

Operator's Manual

ZW

310-6

330-6

Wheel Loader

ZW310-6 • 330-6 WHEEL LOADER OPERATOR'S MANUAL

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

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

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: 0 m to 2000 m (0 ft to 6600 ft)

In case the machine is used under conditions other than described above, consult your nearest 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 or ASTM D-975 which contents 15 ppm or lower sulfur.
Also use fuel that complies with solid contamination level of class 18/16/13 of ISO4406-1999 (solid contamination includes dust). If the fuel specified above is not used, exhaust gas that exceeds the regulation values may be discharged, causing serious problem on the engine. Consult your nearest Hitachi dealer.

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

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

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

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

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

CALIFORNIA

Proposition 65 Warning

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

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

INDEX

MACHINE NUMBERS

INTENDED USE

SAFETY

VISIBILITY MAP

SAFETY SIGNS

NAME OF COMPONENTS

GETTING ON AND OFF THE MACHINE

OPERATOR'S STATION

BREAK-IN

OPERATING ENGINE

DRIVING MACHINE

OPERATING MACHINE

TRANSPORTING

MAINTENANCE

MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS

STORAGE

TROUBLESHOOTING

SPECIFICATIONS

OTHER ATTACHMENTS

INDEX

CONTENTS

MACHINE NUMBERS	1	Prevent Parts from Flying	S-28
Aftertreatment Device.....	2	Prevent Burns.....	S-28
INTENDED USE	1	Replace Rubber Hoses Periodically.....	S-29
Intended Use.....	1	Avoid High-Pressure Fluids.....	S-29
Modifications	1	Prevent Fires	S-30
SAFETY	S-1	Evacuating in Case of Fire.....	S-32
Recognize Safety Information	S-1	Beware of Exhaust Fumes.....	S-32
Understand Signal Words.....	S-1	Precautions for Welding and Grinding	S-32
Follow Safety Instructions.....	S-2	Avoid Heating Near Pressurized Fluid Lines	S-33
Prepare for Emergencies.....	S-3	Avoid Applying Heat to Lines Containing Flammable Fluids	S-33
Wear Protective Clothing.....	S-3	Precautions for Handling Accumulator and Gas Damper.....	S-33
Protect Against Noise	S-4	Remove Paint Before Welding or Heating	S-34
Inspect Machine	S-4	Beware of Asbestos and Silica Dust and Other Contamination.....	S-34
General Precautions for the Cab	S-5	Prevent Battery Explosions	S-35
Use Handrails and Steps	S-6	Service Air Conditioning System Safely	S-35
Never Ride Attachment.....	S-6	Handle Chemical Products Safely.....	S-36
Adjust Operator's Seat.....	S-6	Dispose of Waste Properly.....	S-36
Ensure Safety Before Rising from or Leaving Operator's Seat	S-7	Notes on Aftertreatment Device	S-37
Fasten Your Seat Belt.....	S-7	Precautions for Communication Terminal.....	S-37
Move and Operate Machine Safely.....	S-8	Precaution for Communication Terminal Equipment	S-38
Handle Starting Aids Safely	S-8	VISIBILITY MAP	S-40
Operate Only from Operator's Seat	S-9	SAFETY SIGNS	S-42
Jump Starting	S-9	NAME OF COMPONENTS	1-1
Investigate Job Site Beforehand	S-10	Name of Components	1-1
Equipment of Head Guard, ROPS, FOPS.....	S-11	GETTING ON AND OFF THE MACHINE	1-2
Provide Signals for Jobs Involving Multiple Machines....	S-11	Getting ON and OFF the Machine	1-2
Keep Riders Off Machine	S-12	OPERATOR'S STATION	1-3
Drive Safely	S-12	About Aftertreatment Device	1-3
Drive Machine Safely (Work Site).....	S-13	Cab Features.....	1-6
Drive Safely with Bucket Loaded	S-14	Front Console.....	1-7
Drive on Snow Safely	S-14	Right Console.....	1-8
Travel on Public Roads Safely.....	S-15	Fingertip Control Type	1-8
Avoid Injury from Rollaway Accidents.....	S-15	Multi-Function Joystick Type	1-9
Avoid Accidents from Backing Up and Turning	S-16	Monitor Panel	1-10
Avoid Positioning Bucket or Attachment Over Anyone.....	S-17	Parking Brake Indicator (Red).....	1-11
Avoid Tipping.....	S-17	Brake Oil Low Pressure Indicator (Red)	1-11
Never Undercut a High Bank.....	S-18	Hydraulic Oil Level Indicator (Red).....	1-11
Dig with Caution.....	S-18	Low Steering Oil Pressure Indicator (Red)	1-12
Perform Truck Loading Safely	S-18	Transmission Warning Indicator (Red)	1-12
Avoid Power Lines.....	S-19	Communication Error Indicator (Yellow)	1-12
Precautions for Operation.....	S-19	Discharge Warning Indicator (Red)	1-12
Precautions for Lightning.....	S-19	Engine Trouble Indicator (Red)	1-13
Protect Against Flying Debris and Falling Object.....	S-20	Overheat Indicator (Red)	1-13
Object Handling	S-21	Engine Oil Low Pressure Indicator (Red)	1-13
Protect Against Flying Debris	S-21	Air Filter Restriction Indicator (Red).....	1-14
Park Machine Safely.....	S-22	Preheat Indicator (Yellow)	1-14
Store Attachments Safely	S-22	Coolant Temperature Gauge.....	1-15
Transport Safely	S-23	Fuel Gauge.....	1-15
Handle Fluids Safely—Avoid Fires.....	S-24	Turn Signal Indicator (Green)	1-16
Practice Safe Maintenance	S-25	High Beam Indicator (Blue).....	1-16
Warn Others of Service Work	S-26		
Support Machine Properly.....	S-26		
Stay Clear of Moving Parts	S-27		
Support Maintenance Properly	S-27		

CONTENTS

Work Light Indicator (Yellow).....	1-16	Switches, Steering Wheel and Pedals.....	1-83
Clearance Light Indicator (Green)	1-17	Forward/Reverse Lever/ Shift Switch	1-84
Control lever lock indicator (Red)	1-17	Forward/Reverse Lever	1-84
Multi Function Monitor	1-18	Shift Switch	1-84
Default Setting	1-19	Neutral Lever Lock (for the Forward/Reverse Lever)	1-85
Basic Screen.....	1-20	Steering.....	1-85
How to Use Screens	1-21	Horn Switch.....	1-85
Displaying Basic Screen	1-21	Turn Signal Lever	1-86
Monitor Operation	1-25	Light Switch.....	1-87
Alarm Occurrence Screen.....	1-26	High-Low Beam Switch	1-88
Remedy	1-28	Key Switch.....	1-88
DEF/SCR System Alarm.....	1-31	Wiper Switch	1-89
DEF/AdBlue® Level Alarm	1-31	Wiper Operation.....	1-89
Urea SCR System Malfunction	1-32	Front/Rear Wiper Switch.....	1-90
Aftertreatment Device.....	1-33	Hazard Switch	1-91
Aftertreatment Device Condition Display	1-33	Work Light Switch	1-92
Aftertreatment Device Manual Regeneration		Parking Brake Switch.....	1-93
Request	1-34	Accelerator Pedal.....	1-94
Aftertreatment Device Manual Regeneration		Brake Pedal	1-94
Procedure.....	1-35	Service Brake	1-94
Main Menu.....	1-37	Clutch Cut Off Brake.....	1-94
Ride Control Drive Speed Setting.....	1-38	Tilt, Telescopic Lever/Steering Column Pop-up Pedal	1-95
Dual Lift Arm Auto-Leveler	1-39	Right Console / Switches	1-96
Height Kickout ON/OFF, Stop Height Setting.....	1-40	Fingertip Control Type	1-96
Lower Kickout ON/OFF, Stop Height Setting	1-41	Multi-Function Joystick Type	1-97
Brightness Adjustment.....	1-42	Control Lever.....	1-98
Mail (Optional).....	1-44	Fingertip Control Type	1-98
Setting Menu	1-46	Multi-Function Joystick Lever	1-100
Date and Time.....	1-47	Control Lever Lock Switch	1-101
Time adjustment	1-47	Armrest Adjust Handle	1-101
Date Adjustment.....	1-49	Right Console Fore-aft Adjustment	1-101
Display Mode Setting.....	1-51	Travel Mode Selector.....	1-102
Auto Shut-Down (Optional).....	1-53	Clutch Cut Position Switch.....	1-103
Auto Shut-Down: ON/OFF	1-53	Power Mode Switch.....	1-103
Auto Shut-Down: Setting Time	1-54	Quick Power Switch.....	1-104
Rear View Camera Monitor	1-55	Hold Switch	1-105
Rear View Camera ON (Constant Display)/OFF (Non-		DSS (Down Shift Switch)	1-105
Display)/AUTO (Display at reverse operation).....	1-55	Ride Control Switch	1-106
Aftertreatment Device Regeneration Inhibited	1-57	AUTO.....	1-107
Setting Procedure	1-57	OFF	1-107
Transmission Setting	1-59	Fan Reverse Rotation Switch	1-108
Shift Change Delay Mode Setting	1-59	Manual Operation	1-108
Lockup Setting	1-61	AUTO	1-109
Parallel/Tandem Switching Setting.....	1-63	Forward/Reverse Selector Switch.....	1-110
Warm Up Operation	1-65	Operational Procedure.....	1-110
Language Settings.....	1-67	Emergency Steering Operation Check Switch.....	1-111
List of Display Language.....	1-69	Cigar Lighter.....	1-112
Display Item Selection	1-70	Using Cigar Lighter.....	1-112
Main Menu Sequence Change	1-72	Ash Tray.....	1-112
Information Menu	1-74	Auto Air Conditioner	1-113
Operation	1-75	Features.....	1-113
Fuel Consumption	1-75	Components Name.....	1-114
Maintenance	1-77	Controller Part Name and Function	1-115
Maintenance Notice.....	1-77	Cab Heater Operation	1-117
Remaining Time and Maintenance Interval	1-79	Cooling Operation.....	1-118
Monitoring.....	1-81	Defroster Operation.....	1-119

CONTENTS

Cool Head/Warm Feet Operation.....	1-119	Vandal-Proof Devices.....	1-176
Tips for Optimal Air Conditioner Usage	1-120	Seat Belt.....	1-178
For Rapid Cooling	1-120	Seat Pocket.....	1-178
When Windows Become Misty.....	1-120	BREAK-IN	2-1
Off-Season Air Conditioner Maintenance.....	1-120	Break-in Operation for New Machine.....	2-1
Adjusting Operator's Seat (Air Suspension Type		OPERATING ENGINE	3-1
Seat).....	1-121	Inspect Machine Daily Before Starting	3-1
Components Name	1-121	Check Before Starting	3-3
Rear Tray	1-126	Starting Engine	3-5
Electric Power Output (Optional)	1-126	Starting in Cold Weather.....	3-7
Fuse Box.....	1-127	Check After Starting	3-8
Fuse Box A	1-128	Using Booster Batteries.....	3-9
Fuse Box B.....	1-128	Warming Up Operation.....	3-11
Hot/Cool Box.....	1-129	Warming Up Operation in Cold Weather.....	3-12
Tray and Drink Holder.....	1-129	Stopping Engine.....	3-14
ROPS Cab (ZW310-6).....	1-130	DRIVING MACHINE	4-1
ROPS Cab (ZW330-6).....	1-132	Driving the Machine.....	4-1
Room Light (ZW310-6).....	1-134	Starting to Move.....	4-2
Room Light (ZW330-6).....	1-135	Parking Brake Switch.....	4-7
Emergency Evacuation Hammer	1-136	Drive Speed Change.....	4-8
Sun Visor	1-136	Changing Forward/Reverse Drive Direction.....	4-8
Coat Hook	1-137	Steering Wheel.....	4-9
Upper Switch Panel (Optional)	1-138	Emergency Steering	4-10
Rotary Light Switch (Optional)	1-138	Stop and Restart of Driving	4-11
Rear View Mirror Heater Switch (Optional)	1-138	Precautions for Driving on Slopes.....	4-14
AM/FM Radio Operation.....	1-139	Precautions to be Taken if Machine Failure Occurs.....	4-15
Audio Input	1-142	Stop the Machine	4-16
DAB Operating (Optional).....	1-143	Parking	4-18
Names of Parts	1-144	Emergency Evacuation.....	4-19
Basic Operation	1-146	OPERATING MACHINE	5-1
DAB	1-147	Control Lever.....	5-1
RADIO.....	1-151	Control Lever Lock Switch.....	5-4
EXTERNAL	1-153	Clutch Cut Position Switch.....	5-5
Display Switch.....	1-155	Adjustment of Bucket Auto Leveler.....	5-6
Menus	1-156	Adjustment of Dual Lift Arm Auto Leveler.....	5-8
Outside Rear View Mirror.....	1-162	Auto Shut-Down (Optional).....	5-9
Installation and Adjustment of Mirrors	1-162	Aftertreatment Device Manual Regeneration	
Mirror Installation Diagram.....	1-163	Procedure	5-11
Room Rear View Mirror.....	1-165	Before Operation	5-13
Cab Door.....	1-165	Precautions for Operation	5-13
Right Door Open/Close Lever (ZW310-6).....	1-166	Ensure Safety When Operating on Road Shoulders	5-13
Right Door Lock (ZW310-6)	1-166	Avoid Overloading.....	5-14
Door Lock Knob (ZW330-6)	1-166	Avoid Rapid Steering Changes and/or Sudden	
Window Open/Close Levers	1-167	Braking.....	5-14
Left Door Open/Close Lever (ZW310-6).....	1-168	Avoid Operation with Biased Loads	5-14
Door Open/Close Lever (ZW330-6).....	1-168	Excavation.....	5-15
When Fully Opening the Left Door (ZW310-6)	1-168	Grading	5-17
Cab Door Release Lever (ZW310-6)	1-168	Loading	5-18
Battery Disconnect Switch.....	1-169	Dozing	5-21
Switch Operation	1-170	Scooping	5-21
Articulation Lock Bar.....	1-171	Removing Snow.....	5-22
Towing Pin	1-172	Lifting Wheel Loader	5-22
Inspection/Maintenance Side Access Cover.....	1-173	Precautions for After Operations.....	5-23
Rear Grille.....	1-174		
Steps.....	1-175		
Tool Box	1-175		

CONTENTS

TRANSPORTING	6-1	E. Fuel System	7-67
Transporting by Road	6-1	Check Fuel Level	7-67
Transporting by Trailer	6-1	Recommended Fuel	7-67
Loading / Unloading on Trailer	6-2	Refueling	7-68
Fastening Machine for Transporting	6-4	Drain Water and Sediment from Fuel Tank	7-69
Transporting Wheel Loader (Urgent Situation)	6-5	Drain Fuel Pre-Filter	7-70
Towing Method	6-9	Bleed Air from the Fuel System	7-71
Lifting Machine	6-10	Replace Fuel Main Filter Element	7-72
MAINTENANCE	7-1	Replace Fuel Pre-Filter Element	7-73
Correct Maintenance and Inspection Procedures	7-1	Clean Fuel Solenoid Pump Strainer	7-74
Check the Hour Meter Regularly	7-3	Check Fuel Hoses	7-76
Layout	7-4	F. Air Cleaner	7-77
Preparations for Inspection and Maintenance	7-8	Replace Air Cleaner Element (ZW310-6)	7-77
Lock Frames	7-10	Clean Air Cleaner Outer Element (ZW330-6)	7-78
Inspection/Maintenance Side Access Cover	7-11	Replace Air Cleaner Outer and Inner Elements (ZW330-6)	7-78
Rear Grille	7-12	Dust Ejection Valve (ZW310-6 Only)	7-79
Periodic Replacement of Parts	7-13	Check Air Inlet System	7-80
Maintenance Guide	7-14	G. Cooling System	7-81
Kind of Oils	7-20	Coolant	7-81
List of Consumable Parts	7-23	Precautions for handling antifreeze	7-81
A. Greasing	7-27	Check Coolant Level	7-83
B. Engine	7-32	Check Drive Belt	7-84
Check Engine Oil Level	7-32	Check Drive Belt Tensioner	7-85
Change Engine Oil	7-33	Replace DCA4 Coolant Filter Cartridge	7-86
Replace Engine Oil Filter	7-35	Change Coolant	7-91
Check Crankcase Breather Tube	7-36	Clean Radiator/Oil Cooler and Other Cooling System	7-93
Replace Crankcase Air Breather Element	7-37	H. Electrical System	7-94
Check Vibration Damper	7-39	Batteries	7-94
C. Power Train	7-40	Check Monitor Functions and All Other Instrument Operation	7-98
Check Transmission Oil Level	7-40	Check Work Lights	7-99
Change Transmission Oil	7-41	Check Horn and Reverse Buzzer	7-100
Replace Transmission Oil Filter	7-41	Check Electrical Harnesses and Fuses	7-101
Clean Transmission Oil Suction Strainer	7-41	Fuse Box A	7-102
Torque Converter Air Breather	7-44	Fuse Box B	7-102
Check Axle Oil Level	7-45	I. Brake System	7-103
Change Axle Oil	7-46	Check Right and Left Brake Interlocking Performance	7-103
Check Surroundings Around Axle and Covers for Oil Leaks	7-47	Check Parking Brake Force	7-104
Clean Axle Housing Air Breather	7-47	Check Accumulator Function, Gas Leakage, Looseness, and Damage	7-105
D. Hydraulic System	7-48	Check Gas Pressure in Accumulator	7-106
Inspection and Maintenance of Hydraulic Equipment	7-48	Check Brake Disks (Service and Parking)	7-106
Check Hydraulic Oil Level	7-50	J. Tire	7-107
Change Hydraulic Oil/Clean Hydraulic Oil Tank	7-51	Check Air pressure	7-107
Bleed Air from the Hydraulic System	7-52	Adjustment	7-107
Clean Suction Filter	7-53	Check Tire for Damage	7-108
Clean Pilot Oil Filter (Brake Circuit)	7-54	Check Wheel Bolt Torque	7-108
Clean Pilot Oil Filter (Steering Circuit)	7-56	Removal and Installation of Tire	7-111
Replace Hydraulic Tank Oil Filter	7-57	Tire Wheel	7-111
Replace Air Breather Element	7-59	K. Air Conditioner	7-112
Check Pilot Circuit Accumulator Function, Gas Leakage, Looseness, and Damage	7-60	Clean/Replace Air Conditioner Circulation/Fresh Air Filters	7-112
Check Ride Control Accumulator Function, Gas Leakage, Looseness, and Damage	7-61	Check Air Conditioner	7-116
Check Gas Pressure in Ride Control Accumulator	7-61		
Check Gas Pressure in Steering Accumulator	7-61		
Check Hoses and Lines	7-62		

CONTENTS

Check Air Conditioner Piping	7-116	Joystick Steering Selector	13-3
Check Air Conditioner Condenser	7-117	Forward/Reverse Switch	13-4
Check Air Conditioner Drive Belt.....	7-117	Left Console Lock Release Lever	13-5
Check Refrigerant	7-118	Adjusting the Switch Box Fore/Aft Position	13-6
Replace Air Conditioner Receiver Dryer	7-118	Adjusting the Vertical Height of the Left Console	13-6
Check Compressor and Pulley.....	7-118	Left Armrest Angle Adjustment	13-6
L. Miscellaneous.....	7-119	Switch Box Angle Adjustment	13-6
Check Bucket Teeth and Cutting Edge.....	7-119	Operating Procedures	13-7
Check and Replace Seat and Seat Belt.....	7-120	Descriptions of Warnings	13-10
Check ROPS cab, Resin Cab Roof, and Roof		Axle Oil Cooler	13-12
Mounting Bolts.....	7-120	Axle Oil Cooler (Optional).....	13-12
Check Windshield Washer Fluid Level	7-120	Maintenance Guide of the Axle Oil Cooler	13-12
Check Play Amount in Steering Wheel Stroke.....	7-121	Check Axle Oil Level.....	13-13
Check Accelerator Pedal Operation, and Exhaust		Change Axle Oil	13-14
Gas Color and Noise	7-122	Replace Axle Oil Filter	13-15
Check Rearview Mirror and Inside Rearview		INDEX	14-1
Mirror	7-123		
Check Steps and Handrails for Damage and			
Looseness.....	7-123		
Clean Engine Compartment and Hood	7-124		
Check Sound Absorbing Mat Around Engine	7-124		
Cleaning of Rear View Camera Lens.....	7-124		
Check and Adjust Valve Clearance.....	7-125		
Retighten Front Axle and Rear Axle Support			
Mounting Bolts.....	7-125		
Tightening and Retightening Torque of Nuts and			
Bolts.....	7-126		
M. Aftertreatment Device.....	7-139		
Check and Clean Aftertreatment Device.....	7-139		
N. Urea SCR System.....	7-140		
Check DEF/AdBlue®	7-142		
Refill DEF/AdBlue®	7-142		
Change DEF/AdBlue®	7-144		
Replace DEF/AdBlue® Supply Module Main Filter	7-145		
MAINTENANCE UNDER SPECIAL ENVIRONMENTAL			
CONDITIONS	9-1		
Maintenance Under Special Environmental Conditions...	9-1		
Precautions for Maintenance During Cold Weather			
Season.....	9-2		
STORAGE	10-1		
Storing the Machine.....	10-1		
TROUBLESHOOTING	11-1		
SPECIFICATIONS	12-1		
Specifications.....	12-1		
Sound Level Results.....	12-2		
Electric Fans.....	12-2		
OTHER ATTACHMENTS	13-1		
Joystick Steering	13-1		
Joystick Steering (Optional)	13-1		
Joystick Steering Lever	13-2		
Forward/Reverse Switch (Left)	13-2		
DSS (Down Shift Switch)	13-2		
Wiper Switch	13-2		

CONTENTS

MEMO

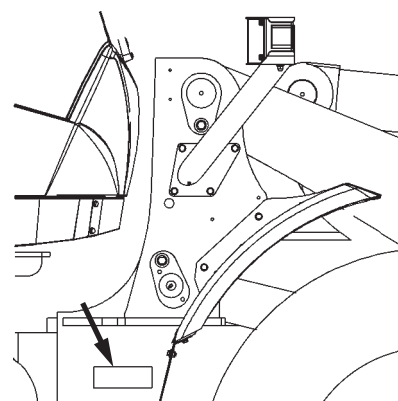
[illegible]

MACHINE NUMBERS

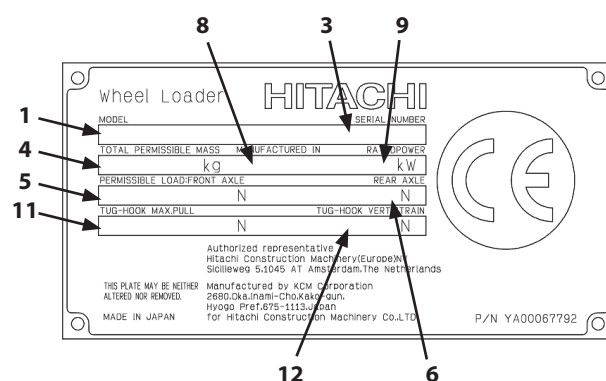
The manufacturing Nos. explained in this group is the individual number (serial No.) given to each machine and hydraulic components. These numbers are requested when inquiring any information on the machine and/or components. Fill these serial Nos. in the blank spaces in this group to immediately make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

Machine

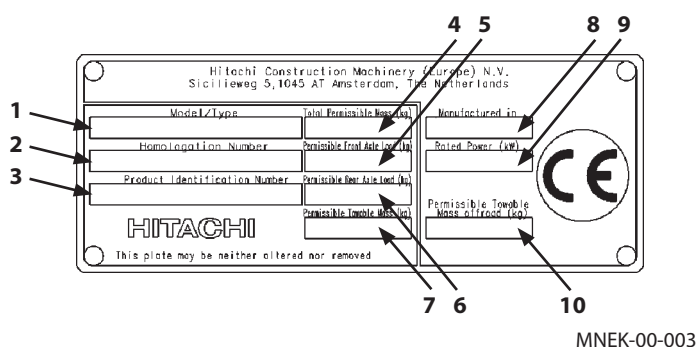
1. Model/Type
2. Homologation Number
3. Product Identification Number
4. Total Permissible Mass (kg)
5. Permissible Front Axle Load (kg)
6. Permissible Rear Axle Load (kg)
7. Permissible Towable Mass (kg)
8. Year of Manufacturing/Manufactured In
9. Rated Power (kW)
10. Permissible Towable Mass Offroad (kg)
11. Tug-Hook Max. Pull (Towing) (N)
12. Tug-Hook Vertical Strain (Lifting) (N)



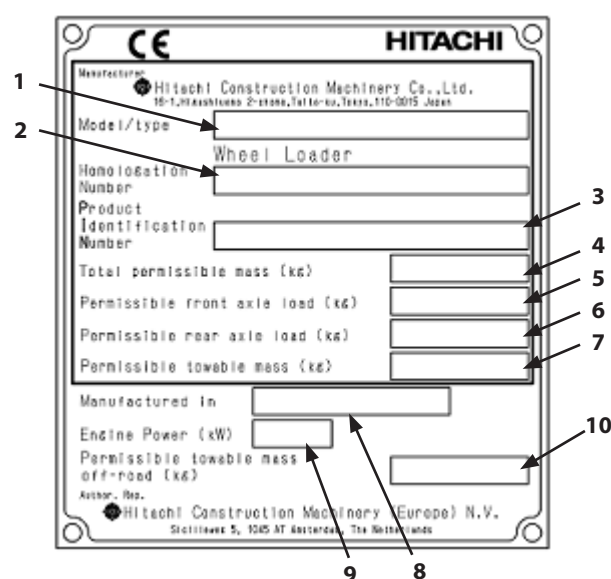
MNFB-00-001



MNHG-00-02K



MNEK-00-003



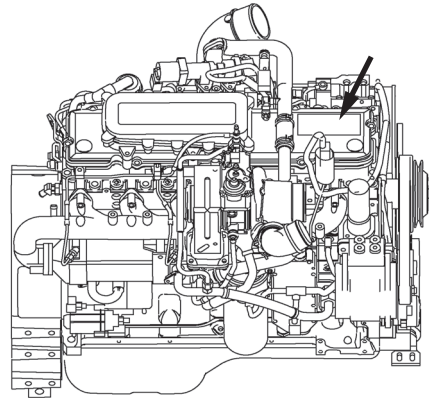
MNHG-00-03K

MACHINE NUMBERS

Engine

TYPE : _____

MFG. NO. : _____



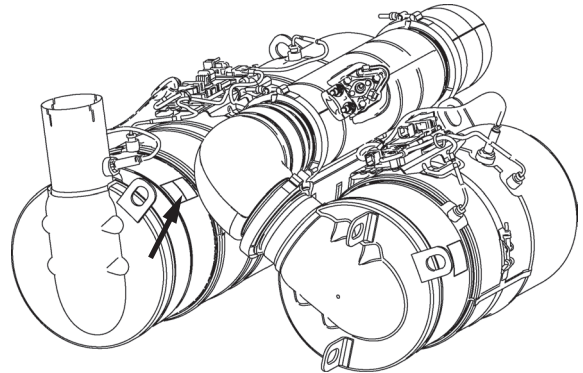
QSL9-4B_plate

Aftertreatment Device

SCR

TYPE : _____

MFG. NO. : _____

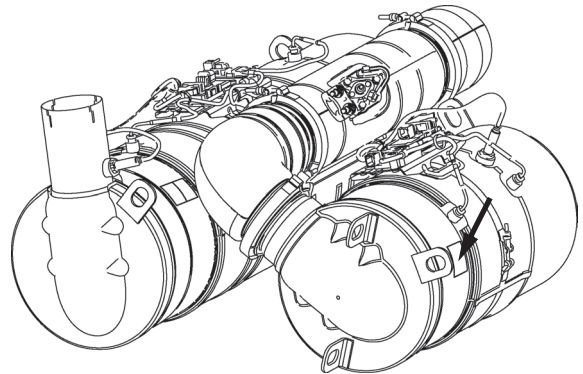


90Z7B_SCR_SN

DOC

TYPE : _____

MFG. NO. : _____



90Z7B_SCR_SN

INTENDED USE

Intended Use

This machine is designed and intended to be used for loading and carrying material with a bucket or working with tools/ attachments described in this manual or approved in writing by the manufacturer.

Risk assessment related to the specific application and working conditions of the machine may require additional safety measures such as protective guards, filtration of cabin air, etc. to be installed, enabling the machine to be operated safely under the specific conditions. Consult your authorized dealer for further information on possibilities to adapt the machine accordingly.

Local regulations and instructions must be respected when using the machine. Using this machine and its equipment for operations other than those intended or approved by the manufacturer, are prohibited.

Modifications

No modification affecting the intended use or structural integrity and therefore safety of the machine should be made without written approval of the manufacturer. Modifications which are not approved include the use of unauthorized accessories, assemblies, parts or attachments, including but not limiting to those connected with a coupling device.

Any legal or natural person performing unapproved modifications to the machine assumes all liability directly or indirectly related to the modification.

The manufacturer reserves the right to reject any warranty claim arising from or related to unapproved modifications.

MEMO

This image shows a full page of a document template. It consists of a series of evenly spaced, horizontal grey lines running across the width of the page. The lines are thin and light in color, providing a guide for writing without being distracting. There are no margins, text, or other markings present on the page.

SAFETY

Recognize Safety Information

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



SA-2644

Understand Signal Words

- On machine safety signs, signal words designating the degree or level of hazard - **DANGER**, **WARNING**, or **CAUTION** - are used with the safety alert symbol.
 - **DANGER** indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 - **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 - **CAUTION** indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 - **DANGER or WARNING safety signs** are located near specific hazards. General precautions are listed on **CAUTION safety signs**.
 - Some safety signs are occasionally used on this machine that do not use any of the designated signal words mentioned above after the safety alert symbol.
- 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 a piece of information.



IMPORTANT

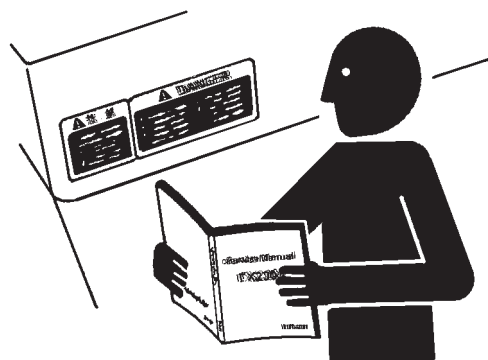


SA-1223

SAFETY

Follow Safety Instructions

- Carefully read and follow all safety signs on the machine and all safety messages in this manual.
- Safety signs should be installed, maintained and replaced when necessary.
 - If a safety sign or this manual is damaged or missing, order a replacement from your authorized dealer in the same way you order other replacement parts (be sure to state machine model and serial number when ordering).
- Learn how to operate the machine and its controls correctly and safely.
- Allow only trained, qualified, authorized personnel to operate the machine.
- Keep your machine in proper working condition.
 - Unauthorized modifications of the machine may impair its function and/or safety and affect machine life.
 - Do not modify any machine parts without authorization. Failure to do so may deteriorate the safety, function, and/or service life of the part. In addition, personal accident, machine trouble, and/or damage to material caused by unauthorized modifications will void Hitachi Warranty Policy.
 - Never attempt to modify or disassemble the inlet/exhaust parts and the aftertreatment device. Avoid shocks to the element of the aftertreatment device, such as striking or dropping objects onto 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

Prepare for Emergencies

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



SA-437

Wear Protective Clothing

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

You may need:

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



SA-438

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

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

SAFETY

Protect Against Noise

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



SA-434

Inspect Machine

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



SA-435

SAFETY

General Precautions for the Cab

- Before entering the cab, thoroughly remove all dirt and/or oil such as mud, grease, soil or stones 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 make a mess around the operator's seat with parts, tools, soil, stones or other, obstacles that may fold up or turn over such as cans or lunch box. The levers or pedals become inoperable if an obstacle jams during the operation stroke of the accelerator pedal, brake pedals, control lever lock switch 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.
- Correctly lay the floor mat specific to the machine. If another floor mat is used, it may be displaced and contact with the accelerator or brake pedals during operation, resulting in serious injury or death.

SAFETY

Use Handrails and Steps

- Falling is one of the major causes of personal injury.
 - When you get on and off the machine, always face the machine and maintain a three-point contact with the steps and handrails.
 - Do not use any controls as handholds.
 - Never jump on or off the machine. Never mount or dismount a moving machine.
 - Before getting on or off the machine, check the condition of the steps and handrails for sticking of slippery material like grease or mud. Thoroughly remove such material if stuck. In addition, repair the damage to the steps and/or handrails. Retighten loose bolts.
 - Never get on and off the machine with tools in your hands.



SA-439

Never Ride Attachment

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

Adjust Operator's Seat

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



SA-462

SAFETY

Ensure Safety Before Rising from or Leaving Operator's Seat

- Before rising from the operator's seat to open / close either side window or to adjust the seat position, be sure to first lower the front attachment to the ground and then move the control lever lock switch to the lock (A) position. Failure to do so may allow the machine to unexpectedly move when a body part unintentionally comes in contact with a control lever, possibly resulting in serious personal injury or death.
- Before leaving the machine, be sure to first lower the front attachment to the ground and then move the control lever lock switch to the lock (A) position. Turn the parking brake switch ON, and turn the key switch OFF to stop the engine.
- Before leaving the machine, close all windows, doors, and access covers and lock them.

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, 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, 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 any problem, replace the problem part(s) or clean the mirror, camera and the monitor.
Refer to Rear View Monitor section for information on cleaning the camera lens and the monitor display.



SA-398

Handle Starting Aids Safely

Starting fluid:

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



SA-293

SAFETY

Operate Only from Operator's Seat

- Inappropriate engine starting procedures may cause the machine to runaway, possibly resulting in serious injury or death.
 - Start the engine only when seated in the operator's seat.
 - Never start the engine while standing on the tire or on ground.
 - Do not start engine by shorting across starter terminals.
 - Before starting the engine, confirm that all control levers are in neutral.
 - Before starting the engine, confirm the safety around the machine and sound the horn to alert bystanders.



SA-431

Jump Starting

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



SA-032

SAFETY

Investigate Job Site Beforehand

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



SA-447

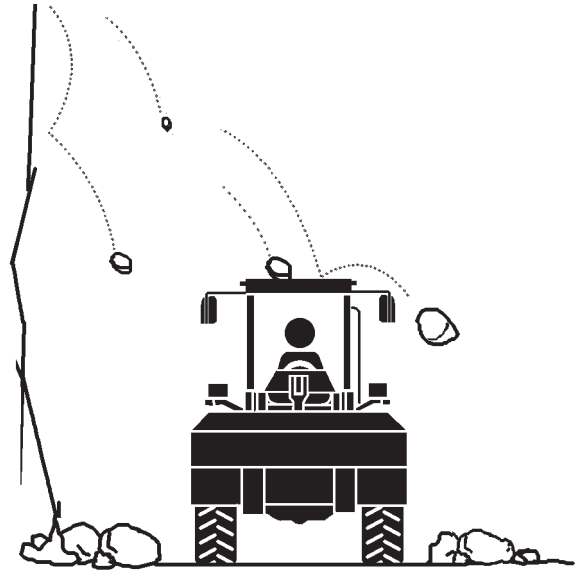
SAFETY

Equipment of Head Guard, ROPS, FOPS

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

ROPS: Roll-Over Protective Structure

FOPS: Falling Object Protective Structure



SA-521

Provide Signals for Jobs Involving Multiple Machines

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



SA-481

SAFETY

Keep Riders Off Machine

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



SA-427

Drive Safely

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

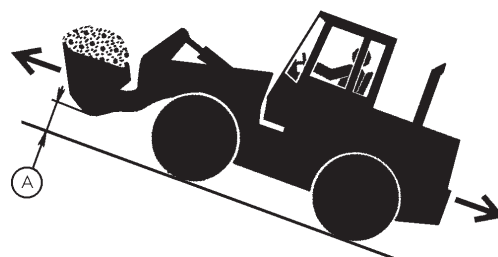


SA-448

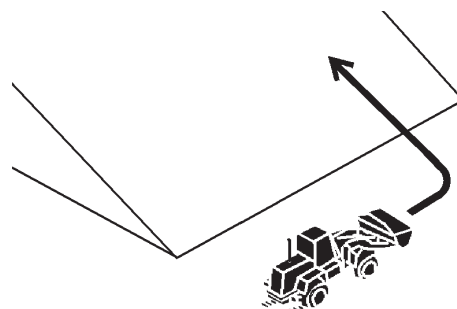
SAFETY

Drive Machine Safely (Work Site)

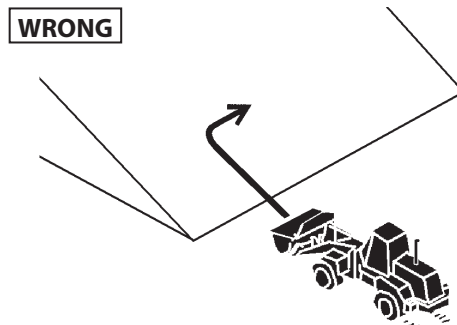
- Before driving the machine, always confirm that the steering wheel / and forward / reverse lever (switch) direction corresponds to the direction you wish to drive.
- Be sure to detour around any obstructions.
- Driving on a slope may cause the machine to slip or overturn, possibly resulting in serious injury or death.
 - When driving up or down a slope, keep the bucket facing the direction of travel, approximately 200 to 300 mm (approximately 8 to 12 in) (A) above the ground.
 - If the machine starts to skid or becomes unstable, immediately lower the bucket to the ground and stop.
- Driving across the face of a slope or steering on a slope may cause the machine to skid or overturn. If the direction must be changed, move the machine to level ground, then, change the direction to ensure safe operation.



SA-449



SA-450



SA-451

SAFETY

Drive Safely with Bucket Loaded

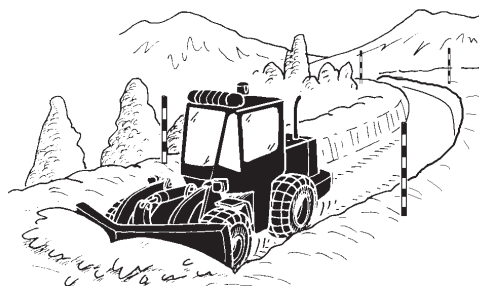
- If the machine is incorrectly operated while driving with the bucket loaded, turning over of the machine may result. Be sure to follow all the instructions indicated below.
 - When driving the machine on a job site with the bucket loaded, hold the bucket as low as possible to keep the machine balanced and to have good visibility.
 - Do not exceed the rated load capacity. Always operate the machine within the rated load capacity.
 - Avoid fast starts, stops, and quick turns. Failure to do so may result in personal injury and/or death.
 - Avoid rapid drive direction changes which could possibly cause personal injury and/or death.



SA-400

Drive on Snow Safely

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



SA-452

SAFETY

Travel on Public Roads Safely

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



SA-453

Avoid Injury from Rollaway Accidents

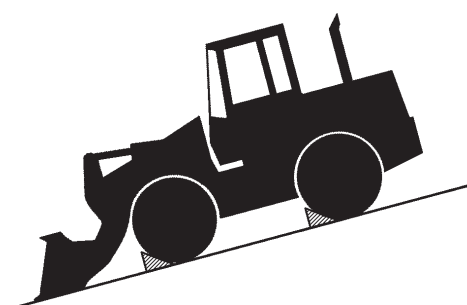
- Death or serious injury may result if you attempt to mount or stop a moving machine.

To avoid rollaways:

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



SA-457



SA-458

SAFETY

Avoid Accidents from Backing Up and Turning

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



SA-383



SA-312

SAFETY

Avoid Positioning Bucket or Attachment Over Anyone

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



SA-518

Avoid Tipping

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

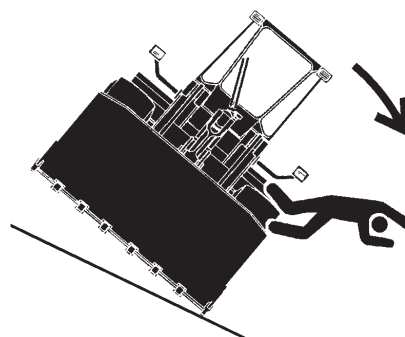
MACHINE WILL TIP OVER FASTER THAN YOU CAN JUMP FREE

FASTEN YOUR SEAT BELT

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

To avoid tipping:

- Be extra careful before operating on a gradient.
 - 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 gradients.
 - If crossing the gradient is unavoidable, never attempt to travel across a gradient steeper than 5 degrees.
 - 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-463

SAFETY

Never Undercut a High Bank

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



SA-519

Dig with Caution

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



SA-396

Perform Truck Loading Safely

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



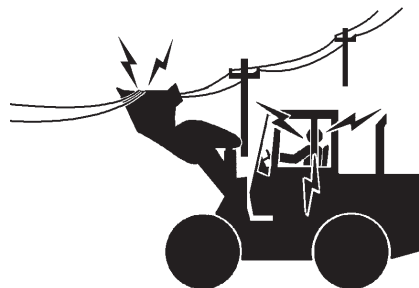
SA-397

SAFETY

Avoid Power Lines

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

When operating near an electric line, never move any part of the machine or load to within 3 m (10 ft) plus twice the line insulator length of overhead wires.



SA-455

Precautions for Operation

- If the front attachment or any part of the machine comes in contact with an overhead obstacle, both the machine and the overhead obstacle may become damaged, and personal injury may result.
 - Take care to avoid coming in contact with overhead obstacles with the bucket or arm during operation.

Precautions for Lightning

- Lightning may strike the machine.

If lightning comes close, immediately stop the operation, and take the following action.

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

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

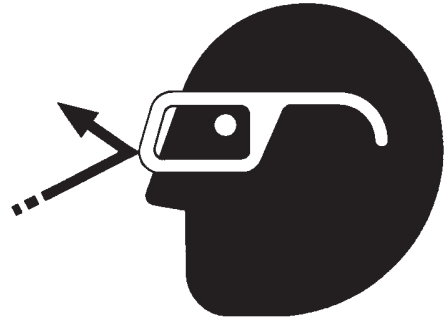


M4GB-05-001

SAFETY

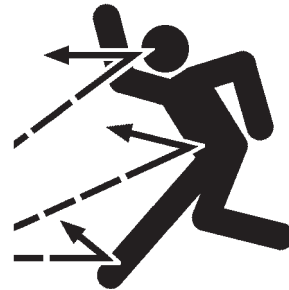
Protect Against Flying Debris and Falling Object

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



SA-432

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



SA-344

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



SA-527

SAFETY

Object Handling

CRANING OPERATION USING THE MACHINE IS NOT ALLOWED.

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

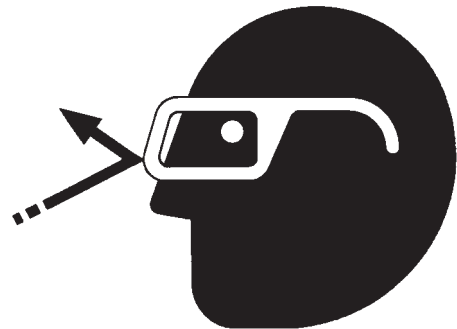
Never attach a sling or chain to the bucket teeth or to the attachment (fork or grapple for example). They may come off, causing the load to fall.



SA-132

Protect Against Flying Debris

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



SA-432

SAFETY

Park Machine Safely

To avoid accidents:

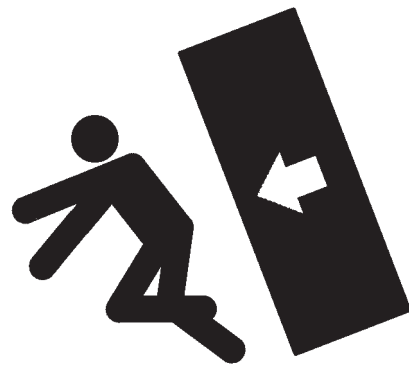
- Park the machine on a firm, level surface.
- Lower bucket to the ground.
- Put the forward / reverse lever (switch) in neutral, and turn the parking brake switch (lever) ON (parking brake) position.
- Run the engine at low idle speed without load for 5 minutes.
- Turn key switch to OFF to stop engine.
- Remove the key from the key switch.
- Turn the control lever lock switch to the lock (🔒) position.
- Close windows, roof vent, and cab door.
- Lock all access doors and compartments.



SA-456

Store Attachments Safely

- Stored attachments such as buckets, hydraulic hammers, and blades can fall and cause serious injury or death.
- Securely store attachments and implements to prevent falling. Keep children and bystanders away from storage areas.

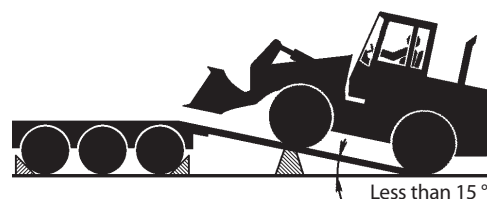


SA-034

SAFETY

Transport Safely

- Be aware care that 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. Use the low speed gear.
 4. Never steer the machine while on the ramp. If the traveling direction must be changed while on the ramp, unload the machine from the ramp, reposition the machine on the ground, then try loading again.
 5. After loading, install the lock bar to securely hold the articulation mechanism.
 6. Wedge the front and rear of tires. Securely hold the machine to the truck or trailer deck with wire ropes.



SA-454

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

SAFETY

Handle Fluids Safely—Avoid Fires

- Handle fuel with care; it is highly flammable. If fuel ignites, an explosion and/or a fire may occur, possibly resulting in serious injury or death.
 - Do not refuel the machine while smoking or when near open flame or sparks.
 - Always stop the engine before refueling the machine.
 - Fill the fuel tank outdoors.
- All fuels, most lubricants, and some coolants are flammable.
 - Store flammable fluids well away from fire hazards.
 - Do not incinerate or puncture pressurized containers.
 - Do not store oily rags; they can ignite and burn spontaneously.
 - Securely tighten the fuel and oil filler caps.



SA-018



SA-019

SAFETY

Practice Safe Maintenance

To avoid accidents:

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

Before servicing the machine:

1. Park the machine on a level surface.
2. Lower the bucket to the ground.
3. Run the engine at low idle speed without load for 5 minutes.
4. Turn the key switch to OFF to stop engine.
5. Relieve the pressure in the hydraulic system by moving the control levers several times.
6. Remove the key from the key switch.
7. Attach a "Do Not Operate" tag on the control lever.
8. Turn the control lever lock switch to the lock (🔒) position.
9. Lock bar connects the front and rear frames.
10. Allow the engine to cool.

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



SA-028



SA-312



SA-134



SA-527

SAFETY

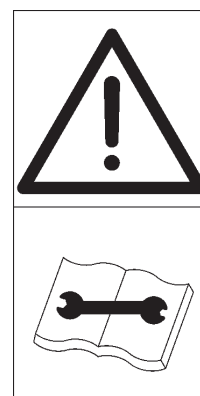
- Sufficiently illuminate the work site. Use a maintenance work light when working under or inside the machine.
- Always use a work light protected with a guard. If the light bulb is broken, spilled fuel, oil, antifreeze fluid, or window washer fluid may catch fire.



SA-037

Warn Others of Service Work

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



SS2045102-4

Support Machine Properly

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

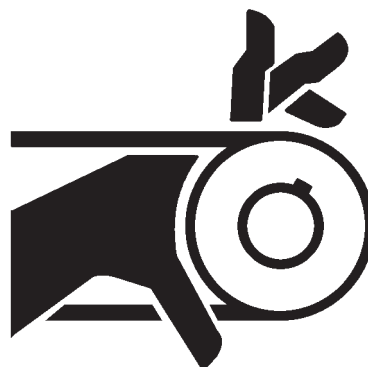


SA-527

SAFETY

Stay Clear of Moving Parts

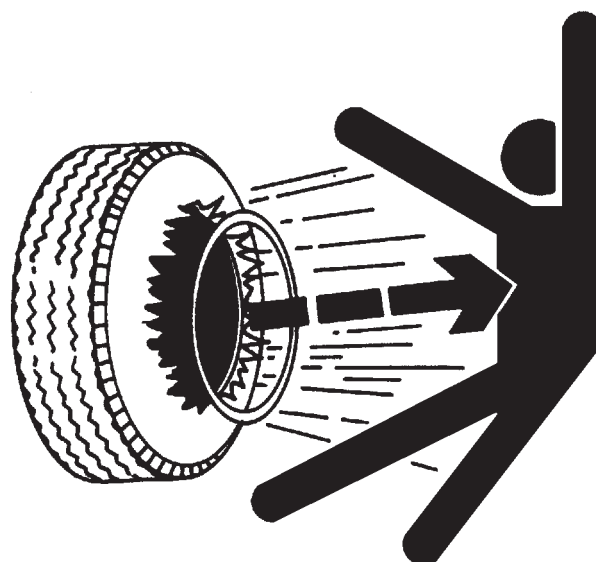
- Entanglement in moving parts can cause serious injury.
- To prevent accidents, care should be taken to ensure that hands, feet, clothing, jewelry and hair do not become entangled when working around rotating parts.



SA-026

Support Maintenance Properly

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



SA-249

SAFETY

Prevent Parts from Flying

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



SA-344

Prevent Burns

Hot spraying fluids:

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



SA-039

Hot fluids and surfaces:

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



SA-225

SAFETY

Replace Rubber Hoses Periodically

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



SA-019

Avoid High-Pressure Fluids

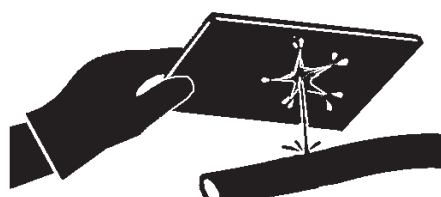
- Fluids such as diesel fuel or hydraulic oil under pressure can penetrate the skin or eyes causing serious injury, blindness or death.
- Avoid this hazard by relieving pressure before disconnecting hydraulic or other lines.
- Tighten all connections before applying pressure.
- Search for leaks with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



SA-031



SA-292



SA-044

SAFETY

Prevent Fires

Check for Oil Leaks:

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



SA-019

Check for Shorts:

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

SAFETY

Clean up Flammable Materials:

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

Check Key Switch:

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

Check Heat Shields:

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

SAFETY

Evacuating in Case of Fire

- If a fire breaks out, evacuate the machine in the following way:
 - Stop the engine by turning the key switch to the OFF position if there is time.
 - Use a fire extinguisher if there is time.
 - Exit the machine.
- In an emergency, if the cab door 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.



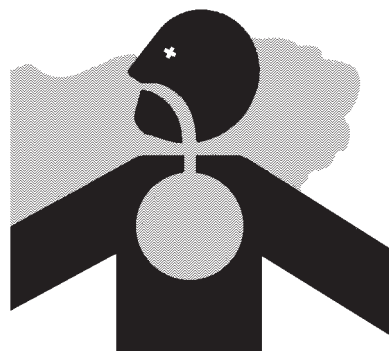
SA-393



SS-1510

Beware of Exhaust Fumes

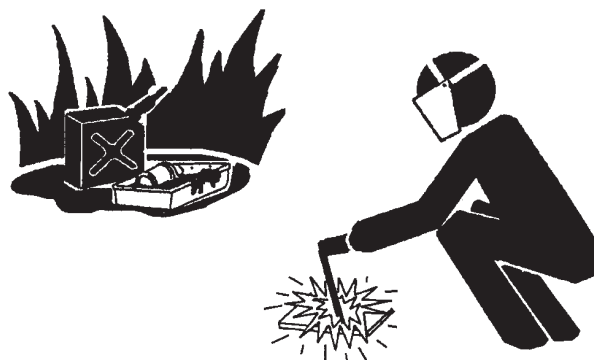
- Prevent asphyxiation. Engine exhaust fumes can cause sickness or death.
- If you must operate in a building, be sure there is adequate ventilation. Either use an exhaust pipe extension to remove the exhaust fumes or open doors and windows to bring enough outside air into the area.
- PM (Particle Matter)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



SA-016

Precautions for Welding and Grinding

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



SA-818

SAFETY

Avoid Heating Near Pressurized Fluid Lines

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



SA-030

Avoid Applying Heat to Lines Containing Flammable Fluids

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

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 of the unit, sealed gas must be released. Consult your nearest Hitachi dealer.

SAFETY

Remove Paint Before Welding or Heating

- Hazardous fumes can be generated when paint is heated by welding, soldering, or using a torch. If inhaled, these fumes may cause sickness.
 - Avoid potentially toxic fumes and dust.
 - Do all such work outside or in a well-ventilated area. Dispose of paint and solvent properly.
 - Remove paint before welding or heating:
- 1. If you sand or grind paint, avoid breathing the dust.
Wear an approved respirator.
- 2. If you use solvent or paint stripper, remove stripper with soap and water before welding. Remove solvent or paint stripper containers and other flammable material from area. Allow fumes to disperse at least 15 minutes before welding or heating.



SA-029

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



SA-029

SAFETY

Prevent Battery Explosions

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



SA-032

Service Air Conditioning System Safely

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



SA-405

SAFETY

Handle Chemical Products Safely

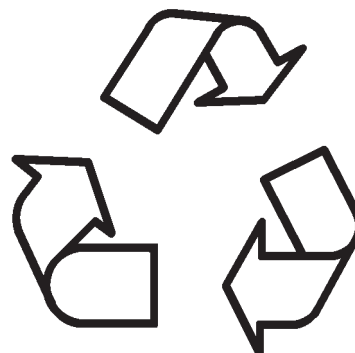
- Direct exposure to hazardous chemicals can cause serious injury. Potentially hazardous chemicals used with your machine include such items as lubricants, coolants, paints, and adhesives.
- A Safety Data Sheet (SDS) provides specific details on chemical products: physical and health hazards, safety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



SA-2579

Dispose of Waste Properly

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

Notes on Aftertreatment Device

About Aftertreatment Device

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

 **WARNING: Exhaust gas from the aftertreatment device, muffler, exhaust piping and tail piping becomes hot during and right after engine running and regeneration of aftertreatment device. Keep away from the exhaust system or hot gas from the exhaust piping during regeneration. Be careful to avoid skin contact with exhaust gas. It may cause severe burns.**

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

Precautions for Communication Terminal

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

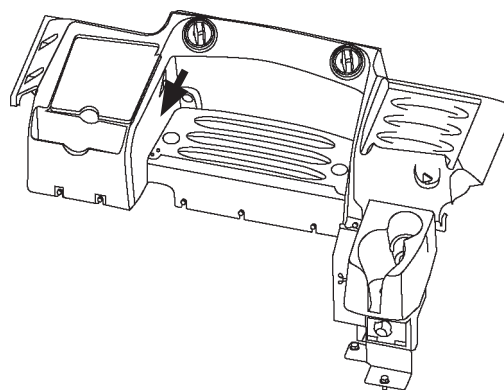
SAFETY

Precaution for Communication Terminal Equipment

This machine has a communication terminal equipment emitting electrical waves installed inside the rear tray situated at the back of the operator's seat. There is a possibility that a medical device, including an implantable device such as a cardiac pacemaker, could be affected and malfunction due to the electrical waves emitted from the communication terminal equipment.

Any person fitted 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 this condition cannot be met, please contact your authorized dealer and have the person in charge stop the communication terminal equipment from functioning completely and confirm that it is not emitting electrical waves. This machine is equipped with a communication terminal type A or type B.

Consult your nearest authorized dealer for the type of communication terminal.



MNEC-01-046

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

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

* 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).

SAFETY

- Never attempt to disassemble, repair, modify or displace the communication terminal, antennas or cables. Failure to do so may result in damage and/or fire to the base machine or to the communication terminal. (When required to remove or install the communication terminal, consult your nearest Hitachi dealer.)
- Do not pinch or forcibly pull cables, cords or connectors. Failure to do so may cause a short or broken circuit that may result in damage and/or fire to the base machine or to the communication terminal.

VISIBILITY MAP

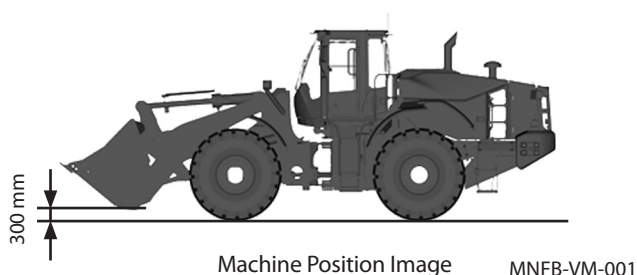
Visibility Map for Machine Model ZW310-6 series Personal Hazard

This machine complies with the essential health and safety requirements for visibility set out by Machinery Directive 2006/42/EC. The map shows the residual maskings (blind spots) observed by a seated operator (wearing the recommended seat restraint) in the cab using direct vision and the standard visual aids supplied with the machine. Additionally, operators are encouraged to adjust the mirrors provided to the machine to show the area as shown below.

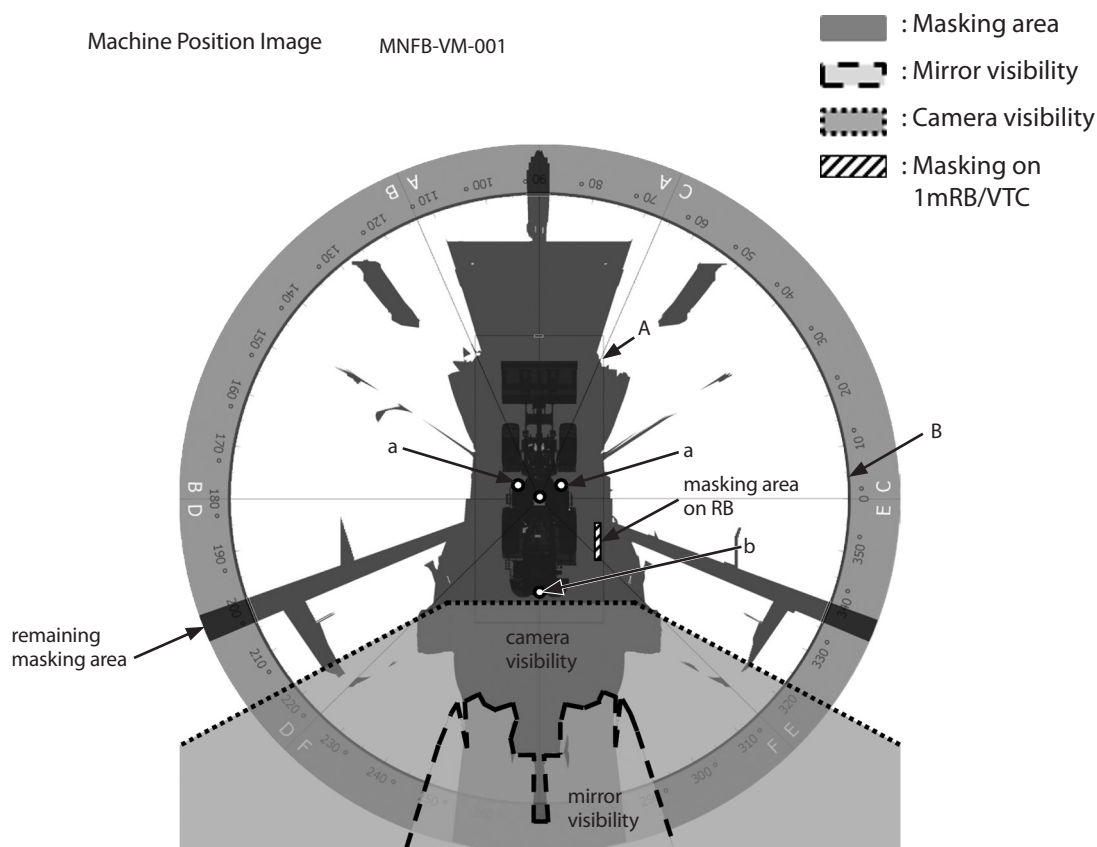
This map shows an approximation of the residual masking. This can be used as a guide when conducting a site risk assessment, utilized for site management and to consider additional visual aids.

Conditions: Driver's visibility on 1mRB and VTC are evaluated under ISO 5006.

Test Height (on 1mRB):	1.2 m to 1.5 m
(1mRB to VTC/on VTC):	Ground Level
Operator eye Height:	1.2 m from the cab floor
Machine Configuration:	Standard/High lift arm
Machine Position:	Travel Position (For the detail position, see the image below)
Applicable visual aids:	1. standard mirror (s) 2. standard rear view camera



- : Operator's eye point
- A : 1 m Rectangular Boundary (1mRB)
- B : 12 m Visibility Test Circle (VTC)
- a : Standard Mirror (s)
- b : Standard rear view camera



Visibility Map

MNFB-VM-002

VISIBILITY MAP

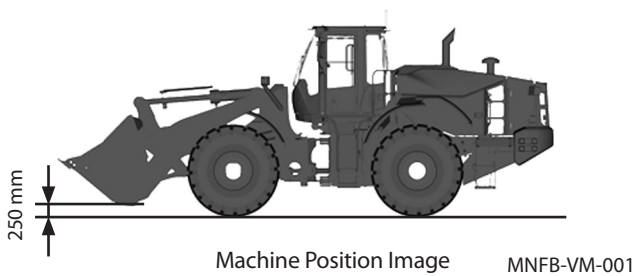
Visibility Map for Machine Model ZW330-6 series Personal Hazard

This machine complies with the essential health and safety requirements for visibility set out by Machinery Directive 2006/42/EC. The map shows the residual maskings (blind spots) observed by a seated operator (wearing the recommended seat restraint) in the cab using direct vision and the standard visual aids supplied with the machine. Additionally, operators are encouraged to adjust the mirrors provided to the machine to show the area as shown below.

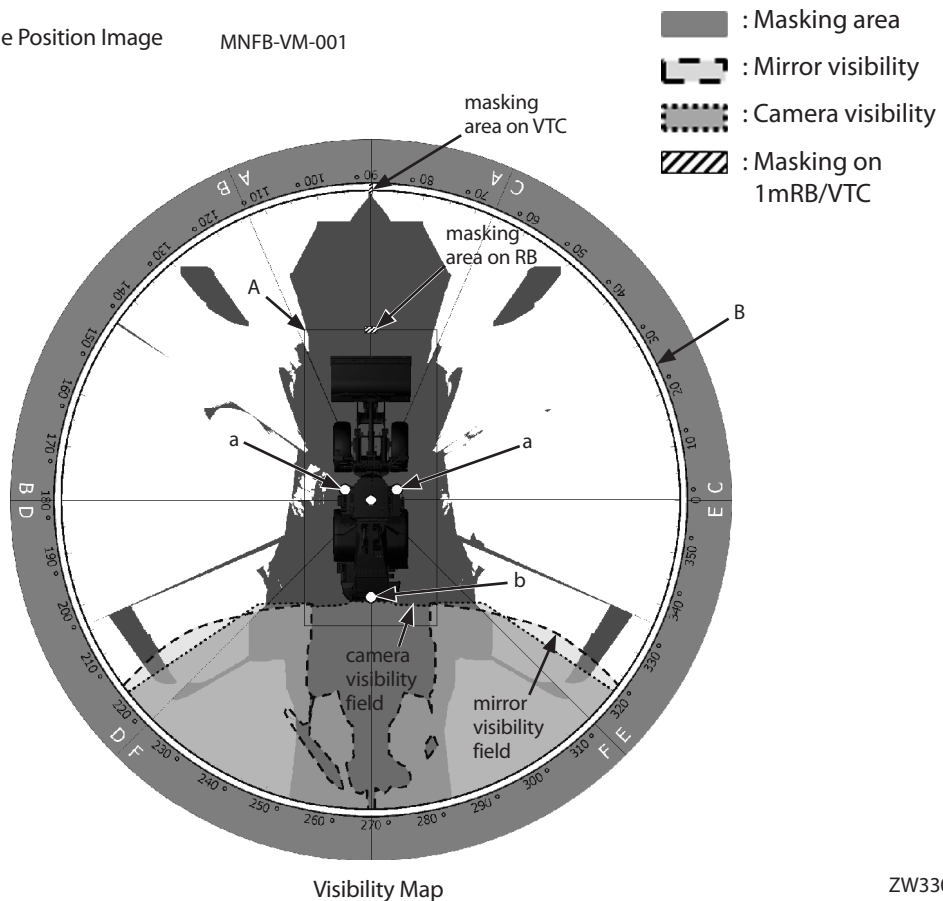
This map shows an approximation of the residual masking. This can be used as a guide when conducting a site risk assessment, utilized for site management and to consider additional visual aids.

Conditions: Driver's visibility on 1mRB and VTC are evaluated under ISO 5006.

Test Height (on 1mRB):	1.2 m to 1.5 m
(1mRB to VTC/on VTC):	Ground Level
Operator eye Height:	1.2 m from the cab floor
Machine Configuration:	Standard/High lift arm
Machine Position:	Travel Position (For the detail position, see the image below)
Applicable visual aids:	1. standard mirror (s) 2. standard rear view camera



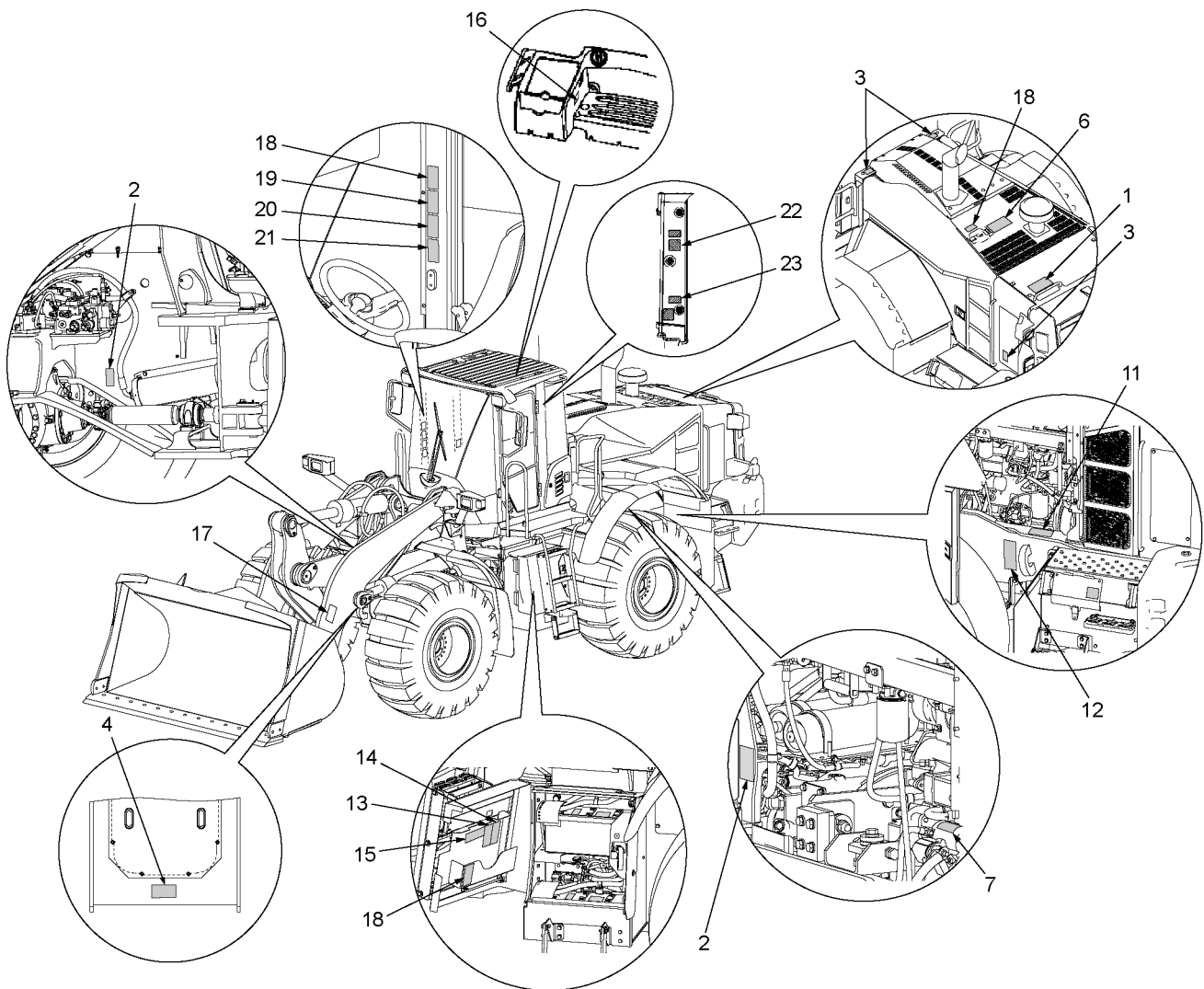
- : Operator's eye point
- A : 1 m Rectangular Boundary (1mRB)
- B : 12 m Visibility Test Circle (VTC)
- a : Standard Mirror (s)
- b : Standard rear view camera



SAFETY SIGNS

All safety signs and their locations affixed on the machine are illustrated in this section. Make sure of the contents described in the safety signs by reading the actual signs affixed on the machine, to ensure safe machine operation. Always keep the safety signs clean. If a safety sign is broken or lost, immediately, obtain a new replacement and affix it again in position on the machine. Use the part number indicated under the right corner of each safety sign illustration when placing an order of it to the Hitachi dealer.

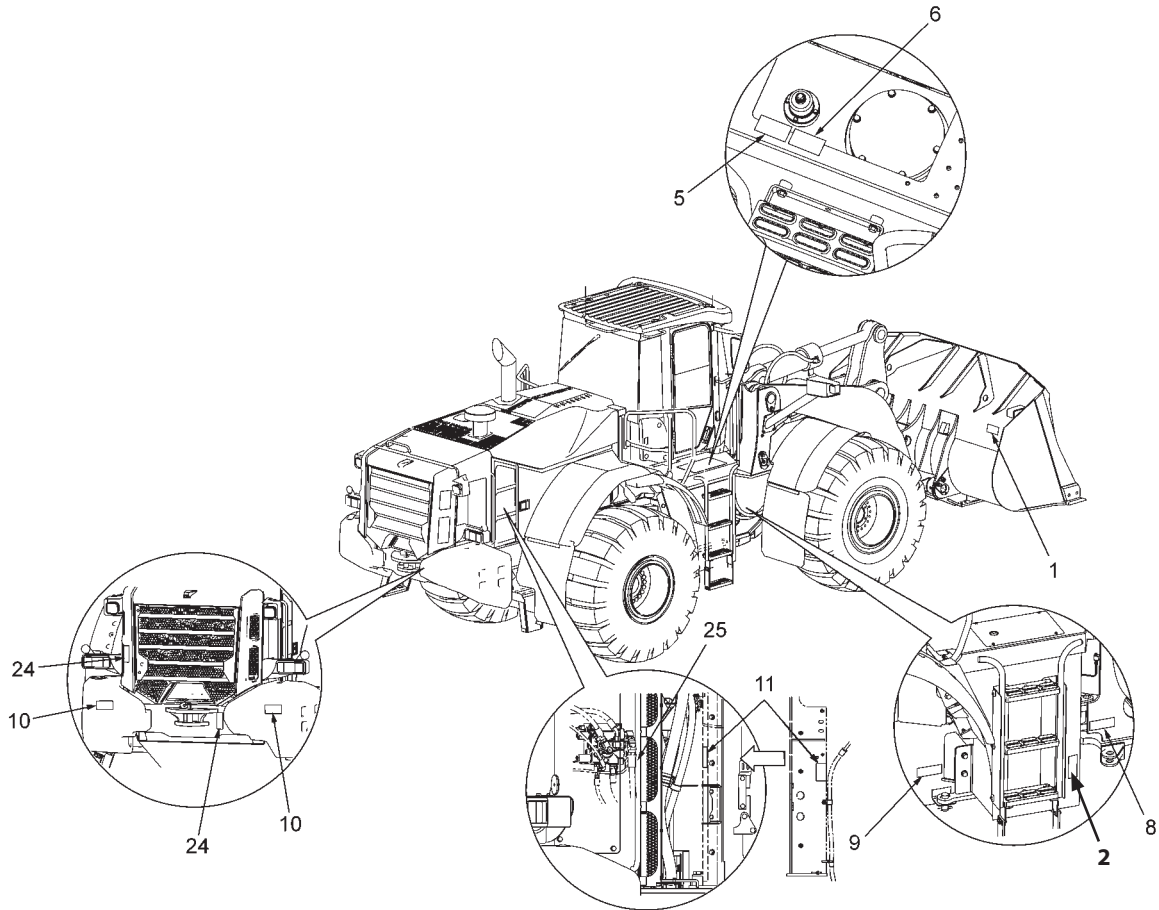
ZW310-6



90Z7B_SS-3770

SAFETY SIGNS

ZW310-6

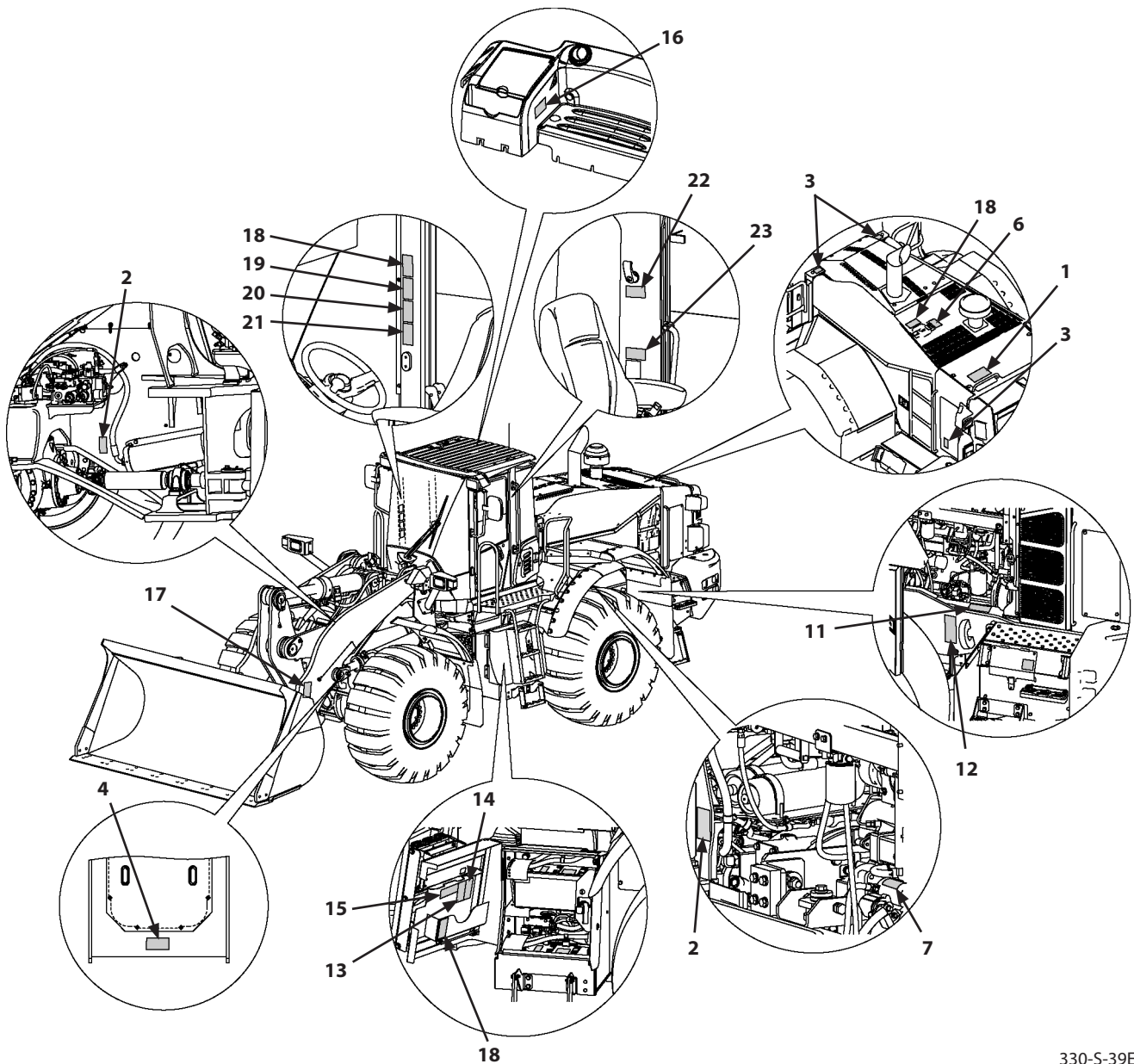


SS-3777

SAFETY SIGNS

All safety signs and their locations affixed on the machine are illustrated in this section. Make sure of the contents described in the safety signs by reading the actual signs affixed on the machine, to ensure safe machine operation. Always keep the safety signs clean. If a safety sign is broken or lost, immediately, obtain a new replacement and affix it again in position on the machine. Use the part number indicated under the right corner of each safety sign illustration when placing an order of it to the Hitachi dealer.

