Kawasaki

85Z7

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OPERATION & MAINTENANCE MANUAL

WHEEL LOADER

85Z7

Powered by ISUZU 6HK1 Engine

Serial No. 85J1-5001 and up

NOTICE

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

MEMO

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

Object Handling

CRANING OPERATION USING THE MACHINE IS NOT ALLOWED.

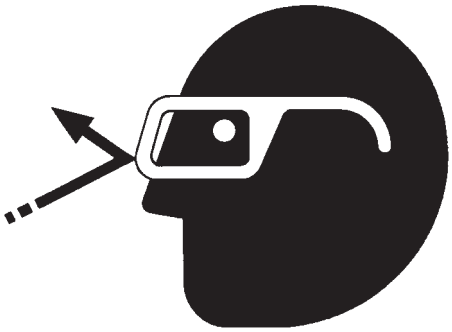
- If a lifted load should fall, any person nearby may be struck by the falling load or may be crushed underneath it, resulting in serious injury or death.

  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

Clean up Flammables:

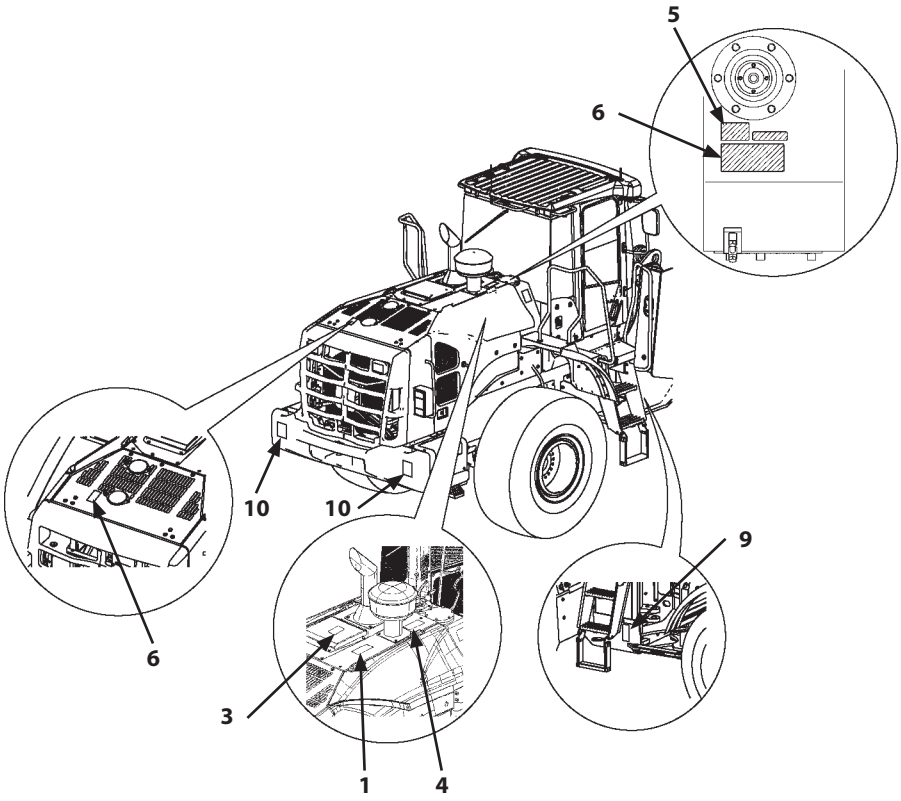
- Spilled fuel and oil, and trash, grease, debris, accumulated coal dust, and other flammables may cause fires.
  - Prevent fires by inspecting and cleaning the machine daily, and by removing adhered oil or accumulated flammables immediately. Check and clean high temperature parts such as the exhaust 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.

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.



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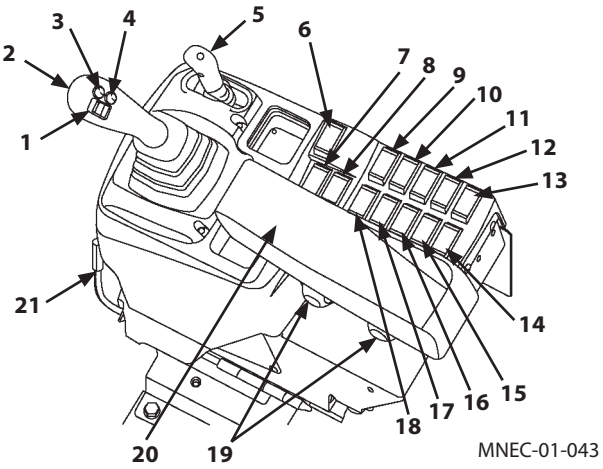
MEMO

Right Console

Multi-Function Joystick Type

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



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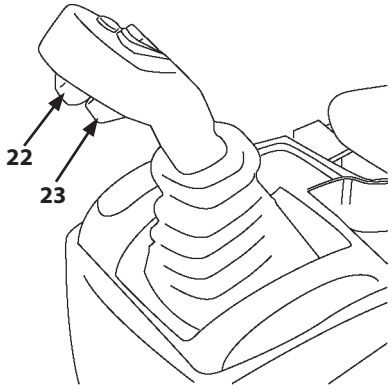


MNEC-01-044

Default Setting

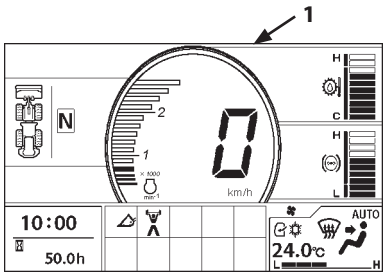
Function	Item	Default
Auto Idling-Stop	ON/OFF of auto idling-stop function	OFF
	Time period for auto idling-stop activation	1 min
Rear View Camera Monitor	ON (Constant display) OFF (No display) AUTO (Display at reverse operation only)	AUTO
Exhaust Filter Regeneration Inhibited	Inhibited regeneration	OFF
Shift Change Delay Mode (Transmission Setting)	ON/OFF of shift (travel speed) change delay mode	OFF
Parallel/Tandem Switching Height	Height at which parallel and tandem circuit operation are switched	Boom is level to the ground
Warm Up	Increases engine speed at engine start to help warm up in cold environment	OFF

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

Display	Contents of Alarms	Remedy
	Hydraulic Oil Overheat Alarm	Hydraulic oil temperature is above normal. Stop operation. Run the engine at slow idle speed to lower the oil temperature.
	Axle Oil Temperature Alarm	Axle oil temperature is above normal. Check if the service brake drags.
	Transmission Oil Temperature Alarm	Transmission oil temperature is above normal. Stop operation. Run the engine at slow idle speed to lower the oil temperature. Use correct range for machine operation, and do not stall torque converter.
	Engine Trouble Alarm	Engine or engine related parts are abnormal. Immediately set the machine in the park position, apply parking brake, stop the engine and contact your authorized dealer.
	Transmission Alarm	Transmission or transmission related parts are abnormal. Immediately set the machine in the park position, apply parking brake, stop the engine and contact your authorized dealer.
	Engine Oil Pressure Alarm	Engine oil pressure has decreased. Immediately stop the engine, and apply parking brake. Check the engine oil system and oil level.
	Main Pump Oil Pressure Alarm	Main pump oil pressure has decreased. Stop machine operation, and apply parking brake. Check the piping of front attachment for oil leaks.
	Boost Temperature Increasing Alarm	Intake air temperature is abnormally high. Stop operation. Check intercooler for clogging and intake air piping connections.

