



70Z7/70TM7



93108-00691

April 2015

OPERATION & MAINTENANCE MANUAL

WHEEL LOADER

70Z7/70TM7

93108-00691

NOTICE
READ AND UNDERSTAND THIS
MANUAL BEFORE OPERATING
AND SAVE THIS MANUAL ON
THE MACHINE

WARNING

CALIFORNIA PROPOSITION 65 **BATTERY WARNING**

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm.

WASH HANDS AFTER HANDLING !

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.

"Perchlorate Material special handling may apply,
See www.dtsc.ca.gov/hazardouswaste/perchlorate."

Applicable parts : Battery, Battery cable
Applicable state : California

FOREWORD

Read this manual carefully before starting and operating the machine for the first time 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 40 °C (-4 °F to 104 °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 nearest Kawasaki dealer.

This manual should be considered a permanent part of your machine and should remain with the machine when you sell it. Replace immediately if missing, damaged or not readable.

This machine is of metric design. Measurements in this manual are metric. American standard measurements are included when appropriate. 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 nearest Kawasaki dealer.

Warranty is provided as a part of Kawasaki'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 Kawasaki will back its products where defects appear within the warranty period. In some circumstances, Kawasaki 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 KCM CORPORATION OF AMERICA OR ANY OF OUR AUTHORIZED DISTRIBUTOR OR DEALER IF YOU HAVE ANY QUESTIONS CONCERNING COMPLIANCE.

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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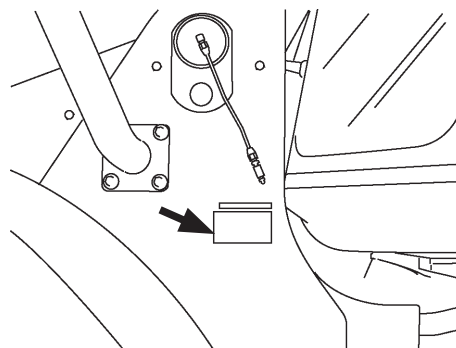
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MACHINE NUMBERS

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.

Machine

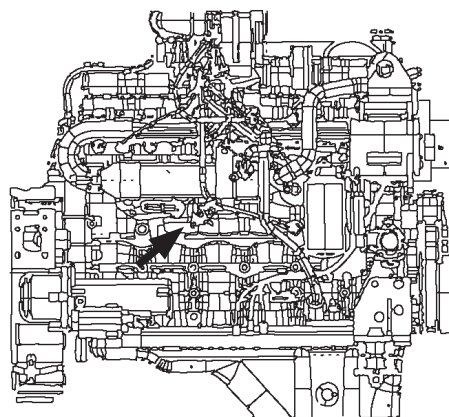
TYPE : _____
PRODUCT
IDENTIFICATION
NUMBER : _____



M4GB-00-001

Engine

TYPE : _____
MFG. NO. : _____



MNEC-00-001

MEMO

[illegible]

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-688

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.



IMPORTANT

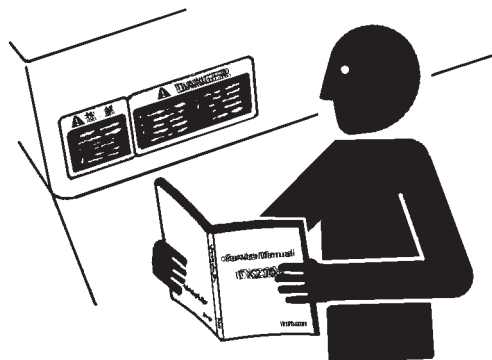


SA-1223

SAFETY

Follow Safety Instructions

- 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 Kawasaki Warranty Policy.
 - Never attempt to modify or disassemble the inlet/exhaust parts. Avoid giving shocks on the muffler 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 Kawasaki. 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 Kawasaki 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.



SA-003

SAFETY

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.



SA-438

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.

SAFETY

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

SAFETY

General Precautions for Cab

- Before entering the cab, thoroughly remove all dirt and / or oil 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 leave parts and / or tools lying around the operator's seat. Store them in their specified locations.
- 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 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.

SAFETY

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.
- 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 improper operations.
 - 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

SAFETY

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

SAFETY

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

SAFETY

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

SAFETY

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

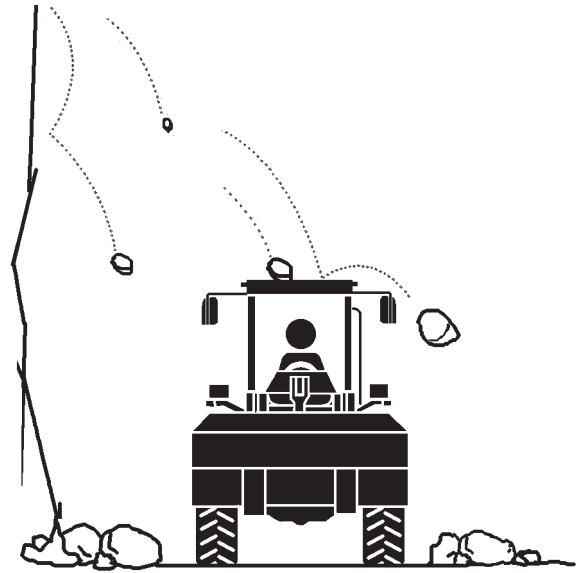
SAFETY

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

SAFETY

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.

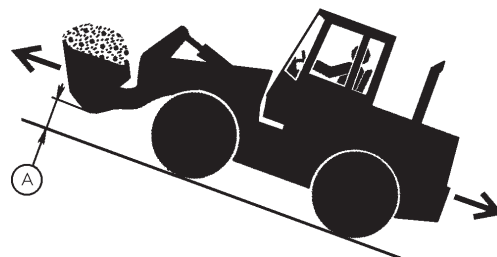


SA-448

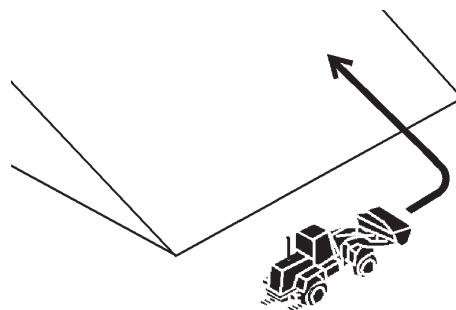
SAFETY

Drive Machine Safely (Work Site)

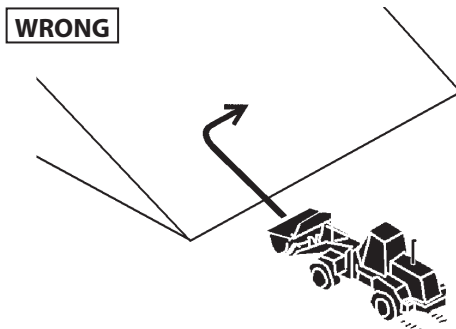
- Before driving the machine, always confirm that the steering wheel / and forward / reverse lever (switch) direction corresponds to the direction you wish to drive.
- Be sure to detour around any obstructions.
- Driving on a slope may cause the machine to slip or overturn, possibly resulting in serious injury or death.
 - When driving up or down a slope, keep the bucket facing the direction of travel, approximately 200 to 300 mm (approximately 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.
- 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

SAFETY

Drive Safely with Bucket Loaded

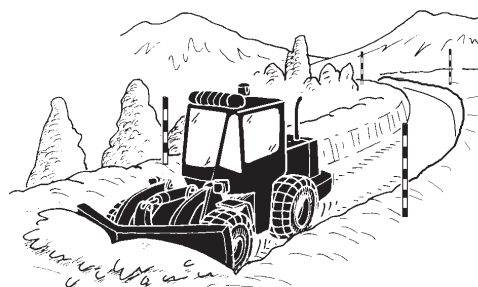
- If the machine is operated incorrectly while driving with the bucket loaded, the machine may turn over. Be sure to follow all of the instructions indicated below.
 - When driving the machine on a job site with the bucket loaded, hold the bucket as low as possible to keep the machine balanced and to 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

SAFETY

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

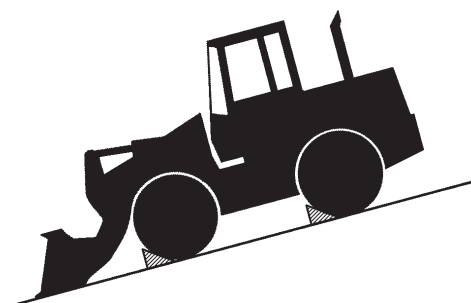
- Death or serious injury may result if you attempt to mount or stop a moving machine.

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

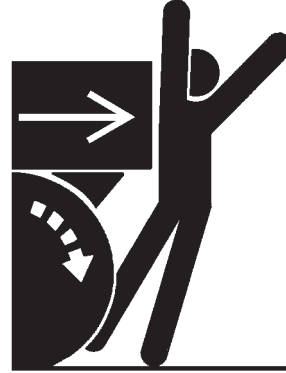


SA-458

SAFETY

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

SAFETY

Avoid Positioning Bucket or Attachment Over Anyone

- 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.



SA-518

Avoid Tipping

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.

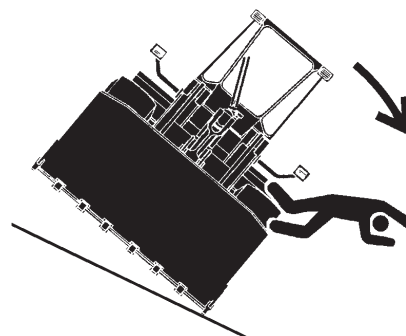
MACHINE WILL TIP OVER FASTER THAN YOU CAN JUMP FREE

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.



SA-463

SAFETY

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.



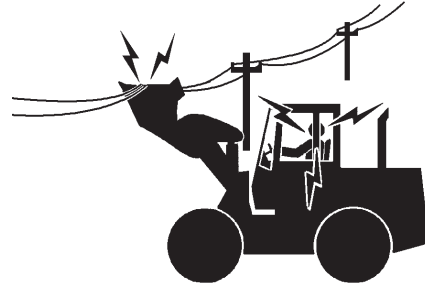
SA-397

SAFETY

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

- The machine is vulnerable to lightning strikes.
- In the event of an electrical storm, immediately stop operation, and lower the bucket to the ground. Evacuate to a safe place far away from the machine.
- After the electrical storm has passed, check all of the machine safety devices for any failure. If any failed safety devices are found, operate the machine only after repairing them.

SAFETY

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.

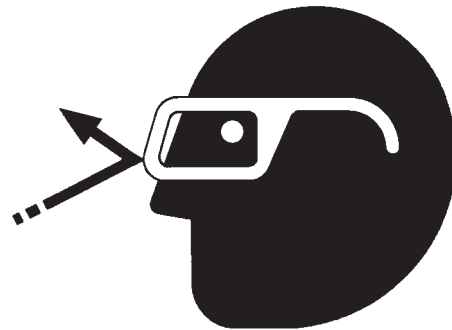
Never attach a sling or chain to the bucket teeth or to the attachment (fork or grapple for example). They may come off, causing the load to fall.



SA-132

Protect Against Flying Debris

- If flying debris hit eyes or any other part of the body, serious injury may result.
 - Guard against injury from flying pieces of metal or debris; wear goggles or safety glasses.
 - Keep bystanders away from the working area before striking any object.



SA-432

SAFETY

Park Machine Safely

To avoid accidents:

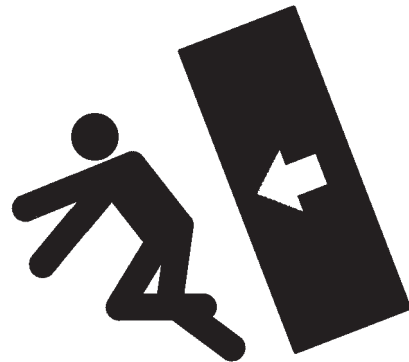
- Park the machine on a firm, level surface.
- Lower bucket to the ground.
- Put the forward / reverse lever (switch) in neutral, and turn the parking brake switch (lever) ON (parking brake) position.
- Run the engine at low idle speed without load for 3 minutes.
- Turn key switch to OFF to stop engine.
- 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.

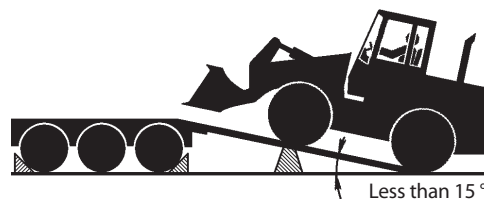


SA-034

SAFETY

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.

SAFETY

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.
- 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-018



SA-019

SAFETY

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.

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.
- Refer to page 7-7 "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-028



SA-312



SA-134



SA-527

SAFETY

- 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

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.

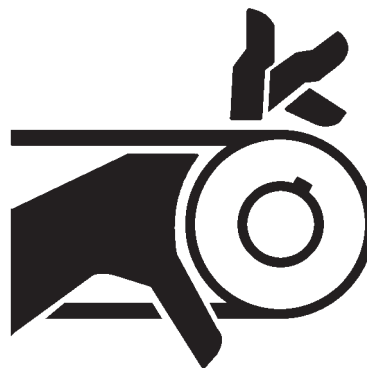


SA-527

SAFETY

Stay Clear of Moving Parts

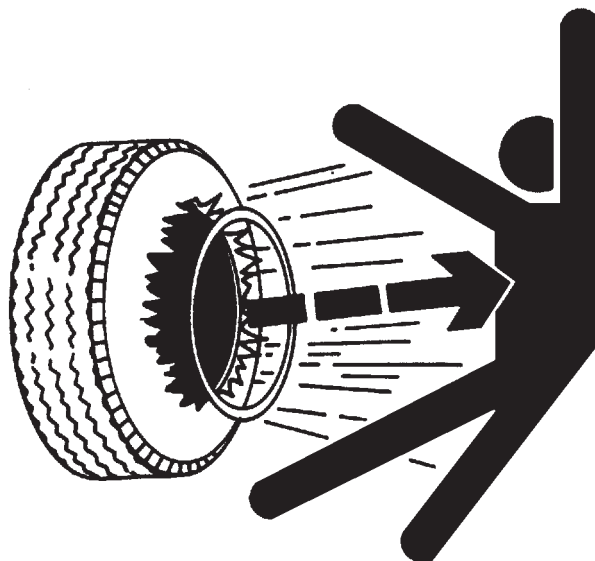
- Entanglement in moving parts can cause serious injury.
- To prevent accidents, care should be taken to ensure that hands, feet, clothing, jewelry and hair do not become entangled when working around rotating parts.



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

SAFETY

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

SAFETY

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.



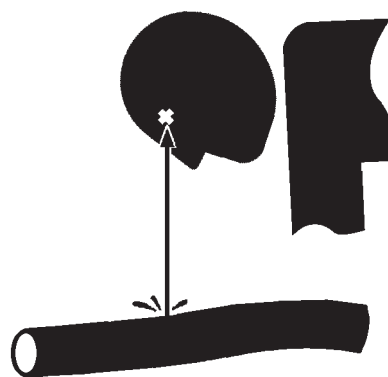
SA-019

Avoid High-Pressure Fluids

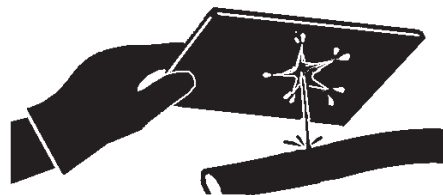
- Fluids such as diesel fuel or hydraulic oil under pressure can penetrate the skin or eyes causing serious injury, blindness or death.
- Avoid this hazard by relieving pressure before disconnecting hydraulic or other lines.
- Tighten all connections before applying pressure.
- Search for leaks with 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

SAFETY

Prevent Fires

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.



SA-019

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.

SAFETY

Clean up Flammables:

- Spilled fuel and oil, and trash, grease, debris, accumulated coal dust, and other flammables may cause fires.
 - Prevent fires by inspecting and cleaning the machine daily, and by removing adhered oil or accumulated flammables 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 flammables 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 flammables such as dead leaves from entering. However, flammables which have passed through the wire screen may cause fires. Check and clean the machine every day and immediately remove accumulated flammables. 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.

SAFETY

Evacuating in Case of Fire

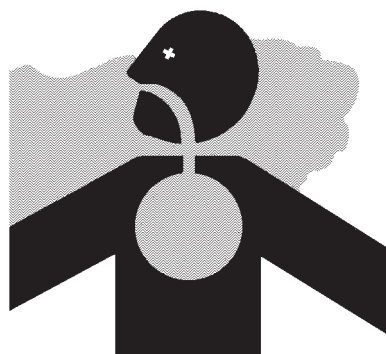
- If a fire breaks out, evacuate the machine in the following way:
 - Stop the engine by turning the key switch to the OFF position if there is time.
 - Use a fire extinguisher if there is time.
 - Exit the machine.
 - If the cab doors do not open, break them with a hammer to make an escapeway.



SA-393

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.



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

SAFETY

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 Kawasaki dealer.

SAFETY

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 Kawasaki Parts.



SA-029

SAFETY

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

SAFETY

Handle Chemical Products Safely

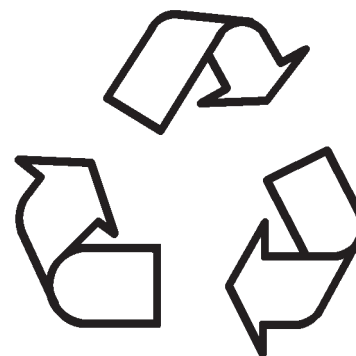
- Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with your machine include such items as lubricants, coolants, paints, and adhesives.
- A Material Safety Data Sheet (MSDS) provides specific details on chemical products: physical and health hazards, safety procedures, and emergency response techniques.
- Check the MSDS 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 MSDS's (available only in English) on chemical products used with your machine.



SA-309

Dispose of Waste Properly

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

SAFETY

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.

SAFETY

Precaution for Communication Terminal Equipment (Option)

This machine may have a communication terminal equipment emitting electrical waves installed in the right rear corner within the cab.

There is a possibility that a medical device, including an implantable device such as a cardiac pacemaker, would be affected and would malfunction by the electrical waves emitted from the communication terminal equipment.

Any person affixed with a medical device such as the above should not use this machine, unless the medical device and the equipment are at least 22 centimeters (8 inches) apart at all times. If such condition cannot be met, please contact our company's nearest dealer and have the person in charge stop the communication terminal equipment from functioning completely and confirm that it is not emitting electrical waves.

Specific Absorption Rate ("SAR") (measured by 10 g per unit) of communication terminal equipment:

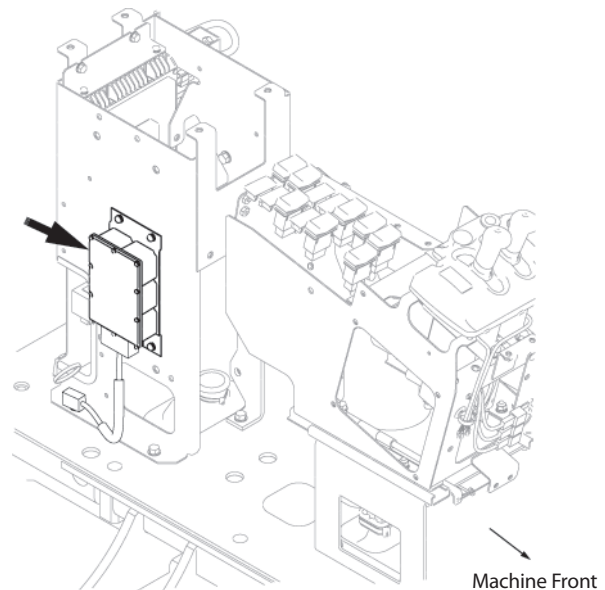
	Model A	Model B
E-GSM900	0.573 W/Kg (914.8 MHz)	0.12 W/Kg (897.6 MHz)
DCS-1800	0.130 W/Kg (1710.2 MHz)	0.06 W/Kg (1748.0 MHz)
WCDMA Band I	0.271 W/Kg (1950.0 MHz)	0.05 W/Kg (1950.0 MHz)
WCDMA Band VIII	-	0.10 W/Kg (892.6 MHz)

 **NOTE:** Please contact to your authorized representative if you want to know which terminal model A or B is installed.

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

* SAR is a measure of the amount of radio frequency energy absorbed by the body when using a wireless application such as a mobile phone.

* In the United States, the SAR limit set by the Federal Communications Commission is at or below 1.6 watts per kilogram (W/kg) taken over the volume containing a mass of 1 gram of tissue that is absorbing the most signal.



90MNEC-01-046

SAFETY

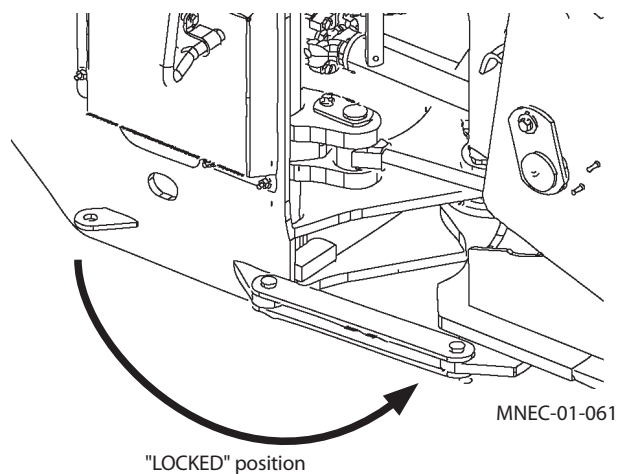
Articulation Stopper (Lock Bar)

⚠ WARNING: With articulation stopper in **LOCKED** position, machine will not steer; which, while operating, could cause an accident, injury or death. Do not lock Articulation Stopper during normal operation.

Articulation stopper locks the front and rear chassis to prevent them from sudden articulation during inspection or transportation.

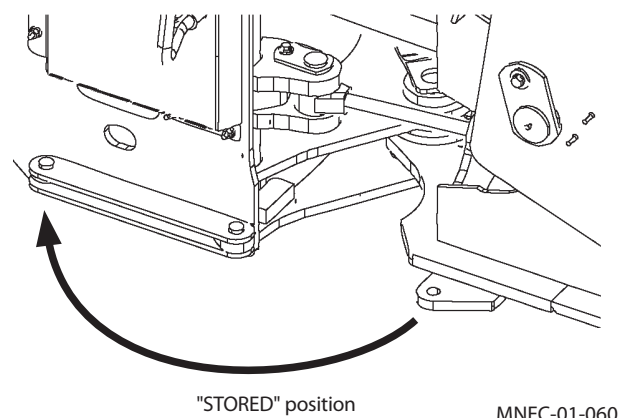
To lock:

1. Align the front and rear chassis straight ahead.
2. Remove the clip pin and pin from the end of the Articulation Stopper (on the rear chassis).
3. Turn the link and fix the end to the bracket on the front chassis (as shown).
4. Insert the pin and clip pin. (This is the **LOCKED** position.)



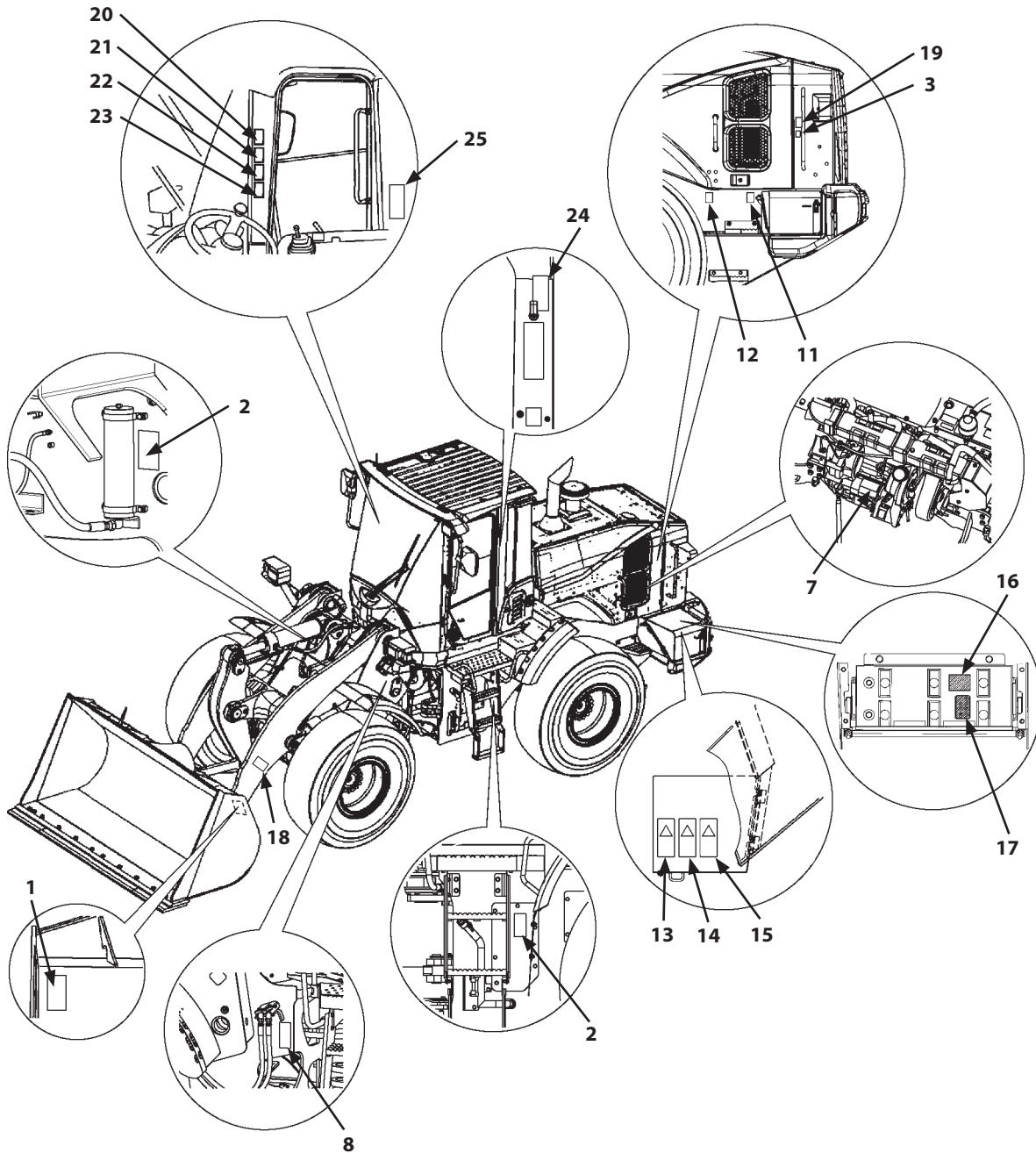
To unlock:

1. Remove the clip pin and pin from the end of the articulation stopper on the front chassis bracket.
2. Turn the link to the rear chassis bracket.
3. Insert the pin and clip pin. (This is the **STORED** position.)



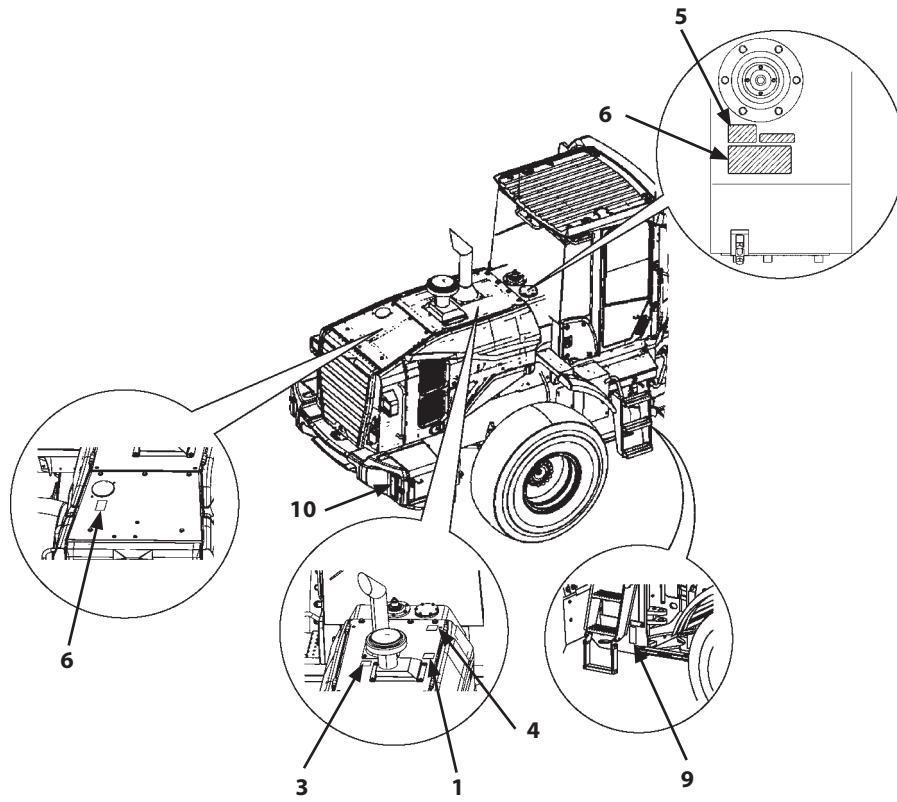
SAFETY LABELS

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 Kawasaki dealer.



SS-3460

SAFETY LABELS



SS-3461

SAFETY LABELS

1. Bucket and Hood

⚠ CAUTION: Sign indicates a fall hazard.

- Do not step on or stand in this area.



YA00015773-KC

2. 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.



YA00015792-KC

SAFETY LABELS

3. Both Sides of Oil Cooler and Engine Housing

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.



YA00015781-KC

4. 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.



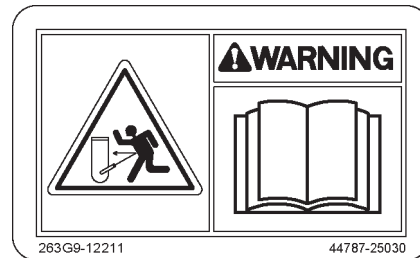
YA00015793-KC

SAFETY LABELS

5. 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 handling.



263G9-12211-KC

6. Top of Hydraulic Oil Tank and Radiator

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.



YA00015787-KC

SAFETY LABELS

7. 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.



YA00015788-KC

8. Both Sides of Front Frame

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.



YA00015775-KC

9. Top of Right Rear Frame Lock Bar

WARNING: Crush Hazard

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



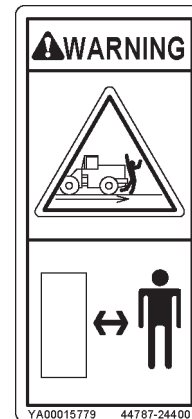
YA00015777-KC

SAFETY LABELS

10. 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.



YA00015779-KC

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

WARNING: Entanglement Hazard

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



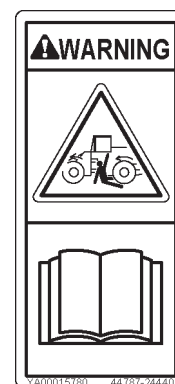
YA00015778-KC

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

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.



YA00015780-KC

SAFETY LABELS

13. Inside Battery Box

CAUTION: Shock Hazard

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



YA00015782-KC

14. Inside Battery Box

WARNING: Explosion Hazard

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



YA00015783-KC

15. Inside Battery Box

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.



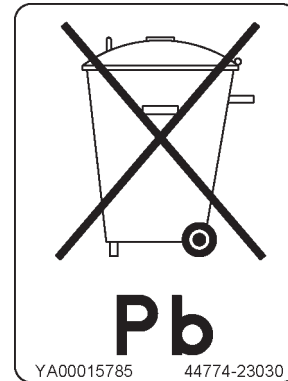
YA00015784-KC

SAFETY LABELS

16. Top of Battery (left and right)

Recycle Batteries

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

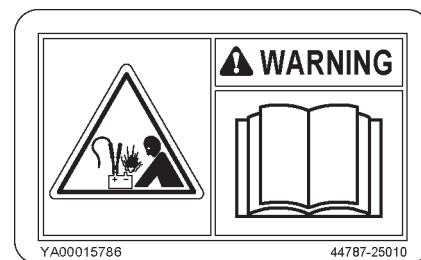


YA00015785-KC

17. Top of Battery (left and right)

WARNING: 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.



YA00015786-KC

18. 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.



YA00015774-KC

SAFETY LABELS

19. Both Sides of Cooling Fan

WARNING: Entanglement Hazard

- Sign indicates a hazard of rotating fan.
Turn off before inspection and maintenance.



YA00022100-KC

20. 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.



YA00015801-KC

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

DANGER: Electrocutation Hazard

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



YA00015802-KC

SAFETY LABELS

22. 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.



YA00015803-KC

23. 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.



YA00015804-KC

24. Cab Inside Right Front Column

⚠ WARNING: Runover Hazard

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



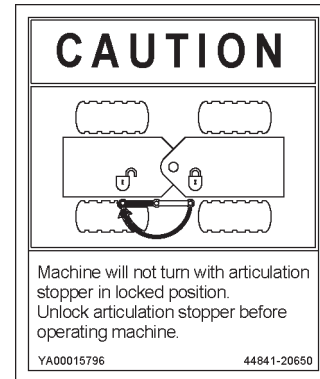
YA00015793-2-KC

SAFETY LABELS

25. Cab Inside Right Front Column

⚠ CAUTION: Steering Hazard

- Unlock articulation stopper before operating machine.



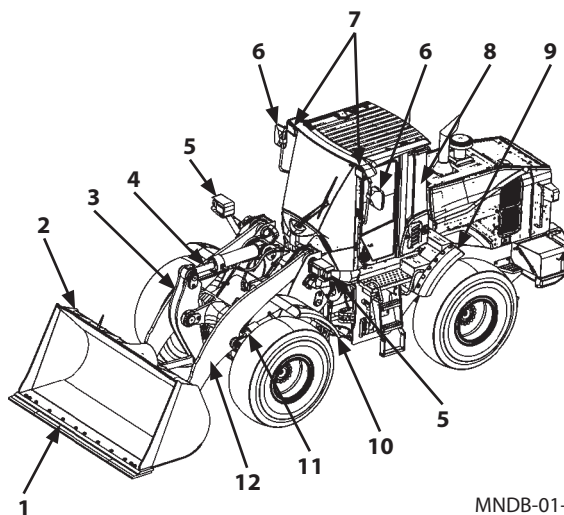
YA00015796-KC

COMPONENTS NAME

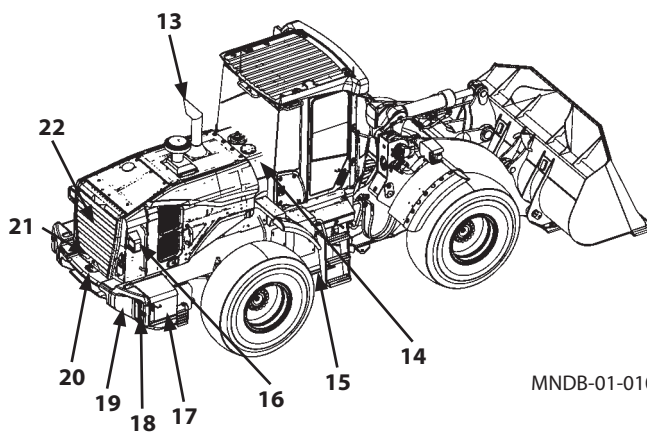
Components Name

70Z7

- 1- Cutting Edge (BOC)
- 2- Bucket
- 3- Lever (Bell Crank)
- 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- Front Fender
- 11- Lift Arm Cylinder
- 12- Lift Arm
- 13- Exhaust Pipe
- 14- Hydraulic Oil Tank
- 15- Articulation Lock Bar
- 16- Rear Work Light
- 17- Battery (One each on both the right and left sides)
- 18- Rear Combination Light
(Turn Signal/Hazard Light/Tail Light/Brake Light/Backup Light)
- 19- Counterweight
- 20- Towing Pin
- 21- Fuel Filler Port
- 22- Radiator/Oil Cooler



MNDB-01-009



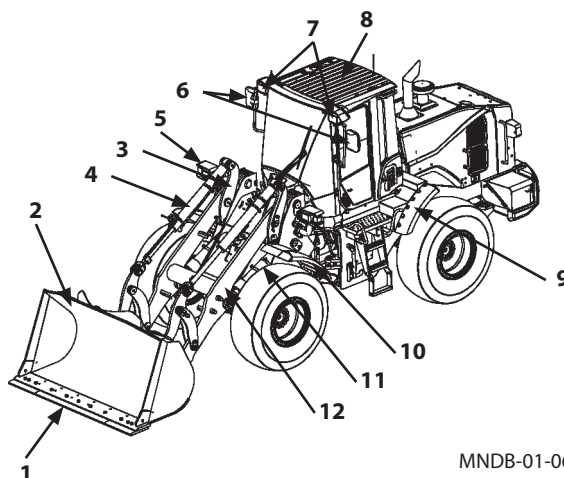
MNDB-01-010

COMPONENTS NAME

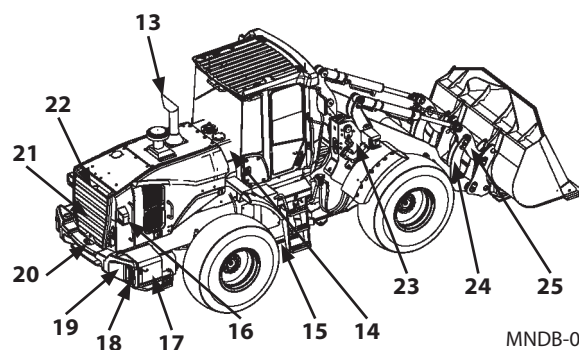
Components Name

70TM7

- 1- Cutting Edge (BOC)
- 2- Bucket
- 3- Lever (Bell Crank)
- 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- Front Fender
- 11- Lift Arm Cylinder
- 12- Lift Arm
- 13- Exhaust Pipe
- 14- Hydraulic Oil Tank
- 15- Articulation Lock Bar
- 16- Rear Work Light
- 17- Battery (One each on both the right and left sides)
- 18- Rear Combination Light
(Turn Signal/Hazard Light/Tail Light/Brake Light/Backup Light)
- 19- Counterweight
- 20- Towing Pin
- 21- Fuel Filler Port
- 22- Radiator/Oil Cooler
- 23- Link
- 24- Guide
- 25- Bucket Link



MNDB-01-064



MNDB-01-065

GETTING ON/OFF THE MACHINE

Getting ON/OFF the Machine

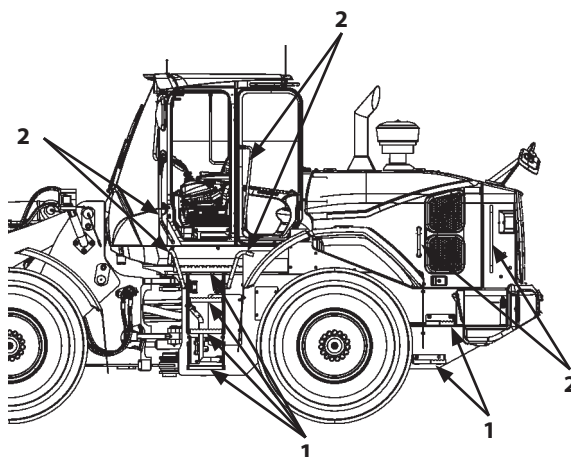
Foot holds (1) and handrails (2) are provided in and around the machine.

These are used to get on and off the cab safely as well as to do inspection and maintenance of the machine safely.

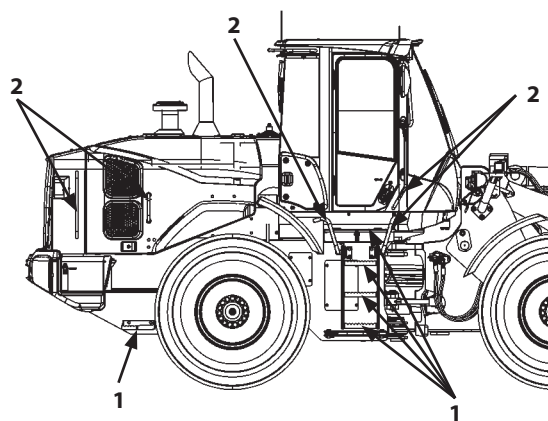
Never jump on or off the machine as it is very dangerous.

WARNING:

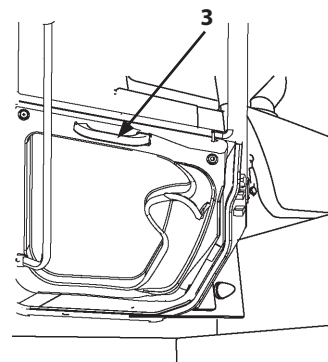
- **Never attach a wire on the foot holds (1) or handrails (2) to lift the cab or main body or while transporting the machine on a truck or trailer as it is dangerous.**
- **The door handle (3) is not a handrail. Do not hold the door handle (3) as a handrail when getting on and off the machine.**
- **Do not hold the steering wheel, forward/reverse lever or control levers when getting on and off the machine.**



MNDB-01-013



MNDB-01-012

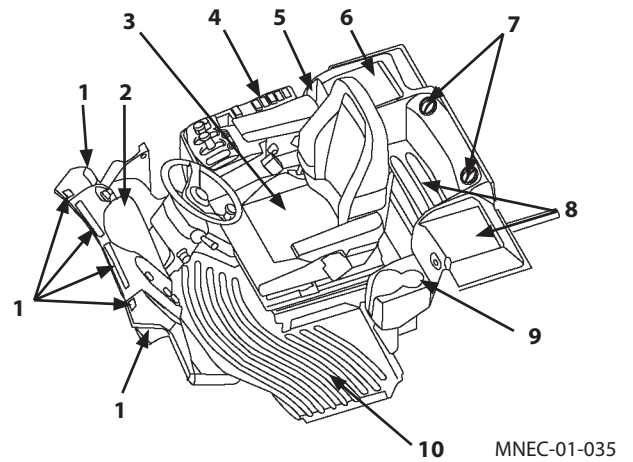


M4GB-01-132

OPERATOR'S STATION

Cab Features

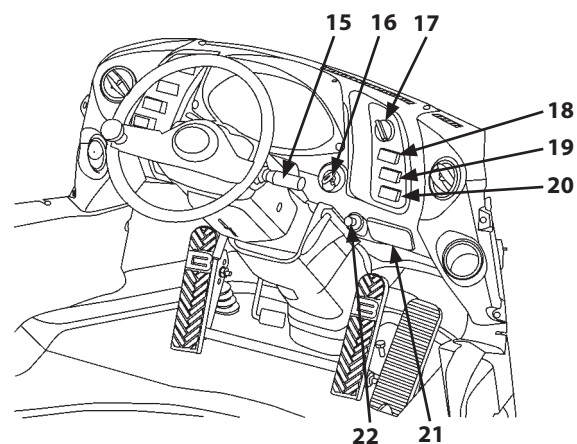
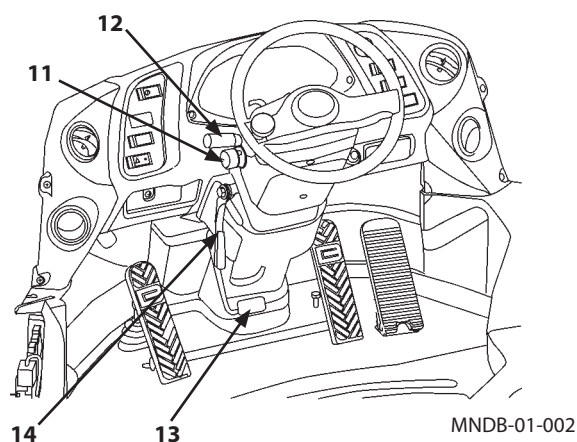
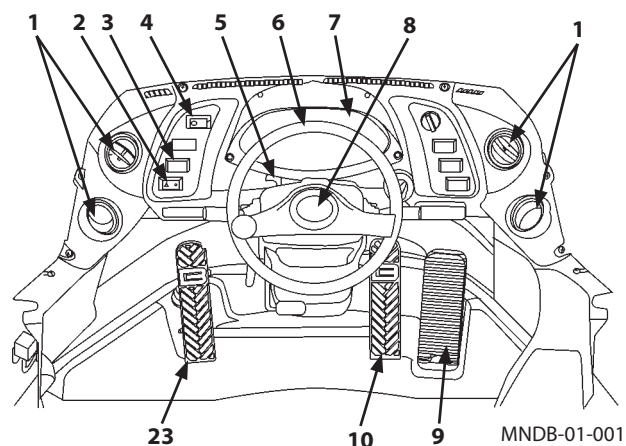
- 1- Front Defroster
- 2- Front Console
- 3- Operator's Seat
- 4- Right Console
- 5- Document Holder
- 6- Hot/Cool Box
- 7- Rear Defroster
- 8- Glove Compartment
- 9- Cup Holder
- 10- Floor Mat



OPERATOR'S STATION

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- Travel Mode Selector
- 18- Auto Idling Stop Switch
- 19- Declutch Position Switch
- 20- Shift Change Delay Mode Switch
- 21- Ash Tray
- 22- Cigar Lighter
- 23- Brake/Declutch Pedal



OPERATOR'S STATION

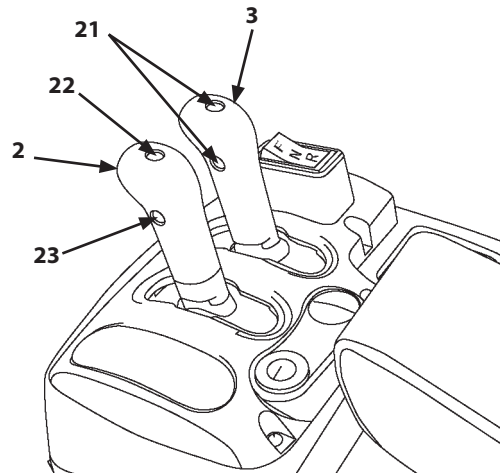
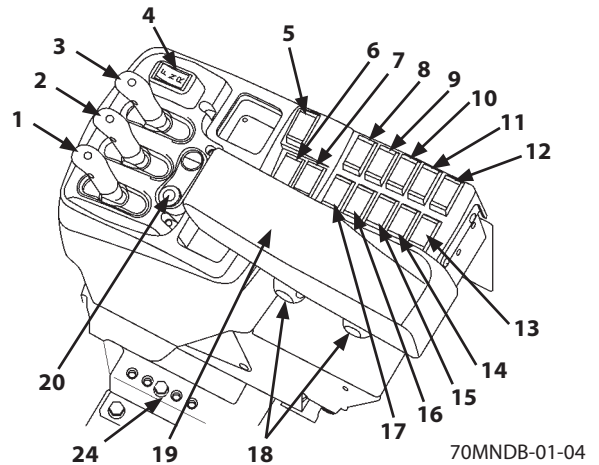
Right Console

Fingertip Control Type

(70TM7: Standard)

(70Z7: Option)

- 1- Auxiliary Control Lever (Option)
- 2- Bucket Control Lever
- 3- Lift Arm Control Lever
- 4- Forward/Reverse Switch
- 5- Control Lever Lock Switch
- 6- Auxiliary
- 7- Auxiliary
- 8- Power Mode Selector
- 9- Forward/Reverse Selector Switch
- 10- Fan Reverse Rotation Switch
- 11- Auxiliary
- 12- Auxiliary
Quick Coupler Switch (70TM7)
- 13- Secondary Steering Operation Check Switch (Option)
- 14- Lift Arm Auto Leveler (Height Kickout) Switch
- 15- Lift Arm Auto Leveler (Lower Kickout) Switch
- 16- 1st Speed Fixed Switch
- 17- Ride Control Switch (Option)
- 18- Armrest Adjust Handle
- 19- Armrest
- 20- Hold Switch
- 21- DSS (Down Shift Switch)
- 22- Horn Switch
- 23- Quick Power Switch

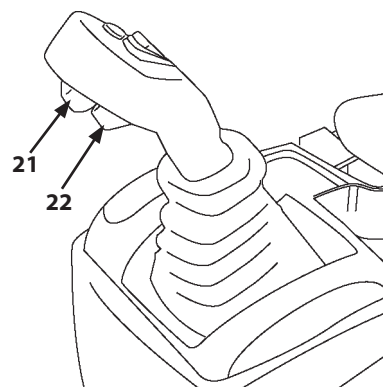
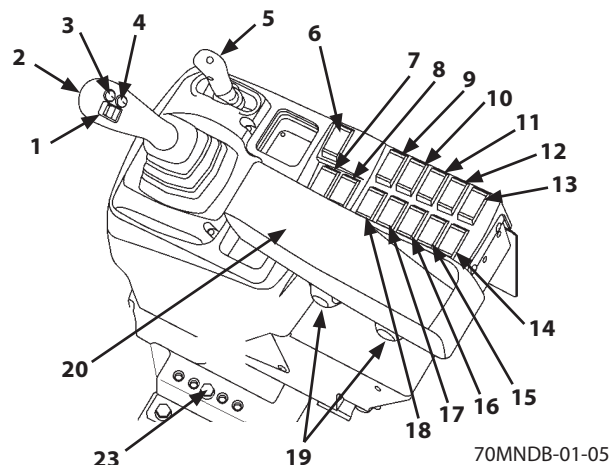


OPERATOR'S STATION

Right Console

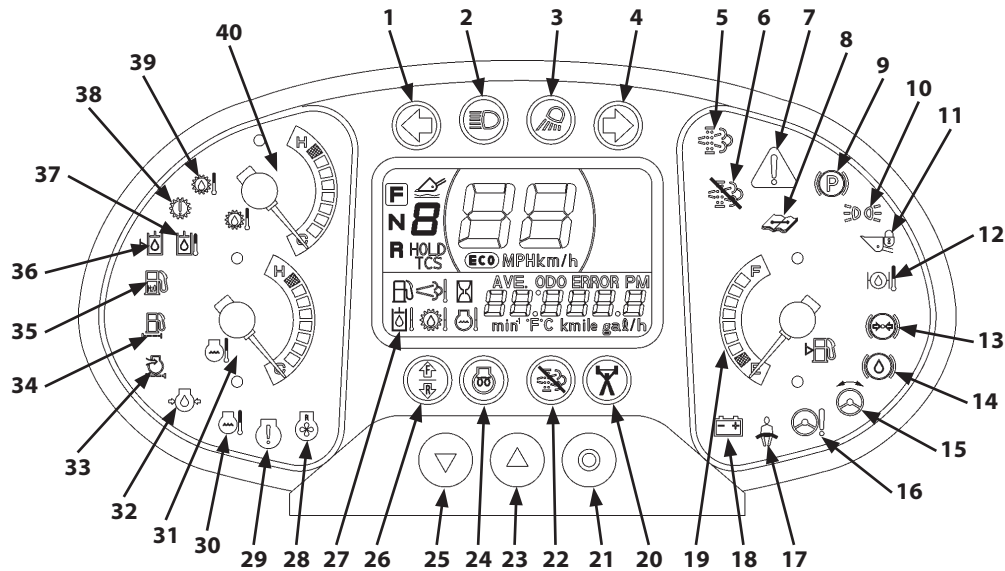
Multi-Function Joystick Type (70Z7: Standard) (70TM7: Option)

- 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- Auxiliary
- 8- Auxiliary
- 9- Power Mode Selector
- 10- Forward/Reverse Selector Switch
- 11- Fan Reverse Rotation Switch
- 12- Auxiliary
- 13- Auxiliary
Quick Coupler Switch (70TM7)
- 14- Secondary Steering Operation Check Switch (Option)
- 15- Lift Arm Auto Leveler (Height Kickout) Switch
- 16- Lift Arm Auto Leveler (Lower Kickout) Switch
- 17- 1st Speed Fixed Switch
- 18- Ride Control Switch (Option)
- 19- Armrest Adjust Handle
- 20- Armrest
- 21- Hold Switch (Under the Lever)
- 22- Horn Button (Under the Lever)



OPERATOR'S STATION

Monitor Panel



MNDB-01-034

- | | |
|--|---|
| 1- Left Turn Signal Indicator | 21- Monitor Mode Selector |
| 2- High Beam Indicator | 22- Not Used |
| 3- Work Light Indicator | 23- Monitor Display Selector (Up) |
| 4- Right Turn Signal Indicator | 24- Preheat Indicator |
| 5- Not Used | 25- Monitor Display Selector (Down) |
| 6- Not Used | 26- Forward/Reverse Selector Switch Indicator |
| 7- Service Indicator | 27- Monitor Display |
| 8- Maintenance Indicator | 28- Fan Reverse Rotation Indicator |
| 9- Parking Brake Indicator | 29- Engine Warning Indicator |
| 10- Clearance Light Indicator | 30- Overheat Indicator |
| 11- Control Lever Lock Indicator | 31- Coolant Temperature Gauge |
| 12- Axle Oil Temperature Indicator | 32- Engine Oil Low Pressure Indicator |
| 13- Brake Oil Low Pressure Indicator | 33- Air Filter Restriction Indicator |
| 14- Not Used | 34- Not Used |
| 15- Secondary Steering Indicator (Option) | 35- Water Separator Indicator |
| 16- Low Steering Oil Pressure Indicator (Option) | 36- Hydraulic Oil Level Indicator |
| 17- Seat Belt Indicator | 37- Hydraulic Oil Temperature Indicator |
| 18- Discharge Warning Indicator | 38- Transmission Warning Indicator |
| 19- Fuel Gauge | 39- Transmission Oil Temperature Indicator |
| 20- Power Mode Indicator | 40- Transmission Oil Temperature Gauge |

OPERATOR'S STATION

Service Indicator

⚠ WARNING: Prevent possible casualty and/or machine damage. If the service indicator flashes and the alarm buzzer sounds, immediately stop machine operation. Then, check and service the section displaying the trouble.

The service indicator comes ON and the alarm buzzer sounds if one of the following cases below occurs. Immediately, stop operating the machine. Move the machine to a safe area. Park the machine and stop the engine. Contact your nearest KAWASAKI dealer for machine inspection:

- If the engine oil pressure decreases,
- If the engine coolant temperature abnormally increases,
- If the brake oil pressure decreases,
- If the steering oil pressure decreases.
- If the hydraulic oil level decreases,

The service indicator comes ON if one of the following cases as described below occurs. Immediately, stop the engine. Check the cause of the trouble.

- If the alternator voltage decreases or becomes excessively high,
- If the air cleaner is restricted,
- If the hydraulic oil temperature becomes higher than the specification,
- If any abnormality is found in engine operation,
- If any abnormality is found in transmission operation,
- If the transmission oil temperature is kept higher than the specification for a short period of time,
- If the indicator comes ON when the parking brake is applied,
- If the axle oil temperature becomes higher than the specification,
- If the fuel filter becomes clogged,
- If the water level of water separator is higher than the specification.
- If the emergency steering system operates,

✎ NOTE: The monitor has a self-check function (indicator light check). Under normal conditions, when the key switch is turned ON, all indicators including the service indicator "!" come and stay ON for approximately 2 seconds, and the buzzer sounds. If any indicator does not come ON, the indicator light may have burned out. Replace the burned out indicator light. If the buzzer does not intermittently sound, contact your nearest KAWASAKI dealer for machine inspection.



M4GB-01-011

OPERATOR'S STATION

Parking Brake Indicator (Red)

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.



M4GB-01-012

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.

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.

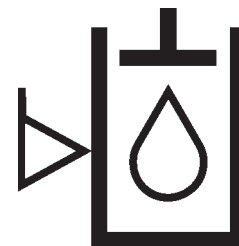


M4GB-01-013

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.

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.



MNEC-01-057

OPERATOR'S STATION

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)

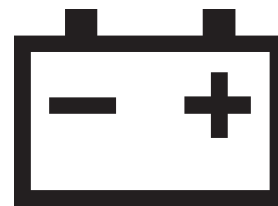
If any serious abnormality occurs in the transmission and/or transmission related parts, the red indicator will light. If the transmission warning indicator and the service indicator light, immediately move the machine to a safe area, set the machine in the park position and stop the engine. Contact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



M4GB-01-024

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

OPERATOR'S STATION

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 light, 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.



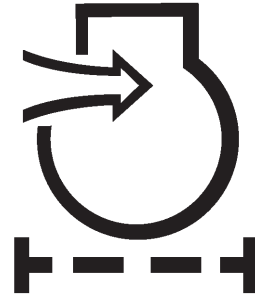
M4GB-01-021

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

OPERATOR'S STATION

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.



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

Low Steering Oil Pressure Indicator (Optional)

IMPORTANT: The secondary steering system shall be provisionally used. If continuously used, damage to the system may result.

If the steering oil pressure decreases, the low steering oil pressure indicator will come ON, the stop indicator will flash, and the alarm buzzer will sound. Move the machine to a safe area and stop the machine.



M4GB-01-016

OPERATOR'S STATION

Secondary Steering Indicator (Yellow) (Option)

IMPORTANT: The secondary steering system shall be provisionally used. If continuously used, damage to the system may result.

If the secondary steering system operates, the secondary steering indicator will come ON. Move the machine to a safe area and stop the machine.
If no operating sound can be heard or an indicator lights after starting the engine, immediately stop the engine and consult your nearest Kawasaki dealer.

 **NOTE:** After the engine is started, the emergency steering system emits a operating sound for around 2 seconds to automatically check the system function, If any abnormality is found during checking, the secondary steering indicator comes ON.



M4GB-01-015

Seat Belt Indicator (Red)

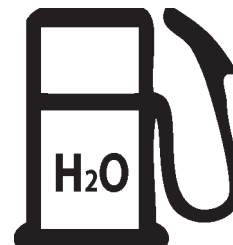
The indicator turns ON when the key switch is turned ON, and turns OFF five seconds after the engine starts.



M4GB-01-017

Water Separator Indicator (Red)

If the water separator is full, the water separator indicator and the service indicator light. Immediately stop the engine and inspect the water separator. Drain the water, if necessary.

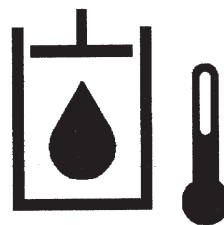


MNEC-01-010

OPERATOR'S STATION

Hydraulic Oil Temperature Indicator (Red)

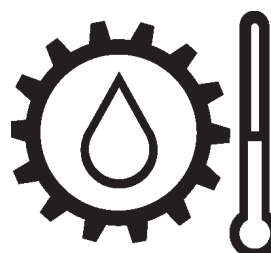
If the hydraulic oil temperature becomes higher than the specification valve, the hydraulic oil temperature indicator will light, the service indicator will light. Immediately stop machine operation and wait for the hydraulic oil to cool before continuing operation.



M4GB-01-026

Transmission Oil Temperature Indicator (Red)

If the transmission oil temperature is kept higher than the specification for a short period of time, both the transmission oil temperature indicator and the service indicator come ON. Immediately stop operation of the machine and run the engine at low idle speed to reduce the transmission oil temperature.



M4GB-01-027

Axle Oil Temperature Indicator (Red)

If the axle oil temperature becomes higher than the specification, both the axle oil temperature indicator and the service indicator comes ON.

 **NOTE:** If the brake pedal is continuously stepped on, an increase of the axle oil temperature may result. Carefully operate the brake pedal.

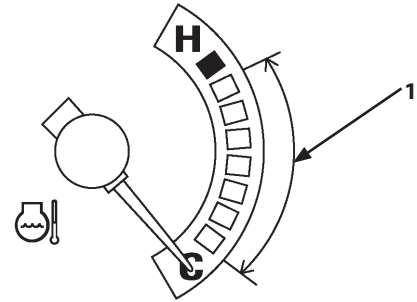


M4GF-01-005

OPERATOR'S STATION

Coolant Temperature Gauge

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.

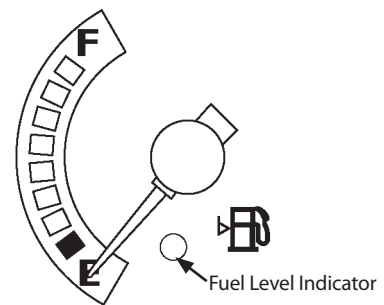


M4GB-01-028

Fuel Gauge

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.

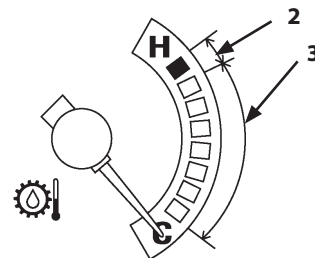
 **NOTE:** The fuel level indicator may light even if the indicator needle does not reach the red range (E), depending on the tilt angle of machine.



MNEC-01-002

Transmission Oil Temperature Gauge

The transmission oil temperature is indicated with a needle. When the needle stays in range (3) during operation, the oil temperature is normal. If the transmission oil temperature abnormally increases to range (2) and is kept higher than the specification for a short period of time, the service indicator comes ON. Stop machine operation and run the engine at low idle to lower the oil temperature. After the oil temperature lowers, stop the engine.



M4GB-01-029

OPERATOR'S STATION

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

OPERATOR'S STATION

Clearance Light Indicator (Green)

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



M4GB-01-035

Control Lever Lock Indicator (Red)

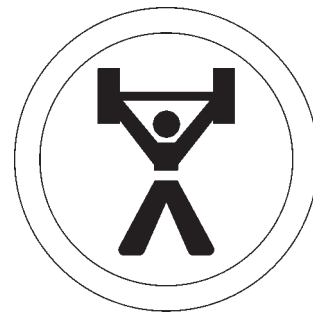
When the control lever lock switch is in ON position, the control lever lock indicator will light.



MNEC-01-004

Power Mode Indicator (Green)

When the power mode switch is in ON position, the power mode indicator will light.



MNDB-01-036

OPERATOR'S STATION

Maintenance Indicator

Indicates that the maintenance times for the following items are approaching. Each time the ignition key is turned ON, the indicator comes ON for 30 seconds. The indicator lights 20 hours before the specified maintenance time arrives.

Items to be indicated:

- Hydraulic oil change
- Hydraulic oil filter replacement 1, 2
- Transmission oil change
- Transmission oil filter replacement
- Engine oil change
- Engine oil filter replacement
- Fuel filter replacement
- Axle oil



M4GB-01-037

Forward/Reverse Selector Switch Indicator (Green)

Comes ON when the forward/reverse selector switch is operable.



M4GB-01-038

Fan Reverse Rotation Indicator (Green)

Lights when the fan is rotating in reverse.

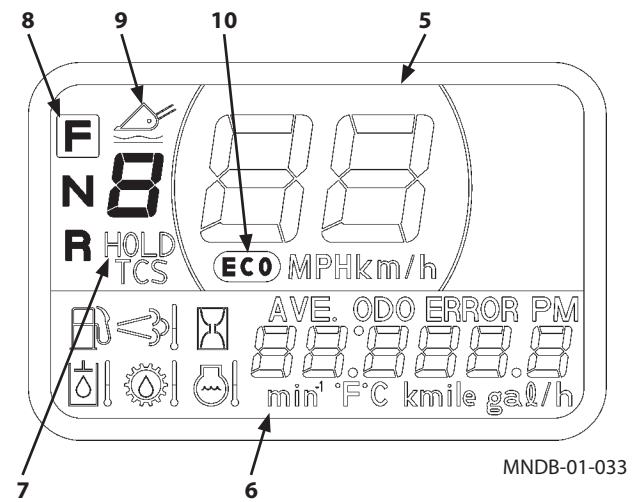
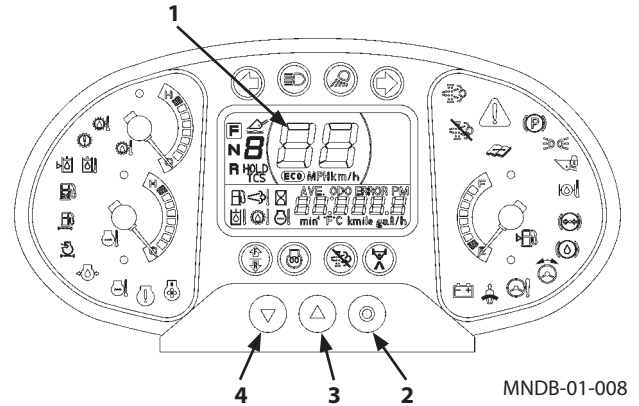


M4GF-01-006

OPERATOR'S STATION

Monitor Display

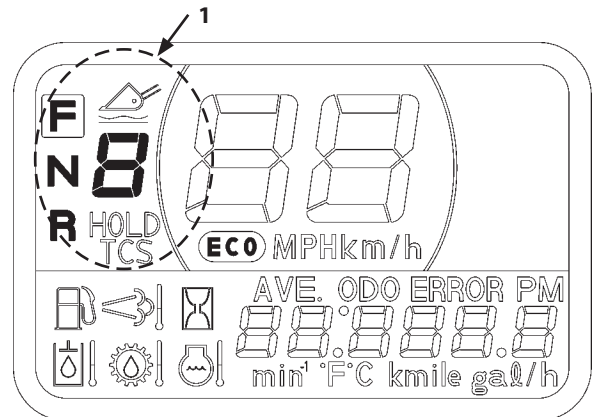
- 1- Monitor Display
- 2- Monitor Display Mode Selector
- 3- Monitor Display Selector (Up)
- 4- Monitor Display Selector (Down)
- 5- Speedometer
- 6- Information Display
- 7- Hold Indicator
- 8- Forward/Reverse and Shift Position Indicator
- 9- Ride Control Indicator
- 10- ECO Indicator



OPERATOR'S STATION

Forward/Reverse and Shift Position Indicator

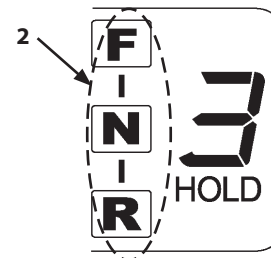
Forward/Reverse and Shift Position Indicator (1) displays the machine driving status (selected FNR lever and shift positions).



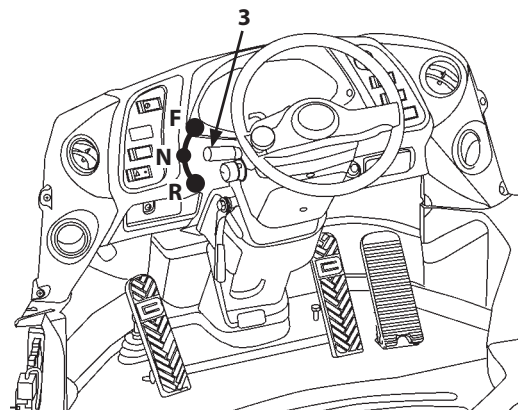
MNDB-01-033

FNR (Forward/Reverse) Position Indicator

FNR position indicator (2) displays the selected position of forward (F)/neutral (N)/reverse (R) lever (3). (Letters F-N-R are constantly displayed.)



M4GB-01-041



MNDB-01-002

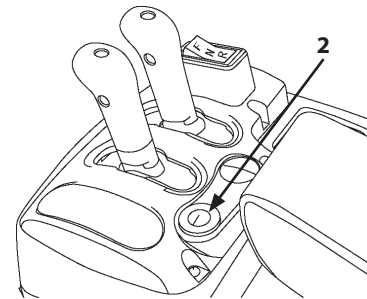
OPERATOR'S STATION

Hold Indicator

When hold switch (2) is ON, hold indicator (1) lights.

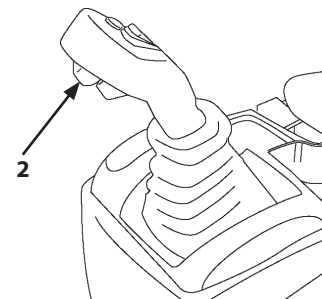


M4GB-01-041



Fingertip Control Type

MNEC-01-042



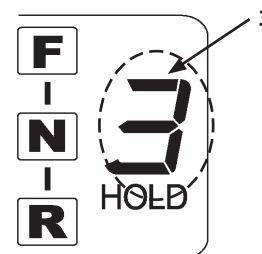
Multi-Function Joystick Type

MNEC-01-044

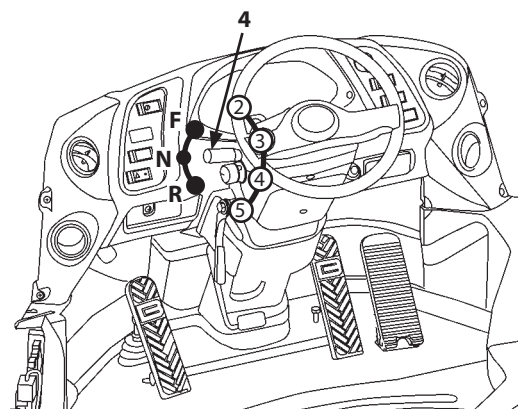
Shift Position Indicator

When forward/reverse lever (4) is in either the forward or reverse position, shift position indicator (3) displays the actually selected shift stage.

- Forward: 5 stages
- Reverse: 3 stages



M4GB-01-041

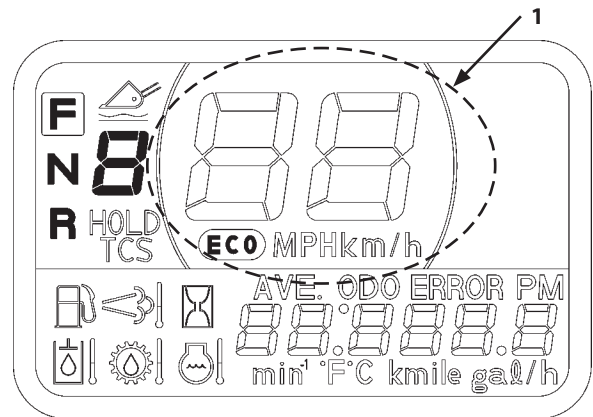
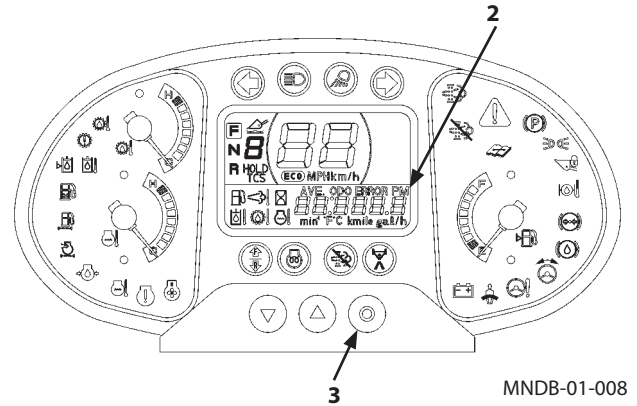


MNDB-01-002

OPERATOR'S STATION

Speedometer

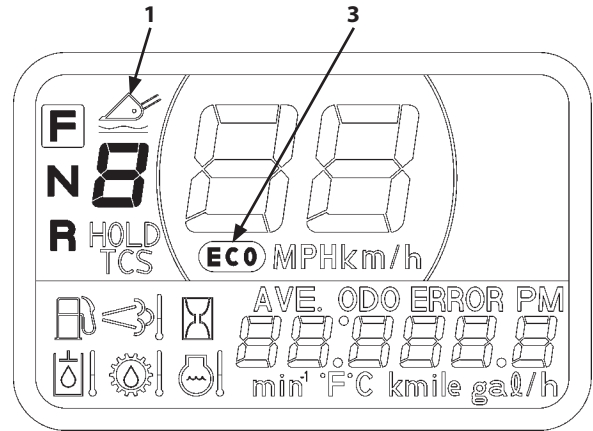
Speedometer (1) indicates the present machine driving speed. While information display (2) is indicating the drive distance, each time monitor mode selector (3) is pressed, the indicated speed unit alternates between "km/h" and "MPH."



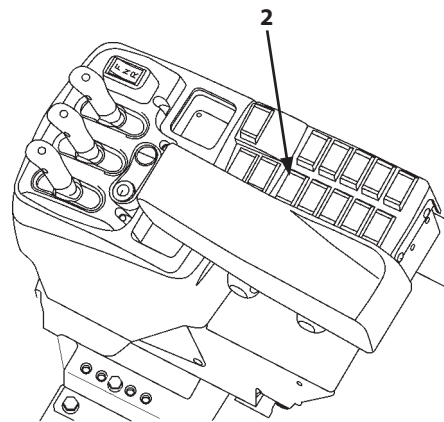
OPERATOR'S STATION

Ride Control Indicator

Ride control indicator (1) lights when ride control switch (2) is turned ON.



MNDB-01-033



70MNDB-01-04

ECO Indicator

ECO indicator (3) lights when the engine runs in energy efficient condition. It becomes OFF when the driving speed is 2 km/h (1.24 mph) or lower or under heavy driving load.