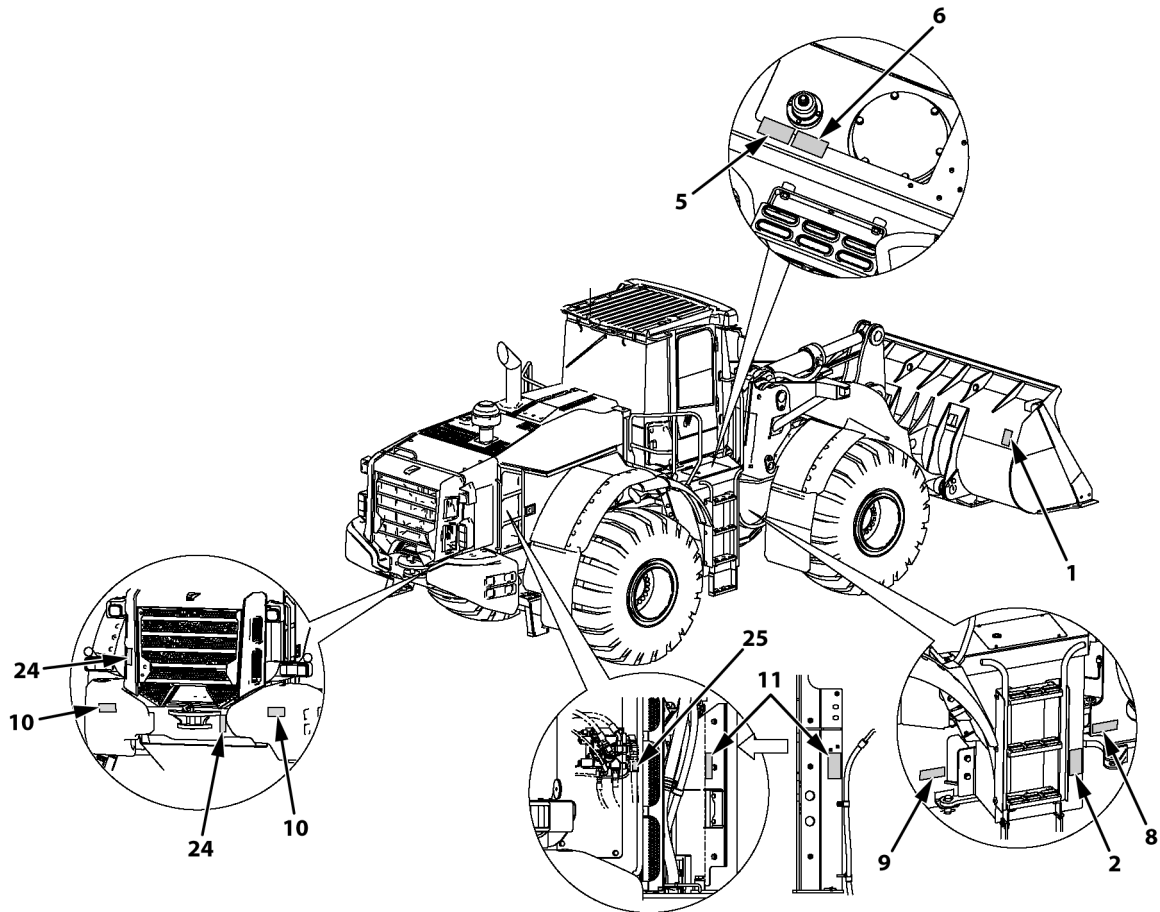
ZW330-6



330-S-39EU

SAFETY SIGNS

ZW330-6



92Z7B-S-40EU

SAFETY SIGNS

1. Bucket and Hood

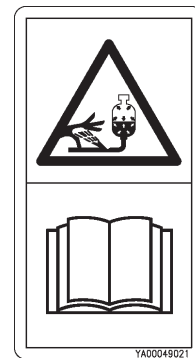
Sign indicates a hazard of falling. Do not step on or stand in this area.



SS3092126-2

2. Accumulator residual pressure

High-pressurized gas is enclosed. Never perform welding and/or torch cutting, and keep away from open flames and heat. Do not try to disassemble it. Refer to the Operator's Manual for the correct removal/installation.



SSYA00049021

3. Both Sides of Oil Cooler and Engine Housing

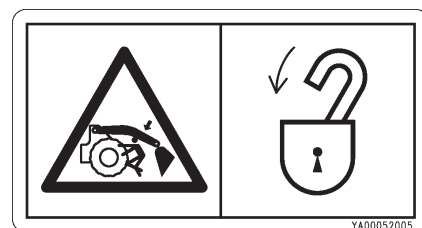
Avoid skin contact with highly heated parts such as the engine, muffler, etc. immediately after operation of the machine. Severe burns may result. Do not touch until cool.



SSYA00051986-1

4. Front Maintenance Access Cover for Front Frame

The front attachment may automatically be lowered, possibly resulting in personal injury. Lower the front attachment to the ground before inspecting/maintaining the machine. In case inspection and/or maintenance work must unavoidably be performed with the front attachment raised, lock the front attachment control levers in position. Then, securely support the front attachment with safety supports and/or blocks.



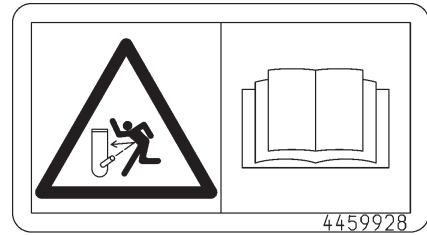
SSYA00052005

SAFETY SIGNS

5. Top of Hydraulic Oil Tank

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.



SS4459928-1

6. Top of Coolant Reservoir Tank and Hydraulic Tank

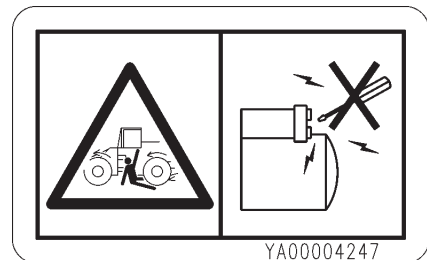
Sign indicates a burn hazard from spurting hot water or oil if coolant reservoir or hydraulic tank is uncapped while hot. Allow radiator or hydraulic tank to cool before removing cap.



SS4420336-3

7. Side of Engine Starter

If the engine is following an incorrect method, the machine may suddenly start to move. Start the engine from the operator's seat only.

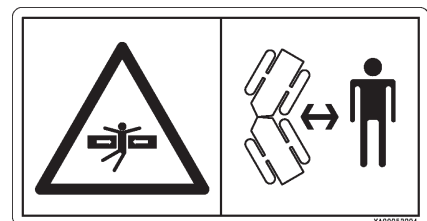


SSYA00004247-1

8. Both Sides of Front Frames

The articulation area becomes a pinch point when steering the machine.

Keep all personnel away from the articulation area during operation of the machine.

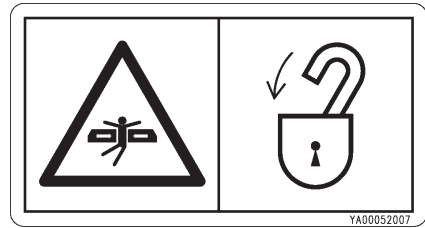


SSYA00052004

SAFETY SIGNS

9. Articulation Lock Bar

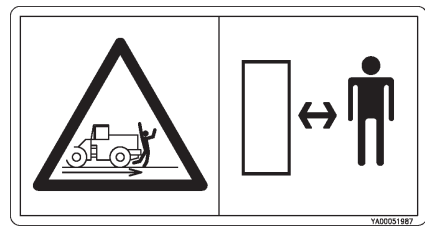
The articulation area becomes a pinch point when steering the machine. Keep all personnel away from the articulation area during operation of the machine.



SSYA00052007

10. Both Sides of Counterweight

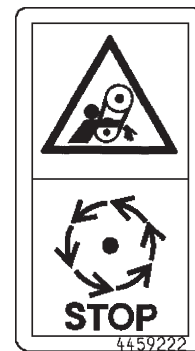
Avoid injury from backing-over accident. Keep everyone away from the machine during operating.



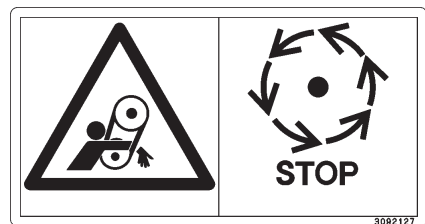
SSYA00051987

11. Both Sides Bottom of Rear Frame Side Cover

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



SS4459222-1



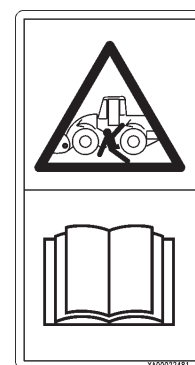
SS3092127-1

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

Machine movement, if engine starts in gear, could result in death or serious injury.

- Do not start engine by shorting across starter terminals.
- Do not start engine while standing on ground.

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



SSYA0002481-2

SAFETY SIGNS

13. Inside Battery Box (Center)

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



SS4460056-2

14. Inside Battery Box (Inward)

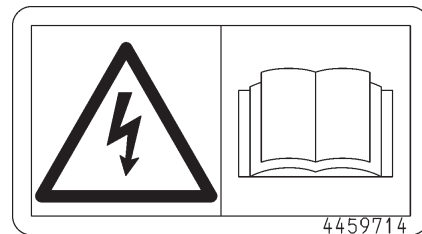
Sign indicates an explosion hazard. Keep fire and open flames away from this area.



SS4460067-2

15. Inside Battery Box (Outward)

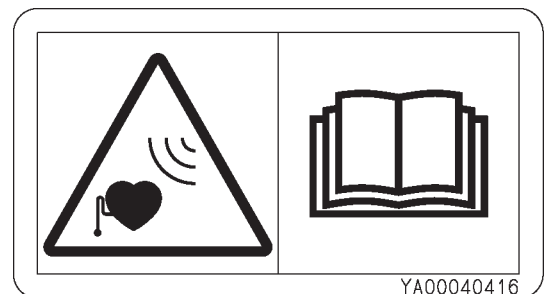
Sign indicates an electrical hazard from handling battery terminals. Read manual for safe and proper handling.



SS4459714-1

16. Cab Inside Rear Console

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

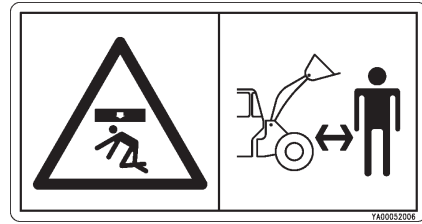


SSYA00040416

SAFETY SIGNS

17. Both Sides of Lift Arm

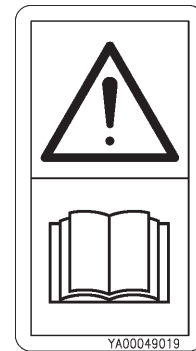
During operation, loads may spill from the bucket and/or the bucket may suddenly fall. Keep everyone far away from the machine during operation.



SSYA00052006

18. Cab Inside Right Front Column (First safety sign from the top), Inside Battery Box, On Hood

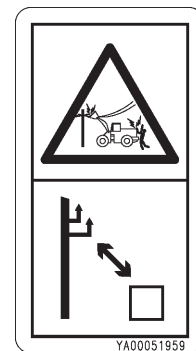
Prior to operation, maintenance, disassembling, and transportation of the machine, be sure to read and understand the Operator's Manual.



SSYA00049019

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

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



SSYA00051959

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

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



SSYA00049020

SAFETY SIGNS

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

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



SSYA00049023

22. Cab Inside Left Rear Column

If the steering system is abnormal, the emergency steering system is activated so that steering operation can be achieved on a temporary basis. The steering wheel will become hard to rotate but it is operable. Immediately park the machine in a safe location.

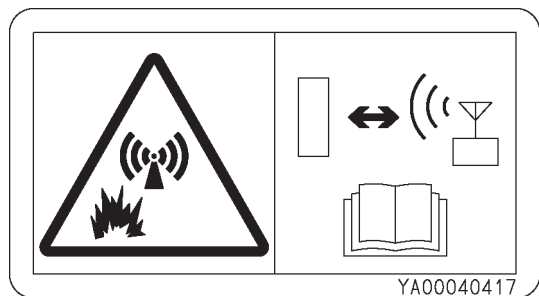
If the machine is operated with the abnormal steering system, serious accident may result.



SSYA00051965

23. Cab Inside Left Rear Column

Communication terminal can cause accidental bombing at the blasting site. Keep the machine apart from the blasting site and an electric detonator to maintain a safe distance.



SSYA00040417

SAFETY SIGNS

24. Both Right and Left Side of Engine Housing Frame

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



SS4672424-2

25. Inside the Right Side Cover Fan Motor Hose

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

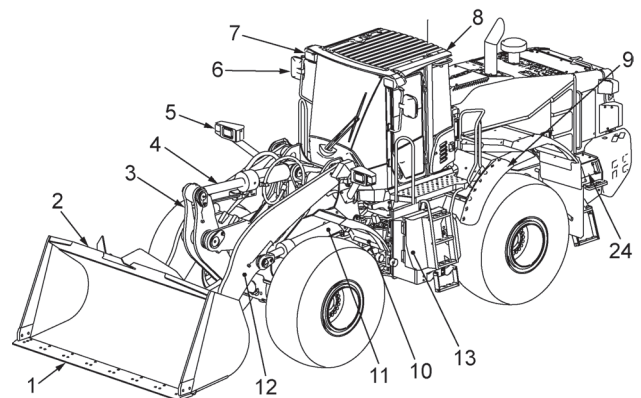


SS263G912601-1

NAME OF COMPONENTS

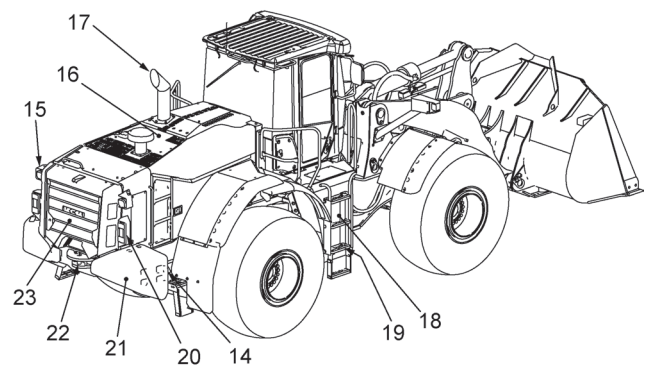
Name of Components

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



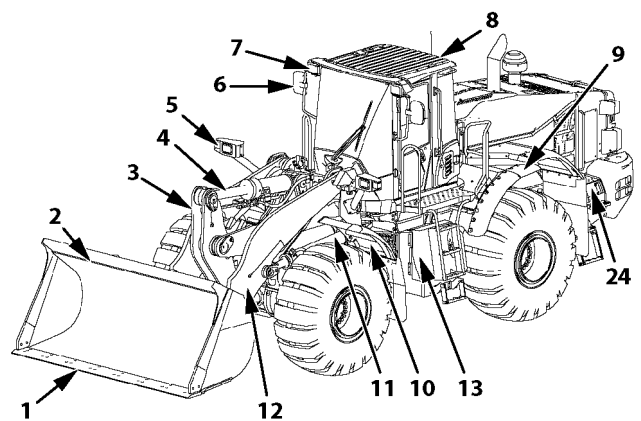
ZW310-6

90Z7B-1-1-1



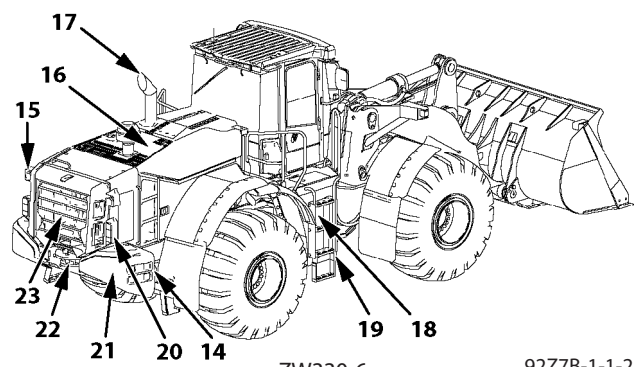
ZW310-6

90Z7B-1-1-2



ZW330-6

92Z7B-1-1-1



ZW330-6

92Z7B-1-1-2

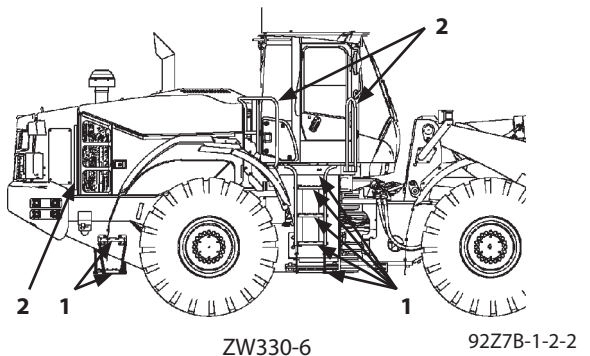
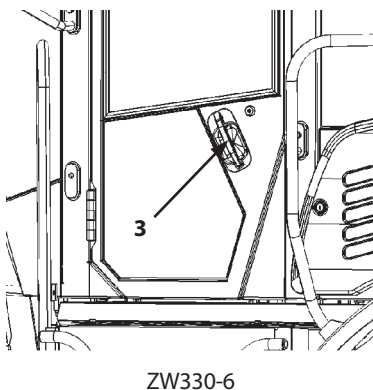
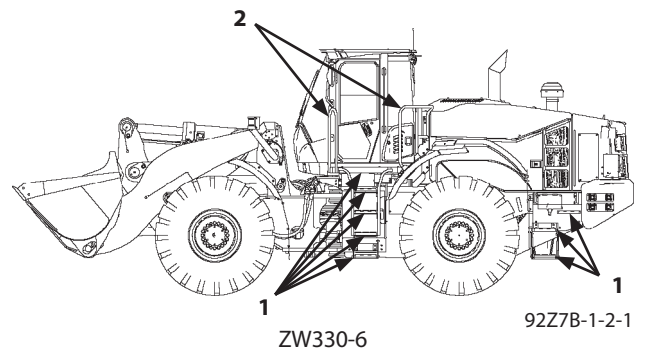
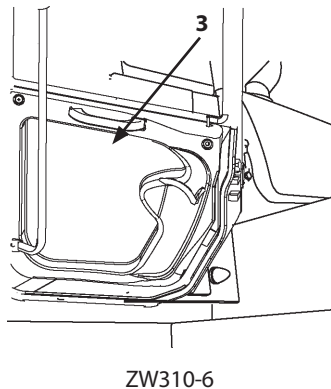
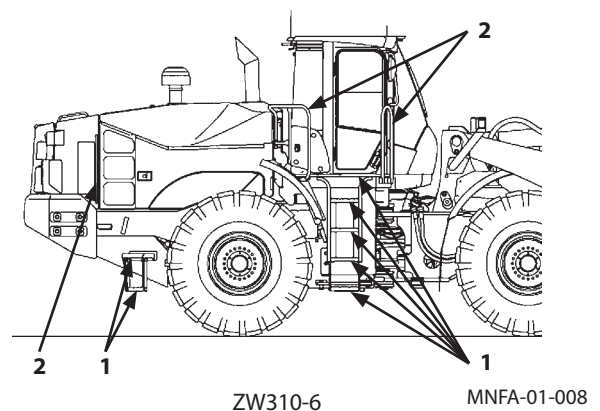
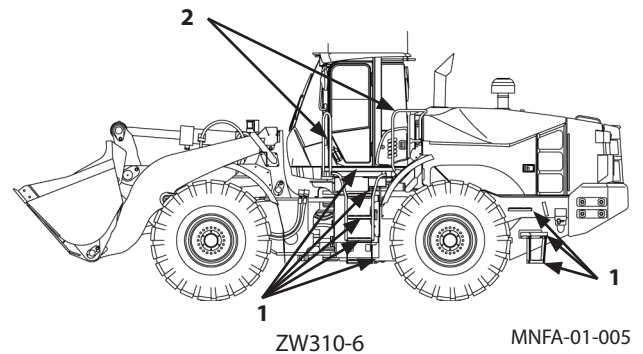
GETTING ON AND OFF THE MACHINE

Getting ON and OFF the Machine

Footholds (1) and handrails (2) are provided around the machine for safe entry and exit to the cab. These are used to get on and off the cab safely as well as to do inspection and maintenance. Never jump on or off the machine, it is very dangerous.

WARNING:

- When lifting the cab/main body or transporting the machine, never attach wire to footholds (1).
- The door handle (3) is not a handrail. Do not hold the door handle (3) as a handrail when getting on and off the machine.
- Do not hold the steering wheel, forward/reverse lever or control levers when getting on and off the machine.
- For machines equipped with joystick steering (optional), put the left console in the disabled position before getting in and out of the machine. For information on operating joystick steering (optional), refer to the section “Joystick Steering” in Chapter 13.



OPERATOR'S STATION

About Aftertreatment Device

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

WARNING:

- **Exhaust gas from the aftertreatment device, muffler, exhaust piping and tail piping becomes hot during and just after engine running and regeneration of aftertreatment device. Pay attention not to let your skin contact any part of exhaust system or hot gas from the exhaust piping, as it may cause severe burns.**
- **If flammable materials such as dead leaves or paper scraps are around the aftertreatment device, they may cause a fire.**
- **To avoid burns, stop the engine and make sure the engine has sufficiently cooled down before performing maintenance.**

IMPORTANT:

- **Be sure to use fuel that complies with JIS K-2204, EN-590 or ASTM D-975 that contains 15 ppm or lower sulfur. If the fuel described above is not used, exhaust gas that exceeds regulation values may be discharged and serious engine problems may occur.**
- **Refill DEF/AdBlue® which meets Japanese Industrial Standards (JIS) or International Organization for Standardization (ISO). If improper liquid (diesel oil, kerosene or gasoline) is refilled in the DEF/AdBlue® tank, fire or system failure may result.**
- **Use only genuine Hitachi engine oil. Using engine oil other than Hitachi genuine oil may result in malfunction of the aftertreatment device.**
- **Do not mix poor quality diesel fuel, drainage agents, fuel additives, gasoline, kerosene, alcohol, or any other type of lubricating oil with specified diesel fuel. Improper fuel usage may deteriorate performance of fuel filters, can cause problems in the lubricated parts of the injector. It can also affect the engine parts and aftertreatment device, 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, aftertreatment device and the exhaust piping. Also never attempt to disassemble the aftertreatment device. Avoid giving shocks on the aftertreatment device by striking elements with other objects or dropping the device. Failure to do so may affect the aftertreatment device, possibly damaging it or lowering its performance.**
- **White smoke may be generated during the aftertreatment device regeneration. Do not attempt to perform a manual regeneration in a poorly ventilated area.**
- **Consult your authorized dealer for checking or repairing the aftertreatment device.**

NOTE:

- *White deposits may accumulate inside the aftertreatment device. The aftertreatment device is automatically regenerated to remove accumulated white deposits at regular intervals. It is called auto-regeneration. The auto-regeneration may start during operation of the machine; you can continue to operate the machine. (Refer to the page 1-33)*
- *Do not stop the engine during regeneration unless absolutely necessary.*
- *The auto-regeneration may be terminated depending on the machine operating condition.*
- *Usually, auto-regeneration starts 60 hours after the previous regeneration (either auto or manual).*

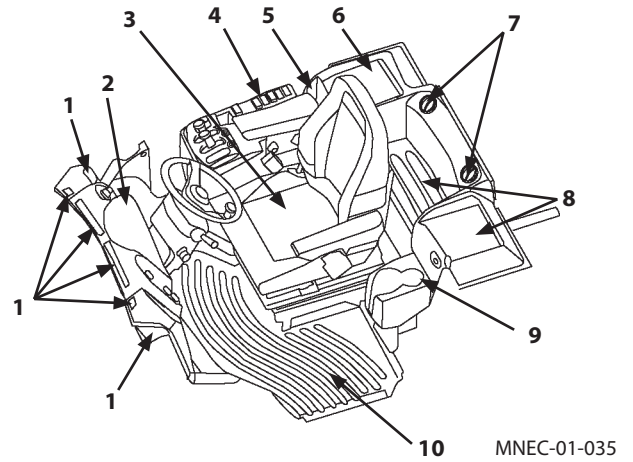
OPERATOR'S STATION

- *If auto regeneration did not complete, an aftertreatment device regeneration request will blink on the monitor. (Refer to the page 1-34) Perform manual regeneration following the specified procedure. (Refer to the page 1-35)*
- *When the machine is operated without performing manual regeneration, the aftertreatment device may be damaged. Immediately move the machine to a safe area and perform manual regeneration.*
- *Both auto and manual regenerations restore aftertreatment device function. It is not a malfunction.*
- *White smoke may be emitted for several minutes after the engine starts, this is not a malfunction.*

OPERATOR'S STATION

Cab Features

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

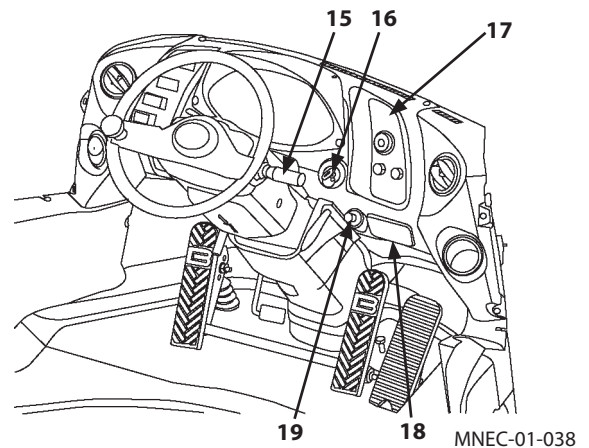
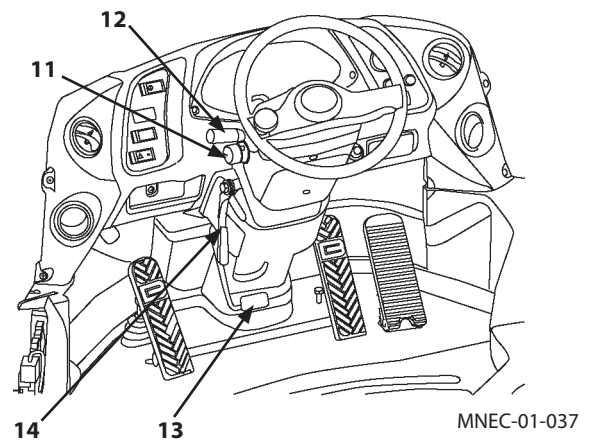
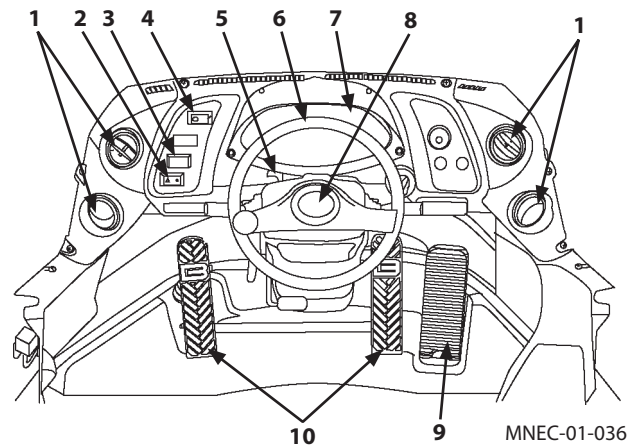


MNEC-01-035

OPERATOR'S STATION

Front Console

- 1- Air Conditioner Front Vent
- 2- Hazard Switch
- 3- Work Light Switch
- 4- Parking Brake Switch
- 5- Neutral Lever Lock (Forward/Reverse Lever)
- 6- Steering Wheel
- 7- Monitor Panel
- 8- Horn Switch
- 9- Accelerator Pedal
- 10- Brake/Clutch Cut Pedal (Both right and left sides are interlocked.)
- 11- Front/Rear Wiper Switch
- 12- Forward/Reverse Lever/Shift Switch
- 13- Steering Column Pop-up Pedal
- 14- Tilt, Telescopic Lever
- 15- Turn Signal Lever/Light Switch/High-Low Beam Switch
- 16- Key Switch
- 17- Multi Function Monitor/Air Conditioner Switch Panel
- 18- Ash Tray
- 19- Cigar Lighter

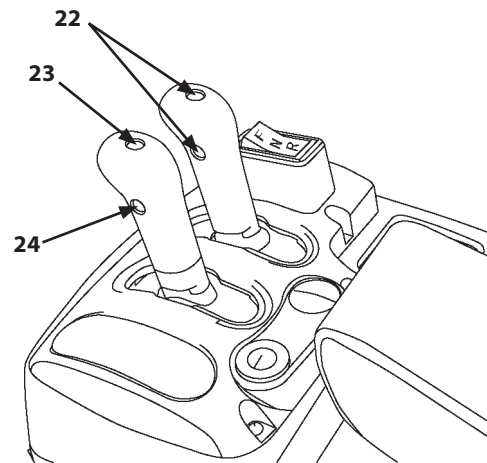
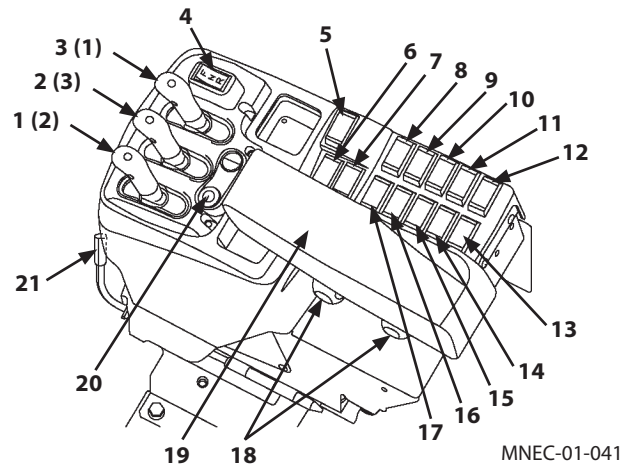


OPERATOR'S STATION

Right Console

Fingertip Control Type

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



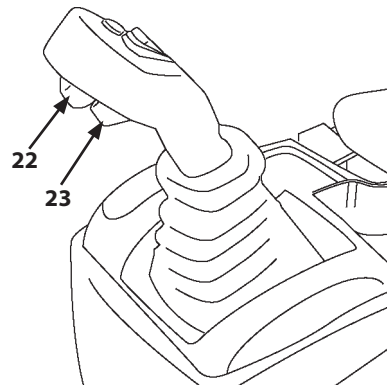
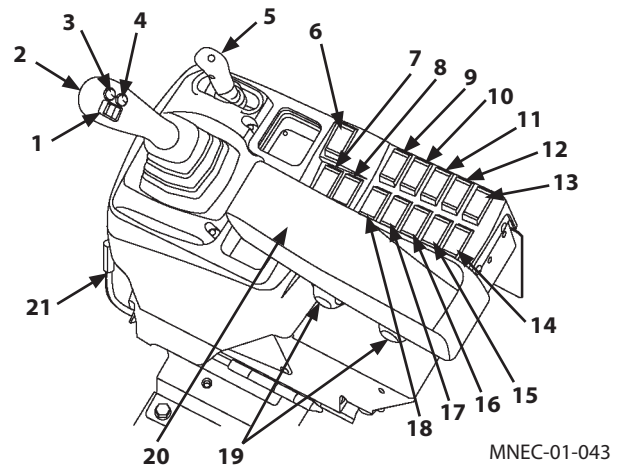
 **NOTE:** * The location of control levers may be changed depending on the specification.

OPERATOR'S STATION

Right Console

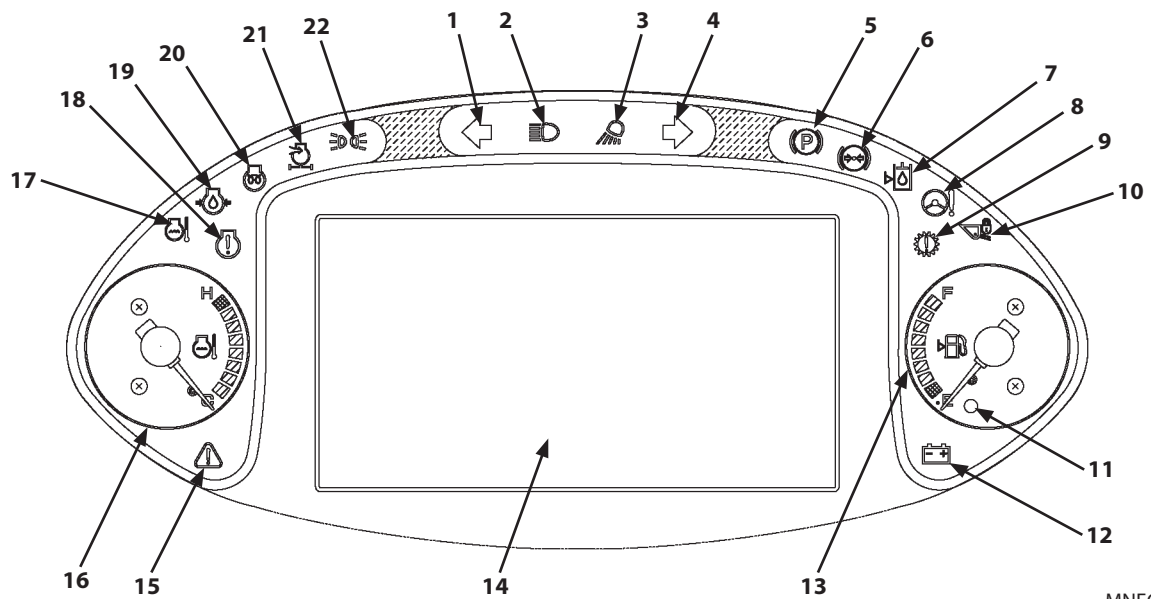
Multi-Function Joystick Type

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



OPERATOR'S STATION

Monitor Panel



MNEC-01-001

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

OPERATOR'S STATION

Parking Brake Indicator (Red)

The parking brake indicator will light when the parking brake is applied.

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



M4GB-01-012

Brake Oil Low Pressure Indicator (Red)

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

If the brake oil pressure becomes low, the brake oil low pressure indicator and the service indicator will light, and the alarm buzzer will sound.

Immediately move the machine to a safe area, set the machine in the park position and stop the engine. Inspect the brake system for any abnormality.

When the brake oil pressure increases to specification, the buzzer stops and the indicator goes off.

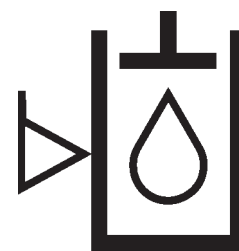


M4GB-01-013

Hydraulic Oil Level Indicator (Red)

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

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



MNEC-01-057

OPERATOR'S STATION

Low Steering Oil Pressure Indicator (Red)

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

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



M4GB-01-016

Transmission Warning Indicator (Red)

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



M4GB-01-024

Communication Error Indicator (Yellow)

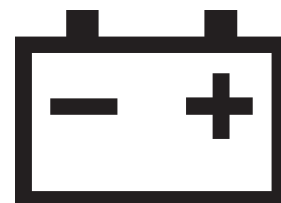
When communication system malfunction occurs, the communication error indicator lights.



M4GB-01-011

Discharge Warning Indicator (Red)

If the alternator voltage lowers, the discharge warning indicator will light. If the alternator voltage is abnormally high, the discharge warning indicator and the service indicator will light. Inspect the alternator and the battery system.



M4GB-01-018

OPERATOR'S STATION

Engine Trouble Indicator (Red)

If any serious abnormality occurs in the engine and/or engine related parts, the red indicator will light.

If the engine trouble indicator and the service indicator light, immediately move the machine to a safe area, set the machine in the park position and stop the engine. Contact your nearest Hitachi dealer for machine inspection.



M4GB-01-019

Overheat Indicator (Red)

If the engine coolant temperature increases to the abnormally high range, the red indicator will light, the service indicator will flash, and the alarm buzzer will sound. Stop operation.

Run the engine at slow idle speed to lower the coolant temperature.



M4GB-01-020

Engine Oil Low Pressure Indicator (Red)

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



If the engine oil pressure becomes low, the low engine oil pressure indicator will light, the service indicator will flash, and the alarm buzzer will sound.

Immediately move the machine to a safe area, set the machine in the park position and stop the engine. Inspect the engine oil pressure system and the oil level for any abnormality.

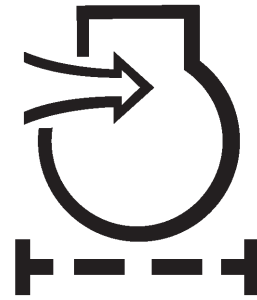
M4GB-01-021

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

OPERATOR'S STATION

Air Filter Restriction Indicator (Red)

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



M4GB-01-023

Preheat Indicator (Yellow)

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

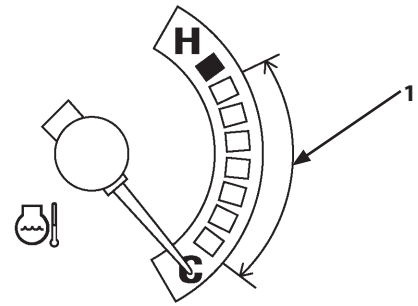


M4GB-01-031

OPERATOR'S STATION

Coolant Temperature Gauge

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

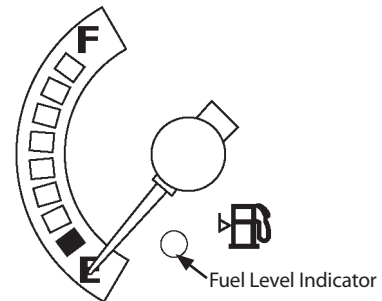


M4GB-01-028

Fuel Gauge

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

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



MNEC-01-002

OPERATOR'S STATION

Turn Signal Indicator (Green)

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



M4GB-01-032

High Beam Indicator (Blue)

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



M4GB-01-033

Work Light Indicator (Yellow)

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



MNDB-01-052

OPERATOR'S STATION

Clearance Light Indicator (Green)

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



M4GB-01-035

Control lever lock indicator (Red)

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



MNEC-01-004

OPERATOR'S STATION

Multi Function Monitor

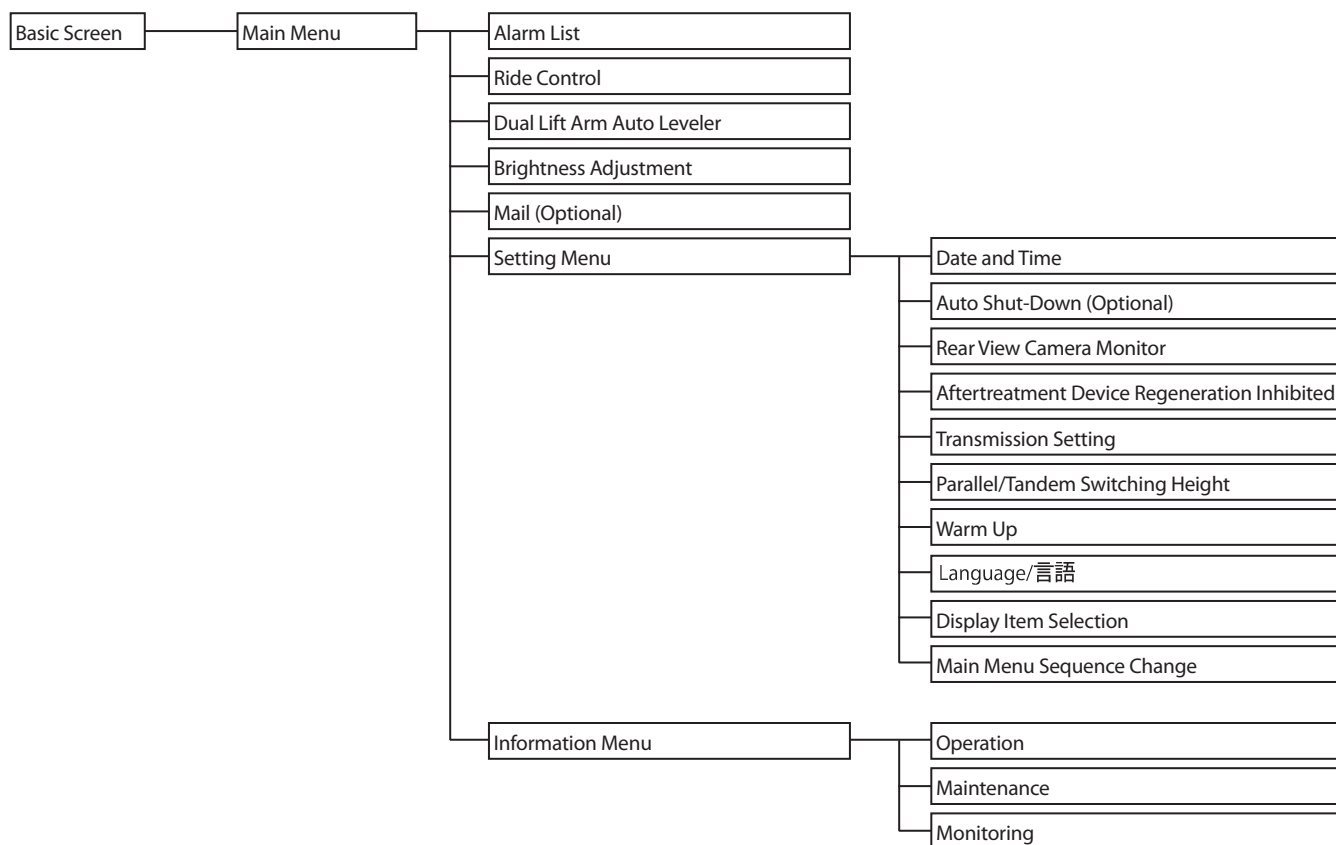
Feature

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

Screen Configuration

The multi function monitor consists of the following screens.

There are 7 menus, and a further 13 sub menus.



OPERATOR'S STATION

Default Setting

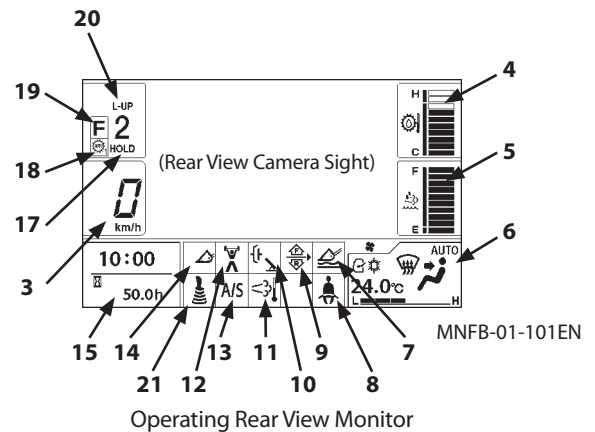
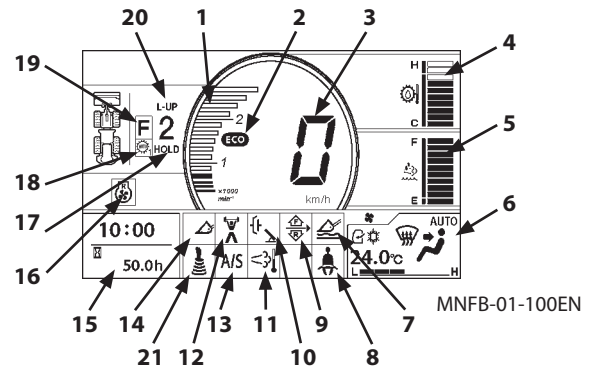
Function	Item	Default
Auto Shut-Down	ON/OFF of Auto Shut-down	OFF
	Setting Time	1 min
Rear View Camera Monitor	ON (Constant Display)/OFF (Non-Display)/AUTO (Display at reverse operation)	AUTO
Aftertreatment Device Regeneration Inhibited	Regeneration Inhibited	OFF
Shift Change Delay Mode	Shift Change Delay Mode ON/OFF	OFF
Lock-up	ON/OFF of transmission lock-up function	ON
Parallel/Tandem Switching Height	Height at parallel or tandem circuit operation are switched	Boom is level to the ground
Warm Up	Increases engine speed at engine start to help warm up in cold environment	OFF

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

OPERATOR'S STATION

Basic Screen

- 1- Engine Tachometer
- 2- ECO Indicator
- 3- Speedometer
- 4- Transmission Oil Temperature Gauge
- 5- DEF/AdBlue® Level Gauge
- 6- Air Conditioner Display
- 7- Ride Control Indicator
- 8- Seat Belt Indicator
- 9- Forward/Reverse Selector Switch Indicator
- 10- Clutch Cut Indicator
- 11- Aftertreatment Device Indicator
- 12- Power Mode Indicator
- 13- Auto Shut-Down Indicator
- 14- Dual Lift Arm Auto Leveler Indicator
- 15- Clock, Hour Meter, Odometer
- 16- Fan Reverse Rotation Indicator
- 17- HOLD Display
- 18- Transmission Auto-shifting Indicator
- 19- F-N-R/Shift Position Indicator
- 20- Torque Converter Lock-Up Indicator
- 21- Joystick Steering Indicator (Optional)



OPERATOR'S STATION

How to Use Screens

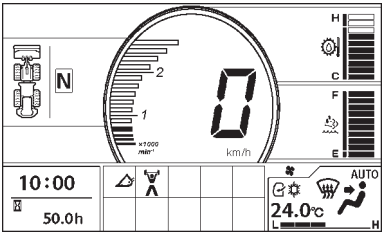
Displaying Basic Screen

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

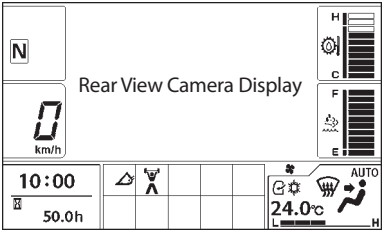
When the key switch is turned to the ON position, the starting screen displays for about two seconds and the basic screen displays.



Starting Screen MNEK-01-102EN



Basic Screen MNEK-01-103EN



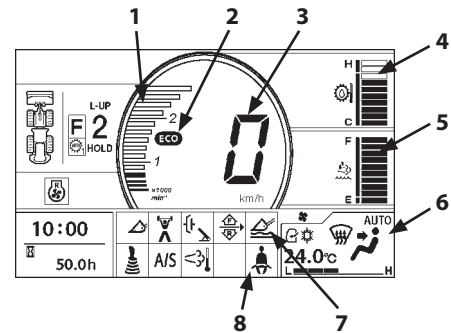
Basic Screen MNEK-01-104EN
(Operating Rear View Monitor)

OPERATOR'S STATION

- Engine Tachometer (1)
Engine tachometer (1) indicates the speed of currently running engine in a gauge form. (200 min⁻¹ step)
If the engine is over speed, the color of the gauge changes.

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

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



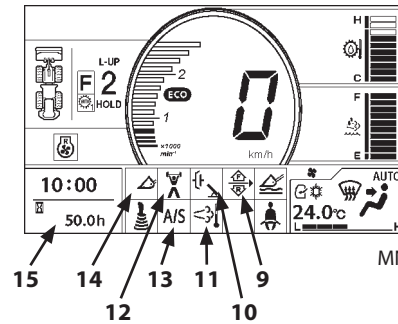
MNFB-01-100EN

- Speedometer (3)
Speedometer (3) indicates the present driving speed.
- Transmission Oil Temperature Gauge (4)
Transmission Oil Temperature Gauge (4) depicts transmission oil temperature as a gauge. When the bar stays in the blue range, the oil temperature is normal. If the oil temperature becomes abnormally high, the alarm buzzer will sound and the warning indicator will be displayed.
- DEF/AdBlue® Level Gauge (5)
DEF/AdBlue® level gauge (5) displays the remaining DEF/AdBlue® amount. When DEF/AdBlue® level becomes low, the last segment turns yellow.
- Air Conditioner Display (6)
Air conditioner display (6) displays operating condition of the air conditioner.
- Ride Control Indicator (7)
Ride control indicator (7) is displayed when the ride control switch is in ON position.
- Seat Belt Indicator (8)
The indicator turns ON when the key switch is turned ON, and turns OFF 5 seconds after the engine starts.

OPERATOR'S STATION

- Forward/Reverse Selector Switch Indicator (9)
The forward/reverse indicator is lit when the forward/reverse switch on the right console, or on the multi-function lever is usable.
- Clutch Cut Indicator (10)
The clutch cut indicator lights when the clutch cut position switch on the right console is in ON () position.
- Aftertreatment Device Indicator (11)
Displays condition of the aftertreatment device.
- Power Mode Indicator (12)
When the power mode selector switch on the right console is turned ON, power mode indicator (12) is lit.
- Auto Shut-Down Indicator (13)
When the auto shut-down is turned ON from the menu screen, the auto shut-down indicator is displayed.
When the key switch is turned ON while auto shut-down is enabled, the auto shut-down indicator blinks for 10 seconds.
- Dual Lift Arm Auto Leveler Indicator (14)
- Clock, Hour Meter, Odometer (15)

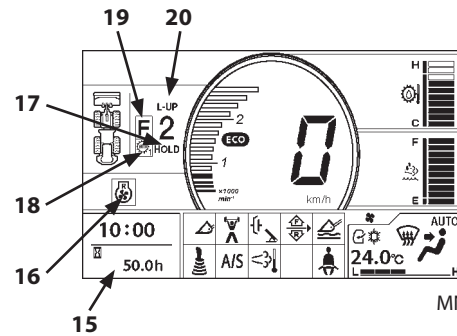
Clock	:	Indicates the current time. 24-h/12-h display can be selected. (Refer to "Date and Time" for switching the display mode.)
Hour Meter	:	The total accumulated operating hours since the machine started working, are displayed in hours (h). One digit after the decimal point indicates tenths of an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



OPERATOR'S STATION

- Fan Reverse Rotation Indicator (16)**
 Displays rotating direction of the fan.
 Normal Rotation → The icon is not displayed.
 Changing Rotational Direction → The icon blinks.
 Reverse Rotation → The icon lights ON.
- HOLD Display (17)**
 Hold display (17) is displayed when the hold switch on the side console is in ON position.
- Transmission Auto-shifting Indicator (18)**
 Transmission auto-shifting indicator (18) displays condition of the travel mode switch. It is not displayed at manual mode.
- F-N-R/Shift Position Indicator (19)**
 F-N-R/Shift Position Indicator (19) displays machine operating condition (status of the transmission).

F-N-R Display
 F-N-R indicator displays status of the transmission.
 Forward → F
 Neutral → N
 Reverse → R
- Shift Position Indicator**
 It displays currently engaged gears. It is not displayed at neutral position.
 Forward : 1st - 4th
 Reverse : 1st - 4th
- Torque Converter Lock-Up Indicator (20)**
 Torque converter lock-up indicator (20) appears during the lock-up shifting. Refer to page 1-59.

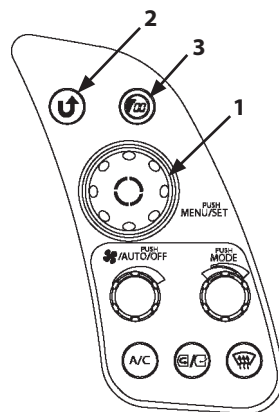


MNFB-01-100EN

OPERATOR'S STATION

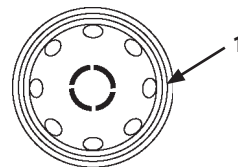
Monitor Operation

- Select/Confirm Knob (1)
 - Push : Push this switch while the basic screen is displayed, the Main Menu Screen opens. Push this switch after the menu screen, the action is confirmed.
 - Rotate : Cursor moves.
- Return to Previous Screen (2)
 - Push this switch to return to the previous screen.
- Return to Basic Screen (3)
 - Allows any screen to return to the basic screen.

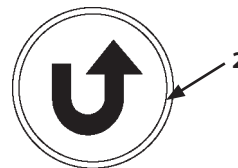


MNEC-01-006

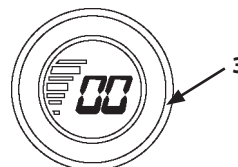
Multi Function Monitor/Air Conditioner Switch Panel



MNEC-01-078



MNEC-01-079



MNEC-01-080

OPERATOR'S STATION

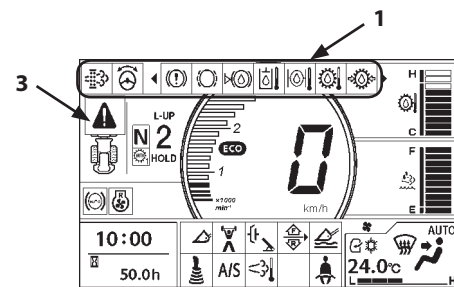
Alarm Occurrence Screen

If any abnormality occurs, alarm marks (1) and service indicator (3) are displayed on the basic screen.

If 8 or more alarms are generated, the alarm marks (1) can be scrolled by rotating selector knob (2).

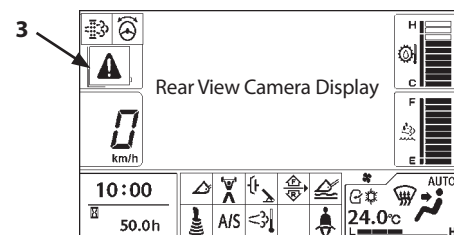
When the rear view monitor is operating, service indicator (3) is displayed.

 **NOTE:** When warning indicators on the monitor panel light, service indicator (3) is displayed.



Basic Screen

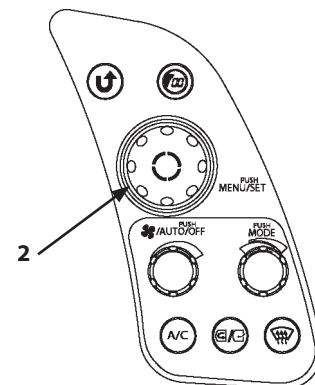
MNFB-01-290EN



Basic Screen

MNEK-01-291EN

(Operating Rear View Monitor)



MNEC-01-006

OPERATOR'S STATION

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

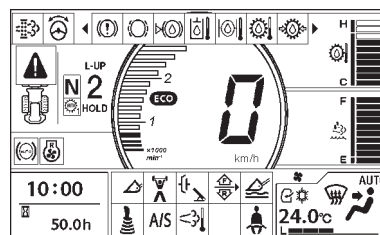
Push selector knob (1) on the basic screen to display the main menu.

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

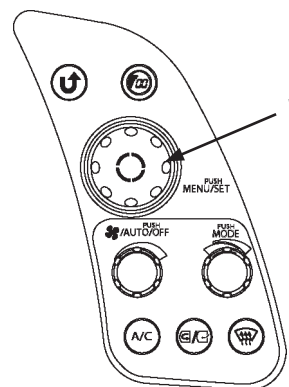
Rotate selector knob (1) to select a required alarm from the alarm list, and push selector knob (1).

Detailed information of the selected alarm will be displayed.

NOTE: When a warning indicator on the monitor panel lights, the alarm is displayed on the alarm list.

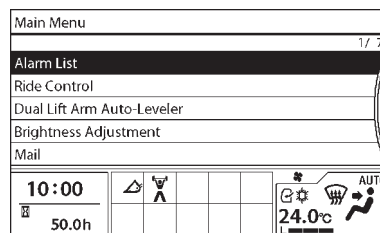


MNFB-01-290EN



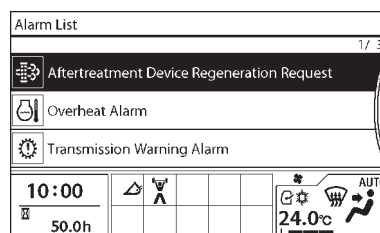
MNEC-01-006

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

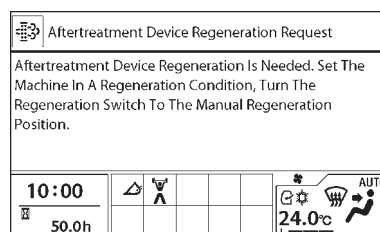


MNEK-01-105EN

CAUTION: The alarm list contains only currently generated alarms.



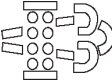
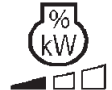
MNEK-01-106EN



MNEK-01-107EN

OPERATOR'S STATION

Remedy

Display	Alarm Name	Content of Alarm
	Brake Oil Pressure Alarm	Brake Oil Pressure Is Low. Immediately Stop Machine Operation And Check The Brake System.
	Steering Oil Pressure Alarm	Steering Oil Pressure Is Low. Immediately Stop Machine Operation And Check The Steering System.
	Emergency Steering Alarm (Blinking)	Emergency Steering Oil Pressure Comes Short Of The Specified Pressure. Check Emergency Steering System.
	Hydraulic Oil Level Alarm	Hydraulic Oil Level Is Low. Immediately Stop Machine Operation And Check Hydraulic Oil Level And Leaks Of Piping.
	Aftertreatment Device Regeneration Request (Blinking) (Yellow)	Aftertreatment Device Regeneration Is Needed. Set The Machine In A Regeneration Condition, Turn The Regeneration Switch To The Manual Regeneration Position.
	Aftertreatment Device Regeneration Inhibit Alarm (Lighting) (Yellow)	As The Regeneration Inhibition Has Been Set, Manual Regeneration Cannot Be Performed. Move The Machine To A Safe Area, Release The Regeneration Inhibition, And Perform Manual Regeneration.
	Aftertreatment Device Auto Regeneration Inhibit Alarm (Lighting) (Yellow)	As The Regeneration Inhibition Has Been Set, Auto Regeneration Cannot Be Performed. Move The Machine To A Safe Area And Release The Regeneration Inhibition.
	Urea Alarm	DEF/AdBlue® Level Is Low Or Urea SCR System Is Abnormal. Refill DEF/AdBlue® If Level Is Low. Contact Your Nearest Authorized Dealer For System Malfunction.
	Engine Output Restriction	Engine Output Is Restricted.
	Engine Warning Alarm (Yellow)	Engine or Engine Related Parts Are Abnormal. Contact Your Nearest Authorized Dealer.

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

OPERATOR'S STATION

Display	Alarm Name	Content of Alarm
	Overheat Alarm**	Coolant Temperature Is Abnormally High. Stop Operation. Run The Engine At Slow Idle To Cool Coolant Temperature.
	Hydraulic Oil Overheat Alarm	Hydraulic Oil Temperature Is Abnormally High. Stop Machine Operation. Run The Engine At Slow Idle Speed To Lower The Oil Temperature.
	Axle Oil Temperature Alarm	Axle Oil Temperature Is Abnormally High. Check If The Service Brake Is Daggled. If The Brake Pedal Is Continuously Stepped On, An Increase Of The Axle Oil Temperature May Result.
	Transmission Oil Overheat Alarm	Transmission Oil Temperature Is Abnormally High. Stop Machine Operation. Run The Engine At Slow Idle Speed To Lower The Oil Temperature.
	Transmission Warning Alarm	Transmission Or accessory Is Abnormal. Safely Park The Machine And Stop The Engine Immediately. Contact Your Nearest Authorized Dealer.
	Engine Oil Pressure Alarm	Engine Oil Pressure Is Low. Immediately Stop The Engine. Check The Engine Oil System And Oil Level.
	Main Pump Oil Pressure Alarm	Main Pump Oil Pressure Is Low. Immediately Stop Machine Operation And Check Front Attachment Piping For Leaks.

 NOTE:

*Alarm mark is displayed and buzzer will sound.

**Alarm mark is displayed and buzzer will sound. Turn accelerator pedal to the slow idle position, and buzzer will stop.

OPERATOR'S STATION

Display	Alarm Name	Content of Alarm
	Urea System Alarm	Urea SCR System Is Abnormal. Contact Your Nearest Authorized Dealer For System Malfunction.
	Battery Charge Alarm	Electrical System Is Abnormal. Check Alternator And Battery Systems.
	Air Cleaner Restriction Alarm	Air Cleaner Elements Are Clogged. Clean Or Replace Air Cleaner Element.
	Water Separator Alarm	Water Separator Is Full. Drain Water.
	System Failure Alarm	Machine Network System Is Abnormal. Contact Your Nearest Authorized Dealer.

 **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

DEF/SCR System Alarm

When the DEF/AdBlue® level becomes low and/or the Urea SCR system malfunctions, the engine performance is controlled depending on the status.

The operator is alerted with alarm indicators.

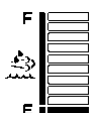
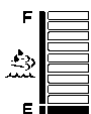
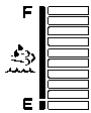
Move and park the machine in a safe place and follow the displayed message, or troubleshooting guide for the accompanied alarms.

DEF/AdBlue® Level Alarm

Display of the DEF/AdBlue® gauge changes depending on the DEF/AdBlue® level.

The engine speed and output level control is as follows.

 **NOTE:** Set the forward/reverse lever to neutral or apply the parking brake to show the alarm message on the monitor.

Level Gauge	Alarm Indicator		Status/Inducement
 (Yellow)	 (Red, light)	REFILL DEF/AdBlue	DEF/AdBlue® level is low. Refill DEF/AdBlue®.
 (Red)	 (Red, slow blink)	REFILL DEF/AdBlue 	DEF/AdBlue® is insufficient. Refill DEF/AdBlue®. Engine output is restricted.
 (Red)	 (Red, slow blink)	REFILL DEF/AdBlue  	DEF/AdBlue® tank is empty. Refill DEF/AdBlue®. Engine output and speed are restricted.
	 (Red, fast blink)	REFILL DEF/AdBlue No Power  	
	 (Red, fast blink)	REFILL DEF/AdBlue No Power  	

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

OPERATOR'S STATION

Urea SCR System Malfunction		
Alarm Indicator		Status/Inducement
 (Red, light)	Exh. System 	Urea SCR system is broken.
 (Red, slow blink)	Exh. System  	Urea SCR system is broken. Engine output is restricted.
 (Red, slow blink)	No Power Exh. System  	Urea SCR system is broken. Engine output and speed are restricted. Contact your authorized dealer for service.
 (Red, fast blink)	No Power Exh. System  	
 (Red, fast blink)	No Power Exh. System  	

OPERATOR'S STATION

Aftertreatment Device

Aftertreatment Device Condition Display

Aftertreatment Device Display (1) displays the condition of the aftertreatment device.



This mark indicates that the exhaust temperature is high during the aftertreatment device regeneration. It is lit while auto or manual 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.
- Do not stop the engine during regeneration unless absolutely necessary.

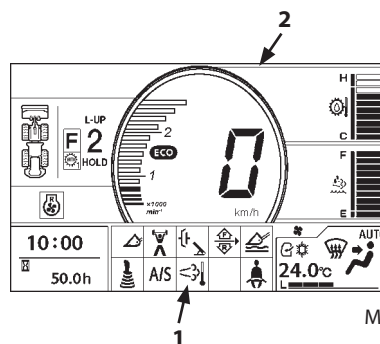
When the manual regeneration switch is pushed during the auto-regeneration process, the message "Minimal Exhaust Restriction. Exhaust Filter Cleaning Not Available." will be displayed on monitor (2).

Depending on the operating conditions of the machine, the regeneration may not be completed. In this case, an aftertreatment device regeneration request will be displayed on the monitor. Immediately perform manual regeneration following the procedure.



This mark indicates that the aftertreatment device regeneration is inhibited. Regeneration will not be performed while this mark is lit.)

IMPORTANT: Set the aftertreatment device regeneration to the inhibited position while operating the machine in an environment with materials that could be flammable. (Refer to the page 1-57)



MNFB-01-100EN

OPERATOR'S STATION

Aftertreatment Device Manual Regeneration Request

The aftertreatment device needs regeneration. Usually, regeneration is performed automatically. However, manual regeneration is required depending on the conditions. The marks described below may be indicated on monitor (1). Also service indicator (2) will be indicated.



(Lighting,
Yellow)

This mark indicates that the aftertreatment device manual regeneration is required. Perform manual regeneration following the below procedure.

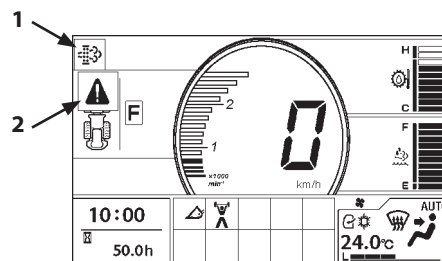


(Lighting,
Yellow)

This mark indicates that the aftertreatment device regeneration is inhibited. Displayed when the manual regeneration request arises while aftertreatment device regeneration is inhibited. Move the machine to a safe place. Perform manual regeneration following the below procedure.

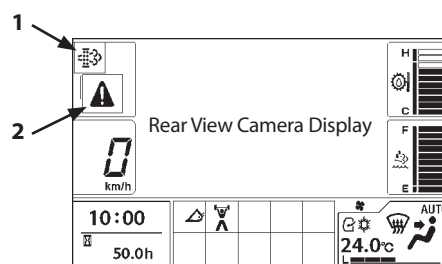
IMPORTANT:

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



Basic Screen

MNEK-01-280EN



Basic Screen

MNEK-01-281EN

(Operating Rear View Monitor)

OPERATOR'S STATION

Aftertreatment Device Manual Regeneration Procedure

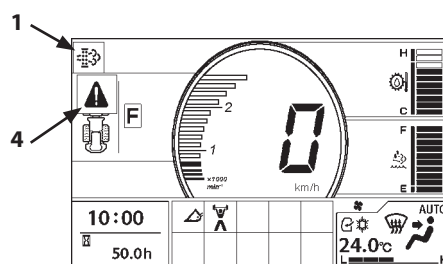
When the manual regeneration is needed, mark (1) as shown in the right and service indicator (4) will be displayed. When mark (1) is displayed, you need to perform manual regeneration. Before starting manual regeneration, be sure to check the following.

- No person is present around the machine.
- Keep flammable objects away from the muffler.
- Remaining fuel alarm is not lit.
- DEF/AdBlue® alarm is not lit.

1. Park the machine in a safe place. Lower the front attachment onto the ground.
2. Set the accelerator pedal and switches to the following state. Aftertreatment device manual regeneration request screen (2) will be displayed on the monitor.

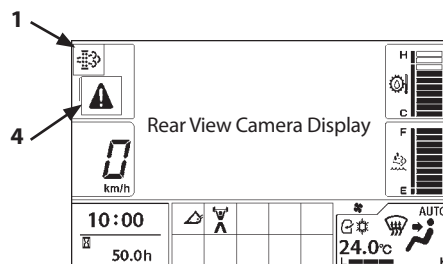
Accelerator Pedal	: OFF
Forward/Reverse Lever	: N (Neutral)
Parking Brake Switch	: ON
Control Lever Lock Switch	: Lock (🔒)
Aftertreatment Device	: OFF
Regeneration inhibited Setting	

3. Push the aftertreatment device regeneration switch (3).



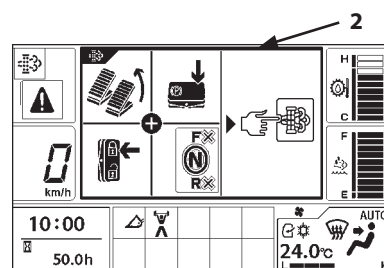
Basic Screen

MNEK-01-280EN



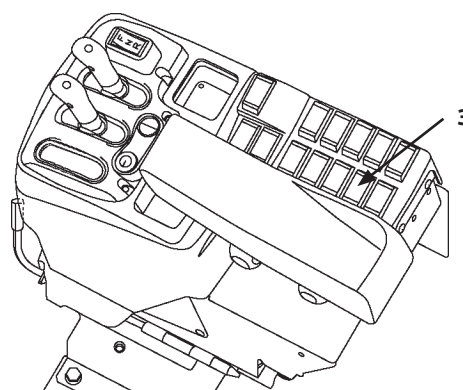
Basic Screen
(Operating Rear View Camera ON)

MNEK-01-281EN

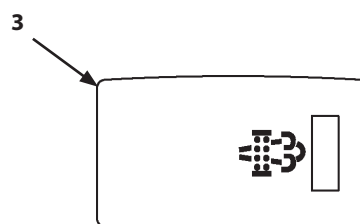


Manual Regeneration Request Screen

MNEK-01-282EN



MNEC-01-526

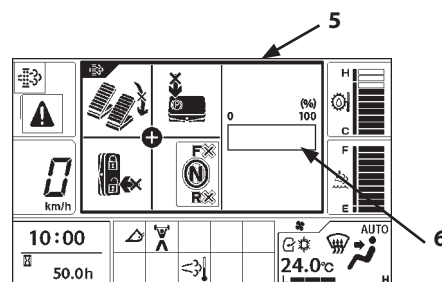


MDAA-05-002

OPERATOR'S STATION

- When pushing the aftertreatment device regeneration switch, screen (5) as shown in the right will be displayed and the manual regeneration starts. Bar graph (6) on the screen indicates progress of the regeneration process.

CAUTION: The manual regeneration does not start unless the accelerator pedal is OFF, forward/reverse lever is in Neutral, parking switch is ON, and the control lever lock switch is ON. When touching the accelerator pedal, forward/reverse lever, parking switch and the control lever lock switch, the regeneration process is aborted. When the process is aborted, start over again.

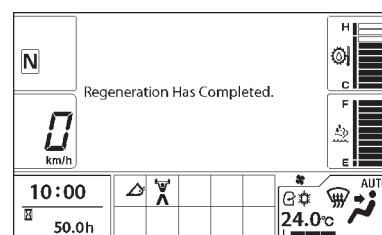


MNEK-01-283EN

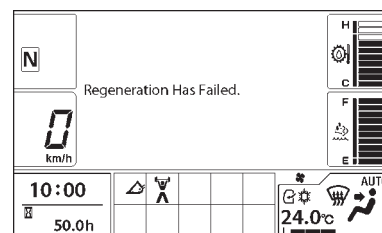
- When the regeneration is finished, "Regeneration Has Completed." message will be displayed. If "Regeneration Has Failed." message is displayed, start over the regeneration process again. Failure of regeneration process may happen in the conditions other than above (such as malfunction of a sensor that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

NOTE:

- Regeneration process may fail in conditions other than those mentioned above (such as sensor malfunction or low ambient temperature).
- The engine sound may change and the engine speed may increase when the manual regeneration starts, this 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, this is not a malfunction.
- Manual regeneration time is shorter directly after machine operation, and longer when engine temperature is low.
- Coolant temperature may increase during the manual regeneration.



MNEK-01-284EN



MNEK-01-285EN

IMPORTANT: If regeneration must be interrupted, push the manual regeneration switch again. The message "Regeneration Has Failed." will be displayed on the monitor, but the machine becomes operable. In this case, manual regeneration should be performed again. Restart manual regeneration as soon as possible.

OPERATOR'S STATION

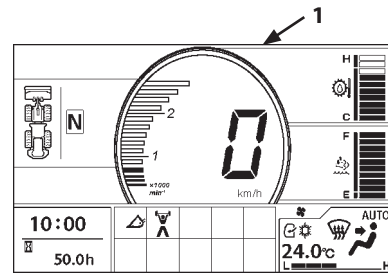
Main Menu

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

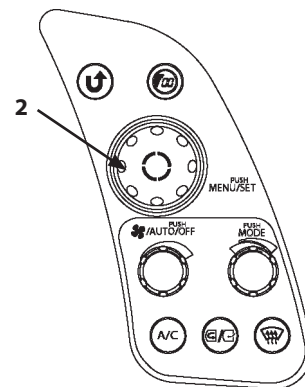
Press selector knob (2) while displaying basic screen (1) to display Main Menu screen (3).

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

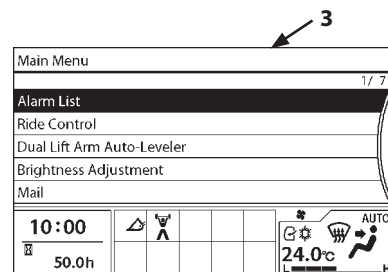
Ride control and Mail (optional) menus will not be displayed unless they are set beforehand.



MNEK-01-103EN



MNEC-01-006

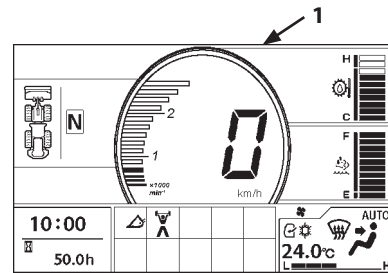


MNEK-01-105EN

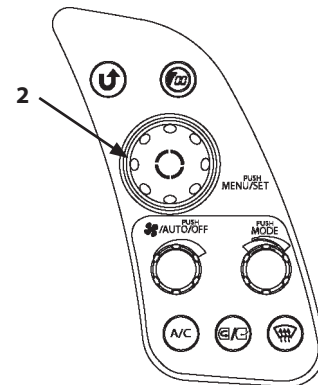
OPERATOR'S STATION

Ride Control Drive Speed Setting

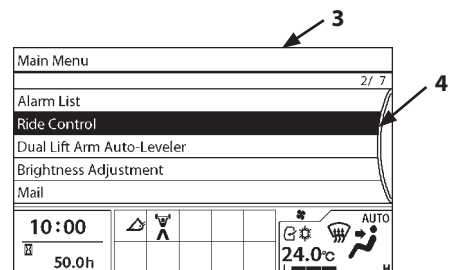
1. Press selector knob (2) while displaying basic screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Ride Control (4).
3. Press selector knob (2) to display Ride Control Drive Speed Setting screen (5).
4. Press selector knob (2) once and then rotate it clockwise to increase set speed at 1 km/h intervals. Rotate the selector knob (2) counterclockwise to decrease set speed at 1 km/h intervals.
(The set vehicle speed can be changed within the set range.)
5. Press selector knob (2) to complete the changes of setting.



