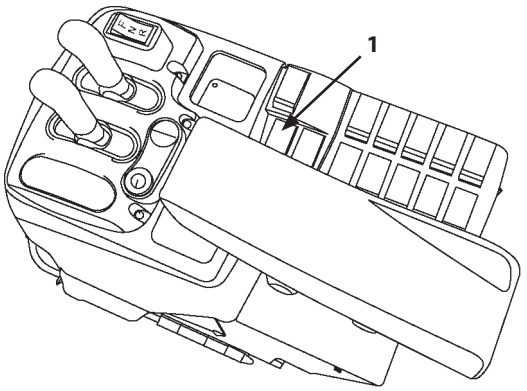
To perform digging (scooping) or loading operation, declutch position switch (1) can be set to any position .

Turn the declutch position switch ON to let the engine speed and power be applied to loading circuits.

- [ ] side (Declutch)
  By depressing left brake pedal (3), the clutch is disengaged and brake is applied without transmitting the power to the drive train.
  : Declutch ON when lightly depressing the left pedal (3)
  (Suited to loading work on a level surface or on a gentle slope.)
  : Declutch ON when firmly applying the left pedal (3)
  (Suited to operate on a steep slope)

- OFF [ ] (Clutch Engaged)
  By depressing brake pedals (3) or (4), brake is applied while power is transmitted to the drive train.

NOTE: When starting to ascend a slope, turn declutch position switch (1) OFF (clutch engaged), depress the left brake pedal. Gradually release the left brake pedal (3) while applying accelerator pedal (5) to easily start ascending a slope.



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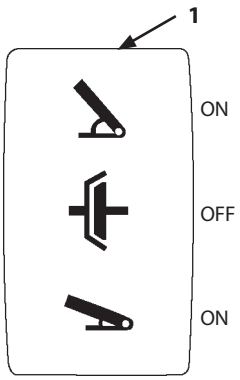

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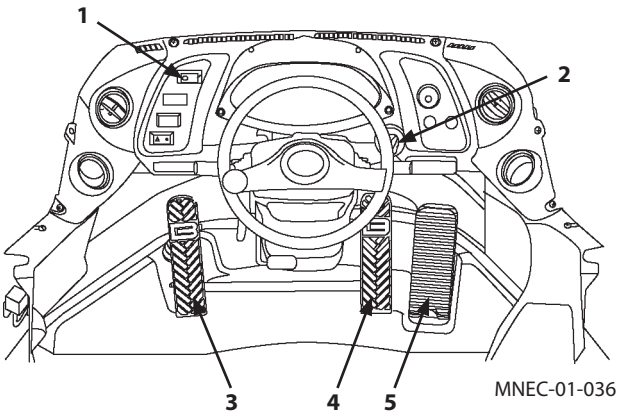
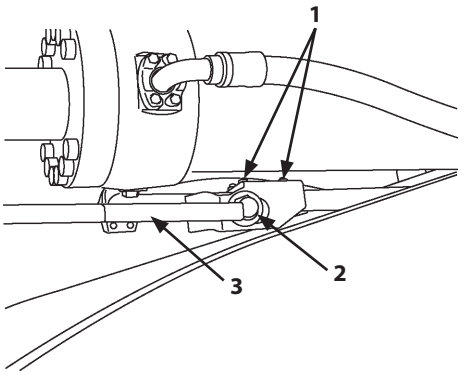


MNEC-01-036

Adjustment of Bucket Auto Leveler

WARNING: CRUSH HAZARD

- **Be careful to avoid injury and/or death when adjusting the bucket auto leveler.**
- **Stop the engine. Lower the loader arm and bucket to the ground to release oil pressure.**
- **Apply the parking brake to prevent unexpected movement of the machine. Chock wheels with blocks. Keep bystanders away from the vicinity of the machine.**

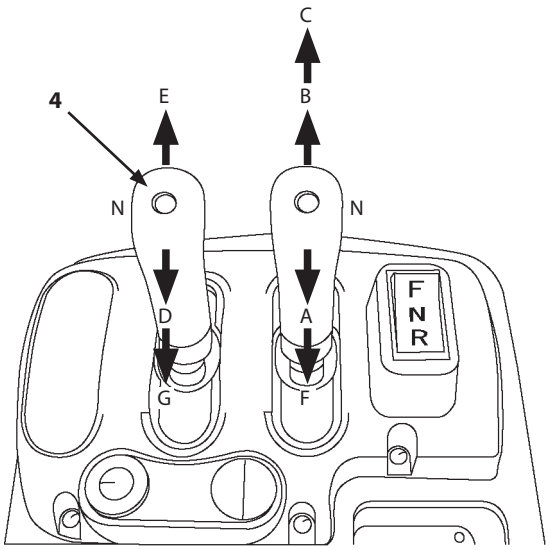


M4GB-05-001

The bucket auto leveler automatically stops the bucket movement when level. (When the machine is shipped from the factory, the bucket positioner is preset so that the bucket is stopped with the bucket bottom parallel with the road surface.)

For example, after discharging material into a truck or a hopper, when bucket control lever (4) is placed to detent position (G), the lever is held in that position. Then, when the bucket is returned to the preset angle position, the bucket is automatically stopped and the lever is returned to neutral (N).

The bucket auto leveler is preset so that when the bucket bottom becomes parallel with the road surface, bucket movement is stopped. Nevertheless, when required to tilt the bucket forward or backward beyond the level position, adjust the bucket auto leveler by moving the mounting position of the proximity switch (2), relative to rod (3).



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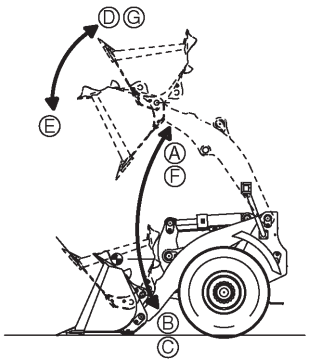
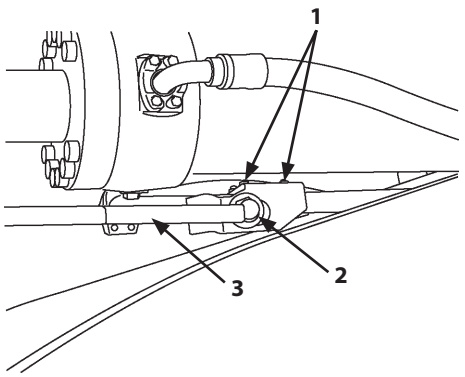


M4GB-01-073

Adjustment Procedures

IMPORTANT: Do not operate the machine with the bucket dumped more than 10°.

1. After moving the bucket to the desired digging angle, stop the engine.
2. Loosen lock nut (2) of the proximity switch. Slide the end edge of leveler bar (3) up to the center of the sensitive area (orange color). Then, tighten lock nut (2).
3. The angle is able to be set to more than one position by setting the placement within the slot. Loosen nuts of U-bolts (1) (2 used), move the bracket, and then tighten the nuts.
4. After adjustment start the engine. Check that the bucket can be stopped at the desired angle position.



M4GB-05-001

Adjustment of Dual Lift Arm Auto Leveler

WARNING:

- **Take extra care to prevent injury and/or death when adjusting the lift arm auto leveler (kickout).**
- **Apply the parking brake to prevent the machine from moving unexpectedly. Chock the wheels with blocks. Keep bystanders away from the vicinity of the machine.**

IMPORTANT:

- **When the lift arm auto leveler (kickout) function is activated with the bucket loaded, the bucket may stop at the set position.**
- **Height setting of lowering direction can not be done when the lift arm is above the horizontal position of the lift arms. Also, height setting of raising direction can not be done when the lift arm is below the horizontal position of the lift arms.**

The lift arm auto leveler is a device that automatically stops the lift arm at the preset position while lowering or raising the lift arm. It is convenient to change the setting of stop position by using this function when the machine is constantly used in a specific way, such as when loading trucks that are equipped with side boards of the same height.
Refer to page 1-38 to adjust the stop position.

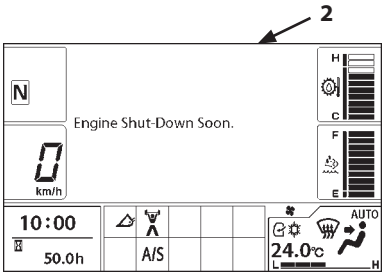
Auto Idling Stop

WARNING: This function automatically stops the engine. Carefully operate within the work environment when using this function.

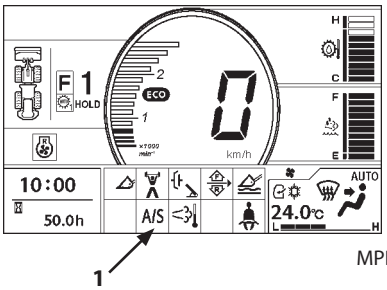
When the auto idling stop function is ON (enabled), the engine automatically stops after the preset time from the state in which the specified conditions are met (see the operating condition on the next page).

30 seconds before the engine stop, monitor (2) displays a message that engine will be stopped and indicator (1) starts flashing. Also the buzzer sounds. The buzzer sounds once at 30 seconds before, intermittently sounds from 15 seconds, and then stops after 15 seconds.

The auto idling stop is disabled and the engine will not stop if any of the conditions on the next page is not satisfied.



MNEK-01-153EN

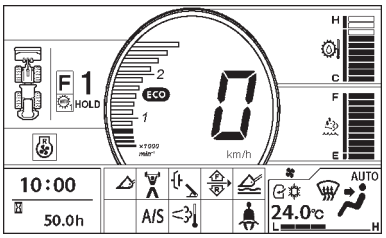


MPD8-01-100EN

IMPORTANT: Ensure that the ON or OFF status of auto idling stop indicator (1). If the indicator is ON, the auto idling stop function will be activated.

Auto Idling Stop Operating Condition

- The engine is running.
- The parking brake switch is ON.
- The forward/reverse lever (switch) is in neutral (N).
- The accelerator pedal is not depressed.
- The brake pedal is not depressed.
- The control lever is not operated.
- The steering wheel is not operated.
- Coolant, hydraulic oil and transmission temperature are not high.
- The aftertreatment device manual regeneration is not operating.



MPD8-01-100EN

IMPORTANT:

- **When the engine stops because of the auto idling stop function, turn the key switch to ACC or OFF once and then turn it to START to restart the engine. Do not leave the machine after auto idling stop. This may discharge the batteries.**
- **When the key switch is turned to OFF position while the auto idling stop function is ON, the setting will remain ON at the next startup.**

Refer to page 1-52 for the auto idling stop setting.

Aftertreatment Device Manual Regeneration

When the manual regeneration is needed, symbol (1) and service indicator (2) as shown to the right will be displayed.
Perform manual regeneration in the following procedure.

IMPORTANT:

Park the machine in a safe area where exhaust temperatures will not damage property or other potential flammable sources.

Be sure that there are no flammable materials in the engine area, including, but not limited to:

- Coal dust.
- Wood chip particles, saw dust.
- Animal feed products (straw, hay, grain dust, etc.)
- Inorganic man made debris; plastics, paper, refuse, etc.
- Any other loose flammable debris.

Manual Regeneration Procedure

1. Park the machine in a safe and open place. Place the transmission in neutral. Apply parking brake. Lower the front attachment level to the ground.

2. Verify that items are set as shown below.

Forward/Reverse Lever	:	N (Neutral)
Forward/Reverse Switch (opt)	:	N (Neutral)
Accelerator Pedal	:	UP (OFF)
Parking Brake Switch	:	ON
Loading Control Lock Switch (4)	:	LOCK ( )
Aftertreatment Device Regeneration Inhibited Setting	:	OFF

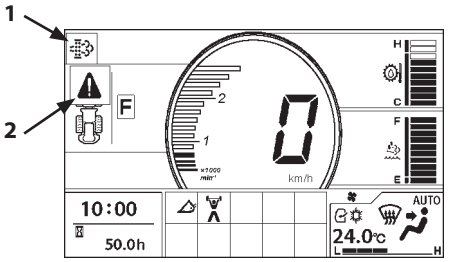
Remaining fuel alarm does not light.

DEF/AdBlue® alarm does not occur.

3. Press the aftertreatment device regeneration switch (3).

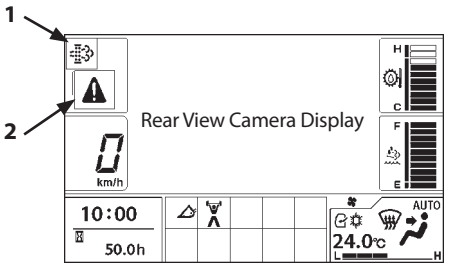
NOTE:

- *When "Aftertreatment Device Regeneration Inhibited" is preset to ON, manual regeneration cannot be started. Refer to page 1-56.*
- *Refer to pages 1-5 and 1-34 for Automatic Regeneration and more information.*



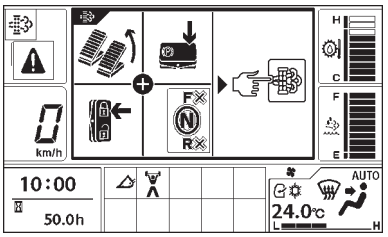
Basic Screen

MNEK-01-280EN



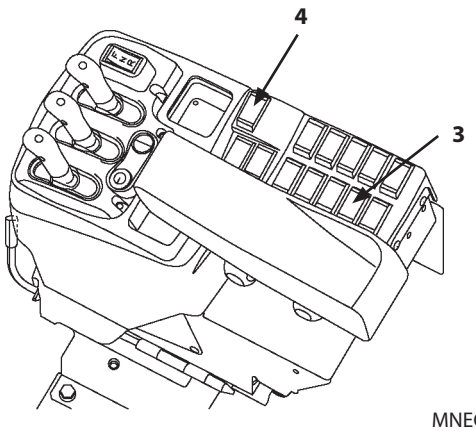
Basic Screen
(Operating Rear View Camera ON)

MNEK-01-281EN

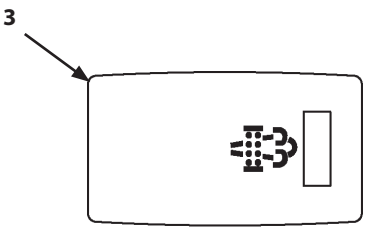


Manual Regeneration Request Screen

MNEK-01-282EN

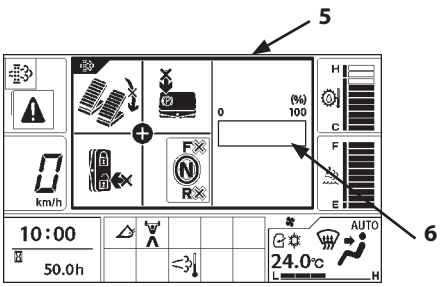


MNEC-01-041



MDAA-05-002

4. When aftertreatment device switch has been pressed, screen (5) appears as shown to the right and manual regeneration starts.
   The bar graph on the screen (6) indicates regeneration progress.



MNEK-01-283EN

NOTE: The manual regeneration cannot start unless the following items are as indicated.

Item	Condition
Accelerator pedal	UP (OFF)
Forward/reverse lever	Neutral
Forward/reverse switch (opt)	Neutral
Parking switch	ON
Control lever lock switch (4)	ON

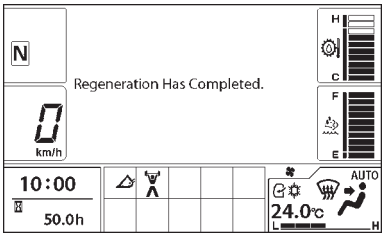
If any of the listed items are changed, or the key is turned to the "OFF" position, the regeneration process will be aborted.
If the manual regeneration has been aborted, start the process over again.

NOTE:

- *The engine sound may change and the engine RPM may increase when the manual regeneration starts. This is not a malfunction.*
- *White smoke may temporarily be generated from the tail pipe during the regeneration process. This is not a malfunction.*
- *Coolant temperature may increase during the manual regeneration.*
- *Regeneration period depends on the ambient temperature.*
- *Just after machine operation, manual regeneration period becomes shorter than when the engine temperature is low.*

5. Manual Regeneration Completed (Successful)

   When manual regeneration is completed, "Regeneration Has Completed." message will be displayed and the regeneration symbol disappears.

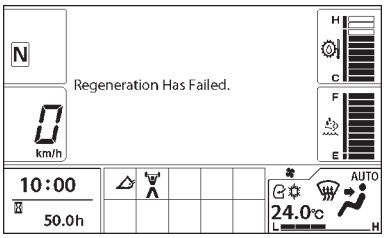


MNEK-01-284EN

6. Manual Regeneration Failed (Unsuccessful)

   If the message "Regeneration Has Failed." appears on the monitor panel, start the regeneration process over again.

   Failure to regenerate manually may be caused by a problem not in the above list, such as malfunction of a sensor that affects regeneration at a low ambient temperature.



MNEK-01-285EN

NOTE: Aftertreatment device regeneration cannot be started when the hydraulic oil temperature is too high. Run the engine at low idle to lower the oil temperature, and restart the procedure.

NOTE: If aftertreatment device regeneration switch (3) is pressed when the ambient temperature is low, it may take long to start the aftertreatment device regeneration process.
Before pressing aftertreatment device regeneration switch (3), increase the coolant temperature to about 70°C (158°F) until the coolant temperature gauge needle starts moving. Refer to page 3-12 for warm-up in cold weather.

IMPORTANT: If regeneration must be interrupted, press manual regeneration switch (3) again.
The message "Regeneration Has Failed." will be displayed on the monitor, and the machine becomes operable.
In this case, manual regeneration must be done later. Perform the manual regeneration again as soon as possible.

Before Operation

WARNING:

- **Be sure to install only authorized buckets and other work tools.**
- **Never modify or increase the capacity of the bucket or other work tools without first receiving authorization. Do not overload the machine by installing additional counterweights. This may result in personal injury and/or machine trouble.**

Precautions for Operation

WARNING:

- **Confirm work site safety before starting work.**
- **Use the machine equipped with FOPS and ROPS if the machine is to be operated in the areas where the possibility of rollover or falling stones exists.**
- **If operation on excessively soft ground is required, operate the machine only after stabilizing the soil.**

- Be sure to wear close fitting clothing and safety equipment appropriate for the job, such as a hardhat, etc. when operating the machine.
- Clear all persons and obstacles away from the area of operation and machine movement. Always be aware of all hazards within the area around the machine while operating.

Ensure Safety When Operating on Road Shoulders

CAUTION: Stabilize the soil before operating the machine on soft road shoulders.

Avoid Overloading

WARNING:

- **Do not penetrate the bucket into piles of soil and/or gravel at fast travel speed.**
- **Avoid excavating or scooping loads when the machine is articulated, which could possibly cause the machine to turn over.**

IMPORTANT: Avoid machine abuse by allowing the bucket or attachment to receive loads at only one side. Damage to the machine may result.

Avoid Rapid Steering Changes and/or Sudden Braking

WARNING: Always maintain a flat work site surface. Avoid rapid steering changes and sudden braking while raising the lift arm with the bucket loaded to prevent the machine from turning over.

Avoid Operation with Loads on Only One Side

WARNING: Avoid machine abuse by allowing the bucket to receive loads at only one side. Machine rollover or deformation of the lift arm may result.

Excavation

Loading Accumulated Soil

IMPORTANT:

- **Do not dig or scoop with machine frame articulated.**
- **Avoid operating the machine with the front wheels raised off the ground. Machine traction force is reduced and excessive loads are applied to the undercarriage.**

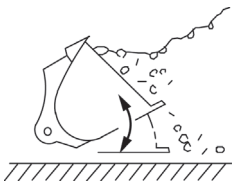
Scoop load while moving the machine forward as described below. As load increases the wheels begin to slip, slightly raise the lift arm to increase tire grip.

NOTE: When loading rocks or hard packed material, the use of bucket teeth is recommended.

1. Move the machine forward to the material. Steer the machine in a straight ahead position when entering the material.
2. Lower the bucket parallel to the ground. Drive the bucket straight into the material.

NOTE: Use approximately 1/2 - full engine speed.

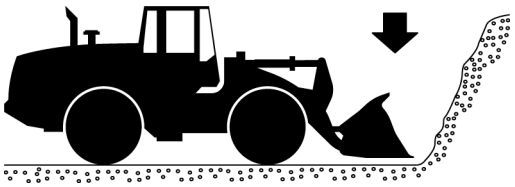
3. Raise the lift arm while running the machine forward slowly in 1st or 2nd speed. Use 2nd speed for loose materials.
4. Move the bucket control lever to the "Roll Back" and the "Hold" position several times to get more material in the bucket.
   When the bucket is filled, move the bucket control lever to the "Roll Back" position.



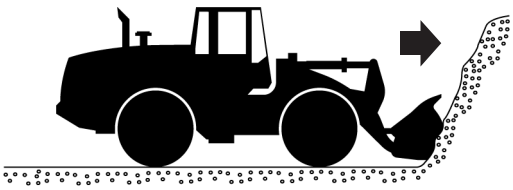
OM0115-Z7

5. Move the machine with the bucket rolled back fully and held at the driving position.

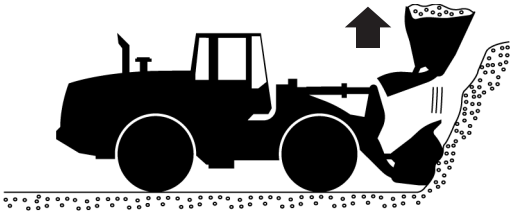
NOTE: Steer the machine in a straight ahead position when entering the material. Aim the center of the bucket at the protruding portion of the material.



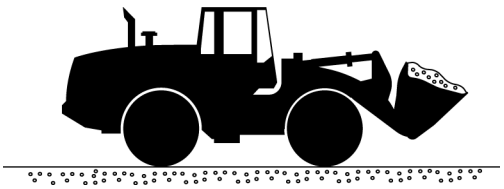
M4GB-05-003



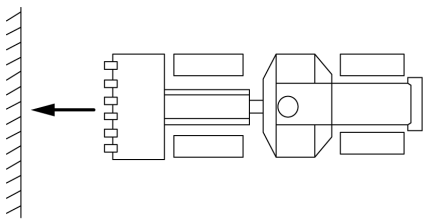
M4GB-05-004



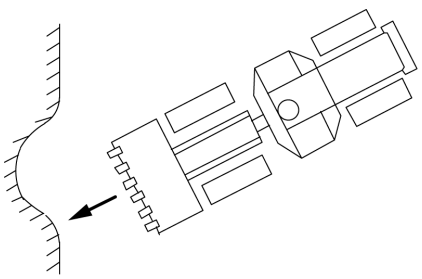
M4GB-05-005



M4GB-05-006



OM0111



OM0112

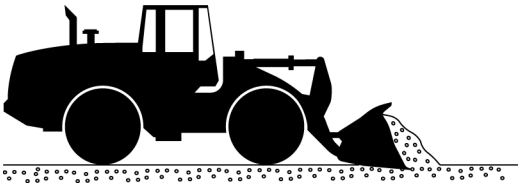
Digging and Loading Level Ground

IMPORTANT: While operating the bucket or fork, never apply excessive force to the tooth tips with the bucket or fork tilted more than 10°. This may result in cracks or damage to the front attachment.

Slightly position the bucket edge downward (0 to 10 degrees) and dig the ground while moving the machine forward as described below. Always take care not to apply loads to only to one side of the bucket.

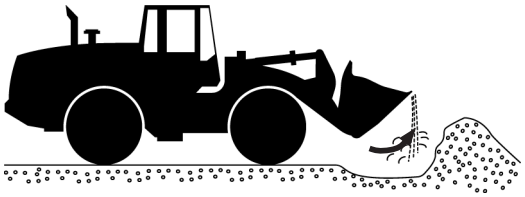
M4GB-05-007

1. Position the bucket edge slightly downward (dump forward 10 degrees or less).



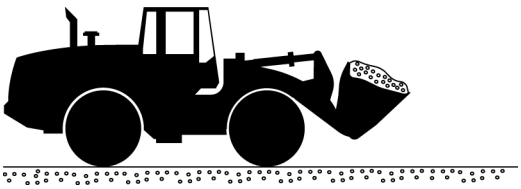
M4GB-05-008

2. While moving the machine forward in 1st or 2nd speed, roll the bucket forward so that the ground surface is gradually lifted.
   Increase engine speed as the bucket digs deeper.



M4GB-05-009

3. Adjust the digging depth by operating the lift arm or bucket.

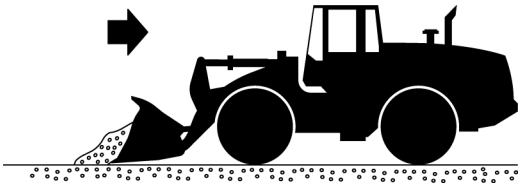


M4GB-05-010

4. When the bucket is filled, move the machine with the bucket fully rolled back. Clear the ground and held at the driving position.

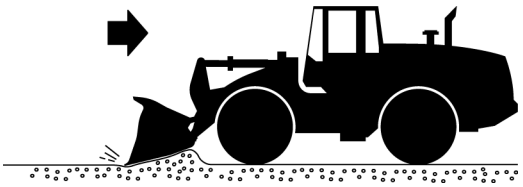
Grading

WARNING: When operating a machine equipped with ride control and the lift arm control lever in the float position, when performing works as soil scooping, land grading, or snow removal, be sure to turn the ride control switch OFF. Failure to do so may allow the ride control system to operate so that the front attachment may automatically move up and down.



M4GB-05-011

IMPORTANT: Perform grading work while moving the machine in reverse. If grading work is performed by moving the machine forward, severe loads are applied to the front attachment, possibly creating cracks or damage to the front attachment.



M4GB-05-012

1. After filling the bucket, dump the bucket gradually to spread soil while moving the machine in reverse.
2. Lower the bucket edge onto the ground. Grade and level the ground surface while driving the machine in reverse with the bucket edge dragging.
3. After filling the bucket with a load such as soil, position the bucket level with the ground surface. Finish the ground surface utilizing the bucket weight.

   At this time, move the machine in reverse with the lift arm held in the FLOAT position.

M4GB-05-013

Loading

IMPORTANT:

- **Always maintain a clean surface for machine operation.**

  Cleaning of materials such as soil and stones spilled on the work surface will reduce wear and/or damage on tires.
- **When carrying loads in the bucket, pay attention to the road surface conditions. Operate the machine at such speed so that the load will not spill out of the bucket, while positioning the bucket at the driving position.**
- **Refrain from banging bucket against the bucket stopper as much as possible when removing stuck material, like clay, from the bucket. This may result in damage to the front attachment.**

  Remove material stuck to the bucket with water under pressure.

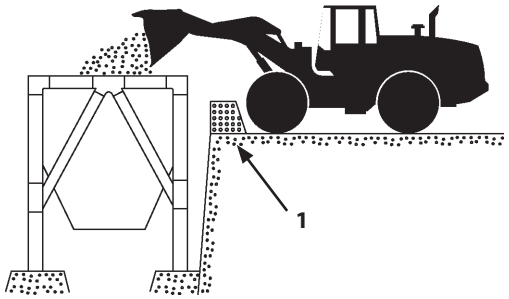
Loading is dumping the handling material onto a truck or into a hopper.
Loading work is performed in either the load and carrying method or loader and dump truck method. Select either method depending on the work site conditions while taking the cost and safety into account.

Load and Carrying Method

WARNING:

- **Be sure to provide a tire stopper (1) in front of the hopper.**
- **Before raising the lift arm, slightly tilt the bucket back and forth to stabilize the load in the bucket to avoid injury or damage to the machine from falling of loose material.**

  Avoid raising the lift arm on a slope.
- **When approaching a hopper with the lift arm raised never steer the loader. Slowly move the machine. Never rapidly operate the machine to prevent roll over.**



M4GB-05-014

A wheel loader performs work process of loading, carrying, and dumping in sequence. Generally, when the carrying distance is 30 to 100 m (33 to 109 yd), this method is employed.
Make an upgrade slope of approx. 3° around a hopper when dumping into the hopper. Be sure to provide a level area 10 m (33 ft) apart from the hopper and tire stopper (1) at the hopper edge. Reduction in travel speed will assist operator's braking operation effort.

Loader and Dump Truck Combination Method

WARNING:

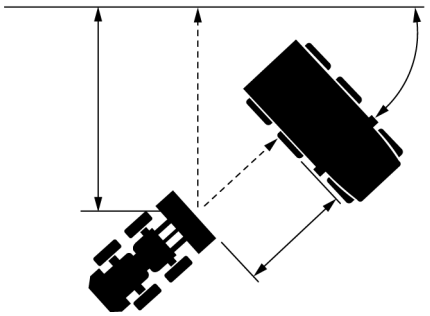
- **Always maintain a flat and clean work site surface. Avoid rapid turns and/or sudden braking while raising the lift arm with the bucket loaded to prevent the machine from tipping over.**
- **Do not insert the bucket into a loading face at fast speed, possibly resulting in an accident.**

A loader carries out loading and carrying, and dumping is carried out by a dump truck. Either V- or I-shape loading method is used in this method. Depending on the work site conditions and matching with available trucks, select the most efficient method.

V-Shape Loading

1. Park a dump truck in a spot located at approx. 60° angle toward the loading face. After loading material, travel the wheel loader in reverse and turn its direction so that the wheel loader faces the parked dump truck at a right angle. Then, travel forward to carry material onto the dump truck.
2. Position the wheel loader so that the material can be loaded around the center of the dump body. In case the dump body is longer than twice the bucket width, load from the front to rear position of the dump body in order.
3. When dumping sticky material such as clay, move the bucket lever back and forth to lightly hit the bucket to the stoppers.

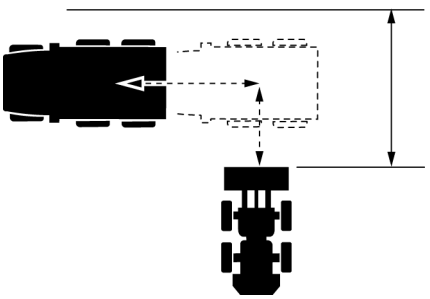
   Use a small steering angle to operate the machine efficiently.
4. Before raising the lift arm to the maximum height with the bucket full, lightly tap the bucket while low to stabilize the material in the bucket and help prevent the material from spilling from the backside of the bucket.



M4GB-05-015

I-Shape Loading

Park a dump truck in a direction parallel to the loading face. After loading material into the bucket, move the wheel loader straight in reverse. Then, move a dump truck to a spot between the loading face and the wheel loader. Move the wheel loader forward to load material into the dump truck body.



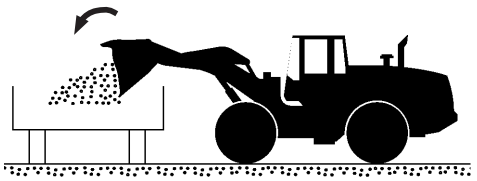
M4GB-05-016

Dumping into Truck or Hopper

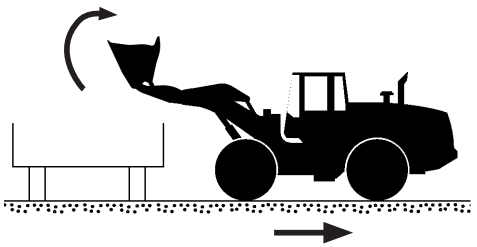
WARNING:

- **When boom is raised, machine stability is reduced and could cause machine to tip over causing serious injury or death.**
- **Do not make quick turns or abrupt braking when boom is raised.**
- **Keep boom low for best stability especially on slopes.**

1. Move the lift arm control lever to the "Raise" position to raise the loaded bucket while approaching the truck or the hopper.
2. Use the declutch switch in the "ON" position if working on a level site.
   When the left brake pedal (declutch pedal) is step on, the transmission is placed automatically in neutral and the lift arm rises faster.
3. Return the lift arm control lever to the "Hold" position when the bucket reaches the enough height to clear the truck or hopper sideboards.
   If the lift arm is equipped with the kickout device, the lift arm will automatically stop and the lift arm control lever will return to the "Hold" position when the bucket reaches the preset height.
   Holding the lift arm control lever in the "Raise" position will continue to raise the lift arm if required.
4. Position the machine in the center of the truck body or hopper to dump the load.
5. Push the bucket control lever forward to the "Dump" position to empty the bucket.
6. Roll back the bucket to clear the truck or hopper sideboards and lower the lift arm while reversing the machine.



90M4GB-05-14

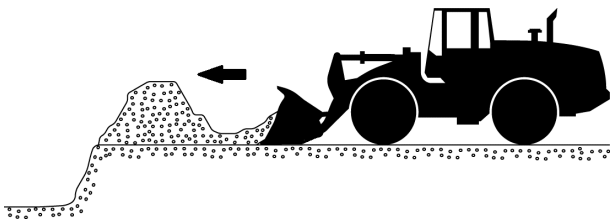


90M4GB-05-14a

Dozing

IMPORTANT:

- **Dozing or pushing with dumped bucket or attachment may cause severe damage to linkages. It may also cause engine over-heating and torque converter over-heating.**
- **Never attempt to forcibly push piled material higher than the bucket capacity. Premature wear of the tires due to slipping and/or waste of fuel may result.**
- **Never apply great force to the cutting edge with the cutting edge tilted forward more than 10°. Failure to obey so may result in damage such as cracks to the working tools. Keep bucket or attachment bottom parallel to ground.**



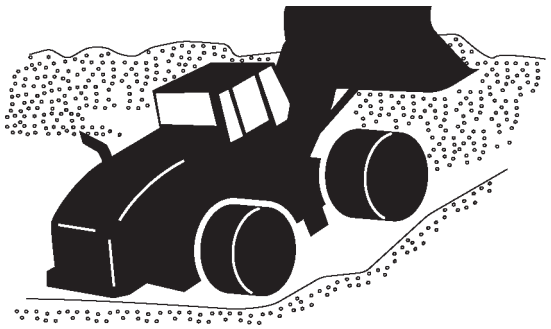
M4GB-05-017KC

Dozing with a wheel loader means a working method performed by a wheel loader using the wheel loader bucket in place of a bulldozer blade. This operation method is employed when reclaiming land or dumping material into a hopper, that is below ground level.
Set the bucket bottom parallel with the ground surface and move the wheel loader forward.

Stock Piling

WARNING: Do not pile material on soft ground. Steering on soft ground may easily cause the machine to tip over.

Take care not to scrape the ground with the counterweight while working.
The machine may become unstable, possibly causing the machine to turnover.



M4GB-05-018

Removing Snow

WARNING: When operating a machine equipped with ride control and the lift arm control lever in the float position, when performing work as soil scooping, land grading, or snow removal, be sure to turn the ride control switch OFF. Failure to do so may allow the ride control system to operate so that the front attachment may automatically move up and down.

CAUTION: Remove snow in the same method as employed in general loading work. However, pay attention to slippage of tires traction and obstacles that may be covered with snow.

M4GB-05-019

Precautions for removing snow

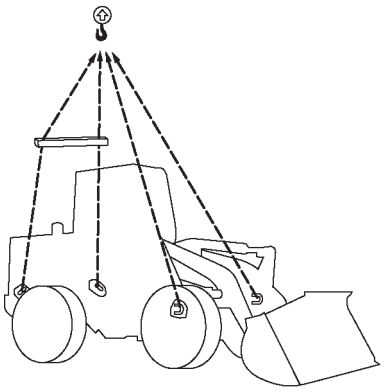
- Avoid sudden starting and stopping as well as rapid steering of the machine.
- Use tire chains on all four wheels.
- Pay attention to the presence of the utility facilities such fire hydrants, manholes, curbs, roadside drains, etc. The facilities or the machine may be damaged.

Lifting Wheel Loader

WARNING:

- **Be sure to use lifting tools and set the articulation stopper (lock bar) in the LOCK position. (Refer to page 1-133.)**
- **Never allow any person to ride on the machine to be lifted.**
- **Never allow any person to enter below the lifted machine. Before fully lifting the machine above the ground, check that the hooks are securely attached to the machine and the machine is well balanced while lifting the machine slightly above the ground.**

  Refer to page 6-10 "Lifting Machine".



MNEC-05-001-1

Lifting of the machine may be needed when loading the machine onto a ship or truck for repairing and/or transporting.

Precautions for After Operation

1. After finishing operation, move the machine to firm, level ground where no possibility of falling stones, ground collapse, or floods are present.

   (Park the machine referring to the "Parking" in the "MOVING THE MACHINE" chapter.)

2. Refill the fuel tank.

CAUTION: Wash the machine when needed. In areas of exposed metal, spray a light coat of rust-preventive oil to protect the machine from rusting. If the machine continues to be used with rust developing in areas like cylinder rods, oil leaks may occur.

IMPORTANT: If hard rain is expected or the machine is to be stored, wrap the muffler with a tarpaulin to prevent water from entering the exhaust system and engine.

3. Clean the machine.

4. Maintenance for long term machine storage after engaging in snow removal. (Refer to STORAGE section.)

   Anti-freeze agents such as salt (sodium chloride or calcium chloride) usually are scattered on snow covered roads. When the machine is stored for a long time after engaging in snow removal work, perform the following maintenance to protect the machine from being corroded and/or damaged by corrosive chemicals or elements.

IMPORTANT: Take care not to spray water directly to electrical parts, harnesses and connectors.

Most lights such as the headlights, work lights, and turn signal lights are water resistant.

4.1 Clean the machine thoroughly.

Clean each cylinder rod (plated areas) and the radiator with extra care.

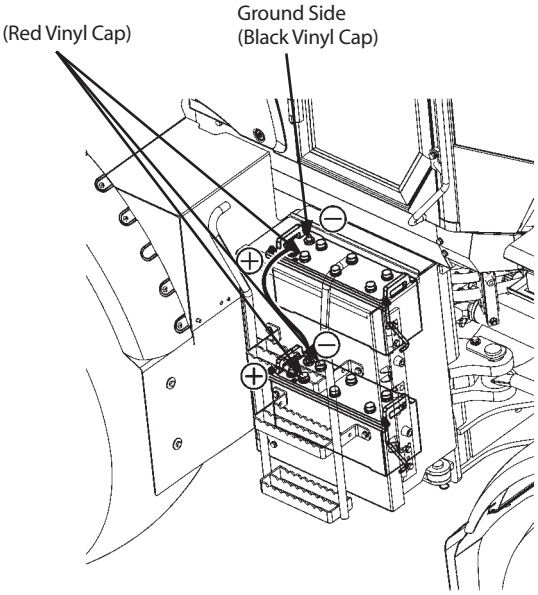
4.2 After positioning the machine for storage, carefully coat each cylinder rod (plated areas) with rust-preventive oil.

4.3 Lubricate all pins while referring to A Greasing Section in the Maintenance Guide List.

CAUTION: When removing the batteries, disconnect the ground cable from the battery terminal first (covered with a black vinyl cap).

4.4 Remove the batteries and store them in a dry cool place.

When the batteries are not removed, disconnect the ground terminal cable.



MNEK-05-001

Transporting by Road

When transporting the machine on public roads, be sure to first understand and follow all local regulations.

1. For transporting using a trailer, check the width, height, length and weight of the trailer when the machine is loaded.
2. Investigate beforehand the conditions of the route to be traveled, such as dimensional limits, weight limits, and traffic regulations. Take any detours that may be needed into account.

   In some cases, getting approval from the authority concerned, disassembling the machine to bring it within dimensional limits or weight limits of local regulations may be necessary.

Selecting a Trailer

Provide an appropriate trailer while referring to the weight and dimensions shown in the specifications. When transporting the machine within the weight and dimensions shown in the specifications by a trailer, it may be possible to transport the machine without disassembling.

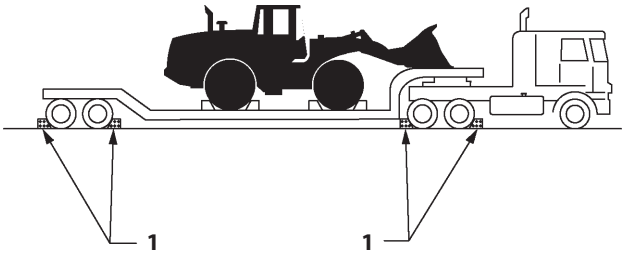
Loading / Unloading on Trailer

WARNING: Be sure to use a loading dock or a ramp for loading/unloading.

Always load and unload the machine on a firm, level surface.

Ramp/Loading Dock:

1. Before loading, thoroughly clean the ramps, loading dock and flatbed. Dirty ramps, loading docks, and flatbeds with oil, mud, or ice on them are slippery and dangerous.
2. Chock (1) the truck and trailer wheels while using a ramp or loading dock.
3. Ramps must be the right size and able to bear the load. Be sure that the incline of the ramp is less than 15°.
4. Loading docks must be the right size and able to bear the load. to support the machine and have an incline of less than 15°.



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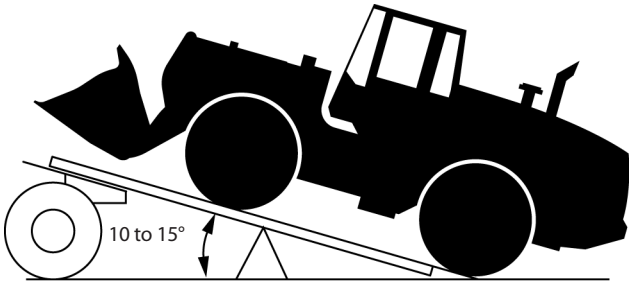


M4GB-06-002

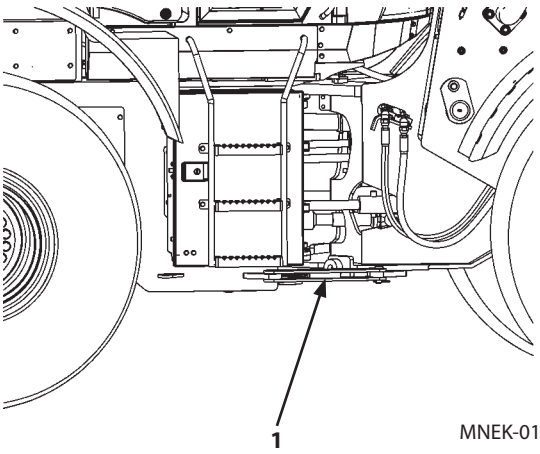
Loading / Unloading on Trailer

WARNING:

- **Keep machine straight while moving up or down a ramp since turning on a ramp may cause the machine to turn over. Never attempt to steer the machine on a ramp. If the travel direction must be changed on a slope, move the machine back to the flat surface on flatbed. Then, after changing the travel direction, begin to move again.**
- **Select AUTO 2 for auto-shifting, or select 2nd speed for manual shifting.**

Loading

1. Load the machine so that the centerline of the machine aligns with the centerline of the trailer flatbed.
2. Slowly move the machine on the ramp.
3. Lower the bucket onto the trailer deck.
4. Stop the engine. Remove the key from the key switch.
5. Operate the control lever several strokes to relieve pressure in the cylinders.
6. Move the control lever lock switch in the lock ( ) position.
7. Securely close the windows and cab doors to protect the cab from rain. Cover the exhaust outlet. Failure to do this will damage the engine.
8. Install the articulation stopper (lock bar) (1) to prevent the machine from articulating.

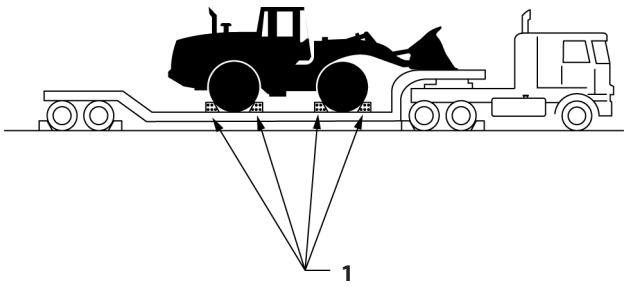


MNEK-01-019

Fastening Machine for Transporting

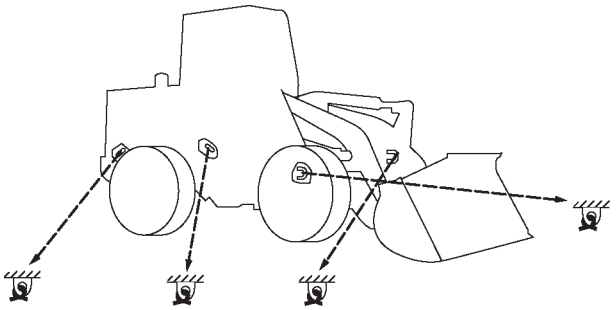
WARNING: Fasten the machine chassis to the trailer securely with chains and cables. While traveling, loads may shake around, move forward or backward or to the sides.

1. Apply the parking brake. Slowly rest the bucket on the trailer deck or load-carrying platform.
2. Place blocks (1) in front of and behind the tires to prevent the machine from moving.
3. Securely fasten the machine and the front attachment to the truck or trailer platform with heavy chains or wire cables.



M4GB-06-003

The machines for export are provided with lifting eyes. Use these eyes for securing the machine.



MNEC-06-002-1

Transporting Wheel Loader (Urgent Situation)

The following procedures shall only be applied to cases when urgently moving the wheel loader a short distance is required. When required to transport the wheel loader long distance, use a trailer.

Precautions for Driving On Roads

Avoid driving the wheel loader long distances at high-speed as much as possible as it may overheat the tires, possibly resulting in premature tire damage and/or wear. Keep the following points in mind when transporting the wheel loader by driving on roads.