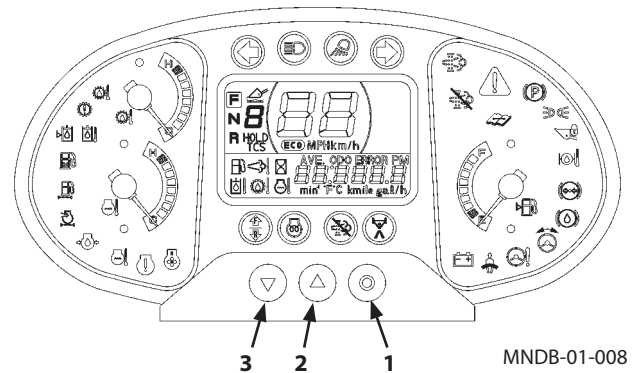
NOTE: You may push the down shift switch when the ECO indicator goes OFF while driving the slope or dozing operation such as snow removal. (Refer to DSS (Down Shift Switch) section)

OPERATOR'S STATION

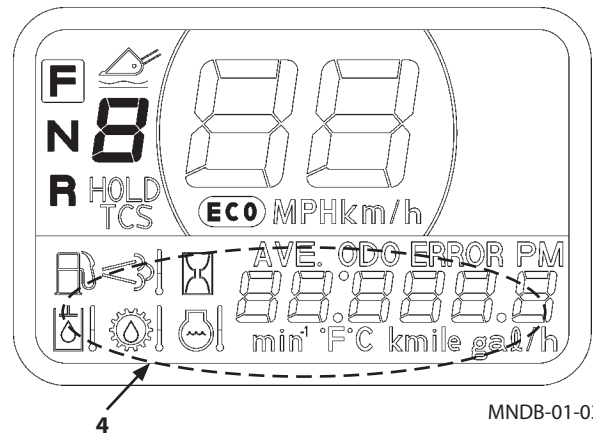
Machine Information Display

When the key switch is turned ON, the machine information area (4) displays the machine information.

When the key switch is turned ON, the machine information display indicates engine start-ready screen (5). Each 0.5 seconds, the most left side indication is counted down as shown in display illustration (6). Then, hour meter (7) is displayed for 5 seconds in 24 hour units. Every time monitor display selector (2) is pressed, the display on the machine information screen is shifted from the clock screen (8) to return to engine start-ready screen (5).



MNDB-01-008



MNDB-01-033

Display order of Items in the normal display mode

- Clock (24H)
- Hour Meter
- Odometer
- INFO (Press switch 3)
 - Hour Meter of Hydraulic Oil
 - Hour Meter 1 of Hydraulic Oil Filter
 - Hour Meter 2 of Hydraulic Oil Filter
 - Hour Meter of Transmission Oil
 - Hour Meter of Transmission Oil Filter
 - Hour Meter of Engine Oil
 - Hour Meter of Engine Oil Filter
 - Hour Meter of Fuel Filter
 - Hour Meter of Axle Oil

Engine Start-ready Screen (5)



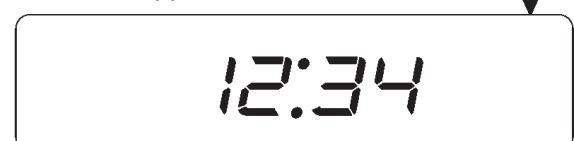
Engine Start-ready Screen (6)



Hour Meter (7)



24H Clock Screen (8)

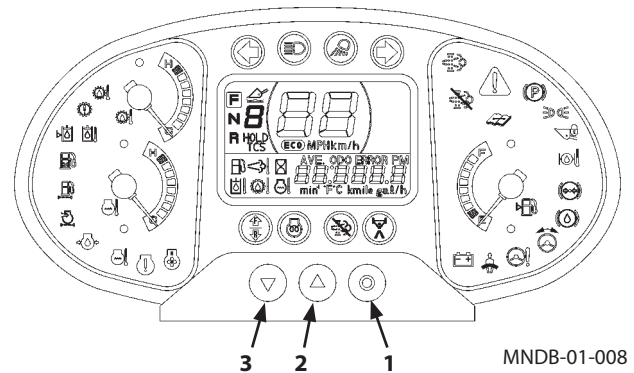


MNDB-01-038

OPERATOR'S STATION

Shifting Item to be Indicated on Machine Information Display

Press monitor display selector (2) to shift the display item one a time in order from the clock display on the machine information display.



- Clock (24H)

Indicates the present time. When this display is indicated, press monitor display selector (2) one a time to display the Hour Meter.

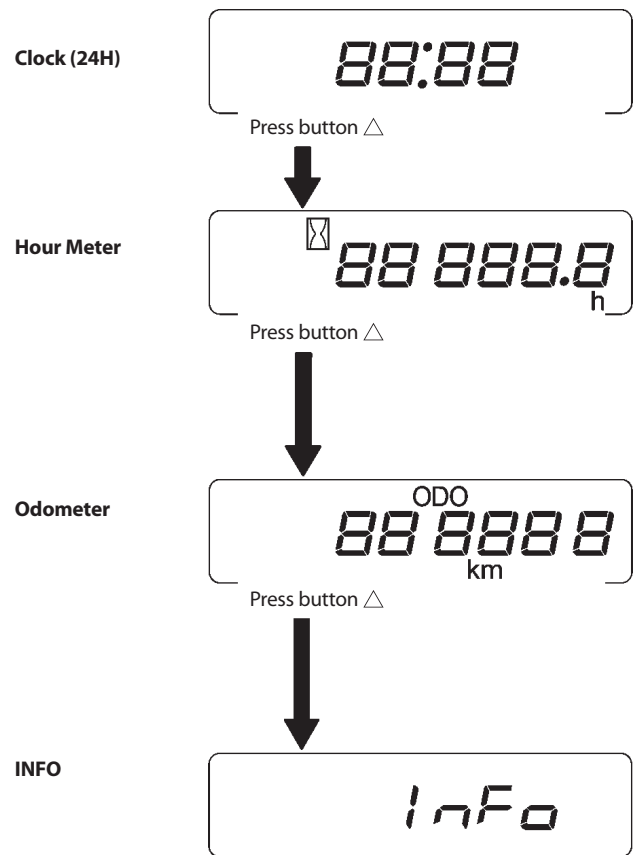
- Hour Meter

Indicates the total machine operating hours up to present. In case the operating hour exceeds 99999.9h, the meter restarts counting the hour from 0 hour. When this display is indicated, press monitor display selector (2) once at a time to display the odometer.

- Odometer

Indicates the total machine traveling distance up to present. When this display is indicated, press monitor display selector (2) once at a time to display the INFO.

➡ : When monitor display selector (△)(2) is pressed once:
 ⇨ : When monitor display selector (▽)(3) is pressed once:



OPERATOR'S STATION

IMPORTANT: Each time the oil is changed and/or oil filter is replaced, reset the displayed monitor time by pressing monitor display mode selector (1) for more than 2 seconds.

Beware not to press monitor display mode selector (1) when the display is indicating the time to change or replace. The display will not be able to indicate the correct time.

• INFO

When screen A is indicated, press monitor display selector (2) once at a time to return to the clock display screen B. Then, when monitor display selector (3) is pressed, the screen is shifted to the hydraulic hour meter display C.

• Hydraulic Oil Hour Meter

Screen C and time screen D indicating the remaining hours up to hydraulic oil change are alternately displayed. When the remaining hour reading becomes 0 hour, maintenance indicator (4) will light.

While displaying screen D, when monitor display selector (2) is pressed, the screen is returned to time screen B. When monitor display selector (3) is pressed, screen E of "Hydraulic oil filter 1 hour meter" is displayed.

Refer to page 1-30 for the resetting of oil change and filter replacement intervals.

• Hydraulic Oil Filter 1 Hour Meter

Screen E and time screen F indicating the remaining hours up to hydraulic tank oil filter replacement are alternately displayed.

When the remaining hour reading becomes 0 hour, maintenance indicator (4) will light.

While displaying screen F, when monitor display selector (2) is pressed, the screen is returned to time screen B. When monitor display selector (3) is pressed, screen G of "Hydraulic oil filter 2 hour meter" is displayed.

Refer to page 1-30 for the resetting of oil change and filter replacement intervals.

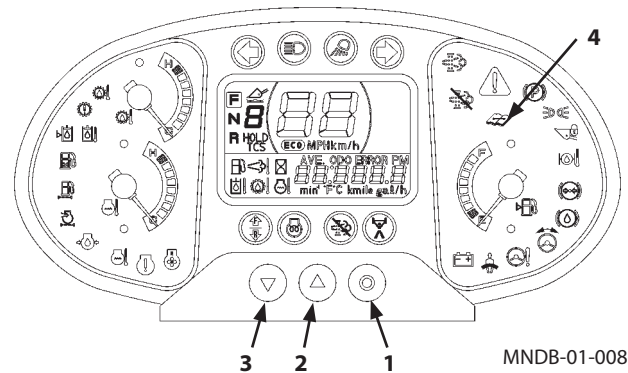
• Hydraulic Oil Filter 2 Hour Meter

Screen G and time screen H indicating the remaining hours up to pilot oil filter replacement are alternately displayed.

When the remaining hour reading becomes 0 hour, maintenance indicator (4) will light.

While displaying screen H, when monitor display selector (2) is pressed, the screen is returned to time screen B. When monitor display selector (3) is pressed, screen I of "Transmission oil hour meter" is displayed.

Refer to page 1-30 for the resetting of oil change and filter replacement intervals.



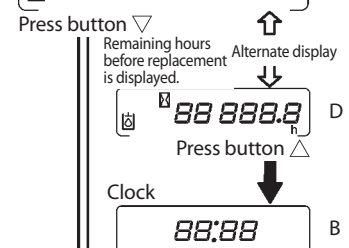
MNDB-01-008

➡ : When monitor display selector (△)(2) is pressed once:
 ➡ : When monitor display selector (▽)(3) is pressed once:

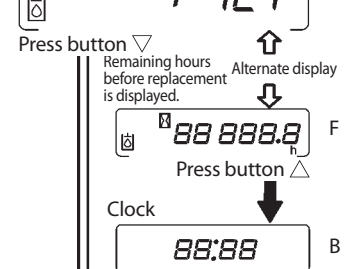
INFO



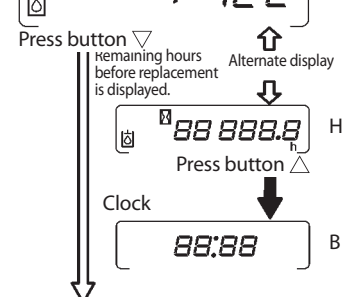
Hydraulic Oil Hour Meter



Hydraulic Oil Filter 1 Hour Meter

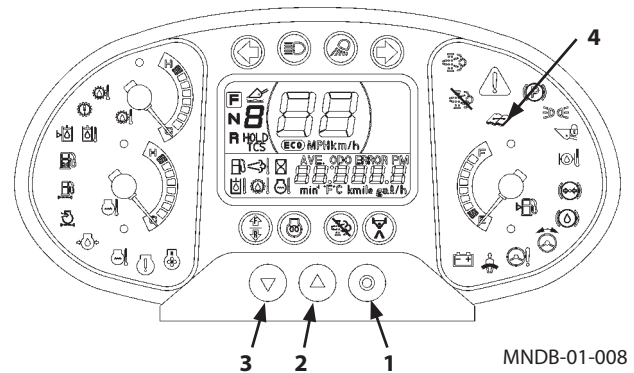


Hydraulic Oil Filter 2 Hour Meter



MNDB-01-040

OPERATOR'S STATION



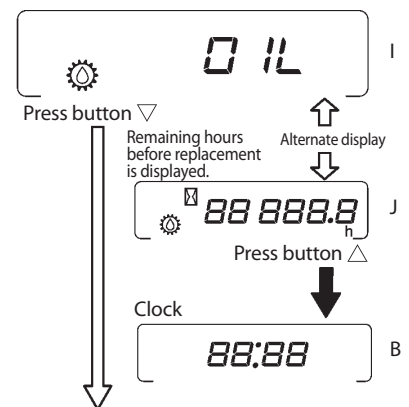
- **Transmission Oil Hour Meter**
Screen I and time screen J indicating the remaining hours up to transmission oil change are alternately displayed. When the remaining hour reading becomes 0 hour, maintenance indicator (4) will light. While displaying screen J, when monitor display selector (2) is pressed, the screen is returned to time screen B. When monitor display selector (3) is pressed, screen K of "Transmission oil filter hour meter" is displayed. Refer to page 1-30 for the resetting of oil change and filter replacement intervals.

- **Transmission Oil Filter Hour Meter**
Screen K and time screen L indicating the remaining hours up to transmission oil filter replacement are alternately displayed. When the remaining hour reading becomes 0 hour, maintenance indicator (4) will light. While displaying screen L, when monitor display selector (2) is pressed, the screen is returned to time screen B. When monitor display selector (3) is pressed, screen M of "Engine oil hour meter" is displayed. Refer to page 1-30 for the resetting of oil change and filter replacement intervals.

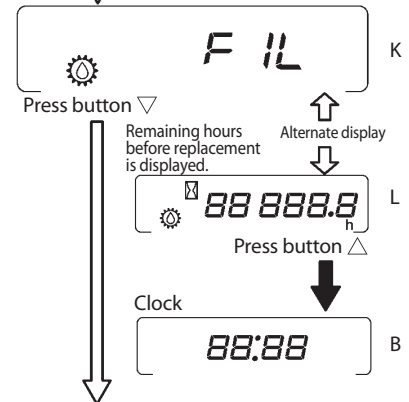
- **Engine Oil Hour Meter**
Screen M and time screen N indicating the remaining hours up to engine oil change are alternately displayed. When the remaining hour reading becomes 0 hour, maintenance indicator (4) will light. While displaying screen N, when monitor display selector (2) is pressed, the screen is returned to time screen B. When monitor display selector (3) is pressed, screen N of "Engine oil filter hour meter" is displayed. Refer to page 1-30 for the resetting of oil change and filter replacement intervals.

➡ : When monitor display selector (△)(2) is pressed once:
 ⇩ : When monitor display selector (▽)(3) is pressed once:

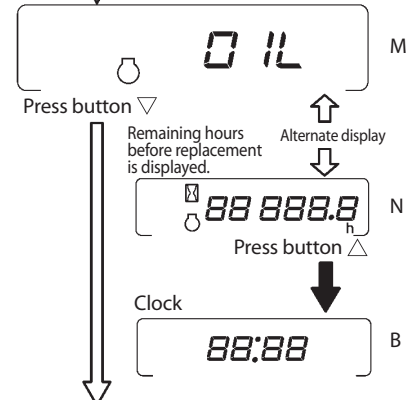
Transmission Oil Hour Meter



Transmission Oil Filter Hour Meter

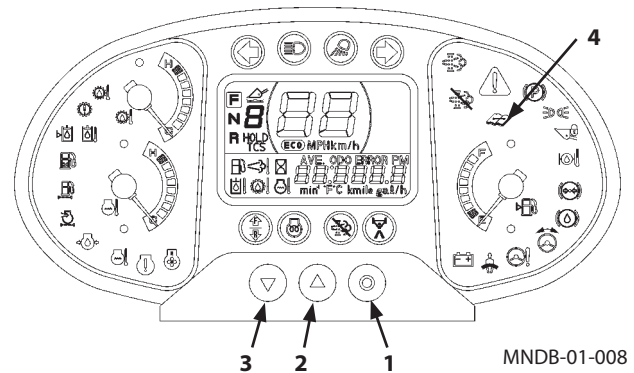


Engine Oil Hour Meter



MNDB-01-041

OPERATOR'S STATION



MNDB-01-008

• Engine Oil Filter Hour Meter

Screen P and time screen Q indicating the remaining hours up to engine oil filter replacement are alternately displayed. When the remaining hour reading becomes 0 hour, maintenance indicator (4) will light.

While displaying screen Q, when monitor display selector (2) is pressed, the screen is returned to time screen B. When monitor display selector (3) is pressed, screen R of "Fuel filter hour meter" is displayed.

Refer to page 1-30 for the resetting of oil change and filter replacement intervals.

• Fuel Filter Hour Meter

Screen R and time screen S indicating the remaining hours up to fuel filter replace are alternately displayed. When the remaining hour reading becomes 0 hour, maintenance indicator (4) will light.

While displaying screen S, when monitor display selector (2) is pressed, the screen is returned to time screen B. When monitor display selector (3) is pressed, screen T of "Axle oil hour meter" is displayed.

Refer to page 1-30 for the resetting of oil change and filter replacement intervals.

• Axle Oil Hour Meter

Screen T and time screen U indicating the remaining hours up to axle oil change are alternately displayed.

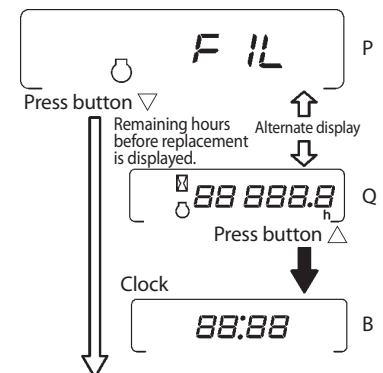
When the remaining hour reading becomes 0 hour, maintenance indicator (4) will light.

While displaying screen U, when monitor display selector (2) is pressed, the screen is returned to time screen B. When monitor display selector (3) is pressed, screen A of "INFO" is displayed.

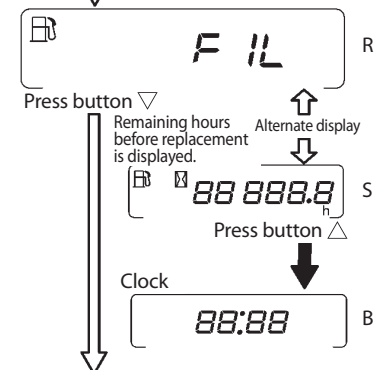
Refer to page 1-30 for the resetting of oil change and filter replacement intervals.

➡ : When monitor display selector (△)(2) is pressed once:
➡ : When monitor display selector (▽)(3) is pressed once:

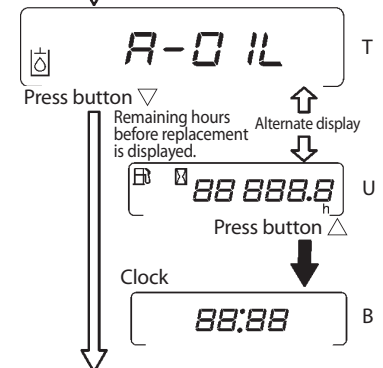
Engine Oil Filter Hour Meter



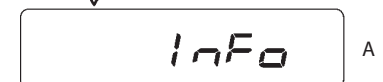
Fuel Filter Hour Meter



Axle Oil Hour Meter



INFO



MNDB-01-042

OPERATOR'S STATION

Resetting of Oil Change and Filter Replacement Intervals

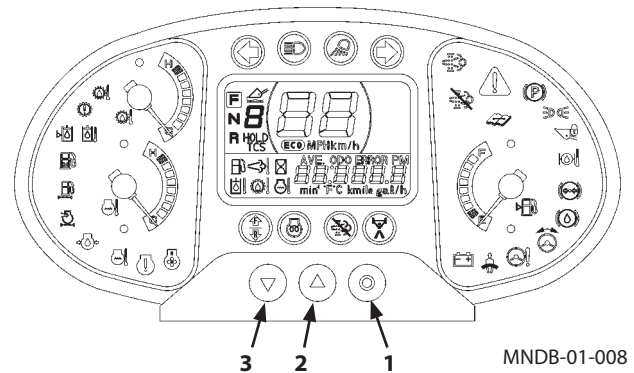
Reset oil change and/or oil filter replacement intervals as needed:

- Hydraulic oil change interval hour meter
Oil change intervals can be reset to "4000.0", "2000.0", or "1500.0". The interval set when the machine was shipped from the factory is "4000.0".

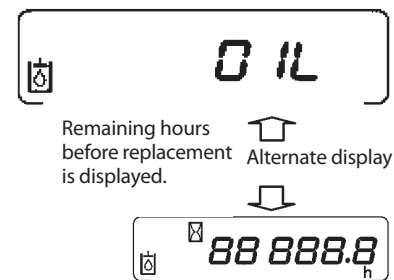
While displaying the change interval hours, keep pressing switch (1).

 **NOTE:** When switch (1) is released, time resetting is completed. Keep pressing switch (1) until the desired resetting time is displayed.

Time display is changed four seconds after pressing switch (1). While keeping switch (1) pressed, press switch (3). Each time switch (3) is pressed, the displayed hours will change in the order of "4000.0 → 2000.0 → 1500.0". When the desired time is displayed, release switch (1) to complete resetting operation.

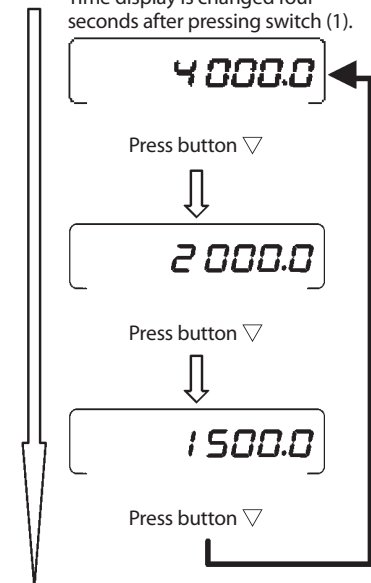


MNDB-01-008

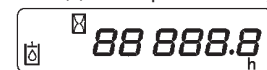


Keep pressing switch (1).

Time display is changed four seconds after pressing switch (1).



Release switch (1) to complete resetting operation.



MNDB-01-043

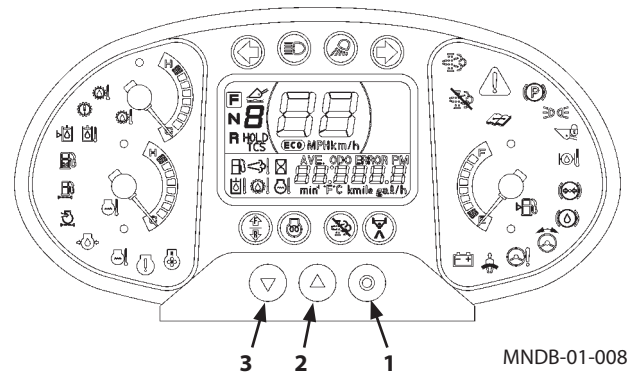
OPERATOR'S STATION

- Hydraulic oil filter 1 replacement interval hour meter
Hydraulic tank oil filter replacement intervals can be reset to "1000.0" or "500.0". The interval set when the machine was shipped from the factory is "1000.0".

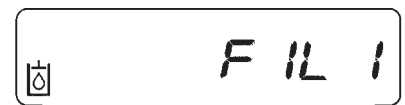
While displaying the change interval hours, keep pressing switch (1).

NOTE: When switch (1) is released, time resetting is completed. Keep pressing switch (1) until the desired resetting time is displayed.

Time display is changed four seconds after pressing switch (1). While keeping switch (1) pressed, press switch (3). Each time switch (3) is pressed, the displayed hours will change in the order of "1000.0 → 500.0". When the desired time is displayed, release switch (1) to complete resetting operation.



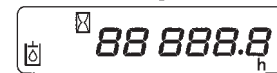
MNDB-01-008



Remaining hours
before replacement
is displayed.

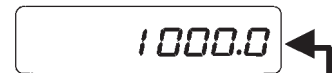


Alternate display
is displayed.

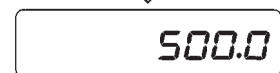


Keep pressing switch (1).

Time display is changed four
seconds after pressing switch (1).

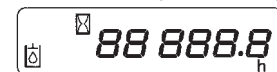


Press button ▽



Press button ▽

Release switch (1) to complete resetting operation.



MNDB-01-044

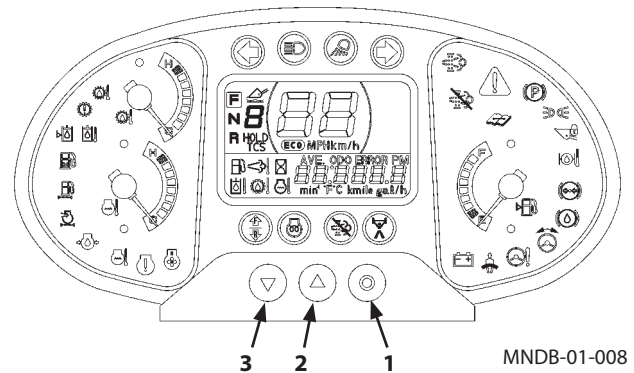
OPERATOR'S STATION

- Hydraulic oil filter 2 replacement interval hour meter
Pilot oil filter replacement intervals can be reset to "2000.0", "1500.0", or "1000.0". The interval set when the machine was shipped from the factory is "2000.0".

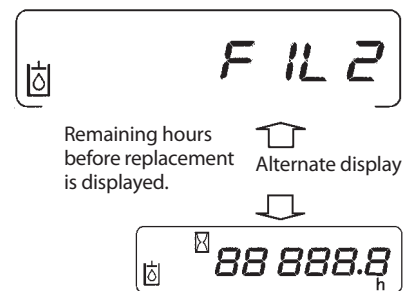
While displaying the change interval hours, keep pressing switch (1).

NOTE: When switch (1) is released, time resetting is completed. Keep pressing switch (1) until the desired resetting time is displayed.

Time display is changed four seconds after pressing switch (1). While keeping switch (1) pressed, press switch (3). Each time switch (3) is pressed, the displayed hours will change in the order of "2000.0 → 1500.0 → 1000.0". When the desired time is displayed, release switch (1) to complete resetting operation.

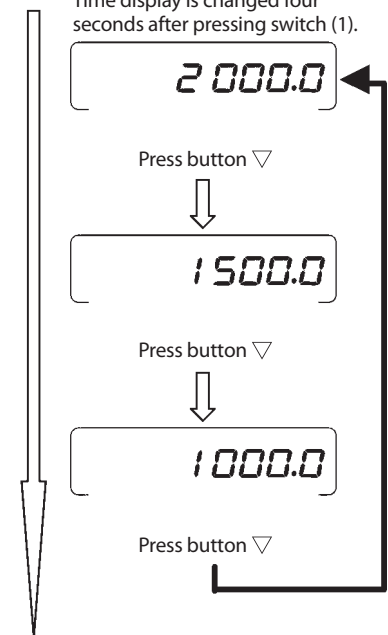


MNDB-01-008

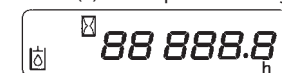


Keep pressing switch (1).

Time display is changed four seconds after pressing switch (1).



Release switch (1) to complete resetting operation.



MNDB-01-045

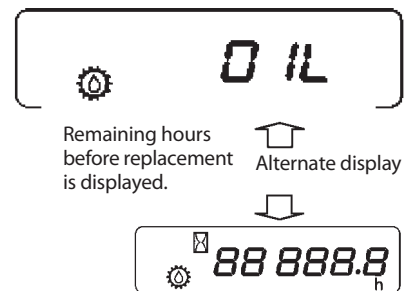
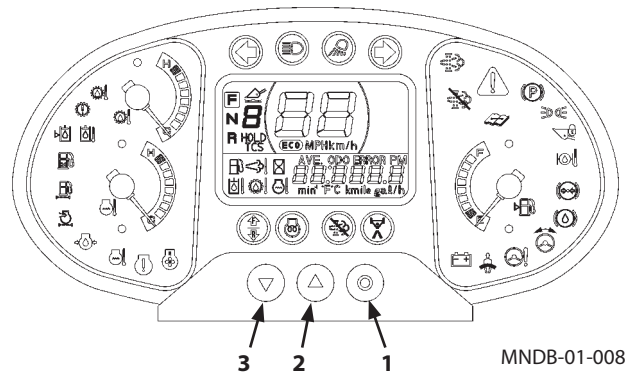
OPERATOR'S STATION

- Transmission oil change interval hour meter
Oil change intervals can be reset to "1000.0", "500.0", or "250.0". The interval set when the machine was shipped from the factory is "1000.0".

While displaying the change interval hours, keep pressing switch (1).

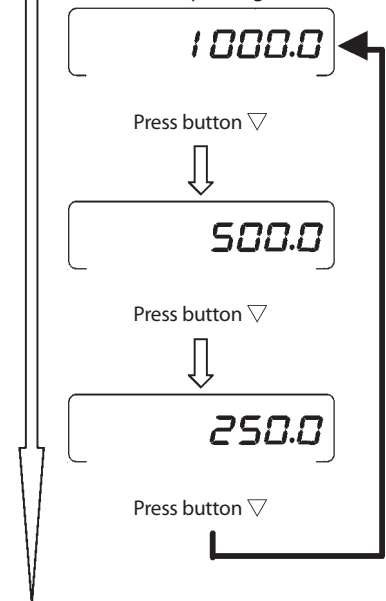
NOTE: When switch (1) is released, time resetting is completed. Keep pressing switch (1) until the desired resetting time is displayed.

Time display is changed four seconds after pressing switch (1). While keeping switch (1) pressed, press switch (3). Each time switch (3) is pressed, the displayed hours will change in the order of "1000.0 → 500.0 → 250.0". When the desired time is displayed, release switch (1) to complete resetting operation.

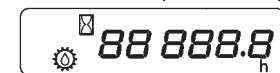


Keep pressing switch (1).

Time display is changed four seconds after pressing switch (1).



Release switch (1) to complete resetting operation.



MNDB-01-046

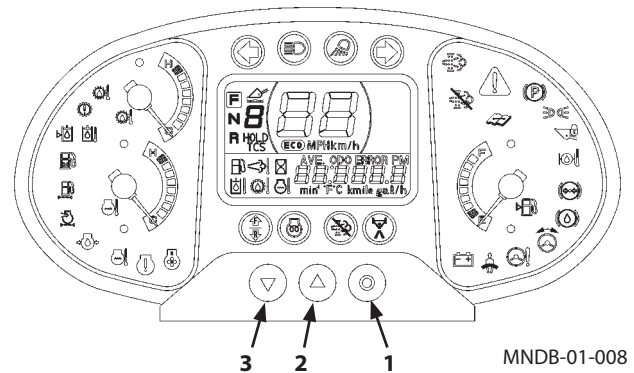
OPERATOR'S STATION

- Transmission oil filter replacement interval hour meter
Transmission oil filter replacement intervals can be reset to "1000.0", "500.0", or "250.0". The interval set when the machine was shipped from the factory is "1000.0".

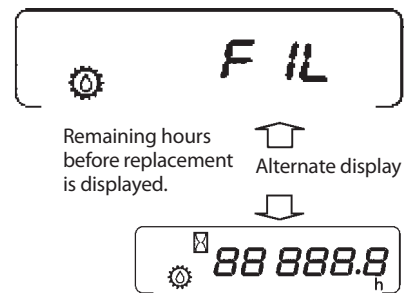
While displaying the replacement interval hours, keep pressing switch (1).

NOTE: When switch (1) is released, time resetting is completed. Keep pressing switch (1) until the desired resetting time is displayed.

Time display is changed four seconds after pressing switch (1). While keeping switch (1) pressed, press switch (3). Each time switch (3) is pressed, the displayed hours will change in the order of "1000.0 → 500.0 → 250.0". When the desired time is displayed, release switch (1) to complete resetting operation.

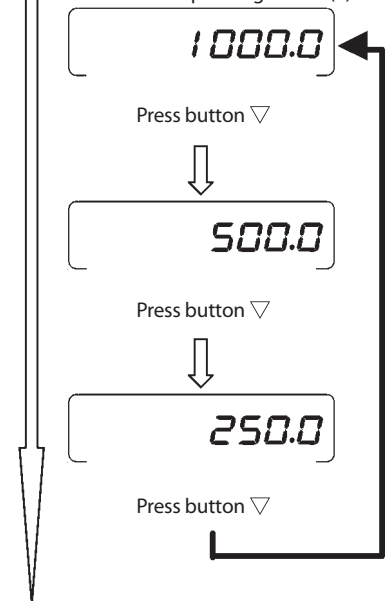


MNDB-01-008

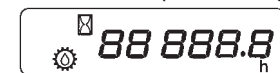


Keep pressing switch (1).

Time display is changed four seconds after pressing switch (1).



Release switch (1) to complete resetting operation.



MNDB-01-047

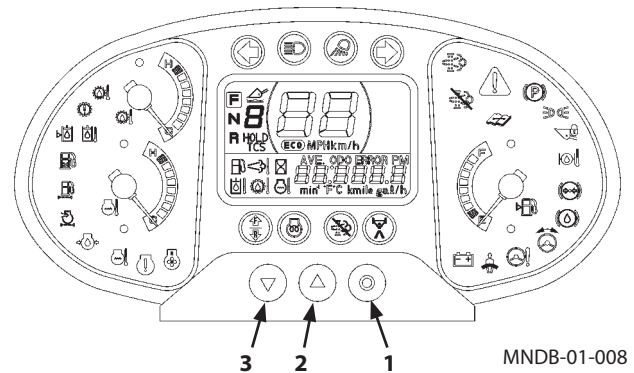
OPERATOR'S STATION

- Engine oil change interval hour meter
Oil change intervals can be reset to "500.0", "250.0", or "200.0". The interval set when the machine was shipped from the factory is "500.0".

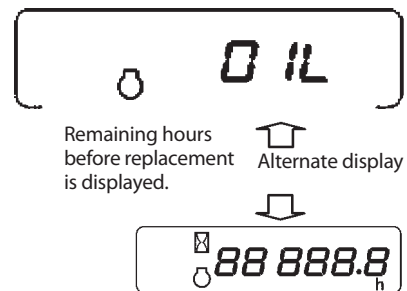
While displaying the change interval hours, keep pressing switch (1).

NOTE: When switch (1) is released, time resetting is completed. Keep pressing switch (1) until the desired resetting time is displayed.

Time display is changed four seconds after pressing switch (1). While keeping switch (1) pressed, press switch (3). Each time switch (3) is pressed, the displayed hours will change in the order of "500.0 → 250.0 → 200.0". When the desired time is displayed, release switch (1) to complete resetting operation.

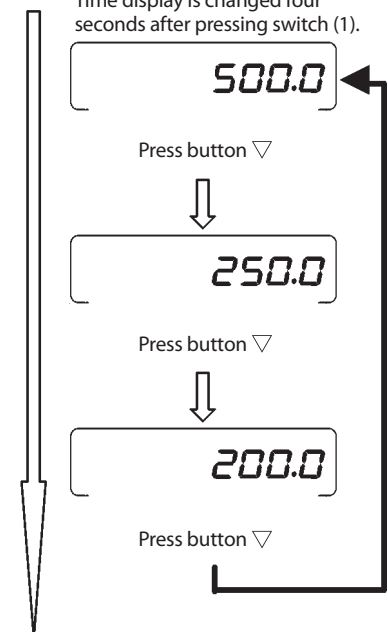


MNDB-01-008

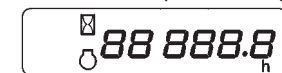


Keep pressing switch (1).

Time display is changed four seconds after pressing switch (1).



Release switch (1) to complete resetting operation.



MNDB-01-048

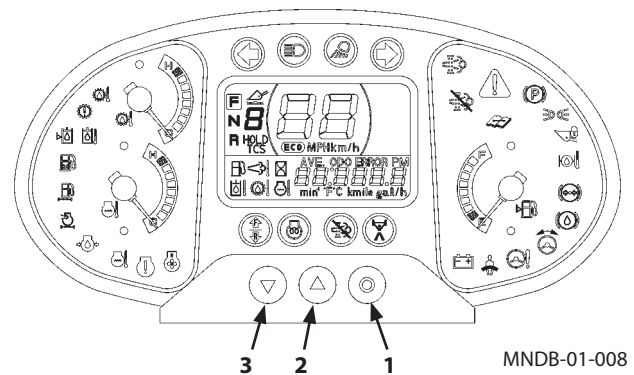
OPERATOR'S STATION

- Engine oil filter replacement interval hour meter
Filter replacement intervals can be reset to "500.0", "250.0", or "200.0". The interval set when the machine was shipped from the factory is "500.0".

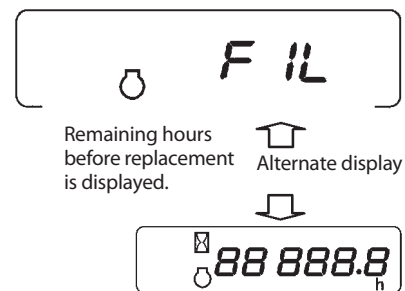
While displaying the replacement interval hours, keep pressing switch (1).

NOTE: When switch (1) is released, time resetting is completed. Keep pressing switch (1) until the desired resetting time is displayed.

Time display is changed four seconds after pressing switch (1). While keeping switch (1) pressed, press switch (3). Each time switch (3) is pressed, the displayed hours will change in the order of "500.0 → 250.0 → 200.0". When the desired time is displayed, release switch (1) to complete resetting operation.

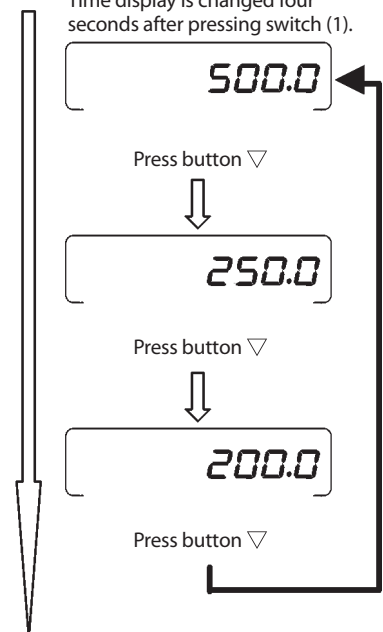


MNDB-01-008

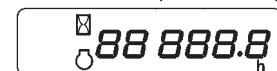


Keep pressing switch (1).

Time display is changed four seconds after pressing switch (1).



Release switch (1) to complete resetting operation.



MNDB-01-049

OPERATOR'S STATION

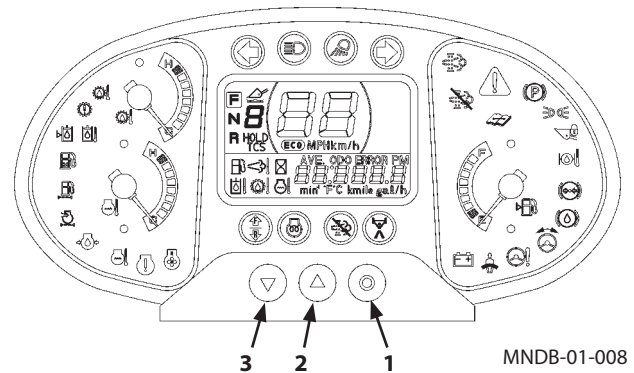
- Fuel filter replacement interval hour meter
Filter replacement intervals can be reset to "500.0" or "250.0".
The interval set when the machine was shipped from the factory is "500.0".

While displaying the replacement interval hours, keep pressing switch (1).

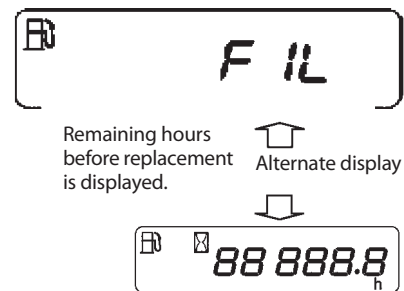
NOTE: When switch (1) is released, time resetting is completed. Keep pressing switch (1) until the desired resetting time is displayed.

Time display is changed four seconds after pressing switch (1). While keeping switch (1) pressed, press switch (3). Each time switch (3) is pressed, the displayed hours will change in the order of "500.0 → 250.0".

When the desired time is displayed, release switch (1) to complete resetting operation.

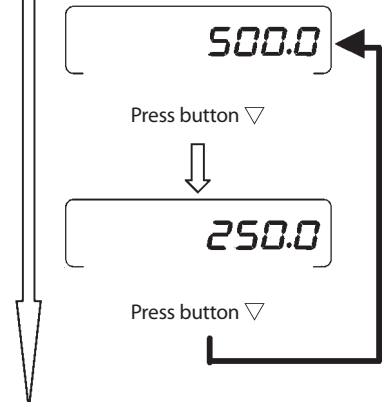


MNDB-01-008

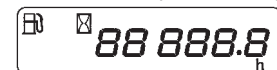


Keep pressing switch (1).

Time display is changed four seconds after pressing switch (1).



Release switch (1) to complete resetting operation.



MNDB-01-050

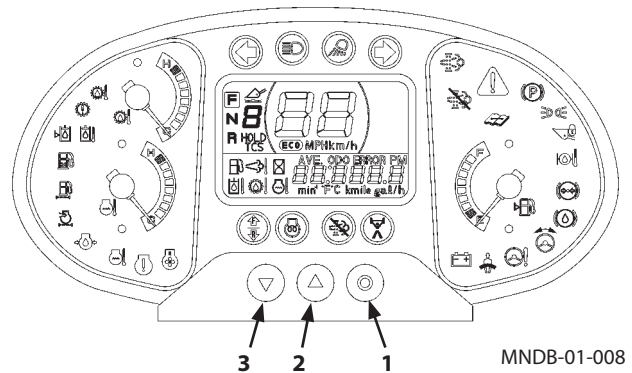
OPERATOR'S STATION

- Axle oil change interval hour meter
Oil change intervals can be reset to "2000.0", "1500.0", or "1000.0". The interval set when the machine was shipped from the factory is "2000.0".

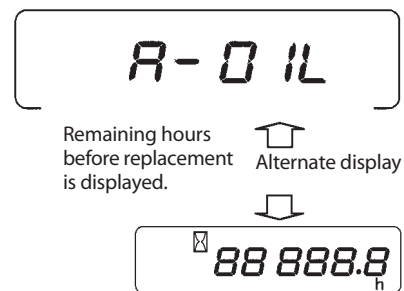
While displaying the change interval hours, keep pressing switch (1).

NOTE: When switch (1) is released, time resetting is completed. Keep pressing switch (1) until the desired resetting time is displayed.

Time display is changed four seconds after pressing switch (1). While keeping switch (1) pressed, press switch (3). Each time switch (3) is pressed, the displayed hours will change in the order of "2000.0 → 1500.0 → 1000.0". When the desired time is displayed, release switch (1) to complete resetting operation.

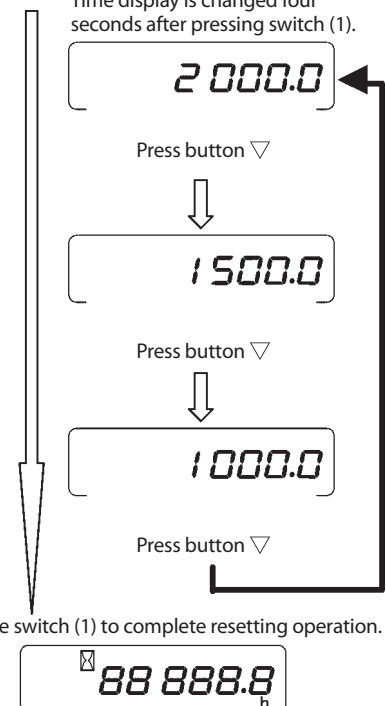


MNDB-01-008



Keep pressing switch (1).

Time display is changed four seconds after pressing switch (1).



Release switch (1) to complete resetting operation.

MNDB-01-051

OPERATOR'S STATION

Clock Setting Mode

The clock display on the machine information display screen can be set in the clock setting mode.

 **NOTE:** If battery power is interrupted over an extended time period, the clock display may indicate "Year of 2000, Month of 01, day of 01, and time of 00:00" when the engine is restarted. Other information data, such as maintenance intervals, will not be reset or deleted due to this insufficient power supply.

- Clock (24H) Setting Procedures

After selecting the clock display on the information display screen, press and hold both selectors (1 and 3) at the same time for more than 1 second to shift the information display screen to the clock setting mode.

1. Year Setting

Press monitor display selector (2 or 3) to increase or decrease the figure displayed on the screen respectively. After displaying the desired year, determine the displayed year by pressing monitor display mode selector (1). Then, move to the next setting screen.

2. Month Setting

Press monitor display selector (2 or 3) to increase or decrease the figure displayed on the screen respectively. After displaying the desired month, determine the displayed year by pressing monitor display mode selector (1). Then, move to the next setting screen.

3. Day Setting

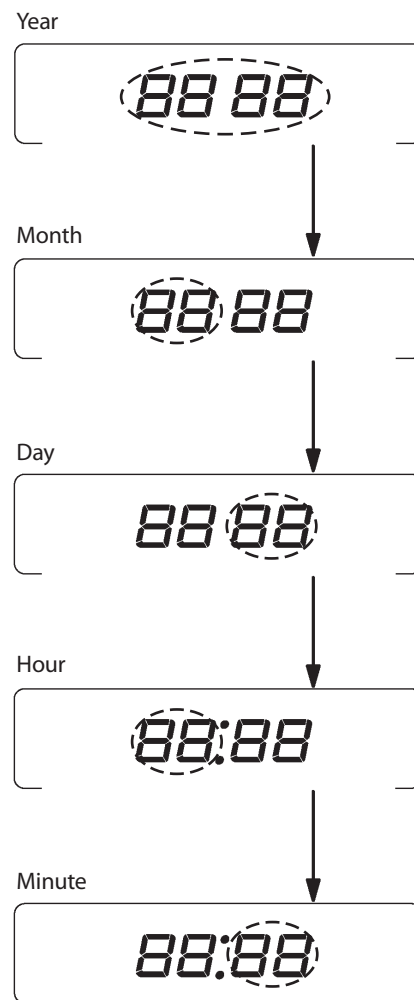
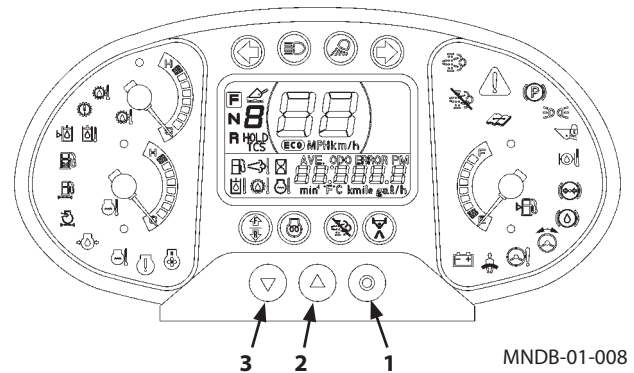
Press monitor display selector (2 or 3) to increase or decrease the figure displayed on the screen respectively. After displaying the desired day, determine the displayed year by pressing monitor display mode selector (1). Then, move to the next setting screen.

4. Hour Setting

Press monitor display selector (2 or 3) to increase or decrease the figure displayed on the screen respectively. After displaying the desired hour, determine the displayed year by pressing monitor display mode selector (1). Then, move to the next setting screen.

5. Minute Setting

Press monitor display selector (2 or 3) to increase or decrease the figure displayed on the screen respectively. After displaying the desired minute, determine the displayed year by pressing monitor display mode selector (1). Then, clock setting is complete.

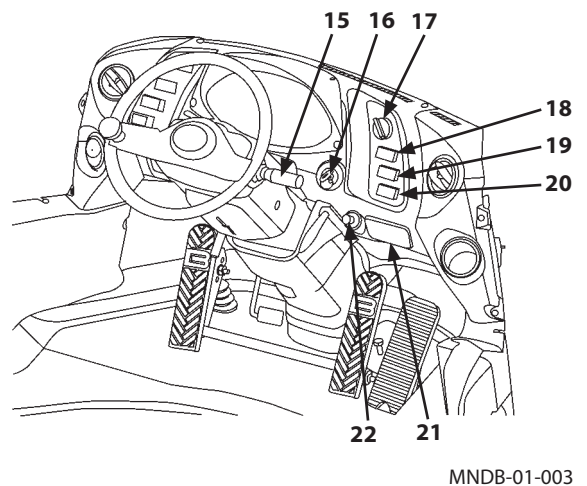
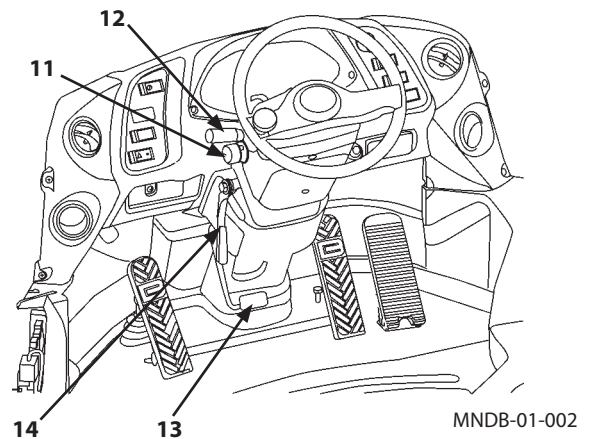
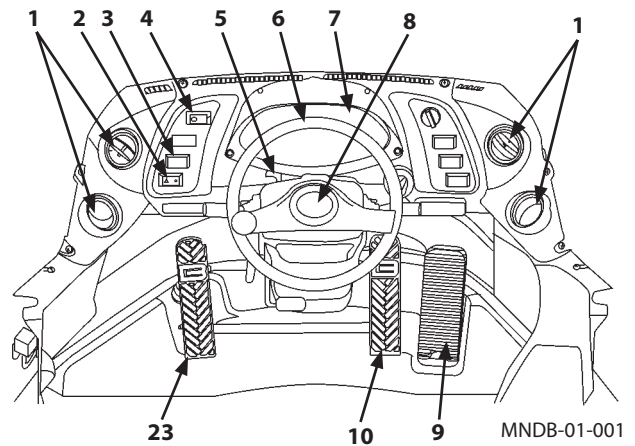


M4GB-01-174

OPERATOR'S STATION

Switches, Steering Wheel and Pedals

- 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- Travel Mode Selector
- 18- Auto Idling Stop Switch
- 19- Declutch position Switch
- 20- Shift Change Delay Mode Switch
- 21- Ash Tray
- 22- Cigar Lighter
- 23- Brake/Declutch Pedal

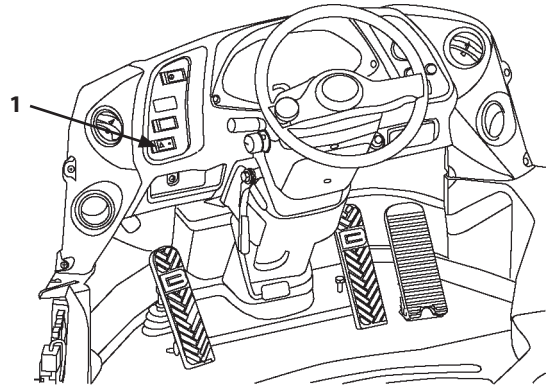


OPERATOR'S STATION

Hazard Switch

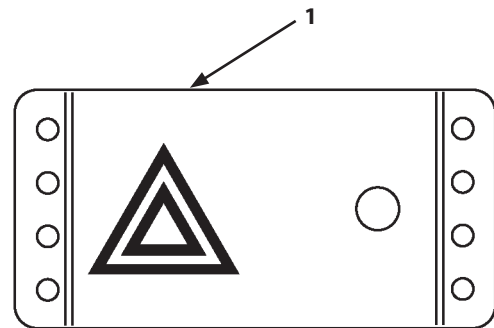
IMPORTANT: Do not leave the hazard switch (1) in the "△" or "ON" position for a long time with the engine stopped. The batteries will become discharged.

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

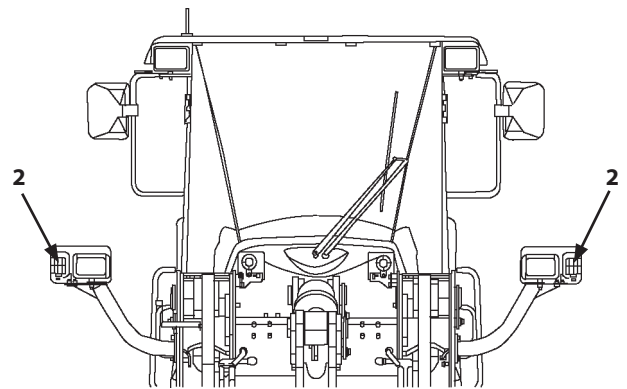


MNEC-01-037

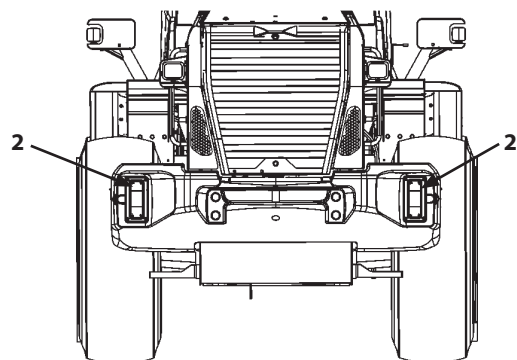
When the "△" on hazard switch (1) is pressed, front and rear turn signals (hazard light) (2) on both right and left sides start flashing.
Press the opposite side of hazard switch (1) to turn the hazard signals OFF.



M4GB-01-065



MNEC-07-039

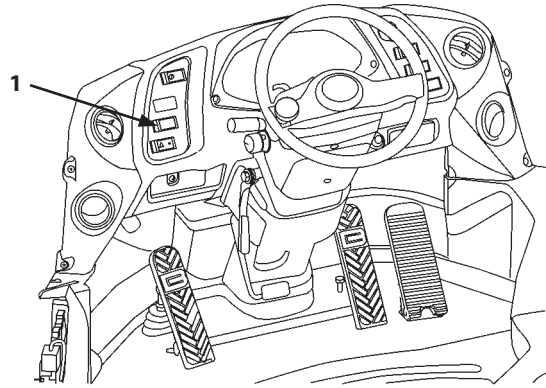


MNDB-07-013

OPERATOR'S STATION

Work Light Switch

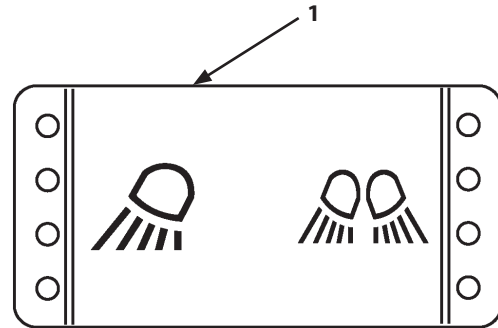
Press the mark  on switch (1) while the light switch is in "D" or "D" position to turn front work lights (2) ON. Rear work lights (3) stay OFF.



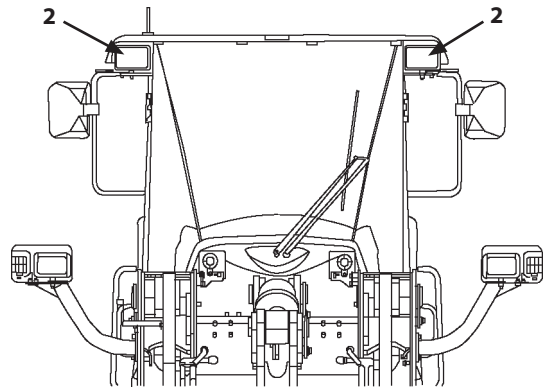
MNDB-01-002

When the side with mark  on switch (1) is pressed, both front work lights (2) and rear work lights (3) are turned ON.

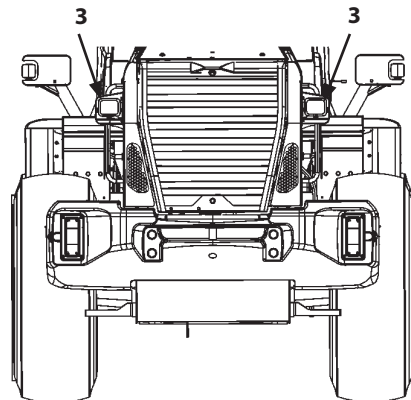
CAUTION: Do not turn the work lights ON while driving on a public road.



M4GB-01-067



MNEC-07-039



MNDB-07-013

OPERATOR'S STATION

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 Kawasaki dealer.

When parking brake switch (1) is turned ON, the parking brake is applied; parking brake indicator (2) will light.

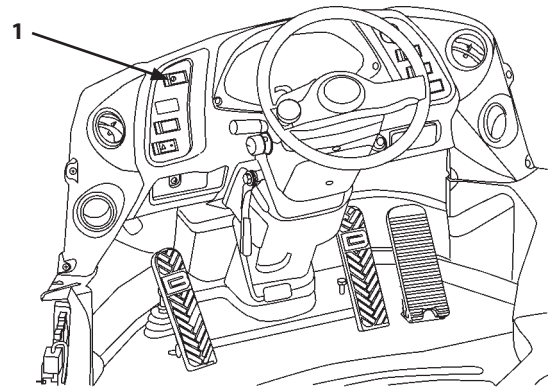
Press the OFF side of parking brake switch (1) to release the parking brake. Check that parking brake indicator (2) goes OFF by pressing the switch firmly clicks.

NOTE:

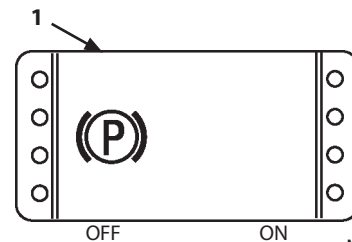
- The parking brake is released by hydraulic pressure only when the engine is running.
- To ensure safe operation, when the parking brake is applied, with the forward/reverse lever moved to the forward (F) or reverse (R) position, the machine should not travel.
- To ensure safe operation, when the engine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

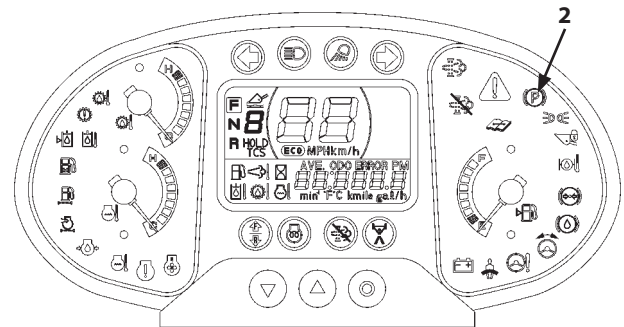
- The parking brake will apply when the key is turned OFF.



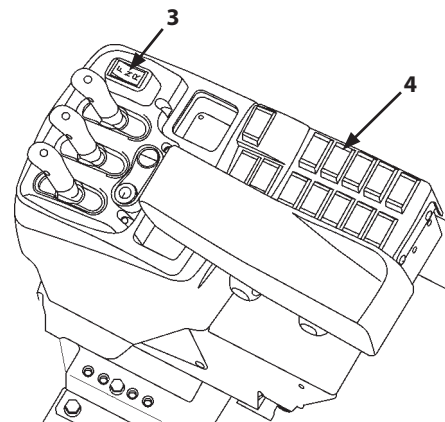
MNDB-01-002



MNEC-01-058-KC



MNDB-01-008



70MNDB-01-04

OPERATOR'S STATION

Neutral Lever Lock (for the Forward/Reverse Lever)

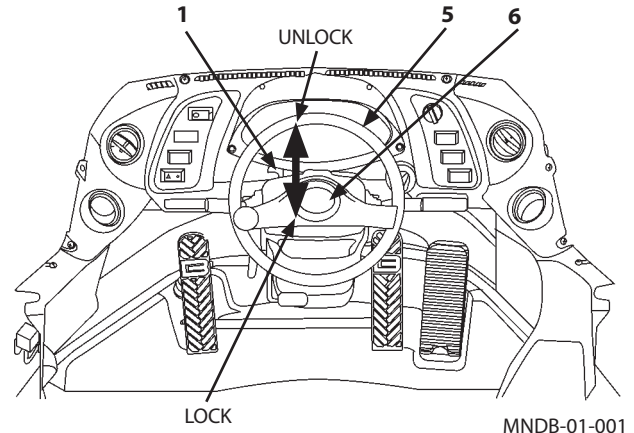
WARNING: When the machine is parked or serviced, be sure to place the neutral lever lock in the LOCK (🔒) position.

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 (🔒)



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.

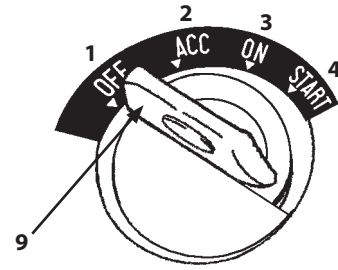
NOTE: The horn switch is provided also on the control lever to improve operator comfort. Refer to page 1-74.

OPERATOR'S STATION

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.



MNDB-01-053

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.

OPERATOR'S STATION

Turn Signal Lever

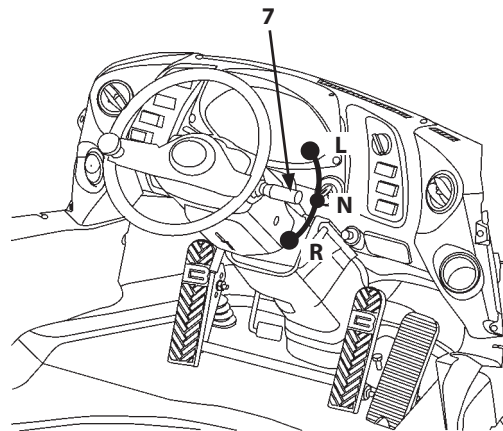
Indicates the drive change direction to persons and/or other vehicles by operating turn signal lever (7).

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.



MNDB-01-003

OPERATOR'S STATION

Light Switch

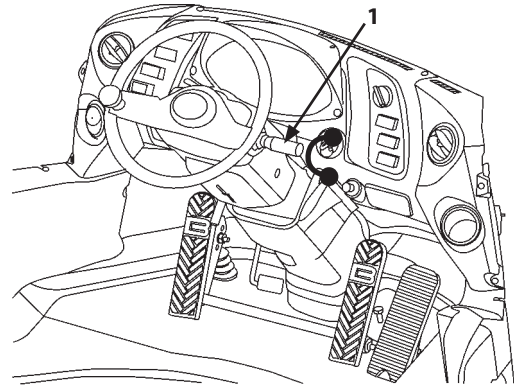
Light switch (1) has three positions, OFF, Small, and Main. As shown below, each light comes ON (☀) or OFF (X) according to the selected position of the light switch.

- 2- Headlight
- 3- Turn Signal/Hazard Light/Clearance Light
- 4- Turn Signal/Hazard Light
- 5- Brake Light/Tail Light

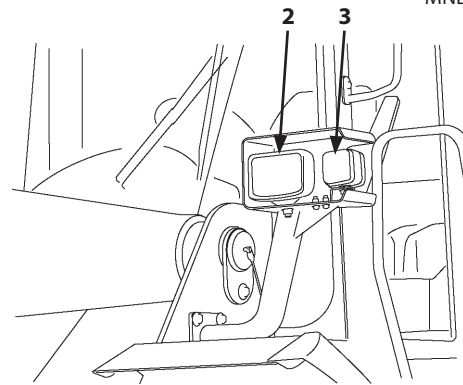
Light Switch Position	Headlight	Clearance Light	Tail Light	Monitor Panel Light
OFF	X	X	X	X
☀	X	☀	☀	☀
☀	☀	☀	☀	☀

 **NOTE:** The light switch position ☀ 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.

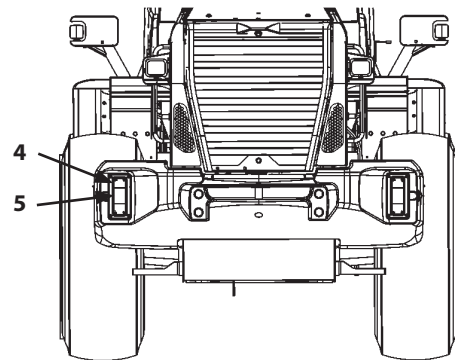
IMPORTANT: Do not hold the switch position at "ON" for a long time with the engine stopped. The batteries will become discharged.



MNDB-01-003



M4GB-01-153



MNDB-07-013

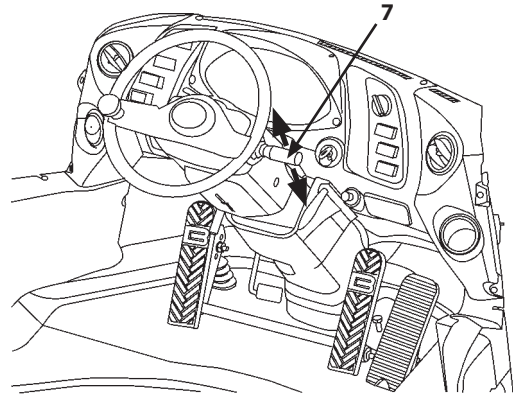
OPERATOR'S STATION

High-Low Beam Switch

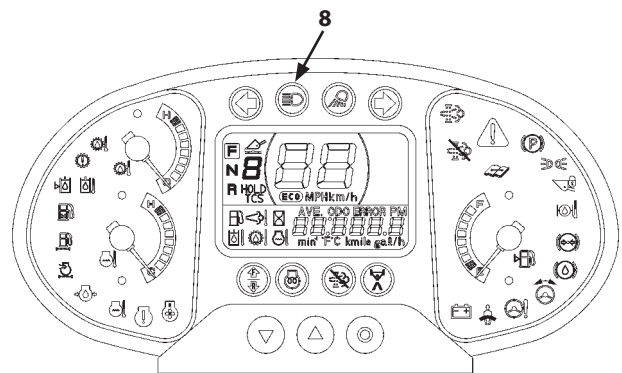
Shifts the headlight beam between high and low.

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.



MNDB-01-003



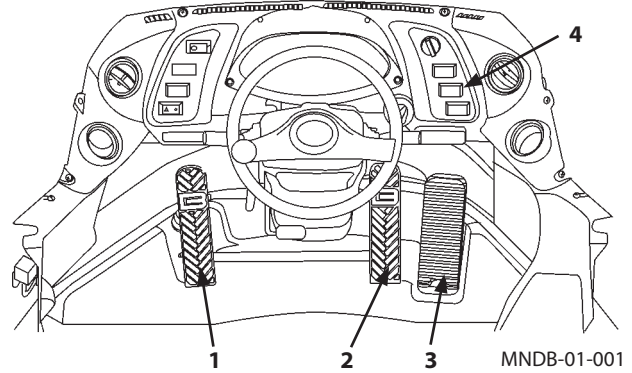
MNDB-01-008

OPERATOR'S STATION

Accelerator Pedal

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

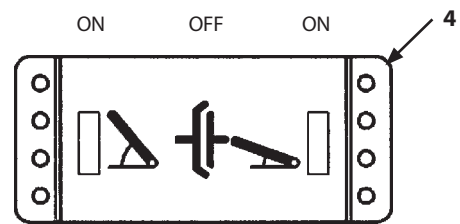
 **NOTE:** The engine speed may change due to the machine control regardless of the operation of the accelerator pedal.



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.**



MNDB-01-019

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).

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.

OPERATOR'S STATION

Forward/Reverse Lever/ Shift Switch

Forward/Reverse Lever

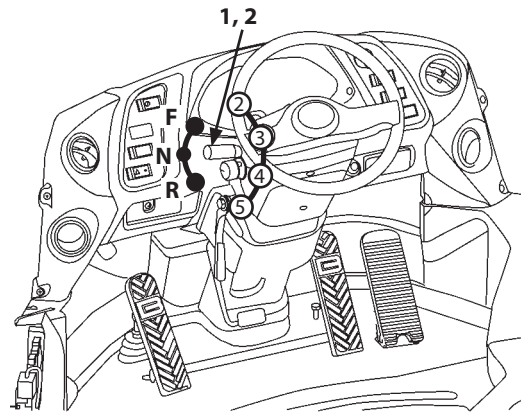
Changes the machine drive direction from forward to reverse and vice versa.

Move forward/reverse lever (1) to the F position to travel the machine forward.

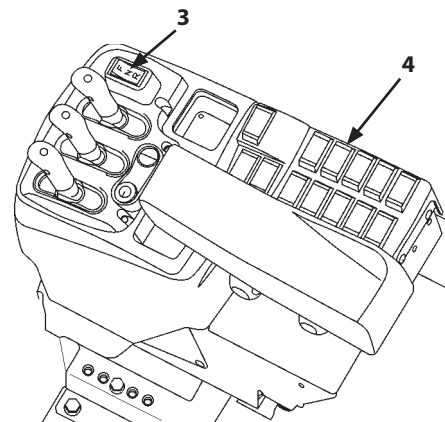
Move forward/reverse lever (1) to the R position to drive the machine in reverse.

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.

 **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 1-64 for forward/reverse selector switch (4).



MNDB-01-002



Fingertip Control Type

70MNDB-01-04

Shift Switch

Rotate shift switch (2) to shift the gear.

Forward : 2nd-5th

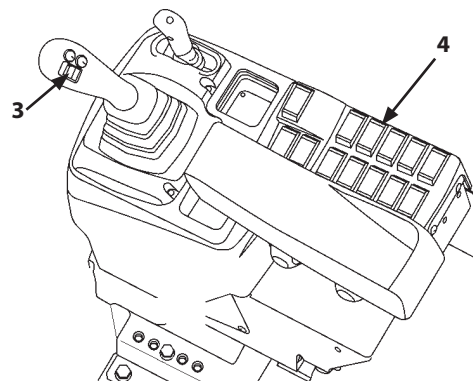
Reverse : 1st-3rd

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

70MNDB-01-05

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.

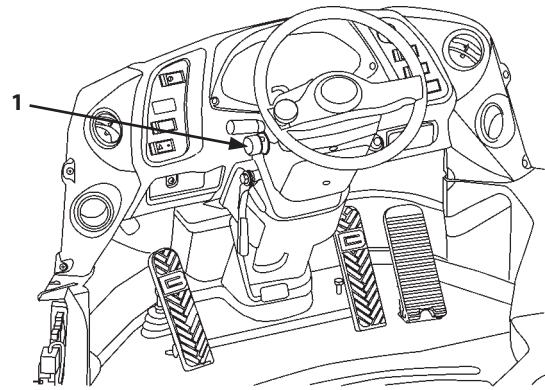
OPERATOR'S STATION

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.



MNDB-01-002

: The front windshield wiper operates at fast speed.

: The front windshield wiper operates at slow speed.

INT : The front windshield wiper intermittently operates.

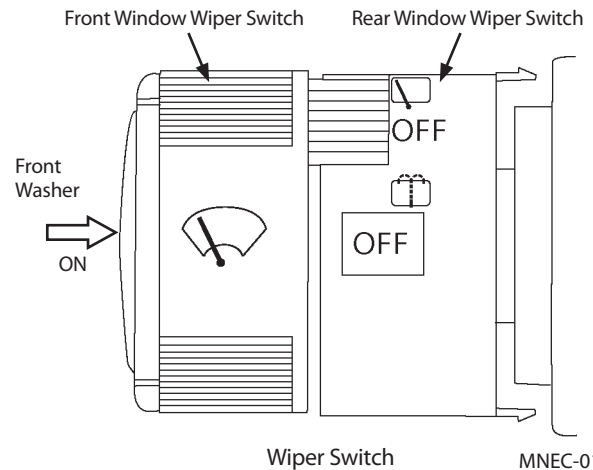
OFF : The front windshield wiper stops moving and the wiper blade is returned to the pre-start position.

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

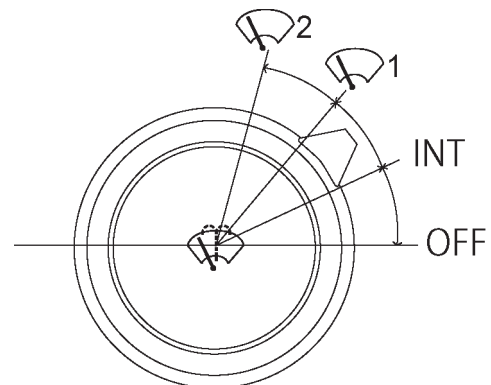
: Washer fluid squirts from the rear nozzle and the rear windshield wiper operates.

: Rear windshield wiper operates.

: Washer fluid squirts from the rear nozzle.

