

PART NO. ENMLBA-EN1-1

**HITACHI**

Reliable solutions

# Operator's Manual

# ZAXIS

## 140W-5B

## 170W-5B

## 190W-5B

## 220W-5B

## Wheeled Excavator

ZX140W-5B • 170W-5B • 190W-5B • 220W-5B WHEELED EXCAVATOR OPERATOR'S MANUAL

 **Hitachi Construction Machinery Co., Ltd.**

URL:<http://www.hitachi-c-m.com>

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Serial No.

ZX140W-5B 003001 and up

ZX170W-5B 004001 and up

ZX190W-5B 003001 and up

ZX220W-5B 003001 and up

## INTRODUCTION

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

**This standard specification machine** can be operated under the following conditions without being modified.  
Atmospheric Temperature: -20 °C to 40 °C (-4 °F to 104 °F)  
Altitude: Up to 2000 m (to 6600 ft)

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

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

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

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

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

Use only diesel fuel with quality specified in JIS K-2204, EN-590, ASTM D-975, GOST R52368 or GB252. Failure to use diesel fuel with quality as specified above may allow the engine to emit exhaust gas which cleanliness can not conform to the requests in various relevant regulations. In addition, serious damage to the engine may result. Consult with your nearest Hitachi dealer for detailed information.

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

This warranty provides you the assurance that Hitachi will back its products where defects appear within the warranty period. In some circumstances, Hitachi also provides field improvements, often without charge to the customer, even if the product is out of warranty.

**Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied.**

Setting fuel delivery above specifications or otherwise overpowering machines will result in such action.

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

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

### CALIFORNIA Proposition 65 Warning

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

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

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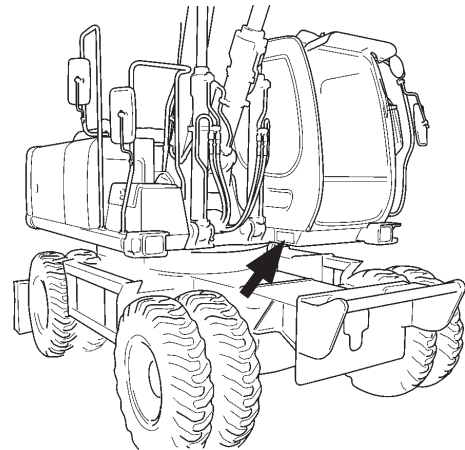
# MACHINE NUMBERS

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

Hitachi Construction Machinery Co., Ltd. 850, Kandatsu-machi, Tsuchiura-shi, Ibaraki-ken, 300-0913 Japan	
Model/type	<input type="text"/>
Homologation Number	<input type="text"/>
Product Identification Number	<input type="text"/>
Total permissible mass(kg)	<input type="text"/>
Permissible front axle load(kg)	<input type="text"/>
Permissible rear axle load(kg)	<input type="text"/>
Allowable towing mass	<input type="text"/>
Year of Manufacturing	<input type="text"/>
Engine Power(kW)	<input type="text"/>
Hydraulic Excavator <b>ZAXIS</b>	

SSYA00018574

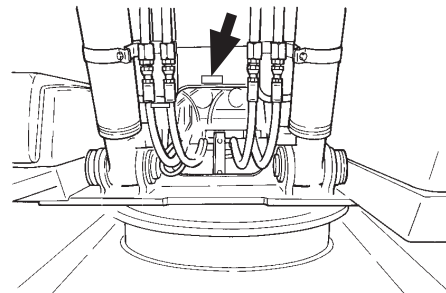
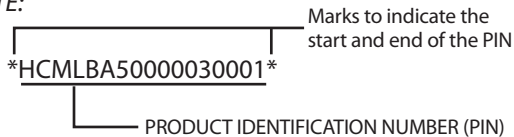


MCBB-01-011

1. Model/Type
2. Homologation Number (Germany and Italy only)
3. Product Identification Number
4. Operating mass (standard version)
5. Year of Manufacturing
6. Engine power in kW according to ISO9249

## Product Identification Number

NOTE:

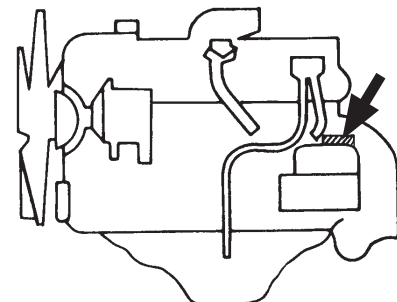


M157-12-008

## Engine

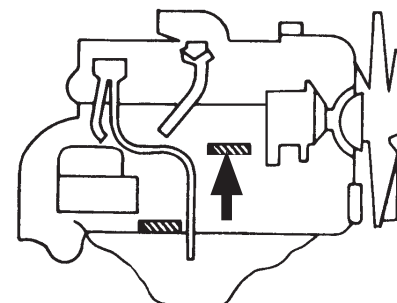
TYPE: \_\_\_\_\_

MFG. NO.: \_\_\_\_\_



ZX140W-5B

M178-00-002



ZX170W-5B, 190W-5B, 220W-5B

M178-00-001

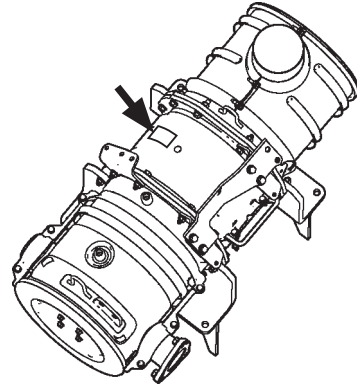
# MACHINE NUMBERS

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## Muffler Filter

TYPE : \_\_\_\_\_

MFG. NO. : \_\_\_\_\_

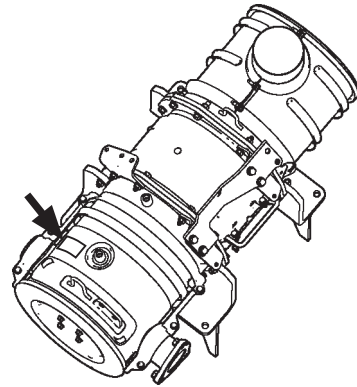


MDAA-00-002

## DOC (Diesel Oxidation Catalyst)

TYPE : \_\_\_\_\_

MFG. NO. : \_\_\_\_\_

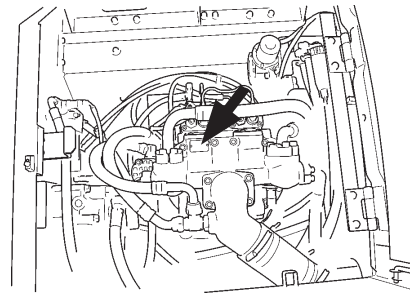


MDAA-00-002

## Hydraulic Pump

TYPE : \_\_\_\_\_

MFG. NO. : \_\_\_\_\_



MCBB-00-002



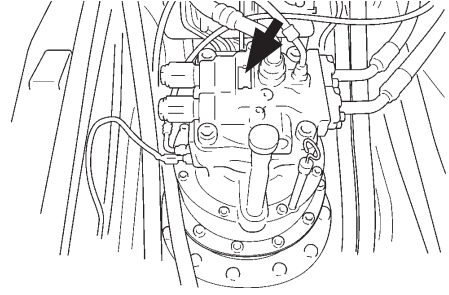
# MACHINE NUMBERS

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## Swing Motor

TYPE : \_\_\_\_\_

MFG. NO. : \_\_\_\_\_

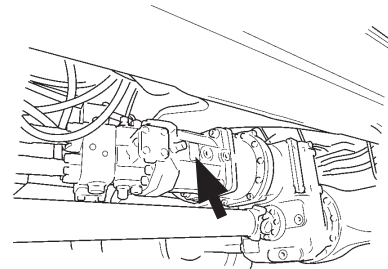


M178-07-086

## Travel Motor

TYPE : \_\_\_\_\_

MFG. NO. : \_\_\_\_\_

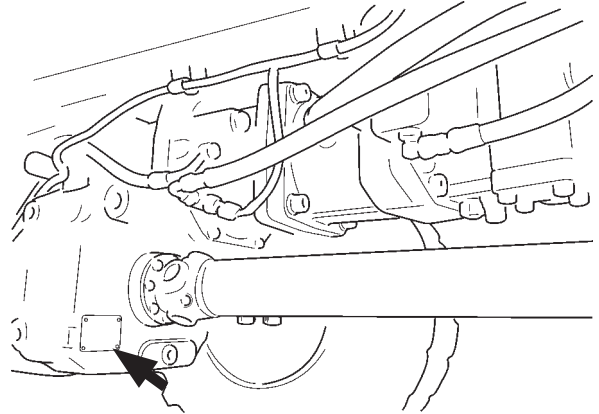


MCBB-07-021

## Transmission

TYPE : \_\_\_\_\_

MFG. NO. : \_\_\_\_\_



MCBB-00-007

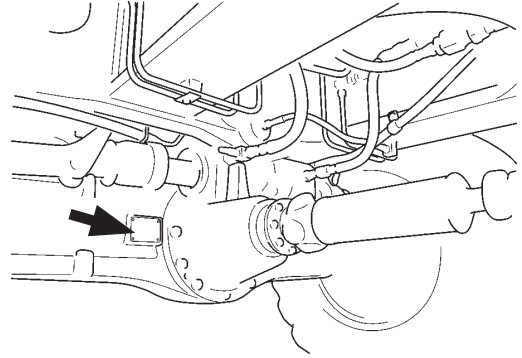
# MACHINE NUMBERS

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## Front Axle

TYPE : \_\_\_\_\_

MFG. NO. : \_\_\_\_\_

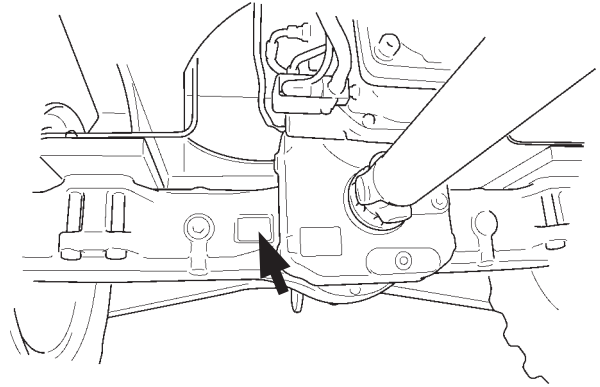


MCBB-00-005

## Rear Axle

TYPE : \_\_\_\_\_

MFG. NO. : \_\_\_\_\_



MCBB-07-053

## SAFETY

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### 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 are occasionally used on this machine.



**IMPORTANT**



- To avoid confusing machine protection with personal safety messages, a signal word **IMPORTANT** indicates a situation which, if not avoided, could result in damage to the machine.
-  **NOTE**: indicates an additional explanation for an element of information.

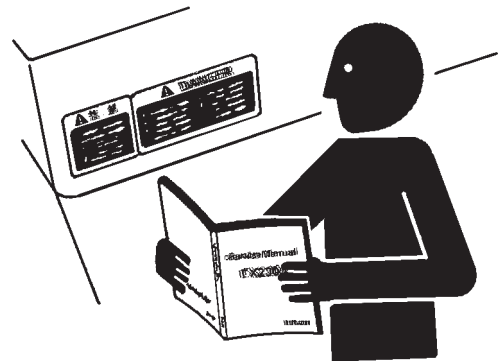
SA-1223

## SAFETY

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### 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 Hitachi Warranty Policy.
  - Never attempt to modify or disassemble the inlet/exhaust parts and the muffler filter. Avoid giving shocks on the muffler filter by striking elements with other objects or dropping the elements. Failure to do so may affect the exhaust gas purifying device, possibly damaging it or lowering its performance.
  - Do not use attachments and/or optional parts or equipment not authorized by Hitachi. Failure to do so may deteriorate the safety, function, and/or service life of the machine. In addition, personal accident, machine trouble, and/or damage to material caused by using unauthorized attachments and/or optional parts or equipment will void Hitachi Warranty Policy.
- The safety messages in this SAFETY chapter are intended to illustrate basic safety procedures of machines. However it is impossible for these safety messages to cover every hazardous situation you may encounter. If you have any questions, you should first consult your supervisor and/or your authorized dealer before operating or performing maintenance work on the machine.



SA-003

## SAFETY

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### 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

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### Wear Protective Clothing

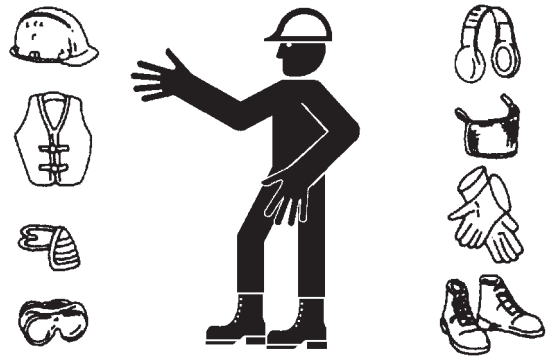
- Wear close fitting clothing and safety equipment appropriate to the job.

You may need:

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

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

- Avoid wearing loose clothing, jewelry, or other items that can catch on control levers or other parts of the machine.
- Operating equipment safely requires the full attention of the operator. Do not wear radio or music headphones while operating the machine.



SA-438

## SAFETY

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### 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

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### 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

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### General Precautions for Cab

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

## SAFETY

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### Use Handholds 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 hand-holds.
  - 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

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### Adjust the Operator's Seat

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



SA-378



## SAFETY

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### 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 pilot control shut-off lever to the LOCK position, and put the brake switch in the P (parking brake) position. Failure to do so may allow the machine to unexpectedly move when a body part unintentionally comes in contact with a control lever and/or pedal, 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 pilot control shut-off lever to the LOCK position, and put the brake switch in the P (parking brake) position. Turn the key switch OFF to stop the engine.
- Before leaving the machine, close all windows, doors, and access covers and lock them.

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### 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

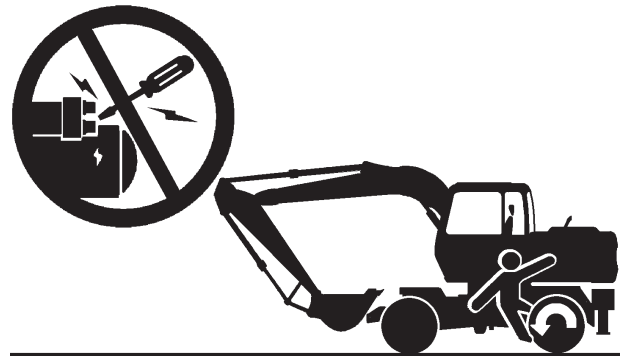
- Bystanders can be run over.
  - Take extra care not to run over bystanders. Confirm the location of bystanders before moving, swinging, or operating the machine.
  - Always keep the travel alarm and horn in working condition (if equipped). It warns people when the machine starts to move.
  - Use a signal person when moving, swinging, 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-083

### 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 track 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-084

## SAFETY

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### 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 THE 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

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### 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-091

## SAFETY

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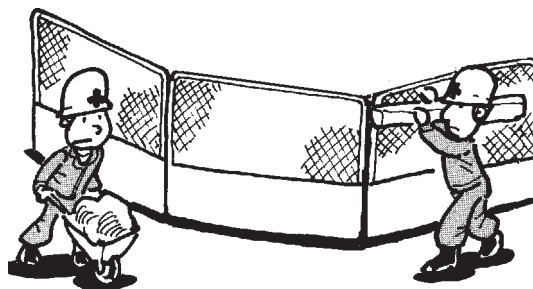
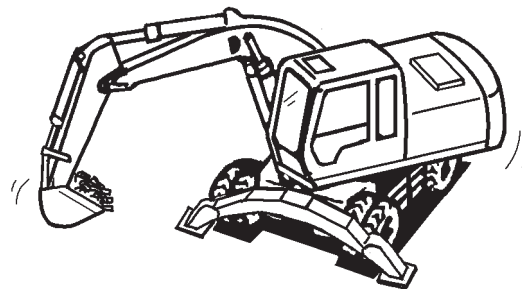
### Precautions for Operations

- Investigate the work site before starting operations.
  - 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 from area of operation and machine movement.

Always beware of the surroundings while operating.

When working in a small area surrounded by obstacles, take care not to hit the upperstructure against obstacles.

- When loading onto trucks, bring the bucket over the truck beds from the rear side. Take care not to swing the bucket over the cab or over any person.



M202-05-014

## SAFETY

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### 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 the possibility of fire when operating the machine near flammable objects such as dry grass.

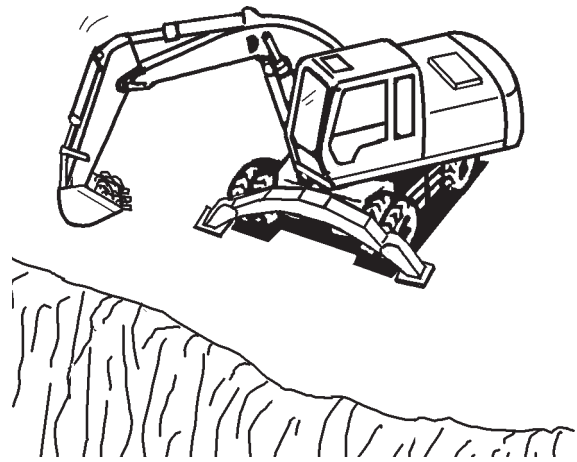


SA-085

## SAFETY

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- Make sure the worksite has sufficient strength to firmly support the machine.  
When working close to an excavation or at road shoulders, operate the machine with the tracks positioned perpendicular to the cliff face with travel motors at the rear, so that the machine can more easily evacuate if the cliff face collapses.
- If working on the bottom of a cliff or a high bank is required, be sure to investigate the area first and confirm that no danger of the cliff or bank collapsing exists. If any possibility of cliff or bank collapsing exists, do not work on the area.
- Soft ground may collapse when operating the machine on it, possibly causing the machine to tip over. When working on soft ground is required, be sure to reinforce the ground first using large pieces of steel plates strong and firm enough to easily support the machine.
- Note that there is always a possibility of machine tipping over when working on rough terrain or on slopes. Prevent machine tipping over from occurring. When operating on rough terrain or on slopes:
  - Reduce the engine speed.
  - Select slow travel speed mode.
  - Operate the machine slowly and be cautious with machine movements.



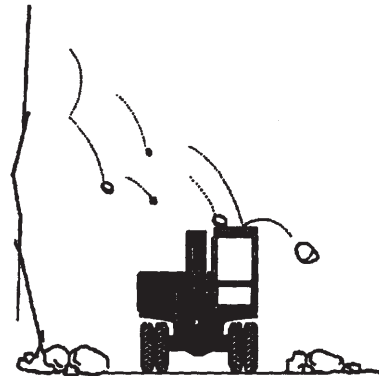
M202-05-015

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### Install OPG Guard

In case the machine is operated in areas where the possibilities of falling stones or debris exist, equip Hitachi OPG guard. Consult your authorized dealer for installing the OPG guard. The guard can be compliant with ROPS standards depending on the machine specifications. In order not to impair operator protective structure: Replace damaged ROPS or OPG guard. Never attempt to repair or modify the guard.

ROPS: Roll Over Protective Structure  
OPG: Operator Protective Guard



SA-686

## SAFETY

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### 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

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### Confirm Direction of Machine to Be Driven

- Incorrect steering wheel/F-N-R switch operation may result in serious injury or death.
  - Before driving the machine, confirm the position of the undercarriage in relation to the operator's position. If the travel motors are located in front of the cab, the machine will move in reverse when travel F-N-R switch is operated to the front.

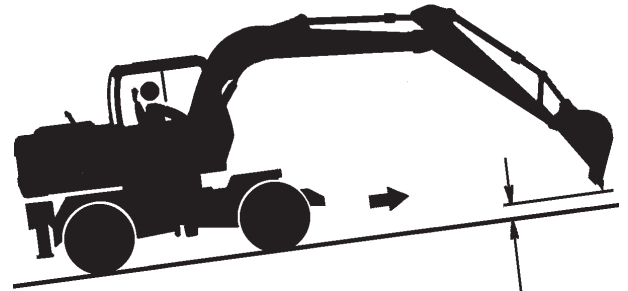


SA-092

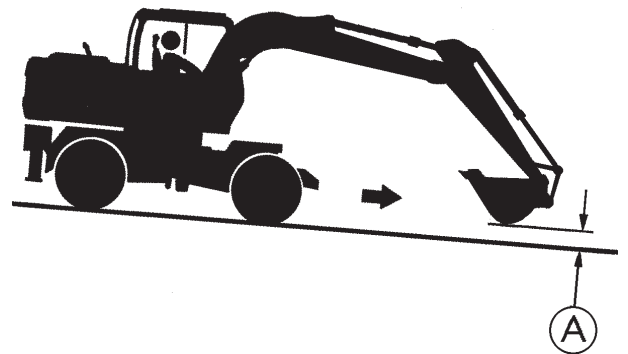
## SAFETY

### Drive Machine Safely

- Before driving the machine, always confirm that the steering wheel/F-N-R switch direction corresponds to the direction you wish to drive.
  - Be sure to detour around any obstructions.
  - Avoid traveling over obstructions. Soil, fragments of rocks, and/or metal pieces may scatter around the machine. Do not allow personnel to stay around the machine while traveling.
- Driving on a slope may cause the machine to slip or overturn, possibly resulting in serious injury or death.
  - Never attempt to ascend or descend 20 degrees or steeper slopes.
  - Be sure to fasten the seat belt.
  - When driving up or down a slope, keep the bucket facing the direction of travel, approximately 0.5 to 1.0 m (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 turnover. If the direction must be changed, move the machine to level ground, then, change the direction to ensure safe operation.
  - Avoid swinging the upperstructure on slopes. Never attempt to swing the upperstructure downhill. The machine may tip over. If swinging uphill is unavoidable, carefully operate the upperstructure and boom at slow speed.
  - If the engine stalls on a slope, immediately lower the bucket to the ground. Return the control levers to neutral. Then, restart the engine.
  - Be sure to thoroughly warm up the machine before ascending steep slopes. If hydraulic oil has not warmed up sufficiently, sufficient performance may not be obtained.



SA-090



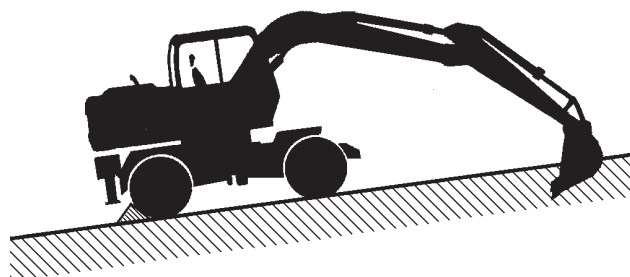
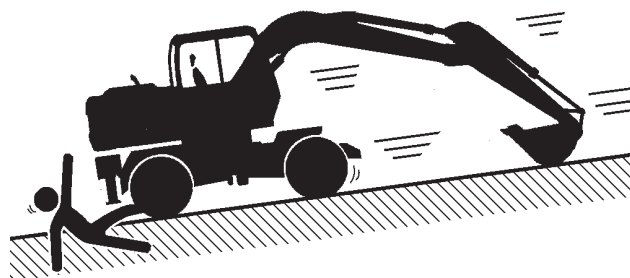
SA-288



## SAFETY

### Avoid Injury from Rollaway Accidents

- Death or serious injury may result if you attempt to mount or stop a moving machine.  
To avoid rollaways:
  1. Select level ground when possible to park machine.
  2. Do not park the machine on a grade.
  3. Lower the bucket and/or other work tools to the ground.
  4. Pull the pilot control shut-off lever to LOCK position.
  5. Place F-N-R switch in the neutral, and put the brake switch in the P (parking brake) position.
  6. Turn the auto-idle switch off.
  7. Run the engine at slow idle speed without load for 5 minutes to cool down the engine.
  8. Stop the engine and remove the key from the key switch.
  9. Block both tires and lower the bucket to the ground. Thrust the bucket teeth into the ground if you must park on a grade.
  10. Position the machine to prevent rolling.
  11. Park at a reasonable distance from other machines.



SA-278

## SAFETY

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### Avoid Injury from Back-Over and Swing Accidents

- If any person is present near the machine when backing or swinging the upperstructure, the machine may hit or run over that person, resulting in serious injury or death.

To avoid back-over and swing accidents:

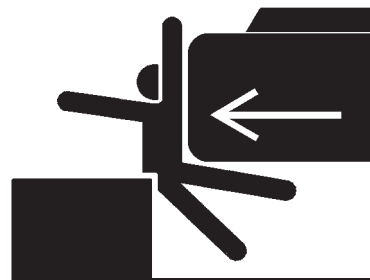
- Always look around BEFORE YOU BACK UP AND SWING THE MACHINE. BE SURE THAT ALL BYSTANDERS ARE CLEAR.
- Keep the travel alarm in working condition (if equipped). ALWAYS BE ALERT FOR BYSTANDERS MOVING INTO THE WORK AREA. USE THE HORN OR OTHER SIGNAL TO WARN BYSTANDERS BEFORE MOVING MACHINE.
- USE A SIGNAL PERSON WHEN BACKING UP IF YOUR VIEW IS OBSTRUCTED. ALWAYS KEEP THE SIGNAL PERSON IN VIEW.

Use hand signals, which conform to your local regulations, when work conditions require a signal person.

- No machine motions shall be made unless signals are clearly understood by both signalman and operator.
- Learn the meanings of all flags, signs, and markings used on the job and confirm who has the responsibility for signaling.
- Keep windows, mirrors, and lights clean and in good condition.
- Dust, heavy rain, fog, etc., can reduce visibility. As visibility decreases, reduce speed and use proper lighting.
- Read and understand all operating instructions in the operator's manual.



SA-383



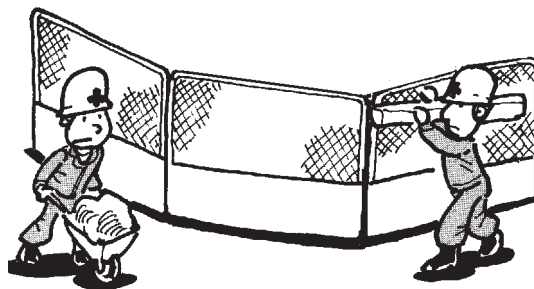
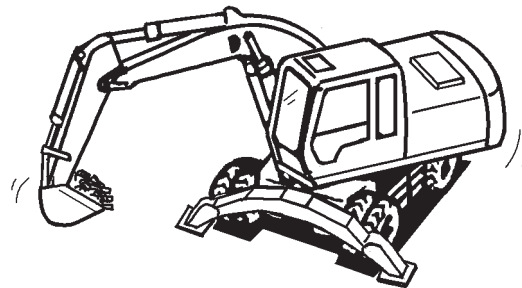
SA-384

## SAFETY

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### Keep Person Clear from Working Area

- A person may be hit severely by the swinging front attachment or counterweight and/or may be crushed against an other object, resulting in serious injury or death.
- Keep all persons clear from the area of operation and machine movement.
- Before operating the machine, set up barriers to the sides and rear area of the bucket swing radius to prevent anyone from entering the work area.



M202-05-014

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### Never Position Bucket Over Anyone

- Never lift, move, or swing bucket above anyone or a truck cab. Serious injury or machine damage may result due to bucket load spill or due to collision with the bucket.



SA-682

## SAFETY

### Avoid Undercutting

- Always confirm that ground conditions are strong enough to support the machine weight when operating near a cliff. Operate the machine with the chassis frame positioned perpendicular to the cliff face so that the machine can more easily evacuate if the cliff face collapses.
- If the footing starts to collapse and if retreat is not possible, do not panic. Often, the machine can be secured by lowering the front attachment, in such cases.



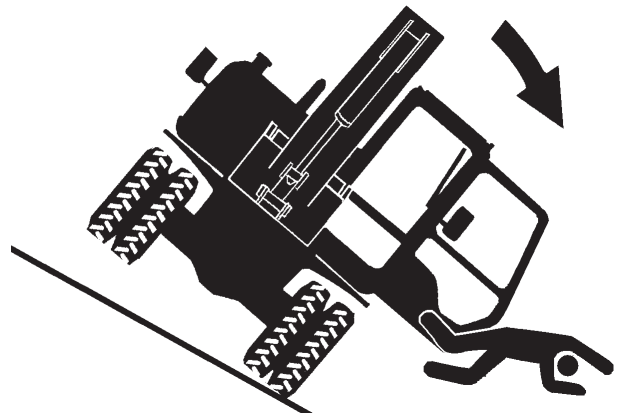
SA-683

### Avoid Tipping

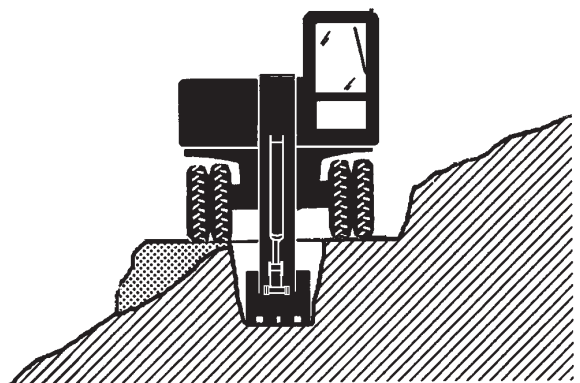
**DO NOT ATTEMPT TO JUMP CLEAR OF TIPPING MACHINE  
--- SERIOUS OR FATAL CRUSHING INJURIES WILL RESULT  
MACHINE WILL TIP OVER FASTER THAN YOU CAN JUMP  
FREE**

#### **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 15 degrees if crossing the grade is unavoidable.
  - Reduce swing 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-088



SA-684

## SAFETY

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### Never Undercut a High Bank

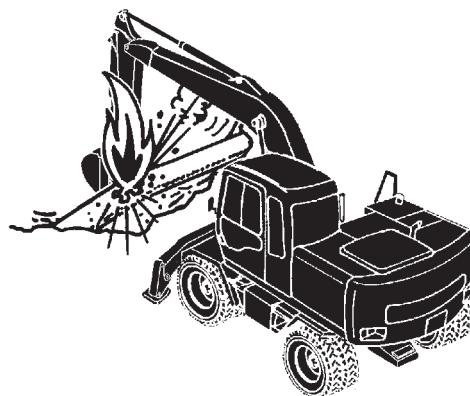
- The edges could collapse or a land slide could occur causing serious injury or death.



SA-685

### Dig with Caution

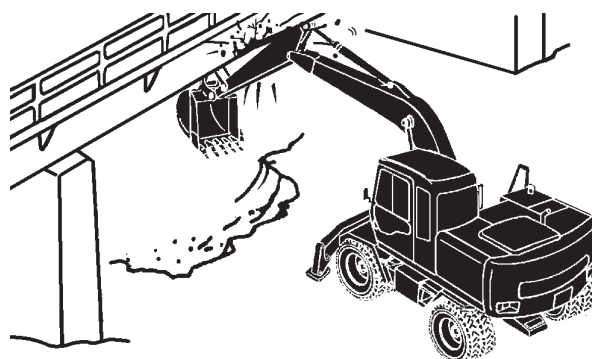
- Accidental severing of underground cables or gas lines may cause an explosion and/or fire, possibly resulting in serious injury or death.
  - Before digging check the location of cables, gas lines, and water lines.
  - Keep the minimum distance required, by law, from cables, gas lines, and water lines.
  - 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-086

### Operate with Caution

- If the front attachment or any other part of the machine hits against an overhead obstacle, such as a bridge, both the machine and the overhead obstacle will be damaged, and personal injury may result as well.
  - Take care to avoid hitting overhead obstacles with the boom or arm.



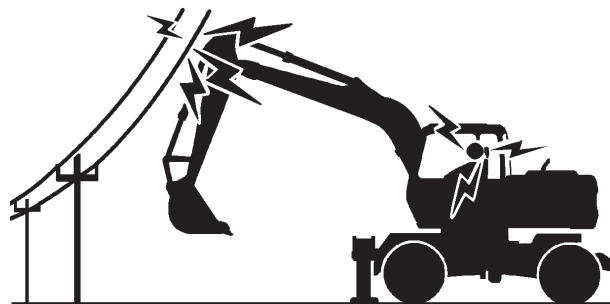
SA-087

## SAFETY

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### Avoid Power Lines

- Serious injury or death can result if the machine or front attachments are not kept a safe distance from electric lines.
- When operating near an electric line, NEVER move any part of the machine or load closer than 3 m plus twice the line insulator length.
- Check and comply with any local regulations that may apply.
- Wet ground will expand the area that could cause any person on it to be affected by electric shock. Keep all bystanders or co-workers away from the site.



SA-089

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### 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.



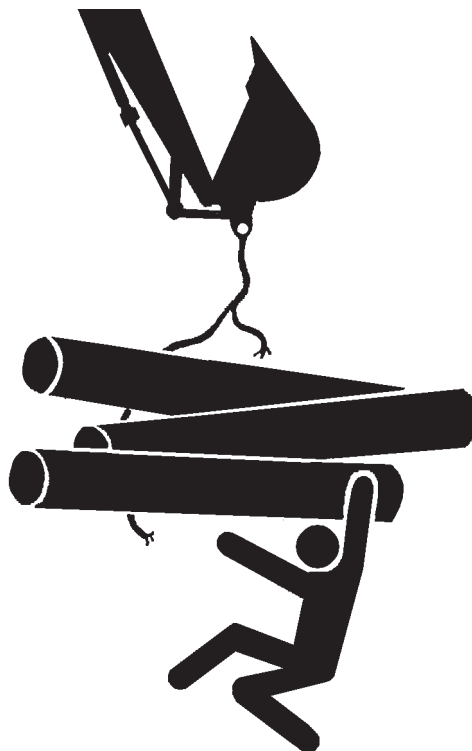
SA-1241

## SAFETY

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### Object Handling

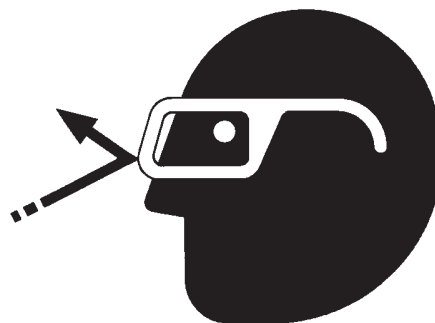
- If a lifted load should fall, any person nearby may be struck by the falling load or may be crushed underneath it, resulting in serious injury or death.
  - When using the machine for craning operations, be sure to comply with all local regulations.
  - Do not use damaged chains or frayed cables, cables, slings, or ropes.
  - Before craning, position the upperstructure with the travel motors at the rear.
  - Move the load slowly and carefully. Never move it suddenly.
  - Keep all persons well away from the load.
  - Never move a load over a person's head.
  - Do not allow anyone to approach the load until it is safely and securely situated on supporting blocks or on the ground.
  - Never attach a sling or chain to the bucket teeth. They may come off, causing the load to fall.



SA-014

### 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.
  - Always close the front windows, doors, door windows and the overhead window when operating the machine.



SA-432

## SAFETY

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### Park Machine Safely

To avoid accidents:

1. Park the machine on a firm, level surface.
2. Lower bucket to the ground.
3. Pull the pilot control shut-off lever to the LOCK position.
4. Place the F-N-R switch in the neutral, and put the brake switch in the P (parking brake) position.
5. Turn auto-idle switch OFF.
6. Run the engine at slow idle speed without load for 5 minutes.
7. Turn key switch to OFF to stop engine.
8. Remove the key from the key switch.
9. Close windows, roof vent, and cab door.
10. Lock all access doors and compartments.
11. Secure the wheels with wedges.



SA-093

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### 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 cap.



SA-018



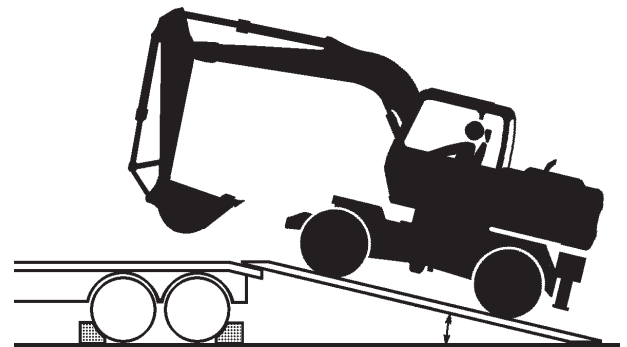
SA-019



## SAFETY

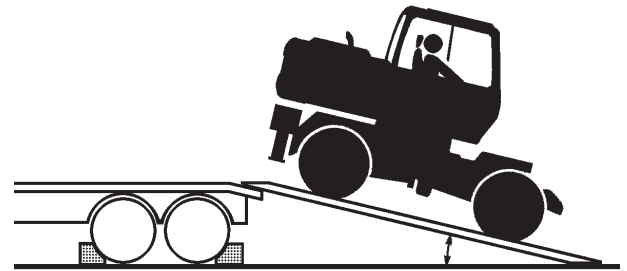
### Transport Safely

- Take care the machine may turn over when loading or unloading the machine onto 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. Turn auto-idle switch OFF.
    4. Always select the slow speed mode with the travel mode switch.
    5. Never load or unload the machine onto or off a truck or trailer using the front attachment functions when driving up or down the ramp.
    6. Never steer the machine while on the ramp. If the traveling direction must be changed while the ramp, unload the machine from the ramp, reposition the machine on the ground, then try loading again.
    7. The top end of the ramp where it meets the flatbed is a sudden bump. Take care when traveling over it.
    8. Place blocks in front of and behind the tires. Securely hold the machine to the truck or trailer deck with wire ropes.



Less than 15°

SA-094



Less than 15°

SA-095

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

## 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 firm, level surface.
2. Lower bucket to the ground.
3. Pull the pilot control shut-off lever to the LOCK position.
4. Place the F-N-R switch in the neutral, and put the brake switch in the P (parking brake) position.
5. Turn auto-idle switch OFF.
6. Run the engine at slow idle speed without load for 5 minutes.
7. Turn key switch to OFF to stop engine.
8. Remove the key from the key switch.
9. Close windows, roof vent, and cab door.
10. Lock all access doors and compartments.
11. Secure the wheels with wedges.

- If a maintenance procedure must be performed with the engine running, do not leave the machine unattended.
- If the machine must be raised, maintain a 90 to 110° angle between the boom and arm. Securely support any machine elements that must be raised for service work.
- 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-527

## SAFETY

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- 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

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### 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

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### 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.



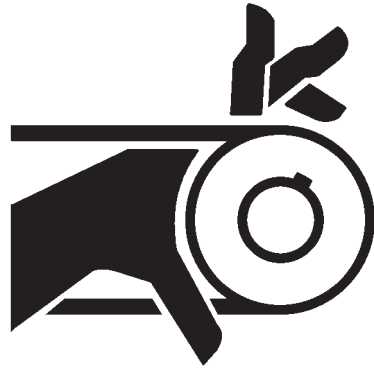
SA-527

## SAFETY

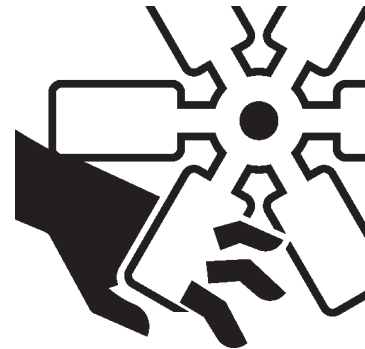
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### Stay Clear of Moving Parts

- 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



SA-2294

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### 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.



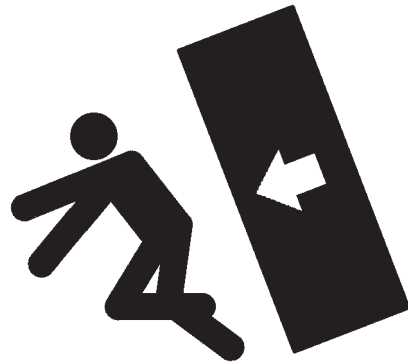
SA-344

## SAFETY

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### 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.

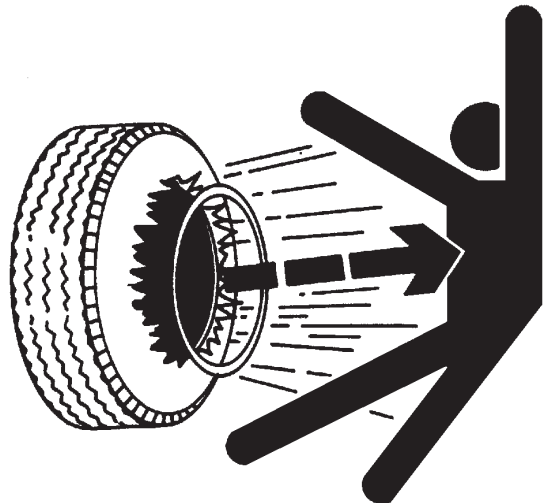


SA-034

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### 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

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### 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.
  - To 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

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### 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

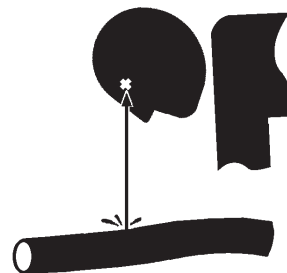
## SAFETY

### Avoid High-Pressure Fluids

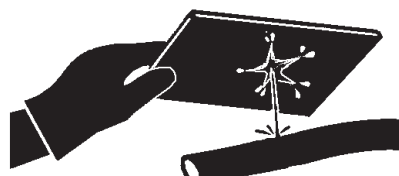
- Fluids such as diesel fuel or hydraulic oil under pressure can penetrate the skin or eyes causing serious injury, blindness or death.
  - Avoid this hazard by relieving pressure before disconnecting hydraulic or other lines.
  - Tighten all connections before applying pressure.
  - Search for leaks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



SA-031



SA-292



SA-044

### Prevent Fires

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

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### 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 slow 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

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### 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.
- In an emergency, if the cab door or front window can not be opened, break the front or rear window panes with the emergency evacuation hammer to escape from the cab. Refer to the explanation pages on the Emergency Evacuation Method.



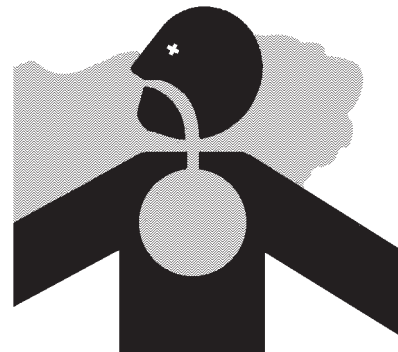
SA-393



SS-1510

### Beware of Exhaust Fumes

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



SA-016

## SAFETY

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### 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

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### 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.

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### 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 Hitachi dealer.

## SAFETY

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### 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 or 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 fibers might be present in imitation parts. Use only genuine Hitachi Parts.



SA-029

## SAFETY

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### 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

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### 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

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### 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.

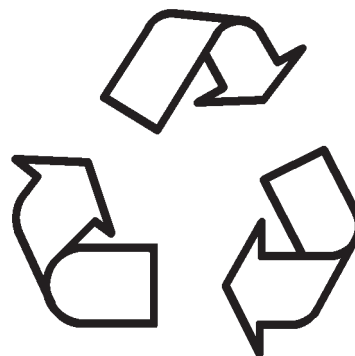


SA-309

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### Dispose of Waste Properly

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

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### Never Ride Attachment

Never allow anyone to ride attachments or load. This is an extremely dangerous practice.

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### Notes for Muffler Filter

#### Muffler Filter

The muffler filter removes particle matters (PM) in the exhaust gas. The muffler filter traps PM, and it is automatically regenerated by burning PM when the set amount of PM is accumulated in the filter. Follow the instructions below to prevent the muffler filter from being damaged.

**⚠ WARNING: Exhaust gas from the muffler filter, muffler and exhaust piping becomes hot during and right after engine running and filter regeneration (burning PM). Keep away from the direction of the exhaust piping and its vicinity during the filter regeneration. Be careful not to let your skin contact with any hot gas from the exhaust piping. It may cause severe burns.**

Do not directly touch water coming out of the muffler filter. The water is mildly-acidic by oxidation catalyst mounted in the muffler filter. If filter water spills on your skin, immediately flush it out with clean water.

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### 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.

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## SAFETY

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### Precaution for Communication Terminal Equipment

This machine has a communication terminal equipment emitting electrical waves installed inside a rear tray which is situated at the back of the driver's seat. 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 rear tray are at least 22 centimeters (8.662 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 equipments:

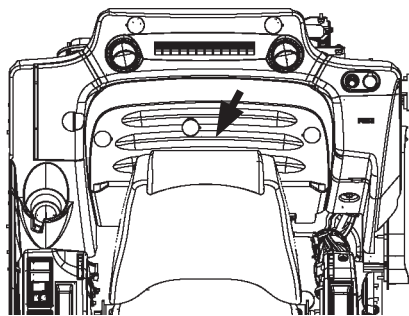
E-GSM900	0.573 W/Kg (914.80 MHz)
DCS-1800	0.130 W/Kg (1710.20 MHz)
WCDMA Band I	0.271 W/Kg (1950.00 MHz)

\*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 Japan: \*Under the Japanese Radio Act and other relevant Japanese regulations, the maximum SAR value is 2 W/kg (as of March 2010).

In EU Member nation: \*Under the "Council Recommendation 1999/519/EC 12 July 1999"; the maximum SAR value is 2 W/kg (as of March 2010).



SA-2302



## **SAFETY**

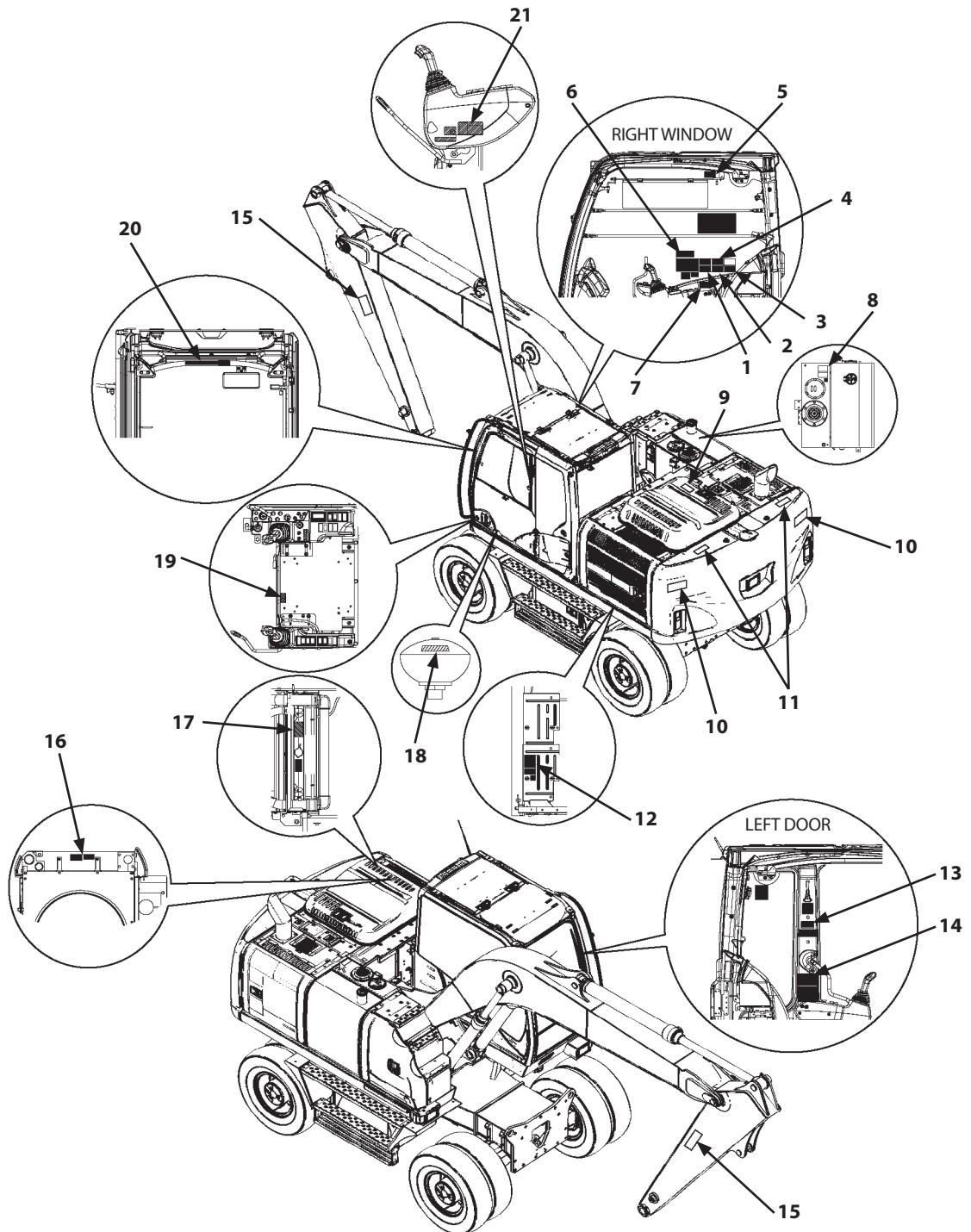
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- Never attempt to disassemble, repair, modify or displace the communication terminal, antenna or cables. Failure to do so may cause damage or fire on the machine and the communication terminal. (Before removing or installing the communication terminal, consult your authorized Hitachi dealer.)
- Do not pinch or forcibly pull cables, cords and connectors. Failure to do so may cause damage or fire on the machine and the communication terminal due to short/broken circuit.



## SAFETY SIGNS

All safety signs and their locations affixed on the machine are illustrated in this group. Make sure of the contents described in the safety signs through reading actual ones affixed on the machine to ensure safe machine operation. Always keep the safety signs clean. In case a safety sign is broken or lost, immediately, obtain a new replacement and affix it again in position on the machine. Use the part No. indicated under the right corner of each safety sign illustration when ordering it at your Hitachi dealer.



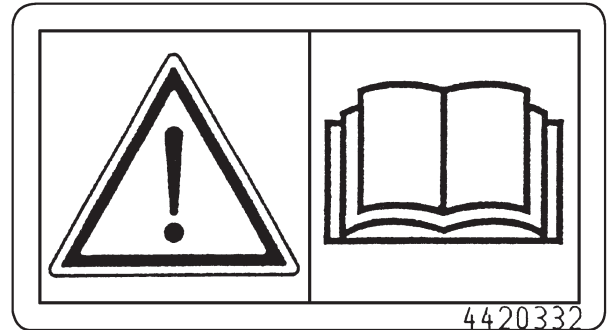
SS3397

## SAFETY SIGNS

1.

### WARNING!

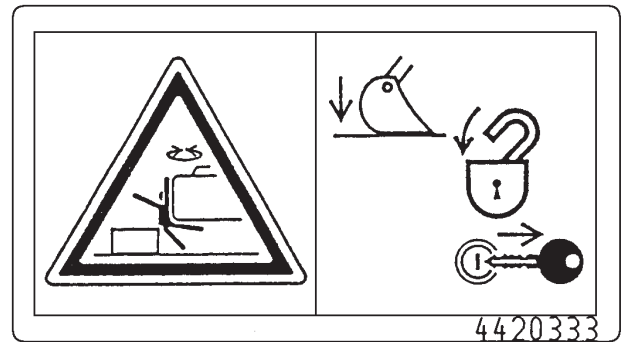
Prior to operation, maintenance, disassembling, and transportation of the machine, be sure to read and understand the Operator's Manual.



SS-1616

2.

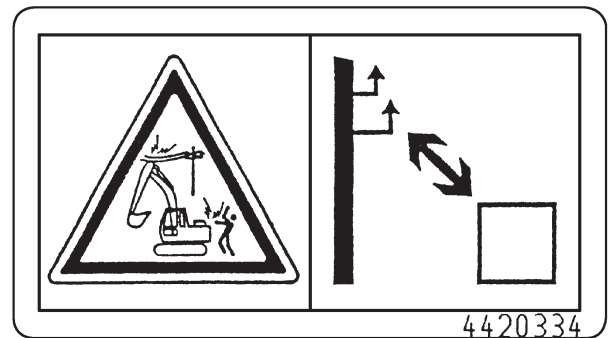
If the parked machine is unexpectedly moved, serious injury or death due to crushing may result. Be sure to lower the front attachment to the ground, lock the control levers, and remove the engine key before leaving the machine unattended.



SS4420333

3.

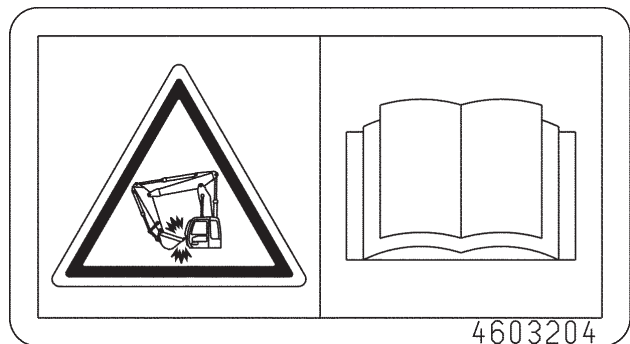
Sign indicates an electrocution hazard if machine is brought too near electric power lines. Keep a safe distance from electric power lines.



SS-1613

4.

When operating with 2-piece boom, the bucket may come in contact with the cab. Operate the machine with care not to allow the tip of the bucket to hit the cab while rolling in the front attachment.

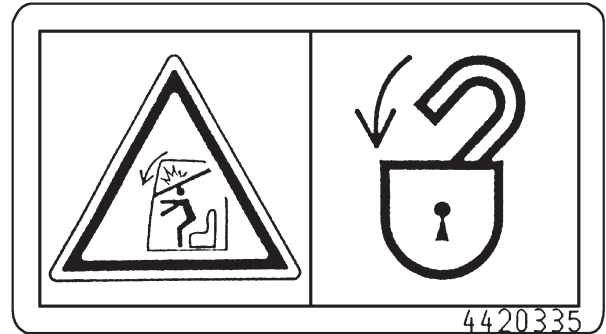


SS4603204

## SAFETY SIGNS

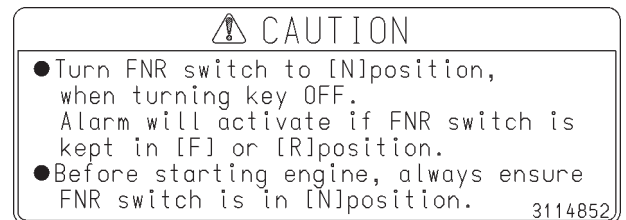
5.

Sign indicates a hazard from falling window.  
After raising window, be sure to lock it in place with lock pins.



SS-1618

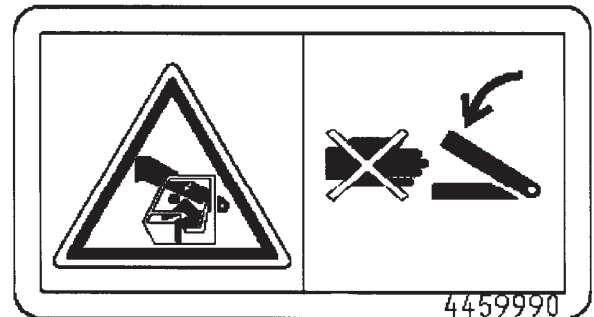
6.



SS3114852

7.

Do not extend your hands or head from the window. Your hands or head may come in contact with the boom.



SS4459990

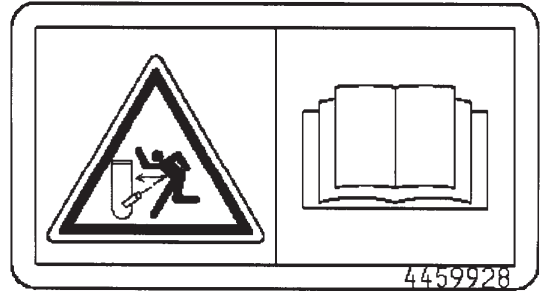
## SAFETY SIGNS

**8.**

Sign indicates a burn hazard from compressed air and spurting hot oil if the oil inlet is uncapped during or right after operation.

Read manual for safe and proper handling.

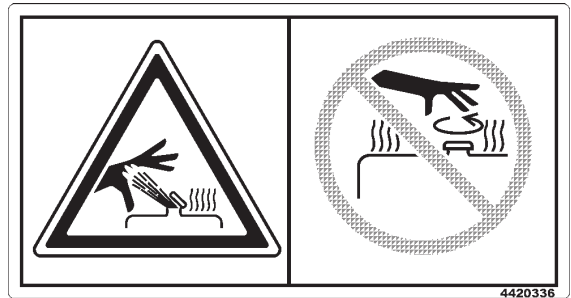
A



SS4459928

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

B



SS4420336

**9.**

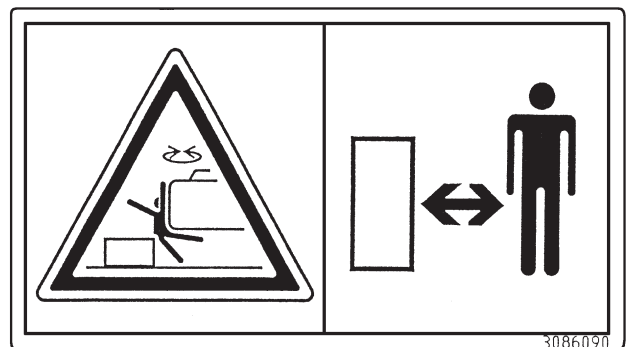
Sign indicates a hazard of falling.  
Do not stand on this place.



SS3092126

**10.**

Sign indicates a crush hazard by rotation of upperstructure of the machine.  
Keep away from swinging area of machine.



SS-1614

## SAFETY SIGNS

11.

Sign indicates a hazard of falling off the fender or hood.  
Never stand close to the edge.

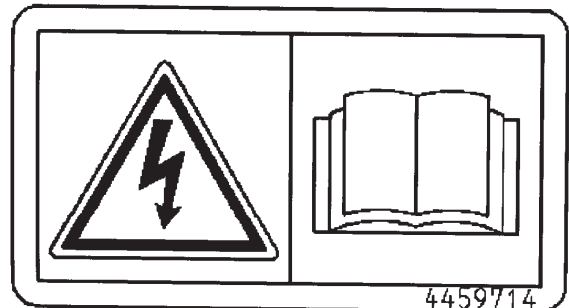


SS3092125

12.

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

A



SS4459714

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

B



SS4460067

Skin contact with electrolyte will cause burns. Splashed electrolyte into eyes will cause blindness. Take care not to touch electrolyte.

C



SS4460056

## SAFETY SIGNS

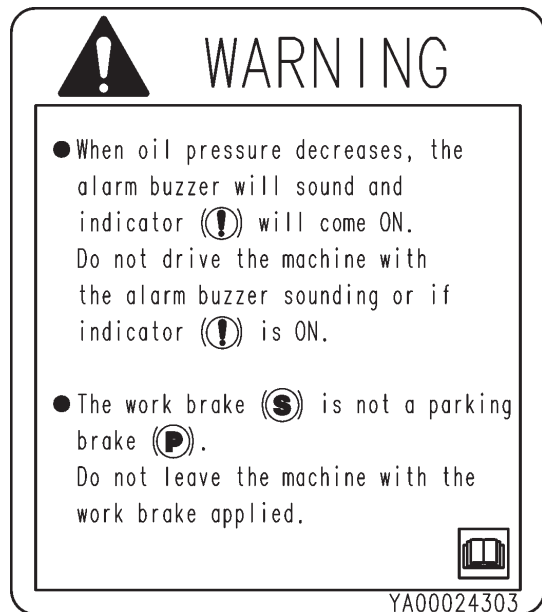
13.

If the machine should overturn, the operator may become injured and/or throw from the cab and/or crushed by the overturning machine.



SS4654287

14.



SSYA00024303

15.

Sign indicates a hazard of being hit by the working device of the machine.

Keep away from machine during operation.



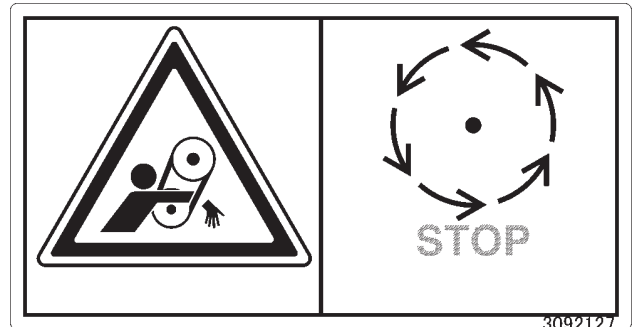
SS3089581



## SAFETY SIGNS

**16.**

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



3092127

SS3092127

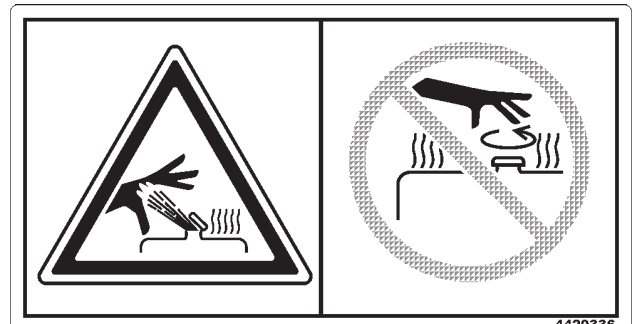


YA00008776

SSYA00008776

**17.**

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



4420336

SS4420336

**18.**

**WARNING**  
IT CONTAINS NITROGEN UNDER HIGH PRESSURE.  
DON'T ALLOW FIRE OR HEAT NEAR IT. DON'T TRY TO DISASSEMBLE IT.  
WEAR EYE PROTECTION AND CAREFULLY DRILL A HOLE AT THE POINT MARKED X TO RELEASE GAS PRESSURE BEFORE DISPOSAL.

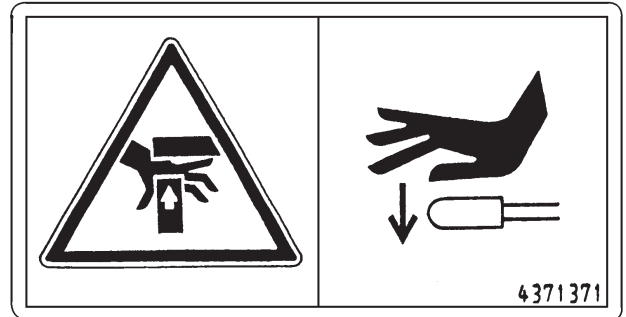
**WARNING**  
IT CONTAINS NITROGEN UNDER HIGH PRESSURE.  
DON'T ALLOW FIRE OR HEAT NEAR IT. DON'T TRY TO DISASSEMBLE IT.  
WEAR EYE PROTECTION AND CAREFULLY DRILL A HOLE AT THE POINT MARKED X TO RELEASE GAS PRESSURE BEFORE DISPOSAL.

SS-3212

## SAFETY SIGNS

19.

When moving the seat height/tilt lever downward, press the lever grip with a palm from the top side. Do not grasp the lever grip to operate the lever, possibly resulting in pinch of your fingers into the seat stand.



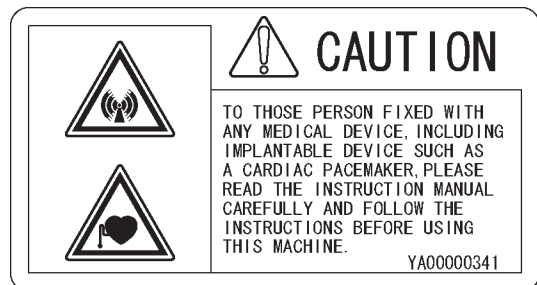
SS-955

20.



SS4467093

21.

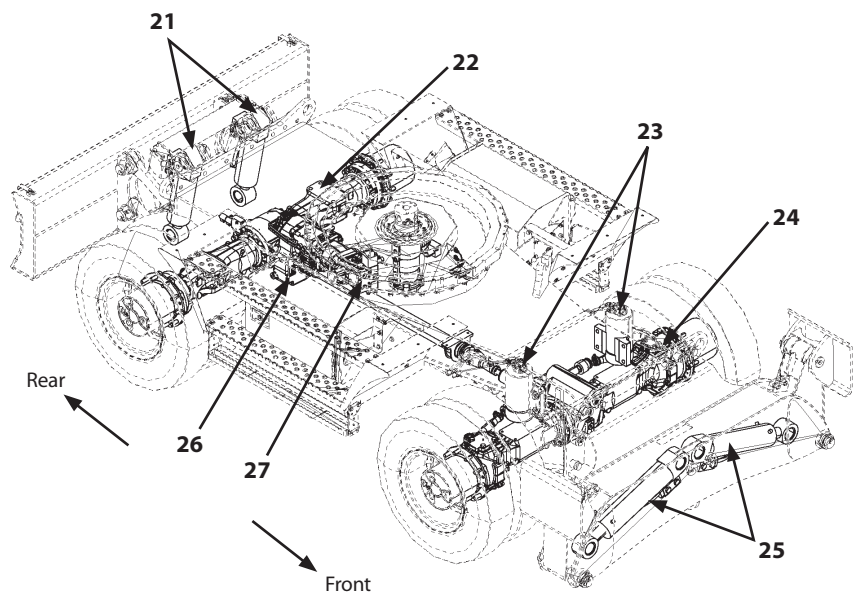
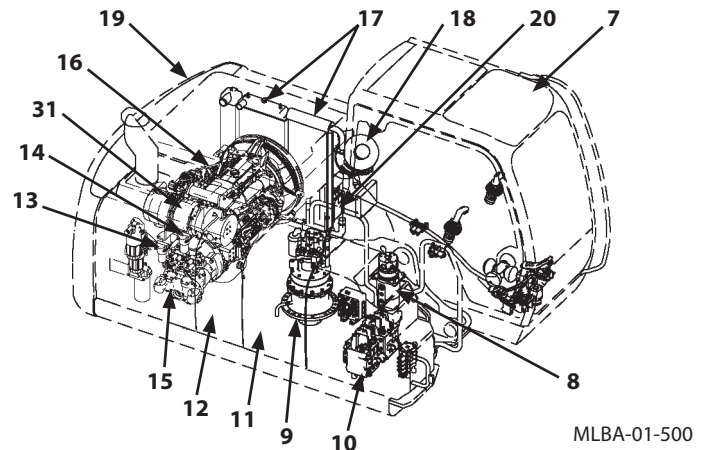
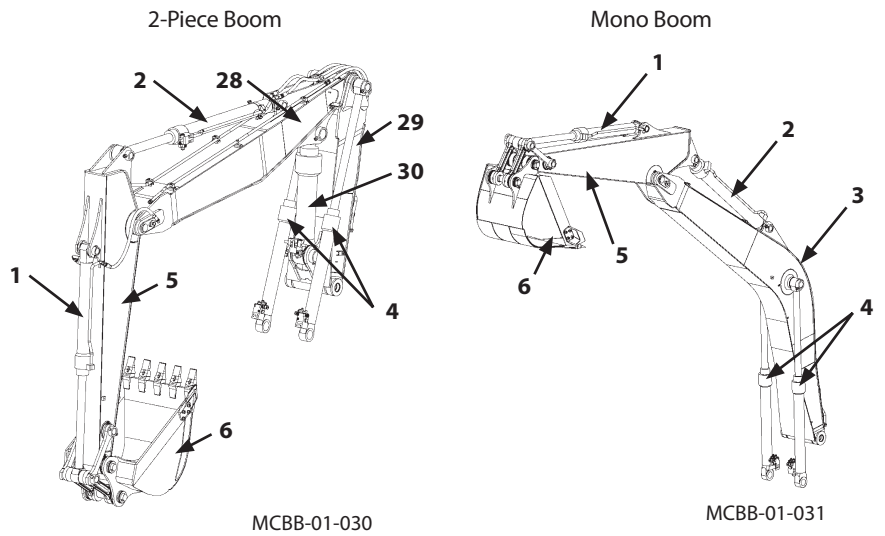


SSYA00000341

## COMPONENTS NAME

### Components Name

- 1- Bucket Cylinder
- 2- Arm Cylinder
- 3- Boom
- 4- Boom Cylinder
- 5- Arm
- 6- Bucket
- 7- Cab
- 8- Center Joint
- 9- Swing Device
- 10- Control Valve
- 11- Fuel Tank
- 12- Hydraulic Oil Tank
- 13- Steering Filter
- 14- Pilot/Brake Filter
- 15- Hydraulic Pump
- 16- Engine
- 17- Radiator/Oil Cooler
- 18- Air Cleaner
- 19- Counterweight
- 20- Battery
- 21- Blade Cylinder (Optional)
- 22- Rear Axle
- 23- Axle Cylinder
- 24- Front Axle
- 25- Outrigger Cylinder (Optional)
- 26- Transmission
- 27- Travel Motor
- 28- Second Boom
- 29- First Boom
- 30- Positioning Cylinder
- 31- Muffler (Muffler Filter)



**NOTE:** A typical model is shown in the right. Some parts may differ depending on the model of the machine.

## GETTING ON/OFF THE MACHINE

### Getting ON/OFF the Machine

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

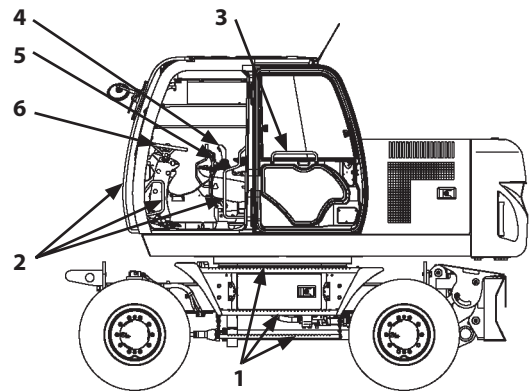
These are used to get on and off the cab safely as well as to do inspection and maintenance of the machine safely.

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

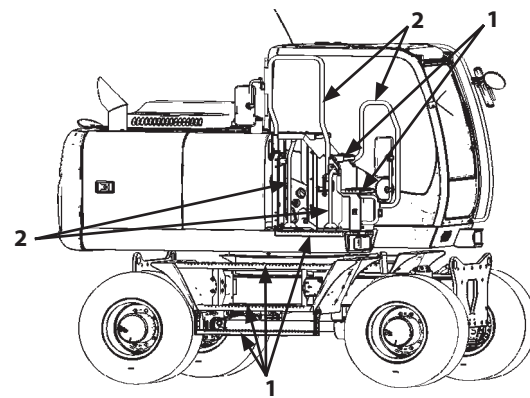
When opening and closing the door, pay thorough attention to the surrounding situation.

#### **⚠ WARNING:**

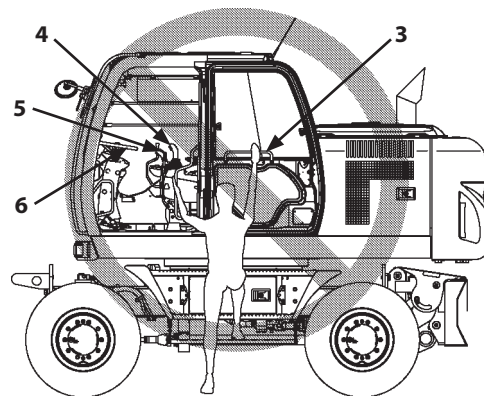
- **Never attach a wire on foot holds (1) or handrails (2) to lift the cab or main body or while transporting the machine on a truck or trailer as it is dangerous.**
- **Door handle (3) is not a handrail. Do not use the door handle as a handrail when getting on and off the machine.**
- **Do not hold control levers (4) or control shut-off lever (5) when getting on and off the machine.**



MLBA-01-501



MLBA-01-502



MLBA-01-503

## OPERATOR'S STATION

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### Muffler Filter

The muffler filter removes particle matters (PM) in the exhaust gas. The muffler filter traps PM, and it is automatically regenerated by burning PM when a set amount of PM is accumulated in the filter. Follow the instructions below to prevent the muffler filter from being damaged.

#### **WARNING:**

- **Exhaust gas from the muffler filter, exhaust piping and tail piping becomes hot during and right after engine running and filter regeneration (burning PM). Be careful not to let your skin contact any part of exhaust system or hot gas from the exhaust piping. Otherwise, it may cause severe burns.**
- **If flammable objects such as dead leaves or paper scraps are around the muffler, they may cause a fire.**
- **Before maintaining the machine, stop the engine and make sure the engine has sufficiently cooled down in order to prevent burns.**
- **Be sure to use fuel that complies with JIS K-2204, EN-590 and ASTM D-975 which contents 15 ppm or lower sulfur. If the fuel described above is not used, exhaust gas that exceeds the regulation values may be discharged and serious problems may arise on the engine.**
- **Use only genuine Hitachi engine oil. Using engine oil other than the genuine Hitachi may shorten the muffler cleaning interval and increase the fuel consumption rate.**
- **Besides, 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 sliding problem at lubricated contacts in the injector. It also affects the engine parts, leading to malfunction.**

## OPERATOR'S STATION

---

- **Do not modify the machine without authorization. Never attempt to modify the air inlet and exhaust parts such as the air duct, muffler filter and the exhaust outlet. Also never attempt to disassemble the muffler filter. Avoid giving shocks on the muffler filter 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.**
- **PM combustion may generate white smoke during muffler filter regeneration. Do not attempt to do muffler filter manual regeneration in a badly ventilated indoors.**

 NOTE:

- *The muffler filter traps PM, and it is automatically regenerated by burning PM when the set amount of PM is accumulated in the filter. It is called auto-regeneration. The auto-regeneration is performed at random times depending on the machine operating condition. The auto-regeneration may start during operation of the machine; you can continue to operate the machine. (Refer to 1-56)*
- *Turning the pilot shut-off lever to LOCK position and the brake switch to P (parking brake) position while performing auto-regeneration may change the engine sound and may increase the engine speed, this is not a malfunction.*
- *Do not stop the engine during regeneration unless absolutely necessary.*
- *The auto-regeneration may be terminated depending on the machine operating condition. At this time, the muffler filter regeneration request indicator will be lit. (Refer to 1-57) This mark indicates that the muffler filter manual regeneration is required. It is called auto-regeneration. Perform manual regeneration following the specified procedure. (Refer to 1-58)*
- *Usually, auto-regeneration starts 8 hours after the previous regeneration. (either auto or manual) The auto-regeneration is performed at random times depending on the machine operating condition.*

## OPERATOR'S STATION

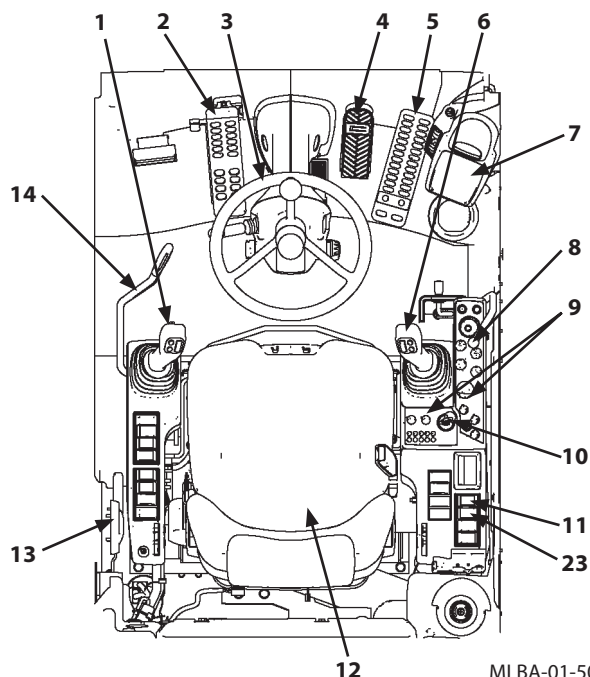
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- *If 10 hours and 30 minutes have passed from previous regeneration that did not complete, the muffler filter regeneration request will be lit on the monitor. (Refer to 1-57) 12 hours after the previous regeneration, the muffler filter regeneration request alarm flashes on the monitor (Refer to 1-57), the engine power decreases and the buzzer sounds interruptedly. Perform manual regeneration following the specified procedure in this case. (Refer to 1-58)*
- *When the machine is operated without performing manual regeneration, the muffler filter may be damaged. Immediately move the machine to a safe area and perform manual regeneration.*
- *If approximately 13 hours have passed without manual regeneration being carried out, the muffler filter alarm and the engine trouble alarm will be displayed on the monitor, and the buzzer sounds (refer to 1-57). Consult your authorized dealer for repairing the muffler filter in this case.*
- *Both auto and manual regenerations restore muffler filter function. It is not a malfunction.*
- *If auto-regeneration interval becomes shorter, consult your authorized dealer.*
- *White smoke may occur for several minutes after the engine start, this is not a malfunction.*

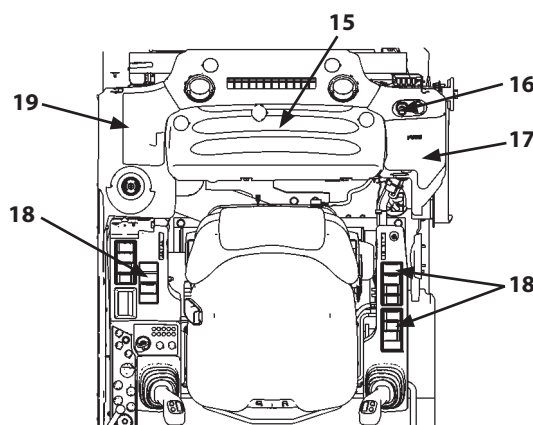
## OPERATOR'S STATION

### Cab Features (Std. Model)

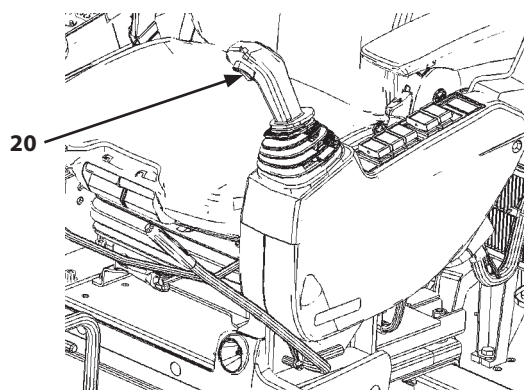
- 1- Left Control Lever/Horn/Front Attachment Selection Switch
- 2- Attachment Pedal (Optional)
- 3- Steering Wheel, Lever and Column Box
- 4- Brake Pedal
- 5- Accelerator Pedal
- 6- Right Control Lever/Auxiliary Switch (N/A)/Power Boost Switch
- 7- Multi Function Monitor Panel
- 8- Attachment Lever
- 9- Switch Panel
- 10- Key Switch
- 11- Regeneration Switch
- 12- Operator's Seat
- 13- Cab Door Release Lever
- 14- Pilot Control Shut-Off Lever
- 15- Glove Compartment
- 16- Cigar Lighter
- 17- Fuse Box
- 18- Switch Panel (for Optional Equipments)
- 19- Glove Compartment (Hot and Cool Box)
- 20- F-N-R Switch
- 21- Engine Stop Switch
- 22- Swing Lock Lever
- 23- Auto Axle Lock Switch



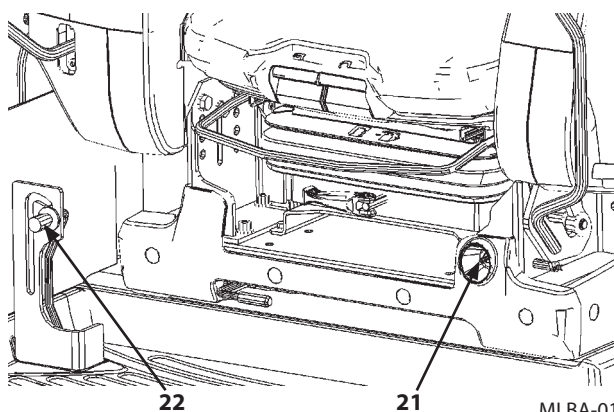
MLBA-01-504



MLBA-01-505



MLBA-01-514



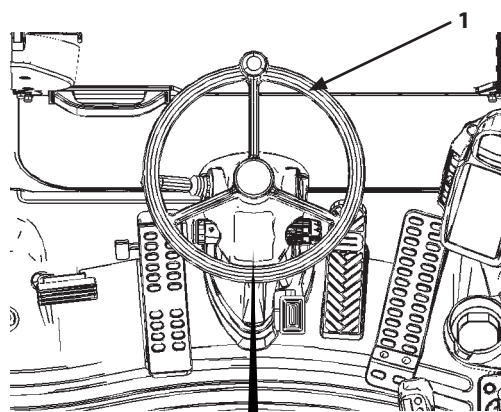
MLBA-01-506



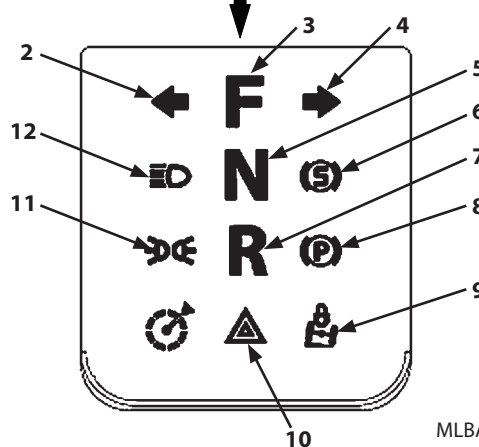
## OPERATOR'S STATION

### Column Box

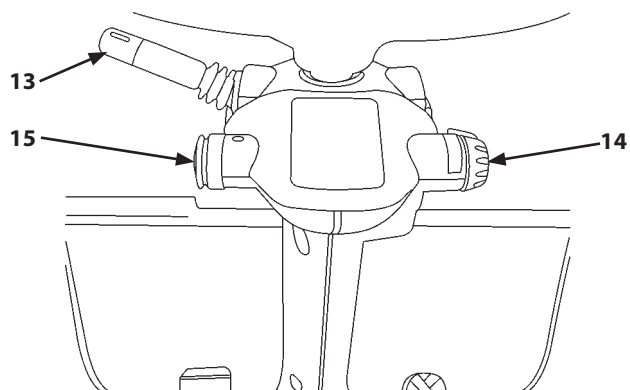
- 1- Steering Wheel
- 2- Turn Signal Indicator (L)
- 3- Forward Indicator
- 4- Turn Signal Indicator (R)
- 5- Neutral Indicator
- 6- Working Brake Indicator
- 7- Reverse Indicator
- 8- Parking Brake Indicator
- 9- Axle Lock Indicator
- 10- Hazard Light Indicator
- 11- Clearance Light Indicator
- 12- High Beam Indicator
- 13- Combination Switch
  - Turn Signal Switch
  - Light Switch
  - Dimmer Switch
  - Passing Switch
- 14- Brake Switch
- 15- Horn Switch
- 16- Tilt Pedal



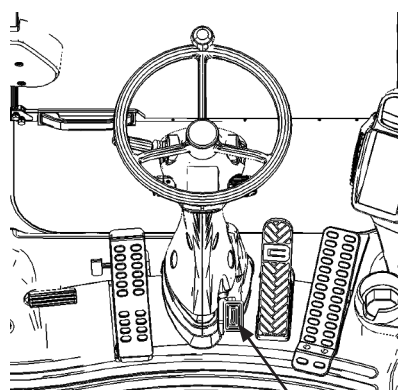
MLBA-01-507



MLBA-01-508



MCGB-01-003



MLBA-01-510

## OPERATOR'S STATION

### Steering Wheel and Travel Horn Switch

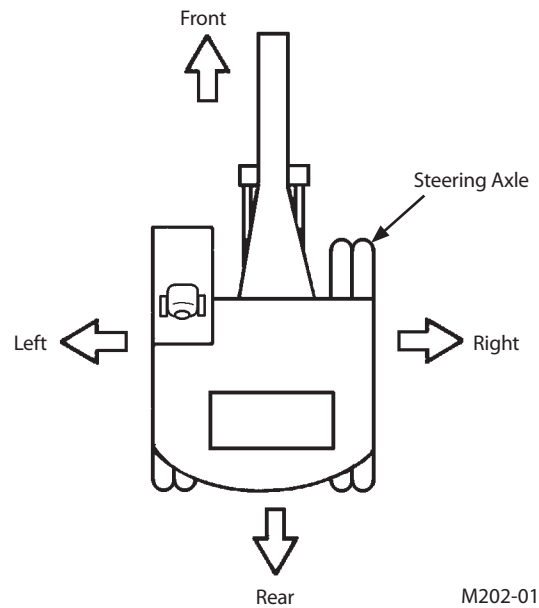
**⚠ WARNING:** When the upperstructure is rotated 180°, travel and steering control directions are reversed. Take extra care when traveling.

**When the undercarriage is in the backward position, the steering axle is located after the operator's station.**

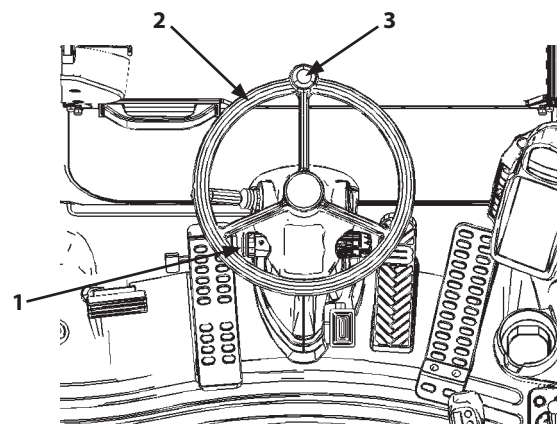
Knob (3) is located on steering wheel (2). Use knob (3) for one hand steering or for quick turns.

- Be sure to grip steering wheel (2) with both hands when traveling at fast speeds or on rough terrain.
- If the engine stalls during traveling, steering wheel (2) becomes very heavy to operate due to malfunction of the steering device. Restart the engine immediately.
- Push horn switch (1) at the left side of the steering column console to sound the horn.

**✎ NOTE:** An arrow mark is attached on top of the upperstructure frame to indicate the machine front.



ML202-01-003



MLBA-01-507

## OPERATOR'S STATION

### Accelerator Pedal

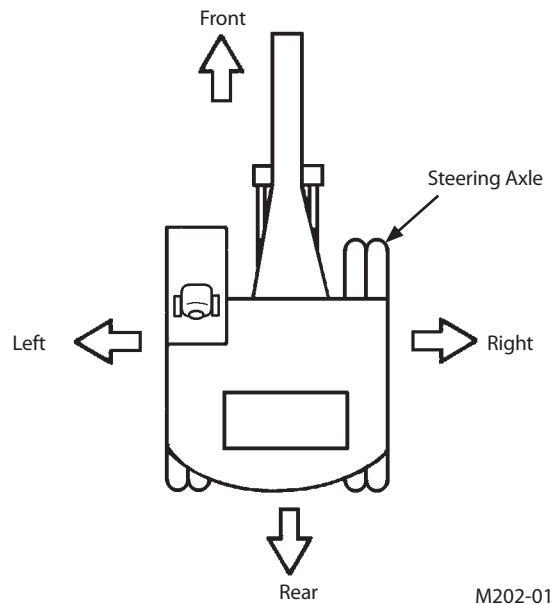
**WARNING:** When the upperstructure is rotated 180°, travel and steering control directions are reversed. Take extra care when traveling.

**When the undercarriage is in the backward position, the steering axle is located after the operator's station.**

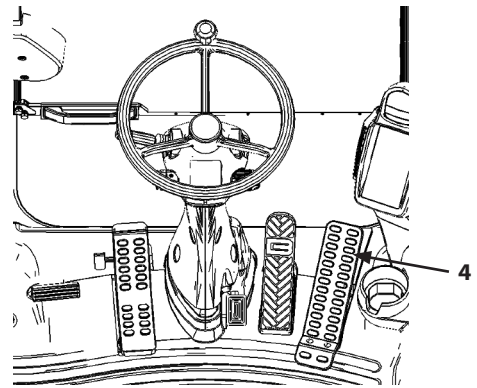
Travel speed can be smoothly controlled by operating accelerator pedal (4).

When accelerator pedal (4) is quickly released during traveling at a fast speed, the hydraulic brake will emit loud noise. In addition, the engine speed won't be reduced immediately. However, this is a normal symptom of the machine. Quick deceleration is quite hazardous so do try to release accelerator pedal (4) as smoothly as possible.

**IMPORTANT:** Do not repeatedly step ON/OFF accelerator pedal (4) quickly. Damage to the travel motors may result.



M202-01-003



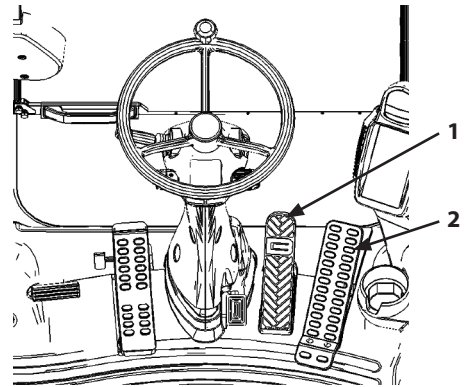
MLBA-01-510

## OPERATOR'S STATION

### Brake Pedal

#### WARNING:



- When returning brake pedal (1), do not quickly release your foot from pedal (1). By failure to do so, all hydraulic oil in the circuit is discharged, possibly causing the machine to start moving. Take extra care when operating the brake.
- If brake pedal (1) is repeatedly stepped on/off more than necessary, the hydraulic oil will be temporarily discharged from the accumulator, causing the oil pressure to decrease. Therefore, carefully operate the brake as brake performance may be reduced.

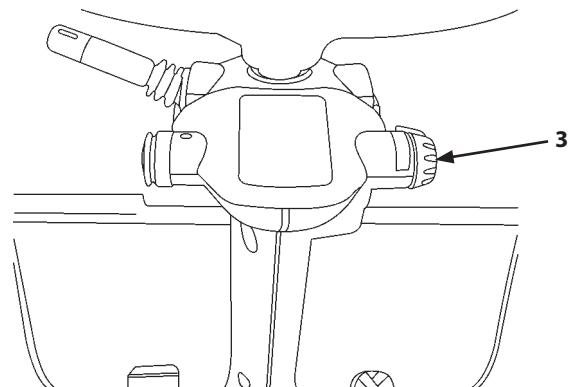


MLBA-01-510

A full-hydraulic brake system is employed on this machine so that powerful braking force is applied by lightly touching brake pedal (1). Accordingly, only use sudden brake operation in case of emergency.

1. Operate brake pedal (1) in the following procedures to smoothly stop the machine:
  - 1.1 Slowly release accelerator pedal (2) when the machine approaches 25 to 35 m before the target area to stop.
  - 1.2 Lightly depress brake pedal (1) when the machine approaches 5 to 6 m before the target area to stop.
  - 1.3 Slightly release brake pedal (1) just before the machine reaches the target area and re-depress the pedal to completely stop the machine.
2. In case the brake becomes inoperable, turn brake switch (3) to the P (parking brake) position to stop the machine. However, only use this operation in case of emergency. After using this operation, sufficiently check that the parking brake has no failure.

 NOTE: When brake switch (3) is in the  (axle lock) position, the working brake can be applied/release by using the brake pedal.



MCGB-01-003

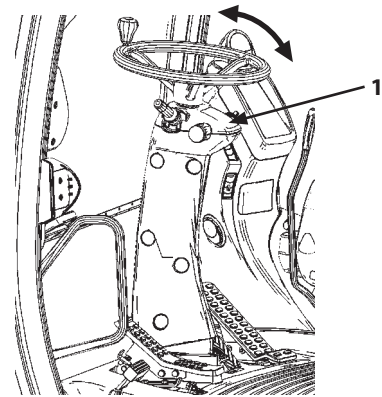
## OPERATOR'S STATION

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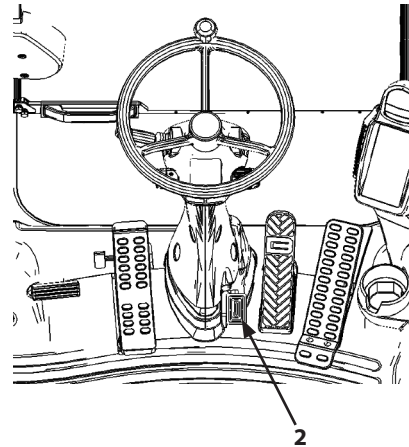
### Tilt Pedal

Angle of the steering wheel column can be adjusted. Pull steering wheel column (1) to your side while depressing tilt pedal (2) to tilt steering wheel column (1). Releasing tilt pedal (2) will lock steering wheel column at the position. Depress tilt pedal (2) to make the steering wheel column automatically stand vertically. If tilt pedal (2) is released halfway, the steering column will be locked at the position.

**IMPORTANT:** If the front window is opened with the steering column standing vertically, the steering wheel interferes with the front window. Before opening/closing the front window, tilt the steering wheel column to your side.



MLBA-01-553



MLBA-01-510

## OPERATOR'S STATION

### F-N-R Switch

**⚠ WARNING:** When the upperstructure is rotated 180°, travel and steering control directions are reversed. Take extra care when traveling.

**When the undercarriage is in the backward position, the steering axle is located after the operator's station.**

Change forward/reverse travel direction by operating F-N-R switch (1).

When F-N-R switch (1) is operated, the corresponding indicator (2, 3 or 4) will be lit.

1. Turn F-N-R switch (1) to the N (neutral) position during machine operation or when parking or stopping the machine.
2. Avoid turning F-N-R switch (1) to the N (neutral) position or to the reverse direction of travel quickly during traveling.

In case braking performance is reduced during traveling, the machine can be stopped by operating F-N-R switch (1) reversely. However, only use this operation in case of emergency.

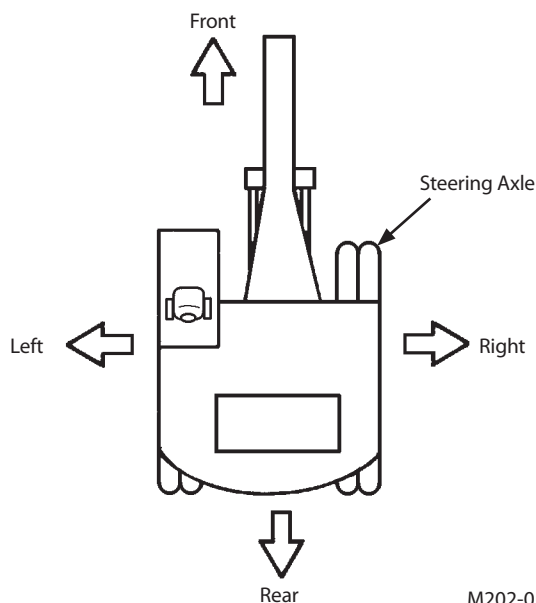
**IMPORTANT:** Avoid turning F-N-R switch (1) to the N (neutral) position or to the reverse direction of travel quickly during traveling.

**Failure to do so may result in damage to the travel motor.**

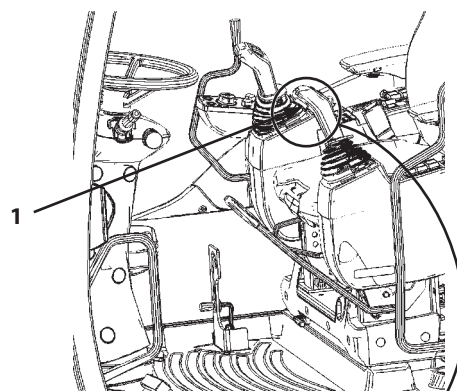
**📌 NOTE:** The engine does not start unless F-N-R switch (1) is in the N (neutral) position.

**📌 NOTE:** Turn F-N-R switch (1) to the N (neutral) position before turning the key switch OFF.

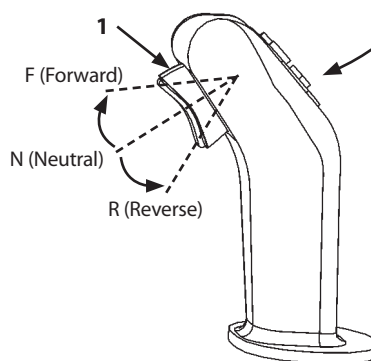
Alarm will activate if F-N-R switch (1) is kept in F (forward) or R (reverse) position.



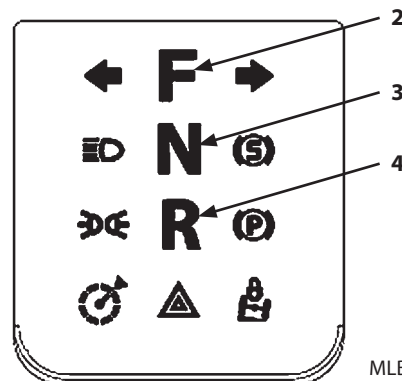
M202-01-003



MLBA-01-509



MCGB-01-026



MLBA-01-508

## OPERATOR'S STATION

### Combination Switch (Turn Signal Switch, Light Switch, Dimmer Switch, Passing Switch)

#### Turn Signal Switch

Turn signal switch (1) is used to indicate the steering direction to other vehicles.

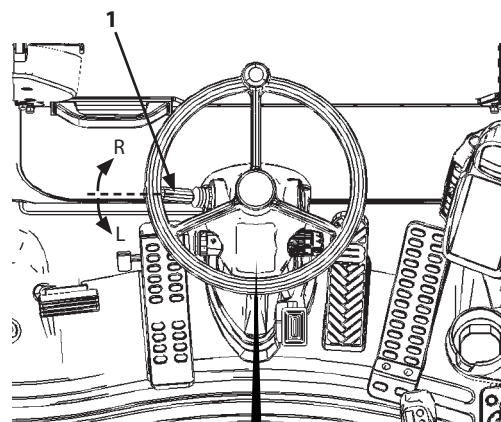
Turn signal switch (1) in the (R) position:

To make right turn, turn signal indicator R (2) lights.

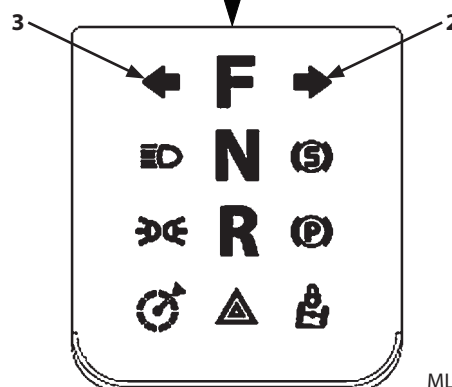
Turn signal switch (1) in the (L) position:

To make left turn, turn signal indicator L (3) lights.

When the steering wheel is returned in the straight travel position, turn signal switch (1) automatically returns to neutral.



MLBA-01-507



MLBA-01-508

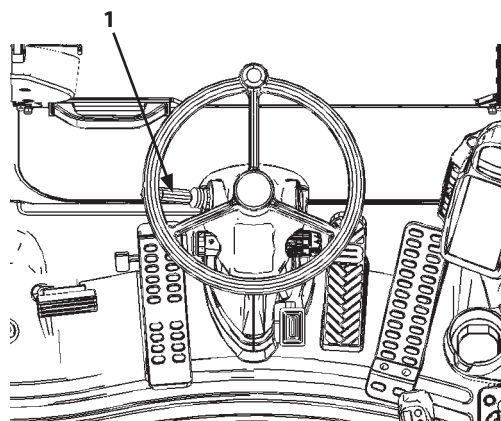
## OPERATOR'S STATION

### Light Switch

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

	Headlight	Clearance Light	Tail Light	Switch Box Light	License Plate Light
☰	☀	☀	☀	☀	☀
☰D☰	×	☀	☀	☀	☀
OFF	×	×	×	×	×

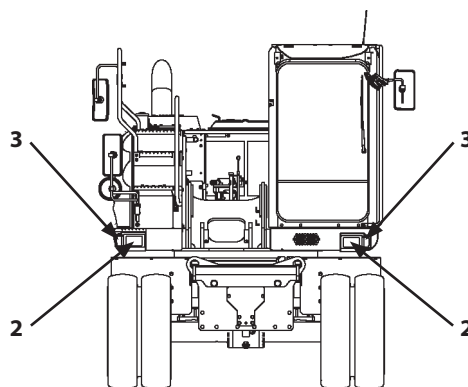
Equipped machine only



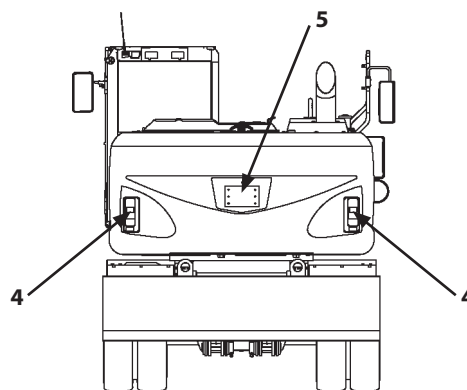
MLBA-01-507

- 2- Headlight
- 3- Clearance light/Turn signal light
- 4- Tail light, Brake light/Turn signal light/Backup light
- 5- License Plate Light

**NOTE:** When the key switch is turned OFF while light switch (1) is in ON ☀ position, the light turns ON for 30 seconds.



MLBA-01-511



MLBA-01-512



## OPERATOR'S STATION

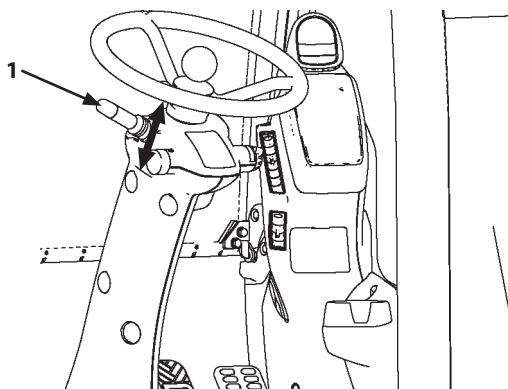
### Dimmer Switch, Passing Switch

Use the dimmer switch when controlling the high/low headlight beam position.

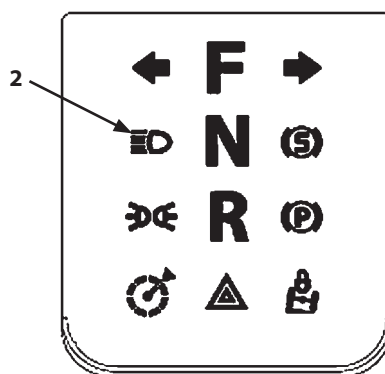
**CAUTION:** Travel the machine with the headlight in the low beam position when other vehicles are present in the vicinity.

By bringing down lever (1) with the headlight ON, the headlight beam turns upward, and the high beam indicator (2) comes ON.

As long as lever (1) is kept raised, the passing light (high headlight beam) comes ON regardless of the light switch position.




MLBA-01-513



MLBA-01-508

## OPERATOR'S STATION

### Brake Switch

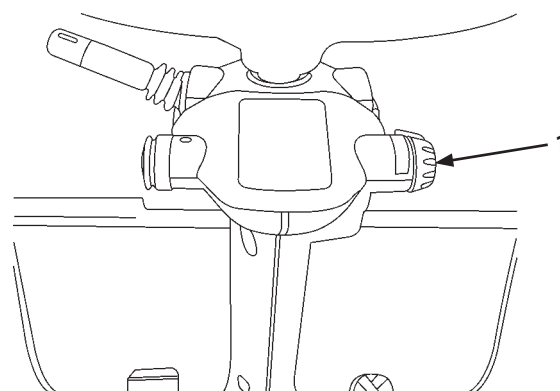
Brake switch (1) has 4 control positions, OFF (traveling),  (axle lock), P (parking brake) and S (working brake).

**⚠ WARNING:**


- Use the axle lock position only when operating the machine. It is dangerous to lock the axle during traveling. Never use the axle lock position during traveling.
- When leaving the machine, always turn brake switch (1) in the P (parking brake) position.

**IMPORTANT:** Do not operate the machine with brake switch (1) in the P (parking brake) position.

Otherwise damage to the parking brake may result.



MCGB-01-003

Brakes and lock Brake switch position	Working Brake	Parking Brake	Axle Lock
OFF (Traveling)	Released or <input type="checkbox"/> ON *	Released	Released or <input type="checkbox"/> ON **
 (Axle Lock)	Released or <input type="checkbox"/> ON ***	Released	<input type="checkbox"/> ON
P (Parking Brake)	Released	<input type="checkbox"/> ON	<input type="checkbox"/> ON
S (Working Brake)	<input type="checkbox"/> ON	Released	<input type="checkbox"/> ON

\* : The working brake is applied by operating the brake pedal or auto axle lock switch.

\*\* : The axle lock is applied by operating the auto axle lock switch.

\*\*\* : The working brake is applied by depressing the brake pedal.

## OPERATOR'S STATION

**NOTE:** The axle lock system locks the front axle. When required to prevent the front axle from oscillating (such case as to swing the upperstructure while traveling on a flat road during operation), turn brake switch (1) to the axle lock position.

When normally traveling, always turn brake switch (1) to the OFF (traveling) position.

Each time brake switch (1) is operated, monitor indicator (2) displays the icon of axle lock, parking brake, and work brake in order.

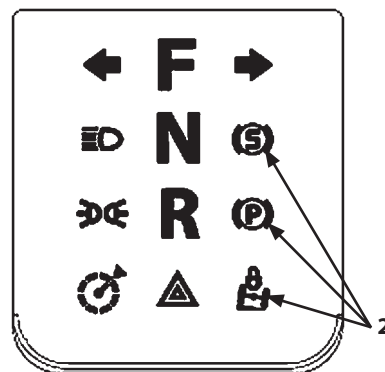
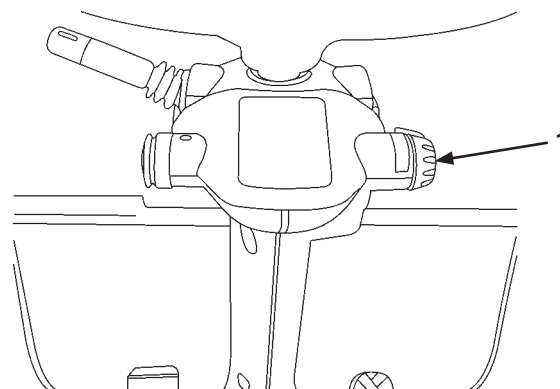
Whenever the machine is operated, turn brake switch (1) in the S (working brake) position.

Do not operate the machine with brake switch (1) in the P (parking brake) position. If a control lever is operated with brake switch (1) in the P (parking brake) position, the buzzer sounds.

Before turning the key OFF, turn brake switch (1) to the P (parking) position. Unless brake switch (1) is in either the P (parking brake) or S (working brake) position, the engine will not start.

Even if the key switch is turned OFF with brake switch (1) in the position other than P (parking brake), the parking brake is applied to ensure safety.

**NOTE:** When brake switch (1) is in the OFF (traveling) position or axle lock position, the engine does not start.



## OPERATOR'S STATION

---

### Working Brake

 **WARNING:**

- **The working brake is not a parking brake. Do not leave the machine with the working brake applied.**
- **Before leaving the operator's seat, be sure to park the machine correctly according to the parking procedures.**

**(Refer to the "Parking" section in the "DRIVING MACHINE" chapter.)**


The working brake is applied by turning the brake switch or depressing the brake pedal.

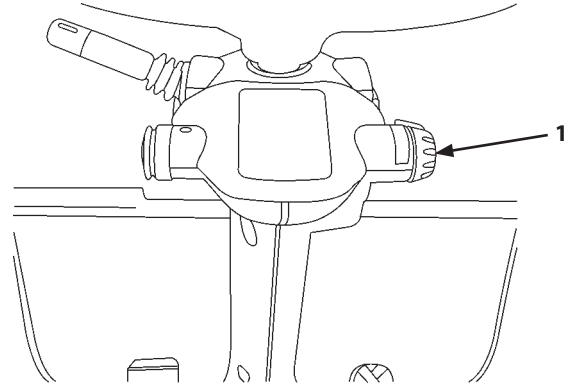
Confirm the operating condition of the working brake by looking at the indicators in the column box.

## OPERATOR'S STATION

### Working Brake Operation 1

Operate brake switch (1) to switch over the working brake between "ON" and "Release".



- 1.1 When the brake switch is turned in the S (working brake) position, the working brake is applied.
- 1.2 When the brake switch is turned in either OFF (traveling),  (axle lock) or P (parking brake) position, the working brake is released.

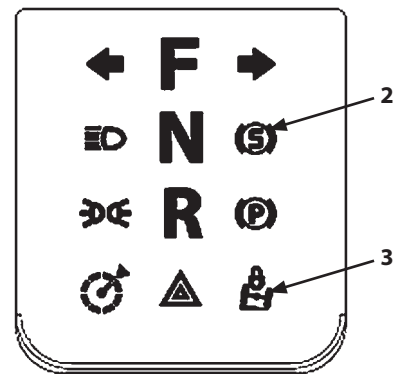


MCGB-01-003

### Working Brake Operation 2

Operate the brake pedal to switch over the working brake between "ON" and "Release".

- 2.1 Turn brake switch (1) to the  (axle lock) position.
  - (1) Fully depress the brake pedal to apply the working brake.
  - (2) Depress the brake pedal again to release the working brake.  
When brake switch (1) is turned in either OFF (traveling) or P (parking brake) position, the working brake is released.
- 2.2 Turn brake switch (1) to the OFF (traveling) position.
  - (1) Turn auto axle lock switch (4) ON.  
Stop the machine. Ensure that axle lock indicator (3) in the column box is lit.
  - (2) Fully depress the brake pedal to apply the working brake.
  - (3) Depress the brake pedal again to release the working brake.  
Also, turning brake switch (1) in either  (axle lock) or P (parking brake) position releases the working brake.

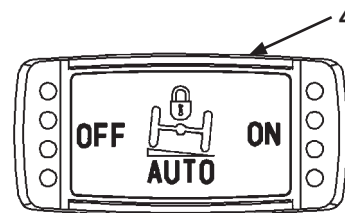


MLBA-01-508

### Confirmation

Confirm the operating condition of the working brake by looking at indicator (2) in the column box.

- Light ON: Working brake ON
- Light OFF: Working brake OFF



MLBA-01-530

## OPERATOR'S STATION

### Auto Axle Lock Switch

If auto axle lock switch (1) is turned ON, the axle lock will be applied when you release your foot from the accelerator pedal even when the brake switch is in the OFF (traveling) position.

#### Operation Procedure

Turn the brake switch to the OFF (traveling) position.  
Turn auto axle lock switch (1) ON. Indicator (2) on the monitor comes ON.

The axle lock activates by releasing the accelerator pedal when the machine travel speed is 3 km/h or less.

When the axle lock activates, axle lock indicator (3) in the column box will come ON.

When the accelerator pedal is depressed again, the axle lock will be released.

Axle lock indicator (3) in the column box will go OFF.

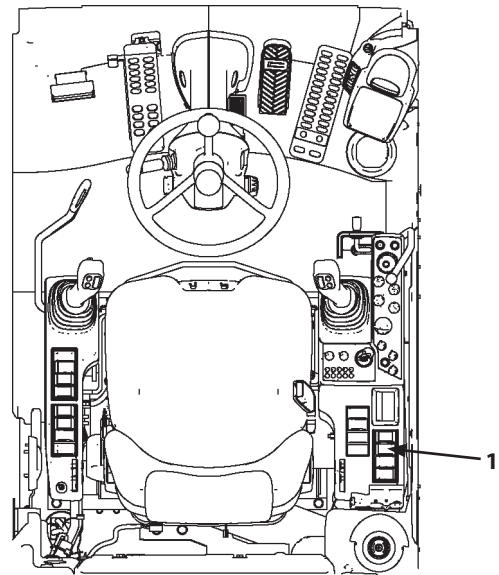
#### Confirmation

Confirm the operating condition of the axle lock by looking at indicator (3) in the column box.

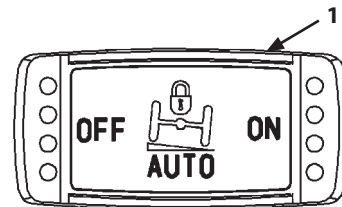
- Light ON: Axle lock ON
- Light OFF: Axle lock OFF

**CAUTION:** When the accelerator pedal is depressed while the auto axle lock is operating, the axle lock will be released.

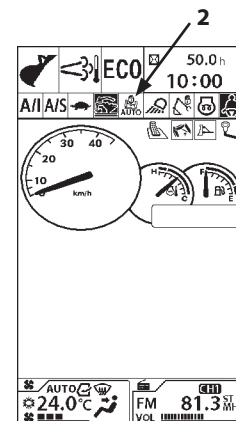
**Do not turn the auto axle lock ON under unstable conditions such as on a slope.**



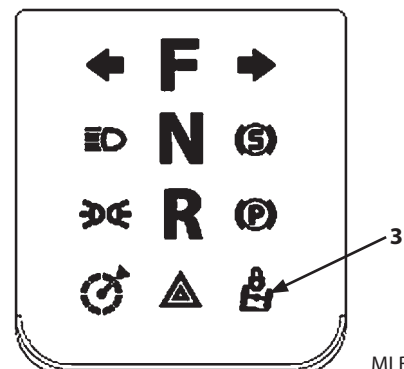
MLBA-01-504



MLBA-01-530



MLBA-01-286



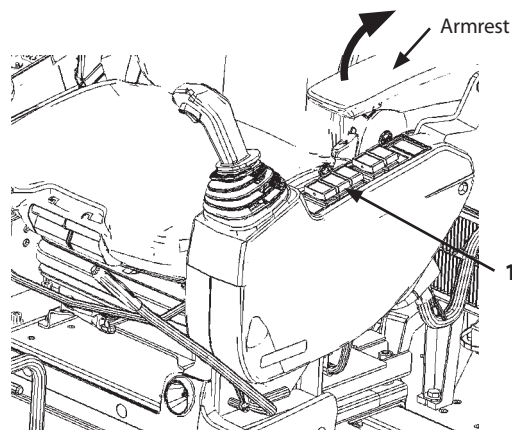
MLBA-01-508

## OPERATOR'S STATION

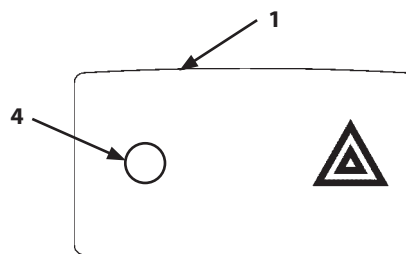
### Hazard Switch

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

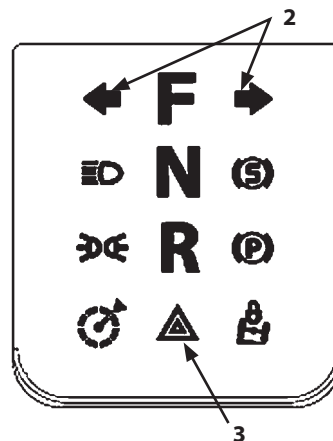
When a machine failure occurs, use this switch to inform other vehicles that the machine is in an emergency situation. When hazard switch (1) is depressed, both right and left turn signal indicators (2), hazard light indicator (3), and hazard switch stop-side indicator (4) start flashing. Raise the armrest when operating hazard switch (1).



MLBA-01-514



MCGB-01-014










MLBA-01-508

## OPERATOR'S STATION

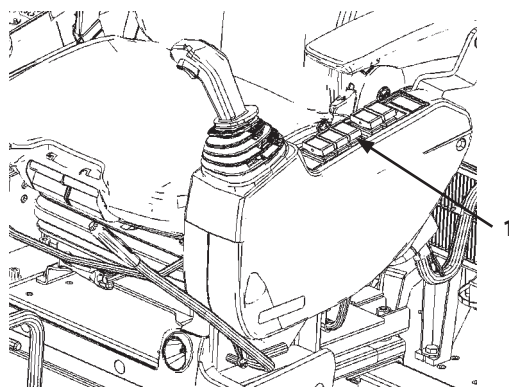
### Blade/Outrigger/Front Attachment Pilot Control Switch

Turn blade/outrigger/front attachment pilot control switch (1) to each position for operating the blade/outrigger and controlling front pilot pressure to restrict the front attachment operation.

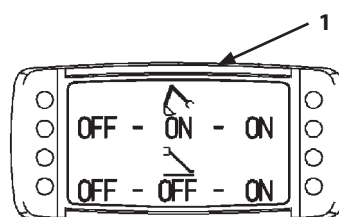
Switch Position	 OFF	 ON	 ON
	 OFF	 OFF	 ON
Front Attachment/Swing Operation	Inoperable	Operable	Operable
Blade/Outrigger Operation	Inoperable	Inoperable	Operable
Travel Operation	Operable*	Operable	Operable

 **NOTE:** \* When traveling on a public road, place blade/outrigger/front attachment pilot control switch (1) in the "OFF, OFF" position so that the front attachment will not move even if the control lever is accidentally moved.

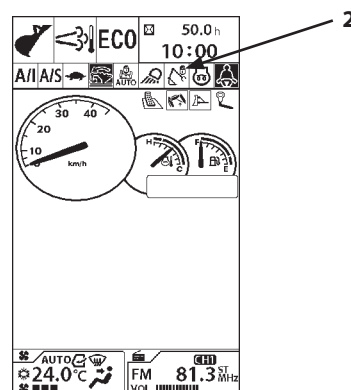
When the front attachment/swing operation is in the OFF position, icon (2) on the monitor panel come ON.



MLBA-01-514



MLBA-01-515



MLBA-01-286



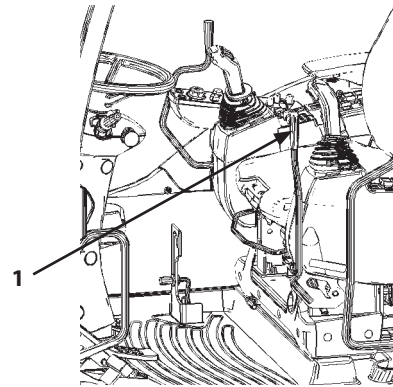
## OPERATOR'S STATION

### Pilot Control Shut-Off Lever

Pilot control shut-off lever (1) functions to prevent the machine from being mistakenly operated when the operator is getting on or off the machine.

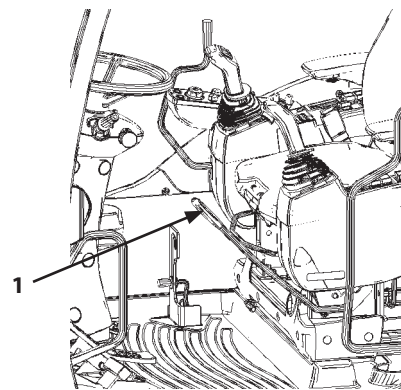
#### **WARNING:**

- Always pull pilot control shut-off lever (1) into the full LOCK position. Unless pilot control shut-off lever (1) is fully moved to the LOCK position, possibly creating a hazardous situation.
- When leaving the machine, always stop the engine. Then, pull the pilot control shut-off lever up to the LOCK position.
- Always check to be sure that the pilot control shut-off lever is pulled up to the LOCK position before transporting the machine or leaving the machine at the end of the shift.
- Confirm that the pilot control shut-off lever is in the LOCK position before starting the engine. The engine will not start in other than the LOCK position.
- Even though the console is pushed down, the pilot control shut-off lever (1) is not lowered. Be sure to operate the lever by holding lever grip.



LOCK position

MLBA-01-517



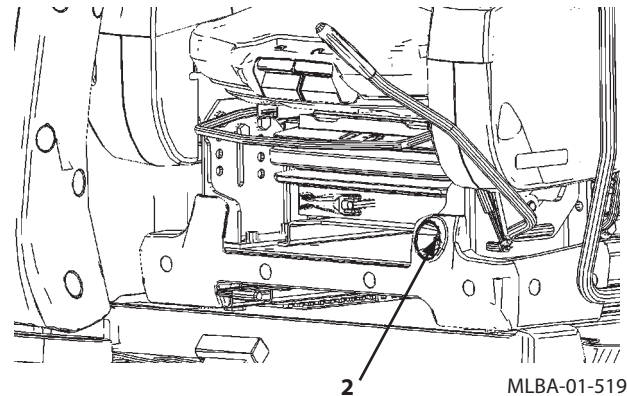
UNLOCK Position

MLBA-01-518

### Engine Stop Switch

In case the engine does not stop even if the key switch is turned OFF due to failure of the machine, move switch (2) located at the front-left side of the seat stand downward to stop the engine.

After operating switch (2), be sure to return the switch back to the upward position.



MLBA-01-519

## OPERATOR'S STATION

### Swing Lock Lever

The swing lock lever locks the swing function by mechanically connecting the upperstructure to the undercarriage.

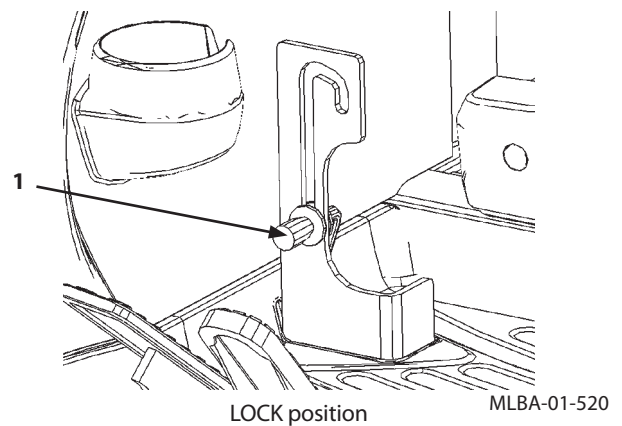
**CAUTION:** Be sure to place swing lock lever (1) in the LOCK position to prevent the upperstructure from swinging whenever transporting on a trailer, traveling on roads, moving from one job site to another or parking on a slope.

**IMPORTANT:** Never operate swing lock lever (1) while rotating the upperstructure. Damage to the main frame may result.

#### Engage Swing Lock

Be sure to place swing lock lever (1) in the LOCK position to prevent the upperstructure from swinging whenever transporting on a trailer, traveling on roads, moving from one job site to another or parking on a slope.

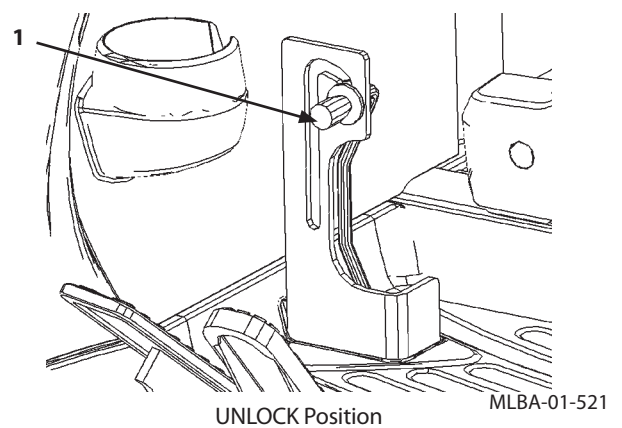
1. Align the swing lock holes on the upperstructure and undercarriage.
2. Lower swing lock lever (1) to the LOCK position.
3. Check that swing lock lever (1) is securely engaged in the LOCK position by slightly rotating the upperstructure.