- Observe the rules and regulations associated to this wheel loader, and travel carefully.
- Recommended tire pressures and traveling speeds may vary depending on the type of tires used and the road conditions. Consult your nearest authorized dealer.
- Check the tire pressure before self-traveling when the tires are cool.
- After driving the wheel loader for 30 minutes, allow the wheel loader to park for 30 minutes and meanwhile, check the tires and every part of the machine for any abnormality, and also check the oil and coolant levels.
- Keep the bucket empty when traveling.
- Do not drive the machine with the tires containing calcium chloride or dry ballast, which accelerate heating.

Precautions for Towing

WARNING: Never attempt to tow the machine if the brake system is in need of repair. Ask your nearest authorized dealer to repair the machine. Operate the machine only after repairs is completed.

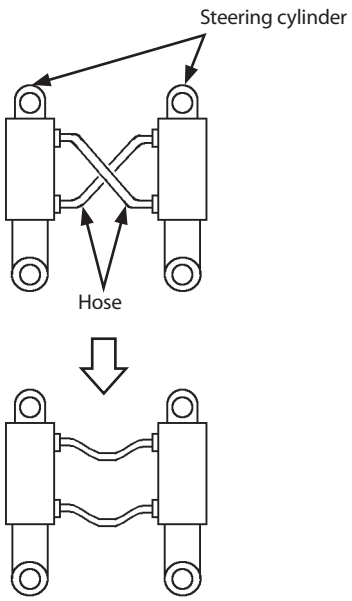
Avoid towing the machine as much as possible. If the machine must be towed, be careful about the following points.

IMPORTANT: Do not tow the machine with the parking brake applied. Damage to the parking brake may result.

- If the engine is operable:
  Keep the engine running so that the steering and brake system are operable. Release the parking brake.

- If the engine is inoperable:
  Removing the propeller shafts
  - When the parking brake cannot be released, manually release the parking brake. (Refer to the "Releasing Parking Brake" on page 6-7.) Then, disconnect the front and rear propeller shafts. At this time, wedge wheel stoppers at all tires to prevent the machine from moving.
  - The steering system is inoperable when the engine is stopped. Changing the hydraulic hose connections between the rod end side and the head end side only of one steering cylinder enables the steering wheel operation.

NOTE: Be careful not to spill oil when disconnecting the hoses. Be sure to catch the oil.



M4GB-06-007

Releasing Parking Brake

WARNING:

- **Once the parking brake is released, the machine becomes impossible to stop with the parking brake system, possibly resulting in personal injury or death.**
- **Before releasing the parking brake be sure to chock tires with wheel stoppers.**

CAUTION:

- **As soon as towing is completed, connect the parking brake.**
- **Towing only when moving the machine to a place where the machine is inspected and/or serviced. Avoid towing to move the machine over a long distance.**

Release the parking brake manually only when the parking brake switch becomes inoperable due to any abnormality or failure in the brake system such as a pump.

Procedures

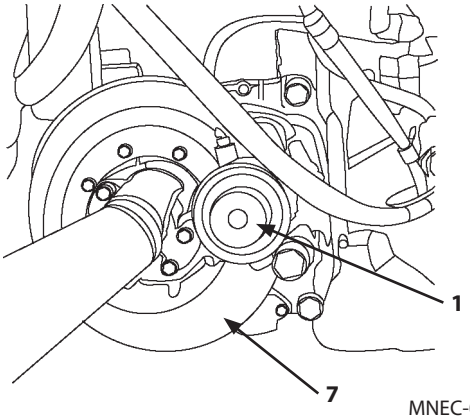
WARNING:

- **Once the parking brake is released, the machine becomes impossible to stop with the brake system.**
- **Wedge wheel stoppers to all tires to prevent the machine from moving.**
- **Before restarting to operate the machine, consult your nearest Hitachi dealer to have the parking brake adjusted.**

1. Rotate cap (1) counterclockwise and remove cap (1).
2. Rotate lock nut (2) counterclockwise by using tool (3) and remove lock nut (2).

   Wrench Size: 24 mm
3. Rotate set bolt (4) counterclockwise by using hexagon wrench (5) until brake disk (7) becomes completely free. Torque to be applied to hexagon wrench (5) is 70 N·m.

   Wrench Size: 8 mm
4. Install and tighten lock nut (2) until it contacts to piston (6).
5. Install cap (1) and lightly tighten it to prevent dust from adhering to the lock nut.



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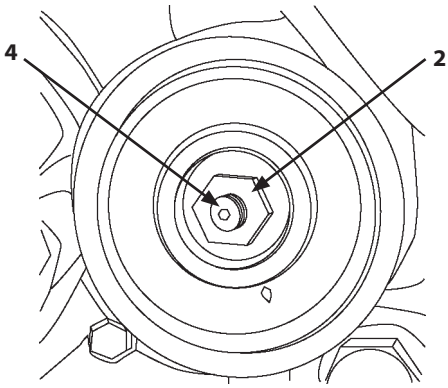

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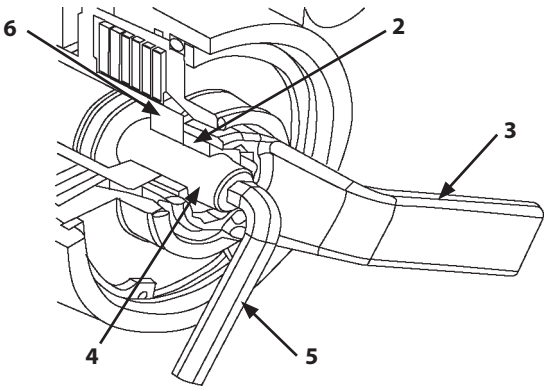


MNEC-06-005

Towing Method

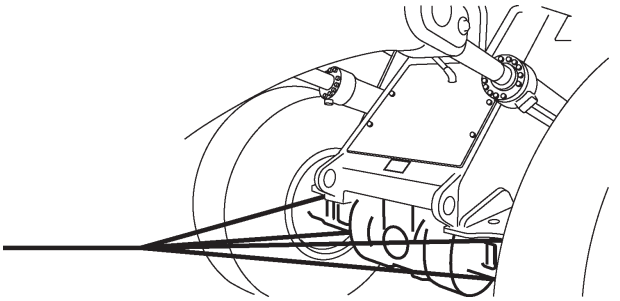
Attach wire ropes to the machine when the machine must be towed, in such cases when the machine cannot be moved from soft ground under its own power.

CAUTION:

- **Use wire cable having the strength more than approx. 150 % of the machine weight.**
- **Towing from the front end of the machine**

  Attach wire ropes to the machine using eye plates on the front chassis as indicated in the illustration. Always use soft material at the corners between the front chassis and wire cables to prevent damage to the wire cables.
- **Towing from the rear end of the machine**

  Attach wire ropes to the machine using the towing pin on the rear chassis as indicated in the illustration. Always use the lock pin after completely inserting the drawbar pin to prevent the wire cables from coming off.



M4GB-06-008

NOTE: Refer to page 1-134 for towing pin.

Lifting Machine

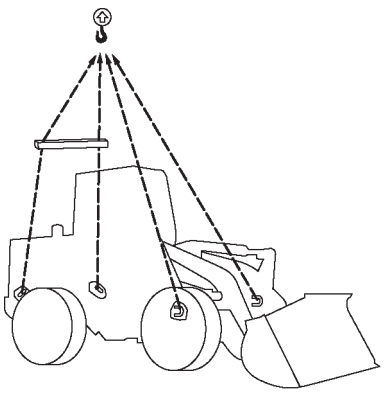
WARNING:

- **The lifting tools are optional. Install specified lifting tools at your nearest authorized dealer.**
- **Use lifting cables and other lifting tools that are free from any damage and/or aging, and properly rated for the load.**
- **Consult your nearest authorized dealer for correct lifting procedures, and size and types of lifting cable and tools.**
- **Before lifting the machine, move the control lever lock switch to the lock (🔒) position to prevent the machine from moving unexpectedly.**
- **Rigidly secure the front and rear chassis using the articulation stopper (lock bar) so that the machine front and rear chassis will not steer.**
- **Incorrect lifting procedure and/or incorrect wire cables may cause the machine to move (shift) while being lifted, resulting in machine damage and/or injury of personnel.**
- **Do not lift the machine quickly. Excessive load will be applied to the wire cables and/or lifting tools, and may cause them to break.**
- **Do not allow anyone to come close to or under the raised machine.**

Lifting

1. Straighten the machine and lower the front attachment as illustrated to the right.
2. Move the control lever lock switch in the lock (🔒) position.
3. Rigidly secure the front and rear chassis using the articulation stopper (lock bar) (Refer to page 1-133).
4. Stop the engine. Remove the key from the key switch.
5. Use cables long enough so that the cables do not come in contact with the machine chassis when the machine is lifted.

   Wrap some protectors around wire ropes and/or support bar as required to prevent the sheet metal from being damaged. Be sure to use the specified lifting tools.
6. Set the crane in an appropriate position on a firm, level surface.
7. Attach the cable to the lifting tools.
8. Load machine slowly and carefully, as desired.



MNEC-05-001-1

Correct Maintenance and Inspection Procedures

Learn how to service your machine correctly. Follow the correct maintenance and inspection procedures shown in this manual.

SA-005

Inspect machine daily before starting.

- Check controls and instruments.
- Check coolant, fuel, DEF/AdBlue® and oil levels.
- Check for leaks, kinked, frayed or damaged hoses and lines.
- Walk around machine checking general appearance, noise, heat, etc.
- Check for loose or missing parts.

If there is any problem with your machine, repair it before operating or contact your authorized dealer for repairs.

IMPORTANT:

- **Use only recommended coolant, fuel, DEF/AdBlue® and lubricants.**
- **Be sure to use only genuine Hitachi parts. Failure to do so may result in serious injury or death and/or machine breakdown.**
- **Failure to use recommended coolant, fuel, DEF/AdBlue®, lubricants, and genuine Hitachi parts will result in loss of Hitachi product warranty.**
- **Never adjust engine governor.**

  Never adjust hydraulic system relief valve.
- **Protect electrical parts from water and steam.**
- **Never spray high pressure water or steam to the transmission oil filler port, transmission air breather, and vicinity of the axle air breather.**
- **Never disassemble electrical components such as main controller, sensors, etc.**
- **Never adjust parts of engine fuel system.**

  Never adjust hydraulic equipment.
- **Using bad quality fuel, drainage agent, fuel additives, gasoline, kerosene or alcohol refueled or mixed with specified fuel may deteriorate performance of fuel filters and cause surface problems between moving parts at lubricated contacts in the injector. It also affects the engine and aftertreatment device parts, leading to malfunction.**
- **Use Hitachi genuine high performance filter.**

- Machine Information Controller
  This machine provides a machine information controller that stores machine operation information for preventive maintenance.
  When maintaining the machine, our authorized service man may down load the stored information via satellite.
  Consult with your nearest authorized dealer for detailed function of this device.
- Communication Terminal Operation (Option)
  It is not necessary to check or operate the communication terminal however if any abnormality is found, consult your nearest authorized dealer.
  Before installing any covering attachment such as a head guard, consult your nearest authorized dealer.
  Never spray water on the communication terminal and wiring.
- Inquire on the proper way to recycle or dispose of oil, fuel, coolant, DEF/AdBlue®, filters, batteries and other waste from your local environmental or recycling center, or from your authorized dealer.

Check the Hour Meter Regularly

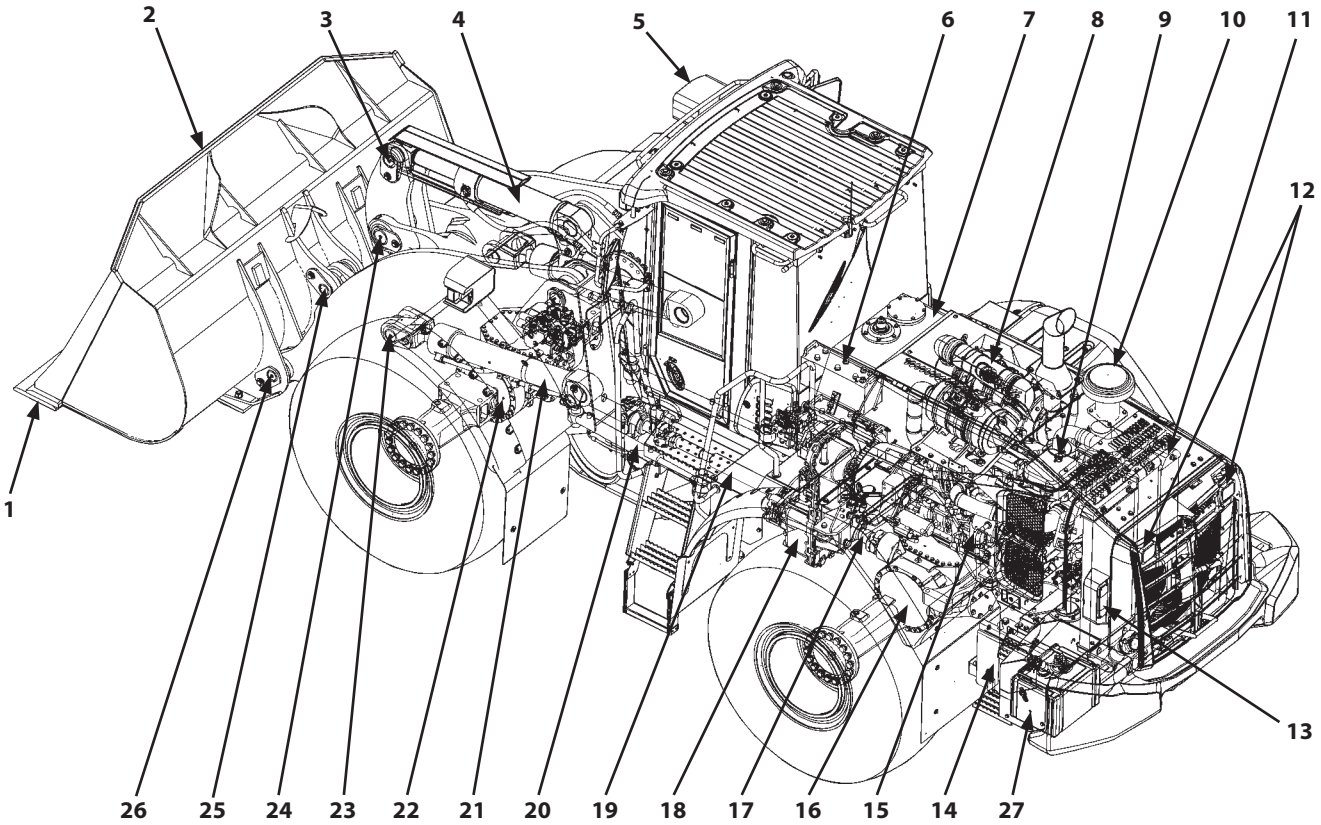
Refer to the List of Check and Maintenance for information about lubricants, check and adjustment intervals. The lubrication chart is affixed on the left side of the front chassis. Refer to 7-6 page.

This manual recommends grouping the intervals into three categories as follows:

Daily Check : To be conducted daily before operation (every 10 hours)
Monthly Check : To be regularly conducted once per month (every 250 hours)
Annual Check : To be regularly conducted once per year (every 2000 hours)

Check and maintenance intervals shown in this manual are those for the machines to be operated under normal conditions. In case the machine is operated under more severe conditions, shorten the intervals.

Layout



MNEK-07-001

1. Bolt on Cutting Edge
2. Bucket
3. Bucket Cylinder Pin
4. Bucket Cylinder
5. Front Combination Lamp
6. Batteries
7. Hydraulic Oil Tank
8. Aftertreatment Device
9. Expansion Tank
10. Air Cleaner
11. Radiator, Oil Cooler, and Other Cooling System
12. Work Light
13. Rear Combination Lamp
14. Fuel Tank
15. Engine
16. Rear Axle
17. Third (Rear) Propeller Shaft
18. Transmission
19. Second (Center) Propeller Shaft
20. Steering Cylinder
21. Lift Arm Cylinder
22. Front Axle
23. Lift Arm Cylinder Pin
24. Bell Crank (Lever) Pin
25. Bucket Link Pin
26. Bucket Pin
27. DEF/AdBlue® Tank

MEMO

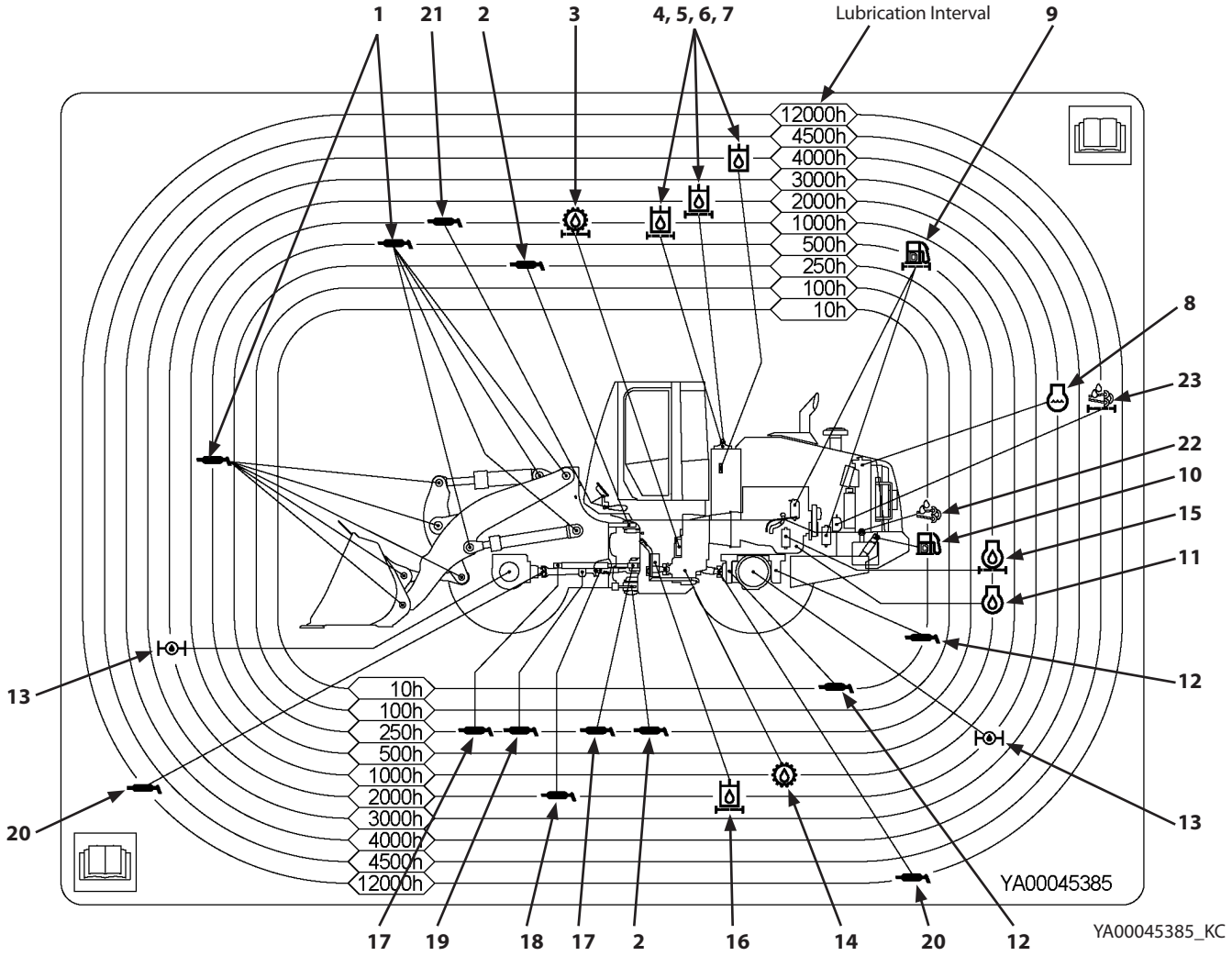
Maintenance Guide Table

The maintenance guide table is affixed to the reverse side of the tool box cover. Lubricate and/or service the parts at the intervals as instructed in the table so that all necessary maintenance can be performed regularly.

- Symbol Marks
  The following marks are used in the maintenance guide table.

	Grease (Front Joint Pin, Cylinder Pin, Propeller Shaft)		Hydraulic Oil
	Engine Oil		Hydraulic Oil Filters (Pilot Filter, Hydraulic Oil Tank Filter, Suction Filter, Air Breather Element)
	Engine Oil Filter		Gear Oil (Final Drive, Differential Gear)
	Coolant (Long-Life Coolant)		Fuel
	Transmission Oil (Transmission, Torque Converter)		Fuel Filter (Fuel Main Filter, Pre-Filter)
	Transmission Oil Filter		DEF/AdBlue® Supply Module Main Filter

- Maintenance Guide Table



	Item	Page		Item	Page
1	Grease (Front Joint Pin)	7-23	12	Grease (Axle Support pin)	7-27
2	Grease (Frame Hinge Pin)	7-26	13	Axle Gear Oil (Final drive, Differential gear)	7-43
3	Transmission Oil Filter	7-40	14	Transmission Oil	7-39
4	Hydraulic Oil Filter (Suction)	7-51	15	Engine Oil Filter	7-34
5	Hydraulic Oil Filter (Main)	7-51	16	Hydraulic Oil Filter (Pilot)	7-52
6	Air Breather Element	7-56	17	Grease (Steering Cylinder Pin)	7-25
7	Hydraulic Oil	7-48	18	Grease (Propeller Shaft)	7-29
8	Coolant (Long-Life Coolant)	7-79	19	Grease (Propeller Shaft Center Support)	7-29
9	Fuel Filter, Fuel Pre-Filter	7-68 to 69	20	Grease (Propeller Shaft Universal)	7-29
			21	Grease (Brake Pedal)	7-30
10	Fuel (Diesel Fuel)	7-69	22	DEF/AdBlue®	7-127
11	Engine Oil	7-31	23	DEF/AdBlue® Supply Module Main Filter	7-130

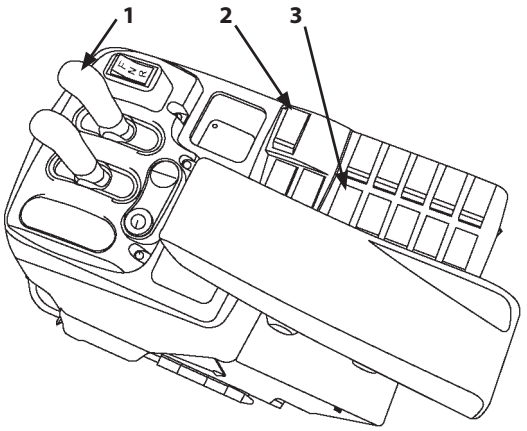
Preparations for Inspection and Maintenance

WARNING: If ride control switch (3) is in the AUTO position, the lift arm may unexpectedly rise. To avoid an accident due to unexpected movement of the lift arm, always turn ride control switch (3) OFF before beginning the inspection and/or maintenance of the machine.

CAUTION: If the machine moves unexpectedly, a serious accident may result. Be sure to apply the parking brake when parking the machine.

Unless specified otherwise, park the machine by following the procedures below before beginning the inspection and/or maintenance work.

1. Park the machine on a solid level surface.
2. Lower the working tools such as the bucket to the ground.
3. Turn ride control switch (3) OFF.
4. Place forward / reverse lever (4) and forward / reverse switch to neutral and place neutral lever lock (6) to lock ( ) position.
5. Apply the parking brake (Turn parking brake (5) ON.)
6. Wedge the tires.
7. Run the engine at low idle speed for 5 minutes to cool the engine. Turn key switch (7) OFF to stop the engine. Again, turn key switch (7) ON and place control lever lock switch (2) to the unlock ( ) position. Fully operate the lift arm control lever (1) 3 to 4 strokes to release residual pressure in the hydraulic system. If inspection and/or maintenance must be performed with the engine kept running, use a signal person.
8. Be sure to place control lever lock switch (2) to the lock ( ) position.
9. Turn key switch (7) OFF and remove the key.
10. Start working only after putting an "UNDER INSPECTION/MAINTENANCE" tag in a highly visible place such as on the cab door or the control lever.



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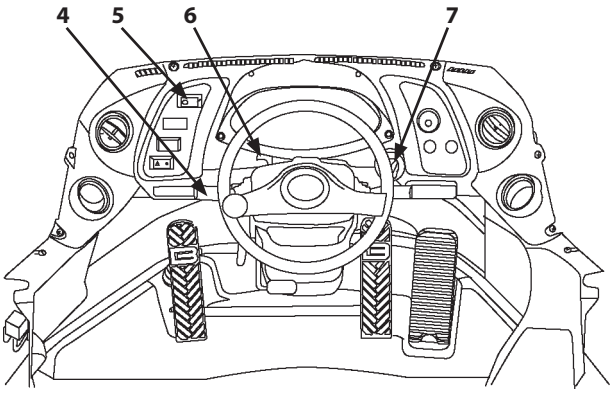
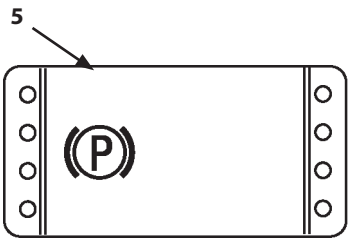


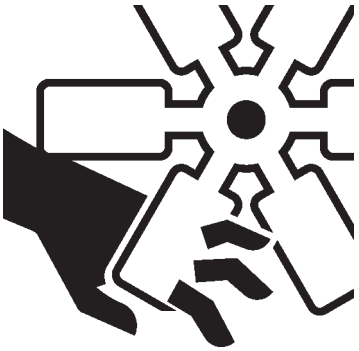
MNEC-01-036



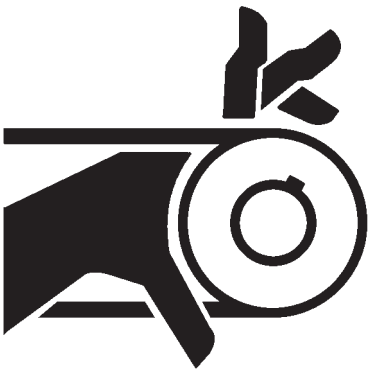
MNEC-01-058

WARNING: Never attempt to maintain the machine when the engine is running in order to prevent an accident. If the engine must be run while working, do the following.

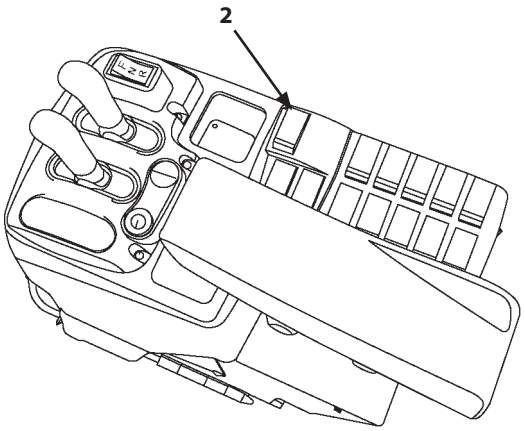
- **One person should take the operator's seat to be ready to stop the engine any time while communicating with other workers.**
- **When working around moving parts is unavoidable, pay special attention to ensure that hands, feet, and clothing do not become entangled.**
- **If parts or tools are dropped or inserted into the fan or the belt, they may fly off or be cut off. Do not drop or insert parts and tools into the moving parts.**
- **Move control lever lock switch (2) to lock position so that the front attachment will not move.**
- **Never touch the control levers and pedals. If operating the control levers or pedals is unavoidable, signal co-workers to move to a safe place.**



SA-2294



SA-026



MNEC-07-001

Articulation Lock

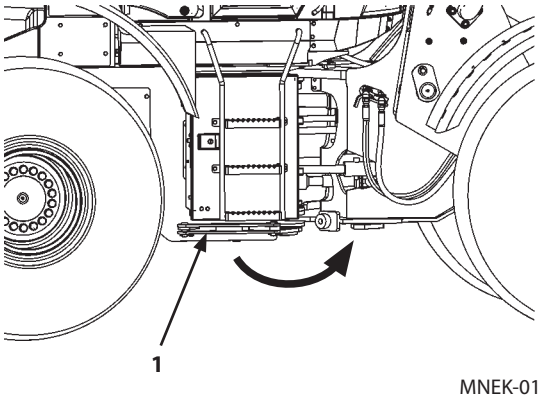
CAUTION: Before beginning to work near the chassis center hinge, install articulation stopper (lock bar) (2) to securely lock and prohibit movement between the front and rear chassis. Avoid accidents from unexpected movement of the machine.

1. Align the front and rear chassis centers with each other.

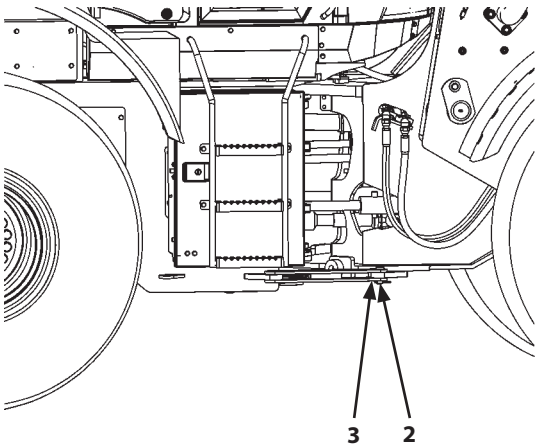
2. Remove β-form pin (5) to remove set pin (1) from the rear chassis hole.

3. Pull out and rotate articulation stopper (2) to align it with the front chassis hole (3).

4. Install set pin (1) into the front chassis hole (3) and the articulation stopper tip end hole. Install β-form pin (5) to lock the articulation stopper (2) in position.

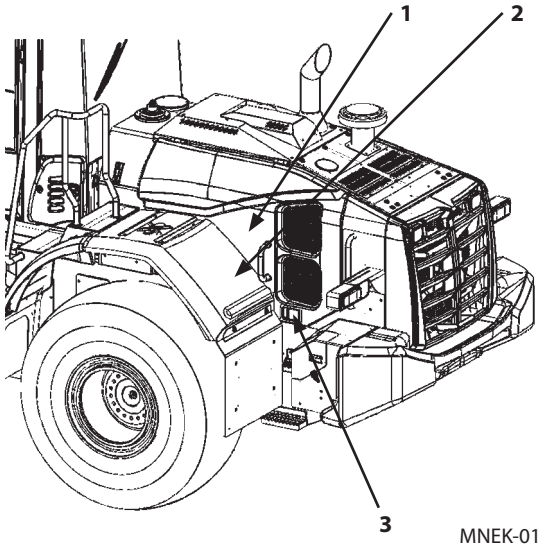


MNEK-01-018



MNEK-01-019

Inspection/Maintenance Access Side Cover



MNEK-01-009

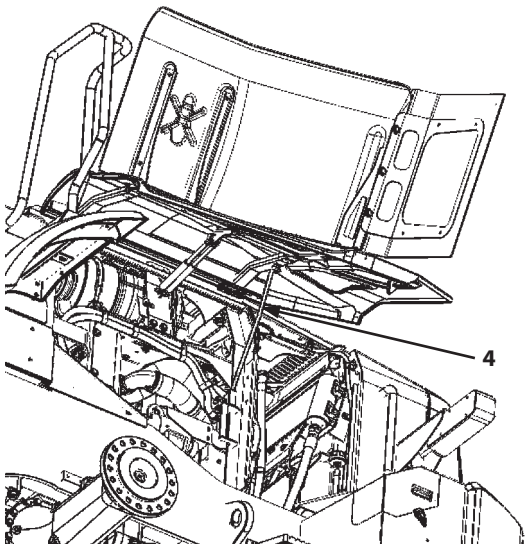
CAUTION:

- **Always close side covers (1) during driving and operation.**
- **Do not keep side covers (1) open on a slope or when a strong wind is blowing. Failure to do so may be dangerous because side cover (1) may unexpectedly close.**
- **Take care not to pinch your fingers when opening/ closing the side covers (1).**
- **When side cover (1) is opened, the cover may move suddenly. Be careful not to come in contact with the cover.**
- **Before inspecting around the engine, be sure to secure side cover (1) with holding rod (4).**
- **If the machine is equipped with the fenders (2) on side covers (1), never ride on the fenders (2).**

When opening side cover (1), pull latch (3).

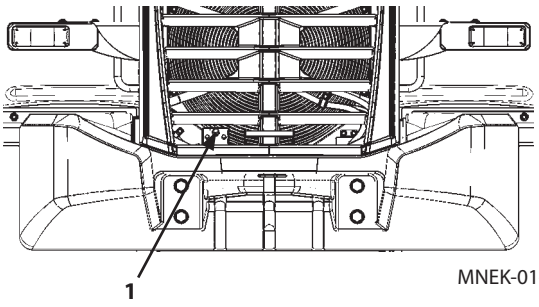
NOTE: When required to inspect the machine for a long time with side cover (1) kept open, lock side cover (1) using the holding rod (4) provided inside the side cover.

Side cover (1) has a holding groove. Engage the holding rod (4) in the holding groove beforehand.



MNEK-01-010

Rear Grille



MNEK-01-020

CAUTION:

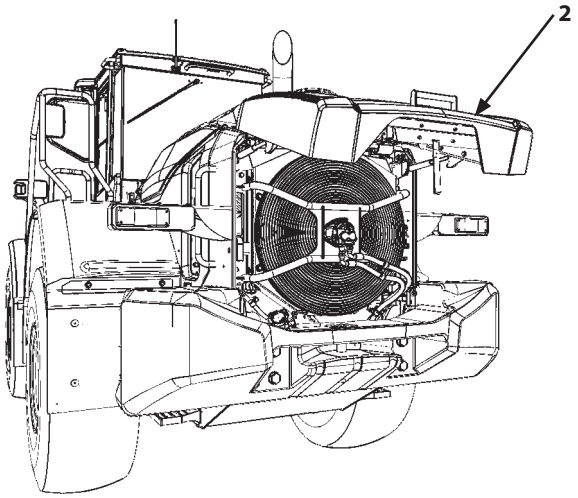
- **Open or close rear grille (2) only after stopping the engine. Failure to do so may create a very dangerous situation as entanglement with the cooling fan may result.**
- **Before driving the machine, always check that rear grille (2) is not open.**
- **Rear grille (2) may spring open. Take care not to come in contact with the rear grille.**

Opening the rear grille

Push open/close Button (1) laterally to open rear grille (2) upward, allowing the fuel tank to be refilled and/or the cooling fan to be cleaned.

Closing the rear grille

While holding the rear grille, slowly close the rear grille downward until a "click" sound is heard.



MNEK-01-021

Periodic Replacement of Parts

To ensure safe operation, be sure to conduct periodic inspection of the machine. In addition, the parts listed below, if defective, may pose serious safety/fire hazards. It is very difficult to gauge the extent of deterioration, fatigue, or weakening of the parts listed below simply by visual inspection alone. For this reason, replace these parts at the intervals shown in the table below. However, if any of these parts are found to be defective, replace before starting operation, regardless of the interval.
Also, when replacing hoses, check the clamps for deformation, cracks, or other deterioration, and replace as necessary.
Be sure to perform periodic inspection of all hoses, as shown below, and replace or retighten any defective parts found, as necessary.
Consult your authorized dealer for correct replacement.

Periodic Replacement Parts			Replacement Intervals
Engine		Fuel hose (Fuel tank to filter)	Every 2 years or 4000 hours whichever comes first
		Fuel hose (Fuel tank to injection pump)	
		Oil filter hose (Engine to oil filter)	
		Heater hose (Heater to engine)	
		Fuel hose (Engine to fuel tank)	
		Coolant filter hose (Engine to DCA coolant filter)	
		Heater hose (Engine to dosing module)	
		DEF/AdBlue® hose (Aftertreatment device)	
Brakes		Brake valve seals (Rubber parts)	Every 1 year
		Wet type brake (D-ring for piston)	Every 4 years
		Accumulator	Every 2 years
		Stop light switch	Every 2 years
		Brake hose	Every 2 years or 4000 hours whichever comes first
Steering Mechanism		Steering hose	Every 2 years or 4000 hours whichever comes first
		Steering cylinder seals (Rubber parts)	Every 4 years
		Steering valve seals (Rubber parts)	Every 2 years
Hydraulic System	Base Machine	Pump suction hose	Every 2 years or 4000 hours whichever comes first
		Hydraulic hose (Main pump to main valve)	
		Hydraulic hose (Fan pump to fan motor and fan valve)	
		Hydraulic hose (Pilot pump to charging valve)	
		Hydraulic hose (Transmission high pressure circuit hose)	
		Hydraulic hose (Transmission cooler line hose)	
		Hydraulic oil tank return hose	
		Hydraulic oil cooler line hose	
		Hydraulic hose (Valve to hydraulic oil tank return hose)	
	Front Attachment	Lift arm cylinder line hose	
		Bucket cylinder line hose	
		Pilot hose	
Cab		Seat belt	Every 3 years

NOTE: Be sure to replace seals, such as O-rings and gaskets, when replacing hoses.

Inspection and Maintenance Table

Check and/or carry out the maintenance at intervals of the specified operating hours below or the calender date, whichever comes first.

IMPORTANT
Severe applications require more frequent maintenance. Severe conditions include heavy dust, extremely abrasive material, caustic chemicals, extremely wet conditions or abnormally hot or cold ambient temperatures.

△: First time replacement or cleaning only

Section	Item for check	Operating hours									Page
		10	50	100	250	500	1000	2000	4000	4500	
Engine	Check Engine Oil Level	○									7-32
	Check Coolant Level	○									7-77
	Check DEF/AdBlue® Level	○									7-128
	Check Accelerator Pedal Operation, and Exhaust Gas Color and Noise	○									7-110
	Drain Fuel Filter	○									7-68
	Check Fuel Level	○									7-65
	Check Drive Belt	○									7-78
	Check Fuel Hoses	○									7-73
	Check Sound Absorbing Mat Around Engine	○									7-112
	Check Crankcase Breather Tube	○									7-36
	Check Air Inlet System	○									7-75
	Replace Engine Oil and Oil Filter Cartridge					○					7-33 7-35
	Clean Radiator/Oil cooler Cores and Other Cooling System					*3 ○					7-81
	Replace Fuel Main Filter Element					○					7-69
	Replace Fuel Pre-Filter Element					○					7-70
	Drain Water and Sediment from Fuel Tank						○				7-67
	Clean Fuel Pump Strainer						○				7-71
	Check Drive Belt Tentioner	Every 1 years or 1000 hours									7-79
	Replace Crankcase Air Breather Element							○			7-37
	Check Vibration Damper							○			7-39
	Replace DEF/AdBlue® Supply Module Main Filter Element									○	7-131
	Check and Adjust Valve Clearance	Every 5000 hours									7-113
	Replace Air Cleaner Element	Indicator comes ON									7-74
	Replace Coolant	Every 2 years or 3000 hours									7-80
	Check and Clean Aftertreatment Device	As required, when regeneration indicator comes ON									7-125

NOTE:

**3 Shorten maintenance intervals when the machine is* operated under severe conditions or when the machine is continuously operated for a long period of time.

△: First time replacement or cleaning only

Section	Item for check	Operating hours									Page
		10	50	100	250	500	1000	2000	4000	4500	
Transmission & Torque Converter	Check Transmission Oil Level	○									7-40
	Replace Transmission Oil Filter Cartridge			△			○				7-41
	Replace Transmission Oil			△			○				7-41
Axle system	Check Tire for Damage	○									7-94
	Greasing (Axle support)	○									7-28
	Check Tire (Tire Pressure)	○									7-94
	Greasing (Propeller Shaft Pillow Block Bearing)				○						7-29
	Check Wheel Bolt Torque		△			○					7-95
	Clean Axle Housing Air Breather					○					7-46
	Check Surroundings Around Axles and Axle Covers for Oil Leaks						○				7-46
	Greasing (Second Propeller Shaft Spline)							*3 ○			7-30
	Greasing (Third Propeller Shaft Spline)							*3 ○			7-30
	Replace Axle Oil							○			7-45
	Retighten Front Axle and Rear Axle Support Mounting Bolts		△					○			7-113
	Greasing (Second (Front) Propeller Shaft)	Every 12000 hours *3 ○									7-28
	Greasing (Second (Center) Propeller Shaft)	Every 12000 hours *3 ○									7-29
	Greasing (Third (Rear) Propeller Shaft)	Every 12000 hours *3 ○									7-30
Steering system	Check Steering Wheel Play	○									7-109
	Greasing (Steering Cylinder)	*1 △			○						7-26
	Check Gas Pressure in Steering Accumulator							○			7-59
Brake system	Check Parking Brake Force	○									7-91
	Check Right and Left Brake Interlocking Performance	○									7-90
	Check Accumulator Function, Gas Leakage, Looseness, and Damage					○					7-92
	Greasing (Brake Pedal)						○				7-31
	Greasing (Brake Pedal Linkage)						○				7-31
	Check Brake Disks (Service and Parking)							○			7-93
	Check Gas Pressure in Accumulator							○			7-93

NOTE:

**1 Add grease daily during first 50 hours of operation. In* case the machine is engaged in excavation in mud, water or snow, add grease after each work shift.

**3 Shorten maintenance intervals when the machine is* operated under severe conditions or when the machine is continuously operated for a long period of time.

△: First time replacement or cleaning only

Section	Item for check	Operating hours									Page
		10	50	100	250	500	1000	2000	4000	4500	
Loading system	Check Hydraulic Oil Level	○									7-49
	Check Bucket Teeth and Cutting Edge	○									7-107
	Check Hoses and Lines for Leaks	○									7-60
	Check Hoses and Lines for Cracks, Bends, Etc.				○						7-60
	Greasing	*1 △			*2 △	○					7-24
	Check Ride Control Accumulator Function, Gas Leakage, Looseness, and Damage (Option)					○					7-59
	Replace Hydraulic Tank Oil Return Filter						○				7-55
	Replace Air Breather Element							○			7-57
	Replace Pilot Oil Filter							○			7-53
	Check Pilot Circuit Accumulator Function, Gas Leakage, Looseness, and Damage							○			7-58
	Check Gas pressure in Ride Control Accumulator (Option)							○			7-59
	Replace Hydraulic Oil and Clean Suction Filter								*4 ○		7-50 7-52
	Replace Pilot Circuit Accumulator	Every 4000 hours or 2 years									7-59
Chassis	Check Outer and Inner Rear View Mirrors	○									7-111
	Check ROPS Cab Mounts, Resin Cab Roof, and Roof Mounting Bolts	○									7-108
	Check and Replace Seat Belt and Lower Tether	○	Replace every 3 years								7-108
	Clean Engine Room and Hood	○									7-112
	Check Steps, Grab Handles and Handrails	○									7-111
	Check Windshield Washer Fluid Level	○									7-108
	Greasing (Center Pin)				○						7-27
Electrical system	Check Monitor Functions and Instrument Operation	○									7-86
	Check Horn and Back Up Alarm	○									7-87
	Check Work Lights	○									7-87
	Clean Rear View Camera Lens	○									7-112
	Check Electrical Harnesses and Fuses		○								7-88
	Check Battery Electrolyte Level			○							7-84
	Check Electrolyte Specific Gravity				○						7-85

NOTE:

**1 Add grease daily during first 50 hours of operation. In* case the machine is engaged in excavation in mud, water or snow, add grease after each work shift.

**2 After 50 hours of operation, carry out next greasing at* the first 250 hours of operation. Then, carry out greasing every 500 hours of operation afterwards. Shorten greasing intervals when the machine is operated under severe conditions or when the machine is continuously operated for a long period of time.

**4 Hydraulic oil changing interval differs according to the* kind of hydraulic oil used.

△: First time replacement or cleaning only

Section	Item for check	Operating hours									Page
		10	50	100	250	500	1000	2000	4000	4500	
Air Conditioner	Clean/Replace Air Conditioner Circulation/Fresh Air Filters			*3 ○			○				7-100 7-103
	Check Air Conditioner Drive Belt						○				7-105
	Check Refrigerant Level						○				7-106
	Check Air Conditioner Condenser						○				7-105
	Check Air Conditioner						○				7-104
	Check Air Conditioner Piping						○				7-104
	Check Compressor and Pulley							○			7-106
	Replace Air Conditioner Receiver Dryer	Every 3 years or 6000 hours									7-106
Others	Check Tightening Torque of Bolts and Nuts		△					○			7-114

NOTE:

**3 Shorten maintenance intervals when the machine is* operated under severe conditions or when the machine is continuously operated for a long period of time.

Kind of Oils

Grease

Kind of Grease	Multipurpose-type Lithium Grease
Application	Chassis Lubrication, Front Attachment Joint Pins
Air Temperature	-20 to 45 °C (-4 to 113 °F)
Oil Specification	NLGI 2 EP

NOTE:

- *Be sure to use a lithium-based grease for universal joints and a propeller shaft spline. If other types of chassis grease are used, premature wear and/or a noise emission may result.*
- *NLGI No. 2 grease is suitable for most temperatures and some auto-lube systems. Use NLGI No. 1 or No. 0 grease for extremely low temperature.*

Engine Oil

IMPORTANT: Use engine oil equivalent to DH-2 specified in JASO or CJ-4, API. Failure to do so may reduce the engine performance and/or shorten the engine service life. Please be noted that all engine failures caused by using engine oil other than specified are excluded from Hitachi Warranty Policy. Consult your nearest authorized dealer for the unclear points.

Kind of Oil	Engine Oil	
Application	Engine Crank Case	
Air Temperature	-20 to 20 °C (-4 to 68 °F)	-15 to 45 °C (5 to 113 °F)
Oil Specification	API CJ-4, JASO DH-2	
	SAE10W-30	SAE15W-40
	SAE10W-40	

Transmission Oil

Kind of Oil	Engine Oil
Application	Transmission and Torque Converter
Air Temperature	-20 to 45 °C (-4 to 113 °F)
Oil Specification	API CF 10W Class

NOTE: When the atmospheric temperature is below -20 °C: Contact your authorized dealer.