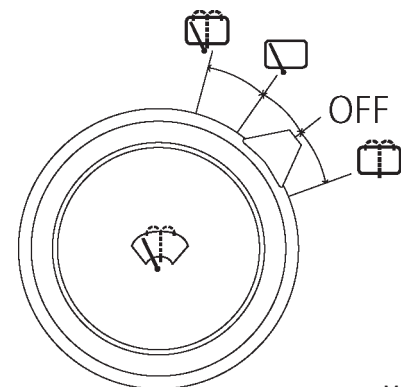


MNEC-01-075



Front Window Wiper Switch

MNEC-01-076



Rear Window Wiper Switch

MNEC-01-077

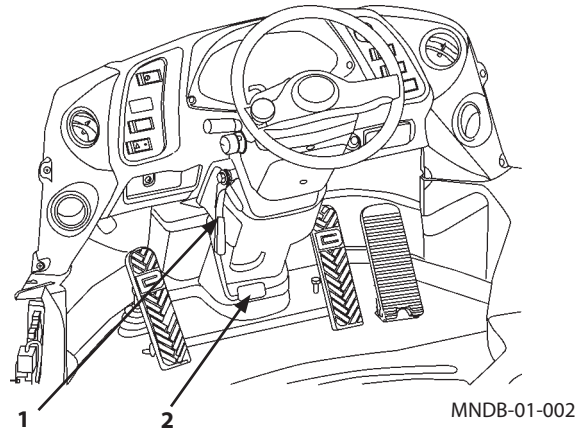
OPERATOR'S STATION

Tilt, Telescopic Lever/Steering Column Tilt Pedal

⚠ 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.



OPERATOR'S STATION

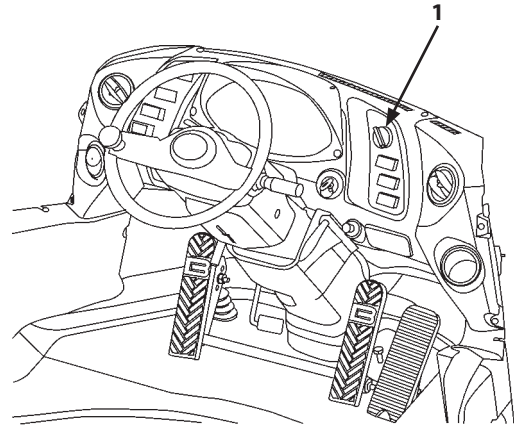
Travel Mode Selector

The travel mode selector (1) selects the travel mode. Selecting the manual mode "⚙" by using the travel mode selector (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 (1).

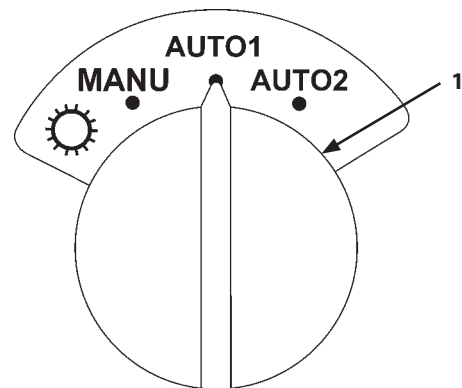
- Manual Mode : Manual gear shift (The gear shifts according to the shift switch.)
- AUTO 1 Mode : Starts out traveling at 2nd speed. When traveling load increases, it automatically shifts from 2nd to 1st speed. (Auto DSS function)
This mode is suited for heavy digging work or climbing a slope.
- AUTO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

Refer to "MOVING THE MACHINE" section.

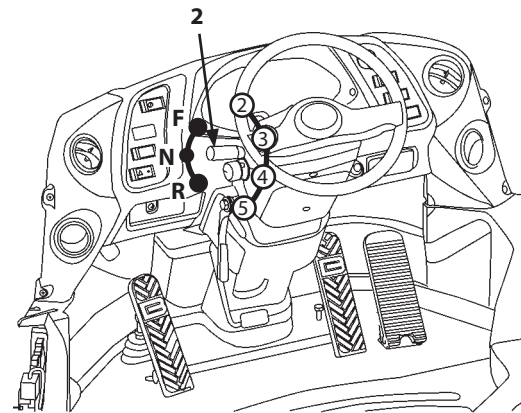
 **NOTE:** The AUTO 1 mode shifts up to the set shift lever position. When the shift switch lever is set to 4th speed, auto-shift range is 1st to 4th speed. When the shift switch is set to 3rd speed, auto-shift range is 1st to 3rd speed.



MNDB-01-003



MNDB-01-024



MNDB-01-002

OPERATOR'S STATION

Declutch Position Switch

Declutch position switch (1) changes the function of left brake pedal.

Operating declutch position switch (1) 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.



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

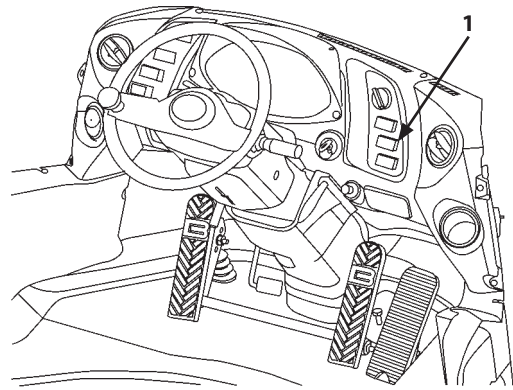


: Declutch ON while deeply depressing the left brake pedal: (Suitable for work on a slope.)

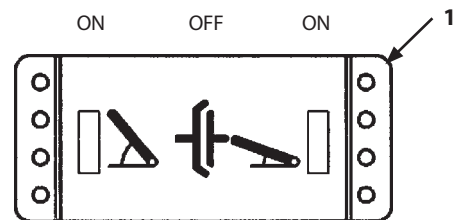
- Declutch OFF

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 (1) OFF (neutral), depress the left brake pedal. Gradually release the left brake pedal while depressing the accelerator pedal to easily start ascending the slope.



MNDB-01-003



MNDB-01-019

OPERATOR'S STATION

Auto Idling Stop Switch

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

When auto idling stop switch is set in ON, the engine automatically stops after the preset time when all the following conditions are satisfied:

- Parking brake switch is turned "ON".
- The throttle pedal is released.
- The hydraulic control levers are not used.

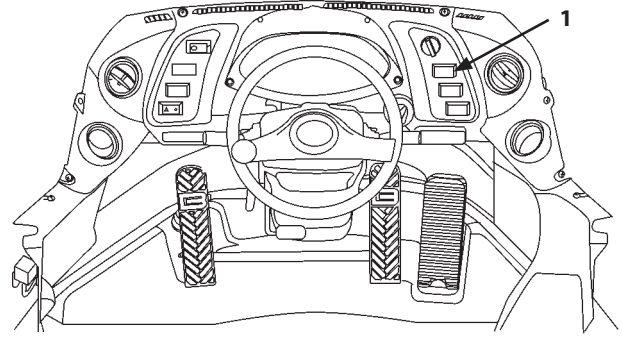
Any one of the above conditions is not satisfied during the countdown period, the shutdown timer is canceled and the engine will not stop.

30 seconds before the engine stop, the indicator (2) 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.

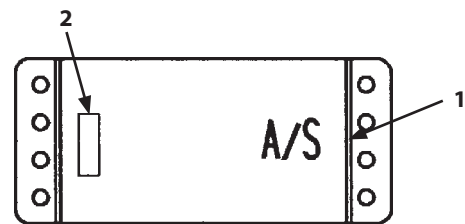
IMPORTANT:

- **Do not leave the machine after auto idling stop. Failure to do so may discharge the batteries.**
- **To restart the engine, turn the key switch OFF, and then perform normal starting procedure.**

🔧 NOTE: The length of time before automatic engine stop is set by the factory at five minutes. To adjust/change the factory set period, contact your authorized dealer.



MNDB-01-001

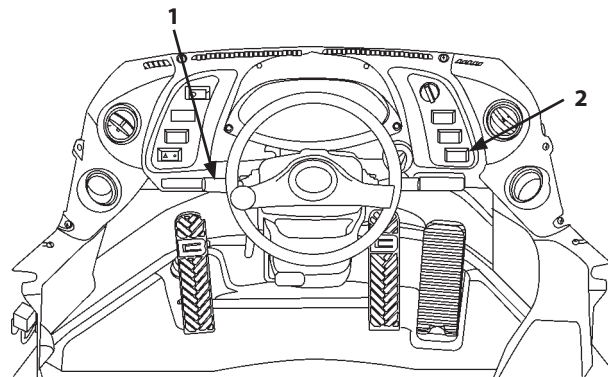


MNDB-01-018

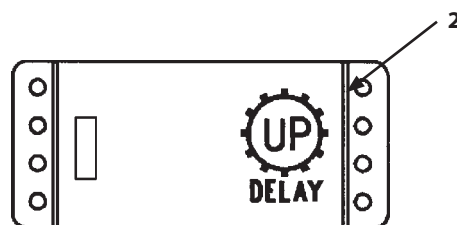
OPERATOR'S STATION

Shift Change Delay Mode Switch

When shift change delay mode switch (2) is set in ON while shift switch (1) is in 3rd or 4th speed position, the shift up timing in 2nd speed → 3rd speed is delayed. Loading work can be easily done in 2nd speed position.



MNDB-01-001



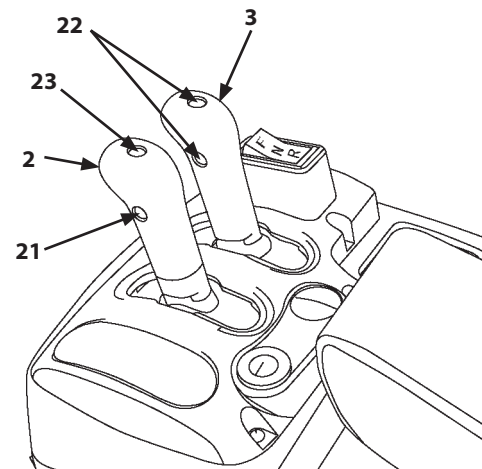
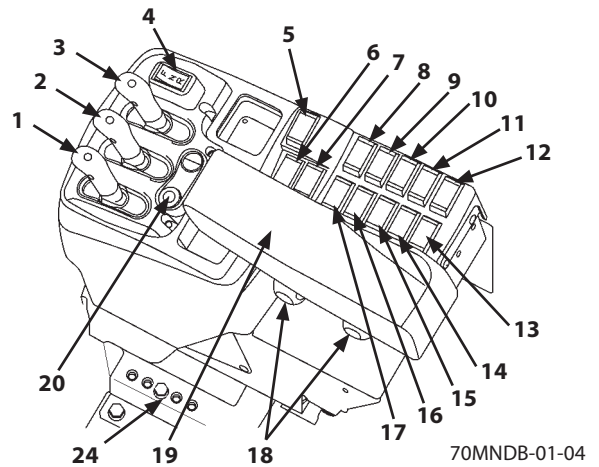
MNDB-01-020

OPERATOR'S STATION

Right Console / Switches

Fingertip Control Type
(70TM7: Standard)
(70Z7: Optional)

- 1- Auxiliary Control Lever (Optional)
- 2- Bucket Control Lever
- 3- Lift Arm Control Lever
- 4- Forward/Reverse Switch
- 5- Control Lever Lock Switch
- 6- Auxiliary
- 7- Auxiliary
- 8- Power Mode Selector
- 9- Forward/Reverse Selector Switch
- 10- Fan Reverse Rotation Switch
- 11- Auxiliary
- 12- Auxiliary
Quick Coupler Switch (70TM7)
- 13- Secondary Steering Operation Check Switch (Optional)
- 14- Lift Arm Auto Leveler (Height Kickout) Switch
- 15- Lift Arm Auto Leveler (Lower Kickout) Switch
- 16- 1st Speed Fixed Switch
- 17- Ride Control Switch (Optional)
- 18- Armrest Adjust Handle
- 19- Armrest
- 20- Hold Switch
- 21- Quick Power Switch
- 22- DSS (Down Shift Switch)
- 23- Horn Switch
- 24- Right Console Positioning Bolt



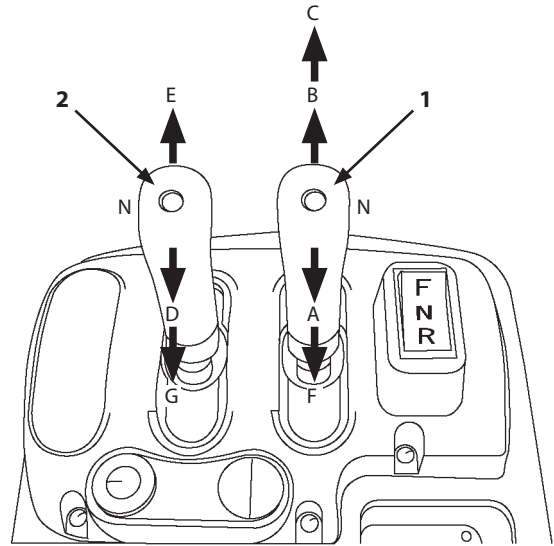
OPERATOR'S STATION

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)

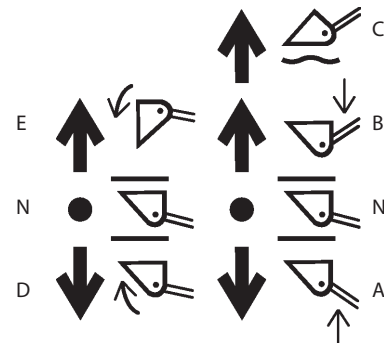
Lever Position	Lift Arm Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied. The lever will stay in this position.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position with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



MNEC-03-003

Bucket Control Lever (2)

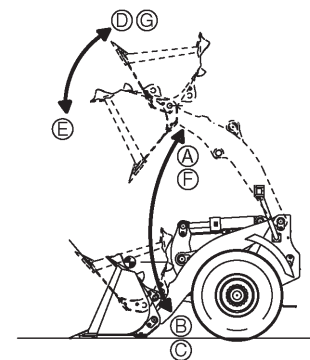
Lever Position	Bucket Operation
E	Bucket Dump: The bucket is tilted forward to dump the bucket.
N	Hold: The bucket is stopped and held in that position.
D	Bucket Tilt (or roll back): The bucket is tilted back; (also this is the transportation position).
G	Detent: When the bucket control lever is moved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



M4GB-01-072

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.

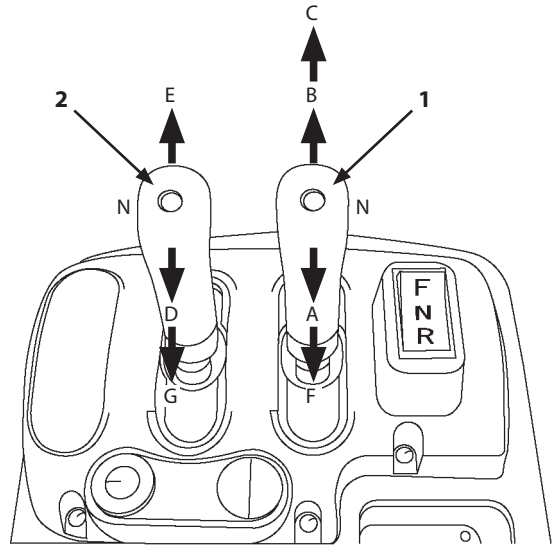


M4GB-01-073

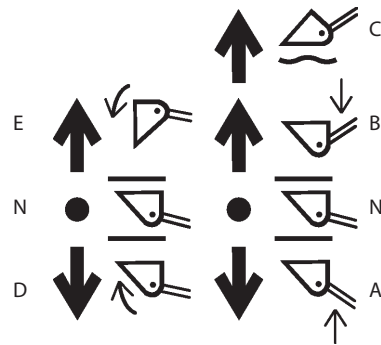
OPERATOR'S STATION

- 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.



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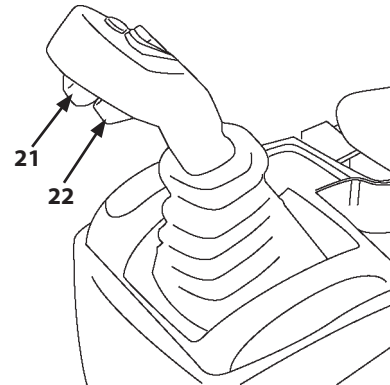
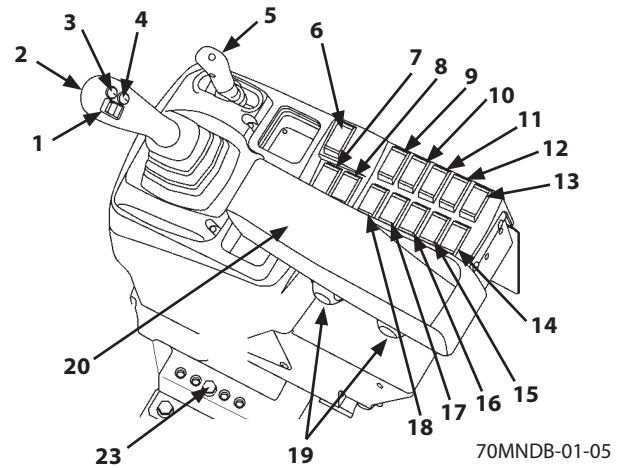
M4GB-01-072

OPERATOR'S STATION

Right Console / Switches

Multi-Function Joystick Type (70Z7: Standard) (70TM7: Option)

- 1- Forward/Reverse Switch
- 2- Multi-Function Joystick Lever
- 3- Quick Power Switch
- 4- DS (Down Shift) Switch
- 5- Auxiliary Control Lever (Option)
- 6- Control Lever Lock Switch
- 7- Auxiliary
- 8- Auxiliary
- 9- Power Mode Selector Switch
- 10- Forward/Reverse Selector Switch
- 11- Fan Reverse Rotation Switch
- 12- Auxiliary
- 13- Auxiliary
Quick Coupler Switch (70TM7)
- 14- Secondary Steering Operation Check Switch (Option)
- 15- Lift Arm Auto Leveler (Height Kickout) Switch
- 16- Lift Arm Auto Leveler (Lower Kickout) Switch
- 17- 1st Speed Fixed Switch
- 18- Ride Control Switch (Option)
- 19- Armrest Adjust Handle
- 20- Armrest
- 21- Hold Switch (Under the Lever)
- 22- Horn Switch (Under the Lever)
- 23- Right Console Positioning Bolt

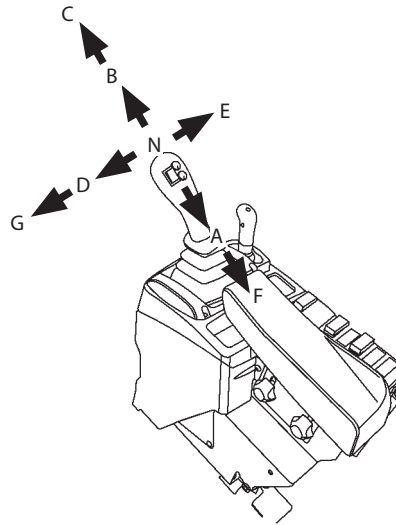


OPERATOR'S STATION

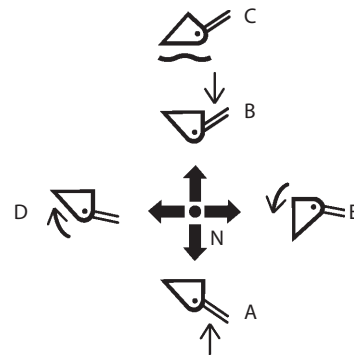
Loading Multi-Function Joystick Lever (Option)

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

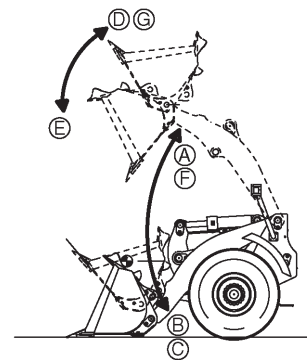
Lever Position	Bucket Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied. The lever is held in this position.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position.
G	Detent: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



MNDB-01-037



M4GB-01-074



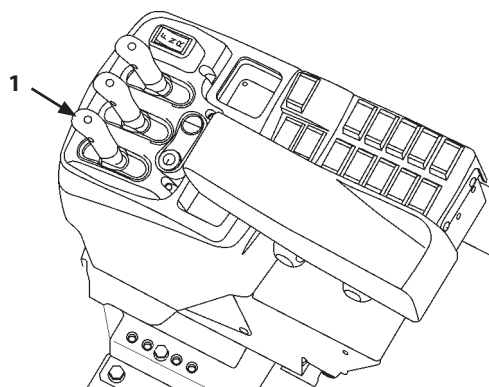
M4GB-01-073

OPERATOR'S STATION

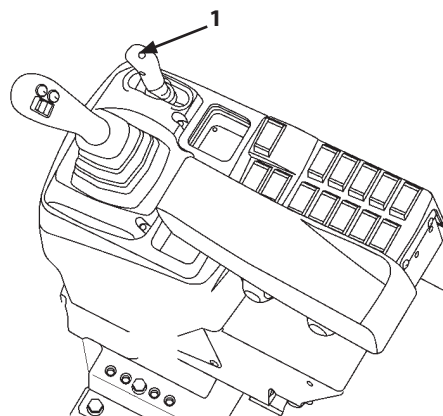
Auxiliary Control Lever (Option)

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.



70MNDB-01-04



70MNDB-01-05

OPERATOR'S STATION

Forward/Reverse Selector Switch

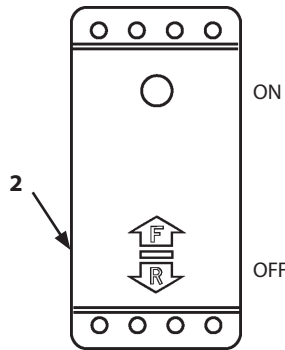
Forward/reverse selector switch (2) is a switch that activates forward/reverse switch (1). When forward/reverse selector switch (2) is in ON position, the machine travels in the forward or reverse direction by selecting the (F) or (R) side of forward/reverse switch (1).

Operational Procedure

1. Turn the parking brake switch OFF.

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

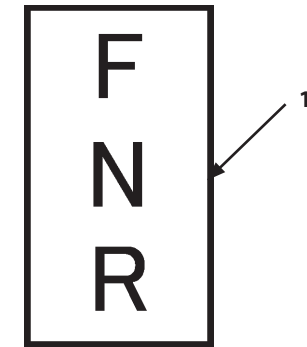
2. When forward/reverse selector switch (2) is turned ON while both forward/reverse lever (3) and forward/reverse switch (1) are in the neutral (N) position, forward/reverse selector switch indicator (4) lights.



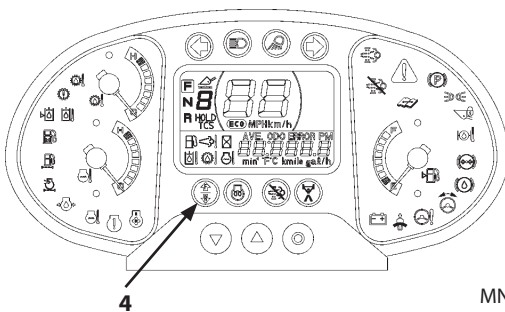
M4GB-01-083

3. Set forward/reverse switch (1) to (F) or (R).

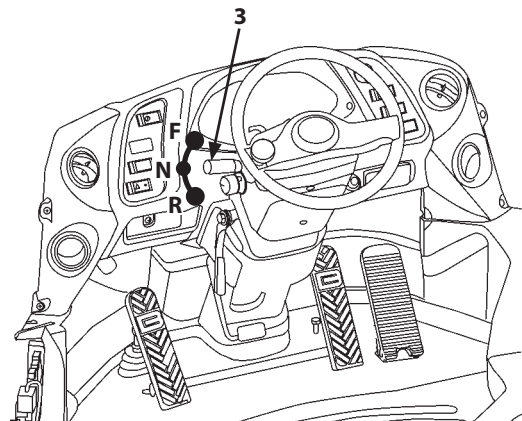
NOTE: The forward/reverse lever (3) has priority over the forward/reverse switch (1). When the forward/reverse lever (3) is applied while the forward/reverse switch (1) is engaged, priority is given to the lever (3), not the switch (1). Perform step 2 above to use the forward/reverse switch (1).



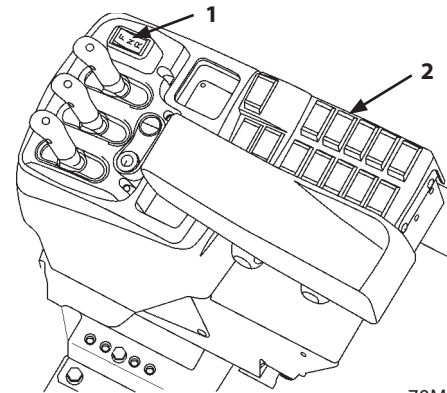
M4GB-01-084



MNDB-01-008

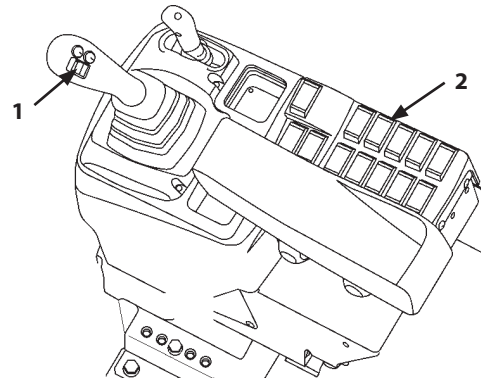


MNDB-01-002



Fingertip Control Type

70MNDB-01-04



Multi-Function Joystick Type

70MNDB-01-05

OPERATOR'S STATION

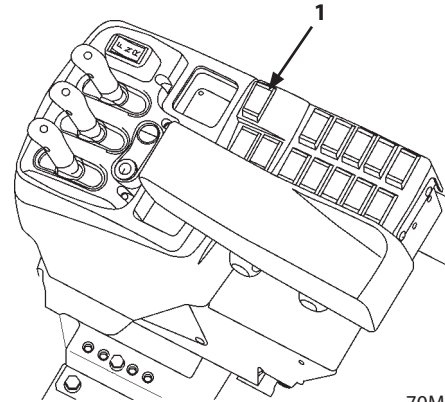
Loading Control Lever Lock Switch

WARNING:

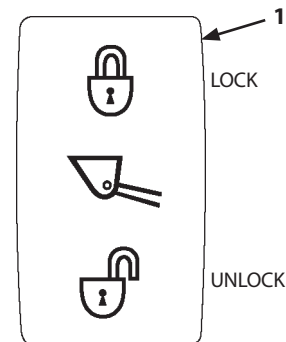
- Before leaving the operator's seat, be sure to stop the engine. Place the boom and bucket in a level, safe position. Then, set control lever lock switch (1) to the LOCK (🔒) position.
- Always check to be sure that the control lever lock switch (1) is set in the LOCK (🔒) position before transporting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

Refer to page 5-4 for details.

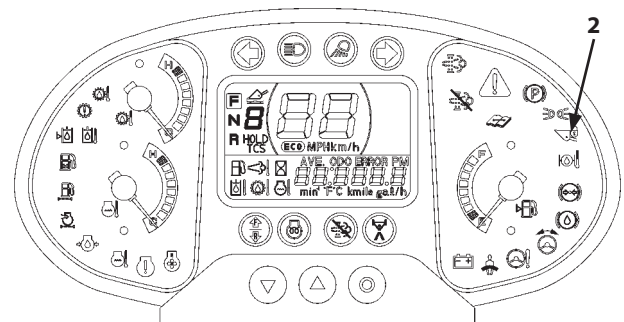
Control lever lock switch (1) is provided to prevent unexpected machine operation, if the operator mistakenly comes in contact with the bucket and/or lift arm control lever when getting on or off the machine. When control lever lock switch (1) is placed to UNLOCK (🔓) position, control lever lock indicator (2) goes OFF and the loading control lever becomes operable.



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MNEC-01-015



MNDB-01-008

OPERATOR'S STATION

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):

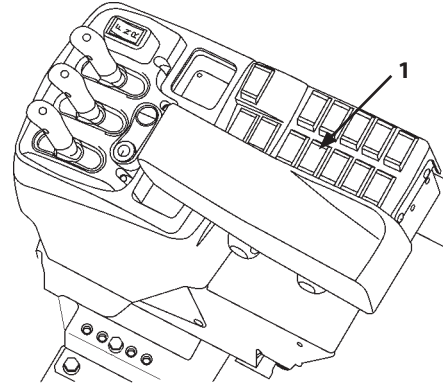
Set shift switch (3) to 2nd speed.

Push the ON side of 1st speed fixed switch (1).

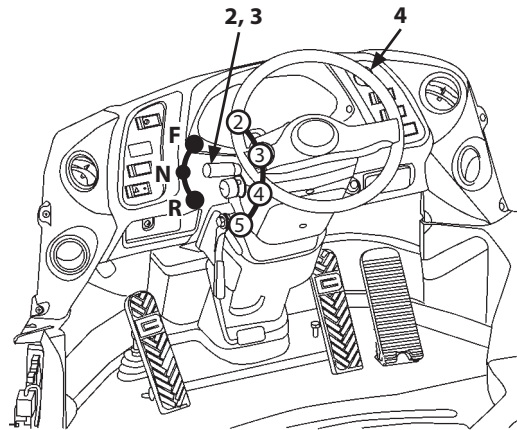
The transmission gear is fixed to 1st speed regardless of the position of travel mode selector (4).

1st Speed Fixed (OFF):

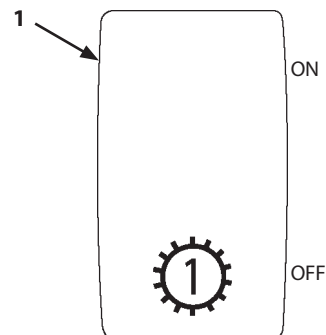
Push the OFF side of 1st speed fixed switch (1).



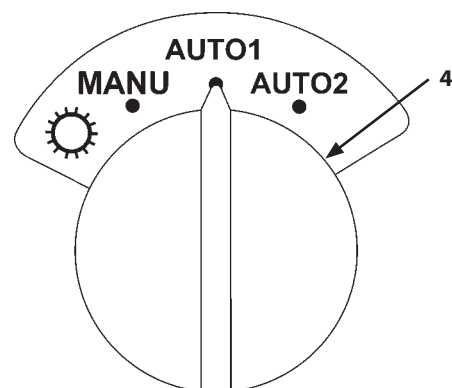
70MNDB-01-04



MNDB-01-002



MNEC-01-502



MNDB-01-024

OPERATOR'S STATION

Power Mode Selector

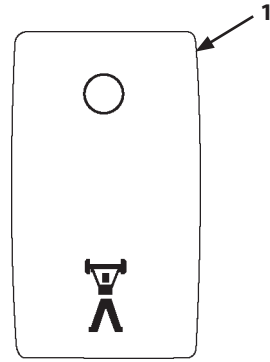
Two operation modes are available and can be selected by power mode selector (1) depending on the applications.

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

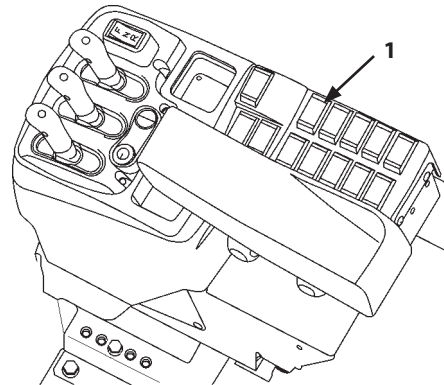
- Power mode (ON) : The power mode is suitable for heavy digging work prioritizing work effectiveness.
Under auto shifting mode, the gear is shifted in regular engine RPM's (min⁻¹) and shift mapping.
- Power mode (OFF) : When the power mode is turned OFF, the machine operates putting more emphasis on 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 symbol () (2) will light on the monitor panel.

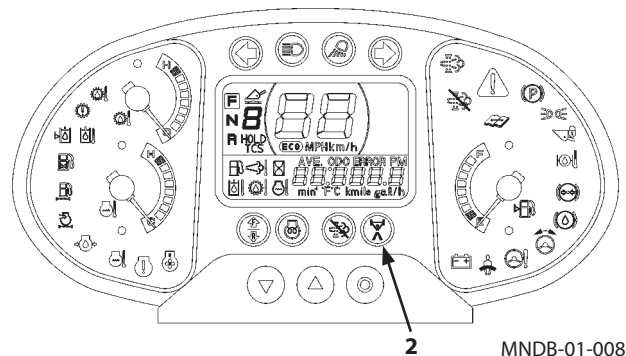
 **NOTE:** When turning the start key switch ON, the power mode is set to OFF.



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70MNDB-01-04

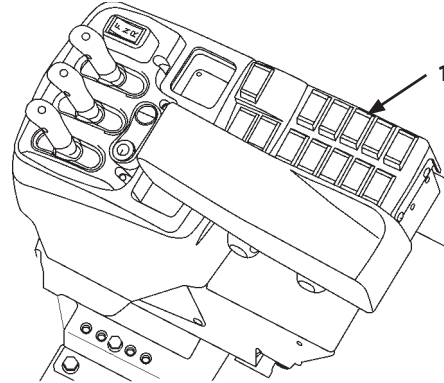


MNDB-01-008

OPERATOR'S STATION

Fan Reverse Rotation Switch

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.



70MNDB-01-04

OFF

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

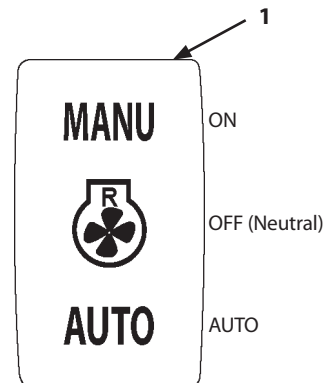
AUTO

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.

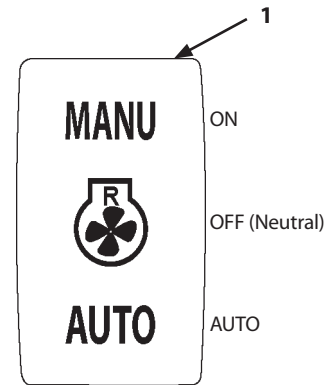
OPERATOR'S STATION

Manual Operation

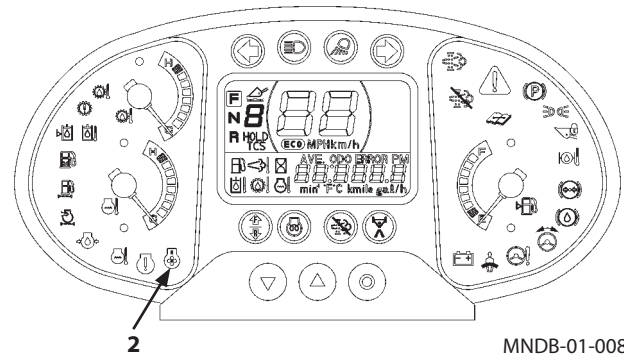
IMPORTANT:

- 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.

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.



MNEC-01-019



MNDB-01-008

OPERATOR'S STATION

Secondary Steering Operation Check Switch (Option)

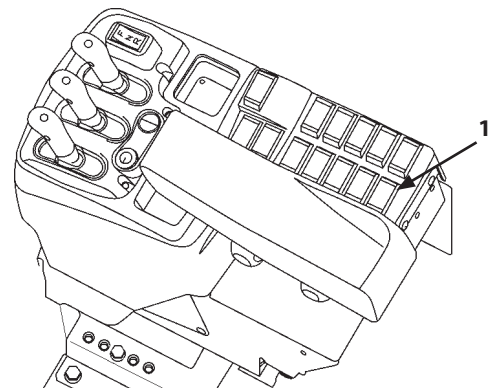
Use this switch to check if the secondary steering pump is operable.

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.

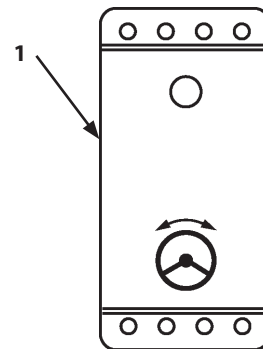
After checking, release switch (1) to turn it OFF.

IMPORTANT: Conduct test only within 2 second.

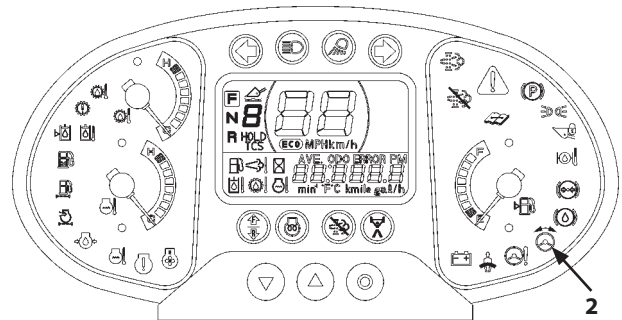


Fingertip Control Type

70MNDB-01-04



M4GB-01-088



MNDB-01-008

OPERATOR'S STATION

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.

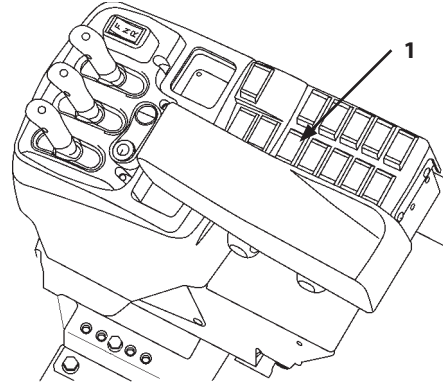
OPERATOR'S STATION

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) lights ON.

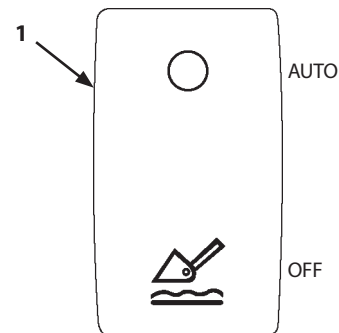


70MNDB-01-04

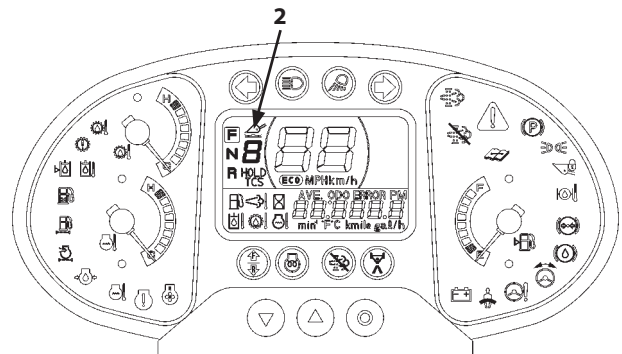
OFF

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.



MNEC-01-022



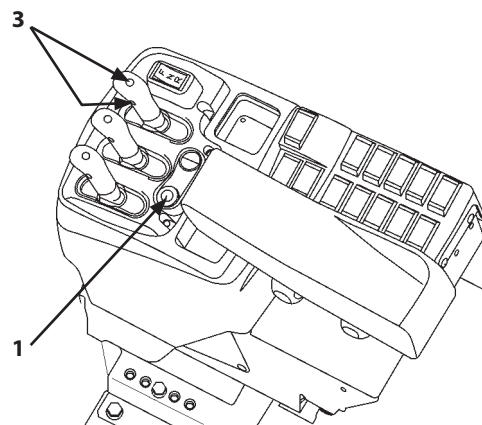
MNDB-01-008

OPERATOR'S STATION

Hold Switch

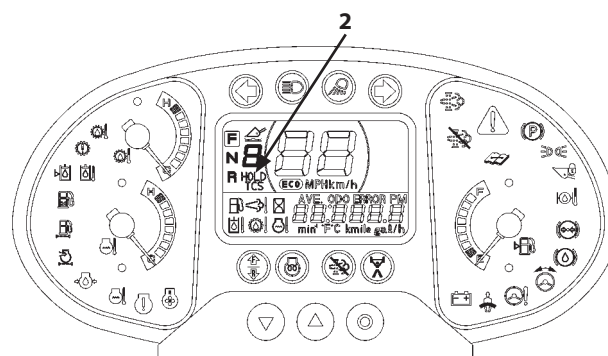
Press hold switch (1) while letting the machine travel in the auto shift mode, hold indicator (2) is displayed and the machine holds the speed gear range that is currently displayed on the monitor.

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) (3).



Fingertip Control Type

70MNDB-01-04

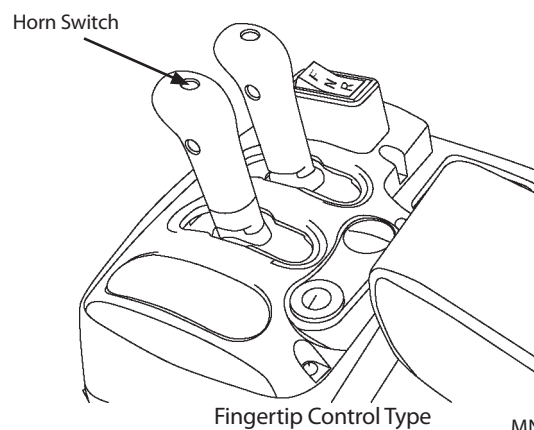


MNDB-01-008

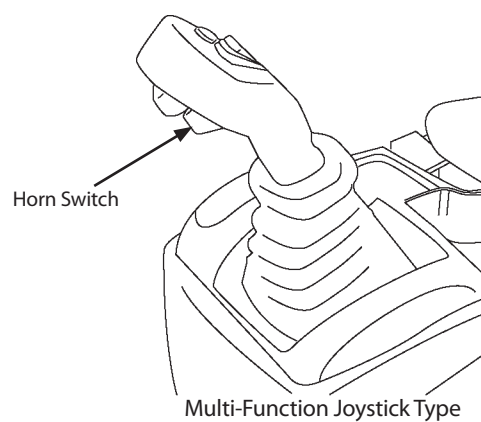
OPERATOR'S STATION

Horn Switch

The horn switch is provided on the control lever to improve operator comfort.



MNEC-01-042



MNEC-01-044

OPERATOR'S STATION

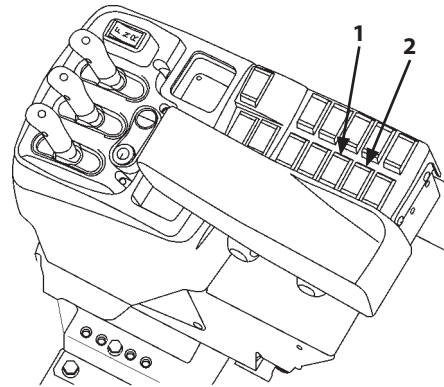
Dual Lift Arm Auto Leveler Switch

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. Lift arm auto leveler switches (1, 2) preset the stopping heights.

IMPORTANT:

- When the lift arm auto leveler switch is activated with the bucket loaded, the arm may be stopped at a position lower than the preset position.
- Lower kickout position cannot be preset at a position higher than the arm level position.

Height kickout position cannot be preset at a position lower than the arm level position.



70MNDB-01-04

Lower Kickout Setting/Height Kickout Setting

Switch

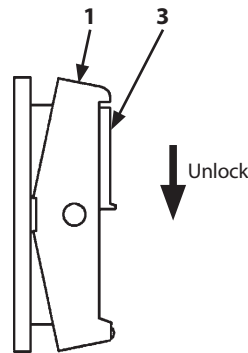
- SET (4 and 8): Sets the lift arm stop position at the current arm height. Press and slide to release lock switch (3).
- ON (5 and 9): Stops the raising or lowering lift arm at the specified height.
- OFF (6 and 10): Deactivates the lift arm auto leveler function.

Lower kickout stop height setting

1. Hold the lift arm in the desired position at which the lift arm is stopped during lowering operation.
2. While releasing lock switch (3) on lift arm auto leveler switch (lower kickout) (1), press SET side (4).

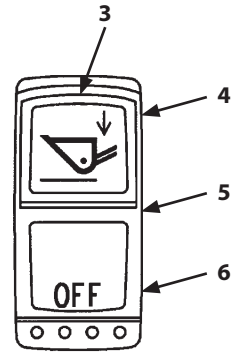
Height kickout stop height setting

1. Hold the lift arm in the desired position at which the lift arm is stopped during raising operation.
2. While releasing lock switch (7) on lift arm auto leveler switch (height kickout) (2), press SET side (8).

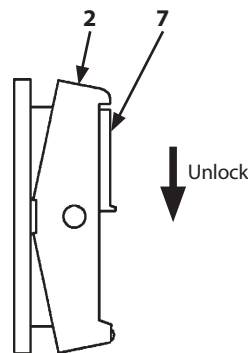


MNDB-01-022

Lower Kickout

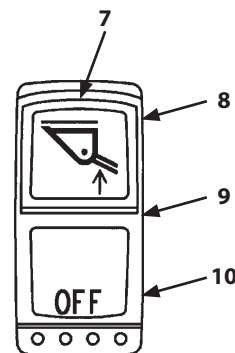


MNDB-01-021



MNDB-01-022

Height Kickout



MNDB-01-023

OPERATOR'S STATION

Quick Power Switch

By pressing quick power switch (1) when the power mode is OFF, the power mode is temporarily activated. (The power mode indicator (2) lights ON.)

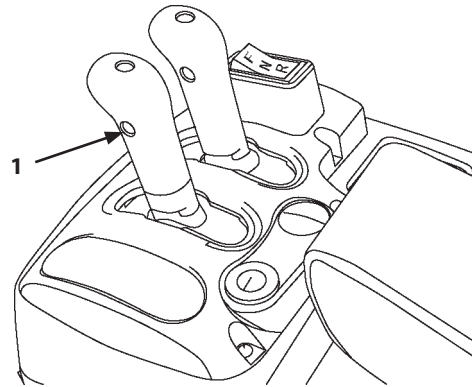
 **NOTE:** The quick power switch is operable only in the following cases.

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

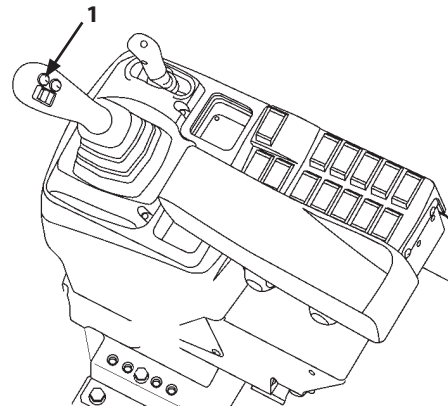
When operating under low load or the forward/reverse lever is in "Neutral" (N) position, the mode will not change to power mode even if quick power mode switch is pressed. The switch selection is ruled invalid.

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

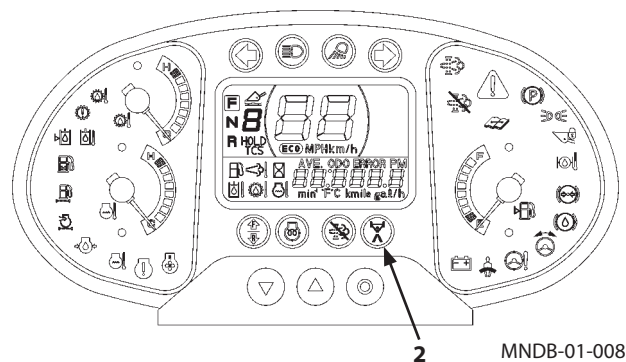
- When operating load is decreased while digging.
- When the quick power mode switch is pressed.
- The forward/reverse lever or forward/reverse switch is shifted.
- While driving in the auto-shift mode, the gear shifts up to the selected gear stage.



MNEC-01-042



70MNDB-01-05



MNDB-01-008

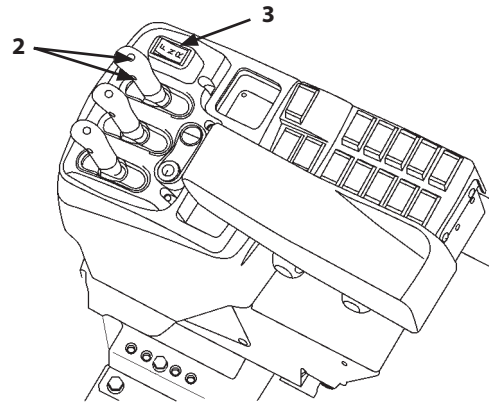
OPERATOR'S STATION

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.

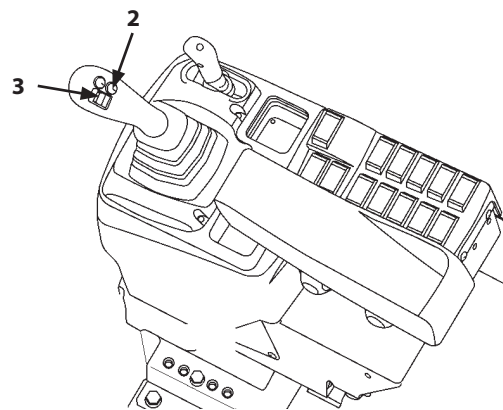
Press DSS (2) when ECO indicator (5) turns OFF while operating on a slope or during snow removal. In this case, the gear temporarily shifts down to 1st speed by pressing DSS (2), but it automatically returns to 2nd speed when traveling load is reduced.

 **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.



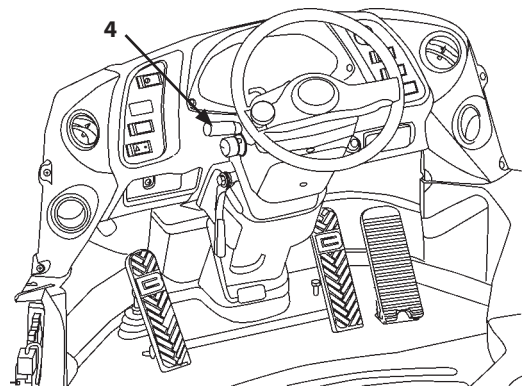
Fingertip Control Type

70MNDB-01-04

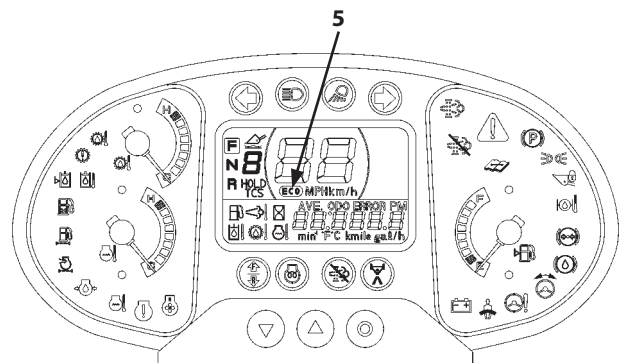


Multi-Function Joystick Type

70MNDB-01-05



MNDB-01-002



MNDB-01-008

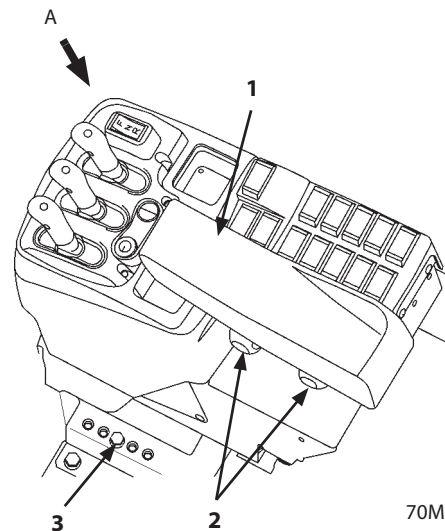
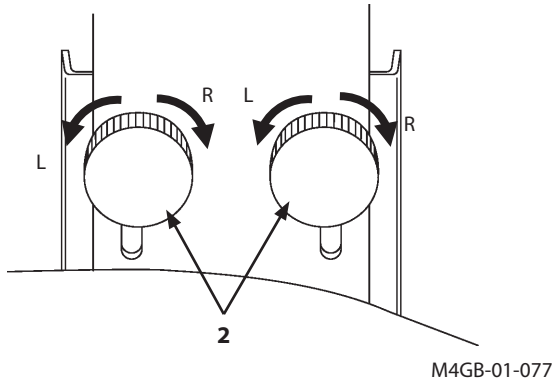
OPERATOR'S STATION

Armrest Adjust Handle

Armrest (1) is provided so that the operator can operate the lever with an arm on it, for comfort and ease.

Loosen handle (2) and position armrest (1) height to fit the operator's preference, tighten handle (2) to fix armrest (1).

L : Loosen
R : Tighten

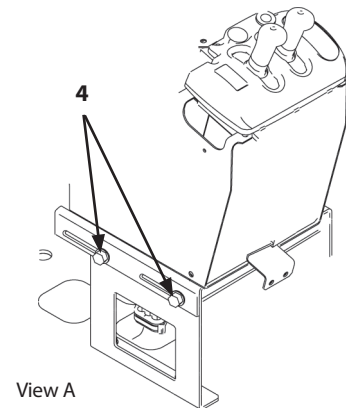


Right Console Positioning Bolt

Adjust the position of the right console as follows.

1. Loosen three bolts (M10) (3, 4) and adjust the position of the right console by sliding it back or forth. Holding and moving armrest (1) maybe easier to move the console.
2. Among five positions, select the best console position and tighten bolt (3).
Sliding quantity: 90 mm (3.5 in)
(5 positions at intervals of 22.5 mm (0.9 in))
3. After the adjustment, make sure to tighten bolts (4).

 **NOTE:** Bolt (3) is tightened in the middle hole by factory as shown.



OPERATOR'S STATION

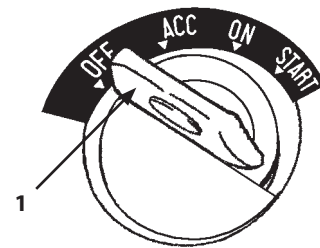
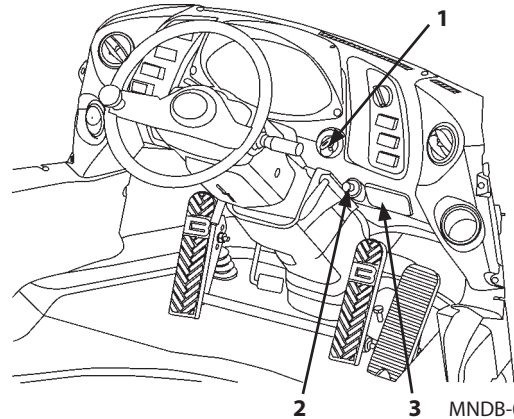
Cigar Lighter (24 VDC Electrical Outlet)

Using Cigar Lighter

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

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 Kawasaki 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.



Using 24 VDC Electrical Power Supply

⚠ CAUTION: Do not connect accessories that use power other than 24 VDC (MAX. 5 A). Damage to the batteries and accessories may result.

Do not use this socket to supply the power for a long time without running the engine. The batteries may be discharged.

1. Pull out the cigar lighter knob, and insert an applicable power socket instead.
2. Turn key switch (1) ON. Power is supplied to the connected accessory.
3. After using the power supply port, insert the cigar lighter into the panel until the knob is seated in the original position and not pressed in.

Ash Tray

⚠ WARNING: Take precautions against fires.

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

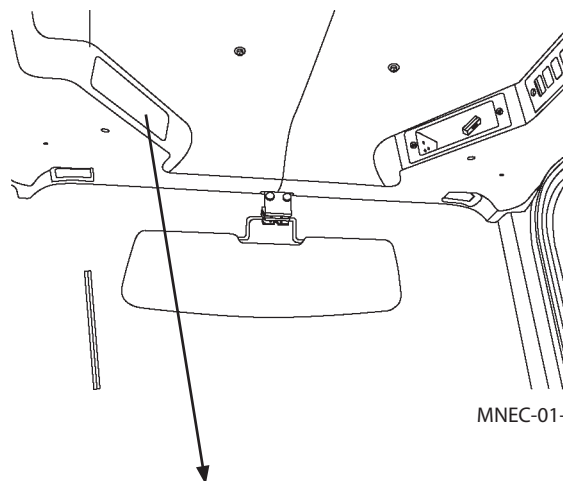
OPERATOR'S STATION

Auto Air Conditioner

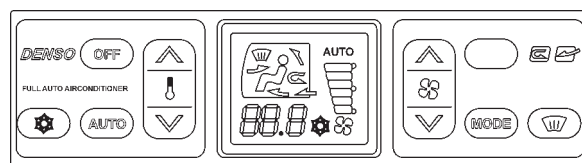
Feature

- 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 pressing the top side mark "▲" on temperature control switch (32 °C)(90°F) or the bottom side mark "▼" (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.



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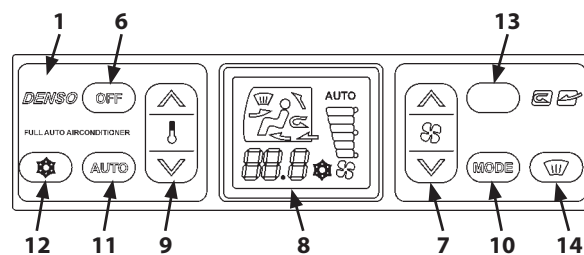
MNDB-01-011

OPERATOR'S STATION

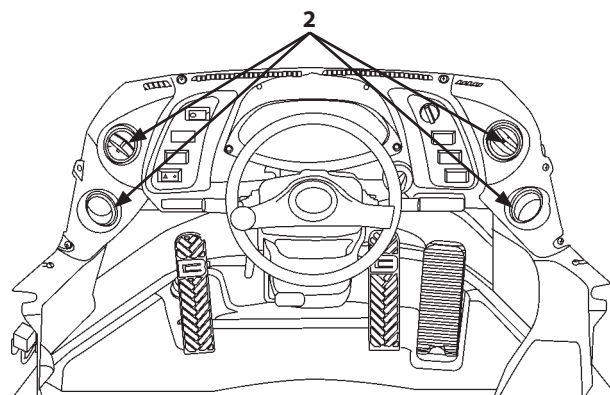
Auto Air Conditioner

Components Name

- 1- Control Panel
- 2- Front Vent
- 3- Rear Vent
- 4- Foot Vent
- 5- Defroster Vent
- 6- OFF Switch
- 7- Blower Switch
- 8- Liquid-Crystal Display (LCD)
- 9- Temperature Control Switch
- 10- Mode Switch
- 11- AUTO Switch
- 12- Air Conditioner Switch
- 13- Circulation/Fresh Air Switch
- 14- Defroster Switch



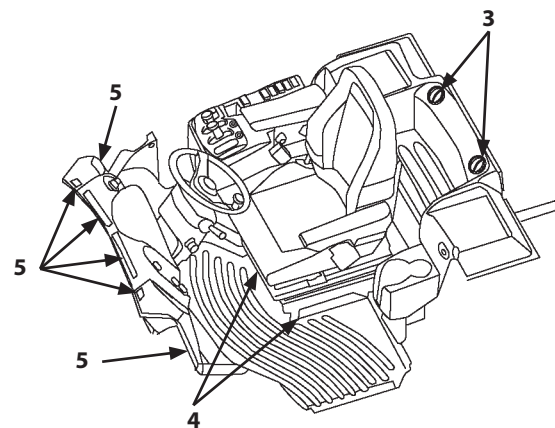
MNDB-01-011



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 **NOTE:** Except for the foot vent (4) and defroster vent (5), all vents are provided with louvers to adjust the air flow direction.

In addition, the louvers on the front vent and rear vent can be completely opened and closed by hand.



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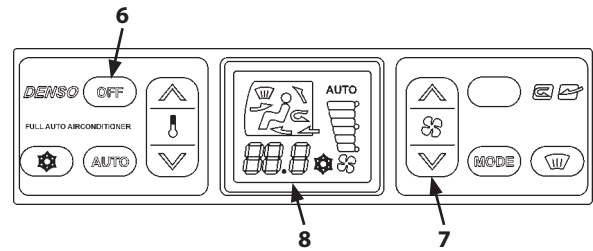
OPERATOR'S STATION

Controller Part Name and Function

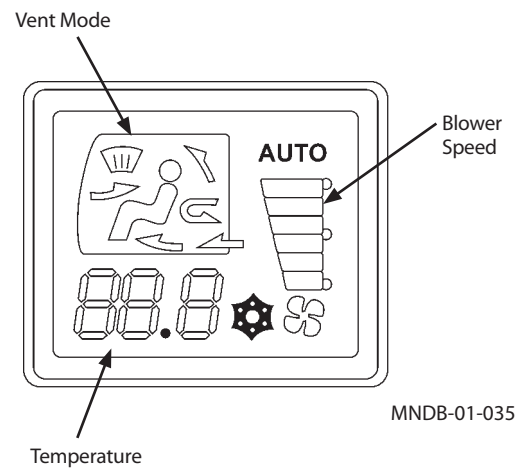
- **OFF Switch (6)**
Stops the operation of the blower and the air conditioner. When the switch is pressed, all displays (vent mode, set-temperature, and blower speed) on the LCD (8) panel will disappear and the blower stops in both the auto and manual modes.
- **Blower Switch (7)**
Controls the blower speed from Low to High in 6 stages in the manual mode. The blower speed is displayed at the right side on the LCD (8).
 - **Increasing Blower Speed**
Each time the top side mark “^” on blower switch (7) is pressed, the blower speed is increased by one increment.
 - **Decreasing Blower Speed**
Each time the bottom side mark “v” on blower switch (7) is pressed, the blower speed is decreased by one increment.

 **NOTE:** In the AUTO mode operation, the fan speed will be automatically controlled with the fan speed indicator flashing.

- **LCD (8)**
Displays the set-status of the air conditioner operating temperature, fan speed, and vent mode.
 - **Temperature Display**
Indicates the set-temperature (18 to 32.0 °C, 65 to 90 °F) by 0.5 °C (0.9 °F) increments at the panel center.
 - **Blower Speed Display**
Indicates the blower speed in 6 stages by lighting the segment at the right side of panel.
 - **Vent Mode Display**
Indicates the selected vent mode at the panel top.
The vent modes are as shown below:
 -  : Front Vent Mode
 -  : Front/Rear Vent Mode
 -  : Front/Rear/Foot Vent Mode
 -  : Foot Vent Mode
 -  : Foot/ Defroster Vent Mode
 -  : Defroster Vent Mode



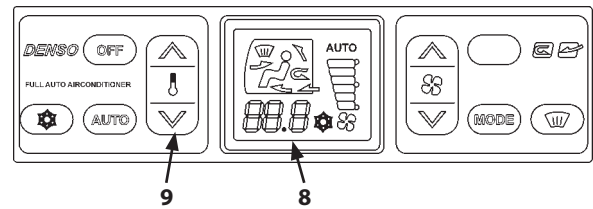
MNDB-01-011



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OPERATOR'S STATION

- **Temperature Control Switch (9)**
Sets the air temperature in the range of 18 to 32.0 °C (65 to 90 °F) in the MANUAL and AUTO modes. Temperature can be set by 0.5 °C (0.9 °F) increments. The set-temperature is displayed on the LCD (8) center.
 - **Increasing Temperature**
Each time the top side mark “^” on temperature control switch (9) is pressed, the set-temperature is increased by 0.5 °C (0.9 °F) increments.
 - **Decreasing Temperature**
Each time the bottom side mark “v” on temperature control switch (9) is pressed, the set-temperature is decreased by 0.5 °C (0.9 °F) increments.
 - **Temperature Mode Change (Centigrade ↔ Fahrenheit)**
Press both “^” and “v” marks on the temperature control switch for longer than 5 seconds at the same time to change the temperature mode (Centigrade ↔ Fahrenheit). (Unit in temperature mode is abbreviated.)



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Temperature Mode	Display on LCD
Centigrade	18.0 to 32.0
Fahrenheit	63 to 91

OPERATOR'S STATION

Controller Part Name and Function

Mode/Temperature Control Switch

- Mode Switch (10)
Selects the air vent. The selected air vent is indicated on LCD (8).



: Front Vent Mode



: Front/Rear Vent Mode



: Front/Rear/Foot Vent Mode



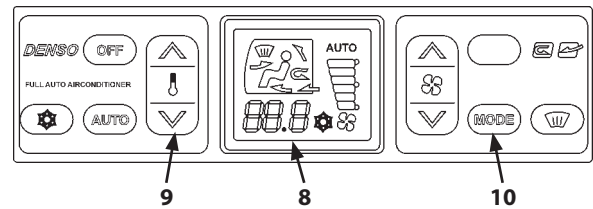
: Foot Vent Mode



: Foot/Defroster Vent Mode



: Defroster Vent Mode



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

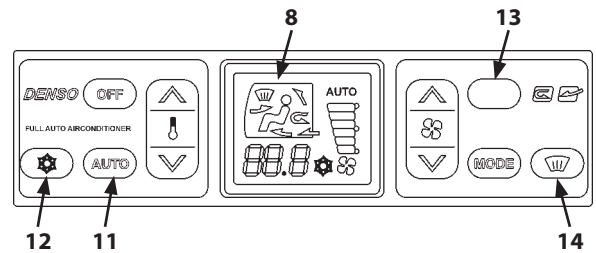


Press defroster switch (4) to change defroster  vent mode.

- AUTO mode
The air vent location is automatically selected.
- Temperature Control Switch (9):
Sets temperature in the cab.
Temperature in the cab can be set from 18.0 to 32.0 °C by pressing temperature control switch (9). Temperature can be set by 0.5 °C increments.
The set-temperature is displayed on LCD (8).

OPERATOR'S STATION

- **AUTO Switch (11)**
Selects the air conditioner operation mode in either AUTO or MANUAL.
 - **AUTO Operation Mode**
Press AUTO switch (11). When the indicator comes ON, the AUTO operation mode is selected. In response to the set-temperature, the blower speed, vent mode, and ventilation mode are automatically controlled.
 - **MANUAL Operation Mode**
Press AUTO switch (11). When the indicator goes OFF, the MANUAL operation mode is selected. Air temperature, blower speed, vent mode, and ventilation mode can be selected as desired.
- **Air Conditioner Switch (12)**
The air conditioner will turn on and the air conditioner indicator will be lit when air conditioner switch (12) is pressed when blower switch (7) is also turned on (any of the blower indicators is ON).
- **Circulation/Fresh Air Switch (13)**
It switches over the air intake port to circulation mode and fresh air mode.
Icon of the selected mode will light. Circulation mode ,
Fresh air mode: .
- **Defroster Switch (14)**
Press defroster switch (14) to select defroster vent mode.

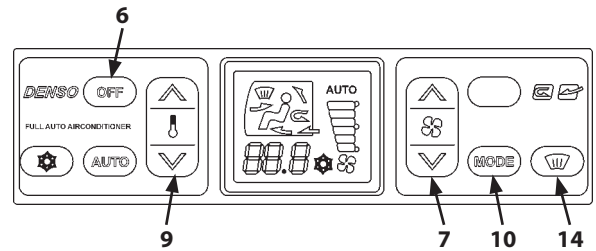


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OPERATOR'S STATION

Defroster Operation

1. Press defroster switch (14) 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 (9).
3. Operate blower switch (7) to adjust flow.
4. Operate mode switch (10) to change  foot/defroster mode.



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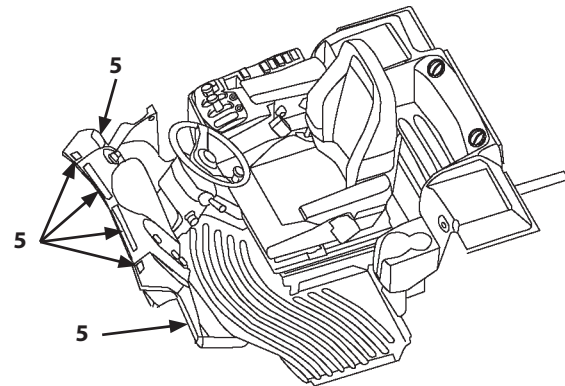
Cool Head/Warm Feet Operation

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

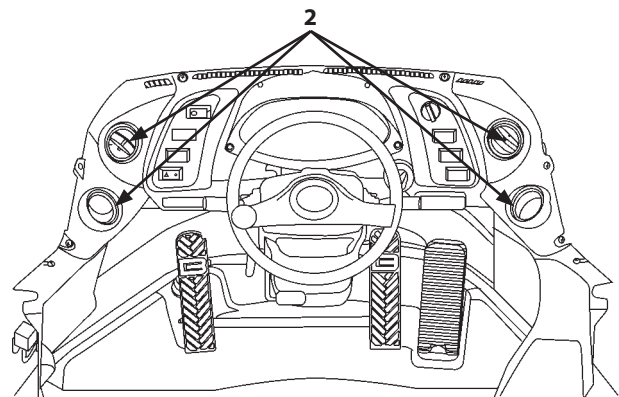
1. Press blower switch (7) to adjust the blower speed.
2. Press MODE switch (10) to display the front and rear vent mark  on the monitor.

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

Control air temperature inside the cab by using temperature control switch (9).



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MNDB-01-001

OPERATOR'S STATION

Tips for Optimal Air Conditioner Usage

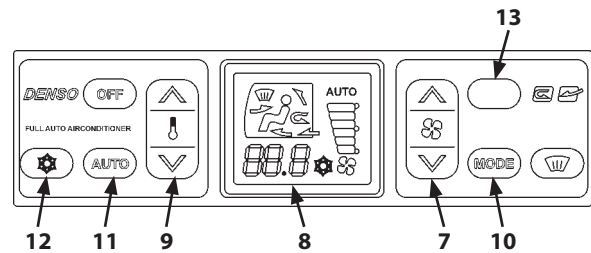
For Rapid Cooling

Temperature in the cab may rise over 80°C (176°F) when the machine is exposed to sun light in the summer. For rapid cooling, ventilate air in the cab first.

After starting the engine, set the temperature control to maximum cooling (18°C, 65°F) using temperature control switch (9). Then turn circulation mode switch (13) ON (the indicator lights).

Select the front/rear vent mode  by operating mode switch (10). Set the blower speed to the maximum flow rate (6 segments lit) by operating blower switch (7). Then, turn air conditioner switch (12) ON (the indicator lights).

After running the engine at a little over 1000 min⁻¹ for a few minutes, press AUTO switch (11) and close the windows. When the temperature in the cab starts to lower, set the desired temperature with temperature control switch (9).



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When Windows Become Clouded

If the insides of the windows become clouded 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 clouded. If this happens, turn off the air conditioner 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. When the cab temperature is lower than 15°C (59°F), the air conditioner may not operate. If this happens, warm the cab using the heater first.

IMPORTANT:

- Do not suddenly increase the engine speed.
- Keep any flames away from the control panel.
- 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.

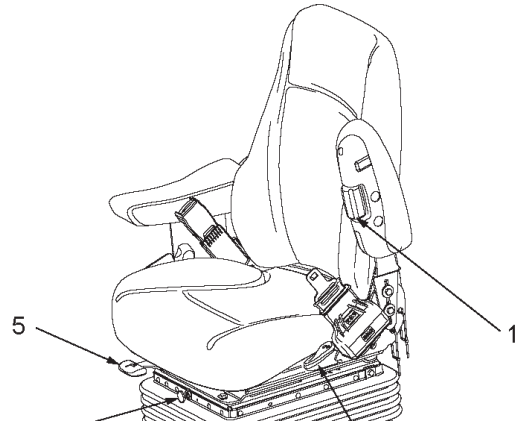
OPERATOR'S STATION

Adjusting Operator's Seat (Air Suspension Type Seat)

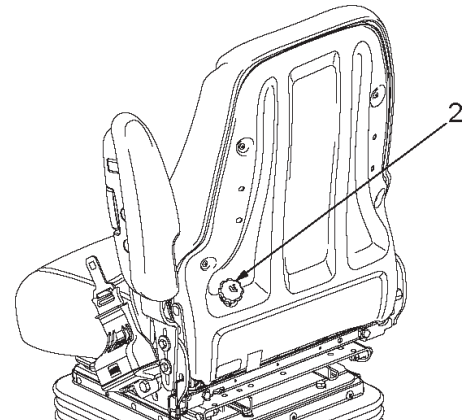
Adjust the seat for comfort and so that the pedals may be pushed fully down when the operator's back is fully against the seat back.

Components Name

- 1- Armrest Angle Adjustment
- 2- Lumbar Support Adjustment
- 3- Reclining Angle Adjustment
- 4- Damper Adjustment
- 5- Fore-Aft Position Adjustment



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.



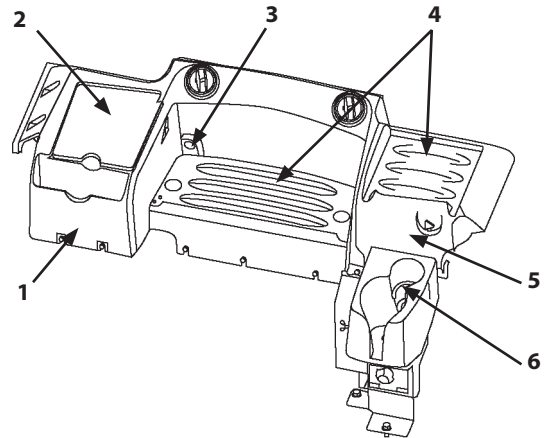
When properly adjusted the seat will not "bottom out" over rough terrain.