#### Disengage Swing Lock

Place swing lock lever (1) to the UNLOCK position when operating or traveling the machine to or on job sites.

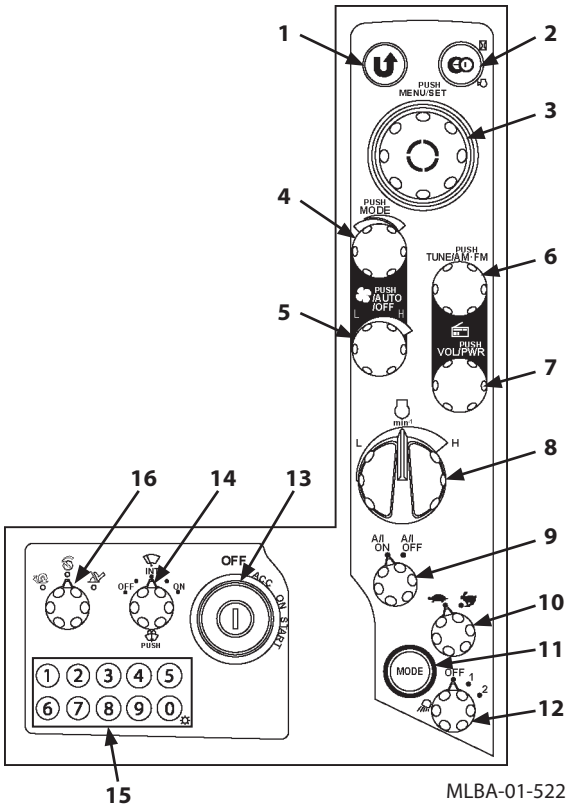
1. Raise swing lock lever (1) to the UNLOCK position.
2. Securely hold swing lock lever (1) in the UNLOCK position.



# OPERATOR'S STATION

## Switch Panel

- 1- Return to Previous Screen
- 2- Return to Basic Screen
- 3- Selector Knob
- 4- Temperature Control Switch/Mode Switch
- 5- AUTO/OFF Switch/Blower Switch
- 6- AM/FM Selector/Tuning Switch
- 7- Power Switch/Volume Control Knob
- 8- Engine Control Dial
- 9- Auto-Idle Selector
- 10- Travel Mode Switch
- 11- Power Mode Switch
- 12- Work Light Switch
- 13- Key Switch
- 14- Wiper/Washer Switch
- 15- Numeric Keypad
- 16- Engine Control Mode Selection Switch



## OPERATOR'S STATION

---

### Return to Previous Screen (Monitor)

Push this switch to return to the previous screen.



MDAA-01-010

### Return to Basic Screen (Monitor)

Allows any screen to return to the basic screen.



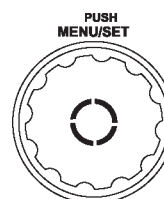
MDAA-01-011

### Selector Knob (Monitor)

Push : Push this switch while the basic screen is displayed, the menu screen opens.

Push this switch after the menu screen, the action is confirmed.

Rotate : Cursor moves.



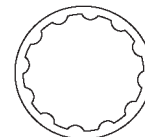
MDAA-01-012

### Temperature Control Switch/Mode Switch (Air Conditioner)

Push : Air vent is selected.

Rotate : Setting the temperature.

TEMP/MODE

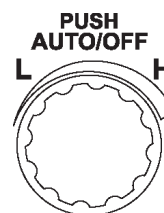


MDAA-01-013

### AUTO/OFF Switch/Blower Switch (Air Conditioner)

Push : Push this switch while the air conditioner OFF, it turns AUTO. Push this switch while operating the air conditioner, it turns OFF.

Rotate : Adjusting the blower speed.



MDAA-01-015

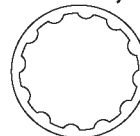
## OPERATOR'S STATION

### AM/FM Selector/Tuning Switch (Radio)

Push : AM/FM is selected.

Rotate : Adjusting radio frequency.

PUSH  
TUNE/AM,FM



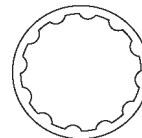
MDAA-01-014

### Power Switch/Volume Control Knob (Radio)

Push : Turns power ON/OFF.

Rotate : Adjusting the volume.

PUSH  
VOL/PWR



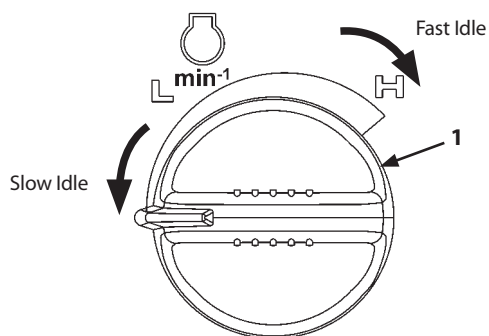
MDAA-01-016

### Engine Control Dial

Use engine control dial (1) to adjust engine speed.

Clockwise : Fast Idle

Counterclockwise : Slow Idle



M1U1-01-033

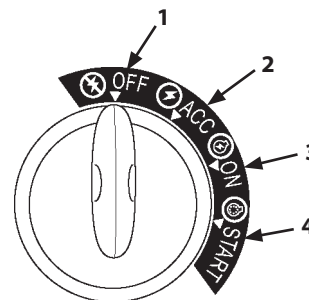
### Key Switch

1- OFF (Engine Off)

2- ACC (Horn, Radio etc.)

3- ON (Engine ON)

4- START (Engine Start)



MDAA-01-313

## OPERATOR'S STATION

### Auto-Idle Selector


The auto-idle selector (2) sets the engine speed control mode to either Auto-Idle ON or OFF.

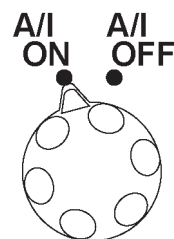
- Auto-Idle

When auto-idle selector (2) is turned to ON position, the engine speed decreases to the idle after approximately 4 seconds at the state in which the work lever is turned to neutral.

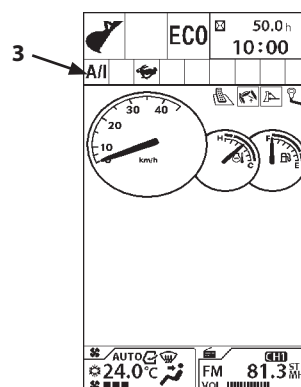
This function reduces fuel consumption.

When the auto-idle mode is selected, auto-idle indicator (3) on the monitor panel lights.

 **NOTE:** The auto-idle function may not work unless the machine warm-up is completed.



MDAA-01-017



MLBA-01-314

### Travel Mode Switch

Two travel modes, FAST and SLOW, are selected by turning the travel mode switch to either position.

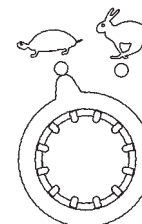


Mark (Fast Speed Mode)



Mark (Slow Speed Mode)

When the travel mode switch is shifted to the desired mode position, corresponding travel mode indicator (4) comes ON.

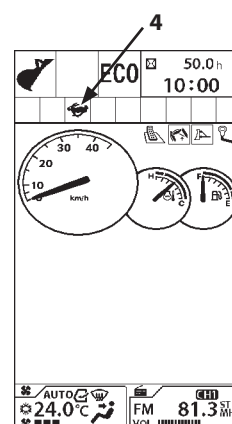


MBFM-01-003

**IMPORTANT:** Shifting the travel mode  ↔  can

be achieved while the machine is traveling.

**During traveling, when the Fast travel mode is shifting down to the SLOW mode, the transmission is shifted after the actual travel speed becomes slower to some extent.**



MLBA-01-001

## OPERATOR'S STATION

### Engine Control Mode Selection Switch

The engine speed control mode, pedal, dial, or creeper, is selected by operating engine control mode selection switch (1). Depending on machine operating conditions, select the appropriate engine control mode.

-  Pedal Mode

This mode suits normal travel operation best.

Adjusting the stroke of the accelerator pedal controls the engine speed. When the accelerator pedal is stepped on, the engine speed increases. When the pedal is returned to neutral, the engine speed is reduced.

After the engine speed is set to run at slow idle speed by fully turning the engine control dial counterclockwise before traveling the machine, when traveling is started by stepping the accelerator pedal, the engine speed increases in proportion to the pedal stroke. When the pedal is returned to neutral to temporarily stop the machine, the engine speed is reduced to slow idle speed, decreasing fuel consumption and travel noise level.

-  Dial Mode

This mode suits traveling in the job site best.

Only the engine control dial can control the engine speed irrespective of how much the accelerator pedal is stroked. The engine speed is kept constant while traveling short distance in the same job site during operation of the front attachment, no readjustment of the engine speed is required.

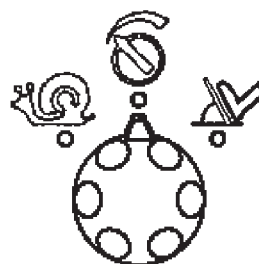
However, the maximum travel speed is slightly slower than that of the pedal mode.

-  Creeper Mode

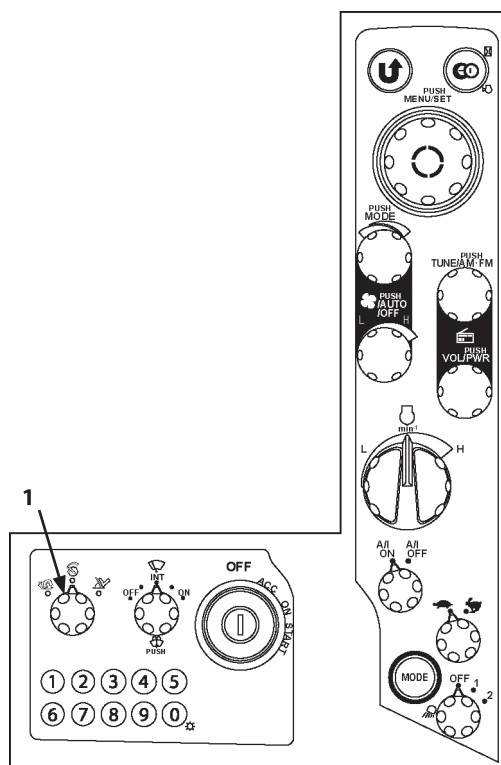
The machine can travel at very slow speed.

The engine speed is controlled with the engine control dial only.

Even if the engine control dial is turned fully clockwise to set the engine speed to fast idle speed and the accelerator pedal is fully stepped on, the machine can travel at very slow speed.



MLBA-01-524




MLBA-01-522

## OPERATOR'S STATION

### Power Mode Switch

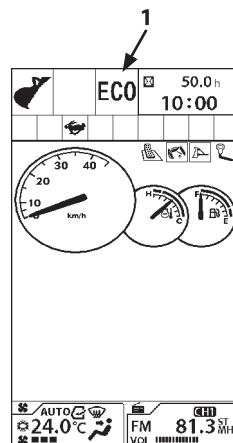
Two engine speed modes, ECO and PWR modes are selected by operating the power mode switch.

- ECO (Economy) Mode  
Operate the machine in this mode when performing normal work.  
"ECO" is displayed on power mode display (1).
- PWR (Power) Mode  
Operate the machine in this mode when a little more power is needed.  
"PWR" is displayed on power mode display (2).

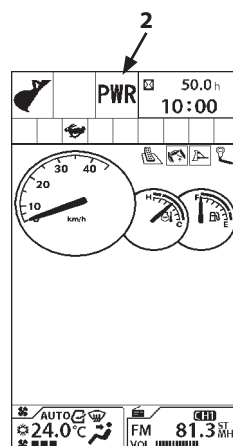
 **NOTE:** ECO mode is set automatically when starting the engine. Set PWR mode if necessary.



MDAA-01-274



MLBA-01-001



MLBA-01-353




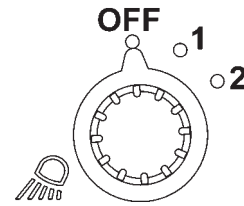
## OPERATOR'S STATION

### Work Light Switch

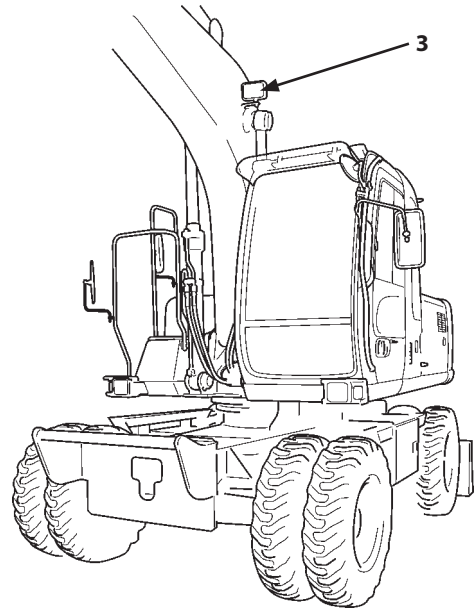
Work light switch has the following positions.

- 1 Position : Work light (3) mounted on the boom will light. Also, the switch panel illumination will light.
- 2 Position : When the optional work light is provided on the cab, this optional work light will come ON.
- OFF position : The work light and the work light indicator go OFF.

 **NOTE:** If the key switch is turned OFF with the work light either in 1-Position or 2-Position, the work light keeps ON for 30 seconds.



MBFM-01-004



MCBB-01-015

## OPERATOR'S STATION

### Wiper/Washer Switch

The wiper and the window washer are operated using the wiper/washer switch.

- Wiper  
Turn the wiper/washer switch to the specified position to operate the wiper.

OFF Position The wiper stops and is retracted.


INT Position The wiper operates intermittently at the interval selected by the switch position as described below. INT has three positions of operating speed as shown below.

INT (Slow): The wiper operates at 8-second interval.


INT (Mid): The wiper operates at 6-second interval.

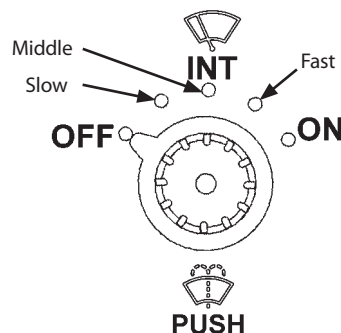
INT (Fast): The wiper operates at 3-second interval.

ON Position The wiper operates continuously.

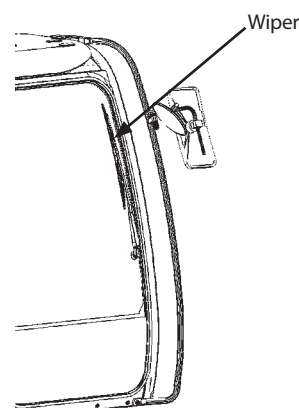
 **NOTE:** When the front window (upper) is opened, the wiper and washer will not operate. If the front window is opened while operating the wiper, the wiper stops.

- Washer  
Press and hold the wiper/washer switch to squirt washer fluid onto the front window. When the wiper/washer switch is pressed for more than 2 seconds, the wiper operates until the switch is released. When the wiper/washer switch is released, the wiper automatically retracts.  
While operating the wiper in the INT mode, when the wiper/washer switch is pressed, the wiper operation mode is changed to the continuous operation mode.

 **NOTE:** The wiper motor protection control stops wiper operation to prevent it from becoming immovable when it operates long period of time under high load. When the wiper stops, do not change the arm position and wait several minutes until the wiper starts operation again.



MBFM-01-005



MLBA-01-525

## OPERATOR'S STATION

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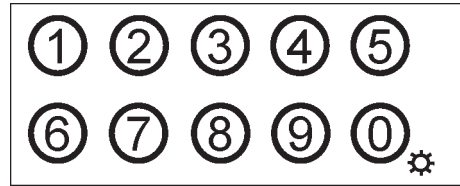
### Numeric Keypad

Used for inputting password.

Press the numeric keypad of 1 to 8 while the radio is ON, the radio station will switch to memorized channel of 1 to 8.

When the light is turned ON, the monitor changes to night mode screen.


Even if the light is turned ON, you can activate the daytime screen by pushing "0" on the numeric keypad.



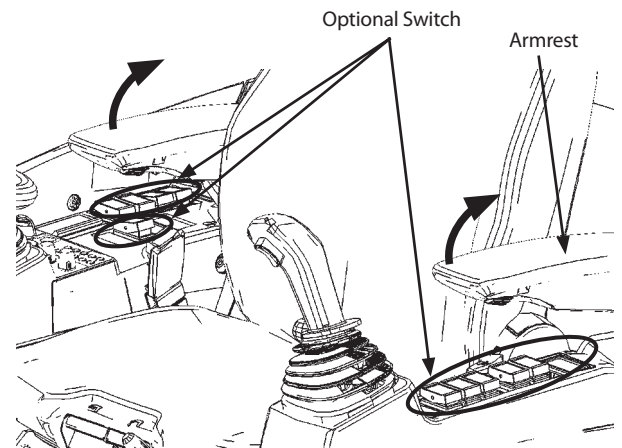
MDAA-01-018

## OPERATOR'S STATION

### Switch Panel (for Optional Equipments)

 **NOTE:** The optional switch locations differ depending on the kinds of optional devices are equipped. Before using the switches, make sure what kinds of optional devices are equipped. Raise the armrest when operating the optional switch. All available optional devices are shown below.


- Electrical Control Main Switch
- Front/Rear Attachment Selection Switch
- Right/Left Selection Switch
- Seat Heater Switch
- Overload Alarm Switch
- Travel Alarm Switch
- Swing Alarm Switch
- Rear Light Switch
- Revolving Light Switch

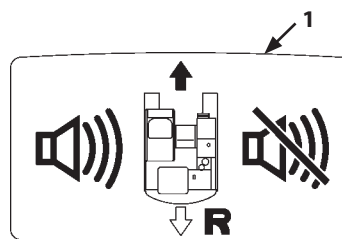


MLBA-01-526

## OPERATOR'S STATION


### Travel Alarm Deactivation Switch (Optional)

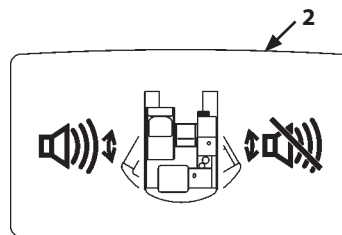
The travel alarm buzzer sounds during travel operation. When pushing the  mark of travel alarm deactivation switch (1), the travel alarm buzzer function is deactivated.



M1U1-01-035

### Swing Alarm Deactivation Switch (Optional)

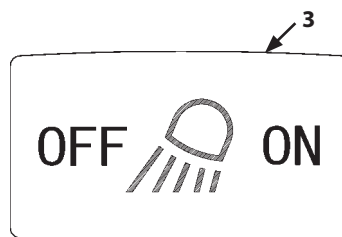
The swing alarm system sounds the buzzer and turns the beacon light ON during swing operation. When pushing the  mark of swing alarm deactivation switch (2), the swing alarm buzzer function is deactivated.



M1U1-01-036

### Rear Light Switch (Optional)

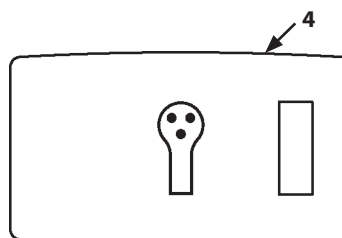
When rear light switch (3) is turned ON, the rear light at the rear of the cab roof comes ON.



M1U1-01-009

### Electrical Control Main Switch (Optional)

Turn the pilot shut-off lever to UNLOCK position. The attachment switch on the control lever becomes operable by pushing ON of the electrical control main switch (4). It becomes OFF by pressing the switch again. It also becomes OFF when the key switch is turned OFF or the pilot shut-off lever is turned to LOCK position.



MDAA-01-311


**CAUTION:** When there is no need to use the attachment switch, turn OFF the main switch to avoid misoperation.


## OPERATOR'S STATION


### Front/Rear Attachment Selection Switch (Optional)

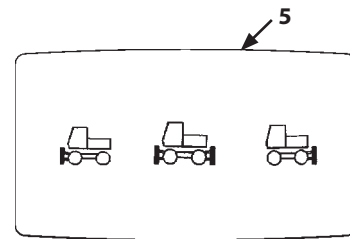
The front/rear attachment selector selects the operable attachments installed on either the front or rear, or both sides of the machine.

**IMPORTANT: Refer to 13 OPTIONAL ATTACHMENTS AND DEVICES for the blade and outrigger operation.**

 : Only attachment installed on the front is operable.

 : Attachments installed on both front and rear are operable simultaneously.

 : Only attachment installed on the rear is operable.




MCGB-13-001


### Right/Left Selection Switch (Optional)


The right/left selector selects the operable attachments installed on either right-hand or left-hand side, or both sides of the machine.

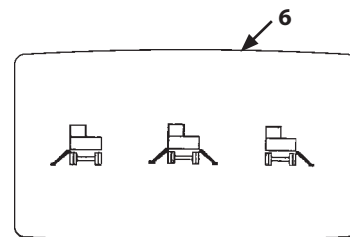
(The blade is operable irrespective of this selector position.)

**IMPORTANT: Refer to 13 OPTIONAL ATTACHMENTS AND DEVICES for the blade and outrigger operation.**

 : Only outrigger installed on the left-hand side is operable.

 : Outrigger installed on both right and left-hand sides are operable simultaneously.

 : Only outrigger installed on the right-hand side is operable.



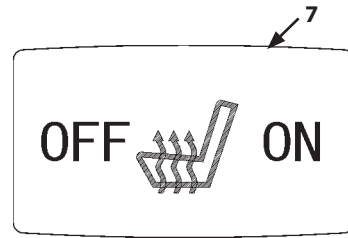
MCGB-13-002

## OPERATOR'S STATION

### Seat Heater Switch (Optional) (7)

When seat heater switch (7) is turned ON, the heater warms the sitting area. When the sitting area reaches specific temperature, the heater stops heating.

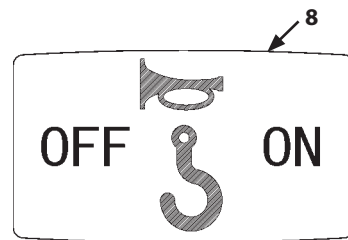
**CAUTION:** If you feel abnormal generation of heat, it may cause low-temperature burn. Stop the heater operation and consult your authorized Hitachi dealer.



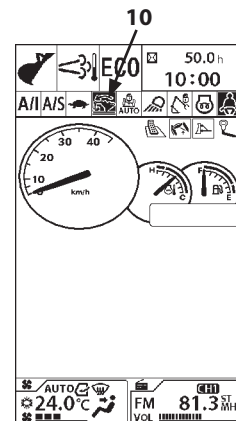
M1U1-01-011

### Overload Alarm Switch (Optional) (8)

Press overload alarm switch (8) ON to sound the buzzer and light the overload warning indicator (10) on the monitor when overload is detected during lifting work.



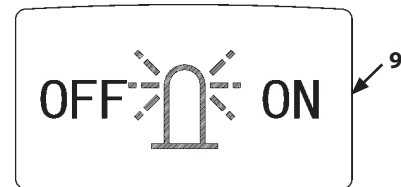
M1U1-01-010



MLBA-01-286

### Revolving Light Switch (Optional) (9)

When revolving light switch (9) is turned ON, the revolving light provided at the rear on the cab roof comes ON.



M1U1-01-012

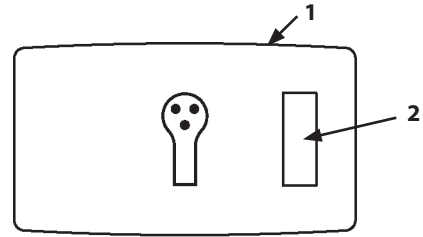
## OPERATOR'S STATION

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### Electrical Control Main Switch (Optional)

- Attachment Switch  
This switch is mainly used for optional devices and attachments having rotary or tilt function. The attachment becomes operable when ON of electrical control main switch (1) is pushed and main switch indicator (2) is lit.

**IMPORTANT: The attachment switch is operable only when indicator (2) of electrical control main switch (1) is lit. Indicator (2) will not light unless the pilot shut-off lever is in UNLOCK position. Besides, the indicator (2) light turns OFF and the attachment switch becomes inoperable when the pilot shut-off lever is placed in LOCK position while indicator (2) is lit. To operate the attachment switch, place the pilot shut-off lever in UNLOCK position, and then push ON of electrical control main switch (1) to turn on indicator (2) light.**



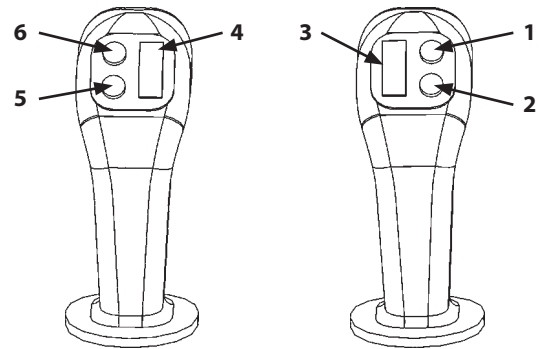
MDAA-01-311



## OPERATOR'S STATION

### AUX Function Lever

1. Auxiliary
2. Power Boost Switch
3. Attachment Switch (Assist Control)
4. Attachment Switch (Optional)
5. Horn
6. Front Attachment Selection Switch
7. F-N-R Switch



Left Control Lever

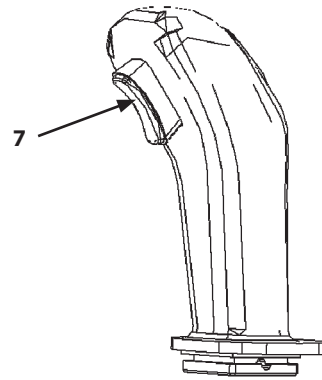
Right Control Lever

MCGB-01-029

MCGB-01-030

### CAUTION:

- These switches are provided for operating attachments of this machine. HITACHI does not bear responsibility on any human injury, malfunction and/or physical loss or damage incurred by unauthorized application or use of unauthorized attachments, optional parts or modified switch, which will void Hitachi Warranty Policy.
- Before using this switch, thoroughly read the operation manual of the corresponding attachment and check the operation of each function in a safe area.
- Before operating an attachment with this switch, confirm the requirements on safe and proper mounting and operation of the attachment with its manufacturer or distributor and observe them.



MLBA-01-527

- Power Boost Switch  
When the power boost switch is pushed, increased front attachment power will be supplied for about 8 seconds.
- Horn  
Horn sounds while the horn switch is pushed.
- Attachment Switch (Assist Control)  
It is mainly used to operate a rotary or tilting type optional attachment. The attachment is activated as long as the switch is kept pressed.

**IMPORTANT:** Refer to 13 OPTIONAL ATTACHMENTS AND DEVICES for the attachment switch operation.

# OPERATOR'S STATION

## Multi Function Monitor

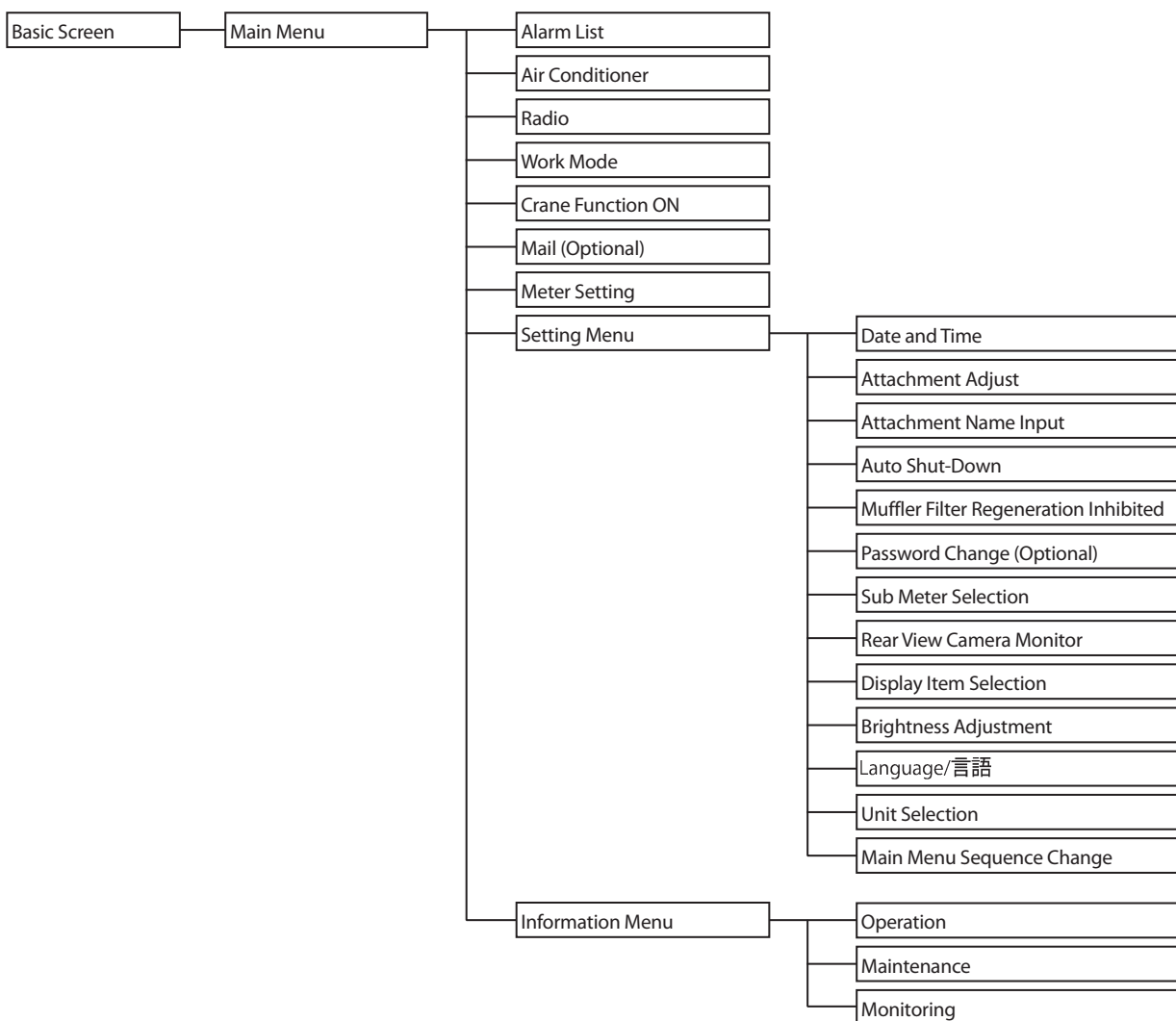
### Feature

The multi function monitor displays various meters, indicators, radio and air conditioner, numeric keypad lock function, rearview camera image, work mode selection and maintenance screen.

### Screen Configuration

The multi function monitor consists of the following screens.


There are 9 menus, and a further 16 sub menus.



## OPERATOR'S STATION

### Default Setting

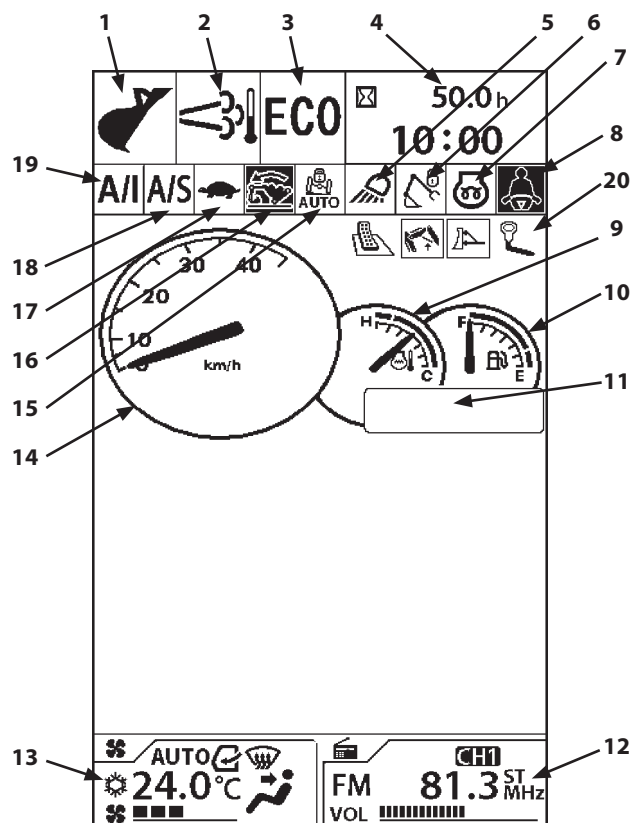
Function	Item	Default
Auto Shut-Down	ON/OFF of Auto Shut-down	OFF
	Setting Time	1 min
Muffler Filter Regeneration Inhibited	Regeneration Inhibited	OFF

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

## OPERATOR'S STATION

### Basic Screen

- 1- Work Mode Display
- 2- Muffler Filter
- 3- Power Mode Display
- 4- Hour Meter, Clock
- 5- Work Light Indicator
- 6- Front Attachment Pilot Pressure Cut Indicator
- 7- Preheat Display
- 8- Seat Belt Display
- 9- Coolant Temperature Gauge
- 10- Fuel Gauge
- 11- Sub Meter
- 12- Radio Display
- 13- Air Conditioner Display
- 14- Speedometer/Tachometer
- 15- Auto Axle Lock Indicator
- 16- Overload Indicator
- 17- Travel Mode Indicator
- 18- Auto Shut-Down Display
- 19- Auto-Idle Display
- 20- Attachment Operational Information Display \*



MLBA-01-020

**NOTE:** \*The contents of display vary depending on the kind of optional attachment (s) installed and operating device. Refer to 13 OPTIONAL ATTACHMENTS AND DEVICES.

# OPERATOR'S STATION

## How to Use Screens

### Displaying Basic Screen

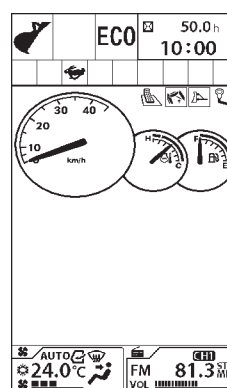
**IMPORTANT:** Start the engine after the basic screen is displayed.

When the key switch is turned to the ACC or ON position, the starting screen displays for about two seconds. When the key switch is kept in ACC position, only hour meter, clock and radio will be displayed. When the key switch is turned from ACC to ON position, the basic screen will be displayed.



Starting Screen

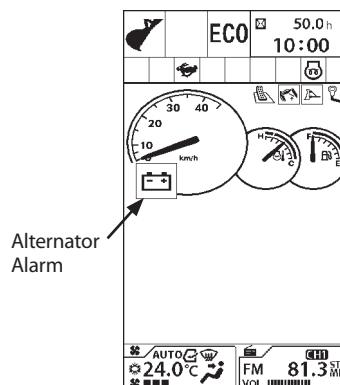
MDAA-01-003EN



Basic Screen

MLBA-01-001

**IMPORTANT:** When the key switch is turned to ON position, the alternator alarm will be displayed on the basic screen. Until the alternator starts generating power after the engine starts, the alternator alarm is displayed on the basic screen.

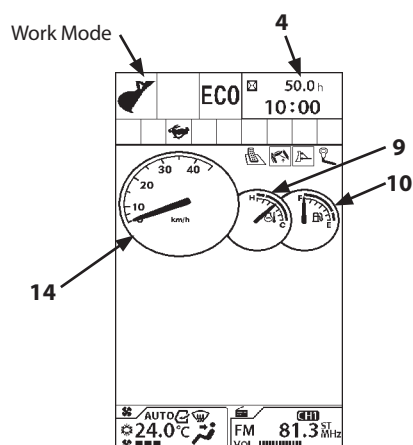


Alternator Alarm

MLBA-01-042

## OPERATOR'S STATION

- Display of Meters
  - Items to be displayed
  - 4- Hour Meter, Clock
  - 9- Coolant Temperature Gauge
  - 10- Fuel Gauge
  - 14- Speedometer/Tachometer
  
- Work Mode Display
  - The attachments being used are displayed.



MLBA-01-001

### Digging Mode



### Attachment Mode

#### Breaker



#### Pulverizer



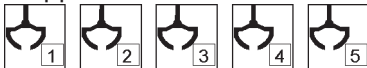
#### Crusher



#### Vibrating Hammer



#### Grapple



#### Clamshell

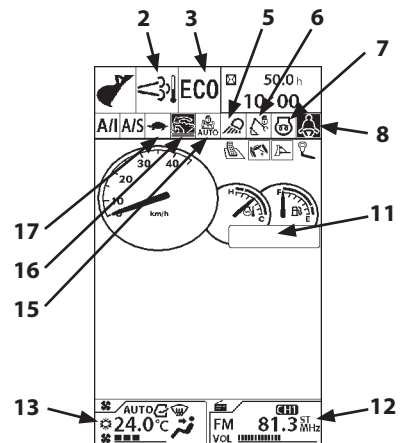


#### Others



## OPERATOR'S STATION

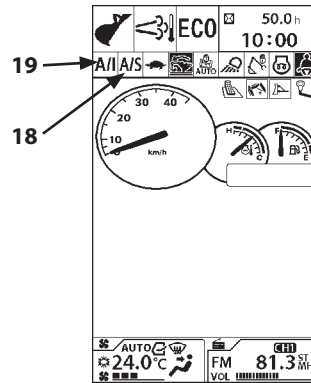
- Muffler Filter Display (2)  
Displays condition of the muffler filter.
- Power Mode Display (3)  
Displays the power mode selected from the switch panel.
- Work Light Indicator (5)  
Comes ON when the work light switch on the switch panel is turned ON.
- Front Attachment Pilot Pressure Cut Indicator (6)  
Comes ON when the blade/outrigger/front attachment pilot control switch is operated and front pilot pressure is cut.
- Preheat Display (7)  
While the current is being supplied to the glow plug, the indicator is displayed.
- Seat Belt Display (8)  
Turns ON when the key switch is in the ON position, and turns OFF 5 seconds after the engine starts.
- Sub Meter Display (11)  
Fuel consumption or breaker hour meter is displayed.  
The fuel consumption is only a rough indication.
- Radio Display (12)  
Displays the radio panel.
- Air Conditioner Display (13)  
Displays the air conditioner panel.
- Auto Axle Lock Indicator (15)  
Is displayed when the auto axle lock switch is turned to the "AUTO" position.
- Overload Indicator (16)  
It indicates that overload is applied at boom raise operation such as lifting operation while the overload alarm switch (optional) is in the ON position.
- Travel Mode Display (17)  
Displays the travel mode selected from the switch panel.



MLBA-01-286

## OPERATOR'S STATION

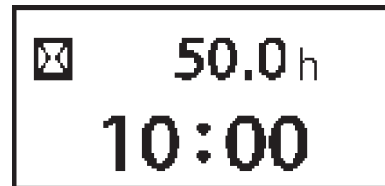
- Auto Shut-Down Display (18)**  
 When the auto shut-down is turned ON from the menu screen, the auto shut-down display (18) displays.  
 When the key switch is turned ON while the auto shut-down is enabled, the auto shut-down indicator blinks for 10 seconds.
- Auto-Idle Display (19)**  
 When the auto-idle is selected from the switch panel, the auto-idle display (18) displays.  
 When the key switch is turned ON while the auto-idle selector is also ON, the auto-idle display blinks for 10 seconds.



MLBA-01-286

### Hour Meter

Total (accumulated) machine operation hours counted since the machine started working, are displayed in hours (h). One digit after the decimal point indicates tenths of an hour (6 minutes).

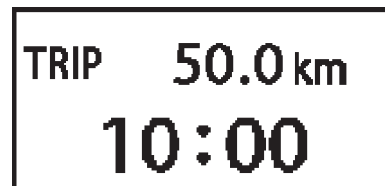


Hour Meter/Clock

MDAA-01-021EN

### Trip meter

It displays the travel distance in the unit of "km" since the trip meter has been reset on the meter setting screen.

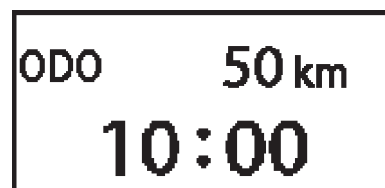


Trip meter/Clock

MLBA-01-541

### Odometer

Total (accumulated) travel distance counted since the machine started traveling, is displayed.



Odometer/Clock

MLBA-01-540

### Clock

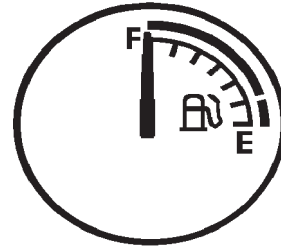
Indicates the present time.  
 24-h/12-h display can be selected.  
 (Refer to "Date and Time" for switching the display mode.)



## OPERATOR'S STATION

### Fuel Gauge

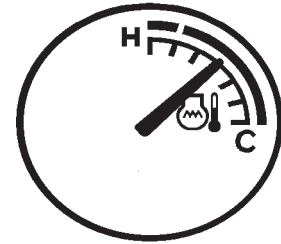
The remaining fuel amount is indicated by the needle.  
Refuel before the needle reaches "E".



MLBA-01-542

### Coolant Temperature Gauge

The engine coolant temperature is indicated with a needle.  
Normally the needle is around the center of the scale during operation.

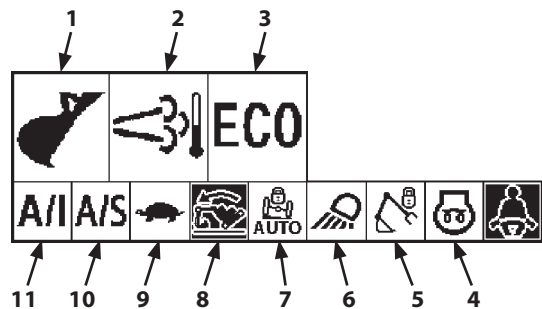


MLBA-01-543

### Operating Status Icon Display

Displays icons indicating the current status of the machine such as selected modes and status of switches.

1. Attachments
2. Muffler Filter Condition
3. Power Mode
4. Preheat Indicator
5. Front Attachment Pilot Pressure Cut Condition
6. Work Light Indicator
7. Auto Axle Lock: ON
8. Overload Alarm
9. Travel Mode
10. Auto Shut-down: ON
11. Auto-Idle: ON



MLBA-01-544

# OPERATOR'S STATION

## Security Functions (Optional)

### Input Password

#### IMPORTANT:


- When required to activate the numeric keypad function, consult your nearest Hitachi dealer.
- If the password is forgotten, the machine must be modified. Be extremely careful not to forget the password.




Starting Screen

MDAA-01-003EN

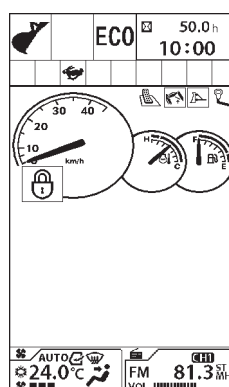
1. Turn the key switch ON. After the starting screen is displayed, the basic screen will be displayed.

 NOTE: The engine does not start and switches other than numeric keys are inoperable at this stage.

2. The password input screen is displayed when pressing switch (1) or turn the key switch to START position.
3. Input a password by using the numeric keypad.
4. The monitor unit matches the input password to the registered one. If they match, the basic screen displays. The engine is ready to run. If an incorrect password is input three times, a buzzer sounds for thirty seconds. During that time, the buzzer does not stop even if the key switch is turned ON/OFF.

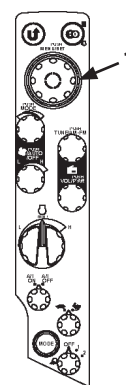
 NOTE: If you make a mistake while entering the password, push the CLEAR key in order to erase the entered characters.

5. After thirty seconds, if the key switch is turned to the ON position, the starting screen displays and the password input screen displays again. Then the password can be input again.
6. If an incorrect password is input again, the buzzer sounds for a further thirty seconds.

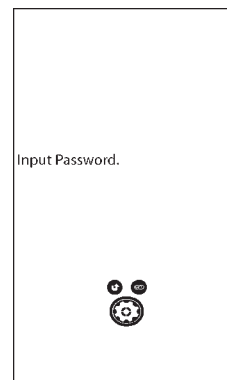


Basic Screen

MLBA-01-350

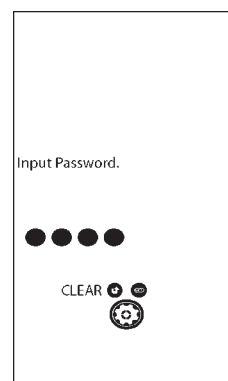


MDAA-01-040



Password Input Screen

MDAA-01-085EN



MDAA-01-086EN

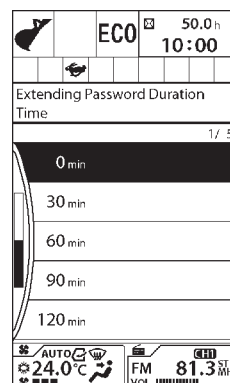
## OPERATOR'S STATION

### Extending Password Duration Time

**IMPORTANT:** This operation is applicable only to those machines that require a password.

By using the password duration screen, password duration time can be set. When restarting the machine, a password need not be input within the specified timeframe.

1. When turning the key switch from ON to ACC position, the monitor unit displays the password duration screen for ten seconds.



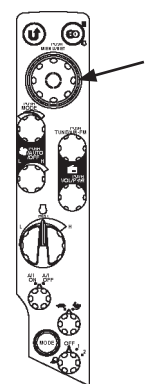
MDAA-01-087EN

Password Duration Screen (Key Switch: OFF)

2. While the password duration screen is still displayed, rotate selector knob (1) to highlight the relevant time. Pushing selector knob (1) sets the password duration time.

- Duration time    0 minute
- Duration time    30 minute
- Duration time    60 minute
- Duration time    90 minute
- Duration time    120 minute

**NOTE:** If the password duration time is not set explicitly, a duration of 0 is assumed.



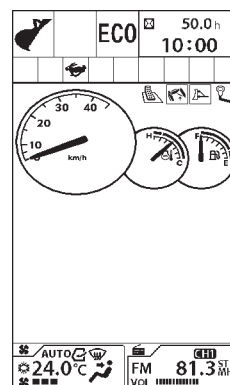
MDAA-01-040

3. If turning the key switch to the ON position within the password duration time, the monitor unit displays the basic screen after the starting screen.



Starting Screen

MDAA-01-003EN



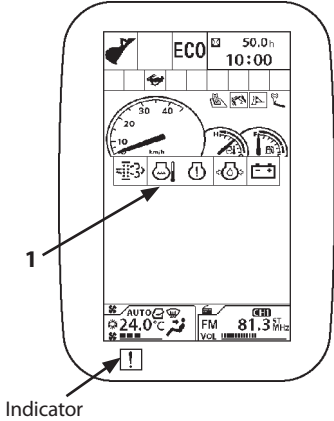
Basic Screen

MLBA-01-001

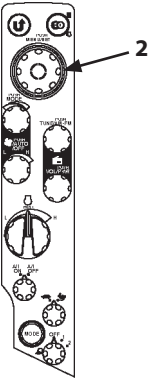
# OPERATOR'S STATION

## Alarm Occurrence Screen

In case any abnormality occurs, alarm marks (1) are displayed on the basic screen.  
If six or more alarms are generated, the alarm marks (1) can be scrolled by rotating switch (2).



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## OPERATOR'S STATION

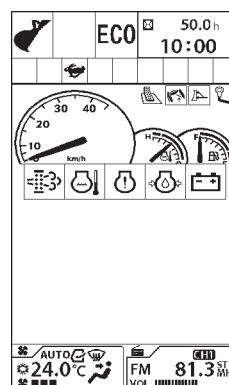
Follow the procedure below to display detailed information for an alarm.

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

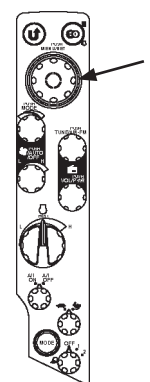
Rotate selector knob (1) to select the alarm list, and push selector knob (1).

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

Detailed information of the selected alarm will be displayed.

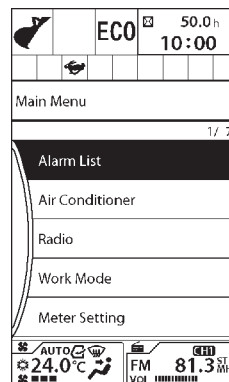


MLBA-01-004



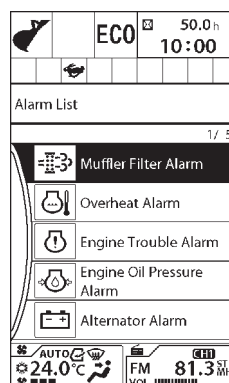
**CAUTION:** The main menu displays the alarm list only when an alarm occurs.

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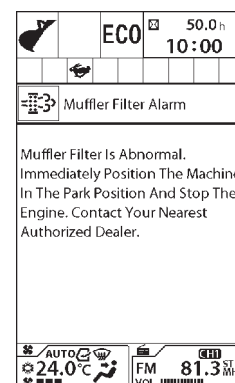


**CAUTION:** The alarm list contains only currently generated alarms.

MLBA-01-077EN




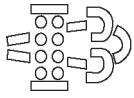
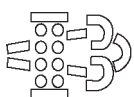





MDAA-01-078EN



MDAA-01-079EN

## OPERATOR'S STATION










### Remedy

Display	Contents of Alarms	Remedy
	Muffler Filter Alarm* (Blinking) (Red)	Muffler Filter Is Abnormal. Immediately Position The Machine In The Park Position And Stop The Engine. Contact Your Nearest Authorized Dealer.
	Muffler Filter Regeneration Request (Blinking) (Yellow)	Immediate Muffler Filter Regeneration Is Required. If Not, The Muffler Filter May Be Damaged. Move The Pilot Shut-Off Lever To The LOCK Position, Move The Brake Switch To The P Position, Run The Engine At Slow Idle Speed And Set The Muffler Filter Switch To The Regeneration Position.
	Muffler Filter Regeneration Request (Lighting) (Yellow)	Muffler Filter Regeneration Is Required. Move The Pilot Shut-Off Lever To The LOCK Position, Move The Brake Switch To The P Position, Run The Engine At Slow Idle Speed And Set The Muffler Filter Switch To The Regeneration Position.
	Muffler Filter Regeneration Inhibited Alarm (Lighting) (Yellow)	Regeneration Operation Is Inhibited. Move Machine To A Safe Location. Manually Perform Regeneration.
	Muffler Filter Auto-Regeneration Inhibited Alarm (Lighting) (Yellow)	Regeneration Operation Is Inhibited. Cannot Auto Regeneration.
	Engine Oil Level Alarm	Check Engine Oil Level And Add Oil If Required.
	Overheat Alarm**	Coolant Temperature Is Abnormally High. Stop Operation. Run The Engine At Slow Idle To Cool Coolant Temperature.
	Hydraulic Oil Temperature Alarm	Hydraulic Oil Temperature Is Abnormally High. Stop Operation, Run Engine At Low Idle To Lower The Oil Temperature.

 NOTE: \* Alarm mark is displayed and buzzer will sound.











\*\* Alarm mark is displayed and buzzer will sound. Turn engine control dial to the slow idle position, and buzzer will stop.


## OPERATOR'S STATION


Display	Contents of Alarms	Remedy
	Engine Trouble Alarm*	Engine Or Accessory Are Abnormal. Contact Your Nearest Authorized Dealer.
	Engine Oil Pressure Alarm	Engine Oil Pressure Is Low. Immediately Stop Engine. Check Engine Oil System And Oil Level.
	Engine Start Disabled	Engine Cannot Start If Each Switch Does Not Meet The Start Conditions. [Start Conditions] Pilot Shut-Off Lever : LOCK Brake Switch : P F-N-R Switch : N
	Engine Start Disabled	Engine Cannot Start If Engine Shut-Off Switch Is In The OFF Position.
	Boost Temperature Alarm	Engine Intake Air Temperature Is Abnormally High. Stop Operation And Check For Clogged Intercooler And/OR Disconnected Intake Airline.
	Exhaust Gas Temperature Alarm	Exhaust Temperature Is Abnormally High. Stop Operation. Check The Exhaust Piping.
	Muffler Filter Alarm	Muffler Filter Cleaning Failed. Contact Your Nearest Authorized Dealer.
	Alternator Alarm	Electrical System Is Abnormal. Check Alternator And Battery Systems.
	Fuel Level Alarm	Fuel Level Is Low.

 NOTE: \* Alarm mark is displayed and buzzer will sound.

## OPERATOR'S STATION

Display	Contents of Alarms	Remedy
	Fuel Temperature Alarm	Fuel Temperature Is Abnormally High. Stop Operation And Check For Any Abnormality Such As Clogged Fuel Cooler.
	Hydraulic Oil Filter Restriction Alarm (Optional)	Hydraulic Oil Filter Is Clogged. Replace Hydraulic Oil Filter Element.
	Line Filter Restriction Alarm (Optional)	Line Filter (Breaker Circuit Return Oil Filter) Is Clogged. Replace Line Filter Element.
	Air Cleaner Restriction Alarm	Air Cleaner Is Clogged. Clean Or Replace Air Cleaner Element.
	Fuel Filter Restriction Alarm*	Fuel Filter Is Clogged. Replace Fuel Filter Element.
	Water Separator Alarm	Water Separator Is Full. Drain Water.
	System Failure Alarm	Machine Network System Is Abnormal. Contact Your Nearest Authorized Dealer.
	Electric Lever Alarm	Electric Lever System Is Abnormal. Contact Your Nearest Authorized Dealer.
	Pilot Control Shut-Off Lever Alarm	Pilot Control Shut-Off Lever System Is Abnormal. Contact Your Nearest Authorized Dealer.
	Brake Pressure Alarm	Brake Oil Pressure Is Low.

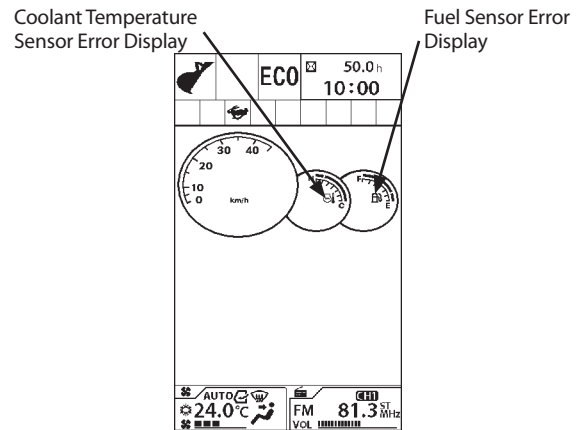
 **NOTE:** The hydraulic oil filter alarm lights only when the high performance element (optional) is used.

 **NOTE:** \* If the indicator comes ON immediately after replacing the fuel filter, air mixed in the system during replacement may be the cause. Be sure to bleed air pressure from the fuel system when replacing the fuel filter. (When air is bled, the indicator will go OFF.)



## OPERATOR'S STATION

- **Fuel Sensor Error Display**  
If the fuel sensor is faulty, the color of the fuel mark changes and the needle disappears. If the harness between the fuel sensor and the controller unit is broken, the needle disappears.
- **Coolant Temperature Sensor Error Display**  
If the coolant temperature sensor is faulty, color of the temperature mark changes and the needle disappears. If the harness between the temperature sensor and the controller unit is broken, the needle disappears.



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## OPERATOR'S STATION

### Muffler Filter

#### Muffler Filter Condition Display

Muffler Filter Display (1) displays the condition of the muffler filter.



This mark indicates that the exhaust temperature is high during the muffler filter regeneration. It lights while auto-regeneration is in process.)

#### NOTE:

- The auto-regeneration is performed at random times. The auto-regeneration may start during operation of the machine; you can continue to operate the machine. Turning the pilot shut-off lever to LOCK position while performing auto-regeneration may change the engine sound and may increase the engine speed, this is not a malfunction.
- Do not stop the engine during regeneration unless absolutely necessary.

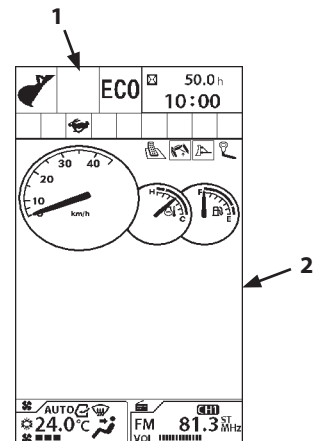
When the manual regeneration switch is pushed during the auto-regeneration process, the message "Minimal Exhaust Restriction. Exhaust Filter Cleaning Not Available." will be displayed on monitor (2).

Regeneration may not be completed according to the operating conditions of the machine. In this case, muffler filter regeneration request will be displayed on the monitor. Immediately perform manual regeneration following the procedure.



This mark indicates that the muffler filter regeneration is inhibited. Regeneration will not be performed while this mark is lit.

**IMPORTANT: Set the muffler filter regeneration to inhibited while operating the machine in a flammable environment. (Refer to 1-83)**



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## OPERATOR'S STATION

### Muffler Filter Manual Regeneration Request

The muffler filter needs regeneration. Usually, regeneration is performed automatically. However, manual regeneration is required depending on the conditions. In that case, marks described below may be indicated on monitor (1).



(Lighting,  
Yellow)

This mark indicates that the muffler filter manual regeneration is required. Perform manual regeneration following the below procedure.



(Blinking,  
Yellow)

This mark indicates that immediate muffler filter manual regeneration is required. Perform manual regeneration following the below procedure.



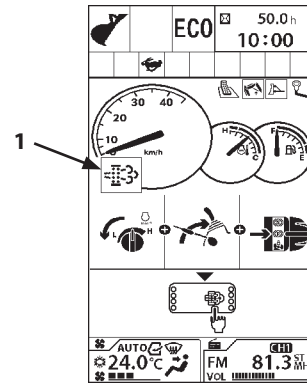
(Blinking,  
Red)

This mark indicates that the muffler filter has over collected particle matter. Immediately stop operation, park the machine in a safe location. Then, contact your nearest Hitachi dealer.



(Lighting,  
Yellow)

This mark indicates that the muffler filter regeneration is inhibited. It is displayed when the manual regeneration request arises while muffler filter regeneration is inhibited. Move the machine to a safe place. Perform manual regeneration following the below procedure.



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### IMPORTANT:

- **Manual regeneration that is performed when the muffler filter regeneration request is displayed restores muffler filter function. This is not a malfunction.**
- **If the machine is continuously operated despite the muffler filter regeneration request is displayed, muffler filter alarm and engine trouble alarm will be displayed, and the buzzer sounds. Consult your authorized dealer for repairing the muffler filter.**

## OPERATOR'S STATION

### Manual Regeneration Procedure

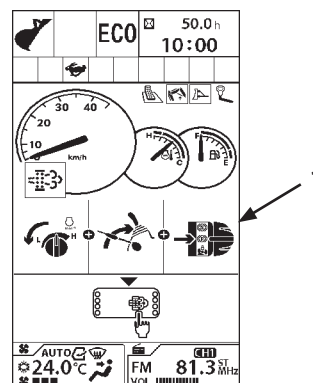
When manual regeneration is needed, screen (1) as shown in the right will be displayed. When this screen is displayed, you need to perform manual regeneration. Before starting manual regeneration, be sure to check the following.

If the rear view camera is equipped on the machine and the camera is enabled, screen (1) is displayed only when the pilot control shut-off lever is in LOCK position.

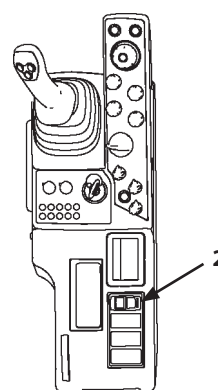
- No person is present around the machine.
  - Keep flammable objects away from the muffler.
  - Remaining fuel alarm is not lit.
1. Park the machine in a safe place. Lower the front attachment onto the ground.
  2. Pull the pilot control shut-off lever to the LOCK position.
  3. Set the engine control dial to slow idle.
  4. Turn the brake switch to the "P" (parking brake) position.
  5. Push the muffler filter regeneration switch (2).
  6. When pushing the muffler filter regeneration switch, screen (3) as shown in the right will be displayed and the manual regeneration starts. Bar graph on the screen indicates progress of the regeneration process.

**CAUTION:** The manual regeneration does not start unless the pilot control shut-off lever is in the LOCK position, the brake switch to the "P" (parking brake) position and the engine control dial is in slow idle. When touching the pilot shut-off lever, the brake switch or the engine control dial during regeneration, the regeneration process is aborted. When the process is aborted, start over again.

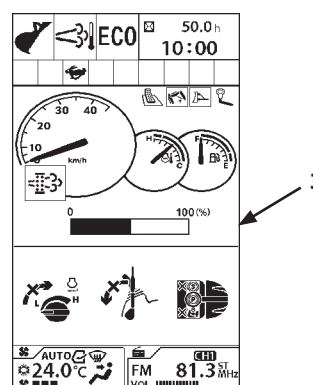
7. When the regeneration is finished, "Regeneration Has Completed." message will be displayed. If "Regeneration Has Failed." message is displayed, start over the regeneration process again. Failure of regeneration process may happen in the conditions other than above (such as malfunction of a sensor that affects regeneration at low ambient temperature).



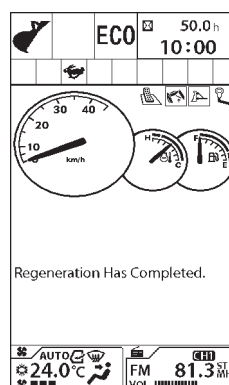
MLBA-01-005



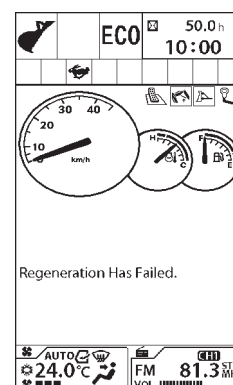
MLBA-01-532



MLBA-01-006



MLBA-01-083EN



MLBA-01-084EN

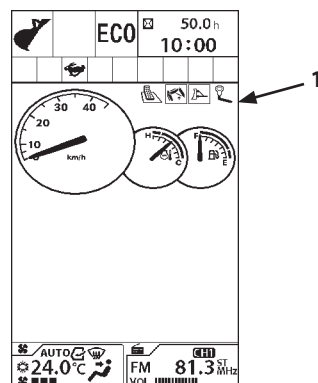
## OPERATOR'S STATION

### Main Menu

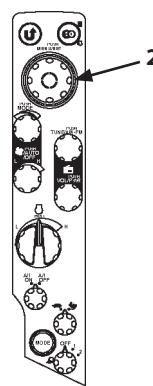
Press selector knob (2) while displaying basic screen (1) to display main menu screen (3).

The main menu screen contains the items shown in the figure to the right. The alarm list is displayed only when an alarm is generated.

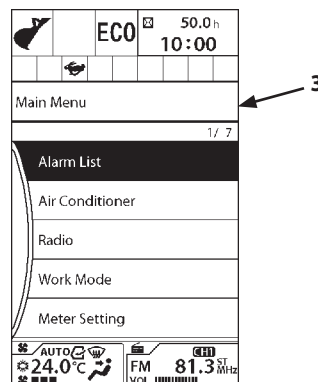
Mail (optional) menu will not be displayed unless they are set beforehand.



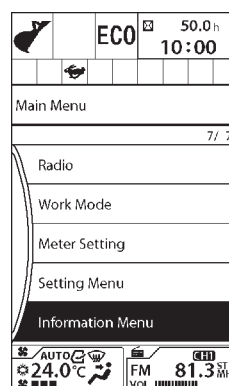
MLBA-01-001



MDAA-01-040



MLBA-01-077EN




MLBA-01-190EN

# OPERATOR'S STATION

## Air Conditioner


Most air conditioner functions are operated by using switches (3) and (4), however air vent selection and turning A/C ON and OFF are performed from the air conditioner setting screen in the menu. (Refer to 1-126)

### Circulation Air Mode

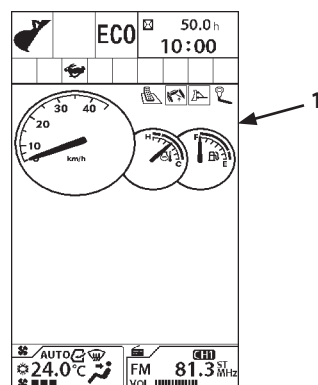
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (5).
2. Rotate selector knob (2) to highlight Air Conditioner (6).
3. Press selector knob (2) to display Air Conditioner screen (7).  
Rotate selector knob (2) to highlight  (8) mark.
4. Press selector knob (2) to set the circulation mode.
5. Press selector knob (2) again to switch the fresh air mode.

### Air Conditioner ON/OFF

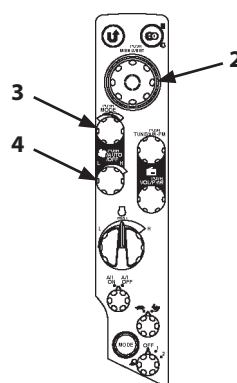
1. Rotate selector knob (2) to highlight A/C (9).
2. Press selector knob (2) to turn the air compressor ON.
3. Press selector knob (2) again to turn the air compressor OFF.

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

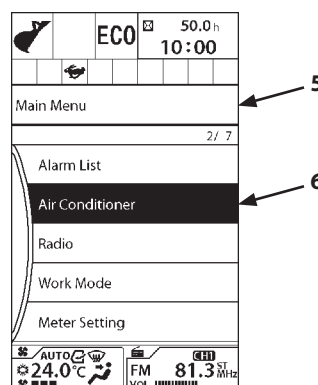
**IMPORTANT:** If mark (10) is displayed on the air conditioner display, communication between the air conditioner and the monitor is abnormal. Consult your nearest Hitachi dealer.



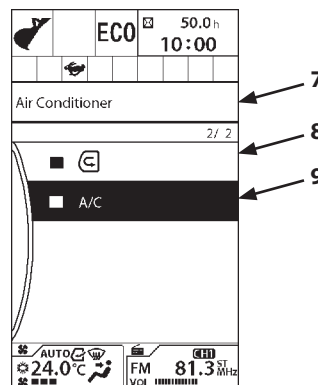
MLBA-01-001



MDAA-01-040



MLBA-01-089EN



MDAA-01-091EN



MDAA-01-226

## OPERATOR'S STATION

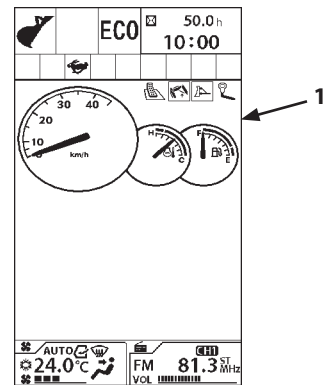
### Radio

Most radio functions are operated by using switches (3) and (4), however memory channel setting, seek function, TONE adjustment, and AUTO PRESET are done at the radio screen in the main menu.

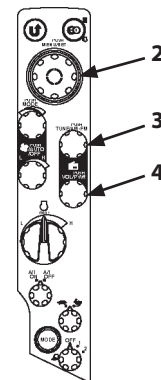
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (5).
2. Rotate selector knob (2) to highlight Radio (6).
3. Press selector knob (2) to display the radio screen.  
(Refer to 1-132)

**IMPORTANT: If mark (7) is displayed on the radio display, communication between the radio and the monitor is abnormal. Consult your nearest Hitachi dealer.**

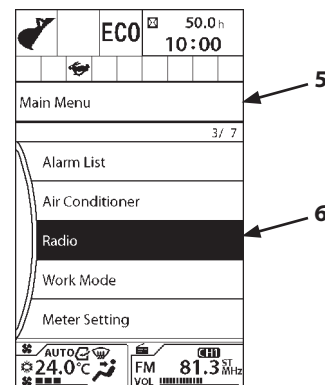
Press the numeric keypad of 1 to 8 while the radio is ON, the radio station will switch to memorized channel of 1 to 8. (Refer to 1-33 and 1-133)



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MDAA-01-040



MLBA-01-092EN



MDAA-01-227

## OPERATOR'S STATION

### Work Mode

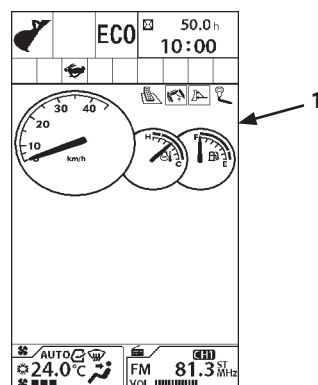
Front attachment is selected in the Work Mode screen under the Work Mode menu in the main menu.

#### Attachment selection

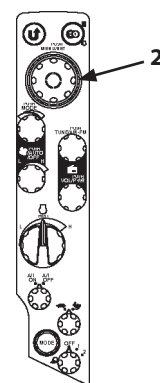
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Work Mode (4).
3. Press selector knob (2) to display Work Mode screen (5).
4. Rotate selector knob (2) to highlight the desired front attachment (6).

(In the right example, "Bucket" is highlighted.)

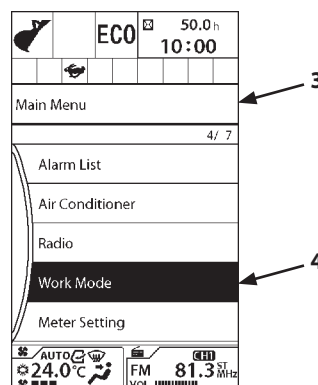
5. Press selector knob (2) to enable the changes.



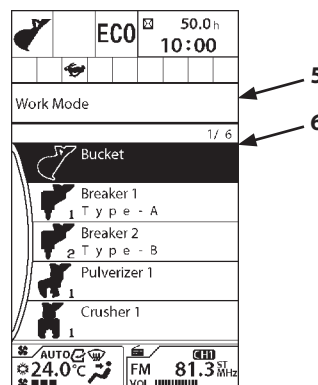
MLBA-01-001



MDAA-01-040



MLBA-01-100EN



MDAA-01-101EN



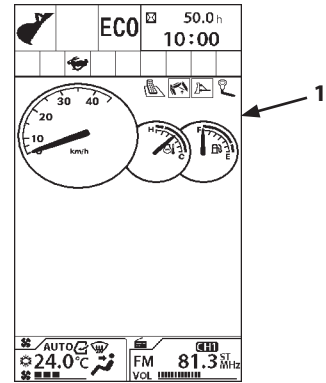
# OPERATOR'S STATION

## Mail (Optional)

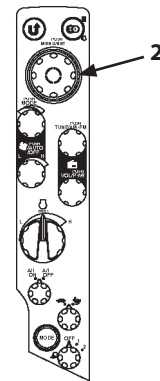
**IMPORTANT:** This function is available only to a machine equipped with a communication terminal. When using the mail function, consult your nearest Hitachi dealer.

1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Mail (4).
3. Press selector knob (2) to display Mail screen (5).
4. Rotate selector knob (2) to highlight desired request.
5. Press selector knob (2) to send mail information to the communication terminal.

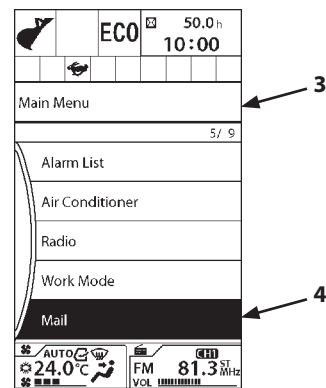
- General Request
- Fuel Replenishment Request
- Service Maintenance Request
- Forwarding Request



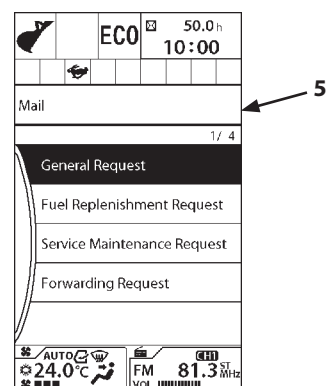
MLBA-01-001



MDAA-01-040



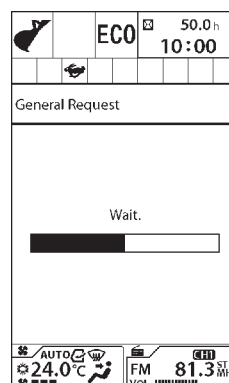
MLBA-01-109EN



MDAA-01-110EN

## OPERATOR'S STATION

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




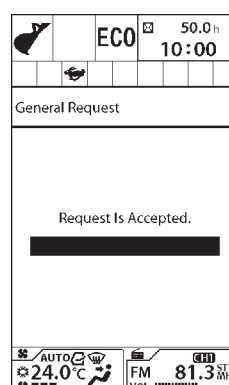
MDAA-01-111EN

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


Push the back key to return to the Mail screen.

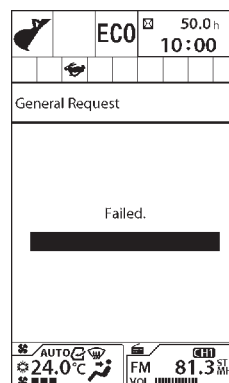
8. Then, a mail is sent from the communication terminal to the central server.

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



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



MDAA-01-113EN

# OPERATOR'S STATION

## Meter Setting

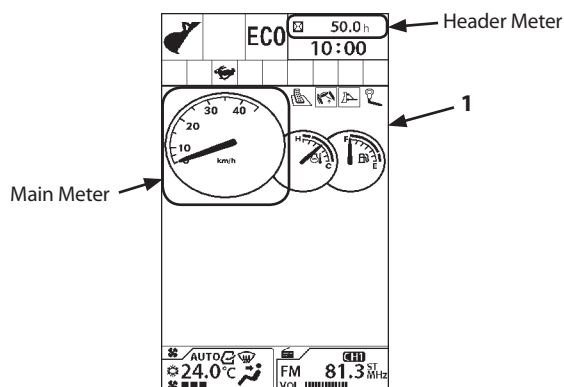
Various meters to be displayed on the monitor screen can be selected in this screen.

Meters listed below can be displayed.

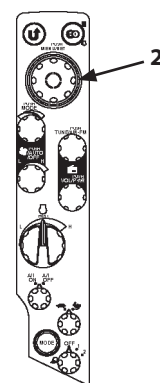
Header meter: Hour meter, Trip meter, ODO meter

Main meter: Speedometer, Tachometer

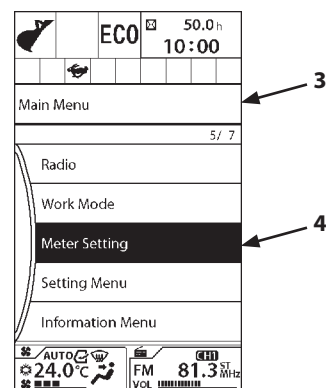
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Meter Setting (4).
3. Press selector knob (2) to display Meter Setting screen (5).



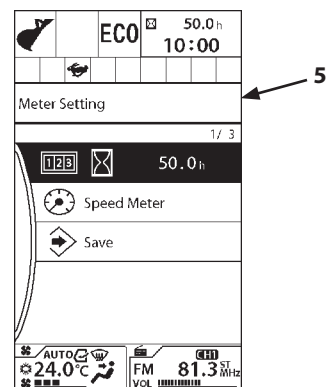
MLBA-01-001



MDAA-01-040





MLBA-01-550EN




MLBA-01-545EN


## OPERATOR'S STATION

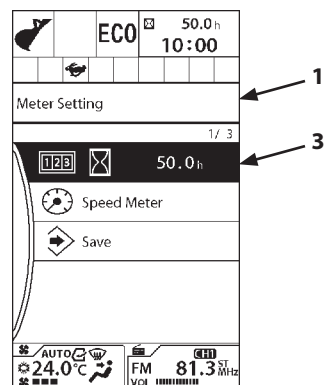
### Switching Header Meter Display

1. Rotate selector knob (2) while displaying Meter Setting screen (1) to highlight  (hour) meter (3).
2. Each time selector knob (2) is pushed, display changes as follows:  (hour) meter → Trip Meter → ODO Meter. Select a meter to be displayed.

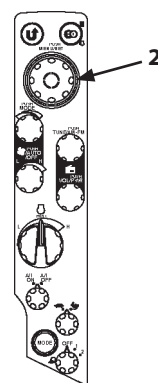
 **NOTE:** The display in the header meter at the top right of the screen will change along with the change in menu display.

3. In order to reset the TRIP meter, keep down selector knob (2) for a while after selecting the TRIP meter. The distance is reset and "0" will be displayed.
4. Rotate selector knob (2) to highlight Save (4) and push selector knob (2).

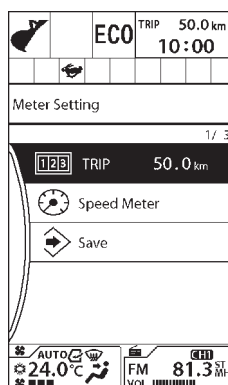
 **NOTE:** If the setting was not saved, the display setting is reset once the key switch is turned OFF, and the previous meter will be displayed on the screen. If you want to display the selected meter on the screen even after the next key switch ON, select Save option.



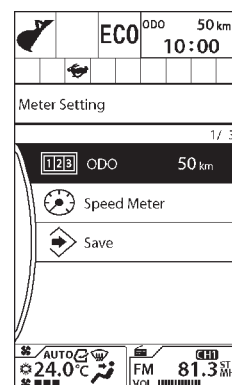
MLBA-01-545EN



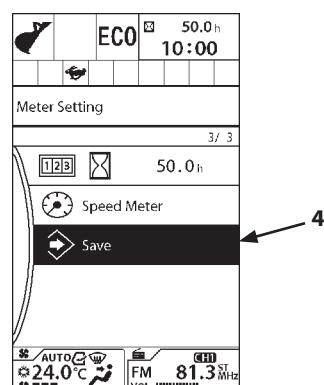
MDAA-01-040



MLBA-01-546EN



MLBA-01-547EN




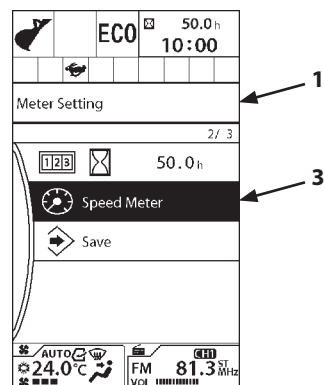
MLBA-01-549EN

## OPERATOR'S STATION

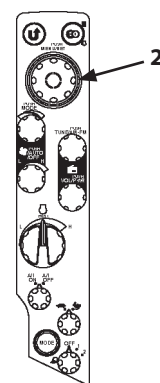
### Switching Main Meter Display

1. On Meter Setting screen (1), rotate selector knob (2) to highlight Speedo Meter (3).
2. Each time selector knob (2) is pushed, display changes as follows: Speedo meter → Tachometer. Select a meter to be displayed.
3. Rotate selector knob (2) to highlight Save (4) and push selector knob (2).

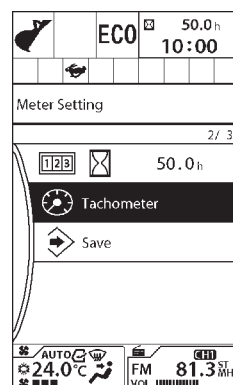
 **NOTE:** If the setting was not saved, the display setting is reset once the key switch is turned OFF, and the previous meter will be displayed on the screen. If you want to display the selected meter on the screen even after the next key switch ON, select Save option.



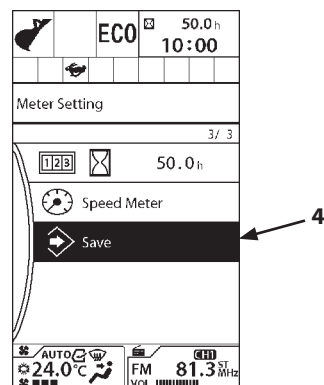
MLBA-01-551EN



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MLBA-01-548EN



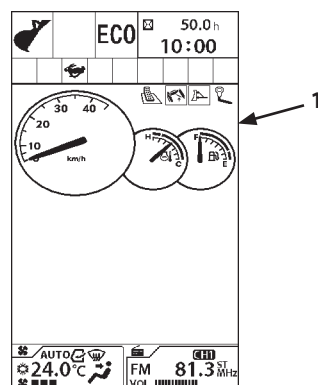
MLBA-01-549EN

## OPERATOR'S STATION

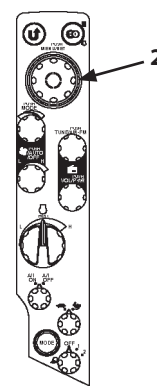
### Setting Menu

Setting menu consists of date and time setting, attachment adjustment, attachment name, auto shut-down setting, change password, selecting sub meter, brightness adjustment of back monitor and screen.

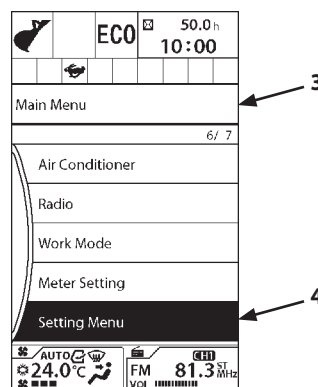
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).



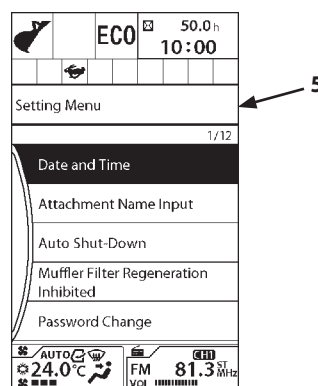
MLBA-01-001



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MLBA-01-114EN



MLBA-01-115EN

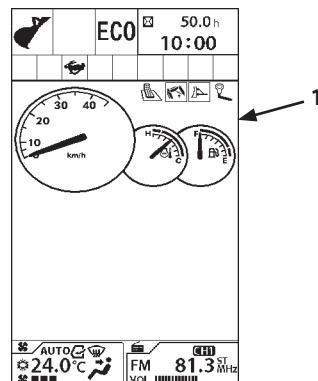
# OPERATOR'S STATION

## Date and Time

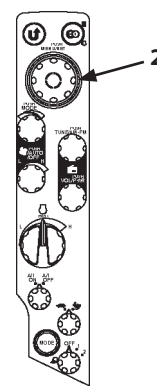
Time, date and display mode can be set on this screen. Year-month-day format and 24h/12h display mode are selected in the display setting.

### Time adjustment

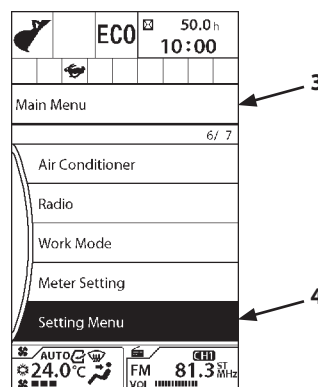
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Date and Time (6).



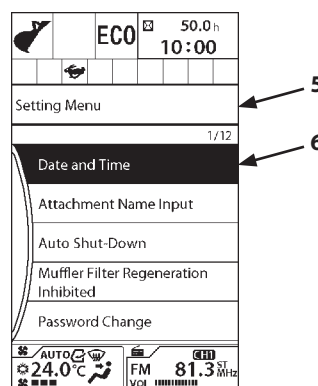
MLBA-01-001



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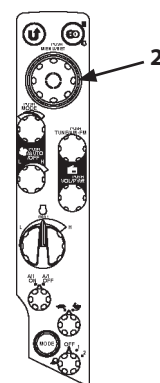
MLBA-01-114EN



MLBA-01-115EN

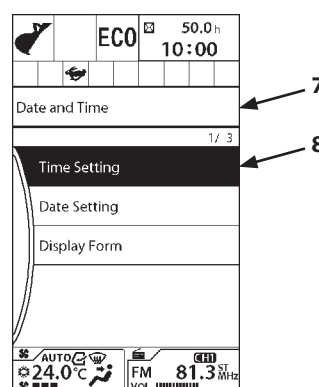
## OPERATOR'S STATION

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



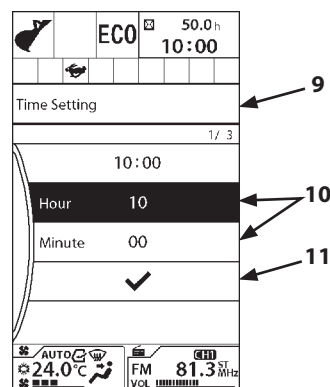
- Rotate selector knob (2) to highlight Time Setting (8).
- Press selector knob (2) to display Time Setting screen (9).

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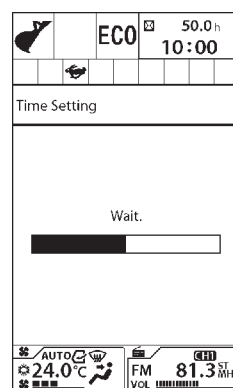


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- Rotate selector knob (2) to highlight Hour or Minute (10) and push selector knob (2).
- Rotate selector knob (2) to adjust the clock. Rotate clockwise to adjust the number upwards, and counterclockwise to decrease it.
- Push selector knob (2) to end the Time setting procedure.
- Rotate selector knob (2) to highlight ✓ (11). Push selector knob (2) to reflect the setting.



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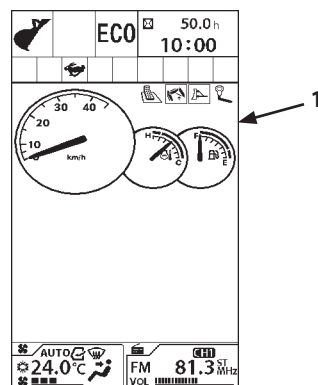
MDAA-01-121EN



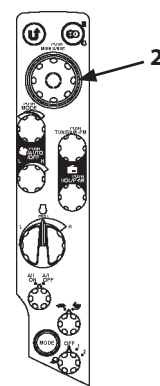
# OPERATOR'S STATION

## Date Adjustment

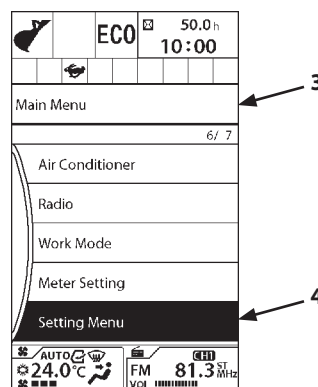
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Date and Time (6).



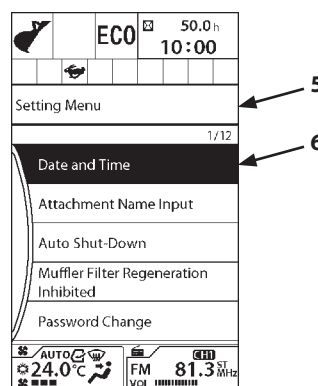
MLBA-01-001



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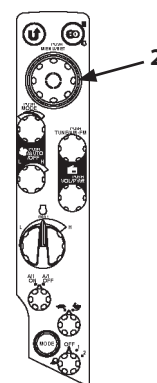
MLBA-01-114EN



MLBA-01-115EN

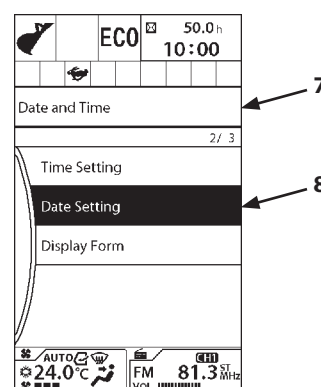
## OPERATOR'S STATION

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



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

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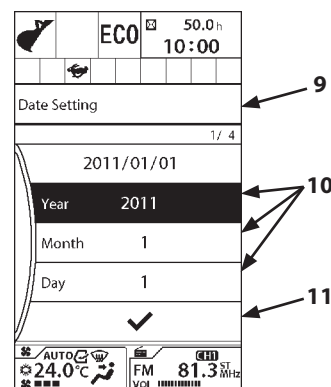


8. Rotate selector knob (2) to highlight Year, Month or Day (10) and push selector knob (2).
9. Rotate selector knob (2) to adjust the clock. Rotate clockwise to adjust the number upwards, and counterclockwise to decrease it.

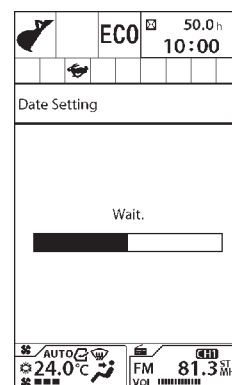
MDAA-01-122EN

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

11. Rotate selector knob (2) to highlight ✓ (11). Push selector knob (2) to reflect the setting.



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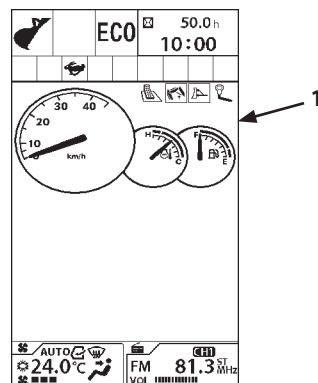


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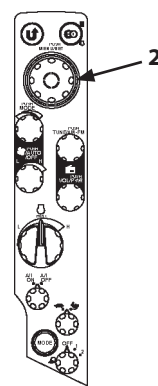
# OPERATOR'S STATION

## Display Mode Setting

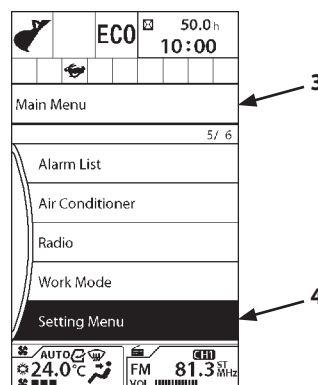
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Date and Time (6).



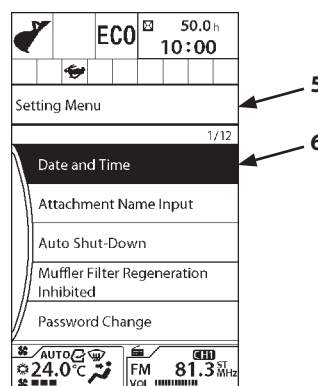
MLBA-01-001



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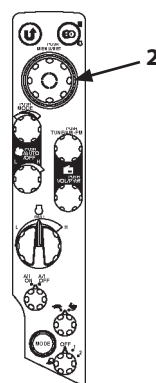
MDAA-01-114EN



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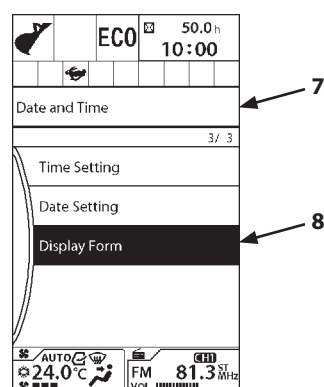
## OPERATOR'S STATION

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



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

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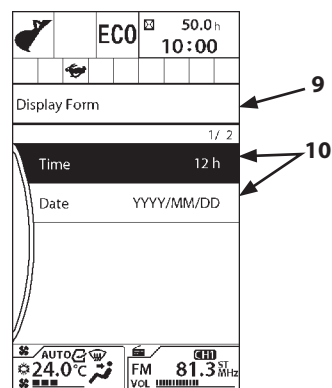


7. Press selector knob (2) to display Display Form screen (9).
8. Rotate selector knob (2) to highlight Date (10) and push selector knob (2).

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

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



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MDAA-01-230EN



MDAA-01-231EN



MDAA-01-232EN



MDAA-01-233EN



MDAA-01-234EN

# OPERATOR'S STATION

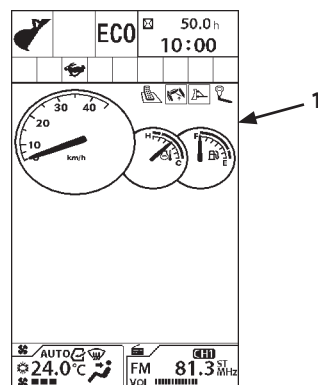
## Attachment Adjustment

The supply flow rate to an attachment, the operational priority for combined operation of an attachment and arm roll-out can be adjusted on the Attachment Adjustment screen.

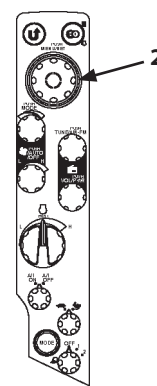
The attachment adjustment can be done when the work mode is set to an attachment other than the bucket. Select an attachment other than the bucket on the work mode screen. (Refer to "Work Mode".)

### Flow Rate Adjustment

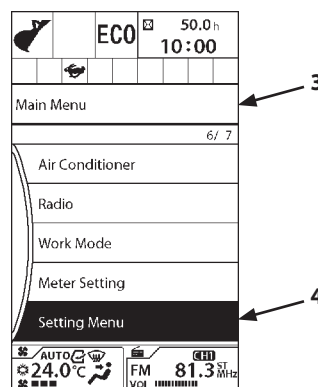
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Attachment Adjustment (6).



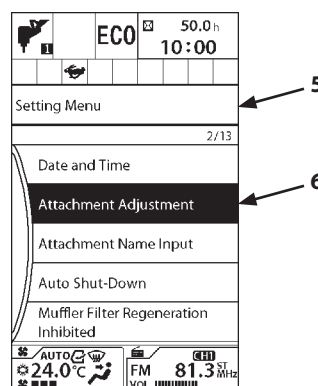
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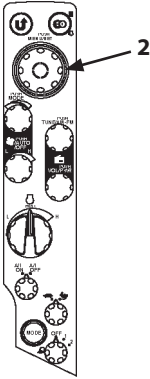
MLBA-01-114EN



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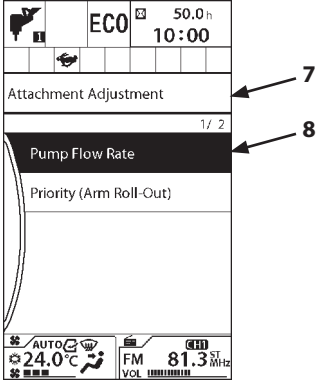
# OPERATOR'S STATION

- 5. Press selector knob (2) to display Attachment Adjustment screen (7).



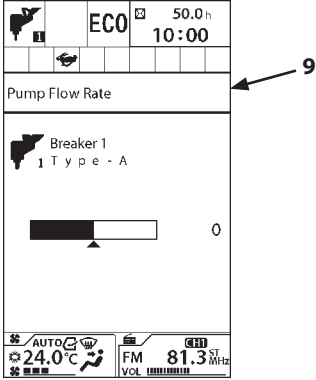
MDAA-01-040

- 6. Rotate selector knob (2) to highlight Pump Flow Rate (8).



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- 7. Press selector knob (2) to display Pump Flow Rate screen (9).
- 8. Rotate selector knob (2) clockwise or counterclockwise to adjust the pump flow rate.



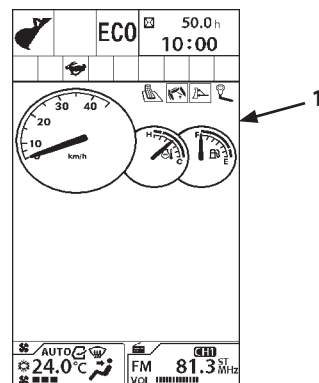
MDAA-01-130EN

## OPERATOR'S STATION

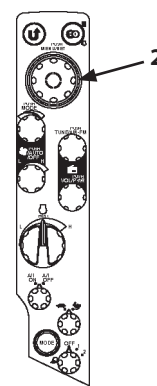
### Priority (arm roll-out)

Select an attachment other than the bucket on the work mode screen. (Refer to 1-62)

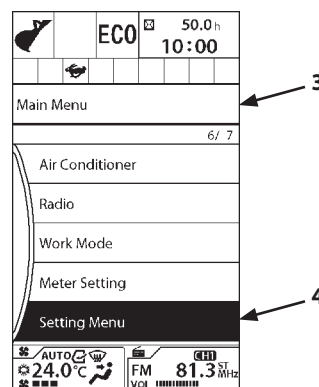
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Attachment Adjustment (6).



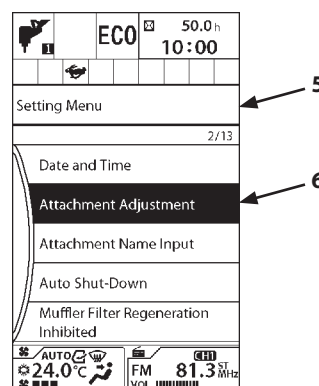
MLBA-01-001



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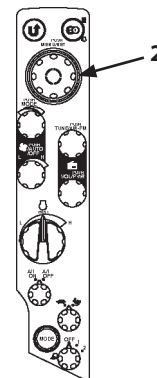


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## OPERATOR'S STATION

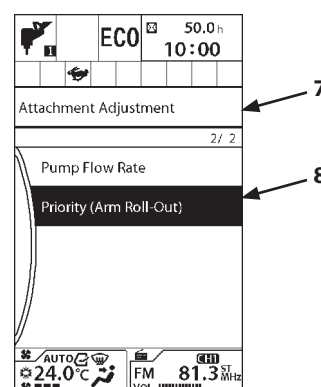
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- Press selector knob (2) to display Attachment Adjustment screen (7).



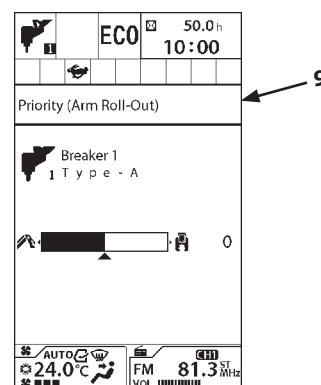
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- Rotate selector knob (2) to highlight Priority (Arm Roll-Out) (8).



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- Press selector knob (2) to display Priority (Arm Roll-out) screen (9).
- Rotate selector knob (2) clockwise to increase flow rate to the attachment. Rotate selector knob (2) counterclockwise to increase flow rate to the arm roll-out circuit.



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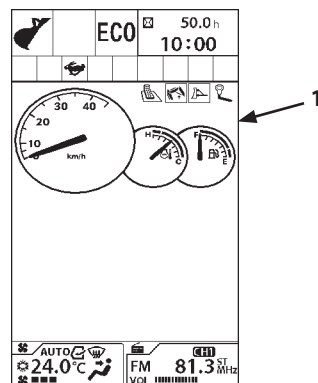


## OPERATOR'S STATION

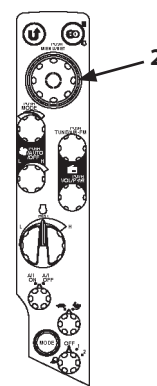
### Attachment Name Input

Attachment name can be changed on this screen.

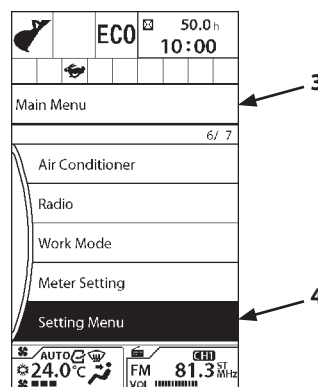
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Attachment Name Input (6).



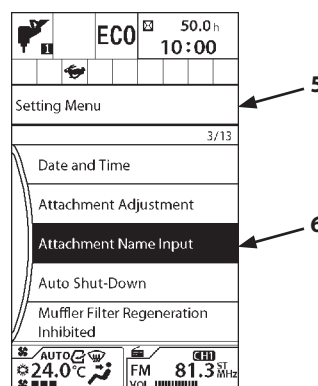
MLBA-01-001



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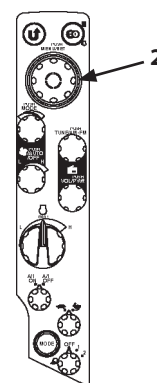
MLBA-01-114EN



MLBA-01-133EN

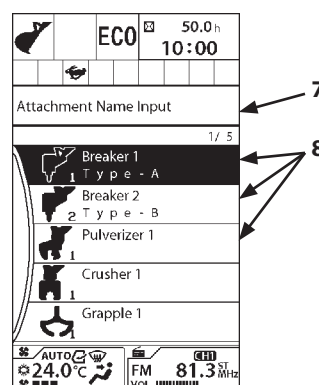
## OPERATOR'S STATION

- Press selector knob (2) to display Attachment Name Input screen (7).



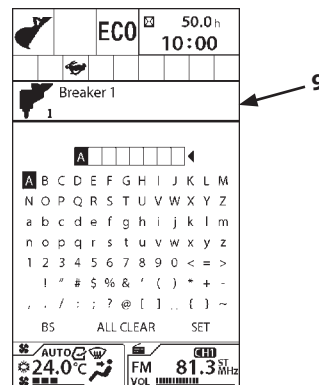
MDAA-01-040

- Rotate selector knob (2) to highlight desired attachment name (8).




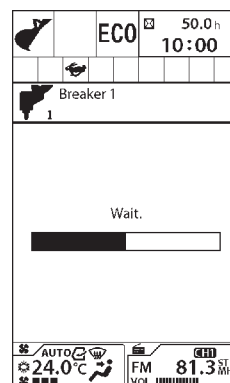
MDAA-01-134EN

- Press selector knob (2) to display Name Change screen (9).
- Rotate selector knob (2) right and left to highlight a character, and push selector knob (2).
- After inputting the new name, rotate selector knob (2) to highlight "SET". Push selector knob (2) to finalize the setting.



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 **NOTE:** In order to delete the last entered character, turn selector knob (2) to highlight "BS" (Back Space), and then push selector knob (2). In order to delete all entered characters, rotate selector knob (2) to highlight "ALL CLEAR". Push selector knob (2).



MDAA-01-145EN

# OPERATOR'S STATION

## Auto Shut-Down

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

The auto shut-down function can be set in this screen. Set the auto shut-down time and enable (ON) the function beforehand. The engine automatically stops when switches are turned in the following conditions.

[Conditions]

Pilot Control Shut-Off Lever: LOCK Position

Brake Switch: "P" Position

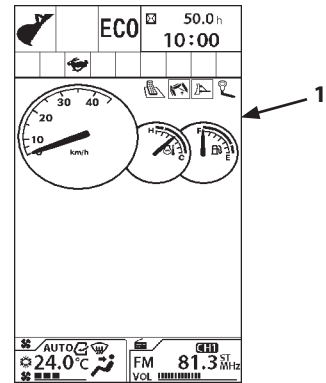
F-N-R Switch: "N" Position

30 seconds before the engine stop, the monitor displays a message that engine will be stopped and the indicator starts flashing. Also the buzzer sounds. The buzzer sounds once at 30 seconds before, continuously sounds from 15 seconds. The engine speed decreases to the idling speed, and then stops after 15 seconds. When the control shut-off lever is pushed before stopping the engine, the auto shut-down is disabled and the engine will not stop.

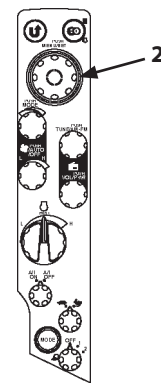
**IMPORTANT:** When the engine stops by the auto shut-down function, turn the key switch to ACC or OFF once and then turn it to START to restart the engine. Turn the key switch OFF after auto shut-down when leaving the machine for long period of time. Do not leave the machine after auto shut-down. Failure to do so may discharge the batteries.

### Auto Shut-down: ON/OFF

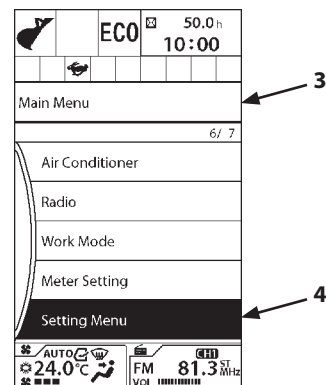
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Auto Shut-Down (6).



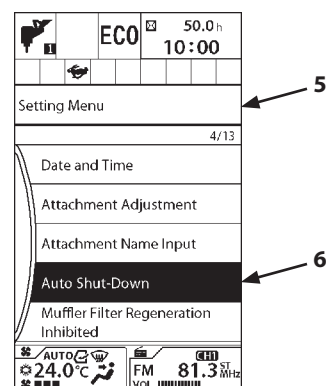
MLBA-01-001



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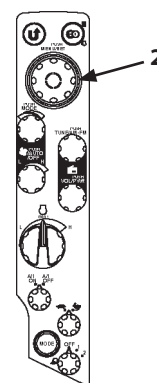
MLBA-01-114EN



MLBA-01-147EN


## OPERATOR'S STATION

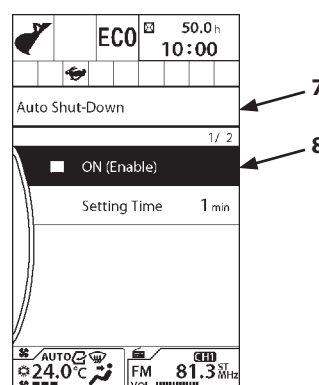
- Press selector knob (2) to display Auto Shut-Down screen (7).



MDAA-01-040

- Rotate selector knob (2) to highlight ON (8).
- Press selector knob (2) to turn the Auto Shut-Down function ON. Press selector knob (2) again to turn the auto shut-down function OFF.


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

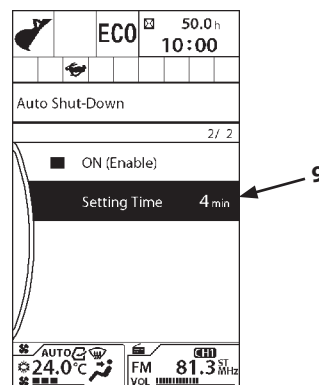


MLBA-01-148EN

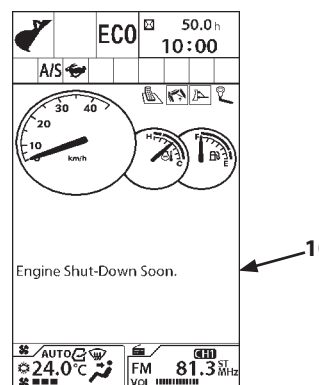
### Acting Time Setting

- On the Auto Shut-Down screen, rotate selector knob (2) to highlight Setting Time (9) and press selector knob (2).
- Rotate selector knob (2) to highlight Auto Shut-Down time.
- Press selector knob (2) to make the change.

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



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MLBA-01-146EN

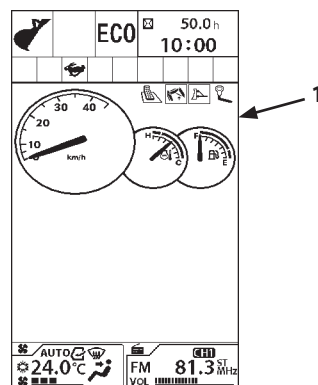
## OPERATOR'S STATION

### Muffler Filter Regeneration Inhibited

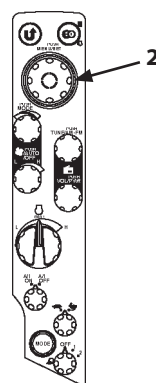
**IMPORTANT:** The muffler filter regeneration can be inhibited at this screen to prevent auto regeneration while operating the machine in a dusty area or indoors.

#### Setting Procedure

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

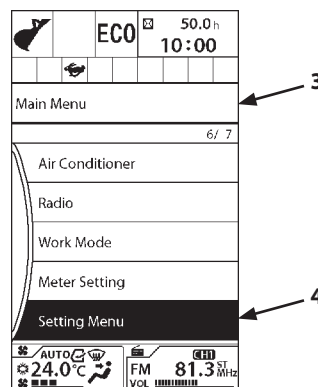


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2. Rotate selector knob (2) to highlight Setting Menu (4).



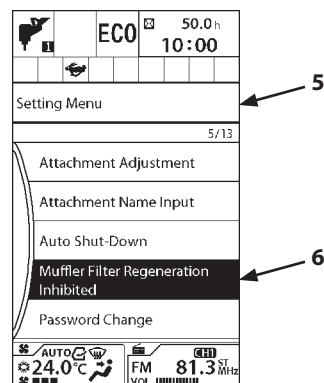
MLBA-01-114EN

## OPERATOR'S STATION

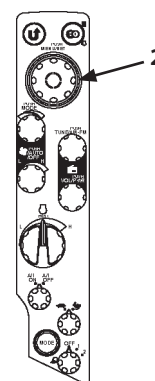
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Muffler Filter Regeneration Inhibited (6).
5. Press selector knob (2) to display Muffler Filter Regeneration Inhibited screen (7).
6. Rotate selector knob (2) to highlight ✓ (8), and press selector knob (2) to display Muffler Filter Regeneration Inhibited screen (9).
7. Rotate selector knob (2) to highlight ON (10). Confirmation screen is added.
8. Press selector knob (2) to turn Muffler Filter Regeneration Inhibited ON. Press selector knob (2) again to turn Muffler Filter Regeneration Inhibited OFF.
9. When ON is selected, the regeneration inhibited icon will be displayed on the monitor. (Refer to 1-56)

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

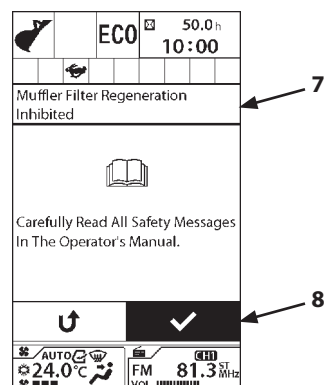
**IMPORTANT:** When the machine is operated with the muffler filter regeneration inhibited, the muffler filter becomes clogged. When the muffler filter regeneration request is displayed, move the machine to a safe place. Perform the manual regeneration following the specified procedure. Failure to do so may damage the muffler filter. Refer to "Muffler Filter" section for the manual regeneration.



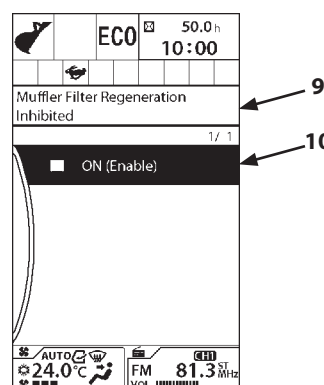
MLBA-01-283EN



MDAA-01-040



MDAA-01-325EN

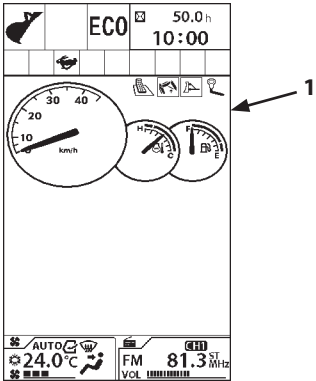


MDAA-01-284EN

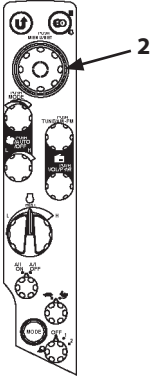
# OPERATOR'S STATION

## Password Change (Optional)

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

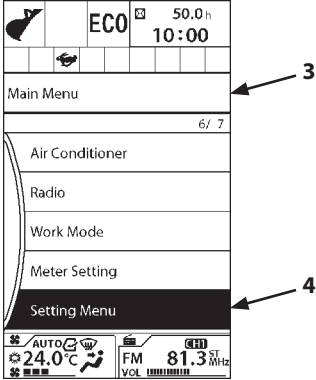


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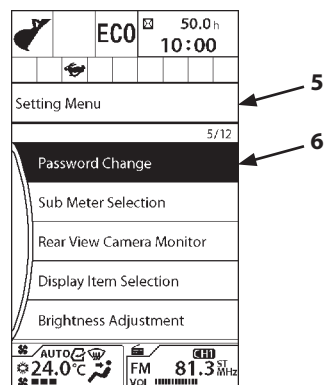
- 2. Rotate selector knob (2) to highlight Setting Menu (4).



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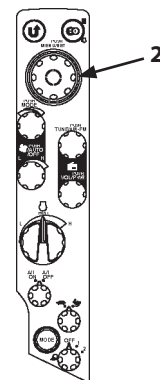
## OPERATOR'S STATION

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



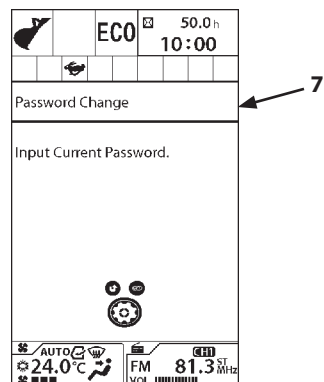
MDAA-01-156EN

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

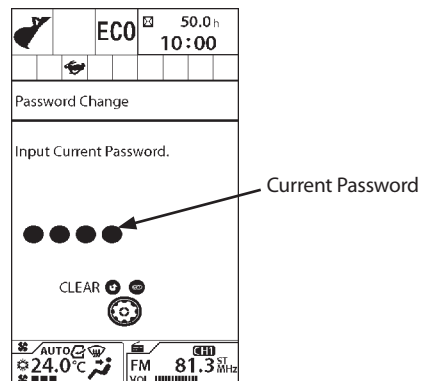


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6. Input current password from the numeric keypad.



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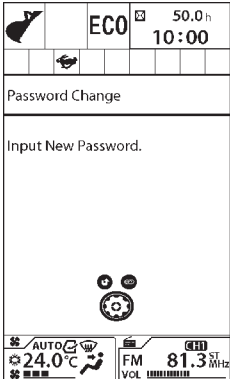


MDAA-01-158EN

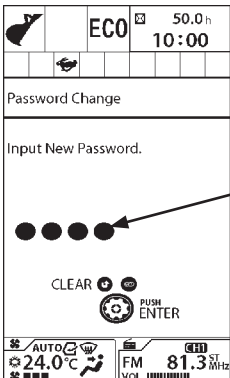


# OPERATOR'S STATION

- 7. Input the new password and push selector knob (2). 3 to 8 digits can be input for password.



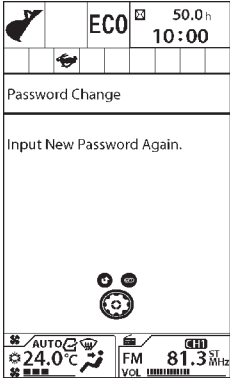
MDAA-01-159EN



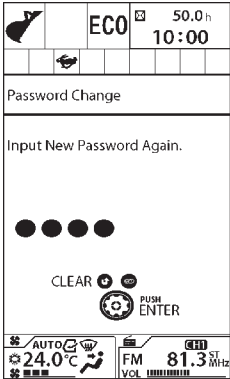
MDAA-01-160EN

# OPERATOR'S STATION

8. Input the new password again to confirm it and push selector knob (2).

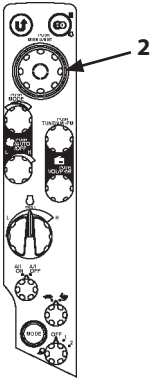


MDAA-01-161EN

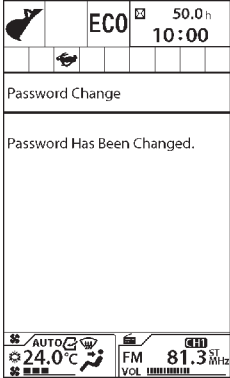


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9. The password has changed.



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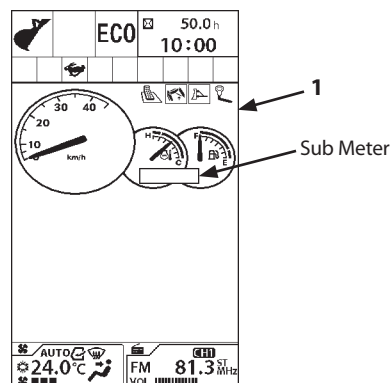
MDAA-01-163EN

## OPERATOR'S STATION

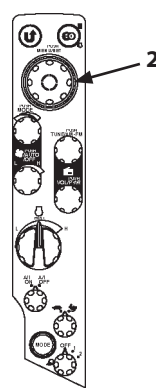
### Sub Meter

A sub meter selection menu that can be added to the basic screen is selected on this screen. OFF, Fuel Consumption Indicator (only a rough indication) and Breaker Hour Meter are provided. The breaker hour meter indicates the breaker operation time.

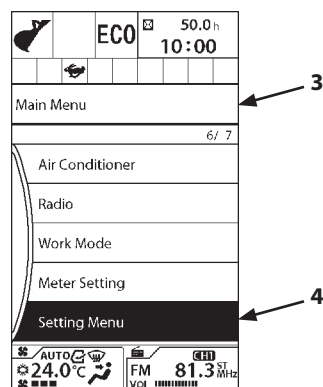
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Sub Meter Selection (6).



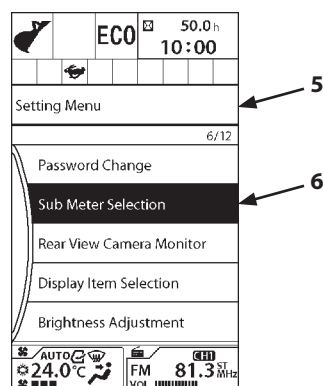
MLBA-01-315



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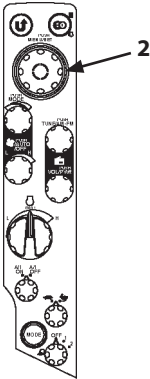
MLBA-01-114EN



MDAA-01-164EN

# OPERATOR'S STATION

5. Press selector knob (2) to display Sub Meter Selection screen (7).



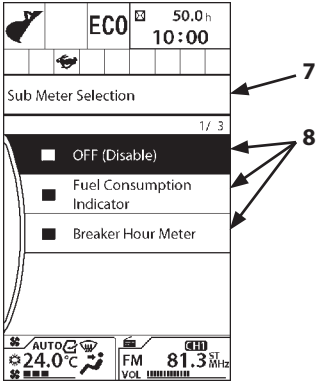
MDAA-01-040

6. Rotate selector knob (2) to highlight desired sub meter (8). (Selecting OFF will not display a sub meter.)

7. Press selector knob (2) to make the changes.

 **NOTE:**

- Only one sub meter can be selected at a time.
- When a display is selected, the mark "■" is displayed in green. When not selected, the mark "■" is displayed in gray.



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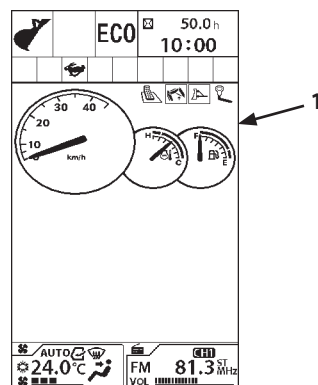
# OPERATOR'S STATION

## Rear View Camera Monitor

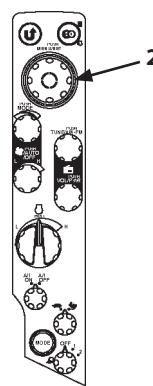
**IMPORTANT:** The image displayed on the rear view monitor is meant only as an aid. Actual position and distance of people and objects in the rear view monitor will be different. When operating the machine, pay thorough attention to the surrounding situation.

### Rear View Camera ON/OFF

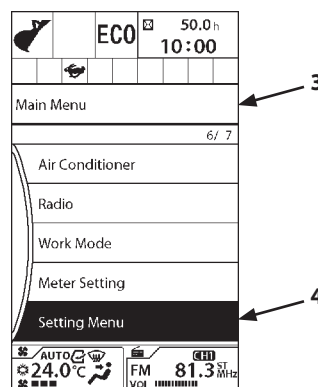
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Rear View Camera Monitor (6).



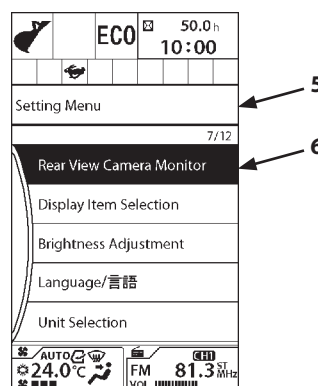
MLBA-01-001



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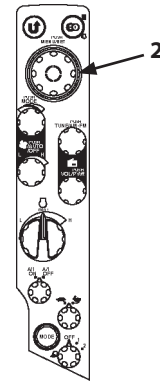
MLBA-01-114EN



MDAA-01-168EN

## OPERATOR'S STATION


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

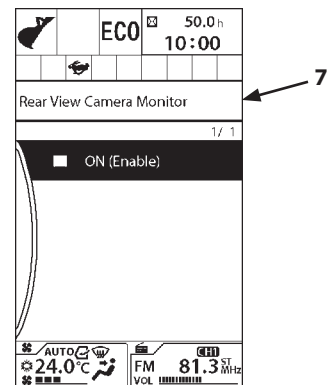


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6. Press selector knob (2) to turn the rear view camera monitor ON/OFF.
7. When the rear view camera monitor is ON, rear view image is continuously displayed on the basic screen.

**IMPORTANT:** In order to obtain a clear image, clean the lens and the monitor display before operating the machine.

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



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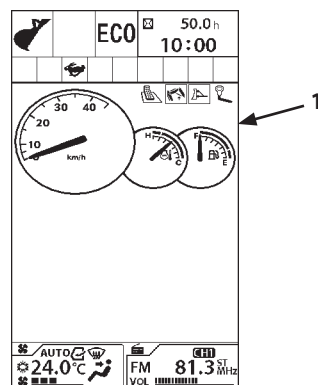
**IMPORTANT:**

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

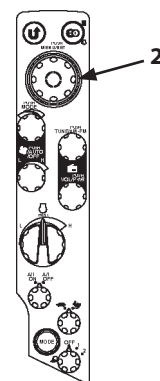
## OPERATOR'S STATION

### Brightness Adjustment

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

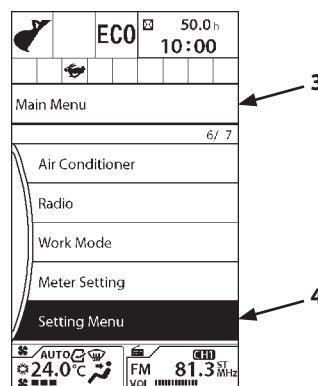


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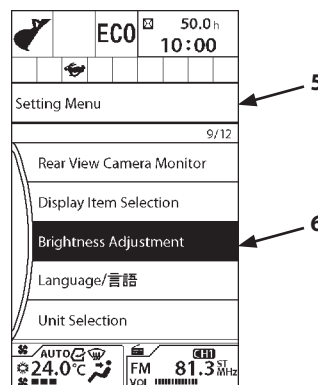
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2. Rotate selector knob (2) to highlight Setting Menu (4).



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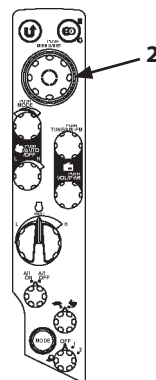
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Brightness Adjustment (6).