Axle Oil

Kind of Oil		Gear Oil
Application		Axle & Wet Disc Brake
Air Temperature		-20 to 45 °C (-4 to 113 °F)
Recommended Product	Hitachi	High Gear Oil TKTT15150-4th
Alternative Product		TO-4 SAE50 Fluid, with 6% friction modifier

NOTE:

- *When using TO-4 SAE50 Fluid other than the listed recommended products, add 6% friction modifier or "anti-chatter" additive to prevent or eliminate service brake application noise. Recommended additive package for universal tractor fluid: HCM 9990A or Afton Hitec8703 or equivalent.*
- *The acceptable ambient temperature when using TO-4 SAE50 Fluid should fall within the range -15 to 40 °C (5 to 104 °F).*
- *For extremely low ambient temperatures, lower viscosity or synthetic oils may be required.*

Hydraulic Oil

Kind of Oil		Hydraulic Oil	
Application		Hydraulic System (Hydraulic Oil Tank)	
Air Temperature		-20 to 45 °C (-4 to 113 °F)	
Change Interval		4000 hours	
Recommended Product	Hitachi	Super EX 46HN	-
Alternative Product		-	JCMAS HK VG46W

NOTE:

- *Never mix hydraulic oils containing zinc with zinc-free hydraulic oils as hydraulic system component damage could result.*
- *Use appropriate oil of viscosity depending on the temperature. Low temperature viscosity will differ depending on each product. Contact each hydraulic oil manufacture directly.*

Recommended Coolant

Kind of Coolant	Long-Life Coolant
Application	Radiator
Standard	ASTMD-6210
Manufacturer/ Recommended Products	Long Life Coolant C521

Service Refill Capacity

Location	Liters	Gallons
Fuel Tank (Diesel Fuel)	245	64
Engine Lubricant (Engine Oil)	25	6.6
Engine Coolant	33	8.7
Transmission	30	7.9
Axle (Front/Rear)	34/34	9/9
Hydraulic Oil	150	39.6
DEF Tank	25	6.6*

*NOTE: *: Refill quantity when the level gauge indicates "empty". The other shows the maximum refill quantity to be required during level check, and may differ from the whole system quantity.*

List of Consumable Parts

1. Filter Elements

	Part No.
Engine Oil Filter	YA00019107
Fuel Main Filter	YL00008001
Fuel Pre-Filter Element	YL00008002
Air Cleaner Element (outer)	YA00018804
Air Cleaner Element (inner)	YA00018805
Suction Filter	263F752091
Hydraulic Tank Oil Filter	4448401
Pilot Oil Filter	2655742471
Transmission Oil Filter	YA00049017
Crankcase Air Breather Element	YA00018806
DEF/AdBlue® Supply Module Main Filter	YA00058284
Hydraulic Tank Air Breather Element	4437838

2. Drive Belts

	Part No.
Air Conditioner Drive Belt	263F672001

3. Combination Light and Other Light

			Part No.
Head Light	Head Light Assembly		4436232 (44890-60350)
	Bulb (24 V, 70/75 W)		4434679
	Unit		4434678
Turn Signal Light	Turn Signal Light Assembly		2640242432
	Bulb	Clearance Light (24V 5W)	2640247301
		Turn Signal Light (24V 25W)	2640247291
Rear Combination Light	Rear Combination Light Assembly		44881-60490
Work Light	Work Light Assembly		4336570
	Bulb (24V 70W)		4285648

4. Slow Blow Fuses

	Part No.
45A	4315323
65A	263G244421
70A	4315073
140A	YA00021809

A. Greasing

WARNING: Apply the parking brake and the articulation lock bar.

NOTE:

- Until break-in operation is performed for more than 50 hours, lubricate the machine every day to get initial operational concordance.
- If excavation is made in mud, water or snow, lubricate the machine after operation is complete.
- Sufficiently add high quality grease through the grease fittings. After removing contamination around the grease fitting, add grease. After greasing, thoroughly remove the old grease that was pushed-out from the seals.

1. One point each to right and left bucket pins (1).

   --- every 500 hours (250 hours at first time only)

2. One point each to bucket link pins (2 and 3).

   --- every 500 hours (250 hours at first time only)

3. One point to bucket cylinder pin (4).

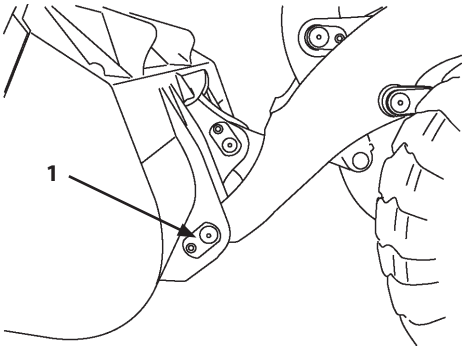
   --- every 500 hours (250 hours at first time only)

   One point to bucket cylinder rod pin (5).

   --- every 500 hours (250 hours at first time only)

4. One point to lever (bell crank) pin (6).

   --- every 500 hours (250 hours at first time only)



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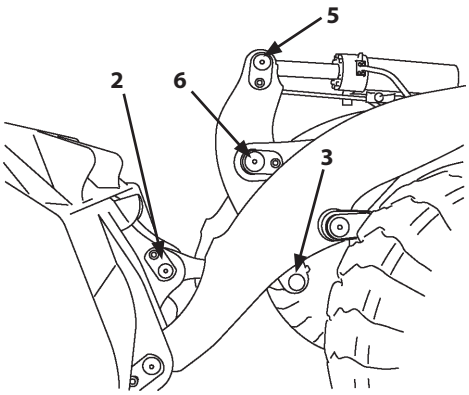

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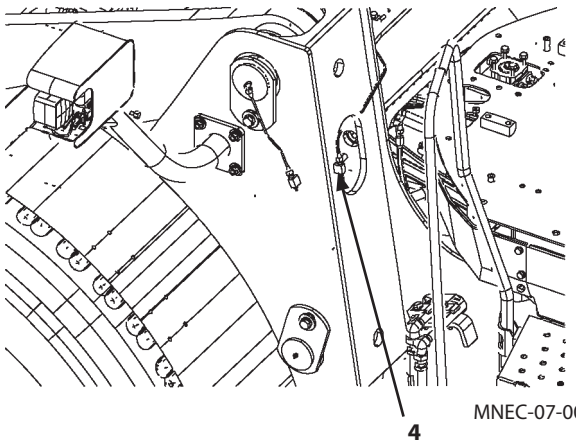
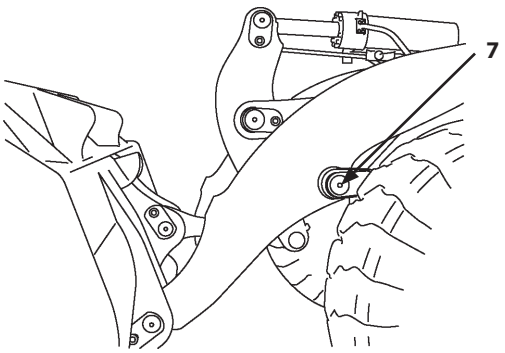


MNEC-07-006

5. One point each to right and left lift arm cylinder rod pins (7).

   --- every 500 hours (250 hours at first time only)



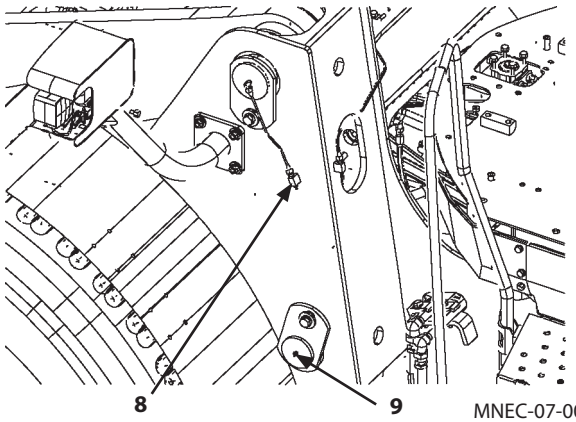
M4GB-07-005

6. One point each to right and left lift arm pivot pins (8).

   --- every 500 hours (250 hours at first time only)

7. One point each to right and left lift arm cylinder pins (9).

   --- every 500 hours (250 hours at first time only)

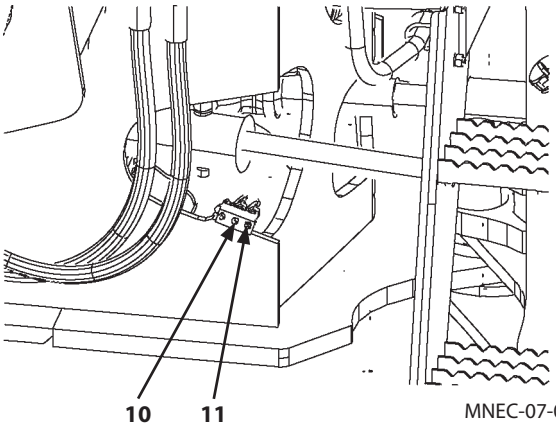


MNEC-07-006

8. One point each to front right and left steering cylinder pins (10 and 11).

   --- every 250 hours

   10- Cylinder left front
   11- Cylinder right front

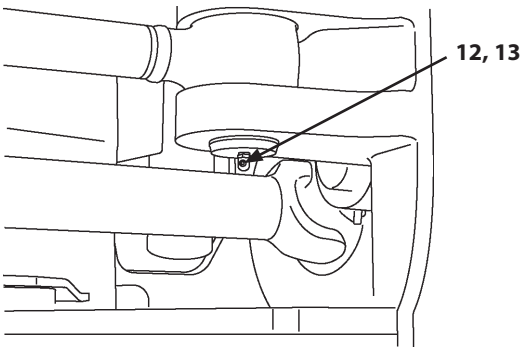


MNEC-07-007

9. One point each to right and left steering cylinder rod pins (12 and 13).

   --- every 250 hours

   Left rear (12)
   Right rear (13)

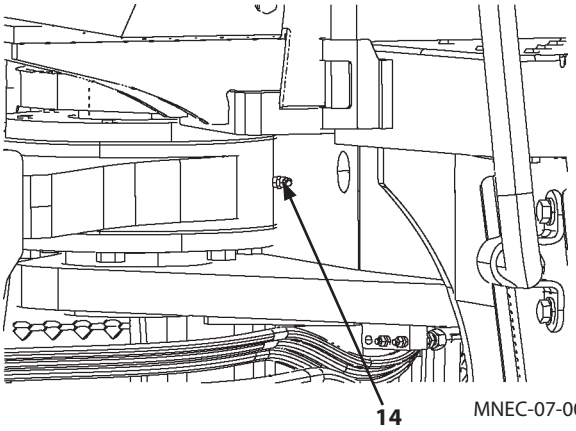


M4GB-07-008

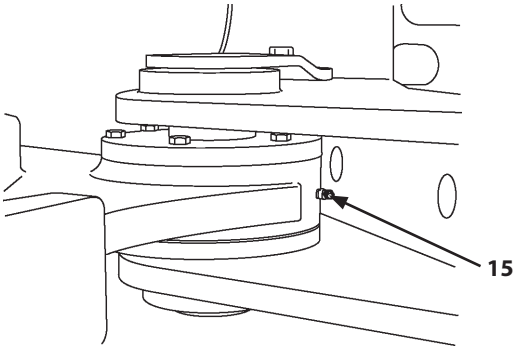
10. One point each to upper and lower center hinge pins (14 and 15).

    --- every 250 hours

    Upper (14)
    Lower (15)



MNEC-07-008

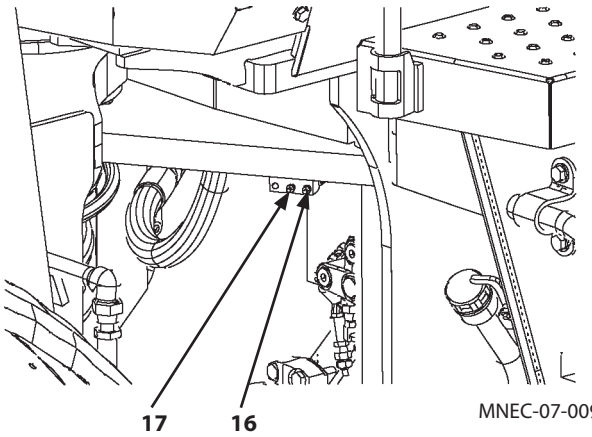


M4GB-07-010

11. One point each to front and rear axle support pins (16 and 17).

    --- every 10 hours

    Front (16)
    Rear (17)

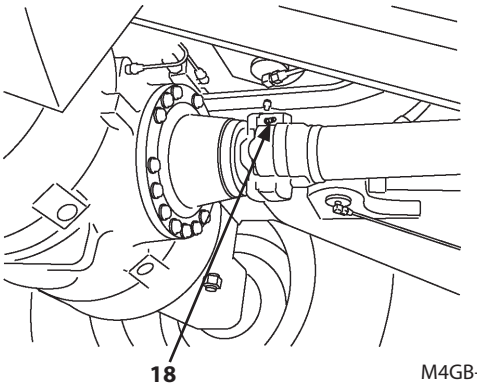


MNEC-07-009

12. One point to second (front) propeller shaft universal (18).

    --- every 12000 hours

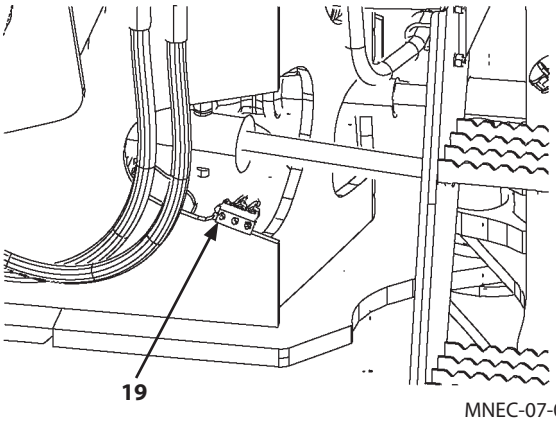
NOTE: When the machine is continuously operated under severe conditions for a long time, shorten the greasing intervals.



M4GB-07-013

13. One point to propeller shaft center support (pillow unit) (19).

    --- every 250 hours



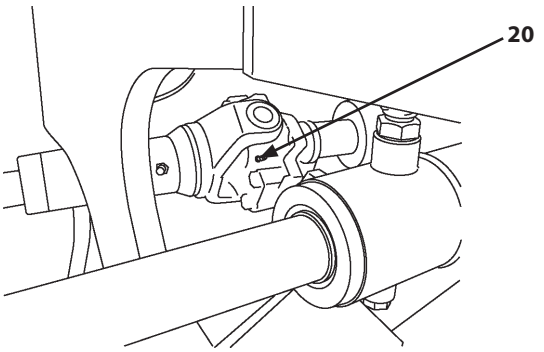
MNEC-07-007

14. One point to second (center) propeller shaft universal front (20).

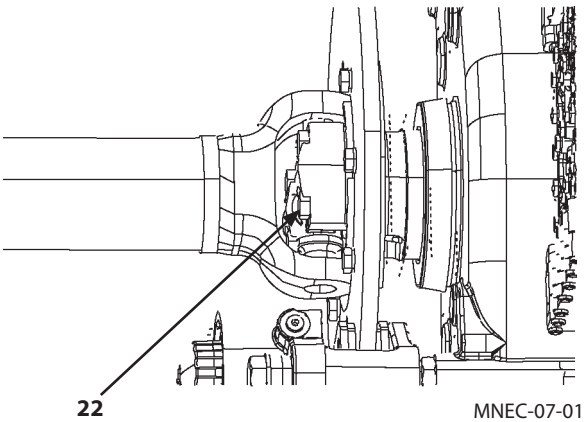
    --- every 12000 hours

    One point to second (center) propeller shaft universal rear (22).

    --- every 12000 hours

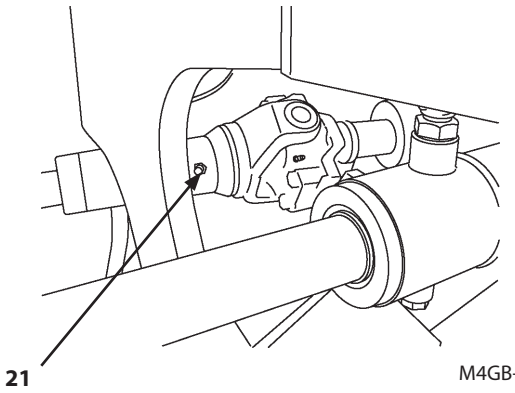


M4GB-07-014



MNEC-07-010

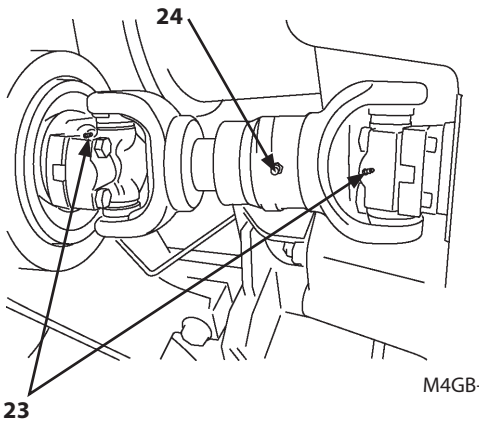
15. One point to second (center) propeller shaft splines (21).
    --- every 2000 hours



M4GB-07-014

16. Two points to third (rear) propeller shaft universal (23).
    --- every 12000 hours

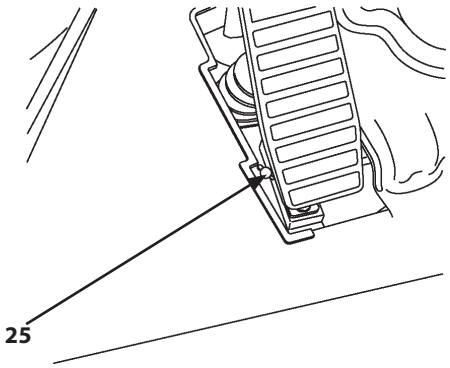
17. One point to third (rear) propeller shaft splines (24).
    --- every 2000 hours



M4GB-07-017

18. Two points to brake pedal (25)

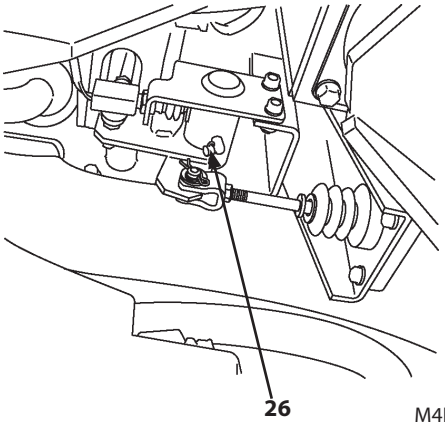
    --- every 1000 hours



M4FC-07-014

19. One point to brake pedal linkage (26)

    --- every 1000 hours



M4FC-07-015

B. Engine

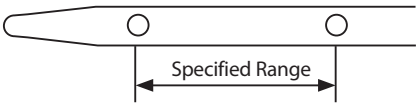
1 **Check Engine Oil Level**

--- every 10 hours (before starting the engine)

IMPORTANT: Incorrect engine oil level may cause engine problems (The oil level should be between the upper and lower marks on oil level gauge (1)).

If engine oil level is too high, control the oil level to the proper quantity before starting the engine.

Check oil level before starting the engine. Pull out oil level gauge (1). Check for mixing of foreign matter or contamination in the oil. Wipe oil level gauge (1) with cloth, re-insert it into the pipe to the end, and then pull it out again. The oil level should be between the upper and lower marks on oil level gauge (1).
If oil level is below the lower limit mark, add the recommended engine oil via oil filler (2).
If oil level exceeds the upper limit mark, remove drain plug (3), and then drain oil.
Recheck oil level.



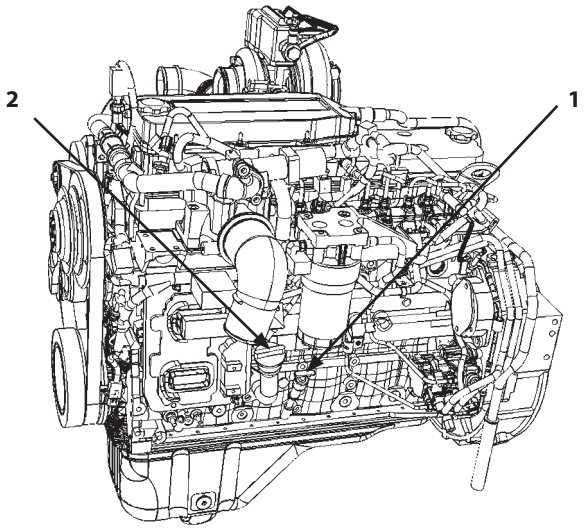
NOTE: Level the engine when adding oil or inspecting oil level.

When required to check oil level after operating the machine, first stop the engine. Wait for more than 15 minutes. Then check oil level.

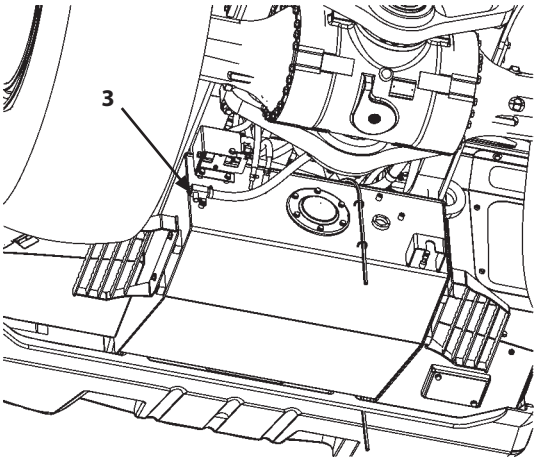
(This means that the oil level will become stabilized after all oil delivered to respective lubrication area returns to the oil pan.)

If the oil color changes, severe contamination and/or mixing of foreign matter may be seen, change the oil.

WARNING: Do not spill oil while changing oil. Spilled fuel and oil, and trash, grease, debris, accumulated coal dust, and other flammable materials may cause fires.



MNEK-07-004



MNEK-07-002

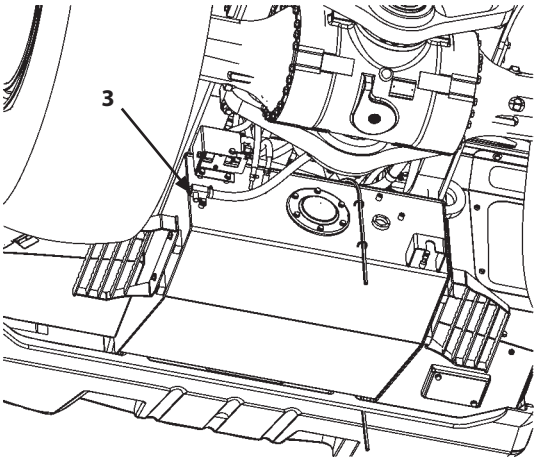
2 Change Engine Oil --- every 500 hours

WARNING: Immediately after the machine has been operated, all engine parts are hot. Wait for the engine to cool before starting any maintenance work. Failure to do so may cause severe burns.

NOTE: Improper disposal of waste oil can threaten the earth's environment and ecology.

Dispose the waste oil and filters in accordance with the local regulation and/or law.

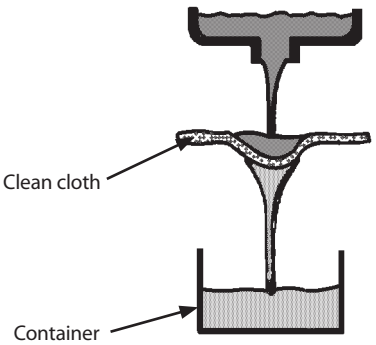
Be sure to replace the engine oil filter when changing the engine oil at the same time.



MNEK-07-002

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Clean the areas around the drain plug and the oil filter.
3. Arrange a 40 liter (11 gallons)- capacity container to receive the drain oil.
4. Remove drain plug (3) provided on the fuel tank side to allow oil to drain.
5. Drain oil from the oil filter cartridge.
6. Allow oil to drain through a clean cloth to check that no foreign matters such as metal pieces are included in the oil.
7. Install a new oil filter.

   (Refer to the descriptions for 3 Replace Engine Oil Filter.)
8. Securely tighten drain plug (3).

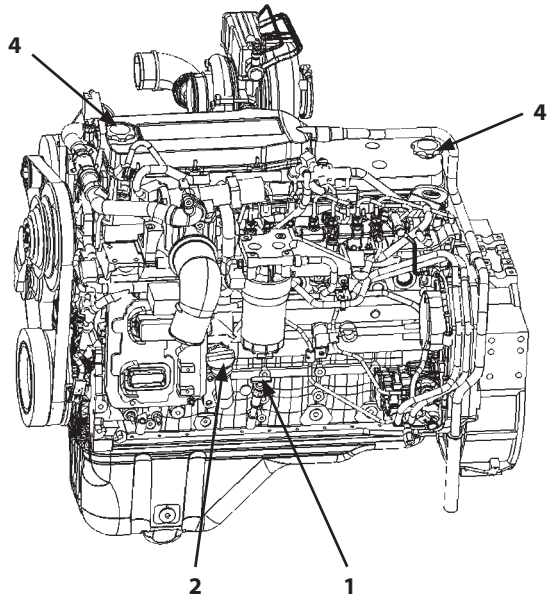


M4GB-07-020

9. Remove oil filler cap (2). Supply the specified amount of engine oil.
   Refer to "Engine Oil" on page 7-17.

   Engine Oil amount : 25 liters (6.6 gallons)

10. Securely tighten oil filler cap (2).
11. Check for looseness of other oil filler caps (4).
12. Check that the oil level is between the maximum and minimum level scales on oil level gauge (1). Then, start the engine.
13. After starting the engine, check the sealing surfaces for any oil leakage.
14. Keep the engine running at low idle speed for 5 minutes and stop the engine. About 15 minutes later, recheck the oil level. If necessary, add oil.



MNEK-07-005

3 Replace Engine Oil Filter

--- every 500 hours (each time when engine oil is changed)

WARNING: Immediately after the machine has been operated, all engine parts are hot. Wait for the engine to cool before starting any maintenance work. Failure to do so may cause severe burns.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Clean the areas around the oil filter.
3. Before removing cartridge type element (1), loosen drain plug (2) to drain oil from the cartridge. The oil is drained through the drain hose. After draining the oil, tighten the drain plug.

IMPORTANT:

- **Take care not to allow foreign matter such as dirt to enter the oil filter.**
- **Be careful not to damage the filter body when removing or installing the filter.**
- **Never reuse a cartridge type element.**

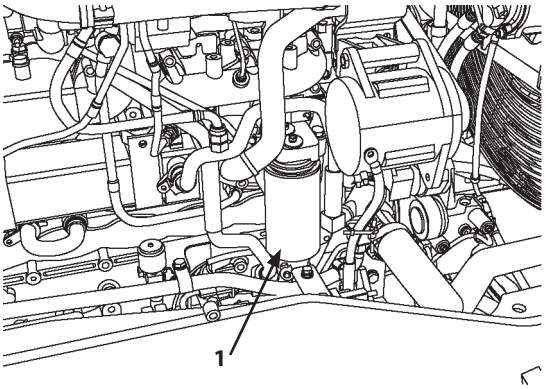
4. Remove cartridge type element (1) by turning it counterclockwise with a filter wrench.
5. Pour new oil into new element (1), being careful not to let it overflow.
6. After coating a new cartridge gasket with engine oil, turn the cartridge clockwise until the gasket comes in contact with the sealing surface.
7. Using the filter wrench, tighten the cartridge 3/4 to 1 turn more. Take care that if the cartridge is excessively tightened, the cartridge may be deformed.

NOTE: Install the cartridge with care so that the gasket is not damaged due to twisting.

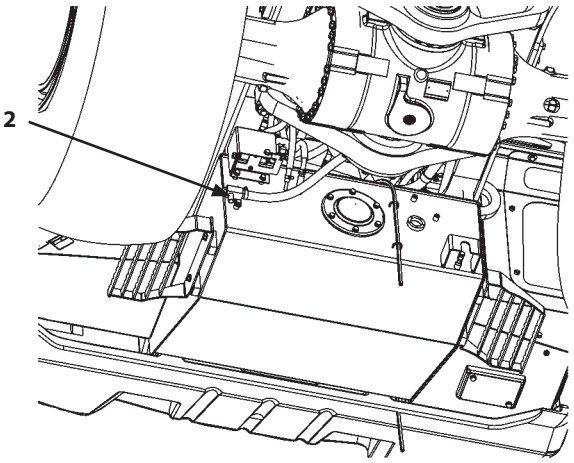
Check for any oil leakage at the filter mounting area.

8. Supply the specified amount of engine oil.

   (Refer to the descriptions for 2 Change Engine Oil.)



MNEC-07-075

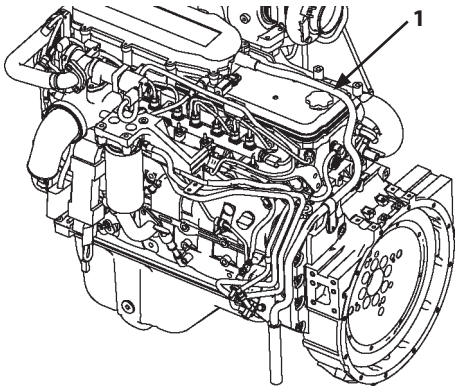


MNEK-07-002

4 **Check Crankcase Breather Tube**
--- every 10 hours (daily)

WARNING: Immediately after the machine has been operated, all engine parts are hot. Wait for the engine to cool down before starting any maintenance work. Failure to do so may cause severe burns.

1. Park the machine following the same procedure as described on page 7-8 for preparation of inspection/ maintenance work.
2. Check tube (1) for sludge, debris, or ice in the tube.
3. If sludge, debris, or ice is found clean the tube with detergent and warm water or a solvent. Dry the tube with compressed air.
4. Visually check the tube for cracks or damage. If damage is found, replace the crankcase breather tube.
5. Check for any oil leakage or loose clamps at the connection with the crankcase breather tube (1).
6. Check for loose clamp securing tube (1) to the engine.



MNEC-07-115

5 Replace Crankcase Air Breather Element --- Every 2000 hours

WARNING: Be sure to wear safety glasses when using compressed air (0.2 MPa(30 PSI)).

NOTE: The crankcase air breather element works as oil separator.

1. Park the machine following the same procedure as described on page 7-8 for preparation of inspection/ maintenance work.
2. Remove oil filler cap (1).
3. Remove bolts (2) from crankcase air breather cover (3).

NOTE: Make a note of bolt (2) position for reference at assembling work.

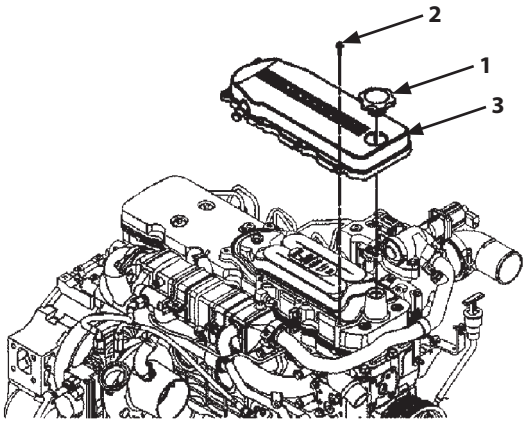
4. Remove crankcase air breather cover (3).
5. Remove air breather element (4) from rocker lever cover (5).

   Do not remove gasket from the rocker lever cover.

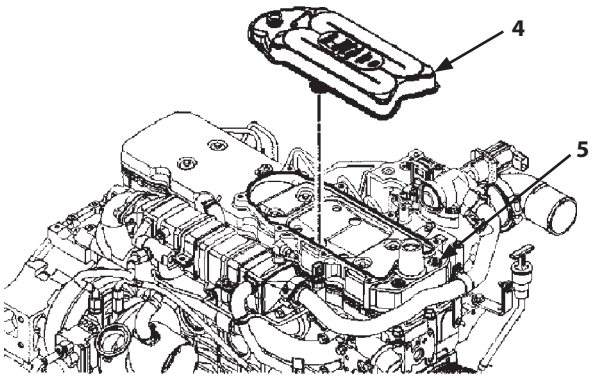
IMPORTANT: If gasket (6) sticks out from the rocker lever cover (5) groove, install new gasket.

6. If any damage is found on the gasket, remove it by pulling gasket tab (7).

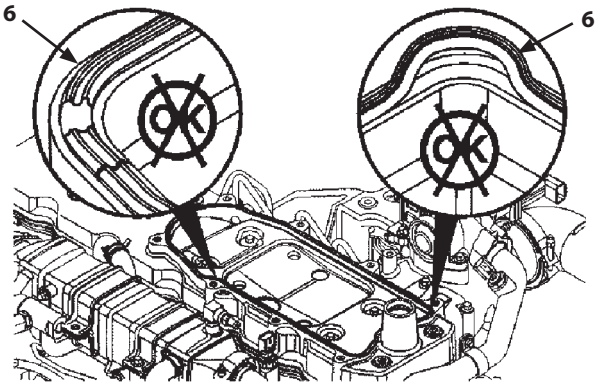
CAUTION: Be sure to wear safety glasses and gloves when using detergent for cleaning.



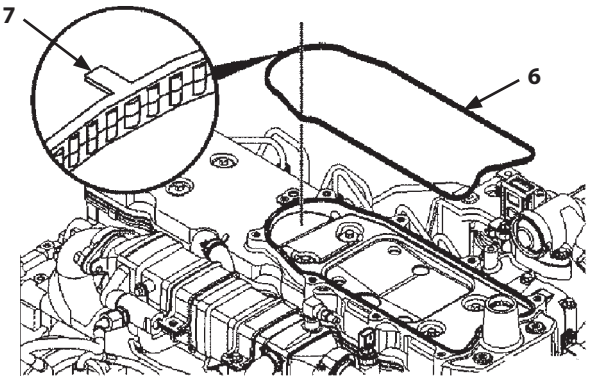
MNEC-07-107



MNEC-07-108



MNEC-07-109



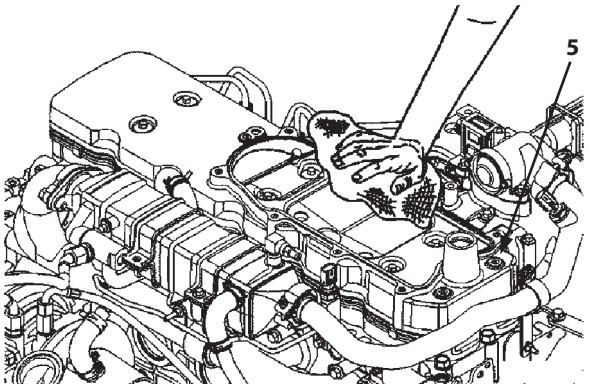
MNEC-07-110

7. Clean the mounting surface of the air breather element and O-ring on rocker lever cover (5). Wipe and dry cleaned surface with clean cloth.
8. Clean the crankcase air breather cover. Dry the surface with compressed air after cleaning.
9. Check the crankcase air breather cover for any damage; replace it if necessary.
10. If gasket (6) is removed, install new gasket on the groove of rocker lever cover (5).

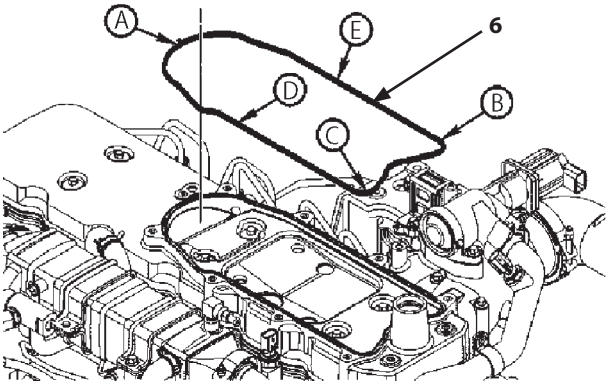
NOTE: Install gasket (6) in the order from A to E shown in the right illustration. Softly push gasket (6) when installing it. Gasket (6) will not fit inside the groove if it is pushed hard with the fingers.

11. Apply engine oil on the O-ring on air breather element (4). Install air breather element (4) on rocker lever cover (5).
12. Install crankcase air breather cover (3).
13. Mount bolts (2) on crankcase air breather cover (3) at the same location as when they were removed.

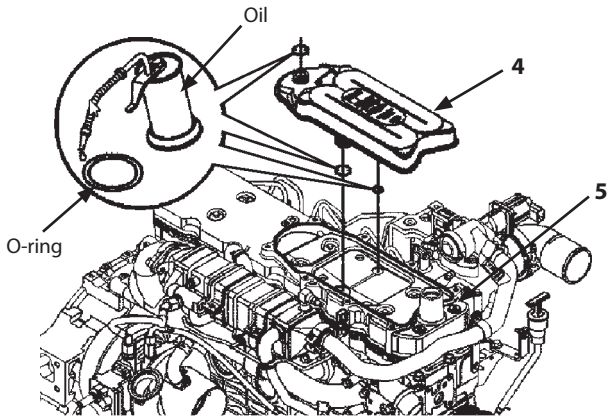
    Tightening torque: 7 N·m
14. Install oil filler cap (1).



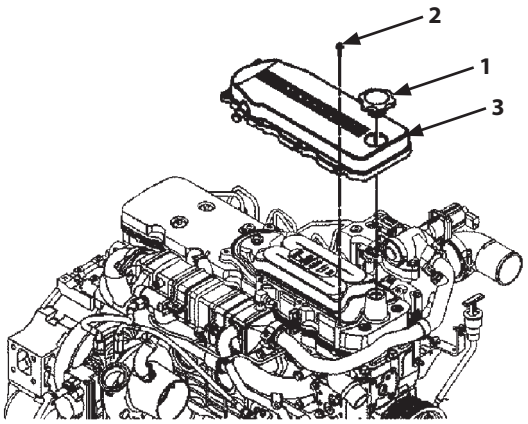
MNEC-07-111



MNEC-07-112



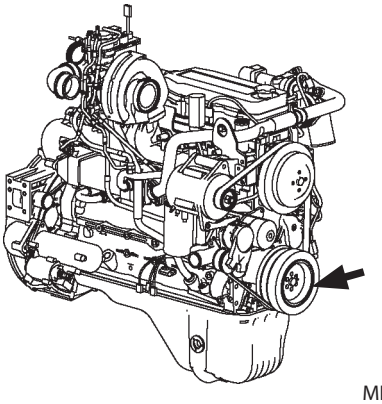
MNEC-07-113



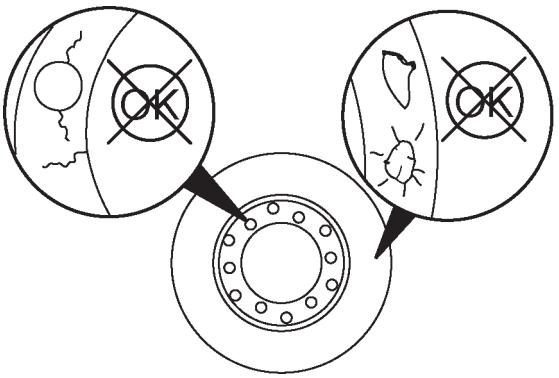
MNEC-07-107

6 Check Vibration Damper --- Every 2000 hours

1. Park the machine following the same procedure as described on page 7-8 for preparation of inspection/ maintenance work.
2. Check damper on the fan end of the engine crankshaft.
3. If any cracks, dent or deformation is found, consult your authorized dealer for check and repair.



MNEC-07-116



MNEC-07-117

C. Power Train

1 **Check Transmission Oil Level**
--- every 10 hours (daily)

WARNING: Check the oil level while running the engine with care about the following points.

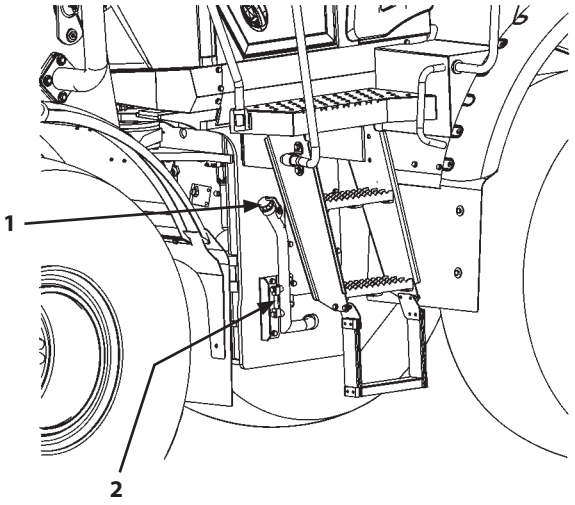
- **Move forward/reverse lever to neutral and turn parking brake switch ON.**
- **After leveling the bucket on the ground, move the control lever lock switch to the lock (🔒) position.**
- **Set the articulation lock bar.**

IMPORTANT: Do not start the engine when the transmission oil level is low. Damage to the transmission may result. Do not use transmission oils other than those listed in the "Transmission Oil".

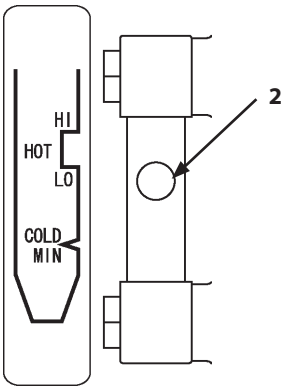
The cap of filler port (1) has the breather function. Never spray high pressure water to the cap and vicinity of the cap. Water may enter into the transmission, damage to the transmission may result.

Before starting the engine, check the transmission oil level with oil level gauge (2). When the oil level is correct, the float in the oil level gauge shall be in the center with the oil cooled. Refill the oil as necessary from transmission oil filler port (1).

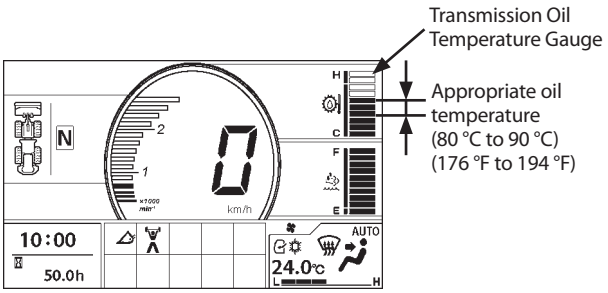
When checking oil level before operating the machine, normally the float in gauge (2) must be higher than the COLD MIN position. If the float is lower than the COLD MIN position, add oil through transmission oil filler port (1).
When the transmission oil temperature is in the normal range of 80 °C to 90 °C (176 °F to 194 °F), the float in the gauge (2) shall be between the HI and the LO notches at the HOT scale on the oil level indication decal. If the float is outside the appropriate range, add or drain oil so that the float enters the range between the HI and LO notches.



MNEK-07-003



M4GB-07-027



MNEK-07-044

2
3

Change Transmission Oil and Transmission Oil Filter
--- every 1000 hours (100 hours at first change only)

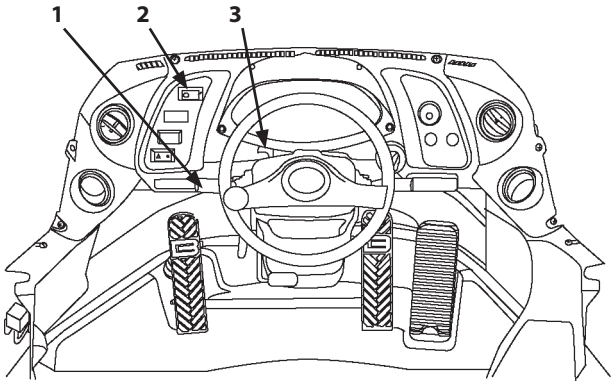
WARNING:

- **Unexpected movement of the machine may cause a serious accident. When parking the machine, place F-N-R lever (1) in neutral and neutral lever lock (3) in the lock (🔒) position. Then, apply parking brake (2) and stop the engine.**
- **Before changing oil, install articulation lock bar (4) to securely hold the front and rear chassis to avoid an accident due to unexpected machine movement. Avoid accidents due to unexpected movement of the machine.**

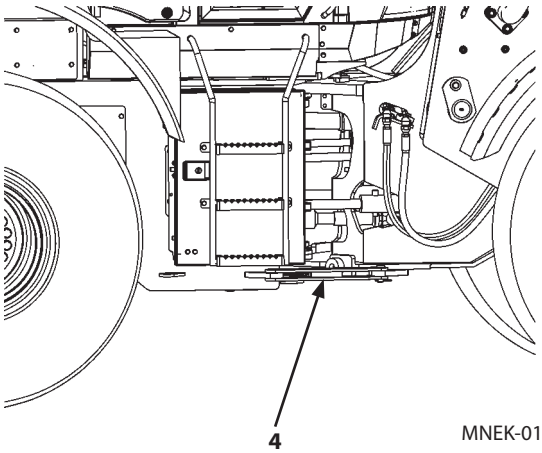
IMPORTANT: Do not use transmission oils other than those listed in the "Transmission Oil".

NOTE: Be sure to replace the transmission oil filter when changing the transmission oil at the same time.