5. Lift handle (5) and move the seat forward or backward. Release handle (5) at one of the several positions.

OPERATOR'S STATION

Rear Tray

- 1- Document Holder
- 2- Hot/Cool Box
- 3- Electric Power Output (12 VDC, 15 A) (Optional)
- 4- Glove Compartments
- 5- Fuse Box
- 6- Cup Holder



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Electric Power Output (Optional)

Use the electric power output (Max. 60W) 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.



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- 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.

OPERATOR'S STATION

Fuse Box

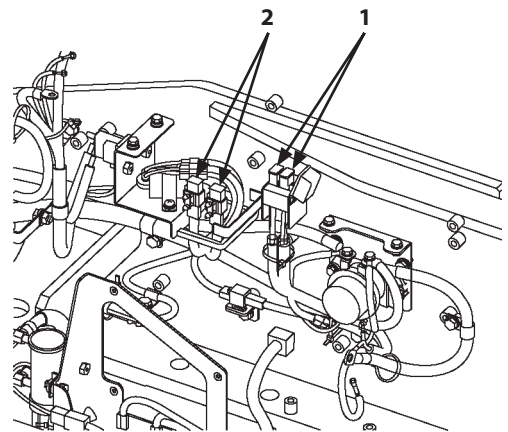
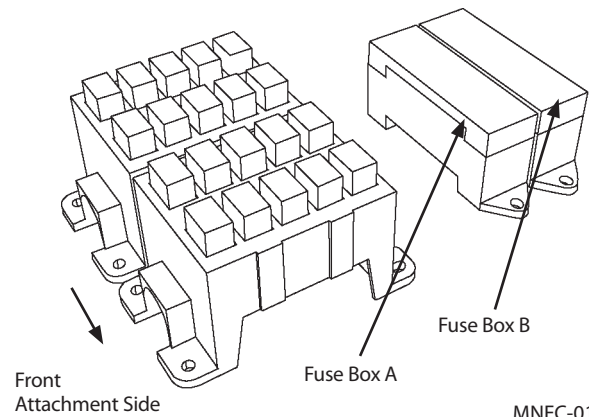
IMPORTANT: If a fuse blows, turn the key switch OFF.
After checking and correcting the cause of the trouble,
replace the fuse with a new one.

The slow blow fuses (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 (1 and 2) in this order.

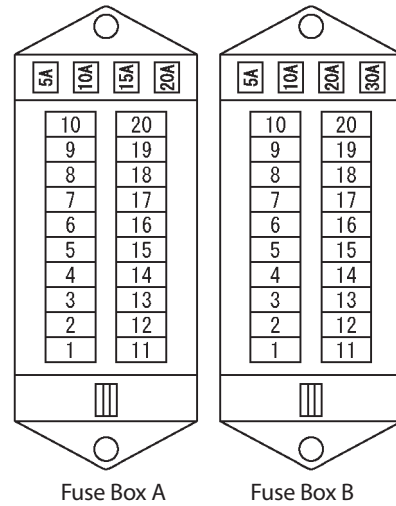
- 1- 140 A
- 2- 65 A



OPERATOR'S STATION

Fuse Box A

10- PARKING 5 A	20- OPTION (10 A)
9- AC1 10 A	19- OPTION (10 A)
8- STOP LAMP 5 A	18- OPTION (20 A)
7- BACK BUZZER 5 A	17- OPTION (15 A)
6- HEAD LAMP LH 5 A	16- OPTION (15 A)
5- WORKING LAMP FRONT 20 A	15- AC2 20 A
4- WIPER FRONT 15 A	14- ROTARY BEACON (Opt) 10 A
3- LIGHTER 10 A	13- SEAT HEATER (Opt) 20 A
2- HEAD LAMP RH 5 A	12- OPTION (20 A)
1- AUTO SHUT DOWN 5 A	11- RADIO 10 A



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Fuse Box B

10- ECU 30 A	20- SECONDARY STEERING (Opt) 5 A
9- TCU 10 A	19- HI BEAM 10 A
8- CONTROLLER 10 A	18- WIPER REAR 10 A
7- FLASHER 10 A	17- WORKING LAMP REAR 20 A
6- HORN 10 A	16- LOADER CONTROL 5 A
5- OPT C/U 5 A	15- MC 10 A
4- OPTION (15 A)	14- TCU POWER 10 A
3- ROOM LAMP 5 A	13- POWER ON 10 A
2- LIGHTING 10 A	12- POSITION 2 5 A
1- ACC RELAY 5 A	11- POSITION 1 5 A

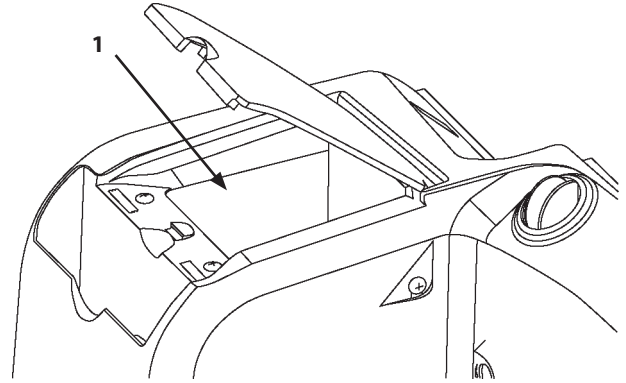
OPERATOR'S STATION

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.



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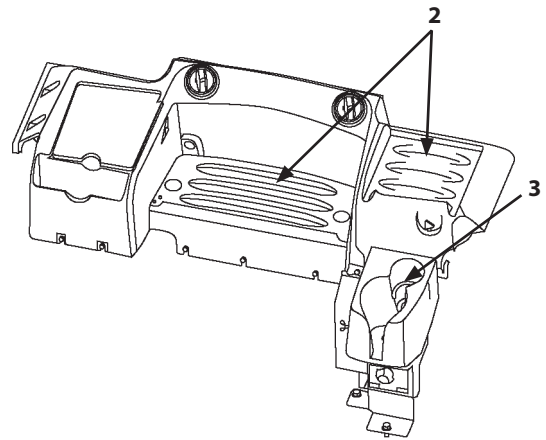
Tray and Drink Holder

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.



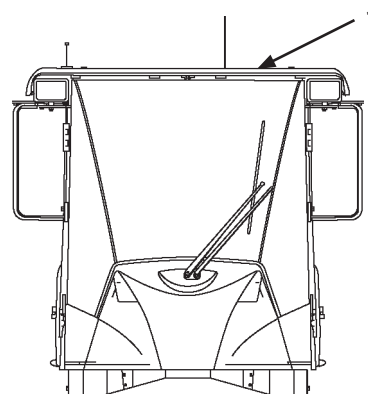
MNEC-01-046

OPERATOR'S STATION

ROPS Cab

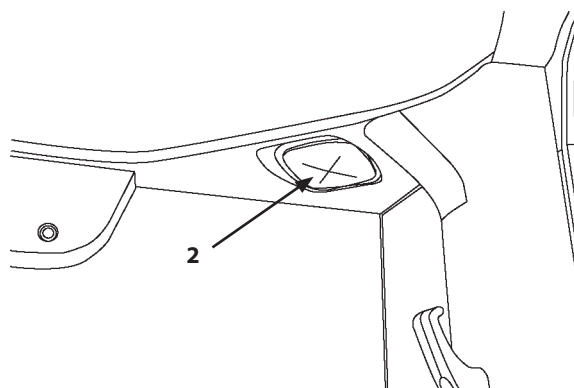
ROPS cab (1) is standard equipment.

1- ROPS Cab



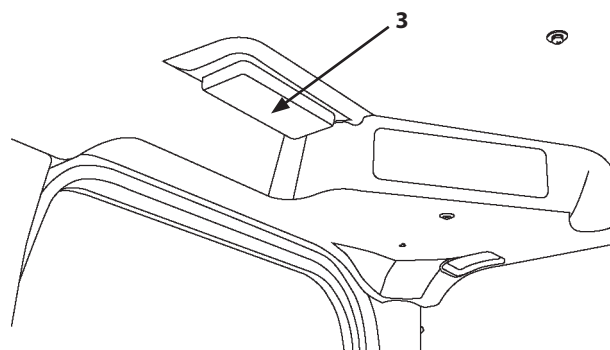
MNEC-01-049

2- Speakers



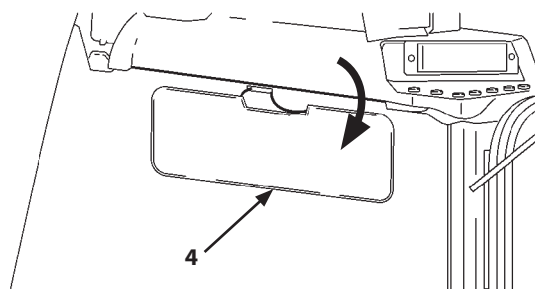
MNEC-01-050

3- Front Interior Light



MNEC-01-051

4- Sun Visor



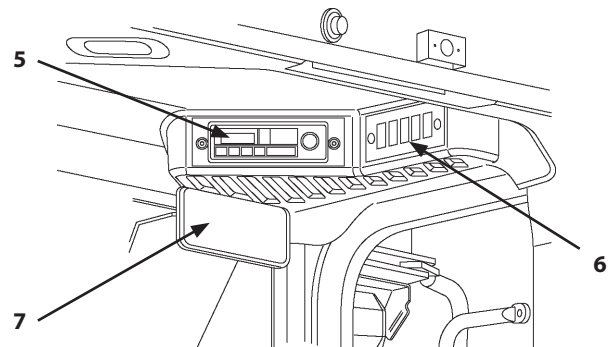
M4GF-01-010

OPERATOR'S STATION

5- Radio

6- Cab Switch Panel (Optional)

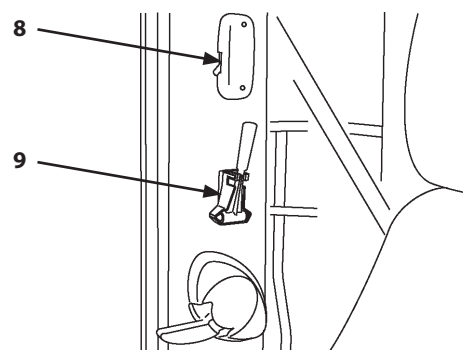
7- Inside Rear View Mirror



M4GB-01-116

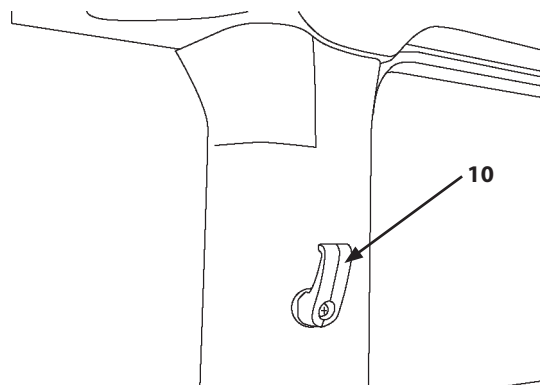
8- Rear Interior Light

9- Emergency Exit Hammer



M4GB-01-117

10- Coat/Hat Hook



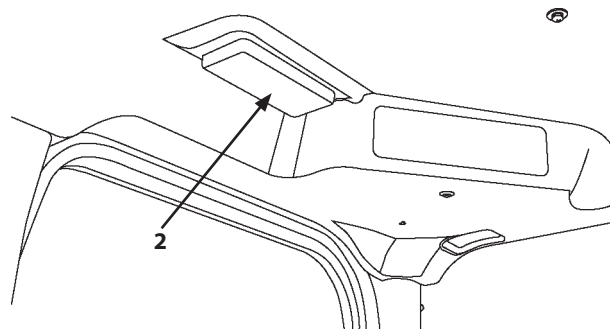
MNEC-01-053

OPERATOR'S STATION

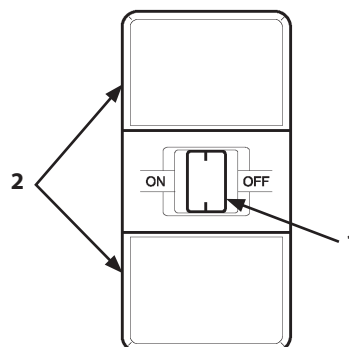
Front Interior Light

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.



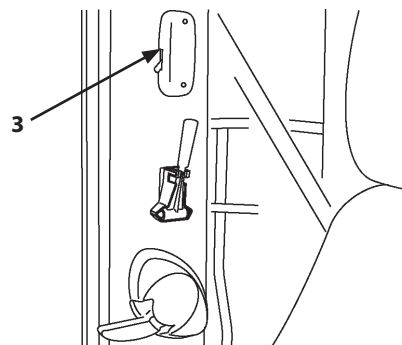
MNEC-01-051



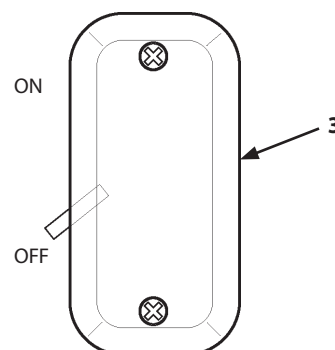
M4GB-01-119

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

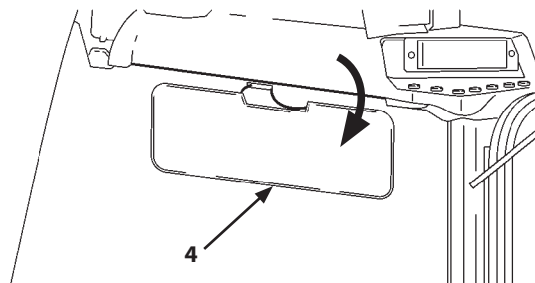


M4GB-01-120

OPERATOR'S STATION

Sun Visor

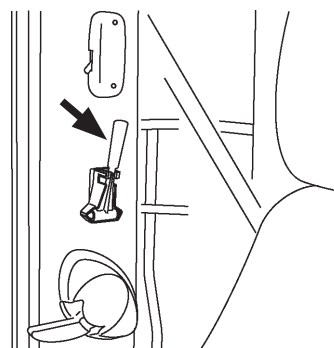
When sunlight is strong, use sun visor (4) by hanging its edge from the cab top down to a desired place.



M4GF-01-010

Emergency Exit Hammer

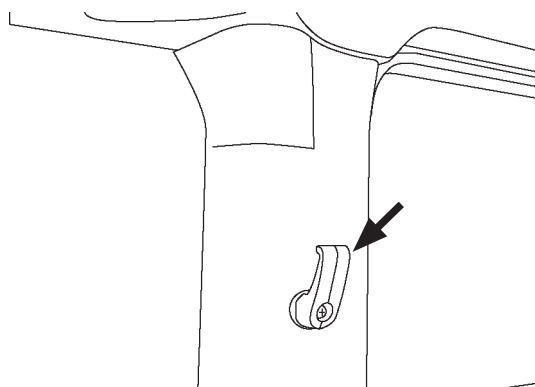
In case the cab door becomes difficult or impossible to open if an emergency situation occurs, exit machine by breaking the windowpane using the provided hammer.



M4GB-01-117

Coat/Hat Hook

Use to hang your coat, hat, etc.

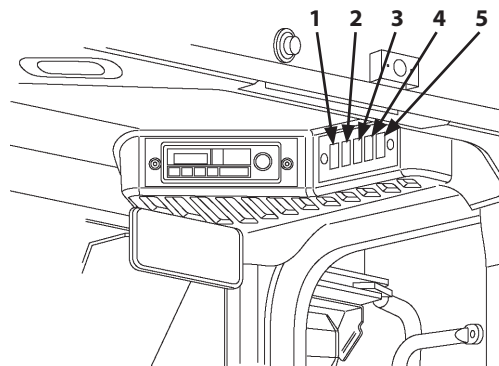


MNEC-01-053

OPERATOR'S STATION

Upper Switch Panel (Optional)

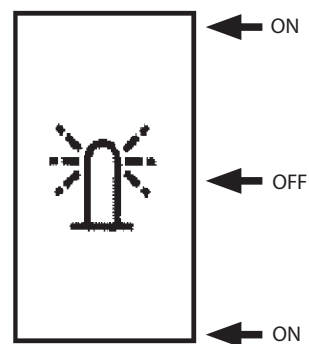
- 1- Rotary Light Switch
- 2- Auxiliary
- 3- Auxiliary
- 4- Auxiliary
- 5- Auxiliary



M4GB-01-116

Rotary Light Switch (Optional)

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

OPERATOR'S STATION

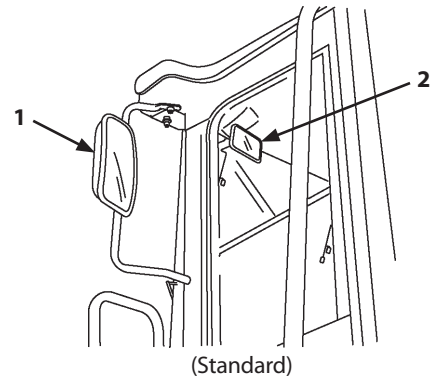
Outside Rear View Mirror

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.

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.



M4GB-01-126

Inside Rear View Mirror

Always keep room rear view mirrors (2) clean.

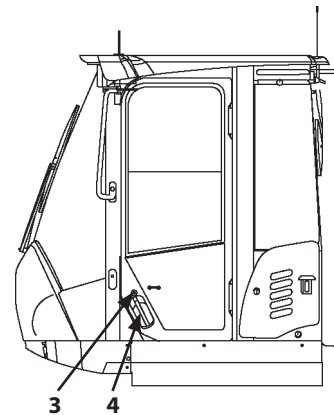
Cab Door

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



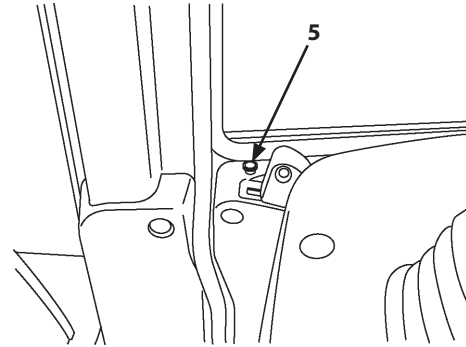
MNEC-01-054

OPERATOR'S STATION

Door Lock Knob

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

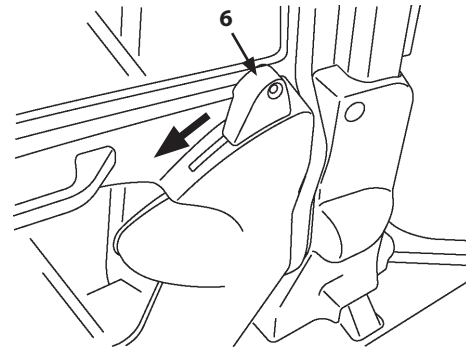
Depress door lock knob (5) to engage the door lock.



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.

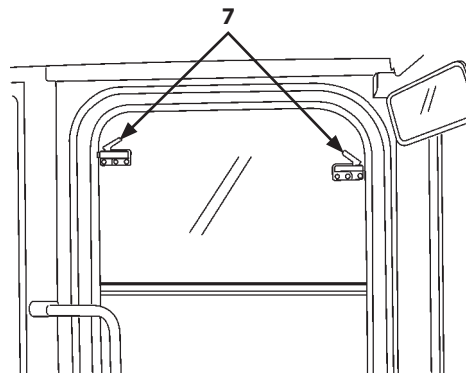


M4GB-01-129

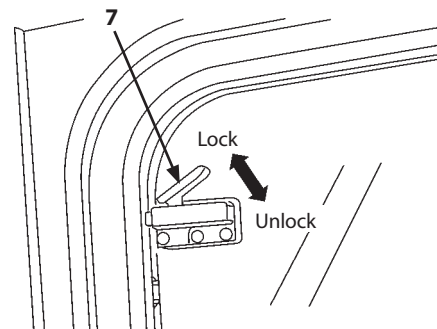
Window Open/Close Levers

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.



M4FJ-01-016



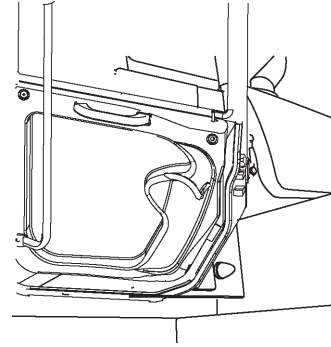
M4EK-01-048

OPERATOR'S STATION

When Fully Opening the Door

⚠ WARNING: Before getting in or out the cab while using the hand rails, 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.

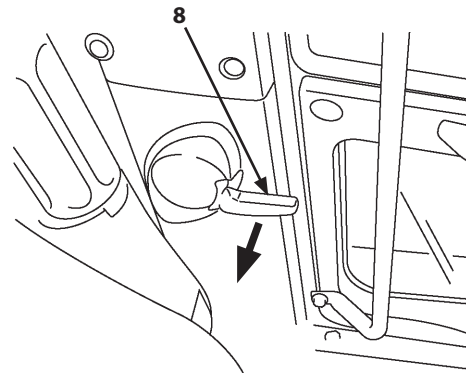
Push the door toward the outside of the cab to fully open the door (175°).



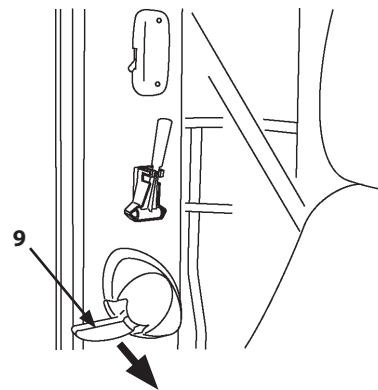
M4GB-01-132

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.

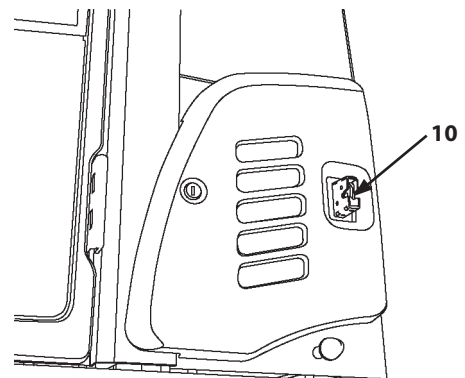


Left Door Lock Disengage Lever M4GB-01-133



Right Door Lock Disengage Lever

M4GB-01-117



MNEC-01-055

OPERATOR'S STATION

Battery Disconnect Switch

IMPORTANT: Never attempt to turn the battery disconnect switch OFF while engine is running or key switch is not in the OFF position. Failure to do so may damage the electrical system.

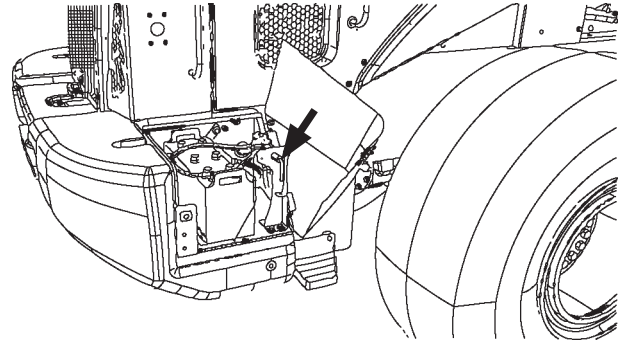
The battery disconnect switch is different from the engine start key switch. When the battery disconnect switch is turned OFF, the electrical system will completely be isolated from the battery. No current will flow through the entire electrical system.

Before turning the battery disconnect switch OFF, be sure to turn the key switch OFF and wait 1 minute 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 1 minute. When turning the battery disconnect switch OFF then ON again, reset of radio station and clock may be required.

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 (Discharge prevention)
- Before replacing the batteries.
- Before welding on the machine.

The battery disconnect switch is located in front of the right battery box.



MNEC-01-520

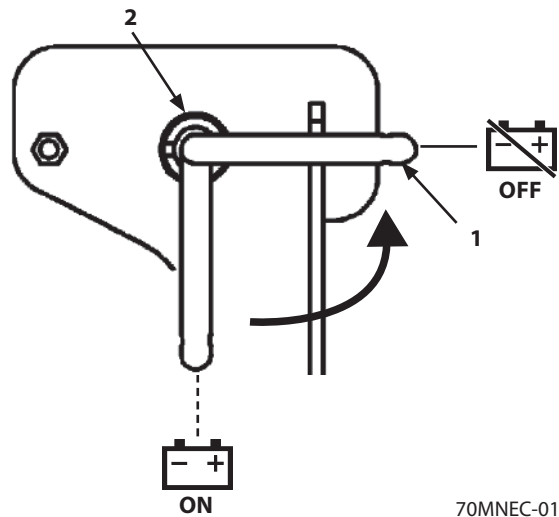
OPERATOR'S STATION

Switch Operation

1. Open the battery box cover.

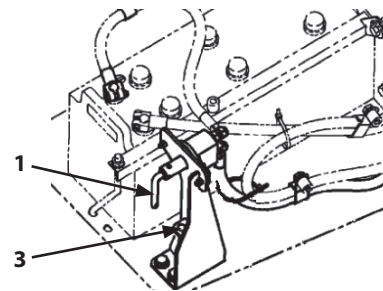
When lever (1) is vertical to the ground, battery disconnect switch (2) turns ON. The lever can not be removed when lever (1) points downward.

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



70MNEC-01-13

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.
3. Insert lever (1) removed from switch (2) into hole (3) of the holder.
4. Close the battery box cover.



70MNEC-01-520

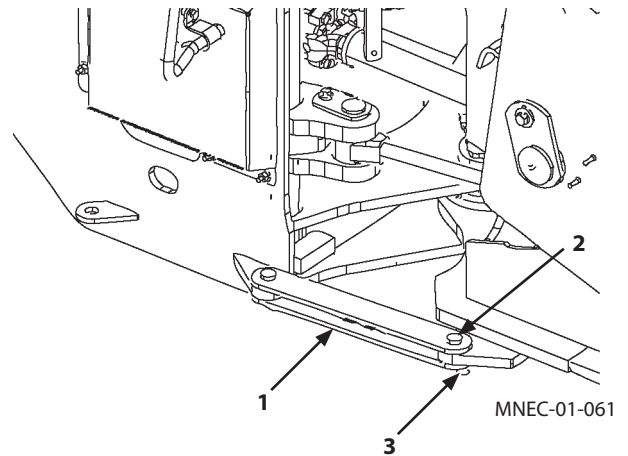
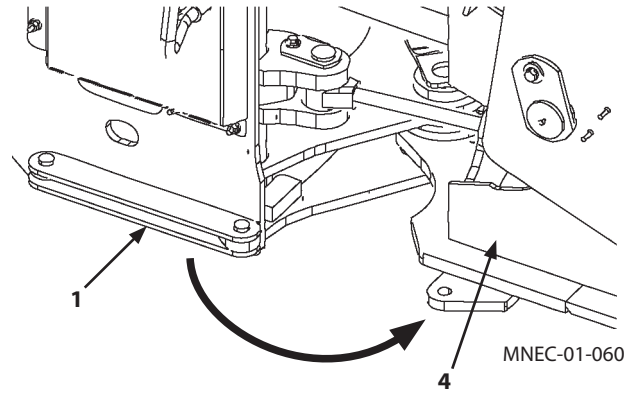
OPERATOR'S STATION

Articulation 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 with pin (2) and 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.



OPERATOR'S STATION

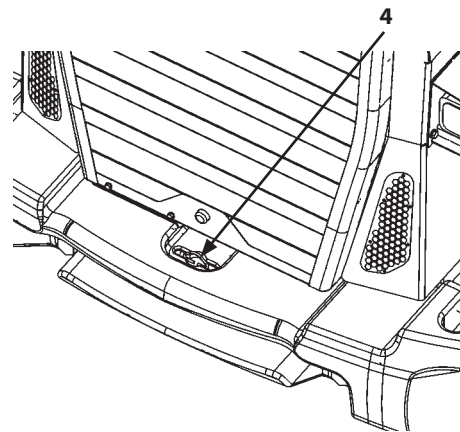
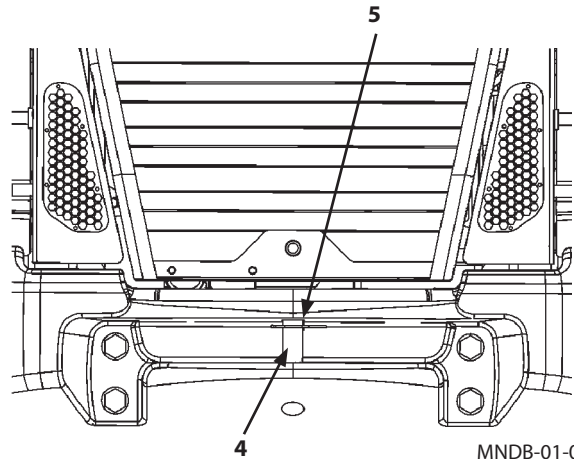
Towing Pin

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

IMPORTANT: Available towing force is as follows. To prevent excessive wear of tires, avoid towing operation requiring more than the available towing force.

Tractive capacity: 158.0 kN (16120 kgf) (35539 lbf)

Towing pin (4) is located on the rear end of the machine. It is used for towing another machine 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 clip (5).



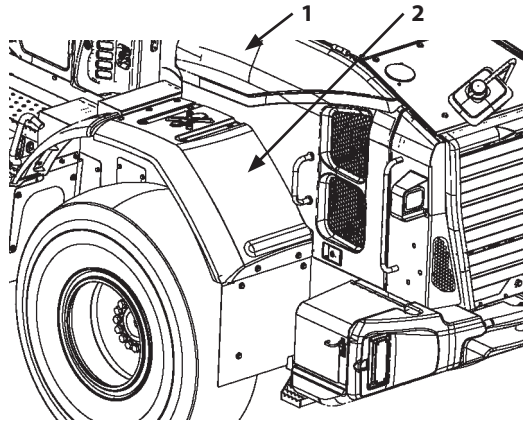
OPERATOR'S STATION

Inspection/Maintenance Side Access Cover

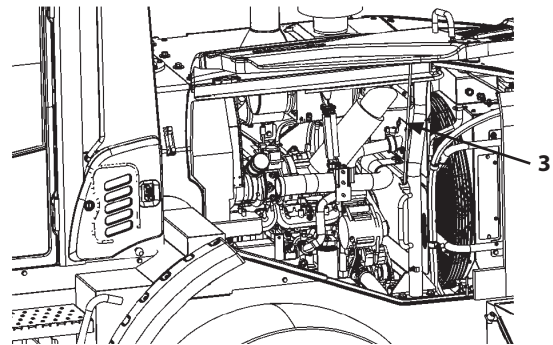
CAUTION:

- 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).
- As the side cover flips up by itself, care should be taken not to be hit with the cover when opening it.
- Before checking around the engine, be sure to lock the cover in position with locking rod (3) provided inside the side cover.
- Never attempt to stand on fender (2) if side cover (1) is provided with fender (2).
If the gas struts become weak, replace them immediately.

 NOTE: Lock the side cover in position with locking rod (3).



MNDB-01-014



MNDB-01-016

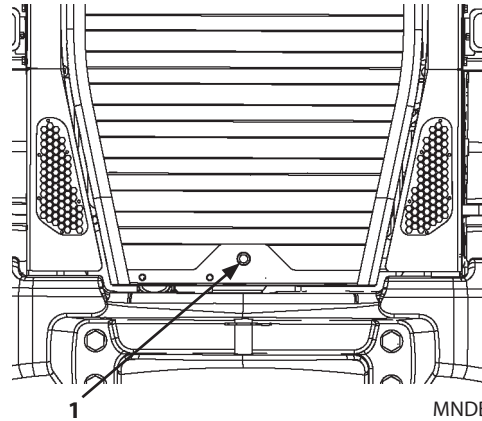
OPERATOR'S STATION

Rear Grille

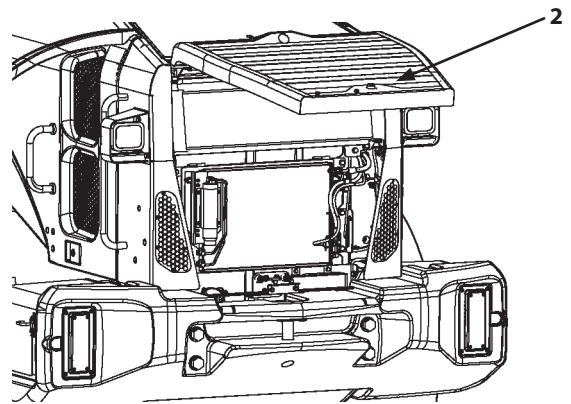
⚠ WARNING: Open or close rear grille (2) only after stopping the engine. It is very dangerous if you are entangled in the cooling fan. Before operating the machine, always check that the rear grille is well latched.

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 it latches (a click sound is heard).



MNDB-01-025



MNDB-01-017

OPERATOR'S STATION

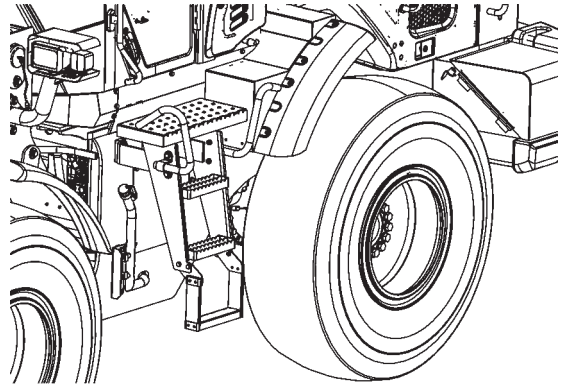
Steps

⚠ WARNING: When getting on and off the machine, use steps and hand rails 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.

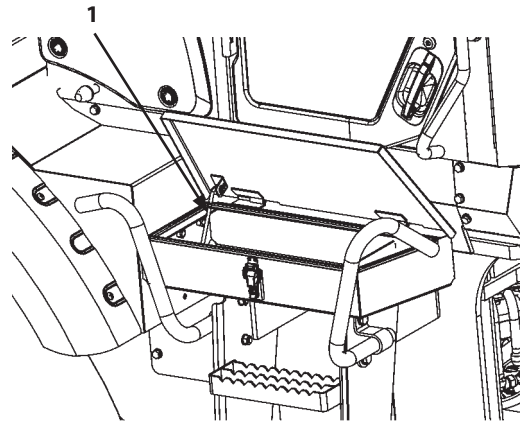
Inspect the steps and handrails daily. Immediately repair or replace any that are missing or damaged.
Clean the steps of any mud, snow or ice before entering or exiting the cab.



MNDB-01-029

Tool Box

Use tool box to store tools. Stopper (1) is provided inside of the cover.

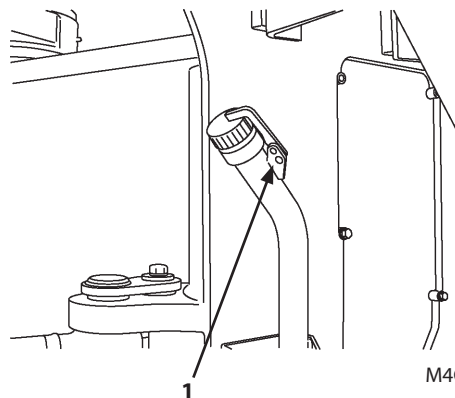


MNDB-01-030

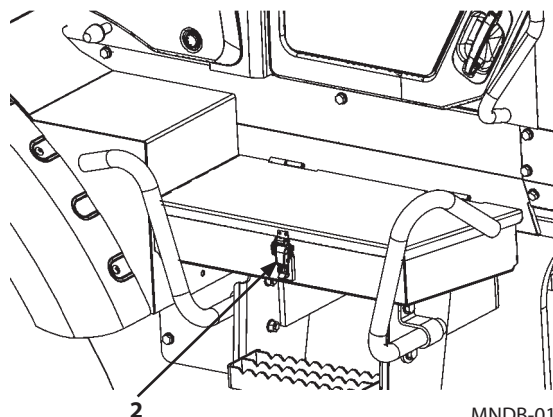
OPERATOR'S STATION

Vandal-Resistant Devices

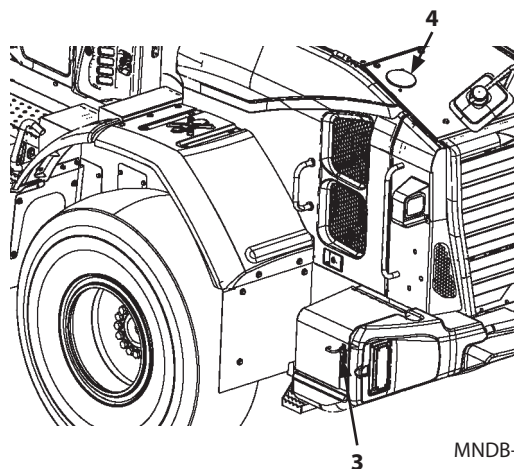
Locks can be installed to transmission inlet cap (1), tool box (2), battery covers (3), and radiator inlet cover (4) (optional).



M4GB-01-147



MNDB-01-028

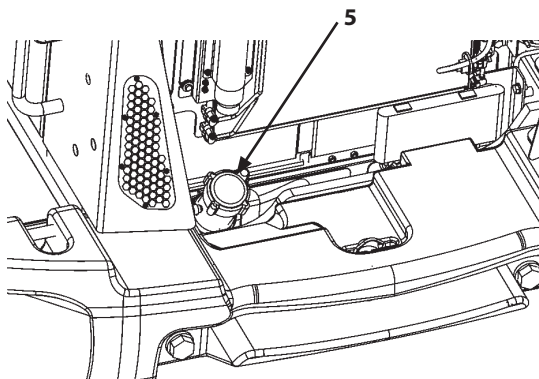


MNDB-01-014

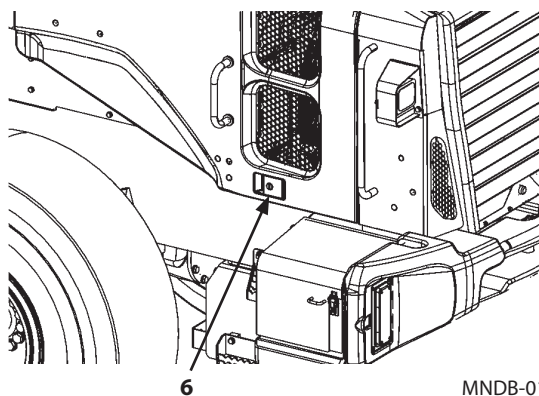
OPERATOR'S STATION

Vandal-Resistant Devices (continue from previous page)

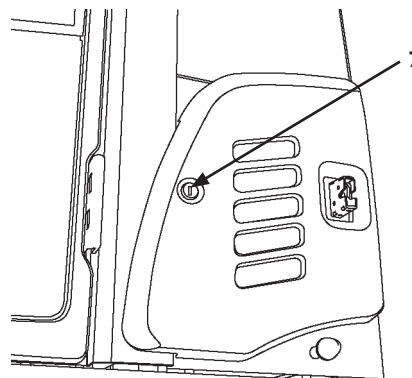
Fuel tank cap (5), side covers (6), and air conditioner fresh air filter (7) can be locked with the starter key.



MNDB-01-026



MNDB-01-027



MNEC-01-055

MEMO

BREAK-IN

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

Use ECO 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

BREAK-IN

A series of horizontal dotted lines for writing.

OPERATING THE ENGINE

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 contaminants 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

OPERATING THE ENGINE

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
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

OPERATING THE ENGINE

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.

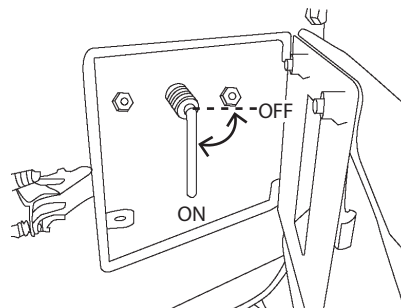
If your machine is not equipped with forward/reverse switch (4), set only forward/reverse lever (2) in the neutral (N) position.

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.

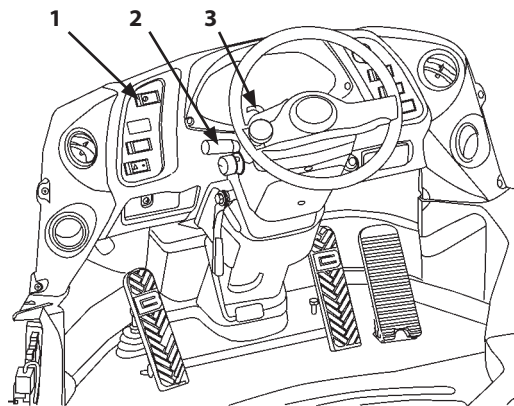
After the engine starts and checking indicator bulbs and display (refer to page 3-5), check that the parking brake indicator is ON.

4. Check that bucket control lever (5) and lift arm control lever (6) are in the neutral (N) position.

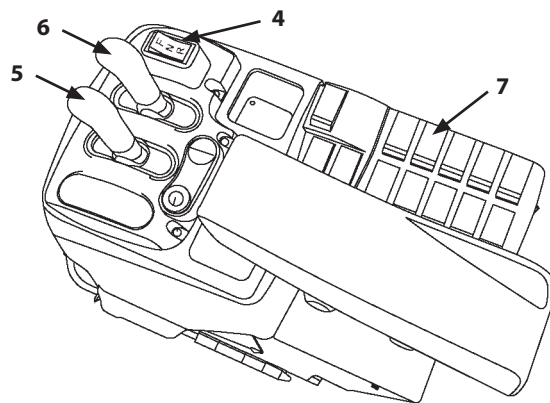


Battery Disconnect Switch

MNEC-01-012

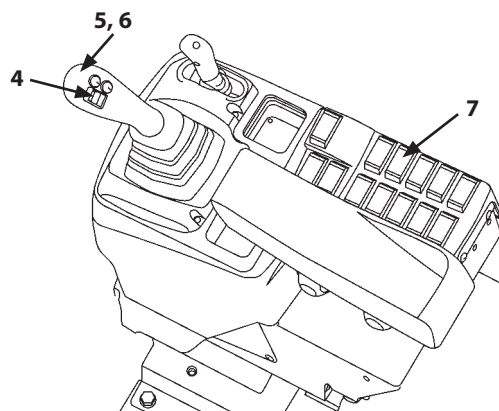


MNDB-01-002



Fingertip Control Type

MNEC-07-001

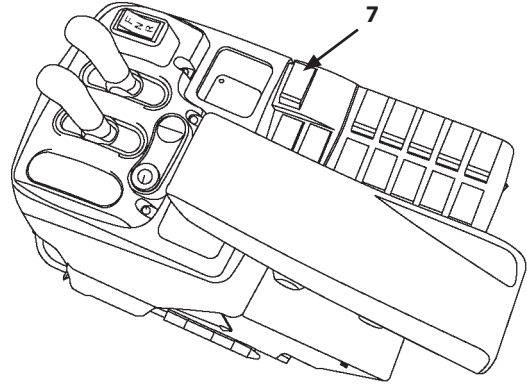


Multi-Function Joystick Type

MNDB-01-005

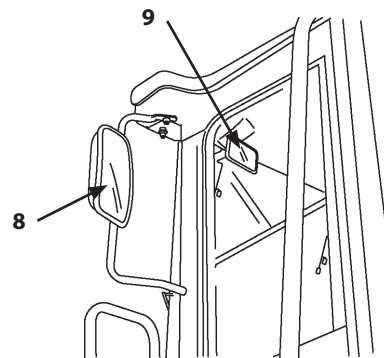
OPERATING THE ENGINE

5. Check that control lever lock switch (7) is in the LOCK (🔒) position.



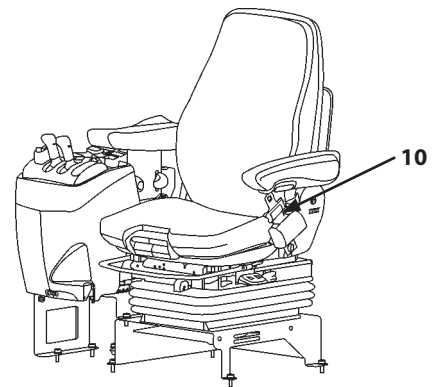
MNEC-07-001

6. Adjust the position of outside rear view mirror (8) and inside rear view mirror (9) 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 (10) 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.



MNDB-01-006

OPERATING THE ENGINE

Starting Engine

Follow the following steps to start the engine without depressing accelerator pedal (3).

1. Be sure that parking brake switch (1) is ON, forward/reverse lever (8) and/or switch (9) is in neutral (N), and neutral lever lock (10) is in the LOCK (🔒) position.
2. Turn the key switch (2) ON.
3. Check indicator bulbs and display.

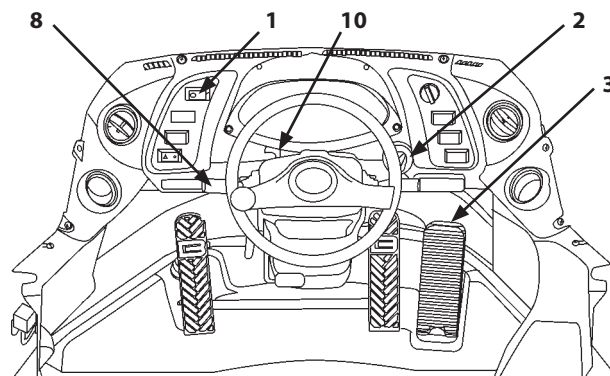
When key switch (2) is turned ON, all indicators and the warning lights come and stay ON for 2 seconds. Then, they go OFF afterward. Any indicator and/or warning light that fails to light at this time is a burned bulb.

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.

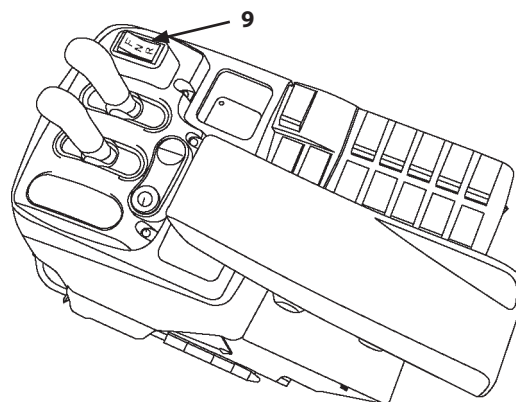
Preheating will automatically start with the key switch ON. The preheat indicator (6) will automatically come ON when needed.

IMPORTANT: When the machine is equipped with the secondary steering (optional), ensure that steering oil pressure indicator (11) is lit. If it is not lit, the secondary steering device is malfunction. Contact your authorized KAWASAKI dealer for machine inspection. Steering oil pressure indicator (11) goes off after the engine starts.

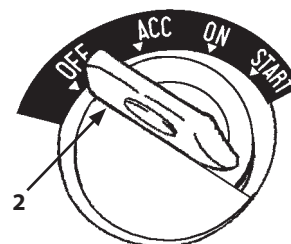
4. Check that parking brake indicator (7) is ON. When the preheat lamp goes OFF (the engine has preheated), sound the horn to clear any personnel away from the area surrounding the machine.



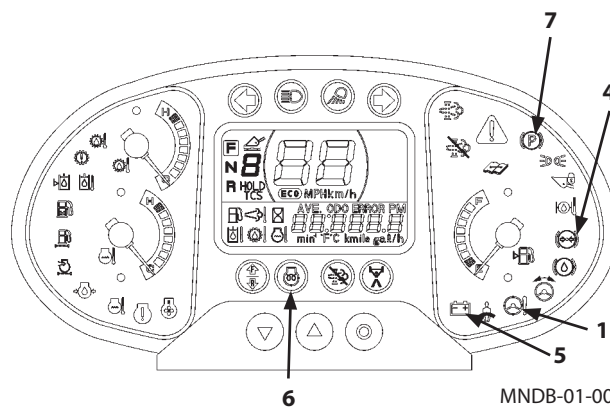
MNDB-01-001



MNEC-07-001



MNDB-01-053



MNDB-01-008

OPERATING THE ENGINE

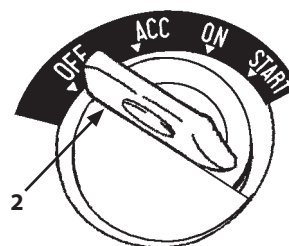
IMPORTANT: Never operate the starter for more than 10 seconds at a time. If the engine fails to start, return key switch to OFF. Wait for more than 30 seconds, then try again.

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

5. Turn key switch (2) to START position to rotate the starter. The engine will start. Do not step on accelerator pedal (3).

6. 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).

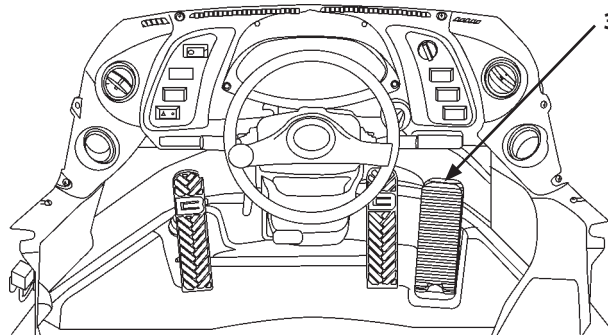


MNDB-01-053

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.

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



MNDB-01-001

NOTE:

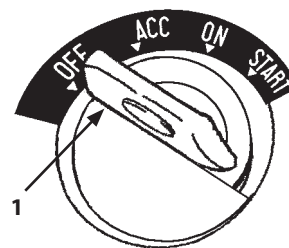
- If the machine is equipped with the secondary steering, the secondary steering auto-check sound may be heard after starting the engine.
- White smoke may occur for several minutes after the engine starts, this is not a malfunction.

OPERATING THE ENGINE

Starting in Cold Weather

Preheating

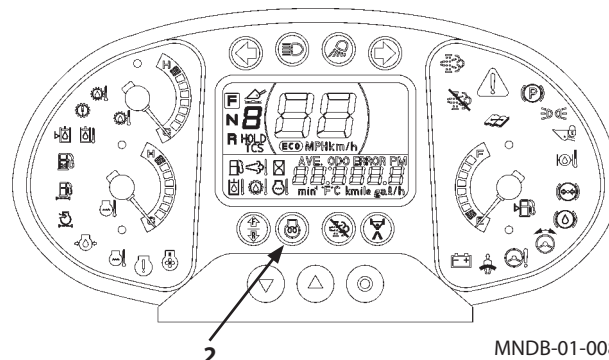
1. Turn the key switch (1) ON. The coolant temperature sensor is activated so that the engine is automatically preheated.
2. Preheat indicator (2) should turn ON. As long as the preheat indicator stays ON, the engine is being heated.



MNDB-01-053

 **NOTE:** Preheating time varies depending on the coolant temperature.

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).

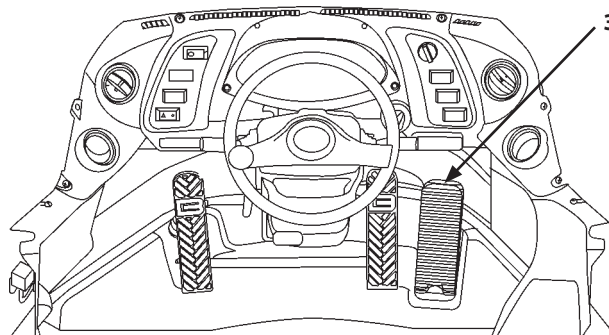


MNDB-01-008

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.

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



MNDB-01-001

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

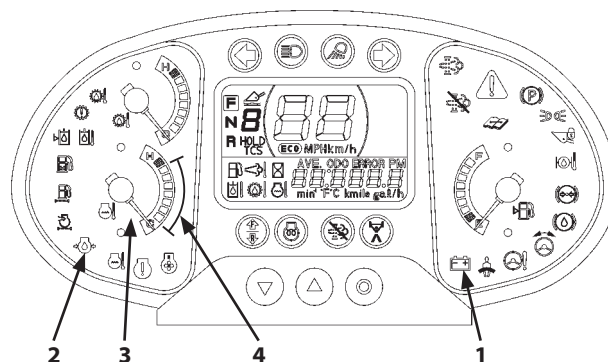
OPERATING THE ENGINE

Check After Starting

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

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 in the range (4).



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 **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 DOC (diesel oxidation catalyst), abnormal fuel system)
White	:	Abnormal (Oil is leaking into the combustion chamber, abnormal DOC, abnormal fuel system)

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

OPERATING THE ENGINE

Using Booster Batteries

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



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.



SA-032

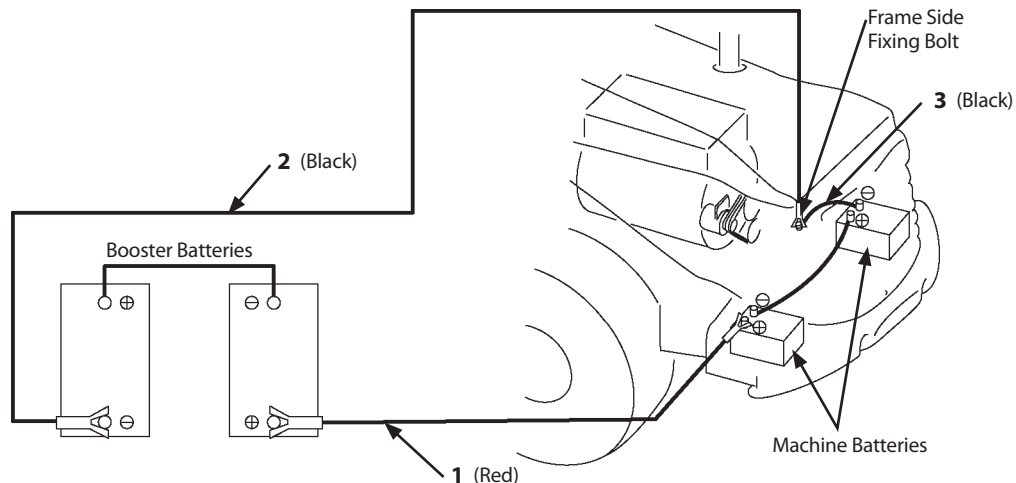
OPERATING THE ENGINE

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 of black cable (3) on machine frame side that connects the negative (-) terminal of the machine battery and machine frame. 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.

2. Disconnecting the booster cables

- 2.1 Disconnect black negative (-) cable (2) from the machine frame first.
- 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.



OPERATING THE ENGINE

Warm Up

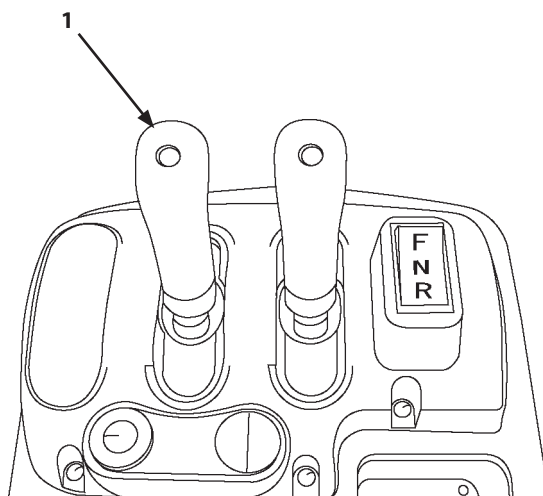
IMPORTANT: At starting the engine, the engine RPM (min^{-1}) is kept at low idle for maximum 35 seconds to warm up the coolant, transmission oil or hydraulic oil. After this period, the engine RPM will increase by applying the accelerator pedal (3).

⚠ 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.

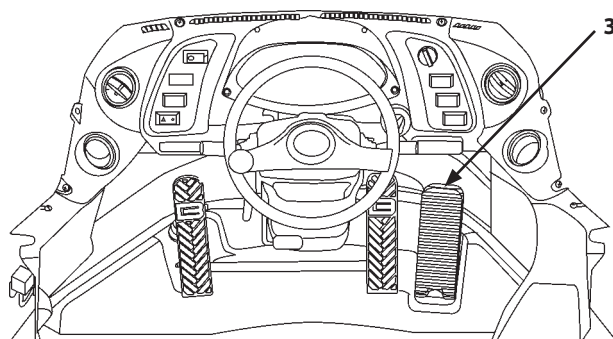
⚠ CAUTION: Operating the machine without warm up causes damage to the engine and hydraulic components. Be sure to perform warm up not only to protect the hydraulic components from being damaged but also to ensure safe operation.

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.)



MNEC-03-003



MNDB-01-001

OPERATING THE ENGINE

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.)

NOTE:

- At this time, do not operate the engine in slow or fast speed. Use medium engine speeds for safe and quick warm up.
- Refer to page 1-61 for Warm Up Operation setting menu.

2. Fully extend the bucket cylinder.

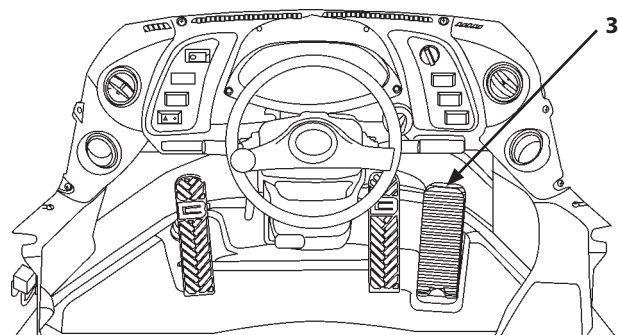
NOTE: Do not continuously operate the bucket control lever for more than 10 seconds at a time. Do not bang linkage when cold.

3. Slowly and fully retract the bucket cylinder.

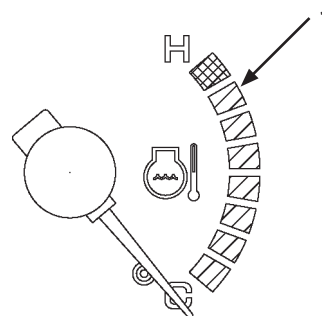
NOTE: Do not continuously operate the bucket control lever for more than 10 seconds at a time. Do not bang linkage when cold.

4. Repeat steps 1 to 3 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 $1200\sim1500 \text{ min}^{-1}$ (RPM's).

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



MNDB-01-001



MNEC-03-002

OPERATING THE ENGINE

Stopping Engine

Stop the engine in the following manner.

IMPORTANT: Never stop the engine while moving the machine.

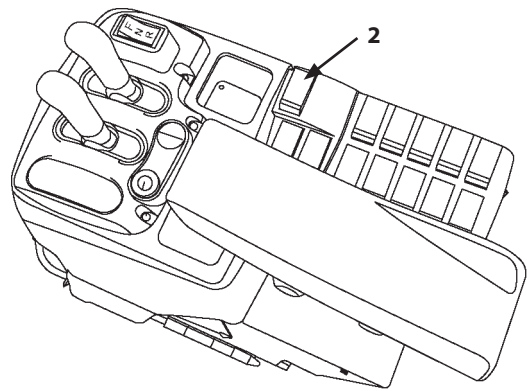
If the engine stops, the steering system may become inoperable, or it may cause other malfunctions or seizure of parking brake.



MNDB-01-053

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.

2. Run the engine at slow 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).



MNEC-07-001

 **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.

MEMO

A series of horizontal dotted lines for writing.

MOVING THE MACHINE

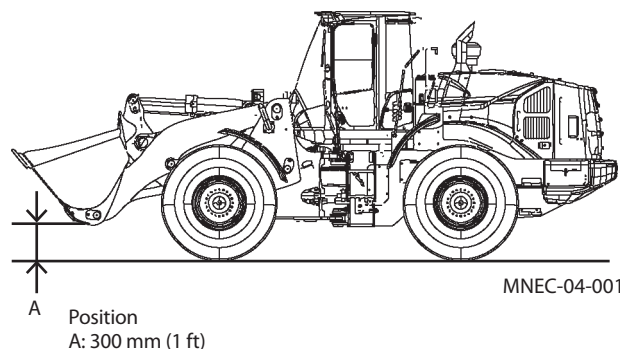
Driving the Machine

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.

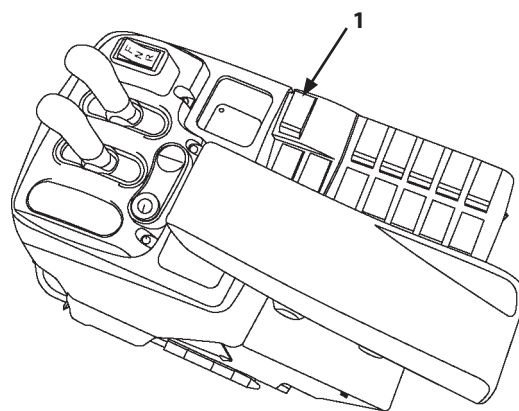
IMPORTANT: The engine must be started and ready for driving correctly by referring to the previous section "OPERATING THE ENGINE".

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. 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.



MNEC-04-001

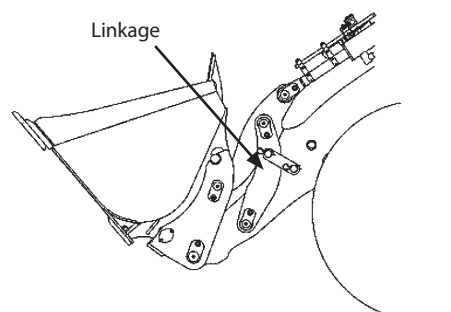


MNEC-07-001

Linkage for Traveling on Public Roads in Italy (70TM7)

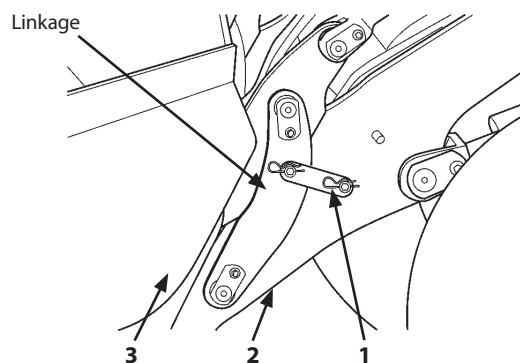
Fix the linkage during traveling on public roads in Italy.

Install the lock bar (1) on the both side of lift arm (2) to prevent the bucket (3) fall.



Traveling posture

M4GB-07-183



M4GB-07-182

MOVING THE MACHINE

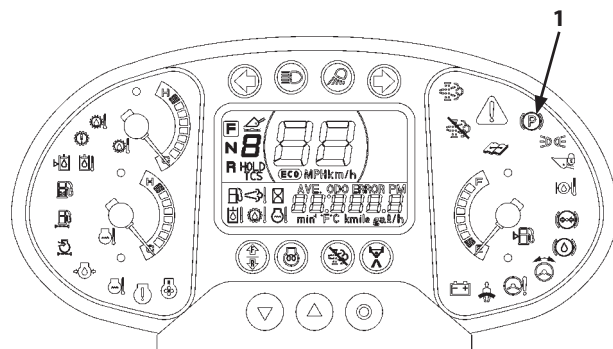
Starting to Move

WARNING: Start to move the machine only after checking that no personnel and/or obstacles are present around the machine.

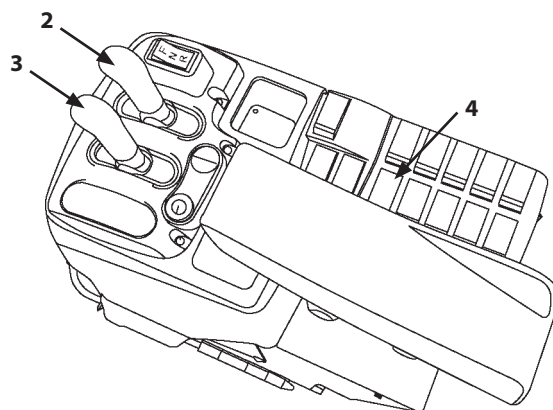
Never turn ride control switch (4) (option) to ON position when traveling the machine or raising the bucket. Before turning the ride control switch (4) ON, stop the machine and confirm that no one is around the bucket. Avoid turning ride control switch (4) to ON position while moving the machine. Failure to do so may automatically move the lift arm up or down.

Refer to page 1-71 for detailed information of ride control switch (4).

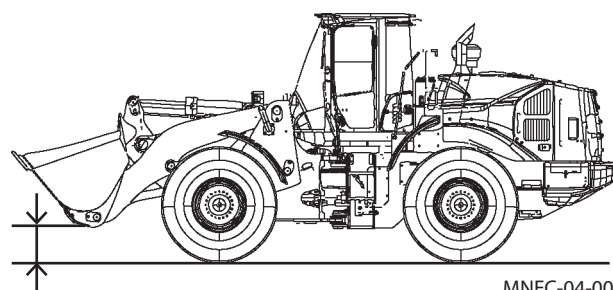
1. Check that none of the warning indicators except parking brake indicator (1) on the monitor panel are ON when engine is running.
2. Set the front attachment in the operating position by operating control levers (2) (3).



MNDB-01-008



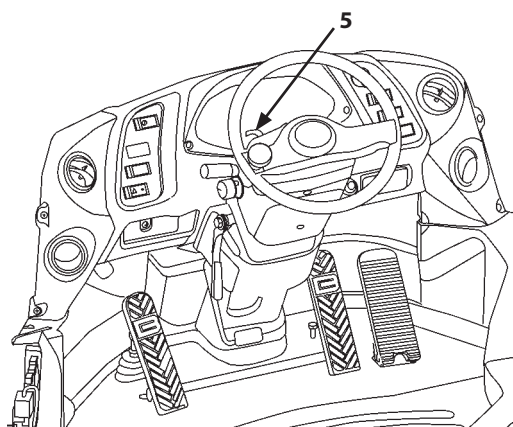
MNEC-07-001



MNEC-04-001

A
Operating Position
A: 300 mm (1 ft)

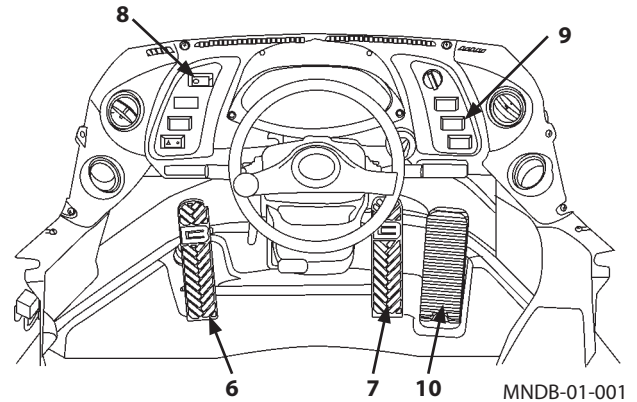
3. Turn neutral lever lock (5) to the UNLOCK (UNLOCK) position.



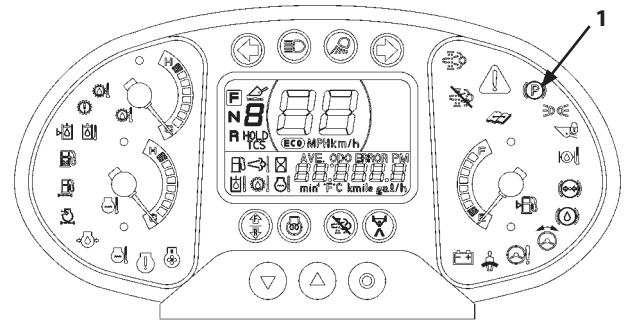
MNDB-01-002

MOVING THE MACHINE

- Step on brake pedal (6) or (7) and press parking brake switch (8) to the OFF position to release the parking brake.



Check that at this time parking brake indicator (1) goes OFF.



 **NOTE:** When starting to ascend a slope, turn declutch switch (9) (⬆) OFF (clutch engaged), and depress the brake pedal (6). Gradually release the brake pedal while depressing the accelerator pedal to easily start ascending a slope.

MOVING THE MACHINE

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 (13). Refer to the page 1-66 for detailed information.

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.

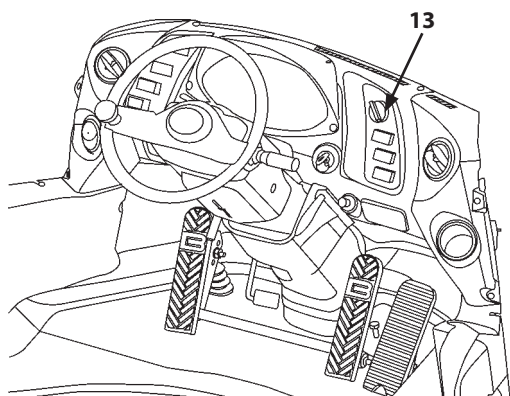
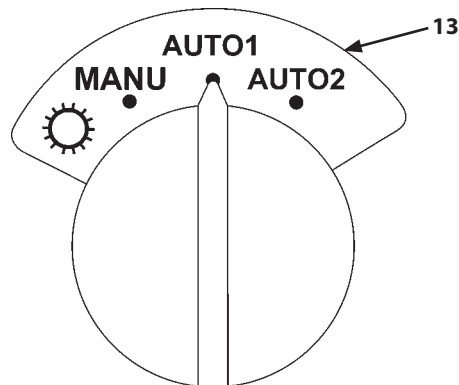
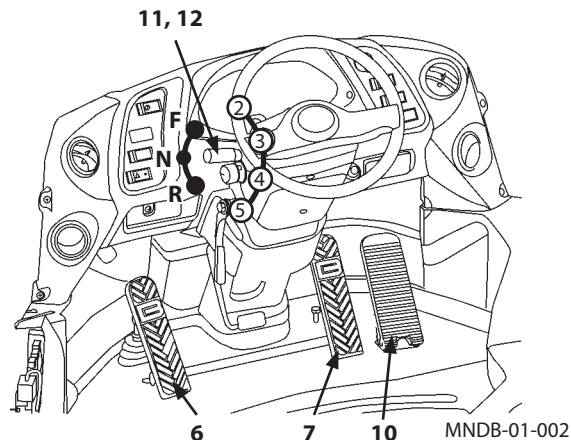


NOTE:

- 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 1-76 for Quick Power Switch.)

7. Release brake pedals (7) and step on accelerator pedal (10) to start traveling.



MOVING THE MACHINE

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 gear automatically shifts in 1st range according to the load. However, the transmission will not shift in 1st range while depressing the brake pedal.

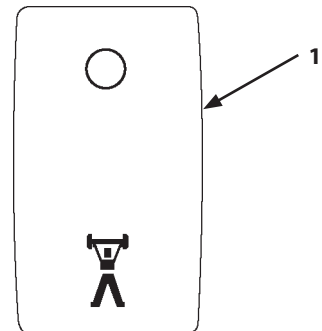
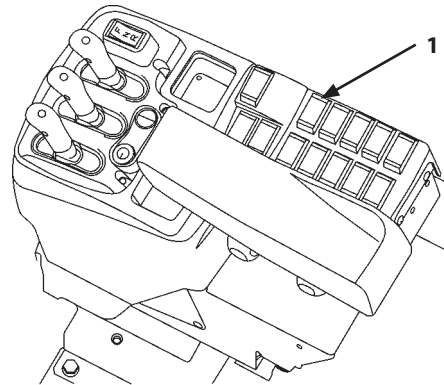
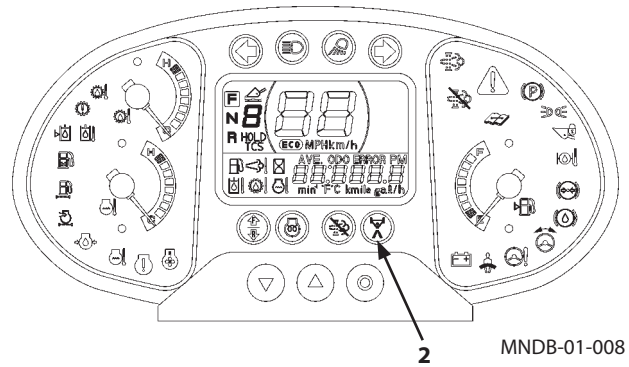
MOVING THE MACHINE

Power Mode Selector

Pressing power mode selector switch (1) alternately activates (ON) and deactivates (OFF) the power mode. When the power mode is activated (ON), power mode indicator (2) lights ON.

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.

 **NOTE:** When the power mode is OFF, the machine operates prioritizing fuel consumption. Under auto shifting mode, the gear is shifted in early timing.



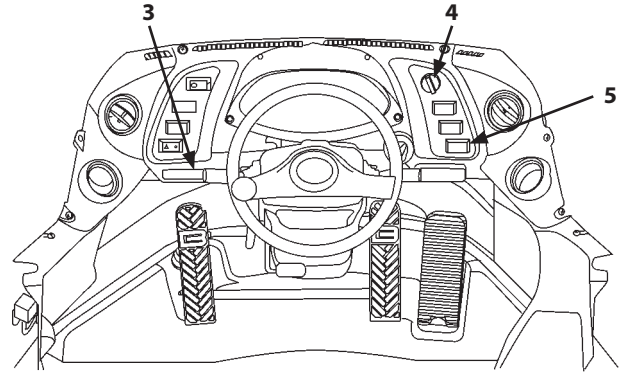
MOVING THE MACHINE

Shift Change Delay Mode

Pressing shift change delay mode switch (5) alternately activates (ON) and deactivates (OFF) the shift change delay mode.