Brightness Adjustment

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



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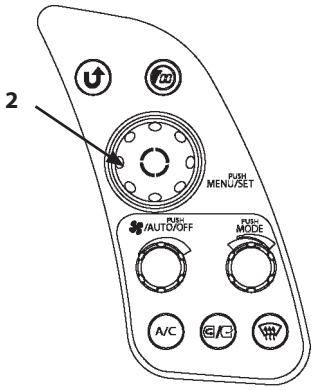
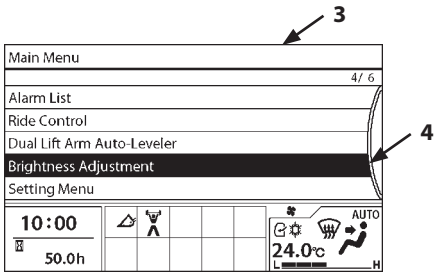


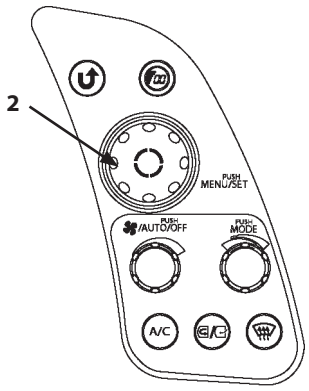
MNEC-01-006

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



85MNEC-01-120EN

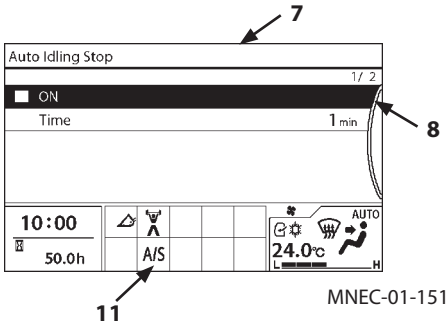
5. Press selector knob (2) to display Auto Idling Stop screen (7).



MNEC-01-006

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

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

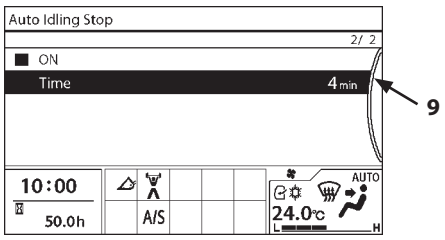


MNEC-01-151EN-KC

Acting Time Setting

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

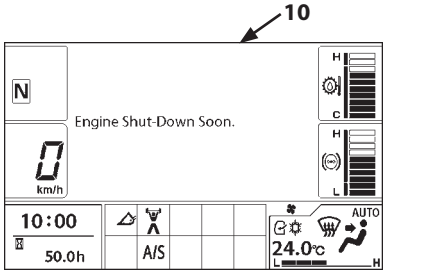
   Rotate selector knob (2) counterclockwise to decrease idle time by 1 minute steps.
3. Press selector knob (2) to make the change.



MNEC-01-152EN-KC

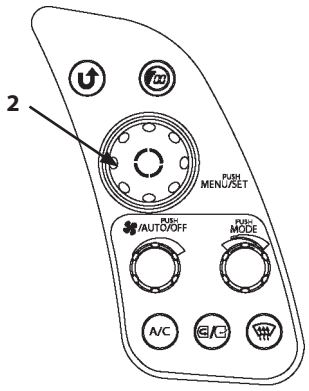
NOTE: The idle time can be set to 1, 2, 3, 4, 5, 7, 10, 15, 20, 25 or 30 minutes. Observe local and federal engine idling regulations.

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



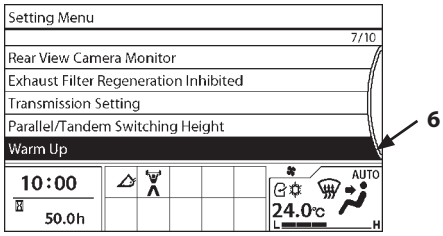
MNEC-01-153EN-KC

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



MNEC-01-006

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

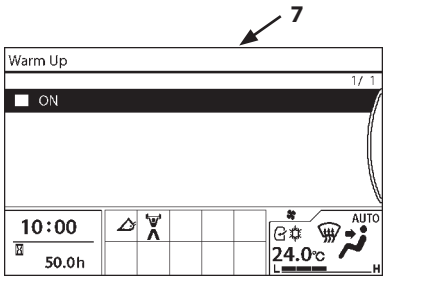


MNEC-01-200EN-KC

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

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

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



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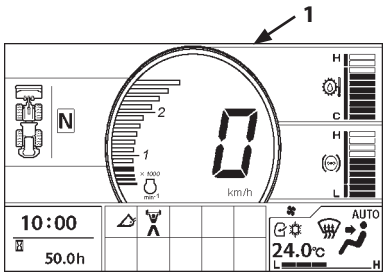
Time Remains and Maintenance Interval

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



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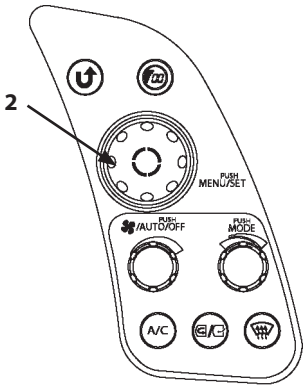

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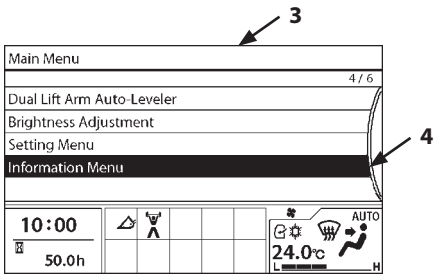
2. Rotate selector knob (2) to highlight Information Menu (4).



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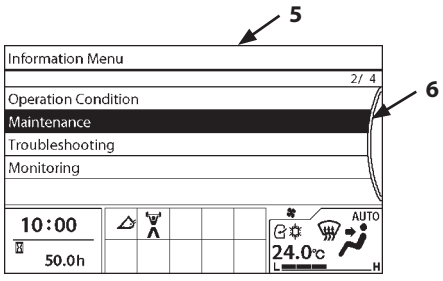
3. Press selector knob (2) to display Information Menu screen (5).