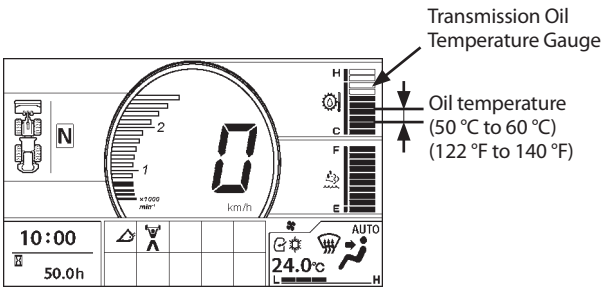
1. Operate the machine until the transmission oil is heated to the appropriate temperature (50 °C to 60 °C) (122 °F to 140 °F).
2. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
3. Install articulation lock bar (4) to the front and rear of the frame by following the procedures described on page 7-10.



MNEC-01-036



MNEK-01-019



MNEK-07-044

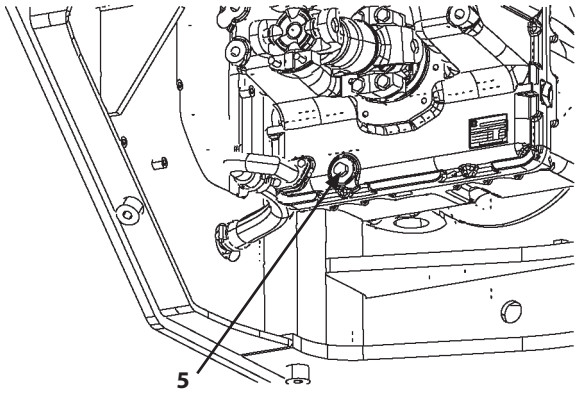
IMPORTANT: The machine is equipped with a turbocharged engine. Perform cool down operation before stopping the engine. Failure to do so may cause the lubricant on the turbocharger bearing surfaces to desiccate due to the intense heat present inside the turbocharger, possibly causing damage to the turbocharger.

4. Turn the key switch OFF to stop the engine. Leave the machine untouched for 10 minutes.
5. Prepare a container of more than 50 liters (13 gallons) capacity to receive the drain oil.

NOTE: Drain plug (5) is magnetized. If excessive amount of metal pieces are found adhered to drain plug (5), contact your authorized dealer.

6. Remove drain plug (5) from the transmission bottom to drain the oil. Dispose of the drain oil in the proper way.
7. Securely tighten drain plug (5).

NOTE: Do NOT apply sealant to drain plug (5).

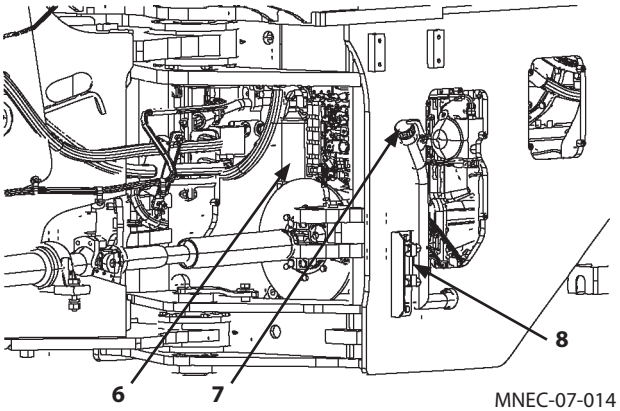


MNEC-07-013

8. Using a filter wrench, turn cartridge filter (6) counterclockwise to remove it.
9. Clean the filter-seating surface. After coating the new cartridge filter gasket surface with new oil, lightly turn the cartridge filter clockwise by hand until the cartridge filter sealing surface comes in contact with the filter-seating surface.
10. At this time, further tighten the cartridge filter 3/4 turns using a filter wrench. Take care not to excessively tighten the cartridge filter. Be careful not to damage filter cartridge by overtightening.
11. Refill the specified amount of oil through transmission oil filler port (7).

    Oil amount : 30 liters (7.9 gallons)

12. Start the engine and keep it running for two minutes.
13. Check that the oil level is within the specified range in oil level gauge (8). If necessary, add oil.



MNEC-07-014

NOTE: Never reuse cartridge type element (6).

Install the cartridge with care so that the O-ring is not damaged due to twisting.

Check for any oil leakage at the drain plug and the filter mounting area.

4 **Change Axle Oil**
--- every 2000 hours

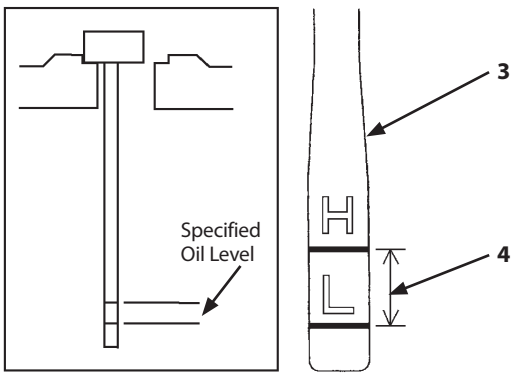
WARNING: Take care about the following points.

- **Starting repair work immediately after operation may cause burns. Wait for the oil to cool before starting any maintenance work.**
- **Lock the front and rear frames with the articulation lock bar.**

IMPORTANT: Do not use axle oils other than those listed in the "Axle Oil".

Check Oil Level

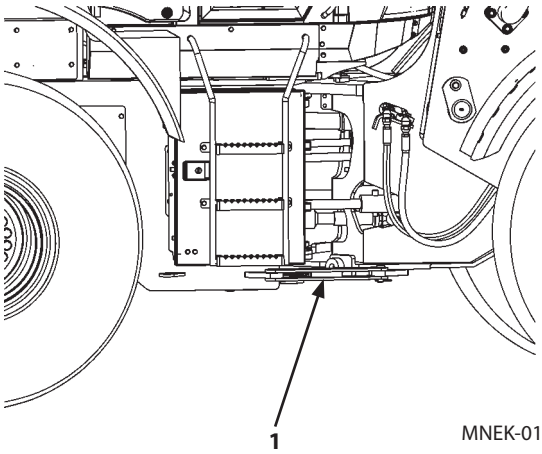
1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Install articulation lock bar (1) to the front and rear of the frame by following the procedures described on page 7-10.
3. Clean the vicinity of oil level plug (2).
4. Remove oil level plug (2). Clean the tip of dipstick (3) connected to oil level plug (2) with a clean cloth.



M4GB-07-039

5. Make the plug lower surface contact to the axle seat face. Oil level must be between marks H and L (4) on the dipstick (3).

   If necessary, add oil.



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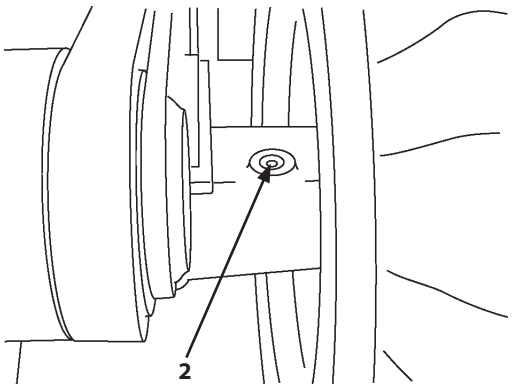
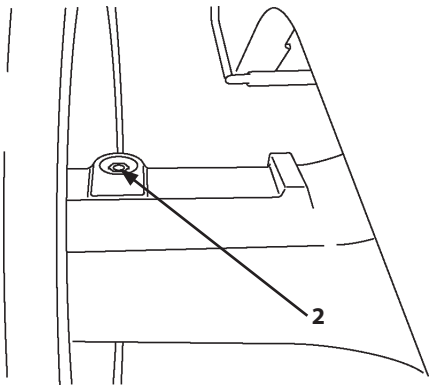


Front Axle M4GB-07-037



Rear Axle M4GB-07-038

Change Axle Oil

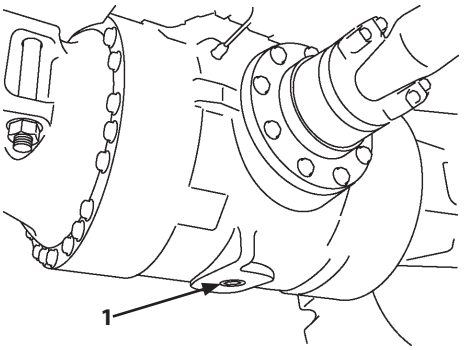
1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Clean the areas around the drain plug and the oil filter.
4. Arrange a container of 50 liters capacity to receive the drain oil.
5. Remove drain plug (1) to drain the oil.
6. Securely tighten drain plug (1).
7. Refill the specified amount of oil through oil level plug (2) hole.

Oil amount

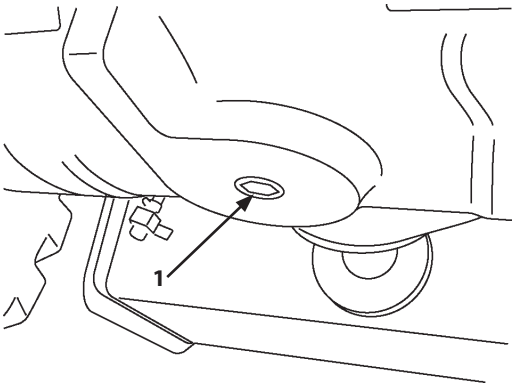
Front Axle	Rear Axle
34 liters (9.0 gallons)	34 liters (9.0 gallons)

IMPORTANT: It takes time for oil to fully lubricate the overall front axle.

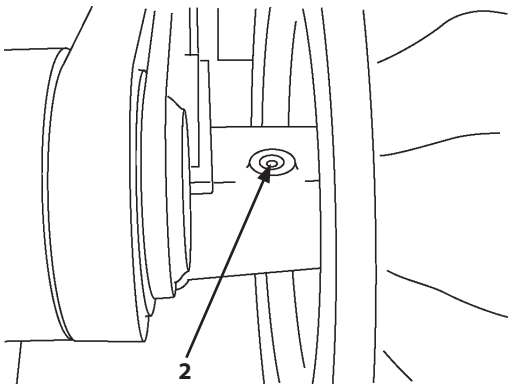
After installing the plug, allow the machine to drive for several minutes. Then, stop the engine and check the axle for any oil leaks.



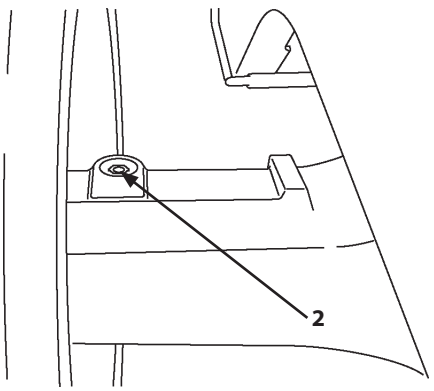
Front Axle M4GB-07-035



Rear Axle M4GB-07-036



Front Axle M4GB-07-037

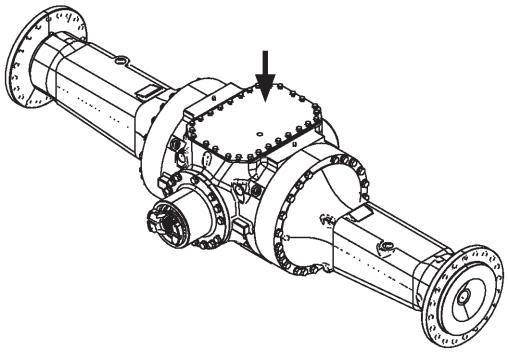


Rear Axle M4GB-07-038

5 **Check Surroundings Around Axle and Covers for Oil Leaks**

--- every 1000 hours

Check the surroundings around the axle and covers for oil leaks. If any oil leaks are found, check the bolts in the oil leaking area for looseness. Retighten as needed.



M4GB-07-159

6 **Clean Axle Housing Air Breather**

--- every 500 hours

Front Axle Breather (1)
Rear Axle Breather (2)

1. Clean the vicinity around the air breather before removing the air breather.

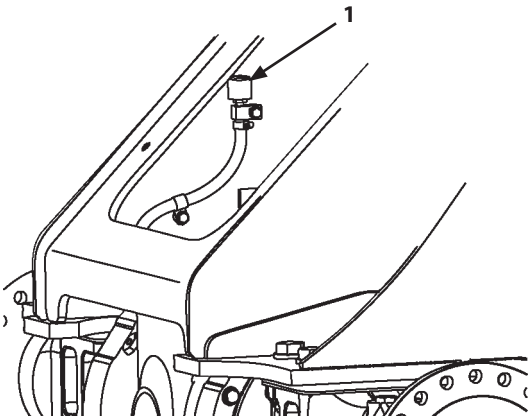
   Open the machine front cover. Front axle air breather (1) is located at the right side.

   Open the machine side cover. Rear axle air breather (2) is located at the left side.

2. Put a cover on the air breather port to prevent foreign matter from entering.

CAUTION: Be sure to wear safety glasses when cleaning the air breather with compressed air.

3. Clean the air breather using compressed air. If completely contaminated, wash the air breather with a cleaning solvent and reinstall it.
4. Take care not to allow foreign matter to enter into the axle housing when reinstalling the air breather.



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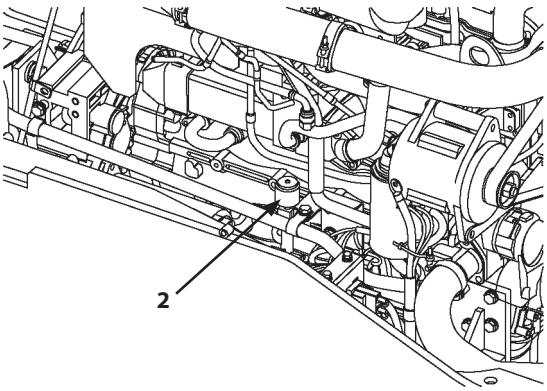


MNEC-07-076

D. Hydraulic System

Inspection and Maintenance of Hydraulic Equipment

CAUTION: When checking and/or servicing the hydraulic components, pay special attention to the following points.

During operation, the parts of the hydraulic system become very hot. Allow the machine to cool down before beginning inspection or maintenance.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Begin servicing hydraulic components only after components, hydraulic oil and lubricants are completely cooled, and after releasing residual pressure.

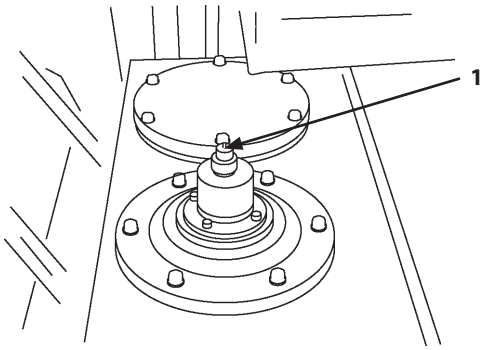
2.1 Release internal pressure.

2.2 Be sure to relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (1).

2.3 Allow the machine to cool down. Note that servicing heated and pressurized hydraulic components may cause hot parts and/or oil to fly off or escape suddenly, possibly resulting in personal injury.

Keep body parts and face away from plugs or screws when removing them. Hydraulic components may be pressurized even when cooled.

Never attempt to service or inspect the hydraulic circuits on slopes. They are highly pressurized due to self-weight.



M4GB-07-044

IMPORTANT:

- **When connecting hydraulic hoses and pipes, take special care to keep seal surfaces free from dirt and to avoid damaging them. Keep these precautions in mind.**
- **Wash hoses, pipes, and the tank interior with a washing liquid and thoroughly wipe off before reconnecting them.**
- **Only use O-rings that are free of damage or defects. Be careful not to damage them during reassembly.**
- **Do not allow high pressure hoses to twist when connecting them. The life of twisted hoses will be shortened considerably.**
- **Carefully tighten low pressure hose clamps. Do not overtighten them.**
- **When adding hydraulic oil, always use the same brand of oil; do not mix brands of oil. As the machine is filled with Hitachi Super EX 46HN or Genuine Hydraulic Oil 5000 when it is shipped from the factory, use it as a general rule. When selecting to use another brand of oil listed in the table "Hydraulic Oil", be sure to completely replace the oil in the system.**
- **Do not use hydraulic oils other than those listed in the table "Hydraulic Oil".**
- **Never run the engine without oil in the hydraulic oil tank.**

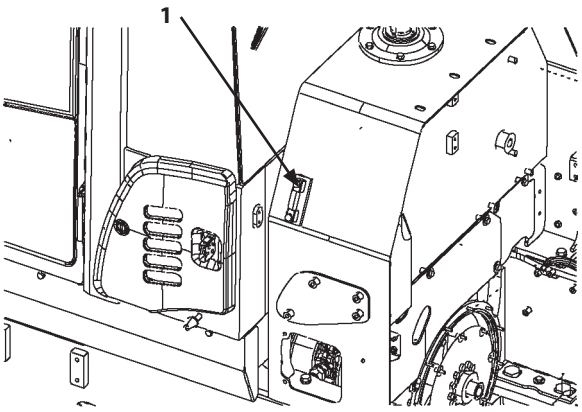
1 **Check Hydraulic Oil Level**
--- every 10 hours (daily)

IMPORTANT: If the oil level is not viewed in the level gauge, immediately refill hydraulic oil up to the appropriate level. Failure to do so may result in a serious failure in the hydraulic system.

If the oil level is higher than the level gauge, drain oil down to the appropriate level using a pump.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Check oil level with level gauge (1) on hydraulic oil tank. Oil must be between marks on the gauge. If necessary, add oil.

NOTE: During cold weather season, check the oil level after warming up the hydraulic oil by referring to the instructions described in the "Warm up operation" group.



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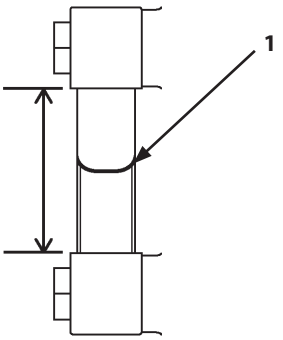


M4GB-07-160

2 Change Hydraulic Oil/Clean Hydraulic Oil Tank --- every 4000 hours

Changing and cleaning procedure

WARNING: Hydraulic oil becomes hot and pressurized during operation. Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.

IMPORTANT: Do not use hydraulic oils other than listed in the "Hydraulic Oil".

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Install articulation lock bar (1) to the front and rear of the frame by following the procedures described on page 7-10.
3. Before changing the hydraulic oil, be sure to relieve the air pressure from the hydraulic oil tank (3) by pressing air bleed valve (2).

IMPORTANT: When changing hydraulic oil, take care not to permit foreign matter such as dirt, water, and /or sand to enter into the hydraulic oil tank.

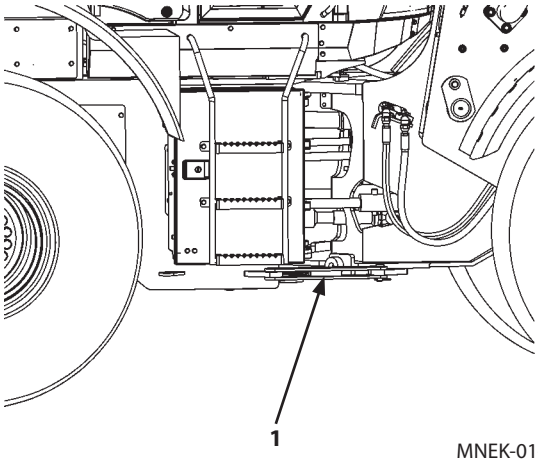
4. Carefully pressure wash the area around the breather, filter cover, and around the hydraulic tank. Dry the area before removing any other covers.
5. Arrange a container of approx. 150 liters (40 gallons).
6. Remove cap (6) of drain valve (5).

IMPORTANT: When connecting drainer (7), entwist it slowly to avoid a large amount of oil from draining at a time.

7. Slowly entwist in the provided drainer (7) to the port to drain oil.

NOTE: Drain valve (5) opens by entwisting drainer (7).

8. Remove cleaning cover (4) on the bottom of hydraulic oil tank (3). Clean the tank bottom with cleaning oil. Install the cover to the original position after cleaning out tank.



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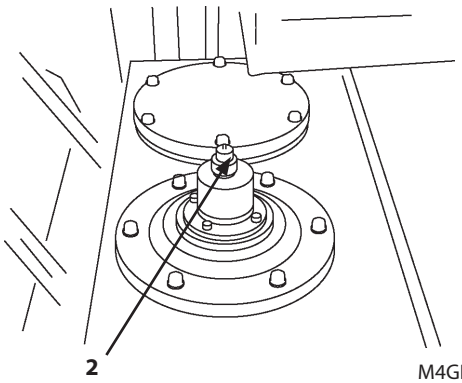

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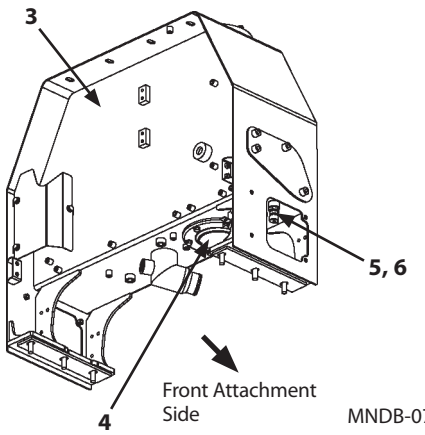

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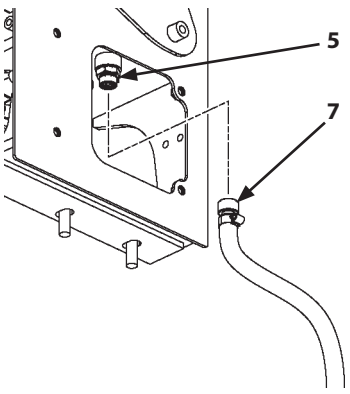


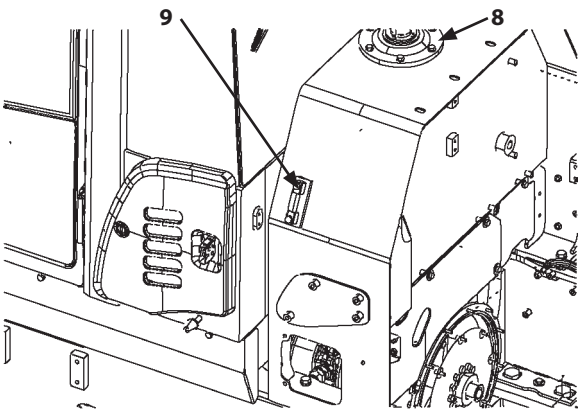
MNDB-07-024

9. Supply hydraulic oil through cover (8) hole on the top of the hydraulic oil tank while checking the oil level at level gauge (9).

Hydraulic oil tank capacity	:	100 liters (26.4 gallons)
Hydraulic system total capacity	:	150 liters (39.6 gallons)

10. Install cover (8) with bolts (6 used).

    Tightening torque: 50 N·m (37 lbf·ft)



MNEC-07-017

IMPORTANT: When changing hydraulic oil, take care not to permit foreign matter such as dirt, water, and/or sand to enter into the hydraulic oil tank.

11. After changing hydraulic oil or replacing the return filter, pilot filter and/or suction filter, bleed air from the hydraulic system following the procedures below.

Bleed Air from the Hydraulic System

11-1. After supplying oil, start the engine.

11-2. Move the bucket and lift arm cylinders several times to bleed air mixed in the hydraulic circuit. Do not operate the cylinders to stroke end.

11-3. Rest the bucket on the ground to resume the hydraulic oil level check position.

12. Stop the engine. Check for any oil leakage. Check the oil level using level gauge (6).

3 **Clean Suction Filter**

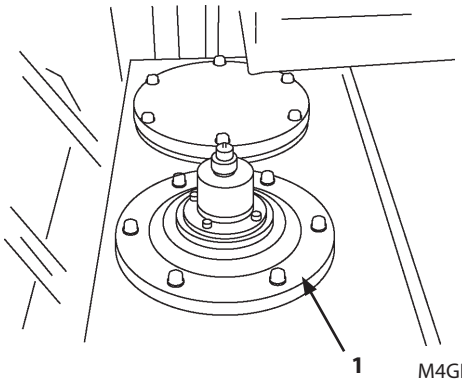
--- each time the hydraulic oil is changed.

IMPORTANT: This upper tank area must be very clean prior to beginning this procedure. Failure to clean the top of tank may lead to hydraulic system problems due to system contamination.

A suction filter is located on the bottom of the hydraulic oil tank.
Clean the suction filter when changing hydraulic oil.

1. After draining hydraulic oil, remove cover (1). Lift to take out rod (2). Put a cover over the oil supply port to prevent foreign matter from entering.

   When removing the suction filter, take care not to allow trapped dust to fall into tank.



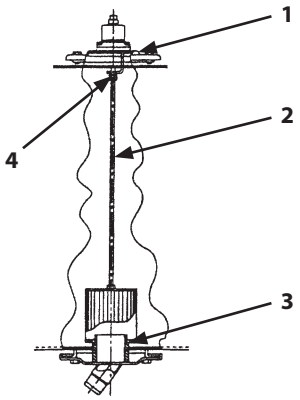
M4GB-07-044

IMPORTANT: A few small particles in the strainer is normal. Large metal, rubber pieces, or a large amount of fine particles is abnormal. If found, contact your authorized dealer.

2. Clean the suction filter and the hydraulic oil tank inside with cleaning oil.
3. Supply the specified volume of oil through the oil supply port while checking the oil level with the oil gauge.
4. Securely insert the suction filter into pipe (3) when installing the suction filter.
5. Before installing cover (1), check that the rod top is correctly inserted into support hole (4) on cover (1). Then, install cover (1) with bolts.

   Tightening torque: 50 N·m (37 lbf·ft)

6. Start the engine. While slowly raising or lowering the arm and tilting the bucket forward and backward, check for any abnormality. Stop the engine. Check the oil level using level gauge (5).



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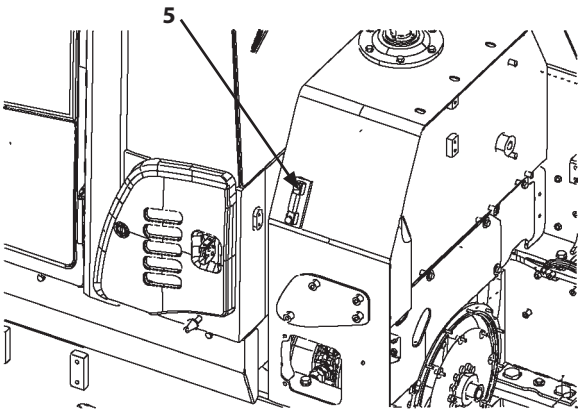


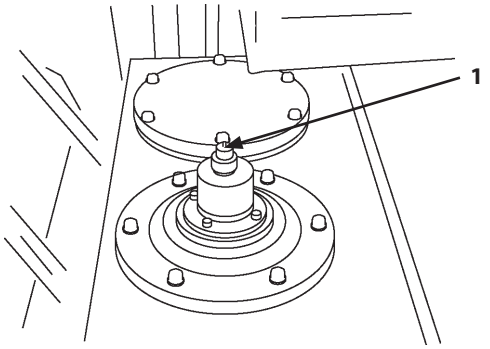
MNEC-07-017

4 **Replace Pilot Oil Filter**
--- every 2000 hours

Replace

WARNING: Hydraulic oil becomes hot and pressurized during operation. Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Before replacing the filter element, be sure to relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (1).
4. Remove the inspection cover for left side rear frame.
5. Rotate the hexagonal section on the bottom of case (2) counterclockwise using a spanner to remove case (2) from head (3).
6. While turning element (5), remove the element downward.
7. Replace O-ring (4) with a new one.
8. Sufficiently seat O-ring (4) and backup ring (6) in the O-ring groove on case (2).
9. Coat the seal surface of new element (5) with hydraulic oil. While turning element (5), completely install element (5) into head (3) using care not to damage the element.



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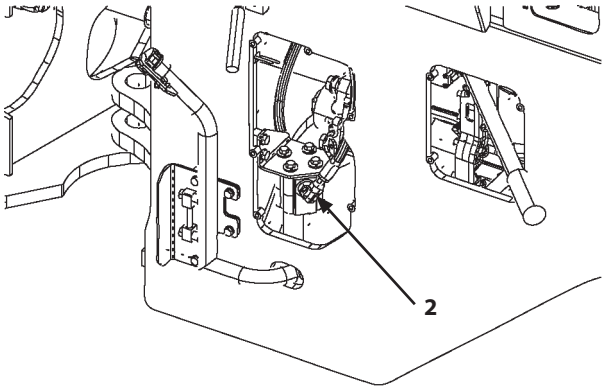

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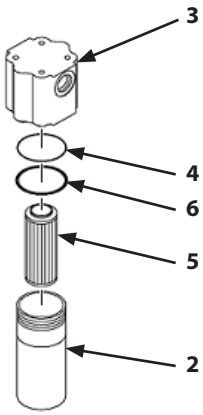

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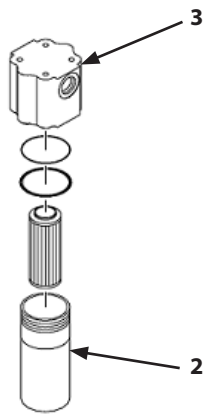
10. Take care never to allow water and/or dust to enter the filter case.
11. Install case (2) into head (3) while rotating case (2) clockwise.

    Tightening torque: 70 to 80 N·m (7 to 8 lbf·ft)
12. After replacing the filter, bleed air from the hydraulic pump and check the oil level in the hydraulic oil tank.

    (Refer to the descriptions for "Bleed air from the hydraulic system" in item 2.)

    If the machine is operated without bleeding the air mixed in the hydraulic circuit, damage to the hydraulic pump may result.

NOTE: Replace the element at the regular intervals to maintain clean hydraulic oil and extend the service life of the hydraulic components.



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5 **Replace Hydraulic Tank Oil Filter**
--- every 1000 hours

WARNING: Hydraulic oil becomes hot and pressurized during operation.

Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.

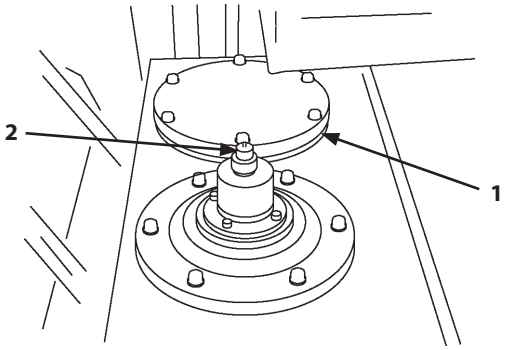
Especially when removing the filter, be aware that the remaining oil in the filter may spill. Use extra care.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Clean the vicinity around cover plate (1).
4. Arrange a container and workshop towels to receive the spilled oil and the element. Relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (2).
5. Loosen bolts (3) (6 used) to remove cover (1) and O-ring (4).

   When removing cover (1), slowly remove the cover while pressing the cover downward so that spring (5) does not fly off. Slowly permit cover to rise, then carefully remove.
6. Remove spring (5) and element (6).
7. Replace element (6) and O-ring (4) with new ones. Install new element and O-ring in the hydraulic oil tank.

   Before installing element (6), make sure that rubber (7) is present.
8. Install cover (1) with bolts (3) (6 used).

   Tightening torque: 50 N·m (37 lbf·ft)



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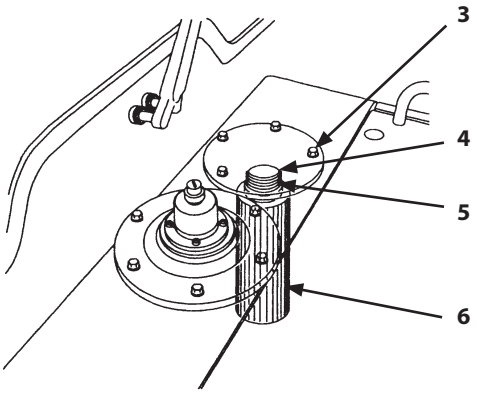

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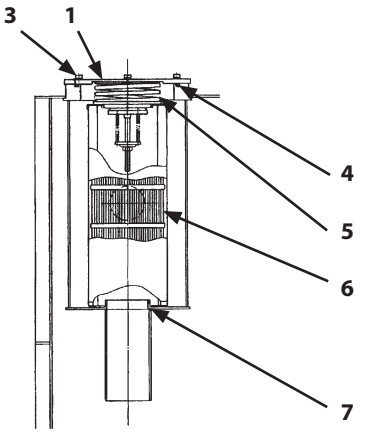


M4GB-07-052

9. After replacing the filter, bleed air from the hydraulic pump and check the oil level in the hydraulic oil tank.

   (Refer to the descriptions for "Bleed air from the hydraulic system" in item 2.)

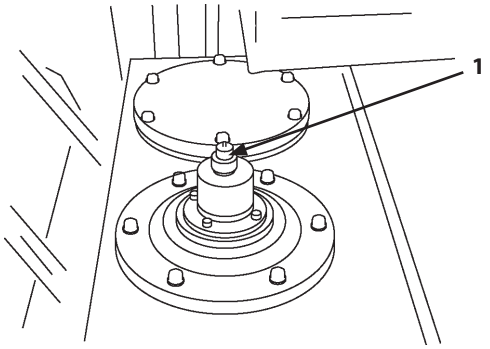
   If the machine is operated without bleeding the air mixed in the hydraulic circuit, damage to the hydraulic pump may result.

NOTE: Replace the element at the regular intervals to maintain clean hydraulic oil and extend the service life of the hydraulic components.

6 Replace Air Breather Element --- every 2000 hours

WARNING: Hydraulic oil becomes hot and pressurized during operation.

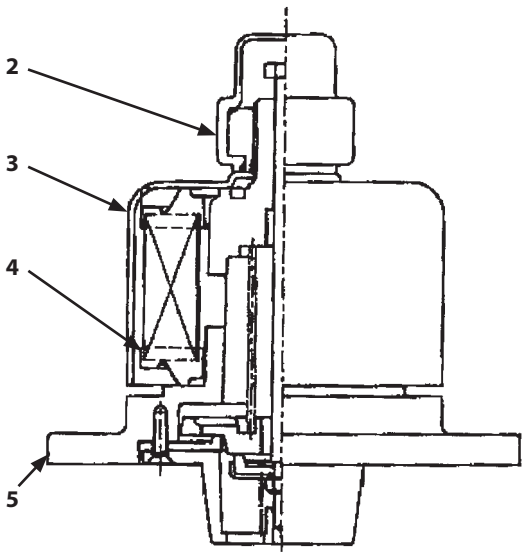
Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.



M4GB-07-044

Replace

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Before replacing the filter element, be sure to relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (1).
3. Rotate cover (3) clockwise approx. 1/4 turn. Remove cap (2) by rotating it counterclockwise.
4. Rotate cover (3) counterclockwise and remove it. Remove element (4).
5. Install new element (4). Tighten cover (3) clockwise. After cover (3) come in contact with the inside element, tighten the cover by 1/4 turn further.
6. Manually tighten cap (2) clockwise to the end. Hold cap (2) in position by hand to prevent the cap from turning. Tighten cover (3) counterclockwise 5 to 10° securely.
7. Take care not to allow water or dust to enter the clearance (air discharge port) between cover (3) and body (5).



M4GB-07-166

NOTE: Replace the element at the recommended regular intervals to keep the hydraulic oil clean and to extend the service life of the hydraulic components.

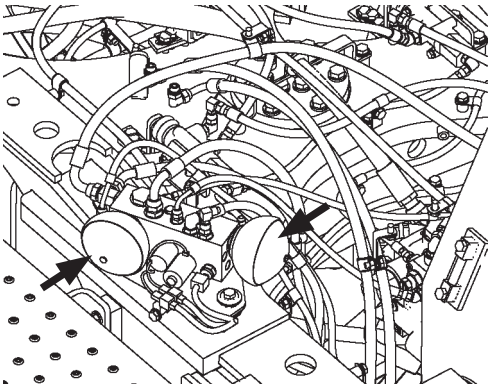
7 **Check Pilot Circuit Accumulator Function, Gas Leakage, Looseness, and Damage**

--- every 2000 hours

WARNING:

- **Allow only qualified personnel to handle the accumulator.**
- **High-pressure nitrogen gas is enclosed in the accumulator. (N_2 is inert.) Caution is required to prevent fires from occurring.**
- **Never strike the accumulator. Keep the accumulator away from heat sources.**
- **Do not directly heat the accumulator. Do not weld the accumulator housing.**
- **Be sure to release pressure before starting to work on the pipe lines.**

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Raise the lift arm at the maximum height, and then set the lift arm control lever in the Neutral (N) position.
3. Turn the key switch OFF to stop the engine.
4. Turn the key switch ON but do NOT start the engine.
5. Confirm the safety around the machine.
6. Place the lift arm control lever to FLOAT position (C) and lower the bucket 1 m (3.3 ft) off the ground within 2 minutes after stopping the engine.
7. Place the lift arm control lever to the LOWER position (B) and lower the bucket on the ground.
8. Ensure the lift arm does not stop halfway. If the lift arm stops halfway, the accumulator function may be deteriorated. Consult your authorized dealer for check and repair.



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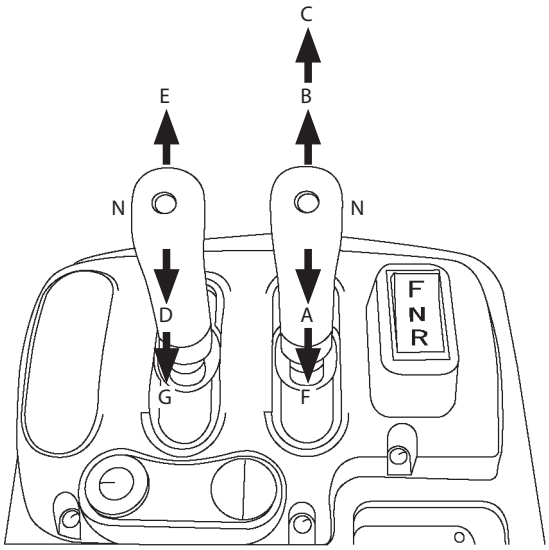

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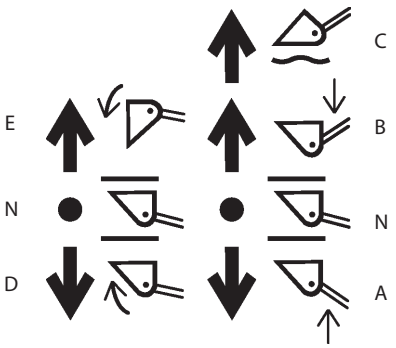

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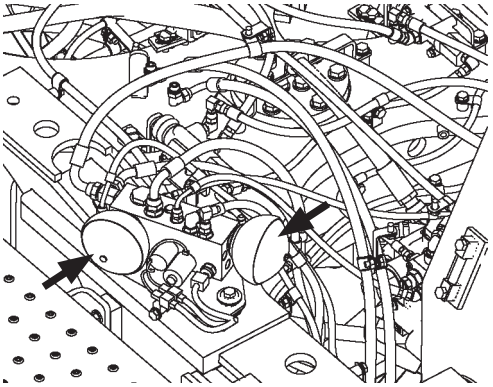
8 **Replace Pilot Circuit Accumulator**

--- every 4000 hours or once every two years whichever comes first.

Consult your authorized dealer for replace.



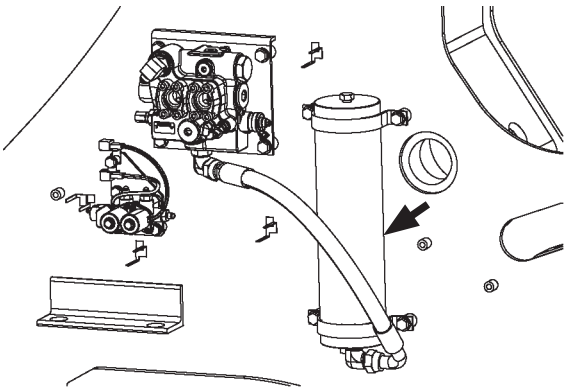
MNEC-07-069

9 **Check Ride Control Accumulator Function, Gas Leakage, Looseness, and Damage (Option)**

--- every 500 hours

WARNING:

- **Allow only qualified personnel to handle the accumulator.**
- **High-pressure nitrogen gas is enclosed in the accumulator. (N_2 is inert.) Caution is required to prevent fires from occurring.**
- **Never strike the accumulator. Keep the accumulator away from heat sources.**
- **Do not directly heat the accumulator. Do not weld the accumulator housing.**
- **Be sure to release pressure before starting to work on the pipe lines.**



MNDB-07-020

Let the machine travel with the ride control switch turned AUTO and OFF to compare the machine's vertical vibration during travel. Travel the machine at a speed faster than "Ride Control Drive Speed Setting" displayed on the multi-monitor. If the machine's vertical vibration is not dampened when letting the machine travel with the ride control function activated, the accumulator may be faulty. Consult your authorized dealer for check and repair.

10 **Check Gas Pressure in Ride Control Accumulator (Option)**

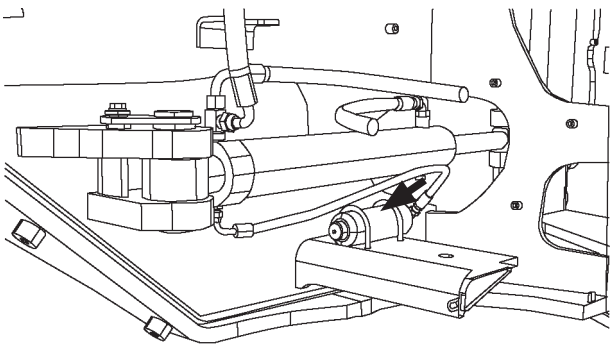
--- every 2000 hours

Check the gas pressure at a regular interval. Ask your authorized dealer for checking.

11 **Check Gas Pressure in Steering Accumulator**

--- every 2000 hours

Check the gas pressure at a regular interval. Ask your nearest authorized dealer for checking.
While steering the machine, if you feel pulsation or vibration and machine does not turn smoothly, contact your nearest authorized dealer for the gas pressure checking.



MNEC-07-114

12 **Check Hoses and Lines**

--- every 10 hours (daily)

--- every 250 hours

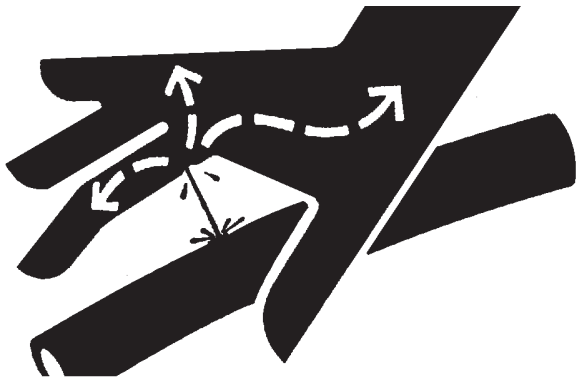
WARNING: High pressure fluid can penetrate the skin causing serious injury.

To avoid this hazard, search for leaks with a piece of cardboard.

Protect hands and body from high-pressure fluids.

If an accident occurs, immediately see a doctor familiar with this type of injury.

Any fluid injected into the skin must be surgically removed within a few hours or serious infection may result.



SA-031

WARNING: Hydraulic oil and lubricant leaks can lead to fire that may result in serious injury.

To avoid this hazard :

- **Park the machine on a solid, level surface.**

  Lower the bucket to the ground.

  Stop the engine. Remove key from the key switch. Push the control lever lock switch to the lock (🔒) position.

- **Check for missing or loose clamps, kinked hoses, lines or hoses that rub against each other, damaged oil cooler, and loose oil cooler flange bolts, for leaks.**

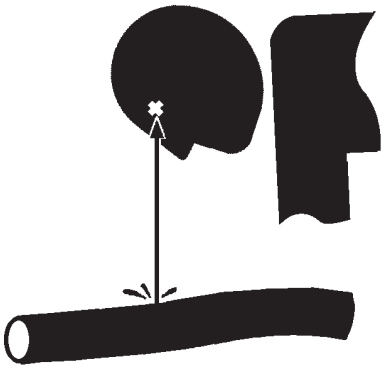
  Check hoses, lines and oil cooler at the check points indicated below for leaks and other damage that may result in future leaks.

  If abnormalities are found, repair them, as shown in Tables 1-2.

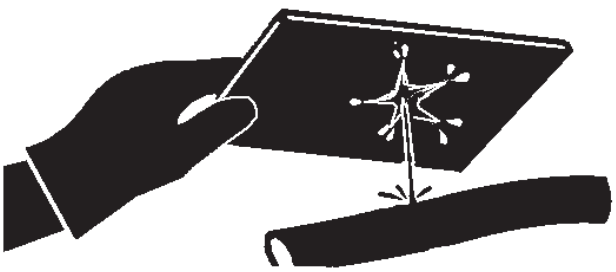
- **Tighten, repair or replace any missing, loose or damaged clamps, hoses, lines, oil cooler, and loose oil cooler flange bolts.**

  Do not bend or strike high-pressure lines.

  Never install bent or damaged hoses or lines.