When travel mode selector (4) is set in AUTO 1 or AUTO 2 while shift switch (3) is in 3rd range, 4th range 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.

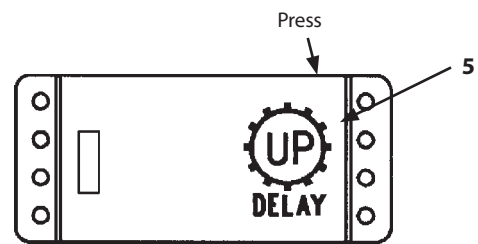


MNDB-01-001

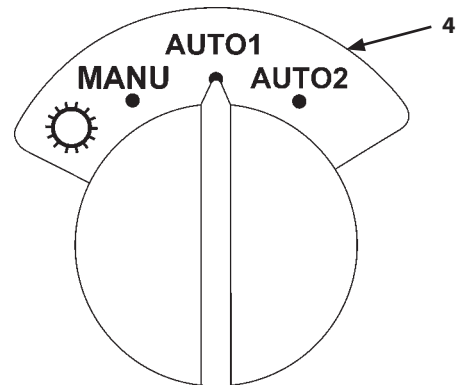
Shift Up Delay

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 forward 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 operate.

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.



MNDB-01-020



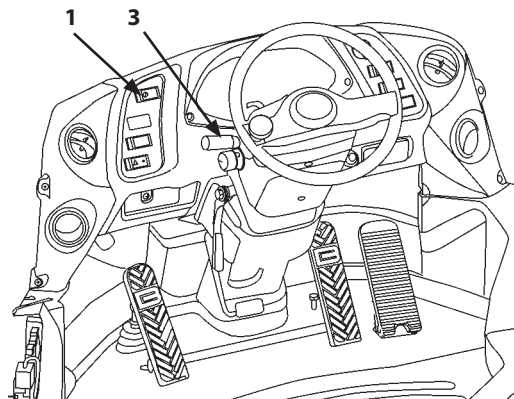
MNDB-01-024

MOVING THE MACHINE

Parking Brake Switch

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.

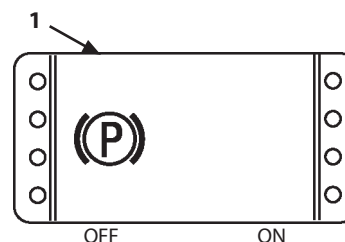


MNDB-01-002

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.

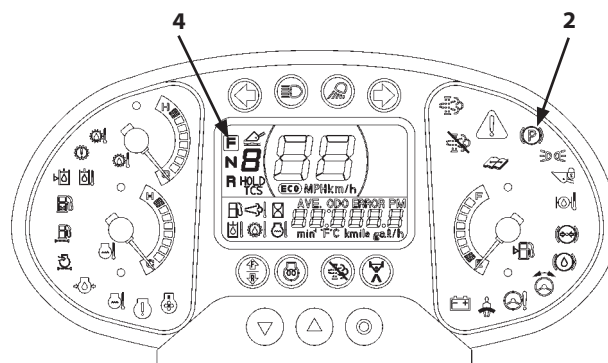


MNEC-01-058-KC

 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.



MNDB-01-008

MOVING THE MACHINE

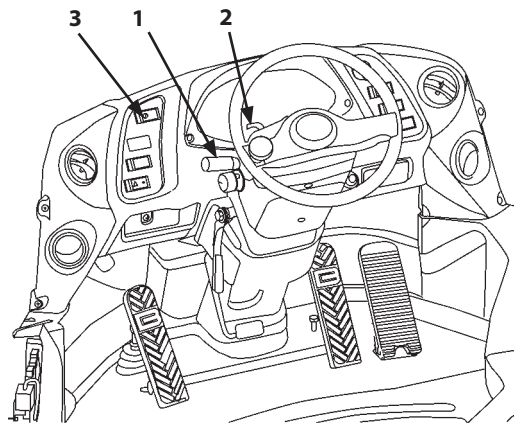
Drive Speed Change

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.



MNDB-01-002

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.
- Be sure to change the machine drive direction only when the machine travel speed is 13 km/h (8 mph) or slower if the gear is in 3rd, 4th or 5th range.

1. Pull neutral lever lock (2) to the UNLOCK () position.
2. Press the OFF position of parking brake switch (3).
3. Move forward/reverse lever (1) to the desired position.

- | | | |
|---|---|-----------------|
| F | : | Forward Driving |
| N | : | Neutral |
| R | : | Reverse Driving |

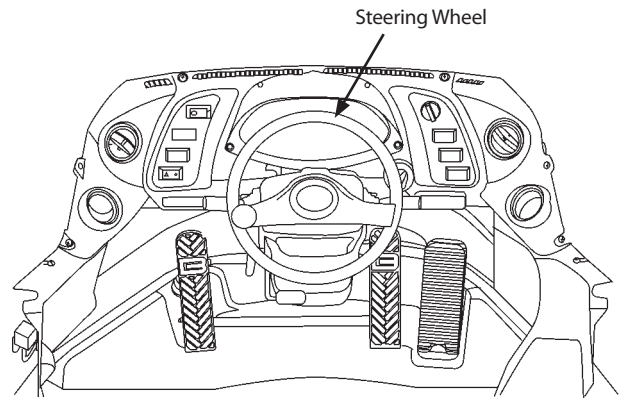
MOVING THE MACHINE

Steering Wheel



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.



MNDB-01-001

IMPORTANT: When the steering wheel is fully turned, the front and the rear frames 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 frames 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.

MOVING THE MACHINE

Secondary Steering (Optional)

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 (2) lights and the buzzer sounds. Immediately park the machine in a safe location. Then, contact your nearest authorized dealer.

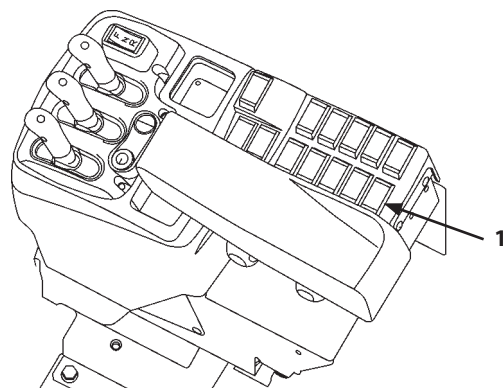
The secondary steering can be used for 60 seconds.

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.

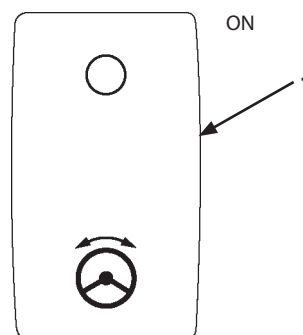
Even though the machine is equipped with the secondary steering system, if the steering function becomes inoperable while moving machine, press secondary steering check switch (1) on the right console to activate the secondary steering system. Then, immediately park and stop the machine in a safe location. When the secondary steering system is activated by pushing secondary steering check switch (1), the secondary steering can be used for 30 seconds.

NOTE:

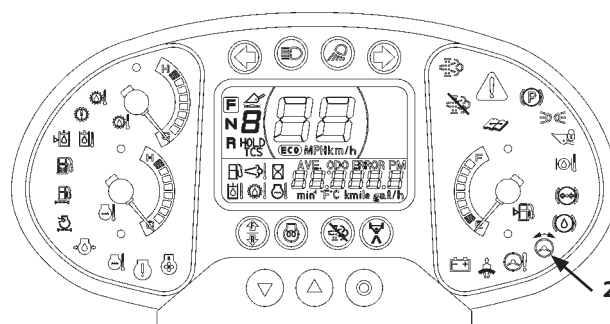
- The secondary steering auto-check sound may be heard for two seconds after starting the engine.
- Before operating the machine, press secondary steering check switch (1) to confirm that the secondary steering pump operates normally.



MNDB-01-004



MNEC-01-020



MNDB-01-008

MOVING THE MACHINE

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.

MOVING THE MACHINE

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.

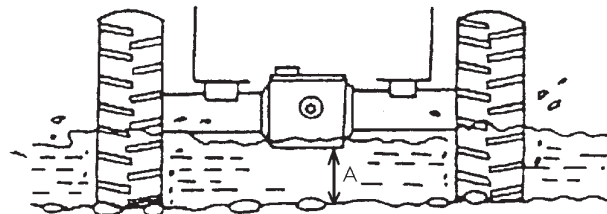
- **Never mount or dismount a moving machine. Never allow any personnel other than the operator to ride on the machine when operating.**
- Even after break-in is complete, avoid running the engine at high RPM's (min^{-1}) under no load.
- If any abnormal condition such as an abnormal noise, vibration, 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.

MOVING THE MACHINE

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 frame even if the frame is not heavily submerged in mud. Check regularly and clean as necessary.



M4GB-04-003

 **NOTE:** After operation is complete, be sure to wash and lubricate all areas which were submerged.

MOVING THE MACHINE

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 gradeability may decrease. Before climbing a steep slope, warm up the machine.

MOVING 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 machine 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.

MOVING THE MACHINE

Stop the Machine

1. Avoid sudden deceleration. Smoothly reduce operating speed.

Release accelerator pedal (1) and step on brake pedal (2) to stop the machine on level surface.

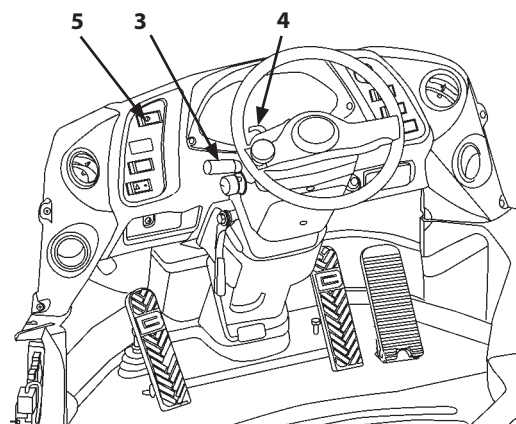
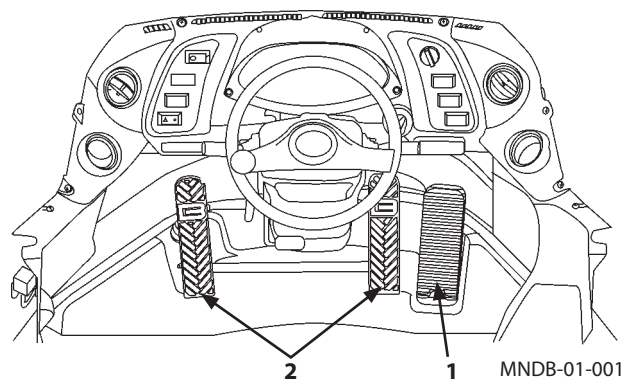
2. Return forward/reverse lever (3) to neutral (N).

Place neutral lever lock (4) to the LOCK (🔒) position.

3. Press the ON position of parking brake switch (5).

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).

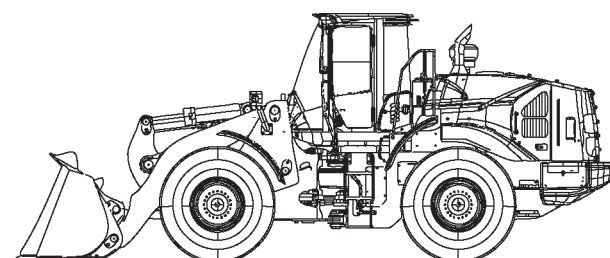
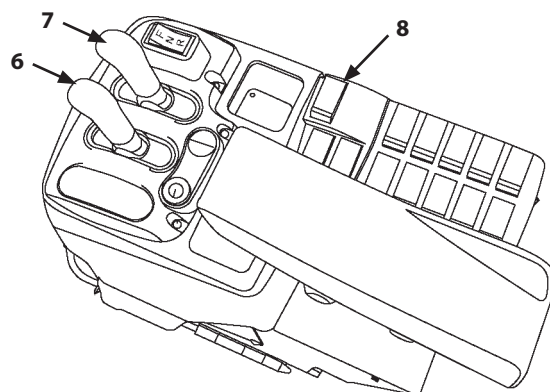
5. Press LOCK (🔒) side of control lever lock switch (8).



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 dissipate 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.



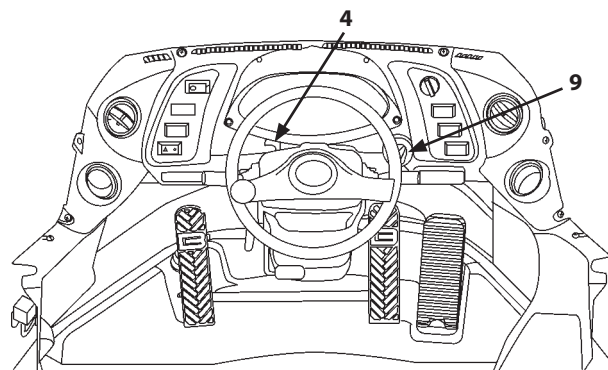
Stop and Parking Position

MNEC-04-002

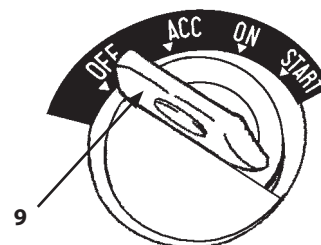
MOVING THE MACHINE

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.
8. Before leaving the machine, close and lock all the windows, cab doors, and covers.



MNDB-01-001



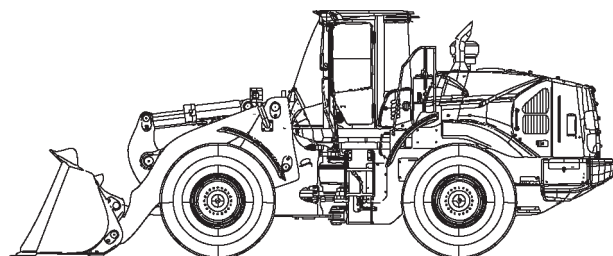
MNDB-01-053

MOVING THE MACHINE

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.
2. Turn parking brake switch (1) ON.

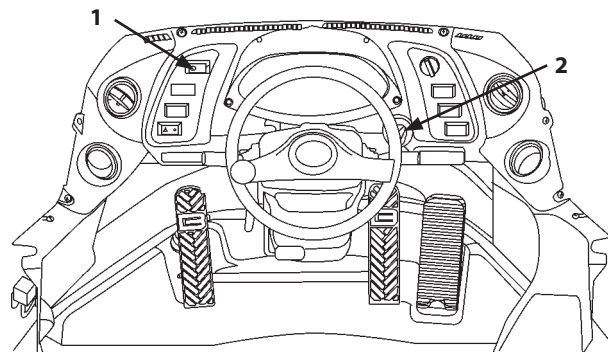


Stop and Parking Position

MNEC-04-002

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.

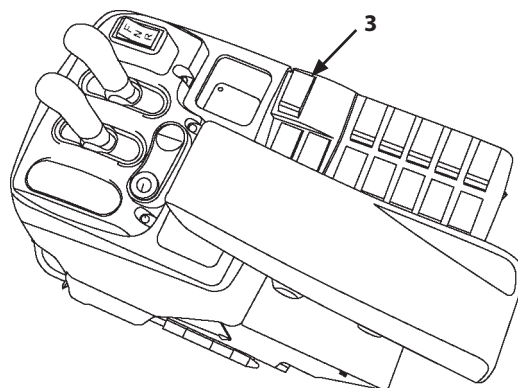
3. Run the engine at low idle speed to cool the engine for a few minutes.



MNDB-01-001

 **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).
6. Before leaving the machine, close and lock all the windows, cab doors, and covers.



MNEC-07-001

MOVING THE MACHINE

Emergency Evacuation

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.

OPERATING THE MACHINE

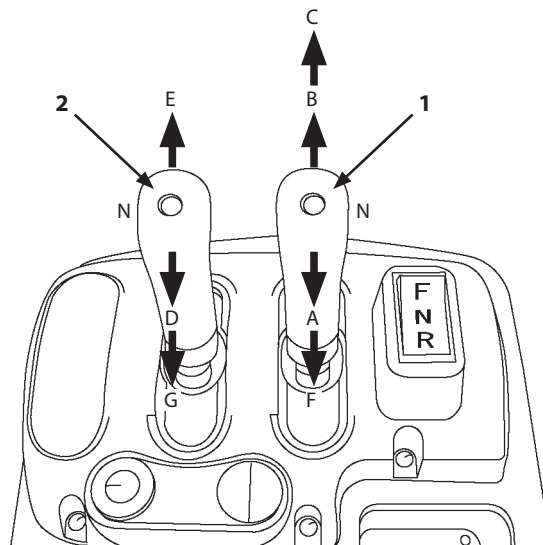
Loading Control Levers

Fingertip Control Type

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

Lift Arm Control Lever (1)

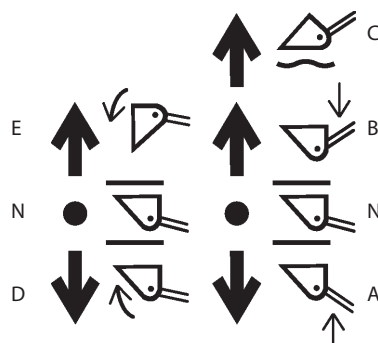
Lever Position	Lift Arm Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied. The lever will stay in this position.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position with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



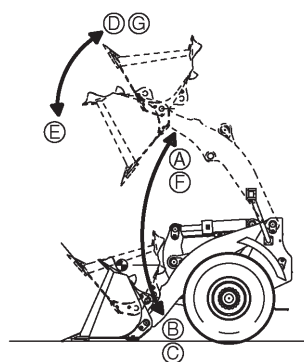
MNEC-03-003

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.



M4GB-01-072



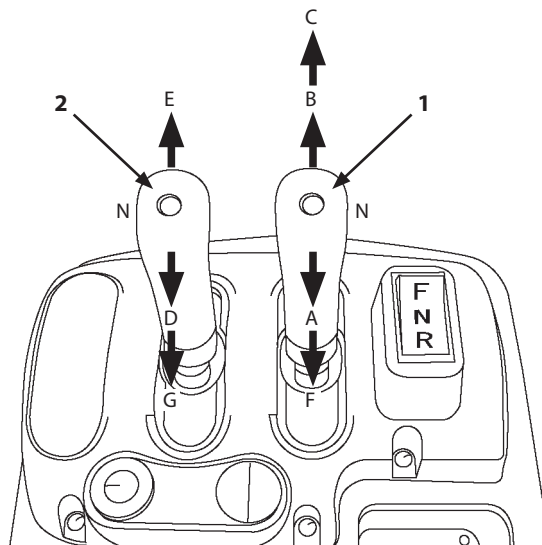
M4GB-01-073

OPERATING THE MACHINE

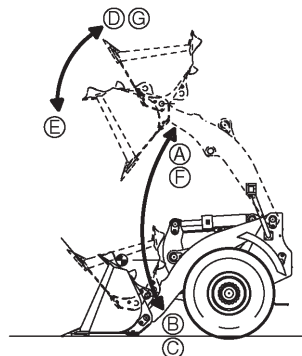
NOTE:

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.



MNEC-03-003



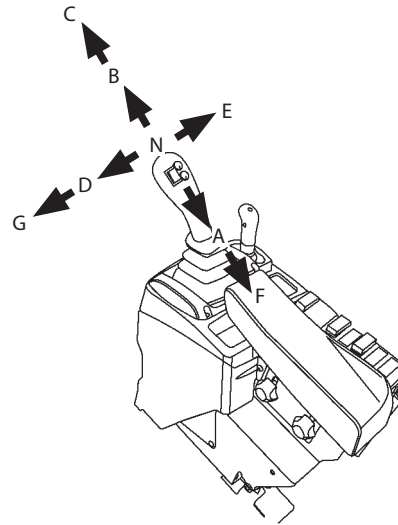
M4GB-01-073

OPERATING THE MACHINE

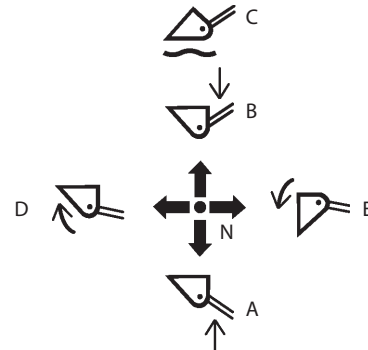
Loading Multi-Function Joystick Lever (Optional)

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

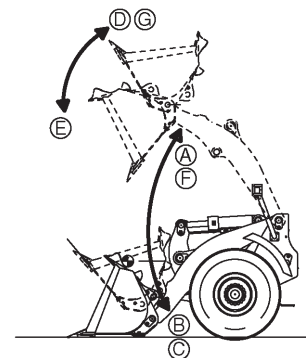
Lever Position	Lift Arm/Bucket Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied. The lever will stay in this position.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position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



MNDB-01-037



M4GB-01-074



M4GB-01-073

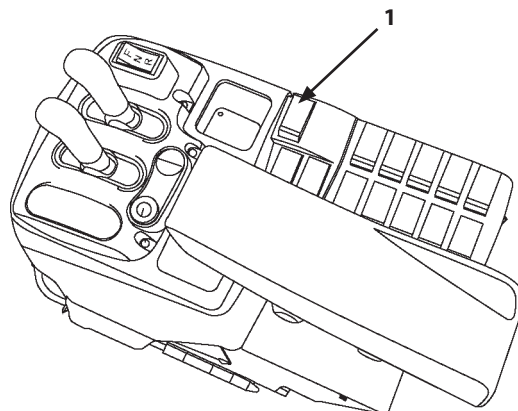
OPERATING THE MACHINE

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.

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 switch (1) is placed in UNLOCK () position, the control lever becomes operable.

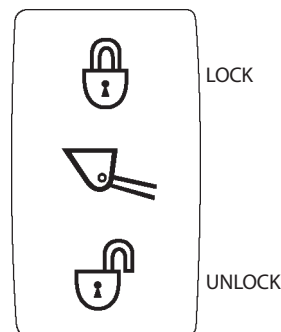


MNEC-07-001

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

OPERATING THE MACHINE

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)

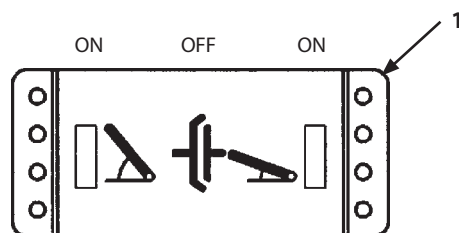
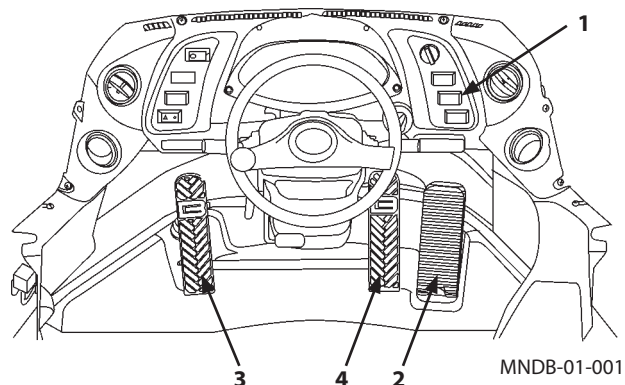
By depressing left brake pedal (3), the clutch is disengaged and brake is applied without transmitting the power to the drive train.

-  : 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 (2) to easily start ascending a slope.



OPERATING THE MACHINE

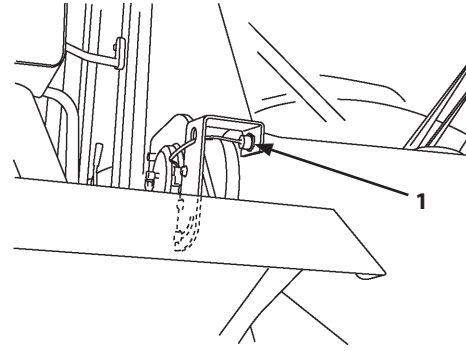
Lift Arm Height Kickout

The lift arm height kickout is a device that automatically stops the lift arm at the preset position while raising the lift arm.

The lift arm height kickout works with a proximity switch (1) to detect the position of lift arm.

 **NOTE:** While lowering the lift arm, the proximity switch does not work.

 **NOTE:** The proximity switch is adjusted so that the arm stops before reaching the highest raising position. To adjust the position of this switch, consult your nearest authorized dealer.



M4GB-05-002

Adjustment of Loader Front

The bucket can be stopped at the desired height by means of optional lift arm auto leveler switches (1, 2), and at the desired digging angle by means of the bucket auto leveler.

Adjust the bucket auto stop position according to the working requirements.

Refer to the following sections for the procedures.

OPERATING THE MACHINE

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:

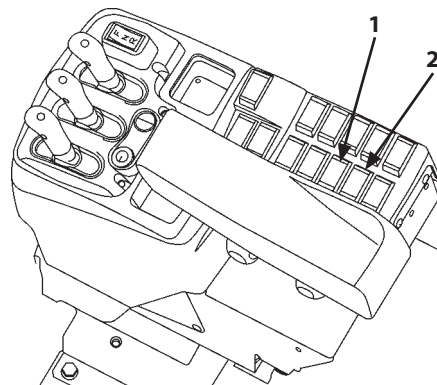
- When the lift arm auto leveler (kickout) function is activated with the bucket loaded, the bucket may stop at the set position.
- Height setting of lowering direction can not be done when the lift arm is above the horizontal position of the lift arms. Also, height setting of raising direction can not 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 desired 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 "Dual Lift Arm Auto Leveler Switch" in the OPERATOR'S STATION section to adjust the stop position.

 NOTE: This lift arm auto leveler works with an angle sensor.



MNDB-01-004



Auto Leveler Switch (Lower Kickout) (1)

MNDB-01-021



Auto Leveler Switch (Height Kickout) (2)

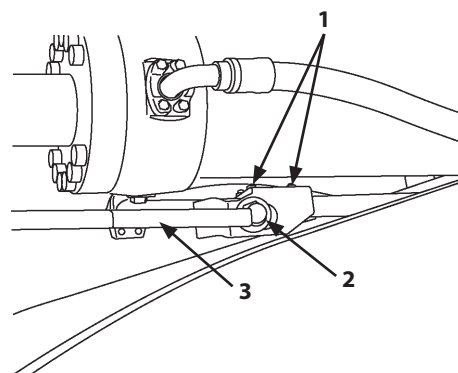
MNDB-01-023

OPERATING THE MACHINE

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.

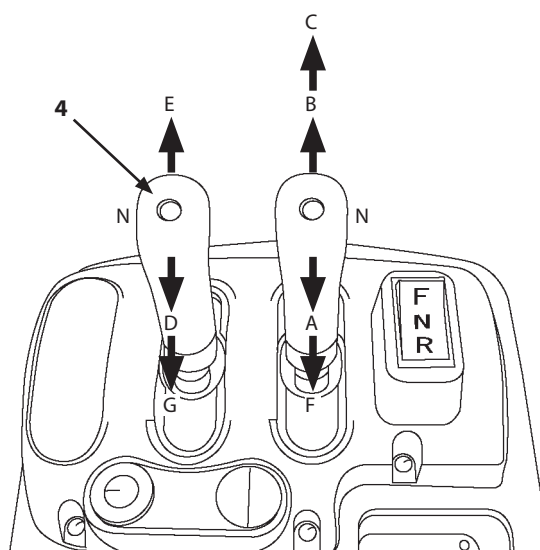


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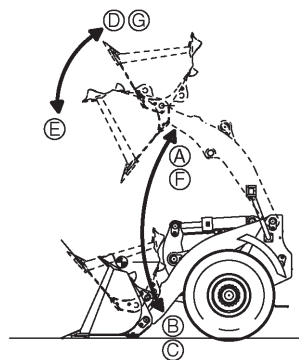
The bucket auto leveler automatically stops the bucket movement when level. (When the machine is shipped from the factory, the bucket positioner is preset so that the bucket is stopped with the bucket bottom parallel with the road surface.)

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).



MNEC-03-003



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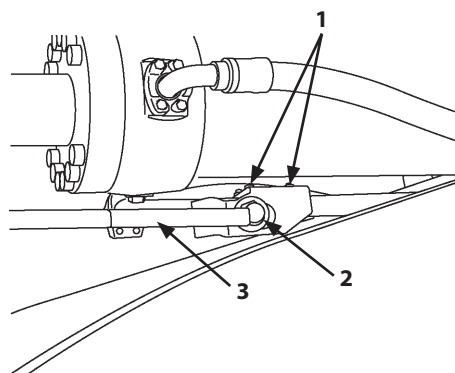
OPERATING THE MACHINE

Adjustment Procedures

IMPORTANT: Do not operate the machine with the bucket dumped more than 10°.

70Z7

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.

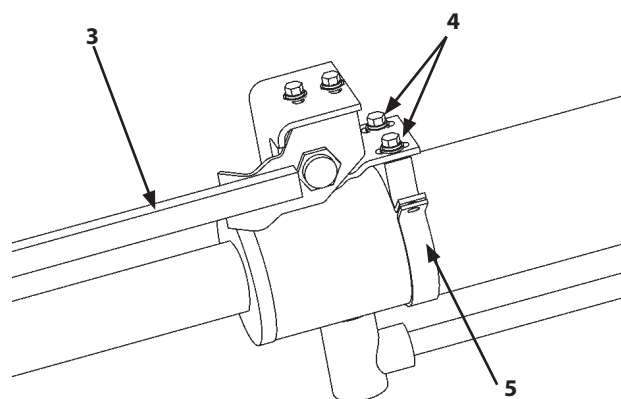


70Z7

M4GB-05-001

70TM7

1. After moving the bucket to the desired digging angle, stop the engine.
2. Loosen bolts (4) (2 used). Move the proximity switch at the position that the center of the sensitive area (orange color) meets the end edge of leveler bar (3). Then, tighten bolts (4).
3. When more preset digging angle is needed, loosen the bolt of clamp (5), move clamp (5), and then tighten the bolt.
4. After adjustment start the engine. Check that the bucket can be stopped at the preset angle position.



70TM7

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OPERATING THE MACHINE

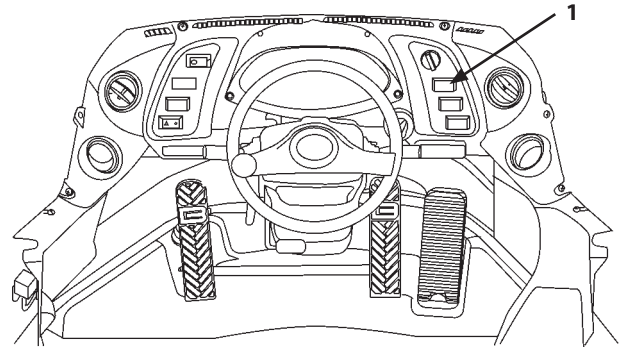
Auto Idling Stop

⚠ WARNING: This function automatically stops the engine. Carefully operate within the work environment when using this function.

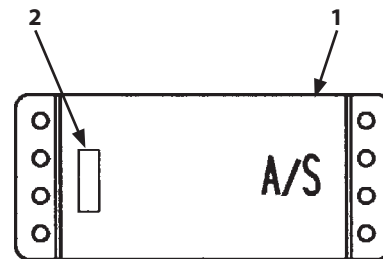
When press auto idling stop switch (1), the idling stop function is ON and idling stop indicator (2) lights.

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, 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 following conditions is met: The parking brake switch is set in OFF position, the forward/reverse switch is set in (F) or (R) position, or the brake pedal or the accelerator pedal is depressed to release it.

IMPORTANT: Ensure that the ON or OFF status of auto idling stop indicator (2). If the indicator is ON, the auto idling stop function will be activated.



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MNDB-01-018

OPERATING THE MACHINE

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.

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 "Auto Idling Stop" in the OPERATOR'S STATION chapter for setting the auto idling stop function.

OPERATING THE MACHINE

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 hard hat, 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.

OPERATING THE MACHINE

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.

OPERATING THE MACHINE

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.

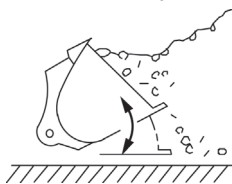
Scoop load while moving the machine forward as described below. As load increases the wheels begin to slip, slightly raise the bucket to reduce the load.

 **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.
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.



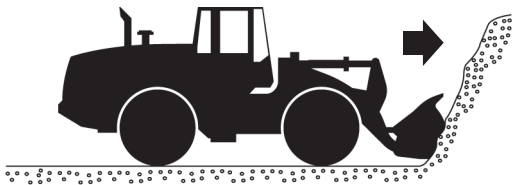
OM0115-Z7

5. Move the machine with the bucket rolled back fully and held at the lowest possible position.

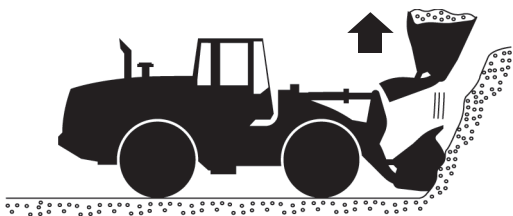
 **NOTE:** Steer the machine in a straight ahead position when entering the material. Aim the center of the bucket at the protruding portion of the material.



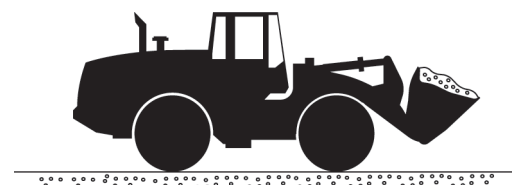
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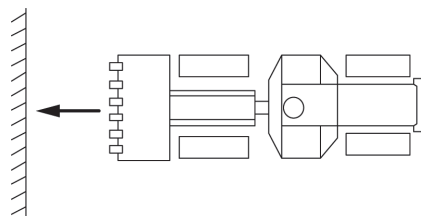
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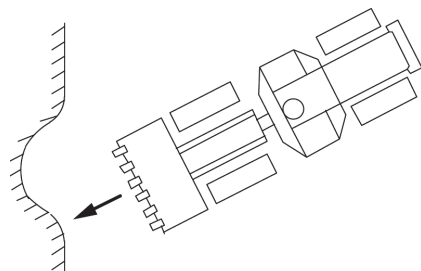
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M4GB-05-006



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OPERATING THE MACHINE

Digging and Loading Level Ground

IMPORTANT: While excavating with 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 teeth 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 one side of the bucket.

1. Position the bucket teeth slightly downward (dump forward 10 degrees or less).



M4GB-05-007



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.

4. When the bucket is filled, move the machine with the bucket fully rolled back. Clear the ground and held at the lowest possible position.



M4GB-05-010

OPERATING THE MACHINE

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.

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.

1. After filling the bucket, dump the bucket gradually to spread soil while moving the machine in reverse.
2. Lower the bucket teeth tips onto the ground. Grade and level the ground surface while driving the machine in reverse with the bucket teeth tips 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-05-011



M4GB-05-012



M4GB-05-013

OPERATING THE MACHINE

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 lowest possible height.
- 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.

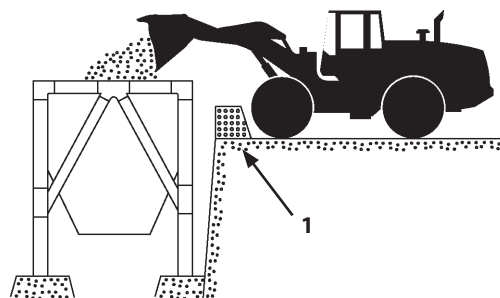
Loading is dumping the handling material onto a truck or into a hopper.

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.

OPERATING THE MACHINE

Loader and Dump Truck Combination Method

WARNING:

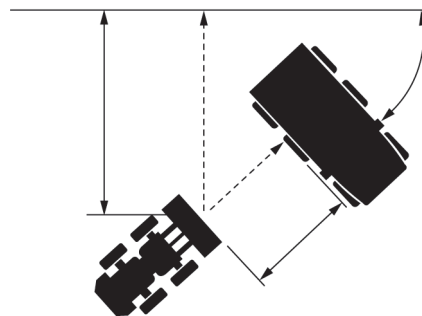
- **Always maintain a flat and clean work site surface. Avoid rapid turns and/or sudden braking while raising the lift arm with the bucket loaded to prevent the machine from tipping over.**
- **Do not insert the bucket into a loading face at fast speed, possibly resulting in an accident.**

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.

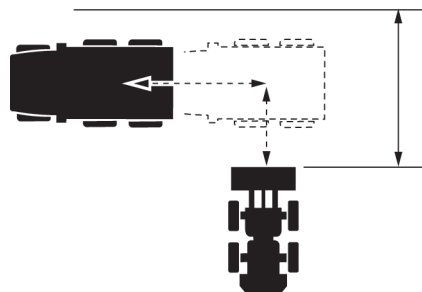
Use a small steering angle to operate the machine efficiently.
4. Before raising the lift arm to the maximum height with the bucket full, lightly tap the bucket while low to stabilize the material in the bucket and help prevent the material from spilling from the backside of the bucket.



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.



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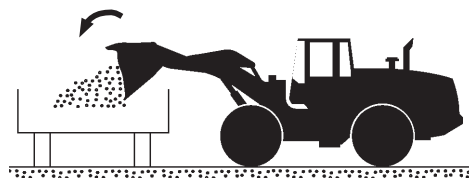
OPERATING THE MACHINE

Dumping into Truck or Hopper

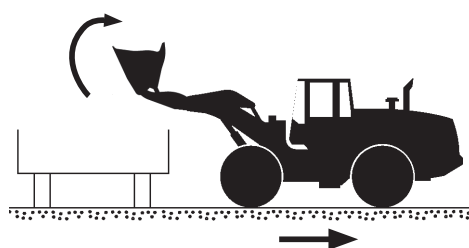
WARNING:

- **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.



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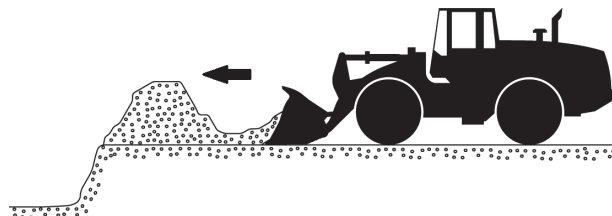
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OPERATING THE MACHINE

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.



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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.



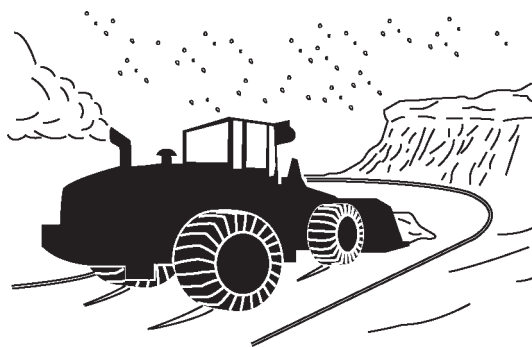
M4GB-05-018

OPERATING THE MACHINE

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.



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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.

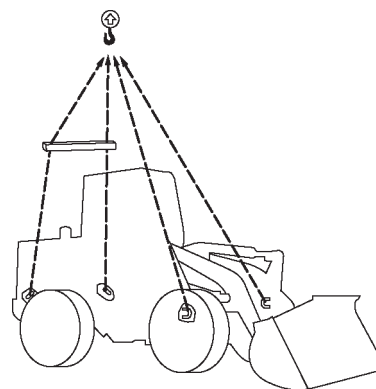
Lifting Wheel Loader

⚠ WARNING:

- Be sure to use lifting tools and set the articulation lock bar in the LOCK position.
- 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 the "LIFTING MACHINE" in the TRANSPORTING section.

Lifting of the machine may be needed when loading the machine onto a ship or truck for repairing and/or transporting.



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OPERATING THE MACHINE

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.

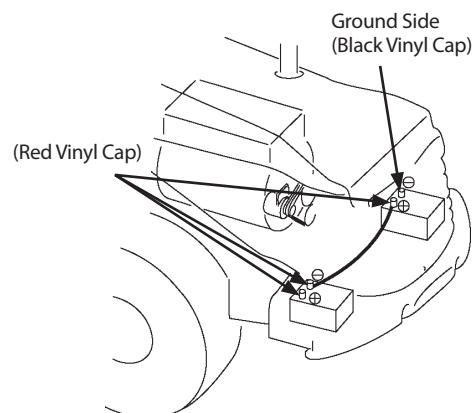
3. Clean the machine.

OPERATING 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.



MNEC-05-002

- 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.

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TRANSPORTING

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.



TRANSPORTING

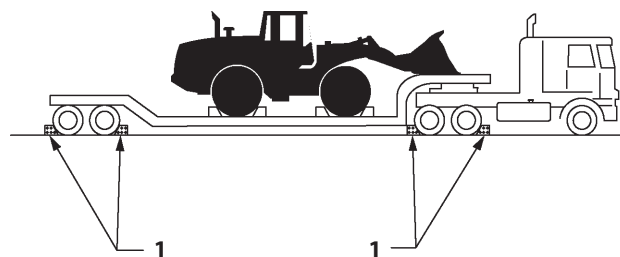
Loading / Unloading on Trailer

⚠ WARNING: Be sure to use a loading dock or a ramp for loading/unloading.

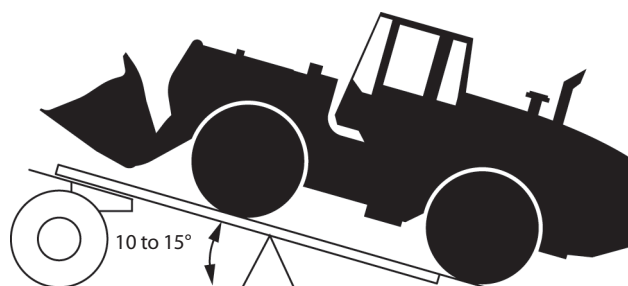
Always load and unload the machine on a firm, level surface.

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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TRANSPORTING

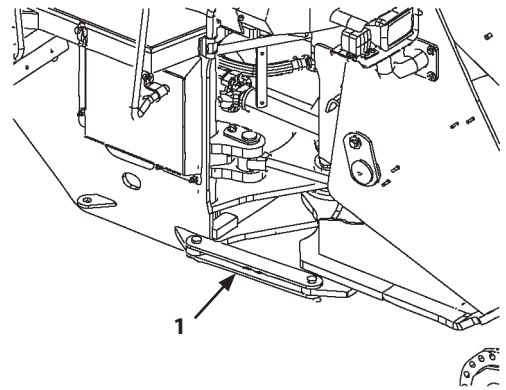
Loading / Unloading on Trailer

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 ground. 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.
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. Remove the key from the key switch.
8. 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.
9. Install the articulation lock bar (1) to prevent the machine from articulating.



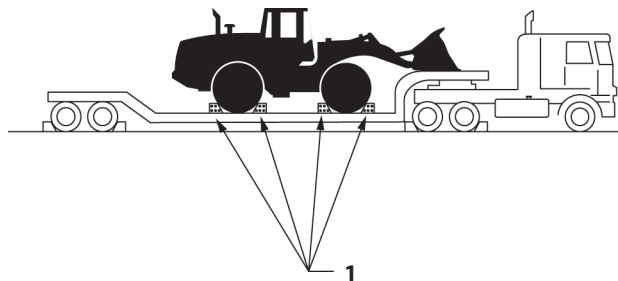
MNEC-07-004

TRANSPORTING

Fastening Machine for Transporting

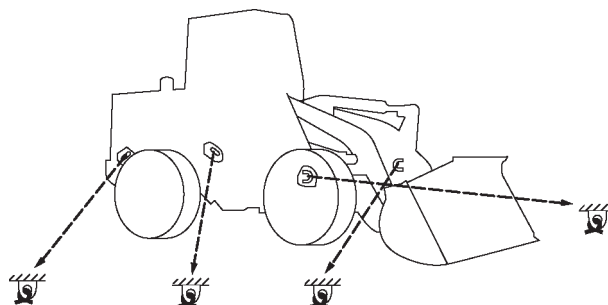
⚠ WARNING: Fasten the machine chassis to the trailer securely with chains and cables. While traveling, loads may shake around, move forward or backward or to the sides.

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. (Optional) Use these eyes for securing the machine.



MNEC-06-002

TRANSPORTING

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.

TRANSPORTING

Precautions for Towing

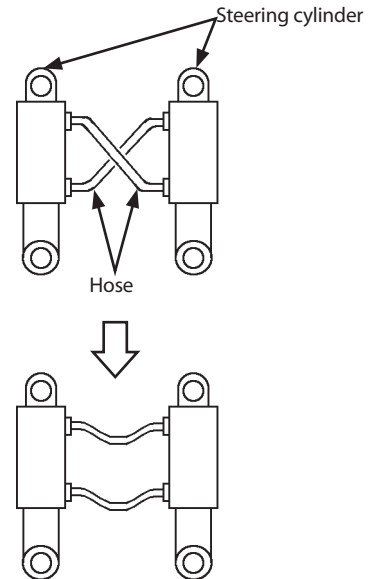
⚠ WARNING: Never attempt to tow the machine if the brake system is in need of repair. Ask your nearest authorized dealer to repair the machine. Operate the machine only after repairs is completed.

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.



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TRANSPORTING

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 complete, 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.

TRANSPORTING

Procedures

WARNING:

- Once the parking brake is released, the machine becomes impossible to stop with the parking brake system.
- Chock all tires to prevent the machine from moving.
- Before restarting to operate the machine, consult your nearest authorized 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).

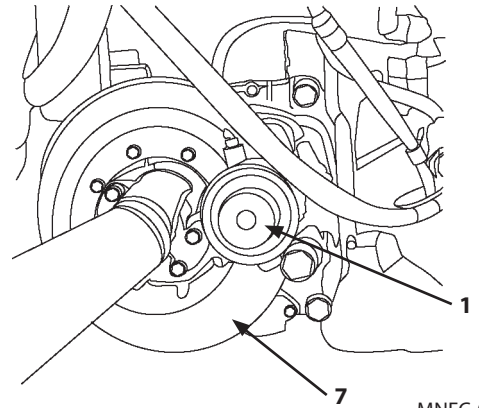
Wrench Size: 24 mm (0.08 in)

3. Rotate set bolt (4) counterclockwise with allen wrench (5) until brake disk (7) becomes completely free.

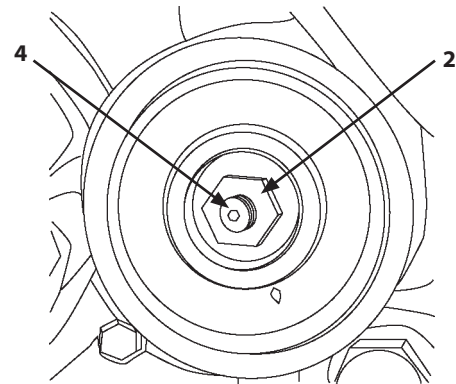
Wrench Size: 8 mm (0.03 in)

4. Install and tighten lock nut (2) until it contacts piston (6). Apply torque of 70 N·m (7.1 kgf·m, 52 lbf·ft) to nut (2).

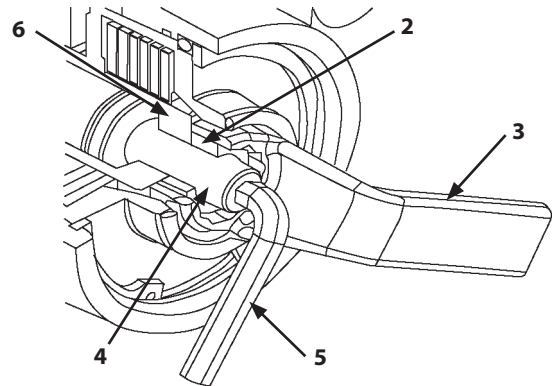
5. Install cap (1) and lightly tighten it to prevent dust from adhering to the lock nut.



MNEC-06-003



MNEC-06-004



MNEC-06-005

TRANSPORTING

Towing Method

CAUTION:

- Use wire cable having the strength more than approx. 150 % of the machine weight.
- Towing from the front end of the machine

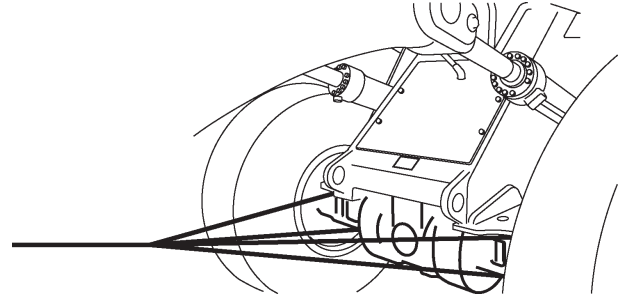
When using wire cables, be sure to attach wire cables to the front axle.

Always use soft material at the corners between the front axle and wire cables to prevent damage to wire cables.

- Towing from the rear end of the machine

When using wire ropes, be sure to attach wire cables to the drawbar pin.

Always use the lock pin after completely inserting the drawbar pin to prevent the wire cable from coming off.



M4GB-06-008

Attach wire ropes to the machine as illustrated when the machine must be towed, such cases when the machine can not be moved from soft ground under its own power.

TRANSPORTING

Lifting Machine



WARNING:

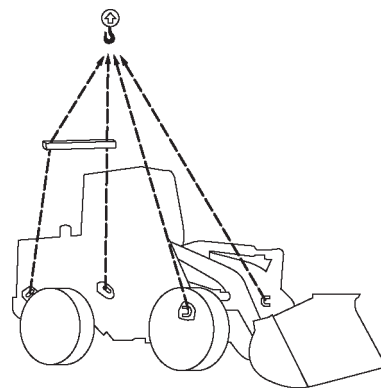
- The lifting tools are optional. Install specified lifting tools at your nearest authorized dealer.
- Use lifting cables and other lifting tools that are free from any damage and/or aging, and properly rated for the load.
- Consult your nearest authorized dealer for correct lifting procedures, and size 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 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 lock bar.
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.



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MAINTENANCE

Correct Maintenance and Inspection Procedures

Learn how to service your machine correctly. Follow the correct maintenance and inspection procedures shown in this manual.

Inspect machine daily before starting.

- Check controls and instruments.
- Check coolant, fuel 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.



SA-005

If there is any problem with your machine, repair it before operating or contact your authorized dealer for repairs.

IMPORTANT:

- **Use only recommended fuel and lubricants.**
- **Be sure to use only genuine Kawasaki parts. Failure to do so may result in serious injury or death and/or machine breakdown.**
- **Failure to use recommended fuel, lubricants, and genuine Kawasaki parts will result in loss of Kawasaki 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 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 leading to malfunction.**
- **Use Kawasaki genuine high performance filter.**

MAINTENANCE

- 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 download 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, 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 maintenance guide table is affixed in the back of the tool box cover. Refer to 7-5 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)

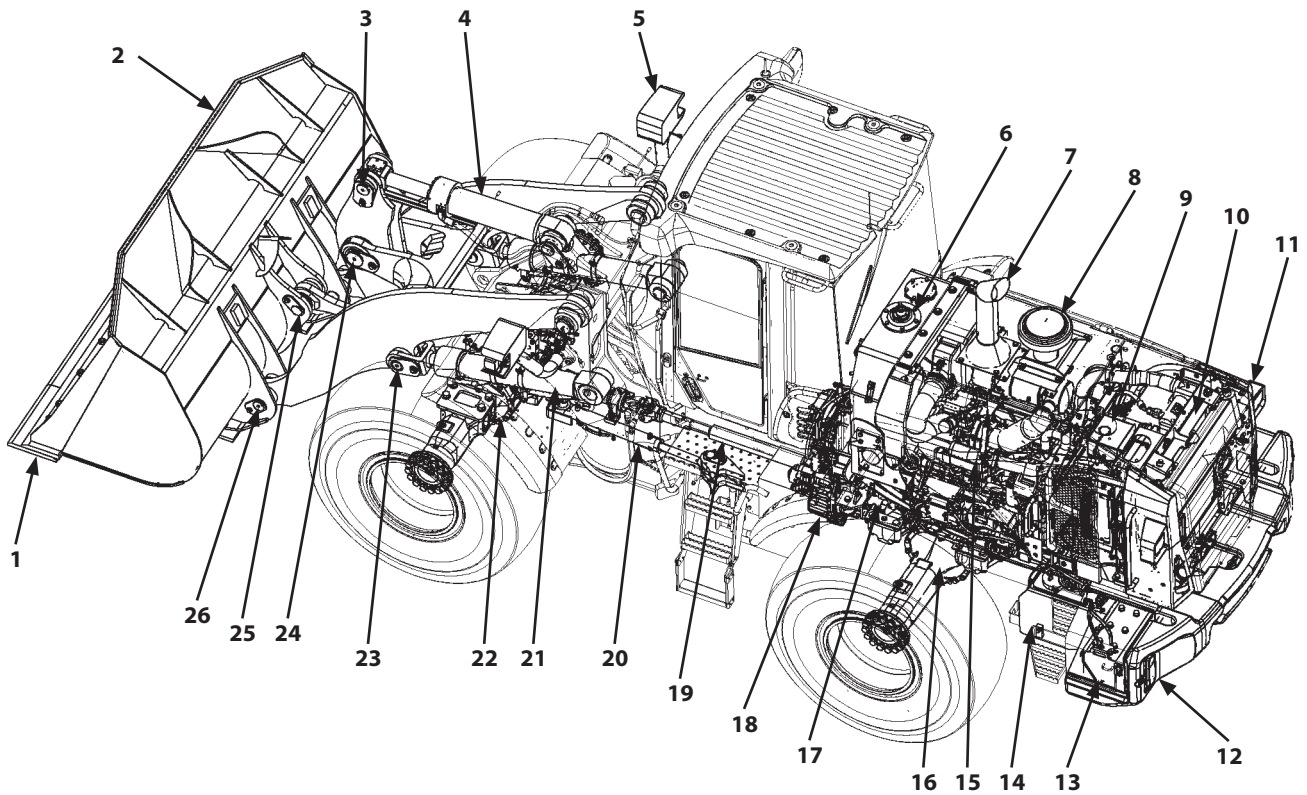
Annual Check : To be regularly conducted once per year (every 2000 hours)

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.

MAINTENANCE

Layout

70Z7



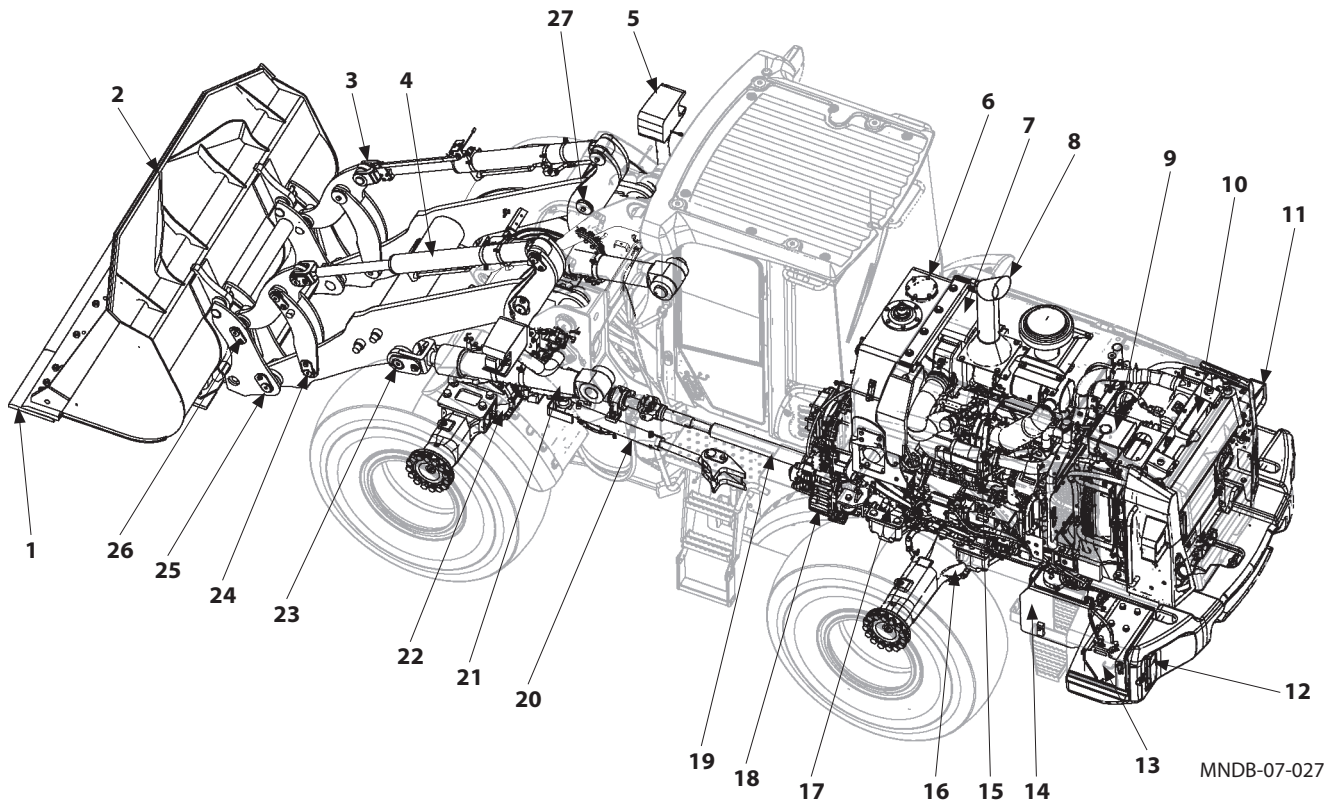
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- | | |
|--|----------------------------|
| 1. Bolt on Cutting Edge | 18. Transmission |
| 2. Bucket | 19. Center Propeller Shaft |
| 3. Bucket Cylinder Pin | 20. Steering Cylinder |
| 4. Bucket Cylinder | 21. Lift Arm Cylinder |
| 5. Front Combination Light | 22. Front Axle |
| 6. Hydraulic Oil Tank | 23. Lift Arm Cylinder Pin |
| 7. Muffler | 24. Lever (Bell Crank) Pin |
| 8. Air Cleaner | 25. Bucket Link Pin |
| 9. Reserve Tank | 26. Bucket Pin |
| 10. Radiator, Oil Cooler, and Other Cooling System | |
| 11. Work Light | |
| 12. Rear Combination Light | |
| 13. Batteries | |
| 14. Fuel Tank | |
| 15. Engine | |
| 16. Rear Axle | |
| 17. Rear Propeller Shaft | |

MAINTENANCE

Layout

70TM7



MNDB-07-027

- | | |
|--|----------------------------|
| 1. Bolt on Cutting Edge | 15. Engine |
| 2. Bucket | 16. Rear Axle |
| 3. Bucket Cylinder Pin | 17. Rear Propeller Shaft |
| 4. Bucket Cylinder | 18. Transmission |
| 5. Front Combination Lamp | 19. Center Propeller Shaft |
| 6. Hydraulic Oil Tank | 20. Steering Cylinder |
| 7. Air Cleaner | 21. Lift Arm Cylinder |
| 8. Muffler | 22. Front Axle |
| 9. Reserve Tank | 23. Lift Arm Cylinder Pin |
| 10. Radiator, Oil Cooler, and Other Cooling System | 24. Guide Pin |
| 11. Work Light | 25. Bucket Pin |
| 12. Rear Combination Lamp | 26. Bucket Link Pin |
| 13. Batteries | 27. Bell Crank Pin |
| 14. Fuel Tank | |

MAINTENANCE

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.

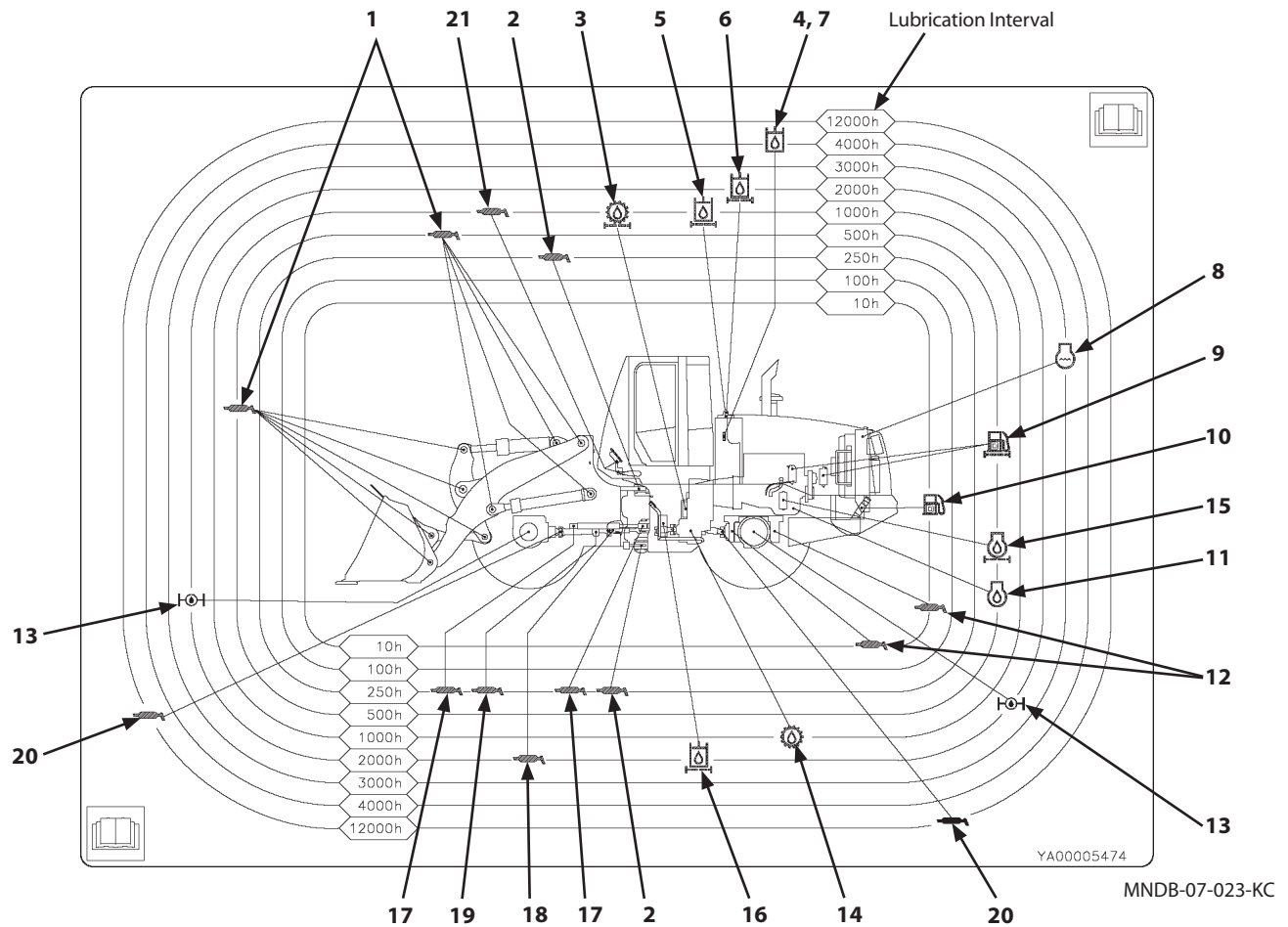
- Symbols

The following symbols 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		Fuel Filter (Fuel Main Filter, Pre-Filter)
	Coolant (Long-Life Coolant)		Gear Oil (Final Drive, Differential Gear)
	Transmission Oil (Transmission, Torque Converter)		Fuel
	Transmission Oil Filter		

MAINTENANCE

• Maintenance Guide Table



	Item	Page		Item	Page
1	Grease (Front Joint Pin)	7-20	11	Engine Oil	7-26
2	Grease (Center Pin)	7-22	12	Grease (Axle Support Pin)	7-22
3	Transmission Oil Filter	7-34	13	Axle Gear Oil (Final drive, Differential gear)	7-37
4	Hydraulic Oil Filter (Suction)	7-45	14	Transmission Oil	7-34
5	Hydraulic Oil Filter (Main)	7-48	15	Engine Oil Filter	7-28
6	Air Breather Element	7-50	16	Hydraulic Oil Filter (Pilot)	7-46
7	Hydraulic Oil	7-43	17	Grease (Steering Cylinder Pin)	7-21
8	Coolant (Long-Life Coolant)	7-72	18	Grease (Propeller Shaft Spline)	7-23,24
9	Fuel Filter, Fuel Pre-Filter	7-62 to 63	19	Grease (Propeller Shaft Pillow Block Bearing)	7-23
10	Fuel Oil (Diesel Fuel)	7-58	20	Grease (Propeller Shaft Universal)	7-22 to 24
			21	Grease (Brake Pedal)	7-24

MAINTENANCE

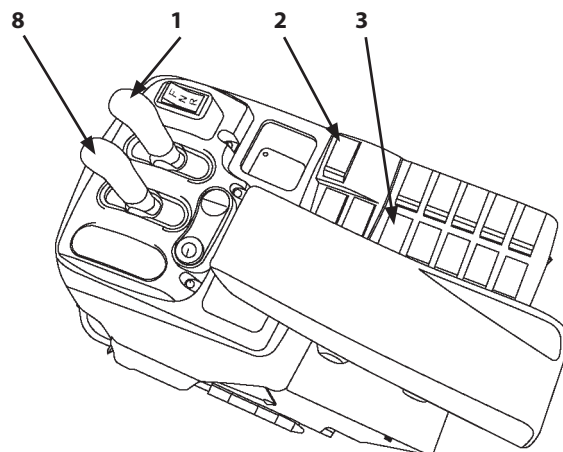
Preparations for Inspection and Maintenance

⚠ WARNING: If ride control switch (3) (option) is in the AUTO position, the lift arm may unexpectedly rise. To avoid an accident due to unexpected movement of the lift arm and bucket, always turn ride control switch (3) OFF before beginning the inspection and/or maintenance of the machine.

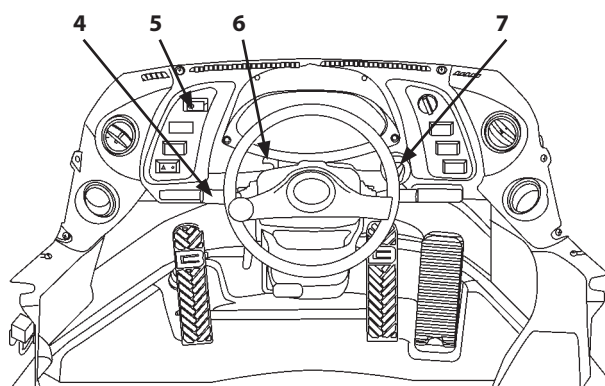
⚠ CAUTION: If the machine is unexpectedly moved, a serious accident may result. Be sure to apply the parking brake when parking the machine.

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 level 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 (P) position.

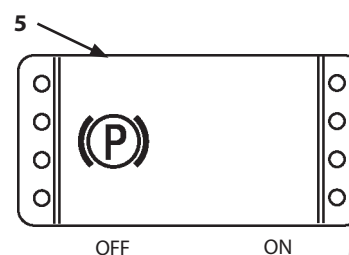


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MNDB-01-001

5. Apply the parking brake (Turn parking brake (5) ON.)
6. Chock the tires.
7. Run the engine at low idle speed for a few 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 (P) position. Fully operate the lift arm and bucket control levers (1, 8) 3 to 4 strokes to release residual pressure in the hydraulic system.
In case inspection and/or maintenance must be performed with the engine running, use a signal person.
8. Be sure to place control lever lock switch (2) to the lock (P) 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.

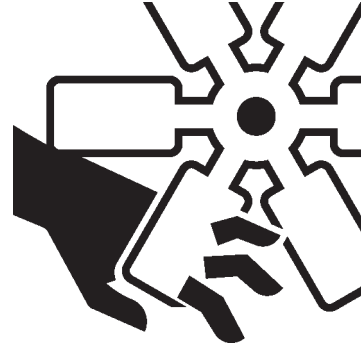


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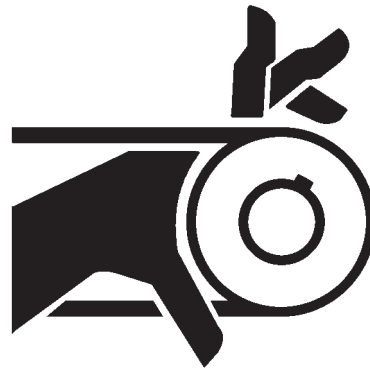
MAINTENANCE

⚠ WARNING: Never attempt to maintain the machine when the engine is running. If the engine must be run while working, do the following.

- One person should be in the operator's seat and ready to stop the engine 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



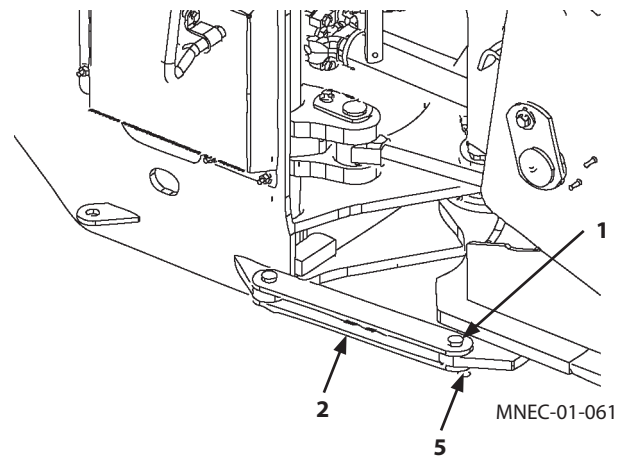
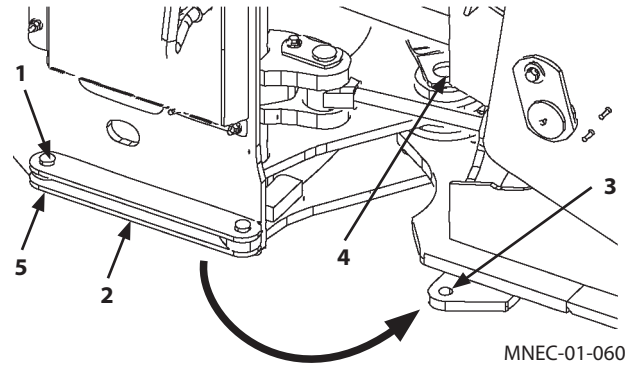
SA-026

MAINTENANCE

Articulation Lock

CAUTION: Before beginning to work near the chassis center hinge (4), install articulation 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 frame hole.
3. Pull out and rotate articulation lock bar (2) to align it with the front chassis hole (3).
4. Install set pin (1) into the front chassis hole (3) and the articulation lock bar tip end hole. Install β -form pin (5) to lock the articulation lock bar (2) in position.



MAINTENANCE

Inspection/ Maintenance Access Side Cover

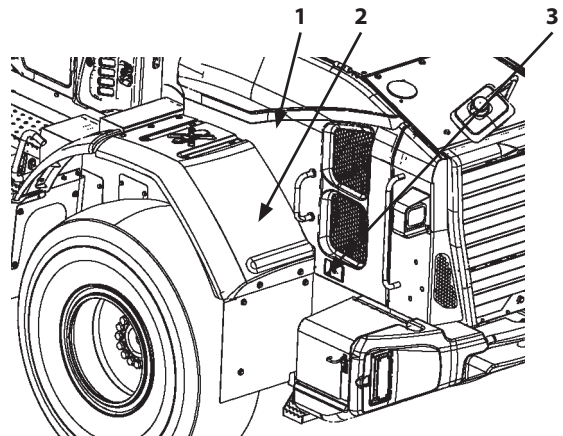
CAUTION:

- Always close side covers (1) during 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).
- In case the machine is equipped with the fenders (2) on side covers (1), never ride on the fenders (2).

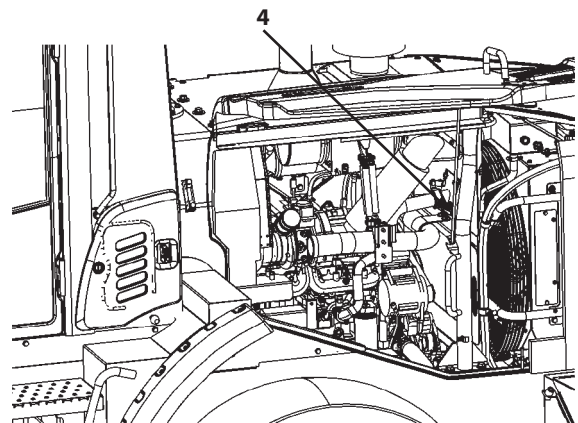
When opening side cover (1), pull latch (3).