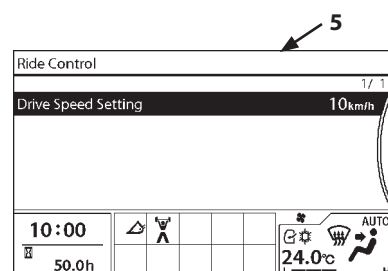
MNEK-01-103EN



MNEC-01-006



MNEK-01-108EN

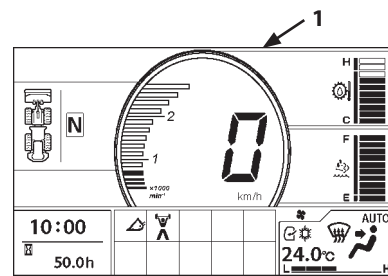


MNEK-01-109EN

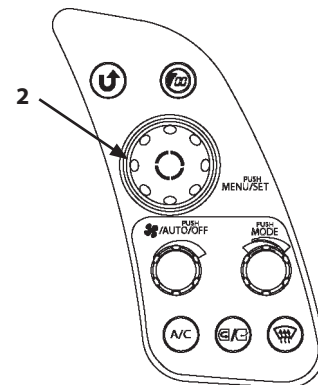
OPERATOR'S STATION

Dual Lift Arm Auto-Leveler

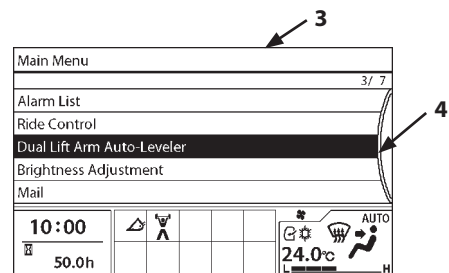
1. Press selector knob (2) while displaying basic screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Dual Lift Arm Auto-Leveler (4).
3. Press selector knob (2) to display Dual Lift Arm Auto-Leveler screen (5).
4. Rotate selector knob (2) to select Height Kickout (6) or Lower Kickout (7).
5. Press selector knob (2).



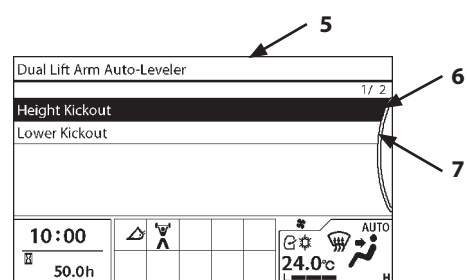
MNEK-01-103EN



MNEK-01-006



MNEK-01-110EN

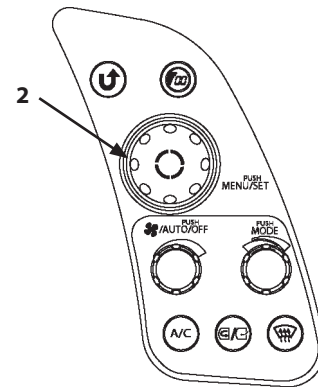


MNEK-01-111EN

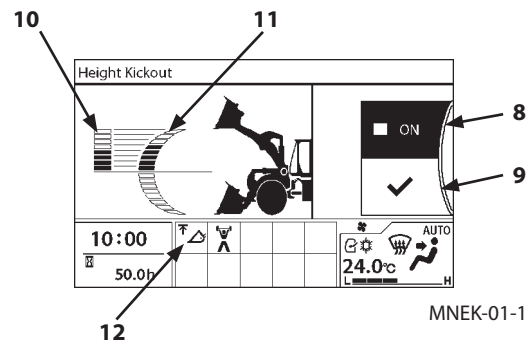
OPERATOR'S STATION

Height Kickout ON/OFF, Stop Height Setting

- Rotate selector knob (2) to highlight ON (8).
- ON/OFF Selection
Press selector knob (2) to turn ON (enabled).
(A box next to ON turns green.)
This enables the setting of the lift arm height.
Press selector knob (2) again to turn OFF (disabled).
When the height kickout is ON (enabled), indicator  (12) will be displayed on the monitor.
- Display content
Segment (10) indicates current set value of the height kickout.
Segment (11) indicates current height of the lift arm.
- Setting Operation
When the height kickout is ON (enabled), the lift arm stop height can be set.
When the lift arm height changes by operating the lift arm control lever, the height is displayed on segment (11).
When the lift arm height is within the setting range, the mark  (9) will be displayed.
Rotate selector knob (2) to highlight  (9).
Press selector knob (2) to change the height kickout setting value.
When the height kickout set value changes, the value displayed on segment (10) will change accordingly.



MNEC-01-006

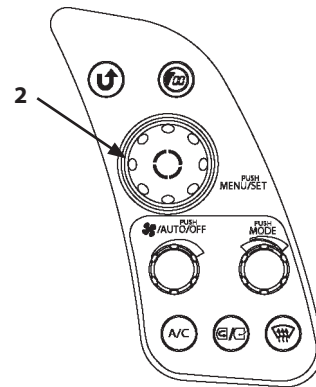


MNEK-01-112EN

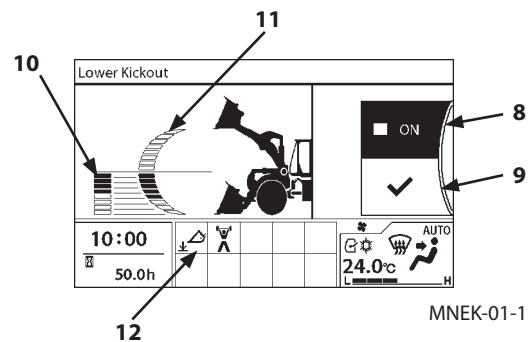
OPERATOR'S STATION

Lower Kickout ON/OFF, Stop Height Setting

- Rotate selector knob (2) to highlight ON (8).
- ON/OFF Selection
Press selector knob (2) to turn ON (enabled).
(A box next to ON turns green.)
This enables the setting of the lift arm height.
Press selector knob (2) again to turn OFF (disabled).
When the lower kickout is ON (enabled), indicator  (12) will be displayed on the monitor.
- Display content
Segment (10) indicates current set value of the lower kickout.
Segment (11) indicates current height of the lift arm.
- Setting Operation
When the lower kickout is ON (enabled), the lift arm stop height can be set.
When the lift arm height changes by operating the lift arm control lever, the height is displayed on segment (11).
When the lift arm height is within the setting range, the mark  (9) will be displayed.
Rotate selector knob (2) to highlight  (9).
Press selector knob (2) to change the lower kickout setting value.
When the lower kickout setting value changes, the value will be displayed on segment (10).



MNEC-01-006

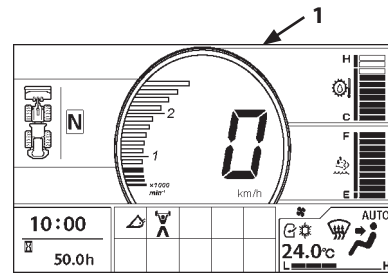


MNEC-01-113EN

OPERATOR'S STATION

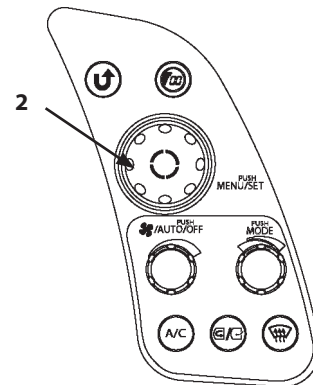
Brightness Adjustment

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

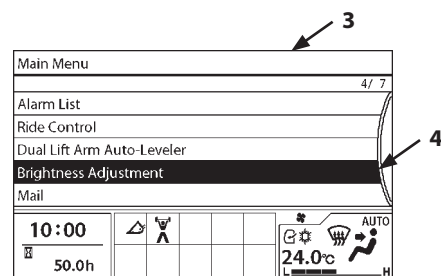


MNEK-01-103EN

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



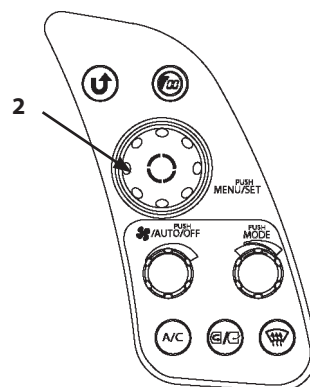
MNEC-01-006



MNEK-01-120EN

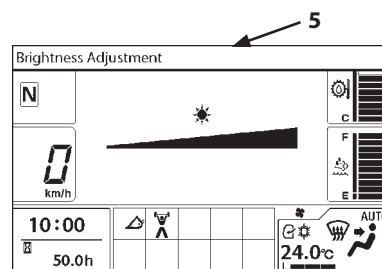
OPERATOR'S STATION

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



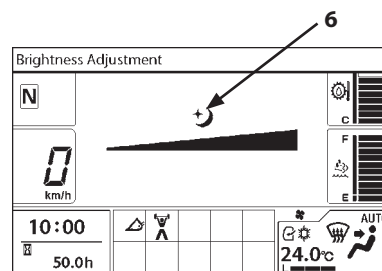
MNEC-01-006

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



MNEK-01-121EN

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



MNEK-01-122EN

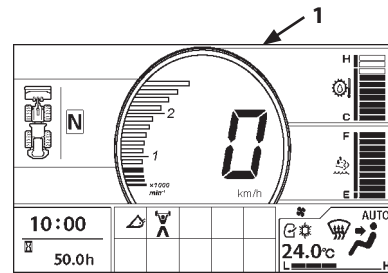
OPERATOR'S STATION

Mail (Optional)

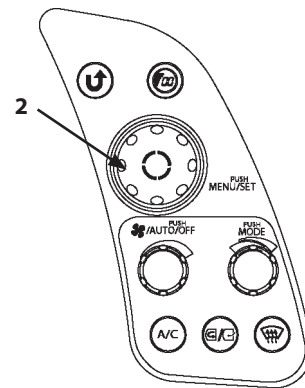
IMPORTANT: This function is available only to a machine equipped with a communication terminal. When using the mail function, consult your nearest Hitachi dealer.

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.

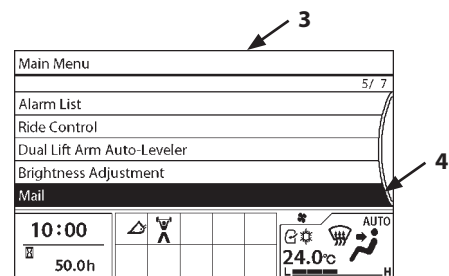
- General Request
- Fuel Replenishment Request
- Service Maintenance Request
- Forwarding Request



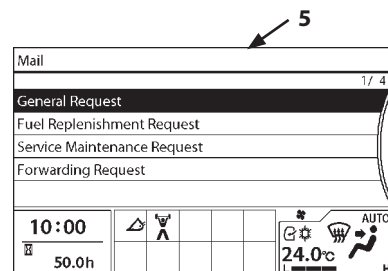
MNEK-01-103EN



MNEC-01-006



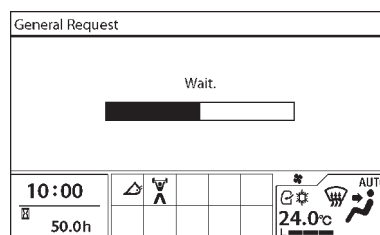
MNEK-01-130EN



MNEK-01-131EN

OPERATOR'S STATION

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

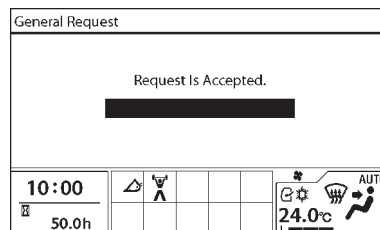


MNEK-01-132EN

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

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

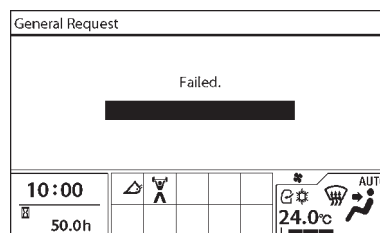
8. A mail is sent from the communication terminal to the central server.



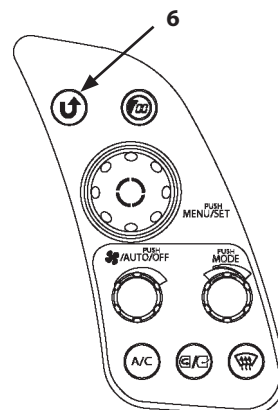
MNEK-01-133EN

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

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



MNEK-01-134EN



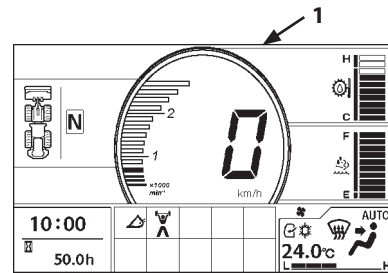
MNEK-01-006

OPERATOR'S STATION

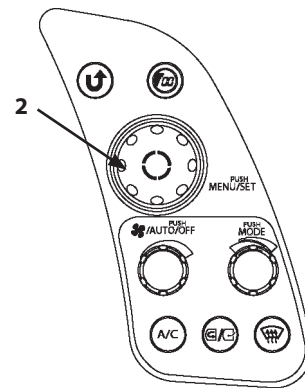
Setting Menu

Setting menu consists of date and time setting, auto shut-down setting, and back monitor setting.

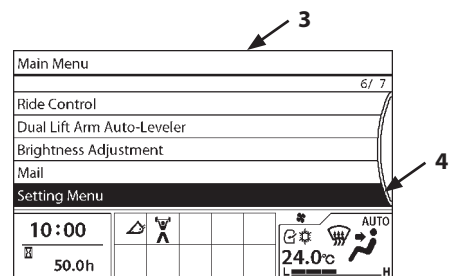
1. Press selector knob (2) while displaying basic screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).



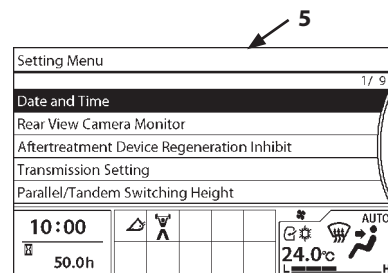
MNEK-01-103EN



MNEC-01-006



MNEK-01-140EN



MNEK-01-141EN

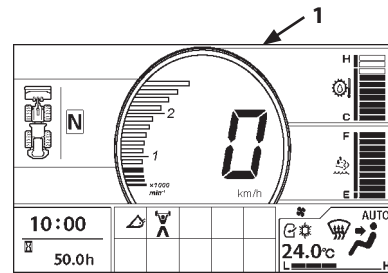
OPERATOR'S STATION

Date and Time

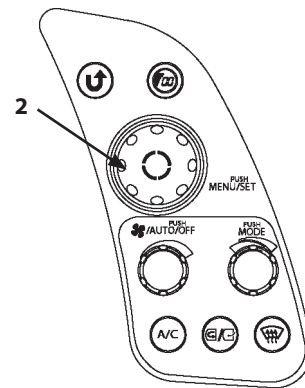
Time, date and display mode can be set on this screen. Year-month-day format and 24h/12h display mode are selected in the display setting.

Time adjustment

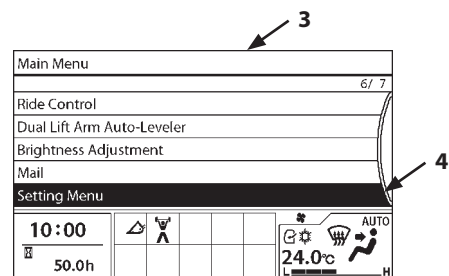
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Date and Time (6).



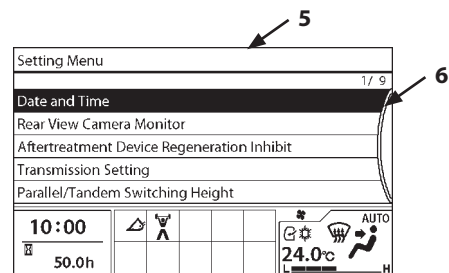
MNEK-01-103EN



MNEC-01-006



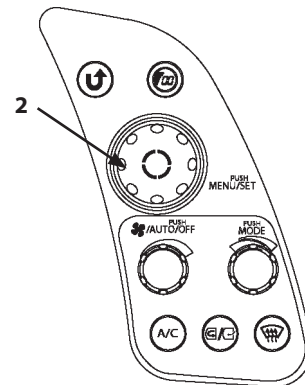
MNEK-01-140EN



MNEK-01-141EN

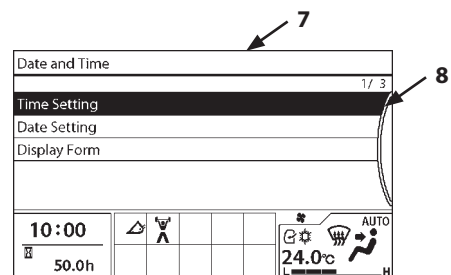
OPERATOR'S STATION

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



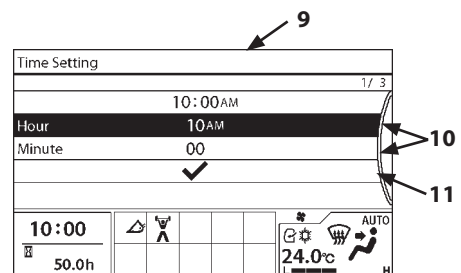
MNEC-01-006

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

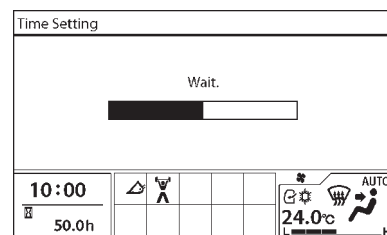


MNEK-01-142EN

8. Rotate selector knob (2) to highlight Hour or Minute (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.
10. Push selector knob (2) to end the time setting procedure.
11. Rotate selector knob (2) to highlight ✓ (11). Push selector knob (2) to make the change.



MNEK-01-143EN

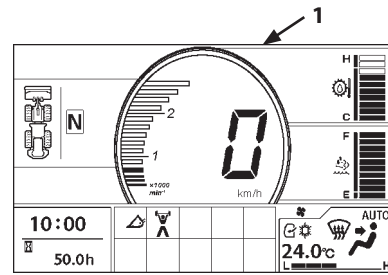


MNEK-01-144EN

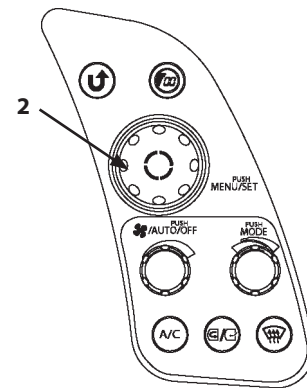
OPERATOR'S STATION

Date Adjustment

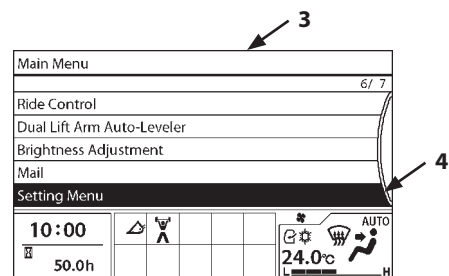
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Date and Time (6).



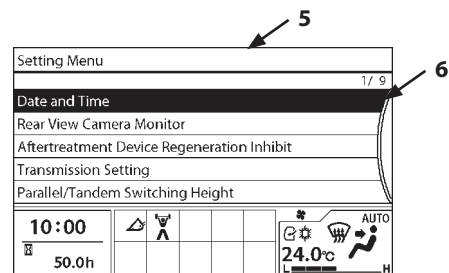
MNEK-01-103EN



MNEC-01-006



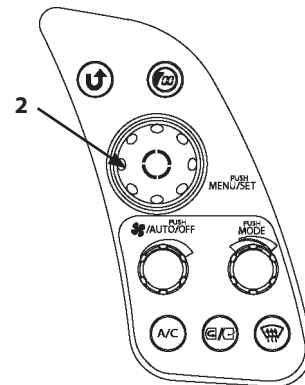
MNEK-01-140EN



MNEK-01-141EN

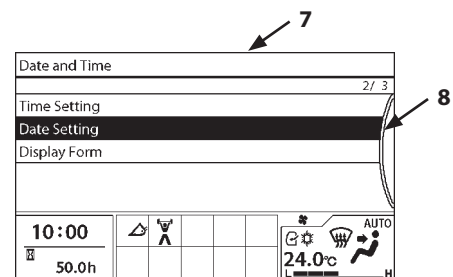
OPERATOR'S STATION

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



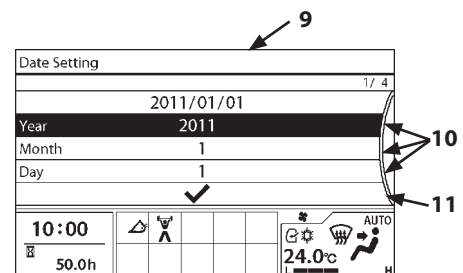
MNEC-01-006

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

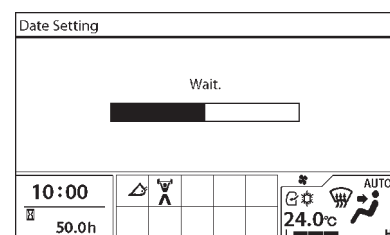


MNEK-01-145EN

8. Rotate selector knob (2) to highlight Year, Month or Day (10) and push selector knob (2).
9. Rotate selector knob (2) to adjust the date. Rotate clockwise to adjust the number upwards, and counterclockwise to decrease it.
10. Push selector knob (2) to end the date setting procedure.
11. Rotate selector knob (2) to highlight ✓ (11). Push selector knob (2) to make the change.



MNEK-01-146EN

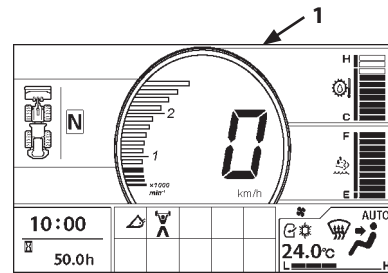


MNEK-01-147EN

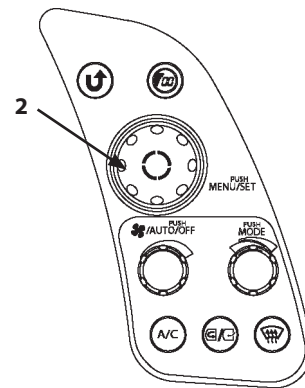
OPERATOR'S STATION

Display Mode Setting

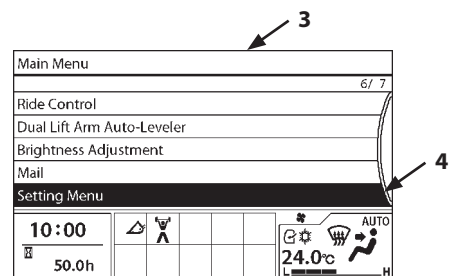
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Date and Time (6).



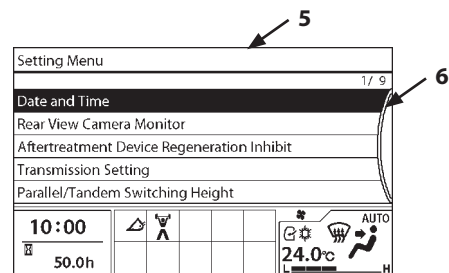
MNEK-01-103EN



MNEK-01-006



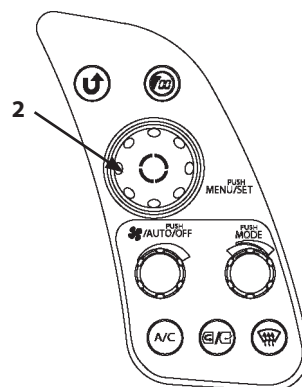
MNEK-01-140EN



MNEK-01-141EN

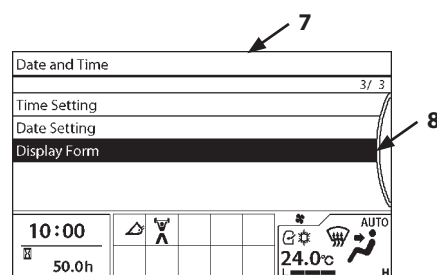
OPERATOR'S STATION

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



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

MNEC-01-006

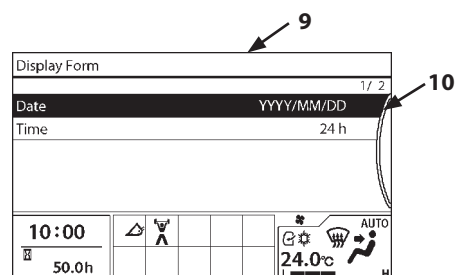


7. Press selector knob (2) to display Display Form screen (9).
8. Rotate selector knob (2) to highlight Date (10) and push selector knob (2).

MNEK-01-148EN

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.

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



MNEK-01-149EN



MNEK-01-302EN

MNEK-01-303EN

MNEK-01-304EN



MNEK-01-300EN

MNEK-01-301EN

OPERATOR'S STATION

Auto Shut-Down (Optional)

WARNING: This function automatically stops the engine. Pay extra attention to 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 after the preset time when machine is parking under the following conditions:

- The engine is running.
- The parking brake is applied.
- The forward/reverse lever (switch) is in neutral (N).
- The accelerator pedal is not depressed.
- The brake pedal is not depressed.
- The control lever is not operated.
- The steering wheel is not operated.
- Coolant, hydraulic oil and transmission temperature are not high.
- The aftertreatment device manual regeneration is not operating.

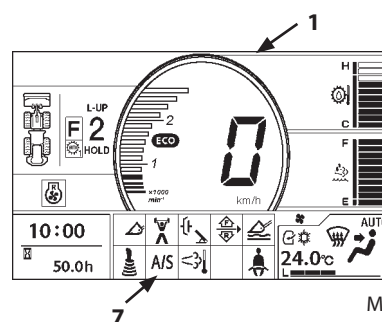
30 seconds before the engine stop, the monitor displays a message that the engine will be stopped and indicator (7) starts flashing. The buzzer also sounds. The buzzer sounds once at 30 seconds before, intermittently sounds from 15 seconds, and then stops after 15 seconds. When the machine is in the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

IMPORTANT:

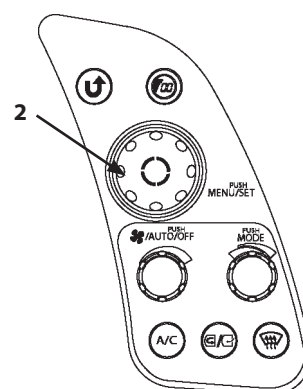
- **Do not leave the machine after auto shut-down. Failure to do so may discharge the batteries.**
- **To restart the engine, turn the key switch OFF, and then perform normal starting procedure.**

Auto Shut-Down: ON/OFF

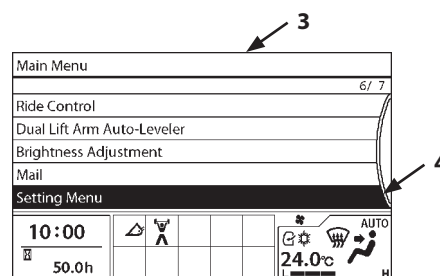
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Auto Shut-Down (6).



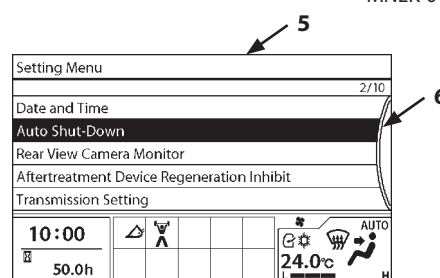
MNFB-01-100EN



MNEC-01-006



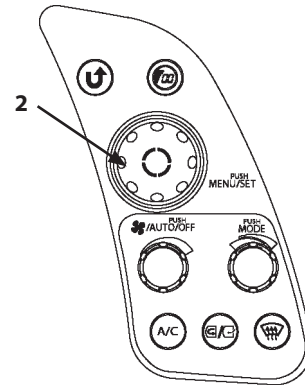
MNEK-01-140EN



MNEK-01-150EN

OPERATOR'S STATION

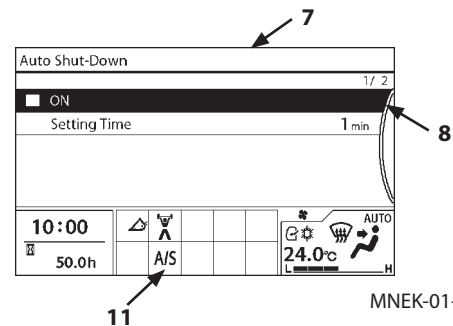
- Press selector knob (2) to display Auto Shut-Down screen (7).



MNEC-01-006

- Rotate selector knob (2) to highlight ON (8).
- Press selector knob (2) to set the auto shut-down function ON and indicator (11) will be lit. Press selector knob (2) again to set the auto shut-down function OFF and indicator (11) goes off.

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



MNEK-01-151EN

Auto Shut-Down: Setting Time

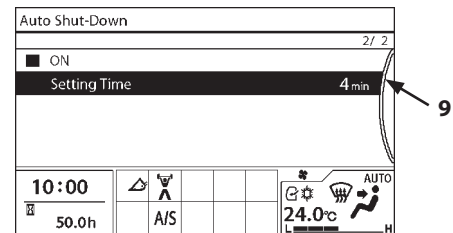
- On the Auto Shut-Down screen, rotate selector knob (2) to highlight Setting Time (9) and push selector knob (2).
- Rotate selector knob (2) clockwise to increase acting time at 1 minute step.

Rotate selector knob (2) counterclockwise to decrease acting time at 1 minute step.

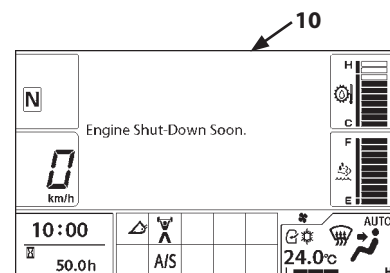
The idle time can be set from 1 minute up to 30 minutes.

- Press selector knob (2) to make the change.

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



MNEK-01-152EN



MNEK-01-153EN

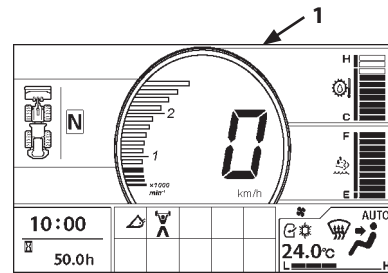
OPERATOR'S STATION

Rear View Camera Monitor

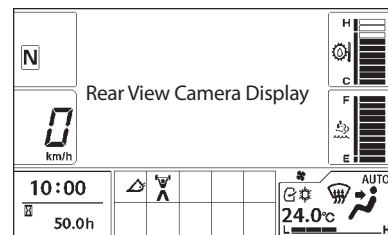
IMPORTANT: The image displayed on the rear view monitor is meant only as an aid. Actual position and distance of people and objects in the rear view monitor will be different. When operating the machine, pay thorough attention to the surrounding situation.

Rear View Camera ON (Constant Display)/OFF (Non-Display)/AUTO (Display at reverse operation)

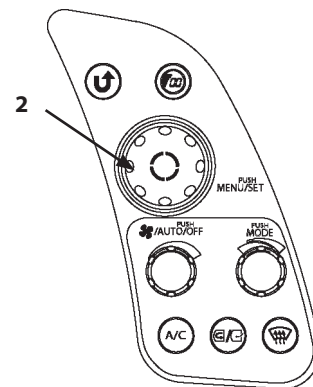
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Rear View Camera Monitor (6).



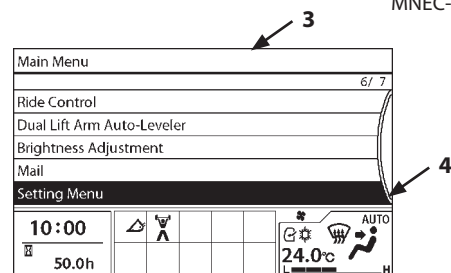
MNEK-01-103EN



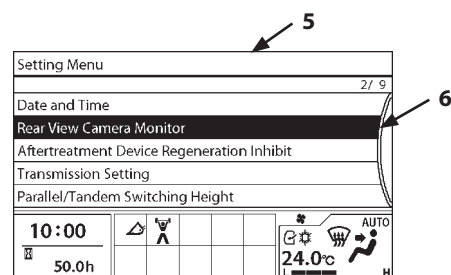
Operating Rear View Monitor MNEK-01-104EN



MNEC-01-006



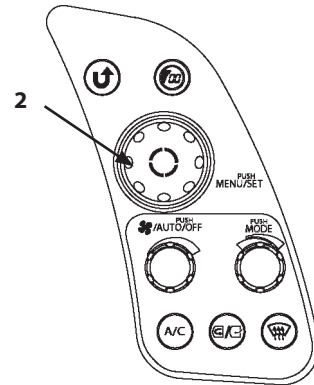
MNEK-01-140EN



MNEK-01-160EN

OPERATOR'S STATION

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



MNEC-01-006

- Press selector knob (2) to turn the rear view camera monitor ON/OFF/AUTO.

- When the rear view camera monitor is ON, rear view image is continuously displayed on the basic screen.

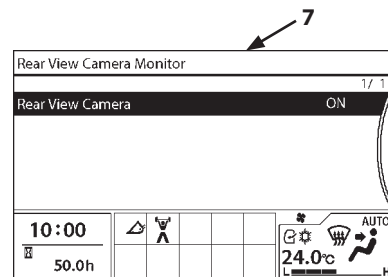
When the rear view camera monitor is set to AUTO, the rear view image is displayed on the basic screen only during reverse travel.

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

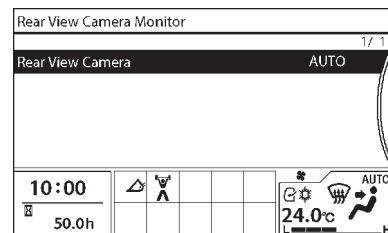
 **NOTE:** The monitor and camera lens surface is a resin product. Lightly wipe the surface with a wet clean cloth. Never use an organic solvent.

IMPORTANT:

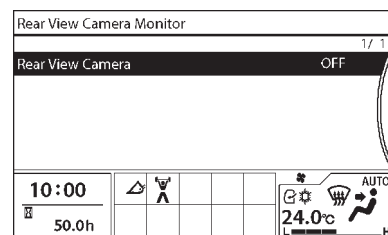
- Never attempt to change the mounting position of the rear view camera.
- Consult your authorized dealer if any abnormality is found on the rear view image.



MNEK-01-161EN



MNEK-01-162EN



MNEK-01-163EN

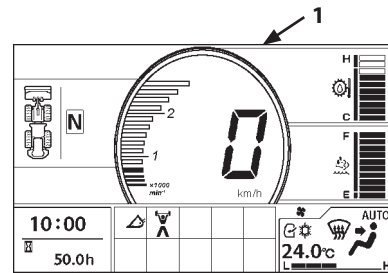
OPERATOR'S STATION

Aftertreatment Device Regeneration Inhibited

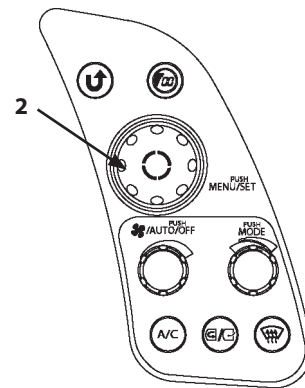
IMPORTANT: The aftertreatment device regeneration can be inhibited at this screen to prevent auto regeneration while operating the machine in a dusty area or indoors.

Setting Procedure

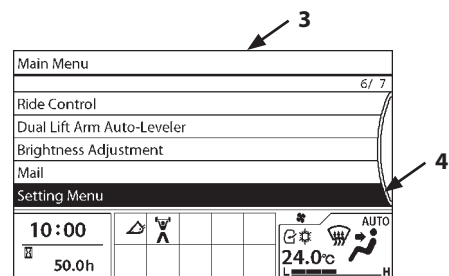
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).



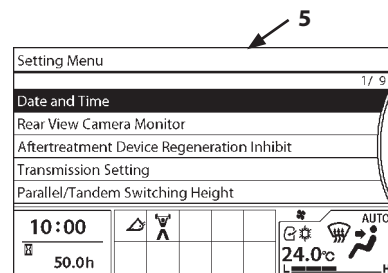
MNEK-01-103EN



MNEC-01-006



MNEK-01-140EN



MNEK-01-141EN

OPERATOR'S STATION

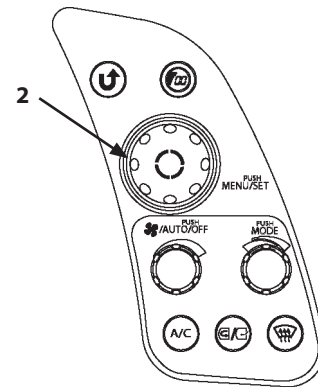
4. Rotate selector knob (2) to highlight Aftertreatment Device Regeneration Inhibited (6).
5. Press selector knob (2) to display Aftertreatment Device Regeneration Inhibited screen (7).
6. Rotate selector knob (2) to highlight  (8), and press selector knob (2) to display Aftertreatment Device Regeneration Inhibited screen (9).
7. Rotate selector knob (2) to highlight ON (10). Confirmation screen is added.

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

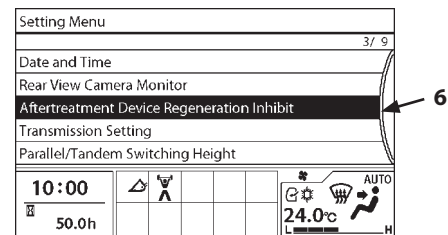
When ON is selected, regeneration inhibited icon (11) will be displayed on the monitor.

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

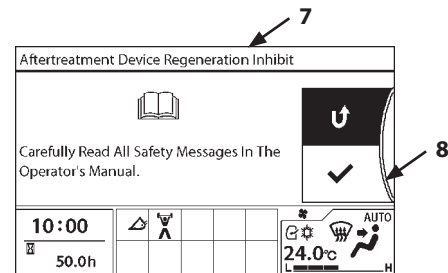
IMPORTANT: When the machine is operated with the aftertreatment device regeneration inhibited, the aftertreatment device becomes clogged. When the aftertreatment device regeneration request is displayed, move the machine to a safe place. Perform the manual regeneration following the specified procedure. Failure to do so may damage the aftertreatment device. Refer to "Aftertreatment Device" section for the manual regeneration.



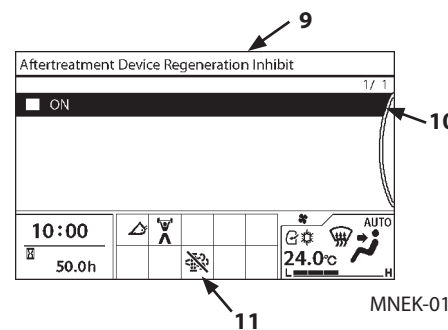
MNEK-01-006



MNEK-01-170EN



MNEK-01-171EN



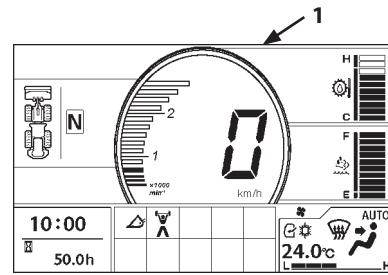
MNEK-01-172EN

OPERATOR'S STATION

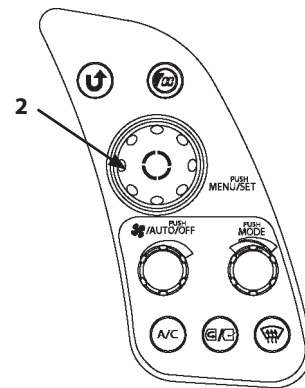
Transmission Setting

Shift Change Delay Mode Setting

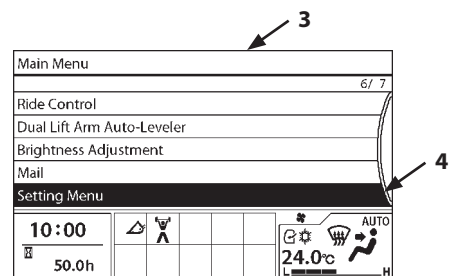
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).



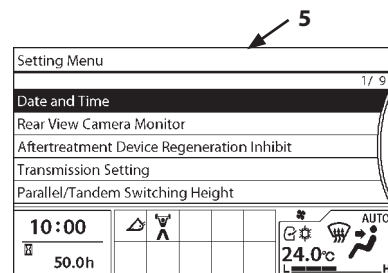
MNEK-01-103EN



MNEC-01-006



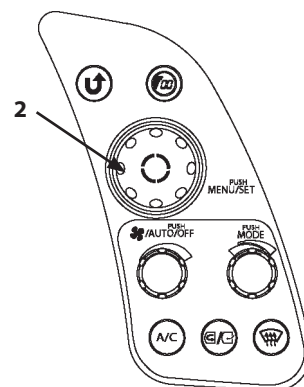
MNEK-01-140EN



MNEK-01-141EN

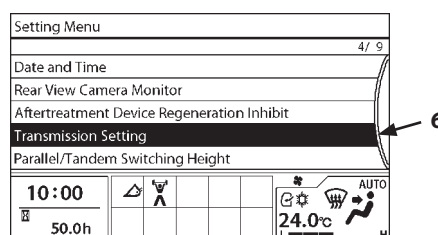
OPERATOR'S STATION

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



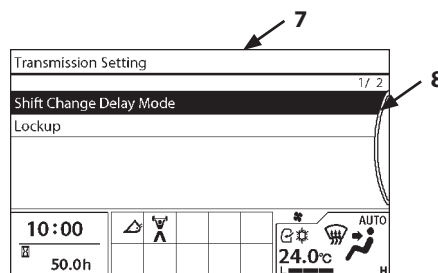
MNEK-01-006

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



MNEK-01-180EN

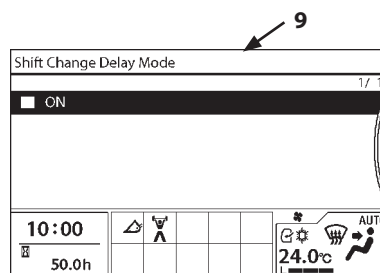
6. Rotate selector knob (2) to highlight Shift Change Delay Mode (8).



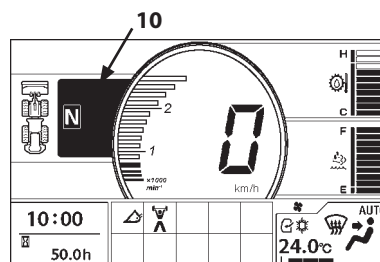
MNFB-01-181EN

7. Press selector knob (2) to display Shift Change Delay Mode screen (9).
8. Press selector knob (2) to turn ON (enabled).
When ON (enabled) is selected, background of the Speed Gear Stage display (10) turns blue.
- Press selector knob (2) again to turn OFF (disabled).

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



MNEK-01-182EN



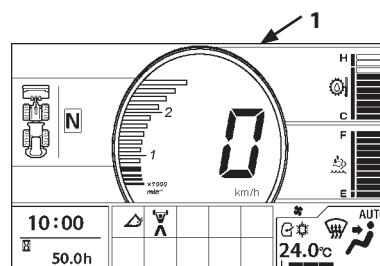
MNEK-01-183EN

OPERATOR'S STATION

Lockup Setting

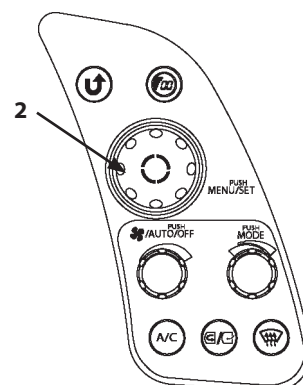
Lock-up clutch is provided for efficient power transmission from the engine, that helps to improve fuel efficiency and have higher ground speed.

Use this setting to activate the lockup shifting (refer to page 4-5).



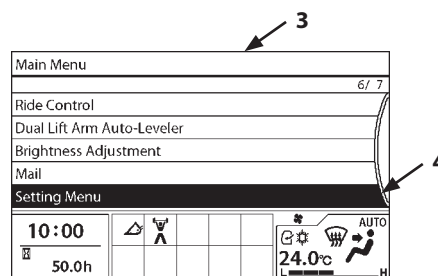
MNEK-01-103EN

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



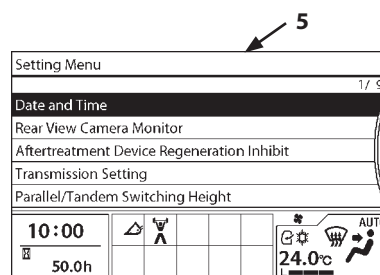
MNEC-01-006

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



MNEK-01-140EN

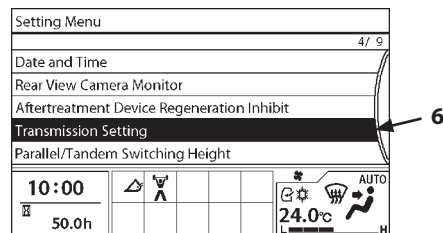
3. Press selector knob (2) to display Setting Menu screen (5).



MNEK-01-141EN

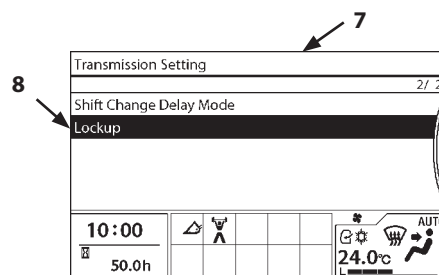
OPERATOR'S STATION

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



MNEK-01-180EN

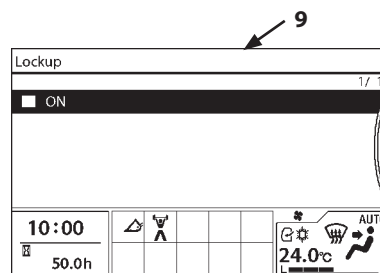
5. Press selector knob (2) to display Transmission Setting screen (7).



MNFB-01-184EN

6. Rotate selector knob (2) to highlight Lockup (8).

7. Press selector knob (2) to display Lockup setting screen (9).



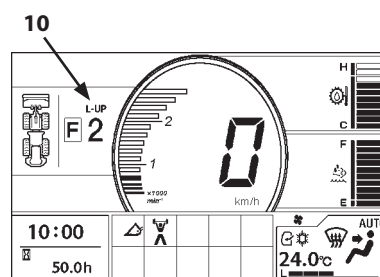
MNFB-01-185EN

8. Press selector knob (2) to turn ON.

When ON is selected, "L-UP" indicator (10) turns ON when the lockup clutch is engaged.

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

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

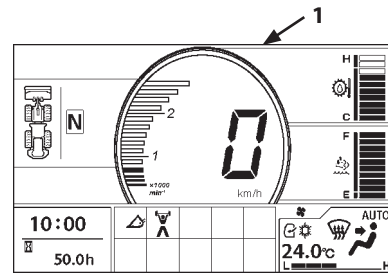


MNFB-01-186EN

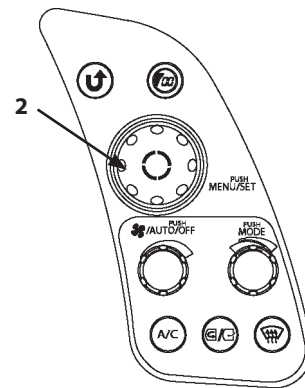
OPERATOR'S STATION

Parallel/Tandem Switching Setting

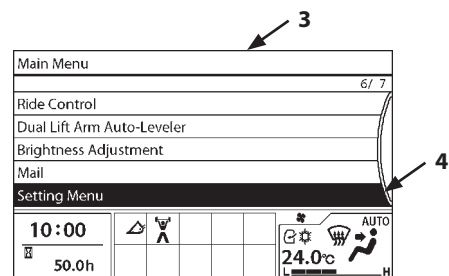
1. Press selector knob (2) while displaying basic screen (1) to display main menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).



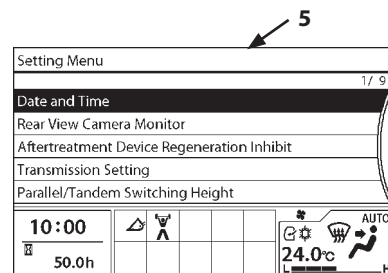
MNEK-01-103EN



MNEC-01-006



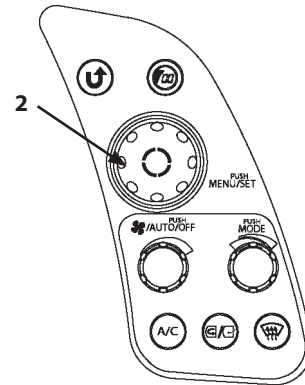
MNEK-01-140EN



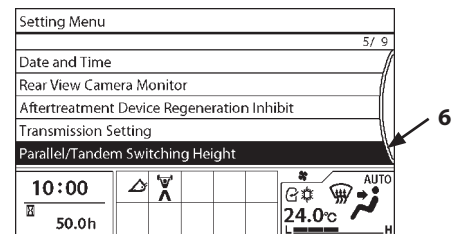
MNEK-01-141EN

OPERATOR'S STATION

4. Rotate selector knob (2) to highlight Parallel/Tandem Switching Height (6).

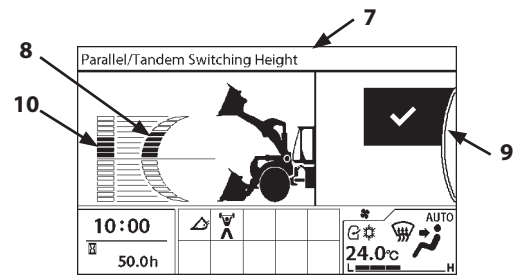


MNEC-01-006



MNEK-01-190EN

5. Press selector knob (2) to display Parallel/Tandem Switching Height screen (7).
6. When the lift arm height changes by operating the lift arm control lever, the height is displayed on segment (8).
7. When the lift arm height is within the setting range, the mark ✓ (9) will be displayed.
8. Press selector knob (2) to change parallel/tandem height setting value.
9. When the parallel/tandem height setting value changes, the value will be displayed on segment (10).



MNEK-01-191EN

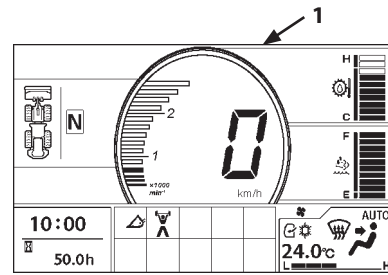
NOTE: When the lift arm height is below segment(10), the operation mode is set to Parallel (Lift arm and bucket), when the lift arm height is above segment(10), the mode is set to Tandem (Bucket priority).

OPERATOR'S STATION

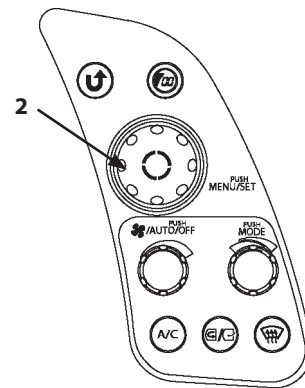
Warm Up Operation

 **NOTE:** Refer to "Warming Up Operation in Cold Weather" in the OPERATING ENGINE section for operation under warming up setting.

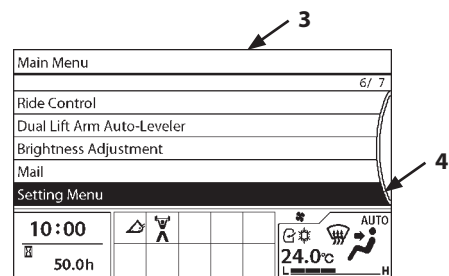
1. Press selector knob (2) while displaying basic screen (1) to display main menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).



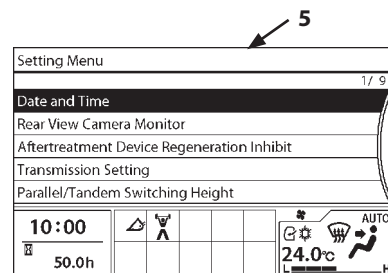
MNEK-01-103EN



MNEC-01-006



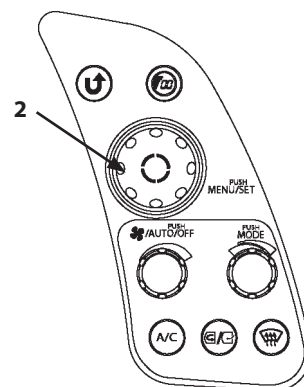
MNEK-01-140EN



MNEK-01-141EN

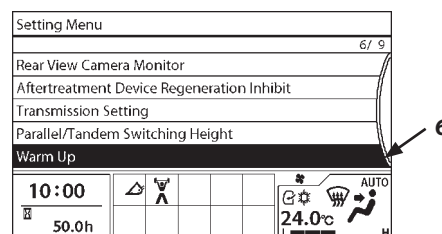
OPERATOR'S STATION

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



MNEK-01-006

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

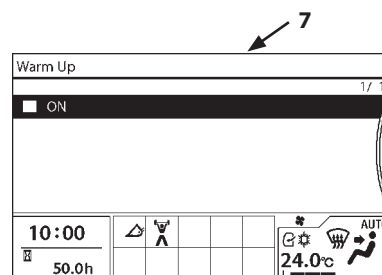


MNEK-01-200EN

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

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

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

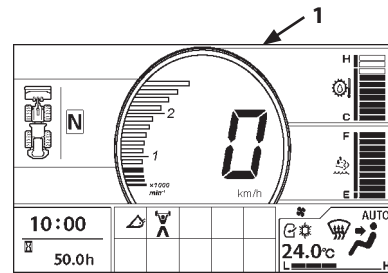


MNEK-01-201EN

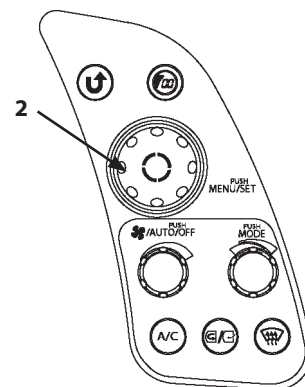
OPERATOR'S STATION

Language Settings

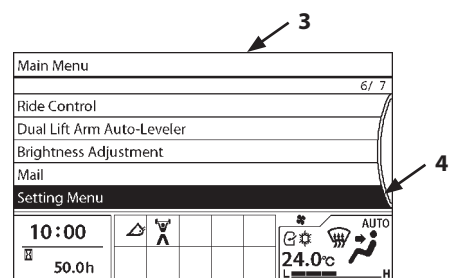
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Language/言語 (6).



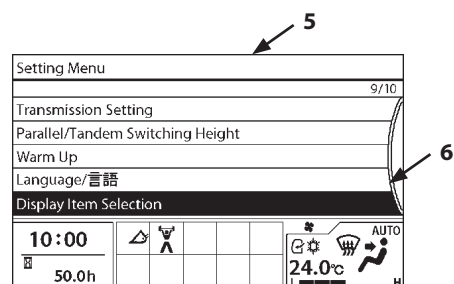
MNEK-01-103EN



MNEC-01-006



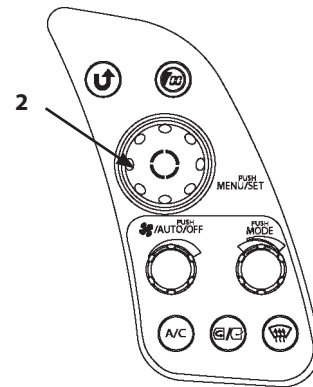
MNEK-01-140EN



MNEK-01-220EN

OPERATOR'S STATION

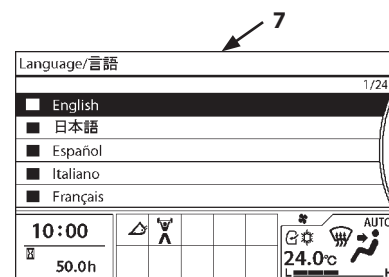
5. Press selector knob (2) to display Language/言語 screen (7).



MNEC-01-006

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

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



MNEK-01-211EN

OPERATOR'S STATION

List of Display Language

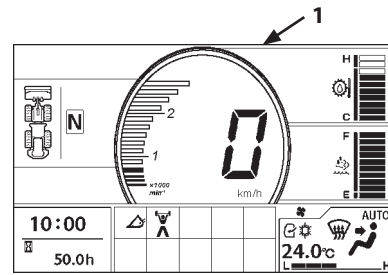
Language	Screen Display
Japanese	日本語
English	English
Spanish	Español
Italian	Italiano
French	Français
German	Deutsch
Dutch	Nederlands
Portuguese	Português
Finnish	Suomi
Greek	Ελληνικά
Swedish	Svenska
Norwegian	Norsk
Turkish	Türkçe
Danish	Dansk
Estonian	Eesti
Polish	Polski
Icelandic	Íslenska
Croatian	Hrvatski
Slovak	Slovenščina
Romanian	limba română
Bulgarian	Български език
Arabic	اللغة العربية
Persian	زبان فارسی

OPERATOR'S STATION

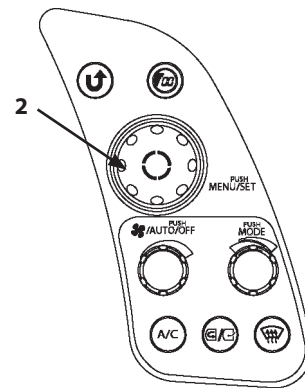
Display Item Selection

Unit to be displayed on the monitor and hour meter/odometer display can be selected in this screen.

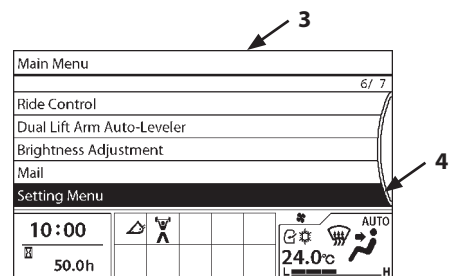
1. Press selector knob (2) while displaying basic screen (1) to display main menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).
3. Press selector knob (2) to display Setting Menu screen (5).
4. Rotate selector knob (2) to highlight Display Item Selection (6).



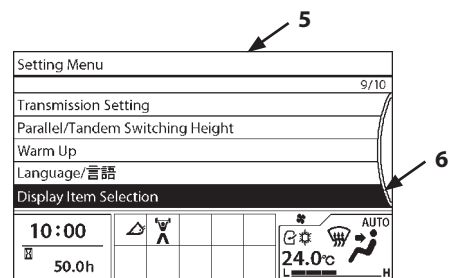
MNEK-01-103EN



MNEK-01-006



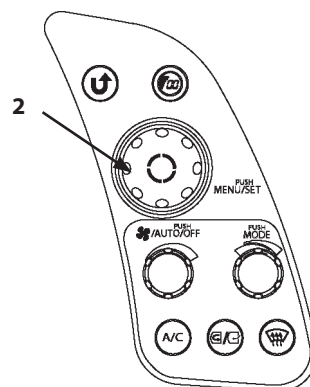
MNEK-01-140EN



MNEK-01-220EN

OPERATOR'S STATION

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

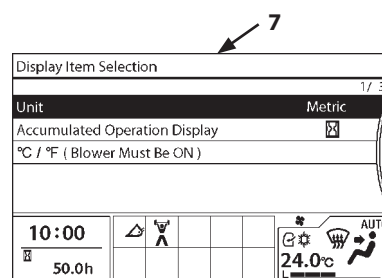


MNEC-01-006

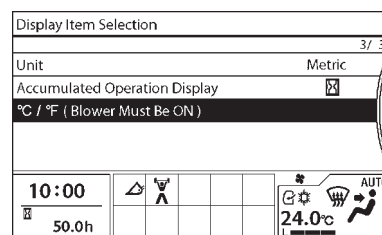
- Rotate selector knob (2) to highlight desired unit system. Press selector knob (2) to set the unit (Metric or US system).
- Rotate selector knob (2) to highlight Accumulated Operation Display. Press selector knob (2) to switch  (hour meter) and ODO (odometer).
- Before changing °C and °F, turn the blower of the air conditioner ON.

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

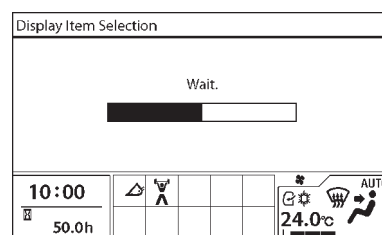
When pressing selector knob (2), "Wait." will be displayed and then the change will be completed.



MNEK-01-221EN



MNEK-01-222EN



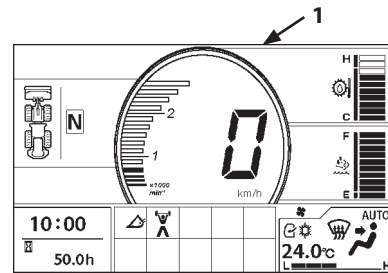
MNEK-01-223EN

OPERATOR'S STATION

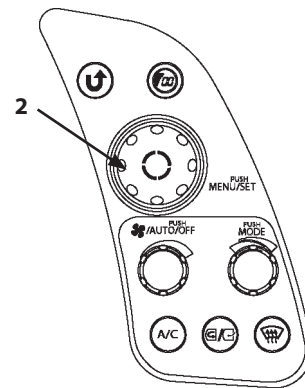
Main Menu Sequence Change

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

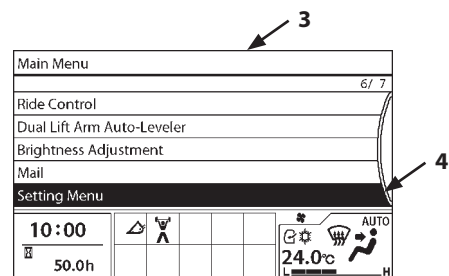
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Setting Menu (4).



MNEK-01-103EN



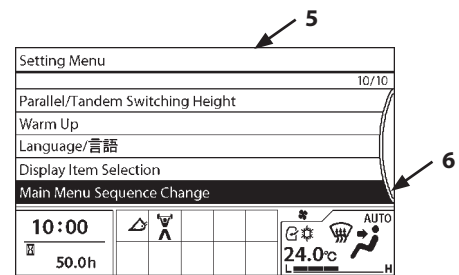
MNEC-01-006



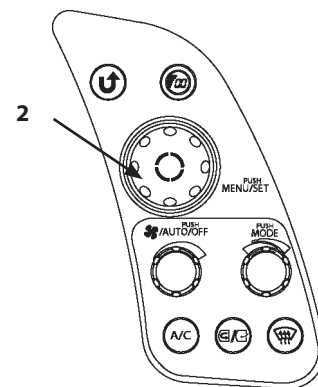
MNEK-01-140EN

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).

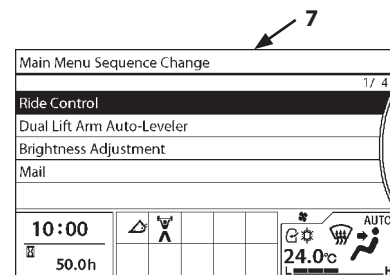


MNEK-01-230EN



MNEC-01-006

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



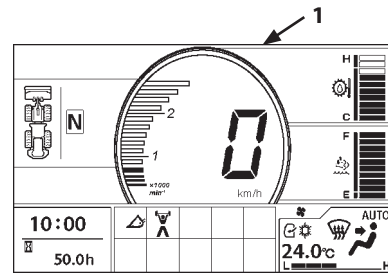
MNEK-01-231EN

OPERATOR'S STATION

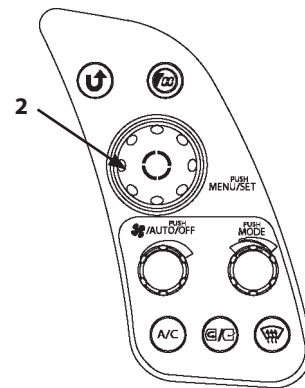
Information Menu

The information menu includes Operation, Maintenance and Monitoring.

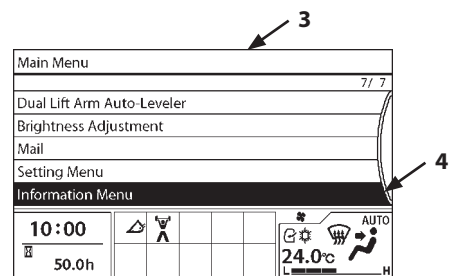
1. Press selector knob (2) while displaying basic screen (1) to display main menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).



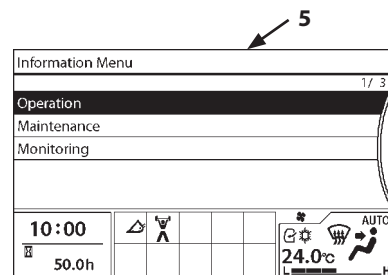
MNEK-01-103EN



MNEC-01-006



MNEK-01-240EN



MNEK-01-241EN

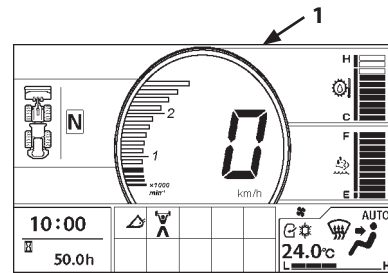
OPERATOR'S STATION

Operation

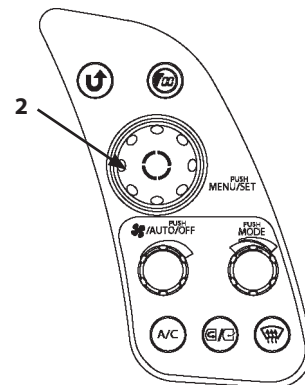
The Operation screen displays fuel consumption, operating hours, and fuel consumption rate from resetting of the monitoring unit.

Fuel Consumption

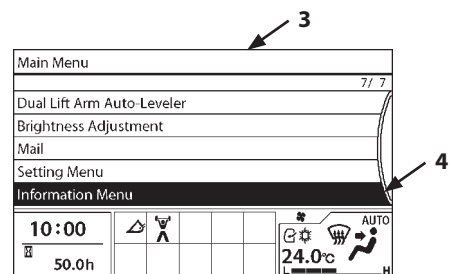
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Operation (6).



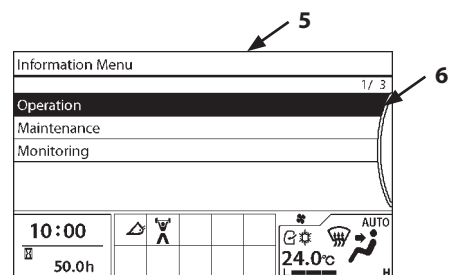
MNEK-01-103EN



MNEC-01-006



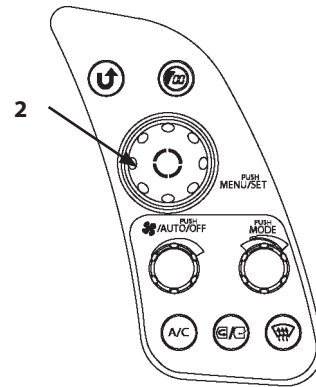
MNEK-01-240EN



MNEK-01-241EN

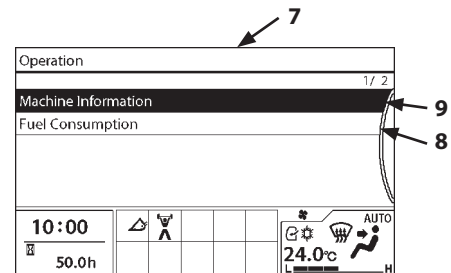
OPERATOR'S STATION

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



MNEC-01-006

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

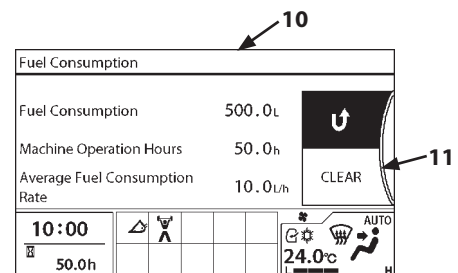


MNEK-01-242EN

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

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

To clear the Fuel Consumption, Machine Operation Hours and the Average Fuel Consumption rate, rotate selector knob (2) to highlight CLEAR (11), and then press selector knob (2).



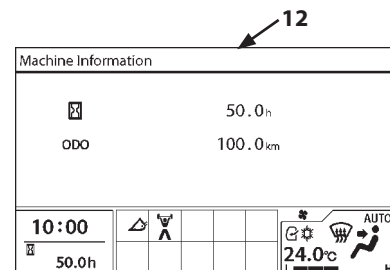
MNEK-01-243EN

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

The values shown on the screen are just for reference.

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

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



MNEK-01-244EN

OPERATOR'S STATION

Maintenance

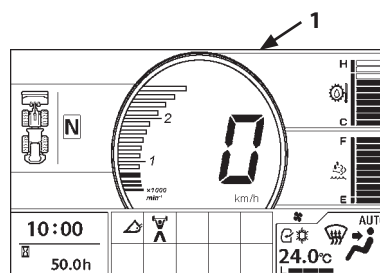
The maintenance screen includes maintenance notice, remaining hours until the next maintenance, and maintenance intervals.

Maintenance Items

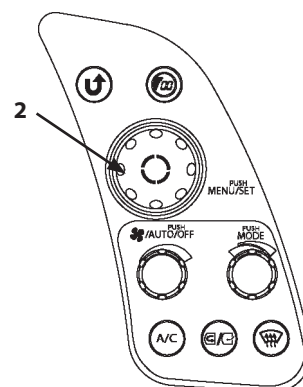
- Engine Oil
- Engine Oil Filter
- Hydraulic Oil
- Pilot Hydraulic Oil Filter
- Hydraulic Tank Oil Filter
- Transmission Oil
- Transmission Oil Filter
- Front Axle Oil
- Rear Axle Oil
- Air Cleaner Element
- Fuel Filter
- Water Separator Filter
- Air Conditioner Filter
- DEF/AdBlue Supply Module Main Filter
- Fuel Solenoid Pump Filter
- Crankcase Air Breather Element
- User Setting 1
- User Setting 2

Maintenance Notice

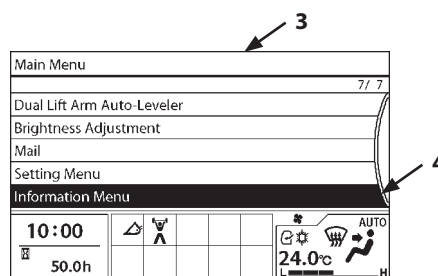
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Maintenance (6).



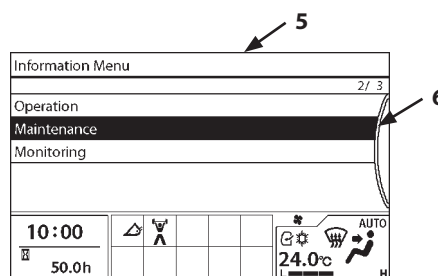
MNEK-01-103EN



MNEC-01-006



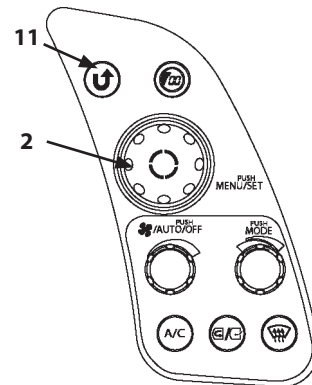
MNEK-01-240EN



MNEK-01-245EN

OPERATOR'S STATION

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

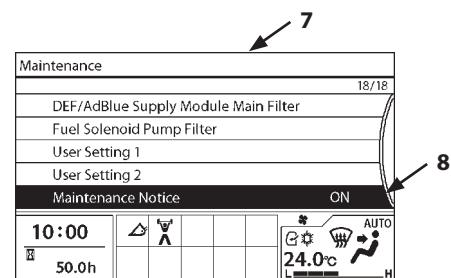


6. Rotate selector knob (2) to highlight Maintenance Notice (8).

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

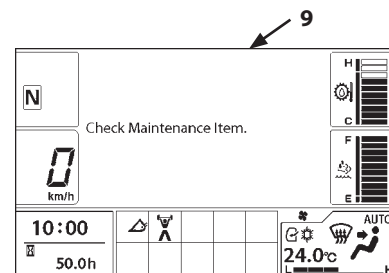
ON : When the required interval is reached, an information message is displayed on the screen.
OFF : No notification message is displayed.

MNEC-01-006

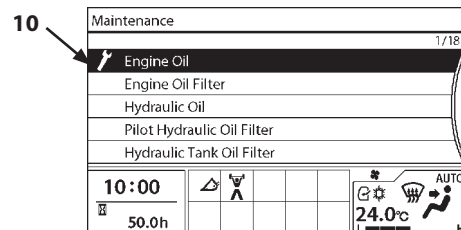


MNEK-01-246EN

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



MNEK-01-247EN

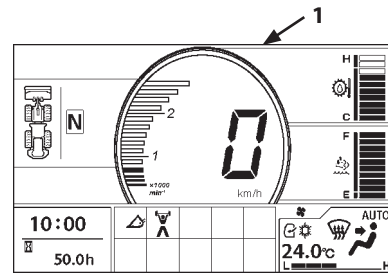


MNEK-01-248EN

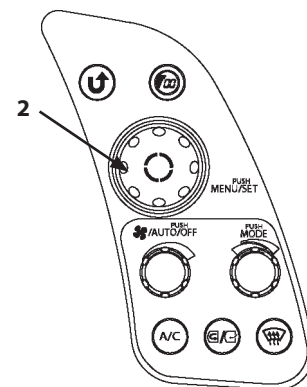
OPERATOR'S STATION

Remaining Time and Maintenance Interval

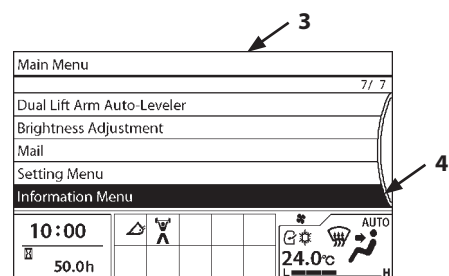
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Maintenance (6).



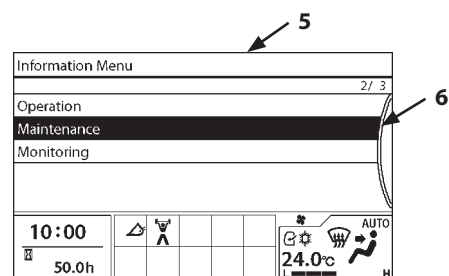
MNEK-01-103EN



MNEC-01-006



MNEK-01-240EN



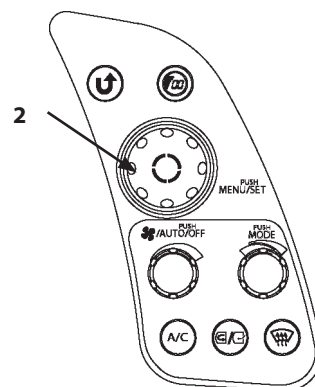
MNEK-01-245EN

OPERATOR'S STATION

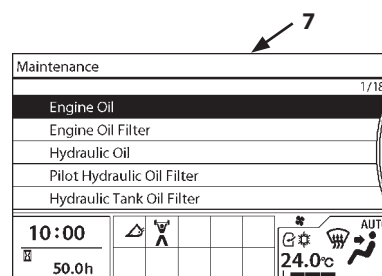
5. Press selector knob (2) to display Maintenance screen (7).