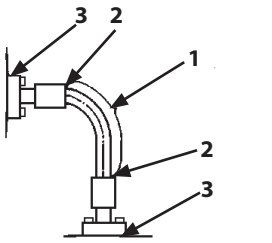
SA-292



SA-044

Table 1. Hoses

Interval (hours)	Check Points	Abnormalities	Remedies
Daily	Hose covers	Leak (1)	Replace
	Hose ends	Leak (2)	Replace
	Fittings	Leak (3)	Retighten or replace hose or O-ring
Every 250 hours	Hose covers	Crack (4)	Replace
	Hose ends	Crack (5)	Replace
	Hose covers	Exposed reinforcement (6)	Replace
	Hose covers	Blister (7)	Replace
	Hose	Bend (8)	Replace (Use proper bend radius)
	Hose	Collapse (9)	Replace (Use proper bend radius)
	Hose ends and fittings	Deformation or Corrosion (10)	Replace



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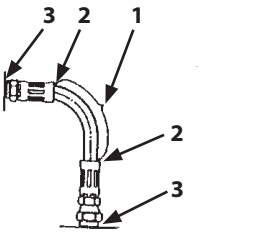

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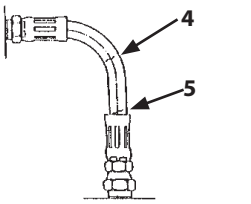

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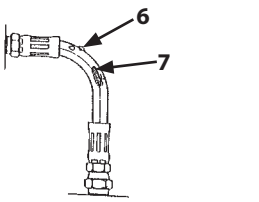

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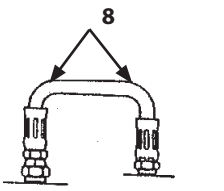

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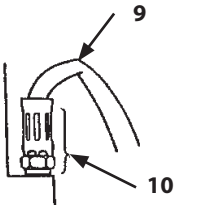
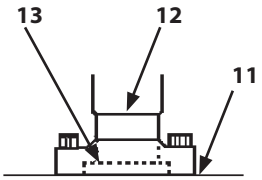


M115-07-149

Fig. 1

NOTE: Refer to the illustrations in Fig. 1 for each check point location or for a description of the abnormality. Use genuine Hitachi parts.

Interval (hours)	Check Points	Abnormalities	Remedies
Daily Check	Contact surfaces of flange joints	Leak (11)	Replace
	Bolts	Loose or leak (11)	Retighten or replace O-ring
	Welded surfaces on flange joints	Leak (12)	Replace
Every 250 hours	Flange joint neck	Crack (13)	Replace
	Welded surfaces on flange joints	Crack (12)	Replace
	Clamps	Missing or deformation Loose bolts	Replace or retighten



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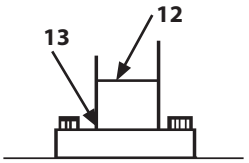


M4GB-07-060

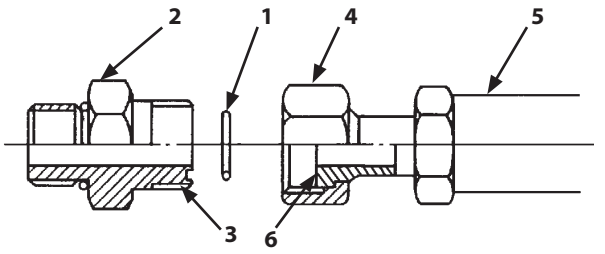
Fig.2

Service Recommendations for Hydraulic Fittings

Two hydraulic fitting designs are used on this machine.

Flat Face O-ring Seal Fitting (ORS Fitting)

An O-ring is used on the sealing surfaces to prevent oil leakage.



M104-07-033

1. Inspect fitting sealing surfaces (6). They must be free of dirt or defects.
2. Replace O-ring (1) with a new one when assembling fittings.
3. Lubricate O-ring (1) and install it into groove (3) using petroleum jelly to hold it in place.
4. Tighten fitting (2) by hand, pressing the fitting joint together to ensure O-ring (1) remains in place and is not damaged.
5. Tighten fitting (2) or nut (4) to the torque values shown. Do not allow hose (5) to twist when tightening fittings.
6. Check for leaks. If oil leaks from a loose connection, do not tighten fitting (2). Open the connection, replace O-ring (1) and check for correct O-ring position before tightening the connection.

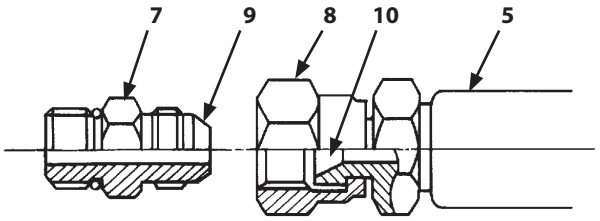
Tightening torque:
Tighten fittings to the torque values shown below.

Width across flats (mm)		27	36	41	50
Tightening torque:	N·m (lbf·ft)	95 (70)	180 (133)	210 (155)	350 (258)

Metal Face Seal Fittings

Fittings are used on smaller hoses and consist of metal flare (9) and metal flare seat (10).

1. Tighten fitting (7) by hand.
2. Tighten fitting (7) or nut (8) to the torque values shown. Do not allow hose (5) to twist when tightening fittings.



M202-07-051

Tightening torque:
Tighten fittings to the torque values shown below.

Width across flats (mm)		17	19	22	27	36
Tightening torque:	N·m (lbf·ft)	25 (18)	30 (22)	40 (30)	80 (59)	180 (133)

E. Fuel System

1 **Check Fuel Level**
--- every 10 hours (daily)

WARNING: Fuel is flammable. Keep fuel away from fire hazards.

IMPORTANT: Always fill the fuel tank with the specified diesel fuel. Failure to do so may cause engine trouble and also making it difficult for the engine to start. Use of diesel fuel with sulfur content less than 15 mg/kg (15 ppm) is required.

Recommended Fuel

Use only super high quality or high quality DIESEL FUEL (JIS K-2204) (ASTM 975D). Kerosene must NOT be used.

Use of poor quality fuel, tank cleaning solvents, unapproved fuel additives, gasoline, kerosene or alcohol refueled or mixed with specified fuel may deteriorate performance of fuel filters and cause friction problems in the injectors. It also may affect other engine parts, leading to malfunction.

Using fuel other than ultra low-sulfur diesel fuel has adverse effects on the engine and the aftertreatment device, which may result in malfunction.

About Biodiesel Fuel

Biodiesel fuel is made by refining various vegetable oils or animal fats.

IMPORTANT: When blended with Ultra-Low Sulfur Diesel (ULSD) fuel it may be used only if:

- **It is used in blends of B5 (5% biodiesel/95% ULSD).**
- **It is supplied by a BQ9000 Certified Marketer – check www.bq9000.org.**
- **It meets the ASTM D6751 standard for B100 biodiesel before blending.**
- **The biodiesel is properly stored and filtered prior to use in the loader.**

CAUTION:

- **Concentrations greater than B5 (5%) may cause engine trouble that is not covered by warranty.**
- **Using biodiesel will increase fuel consumption and reduce power compared to 100% ULSD.**
- **Biodiesel will experience restricted flow as temperatures drop and may become waxy before 100% ULSD.**
- **Biodiesel storage can lead to water contamination from absorption and microbial growth greater than 100% USLD.**
- **The higher the concentration of biodiesel the more likely damage to the engine and emissions controls will occur.**
- **Biodiesel has a limited storage life and must be used within 45 days of manufacture.**

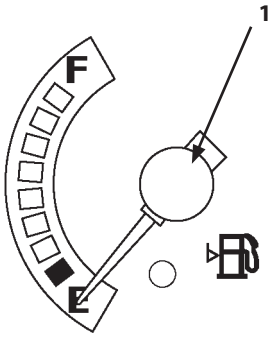
Refueling

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.

IMPORTANT: The turbocharger may be damaged if the engine is not properly shut down.

DANGER: Handle fuel carefully. Shut the engine off before fueling. Do not smoke while you fill the fuel tank or work on fuel system.

2. Check fuel gauge (1) of the monitor panel. Add fuel if necessary.



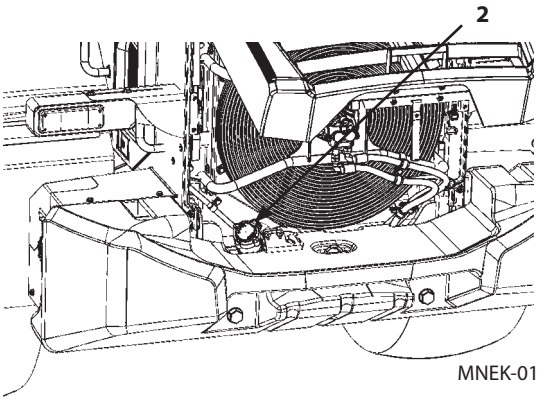
MNEC-01-002

IMPORTANT: Keep all dirt, dust, water and other foreign materials out of the fuel system.

3. To avoid condensation, fill the tank at the end of each day's operation. Take care not to spill fuel on the machine or ground.

   Fuel tank capacity: 245 liters (64 gallons)

4. Install and lock fill cap (2) immediately after fueling.

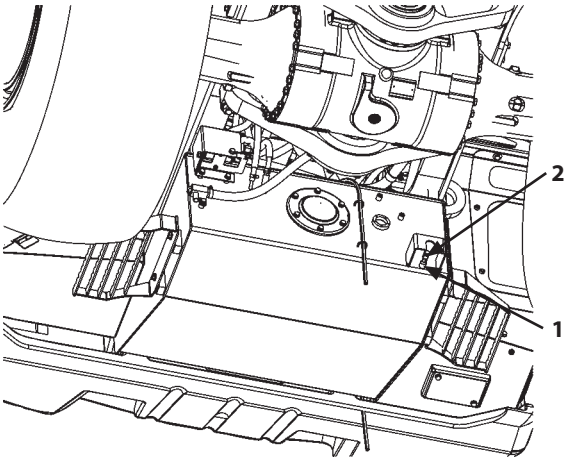


MNEK-01-013

2 **Drain Water and Sediment from Fuel Tank --- every 1000 hours**

Before starting to operate the machine, remove plug (2) from the tip of drain valve (1) on the fuel tank bottom and open drain valve (1) to drain water and/or sediment from the fuel tank.

NOTE: Drain valve (1) has vandal-proof plug (2).



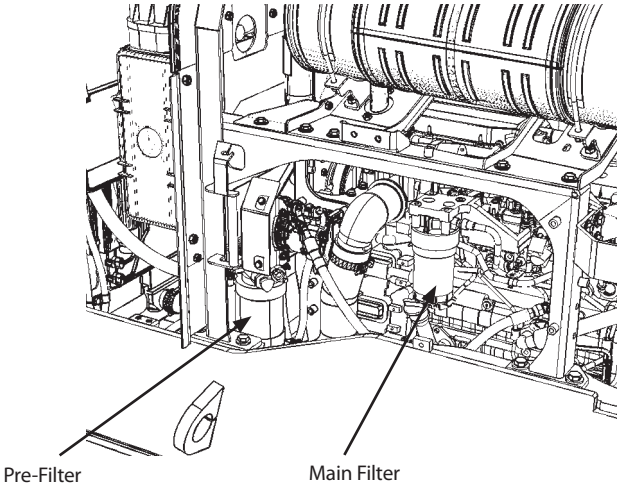
MNEK-07-002

3 Drain Fuel Filter
--- every 10 hours (daily)

IMPORTANT: Drain fuel pre-filter daily before starting operation. The engine may be damaged if failed. Drained water should contain fuel. Follow the local regulations when disposing it.

Fuel pre-filter (1) has water separator function, which drains accumulated water.

NOTE: Drain water when the engine trouble indicator flashes.

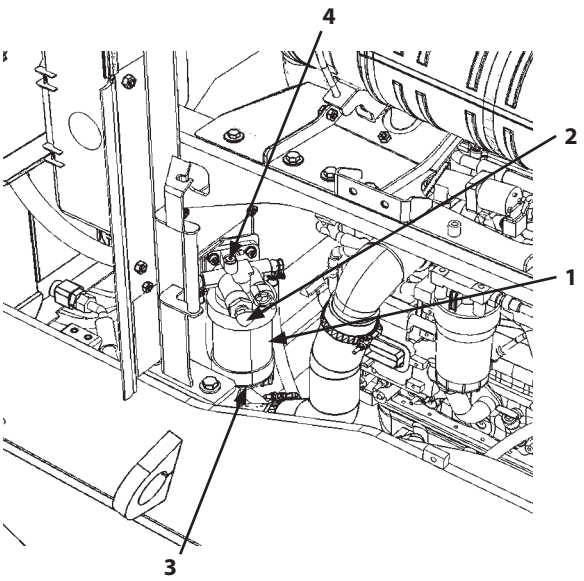


MNEK-07-006

Draining Procedures

1. Connect black drain hose (5) located in the tool box to drain plug (3) under fuel pre-filter (1) and the case.
2. Loosen drain plug (3) to drain water.

   Place a container to receive water for safety.
3. After draining water, securely tighten drain plug (3).



MNEK-07-007

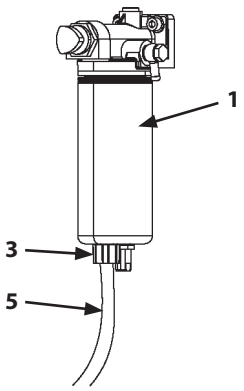
Bleed Air from the Fuel System

IMPORTANT: Air in the fuel system may make the engine hard to start or make it run rough or not run at all.

After running the fuel tank dry, draining water from fuel filter or fuel pre-filter (1) or replacing the fuel filter, be sure to bleed the air from the fuel system.

If fuel contains high water content, check the fuel filter earlier than the normal interval and drain water if necessary.

1. Loosen air bleed plug (4), operate feed pump (2) until no air bubble is observed in the fuel from the air bleed plug.
2. After no air bubble is spouted from air bleed plug (4), tighten air bleed plug (4) and operate the feed pump until it becomes difficult to move.
3. Once the feed pump becomes difficult to move, push the disk part of feed pump (2) back to the original position.
4. Start the engine. Check the fuel supply system for fuel leaks.



MNDB-07-025

4 **Replace Fuel Main Filter Element**
---every 500 hours

CAUTION: Depending on the circumstance, diesel fuel is flammable. When inspecting or performing service or repairs on the fuel system, to reduce the possibility of fire and resulting severe personal injury, death, or property damage, never smoke or allow sparks or flames (such as pilot lights, electrical switches, or welding equipment) in the work area.

IMPORTANT:

- **Be sure to use only genuine Hitachi elements for the fuel main filter element and the pre-filter element. Failure to do so may lower engine performance and/ or shorten the engine service life.**
- **Make sure that debris, water, steam, or cleaning solution does not get inside the fuel system.**

1. Remove cartridge filter (2) from fuel filter (1) by using a filter wrench.

   Arrange a container to receive fuel for safety and to prevent ground from contamination.

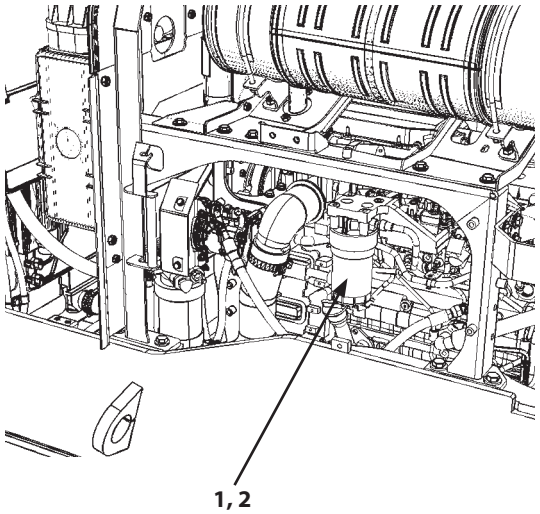
2. Apply a thin film of clean fuel to the gasket of new cartridge filter (2).
3. Turn cartridge filter (2) clockwise by hand until the gasket touches the contact area.
4. Using the filter wrench, tighten the cartridge 1/4 to 1/2 turn more.

   Be careful not to overly tighten cartridge filter (2). Deformation of the cartridge may result.

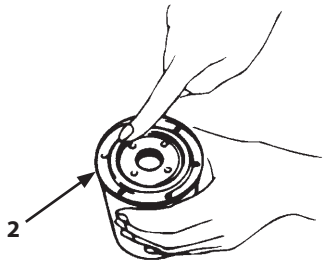
5. Bleed Air from the Fuel System

   After replacing the fuel filter, bleed air from the fuel system.

   (Refer to "Bleed Air from the Fuel System" in item **3**.)



MNEK-07-006



M4GB-07-066

5 **Replace Fuel Pre-Filter Element**
---every 500 hours

CAUTION: Depending on the circumstance, diesel fuel is flammable. When inspecting or performing service or repairs on the fuel system, to reduce the possibility of fire and resulting severe personal injury, death, or property damage, never smoke or allow sparks or flames (such as pilot lights, electrical switches, or welding equipment) in the work area.

IMPORTANT:

- **Be sure to use only genuine Hitachi elements for the fuel main filter element and the pre-filter element. Failure to do so may lower engine performance and/ or shorten the engine service life.**
- **Make sure that debris, water, steam, or cleaning solution does not get inside the fuel system.**

1. Remove cartridge filter (1) by using a filter wrench.

   Arrange a container to receive fuel for safety and to prevent ground from contamination.

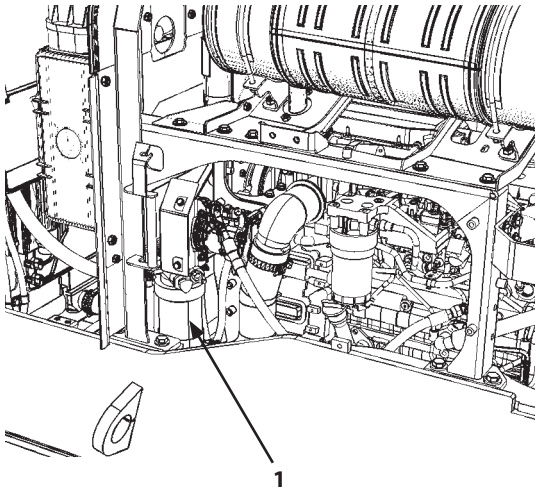
2. Apply a thin film of clean fuel to the gasket of new cartridge filter element (2).
3. Turn cartridge filter element (2) clockwise by hand until the gasket touches the contact area.
4. Using the filter wrench, tighten the cartridge 1/4 to 1/2 turn more.

   Be careful not to overly tighten cartridge filter (1). Deformation of the cartridge may result.

5. Bleed Air from the Fuel System

   After replacing the fuel pre-filter, bleed air from the fuel system.

   (Refer to "Bleed Air from the Fuel System" in item **3**.)



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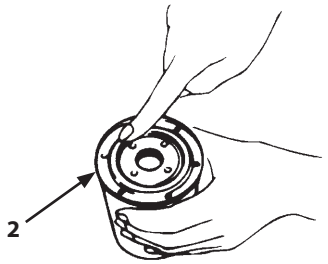
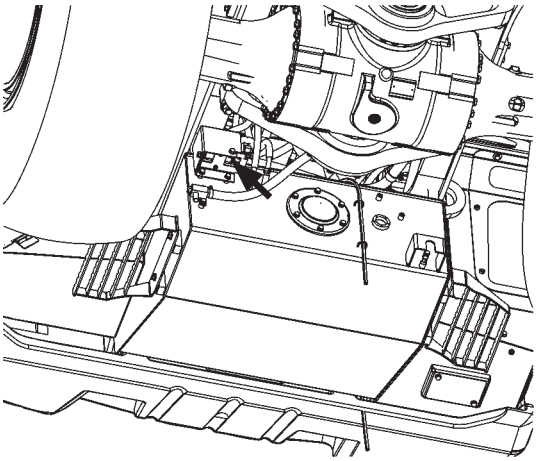


M4GB-07-066

6 Clean Fuel Solenoid Pump Strainer --- every 1000 hours

Cleaning

When the strainer is disassembled, be sure to replace the gasket. Install the cover and the magnet only after sufficiently cleaning them. After being assembled, closely check the air-tightness of the strainer.



MNEK-07-002

Disassembling/ Assembling

1. To remove cover (1), loosen with a wrench.
   After cover (1) is removed, gasket (2), strainer (3), and gasket (4) are easily removed in order.

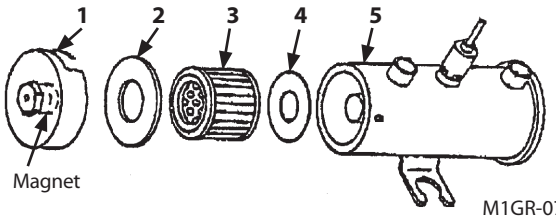
2. Wash strainer (3) with solvent.

3. Install the strainer in the reverse order of disassembling. At that time, install gasket (2) into cover (1) first.
   Then, securely tighten cover (1) to pump (5) using a wrench.

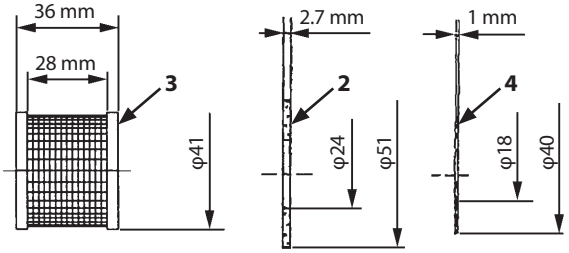
NOTE: Wrench size: 17 mm

IMPORTANT:

- **Only clean and replace the strainer as well as gaskets (2) and (4) while servicing the fuel pump. Never attempt to disassemble other parts.**
- **Gasket (4) can get caught in the bore of pump (5), making it difficult to remove the gasket, but do not disassemble the cylinder of pump (5). If the gasket is difficult to remove, do not disassemble other parts but stretch gasket (4) to remove it. Use a new gasket (4) for assembling.**



M1GR-07-004



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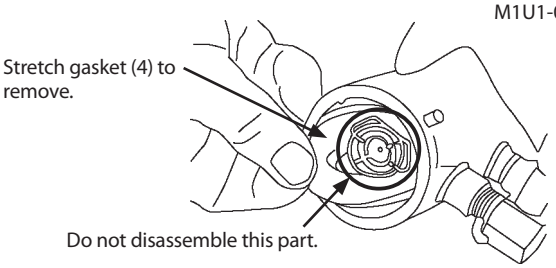

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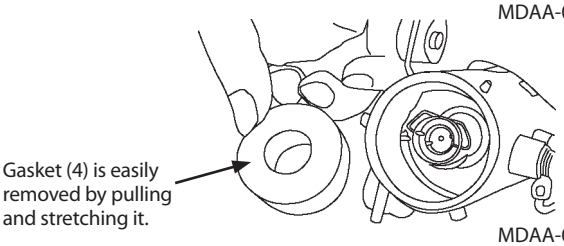


MDAA-07-054

7 **Check Fuel Hoses**

--- every 10 hours (daily) / every 250 hours

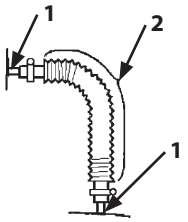
WARNING: Fuel leaks can lead to fires that may result in serious injury.

Check for kinked hoses, hoses that rub against each other, and any fuel leaks.

Repair or replace any loose or damaged hoses.

Never reinstall bent or damaged hoses.

According to the check points shown below, check hoses for oil leaks and damage.
If any abnormality is found, replace or retighten as instructed in the table.



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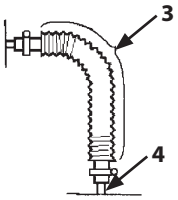

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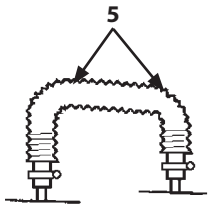

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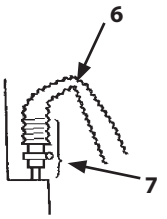


M4GB-07-074

Hose

Interval (hours)	Check Points	Abnormalities	Remedies
Every 10 hours (daily)	Hose ends Hose covers	Leak (1) Wear, crack (2)	Retighten or replace
Every 250 hours	Hose covers Hose ends Hose Hose fittings	Crack (3) Crack (4) Bend (5), Collapse (6) Corrosion (7)	Replace Replace Replace Replace

F. Air Cleaner

1 Replace Air Cleaner Element

Replace --- when the monitor indicator is lit.

Air cleaner (1) is comprised of double elements, the outer element and inner element.

IMPORTANT: Do not reuse outer element (4). Replace it when the indicator is lit.

Replace inner element (5) every after replacing outer element (4) twice. Before reusing inner element (5), ensure there is no damage on the filter surface, O-ring and outer shape.

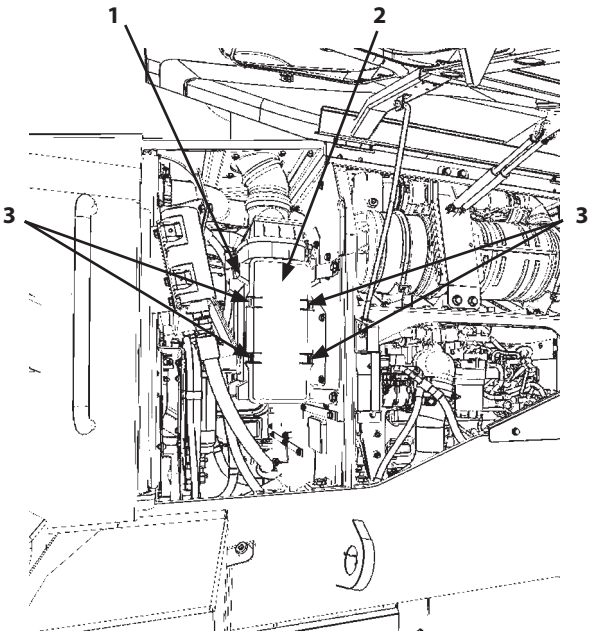
1. Park the machine following the same procedure as described on page 7-8 for preparation of inspection/ maintenance work.

IMPORTANT: Take care not to allow foreign matter such as dirt to enter the engine when cleaning or replacing elements.

2. Remove clip band (3) and remove cover (2).
3. Hold the outer element release knob (6). Pull out outer element (4) from the air cleaner to remove it.
4. Clean inside the air cleaner (1) with a wet cloth.
5. Hold inner element (5) release knob (7). Pull out inner element (5) from air cleaner (1) to remove it.
6. Install inner element (5) and outer element (4) into air cleaner (1).

IMPORTANT: An O-ring is fit on the circumference of inner element (5). Push inner element (5) into the air cleaner. Be sure there is no gap between the O-ring and air cleaner.

7. Install cover (2) and tighten it with clip band (3).
8. Start the engine after the cleaning is done. Ensure the indicator light is not ON.



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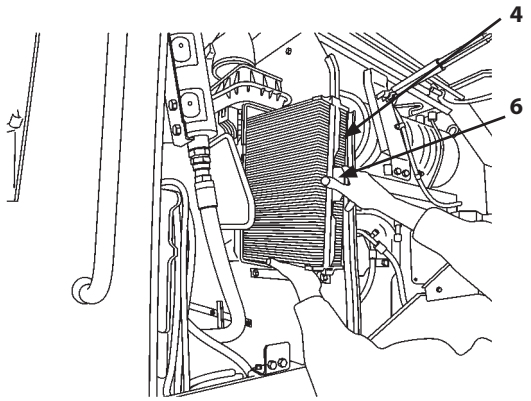

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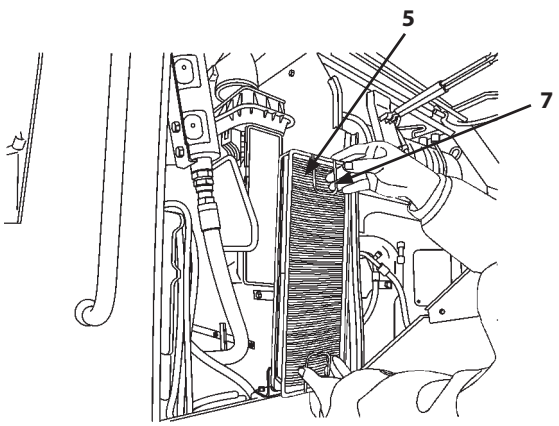
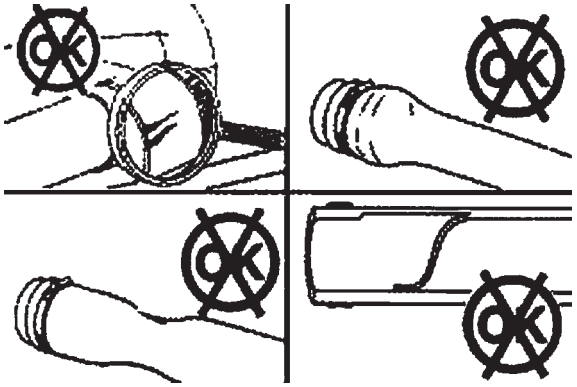


MNEK-07-031

2 **Check Air Inlet System**
--- every 10 hours (daily)

Check pipes and hoses of the air inlet system for wear, damage or loose connections and clamps. Replace damaged pipes and hoses. Retighten loose clamps.
Tightening torque: 8 N·m (6 lbf·ft)



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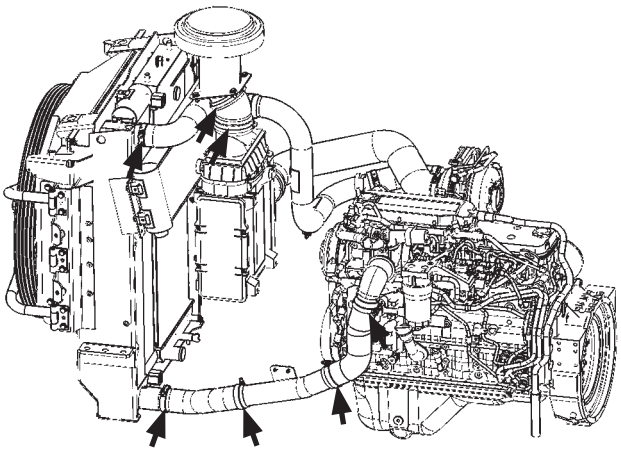

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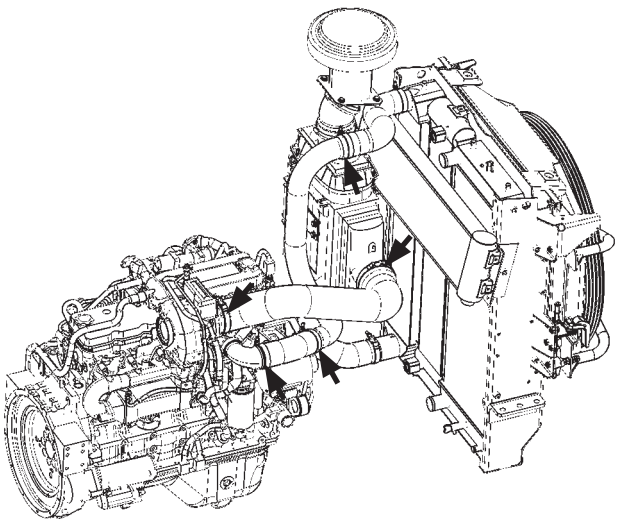


MNEK-07-010

G. Cooling System

Coolant

Use fresh water or normal tap water as the coolant water. Do not use strong acid or alkaline water. Use of the genuine Long-Life Coolant (LLC) mixed by 33 to 50 % is recommended.

If the air temperature is expected to fall below 0 °C (32 °F), fill the cooling system with Long-Life Coolant (LLC) and soft water mix. As a general rule, the ratio of LLC should be 50% as shown in the table below. If the ratio is above 50%, the engine may overheat.

LLC Mixing Table

Air temperature °C (°F)	Mixing ratio %	Coolant Capacity: 33 liter (8.7 gallons)	
		LLC liter (gallon)	Soft Water liter (gallon)
	50	16.5 (4.35)	16.5 (4.35)

WARNING:

- **Antifreeze is poisonous; if ingested, it can cause serious injury or death. Induce vomiting and get emergency medical attention immediately.**
- **When storing antifreeze, be sure to keep it in a clearly marked container with a tight lid. Always keep ANTIFREEZE out of the reach of children.**
- **Be careful of fire hazards. LLC is specified as a dangerous substance in the fire protection law.**
- **If antifreeze is accidentally splashed into eyes, flush with water for 10 to 15 minutes and get emergency medical attention.**
- **When storing or disposing of antifreeze, be sure to comply with all local regulations.**

1 **Check Coolant Level**

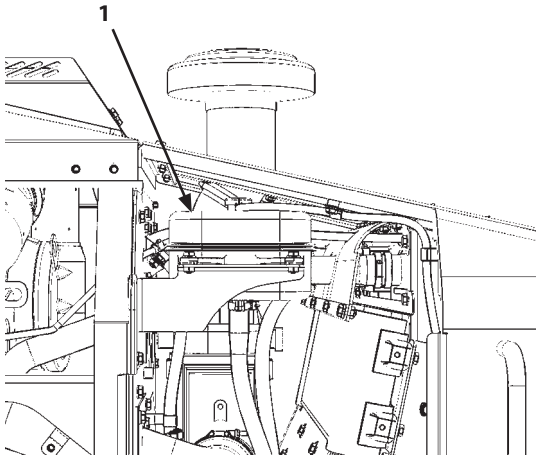
--- every 10 hours (daily) (before starting the engine)

WARNING: Do not remove cap (2) until the coolant temperature in the radiator is cool. Hot steam may spout out, possibly causing severe burns. After the coolant temperature cools, slowly loosen cap (2) to release the inside air pressure before removing cap (2).

The coolant level must be at FULL (3) mark on expansion tank (1).
If the coolant level is below the FULL (3) mark, remove cap (2) from expansion tank (1) and refill coolant.

If expansion tank (1) is empty, add coolant to the radiator and then to expansion tank (1).

- When refilling a long life coolant (LLC), use the same brand product and the same mixture ratio as already used in the machine.
- If only water is refilled, the mixture ratio in the long life coolant (LLC) is diluted so that anti-rust and antifreeze effect in the coolant will become deteriorated.
- Refer to page 7-75 for the coolant specifications.



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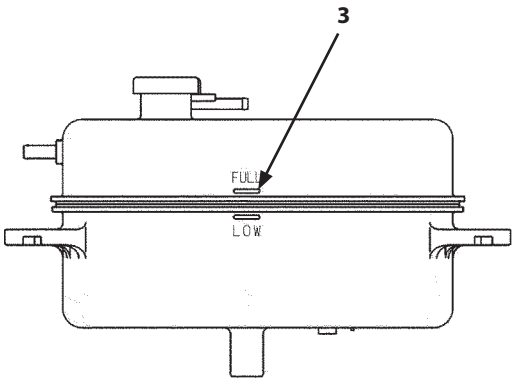

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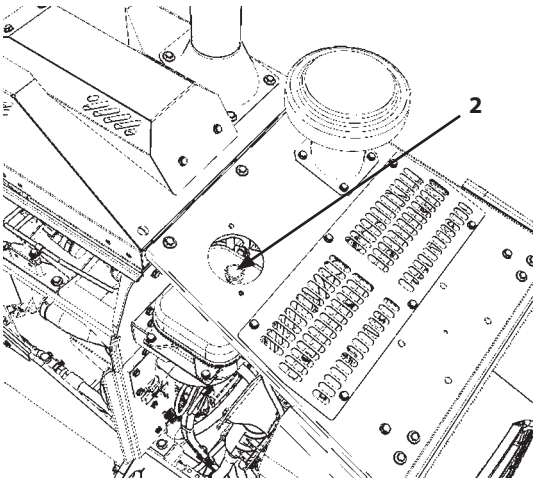
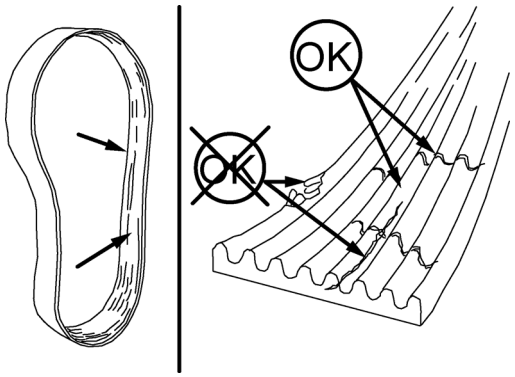


MNEK-07-012

2 **Check Drive Belt**

--- every 10 hours (daily)

Check the drive belt for any abnormality. If any cracks are found, replace the belt with a new one.



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3 **Check Drive Belt Tensioner**

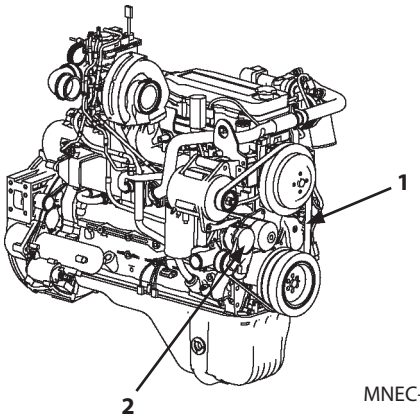
--- every 1000 hours or once a year

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Open the side cover to access the engine.
4. With the belt installed, verify that neither tensioner arm stop is in contact with the spring casing stop. If either stop is touching, drive belt (1) must be replaced.

   After replacing the belt, if the tensioner arm stops are still in contact with the spring case stop, the belt tensioner must be replaced.
5. Check tensioner (2) for cracks on arm, pulley, and stops. If any cracks are observed, the drive belt tensioner must be replaced.

NOTE: Consult your nearest authorized dealer for the drive belt tensioner replacement.

6. Check belt tensioner pulley (3) for any dirt or damage. If ir is dirty or damaged, contact your nearest authorized dealer for cleaning or replacement.
7. Check the location of drive belt on belt tensioner pulley (3).
   The belt must be centered on, or close to the middle of, the pulley.
   Misaligned belts, either too far forward or backward, can cause belt wear, belt roll-off failures, or increase uneven tensioner bushing wear.



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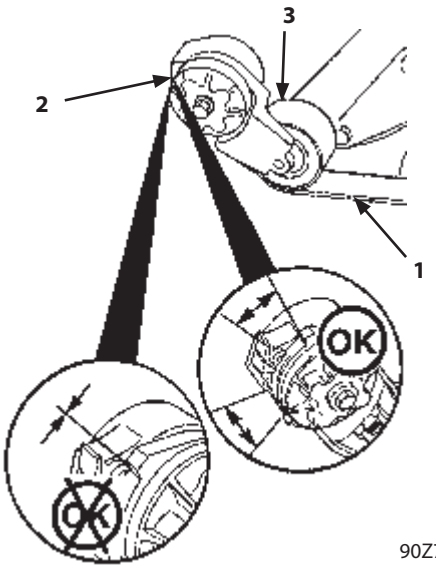

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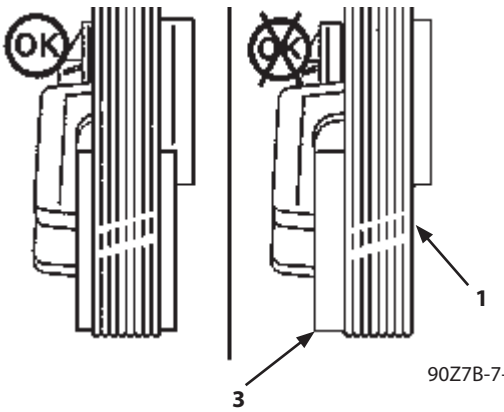


90Z7B-7-77-3

4 **Change Coolant**

--- every 2000 hours or two years

CAUTION: Do not remove the expansion tank cap (1) until the coolant temperature in the radiator is cool. Hot steam may spout out, possibly causing severe burns. After the coolant temperature cools, slowly loosen cap (1) to release the inside air pressure before removing cap (2).

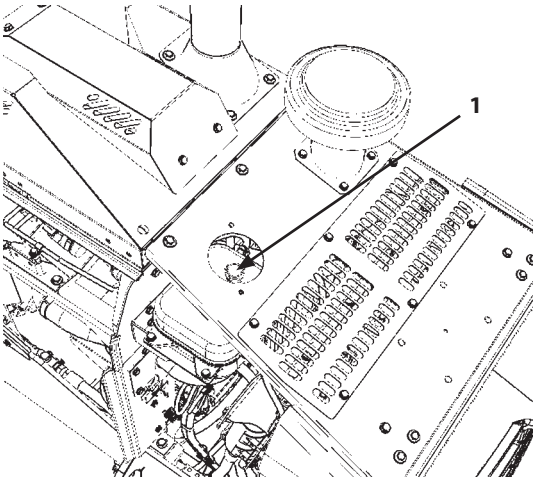
IMPORTANT: Use Hitachi genuine coolant. Change the coolant every two years or 2000 hours whichever comes first.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Remove expansion tank cap (1). Open radiator drain cock (2) and drain the coolant.
4. Close radiator drain cock (2). Supply low impurity soft water or tap water together with the specified LLC up to the radiator filler port. When adding coolant, do so slowly to avoid mixing in the system.

   Start the engine and sufficiently bleed air from the cooling system.

NOTE: When refilling a long-life coolant, pour it at flow rate 14 L/min (3.7 gpm) or below. If flow rate is larger than the above, air does not bleed, being unable to fill the specified amount.

5. After adding coolant, operate the engine for several minutes. Check the coolant level again and add coolant if necessary.



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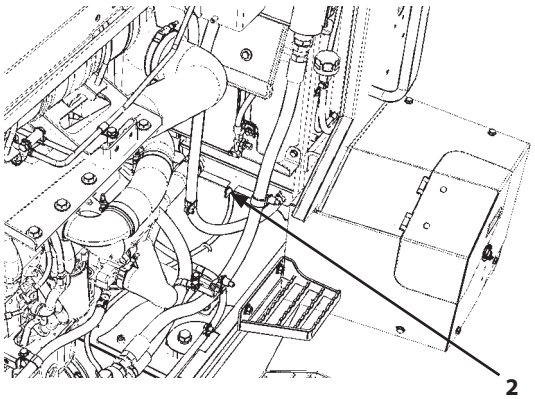


MNEK-07-013

5 **Clean Radiator/Oil Cooler and Other Cooling System --- every 500 hours or when the core is clogged.**

CAUTION: Wear goggles or safety glasses when using compressed air [less than 0.2 MPa (30 PSI)].

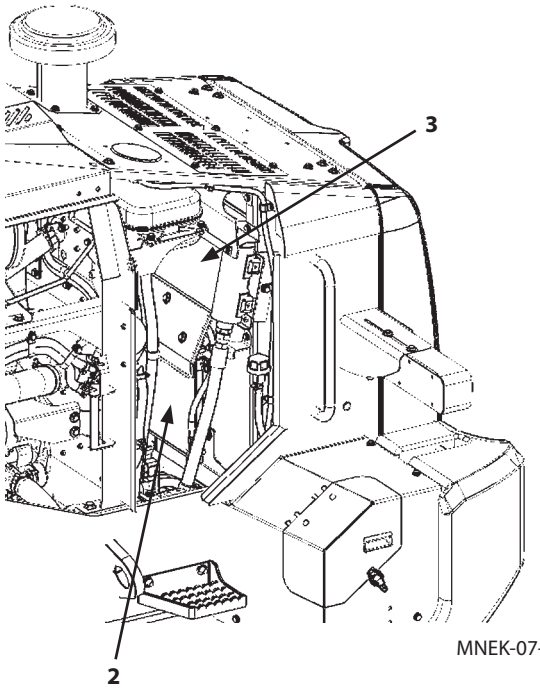
IMPORTANT: If compressed air with the pressure of more than 0.2 MPa (30 PSI) or tap water with high delivery pressure is used for cleaning, damage to the radiator/ oil cooler fins may result.

Keep the nozzle away from the core surface more than 500 mm (20 in).

Over the Side Cover
Check and clean air conditioner condenser (2) and torque converter oil cooler (3).

Over the Rear Grille
Check and clean radiator (4), hydraulic oil cooler (5) and intercooler (6), and hydraulic driven fan (7) by releasing lock (8) and opening the hydraulic driven fan.

If dirt or dust is accumulated on them, cooling system performance decreases. Clean the radiator/oil cooler cores with compressed air pressure (lower than 0.2 MPa (30 PSI)) or tap water. It will prevent a reduction in cooling system performance.



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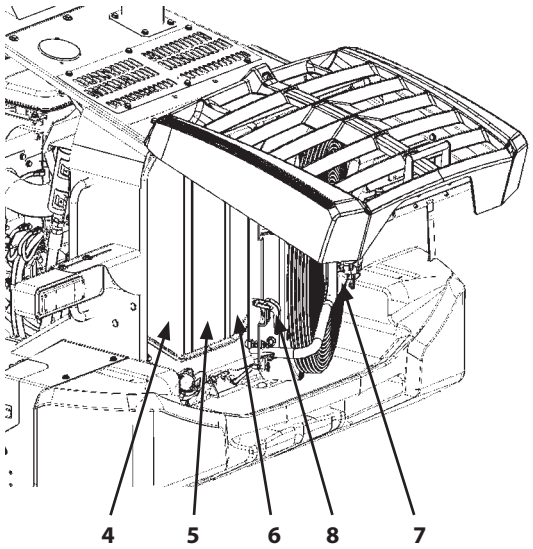


MNEK-07-015

H. Electrical System

IMPORTANT:

- **Improper radio communication equipment and associated parts, and/or improper installation of radio communication equipment affects the machine's electronic parts, causing involuntary movement of the machine.**

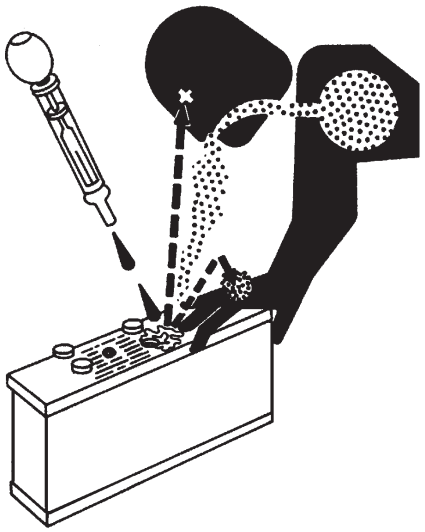
  Improper installation of electrical equipment may cause machine failure and/or a fire on the machine.