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



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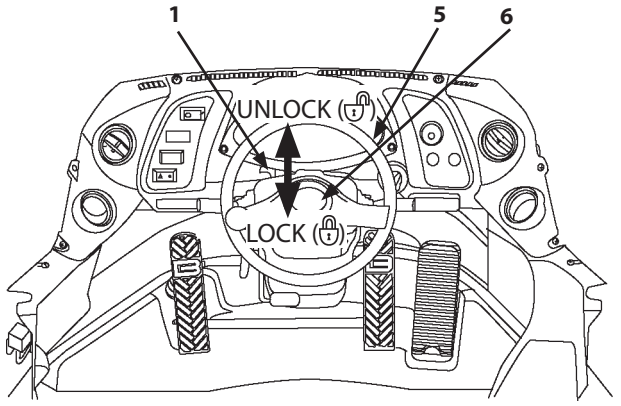
Neutral Lever Lock (for the Forward/Reverse Lever)

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 (🔒)



MNEC-01-036

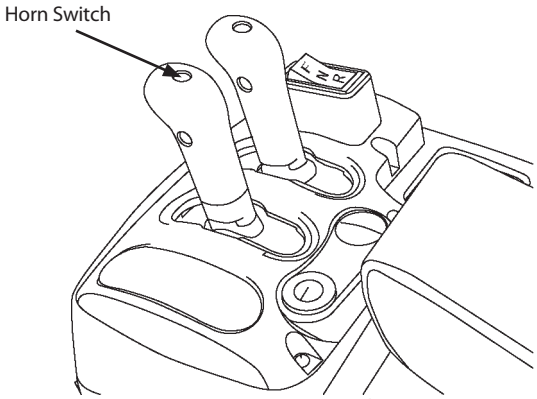
Steering Wheel

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

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

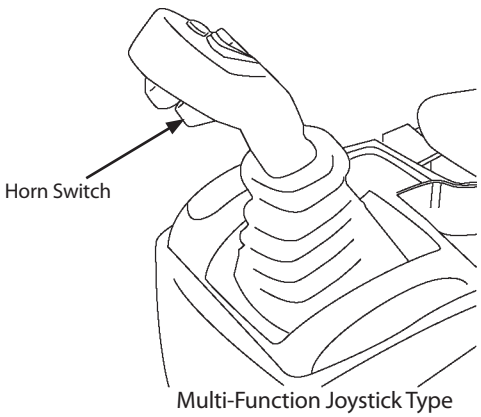
Horn Switch

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



Fingertip Control Type

MNEC-01-042



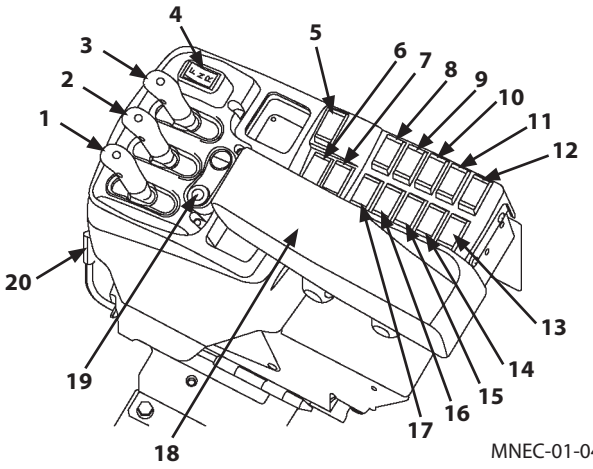
Multi-Function Joystick Type

MNEC-01-044

Right Console / Switches

Fingertip Control Type

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



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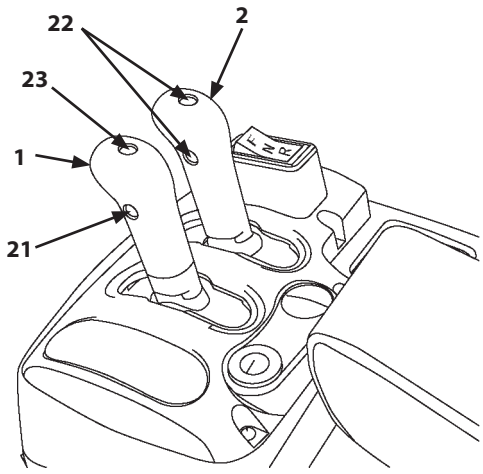

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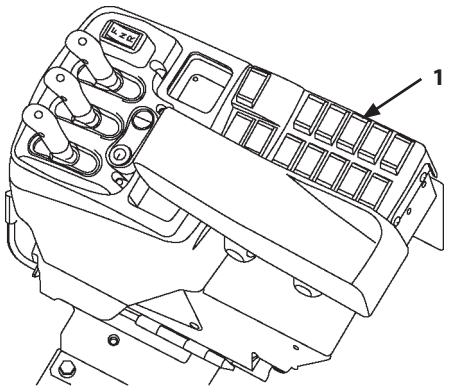
Fan Reverse Rotation Switch

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.



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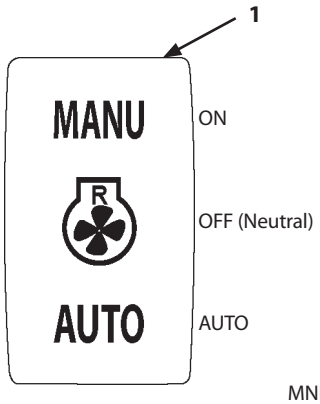
OFF

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.



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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.

Components Name

1- Monitor

2- Control Panel

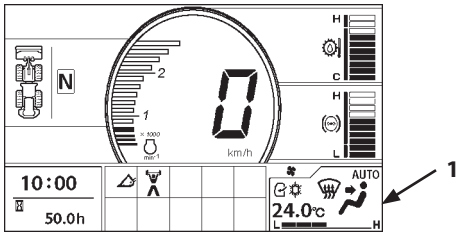
3- Temperature Control Switch (Rotate)/Mode Switch (Press)

4- Defroster Switch

5- Circulation/Fresh Air Switch

6- Air Conditioner ON/OFF Switch

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



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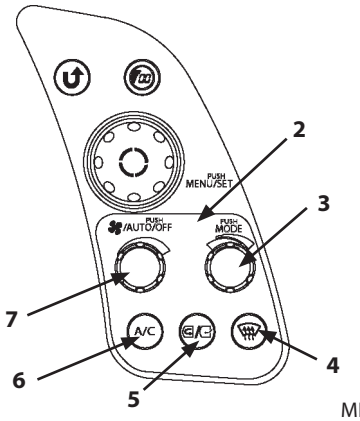


MNEC-01-006

8- Defroster Vent

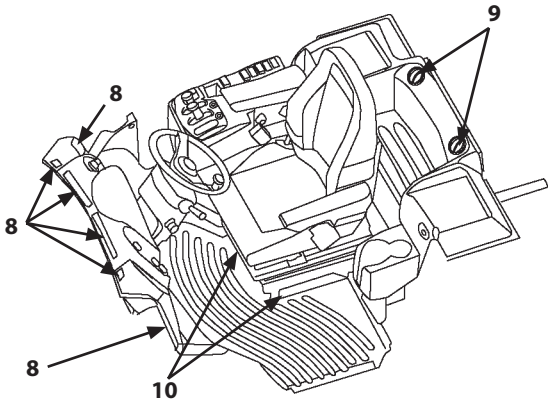
9- Rear Vent

10- Foot Vent

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

NOTE:

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



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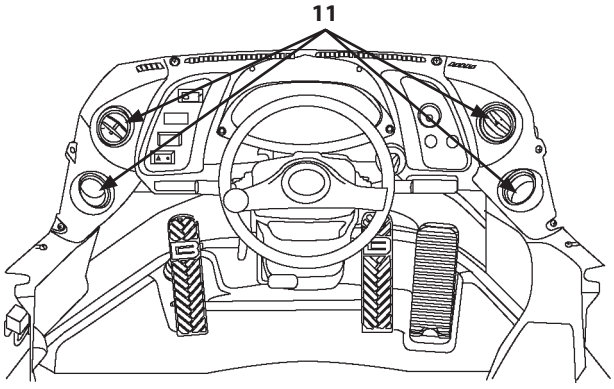
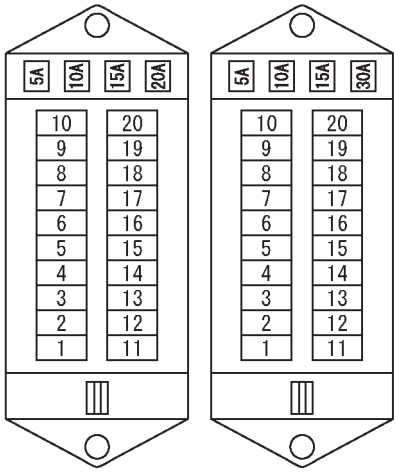


MNEC-01-036

Fuse Box A

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



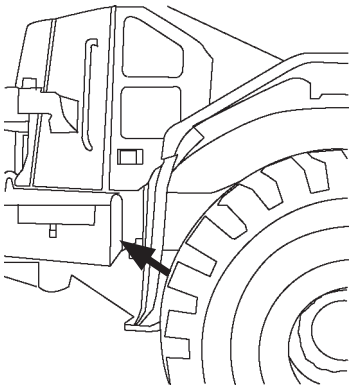
Fuse Box A Fuse Box B

MNEC-01-031

Fuse Box B

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

Battery Disconnect Switch



MNEC-01-011

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.

MEMO

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.

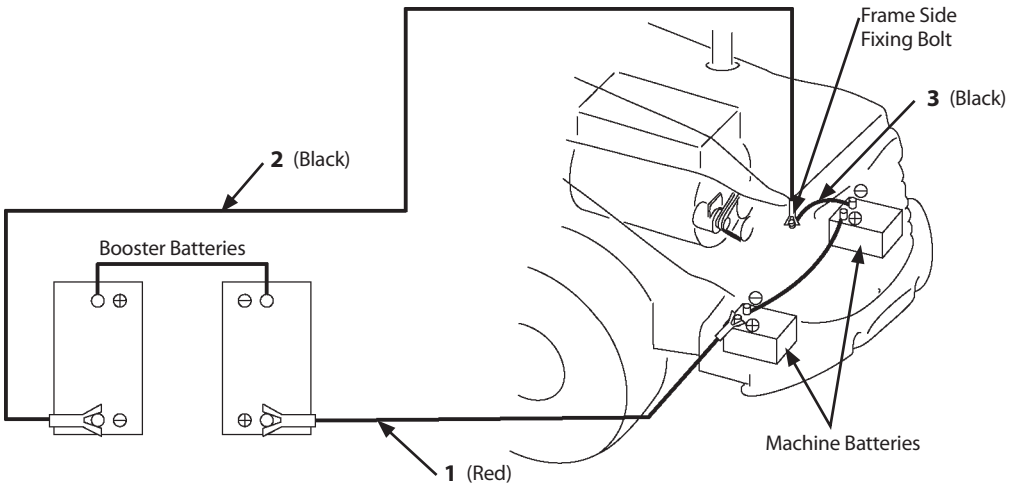
2. Disconnecting the booster cables

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.

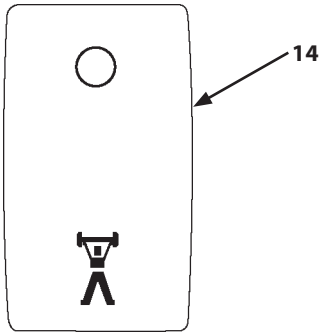
2.4 Disconnect the other end of red booster cable (1) from the positive terminal of the machine battery.



MNEC-03-001

Power Mode Selector

Pressing power mode selector switch (14) alternately activates (ON) and deactivates (OFF) the power mode. When the power mode is activated (ON), the indicator "P" appears on the monitor display.
The power mode is suited for heavy digging work prioritizing work effectiveness. Under auto shifting mode, the gear is shifted in regular RPM's (min^{-1}) and shift mapping.



MNEC-01-016

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

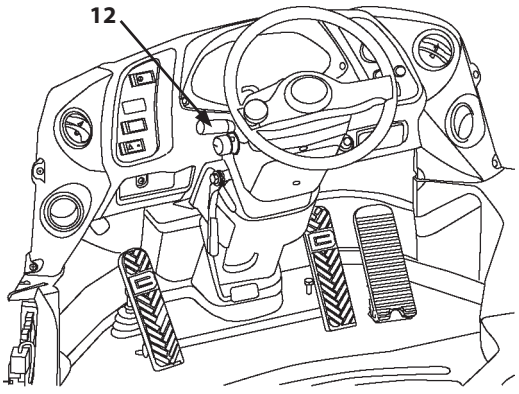
Shift Change Delay Mode

When travel mode selector (13) is set in AUTO 1 or AUTO 2 while shift switch (12) is in 3rd range or 4th range position, the shift up timing in 2nd range → 3rd range is delayed. Loading work can be easily done in 2nd range position.

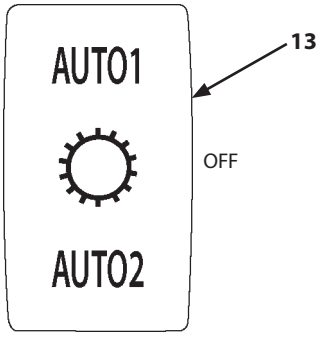
Shift Up Delay

Forward movement	:	The gear shifts up when moving the machine at high speed in 2nd range for 4 seconds or longer. The gear will not shift while the lift arm is raising. The 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.

Capability to activate or not activate the shift change delay mode is selected at the transmission setting screen on the monitor.
(Refer to Section 1, OPERATOR'S STATION, Transmission Setting.)



MNEC-01-037



MNEC-01-024

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).

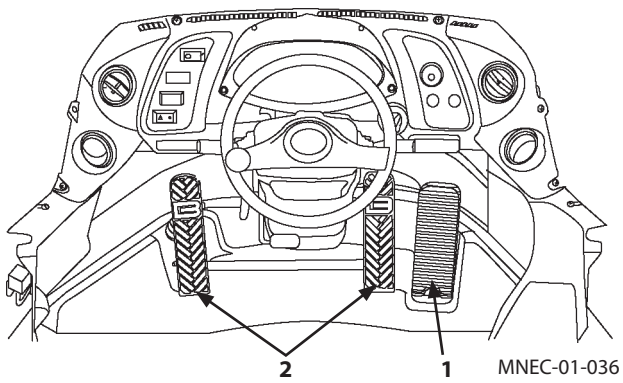
4. Level the bucket with the surface of the ground and lower the bucket to the ground by operating bucket control lever (6) and lift arm control lever (7).

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.