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

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



MNEC-01-006



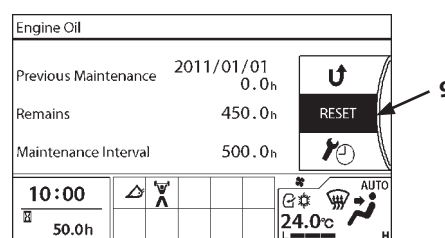
MNEK-01-251EN

Resetting Data

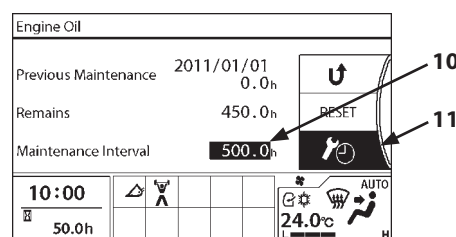
To reset the remaining time data, rotate selector knob (2) to highlight RESET (9), and then push selector knob (2). The value of the remaining hours is reset to that of the maintenance interval. The previous change date/hour is updated with the current date and time.

Maintenance Interval Setting

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



MNEK-01-249EN

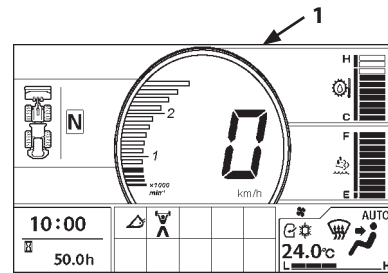


MNEK-01-250EN

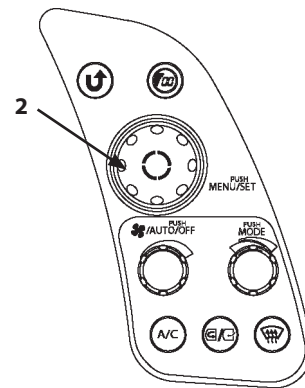
OPERATOR'S STATION

Monitoring

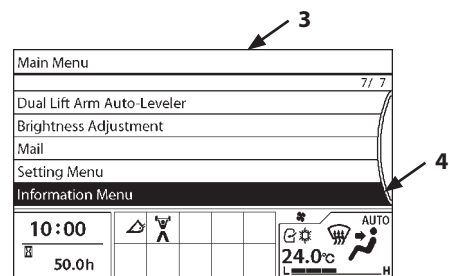
1. Press selector knob (2) while displaying Basic Screen (1) to display Main Menu screen (3).
2. Rotate selector knob (2) to highlight Information Menu (4).
3. Press selector knob (2) to display Information Menu screen (5).
4. Rotate selector knob (2) to highlight Monitoring (6).



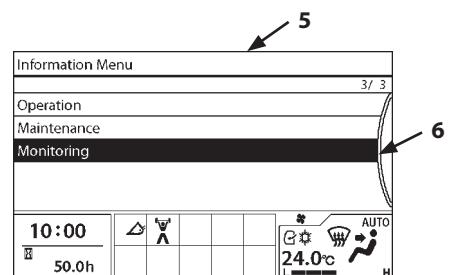
MNEK-01-103EN



MNEC-01-006



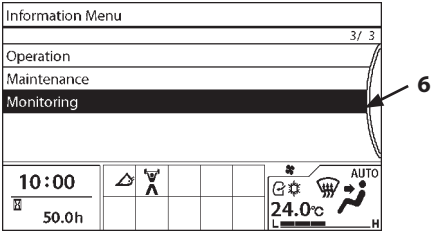
MNEK-01-240EN



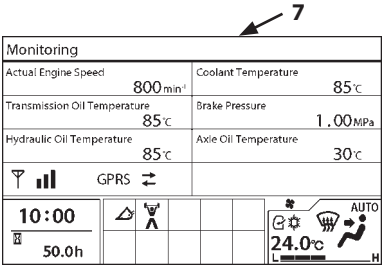
MNEK-01-270EN

OPERATOR'S STATION

- 5. Rotate selector knob (2) to highlight Monitoring (6).
- 6. Press selector knob (2) to display Monitoring screen (7).



MNEK-01-270EN

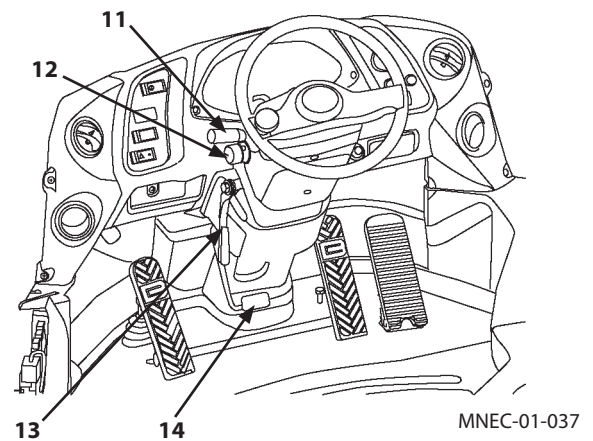
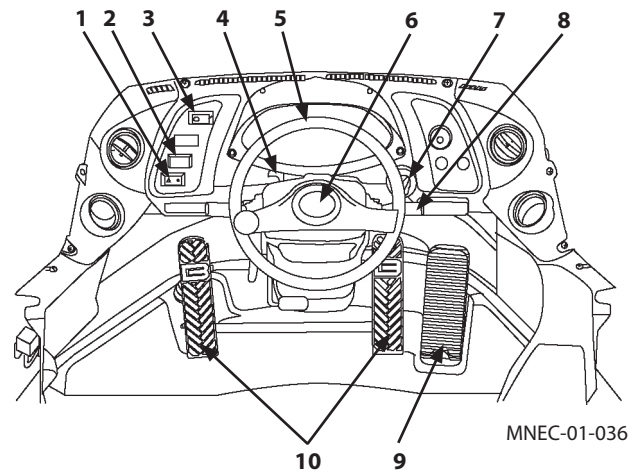


MNEK-01-271EN

OPERATOR'S STATION

Switches, Steering Wheel and Pedals

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



OPERATOR'S STATION

Forward/Reverse Lever/ Shift Switch

Forward/Reverse Lever

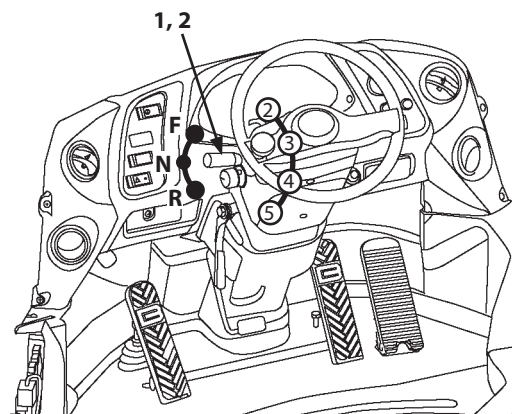
Changes the machine drive direction from forward to reverse and vice versa.

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

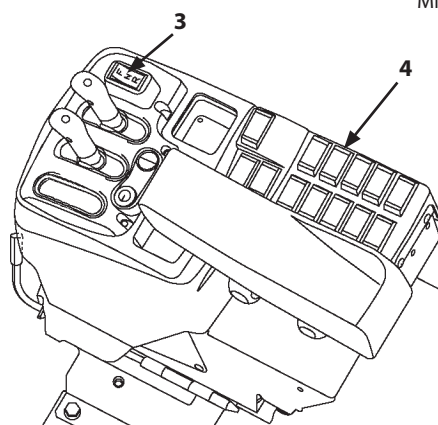
Move forward/reverse lever (1) to the R position to drive the machine in reverse.

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

 **NOTE:** The engine will not be started unless the forward/reverse switch (3) and forward/reverse lever (1) are in the neutral position. For safety, turn the forward/reverse selector switch (4) in the OFF position. Refer to 1-110 for forward/reverse selector switch (4).



MNEC-01-037



Fingertip Control Type

MNEC-01-526

Shift Switch

Rotate shift switch (2) to shift the gear.

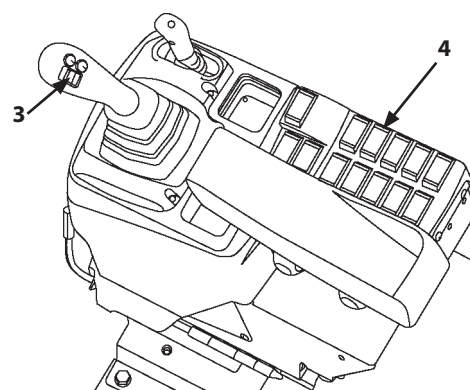
Forward	Reverse
2nd - 4th	2nd - 4th

Select a proper shift for the work.

IMPORTANT: The forward/reverse lever and shift switch are designed to operate lightly.

Do not press and twist the lever and switch firmly.

Damage to the lever and switch may result.



Multi-Function Joystick Type

MNEC-01-043

OPERATOR'S STATION

Neutral Lever Lock (for the Forward/Reverse Lever)

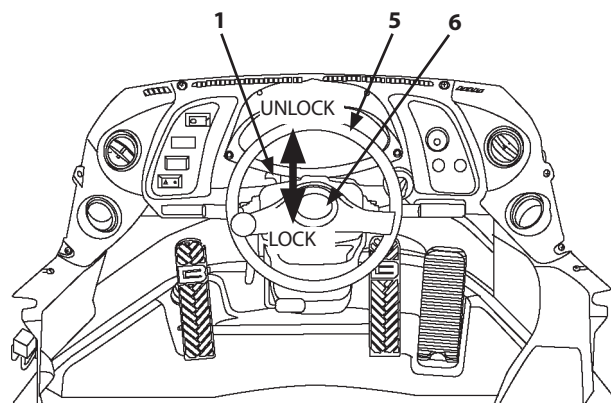
WARNING: When the machine is parked or serviced, be sure to place the neutral lever lock (1) in the LOCK position.

The neutral lever lock makes the forward/reverse lever immovable so that the machine does not start moving even if a body part comes in contact with the forward/reverse lever by mistake.

Before starting the engine, set neutral lever lock (1) in the LOCK position.

Pull : UNLOCK

Push : LOCK



MNEC-01-036

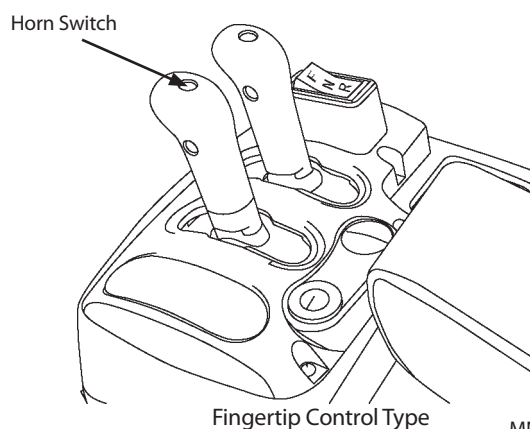
Steering

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

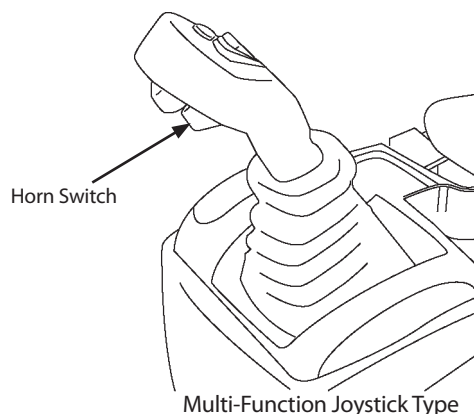
Horn Switch

Press horn switch (6) to sound the horn.

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



MNEC-01-042



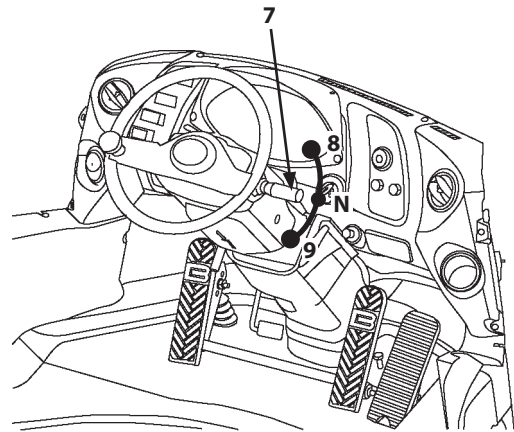
MNEC-01-044

OPERATOR'S STATION

Turn Signal Lever

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

- 8- Left Turn
- 9- Right Turn



MNEC-01-038

OPERATOR'S STATION

Light Switch

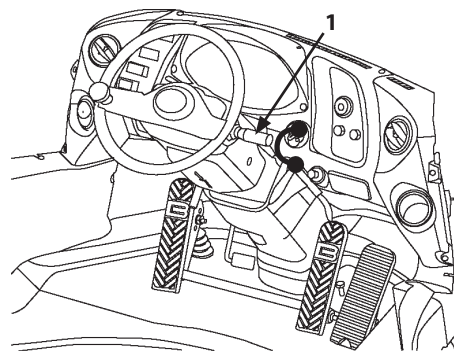
Light switch (1) has three positions, OFF, Small, and Main. As shown below, each light comes ON (☀) or OFF (✕) according to the selected position of the light switch.

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

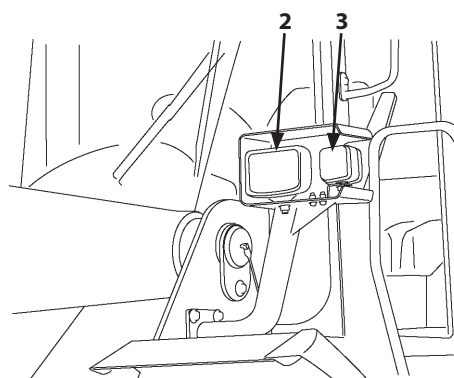
Light Switch Position	Headlight	Clearance Light	Tail Light	Number Plate Light	Monitor Panel Light
OFF	✕	✕	✕	✕	✕
☀☀	✕	☀	☀	☀	☀
☀☀☀	☀	☀	☀	☀	☀

 **NOTE:** The light switch position ☀☀ remains lit even if the key switch is turned OFF. It is used as a parking light when parking the machine on a public road.

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

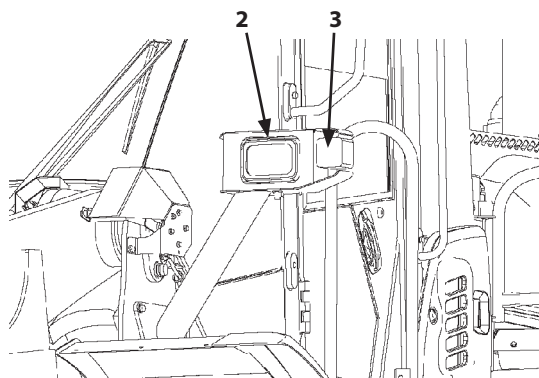


MNEC-01-038



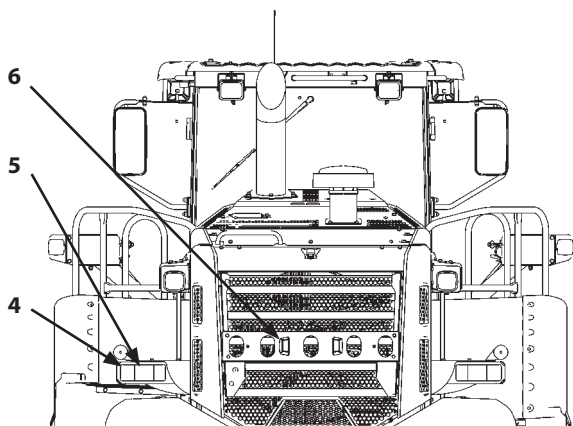
ZW310-6

M4GB-01-153



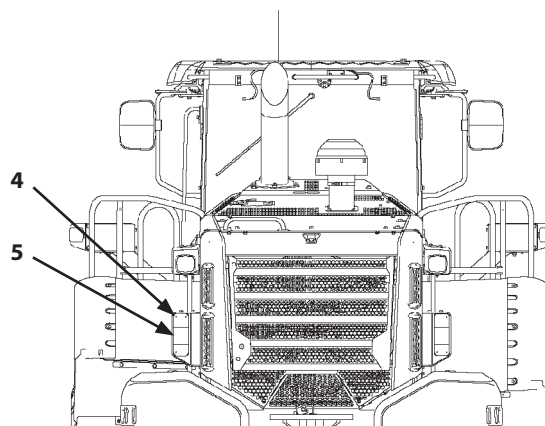
ZW330-6

92Z7B-1-87-2



ZW310-6

MNFB-01-001



ZW330-6

92Z7B-1-87-3

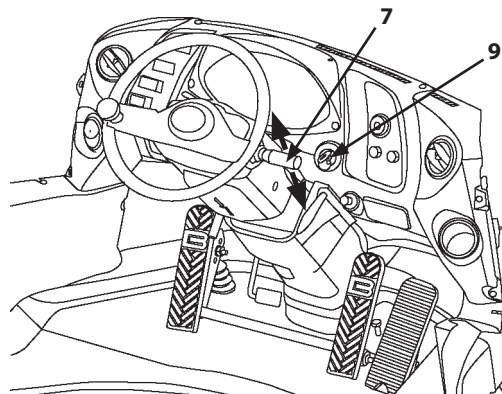
OPERATOR'S STATION

High-Low Beam Switch

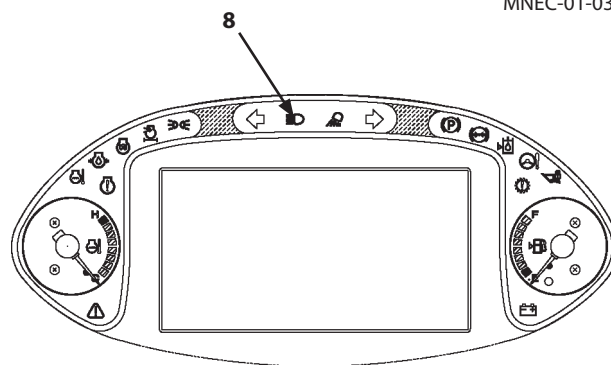
Shifts the direction of the headlight beam high and low.

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

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



MNEC-01-038

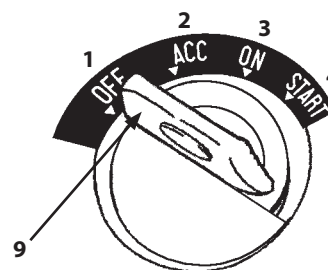


MNEC-01-073

Key Switch

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

WARNING: Never turn key switch (9) OFF while traveling the machine. Failure to do so will result in steering wheel and brake pedal to be inoperable.



MNDB-01-053

- 1- OFF (Engine Off)
- 2- ACC (Radio)
- 3- ON (Power ON)
- 4- START (Engine Start)

OPERATOR'S STATION

Wiper Switch

Wiper Operation

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

- Before operating the windshield wiper, remove snow or dust from the windshield surface and defrost the frozen windshield.
- Use anti-freeze type washer fluid.
- Squirt windshield washer fluid on the dry windshield before operating the wiper. Continuous operation of the windshield wiper in semiarid (such as light rain or snow) conditions may cause failure of the wiper. Use wiper intermittently to protect it from damage.
- If the machine is equipped with a hot-wire heater (for windshield), continuous operation of the windshield wiper with the heater switch kept ON for a long time may cause the wiper blades to be burnt.

OPERATOR'S STATION

Front/Rear Wiper Switch

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

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

: The front windshield wiper operates at fast speed.

: The front windshield wiper operates at slow speed.

INT : The front windshield wiper intermittently operates.

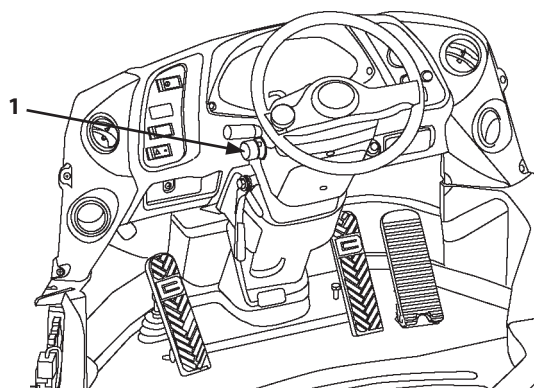
OFF : The front windshield wiper stops moving and the wiper blade is returned to the pre-start position.

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

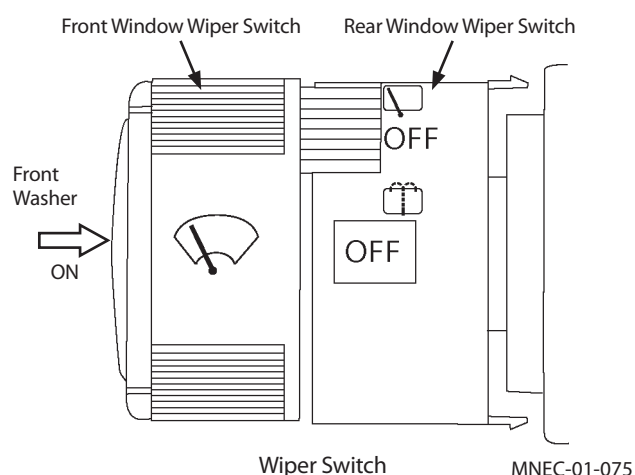
: Washer fluid squirts from the rear nozzle and the rear windshield wiper operates.

: Rear windshield wiper operates.

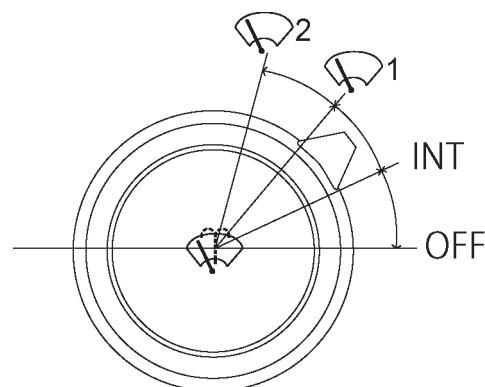
: Washer fluid squirts from the rear nozzle.



MNEC-01-037

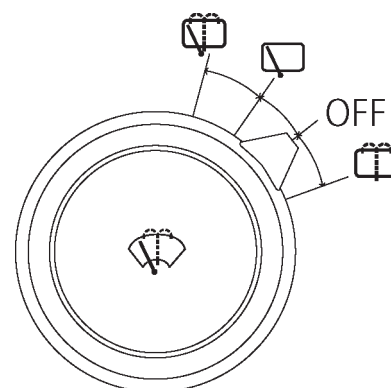


MNEC-01-075



Front Window Wiper Switch

MNEC-01-076



Rear Window Wiper Switch

MNEC-01-077

OPERATOR'S STATION

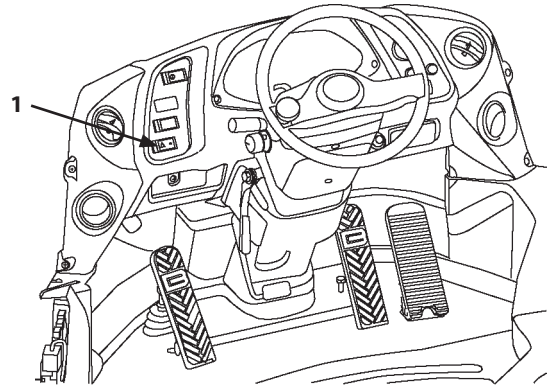
Hazard Switch

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

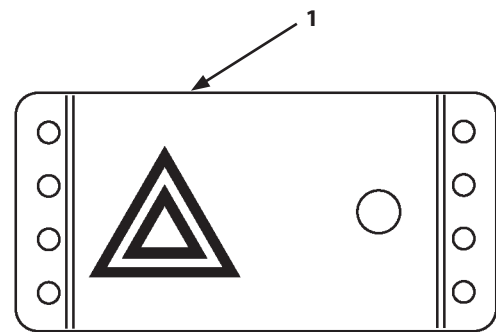
When a machine failure occurs, use this switch to inform other vehicles that the machine is in an emergency situation.

When the position marked with "▲" on hazard switch (1) is pressed, front and rear turn signals (hazard light) (2) on both right and left sides start flashing.

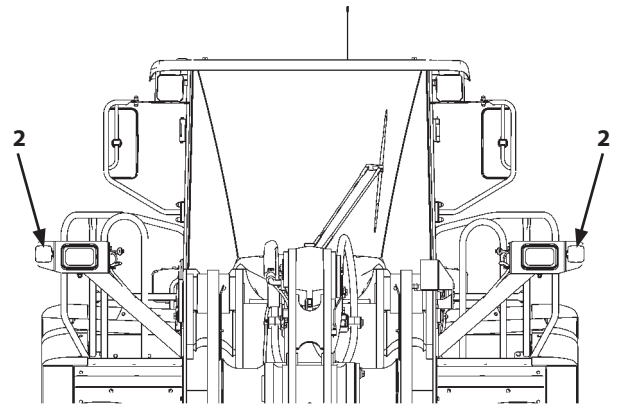
Press the opposite side of hazard switch (1) to turn the hazard signals (2) OFF.



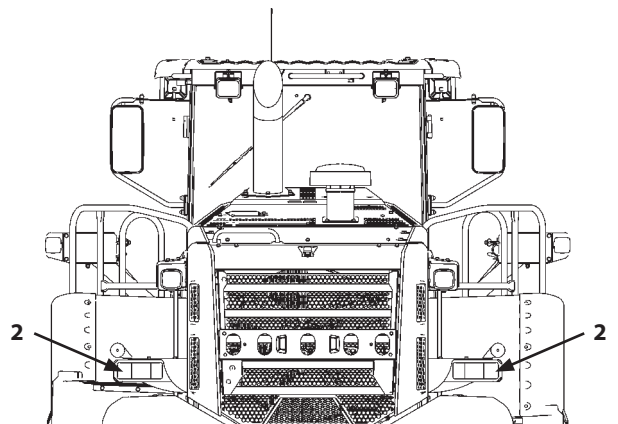
MNEC-01-037



M4GB-01-065



MNFB-01-002



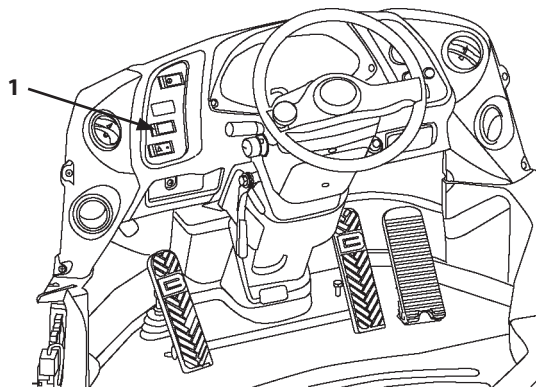
MNFB-01-001

OPERATOR'S STATION

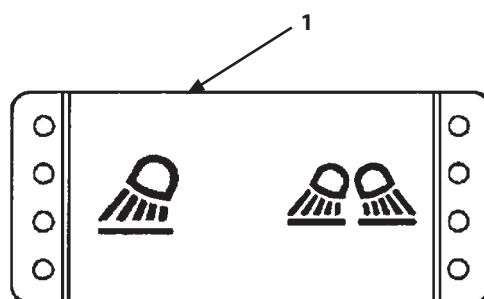
Work Light Switch

Press the mark  on switch (1) while the light switch is in "D" or "D" position to turn front work lights (2) ON. Rear work lights (3) stay OFF. When the side with mark  on switch (1) is pressed, both front work lights (2), rear work lights (3) and rear cab lights (4) (option) are turned ON.

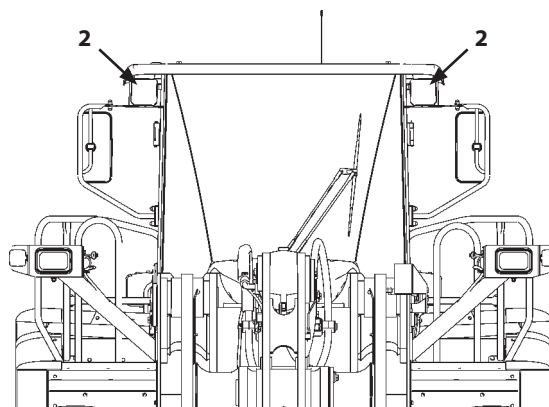
CAUTION: Do not turn the work lights ON while driving on a public road.



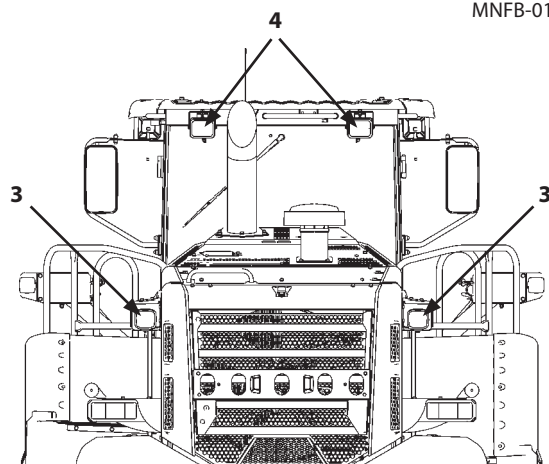
MNEC-01-037



MNFA-01-011



MNFB-01-002



MNFB-01-001

OPERATOR'S STATION

Parking Brake Switch

WARNING:

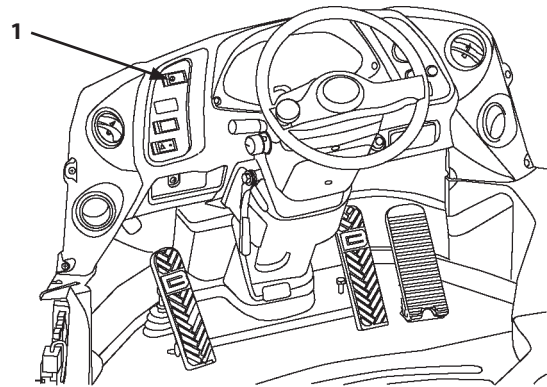
- To prevent accidents due to running away of the machine, after parking the machine or before leaving the machine, be sure to apply the parking brake.
- Never apply the parking brake while traveling the machine.
- Apply the parking brake only after the machine has stopped.
- Failure to do so may cause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

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

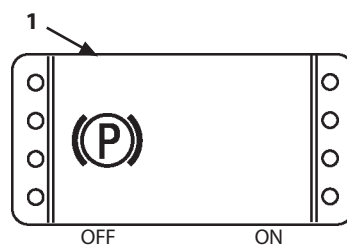
Press the OFF side of parking brake switch (1) to release the parking brake. Check that parking brake indicator (2) goes OFF by pressing the switch twice with clicks.

NOTE:

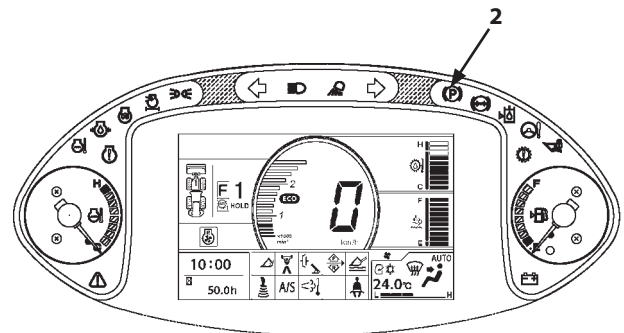
- The parking brake is released by hydraulic pressure only when the engine is running.
- To ensure safe operation, when the parking brake is applied, even though the forward/reverse lever is moved to forward (F) or reverse (R) position, the machine does not travel.
- To ensure safe operation, when the engine is stopped, the parking brake is applied even if parking brake switch (1) is in the OFF position.
Before restarting the engine, ensure the forward/reverse lever and forward/reverse switch (5) are in "Neutral" position, and forward/reverse selector switch (4) is in OFF position for safety.
- The parking brake will apply when the key is turned OFF.



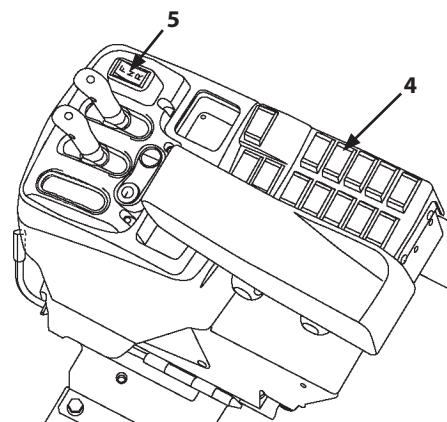
MNEC-01-037



MNEC-01-058



MNEK-01-500



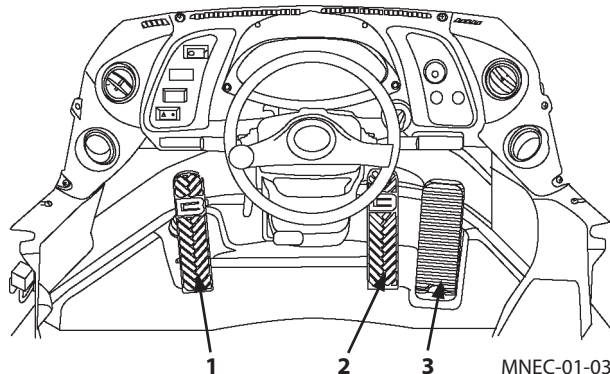
MNEC-01-526

OPERATOR'S STATION

Accelerator Pedal

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

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



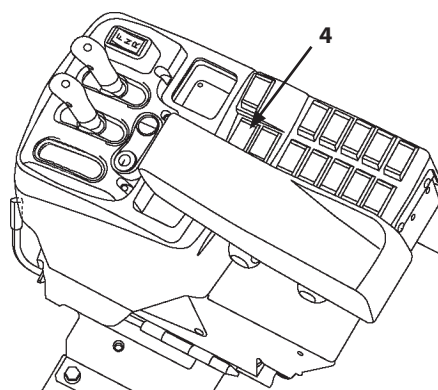
MNEC-01-036

Brake Pedal

WARNING:

- **Avoid sudden brake application during travel operation, possibly creating a hazardous situation. The machine may lose its balance.**
- **To prevent wear on the brake pads, brake discs and clutch, and to keep the axle oil from overheating, keep your feet off the brake pedal except when needed.**
- **Keep the installation areas around the brake pedals clean to prevent dust and/or grit from accumulating. The brake may become inoperable.**

Left and right brake pedals (1), (2) can function as the service brake or the clutch cut off brake by switching clutch cut position switch (4).



Fingertip Control Type

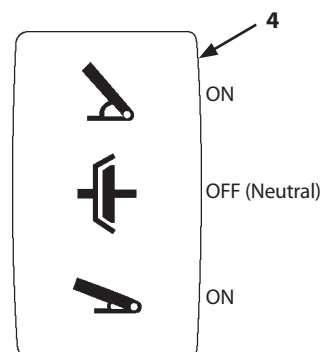
MNEC-01-526

Service Brake

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

Clutch Cut Off Brake

Brake pedals (1), (2) function as clutch cut off brake by setting clutch cut position switch to the ON  . Use to stop the machine in the specified position to engage the machine in loading/unloading work.



MNEC-01-025

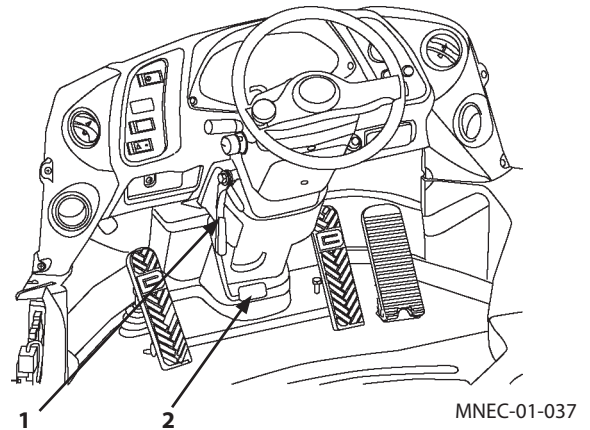
OPERATOR'S STATION

Tilt, Telescopic Lever/Steering Column Pop-up Pedal

⚠ WARNING:

- Before operating the machine, be sure that the steering wheel is locked.
- Do not operate the tilt, telescopic lever (1) and steering column pop-up pedal (2) during operation.
- Before operating the machine, adjust the steering column inclination so as to match the operator's physical constitution. Pull lever (1) to set the steering column inclination to the desired position. Push lever (1) until it contacts the stopper, ensuring the steering column is locked.
- By depressing steering column pop-up pedal (2), the steering column moves forward, and the distance between the operator's seat and the steering wheel increases, allowing operator to get on and off the machine easily.
- After moving the steering column forward, pull the steering wheel to the operator side. The steering column will be automatically locked in the regular position and the machine becomes operable.

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

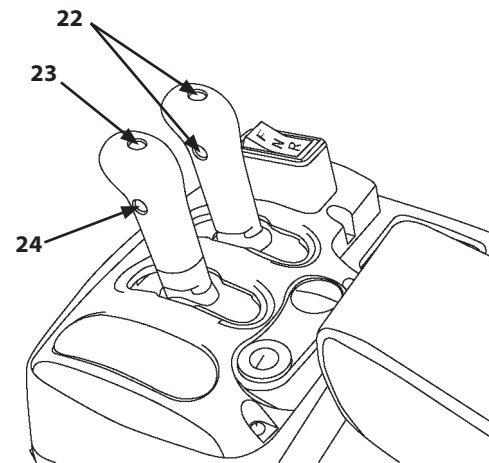
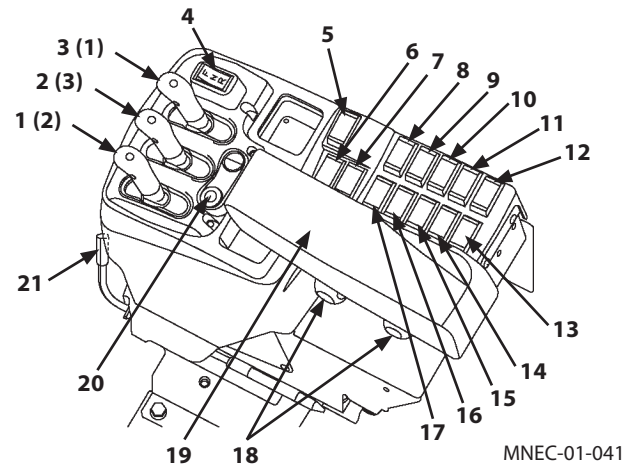


OPERATOR'S STATION

Right Console / Switches

Fingertip Control Type

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



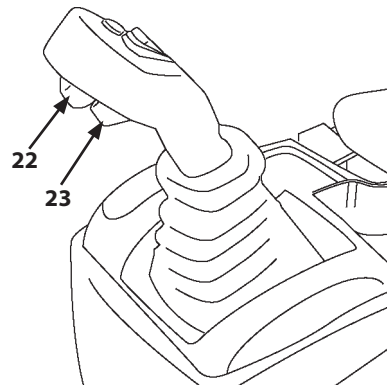
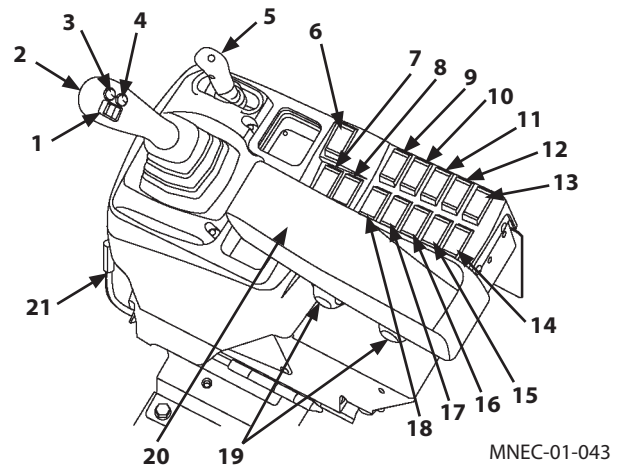
 **NOTE:** * The location of control levers may be changed depending on the specification.

OPERATOR'S STATION

Right Console / Switches

Multi-Function Joystick Type

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



OPERATOR'S STATION

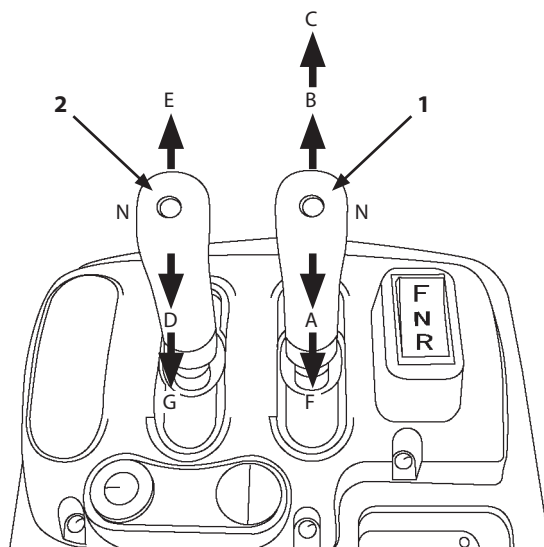
Control Lever

Fingertip Control Type

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

Lift Arm Control Lever (1)

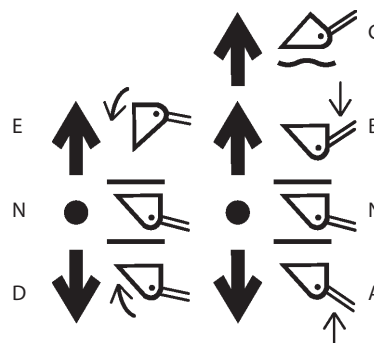
Lever Position	Lift Arm Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position.



MNEC-03-003

Bucket Control Lever (2)

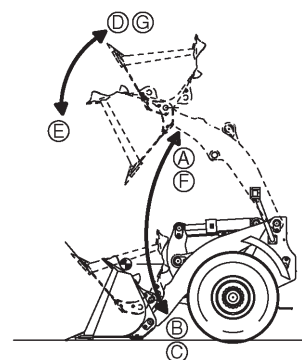
Lever Position	Bucket Operation
E	Bucket Dump: The bucket is tilted forward to dump the bucket load.
N	Hold: The bucket is stopped and held in that position.
D	Bucket Tilt: The bucket is tilted back, taking the transportation position.
G	Detent: When the bucket control lever is moved from the bucket dump position to the bucket tilt position, the bucket control lever is maintained in this position.



M4GB-01-072

NOTE:

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

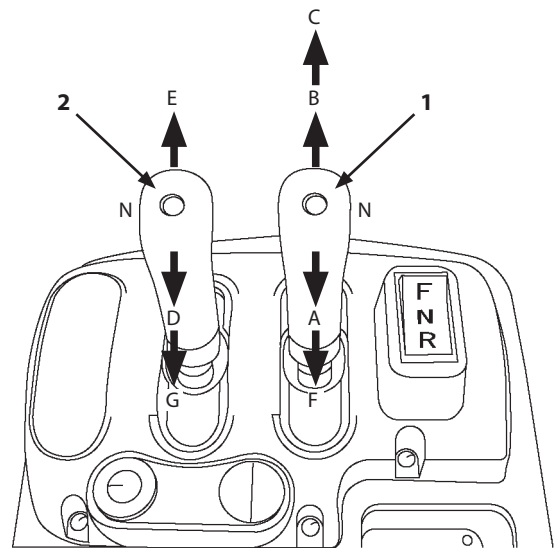


M4GB-01-073

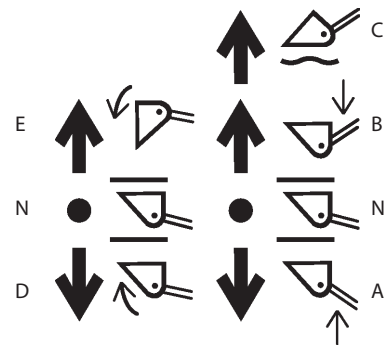
OPERATOR'S STATION

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

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



MNEC-03-003



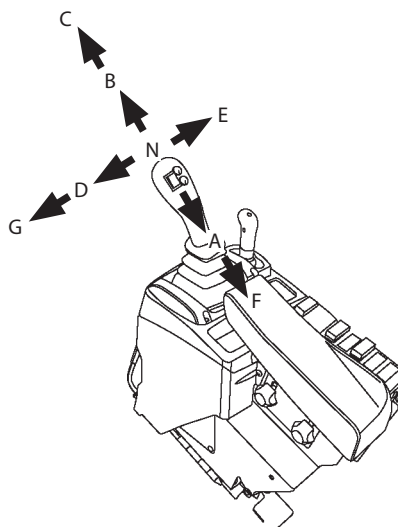
M4GB-01-072

OPERATOR'S STATION

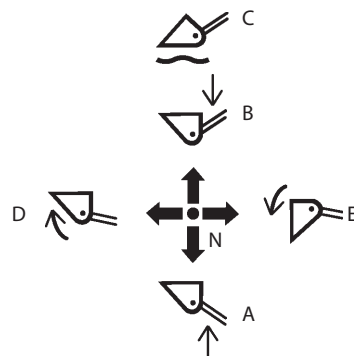
Multi-Function Joystick Lever

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

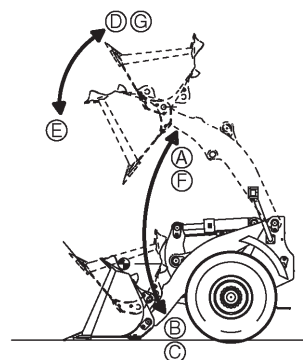
Lever Position	Bucket Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position.
G	Detent: When the multi-function joystick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



MNEC-01-059



M4GB-01-074



M4GB-01-073

OPERATOR'S STATION

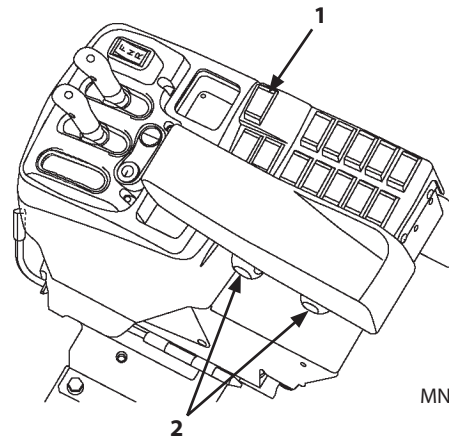
Control Lever Lock Switch

WARNING:

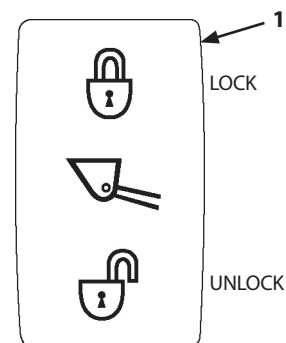
- Before leaving the operator's seat, be sure to stop the engine. Set control lever lock switch (1) to the LOCK (🔒) position.
- Always check to be sure that the control lever lock switch is set in the LOCK (🔒) position before transporting the machine or leaving the machine at the end of the shift.

Refer to section 5-4 for details.

Control lever lock switch (1) is provided to prevent the machine from being mistakenly operated when the operator accidentally touches the bucket and/or lift arm control lever when getting on or off the machine. When control lever lock switch (1) is placed to UNLOCK (🔓) position, the front control lever becomes operable.



MNEC-01-526



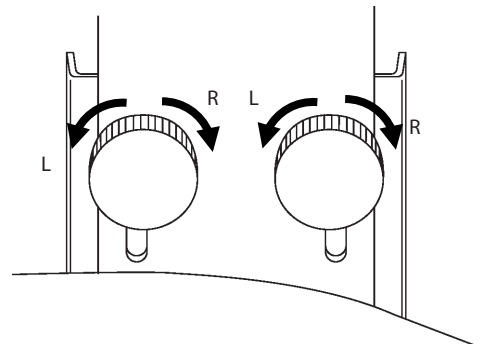
MNEC-01-015

Armrest Adjust Handle

The armrest is provided so that the operator can operate the lever with an arm on the armrest, for comfort and ease.

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

L : Loosen
R : Tighten

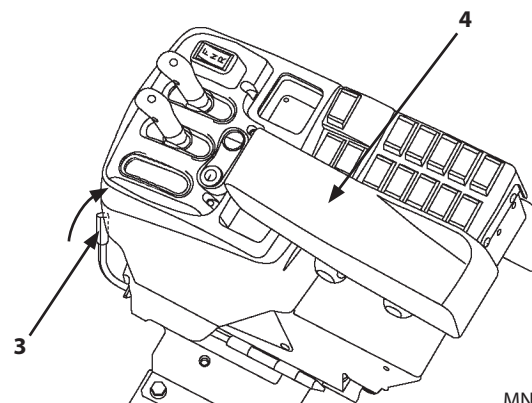


M4GB-01-077

Right Console Fore-aft Adjustment

Move arm rest (4) forward or backward by holding the arm rest with your right hand while tilting lever (3) rightward (outside) by holding the lever with your left hand. Stop the console at an arbitrary position, and return lever (3) to original position (inside) to secure the console.

Fore-Aft Position Adjustment : 90 mm



MNEC-01-526

OPERATOR'S STATION

Travel Mode Selector

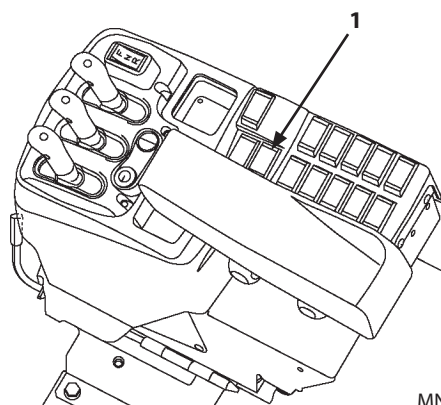
The travel mode selector (1) selects the travel mode. Selecting the manual mode "⚙️" by using travel mode selector (1) sets the transmission to manual mode, which allows manual shift change by using shift switch (2). AUTO 1 and AUTO 2 are choices selectable at auto-shift mode. Select the most efficient mode for the travel and work condition.

Be sure to stop the machine and set forward/reverse lever (2) in the neutral (N) position before operating travel mode selector (1).

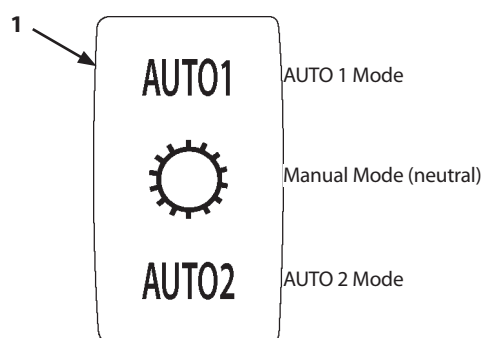
Manual Mode	: Manual gear shift (The gear shifts according to the shift switch.)
AUTO 1 Mode	: Start traveling at 2nd speed. When traveling load increases, it automatically shifts from 2nd to 1st speed. (Auto DSS function) This mode is suited for heavy digging work or ascending on a slope.
AUTO 2 Mode	: Start traveling at 2nd speed. This mode uses 2nd or more gear shifts. This mode is suited for removing snow.

Refer to "DRIVING MACHINE" section.

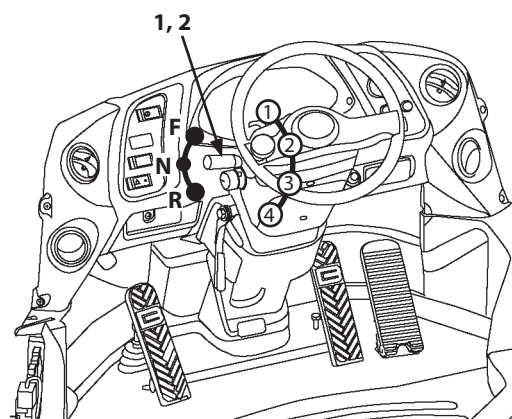
 **NOTE:** The AUTO 1 mode shifts up to the set shift switch position. When the shift switch is set to 4th speed, auto-shift range is 1st to 4th speed. When the shift switch is set to 3rd speed, auto-shift range is 1st to 3rd speed.



MNEC-01-041



MNEC-01-024



MNEC-01-037

OPERATOR'S STATION

Clutch Cut Position Switch

Clutch cut position switch (2) changes the function of left and right brake pedals.

Operating clutch cut position switch (2) turns the clutch cut off function ON and OFF.

- Clutch cut ON

By depressing left or right brake pedal, the clutch is disengaged and brake is applied without transmitting the drive power to the tires.



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



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

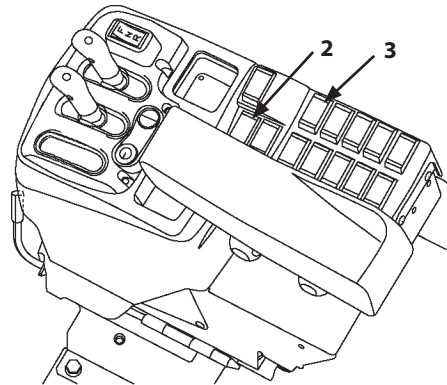
- Clutch cut OFF

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

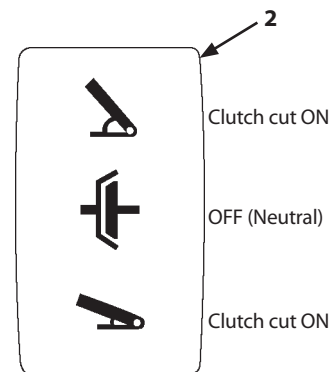


NOTE:

- When starting to ascend a slope, turn clutch cut position switch (2) OFF (neutral), depress the left brake pedal. Gradually release the left brake pedal while depressing the accelerator pedal to easily start ascending the slope.
- Effective use of the clutch cut position switch leads to reduced fuel consumption and overheating of axle oil.



MNEC-01-526



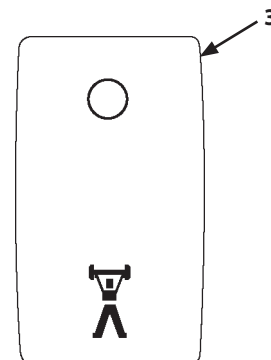
MNEC-01-025

Power Mode Switch

Push power mode switch (3) to ON/OFF the power mode.

OFF : This mode is suitable for loading work with a high value placed on fuel consumption.
Under auto shifting mode, the gear is shifted at an early timing.

ON : This mode is suitable for heavy digging work with a high value placed on work effectiveness.
Under auto shifting mode, the gear is shifted at a regular timing.



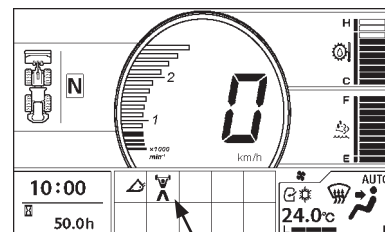
MNEC-01-016

Each time the upper side of the switch (○ mark) is pressed, the power mode changes ON/OFF alternately.

Power mode icon (4) is displayed on the power mode indicator of the monitor screen.



NOTE: When turning the key switch ON, the power mode always starts from OFF state. Before operating the machine at power mode, operate the power mode switch and ensure the power mode icon (4) is displayed on the monitor screen.



MNEK-01-103EN

OPERATOR'S STATION

Quick Power Switch

When quick power switch (4) is pressed while the power mode switch is OFF, the work mode is temporarily switched to P-mode. (The power mode indicator on the monitor is also changed to )

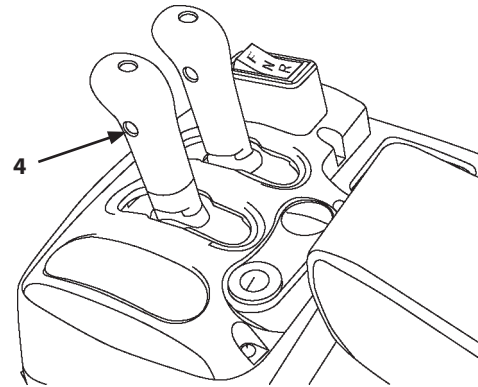
 **NOTE:** The quick power switch is operable only in the following cases:

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

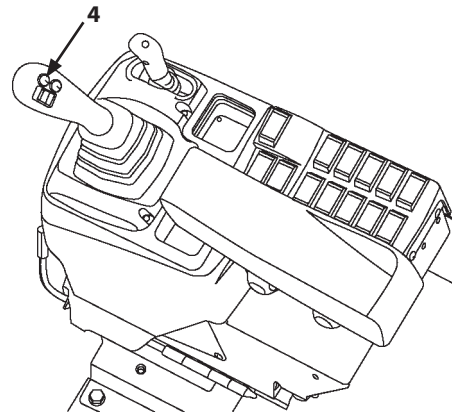
When driving under low load or the forward/reverse lever is in "Neutral" (N) position, the mode will not change to power mode even if quick power mode switch is pressed. The switch becomes invalid.

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

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



MNEC-01-042



MNEC-01-043

OPERATOR'S STATION

Hold Switch

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

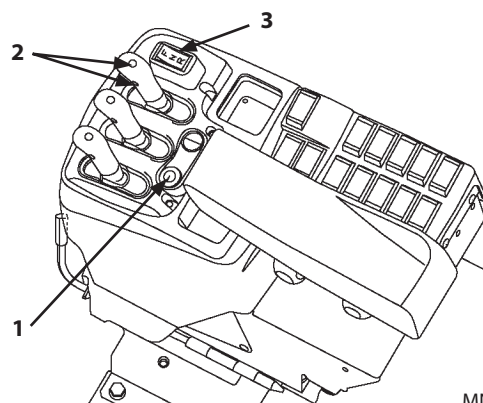
Operate one of the following methods to release the hold function: Press the hold switch again, change the shift, change the travel mode, or press DSS (down shift switch).

DSS (Down Shift Switch)

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

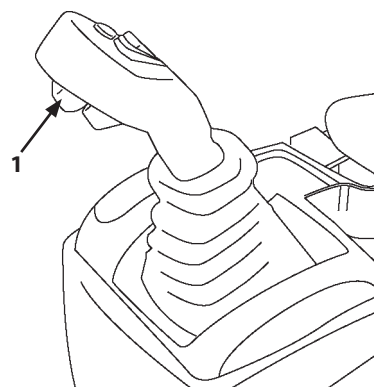
Press DSS (2) at the timing when ECO indicator (5) becomes OFF while driving a slope or dozing operation such as snow removal. In this case, the gear temporarily down shifts to 1st speed by pressing DSS (2), but it automatically returns to 2nd speed when traveling load is reduced.

NOTE: Under auto shift mode or manual shift mode, each time DSS (2) is pressed, the gear down shifts at 1-speed step. Under auto shift mode, press and hold DSS (2) to down shift from 5th speed to 1st speed.

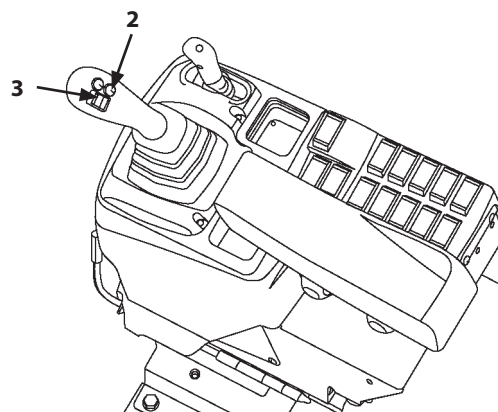


Fingertip Control Type

MNEK-01-041

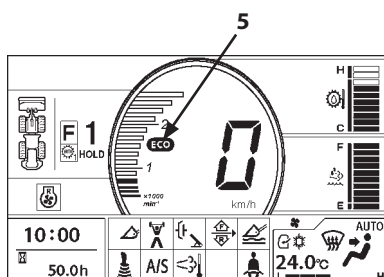


MNEK-01-044

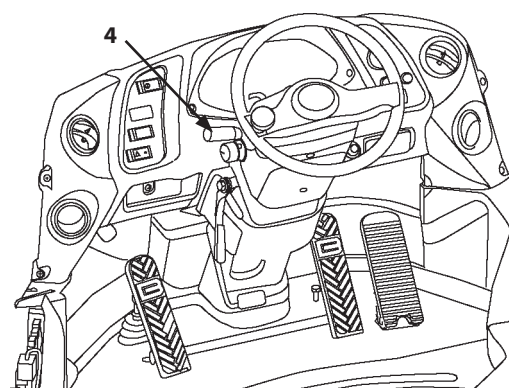


Multi-Function Joystick Type

MNEK-01-043



MNEK-01-100EN



MNEK-01-037

OPERATOR'S STATION

Ride Control Switch



WARNING:

- **To ensure safety, operate the ride control switch only after parking the machine with the bucket lowered to the ground.**
- **When operating the machine with the front attachment in the float position (scooping, grading, or snow removal), always turn the ride control switch OFF. Failure to do so may allow the front attachment to unexpectedly move up or down when the ride control system is activated.**
- **When operating the machine with the ride control ON, reduce the machine speed. Ride control accumulator will carry high pressure if sudden impact load is applied on the working equipment, causing gas leakage.**

The ride control switch damps the vertical vibration of the front attachment during drive operation so that comfortable machine ride quality is obtained. As stable drive operation is achieved, bucket load spill can be prevented.

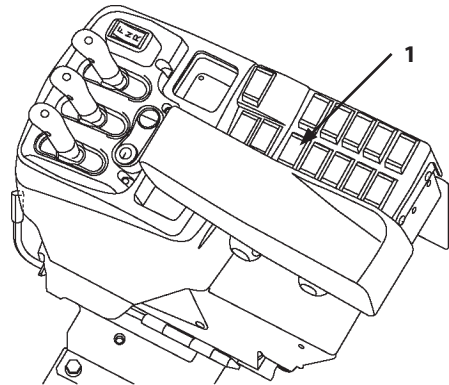
OPERATOR'S STATION

AUTO

When ride control switch (1) is turned to AUTO, the drive speed sensor and the controller are activated. When the drive speed becomes faster than the preset travel speed, the ride control system automatically operates.

When the drive speed becomes slower than the preset travel speed, the ride control system becomes inoperable.

When ride control switch (1) is turned to AUTO mode, ride control indicator  (2) on the monitor display comes ON.

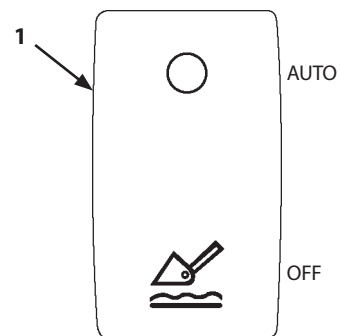


MNEC-01-041

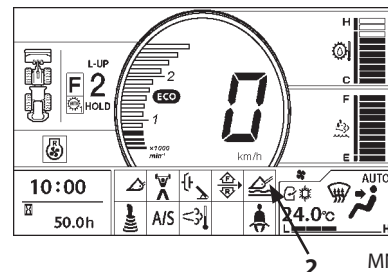
OFF

When ride control switch (1) is turned OFF, ride control indicator (2) on the monitor display goes OFF and the ride control system becomes inoperable.

When the key switch is in the OFF position, the ride control system does not operate even if ride control switch (1) is in AUTO position. When the engine is stopped while ride control switch (1) is in AUTO, the ride control is turned OFF.



MNEC-01-022



MNFB-01-100EN

OPERATOR'S STATION

Fan Reverse Rotation Switch

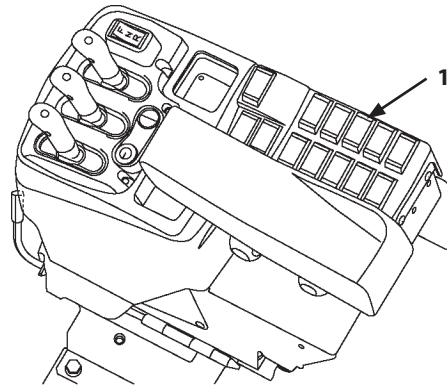
Fan reverse rotation switch (1) reverses the hydraulic driven fan. If the radiator is clogged, rotate the hydraulic driven fan in reverse direction to blow out the clogged dust. Carry out the fan reverse rotation regularly to prevent the cooling system from clogging.

Manual Operation

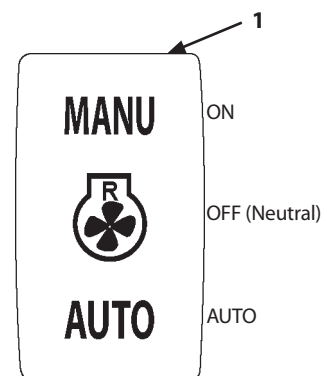
IMPORTANT:

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

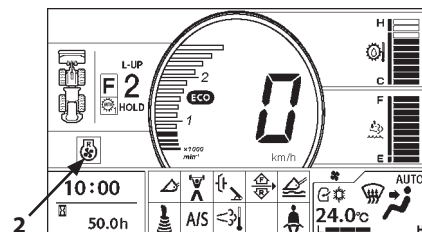
1. Close the side cover and the rear grille before operating the switch.
2. Start the engine. Be sure to confirm that the parking brake is applied. Press ON side of fan reverse rotation switch (1) once. Fan reverse rotation indicator (2) starts flashing. Approximately 1 minute later, the fan rotates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



MNEC-01-041



MNEC-01-019



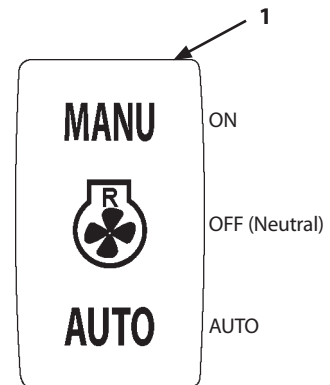
MNFB-01-100EN

OPERATOR'S STATION

AUTO

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

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



MNEC-01-019

OPERATOR'S STATION

Forward/Reverse Selector Switch

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

If the machine is equipped with joystick steering (optional), refer to the section "Joystick Steering" in Chapter 13.

Operational Procedure

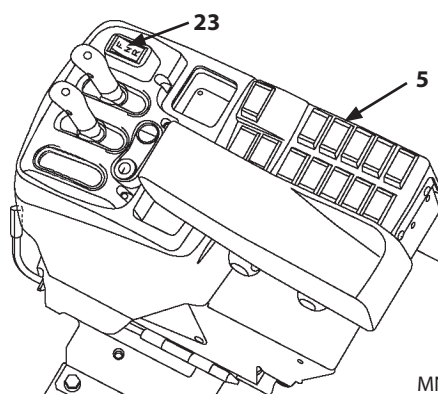
1. Turn the parking brake switch OFF.

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

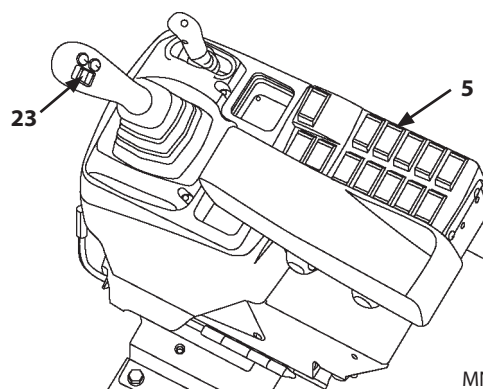
2. When forward/reverse selector switch (5) is turned ON while both forward/reverse lever (22) and forward/reverse switch (23) are in the neutral (N) position, forward/reverse indicator (24) is lit.
3. Set forward/reverse selector switch (23) to (F) or (R).

NOTE: When forward/reverse lever (22) is set to other than the neutral (N) position while forward/reverse switch (23) is operating, forward/reverse switch (23) becomes disabled. (Forward/reverse lever priority control)

If you use the forward/reverse switch (23) again, perform step 2.

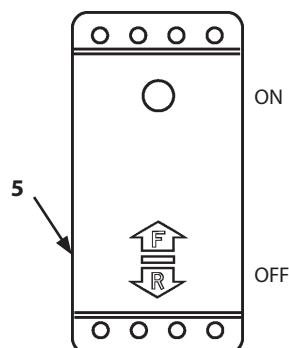


MNEC-01-526

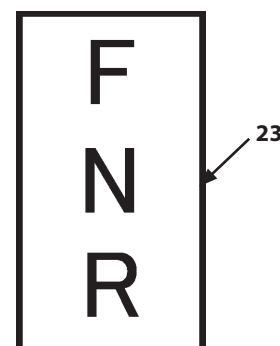


MNEC-01-043

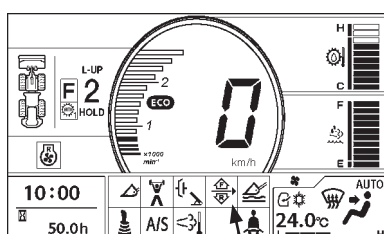
Multi-Function Joystick Type



M4GB-01-083

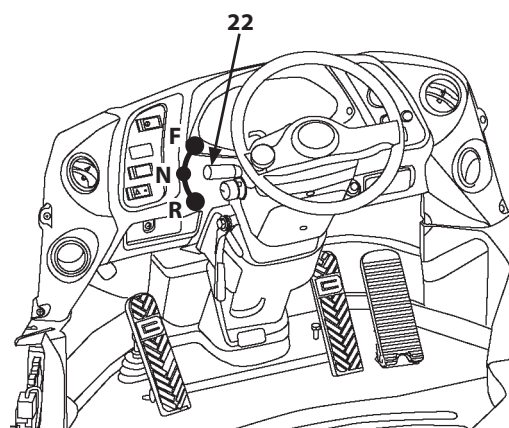


M4GB-01-084



24

MNFB-01-100EN



MNEC-01-037

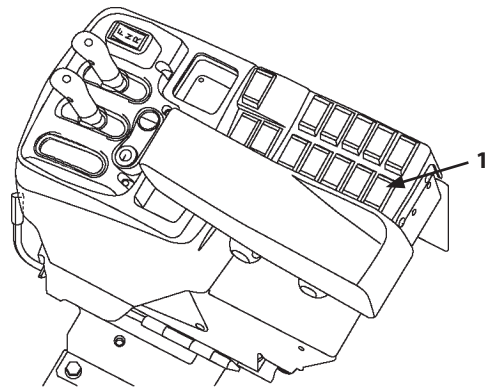
OPERATOR'S STATION

Emergency Steering Operation Check Switch

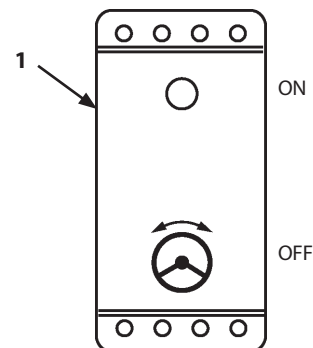
Push emergency steering operation check switch (1) to check whether the emergency steering pump operates. The emergency steering pump operates while pushing the ON side of the switch. In the meantime, emergency steering alarm (2) will be displayed on the monitor screen. Release the switch when the operation of the emergency steering pump is checked. The switch will return to OFF position.

IMPORTANT: As the pump requires a large amount of electric power for operation, check it within one or two seconds.

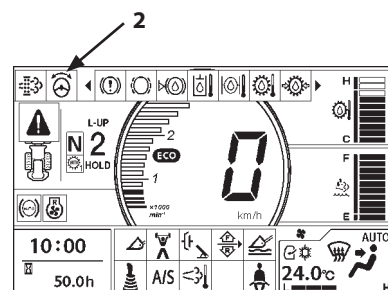
 **NOTE:** The emergency steering auto-check is performed for one to two seconds after starting the engine. The pump's operating noise will be heard during the check.



MNEC-01-526



M4GB-01-088



MNFB-01-290EN

OPERATOR'S STATION

Cigar Lighter

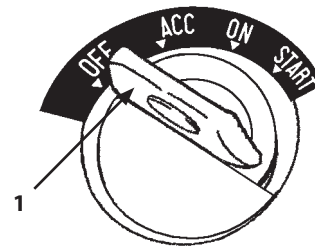
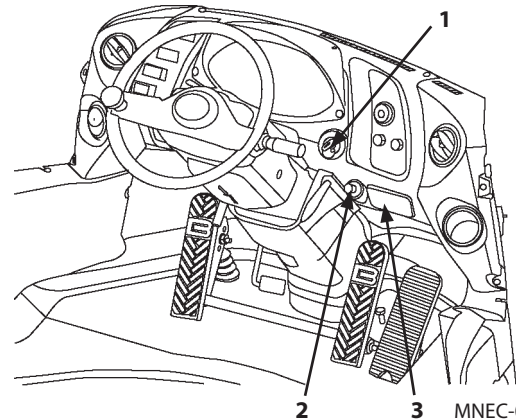
Using Cigar Lighter

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

IMPORTANT: If the cigar lighter does not pop out automatically 30 seconds after pushing the cigar lighter in, pull out the cigar lighter manually. Consult your nearest Hitachi dealer.

1. Turn key switch (1) ON.
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.

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



MNDB-01-053

Ash Tray

⚠ WARNING: Take precautions against fires.
Use ash tray (3) when smoking in the cab.

OPERATOR'S STATION

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 intensity of the sun.
- 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

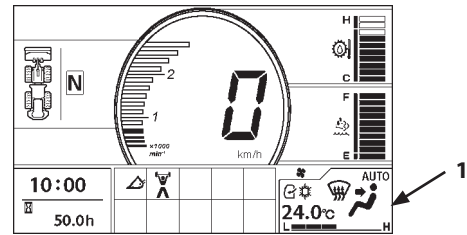
Components Name

- 1- Monitor
- 2- Control Panel
- 3- Temperature Control Switch/Mode Switch
- 4- Defroster Switch
- 5- Circulation/Fresh Air Switch
- 6- Air Conditioner ON/OFF Switch
- 7- Auto Switch/Blower Switch
- 8- Defroster Vent
- 9- Rear Vent
- 10- Foot Vent
- 11- Air flows out of front vent and the defroster vents.

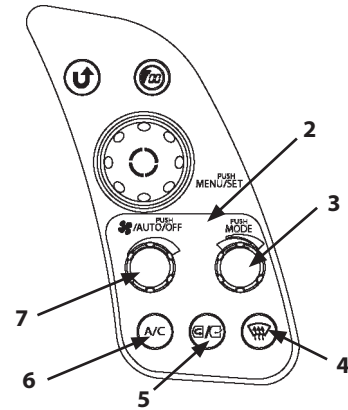


NOTE:

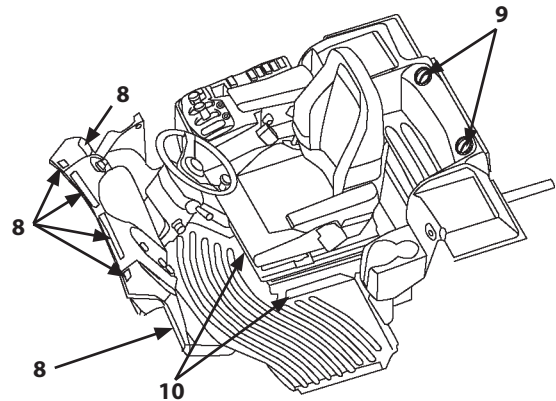
- Except for foot vent (10) and defroster vent (8), all vents are provided with louvers to adjust the air flow direction.
- The louvers on front vent (11) and rear vent (9) can be completely opened and closed by hand.