  Be sure to consult your authorized dealer when installing radio communication equipment or additional electrical parts, or when replacing electrical parts.
- **Never attempt to disassemble or modify the electrical/electronic components. If replacement or modification of such components is required, contact your authorized dealer.**

1 Batteries

WARNING:

- **Battery gas can explode. Keep sparks and flames away from batteries.**
- **Do not keep tools, metals or flammable materials around the battery or inside the battery room. If a metal tool is placed across the battery terminal and a vehicle component such as the engine block, sparks may be created, possibly resulting in fire and/or explosion.**
- **Use a flashlight to check the battery electrolyte level.**
- **Do not continue to use or charge the battery when electrolyte level is lower than specified. Explosion of the battery may result.**
- **Charge the batteries in a well ventilated location.**
- **Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into the eyes.**



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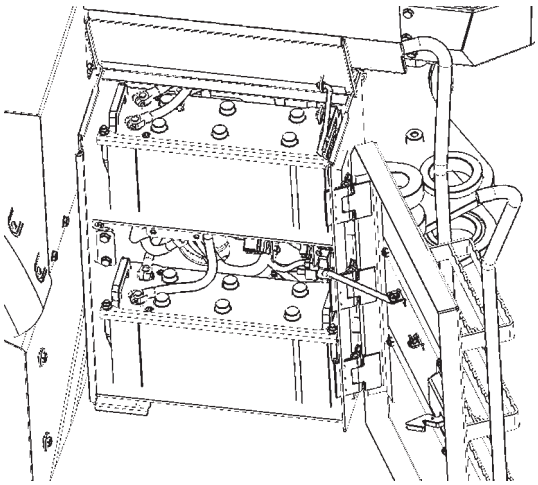


MNEK-07-016

Avoid hazard by:

1. **Filling batteries in a well-ventilated area.**
2. **Wearing eye protection and rubber gloves.**
3. **Avoiding breathing fumes when electrolyte is added.**
4. **Avoiding spilling or dripping electrolyte.**
5. **Using proper booster battery starting procedures.**

If you spill acid on yourself, call 911, then:

1. **Flush your skin with water.**
2. **Apply baking soda or lime to help neutralize the acid.**
3. **If splashed in eyes, flush with water for 10 to 15 minutes. Get medical attention immediately.**

If acid is swallowed, call 911, then:

1. **Drink large amounts of water or milk.**
2. **Then drink milk of magnesia, beaten eggs, or vegetable oil.**
3. **Get medical attention immediately.**

IMPORTANT: Add water to batteries when cool weather before you begin operating your machine for the day, or else charge the batteries.

IMPORTANT: If the battery is used with the electrolyte solution level lower than the specified level, the battery performance may deteriorate quickly.

IMPORTANT: Do not refill electrolyte solution more than the specified upper level. Electrolyte solution may spill, damaging painted surfaces and/or corroding other machine parts.

NOTE: In case electrolyte solution is filled above the specified upper level line or beyond the bottom end of the sleeve, remove the excess electrolyte solution until the electrolyte solution level is down to the bottom end of the sleeve by using a pipette.

After neutralizing the removed electrolyte solution with sodium bicarbonate, flush it with plenty of water, otherwise, consult the battery manufacturer.

Electrolyte Level Check --- every 100 hours (monthly)

1. Check the electrolyte level at least once a month.
2. Park the machine on level ground and stop the engine.
3. Check the electrolyte level.

3.1 When checking the level from the battery side:

Clean around the level check lines with a wet towel. Do not use a dry towel. Static electricity may be developed, causing the battery gas to explode. Check if the electrolyte level is between U.L (Upper Level) and L.L (Lower Level).

If the electrolyte level is lower than the middle level between the U.L and L.L, immediately refill with distilled water or commercial battery fluid.

Be sure to refill with distilled water before recharging (operating the machine).

After refilling, securely tighten the filler caps.

3.2 When impossible to check the level from the battery side or no level check mark is indicated on the side:

After removing the filler plug from the top of the battery. Check the electrolyte level by viewing through the filler port. It is difficult to judge the accurate electrolyte level in this case. When the electrolyte level is at the U.L, the level is judged to be proper. Referring to the illustrations at the right side, check the level. When the electrolyte level is lower than the bottom end of the sleeve, refill with distilled water or commercial battery fluid up to the bottom end of the sleeve.

After refilling, securely tighten the filler caps.

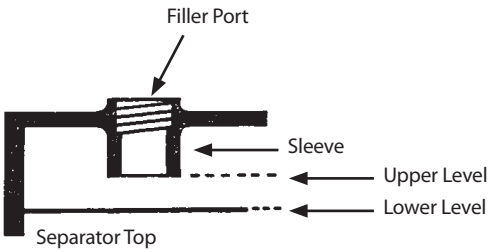
Be sure to refill with distilled water before recharging (operating the machine).

3.3 When an indicator is available to check the level, follow its check result.

4. Always keep the area around the battery terminals clean to prevent battery discharge.

Check terminals for loose and/or rust. Coat terminals with grease or petroleum jelly to prevent corrosion build up.

M146-07-109



M146-07-110

Correct

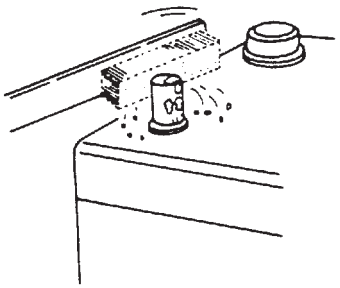
Since the electrolyte solution surface touches the bottom end of the sleeve, the electrolyte solution surface is raised due to surface tension so that the electrode ends are seen curved.

M146-07-111

Lower

When the electrolyte solution surface is lower than the bottom end of the sleeve, the electrode ends are seen straight.

M146-07-112



M409-07-072

Check Electrolyte Specific Gravity

--- every 250 hours

CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight and a mirror to check the battery electrolyte solution level.

Sulfuric acid in battery electrolyte solution is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into the eyes.

Never check the battery charge by placing a metal object across the posts. Use a battery tester or hydrometer.

Always remove the grounded (-) battery lead first and attach it last.

Avoid hazard by:

1. **Filling batteries in a well-ventilated area.**
2. **Wearing eye protection and rubber gloves.**
3. **Avoiding breathing fumes when electrolyte solution is added.**
4. **Avoiding spilling or dripping electrolyte solution.**
5. **Using proper booster battery starting procedures.**

If you spill acid on yourself, call 911, then:

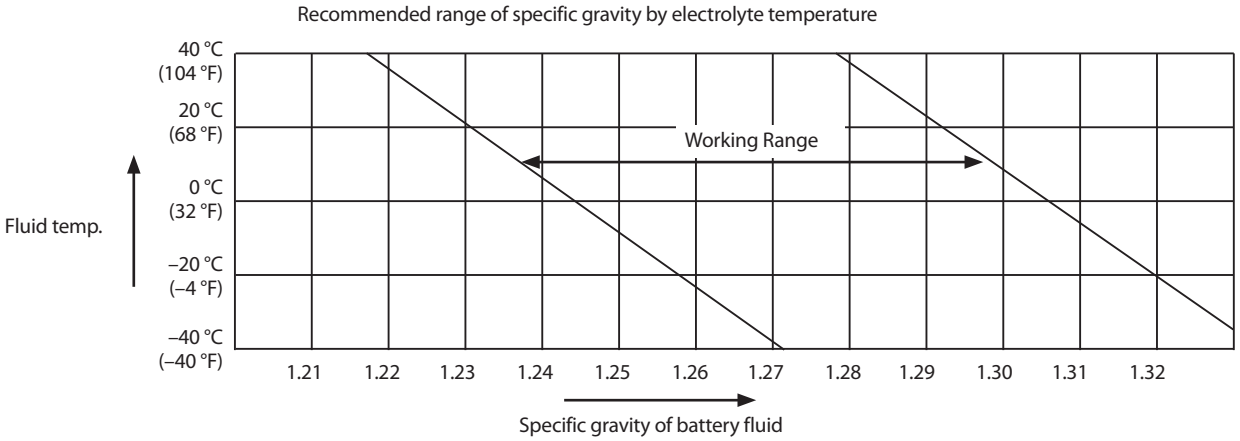
1. **Flush your skin with water.**
2. **Apply baking soda or lime to help neutralize the acid.**
3. **If splashed in eyes, flush with water for 10 to 15 minutes. Get medical attention immediately.**

If acid is swallowed, call 911, then:

1. **Drink large amounts of water or milk.**
2. **Then drink milk of magnesia, beaten eggs, or vegetable oil.**
3. **Get medical attention immediately.**

IMPORTANT: Check the specific gravity of the electrolyte when it is cool, not immediately after operation.

Check the electrolyte specific gravity in each battery cell. The lowest limit of the specific gravity for the electrolyte varies depending on electrolyte temperature. The specific gravity should be kept within the range shown below. Charge the battery if the specific gravity is below the limit.



Replace Batteries

IMPORTANT: Before adjusting electrical system or welding on the machine, disconnect the negative side of the battery, or turn the battery disconnect switch to OFF position.

Your machine has two 12-volt batteries with negative (-) ground.
If one battery in a 24-volt system has failed but the other is still good, replace the failed battery with an operable battery of the same type. For example, replace a failed maintenance-free battery with a new maintenance-free battery. Different types of batteries may have different rates of charge. This difference could overload one of the batteries and cause it to fail.

2 Check Monitor Functions and All Other Instrument Operation

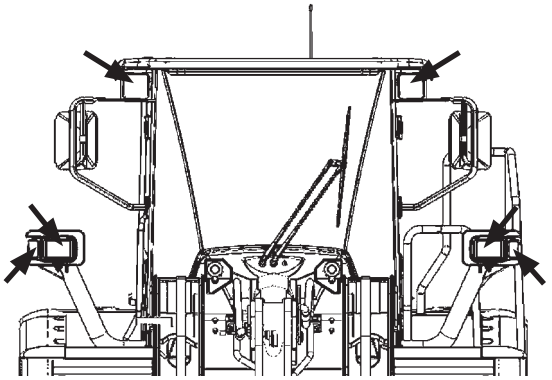
--- every 10 hours (daily)

Run the engine at low idle when checking the instruments. The monitor indicates alarm, caution and confirmation status in red, orange, and normal operative condition in blue or green respectively. Check each gauge or meter if its needle is moved with the key switch ON. The needle shall be moved to the blue range when normal and to the red range when abnormal. Refer to the Group of Operator's Station in Section 1 for more information.

3 **Check Work Lights**
--- every 10 hours (daily)

CAUTION: If any burned-out light is found, immediately replace it with a new one.

Visually check all work lights that they normally light and/or flash from the front and rear sides of the machine.

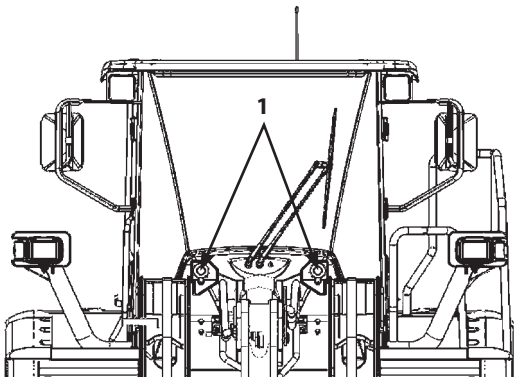


MNEK-07-039

4 **Check Horn and Backup Alarm**
--- every 10 hours (daily)

WARNING: Before checking the horn and/or the backup alarm, always apply the parking brake and clear the machine's vicinity of other personnel.

Horn (1) is located on the front chassis.
The horn switch button is located at the steering wheel center and on the right console. If the machine is equipped with a multi-function joystick lever, the horn switch is located on the multi-function joystick lever. Backup alarm (2) is located at the left side of the rear grille. Check that backup alarm (2) correctly sounds by operating either the forward/reverse lever or the forward/reverse switch to the reverse drive side.



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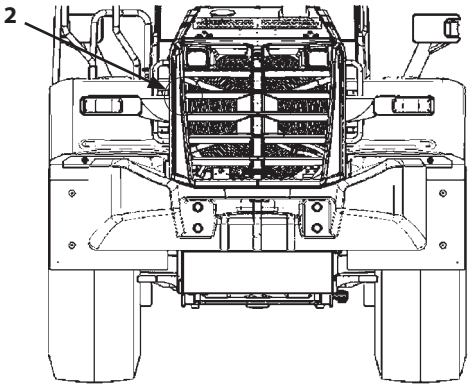
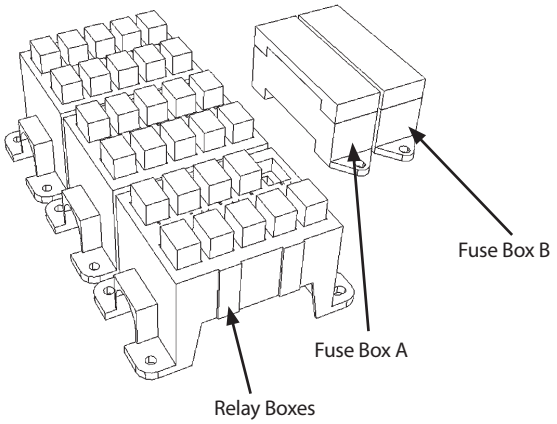


MNEK-07-040

5 **Check Electrical Harnesses and Fuses**
--- every 50 hours

⚠ CAUTION: If dirt or dust is adhered on the wirings or relays, it may cause fire on the machine.

Check the electrical harness and terminals of the batteries, starter motor, and alternator for loose connection and/or short circuit (broken shield). Remove dirt or dust if necessary.
If any burned mark or an abnormal smell is noticed at a harness, consult your nearest authorized dealer.

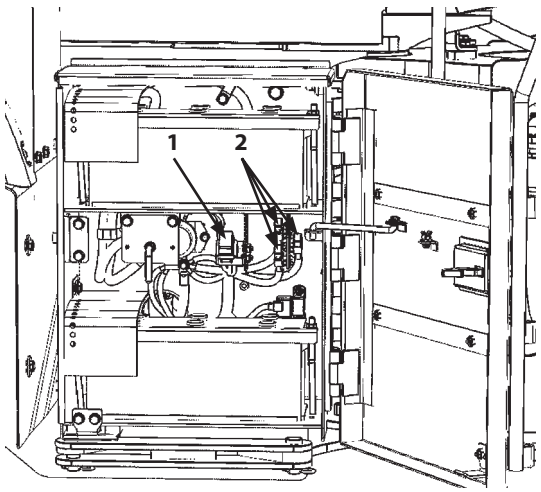


MNEK-07-017

Replace Fuse:

1. If any electrical equipment becomes inoperable, first check the fuses in the fuse boxes (A, B) located in the left console in the operator's station.
2. One spare fuse for each respective fuse capacity is provided in the fuse boxes (A, B).
3. Finally, check slow blow fuses (1) (2) located on the inside of the battery box.

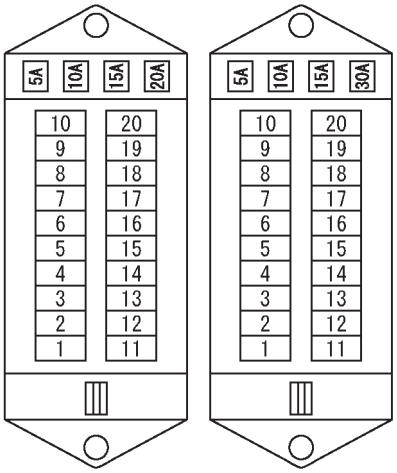
   1- 70A, 140A
   2- 45A, 65A (2 used)



MNEK-01-015

Fuse Box A

10- PARKING 5 A
9- AC1 10 A
8- STOP LAMP 5 A
7- BACKUP ALARM 5 A
6- HEAD LAMP LH 5 A
5- WORKING LAMP FRONT 20 A
4- WIPER FRONT 15 A
3- 24 V CIGAR SOCKET 10 A
2- HEAD LAMP RH 5 A
1- FUEL PUMP 5 A
20- OPTION 4 (JSS) (10 A)
19- OPTION 3 (ACC2) (15 A)
18- DEF HEATER 15 A
17- DEF SUPPLY 15 A
16- DEF SENSOR 15 A
15- AC2 20 A
14- ROTARY BEACON 10 A
13- SEAT HEATER 20 A
12- OPTION 2 (ACC1) (20 A)
11- RADIO (USA) 10 A



Fuse Box A Fuse Box B

MNEC-01-031

Fuse Box B

10- ECM 30 A
9- TCU 10 A
8- CONTROLLER 10 A
7- FLASHER 10 A
6- HORN 10 A
5- OPT C/U 5 A
4- OPTION 1 (BT) (15 A)
3- CAB DOME LAMP 5 A
2- LIGHTING SW 10 A
1- DC/DC POWER ON 20 A
20- SECONDARY STEERING 5 A
19- HIGH BEAM 10 A
18- WIPER REAR 10 A
17- WORKING LAMP REAR 20 A
16- LOADER CONTROL 5 A
15- MC 10 A
14- TCU POWER 10 A
13- POWER ON 10 A
12- POSITION 2 5 A
11- POSITION 1 5 A

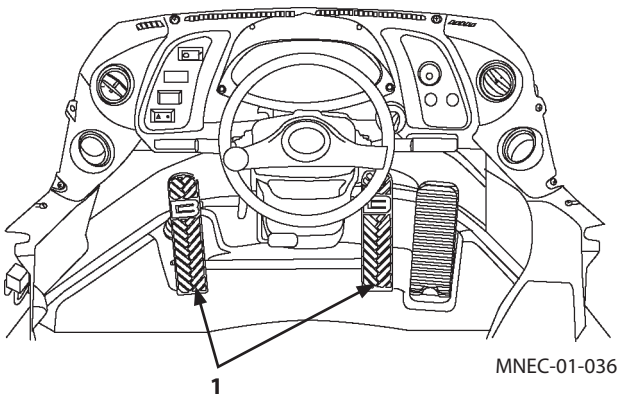
I. Brake System

1 **Check Right and Left Brake Interlocking Performance**

--- every 10 hours (daily)

WARNING:

- **Put up a no admission notice for the range of 100 m (110 yd) ahead in the forward machine travel direction. Arrange a safety monitor person.**
- **Do not allow dust and/or soil to accumulate in vicinity (3) of the brake pedal. The brake may lose traction.**



MNEC-01-036

While stepping on brake pedal (1), check the pedal movement, the brake performance, and the play in the pedal stroke for any abnormality.
If dust and/or soil accumulates in vicinity (3) of the brake pedal, remove the accumulated dust and/or soil.

Check Brake Performance

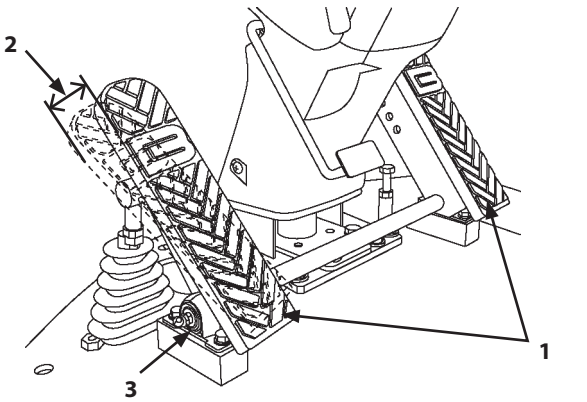
The machine must be stopped within 5 m (16.4 ft) range after the brake is applied while driving at the speed of 20 km/h (12.4 mph) on a flat dry paved surface road.

Check Play in Brake Pedal Stroke

Measure the pedal stroke at pedal tip (2) by pressing the pedal with your hand until you feel an intermittent feed back from the pedal.

Correct Play (2) : 7 to 16 mm (0.3 to 0.63 in)

If the play is outside the specified range, consult your nearest authorized dealer.
If abnormal pedal operation and/or performance is noticed, consult your nearest authorized dealer. Get the machine checked and repaired.



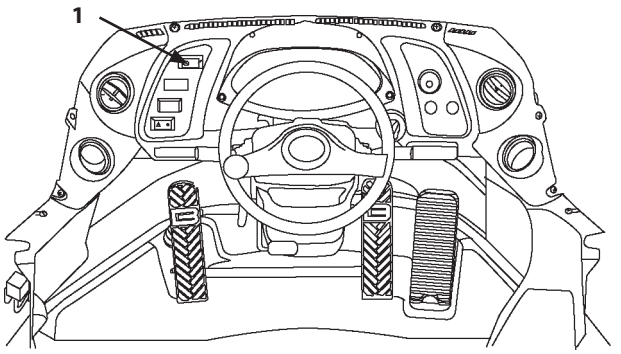
MNEC-07-042

2 **Check Parking Brake Force**
--- every 10 hours (daily)

WARNING: Check the machine in a place where no one is present or ahead in the drive traveling direction. Keep bystanders away from the machine.

After confirming the service brakes work normally, test the parking brake.

1. Move the machine to a safe open place on a 20 % (11.3 degrees) inclining dry surface slope.
2. Stop the machine with the service brake.
3. Turn ON parking brake switch (1).
4. Release the service brakes.
5. The machine should not move.



MNEC-01-036

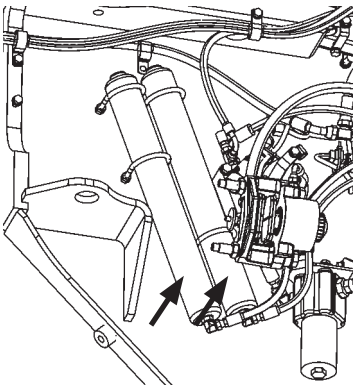
IMPORTANT: If machine moves when parking brake switch is ON, there is some problem with parking brake. Consult your nearest authorized dealer. Do not operate until problem has been corrected.

3 **Check Accumulator Function, Gas Leakage, Looseness, and Damage**

--- every 500 hours

WARNING: Allow only qualified personnel to service the accumulator.

- **High-pressure nitrogen gas is enclosed in the accumulator. (N_2 is inert, and will not burn.)**
- **Never strike the accumulator. Keep the accumulator away from heat sources.**
- **Do not weld the accumulator housing.**
- **Be sure to release oil pressure before starting to work on the brake circuit.**



MNDB-07-001

1. Check that alarm function is activated:

   Check that when the brake pedal is strongly stepped more than 5 strokes with the key switch ON and the engine stopping, the monitor indicators come ON.

2. Note that alarm function is deactivated:

   Start the engine. Run the engine at middle speed to pressurize the accumulator. Check that when the pressure builds in the accumulator, the alarm buzzer stops sounding and the brake oil pressure indicator goes OFF.

3. Note how many times the brake pedal is stepped:

   Check that the brake pedal can be stepped more than 5 strokes before the brake oil pressure indicator comes ON with the key switch ON, the engine stopping, and brake oil pressure gauge in the right of the monitor display indicates the maximum level.

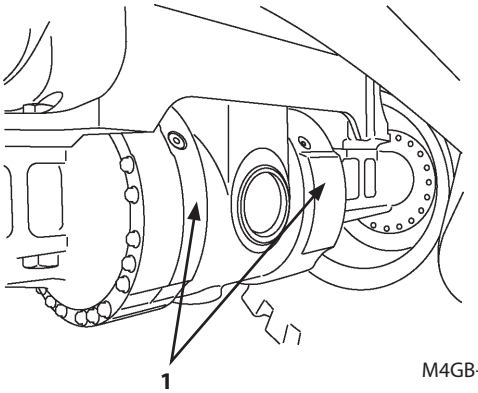
Three points described above must be confirmed as operational. Besides the above points, check the accumulator for gas leakage, looseness, and damage. If any abnormality is found, immediately consult your nearest authorized dealer.

4 **Check Gas Pressure in Accumulator**
--- every 2000 hours

Check the gas pressure at a regular interval. If the machine is operated with the gas pressure lower than specified value, normal brake operation and/or loading operation may not be achieved, possibly creating very hazardous situations. Ask your nearest authorized dealer for checking.

5 **Check Brake Disks (Service and Parking)**
--- every 2000 hours

Service brake (1) is a closed wet type brake.
Parking brake (2) is a dry type disk brake. Parking brake (2) is mounted on the transmission side.
Consult your nearest authorized dealer for checking.



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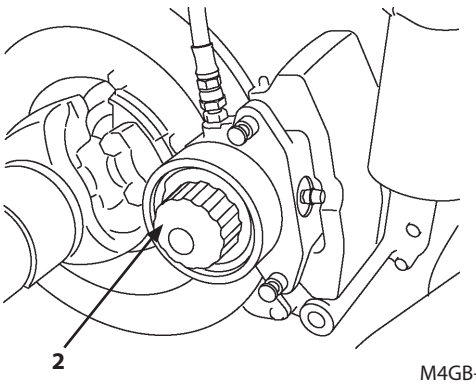


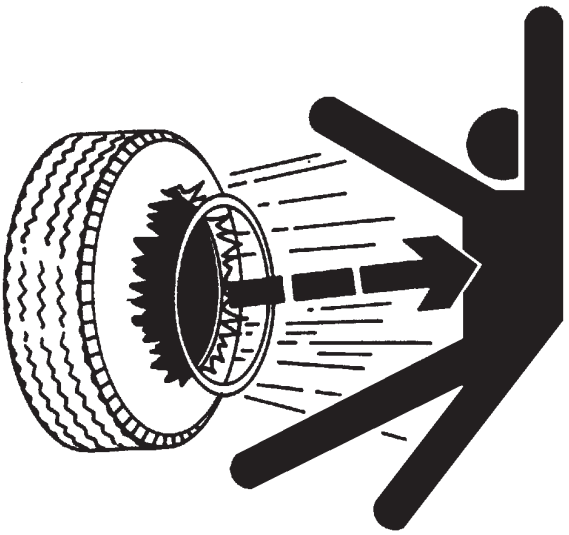
M4GB-06-004

J. Tire

1 **Check and Replace Tire (Tire Pressure)**
Check appearance --- 10 hours (daily)
Check tire pressure when appearance is questionable or each week (50 hours)
Replace --- as necessary

WARNING:

- **Secure the front and rear chassis with the articulation lock bar and pins.**
- **When inflating tires, stand behind the tread and use the self-attaching chuck with a line extension.**
- **Avoid welding near tires, which could potentially cause the tires to explode.**
- **A tire may explode if it is smoking due to intense heat such as if the machine catches fire.**
- **Never weld on rims. Replace defective rims.**



SA-249

IMPORTANT:

- **Always maintain the correct tire pressure.**
- **Even if only one tread pattern has worn out, replace the tire with new one. Tires must be evenly sized. Before operating the machine, check the tires for damage.**
- **When replacing one tire, use a new tire having the same tread pattern and specification as the other tires.**
- **Tires must be evenly sized.**

Check Air Pressure

1. Measure air pressure when the tires are cool before operating the machine.

Standard Tire	Standard Air Pressure
20.5R25 (L3)	400 kPa (4.00 kgf/cm^2) (58 PSI)

2. Check tires for damage and/or excessive wear.

2 **Check Tire for Damage**
--- every 10 hours (daily)

WARNING: If tire has external damaged such as deep cuts, an accident due to puncture or burst of the tire may occur, possibly resulting in injury or death.

Check the external appearance of tires for damage.

3 **Check Wheel Bolt Torque**

--- every 500 hours (50 hours at first time only)

Be sure to check the wheel bolt torque by turning the bolt in the tightening direction.
Tightening torque: 890 N·m (655 lbf·ft)

Replace Tire

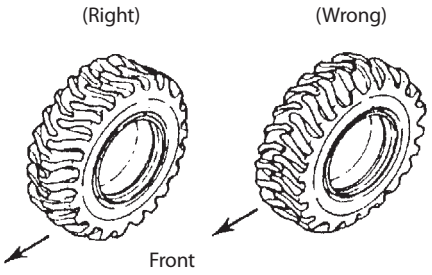
WARNING: Secure the front and rear frames with the articulation lock bar and pins.

IMPORTANT: Height of the machine may change according to the types of tires to be installed.

Do not change the specifications of the registered machine by using unauthorized tire sizes.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Loosen all wheel bolts one turn.

   Note which way the tread pattern is facing.
4. After jacking up the machine, securely support the machine with blocks.
5. Remove the wheel bolts. Replace the tire.
6. With the tire raised off the ground, lightly tighten the wheel bolts in order as illustrated to the right.
7. Lower the machine. Retighten the wheel bolts to specification in the order as illustrated to the right.



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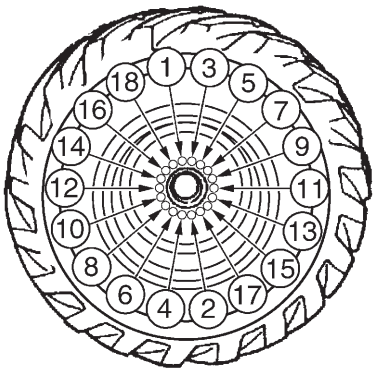


M4GB-07-102

Recommended Tire Air Pressure (Bias ply tire)

Size	Pattern	Air pressure
20.5-25-12PR	L-3	325 kPa (3.25 kgf/cm^2) (47 PSI)
20.5-25-16PR	L-3	325 kPa (3.25 kgf/cm^2) (47 PSI)

Adjust air pressure according to the job site conditions

Tire Sizes to be Used

Adjust tire pressure in conformity with the work mode the machine is engaged in.
Consult your nearest authorized dealer or tire manufacturer for more detailed information.

Driving on Public Roads: Standard Pressure

- Loading/excavation on normal ground surface: Standard or slightly higher than standard pressure
- Heavy-duty excavation: Higher pressure in the standard pressure range
- Operation on soft or sandy terrain: Slightly lower than standard pressure

NOTE: Apply the same air pressure to snow tires.

For radial tires, tires with other patterns, or special operating conditions consult the tire manufacture.

For liquid tire ballast consult your nearest authorized dealer or the tire dealer.

Oscillation Stopper

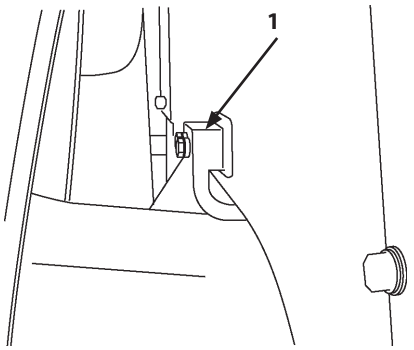
IMPORTANT: Use oscillation stopper (1) that for the tire size and tread pattern.

According to the size and tread pattern of tires, the clearance between the machine parts and top of tire (A) may become narrower, interference can occur between the tire and the machine parts.
When size and tread pattern of tires are changed, install the correct oscillation stopper (1) by referring the list below.

Tire Size	Tread Pattern	Oscillation Stopper
20.5-25-12, 16PR	L-3	×
	L-4	
20.5 R 25	L-5	×

○: Use
×: Not use

NOTE: The oscillation stopper is available at your nearest authorized dealer.



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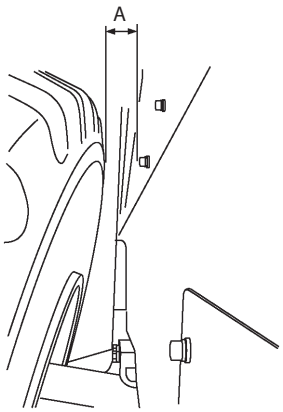


M4GB-07-163

Tire Rotation

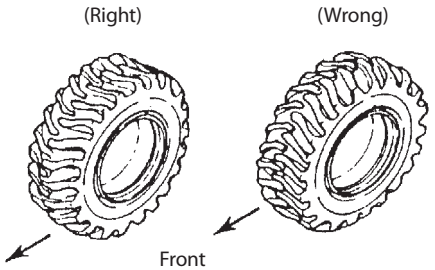
Rotate tires when uneven or abnormal wear is recognized on either front or rear, or right and left tire. Tire rotation is recommended to achieve uniformity of wear on tires or equalization of tire service life.

Rotation Procedure

WARNING: Install tire with no external damage such as score and abnormal wear.

Failure to do so may cause the puncture or the tire to blowout, possibly resulting in personal injury or death since tire load is increased when the machine is loaded or braked during operation.

- Switch tires only between the front and rear positions. Do not switch the tires between diagonal positions.
- Align the tire rotation direction with the tire tread design pattern. Especially traction tread design pattern (optional) will affect not only economy of tire but also safety of operation.

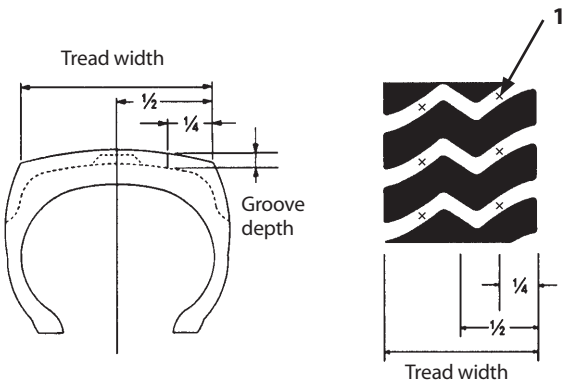


M4GB-07-104

How to Check Wear Amount (Tread Design Groove Depth):

Measure the groove depth at 1/4 tread width position [shown with × mark (1) in the figure].

Use limit of the groove depth shall be approx. 85 % of the new tire groove depth. If extreme uneven wear or exposed rubbing strips are found, replace the tire even before reaching 85 %.



MNEC-07-122

IMPORTANT: If the machine is operated with such tires at either rear or front being extremely worn or different in type, construction, or size, the travel driving system such as axles or transmission will be adversely affected in their performance and/or endurance.

When replacing tires, be sure to use the same tires in type, construction and size to the four wheels. It is recommended to replace tires of the four wheels at the same time.

Removal and Installation of Tire

WARNING: A wheel and tire assembly is a very heavy part so that removal and installation of a tire is hazardous and difficult work. In addition, a crane to lift a tire is required when removing or installing the tire to the wheel. Consult your nearest authorized dealer or a professional tire sales shop for tire removal and installation work. When jacking up the machine, observe the following points.

- Select dry, solid and flat ground for a work site.
- Work in a group of more than two persons. One person to mainly do the work and others to work as assistants and/or ensure safety.
- Do not use the bucket to raise the front wheels.
- Do not raise the machine off the ground higher necessary.
- When one axle is raised off the ground, block the tires at the axle that is still in contact with the ground.
- After the machine is raised off ground, be sure to block the machine using rigid supports. If wooden blocks are used for "cribbing" support, use only hard wood blocks. Never use soft wood for support. Never leave the machine to be supported only by jacks.
- The rear wheels oscillate. Insert wooden blocks between the axle and the frame to stop oscillation.
- When removing the wheel bolts, lift the wheel with a crane so that the wheel bolt remaining at the top position is removed lost.
- Wheel bolt tightening torque: 890 N·m (91 kgf·m, 655 lbf·ft)

Tire Wheel:

WARNING: Use only reliable and professional tire repair shops to do tire repair or replacements. Only authorized professional repair shops should be permitted to assemble and inflate tires. Rusty rims that have been deeply corroded must not be reused. Replace them with new rims.

K. Air Conditioner

1 **Clean/Replace Air Conditioner Circulation/Fresh Air Filters**

Clean filters

--- every 100 hours (or once a week whichever comes first)

Replace filter

--- after cleaning filters 10 times (or when the filters are severely clogged)

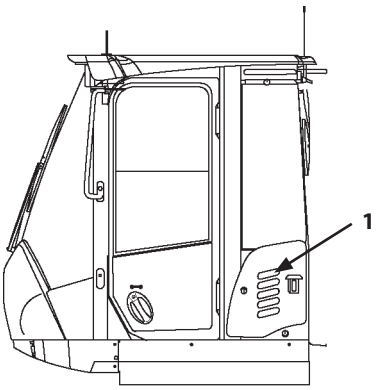
NOTE: If the machine is operated at a dusty job site, clean or replace the filter element earlier than the normal interval.

Clean Fresh Air Filter

1. Remove the filter:

   The fresh air filter is installed behind cover (1) on the left rear side of the cab exterior. Open cover (1) with the starter key.

   Loosen wing nuts (3) and remove plate (2). Remove fresh air filter (4).



MNEC-01-505

CAUTION: When using compressed air pressure, wear safety glasses or goggles.

IMPORTANT: If compressed air delivery pressure is high, damage to the filter fins may result. Always use compressed air at the lower pressure than 0.2 MPa (30 PSI). Keep the nozzle more than 500 mm (20 in) away from the core surface.

2. Clean fresh air filter (4).

   Clean fresh filter (4) using compressed air or by washing with water.

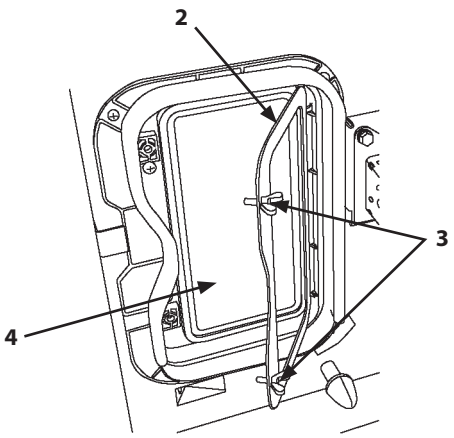
   Washing procedure with water is as follows:

2.1 Use tap water.

2.2 Submerge the filter in water containing a neutral detergent for about 5 minutes.

2.3 Clean the filter with water again.

2.4 Sufficiently dry the filter.



MNEC-07-043

IMPORTANT: Inappropriate installation of the filter may cause dust to enter into the air conditioner, causing malfunction or breakdown of the air conditioner.

Before installing the filter element, clean off dust around the mounting area; install the filter element with extra care.

3. Install the cleaned fresh air filter or a new filter by following the filter removal procedure described in step 1 in the reverse order.

Clean and Replace Double Filter (Option)

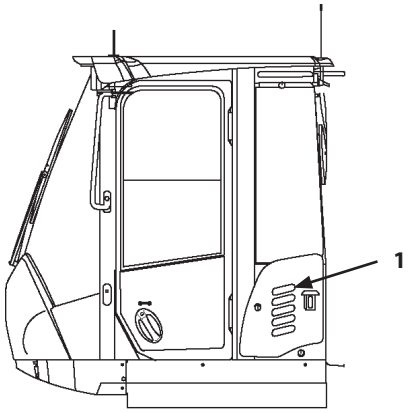
--- When cleaning fresh air filter

1. Remove the double filter:

   The double filter is installed behind cover (1) on the left rear side of the cab exterior. Open cover (1) with the starter key.

   Loosen wing nuts (3) and remove plate (2) with double filter (7).

   Remove bolts (5) (4 used), plate (6), and double filter (7) from plate (2).



MNEC-01-505

CAUTION: When using compressed air pressure, wear safety glasses or goggles.

IMPORTANT: If compressed air delivery pressure is high, damage to the filter fins may result. Always use compressed air at the lower pressure than 0.2 MPa (30 PSI). Keep the nozzle more than 500 mm (20 in) away from the core surface.

2. Clean double filter (7).

   Clean double filter (7) using compressed air or by washing with water.

   Washing procedure with water is as follows:

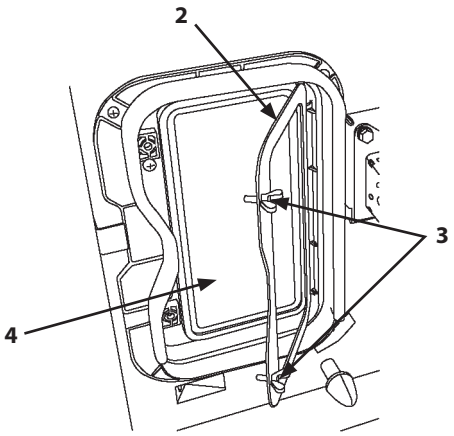
2.1 Use tap water.

2.2 Submerge the filter in water containing a neutral detergent for about 5 minutes.

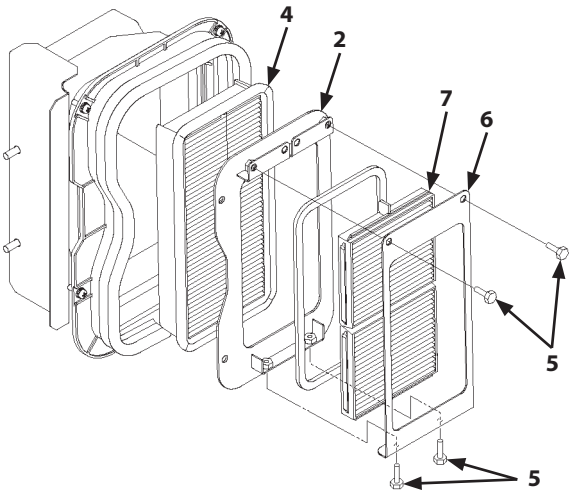
2.3 Clean the filter with water again.

2.4 Sufficiently dry the filter.

3. Install the cleaned double filter or a new filter by following the filter removal procedure described in step 1 in the reverse order.



MNEC-07-043

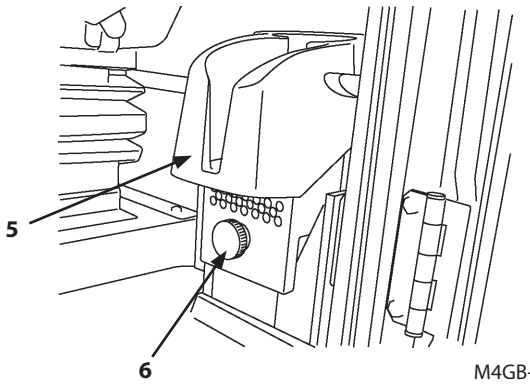


MNHE-07-048

Clean Circulation Air Filter

1. Remove the filter:

   Remove screw (6) under cup holder (5) and tilt the cup holder forward. Hold handle (7) and pull handle (7) toward you to remove circulation air filter (8).



M4GB-07-108

CAUTION: When using compressed air pressure, wear safety glasses or goggles.

IMPORTANT: If compressed air delivery pressure is high, damage to the filter fins may result. Always use compressed air at the lower pressure than 0.2 MPa (30 PSI). Keep the nozzle away from the core surface more than 500 mm (20 in).

2. Clean circulation air filter (8).

   Clean circulation air filter (8) using compressed air or by washing with water.

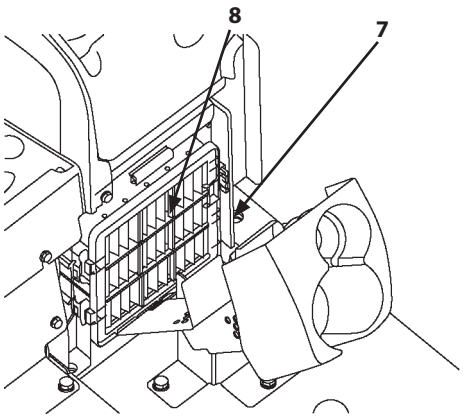
   Washing procedure with water is as follows:

2.1 Use tap water.

2.2 Submerge the filter in water containing a neutral detergent for about 5 minutes.

2.3 Clean the filter with water again.

2.4 Sufficiently dry the filter.



MNEC-07-044

IMPORTANT: Inappropriate installation of the filter may cause dust to enter into the air conditioner, causing malfunction or breakdown of the air conditioner.

Before installing the filter element, clean off dust around the mounting area; install the filter element with extra care.
Keep cab doors closed when operating machine.

3. Install the cleaned circulation air filter or a new filter by following the filter removal procedure described in step 1 in the reverse order.

2 **Check Air Conditioner**
--- every 6 months

Check the air conditioner switch panel, air conditioner unit, and condenser mounting areas for any abnormality, and check hoses for any damage.

NOTE: When the season to use the air conditioner comes close, check the air conditioner to get it ready to use at all times.

When not required to use the air conditioner for a long period of time, operate the air conditioner in the cooling mode once a week to prevent lack of lubrication.

WARNING: Do not clean the compressor and receiver tank with steam.

The refrigerant gas pressure will increase, possibly causing the hoses to break.

3 **Check Air Conditioner Piping**
--- every 6 months

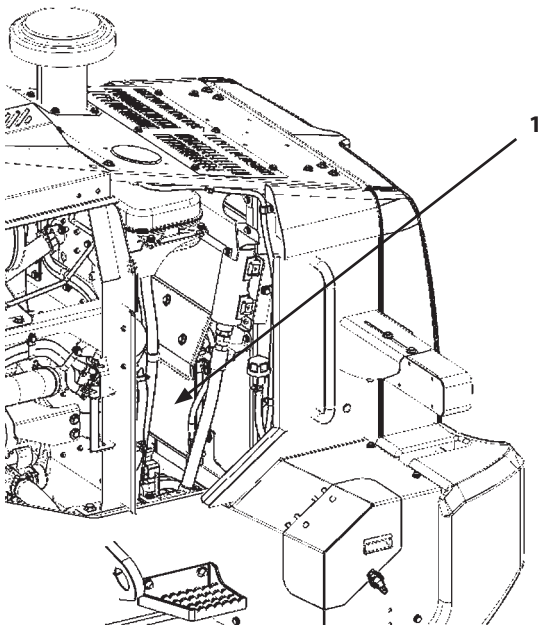
CAUTION: If any leakage is found, repair or replace the corresponding pipes. Tighten the joint bolts to specification.

Do not overly tighten piping.

Check the piping for abnormal deformation and/or damage. If a pipe joint is contaminated with oil, refrigerant leakage may be suspected. Check for leakage using a gas leak detector.

4 Check Air Conditioner Condenser --- every 6 months

If condenser (1) is covered with dirt and/or insects, air conditioner cooling performance will be reduced.
Remove dirt or stain from fins of condenser (1) using tap water. If the condenser has been severely contaminated, use a soft brush. Do not use a hard brush, which may damage the fins.