 NOTE: When required to inspect the machine 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.



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MNDB-01-016

MAINTENANCE

Rear Grille

CAUTION:

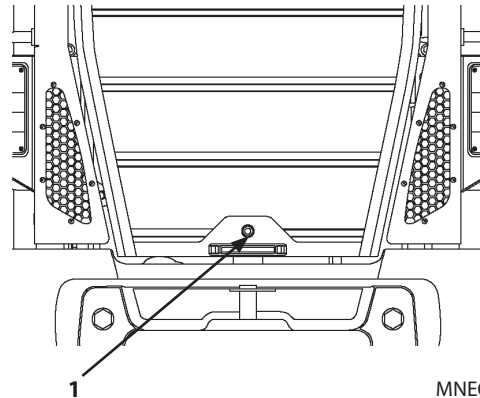
- Open or close rear grille (2) only after stopping the engine. Failure to do so may create a very dangerous situation as entanglement with the cooling fan may result.
- Before running the machine, always check that rear grille (2) is not open.
- Rear grille (2) may spring open. Take care not to be hit by the rear grille.

Opening the rear grille

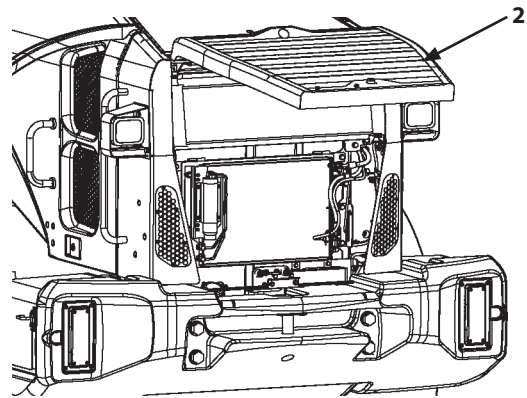
Push open/close button (1) laterally to open rear grille (2) upward. This provides access to the area under the grille allowing the fuel tank to be refilled and/or the cooling fan to be cleaned.

Closing the rear grille

While holding rear grille (2), slowly close rear grille (2) downward until a "click" sound is heard.



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MAINTENANCE

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)		
Brakes	Brake valve seals (Rubber parts)	Every 1 years	
	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 (Replace when worn or if not working correctly)	Every 3 years	

 **NOTE:** Be sure to replace seals, such as O-rings and gaskets, when replacing hoses.

MAINTENANCE

Inspection and Maintenance Table

Check and/or carry out the maintenance at intervals of the specified operating hours below or the calendar 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	○									7-26
	Check Coolant Level	○									7-71
	Check Accelerator Pedal Operation, and Exhaust Gas Color and Noise	○									7-102
	Drain Fuel Filter	○									7-62
	Check Fuel Level	○									7-59
	Check Drive Belt	○									7-72
	Check Fuel Hoses	○									7-66
	Check Crankcase Breather Tube	○									7-30
	Dust Ejection Valve	○									7-68
	Check Air Inlet System	○									7-69
	Check Drive Belt Tension				○						7-72
	Change Engine Oil					○					7-27
	Replace Engine Oil Filter					○					7-29
	Clean Radiator / Oil cooler Cores and Other Cooling System					*3 ○					7-74
	Drain Water and Sediment from Fuel Tank						○				7-61
	Replace Fuel Main Filter Element					○					7-63
	Replace Fuel Pre-Filter Element					○					7-64
	Clean Fuel Pump Strainer						○				7-65
	Check and Adjust Valve Clearance									○	7-104
	Check Sound Absorbing Mat Around Engine	○									7-104
	Replace Crankcase Air Breather Element							○			7-31
	Check Vibration Damper							○			7-33
	Clean and Replace Air Cleaner Element	Indicator comes ON ○									7-67
	Change Coolant	Every 2 years or 3000 hours ○									7-73

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.

MAINTENANCE

△: First time replacement or cleaning only

Section	Item for check	Operating hours									Page
		10	50	100	250	500	1000	2000	4000	12000	
Transmission & Torque Converter	Check Transmission Oil Level	○									7-34
	Change Transmission Oil and Transmission Oil Filter			△			○				7-35
Axle system	Check Tire for Damage	○									7-87
	Greasing (Axle support)	○									7-23
	Check and Replace Tire (Tire Pressure)	○									7-87
	Greasing (Propeller Shaft Pillow Block Bearing)				○						7-24
	Check Wheel Bolt Torque		△			○					7-88
	Clean Axle Housing Air Breather					○					7-40
	Check Surroundings Around Axle and Covers for Oil Leaks						○				7-40
	Greasing (Center Propeller Shaft Spline)							*3 ○			7-24
	Greasing (Rear Propeller Shaft Spline)							*3 ○			7-25
	Change Axle Oil							○			7-38
	Retighten Front Axle and Rear Axle Support Mounting Bolts		△					○			7-106
	Greasing (Front Propeller Shaft)									○	7-23
	Greasing (Center Propeller Shaft)									○	7-24
	Greasing (Rear Propeller Shaft)									○	7-25
Steering system	Check Play Amount in Steering Wheel Movement	○									7-101
	Greasing (Steering Cylinder)	*1 △			○						7-22
	Check Gas Pressure in Steering Accumulator							○			7-53
Brake system	Check Parking Brake Force	○									7-84
	Check Right and Left Brake Interlocking Performance	○									7-83
	Check Accumulator Function, Gas Leakage, Looseness, and Damage					○					7-85
	Grease (Brake Pedal)						○				7-25
	Grease (Brake Pedal Linkage)						○				7-25
	Check Brake Disks (Service and Parking)							○			7-86
	Check Gas Pressure in Accumulator							○			7-86



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.

MAINTENANCE

△: 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	○									7-43
	Check Bucket Teeth and Cutting Edge	○									7-99
	Check Hoses and Lines	○									7-54
	Greasing	*1 △			*2 △	○					7-20
	Check Ride Control Accumulator Function, Gas Leakage, Looseness, and Damage					○					7-53
	Replace Hydraulic Tank Oil Filter						○				7-49
	Replace Air Breather Element							○			7-51
	Replace Pilot Oil Filter							○			7-47
	Check Pilot Circuit Accumulator Function, Gas Leakage, Looseness, and Damage							○			7-52
	Check Gas pressure in Ride Control Accumulator							○			7-53
	Change Hydraulic Oil								*4 ○		7-44
	Clean Suction Filter								*4 ○		7-46
	Replace Pilot Circuit Accumulator	Every 4000 hours or once every two years whichever comes first.									7-53
Chassis	Check Rearview Mirror and Inside Rearview Mirror	○									7-103
	Check ROPS Cab, Resin Cab Roof, and Roof Mounting Bolts	○									7-100
	Check and Replace Seat Belt and Lower Tether	○	Every 3 years								7-100
	Clean Engine Compartment and Hood	○									7-104
	Check Steps and Handrails for Damage and Looseness	○									7-103
	Check Windshield Washer Fluid Level	○									7-100
	Greasing (Center Pin)				○						7-23
Electrical system	Check Monitor Functions and All Other Instrument Operation	○									7-79
	Check Horn and Back Up Alarm	○									7-80
	Check Work Lights	○									7-80
	Check Electrical Harnesses and Fuses		○								7-81
	Check Battery Electrolyte Level			○							7-76
	Check Electrolyte Specific Gravity				○						7-78

 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.

MAINTENANCE

△: 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○							7-93
	Check Air Conditioner Compressor Belt	Every 6 months									7-97
	Check Refrigerant	Every 6 months									7-98
	Check Air Conditioner Condenser	Every 6 months									7-97
	Check Air Conditioner	Every 6 months									7-96
	Check Air Conditioner Piping	Every 6 months									7-96
	Check Compressor and Pulley	Every one year									7-98
Others	Tightening and Retightening Torque of Nuts and Bolts		△		○						7-106

 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.

MAINTENANCE

Kind of Oils

Recommended Grease

Application	Front Joint Pin, etc.
Manufacturer	-20 to 45 °C (-4 to 113 °F)
British Petroleum	BP Energrelse LS-EP2
Caltex Oil	Multifax EP2
Idemitsu Kosan	Daphne Eponex SR2
Exxon Mobil Oil	Mobilgrease XHP222 Special
Nippon OIL	Epinoc Grease AP2
Shell OIL	Shell Alvania EP2
JAPAN ENERGY	*JOMO Lisonix Grease EP2

 **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.

Use multipurpose-type EP/MOLY grease for most applications.

NLGI No. 2 grease is suitable for most temperatures. Use NLGI No. 1 or No. 0 grease for extremely low temperature.

The machine shipped from factory is filled with lubricants marked with .

Recommended 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 Kawasaki Warranty Policy. Consult your nearest Kawasaki dealer for the unclear points.

Kind of Oil	Engine Oil		
Application	Engine Crankcase		
Air Temp.	-20 to 20 °C (-4 to 68 °F)	-15 to 40 °C (5 to 104 °F)	
Manufacturer			JASO
Hitachi	Super Wide DH-2 10W-30	Super Wide DH-2 15W-40	DH-2
Exxon Mobil	Delvac 1300 Super (PROTEC ELITE 15W-40)		
	SAE 10W-30		

MAINTENANCE

Recommended Transmission Oil

Application	Transmission
	Engine Oil (API CF 10W Class)
	-20 to 45 °C (-4 to 113 °F)
Manufacturer	
Idemitsu Kosan	APOLLOIL MOTIVE S310
Exxon Mobil	Mobil TRANS HD-10
Texaco	Delo 400 10W

 NOTE:

- Use engine oil classification API "CF" 10W or Multi-purpose Automatic Transmission Fluid.
- The machine shipped from the factory is filled with lubricants marked with .
- When the atmospheric temperature is below -20 °C: Contact your authorized dealer.

Recommended Axle Oil

Kind of Oil	Gear Oil
	Axle
	2000 hours
Change Interval	
Manufacturer	
Hitachi	High Gear Oil
ExxonMobil	Mobilube HD 80W-90
	MOBILTRANS HD-50
Valvoline	DT50

MAINTENANCE

Recommended Hydraulic Oil

Kind of Lubricant	Hydraulic Oil	
Where to be applied	Hydraulic System	
Change Interval	4000 Hr	2000 Hr
Environmental Temp.	-20 to +45 °C (-4 to 113 °F)	
Kawasaki	KCM Super EX 46HN	
Idemitsu Kosan		Super Hydro 46x
JX Nippon Oil & Energy Corporation		SUPER HYRANDO WP46
Shell		Tellus ST 46 (Tellus S3 V 46)
Exxon Mobil		Mobil DTE 10 Excel 46
BP		Bartran HV46
Castrol		Hyspin HVI 46
Chevron		RANDO Ashless 46HD
Others		JCMAS HK VG46W

 **NOTE:** Use proper hydraulic oil in accordance with the atmospheric temperature.

The machine shipped from the factory is filled with oil marked .

When the atmospheric temperature is between -40 °C and +20 °C: Use the proper hydraulic oil having high and low temperature characteristics by referring to the values shown below.

Low Temperature Viscosity: Less than 4000 cSt at -40 °C

High Temperature Viscosity: More than 6.5 cSt at +80 °C

The above values are approximately equivalent to ISO viscosity grade #22. However, low temperature viscosity will differ depending on each product. Contact each hydraulic oil manufacture directly.

When the atmospheric temperature is below -40 °C: Contact your authorized dealer.

Recommended Coolant

Refer to page 7-69 for information.

MAINTENANCE

A. Greasing

WARNING: Apply the parking brake and the articulation lock bar.

NOTE:

- Until break-in is performed for more than 50 hours, lubricate the machine every day to get initial lubrication.
- In case excavation is made in mud, water or snow, lubricate the machine after operation is complete.
- 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 and grease at the grease zerk nipple.

1. Bucket pins (1) (One point each to right and left).
--- every 500 hours (250 hours at first time only)

2. Bucket link pin
--- every 500 hours (250 hours at first time only)

70Z7

One point each to bucket link pins (2 and 3).

70TM7

Bucket link pins (2) (One point each to right and left).

3. One point each to guide link pins (4 and 5). (70TM7)
--- every 500 hours (250 hours at first time only)

4. Bucket cylinder pin
--- every 500 hours (250 hours at first time only)

70Z7

Bucket cylinder pin (7) (One point).

Bucket cylinder rod pin (6) (One point).

70TM7

Bucket cylinder pins (7) (One point each to right and left).

Bucket cylinder rod pins (6) (One point each to right and left).

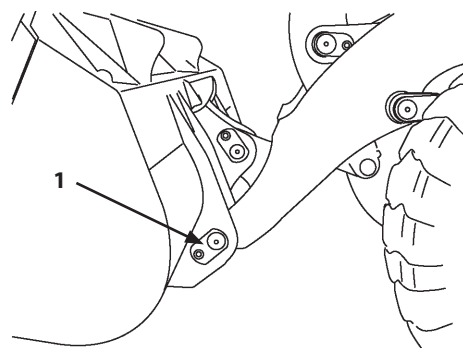
5. Bell crank pin
--- every 500 hours (250 hours at first time only)

70Z7

Bell crank pin (8) (One point).

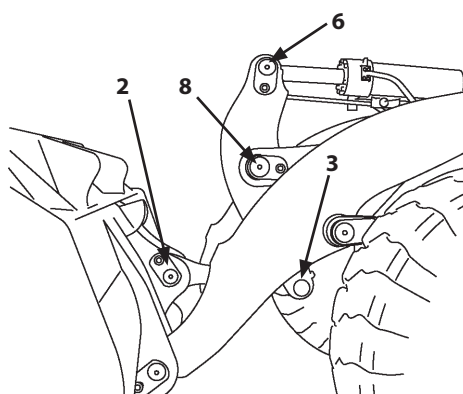
70TM7

Bell crank pins (8) (One point each to right and left).



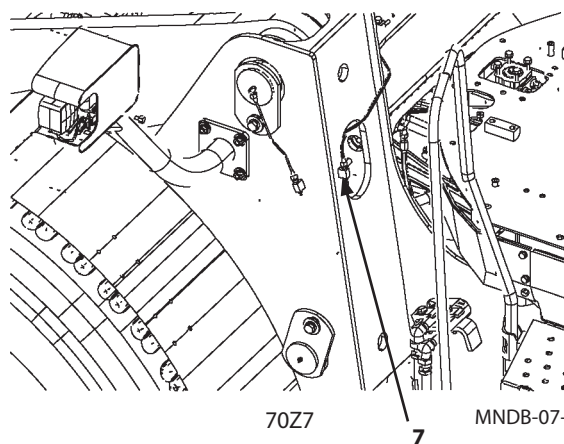
70Z7

M4GB-07-004



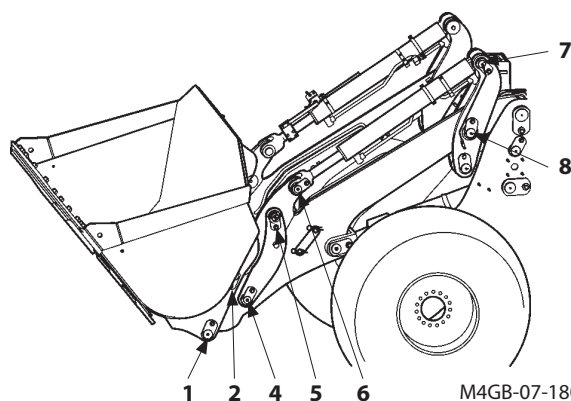
70Z7

M4GB-07-005



70Z7

MNDB-07-019



70TM7

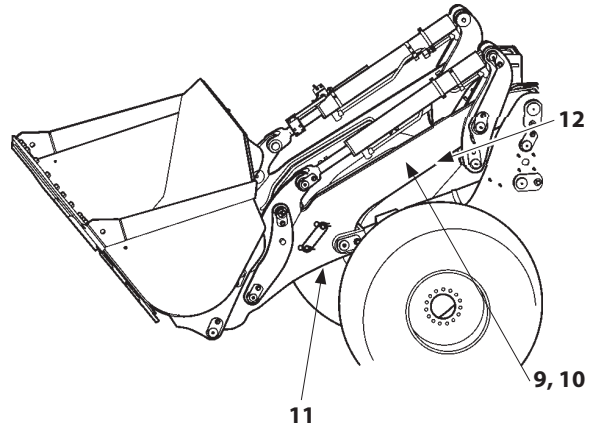
M4GB-07-180

MAINTENANCE

6. One point each to right and left link pins (9 and 10)

70TM7

--- every 500 hours (250 hours at first time only)



70TM7

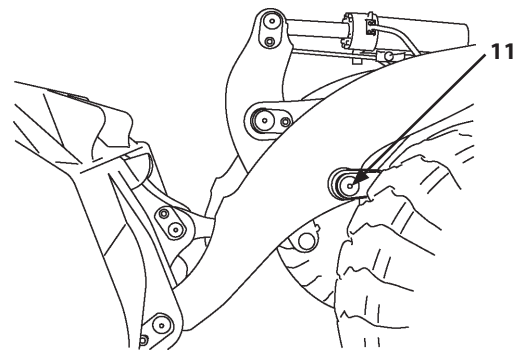
MNDF-07-061

7. One point each to right and left lift arm cylinder rod pins (11).

--- every 500 hours (250 hours at first time only)

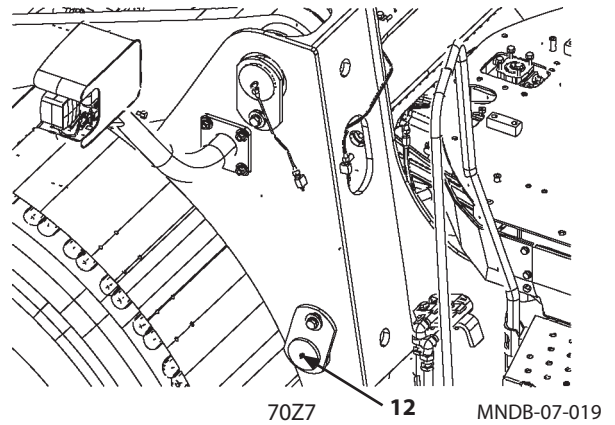
One point each to right and left lift cylinder pins (12).

--- every 500 hours (250 hours at first time only)



70Z7

M4GB-07-005

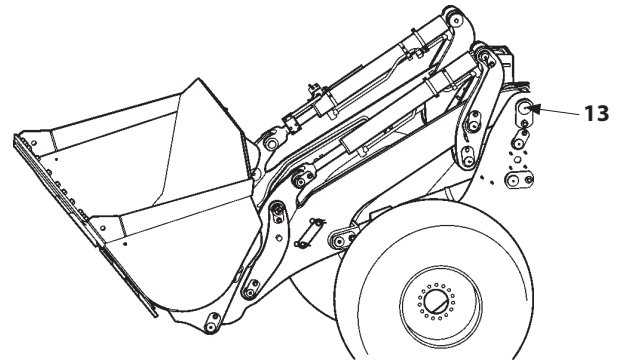


70Z7

MNDB-07-019

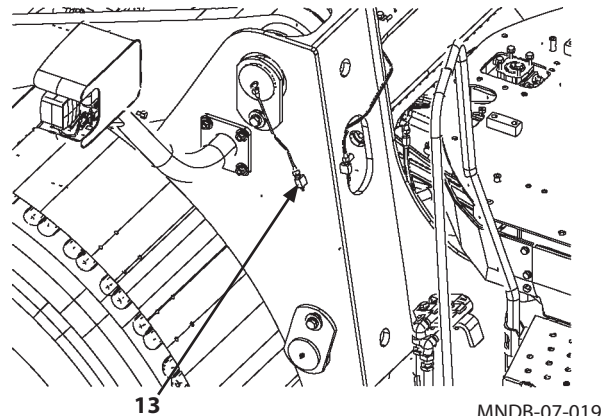
MAINTENANCE

8. One point each to right and left lift arm pivot pins (13).
--- every 500 hours (250 hours at first time only)



70TM7

M4GB-07-180



13

70Z7

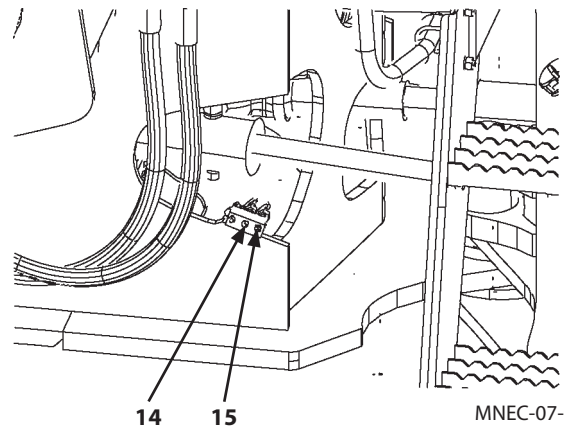
MNDB-07-019

9. One point each to front right and left steering cylinder pins (14 and 15).

--- every 250 hours

Cylinder left front (14)

Cylinder right front (15)



14

15

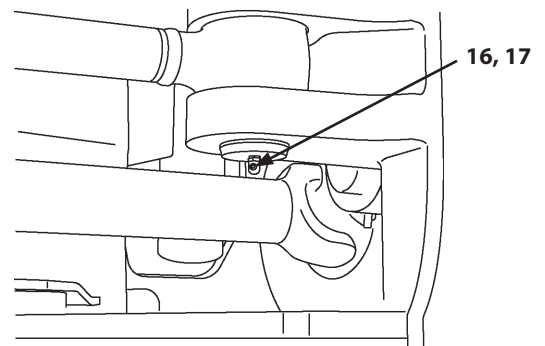
MNEC-07-007

10. One point each to right and left steering cylinder rod pins (16 and 17).

--- every 250 hours

Left rear (16)

Right rear (17)



16, 17

M4GB-07-008

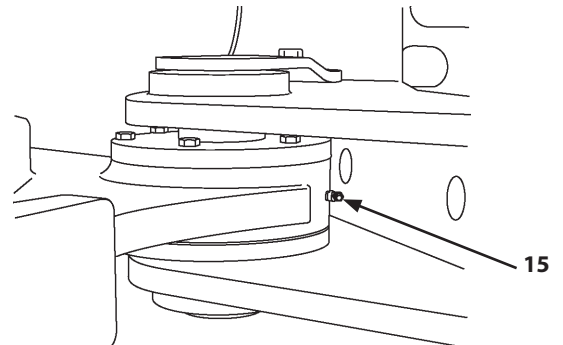
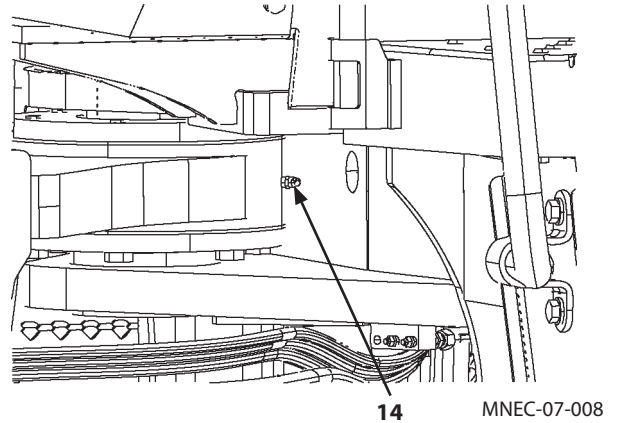
MAINTENANCE

11. One point each to upper and lower chassis center hinge pins (14 and 15).

--- every 250 hours

Upper (14)

Lower (15)

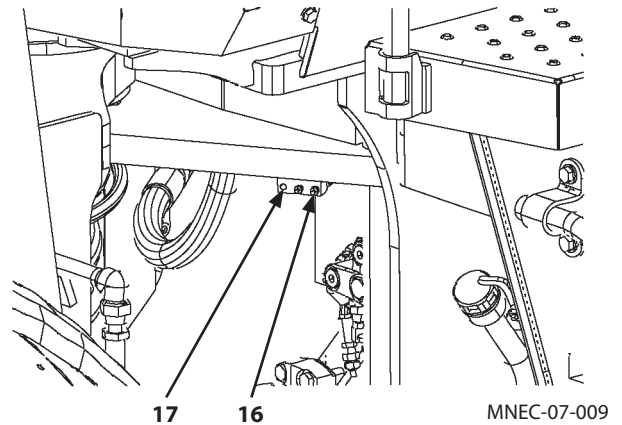


12. One point each to front and rear axle support pins (16 and 17).

--- every 10 hours

Front (16)

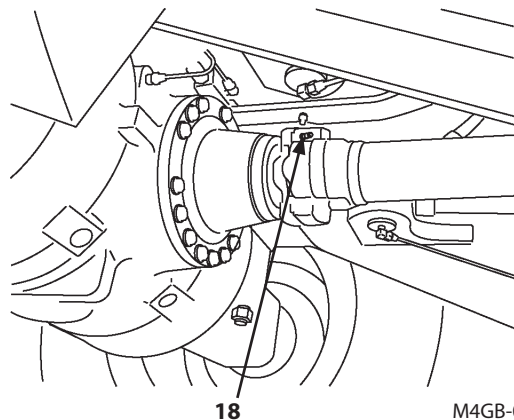
Rear (17)



13. One point to front propeller shaft universal (18).

--- every 12000 hours

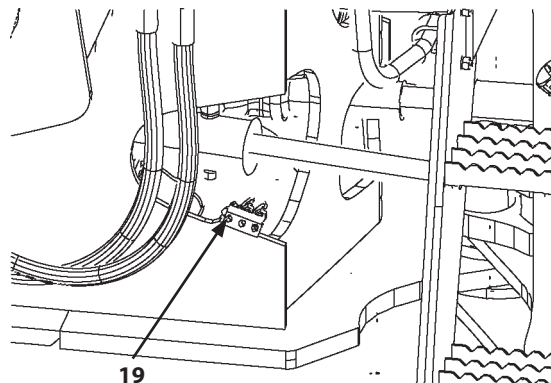
 **NOTE:** When the machine is continuously operated under severe conditions for a long time, shorten the greasing intervals.



MAINTENANCE

14. One point to propeller shaft pillow unit (19).

--- every 250 hours



MNEC-07-007

15. One point to center propeller shaft universal front (20).

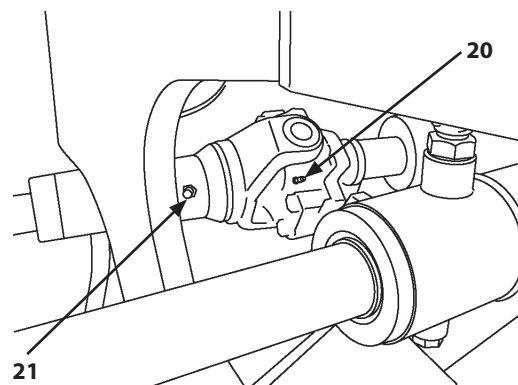
--- every 12000 hours

One point to center propeller shaft universal rear (22).

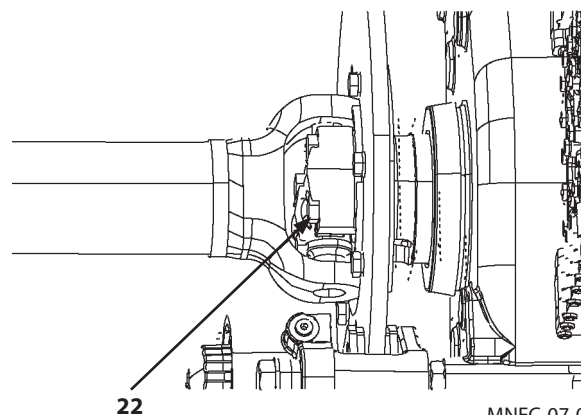
--- every 12000 hours

16. One point to center propeller shaft splines (21)

--- every 2000 hours



M4GB-07-014

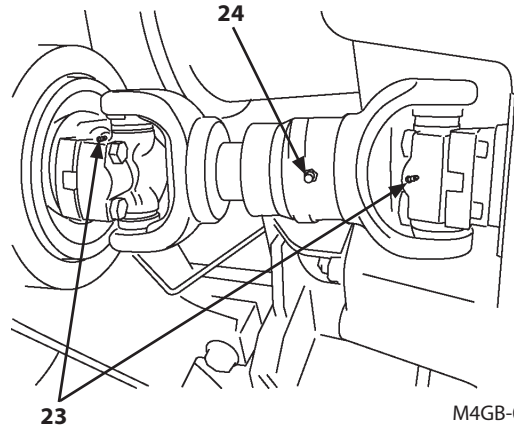


MNEC-07-010

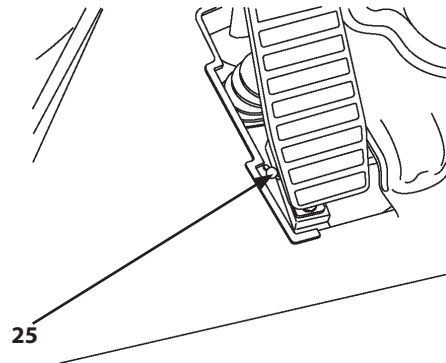
MAINTENANCE

17. Two points to rear propeller shaft universal (23).
--- every 12000 hours

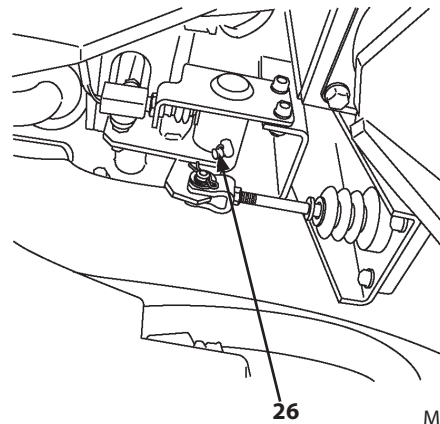
18. One point to rear propeller shaft splines (24).
--- every 2000 hours



19. Two points to brake pedal (25).
--- every 1000 hours



20. One point to brake pedal linkage (26).
--- every 1000 hours



MAINTENANCE

B. Engine

- 1** Check Engine Oil Level
--- every 10 hours (machine parked on a level surface before starting the engine)

IMPORTANT: Incorrect engine oil level may cause engine trouble (The oil level should be between the upper and lower marks on oil level gauge (1)).

If engine oil level is too high, lower the oil level to the proper place 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).

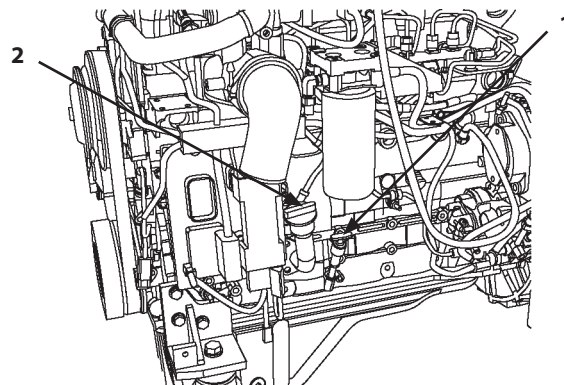
If oil level is below the lower limit mark, add the recommended engine oil via oil filler (2).

If oil level exceeds the upper limit mark, remove drain plug (3), and then drain oil.

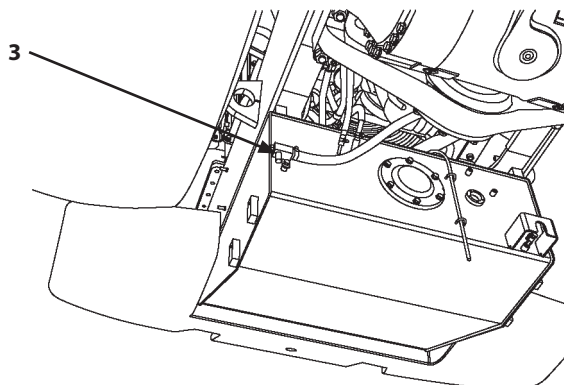


NOTE: Level the machine when adding oil or inspecting oil level. When required to check oil level after operating the machine, first stop the engine. Wait for more than 15 minutes. Then check oil level. (This means that the oil will return to the oil pan, then oil level can be checked.) In case the oil 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, oil, and other flammables may cause fires.



MNEC-07-073



MNEC-07-074

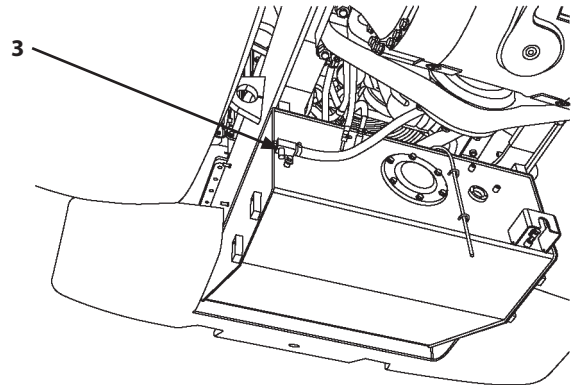
MAINTENANCE

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 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.

1. Park the machine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.
2. Clean the areas around the drain plug and the oil filter.
3. Arrange a 40 liter (12 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.

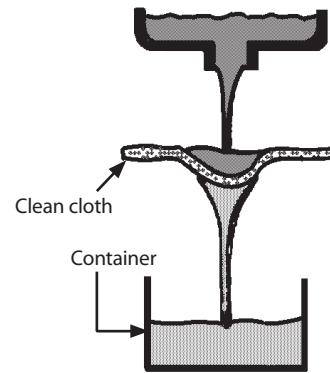


MNEC-07-074

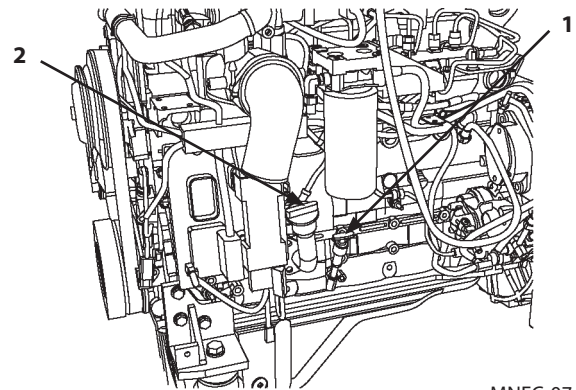
MAINTENANCE

6. Allow oil to drain through a clean cloth to check if any foreign matters such as metal pieces are not 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).
9. Remove oil filler cap (2). Supply the specified amount of approved engine oil. Refer to "Recommended Engine Oil" on page 7-17.
25 liters (6.6 gallons)

10. Check that the oil level is between the maximum and minimum level scales on oil level gauge (1). Then, start the engine.
11. After starting the engine, check the sealing surfaces for any oil leakage.
12. 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.



M4GB-07-020



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MAINTENANCE

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 7-7 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.

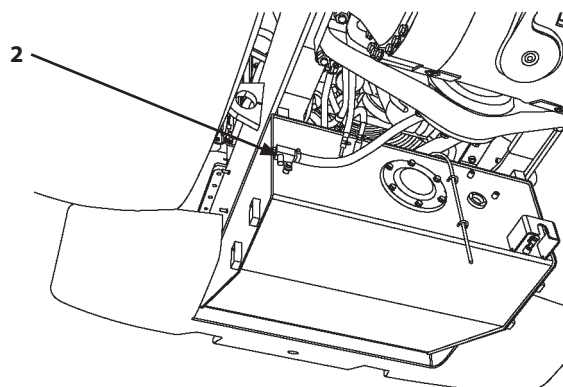
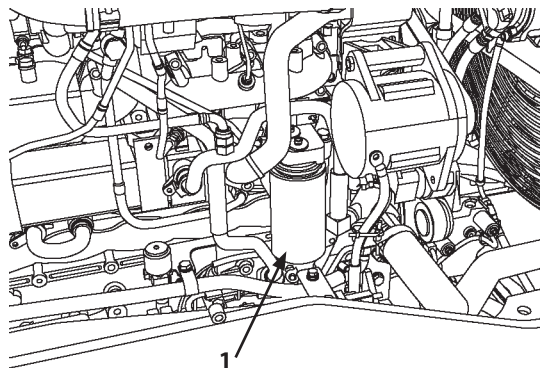
IMPORTANT:

- 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. After coating a new cartridge gasket with engine oil, turn the cartridge clockwise until the gasket comes in contact with the sealing surface.
6. Using the filter wrench, tighten the cartridge 3/4 to 1 turn more. Be careful not to damage filter cartridge by overtightening.

NOTE: Install the cartridge with care so that the gasket is not damaged from twisting. Check for any oil leakage at the filter mounting area.

7. Supply the specified amount of engine oil. (Refer to the descriptions for [2](#) Change Engine Oil.)

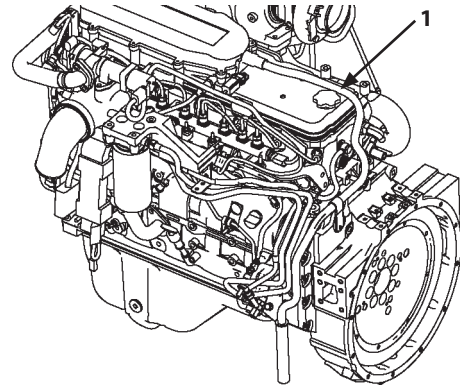


MAINTENANCE

4 Check Crankcase Breather Tube --- 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 7-7 for preparation of inspection/maintenance work.
2. Check tube (1) for dent or damage.
3. Check for any oil leakage or loose clamps at the connection with the crankcase breather tube (1).
4. Check for loose clamp securing tube (1) to the engine.



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MAINTENANCE

5 Replace Crankcase Air Breather Element

--- Every 2000 hours

WARNING: Be sure to wear safety glasses when using compressed air (0.2 MPa (2 kgf/cm², 30 PSI)).

1. Park the machine following the same procedure as described on page 7-7 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.

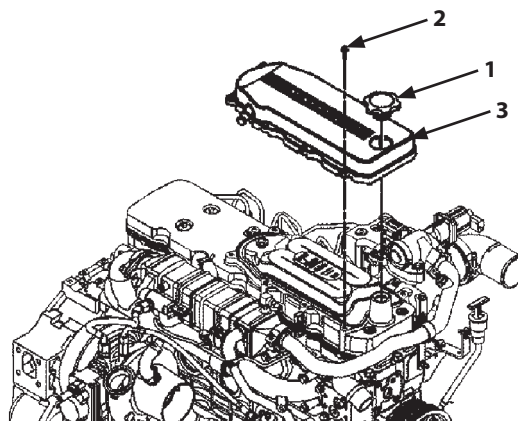
4. Remove crankcase air breather cover (3).
5. Remove air breather element (4) from rocker lever cover (5).

Do not remove gasket (6) from the rocker lever cover.

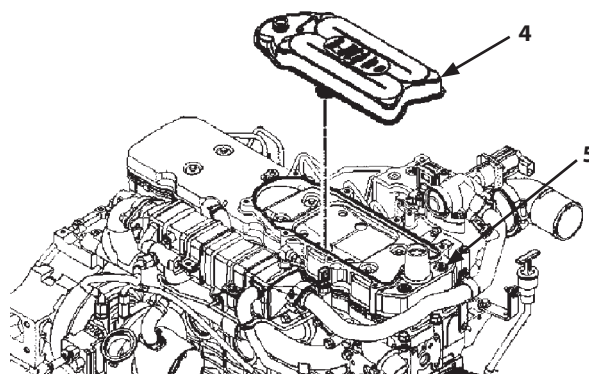
IMPORTANT: If gasket (6) sticks out from the rocker lever cover (5) groove, install new gasket.

6. If any damage is found on the gasket, remove it by pulling gasket tab (7).

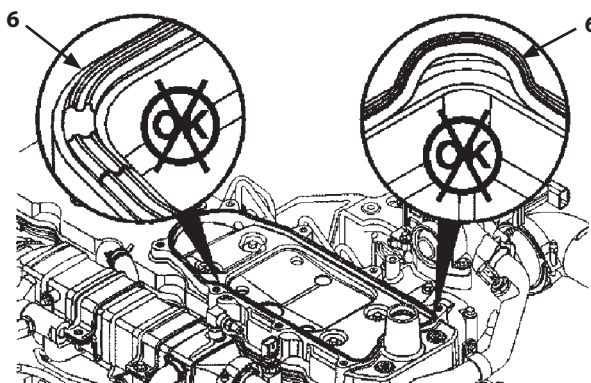
CAUTION: Be sure to wear safety glasses and gloves when using detergent for cleaning.



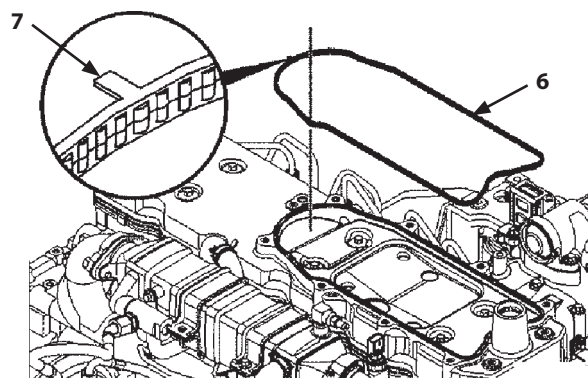
MNEC-07-107



MNEC-07-108



MNEC-07-109



MNEC-07-110

MAINTENANCE

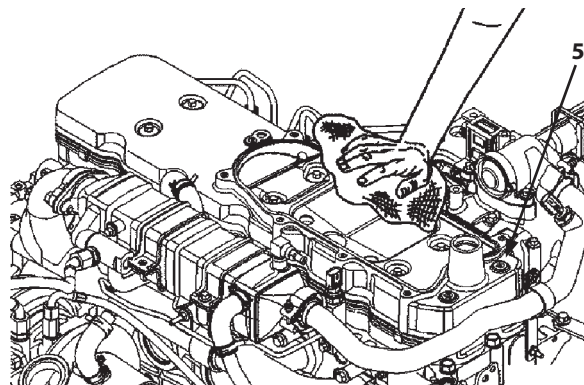
7. Clean the mounting surface of the air breather element and O-ring on rocker lever cover (5). Wipe and dry cleaned surface with clean cloth.
8. Clean the crankcase air breather cover. Dry the surface with compressed air after cleaning.
9. Check the crankcase air breather cover for any damage; replace 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.

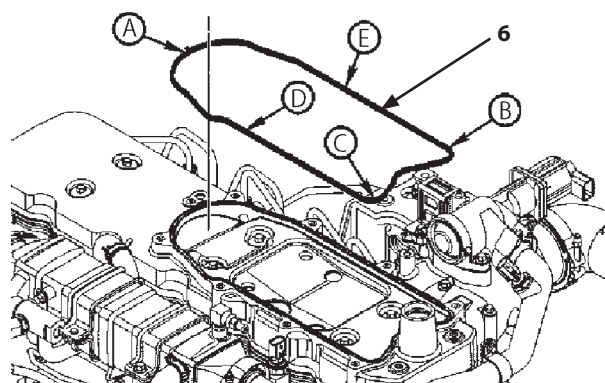
11. Apply engine oil on the O-ring on air breather element (4). Install air breather element (4) on rocker lever cover (5).
12. Install crankcase air breather cover (3).
13. Mount bolts (2) on crankcase air breather cover (3) at the same location as when they were removed.

Tightening torque: 7 N·m (0.7 kgf·m, 5.2 lbf·ft)

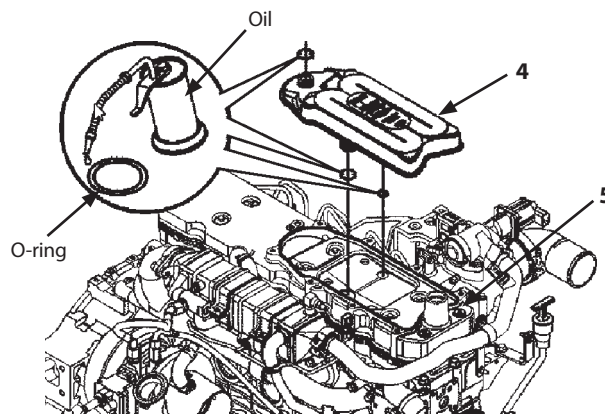
14. Install oil filler cap (1).



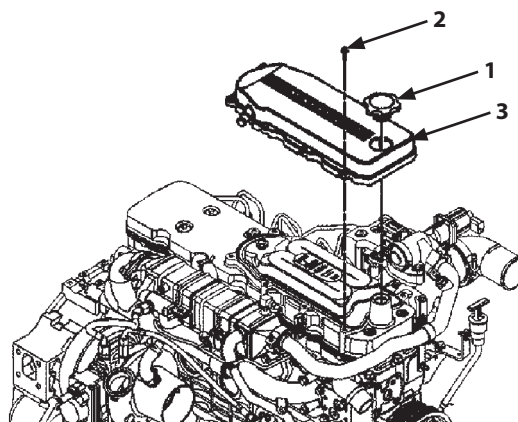
MNEC-07-111



MNEC-07-112



MNEC-07-113



MNEC-07-107

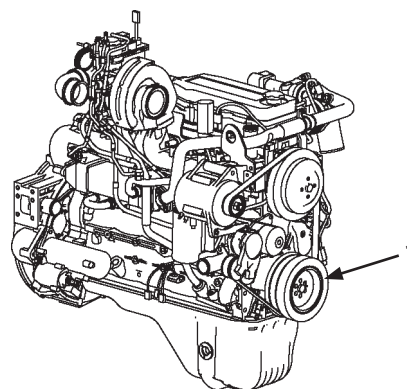
MAINTENANCE

6

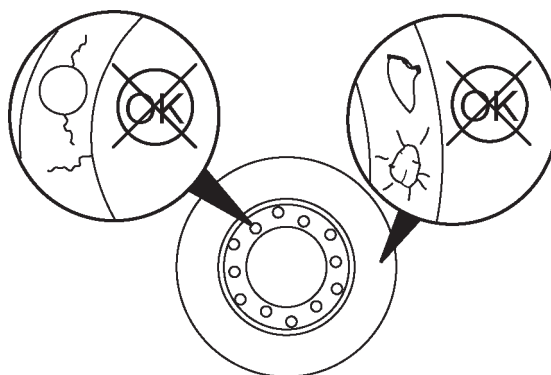
Check Vibration Damper

--- Every 2000 hours

1. Park the machine following the same procedure as described on page 7-7 for preparation of inspection/maintenance work.
2. Check damper (1) on the fan end of the engine crankshaft.
3. If any cracks, dents or deformation is found, consult your authorized Kawasaki dealer for check and repair.



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MNEC-07-117

MAINTENANCE

C. Power Train

- 1** Check Transmission Oil Level
--- every 10 hours (daily)

WARNING:

- 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.

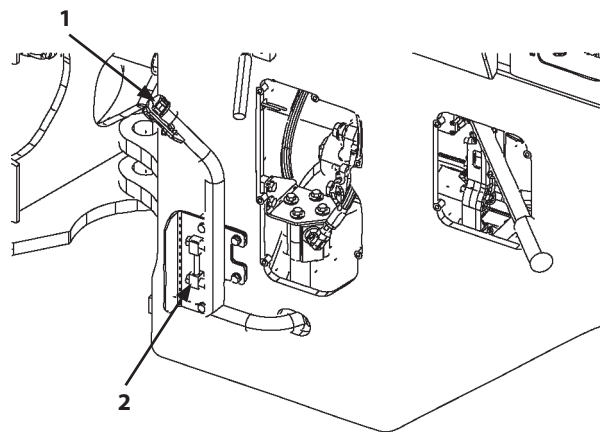
IMPORTANT:

- 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 "Recommended 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.

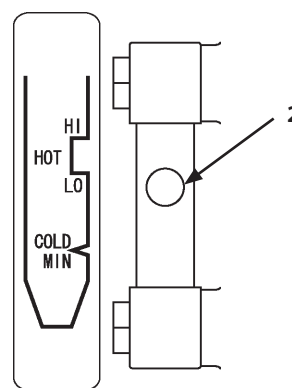
Before starting the engine, check the transmission oil level with oil level gauge (2). When the oil level is within range, the float in the oil level gauge shall be in the center with the oil cooled. Refill the oil as necessary from transmission oil filler port (1).

When checking oil level before operating the machine, normally the float in gauge (2) must be higher than the COLD MIN position. In case 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 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.



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M4GB-07-027

MAINTENANCE

2 Change Transmission Oil and Transmission Oil Filter --- every 1000 hours (100 hours at first change only)

3

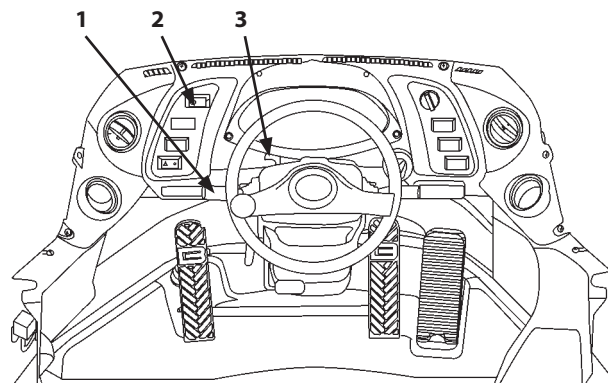
WARNING:

- 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.
- Put the cover on the parking brake disk before replacing the transmission oil filter to prevent oil from adhering to the parking brake disk. If oil adhered, clean the parking brake disk by using cleaning liquid to completely remove oil. Failure to do so may cause the parking brake to malfunction.

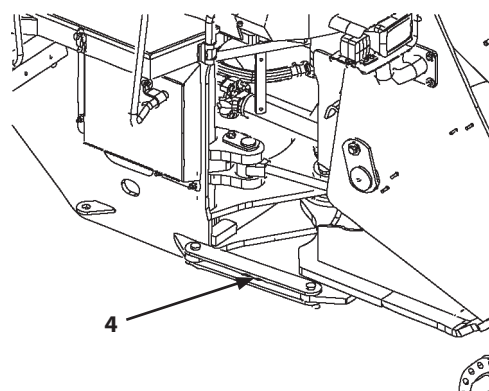
IMPORTANT: Do not use transmission oils other than those listed in the "Recommended Transmission Oil"

 **NOTE:** Be sure to replace the transmission oil filter when changing the transmission oil.

1. Operate the machine until the transmission oil is heated to the appropriate temperature.
2. Park the machine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.
3. Install articulation lock bar (4) to the front and rear of the chassis by following the procedures described on page 7-9.



MNDB-01-001



MNEC-07-004

MAINTENANCE

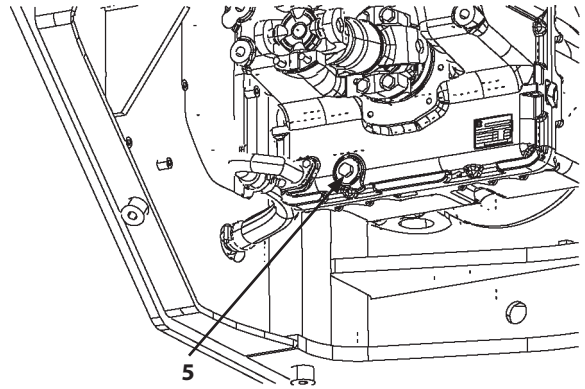
IMPORTANT: The machine is equipped with a turbocharged engine. Cool down before stopping the engine. Failure to do so may cause the lubricant on the turbocharger bearing and seal surfaces to dissipate due to the intense heat present inside the turbocharger, possibly damaging the turbocharger.

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 L (13 gal) capacity to receive the oil.

 **NOTE:** Drain plug (5) is magnetized. If excessive amount of metal pieces are found on drain plug (5), contact your nearest authorized dealer.

6. Remove drain plug (5) from the transmission bottom to drain the oil. Dispose of the oil in accordance with local regulations.
7. Securely tighten drain plug (5).

 **NOTE:** Do not apply sealant to drain plug (5).



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MAINTENANCE

⚠ WARNING: Take care not to let transmission oil adhere to parking brake disk (9). If oil adhered, completely remove oil.

8. Put the cover on parking brake disk (9) to prevent transmission oil from adhering.
9. Using a filter wrench, turn cartridge filter (6) counterclockwise to remove it.
10. 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.
11. At this time, tighten the cartridge filter an additional 3/4 turn with a filter wrench. Take care not to tighten the filter cartridge excessively. Be careful not to damage filter cartridge by overtightening.
12. Refill the specified amount of oil through transmission oil filler port (7).

21 liters (5.5 gallons)



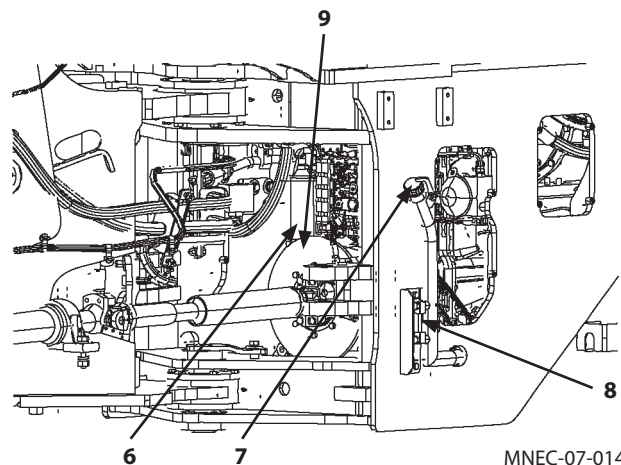
NOTE:

Oil amount in entire T/M assy: 30 liters (7.9 gallons)

13. Start the engine and keep it running for two minutes.
14. Check that the oil level is within the specified range in oil level gauge (8). Refill as necessary.



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.*



MNEC-07-014

MAINTENANCE

4 Change Axle Oil --- every 2000 hours

WARNING: Be cautious about the following items.

- Starting repair work immediately after operation may cause burns. Wait for oil temperature to lower.
- Lock the front and rear chassis with the articulation lock bar.

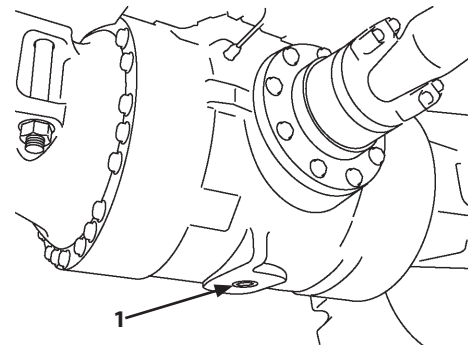
IMPORTANT: Do not use axle oils other than those listed in the "Recommended Axle Oil".

Change Axle Oil

1. Park the machine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.
2. Install articulation lock bar (4) to the front and rear of the chassis by following the procedures described on page 7-9.
3. Clean the vicinity around drain plug (1) and the oil drain plug hole.
4. Arrange a container of 50 liters (13 gallons) 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.

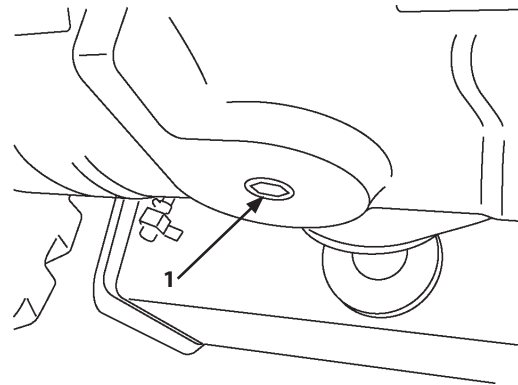
Front	Rear
31 liters (8.2 gallons)	34 liters (9.0 gallons)

IMPORTANT: It takes time for oil to fully lubricate the overall front axle. After installing the plug, operate the machine slowly for several minutes. Then, stop the engine and check the axle for any oil leaks.



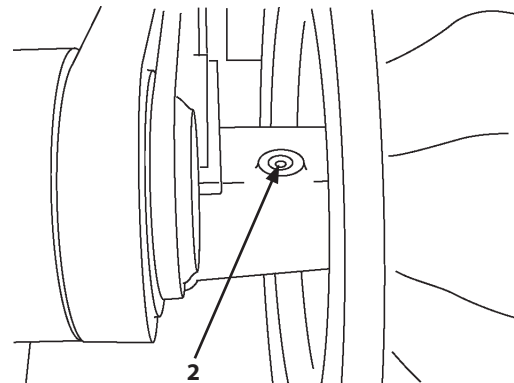
Front Axle

M4GB-07-035



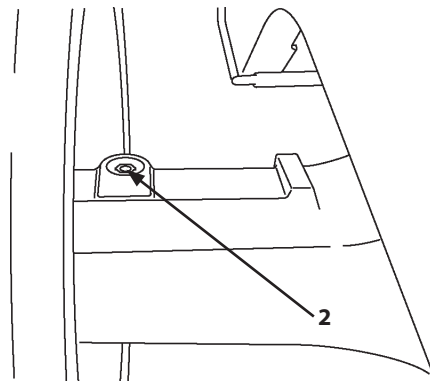
Rear Axle

M4GB-07-036



Front Axle

M4GB-07-037



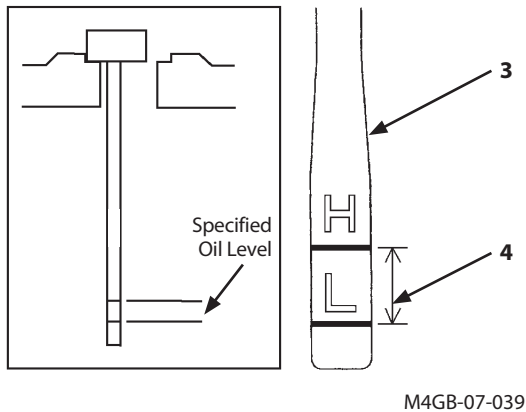
Rear Axle

M4GB-07-038

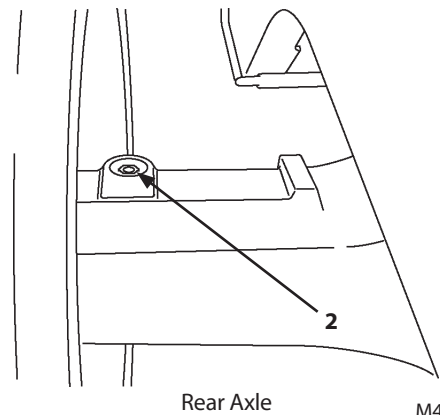
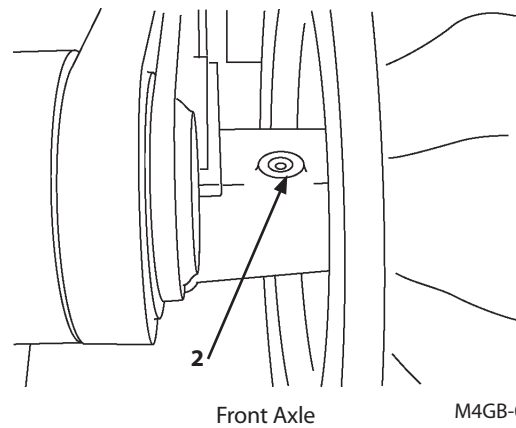
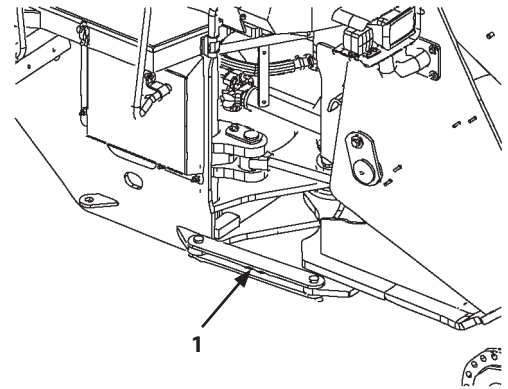
MAINTENANCE

Check Oil Level

1. Park the machine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.
2. Install articulation lock bar (1) to the front and rear of the chassis by following the procedures described on page 7-9.
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.



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.

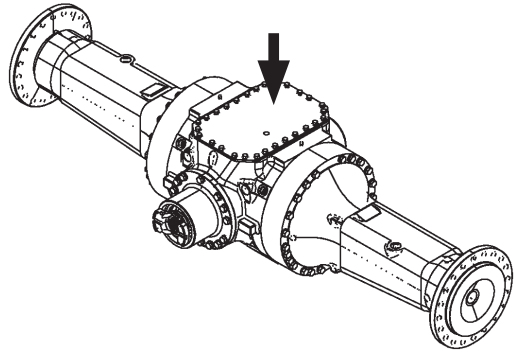


MAINTENANCE

5 Check Surroundings Around Axle and Covers for Oil Leaks

--- every 1000 hours

Check the areas 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

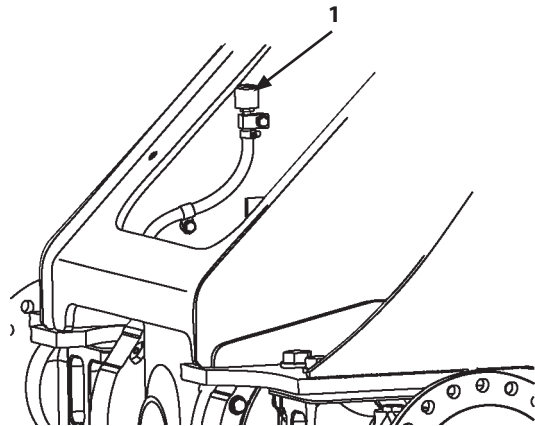
--- every 500 hours

Front Axle Breather (1)

1. Clean the areas around the air breathers before removing the air breathers. Open the machine front cover. Front axle air breather (1) is located at the right side. Remove the cover.
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, blow it dry 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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MAINTENANCE

D. Hydraulic System

Inspection and Maintenance of Hydraulic Equipment

CAUTION: 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 7-7 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 circuit pressures.

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).

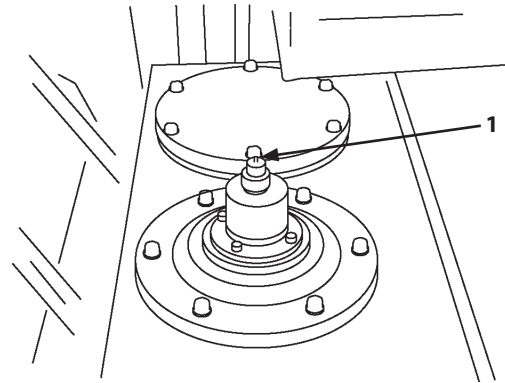
2.3 Allow the machine to cool down.

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.

Service only on a flat, solid and level surface.



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MAINTENANCE

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 it out 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 compatible oils; do not mix brands of oil. As the machine is filled with Super EX 46HN 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 "Recommended Hydraulic Oil", be sure to completely replace the oil in the system.
- Do not use hydraulic oils other than those listed in the table "Recommended Hydraulic Oil".
- Never run the engine without oil in the hydraulic oil tank.

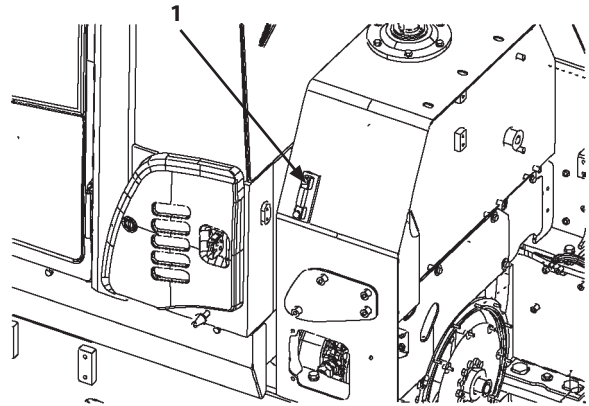
MAINTENANCE

1 Check Hydraulic Oil Level --- every 10 hours (daily)

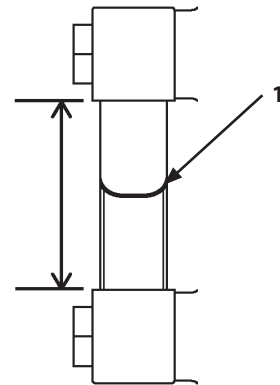
IMPORTANT: If the oil level is not viewed in the level gauge, immediately refill hydraulic oil up to the correct level. Failure to do so may result in a serious failure in the hydraulic system. If the oil level is higher than the level gauge, drain oil down to the appropriate level using a pump.

1. Park the machine following the same procedures as described on page 7-7 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" group.



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M4GB-07-160

MAINTENANCE

2 Change Hydraulic Oil --- every 4000 hours

WARNING: Hydraulic oil becomes hot during operation. Severe burns may result if skin comes in contact with hot hydraulic oil. Wait for the oil to cool before starting any maintenance work. Release trapped hydraulic circuit pressure by using the loader control levers.

IMPORTANT: Do not use hydraulic oils other than listed in the "Recommended Hydraulic Oil".

1. Park the machine and stop the engine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.
2. Install articulation lock bar (1) to the front and rear of the chassis by following the procedures described on page 7-9.
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 matters such as dirt, water, and /or sand to enter into the hydraulic oil tank.

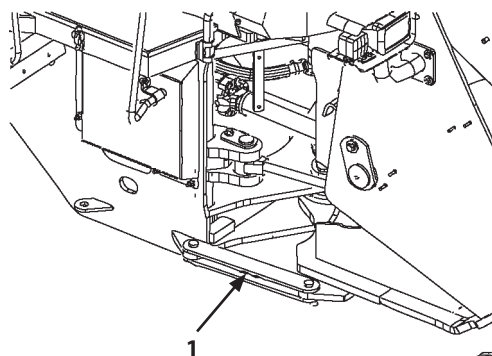
4. Arrange a container of approx. 150 liters (40 gallons).
5. Remove cap (6) of drain valve (5).

IMPORTANT: When connecting drainer (7), entwist it slowly to avoid a large amount of oil from draining at a time.

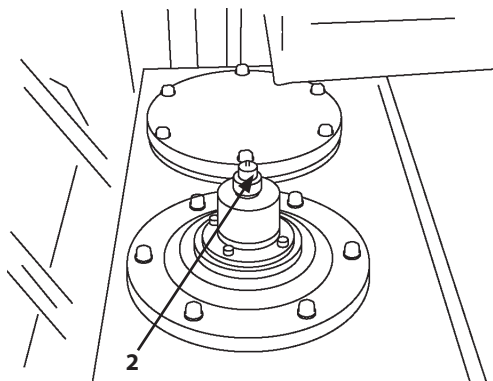
6. Slowly entwist in the provided drainer (7) to the port to drain oil.

NOTE: Drain valve (5) opens by entwisting drainer (7).

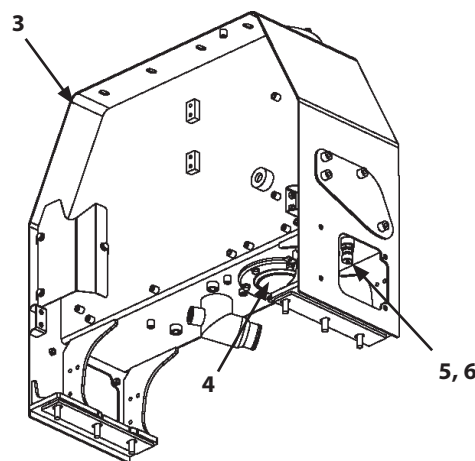
7. Remove cleaning cover (4) on the bottom of hydraulic oil tank (3). Clean the tank bottom with cleaning oil. Install the cover to the original position after cleaning out tank.



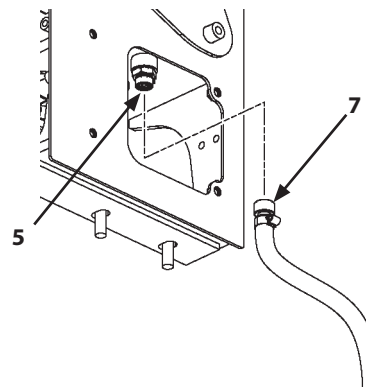
MNEC-07-004



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MNDB-07-023



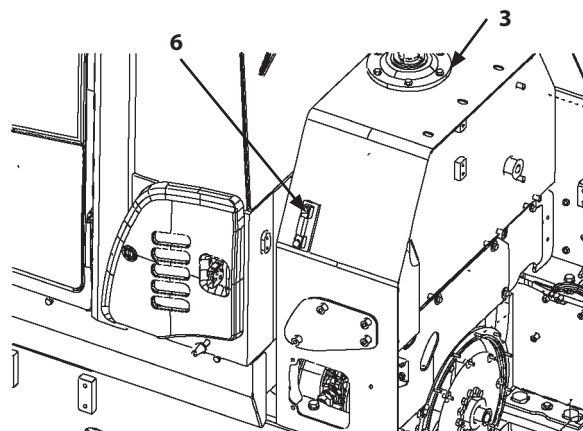
MNDB-07-024

MAINTENANCE

- Supply hydraulic oil through cover (3) hole on the top of the hydraulic oil tank while checking the oil level at level gauge (6). Refer to "Recommended Hydraulic Oil" on page 7-19.

Capacity of hydraulic oil tank	Total oil capacity in the hydraulic system
100 liters (27 gallons)	150 liters (40 gallons)

- Install cover (3) with bolts (6 used).
Tightening torque 50 N·m (5.0 kgf·m, 37 lbf·ft)



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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.

- Start the engine. Slowly raise or lower the arm and tilt the bucket forward and backward. Stop the engine. Check for any oil leakage. Check the oil level using level gauge (6).

Bleed Air from the Hydraulic System.

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 Circuit.

- After supplying oil, start the engine. Do not exceed 1000 RPM (min⁻¹). Move the bucket and lift arm cylinders several times to bleed air mixed in the hydraulic circuit. Do not operate the cylinders to the end of cylinder stroke, and do not apply a heavy load to the cylinders.
- Rest the bucket on the ground to resume the hydraulic oil level check position.
- Stop the engine. Check the oil level. Add oil as needed.

MAINTENANCE

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.

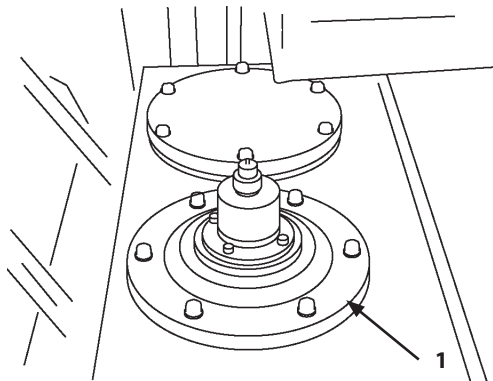
1. After draining hydraulic oil, remove cover (1). Lift to take out rod (2). Put a cover over the oil supply port to prevent foreign matter from entering.

When moving the suction filter upward, slowly lift it out. Failure to do so will allow trapped dust to fall into tank.

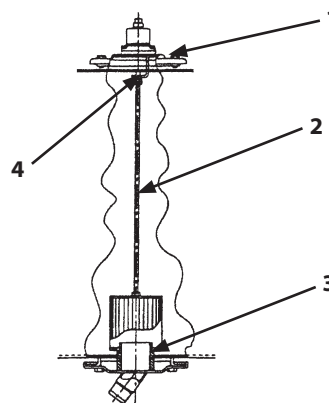
2. Clean the suction filter and the hydraulic oil tank inside with cleaning solvent. Swab out cleaning oil with a lint free cloth.
3. Fill the tank to level with the specified volume of oil through the oil supply port. Check the oil level at the oil sight gauge.
4. Securely insert the suction filter into pipe (3).
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 (5.0 kgf·m, 37 lbf·ft)

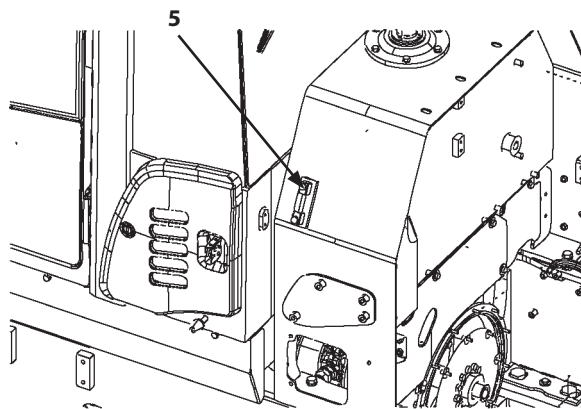
6. Start the engine. While slowly raising or lowering the arm and tilting the bucket forward and backward, check for any abnormality. Stop the engine. Check the oil level using level gauge (5).