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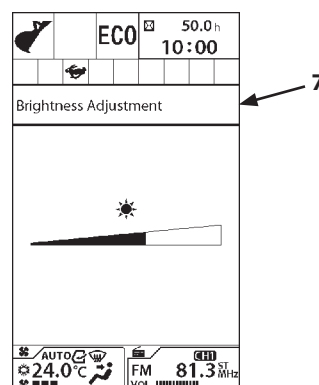
## OPERATOR'S STATION

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




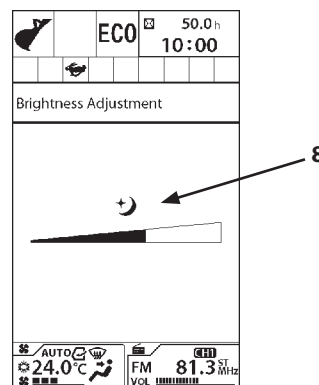
MDAA-01-040

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




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 **NOTE:** When the light is turned ON, the monitor screen changes to night mode and mark (8) is displayed. Brightness can be adjusted for day mode and night mode respectively.



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 **NOTE:** Even if the light is turned ON during daytime, you can activate the daytime screen by pushing "0" (9) on the numeric keypad.



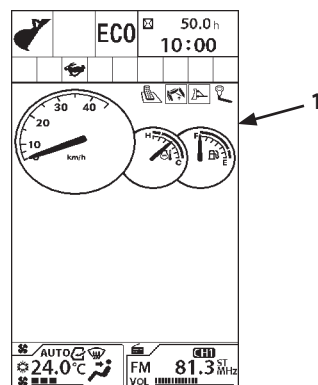
MDAA-01-018



# OPERATOR'S STATION

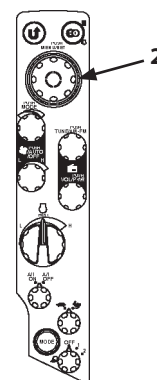
## Language Settings

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



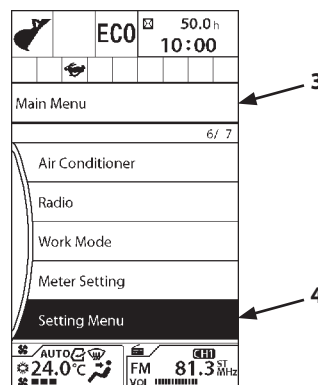
MLBA-01-001

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

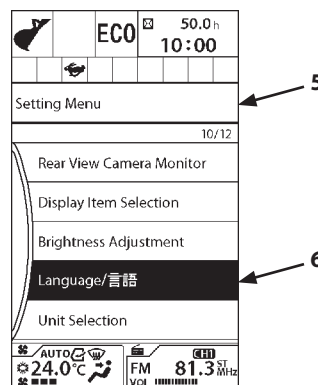


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3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Language/言語 (6).



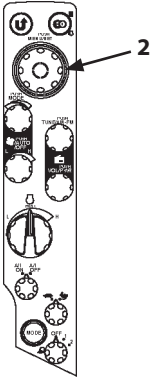
MLBA-01-114EN



MDAA-01-176EN


# OPERATOR'S STATION

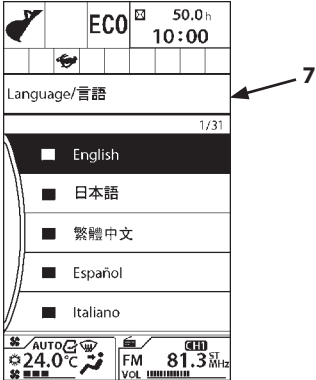
5. Press selector knob (2) to display Language/言語 screen (7).



6. Rotate selector knob (2) to highlight the desired language. Press selector knob (2) to set the image.

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 **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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## OPERATOR'S STATION

### Lists of Display Language

Language	Screen Display
Japanese	日本語
English	English
Spanish	Español
Italian	Italiano
French	Français
German	Deutsch
Dutch	Nederlands
Russian	Русский
Portuguese	Português
Finnish	Suomi
Greek	Ελληνικά
Swedish	Svenska
Norwegian	Norsk
Chinese (Simplified)	简体中文
Chinese (Traditional)	繁體中文
Korean	한국어

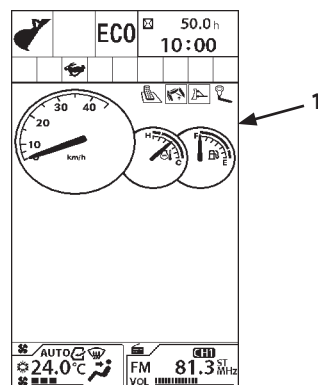
Language	Screen Display
Indonesian	Bahasa Indonesia
Thai	ภาษาไทย
Vietnamese	Tiếng Việt
Myanmarese	မြန်မာစာစကား
Arabic	اللغة العربية
Persian	زبان فارسی
Turkish	Türkçe
Danish	Dansk
Estonian	Eesti
Polish	Polski
Icelandic	Íslenska
Croatian	Hrvatski
Slovenian	Slovenščina
Romanian	limba română
Bulgarian	Български език
Lithuanian	Lietuvių kalba

# OPERATOR'S STATION

## Unit Selection

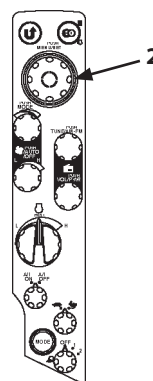
Unit system displayed on the monitor can be selected in this screen.

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



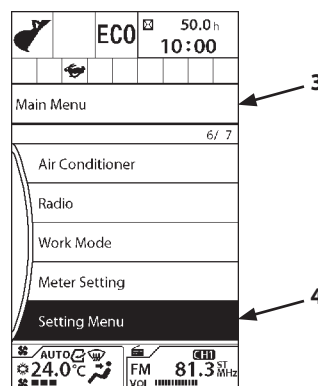
MLBA-01-001

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

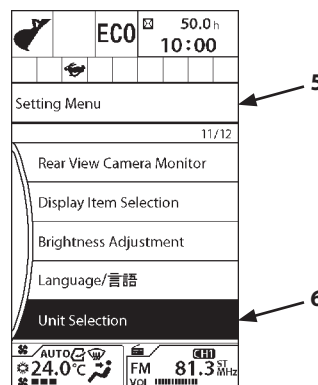


MDAA-01-040

3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Unit Selection (6).



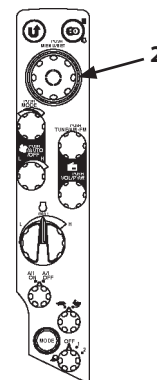
MLBA-01-114EN



MDAA-01-181EN

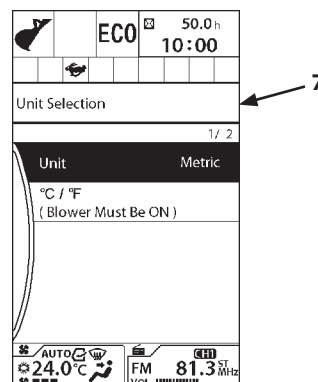
## OPERATOR'S STATION

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



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

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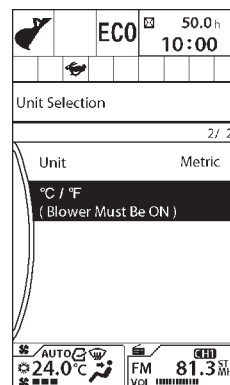


7. Before changing °C and °F, turn the blower of the air conditioner ON.

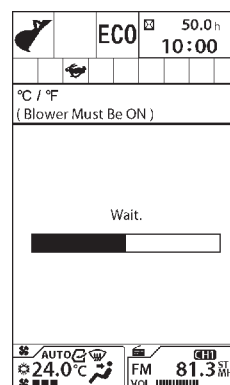
MDAA-01-182EN

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

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



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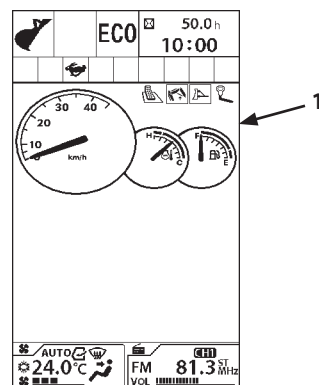
MDAA-01-184EN

## OPERATOR'S STATION

### Display Item Selection (Rear View Camera OFF)

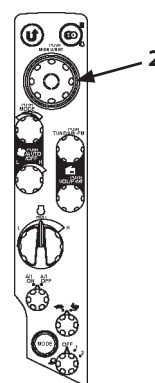
The display under the meters can be set to OFF (disable), Logo or Operational information.

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



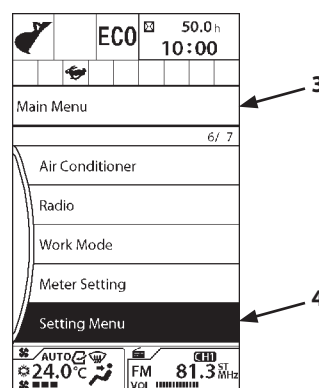
MLBA-01-001

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

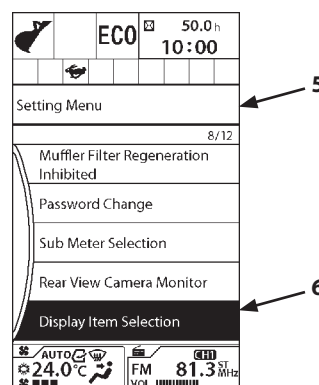


MDAA-01-040

3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Display Item Selection (6).



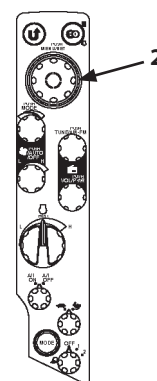
MLBA-01-114EN




MDAA-01-237EN

## OPERATOR'S STATION

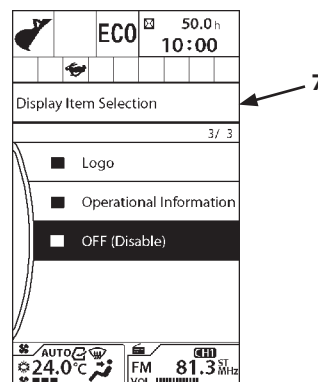
5. Press selector knob (2) to display Display Item Selection screen (7).



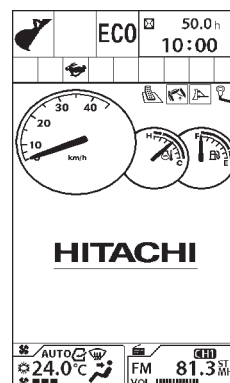
6. Rotate selector knob (2) to highlight desired display. Press selector knob (2) to set the image. (Selecting OFF sets non-display.)

 **NOTE:** When a display is selected, the mark "■" is displayed in green. When not selected, the mark "■" is displayed in gray.

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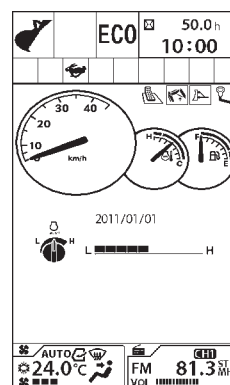


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Logo

MLBA-01-239



Operation Information

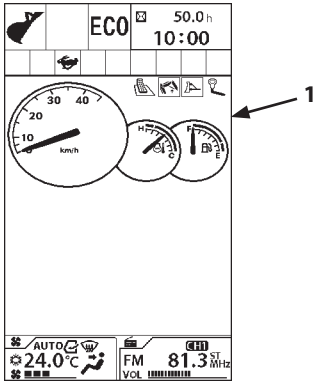
MLBA-01-222

# OPERATOR'S STATION

## Main Menu Sequence Change

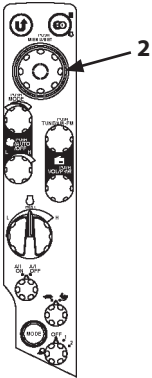
Menu sequence of Air Conditioner, Radio, Work Mode and Mail can be changed in this screen. Frequently used menu can be located on top of the screen.

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

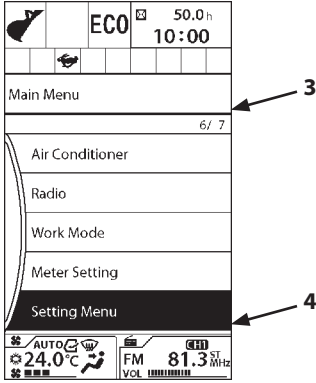


MLBA-01-001

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



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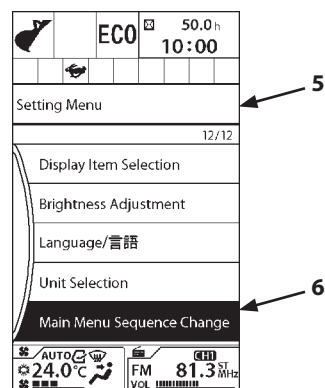


MLBA-01-114EN

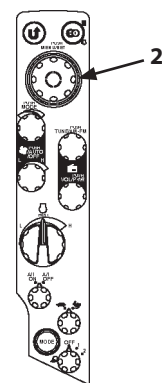


## OPERATOR'S STATION

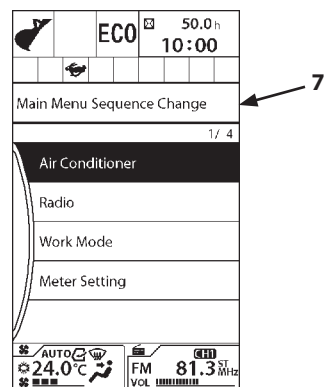
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Main Menu Sequence Change (6).



5. Press selector knob (2) to display Main Menu Sequence Change screen (7).



6. Rotate selector knob (2) to highlight a menu to be on the top of the screen. Press selector knob (2) to set the menu to the top of the screen.

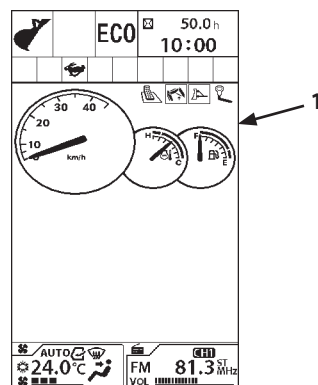


## OPERATOR'S STATION

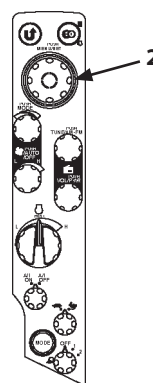
### Information Menu

The information menu includes Operation, Maintenance and Monitoring.

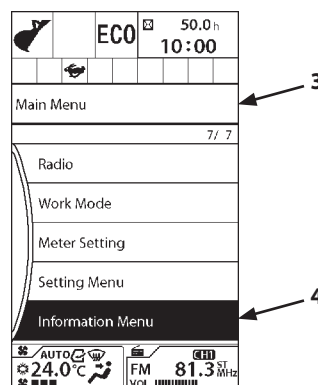
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).



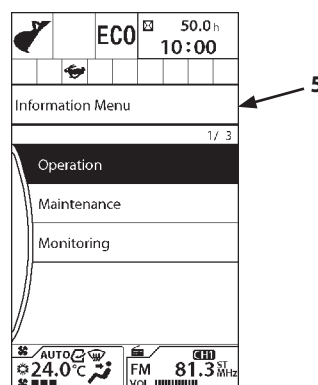
MLBA-01-001



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MLBA-01-190EN

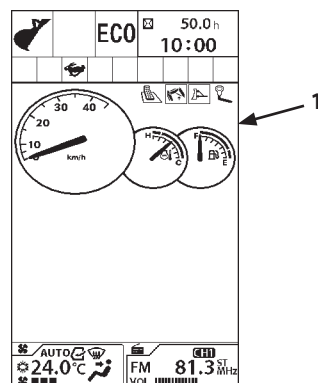


MDAA-01-191EN

# OPERATOR'S STATION

## Operation

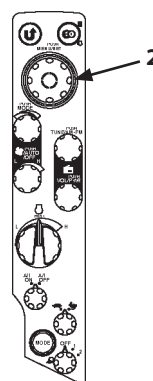
The Operation screen displays Fuel Consumption, Breaker Operation, Attachment Operation, Travel Operation, and Actual Operation menus. The Fuel Consumption screen displays fuel consumption, operating hours, and fuel consumption rate from resetting of the monitoring unit. The Breaker Operation screen displays breaker operating hours, machine operating hours and operating rate from resetting the monitoring unit. The Attachment Operation screen displays total operating hours of front attachment, travel and all operation from resetting the monitoring unit.



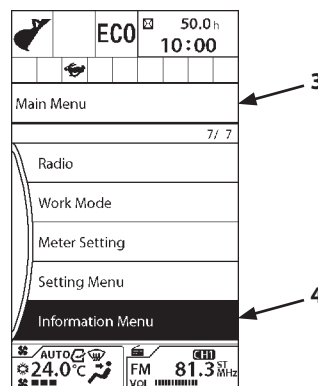
MLBA-01-001

### Fuel Consumption

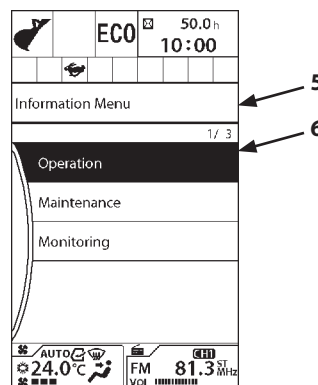
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Operation (6).



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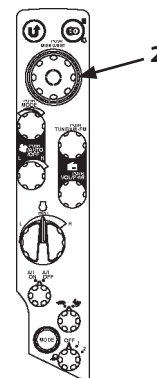
MLBA-01-190EN



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## OPERATOR'S STATION

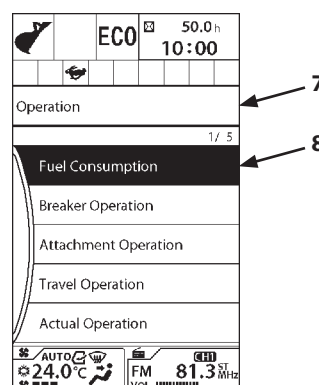
5. Press selector knob (2) to display Operation screen (7).



6. Rotate selector knob (2) to highlight Fuel Consumption (8).

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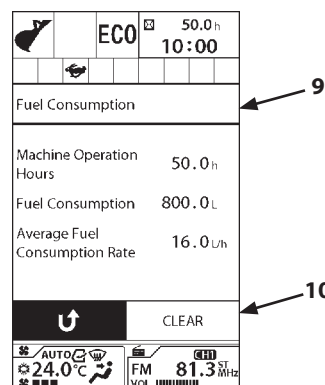
7. Press selector knob (2) to display Fuel Consumption screen (9).



MDAA-01-193EN

The Machine Operation Hours, Fuel consumption, and Average Fuel Consumption rate can be checked on this screen.

Pushing selector knob (2) returns to the basic screen. To clear the Fuel Consumption and Machine Operation Hours, rotate selector knob (2) to highlight CLEAR (10), and then push selector knob (2).



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

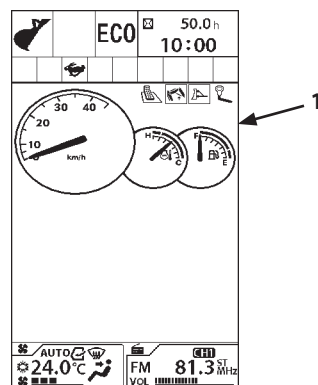
**The values shown on the screen are just for reference.**

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

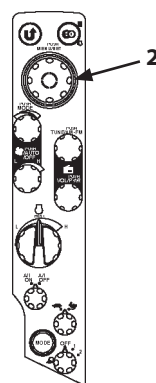
## OPERATOR'S STATION

### Breaker Operation

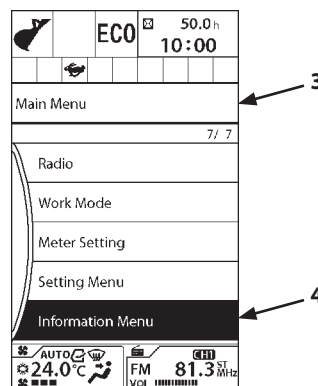
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Operation (6).



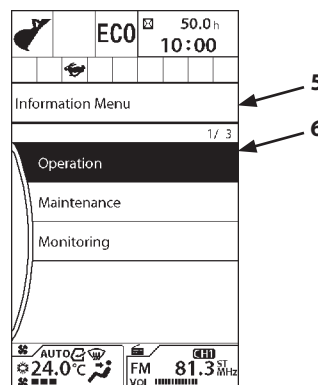
MLBA-01-001



MDAA-01-040



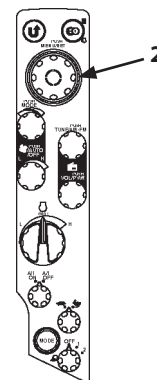
MLBA-01-190EN



MDAA-01-191EN

## OPERATOR'S STATION

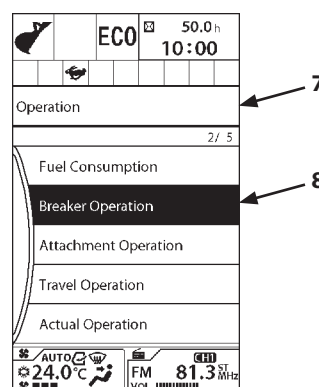
5. Press selector knob (2) to display Operation Screen (7).



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6. Rotate selector knob (2) to highlight Breaker Operation (8).

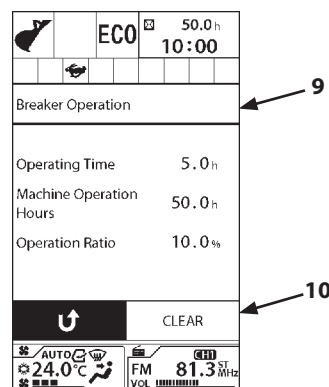
7. Press selector knob (2) to display Breaker Operation screen (9).



MDAA-01-196EN

Operating Time, Machine Operation Hours and Operation Ratio can be checked in this screen.

Pushing selector knob (2) returns to the basic screen. To reset the Operation Time and Machine Operation Hours data, rotate selector knob (2) to highlight CLEAR (10), and then push selector knob (2).

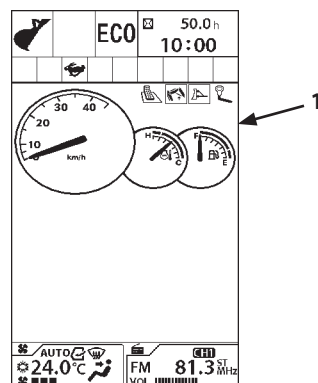


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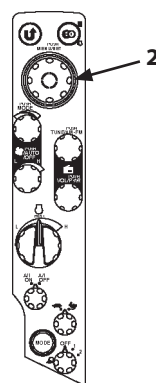
# OPERATOR'S STATION

## Attachment Operation

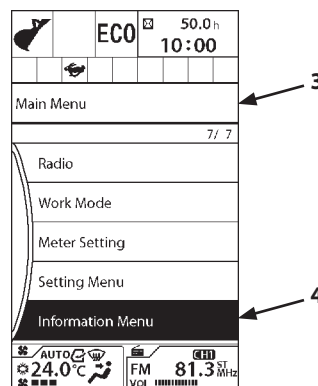
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Operation (6).



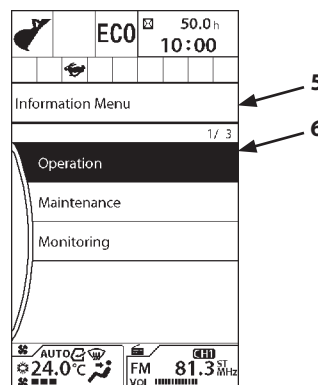
MLBA-01-001



MDAA-01-040



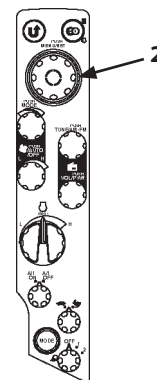
MLBA-01-190EN



MDAA-01-191EN

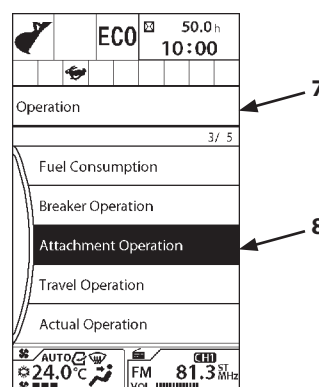
## OPERATOR'S STATION

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



6. Rotate selector knob (2) to highlight Attachment Operation (8).

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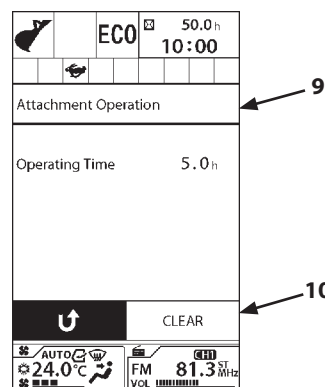


7. Press selector knob (2) to display Attachment Operation screen (9).

MDAA-01-199EN

The attachment Operating Time can be checked in this screen.

Push selector knob (2) to return the previous screen .To reset the Operating Time data, rotate selector knob (2) to highlight CLEAR (10), and then push selector knob (2).



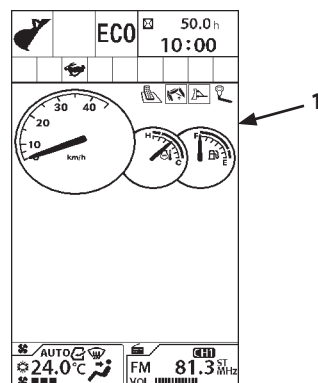
MDAA-01-200EN



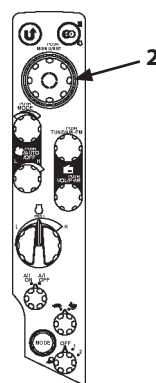
## OPERATOR'S STATION

### Travel Operation

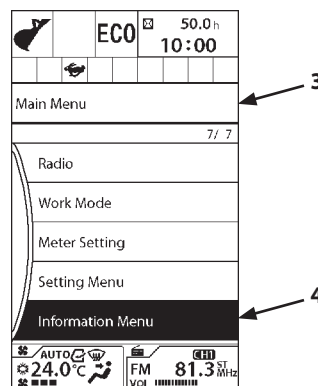
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Operation (6).



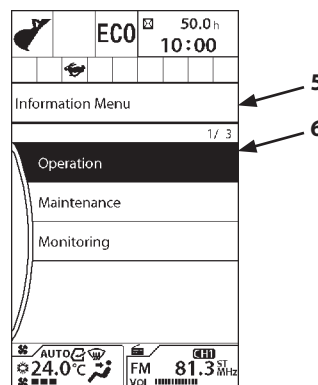
MLBA-01-001



MDAA-01-040



MLBA-01-190EN



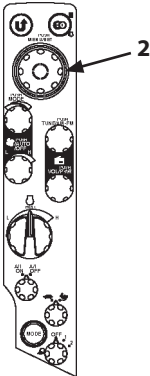
MDAA-01-191EN

# OPERATOR'S STATION

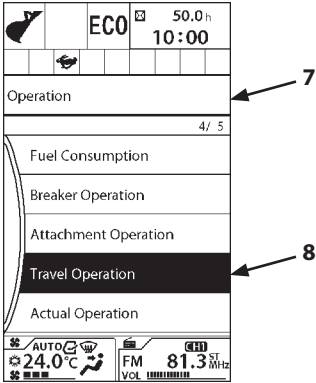
5. Press selector knob (2) to display operation screen (7).

- 6. Rotate selector knob (2) to highlight Travel Operation (8).
- 7. Press selector knob (2) to display Travel Operation screen (9).

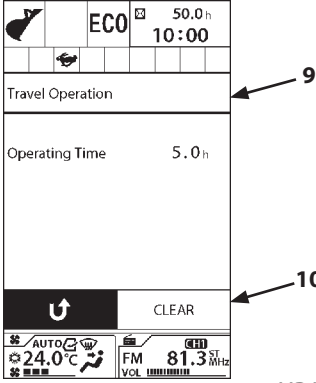
Total Travel Operation Time can be checked in this screen. Push selector knob (2) to return the previous screen. To reset the Operating Time data, rotate selector knob (2) to highlight CLEAR (10), and then push selector knob (2).



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MDAA-01-202EN

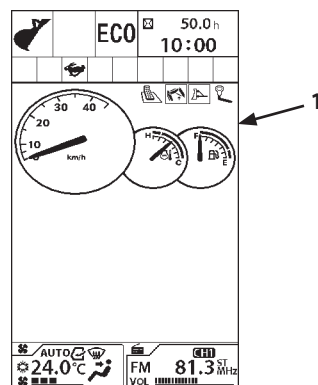


MDAA-01-203EN

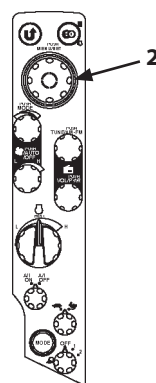
## OPERATOR'S STATION

### Actual operation

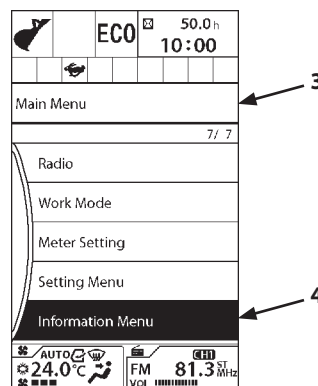
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Operation (6).



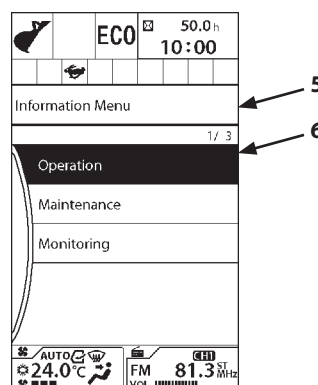
MLBA-01-001



MDAA-01-040



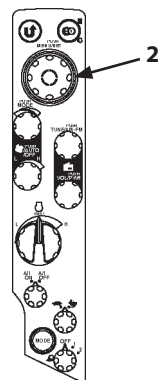
MLBA-01-190EN



MDAA-01-191EN

## OPERATOR'S STATION

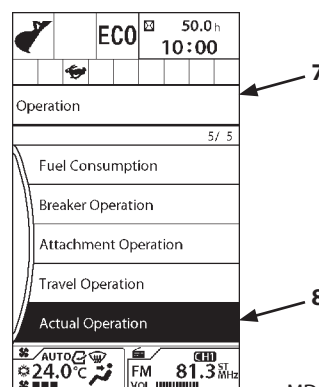
5. Press selector knob (2) to display operation screen (7).



6. Rotate selector knob (2) to highlight Actual Operation (8).


MDAA-01-040

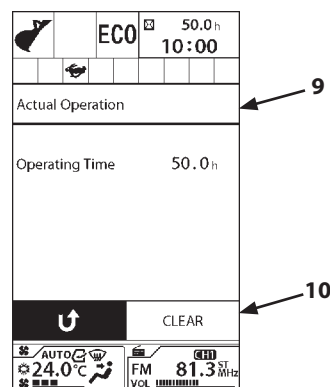
7. Press selector knob (2) to display Actual Operation screen (9).



MDAA-01-205EN

The actual Operating Time can be checked in this screen. Push selector knob (2) to return the previous screen. To reset the Operating Time data, rotate selector knob (2) to highlight CLEAR (10), and then push selector knob (2).

 **NOTE:** The Operating Time includes travel operation hours as well as all other operations.



MDAA-01-206EN

# OPERATOR'S STATION

## Maintenance

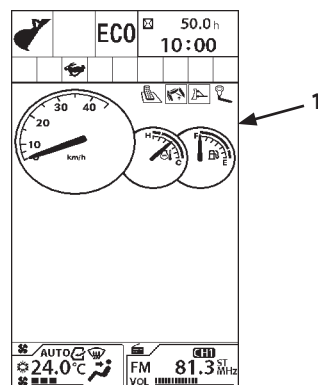
The maintenance screen includes maintenance notice, remaining hours until the next maintenance, and maintenance intervals.

### Maintenance Items

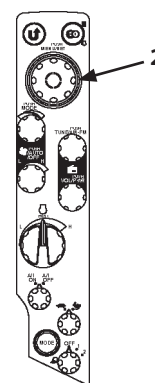
- Engine Oil
- Engine Oil Filter
- Hydraulic Oil
- Hydraulic Oil Pilot/Brake Filter
- Hydraulic Oil Full-Flow Filter
- Pump Transmission Oil
- Hydraulic Oil Steering Filter
- Travel Transmission Oil
- Axle Gear Oil (Front, Rear, Each hub)
- Propeller Shaft Grease
- Front Axle King Pin Grease
- Front Axle Center Pin Grease
- Wheel Nut Torque Check
- Swing Device Oil
- Swing Bearing Grease
- Air Cleaner Filter
- Fuel Filter
- Air Conditioner Filter
- Muffler Filter
- Line Filter (Optional)
- Water Separator (Optional)
- User Setting 1
- User Setting 2

### Maintenance Notice

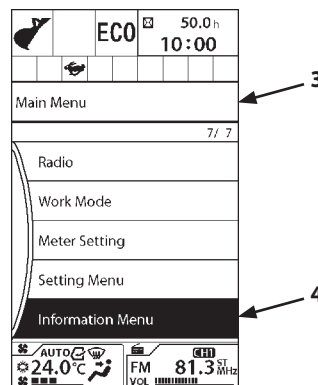
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Maintenance (6).



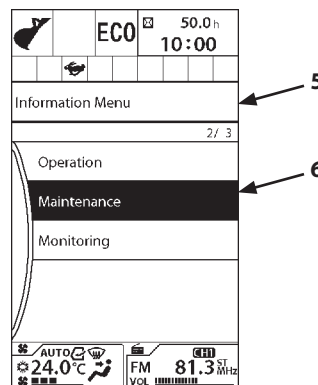
MLBA-01-001



MDAA-01-040



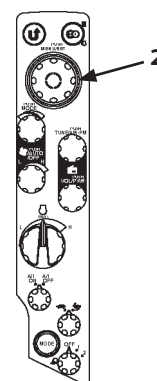
MLBA-01-190EN



MDAA-01-223EN

## OPERATOR'S STATION

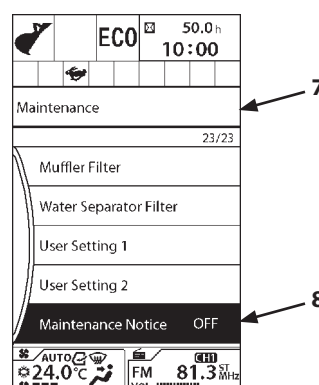
5. Press selector knob (2) to display Maintenance screen (7).



6. Rotate selector knob (2) to highlight Maintenance Notice (8).


MDAA-01-040

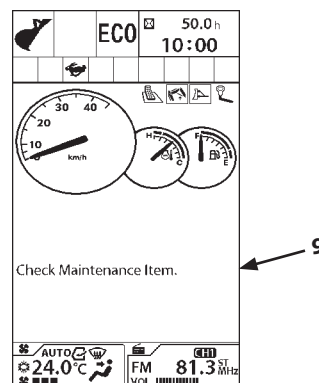
7. Press selector knob (2) to turn the Maintenance Notice ON. Press selector knob (2) again to turn the Maintenance Notice OFF.



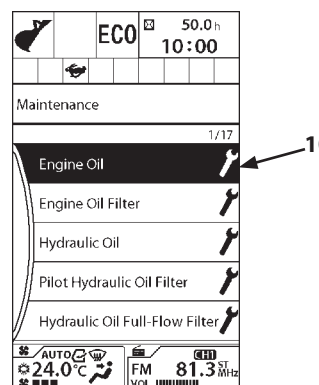
MLBA-01-208EN

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

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



MLBA-01-213EN

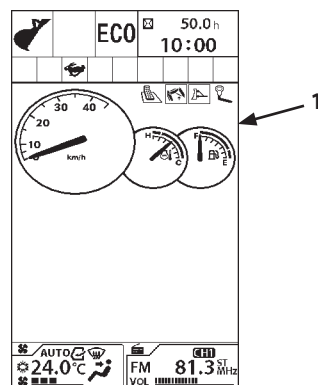


MDAA-01-214EN

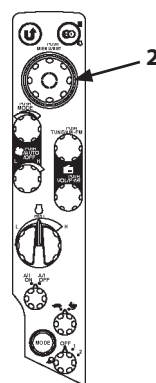
## OPERATOR'S STATION

### Time Remains and Maintenance Interval

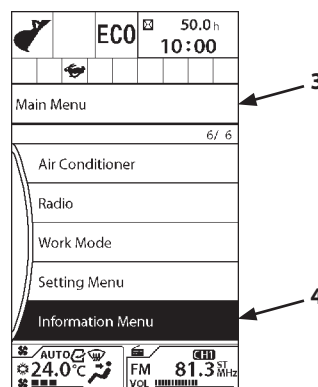
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Maintenance (6).



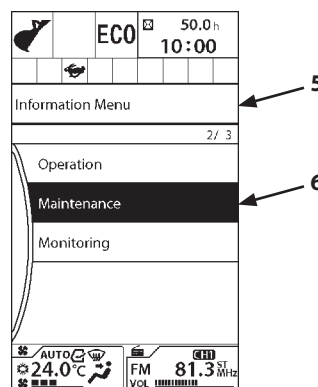
MLBA-01-001



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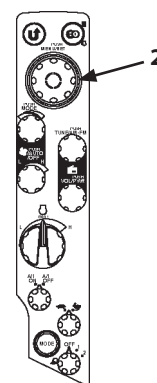
MDAA-01-190EN



MDAA-01-223EN

## OPERATOR'S STATION

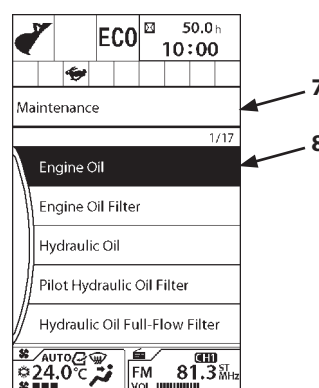
5. Press selector knob (2) to display Maintenance screen (7).



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

7. Press selector knob (2) to display the time remaining for the selected maintenance item.




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### Resetting Data

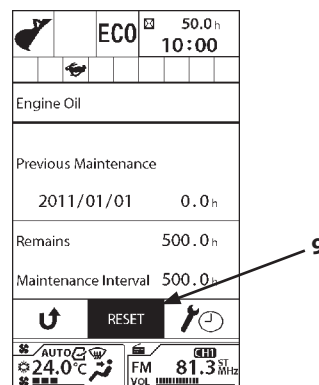
To reset the remaining time data, rotate selector knob (2) to highlight RESET (9), and then push selector knob (2).

The value of the remaining hours is reset to that of the change interval. The previous change date/hour is updated with the current date and time.

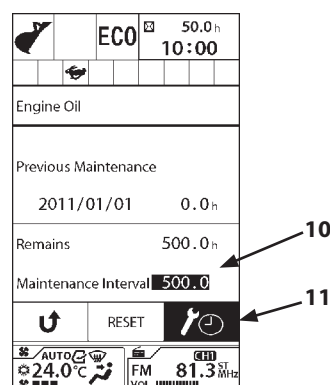
### Maintenance Interval Setting

To change the maintenance interval, rotate selector knob (2) to highlight  (11), and then press selector knob (2).

The background color of Maintenance Interval (10) changes, then turn selector knob (2) to adjust the time, and then push selector knob (2) to enable the change.



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MDAA-01-212EN

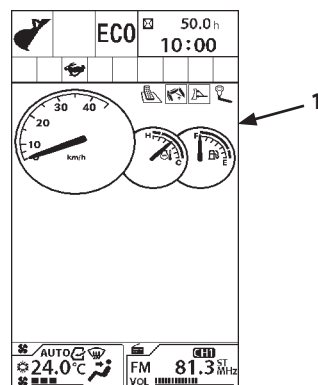


## OPERATOR'S STATION

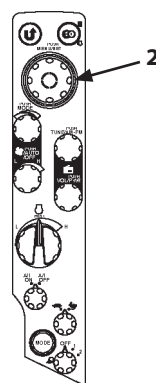
### Monitoring

Engine speed and PM (particle matter) accumulation in the muffler filter can be checked in this screen.

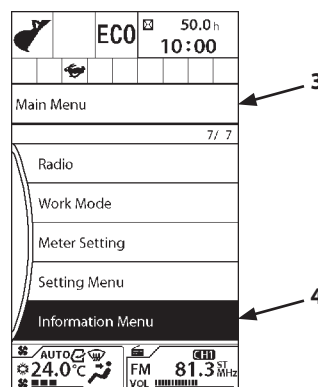
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Monitoring (6).



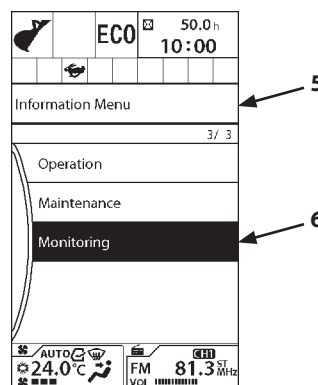
MLBA-01-001



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MLBA-01-190EN






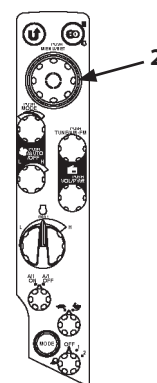
MDAA-01-220EN

## OPERATOR'S STATION

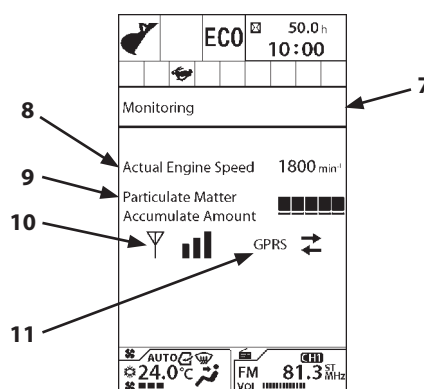
5. Press selector knob (2) to display Monitoring screen (7).

### Monitoring Items


- Actual Engine Speed (8)  
Indicates the present engine speed.
- Particulate Matter Accumulate Amount (9)  
Particulate Matter Accumulate Amount is expressed in a bar graph.  
When the "Particulate Matter Accumulate Amount" bar reaches the right end, auto-regeneration takes place.  
However, auto-regeneration may not be performed depending on the machine condition.  
The Particulate Matter Accumulate Amount is not displayed during regeneration.
-   (Antenna Icon) (10)  
Antenna's receiving sensitivity is expressed in a bar graph.  
When  is displayed, the communication terminal is out of service.  
Data such as operation information can not be sent to the Global e-Service when the communication terminal is out of service or has a low sensitivity.
- GPRS (11)  
Indicates connection status of data communication.  
When the arrow is gray, data such as daily running report can not be sent to the Global e-service.



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 **NOTE:** Antenna icon (10) and GPRS (11) will not be displayed when the communication terminal is not installed in the machine.

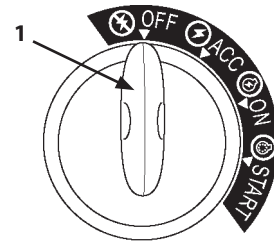
## OPERATOR'S STATION

### Cigar Lighter

#### Using Cigar Lighter

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

1. Turn key switch (1) to the ACC or ON position.
2. Press and release lighter knob (2).
3. The cigar lighter knob will return to the original position when the lighter becomes usable. 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.



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#### Using Cigar Lighter Port as External Power Source

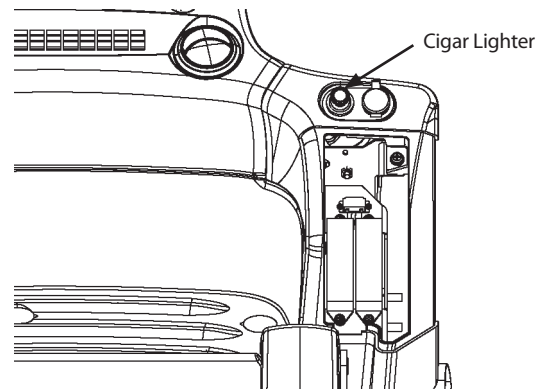
Use the cigar lighter port to supply power to lighting equipment for servicing the machine.

**IMPORTANT:** Only 24 V electric power is available from the cigar lighter port on this machine.

**Never connect accessories that use power other than 24 V. Damage to the batteries and accessories may result.**

**Do not supply power to accessories for a long time without running the engine. Failure to do so may discharge the batteries.**

1. Pull the lighter knob out.
2. Correctly insert the accessory socket into the cigar lighter port.
3. Turn key switch (1) to the ACC or ON position. Power is supplied to the connected accessory.
4. After using the accessory, disconnect the accessory socket and insert the cigar lighter into the port.



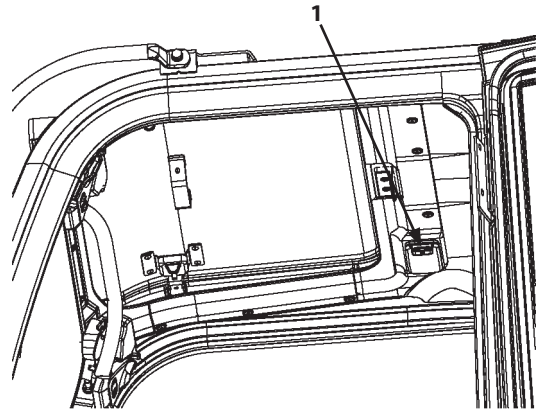
MDAA-01-297

## OPERATOR'S STATION

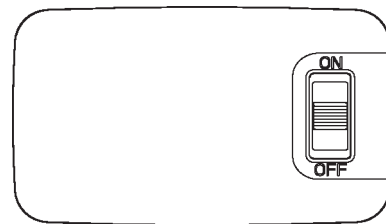
### Cab Light Switch

Push switch (1) on the cab light to turn the cab light ON.

- ON : The cab light comes and stays ON.  
(The light does not turn ON while the key OFF.)
- OFF : The light goes OFF.
- Neutral : The room lamp lights on in conjunction with the opening of cab door.  
The lamp automatically goes off after 30 seconds.  
(The light turns ON while the key switch is OFF.)



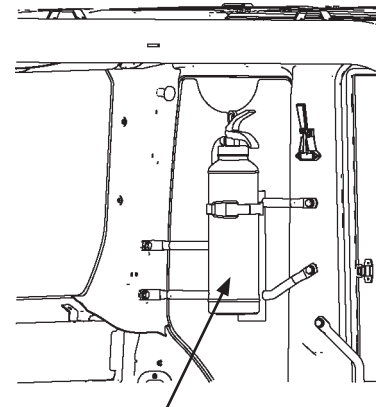
MDAA-01-305



MDAA-01-318

### Installing Fire Extinguisher (Optional)

A fire extinguisher can be installed at the left rear corner inside the cab. Consult your nearest HITACHI dealer to install a fire extinguisher.

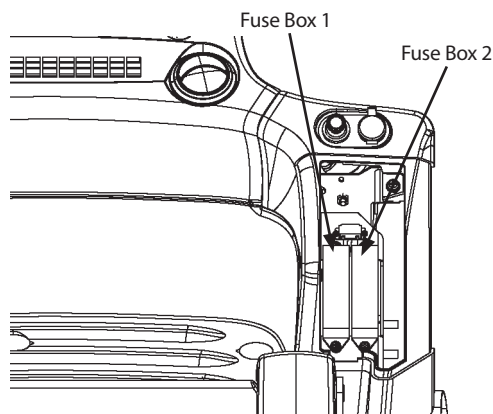


MDAA-01-319

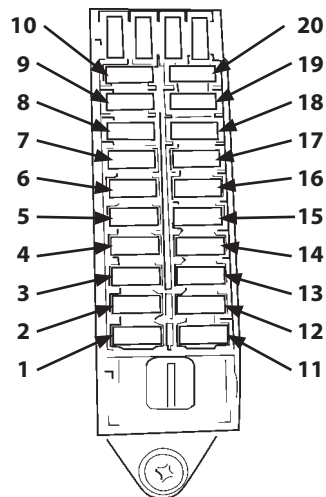
# OPERATOR'S STATION

## Fuse Box 1

- |                       |                       |
|-----------------------|-----------------------|
| 10- CONTROLLER<br>5 A | 20- OPTION3<br>5 A    |
| 9- BACKUP<br>10 A     | 19- HORN<br>10 A      |
| 8- ECM<br>30 A        | 18- IDLE STOP<br>5 A  |
| 7- START<br>5 A       | 17- POWER ON<br>5 A   |
| 6- OPTION2<br>20 A    | 16- GLOW. R<br>5 A    |
| 5- OPTION1<br>5 A     | 15- AUXILIARY<br>10 A |
| 4- SOLENOID<br>20 A   | 14- MONITOR<br>5 A    |
| 3- HEATER<br>20 A     | 13- LIGHTER<br>10 A   |
| 2- WIPER<br>10 A      | 12- RADIO<br>5 A      |
| 1- LAMP<br>20 A       | 11- FUEL PUMP<br>5 A  |



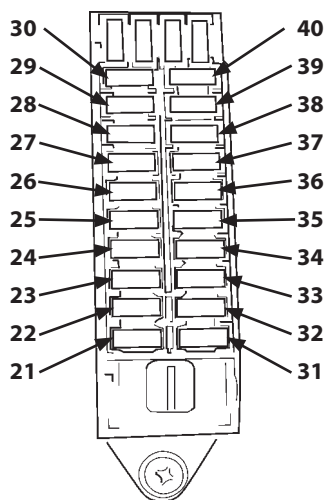
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M1GR-01-003

## Fuse Box 2

- |                              |                              |
|------------------------------|------------------------------|
| 30- ASSIST CONTROL<br>10 A   | 40- CAB LAMP<br>5 A          |
| 29- O/R CONTROL<br>10 A      | 39- SMCZ<br>5 A              |
| 28- P/SW OTHER<br>10 A       | 38- CAB LAMP +2<br>15 A      |
| 27- COLUMN BOX<br>10 A       | 37- SOLENOID<br>10 A         |
| 26- BACK LAMP<br>10 A        | 36- CAB LAMP REAR<br>10 A    |
| 25- STOP LAMP<br>15 A        | 35- WARNING LAMP<br>15 A     |
| 24- TURN L-R<br>10 A         | 34- SEAT COMPRESSOR<br>10 A  |
| 23- UPPER BEAM<br>10 A       | 33- SEAT HEATER<br>10 A      |
| 22- HEAD LAMP R<br>10 A      | 32- HEAD LAMP L<br>10 A      |
| 21- CLEARANCE LAMP R<br>10 A | 31- CLEARANCE LAMP L<br>10 A |



M1GR-01-003


## OPERATOR'S STATION

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### Auto Air Conditioner

#### Features:


- Full Auto-Temperature Control:  
Automatically controls the cab temperature to maintain the temperature set by the temperature control switch regardless of outside air temperature and insolation.
- Max. Cooling and Heating:  
Maximum cooling or heating can be obtained by rotating the temperature control switch clockwise (32 °C) or counterclockwise (18 °C) 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.

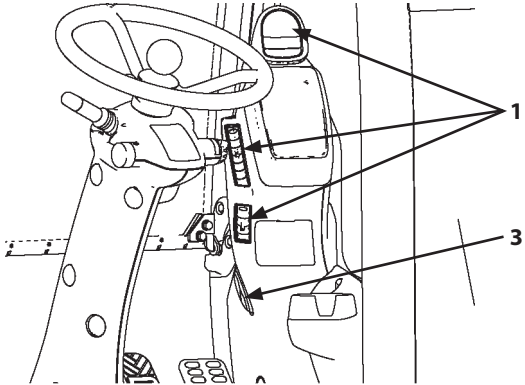
 *NOTE: Even in the summer season, the high idle speed may be higher than the normal speed due to the above control.*

# OPERATOR'S STATION

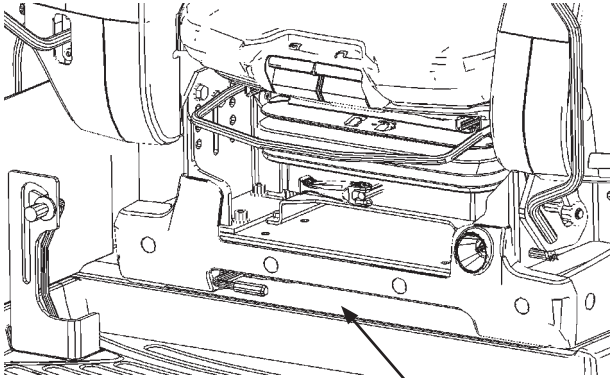
**Components Name**

- 1- Front Vent
- 2- Foot Vent
- 3- Defroster Vent
- 4- Rear Vent
- 5- Temperature Control Switch/Mode Switch
- 6- AUTO/OFF Switch/Blower Switch

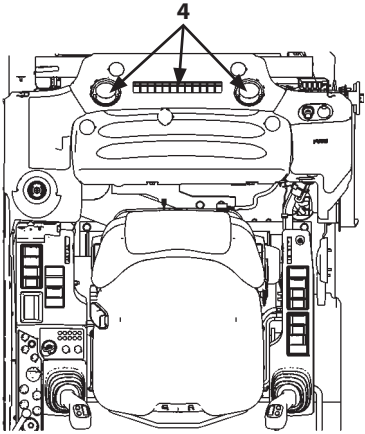
 **NOTE:** Air flow direction can be changed by controlling the louvers at all air vents except for foot vents (2). In addition, the louvers on front vent (1), defroster vent (3) and left/right side of rear vent (4) can be completely opened and closed by hand.



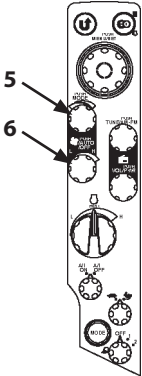
MLBA-01-513



MLBA-01-506



MLBA-01-505




MDAA-01-040


## OPERATOR'S STATION


### Controller Part Name and Function


- Mode Switch (5)

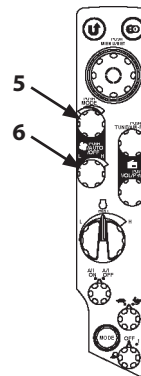
Selects the air vent. The selected air vent is indicated on monitor (7).

 Air flows out of front vent and the defroster vents.  
(Including defroster vent)

 Air flows out of the front, rear and the defroster vents.  
(Including defroster vent)

 Air flows out of the front, rear, foot and the defroster vents.  
(Including defroster vent)

 Foot Vent Mode



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Each time mode switch (5) is pressed, the vent location can be changed in four stages as illustrated below.



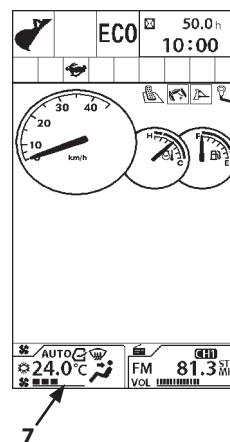
- When switch (6) is selected in AUTO:  
The air vent location is automatically selected.

- Temperature Control Switch (5):

Sets temperature in the cab.

Temperature in the cab can be set from 18.0 to 32.0 °C by rotating temperature control switch (5). Temperature can be set by 0.5 °C increments.

The set-temperature is displayed on monitor (7).



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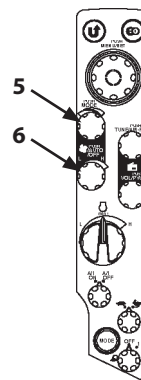
## OPERATOR'S STATION

- Blower Switch (6)

- When AUTO indicator (8) is ON, the blower speed is automatically controlled.
- When AUTO indicator (8) is OFF, the blower speed is controlled in 6 steps.

Rotate blower switch (6) clockwise to increase blower speed. Rotate blower switch (6) counterclockwise to decrease blower speed.

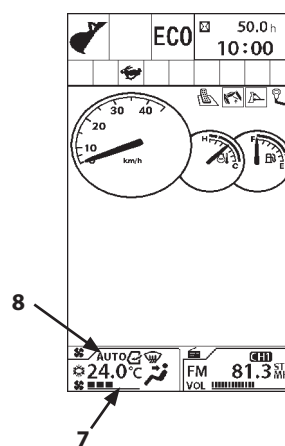
The monitor (7) indicates the corresponding blower fan speed.



- AUTO/OFF Switch (6)

Push AUTO/OFF Switch (6) while the air conditioner OFF, it turns AUTO. Press AUTO/OFF switch (6) while operating the air conditioner, it stops operation.

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## OPERATOR'S STATION

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### Cab Heater Operation

1. AUTO switch (6):

According to signals sent from various sensors, the air conditioner amplifier automatically selects the air flow-in vents, air suction ports, and air flow-in temperature at the vent, and controls the blower speed.

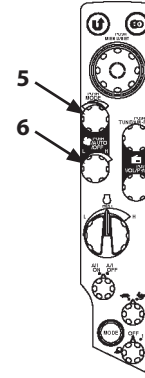
2. Temperature Control Switch (5):

Adjust temperature control switch (5) so that "25.0" is indicated on the monitor. Control air temperature inside cab using this switch as necessary.

3. As Necessary:

- Operate Mode switch (5) to manually select the air vent.
- Operate blower switch (6) to manually control the blower speed.
- Operate the air conditioner setting screen on the monitor to maintain the air vent in the fresh air mode or circulation mode.

Usually the cab heater turns the dehumidifier function OFF, however, it turns ON by switching the A/C to ON at the air conditioner setting screen.



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## OPERATOR'S STATION

### Cooling Operation

1. AUTO switch (6):

Press AUTO switch (6) to set the air conditioner AUTO mode. According to signals sent from various sensors, the air conditioner amplifier automatically selects the air flow-in vents, air suction ports, and air flow-in temperature at the vent, and controls the blower speed.

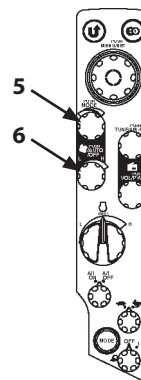
2. Temperature Control Switch (5):

Adjust temperature control switch (5) so that "25.0" is indicated on the monitor. Control air temperature inside the cab using this switch as necessary.

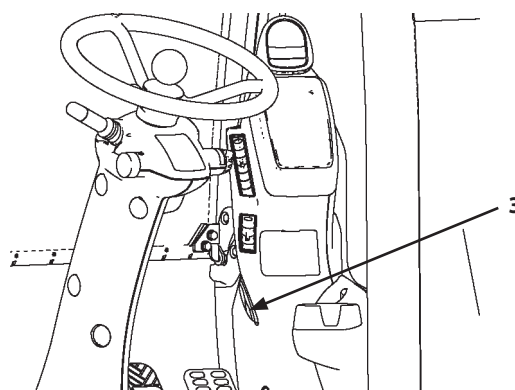
3. As Necessary:

- Operate Mode switch (5) to manually select the air vent.
- Operate blower switch (6) to manually control the blower speed.
- Operate the air conditioner setting screen on the monitor to maintain the air vent in the fresh air mode or circulation mode.

In case the front window (lower) becomes clouded, manually close the defroster vent (3). (It can be closed manually.)





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## OPERATOR'S STATION

### Defroster Operation

1. Press AUTO Switch (6) to blow out temperature-controlled air. During cold weather season when starting the engine, the engine coolant temperature and air temperature in the cab are low. The Heater Start-Operation Control System controls the blow rate to the minimum (LO) in order to restricts cool air from flowing into the cab.
2. Adjust temperature control switch (5) so that "25.0" is indicated on the monitor. Set the fresh air circulation mode from air conditioner setting screen on the monitor.
3. Select the front vents (1)  or the front and rear vents  using mode switch (5).


Control air flow direction by adjusting the louvers at the front vent (1) and the defroster vent (3).

Control air temperature in the cab by using temperature control switch (5).

If the windowpanes become clouded in rainy season or wanted to eliminate moisture, turn A/C to ON at the air conditioner screen on the monitor.

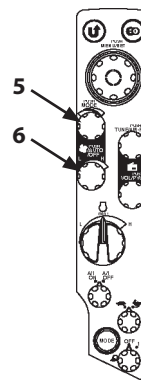
### Cool Head/Warm Feet Operation

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

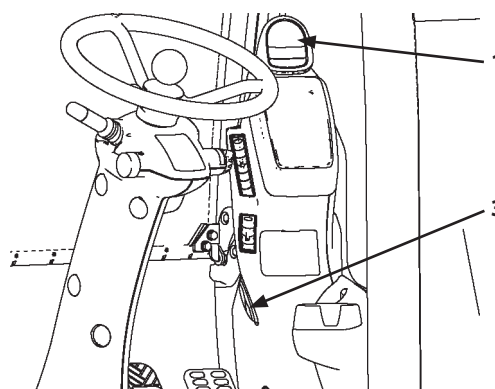
1. Press blower switch (6) to adjust the blower speed.
2. Press MODE switch (5) to display  on the liquid crystal panel.

Turn A/C ON from the air conditioner setting screen on the monitor.

Control air temperature inside the cab by using temperature control switch (5).



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## OPERATOR'S STATION

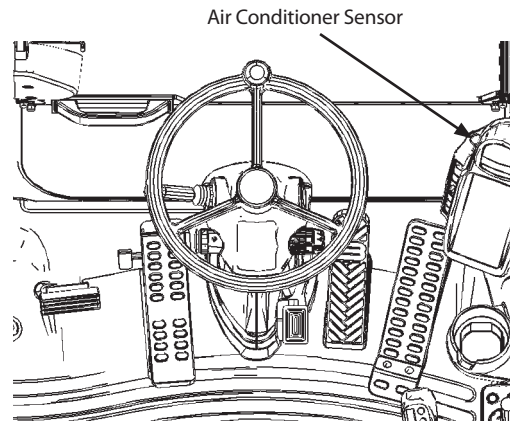
### Tips for Optimal Air Conditioner Usage

#### 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. In this case, ventilate air in the cab first by opening the windows for rapid cooling.

After starting the engine, press AUTO switch (6). Set temperature to "18.0" on the monitor by using temperature control switch (5). Turn circulation mode ON from air conditioner setting screen on the monitor.

Close the window when the cab cools down to the ambient temperature.



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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.

#### IMPORTANT:

- **Do not suddenly increase the engine speed. Failure to do so may damage the compressor.**
- **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

### AM/FM Radio Operation

**CAUTION:** Refrain from listening to the radio in the cab while operating the machine

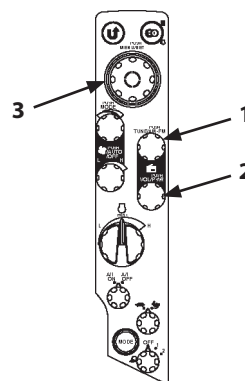
#### Controls on the radio

##### 1- AM/FM Selector/Tuning Switch

"FM" and "AM" are switched over alternately each time the switch is pressed. Rotate the tuning knob clockwise to increase frequency, counterclockwise to decrease frequency.

##### 2- Power Switch/Volume Control Knob

Push: Turns power ON/OFF. Turn the volume control knob clockwise to increase the sound volume. Turn it counterclockwise to decrease the sound volume.



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#### Tuning Procedure

##### • Manual Tuning Procedure

Rotate tuning switch (1) until the desired station is reached.

##### • Automatic Search Function

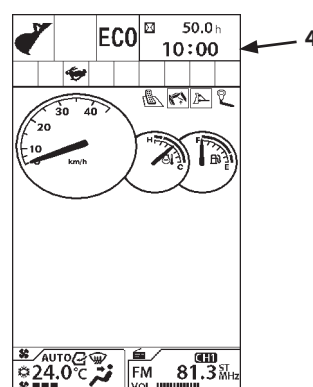
1. Press selector knob (3) while displaying basic screen (4) to display main menu screen (5).

2. Rotate selector knob (3) to highlight Radio (6).

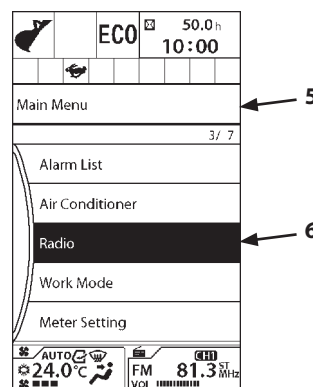
Press selector knob (3) to display the radio screen.

Rotate selector knob (3) to highlight seek (8). Push selector knob (3) to go to the next higher frequency station. Press selector knob (3).

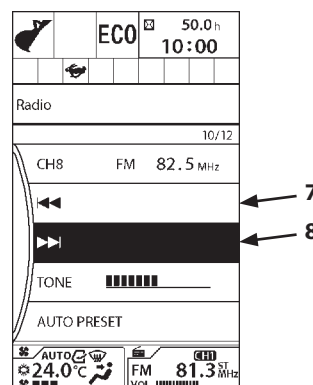
Rotate selector knob (3) to highlight seek (7). Push selector knob (3) to go to the next lower frequency station. Press selector knob (3).



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MLBA-01-092EN



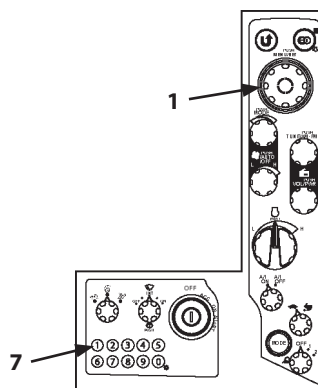
MDAA-01-095EN

# OPERATOR'S STATION

## Station Presetting Procedure

### Setting from Monitor

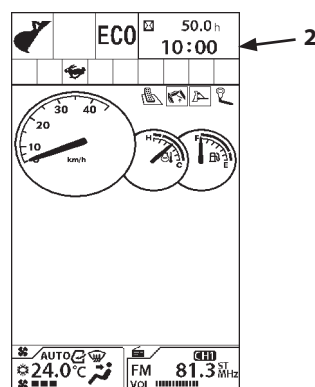
1. Select the desired station. Refer to the "Tuning Procedure" in the previous section.
2. Press selector knob (1) while displaying basic screen (2) to display main menu screen (3). Rotate selector knob (1) to highlight radio (4).
3. Press selector knob (1) to display Radio screen (5).
4. Rotate selector knob (1) to highlight a CH to preset a station. (CH1 to CH8)
5. Press and hold selector knob (1) for more than 1 second. The current station is preset to the selected CH.



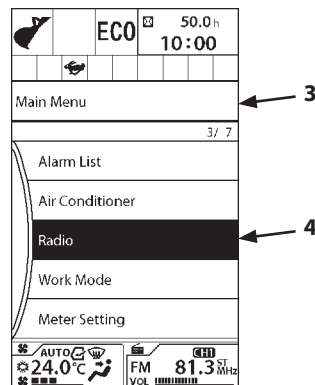
MLBA-04-011

### Setting from numeric keypad

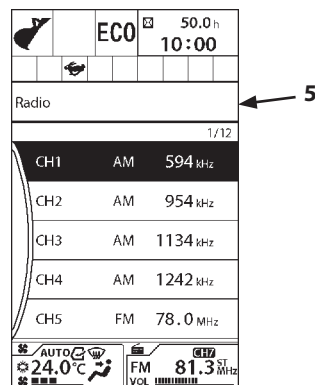
1. Select the desired station. Refer to the "Tuning Procedure" in the previous section.
2. Press and hold one numeric keypad (1 to 8) for more than 1 second. The current station is preset to the selected number of CH.



MLBA-01-001



MLBA-01-092EN



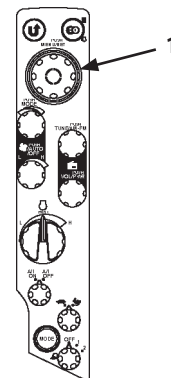
MDAA-01-093EN

## OPERATOR'S STATION

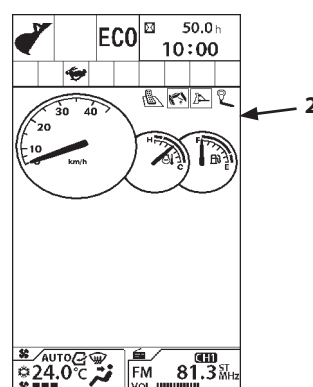
### Station Auto-Presetting Procedure

Receivable stations can be automatically sought and preset to the memory.

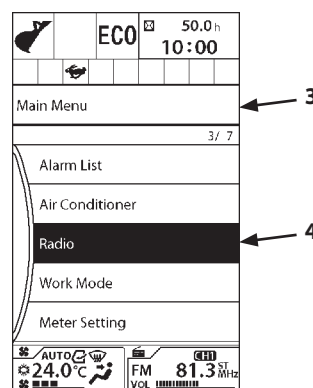
1. Press selector knob (1) while displaying basic screen (2) to display main menu screen (3).
2. Rotate selector knob (1) to highlight Radio (4).  
Press selector knob (1) to display Radio screen (5).
3. Rotate selector knob (1) to highlight AUTO PRESET (6).
4. Press selector knob (1) to start AUTO PRESET process.  
The AUTO PRESET scans reception frequency, allocate sought stations to CH1 to CH8 from sensitive station. AM will be preset to CH1 to 4, FM will be preset to CH5 to 8.  
Operating the radio during scan stops the AUTO PRESET.



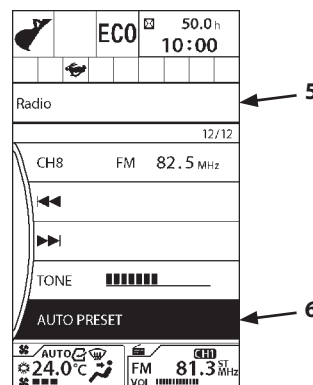
MDAA-01-040



MLBA-01-001



MLBA-01-092EN



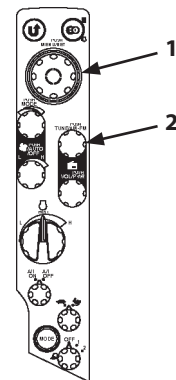
MDAA-01-099EN



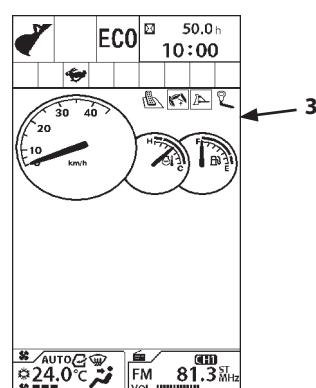
## OPERATOR'S STATION

### TONE Control

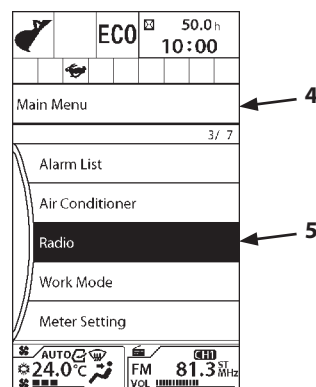
1. Press selector knob (1) while displaying basic screen (3) to display main menu screen (4).
2. Rotate selector knob (1) to highlight Radio (5).  
Press selector knob (1) to display Radio screen (6).
3. Rotate selector knob (1) to highlight TONE (7).
4. Press selector knob (1) to adjust TONE control. Rotate selector knob (1) clockwise to boost treble. Rotate selector knob (1) counterclockwise to boost bass. Press selector knob (1) to enable the changes.



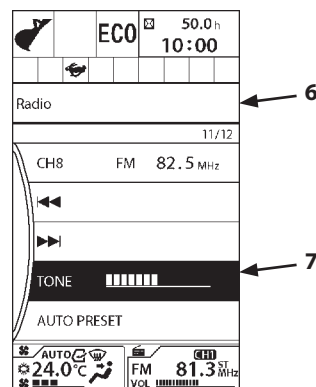
MDAA-01-040



MLBA-01-001



MLBA-01-092EN



MDAA-01-096EN

## OPERATOR'S STATION

### Audio Input (Optional)

**IMPORTANT:** This function is available only to a machine equipped with an audio input (optional). Use this function with proper sound volume.

#### Audio Input Selection

Attach the audio input (optional) device and push AM/FM Switch/Tuning Switch (1) to display AM and FM screen as well as AUX input screen (3).

#### Connecting audio device

By removing AUX IN Cap (4), the audio input terminal appears.

Connect your audio device to the audio input terminal of the machine with your audio cable.

**IMPORTANT:** Use  $\Phi 3.5$  mm stereo plug for the connection of audio input terminal.

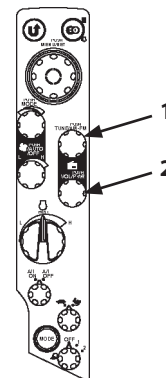
**IMPORTANT:** Put AUX IN cap (4) when the audio input is not in use.

#### Volume Control of audio device

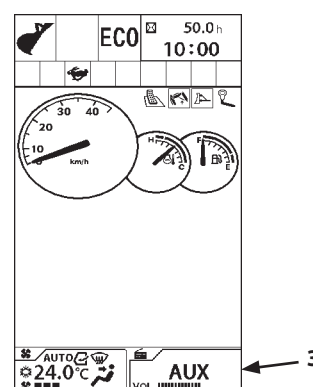
Turn the volume down to the minimum beforehand, and then turn volume control knob (2) clockwise to adjust the volume.

**IMPORTANT:** If volume control knob (2) has been set to the maximum, you will hear an overwhelming sound; so set the volume control knob to the minimum first and then turn it clockwise to increase it. Adjust the volume knob on the audio device if the sound is too low even volume control knob (2) is set at top.

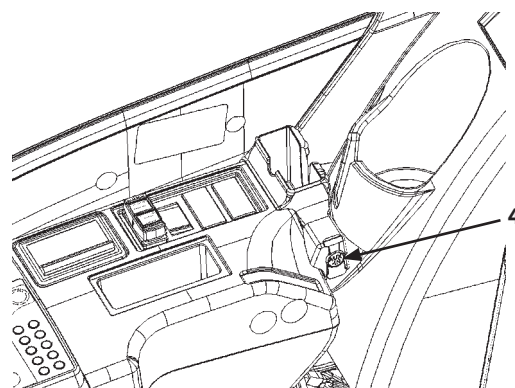
**IMPORTANT:** Operate your audio device to play or stop the sound.



MDAA-01-040



MLBA-01-340



MDAA-01-341

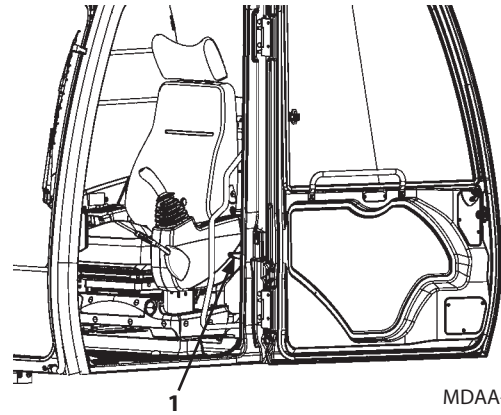
## OPERATOR'S STATION

---

### Cab Door Release Lever

**⚠ CAUTION:**

- **Open the cab door all the way until it securely locks in the latch on the side of the cab.**
- **Do not unlock the cab door when the machine is parked on a slope or while the wind is blowing hard. The cab door may close accidentally, possibly resulting in personal injury.**
- **When opening or closing the cab door, take extra care not to catch fingers between the base machine and the cab door.**



MDAA-01-320

To unlock the door, push down on lever (1).

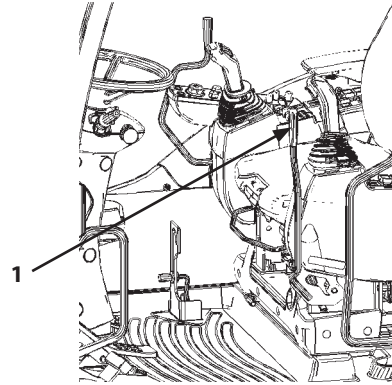
## OPERATOR'S STATION

---

### Opening/Closing and Removing Cab Inside Window

**⚠ WARNING:**

- Open, close or remove the upper-front cab window, overhead window, cab door window or lower-front window only after lowering the front attachment to the ground and pulling up pilot control shut-off lever (1) to the LOCK position. Failure to do so may allow the machine to move unexpectedly if a control lever or pedal is touched with a part of the body by mistake, possibly resulting in personal injury or death.
- Park the machine on a level and solid ground and stop the engine before opening and closing the upper front window.
- To open the upper front window, hold the window by hands, hold it until the window is locked.
- When closing the window, it may accidentally fall by its own weight. Hold the window by hands until it is completely closed. Since the window stops before it completely closes, do not operate the machine at the position with the window being stopped. The window is not locked at that position, having the possibility of suddenly dropping.




MLBA-01-517

## OPERATOR'S STATION

### Opening Upper Front Window

#### Opening Upper Front Window

1. Press lock release lever (1) at the upper center to release the upper front window lock.
2. Holding lock release lever (1) at the upper center and lower handle on the upper front window, pull the upper front window up and back until it securely catches into auto locks (3).
3. After confirming that the window securely catches into auto locks (3), slide lock pin (2) into the left bracket boss hole to lock the window in position.

 **NOTE:** When the upper front window is opened, the wiper and washer are inoperable.


**IMPORTANT:** If the front window is opened or closed with the steering wheel column in the upright position, the steering wheel will come in contact with the front window. Always tilt the steering wheel column backward before opening or closing the front window.

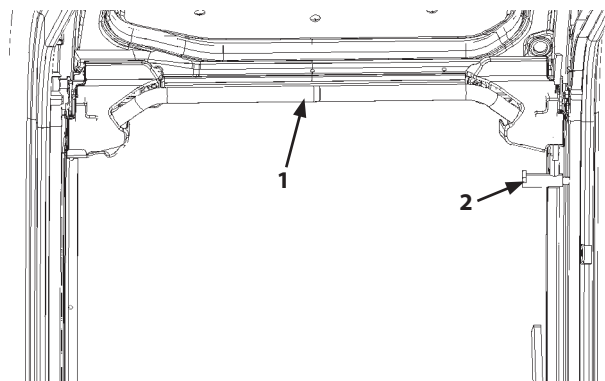
#### CAUTION:

- Slowly close the upper front window so that not to catch your fingers.
- Always secure lock pin (2) in the lock position after the upper front window is opened.

4. To close the upper front window, by following the steps 1 to 3 in the reverse order. The window stops before it completely closes, so close the front window by pushing release lever (1) upward.

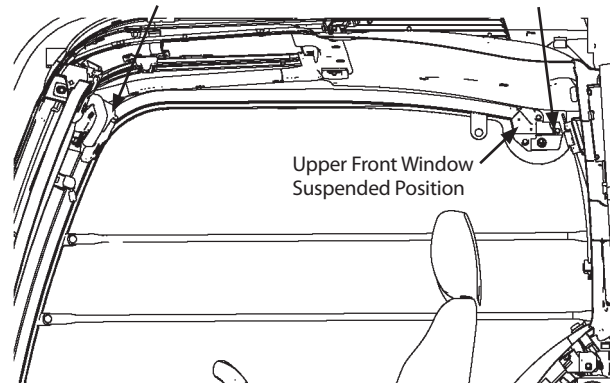
Push release lever (1) downward to release auto lock (3).

 **NOTE:** Unless the upper front window is securely closed, the wiper and washer will not operate.



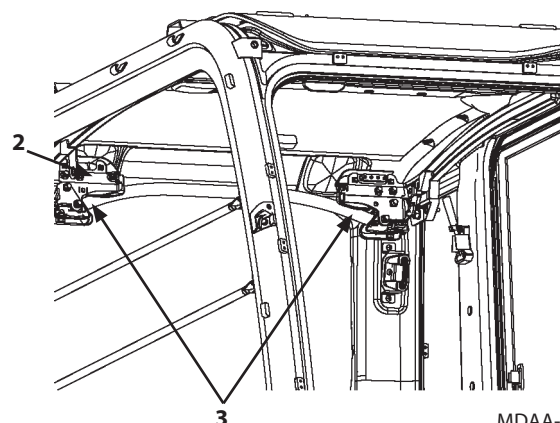
Front Window Close  
LOCK Position

M1U1-01-028  
Front Window Close  
UNLOCK Position



Upper Front Window  
Suspended Position

MDAA-01-328



MDAA-01-306

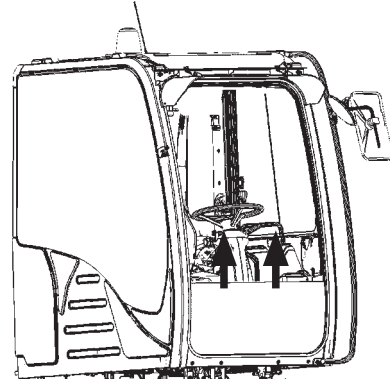
## OPERATOR'S STATION

### Removing and Storing Lower Front Window

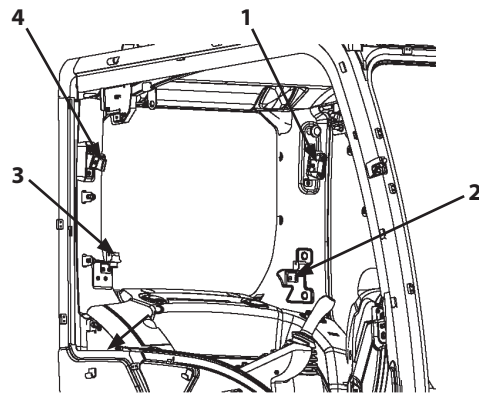
**CAUTION:** Take care not to pinch your fingers when handling the lower front window.

#### Removing and Storing Lower Front Window

1. Open the upper front window beforehand when removing the lower front window.
2. While pulling the lower front window inward, raise it to remove.
3. Store the removed windowpane in the storing position. After inserting the windowpane into rubbers (2 and 3), slide it sideways securely into rubber (4). Then, push fastener (1) to lock.



MLBA-01-528



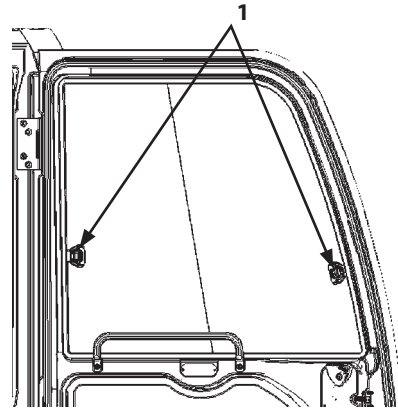
MDAA-01-299

## OPERATOR'S STATION

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### Opening Side Windows

Hold handle (1) and slide rear pane to open the side window.



Side Window

MLBA-01-529

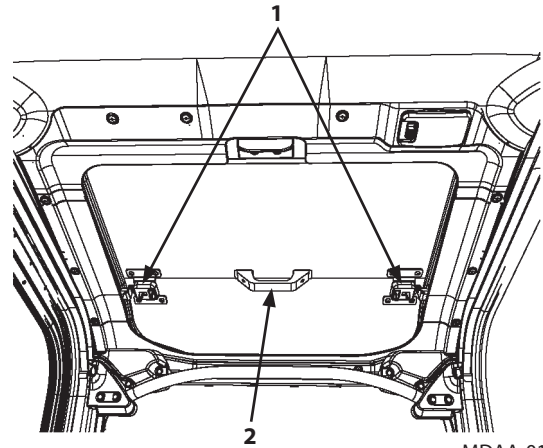
## OPERATOR'S STATION

### Opening/Closing Overhead Window (Std. Model)

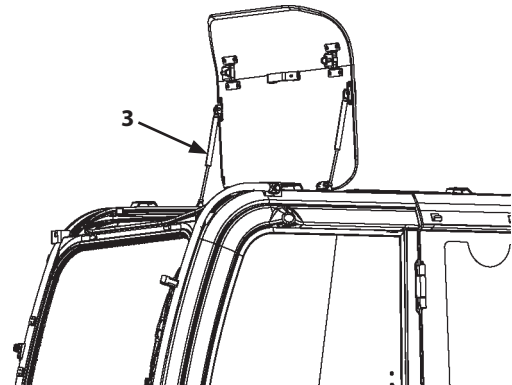
Move lock levers (1) toward center of window. Hold handle (2) and lift window until it rises upright. With the window positioned upright, it will be secured in position by dampers (3).

Hold handle (2) and pull window down until "click" sound is heard from left and right locks (1).

Note that the overhead window can be used as an emergency exit.



MDAA-01-302



MDAA-01-303



## OPERATOR'S STATION

### Opening/Closing Overhead Window (Clear Hatch: If Equipped)

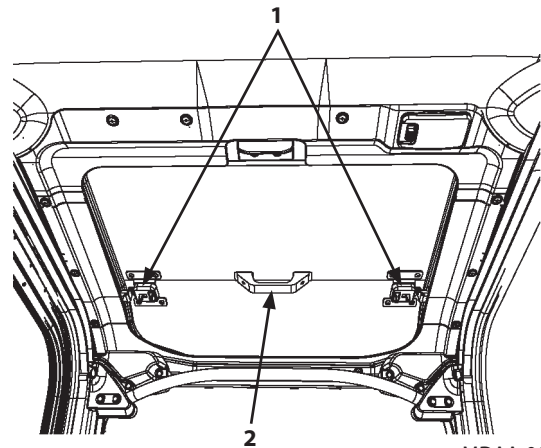
Move lock levers (1) toward center of window. Hold handle (2) and lift window until it rises upright. With the window positioned upright, it will be secured in position by dampers (3).

Hold handle (2) and pull window down until "click" sound is heard from left and right locks (1).

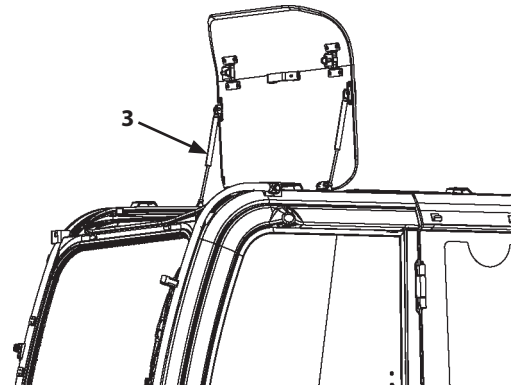
Note that the overhead window can be used as an emergency exit.

#### IMPORTANT:

- **Replace the clear hatch with a new one every 5 years even if undamaged. In case it was remarkably damaged or has received severe shock loads, replace it even if it has been not in use for 5 years.**
- **When cleaning the clear hatch, use a neutral detergent. If acidic or alkaline detergent is used, the clear hatch may become discolored or crack.**
- **Keep organic solvent away from the clear hatch. Failure to do so may cause the clear hatch to become discolored or crack.**



MDAA-01-302



MDAA-01-303

## OPERATOR'S STATION

### Emergency Exit

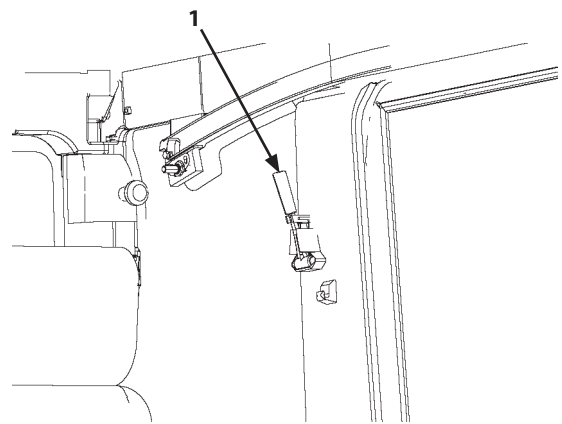
Escape from the cab in emergency in the following methods:

**⚠ CAUTION:** The danger of downfall is always present when escaping from the cab in emergency, possibly resulting in serious personal injury. Escape from the cab as safely as possible, depending on the posture of machine and the outside situation.

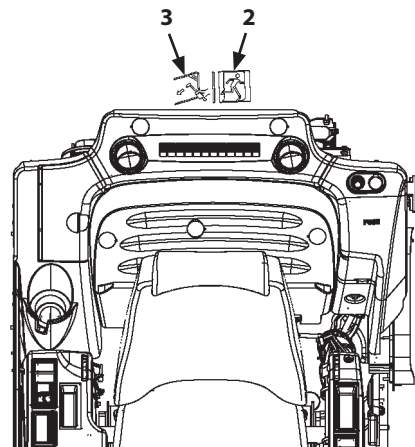
1. Open the cab door. Escape through the door.
2. If the cab door should be difficult to open or use, open the upper front window. Escape through the window.

**✎ NOTE:** See page "OPENING UPPER FRONT WINDOW" for the opening method of the upper front window.

3. If the front window is not available for escaping, break the rear window glass using the emergency evacuation tool (1). Then escape through the broken window.
4. If neither of front and rear windows is available for emergency exit, open the overhead window to escape from the cab.



MDAA-01-321



MDAA-01-322

## OPERATOR'S STATION

### Adjusting the Seat

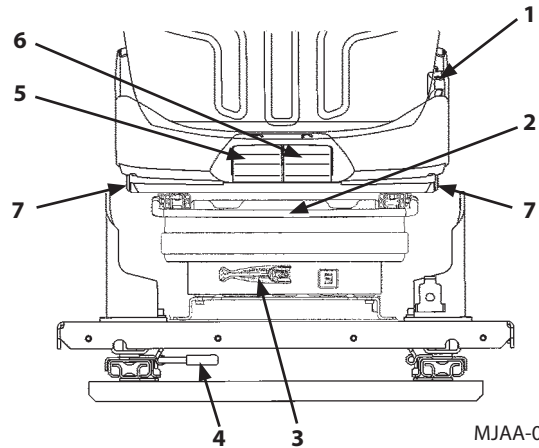
**⚠ WARNING:** Adjust the seat only after lowering the front attachment on the ground and pulling up the pilot control shut-off lever to the LOCK position. Failure to do so may allow the machine to move unexpectedly if a control lever or pedal is touched with a part of the body by mistake, possibly resulting in personal injury or death.

#### Backrest Adjustment

Pull up lever (1) to release backrest lock. Move backrest to the desired position. Move backrest to the desired position and release lever (1).

#### Seat Fore-Aft Adjustment

Pull up slide lever (3) to adjust the fore/after position of the seat assembly. Pull lever (2) to slide the seat. Seat fore-aft adjustment range is 190 mm (7.9 in) with steps every 10 mm (0.4 in). Release the lever at any position, and check that the backrest is locked.

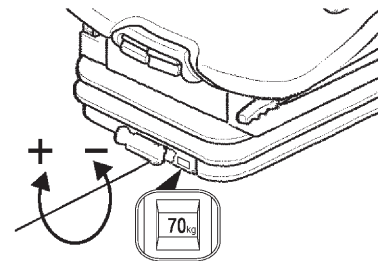


MJAA-01-015

#### Weight Adjustment

Adjust the weight support to protect operator's body. Rotate lever (3) (scale unit: 10 kg) to adjust the weight support to the operator's weight.

Adjustable Range : 50 kg to 130 kg



M4GB-01-101

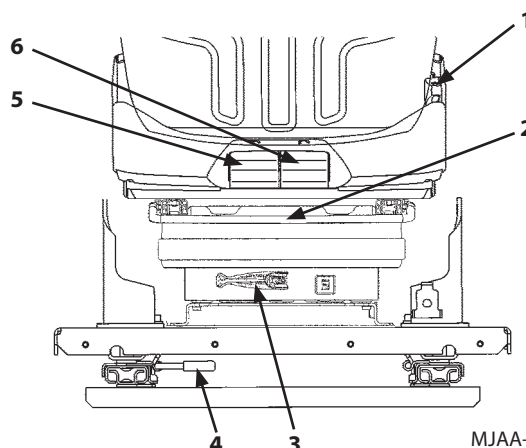
#### Seat Height Adjustment

Adjust the height by holding left and right sides of the seat (7) with both hands and moving the seat upward with your legs. Slowly release your hands at the lock position (click sound is heard). If the seat reaches the top end exceeding the highest adjustable position, it will do down to the lowest position. Seat height is adjustable to 4 steps in the range of 80 mm (3.1 in) from highest to lowest position.

## OPERATOR'S STATION

### Console and Seat Fore-aft Adjustment

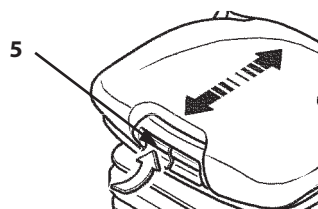
Operate console and seat slide lever (4) to adjust the seat and both right and left consoles to desired distance from the travel pedals and levers. Seat and console fore-aft adjustment range is 160 mm (6.3 in) with steps every 20 mm (0.8 in).



MJAA-01-015

### Seat Depth Adjustment

The fore/after position of only the seat surface can be changed. While pulling up lever (5) provided in the front the seat, slide the seat in the front or rear direction to adjust the seat depth up to 60 mm (2.4 in) by 15 mm (0.6 in) interval.

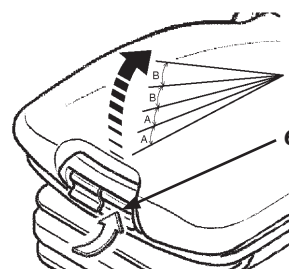


M4GB-01-094

### Inclination Adjustment

The inclination of the seat surface can be changed. While pulling up lever (6) provided in the front of the seat, press or release the seat surface to adjust the inclination of the seat surface from 3° to 11° in 4 steps.

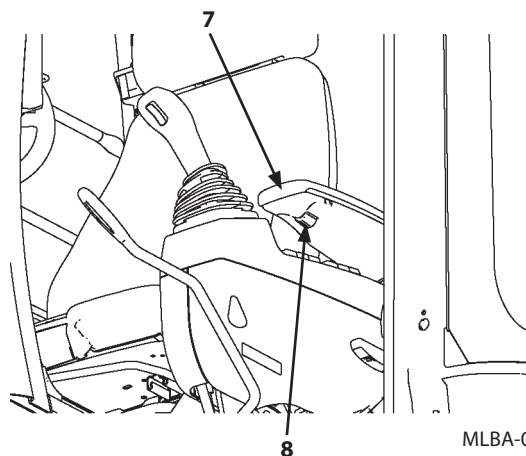
- A : 3°
- B : 2.5°



M4GB-01-093

### Armrest Adjustment

Armrest (7) can be pulled upright by hand 100°. Pull the armrest upright by hand to get on and off the machine easily. The angle of armrest (7) can be adjusted to the desired position by turning adjusting dial (8) located on the bottom of armrest (7).



MLBA-01-552

## OPERATOR'S STATION

### Adjusting Operator's Seat (Optional)

**⚠ WARNING:** Adjust the seat only after lowering the front attachment on the ground and pulling up the pilot control shut-off lever to the LOCK position. Failure to do so may allow the machine to move unexpectedly if a control lever or pedal is touched with a part of the body by mistake, possibly resulting in personal injury or death.

#### Adjusting Seat Height

**IMPORTANT:** The seat is an air suspension type.

Pull lever (1) upward to fill air and raise the seat. Push lever (1) downward to release air and lower the seat. When the seat is properly adjusted for your weight, indicator (2) is in the green zone.

#### Console and Seat Fore-aft Adjustment

Operate console and seat slide lever (3) to adjust the seat and both right and left consoles to desired distance from the travel pedals and levers. Seat and console fore-aft adjustment range is 160 mm (6.3 in) with steps every 20 mm (0.8 in).

#### Seat Fore-Aft Adjustment

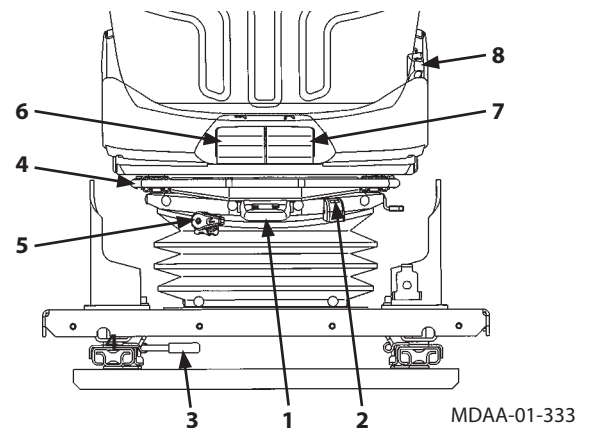
Operate seat slide lever (4) to adjust the seat to desired distance from the travel pedals and levers. Seat fore-aft adjustment range is 190 mm (7.5 in) with steps every 10 mm (0.4 in).

#### Suspension Adjustment

Rotate knob (5) to adjust the suspension.

Rotate clockwise: : To decrease suspension stiffness.

Rotate counterclockwise: : To increase suspension stiffness.

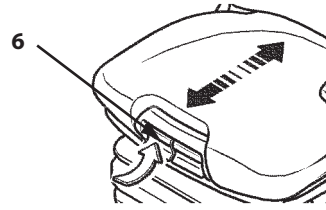


MDAA-01-333

## OPERATOR'S STATION

### Seat Depth Adjustment

The fore/after position of only the seat surface can be changed. While pulling up lever (6) provided in the front the seat, slide the seat in the front or rear direction to adjust the seat depth up to 60 mm (2.4 in) by 15 mm (0.6 in) interval.

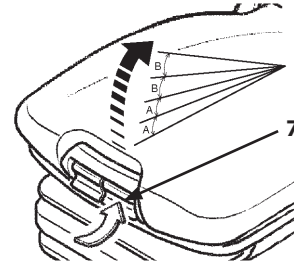


M4GB-01-094

### Inclination Adjustment

The inclination of the seat surface can be changed. While pulling up lever (7) provided in the front of the seat, press or release the seat surface to adjust the inclination of the seat surface from 3° to 11° in 4 steps.

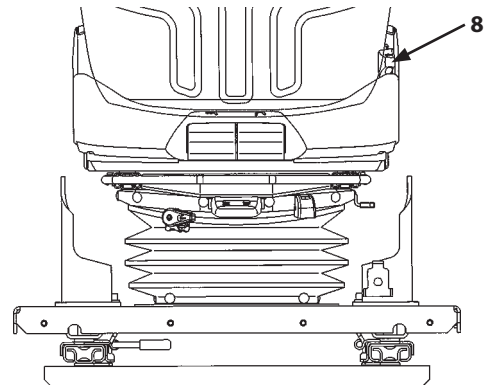
- A : 3°
- B : 2.5°



M4GB-01-093

### Backrest Adjustment

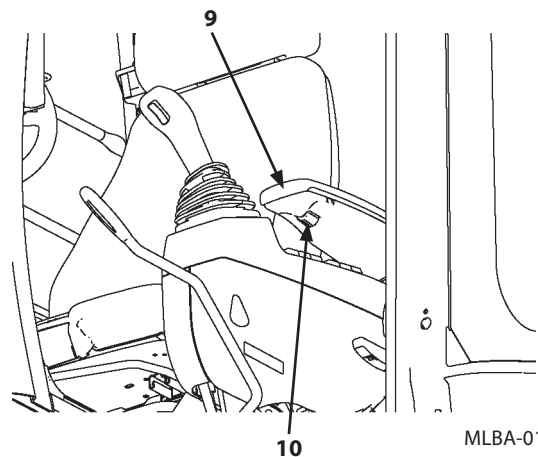
Pull up lever (8) to release backrest lock. Move backrest to the desired position and release lever (8).



MDAA-01-333

### Armrest

Armrest (9) can be pulled upright by hand 100°. Pull the armrest upward when getting on and off the machine. The angle of armrest (9) can be adjusted to the desired position by turning adjusting dial (10) located on the bottom of armrest (9).



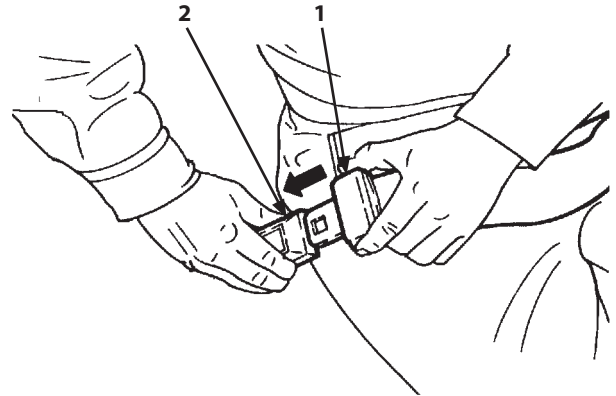
MLBA-01-552

## OPERATOR'S STATION

### Seat Belt

#### WARNING:

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

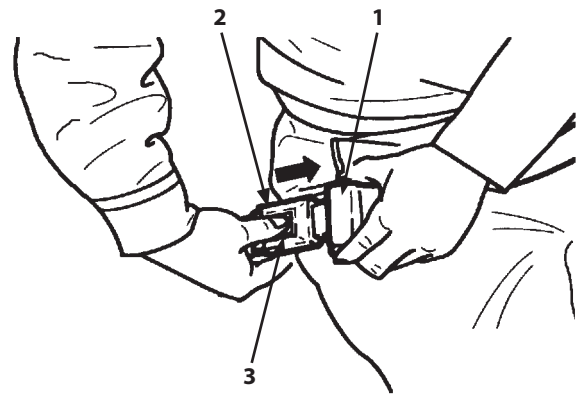


M1U1-01-031

### Seat Belt

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

Replace the seat belt if it is damaged or worn, or if the seat belt had external damage such as an accident.



M1U1-01-032

## OPERATOR'S STATION

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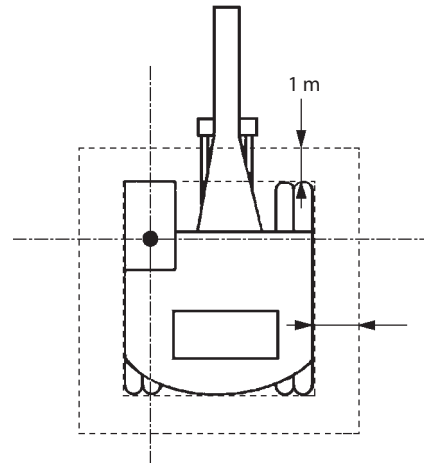
### Installation and Adjustment of Mirrors

**⚠ WARNING:** Adjust the mirrors before operating the machine. Improper adjustment of the mirrors provides poor visibility, which may cause serious human injury or death.

**IMPORTANT:** The image displayed on the rear view monitor is meant only as an aid. When operating the machine, pay thorough attention to the surrounding situation.

Adjust the mirrors so that persons standing within 1 m from the machine (or object with height of 1.5 m and 30 cm in diameter) can be recognized from the operator's seat.

**IMPORTANT:** If a modification that may restrict operator's visibility is made, determine the operator's visual field again.



MLBA-01-554



## BREAK-IN

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### Break-in Operation for New Machine

**IMPORTANT: If the machine is heavily loaded without performing break-in operation, damage to the machine such as seizure and/or scoring may result by which the machine life will be remarkably shortened. Be sure to sufficiently perform break-in operation.**

Machine life and performance will be greatly affected by the extent of operation and maintenance of the machine during the initial operation.

Operate the machine only in "ECO" mode and limit the engine horsepower up to about 80 % of full load for the first 50 hours. Lubricate all working tool pivots every day.



# OPERATING ENGINE

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## Inspect Machine Daily Before Starting

Perform the following required daily check before starting the engine.

### Walk around check

Walk around the machine to check the following items.

- Appearance of the machine
- Leaks of oil or coolant
- Looseness of electric wires
- Looseness and missing of bolts
- Check and clean accumulated flammables around the high temperature parts

### Each Device Check

Engine

- Level and contamination of engine oil and coolant \*
- Oil and water leaks, damage to hoses and pipe lines
- Clogging and damage to radiator, oil cooler and intercooler
- Looseness and missing of mounting bolts and nuts
- Drain fuel filter \*

Upperstructure

- Fuel level, leaks, contamination and drainage of fuel in tank \*
- Hydraulic oil level, leaks and contamination of hydraulic oil tank \*
- Movement, play and operating force of all control levers
- Operation of all hydraulic components, oil leaks and damage to pipe lines and hoses
- Deformation, break and abnormal noise of upper structure
- Looseness and missing of mounting bolts and nuts
- Washer fluid \*

Undercarriage

- Oil leaks from driving devices
- Oil leaks and damage to pipe lines and hoses
- Looseness and missing of mounting bolts and nuts

Working Device

- Oil leaks and damage to cylinders, pipe lines and hoses
- Wear and damage of the bucket
- Looseness, wear and missing of bucket teeth \*
- Lubrication state of the working device
- Damage to pin anti-extraction pins, stoppers, rings and bolts
- Looseness and missing of mounting bolts and nuts

## OPERATING ENGINE

---

### Tires

- All tires are inflated with appropriated air pressure.
- No cracks and damage observed.
- No excessive wear observed.
- No metal pieces, stones or other foreign material found.

### Lights and Turn Signals

- They light up or flash normally without contamination and damage. \*

### Outside Rear View Mirror and Inside Rear View Mirror

- Appropriate visibility obtained.

### Reflectors and License Plate

- Clearly visible and no damage found.

### Previously reported damage

- No abnormality observed.

### Others

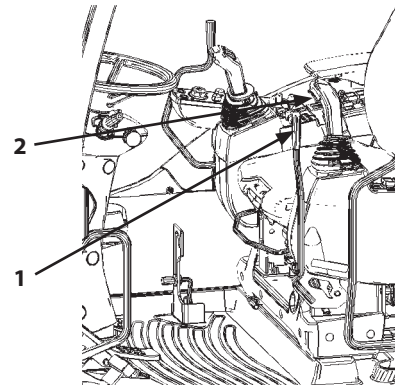
- Operation of instruments, switches, lights and buzzer/horn
- Function of parking brake
- Deformation and break of head guard
- Abnormal outside appearance of machine
- Wear and damage of the seat belt \*

 **NOTE:** Item with \* mark Refer to "Maintenance" section for detailed information.

## OPERATING ENGINE

### Before Starting Engine

1. Confirm that pilot control shut-off lever (1) is in the LOCK position.
2. Confirm that F-N-R switch (2) is placed in neutral position.
3. Confirm that brake switch (3) is in "P" (parking) position.
4. Confirm that all control levers are placed in neutral.
5. Insert key switch (4). Turn it in the ON position. Press and hold switch (5) with the engine stopped.



LOCK position

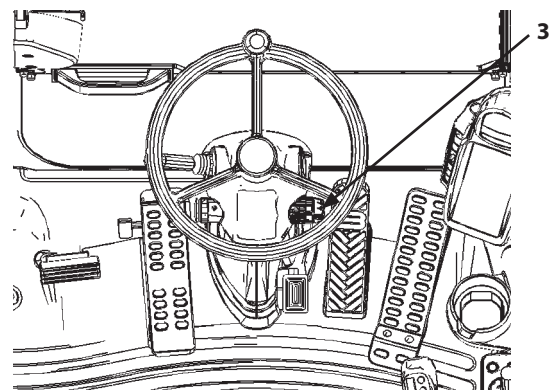
MLBA-01-517

**IMPORTANT:** Always check the machine on a firm, level surface. Never start the engine while checking the machine.

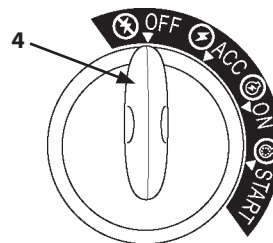
The engine oil indicator (6) must be displayed in green.

6. Adjust the seat to allow full pedal and control levers stroke with operator's back against the backrest. Fasten the seat belt.

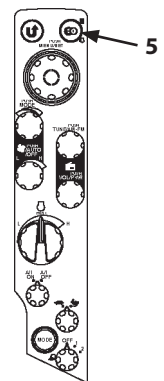
**NOTE:** The monitor surface is a resin product. When the surface becomes dusty, lightly wipe the surface with a wet cloth. Never use an organic solvent.



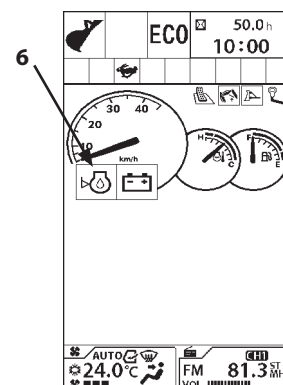
MLBA-01-507



MDAA-01-313



MDAA-01-040



MLBA-01-041

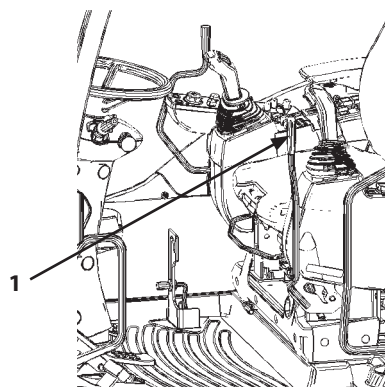
# OPERATING ENGINE

## Starting the Engine

### Starting the Engine in Ordinary Temperature

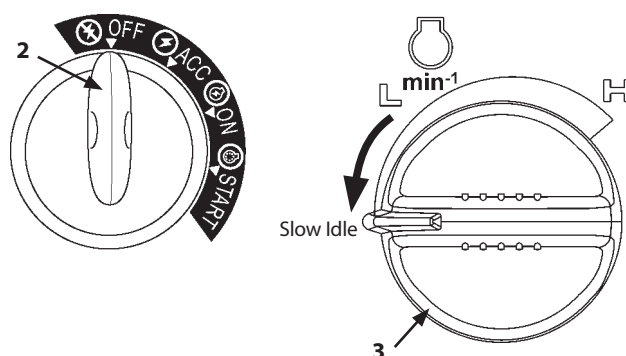
1. Confirm that pilot control shut-off lever (1) is in the LOCK position.
2. Turn engine control dial (3) to the slow idle position.
3. Sound horn to alert bystanders
4. Insert key switch (2). Turn it to ON position.
5. "Wait-screen (nothing is displayed)" is displayed on the monitor for 2 seconds. Regardless of pilot control shut-off lever (1) position, the engine starter motor can not be operated during this moment.
6. If the security function is activated, push switch (4) or turn the key switch to START position to display password input screen. When the password input screen is displayed on the monitor, input the password. Unless the security function (ignition block system) is activated, this screen is not displayed.

**IMPORTANT:** When required to activate the numeric keypad function (ignition block system), consult your nearest Hitachi dealer.



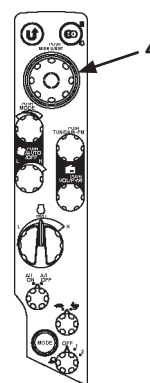
LOCK Position

MLBA-01-517

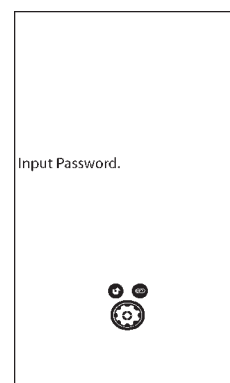


MDAA-01-313

M1U1-01-033




MDAA-01-040



Password Input Screen

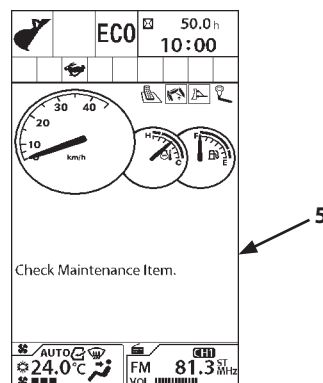
MDAA-01-085EN

## OPERATING ENGINE

 **NOTE:** When the key switch is turned ON, the maintenance notification (5) for the item whose maintenance interval has expired displays for ten seconds. Press Return switch (6) or turn the pilot control shut-off lever to UNLOCK position while the rear view camera is enable to delete the notification.

7. The basic screen will be displayed on the monitor. Check that the preheat indicator (7) is OFF at this time.
8. Turn key switch (2) to START position to rotate the starter. The engine will start.

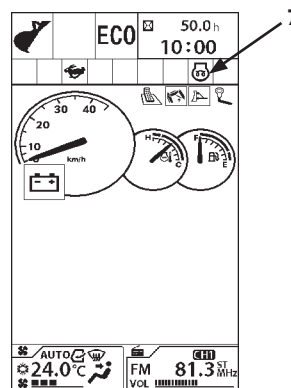
**IMPORTANT:** Never operate the starter for more than 10 seconds at a time. If engine fails to start, return key switch to OFF. Wait for more than 30 seconds, then try again. Failure to do so may cause damage to the starter and/or discharging the batteries.



MLBA-01-213EN



MDAA-01-040





Basic Screen


MLBA-01-042


## OPERATING ENGINE


9. Release key switch (2) immediately after the engine has started. Key switch (2) will automatically return to ON position.

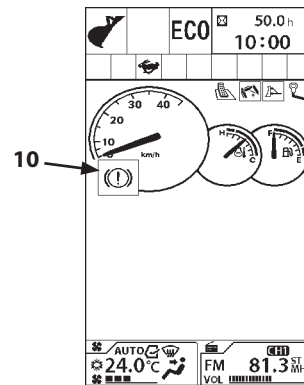
 **NOTE:** Immediately after the engine starts, the engine speed will be held at a slow idle speed for 3 to 30 seconds. The time to keep slow idle speed becomes longer when coolant or hydraulic oil temperature is low. Even if the engine control dial (3) is not in the slow idle position when starting the engine, the engine speed will be held at slow idle.

 **NOTE:** After holding the slow idle speed, the automatic heating system operates so that even though the engine control dial is set in the slow idle position, the engine speed will temporarily increase.

 **CAUTION:** Do not move the machine for 30 seconds after starting the engine. The engine speed may suddenly fluctuate right after holding slow idle speed, which may change the operation speed, causing serious accident.

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

 **NOTE:** If the brake accumulator pressure is low before starting the engine, buzzer sounds continuously and brake pressure alarm (10) is displayed by turning the key switch ON; it is not a malfunction. This alarm warns that the brake does not function even if the brake pedal is depressed due to low pressure in the brake accumulator. Soon after the engine starts, brake pressure alarm (10) and the buzzer go OFF at the same time.



MLBA-03-001



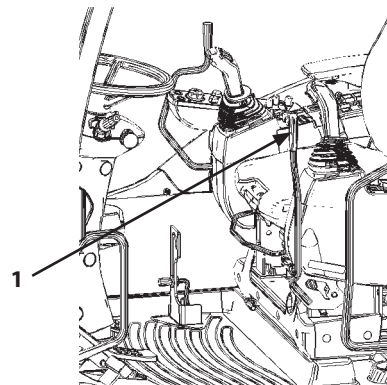
## OPERATING ENGINE

### Starting in Cold Weather

#### Preheating

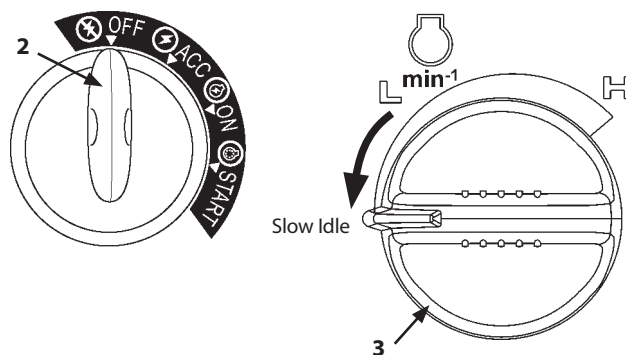
1. Confirm that pilot control shut-off lever (1) is in the LOCK position.
2. Turn engine control dial (3) to the slow idle position.
3. Sound the horn to alert bystanders.
4. Insert key switch (2). Turn it to ON position.
5. "Wait-screen (nothing is displayed)" is displayed on the monitor for 2 seconds. Regardless of pilot control shut-off lever (1) position, the engine can not be cranked during this moment.
6. If the security function is activated, push switch (4) or turn the key switch to START position to display password input screen. When the password input screen is displayed on the monitor, input the password. Unless the security function (ignition block system) is activated, this screen is not displayed.

**IMPORTANT:** When required to activate the security function (ignition block system), consult your nearest Hitachi dealer.



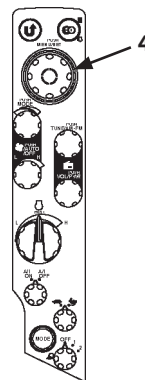
LOCK Position

MLBA-01-517

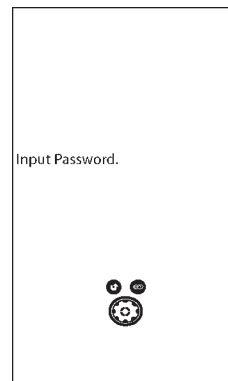


MDAA-01-313

M1U1-01-033




MDAA-01-040




Password Input Screen

MDAA-01-085EN

## OPERATING ENGINE

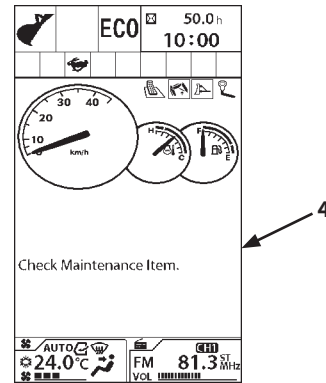
 **NOTE:** When the key switch is turned ON, the maintenance notification (4) for the item whose maintenance interval has expired displays for ten seconds. Press Return switch (5) or turn the pilot shut-off lever to UNLOCK position while the rear view camera is enable to delete the notification.

7. The basic screen will be displayed on the monitor.  
The machine will automatically check if preheating is required or not. When preheating is required, preheat indicator (6) is lit for automatically.

 **NOTE:** In case, preheat indicator (6) does not come ON, preheating is not required. Follow the "Starting the Engine in Ordinary Temperature" section.

8. As soon as preheat indicator (6) goes OFF, turn key switch (2) to START position to rotate the starter.

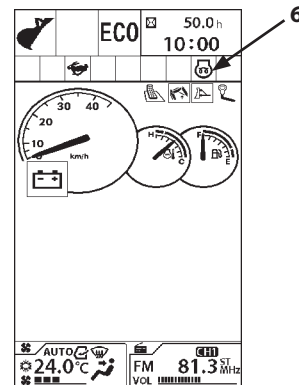
**IMPORTANT:** Never operate the starter for more than 10 seconds at a time. If engine fails to start, return key switch to OFF. Wait for more than 30 seconds, then try again. Failure to do so may cause damage to the starter and/or discharging the batteries.



MLBA-01-213EN



MDAA-01-040





Basic Screen


MLBA-01-042


## OPERATING ENGINE


9. Release key switch (2) immediately after the engine has started. Key switch (2) will automatically return to ON position.

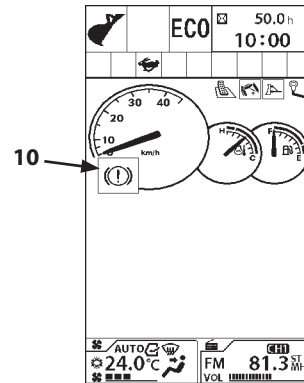
 **NOTE:** Immediately after the engine starts, the engine speed will be held at a slow idle speed for 3 to 30 seconds. The time to keep slow idle speed becomes longer when coolant or hydraulic oil temperature is low. Even if the engine control dial (3) is not in the slow idle position when starting the engine, the engine speed will be held at slow idle.

 **NOTE:** After holding the slow idle speed, the automatic heating system operates so that even though the engine control dial is set in the slow idle position, the engine speed will temporarily increase.

 **CAUTION:** Do not move the machine for 30 seconds after starting the engine. The engine speed may suddenly fluctuate right after holding slow idle speed, which may change the operation speed, causing serious accident.

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

 **NOTE:** If the brake accumulator pressure is low before starting the engine, buzzer sounds continuously and brake pressure alarm (10) is displayed by turning the key switch ON; it is not a malfunction. This alarm warns that the brake does not function even if the brake pedal is depressed due to low pressure in the brake accumulator. Soon after the engine starts, brake pressure alarm (10) and the buzzer go OFF at the same time.



MLBA-03-001

## OPERATING ENGINE

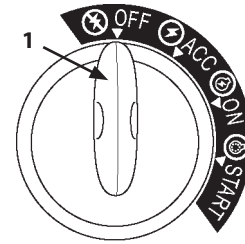
### Starting in Extremely Cold Weather (ZX140W-5B)

The engine may be difficult to start in extremely cold weather. In that case, start the engine by following the procedure given below.

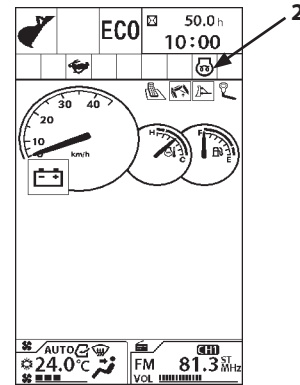
#### IMPORTANT:

- **Never operate the starter for more than 30 seconds at a time. Failure to do so may cause damage to the starter and/or discharging the batteries.**
- **Never attempt to perform the engine preheating for more than 16 seconds at a time. Failure to do so may cause damage to the engine electrical component and/or discharging the batteries.**

1. Turn the key switch (1) ON. Ensure preheat indicator (2) turns ON, and preheat the engine for 16 seconds.
2. Turn the key switch to START position and crank the engine for 30 seconds.
3. Turn the key switch OFF to stop the engine. Wait 5 seconds.
4. Turn the key switch ON again, and preheat the engine for 16 seconds.
5. Turn the key switch to START position again to start the engine.



MDAA-01-313



Basic Screen

MLBA-01-042

## OPERATING ENGINE

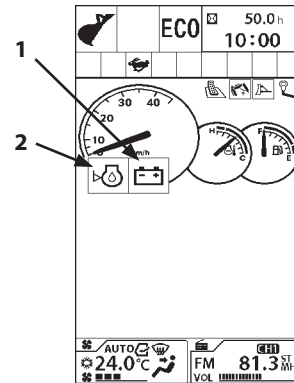
### Check Instruments After Starting

#### Checking instruments through monitor functions

After starting the engine, check the following points through the monitor functions.

1. Check that discharge warning indicator (1) is OFF. In case discharge warning indicator (1) stays ON, immediately stop the engine. Inspect the alternator and battery system for any abnormality.
2. Check that low engine oil pressure indicator (2) is OFF and the alarm buzzer does not sound.

In case low engine oil pressure indicator (2) stays ON and the buzzer sounds, immediately stop the engine. Inspect the engine oil pressure system and the oil level.




**IMPORTANT:** In case any abnormality is found on the monitor unit, immediately stop the engine. Inspect the cause of the trouble.

MLBA-01-041

#### 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 : Normal (Perfect combustion)

Black : Abnormal (Imperfect combustion, abnormal muffler filter, abnormal fuel system)

White : Abnormal (Oil is leaking into the combustion chamber, abnormal muffler filter, abnormal fuel system)

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

#### Brakes

Check the brakes by following the items given below.

- The brake pedal stroke is appropriate, brake performance is sufficient, and the brakes apply evenly.
- Extent of hydraulic power increase
- Parking brake works properly.

## OPERATING ENGINE

### Using Booster Batteries

#### 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, dangerous sparks may be unexpectedly created on the machine.
- Never connect a positive terminal to a negative terminal, as a dangerous short circuit will occur.