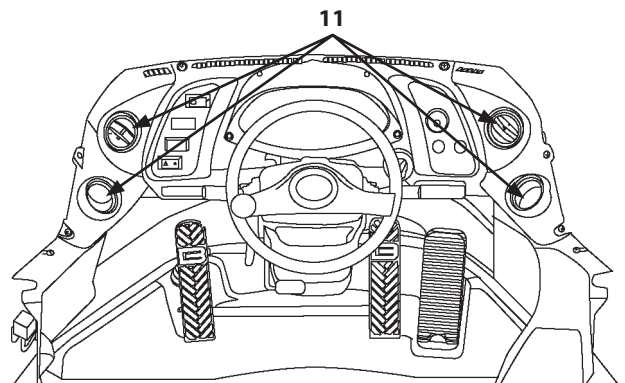
MNEK-01-103EN



MNEC-01-006



MNEC-01-035



MNEC-01-036

OPERATOR'S STATION

Controller Part Name and Function

Mode/Temperature Control Switch

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

 : Front Vent Mode

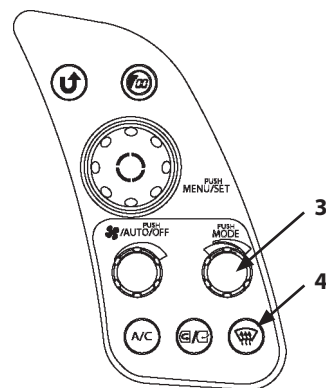
 : Front/Rear Vent Mode

 : Front/Rear/Foot Vent Mode

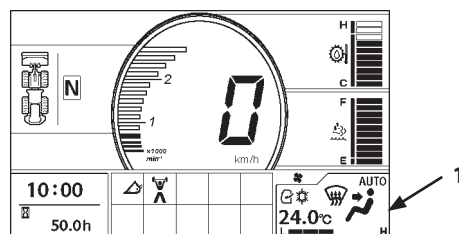
 : Foot Vent Mode

 : Foot/Defroster Vent Mode

 : Defroster Vent Mode



MNEC-01-006



MNEK-01-103EN

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



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

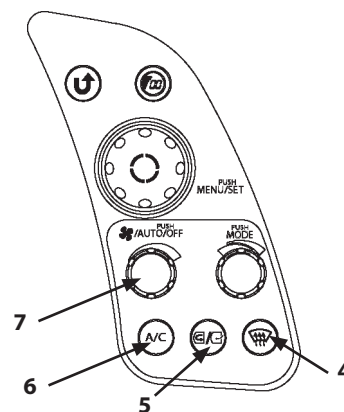
- AUTO mode
The air vent location is automatically selected.
- Temperature Control Switch (3):
Sets temperature in the cab.
Temperature in the cab can be set between 18.0 and 32.0 °C by rotating temperature control switch (3). Temperature can be set in 0.5 °C increments.
The set-temperature is displayed on monitor (1).

OPERATOR'S STATION

AUTO Switch/Blower Switch

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

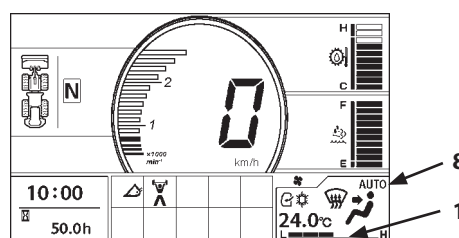
While the air conditioner is OFF, pressing AUTO/OFF Switch (7) switches the unit to AUTO mode. While operating the air conditioner, pressing AUTO/OFF switch (7) stops operation.



MNEC-01-006

Air Conditioner ON/OFF Switch (6)

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



MNEK-01-103EN

Circulation/Fresh Air Switch (5)

It switches over the air intake port to circulation mode and fresh air mode.

Icon of the selected mode will be displayed on the monitor.

Circulation mode , Fresh air mode: .

Defroster Switch (4)

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

OPERATOR'S STATION

Cab Heater Operation

1. AUTO switch (7):

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

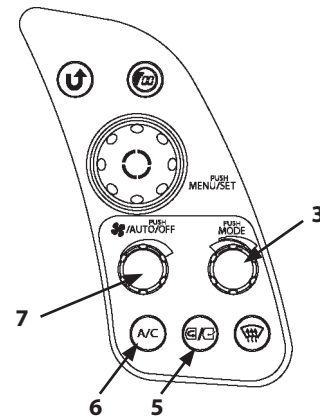
2. Temperature Control Switch (3):

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

3. Other Functions and Operations

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

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



MNEC-01-006

OPERATOR'S STATION

Cooling Operation

1. AUTO Switch (7)

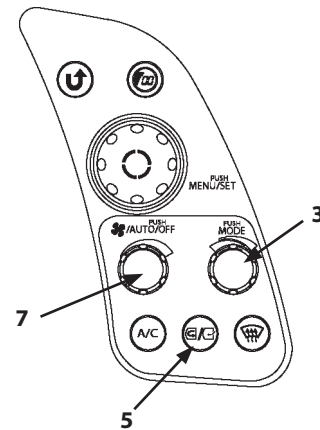
Press AUTO switch (7) to set the air conditioner AUTO mode. According to signals sent from various sensors, the air conditioner amplifier automatically selects the air flow-in vents, air suction ports, and air flow-in temperature at the vent, and controls the blower speed.

2. Temperature Control Switch (3):

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

3. Other Functions and Operations

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

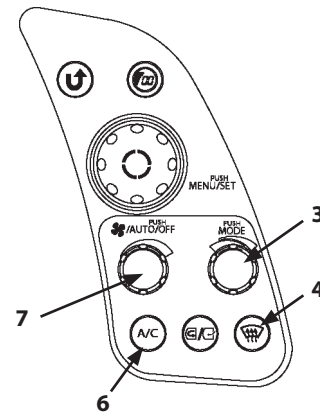


MNEC-01-006

OPERATOR'S STATION

Defroster Operation

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



MNEC-01-006

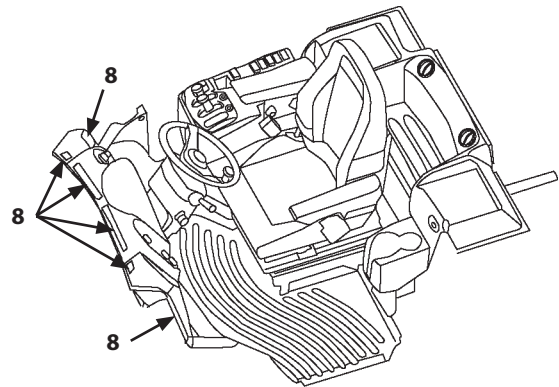
Cool Head/Warm Feet Operation

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

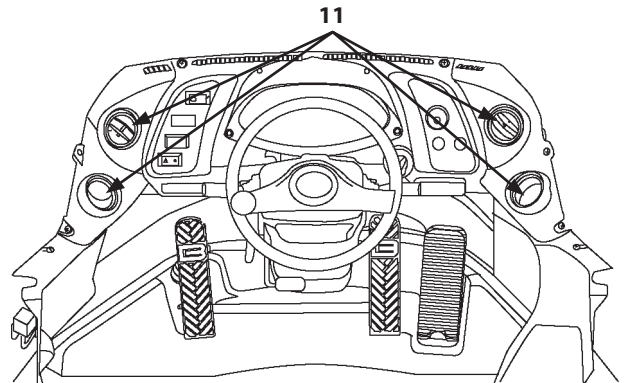
1. Rotate blower switch (7) to adjust the blower speed.
2. Press Mode switch (3) to display the front and rear vent mark  on the monitor.

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

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



MNEC-01-035



MNEC-01-036

OPERATOR'S STATION

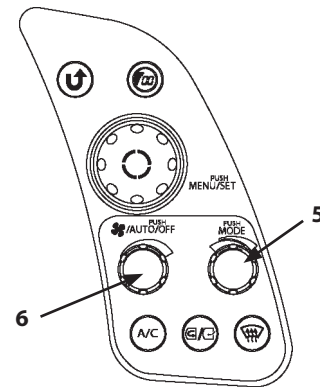
Tips for Optimal Air Conditioner Usage

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.



MNEC-01-006

When Windows Become Misty

If the insides of the windows become misty during rainy weather or on humid days, operate the air conditioner to aid in keeping the windows clear.

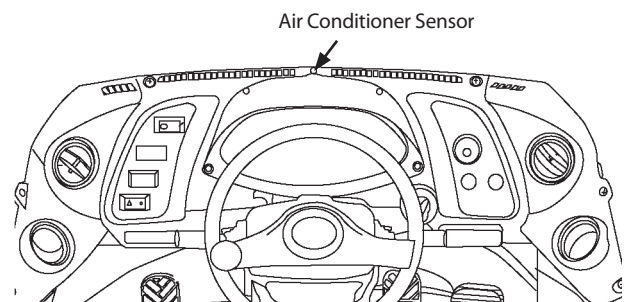
When the atmosphere is very damp, and if the air conditioner has run excessively, the outside of the windows may become misty. If this happens, turn off the air conditioner to adjust the temperature in the cab.

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:

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



MNEC-01-086

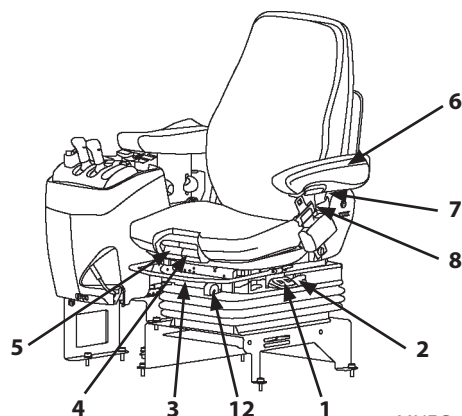
OPERATOR'S STATION

Adjusting Operator's Seat (Air Suspension Type Seat)

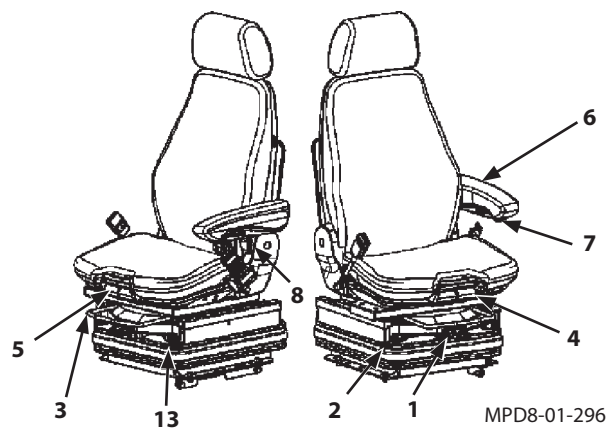
CAUTION: Adjust the seat position so that all the pedals, levers and switches can be easily and correctly operated. Adjust the seat position while the machine is parked.

Components Name

- 1- Height/Weight Support Adjustment
- 2- Damper Adjustment
- 3- Fore-Aft Position Adjustment
- 4- Inclination Adjustment
- 5- Seat Depth Adjustment
- 6- Armrest
- 7- Armrest Angle Adjustment
- 8- Reclining Angle Adjustment
- 9- Lumbar Support Adjustment
- 10- Headrest
- 11- Seat Heater Switch
- 12- Indicator (Standard Seat Only)
- 13- Fore-Aft Isolator (Heavy Duty Seat Only)



MNEC-01-045



MPD8-01-296

Heavy Duty Seat (Option)

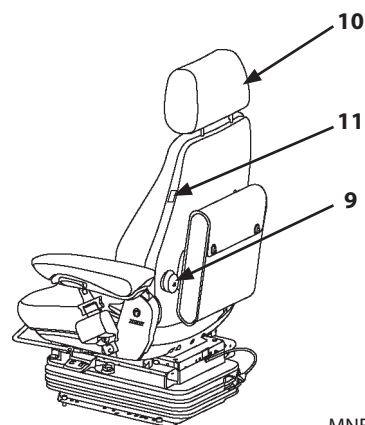
1. Height/Weight Support Adjustment

IMPORTANT: Set damper adjustment lever (2) to the "soft" position before pulling up lever (1).

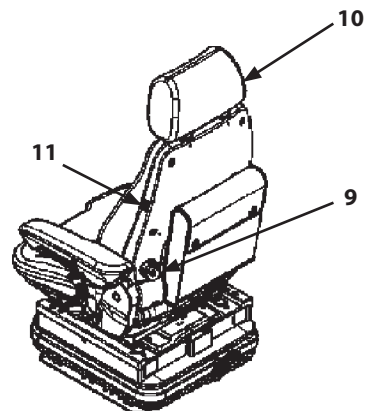
Pull lever (1) upward to fill air and raise the seat. Push lever (1) downward to release air and lower the seat. When the seat is properly adjusted for your weight, indicator (12) is in the green zone.

Weight support automatically adjustment type (Heavy duty seat) (option)

Slightly pull up lever (1) to automatically adjust the weight support strength.



MNEC-01-071



MPD8-01-295

Heavy Duty Seat (Option)

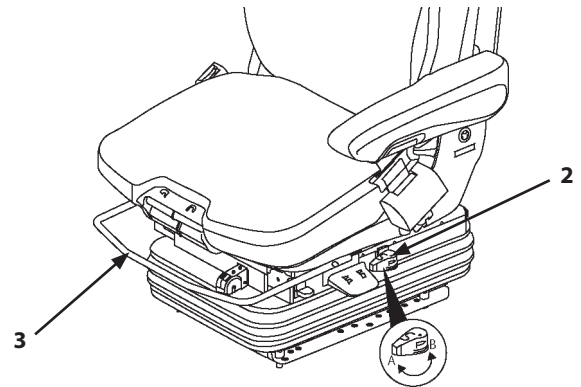
IMPORTANT: Do not continuously operate the lever for more than 1 minute. Damage to the lever and switch may result.

OPERATOR'S STATION

2. Damper Adjustment

The damper stiffness can be adjusted in accordance with the type of work engaged in or the conditions of the road surface.

- A : Hard
- B : Soft

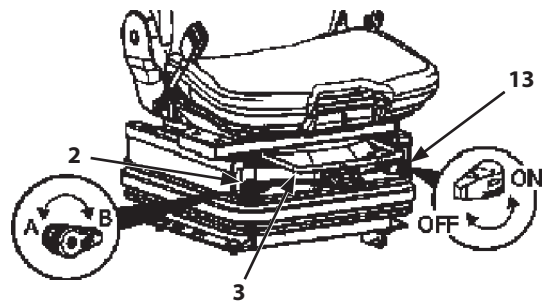


MNEC-01-072

3. Fore-Aft Position Adjustment

Pull up slide lever (3) to adjust the fore/after position of the seat assembly. The adjustment range for seat fore-aft is 210 mm with steps every 10 mm. Return the lever to the original position after the seat assembly is moved to the desired position. Check that the seat assembly is locked in the desired position.

 **NOTE:** When fore-aft isolator (13) is set to ON side, the seat assembly may slightly moves fore and aft while driving the machine in order to cushion the shock (heavy duty seat only).



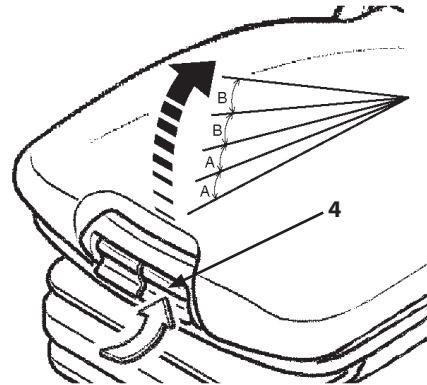
MPD8-01-297

OPERATOR'S STATION

4. Inclination Adjustment

The inclination of the seat surface can be changed. While pulling up lever (4) 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.

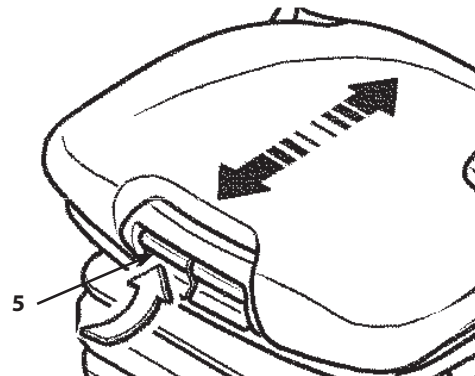
- A : 3°
- B : 2.5°



M4GB-01-093

5. Seat Depth Adjustment

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



M4GB-01-094

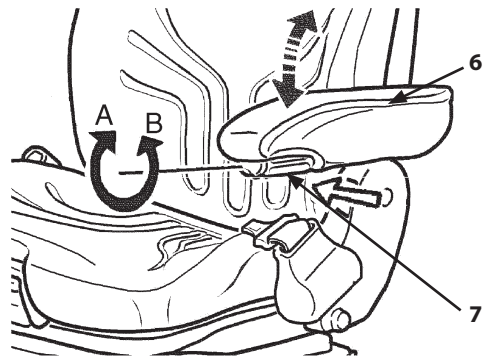
6. Armrest Adjustment

The armrest is a movable type. Keep the armrest in the upright position unless required.

7. Armrest Angle Adjustment

The angle of the armrest can be adjusted by turning knob (7) provided under the armrest.

- A : Raise
- B : Lower

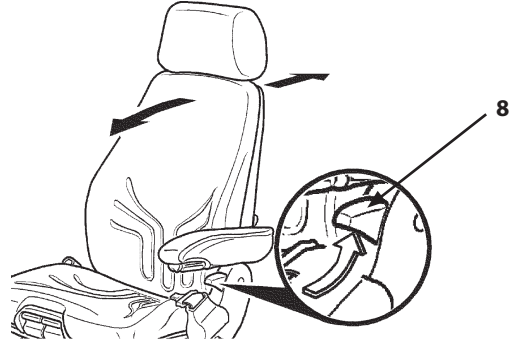


M4GB-01-095

OPERATOR'S STATION

8. Reclining Angle Adjustment

The reclining angle can be adjusted up to 10° forward and 34° backward by 2° intervals respectively by pulling up reclining adjusting lever (8). After moving the seat to the desired position, return the reclining adjusting lever to the original position. Check that the reclining angle is locked in the desired position.



M4GB-01-096

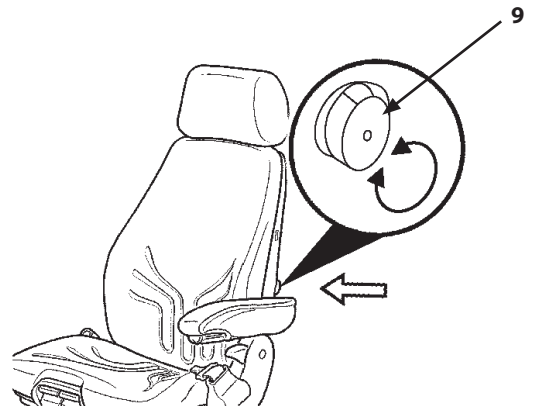
9. Lumbar Support Adjustment

A swelling on the backrest surface can be adjusted. Turn knob (9) until the desired swelling is obtained.



NOTE:

- Turn the knob to adjust the swelling on the lumbar support. The lumbar support adjusting knob works irrespective of the turning direction.
- When the knob is continuously rotated, swelling / shrinking of the backrest is repeated.

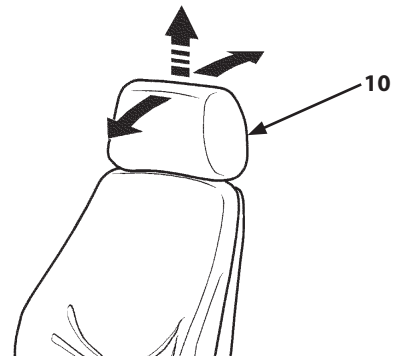


M4GB-01-097

10. Headrest

Adjust the headrest position by pulling up or pushing down the headrest. The headrest height adjusting stroke is 100 mm. In addition, the fore/after angle of the headrest can be adjusted in the range of 49° on both sides by pulling forward or pushing backward the headrest.

When required to remove the headrest, fully pull up the headrest.



M4GB-01-099

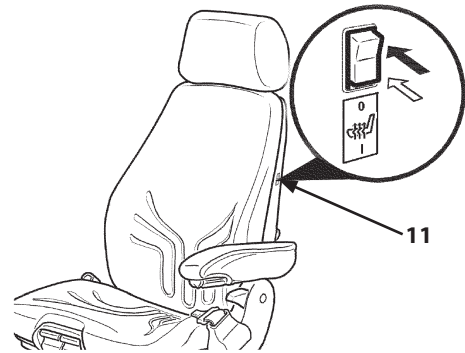
OPERATOR'S STATION

11. Seat Heater Switch

Turn the heater ON or OFF by operating switch (11) provided on the side of the backrest.

- : OFF
- | : ON

When seat heater switch (11) is turned ON, the seat and/or backrest are heated to warm them up. When the temperature of the seat and/or backrest reaches its specified temperature, heating turns off automatically.



M4GB-01-098

WARNING:

- Use with seat wet or something poking into seat could cause electrical shock.
- Be careful when handling water or drinking water.
- Do not use if clothes are extremely wet.
- Do not poke the seat with a sharp object or put anything heavy with protruding parts on the seat.

CAUTION:

- Certain person as noted below, could be at risk of a low temperature burn, so should be careful during use.
 - Person with delicate skin
 - Person suffering from fatigue
 - Person under excessive drinking or medication that could cause sleepiness (sleeping pills, cold medicines, etc.)
- Continuous use could cause low temperature burn to person.
- Use with blanket or cushion which may retain heat could cause abnormal heating of the seat.

IMPORTANT:

- To prevent damage, do not poke the seat with sharp objects or put anything heavy with protruding parts on the seat.
- If a liquid like water or a drink is spilled on the seat, wipe off with a soft cloth and make sure the seat is dry before using again.
- If the seat is abnormally hot, stop use and contact your authorized dealer.

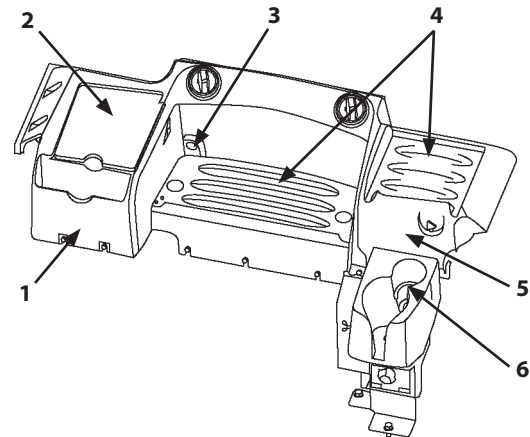
 **NOTE:** The point where heated varies with the type of seat.

 **NOTE:** Even if switch (11) is turned OFF after using the seat heater, the seat temperature does not decrease immediately. Operate the machine after sufficiently checking the switch position.

OPERATOR'S STATION

Rear Tray

- 1- Document Holder
- 2- Hot/Cool Box
- 3- Electric Power Output (Optional)
- 4- Tray
- 5- Fuse Box
- 6- Cup Holder

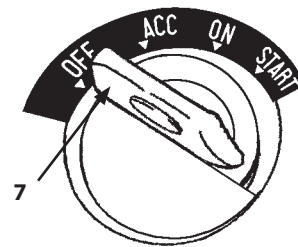


MNEC-01-046

Electric Power Output (Optional)

12 V DC electric power is available from electric power output (3). The maximum current is 5A (60W). Use the electric power output to supply power to lighting equipment for servicing the machine.

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



MNDB-01-053

1. Remove covers.
2. Insert the socket of the accessory to be used into the electric power output port.
3. Turn the key switch (7) ON. Power is supplied to the connected accessory.
4. After completing operation of the accessory, disconnect the accessory. Reinstall the cover.

OPERATOR'S STATION

Fuse Box

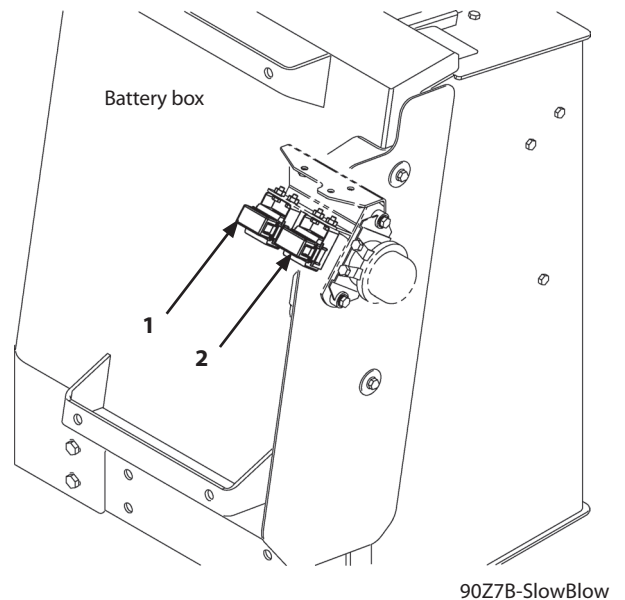
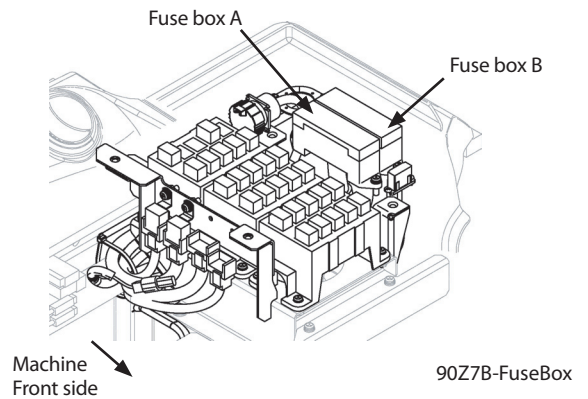
IMPORTANT: If a fuse blows, turn the key switch OFF.
After checking and correcting the cause of the trouble,
replace the fuse with a new one.

The slow blow fuses (1 and 2) function as a safety valve to prevent excess current from flowing in the electrical system. The fuse capacity varies depending on its corresponding circuit. Be sure to replace the blown fuses only with the specified ones.

When checking fuses, check the fuse A, B and slow blow fuses (1 and 2) in this order.

Capacity of slow blow fuses

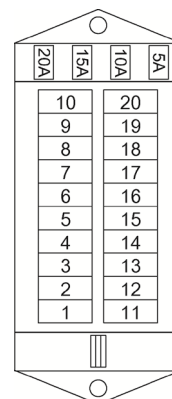
- 1- 120A x 2
- 2- 70A, 140A



OPERATOR'S STATION

Fuse Box A

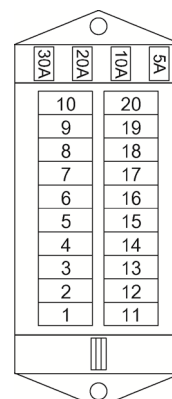
10- PARKING SOLENOID 5 A	20- OPTION 4 10A JSS 5 A
9- AIR CONDITIONER 1 10 A	19- OPTION 3 (15 A)
8- TURN SIGNAL, STOP LAMP 5 A	18- AdBlue LINE HEATER 15 A
7- BACK LAMP, BACK BUZZER 5 A	17- AdBlue SUPPLY MODULE 15 A
6- HEAD LAMP (LEFT) 5 A	16- AdBlue SENSOR 10 A
5- CABIN FRONT WORKING LAMP 20 A	15- AIR CONDITIONER 2 20 A
4- WIPER FRONT 15 A	14- KEY SWITCH STARTER 10 A
3- SOCKET (24 V) 20 A	13- SEAT HEATER 15 A
2- HEAD LAMP (RIGHT) 5 A	12- OPTION 2 (20 A)
1- FUEL PUMP 5 A	11- OPTION 10 A



90Z7B-FuseBoxA

Fuse Box B

10- ECM 30 A	20- EMERGENCY STEERING 5 A
9- -	19- HIGH BEAM 10 A
8- CONTROLLER 10A	18- WIPER REAR 10 A
7- FLASHER 10 A	17- WORKING LAMP REAR 20 A
6- HORN 10 A	16- LOADER CONTROL 5 A
5- OPTION CAN 5 A	15- MC 10 A
4- OPTION 1 (BATTERY) (15 A)	14- PARKING RELAY 5 A
3- CAB ROOM LAMP 20 A	13- POWER ON 10 A
2- LIGHTING SWITCH 10 A	12- POSITION 2 5 A
1- RADIO 5 A	11- POSITION 1 5 A

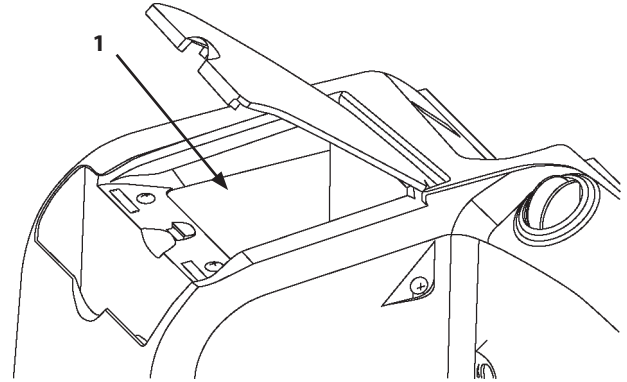


90Z7B-FuseBoxB

OPERATOR'S STATION

Hot/Cool Box

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

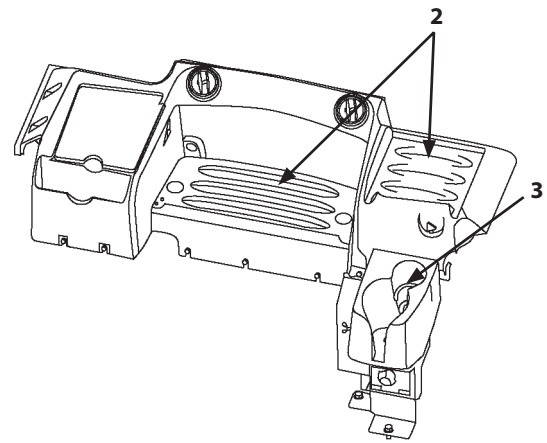


MNEC-01-048

Tray and Drink Holder

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

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



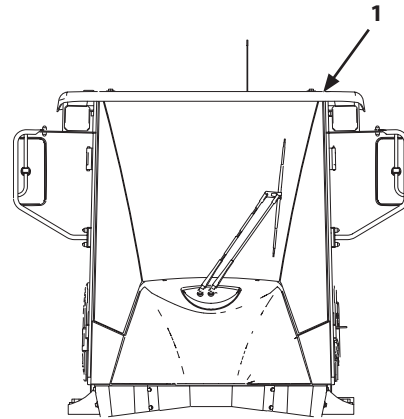
MNEC-01-046

OPERATOR'S STATION

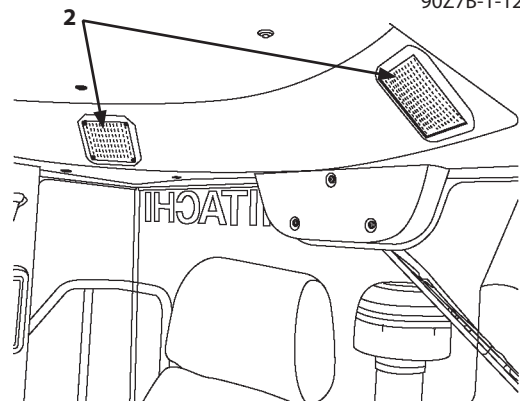
ROPS Cab (ZW310-6)

ROPS cab (1) is standard equipment.

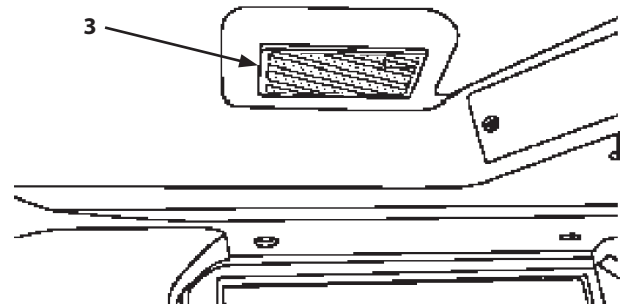
- 1- ROPS Cab
- 2- Speakers
- 3- Front Room Light
- 4- Sun Visor



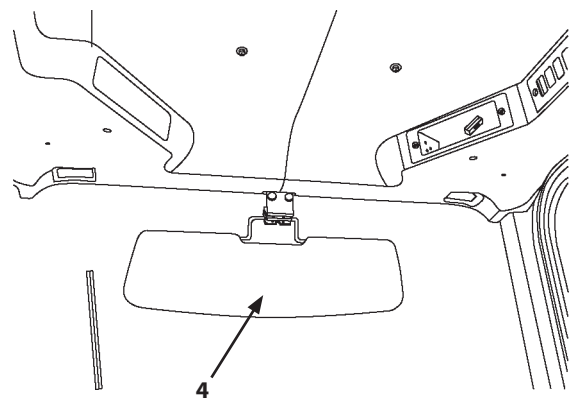
90Z7B-1-124-1EU



MNEC-01-516



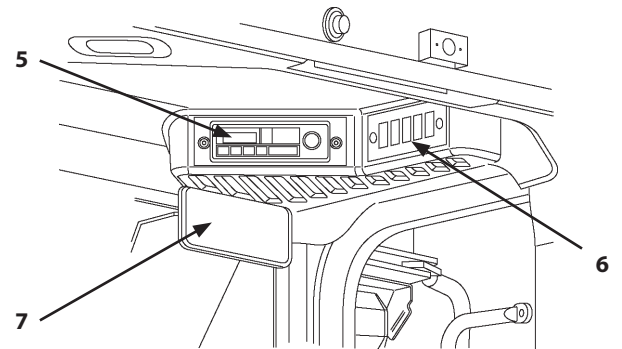
MPD8-01-292



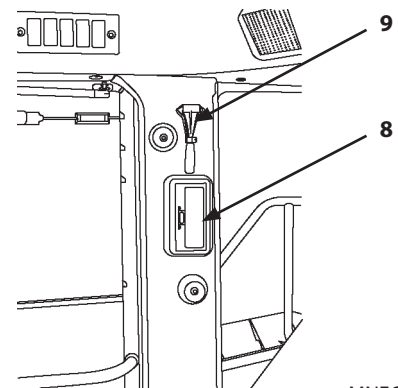
MNEC-01-052

OPERATOR'S STATION

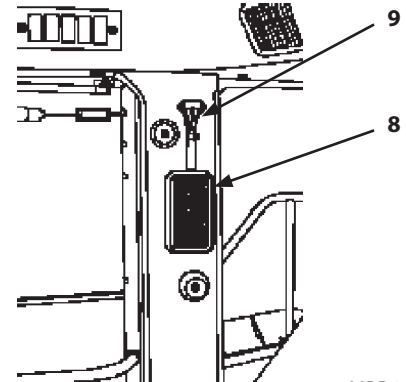
- 5- Radio
- 6- Cab Switch Panel (Optional)
- 7- Room Rear View Mirror
- 8- Rear Room Light
- 9- Emergency Evacuation Hammer
- 10- Coat Hook



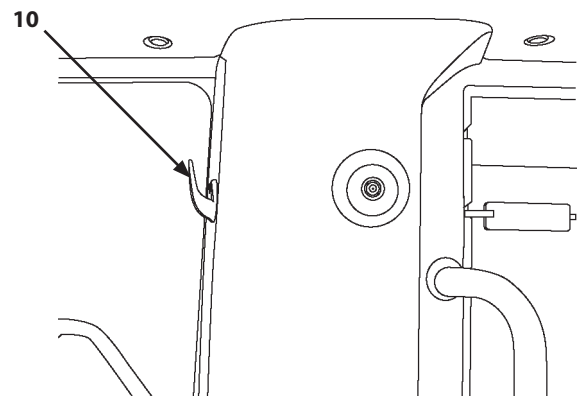
M4GB-01-116



MNEC-01-504



MPD8-01-293

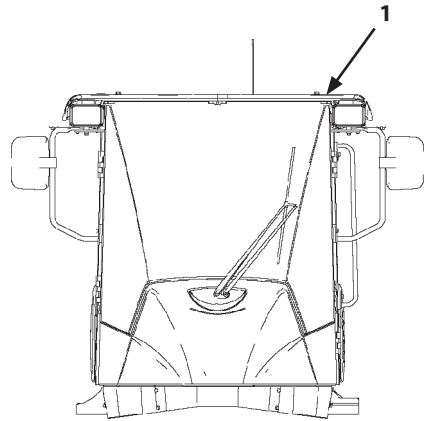


MNEC-01-518

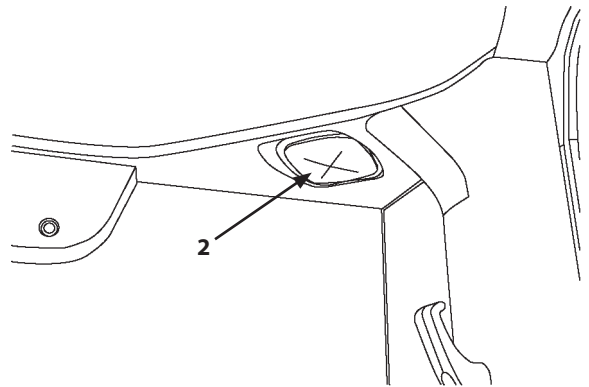
OPERATOR'S STATION

ROPS Cab (ZW330-6)

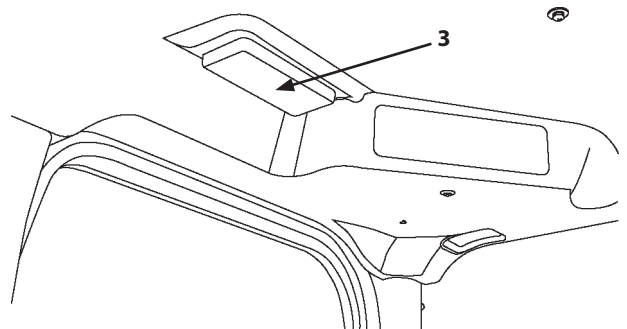
- 1- ROPS Cab
- 2- Speakers
- 3- Front Room Light
- 4- Sun Visor



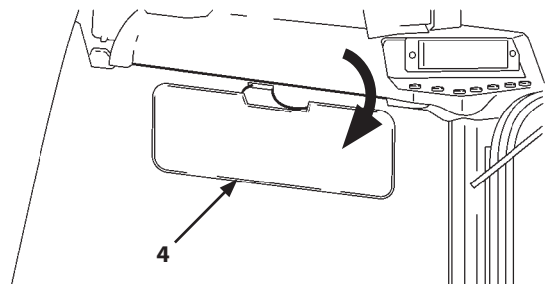
92Z7B-1-130-1



MNEC-01-050



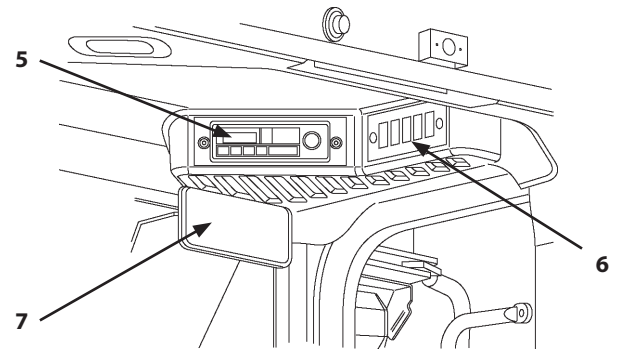
MNEC-01-051



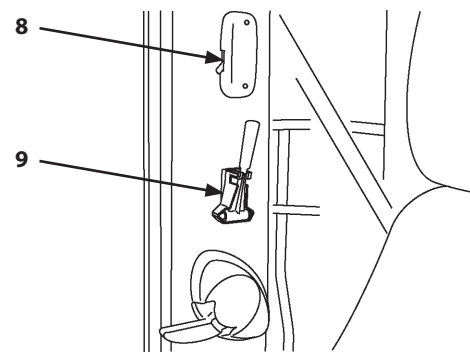
M4GF-01-010

OPERATOR'S STATION

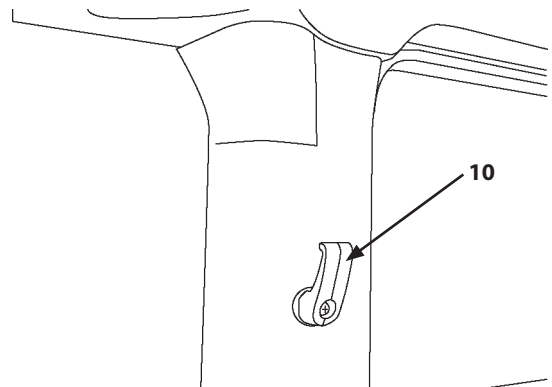
- 5- Radio
- 6- Cab Switch Panel (Optional)
- 7- Room Rear View Mirror
- 8- Rear Room Light
- 9- Emergency Evacuation Hammer
- 10- Coat Hook



M4GB-01-116



M4GB-01-117



MNEC-01-053

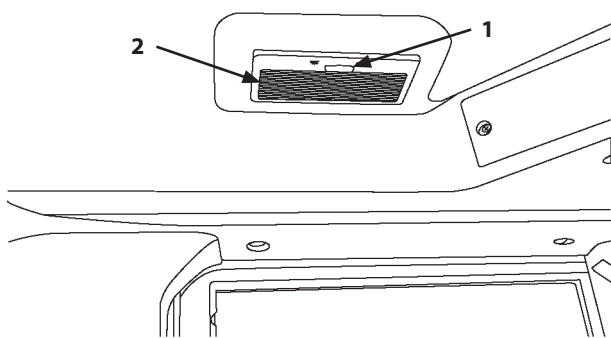
OPERATOR'S STATION

Room Light (ZW310-6)

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

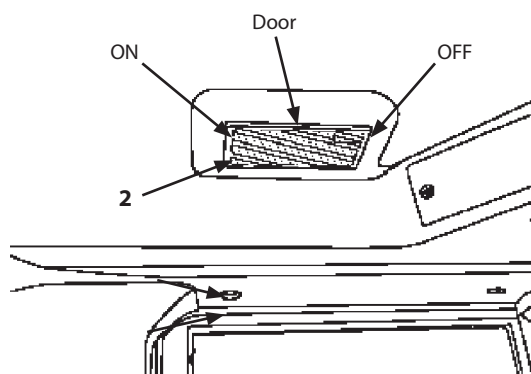
For the room light without switch (1), directly press the desired side of light (2).

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



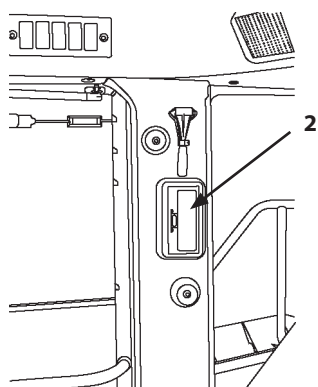
Front Room Light

MNEC-01-517



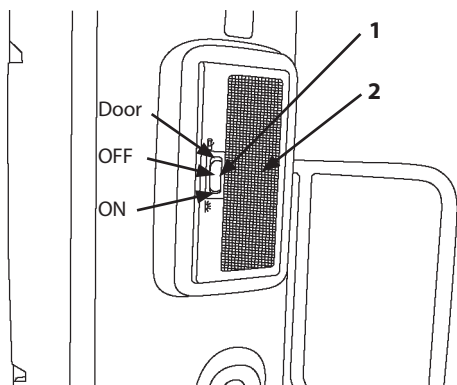
Front Room Light without Switch (1)

MPD8-01-292

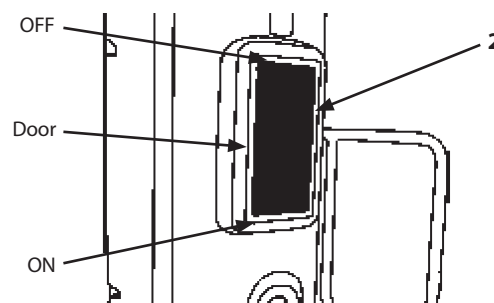


Rear Room Light

MNEC-01-504



MNEC-01-519



Rear Room Light without Switch (1)

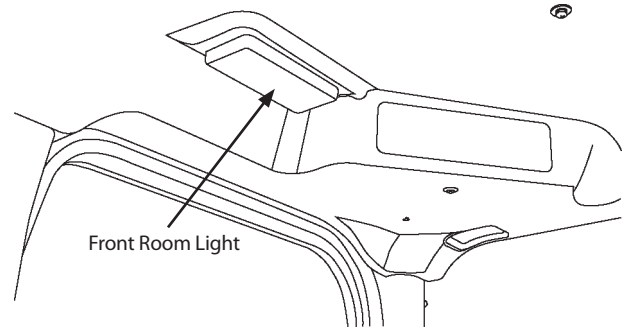
MPD8-01-294

OPERATOR'S STATION

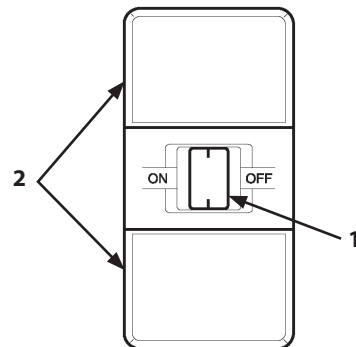
Room Light (ZW330-6)

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

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

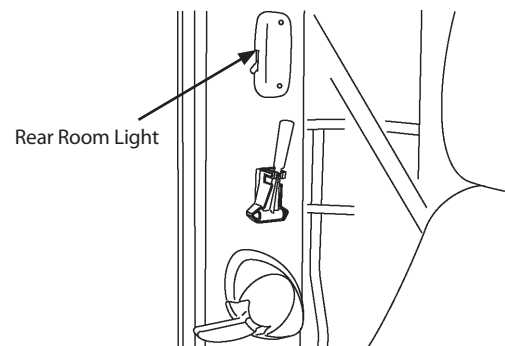


MNEC-01-051

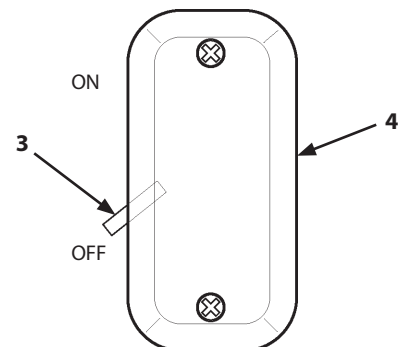


M4GB-01-119

Switch (3) ON: Rear room light (4) comes and stays ON.
Switch (3) OFF: Rear room light goes OFF.



M4GB-01-117

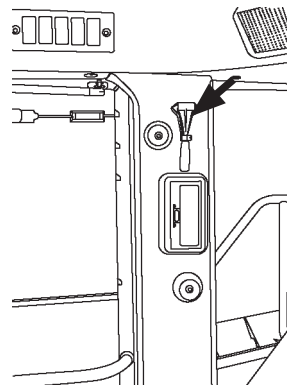


M4GB-01-120

OPERATOR'S STATION

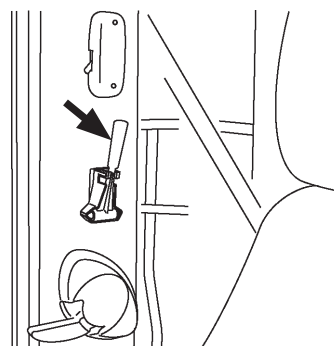
Emergency Evacuation Hammer

If the cab door becomes difficult or impossible to open in an emergency situation occurs, evacuate from the machine by breaking the windowpane using the provided hammer.



ZW310-6

MNEC-01-504

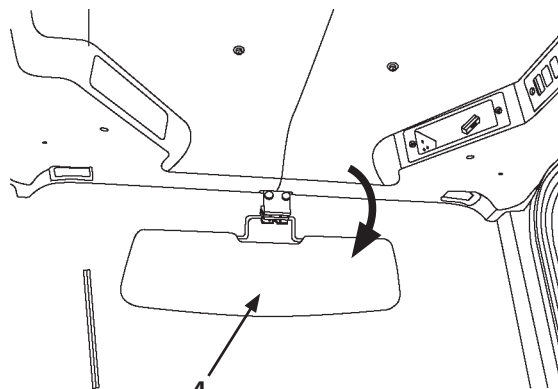


ZW330-6

M4GB-01-117

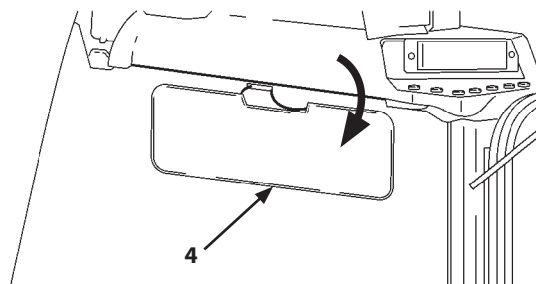
Sun Visor

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



ZW310-6

MNEC-01-052



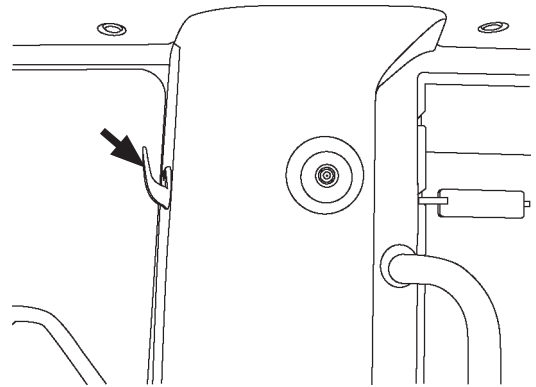
ZW330-6

M4GF-01-010

OPERATOR'S STATION

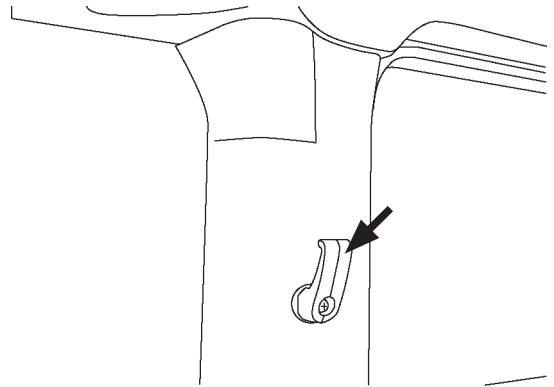
Coat Hook

Use to hang your coat, hat, etc.



ZW310-6

MNEC-01-518



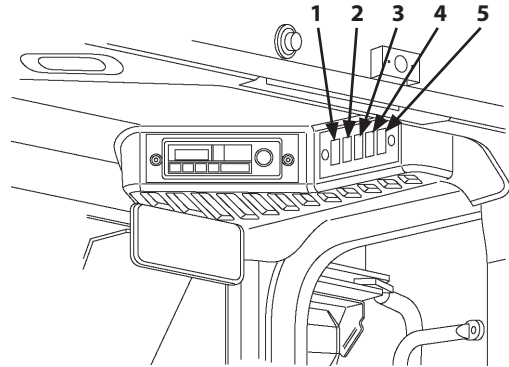
ZW330-6

MNEC-01-053

OPERATOR'S STATION

Upper Switch Panel (Optional)

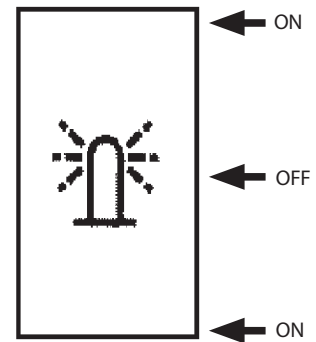
- 1- Rotary Light Switch
- 2- Rear View Mirror Heater Switch (Optional)
- 3- Auxiliary
- 4- Auxiliary
- 5- Auxiliary



M4GB-01-116

Rotary Light Switch (Optional)

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



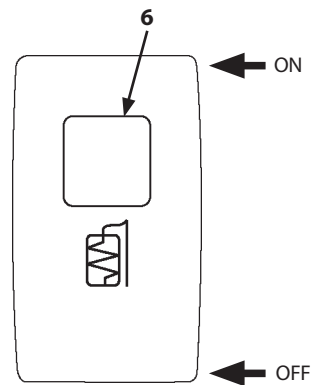
M4GB-01-125

Rear View Mirror Heater Switch (Optional)

IMPORTANT: Do not use for a long time with the engine stopped. Doing so will drain the battery.

Once the mirror is defogged, turn OFF the switch.

Press the upper part of the switch to turn ON the rear view mirror heater. While operating the heater, indicator (6) lights. Press the lower part of the switch to turn OFF the heater and indicator (2).



MNEC-01-539

OPERATOR'S STATION

AM/FM Radio Operation

CAUTION: Refrain from listening to the radio while operating the machine.

Controls on the Radio

- 1- Power Switch:
- 2- Volume Control Switch
- 3- AM/FM Switch

Each time the AM/FM switch is pushed, the display is switched as FM1→FM2→AM→AUX→FM1.

- 4- Station Presets

Stations are selected and preset by using these buttons.

- 5- UP/DOWN Switch

Selecting radio stations, step adjustment of sound and clock adjustment can be done by using these switches.

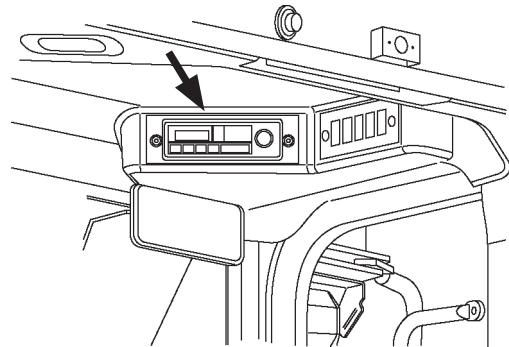
- 6- Display Mode Change Switch

Each time the display switch is pressed, "Clock" and "Reception Frequency" are displayed alternately.

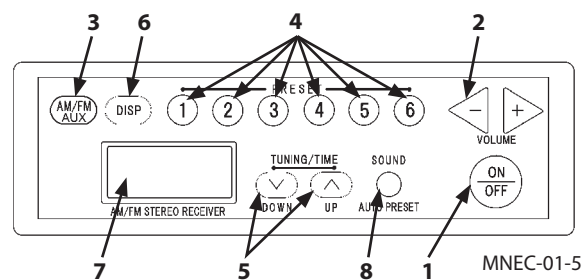
- 7- Digital Display

- 8- Sound Switch

Adjusting sound (Balance/Bass/Treble).



MNEC-01-534

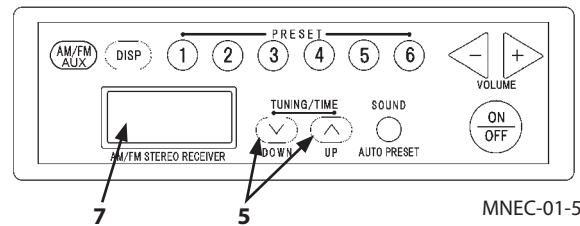


MNEC-01-535

OPERATOR'S STATION

Tuning Procedure

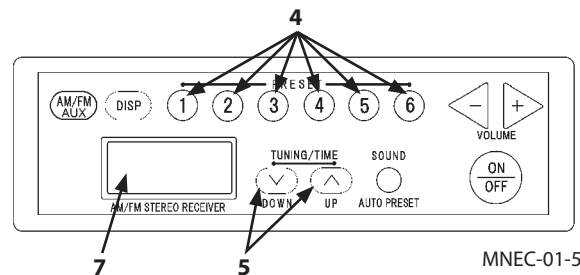
- **Manual Tuning Procedure**
Repeatedly tap UP/DOWN switches (5) until the desired station is reached. Each time the tuning switch is pressed, the frequency changes at an interval. Tap the tuning switch [UP] to increase the frequency. Tap the tuning switch [DOWN] to decrease the frequency.
- **Automatic Search Function**
Press and hold one UP/DOWN switch (5) for more than half a second, then release. Automatic search stops when a station is received. Tap the tuning switch [UP] to increase the frequency. Tap the tuning switch [DOWN] to decrease the frequency. In order to deactivate the automatic search function while it is operating (while searching the next available frequency station), simply tap UP/DOWN switch (5) again. If the receiving radio waves are weak, i. e. such as when the machine is located between high rising buildings, etc., use the manual tuning procedure to select the desired station.



MNEC-01-535

Station Presetting Procedure

1. Select the desired station by using UP/DOWN switches (5). Refer to the "Tuning Procedure" in the previous section.
 2. Press and hold one preset switch (4) for more than 1 second. The current station is preset to the selected number of switch. When the station is preset, the preset No. (such as "P-1") blinks three times on display (7). Once the presetting is complete for a preset switch (4), the radio will be tuned to the preset station when a preset switch (4) is pressed. To change the preset station, follow the same procedure described in the station presetting procedure.
- **Memory of preset station is erased**
When the radio is disconnected from the battery during machine maintenance or the radio removal, station memories in the preset switches will be erased. In this case, preset stations again.



MNEC-01-535

OPERATOR'S STATION

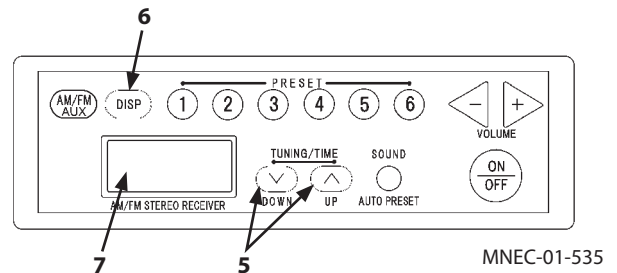
Digital Clock Setting Procedure

In order to set the clock, digital display (7) must be in the time display mode.

 **NOTE:** When the machine battery runs out, the clock displays [12:00] at the next starting.

Time Adjustment

1. Press display switch (6) to indicate the hour display on digital display (7).
2. When pressing and holding display switch (6), "Hour" on digital display (7) will blink. Press UP/DOWN switches (5) to adjust "Hour". When pressing [UP] key while "12" is displayed on "Hour" area, it changes to "1". The time is displayed in 12 hour standard.
3. When pressing display switch (6), "Min." on digital display (7) will blink. Press UP/DOWN switches (5) to adjust "Min.". When pressing [UP] key while "59" is displayed on "Min." area, it changes to "00". However, the "Hour" display remains unchanged in this case.
4. Press display switch (6) again to end the clock time setting procedure. Time display stops blinking and changes to stay ON.



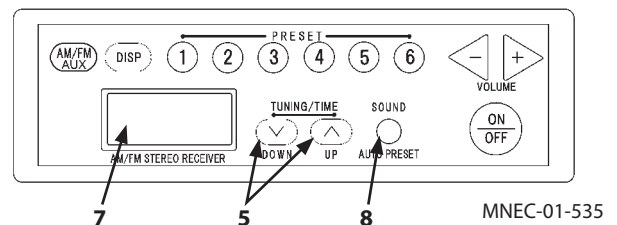
Adjusting Sound

1. Press sound switch (8) several times to indicate the "BAL" on top of digital display (7).
2. Press UP/DOWN switches (5) to adjust volume balance of left and right speakers.

When pushing the "DOWN" switch, volume of left speaker increases; and pushing the "UP" switch, volume of right speaker increases.

3. Press sound switch (8) several times to indicate the "TRE" on top of digital display (7).
4. Press UP/DOWN switches (5) to adjust treble.
5. Press sound switch (8) several times to indicate the "BAS" on top of digital display (7).
6. Press UP/DOWN switches (5) to adjust bass.
7. Tap sound switch (8) to end the sound adjustment procedure.

 **NOTE:** When the machine battery runs out, all of the sound parameter display [0] at the next starting.



OPERATOR'S STATION

Audio Input

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

Audio Input Selection

Push AM/FM Switch (1) to display AM and FM screen as well as AUX screen on digital display (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.

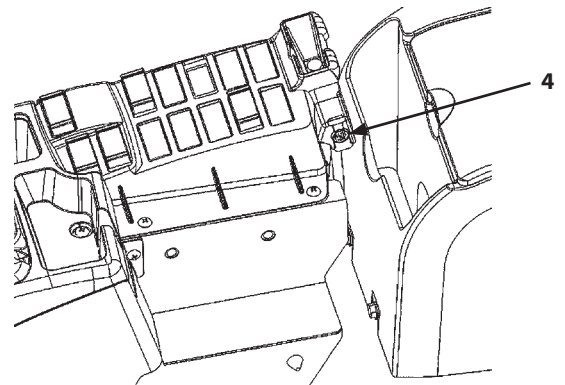
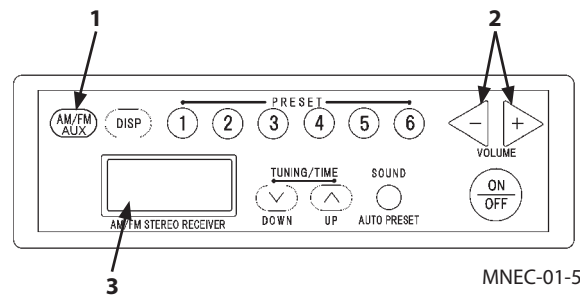
IMPORTANT: Put AUX IN cap (4) when the audio input is not in use.

Volume Control of audio device

Turn the volume down to the minimum beforehand, and then push volume control switch (2) to adjust the volume.

IMPORTANT: If volume control on the audio device has been set to the maximum, you will hear an overwhelming sound; so set the volume control to the minimum first. If the sound is too low even volume control switch (2) is pushed to the maximum, adjust the volume control on the audio device to increase the volume.

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



OPERATOR'S STATION

DAB Operating (Optional)

About trademark

The Bluetooth® wordmark and logo are registered trademarks owned by Bluetooth SIG, Inc., and Scribble Design Inc. uses these marks under license. Other trademarks and trade names belong to their respective owners.



CAUTION:

- **Do not operate the radio or other audio equipment while driving or working.**
- **The speaker volume may vary depending on the source, radio, AUX audio input, Bluetooth® audio or handsfree phone. Adjust to an appropriate volume, such as by changing the volume of the Bluetooth compatible device.**

IMPORTANT:

- **This device cannot connect to more than 1 Bluetooth compatible device at a time.**
- **Once this device is paired with a Bluetooth compatible device, it will connect to the Bluetooth compatible device automatically if it can connect when this device is turned ON.**
- **This device does not allow Bluetooth compatible devices to be selected.**
- **If connected to a Bluetooth compatible device other than the desired Bluetooth compatible device, first turn the Bluetooth function on the other device OFF, and then delete the device from the registered Bluetooth device list on this device.**

OPERATOR'S STATION

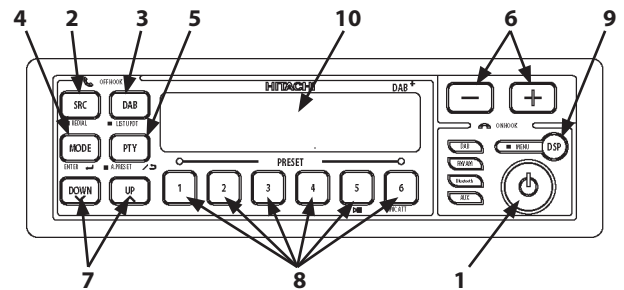
Names of Parts

- Control Panel
- 1- POWER button
Turns the device ON/OFF.
- 2- SRC button
Switches the source (DAB→RADIO→EXT).
- 3- DAB button
Updates the DAB reception list.
- 4- MODE button
Switches the sub-sources of each source.
- 5- PTY button
Makes PTY (DAB genre selection) and auto presets (FM/AM).
- 6- VOL+ and VOL- buttons
Adjust the volume.
- 7- UP and DOWN buttons
Adjusts radio frequency and switches between menu items.
- 8- PRESET buttons (1 to 6)
Calls up/registers preset frequencies.
- 9- DISP button
Switches the display (e.g., frequency, service name, and clock).
- 10- LCD Display
Indicates the frequency, time, etc.

Digital Radio Unit

Bluetooth Unit
(Handsfree Mic)

MPTC-01-045



MPTC-01-046

OPERATOR'S STATION

- LCD Display

- 1- Segment section

Indicates the source name, frequency, service name, etc. in characters and/or numbers.

- 2- kHz/MHz label

Used for unit information during frequency display.

- 3- ST label

Lights to indicate stereo reception when DAB/FM are selected.

- 4- TI label

Lights when traffic information is being received.

- 5- D label

Lights when DAB data is being received.

- 6- PTY label

Lights when program type is being used.

- 7- LOUD label

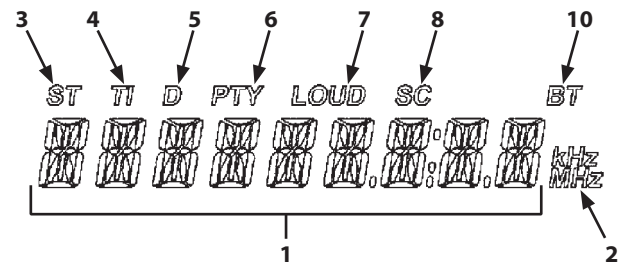
Lights when loudness is ON.

- 8- SC label

Flashes when a secondary DAB service is available and stays lit during reception.

- 10- BT label

Lights when connected to a Bluetooth compatible device.



MPTC-01-047

OPERATOR'S STATION

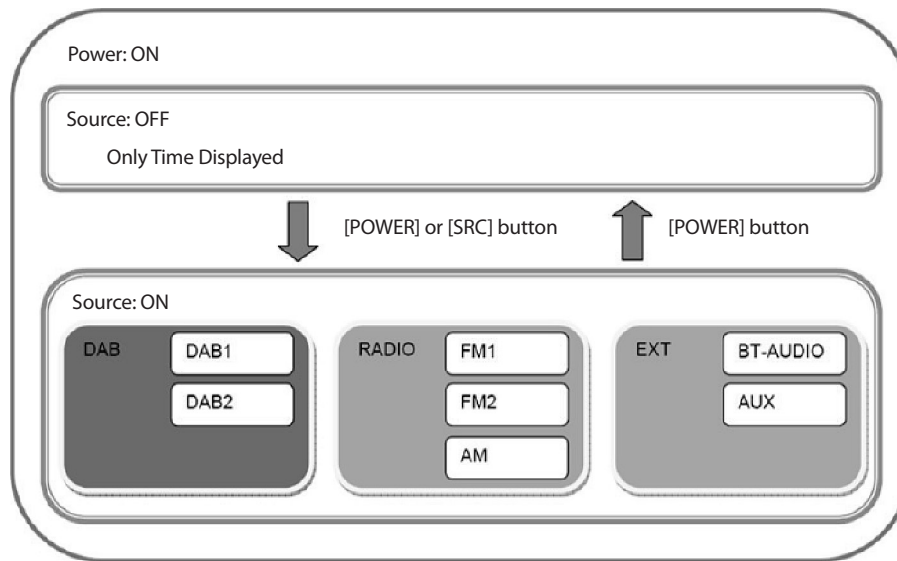
Basic Operation

Turning the Radio ON

With the key set to ON or ACC, press the [POWER] button.

Turning the Source ON

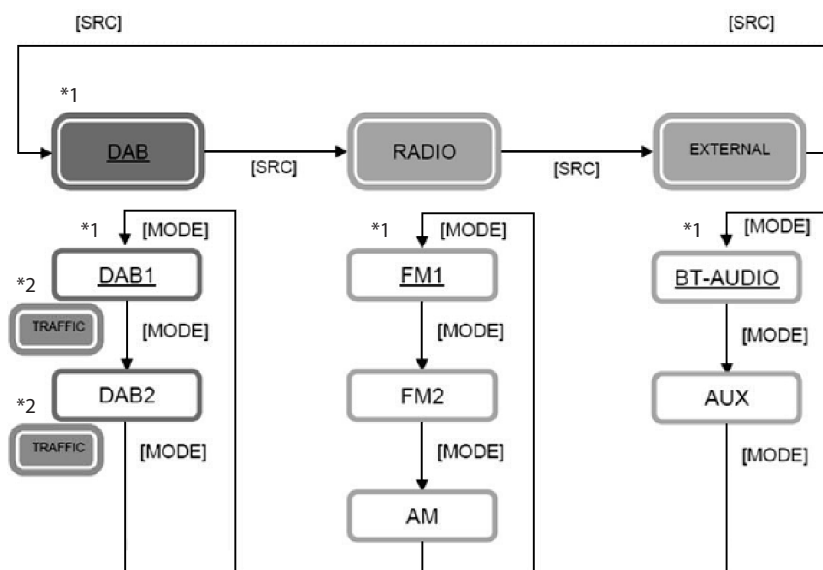
- When the source is off, press the [POWER] or [SRC] button to turn the source on.
- When the source is on, pressing the [POWER] button turns the source off.
- When the source is turned on, the source that had been selected when it was turned off last time is selected.



MPTC-01-048

Switching Sources

- Pressing the [SRC] button toggles between the sources (DAB→RADIO→EXTERNAL).
- Pressing the [MODE] button while on a source screen switches between its sub-sources (DAB1→DAB2 e.g.).



*1 : Underlined sources are the defaults.

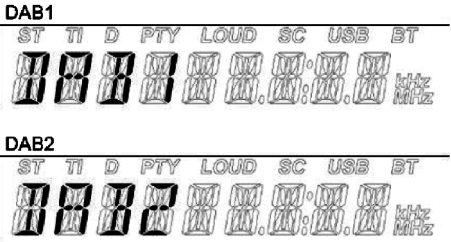
*2 : Refer to the page 1-161 for "TI Interrupt Setting".

MPTC-01-049

OPERATOR'S STATION

DAB

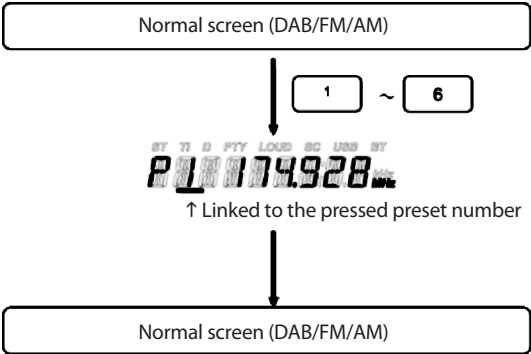
- Receives both DAB and DAB+ radio.
- The only difference between DAB1 and DAB2 is the grouping of preset numbers; the function is the same.



MPTC-01-050

Calling up Preset Stations

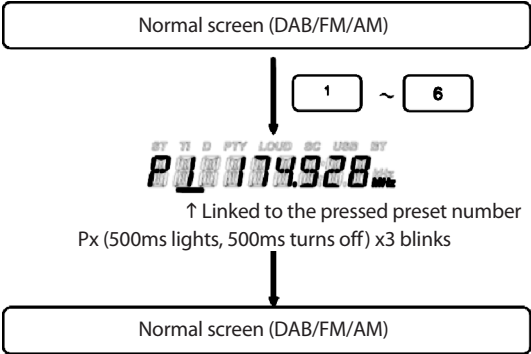
- Tunes to and receives the frequency registered in the preset number.
- Press any of the [PRESET] buttons (1 to 6) to tune the station.



MPTC-01-051

Registering Preset Stations

- This function stores the frequency being received in the corresponding preset number.
- Press and hold any of the [PRESET] buttons (1 to 6) to store the station.

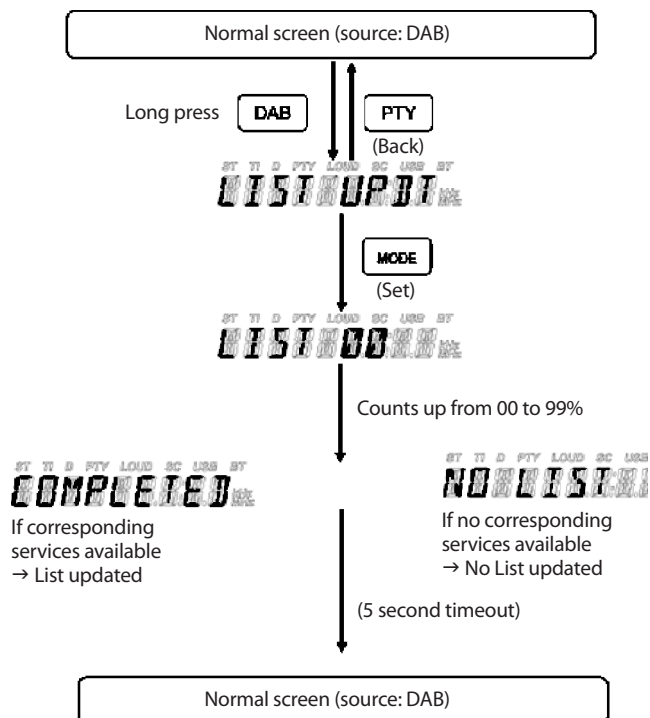


MPTC-01-051

OPERATOR'S STATION

Updating the DAB List

- This function generates a list of DAB stations that can be received.
- Press and hold the [DAB] button.
Press the [MODE] button to display the progress (00 to 99).
Press the [PTY] button to cancel.
- If corresponding services are available, "COMPLETED" is displayed on the screen and the list is updated.
- If no corresponding services are available, "NO LIST" is displayed on the screen and the list is not updated.
- Updating the DAB list may take up to 3 minutes.



MPTC-01-052

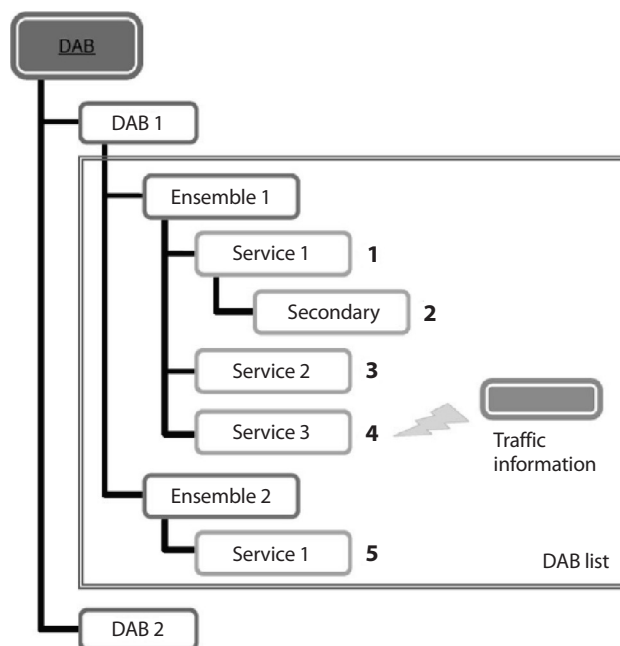
OPERATOR'S STATION

Selecting from the List

- Press the [UP] or [DOWN] button to move through the following list items.

[UP] button : 1 → 2 → ... → 5 → 1 ...

[DOWN] button : 1 → 5 → ... → 2 → 1 ...



MPTC-01-053

Ensemble/Jump

- Long press the [UP] or [DOWN] button to jump to the next ensemble.
- The DAB list must be updated prior to using the ensemble jump function.