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MAINTENANCE

4

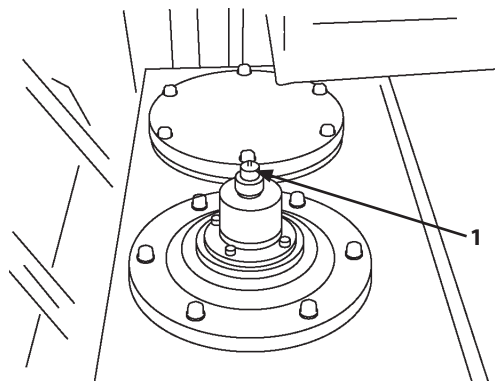
Replace Pilot Oil Filter

--- every 2000 hours

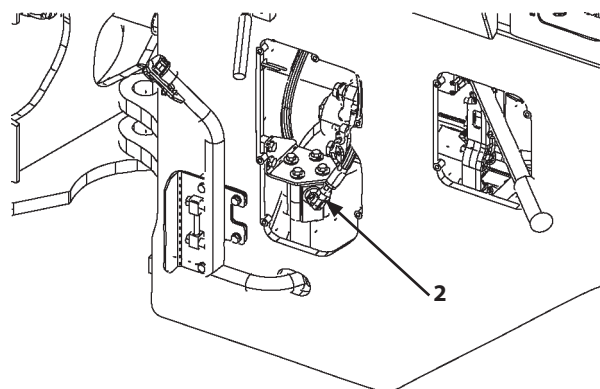
WARNING: Hydraulic oil becomes hot during operation. Severe burns may result if skin comes in contact with hot hydraulic oil. Wait for the oil to cool before starting any maintenance work.

IMPORTANT: Remove trapped hydraulic circuit pressure by using the loader control levers.

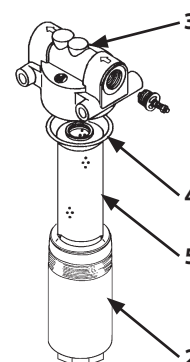
1. Park the machine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the chassis by following the procedures described on page 7-9.
3. Before replacing the filter element, be sure to relieve 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 wrench to remove case (2) from head cover (3).
6. While turning element (5), remove the element downward.
7. Replace O-ring (4) with a new one.
8. Seat O-ring (4) in the O-ring groove on head cover (3).
9. Coat the seal surface of new element (5) with hydraulic oil. While turning element (5), completely install element (5) into head cover (3) using care not to damage the element.



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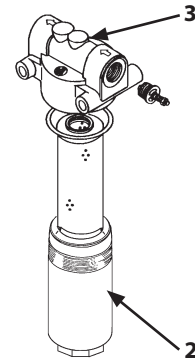
MAINTENANCE

10. Take care never to allow water and/or dust to enter the filter case.
11. Install case (2) into head cover (3) while rotating case (2) clockwise.

Tightening torque: 20 to 30 N·m (2 to 3 kgf·m, 14 to 22 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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MAINTENANCE

5 Replace Hydraulic Tank Oil Filter --- every 1000 hours

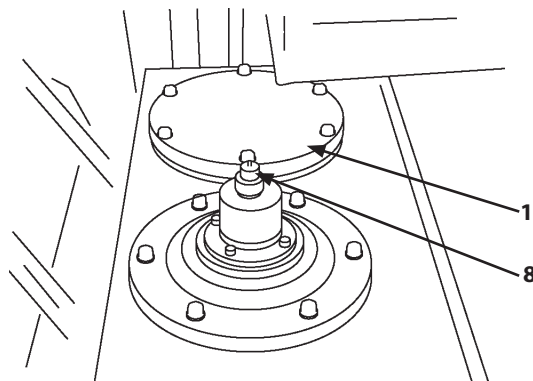
⚠ WARNING: Hydraulic oil becomes hot during operation. Severe burns may result if skin comes in contact with hot hydraulic oil. Wait for the oil to cool before starting any maintenance work.

Especially when removing the filter, be careful that the remaining oil in the filter does not spill.

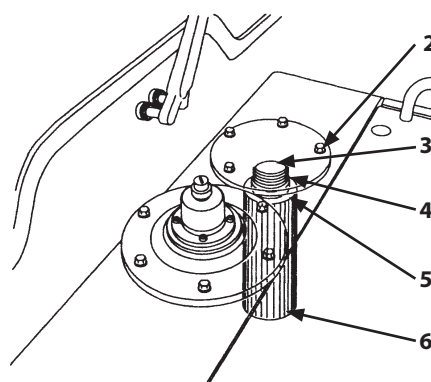
Replacement Procedures

1. Park the machine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the chassis by following the procedures described on page 7-9.
3. Clean the vicinity around cover plate (1).
4. Get a container and workshop towels to hold the spilled oil and the element. Relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (8).
5. Loosen bolts (2) (6 used) to remove cover (1) and O-ring (3). When removing cover (1), slowly remove the cover while pressing the cover downward so that spring (4) does not fly off. Slowly permit cover to rise, then carefully remove.
6. Remove spring (4), valve (5) and element (6).
7. Replace element (6) and O-ring (3) with new ones. Install new element and new O-ring in the hydraulic oil tank. Before installing element (6), make sure that rubber (7) is present.
8. Install cover (1) with bolts (2) (6 used).

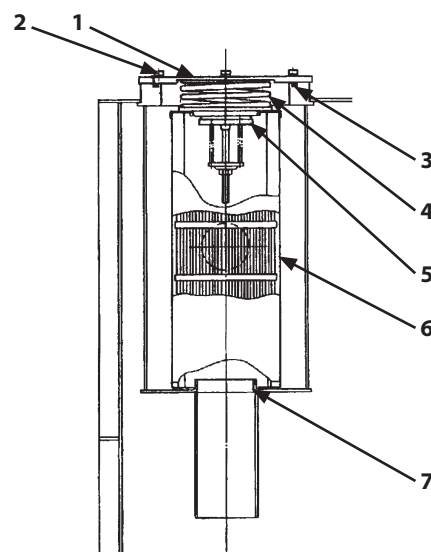
Tightening torque: 49.9 N·m (5.1 kgf·m, 37 lbf·ft)



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MAINTENANCE

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.

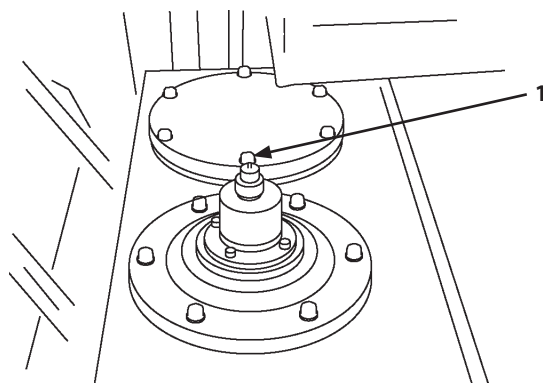
MAINTENANCE

6 Replace Air Breather Element --- every 2000 hours

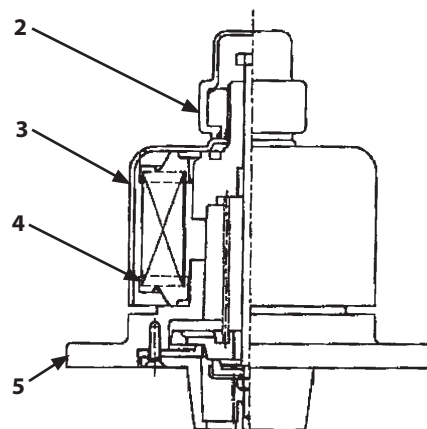
WARNING: Hydraulic oil becomes hot during operation. Severe burns may result if skin comes in contact with hot hydraulic oil. Wait for the oil to cool before starting any maintenance work.

Replacement Procedures

1. Park the machine following the same procedures as described on page 7-7 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 turns. 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 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).
8. Replace the element at the recommended regular intervals to keep the hydraulic oil clean and to extend the service life of the hydraulic equipment.



M4GB-07-044



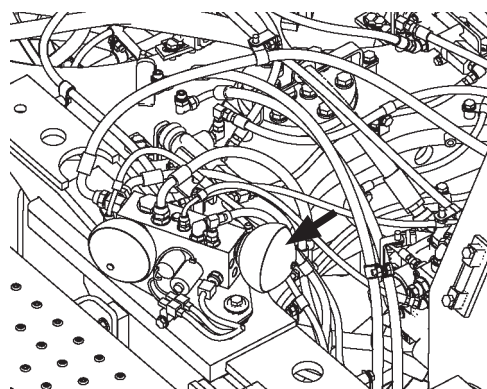
M4GB-07-166

MAINTENANCE

7 Check Pilot Circuit Accumulator Function, Gas Leakage, Looseness, and Damage --- every 2000 hours

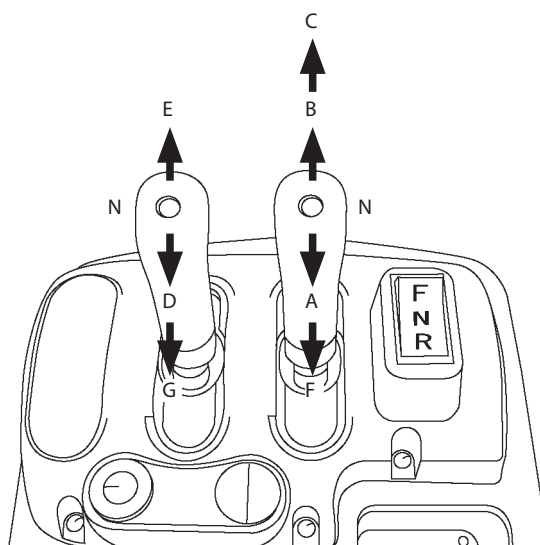
WARNING: Allow only qualified personnel to handle the accumulator.

- High-pressure nitrogen gas is enclosed in the accumulator. (N₂ is inert.)
- 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 pilot circuits.

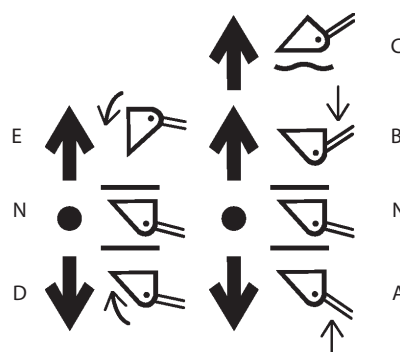


MNEC-07-069

1. Park the machine following the same procedures as described on page 7-7 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 to ON position. (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 (40 in) 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 the rest of the way to 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 nearest authorized dealer for check and repair.



MNEC-03-003



M4GB-01-072

MAINTENANCE

- 8 Replace Pilot Circuit Accumulator**
--- every 4000 hours or once every two years
whichever comes first.

Consult your nearest authorized dealer for this service.

- 9 Check Ride Control Accumulator Function, Gas Leakage, Looseness, and Damage**
--- every 500 hours

WARNING: Allow only qualified personnel to handle the accumulator.

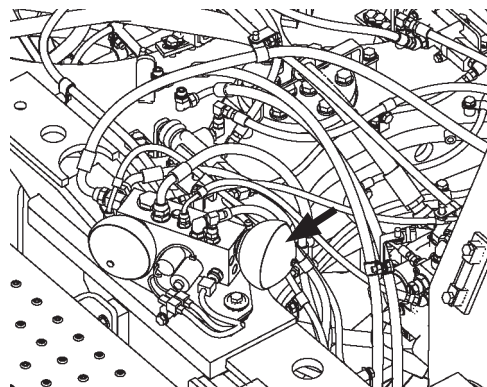
- High-pressure nitrogen gas is enclosed in the accumulator. (N₂ is inert.)
- Never strike the accumulator. Keep the accumulator away from heat sources.
- Do not weld the accumulator housing.
- Be sure to release oil pressure before starting to work on ride control circuit.

Let the machine travel with the ride control switch turned from AUTO to OFF to compare the machine's vertical vibration during travel.

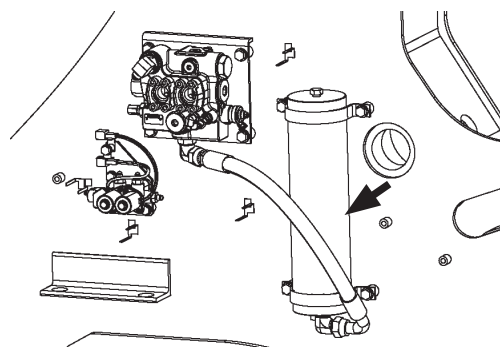
Travel the machine at the speed faster than "Ride Control Drive Speed Setting" displayed on the multi-monitor.

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 nearest authorized dealer for check and repair.



MNEC-07-069



MNDB-07-020

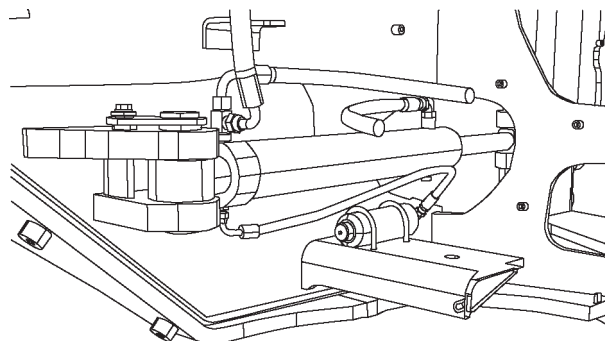
- 10 Check Gas Pressure in Ride Control Accumulator**
--- every 2000 hours

Check the gas pressure at a regular interval. Ask your nearest 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

MAINTENANCE

12 Check Hoses and Lines --- every 10 hours (daily)

⚠ 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.

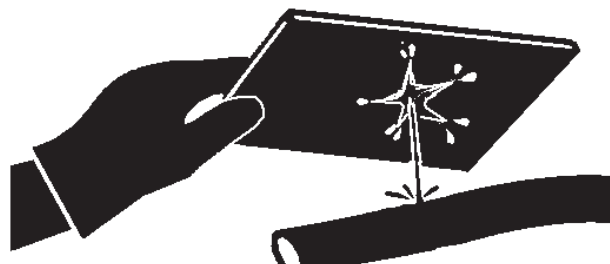
- Tighten, repair or replace any missing, loose or damaged clamps, hoses, lines, oil cooler, and loose oil cooler flange bolts.

Do not bend or strike high-pressure lines.

Never install bent or damaged hoses or lines.



SA-292



SA-044

MAINTENANCE

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

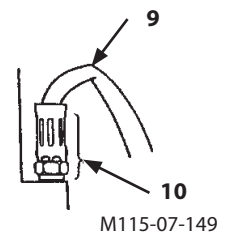
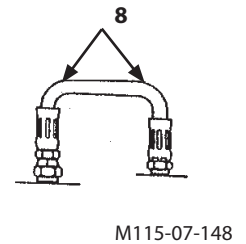
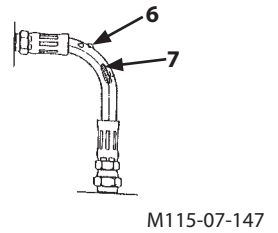
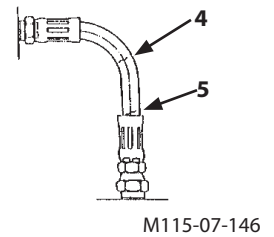
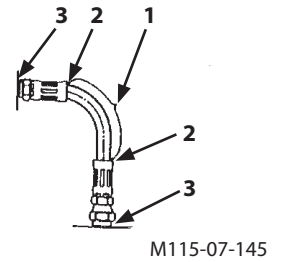
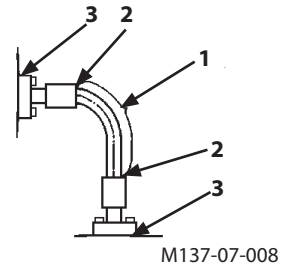


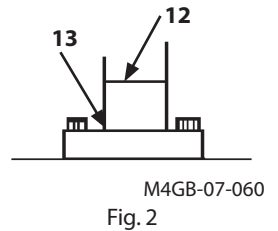
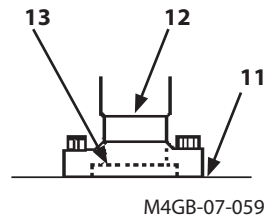
Fig. 1

NOTE: Refer to the illustrations in Fig. 1 for each check point location or for a description of the abnormality. Use genuine Kawasaki parts.

MAINTENANCE

Table 2. Lines

Interval (hours)	Check Points	Abnormalities	Remedies
Daily	Contact surfaces of flange joints	Leak (11)	Replace O-ring and/or retighten bolts
	Bolts	Loose or leak (11)	
	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	Replace
		Deformation	Replace
		Loose	Retighten



 **NOTE:** Refer to the illustrations in Fig. 2 for each check point location or for a description of the abnormality. Use genuine Kawasaki parts.

MAINTENANCE

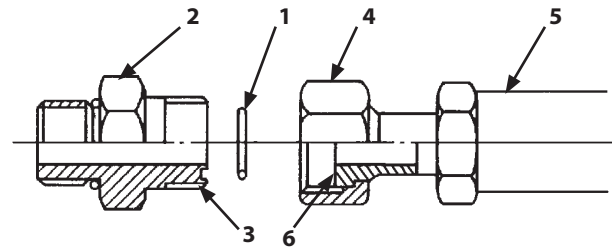
Service Recommendations for Hydraulic Fittings

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.

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.



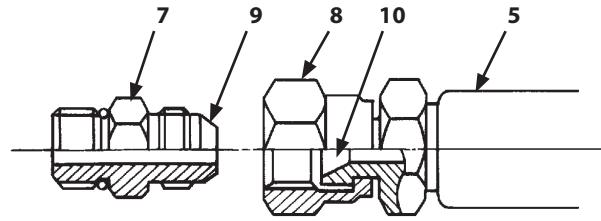
Torque specifications		±10 %				
Width across flats (mm)		27 (1.1 in)	32 (1.3 in)	36 (1.4 in)	41 (1.6 in)	50 (2.0 in)
Tightening torque	N·m	93	132	176	206	330
	(kgf·m)	(9.5)	(14)	(18)	(21)	(34)
	(lbf·ft)	(69)	(101)	(130)	(152)	(243)

MAINTENANCE

Metal Face Seal Fittings

Fittings are used on smaller hoses and consist of a metal flare and a metal flare seat.

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

Width across flats (mm)		17 (0.67 in)	19 (0.75 in)	22 (0.87 in)	27 (1.06 in)	36 (1.42 in)
Tightening torque	N·m	24.5	29.5	39	93	175
	(kgf·m)	(2.5)	(3)	(4)	(9.5)	(18.0)
	(lbf·ft)	(18.5)	(22)	(29)	(69)	(132.5)

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) (D-975). 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 diesel oxidation catalyst (DOC), which may result in malfunction.

MAINTENANCE

Refueling

1. Park the machine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.

IMPORTANT: The turbocharger may be damaged if the engine is not properly shut down.

⚠ WARNING: Handle fuel carefully. Shut the engine off before fueling. Do not smoke while you fill the fuel tank or work on fuel system.

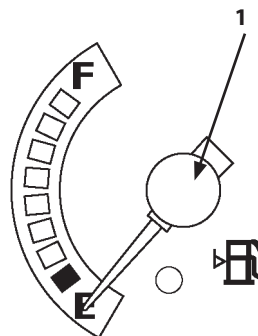
2. Check fuel gauge (1) on the monitor panel. Add fuel if necessary.

IMPORTANT: Keep all dirt, dust, water and other foreign materials out of the fuel system.

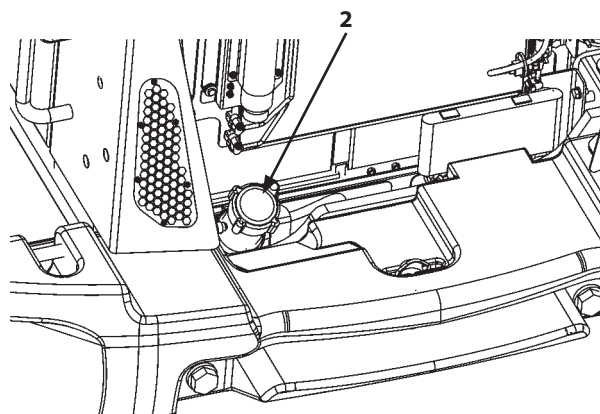
3. To avoid condensation, fill the tank at the end of each day's operation. Take care not to spill fuel on the machine or ground.

Fuel tank capacity: 235 liters (62 gallons)

4. Install and lock fill cap (2) immediately after fueling.



MNEC-01-002

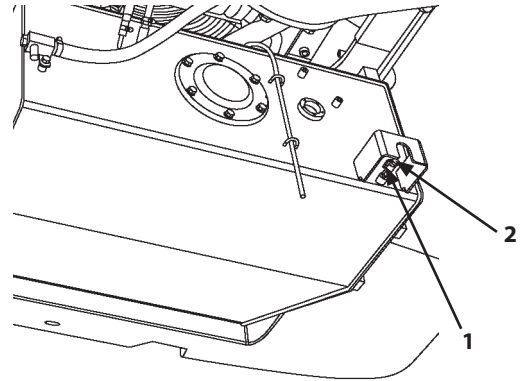


MNDB-01-026

MAINTENANCE

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. Plug (2) is installed to protect drain valve (1). Tighten plug when no more water is draining, and only fuel drainage is seen.



MNEC-07-077

MAINTENANCE

3

Drain Fuel Filter

--- every 10 hours (daily)

IMPORTANT: Drain fuel filter daily before starting operation. The engine may be damaged if you do not drain fuel filter daily.

Fuel pre-filter (1) has water separator function, which drains water. Drain water when the engine trouble indicator flashes.

Draining Procedures

1. Connect transparent drain hose (5) stored in the tool box to drain plug (3) on the bottom of pre-filter (1).
2. Place a container to receive water and loosen drain plug (3) to drain water.
3. After draining water, securely tighten drain plug (3).

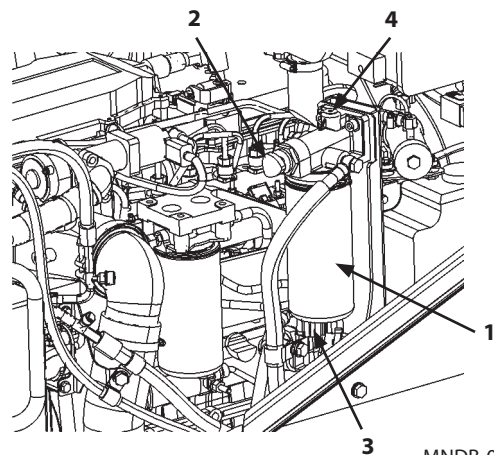
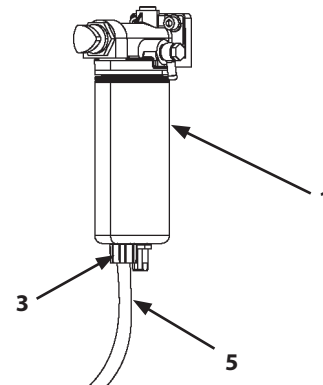
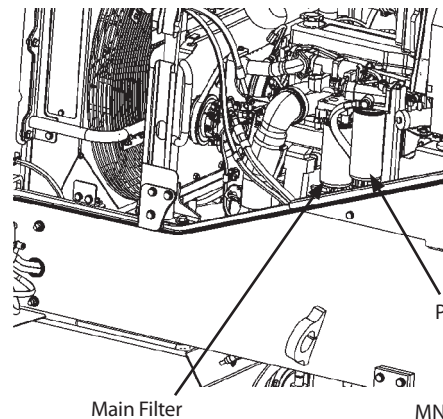
Bleed Air from the Fuel System

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.



MAINTENANCE

4 Replace Fuel Main Filter Element --- every 500 hours

IMPORTANT:

- Be sure to use only genuine Kawasaki 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.
- Do not allow dirt and/or water to enter the fuel system.

Procedures:

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.

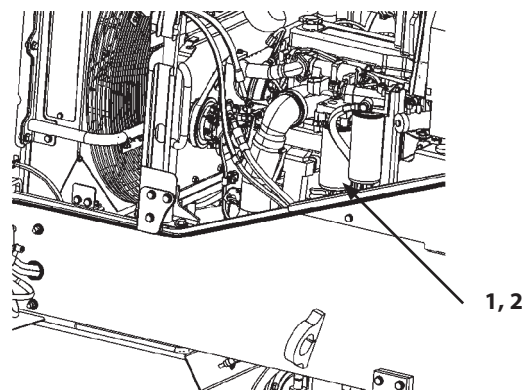
2. Apply a thin film of clean fuel to the gasket of new cartridge filter (2).
3. Turn cartridge filter (2) clockwise by hand until the gasket touches the contact area.
4. Using the filter wrench, tighten the cartridge 3/4 turn more.

Be careful not to overly tighten cartridge filter (2). Deformation of the cartridge may result.

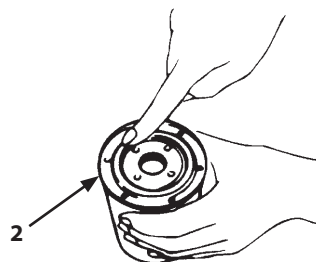
5. Bleed Air from the Fuel System

After replacing the fuel filter, bleed air from the fuel system.

(Refer to "Bleed Air from the Fuel System" in item **3**.)



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M4GB-07-066

MAINTENANCE

5 Replace Fuel Pre-Filter Element ---every 500 hours

IMPORTANT:

- Be sure to use only genuine Kawasaki elements for the main fuel filter and the pre-filter. Failure to do so may deteriorate the engine performance and/or shorten the engine service life. Please be noted that all engine failures caused by using other manufacturers' elements are excluded from Kawasaki Warranty Policy.
- Take care not to allow dirt and/or water to enter the fuel tank.

Procedures

1. Remove cartridge filter (1) by using a filter wrench.

Arrange a container to receive fuel for safety and to prevent ground from contamination.

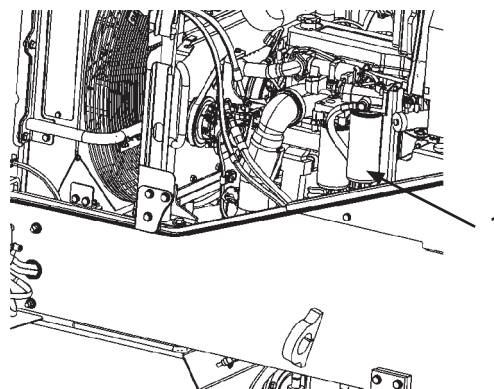
2. Apply a thin film of clean fuel to the gasket of new cartridge filter (2).
3. Turn cartridge filter (2) clockwise by hand until the gasket touches the contact area.
4. Using the filter wrench, tighten the cartridge 3/4 turn more.

Be careful not to overly tighten cartridge filter (1).
Deformation of the cartridge may result.

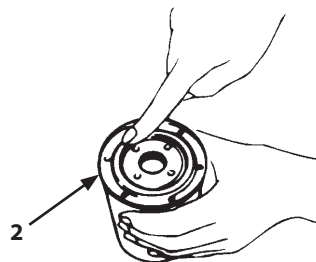
5. Bleed Air from the Fuel System

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

MAINTENANCE

6

Clean Fuel 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 thoroughly cleaning them. After being assembled, closely check the air-tightness of the strainer.

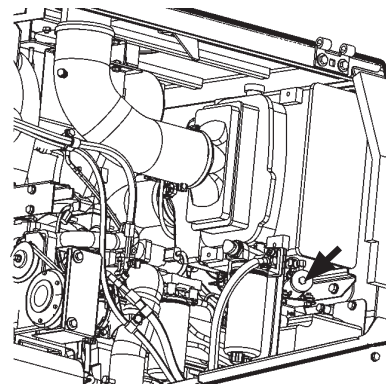
Disassembling/ Assembling

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. Wash strainer (3) with solvent. 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.

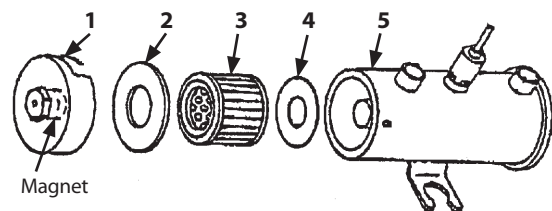
 NOTE: Wrench size: 17 mm (0.7 inch)

IMPORTANT:

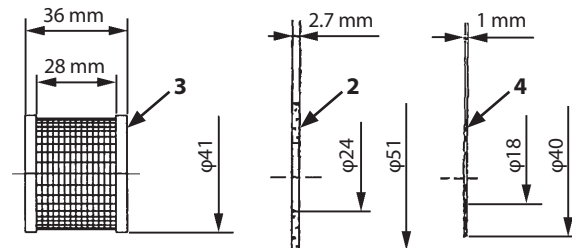
- Only clean and replace the strainer as well as gaskets (2) and (4) while servicing the fuel pump. Never attempt to disassemble other parts.
- Gasket (4) can get caught in the bore of pump (5), making it difficult to remove the gasket, but do not disassemble the cylinder of pump (5). If the gasket is difficult to remove, do not disassemble other parts but stretch gasket (4) to remove it. Use a new gasket (4) for assembling.



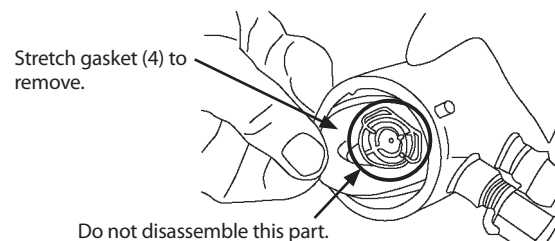
MNDB-07-006



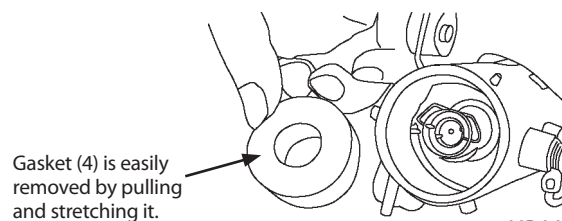
M1GR-07-004



M1U1-07-006



MDAA-07-053



MDAA-07-054

MAINTENANCE

7 Check Fuel Hoses --- every 10 hours (daily)

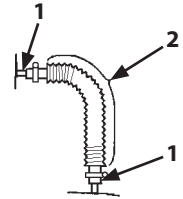
⚠ WARNING: Fuel leaks can lead to fires that may result in serious injury.

- Escaping combustible fluid can cause fires. Check for kinked hoses, hoses that chafe against each other, and signs of fuel leaks.
- Repair or replace loose or damaged hoses.
- Never reinstall bent or damaged hoses.

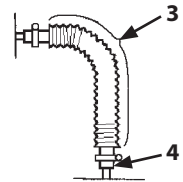
According to the check points shown below, check hoses for oil leaks and damage.
If any problem is found, replace or retighten as instructed in the table.

Hose

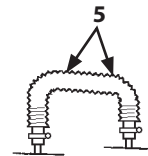
Interval (hours)	Check Points	Problems	Remedies
Daily	Hose ends	Leak (1)	Retighten or replace
	Hose covers	Wear, crack (2)	Replace
Every 250 hours	Hose covers	Crack (3)	Replace
	Hose ends	Crack (4)	Replace
	Hose	Bend (5), Collapse (6)	Replace
	Hose fittings	Corrosion (7)	Replace



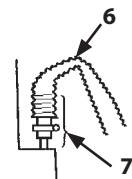
M137-07-003



M137-07-004



M137-07-005



M137-07-006

MAINTENANCE

F. Air Cleaner

1 Clean and 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.

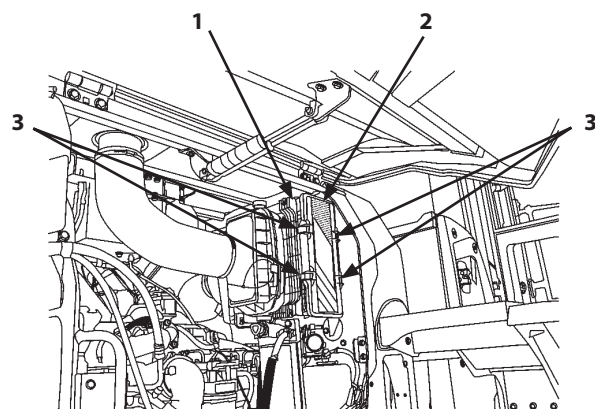
1. Park the machine following the same procedure as described on page 7-7 for preparation of inspection/maintenance work.

IMPORTANT: Take care not to allow foreign matter such as dirt to enter the engine when cleaning or replacing elements.

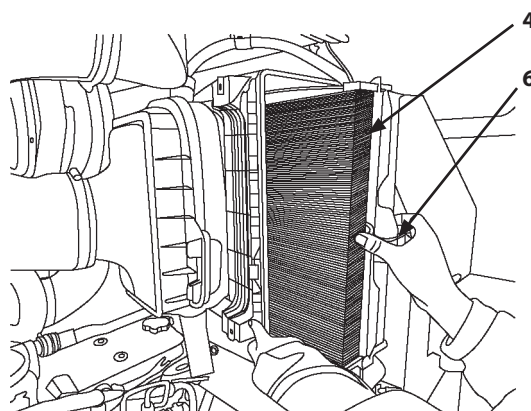
2. Remove clip band (3) and remove cover (2).
3. Hold the outer element release knob (6). Pull out outer element (4) from the air cleaner to remove it.
4. Clean inside the air cleaner with a wet cloth.
5. Hold inner element (5) release knob (7). Pull out inner element (5) from air cleaner (1) to remove 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.

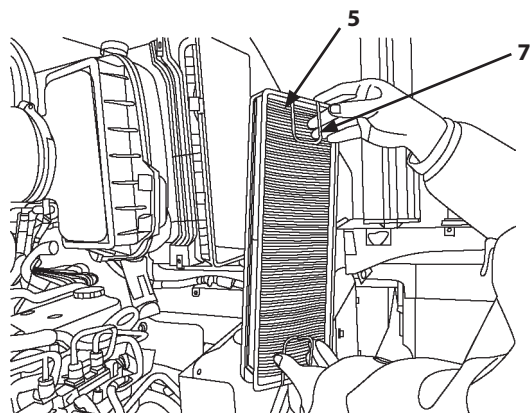
7. Install cover (2) and tighten it with clip band (3).
8. Start the engine after the cleaning is done. Ensure the indicator light is not ON.



MNDB-07-016



MNEC-07-105



MNEC-07-106

MAINTENANCE

22 Dust Ejection Valve --- daily

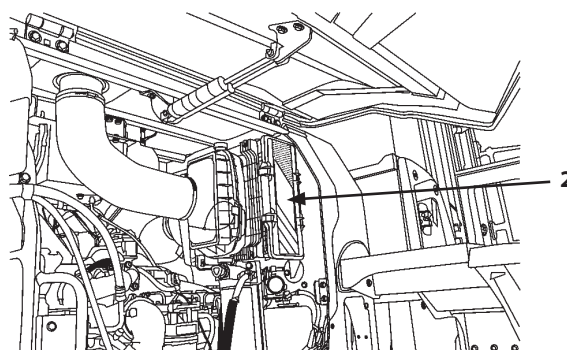
Clean

Dust ejection valve (1) is located on the bottom of air cleaner (2).

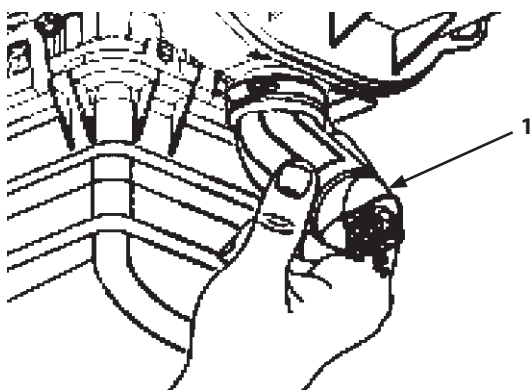
Hold down the valve from both sides by using your fingers until the end of dust ejection valve (1) opens.

If dust is difficult to be removed, loosen the clip at the root of dust ejection valve (1) to remove dust ejection valve (1).
Clean inside the valve.

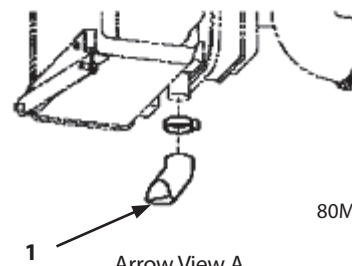
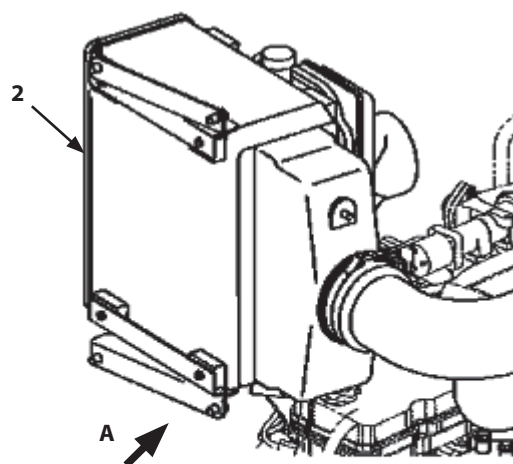
Check the valve for any damage.



MNDB-07-016



MNEC-07-120



Arrow View A

80MNEC-07-120

MAINTENANCE

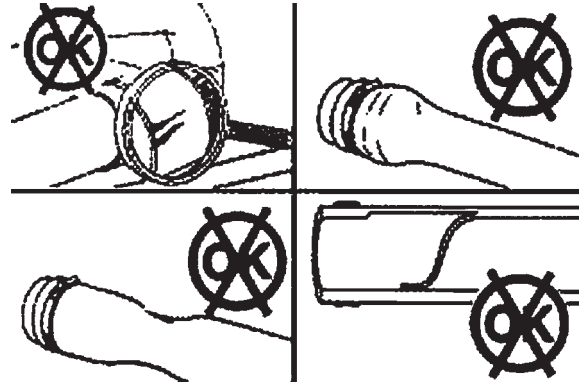
3

Check Air Inlet System

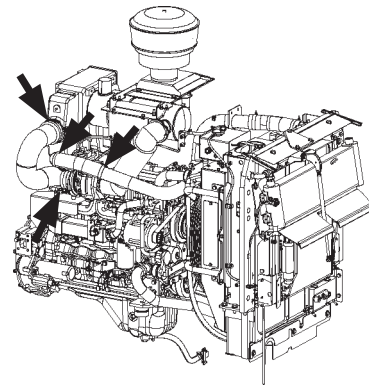
--- daily

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.

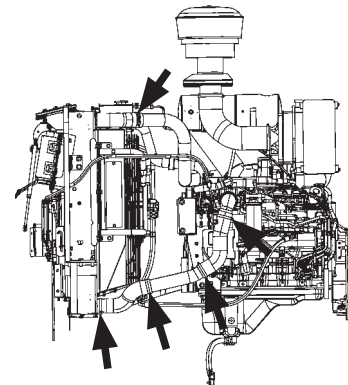
Tightening torque: 8 N·m (0.8 kg·m, 6 lbf·ft)



MNEC-07-121



MNDB-07-007



MNDB-07-008

MAINTENANCE

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 Kawasaki 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 range between 33% and 50% as shown in the table below. If the ratio is below 33%, the system may develop rust, and if it is above 50%, the engine may overheat.

LLC Mixing Table

Air temperature °C (°F)	Mixing ratio %	Coolant Capacity: 28.0 liter (7.4 gallons)	
		LLC liter (gallon)	Soft Water liter (gallon)
-15 (5.0)	33	9.2 (2.4)	18.8 (5.0)
-20 (-4.0)	38	10.6 (2.8)	17.4 (4.6)
-25 (-13)	43	12.0 (3.2)	16.0 (4.2)
-30 (-22)	48	13.4 (3.6)	14.6 (3.8)

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.

MAINTENANCE

1

Check Coolant Level

--- every 10 hours (daily)

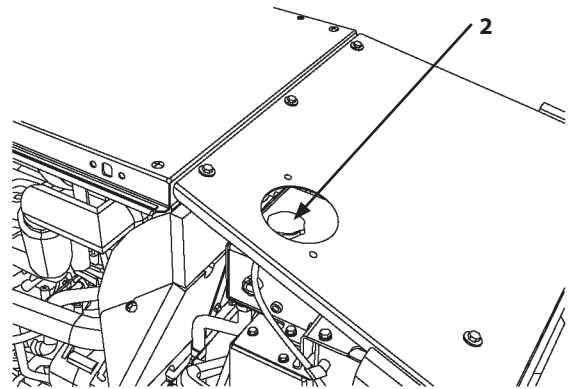
⚠ WARNING: Do not remove cap (2) until the coolant temperature in the radiator has cooled. Hot steam and coolant may spout out, possibly causing severe burns. After the coolant temperature cools, slowly loosen cap (2) to release the inside air pressure before removing cap (2).

When the coolant temperature is low, the coolant level must be above the top of sight glass (3).

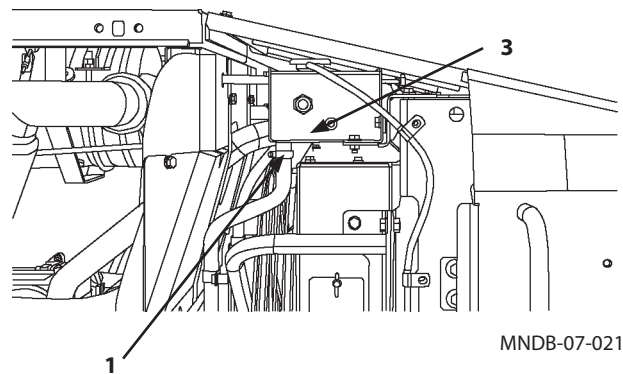
If the coolant level is visible, which is halfway between the top and bottom of sight glass (3), or the coolant level is invisible, which is below the bottom of sight glass (3), fill coolant until the coolant level exceeds the top of sight glass (3).

In case no coolant is present in reservoir tank (1), add the coolant mixture via the cap hole on reservoir tank (1).

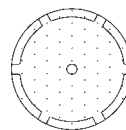
- When refilling a long life coolant (LLC), use the same brand product and the same mixture ratio as already used in the machine.
- If only water is refilled, the mixture ratio in the long life coolant (LLC) is diluted so that anti-rust and antifreeze effect in the coolant will become diluted and less effective.



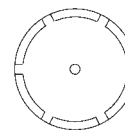
MNDB-07-022



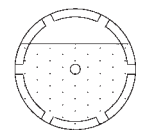
MNDB-07-021



OK



NO



NO

Sight Glass (3)

MNDB-07-018

MAINTENANCE

2 **Check Drive Belt** --- every 10 hours (daily)

Check the drive belt for any trouble. If any cracks are found, replace the belt with a new one.

3 **Check and Adjust Drive Belt Tension** --- every 250 hours (or whenever the slack is found)

An automatic adjustment function is provided.

MAINTENANCE

4

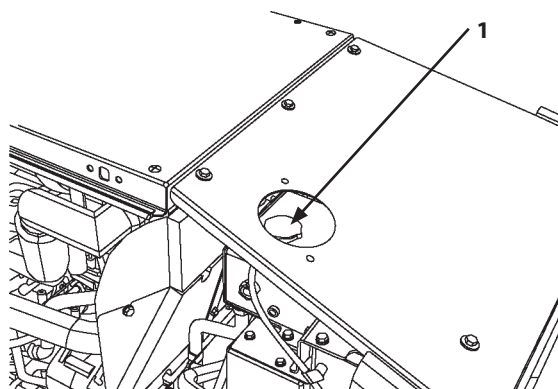
Change Coolant

--- every 3000 hours or two years

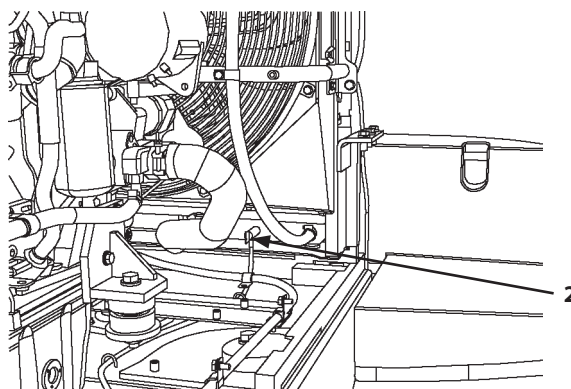
⚠ WARNING: Do not remove the radiator cap (1) until the coolant temperature in the radiator has cooled. Hot steam and coolant may spout out, possibly causing severe burns. After the coolant temperature cools, slowly loosen the cap to release the inside pressure before removing cap (1).

🔧 NOTE: Refer to page 7-69 for coolant specification. When other than Kawasaki LLC is used, contact your nearest Kawasaki dealer for the replacement interval.

1. Park the machine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the chassis by following the procedures described on page 7-9.
3. Remove radiator cap (1). Open radiator drain cock (2) and the engine water jacket drain plug to completely drain the coolant.
4. Remove impurities such as scale at the same time. Use a diesel engine coolant system flush kit for this.
5. 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 thoroughly bleed air from the cooling system.
6. After adding coolant, operate the engine for several minutes. Check the coolant level again and add coolant if necessary.



MNDB-07-022



MNEC-07-083

MAINTENANCE

5 Clean Radiator/Oil Cooler Cores and Other Cooling System

--- every 500 hours or when the core is clogged.

WARNING: When using compressed air pressure [less than 0.2 MPa (2 kgf/cm², 30 PSI)], wear safety glasses or goggles.

IMPORTANT: If compressed air with the pressure of more than 0.2 MPa (2 kgf/cm², 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 inch).

Over the Side Cover

Remove left and right access covers (6) and (7) to clean radiator (4), oil cooler (5) and intercooler (1) from the hydraulic driven fan side.

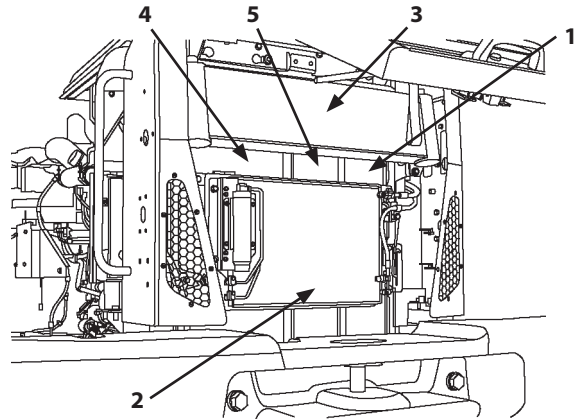
Over the Rear Grille

Open the rear grill to check and clean torque converter cooler (3) and air condenser (2).

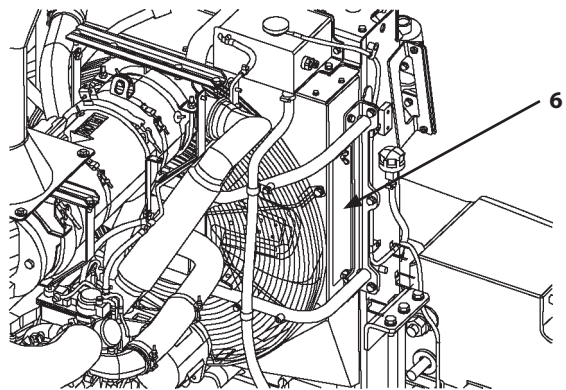
Remove bolts (8) from left and right side of air condenser (2). Raise air condenser (2) upward. Raise air condenser (2) until it is secured with catch (9).

Thereby, radiator (4), oil cooler (5), and intercooler (1) can be checked and cleaned.

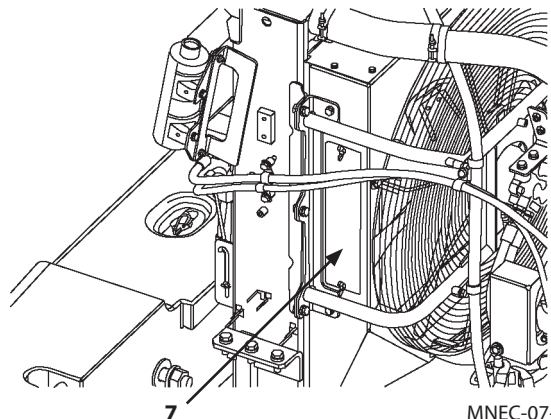
If dirt or dust is accumulated on them, cooling system performance decreases. Clean the radiator/oil cooler cores with compressed air pressure (lower than 0.2 MPa (2 kgf/cm²)) or tap water. It will prevent a reduction in cooling system performance.



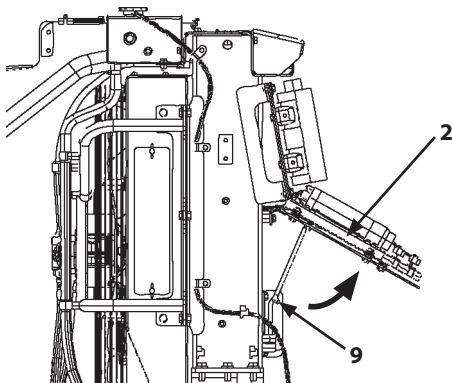
MNEC-07-084



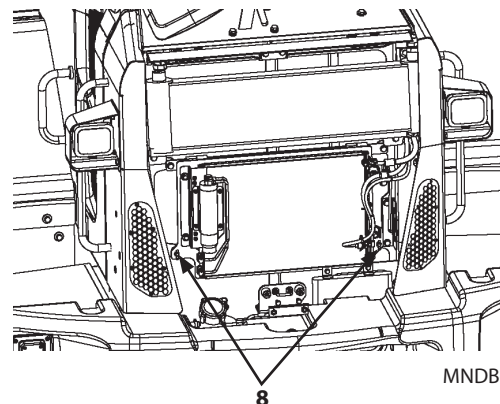
MNEC-07-085



MNEC-07-086



MNEC-07-100



MNDB-07-005

MAINTENANCE

H. Electrical System

IMPORTANT: Improper radio communication equipment and associated parts, and/or improper installation of radio communication equipment may effect the machine's electronic parts, causing involuntary movement of the machine.

Also, 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 any type of 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. Check batteries only when cool.

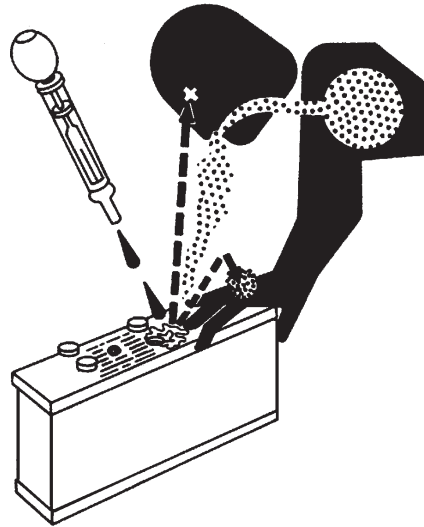
Use a flashlight to check the battery electrolyte level.

Do not continue to use or charge the battery when electrolyte level is lower than specified. Explosion of the battery may result.

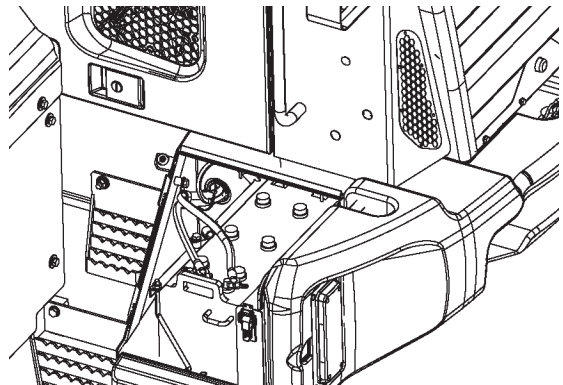
Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into the eyes.

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.



SA-036



MNDB-07-004

MAINTENANCE

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.

MAINTENANCE

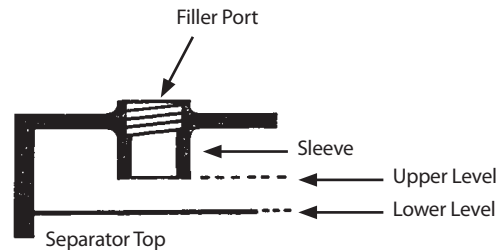
Electrolyte Level Check

--- every 100 hours (Do this when machine is cold.)

1. Check the electrolyte solution level at least once a month.
2. Park the machine on level ground and stop the engine.
3. Check the electrolyte solution 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 spark, causing the battery gas to explode. Check if the electrolyte solution level is between U.L (Upper Level) and L.L (Lower Level). In case the electrolyte solution 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 solution level by viewing through the filler port. Use a flash light and a mirror to do this. It is difficult to accurately judge the electrolyte solution level in this case. Therefore, when the electrolyte solution level is flush with the U.L, the level is correct. Referring to the illustrations to the right, check the level.
When the electrolyte solution level is lower than the bottom end of the sleeve, refill with distilled water or commercial battery fluid up to the bottom of the sleeve. Be sure to refill with distilled water before recharging (operating the machine). After refilling, securely tighten the filler caps.
 - 3.3 When an indicator is available to check the level, use it.
4. Always keep the battery areas clean to prevent battery discharge. Check terminals for looseness and/or corrosion. 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.

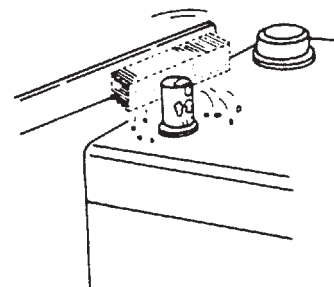
M146-07-111

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

MAINTENANCE

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.

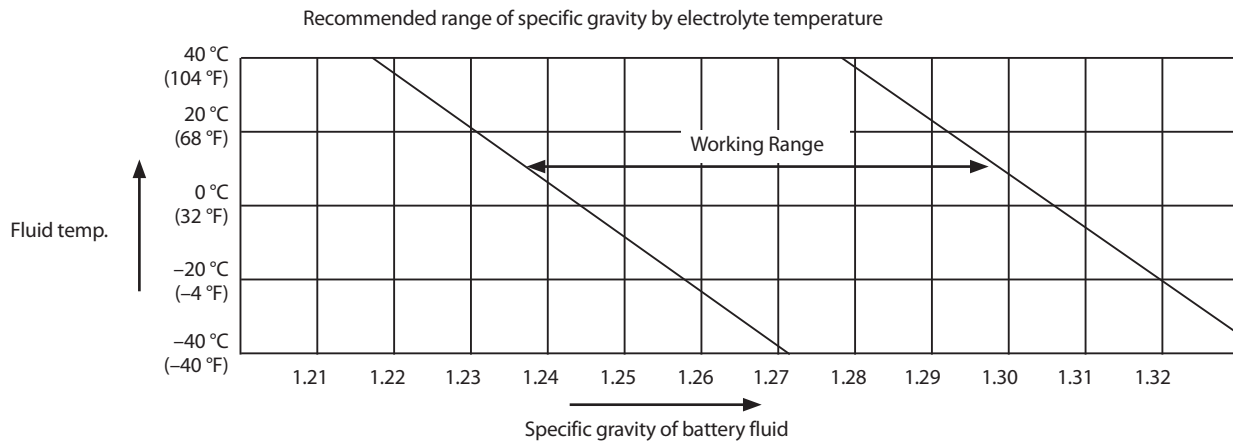
If acid is swallowed, call 911, then:

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.



MAINTENANCE

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)

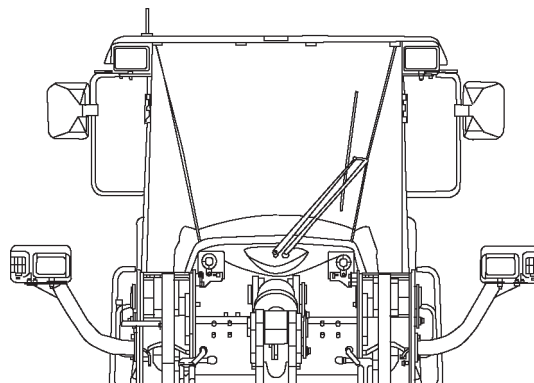
Run the engine at low idle when checking the instruments. The monitor indicates alarm, caution and confirmation status in red, orange, and normal operative condition in blue or green respectively. Check each gauge or meter if its needle is moved with the key switch ON. The needle shall be moved to the red range when abnormal. Refer to the Group of Operator's Station in Section 1 for more information.

MAINTENANCE

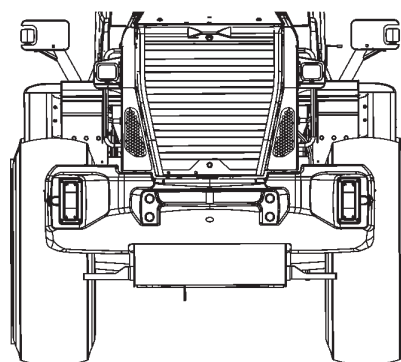
3 Check Work Lights --- every 10 hours (daily)

CAUTION: If any burned-out light is found, immediately replace it with a new one.

Visually check all work lights that they normally illuminate and/or flash from the front and rear sides of the machine.



MNEC-07-039

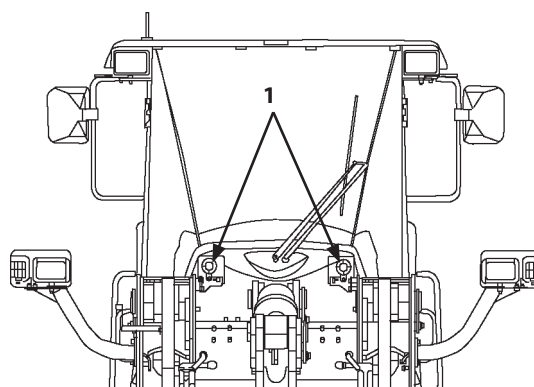


MNDB-07-013

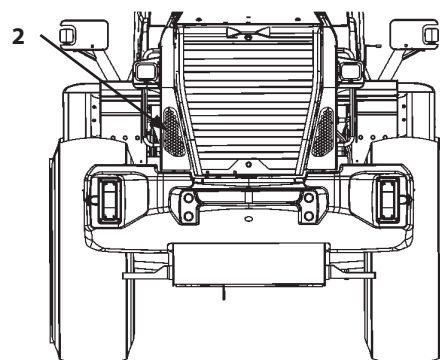
4 Check Horn and Reverse Buzzer --- every 10 hours (daily)

WARNING: Before checking the horn and/or the backup alarm, always apply the parking brake and clear the machine area of other personnel.

The horn switch button is located at the steering wheel center and bucket control lever. In case the machine is equipped with a multi-function joystick lever, the horn switch is located on the multi-function joystick lever. Horn (1) is located on the front chassis. Reverse buzzer (2) is located at the left side of the rear grille. Check that reverse buzzer (2) correctly sounds by operating either the forward/reverse lever or the forward/reverse switch to the reverse drive side.



MNEC-07-039



MNDB-07-013

MAINTENANCE

5 Check Electrical Harnesses and Fuses

--- every 50 hours

IMPORTANT: Remove any dirt or dust adhered on the wirings or relays, as it may cause a fire.

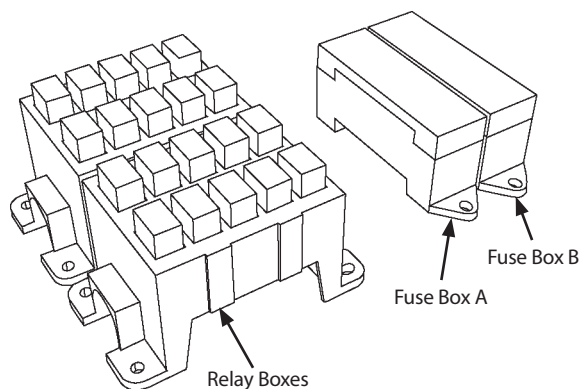
Check the electrical harness and terminals of the batteries, starter motor, and alternator for loose connection and/or short circuit (broken shield). If any burned mark or a burning odor is noticed at a harness, consult your nearest authorized dealer.

Replace Fuse:

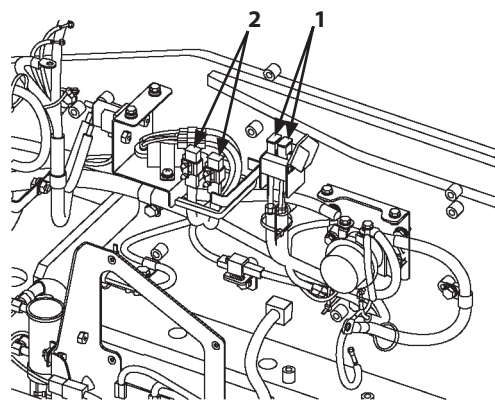
1. If any electrical equipment becomes inoperable, first check the fuses in the fuse boxes (A, B) located in the right console (behind the front control lever) in the operator's station.
2. One each spare fuse for respective fuse capacities is provided in the fuse boxes (A, B).
3. Finally, check slow blow fuses (1) (2) located on the left side of the machine.

1 - 140 A

2 - 65 A



MNEC-01-047

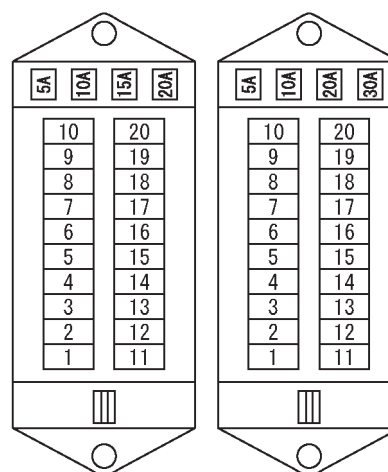


MNEC-01-503

MAINTENANCE

Fuse Box A

10- PARKING 5 A	20- OPTION (10 A)
9- AC1 10 A	19- OPTION (10 A)
8- STOP LAMP 5 A	18- OPTION (20 A)
7- BACK BUZZER 5 A	17- OPTION (15 A)
6- HEAD LAMP LH 5 A	16- OPTION (15 A)
5- WORKING LAMP FRONT 20 A	15- AC2 20 A
4- WIPER FRONT 15 A	14- ROTARY BEACON (Opt) 10 A
3- LIGHTER 10 A	13- SEAT HEATER (Opt) 20 A
2- HEAD LAMP RH 5 A	12- OPTION (20 A)
1- AUTO SHUT DOWN 5 A	11- RADIO 10 A



Fuse Box A

Fuse Box B

MNDB-01-062

Fuse Box B

10- ECU 30 A	20- SECONDARY STEERING (Opt) 5 A
9- TCU 10 A	19- HI BEAM 10 A
8- CONTROLLER 10 A	18- WIPER REAR 10 A
7- FLASHER 10 A	17- WORKING LAMP REAR 20 A
6- HORN 10 A	16- LOADER CONTROL 5 A
5- OPT C/U 5 A	15- MC 10 A
4- OPTION (15 A)	14- TCU POWER 10 A
3- ROOM LAMP 5 A	13- POWER ON 10 A
2- LIGHTING 10 A	12- POSITION 2 5 A
1- ACC RELAY 5 A	11- POSITION 1 5 A

MAINTENANCE

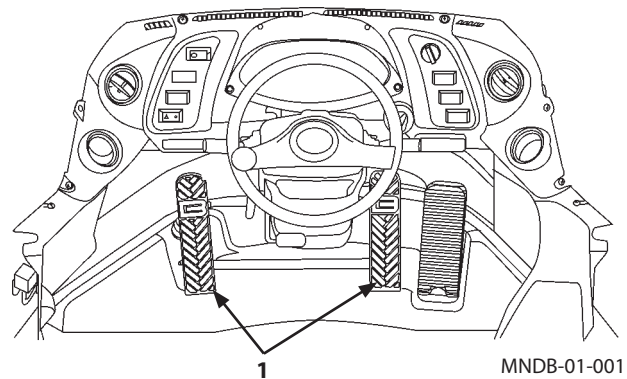
I. Brake System

1 Check Right and Left Brake Interlocking Performance

--- every 10 hours (daily)

WARNING: Put up a do not enter sign for the range of 100 m (110yd) ahead in the forward machine travel direction. Arrange a safety monitor person.

WARNING: Do not allow dust and/or soil to accumulate in vicinity (3) of the brake pedal. The brake may lose traction.



While stepping on brake pedal (1), check the pedal movement, the brake performance, and the play in the pedal stroke for any problems.

If dust and/or soil accumulates in vicinity (3) of the brake pedal, remove the accumulated dust and/or soil.

Check Brake Performance

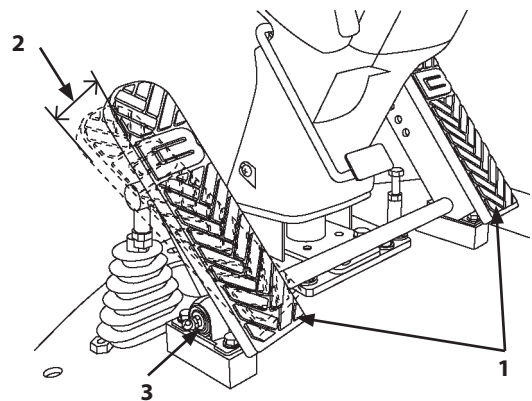
The machine must be stopped within 5 m range after the brake is applied while driving at the speed of 20 km/h on a flat dry paved surface road.

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 0.6 inch)

If the play is outside the specified range, consult your nearest authorized dealer. In case poor performance is noticed, consult your nearest authorized dealer. Get the machine checked and repaired.



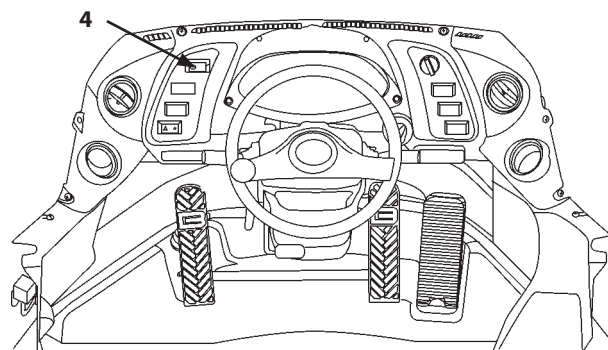
MAINTENANCE

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.

Use the steepest available slope on the worksite.

Park the machine with no load applied on a 15° inclining dry surface slope. The machine must not move with the parking brake switch (4) ON. Should the machine move during inspection, consult your nearest authorized dealer. Get the brake system checked and repaired.



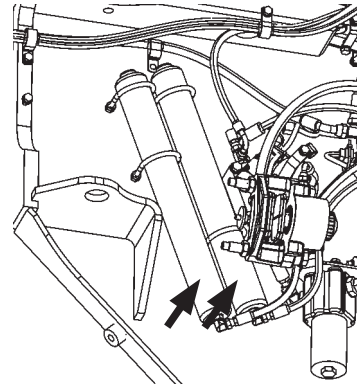
MNDB-01-001

MAINTENANCE

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. (N₂ 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 1,200 RPM (min⁻¹) 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. Also, ensure the brake oil pressure gauge on the monitor indicates the maximum value.

3. Note how many times the brake pedal is stepped:

Check that the brake pedal can be stepped more than 5 strokes before the monitor indicators come 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.

MAINTENANCE

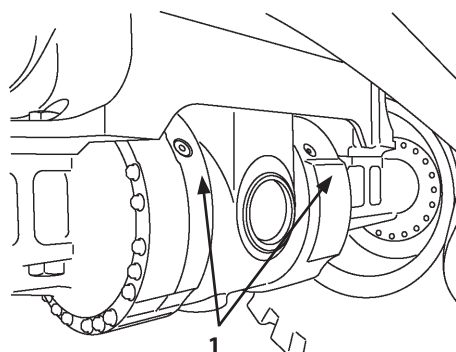
4 Check Gas Pressure in Accumulator --- every 2000 hours

Check the gas pressure at a regular interval. If the machine is operated with the gas pressure lower than specified value, normal brake performance and/or loading performance may not be to specifications achieved, possibly creating very hazardous situations. Ask your nearest authorized dealer for checking.

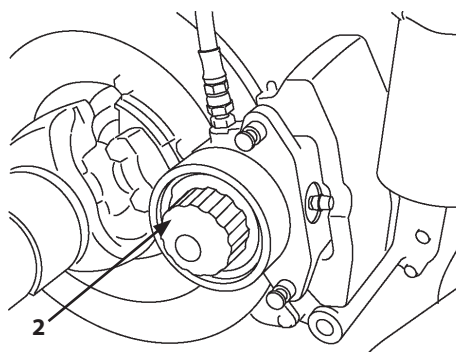
 **NOTE:** Check the accumulator for the ride control equipped machine in the same manner.

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.



M4GB-07-101



M4GB-06-004

MAINTENANCE

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

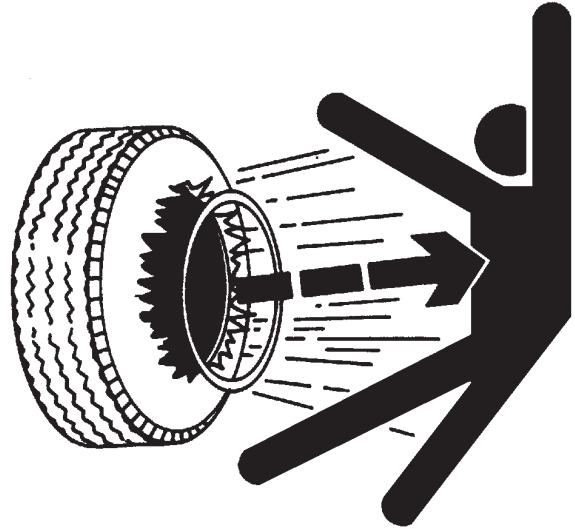


WARNING:

- 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.

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.



SA-249

Check Air Pressure

1. Measure air pressure when the tires are cool before operating the machine.

70Z7

Standard Tire	Standard Air pressure
20.5-25-12PR	325 kPa (3.25 kgf/cm ²) (47 PSI)

70TM7

Standard Tire	Standard Air pressure
23.5-25-16PR	363 kPa (3.7 kgf/cm ²) (53 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.

MAINTENANCE

3 Check Wheel Bolt Torque

--- every 500 hours

(50 hours at fist time only)

Be sure to check the wheel bolt torque by turning the bolt clockwise.

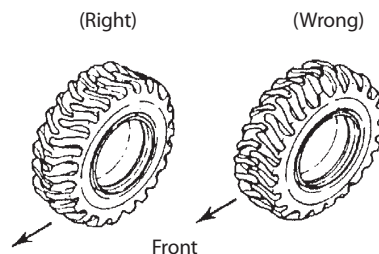
Tightening Torque: 890 N·m (91 kgf·m, 655 lbf·ft)

Replace Tire

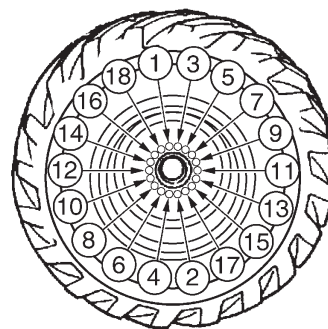
WARNING: Secure the front and rear frames with the articulation lock bar and pins.

IMPORTANT: Height of the machine may change according to the types of tires to be installed. Do not change the specifications of the machine by using unauthorized tire sizes.

1. Park the machine following the same procedures as described on page 7-7 for preparation of inspection/maintenance work.
2. Install the articulation lock bar to the front and rear of the chassis by following the procedures described on page 7-9.
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 the above torque specification and in the order as illustrated to the right.



M4GB-07-104



M4GB-07-102

MAINTENANCE

Recommended Tire Air Pressure (Bias ply tire)

70Z7

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)

70TM7

Size	Pattern	Air pressure
23.5-25-12PR	L-3	304 kPa (3.1 kgf/cm ²) (44 PSI)
23.5-25-16PR	L-3	363 kPa (3.7 kgf/cm ²) (53 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 Kawasaki dealer or the tire dealer.

MAINTENANCE

Oscillation Stopper

IMPORTANT: Use oscillation stopper (1) that for the tire size and tread pattern.

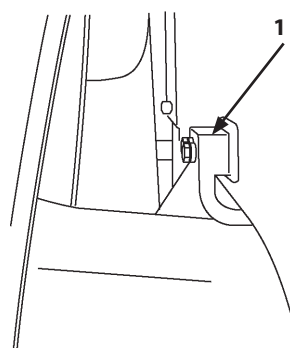
According to the size and tread pattern of tires, the clearance between the machine parts and top of tire (A) may become narrower, interference can occur between the tire and the machine parts.