MNEK-07-019

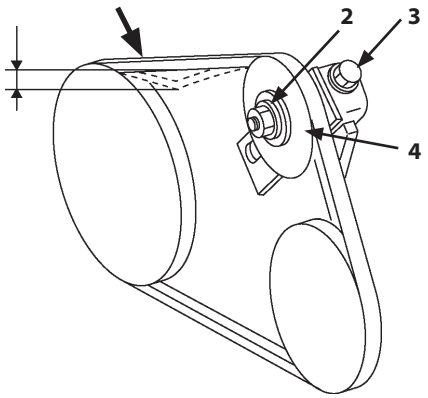
5 Check Air Conditioner Drive Belt --- every 6 months

Check the belt for abnormal deflection and damage.
Check drive belt tension by depressing the midpoint shown with ↓ mark in the illustration with the thumb. Deflection must be as follows with a depression force of approximately 98 N (22 lbf).

Deflection : approx. 6 mm (0.24 in)

Belt Tension Adjustment Procedure

1. Loosen lock nut (2) of tension pulley (4).
2. Move tension pulley (4) to adjust belt tension by turning belt tension adjustment bolt (3).
3. Securely tighten nut (2).



M4GB-07-111

6 **Check Refrigerant**
--- every 6 months

Start the engine and run at approximately 1500 min^{-1} (rpm). Turn the air conditioner switch to ON. Set the blower switch to HI and set the temperature control switch to the coolest position (18 °C on the monitor screen). Operate the air conditioner 2 to 3 minutes. Check if cool air comes out from the vent in the cab.

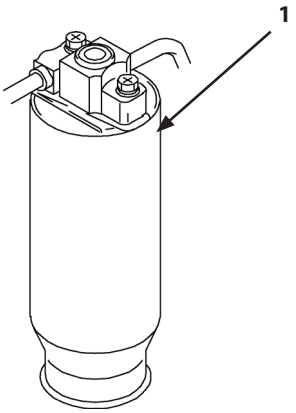
Type	Refrigerant No.	Quantity kg
HFC	R134a	0.9±0.05

IMPORTANT: If recovery or refill of refrigerant is required during the machine maintenance (including disposing the machine), contact your refrigerant supplier or your authorized dealer.

7 **Replace Air Conditioner Receiver Dryer**
--- every 6000 hours or three years

IMPORTANT: Do not release refrigerant into the atmosphere as this is illegal. Comply with refrigerant regulations.

Before charging refrigerant, all the refrigerant must be recovered from the system. Consult your nearest authorized dealer to replace receiver dryer (1) or to charge the refrigerant.



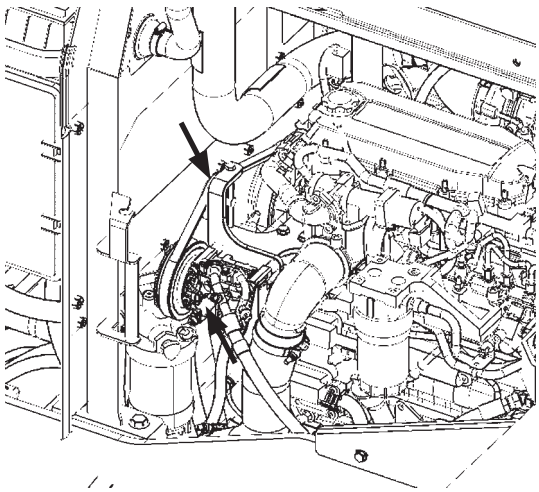
90Z7-OM0144

8 **Check Compressor and Pulley**
--- once a year

Check the compressor and its vicinity for abnormality in operation, oil stain, or refrigerant leakage. Check the pulley for abnormal noise.
Check the belt for abnormal deflection and damage.

Check Compressor:

After operating the air conditioner for 5 to 10 minutes, check temperature at both the high pressure pipe and the low pressure pipe.
Normally, the high pressure pipe must be hot and the low pressure pipe must be cool.



MNEK-07-020

L. Miscellaneous

1 **Check Bucket Teeth and Cutting Edge**
--- every 10 hours (daily)

Check bucket teeth for wear and looseness.

Replace

WARNING: Guard against injury from flying pieces of metal.

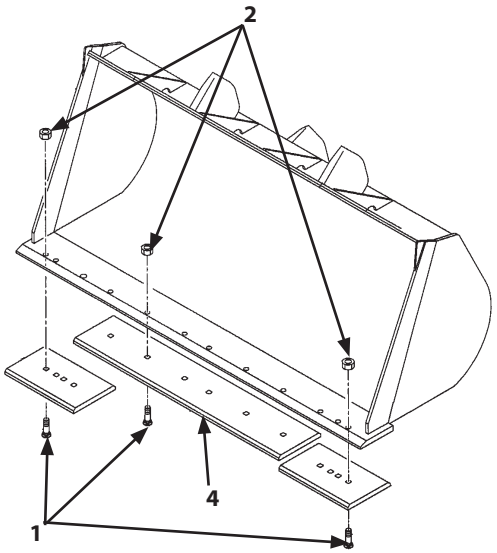
Wear goggles or safety glasses, hard hat and face shield.

Cutting Edge

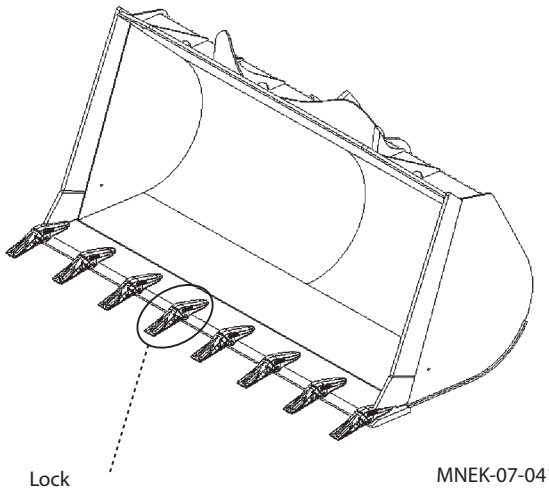
1. Lift the bucket so its bottom is level. Lift the bucket to an appropriate height and wedge a block under it so the bucket will not come down. Stop the engine.
2. Loosen bolts (1) and nuts (2). Remove cutting edge (4).
3. Install new cutting edge (4). If the reverse side of a cutting edge is not worn much, use it again with the face reversed. If both sides are worn out, replace it with a new one.
4. Tighten nuts (2).

   Tightening torque
   Cutting edge : 1068 N·m (788 lbf·ft)

5. Retighten mounting nuts (2) after a few hours of operation.



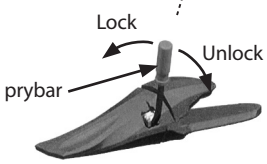
M4GB-07-116



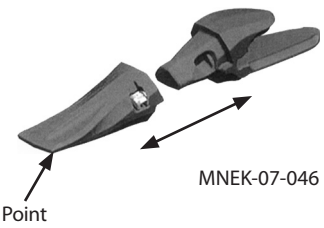
MNEK-07-041

Bucket Teeth

1. Lift the bucket so its bottom is level. Lift the bucket to an appropriate height and wedge a block under it so the bucket will not come down. Stop the engine.
2. Insert a prybar into the locking part of the tooth, unlock it and remove the point.
3. Remove the point of the tooth.
4. Mount a new point and lock it with the prybar.
5. After operating the machine for several hours, check and make sure there are no problems with the mounting of the point.



MNEK-07-045



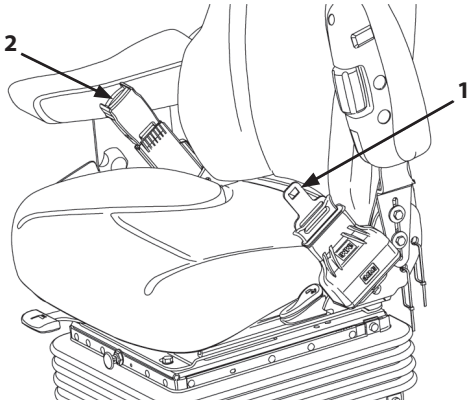
MNEK-07-046

2 **Check and Replace Seat and Seat Belt**

Check appearance --- every 10 hours (daily)

Replace --- every 3 years

Examine buckle (1), attaching hardware (2) and seat belt web. Replace the seat belt web, buckle, or attaching hardware if they are damaged, or worn. Also check the wind-up condition of the seat belt.
Replace seat belt every 3 years, regardless of appearance. Inspect the seat for large play or damage. Replace it if necessary.

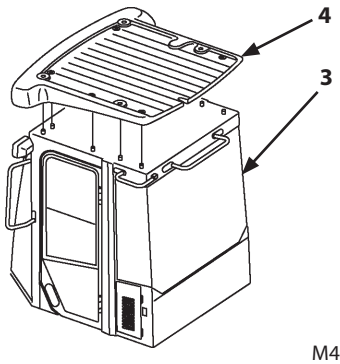


90Z7-7-96-1

3 **Check ROPS Cab, Resin Cab Roof, and Roof Mounting Bolts**

--- every 10 hours (daily)

Check the appearance of ROPS cab (3) and resin cab roof (4) for any abnormal damage or deformation.



M4GB-07-118

4 **Check Windshield Washer Fluid Level**

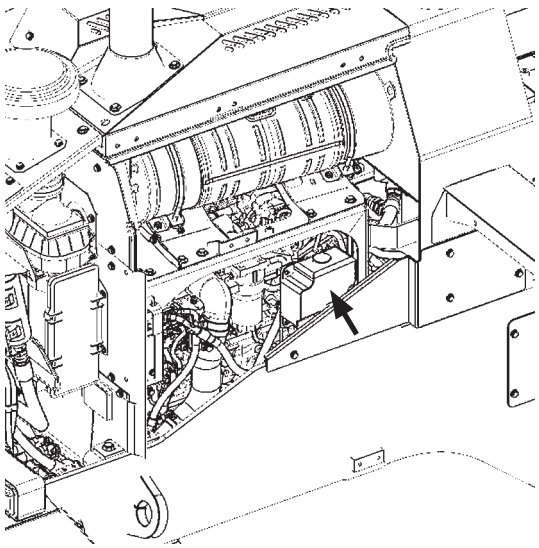
--- every 10 hours (daily)

IMPORTANT: Keep all dirt, dust and other foreign materials out of the tank.

Use anti-freeze type washer fluid in cold weather.

Check the fluid level. If necessary, add the fluid.

NOTE: The location of the windshield washer fluid tank differs depending on the machine models.



MNEK-07-021

5 **Check Play Amount in Steering Wheel Movement --- every 10 hours (daily)**

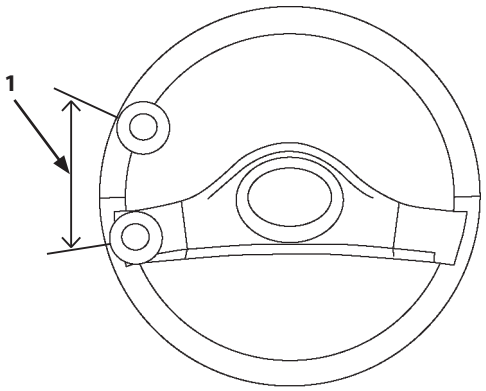
WARNING: Pinch point. When the steering wheel is turned, the clearance between the front and rear chassis closes, creating a hazardous situation. Keep personnel away from the chassis articulation point during inspection.

Check that play (1) in steering wheel movement is correct and that steering column tilt telescopic lever (2) and pedal (3) are held securely. In addition, check that the chassis steering stoppers come in contact with the opposing chassis surface stopper when the steering wheel is fully turned and that the steering cylinders operate normally.

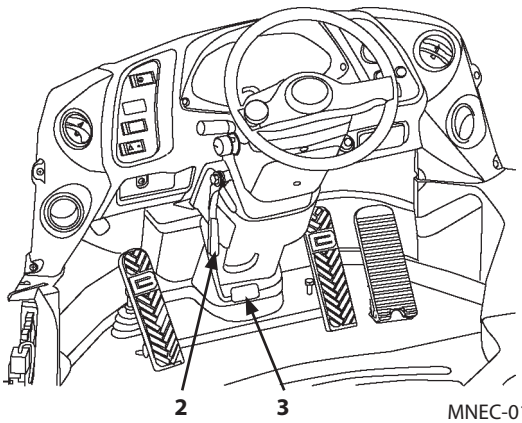
1. Start the engine. Turn the parking brake switch ON.
2. Slightly lift the bucket above the ground. Place the control lever lock in the lock (🔒) position.
3. While running the engine at slow speed, slightly rotate the steering wheel clockwise and counterclockwise. Measure the beginning movement distance along the steering wheel circumference until both right and left steering cylinders start moving (check the movement of the bucket and/or tires).

   Play amount (1): 5 to 15 mm (0.2 to 0.6 in)

NOTE: If too much steering wheel play is found or if the steering wheel does not move smoothly, consult your nearest authorized dealer for checking.



MNEC-07-050



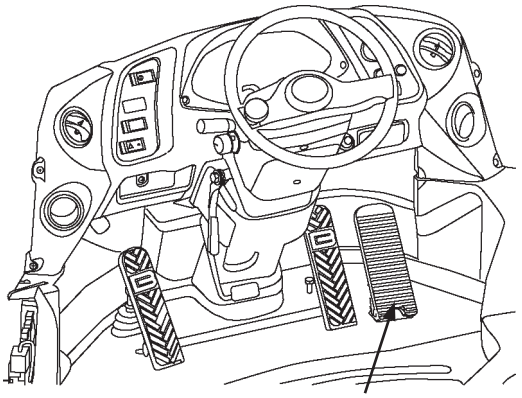
MNEC-01-037

6 **Check Accelerator Pedal Operation, and Exhaust Gas Color and Noise**

--- every 10 hours (daily)

WARNING: Move the forward/reverse lever to neutral. Apply the parking brake. After horizontally resting the bucket on the ground, set the wheel stoppers.

While slowly stepping on accelerator pedal (1), check that the engine speed smoothly increases. While slowly returning accelerator pedal (1), check that the engine speed smoothly decreases.
If dust and/or soil accumulate in vicinity of accelerator pedal (1), remove them.



MNEC-01-037

Exhaust Gas Color and Noise

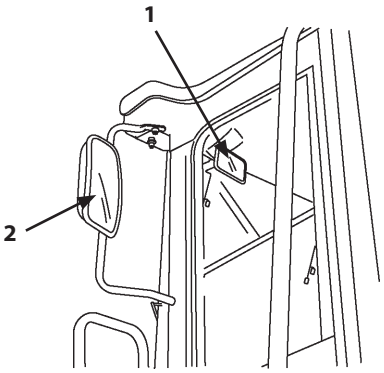
DANGER: Ventilate the shop with fresh air when carrying out warm-up operation indoors. Failure to do so may cause intoxication by exhaust gas, possibly resulting in personal death accident.

IMPORTANT: This machine is equipped with an engine that meets Tier 4 emission requirements. Never attempt to modify the inlet and exhaust system.

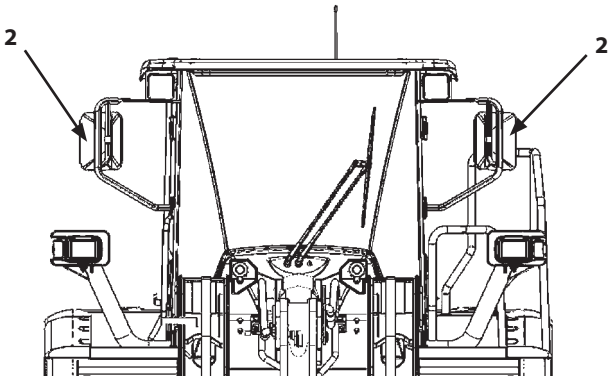
Exhaust gas color is normally transparent or light blue. Although exhaust gas color slightly becomes white immediately after the engine is started or quickly accelerated, this symptom is not abnormal.
If the exhaust gas color turns black, white, brown, or gray, check the engine oil level and the fuel supply system for any abnormality. In addition, check that no abnormal noise is heard coming from the engine or the muffler.

7 Check Rearview Mirror and Inside Rearview Mirror --- every 10 hours (daily)

Check that inside rearview mirror (1) and rearview mirror (2) are adjusted correctly. Check inside rearview mirror (1) and rearview mirror (2) for contamination or damage to the mirror glass. Clean if needed.



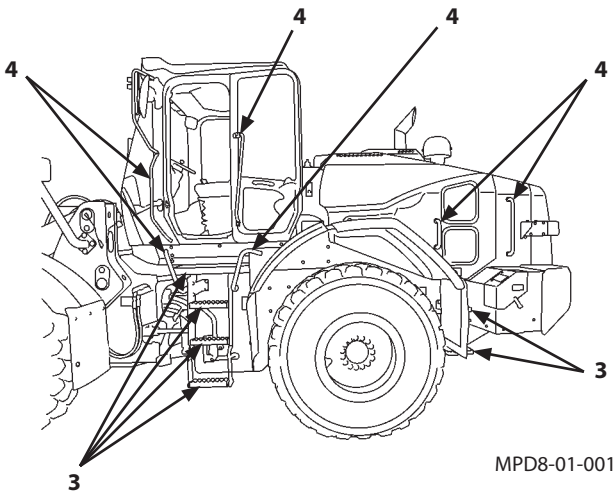
M4GB-01-126



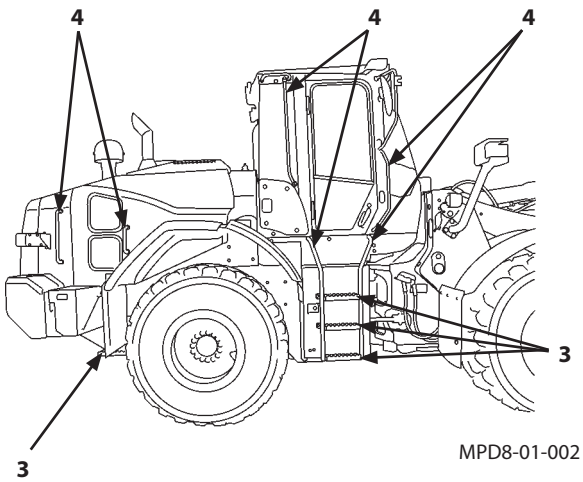
MNEK-07-039

8 Check Steps and Handrails for Damage and Looseness --- every 10 hours (daily)

Check steps (3) and handrails (4) for damage, looseness and contamination. If oil, grease or mud are on the steps and/or handrails (4), remove it.
If the steps (3) and/or handrails (4) become damaged or loosened, immediately replace.
Do not repair handrails or steps. Repairs can fail unexpectedly. Be sure to replace damaged steps or handrails.



MPD8-01-001

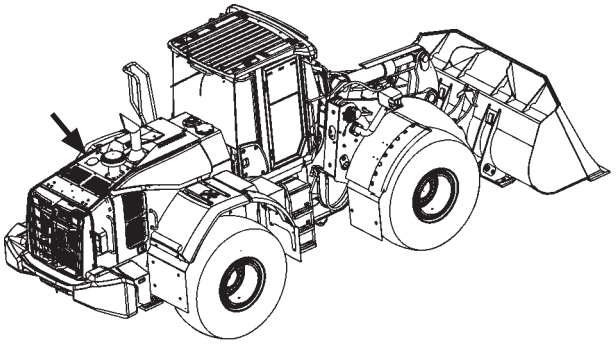


MPD8-01-002

9 **Clean Engine Compartment and Hood**
--- every 10 hours (daily)

CAUTION: Dust or chips accumulated in the engine compartment or around the hood may come in contact with high temperature sections near the engine or hood, possibly causing fires.

Remove the accumulated dust and chips from the hood. Open the side access cover and check if dust and/or chips are accumulated in the engine compartment and/or the areas above the engine. Remove the accumulated chips and/or dust if any.

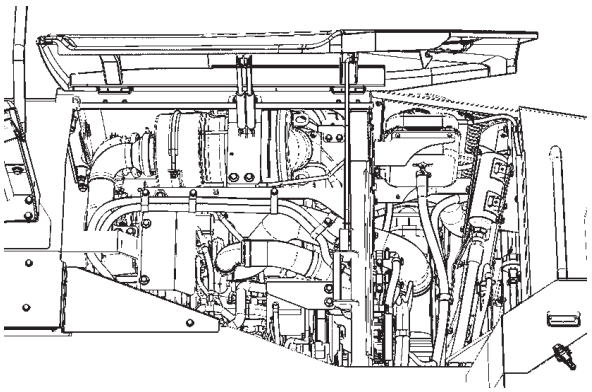


MNEK-07-032

10 **Check Sound Absorbing Mat Around Engine**
--- every 10 hours (daily)

CAUTION: If the sound absorbing mat in the engine compartment becomes unglued, the mat may come in contact with high temperature sections of the engine, possibly resulting in fires.

Check if the sound absorbing mat around the engine is unglued. If any part of the mat is found unglued, immediately contact your nearest Hitachi dealer for repair.



MNEK-07-022

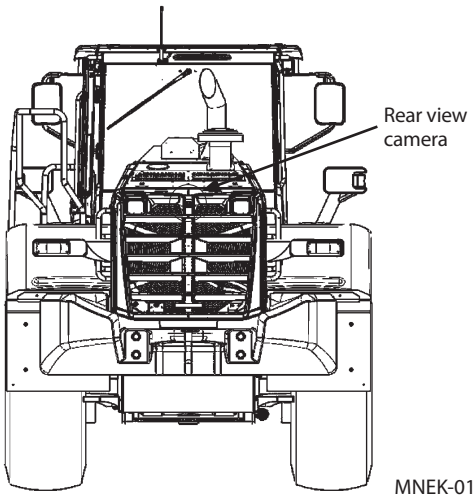
11 **Cleaning of Rear View Camera Lens**
--- every 10 hours

Oil, dust, moisture band, or others may obscure the image from the camera lens.
If image is not clear, clean the lens by following below procedure.

1. Gently wipe surface of the camera lens with a damp cloth.

IMPORTANT: Never use organic solvent.

Do not apply excessive force as it may damage the camera.



MNEK-01-006

12 Check and Adjust Valve Clearance

--- every 5000 hours

Consult your nearest authorized dealer for check and repair.

13 Retighten Front Axle and Rear Axle Support Mounting Bolts

--- every 2000 hours (50 hours at first time only)

Check front and rear axle support mounting bolts for looseness.

Tightening torques of the front axle and rear axle support mounting bolts

Front Axle Mounting Bolt	Rear Axle Support Mounting Bolt
785±150 N·m (579±111 lbf·ft)	890±170 N·m (656±125 lbf·ft)

14 Tightening and Retightening Torque of Nuts and Bolts

--- every 250 hours (50 hours at first time only)

Check tightness after the first 50 hours then every 2000 hours. The nuts and bolts other than those shown in the table below shall be tightened in accordance with the torque values shown in the table on page 7-114.
Tighten or retighten nuts and bolts used on this machine in accordance with the torque values shown in the following table.
Check nuts and bolts for looseness and missing daily before and after operation. If any loose or missing nuts and/or bolts are found , retighten or supply replacement parts.

	Locations		Bolt Diameter	Quantity	Wrench Size	Torque N·m (lbf·ft)
1	Front axle mounting bolt		24	8	36	785±150 (579±11)
2	Rear axle support mounting bolt		24	8	36	890±170 (656±125)
3	Wheel rim mounting bolt		24	60	36	890 (656)
4	Propeller shaft mounting bolt	Axle side	12	12	17	*145 (107)
		Transmission side	**1/2-20 UNF-2A	8	3/4 inch	*145 (107)
5	Propeller shaft support bearing mounting bolt		20	2	30	206 (152)
6	Transmission mounting bolt: Bracket		20	4	30	*401 (296)
7	Transmission mounting bolt: Cushion rubber		18	2	27	315 (232)
8	Engine mounting bolt: Bracket		12	10	19	*110 (82)
9	Engine mounting bolt: Cushion rubber		18	2	27	315 (232)
10	Aftertreatment device mounting nut (Double)		10	16	17	20 (14.8)
11	Counterweight mounting bolt		30	4	46	1510 (1114)
12	Top center pin upper flange lock		16	7	24	*205 (151)
13	Bottom center pin lock		16	1	24	210 (155)
14	Loader front pin lock		16	9	24	210 (155)
			12	4	19	90 (66)
15	Steering cylinder pin lock		12	4	19	90 (66)
16	Radiator frame mounting bolt		16	6	24	*210 (155)
17	Radiator mounting bolt		8	2	12	17.6 (13)
18	Intercooler mounting bolt		8	1	12	17.6 (13)
19	Oil cooler mounting bolt		10	2	17	36.2 (27)
20	Torque converter cooler mounting bolt		10	4	17	36.2 (27)
21	Air conditioner condenser mounting bolt		8	4	13	12.5 (9.2)
22	Air conditioner compressor mounting bolt		8	4	SOCKET 6	24.5to29.4 (18to21.7)
23	Cab cushion rubber mounting bolt		16	4	24	*205 (151)
24	Cutting edge mounting bolt		**1"	12	37.47	1068 (788)
25	Wear plate mounting bolt		**1"	4	37.47	1068 (788)

*: LOCTITE #263 is used.
**: The unit of figure is "inch".

Tightening Torque Chart

Bolt Dia. mm (in)	Hexagon Wrench							Socket Bolt		
	10.9 Ⓣ T		8.8 Ⓗ H		7 M		Wrench Size mm	Socket Bolt		Wrench Size mm
	N·m	(lbf·ft)	N·m	(lbf·ft)	N·m	(lbf·ft)		N·m	(lbf·ft)	
6 (0.24)					3.3 to 4.2	(2.4 to 3.1)	10			5
8 (0.31)	30	(22)	20	(14.8)	10	(7.4)	13	20	(14.8)	6
10 (0.39)	65	(48)	50	(36.9)	20	(14.8)	17	50	(36.9)	8
12 (0.47)	110	(81)	90	(66.4)	35	(25.8)	19	90	(66.4)	10
14 (0.55)	180	(133)	140	(104)	55	(40.6)	22	140	(104)	12
16 (0.63)	270	(199)	210	(155)	80	(59)	24	210	(155)	14
18 (0.71)	400	(295)	300	(221)	120	(88.5)	27	300	(221)	14
20 (0.79)	550	(406)	400	(295)	170	(125)	30	400	(295)	17
22 (0.87)	750	(553)	550	(406)	220	(162)	32			
24 (0.94)	950	(700)	700	(516)	280	(207)	36			
27 (1.06)	1400	(1033)	1050	(774)	400	(295)	41			
30 (1.18)	1950	(1438)	1450	(1069)	550	(406)	46			
33 (1.30)	2600	(1918)	1950	(1438)	750	(553)	50			
36 (1.42)	3200	(2360)	2450	(1807)	950	(700)	55			

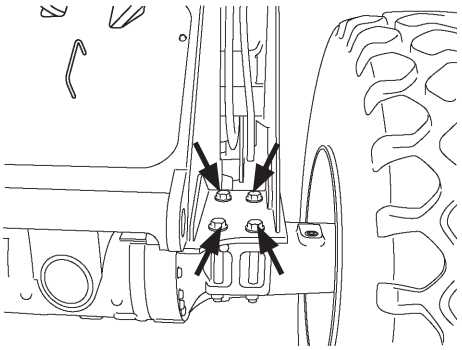
CAUTION: If counterweight mounting bolts are loosened, consult your nearest authorized dealer.

IMPORTANT:

- **Apply lubricant to bolts and nuts to lower friction except plated bolts and nuts.**
- **Remove soil, dust, and/or dirt from the nut and bolt thread surfaces before tightening.**
- **Tighten nuts and bolts to specifications. If tightened with excessively low or high torque, missing or breakage of nuts and/or bolts may result.**

1. Front axle mounting bolt

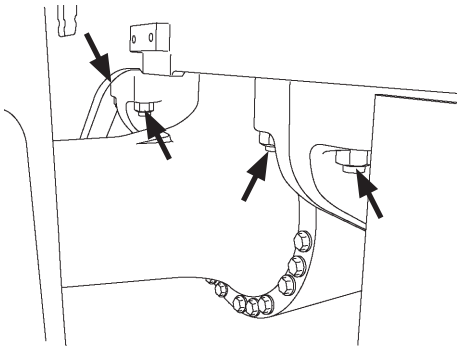
Bolt dia. mm	24
Quantity	8



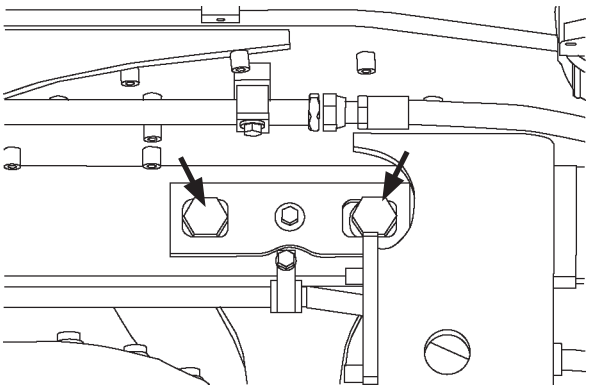
M4GB-07-124

2. Rear axle support mounting bolt

Bolt dia. mm	24
Quantity	8



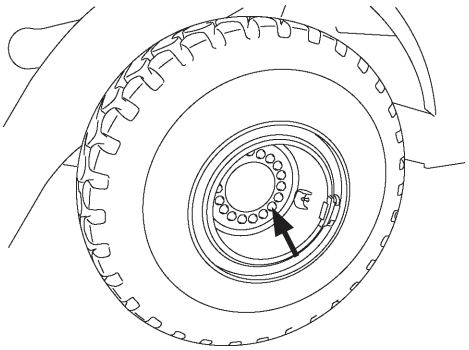
M4GB-07-125



MNEC-07-052

3. Wheel rim mounting bolt

Bolt dia. mm	24
Quantity	60



M4GB-07-127

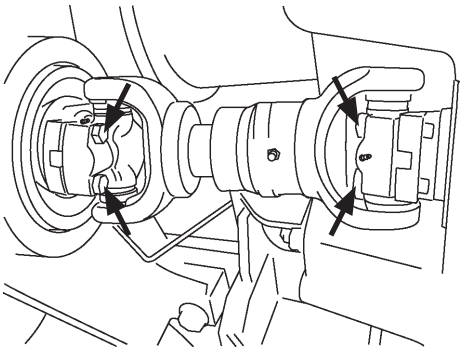
4. Propeller shaft mounting bolt

   Axle side

Bolt dia. mm	12
Quantity	12

   Transmission side

Bolt dia. inch	1/2-20 UNF-2A
Quantity	8

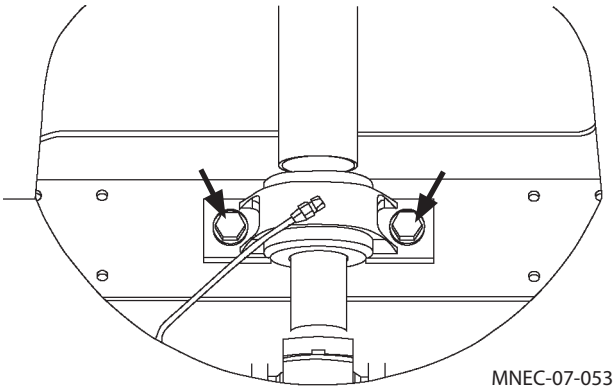


M4GB-07-017

NOTE: Apply LOCTITE#263.

5. Propeller shaft support bearing mounting bolt

Bolt dia. mm	20
Quantity	2

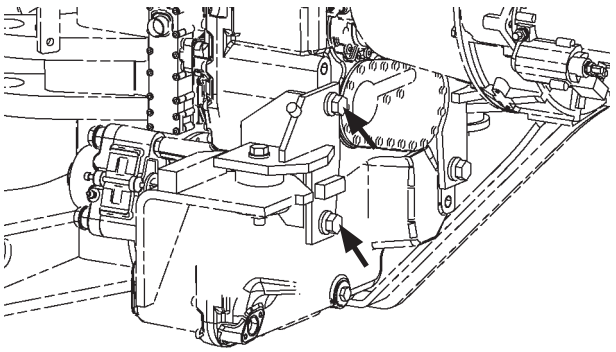


MNEC-07-053

6. Transmission mounting bolt: Bracket

Bolt dia. mm	20
Quantity	4

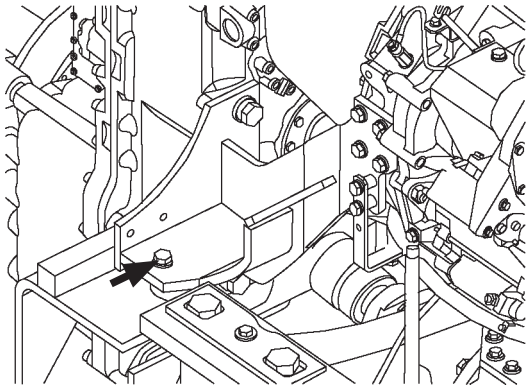
NOTE: Apply LOCTITE#263.



MNDB-07-010

7. Transmission mounting bolt: Cushion rubber

Bolt dia. mm	18
Quantity	2



MNEC-07-054

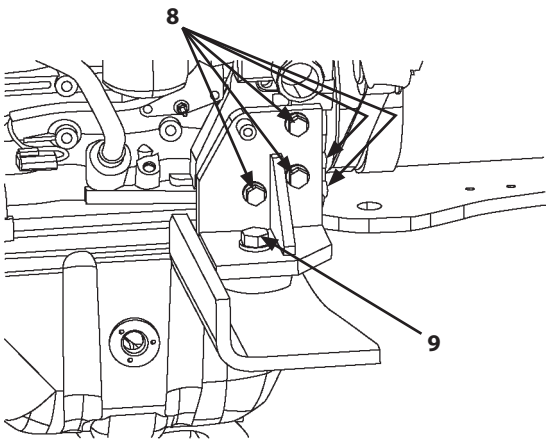
8. Engine mounting bolt: Bracket

Bolt dia. mm	12
Quantity	10

NOTE: Apply LOCTITE#263.

9. Engine mounting bolt: Cushion rubber

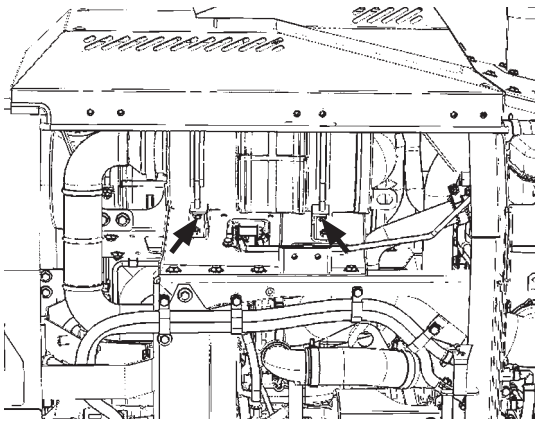
Bolt dia. mm	18
Quantity	2



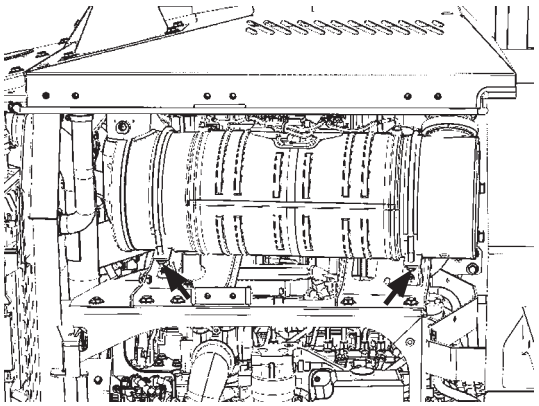
MNEC-07-093

10. Aftertreatment device mounting nut (Double)

Bolt dia. mm	10 (Nut)
Quantity	16



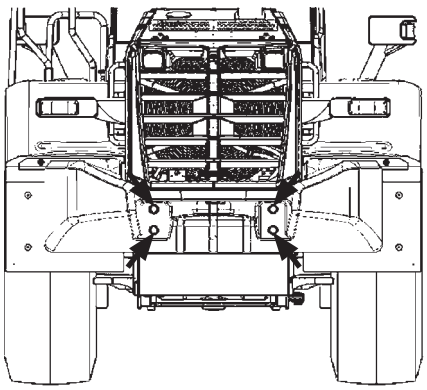
MNEK-07-023



MNEK-07-024

11. Counterweight mounting bolt

Bolt dia. mm	30
Quantity	4

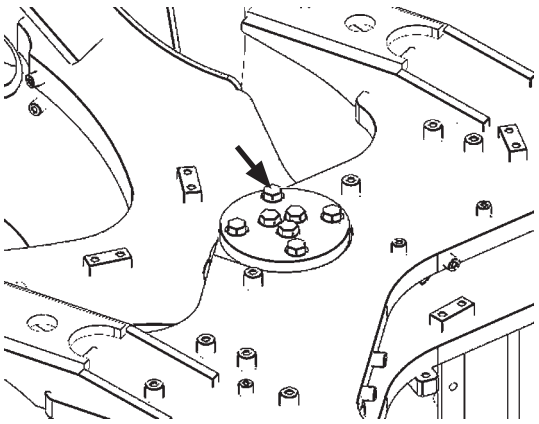


MNEK-07-040

12. Top center pin upper flange lock

Bolt dia. mm	16
Quantity	7

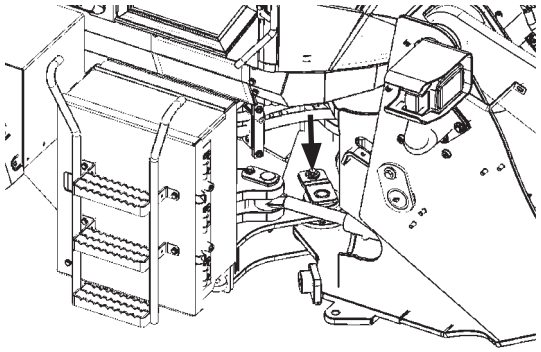
NOTE: Apply LOCTITE#263.



MNEK-07-047

13. Bottom center pin lock

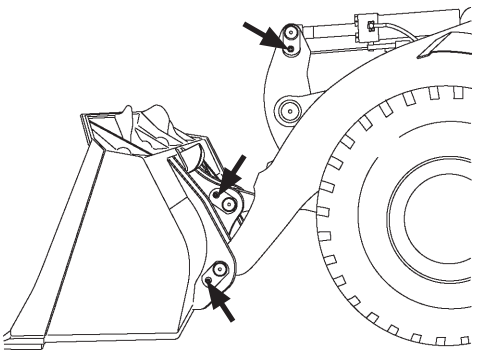
Bolt dia. mm	16
Quantity	1



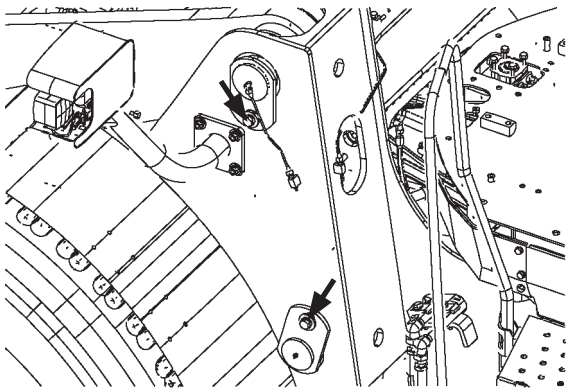
MNEK-07-043

14. Loader front pin lock

Bolt dia. mm	16	12
Quantity	9	4



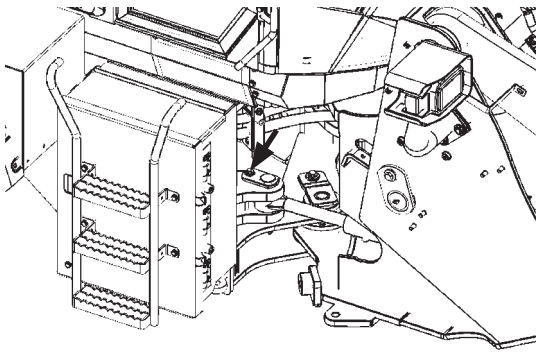
M4GB-07-137



MNEC-07-006

15. Steering cylinder pin lock

Bolt dia. mm	12
Quantity	4

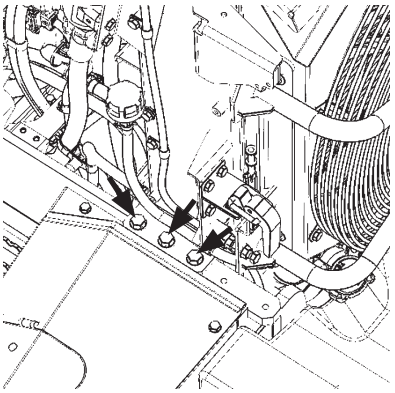


MNEK-07-043

16. Radiator frame mounting bolt

Bolt dia. mm	16
Quantity	6

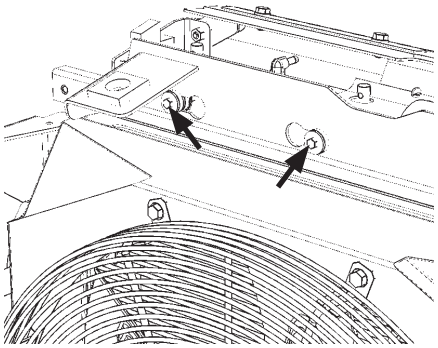
NOTE: Apply LOCTITE#263.



MNEK-07-025

17. Radiator mounting bolt

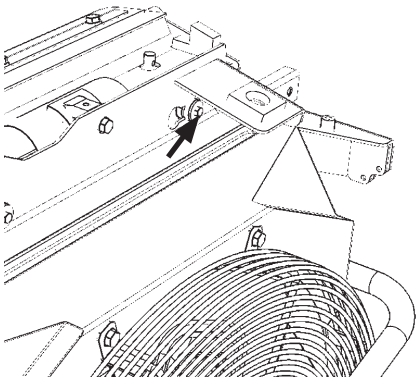
Bolt dia. mm	8
Quantity	2



MNEK-07-026

18. Intercooler mounting bolt

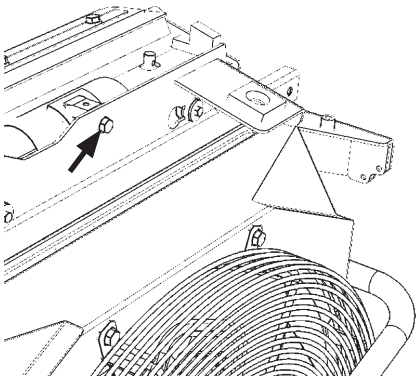
Bolt dia. mm	8
Quantity	1



MNEK-07-027

19. Oil cooler mounting bolt

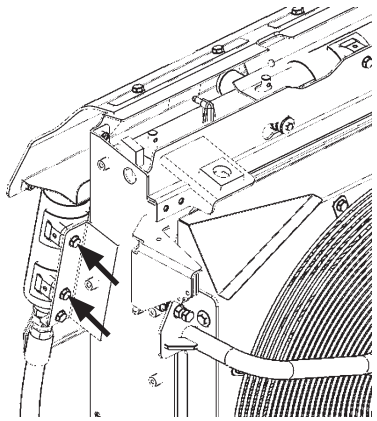
Bolt dia. mm	10
Quantity	2



MNEK-07-027

20. Torque converter cooler mounting bolt

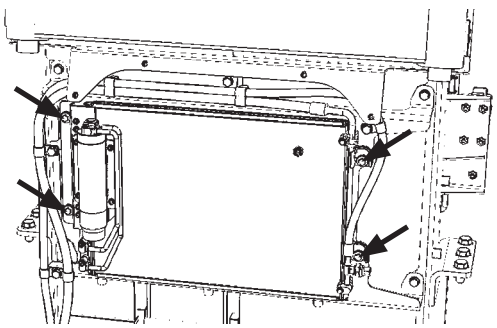
Bolt dia. mm	10
Quantity	4



MNEK-07-028

21. Air conditioner condenser mounting bolt

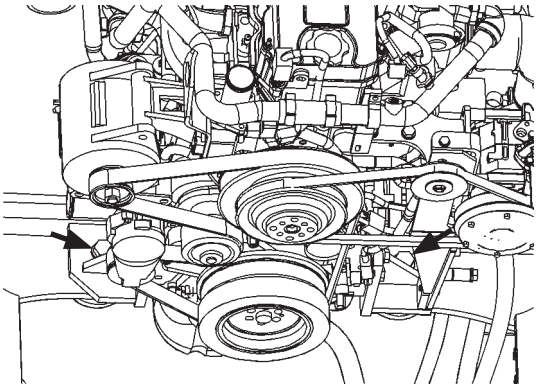
Bolt dia. mm	8
Quantity	4



MNEK-07-029

22. Air conditioner compressor mounting bolt

Bolt dia. mm	8
Quantity	4

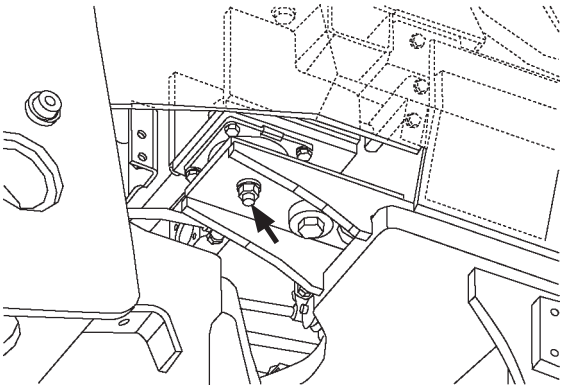


MPD8-07-001

23. Cab cushion rubber mounting bolt

Bolt dia. mm	16
Quantity	4

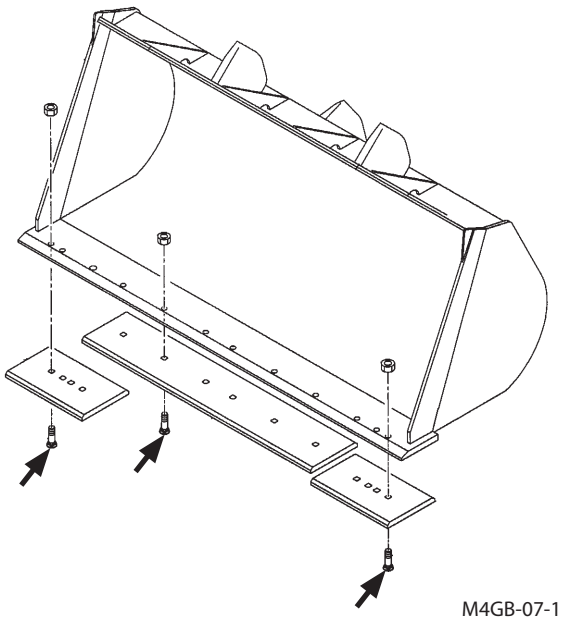
NOTE: Apply LOCTITE#263.