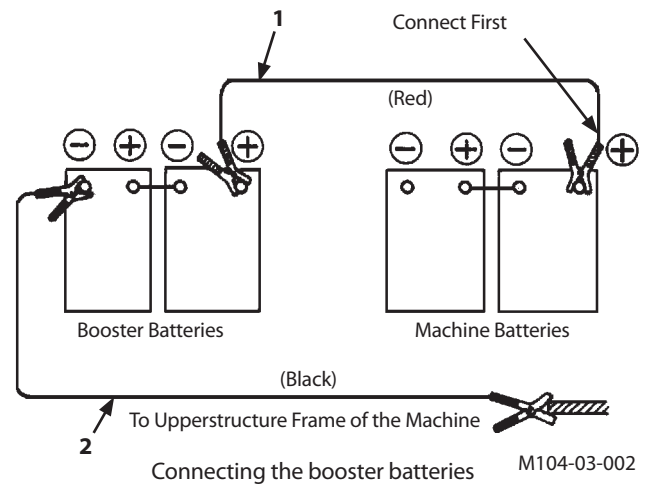
SA-032

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

When the machine batteries are exhausted, start the engine using booster batteries as shown below.

#### Connecting the booster batteries

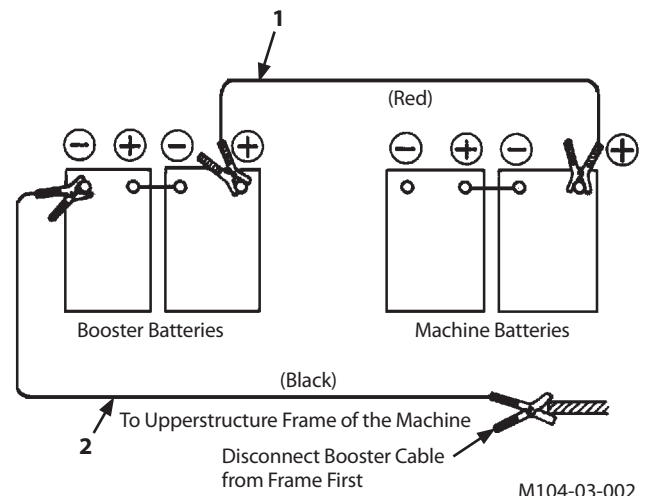
1. Stop the engine of the machine on which booster batteries are mounted.
2. Connect one end of red cable (1) to the positive (+) terminal of the machine batteries, and the other end to the positive (+) terminal of the booster batteries.
3. Connect one end of black cable (2) to the negative (-) terminal of the booster batteries, and then make ground connection to the frame of the machine to be started with the other end of black (-) cable (2). In the last connection to frame, sparks may fly. Be sure to connect the cable end as far away from the machine batteries as possible.
4. After securely connecting the booster cables, start the engine of the machine on which booster batteries are mounted. Run the engine speed to the middle between slow and fast idle.
5. Start the engine of the troubling machine.
6. After the engine starts, disconnect cables (2) and (1), following the procedure below.



## OPERATING ENGINE

### Disconnecting the booster cables

1. Disconnect black negative (-) cable (2) from the machine frame first.
2. Disconnect the other end of black negative (-) cable (2) from the booster batteries.
3. Disconnect red positive (+) cable (1) from the booster batteries.
4. Disconnect red positive (+) cable (1) from the machine batteries.



M104-03-002

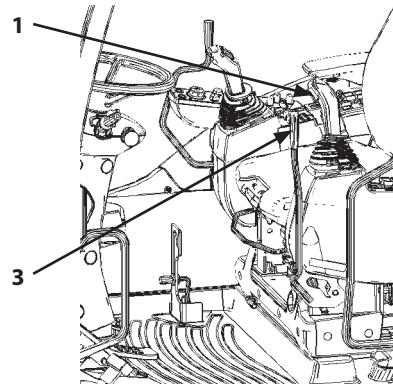
Disconnecting the booster cables

## OPERATING ENGINE

### Stopping the Engine

#### Engine stop procedure

1. Except for special cases, before stopping the engine, lower the bucket to the ground.
2. Shift F-N-R switch (1) to "N" (neutral) position. Turn brake switch (2) to the "P" (parking) position.
3. Pull pilot control shut-off lever (3) to LOCK position.
4. Turn engine control dial (4) to the slow idle position and run the engine for 5 minutes to cool the engine.

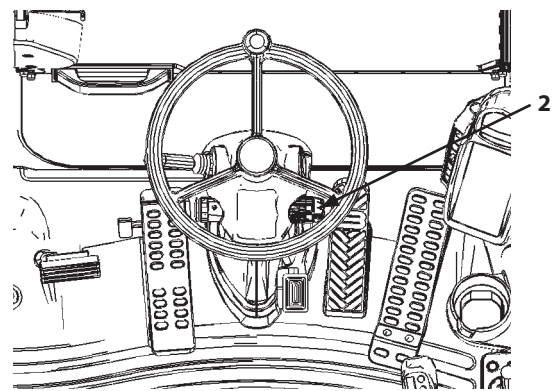


LOCK Position

MLBA-01-517

**IMPORTANT:** If the engine equipped with a turbocharger is stopped without first performing the cool down operation, the lubricant on the turbocharger bearing surfaces may desiccate due to the intense heat present inside the turbocharger, possibly causing damage to the turbocharger.

5. Turn key switch (5) OFF to stop the engine.

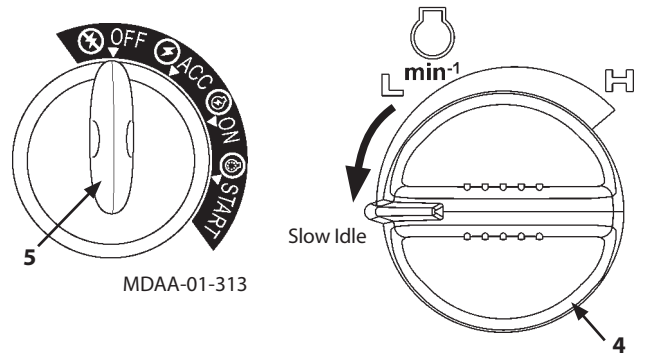


MLBA-01-507

#### If the engine does not stop, even if the key switch is turned to the OFF position. (Emergency Stop)

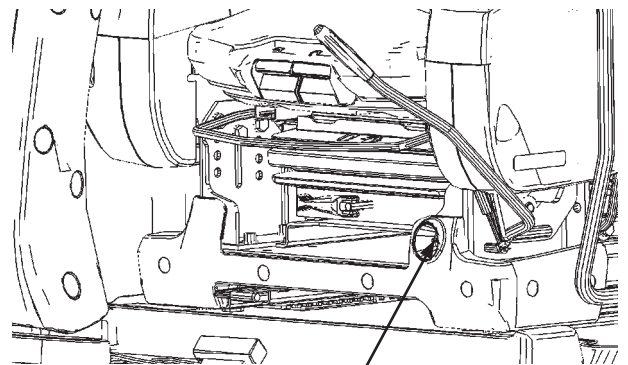
In case the engine does not stop even if key switch (5) is turned OFF due to failure of the machine, move engine stop switch (6) downward to stop the engine. The engine will stop. Return engine stop switch (6) to its original position (upward).

**CAUTION:** Do not use engine stop switch (4) unless absolutely necessary. When the machine stops due to the machine failure, do not start the machine until repair is completed.



MDAA-01-313

M1U1-01-033



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MLBA-01-519



## OPERATING ENGINE

### Engine Auto-Stop in Extremely Low Temperature

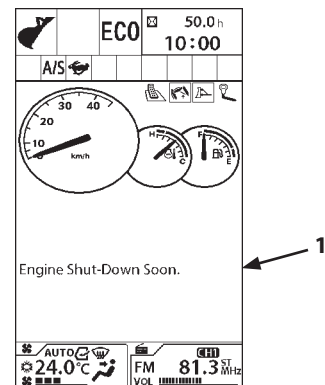
**⚠ WARNING:** This function automatically stops the engine. Take extra care on the work and work environment when using this function.

**IMPORTANT:** If the machine is left without operation under  $-20\text{ }^{\circ}\text{C}$  or lower environment for long period of time, exhaust gas component may accumulate in the muffler filter, damage to the muffler filter may result.

Under  $-20\text{ }^{\circ}\text{C}$  or lower environment, the engine will automatically stop 60 minutes after the pilot control shut-off lever is pulled to the LOCK position. 30 seconds before the engine stop, the monitor displays message (1) that engine will be stopped and the indicator starts flashing. Also the buzzer sounds. The buzzer sounds once at 30 seconds before, continuously sounds from 15 seconds. The engine speed decreases to the idling speed, and then stops after 15 seconds. When the control shut-off lever is pushed before stopping the engine, the auto shut-down is disabled and the engine will not stop.

**IMPORTANT:** When the engine stops by the auto-stop function, turn the key switch to ACC or OFF once and then turn it to START to restart the engine. Turn the key switch OFF after the engine auto-stop when leaving the machine for long period of time. Do not leave the machine after the engine auto-stop. Failure to do so may discharge the batteries.

**✎ NOTE:** The engine can stop automatically when related conditions are met regardless of the auto shut-down function ON or OFF.



MLBA-01-146EN



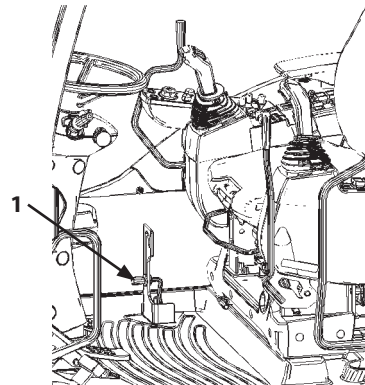
# DRIVING MACHINE

## Driving the Machine

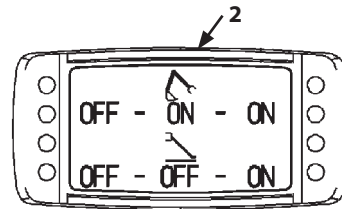
Correct operation will result in extending the service life of each part and component as well as saving fuel and oil. Always be sure to safely and efficiently operate the machine while paying attention to the following points.

### Precautions for starting to move

1. While checking the tires for abnormal air pressure and any obvious damage, make sure that there is no hazardous and/or obstacles in and around the vicinity of the machine.  
Close and lock all covers.
2. Sufficiently raise the outrigger and/or the blade.
3. Position the front attachment to the front of the machine, then place swing lock lever (1) to the LOCK position.
4. When traveling on a public road, attach the bucket and position the front attachment as illustrated below. Place blade/outrigger/front attachment pilot control switch (2) in the "OFF, OFF" position so that the front attachment will not move even if the control lever is accidentally moved.
5. When traveling, fully rotate the engine control dial counterclockwise to let the engine run at the slow idle. Use the accelerator pedal to regulate the engine speed.



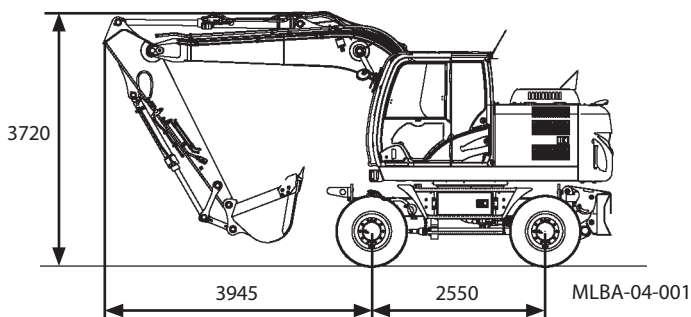
MLBA-01-517



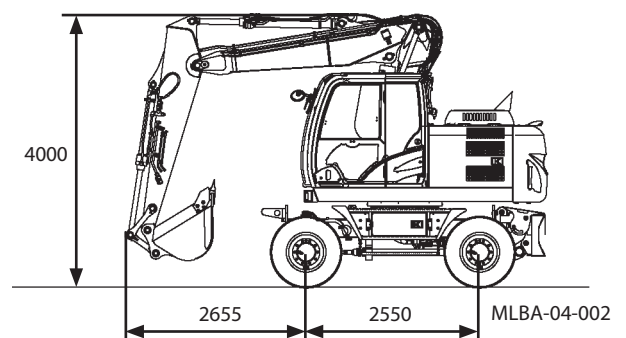
MLBA-01-515

## Driving Position

ZX140W-5B Monoblock Boom

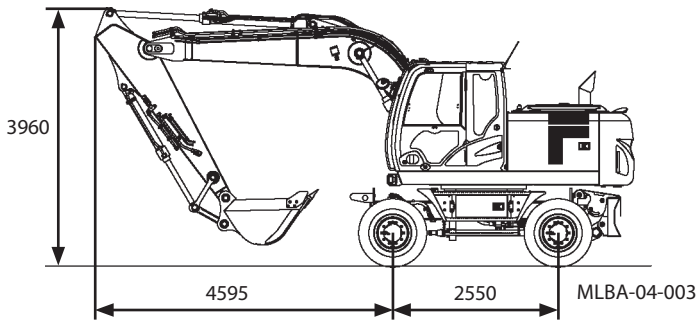


ZX140W-5B 2-Piece Boom

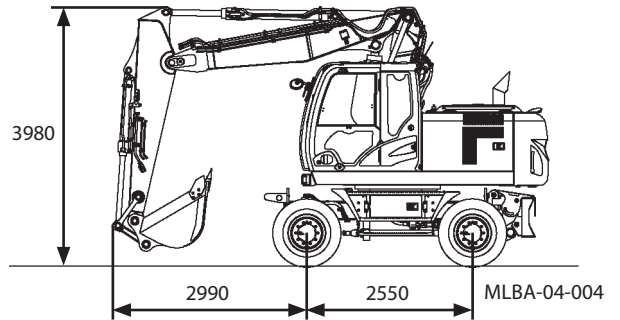


# DRIVING MACHINE

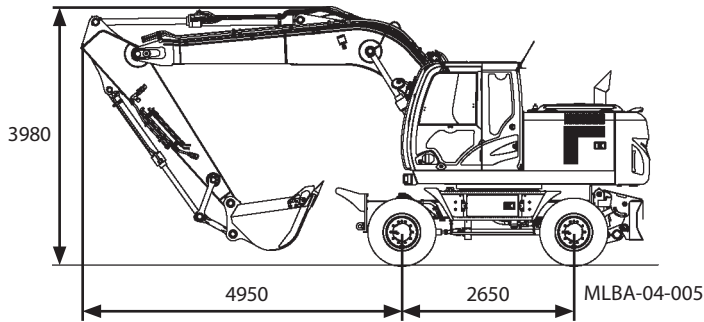
ZX170W-5B Monoblock Boom



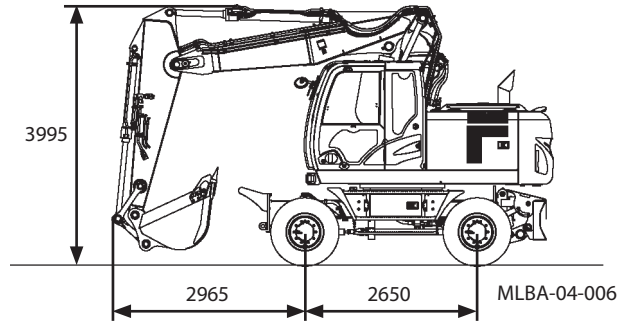
ZX170W-5B 2-Piece Boom



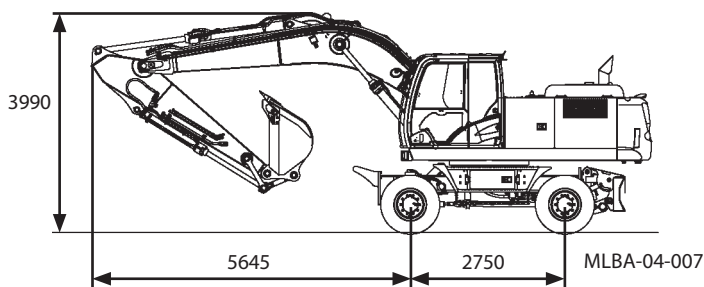
ZX190W-5B Monoblock Boom



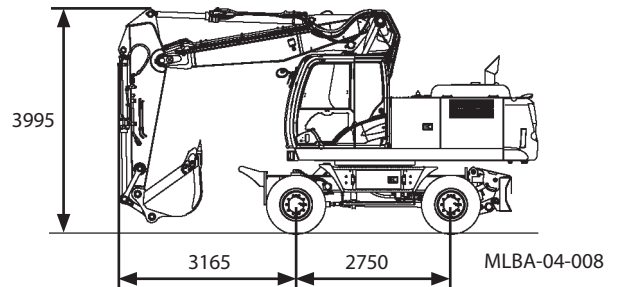
ZX190W-5B 2-Piece Boom



ZX220W-5B Monoblock Boom



ZX220W-5B 2-Piece Boom



# DRIVING MACHINE

## Engine Speed Control

The engine speed control mode is selected with engine speed control mode selection switch (1).

Depending on machine operating conditions, select the proper engine control mode.

-  Pedal Mode

This mode suits normal travel operation best.

Adjusting the stroke of the accelerator pedal controls the engine speed. When the accelerator pedal is stepped on, the engine speed increases. When the pedal is returned to neutral, the engine speed is reduced.

After the engine speed is set to run at slow idle speed by fully turning the engine control dial counterclockwise before traveling the machine, when traveling is started by stepping the accelerator pedal, the engine speed increases in proportion to the pedal stroke. When the pedal is returned to neutral to temporarily stop the machine, the engine speed is reduced to slow idle speed, decreasing fuel consumption and travel noise level.

-  Dial Mode

This mode suits traveling in the job site best.

Only the engine control dial can control the engine speed irrespective of how much the accelerator pedal is stroked.

The engine speed is kept constant while traveling short distance in the same job site during operation of the front attachment, no readjustment of the engine speed is required.

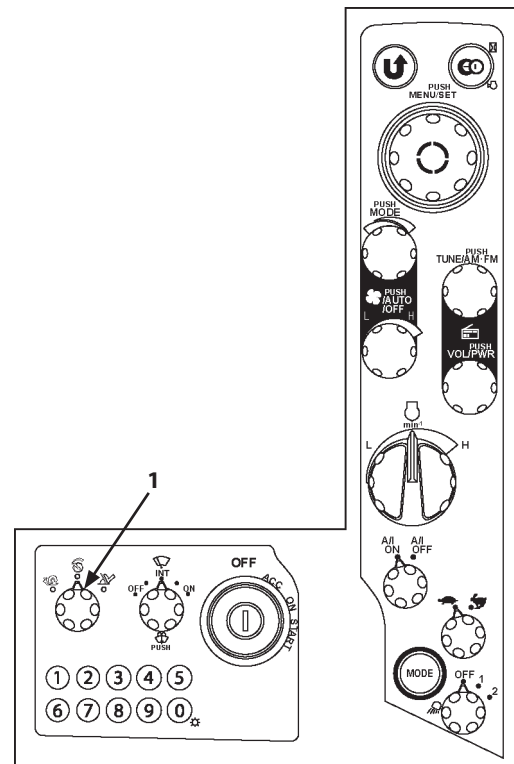
However, the maximum travel speed is slightly slower than that of the pedal mode.

-  Creeper Mode

The machine can travel at very slow speed.

The engine speed is controlled with the engine control dial only.

Even if the engine control dial is turned fully clockwise to set the engine speed to fast idle speed and the accelerator pedal is fully stepped on, the machine can travel at very slow speed.







MLBA-01-522

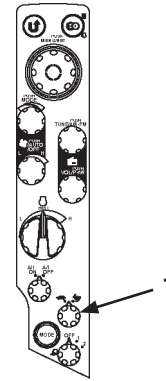
# DRIVING MACHINE

## Travel Mode Switch

Turn travel mode switch (1) on the switch panel to the specified position to select the travel mode (Fast/Slow).

- Fast Mode: Turn travel mode switch (1) to mark  (2) position.
- Slow Mode: Turn travel mode switch (1) to mark  (3) position.

- 2-  Mark (Fast Speed Mode)
- 3-  Mark (Slow Speed Mode)



MDAA-01-040

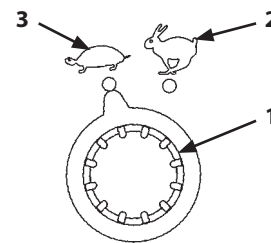
## Starting to Travel

1. Check for safety around the machine. Place the F-N-R switch in the F (forward) or the R (reverse) position. Turn the brake switch OFF (traveling) to release the parking brake. At this time, the engine speed becomes higher than the starting speed. Slowly step on the accelerator pedal to start traveling.

Use the accelerator pedal to accelerate or decelerate the travel speed.

2. Check the brakes at the safe place to ensure they function properly.

Also, confirm that the machine slows down when the accelerator pedal is released.



MBFM-01-003

**⚠ WARNING: When the undercarriage is in the backward position, travel and steering control directions are reversed. Take extra care when traveling.**

**The undercarriage is in the backward position means that the steering axle is located behind the operator's station.**

# DRIVING MACHINE

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## Stopping and Restarting

Use this operation method when requiring temporarily stopping or moving the machine for a short distance.

1. Slowly release the accelerator pedal. Depress the brake pedal to stop the machine.
2. Slowly depress the accelerator pedal to move the machine again.
3. When stopping the machine for long period, always place F-N-R switch in the "N" (neutral) position, turn the brake switch to the "P" (parking) position and apply the parking brake for your safety.
4. During drive operation, the machine drive position may be changed due to inner hydraulic oil leaks. When this happens, stop the machine in a safe place. Return the F-N-R switch to the "N" (neutral) position, turn the brake switch to the "S" (working brake) position and apply the working brake. Always keep in mind to hold the front attachment in the correct traveling position.

## Driving Instructions

For your safety and the safety of others, keep in mind the following instructions, and obey all traffic regulations while driving.

### **WARNING:**

- **In case a tire is punctured while driving, securely hold the steering wheel and slowly reduce the drive speed.**

**Do not apply the brake suddenly. Doing so may cause the steering wheel to become out of control, possibly creating serious accidents.**

- **Never mount or dismount a moving machine. Never allow any personnel other than the operator to ride on the machine when driving. Otherwise, personal injury or death due to downfall or entanglement in the machine may result.**
- **When installing a 2-way radio, locate an antenna outside the cab.**
- **If the antenna is located in the cab, travel speed may become out of control due to radio wave interference.**

**IMPORTANT:** Stop the machine immediately if the warning buzzer sounds or the brake oil pressure indicator is displayed on the monitor.

## DRIVING MACHINE

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- Even after the break-in period is over, avoid running the engine at high speeds with no load.
- If any abnormal condition such as an abnormal noise or smell is notified while operating, immediately stop the engine and inspect the machine for any trouble.
- Avoid using sudden steering or braking as much as possible because not only own machine but also other machines may become involved in a hazardous condition.
- Driving speeds of this machine are lower than most normal automobiles. Always give the right of way to automobiles.
- Before approaching a curve, reduce speed and drive with extra care for the right side and right front side visibility.
- Make it customary to check monitor. If any abnormality is indicated, stop the machine immediately, and check for causes.
- Use a signal person when driving on the shoulder of a road or in congested areas.
- Before restarting at an intersection or turning right, be sure to check the right and right front of the machine for any obstructions. After confirming safety, slowly restart driving.



## DRIVING MACHINE

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### Precautions for Traveling on a Slope

 **WARNING:**

- **Primarily use hydraulic pressure brake (relief pressure) when descending a slope. Step on the brake pedal only when required. If only the foot brake is used, the brake will overheat, decreasing brake performance and possibly causing a personal accident.**

**If overheating of the brake system is noticed, immediately park the machine in a safe location. Restart and drive the machine only after the brake system is sufficiently cooled.**

- **When descending a long slope continuously, hydraulic oil temperature in the travel circuit may increase. Occasionally step on the accelerator pedal to slacken increasing oil temperature sharply.**

**IMPORTANT:**

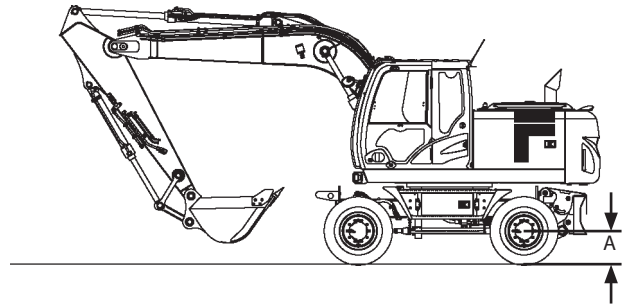
- **Do not descend a slope with the F-N-R switch kept in "N" (neutral) position. Damage to the travel motor may result.**
- **If hydraulic oil temperature in the travel circuit overheats, damage to the hydraulic components may result.**
- In case the engine stalls on a slope, be sure to depress the brake pedal and turn the brake switch to "P" (parking) position. Then, restart the engine.
- Before descending a slope, confirm that the brake system works normally by operating the brake pedal.
- In case the hydraulic oil and lubricant temperatures are low, the machine gradability may decrease. Before ascending a steep slope, sufficiently perform the warm up operation of the machine.

## DRIVING MACHINE

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### Traveling in Water or on Soft Terrain

1. Do not operate the machine with the front and rear axles, transmission, parking brake or front and rear propel shafts submerged in water. Avoid traveling in water if possible.
2. When traveling in water is unavoidable, the machine may be submerged up to a depth of A: 300 mm (11.8 in) as long as the stream bed is even and the water flows slowly. If the bed is uneven and the water flow is rapid, leave a safety margin in order to guarantee the machine will not be submerged deeper than 300 mm (11.8 in).
3. When operating the machine on muddy ground, mud will easily accumulate on the chassis frame even if the chassis is seldom submerged in muddy water. Check regularly and clean as necessary.



MLBA-04-003

**IMPORTANT:** Once the axles, transmission, parking brake, etc. are submerged, they should be reconditioned immediately. Otherwise excessive wear on revolving parts such as gears and bearings will result in and/or the brake will become inoperable. Consult your authorized Hitachi dealer.

### Extrication from Soft Ground

Avoid traveling on soft terrain. In case the machine has to unavoidably travel on soft terrain, follow the instruction below:

If the wheels start spinning, lower the bucket to the ground and raise the machine front off the ground using the boom and arm function. Then, try to extricate the machine while rolling the arm in. Operate the boom, arm, and accelerator pedal simultaneously so that excessive loads will not be applied to the machine.

## DRIVING MACHINE

### Parking

#### **WARNING:**

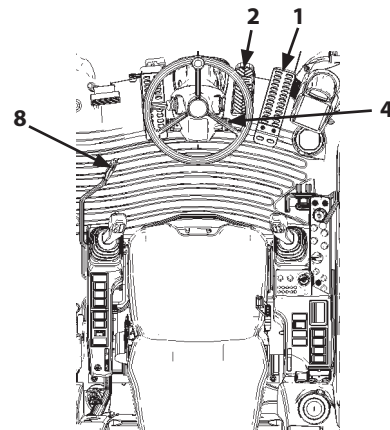
- **The working brake is not a parking brake. Do not leave the machine with the working brake applied.**
- **Before leaving the operator's seat, be sure to park the machine correctly according to the parking procedures.**



MLBA-04-009

Park the machine in the following steps:

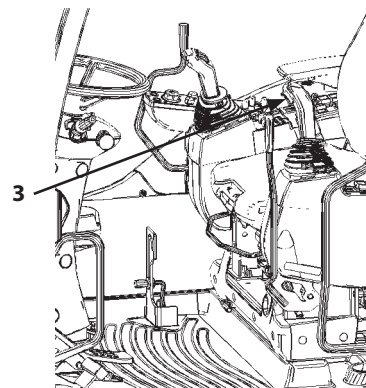
1. Slowly release accelerator pedal (1).
2. Depress brake pedal (2) to stop the machine.
3. Place F-N-R switch (3) in the "N" (neutral) position.
4. Turn auto-idle switch (5) OFF.
5. After checking that the swing lock is in the LOCK position, lower the bucket to the ground.
6. Turn brake switch (4) to the "P" (parking) position.
7. Pull pilot control shut-off lever (8) to LOCK position.
8. Fully turn engine control dial (6) counterclockwise. Run the engine at slow idle speed for approx. 5 minutes to cool the engine.
9. Turn key switch (7) OFF to stop the engine. Remove the key.
10. Before leaving the machine, close and lock all the windows, cab doors, and covers.  
Secure the wheels with wedges.



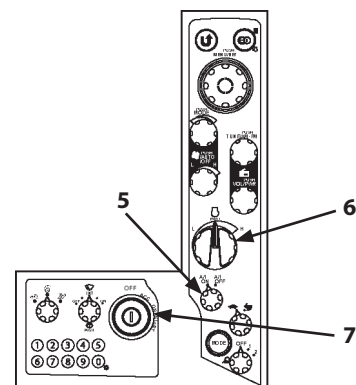
MLBA-04-010

#### **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 door when parking the machine.**
- **Do not park the machine near flammables.**



MLBA-01-517



MLBA-04-011

## DRIVING MACHINE

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### Precautions to be Taken if Machine Failure Occurs

- Look out for following vehicles. Slow down gradually. Maneuver the machine to the side of the road. Stop the machine, turn the brake switch to the "P" (parking) position and apply the parking brake. When any machine failure is recognized in a short tunnel, park the machine outside the tunnel as long as possible.
- Indicate using a sign that the vehicle is disabled. Unless a sign is used, collision with a following vehicle from behind may result. Be sure to indicate the sign of the disabled vehicle using one of the following methods.
  - Use a parking signboard.
  - Turn the hazard lights ON.
  - Use an emergency signal instrument (emergency signal light).
  - Use a red flag or light.
  - Tie a piece of cloth like a handkerchief to an easy-to-see place such as the door or the rear end of the machine.

#### **WARNING:**


- **Avoid spilling oil on the road. Oil on the road can cause vehicles passing by to slip, resulting in accidents. Warn following vehicles first. Then, remove the oil from the road.**
  - **Check the failed section. If possible, repair the machine by yourself while ensuring safety and paying attention to the traffic conditions of other vehicles.**
  - **Repair work in the tunnel is very dangerous. Avoid working outside the vehicle even simple tasks.**
- In case the repairing the machine by yourself is impossible, contact your authorized HITACHI dealer.

## DRIVING MACHINE


### Travel Alarm (Optional)

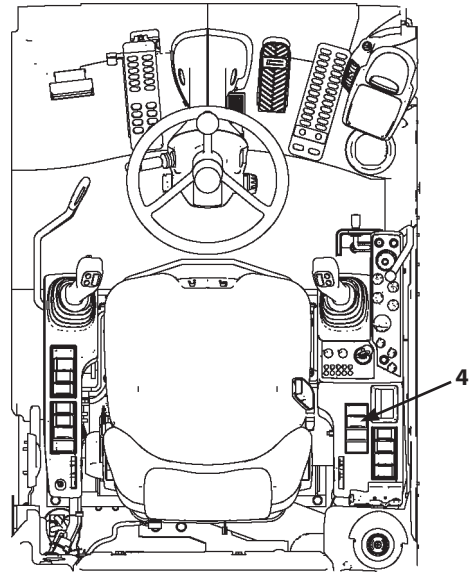
The travel alarm sounds the buzzer during traveling to notify the personnel around the machine that the machine is traveling.

#### Travel Alarm Deactivation Method

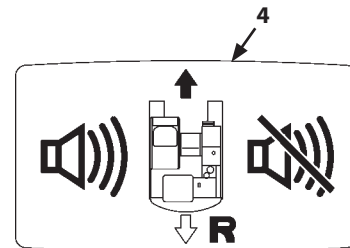
When 12 seconds or more have passed after the machine started traveling, press the right side  of travel alarm deactivation switch (4) to stop the buzzer from sounding. (The travel alarm is not deactivated even if it is pressed within 12 seconds.)

When the machine restarts traveling, the buzzer will sound again. When desired to stop the buzzer from sounding, press travel alarm deactivation switch (4) again.

 **NOTE:** An optional switch location may differ according to the type of the attached optional equipment. Before using the switches, make sure what kinds of optional devices are equipped.



MLBA-01-504



M1U1-01-035



## OPERATING MACHINE

### Control Lever (ISO Pattern)

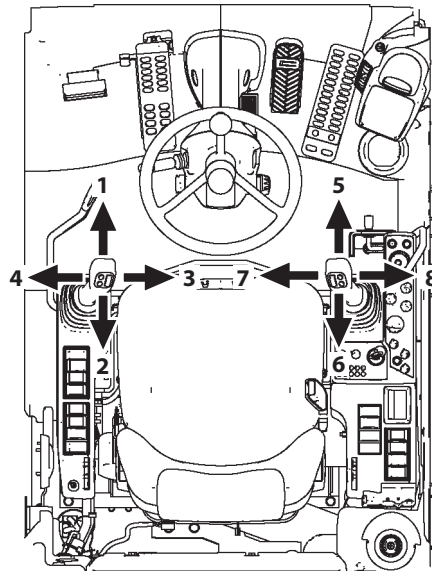
#### **⚠ WARNING:**

- **Never place any part of body beyond window frame. It could be crushed by the boom if boom control lever is accidentally bumped or otherwise engaged. Never remove the window sash bar.**
- **Make sure you know the location and function of each control before operating.**
- **Do not change the control lever operation pattern. Failure to do so may result in operation mistake of the machine.**

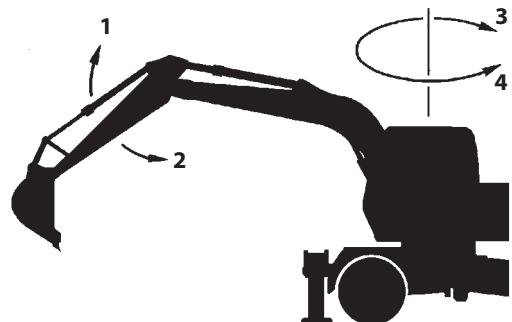
A label showing the control patterns of the levers and pedals is attached on the right side in the cab.

When a lever is released, it will automatically return to neutral, and that machine function will stop.

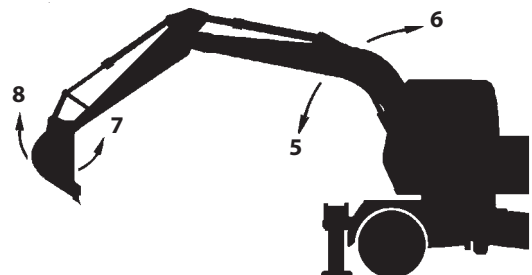
- 1- Arm Roll-Out
- 2- Arm Roll-In
- 3- Swing Right
- 4- Swing Left
- 5- Boom Lower
- 6- Boom Raise
- 7- Bucket Roll-In
- 8- Bucket Roll-Out



MLBA-01-504



MLBA-05-001



MLBA-05-002

## OPERATING MACHINE

### Pilot Control Shut-Off Lever

Pilot control shut-off lever (1) functions to prevent misoperation of the machine from occurring if the control levers are accidentally moved when leaving the operator's seat or when entering the cab.

#### **⚠ WARNING:**

- **Always pull pilot control shut-off lever (1) into the full LOCK position. Unless front control lever lock (1) is fully moved to the LOCK position, the front control lever is not locked, possibly creating a hazardous situation.**
- **When leaving the machine, always stop the engine. Then, pull pilot control shut-off lever (1) up to the LOCK position.**
- **Always check to be sure that the pilot control shut-off lever is pulled up to the LOCK position before transporting the machine or leaving the machine at the end of the shift.**

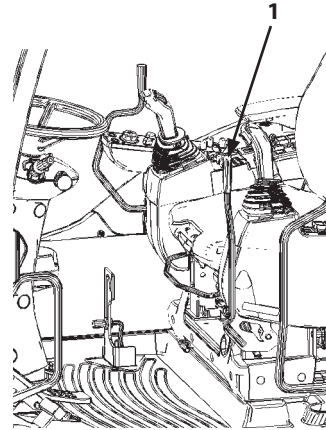
#### **Before Leaving the Machine**

1. Park the machine on a firm, level surface. Lower the bucket to the ground. Return all control levers to neutral. Properly shut down the engine.
2. Pull pilot control shut-off lever (1) up into the full LOCK position.

#### **Before Starting Operation:**

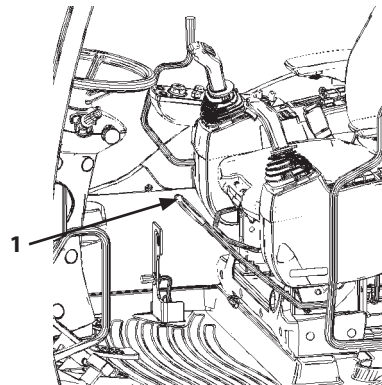
Confirm that pilot control shut-off lever (1) is pulled up to the LOCK position before starting the engine. The engine will not start in other than the LOCK position. Slowly push down control shut-off lever (1) to UNLOCK position before starting operation. Confirm that all control levers and pedals are in neutral and that no part of the machine is in motion.

- ⚠ WARNING:** If any part of the machine (any actuator) moves when pilot control shut-off lever (1) is lowered to the UNLOCK position despite the fact that all controls are placed in neutral, the machine is malfunctioning. Immediately pull pilot control shut-off lever (1) back to the LOCK position, and stop the engine. Then, see your authorized dealer. Even if pilot control shut-off lever (1) is in the LOCK position, the machine can travel.



Pilot Control Shut-Off Lever: LOCK Position

MLBA-01-517



Pilot Control Shut-Off Lever: UNLOCK Position

MLBA-01-518



# OPERATING MACHINE

## Warming Up Operation

In cold weather, warm up the machine until coolant and hydraulic oil temperature increases to the appropriate operating temperature.

**IMPORTANT:** The appropriate hydraulic oil operating temperature on this machine is 50 to 80 °C. Hydraulic components may be seriously damaged if the machine is operated with low temperature hydraulic oil. In case warming up the machine by relieving the hydraulic system, continuously relieve the relief valve for 10 to 15 seconds while taking a pause for 5 to 10 seconds.


1. Keep engine control dial (1) in the slow idle position after starting the engine.


(Do not operate the machine until the needle of coolant temperature gauge (2) starts swinging.)


2. After the needle of coolant temperature gauge (2) starts swinging, turn engine control dial (1) to approx. medium position.
3. Operate the boom, arm and bucket cylinders slowly to each stroke end several times.

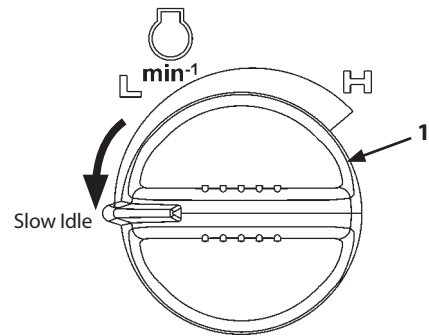
If an attachment is installed, let the attachment lightly activate to allow hydraulic oil to circulate through the system.

4. Operate the travel and swing functions slowly to allow hydraulic oil to circulate through the systems.
5. Warming up operation ends after the above operation is completed.

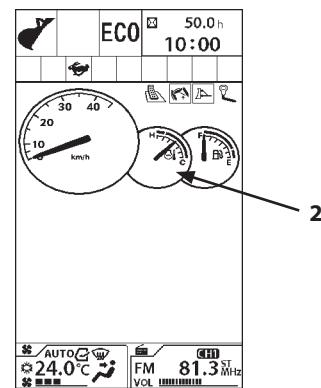
 **NOTE:** Immediately after the engine starts, the engine speed will be held at a slow idle speed for 3 to 30 seconds. The time to keep slow idle speed becomes longer when coolant or hydraulic oil temperature is low. Even if the engine control dial (1) is not in the slow idle position when starting the engine, the engine speed will be held at slow idle.

 **NOTE:** After holding at a slow idle speed, the warm-up operation system automatically operates so that the engine speed increases for a moment even though engine control dial (1) is in the slow idle position.

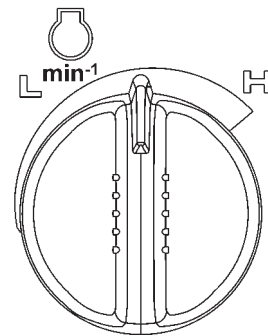
 **CAUTION:** Do not attempt to operate the machine for 30 seconds after starting the engine. The engine speed may change after the slow idle period and operation speed of work device may suddenly increase, may cause serious accident.



M1U1-01-033



MLBA-01-001



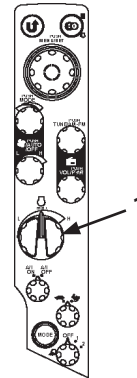
M1U1-03-006

## OPERATING MACHINE

### Engine Speed Control

Increase and decrease the engine speed using engine control dial (1) located on the switch panel, as illustrated.

- Turn engine control dial (1) clockwise to increase the engine speed. Turn engine control dial (1) counterclockwise to decrease the engine speed.
- Note that the auto-idle function will be deactivated if engine control dial (1) is operated while the engine is running at the auto-idle setting.
- Before stopping the engine, always turn engine control dial (1) counterclockwise to the stop (to the slow idle setting). Run the engine five minutes to cool the engine. Then, turn the key switch to OFF position to stop the engine.

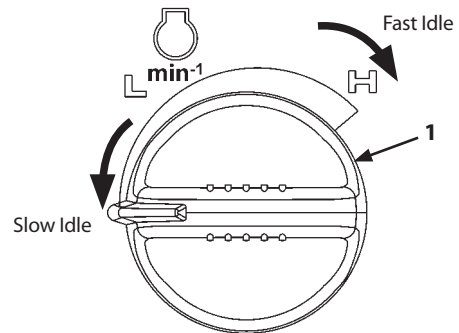


MDAA-01-040

**NOTE:** Immediately after the engine starts, the engine speed will be held at a slow idle speed for 3 to 30 seconds. The time to keep slow idle speed becomes longer when coolant or hydraulic oil temperature is low. Even if the engine control dial (1) is not in the slow idle position when starting the engine, the engine speed will be held at slow idle.

**NOTE:** After holding at a slow idle speed, the warm-up operation system automatically operates so that the engine speed increases for a moment even though engine control dial (1) is in the slow idle position.

**CAUTION:** Do not attempt to operate the machine for 30 seconds after starting the engine. The engine speed may change after the slow idle period and operation speed of work device may suddenly increase, may cause serious accident.



M1U1-01-033

## OPERATING MACHINE

### Auto-Idle

#### Auto-Idle Function

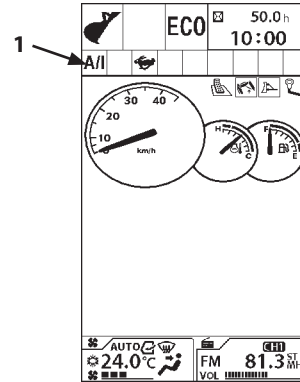
With auto-idle selector (3) turned to the A/I ON position, approximately 4 seconds after all control levers are returned to neutral, the engine speed decreases to the auto-idle setting to save fuel consumption.

The engine speed will immediately increase to the speed set by engine control dial (2) when any control lever is operated.

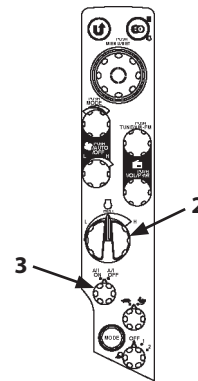
#### WARNING:

- Prevent the machine from unexpected movement. Be sure to turn auto-idle selector (3) to the A/I OFF position when unexpected machine movement is undesirable, especially when loading/unloading the machine for transportation.
- Always be aware of engine control dial (2) setting when auto-idle selector (3) is turned to the A/I ON position. If the engine speed is set high with engine control dial (2), and if the operator is not aware of the high engine speed setting, the engine speed will unexpectedly increase when any control lever is operated, causing unexpected machine movement, thus possibly resulting in serious personal injury.

**IMPORTANT:** Always check if auto-idle indicator (1) is turned ON or OFF before starting operation. If the indicator is ON, the auto-idle function will be activated.



MLBA-01-314



MDAA-01-040

## OPERATING MACHINE

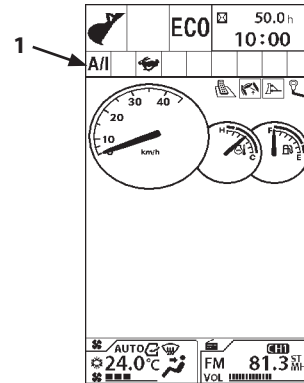
### Auto-Idle ON/OFF

Note that auto-idle function can be turned ON or OFF by using auto-idle selector (3) only when the key switch is in ON position.

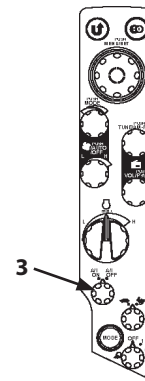
Always check if the auto-idle function is turned ON or OFF with auto-idle indicator (1).

Auto-Idle Indicator (1) ON : Auto-Idle Function ON  
Auto-Idle Indicator (1) OFF : Auto-Idle Function OFF

- When auto-idle selector (3) is turned OFF with auto-idle indicator (1) ON, indicator (1) will go OFF and the auto-idle system is deactivated.
- Even if the engine is stopped by turning the key switch with auto-idle selector (3) in the A/I ON position [indicator (1) ON], the auto-idle system is not deactivated. When the engine is restarted, the auto-idle system remains activated, allowing auto-idle indicator (1) to flash for 5 seconds and stay ON later.



MLBA-01-314



MDAA-01-040

## OPERATING MACHINE

### Auto Shut-Down

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

When the auto shut-down function is turned ON, the engine automatically stops after the preset time at the state in which the control shut-off lever is pulled. 30 seconds before the engine stop, monitor (2) displays a message that engine will be stopped and indicator (1) starts flashing. Also the buzzer sounds. The buzzer sounds once at 30 seconds before, continuously sounds from 15 seconds. The engine speed decreases to the idling speed, and then stops after 15 seconds. When the control shut-off lever is pushed before stopping the engine, the auto shut-down is disabled and the engine will not stop.

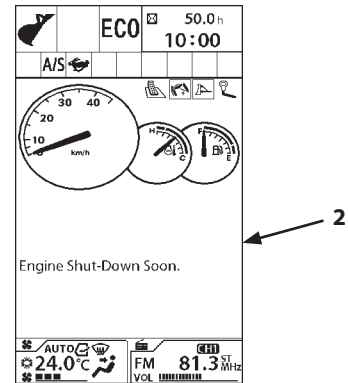
**IMPORTANT:** Ensure that the ON or OFF status of auto shut-down indicator (1). If the indicator is ON, the auto shut-down function will be activated.

#### Operating condition

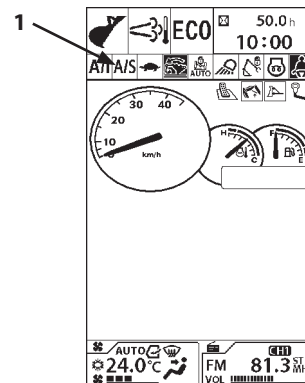
- The engine is running.
- The pilot control shut-off lever is in the LOCK position.
- The F-N-R switch is in the "N" (neutral) position.
- The brake switch is in the "P" (parking) position.
- Coolant and hydraulic oil temperature are not high.
- The muffler filter is not in regenerating process.

#### IMPORTANT:

- When the engine stops by the auto shut-down 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 shut-down. Failure to do so may discharge the batteries.
- When the key switch is turned to OFF position while the auto shut-down function is ON, the setting will be reset. When it is required to keep the setting, consult your nearest Hitachi dealer.



MLBA-01-146EN



MLBA-01-286

# OPERATING MACHINE

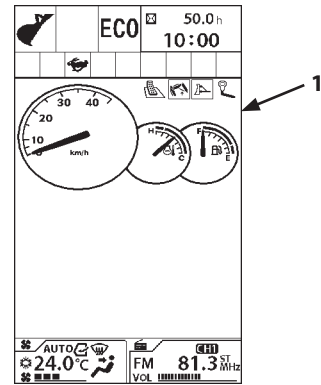
## IMPORTANT:

- Even if the auto shut-down function is ON, the engine will not stop during the regeneration of the muffler filter.
- When the auto shut-down activates, the air conditioner will also stop.

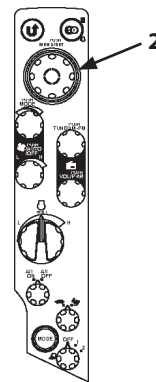
## Setting the Auto Shut-Down Function

### Auto Shut-Down: ON/OFF

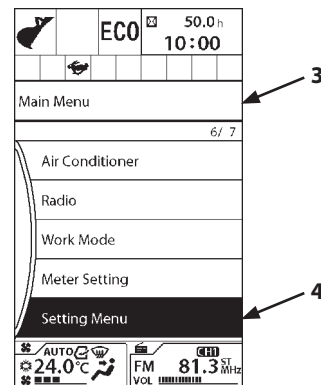
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Auto Shut-Down (6).



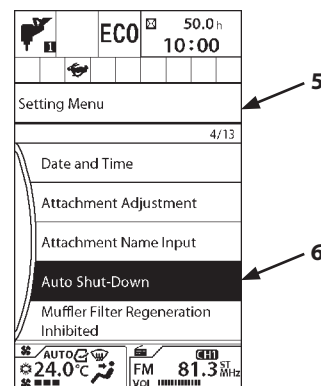
MLBA-01-001



MDAA-01-040



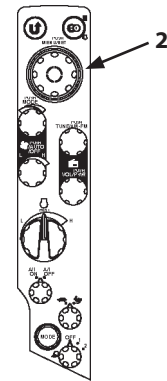
MLBA-01-114EN



MLBA-01-147EN


## OPERATING MACHINE

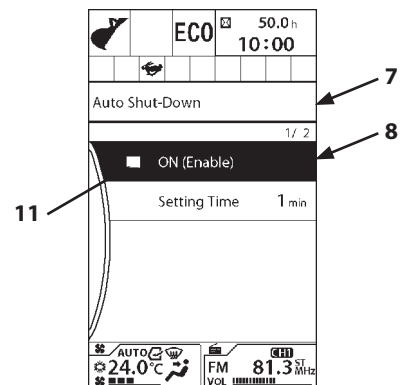
- Press selector knob (2) to display Auto Shut-Down screen (7).



MDAA-01-040

- Rotate selector knob (2) to highlight ON (8).
- Press selector knob (2) to turn the Auto Shut-Down function ON. Press selector knob (2) again to turn the auto shut-down function OFF.


 **NOTE:** When the function is ON, the mark "■" (11) is displayed in green. When the function is OFF, the mark "■" (11) is displayed in gray.

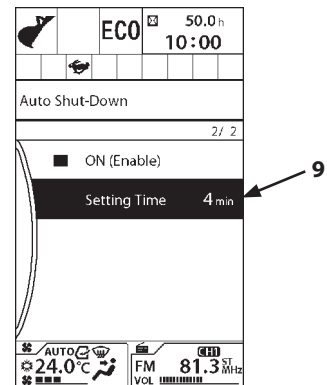


MLBA-01-148EN

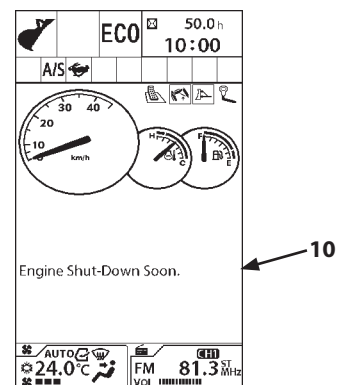
### Acting Time Setting

- On the Auto Shut-Down screen, rotate selector knob (2) to highlight Setting Time (9).
- Push selector knob (2). Rotate selector knob (2) to adjust the auto shut-down acting time.
- Press selector knob (2) to make the change.

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



MLBA-01-150EN



MLBA-01-146EN

# OPERATING MACHINE

## Muffler Filter Manual Regeneration

### Manual Regeneration Procedure

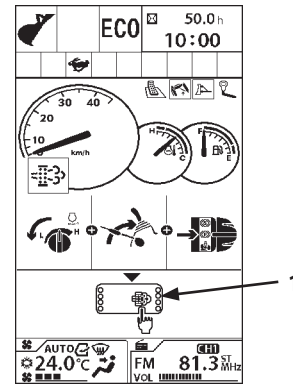
When the manual regeneration is needed, screen (1) as shown in the right will be displayed. When this screen is displayed, you need to perform the manual regeneration. Before starting the manual regeneration, be sure to check the following.

If the rear view camera is equipped on the machine and the camera is enabled, screen (1) is displayed only when the pilot control shut-off lever is in LOCK position. (Refer to 1-58)

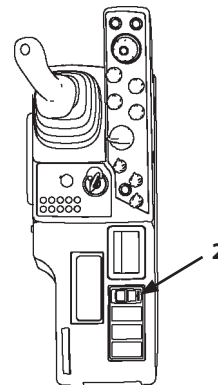
- No person is present around the machine
- Keep flammable objects away from the muffler.
- Remaining fuel alarm does not light.

1. Park the machine in a safe place. Lower the front attachment onto the ground.
2. Pull the pilot control shut-off lever to the LOCK position.
3. Set the engine control dial to slow idle.
4. Turn the brake switch to the "P" (parking) position.
4. Push the muffler filter regeneration switch (2).
5. When pushing the muffler filter regeneration switch (2), screen (3) as shown in the right will be displayed and the manual regeneration starts. Bar graph on the screen indicates progress of the regeneration process.

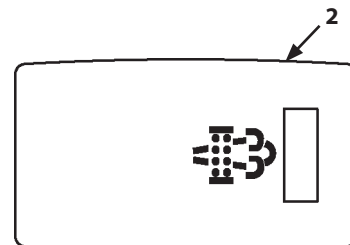
**IMPORTANT:** The regeneration does not start unless the pilot control shut-off lever is in the LOCK position and the engine control dial is in slow idle. When touching the pilot shut-off lever or the engine control dial during regeneration, the regeneration process is aborted. When the process is aborted, start over again.



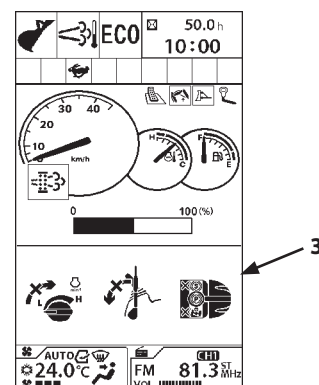
MLBA-01-005



MDAA-01-346



MDAA-05-002



MLBA-01-006



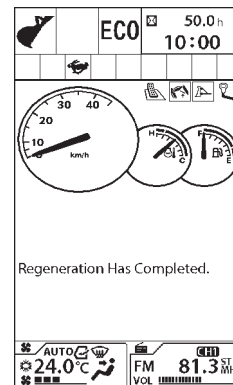
## OPERATING MACHINE

6. When the regeneration is finished, "Regeneration Has Completed." message will be displayed. If "Regeneration Has Failed." message is displayed, start over the regeneration process again. Failure of regeneration process may happen in the conditions other than above (such as malfunction of a sensor that affects regeneration at low ambient temperature).

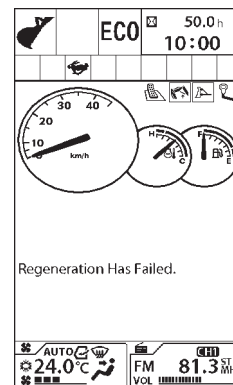
 **NOTE:**

- The engine sound may change and the engine speed may increase when the manual regeneration starts, but it is not a malfunction.
- Regeneration time varies depending on the ambient temperature.
- White smoke may temporarily be generated from the tail pipe during the regeneration process due to the burning of particle matter (PM), but it is not a malfunction.
- Manual regeneration process completes earlier right after the engine has been running than when it is cold.
- Coolant temperature may increase during the manual regeneration.

**IMPORTANT:** If regeneration must be interrupted, push the muffler regeneration switch again. The message "Regeneration Has Failed." will be displayed on the monitor, but the machine becomes operable. In this case, regeneration should be performed again. Restart the manual regeneration as soon as possible.



MLBA-01-083EN



MLBA-01-084EN

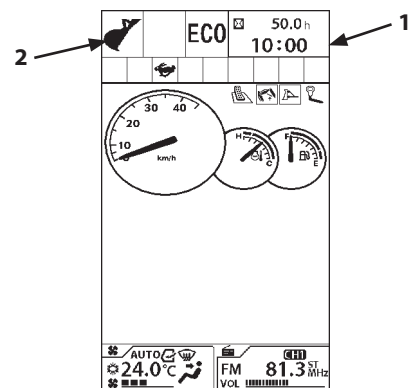
## OPERATING MACHINE

### Work Mode

Select Work Mode in the main menu, and choose the appropriate hydraulic circuit and pump flow rate for the front attachment at Work Mode screen.

When the engine is started, the digging mode is automatically set. Following six work modes can be selected from the Work Mode screen.

- Digging Mode
- Breaker 1 Mode
- Breaker 2 Mode
- Pulverizer 1 Mode
- Crusher 1 Mode
- Grapple 1 Mode












MLBA-01-001

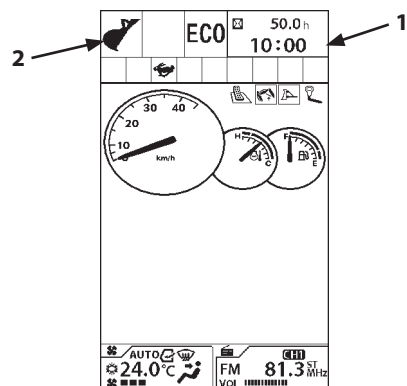
## OPERATING MACHINE

The selected work mode is indicated by attachment mode indicator (2) of basic screen (1).

Select the work mode corresponding to the work in which the machine is engaged while referring to the table below.

	Work Mode	Description
	Digging Mode	Select this mode when using bucket.
	Breaker 1 to 5 Mode	Select this mode when using breaker.
	Pulverizer 1 to 5 Mode	Select this mode when using pulverizer.
	Crusher 1 to 5 Mode	Select this mode when using crusher.
	Vibrating Hammer 1 to 5 Mode	Select this mode when using vibrating hammer.
	Grapple 1 to 5 Mode	Select this mode when using grapple.
	Clamshell 1 to 5 Mode	Select this mode when using clamshell.
	Others 1 to 5 Mode	Select this mode when other than the above attachment is used.

 **NOTE:** 36 work modes shown above are designated as the standard specifications. Up to 11 attachment modes other than the digging mode can be designated. Consult your nearest Hitachi dealer for adding or changing the designation of the attachment modes.

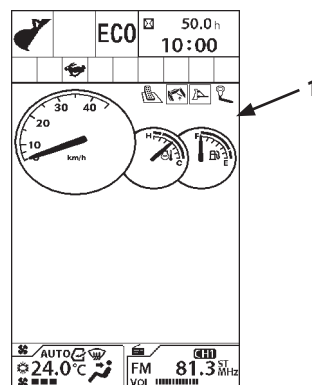


MLBA-01-001

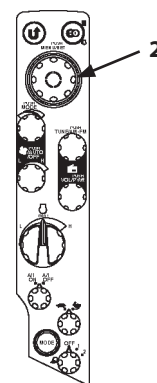
# OPERATING MACHINE

## Attachment selection

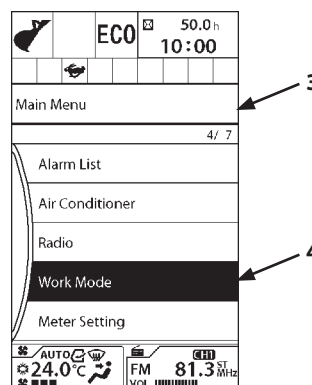
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Work Mode (4).
3. Press selector knob (2) to display Work Mode screen (5).
4. Rotate selector knob (2) to highlight the desired front attachment.  
(In the right example, "Bucket" (6) is highlighted.)
5. Press selector knob (2) to make the changes.



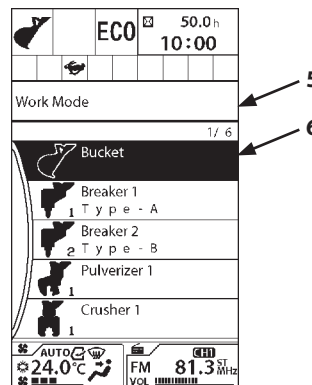
MLBA-01-001



MDAA-01-040



MLBA-01-100EN



MDAA-01-101EN

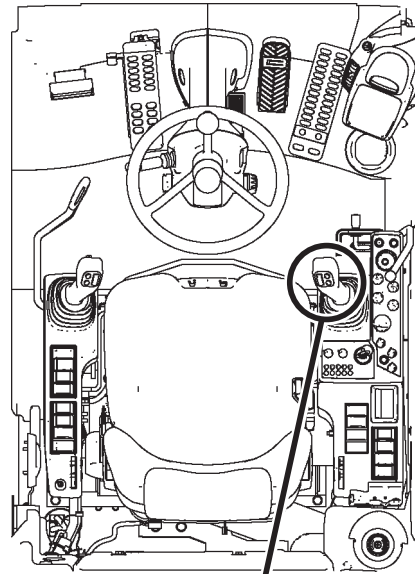
## OPERATING MACHINE

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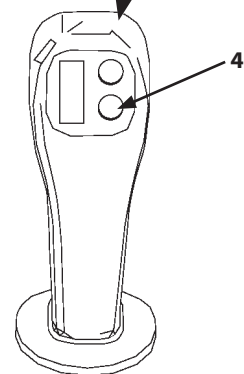
### Power Boost Switch

Power boost switch (4) is located on the top of the right control lever.

When power boost switch (4) is pushed, increased front attachment power will be supplied for about 8 seconds.



MLBA-01-504




MLBA-05-003

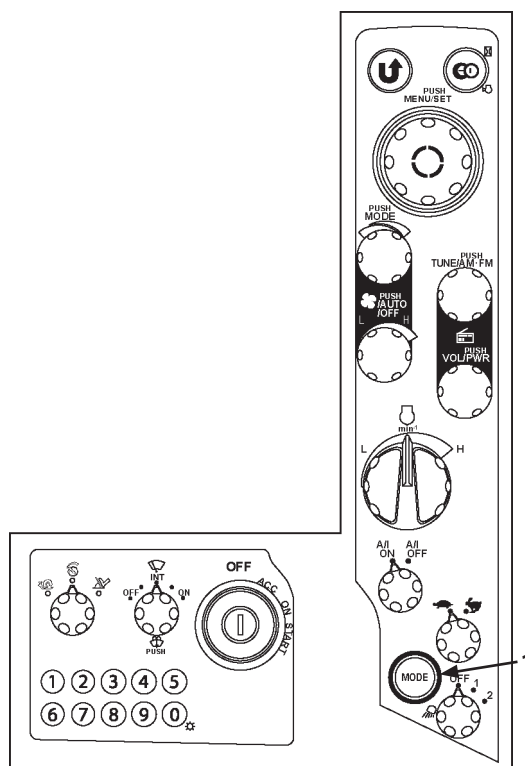
## OPERATING MACHINE

### Power Mode Switch

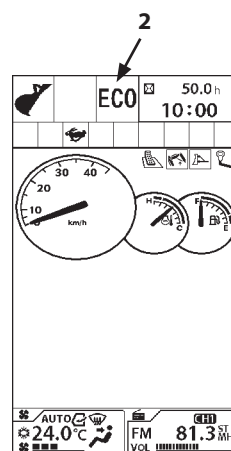
Two engine speed modes, ECO and PWR modes are selected by operating power mode switch (1).

- **ECO (Economy) Mode**  
Operate the machine in this mode when performing normal work.  
ECO is displayed on Power Mode Display (2).
- **PWR (Power) Mode**  
Use this mode when a little more power is needed.  
PWR is displayed on Power Mode Display (3).

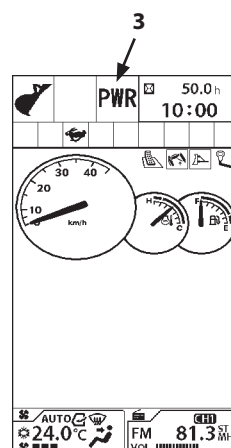
 **NOTE:** ECO mode is set automatically when starting the engine. Set PWR mode if necessary.



MLBA-01-522



MLBA-01-001



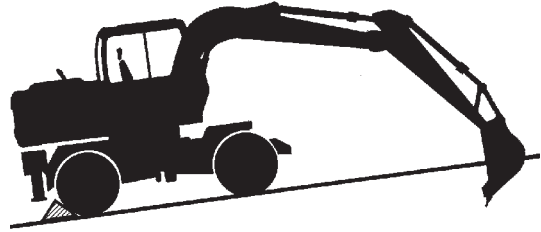
MLBA-01-353

## OPERATING MACHINE

### Parking/Stopping Machine on a Slope (In Case of Emergency)

**⚠ WARNING:** Parking or stopping the machine on a slope is hazardous. Avoid parking or stopping the machine on a slope.

In case parking or stopping the machine on a slope is unavoidable, insert the bucket into the ground to stabilize the machine. After returning all levers to neutral, place the brake switch in the "P" (parking) position. Place blocks against the wheels.



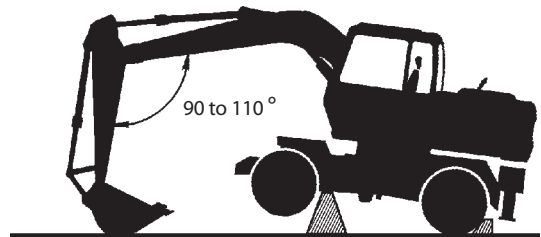
MLBA-05-004

**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 door when parking the machine.

### Raising Machine Front Above Ground with Boom and Arm Function

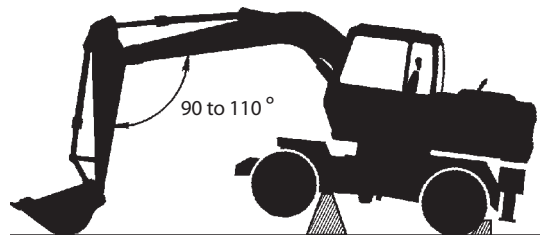
**⚠ WARNING:** Prevent the machine from skidding. Keep the angle between the boom and arm 90 to 110°.

1. Apply the parking brake.
2. Push the ground with the bucket round bottom while holding the angle between the boom and arm 90 to 110°.



MLBA-05-005

**IMPORTANT:** When the machine is modified as a face shovel by installing the hoe bucket in reverse, avoid raising the machine above the ground using the front attachment with the bucket cylinder fully extended. Excessive loads will be applied to the pins around the bucket and the bucket cylinder, resulting in breakage of the pins.



MLBA-05-006



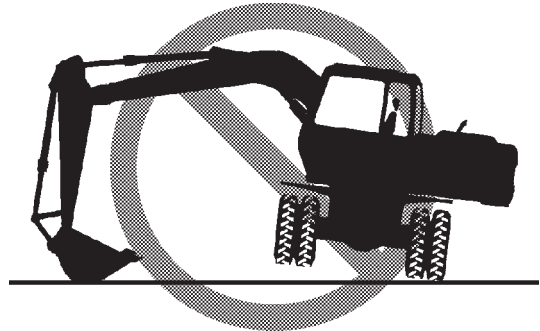
MLBA-05-007

## OPERATING MACHINE

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### Operating Differential Gear at High-speed for a Long Periods of Time is Prohibited

**IMPORTANT:** High speed differences over a longer period of time are not allowed. Damage to the axle inner parts and/or the differential gear may result. (e.g. spinning for "cleaning the tire")



MLBA-05-008



## OPERATING MACHINE

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### Operating Backhoe

- Use the appropriate arm and bucket for the work. (Refer to the "Bucket Types and Applications" in the Specifications section.)
- Pull the bucket toward the machine using the arm as the main digging force.
- When soil sticks to the bucket, remove it by moving the arm and/or bucket rapidly back and forth.
- Position the bucket teeth as parallel as possible with the direction of excavation. Utilize the arm stroke as much as possible with the bucket teeth inserted shallowly.
- Face the rear side of the undercarriage in the same direction as the excavation. Move the machine backward as excavation progresses.
- When operating the arm, avoid bottoming the cylinder to prevent cylinder damage.

#### **IMPORTANT:**

- **When digging at an angle, avoid striking the tires with the bucket teeth.**
- **When lowering the boom, avoid sudden stops that may cause shock load damage to the machine.**
- **When digging a deep excavation, avoid striking the boom or bucket cylinder hoses against the ground.**
- **When operating the machine with the blade (if equipped) positioned towards the front, the bucket teeth may come in contact with the blade if you are not careful.**

## OPERATING MACHINE

### Shovel

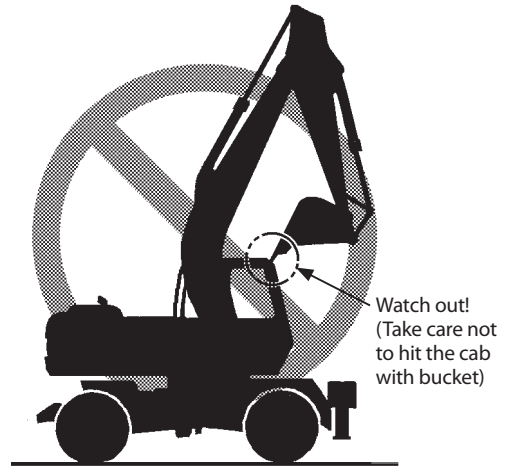
Backhoe operation digs the ground using the bucket in a roll-in motion. On the other hand, face shovel operation digs the ground using the arm cylinder in a scraping motion.

**⚠ WARNING:** Take care not to hit the cab when rolling in the arm with the reversed-installed bucket. Operate the machine with care not to allow the tip of the bucket to hit the cab while rolling in the front attachment.

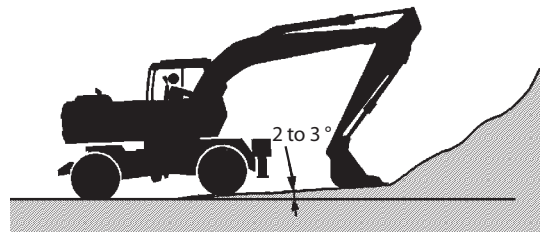
**IMPORTANT:** If a bucket hook is mounted, take care not to hit the arm with the hook when rolling in the bucket.

- For face shovel operation, dig the ground using the arm cylinder in a scraping motion.
- When underground water is expected, make a slope angle of 2 to 3° to drain this water as shown.

**✎ NOTE:** Because of the hydraulic cylinder structure, digging force of the face shovel operation is smaller than the backhoe operation.



MLBA-05-009



MLBA-05-010

## OPERATING MACHINE

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### Grading Operation

Operate the boom, arm, and the bucket in such a way so that the bucket teeth move horizontally, constantly keeping them perpendicular to the ground at the grading operation.

**IMPORTANT: Do not pull or push dirt with the bucket when traveling. Excess force will be applied on each part, and the machine may be damaged.**

1. Operate arm roll-in function while slowly raising the boom. Once the arm moves past the vertical position, slowly lower the boom to allow the bucket to maintain a smooth surface.
2. Arm roll-out operation is performed in the reverse way of step 1.
3. Do the slope finishing work in the same procedure as described in steps 1 and 2.



MLBA-05-011

## OPERATING MACHINE

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### Do not Strike the Ground with Bucket Teeth

**⚠ WARNING:** Forcibly striking the bucket teeth on the ground may result in personal injury by the flying debris. Also, this operation will shorten the service life of each part on the front attachment.

If the bucket teeth are forcibly struck on the ground, it shortens the service life of the front attachment parts (especially the bucket).

When digging a hard gravel stratum, use dig up force of the bucket. Operate the boom, arm and the bucket simultaneously so that the bucket teeth efficiently bite into the ground. Flying debris may result in personal injury.

### Avoid Hammer Work

**⚠ WARNING:** As the bucket body has the curved surface, hammer work or piling work is very dangerous. Doing so may damage the bucket and front attachment.

Do not attempt to use the bucket for hammer work and piling work.

Doing so may damage the bucket and front attachment, causing personal injury.



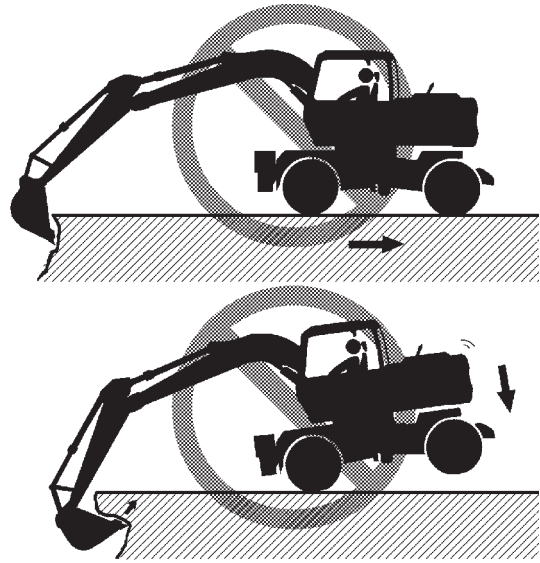
MLBA-05-012

## OPERATING MACHINE

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### Avoid Abusive Operation

Do not use travel and do not raise rear of the machine to use the machine's weight as additional digging force. Severe machine damage may result.



MLBA-05-013

### Avoid Side Load the Bucket

Do not side load the bucket. For example, do not swing the bucket to level material or do not strike objects from the side with the bucket.

Doing so may damage the front attachment and the swing system.



MLBA-05-014

## OPERATING MACHINE

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### Pilot Accumulator Function

The pilot accumulator (1) is a pressure storage reservoir of the control circuit which supplies pressure and enables to operate the control circuit even after stopping the engine.

Thus, the front attachment can be lowered with its own weight by using the control lever and pressure in the hydraulic circuit can be released after stopping the engine.

#### Pressure Release Procedure of Hydraulic Circuit

1. Set the machine in the parking position.
2. Pull the pilot control shut-off lever to the LOCK position.

Perform items from 3 to 5 within 15 seconds.

As pressure in the accumulator gradually decreases after stopping the engine, pressure in the hydraulic circuit can be released only immediately after stopping the engine.

3. Stop the engine. Turn the key switch ON.
4. Push the pilot control shut-off lever to the UNLOCK position.
5. Move the control levers and attachment pedals forward and rearward or left and right to release pressure from the hydraulic circuit.
6. Pull the pilot control shut-off lever to the LOCK position and turn the key switch OFF.

## OPERATING MACHINE

### How to Lower Boom In Case of Emergency and When Engine Stops

(Without hose-rupture safety valve)

**⚠ WARNING:** Prevent personal injury. Confirm that no one is under the front attachment before starting the procedure below.

In case the engine suddenly stops and the engine cannot restart, lower the boom in the following procedures.

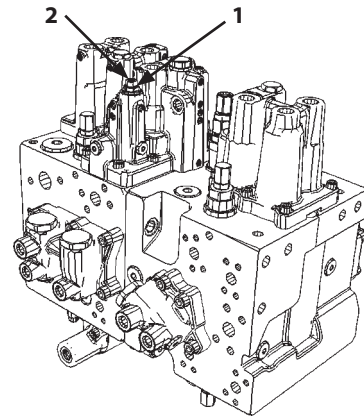
**IMPORTANT:** Never loosen screw (2) more than 2 turns. Screw (2) may come off.

1. Loosen lock nut (1) in the control valve at the right. Loosen screw (2) one half of a turn. The boom lowering speed can be somewhat adjusted by loosening screw (2) more.

**IMPORTANT:** Excessive leakage may result if the screw and the lock nut are tightened insufficiently. Be sure to retighten the screw and the lock nut to specifications.

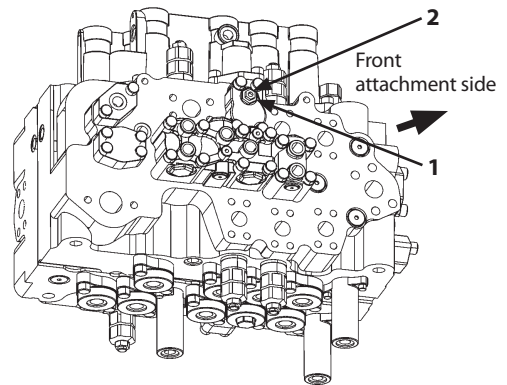
2. After the boom is lowered, tighten screw (2) and tighten lock nut (1) to the specifications below.

Locknut (1)  
Tightening Torque : 13 N·m (1.3 kgf·m)  
Bolt (2)  
Tightening Torque : 7 N·m (0.7 kgf·m)



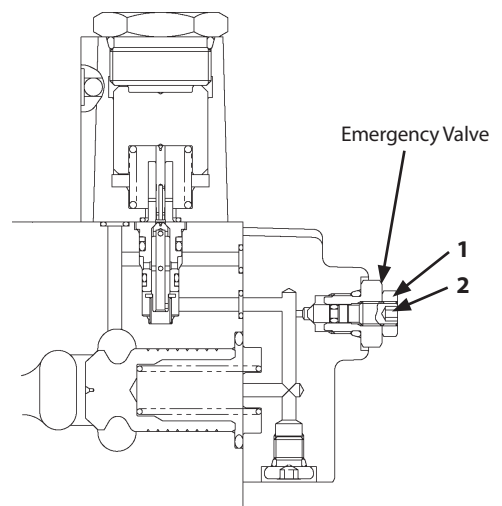
MDAA-05-008

ZX140W-5B, 170W-5B, 190W-5B



T1V1-03-03-073

ZX220W-5B



T1V1-03-03-038

## OPERATING MACHINE

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### Precautions for After Operations

- After finishing the day's operation, drive the machine to a firm, level ground where no possibility of falling stones, ground collapse, or floods are present.  
(Refer to the group for "PARKING MACHINE" in the DRIVING MACHINE section.)
- Fully refill the fuel in the fuel tank.
- Clean the machine.



# TRANSPORTING

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## Transporting by Road

When transporting the machine on public roads, be sure to first understand and follow all local regulations.

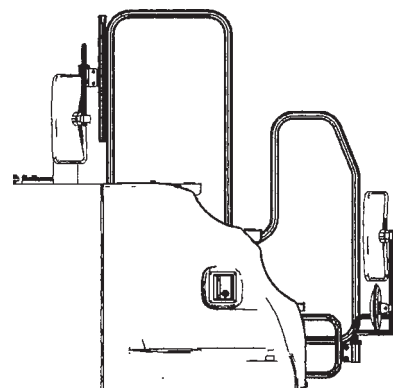
- When transporting the machine using a trailer, check the width, height, length and weight of the trailer with the machine loaded. Note that the weight and transporting dimensions will vary depending on the type of outrigger/ blade or arm to be installed on the machine. Refer to the mass (weight) shown in the specifications and take care that the trailer is not overloaded.
- Investigate beforehand the conditions of the route to be traveled, such as dimensional limits, weight limits, and traffic regulations.

In some cases, getting the permission from the local authority concerned or disassembling the machine to bring it within dimensional limits or weight limits of local regulations may become necessary.

Notify the nearest dealer that you are transporting the unit.

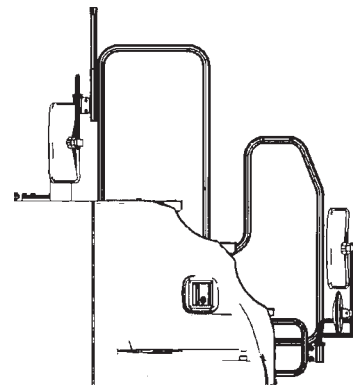
### IMPORTANT:

- **The auxiliary bar attached to the rear section of the hand rail can be installed in two positions to adjust its height.**
- **Install the auxiliary bar in the transportation position when transporting the machine.**
- **After transporting the machine, reinstall the auxiliary bar in the normal operation position before operating the machine.**



Transportation Position

MLBA-06-007



Normal Operation Position

MLBA-06-008

## TRANSPORTING

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### Loading/Unloading on a Trailer

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

 **WARNING:**

- **Be sure to use a loading dock or a ramp for loading/unloading the machine. Never load or unload the machine onto or off a truck or trailer using the front attachment functions when driving up or down the ramp.**
- **Always turn the auto-idle switch OFF when loading or unloading the machine. In the auto-idle mode, speed may automatically increase.**
- **Always select the slow speed mode with the travel mode switch.**
- **Never steer while driving up or down a ramp as it is extremely dangerous and may cause the machine to turnover. NEVER attempt to change directions whilst positioned on the ramp. If repositioning is necessary, first move back to the ground or flatbed, modify traveling direction, and begin to drive again.**
- **The top end of the ramp where it meets the flatbed is a sudden bump. Take care when traveling over it as the balance may be lost. If the front attachment is not fitted, reverse onto the trailer.**
- **Extreme care must be taken when swinging the upper structure when the machine is on the trailer flatbed. If the front attachment is fitted, swing slowly with the arm fully roll-in underneath the boom being careful not to lose the balance of the machine.**
- **When the machine is equipped with the front attachment: Take care to prevent the machine from turning over. Before rotating the upperstructure on a trailer, turn the brake switch to the "S" (working brake) and lock the axle.**
- **When the machine is not equipped with the front attachment: Do not swing the upperstructure. Failure to do so may cause the machine to turn over.**
- **When the upperstructure is rotated 180°, steering control and F-N-R switch operating directions are reversed. Take extra care when traveling.**
- **In cold weather, be sure to warm up the machine before loading or unloading it.**

## TRANSPORTING

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### **Ramp/Loading Dock:**

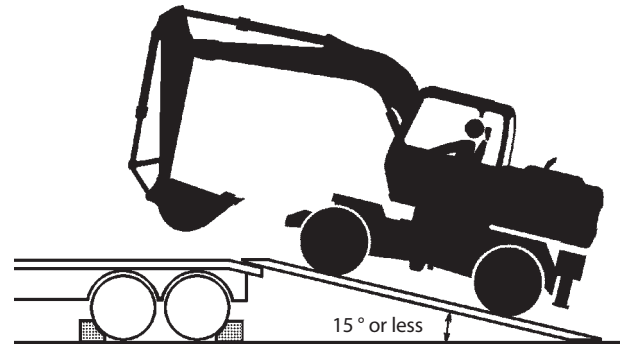
1. Before loading, thoroughly clean the ramps, loading dock and flatbed. Dirty ramps, loading docks, and flatbeds with oil, mud, or ice on them are slippery and dangerous.
2. Place blocks against the truck and trailer wheels while using a ramp or loading dock.
3. Ramps must be sufficient in width, length, and strength. Be sure that the incline of the ramp is less than 15 degrees.
4. Loading docks must be sufficient in width and strength to support the machine and have an incline of less than 15 degrees.
5. When transporting the machine equipped with a blade, take care not to hit the blade.

## TRANSPORTING

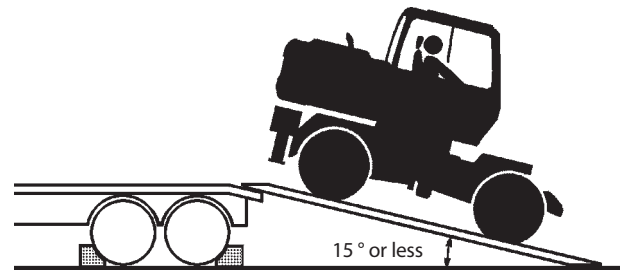
### Loading

If the front attachment is fitted, load with the front faced towards the front, if the front attachment is not fitted, reverse onto the trailer.

1. Load the machine so that the centerline of the machine aligns with the centerline of the trailer flatbed.
2. Drive the machine onto the ramp slowly.



MLBA-06-001



MLBA-06-002

3. Slowly drive the machine forward on ramps until the machine reaches the position as illustrated to the right.
4. Always turn the brake switch to the "S" (working brake) position. After slightly raising the bucket above the flatbed, slowly rotate the upperstructure 180°.
5. Drive the machine in reverse and stop at the specified position.
6. Rest the front attachment on supports such as wooden blocks placed on the trailer flatbed. When the machine is equipped with a blade, lower the blade onto the flatbed.
7. Stop the engine. Remove the key from the key switch.
8. Pull the pilot control shut-off lever to the LOCK position.
9. Be sure to close the cab windows, overhead window, and door to prevent entry of wind and rain into the cab. Place a cover over the exhaust outlet.
10. Store the mirror, handrails, and radio antenna in the specified positions.



MLBA-06-006



M202-06-003

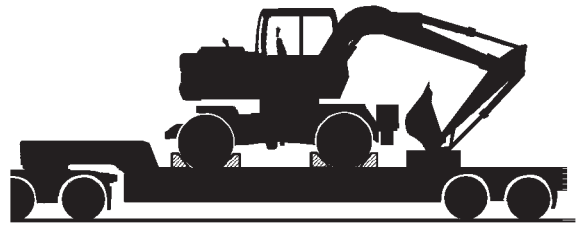
Close and lock all doors and covers.

## TRANSPORTING

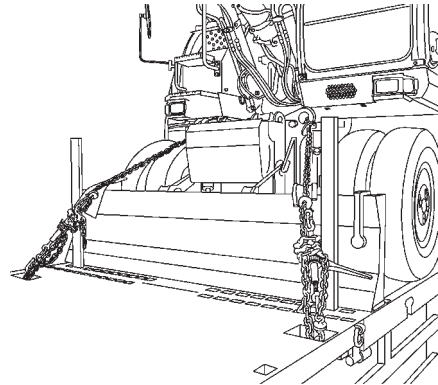
### Fastening Machine for Transporting

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

1. Turn the brake switch to the "P" (parking) position. Place blocks in front of and behind the tires.
2. Securely tighten the base machine and the front attachment to the flatbed with wire ropes.



MCGB-06-004



MLBA-06-005

### Unloading

**IMPORTANT:** Make sure that the angle of the boom and the arm is kept between 90 to 110 ° when unloading the unit.

Damage to the unit is possible if the arm is kept in a suspended state during unloading.

1. Before driving the machine onto the ramp from the trailer flatbed end, slightly raise the bucket above the ground and slowly drive down the ramp while taking care so that the machine does not go off the ramp.



M202-06-006

**IMPORTANT:** When driving the machine over the ramp, do not allow the machine to hit the ground too hard with the arm. Possible damage to the hydraulic cylinders may result.

2. The bucket must be on the ground before the machine begins to tip forward.
3. As the machine moves forward, raise the boom and extend the arm until the machine is completely off the ramp.

## TRANSPORTING

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### Towing Machine

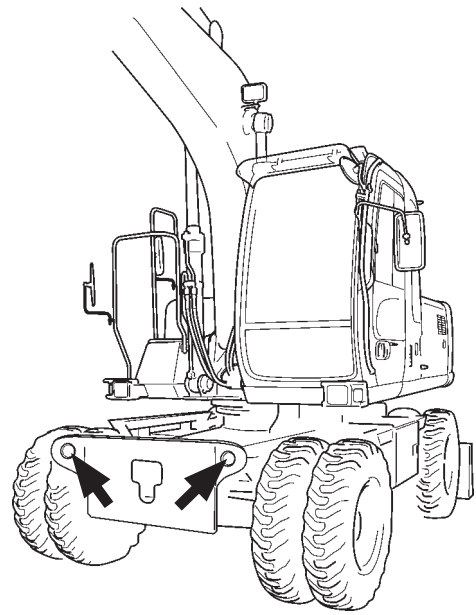
**⚠ WARNING:**

- **Never attempt to tow the machine if the brake system is in need of repair. Consult your authorized Hitachi dealer to repair the machine. Operate the machine only after repair is completed.**
- **In case the machine must unavoidably be towed by releasing the parking brake, follow the procedures below.**
- **To ensure safety, always tow the machine at a speed of 10 km/h or less.**

**IMPORTANT:**

- **Do not tow the machine with the parking brake applied. Damage to the parking brake may result.**
- **When towing the machine, be sure to only use the towing hook point.**
- **If the machine is towed a long distance, the transmission may be damaged because the transmission interior is not sufficiently lubricated. Never tow the machine a long distance more than 5 km or more. When a long distance transportation of the machine is required, use a trailer to carry the machine.**

This machine is equipped with a negative-type parking brake so that when the engine is stopped by turning the key switch OFF, the parking brake is automatically applied. Depending on the current machine conditions, parking brake release procedures differ. Follow the procedures below to release the parking brake.



MCGB-06-002

## TRANSPORTING

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### When the engine is operable

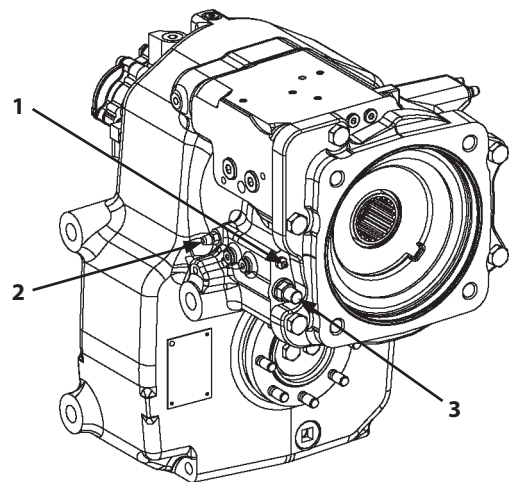
When the engine and the electrical system operate normally, start the engine and turn the brake switch OFF to release the parking brake.

### When the engine is not operable

**⚠ DANGER:** When the parking brake is released, the machine becomes free to move, possibly creating hazardous conditions. Before releasing the parking brake or connecting the brake system, be sure to lock tires with wheel stoppers.

When the engine or the electrical system is inoperable so that the parking brake cannot be released with the brake switch, manually release the parking brake located in the travel transmission by following the procedures below.

1. Arrange the attached grease gun.
2. Supply grease through nipple (1).
3. Continuously supply grease until grease flows out of relief valve (3).



T21W-03-05-014

## TRANSPORTING

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### Engaging Parking Brake (After repair work is complete)

1. Loosen bleeder (2) to allow grease to be discharged.
2. Start the engine. Select travel mode between fast and slow around 8 or 9 times to release the grease.
3. Tighten bleeder (2).

**⚠ WARNING:** When engaging the parking brake, grease is discharged. If the discharged grease is kept left on the ground, the following cars may slip, possibly causing dangerous situation.

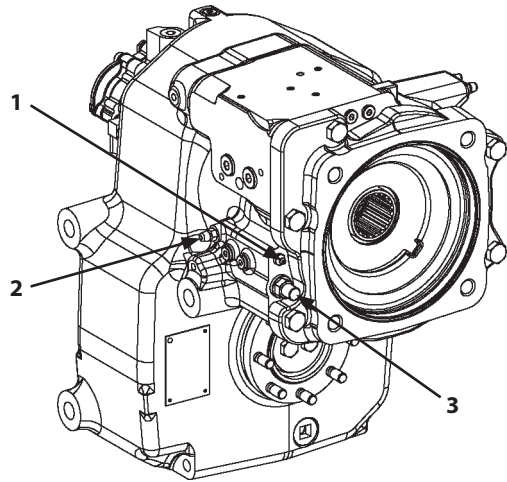
Take the most priority to notice the following cars and remove the discharged grease as soon as possible.

**⚠ DANGER:** When the parking brake is released, the machine becomes free to move, possibly creating hazardous conditions.

Before releasing the parking brake or connecting the brake system, be sure to lock tires with wheel stoppers.

**⚠ CAUTION:** The pressure inside the transmission is high.

Do not loosen bleeder (2) quickly or loosen it too much as bleeder (2) may fly out or high-pressure grease in the transmission may spout out. Loosen carefully and keep away from bleeder (2).



T21W-03-05-014



## TRANSPORTING

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### Lifting Machine



**WARNING:**

- **Use lifting cables and other lifting tools being free from any damage and/or aging, and having sufficient strength.**
- **Consult your nearest Hitachi dealer for correct lifting procedures, and size and types of lifting cable and tools.**
- **Pull the pilot control shut-off lever to the LOCK position so that the machine does not accidentally move while being lifted.**
- **Incorrect lifting procedure and/or incorrect wire rope attachment will cause the machine to move (shift) while being lifted, resulting in machine damage and/or personal injury.**
- **Do not lift the machine quickly. Excessive load will be applied to the lifting wire ropes and/or lifting tools, possibly causing them to break.**
- **Do not allow anyone to come close to or under the lifted machine.**
- **The indicated gravity center is for the standard specification machine. The gravity center will vary depending on the kinds of attachments and/or optional equipment to be installed or their position to be taken. Therefore, take care not to lose the balance of the machine while lifting.**

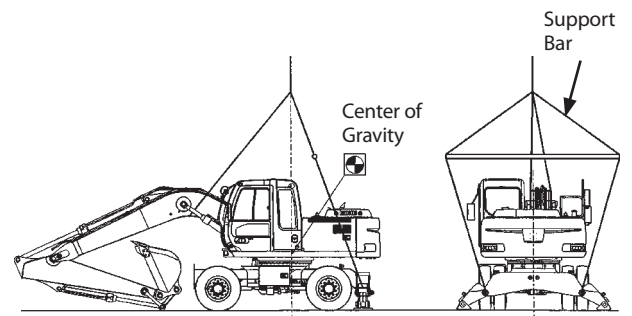
## TRANSPORTING

### Lifting

1. Fully extend the arm and bucket cylinders. Lower the boom until the bucket comes in contact with the ground.
2. Pull the pilot control shut-off lever to the LOCK position.
3. Stop the engine. Remove the key from the key switch.
4. Close and lock all doors and covers.
5. Use wire ropes and support bar of sufficient length so that they do not come in contact with the machine while lifting.

Wrap some protectors around wire ropes and/or support bar as required to prevent the machine from being damaged.

6. Set a crane in an appropriate position.
7. Thread the wire rope through the boom and rear outrigger. Attach the wire ropes to the crane.



MCBB-06-003

## MAINTENANCE

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### Correct Maintenance and Inspection Procedures

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

Perform the required daily check before starting the engine. Refer to "Inspect Machine Daily Before Starting" on page 3-1.

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

#### IMPORTANT:

- **Use only recommended fuel and lubricants.**
- **Be sure to use only genuine Hitachi parts. Failure to do so may result in serious injury or death and/or machine breakdown.**
- **Failure to use recommended fuel, lubricants, and genuine Hitachi parts will result in loss of Hitachi product warranty.**
- **Protect electrical parts from water and steam.**
- **Never disassemble electrical components such as main controller, sensors, etc.**
- **Never adjust parts of engine fuel system or 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 sliding problem at lubricated contacts in the injector. It also affects the engine and muffler filter parts, leading to malfunction.**
- **Use Hitachi genuine high performance filter.**



SA-005

## MAINTENANCE

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- **Body Information Controller**

This machine provides a body information controller that stores machine operation information for preventive maintenance.

When maintaining the machine, our authorized service man may download the stored information.

Consult with your nearest Hitachi dealer for detailed function of this device.

- **Communication Terminal Operation**

It is not necessary to check or operate the communication terminal however if any abnormality is found, consult your nearest Hitachi dealer.

Before installing any covering attachment such as a head guard, consult your nearest Hitachi dealer.

Never spray water on the communication terminal and the wirings.

- **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.**

## MAINTENANCE

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### **Check the Hour Meter Regularly**

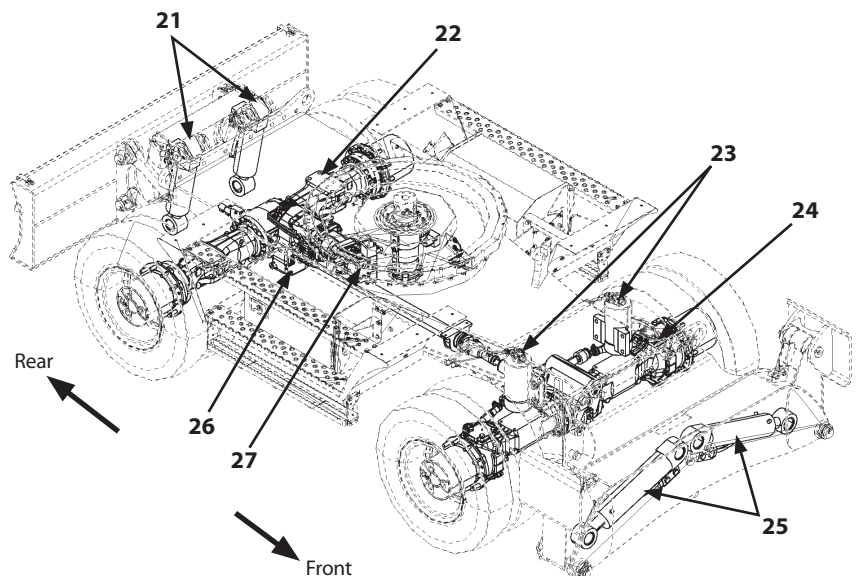
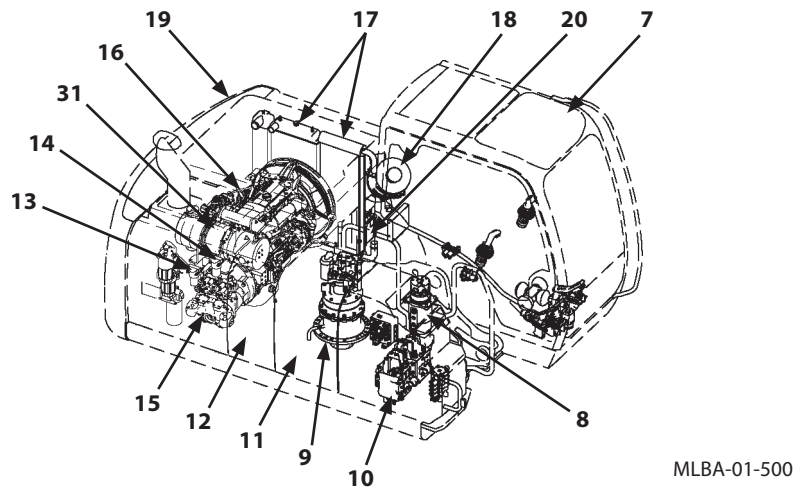
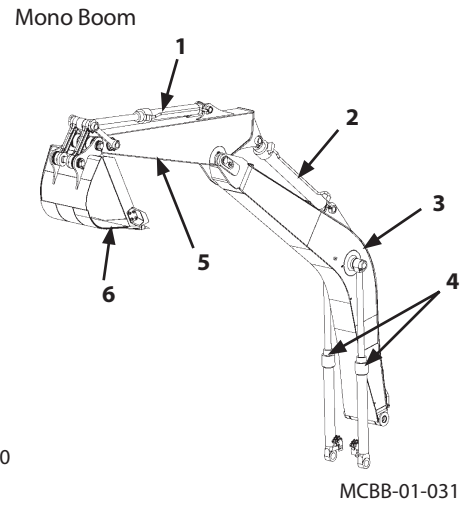
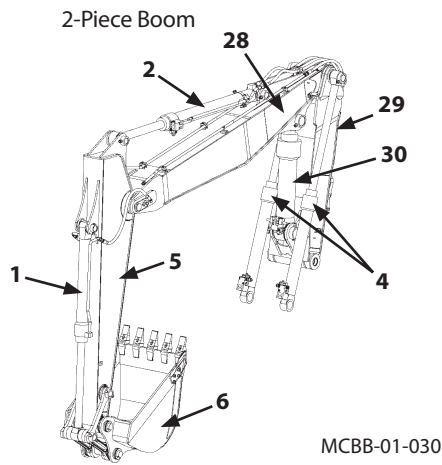
Refer to the List of Check and Maintenance for information about lubricants, check and adjustment intervals. The maintenance guide table is affixed in the back of the tool box cover. Refer to page 7-6.


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

- 1- Bucket Cylinder
- 2- Arm Cylinder
- 3- Boom
- 4- Boom Cylinder
- 5- Arm
- 6- Bucket
- 7- Cab
- 8- Center Joint
- 9- Swing Device
- 10- Control Valve
- 11- Fuel Tank
- 12- Hydraulic Oil Tank
- 13- Steering Filter
- 14- Pilot/Brake Filter
- 15- Hydraulic Pump
- 16- Engine
- 17- Radiator and Oil Cooler
- 18- Air Cleaner
- 19- Counterweight
- 20- Battery
- 21- Blade Cylinder (Optional)
- 22- Rear Axle
- 23- Axle Cylinder
- 24- Front Axle
- 25- Outrigger Cylinder (Optional)
- 26- Transmission
- 27- Travel Motor
- 28- Second Boom
- 29- First Boom
- 30- Positioning Cylinder
- 31- Muffler (Muffler Filter)












 **NOTE:** The typical machine model is illustrated to the right. Some portions may differ on other models.

## MAINTENANCE

### Maintenance Guide Table

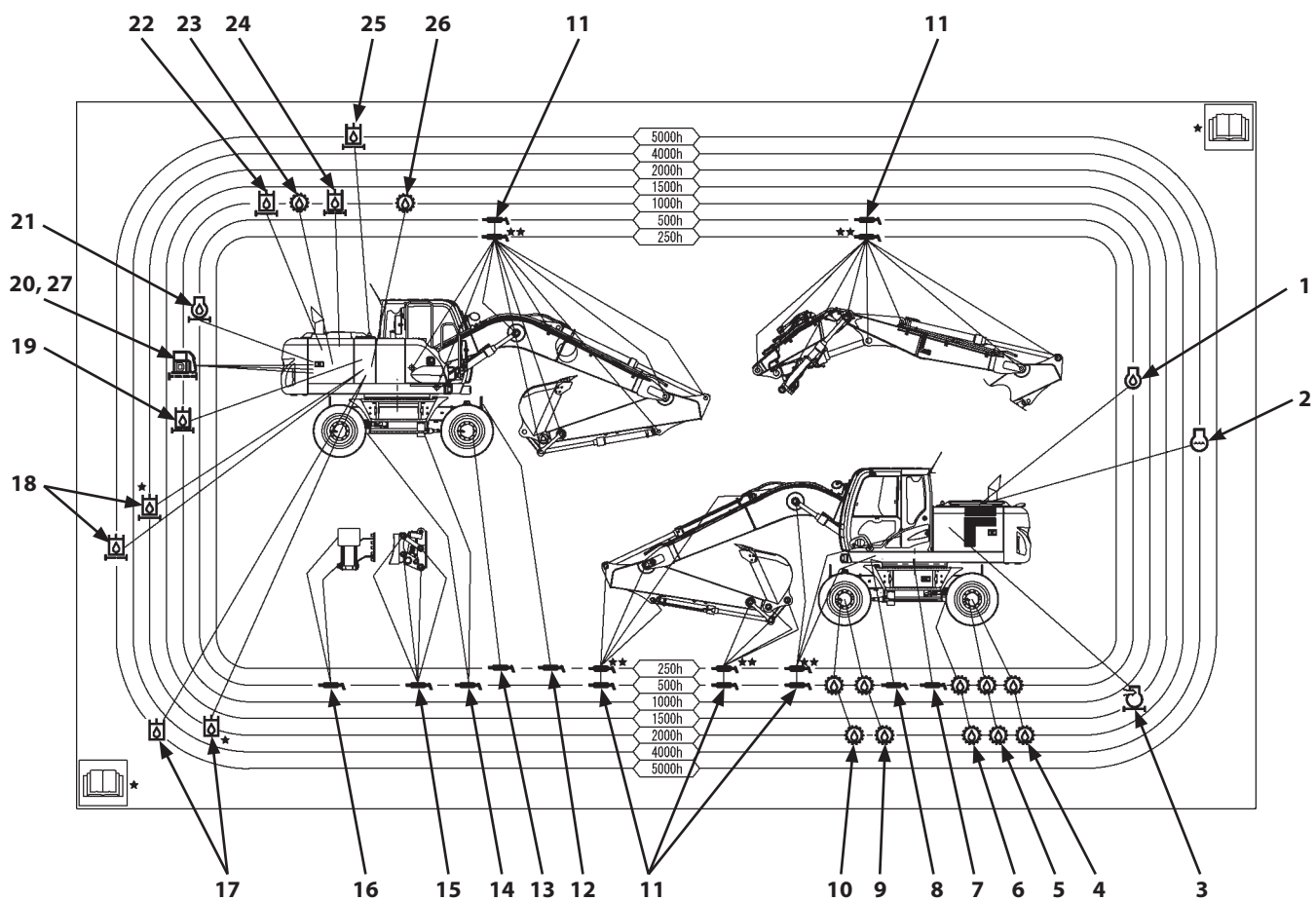
The maintenance guide table is affixed to the reverse side of the tool box cover. Lubricate and/or service the parts at the intervals as instructed in the table so that all necessary maintenance can be performed regularly.

- **Symbol Marks**  
The following marks are used in the maintenance guide table.

	Grease (Front Joint Pin, Swing Bearing, Swing Gear)		Hydraulic oil filters (Pilot/Brake Filter, Steering Filter, Hydraulic Oil Tank Filter, Suction Filter)
	Gear Oil (Pump Transmission, Transmission, Axle, Swing Reduction Device)		Air Cleaner Element
	Engine Oil		Coolant (Long-Life Coolant)
	Engine Oil Filter		Fuel Filter (Fuel Main Filter, Pre-Filter) Fuel Solenoid Pump Strainer
	Hydraulic Oil		

# MAINTENANCE

• Maintenance Guide Table



MLBA-07-091

Item	Page	Item	Page
1 Engine Oil	7-31	15 Grease (Blade)	13-8
2 Coolant (Long-Life Coolant)	7-94	16 Grease (Outrigger)	13-8
3 Air Cleaner Element	7-87	17 Hydraulic Oil	7-52
4 Gear Oil (Rear Axle)	7-38	18 Hydraulic Oil Filter (Suction)	7-52
5 Gear Oil (Rear Hub Reduction)	7-40	19 Hydraulic Oil Filter (Full Flow)	7-57
6 Gear Oil (Transmission)	7-36	20 Fuel Filter	7-80
7 Grease (Swing Gear)	7-24	21 Engine Oil Filter	7-31
8 Grease (Swing Bearing)	7-25	22 Hydraulic Oil Filter (Pilot, Brake)	7-62
9 Gear Oil (Front Axle)	7-37	23 Gear Oil (Pump Transmission)	7-34
10 Gear Oil (Front Hub Reduction)	7-40	24 Hydraulic Oil Filter (Steering)	7-62
11 Greas (Front Joint Pin)	7-23	25 Hydraulic Oil Filter (Air Breather)	7-64
12 Greas (Equalizer Pin)	7-28	26 Gear Oil (Swing Device)	7-35
13 Grease (Front Axle)	7-27	27 Fuel Solenoid Pump Strainer	7-82
14 Grease (Propel Shaft)	7-27		



## MAINTENANCE

### Preparations for Inspection and Maintenance

Except in special cases, park the machine by following the procedure before servicing the machine.

1. Park the machine on a level surface.
2. Lower the bucket to the ground.
3. Place F-N-R switch (2) to N (neutral).
4. Turn brake switch (1) on steering column console to the P (parking) position.
5. Pull pilot control shut-off lever (3) to the LOCK position.
6. Turn the auto-idle switch OFF.

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

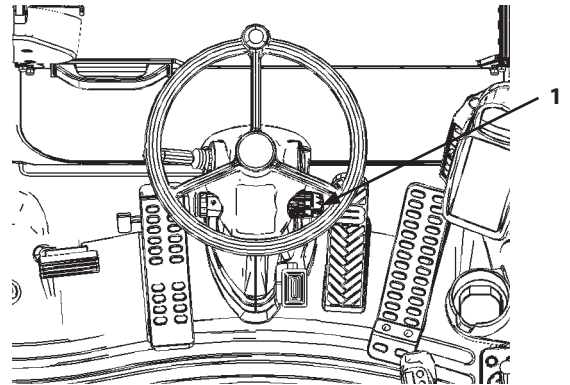
7. Turn engine control dial to the slow idle position and run the engine for 5 minutes to cool the engine.
8. Turn the key switch OFF to stop the engine. Remove the key.
9. Secure the wheels with wedges.
10. After putting tag (4) for "Under Serving" on the easy-to-see cab door or control lever (3), begin the work.

**⚠ WARNING: Never attempt to maintain the machine when the engine is running in order to prevent the accident. If maintenance work while engine running is unavoidable, strictly comply with the following items.**

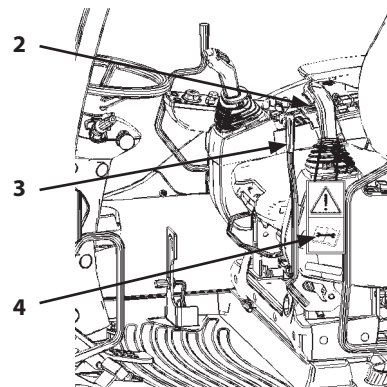
- One person should take the operator's seat to be ready to stop the engine any time while communicating with other workers.
- When working around moving parts is unavoidable, pay special attention to ensure that hands, feet, and clothing do not become entangled.
- If parts or tools are dropped or inserted into the fan or the belt, they may fly off or be cut off. Do not drop or insert parts and tools into the moving parts.
- Move pilot control shut-off lever (3) 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 evacuate to safer place.



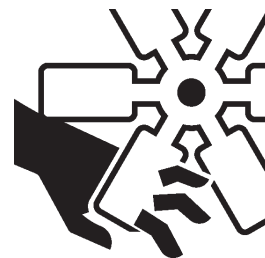
MLBA-04-009



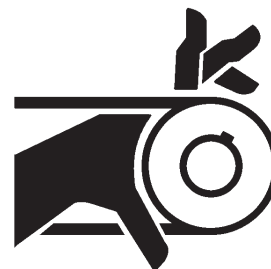
MLBA-01-507



MLBA-07-087



SA-2294



SA-026

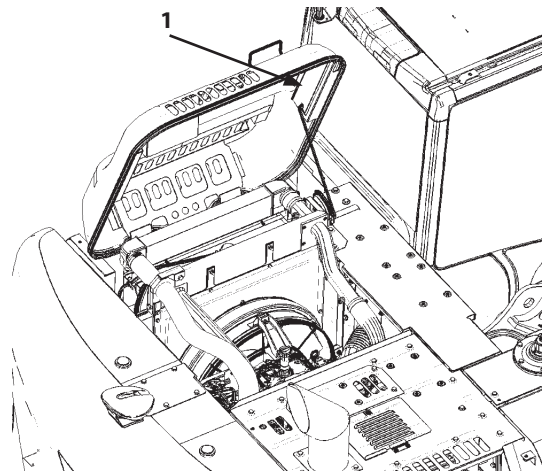
## MAINTENANCE

### Hood and Access Covers

ZX140W-5B

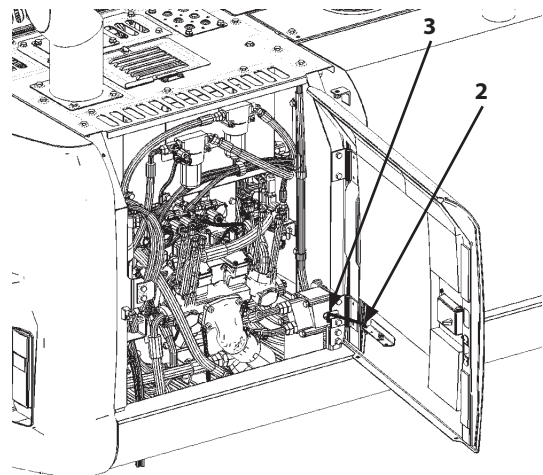
**⚠ WARNING:**

- Do not keep the hood and access covers open when the machine is parked on a slope, or while the wind is blowing hard. The hood or access covers may close accidentally, possibly resulting in personal injury.
- When opening or closing the hood and access covers, take extra care not to catch fingers between the base machine and the hood or access covers.
- Holding the handle on the access cover, raise the cover until the cover is secured with catch (1).
- After opening the right and/or left access cover, be sure to insert rod (2) into cover lock hole (3) to hold the cover.



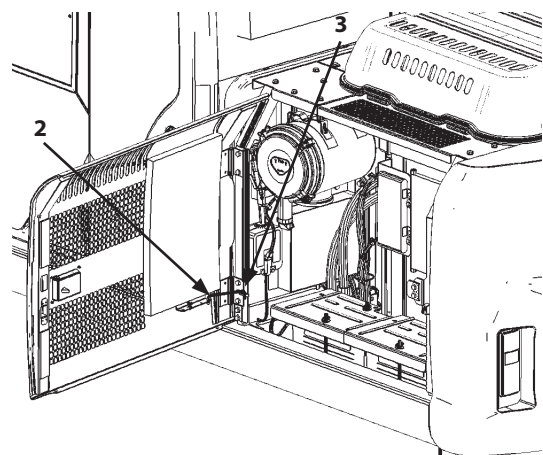
Engine Cover

MLBA-07-002



Right Cover

MLBA-07-004



Left Cover

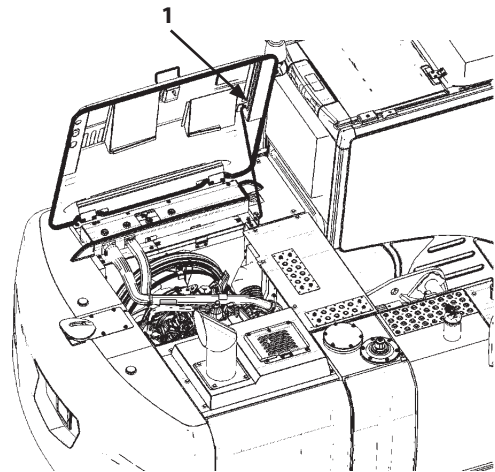
MLBA-07-003

## MAINTENANCE

### ZX170W-5B/190W-5B

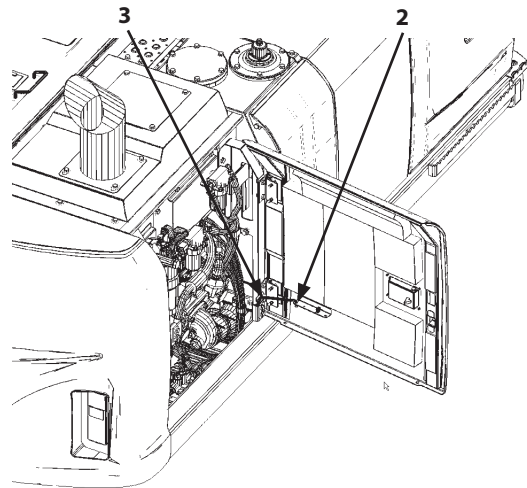
#### **⚠ WARNING:**

- Do not keep the hood and access covers open when the machine is parked on a slope, or while the wind is blowing hard. The hood or access covers may close accidentally, possibly resulting in personal injury.
- When opening or closing the hood and access covers, take extra care not to catch fingers between the base machine and the hood or access covers.
- Holding the handle on the access cover, raise the cover until the cover is secured with catch (1).
- After opening the right and/or left access cover, be sure to insert rod (2) into cover lock hole (3) to hold the cover.



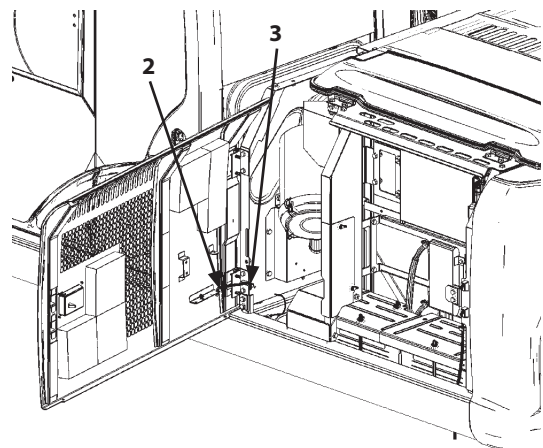
Engine Cover

MLBA-07-005



Right Cover

MLBA-07-006



Left Cover

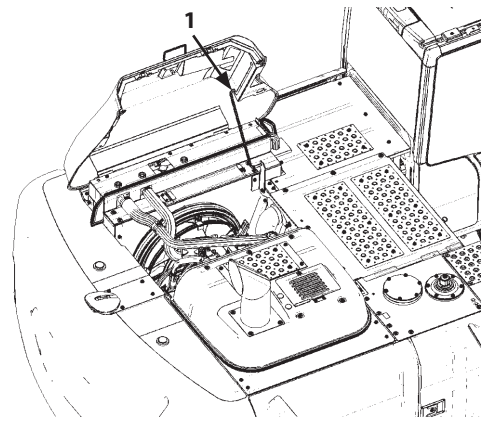
MLBA-07-007

# MAINTENANCE

## ZX220W-5B class

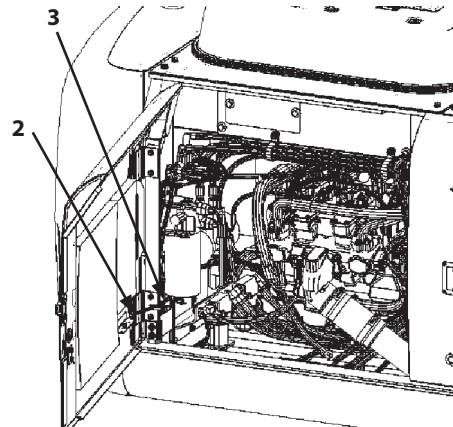
### WARNING:

- Do not keep the hood and access covers open when the machine is parked on a slope, or while the wind is blowing hard. The hood or access covers may close accidentally, possibly resulting in personal injury.
- When opening or closing the hood and access covers, take extra care not to catch fingers between the base machine and the hood or access covers.
- Holding the handle on the access cover, raise the cover until the cover is secured with catch (1).
- After opening the right and/or left access cover, be sure to insert rod (2) into cover lock hole (3) to hold the cover.
- When opening the rear right and left covers, open the front right and left covers first. Then, pull to open the rear right and left covers as illustrated.



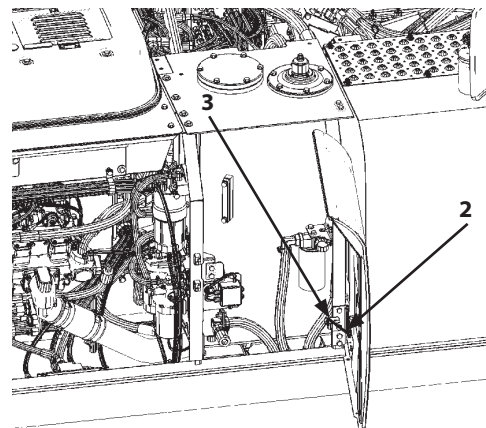
Engine Cover

MLBA-07-008



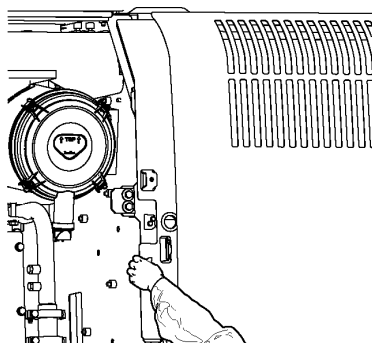
Rear Right Cover

MLBA-07-088



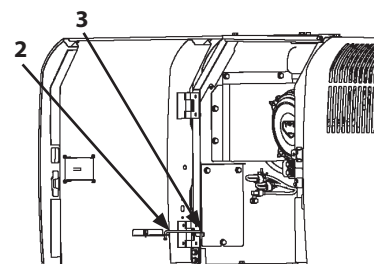
Front Right Cover

MLBA-07-010



Rear Left Cover

MDAA-07-020



Front Left Cover

MDAA-07-019

# MAINTENANCE

## Maintenance Guide

### A. Greasing

Parts				Quantity	Interval (hours)							Page	
					8	50	100	250	500	1000	2000		
1.	Front Joint Pins	Bucket and Link Pins	ZX140W-5B	8	★				★★				7-23
			ZX170W-5B, 190W-5B, 220W-5B	9	★				★★				
	Others	Monoblock Boom	11	★				★★				7-23	
		2-piece Boom	15	★				★★					
2.	Swing Bearing			2								7-25	
3.	Swing Internal Gear			1					★★★			7-26	
4.	Front Axle			4								7-27	
5.	Propel Shaft (Front and Rear)			3								7-27	
6.	Equalizer Pin			1								7-28	

★ : In case excavations are performed in water, grease the pin after operation is complete.

★★ : 250 hours for only first time.

★★★ : Check and add grease if necessary.

#### IMPORTANT:

- Grease bucket and link pivots every day until break-in operation (50 hours) is complete.
- When a bucket which does not have clearance adjustment mechanism such as slope-finishing bucket, or a genuine Hitachi hoe bucket before EX-5 model, or an attachment other than genuine Hitachi bucket is used, grease two pins every 250 hours.

### B. Engine

Parts				Quantity	Interval (hours)							Page	
					8	50	100	250	500	1000	2000		
1.	Engine Oil	Check Oil Level		1									7-29
2.	Engine Oil	Change	ZX140-5B	16 L (4.2 US gal)									7-31
			ZX170-5B, 190W-5B, 220W-5B	23 L (6.1 US gal)									
3.	Engine Oil Filter	Replace		1								7-31	
4.	Check and Clean Around Engine			–					As required			7-33	

## MAINTENANCE

### C. Transmission

Parts		Quantity	Interval (hours)								Page	
			8	50	100	250	500	800	1000	2000		
1. Pump Transmission	Oil Level Check	1									7-34	
	Change	1.0 L (1.1 US qt)									7-34	
	Clean Air Breather	1									7-34	
2. Swing Reduction Gear	Oil Level Check	1									7-35	
	Change	ZX140W-5B	3.2 L (0.85 US gal)								7-35	
		ZX170W-5B, 190W-5B, 220W-5B	6.2 L (1.6 US gal)								7-35	
3. Transmission	Oil Level Check	1	Every week								7-36	
	Change	2.5 L (2.7 US qt)					★				7-36	
4. Front Axle	Oil Level Check	1	Every one month								7-37	
	Change	ZX140W-5B	9.1 L (2.4 US gal)					★			7-37	
		ZX170W-5B, 190W-5B	STD.	9.5 L (2.5 US gal)					★			7-37
			WIDE	10.6 L (2.8 US gal)					★			7-37
		ZX220W-5B	11.0 L (2.9 US gal)					★			7-37	
5. Rear Axle	Oil Level Check	1	Every one month								7-38	
	Change	ZX140W-5B	11.8 L (3.1 US gal)					★			7-38	
		ZX170W-5B, 190W-5B	STD.	14.0 L (3.7 US gal)					★			7-38
			WIDE	15.5 L (4.1 US gal)					★			7-38
		ZX220W-5B	14.5 L (3.8 US gal)					★			7-38	
6. Front and Rear Hub Reduction Device	Oil Level Check	4	Every one month								7-39	
	Change	Front	2.5 Lx2 (2.7 US qt x2)					★			7-40	
		Rear	2.5 Lx2 (2.7 US qt x2)					★			7-40	

 **NOTE:** ★ Maintenance required only during first time check.

## MAINTENANCE

### D. Brake (Traveling)

Parts	Quantity	Interval (hours)							Page
		8	50	100	250	500	1000	2000	
1. Check Brake Accumulator	–								7-43
2. Check Service Brake and Parking Brake Force	–								7-44
3. Check and Clean Brake Oil Pipings	–								7-44

### E. Tire

Parts	Quantity	Interval (hours)							Page
		8	50	100	250	500	1000	2000	
1. Tire	Inspection	8							7-46
	Replacement	–	As required						7-46

### F. Hydraulic System

Parts	Quantity	Interval (hours)										Page	
		8	50	100	250	300	1000	1500	2000	2500	5000		
1. Check Hydraulic Oil Level	1												7-51
2. Change Hydraulic Oil	ZX140W-5B	135 L (35.7 US gal)											7-52
	ZX170W-5B, 190W-5B	170 L (44.9 US gal)								★		★	
	ZX220W-5B	200 L (52.8 US gal)											
3. Clean Suction Filter	1	Each time when hydraulic oil is changed										7-52	
4. Replace Full-Flow Element	1						★						7-57
5. Replace Pilot/Brake and Steering Oil Filter Elements	2												7-62
6. Replace Air Breather Element	1												7-64
7. Check Hoses and Lines	for leaks, loose												7-66
	for cracks, bend, etc.	–											7-66

★ : Changing interval differs according to the brand of hydraulic oil used, kind of filter element or average attachment operating availability.