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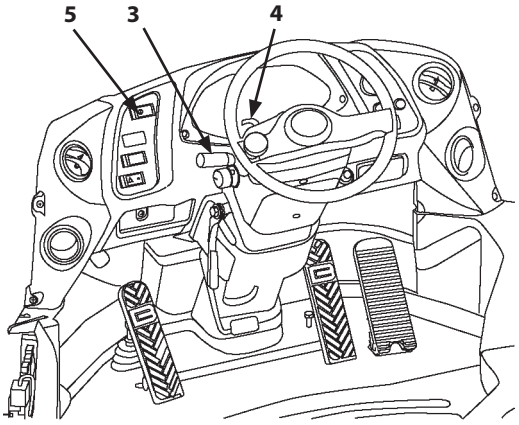

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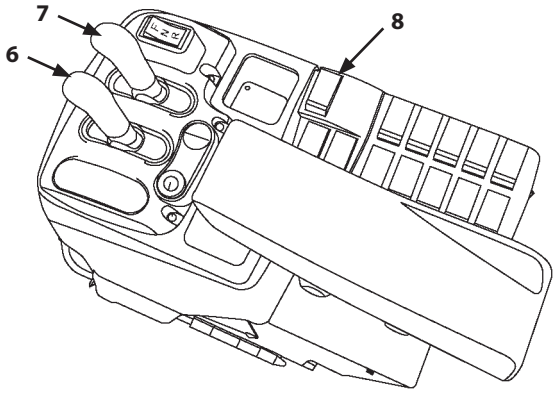
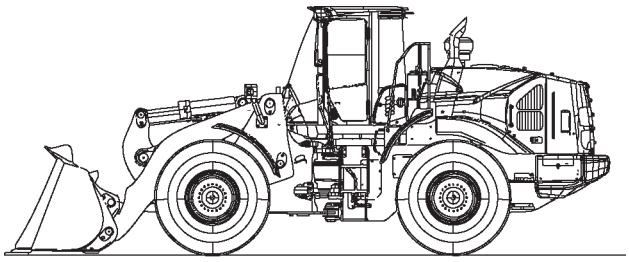


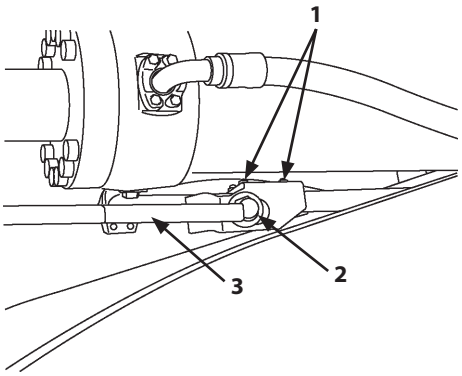
MNEC-07-001


Stop and Parking Position
MNEC-04-002

Adjustment of Bucket Auto Leveler

WARNING: CRUSH HAZARD

- **Be careful to avoid injury and/or death when adjusting the bucket auto leveler.**
- **Stop the engine. Lower the loader arm and bucket to the ground to release oil pressure.**
- **Apply the parking brake to prevent unexpected movement of the machine. Chock wheels with blocks. Keep bystanders away from the vicinity of the machine.**

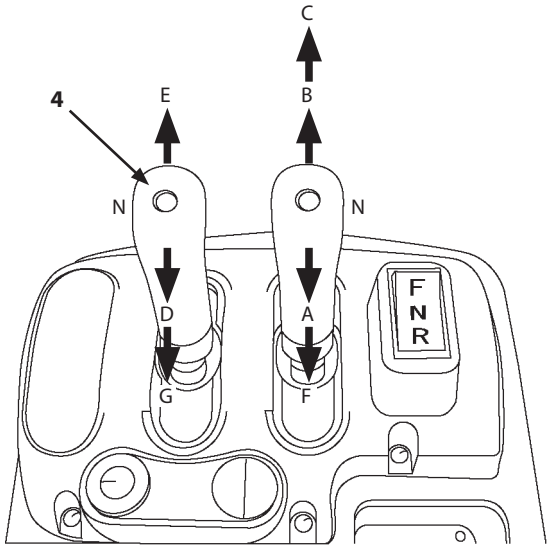


M4GB-05-001

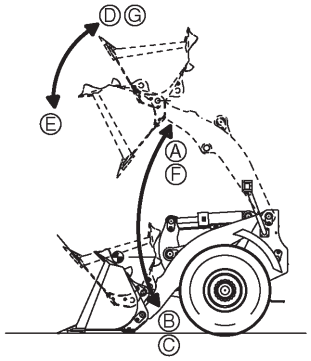
The bucket auto leveler automatically stops the bucket movement when level. (When the machine is shipped from the factory, the bucket positioner is preset so that the bucket is stopped with the bucket bottom parallel with the road surface.)

For example, after discharging material into a truck or a hopper, when bucket control lever (4) is placed to detent position (G), the lever is held in that position. Then, when the bucket is returned to the preset angle position, the bucket is automatically stopped and the lever is returned to neutral (N).

The bucket auto leveler is preset so that when the bucket bottom becomes parallel with the road surface, bucket movement is stopped. Nevertheless, when required to tilt the bucket forward or backward beyond the level position, adjust the bucket auto leveler by moving the mounting position of the proximity switch (2), relative to rod (3).



MNEC-03-003

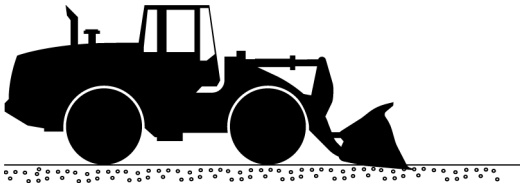


M4GB-01-073

Digging and Loading Level Ground

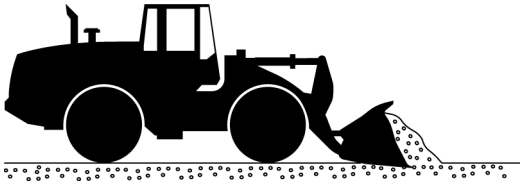
IMPORTANT: While excavating with the bucket or fork, never apply excessive force to the tooth tips with the bucket or fork tilted more than 10°. This may result in cracks or damage to the front attachment.

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 to one side of the bucket.



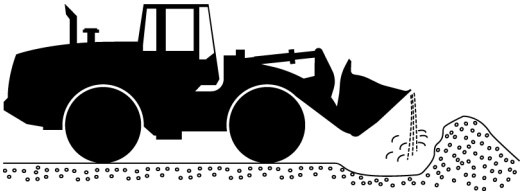
M4GB-05-007

1. Position the bucket teeth slightly downward.



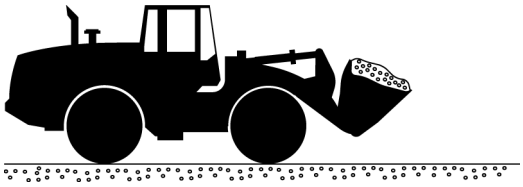
M4GB-05-008

2. While moving the machine forward, roll the bucket forward so that the ground surface is gradually lifted.
3. Adjust the digging depth by operating the lift arm.



M4GB-05-009

4. Move the machine with the bucket rolled backward fully and held at the lowest possible position.



M4GB-05-010

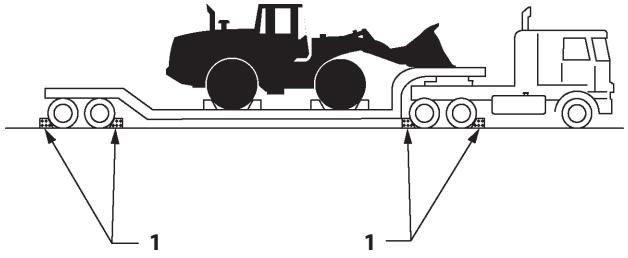
Loading / Unloading on Trailer

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

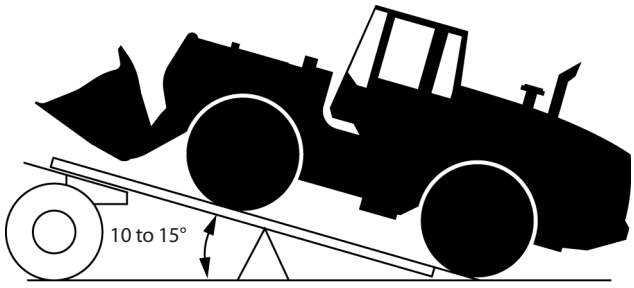
Always load and unload the machine on a firm, level surface.