MNEC-07-066

24. Cutting edge mounting bolt

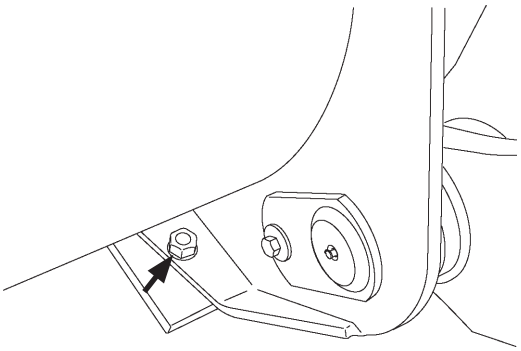
Bolt dia. inch	1"
Quantity	12



M4GB-07-116

25. Wear plate mounting bolt

Bolt dia. inch	1"
Quantity	4



M4GB-07-150

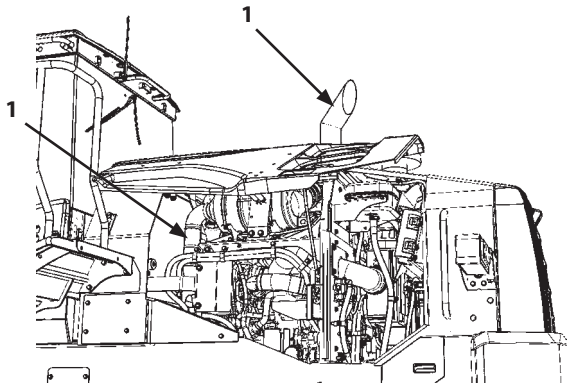
M. Aftertreatment Device

1 **Check and Clean Aftertreatment Device**
--- as required

IMPORTANT:

- **Check and clean flammable materials on the area around the Aftertreatment device.**
- **Condensation for dew may blow out from the exhaust outlet of the afterfreatment device and black deposition may be observed; it is not a malfunction.**

Do not disassemble the base machine support parts and sensors.
When the machine is operated in dusty areas, refer to the page 9-1 "Maintenance Under Special Environmental Conditions".



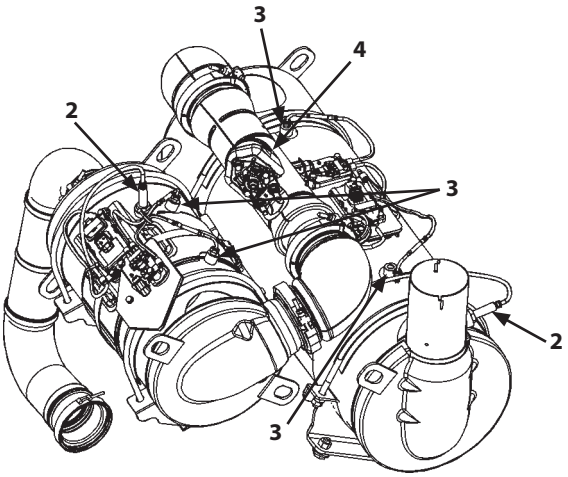
MNEK-07-037

1. Open the right and left side cover.

2. Check exhaust pipe (1) for cracks.
   Check the aftertreatment device units for loose or disconnection.

3. Check the connectors and harnesses of NOx sensors (2), temperature sensors (3) and dosing module (4) for abnormality.

4. Close the side cover.



MPD8-07-002

N. Urea SCR System

WARNING: Fill specified DEF/AdBlue® into the DEF/AdBlue® tank.

If improper DEF/AdBlue® is refilled, fire or system failure may result. If improper liquid is refilled in the DEF/AdBlue® tank, consult your authorized dealer for check or repair.

Specified DEF/AdBlue®
Refill DEF/AdBlue® which meets Japanese Industrial Standards (JIS K2247), International Organization for Standardization (ISO 22241) or Deutsche Industrie Normen (DIN 70070). If improper liquid (diesel oil, kerosene or gasoline) is refilled in the DEF/AdBlue® tank, fire or system failure may result. The specified DEF/AdBlue® is colorless and odorless solution (urea 32.5 %, water 67.5 %) which begins to freeze at -11 °C (12 °F). *It is recommended storing DEF/AdBlue® at temperature between -10 and 40 °C (14 and 104 °F).*

In some cases, specified urea solution is referred to by one or more of these names:

- Aqueous Urea Solution 32
- AUS 32
- NOx Reduction Agent
- Catalyst Solution

NOTE: AdBlue® is produced from suppliers which are licensed by the VDA (Verband der Automobilindustrie e.V).

Diesel Exhaust Fluid (DEF) is certified by the API (American Petroleum Institute) Diesel Exhaust Fluid Certification Program.

CAUTION:

- **DEF/AdBlue® is colorless and harmless solution. It is harmless when contacting with the body, however, it may cause skin to become inflamed depending on the constitution of the individual. Flush DEF/AdBlue® with clean water when it contacts on the skin.**
- **If you swallow DEF/AdBlue® by mistake, drink 1 or 2 cups of water or milk and seek immediate medical attention.**
- **If DEF/AdBlue® is accidentally splashed into eyes, flush with water for 15 minutes or longer and get emergency medical attention.**

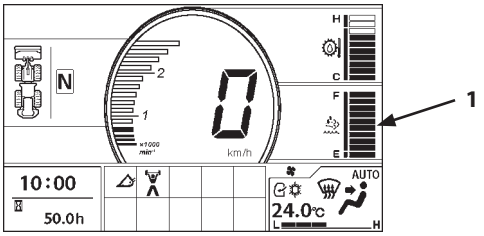
IMPORTANT:

- **Use dedicated container recommended by the business entity who is handling DEF/AdBlue® to store DEF/AdBlue®. Do not use general container, a container used for other purpose and contaminated container because the quality of DEF/AdBlue® deteriorates.**
- **The DEF/AdBlue® is non-combustible, however, move DEF/AdBlue® to a safe place when fire occurs.**
- **Wash out spilled DEF/AdBlue® with clean water.**
- **Seal the container and store it in a well ventilated place. If DEF/AdBlue® freezes, the quality does not change just after freezing.**
- **As long as sealed by an airtight stopper, unless water evaporates DEF/AdBlue® will not deteriorate within the guarantee period.**
- **Do not pour waste DEF/AdBlue® and its containers onto the ground, and do not allow waste to flow into rivers and/or lakes. When disposing DEF/AdBlue®, make sure to let authorized industrial waste disposal contractor dispose of it appropriately.**

1 Check DEF/AdBlue®

--- every 10 hours (daily)

Park the machine on a level surface. Lower the bucket to the ground. Check the DEF/AdBlue® level with DEF/AdBlue® gauge (1).
If necessary, stop the engine and add DEF/AdBlue®.



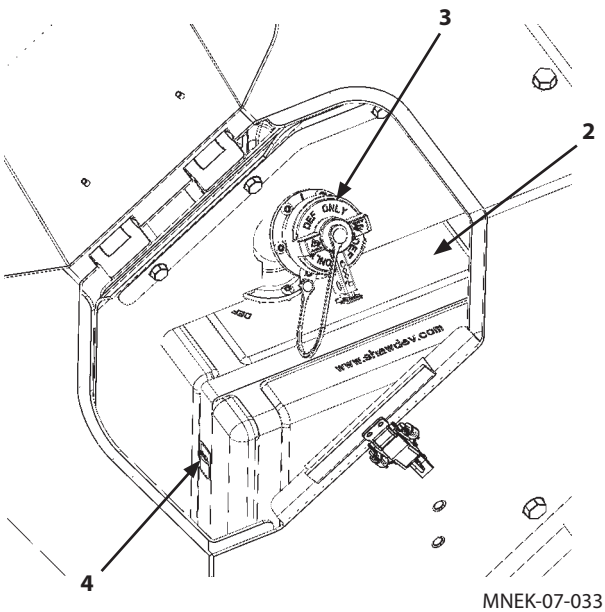
MNEK-01-103EN

Refill DEF/AdBlue®

CAUTION:

- **Refill DEF/AdBlue® which meets Japanese Industrial Standards (JIS K2247), International Organization for Standardization (ISO 22241) or Deutsche Industrie Normen (DIN 70070) in DEF/AdBlue® tank (2). If low density DEF/AdBlue® is refilled, alarm will be generated, restricting machine operation. Do not dilute DEF/AdBlue® with water.**
- **Wear safety equipment such as safety glasses or goggles, rubber gloves appropriate to the job. Wash DEF/AdBlue® with clean water when it contacts on the skin. If DEF/AdBlue® is accidentally splashed into eyes, flush with water for 15 minutes or longer and get emergency medical attention.**

1. Park the machine according to the instruction on "Preparations for Inspection and Maintenance" (7-8).
2. DEF/AdBlue® tank (2) is located in the cover at left rear of the machine. Open the DEF/AdBlue® tank cover.
3. Clean dust and mud around the filler port of DEF/AdBlue® tank with clean cloth.
4. Remove cap (3) from DEF/AdBlue® tank (2) and refill DEF/AdBlue®. Be sure to stop refilling before the "FULL" line (4).



MNEK-07-033

IMPORTANT:

- **Take care not to allow dust and/or water to enter the DEF/AdBlue® tank when refilling.**
- **If DEF/AdBlue® is filled above the "FULL" line, the system may be damaged during operation or tank (2) may be broken when frozen.**

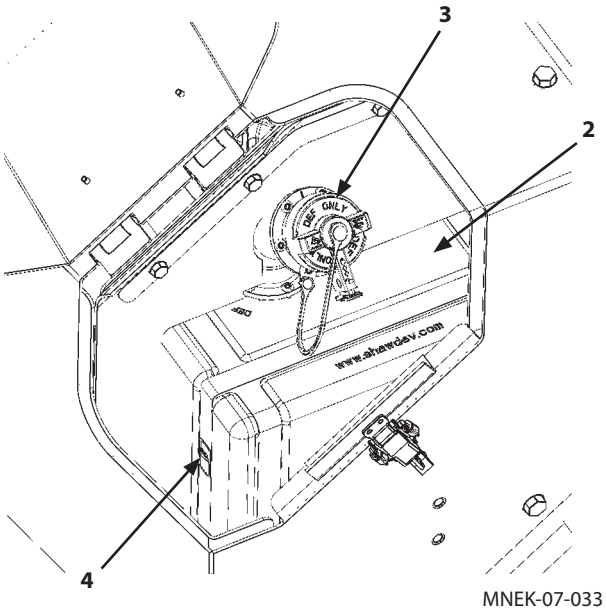
5. Install cap (3) after refilling DEF/AdBlue®. Close the DEF/AdBlue® tank cover.

IMPORTANT:

- **Do not get on top of DEF/AdBlue® tank (2) or sensors and piping on the tank. Failure to do so may damage the machine.**
- **White deposits may be observed when DEF/AdBlue® is dried naturally; it is normal. Wash out DEF/AdBlue® deposits with soft water. Never use a high pressure washer.**

NOTE:

- *Wipe spilled DEF/AdBlue® and wash spilled area with plenty of water.*
- *The sound of flowing water may be heard from the tank after the engine stops. It is the sound of returning DEF/AdBlue® from piping to the tank, not a malfunction.*
- *DEF/AdBlue® will freeze at low temperature, and deteriorate (ammonification) at high temperature. It is recommended storing DEF/AdBlue® at temperature between -10 and 40 °C (14 and 104 °F).*
- *Use dedicated container (purchased container) to store or carry DEF/AdBlue®. Alternatively use a polyethylene resin tank, or stainless steel tank.*



MNEK-07-033

Change DEF/AdBlue®

---As required

CAUTION: Wear safety equipment such as safety glasses or goggles, rubber gloves appropriate to the job. Wash DEF/AdBlue® with clean water when it contacts with the skin. If DEF/AdBlue® is accidentally splashed into eyes, flush with water for 15 minutes or longer and get emergency medical attention.

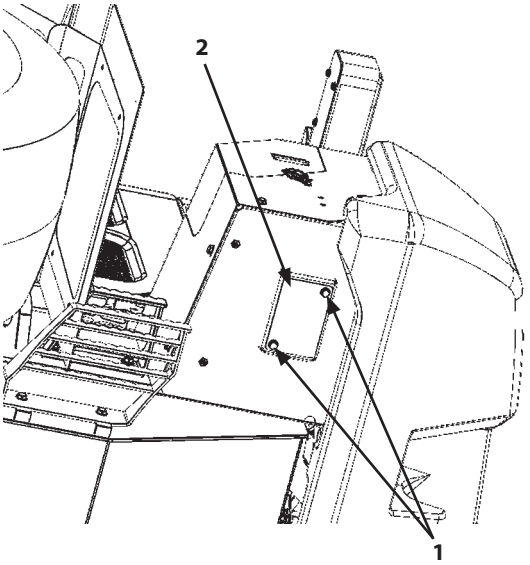
IMPORTANT: When contaminated or deteriorated DEF/AdBlue® is used, malfunction may result. Change DEF/AdBlue® periodically to keep cleanliness in the tank.

1. Remove bolts (1) and washers and remove cover (2).
2. Place a 50 liter (13 gallons) or larger capacity container under drain plug (3).
3. Slowly loosen drain plug (3) to drain DEF/AdBlue®.
4. Tighten drain plug (3) after draining DEF/AdBlue®.

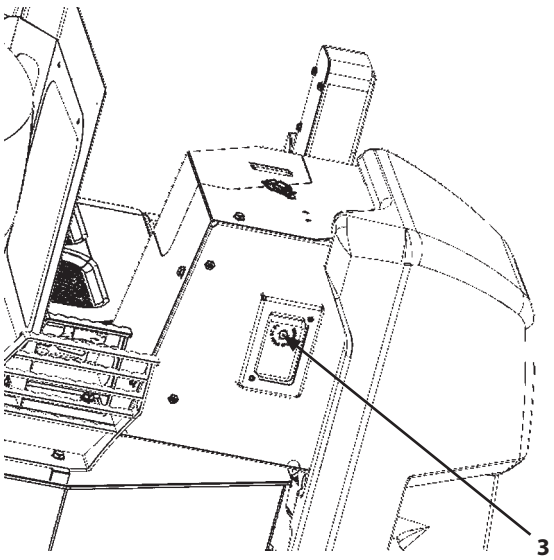
   Wrench size: 6 mm

   Tightening torque: 5 to 7 N·m (3.7 to 5 lbf·ft)
5. Fix cover (2) with bolts (1) and washers.
6. Remove the cap from DEF/AdBlue® tank and refill DEF/AdBlue®.
   (Refer to 1 "Check DEF/AdBlue®".)

   DEF amount: 25.1 liters (6.6 gallons)



MNEK-07-034



MNEK-07-035

2 Replace DEF/AdBlue® Supply Module Main Filter --- every 4500 hours

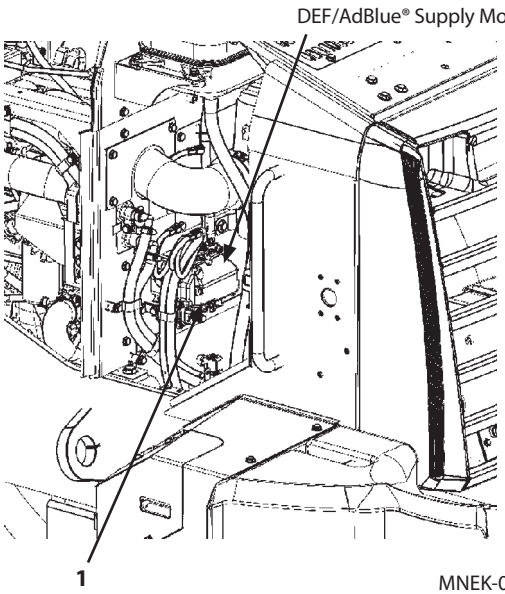
A filter (2) is mounted in the DEF/AdBlue® supply module. Periodically replace filter (2).

CAUTION: Use rubber glove and goggles or safety glasses for protection during operation. Wash DEF/AdBlue® with clean water when it contacts on the skin.

IMPORTANT:

- **Take care not to allow dirt and/or water to enter the DEF/AdBlue® tank while replacing filter (2).**
- **Check for leaks around the mounting position after replacement.**
- **White deposition may be observed when DEF/AdBlue® is dried naturally; it is normal. Wash out DEF/AdBlue® deposition with clean water. Never use a high pressure washer.**

1. Park the machine according to the instruction on Preparations for Inspection and Maintenance (7-8).
2. Open the side cover.
3. Remove cap (1) from the DEF/AdBlue® supply module by using a 27 mm bihexagon wrench.
4. Pull out filter (2) inside the supply module. As it is tightly mounted, it can not be pulled by hands. Use tools such as a pliers. Replace filter (2) assembly when replacing filter (2) of DEF/AdBlue® supply module.
5. Install new filter (2), and tighten cap (1) with 20±5 N·m (14.8±3.7 lbf·ft) torque.



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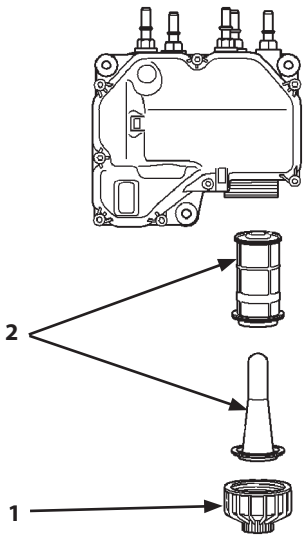

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MEMO

Maintenance Under Special Environmental Conditions

WARNING: Before operating the machine in a river, check the riverbed conditions in advance.

WARNING: Avoid driving the machine into a river where the riverbed is steep and deep or the stream is rapid.

Operating Conditions	Precautions for Maintenance		
Muddy Soil, Rainy or Snowy Weather	Before Operation:	:	Check tightness of plugs and all drain cocks.
	After Operation	:	Clean the machine and check for cracks and damage. Check for loose or missing bolts and nuts. Lubricate all necessary parts. If the machine should be submerged in water more than approximately 450 mm, water may get into the brake device (like the park brake), resulting in poor braking performance. Watch out when starting/stopping the machine.
Near the Ocean (or near chemical treatment place)	Before Operation:	:	Check tightness of plug and all drain cocks.
	After Operation	:	Thoroughly clean the machine with fresh water to wash off salt. Service electrical equipment often to prevent corrosion.
Dusty Atmosphere	Air Cleaner	:	Clean the element regularly at shorter service intervals when indicator illuminates.
	Radiator	:	Clean the oil cooler and the radiator cores.
	Fuel, DEF/AdBlue®	:	Clean the filter element and strainer regularly at shorter service intervals.
	Aftertreatment Device, Engine	:	Clean them frequently to prevent deposits or dirt. Apply "Aftertreatment Device Regeneration Inhibit" setting as needed.
	Electrical Equipment	:	Clean them regularly, in particular, the commutator surface of the alternator and starter.
Rocky Ground	Chassis	:	Check for damage on tires, for loose, cracked, worn, and damaged bolts and nuts.
	Front Attachment:	:	Standard attachment may be damaged when digging rocky ground. Use a heavy duty bucket. Consult your nearest authorized dealer.
Freezing Weather	Fuel	:	Use high quality fuel suitable for low temperature. Check the fuel tank breather pipe freezing.
	Lubricant	:	Use high quality low viscosity hydraulic oil and engine oil.
	Engine Coolant	:	Be sure to use antifreeze.
	Battery	:	Fully charge the batteries regularly at shorter service intervals. If not charged fully, electrolyte may freeze.
	Tires and Chassis	:	Keep fires and chassis clean. Park the machine on a hard surface to prevent the tires from freezing to the ground.
	DEF/AdBlue®	:	Keep 80% of tank capacity when storing at -10°C (12°F) or lower. The DEF/AdBlue® tank maybe broken if DEF/AdBlue® is frozen.
When handling old paper and/or industrial waste	Engine compartment	:	Remove old paper and/or waste accumulated around the radiator and in the engine compartment, possibly causing overheating or fires of the machine if not removed.
	Air cleaner	:	Clean the element at shorter intervals.
	Fuel system	:	Clean and replace the elements and the filters at shorter intervals.
	Loader chassis	:	Remove the accumulated paper and/or waste from the surroundings around the loader chassis and the attachment. Failure to do so may cause damage of the machine.
	Radiator	:	Wash as frequently as possible to prevent corrosion due to chemical materials.

IMPORTANT: If material to be handled is a substance that causes corrosion such as salt or chemical, consult your nearest authorized dealer. Special modification or treatment may be needed for the machine. If the machine continues to be used, malfunction may occur due to corrosion.
Consult your nearest authorized dealer when the machine is operated under special condition (s).

Precautions for Maintenance During Cold Weather Season

Before the atmospheric temperature below -0 °C (32 °F), note the following points.

- Water and oil in the machine will freeze. Never use water without antifreeze. Use correct windshield washing solution so that windshield washer tanks and pumps will not freeze.
- Road surfaces may freeze so that tires may slip.
- Oil viscosity changes and oil thickens.

Keeping the above points in mind, follow the below:

1. Refill fluids such as water and lubricants prior to operation (except fuel).
2. Mix LLC (long life coolant) in the radiator (coolant). When this machine is shipped from the factory, LLC is supplied.
3. Change the engine oil to cold weather type oil.
4. Use fuel (#1 diesel fuel). To prevent condensation on the inside wall in the fuel tank, fully refill the fuel tank with #1 diesel fuel after each shift.
5. If the electrolyte solution in the battery case freezes, damage to the battery case may result. Keep the batteries fully charged. After completing work, turn all lights OFF. When finished with work, run the engine at low idle for a few minutes to cool down. This will help rebuild battery charge when lights and other equipment are off.

   In extreme cold, remove the batteries and store them in a warm indoor place. When it is possible to measure and adjust the specific gravity of the electrolyte solution, increase the specific gravity of the electrolyte up to 1.280. Do not increase more than 1.280.

After taking the measures as recommended above, start operation of the machine.

DANGER: Ventilate the area with fresh air when carrying out warm-up operation indoor. Failure to do so may cause asphyxiation from exhaust gas, resulting in death or severe injury.

6. After preheating, start and warm up the engine.
7. After warming up the engine, warm up the loading hydraulics. Slowly operate the control levers to move the cylinders full stroke several times. Do not force cylinders to go to the end of their stroke.
8. Road surfaces covered with snow, especially when snow has been compacted, will be frozen. Use tire chains on all four wheels.
9. Take anti-freeze measures after completing operation.

- Spray keyholes with light oil. Cover the keyhole by sticking a tape on.
- Rubber parts such as wiper blades may freeze. Keep other parts away from the rubber parts. Warm up cab prior to use of wipers.
- Remove packed snow from around the axles, articulation joint and inside the machine with a bar or brush. Be careful not to damage electrical wiring.
- In case it is impossible to store the machine indoors, park the machine on a level dry surface and cover the machine with a large machine cover.
- Keep 80% of tank capacity when storing DEF/AdBlue®. The DEF/AdBlue® tank maybe broken if frozen.

NOTE: DEF/AdBlue® starts freezing at -10°C (12°F). Freezing does not affect its performance once thawed.

MEMO

Storing the Machine

WARNING: When servicing indoors for long term storage, open windows and doors to maintain good air ventilation to prevent asphyxiation.
Check all lubricants before operating the machine after bring stored.
Apply the parking brake while storing.

If the machine is to be stored for more than one month, observe the following precautions so that its function will not be impaired during storage.

Precaution Items for Long-Time Storage

Item	Contents of Work
Wash Machine	Wash the machine to remove mud and/or dust.
Supply Oil and Grease	Check for low level/contamination of lubricating oil. Refill or change as necessary. Grease all joints. Apply a thin coat of oil to exposed metal and parts susceptible to rust. (i.e. cylinder rods etc.) Fill up fuel tank completely to prevent rust in the fuel tank.
Battery	Remove and fully charge the batteries, then store them in a warm place. If the machine is equipped with the battery disconnect switch, turn the disconnect switch OFF.
Coolant	Check that anti-freeze is within specifications. Use a rust inhibitor. Thoroughly wash the radiator by water and then dry it.
DEF/AdBlue®	Make sure to store DEF/AdBlue® at 30°C (86°F) or lower. When stored for a month or more at around 40°C (104°F), DEF/AdBlue® may decompose. If it smells like ammonia when opening the storage container, do not use it. DEF/AdBlue® starts freezing at -10°C (12°F). Freezing does not affect its performance once thawed. Never use a container used for any other liquid or oil. Contaminated DEF/AdBlue® will cause the SCR system to work incorrectly, resulting in a vehicle operating illegally.
Prevention of Dust and Moisture	Store the machine in a dry garage and cover it.
Tools	Inspect and repair, then store.
Periodic Operation	Operate the machine at least once a month to lubricate the parts. At this time, check the coolant and lubrication oil levels. Charge the batteries.

IMPORTANT: If the machine is not periodically operated, damage to hydraulic equipment may result due to insufficient lubrication.

NOTE: Periodic operation means that a series of operations such as drive, and loader front lift arms, bucket, and steering operation are repeated a few times after performing warm-up.

Before operating the loader front attachment and steering wheel, remove rust-prevention oil coated on the hydraulic cylinder rods.

Removing the Machine from Storage

WARNING: When servicing indoors for long term storage, open windows and doors to maintain good air ventilation to prevent asphyxiation. Check all lubricants before operating the machine after bring stored.

Apply the parking brake while storing.

IMPORTANT:

- **Lubricants will deteriorate during storage of the machine.**
- **Thoroughly check coolant, lubricants and adequately perform lubrication operation before resuming operation. Avoid quick operation. Failure to do so may cause damage to the engine, hydraulic equipment, transmission, axle, etc. due to insufficient lubrication or coolant.**
- **If lubrication running is not performed for more than three months, start the engine by following the procedure below.**

  1. **Crank the engine (operate starter motor without running the engine) for three seconds and stop 10 seconds. Repeat this process three times.**
  2. **Start the engine. Run the engine at low idle for three minutes. Then carry out lubrication running for cylinders. Be careful not to fully stroke cylinders.**

  Starting the engine or operating cylinders without the procedure above, it may cause damage to the machine such as engine seizure.

- **When turning the battery disconnect switch from OFF to ON, preset radio station and the clock may be reset. Set them again.**

1. Remove covers.
2. Remove grease from the cylinder rods if coated.
3. Fill the fuel tank. Bleed air from the fuel system. Check all fluid levels.
4. Adjust alternator and drive belt tension.
5. Check the oil level. Add oil as needed.
6. Test battery electrolyte solution and install the batteries.

   If the machine is equipped with the battery disconnect switch, turn the disconnect switch ON.
7. Start the engine. Run the engine at less than 1,000 RPM's for several minutes before full load operation.
8. Repeat the process several times.
9. Stop the engine. Check each device for oil leaks.
10. Replace the fuel filter and engine oil filter with new one as needed. Change engine oil.
11. Check clamps of the suction hoses, air cleaner hoses and radiator hoses. Retighten them as needed.
12. Recheck radiator coolant.

Before operating, check the machine in accordance with the descriptions in "Daily Check before Starting the Engine" on page 3-1. and warm up.

MEMO

Troubleshooting

If any machine trouble has occurred, immediately repair it. Make certain the cause of the trouble and take necessary measures to prevent the reoccurrence of the same trouble. In case troubleshooting is difficult, or measures marked with * must be taken, consult the nearest authorized dealer. Never attempt to adjust, disassemble, or repair the hydraulic and/or electrical/electronic parts/components.

1. Engine

Consult the nearest authorized dealer for the engine troubleshooting.

2. Engine Auxiliaries

Problem	Cause	Solution
Batteries will not charge.	Broken battery separator	Replace
	Faulty regulator	* Adjust and replace
	Faulty ground line	* Repair
	Faulty alternator	* Repair and replace
Batteries discharge quickly after being charged.	Shorted cable	* Repair and replace
	Shorted battery separator	* Repair and replace
	Increased sediment in battery	* Clean
Coolant temperature is too high.	Low coolant level	Add
	Loose engine drive belt	Adjust
	Damaged rubber hose	* Replace
	Faulty thermostat	* Replace
	Faulty coolant temperature gauge	* Replace
	Cooling system passages dirty	Flush cooling system
	Radiator core or oil cooler core plugged	Clean radiator and oil cooler
	Radiator screen plugged	Clean screen

3. Engine does not Start.

Symptom	Cause	Solution
The starter does not turn.	Reduced battery voltage	Charge the batteries. Replace.
	High resistance in the starter circuit	* Clean and/or retighten the battery terminals and starter terminals
	Faulty key switch	* Replace
	Damaged wire harness	* Repair or replace
	Faulty battery relay	* Replace
	Blown slow blow fuse link	* Replace
	The forward/reverse selector lever is in either the forward or reverse position.	Return to neutral.
	Faulty starter	* Repair or replace
	Battery disconnect switch is OFF.	Turn the switch to ON position.
Although the starter turns, the engine does not start.	Use of poor quality fuel, insufficient fuel, lack of fuel	Change fuel. Refill tank with good quality fuel.
	Faulty intake air heater	* Replace intake air heater
	Air mixed in the fuel supply line	Bleed air
	Faulty injection pump or nozzle	* Repair or replace
	Reduced compression pressure	* Repair or replace
Engine speed does not increase.	During fan reversing operation, the F, R, or parking switch was deactivated or the Fan reverse rotation switch was turned OFF.	Rotate the fan in normal direction. Refer to the fan reverse switch on page 1-105.
	DEF/AdBlue® tank is empty.	Supply DEF/AdBlue®.
	The accelerator pedal function is abnormal.	Replace the accelerator pedal or parts.
Although the engine cranks, running speed is low and easy to stall.	Deteriorated engine oil	Change engine oil
	Contaminated injection nozzle	* Replace
	Clogged fuel prefilter	Replace
	Clogged fuel filter	Replace
	Clogged electromagnetic pump strainer	Clean
	Air mixed in the fuel supply line	Bleed air
	Poor fuel quality	Replace

*NOTE: * Consult your nearest authorized dealer.*

4. Control Lever

Symptom	Cause	Solution
Hard to move	Rusted joint	* Lubricate or repair
	Worn pusher	* Replace
Does not move smoothly	Worn pusher	* Repair or replace
	Faulty pilot valve	* Replace
Does not return to neutral	Faulty pilot valve	* Replace
The lever is tilted in the neutral position due to increase in play	Worn joint	* Repair or replace
	Faulty pilot valve	* Replace
The lever is not held with magnetic detent.	Faulty magnetic solenoid	* Replace
	Faulty sensor	* Replace

5. Hydraulic System

After the machine has been kept stowed stored for a long time, air in the oil may be separated and accumulate in the upper section in the cylinder, causing slow response time in operation or reducing cylinder power. In case these symptoms appear, repeatedly operate all actuators several times.

Problem	Cause	Solution
Loader front and travel functions are inoperable (hydraulic pump noise level increases).	Faulty hydraulic pump	* Repair, Replace
	Lack of hydraulic oil	Refill
	Broken suction pipe and/or hose	* Repair, Replace
All actuators have no power.	Malfunction due to worn hydraulic pump	* Replace
	Decrease in set pressure of main relief valve in control valve	* Clean, Adjust
	Lack of hydraulic oil	Refill
	Trapped foreign matter in hydraulic oil tank suction filter	Clean
	Aeration in suction side	Retighten
Only one actuator is inoperable.	Broken control valve spool	* Replace
	Trapped foreign matter in valve spool	* Repair, Replace
	Broken pipe and/or hose	* Repair, Replace
	Loose pipe line joint	Retighten
	Broken O-ring at pipe line joint	* Replace
	Broken actuator	* Repair, Replace
Only one cylinder is inoperable or has no power.	Broken oil seal in cylinder	* Repair, Replace
	Oil leaf due to damage to cylinder rod	* Repair, Replace
Oil overheats	Clogged oil cooler	* Clean, Replace
	Faulty fan motor and pump	* Repair, Replace
	Weak tension of engine drive belt	Adjust
Oil leak from low pressure hose	Loose clamp	Retighten
	Faulty suction manifold	* Repair, Replace

*NOTE: * Consult the nearest authorized dealer.*

6. Drive Function

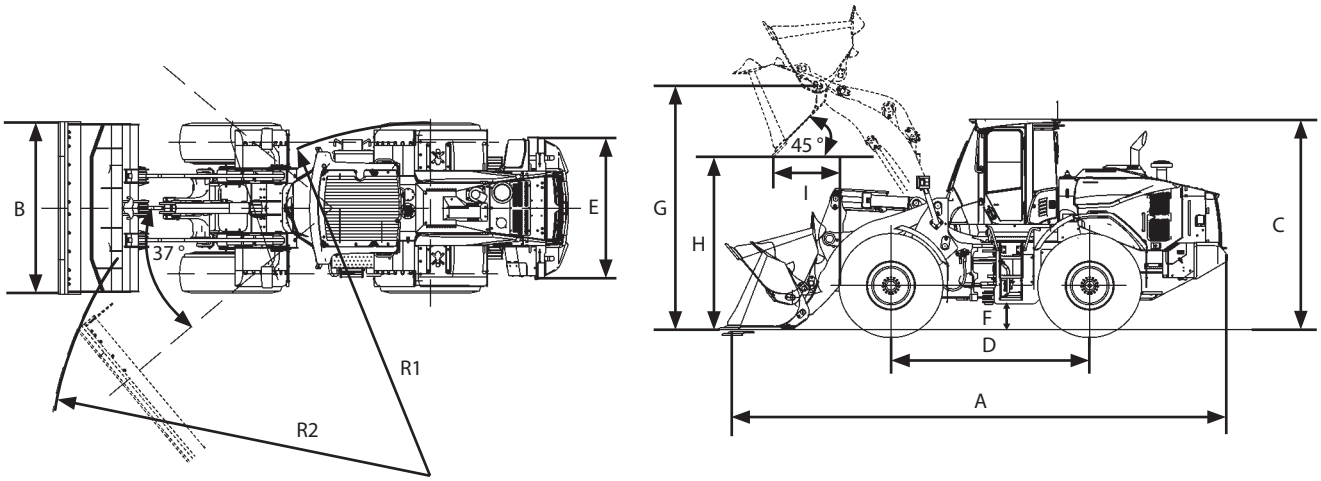
Problem	Cause	Solution
Steering wheel is heavy to operate.	Faulty steering pump	* Repair, Replace
	Faulty steering device	* Repair, Replace
	Malfunction of steering cylinder	* Repair, Replace
	Relief valve set pressure reduction	* Adjust
	Faulty steering column	
	Low tire air pressure	* Inflate
Steering wheel turns in unexpected direction.	One side brake is applied or dragged.	* Adjust
Accelerator pedal is heavy to operate.	Rusted joint	* Lubricate, Repair
Accelerator pedal play is excessive.	Worn joint	* Replace, Repair
Parking brake Does not work properly	Worn brake disk and/or pads	* Replace
	Faulty parking brake solenoid valve	* Repair or replace
Service brake does not work properly	Malfunction of brake valve	* Repair or replace
	Oil leak from brake line, Air mixing	* Repair. Bleed air
Service brake is dragging.	Malfunction of brake valve	* Repair or replace
	Faulty brake pedal	* Repair or replace
	Corrosion of brake pedal parts	Clean and lubricate
	Pebbles in area of brake pedals	Remove - clean area
Service brake fluid loss (hydraulic oil).	Oil leak from brake line and/or hose connector	* Retighten or repair
	Oil leak due to brake piston seal (inside axle)	* Repair
Transmission is noisy.	Lack or deterioration of gear oil	Refill, replace
	Worn inner parts in transmission	* Repair, Replace
	Broken gear or bearing	* Repair, Replace
Oil temperature increases.	Faulty fan rotation	* Repair or adjust
Propeller shaft vibrates.	Bent propeller shaft	* Repair, Replace
	Loosened parts, Loss of balance	* Retighten, Adjust
Propeller shaft is noisy	Excessively worn spline	* Replace
	Worn or seized spider bearing	* Replace
	Loosened parts	* Retighten
	Insufficient greasing	Grease
Front and/or rear axle is noisy	Worn or broken gears	* Replace
	Lack or deterioration of gear oil	Refill, Replace
	Worn bearings, Excess play	* Replace
	Excess play on shaft spline	* Repair, Replace
Front and/or rear axle does not transmit power.	Broken axle	* Repair
	Broken gears	* Repair

*NOTE: * Consult the nearest authorized dealer.*

7. Others

The machine may have a noise, excessive vibration, and abnormal smell when any trouble occurs. Always beware of the machine conditions during operation.

Specifications



MPD8-12-001

Bucket Type	-	GSC
Bucket Capacity: heaped	m^3 (Y^3)	2.8 (3.7)
Operating Weight	kg (lbs)	14560 (32100)
Tipping Load (full turn)	kg (lbs)	10440 (23020)
Engine	-	CUMMINS QSB6.7
A: Overall Length	mm (in)	8000 (315)
B: Overall Width (Bucket)	mm (in)	2730 (107)
C: Overall Height	mm (in)	3280 (129)
D: Wheel Base	mm (in)	3100 (122)
E: Tread (front and rear tires)	mm (in)	2050 (81)
F: Ground Clearance	mm (in)	395 (16)
G: Bucket Hinge Height	mm (in)	3920 (154)
H: Dumping Clearance (45 °)	mm (in)	2760 (109)
I: Dumping Reach (45 °)	mm (in)	1110 (44)
R1: Minimum Rotation Radius	mm (in)	5580 (220)
R2: Minimum Rotation Radius	mm (in)	6230 (245)
Travel Speed Forward/Reverse (at Power mode)	km/h (mph)	38.5 (38.5)/26.5 (28.3) (23.9 (23.9)/16.5 (17.6))
Transmission Speeds (F/R)	-	5/3
Articulation Angle (Left/Right) deg	(°)	40
Tire Size	-	20.5R25 (L3)

NOTE: These specifications are subject to change without notice.

MEMO

Hydraulic Type Quick Coupler Operation

A quick coupler is a system by which a front attachment work tool such as a bucket can be easily replaced with other type of a work tool.

WARNING: During replacement work, keep personnel away from the machine. Removal and installation of pins can be achieved from the operator's seat.

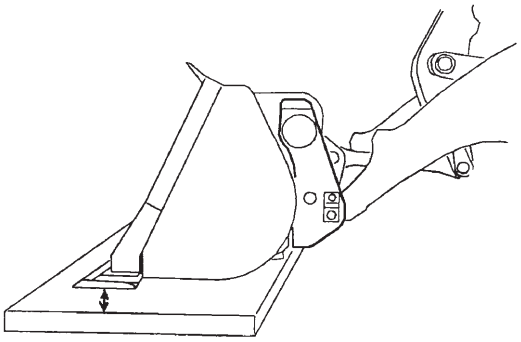
Removal:

Before removing a work tool, disconnect hydraulic hoses from the attachment cylinders other than disconnecting hydraulic hoses from the bucket and lift arm cylinders. (Refer to page 13-5 for information on hydraulic hose connection and disconnection.) Put the bucket (attachment) to be removed on a support such as a pallet if available.

1. Horizontally lift the bucket by approx. 20 cm above the pallet.

WARNING: Before leaving the machine apply the parking brake.

2. Operate the quick coupler cylinder with hydraulic coupler switch (1) to remove pin (4).
3. While pulling to slide lock switch (2), continue to press switch removal position (3) to remove the coupler cylinder pin (4).
4. To allow the quick coupler pin to be removed, position the bucket (attachment) as closely to the rear of the pallet as possible.
5. While slowly lowering the lift arm, slightly tilt the bucket forward by operating the bucket cylinder to allow the bucket to come off the quick coupler.



Horizontally lift the bucket

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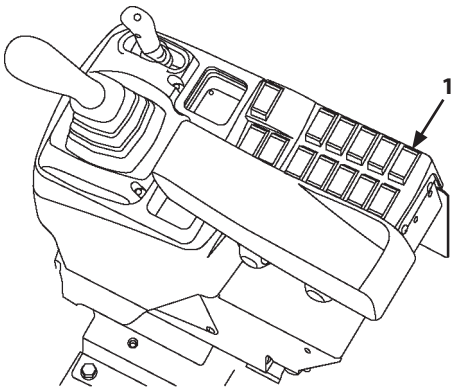

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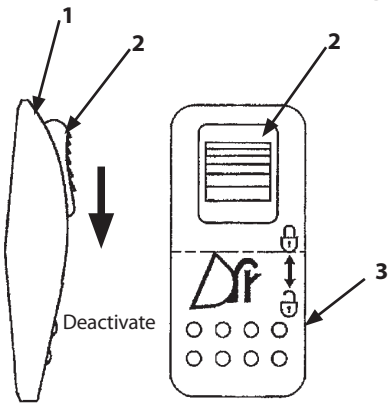

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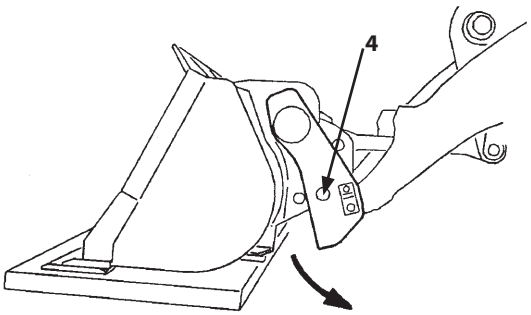

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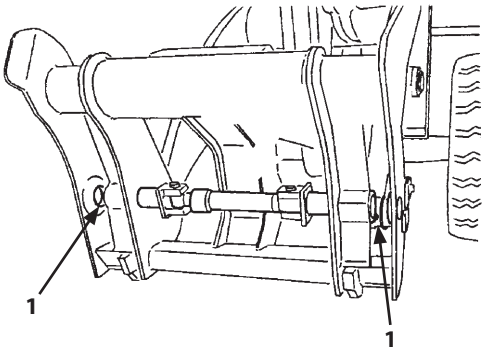
Installation

WARNING: Complete installation work only after checking that both right and left coupler pins (1) have been correctly installed.

WARNING: Before leaving the machine apply the parking brake.

1. After checking that coupler pin (1) is removed, slowly bring the machine close to bucket (attachment) hook (3) and install the quick coupler to the hook.
2. Slightly raise lift arm (4). Slowly tilt the bucket (attachment) backward by operating the bucket cylinder until stopper (5) comes in contact with the coupler.
3. While pulling to slide lock switch, continue to press switch installation position to install coupler cylinder pin (1).

NOTE: In case the newly installed attachment uses an additional hydraulic cylinder other than the bucket and/or lift arm being already installed, connect the hydraulic hoses to the additional cylinder in advance.



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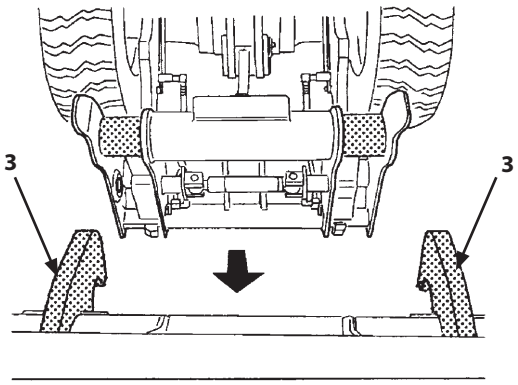

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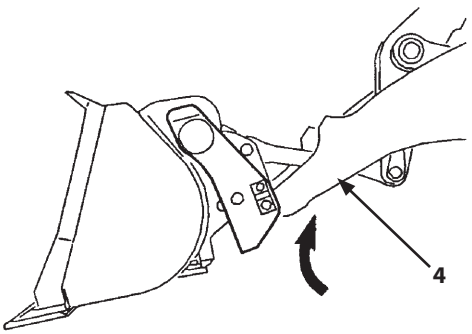

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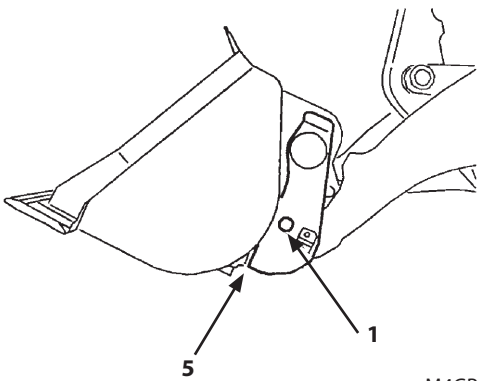

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