Refer to the "Change Hydraulic Oil and Replace Full-Flow Filter Element". See recommended oil chart.

## MAINTENANCE

### G. Fuel System

Parts		Quantity	Interval (hours)						Page	
			8	50	100	250	500	1000		2000
1.	Check Fuel Level	1								7-71
2.	Drain Fuel Tank Sump	1								7-73
3.	Drain Fuel Filter	2								7-74
4.	Replace Fuel Main Filter Element	1								7-78
5.	Replace Fuel Pre-Filter Element	1								7-80
6.	Clean Fuel Solenoid Pump Strainer	1								7-82
7.	Check Water Separator (Optional)	Drain water	1							7-84
		Replace element	1							7-85
8.	Check Fuel Hoses	for leaks, cracks	–							7-86
		for cracks, bend, etc.	–							7-86

### H. Air Cleaner

Parts		Quantity	Interval (hours)						Page	
			8	50	100	250	500	1000		2000
1.	Air Cleaner Outer Element	Clean	1	(or when indicator lit)						7-87
		Replace	1	After cleaning 6 times or 1 year						7-87
2.	Air Cleaner Inner Element (Optional)	Replace	1	When outer element is replaced						7-87



# MAINTENANCE

## I. Cooling System

Parts		Quantity	Interval (hours)						Page	
			8	50	100	250	500	1000		2000
1.	Check Coolant Level	1								7-91
2.	Check and Adjust Fan Belt Tension	1								7-92
3.	Change Coolant	ZX140W-5B	20L (5.3 US gal)	Twice a year *						7-94
		ZX170W-5B, 190W-5B, 220W-5B	25L (6.6 US gal)							
4.	Clean Radiator, Oil Cooler and Inter Cooler Core	Outside	1					★		7-96
		Inside	1	Once a year						7-96
5.	Clean Oil Cooler, Radiator and Inter Cooler Front Screen	1						★		7-98
6.	Clean Air Conditioner Condenser	1						★		7-99
7.	Clean Fuel Oil Cooler	1								7-99

★: Shorten the maintenance interval when the machine is operated in dusty areas.

\*: When genuine Hitachi Long-Life Coolant is used, change every two years or 4000 operating hours, whichever comes first.

### IMPORTANT:

- **Use soft water as a coolant. Do not use strong acid or alkaline water. Use the coolant with genuine Hitachi Long-Life Coolant (LLC) mixed by 30 to 50 %. If a coolant mixed with less than 30 % of Hitachi Long-Life Coolant is used, service life of the cooling parts may be shortened due to damage by freezing or corrosion of coolant system parts.**
- **If mineral-rich water is used for coolant, water stain or scale may build up inside the engine or radiator, causing overheat due to deterioration of coolant performance.**

## J. Electrical System

Parts		Quantity	Interval (hours)						Page	
			8	50	100	250	500	1000		2000
1.	Battery	Check Electrolyte Level	2	Every month						7-103
		Check electrolyte specific gravity	2	Every month						7-105
2.	Replacing Fuses	Replace	–	As required						7-107
3.	Check Monitor Functions and All Other Instrument Operation	–								7-109
4.	Check Work Lights	–								7-109
5.	Check Horn	–								7-109

## MAINTENANCE

### K. Miscellaneous

Parts		Quantity	Interval (hours)							Page	
			8	50	100	250	500	1000	2000		4500
1.	Check and Replace Bucket Teeth	–									7-110
2.	Change Bucket	–	As required							7-112	
3.	Convert Bucket Connection Into Face Shovel	–	As required							7-113	
4.	Adjust Bucket Linkage	1	As required							7-114	
5.	Check and Replace Seat Belt	1		Every 3 years						7-115	
6.	Check Windshield Fluid Level	1	As required							7-116	
7.	Check Play Amount in Steering Wheel Stroke	–									7-117
8.	Check Rearview Mirror and Inside Rearview Mirror	–									7-117
9.	Clean and Replace Air Conditioner Filter	Circulating Air Filter	Clean	1							7-118
			Replace	1	After cleaning 6 times or so						7-118
		Fresh Air Filter	Clean	1							7-118
			Replace	1	After cleaning 6 times or so						7-118
10.	Check Air Conditioner	–									7-120
11.	Clean Cab Floor	–	As required							7-122	
12.	Retighten Cylinder Head Bolt	–	*As required							7-123	
13.	Inspect and Adjust Valve Clearance	–						*			7-123
14.	Measure Engine Compression Pressure	–						*			7-123
15.	Check Starter and Alternator	–						*			7-123
16.	Check and Replace EGR Device	–	*As required							7-123	
17.	Check Gas Damper	–	*As required							7-124	
18.	Clean EGR Cooler	–								*	7-124
19.	Check Turbocharger	–								*	7-124
20.	Check and Clean Injector	–								*	7-124
21.	Tightening and Retightening Torque of Nuts and Bolts	–		★★							7-124

★★: Maintenance required only during first time check.

 NOTE: \* Contact your nearest Hitachi dealer for maintenance.

### L. Muffler Filter

Parts		Quantity	Interval (hours)							Page	
			8	50	100	250	500	1000	2000		4500
1.	Check and Clean Filter Element of Muffler Filter	1								*	7-139
2.	Check and Clean Muffler Filter	–	As required							7-139	

 NOTE: \* Contact your nearest Hitachi dealer for maintenance.


## 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.

These parts may cause serious safety/fire hazards due to deterioration, wear, or fatigue being attributed to material aging or repeated operation. 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. Consult your authorized dealer for correct replacement.

Periodic Replacement Parts		Replacement Intervals	
Engine	Fuel hose (Fuel tank, Filter to Engine)	Every 2 years	
	Fuel hose (Engine, Fuel cooler to Fuel tank)	Every 2 years	
	Oil filter hose (Engine to oil filter)	Every 2 years	
	Heater hose (Heater to engine)	Every 2 years	
	Differential pressure hose (Differential sensor to differential pipe)	Every 4500 hours	
Brakes	Upperstructure	Brake valve seals (Rubber parts)	Every 2 years
		Brake hose	Every 2 years
		Stop light switch	Every 2 years
	Undercarriage	Center joint seals (Rubber parts)	Every 2 years
		Brake hose	Every 2 years
Steering System	Steering hose	Every 2 years	
	Steering cylinder seals (Rubber parts)	Every 2 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
		Pump delivery hose	Every 2 years or 4000 hours whichever comes first
		Swing hose	Every 2 years or 4000 hours whichever comes first
		Travel high pressure hose	Every 2 years or 4000 hours whichever comes first
		Tail Hose	Every 2 years or 4000 hours whichever comes first
		Attachment Line Hose	Every 2 years or 4000 hours whichever comes first
	Working Device	Boom cylinder line hose	Every 2 years or 4000 hours whichever comes first
		Arm cylinder line hose	Every 2 years or 4000 hours whichever comes first
		Bucket cylinder line hose	Every 2 years or 4000 hours whichever comes first
		Positioning cylinder line hose	Every 2 years or 4000 hours whichever comes first
Pilot hose	Every 2 years or 4000 hours whichever comes first		
Seat Belt		Every 3 years	
Clear hatch (If equipped)		Every 5 years	

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

#### IMPORTANT:

- **Replace the clear hatch with a new one every 5 years even if undamaged. In case it was remarkably damaged or has received severe shock loads, replace it even if it has been not in use for 5 years.**
- **When cleaning the clear hatch, use a neutral detergent. If acidic or alkaline detergent is used, the clear hatch may become discolored or crack.**
- **Keep organic solvent away from the clear hatch. Failure to do so may cause the clear hatch to become discolored or crack.**

## MAINTENANCE

### Kind of Oils

#### Brand Names of Recommended Grease

Kind of Grease	Lithium Grease
Application	Front Attachment Joint Pins, Swing Bearing, Swing Gear
Air Temp.	-20 to 40 °C (-4 to 104 °F)
Manufacturer	
Hitachi	Hitachi Grease SEP2 Hitachi Grease EP-2
Idemitsu Kosan	Daphne Eponex Grease EP No.2 Daphne Eponex Grease No.2
JX Nippon Oil & Energy Corporation	EPINOC GREASE AP(N)2 LISONIX GREASE EP2
Shell	Alvania Grease EP2 (Shell Gadus S2 V220 2) Cartridge Grease EP2
ExxonMobil	Mobilux EP2
KIGNAS Oil	KIGNAS MP GREASE No.2
COSMO Oil	COSMO GREASE DYNAMAX EP2
BP	Energrease LS-EP2
Castrol	Spheerol EPL2
Chevron	Multifax EP2

#### Recommended Engine Oil

**IMPORTANT: Use only genuine Hitachi engine oil as shown below or engine oil equivalent to DH-2 specified in JASO. Failure to do so may deteriorate the engine and muffler filter performance and/or shorten their service life. Please be noted that all engine failures caused by using engine oil other than specified are excluded from Hitachi Warranty Policy. Consult your nearest Hitachi dealer for the unclear points.**

ZX140W-5B

#### Brand Names of Recommended Engine Oil

Kind of Oil	Engine Oil	
Application	Engine Crank Case	
Air Temp.	-20 to 40 °C (-4 to 104 °F)	
Manufacturer		JASO
Hitachi	Super Wide DH-2 10W40	DH-2

ZX170W-5B, 190W-5B, 220W-5B

#### Brand Names of Recommended Engine Oil

Kind of Oil	Engine Oil		
Application	Engine Crank Case		
Air Temp.	-20 to 40 °C (-4 to 104 °F)	-15 to 40 °C (5 to 104 °F)	
Manufacturer			JASO
Hitachi	Super Wide DH-2 10W30	Super Wide DH-2 15W40	DH-2

## MAINTENANCE


### Brand Names of Recommended Pump Transmission and Transmission oil

Application	Swing Reduction Gear	Pump Transmission, Transmission
Kind of Oil Air Temp.	Gear Oil	Engine Oil
Manufacturer	-20 to 40 °C (-4 to 104 °F)	-20 to 40 °C (-4 to 104 °F)
Hitachi	Hitachi Gear Oil GL-4 90	Super wide DH-1 15W40 Super wide DH-2 15W40
Idemitsu Kosan	Apolloil Gear Oil HE90	Apolloil Super wide 15W-40
JX Nippon Oil & Energy Corporation	HYPOID GEAR 90 GEAR4 90	DIESEL CF/DH-1 15W-40 DIESEL CF4/DH-1 15W-40H
Shell	Spirax S2 G 90	Rimula D Multi 15W-40
ExxonMobil	Mobilube GX80W-90	Delvac Super DH-2 15W-40
BP	Energear EP 80W-90	Vanellus C3 Multigrade 15W-30
Castrol	Manual GL-4 80W-90	
Chevron	Thuban SAE 90	DELO 400 Multigrade 15W-30
Remarks	API GL4 Class	API CD Class, JASO DH-1, JASO DH-2

## MAINTENANCE

### The Brand Names of Recommended Axle Oil

Application	Front and Rear Axle, Hub Reduction Device
Kind of oil	Gear oil
Air Temp.	-20 to 40 °C (-4 to 104 °F)
Manufacturer	
SHELL INTERNATIONAL	-
FUCHS PETROLUB AG	TITAN GEAR LS 90
CASTROL INTERNATIONAL	HYPOY LS 90
MOBIL OIL	-
ARAL AG	GETRIEBEÖL HYP LS 85W-90
KROON-OIL	GEAR OIL LS 80W-90
PAKELO MOTOR OIL	UNIVERSAL GEAR EP/LS SAE 80W/90
PANOLIN AG	SUPER DUTY LS 90
S.A.E.L.,	GULF LS REAR AXLE OIL 80W-90
TOTAL LUBRIFIANTS	FINA TRANSFLUID LS 80W-90

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

## MAINTENANCE

### Brand Names of Recommended Hydraulic Oil

Kind of Lubricant	Hydraulic Oil	
Where to be applied	Hydraulic System	
Change Interval	5000 hours	2000 hours
Environmental Temp.	-20 to 40 °C (-4 to 104 °F)	
Manufacturer		
Hitachi	Super EX 46HN	
Idemitsu Kosan	Super Hydro 46X	
JX Nippon Oil & Energy Corporation	SUPER HYRANDO WP46 HYDLUX 46H	
Shell	Tellus ST 46 (Tellus S3 V 46)	
ExxonMobil	Mobil DTE 10 Excel 46	
BP	Bartran HV46	
Castrol	Hyspin HVI 46	
Chevron	RANDO Ashless 46HD	

 **NOTE:** Consult the nearest Hitachi dealer for the conditions of use and hydraulic oil other than those described above.

## MAINTENANCE

### Recommended Oil Viscosity

Application	Kind of Oil	Air Temperature (°C)								
		-30	-20	-10	0	10	20	30		40
Engine Crank Case	Engine Oil									Super Wide DH-2 10W30
										Super Wide DH-2 10W40
										Super Wide DH-2 15W40
Pump Transmission Transmission	Engine Oil									API CD Class
Swing Reduction Device	Gear Oil									Hitachi Gear Oil GL-4 90
Axle Hub Reduction	Gear Oil									API GL-4
Hydraulic System	Hydraulic Oil									Super EX 46HN
Fuel Tank	Diesel Fuel									ASTM Grade No.2-DS15 ASTM Grade No.2-DS500
										ASTM Grade No.1-DS15 ASTM Grade No.1-DS500
Grease fitting	Lithium Grease									SEP Grease
Radiator	Coolant									Genuine Hitachi LLC (Long-Life Coolant)

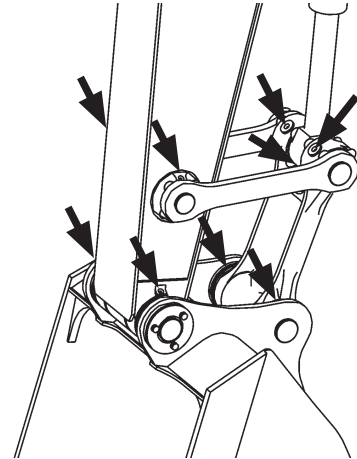


# MAINTENANCE

## A. Greasing

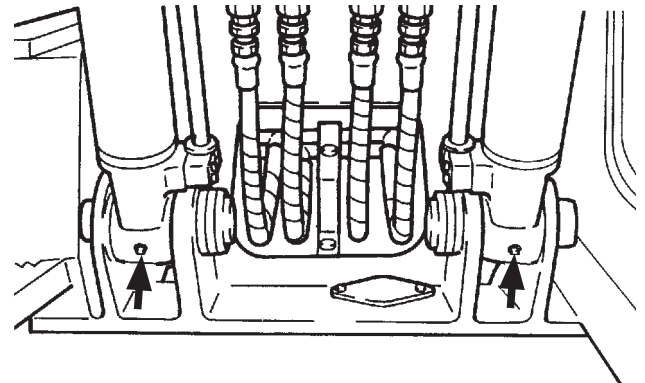
### 1 Front Joint Pins --- 500 hours

Lubricate all fittings shown in the figure.



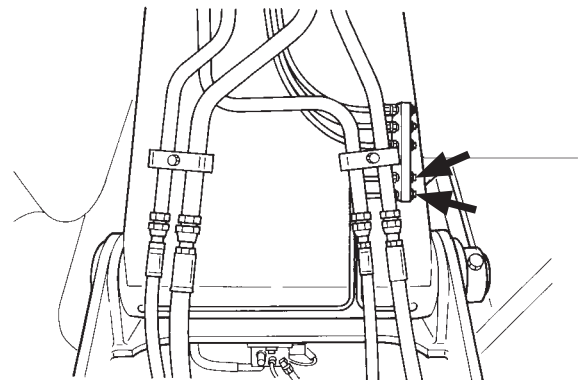
M178-07-007

- Boom Cylinder Bottom Side



M104-07-002

- Boom Foot

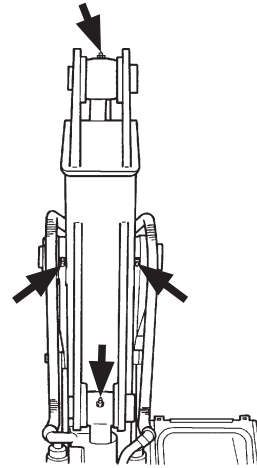


M157-07-155

## MAINTENANCE

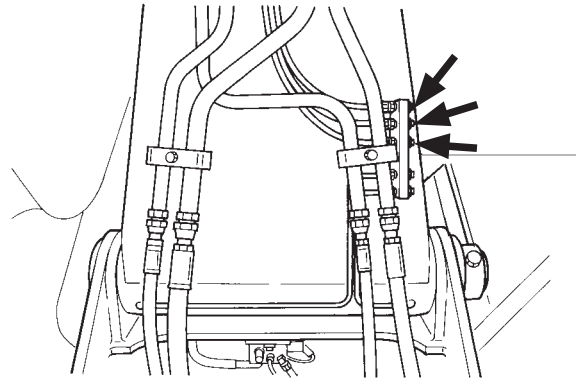
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- Boom and Arm Joint Pin, Arm Cylinder Rod Pin and Bucket Cylinder Bottom Pin.



M157-07-157

- Boom Cylinder Rod Pins and Arm Cylinder Bottom Pin.



M157-07-155

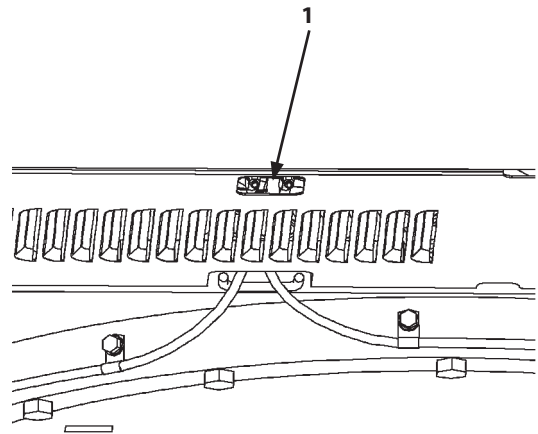
## MAINTENANCE

### 2 Swing Bearing --- every 500 hours

**CAUTION:** Lubricating both the swing bearing and gear and rotating the upperstructure must be done by one person. Before you lubricate the swing bearing, clear the area of all persons.

**Lower the bucket to the ground. Stop the engine. Pull the pilot control shut-off lever to the LOCK position.**

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Apply grease via two grease fittings (1).
3. Start the engine. Push the pilot control shut-off lever to the UNLOCK position.
4. Raise the bucket several inches off the ground and rotate the upperstructure 45 ° (1/8 turn).
5. Lower the bucket to the ground.
6. Repeat the procedure (Step 1 to 5) four times.
7. Apply grease to the swing bearing until grease can be seen escaping from the swing bearing seals.



MCGB-07-009

Model	Capacity
ZX140W-5B	0.25 L (0.27 US qt)
ZX170W-5B, 190W-5B,	0.30 L (0.32 US qt)
ZX220W-5B	0.35 L (0.37 US qt)

8. Take care not to supply excessive grease.

## MAINTENANCE

### 3 Swing Internal Gear --- every 500 hours

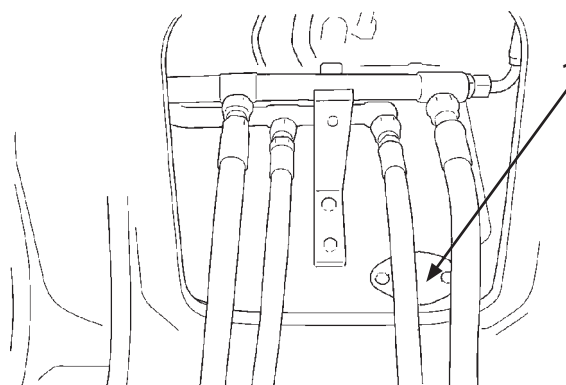
**CAUTION:** Lubricating both the swing bearing and gear and rotating the upperstructure must be done by one person. Before you lubricate the swing bearing, clear the area of all persons.

**Lower the bucket to the ground. Stop the engine. Pull the pilot control shut-off lever to the LOCK position.**

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove cover (1) from upperstructure. Check if the swing gear is properly lubricated by grease. Add approximately 0.5 kg of grease, if required.

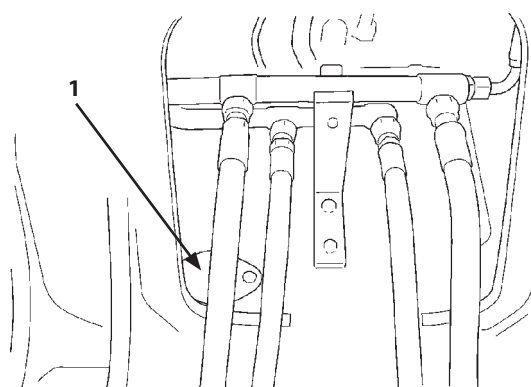
If the grease is contaminated, remove grease by opening cover (2) at the undercarriage side and replace with clean grease.

Model	Capacity
ZX140W-5B	14 L (3.7 US gal)
ZX170W-5B, 190W-5B, 220W-5B	17 L (4.5 US gal)



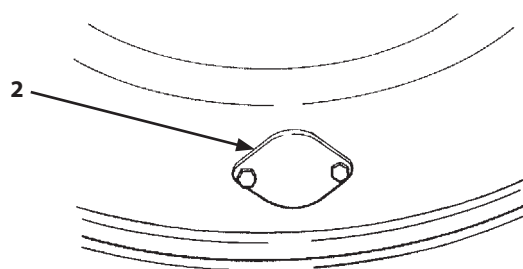
ZX140W-5B, 220W-5B

MCGB-07-010



ZX170W-5B, 190W-5B

M1U1-07-058

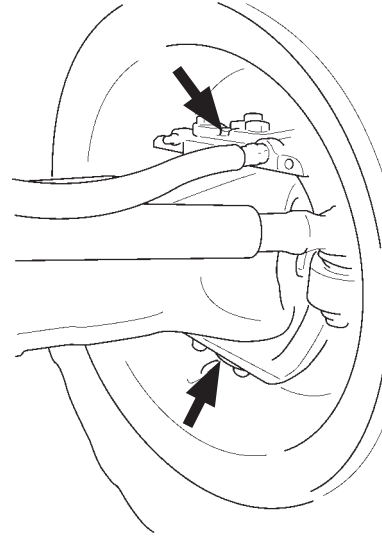


M157-07-161

## MAINTENANCE

### 4 Front Axle --- every 250 hours

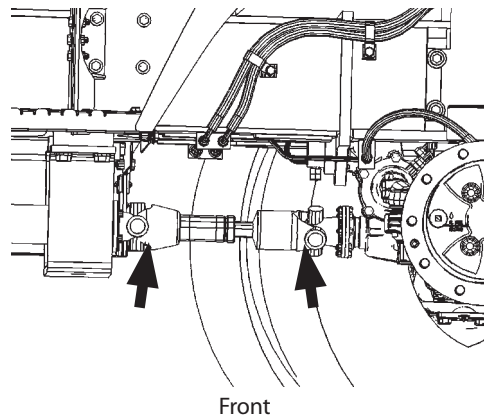
Grease all the fittings shown in the figure.  
(4 used, 2 fittings on both side)



MCBB-07-044

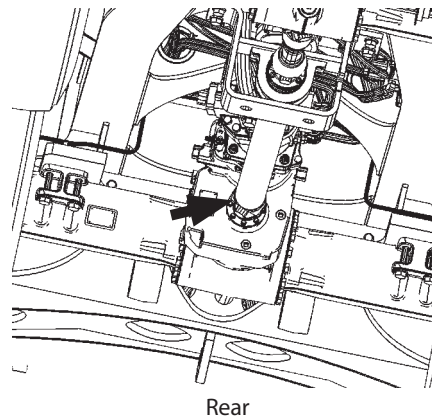
### 5 Propel Shaft (Front and Rear) --- every 500 hours

Grease all the fittings shown in the figure.



Front

MCGB-07-012



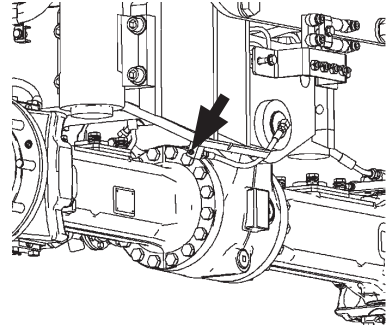
Rear

MCGB-07-014

# MAINTENANCE

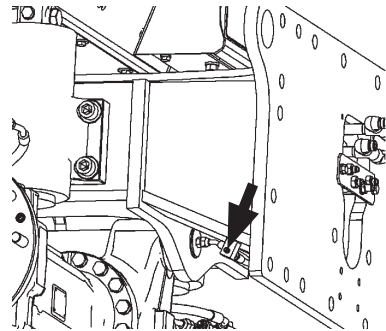
**6** Equalizer Pin  
--- every 250 hours

Grease all the fittings shown in the figure.



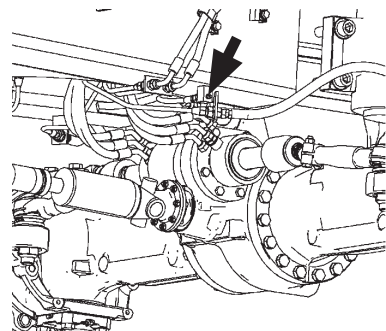
ZX140W-5B, 170W-5B

MCGB-07-016



ZX190W-5B

MCGB-07-017



ZX220W-5B

MCGB-07-018

# MAINTENANCE

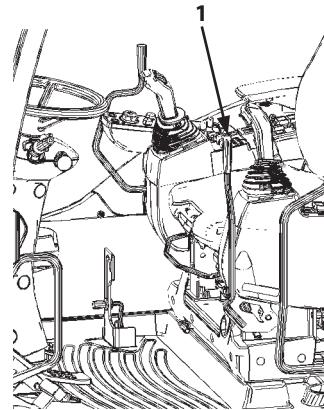
## B. Engine

### 1 Engine Oil Level --- check daily (Before starting the engine)

**IMPORTANT:** For most accurate readings, check the oil level every day before starting the machine. Be sure the machine is on a level surface.

1. Confirm that pilot control shut-off lever (1) is in the LOCK position.
2. Confirm that all control levers are placed in neutral.
3. Insert key switch (2). Turn it to ON position. Press and hold switch (3) with the engine stopped.


The engine oil indicator (4) must be displayed in green.

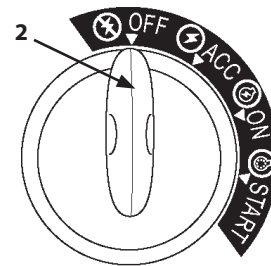


MLBA-01-517

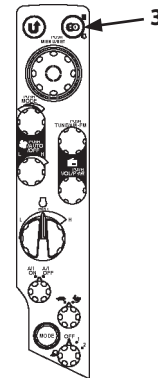
### IMPORTANT:

- Do not rely only on the monitor display for checking the machine conditions; visually check them yourself as required such as oil level.
- Never start the engine while checking the machine.
- Always check the machine on a firm, level surface.

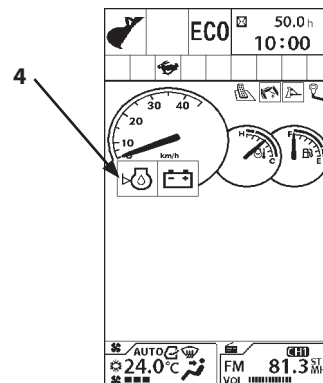
 **NOTE:** If the security function is enabled, a password is required. (Refer to page 1-48)



MDAA-01-313



MDAA-01-040



MLBA-01-041

## MAINTENANCE

### Visual Inspection

#### IMPORTANT:

- An incorrect engine oil level may cause trouble on the engine (The oil level should be between the upper and lower marks on oil level gauge (1)).
- Even if the engine oil level exceeds the upper limit, control the oil level to the proper quantity before starting the engine.

Check oil level before starting the engine.

Open the engine cover and pull out oil level gauge (1). Wipe oil level gauge (1) with cloth, re-insert it into the pipe to the end, and then pull it out again.

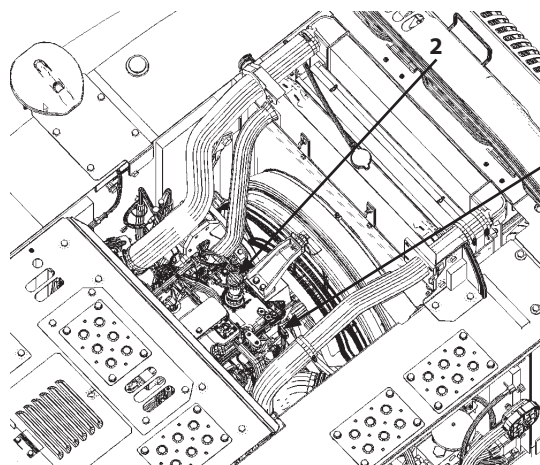
The oil level should be between the upper and lower marks on oil level gauge (1).

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 cap (4) of drain valve (3) at the bottom of the engine oil pan, and then open drain valve (3) by turning drainer (5) to drain oil.

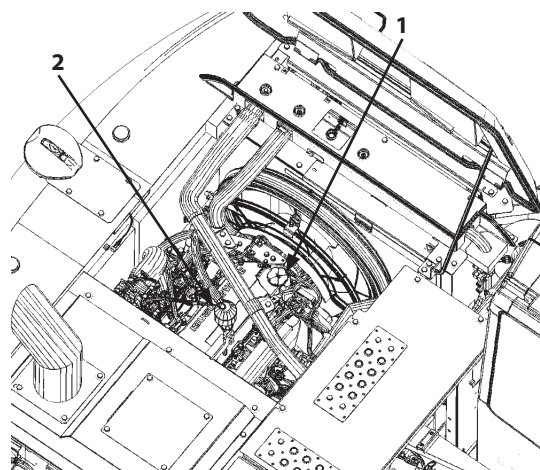
**CAUTION:** Do not spill oil while adding oil. Spilled oil may cause fires.

**IMPORTANT:** Turn drainer (5) slowly. Oil may exhaust in large quantity when turned at once.



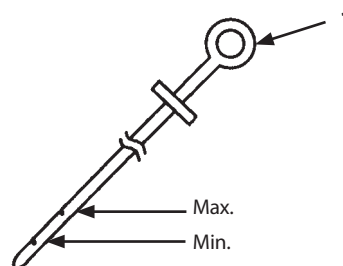
ZX140W-5B

MLBA-07-011

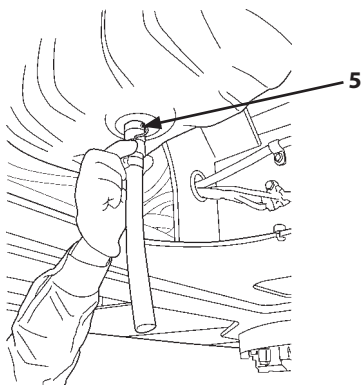


ZX170W-5B, 190W-5B, 220W-5B

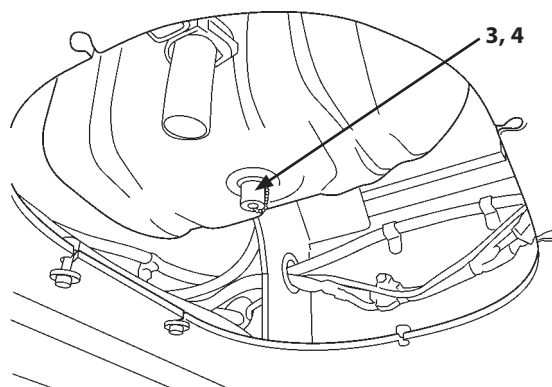
MLBA-07-012



M178-07-011



M1U1-07-046



M1U1-07-045



## MAINTENANCE

- 2** Change Engine Oil  
--- every 500 hours

- 3** Replace Engine Oil Filter  
--- every 500 hours

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

**! CAUTION: Engine may be hot just after operation. Wait for engine to cool before starting work.**

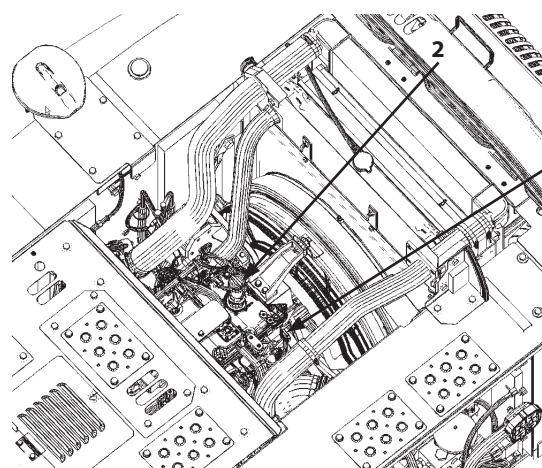
2. Remove oil filler cap (2).
3. Remove cap (4) from oil pan drain valve (3). Install drainer (5) to drain valve (3).

**IMPORTANT: Install drainer (5) to drain valve (3) slowly. Oil may exhaust in large quantities when suddenly tightened.**

4. Screw drainer (5) into drain valve (3). Drain valve (3) will be opened to drain oil.
5. Then, allow oil to drain through a clean cloth into a container.

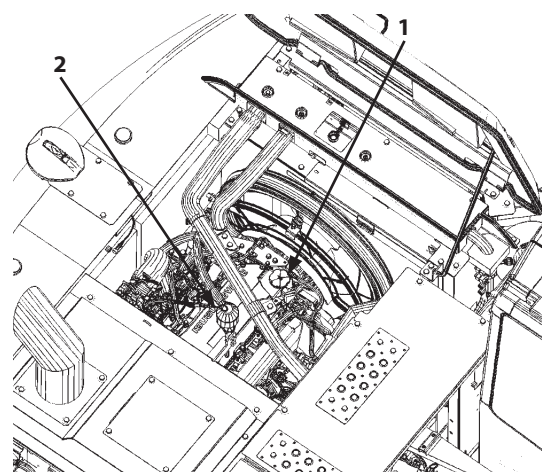
Model	Capacity
ZX140W-5B	16-liter (4.2 US gal)
ZX170W-5B, 190W-5B, 220W-5B	23-liter (6.1 US gal)

6. After all oil has been drained, inspect the cloth for any debris such as small pieces of metal.
7. Remove drainer (5). Install cap (4) to drain valve (3).



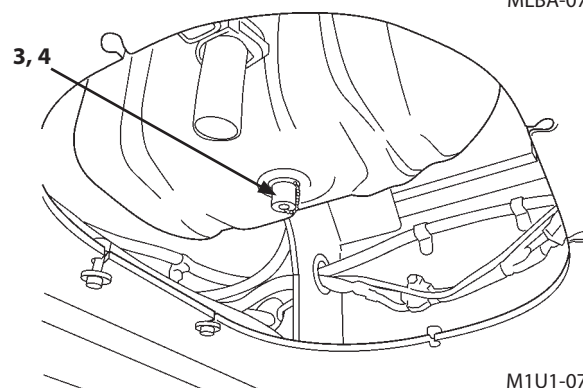
ZX140W-5B

MLBA-07-011

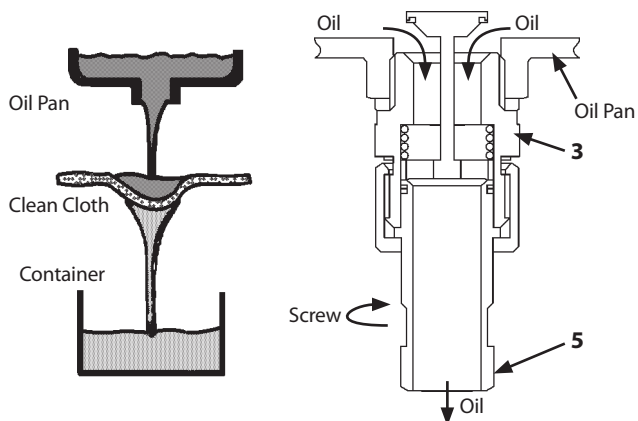


ZX170W-5B, 190W-5B, 220W-5B

MLBA-07-012

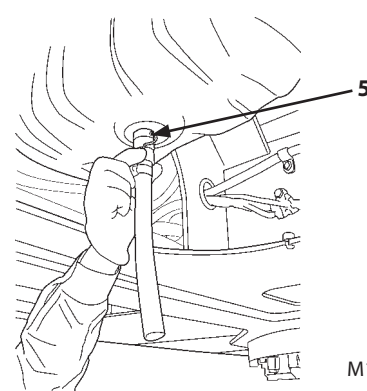


M1U1-07-045



M104-07-010

M1U1-07-002



M1U1-07-046

## MAINTENANCE

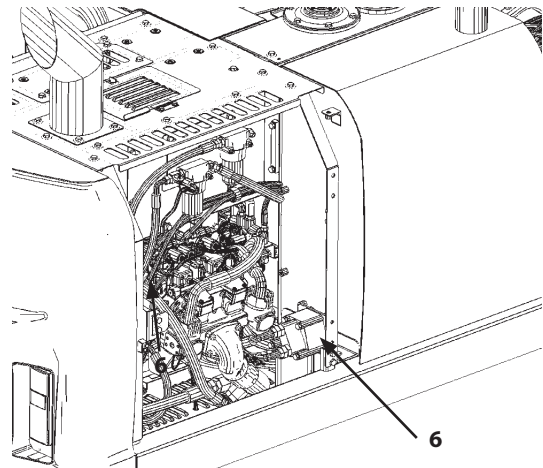
- Open the right access cover and secure the cover with rod.
- Remove the filter cartridges of engine oil filter cartridge (6) by turning it counterclockwise with the filter wrench.
- Clean the filter gasket contact area on the engine.

### IMPORTANT:

- When filling new oil, take care not to allow foreign matter to enter the engine.
  - Do not re-use cartridge element (6).
- Pour new oil into the new cartridge, being careful not to let it overflow. Then, apply a thin layer of clean oil to the cartridge gasket (O-ring).
  - Install new filter (6). Turn the filter cartridge clockwise by hand until the gasket touches the contact area. Be sure not to damage the gasket when installing filter (6).
  - Tighten engine oil filter (6) 3/4 to 1 turn more using the filter wrench. Be careful not to overtighten.

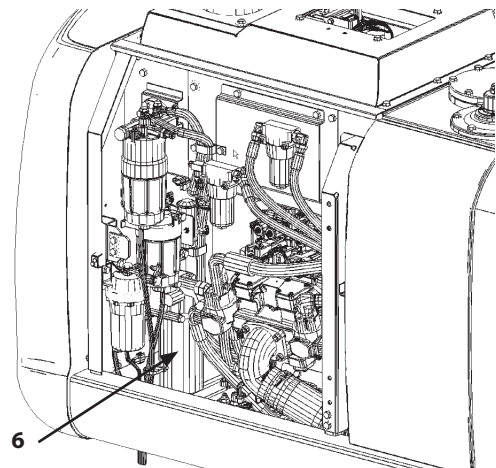
**⚠ CAUTION: Do not spill oil while adding oil. Spilled oil may cause fires.**

- Fill the engine with recommended oil. Check that oil level is between the circle marks on the dipstick after 15 minutes.
- Install the oil filler cap.
- Start the engine. Run the engine at slow idle for 5 minutes.



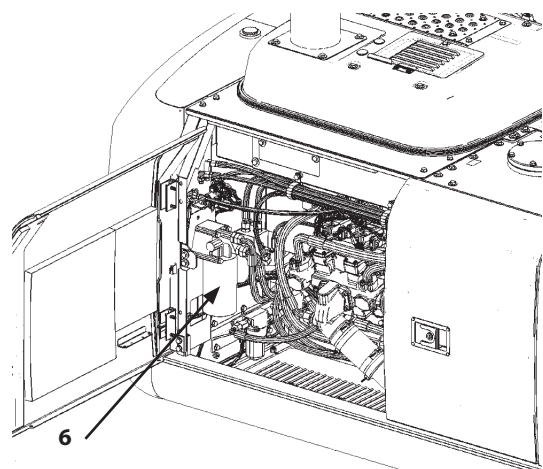
ZX140W-5B

MLBA-07-013



ZX170W-5B, 190W-5B

MLBA-07-014



ZX220W-5B

MLBA-07-015

## MAINTENANCE

---

17. Stop the engine. Remove the key from the key switch.
18. Check for any leakage.
19. After 15 minutes, check oil level on the dipstick and add or drain oil to maintain proper oil level. (The oil level should be between the upper and lower limit marks on the oil level gauge.) (Refer to 7-30)

### **IMPORTANT:**

- **An incorrect engine oil level may cause trouble on the engine. Even if the engine oil level exceeds the upper limit, control the oil level to the proper quantity before starting the engine.**
- **Do not overtighten the engine oil pan mounting bolts of ZX140W-5B. Failure to do so may damage the packing seal.**

### **4** Check and Clean Around the Engine

--- As required

**IMPORTANT:** Check for flammable objects in the area around the engine and clean that area.

When the machine is operated in dusty areas, refer to "9-1 Maintenance Under Special Environmental Conditions".

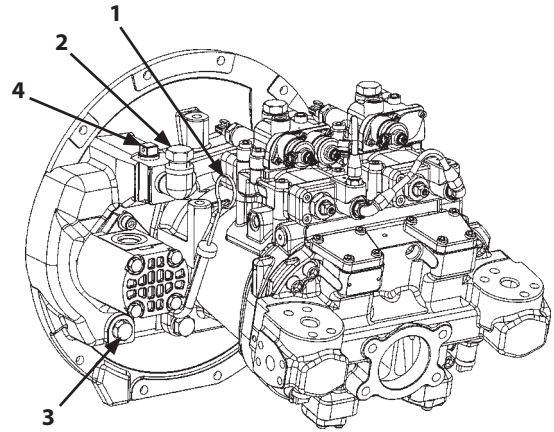
## MAINTENANCE

### C. Transmission

#### 1 Pump Transmission

##### Check Oil Level --- every 250 hours

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove oil level gauge (1). Oil must be within the specified range.
3. If necessary, remove filler plug (2) and add oil. (See gear oil chart)
4. Recheck oil level.



MDAA-07-108

##### Change Oil --- every 1000 hours

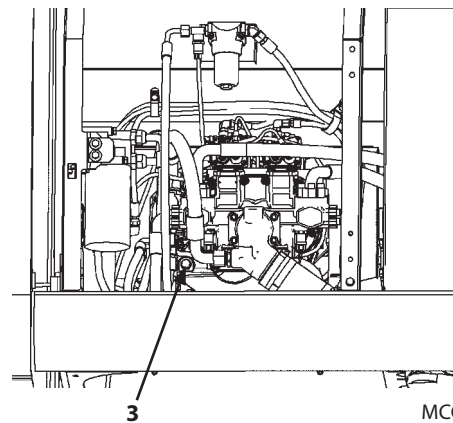
##### Clean Air Breather --- every 1000 hours

**IMPORTANT: Do not use transmission oils other than those listed in the "Brand Names of Recommended Transmission Oil".**

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

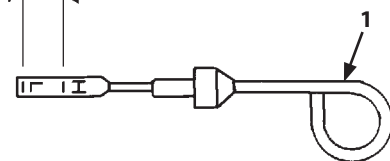
**CAUTION: Oil may be hot just after operation. Wait for oil to cool before starting work.**

2. Remove filler plug (2).
3. Remove drain plug (3). Allow oil to drain through a clean cloth into a 2-liter (2.1 US qt) container.
4. After all oil has drained, inspect cloth for any debris such as small pieces of metal.
5. Reinstall drain plug (3).
6. Add oil via filler plug (2) until it is within the specified range on oil level gauge (1).  
Oil capacity: 1.0 L (1.1 US qt)
7. Reinstall filler plug (2).
8. Remove air breather (4) and perform cleaning. After cleaning, install air breather (4).



MCGB-07-025

Specified Range



M1G6-07-004

# MAINTENANCE

## 2 Swing Reduction Gear

### Check Oil Level --- every 500 hours

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove oil level gauge (1). Oil must be between marks.
3. If necessary, remove oil filler cap (2) and add oil. (See gear oil chart)
4. Recheck oil level.

### Change Gear Oil --- every 1000 hours

**IMPORTANT: Do not use gear oils other than those listed in the "Brand Names of Recommended Gear Oil".**

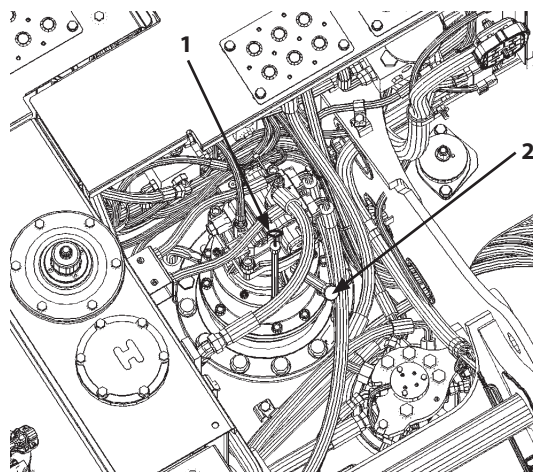
1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.

**CAUTION: Gear oil may be hot just after operation. Wait for gear oil to cool before starting work.**

2. Remove the drain plug mounted on the end of drain pipe to drain oil.
3. Reinstall the drain plug.
4. Remove oil filler cap (2) and add oil until it is between the marks on oil level gauge (1).

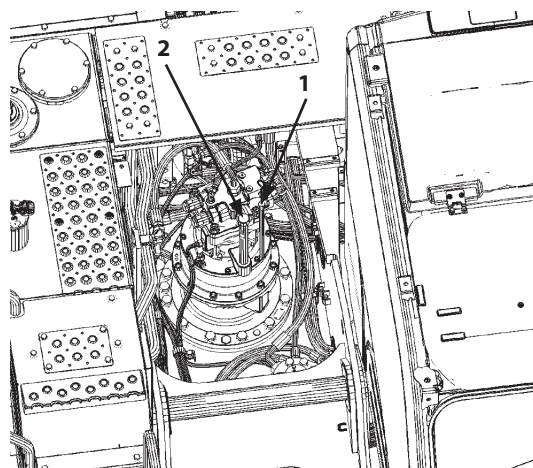
Model	Capacity
ZX140W-5B	3.2 L (0.85 US gal)
ZX170W-5B, 190W-5B, 220W-5B	6.2 L (1.6 US gal)

5. Reinstall oil filler cap (2).



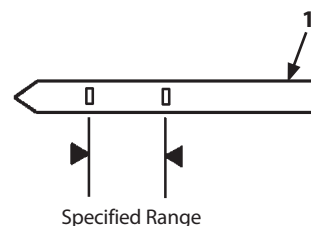
ZX140W-5B

MLBA-07-016



ZX170W-5B, 190W-5B, 220W-5B

MLBA-07-017



ML04-07-017

## MAINTENANCE

### 3 Transmission Oil

**⚠ WARNING:** The components of the undercarriage and also transmission oil are very hot just after the engine is stopped. Begin inspection/maintenance after travel device has cooled off.

#### Check Oil Level --- every week

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove level plug (1) (Which also serves as the oil filler plug ) oil should flow out of the plug hole. If it does not, supply oil.
3. Clean level plug (1), re-install plug (1) with a new O-ring and tighten them to specified torque.

Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)

#### Change Transmission Oil --- every 2000 hours (first time after 500 hours)

**IMPORTANT:** Change the transmission oil at least once a year.

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove drain plug (2) and level plug (1). Allow all gear oil to drain.
3. After the gear oil is drained, clean drain plug (2). Re-install drain plug (2) with a new O-ring and tighten it to specified torque.

Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)

4. Supply new oil until it flows out of level plug (1) hole.

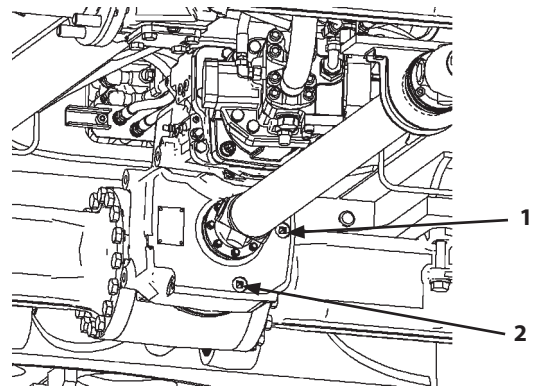
Oil capacity: 2.5 L (2.7 US qt)

5. After few minutes, check oil level with level plug (1) on transmission. If necessary, add oil.
6. Re-install level plug (1) with a new O-ring and tighten them to specified torque.

Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)



M202-07-028



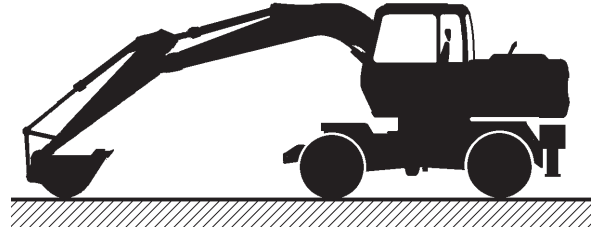
MCGB-07-030



## MAINTENANCE

### 4 Front Axle

**WARNING:** The components of the undercarriage and also gear oil are very hot just after the engine is stopped. Begin inspection/maintenance after travel device has cooled off.

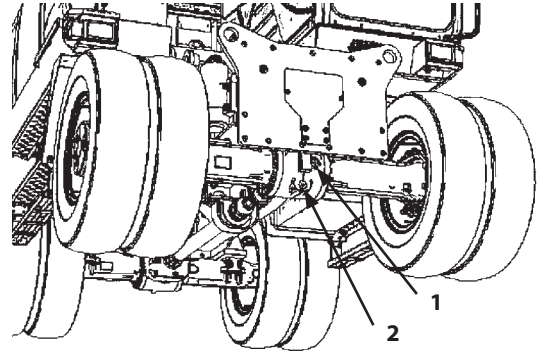


M202-07-028

#### Check Oil Level --- every one month

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove level plug (1) (Which also serves as the oil filler plug ) oil should flow out of plug (1) hole. If it does not, supply oil.
3. Clean level plug (1), re-install plug (1) with a new O-ring and tighten them to specified torque.

Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)



MLBA-07-018

#### Change Gear Oil

--- every 2000 hours (first time after 500 hours)

**IMPORTANT:** Change the gear oil at least once a year.

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove drain plug (2) and level plug (1).  
Allow all gear oil to drain.
3. After the gear oil is drained, clean drain plug (2). Re-install drain plug (2) with a new O-ring and tighten them to specified torque.

Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)

4. Supply new oil until it flows out of level plug (1) hole.
5. After few minutes, check oil level with level plug (1) on front axle. If necessary, add oil.
6. Re-install level plug (1) with a new O-ring and tighten them to specified torque.

Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)

## MAINTENANCE

### 5 Rear Axle

**⚠ WARNING:** The components of the undercarriage and also gear oil are hot just after the engine is stopped. Begin inspection/maintenance after travel device has cooled off.

#### Check Oil Level --- every one month

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove level plug (1) (Which also serves as the oil filler plug ) oil should flow out of plug (1) hole. If it does not, supply oil.
3. Clean level plug (1), re-install plug (1) with a new O-ring and tighten them to specified torque.

Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)

#### Change Gear Oil

--- every 2000 hours (first time after 500 hours)

**IMPORTANT:** Change the gear oil at least once a year.

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove drain plug (2) and level plug (1).  
Allow all gear oil to drain.
3. After the gear oil is drained, clean drain plug (2). Re-install drain plug (2) with a new O-ring and tighten them to specified torque.

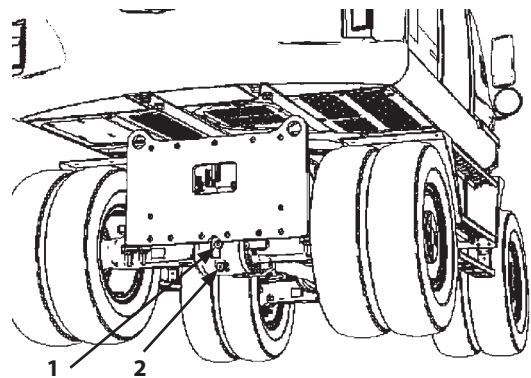
Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)

4. Supply new oil until it flows out of level plug (1) hole.
5. After few minutes, check oil level with level plug (1) on rear axle. If necessary, add oil.
6. Re-install level plug (1) with a new O-ring and tighten them to specified torque.

Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)



ML202-07-028



MLBA-07-019



## MAINTENANCE

### 6 Front and Rear Hub Reduction Devices

**⚠ WARNING:** The components of the undercarriage and also gear oil are very hot just after the engine is stopped. Begin inspection/maintenance after travel device has cooled off.

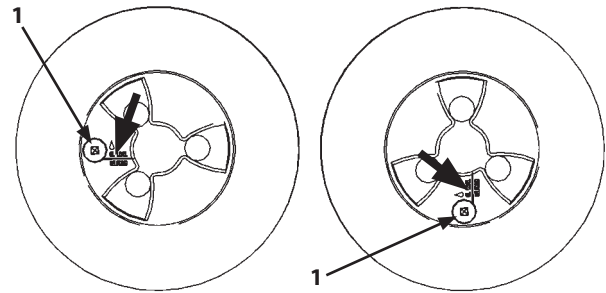
#### Check Oil Level --- every one month

1. Park the machine on a firm, level surface .
2. Bring plug (1) (used to check oil level, drain oil and add oil) on the hub reduction device end to the "Check Position" shown at right.
3. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
4. Remove plug (1). At this time, oil should flow out of the plug hole. If it does not, supply oil.
5. Clean plug (1), re-install plug (1) with a new O-ring and tighten them to specified torque.

Torque specifications : 50 N·m (5.1 kgf·m, 37 lbf·ft)



M202-07-028



Check Position

Drain Position

MCGB-07-035

## MAINTENANCE

### Change Gear Oil

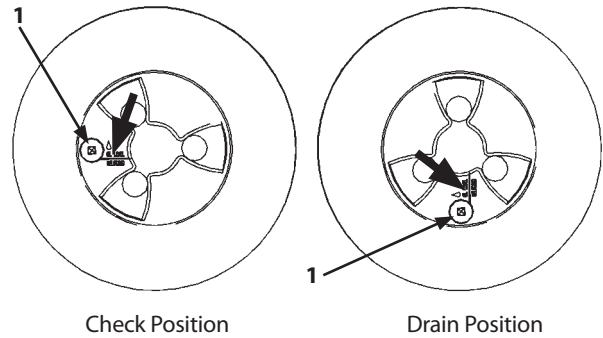
--- every 2000 hours (first time after 500 hours)

**IMPORTANT:** Change the gear oil at least once a year.

1. Park the machine on a level surface.
2. Bring plug (1) on the hub reduction device end to the "Drain Position" shown at right.
3. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
4. Remove plug (1). Allow all gear oil to drain.  
Torque specifications: 50 N·m (5.1 kgf·m, 37 lbf·ft)
5. Bring plug (1) on the hub reduction device end to the "Check Position" shown at right. Lower the bucket to the ground. Put the brake switch in the P (Parking) position and stop the engine.
6. Supply new oil until it flows out of the plug (1) hole.  
Oil capacity: 2.5 L (2.7 US qt)
7. After few minutes, check oil level with level plug (1) on reduction device. If necessary, add oil.
8. Re-install plug (1) with a new O-ring and tighten them to specified torque.  
Torque specifications: 50 N·m (5.1 kgf·m, 37 lbf·ft)



M202-07-028



Check Position

Drain Position

MCGB-07-035

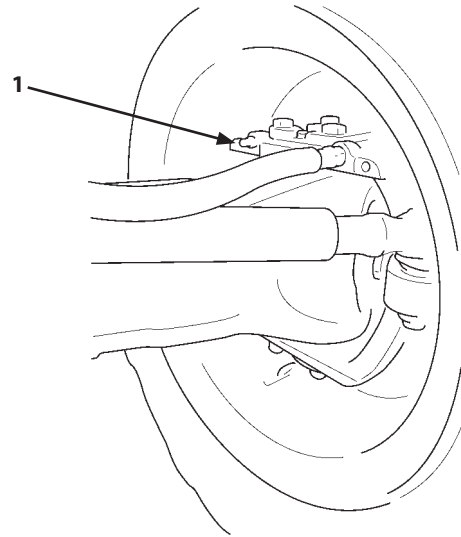
## MAINTENANCE

### D. Brake (Traveling)

#### Bleed air from the brake system

#### **⚠ WARNING:**

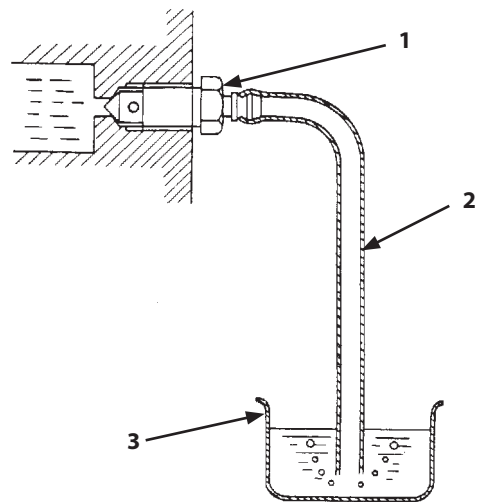
- Do not touch the steering wheel while bleeding air. Before operating the steering wheel, move coworkers to the safe area.
- If air is remaining in the brake system, the brake performance will be reduced, possibly creating hazardous conditions. After disassembling the brake line or replacing the hydraulic oil, be sure to bleed air from the brake system.
- After air bubbles in the hydraulic oil disappear during air bleeding work, continue to bleed air until approx. 500 mL hydraulic oil is drained from each wheel. If air bubbles are still present after draining oil approx. 500 mL, continue to bleed air until air bubbles disappear.



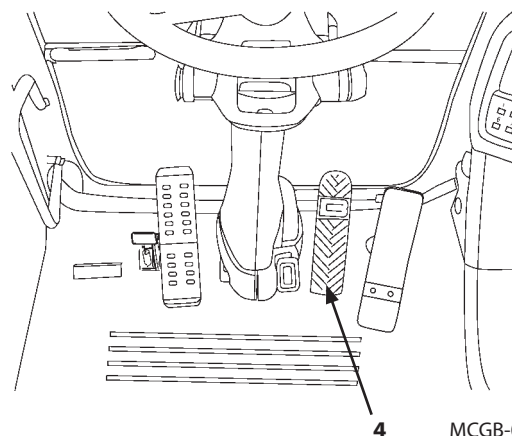
MCBB-07-044

Bleed air from all wheels with a teamwork of two persons following the procedures shown below. Four air bleeders are provided in total [one air bleeder (1) per wheel].

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Turn the brake switch on the steering column console to the P (parking) position. Start the engine to increase the hydraulic oil pressure.
3. Connect a transparent vinyl tube (2) to the tip of air bleeder (1). Put the other end of the tube into transparent container (3) filled with hydraulic oil.
4. One person moves brake pedal (4) several times and holds the pedal in the stepped position.
5. While holding (4) brake pedal (4) in the stepped position, the other person loosens air bleeder (1) to allow the hydraulic oil and air to discharge for several seconds. Then, tighten air bleeder (1).
6. Repeat step 4 to 5 until air bubbles disappear in the discharged oil.



M202-07-023



MCGB-01-004

## MAINTENANCE

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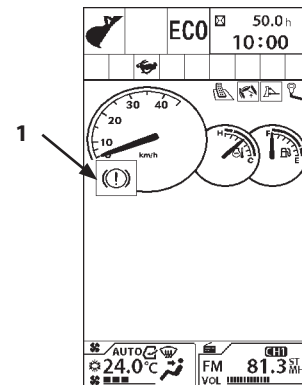
7. After air bubbles disappear in the discharged oil, continue to perform this procedure until approx. 500 mL hydraulic oil is drained. If air bubbles are still present after discharging oil approx. 500 mL, continue to perform this procedure until air bubbles disappear.
8. Securely tighten air bleeder (1).
9. Bleed air from all other wheel brakes in the same procedure.
10. After completing to bleed air from four bleeders, repeat above steps 4 to 6 twice in each bleeder to check that air is fully bled.

## MAINTENANCE

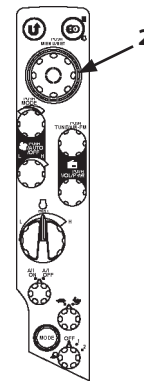
### 1 Check Brake Accumulator

--- daily

1. Start the engine with the brake switch on the steering column console turned to the P (parking brake) position.
2. After performing warm up operation, move the brake pedal from four to five strokes. Then, stop the engine.
3. Turn the key switch ON. When the security function is activated, push switch (2) and input password.
4. Fully step on the brake pedal from 2 to 3 strokes. The buzzer will sound and brake pressure indicator (1) will light when normal. If the buzzer sounds and brake pressure indicator (1) lights before the brake pedal is stepped on one stroke, the pressure charged in accumulator is abnormal. Do not travel the machine. Ask your nearest Hitachi dealer to replace the brake accumulator.
5. Repeat the above procedures three times to obtain the correct result and check that no abnormality is present.



MLBA-03-01



MDAA-01-040

## MAINTENANCE

### 2 Check Service Brake and Parking Brake Force --- daily

In case any abnormality is found in brake performance such as:

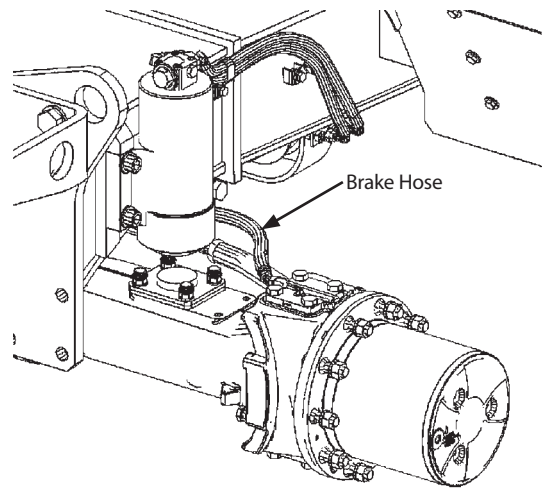
- The brake pedal stroke is not appropriate.
- The brake does not work effectively.
- The brakes do not apply evenly.
- A noise is heard when the brake is applied.

Contact your nearest Hitachi Dealer.

The brake must be checked for wear.

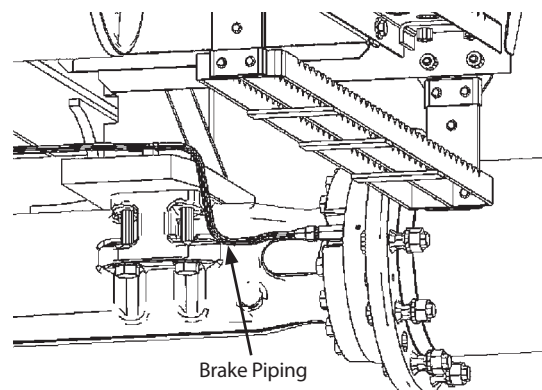
### 3 Check and Clean Brake Oil Pipings --- daily

- Check the brake oil piping and hoses for cracks and oil leaks.
- Keep the brake oil piping and hoses clean to prevent mud from accumulating.



Front Axle

MLBA-07-020



Brake Piping

Rear Axle

MLBA-07-021

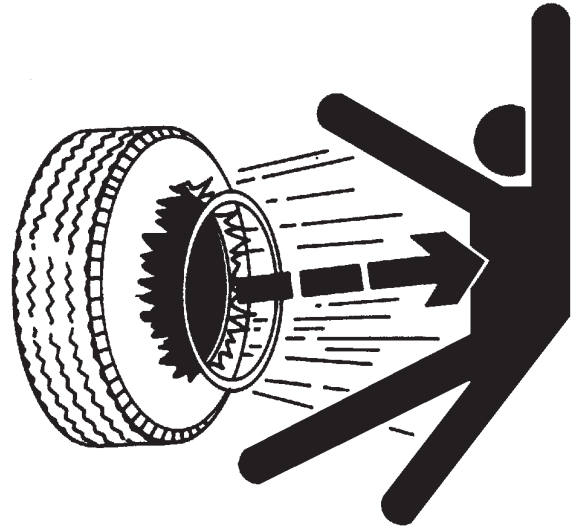
## MAINTENANCE

### E. Tire

#### Tire/Size

Use tires of either of the following sizes.

**IMPORTANT:** Be sure to use tires of the same specifications made by the same manufacturer.



#### Check Tire Pressure.

SA-249

Manufacturer	Size	Double or Single		Air Pressure Specification (kPa)
Mitas	10.00-20 14PR	Double		650 (6.6 kgf/cm <sup>2</sup> , 94 psi)
	10.00-20 16PR	Double		750 (7.6 kgf/cm <sup>2</sup> , 109 psi)
Bridgestone	10.00-20 16PR	Double		700 (7.1 kgf/cm <sup>2</sup> , 102 psi)
	11.00-20 16PR	Double		700 (7.1 kgf/cm <sup>2</sup> , 102 psi)
Nokian	10.00-20	Double		900 (9.2 kgf/cm <sup>2</sup> , 131 psi)
Michelin	18R19.5	Single		800 (8.2 kgf/cm <sup>2</sup> , 116 psi)
Aliance	600/40-22.5	Single		600 (6.1 kgf/cm <sup>2</sup> , 87 psi)
Caliber	315/80R22.5	Double	ZX140W-5B, 170W-5B	750 (7.6 kgf/cm <sup>2</sup> , 109 psi)
			ZX190W-5B, 220W-5B	900 (9.2 kgf/cm <sup>2</sup> , 131 psi)
	315/70R22.5	Double	ZX140W-5B, 170W-5B	800 (8.2 kgf/cm <sup>2</sup> , 116 psi)
			ZX190W-5B, 220W-5B	950 (9.7 kgf/cm <sup>2</sup> , 138 psi)

Follow correct procedures when removing or installing tire from/to wheel or rim.

#### **WARNING:**

- **Explosive separation of a tire and rim parts can cause serious injury or death.**

**Do not attempt to mount a tire if you do not have the proper equipment and experience to perform the job. Have it done by your authorized dealer or a qualified repair service.**

- **The inside tire is different from the outside tire in rim offset dimension. Therefore, if both tires are installed in reverse, the tire width will become wider than the overall width of the vehicle. Pay attention so that both inside and outside tires are installed in their correct positions.**

# MAINTENANCE

## 1 Tire Inspection and Replacement Procedure

**IMPORTANT:** Follow the precautions below when removing tire assembly.

- Clean hub nut area before removing/installing the tire in order to remove contaminations that may trigger the nuts to seize.
- When loosening the nuts, do not use high-speed rotating tools such as an air impact wrench. Slowly loosen nuts with your hand.
- When tightening the nuts, do not use high-speed rotating tools such as an air impact wrench. Slowly tighten nuts with your hand according to the procedure below.

### Inspection --- daily

1. If the tread of any part of a tire has worn down, replace the tire.
2. Each day before starting work, be sure to check the tires for cracks, damage, foreign matter, etc.
3. Confirm that the tire pressure is within specifications.

### Replacement --- as required

Remove and Install tires following these procedures


#### Removal

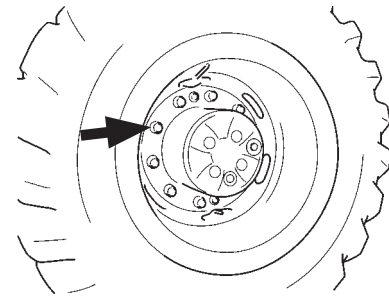
1. Loosen the wheel nuts with a wheel wrench. Right-handed Screws are used for both the right-hand and left-hand wheels.
2. Jack up the machine body until the tire clears the ground. Remove tire.

#### Installation

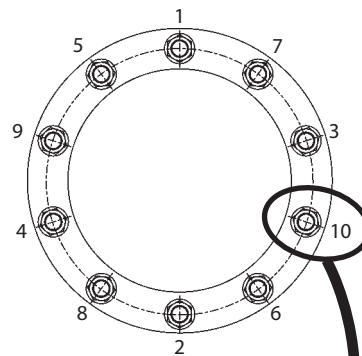
1. Apply engine oil to thread of nut and washer facing surface of nut slightly.
2. Do not apply engine oil to disk wheel facing surface of the washers (Spherical surface: ☆).
3. Tighten the wheel nuts temporarily. Then, lower the machine body to contact the tire with the ground. Tighten the wheel nuts with the specified torque.

Torque Specification : 650 N·m (66 kgf·m)

 **NOTE:** When installing the tire, shift the air valves of inner and outer tires so that air supply is easy.

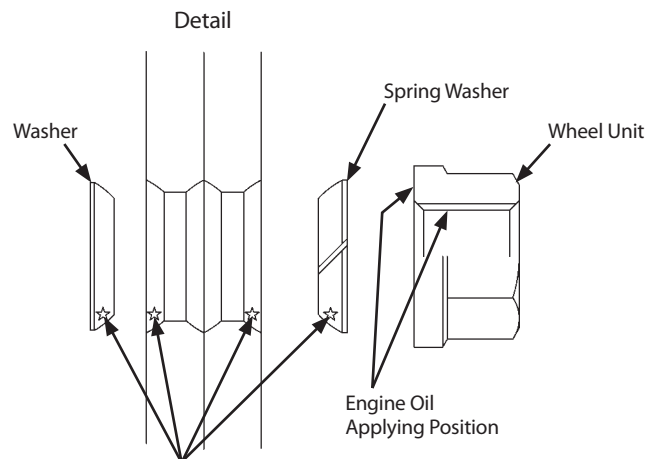


MCBB-07-023



The Example of the Order of Wheel Nut Bolting

MCGB-07-103



Must Not Apply Engine Oil (Same to Other Area: ☆)

MCGB-07-103



# MAINTENANCE

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## F. Hydraulic System

### Inspection and Maintenance of Hydraulic Equipment

**IMPORTANT:** Never adjust parts of hydraulic equipment.

**⚠ CAUTION:** When checking and/or servicing the hydraulic components, pay special attention to the following points.

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Begin servicing hydraulic components only after components, hydraulic oil and lubricants are completely cooled, and after releasing residual pressure.
  - 2.1 Before checking and/or servicing the hydraulic system, be sure to release the residual pressure from the cylinder circuits of the boom, arm and the bucket, swing piping and pilot piping. An accumulator can be installed on some models of this machine as an option to be capable of moving the front attachment for specified time (around 10 seconds) after stopping the engine.
  - 2.2 Bleed air from the hydraulic oil tank to release internal pressure.
  - 2.3 Immediately after operation, all hydraulic components and hydraulic oil or lubricants are hot and highly pressurized. Begin inspection and/or maintenance work only after the machine has cooled down.

Servicing heated and pressurized hydraulic components may cause plugs, screws and/or oil to fly off or escape suddenly, possibly resulting in personal injury. Hydraulic components may be pressurized even when cooled.

Keep body parts and face away from the front of plugs or screws when removing them.
- 2.4 Even after air pressure in the hydraulic oil tank is released, when the machine is parking on a slope, the oil pressure in the travel motor and the swing motor circuits are maintained at high pressure as the reaction force of the machine weight is constantly applied to the travel motor. Never check and/or service the machine parking on a slope.

## MAINTENANCE

---

### IMPORTANT:

- **When connecting hydraulic hoses and pipes, take special care to keep seal surfaces free from dirt and to avoid damaging them.**
- **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.**
- **Do not use hydraulic oils other than those listed in the table "Brand names of recommended hydraulic oil".**
- **When adding hydraulic oil, always use the same brand of oil; do not mix brands of oil. When using another manufacturer's hydraulic oil, be sure to change the full amount.**
- **The new machine is filled with hydraulic oil of Super EX 46HN (change interval: every 5000 hours). When adding or changing the hydraulic oil, continue to use Super EX 46HN.**
- **Never run the engine without oil in the hydraulic oil tank.**

## MAINTENANCE

### Change Hydraulic Oil and Replace Full-Flow Filter Element

Hydraulic breaker operation subjects the hydraulic system to become contaminated faster and to quickly deteriorate the hydraulic oil.

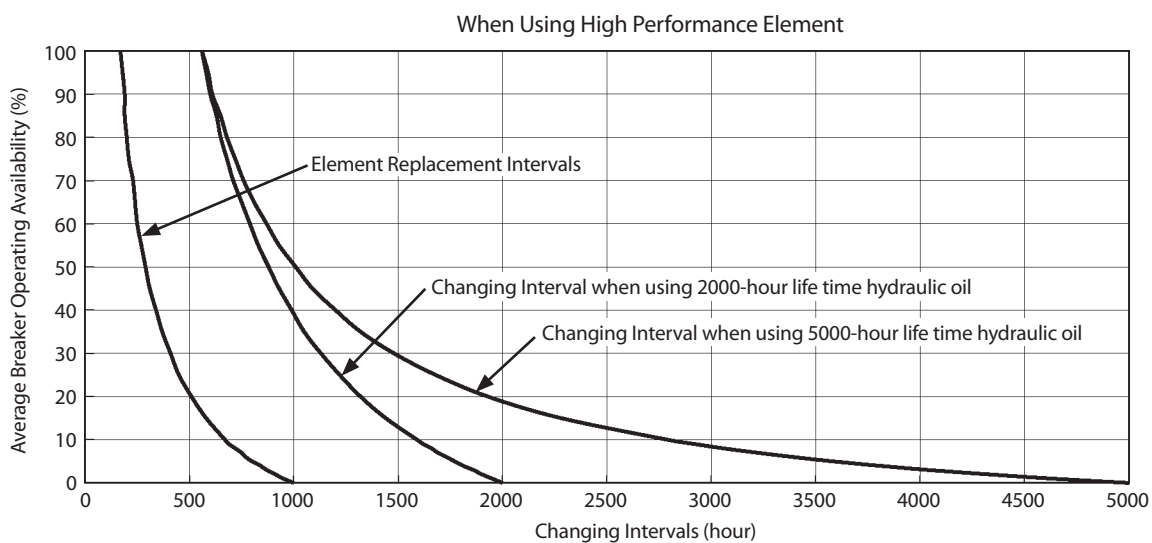
Failure to adhere to proper maintenance intervals may result in damage to the base machine and the breaker.

In order to extend the service life particularly of the hydraulic pump, change the hydraulic oil and the full-flow filter element at the specified frequency given below.

Check machine service hours by using the breaker hour meter. (Refer to the Breaker Operation in the OPERATOR'S STATION section.)

Changing intervals for the high performance element (micro-glass)

Breaker Operating Availability	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
Full-Flow Filter	1000	670	510	410	340	290	250	230	200	190	170
Hydraulic oil: 2000 hours life time	2000	1590	1320	1130	990	880	790	710	650	600	560
Hydraulic oil: 5000 hours life time	5000	2790	1930	1480	1200	1010	870	760	680	610	560

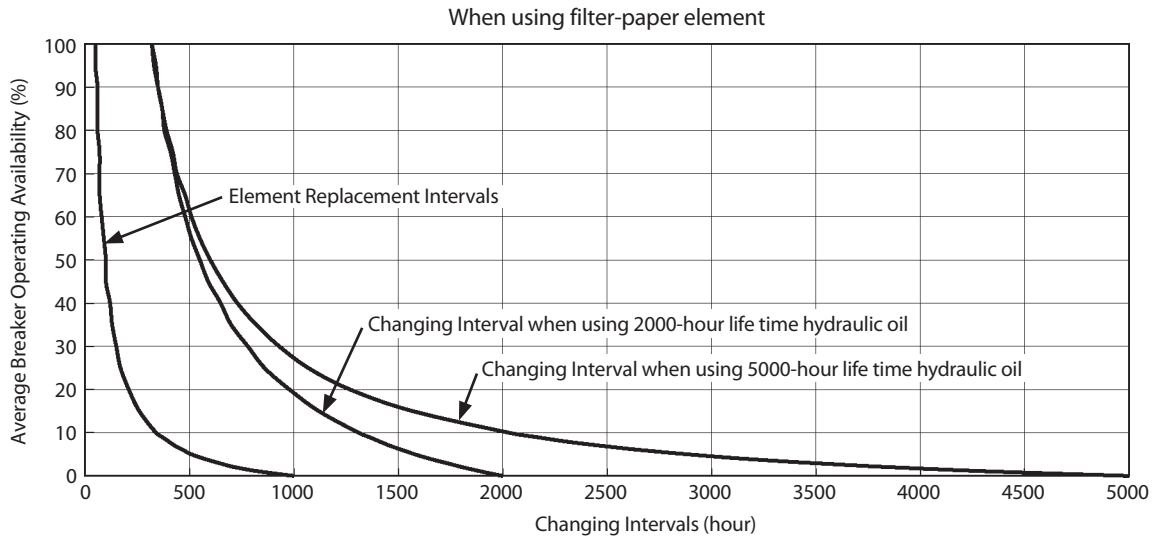


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## MAINTENANCE

Changing intervals for the filter-paper element

Breaker Operating Availability	0 %	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
Full-Flow Filter	1000	340	210	150	120	100	80	70	60	60	50
Hydraulic oil: 2000 hours life time	2000	1310	980	780	650	550	480	430	380	350	320
Hydraulic oil: 5000 hours life time	5000	2030	1270	930	730	600	510	440	390	350	320



MDAA-07-051

 **NOTE:** Full-flow filter restriction indicator is optional. If a filter-paper element is used, this indicator does not operate.

## MAINTENANCE

### 1 Check Hydraulic Oil Level

--- daily

**IMPORTANT:** If the oil level is not viewed in the level gauge, immediately refill hydraulic oil up to the appropriate level. Failure to do so may result in a serious failure in the hydraulic system. If the oil level is higher than the level gauge, remove 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 for inspection and maintenance.
2. Open the access door in front of the main pump. Check oil level with level gauge (1) on hydraulic oil tank. Oil must be between marks on gauge (1). If necessary, add oil.

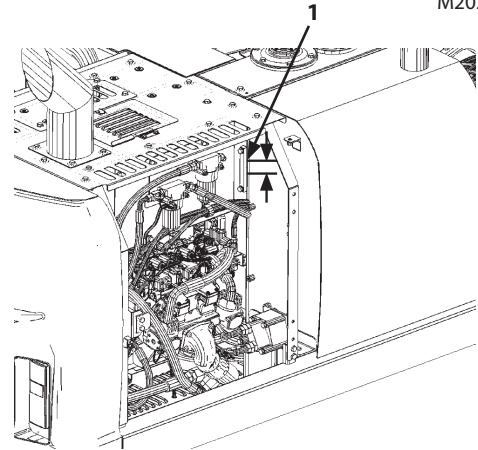
**⚠ WARNING:** The hydraulic oil tank is pressurized. Push the pressure release button on the air breather to release pressure, and carefully remove the cap.

To add oil:

3. Push the pressure release button on the air breather to release pressure. Remove the cover.
4. Add oil. Recheck oil level with level gauge (1).
5. Install the cover. Make sure the filter and rod assembly are in correct position.

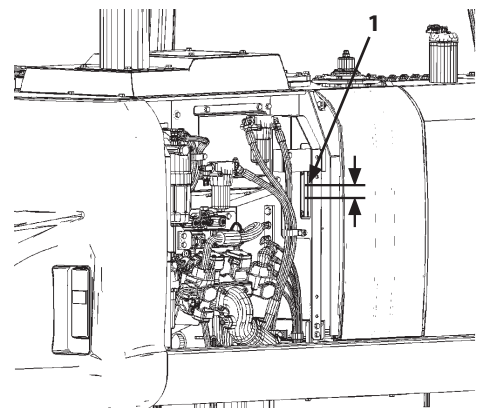


M202-07-028



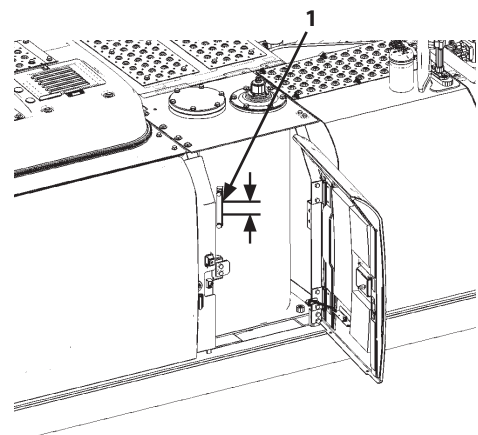
ZX140W-5B

MLBA-07-013



ZX170W-5B, 190W-5B

MLBA-07-022



ZX220W-5B

MLBA-07-023

## MAINTENANCE

### 2 Change Hydraulic Oil

### 3 Clean Suction Filter

--- every 5000 hours or 2000 hours

**IMPORTANT:** Hydraulic oil changing intervals differ according to brand of hydraulic oils used kind of filter element and breaker operating availability. Refer to "Change Hydraulic Oil and Replace Full-Flow Filter Element". (Refer to 7-49, 7-50 pages)



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**CAUTION:** Hydraulic oil may be hot just after operation. Wait for oil to cool before starting work.

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

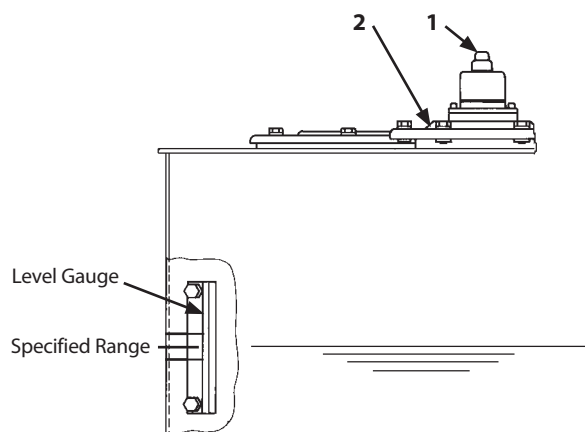
1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Clean the top of the hydraulic oil tank to keep dirt out of the hydraulic system.

**CAUTION:** The hydraulic oil tank is pressurized. Push pressure release button (1) on the air breather before removing the air breather.

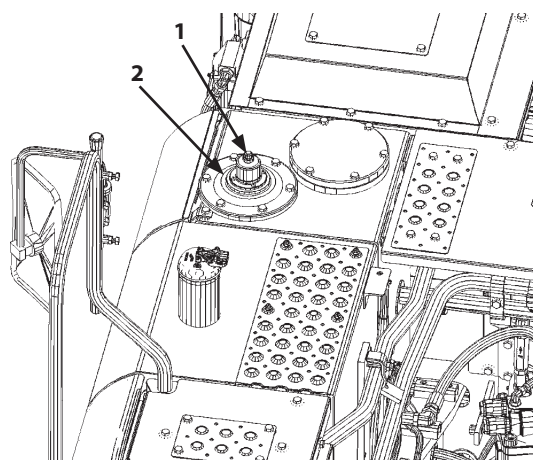
3. Push pressure release button (1) on the air breather.
4. Remove cover (2).
5. Remove oil using a suction pump. The hydraulic oil tank capacity, up to specified oil level, is approximately A.

Model	A
ZX140W-5B	135 L (35.7 US gal)
ZX170W-5B, 190W-5B	170 L (44.9 US gal)
ZX220W-5B	200 L (52.8 US gal)

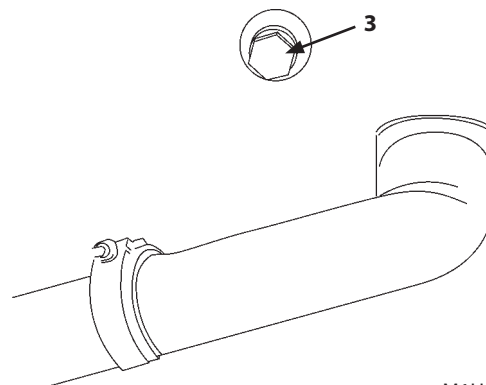
6. Remove drain plug (3). Allow oil to drain.



M157-07-016



MLBA-07-024



M1U1-07-047

## MAINTENANCE

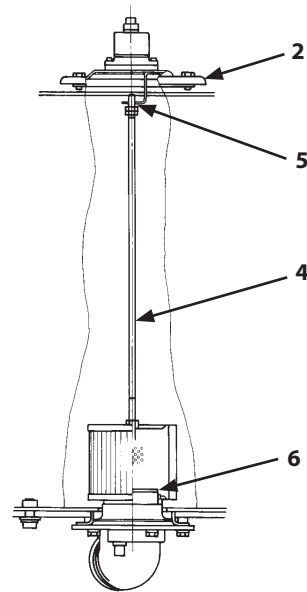
7. Remove rod assembly (4).

**IMPORTANT: When changing hydraulic oil, take care not to enter foreign matters such as dirt, water, and/or sand into the hydraulic oil tank.**

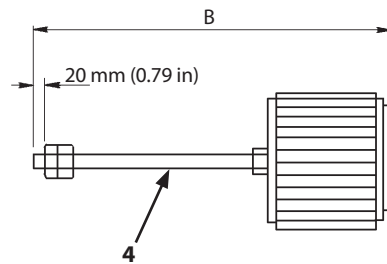
8. Clean the filter and tank interior. If the filter is to be replaced, install new filter on rod (4) as shown. Tighten nut to 15 to 20 N·m (1.5 to 2.0 kgf·m, 11.0 to 14.5 lbf·ft).
9. Before installing the suction filter, check the dimension of rod (4) assembly shown in figure right. Securely insert rod (4) assembly into pipe (6).

Model	B
ZX140W-5B	867 mm (34.1 in)
ZX170W-5B, 190W-5B	856 mm (33.7 in)
ZX220W-5B	889 mm (35.0 in)

10. Replace the full-flow filter.  
(See "Replacement of Full-Flow Filter")
11. Clean, install and tighten drain plug (3).
12. Add oil until it is between the marks on the oil level gauge.
13. Before securing cover (2) with bolts, ensure the top edge of the rod (4) assembly is completely inserted into the hole of support (5). Make sure filter and rod (4) assembly are in correct positions. Install cover (2). Tighten the bolts to 50 N·m (5 kgf·m, 36 lbf·ft).
14. Be sure to do "Air Bleeding Procedures" shown next page.



M157-07-062



M107-07-070

## MAINTENANCE

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### Air Bleeding Procedures

Bleed air from these pumps after changing hydraulic oil.

**IMPORTANT: If the hydraulic pump is not filled with oil, it will be damaged when the engine is started.**

- Pump Air Bleeding  
ZX140W-5B
  1. Loosen air bleed plugs (1) on the pump for bleeding air.
  2. After flowing oil from air bleed plugs (1), tighten air bleed plugs (1).

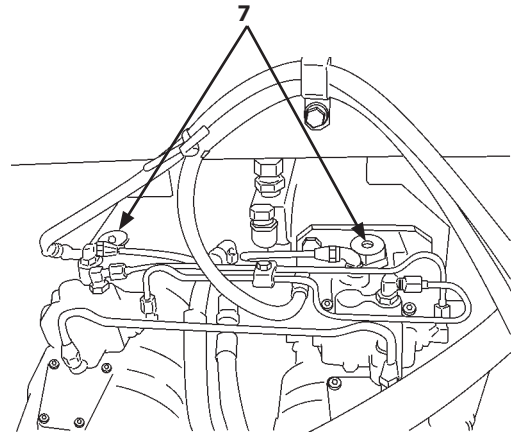
Tightening Torque: 95 N·m (9.5 kgf·m)

**IMPORTANT: If run the engine more than 30 seconds. It will be damaged the hydraulic pumps.**

3. Start the engine and stop it after 30 seconds.
4. Repeats step 1 to 2.

ZX170W-5B, 190W-5B, 220W-5B  
Perform work of step 1 and 2.

- Hydraulic System Air Bleeding
  1. Purge air from the hydraulic system by running the engine at slow idle and operating the control levers slowly and smoothly for 15 minutes.
  2. Position the machine as illustrated in the oil level checking procedure.
  3. Turn the auto-idle switch off.
  4. Stop the engine. Remove the key from the key switch.
  5. Pull the pilot control shut-off lever to the LOCK position.
  6. Check the hydraulic oil tank gauge. Add oil if necessary.



M1U1-07-035



## MAINTENANCE


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- Brake System Air Bleeding  
Bleed air from the brake system (refer to page 7-41).


## MAINTENANCE

- Bleed Air from Travel Transmission

**IMPORTANT:** Air trapped in the travel transmission gearshift hydraulic circuit will cause erratic operation in the gearshift system. When the transmission gearshift hydraulic line is disassembled and/or hydraulic oil is changed, be sure to bleed air.

 **NOTE:** Bleed the air by two or more persons.

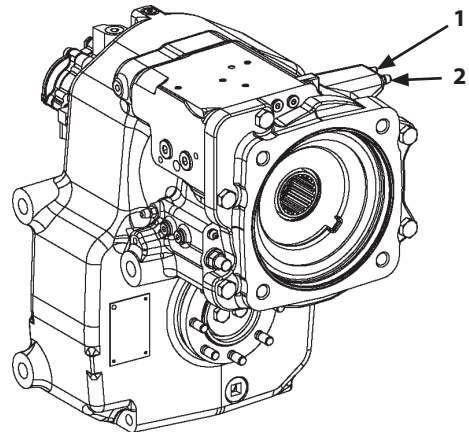
1. Start the engine, park the machine on level firm ground, and lower the bucket to the ground.
2. Set the brake switch into S position, and apply the working brakes.

 **NOTE:** If the brake switch is in P (parking brake) position, air bleeding work cannot be performed.

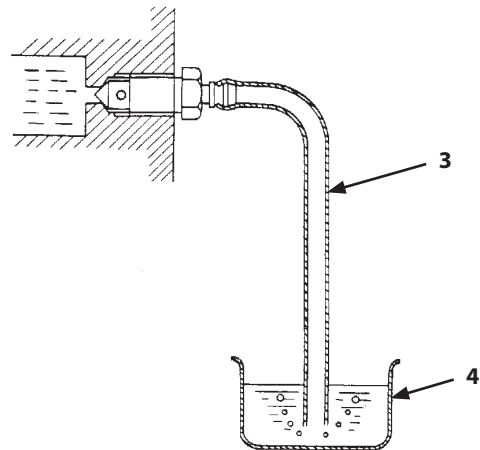
3. Insert a transparent vinyl tube (3) at the end of air bleed plug (1 and 2) of transmission, and put the other one end into the transparent container (4) filled with hydraulic oil.
4. Switch travel mode switch (5) fast speed ↔ slow speed 4 to 5 times.
5. Fast speed side:  
Put the travel mode switch (5) into fast speed position, and loosen air bleed plug (1).

Slow speed side:  
Put travel mode switch (5) into slow speed position, and loosen air bleed plug (2).

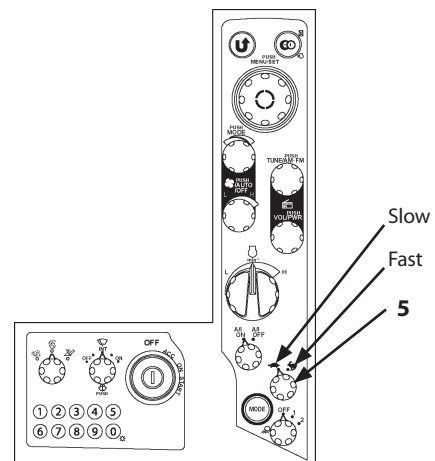
6. Discharge the air in hydraulic oil, and tighten air bleed plug (1 and 2) after 15 to 20 seconds.
7. Repeat steps 4 to 6 until the air bubbles stop coming out with the hydraulic oil. (About 4 to 5 times)
8. Tighten air bleed plug (1 and 2).



T21W-03-05-014



M202-07-023



MLBA-01-522

## MAINTENANCE

### 4 Replacement of Full-Flow Filter (Filter-Paper Element)

--- every 1000 hours

**IMPORTANT:** Changing interval differs according to the brand of hydraulic oil used, kind of filter element or average attachment operating availability. Refer to "Change Hydraulic Oil and Full-Flow Filter Element". (Refer to 7-49, 7-50 pages)

**CAUTION:** Hydraulic oil becomes hot and pressurized during operation. Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.

#### Procedures:

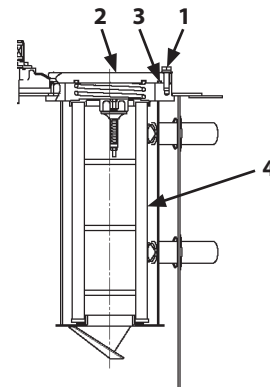
1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Before replacing the element, be sure to bleed air pressure from the hydraulic oil tank by pressing the air bleed valve on the hydraulic oil tank.
3. Loosen bolts (1) (6 used) to remove cover (2) and O-ring (3).

**IMPORTANT:** Especially when removing the filter, be aware that the remaining oil in the filter may spill. Use extra care.

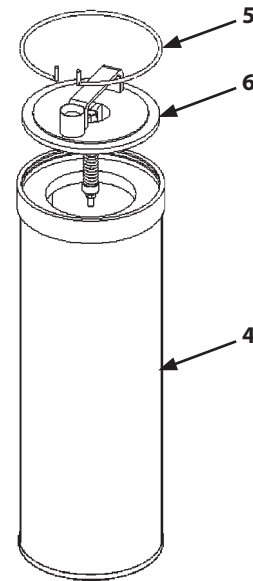
4. Remove the filter element assembly (4).
5. Remove ring (5) and grip plate (6) from the filter element assembly (4).
6. Take extra care never to allow water or dust to enter the filter case.



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MDAA-07-004



M1U1-07-064

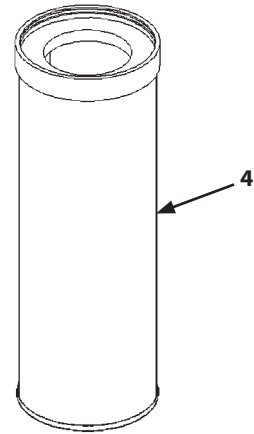
## MAINTENANCE

7. Replace O-ring (7) of element (4) and grip plate (6) with new one. Be careful not to damage element (4) and O-ring (7).

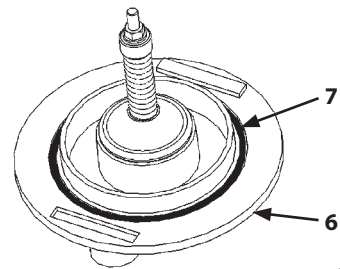
Broken element (4) is unusable.

8. Check the concavity and convexity position of logo (8) on filter element (4) and logo (9) on grip plate (6).

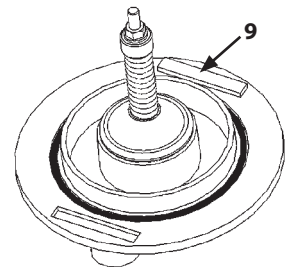
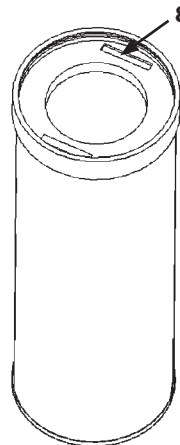
Fit the grip plate (6) assembly with filter element (4) so that concavity of filter element (4) logo and convexity of the grip plate (6) assembly logo; convexity of filter element (4) logo and concavity of the grip plate (6) assembly logo are engaged.



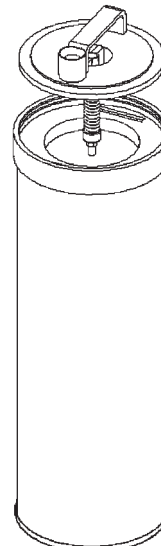
M1U1-07-065



M1U1-07-066



M1U1-07-067



M1U1-07-068

## MAINTENANCE


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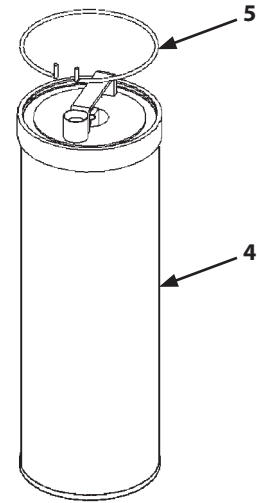
9. Install ring (5).
10. Install cover (2) with bolts (1) (6 used).
11. Bleed air from the hydraulic system and check the hydraulic oil level after replacing the element.

Tightening Torque: 50 N·m (5 kgf·m)

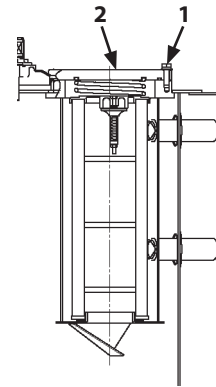
(Refer to the descriptions for "Air Bleeding Procedures")

If the machine is operated with air mixed in the hydraulic circuit, damage to the pump may result.

 **NOTE:** Replace element (4) at the regular interval to keep hydraulic oil clean and to extend the service life of the hydraulic components.



M1U1-07-069



MDAA-07-004

## MAINTENANCE

### 4 Replacement of Full-Flow Filter Element (High Performance Element) (Optional)

--- every 1000 hours

**IMPORTANT:** Changing interval differs according to the brand of hydraulic oil used, kind of filter element or average attachment operating availability. Refer to "Change Hydraulic Oil and Replace Full-Flow Filter Element". (Refer to 7-49, 7-50 pages)



M202-07-028

When the hydraulic oil filter alarm on the monitor panel is lit, immediately replace the filter element.

**CAUTION:** Hydraulic oil becomes hot and pressurized during operation. Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.

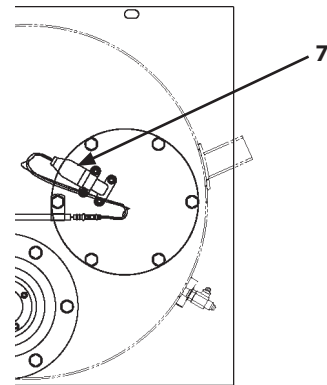
**IMPORTANT:** Precautions for the filter element

- The high performance element (micro-glass) is the optional full-flow filter element.

When replacing the element, use the same kind of high performance element.

In case a filter-paper element is unavoidably used, change hydraulic oil and replace full-flow filter element by referring to the "Change Hydraulic Oil and Replace Full-Flow Filter Element" section.

- If a filter-paper element is used, the full-flow filter restriction indicator does not operate. Isolate the circuit for full-flow filter restriction indicator (7).




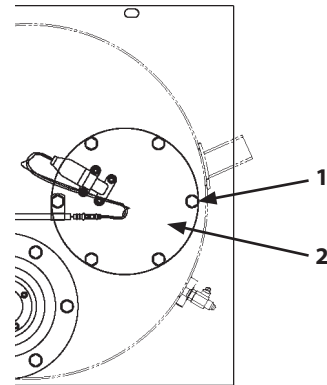
MDAA-07-005

## MAINTENANCE

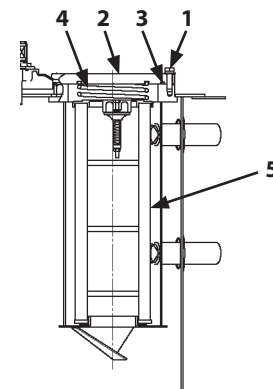
### Procedures:

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Before replacing element (5), be sure to bleed air pressure from the hydraulic oil tank by pressing the air bleed valve on the hydraulic oil tank.
3. Loosen bolts (1) (6 used) to remove cover (2) and O-ring (3). When removing cover (2), slowly remove the cover while pressing the cover downward so that spring (4) does not fly off.
4. Remove spring (4), and element (5).
5. When installing new element (5) into the hydraulic oil tank, replace O-ring (3) with a new one at the same time.
6. Install cover (2) with bolts (1) (6 used).  
Tightening Torque: 50 N·m (5 kgf·m)
7. Bleed air from the hydraulic system and check the hydraulic oil level after replacing the element.  
(Refer to the descriptions for "Air Bleeding Procedures")  
If the machine is operated with air mixed in the hydraulic circuit, damage to the pump may result.

 **NOTE:** Replace element (5) at the regular interval to keep hydraulic oil clean and to extend the service life of the hydraulic components.



MDAA-07-005



MDAA-07-004

# MAINTENANCE

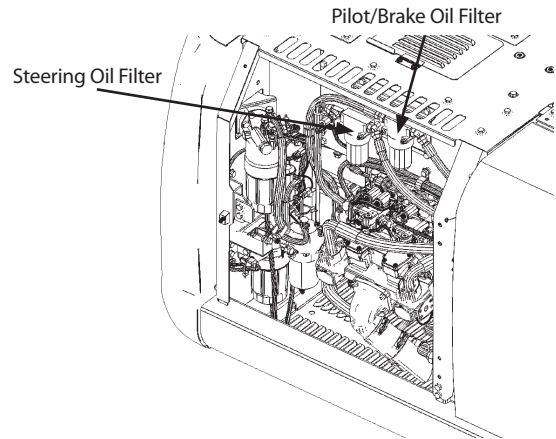
## 5 Replace Pilot/Brake and Steering Filter Element --- every 1000 hours

**CAUTION:** Hydraulic oil becomes hot and pressurized during operation. Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.

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

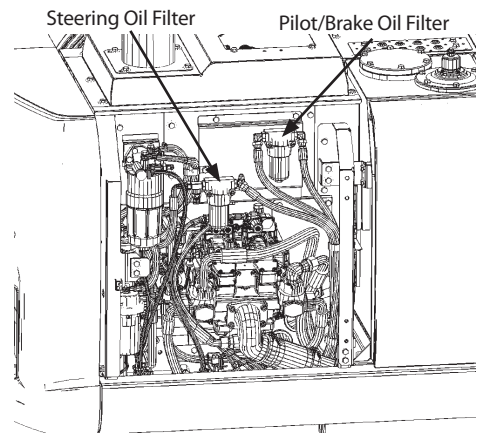


M202-07-028



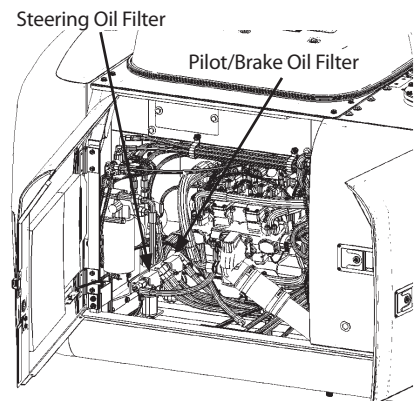
ZX140W-5B

MLBA-07-025



ZX170W-5B, 190W-5B

MLBA-07-026



ZX220W-5B

MLBA-07-009

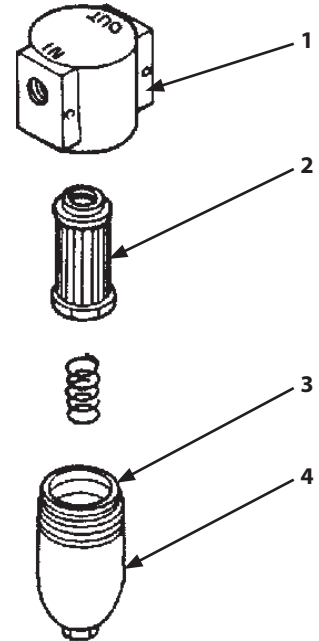


## MAINTENANCE

**CAUTION:** The hydraulic oil tank is pressurized. Push the pressure release button on the air breather before removing the filter cartridge.

2. Push the pressure release button on the air breather.
3. Turn the hexagonal tube on the bottom of case (4) using a spanner wrench counterclockwise to remove case (4) from head cover (1).
4. Pull element (2) down while turning.
5. Replace O-ring (3) with new one.
6. Correctly install new O-ring (3) into the O-ring groove around case (4).
7. After coating the seal surface on new element (2) with clean hydraulic oil, completely install element (2) into head cover (1) while turning the element with care not to damage the seal surface.
8. Take care never to allow water and/or dust to enter the filter case.
9. Install case (4) into head cover (1) while turning case (4) clockwise.  
Tightening torque: 40 to 50 N·m (4.0 to 5.0 kgf·m)
10. After replacing the element, bleed air from the hydraulic system. (Refer to discriptions for "Air Bleeding Procedures")

**NOTE:** Replace the element at regular intervals to keep the hydraulic oil clean, extending service life of the hydraulic equipment.



MLBA-07-095

## MAINTENANCE

### 6 Replace Air Breather Element

--- every 5000 hours

**CAUTION:** Hydraulic oil becomes hot and pressurized during operation. Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.

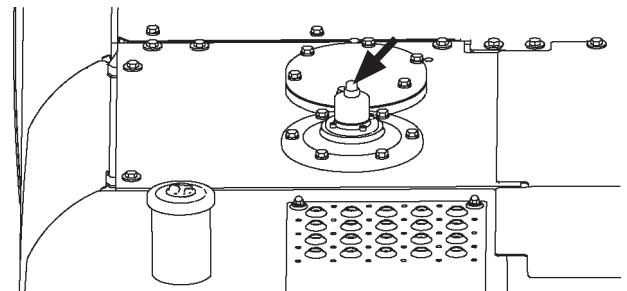


M202-07-028

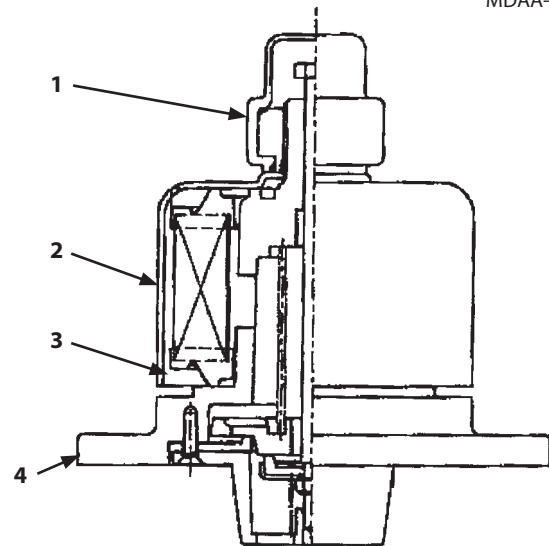
#### Procedures:

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Before replacing element (3), be sure to bleed air pressure from the hydraulic oil tank by pressing the air bleed valve on the hydraulic oil tank.
3. Rotate cover (2) clockwise approx. 1/4 turns. Remove cap (1) by rotating it counterclockwise.
4. Rotate cover (2) counterclockwise and remove it. Remove element (3).
5. Install new element (3). Tighten to install cover (2) until cover (2) comes in contact with element (3). Then, further tighten the cover 1/4 turn.
6. Securely tighten cap (1) clockwise by hand. While holding cap (1) by hand so that cap (1) does not rotate, securely tighten cover (2) by rotating counterclockwise 5 to 10° by hand.
7. Take care never to allow water and/or contaminant to stay between cover (2) and body (4) (air breathing port).

**NOTE:** Replace element (3) at the regular interval to keep hydraulic oil clean and to extend the service life of the hydraulic components.



MDAA-07-037



M1G6-07-001

## MAINTENANCE

### 7 Check Hoses and Lines

---daily

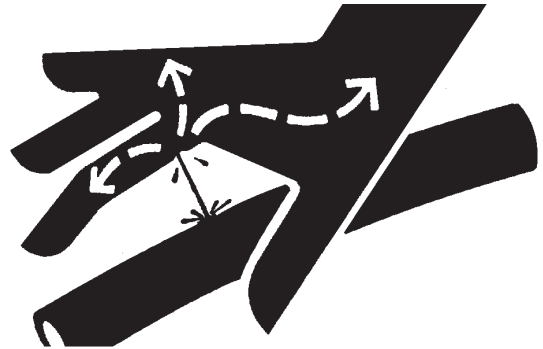
--- every 250 hours

#### WARNING:

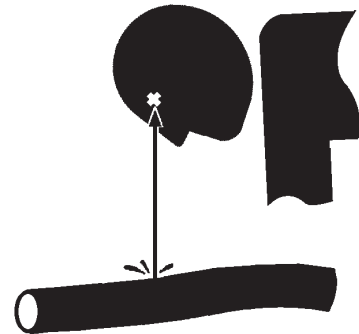
- Hydraulic oil and lubricant leaks can lead to fire that may result in serious injury. Check for missing or loose clamps, kinked hoses, lines or hoses that rub against each other, damaged oil cooler, and loose oil cooler flange bolts, for leaks.
- Escaping oil under pressure can penetrate the skin causing serious injury. To avoid this hazard, search for oil leaks with a piece of cardboard. Take care to protect hands and body from high-pressure fluids. If an accident occurs, see a doctor familiar with this type of injury immediately.
- Tighten, repair or replace any missing, loose or damaged clamps, hoses and lines.
- Do not bend or strike high-pressure lines.
- Never install bent or damaged hoses or lines.

According to the check points shown below, check hoses and lines for oil leaks and damage.

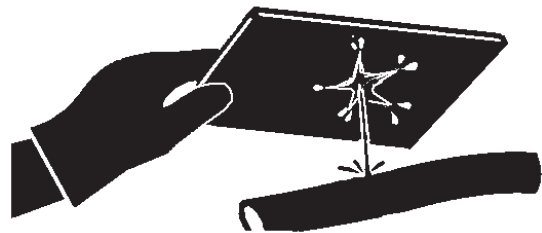
If any abnormality is found, replace or retighten as instructed in the table.



SA-031



SA-292

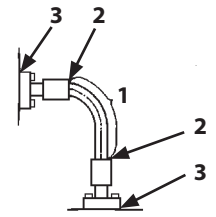


SA-044

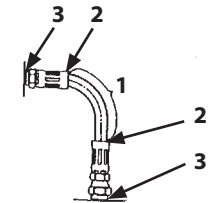
## MAINTENANCE

### Hose

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

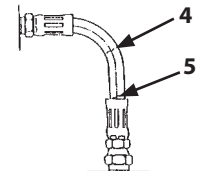


M137-07-008

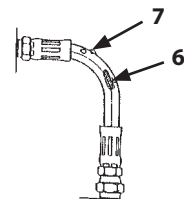


M115-07-145

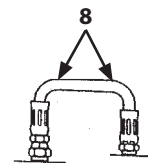
Interval (hours)	Check Points	Abnormalities	Remedies
Every 250 hours	Hose covers	Damage or leak (4)	Replace
	Hose ends	Damage or leak (5)	Replace
	Hose covers	Exposed reinforcement (6)	Replace
	Hose covers	Crack or blister (7)	Replace
	Hose	Bend (8), Collapse (9)	Replace
	Hose ends and Fittings	Deformation or corrosion (10)	Replace



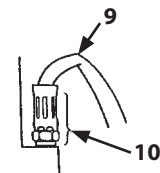
M115-07-146



M115-07-147



M115-07-148

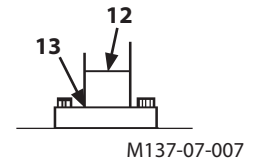
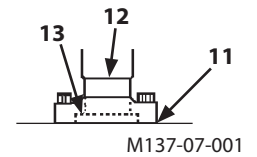


M115-07-149

## MAINTENANCE

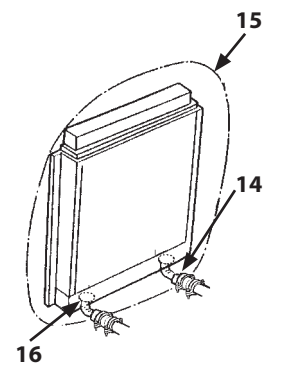
### Lines

Interval (hours)	Check Points	Abnormalities	Remedies
Daily	Contact surfaces of flange joints	Leak (11)	Replace
	Bolts	Loose or leak (11)	Retighten or replace O-ring
	Welded surfaces on flange joints	Leak (12)	Replace
Every 250 hours	Flange joint neck	Crack (13)	Replace
	Welded surfaces on flange joints	Crack (12)	Replace
	Clamps	Missing or deformation Loose bolts	Replace or retighten



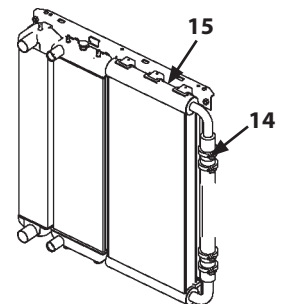
### Oil Cooler

Interval (hours)	Check Points	Abnormalities	Remedies
Daily	Contact surfaces of flange joints	Leak (16)	Replace
	Bolts	Loose or leak (16)	Retighten or replace O-ring
Every 250 hours	Coupling	Leak (14)	Retighten or replace
	Oil Cooler	Leak (15)	Replace



ZX140W-5B

M137-07-002



ZX170W-5B, 190W-5B,  
220W-5B

M1U1-07-051

## MAINTENANCE

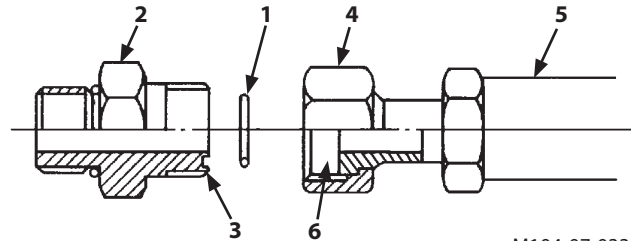
### Service Recommendations for Hydraulic Fittings

Two hydraulic fitting designs are used on this machine.

- Flat Face O-ring Seal Fitting (ORS Fitting)  
O-ring (1) is used on the sealing surfaces of adaptor (2) to prevent oil leakage.

#### Precautions for Use

1. Replace O-ring (1) with a new one when assembling fittings.
  2. Check that O-ring (1) is properly fitted in O-ring groove (3). Tighten union (4).
- Tightening union (4) with O-ring (1) out of the groove may damage O-ring (1) and cause oil leak.
3. When assembling fittings, take care not to make a dent on O-ring groove (3) of adaptor (2) and sealing surface (6) on hose (5) or valve side. Failure to do so may result in damage to O-ring (1) leading to oil leak.
  4. If oil leaks from a loose connection of union (4), do not tighten fitting (2). Open the connection, replace O-ring (1) with new one and check for correct O-ring position before tightening the connection.



M104-07-033

#### Tightening Torque:

Tighten fittings to the torque values shown below.

±10 %

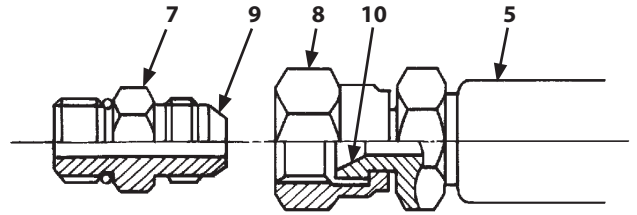
Wrench size (mm)		27	32	36	41, 46
Tightening Torque:	N·m	95	140	180	210
	(kgf·m)	(9.5)	(14)	(18)	(21)

## MAINTENANCE

- **Metal Face Seal Fittings**

Fittings are used on smaller diameter joint and consist of a metal flare (10) and a metal flare seat (9).

1. Inspect flare (10) and flare seat (9). They must be free of dirt or obvious defects.
2. Tighten fitting (7) by hand.
3. Tighten fitting (7) or nut (8) to the torque values shown. Do not allow hose (5) to twist when tightening fittings.



M202-07-051

Wrench size (mm)		17	19	22	27
Torque	N·m	25	30	40	80
	(kgf·m)	(2.5)	(3)	(4)	(8)

- **Bent Tube**

Tighten bent tube to the torque values shown below.

Wrench size (mm)		19
Tightening torque	N·m	44
	(kgf·m)	(4.4)

## MAINTENANCE

---

### G. Fuel System

 **WARNING: Beware of fire. 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.**

#### **Recommended Fuel**

Use only super high quality or high quality DIESEL FUEL (JIS K-2204) (EN590) (ASTM D-975). Kerosene must NOT be used. Besides, 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 sliding problem at lubricated contacts in the injector. It also affects the engine parts, leading to malfunction. Using fuel other than ultra low-sulfur or low-sulfur diesel fuel has adverse effects on the engine and the muffler filter, which may result in malfunction.



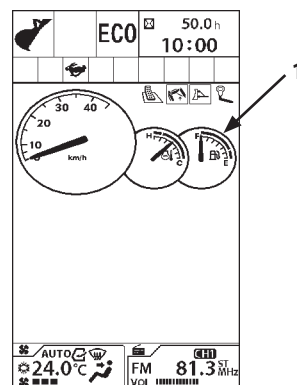
## MAINTENANCE

### 1 Check Fuel Level --- every 8 hours (daily)

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

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

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



MLBA-01-001

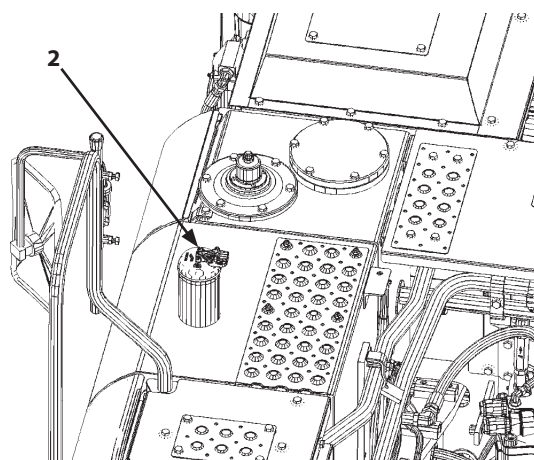
**IMPORTANT:** Keep all dirt, dust, water and other foreign materials out of the fuel system when refilling fuel.

3. Remove cap (2) of fuel port.

[Cap (2) unlock procedures]

- Release the key lock.
- Pull up handle (3) and turn handle (3) counterclockwise for releasing cap (2) lock.
- Remove cap (2).

4. 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.



MLBA-07-024

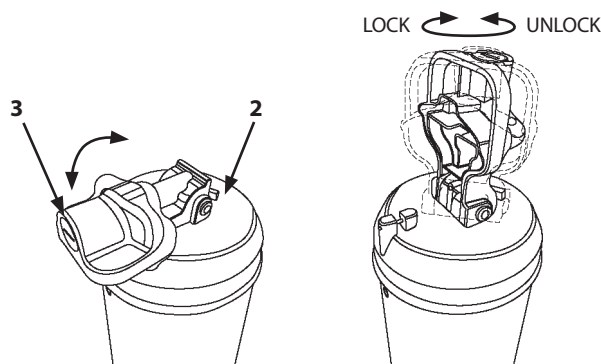
Model	Tank Capacity
ZX140W-5B	250 L (66 US gal)
ZX170W-5B, 190W-5B	290 L (77 US gal)
ZX220W-5B	400 L (94 US gal)

Do not fill the tank more than specified. Stop filling when a yellow mark on fuel level gauge (4) becomes visible. Be sure to position the fuel service nozzle so that any part of the nozzle does not obstruct rising of float-type fuel level gauge (4).

5. Install cap (2) of fuel port.

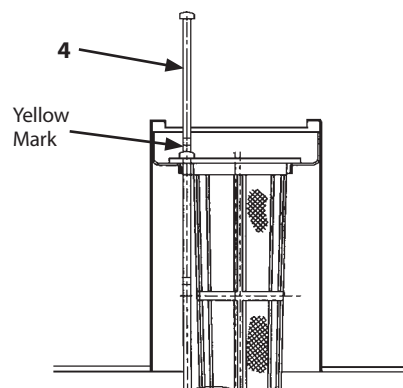
[Cap (2) lock procedures]

- Install cap (2).
- Turn handle clockwise until cap (2) is locked, and push down handle (3).
- Lock the key.




MLBA-07-094

MLBA-07-093

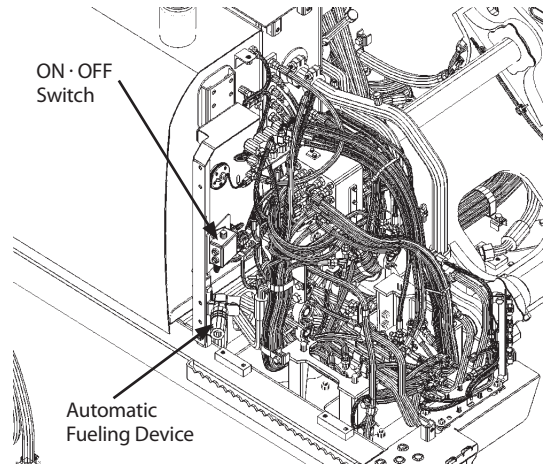


M157-07-060

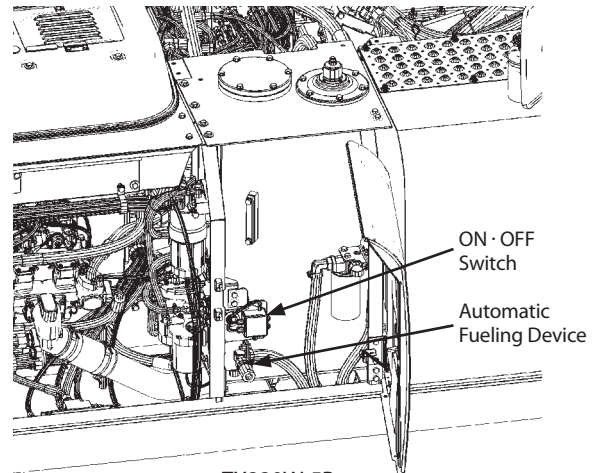
# MAINTENANCE

 **NOTE:** Take precautions for Fueling with Automatic Fueling Device (Optional).

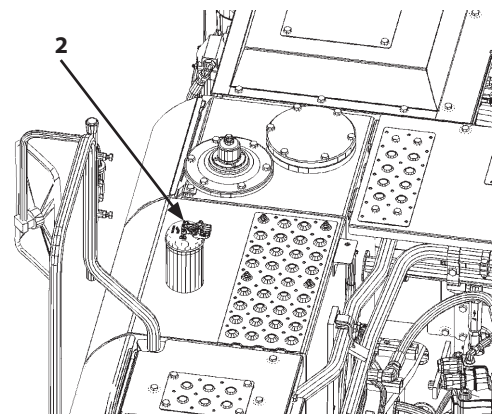
Avoid overfilling. Never fail to remove filler cap (2) when refueling with the automatic fueling device and be sure to stop fueling when the yellow mark on the float (3) becomes visible.