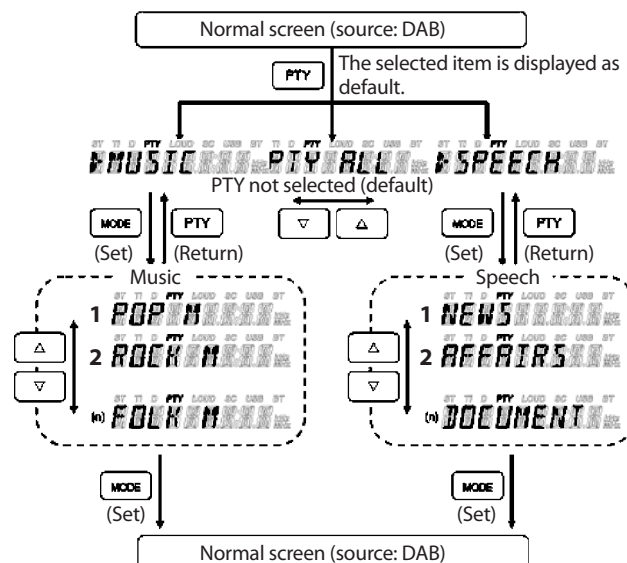
Table 1 Channels (frequencies) of DAB broadcasts

ch	MHz	ch	MHz	ch	MHz
5A	174.928	8A	195.936	11A	216.928
5B	176.640	8B	197.648	11B	218.640
5C	178.352	8C	199.360	11C	220.352
5D	180.064	8D	201.072	11D	222.064
6A	181.936	9A	202.928	12A	223.936
6B	183.648	9B	204.640	12B	225.648
6C	185.360	9C	206.352	12C	227.360
6D	187.072	9D	208.064	12D	229.072
7A	188.928	10A	209.936	13A	230.784
7B	190.640	10B	211.648	13B	232.496
7C	192.352	10C	213.360	13C	234.208
7D	194.064	10D	215.072	13D	235.776
–	–	–	–	13E	237.488
–	–	–	–	13F	239.200

OPERATOR'S STATION

PTY Search (Program Type Search)

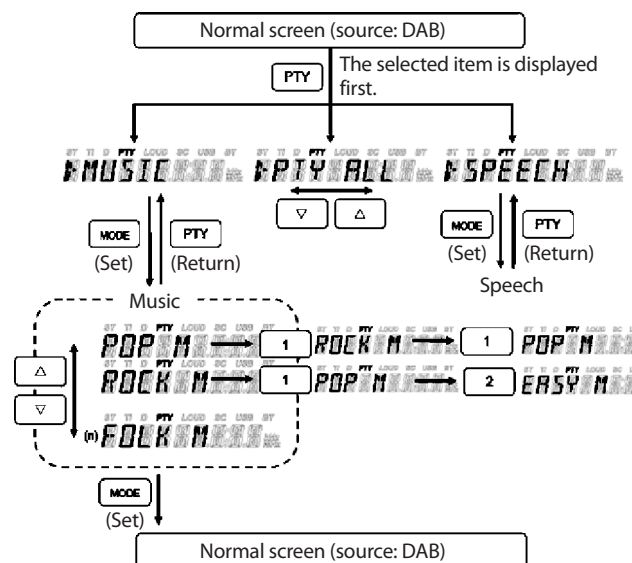
- Programs can be searched by type, such as music, speeches, etc.
- When the source is on DAB, press the [PTY] button to light the PTY pictogram.
Press the [UP] or [DOWN] button to navigate between items.
Press the [MODE] button to move to the next layer of menus.
Press the [PTY] button to move to the previous layer of menus.
- If an item was selected the previous time, that item becomes the default.
- If there are no PTY search results or corresponding PTY in the DAB list, then it goes to a state with PTY ALL selected. In such case, the PTY pictogram turns off.



MPTC-01-054

Shortcut Function

- Pressing a [PRESET] button (1 to 6) when the MUSIC or SPEECH type is selected makes it possible to greatly reduce the number of presses of the [UP] and [DOWN] buttons.



MPTC-01-055

[PRESET]	MUSIC	SPEECH
1	POP M, ROCK M	NEWS, AFFAIRS, INFO
2	EASY M, LIGHT M	SPORT, EDUCATE, DRAMA
3	CLASSICS M, OTHER M	CULTURE, SCIENCE, VARIED
4	JAZZ, COUNTRY	WEATHER, FINANCE, CHILDREN
5	NATION M, OLDIES	SOCIAL, RELIGION, PHONE IN
6	FOLK M	TRAVEL, LEISURE, DOCUMENT

OPERATOR'S STATION

RADIO

- Receives both FM and AM radio.
- The only difference between FM1 and FM2 is the grouping of preset numbers; the function is the same.



MPTC-01-056

Calling up Preset Stations

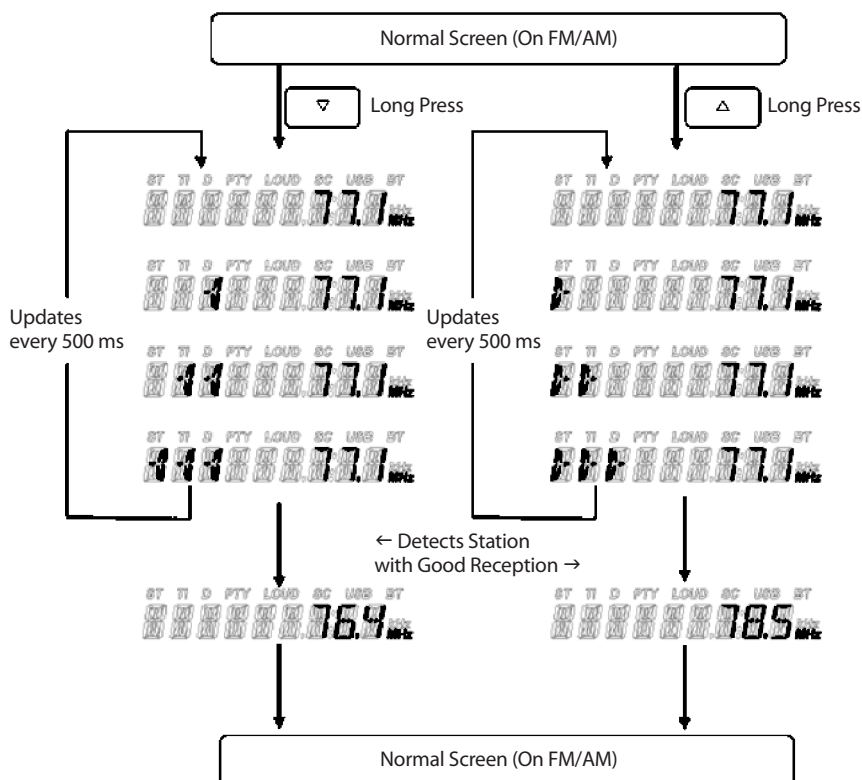
- Operates the same as when calling up DAB presets.
(Refer to the page 1-149 for "Calling up Preset Stations".)

Registering Preset Stations

- Operates the same as when registering DAB presets.
(Refer to the page 1-149 for "Registering Preset Stations".)

Auto-Seek Up/Down

- Long press the [UP] or [DOWN] button to auto-seek a frequency with good reception.
If the [UP] or [DOWN] button is pressed during auto-seek, it cancels the function and the radio tunes the frequency detected when the button was pressed.
- If no stations with good reception can be found after searching the entire band, the radio continues searching.



MPTC-01-057

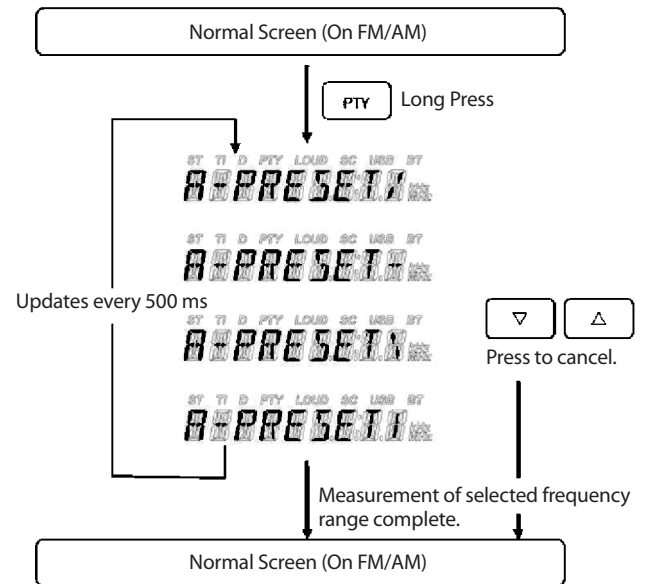
OPERATOR'S STATION

Manual Seek Up/Down

- Press the [UP] or [DOWN] button to move up/down 1 frequency step at a time.
- Frequency steps are: [FM: 50 kHz/step] & [AM: 9 kHz/step].

Auto-Preset Stations

- Long press the [PTY] button to register stations with good reception in order to preset memory (1 to 6). Press the [UP] or [DOWN] button to cancel.



MPTC-01-058

OPERATOR'S STATION

EXTERNAL

- The system can also take external audio inputs.

BT-Audio (A special Bluetooth® unit is necessary to use this function.)

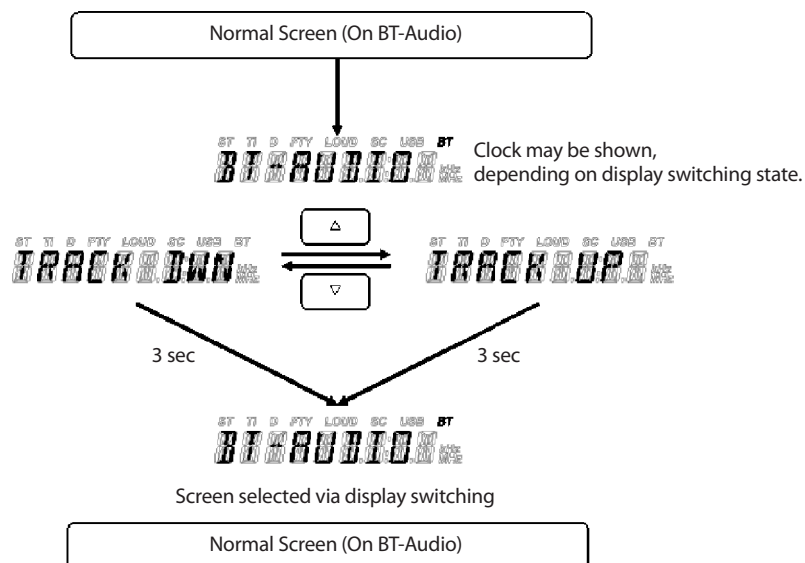
- Plays audio files via Bluetooth connection with a cell phone or Bluetooth audio playback device.
- Allows operations like play, pause, next song, previous song, etc.



MPTC-01-059

Change Track

- Press the [UP] or [DOWN] button to change tracks.

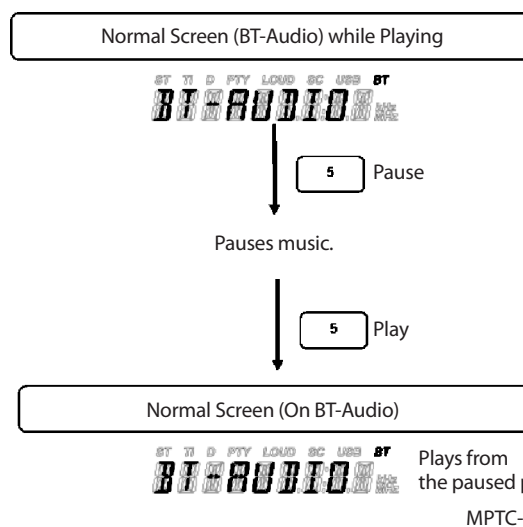


MPTC-01-060

Play/Pause

- Pressing the [PRESET] button (5) while playing a song pauses playback.
- Pressing the [PRESET] button (5) again starts playing from where it was paused.

NOTE: When some Bluetooth devices are connected, and with some applications, the system may not progress from Play → Pause → Play and so on.



MPTC-01-061

OPERATOR'S STATION

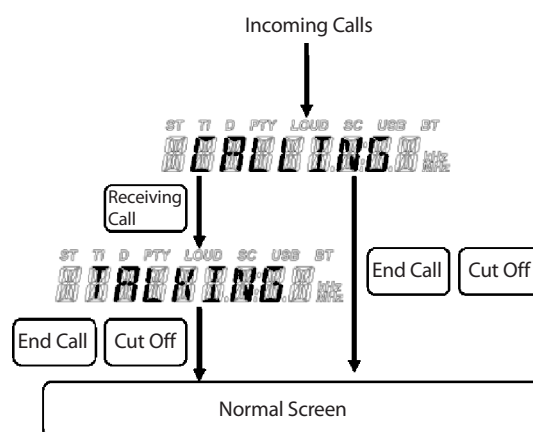
Handsfree (A special Bluetooth® unit is necessary to use this function.)

- Allows handsfree conversations when using a Bluetooth (HFP protocol) compatible cellphone.

Item	Operations
Incoming call → Talk	When a call comes in, press any of the buttons: [SRC], [DAB], [MODE], [PTY], [UP], [DOWN], [PRESET].
Talk → End call	During the call, press one of the buttons: [DISP], [POWER].
Reject call	When a call comes in, press one of the buttons: [DISP] or [POWER].
Redial	Long press the [SRC] button when the key switch and/or the ACC is ON.

Incoming Calls (A special Bluetooth® unit is necessary to use this function.)

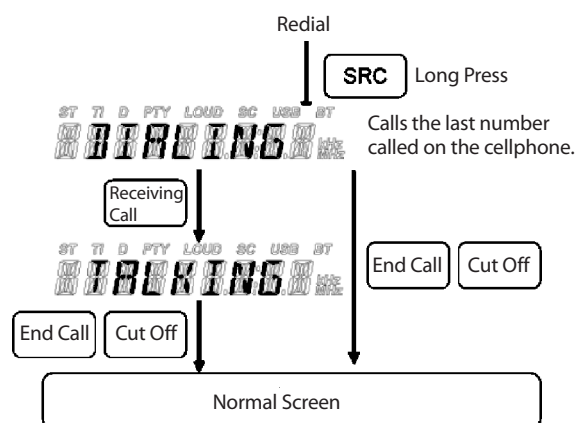
- When a cellphone is connected via Bluetooth and a call comes in, "CALLING" is displayed on the screen, regardless of the band (or operation) at the time, and the speaker rings with the call.
- Even if the source of the radio unit is OFF, when a call comes in, the source automatically turns ON, "CALLING" is displayed and the speaker rings with the call.
- If the call is rejected, it does not transition to talking and returns to the band (or operation) before the call.
- Pressing [PRESET] button (6) while talking toggles the microphone OFF/ON.
The voice of the speaker is muted when the microphone is OFF.
Microphone OFF is canceled after each call.



MPTC-01-062

Redial (A special Bluetooth® unit is necessary to use this function.)

- Regardless of the band (or operation) at the time, long pressing the [SRC] button causes "DIALING" to be displayed on screen and the sound from dialing to be played on the speaker.
- Even if the source of the radio unit is OFF, when the redial function is used, the source automatically turns ON, and it shifts to the redial process.
- The redial function redials the number of the last incoming call since the ACC was turned ON.
- The redial function may not work if the length of the previous incoming call was short.



MPTC-01-063

AUX

- Only available for machines equipped with an audio input.
Use this function at an appropriate volume.



MPTC-01-064

OPERATOR'S STATION

Display Switch

- Pressing the [DISP] button while on any source screen switches the display mode.
- If a source lacks a given item, it displays the next display mode item.
- The previous display mode becomes the default when the operation is performed the next time.

Display mode	DAB	FM/AM	BT-AUDIO	AUX
1	Source name	Source name	Source name	Source name
2	Ensemble name	↓	↓	↓
3	Secondary name	↓	↓	↓
4	Service name	↓	↓	↓
5	Frequency	Frequency	↓	↓
6	Channel number	↓	↓	↓
7	Clock	Clock	Clock	Clock

Source Name Display

- Indicates the name of each source.

Ensemble Name Display (DAB only)

- Indicates the name of the DAB ensemble received.



MPTC-01-065

Service Name Display (DAB only)

- Indicates the name of the DAB service received.



MPTC-01-066

Secondary Name Display (DAB only)

- Indicates the secondary name of the DAB service received.



MPTC-01-067

Frequency Display (DAB, FM, AM only)

- Indicates the currently tuned frequency.



MPTC-01-068

Channel Number Display (DAB only)

- Indicates the currently tuned channel number.



MPTC-01-069

Clock Display

- Indicates the time.



MPTC-01-070

OPERATOR'S STATION

Menus

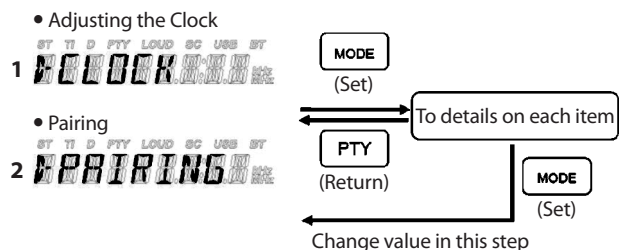
- Allow changes to the various settings.

Source OFF Menu

- Long pressing the [DISP] button while sources are OFF displays the menu items.
Press the [UP] or [DOWN] button to choose the item you wish to set.
[UP] button : 1 → 2 → 1 ...
[DOWN] button : 1 → 2 → 1 ...
Press the [MODE] button to go to the setting screen of that item.
- For information on the settings for each item, refer to 1-159 and onwards.
- The only items that can be set with sources OFF are clock adjustments and pairing.

Source ON Menu

- Long pressing the [DISP] button while a source is ON displays the menu items.
Press the [UP] or [DOWN] button to choose the item you wish to set.
[UP] button : 1 → 2 → ... → 11 → 1 ...
[DOWN] button : 1 → 11 → ... → 1 → 11 ...
Press the [MODE] button to go to the setting screen of that item.
- For information on the settings for each item, refer to 1-159 and onwards.



MPTC-01-071

- Left/Right Output Balance Adjustment

1 **BALANCE**

- Treble Adjustment

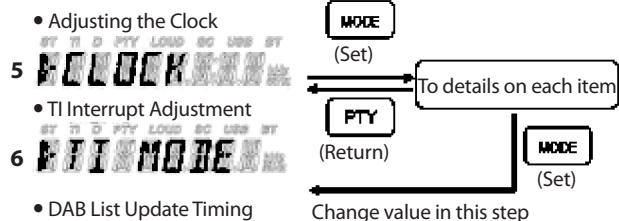
2 **TREBLE**

- Bass Adjustment

3 **BASS**

- Loudness Adjustment

4 **LOUDNESS**



- Pairing

8 **PAIRING**

- Region Display

9 **REGION**

- DAB Antenna Power Output

10 **DAB ANT**

- FW Version

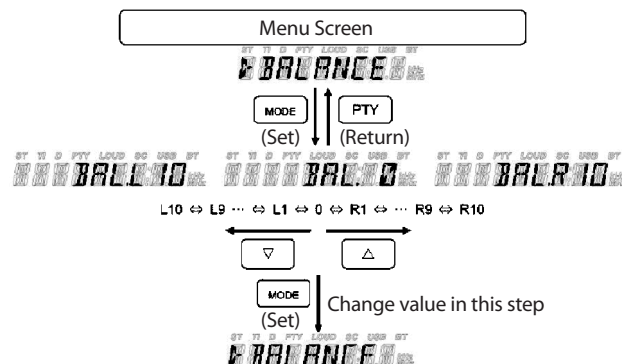
11 **VERSION**

MPTC-01-072

OPERATOR'S STATION

Left/Right Output Balance Adjustment

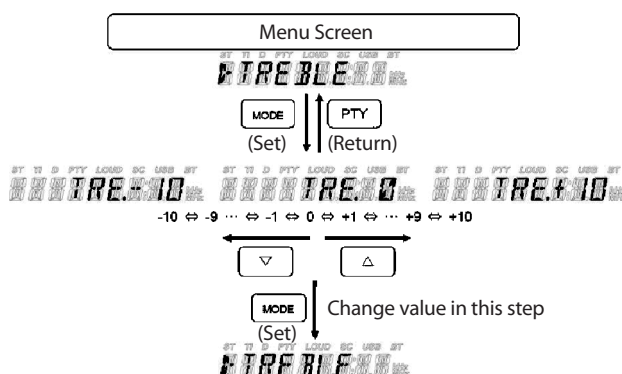
- Allows the balance in output between left and right to be changed.
- There are 21 steps to this adjustment: L10 (left only) to L1, 0 (Center) and R1 to R10 (right only).
- Press the [UP] or [DOWN] button to adjust the balance L/R. Pressing the [MODE] button completes the setting and it returns to the Menu screen. Pressing the [PTY] button cancels the setting and it returns to the Menu screen.



MPTC-01-073

Treble Output Adjustment

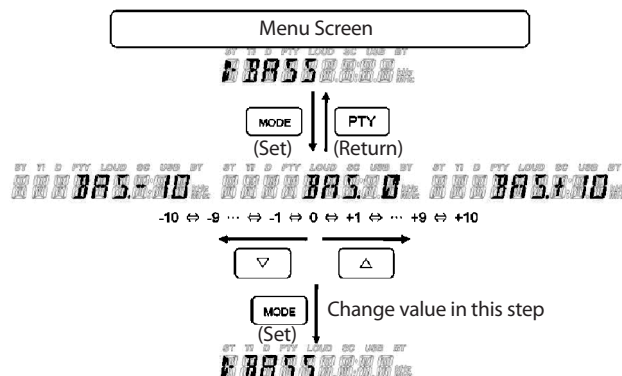
- Allows the high frequency part of the sound tone output to the speaker to be adjusted.
- It can be adjusted in 21 steps: +10 to 0 to -10.
- Press the [UP] or [DOWN] button to adjust the output. Pressing the [MODE] button completes the setting and it returns to the Menu screen. Pressing the [PTY] button cancels the setting and it returns to the Menu screen.



MPTC-01-074

Bass Output Adjustment

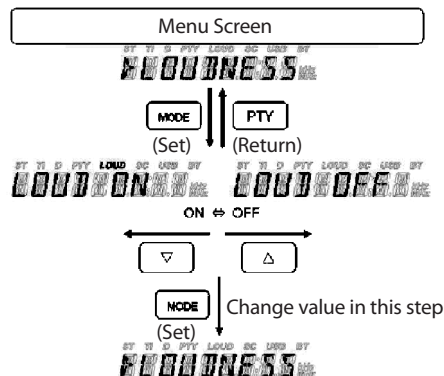
- Allows the low frequency part of the sound tone output to the speaker to be adjusted.
- It can be adjusted in 21 steps: +10 to 0 to -10.
- Press the [UP] or [DOWN] button to adjust the output. Pressing the [MODE] button completes the setting and it returns to the Menu screen. Pressing the [PTY] button cancels the setting and it returns to the Menu screen.



MPTC-01-075

Loudness Setting

- Allows the bass and treble ranges to be increased at low volumes to enhance hearing of those ranges.
- The setting can be either ON or OFF.
- Press the [UP] or [DOWN] button and select either "LOUD ON" or "LOUD OFF". Pressing the [MODE] button completes the setting and it returns to the Menu screen. Pressing the [PTY] button cancels the setting and it returns to the Menu screen.
- The LOUD pictogram lights when the setting is ON.



MPTC-01-076

OPERATOR'S STATION

TI Interrupt Setting

- This setting allows the interruption of the DAB station with traffic information (TI).
- Press the [UP] or [DOWN] button and select either "AUTO" or "NOT USE".

Pressing the [MODE] button completes the setting and it returns to the Menu screen.

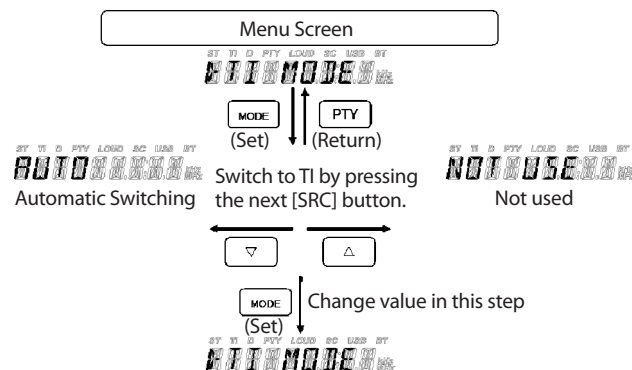
Pressing the [PTY] button cancels the setting and it returns to the Menu screen.

AUTO: Automatic Switching

- When the source is DAB and TI is received in the current on-air ensemble, it switches automatically to the TI broadcasting service.

NOT USE: Not used

- The TI function is disabled.



MPTC-01-079

DAB List Update Timing Setting

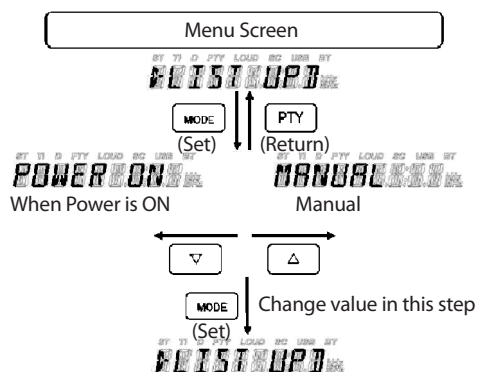
- This allows the timing for updating the DAB list to be set.
- Press the [UP] or [DOWN] button and select either "POWER ON" or "MANUAL".

Pressing the [MODE] button completes the setting and it returns to the Menu screen.

Pressing the [PTY] button cancels the setting and it returns to the Menu screen.

POWER ON : When the power is ON and the source is DAB, long press the [DAB] button to execute this function.

MANUAL : When the source is DAB, long press the [DAB] button to execute this function.



MPTC-01-080

OPERATOR'S STATION

Pairing (A special Bluetooth® unit is necessary to use this function.)

- This function authenticates the Bluetooth device for use with this device.
- Pressing the [MODE] button on the setting screen to display the "PUSH MODE" on the screen.

Pressing the [MODE] button again displays "WAIT" on the screen. Once the special Bluetooth module of the radio unit completes preparations, "PKEY 0000" and "BT****" are displayed alternately on the screen.

Select the name of this device, "BT****" on the Bluetooth device to be connected.

("****" is the 4-digit serial number of the special Bluetooth module of the radio unit.)

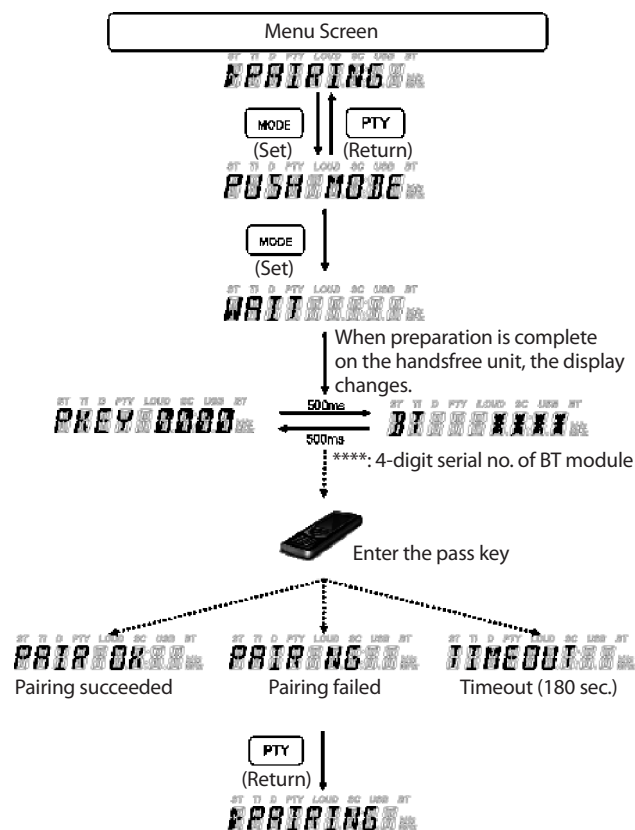
Pressing the [PTY] button at any stage cancels the pairing and it returns to the Menu screen.

If pairing is successful, "PAIR OK" is displayed on the screen.

If pairing fails, "PAIR NG" is displayed on the screen.

If there is no communication for 180 seconds after pairing starts, "TIME OUT" is displayed on the screen.

Pressing the [PTY] buttons completes the setting and it returns to the Menu screen.



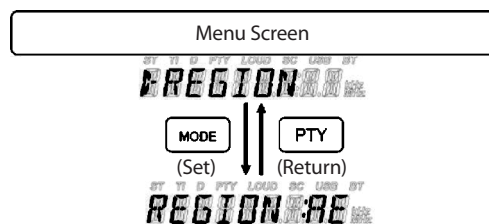
MPTC-01-081

OPERATOR'S STATION

Region Display

- This function allows the setting for the region where the radio unit can get reception to be checked.
- Make sure the region displayed is "AE."

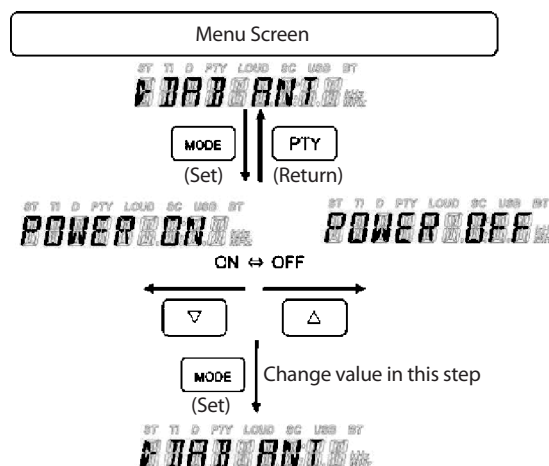
AE: Europe, Asia, Australia.



MPTC-01-082

DAB Antenna Power Output Setting

- This function enables/disables the output of power to the DAB antenna terminal.
 - Press the [UP] or [DOWN] button and select either "POWER ON" or "POWER OFF".
- Pressing the [MODE] button completes the setting and it returns to the Menu screen.
- Pressing the [PTY] button cancels the setting and it returns to the Menu screen.

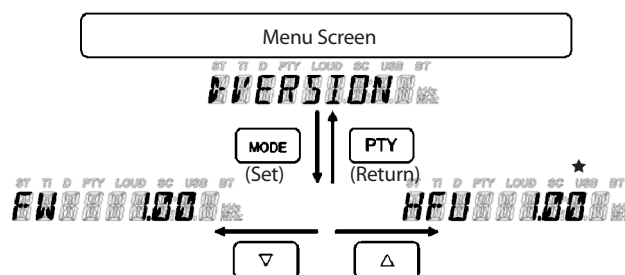


MPTC-01-083

Version Display

- This function allows the version of the radio unit's firmware to be checked.

IMPORTANT: If the battery is disconnected (cannot supply power) for a long time, the settings are initialized. If settings are initialized, redo the settings.



★ : The HFU (special Bluetooth unit) version is displayed.

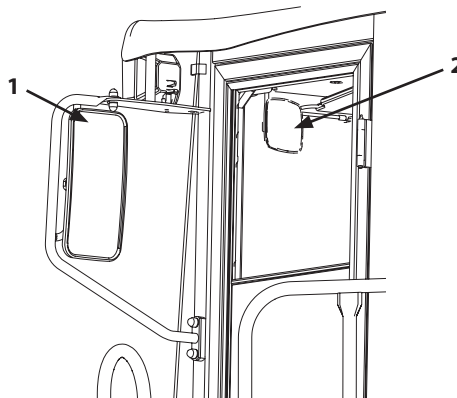
MPTC-01-084

OPERATOR'S STATION

Outside Rear View Mirror

WARNING: Do not travel the machine in reverse by relying on only the range of vision the rear view mirror (1) provides. Use the rear view mirror only as an assistant during travel operation. Be sure to confirm the safety by using your own visibility when traveling the machine in reverse.

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



90Z7B-1-132-1EU

Installation and Adjustment of Mirrors

WARNING:

- Adjust the mirrors, referring to the field of vision in the mirrors in the "VISIBILITY MAP" chapter. Perform adjustment with the machine position as shown.
- If the mirrors are adjusted improperly, the field of vision cannot be ensured and/or will be obstructed, which may result in serious personal injury.
- Check the field of vision in the mirrors every day before starting work.
- If any of the mirrors are dirty, clean them.
- Ensure appropriate footing when adjusting or cleaning mirrors.



Machine Position Image

MNEK-VM-001

IMPORTANT: Mirrors and cameras only act as aids. Before operating the machine, always check the area around the machine thoroughly.

IMPORTANT: If a modification is made that could restrict the field of vision, it may result in an obstruction to the field of vision, so check the field of vision again.

OPERATOR'S STATION

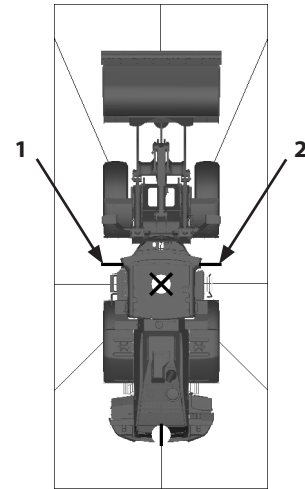
Mirror Installation Diagram

The mirror installation locations (1, 2) on this machine are shown in the right.

Adjust the installation locations of each mirror by following the instructions below to ensure safety.

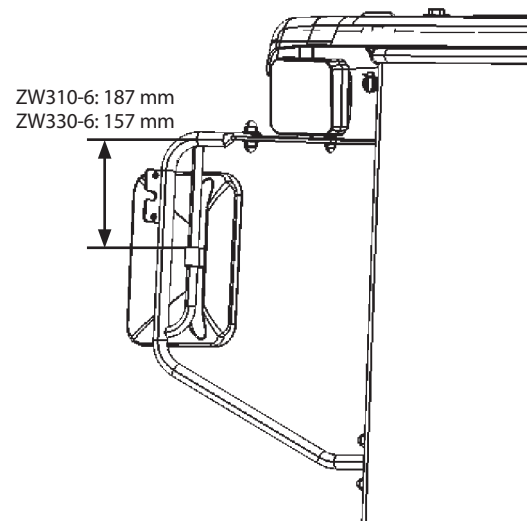
Installation angle and dimension varies depending on the model.

- 1- Outside Rear View Mirror (Left)
or Rear View Mirror with Close-Proximity Mirror (Left)
(ZW310-6)
- 2- Outside Rear View Mirror (Right)
or Rear View Mirror with Close-Proximity Mirror (Right)
(ZW310-6)



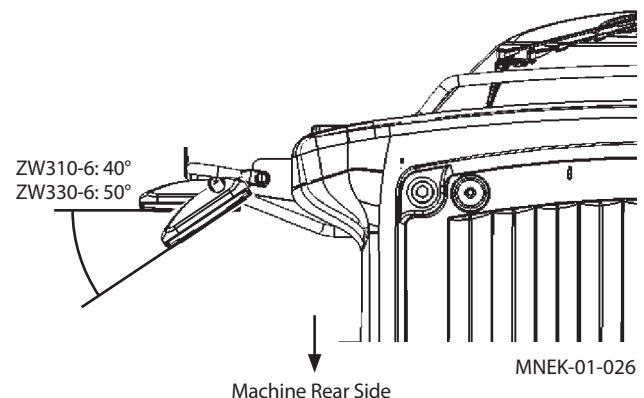
MPD8-01-009

- Outside Rear View Mirror (Height)
Adjust the mirror to the specified position.
Ensure a wide view in the rear of the machine.



MNEK-01-025

- Outside Rear View Mirror (Angle)
Adjust the mirror to the specified position.
Changing the angle and positioning as shown on the right,
so as to ensure a wide view in the rear of the machine.



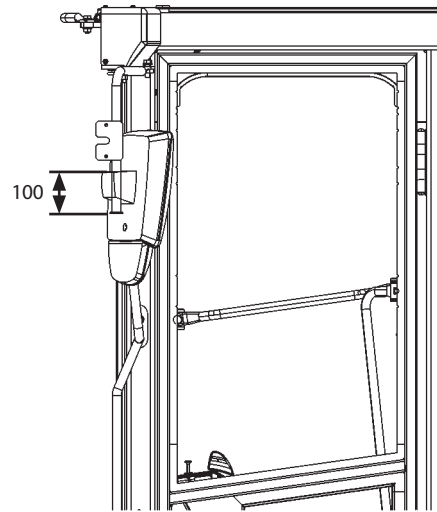
MNEK-01-026

OPERATOR'S STATION

- Rear View Mirror with Close-Proximity Mirror (Height)
(ZW310-6)

Adjust the mirror to the specified position.

Ensure a wide view from the rear of the machine.

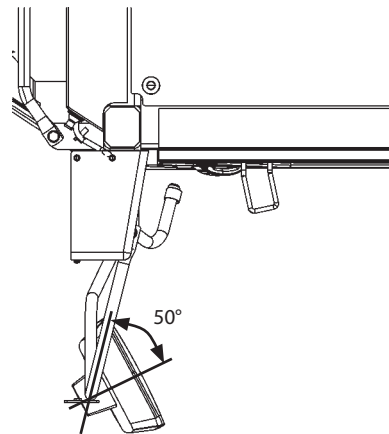


MPTC-01-043

- Rear View Mirror with Close-Proximity Mirror (Angle)
(ZW310-6)

Adjust the mirror to the specified position.

Changing the angle and positioning as shown on the right,
so as to ensure a wide view from the rear of the machine.



MPTC-01-044

OPERATOR'S STATION

Room Rear View Mirror

Always keep room rear view mirrors (2) clean.

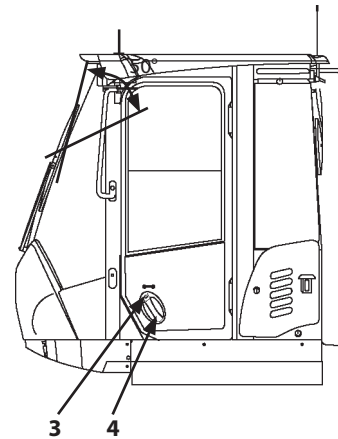
Cab Door

CAUTION: When closing the door, securely close the door. Before leaving the operator's seat, securely close the door.

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

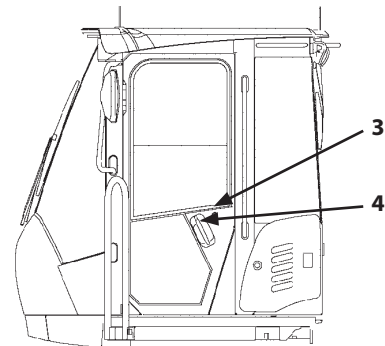
3- Door Lock Key

4- Door Open/Close Lever



ZW310-6

MNEC-01-505



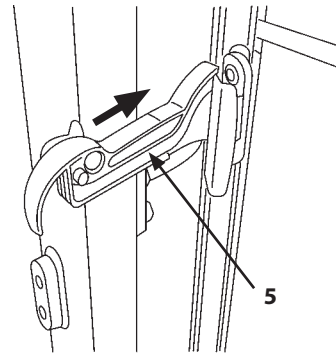
ZW330-6

92Z7-1-129-2

OPERATOR'S STATION

Right Door Open/Close Lever (ZW310-6)

When opening the right door, move lever (5) to a horizontal position, and push it to the fixed position.

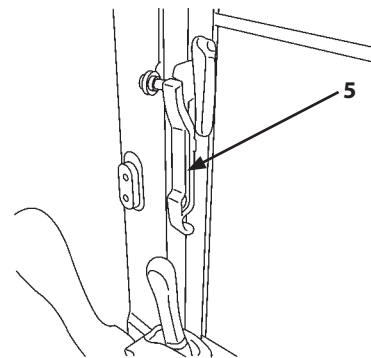


MNEK-01-504

Right Door Lock (ZW310-6)

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

Depress lever (5) to engage the door lock.

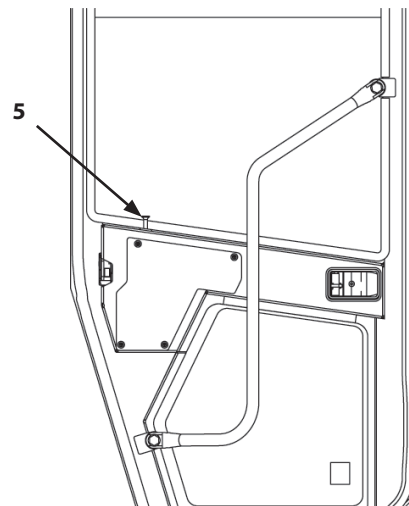


MNEK-01-505

Door Lock Knob (ZW330-6)

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

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

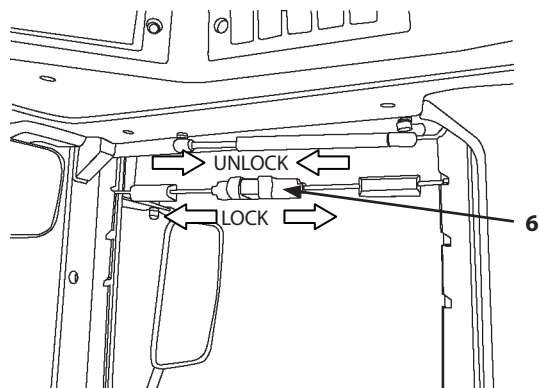


92Z7-1-130-1

OPERATOR'S STATION

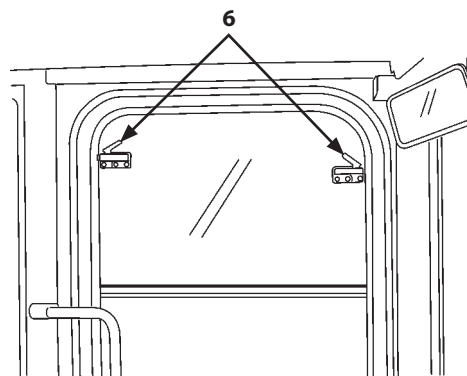
Window Open/Close Levers

When window open/close levers (6) on both sides are simultaneously pressed from left and right sides toward center, the window is unlocked, allowing the windowpanes to move. When window open/close levers (6) are released, stoppers are engaged in the nearest steps so that the window is locked in that position.



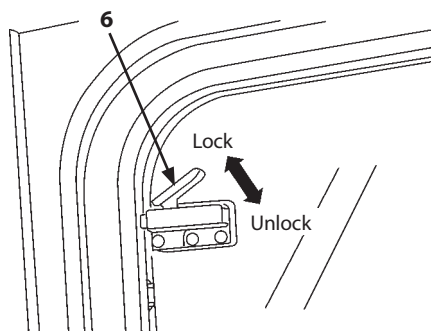
ZW310-6

MNEC-01-507



ZW330-6

M4FJ-01-016



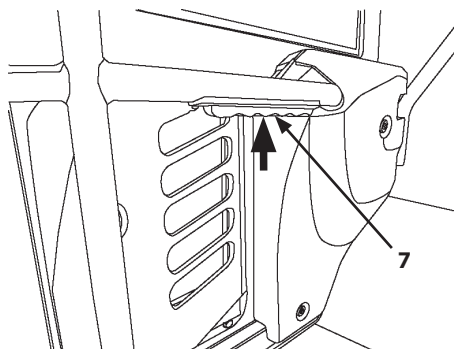
ZW330-6

M4EK-01-048

OPERATOR'S STATION

Left Door Open/Close Lever (ZW310-6)

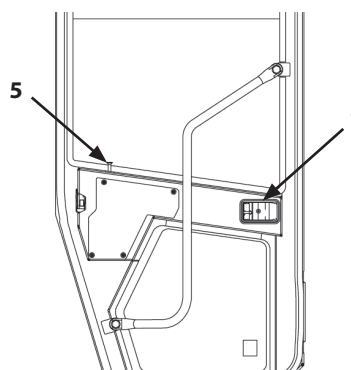
When opening the left door, hold and push lever (7) to disengage the door lock.



MNEC-01-508

Door Open/Close Lever (ZW330-6)

When opening the door, while lifting door lock knob (5), pull lever (7) to disengage the door lock.

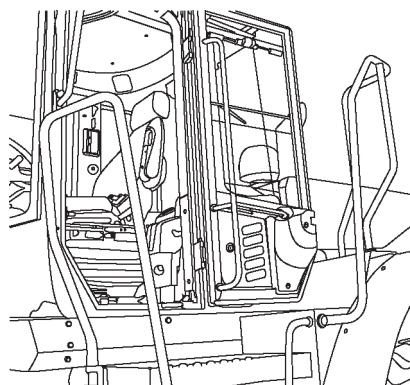


92Z7-1-130-1

When Fully Opening the Left Door (ZW310-6)

⚠ WARNING: Before getting on or off the cab using the hand rails, check that the cab door is securely locked. If the hand rails are used without locking the door securely, the door lock may come off, possibly causing falling accident.

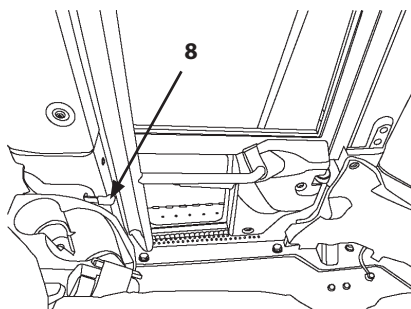
Push the door toward the outside of the cab to fully open the door (175°).



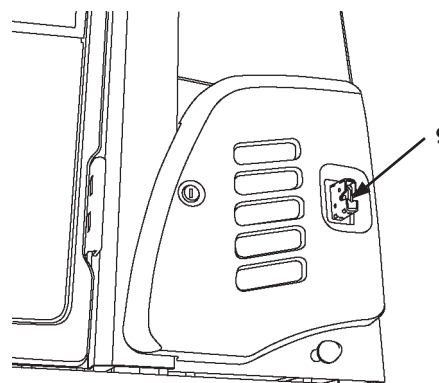
MNEC-01-521

Cab Door Release Lever (ZW310-6)

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



MNEC-01-509



MNEC-01-055

OPERATOR'S STATION

Battery Disconnect Switch

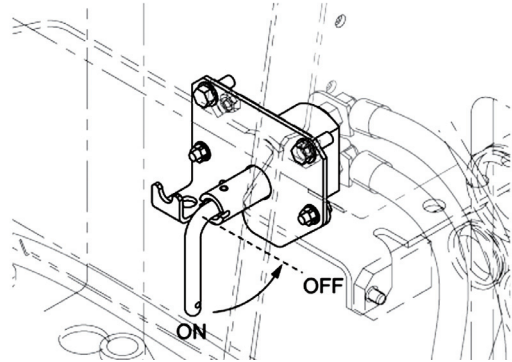
IMPORTANT: Never turn the disconnect switch OFF while the engine is running or the key switch is in the position other than OFF. Failure to do so may damage the electrical system.

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

Before turning the battery disconnect switch OFF, be sure to turn key switch OFF and wait 5 minutes or more after the engine stops. If the battery disconnect switch is turned OFF within 5 minutes after the engine stops, it may result in malfunction of the electrical system. When turning the battery disconnect switch from OFF to ON, preset radio station and the clock may be reset. Set them again.

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

- Before maintaining and repairing the electrical system
- Before storing the machine for long period (Discharge prevention)
- Before performing welding operation on the machine.
- Before replacing the batteries.



BatterySW3

OPERATOR'S STATION

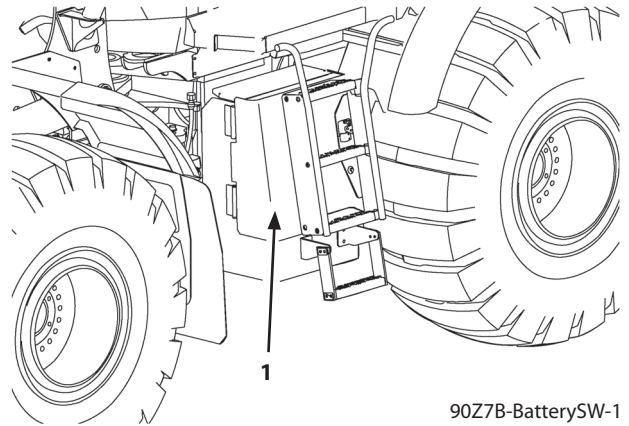
Switch Operation

1. Open cover (1).

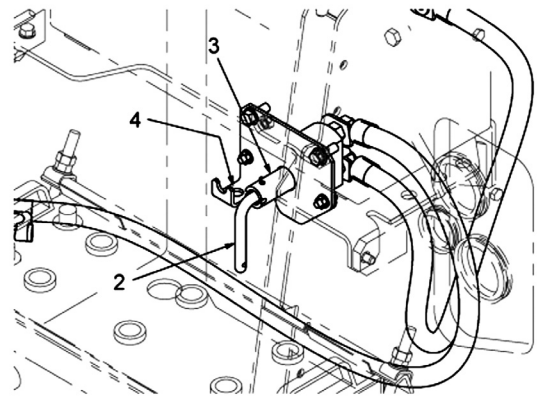
When lever (2) is vertical to the ground, battery disconnect switch (3) turns ON. The lever can not be removed when lever (2) points downward.

When operating the machine with battery disconnect switch (3) ON, close cover (1).

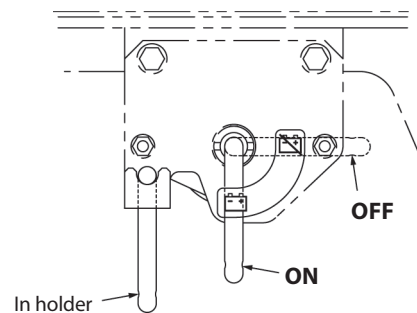
2. When turning lever (2) 90° counterclockwise (the lever is lateral to the ground), battery disconnect switch (3) turns OFF. Lever (2) can be removed from battery disconnect switch (3) when it is in OFF position.
3. Insert lever (2) removed from switch (3) into hole (4) of the holder.
4. Close cover (1).



90Z7B-BatterySW-1



BatterySW2



LeverPosition

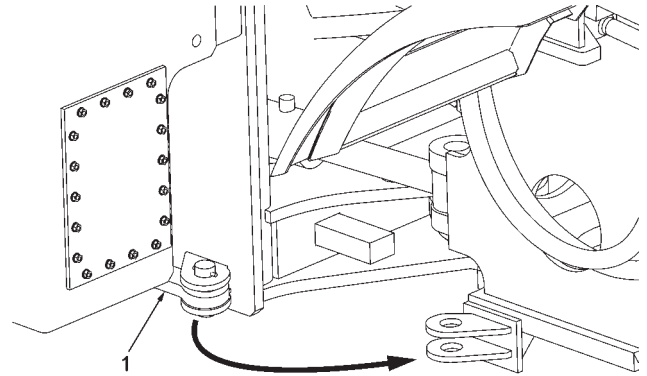
OPERATOR'S STATION

Articulation Lock Bar

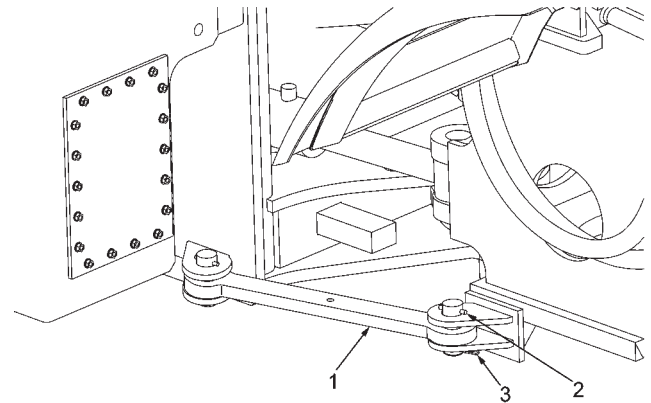
⚠ WARNING:

- Before servicing or transporting the machine, be sure to engage lock bar (1).
- Before driving the machine, be sure to disengage the lock bar (1) from the front frame and fasten the lock bar to the rear frame with pin (2) and β -form lock pin (3).

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



90Z7-1-136-1



90Z7-1-136-2

OPERATOR'S STATION

Towing Pin

⚠ WARNING: Since towing is a potentially dangerous operation, perform only in an emergency situation.

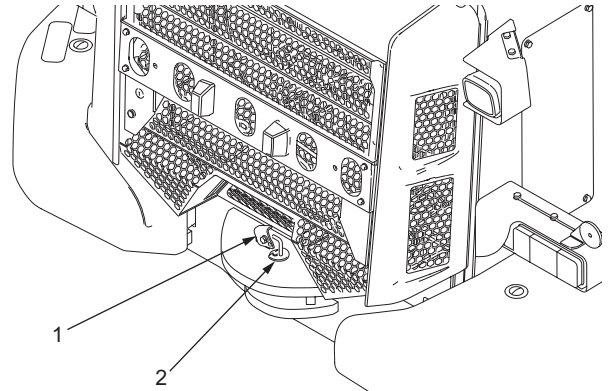
IMPORTANT: Available towing forces by machine model are as follows. To prevent excessive wear of tires, avoid towing operation requiring more than the available towing force.

ZW310-6: 186 kN (19000 kgf) (Power Mode: ON)

ZW330-6: 189 kN (19350 kgf) (Power Mode: ON)

- To ensure safety, always tow the machine at the speed 5 km/h or less.
- Never tow the machine long distance more than 5 km.
- Do not tow other machine.

Towing pin (2) is located on the rear end of the base machine. It is used for towing for recovery of machine or fastening the machine on a trailer deck for transportation. Pull up the left end, or push down the right end, of stopper (1) to pull out towing pin (2). Tie or loop the towing rope and let it pass through the hole.



90Z7B-1-135-1EU

OPERATOR'S STATION

Inspection/Maintenance Side Access Cover

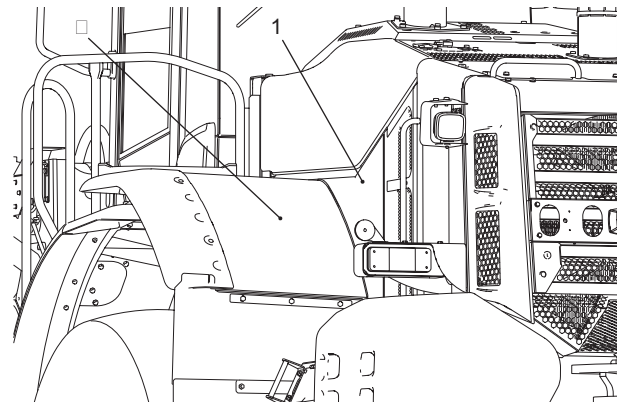
CAUTION:

- Always close side covers (1) during driving and operation.
- Do not keep side covers (1) open on a slope or when a strong wind is blowing. Failure to do so may be dangerous because side cover (1) may unexpectedly close.
- Take care not to pinch your fingers when opening/closing the side covers (1).
- When side cover (1) is opened, the cover may move suddenly. Be careful not to come in contact with the cover.
- Before inspecting around the engine, be sure to secure side cover (1) with holding rod (3).
- If the machine is equipped with the fenders (2) on side covers (1), never ride on the fenders (2).

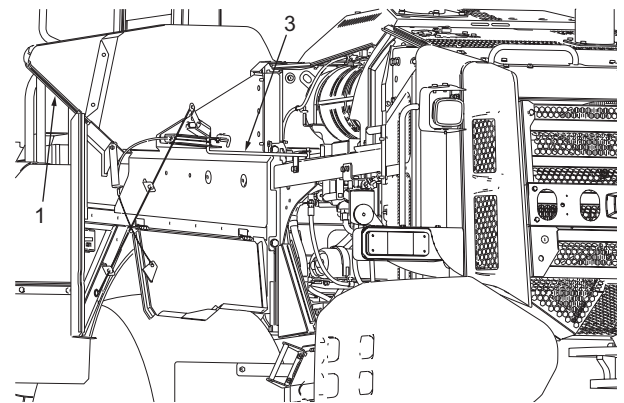
When opening side cover (1), pull latch (4).

 NOTE: When required to inspect the machine for a long time with side cover (1) kept open, lock side cover (1) using the holding rod (3) provided inside the side cover.

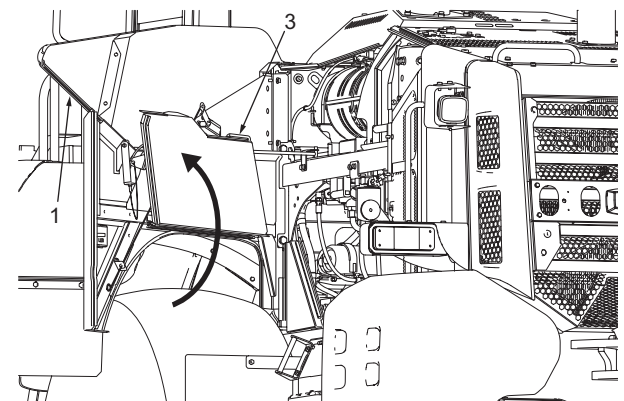
Side cover (1) has a holding groove. Engage the holding rod (3) in the holding groove beforehand.



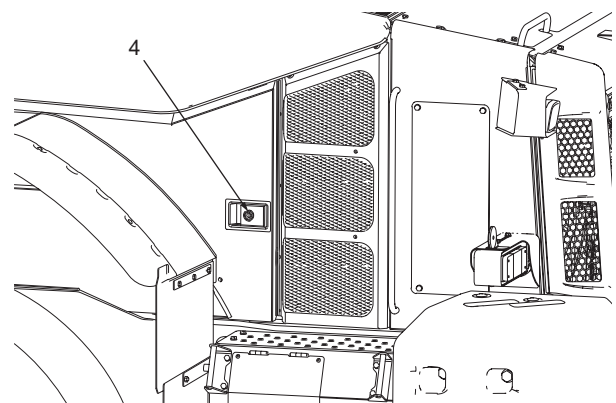
90Z7B-1-136-4EU



90Z7B-1-136-2EU



90Z7B-1-136-3EU



90Z7B-1-140-2EU

OPERATOR'S STATION

Rear Grille

CAUTION:

- Open or close rear grille (4) only after stopping the engine. Failure to do so may create a very dangerous situation as entanglement with the cooling fan may result.
- Before driving the machine, always check that rear grille (4) is not open.

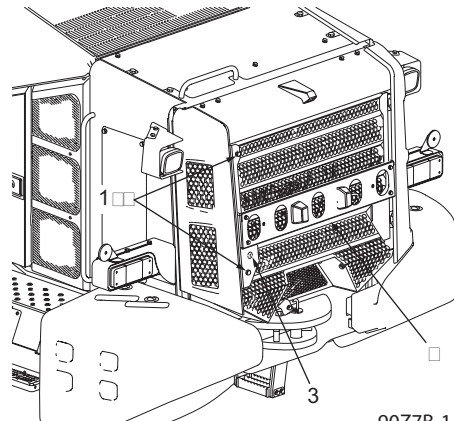
 NOTE: The switch key cannot be removed from latch (3) while rear grille (4) is being opened.

Opening the rear grille

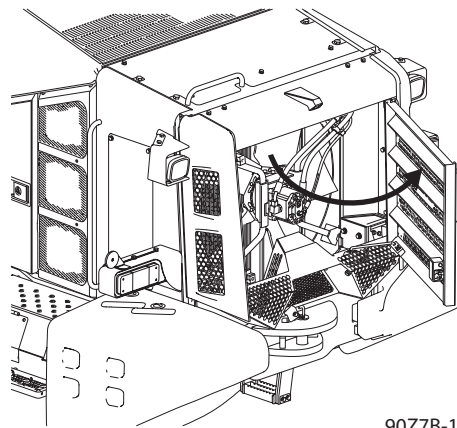
Remove bolt caps (1) and bolts (2). Release latch (3) with the key switch unlock rear grille (4). The rear grille opens and the cooling fan can be cleaned.

Closing the rear grille

After closing rear grille (4), turn and remove key switch (3) to lock rear grille (4). Tighten bolts (2) and install caps (1).



90Z7B-1-137-1EU



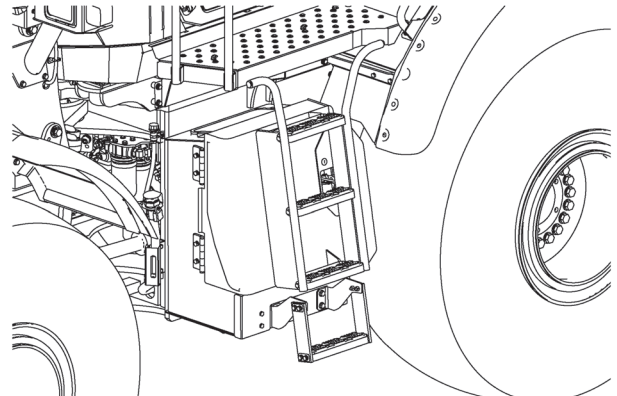
90Z7B-1-137-2EU

OPERATOR'S STATION

Steps

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

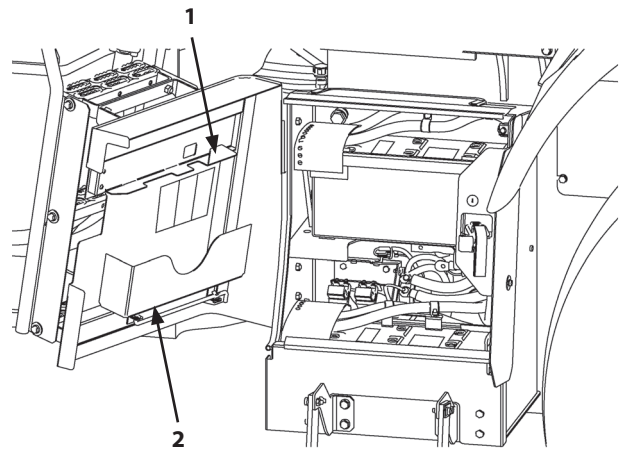
Although there are steps on both sides of the machine (left and right), use the steps on the left side to get in and out of the operator's station. The cab does not have a door on the right side. The steps on the right are for use during maintenance or in emergencies.



90Z7B-1-138-1

Tool Box

Use inside of the battery box to store tools. There is a grease gun holder (1) and tool box (2) on the rear of the battery box cover.

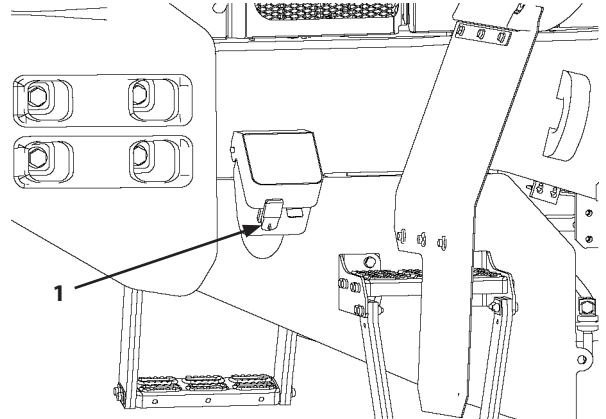


90Z7B-1-138-2

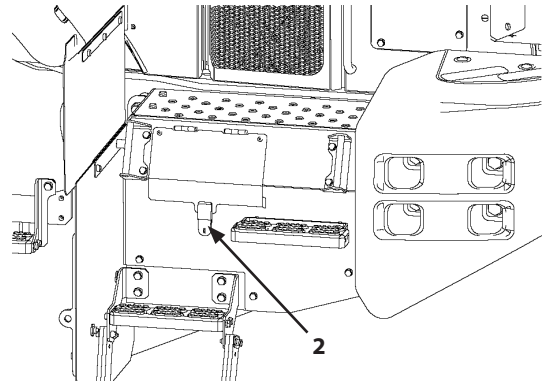
OPERATOR'S STATION

Vandal-Proof Devices

A lock key can be installed to fuel tank cap (1), and DEF/AdBlue tank cover (2).



90Z7B-1-142-2

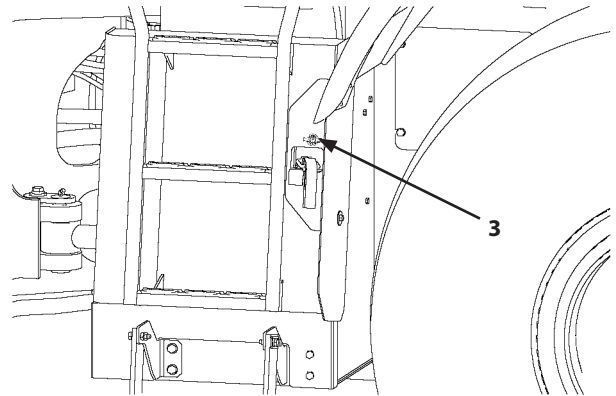


90Z7B-1-142-3

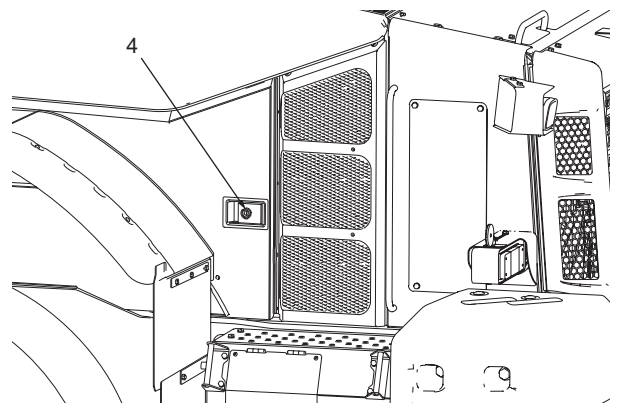
OPERATOR'S STATION

Vandal-Proof Devices (continue from previous page)

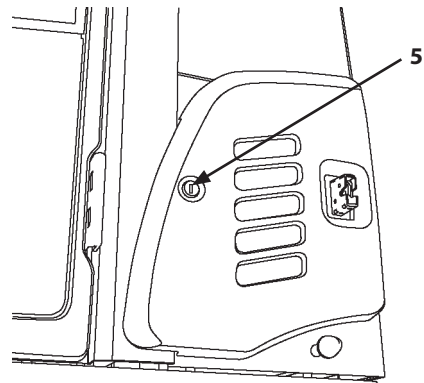
Battery cover (3), side covers (4), and air conditioner fresh air filter (5) can be locked with the keys.



ZW310-1-140-1



90Z7B-1-140-2EU



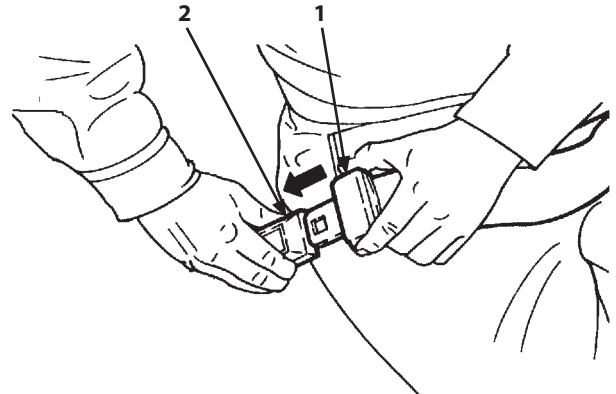
MNEC-01-055

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.

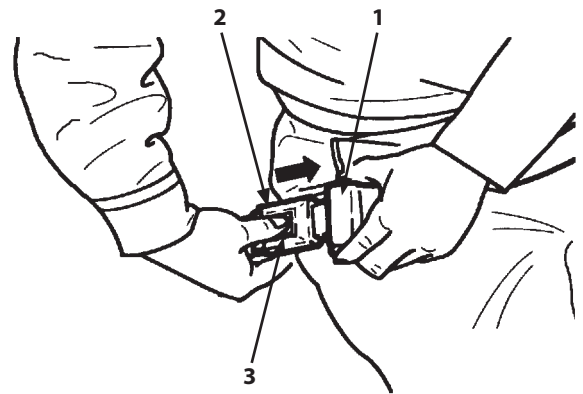


M1U1-01-031

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).

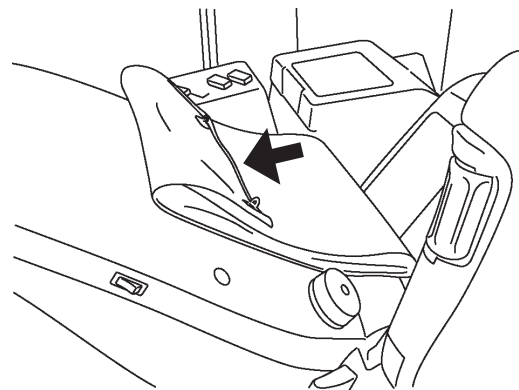
Replace seat belt (1) if it is damaged or worn, or if the machine is involved in an accident which puts severe stress on the seatbelt.



M1U1-01-032

Seat Pocket

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



M4GB-01-139

BREAK-IN

Break-in Operation for New Machine

IMPORTANT: If the machine is heavily loaded without performing the break-in operation, damage to the machine such as seizure and/or scoring may result and the machine life will be significantly 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. Perform break-in operation for the first 100 hours.

- Check the machine before starting the engine.
- After starting the engine, sufficiently perform warm up operation.
- Avoid sudden starting, sudden acceleration and sudden braking while traveling the machine.
- Avoid heavy load for the front attachment.

MEMO

[illegible]

OPERATING ENGINE

Inspect Machine Daily Before Starting

Perform the required daily check before starting the engine.

- Refer to "Maintenance" section for detailed information.

Check Points	Check Contents
1. Brake System	1. The brake pedal stroke is appropriate, brake performance is sufficient, and the brakes apply evenly. 2. The parking brake performance is sufficient.
2. Tires	1. Tire pressure is appropriate. 2. No cracks and damage observed. 3. No excessive wear observed. 4. No metal pieces, stones or other foreign material found.
3. Wheel Disk	Mounting condition of the wheel disk is correct.
4. Lights and Turn Signals	They light up or flash normally without contamination and damage.
5. Outside Rear View Mirror and Inside Rear View Mirror	Appropriate visibility obtained.
6. Reflectors and Registration Plate	No contamination and damage found.
7. The portions where abnormality was found at previous operation.	No abnormality observed.
8. Engine	1. Level and contamination of engine oil and coolant. 2. Loose or damage of the alternator drive belt. 3. Ease of starting, exhaust gas color, and noise. 4. Oil and water leaks, damage to hoses and pipe lines. 5. Clogging and damage of radiator, oil cooler and inter cooler. 6. Looseness and/or missing mounting bolts and nuts. 7. Check crankcase breather tube. 8. Drain water and sediment from fuel filter. 9. Check exhaust gas color and noise. 10. Check dust ejection valve. 11. Check accelerator pedal operation.

OPERATING ENGINE

Check Points	Check Contents
9. Chassis	1. Oil level and leaks of the transmission and the axle. 2. Level, leaks and contamination of the fuel tank. Drain fuel tank sump. 3. Fuel leaks and damage of the fuel hoses and pipe lines. 4. Level and leaks of the hydraulic oil tank. 5. Operation, play and operating force of control levers and steering wheel. 6. Operation of hydraulic equipment. Oil leaks and damage to pipings and hoses. 7. Deformity, damage, and abnormal noise of each part. 8. Washer fluid. 9. Level, leaks and contamination of the DEF/AdBlue® tank. 10. DEF/AdBlue® leaks of pipe lines and hoses. 11. Clean around the aftertreatment device.
10. Loader	1. Oil leaks and damage to cylinders, pipe lines and hoses. 2. Loose, wear and missing of the cutting edge. 3. Wear and damage to the bucket. 4. Condition of lubrication of the loader front. 5. Damage to the pin lock bolts, stoppers and links. 6. Loose and/or missing mounting bolts and nuts.
11. Others	1. Operation of instruments, switches, lights and buzzer/horn. 2. Damage and deformation to the ROPS cab. 3. Abnormal outside appearance of machine. 4. Looseness of the battery terminals. 5. Wear and damage to the seat belt. 6. Damage to the step.

OPERATING ENGINE

Check Before Starting

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

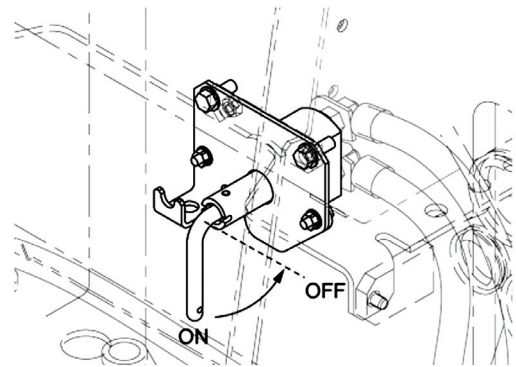
1. If your machine is equipped with the battery disconnect switch, check that the switch is in the ON position.
2. Check that both forward/reverse lever (2) and forward/reverse switch (4) are in the neutral (N) position and neutral lever lock (3) is in the LOCK position.

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

If the machine is equipped with joystick steering (optional), put the Forward/Reverse switch on the left console in the neutral (N) position. For information on operating joystick steering (optional), refer to the section "Joystick Steering" in Chapter 13.

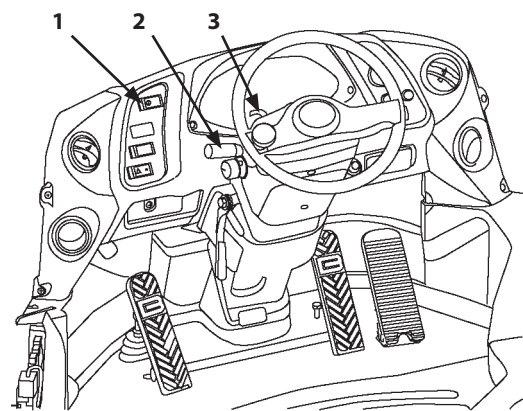
NOTE: Unless forward/reverse lever (2) and forward/reverse switch are in neutral (N), the engine will not start.

3. Check that parking brake switch (1) is in the ON position.
After the engine starts and checking indicator bulbs (refer to page 3-5), check that the parking brake indicator is ON.
4. Check that bucket control lever (5) and lift arm control lever (6) are in the neutral (N) position.

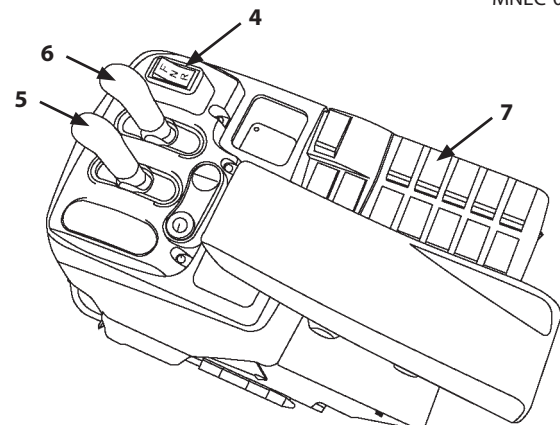


Battery Disconnect Switch

BatterySW3

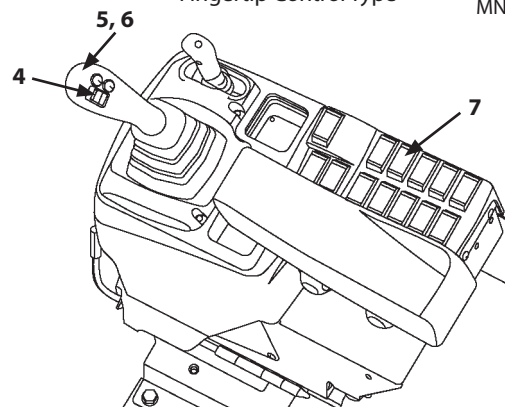


MNEC-01-037



Fingertip Control Type

MNEC-07-001

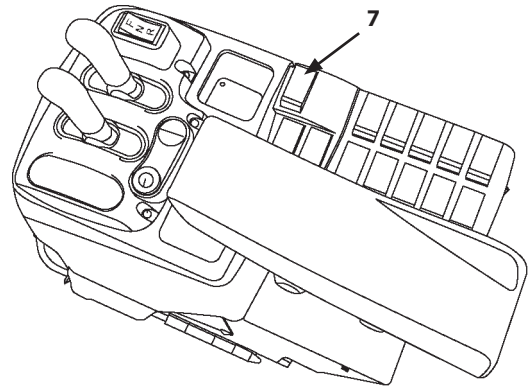


Multi-Function Joystick Type

MNEC-01-043

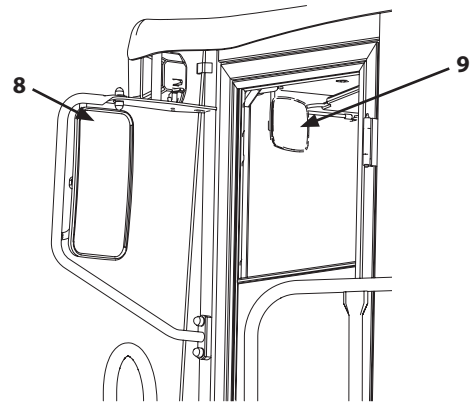
OPERATING ENGINE

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



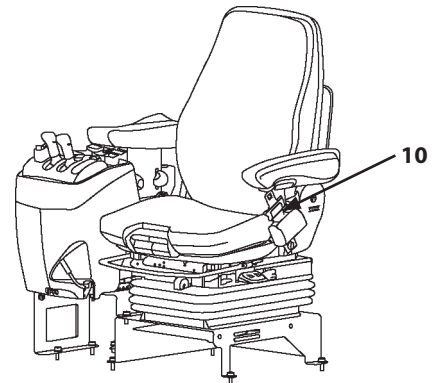
MNEC-07-001

6. Adjust the position of outside rear view mirror (8) and room rear view mirror (9) so that the best rear visibility can be obtained.