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°.



M4GB-06-001



M4GB-06-002

- Machine Information Controller
  This machine provides a machine information controller that stores machine operation information for preventive maintenance.
  When maintaining the machine, our authorized service man may down load the stored information via satellite.
  Consult with your nearest authorized dealer for detailed function of this device.
- Communication Terminal Operation (Option)
  It is not necessary to check or operate the communication terminal however if any abnormality is found, consult your nearest authorized dealer.
  Before installing any covering attachment such as a head guard, consult your nearest authorized dealer.
  Never spray water on the communication terminal and wiring.
- Inquire on the proper way to recycle or dispose of oil, fuel, coolant, filters, batteries and other waste from your local environmental or recycling center, or from your authorized dealer.

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)	
		Exhaust filter (Lagging cover)	Every 2000 hours
		Exhaust filter (Bellows exhaust pipe)	Every 4500 hours
		Exhaust filter (Mount bracket rubber cushion)	Every 4500 hours
		Exhaust filter (Differential pressure hose)	Every 4500 hours
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

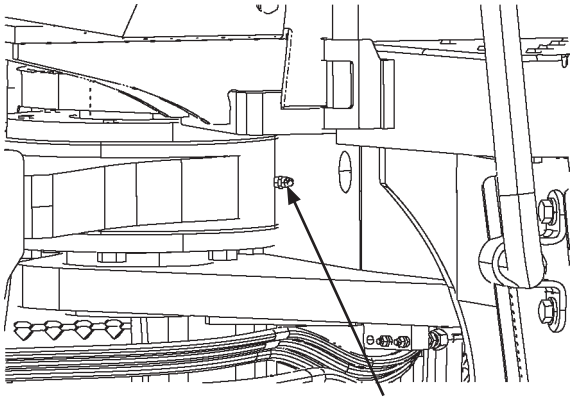
NOTE: Be sure to replace seals, such as O-rings and gaskets, when replacing hoses.

9. One point each to upper and lower frame center hinge pins (14 and 15).

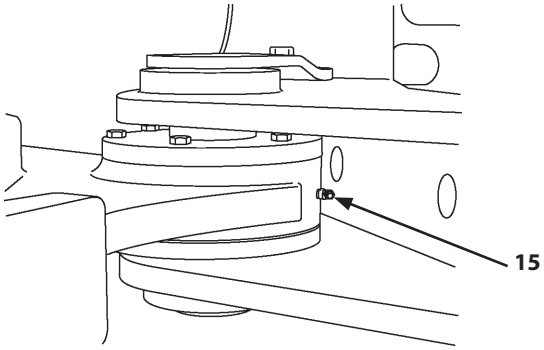
   --- every 250 hours

   Upper (14)

   Lower (15)



MNEC-07-008

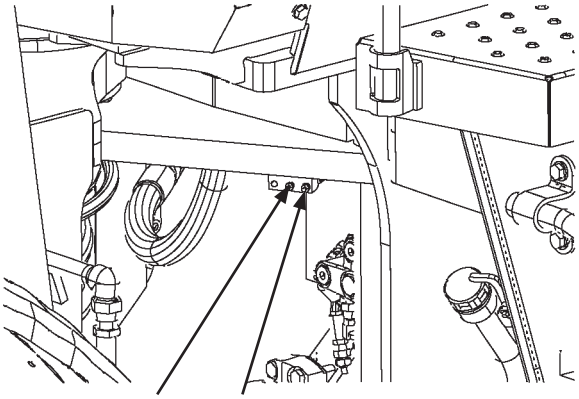


M4GB-07-010

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

    --- every 10 hours

    Front (16)
    Rear (17)

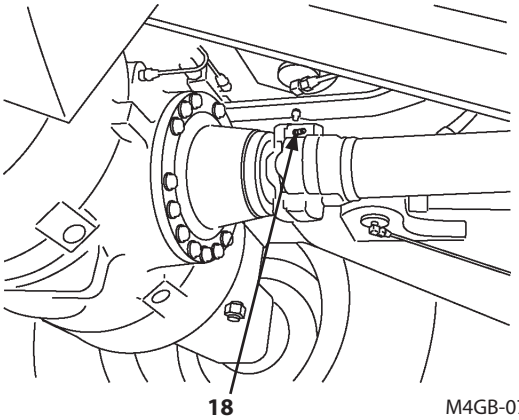


MNEC-07-009

11. 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.



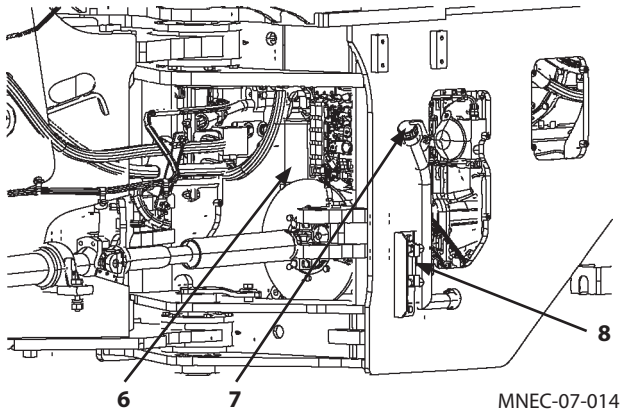
M4GB-07-013

8. Using a filter wrench, turn cartridge filter (6) counterclockwise to remove it.
9. Clean the filter-seating surface. After coating the new cartridge filter gasket surface with new oil, lightly turn the cartridge filter clockwise by hand until the cartridge filter sealing surface comes in contact with the filter-seating surface.
10. At this time, 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.
11. Refill the specified amount of oil through transmission oil filler port (7).

    25 liters (6.6 gallons)

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

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.

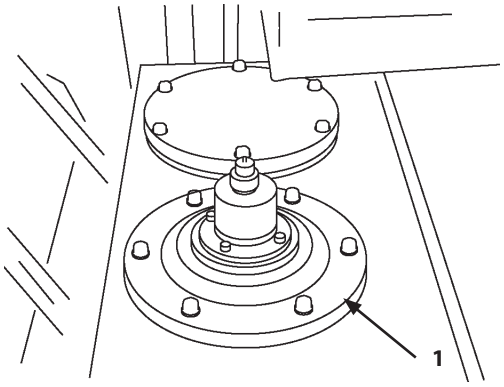
1. After draining hydraulic oil, remove cover (1). Lift to take out rod (2). Put a cover over the oil supply port to prevent foreign matter from entering.