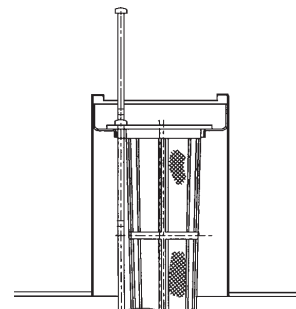
ZX140W-5B, 170W-5B, 190W-5B MLBA-07-028



ZX220W-5B MLBA-07-010



MLBA-07-024



M157-07-060

## MAINTENANCE

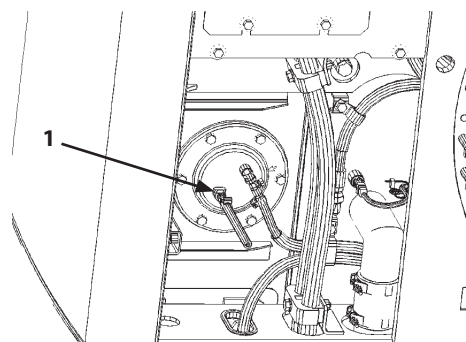
### 2 Drain Fuel Tank Sump

--- daily

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Place 0.5 liters or larger capacity container under the drain hose to collect the drained water.
3. Open drain valve (1) to drain water and/or sediment.
4. After draining water, securely tighten drain valve (1).



M202-07-028



MLBA-07-033

## MAINTENANCE

### 3 Drain Fuel Filter --- every 8 hours (before starting operation)

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

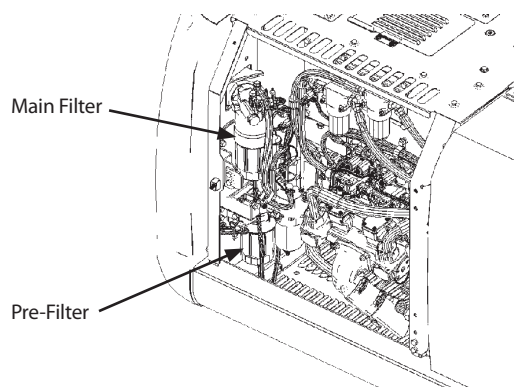
Fuel main filter and pre-filter have water separator functions, these allow float (4) to rise as water accumulates. Be sure to drain daily the water accumulated in the filter until float (4) goes to the bottom of case.

#### Draining Procedures (Main Filter)

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Place 0.5 liters or larger capacity container under drain hose (3) to collect the drained water.
3. Rotate drain valve (2) on the bottom of the filter about 4-turns counterclockwise. Drain the water accumulated in the filter until float (4) goes to the bottom of case. If it is difficult to drain, loosen plug (1) on the top of the main filter.
4. After draining water, securely tighten drain valve (2) and plug (1).
5. Start the engine. Check drain valve (2) and plug (1) for fuel leaks.

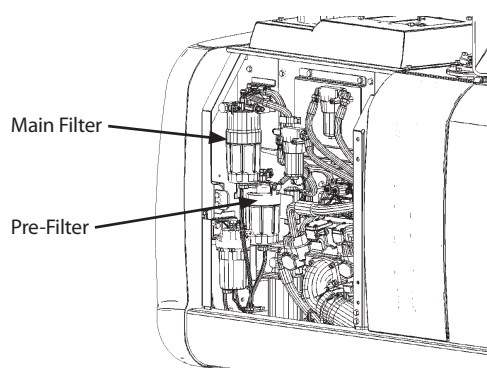
Wrench size: 10 mm

**IMPORTANT: After draining water mixed in fuel, bleed air from the fuel supply system.**



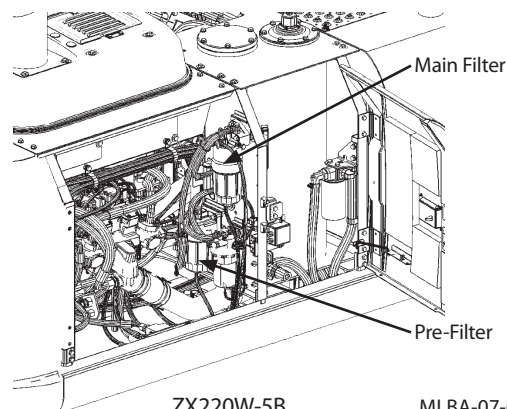
ZX140W-5B

MLBA-07-092



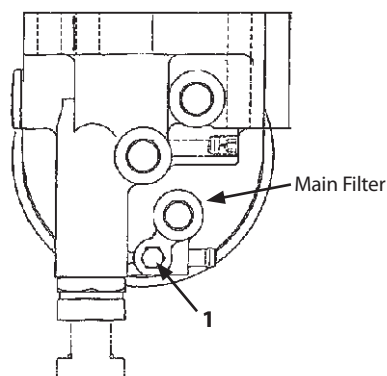
ZX170W-5B, 190W-5B

MLBA-07-031

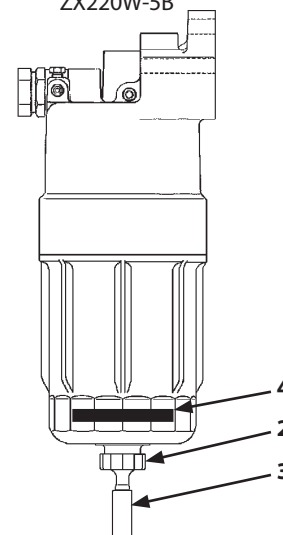


ZX220W-5B

MLBA-07-032



M1GR-07-010



M81U-07-030

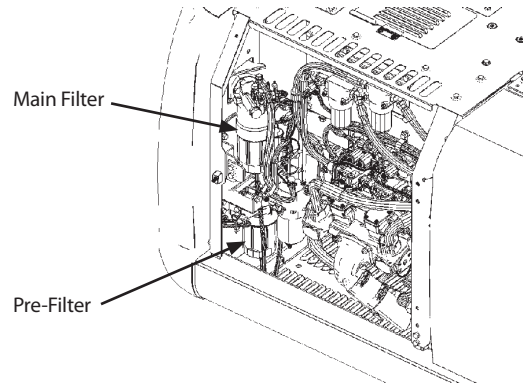
# MAINTENANCE

## Draining Procedures (Pre-Filter)

1. Place 0.5 liters or larger capacity container under drain hose (3) to collect the drained water.
2. Rotate drain valve (2) on the bottom of the filter counterclockwise. Drain the water accumulated in the filter until float (4) goes to the bottom of case. If it is difficult to drain, loosen plug (1) on the top of the fuel pre-filter.
3. After draining water, securely tighten drain valve (2) and plug (1).
4. Start the engine. Check drain valve (2) and plug (1) for fuel leaks.

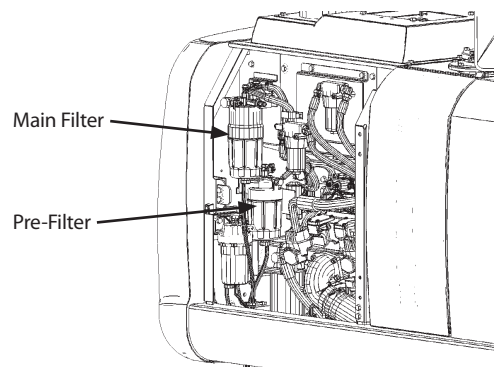
**IMPORTANT:** After draining water mixed in fuel, bleed air from the fuel supply system.

Wrench size: 14 mm



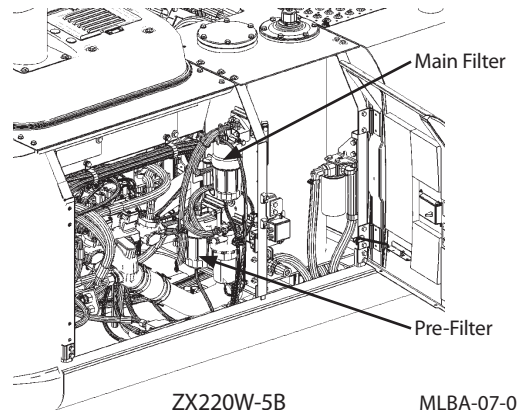
ZX140W-5B

MLBA-07-092



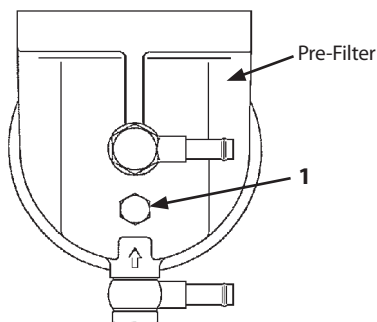
ZX170W-5B, 190W-5B

MLBA-07-031

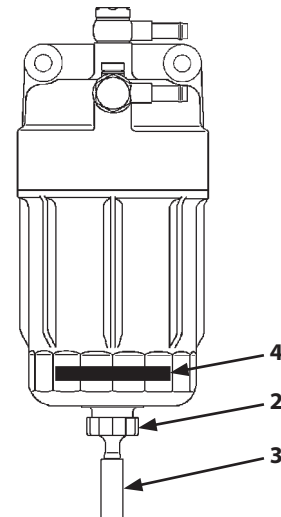


ZX220W-5B

MLBA-07-032



M1U1-07-004



M81U-07-031

## MAINTENANCE

### Bleed Air from the Fuel System

Air in the fuel system may make the engine hard to start or make it run irregularly.

After draining water and sediment from the fuel filter, replacing the fuel filter, cleaning the fuel solenoid pump strainer or running the fuel tank dry, be sure to bleed the air from the fuel system.

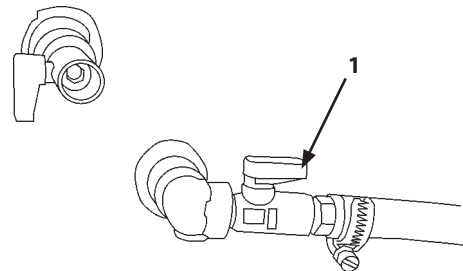
### Main Points to Bleed Air

This machine is equipped with a fuel solenoid pump.

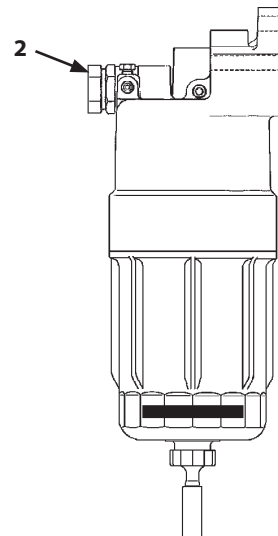
**CAUTION:** Fuel leaks may lead to fires.

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Check that fuel cock (1) on the bottom of the fuel tank is opened.
3. Turn the key switch ON and hold it in that position for approx. 3 minutes. Thereby, the electrical fuel pump operates, starting to bleed air.
4. While holding the key switch in the ON position, reciprocate fuel main filter priming pump (2). After air is bled from the main filter, return priming pump (2) to the original position.
5. After the main filter is filled with fuel, hold the key switch in the ON position for 30 seconds.
6. Start the engine. Check the fuel supply system for fuel leaks.

**IMPORTANT:** Even if air is not thoroughly bled, do not hold the key switch in the ON position for more than 5 minutes. In case air is not thoroughly bled, first return the key switch to the OFF position. Then, after waiting for more than 30 seconds, turn the key switch ON again. Failure to do so may cause damage to the electrical pump and/or discharging the batteries.



M1U1-07-015



M81U-07-030

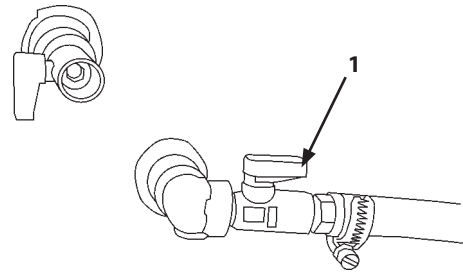
## MAINTENANCE

### Air Bleeding by Priming Pump

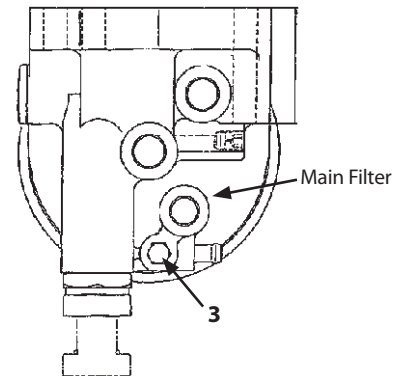
In case air is not bled due to malfunction of the fuel solenoid pump, operating the priming pump only can bleed air.

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
  2. Check that fuel cock (1) on the bottom of the fuel tank is opened.
  3. Loosen air bleed plug (3) on the fuel main filter.
  4. Supply fuel by reciprocating priming pump (6).
- After no air bubbles are spouted through air bleed plug (3), tighten air bleed plug (3).
5. After tightening air bleed plug (3), reciprocate priming pump (2) approx. 150 strokes.
  6. Wipe off any spilled fuel.
  7. Start the engine. Check that no fuel leaks are present. If the engine does not start, repeat the above procedures from step 1.

Wrench size: 10 mm



M1U1-07-015

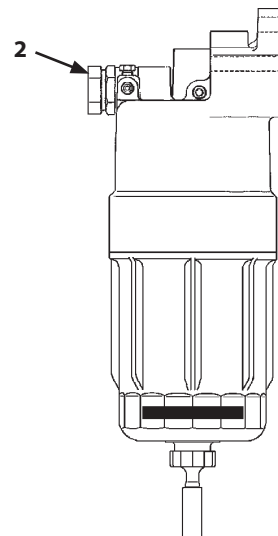


M1GR-07-010

### If Air Mixed After Common Rail

In case air mixed in the fuel system due to lack of fuel and the engine is difficult to start, release air by following the procedure given below.

1. Bleed air until the engine supply pump entrance enough according to the above-mentioned procedures.
2. Operate starter motor for long cranking within 20 seconds. If engine falls to start, return key switch to OFF. Wait more than about 60 seconds, and then try again.



M81U-07-030

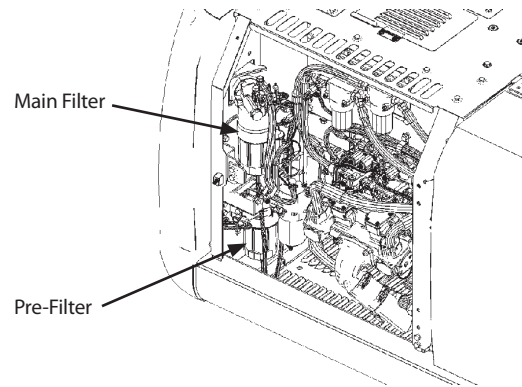


## MAINTENANCE

- 4** **Replace Fuel Main Filter Element**  
--- every 1000 hours or when fuel filter clogging lamp is lit

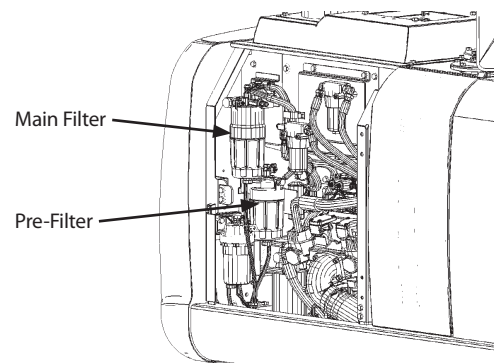
### IMPORTANT:

- Be sure to use only genuine Hitachi elements for the fuel main filter element and the pre-filter element. Failure to do so may 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 Hitachi Warranty Policy.
- Take care not to allow dirt and/or water to enter the fuel tank.



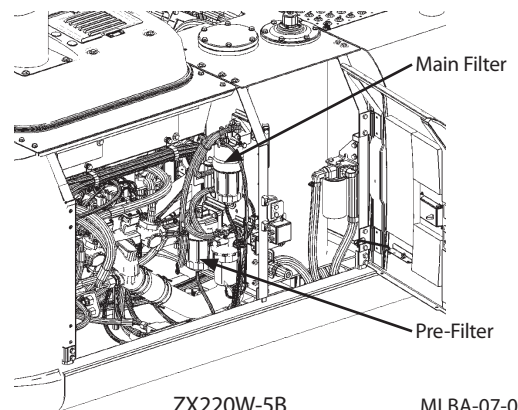
ZX140W-5B

MLBA-07-092



ZX170W-5B, 190W-5B

MLBA-07-031



ZX220W-5B

MLBA-07-032



## MAINTENANCE

### Procedures:

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Close cock (5) on the bottom of the fuel tank.
3. Place 1 liter or larger capacity container under drain hose (3) to collect the drained water.
4. Loosen air bleed plug (1) and drain valve (2). Drain fuel until fuel does not flow out of the filter.

After draining fuel, remove drain valve (2) and replace O-ring.

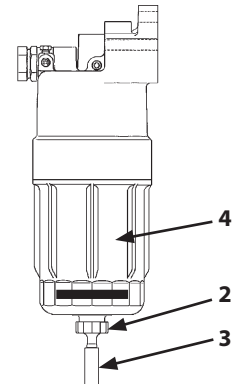
5. Remove transparent filter case (4) using the exclusive tool.
6. When transparent filter case (4) is removed, the element and O-ring for transparent filter case (4) are exposed. Remove the element and O-ring by hand.
7. Install a new element. Replace O-ring and tighten transparent filter case (7) to 30 +/- 2 N·m using the exclusive tool.
8. Tighten air bleed plug (1) and drain valve (2).
9. Open cock (3) on the bottom of the fuel tank.

10. Bleed Air from the Fuel System

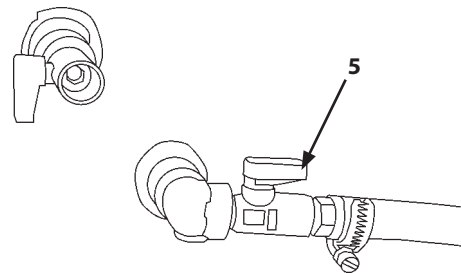
After replacing the fuel filter element, bleed air from the fuel supply system.

(Refer to "Bleed Air from the Fuel System".)

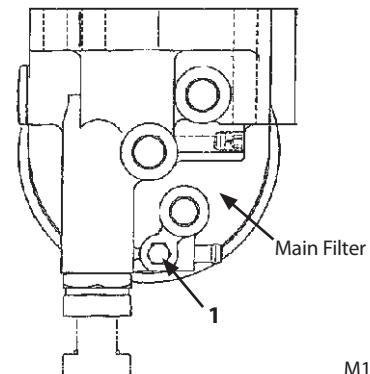
Wrench size: 10 mm



M81U-07-030



M1U1-07-015



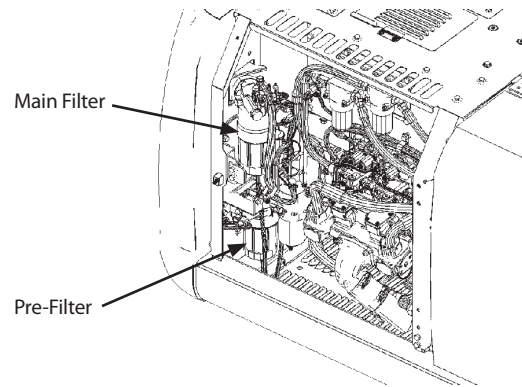
M1GR-07-010

## MAINTENANCE

- 5** **Replace Fuel Pre-Filter Element**  
---every 1000 hours or when fuel filter clogging lamp is lit

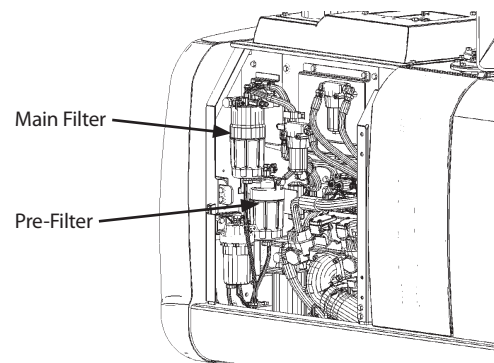
### IMPORTANT:

- Be sure to use only genuine Hitachi elements for the fuel main filter element and the pre-filter element. Failure to do so may 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 Hitachi Warranty Policy.
- Take care not to allow dirt and/or water to enter the fuel tank.



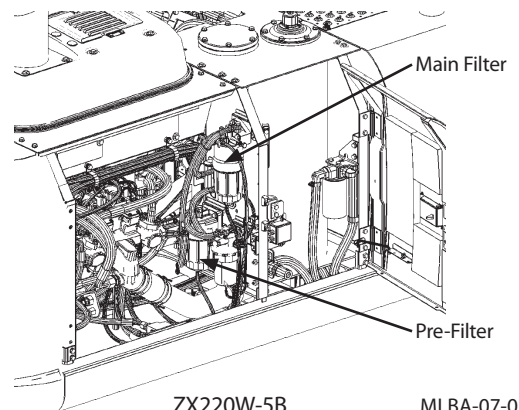
ZX140W-5B

MLBA-07-092



ZX170W-5B, 190W-5B

MLBA-07-031



ZX220W-5B

MLBA-07-032

## MAINTENANCE

### Procedures:

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Close cock (5) on the bottom of the fuel tank.
3. Place 1 liter or larger capacity container under drain hose (3) to collect the drained water.
4. Loosen air bleed plug (1) and drain valve (2). Drain fuel until fuel does not flow out of the filter.

After draining fuel, remove drain valve (2) and replace O-ring.

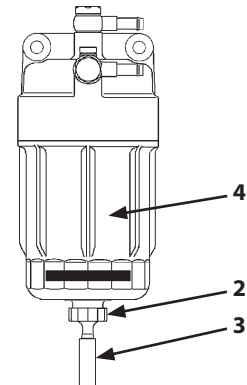
5. Remove transparent filter case (4) using the exclusive tool.
6. When transparent filter case (4) is removed, the element and O-ring for transparent filter case (4) is exposed. Remove the element by hand.
7. Install a new element. Replace O-ring and tighten transparent filter case (4) to 30 +/- 2 N·m using the exclusive tool.
8. Tighten air bleed plug (4) and drain valve (2).
9. Open cock (5) on the bottom of the fuel tank.

10. Bleed Air from the Fuel System

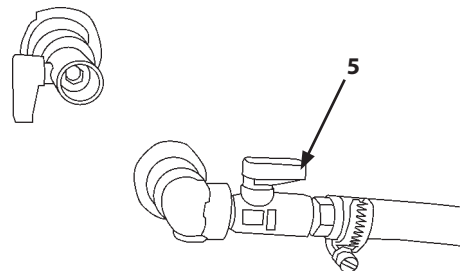
After replacing the fuel filter element, bleed air from the fuel supply system.

(Refer to "Bleed Air from the Fuel System".)

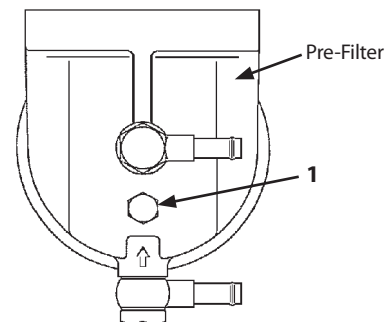
Wrench size: 14 mm



M81U-07-031



M1U1-07-015



M1U1-07-004

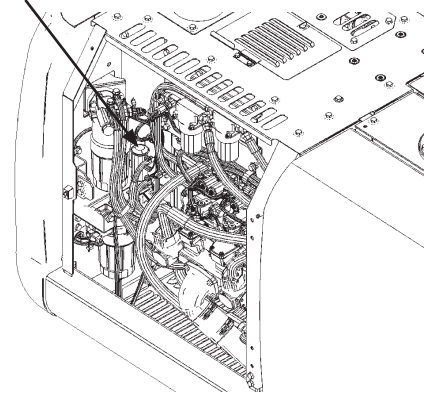
## MAINTENANCE

### 6 Clean Fuel Solenoid Pump Strainer --- every 1000 hours

#### Cleaning

When the strainer is disassembled, be sure to replace the gasket. Install the cover and the magnet only after sufficiently cleaning them. After being assembled, closely check the air-tightness of the strainer.

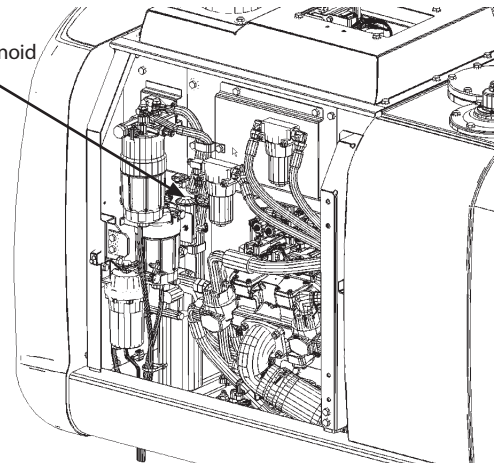
Fuel Solenoid Pump



ZX140W-5B

MLBA-07-030

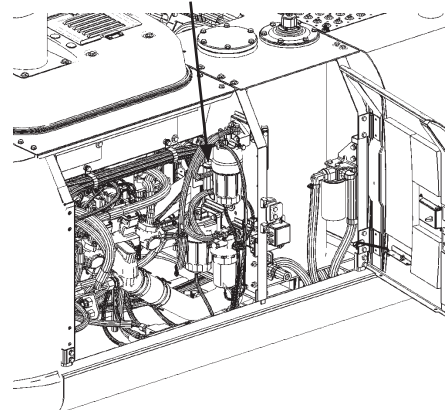
Fuel Solenoid Pump



ZX170W-5B, 190W-5B

MLBA-07-014

Fuel Solenoid Pump



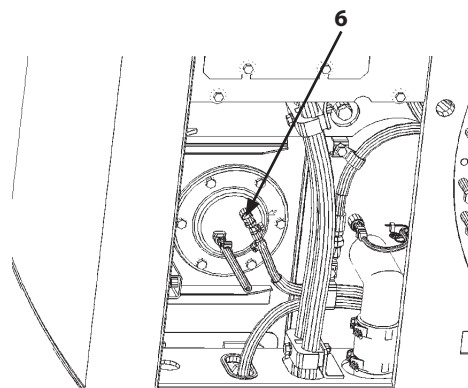
ZX220W-5B

MLBA-07-032

## MAINTENANCE

### Disassembling/ Assembling

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Close cock (6) on the bottom of the fuel tank.
3. To remove cover (1), loosen with a spanner.
4. After cover (1) is removed, gasket (2), strainer (3), and gasket (4) are easily removed in order.
5. Wash removed strainer (3) with light oil.
6. 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 spanner.

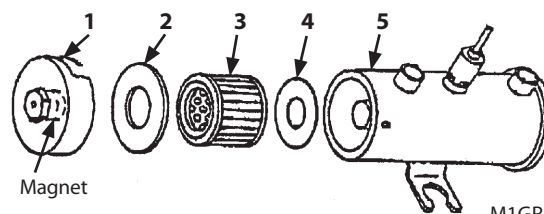


MLBA-07-033

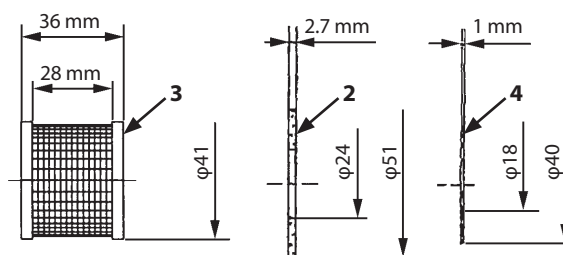
**NOTE:** Wrench size: 17 mm

### IMPORTANT:

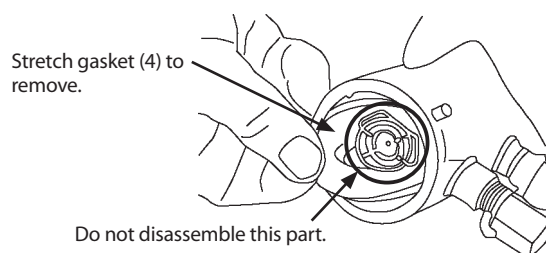
- **Only do the cleaning and replacement of the strainer as well as the replacement of gaskets (2) and (4) while servicing the machine. Never attempt to disassemble other parts.**
- **Gasket (4) can get caught with the shaft of pump (5), making it difficult to remove the gasket, but do not disassemble the shaft of pump (5). If the gasket is difficult to remove, do not disassemble other parts but extend gasket (4) to remove it. Use new gasket (4) for assembling.**



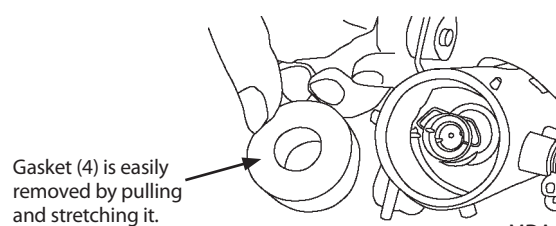
M1GR-07-004



M1U1-07-006



MDAА-07-053



MDAА-07-054

## MAINTENANCE

### 7 Check Water Separator (Optional)

**Drain water --- every 8 hours (before starting operation)**

**Change Element --- every 2000 hours**

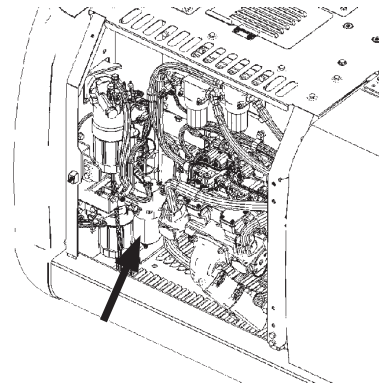
Water separator (2) is a device designed to separate water from the fuel. There is a float inside the case which buoys when water accumulates.

When the float rises to the water draining level, drain water.

#### Drain Procedures

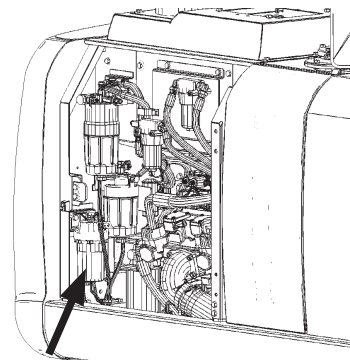
1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Close the cock located at lower part of the fuel tank to stop feeding fuel.
3. Place 0.5 liters or larger capacity container under drain hose (4) to collect the drained water.
4. Loosen plug (1) at upper part of water separator (2). Loosen drain valve (3) at lower part of the case to drain water.
5. After draining water, securely tighten drain plug (1) and valve (3).
6. Return fuel cock (5) to its original position (open).

**IMPORTANT: After draining water from the water separator, bleed air from the fuel supply system.**



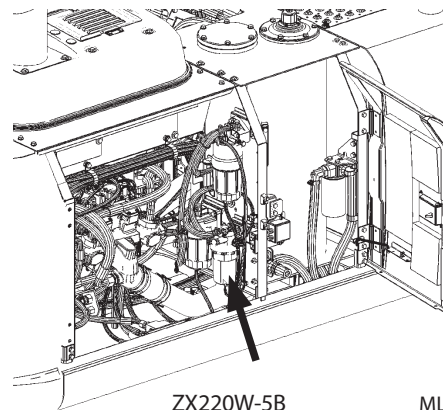
ZX140W-5B

MLBA-07-092



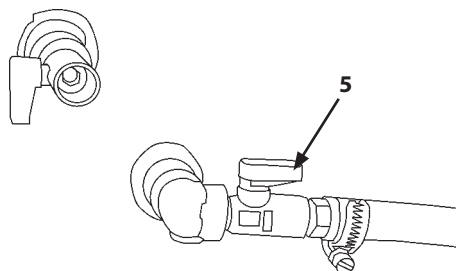
ZX170W-5B, 190W-5B

MLBA-07-031

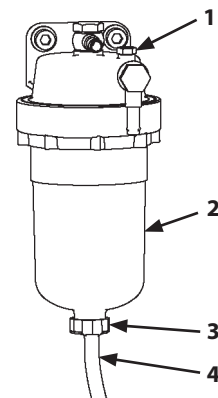


ZX220W-5B

MLBA-07-032



M1U1-07-015



MDAA-07-009

## MAINTENANCE

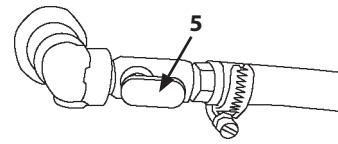
### Element replacement procedure

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Close cock (5) on the bottom of the fuel tank.
3. Place 1 liter or larger capacity container under drain hose (4) to collect the drained water.
4. Loosen air bleed plug (1) and drain valve (3). Drain fuel until fuel does not flow out of the filter.  
After draining fuel, remove drain valve (3) and replace O-ring.
5. Remove transparent filter case (2) using the exclusive tool.
6. When transparent filter case (2) is removed, the element and O-ring for transparent filter case (2) is exposed. Remove the element by hand.
7. Install a new element. Replace O-ring and tighten transparent filter case (3) to 30 +/- 2 N·m using the special tool.
8. Tighten air bleed plug (1) and drain valve (3).
9. Open cock (1) on the bottom of the fuel tank.
10. Bleed Air from the Fuel System

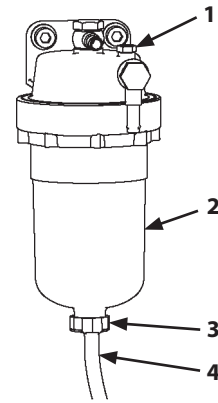
After replacing the water separator element, bleed air from the fuel supply system.

(Refer to "Bleed Air from the Fuel System".)

Wrench size: 10 mm



MDAA-07-007



MDAA-07-009

## MAINTENANCE

### 8 Check Fuel Hoses

- every 8 hours (before starting operation)
- every 250 hours

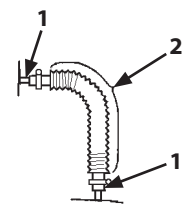
**⚠ CAUTION:** Fuel leaks can lead to fires that may result in serious injury.

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

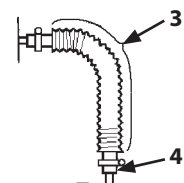
According to the check points shown below, check hoses for oil leaks and damage. If any abnormality is found, replace or retighten as instructed in the table.

#### Hose

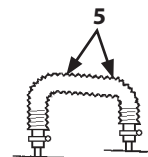
Interval (hours)	Check Points	Abnormalities	Remedies
Daily	Hose ends	Leak (1)	Retighten or replace
	Hose covers	Wear, crack (2)	Replace
Every 250 hours	Hose covers	Crack (3)	Replace
	Hose ends	Crack (4)	Replace
	Hose	Bend (5), Collapse (6)	Replace
	Hose fittings	Corrosion (7)	Replace



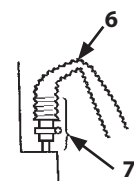
M137-07-003



M137-07-004



M137-07-005



M137-07-006



# MAINTENANCE

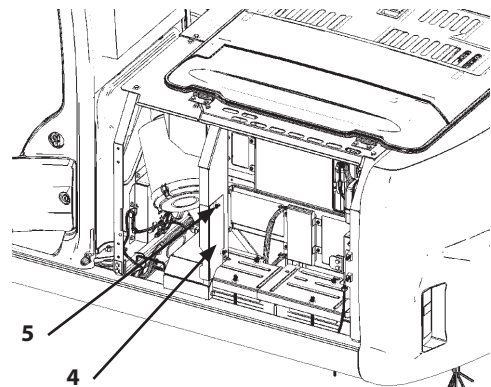
## H. Air Cleaner

- 1** Clean Air Cleaner Outer Element  
--- every 250 hours or when the restriction indicator comes ON
- 2** Replace Air Cleaner Outer and Inner Elements  
--- after cleaning six times or after one year

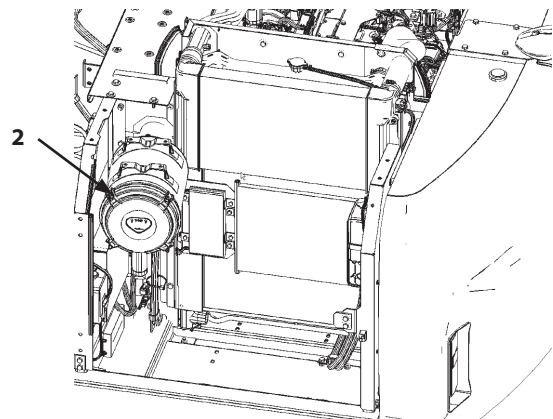
### Procedure:

#### Clean Air Cleaner Outer Element

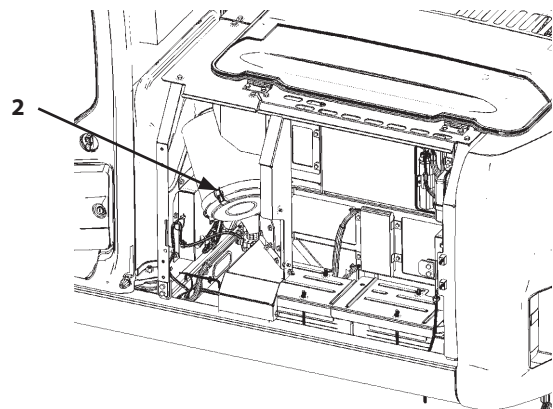
1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.  
ZX140W-5B, 220W-5B
2. Loosen clamps (2) to remove the cover.  
ZX170W-5B, 190W-5B
2. Remove wing nuts (5) and cover (4). Loosen clamps (2) to remove the cover.



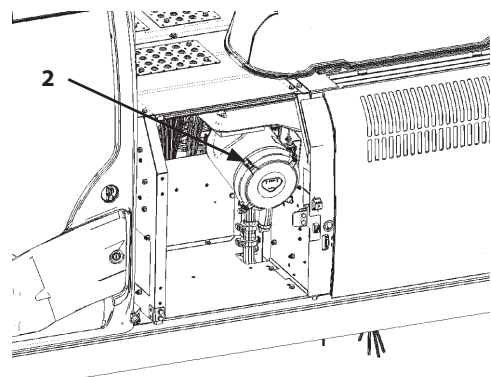
ZX170W-5B, 190W-5B MLBA-07-034



ZX140W-5B MLBA-07-035



ZX170W-5B, 190W-5B MLBA-07-036



ZX220W-5B MLBA-07-037

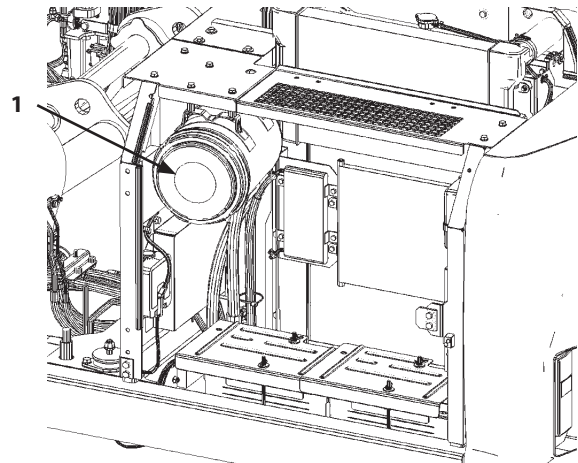
## MAINTENANCE

3. Remove outer element (1).

**⚠ CAUTION:** Use reduced compressed air pressure. (Less than 0.2 MPa, 2 kgf/cm<sup>2</sup>). Clear area of bystanders, guard against flying chips, and wear personal protection equipment including goggles or safety glasses.

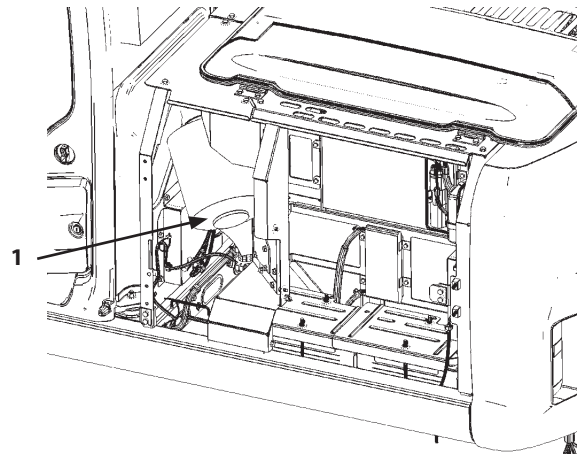
**IMPORTANT:** To clean element (1), avoid giving shocks or striking element with other objects.

4. Clean outer element (1) by blowing compressed air [less than 0.2 MPa (2 kgf/cm<sup>2</sup>)] outward from the inside of the filter element. After cleaning, be sure to check element (1) for any damage. If any damage is found, replace the element with a new one.



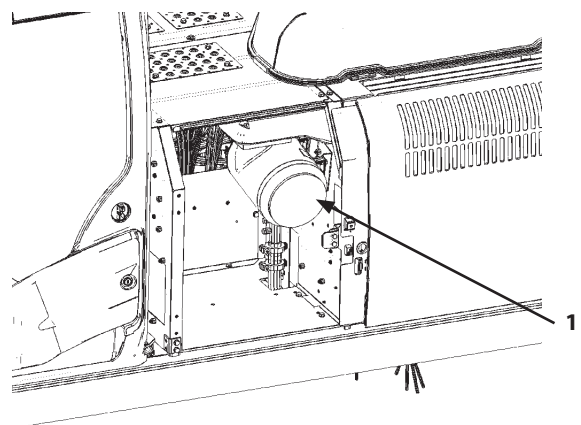
ZX140W-5B

MLBA-07-038



ZX170W-5B, 190W-5B

MLBA-07-039



ZX220W-5B

MLBA-07-040

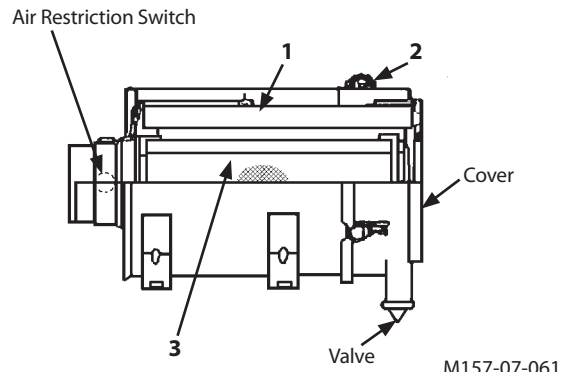
## MAINTENANCE

---

5. Clean the filter interior before installing outer element (1).
6. Install outer element (1).

**IMPORTANT: Do not install the element and/or the cover forcibly when installing the clamps. Failure to do so may result in deformation of the clamps, element, and/or cover.**

7. Install cover and tighten clamps (2).
8. Start the engine and run at slow idle.
9. In case the air filter restriction indicator lights soon after cleaning outer element (1) even if the cleaning times are less than 6 times, replace both outer and inner elements with new ones.



### Replace Air Cleaner Outer and Inner Element

**IMPORTANT:**

- **When replacing the air cleaner filter element, replace both outer (1) and inner (3) elements together.**
- **Do not reuse inner element (3). Always replace the new one.**

10. Remove outer element (1). (Perform work of step 1 to 3.)
11. Clean the filter interior before removing inner element (3).
12. Remove inner element (3).
13. First install inner element (3) and then install outer element (1).
14. Install cover and tighten clamps (2).

# MAINTENANCE

## I. Cooling System

### Coolant

**IMPORTANT:** Use soft water as a coolant. Do not use strong acid or alkaline water. Use the coolant with genuine Hitachi Long-Life Coolant (LLC) mixed by 30 to 50 %.

If a coolant mixed with less than 30 % of Hitachi Long-Life Coolant is used, service life of the cooling parts may be shortened due to damage by freezing or corrosion of coolant system parts.

If it is above 60 %, the engine may overheat.

### Antifreeze Mixing Ratio

Air Temperature [°C]	Mixing Ratio [%]	ZX140W-5B		ZX170W-5B, 190W-5B, 220W-5B	
		Antifreeze [L]	Soft water [L]	Antifreeze [L]	Soft water [L]
-1	30	6	14	7.5	17.5
-15	35	7	13	8.7	16.3
-20	40	8	12	10	15
-25	45	9	11	11.2	13.8
-30	50	10	10	12.5	12.5

### CAUTION: Precautions for handling antifreeze

- Antifreeze is poisonous.
- Antifreeze is poisonous; if ingested, it can cause serious injury or death. Induce vomiting and get emergency medical attention immediately.
- If antifreeze is accidentally splashed into eyes, flush with water for 10 to 15 minutes and get emergency medical attention.
- 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.
- Use attention to fire hazards. LLC is specified as a dangerous substance in the fire protection law.
- When disposing of LLC, be sure to comply with all local regulations. When storing or disposing of antifreeze, be sure to comply with all local regulations.

## MAINTENANCE

### 1 Check Coolant Level

--- daily

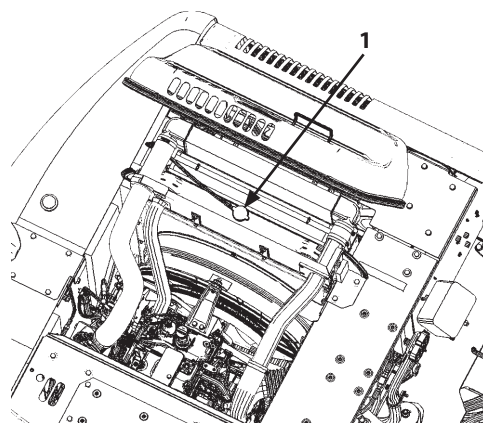
With the engine cold, the coolant level must be between the FULL and LOW marks on coolant reservoir (2).

If the coolant level is below the low mark, add coolant to coolant reservoir (2).

**⚠ CAUTION:** Do not loosen cap (1) until the coolant temperature in the radiator becomes cool. Hot steam may spout out, possibly causing severe burns. After the coolant temperature has lowered, slowly loosen cap (1) to release the inside air pressure before removing cap (1).

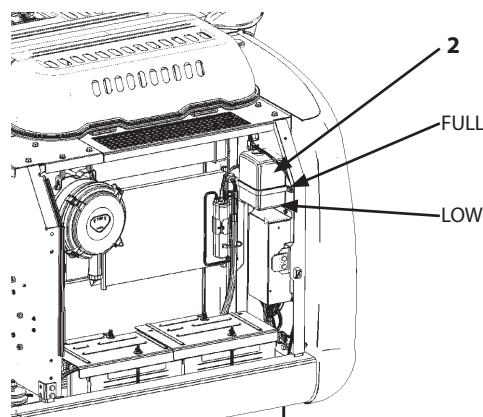
If coolant reservoir (2) is empty, add coolant through cap (1) radiator.

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



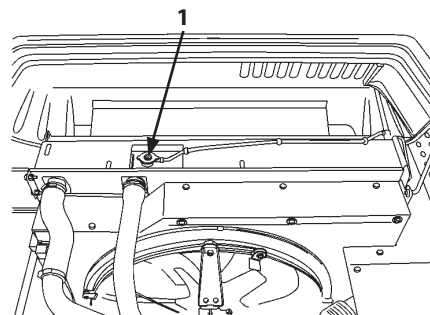
ZX140W-5B

MLBA-07-041



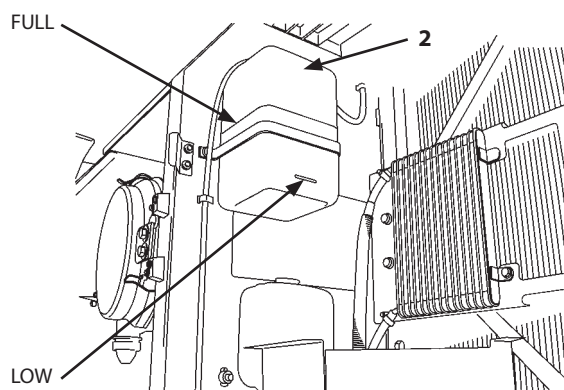
ZX140W-5B

MLBA-07-042



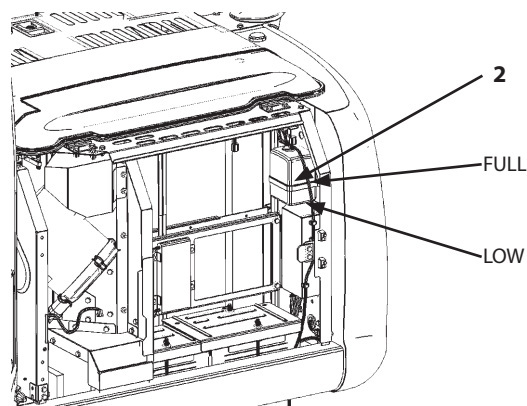
ZX170W-5B, 190W-5B, 220W-5B

M1U1-07-024



ZX220W-5B

M1U1-07-022



ZX170W-5B, 190W-5B

MLBA-07-043

## MAINTENANCE

### 2 Check and Adjust Fan Belt Tension

--- every 250 hours

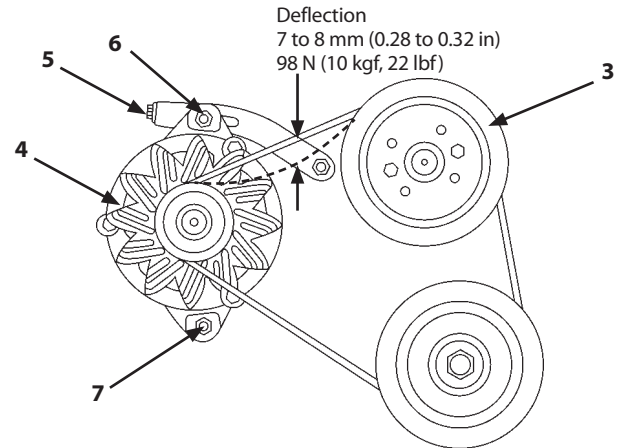
#### ZX140W-5B

**IMPORTANT:** Loose fan belt may result in insufficient battery charging, engine overheating, as well as premature belt wear. Belts that are too tight, however, can damage both bearings and belts.

#### Inspect

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Check fan belt tension by depressing the midpoint between fan pulley (3) and alternator pulley (4) by your thumb with a depressing force of approximately 98 N (10 kgf, 22 lbf). Deflection must be within the value illustrated in the right.

Visually check the belt for wear. Replace if necessary.



ZX140W-5B

M1U1-07-089

#### Adjust Drive Belt Tension

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Loosen lock nut (6) at the top of alternator (4), and bolt (7) at the bottom of alternator (4).
3. Adjust belt tension by moving alternator (4) forward or backward by using adjustment bolt (5).
4. Securely tighten lock nut (6) and bolt (7).

#### Tightening Torque

Nut (6): 25 N·m (2.5 kgf·m, 18 lbf·ft)

Bolt (7): 52 N·m (5.2 kgf·m, 38 lbf·ft)

**IMPORTANT:** When a new belt is installed, be sure to re-adjust the tension after operating the engine for 3 to 5 minutes at slow idle speed to be sure that the new belt is seated correctly.

## MAINTENANCE

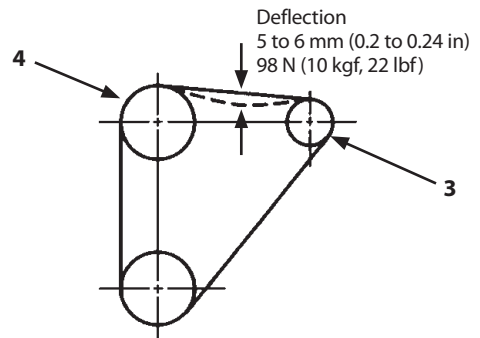
### ZX170W-5B, 190W-5B, 220W-5B

**IMPORTANT:** Loose fan belt may result in insufficient battery charging, engine overheating, as well as premature belt wear. Belts that are too tight, however, can damage both bearings and belts.

#### Inspect

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Check fan belt tension by depressing the midpoint between the fan pulley and the alternator pulley by your thumb with a depressing force of approximately 98 N (10 kgf, 22 lbf). Deflection must be within the value illustrated in the right.

Visually check the belt for wear. Replace if necessary.

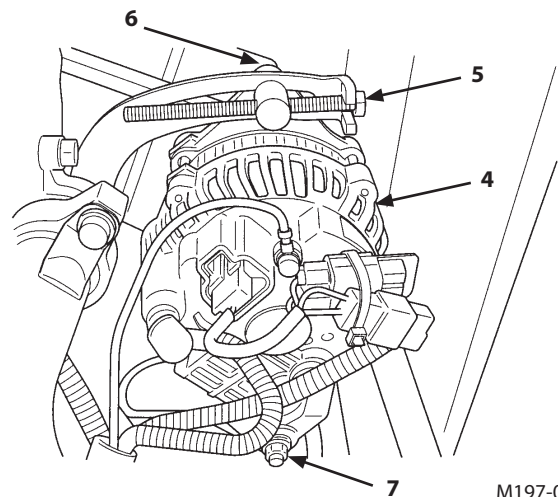


M178-07-030

#### Adjust Drive Belt Tension

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Loosen lock nut (6) at the top of alternator (4), and lock nut (7) at the bottom of alternator (4).
3. Adjust belt tension by moving alternator (4) forward or backward by using adjustment bolt (5).
4. Securely tighten lock nut (6) and bolt (7).


**IMPORTANT:** When a new belt is installed, be sure to re-adjust the tension after operating the engine for 3 to 5 minutes at slow idle speed to be sure that the new belt is seated correctly.




M197-07-072

## MAINTENANCE

### 3 Change Coolant --- twice a year (in spring and autumn)

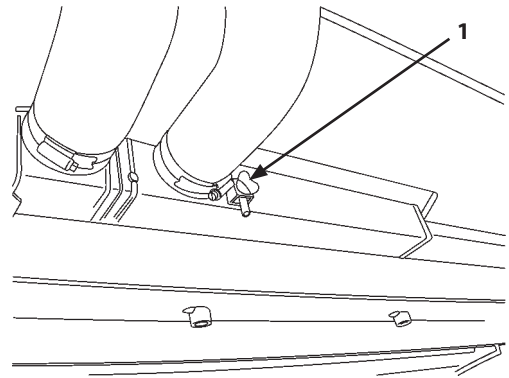
 **NOTE:** When genuine Hitachi Long-Life Coolant is used, change interval is once every two years (in autumn every other year) or every 4000 hours whichever comes first.

 **CAUTION:** Do not loosen the radiator cap until the system has cooled. Hot steam may spout out, possibly causing severe burns. Loosen the cap slowly to the stop. Release all pressure before removing the cap.

**IMPORTANT:** Use fresh water or normal tap water as a coolant. Do not use strong acid or alkaline water. Use the coolant with genuine Hitachi Long-Life Coolant (LLC) mixed by 30 to 50 %.

#### Procedure:

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Remove the under cover. Remove the radiator cap. Open drain cock (1) on the radiator to allow the coolant to drain completely. Remove impurities such as scale at the same time.
3. Close drain cock (1). Fill the radiator with soft water containing fewer impurities or tap water and a radiator cleaner agent. Run the engine at a speed slightly higher than slow idle for about 10 minutes until the coolant temperature gauge becomes horizontally.
4. Stop the engine and open radiator drain cock (1). Flush out the cooling system with tap water, until draining water is clear. This helps remove rust and sediment.



M1U1-07-029



## MAINTENANCE

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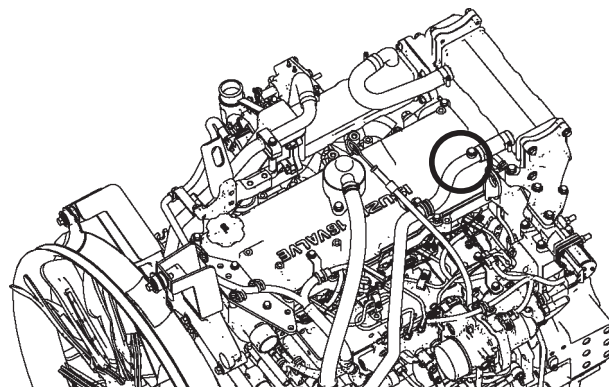
5. Close drain cock (1). Fill the radiator with tap water and LLC at the specified mixing ratio. When adding coolant, do so slowly to avoid mixing air bubbles in the system.

Run the engine to sufficiently bleed air from the cooling system.

ZX170W-5B, 190W-5B, 220W-5B

It is necessary to bleed air from water lines of EGR. Loosen the plug and bleed air.

6. After adding coolant, operate the engine for several minutes. Check the coolant level again, and add coolant if necessary.



ZX170-5B, 190W-5B, 220W-5B MDAА-07-010

## MAINTENANCE

- 4** Clean Radiator/Oil Cooler/Inter Cooler Core  
 Outside --- every 500 hours  
 Inside --- once a year

**CAUTION:** Use reduced compressed air pressure (Less than 0.2 MPa, 2 kgf/cm<sup>2</sup>) for cleaning purposes. Wear personal protection equipment including eye protection.

**IMPORTANT:**

- Cover air cleaner inlet opening to prevent entry of dust and water while cleaning the radiator.
- If air with pressure of higher than 0.2 MPa (2 kgf/cm<sup>2</sup>) or tap water with high delivery pressure is used for cleaning, damage to the radiator/oil cooler/inter cooler fins may result.

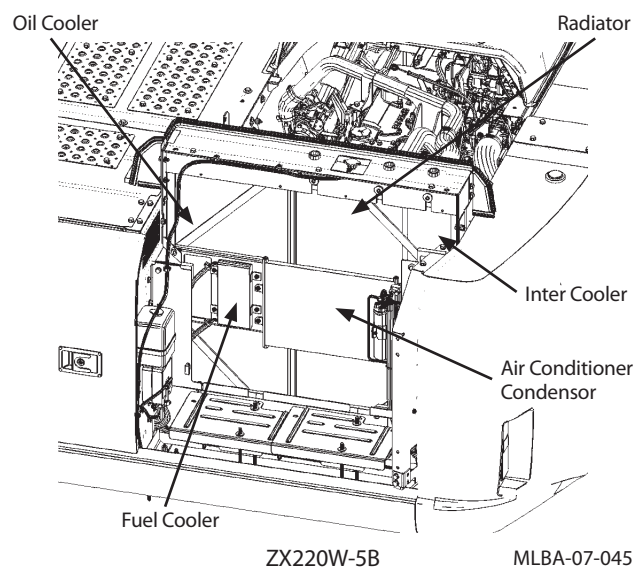
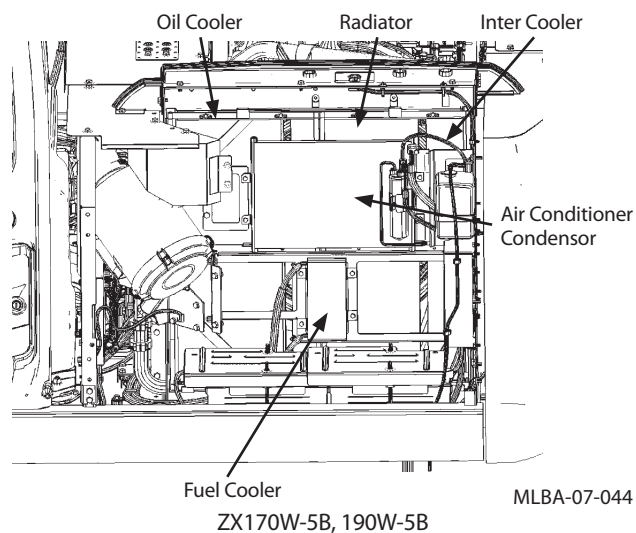
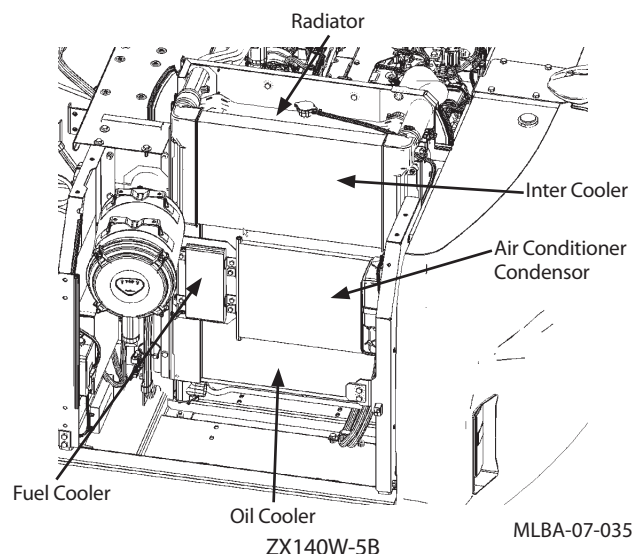
**ZX140W-5B**

The radiator, the oil cooler and the inter cooler are arranged in series.

**ZX170W-5B, 190W-5B, 220W-5B**

The radiator, the oil cooler and the inter cooler are arranged in tandem.

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



## MAINTENANCE

### WARNING:

- Entanglement in moving parts can cause serious injury.
- Before servicing, stop the engine and the fan to prevent any accident.
- Never attempt to start the engine when the cover is open.
- In case tools or parts are dropped into the radiator/oil cooler/inter cooler core, remove them before starting the engine.

ZX170W-5B, 190W-5B, 220W-5B

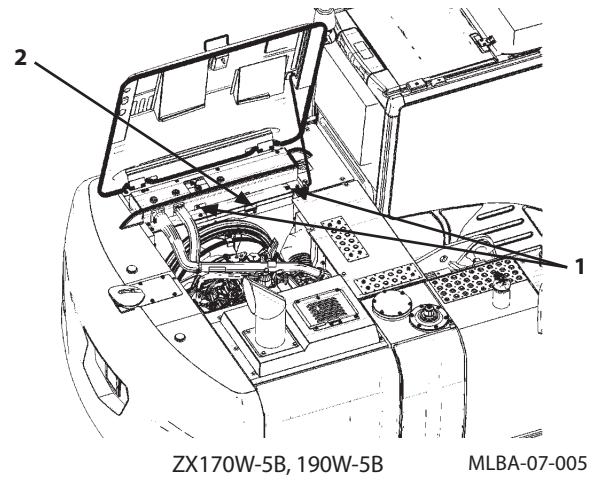
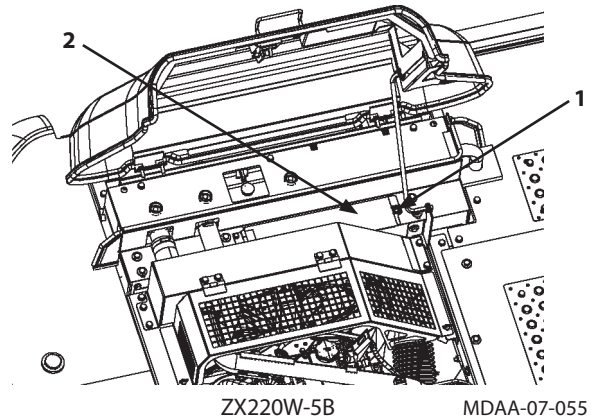
Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.

Twist screw (1) to open cover (2) and perform cleaning.

Take care not to break the fin during clean operation.

Close cover (2) and tighten screw (1) after cleaning.

**IMPORTANT:** Check the core periodically and replace it if necessary when the machine is operated in dusty areas.



## MAINTENANCE

### 5 Clean Oil Cooler, Radiator and Inter Cooler Front Screen

--- every 500 hours

**IMPORTANT:** Check the screen daily and replace it if necessary when the machine is operated in dusty areas.

Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.

ZX140W-5B, 170W-5B, 190W-5B

Remove wing bolts and screen. After cleaning the screen, install wing bolts and screen.

ZX220W-5B

Pull the clip lever on the screen to remove the screen.

Insert the clip into the cover hole and turn over the clip lever to hold the screen.

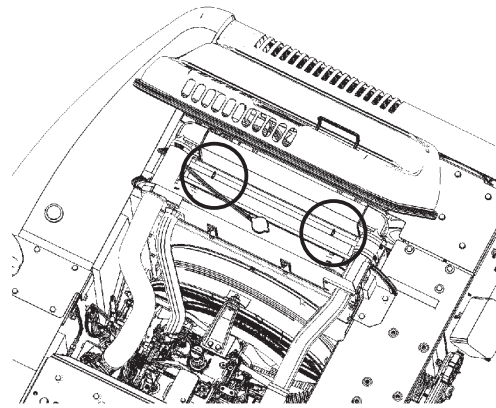
The screen can not be held properly if the clip nut is too tight or loose. Adjust the tightening torque of the clip nut to hold the screen.

For rough indication of the tightening torque, refer to the below.

Tightening Torque: 0.5 N·m

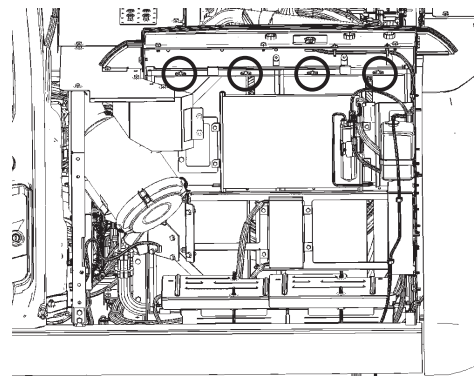
or

A: 2.5 to 3.5 mm



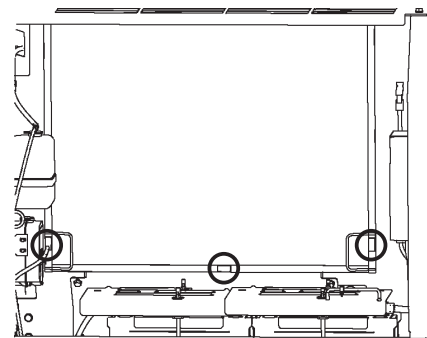
ZX140W-5B

MLBA-07-096



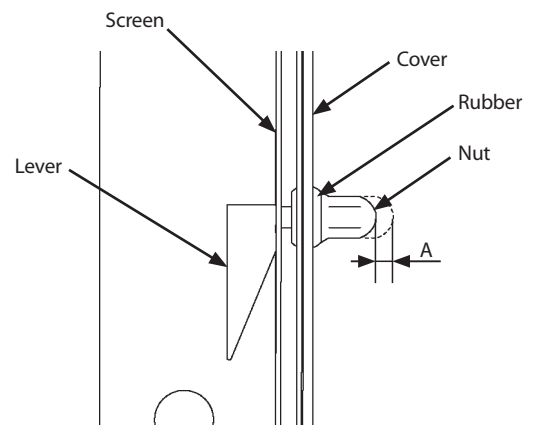
ZX170W-5B, 190W-5B

MLBA-07-044



ZX220W-5B

MDAA-07-024



ZX220W-5B

MDAA-07-025

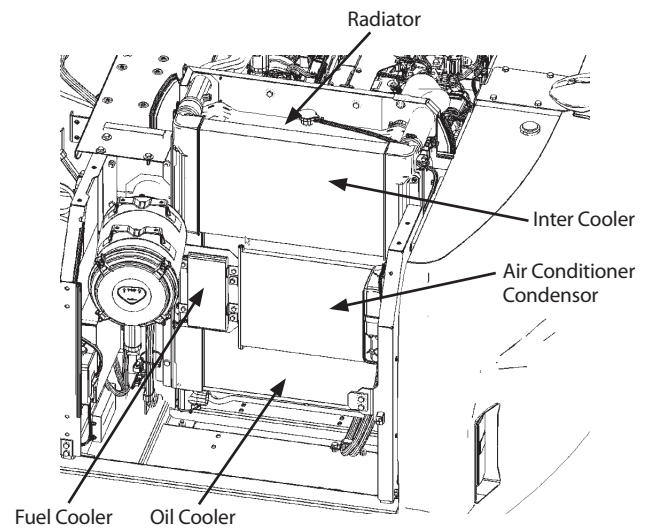
# MAINTENANCE

- 6** Clean Air Conditioner Condenser  
--- every 500 hours

**IMPORTANT:** Check the screen daily and replace it if necessary when the machine is operated in dusty areas.

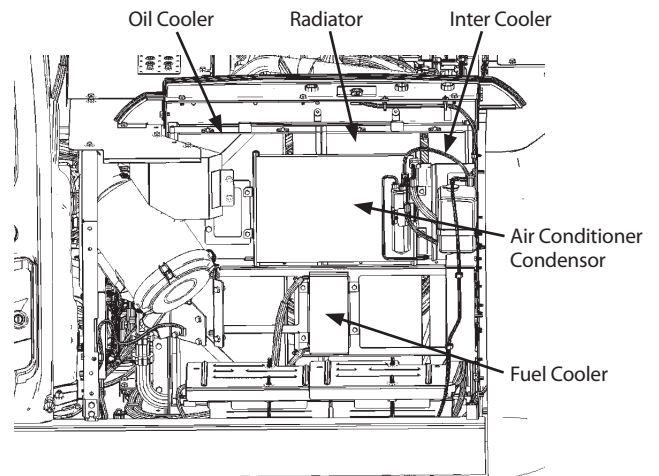
- 7** Clean Fuel Oil Cooler  
--- every 500 hours

**IMPORTANT:** Check the screen daily and replace it if necessary when the machine is operated in dusty areas.



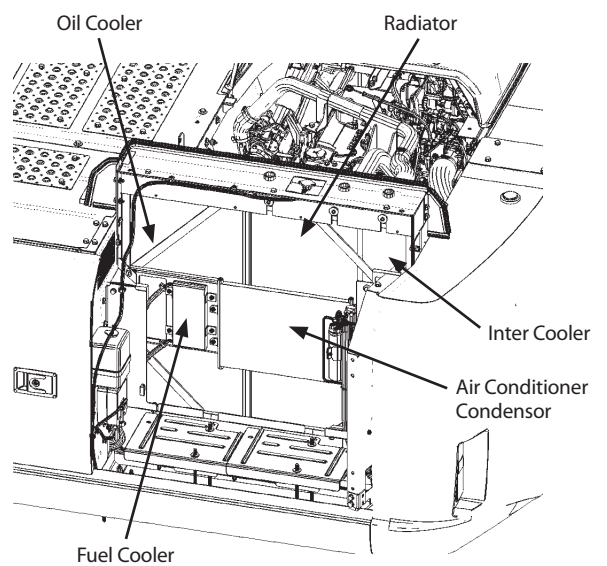
ZX140W-5B

MLBA-07-035



ZX170W-5B, 190W-5B

MLBA-07-044



ZX220W-5B

MLBA-07-045

## MAINTENANCE

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### J. Electrical System

#### IMPORTANT:

- **Improper radio communication equipment and associated parts, and/or improper installation of radio communication equipment affects the machine's electronic parts, causing involuntary movement of the machine.**
- **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 radio communication equipment or additional electrical parts, or when replacing electrical parts.**
- **Never attempt to disassemble or modify the electrical/electronic components. If replacement or modification of such components is required, contact your authorized dealer.**

## MAINTENANCE

### 1 Battery

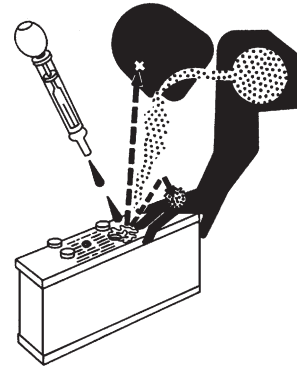
#### ⚠ WARNING:

- Battery gas can explode. Keep sparks and flames away from batteries.
- Do not leave cover (1) removed. Do not keep tools, metals or flammables around the battery or inside the battery room. If a metal tool is placed across the battery terminal and a vehicle component such as the engine block, sparks may be created, possibly resulting in fire and/or explosion.
- Do not continue to use or charge the battery when electrolyte level is lower than specified. Explosion of the battery may result.
- Charge the batteries in a well ventilated location.
- Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into the eyes. Wearing eye protection and rubber gloves.

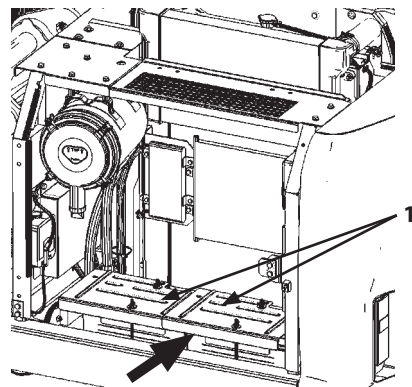
#### IMPORTANT:

- If the battery is used with the electrolyte level lower than the specified lower level, the battery may deteriorate quickly.
- Do not refill electrolyte more than the specified upper level. Electrolyte may spill, damaging the painted surfaces and/or corroding other machine parts.

✎ NOTE: In case electrolyte is refilled more than the specified upper level line or beyond the bottom end of the sleeve, remove the excess electrolyte until the electrolyte level is down to the bottom end of the sleeve using a pipette. After neutralizing the removed electrolyte with sodium bicarbonate, flush it with plenty of water, otherwise, consult the battery manufacturer.

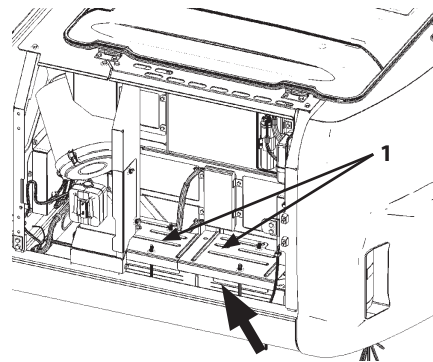


SA-036



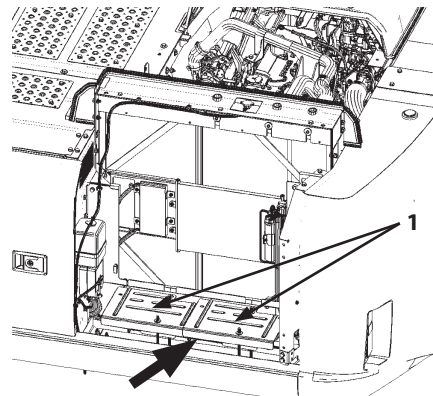
ZX140W-5B

MLBA-07-046



ZX170W-5B, 190W-5B

MLBA-07-047



ZX220W-5B

MLBA-07-045



## MAINTENANCE

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### Precautions for Handling Batteries

- If electrolyte spills on your skin and/or clothes, immediately flush the skin and/or clothes with water and then wash further with soap.  
If splashed in eyes, flush with water for approximately 15 minutes and seek immediate medical attention.
- Avoid using fire hazards such as matches lighters and tobacco near the batteries. Do not allow sparks to fly.
- Check or service the battery only after stopping the engine, turning the key OFF and removing the battery caps.
- Contact with the battery immediately after operation may cause personal injury.  
Wait for the battery to cool.
- When the battery is recharged, inflammable hydrogen gas is created. Remove the battery from the base machine. Recharge the battery after removing the caps in a well ventilated area.
- When disconnecting the battery terminals, first disconnect the ground line [minus (-)] side terminal. When connecting the battery terminals, connect the ground line [minus (-)] side terminal last. If a piece of metal, such as a tool comes in contact with the battery plus (+) side terminal and the vehicle frame when both terminals are connected, the electrical system may short-circuit, possibly creating a dangerous situation.
- If a new battery is used along with an old battery, the service life of the new battery may be shortened. Replace two batteries at one time. Using old battery together with new battery may shorten the new battery life time.
- Loose terminal may allow sparks to fly. Securely tighten the terminals.



## MAINTENANCE

### Electrolyte Level Check --- every one month

Check the electrolyte level at least once a month.

1. Park the machine on level ground and stop the engine.
2. Check the electrolyte level.
  - 2.1 When checking the level from the battery side:

Clean around the level check lines with a wet towel. Do not use a dry towel. Static electricity may be developed, causing the battery gas to explode. Check if the electrolyte level is between U.L (Upper Level) and L.L (Lower Level).

In case the electrolyte level is lower than the middle level between the U.L and L.L, immediately refill with distilled water or commercial battery fluid.

After refilling, securely tighten the filler plug.

Be sure to refill with distilled water before recharging (operating the machine).

- 2.2 When impossible to check the level from the battery side or no level check mark is indicated on the side:

After removing the filler plug from the top of the battery. Check the electrolyte level by viewing through the filler port. It is difficult to judge the accurate electrolyte level in this case. Therefore, when the electrolyte level is flush with the U.L, the level is judged to be proper. Then, referring to the right illustrations, check the level. When the electrolyte level is lower than the bottom end of the sleeve, refill with distilled water or commercial battery fluid up to the bottom end of the sleeve.

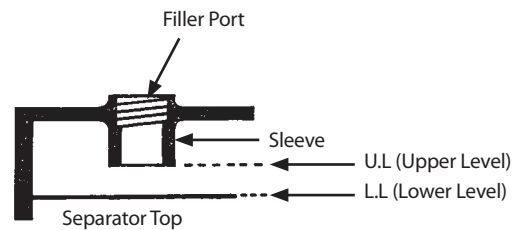
After refilling, securely tighten the filler plug.

Be sure to refill with distilled water before recharging (operating the machine).

- 2.3 When an indicator is available to check the level, follow the checking results.



M146-07-109



M146-07-110

#### Proper



Since the electrolyte surface touches the bottom end of the sleeve, the electrolyte surface is raised due to surface tension so that the electrode ends are seen curved.

M146-07-111

#### Lower



When the electrolyte surface is lower than the bottom end of the sleeve, the electrode ends are seen straight.

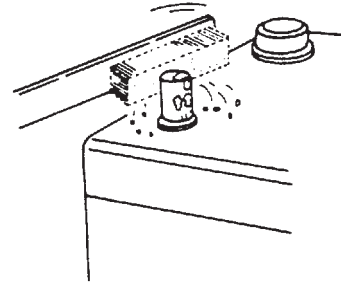
M146-07-112

## MAINTENANCE

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3. Always keep around the battery terminals clean to prevent battery discharge. Check terminals for loose and/or rust.

Check terminals for loose and/or rust. Coat terminals with grease or petroleum jelly to prevent corrosion build up.

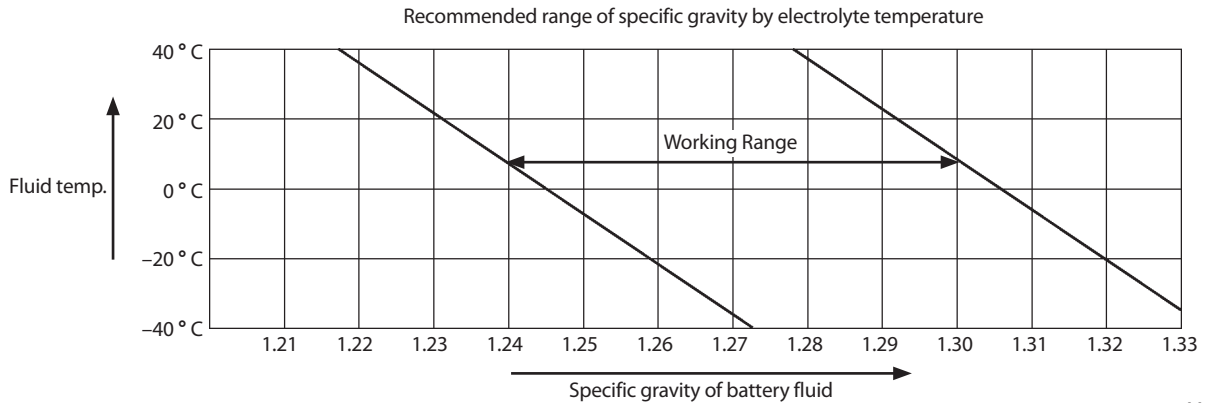


M409-07-072


## MAINTENANCE

### Check electrolyte specific gravity --- every one month

The electrolyte specific gravity varies depending on the electrolyte temperature. The specific gravity should be kept within the range shown below. Charge the battery if the specific gravity is below the limit.



M104-07-054

 **NOTE:** Measure the electrolyte specific gravity when the electrolyte temperature is equal to the atmospheric temperature. Do not check the electrolyte specific gravity immediately after operation as the correct value can not be obtained.

## MAINTENANCE

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### Replace Batteries

**⚠ CAUTION:** When disconnecting the battery terminals, first disconnect the ground line [minus (-)] side terminal. When connecting the battery terminals, connect the ground line [minus (-)] side terminal last. If a piece of metal, such as a tool comes in contact with the battery plus (+) side terminal and the vehicle frame when both terminals are connected, the electrical system may short-circuit, possibly creating a dangerous situation.

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 one 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.

## MAINTENANCE

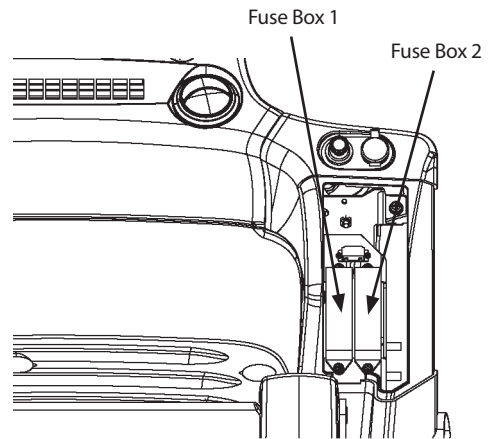
### 2 Replacing Fuses --- as necessary

If any electrical equipment fails to operate, first check the fuses. Fuse box is located behind the operator's seat.

**IMPORTANT:** Install fuse with correct amperage rating to prevent electrical system damage from overload.

 **NOTE:**

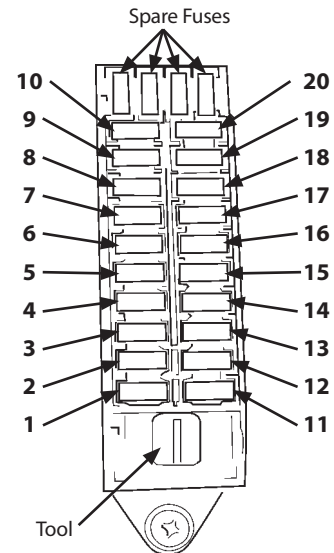
- One each spare fuse for respective fuse capacities is provided in the fuse box.
- A fuse removing jig is provided in the fuse box.



MDAA-01-297

#### Fuse Box 1

10- CONTROLLER 5 A	20- OPTION3 5 A
9- BACK UP 10 A	19- HORN 10 A
8- ECM 30 A	18- IDLE STOP 5 A
7- START 5 A	17- POWER ON 5 A
6- OPTION2 20 A	16- GLOW RELAY 5 A
5- OPTION1 5 A	15- AUXILIARY 10 A
4- SOLENOID 20 A	14- MONITOR 5 A
3- HEATER 20 A	13- LIGHTER 10 A
2- WIPER 10 A	12- RADIO 5 A
1- LAMP 20 A	11- FUEL PUMP 5 A

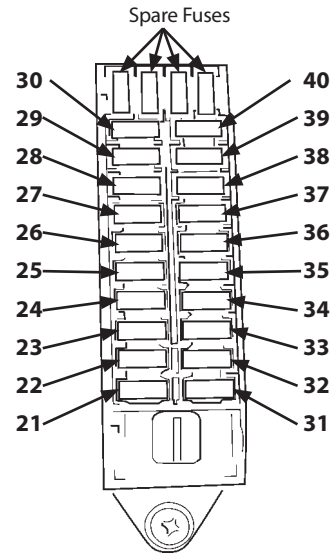


M1GR-01-003

## MAINTENANCE

### Fuse Box 2

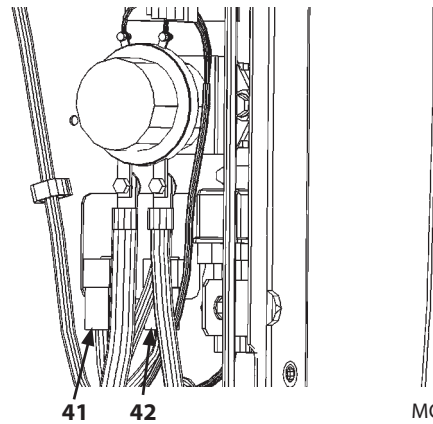
30- ASSIST CONTROL 10A	40- CAB LAMP 5A
29- O/R CONTROL 10A	39- SMCZ 5A
28- P/SW OTHER 10A	38- CAB LAMP +2 5A
27- COLUMN BOX 10A	37- SOLENOID 10A
26- BACK LAMP 10A	36- CAB LAMP REAR 10A
25- STOP LAMP 15A	35- WARNING LAMP 15A
24- TURN L-R 10A	34- SEAT COMPRESSOR 10A
23- UPPER BEAM 10A	33- SEAT HEATER 10A
22- HEAD LAMP R 10A	32- HEAD LAMP L 10A
21- CLEARANCE LAMP R 10A	31- CLEARANCE LAMP L 10A



M1GR-01-003

- **Fusible Link (Main Fuse)**  
In case the starter won't rotate even if the key switch is turned to the START position, fusible link may be the cause of the trouble. Remove the cover next to the engine coolant reservoir to check the fuse. Replace it if blown.

41- + Side (Red) 45 A
42- - Side (Black) 65 A



MCGB-07-060

## MAINTENANCE

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### **3** Check Monitor Functions and All Other Instrument Operation

--- daily

Run the engine at low idle speed when checking the instruments.

Refer to the Group of Operator's Station in Section 1 for more information.

### **4** Check Work Lights

--- daily

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

Visually check all work lights that they normally light and/or flash from the front and rear sides of the machine. Consult your authorized Hitachi dealer for light axis adjustment when the headlights are replaced.

Part	Capacity	Type
Headlight	24 V 75/70 W	H4
Clearance Lamp	24 V 4 W	T4W
Turn Signal Light	24 V 21 W	P21W
Tail Light, Brake Light	24 V 5 W/21 W	P21/5W
License Plate Light	24 V 10 W	R10W
Cab Light (LED)	24 V	-
Working Light	24 V 70 W	H3
Rotary Beacon	24 V 70 W	H1

### **5** Check Horn

--- daily

The horn switch button is located at the left side of column box. Push the horn switch.

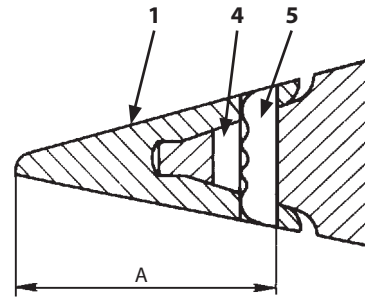
# MAINTENANCE

## K. Miscellaneous

### 1 Check and Replace Bucket Teeth --- daily

Check bucket teeth (1) for wear and looseness. Replace teeth (1) if tooth wear exceeds the designated service limit shown below.

Model	A (mm)	
	New	Limit of Use
ZX140W-5B, 170W-5B	166	85
ZX190W-5B, 220W-5B	200	95

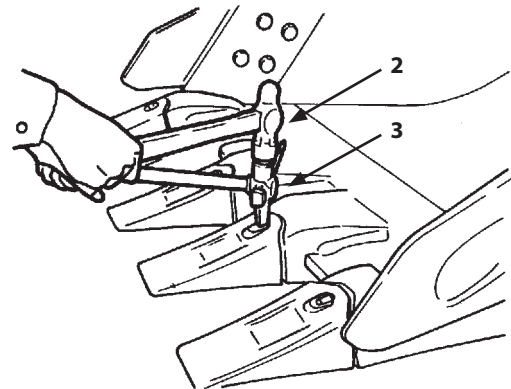


M104-07-056

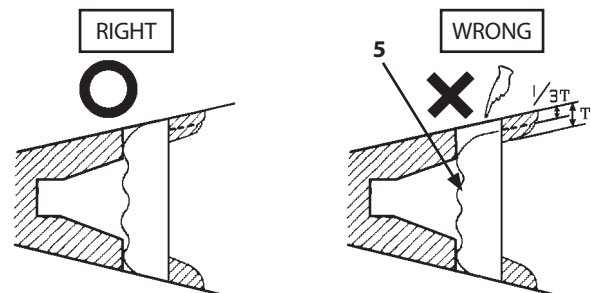
### Replace

#### ⚠ CAUTION:

- Guard against injury from flying pieces of metal.
  - Wear hard hat or safety glasses, and safety equipment appropriate to the job.
1. Use hammer (2) and drift (3) to drive out locking pin (5). Take care not to damage lock rubber (4).
  2. Check lock pin (5) and lock rubber (4). Short locking pins and damaged rubber pin locks must be replaced with new ones.



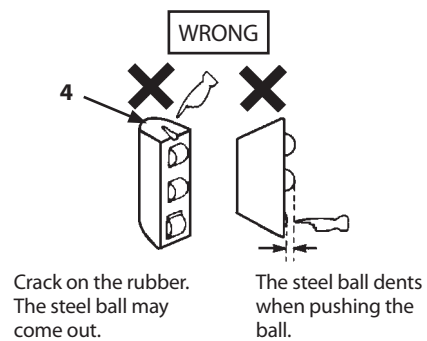
M104-07-116



Flush one end of the locking pin to evaluate. In this instance, the locking pin is too short.

M104-07-118

M104-07-058



Crack on the rubber. The steel ball may come out.

The steel ball dents when pushing the ball.

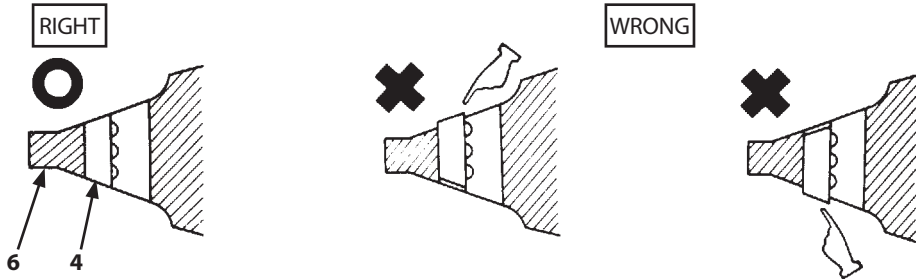
M104-07-059



## MAINTENANCE

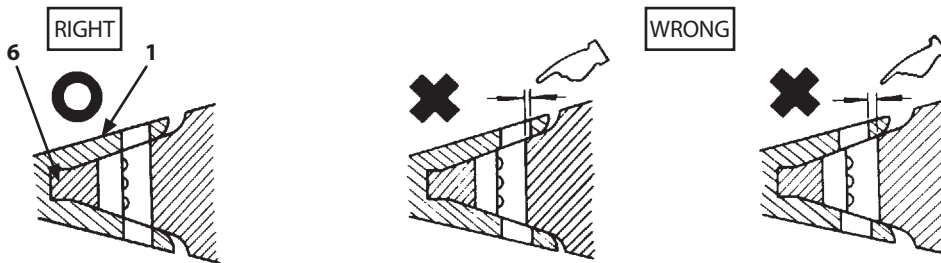
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3. Clean shank (6) surface.
4. Install rubber pin lock (4) into shank (6) hole as shown.



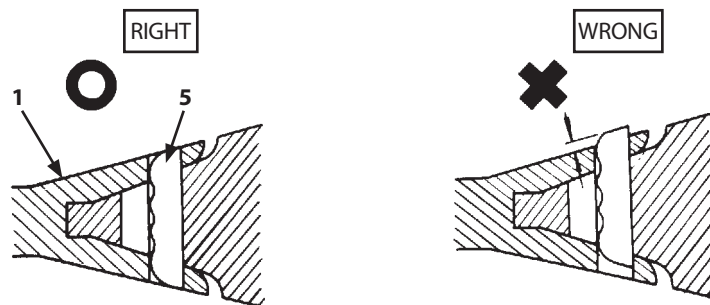
M104-07-060

5. Position new tooth (1) over shank (6).



M104-07-061

6. Drive locking pin (5) fully into the hole as shown.



M104-07-062

## MAINTENANCE

### 2 Change Bucket

**CAUTION:** When driving the connecting pins in or out, guard against injury from flying pieces of metal or debris. Wear hard hat or safety glasses, and safety equipment appropriate to the job.

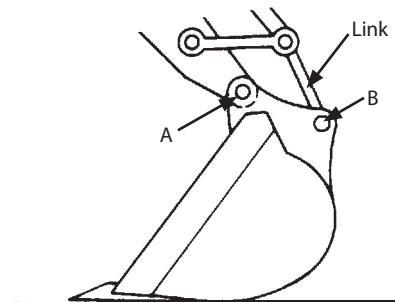
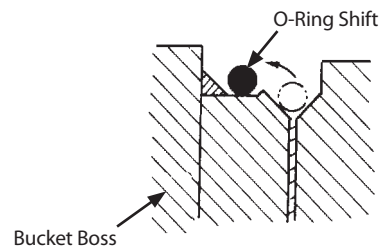
Before starting converting work, keep bystanders clear of the machine. Slowly move the front attachment. When using a signal person, coordinate hand signals before starting.

#### Removal

1. Park the machine on a level surface. Lower the bucket to the ground and position it with the flat surface resting on the ground. Be sure the bucket will not roll when the pins are removed.
2. Slide the O-rings out of the way, as shown.
3. Remove bucket pins A and B to separate the arm and bucket.

#### Installation

1. Clean the pins and pin bores. Apply sufficient grease to the pins and pin bores.
2. Place the new bucket in stable position as shown in the figure.
3. Fit the arm and alternate bucket. Be sure the bucket will not roll. Install bucket pins A and B.
4. Install the locking pins and snap rings on pins A and B.
5. Install O-rings to the specified positions.
6. Apply grease to each pin.
7. Start the engine and run at slow idle. Slowly operate the bucket in both directions to check for any interference in bucket movement.



M104-07-063

## MAINTENANCE

### 3 Convert Bucket Connection Into Face Shovel

**CAUTION:** When driving the connecting pins in or out, guard against injury from flying pieces of metal or debris. Wear hard hat or safety glasses, and safety equipment appropriate to the job.

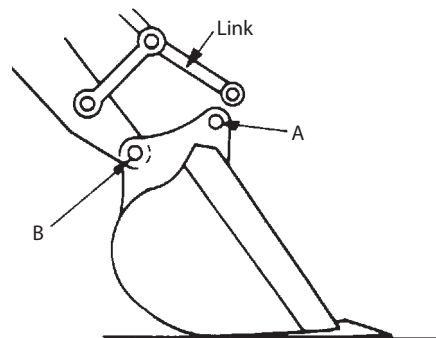
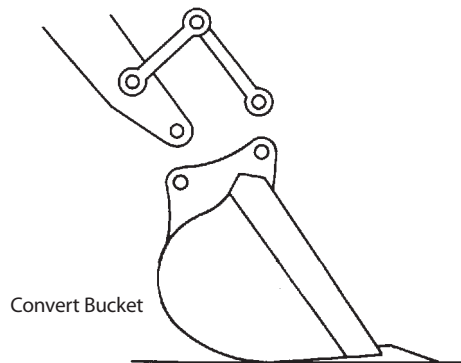
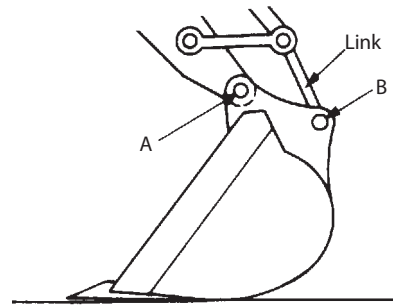
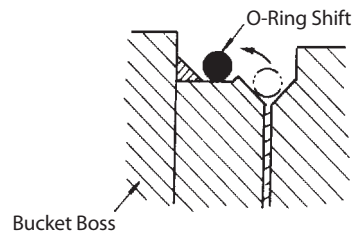
Converting the bucket connection allows you to use the machine as a face shovel. Before starting converting work, keep bystanders clear of the machine. Slowly move the front attachment. When using a signal person, coordinate hand signals before starting.

#### Procedure:

1. Place the bucket in a stable position.
2. Slide the O-rings out of the way, as shown.
3. Remove bucket pins A and B to separate the arm and bucket.

Clean the pins and pin bores. Apply sufficient grease to the pins and pin bores.

4. Turn the bucket 180°. Be sure the bucket will not roll.
5. Fit the arm and alternate bucket. Be sure the bucket will not roll. Install bucket pins A and B.
6. Install the locking pins and snap rings on pins A and B.
7. Install O-rings to the specified positions.
8. Apply grease to each pin.
9. Start the engine and run at slow idle. Slowly operate the bucket in both directions to check for any interference in bucket movement.




M104-07-064

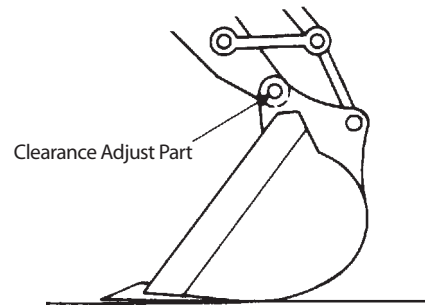
## MAINTENANCE

### 4 Adjust Bucket Linkage

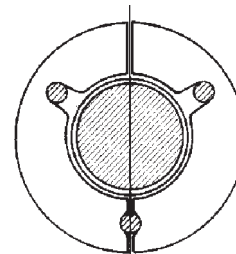
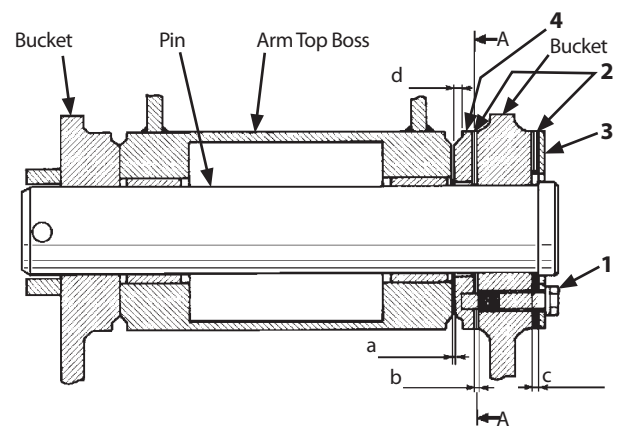
The machine is provided with a bucket adjustment system to take up play in the linkage. When play in the linkage increases, remove and install shims as follows:

1. Place the bucket in a stable position.
2. Run the engine at slow idle. With the bucket on the ground, slowly swing counterclockwise slightly until the top of the left bucket boss contacts the arm.
3. Stop the engine. Pull the pilot control shut-off lever to the LOCK position.
4. Slightly loosen three bolts (1) using a 22 mm wrench. Remove all shims (2) from clearance (c) between plate (3) and bucket. As shim (2) is a dual partitioning type, it can be easily removed by slightly loosening bolt (1) and inserting tip of a screw driver into the contact surface of left and right shims (2).
5. Push and hold bolts (1) to remove all clearance (a) between arm and boss (4). Holding boss (4) against arm increases clearance (b). Install as many shims (2) into clearance (b) as possible.
6. Install remaining shims (2) into clearance (c) and tighten bolts (1) to 140 N·m (14 kgf·m).

 **NOTE:** The total number of shims (2) used in clearance (b) and (c) are  $6 \times 2 = 12$ . Remaining shims (2) must be installed in clearance (c) to prevent arm end face or bolt damage. Replace boss (4) with new one if measurement (d) is 5 mm (0.2 in) or less.



M503-07-056



Section A

M1G6-07-010

## MAINTENANCE

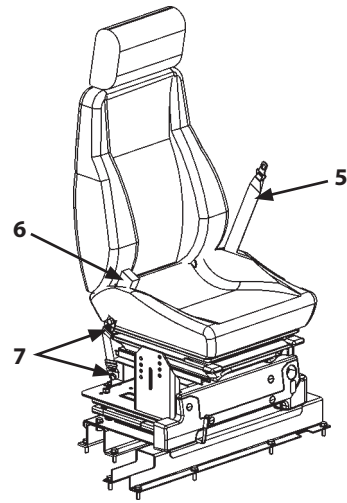
### 5 Check and Replace Seat Belt

Check --- daily

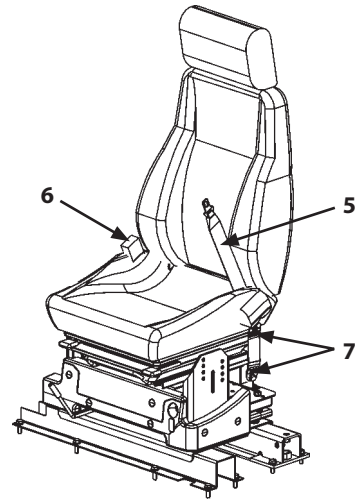
Replace --- every 3 years

Prior to operating the machine, thoroughly examine belt (5), buckle (6) and attaching hardware (7). If any item is damaged or materially worn, replace the seat belt or component before operating the machine.

We recommend that the seat belt be replaced every three years regardless of its apparent condition.



M1U1-07-008

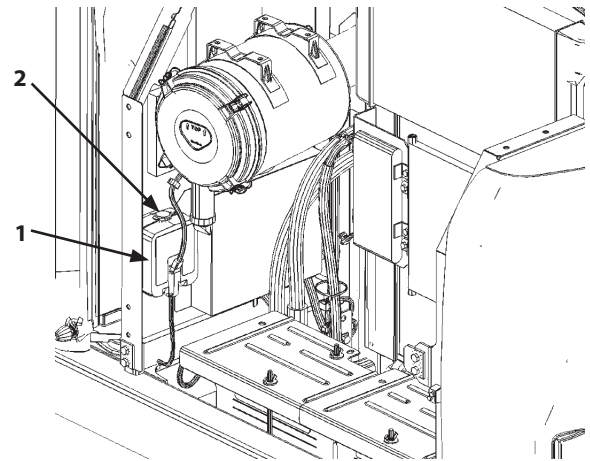


M1U1-07-009

## MAINTENANCE

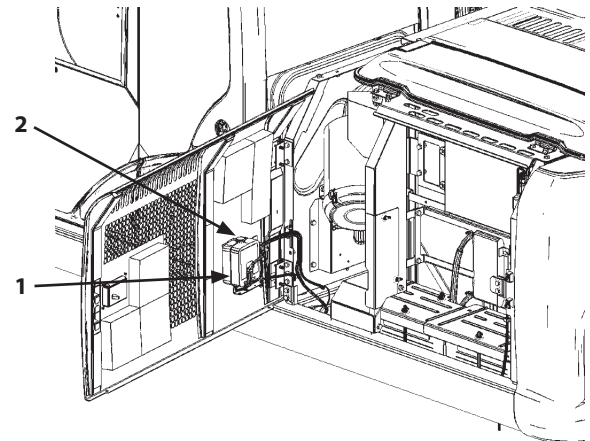
### 6 Check Windshield Fluid Level

Check fluid in windshield washer tank (1). If the fluid level is low, remove cap (2) and add fluid via the opening. During winter season, use all season windshield washer which will not freeze.



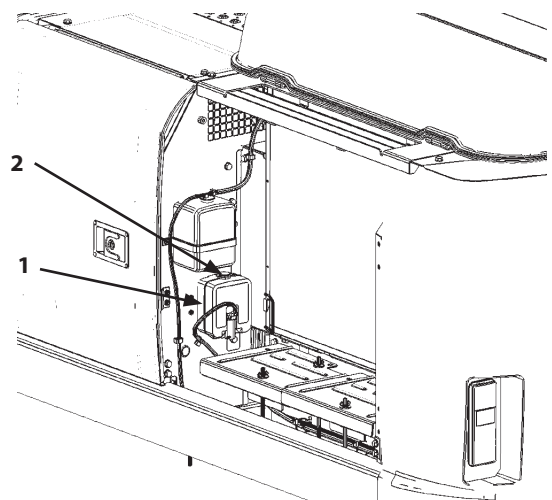
ZX140W-5B

MLBA-07-048



ZX170W-5B, 190W-5B

MLBA-07-049



ZX220W-5B


MLBA-07-050

## MAINTENANCE

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### **7** Check Play Amount in Steering Wheel Stroke --- daily

Check that play in steering wheel stroke is correct and that steering column tilt telescopic lever and pedal are securely held.

 *NOTE: If too much play amount of the steering wheel is found or if the steering wheel does not move smoothly, consult your nearest Hitachi dealer for checking.*

### **8** Check Rearview Mirror and Inside Rearview Mirror --- daily

Check that the inside of rearview mirror and rearview mirror are facing a correct direction. Check the inside rearview mirror and the rearview mirror for contamination or damage.

## MAINTENANCE

### 9 Clean and Replace Air Conditioner Filter

#### Clean Circulating/Fresh Air Filters

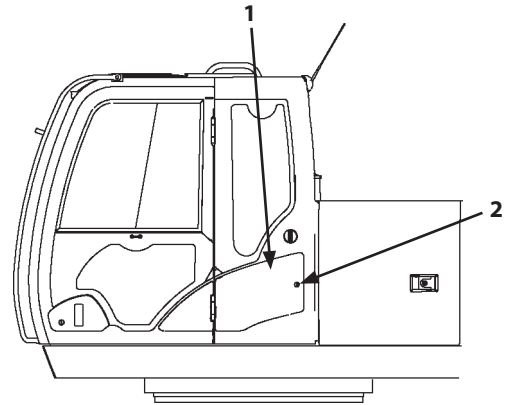
Circulating Air Filter --- every 500 hours

Fresh Air Filter --- every 500 hours

#### Replace Circulating/Fresh Air Filters

Circulating Air Filter --- After cleaning 6 times or so

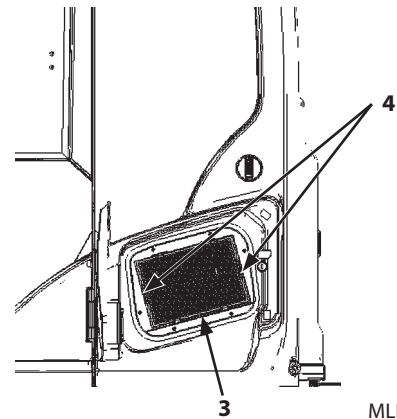
Fresh Air Filter --- After cleaning 6 times or so



MDAA-07-040

#### Removing Fresh Air Filter

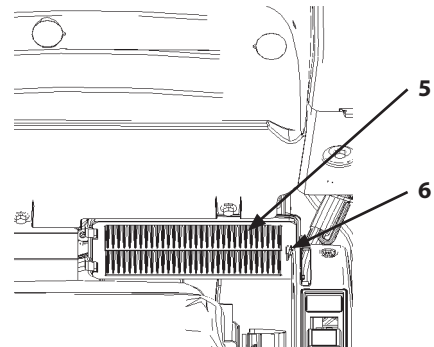
1. Insert the key into keyhole (2) on left cab side cover (1). Then, rotate the key counterclockwise to unlock the key. Open cover (1).
2. While pressing knobs (4) on both sides of fresh air filter (3) inward, horizontally remove the fresh air filter.



MLBA-07-089

#### Removing Circulating Air Filter

1. Circulating air filter (5) is located under the rear tray.
2. Holding grips (6), pull them toward you to remove.



MLBA-07-090



## MAINTENANCE

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**⚠ WARNING:** When using compressed air pressure, wear safety glasses or goggles.

### Cleaning

Clean the circulating and fresh air filters.  
Clean both the external and internal filters by blowing compressed air or washing with water.

Washing procedure with water is as follows:

1. Use tap water.
2. Submerge the filter in water containing a neutral detergent for about 5 minutes.
3. Clean the filter with water again.
4. Dry the filters.

### Installation

**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.

When installing the cleaned circulating/fresh air filter or new filters, follow the reverse order of the Removing Filter procedures described on the previous page.

## MAINTENANCE

### 10 Check Air Conditioner --- every 250 hours

Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.

#### Check pipe connections for refrigerant gas leakage

If oil seepage is found around pipe connections, it indicates possible gas leakage.

#### Check Refrigerant

Start the engine and run at approximately  $1500 \text{ min}^{-1}$  (rpm). Turn the air conditioner switch to ON. Set the blower switch to HI and set the temperature control switch to the coolest position ( $18^{\circ}\text{C}$  on the monitor screen). Operate the air conditioner 2 to 3 minutes. Check if cool air comes out from the vent in the cab.

#### Kind of refrigerant and amount when shipping the machine

Model	Type	Amount
ZX140W-5B, 170W-5B, 190W-5B	HFC134a	$0.75 \pm 0.05 \text{ kg}$
ZX220W-5B		$0.80 \pm 0.05 \text{ kg}$

**IMPORTANT: Do not dispose FREON into the atmosphere to prevent depletion of ozone layer and global warming.**

#### Check the condenser

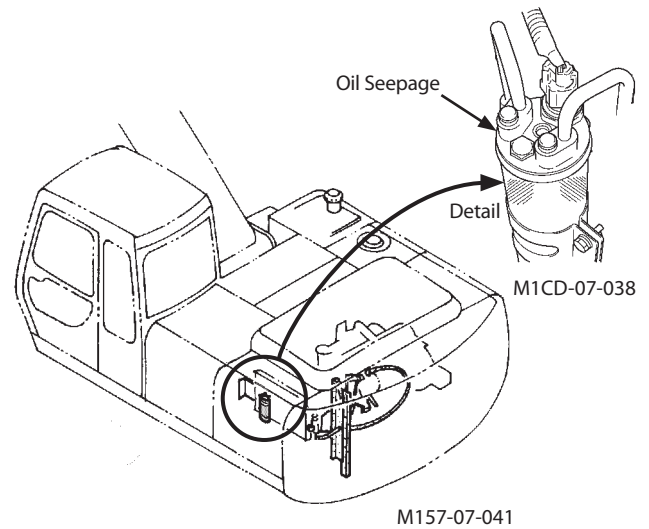
If the condenser fins become clogged with dirt or insects, the cooling effect will be decreased.  
Be sure to keep it clean at all times. (Refer to "Clean Radiator Core" in Maintenance Section.)

#### Check compressor

After operating the air conditioner for 5 to 10 minutes, touch both the high pressure pipe and the low pressure pipe.  
If normal, the high-pressure side pipe will be hot, and the low-pressure side cold.

#### Check mounting bolts for looseness

Confirm that the compressor mounting bolts and other mounting/fastening bolts are securely tightened.

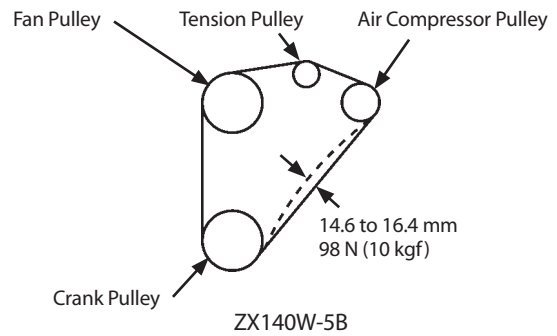


## MAINTENANCE

### Inspect belt, check and adjust tension

Visually check the compressor and fan belts for wear. Check fan belt tension by depressing the midpoint of the belt with the thumb. Deflection must be shown in the right figure with a depressing force of approximately 98 N (10 kgf).

If cool air does not come out, or any other abnormalities are found in air conditioner system, see your authorized dealer for inspection.

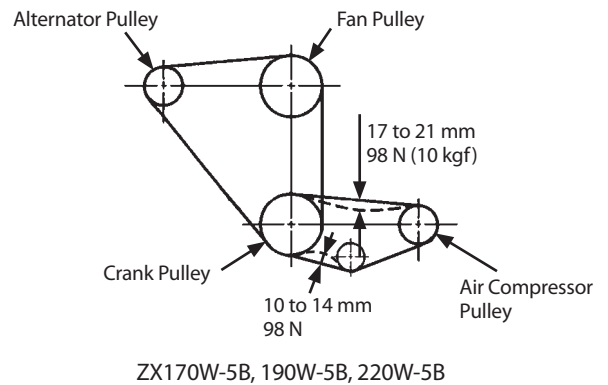


M1U1-07-086

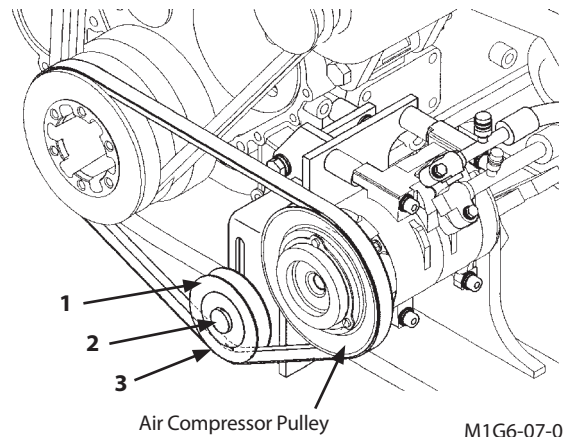
### Adjust Compressor Belt Tension

1. Loosen lock bolt (2) of tension pulley (1).
2. Move the compressor pulley by adjusting bolt (3) under tension pulley (1) until tension is correct.
3. Securely tighten bolt (2) of tension pulley (1).

**IMPORTANT:** When a new belt is installed, be sure to re-adjust the tension after operating the engine for 3 to 5 minutes at slow idle speed to be sure that the new belt is seated correctly.



M1GR-07-007



M1G6-07-013

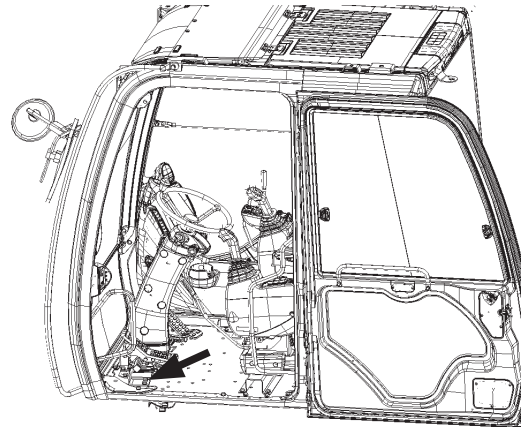
## MAINTENANCE

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### 11 Clean Cab Floor --- as required

**IMPORTANT:** When cleaning the cab floor with tap water, spray the floor only. Take care not to splash the surrounding area. Do not increase water spray speed by restricting the hose end, and do not use high pressure steam for cleaning. Be sure to completely remove any moisture from the surrounding area.

1. Park the machine following the same procedures as described on page 7-7 for preparation for inspection and maintenance.
2. Sweep the cab floor clean using a brush, and brush dust from the cab floor while spraying water.
3. When cleaning the floor mat, sweep dust (water) along the grooves on the floor mat.
4. When cleaning after removing the floor mat, sweep dust (water) through one cleaning hole.



MLBA-07-086

## MAINTENANCE

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- 12** **Retighten Cylinder Head Bolt**  
--- as required

See your authorized dealer.

- 13** **Inspect and Adjust Valve Clearance**  
--- every 1000 hours

See your authorized dealer.

- 14** **Measure Engine Compression Pressure**  
--- every 1000 hours

See your authorized dealer.

- 15** **Check Starter and Alternator**  
--- every 1000 hours

See your authorized dealer.

- 16** **Check and Replace EGR Device**  
--- as required

See your authorized dealer.

## MAINTENANCE

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### **17** Check Gas Damper --- as required

**⚠ CAUTION:** The gas damper has been charged with high-pressure nitrogen gas. Inappropriate handling may cause explosion, possibly resulting in serious injury or death.

The gas dampers are used in the engine cover and the cab overhead window. Contact your nearest HITACHI dealer immediately at any of the following situations.

- The cover or window can not be opened with normal operating force.
- The cover or window can not maintain its open position.
- Oil or gas leak is found.

### **18** Clean EGR Cooler --- every 4500 hours

See your authorized dealer.

### **19** Check Turbocharger --- every 4500 hours

See your authorized dealer.

### **20** Check and Clean Injector --- every 4500 hours

See your authorized dealer.

### **21** Tightening and Retightening Torque of Nuts and Bolts --- every 250 hours (first time after 50 hours)

Tighten or retighten nuts and bolts used on this machine in accordance with the torque values shown in the following table. Bolts and nuts should be replaced with those of the same or higher grade.

Check tightness after the first 50 hours then every 250 hours. For tightening nuts and bolts other than specified in the table below, refer to the Tightening Torque Chart at the end of this section.

## MAINTENANCE

ZX140W-5B

No.	Descriptions	Bolt Dia (mm)	Q'ty	Wrench Size (mm)	Torque		
					N·m	(kgf·m)	(lbf·ft)
1	Engine cushion rubber mounting nut (Fan side)	16	2	24	270	(27)	(199)
	Engine cushion rubber mounting nut (Pump side)	18	4	27	400	(40)	(295)
2	Engine bracket mounting bolt (Pump side)	12	8	19	110	(11)	(81)
3	Hydraulic oil tank mounting bolt	16	4	24	270	(27)	(199)
4	Fuel tank mounting bolt	16	4	24	210	(21)	(155)
5	Radiator mounting bolt (Lower side)	12	4	19	90	(9.0)	(66)
	Radiator mounting bolt (Counterweight Side)	16	2	24	210	(21)	(155)
6	Pump mounting bolt	10	8	17	65	(6.5)	(48)
7	Control valve mounting bolt	16	4	24	270	(27)	(199)
8	Control valve bracket mounting bolt	16	4	24	270	(27)	(199)
9	Swing device mounting bolt	20	10	30	500	(50)	(369)
10	ORS and metal face seal fittings for hydraulic hoses and piping	-	-	17	25	(2.5)	(18)
				19	30	(3.0)	(22)
				22	40	(4)	(30)
				27	95	(9.5)	(70)
				32	140	(14)	(103)
				36	180	(18)	(133)
41	210	(21)	(155)				
11	Bent tube mounting nut	-	-	19	44	(4.4)	(32)
12	Battery mounting nut	10	2	17	50	(5.0)	(37)
13	Cab mounting nut	16	4	24	210	(21)	(155)
	Cab mounting anchor bolt	22	1	32	550	(55)	(406)
	Cab cushion rubber mounting bolt	12	8	19	110	(11)	(81)
		6	-	10	5	(0.5)	(3.7)
14	Cover mounting bolt	8	-	13	10	(1)	(7.4)
		10	-	17	50	(5.0)	(3.7)
		8	6 pairs	13	10.3 to 12.4	(1.05 to 1.26)	(7.60 to 9.15)
16	Jubilee clamp	-	-	7	6	(0.6)	(4.4)
		-	-	8	6	(0.6)	(4.4)
	T-bolt clamp	-	5	11	10	(1.0)	(7.4)
17	Swing bearing mounting bolt (Upperstructure)	18	32	27	400	(40)	(295)
	to (Chassis)	16	36	24	270	(27)	(199)
18	Center joint lock mounting bolt *	16	5	24	270	(27)	(199)
19	Transmission B-port, K-port adapter (2 Pieces)	16	2	22	20	(2)	(15)
20	Travel motor mounting bolt *	16 (HEX. Wrench)	4	14	270	(27)	(199)
21	Propel shaft mounting bolt (Axle Side) *	10	8	17	80	(8.0)	(59)
	Propel shaft mounting nut (Axle Side) *	10	8	14	80	(8.0)	(59)
22	Center bearing mounting bolt *	10	2	17	50	(5.0)	(37)
23	Propel shaft connection bolt (Center Bearing) *	10 (HEX. Wrench)	4	8	62	(6.2)	(46)
	Propel shaft connection nut (Center Bearing) *	10	4	14	62	(6.2)	(46)
24	Rear axle mounting bolt *	20	8	30	560	(56)	(413)
25	Wheel mounting nut ☆	22	40	30	650	(65)	(479)
26	Muffler filter mounting bolt	10	4	17	50	(5.0)	(37)
27	Engine PTO mounting bolt	10 (HEX. Wrench)	2	8	51	(5.1)	(38)

\* Apply "LOCTITE® 262" to the threads.

☆ Refer to "Tire Inspection and Replacement Procedure" in E. TIRE [1].

## MAINTENANCE

ZX170W-5B, 190W-5B

No.	Descriptions	Bolt Dia (mm)	Q'ty	Wrench Size (mm)	Torque		
					N-m	(kgf-m)	(lbf-ft)
1	Engine cushion rubber mounting nut	22	4	32	550	(55)	(406)
2	Engine bracket mounting bolt (Fun side)	10	8	17	65	(6.5)	(48)
	Engine bracket mounting bolt (Pump side)	16	8	24	270	(27)	(199)
3	Hydraulic oil tank mounting bolt	16	6	24	270	(27)	(199)
4	Fuel tank mounting bolt	16	4	24	270	(27)	(199)
5	Radiator mounting bolt (Lower side)	16	3	24	210	(21)	(155)
6	Pump mounting bolt	12	9	19	110	(11)	(81)
7	Control valve mounting bolt	16	4	24	270	(27)	(199)
8	Control valve bracket mounting bolt	16	4	24	270	(27)	(199)
9	Swing device mounting bolt	20	14	30	500	(50)	(369)
10	ORS and metal face seal fittings for hydraulic hoses and piping	-	-	17	25	(2.5)	(18)
				19	30	(3.0)	(22)
				22	40	(4)	(30)
				27	95	(9.5)	(70)
				32	140	(14)	(103)
				36	180	(18)	(133)
				41	210	(21)	(155)
11	Bent tube mounting nut	-	-	19	44	(4.4)	(32)
12	Battery mounting nut	10	8	17	50	(5.0)	(46)
13	Cab mounting nut	16	4	24	210	(21)	(155)
	Cab mounting anchor bolt	22	1	32	550	(55)	(406)
	Cab cushion rubber mounting bolt	12	8	19	110	(11)	(81)
14	Cover mounting bolt	6	-	10	5	(0.5)	(3.7)
		8	-	13	10	(1)	(7.4)
		10	-	17	50	(5.0)	(37)
		12	-	19	90	(9.0)	(66)
15	Flexible master coupling of piping	-	5 pairs	13	10.3 to 12.4	(1.05 to 1.26)	(7.60 to 9.15)
16	Jubilee clamp	-	13	7	6	(0.6)	(4.4)
			4	8	6	(0.6)	(4.4)
	T-bolt clamp	-	9	11	6	(0.6)	(4.4)
17	Swing bearing mounting bolt to (Upperstructure)	20	36	30	520	(52)	(384)
	(Chassis)	20	36	30	500	(50)	(369)
18	Center joint lock mounting bolt *	16	5	24	270	(27)	(199)
19	Transmission B-port, K-port adapter (2 Pieces)	16	2	22	20	(2)	(15)
20	Travel motor mounting bolt *	16 (HEX. Wrench)	4	14	270	(27)	(199)
21	Propel shaft mounting bolt (Front Axle Side) *	10	8	17	76	(7.6)	(56)
	Propel shaft mounting nut (Front Axle Side)	10	8	14	76	(7.6)	(56)
	Propel shaft mounting nut (Rear Axle Side) *	10	8	14	76	(7.6)	(56)
22	Center bearing mounting bolt *	10	2	17	50	(5.0)	(46)
23	Propel shaft connection bolt* (Center Bearing)	10 (HEX. Wrench)	4	8	62	(6.2)	(46)
	Propel shaft connection nut (Center Bearing)	10	4	17	62	(6.2)	(46)
24	Rear axle mounting bolt *	20	8	30	560	(56)	(413)
25	Tire wheel mounting nut ☆	22	40	30	650	(65)	(479)
26	Muffler filter mounting bolt	12	4	19	110	(11)	(81)
27	Engine PTO mounting bolt	10 (HEX. Wrench)	2	8	50	(5.0)	(37)

\* Apply "LOCTITE® 262" to the threads.