90Z7B-1-132-1EU

7. While seated on the operator's seat with your back in contact with the backrest, adjust each function of the seat so that the brake pedal can be fully stepped on.
8. Fasten seat belt (10).



MNEC-01-045

OPERATING ENGINE

Starting Engine

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

1. Check that both forward/reverse lever (8) and forward/reverse switch (9) are in the neutral (N) position and neutral lever lock (10) is in the LOCK position.

If the machine is equipped with joystick steering (optional), put the Forward/Reverse switch on the left console in the neutral (N) position. For information on operating joystick steering (optional), refer to the section "Joystick Steering" in Chapter 13.

2. Check that parking brake switch (1) is ON.
3. Turn the key switch (2) ON.
4. Check indicator bulbs

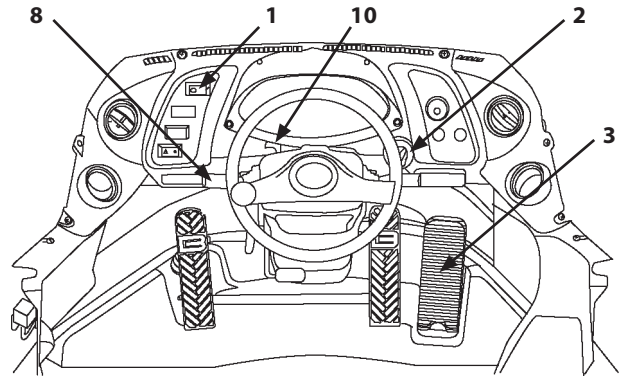
When key switch (2) is turned ON, all indicators and the warning lights come and stay ON for 2 seconds. They go OFF afterward. Any indicator and/or warning light that fails to light at this time is a burned bulb.

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

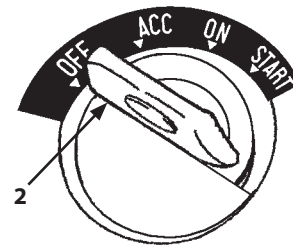
Preheating will automatically start with the key switch ON. The preheat indicator (6) will automatically come ON.

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

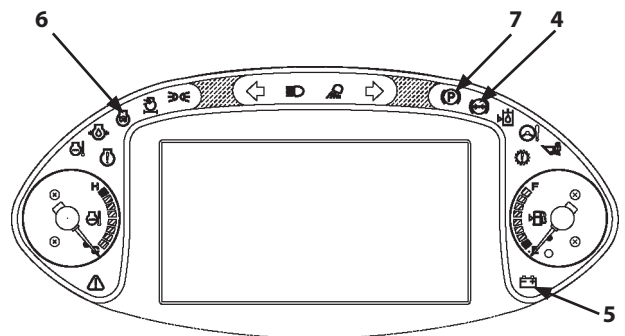
5. Check that parking brake indicator (7) is ON. When the preheat lamp goes OFF (the engine has preheated), sound the horn to clear any personnel away from the area surrounding the machine.



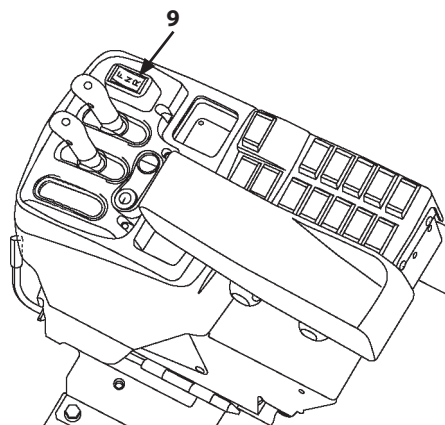
MNEC-01-036



MNDB-01-053



MNEC-01-073



MNEC-01-526

OPERATING ENGINE

IMPORTANT: Never operate the starter for more than 10 seconds at a time. If the engine fails to start, return the key switch to the OFF position. Wait for more than 2 minutes, then try again.

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

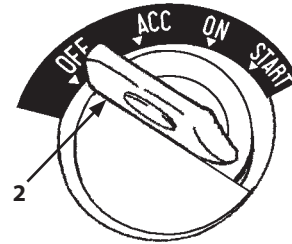
6. Turn key switch (2) to the START position to rotate the starter. The engine will start.

Do not depress accelerator pedal (3) when starting the engine.

7. Release the key switch just after the engine has started.

The key switch will automatically return to the ON position.

After the engine starts, perform idling operation without depressing accelerator pedal (3) to warm up the machine.

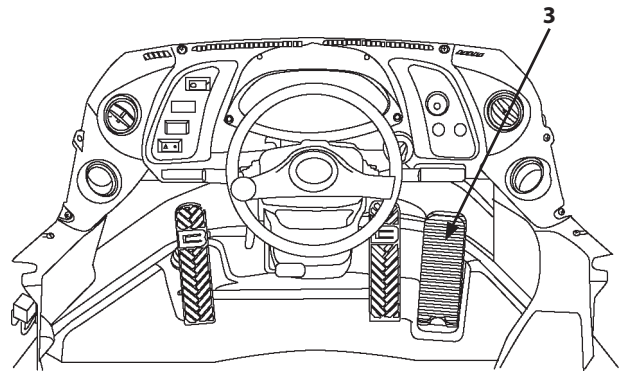


MNDB-01-053

IMPORTANT: Right after the engine starts, the engine speed will be kept to slow idle speed for maximum 30 seconds when the coolant, hydraulic oil or transmission oil temperature is low, or for 3 seconds at normal temperature even if accelerator pedal (3) is operated.

WARNING: After starting the engine, start the machine operation only after confirming that the engine speed changes by operating accelerator pedal (3).

Otherwise, the machine or the front attachment may unexpectedly start moving, possibly causing accidents such as crash.



MNEC-01-036

NOTE:

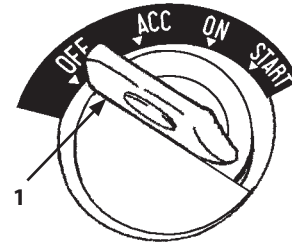
- If the machine is equipped with the emergency steering, the emergency steering auto-check sound may be heard after starting the engine.
- White smoke may be emitted for several minutes after the engine starts, this is not a malfunction.

OPERATING ENGINE

Starting in Cold Weather

Preheating

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



MNDB-01-053

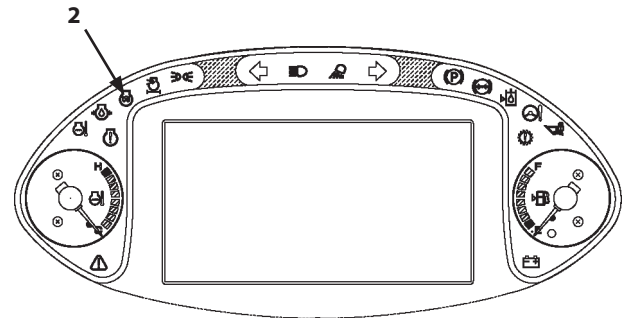
 **NOTE:** Preheating time varies depending on the ambient temperature.

3. As soon as preheat indicator (2) goes OFF, turn key switch (1) to START position to rotate the starter. As soon as the engine starts, release the key switch. The key switch will automatically return to the ON position.

Do not depress accelerator pedal (3) when starting the engine.

After the engine starts, perform idling operation without depressing accelerator pedal (3) to warm up the machine.

After starting the engine, perform warm-up operation as described on page 3-11.

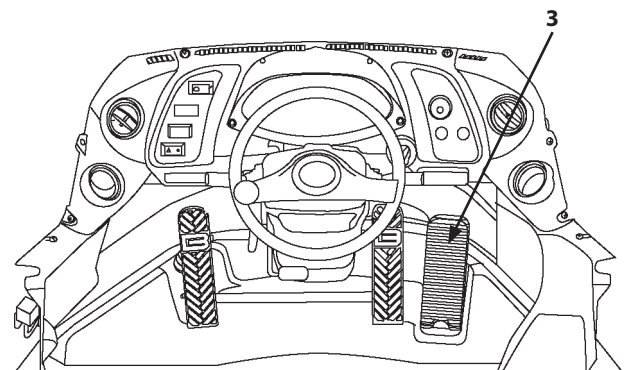


MNEC-01-073

IMPORTANT: Right after the engine starts, the engine speed will be kept to slow idle speed for maximum 30 seconds even if accelerator pedal (3) is operated.

 **WARNING:** After starting the engine, start the machine operation only after confirming that the engine speed changes by operating accelerator pedal (3).

Otherwise, the machine or the front attachment may unexpectedly start moving, possibly causing accidents such as crash.



MNEC-01-036

 **NOTE:** Illuminations such as headlight, work light or room light may become dim during the engine preheat operation at cold temperature.

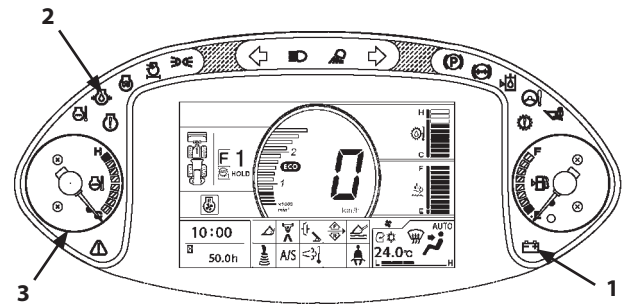
OPERATING ENGINE

Check After Starting

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

Check the monitor operation:

1. Check that discharge warning indicator (1) is OFF.
If the discharge warning indicator 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.
If the low engine oil pressure indicator stays ON, immediately stop the engine. Inspect the engine oil pressure system and the oil level.
3. Check that engine coolant temperature gauge (3) is within the normal range (green).



MNEK-01-500

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

Check engine noise and exhaust gas color:

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

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

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

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

OPERATING ENGINE

Using Booster Batteries

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

⚠ WARNING:

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

If the machine batteries are completely discharged so that when starting the engine using booster batteries is necessary, follow the procedures described to the next page.

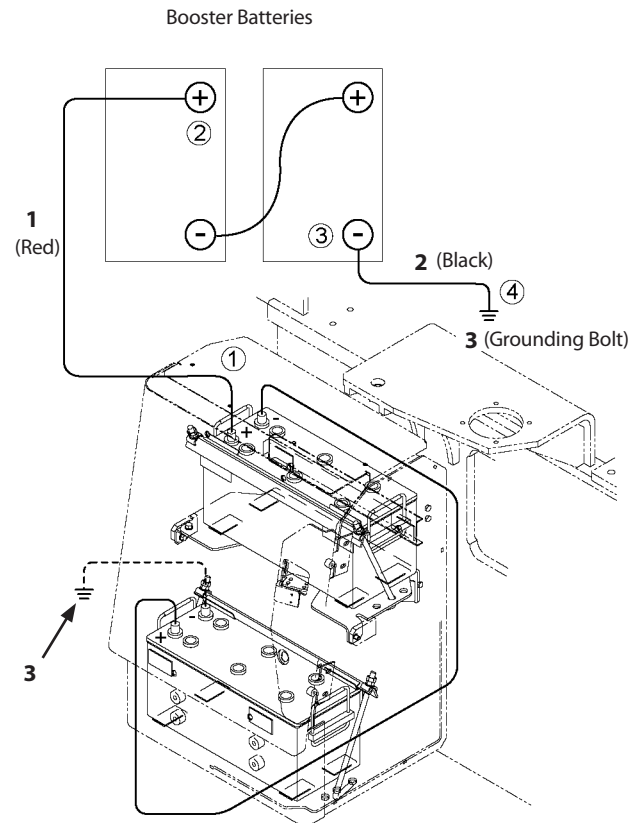


SA-032

OPERATING ENGINE

1. Connecting the booster batteries

- 1.1 Stop the engine on the booster battery mounted machine.
- 1.2 Connect one end of red booster cable (1) to the positive (+) terminal of the machine battery, and the other end to the positive (+) terminal of the booster battery.
- 1.3 Connect one end of black booster cable (2) to the negative (-) terminal of the booster batteries, and then connect the other end of the cable to the bolt (3) on the inside of rear frame as shown. In the last connection to the bracket, sparks may fly so keep the machine batteries as far away as possible from the bracket.
- 1.4 After securely connecting the booster cables, start the engine on the booster battery mounted machine.
- 1.5 Start the engine of the machine with a problem.
- 1.6 After the engine starts, disconnect booster cables (1 and 2) in the following steps.

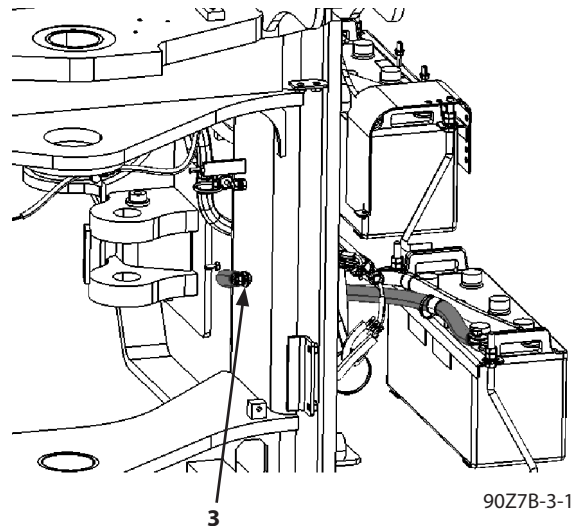


90Z7B-3-10-1

2. Disconnecting the booster cables

- 2.1 Disconnect black negative (-) cable (2) from the machine frame first.
- 2.2 Disconnect the other end of black booster cable (2) from the negative terminal of the booster batteries.
- 2.3 Disconnect one end of red booster cable (1) from the positive terminal of the booster battery.
- 2.4 Disconnect the other end of red booster cable (1) from the positive terminal of the machine battery.

IMPORTANT: Make sure to connect/disconnect booster cables (1 and 2) following the described steps. Connect booster cables one by one. Do not hold both cables at the same time to avoid short circuit.



90Z7B-3-10-2

OPERATING ENGINE

Warming Up Operation

IMPORTANT: Right after the engine starts, the engine speed will be kept to slow idle speed for maximum 35 seconds when the coolant, hydraulic oil or transmission oil temperature is low, or for 3 seconds at normal temperature even if accelerator pedal (3) is operated.

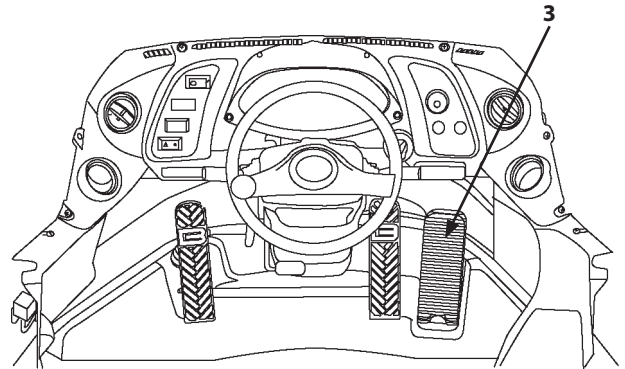
WARNING: After starting the engine, start the machine operation only after confirming that the engine speed changes by operating accelerator pedal (3).

Otherwise, the machine or the front attachment may unexpectedly start moving, possibly causing accidents such as crash.

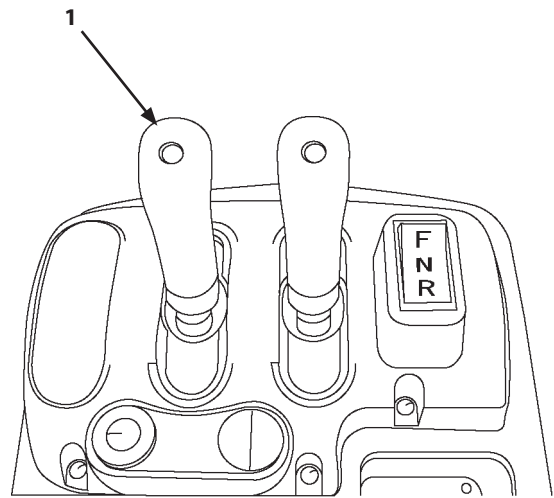
CAUTION: Operating the machine without warming up operation causes damage to the engine and hydraulic components. Be sure to perform warm up operation not only to protect the hydraulic components from being damaged but also to ensure safe operation.

If the machine is operated excessively with the hydraulic oil temperature below 20 °C, damage to the hydraulic components may result. After starting the engine, sufficiently perform warm up operation as described below before operating the machine until the hydraulic temperature increases to higher than 20 °C.

1. Run the engine at slow idle speed without operating the accelerator pedal (3) for about 3 to 5 minutes without load.
2. Increase the engine at medium speed. Raise the bucket above the ground and hold bucket control lever (1) in the tilt position for 10 seconds. (Do not operate control levers other than the bucket control lever at this time.)



MNEC-01-036



MNEC-03-003

OPERATING ENGINE

Warming Up Operation in Cold Weather

IMPORTANT: Right after the engine starts, the engine speed will be kept to slow idle speed for maximum 35 seconds even if accelerator pedal (3) is operated.

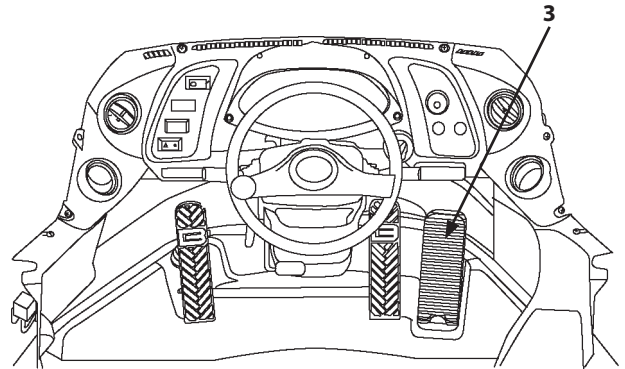
WARNING: After starting the engine, start the machine operation only after confirming that the engine speed changes by operating accelerator pedal (3).

Otherwise, the machine or the front attachment may unexpectedly start moving, possibly causing accidents such as crash.

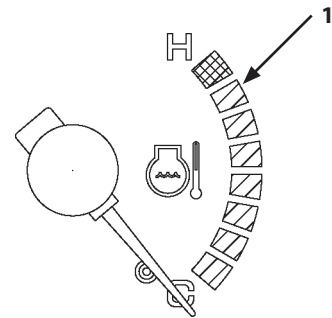
CAUTION: If the hydraulic oil temperature is low, perform cold weather warm up. Operate the machine only after the loader front operating speed becomes normal. Operating the machine without warming up operation causes damage to the engine and hydraulic components. Be sure to perform warm up, not only to protect the hydraulic components from being damaged, but also to ensure safe operation.

NOTE: Illuminations such as headlight, work light or room light may become dim during the engine preheat operation at cold temperature.

1. Run the engine at slow idle speed for more than 5 minutes.
If the [Warming Up Operation] in the multi-monitor setting menu is set to "ON" (enabled), the engine speed automatically increases from slow idle to 1000 min⁻¹ (rpm) and enters warm-up mode when hydraulic oil temperature is 0 °C or lower.
Further, when either hydraulic oil temperature becomes 30 °C or higher, or engine coolant temperature becomes 40 °C or higher, the warm-up mode is automatically canceled, and the engine runs in slow idle mode.
(Do not operate the machine until the needle of coolant temperature gauge (1) starts swinging.)



MNEC-01-036



MNEC-03-002

OPERATING ENGINE

2. Run the engine at slow idle speed for more than 5 minutes.

 *NOTE: At this time, do not operate the engine in slow or fast speed.*

3. Slowly extend the bucket cylinder to stroke end.

 *NOTE: Do not continuously operate the bucket control lever for more than 10 seconds at this time.*

4. Slowly retract the bucket cylinder to stroke end.

 *NOTE: Do not continuously operate the bucket control lever for more than 10 seconds at this time.*

5. Repeat steps 2 to 4 above until the loader front operating speed becomes normal. When the atmospheric temperature is lower than 0 °C, extend the warming up operation time by running the engine at middle speed.
6. Run the engine at low idle speed.
7. Slowly turn the steering wheel until the steering cylinder is close to the end of stroke.
8. Slowly turn the steering wheel in the opposite direction, until close to the end of stroke.
9. Repeat steps 7 and 8 five times.

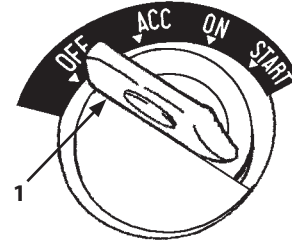
OPERATING ENGINE

Stopping Engine

Stop the engine in the following manner.

IMPORTANT: Never stop the engine while traveling the machine.

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

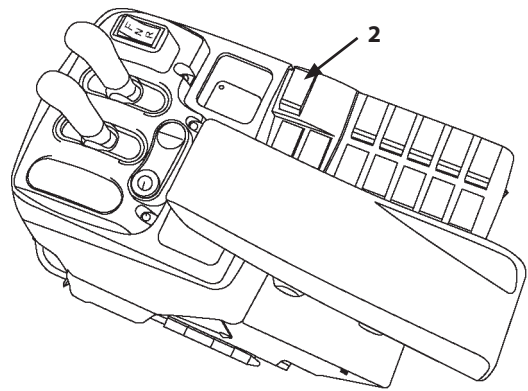


1. Lower the bucket before stopping the engine.

MNDB-01-053

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.

2. Run the engine at slow idle speed for 5 minutes to cool the engine.
3. Turn the key switch (1) to OFF position to stop the engine.
4. Press LOCK (🔒) side of control lever lock switch (2).



MNEC-07-001

IMPORTANT: After stopping the engine, the DEF/AdBlue® pump keeps operating to return the DEF/AdBlue® in piping to the DEF/AdBlue® tank. Do not turn the battery disconnect switch OFF while pump running and wait 5 minutes or more after engine stops. Failure to do so may damage the SCR system.

DRIVING MACHINE

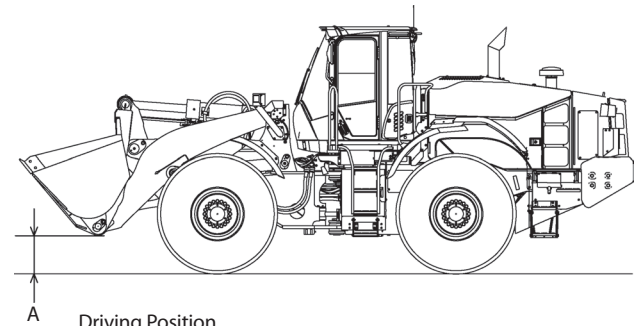
Driving the Machine

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

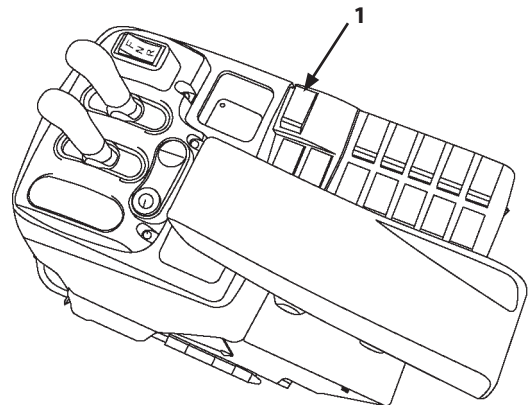
1. While checking the tires for abnormal air pressure and any obvious damage, make sure that there is no hazardous and/or obstacles in and around the vicinity of the machine.
2. After raising the lift arm, set the machine to the driving position, fully tilt the bucket backward.
3. Before driving on public roads, set the machine to the driving position as illustrated to the right. Be sure to press LOCK (🔒) side of loader control lever lock switch (1) so that the linkage will not move even if the control levers are accidentally moved.
4. After starting the engine, be sure to run the engine at slow idle speed to warm up the machine before starting to move. Do not depress the accelerator pedal when starting the engine and idling operation.

Refer to pages 3-11 and 3-12 for the warming up operation.



Driving Position
A: 300 mm

90Z7B-4-1-1US



MNEC-07-001

DRIVING MACHINE

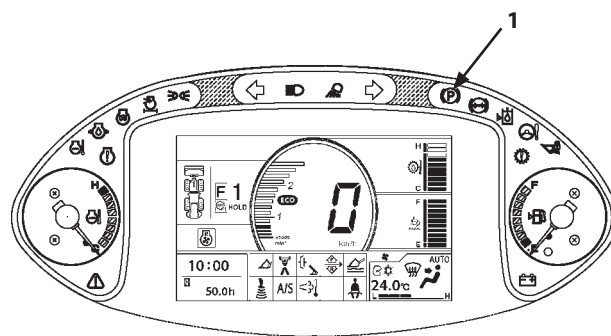
Starting to Move

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

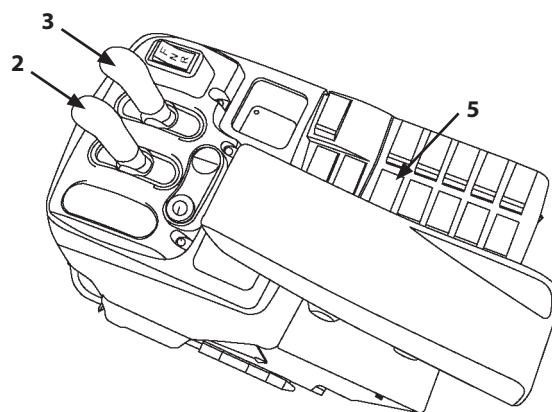
Never turn ride control switch (5) to ON position when traveling the machine or raising the bucket. Before turning the ride control switch (5) ON, stop the machine and confirm the safety around the bucket. Avoid turning ride control switch (5) to ON position while traveling the machine. Failure to do so may automatically move the lift arm up or down.

Refer to page 1-106 for detailed information of ride control switch (5).

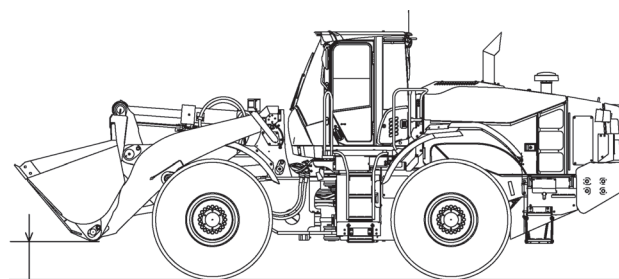
1. Check that none of the warning indicators except parking brake indicator (1) on the monitor panel is ON.
2. Set the front attachment in the driving position by operating control levers (2) (3).
3. Turn neutral lever lock (4) to the UNLOCK (🔓) position.



MNEK-01-500

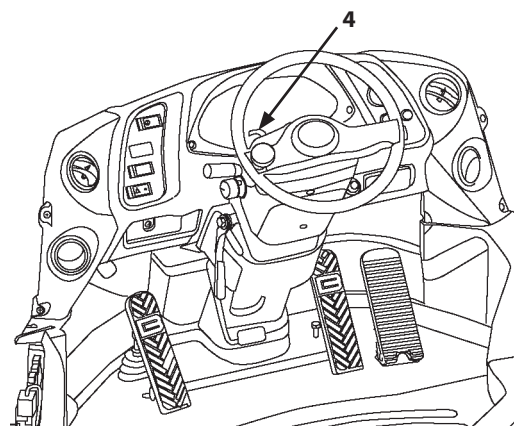


MNEC-07-001



Driving Position
A: 300 mm

90Z7B-4-1-1US

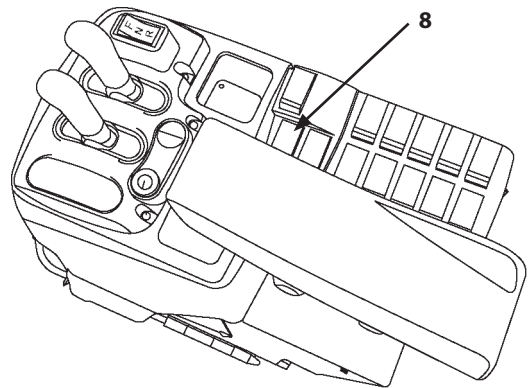
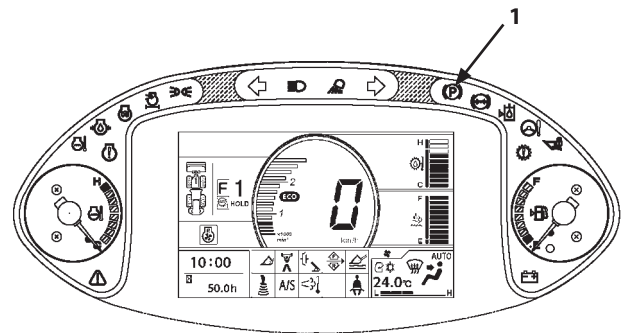
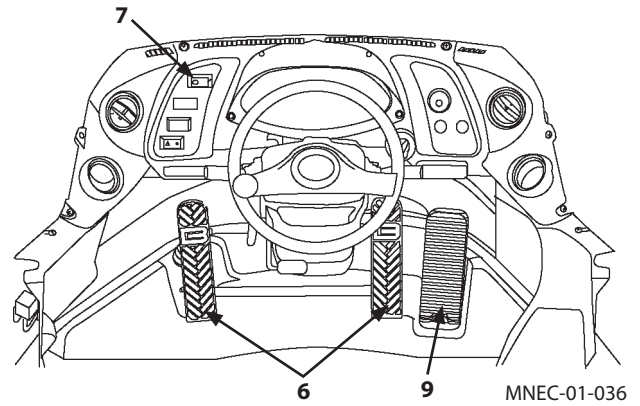


MNEC-01-037

DRIVING MACHINE

- Step on brake pedal (6) and press parking brake switch (7) to the OFF position to release the parking brake. Check that at this time parking brake indicator (1) goes OFF.

 **NOTE:** When starting to ascend a slope, turn clutch cut position switch (8) OFF (⬆) (clutch engaged), and depress the brake pedal. Gradually release brake pedal (6) while depressing accelerator pedal (9) to easily start ascending a slope.



DRIVING MACHINE

5. Manual Shift (M)

After moving forward/reverse lever (10) to either forward (F) or reverse (R) position, move the shift switch (11) to the desired position. The transmission gear position can be shifted in 5 ranges in the forward and 3 ranges in the reverse mode. Select the most appropriate transmission gear position according to the type of the work engaged in or the driving road conditions.

Manual Mode:

Manual shift mode.

The transmission gear is shifted according to the shift switch position.

To fix the transmission gear to manual 1st speed, turn the shift switch to 2nd speed, and then push 1st speed fixed switch regardless of the position of travel mode selector (12). Refer to the page 1-102 for detailed information.

6. Auto Shift

Set forward/reverse lever (10) to (F) or (R). Select the most appropriate transmission gear position according to the type of the work engaged in or the driving road conditions. Select the most appropriate travel pattern by operating travel mode selector (12).

AUTO 1 Mode:

This mode sets 1st speed as the minimum speed gear stage.

Start traveling with 2nd speed. When driving load increases, it automatically shifts to 1st speed.

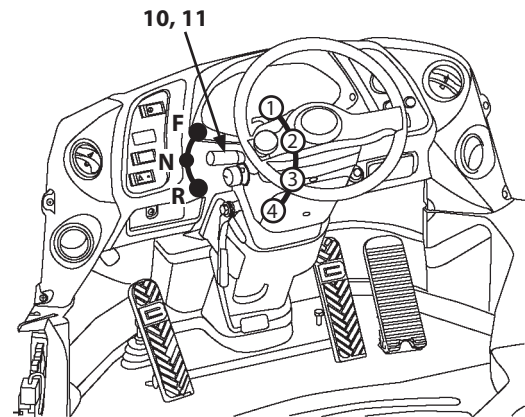
This mode is suited for heavy digging work or ascending on a slope.

AUTO 2 Mode:

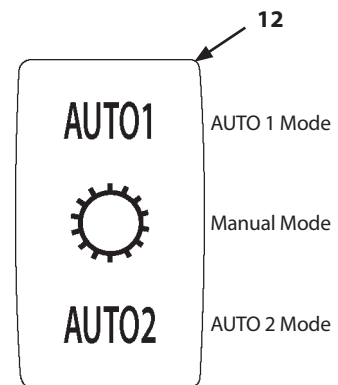
This mode sets 2nd speed as the minimum speed gear stage.

This mode is suited for removing snow.

7. Release brake pedals (6) and step on accelerator pedal (9) to start traveling.



MNEC-01-037



MNEC-01-024

DRIVING MACHINE

Shift Range of Auto Transmission

Mode	Shift Position	Shift Range
AUTO 1:	1st speed	1st speed only
	2nd speed*	1st ↔ 2nd speed ↔ 2nd L-UP
	3rd speed*	1st speed ↔ 2nd speed → 2nd L-UP → 3rd speed ↔ 3rd L-UP ← ← ←
	4th speed*	1st speed ↔ 2nd speed → 2nd L-UP → 3rd speed → 3rd L-UP → 4th speed ↔ 4th L-UP ← ← ← ← ←
AUTO 2:	1st speed	1st speed only
	2nd speed	2nd ↔ 2nd L-UP
	3rd speed	2nd speed → 2nd L-UP → 3rd speed ↔ 3rd L-UP ← ← ←
	4th speed	2nd speed → 2nd L-UP → 3rd speed → 3rd L-UP → 4th speed ↔ 4th L-UP ← ← ← ← ←



NOTE:

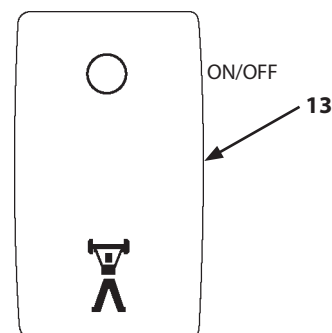
- * Start traveling with 2nd speed.
- "L-UP" stands for lock-up, and indicates lockup clutch is used.
When lockup setting is turned OFF, the L-UP shift ranges are skipped during shift change. Refer to page 1-61 for the lockup setting.
- L-UP shift ranges are skipped during shift down.
- L-UP shift ranges are not available when Manual Shift Mode is selected. (L-UP is for Auto Shift Mode only.)
- When AUTO 1 is selected, the gear automatically shifts in 1st speed according to the load. However, the transmission will not shift in 1st speed while depressing the brake pedal.

DRIVING MACHINE

Power Mode Switch

Press power mode switch (13) to switch the power mode ON/OFF.

- OFF : This mode is suited for loading work prioritizing fuel consumption.
Under auto shifting mode, the gear is shifted in early timing.
- ON : This mode is suited for heavy digging work prioritizing work effectiveness.
Under auto shifting mode, the gear is shifted in regular timing.



MNEC-01-016

Shift Change Delay Mode

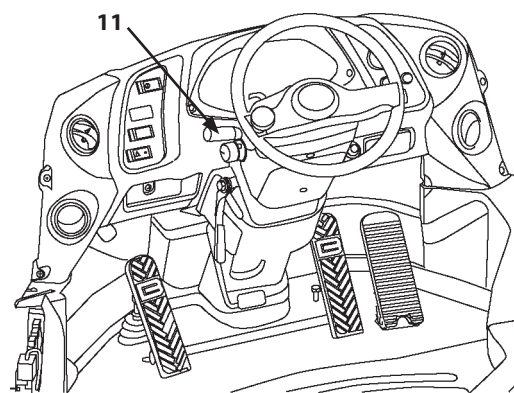
When travel mode selector (12) is set in AUTO 1 or AUTO 2 while shift switch (11) is in 3rd or 4th speed position, the shift up timing in 2nd speed → 3rd speed is delayed. Loading work can be easily done in 2nd speed position.

Shift Up Delay

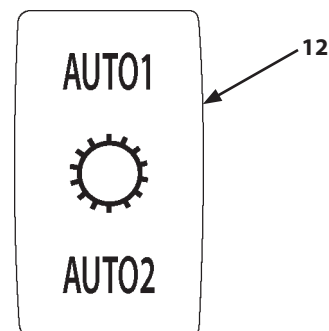
Forward traveling : The gear shifts up when traveling the machine at high speed in 2nd speed position for 8 seconds or longer. However, the gear will not shift while the lift arm is raising. When the bucket is at transportation or traveling height, the shift up timing delay operates once. When the bucket is at digging position (near the ground), the shift up timing delay always operates.

Reverse traveling : The gear shifts up when traveling the machine at high speed in 2nd speed position for 8 seconds or longer. The shift up timing delay operates regardless of the bucket height.

Capability to activate or not activate the shift change delay mode is selected at the transmission setting screen on the monitor.



MNEC-01-037



MNEC-01-024

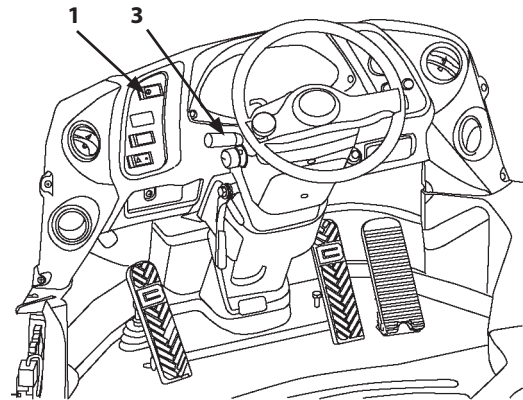
 **NOTE:** The shift up delay will not operate when shifting up from 2nd speed to 2nd L-UP.

DRIVING MACHINE

Parking Brake Switch

WARNING:

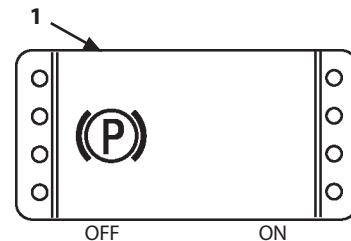
- To prevent accidents due to running away of the machine, after parking the machine or before leaving the machine, be sure to apply the parking brake.
- Never apply the parking brake by operating parking brake switch (1) while traveling the machine except in an emergency. Premature wear and/or damage to the parking brake may result. After the parking brake has been applied in an emergency while traveling the machine, have the parking brake checked at your nearest Hitachi dealer.



MNEC-01-037

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

Operate the parking brake after parking the machine on level ground.

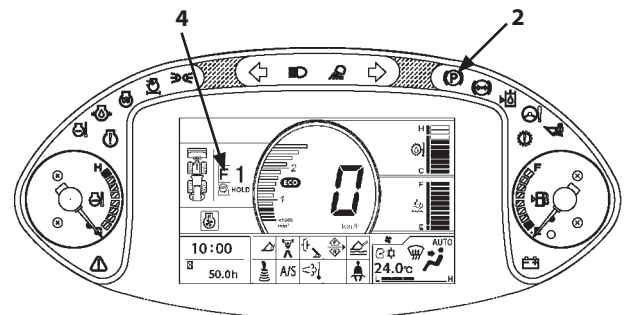


MNEC-01-058

 NOTE: While running the engine, when the parking brake is applied with forward/reverse selector switch lever (3) in neutral, parking brake indicator (2) comes ON.

2. While running the engine, when the parking brake is applied with forward/reverse lever (3) in either the forward (F) or reverse (R) position, parking brake indicator (2) comes ON, and the alarm buzzer sounds. F-N-R display (4) of the monitor display indicates "N" not "F" and "R". The display will not indicate "F" and "R" until the parking brake is released.
3. To ensure safe operation, when the engine is stopped, the parking brake is applied even if parking brake switch (1) is in the OFF position.

In this case even after the engine is restarted, the parking brake will not be released. After starting the engine, push the ON position of parking brake switch (1) once. Push the OFF position parking brake switch (1) to release the parking brake.



MNEC-01-500

DRIVING MACHINE

Drive Speed Change

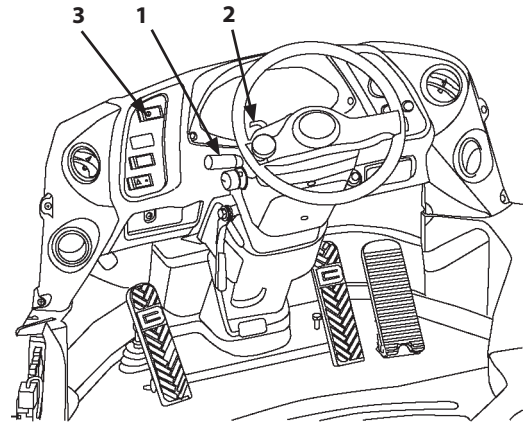
The transmission gear range can be selected by turning shift switch (1).

Refer to item 6 on page 4-4 for the auto-shifting mode.

1st and 2nd speed : To be used for excavation and loading work

3rd and 4th speed : To be used for traveling operation.

 **NOTE:** Avoid rapid gear changes using shift switch (1) while traveling at high speed. Shift the gear range only after reducing the travel speed by releasing the accelerator pedal.



MNEC-01-037

Changing Forward/Reverse Drive Direction

WARNING:

- Before changing the drive direction, confirm that the drive direction is clear.
- To ensure operator's safety and ensure the longevity of the power train system, change the machine drive direction only after sufficiently reducing the drive speed.
- Be sure to change the machine drive direction only when the machine travel speed is 13 km/h or slower if the gear is in 3rd, 4th or 5th speed position.

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

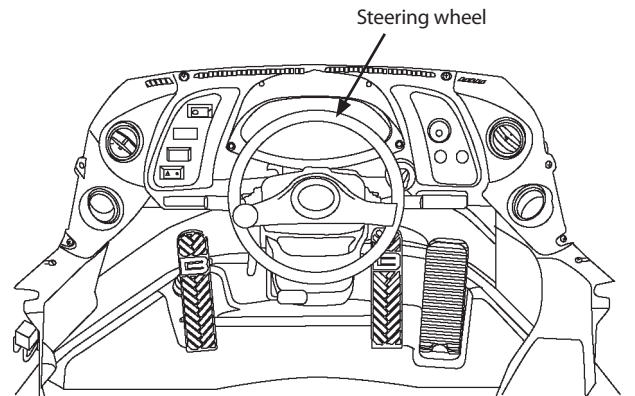
F : Forward Driving
N : Neutral
R : Reverse Driving

DRIVING MACHINE

Steering Wheel

WARNING:

- Avoid quick steering while driving the machine at high speeds, while driving on a steep slope, or while raising the lift arms. Failure to do so may cause the machine to turn over.
- Never attempt to stop the engine while steering the machine. If the engine is stopped, the steering wheel will lock and the parking brake will be applied so that steering will be impossible. Never stop the engine while traveling the machine.
- Never steer while raising the lift arm high as it is extremely dangerous and may cause the machine to turnover.



MNEC-01-036

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

Turn the steering wheel toward the direction you intend to steer the machine during drive operation.

 **NOTE:** This machine has an articulated frame. The front and rear frames are coupled by connection pins (center pins) so that the rear wheels follow the tracks of the front wheels.

Turn the steering wheel slowly so as to follow the motion of the machine.

DRIVING MACHINE

Emergency Steering

If the oil pressure in the steering system lowers, the emergency steering system is activated so that steering operation can be achieved.

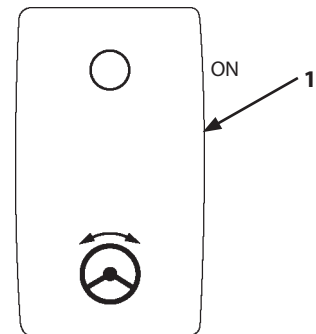
If the emergency steering system is activated, the emergency steering indicator lights and the buzzer sounds.

The steering wheel will become hard to rotate but it is operable. Immediately park the machine in a safe location.

Contact your nearest Hitachi dealer.

The emergency steering can be used for 60 seconds.

IMPORTANT: The emergency steering system is provided for provisional use. If continuously used for more than 60 seconds, damage to the system may result.



MNEC-01-020

Even though the machine is equipped with the emergency steering system, if the steering function becomes inoperable during drive operation, press emergency steering check switch (1) on the right console to activate the emergency steering system. Immediately park and stop the machine in a safe location.

When the emergency steering system is activated by pushing emergency steering check switch (1), the emergency steering can be used for 30 seconds.

NOTE:

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

DRIVING MACHINE

Stop and Restart of Driving

Follow the tips described below when required to stop or restart driving.

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. If the machine is required to park for a long period of time, make it a rule to return the forward/reverse lever to neutral (N), turn the parking brake switch ON, and apply the parking brake to ensure safety operation.
4. During drive operation, the machine drive position may be changed due to inner hydraulic oil leaks. When required to rectify the drive position, stop driving, return the forward/reverse lever to neutral, apply the parking brake by turning the parking brake switch ON. After rectifying the position of lift arm and bucket, begin driving the machine again. Always allow the machine to maintain correct drive position.

DRIVING MACHINE

Precautions for driving

During drive operation, observe the general operating manners beside the precautions described below to ensure safe and correct operation.

WARNING:

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

If the brake is suddenly applied by strongly depressing the brake pedal, the steering may become out of control, possibly creating a serious accident. Never apply the brake quickly if a tire becomes punctured.

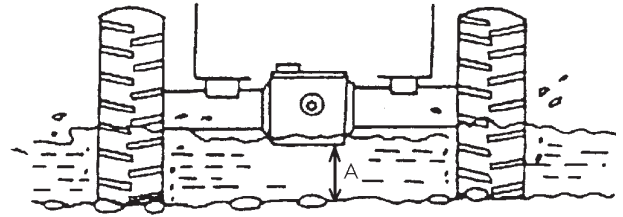
- **Never mount or dismount a moving machine. Never allow any personnel other than the operator to ride on the machine when driving.**
- Even after break-in operation is complete, avoid running the engine at fast speed under no load.
- If any abnormal condition such as an abnormal noise or smell is noticed while driving, immediately stop the engine and inspect the machine for any trouble.
- Avoid sudden braking and turning, as this is dangerous to other vehicles as well as your own.
- The driving speed of this machine is slower than most normal automobiles. Give way to normal automobiles that travel at faster speeds.
- Make it a habit to periodically scan the gauges and instruments. If any abnormality is recognized, immediately stop the machine and check the machine for the cause of the trouble.
- When required to drive on the road shoulder or in tight spaces, use a signal person.
- Slowly drive in or turn a crossing while paying attention to the visibility ahead and in the opposite driving lane.

DRIVING MACHINE

Driving in Water or on Soft Ground

IMPORTANT: If the axles, transmission, etc. should become submerged, they must be reconditioned immediately, otherwise the inner gears may wear excessively, or the machine may become damaged. Contact your nearest Hitachi dealer for inspection and maintenance.

- Do not submerge the front and rear axles, transmission, or front and rear propeller shafts in water or mud. Avoid driving in water as much as possible.
- If driving in water or mud is unavoidable, do not allow the machine to be submerged deeper than allowable depth (A) (up to the bottom of the axle housing). Reduce the allowable depth if there is concern the river bed is rugged, or water is flowing fast.
- When driving/operating on muddy ground, mud can easily accumulate on the frame even if the frame is not heavily submerged in mud. Check regularly and clean as necessary.



M4GB-04-003

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

DRIVING MACHINE

Precautions for Driving on Slopes



WARNING:

- **Never allow the machine to descend a slope with the forward/reverse lever in neutral (N). Failure to do so will not only work the engine braking to malfunction but also create the causes of various machine troubles.**
- **When descending a slope, use engine braking. Apply the brakes only when absolutely required. If the brake is continuously used while descending a slope, the brake temperature will increase, possibly decreasing the braking performance.**
If overheating of the brake system is recognized, immediately park the machine in a safe location. Restart and drive the machine only after the brake system is sufficiently cooled.
- **When descending a slope, do not drive the machine at a speed faster than the maximum travel speed. Failure to do so may damage the machine and/or a serious accident may result.**

When steering on a slope, lower the bucket to increase the machine stability. Do not steer on a steep slope. Failure to do so may possibly cause the machine to turn over.

When descending a slope, travel the machine in the slow drive gear range using sufficient engine braking.

Do not drive the machine at a speed faster than the maximum travel speed.

If the engine stalls on a slope, immediately step on the brake pedal as strongly as possible, lower the loader front to the ground and stop the machine. The parking brake is automatically applied when the engine is stopped regardless of the position of the parking brake switch. Before restarting the engine, return the Forward/Reverse lever to neutral (N) and turn the parking brake switch ON.

- Before descending a slope, confirm that the brake system works normally by operating the brake pedal.
- If the hydraulic oil and lubricant temperatures are low, the machine gradeability may decrease. Before climbing a steep slope, sufficiently perform the warm up operation of the machine.

DRIVING MACHINE

Precautions to be Taken if Machine Failure Occurs

- Keep alert. While paying attention to the vehicles following you, slowly reduce the travel speed and park the machine on the road shoulder as closely to the shoulder edge as possible. 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 machine is failure. Unless a sign is used, collision with a following vehicle from behind may result. Be sure to indicate the sign of the machine failure 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.
- Check the failed part. If possible, repair the machine by yourself while ensuring safety and paying attention to the traffic conditions of other vehicles.

 **WARNING: Do not spill oil on the road surface. Failure to do so may cause the following vehicle to slide, possibly creating a serious accident.**

- If hydraulic oil leaks, immediately repair the machine. If road is covered with oil, inform vehicles following behind of the hazard immediately. Remove the leaked oil as soon as possible.
- If repairing the machine by yourself is impossible, contact your nearest Hitachi dealer.
- Repair work in the tunnel is very dangerous. Avoid working outside the vehicle even simple tasks.

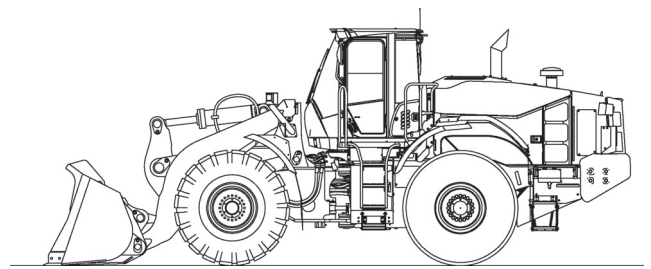
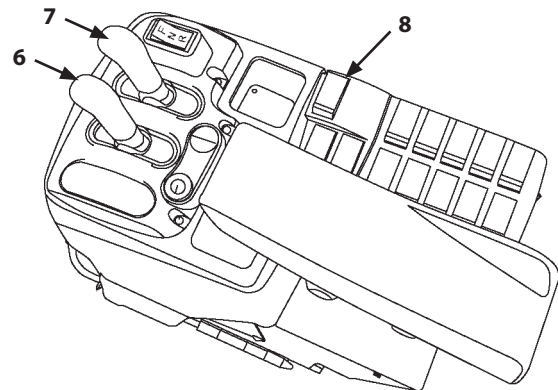
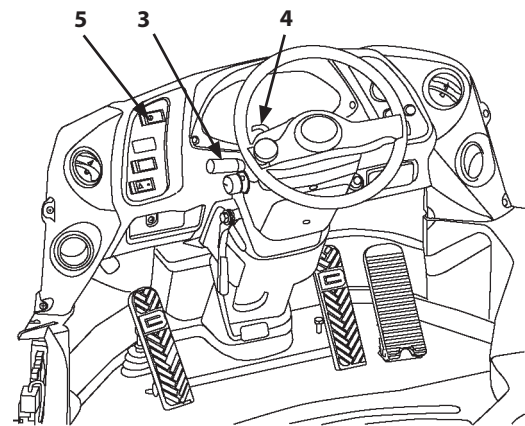
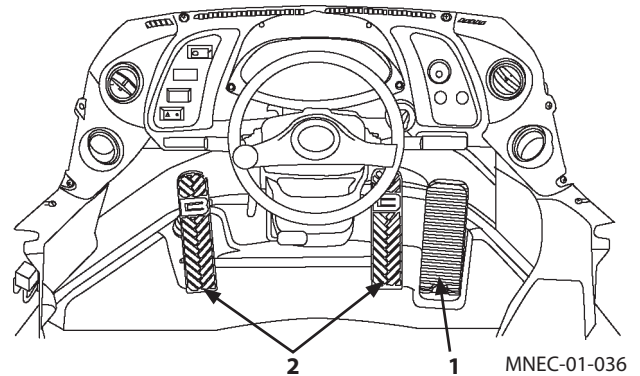
DRIVING MACHINE

Stop the Machine

1. Avoid sudden deceleration. Smoothly reduce the drive speed.
Release accelerator pedal (1) and step on brake pedal (2) to stop the machine on level surface.
2. Return forward/reverse lever (3) to neutral (N).
Place neutral lever lock (4) to the LOCK position.
3. Press the ON side of parking brake switch (5).
4. Level the bucket with the surface of the ground and lower the bucket to the ground by operating bucket control lever (6) and lift arm control lever (7).
5. Press LOCK (🔒) side of control lever lock switch (8).

IMPORTANT: This machine is equipped with a turbocharged engine. Therefore if the engine is stopped without performing cooling down operation, the lubricant on the turbocharger bearing surfaces may desiccate due to the intense heat present, possibly causing damage to the turbocharger.

6. Run the engine at slow idle speed for 5 minutes to cool the engine.



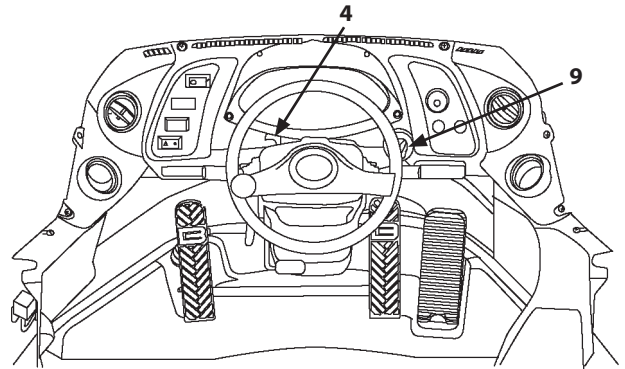
Stop and Parking Position

DRIVING MACHINE

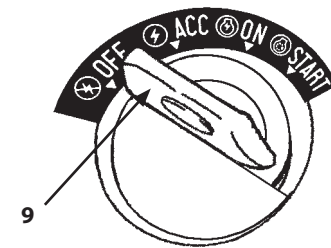
IMPORTANT: Do not leave the machine by turning key switch (9) in ACC position. Failure to do so may discharge the batteries.

Be sure to turn key switch to OFF position before leaving the machine.

7. Turn key switch (9) to OFF position to stop the engine. Remove the key from the switch. Place neutral lever lock (4) to the LOCK position.
8. Before leaving the machine, close and lock all the windows, cab doors, and covers.



MNEC-01-036



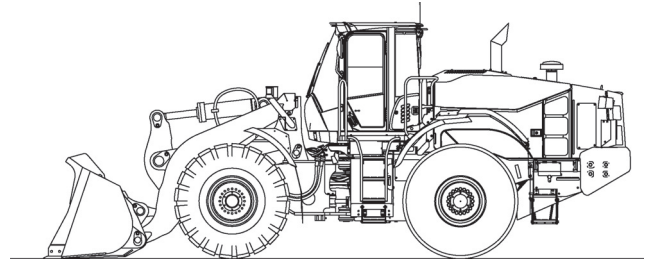
M4GB-01-089

DRIVING MACHINE

Parking

IMPORTANT: When parking the machine with cab door and windows open, cab electrical components may be damaged by bad weather. Always close windows, roof vent and cab door when parking the machine.

1. Stop and park the machine on level surface. Lower the bucket to the ground.
2. Turn parking brake switch (1) ON.

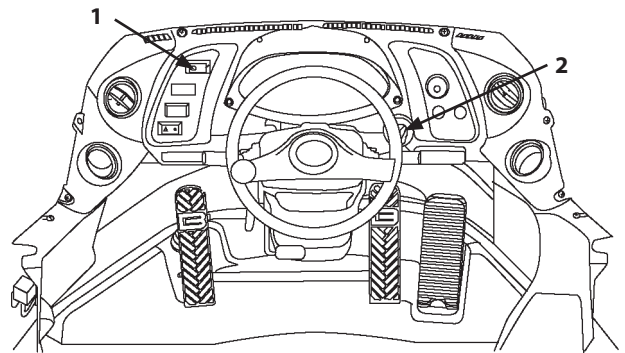


90Z7B-BKT td view

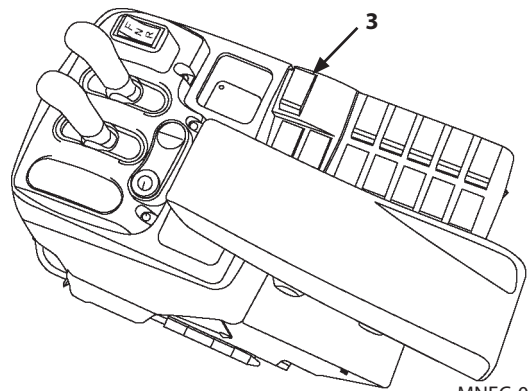
Stop and Parking Position

IMPORTANT: This machine is equipped with a turbocharged engine. If the engine is stopped without performing cooling down operation, the lubricant on the turbocharger bearing surfaces may desiccate due to the intense heat present, possibly causing damage to the turbocharger.

3. Run the engine at low idle speed to cool the engine for 5 minutes.
4. Turn key switch (2) to OFF position to stop the engine. Remove the key from the switch.
5. Press LOCK (🔒) side of control lever lock switch (3).
6. Before leaving the machine, close and lock all the windows, cab doors, and covers.



MNEC-01-036



MNEC-07-001

DRIVING MACHINE

Emergency Evacuation

When the engine has stalled during driving:

Pressurized oil in the accumulator acts on the brake when the brake pedal is depressed. Immediately park and stop the machine in a safe location. At this time, do not repeat to pat the brake pedal.

The brake oil pressure is quickly reduced so that the brake becomes inoperable.

If the machine does not stop even if the brake pedal is stepped on, press the parking brake switch ON side to stop the machine.

The steering wheel will become hard to rotate as the hydraulic system becomes inoperable.

In the event any symptom mentioned above occurs, immediately trace the cause of the problem.

If a complicate failure has occurred, consult your nearest Hitachi dealer.

MEMO

OPERATING MACHINE

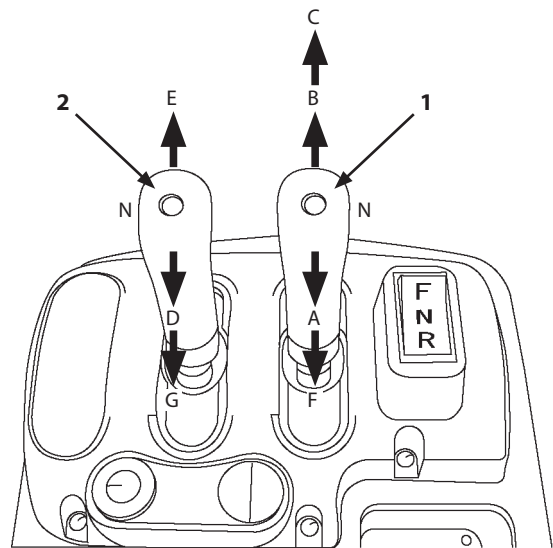
Control Lever

Fingertip Control Type

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

Lift Arm Control Lever (1)

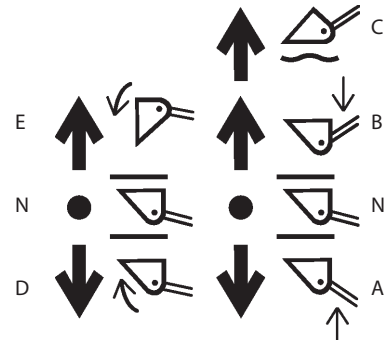
Lever Position	Lift Arm Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position.



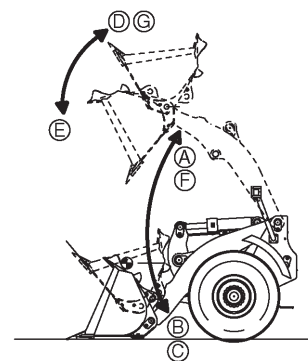
MNEC-03-003

Bucket Control Lever (2)

Lever Position	Bucket Operation
E	Bucket Dump: The bucket is tilted forward to dump the bucket load.
N	Hold: The bucket is stopped and held in that position.
D	Bucket Tilt: The bucket is tilted back, taking the transportation position.
G	Detent: When the bucket control lever is moved from the bucket dump position to the bucket tilt position, the bucket control lever is maintained in this position.



M4GB-01-072



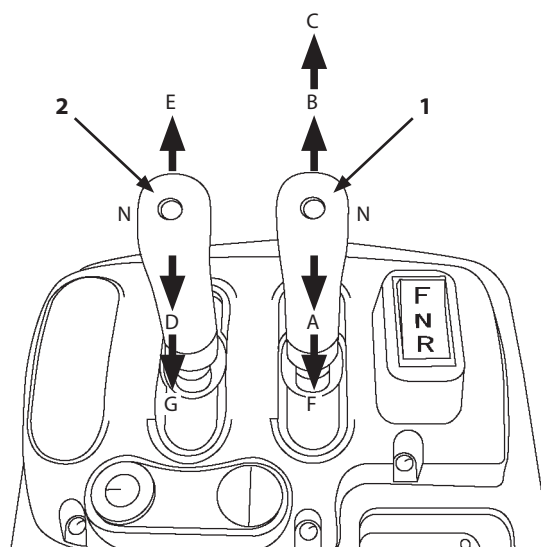
M4GB-01-073

OPERATING MACHINE

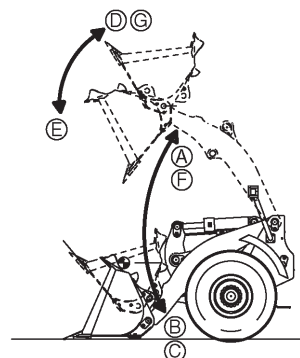
 NOTE:

1. Further pull lift arm control lever (1) from "Raise" position (A), the lever is held in the position (F) until the lift arm moves to the position preset by the lift arm kickout. When the lift arm moves the preset position, lift arm control lever (1) automatically moves to the Hold (N) position.
2. Further turn bucket control lever (2) from "Tilt" position (D) after bucket dump operation, the lever is held in the position (G) until the bucket moves to the position preset by the bucket auto leveler. When the bucket moves to the preset position, bucket control lever (2) automatically moves to the Hold (N) position.
3. When pushing down lift arm control lever (1) to the "Float" position (C), the lift arm moves to the position preset by lift arm auto-leveler system and is held in the position. When the lift arm moves to the preset position, lift arm control lever (1) automatically moves to the "Hold" (N) position. (Machine is equipped with the lift arm auto-leveler system)

 NOTE: When operating the machine in Float (C) position, first hold the lift arm at the float position; then further tilt the lever to the Float position, and lower the lift arm on the ground.



MNEC-03-003



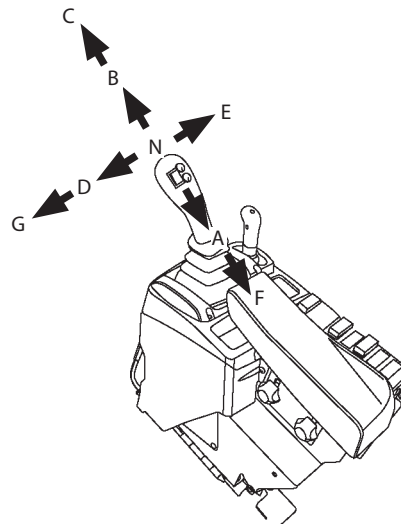
M4GB-01-073

OPERATING MACHINE

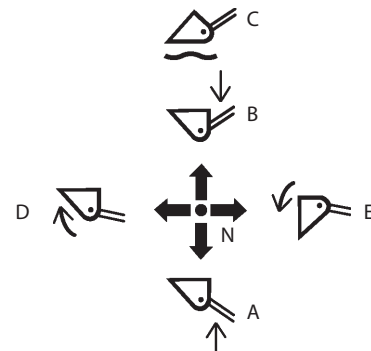
Multi-Function Joystick Lever

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

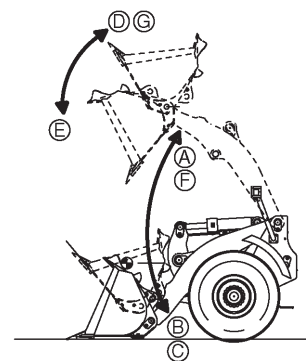
Lever Position	Lift Arm/Bucket Operation
C	Float (Detent): The lift arm free falls and can be moved as loads are applied.
B	Lift Arm Lower
N	Hold: The lift arm is stopped and held in that position.
A	Lift Arm Raise
F	Detent: The lift arm is held in the raise position.
G	Detent: When the multi-function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



MNEC-01-059



M4GB-01-074



M4GB-01-073

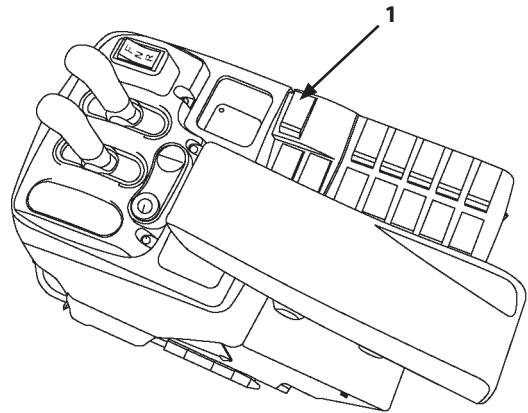
OPERATING MACHINE

Control Lever Lock Switch

WARNING:

- Be sure to press LOCK (🔒) side of control lever lock switch (1).
- Before leaving the operator's seat, be sure to stop the engine. Set control lever lock switch (1) to the LOCK (🔒) position.
- Always check to be sure that the control lever lock switch is set in the LOCK (🔒) position before transporting the machine or leaving the machine at the end of the shift.

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

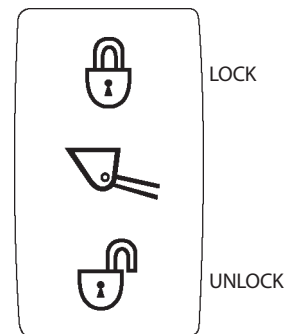


MNEC-07-001

Control Lever Lock Switch Operation

- When leaving the operator's seat:
 1. Park the machine on solid level ground. Lower the bucket to the ground. Return all levers to hold. Stop the engine.
 2. Press LOCK (🔒) side of control lever lock switch (1).
- Before starting operation:

Before starting operation, check that control lever lock switch (1) is in the UNLOCK (🔓) position.



MNEC-01-015

OPERATING MACHINE

Clutch Cut Position Switch

To perform digging (scooping) or loading operation, clutch cut position switch (1) can be set to any position   . Turn the clutch cut position switch ON to let the machine power concentrate on digging operation or to increase the lift arm raising speed.

-   side (Clutch Cut)
By depressing left or right brake pedal (3), the clutch is disengaged and brake is applied without transmitting the drive power to the tires.

 : Clutch cut ON when lightly depressing the brake pedal (3).

(Suited to loading work on a level surface or on a gentle slope.)

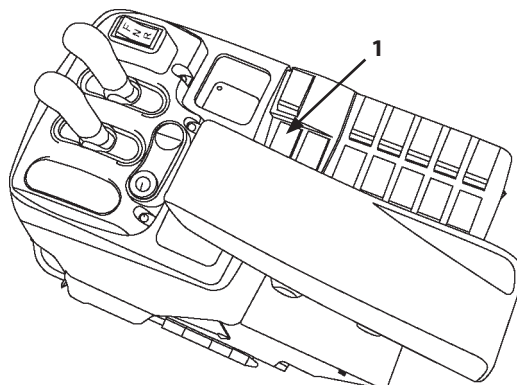
 : Clutch cut ON when deeply depressing the brake pedal (3).

(Suited to operate on a steep slope)

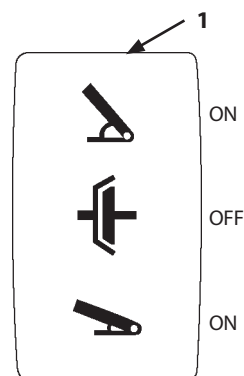
- OFF  (Clutch Engaged)
By depressing left or right brake pedal (3), brake is applied while driving power is transmitted to the tires.

NOTE:

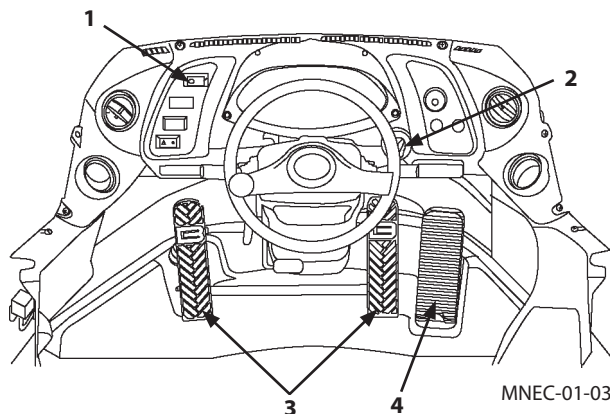
- When starting to ascend a slope, turn clutch cut position switch (1) OFF  (clutch engaged), depress the left brake pedal (3). Gradually release the left brake pedal while depressing the accelerator pedal (4) to easily start ascending a slope.
- Effective use of the clutch cut position switch leads to reduced fuel consumption and overheating of axle oil.



MNEC-07-001



MNEC-01-025



MNEC-01-036

OPERATING MACHINE

Adjustment of Bucket Auto Leveler

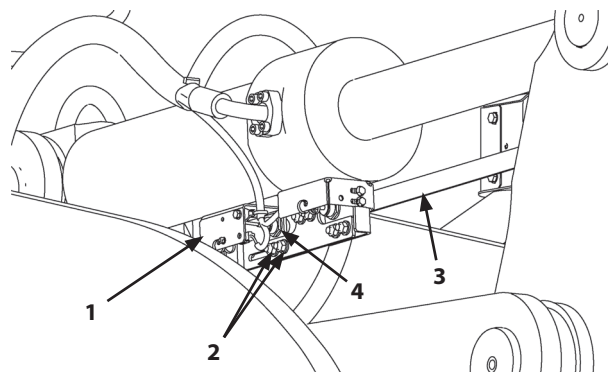
WARNING:

- Pay attention to safety to avoid personal injury and/or death when adjusting the bucket auto leveler.
- Stop the engine. Lower the loader front on the ground to release oil pressure.
- Apply the parking brake to prevent the machine from moving unexpectedly. Wedge the wheels with blocks. Keep bystanders away from the vicinity of the machine.

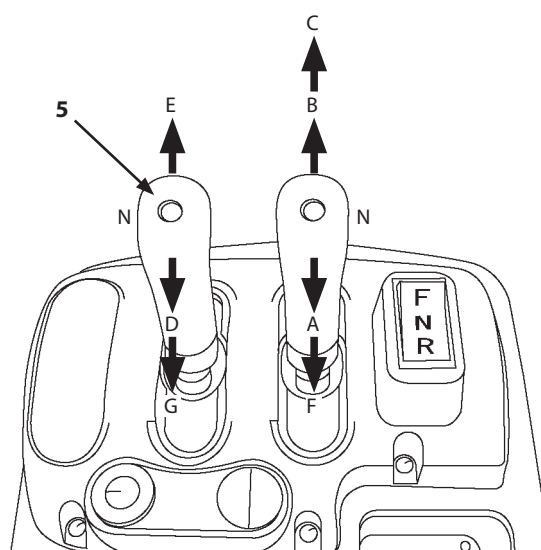
The bucket auto leveler automatically stops the bucket movement at the preset digging angle. (When the machine is shipped from the factory, the bucket positioner is preset so that the bucket is stopped with the bucket bottom parallel with the road surface.)

For example, after discharging material into a truck or a hopper, when bucket control lever (5) is placed to detent position (G), the lever is held in that position. When the bucket is returned to the preset angle position, the bucket is automatically stopped and the lever is returned to hold (N).

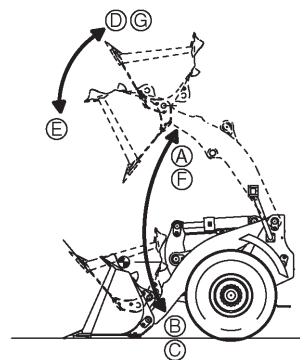
The bucket auto leveler is preset so that when the bucket bottom becomes parallel with the road surface, the bucket is stopped. When required to tilt the bucket forward or backward more than level position, adjust the bucket auto leveler by moving the mounting position of the proximity switch (4).



90Z7B-5-6-1



MNEC-03-003



M4GB-01-073

OPERATING MACHINE

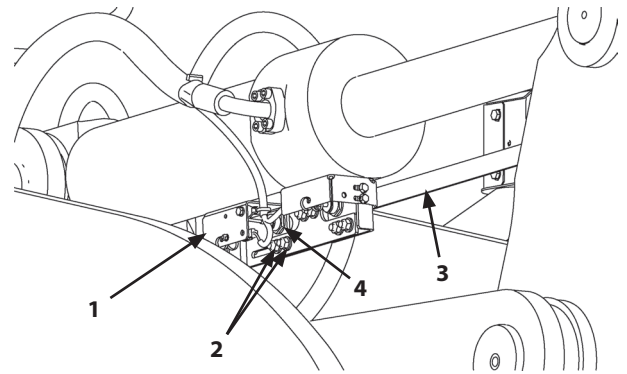
Adjustment Procedures

IMPORTANT: Do not operate the machine with the bucket dumped more than 10°. Avoid applying great towing force to the bucket cutting edge.

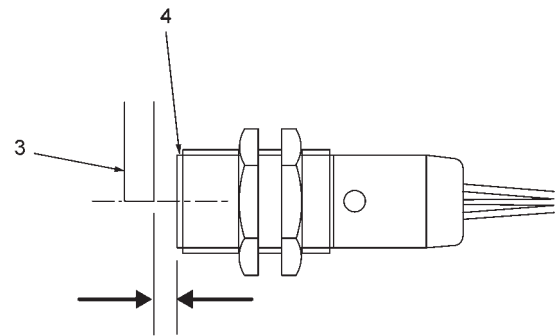
1. After moving the bucket to the desired digging angle, stop the engine.
2. Loosen bolts (2) of proximity switch (4). Slide the end edge of leveler bar (3) up to the center of the sensitive area (orange color). Tighten bolts (2).
3. Loosen the proximity switch (4) mounting nut and adjust the clearance between rod (3) and proximity switch (4) to 5 ± 2 mm.