When size and tread pattern of tires are changed, install the correct oscillation stopper (1) by referring the list below.

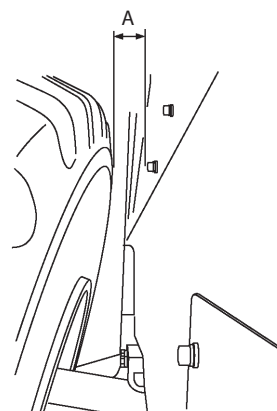
Tire Size	Tread Pattern	Oscillation Stopper
20.5-25-12, 16PR	L-3	×
	L-4	×
20.5 R 25	L-5	×
23.5-25-12, 16PR	L-3	×

○: Use
×: Not use

 **NOTE:** The oscillation stopper is available at your nearest Kawasaki dealer.



M4GB-07-162



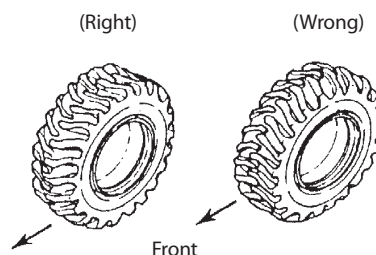
M4GB-07-163

MAINTENANCE

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 for good tire service life.

⚠ WARNING: This must have no external damage, such as heavy cuts, large bubbled protrusions or other damage that can lead to tire failure. If tires have such problems, they may fail with a blow-out, and cause an injury or death, or otherwise damage property.



M4GB-07-104

Rotation Procedure

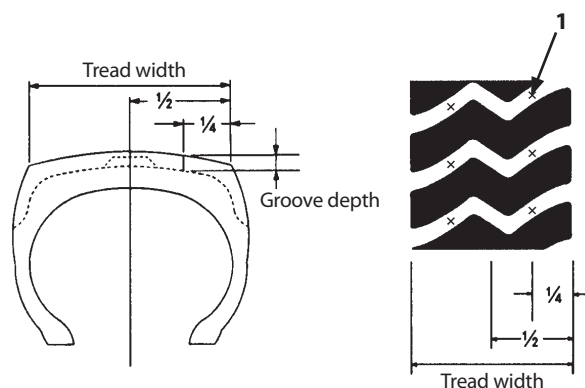
- Switch tires only between the front and rear positions. Do not switch the tires between diagonal positions.
- Align the tire rotation direction with the tire tread design pattern. Tread design pattern direction (optional) will affect not only economy of tire but also safety of operation.

How to Check Wear Amount (Tread Design Groove Depth):

Measure the groove depth at 1/4 tread width position [shown with X mark (1) in the figure].

Use limit of the groove depth shall be approx. 85 % of the new tire groove depth. In case extreme uneven wear or exposed rubbing strips are found, replace the tire even before reaching 85 %.

IMPORTANT: The tire sizes must be close to even, or mechanical damage will result to the drive train. When installing replacement tires, be sure that the tire sizes and design are the same. It is recommended to replace all four tires at the same time.



M4GB-07-103

MAINTENANCE

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 Kawasaki 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 last.
- Wheel bolt tightening torque: 890 N·m (90.8 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.

MAINTENANCE

K. Air Conditioner

1 Clean/Replace Air Conditioner Circulation/Fresh Air Filters

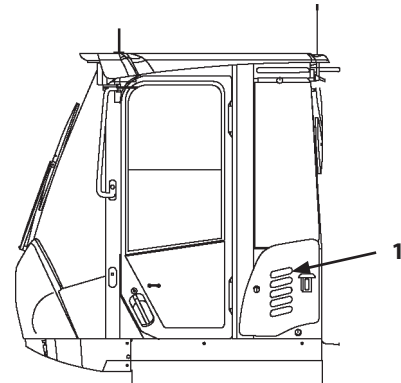
Clean filters --- every 100 hours (or once a week whichever come first)

Replace filter --- after cleaning filters 10 times (or when the filters are severely clogged)

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).

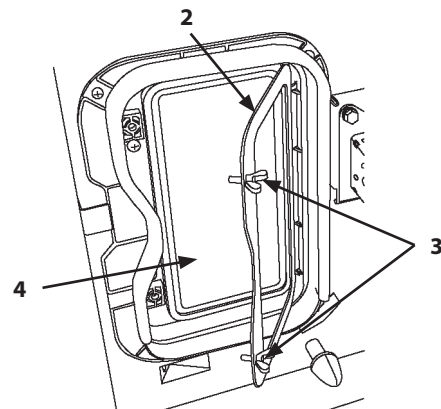


MNEC-01-054

⚠ WARNING: 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 (2 kgf/cm², 30 PSI). Keep the nozzle more than 500 mm (20 in) away from the core surface.

2. 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. Move the filter around in water slowly for about 2 minutes.
 - 2.3 Rinse the filter with water. Check for cleanness. Repeat 2.2 and 2.3 if needed.
 - 2.4 Dry the filter.



MNEC-07-043

IMPORTANT: Incorrect 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 fresh air filter or a new filter by following the filter removal procedure described in step 1 in the reverse order.

MAINTENANCE

Clean and Replace Double Filter (Optional)

--- 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).

CAUTION: When using compressed air pressure, wear safety glasses or goggles.

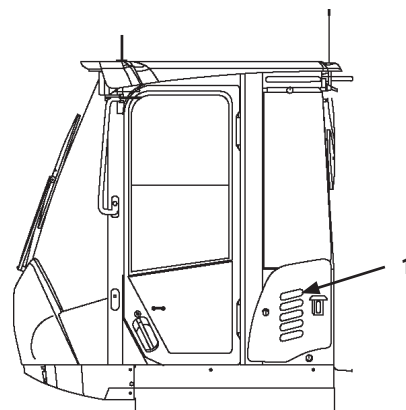
IMPORTANT: If compressed air delivery pressure is high, damage to the filter fins may result. Always use compressed air at the lower pressure than 0.2 MPa (2kgf/cm²). Keep the nozzle more than 500 mm away from the core surface.

2. Clean double filter (7).

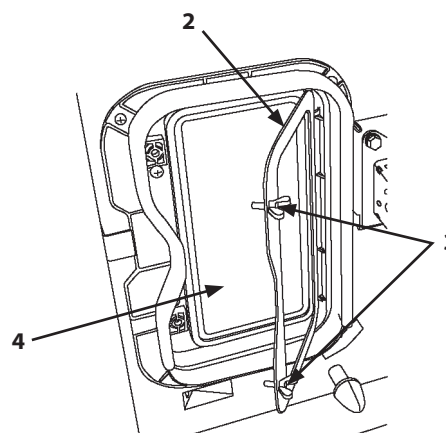
Clean double filter (7) using compressed air or by washing with water.

Washing procedure with water is as follows:

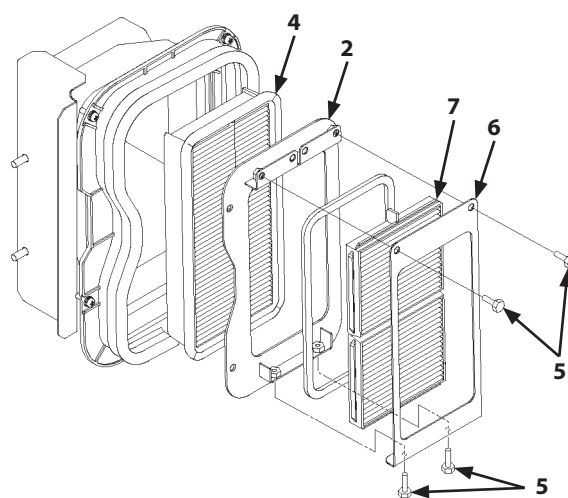
- 2.1 Use tap water.
 - 2.2 Submerge the filter in water containing a neutral detergent for about 5 minutes
 - 2.3 Clean the filter with water again.
 - 2.4 Sufficiently dry the filter.
3. Install the cleaned double filter or a new filter by following the filter removal procedure described in step 1 in the reverse order.



MNEC-01-054



MNEC-07-043



MNHE-07-048

MAINTENANCE

Clean Circulation Air Filter

1. Remove the filter:

Remove screw (6) under cup holder (5) and tilt the cup holder forward.

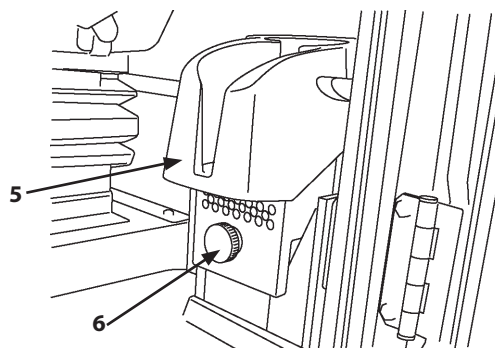
2. Hold handle (7) and pull handle (7) toward you to remove circulation air filter (8).

IMPORTANT: Do not use compressed air or water to clean filter (8) as damage to the filter fins may result.

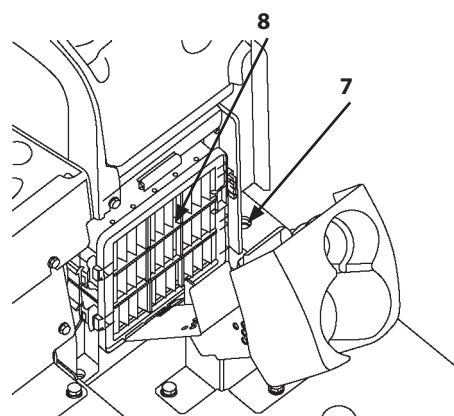
3. Clean circulation air filter (8) using a vacuum clean or lightly tapping to dust the filter.

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.

4. Install the cleaned circulation air filter or a new filter by following the filter removal procedure described in step 1 in the reverse order.



M4GB-07-108



MNEC-07-044

MAINTENANCE

2 Check Air Conditioner --- every 6 months

Check the air conditioner switch panel, air conditioner unit, and condenser mounting areas for any troubles, 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.



CAUTION: Avoid steam cleaning

Do not clean the compressor and receiver tank with steam. The high temperature will cause the refrigerant gas pressure to increase, possibly causing the hoses to break. This could injure personnel.

3 Check Air Conditioner Piping --- every 6 months

IMPORTANT: If any leakage is found, repair or replace the corresponding pipes. Tighten the joint bolts to specification.

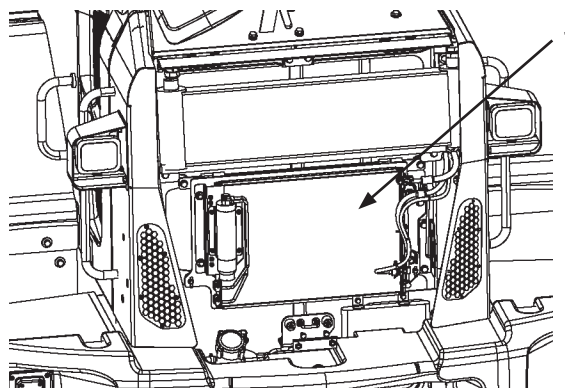
Check the piping for deformation and/or damage. If a pipe joint is contaminated with oil, refrigerant leakage may be suspected. Check for leakage using a refrigerant gas leak detector.

MAINTENANCE

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 foreign material from fins of condenser (1) using tap water. In case the condenser has been severely contaminated, use a soft brush or a plastic fin comb tool. Do not use a hard brush, which may damage the fins.



MNDB-07-005

5 Check Air Conditioner Compressor Belt

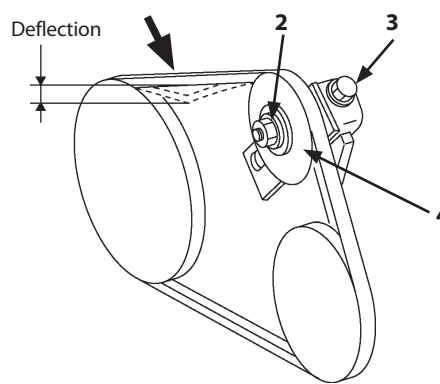
--- every 6 months

Check the belt for abnormal deflection and damage. Check HVAC 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 (10 kgf, 22 lbf).

Approx. 6 mm (0.2 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

MAINTENANCE

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 (65 °F) on the monitor screen). Operate the air conditioner 2 to 3 minutes. Check if cool air comes out from the vent in the cab. This machine uses new refrigerant R134a. Before charging the refrigerant, first recover all the refrigerant from the system. Then, charge the refrigerant by the specified quantity. In case any abnormality is found in the air conditioner, consult your nearest authorized dealer.

Type	Refrigerant No.	Quantity kg
HFC	R134a	0.90 ± 0.05

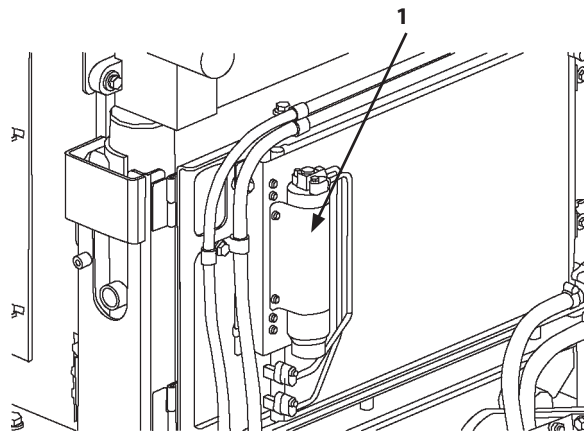
IMPORTANT: Do not release refrigerant into the atmosphere as this is illegal. Comply with refrigerant regulations.

7 Check Compressor and Pulley --- once a year

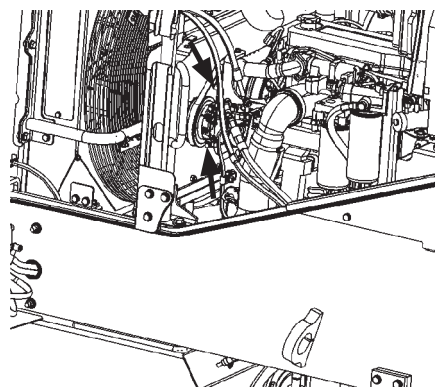
Check the compressor and its vicinity for abnormality in operation, oil, or refrigerant leakage. Check the pulley for abnormal noise.

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.



MNEC-07-045



MNDB-07-002

MAINTENANCE

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.

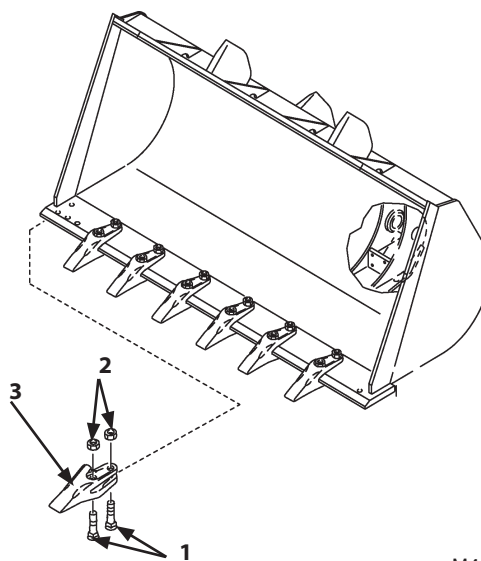
1. Raise the bucket to an appropriate height with the bucket bottom parallel to the ground. Insert hard wood support blocks under the bucket to support it. Stop the engine.
2. Loosen bolts (1) and nuts (2). Remove bucket teeth (3) or cutting edge (4).
3. Install new teeth (3) or cutting edge (4). If the reverse side of a cutting edge is not worn much, use it again with the unused edge forward. If both sides are worn out, replace it with a new one.
4. Tighten nuts (2).

Tightening torque:

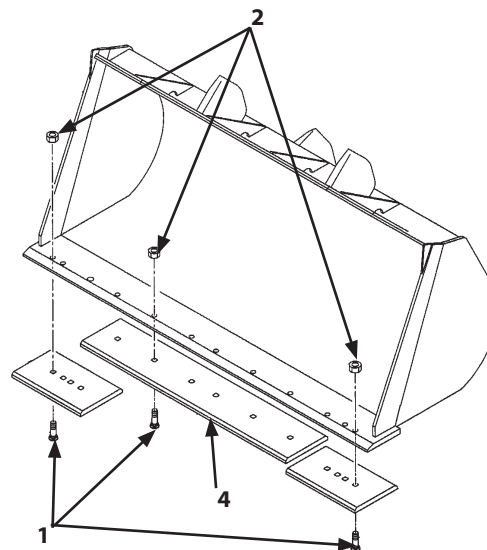
Bucket teeth: 1090 N·m (111 kgf·m, 805 lbf·ft)

Cutting edge: 1980 N·m (202 kgf·m, 1460 lbf·ft)

5. Retighten mounting nuts (2) after a few hours of operation.



M4GB-07-115



M4GB-07-116

MAINTENANCE

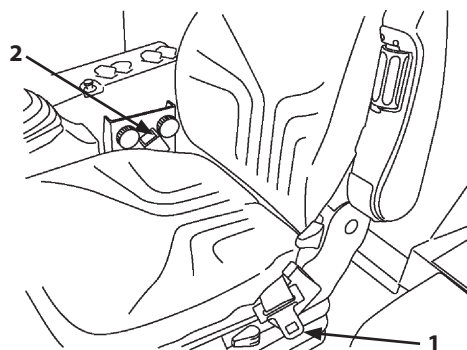
2 Check and Replace Seat Belt and Lower Tether

Check --- 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.

Replace seat belt and lower tether every 3 years, regardless of appearance.

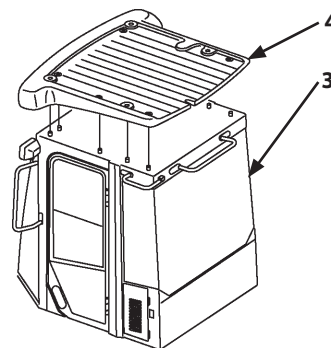


M4GB-07-117

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.



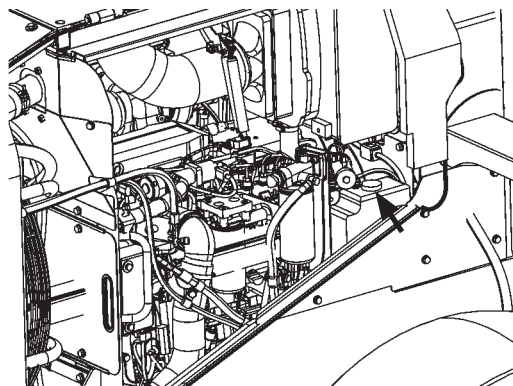
M4GB-07-118

4 Check Windshield Washer Fluid Level

--- every 10 hours (daily)

IMPORTANT: Keep all dirt, dust and other foreign materials out of the tank.

Check the fluid level. If necessary, add the fluid.



MNDB-07-014

MAINTENANCE

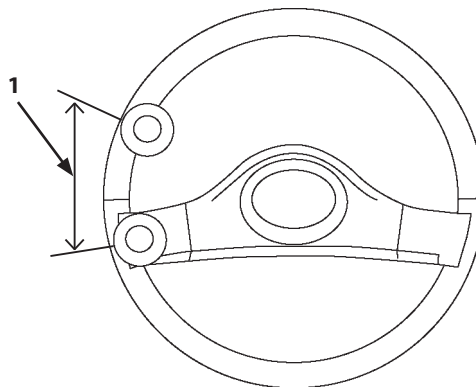
5

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.

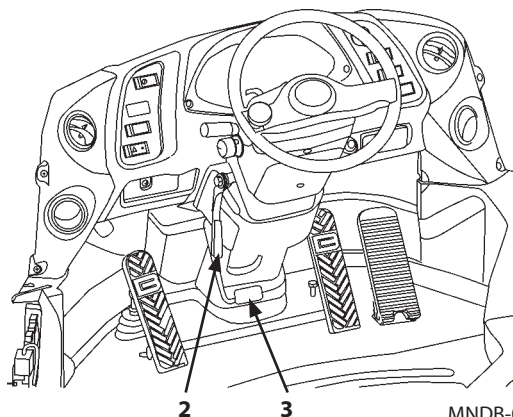
Check that play (1) in steering wheel movement is correct and that steering column tilt telescopic lever (2) and pedal (3) are held securely. In addition, check that the chassis steering stoppers come in contact with the opposing chassis surface stopper when the steering wheel is fully turned and that the steering cylinders operate normally.



MNEC-07-050

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)



MNDB-01-002

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.

MAINTENANCE

6 Check Accelerator Pedal Operation, and Exhaust Gas Color and Noise

--- every 10 hours (daily)

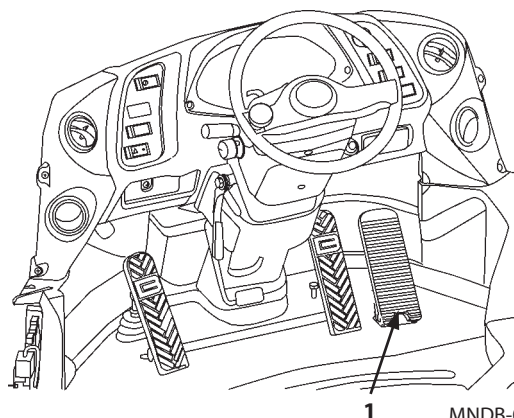
WARNING: Move the forward/reverse lever to neutral. Apply the parking brake. After resting the bucket level to the ground, block the wheels.

While slowly stepping on accelerator pedal (1), check that the engine speed smoothly increases. Then, while slowly returning accelerator pedal (1), check that the engine speed smoothly decreases.

Exhaust Gas Color and Noise:

DANGER: Exhaust inhalation hazard. Ventilate the shop with fresh air when carrying out warming up warm-up operation indoor. Failure to do so may cause asphyxiation from exhaust gas, resulting in death or severe injury.

Exhaust gas color is normally transparent or light blue. Although exhaust gas color is a light white color 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 problems. In addition, check that no abnormal noise is heard coming from the engine or muffler.

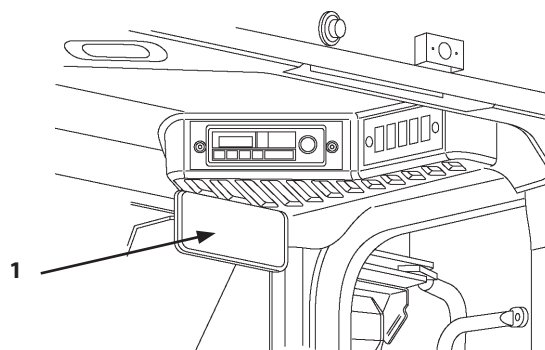


MNDB-01-002

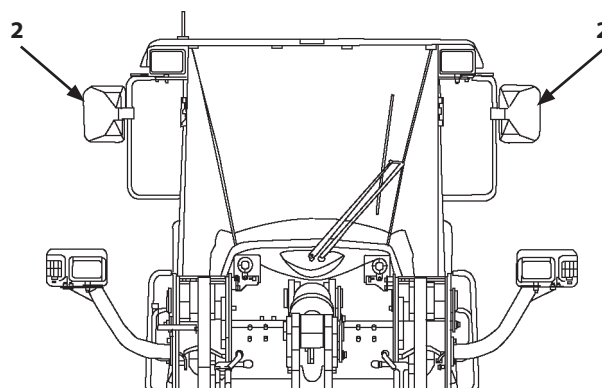
MAINTENANCE

7 Check Rearview Mirror and Inside Rearview Mirror --- every 10 hours

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-01-116

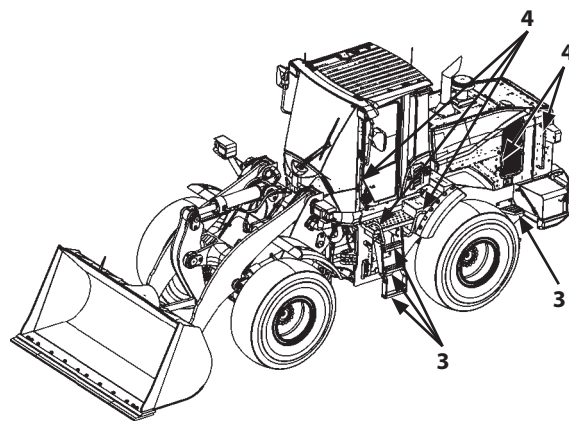


MNEC-07-039

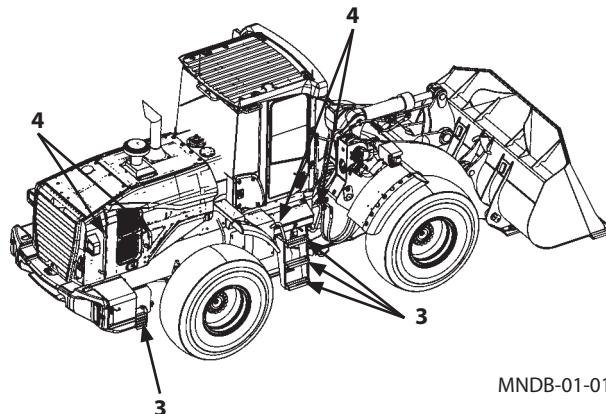
8 Check Steps and Handrails for Damage and Looseness

--- every 10 hours

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.



MNDB-01-009



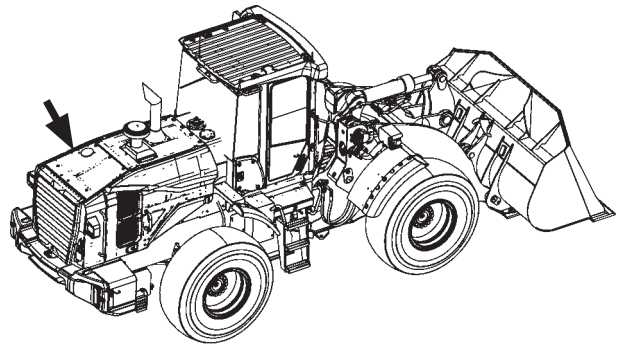
MNDB-01-010

MAINTENANCE

9 Clean Engine Compartment and Hood --- every 10 hours (daily)

CAUTION: Dust or debris accumulated in the engine compartment or around the hood may come in contact with high temperature sections near the muffler, engine or hood, possibly causing fires.

Open the side access cover and check if dust and /or chips debris are accumulated in the engine compartment and/or above the engine. Remove the accumulated dust and debris and/or dust from the engine areas.

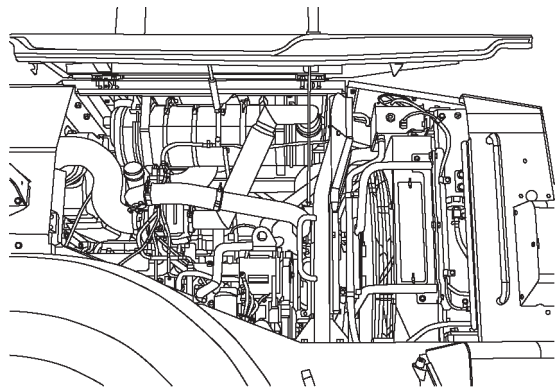


MNDB-01-010

10 Check Sound Absorbing Mat Around Engine --- every 10 hours (Daily)

CAUTION: If the sound absorbing mat in the engine compartment loosens, 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 has loosened. If any part of the mat is found loose, immediately contact your nearest authorized dealer for repair.



MNEC-07-091

11 Check and Adjust Valve Clearance --- every 4500 hours

Consult your nearest authorized dealer for check and repair.

MAINTENANCE

12 Retighten Front Axle and Rear Axle Support Mounting Bolts

--- every 2000 hours

Maintenance required only during first time 50 operating hours.

Check front and rear axle support mounting bolts for looseness.

Tightening torque values of the front axle and rear axle support mounting bolts

Front Axle Mounting Bolt	Rear Axle Support Mounting Bolt
785±150 N·m (80±15 kgf·m) (580±110 lbf·ft)	890±170 N·m (90±17 kgf·m) (655±125 lbf·ft)

MAINTENANCE

13 Tightening and Retightening Torque of Nuts and Bolts

--- every 2000 hours (50 hours at first time only)

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. 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 7-107.

No.	Locations		Bolt Diameter	Quantity	Wrench Size	Torque N·m (kgf·m, lbf·ft)
1	Front axle mounting bolt		24	8	36	785±150 (80±15, 580±110)
2	Rear axle support mounting bolt		24 (Nut)	8	36	890±170 (90±17, 655±125)
3	Wheel rim mounting bolt		24	60	36	890 (91, 655)
4	Propeller shaft mounting bolt *		12	20	17	143 (15, 105)
5	Propeller shaft support bearing mounting bolt		20	2	30	206 (21, 152)
6	Transmission mounting bolt: Bracket *		20	4	30	401 (41, 296)
7	Transmission mounting bolt: Cushion rubber		18	2	27	315 (32, 230)
8	Engine mounting bolt: Bracket *		12	6	19	81.2 (8.3, 60)
9	Engine mounting bolt: Cushion rubber		18	2	27	315 (32, 230)
10	Muffler mounting bolt		10	8	17	50 (5, 37)
11	Counterweight mounting bolt *		30	4	46	1510 (154, 1115)
12	Top center pin upper flange lock		16	7	24	205 (21, 152)
13	Bottom center pin lock		16	1	24	210 (21, 155)
14	Loader front pin lock	70Z7	16	9	24	210 (21, 155)
			12	4	19	90 (9, 66)
		70TM7	12	22	19	90 (9, 66)
			16	14	24	210 (21, 155)
15	Steering cylinder pin lock		12	4	19	90 (9, 66)

* Apply "LOCTITE® 262" to the threads.

MAINTENANCE

No.	Locations	Bolt Diameter	Quantity	Wrench Size	Torque N·m (kgf·m, lbf·ft)
16	Radiator frame mounting bolt *	16	6	24	154 (16, 115)
17	Radiator mounting bolt	8	2	12	17.6 (1.8, 13)
18	Intercooler mounting bolt	8	1	12	17.6 (1.8, 13)
19	Oil cooler mounting bolt	10	2	17	50 (5, 37)
20	Torque converter cooler mounting bolt	10	4	17	36.2 (4, 27)
21	Air conditioner condenser mounting bolt	8	4	12	12.5 (1, 9)
22	Air conditioner compressor mounting bolt	8	4	12	24.5 to 29.4 (2.5 to 3, 18 to 22)
23	Cab cushion rubber mounting bolt *	16 (Nut)	4	24	205 (21, 151)
24	Bucket tooth mounting bolt (Optional)	**11/4'	16	46	1940 (198, 1430)
25	Cutting edge mounting bolt	**1'	12	37.47	1068 (109, 790)
26	Wear plate mounting bolt	**1'	4	37.47	1068 (109, 790)

* Apply "LOCTITE® 262" to the threads.
 Figures with ** mark are shown in Inch.

MAINTENANCE

Tightening Torque Chart

Bolt Dia. mm (in)	Tightening torque N·m (kgf·m) (lbf·ft)						Wrench size mm (in)		
	   (11T)	   (8T)	 (4T)	Hexagon Bolt (8~11T)	Flanged Bolt (8T)	Socket Bolt			
6 (0.24)			3~4 (0.3~0.4) (2.2~3)	10 (0.39)	10 (0.39)	5 (0.20)			
8 (0.31)	30 (3) (22)	20 (2) (14.8)	10 (1) (7.4)	13 (0.51)	12 (0.47)	6 (0.24)			
10 (0.39)	65 (6.5) (48)	50 (5) (36.9)	20 (2) (14.8)	17 (0.67)	14 (0.55)	8 (0.31)			
12 (0.47)	110 (11) (81)	90 (9) (66.4)	35 (3.5) (25.8)	19 (0.75)	17 (0.67)	10 (0.39)			
14 (0.55)	180 (18) (133)	140 (14) (104)	55 (5.5) (40.6)	22 (0.87)		12 (0.47)			
16 (0.63)	270 (27) (199)	210 (21) (155)	80 (8) (59)	24 (0.94)	22 (0.87)	14 (0.55)			
18 (0.71)	400 (40) (295)	300 (30) (221)	120 (12) (88.5)	27 (1.06)		14 (0.55)			
20 (0.79)	550 (55) (406)	400 (40) (295)	170 (17) (125)	30 (1.18)	27 (1.06)	17 (0.67)			
22 (0.87)	750 (75) (553)	550 (55) (406)	220 (22) (162)	32 (1.26)					
24 (0.94)	950 (95) (700)	700 (70) (516)	280 (28) (207)	36 (1.42)	32 (1.26)	19 (0.75)			
27 (1.06)	1400 (140) (1033)	1050 (105) (774)	400 (40) (295)	41 (1.61)					
30 (1.18)	1950 (195) (1438)	1450 (145) (1069)	550 (55) (406)	46 (1.81)					
33 (1.30)	2600 (260) (1918)	1950 (195) (1438)	750 (75) (553)	50 (1.97)					
36 (1.42)	3200 (320) (2360)	2450 (245) (1807)	950 (95) (700)	55 (2.17)					

CAUTION: If counterweight mounting bolts are loosened, consult your nearest authorized dealer.

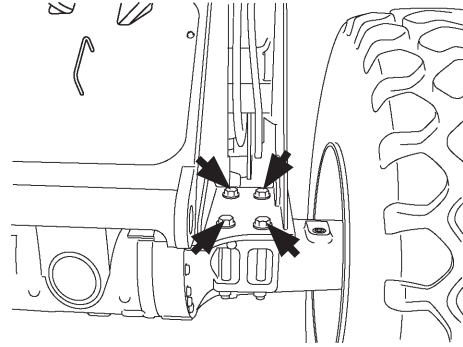
IMPORTANT:

- 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.

MAINTENANCE

1. Front axle mounting bolt

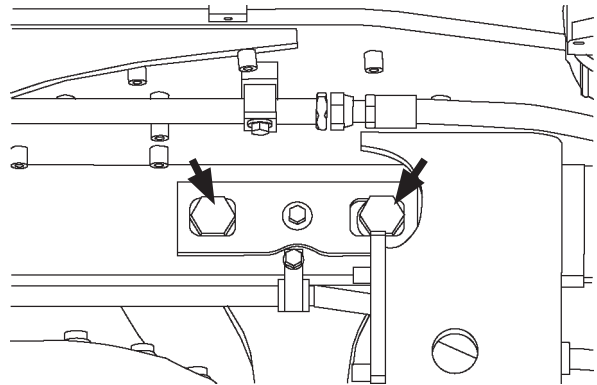
Bolt dia. mm (in)	24 (0.9)
Quantity	8



M4GB-07-124

2. Rear axle support mounting bolt

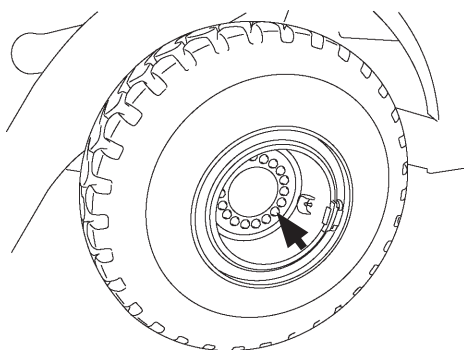
Bolt dia. mm (in)	24 (0.9)
Quantity	8



MNEC-07-052

3. Wheel rim mounting bolt

Bolt dia. mm (in)	24 (0.9)
Quantity	60



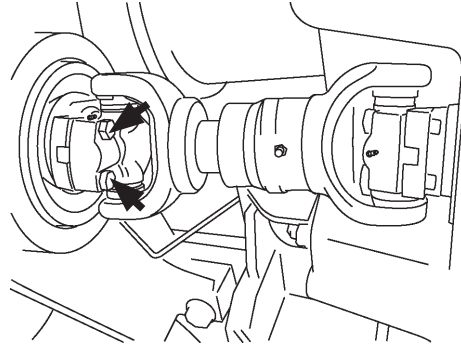
M4GB-07-127

MAINTENANCE

4. Propeller shaft mounting bolt

Bolt dia. mm (in)	12 (0.5)
Quantity	20

 NOTE: Apply LOCTITE#262 or equivalent.

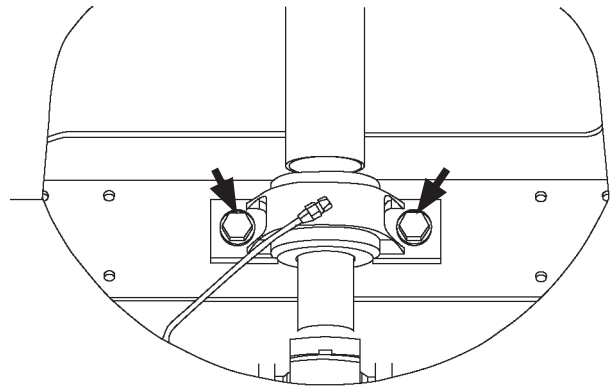


M4GB-07-017

5. Propeller shaft support bearing mounting bolt

Bolt dia. mm (in)	20 (0.8)
Quantity	2

 NOTE: Apply LOCTITE#262 or equivalent.

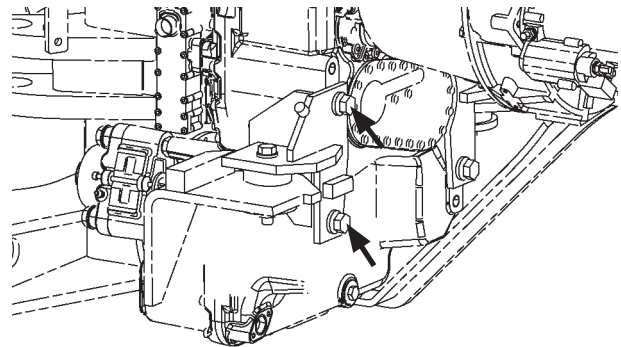


MNEC-07-053

6. Transmission mounting bolt: Bracket

Bolt dia. mm (in)	20 (0.8)
Quantity	4

 NOTE: Apply LOCTITE#262 or equivalent.



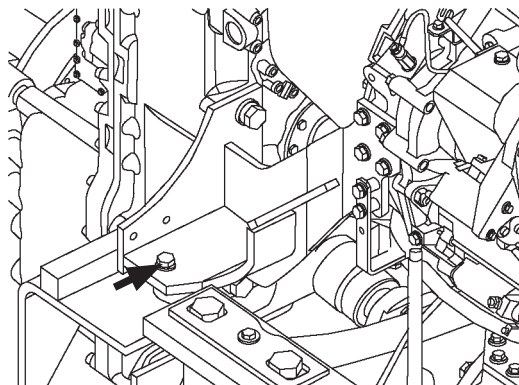
MNDB-07-010

MAINTENANCE

7. Transmission mounting bolt: Cushion rubber

Bolt dia. mm (in)	18 (0.7)
Quantity	2

 NOTE: Apply LOCTITE#262 or equivalent.

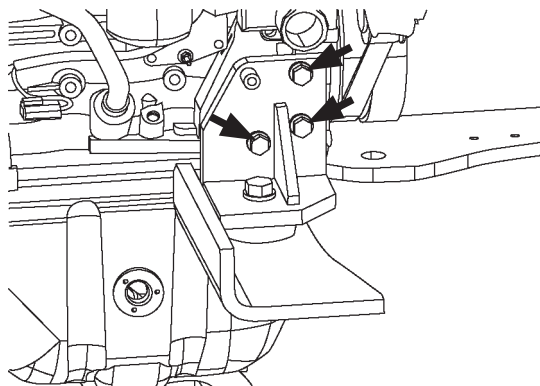


MNEC-07-054

8. Engine mounting bolt: Bracket

Bolt dia. mm (in)	12 (0.5)
Quantity	6

 NOTE: Apply LOCTITE#262 or equivalent.

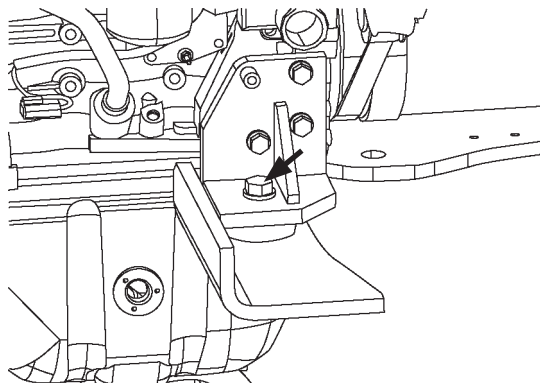


MNEC-07-093

9. Engine mounting bolt: Cushion rubber

Bolt dia. mm (in)	18 (0.7)
Quantity	2

 NOTE: Apply LOCTITE#262 or equivalent.

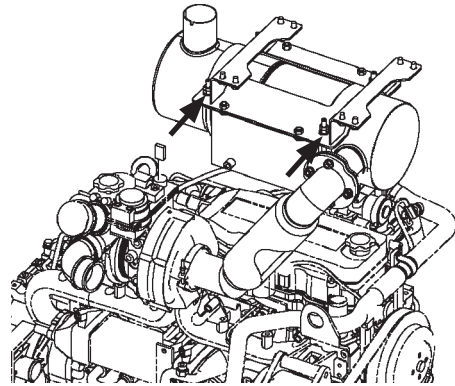


MNEC-07-093

MAINTENANCE

10. Muffler mounting bolt

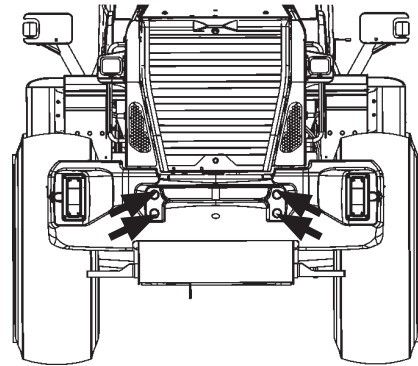
Bolt dia. mm (in)	10 (0.4)
Quantity	8



MNDB-07-009

11. Counterweight mounting bolt

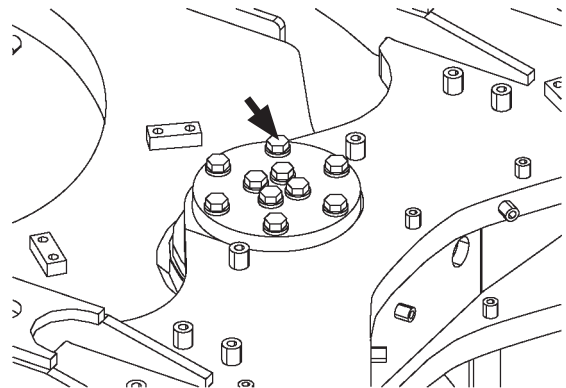
Bolt dia. mm (in)	30 (1.2)
Quantity	4



MNDB-07-013

12. Top center pin upper flange lock

Bolt dia. mm (in)	16 (0.6)
Quantity	7

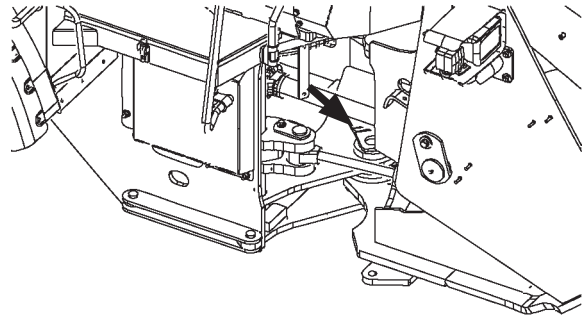


MNEC-07-068

MAINTENANCE

13. Bottom center pin lock

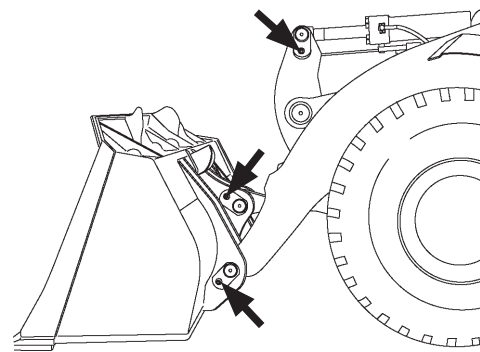
Bolt dia. mm (in)	16 (0.6)
Quantity	1



MNEC-07-058

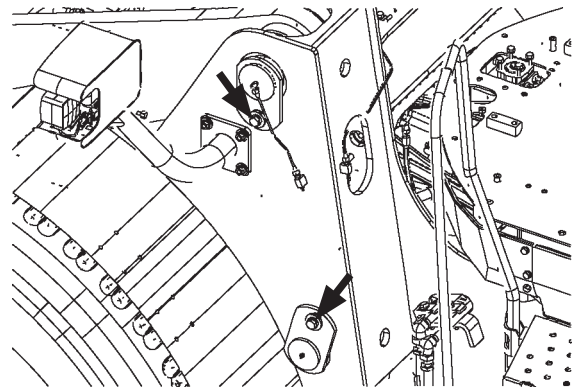
14. Loader front pin lock

	70Z7		70TM7	
Bolt dia. mm (in)	16 (0.6)	12 (0.5)	16 (0.6)	12 (0.5)
Quantity	9	4	14	22



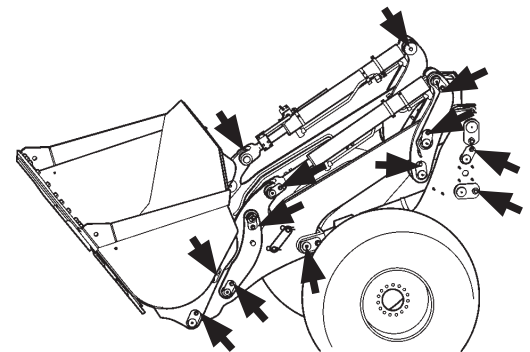
70Z7

M4GB-07-137



70Z7

MNEC-07-006



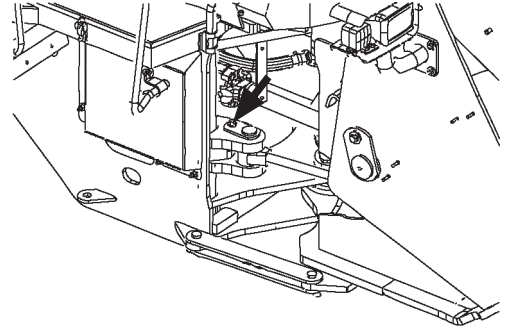
70TM7

M4GB-07-180

MAINTENANCE

15. Steering cylinder pin lock

Bolt dia. mm (in)	12 (0.5)
Quantity	4

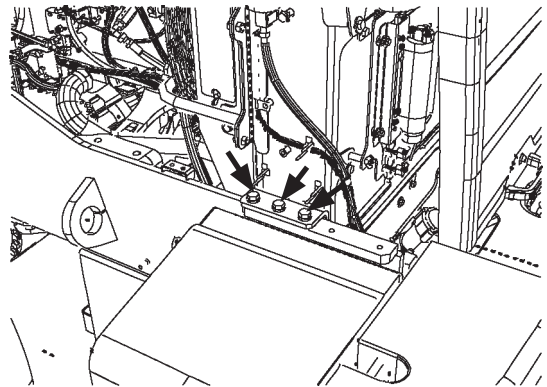


MNEC-07-004

16. Radiator frame mounting bolt

Bolt dia. mm (in)	16 (0.6)
Quantity	6

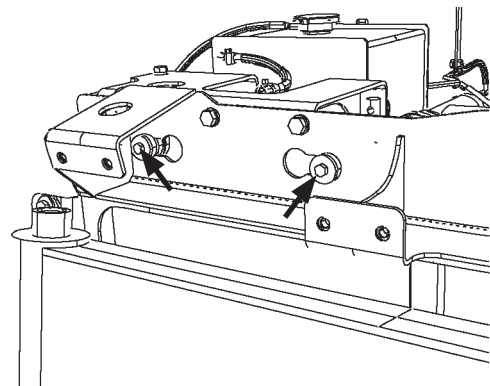
 **NOTE:** Apply LOCTITE#262 or equivalent.



MNEC-07-095

17. Radiator mounting bolt

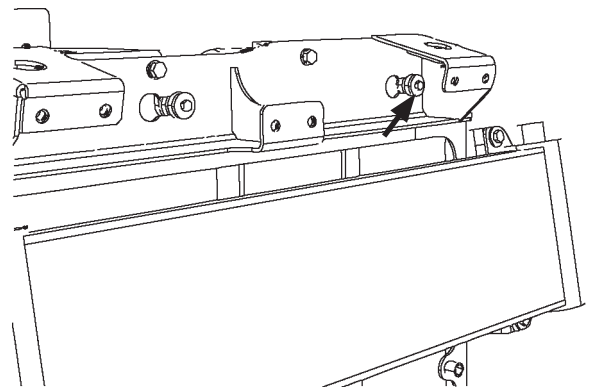
Bolt dia. mm (in)	8 (0.3)
Quantity	2



MNEC-07-096

18. Intercooler mounting bolt

Bolt dia. mm (in)	8 (0.3)
Quantity	1

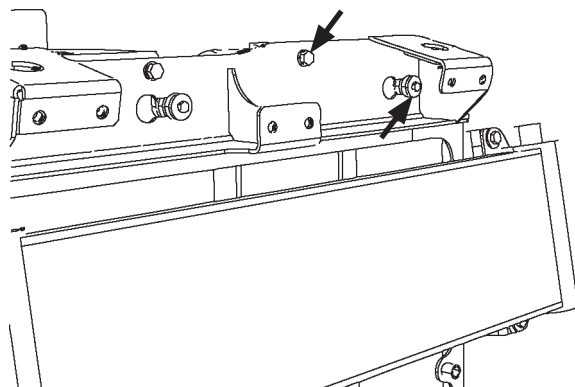


MNEC-07-097

MAINTENANCE

19. Oil cooler mounting bolt

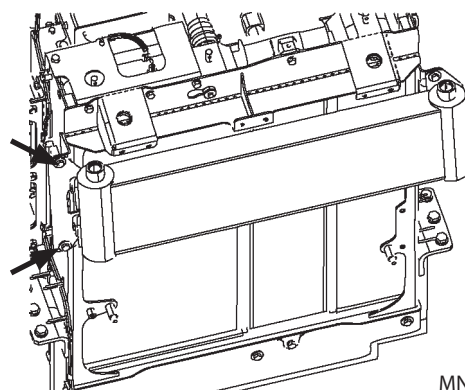
Bolt dia. mm (in)	10 (0.4)
Quantity	2



MNEC-07-097

20. Torque converter cooler mounting bolt

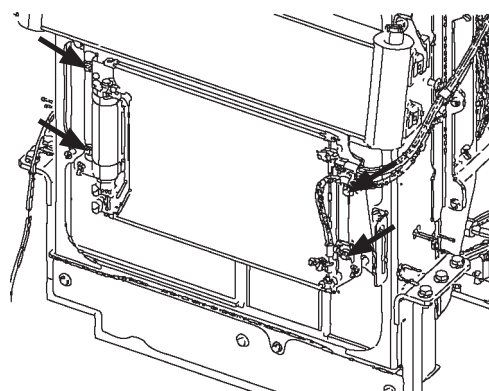
Bolt dia. mm (in)	10 (0.4)
Quantity	4



MNEC-07-098

21. Air conditioner condenser mounting bolt

Bolt dia. mm (in)	8 (0.3)
Quantity	4

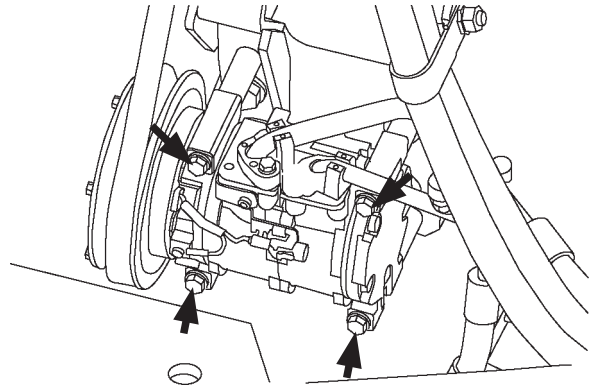


MNEC-07-099

MAINTENANCE

22. Air conditioner compressor mounting bolt

Bolt dia. mm (in)	8 (0.3)
Quantity	4

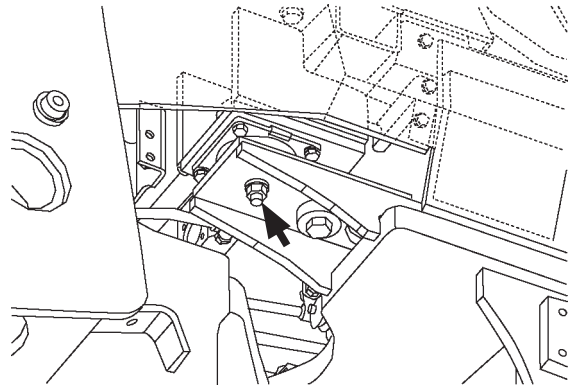


MNEC-07-065

23. Cab cushion rubber mounting bolt

Bolt dia. mm (in)	16 (0.6)
Quantity	4

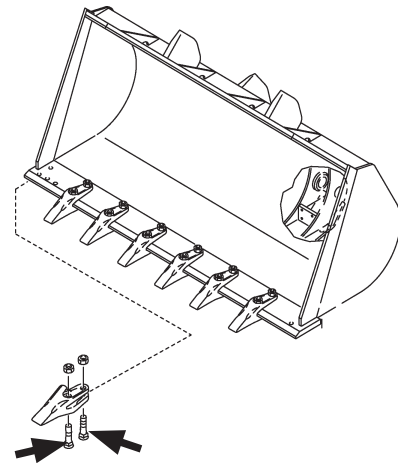
 NOTE: Apply LOCTITE#262 or equivalent.



MNEC-07-066

24. Bucket tooth mounting bolt (Optional)

Bolt dia. in	1 1/4"
Quantity	16

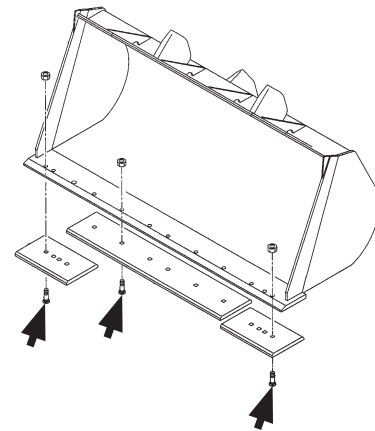


M4GB-07-115

MAINTENANCE

25. Cutting edge mounting bolt

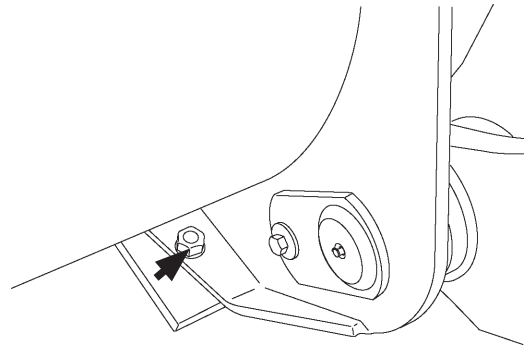
Bolt dia. in	1"
Quantity	12



M4GB-07-116

26. Wear plate mounting bolt

Bolt dia. in	1"
Quantity	4



M4GB-07-150

MAINTENANCE

MEMO

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MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS

Maintenance Under Special Environmental Conditions

WARNING:

- Before operating the machine in a river, check the riverbed conditions in advance.
- 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 (17.7 in) 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 System :	Clean the filter element and strainer regularly at shorter service intervals.
	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 Kawasaki 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 Frames :	Keep tires and frames clean. Park the machine on a hard surface to prevent the tires from freezing to the ground.
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 frame :	Remove the accumulated paper and/or waste from the surroundings around the loader frame 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 Kawasaki 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 Kawasaki dealer when the machine is operated under special condition (s).

MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS

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 in the engine crankcase 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.

6. Use anti-freeze type washer fluid.

After taking the measures as recommended above, start operation of the machine.

MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS

 **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.

7. After preheating, start and warm up the engine.
8. 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.
9. Road surfaces covered with snow, especially when snow has been compacted, will be frozen. Use tire chains on all four wheels.
10. 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.

MEMO

STORAGE

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 being 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.
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.

STORAGE

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 being 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.

STORAGE

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 fan 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.

STORAGE

MEMO

[illegible]

TROUBLESHOOTING

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
	Abnormal fan operation	Adjust or repair
	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

TROUBLESHOOTING

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 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 1-68.
	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 filter	Replace
	Clogged feed pump strainer	Clean
	Air mixed in the fuel supply line	Bleed air
	Poor fuel quality	Replace

 **NOTE:** * Consult your nearest authorized dealer.

TROUBLESHOOTING

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
	Broken control valve spool	* Replace
Only one actuator is inoperable.	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
	Broken oil seal in cylinder	* Repair, Replace
Only one cylinder is inoperable or has no power.	Oil leak due to damage to cylinder rod	* Repair, Replace
Oil overheats	Clogged oil cooler	* Clean, Replace
	Faulty fan motor and pump	* Repair, Replace
Oil leak from low pressure hose	Loose clamp	Retighten
	Faulty suction manifold	* Repair, Replace

 **NOTE:** * Consult the nearest authorized dealer.

TROUBLESHOOTING

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.

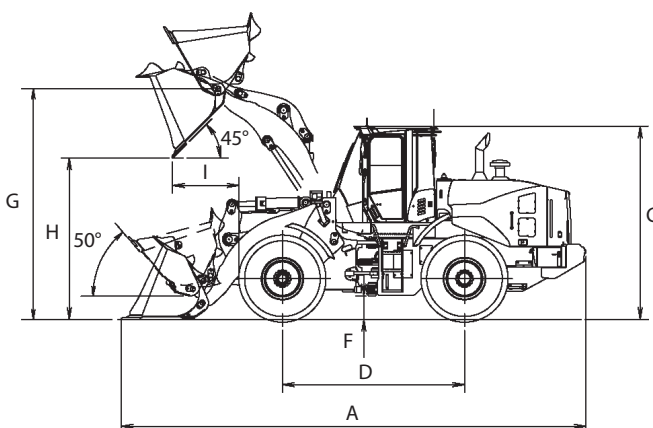
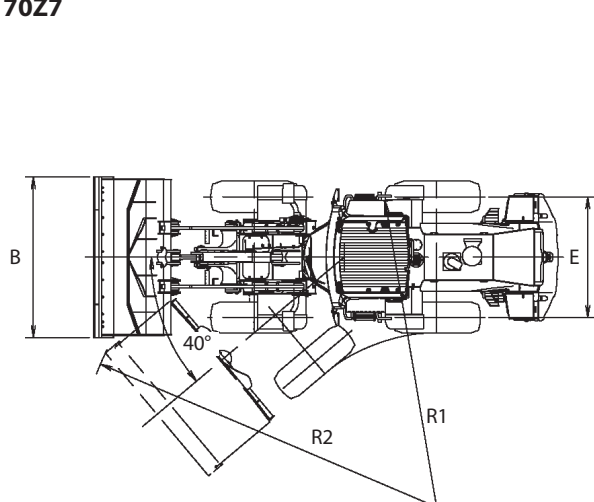
7. Others

The machine may have a noise, excessive vibration, and abnormal smell when any trouble occurs. Always beware of the machine conditions during operation.

SPECIFICATIONS

Specifications

70Z7



MNDB-12-001



NOTE: This illustration includes optional equipment.

(Optional equipment differs depending on the destination of the machine.)

Model	-	70Z7
Bucket Capacity: heaped	m ³ (Y ³)	3.2 (4.2)
Operating Weight	kg (lbs)	14420 (31790) [14730 (32475)]
Tipping Load (Full Turn)	kg (lbs)	10240 (22575) [10340 (22795)]
Engine		CUMMINS QSB6.7
A: Overall Length	mm (in)	7940 (313) [8020 (315)]
B: Overall Width (Bucket)	mm (in)	2730 (108)
C: Overall Height	mm (in)	3280 (129)
D: Wheel Base	mm (in)	3100 (122)
E: Tread	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)	2730 (107.5)
I: Dumping Reach (45 °)	mm (in)	1140 (45)
R1: Minimum Rotation Radius	mm (in)	5300 (209)
R2: Minimum Rotation Radius	mm (in)	6230 (245)
Travel Speed Forward/Reverse	km/h (mph)	38.5/26.5 (23.9/16.5)
Transmission Speeds (F/R)	-	5/3
Articulation Angle (Left/Right) deg	(°)	40
Tire Size	-	20.5-25-12PR (L2)



NOTE: • LSC, Bolt-On Edges

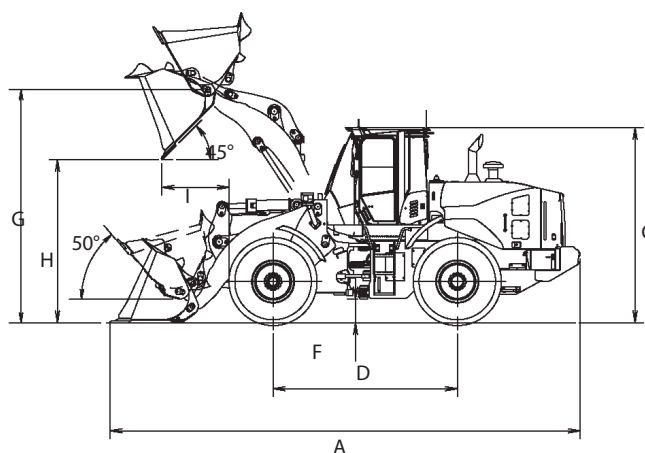
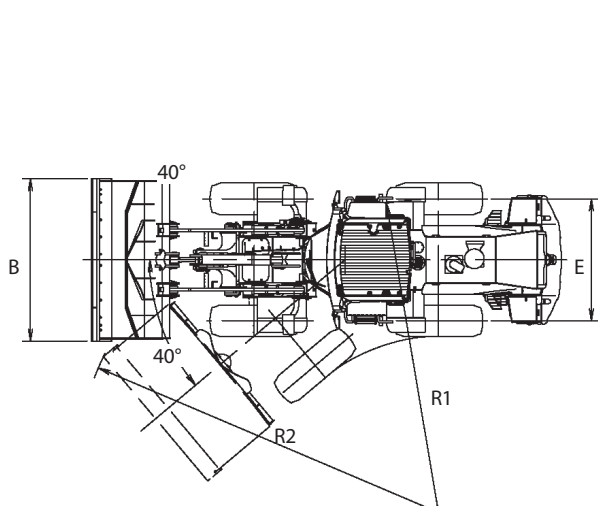
• These specifications are subject to change without notice.

• The value in [] shows the specification when the machine is equipped with additional counterweight.

SPECIFICATIONS

Specifications

70TM7



MNDB-12-003

Model	-	70TM7	
		Quick coupler	General purpose(Stock pile)
Bucket Capacity: heaped	m ³ (Y ³)	2.6 (3.4)	2.8 (3.7)
Operating Weight	kg (lbs)	16170 (35650)	15910 (35080)
Tipping Load	kg (lbs)	9190 (20260)	10020 (22090)
Engine		CUMMINS QSB6.7	
A: Overall Length	mm (in)	8260 (325)	8180 (322)
B: Overall Width (Bucket)	mm (in)	2730 (107)	
C: Overall Height	mm (in)	3350 (132)	
D: Wheel Base	mm (in)	3100 (122)	
E: Tread	mm (in)	2050 (80.7)	
F: Ground Clearance	mm (in)	460 (18.1)	
G: Bucket Hinge Height	mm (in)	4110 (162)	
H: Dumping Clearance (45 °)	mm (in)	2780 (109)	2840 (112)
I: Dumping Reach (45 °)	mm (in)	1360 (53.5)	1270 (50.0)
R1: Minimum Rotation Radius	mm (in)	5300 (209)	
R2: Minimum Rotation Radius	mm (in)	6280 (247)	6260 (246)
Travel Speed Forward/Reverse	km/h (mph)	41.7/31.0 (25.9/19.3)	
Transmission Speeds (F/R)	-	5/3	
Articulation Angle (Left/Right) deg	(°)	40	
Tire Size	-	23.5-25-16PR (L3)	



NOTE: • * BOC (Bolt-On Cutting Edge)

• These specifications are subject to change without notice.

OTHER ATTACHMENTS AND DEVICE

Quick Coupler

How to Use Hydraulic Loader Coupler

When the optional hydraulic coupler system is provided, installation and removal of the front attachment, such as bucket, clamp, becomes quick and easy work. Follow the procedures below to couple or uncouple the attachment.

 **NOTE:** Regardless of the attachment types, the coupling procedure is the same.

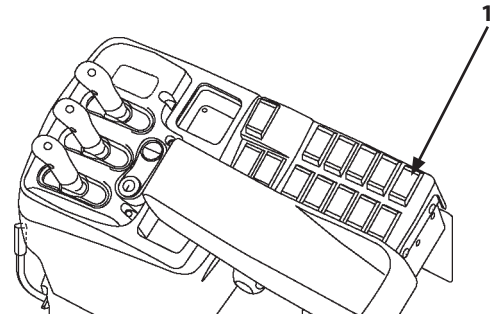
 **WARNING: CRUSH HAZARD.**
Improperly locked attachment could release and cause serious injury or death.

Coupling to Attachment

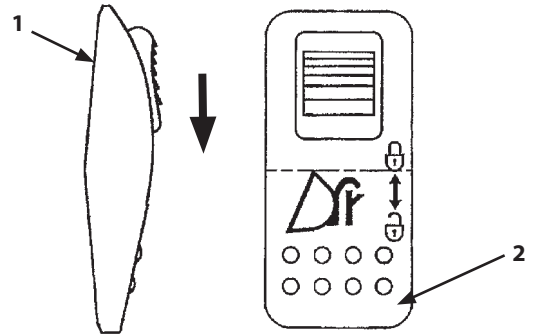
IMPORTANT:

Make sure that hydraulic coupler switch (1) is placed to "unlock" position (2).

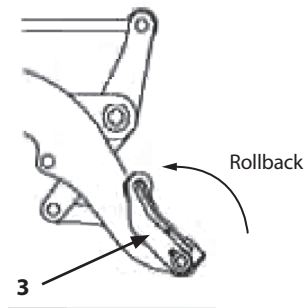
1. In front of the attachment, lower the boom using the boom control lever.
2. Hold the bucket control lever in "rollback" position until locking plungers have fully retracted.
3. Slowly move the machine forward and roll coupler (3) forward to "dump" position to align with attachment hook (4).
4. Raise coupler (3) into position into hook (4).



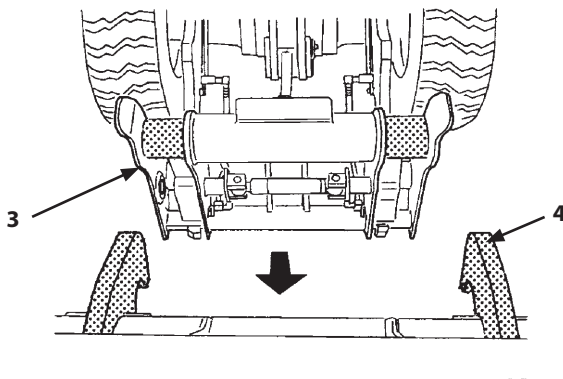
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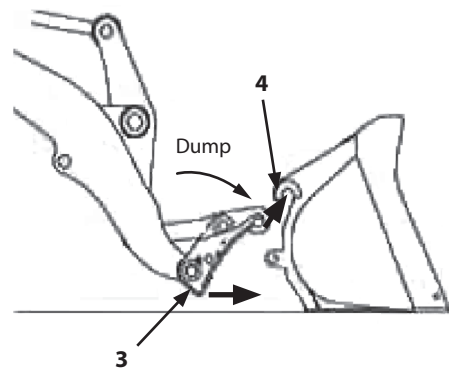
M4GB-01-175



90Z7-13-03



M4GB-13-004

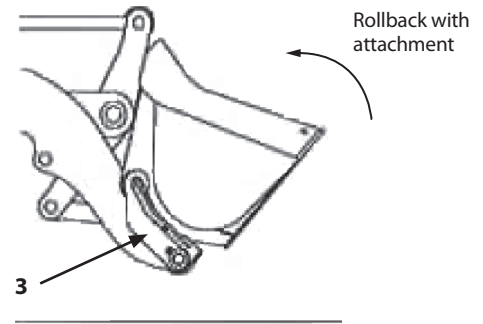


90Z7-13-04

OTHER ATTACHMENTS AND DEVICE

Quick Coupler

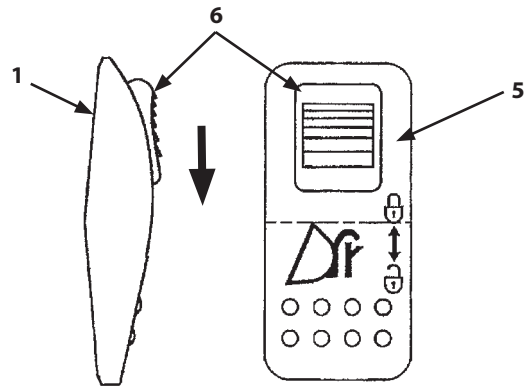
5. Roll back coupler (3) with attachment to align the attachment pin holes with the coupler plungers.



90Z7-13-05

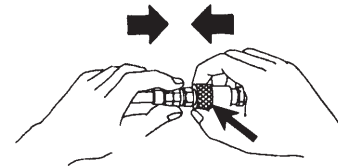
6. Press hydraulic coupler switch (1) down to "lock" position (5) while sliding lock switch (6) to your side. Hold the bucket control lever in the "Roll Back" position until the coupler plungers are fully extended.
7. Visually confirm engagement of plungers by lifting coupler into view.

⚠ WARNING: Do not operate the machine if attachment is loose. Visually check the coupler to verify it is securely attached. Make sure plungers are fully engaged into attachment ribs.



M4GB-01-175

8. Connect hydraulic hoses, if necessary.



90M4GB-13-07

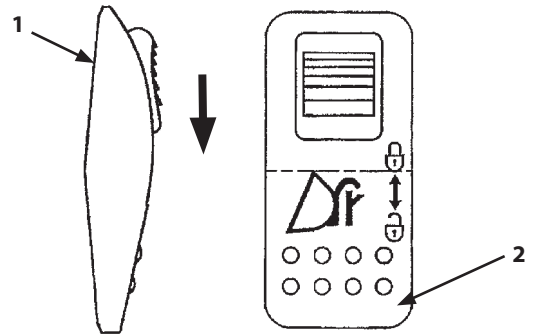
OTHER ATTACHMENTS AND DEVICE

Quick Coupler

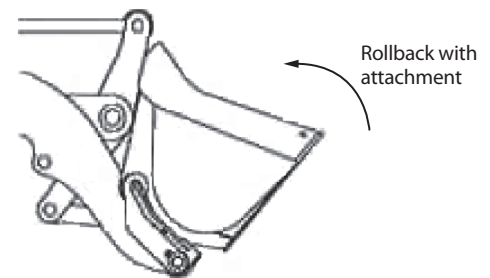
Uncoupling from Attachment

⚠ WARNING: PINCH HAZARD.
Keep clear of coupler cylinder plungers. Coupler lock pins will extend to locked position when switch is in "lock" position and electrical power is shut-off. Serious injury could occur.

1. Press hydraulic coupler switch (1) down to "unlock" position (2).
2. Hold the bucket control lever in "Rollback" position until locking plungers have fully retracted.

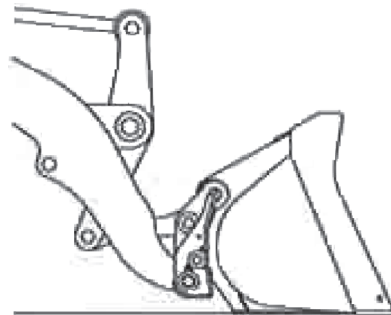


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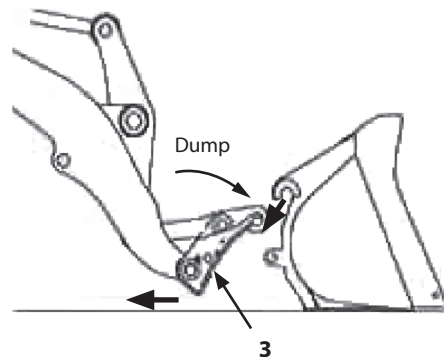
3. Lower the attachment onto the ground.

90Z7-13-05



4. Roll coupler (3) forward to "dump" position while slowly moving the machine backward away from the attachment.

90Z7-13-06



90Z7-13-04

OTHER ATTACHMENTS AND DEVICE

Quick Coupler

General Maintenance

Daily

- Inspect the locking mechanism
- Inspect hoses for leaks
- Apply grease to zerk fittings

Every 1000 hours

- Inspect rollback & dump stoppers, if applicable.

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