☆ Refer to "Tire Inspection and Replacement Procedure" in E. TIRE [1].



## MAINTENANCE

ZX220W-5B










No.	Descriptions	Bolt Dia (mm)	Q'ty	Wrench Size (mm)	Torque			
					N·m	(kgf·m)	(lbf·ft)	
1	Engine cushion rubber mounting nut (Fan side)	22	2	32	550	(55)	(406)	
	Engine cushion rubber mounting nut (Pump side)	22	2	32	550	(55)	(406)	
2	Engine bracket mounting bolt (Fun side)	10	8	17	65	(6.5)	(48)	
	Engine bracket mounting bolt (Pump side)	16	12	24	270	(27)	(199)	
3	Hydraulic oil tank mounting bolt	18	4	27	400	(40)	(295)	
4	Fuel tank mounting bolt	16	6	24	270	(27)	(199)	
5	Radiator mounting bolt (Lower side)	16	3	24	270	(27)	(199)	
6	Pump mounting bolt	12	9	19	110	(11)	(81)	
7	Control valve mounting bolt	16	4	24	210	(21)	(133)	
8	Control valve bracket mounting bolt	16	4	24	270	(27)	(199)	
9	Swing device mounting bolt	22	14	32	650	(65)	(48)	
10	ORS and metal face seal fittings for hydraulic hoses and piping	-	-	17	25	(2.5)	(18)	
				19	30	(3.0)	(22)	
				22	40	(4)	(30)	
				27	95	(9.5)	(70)	
				32	140	(14)	(103)	
				36	180	(18)	(133)	
				41	210	(21)	(155)	
11	Bent tube mounting nut	-	-	19	44	(4.4)	(32)	
12	Battery mounting nut	10	4	17	50	(5.0)	(37)	
13	Cab mounting nut	16	4	24	210	(21)	(155)	
	Cab mounting anchor bolt	22	1	32	550	(55)	(406)	
	Cab cushion rubber mounting bolt	12	8	19	110	(11)	(81)	
14	Cover mounting bolt			6	5	(0.5)	(3.7)	
				8	10	(1)	(7.4)	
				10	50	(5.0)	(37)	
				12	90	(9.0)	(66)	
15	Flexible master coupling of piping	8 or 1/4-28UNF	4 pairs	13	10.3 to 12.4	(1.05 to 1.26)	(7.60 to 9.15)	
16	Jubilee clamp	-	21	11	6	(0.6)	(4.4)	
				7	6	(0.6)	(4.4)	
				8	6	(0.6)	(4.4)	
	T-bolt clamp	-	8	11	6	(0.6)	(4.4)	
17	Swing bearing mounting bolt to	(Upperstructure)	22	38	32	650	(65)	(479)
		(Chassis)	22	36	32	650	(65)	(479)
18	Center joint lock mounting bolt *	16	5	24	270	(27)	(199)	
19	Transmission B-port, K-port adapter (2 Pieces)	16	2	22	20	(2)	(15)	
20	Travel motor mounting bolt *	16 (HEX. Wrench)	4	14	270	(27)	(199)	
21	Propel shaft mounting bolt (Front Axle Side) *	10	8	17	76	(7.6)	(56)	
	Propel shaft mounting nut (Front Axle Side)	10	8	14	76	(7.6)	(56)	
	Propel shaft mounting nut (Rear Axle Side) *	10	8	14	76	(7.6)	(56)	
22	Center bearing mounting bolt *	10	2	17	50	(5.0)	(46)	
23	Propel shaft connection bolt* (Center Bearing)	10 (HEX. Wrench)	4	8	62	(6.2)	(46)	
	Propel shaft connection nut (Center Bearing)	10	4	17	62	(6.2)	(46)	
24	Rear axle mounting bolt *	24	8	36	960	(96)	(708)	
25	Tire wheel mounting nut ☆	22	40	30	650	(65)	(479)	
26	Muffler filter mounting bolt	12	4	19	110	(11)	(81)	
27	Engine PTO mounting bolt	10 (HEX. Wrench)	2	8	50	(5)	(37)	

\* Apply "LOCTITE® 262" to the threads.

☆ Refer to "Tire Inspection and Replacement Procedure" in E. TIRE [1].

## MAINTENANCE

### Tightening Torque Chart

Bolt Dia. mm	Hexagon Wrench						Socket Bolt			
	  		  		  		Wrench size mm	Socket Bolt		Wrench size mm
	N·m(kgf·m)		N·m(kgf·m)		N·m(kgf·m)			N·m	(kgf·m)	
6					3.3 to 4.2 (0.3 to 0.4)		10			5
8	30	(3.0)	20	(2.0)	10	(1.0)	13	20	(2.0)	6
10	65	(6.5)	50	(5.0)	20	(2.0)	17	50	(5.0)	8
12	110	(11)	90	(9)	35	(3.5)	19	90	(9)	10
14	180	(18)	140	(14)	55	(5.5)	22	140	(14)	12
16	270	(27)	210	(21)	80	(8.0)	24	210	(21)	14
18	400	(40)	300	(30)	120	(12)	27	300	(30)	14
20	550	(55)	400	(40)	170	(17)	30	400	(40)	17
22	750	(75)	550	(55)	220	(22)	32			
24	950	(95)	700	(70)	280	(28)	36			
27	1400	(140)	1050	(105)	400	(40)	41			
30	1950	(195)	1450	(145)	550	(55)	46			
33	2600	(260)	1950	(195)	750	(75)	50			
36	3200	(320)	2450	(245)	950	(95)	55			

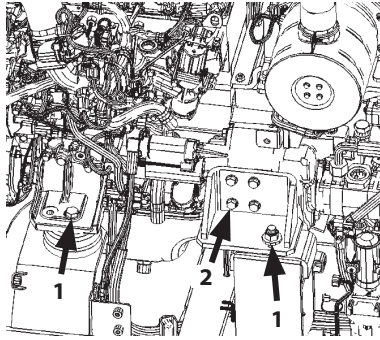
**⚠ CAUTION:** If fixing bolts for counterweight are loosened, consult your nearest authorized dealer.

#### IMPORTANT:

- Apply lubricant (e. g. white zinc B solved into spindle oil) to bolts and nuts to stabilize their friction coefficient.
- 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.

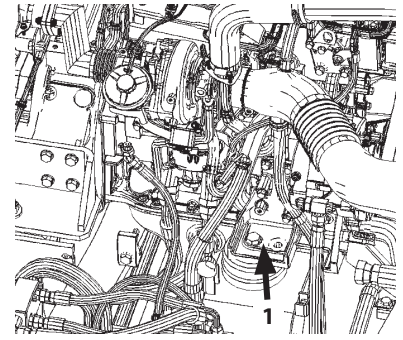
# MAINTENANCE

1. Engine cushion rubber mounting nuts.
2. Engine bracket mounting bolts.



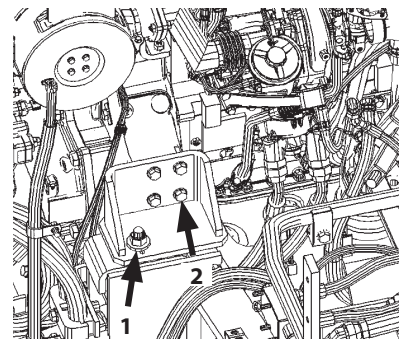
ZX140W-5B (Counterweight Side)

MLBA-07-056



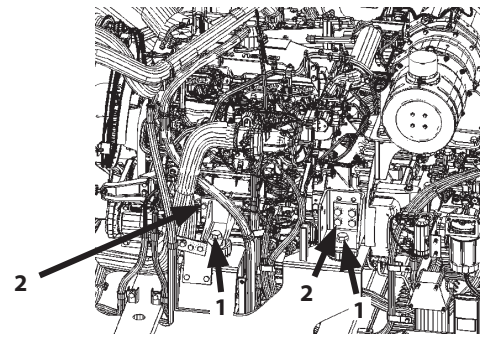
ZX140W-5B (Front Side)

MLBA-07-058



ZX140W-5B (Front Side)

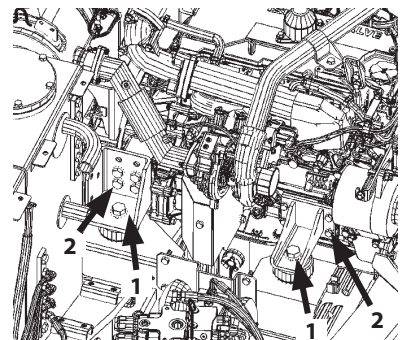
MLBA-07-055



ZX170W-5B,190W-5B, 220W-5B

(Counterweight Side)

MLBA-07-076



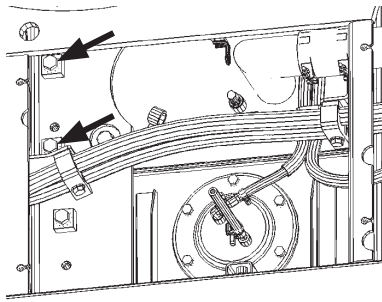
ZX170W-5B,190W-5B, 220W-5B

(Front Side)

MLBA-07-077

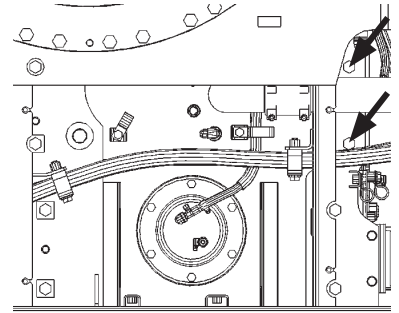
# MAINTENANCE

## 3. Hydraulic oil tank mounting bolts.



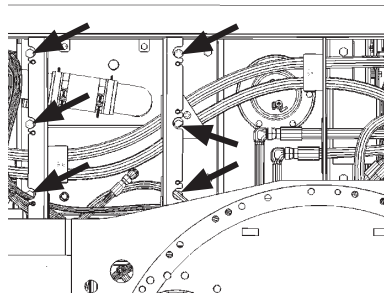
ZX140W-5B

MLBA-07-059



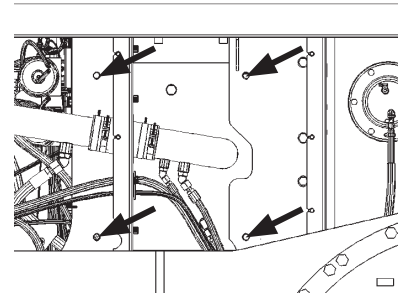
ZX140W-5B

MLBA-07-063



ZX170W-5B, 190W-5B

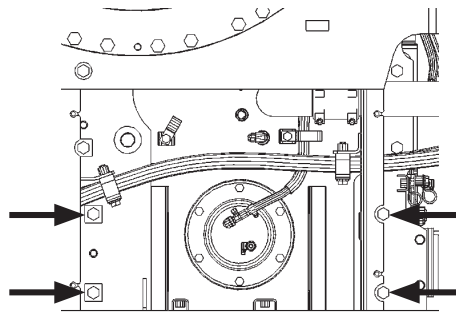
MLBA-07-081



ZX220W-5B

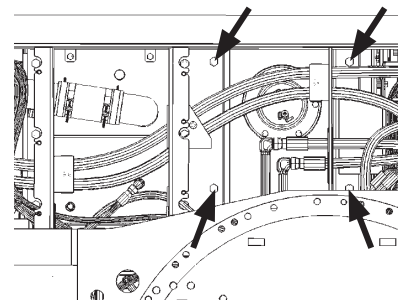
MLBA-07-085

## 4. Fuel tank mounting bolts.



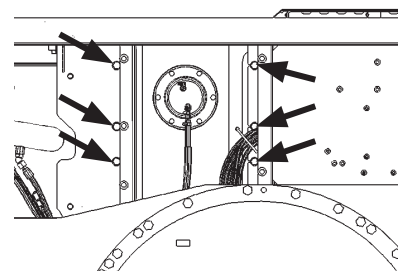
ZX140W-5B

MLBA-07-063



ZX170W-5B, 190W-5B

MLBA-07-081

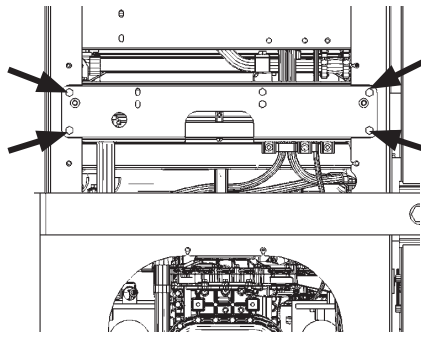


ZX220W-5B

MLBA-07-083

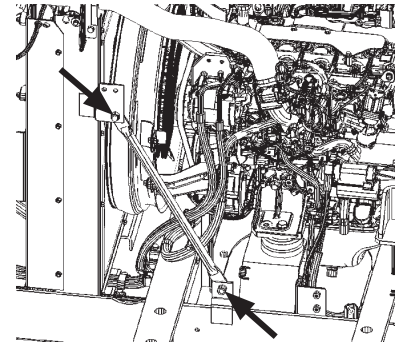
# MAINTENANCE

## 5. Radiator mounting bolts.



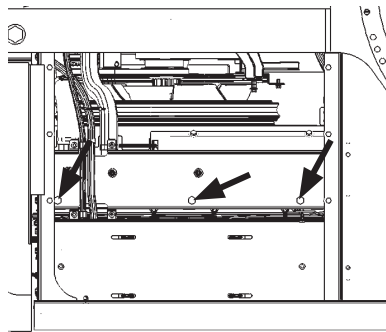
ZX140W-5B (Lower Side)

MLBA-07-060



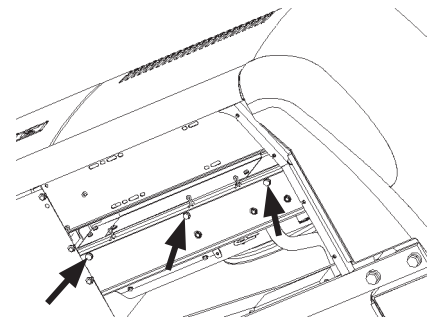
ZX140W-5B (Counterweight Side)

MLBA-07-061



ZX170W-5B, 190W-5B

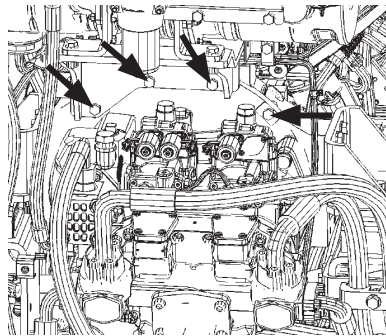
MLBA-07-078



ZX220W-5B

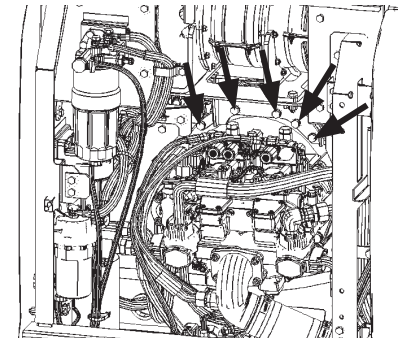
MDAA-07-101

## 6. Pump mounting bolts.



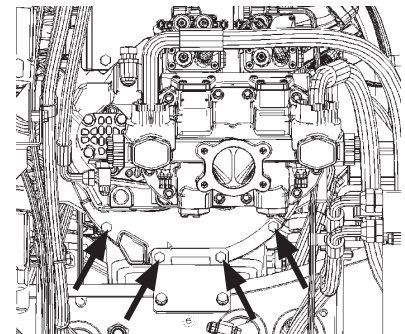
ZX140W-5B

MLBA-07-069



ZX170W-5B, 190W-5B, 220W-5B

MLBA-07-079

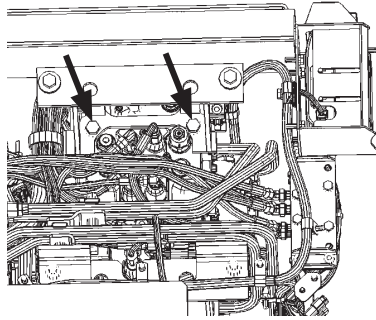


MLBA-07-070

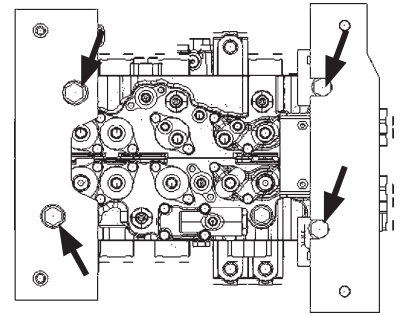


# MAINTENANCE

## 7. Control valve mounting bolts.

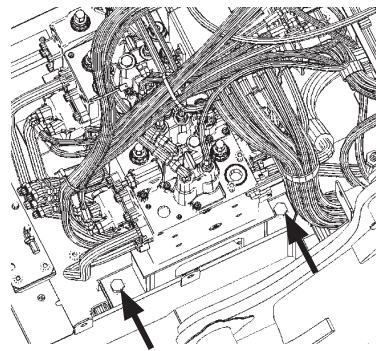


ZX140W-5B, 170W-5B, 190W-5B  
MLBA-07-064

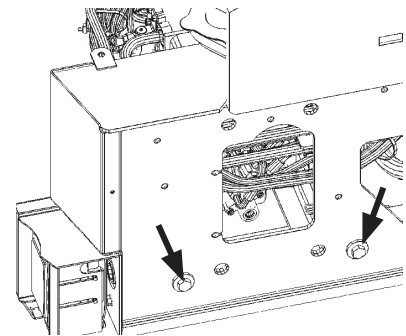


ZX220W-5B  
MDAA-07-111

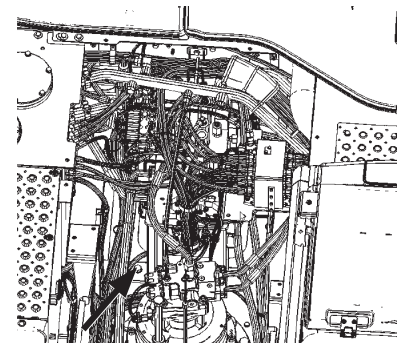
## 8. Control valve bracket mounting bolts.



ZX140W-5B, 170W-5B, 190W-5B  
MLBA-07-065

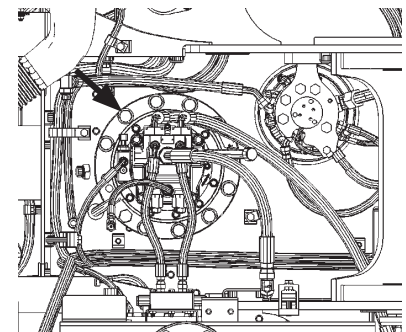


ZX140W-5B, 170W-5B, 190W-5B  
MLBA-07-066



ZX220W-5B  
MLBA-07-084

## 9. Swing device mounting bolts.

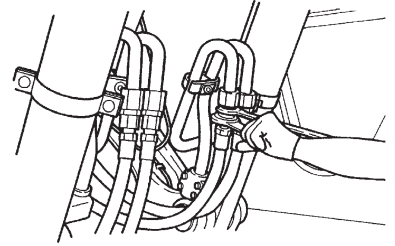


MLBA-07-067

## MAINTENANCE

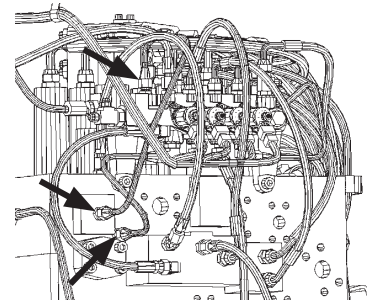
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10. ORS and metal face seal fittings for hydraulic hoses and piping.



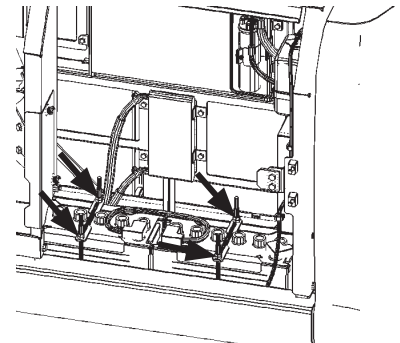
M107-07-081

11. Hycolin tube mounting nuts.



MCGB-07-121

12. Retighten the battery mounting nuts.



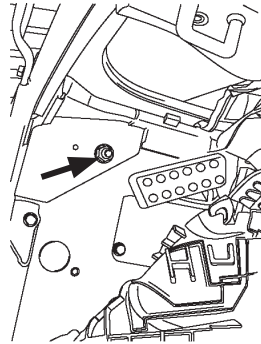
MLBA-07-074

## MAINTENANCE

### 13. Cab mounting nut.

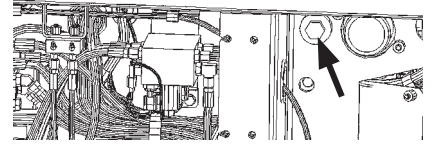
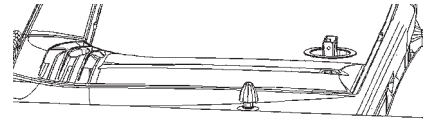
Cab mounting anchor bolt.

Cab cushion rubber mounting bolts.



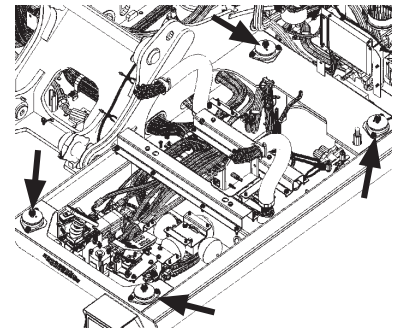
(Mounting Nut)

M1U1-07-026



(Anchor Bolt)

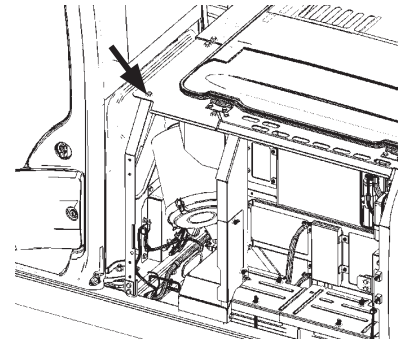
MCGB-07-125



(Cushion Rubber Mounting Bolt)

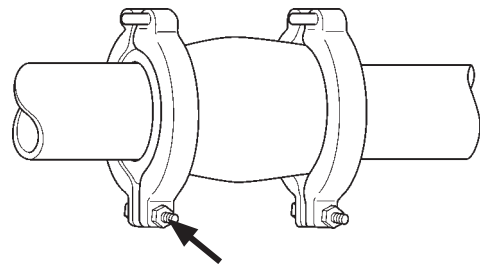
MLBA-07-071

### 14. Cover mounting bolts.



MLBA-07-075

### 15. Flexible master coupling of piping.

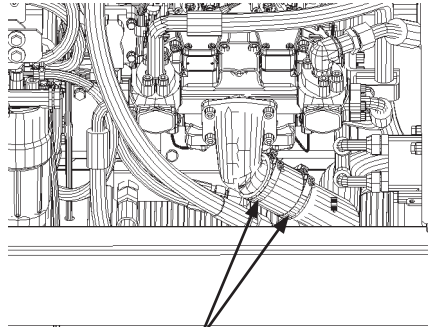


M1G6-07-008



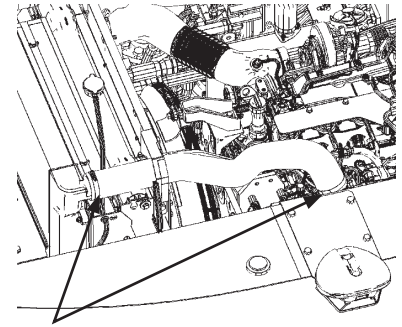
# MAINTENANCE

16. Jubilee and T-bolt clamp.



T-bolt Clamp

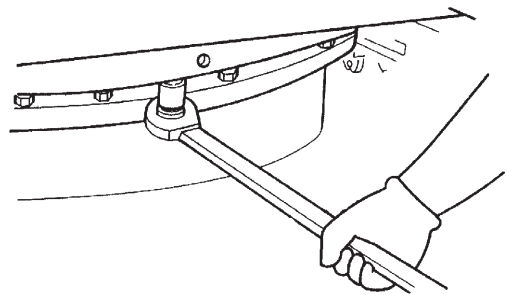
MCGB-07-127



Jubilee Clamp

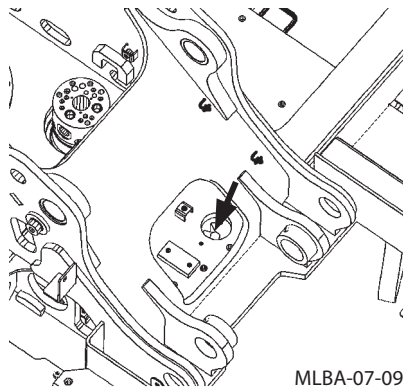
MLBA-07-072

17. Swing bearing mounting bolts to the upperstructure.



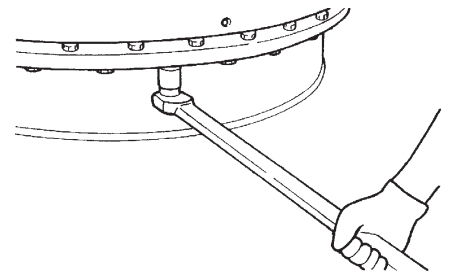
MCBB-07-041

Swing bearing mounting bolt to the chassis.



MLBA-07-098

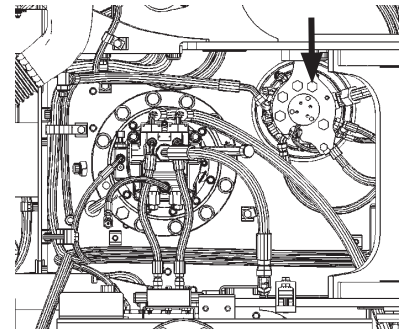
ZX140W-5B



MCBB-07-042

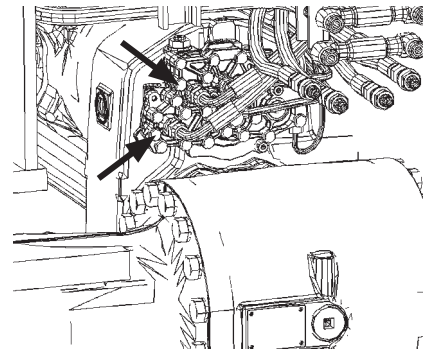
ZX170W-5B, 190W-5B, 220W-5B

18. Center joint lock mounting bolts.



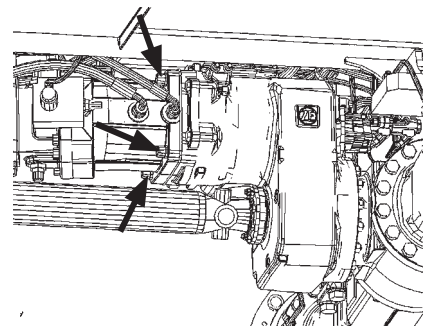
## MAINTENANCE

19. Transmission B-port, K-port adapter.



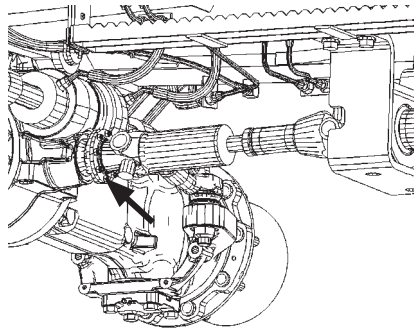
MCGB-07-133

20. Travel motor mounting bolts.

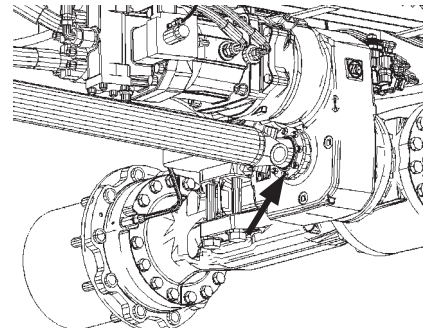


MCGB-07-135

21. Propel shaft mounting bolts and nuts.



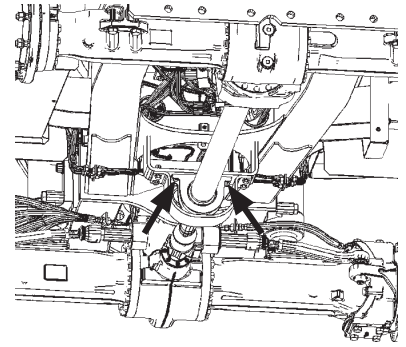
MCGB-07-138



MCGB-07-139

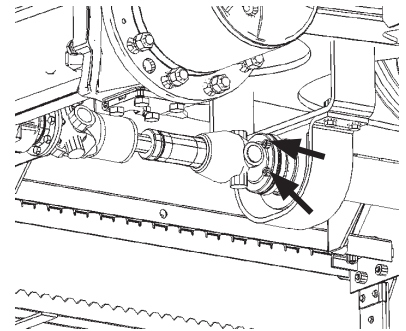
# MAINTENANCE

22. Center bearing mounting bolts.



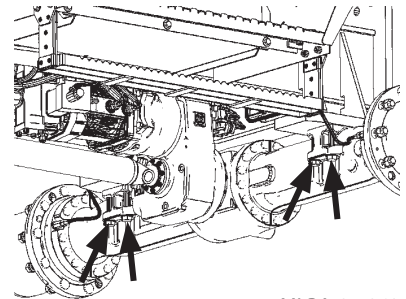
MLBA-07-057

23. Propel shaft connection bolts and nuts.



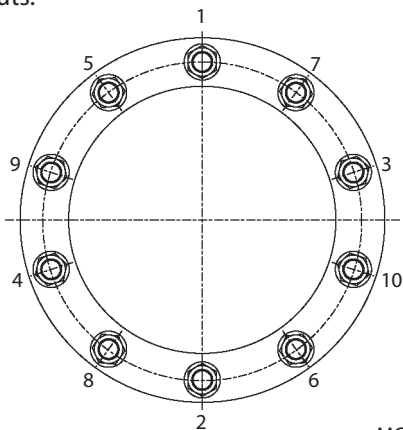
MLBA-07-062

24. Rear axle mounting bolts.



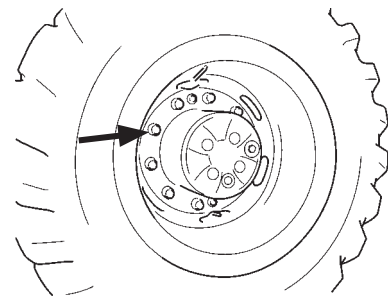
MLBA-07-068

25. Wheel nuts.



The Order of Wheel Nut Bolting

MCGB-07-141

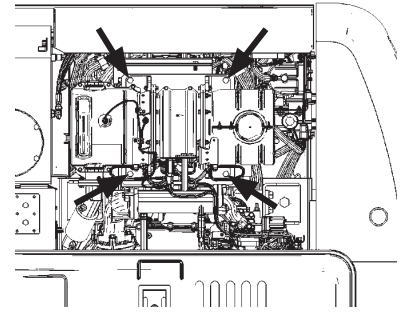


MCBB-07-023

## MAINTENANCE

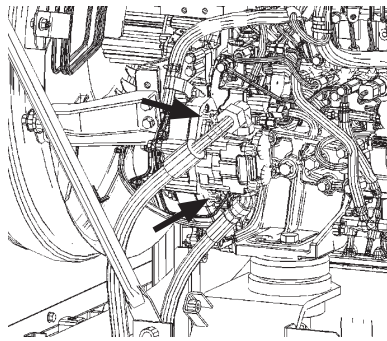
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26. Muffler filter mounting bolts.



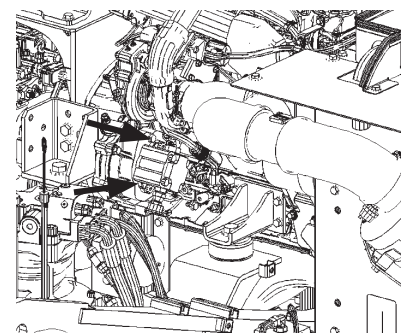
MLBA-07-082

27. Engine PTO mounting bolts.



ZX140W-5B

MLBA-07-073



ZX170W-5B, 190W-5B, 220W-5B

MLBA-07-080

## MAINTENANCE

### L. Muffler Filter

- 1 Check and Clean Filter Element of Muffler Filter**  
--- every 4500 hours

See your authorized dealer.

- 2 Check and Clean Muffler Filter**  
--- as required

**IMPORTANT:** Check and clean flammable objects on the area around the muffler filter.

Do not disassemble the base machine support parts, sensors, differential pressure hoses and pipes.

When the machine is operated in dusty areas, refer to "9-1 Maintenance Under Special Environmental Conditions".

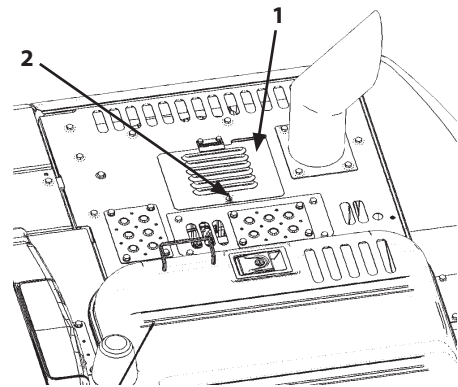
Twist screw (2) to open muffler filter maintenance window (1) located at the top of the engine cover.

Check differential hoses and pipes for disconnection or cracks.

Check the differential sensors and harnesses of exhaust temperature sensors for abnormality.

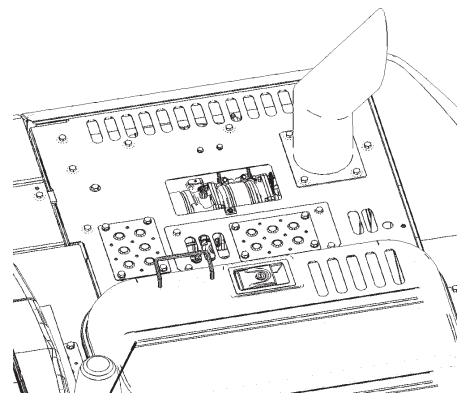
Securely close muffler filter maintenance window (1).

Remove muffler upper cover if necessary and clean muffler filter. In this case, see your authorized dealer.



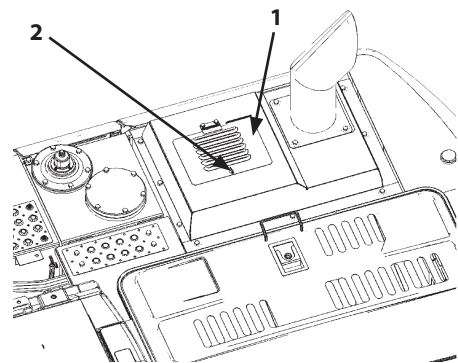
ZX140W-5B

MLBA-07-051



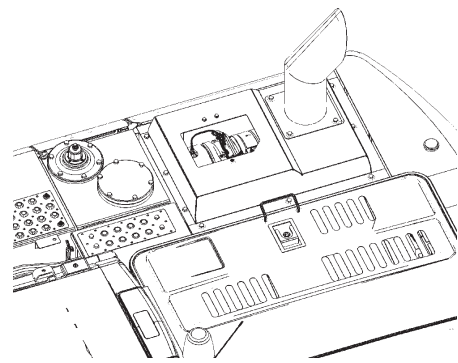
ZX140W-5B

MLBA-07-052



ZX170W-5B, 190W-5B

MLBA-07-053

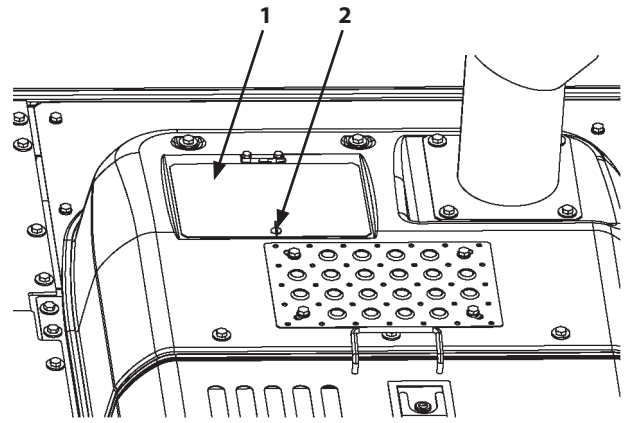


ZX170W-5B, 190W-5B

MLBA-07-054

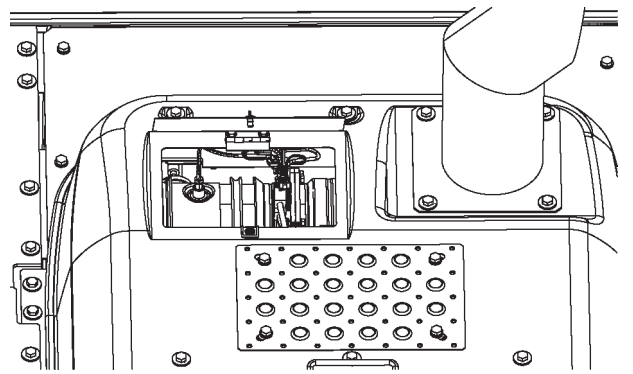
# MAINTENANCE

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ZX220W-5B,

MDAA-07-043

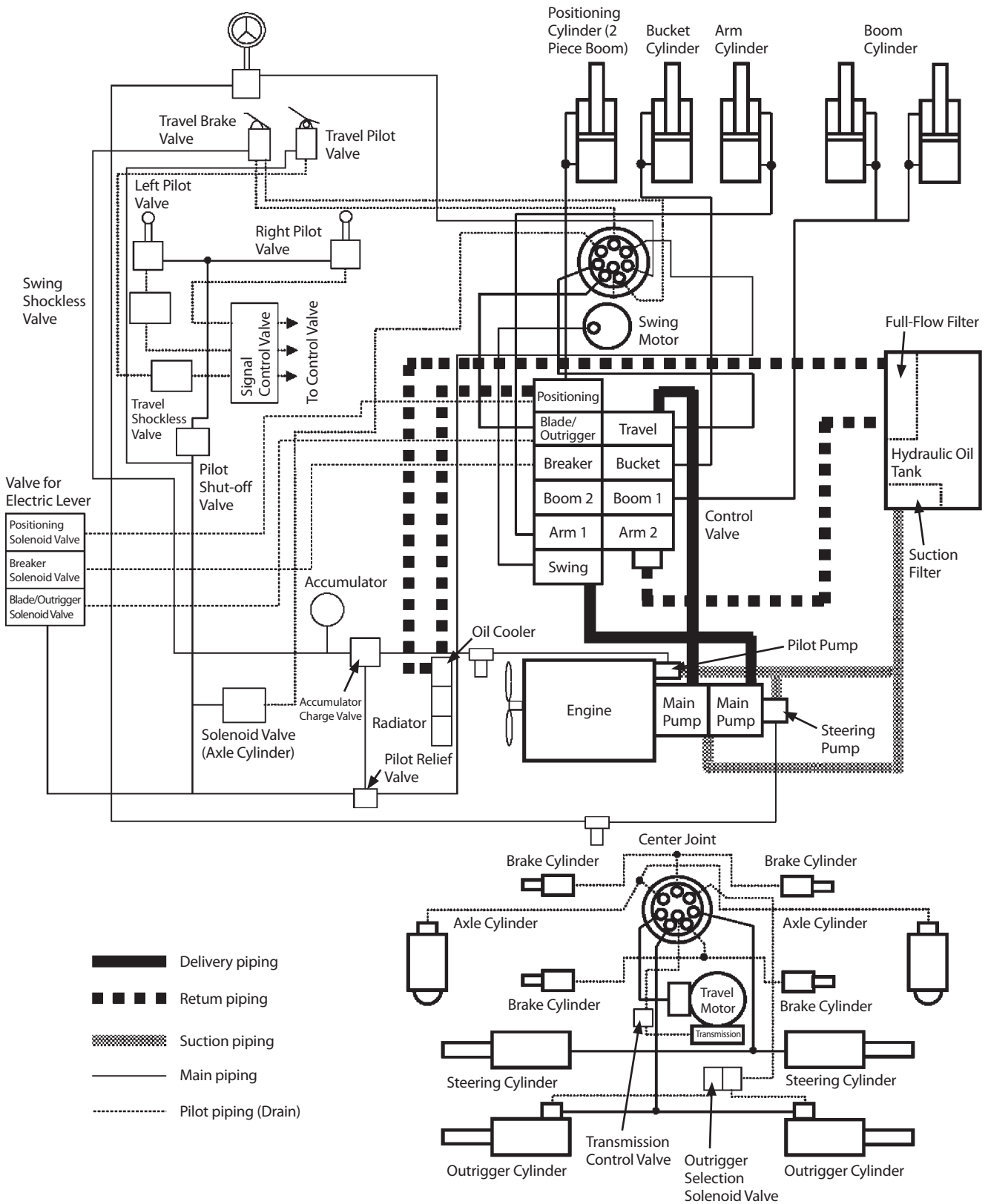


ZX220W-5B,

MDAA-07-042

# HYDRAULIC CIRCUIT AND ELECTRICAL CIRCUIT

## Hydraulic Circuit



MLBA-08-001

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## HYDRAULIC CIRCUIT AND ELECTRICAL CIRCUIT

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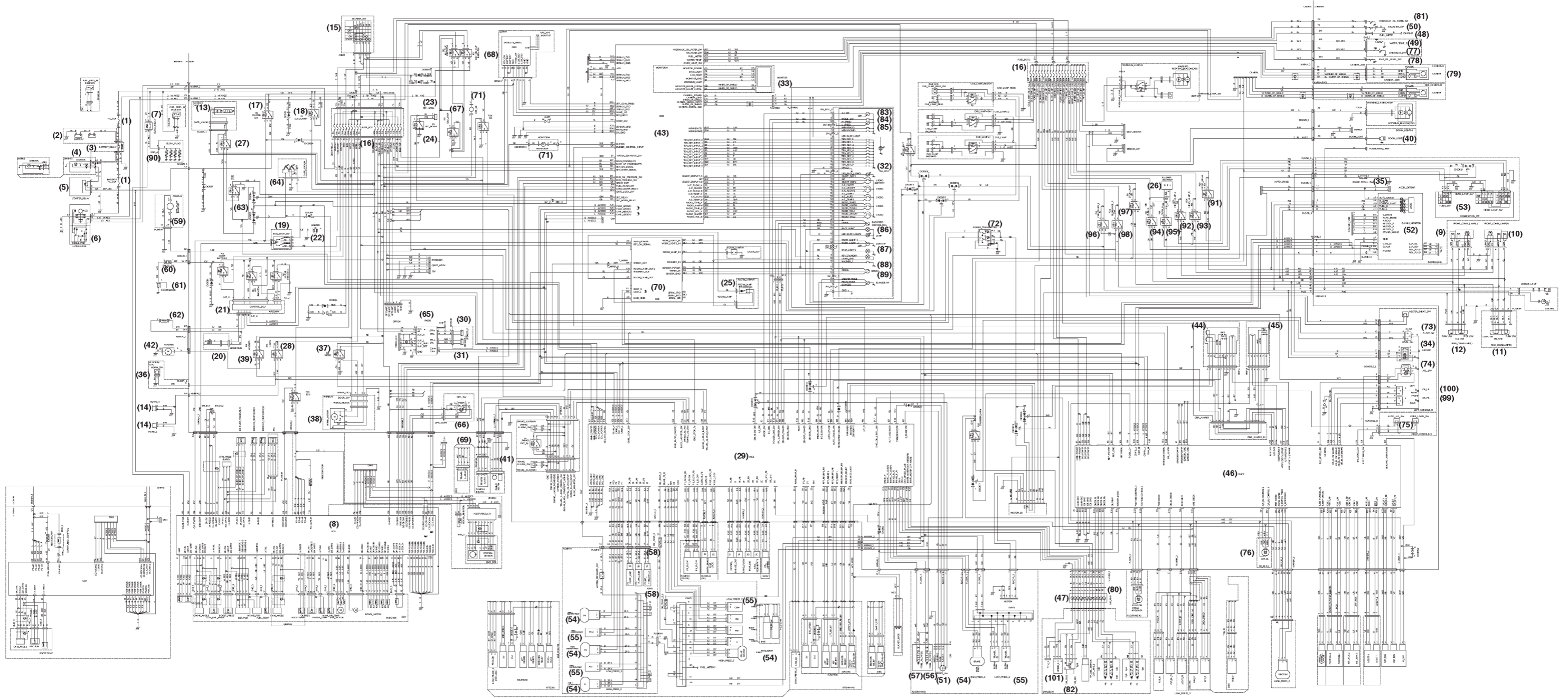
### Electrical Circuit

#### Electrical Diagram

1. FUSIBLE LINK
2. BATTERY
3. BATTERY RELAY
4. STARTER
5. SAFETY RELAY
6. ALTERNATOR
7. GLOW RELAY
8. ECU
9. FRONT COMB. LAMP (L)
10. FRONT COMB. LAMP (R)
11. REAR COMB. LAMP (R)
12. REAR COMB. LAMP (L)
13. PILOT SHUT-OFF SOLENOID VALVE
14. HORN (H), (L)
15. STARTER SWITCH
16. FUSE
17. STARTER CUT RELAY
18. LOAD DUMP RELAY
19. ENGINE STOP SWITCH
20. SOLAR RADIATION SENSOR
21. AIR-CONDITIONER UNIT
22. LIGHTER
23. SECURITY HORN
24. SECURITY HORN RELAY
25. ROOM LAMP
26. FLASHER
27. PILOT SHUT-OFF RELAY
28. HORN RELAY
29. MCZ
30. SPEAKER-R
31. SPEAKER-L
32. SWITCH BOX
33. MONITOR
34. HAZARD SWITCH
35. BRAKE SWITCH
36. HORN SWITCH
37. WIPER RELAY
38. WIPER MOTOR
39. WASHER RELAY
40. BOOM LIGHT
41. SWING ALARM
42. WASHER
43. DSZ
44. MISSION SWITCH
45. POWER DIGGING SWITCH
46. SMCZ
47. SLIP LING
48. FUEL SENSOR
49. COOLANT TEMPERATURE SENSOR
50. AIR CLEANER SWITCH
51. PARKING SWITCH
52. COLUMN BOX
53. COMBINATION SWITCH
54. PRESSURE SENSOR (H)
55. PRESSURE SENSOR (L)
56. TRAVEL (F) Pi CUT
57. TRAVEL (R) Pi CUT
58. HYD. OIL TEMPERATURE SENSOR
59. FUEL SOLENOID PUMP
60. PRESSURE SWITCH
61. AIR-CON. COMPRESSOR
62. AMBIENT SENSOR
63. SECURITY RELAY
64. PILOT SHUT-OFF SWITCH
65. RADIO
66. DPF SWITCH
67. AUTO SHOT DOWN RELAY
68. SATELLITE SERIAL
69. TRAVEL ALARM
70. BCZ
71. BUZZER
72. POWER TRANSISTOR
73. PILOT CUT SWITCH
74. AFL SWITCH
75. AUTO AXLE LOCK SWITCH
76. OUTRIGGER/BLADE LEVER
77. OVER-HEAT SWITCH
78. ENGINE OIL LEVEL SWITCH
79. CAMERA
80. POSITIONING PEDAL
81. HYD. OIL FILTER WARNING
82. TRANSMISSION
83. AUTO-IDLE SWITCH
84. MODE SWITCH
85. TRAVEL 2-SPEED SWITCH
86. ENGINE SPEED CONTROL DIAL
87. LIGHT SWITCH
88. WASHER SWITCH
89. WIPER SWITCH
90. GLOW PLUG
91. UPPER BEAM RELAY
92. HEAD LAMP RELAY L
93. HEAD LAMP RELAY R
94. TURN RELAY L
95. TURN RELAY R
96. CLEARANCE RELAY L
97. STOP LAMP RELAY
98. CLEARANCE RELAY R
99. OUTRIGGER SWITCH (FRONT/REAR)
100. OUTRIGGER SWITCH (LEFT/RIGHT)
101. SPEED SENSOR



# Electrical Diagram





## MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS

### Maintenance Under Special Environmental Conditions

Operating Conditions	Precautions for Maintenance
Muddy Soil, Rainy or Snowy Weather	After Operation : Clean the machine and check for cracks, damaged, loose or missing bolts and nuts. Lubricate all necessary parts without delay.
Near the Ocean	After Operation : The following salt pollution measures must be taken when the machine is operated at sea or at coastline. <ol style="list-style-type: none"> <li>(1) After completing the work, extend/retract the hydraulic cylinders several times to form oil film on the rod surface. Store the machine with cylinders retracted as much as possible.</li> <li>(2) Thoroughly clean the machine with fresh water to wash off salt.</li> <li>(3) Perform touch up painting periodically on hose fittings, lubrication piping and inserting position of cover, where sea water is easily collected, in order to prevent corrosion.</li> <li>(4) During storage of the machine, cover the machine by tarps to prevent sea water from entering into the cab vent. Apply rust prevention oil (example: ANTIRUST P-1300NP-3 JX Nippon Oil &amp; Energy Corporation) onto plated part of the cylinder rods.</li> </ol>
Dusty Atmosphere	Air Cleaner : Clean the element regularly at shorter service intervals. Radiator : Clean the oil cooler screen to prevent clogging of the radiator core. Fuel System : Clean the filter element and strainer regularly at shorter service intervals. Engine, Muffler : Clean earlier than the normal interval to prevent dust from sticking and accumulating. Inhibit regeneration according to the machine operating condition.
Rocky Ground	Chassis : Carefully operate while checking for cracks, damage and loose bolts and nuts. Front Attachment : Standard attachment may be damaged when digging rocky ground. Reinforce the bucket before using it, or use a heavy duty bucket.
Falling Stones	Cab Head Guard : Provide a cab guard to protect the machine from falling stones. Consult your nearest Hitachi dealer.
Freezing Weather	Fuel/Lubricant : Use high quality and low viscosity fuel and oil. Engine Coolant : Be sure to use antifreeze. Battery : Fully charge the batteries at shorter intervals. If not fully charged, electrolyte may freeze. Chassis : Keep the chassis clean. Park the machine on a hard surface to prevent the tracks from freezing to the ground.



# STORAGE

## Storing the Machine

In case the machine is to be stored for longer than one month, pay attention to the following points to prepare next operation.

### Precautions for Long-Term Storage

Item	Remedy
Machine Cleaning	Wash the machine. Remove soil or other debris adhered to the machine.
Lubrication/Greasing	Check lubricant's level and contamination. Fill up or change if necessary. Lubricate all grease points. Coat grease to exposed metal surfaces which are subject to rust. (i.e. cylinder rods etc.)
Battery	Remove the batteries and store them in a dry protected place after charging fully. If not removed, disconnect the negative battery cable from the (-) terminal.
Coolant	Add anti-rusting agent. If storing in extremely cold areas, either add extra anti-freeze or drain coolant completely to avoid freezing. In this case, place a sign reading "NO COOLANT".
Protection Against Dust and Moisture	Store the machine in a dry storage area using a protective cover.
Tools	Inspect and repair, then store.
Lubrication Operation	If oil film on the metal surfaces is lost, rust may begin, possibly causing abnormal wear of the machine when the machine operation is restarted. If the machine is stored for a long time, operate hydraulic functions for travel, swing and digging two to three times for lubrication, at least once a month. Be sure to check the coolant level and lubrication conditions before operating.

### NOTE:

- *Lubricating operation is a series of warm-up, travel, swing and digging operation carried out repeatedly for a few cycles at slow speed.*
- *Lubricants will deteriorate during long term storage of the machine. Be sure to carefully check the lubricants before restarting operation of the machine.*

### Precautions for Disconnecting or Connecting Batteries

In case the batteries are kept disconnected for more than one month or when the batteries are reconnected, contact your nearest Hitachi dealer. Resetting of the Information Controller may be required.



## TROUBLESHOOTING

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### 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 Hitachi dealer. Never attempt to adjust, disassemble, or repair the hydraulic and/or electrical/electronic parts/components.

**IMPORTANT: Never attempt to disassemble or modify the electrical/electronic components.**

#### Engine

Consult the nearest Hitachi dealer for the engine troubleshooting.

#### Engine Auxiliaries

Problem	Cause	Solution
Batteries will not be charged.	Broken battery separator	Replace
	Faulty regulator	* Adjust and replace
	Faulty ground line	* Repair
	Faulty alternator	* Repair or replace
Batteries discharge quickly after being charged.	Shorted cable	* Repair or replace
	Shorted battery separator	* Repair or replace
	Increased sediment in battery	* Replace
Coolant temperature is too high.	Low coolant level	Refill
	Insufficient fan belt tension	Adjust
	Damaged rubber hose	* Replace
	Faulty thermostat	* Replace
	Faulty coolant temperature gauge	* Replace

Items with \* mark: Consult your nearest Hitachi dealer.

## TROUBLESHOOTING

<b>Impossible to Start the Engine</b>			
Problem	Cause	Solution	
Engine will not start	Starter does not rotate or is not powerful	The F-N-R switch is turned to "F" or "R".	Turn the F-N-F switch to "N" (neutral) position.
		Brake switch is not in P (parking).	Place brake switch to P (parking)
		Discharged battery	Charge or replace battery.
		Disconnected, loose, or corroded battery terminals	After repairing the corroded area, securely tighten the connectors.
		Lowered pilot control shut-off lever.	Pull pilot control shut-off lever up.
		Disconnected, loose, or corroded starter ground line terminals.	After repairing the corroded area, securely tighten the connectors.
		Faulty pilot control shut-off lever electrical system	Repair
		Too high engine oil viscosity	Change engine oil with appropriate viscosity.
		Faulty starter and/or electrical system	* Repair and replace
	Starter rotates	No fuel	After checking that no fuel is leaking, refill fuel.
Air in the fuel system		Bleed air.	
Clogged fuel filter		After draining water, replace the element.	
Frozen fuel		Warm the fuel pump with hot water or wait until the atmospheric temperature rises.	
Engine stop switch is ON		* Repair and replace	
Faulty preheat system		* Repair and replace	
Even though the engine is started, the engine stalls soon	Too low idle speed	* Repair and replace	
	Clogged fuel filter	After draining water, replace the element.	
	Clogged pre-fuel filter	Clean or replace the element.	
	Faulty engine control system	* Repair and replace	
	Clogged air cleaner	Clean or replace the element.	
	Faulty injection pump	* Repair and replace	
Engine runs irregularly	Faulty fuel system	* Repair and replace	
	Water or air in the fuel system	Drain water or bleed air.	
	Faulty engine control system	* Repair and replace	
	Clogged muffler filter	* Repair and replace	

Items with \* mark: Consult your nearest Hitachi dealer.



## TROUBLESHOOTING

<b>Control Lever</b>		
Problem	Cause	Solution
Lever is heavy to operate.	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

Items with \* mark: Consult your nearest Hitachi dealer.

## TROUBLESHOOTING

### Hydraulic System

When the machine is stored without operation, air mixed in hydraulic oil will become separated and will accumulate in the cylinder upper sections, causing a delay in the response time of the machine movement or weak power development.

In case these symptoms appear, repeatedly operate all actuators several times.

Problem	Cause	Solution
No hydraulic Functions (Noise from pumps)	Faulty hydraulic pump	* Repair or replace
	Lack of hydraulic oil	Refill
	Broken suction pipe and/or hose	* Repair or replace
No hydraulic Functions (Hydraulic pump noise remains unchanged.)	Blade/outrigger/front attachment pilot control switch is OFF position.	Place blade/outrigger/front attachment pilot control switch to ON position.
	Faulty pilot pump	* Replace
	Faulty pilot shut-off solenoid valve	* Replace
	Faulty wire harness (pilot shut-off solenoid valve) pilot shut-off switch.	* Repair or replace
	The pilot control shut-off lever is in the LOCK position.	Turn the pilot shut-off lever to the UNLOCK position.
All actuators have no power.	Malfunction due to worn hydraulic pump	* Replace
	Decreased main relief valve set pressure in the control valve	* Adjust
	Lack of hydraulic oil	Refill
	Clogged suction strainer in the hydraulic oil tank	Clean
	Absorption of air from the oil suction side	Retighten
	Faulty pressure sensor.	* Replace
	Faulty solenoid valve	* Replace
Only one side lever is inoperable or has no power.	Faulty relief valve in the valve	* Repair or replace
	Broken pipe and/or hose	* Repair or replace
	Loose pipe line joint	Retighten
	Broken O-ring at pipe line joint	* Replace
	Faulty hydraulic pump	* Repair or replace
	Faulty pilot valve	* Replace
	Faulty pilot circuit line	* Repair or replace
Faulty pilot solenoid valve	* Repair or replace	

Items with \* mark: Consult your nearest Hitachi dealer.

## TROUBLESHOOTING

Problem	Cause	Solution
Only one actuator is inoperable.	Broken control valve spool	* Replace
	Embedded foreign matter in valve spool	* Repair or replace
	Broken pipe and/or hose	* Repair or replace
	Loose pipe line joint	Retighten
	Broken O-ring at pipe line joint	* Replace
	Broken actuator	* Repair or replace
	Faulty pilot valve	* Replace
	Faulty pilot circuit line	* Repair or replace
Only one cylinder is inoperable or has no power.	Faulty pilot solenoid valve	* Repair or replace
	Broken oil seal in cylinder	* Repair or replace
	Oil leak due to damage to cylinder rod	* Repair or replace
	Faulty pilot valve	* Replace
	Faulty pilot circuit line	* Repair or replace
Hydraulic oil temperature increases.	Faulty pilot solenoid valve	* Repair or replace
	Stained oil cooler	Clean
Oil leak from low pressure hose	Insufficient engine fan belt tension	Adjust
	Loose clamps	Retighten
	Faulty suction manifold	* Repair or replace

Items with \* mark: Consult your nearest Hitachi dealer.

## TROUBLESHOOTING

<b>Travel</b>		
Problem	Cause	Solution
Machine does not travel both forward and backward.	Broken center joint	* Repair and replace
	Parking brake is not released.	* Repair and replace
	The parking brake release system remains ON.	Turn the parking brake release system OFF.
	Broken transmission	* Repair and replace
	Broken travel motor	* Repair and replace
	Broken brake valve	* Repair and replace
	Faulty pilot valve	* Replace
	Faulty pilot line	* Repair and replace
The travel speed does not change.	Faulty shift lever	* Replace
	Incomplete connection of connector	* Repair and replace
	Faulty wire harness	* Repair
	Faulty controller	* Replace
	Faulty solenoid valve	* Repair and replace
	Faulty transmission control valve	* Repair and replace
	Faulty transmission	* Repair and replace

Items with \* mark: Consult your nearest Hitachi dealer.

## TROUBLESHOOTING

### Steering

Problem	Cause	Solution
Steering wheel is heavy to operate.	Faulty steering pump	* Repair and replace
	Faulty steering valve	* Repair and replace
	Malfunction of steering cylinder	* Repair and replace faulty parts.
	Reduced set pressure of relief valve	* Adjust
	Reduced air pressure in tire	Refill
	Incorrect wheel alignment	* Adjust
Steering wheel vibrates.	Play in bearing	* Repair and replace
	Incorrect wheel alignment	* Adjust
	Unbalance between right and left tires	* Adjust and replace
	Worn king pin bushing	* Repair and replace
Steering wheel is uncontrolled.	Incorrect wheel alignment	* Adjust
	Uneven performance and dragging of brake	* Adjust
	Unbalance between right and left tires	* Adjust and replace

Items with \* mark: Consult your nearest Hitachi dealer.

### Brake

Problem	Cause	Solution
Brake does not operate effectively.	Worn brake disk	* Replace
	Faulty brake valve	* Repair and replace
	Oil leaks from wheel cylinder	* Repair and replace
	Oil leaks from or drawn air in brake piping.	* Repair and Bleed
Brake drags	Permanent set or breakage of return spring	* Replace
	Service and/or parking brake is applied.	Release
Brake operates unevenly.	Worn brake disk	* Replace
	Oil leaks from wheel cylinder	* Repair and replace
Brake squeaks when applied.	Worn disk	* Replace and repair

Items with \* mark: Consult your nearest Hitachi dealer.

## TROUBLESHOOTING

<b>Transmission</b>		
Problem	Cause	Solution
Noisy	Lack of gear oil or deteriorated quality of oil	Refill or change oil.
	Worn transmission inner parts	* Repair and/or replace faulty parts.
	Broken gear and/or bearing	* Repair and/or replace faulty parts.
Gearshift is not achieved.	Oil leaks from transmission circuit	* Repair and replace
	Mixed air in transmission circuit	Bleed air.
	Faulty transmission control valve	* Repair or replace.
	Faulty shift interlock section	* Repair or replace faulty parts.
Power is not transmitted.	The parking brake release system remains ON.	Discharge the parking brake release grease.
	Broken clutch	* Replace
	Broken shafts and/or gears	* Replace

Items with \* mark: Consult your nearest Hitachi dealer.

## TROUBLESHOOTING

### Propeller Shaft

Problem	Cause	Solution
Propeller shaft vibrates.	Bent propeller shaft	* Repair and replace faulty part.
	Loose parts and/or unbalance	* Retighten and Adjust
Propeller shaft makes noise.	Excessively worn spline	* Replace
	Worn or seized spider bearing	* Replace
	Loose parts	* Retighten
	Insufficient greasing	Grease

Items with \* mark: Consult your nearest Hitachi dealer.

### Front/Rear Axle

Problem	Cause	Solution
Noise is heard.	Worn or broken gears	* Replace
	Low gear oil level or improper property oil	Refill and Change oil.
	Worn bearing or increased bearing play	* Replace
	Increased gaps on shaft spline	* Repair and replace
Power is not transmitted.	Broken shaft	* Replace
	Broken gear	* Replace

Items with \* mark: Consult your nearest Hitachi dealer.

### Swing

Problem	Cause	Solution
Swing function is inoperable	Swing lock is engaged.	Release
	Malfunction of swing parking brake	* Repair and replace
	Faulty swing parking brake release valve	* Repair and replace
	Broken swing motor	* Repair and replace
	Faulty pilot valve	* Replace
	Faulty pilot piping	* Repair and replace
Machine does not swing smoothly.	Worn swing gear	* Repair and replace
	Broken swing bearing or balls	* Repair and replace
	Insufficient grease	Add

Items with \* mark: Consult your nearest Hitachi dealer.

Swing noise may be heard or swing system may not operate smoothly immediately after the control valve, swing motor relief valve, and/or swing motor is replaced. This is caused by air trapped in the swing hydraulic circuit. Therefore, this symptom will disappear after the machine is operated slowly for approx. 10 minutes. After repairing, be sure to check the oil level in the hydraulic oil tank. Refill hydraulic oil as necessary.

## TROUBLESHOOTING

### Engine Speed

Problem	Cause	Solution
Even if operating the engine control dial, the engine speed does not change.	Blown fuse	Replace
	Faulty engine control dial	* Replace
	Poor contact in connector	* Repair or replace
	Damaged wire harness (between EC dial and MC, or MC and ECM)	* Repair
	Faulty controller (MC, ECM)	* Replace
	Performing manual regeneration	(Normal control)
Work mode does not change.	Faulty mode switch	* Replace
	Poor contact in connector	* Repair or replace
	Damaged wire harness (between MC and monitor)	* Repair
	Faulty controller (MC)	* Replace
	Faulty solenoid valve	* Repair or replace
Engine speed is uncontrolled with accelerator pedal in the pedal mode.	Faulty engine control selection switch	* Replace
	Faulty travel pilot pressure sensor	* Replace
	Faulty connector	* Repair and replace
	Faulty wire harness	* Repair
	Faulty controller	* Repair
	Faulty travel pilot valve	* Repair and replace
	Faulty brake switch	* Repair
Auto-idle is inoperable or not released.	Faulty pressure sensor.	* Replace
	Poor contact in connector	* Repair or replace
	Damaged wire harness	* Repair
	Faulty controller.	* Replace
	Performing manual regeneration	(Normal control)

Items with \* mark: Consult your nearest Hitachi dealer.

### Pump Control

Problem	Cause	Solution
Front attachment and/or travel speed is slow.	Blown control fuse	Replace
	Poor contact in connector	* Repair or replace
	Damaged wire harness	* Repair
	Faulty controller.	* Replace
	Faulty pump solenoid valve.	* Replace
	Faulty pressure sensor.	* Replace

Items with \* mark: Consult your nearest Hitachi dealer.



## TROUBLESHOOTING

### Blade/Outrigger

Problem	Cause	Solution
Blade/outrigger is inoperable. (Other hydraulic actuators are also inoperable.)	Refer to Hydraulic system	Refer to Hydraulic system
Blade/outrigger is inoperable. (Other hydraulic actuators operate normally.)	Blade/outrigger/front attachment pilot control switch is OFF position.	Place blade/outrigger/front attachment pilot control switch to ON position.
	Broken attachment lever or control switch	* Replace
	Faulty wire harness (Attachment Lever-Controller-Solenoid valve)	* Replace
	Faulty controller	* Replace
	Faulty solenoid valve	* Repair and replace
	Broken control valve spool	* Replace
	Seized foreign matter in valve spool	* Repair and replace
	Faulty relief valve in control valve	* Repair and replace
	Broken pipe, pipe line and/or hose	* Repair and replace
	Broken cylinder	* Repair and replace

Items with \* mark: Consult your nearest Hitachi dealer.

### 2-Piece Boom (Positioning Cylinder)

Problem	Cause	Solution
Positioning cylinder is inoperable. (Other hydraulic actuators are also inoperable.)	Refer to Hydraulic system	Refer to Hydraulic system
Positioning cylinder is inoperable. (Other hydraulic actuators operate normally.)	Other attachment is selected with the front attachment selection switch.	Select 2-piece boom by using front attachment selection switch
	Broken attachment pedal or control switch	* Replace
	Faulty wire harness (Attachment pedal-Controller-Solenoid valve)	* Replace
	Faulty controller	* Replace
	Faulty solenoid valve	* Repair and replace
	Broken control valve spool	* Replace
	Seized foreign matter in valve spool	* Repair and replace
	Faulty relief valve in control valve	* Repair and replace
	Broken pipe, pipe line and/or hose	* Repair and replace
	Broken cylinder	* Repair and replace

Items with \* mark: Consult your nearest Hitachi dealer.

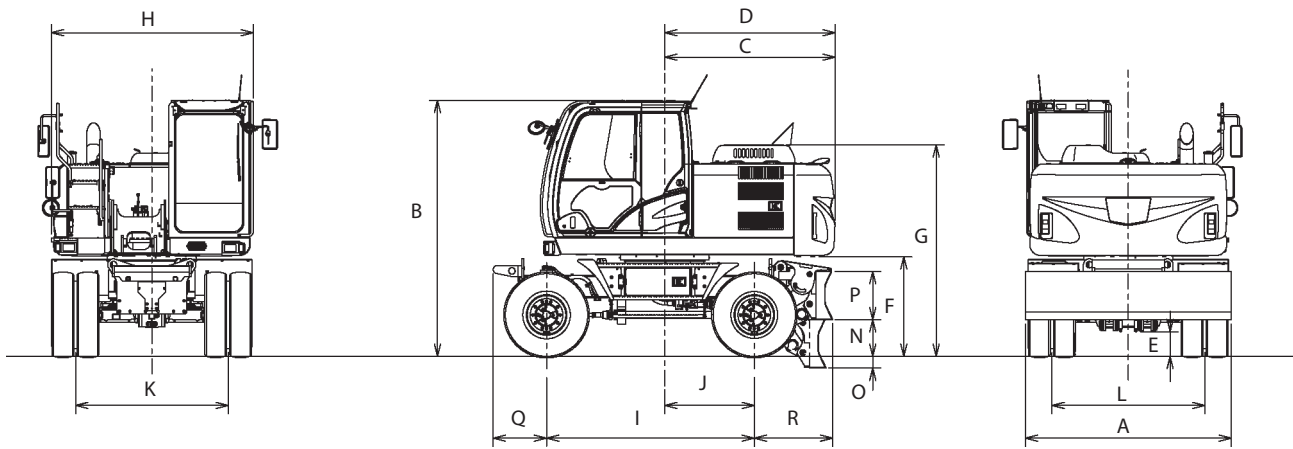
### Others

The machine trouble may induce the cause of noise, excessive vibration, and/or smell. Always be careful during operation.



## SPECIFICATIONS

### Specifications ZX140W-5B (Rear Blade)



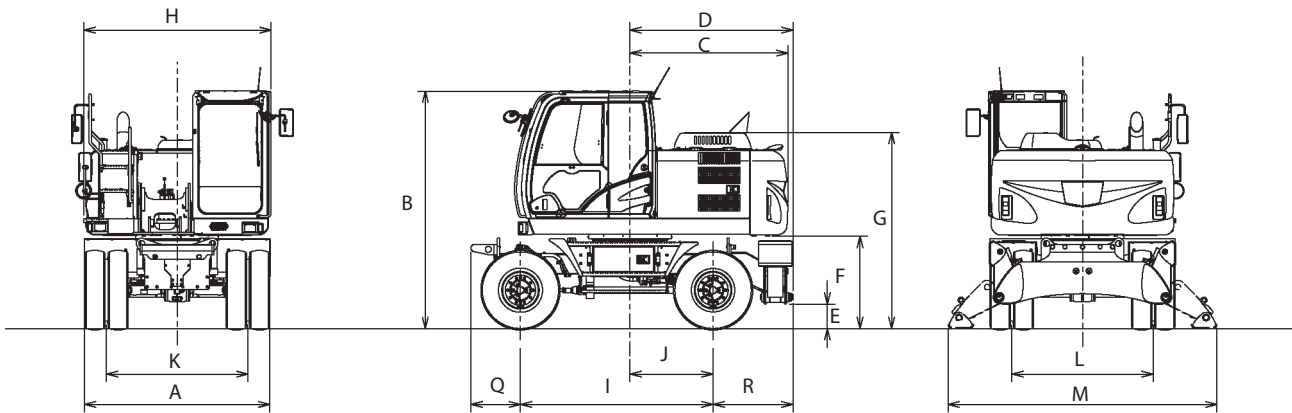
MLBA-12-001

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.52 m (8 ft 3 in)	2.52 m (8 ft 3 in)
Bucket Capacity (Heaped)		PCSA 0.50 m <sup>3</sup> (0.65 yd <sup>3</sup> ), CECE 0.45 m <sup>3</sup>	
Operating Weight	kg (lb)	14800 (32600)	15200 (33500)
Base Machine Weight	kg (lb)	12400 (27300)	12400 (27300)
Engine		ISUZU AM-4JJ1X	
Engine Power	SAE J1349 net ISO 9249 net EEC 80/1269 net	90.2 kW/2200 min <sup>-1</sup> (123 PS/2200 rpm)	
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2530 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2120 (7' 0")	
D: Rear End Length	mm (ft-in)	2120 (7' 0")	
E: Minimum Ground Clearance	mm (ft-in)	300 (1' 0")	
F: Counterweight Clearance	mm (ft-in)	1215 (4' 0")	
G: Engine Cover Height	mm (ft-in)	2590 (8' 6")	
H: Overall Width of Upperstructure	mm (ft-in)	2480 (8' 2")	
I: Wheelbase	mm (ft-in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft-in)	1100 (3' 7")	
K: Front Wheel Tread	mm (ft-in)	1875 (6' 2")	
L: Rear Wheel Tread	mm (ft-in)	1875 (6' 2")	
M: Outrigger Spread	mm (ft-in)	–	
N: Max. Raising Height	mm (ft-in)	445 (1' 6")	
O: Max. Digging Depth	mm (ft-in)	145 (6")	
P: Blade Height	mm (ft-in)	590 (1' 11")	
Q: Front Axle to Front of Chassis	mm (ft-in)	655 (2' 2")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	965 (3' 2")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.9	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.2 (21.7/5.3/1.4)	
Gradeability	Degree (%)	35 (70)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX140W-5B (Rear Outrigger)



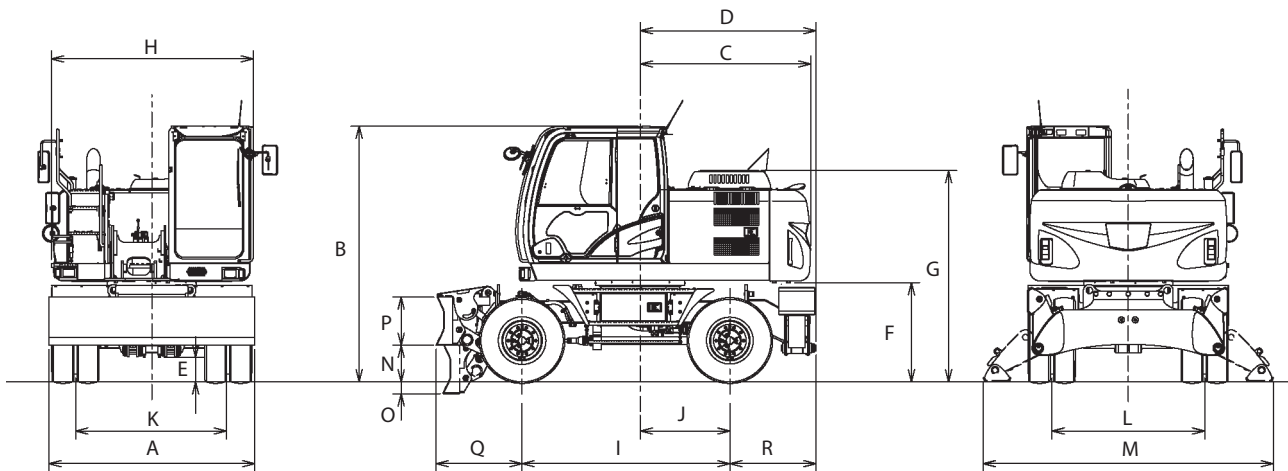
MLBA-12-002

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.52 m (8 ft 3 in)	2.52 m (8 ft 3 in)
Bucket Capacity (Heaped)		PCSA 0.50 m <sup>3</sup> (0.65 yd <sup>3</sup> ), CECE 0.45 m <sup>3</sup>	
Operating Weight	kg (lb)	15100 (33300)	15500 (34200)
Base Machine Weight	kg (lb)	12700 (28000)	12700 (28000)
Engine		ISUZU AM-4JJ1X	
Engine Power	SAE J1349 net	90.2 kW/2200 min <sup>-1</sup> (123 PS/2200 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2490 (8' 2")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2120 (7' 0")	
D: Rear End Length	mm (ft-in)	2160 (7' 1")	
E: Minimum Ground Clearance	mm (ft-in)	320 (1' 1")	
F: Counterweight Clearance	mm (ft-in)	1215 (4' 0")	
G: Engine Cover Height	mm (ft-in)	2590 (8' 6")	
H: Overall Width of Upperstructure	mm (ft-in)	2480 (8' 2")	
I: Wheelbase	mm (ft-in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft-in)	1100 (3' 7")	
K: Front Wheel Tread	mm (ft-in)	1875 (6' 2")	
L: Rear Wheel Tread	mm (ft-in)	1875 (6' 2")	
M: Outrigger Spread	mm (ft-in)	3380 (11' 1")	
N: Max. Raising Height	mm (ft-in)	–	
O: Max. Digging Depth	mm (ft-in)	–	
P: Blade Height	mm (ft-in)	–	
Q: Front Axle to Front of Chassis	mm (ft-in)	655 (2' 2")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1060 (3' 6")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.9	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.2 (21.7/5.3/1.4)	
Gradeability	Degree (%)	35 (70)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX140W-5B (Front Blade Rear Outrigger)



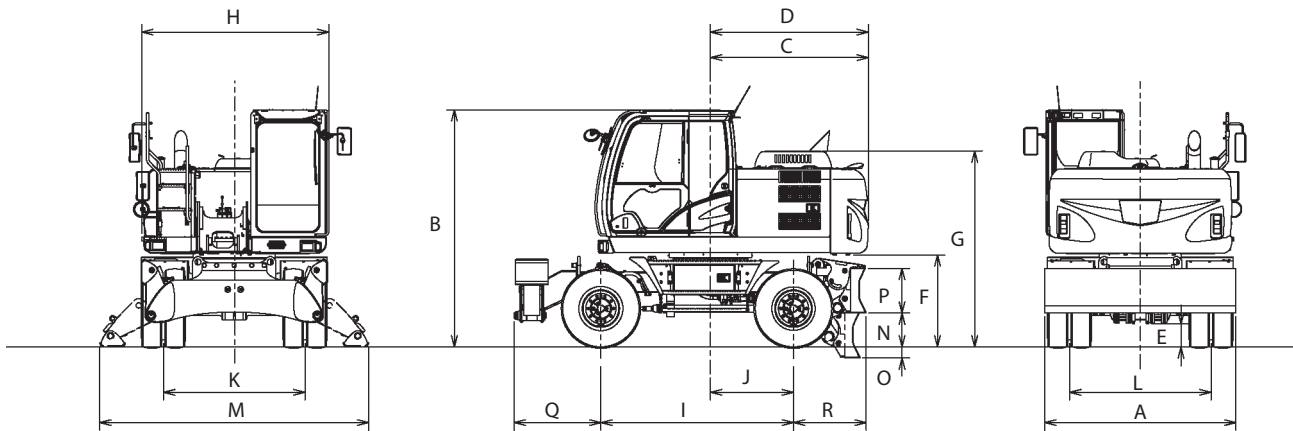
MLBA-12-003

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm		2.52 m (8 ft 3 in)	2.52 m (8 ft 3 in)
Bucket Capacity (Heaped)		PCSA 0.50 m <sup>3</sup> (0.65 yd <sup>3</sup> ), CECE 0.45 m <sup>3</sup>	
Operating Weight	kg (lb)	15800 (34800)	16300 (35900)
Base Machine Weight	kg (lb)	13400 (29500)	13400 (29500)
Engine		ISUZU AM-4JJ1X	
Engine Power	SAE J1349 net	90.2 kW/2200 min <sup>-1</sup> (123 PS/2200 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2530 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2120 (7' 0")	
D: Rear End Length	mm (ft-in)	2160 (7' 1")	
E: Minimum Ground Clearance	mm (ft-in)	300 (1' 0")	
F: Counterweight Clearance	mm (ft-in)	1215 (4' 0")	
G: Engine Cover Height	mm (ft-in)	2590 (8' 6")	
H: Overall Width of Upperstructure	mm (ft-in)	2480 (8' 2")	
I: Wheelbase	mm (ft-in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft-in)	1100 (3' 7")	
K: Front Wheel Tread	mm (ft-in)	1875 (6' 2")	
L: Rear Wheel Tread	mm (ft-in)	1875 (6' 2")	
M: Outrigger Spread	mm (ft-in)	3380 (11' 1")	
N: Max. Raising Height	mm (ft-in)	445 (1' 6")	
O: Max. Digging Depth	mm (ft-in)	145 (6")	
P: Blade Height	mm (ft-in)	590 (1' 11")	
Q: Front Axle to Front of Chassis	mm (ft-in)	1055 (3' 6")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1060 (3' 6")	
Tire Size	-	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.9	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.2 (21.7/5.3/1.4)	
Gradeability	Degree (%)	35 (70)	

**NOTE:** \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX140W-5B (Front Outrigger Rear Blade)



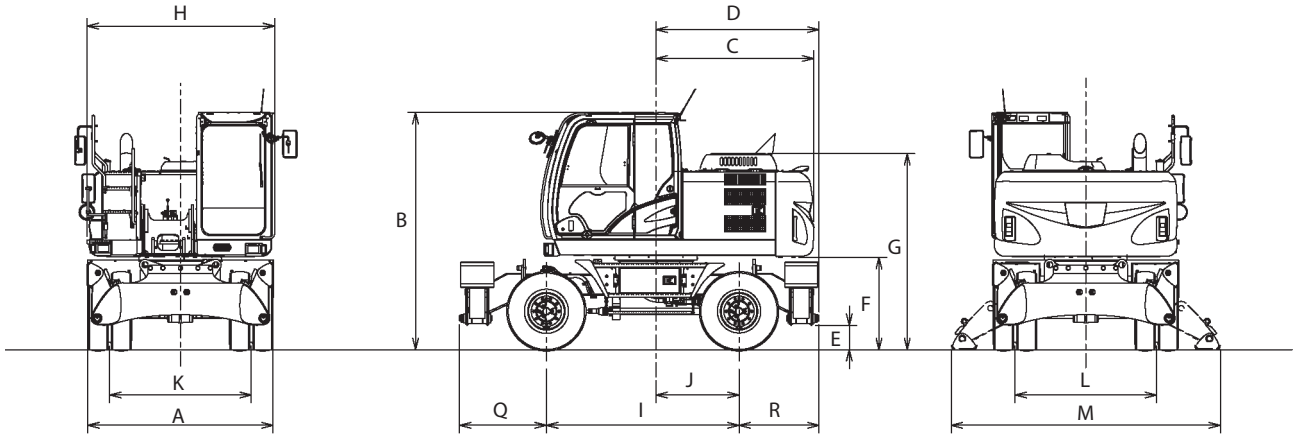
MLBA-12-004

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm		2.52 m (8 ft 3 in)	2.52 m (8 ft 3 in)
Bucket Capacity (Heaped)		PCSA 0.50 m <sup>3</sup> (0.65 yd <sup>3</sup> ), CECE 0.45 m <sup>3</sup>	
Operating Weight	kg (lb)	15800 (34800)	16300 (35900)
Base Machine Weight	kg (lb)	13400 (29500)	13400 (29500)
Engine		ISUZU AM-4JJ1X	
Engine Power	SAE J1349 net	90.2 kW/2200 min <sup>-1</sup> (123 PS/2200 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2530 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2120 (7' 0")	
D: Rear End Length	mm (ft-in)	2120 (7' 0")	
E: Minimum Ground Clearance	mm (ft-in)	300 (1' 0")	
F: Counterweight Clearance	mm (ft-in)	1215 (4' 0")	
G: Engine Cover Height	mm (ft-in)	2590 (8' 6")	
H: Overall Width of Upperstructure	mm (ft-in)	2480 (8' 2")	
I: Wheelbase	mm (ft-in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft-in)	1100 (3' 7")	
K: Front Wheel Tread	mm (ft-in)	1875 (6' 2")	
L: Rear Wheel Tread	mm (ft-in)	1875 (6' 2")	
M: Outrigger Spread	mm (ft-in)	3380 (11' 1")	
N: Max. Raising Height	mm (ft-in)	445 (1' 6")	
O: Max. Digging Depth	mm (ft-in)	145 (6")	
P: Blade Height	mm (ft-in)	590 (1' 11")	
Q: Front Axle to Front of Chassis	mm (ft-in)	1150 (3' 9")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	965 (3' 2")	
Tire Size	-	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.9	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.2 (21.7/5.3/1.4)	
Gradeability	Degree (%)	35 (70)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX140W-5B (Front Outrigger Rear Outrigger)



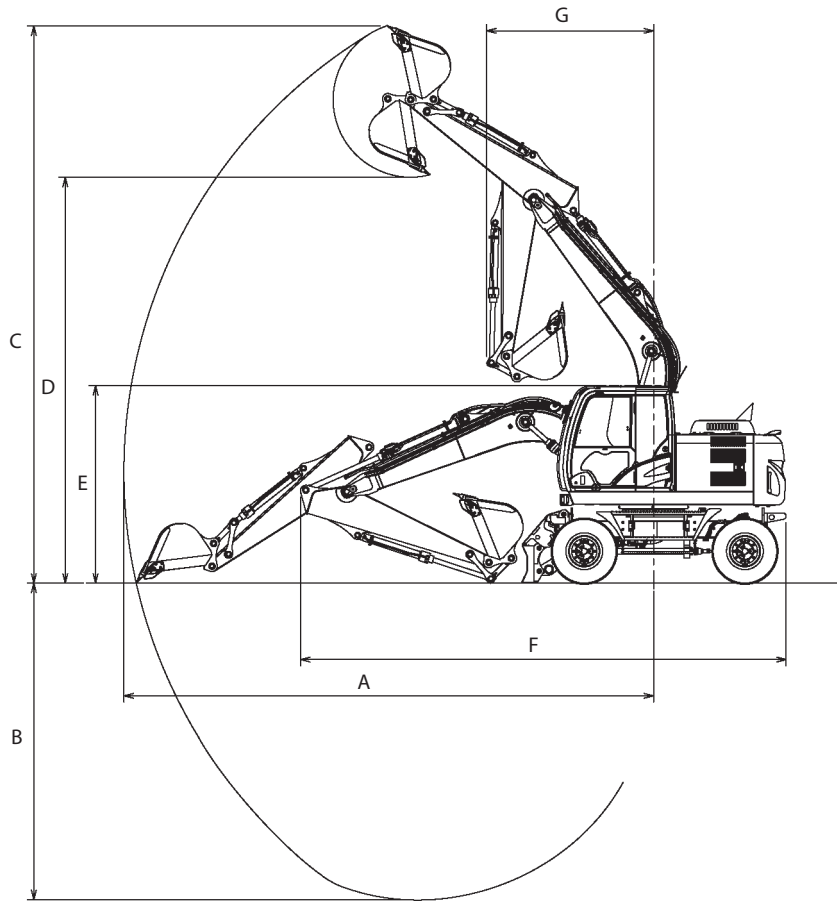
MLBA-12-005

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.52 m (8 ft 3 in)	2.52 m (8 ft 3 in)
Bucket Capacity (Heaped)		PCSA 0.50 m <sup>3</sup> (0.65 yd <sup>3</sup> ), CECE 0.45 m <sup>3</sup>	
Operating Weight	kg (lb)	16100 (35500)	16600 (36600)
Base Machine Weight	kg (lb)	13700 (30200)	13700 (30200)
Engine		ISUZU AM-4JJ1X	
Engine Power	SAE J1349 net ISO 9249 net EEC 80/1269 net	90.2 kW/2200 min <sup>-1</sup> (123 PS/2200 rpm)	
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2490 (8' 2")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2120 (7' 0")	
D: Rear End Length	mm (ft-in)	2160 (7' 1")	
E: Minimum Ground Clearance	mm (ft-in)	320 (1' 1")	
F: Counterweight Clearance	mm (ft-in)	1215 (4' 0")	
G: Engine Cover Height	mm (ft-in)	2590 (8' 6")	
H: Overall Width of Upperstructure	mm (ft-in)	2480 (8' 2")	
I: Wheelbase	mm (ft-in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft-in)	1100 (3' 7")	
K: Front Wheel Tread	mm (ft-in)	1875 (6' 2")	
L: Rear Wheel Tread	mm (ft-in)	1875 (6' 2")	
M: Outrigger Spread	mm (ft-in)	3380 (11' 1")	
N: Max. Raising Height	mm (ft-in)	–	
O: Max. Digging Depth	mm (ft-in)	–	
P: Blade Height	mm (ft-in)	–	
Q: Front Axle to Front of Chassis	mm (ft-in)	1150 (3' 9")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1060 (3' 6")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.9	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.2 (21.7/5.3/1.4)	
Gradeability	Degree (%)	35 (70)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Working Ranges ZX140W-5B Monoblock Boom



MLBA-12-006

Type of Front-End Attachment		Monoblock Boom		
		Category	2.10 m (6 ft 11 in) Arm	2.52 m (8 ft 3 in) Arm
Item		Backhoe	Backhoe	Backhoe
A: Maximum Digging Reach	mm (ft-in)	8040 (26' 5")	8410 (27' 7")	8870 (29' 1")
B: Maximum Digging Depth	mm (ft-in)	4610 (15' 2")	5030 (16' 6")	5520 (18' 1")
C: Maximum Cutting Height	mm (ft-in)	8660 (28' 5")	8850 (29' 0")	9160 (30' 1")
D: Maximum Dumping Height	mm (ft-in)	6240 (20' 6")	6440 (21' 2")	6760 (22' 2")
E: Overall Height	mm (ft-in)	3130 (10' 3")	3130 (10' 3")	3240 (10' 8")
F: Overall Length				
Rear BL.	mm (ft-in)	* 7675 (25' 2")	* 7715 (25' 4")	* 7695 (25' 3")
Rear OR.	mm (ft-in)	* 7675 (25' 2")	* 7715 (25' 4")	* 7695 (25' 3")
Front BL Rear OR.	mm (ft-in)	* 8075 (26' 6")	* 8115 (26' 7")	* 8095 (26' 7")
Front OR. Rear BL.	mm (ft-in)	* 8170 (26' 10")	* 8210 (26' 11")	* 8190 (26' 10")
Front OR. Rear OR.	mm (ft-in)	* 8170 (26' 10")	* 8210 (26' 11")	* 8190 (26' 10")
G: Minimum Swing Radius	mm (ft-in)	2610 (8' 7")	2650 (8' 8")	2910 (9' 7")

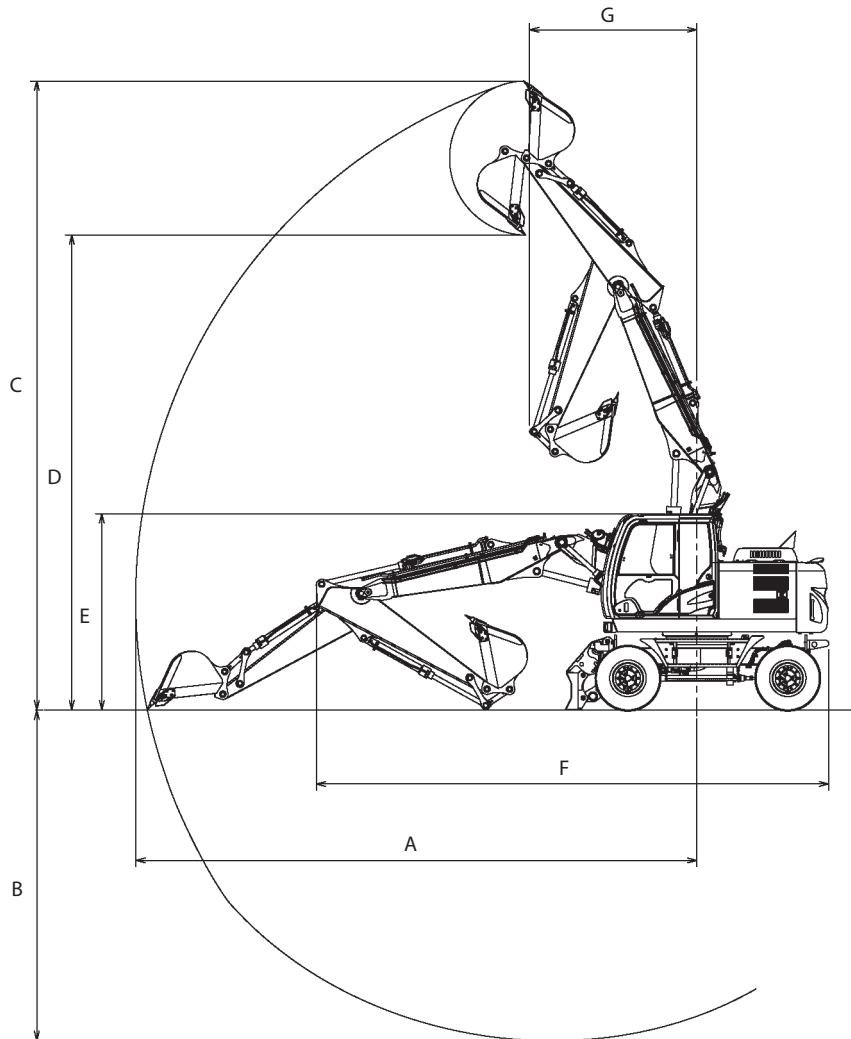
NOTE: \* Transport the machine with the rear side facing forward.

BL: Blade OR: Outrigger



## SPECIFICATIONS

### Working Ranges ZX140W-5B 2-Piece Boom



MLBA-12-007

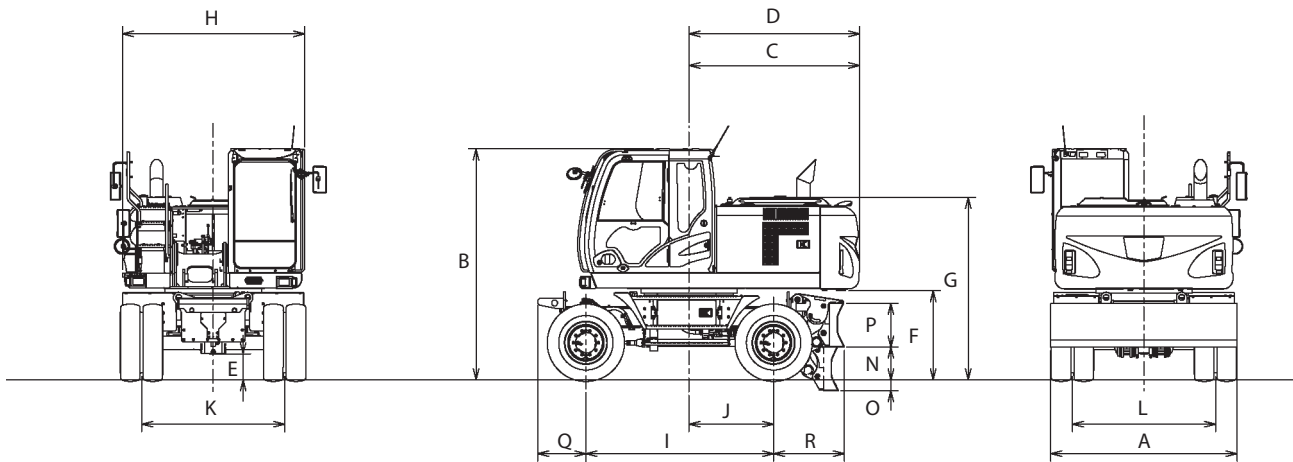
Type of Front-End Attachment		2-Piece Boom		
		Category	2.10 m (6 ft 11 in) Arm	2.52 m (8 ft 3 in) Arm
Item		Backhoe	Backhoe	Backhoe
A: Maximum Digging Reach	mm (ft-in)	8580 (28' 2")	8960 (29' 5")	9430 (30' 11")
B: Maximum Digging Depth	mm (ft-in)	4870 (16' 0")	5290 (17' 4")	5770 (18' 11")
C: Maximum Cutting Height	mm (ft-in)	9750 (32' 0")	10040 (32' 11")	10450 (34' 3")
D: Maximum Dumping Height	mm (ft-in)	7290 (23' 11")	7570 (24' 10")	7990 (26' 3")
E: Overall Height	mm (ft-in)	3130 (10' 3")	3130 (10' 3")	3350 (11' 0")
F: Overall Length				
Rear BL.	mm (ft-in)	* 8175 (26' 10")	* 8185 (26' 10")	* 8155 (26' 9")
Rear OR.	mm (ft-in)	* 8175 (26' 10")	* 8185 (26' 10")	* 8155 (26' 9")
Front BL Rear OR.	mm (ft-in)	* 8575 (28' 2")	* 8585 (28' 2")	* 8555 (28' 1")
Front OR. Rear BL.	mm (ft-in)	* 8670 (28' 5")	* 8680 (28' 6")	* 8650 (28' 5")
Front OR. Rear OR.	mm (ft-in)	* 8670 (28' 5")	* 8680 (28' 6")	* 8650 (28' 5")
G: Minimum Swing Radius	mm (ft-in)	2520 (8' 3")	2670 (8' 9")	3040 (10' 0")

NOTE: \* Transport the machine with the rear side facing forward.

BL : Blade OR : Outrigger

## SPECIFICATIONS

### Specifications ZX170W-5B (Standard Gauge, Rear Blade)



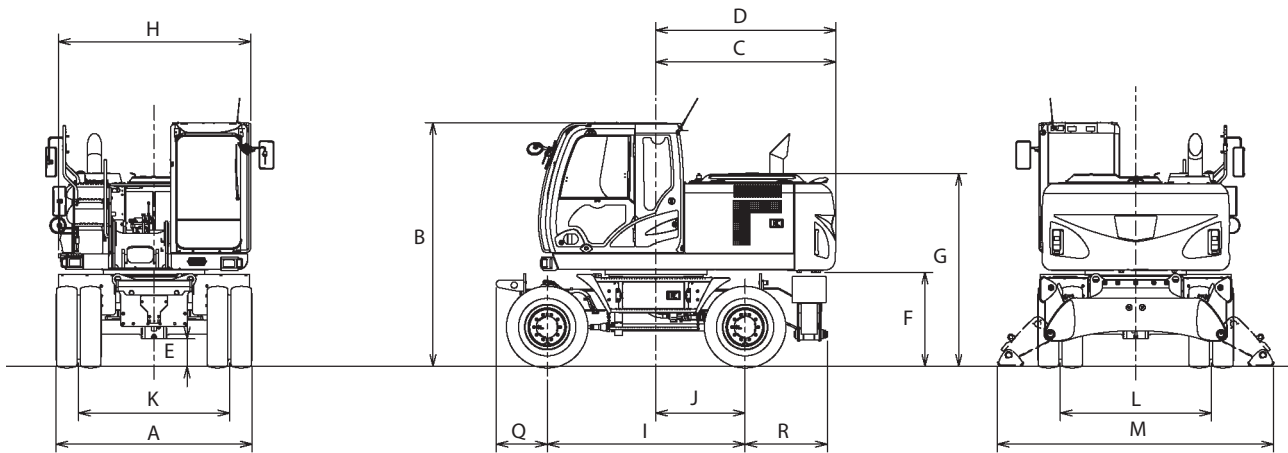
MLBA-12-008

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.58 m (8 ft 6 in)	2.50 m (8 ft 2 in)
Bucket Capacity (Heaped)		PCSA 0.60 m <sup>3</sup> (0.78 yd <sup>3</sup> ), CECE 0.55 m <sup>3</sup>	
Operating Weight	kg (lb)	17050 (37600)	17700 (39000)
Base Machine Weight	kg (lb)	14050 (31000)	14050 (31000)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft·in)	2550 (8' 4")	
B: Cab Height	mm (ft·in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft·in)	2320 (7' 7")	
D: Rear End Length	mm (ft·in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft·in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft·in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft·in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft·in)	2450 (8' 1")	
I: Wheelbase	mm (ft·in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft·in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft·in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft·in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft·in)	–	
N: Max. Raising Height	mm (ft·in)	445 (1' 6")	
O: Max. Digging Depth	mm (ft·in)	145 (6")	
P: Blade Height	mm (ft·in)	590 (1' 11")	
Q: Front Axle to Front of Chassis	mm (ft·in)	605 (2' 0")	
R: Rear Axle to Rear of Chassis	mm (ft·in)	965 (3' 2")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	35 (70)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX170W-5B (Standard Gauge, Rear Outrigger)



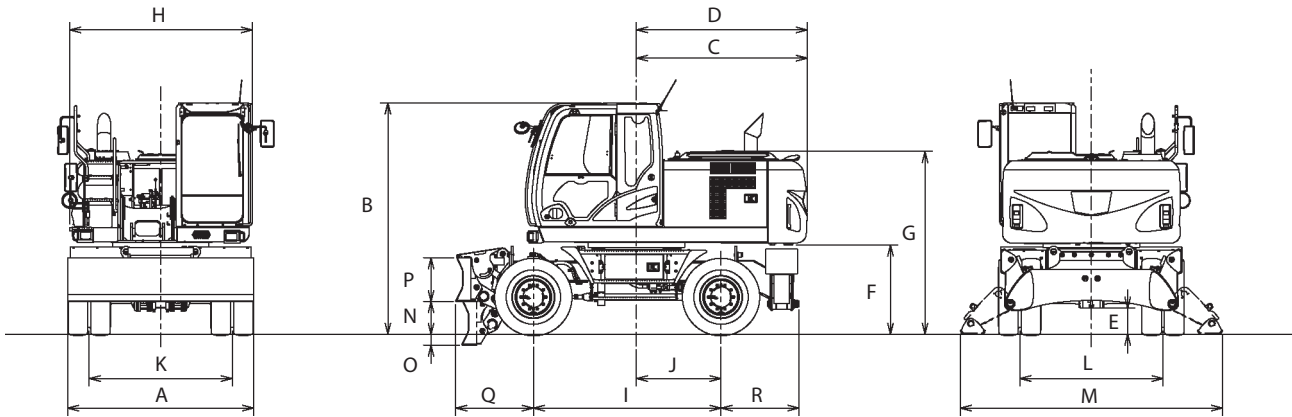
MLBA-12-009

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.58 m (8 ft 6 in)	2.50 m (8 ft 2 in)
Bucket Capacity (Heaped)		PCSA 0.60 m <sup>3</sup> (0.78 yd <sup>3</sup> ), CECE 0.55 m <sup>3</sup>	
Operating Weight	kg (lb)	17350 (38200)	18000 (39700)
Base Machine Weight	kg (lb)	14350 (31600)	14350 (31600)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2550 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2320 (7' 7")	
D: Rear End Length	mm (ft-in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft-in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft-in)	2450 (8' 1")	
I: Wheelbase	mm (ft-in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft-in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft-in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft-in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft-in)	3380 (11' 1")	
N: Max. Raising Height	mm (ft-in)	–	
O: Max. Digging Depth	mm (ft-in)	–	
P: Blade Height	mm (ft-in)	–	
Q: Front Axle to Front of Chassis	mm (ft-in)	605 (2' 0")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1060 (3' 6")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	35 (70)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX170W-5B (Standard Gauge, Front Blade Rear Outrigger)



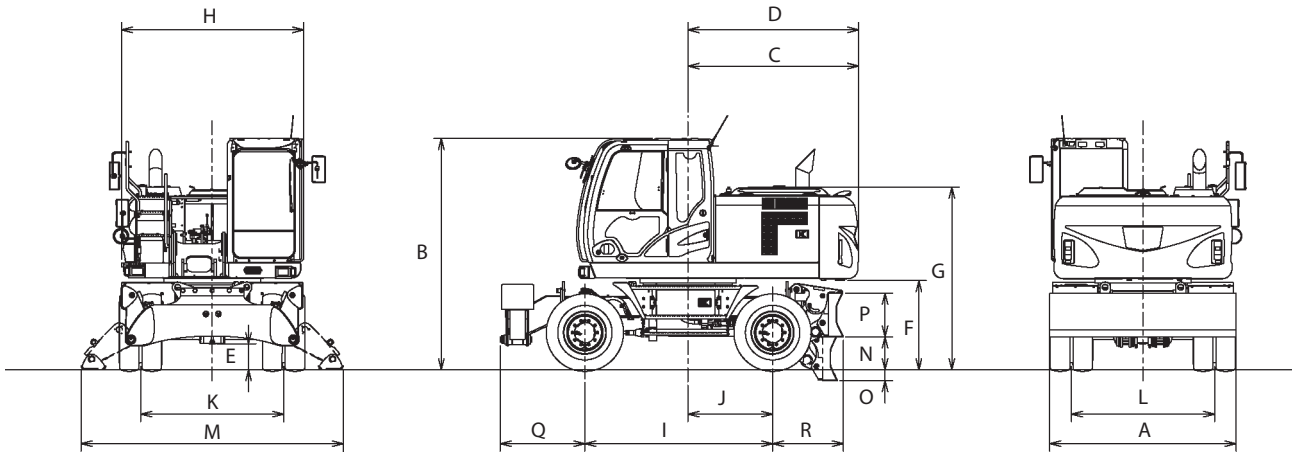
MLBA-12-010

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	—	2.58 m (8 ft 6 in)	2.50 m (8 ft 2 in)
Bucket Capacity (Heaped)		PCSA 0.60 m <sup>3</sup> (0.78 yd <sup>3</sup> ), CECE 0.55 m <sup>3</sup>	
Operating Weight	kg (lb)	18150 (40000)	18800 (41400)
Base Machine Weight	kg (lb)	15150 (33400)	15150 (33400)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2550 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2320 (7' 7")	
D: Rear End Length	mm (ft-in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft-in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft-in)	2450 (8' 1")	
I: Wheelbase	mm (ft-in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft-in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft-in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft-in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft-in)	3380 (11' 1")	
N: Max. Raising Height	mm (ft-in)	445 (1' 6")	
O: Max. Digging Depth	mm (ft-in)	145 (6")	
P: Blade Height	mm (ft-in)	590 (1' 11")	
Q: Front Axle to Front of Chassis	mm (ft-in)	1055 (3' 6")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1060 (3' 6")	
Tire Size	—	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	35 (70)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX170W-5B (Standard Gauge, Front Outrigger Rear Blade)



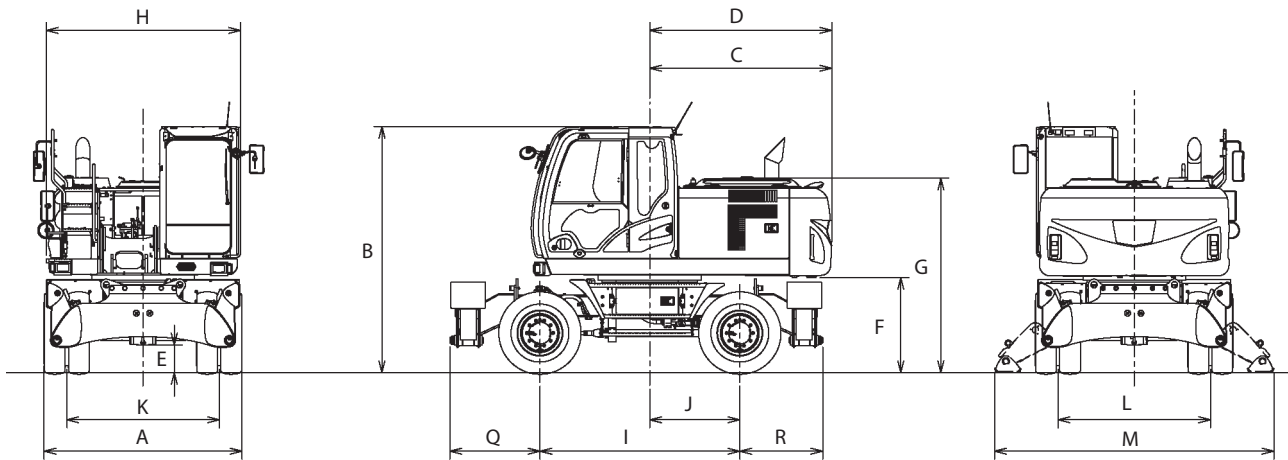
MLBA-12-011

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.58 m (8 ft 6 in)	2.50 m (8 ft 2 in)
Bucket Capacity (Heaped)		PCSA 0.60 m <sup>3</sup> (0.78 yd <sup>3</sup> ), CECE 0.55 m <sup>3</sup>	
Operating Weight	kg (lb)	18150 (40000)	18800 (41400)
Base Machine Weight	kg (lb)	15150 (33400)	15150 (33400)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2550 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2320 (7' 7")	
D: Rear End Length	mm (ft-in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft-in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft-in)	2450 (8' 1")	
I: Wheelbase	mm (ft-in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft-in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft-in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft-in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft-in)	3380 (11' 1")	
N: Max. Raising Height	mm (ft-in)	445 (1' 6")	
O: Max. Digging Depth	mm (ft-in)	145 (6")	
P: Blade Height	mm (ft-in)	590 (1' 11")	
Q: Front Axle to Front of Chassis	mm (ft-in)	1150 (3' 9")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	965 (3' 2")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	35 (70)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX170W-5B (Standard Gauge, Front Outrigger Rear Outrigger)



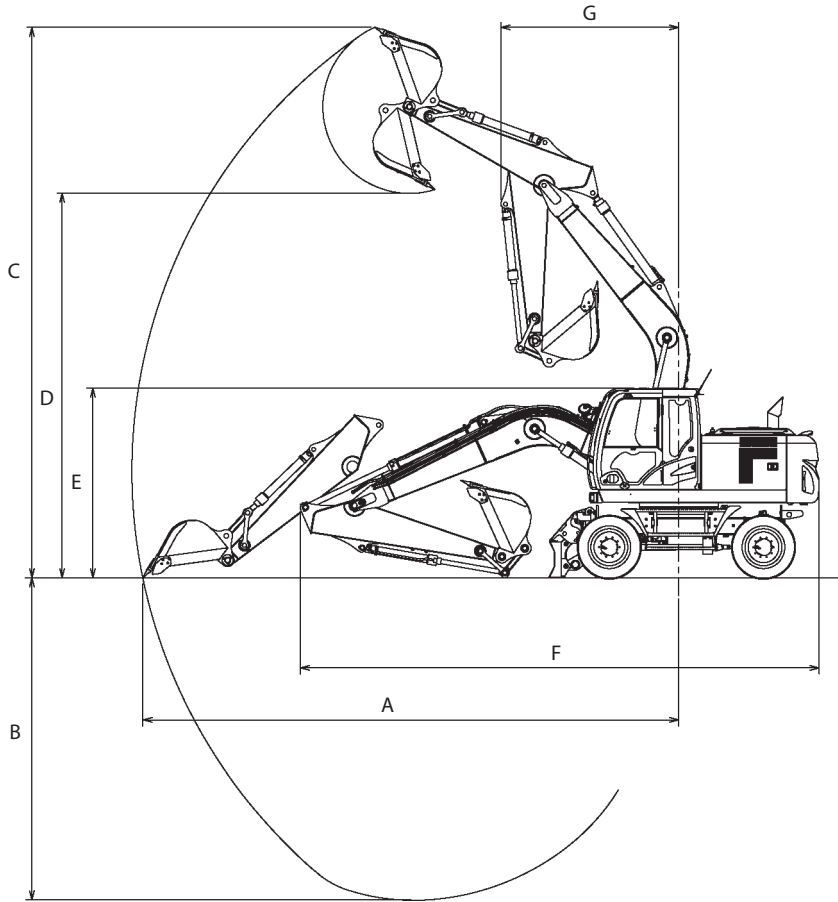
MLBA-12-012

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.58 m (8 ft 6 in)	2.50 m (8 ft 2 in)
Bucket Capacity (Heaped)		PCSA 0.60 m <sup>3</sup> (0.78 yd <sup>3</sup> ), CECE 0.55 m <sup>3</sup>	
Operating Weight	kg (lb)	18400 (40600)	19050 (42000)
Base Machine Weight	kg (lb)	15400 (34000)	15400 (34000)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2550 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2320 (7' 7")	
D: Rear End Length	mm (ft-in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft-in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft-in)	2450 (8' 1")	
I: Wheelbase	mm (ft-in)	2550 (8' 4")	
J: Swing-center to Rear Axle	mm (ft-in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft-in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft-in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft-in)	3380 (11' 1")	
N: Max. Raising Height	mm (ft-in)	–	
O: Max. Digging Depth	mm (ft-in)	–	
P: Blade Height	mm (ft-in)	–	
Q: Front Axle to Front of Chassis	mm (ft-in)	1150 (3' 9")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1060 (3' 6")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	35 (70)	

NOTE: \* The specification not matching the local regulation is excluded.

# SPECIFICATIONS

## Working Ranges ZX170W-5B Monoblock Boom



MLBA-12-013

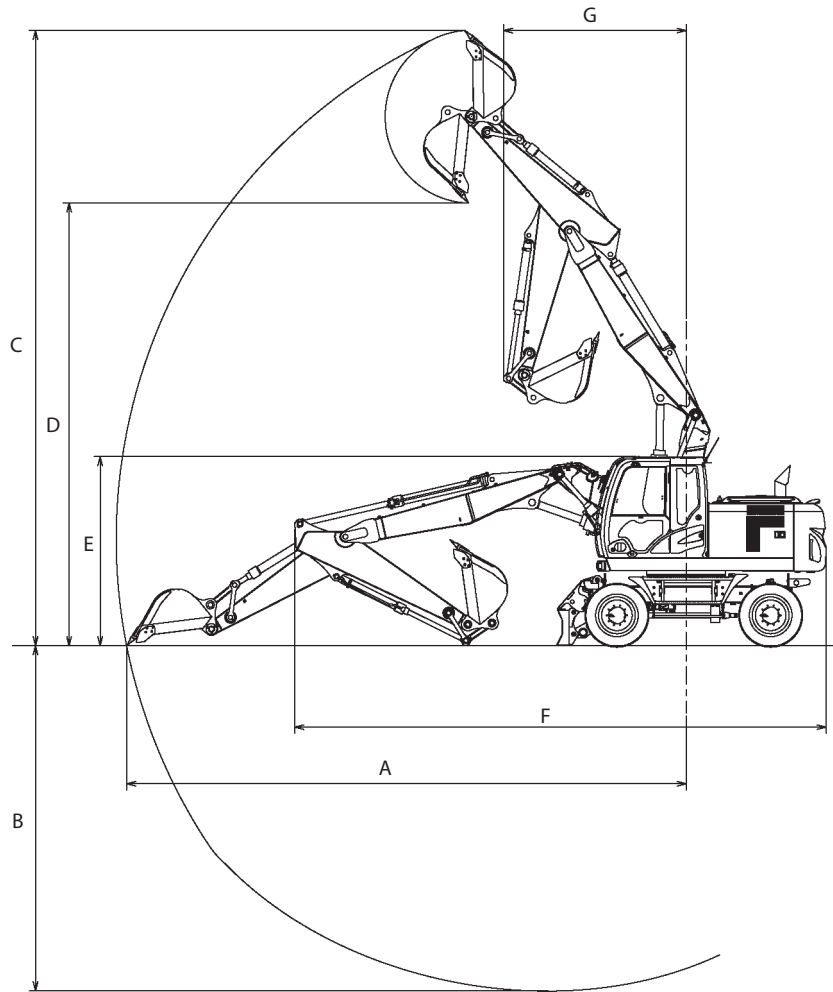
Type of Front-End Attachment		Monoblock Boom	
		2.22 m (7 ft 3 in) Arm	2.58 m (8 ft 6 in) Arm
Item	Category	Backhoe	Backhoe
A: Maximum Digging Reach	mm (ft-in)	8690 (28' 6")	9050 (29' 8")
B: Maximum Digging Depth	mm (ft-in)	4960 (16' 3")	5330 (17' 6")
C: Maximum Cutting Height	mm (ft-in)	8820 (28' 11")	9100 (29' 10")
D: Maximum Dumping Height	mm (ft-in)	6130 (20' 1")	6360 (20' 10")
E: Overall Height	mm (ft-in)	3190 (10' 6")	3130 (10' 3")
F: Overall Length			
Std. Chassis Rear BL.	mm (ft-in)	* 8375 (27' 6")	* 8580 (28' 2")
Std. Chassis Rear OR.	mm (ft-in)	* 8375 (27' 6")	* 8580 (28' 2")
Front BL. Rear OR.	mm (ft-in)	* 8825 (28' 11")	* 8715 (28' 7")
Front OR. Rear BL.	mm (ft-in)	* 8920 (29' 3")	* 8810 (28' 11")
Front OR. Rear OR.	mm (ft-in)	* 8920 (29' 3")	* 8810 (28' 11")
G: Minimum Swing Radius	mm (ft-in)	3380 (11' 1")	2940 (9' 8")

**NOTE:** \* Transport the machine with the rear side facing forward.

BL: Blade OR: Outrigger

## SPECIFICATIONS

### Working Ranges ZX170W-5B 2-Piece Boom



MLBA-12-014

Type of Front-End Attachment		2-Piece Boom	
		2.21 m (7 ft 3 in) Arm	2.50 m (8 ft 2 in) Arm
Item	Category	Backhoe	Backhoe
A: Maximum Digging Reach	mm (ft-in)	9190 (30' 2")	9450 (31' 0")
B: Maximum Digging Depth	mm (ft-in)	5430 (17' 10")	5720 (18' 9")
C: Maximum Cutting Height	mm (ft-in)	10010 (32' 10")	10200 (33' 6")
D: Maximum Dumping Height	mm (ft-in)	7160 (23' 6")	7340 (24' 1")
E: Overall Height	mm (ft-in)	3130 (10' 3")	3130 (10' 3")
F: Overall Length			
Std. Chassis Rear BL.	mm (ft-in)	* 8505 (27' 11")	* 8495 (27' 10")
Std. Chassis Rear OR.	mm (ft-in)	* 8505 (27' 11")	* 8495 (27' 10")
Front BL. Rear OR.	mm (ft-in)	* 8955 (29' 5")	* 8945 (29' 4")
Front OR. Rear BL.	mm (ft-in)	* 9050 (29' 8")	* 9040 (29' 8")
Front OR. Rear OR.	mm (ft-in)	* 9050 (29' 8")	* 9040 (29' 8")
G: Minimum Swing Radius	mm (ft-in)	3040 (10' 0")	3030 (9' 11")

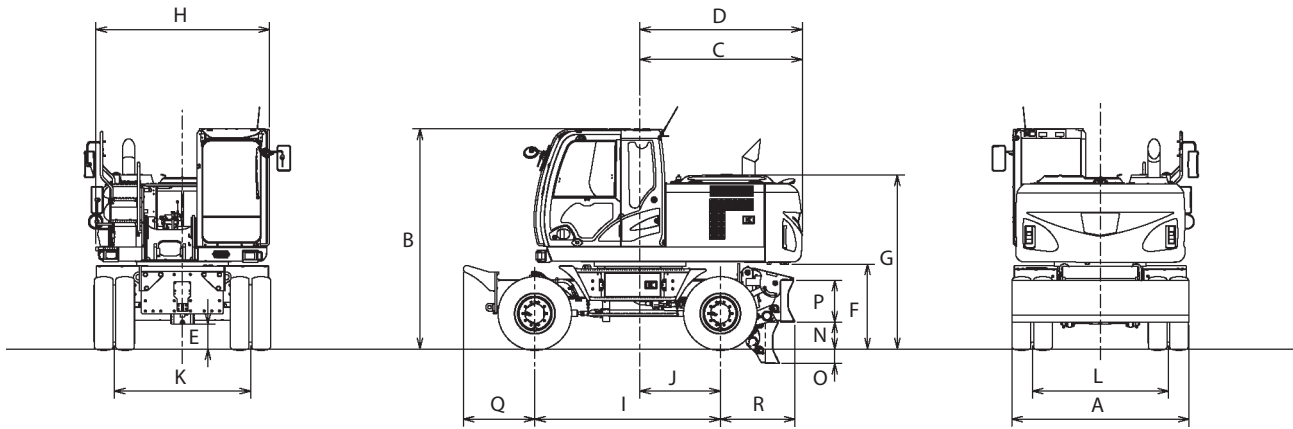
NOTE: \* Transport the machine with the rear side facing forward.

BL : Blade OR : Outrigger



## SPECIFICATIONS

### Specifications ZX190W-5B (Standard Gauge, Rear Blade)



MLBA-12-015

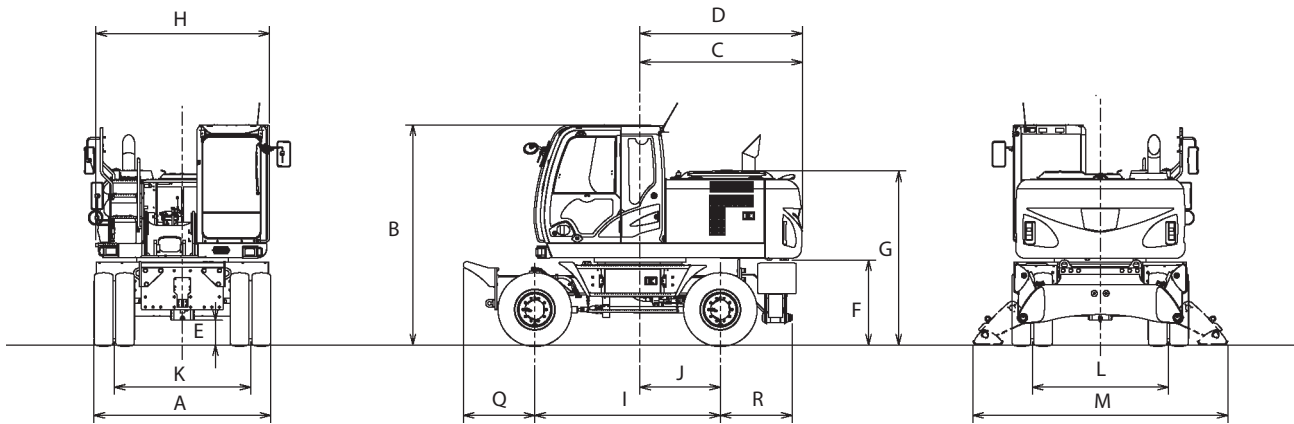
Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.71 m (8 ft 11 in)	2.40 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.70 m <sup>3</sup> (0.92 yd <sup>3</sup> ), CECE 0.60 m <sup>3</sup>	
Operating Weight	kg (lb)	18450 (40700)	19000 (41900)
Base Machine Weight	kg (lb)	15050 (33200)	15050 (33200)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2550 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2320 (7' 7")	
D: Rear End Length	mm (ft-in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft-in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft-in)	2450 (8' 1")	
I: Wheelbase	mm (ft-in)	2650 (8' 8")	
J: Swing-center to Rear Axle	mm (ft-in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft-in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft-in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft-in)	–	
N: Max. Raising Height	mm (ft-in)	370 (1' 3")	
O: Max. Digging Depth	mm (ft-in)	220 (9")	
P: Blade Height	mm (ft-in)	590 (1' 11")	
Q: Front Axle to Front of Chassis	mm (ft-in)	975 (3' 2") [470 (1' 7")] **	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1065 (3' 6")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	34 (67)	

 NOTE: \* The specification not matching the local regulation is excluded.

\*\* Machine equipped with the short chassis.