   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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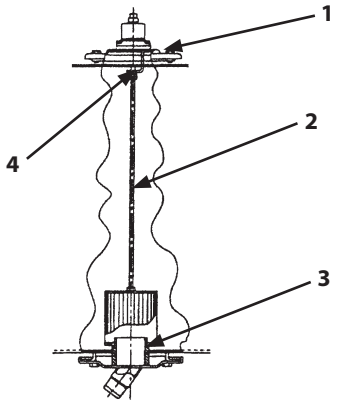

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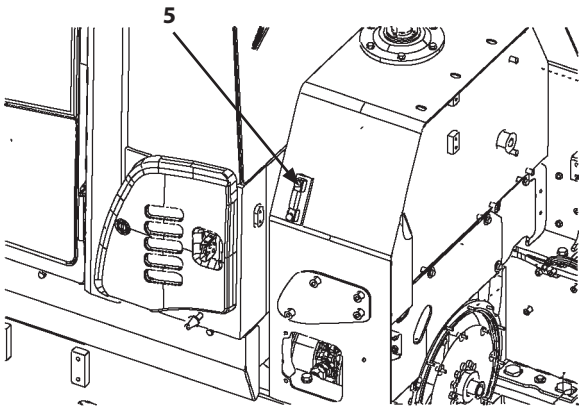


MNEC-07-017

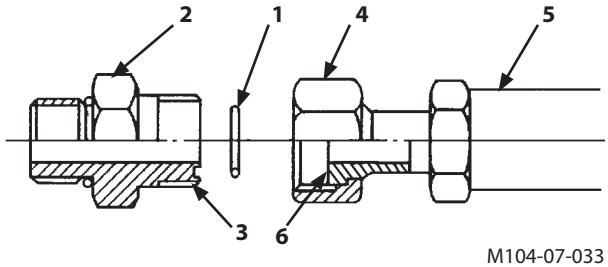
Service Recommendations for Hydraulic Fittings

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.



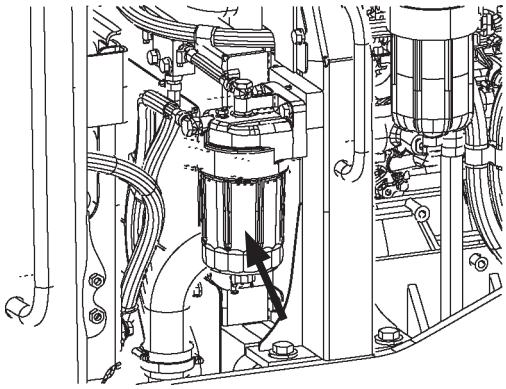
M104-07-033

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)

5 **Replace Fuel Pre-Filter Element**

---every 1000 hours or when fuel filter restriction indicator is lit



MNEC-07-023

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 to allow dirt and/or water to enter the fuel system.**

Procedures:

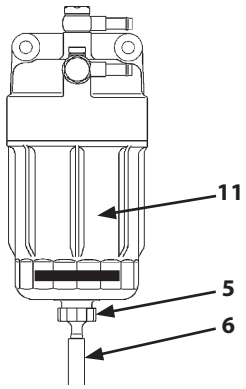
1. Connect transparent drain hose (6) stored in the tool box to drain (5).
2. Place 1 liter or larger capacity container under drain hose (6) to hold the drained water.
3. Loosen air bleed plug (7) and drain (5). Drain fuel until the filter is empty.

   After draining fuel, remove drain (5) and replace O-ring at drain (5).
4. Remove transparent filter case (11) using the special tool.
5. When transparent filter case (11) is removed, the element and O-ring for transparent filter case (11) is exposed. Remove the element by hand.
6. Install a new element. Replace transparent filter case O-ring and tighten transparent filter case (11) to 30 ± 2 N·m (3±0.2 kgf·m, 22±1.5 lbf·ft) using the special tool.
7. Tighten air bleed plug (7) and drain (5). Store used hose (6) in the tool box.
8. Bleed Air from the Fuel System

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

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

   Wrench size: 14 mm



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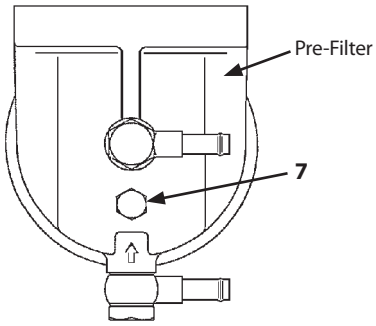


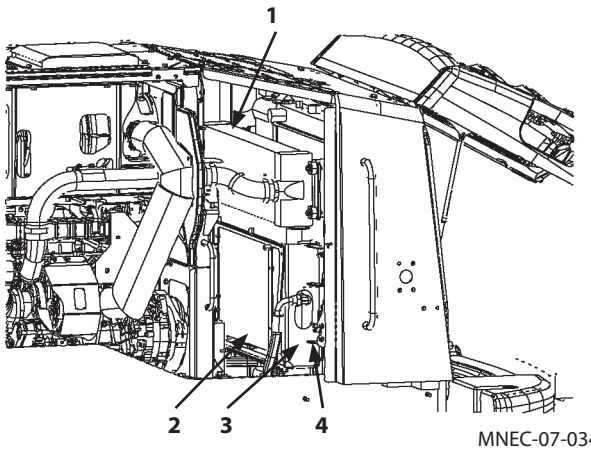
M1U1-07-004

6 **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.

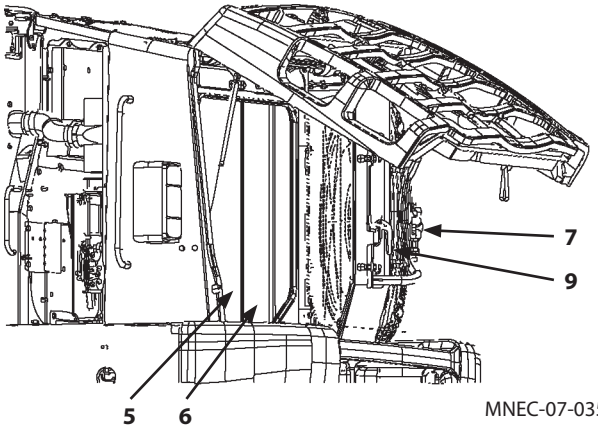
IMPORTANT: If compressed air with the pressure of more than 0.2 MPa (2 kgf/cm², 30 PSI) or tap water with high delivery pressure is used for cleaning, damage to the radiator/oil cooler fins may result. Keep the nozzle away from the core surface more than 500 mm (20 inch).



MNEC-07-034

(Over the Side Cover)

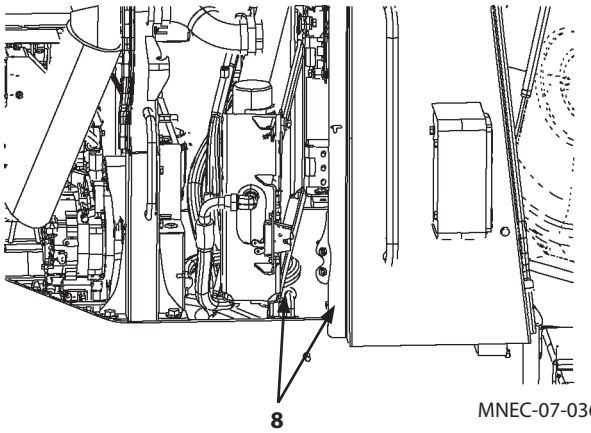
Check and clean engine charge air cooler (1), HVAC condenser (2), and torque converter oil cooler (3). When torque converter oil cooler (3) is moved away by pushing down catch lever (4), clearance (8) in front of the radiator can be cleaned.