## SPECIFICATIONS

### Specifications ZX190W-5B (Standard Gauge, Rear Outrigger)



MLBA-12-016

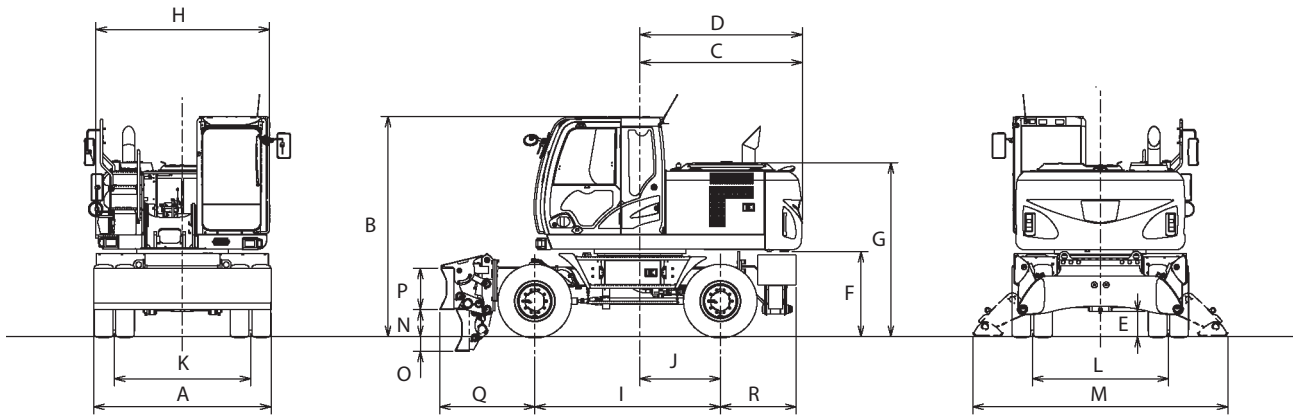
Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.71 m (8 ft 11 in)	2.40 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.70 m <sup>3</sup> (0.92 yd <sup>3</sup> ), CECE 0.60 m <sup>3</sup>	
Operating Weight	kg (lb)	18800 (41400)	19350 (42700)
Base Machine Weight	kg (lb)	15400 (34000)	15400 (34000)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net ISO 9249 net EEC 80/1269 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2550 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2320 (7' 7")	
D: Rear End Length	mm (ft-in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft-in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft-in)	2450 (8' 1")	
I: Wheelbase	mm (ft-in)	2650 (8' 8")	
J: Swing-center to Rear Axle	mm (ft-in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft-in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft-in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft-in)	3440 (11' 3")	
N: Max. Raising Height	mm (ft-in)	–	
O: Max. Digging Depth	mm (ft-in)	–	
P: Blade Height	mm (ft-in)	–	
Q: Front Axle to Front of Chassis	mm (ft-in)	975 (3' 2") [470 (1' 7")] **	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1085 (3' 7")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	34 (67)	

NOTE: \* The specification not matching the local regulation is excluded.

\*\* Machine equipped with the short chassis

## SPECIFICATIONS

### Specifications ZX190W-5B (Standard Gauge, Front Blade Rear Outrigger)



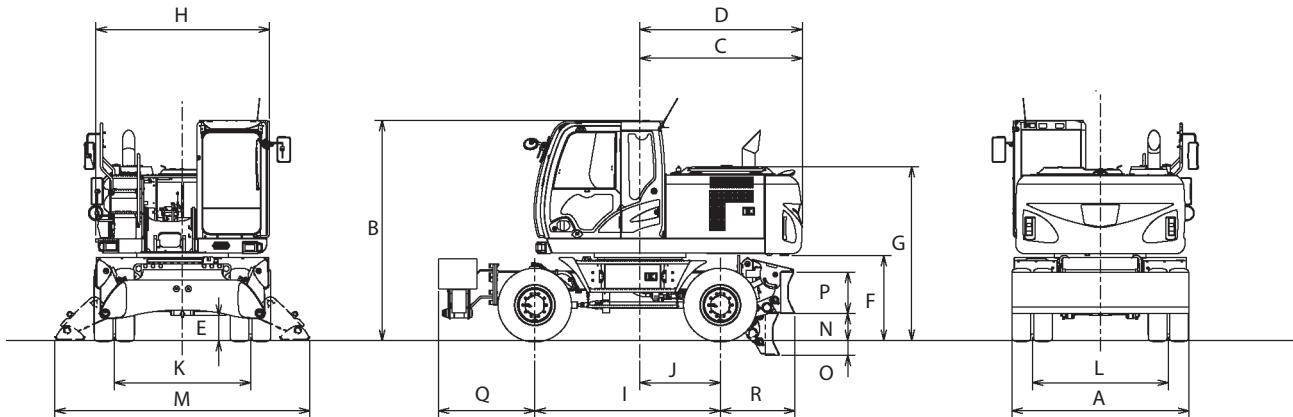
MLBA-12-017

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.71 m (8 ft 11 in)	2.40 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.70 m <sup>3</sup> (0.92 yd <sup>3</sup> ), CECE 0.60 m <sup>3</sup>	
Operating Weight	kg (lb)	19600 (43200)	20150 (44400)
Base Machine Weight	kg (lb)	16200 (35700)	16200 (35700)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2550 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2320 (7' 7")	
D: Rear End Length	mm (ft-in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft-in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft-in)	2450 (8' 1")	
I: Wheelbase	mm (ft-in)	2650 (8' 8")	
J: Swing-center to Rear Axle	mm (ft-in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft-in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft-in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft-in)	3440 (11' 3")	
N: Max. Raising Height	mm (ft-in)	370 (1' 3")	
O: Max. Digging Depth	mm (ft-in)	220 (9")	
P: Blade Height	mm (ft-in)	590 (1' 11")	
Q: Front Axle to Front of Chassis	mm (ft-in)	1320 (4' 4")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1085 (3' 7")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creep) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	34 (67)	

**NOTE:** \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX190W-5B (Standard Gauge, Front Outrigger Rear Blade)



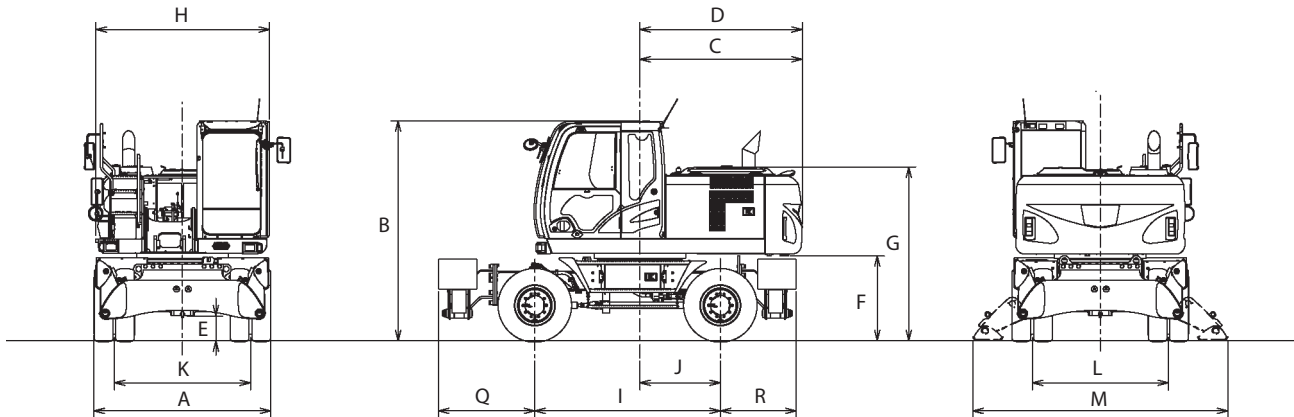
MLBA-12-018

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.71 m (8 ft 11 in)	2.40 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.70 m <sup>3</sup> (0.92 yd <sup>3</sup> ), CECE 0.60 m <sup>3</sup>	
Operating Weight	kg (lb)	19600 (43200)	20150 (44400)
Base Machine Weight	kg (lb)	16200 (35700)	16200 (35700)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net ISO 9249 net EEC 80/1269 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2550 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2320 (7' 7")	
D: Rear End Length	mm (ft-in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft-in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft-in)	2450 (8' 1")	
I: Wheelbase	mm (ft-in)	2650 (8' 8")	
J: Swing-center to Rear Axle	mm (ft-in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft-in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft-in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft-in)	3440 (11' 3")	
N: Max. Raising Height	mm (ft-in)	370 (1' 3")	
O: Max. Digging Depth	mm (ft-in)	220 (9")	
P: Blade Height	mm (ft-in)	590 (1' 11")	
Q: Front Axle to Front of Chassis	mm (ft-in)	1320 (4' 4")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1085 (3' 7")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	34 (67)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX190W-5B (Standard Gauge, Front Outrigger Rear Outrigger)



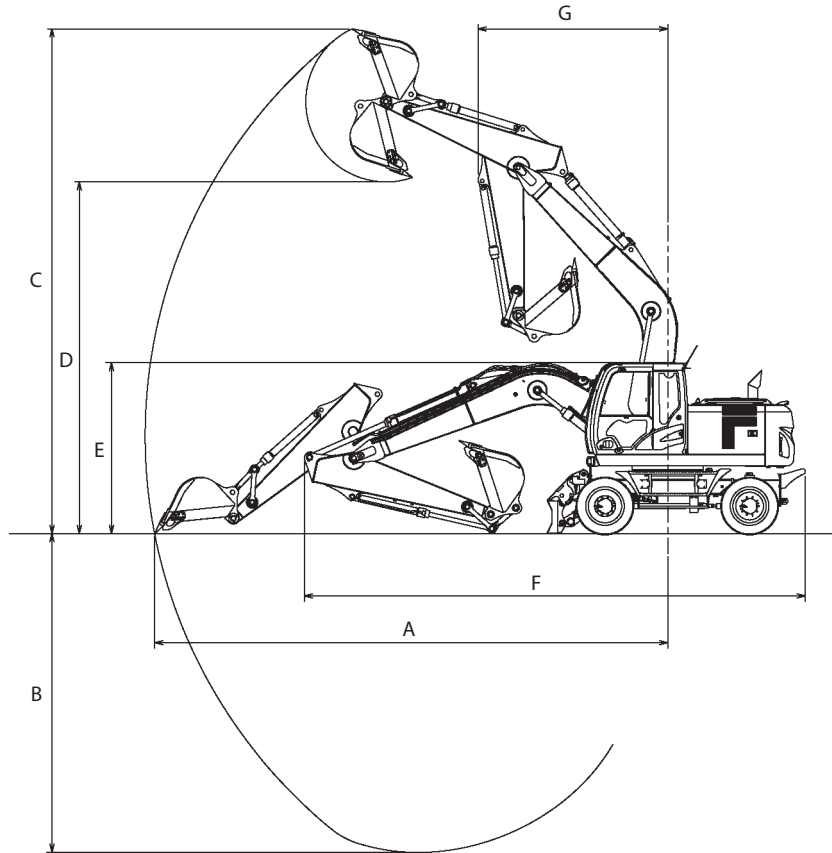
MLBA-12-019

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.71 m (8 ft 11 in)	2.40 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.70 m <sup>3</sup> (0.92 yd <sup>3</sup> ), CECE 0.60 m <sup>3</sup>	
Operating Weight	kg (lb)	19850 (43800)	20400 (45000)
Base Machine Weight	kg (lb)	16450 (36300)	16450 (36300)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2550 (8' 4")	
B: Cab Height	mm (ft-in)	3130 (10' 3")	
C: Rear End Swing Radius	mm (ft-in)	2320 (7' 7")	
D: Rear End Length	mm (ft-in)	2320 (7' 7")	
E: Minimum Ground Clearance	mm (ft-in)	350 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1235 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2475 (8' 1")	
H: Overall Width of Upperstructure	mm (ft-in)	2450 (8' 1")	
I: Wheelbase	mm (ft-in)	2650 (8' 8")	
J: Swing-center to Rear Axle	mm (ft-in)	1150 (3' 9")	
K: Front Wheel Tread	mm (ft-in)	1945 (6' 5")	
L: Rear Wheel Tread	mm (ft-in)	1945 (6' 5")	
M: Outrigger Spread	mm (ft-in)	3440 (11' 3")	
N: Max. Raising Height	mm (ft-in)	–	
O: Max. Digging Depth	mm (ft-in)	–	
P: Blade Height	mm (ft-in)	–	
Q: Front Axle to Front of Chassis	mm (ft-in)	1380 (4' 6")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1085 (3' 7")	
Tire Size	–	10.00-20 14PR	
Swing Speed	min <sup>-1</sup> (rpm)	12.2	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	35/8.6/2.4 (21.7/5.3/1.5)	
Gradeability	Degree (%)	34 (67)	

NOTE: \* The specification not matching the local regulation is excluded.

# SPECIFICATIONS

## Working Ranges ZX190W-5B Monoblock Boom



MLBA-12-020

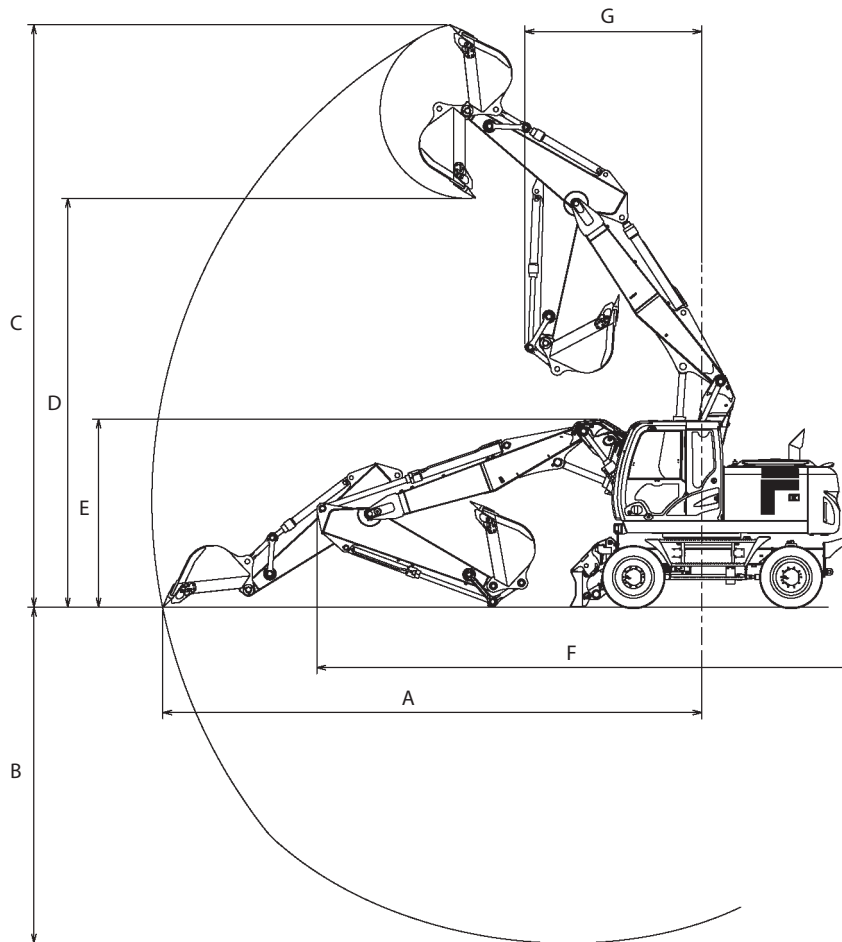
Type of Front-End Attachment		Monoblock Boom			
		Category	2.26 m (7 ft 5 in) Arm	2.71 m (8 ft 11 in) Arm	
Item			Backhoe	Backhoe	
A: Maximum Digging Reach	mm (ft-in)		9220 (30' 3")	9580 (31' 5")	
B: Maximum Digging Depth	mm (ft-in)		5390 (17' 8")	5830 (19' 2")	
C: Maximum Cutting Height	mm (ft-in)		9160 (30' 1")	9250 (30' 4")	
D: Maximum Dumping Height	mm (ft-in)		6340 (20' 10")	6450 (21' 2")	
E: Overall Height	mm (ft-in)		3150 (10' 4")	3130 (10' 3")	
F: Overall Length					
Std. Chassis Rear BL.	mm (ft-in)	*	9155 (30' 0")	*	9135 (30' 0")
Short Chassis Rear BL.	mm (ft-in)	*	8650 (28' 5")	*	8630 (28' 4")
Std. Chassis Rear OR.	mm (ft-in)	*	9155 (30' 0")	*	9135 (30' 0")
Short Chassis Rear OR.	mm (ft-in)	*	8650 (28' 5")	*	8630 (28' 4")
Front BL. Rear OR.	mm (ft-in)	*	9500 (31' 2")	*	9480 (31' 1")
Front OR. Rear BL.	mm (ft-in)	*	9560 (31' 4")	*	9540 (31' 4")
Front OR. Rear OR.	mm (ft-in)	*	9560 (31' 4")	*	9540 (31' 4")
G: Minimum Swing Radius	mm (ft-in)		3510 (11' 6")	3480 (11' 5")	

NOTE: \* Transport the machine with the rear side facing forward.

BL: Blade OR: Outrigger

## SPECIFICATIONS

### Working Ranges ZX190W-5B 2-Piece Boom



MLBA-12-021

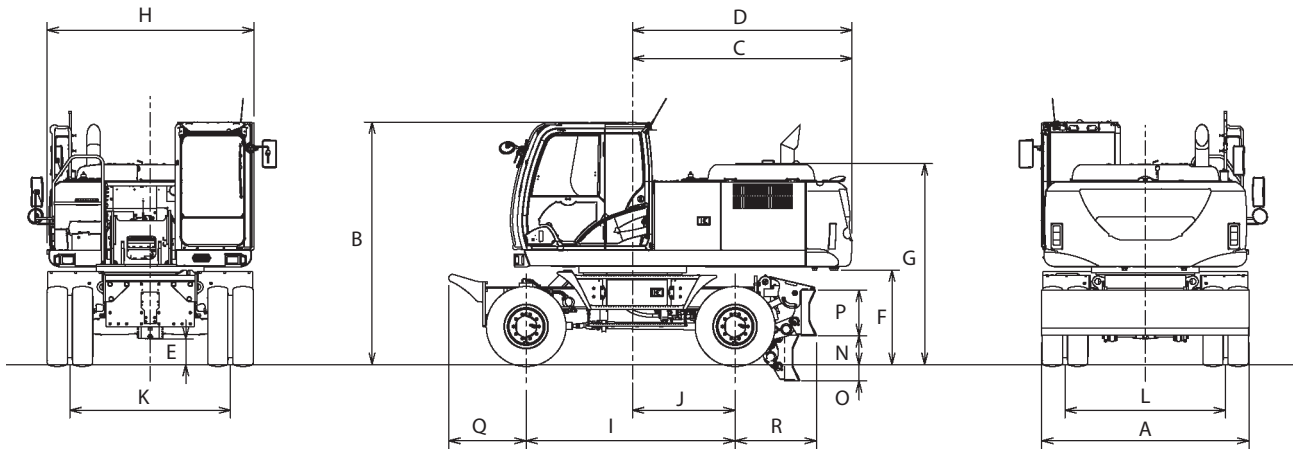
Type of Front-End Attachment		2-Piece Boom		
		Category	2.26 m (7 ft 5 in) Arm	2.40 m (7 ft 11 in) Arm
Item		Backhoe	Backhoe	Backhoe
A: Maximum Digging Reach	mm (ft-in)	9100 (29' 10")	9240 (30' 4")	9480 (31' 1")
B: Maximum Digging Depth	mm (ft-in)	5500 (18' 1")	5640 (18' 6")	5930 (19' 6")
C: Maximum Cutting Height	mm (ft-in)	9670 (31' 9")	9780 (32' 1")	9850 (32' 4")
D: Maximum Dumping Height	mm (ft-in)	6760 (22' 2")	6870 (22' 7")	6950 (22' 10")
E: Overall Height	mm (ft-in)	3190 (10' 6")	3150 (10' 4")	3210 (10' 6")
F: Overall Length				
Std. Chassis Rear BL.	mm (ft-in)	* 8965 (29' 5")	* 8945 (29' 4")	* 8955 (29' 5")
Short Chassis Rear BL.	mm (ft-in)	* 8460 (27' 9")	* 8440 (27' 8")	* 8450 (27' 9")
Std. Chassis Rear OR.	mm (ft-in)	* 8965 (29' 5")	* 8945 (29' 4")	* 8955 (29' 5")
Short Chassis Rear OR.	mm (ft-in)	* 8460 (27' 9")	* 8440 (27' 8")	* 8450 (27' 9")
Front BL. Rear OR.	mm (ft-in)	* 9310 (30' 7")	* 9290 (30' 6")	* 9300 (30' 6")
Front OR. Rear BL.	mm (ft-in)	* 9370 (30' 9")	* 9350 (30' 8")	* 9360 (30' 9")
Front OR. Rear OR.	mm (ft-in)	* 9370 (30' 9")	* 9350 (30' 8")	* 9360 (30' 9")
G: Minimum Swing Radius	mm (ft-in)	3150 (10' 4")	2970 (9' 9")	3000 (9' 10")

NOTE: \* Transport the machine with the rear side facing forward.

BL: Blade OR: Outrigger

## SPECIFICATIONS

### Specifications ZX220W-5B (Rear Blade)



MLBA-12-022

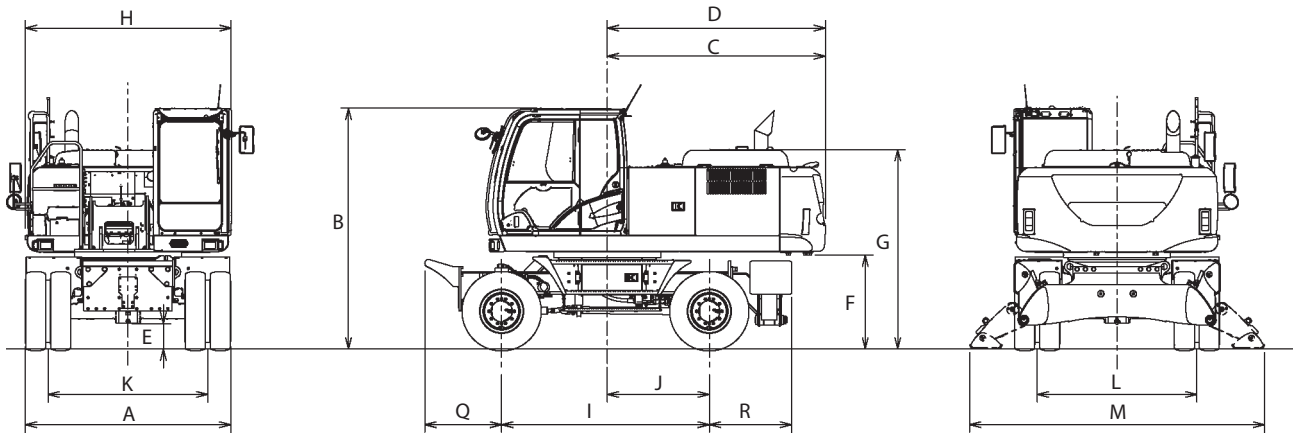
Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.91 m (9 ft 7 in)	2.41 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.80 m <sup>3</sup> (1.05 yd <sup>3</sup> ), CECE 0.70 m <sup>3</sup>	
Operating Weight	kg (lb)	21600 (47600)	22200 (48900)
Base Machine Weight	kg (lb)	17000 (37500)	17000 (37500)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2750 (9' 0")	
B: Cab Height	mm (ft-in)	3185 (10' 5")	
C: Rear End Swing Radius	mm (ft-in)	2890 (9' 6")	
D: Rear End Length	mm (ft-in)	2890 (9' 6")	
E: Minimum Ground Clearance	mm (ft-in)	345 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1245 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2640 (8' 8")	
H: Overall Width of Upperstructure	mm (ft-in)	2725 (8' 11")	
I: Wheelbase	mm (ft-in)	2750 (9' 0")	
J: Swing-center to Rear Axle	mm (ft-in)	1350 (4' 5")	
K: Front Wheel Tread	mm (ft-in)	2115 (6' 11")	
L: Rear Wheel Tread	mm (ft-in)	2115 (6' 11")	
M: Outrigger Spread	mm (ft-in)	–	
N: Max. Raising Height	mm (ft-in)	380 (1' 3")	
O: Max. Digging Depth	mm (ft-in)	210 (8")	
P: Blade Height	mm (ft-in)	600 (2' 0")	
Q: Front Axle to Front of Chassis	mm (ft-in)	1020 (3' 4")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1075 (3' 6")	
Tire Size	–	11.00-20 16PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.8	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	27.5/7.4/2.9 (17.1/4.6/1.8)	
Gradeability	Degree (%)	31 (60)	

NOTE: \* The specification not matching the local regulation is excluded.



## SPECIFICATIONS

### Specifications ZX220W-5B (Rear Outrigger)



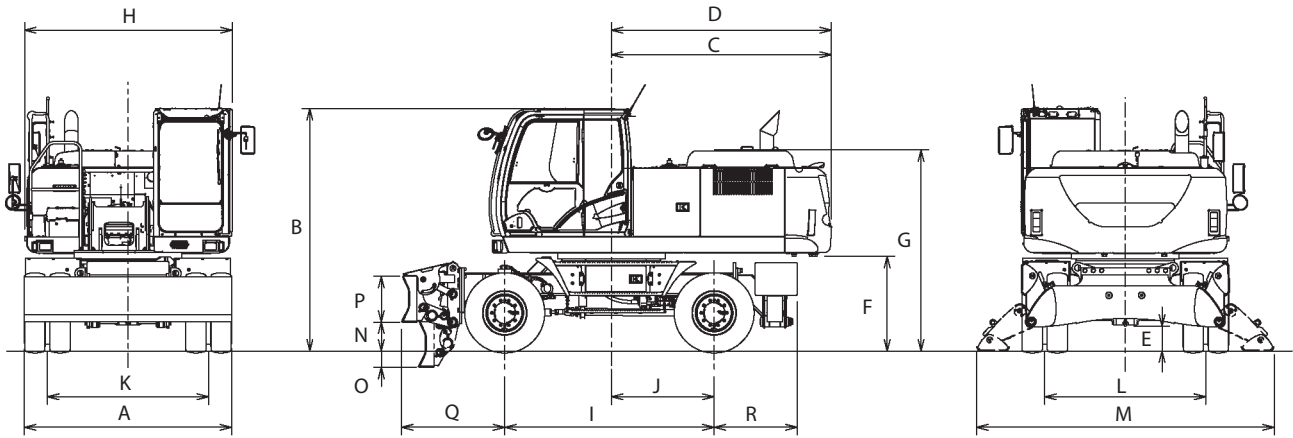
MLBA-12-023

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.91 m (9 ft 7 in)	2.41 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.80 m <sup>3</sup> (1.05 yd <sup>3</sup> ), CECE 0.70 m <sup>3</sup>	
Operating Weight	kg (lb)	22000 (48500)	22600 (49800)
Base Machine Weight	kg (lb)	17400 (38400)	17400 (38400)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2750 (9' 0")	
B: Cab Height	mm (ft-in)	3185 (10' 5")	
C: Rear End Swing Radius	mm (ft-in)	2890 (9' 6")	
D: Rear End Length	mm (ft-in)	2890 (9' 6")	
E: Minimum Ground Clearance	mm (ft-in)	345 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1245 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2640 (8' 8")	
H: Overall Width of Upperstructure	mm (ft-in)	2725 (8' 11")	
I: Wheelbase	mm (ft-in)	2750 (9' 0")	
J: Swing-center to Rear Axle	mm (ft-in)	1350 (4' 5")	
K: Front Wheel Tread	mm (ft-in)	2115 (6' 11")	
L: Rear Wheel Tread	mm (ft-in)	2115 (6' 11")	
M: Outrigger Spread	mm (ft-in)	3905 (12' 10")	
N: Max. Raising Height	mm (ft-in)	–	
O: Max. Digging Depth	mm (ft-in)	–	
P: Blade Height	mm (ft-in)	–	
Q: Front Axle to Front of Chassis	mm (ft-in)	1020 (3' 4")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1090 (3' 7")	
Tire Size	–	11.00-20 16PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.8	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	27.5/7.4/2.9 (17.1/4.6/1.8)	
Gradeability	Degree (%)	31 (60)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX220W-5B (Front Blade Rear Outrigger)



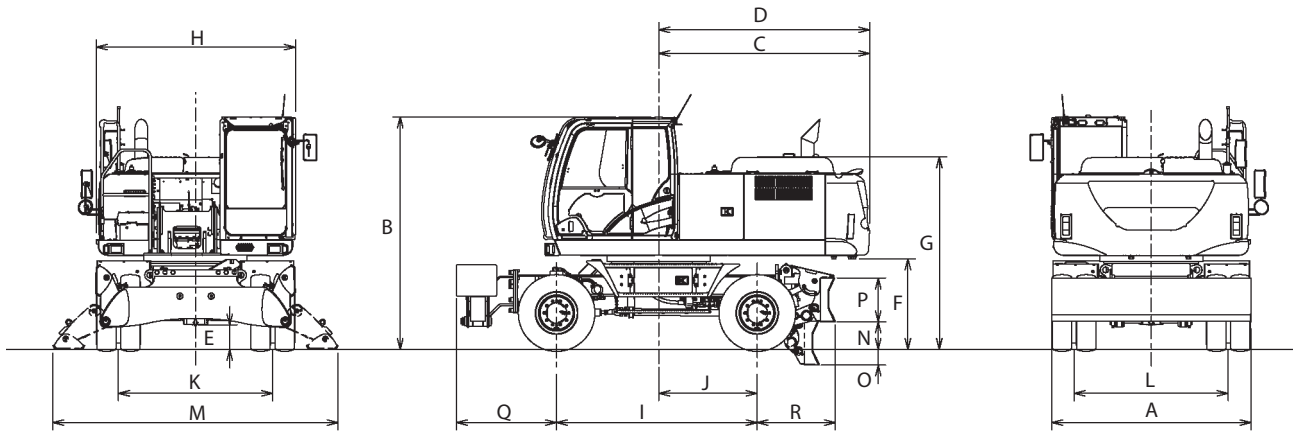
MLBA-12-024

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.91 m (9 ft 7 in)	2.41 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.80 m <sup>3</sup> (1.05 yd <sup>3</sup> ), CECE 0.70 m <sup>3</sup>	
Operating Weight	kg (lb)	22900 (50500)	23500 (51800)
Base Machine Weight	kg (lb)	18300 (40300)	18300 (40300)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2750 (9' 0")	
B: Cab Height	mm (ft-in)	3185 (10' 5")	
C: Rear End Swing Radius	mm (ft-in)	2890 (9' 6")	
D: Rear End Length	mm (ft-in)	2890 (9' 6")	
E: Minimum Ground Clearance	mm (ft-in)	345 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1245 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2640 (8' 8")	
H: Overall Width of Upperstructure	mm (ft-in)	2725 (8' 11")	
I: Wheelbase	mm (ft-in)	2750 (9' 0")	
J: Swing-center to Rear Axle	mm (ft-in)	1350 (4' 5")	
K: Front Wheel Tread	mm (ft-in)	2115 (6' 11")	
L: Rear Wheel Tread	mm (ft-in)	2115 (6' 11")	
M: Outrigger Spread	mm (ft-in)	3905 (12' 10")	
N: Max. Raising Height	mm (ft-in)	380 (1' 3")	
O: Max. Digging Depth	mm (ft-in)	210 (8")	
P: Blade Height	mm (ft-in)	600 (2' 0")	
Q: Front Axle to Front of Chassis	mm (ft-in)	1355 (4' 5")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1090 (3' 7")	
Tire Size	–	11.00-20 16PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.8	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	27.5/7.4/2.9 (17.1/4.6/1.8)	
Gradeability	Degree (%)	31 (60)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX220W-5B (Front Outrigger Rear Blade)



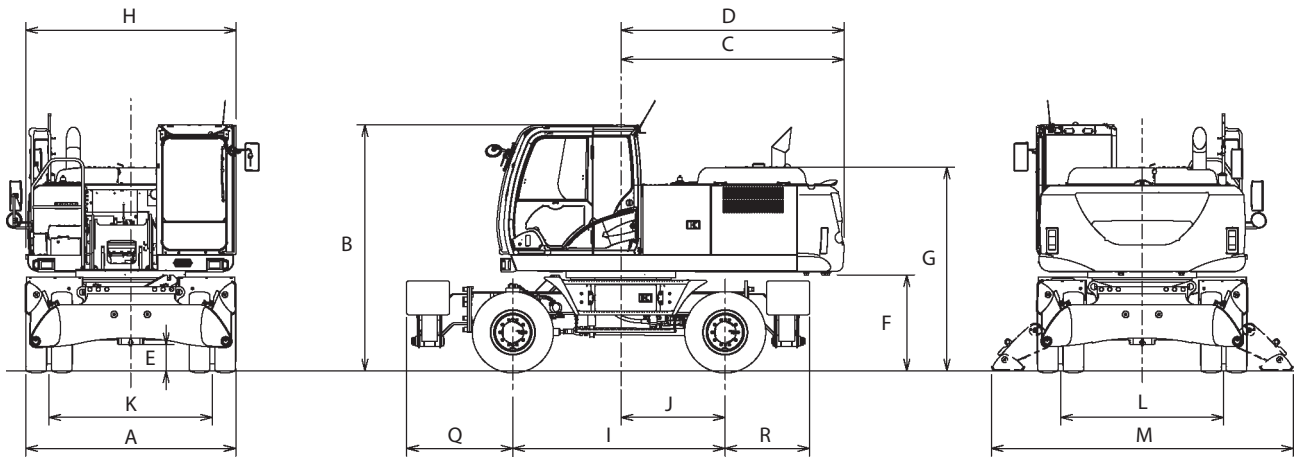
MLBA-12-025

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.91 m (9 ft 7 in)	2.41 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.80 m <sup>3</sup> (1.05 yd <sup>3</sup> ), CECE 0.70 m <sup>3</sup>	
Operating Weight	kg (lb)	22900 (50500)	23500 (51800)
Base Machine Weight	kg (lb)	18300 (40300)	18300 (40300)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2750 (9' 0")	
B: Cab Height	mm (ft-in)	3185 (10' 5")	
C: Rear End Swing Radius	mm (ft-in)	2890 (9' 6")	
D: Rear End Length	mm (ft-in)	2890 (9' 6")	
E: Minimum Ground Clearance	mm (ft-in)	345 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1245 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2640 (8' 8")	
H: Overall Width of Upperstructure	mm (ft-in)	2725 (8' 11")	
I: Wheelbase	mm (ft-in)	2750 (9' 0")	
J: Swing-center to Rear Axle	mm (ft-in)	1350 (4' 5")	
K: Front Wheel Tread	mm (ft-in)	2115 (6' 11")	
L: Rear Wheel Tread	mm (ft-in)	2115 (6' 11")	
M: Outrigger Spread	mm (ft-in)	3905 (12' 10")	
N: Max. Raising Height	mm (ft-in)	380 (1' 3")	
O: Max. Digging Depth	mm (ft-in)	210 (8")	
P: Blade Height	mm (ft-in)	600 (2' 0")	
Q: Front Axle to Front of Chassis	mm (ft-in)	1375 (4' 6")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1075 (3' 6")	
Tire Size	–	11.00-20 16PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.8	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	27.5/7.4/2.9 (17.1/4.6/1.8)	
Gradeability	Degree (%)	31 (60)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Specifications ZX220W-5B (Front Outrigger Rear Outrigger)



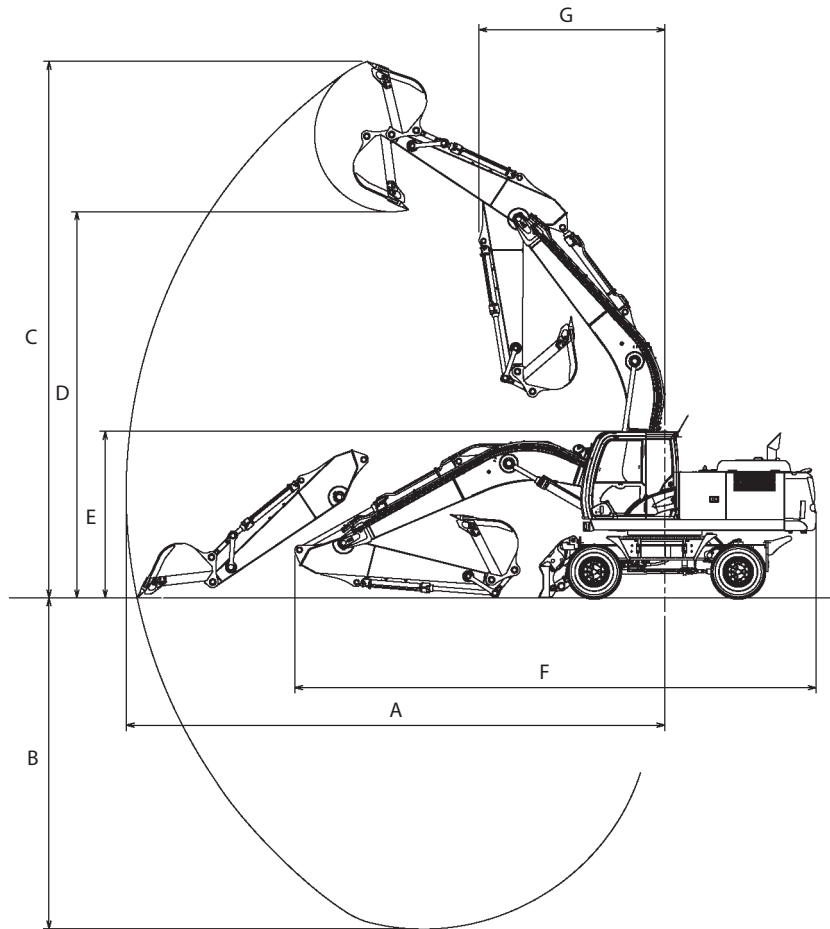
MLBA-12-026

Type of Front-End Attachment		Monoblock Boom	2-Piece Boom
Type of Arm	–	2.91 m (9 ft 7 in)	2.41 m (7 ft 11 in)
Bucket Capacity (Heaped)		PCSA 0.80 m <sup>3</sup> (1.05 yd <sup>3</sup> ), CECE 0.70 m <sup>3</sup>	
Operating Weight	kg (lb)	23300 (51400)	23900 (52700)
Base Machine Weight	kg (lb)	18700 (41200)	18700 (41200)
Engine		ISUZU AM-4HK1X	
Engine Power	SAE J1349 net	122 kW/2000 min <sup>-1</sup> (166 PS/2000 rpm)	
	ISO 9249 net		
	EEC 80/1269 net		
A: Overall Width (Excluding Rearview Mirrors)	mm (ft-in)	2750 (9' 0")	
B: Cab Height	mm (ft-in)	3185 (10' 5")	
C: Rear End Swing Radius	mm (ft-in)	2890 (9' 6")	
D: Rear End Length	mm (ft-in)	2890 (9' 6")	
E: Minimum Ground Clearance	mm (ft-in)	345 (1' 2")	
F: Counterweight Clearance	mm (ft-in)	1245 (4' 1")	
G: Engine Cover Height	mm (ft-in)	2640 (8' 8")	
H: Overall Width of Upperstructure	mm (ft-in)	2725 (8' 11")	
I: Wheelbase	mm (ft-in)	2750 (9' 0")	
J: Swing-center to Rear Axle	mm (ft-in)	1350 (4' 5")	
K: Front Wheel Tread	mm (ft-in)	2115 (6' 11")	
L: Rear Wheel Tread	mm (ft-in)	2115 (6' 11")	
M: Outrigger Spread	mm (ft-in)	3905 (12' 10")	
N: Max. Raising Height	mm (ft-in)	–	
O: Max. Digging Depth	mm (ft-in)	–	
P: Blade Height	mm (ft-in)	–	
Q: Front Axle to Front of Chassis	mm (ft-in)	1375 (4' 6")	
R: Rear Axle to Rear of Chassis	mm (ft-in)	1090 (3' 7")	
Tire Size	–	11.00-20 16PR	
Swing Speed	min <sup>-1</sup> (rpm)	11.8	
Travel Speed (Fast/Slow/Creeper) *	km/h (mph)	27.5/7.4/2.9 (17.1/4.6/1.8)	
Gradeability	Degree (%)	31 (60)	

NOTE: \* The specification not matching the local regulation is excluded.

## SPECIFICATIONS

### Working Ranges ZX220W-5B Monoblock Boom



MLBA-12-027

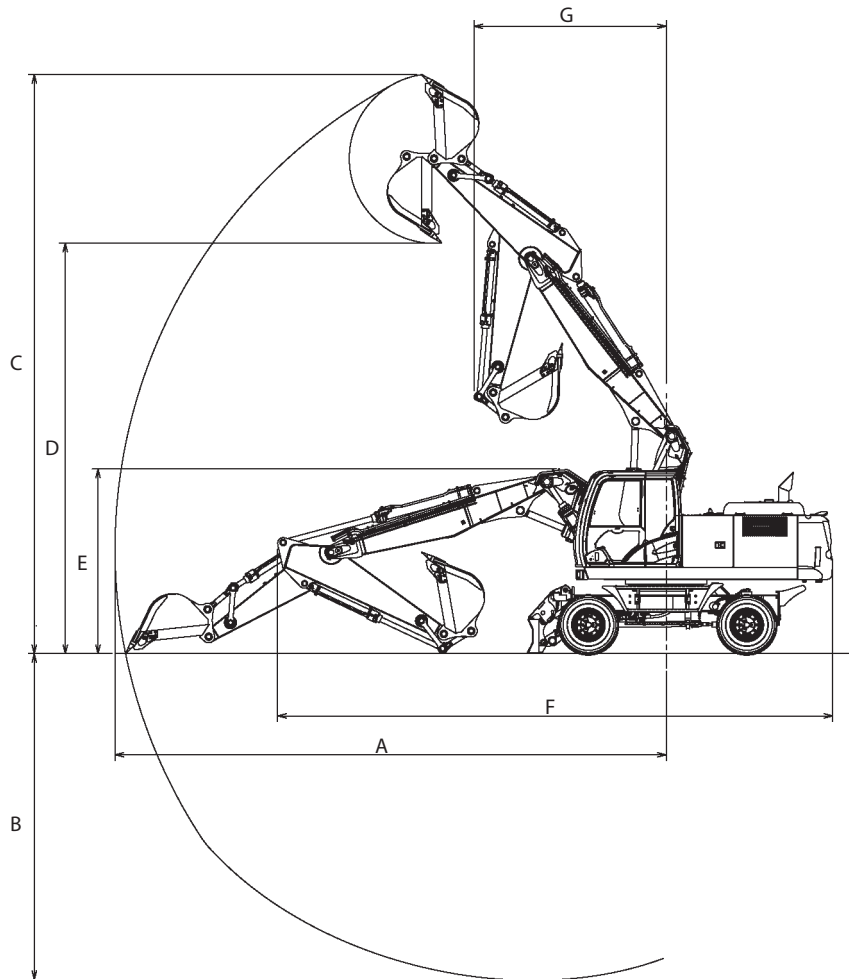
Type of Front-End Attachment		Monoblock Boom		
		Category	2.03 m (6 ft 8 in) Arm	2.42 m (7 ft 11 in) Arm
Item		Backhoe	Backhoe	Backhoe
A: Maximum Digging Reach	mm (ft-in)	9585 (31' 5")	9785 (32' 1")	10280 (33' 9")
B: Maximum Digging Depth	mm (ft-in)	5430 (17' 10")	5815 (19' 1")	6310 (20' 8")
C: Maximum Cutting Height	mm (ft-in)	10050 (33' 0")	9870 (32' 5")	10245 (33' 7")
D: Maximum Dumping Height	mm (ft-in)	7145 (23' 5")	7030 (23' 1")	7380 (24' 3")
E: Overall Height	mm (ft-in)	3210 (10' 6")	3230 (10' 7")	3185 (10' 5")
F: Overall Length				
Rear BL.	mm (ft-in)	* 10095 (33' 1")	* 10100 (33' 2")	* 9960 (32' 8")
Rear OR.	mm (ft-in)	* 10095 (33' 1")	* 10100 (33' 2")	* 9960 (32' 8")
Front BL. Rear OR.	mm (ft-in)	* 10095 (33' 1")	* 10100 (33' 2")	* 9960 (32' 8")
Front OR. Rear BL.	mm (ft-in)	* 10095 (33' 1")	* 10100 (33' 2")	* 9960 (32' 8")
Front OR. Rear OR.	mm (ft-in)	* 10095 (33' 1")	* 10100 (33' 2")	* 9960 (32' 8")
G: Minimum Swing Radius	mm (ft-in)	3770 (12' 4")	3640 (11' 11")	3550 (11' 8")

NOTE: \* Transport the machine with the rear side facing forward.

BL: Blade OR: Outrigger

## SPECIFICATIONS

### Working Ranges ZX220W-5B 2-Piece Boom



MLBA-12-028

Type of Front-End Attachment		2-Piece Boom		
		2.41 m (7 ft 11 in) Arm	2.61 m (8 ft 7 in) Arm	2.91 m (9 ft 7 in) Arm
Item	Category	Backhoe	Backhoe	Backhoe
A: Maximum Digging Reach	mm (ft-in)	9565 (31' 5")	9760 (32' 0")	10025 (32' 11")
B: Maximum Digging Depth	mm (ft-in)	5650 (18' 6")	5850 (19' 2")	6140 (20' 2")
C: Maximum Cutting Height	mm (ft-in)	10055 (33' 0")	10205 (33' 6")	10355 (34' 0")
D: Maximum Dumping Height	mm (ft-in)	7130 (23' 5")	7275 (23' 10")	7430 (24' 5")
E: Overall Height	mm (ft-in)	3210 (10' 6")	3265 (10' 9")	3320 (10' 11")
F: Overall Length				
Rear BL.	mm (ft-in)	* 9635 (31' 7")	* 9630 (31' 7")	* 9635 (31' 7")
Rear OR.	mm (ft-in)	* 9635 (31' 7")	* 9630 (31' 7")	* 9635 (31' 7")
Front BL. Rear OR.	mm (ft-in)	* 9635 (31' 7")	* 9630 (31' 7")	* 9635 (31' 7")
Front OR. Rear BL.	mm (ft-in)	* 9635 (31' 7")	* 9630 (31' 7")	* 9635 (31' 7")
Front OR. Rear OR.	mm (ft-in)	* 9635 (31' 7")	* 9630 (31' 7")	* 9635 (31' 7")
G: Minimum Swing Radius	mm (ft-in)	3335 (10' 11")	3395 (11' 2")	3420 (11' 3")

NOTE: \* Transport the machine with the rear side facing forward.

BL : Blade OR : Outrigger

## SPECIFICATIONS

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### Sound Level Results (2000/14/EC)

LwA: sound-power level of airborne noise

LpA: sound level at operator's station


Unit: dB(A)

	LwA	LpA
ZX140W-5B	100	70
ZX170W-5B	100	71
ZX190W-5B	100	71
ZX220W-5B	101	71

### Vibration Level

Hands/Arms: The acceleration to which the operator's hands and arms will be exposed is lower than  $2.5 \text{ m/s}^2$ .

Entire body: The acceleration to which the operator's entire body will be exposed is lower than  $0.5 \text{ m/s}^2$ .

 **NOTE:** The acceleration is measured in accordance with ISO 2631/1; ISO 5349 and SAE J1166.





# OPTIONAL ATTACHMENTS

## Operation of Optional Attachments

### Operation of Optional Attachments

Attachments can be operated by the attachment pedals, levers and switches located on the AUX function lever. Information on operating device and installed attachment is displayed on the monitor screen (1) as the attachment operational information. The combinations are preset in the factory. If you want to change the setting, consult your nearest authorized dealer.

#### Attachment Operational Information

Icons (2) and (5) at both ends of monitor screen (1) indicate operating devices. Icons (3) and (4) indicate the attachments. Monitor screen (1) shows that the operating device displayed on icon (2) controls attachment displayed on icon (3), and operating device displayed on icon (5) controls attachment (4).

Up to four operational information can be displayed on the monitor screen at the same time.

Meaning of operational information illustrated on the right is shown in the chart below as an example.

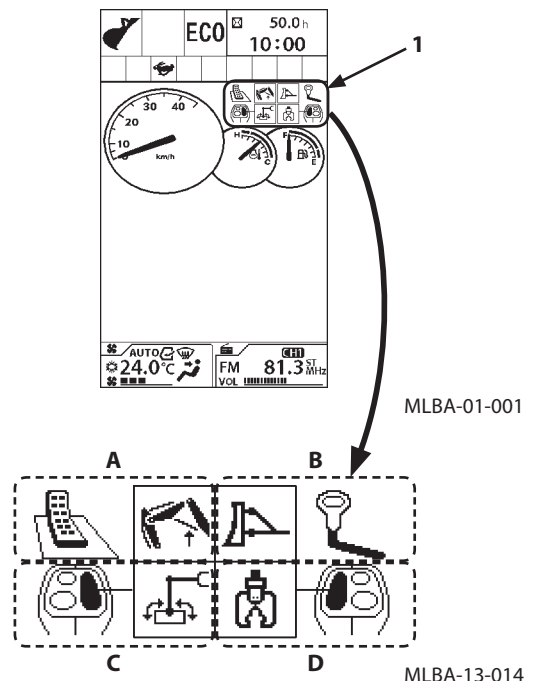
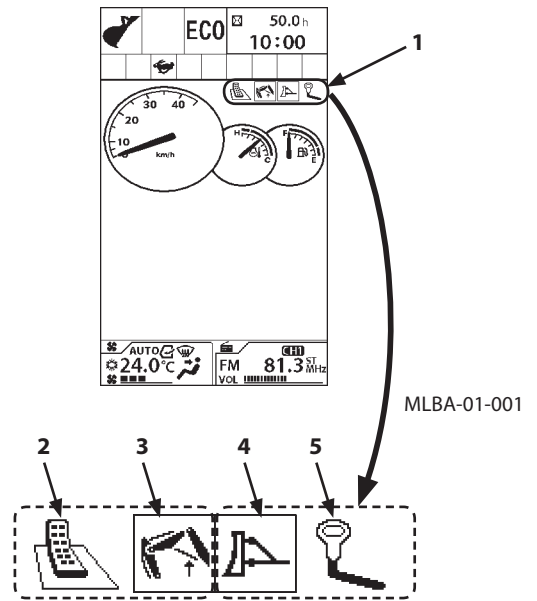
Symbol	Operating Devices	Attachments
A	Attachment Pedal	2-Piece Boom
B	Attachment Lever	Blade
C	Attachment switch located on the left control lever	Attachment Swing Operation
D	Attachment switch located on the right control lever	Crusher

#### Color of Attachment Icons

When an attachment becomes operable, background color of the attachment icon changes to indicate it is ready to operate.

Icon background color (Gray) : Operable

Icon background color (Black) : Inoperable







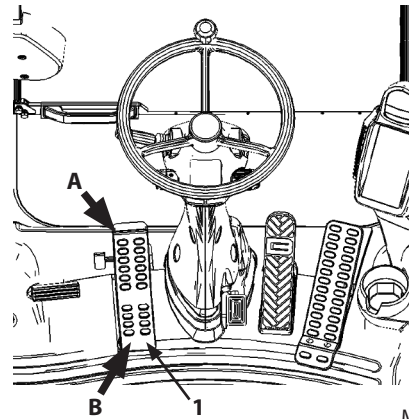
# OPTIONAL ATTACHMENTS

## Operation of Optional Attachments

### Variation of operational information icons





#### Icons of Operating Devices

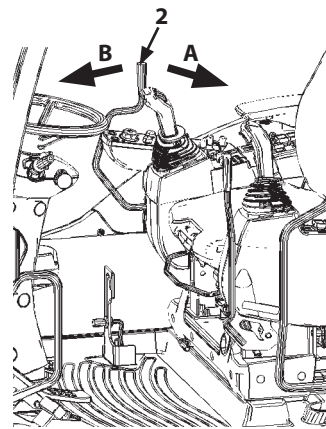
Icons	Operating Devices
	Attachment pedal (1)
	Attachment lever (2)
	Switch (3) on the AUX function left control lever
	Switch (4) on the AUX function right control lever



MLBA-01-510

#### Icons of Attachments

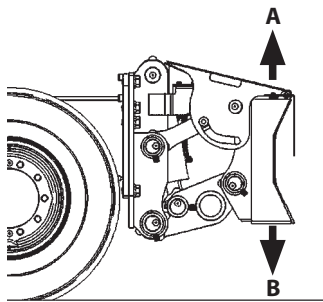
Icons	Attachments
	2-Piece Boom
	Blade, Outrigger
	Breaker, Crusher etc.
	Quick coupler, Attachment swing operation etc.



MLBA-01-517

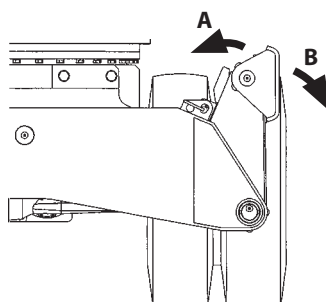
### Basic operation of attachments

Operating directions of pedal/lever/switches (A and B) correspond to the moving directions of attachments (A and B) shown in the figure right.



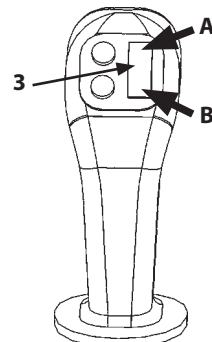
Blade

MLBA-13-015



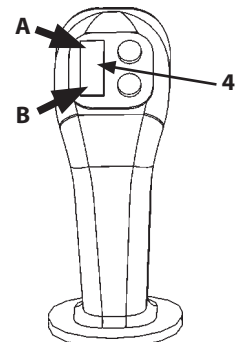
Outrigger

MLBA-13-016



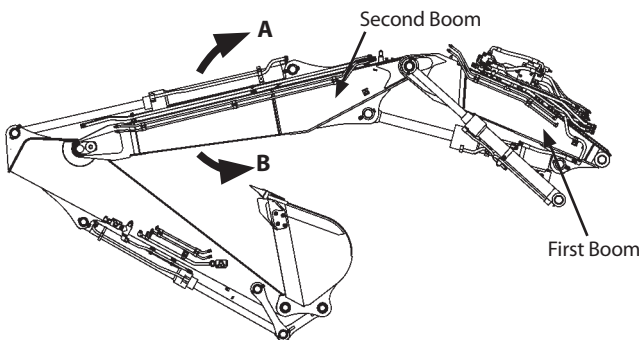
AUX function left control lever

MCGB-01-029



AUX function right control lever

MCGB-01-030



2-Piece Boom

MCGB-13-009

# OPTIONAL ATTACHMENTS

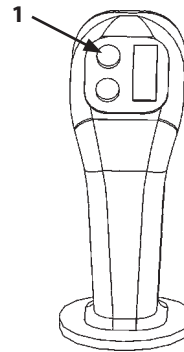
## Operation of Optional Attachments

### Changeover of attachments

When the machine is equipped with AUX function lever, two kinds of attachments can be set at the same operating device (pedal/switch).

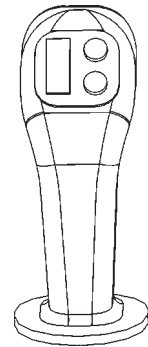
Push front attachment selection switch (1) on the AUX function control lever to switch over the attachment to be controlled. If switch (1) is pushed, the buzzer sounds, and the attachment icon concurrently changes and blinks in yellow. The icon blinks for 5 seconds. After that, the attachment operation switches over.

Consult your authorized Hitachi dealer for the setting.



AUX function left control lever

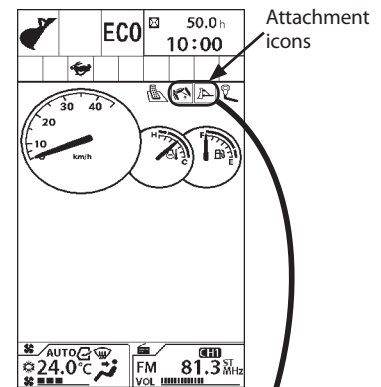
MCGB-01-029



AUX function right control lever

MCGB-01-030

**NOTE:** Right illustration shows the monitor display example when switch (1) is pushed while the 2-piece boom and crusher are set at the attachment pedal.



MLBA-01-001



MLBA-13-037



MLBA-13-038

# OPTIONAL ATTACHMENTS

## Blade and Outrigger

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### Blade and Outrigger

 **WARNING:**

- Terms of "front or rear" and "right-hand or left-hand side" used in the description are determined by facing in the direction of forward travel from the operator's seat. When the upperstructure is rotated 180°, front/rear and right/left directions are reversed. When operating the machine, use extra caution to avoid misoperation.
- Check that no person and obstructions are present in the working range of the outrigger and blade.

 **CAUTION:**

- Confirm the relationship between the control lever operation direction and the movement direction of the outrigger and blade.
- Before traveling, always fully retract the outrigger and secure it in position with the lock pin, and fully raise the blade. Check that the blade/outrigger/front attachment pilot control switch is in the OFF position.

# OPTIONAL ATTACHMENTS

## Blade and Outrigger

### Operating Blade/Outrigger




The blade and outrigger attachments are installed on the front and rear of the chassis in many combinations. All attachments are operated with attachment lever (1), blade/outrigger/front attachment pilot control switch (2), front/rear attachment selection switch (3) and right/left selection switch (4).

**NOTE:** Attachment lever (1) is set to operate the blade/outrigger when the machine is shipped from the factory.




1. Place pilot control shut-off lever (5) to the LOCK position.
2. Turn blade/outrigger/front attachment pilot control switch (2) to the ON-ON position.

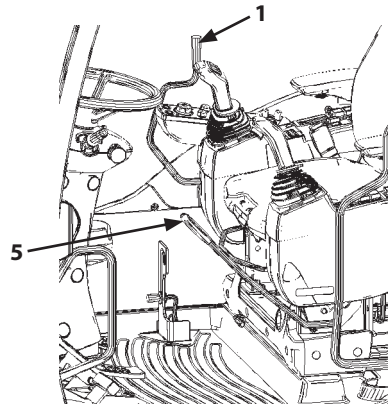
Ensure the background color of the blade/outrigger icon in the operational information icons on the monitor screen changes to indicate that it is ready to operate.

3. Select front/rear attachment selection switch (3) to the desired position.

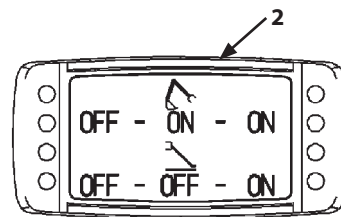
-  : Only attachment installed on the front is operable.
-  : Attachments installed on both front and rear are operable simultaneously.
-  : Only attachment installed on the rear is operable.

4. Select right/left selection switch (4) to the desired position. The blade (when equipped) is operable irrespective of this switch (4) position.

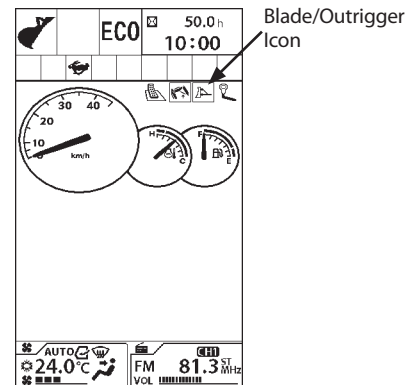
-  : Only outrigger installed on the left-hand side is operable.
-  : Outrigger installed on both right and left-hand sides are operable simultaneously.
-  : Only outrigger installed on the right-hand side is operable.



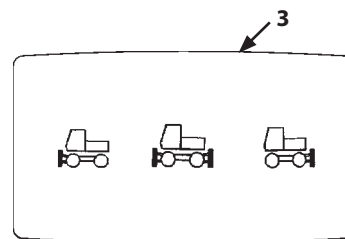
MLBA-01-518



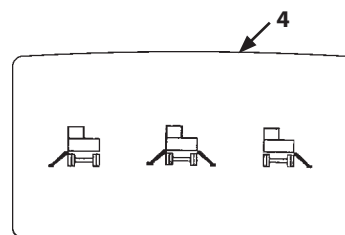
MLBA-01-515



MLBA-01-001



MCGB-13-001

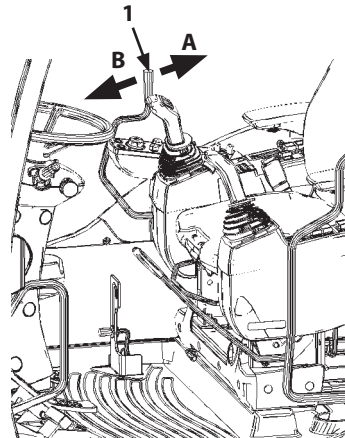


MCGB-13-002

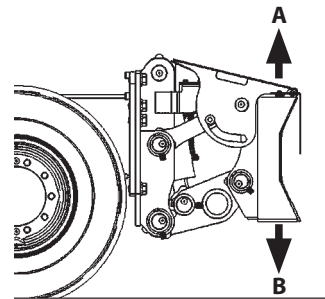
## OPTIONAL ATTACHMENTS

### Blade and Outrigger

5. Operate attachment lever (1) to operate the blade/outrigger.
6. After operation, pull the pilot control shut-off lever to the LOCK position.

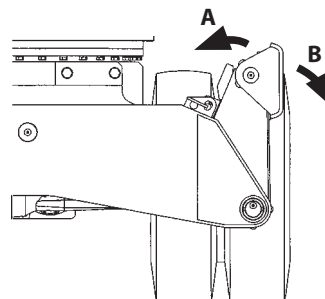


MLBA-01-518



Blade

MLBA-13-015



MLBA-13-016

## OPTIONAL ATTACHMENTS

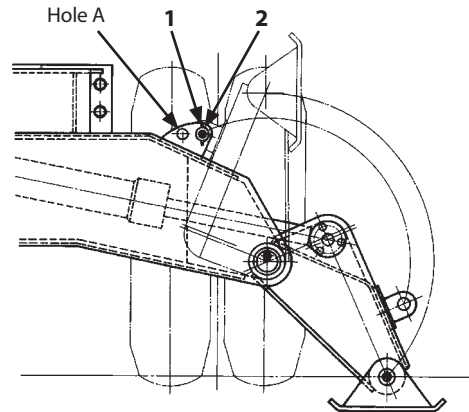
### Blade and Outrigger

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**⚠ CAUTION:** Securely hold the outrigger with pins (1 and 2) before traveling.

#### Install/Remove outrigger Lock Pins

1. Install Lock Pins
  - 1.1 After raising the outrigger, always securely hold the outrigger with lock pin (1) and cross pin (2).
2. Remove Lock Pins
  - 2.1 Use hole A to stow the removed lock pin (1).
  - 2.2 After removing pins (1 and 2), securely hold them in hole A.



MLBA-13-017

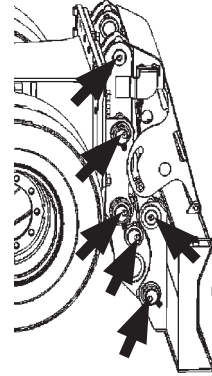
## OPTIONAL ATTACHMENTS

### Blade and Outrigger

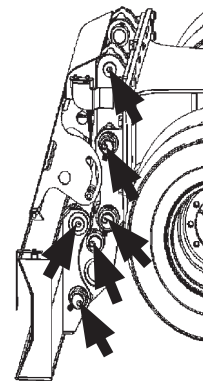
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**Maintenance, Greasing --- every 500 hours**

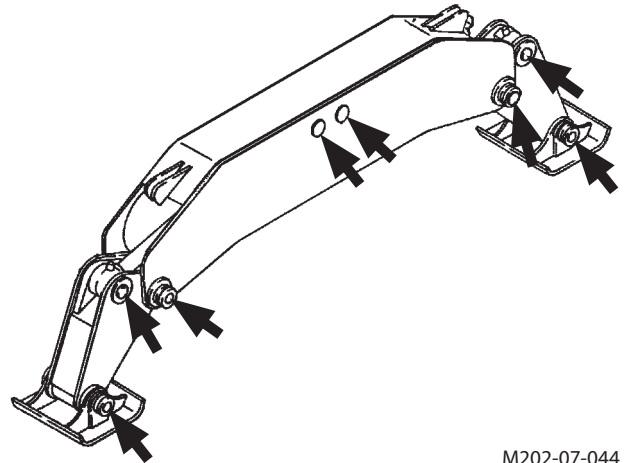
Grease all the fittings shown in the figure.



MLBA-13-018



MLBA-13-019



M202-07-044



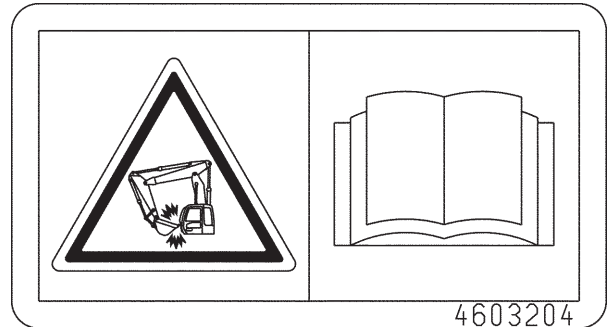
# OPTIONAL ATTACHMENTS

## 2-Piece Boom

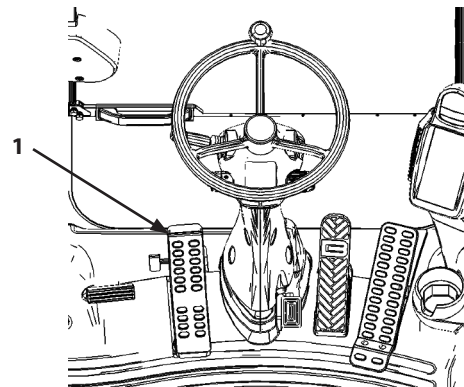
### 2-Piece Boom

**⚠ WARNING:** When operating with 2-piece boom, the bucket may come in contact with the cab. Operate the machine with care not to allow the tip of bucket to hit the cab while rolling in the 2-piece boom.

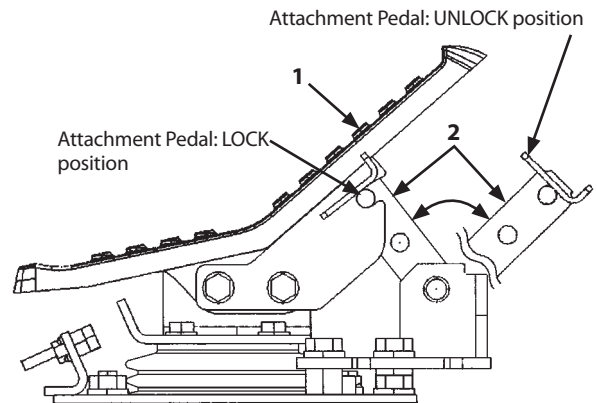
**⚠ CAUTION:** Always keep attachment pedal (1) locked with pedal lock (2) when attachment pedal (1) is not in use. Do not allow your foot to rest on the pedal when the attachment pedal (1) is not in use.



SS4603204



MLBA-01-510




MJAA-05-005

# OPTIONAL ATTACHMENTS

## 2-Piece Boom

### 2-piece boom operation

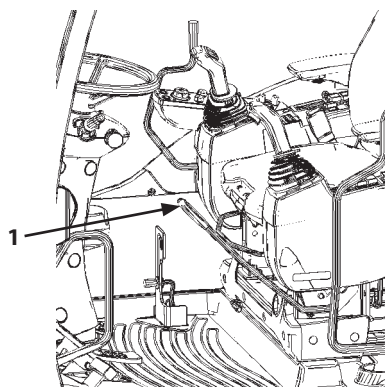
The 2-piece boom can be operated using attachment pedal (3) located on the left front of the seat, as illustrated.

 **NOTE:** Attachment pedal (3) is set to operate the 2-piece boom when the machine is shipped from the factory.

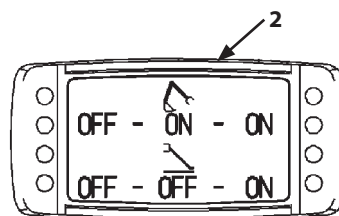
1. Place pilot control shut-off lever (1) to the LOCK position.
2. Turn blade/outrigger/front attachment pilot control switch (2) to the ON-OFF or ON-ON position.

Ensure the background color of the 2-piece boom icon in the operational information icons on the monitor screen changes to indicate that it is ready to operate.

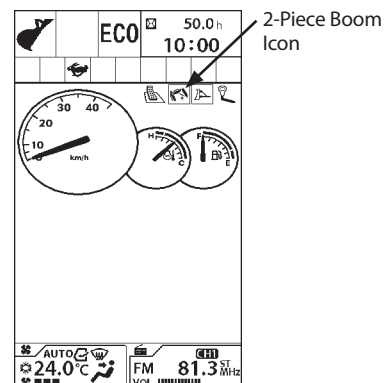
3. Operate attachment pedal (3) to operate the 2-piece boom.
4. After operation, pull the pilot control shut-off lever (1) to the LOCK position.



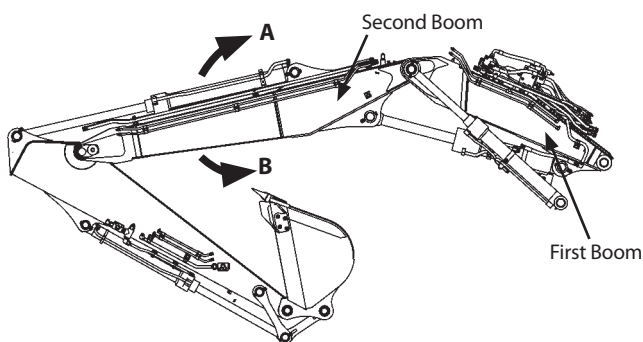
MLBA-01-518



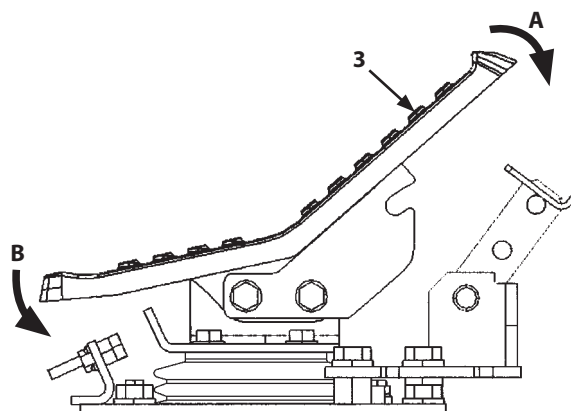
MLBA-01-515



MLBA-01-001



MCGB-13-009



M1J1-13-006

# OPTIONAL ATTACHMENTS

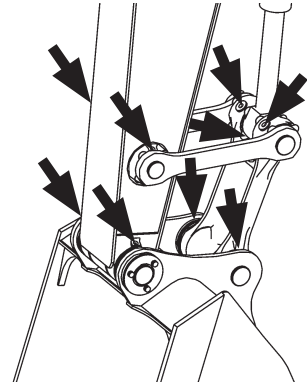
## 2-Piece Boom

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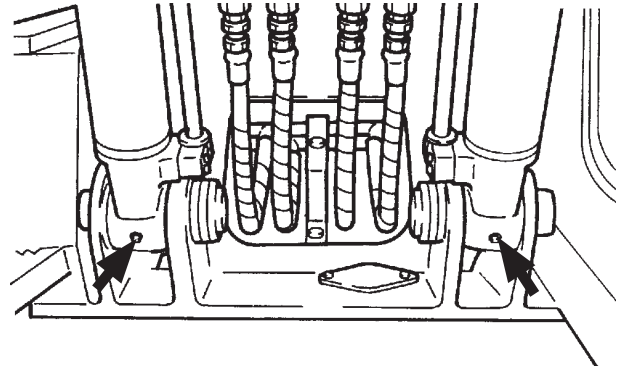
### Maintenance, Greasing --- every 500 hours

- Front joint pins
- Bucket and link pins



M178-07-007

- Boom cylinder bottom

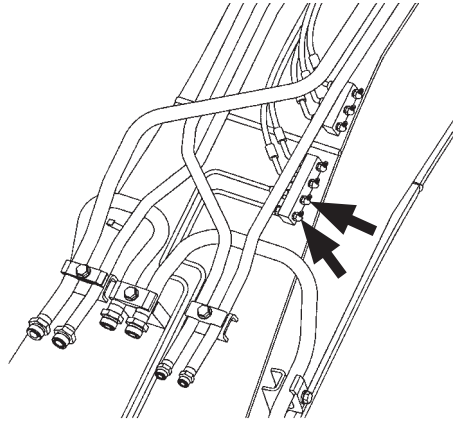


M104-07-002

# OPTIONAL ATTACHMENTS

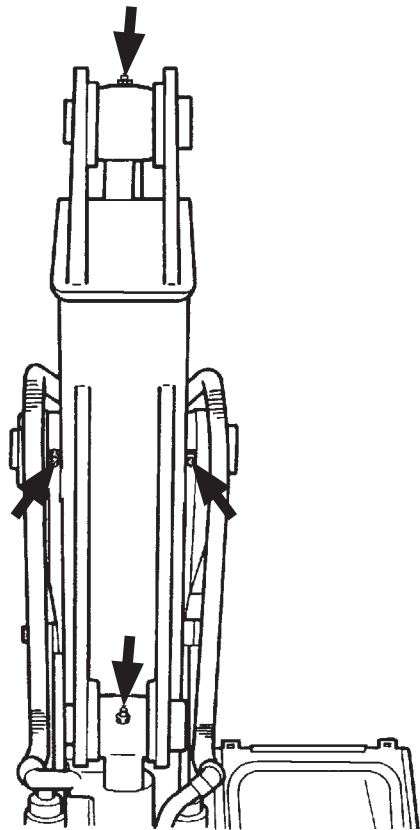
## 2-Piece Boom

- Boom foot



MCGB-13-005

- Boom and arm joint pins, arm cylinder rod pin and bucket cylinder bottom pin

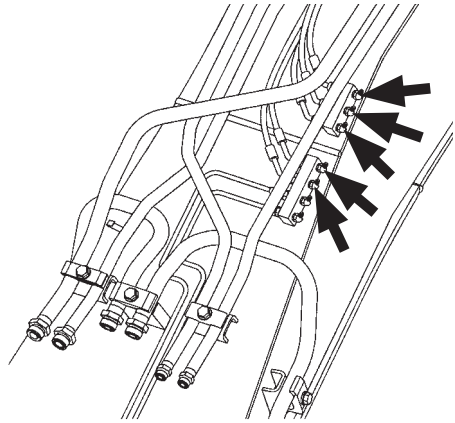


M157-07-157

# OPTIONAL ATTACHMENTS

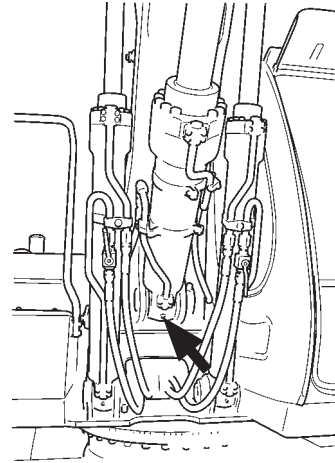
## 2-Piece Boom

- Arm cylinder bottom pin, first and second boom joint pins



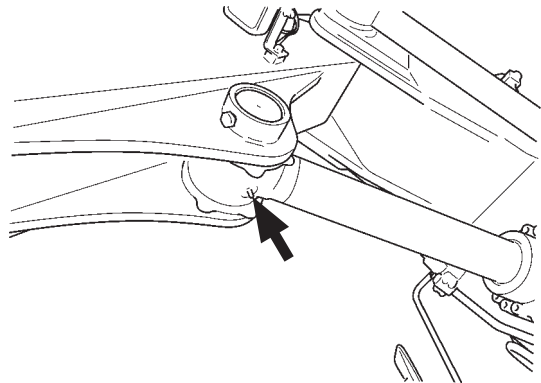
MCGB-13-005

- Positioning cylinder bottom pin



MCBB-07-008

- Positioning cylinder rod pin



MCBB-07-010

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

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#### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

##### **Selecting a breaker or crusher**

Select a breaker, crusher or quick coupler with the correct size and weight for your machine, considering the stability of the machine, hydraulic oil pressure and flow rate of the breaker, crusher or quick coupler. See your authorized dealer for correct breaker information.

##### **Precautions for Operation**

Carefully study the operation manuals of the breaker, crusher and quick coupler.

To avoid damaging the machine, hydraulic breaker, crusher or quick coupler, follow the precautions given below.

##### **Precautions for connecting breaker or crusher piping.**

Do not allow impurities to enter into the system when switching the breaker, crusher or the quick coupler with the bucket.

When the breaker, crusher or quick coupler is not used, apply the cover to the pipe opening on the arm top and install the plug or cap into the hose end of the breaker, crusher or the quick coupler to prevent impurities from entering the system.

Be sure to provide spare covers and plugs in the tool box so that they will be available when needed.

After connecting, check the connecting seal fitting for oil leakage, and pipe clamp bolts for looseness.

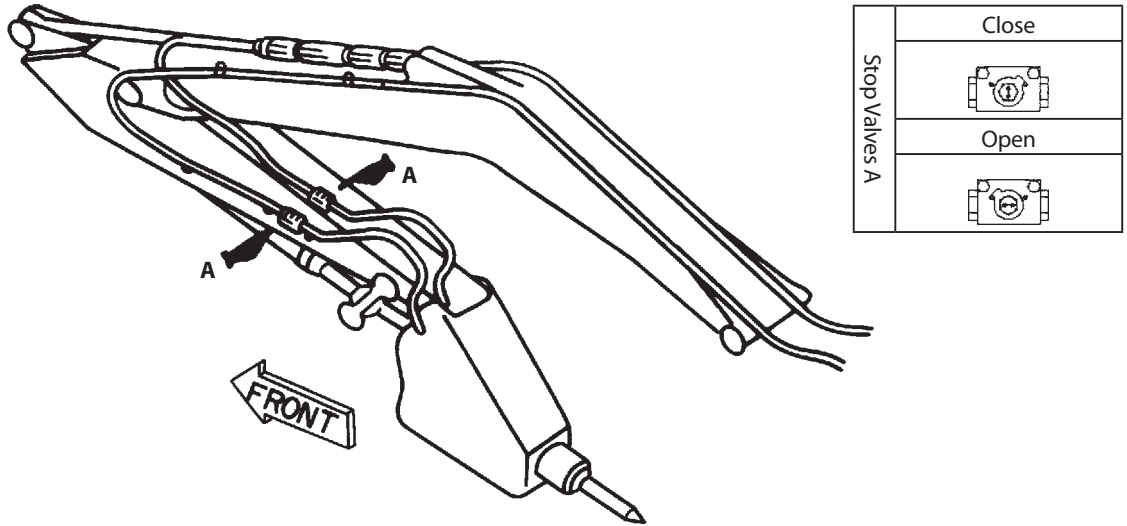
# OPTIONAL ATTACHMENTS

## Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

### Piping for breaker and crusher (optional)

ZX140W-5B/170W-5B/190W-5B/220W-5B

Operational procedures for stop valves and selection valve.

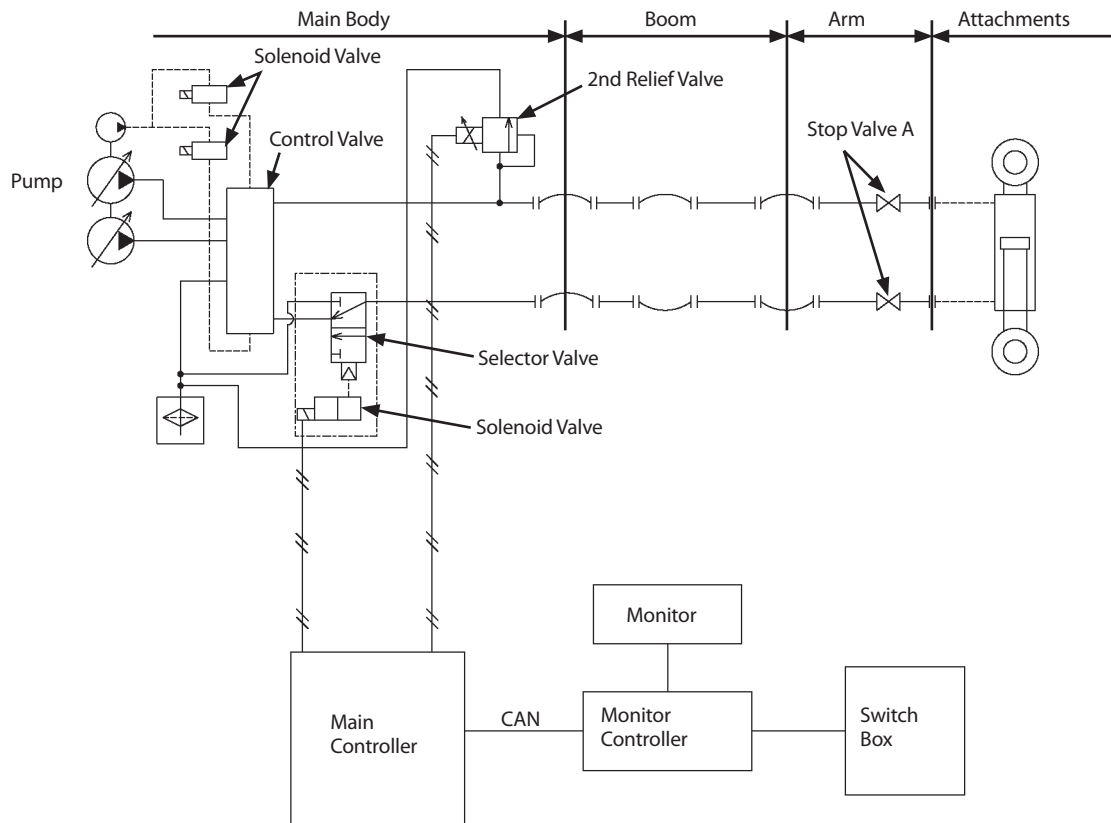


Stop Valve A

Close: When not using attachment or is detached.

Open: When using attachment

MLBA-13-039



MLBA-13-021

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

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#### **Secondary Relief Pressure Adjustment**

Depending on the breaker model, the secondary relief valve relief set pressure differs.

Consult your nearest Hitachi dealer for installing a breaker.



## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

#### Attachment Pedal (Hydraulic Breaker) (Optional)

The breaker can be operated using attachment pedal (1) located on the left front of the seat, as illustrated.

**NOTE:** Attachment pedal (1) is set to operate the hydraulic breaker when the machine is shipped from the factory.

#### CAUTION:

- Always keep attachment pedal (1) locked with pedal lock (2) when attachment pedal (1) is not in use.
- Do not allow your foot to rest on the pedal when the attachment pedal (1) is not in use.
- When changing pedal lock (2) position, pull the pilot control shut-off lever up to the LOCK position.

1. Select the hydraulic breaker icon on monitor work mode selection screen (3). Refer to the descriptions about the work mode in the OPERATING THE MACHINE section for work mode setting procedures.

2. Move pedal lock (2) forward to the UNLOCK position.

3. Place the pilot control shut-off lever to the UNLOCK position.

4. Turn blade/outrigger/front attachment pilot control switch (4) to the ON-OFF or ON-ON position.

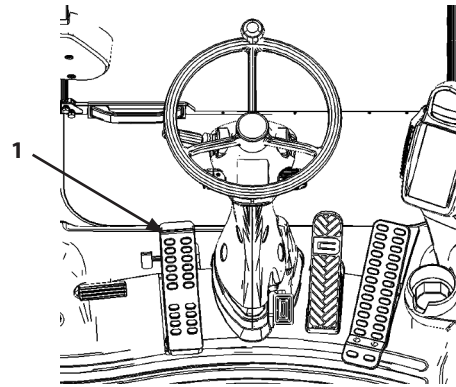
Ensure the background color of the crusher icon in the operational information icons on the monitor screen changes to indicate that it is ready to operate.

5. Push down on attachment pedal (1) to operate the breaker.

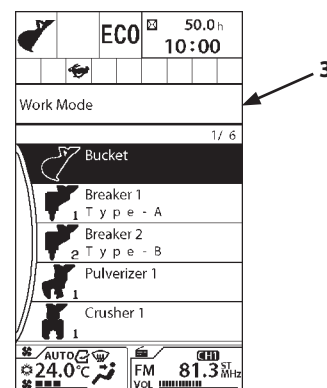
Loosen stopper bolt (5) until stopper bolt (5) comes in contact with the bracket in attachment pedal (1) neutral to prevent attachment pedal (1) from being stepped backward.

6. Remove foot from attachment pedal (1) to stop the breaker.

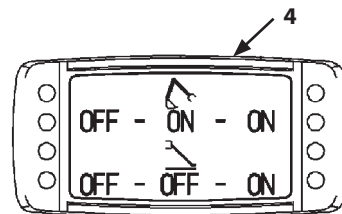
7. Be sure to lock attachment pedal (1) with pedal lock (2) when the attachment pedal is not in use.



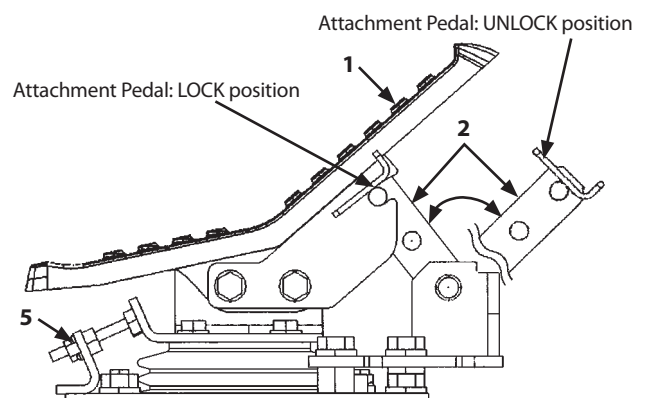
MLBA-01-510



MDAA-01-101EN



MLBA-01-515



MJAA-05-004

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

#### Precautions for Breaker Operation

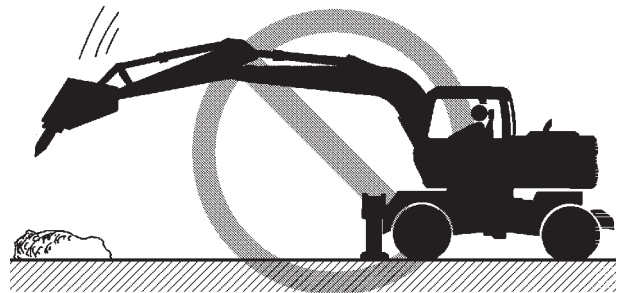
**⚠ WARNING:** Machine stability is reduced as the breaker is much heavier than the bucket. When using a breaker, the machine is more apt to tip over. Also, flying objects may hit the cab or other part of the machine. Observe the following precautions and take any other precautions necessary to prevent accidents and machine damage from occurring.

#### Avoid Hitting Objects with Breaker.

The breaker is heavier than the bucket, causing the breaker to lower faster.

Take care not to hit any objects with breaker. Doing so will result in damage to the breaker, the front attachment, and/or the upperstructure.

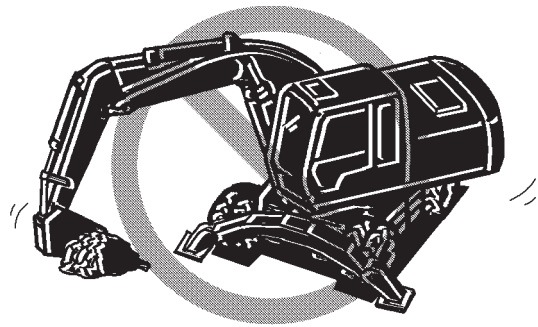
Always move (lower) the breaker slowly to position the tip of the chisel on the object to be broken before starting breaker operation.



MLBA-13-023

#### Avoid Moving Objects with Breaker.

Do not use the breaker and/or the bracket to move objects. Damage to the boom, arm, and/or breaker may result. Do not use the breaker and/or the swing function to move objects. Damage to the boom, arm, and/or breaker may result.

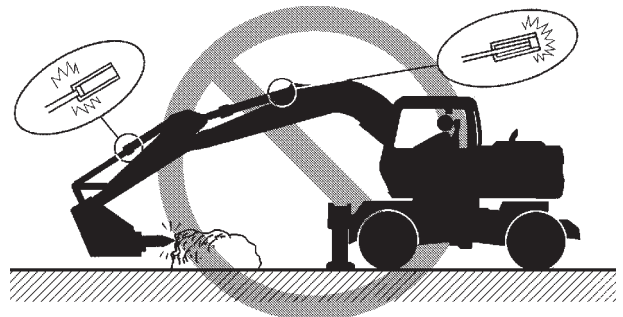


MLBA-13-024

#### Avoid Operating Breaker at Cylinder Stroke End.

Always operate the breaker by positioning the cylinder rods 100 mm or longer before the stroke end position.

When operating the breaker with cylinders fully retracted or extended, hydraulic cylinders, arm or boom may be damaged.



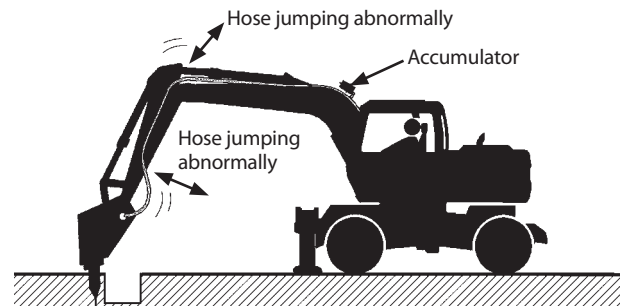
MLBA-13-025

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

#### Stop Operation If Breaker Hydraulic Hoses Jump abnormally.

Change in breaker accumulator pressure or a damaged accumulator will cause abnormal hose jumping and may cause breaker and/or machine damage. Immediately stop machine operation. Failure to do so may result in a serious failure in the pump or hydraulic system. Contact your nearest HITACHI dealer.

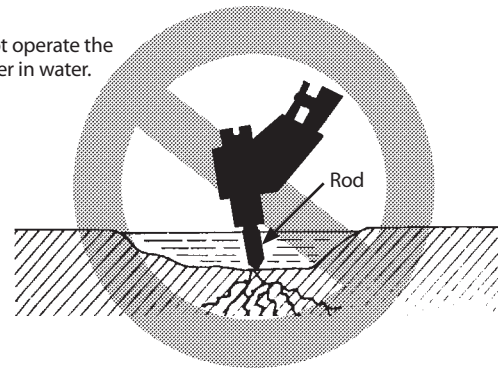


MLBA-13-033

#### Do Not Operate the Breaker in Water.

Doing so will cause rust and seal damage, resulting in damage to the hydraulic system components. Rust, dust and water may enter into the hydraulic oil through the broken seal, damage to the hydraulic system may result.

Do not operate the breaker in water.



MZX5-13-017

#### Do Not Use Breaker for Lifting Operation.

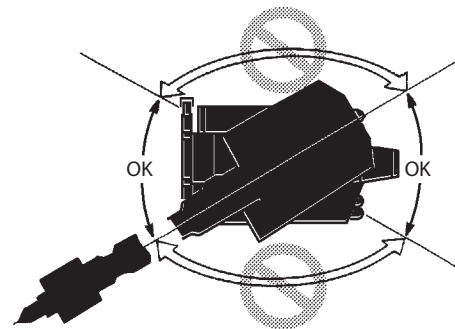
The machine tipping over and/or breaker damage may result.



MLBA-13-026

#### Do Not Operate the Breaker to the Side of the Machine.

The machine may become unstable and undercarriage component life may shorten as a result from operating the breaker to the side of the machine.



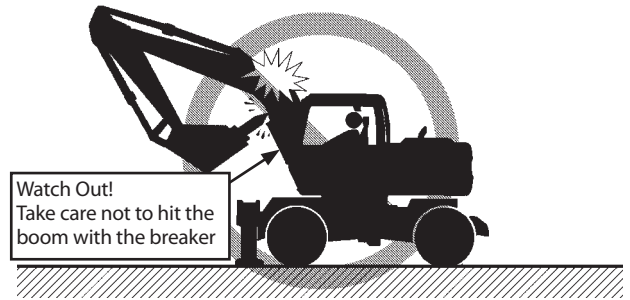
MLBA-13-027

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

#### Operate the Hydraulic Excavator Carefully to Avoid Hitting the Boom.

When the arm rolled in with the breaker equipped, the chisel may come in contact with the boom.



MLBA-13-034

#### Do Not Operate Breaker with the Arm Positioned Vertically.

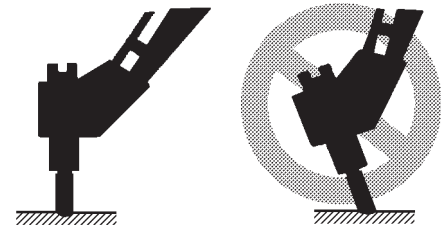
Excessive vibration to the arm cylinder will occur, causing oil leakage.



MLBA-13-035

#### Press the Breaker So That the Chisel (The Axis) is Positioned and Thrust Perpendicular to the Object.

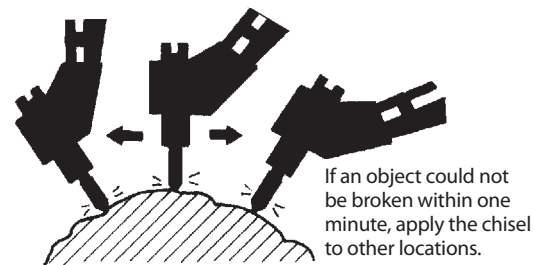
Failure to do so may damage the chisel or may cause seized piston.



MZX5-13-007

#### Do Not Operate the Breaker Continuously Longer Than One Minute.

Failure to do so may result in premature wear of the chisel. If an object could not be broken within one minute, apply the chisel to other locations, less than one minute for each location.



M147-05-015

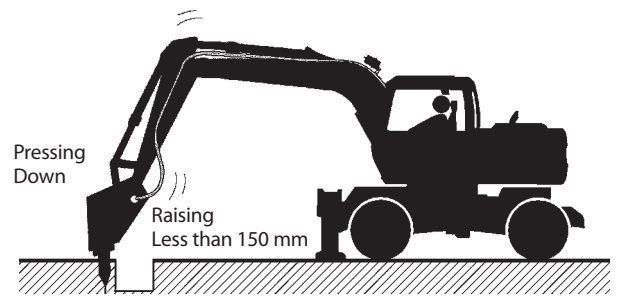
## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

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#### **Raising the Front Part of the Undercarriage by Pressing Down the Breaker May Cause Damage to the Front Attachment.**

Never raising the front edge of the undercarriage higher than 150 mm (6 in) by pressing the breaker down.



MLBA-13-036

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

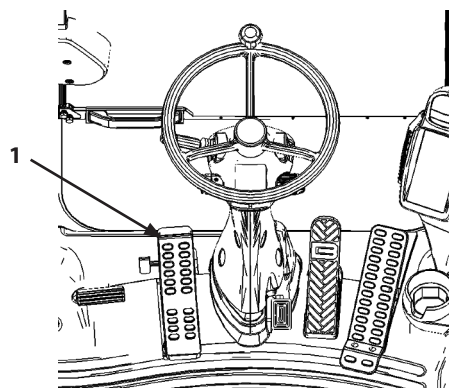
#### Attachment Pedal (Hydraulic Crusher) (Optional)

The crusher can be operated using attachment pedal (1) located on the left front of the seat, as illustrated.

**NOTE:** Attachment pedal (1) is set to operate the crusher when the machine is shipped from the factory.

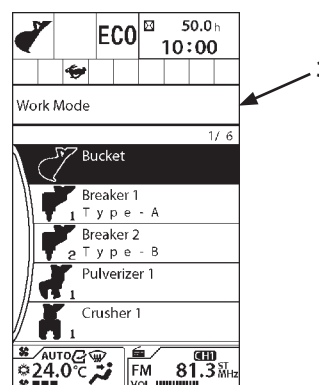
#### CAUTION:

- Always keep attachment pedal (1) locked with pedal lock (2) when attachment pedal (1) is not in use.
- Do not allow your foot to rest on the pedal when the attachment pedal (1) is not in use.
- When changing pedal lock (2) position, pull the pilot control shut-off lever up to the LOCK position.



MLBA-01-510

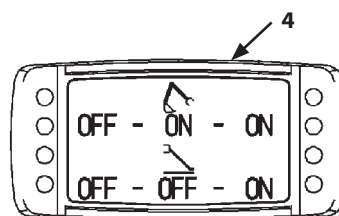
1. Select the proper hydraulic crusher icon on work mode selection screen (3). Refer to the descriptions about the work mode in the OPERATING THE MACHINE section for work mode setting procedures.
2. Move pedal lock (2) forward to the UNLOCK position.
3. Place the pilot control shut-off lever to the UNLOCK position.
4. Turn blade/outrigger/front attachment pilot control switch (4) to the ON-OFF or ON-ON position.



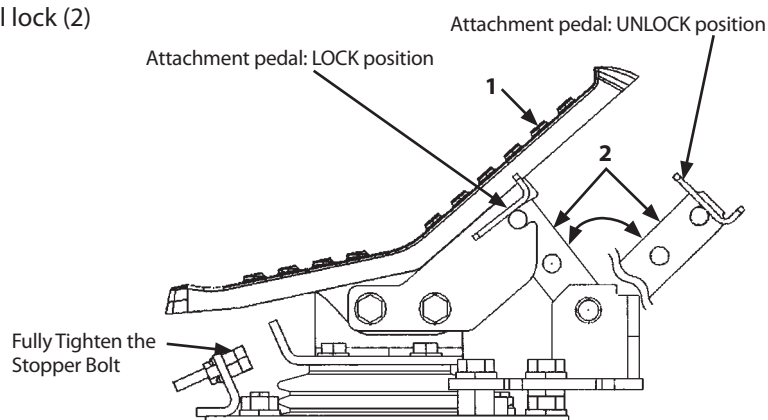
MDAA-01-101EN

Ensure that the background color of the crusher icon in the operational information icons on the monitor changes to notify that it is ready to operate.

5. Push down on attachment pedal (1) either forward or backward to open or close the crusher.
6. Remove foot from attachment pedal (1) to stop the crusher.
7. Be sure to lock attachment pedal (1) with pedal lock (2) when the attachment pedal is not in use.



MLBA-01-515



MJAA-05-005

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

#### Precautions for Crusher Operation

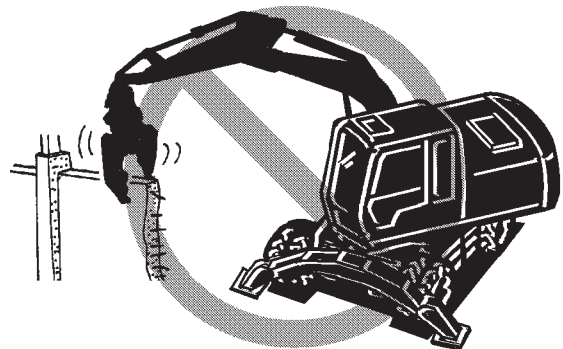
Prevent machine tipping over and damage to the front attachment. Observe the following precautions for crusher operation.

**⚠ WARNING: Machine stability is reduced as crusher is much heavier than bucket. When operating with a crusher, the machine is more apt to tip over. Falling or flying objects may hit the cab or other part of the machine. Observe the following precautions and take any other precautions necessary to prevent accidents and machine damage from occurring.**

- Do not allow the machine's weight to be supported by the crusher or bucket cylinder with the bucket cylinder fully extended or retracted. Failure to do so may result in damage to the front attachment. In particular, avoid doing so with the bucket cylinder fully extended, as the front attachment will be easily damaged. Take care to prevent this from happening when dismantling foundation structures using the crusher.
- Using the front attachment, do not raise the base machine off the ground with the arm cylinder fully extended. Failure to do so may result in damage to the arm cylinder.
- When a heavyweight attachment such as a crusher is installed, avoid quickly starting or stopping the front attachment. Failure to do so may result in damage to the front attachment.
- Do not attempt to perform crushing on either side of the machine. Always perform crushing operations to the fore or rear, parallel with the tracks. Otherwise, tipping over may occur.



MLBA-13-028



MLBA-13-029

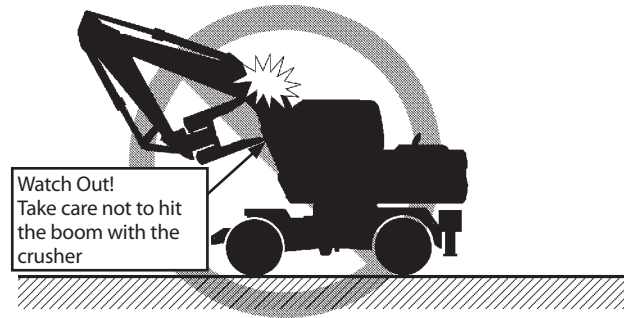


## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

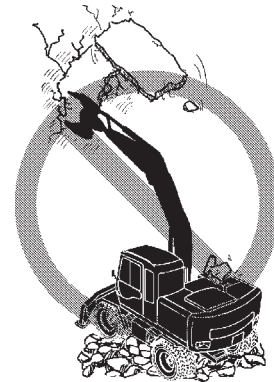
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- When the arm rolled in with the crusher equipped, the crusher may come in contact with the boom and cab.



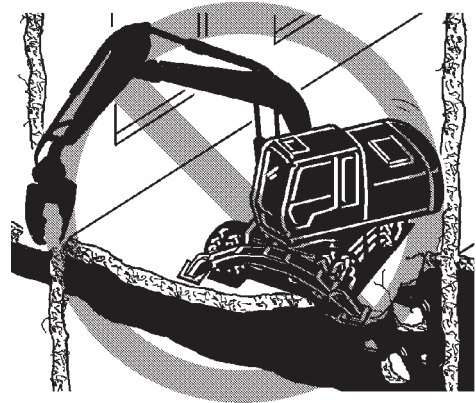
MLBA-13-030

- When operating the crusher up high with the boom fully raised, be careful of falling objects.



MLBA-13-031

- When operating the crusher on a floor in a building, first confirm that the floor has sufficient strength to support the load caused by crushing, in addition to the machine weight.  
The load equivalent or higher than the machine weight may be applied on floor depending on the operation method.



MLBA-13-032



## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

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- Always operate the crusher on a stable, level surface, not on a slope or on crushed scraps. Do not operate the machine on the scrapped material or on a slope.
- Do not use the crusher to haul or load crushed scraps.
- If a multiple number of attachments, such as crusher and bucket, or crusher and breaker, are used, replacing them with each other at intervals, impurities are more apt to enter the hydraulic system and the hydraulic oil deteriorates quickly. For this reason, replace the hydraulic oil tank filter and change the hydraulic oil at the intervals specified in the breaker time sharing diagram in the previous section.
- Always remove the crusher from the excavator before transporting the machine. Do not fully extend the bucket cylinder when transporting, as this may damage the front attachment, when vibrations arise during transportation.

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

#### Attachments

##### Allowable Weight Limits of Installed Attachment

- When an attachment other than the standard bucket is installed on the machine, the machine stability will be different.  
If a heavy attachment is used, not only will controllability be affected but also machine stability will be reduced, possibly causing safety hazard.
- Before installing attachments such as hydraulic breaker, crusher (concrete crusher), or pulverizer, take machine controllability into account when selecting the weight of the attachment by referring to the table below.

#### ZX140W-5B

Unit : kg (lb)

Model	Base Machine				Breaker		Crusher/Pulverizer	
	Boom	Arm	Front	Rear	Std.Weight	Max.Weight	Std.Weight	Max.Weight
ZX140W-5B	2-Piece	2.52 m	-	BL (Up)	900 (1980)	1000 (2200)	1050 (2310)	1250 (2750)
			-	BL (Down)	1000 (2200)	1150 (2530)	1250 (2750)	1450 (3190)
			-	OR (Down)				
			OR (Down)	BL (Down)				
			BL (Down)	OR (Down)				
			OR (Down)	OR (Down)				
	Mono	2.52 m	-	BL (Up)	950 (2090)	1100 (2420)	1200 (2640)	1400 (3080)
			-	BL (Down)	1000 (2200)	1150 (2530)	1250 (2750)	1450 (3190)
			-	OR (Down)				
			OR (Down)	BL (Down)				
BL (Down)			OR (Down)					
OR (Down)	OR (Down)							

 NOTE: BL:Blade OR: Outrigger

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

**ZX170W-5B, 190W-5B, 220W-5B**

Unit : kg (lb)

Model	Base Machine				Breaker		Crusher/Pulverizer	
	Boom	Arm	Front	Rear	Std.Weight	Max.Weight	Std.Weight	Max.Weight
ZX170W-5B	2-Piece	2.50 m	-	BL (Up)	1100 (2420)	1200 (2640)	1300 (2860)	1500 (3300)
			-	BL (Down)	1150 (2530)	1250 (2750)	1350 (2970)	1600 (3520)
			-	OR (Down)				
			OR (Down)	BL (Down)				
			BL (Down)	OR (Down)				
	-	OR (Down)	OR (Down)	1250 (2750)	1350 (2970)	1500 (3300)	1750 (3850)	
	Mono	2.58 m	-					BL (Up)
			-					BL (Down)
			-					OR (Down)
			OR (Down)					BL (Down)
BL (Down)			OR (Down)					
OR (Down)	OR (Down)							
ZX190W-5B	2-Piece	2.40 m	-	BL (Up)	1150 (2530)	1250 (2750)	1350 (2970)	1600 (3520)
			-	BL (Down)	1300 (2860)	1450 (3190)	1600 (3520)	1850 (4070)
			-	OR (Down)				
			OR (Down)	BL (Down)				
			BL (Down)	OR (Down)				
	-	OR (Down)	OR (Down)	1300 (2860)	1450 (3190)	1600 (3520)	1850 (4070)	
	Mono	2.71 m	-					BL (Up)
			-					BL (Down)
			-					OR (Down)
			OR (Down)					BL (Down)
BL (Down)			OR (Down)					
OR (Down)	OR (Down)							
ZX220W-5B	2-Piece	2.41 m	-	BL (Up)	1100 (2420)	1250 (2750)	1350 (2970)	1550 (3410)
			-	BL (Down)	1300 (2860)	1400 (3080)	1550 (3410)	1800 (3960)
			-	OR (Down)	1550 (3410)	1750 (3850)	1900 (4180)	2200 (4850)
			OR (Down)	BL (Down)				
			BL (Down)	OR (Down)				
	OR (Down)	OR (Down)						
	Mono	2.91 m	-	BL (Up)	1000 (2200)	1100 (2420)	1200 (2640)	1400 (3080)
			-	BL (Down)	1150 (2530)	1300 (2860)	1400 (3080)	1650 (3630)
			-	OR (Down)	1400 (3080)	1550 (3410)	1700 (3740)	1950 (4290)
			OR (Down)	BL (Down)	1550 (3410)	1750 (3850)	1900 (4180)	2200 (4850)
BL (Down)			OR (Down)					
OR (Down)			OR (Down)					

 NOTE: BL:Blade OR: Outrigger

## **OPTIONAL ATTACHMENTS**

### **Hydraulic Breaker, Hydraulic Crusher and Quick Coupler**

---

- Breaker operation speed is faster than crusher operation so that the recommended breaker max. weights are reduced more than those of the crushers.
- The weight is not the only factor to be considered when selecting a breaker.
- Avoid installing an attachment with a long overall length. Damage to the front attachment may result.
- When an attachment of the max. weight is installed, always operate the attachment over the front or rear side of the machine. In addition, avoid operating the attachment at the maximum reach.
- Crushers are heavier than breakers. Slowly move the control lever when operating a crusher.

## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

#### Attachment Connection Parts

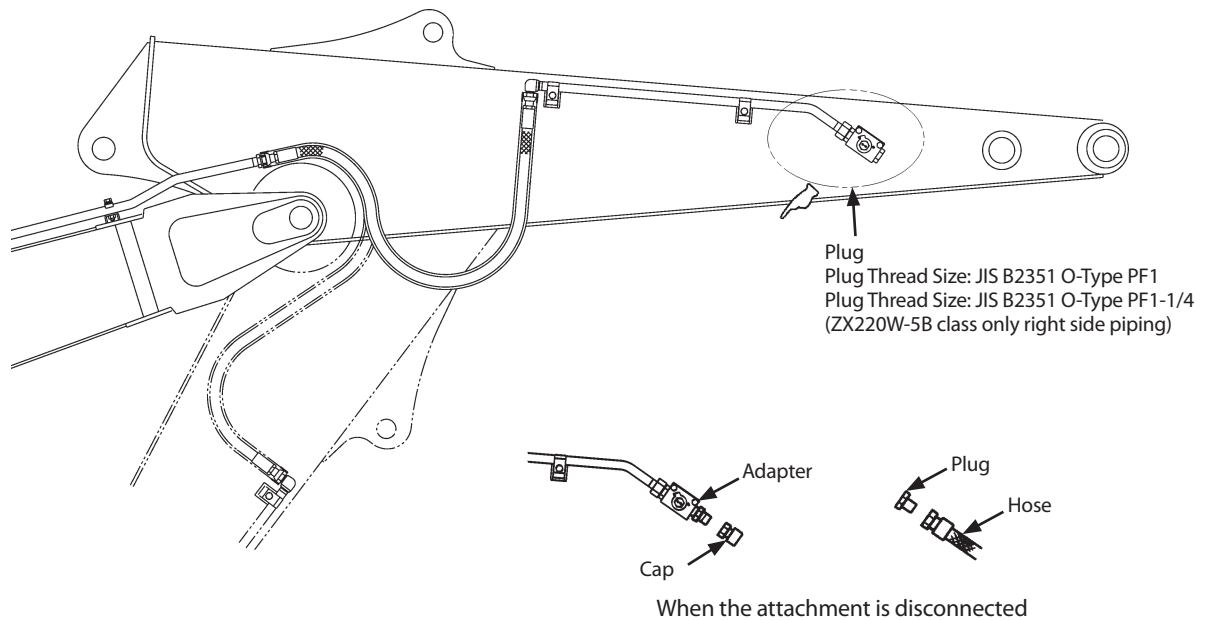
The attachment hydraulic line and connection parts are located as illustrated below.

When the attachment is disconnected, be sure to install caps or plugs to the ends of both the arm and attachment side hydraulic lines to prevent dust from entering or from sticking.

Adapter tightening torque:

PF1: 210 N·m (21 kgf·m)

PF1-1/4: 340 N·m (34 kgf·m) (ZX220W-5B class only right side piping)

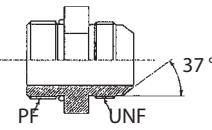
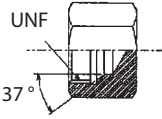
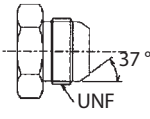

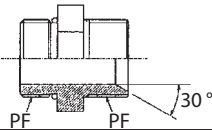
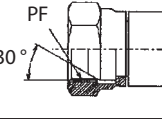
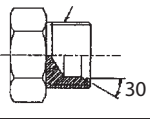
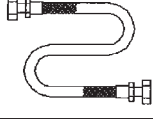
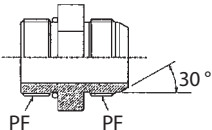
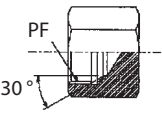
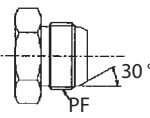



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## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

Part No. List (Fill attachment manufacturer's part Nos. in the blank spaces.)

Form / Size	Adapter Size	Adapter	Cap	Plug	Hose
	PF-UNF Male-Type				
ZX140W-5B, 170W-5B, 190W-5B left side piping	PF1-1-1/16UN	4456399	4222711	4222264	
ZX140W-5B, 170W-5B, 190W-5B right side piping 220W-5B left side piping	PF1X1-5/16UN	4214444	4222712	4222265	
ZX220-5B right side piping	PF1-1/4X1- 5/16UN	4314094			
	PF-PF30° Female-Type				
ZX140W-5B, 170W-5B, 190W-5B left side piping	PF1-PF3/4	4129457	9718916	4222047	
ZX140W-5B, 170W-5B, 190W-5B right side piping 220W-5B left side piping	PF1XPF1	4042034	9718917	4168177	
ZX220-5B right side piping	PF1-1/4XPF1	4317614			
	PF-PF30° Male-Type				
ZX140W-5B, 170W-5B, 190W-5B left side piping	PF1-PF3/4	4456120	4222715	4222044	
ZX140W-5B, 170W-5B, 190W-5B right side piping 220W-5B left side piping	PF1XPF1	4456118	4222716	4222045	
ZX220-5B right side piping	PF1-1/4XPF1	4653961			

## OPTIONAL ATTACHMENTS

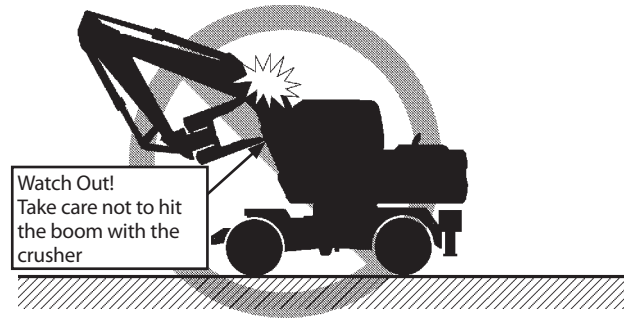
### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

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#### Precaution For Arm Roll-In/Bucket Roll-In Combined Operation

When Installing an Attachment Longer Than Standard  
Bucket

- ⚠ WARNING:** When an attachment (such as a hydraulic breaker, crusher or quick coupler), the overall length of which is longer than that of the bucket, is installed, the attachment may come in contact with the cab and/or the boom. Operate the machine with care not to allow the tip of the front attachment to hit the cab and/or the boom while rolling in the front attachment.



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## OPTIONAL ATTACHMENTS

### Hydraulic Breaker, Hydraulic Crusher and Quick Coupler

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#### **Change Hydraulic Oil and Replace Full-Flow Filter Element**


Hydraulic breaker operation subjects the hydraulic system to become contaminated faster and to quickly deteriorate the hydraulic oil.

Failure to adhere to proper maintenance intervals may result in damage to the base machine and the breaker.

In order to extend the service life particularly of the hydraulic pump, change the hydraulic oil and the full-flow filter element at the specified frequency given below. (Refer to the "Hydraulic System" in the "MAINTENANCE" Section.)

Replacement intervals differ depending on the brand of hydraulic oil used. Refer to the Hydraulic System in the MAINTENANCE section.

Use high performance (micro-glass) element when the full-flow filter restriction indicator is equipped.

 **NOTE:** *If a filter-paper element is used, this indicator does not operate. (Refer to the "Hydraulic System" in the "MAINTENANCE" Section.)*



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## CONFORMITY

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The EC Declaration of Conformity includes the machine without accessory, unless fitted with accessories approved by Hitachi Construction Machinery.

The EC Declaration of Conformity will lose its validity for any modification of the machine without approval.

Hitachi Construction Machinery does not cover conformity of machines fitted with OEM equipment.

### **Legal Provisions;**

The machine fulfills all relevant provisions of the following directives (and their amendments)

2004/108/EC Electromagnetic compatibility

2006/42/EC Machine

2000/14/EC Noise emission

### **Notified body for 2000/14/EC**

SNCH

Société Nationale de Certification et d'Homologation

S.à.r.l. 11, route de Luxembourg L-5230 Sandweiler

### **Conformity assessment procedure followed;**

Annex VI

### **Manufacturer;**

Hitachi Construction Machinery Co., Ltd.

650 Kandatsu-machi Tsuchiura-shi Ibaraki-ken 300-0013

Japan

Hitachi Construction Machinery (Europe) N.V.

Souvereinstraat 16, 4903 RH, Oosterhout, The Netherlands

### **Authorized Representative;**

Hitachi Construction Machinery (Europe) N.V.

Siciliëweg 5, 1045 AT, Amsterdam, The Netherlands

Position; Manager, Quality Assurance Div.

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## Hitachi Construction Machinery Europe N.V. (HCME) Limited Warranty

### **This limited warranty ("Warranty") applies only to the Product specified in this Operator's Manual.**

This Warranty applies only to the Product manufactured and/or sold by Hitachi Construction Machinery (Europe) N.V. ("HCME") or through its authorized Distributor in the European Union, Switzerland, Iceland and Norway.

This Warranty does not apply to the Product operating in the countries outside the European Union with the exception of Switzerland, Iceland and Norway. (In other areas different warranties may apply. Copies of applicable warranties may be obtained by written request to Hitachi Construction Machinery Co., Ltd.)

HCME warrants the new Product will comply in all material respects with HCME's specifications thereof and will be free of defects proved to have been caused by defective materials and/or faulty workmanship, in the sole judgment of HCME during the following period:

### **Warranty Period**

Twelve (12) months, two thousand (2,000) hours of operation whichever comes first after the date of delivery to the first User.

### **This Warranty is subject to the following terms and conditions:**

#### **HCME's Obligations & Responsibilities**

- Repair the Product in the sole judgment of HCME;
- Repair or provide replacement parts in the sole judgment of HCME (either new, remanufactured, repaired or by HCME approved parts) needed to correct the defects;
- The replaced parts become the property of HCME;
- The replaced parts provided under this Warranty are warranted for the remaining Warranty Period applicable to the Product in which they were installed;
- Provide reasonable and customary labour necessary for the Warranty works through its authorized Distributor at the place of business of HCME or its authorized Distributor during normal working hours.

#### **User's Obligations & Responsibilities**

- Operate the Product in accordance with the Operator's Manual and the designated specification of fuel and perform the required maintenance as indicated in the Operator's Manual;
- Provide proof of a delivery inspection to the first User, periodical maintenance compliance (receipts, copies of work orders, invoices and periodical inspection results);
- Pay for travel expenses of HCME or HCME's authorized Distributor (as the case may be) to a job site and transportation expenses;
- Labour costs in excess of those provided under "HCME Obligations & Responsibilities" including but not limited to premium or overtime labour costs;
- Pay for parts shipping charges in excess of those that are considered usual or customary;
- Pay for local taxes and duties if applicable;
- Pay for costs to investigate complaints, unless the problem is caused by a defect in HCME material or workmanship;
- Give a prompt notice (within five (5) working days) of a warrantable failure and/or potential problem;

- Promptly make the Product available for Warranty works;
- Permit HCME and/or its authorized Distributor to get access to all relevant information in order to investigate and/or repair the failure.

### **Limitations**

This Warranty does not apply to service parts, wear parts, consumable parts such as lamps, fuses, V-belts, brake clutch lining, brake disc, clutch disc, ground engaging parts, track, tires, wire ropes, filter elements, oil, grease, grease nipples, etc., unless these parts fail as a result of a failure of a warranted part of the Product.

Moreover, this Warranty shall not be applicable in the following cases:

- Failures resulting from unauthorized repair or adjustments in the Product;
- Failures resulting from the attachments, and/or parts, not manufactured and/or sold or approved by HCME;
- Failures resulting from using fuel and/or lubricant other than the type designated by HCME;
- Failures resulting from operation in disregard of the Operator's Manual and/or catalogues and/or such instructions as are issued by HCME for the Product;
- Failures resulting from any abuse, neglect, improper handling and/or insufficient or erroneous maintenance of the Product;
- Failures resulting from floods, lightning, storms, fires, and other Acts of God;
- Failures resulting from the User's delay in prompt repair of the initial problem;
- Failures resulting from any use and/or installation that HCME judges improper;
- Minor change of colour and/or rust on the Product ascribable to normal wear and tear;
- Such phenomena as normal noise, vibration, etc. which will not affect the function of the Product;
- Minor adjustments such as re-torque and tightening of nuts, bolts, hoses, hydraulic lines, fittings and troubleshooting.

THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES AND THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY CONSTITUTES USER'S SOLE RIGHT AND REMEDY AND HCME'S SOLE OBLIGATIONS & RESPONSIBILITIES IN RESPECT OF ANY DEFECTIVE OR MALFUNCTIONING PRODUCTS AND IS SUBJECT TO ANY LIMITATIONS OF LIABILITY THAT ARE PART OF ANY SALES AGREEMENT WITH HCME.

FOR THE AVOIDANCE OF DOUBT AND WITHOUT PREJUDICE TO THE FOREGOING, HCME WILL NOT BE LIABLE FOR ANY DIRECT OR INDIRECT DAMAGES (INCLUDING BUT NOT LIMITED TO ANY CONSEQUENTIAL DAMAGES, LOSS OF REVENUES, LOSS OF PROFITS OR BUSINESS INTERRUPTION LOSSES) UNLESS THE DAMAGE IS THE RESULT OF HCME'S WILFULL MISCONDUCT OR GROSS NEGLIGENCE.

EXCEPT AS EXPRESSLY STATED HEREIN, THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, BY OPERATIONS OF LAW OR OTHERWISE, PERTAINING TO THE PRODUCTS.

This version is in effect as of April 1, 2012.

## **Hitachi Construction Machinery Europe N.V. (HCME) Limited Warranty**

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IF THIS WARRANTY IS ALSO TRANSLATED INTO ANOTHER LANGUAGE, DIFFERENT FROM ENGLISH, IN CASE OF DISCREPANCIES BETWEEN THE TEXTS, THE TEXT IN ENGLISH LANGUAGE SHALL PREVAIL.

THIS WARRANTY SHALL BE GOVERNED BY AND IS CONSTRUED IN ACCORDANCE WITH THE LAW OF THE NETHERLANDS WITH THE EXCLUSION OF THE UN CONVENTION ON CONTRACTS FOR THE INTERNATIONAL SALE OF GOODS (CISG). ALL CLAIMS AND DISPUTES ARISING OUT OF OR IN CONNECTION WITH THIS WARRANTY SHALL BE SETTLED BY THE COMPETENT COURT IN AMSTERDAM, THE NETHERLANDS. HOWEVER, HCME SHALL HAVE THE RIGHT TO SUBMIT ANY CLAIM OR DISPUTE TO A COURT THAT WOULD HAVE JURISDICTION IN THE ABSENCE OF THE FOREGOING STIPULATION. AS AN EXCEPTION, IF THE USER IS DOMICILED OUTSIDE THE EUROPEAN UNION, SWITZERLAND, NORWAY OR ICELAND, UPON COMMENCEMENT OF PROCEEDINGS ALL CLAIMS AND DISPUTES ARISING OUT OF OR IN CONNECTION WITH THIS WARRANTY, SHALL BE FINALLY SETTLED IN ACCORDANCE WITH THE ARBITRATION RULES OF THE NETHERLANDS ARBITRATION INSTITUTE (NAI). THE ARBITRAL TRIBUNAL SHALL BE COMPOSED OF THREE ARBITRATORS WHO SHALL DECIDE IN ACCORDANCE WITH THE RULES OF DUTCH LAW. THE PLACE OF ARBITRATION SHALL BE AMSTERDAM, THE NETHERLANDS. THE ARBITRAL PROCEDURE SHALL BE CONDUCTED IN THE ENGLISH LANGUAGE.

Claims under this Warranty should be submitted to a place of business of an authorized HCME's Distributor or directly to HCME. For the information concerning either the address to submit the claims or HCME as the issuer of this Warranty, please write to: Hitachi Construction Machinery (Europe) N.V., Sicilieweg 5, 1045 AT, Amsterdam, The Netherlands.

**Wheeled Excavator ZX140W-5B/ZX170W-5B/ZX190W-5B/ZX220W-5B**

**Operator's Manual (Original Instruction)**

Manual part number : ENMLBA-EN1-1

Hitachi Construction Machinery (Europe) N.V.  
Address : Siciliëweg 5, 1045 AT, Amsterdam, The Netherlands  
URL : <http://www.hitachi-c-m.com>

**Manufacturer :**

Hitachi Construction Machinery Co., Ltd.  
Address : 650 Kandatsu-machi Tsuchiura-shi Ibaraki-ken 300-0013 Japan  
URL : <http://www.hitachi-c-m.com>