MNEC-07-035

(Over the Rear Grille)

Check and clean radiator (5), hydraulic oil cooler (6). Release lock (9), open and clean hydraulic driven fan (7). In case dirt or dust sticks to the radiator/oil cooler cores, clean the radiator/oil cooler cores with compressed air pressure [less than 0.2 MPa (2 kgf/cm², 30 PSI)] or tap water to maintain the cooling system performance at a good level.



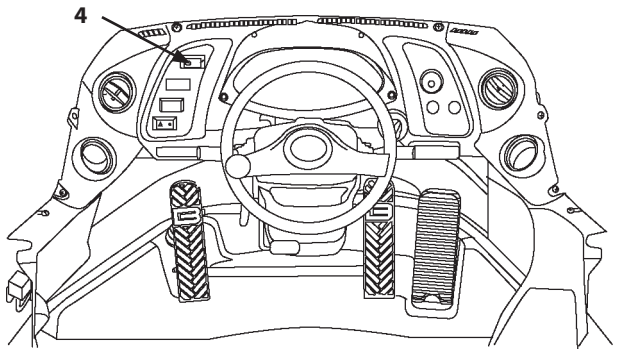
MNEC-07-036

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.



MNEC-01-036

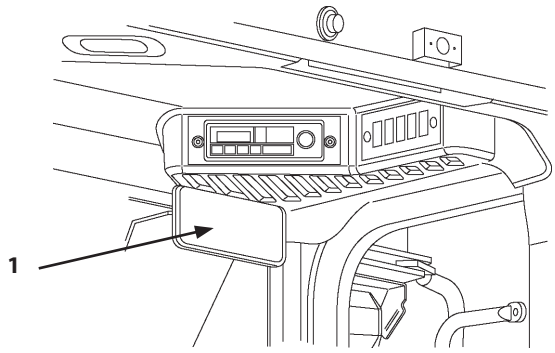
IMPORTANT: Incorrect installation of the filter may cause dust to enter into the air conditioner, causing malfunction or breakdown of the air conditioner. Before installing the filter element, clean off dust around the mounting area; install the filter element with extra care. Keep cab doors closed when 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.

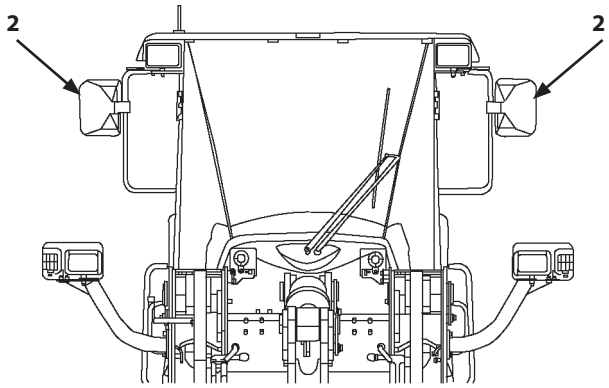
7 Check Rearview Mirror and Inside Rearview Mirror

--- 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

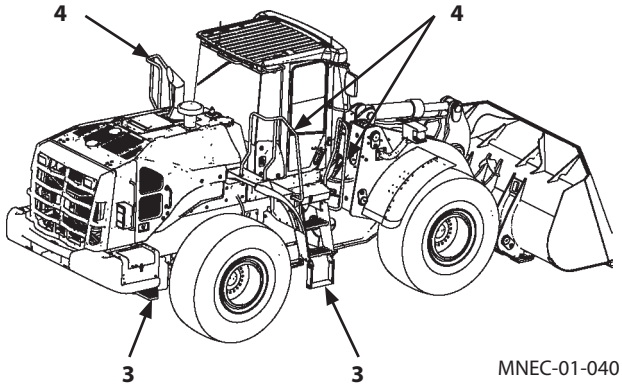


MNEC-07-039

8 Check Steps and Handrails for Damage and Looseness

--- every 10 hours

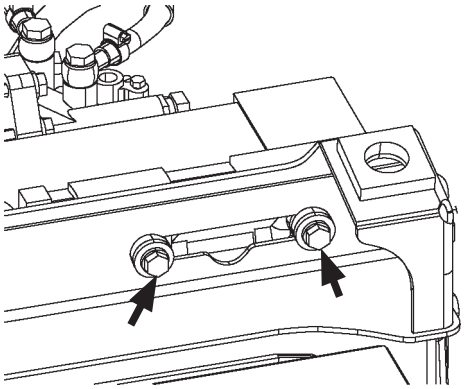
Check steps (3) and handrails (4) for damage, looseness and contamination. If oil, grease or mud are on the steps and/or handrails (4), remove it.
If the steps (3) and/or handrails (4) become damaged or loosened, immediately replace.
Do not repair handrails or steps. Repairs can fail unexpectedly. Be sure to replace damaged steps or handrails.



MNEC-01-040

19. Oil cooler mounting bolt

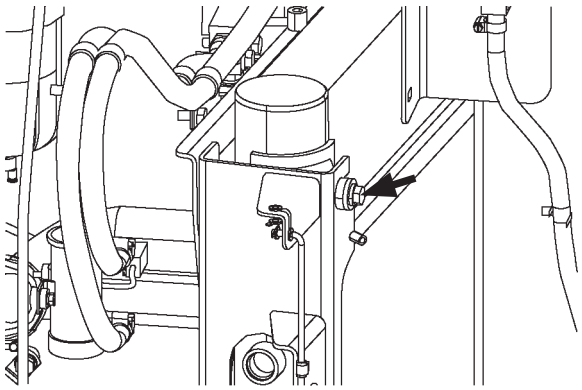
Bolt diameter	10 mm (0.39 in)
Quantity	4
Wrench size	17 mm (0.67 in)
Tightening torque	36.2 N·m (4 kgf·m, 27 lbf·ft)



MNEC-07-062

20. Torque converter cooler mounting bolt

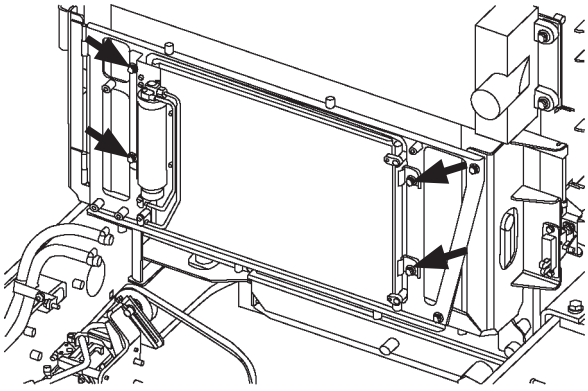
Bolt diameter	10 mm (0.39 in)
Quantity	2
Wrench size	17 mm (0.67 in)
Tightening torque	36.2 N·m (4 kgf·m, 27 lbf·ft)



MNEC-07-063

21. Air conditioner condenser mounting bolt

Bolt diameter	8 mm (0.3 in)
Quantity	4
Wrench size	13 mm (0.51 in)
Tightening torque	12.5 N·m (1 kgf·m, 9 lbf·ft)



MNEC-07-064

MEMO