After adjusting, securely tighten the mounting nut.

4. After adjustment start the engine. Check that the bucket can be stopped at the preset angle position.



90Z7B-5-6-1



OM0128a

OPERATING MACHINE

Adjustment of Dual Lift Arm Auto Leveler



WARNING:

- **Take extra care to prevent personal injury and/or death when adjusting the lift arm auto leveler.**
- **Apply the parking brake to prevent the machine from moving unexpectedly. Wedge the wheels with blocks. Keep bystanders away from the vicinity of the machine.**

IMPORTANT:

- **When the lift arm auto leveler function is activated with the bucket loaded, the bucket may stop under the set position.**
- **Height setting of lowering direction can not be done when the lift arm is higher than horizontal position. Also, height setting of raising direction can not be done when the lift arm is lower than horizontal position.**

The lift arm auto leveler is a device that automatically stops the lift arm at the preset position while lowering or raising the lift arm. It is convenient to change the setting of stop position by using this function when the machine is constantly used in a specific way for cargo handling work.

Refer to "Dual Lift Arm Auto Leveler Switch" in the OPERATOR'S STATION section to adjust the stop position.

OPERATING MACHINE

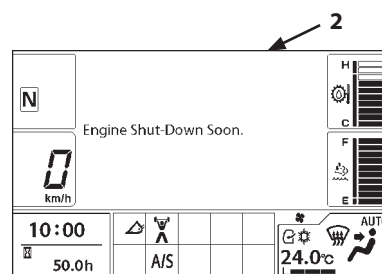
Auto Shut-Down (Optional)

WARNING: This function automatically stops the engine. Pay extra attention to the work and work environment when using this function.

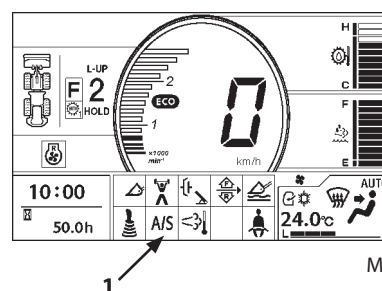
When the auto shut-down function is ON (enabled), the engine automatically stops after the preset time from the state in which the following conditions are met: The parking brake switch is turned ON, the forward/reverse lever (switch) is set in neutral (N) position, and the brake pedal or accelerator pedal is not depressed. (Refer to the descriptions in the next page for the detail operating condition)

30 seconds before the engine stop, monitor (2) displays a message that engine will be stopped and indicator (1) starts flashing. Also the buzzer sounds. The buzzer sounds once at 30 seconds before, intermittently sounds from 15 seconds, and then stops after 15 seconds. The auto shut-down is disabled and the engine will not stop if any of the following conditions are met: The parking brake switch is set in OFF position, the forward/reverse lever (switch) is set in (F) or (R) position, or the brake pedal or the accelerator pedal is depressed to release it.

IMPORTANT: Ensure the ON or OFF status of auto shut-down indicator (1). If the indicator is ON, the auto shut-down function will be activated.



MNEK-01-153EN



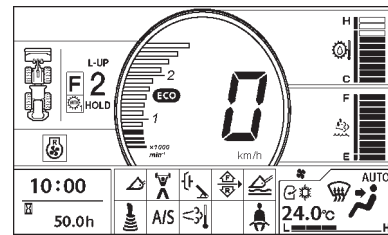
MNFB-01-100EN

OPERATING MACHINE

Auto Shut-Down

Operating condition

- The engine is running.
- The parking brake is applied.
- The forward/reverse lever (switch) is in neutral (N).
- The accelerator pedal is not depressed.
- The brake pedal is not depressed.
- The control lever is not operated.
- The steering wheel is not operated.
- Coolant, hydraulic oil and transmission temperature are not high.
- The aftertreatment device manual regeneration is not operating.



MNFB-01-100EN

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.**

Refer to "Auto Shut-Down" in the OPERATOR'S STATION chapter for setting the auto shut-down function.

OPERATING MACHINE

Aftertreatment Device Manual Regeneration Procedure

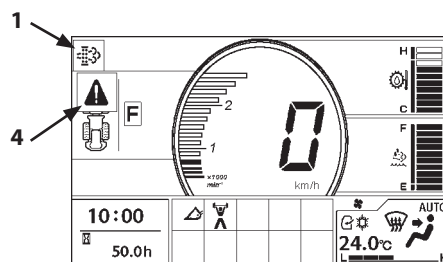
When the manual regeneration is needed, mark (1) as shown in the right and service indicator (4) will be displayed. When mark (1) is displayed, you need to perform manual regeneration. Before starting manual regeneration, be sure to check the following.

- No person is present around the machine.
- Keep flammable objects away from the muffler.
- Remaining fuel alarm is not lit.
- DEF/AdBlue® alarm is not lit.

1. Park the machine in a safe place. Lower the front attachment onto the ground.
2. Set the accelerator pedal and switches to the following state. Aftertreatment device manual regeneration request screen (2) will be displayed on the monitor.

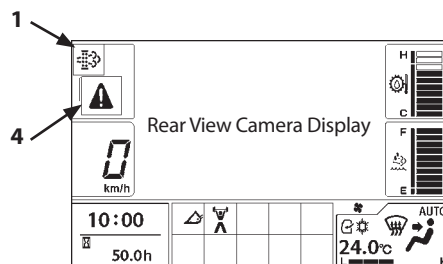
Accelerator Pedal	: OFF
Forward/Reverse Lever	: N (Neutral)
Parking Brake Switch	: ON
Control Lever Lock Switch	: Lock (🔒)
Aftertreatment Device	: OFF
Regeneration inhibited Setting	

3. Push the aftertreatment device regeneration switch (3).



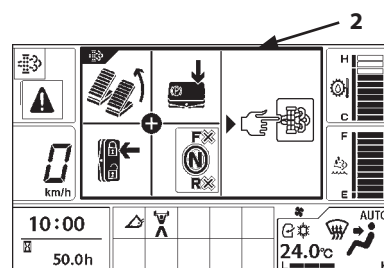
Basic Screen

MNEK-01-280EN



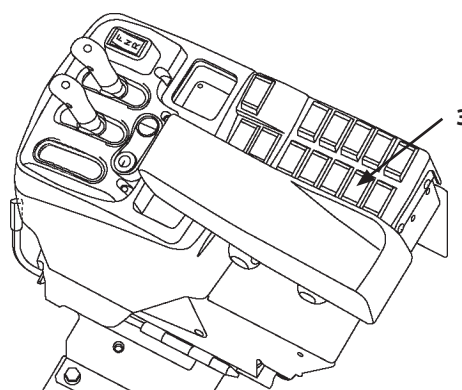
Basic Screen
(Operating Rear View Camera ON)

MNEK-01-281EN

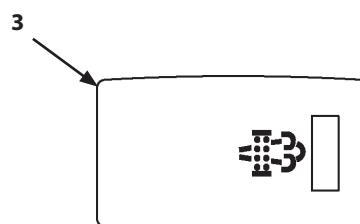


Manual Regeneration Request Screen

MNEK-01-282EN



MNEC-01-526

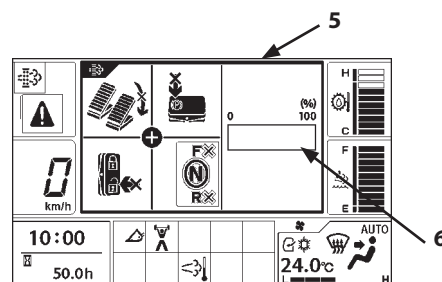


MDAA-05-002

OPERATING MACHINE

- When pushing the aftertreatment device regeneration switch, screen (5) as shown in the right will be displayed and the manual regeneration starts. Bar graph (6) on the screen indicates progress of the regeneration process.

CAUTION: The manual regeneration does not start unless the accelerator pedal is OFF, forward/reverse lever is in Neutral, parking switch is ON, and the control lever lock switch is ON. When touching the accelerator pedal, forward/reverse lever, parking switch and the control lever lock switch, the regeneration process is aborted. When the process is aborted, start over again.

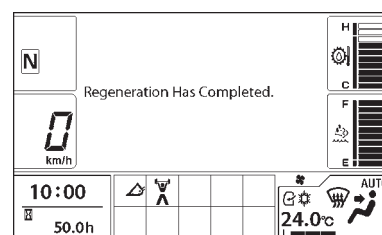


MNEK-01-283EN

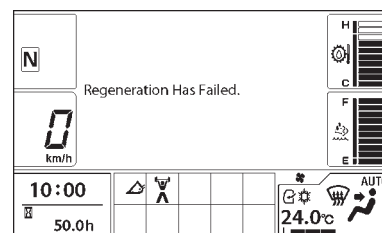
- When the regeneration is finished, "Regeneration Has Completed." message will be displayed. If "Regeneration Has Failed." message is displayed, start over the regeneration process again. Failure of regeneration process may happen in the conditions other than above (such as malfunction of a sensor that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

NOTE:

- Regeneration process may fail in conditions other than those mentioned above (such as sensor malfunction or low ambient temperature).
- The engine sound may change and the engine speed may increase when the manual regeneration starts, this 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, this is not a malfunction.
- Manual regeneration time is shorter directly after machine operation, and longer when engine temperature is low.
- Coolant temperature may increase during the manual regeneration.



MNEK-01-284EN



MNEK-01-285EN

IMPORTANT: If regeneration must be interrupted, push the manual regeneration switch again. The message "Regeneration Has Failed." will be displayed on the monitor, but the machine becomes operable. In this case, manual regeneration should be performed again. Restart manual regeneration as soon as possible.

OPERATING MACHINE

Before Operation

 WARNING:

- Be sure to install only authorized buckets and other work tools on the front attachment.
- Never modify or increase the capacity of the bucket or other work tools without first receiving authorization. Do not overload the machine by installing additional counterweights. Failure to do so may result in personal injury and/or machine trouble.

Precautions for Operation

 WARNING:

- Confirm work site safety before starting any operations.
- Use the machine equipped with FOPS and ROPS if the machine is to be operated in the areas where the possibility of falling stones exists.
- If operation on soft ground is required, operate the machine only after reinforcing the ground.
- Be sure to wear close fitting clothing and safety equipment appropriate for the job, such as a hard hat, etc. when operating the machine.
- Clear all persons and obstacles away from the area of operation and machine movement. Always be aware of the area around the machine while operating.

Ensure Safety When Operating on Road Shoulders

-  **CAUTION:** Reinforce the ground before operating the machine on soft road shoulders.

OPERATING MACHINE

Avoid Overloading



WARNING:

- Do not penetrate the bucket into piles of soil and/or gravel at fast travel speed to avoid personal accidents.
- Avoid excavating or scooping loads when the machine is articulated, which could possibly cause the machine to turn over.

IMPORTANT: Avoid abuse machine operation by allowing the bucket or attachment to receive biased loads at only one side. Damage to the machine may result.

Avoid Rapid Steering Changes and/or Sudden Braking



WARNING: Always maintain a flat work site surface. Avoid rapid steering changes and sudden braking while raising the lift arm with the bucket loaded to prevent the machine from turning over.

Avoid Operation with Biased Loads



WARNING: Avoid abuse machine operation by allowing the bucket to receive biased loads at only one side. Turning over of the machine or deformation of the working devices such as the lift arm may result.

OPERATING MACHINE

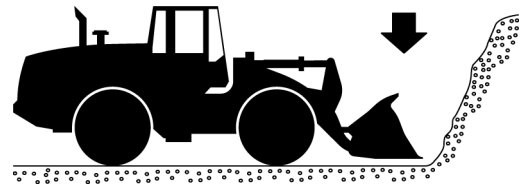
Excavation

Loading Accumulated Soil

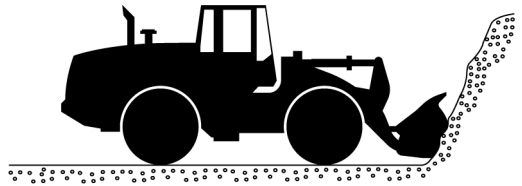
IMPORTANT: Avoid operating the machine with the front wheels raised off the ground. Machine traction force is reduced and excessive loads are applied to the undercarriage.

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

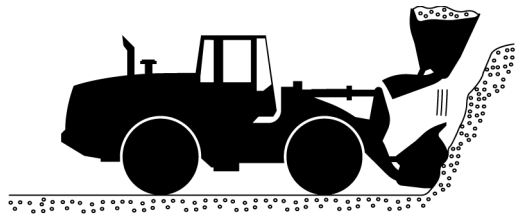
1. Level the bucket with the surface of the ground. Penetrate the bucket into the accumulated soil while driving the machine forward.
2. After the bucket has sufficiently penetrated the soil, raise the lift arm while driving the machine forward further and occasionally tilt the bucket back to fill the bucket. Sometimes set the bucket in the tilt position to fill up material in the bucket.
3. If it is difficult to penetrate the soil with the bucket, move the bucket back and forth and the bucket teeth up and down.
4. Drive the machine with the bucket tilted backward fully and held at the lowest possible position.



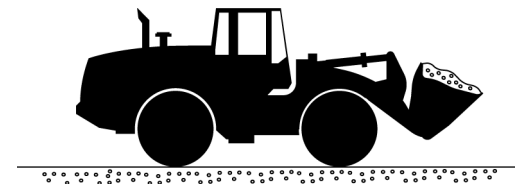
M4GB-05-003



M4GB-05-004



M4GB-05-005



M4GB-05-006

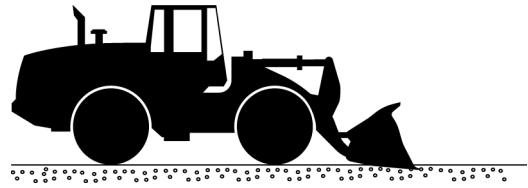
OPERATING MACHINE

Digging and Loading Level Ground

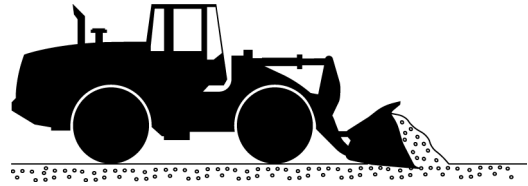
IMPORTANT: While excavating with the bucket or fork, never apply excessive traction force to the tooth tips with the bucket or fork tilted more than 10°. Failure to do so may result in cracks or damage to the front attachment.

Slightly position the bucket teeth downward (0 to 10 degrees) and dig the ground while driving the machine forward as described below. Always take care not to apply loads to only one side of the bucket.

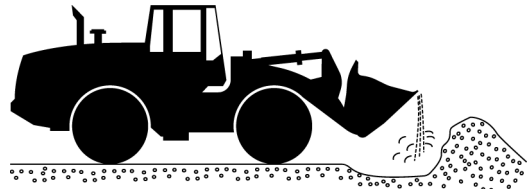
1. Position the bucket teeth slightly downward.
2. While driving the machine forward, tilt the bucket so that the ground surface is gradually separated.
3. Adjust the digging depth by operating the lift arm.
4. Drive the machine with the bucket tilted backward fully and held at the lowest possible position.



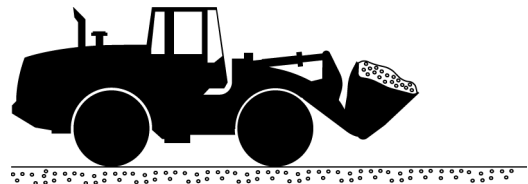
M4GB-05-007



M4GB-05-008



M4GB-05-009



M4GB-05-010

OPERATING MACHINE

Grading

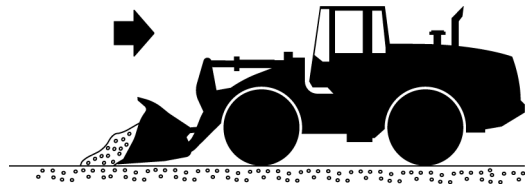
CAUTION: Turn the Ride Control Switch OFF when performing work with the front attachment in the float position.

Performing work with the Ride Control Switch ON and the front attachment lever in the float position, ride control is active and may allow the attachment to drop while the machine is driving.

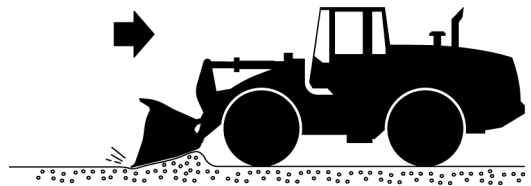
IMPORTANT: Be sure to perform grading work while driving the machine in reverse. If grading work is performed by driving the machine forward, severe loads are applied to the front attachment, possibly creating cracks or damage to the front attachment.

1. After filling soil into the bucket, dump the bucket gradually to disperse soil while driving the machine in reverse.
2. Lower the bucket teeth tips onto the ground. Grade and level the ground surface while driving the machine in reverse with the bucket teeth tips dragging.
3. After filling the bucket with a load such as soil, position the bucket level with the ground surface. Finish the ground surface utilizing the bucket weight.

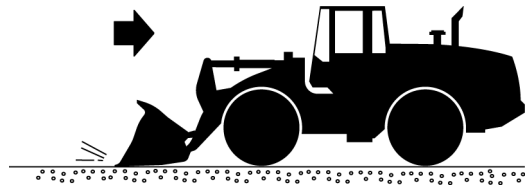
At this time, drive the machine in reverse with the lift arm held in the FLOAT position.



M4GB-05-011



M4GB-05-012



M4GB-05-013

OPERATING MACHINE

Loading

IMPORTANT:

- **Always maintain a clean surface for machine operation.**
Cleaning of materials such as soil spilled on the driving surface will reduce wear and/or damage on tires.
- **When carrying loads in the bucket, pay attention to the travel road surface conditions. Drive the machine at such speed so that the load will not spill out of the bucket, while positioning the bucket at the lowest possible height.**
- **Refrain from allowing the bucket to come in contact with the bucket stopper as much as possible when removing adhered material, like clay, from the bucket. Failure to do so may result in damage to the front attachment.**
Remove material stuck to the bucket by washing with water.

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

Loading work is performed in either the load and carrying method or loader and dump truck method. Select either method depending on the work site conditions while taking the merits in cost and safety into account.

OPERATING MACHINE

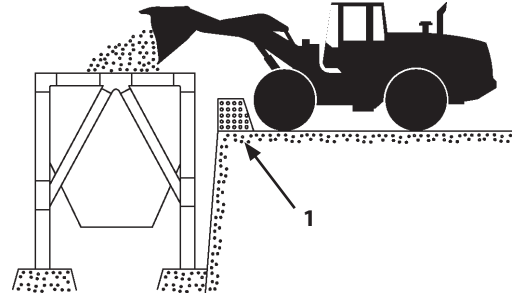
Load and Carrying Method

WARNING:

- Be sure to provide tire stopper (1) in front of the dumping port.
- Before raising the lift arm, slightly tilt the bucket back and forth to stabilize the load in the bucket to avoid personal injury or damage to the machine due to falling of the load.

Avoid raising the lift arm on a slope.

- When approaching the machine to the dumping port with the lift arm raised to a high enough position, never operate steering wheel. Slowly drive the machine. Never rapidly operate the machine to prevent turning over accident.



M4GB-05-014

A wheel loader performs work process of loading, carrying, and dumping in sequence. Generally, when the carrying distance is 30 to 100 m, this method is employed. Make an upgrade slope of approx. 3° around a hopper when dumping into the hopper. Be sure to provide a level area 10 m apart from the dumping port and tire stopper (1) at the dumping port edge. Automatic reduction in travel speed will assist operator's braking operation effort.

OPERATING MACHINE

Loader and Dump Truck Combination Method

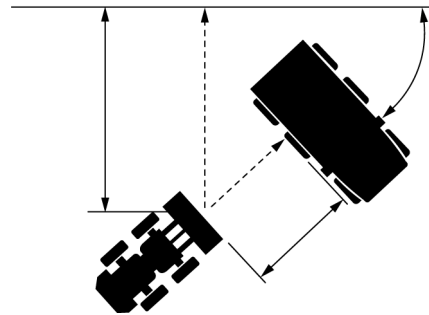
WARNING:

- **Always maintain a flat work site surface. Avoid rapid turns and/or sudden braking while raising the lift arm with the bucket loaded to prevent the machine from tipping over.**
- **Do not penetrate the bucket into a loading face at fast travel speeds to avoid personal accidents.**

A loader carries out loading, and carrying and dumping is carried out by a dump truck. Either V- or I-shape loading method is employed in this method. Depending on the work site conditions encountered and matching with available trucks, select the most efficient method.

V-Shape Loading

1. Park a dump truck in a spot located at approx. 60° angle toward the face of loading by the wheel loader. After loading material, travel the wheel loader in reverse and turn its direction so that the wheel loader faces the parked dump truck at a right angle. Travel forward to carry material onto the dump truck.
 2. Position the wheel loader so that the material can be loaded around the center of the dump body. If the dump body is longer than twice the bucket width, load from the front to rear position of the dump body in order.
 3. When dumping sticky material such as clay, move the bucket lever back and forth to lightly hit the bucket to the stoppers.
- Take a steering angle as small as possible to operate the machine efficiently.
4. Before raising the lift arm to the maximum height with the bucket full, lightly tap the bucket on the ground to stabilize the material in the bucket to prevent the material from spilling off the backside of the bucket.

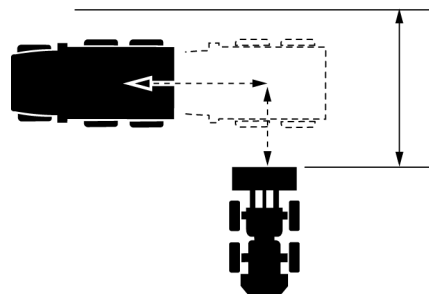


M4GB-05-015

I-Shape Loading

Park a dump truck in a direction parallel to the loading face. After loading material into the bucket, travel the wheel loader straight in reverse. Move a dump truck to a spot between the loading face and the wheel loader. Travel the wheel loader forward to load material onto the dump truck body.

Loading times become shorter using this loading method, reducing the total working cycle time and increasing work efficiency. Position the machine down the wind as much as possible. The engine will not only inhale as little dust as possible but also operator's eyes will be protected from being contaminated.



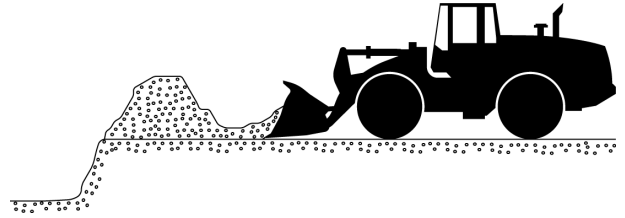
M4GB-05-016

OPERATING MACHINE

Dozing

IMPORTANT:

- **Never attempt to forcibly push piled material higher than the bucket capacity. Premature wear of the tires due to slipping and/or waste of fuel may result.**
- **Do not perform dozing with the bucket dumped. Abnormal excessive stress will be applied on the front attachment.**
- **Never apply great traction force to the cutting edge with the cutting edge tilted forward more than 10°. Failure to obey so may result in damage such as cracks to the working tools and front attachment.**



M4GB-05-017

Dozing stands for a working method performed by a wheel loader using the wheel loader bucket in place of a bulldozer blade. This operation method is employed when reclaiming land or dumping material into a hopper. Set the bucket bottom parallel with the ground surface and drive the wheel loader forward.

Scooping

⚠ WARNING: Do not allow the machine to engage in piling up material on a soft ground. It is import to be aware that steering operation on soft ground may easily cause tipping over of the machine.

Take care not to touch the ground with the counterweight while engaging in scooping work. The machine may become unstable, possibly causing the machine to turnover.



M4GB-05-018

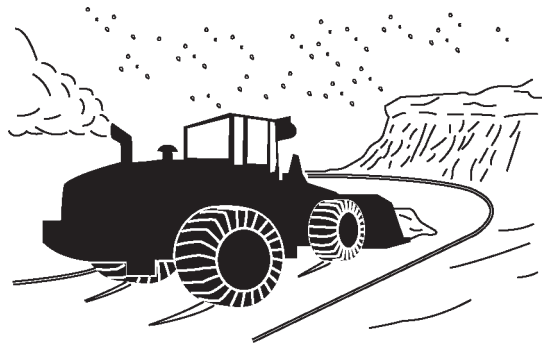
OPERATING MACHINE

Removing Snow

CAUTION:

- Remove snow in the same method as employed in general loading work. However, pay attention to slippage of tires and obstacles covered with snow.
- Turn the Ride Control Switch OFF when performing work with the front attachment in the float position.

Performing work with the Ride Control Switch ON and the front attachment lever in the float position, ride control is active and may allow the attachment to drop while the machine is driving.



M4GB-05-019

Precautions for removing snow

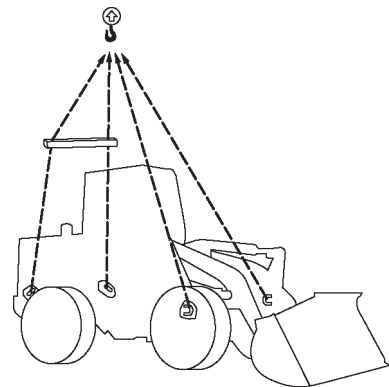
- Avoid sudden starting and stopping as well as rapid steering of the machine.
- Use tire chains on all four wheels.
- Pay attention to the presence of the utility facilities such fire hydrants, manholes, curbs, roadside drains, etc. The facilities or the machine may be damaged.

Lifting Wheel Loader

WARNING:

- Be sure to use lifting tools and set the articulation lock bar in the LOCK position.
- Never allow any person to ride on the machine to be lifted.
- Never allow any person to enter below the lifted machine. Before fully lifting the machine above the ground, check that the hooks are securely attached to the machine and the machine is well balanced while lifting the machine slightly above the ground.

Refer to the "LIFTING MACHINE" in the TRANSPORTING section.



MNEC-05-001

Lifting work of the machine will become necessary when loading the machine onto a ship or truck for repairing and/or transporting.

OPERATING MACHINE

Precautions for After Operations

1. 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.

(Park the machine referring to the "Parking" in the "DRIVING THE MACHINE" chapter.)

2. Refill the fuel tank.



CAUTION: Wash the machine immediately after operation and then coat rust-preventive oil to protect the machine from rusting. If the machine continues to be used with rust developing, oil leaks may occur.

IMPORTANT: If heavy rain is expected or the machine is to be stored, wrap the muffler with a tarpaulin to prevent water from entering the muffler.

3. Clean the machine.
4. If anti-freeze or long life coolant is not used in cold weather, be sure to drain coolant from the radiator and the engine jacket.

Also, be sure to put a "No Water in Radiator" tag in a visible place after the coolant has been drained.

OPERATING MACHINE

5. Maintenance for long term machine storage after engaging in snow removal. (Refer to STORAGE section.)

Anti-freeze agents such as salt (sodium chloride or calcium chloride) are scattered on snow roads. When the machine is stored for a long time after engaging in snow removal work, perform the following maintenance to protect the machine from being corroded and/or damaged by salt.

IMPORTANT: Take care not to spray water directly to electrical parts, harnesses and connectors.

Kinds of lights such as the headlights, work lights, and turn signal lights are waterproof.

- 5.1 Clean the machine thoroughly.

Clean each cylinder rod (plated areas) and the radiator with extra care.

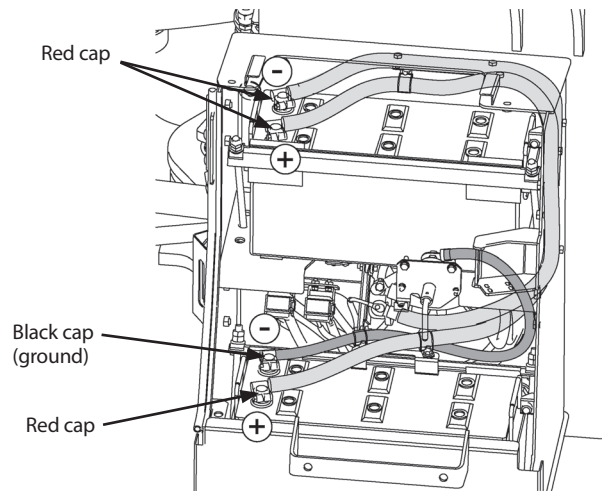
- 5.2 After positioning the machine for storage, carefully coat each cylinder rod (plated areas) and the control valve spools with rust-preventive oil.

- 5.3 Lubricate all pins while referring to A Greasing Section in the Maintenance Guide List.

CAUTION: When removing the batteries, disconnect the ground cable from the battery terminal first (covered with a black vinyl cap).

- 5.4 Remove the batteries and store them in a dry cool place.

When the batteries are not removed, disconnect the ground terminal cable.



90Z7B-5-24-1

TRANSPORTING

Transporting by Road

When transporting the machine on public roads, be sure to first understand and follow all local regulations.

1. For transporting using a trailer, check the width, height, length and weight of the trailer when the machine is loaded.
2. Investigate conditions on the route to be traveled in advance, such as dimensional limits, weight limits, and traffic regulations.

In some cases it may be necessary to obtain permission from the local authority concerned, or to disassemble the machine to bring it within local regulation for dimensional or weight limits.

Transporting by Trailer

Provide an appropriate trailer while referring to the weight and dimensions shown in the specifications. When transporting the machine within the weight and dimensions shown in the specifications by a trailer, it is possible to transport the machine without disassembling.

TRANSPORTING

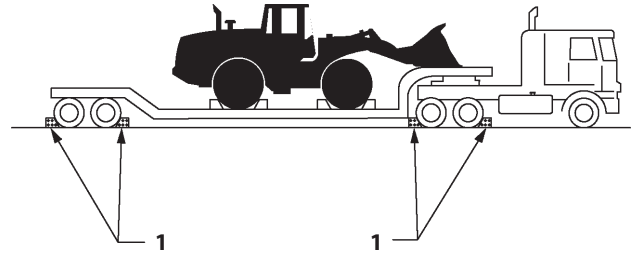
Loading / Unloading on Trailer

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

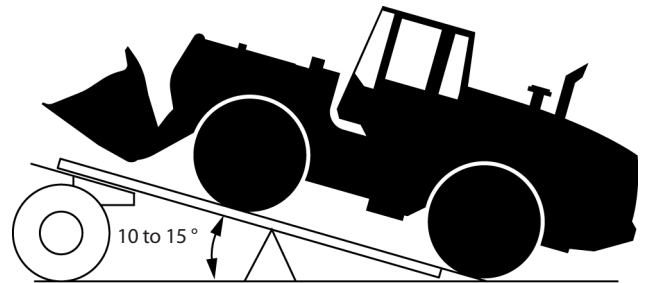
Always load and unload the machine on a firm, level surface.

Ramp/Loading Dock:

1. Before loading, thoroughly clean the ramps, loading dock and flatbed. Dirty ramps, loading docks, and flatbeds with oil, mud, or ice on them are slippery and dangerous.
2. Place blocks (1) 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°.
4. Loading docks must be sufficient in width and strength to support the machine and have an incline of less than 15°.



M4GB-06-001



M4GB-06-002

TRANSPORTING

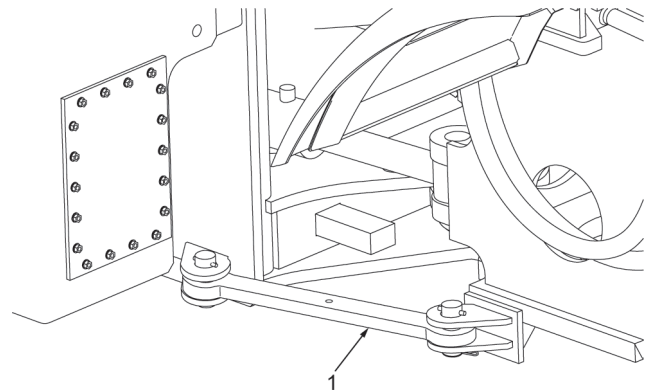
Loading / Unloading on Trailer

WARNING:

- **Never steer while driving up or down a ramp as it is extremely dangerous and may cause the machine to turnover. Never attempt to steer the machine on a ramp. If the travel direction must be changed on a slope, move back the machine to the flat ground. After changing the travel direction, begin to drive again.**
- **Select AUTO 2 for auto-shifting, or select 2nd speed for manual shifting.**

Loading

1. Load the machine so that the centerline of the machine aligns with the centerline of the trailer flatbed.
2. Slowly drive the machine on the ramp.
3. Lower the bucket onto the trailer deck.
4. Stop the engine. Remove the key from the key switch.
5. Operate the control lever several strokes to relieve pressure in the cylinders.
6. Move the control lever lock switch in the LOCK (🔒) position.
7. Securely close the windows and cab door to protect the cab from rain. Place a cover over the exhaust outlet.
8. Install the articulation lock bar (1) to prevent the machine from articulating.



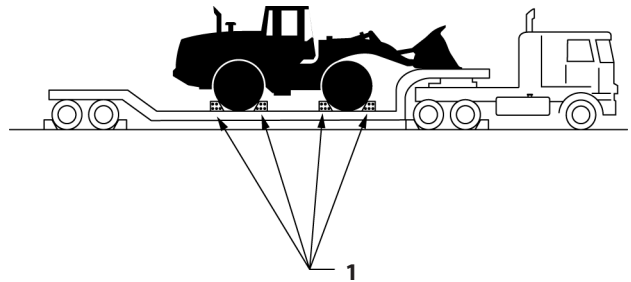
90Z7-6-3-1

TRANSPORTING

Fastening Machine for Transporting

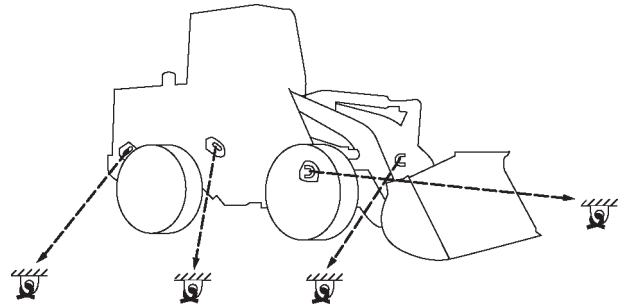
⚠ WARNING: Fasten the machine frame to the deck securely with chains and cables. While traveling, loads may shake around, move forward or backward or to the sides.

1. Apply the parking brake. Slowly rest the bucket on the trailer deck or load-carrying platform.
2. Wedge wooden blocks (1) front and rear each tire to fasten the machine in position.
3. Securely fasten the base machine and the front attachment to the load-carrying platform with sufficient wire ropes.



M4GB-06-003

The machines for export are provided with lifting holes. Use these holes for securing the machine.



MNEC-06-002

TRANSPORTING

Transporting Wheel Loader (Urgent Situation)

The following procedures shall only be applied to cases when urgently moving the wheel loader a short distance is required. When required to transport the wheel loader long distance, use a trailer.

Precautions for Self-Traveling

Avoid driving the wheel loader long distances at high-speed as much as possible as it may overheat the tires, possibly resulting in premature tire damage and/or wear. Keep the following points in mind when transporting the wheel loader by self-traveling.

- Observe the rules and regulations associated to this wheel loader, and travel carefully.
- Recommended tire pressures and traveling speeds may vary depending on the type of tires used and the road conditions. Consult your nearest Hitachi dealer.
- Check the tire pressure before self-traveling when the tires are cool.
- After driving the wheel loader for one hour, allow the wheel loader to park for 30 minutes and meanwhile, check the tires and every part of the machine for any abnormality, and also check the oil and coolant levels.
- Keep the bucket empty when traveling.
- Do not drive the machine with the tires containing calcium chloride or dry ballast, which accelerate heating.

TRANSPORTING

Precautions for Towing

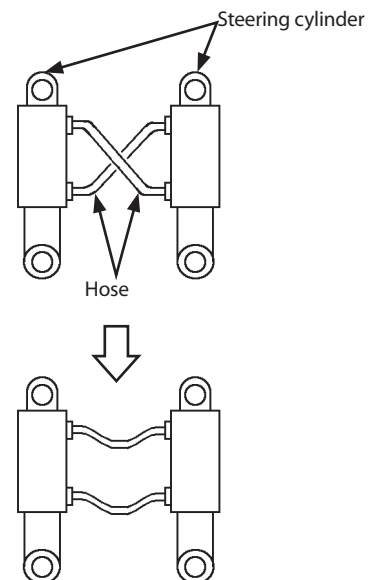
⚠ WARNING: Never attempt to tow the machine if the brake system is in need of repair. Ask your nearest authorized dealer to repair the machine. Operate the machine only after repair is completed.

Avoid towing the machine except for recovery for machine. If the machine is to be unavoidably towed, beware of the following points.

IMPORTANT: Do not tow the machine with the parking brake applied. Damage to the parking brake may result.

- If the engine is operable:
Keep the engine running so that the steering and brake system are operable. Release the parking brake.
- If the engine is inoperable:
Removing the propeller shaft
 - When the parking brake cannot be released, manually release the parking brake. (Refer to the "Releasing Parking Brake" on page 6-7.) Disconnect the front and rear propeller shafts. At this time, wedge wheel stoppers to all tires to prevent the machine from moving.
 - The steering system is inoperable when the engine is stopped. Changing the hydraulic hose connections between the rod end side and the head end side only of one steering cylinder enables the steering wheel operation.

✎ NOTE: Be careful not to spill oil when disconnecting the hoses.



M4GB-06-007

TRANSPORTING

Releasing Parking Brake

 WARNING:

- Once the parking brake is released, the machine becomes impossible to stop with the brake system, possibly resulting in personal injury or death.
- Before releasing the parking brake or connecting the brake system, be sure to lock tires with wheel stoppers.

 CAUTION:

- As soon as towing operation is complete, connect the parking brake.
- Use towing only when moving the machine to a place where the machine is inspected and/or serviced. Avoid towing to move the machine over a long distance.

Release of the parking brake is done manually only when the parking brake switch becomes inoperable due to any abnormality or failure in the brake system such as a pump.

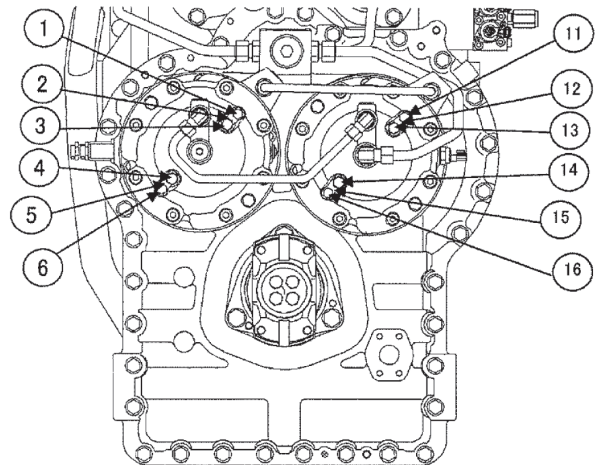
TRANSPORTING

Procedures

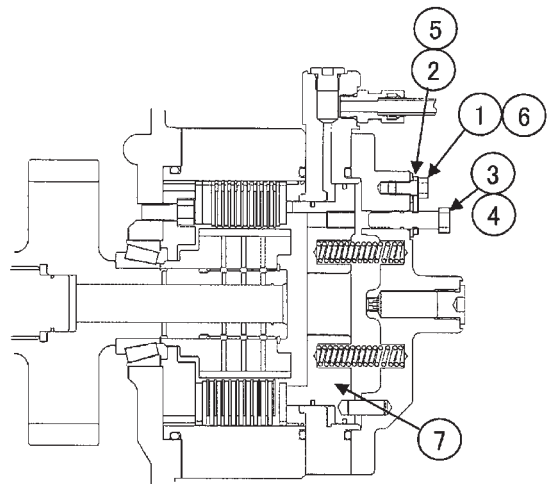
WARNING:

- Once the parking brake is released, the machine becomes impossible to stop with the parking brake system.
- Wedge wheel stoppers to all tires to prevent the machine from moving.
- Before restarting to operate the machine, consult your nearest authorized dealer to have the parking brake adjusted.

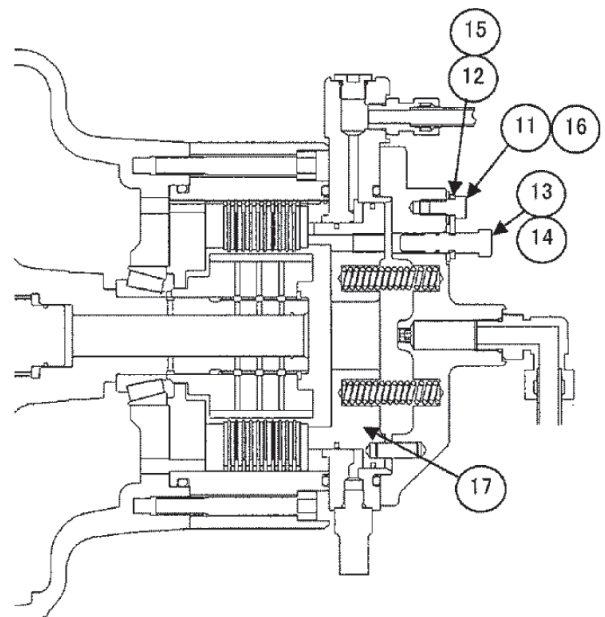
1. Rotate bolts (1, 6) counterclockwise and remove the parking brake cap.
2. Remove lock plates (2, 5) from set bolts (3, 4).
3. Press in bolts (3, 4) until they reach the screwed part of piston (7).
4. Tighten bolts (3)(4) alternatively and evenly until the brake discs become free by removing piston (7) apart from the brake discs.
5. Rotate bolts (11, 16) counterclockwise and remove the parking brake cap.
6. Remove lock plates (12, 15) from set bolts (13, 14).
7. Press in bolts (13, 14) until they reach the screwed part of piston (17).
8. Tighten bolts (13)(14) alternatively and evenly until the brake discs become free by removing piston (17) apart from the brake discs.



90Z7-6-8-1EU



90Z7-6-8-2JPUS



90Z7-6-8-3EU

TRANSPORTING

Towing Method



CAUTION:

- Use wire rope with a towing strength of at least 150 % of the machine weight.
- Towing from the front side of the machine

The machine using eye plates on the front chassis as indicated in the illustration.

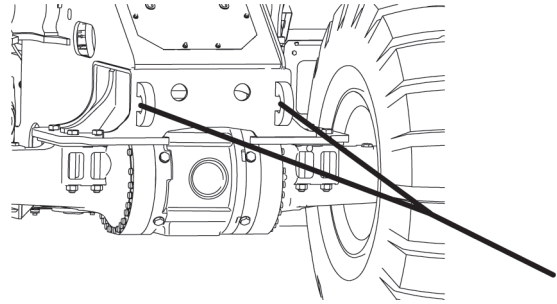
Always use soft material at the corners between the front chassis and wire ropes to prevent damage to wire ropes.

- Towing from the rear side of the machine

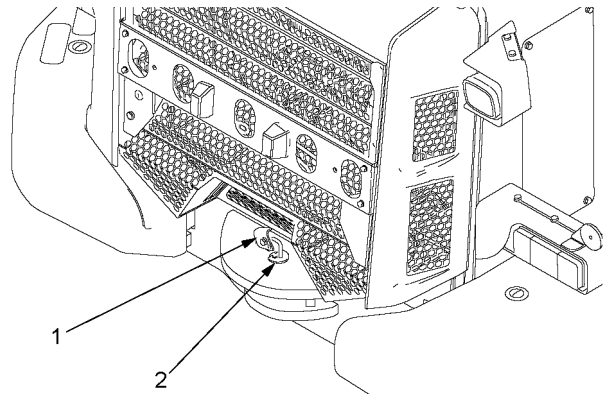
When using wire ropes, be sure to attach wire ropes to towing pin (2).

Always use the lock pin after completely inserting towing pin (2) to prevent the wire rope from coming off.

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



92Z7-6-9-2



90Z7B-1-135-1EU

TRANSPORTING

Lifting Machine



WARNING:

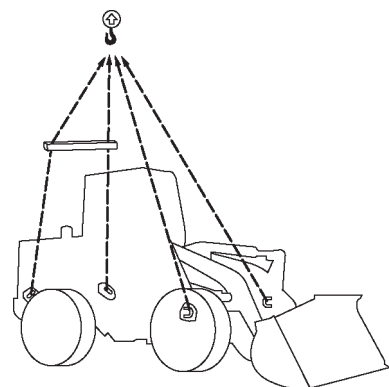
- The lifting tools are optional. Install specified lifting tools at your nearest Hitachi dealer.
- Use lifting cables and other lifting tools being free from any damage and/or aging, and having sufficient strength.
- Consult your nearest Hitachi dealer for correct lifting procedures, and size and types of lifting cable and tools.
- Before lifting the machine, move the control lever lock switch to the LOCK (🔒) position to prevent the machine from moving unexpectedly.
- Rigidly secure the front and rear frames using the articulation lock bar so that the machine front and rear frames are not articulated.
- 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.

Lifting

1. Straighten the machine and position the front attachment horizontally as illustrated to the right.
2. Move the control lever lock switch in the LOCK (🔒) position.
3. Rigidly secure the front and rear frames using the articulation lock bar.
4. Stop the engine. Remove the key from the key switch.
5. Use cables long enough so that the cables do not come in contact with the machine body when the machine is lifted.

Wrap some protectors around wire ropes and/or support bar as required to prevent the machine from being damaged. Be sure to use the specified lifting tools.

6. Set a crane in an appropriate position.
7. Attach the cable to the lifting tools.



MNEC-05-001

MAINTENANCE

Correct Maintenance and Inspection Procedures

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

Inspect machine daily before starting.

- Check controls and instruments.
- Check coolant, fuel and oil levels.
- Check for leaks, kinked, frayed or damaged hoses and lines.
- Walk around machine checking general appearance, noise, heat, etc.
- Check for loose or missing parts.



SA-005

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

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.**
- **Never adjust engine governor or hydraulic system relief valve.**
- **Protect electrical parts from water and steam.**
- **Never spray high pressure water or steam to the transmission oil filler port and vicinity of the axle air breather.**
- **Never disassemble electrical components such as main controller, sensors, etc.**
- **Never adjust parts of engine fuel system 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 aftertreatment device parts, leading to malfunction.**
- **Use Hitachi genuine high performance filter.**

MAINTENANCE

- 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 authorized 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 authorized Hitachi dealer.

Before installing any covering attachment such as a head guard, consult your authorized Hitachi dealer.

Never spray water on the communication terminal and the wirings.

- Inquire to your local environmental or recycling center or your nearest Hitachi dealer, for the proper way to recycle or dispose of oil, fuel, coolant, filters, batteries and other waste.

MAINTENANCE

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 .

This manual recommends grouping the intervals into three categories as follows:

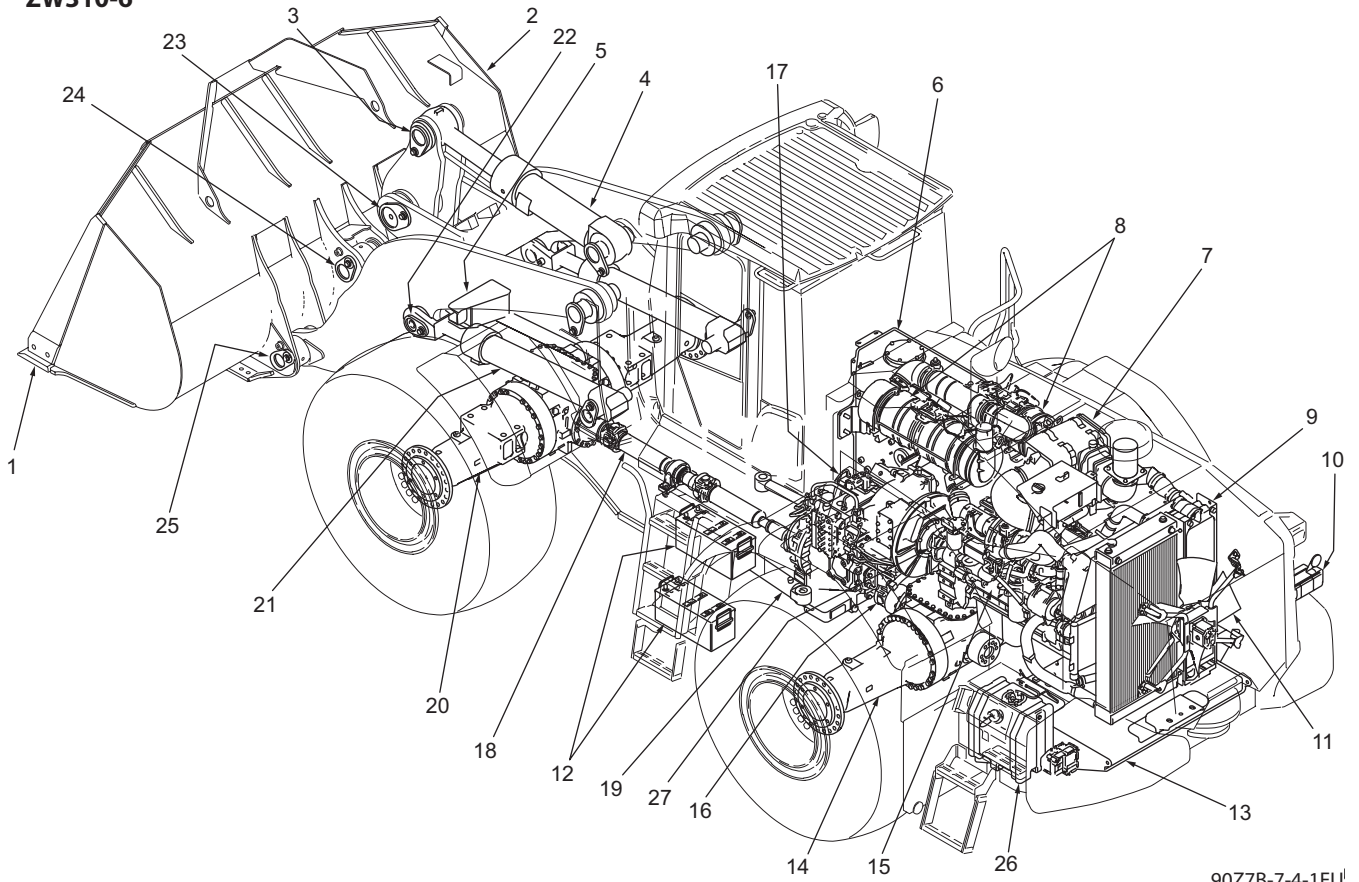
- Daily Check : To be conducted daily before operation
- Monthly Check: To be regularly conducted once per month
- Annual Check : To be regularly conducted once per year

Check and maintenance intervals shown in this manual are those for the machines to be operated under normal conditions. If the machine is operated under more severe conditions, shorten the intervals.

MAINTENANCE

Layout

ZW310-6

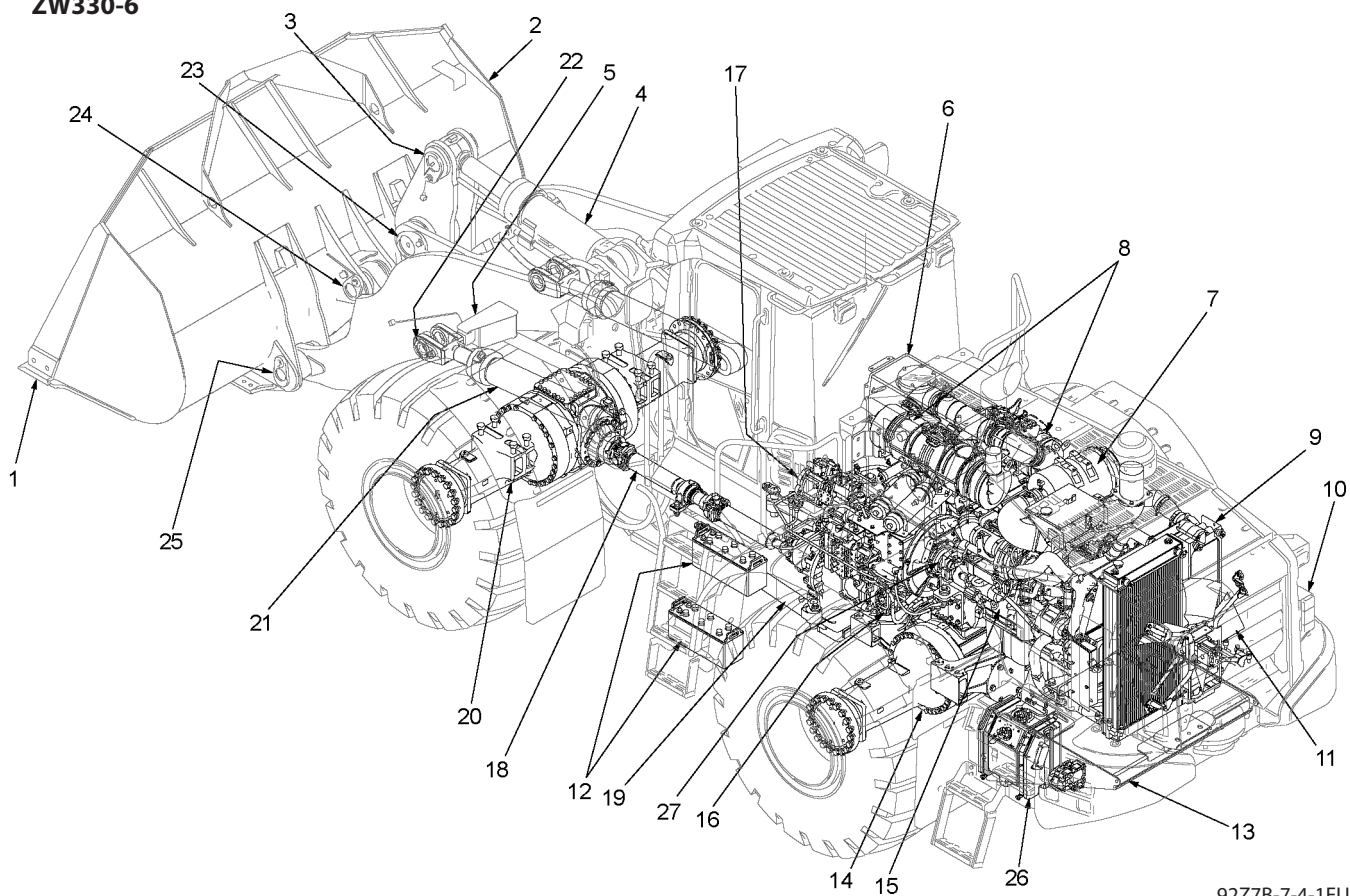


90Z7B-7-4-1EU¹

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

MAINTENANCE

ZW330-6



92Z7B-7-4-1EU

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

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.

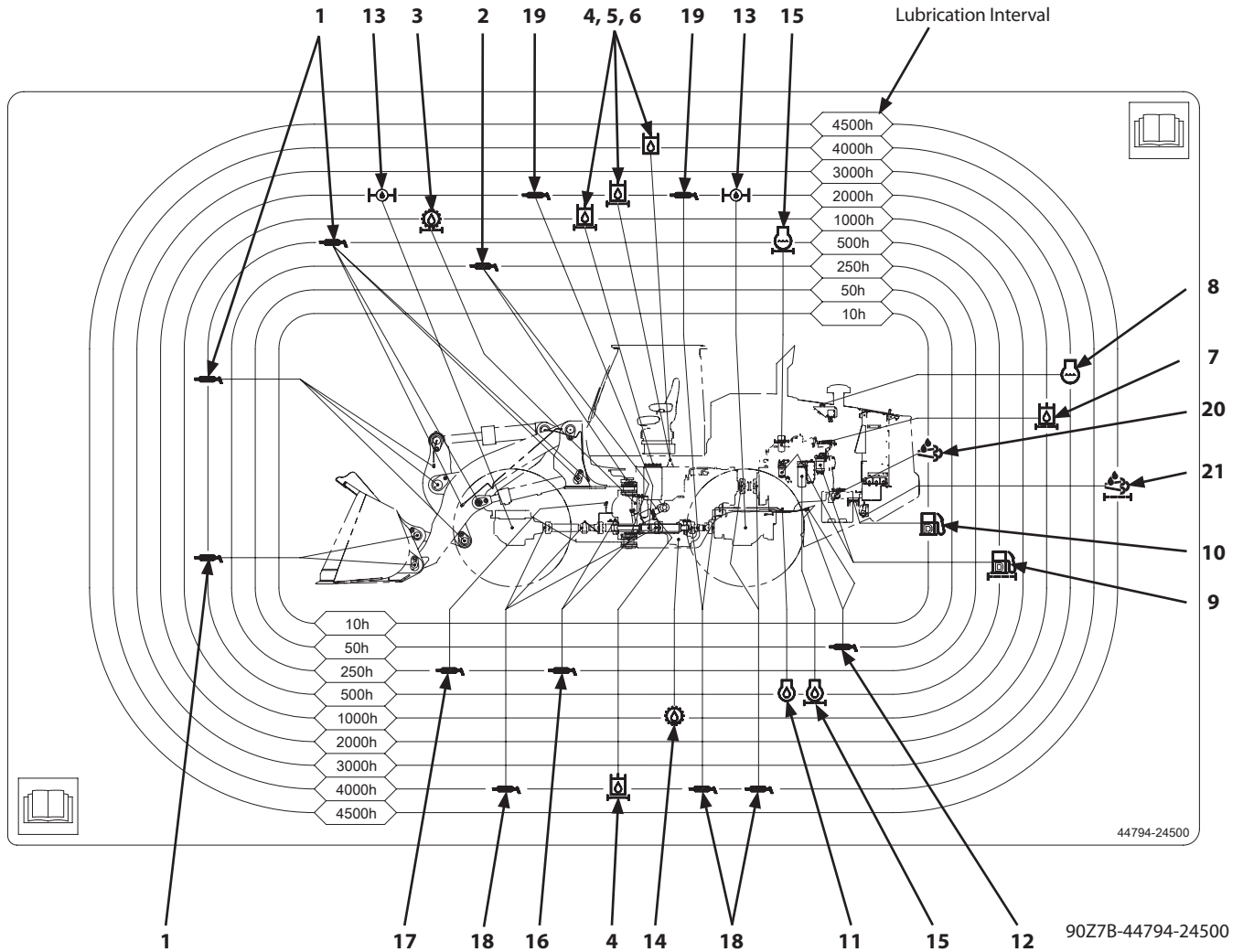
- Symbol Marks

The following marks are used in the maintenance guide table.

	Grease (Front Joint Pin, Cylinder Pin, Propeller Shaft)		Hydraulic Oil
	Engine Oil		Hydraulic Oil Filters (Hydraulic Oil Tank Filter, Suction Filter, Air Breather Element)
	Engine Oil Filter		Gear Oil (Final Drive, Differential Gear)
	Coolant (Long-Life Coolant)		Fuel
	Transmission Oil (Transmission, Torque Converter)		Fuel Filter (Fuel Main Filter, Pre-Filter)
	Transmission Oil Filter		DEF/AdBlue® Supply Module Main Filter

MAINTENANCE

• Maintenance Guide Table



Item	Page	Item	Page
1 Grease (Front Joint Pins)	7-27, 28	11 Engine Oil	7-32
2 Grease (Frame Hinge Pins)	7-29	12 Grease (Axle Support pin)	7-29
3 Transmission Oil Filter	7-41	13 Axle Gear Oil (Final drive, Differential gear)	7-46
4 Hydraulic Oil Filter (Main)	7-57	14 Transmission Oil	7-41
5 Air Breather Element	7-59	15 Engine Oil Filter	7-35
6 Hydraulic Oil	7-51	16 Grease (Steering Cylinder Pin)	7-28
7 Pilot Oil Filter	7-54, 56	17 Grease (Propeller Shaft Center Support)	7-30
8 Coolant (Long-Life Coolant)	7-88	18 Grease (Propeller Shaft Universal)	7-30
9 Fuel Filter, Fuel Pre-Filter	7-72 to 7-73	19 Grease (Propeller Shaft Spline)	7-30, 31
10 Fuel (Diesel Fuel)	7-67	20 DEF/AdBlue®	7-139
		21 DEF/AdBlue® Supply Module Main Filter	7-142

MAINTENANCE

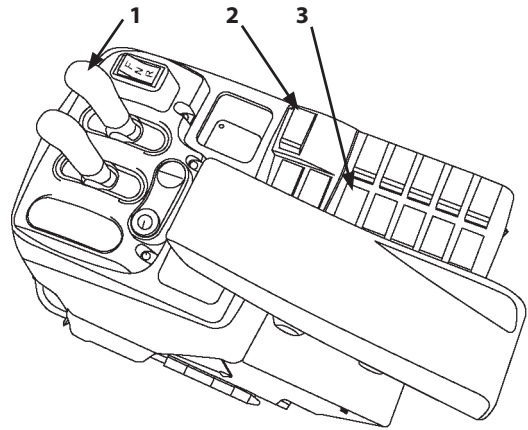
Preparations for Inspection and Maintenance

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

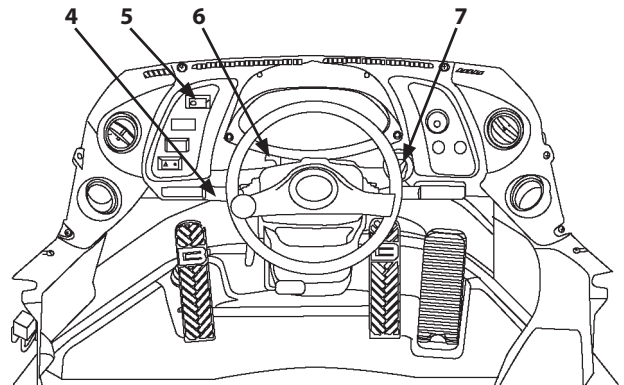
⚠ CAUTION: If the machine moves unexpectedly, a serious accident may result. Be sure to apply the parking brake when parking the machine.

Unless specified otherwise, park the machine by following the procedures below before beginning the inspection and/or maintenance work.

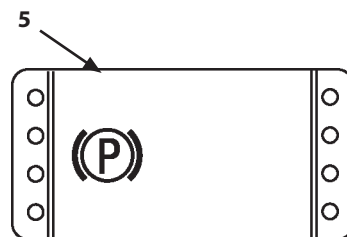
1. Park the machine on a solid level surface.
2. Lower the working tools such as the bucket to the ground.
3. Turn ride control switch (3) OFF.
4. Place forward / reverse lever (4) to neutral and place neutral lever lock (6) to lock (P) position.
5. Apply the parking brake (Turn parking brake (5) ON.)
6. Wedge the tires.
7. Run the engine at low idle speed for 5 minutes to cool the engine. Turn key switch (7) OFF to stop the engine. Again, turn key switch (7) ON and place control lever lock switch (2) to the unlock (U) position. Fully operate the lift arm control lever (1) 3 to 4 strokes to release residual pressure in the hydraulic system. If inspection and/or maintenance must be performed with the engine kept running, use a signal person.
8. Be sure to place control lever lock switch (2) to the lock (L) position.
9. Turn key switch (7) OFF and remove the key.
10. Start working only after putting an "UNDER INSPECTION/ MAINTENANCE" tag in a highly visible place such as on the cab door or the control lever.



MNEC-07-001



MNEC-01-036

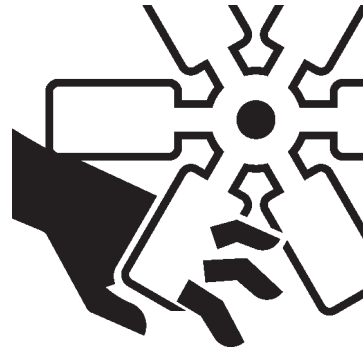


MNEC-01-058

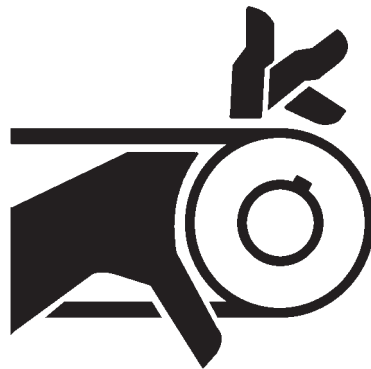
MAINTENANCE

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

- One person should take the operator's seat to be ready to stop the engine any time while communicating with other workers.
- When working around moving parts is unavoidable, pay special attention to ensure that hands, feet, and clothing do not become entangled.
- If parts or tools are dropped or inserted into the fan or the belt, they may fly off or be cut off. Do not drop or insert parts and tools into the moving parts.
- Move control lever lock switch (2) to lock (🔒) position so that the front attachment will not move.
- Never touch the control levers and pedals. If operating the control levers or pedals is unavoidable, signal co-workers to move to a safe place.



SA-2294



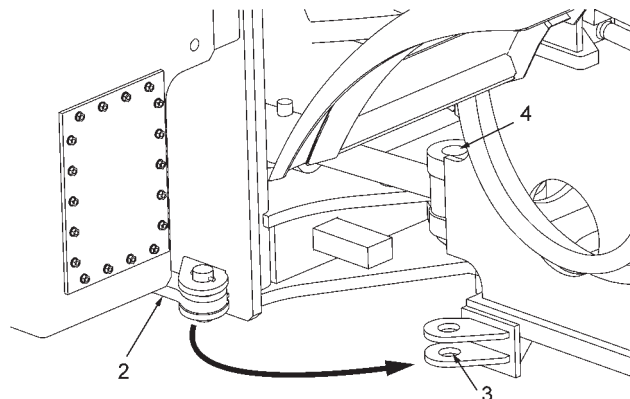
SA-026

MAINTENANCE

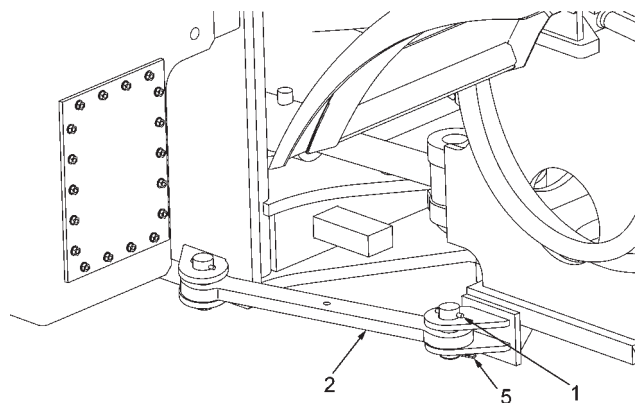
Lock Frames

⚠ WARNING: Before beginning to work near the frame center hinge (4), install articulation lock bar (2) to securely lock and prohibit movement between the front and rear frames. Avoid accidents due to unexpected movement of the machine.

1. Align the front and rear frame centers with each other.
2. Remove β -form pin (5) to remove set pin (1) from the rear frame hole.
3. Pull out and rotate articulation lock bar (2) to align it with the front frame hole (3).
4. Install set pin (1) into the front frame hole (3) and the articulation lock bar tip end hole. Install β -form pin (5) to lock the articulation lock bar (2) in position.



90Z7-7-9-1



90Z7-7-9-2

MAINTENANCE

Inspection/Maintenance Side Access Cover

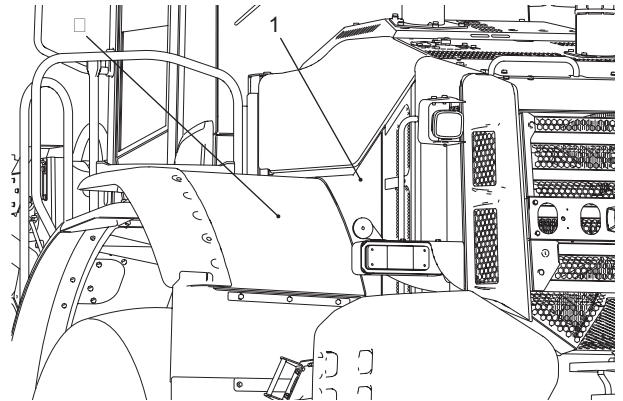
CAUTION:

- Always close side covers (1) during driving and operation.
- Do not keep side covers (1) open on a slope or when a strong wind is blowing. Failure to do so may be dangerous because side cover (1) may unexpectedly close.
- Take care not to pinch your fingers when opening/closing the side covers (1).
- When side cover (1) is opened, the cover may move suddenly. Be careful not to come in contact with the cover.
- Before inspecting around the engine, be sure to secure side cover (1) with holding rod (3).
- If the machine is equipped with the fenders (2) on side covers (1), never ride on the fenders (2).

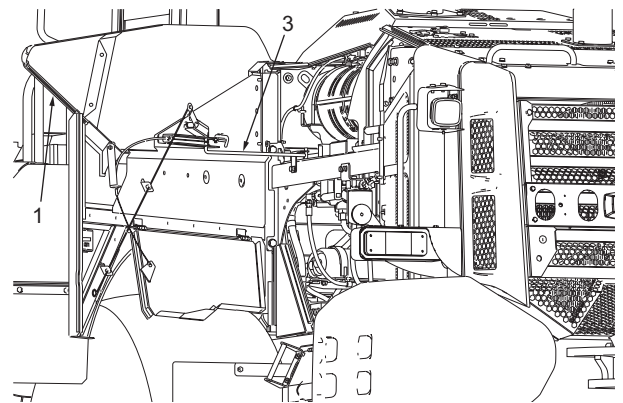
When opening side cover (1), pull latch (4).

 NOTE: When required to inspect the machine for a long time with side cover (1) kept open, lock side cover (1) using the holding rod (3) provided inside the side cover.

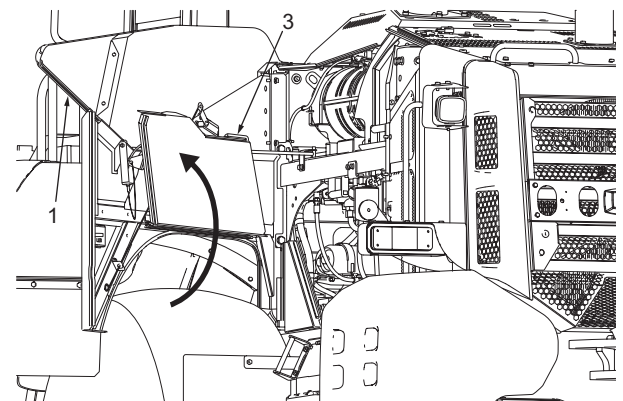
Side cover (1) has a holding groove. Engage the holding rod (3) in the holding groove beforehand.



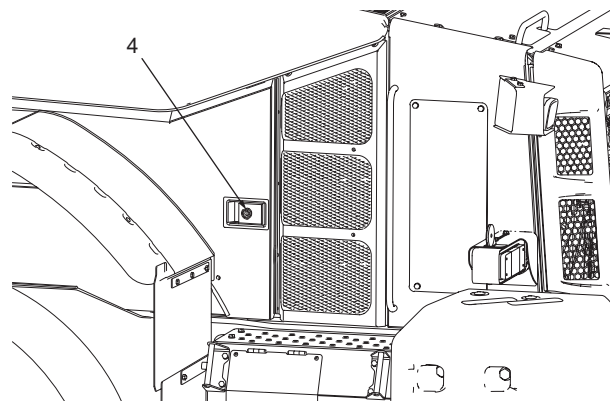
90Z7B-1-136-4EU



90Z7B-1-136-2EU



90Z7B-1-136-3EU



90Z7B-1-140-2EU

MAINTENANCE

Rear Grille

CAUTION:

- **Open or close rear grille (4) only after stopping the engine. Failure to do so may create a very dangerous situation as entanglement with the cooling fan may result.**
- **Before driving the machine, always check that rear grille (4) is not open.**

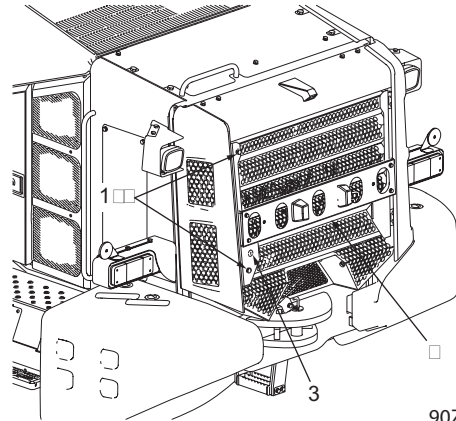
 **NOTE:** The switch key cannot be removed from latch (3) while rear grille (4) is being opened.

Opening the rear grille

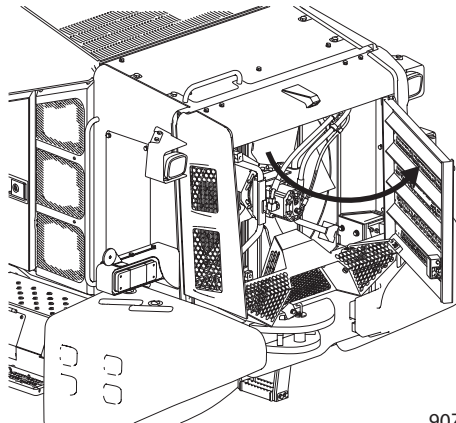
Remove bolt caps (1) and bolts (2). Release latch (3) with the key switch unlock rear grille (4). The rear grille opens and the cooling fan can be cleaned.

Closing the rear grille

After closing rear grille (4), turn and remove key switch (3) to lock rear grille (4). Tighten bolts (2) and install caps (1).



90Z7B-1-137-1EU



90Z7B-1-137-2EU

MAINTENANCE

Periodic Replacement of Parts

To ensure safe operation, be sure to conduct periodic inspection of the machine. In addition, the parts listed below, if defective, may pose serious safety/fire hazards. It is very difficult to gauge the extent of deterioration, fatigue, or weakening of the parts listed below simply by visual inspection alone. For this reason, replace these parts at the intervals shown in the table below. However, if any of these parts are found to be defective, replace before starting operation, regardless of the interval.

Also, when replacing hoses, check the clamps for deformation, cracks, or other deterioration, and replace as necessary.

Be sure to perform periodic inspection of all hoses, as shown below, and replace or retighten any defective parts found, as necessary.

Consult your authorized dealer for correct replacement.

Periodic Replacement Parts			Replacement Intervals
Engine		Fuel hose (Fuel tank to fuel pre-filter)	Every 2 years or 4000 hours whichever comes first
		Fuel hose (Fuel pre-filter to main filter)	
		Oil filter hose (Engine to oil filter)	
		Heater hose (Heater to engine)	
		Fuel hose (Engine to fuel tank)	
		Coolant filter hose (Engine to DCA coolant filter)	
		Heater hose (Engine to dosing module)	
		DEF/AdBlue® hose (Aftertreatment device)	
Brakes		Brake valve seals (Rubber parts)	Every 1 year
		Wet type brake (D-ring for piston)	Every 4 years
		Accumulator	Every 2 years
		Stop light switch	Every 2 years
		Brake hose	Every 2 years or 4000 hours whichever comes first
Steering Mechanism		Steering hose	Every 2 years or 4000 hours whichever comes first
		Steering cylinder seals (Rubber parts)	Every 4 years
		Steering valve seals (Rubber parts)	
Hydraulic System	Base Machine	Pump suction hose	Every 2 years or 4000 hours whichever comes first
		Hydraulic hose (Main pump to main valve)	
		Hydraulic hose (Fan pump to fan motor and fan valve)	
		Hydraulic hose (Transmission high pressure circuit hose)	
		Hydraulic hose (Transmission cooler line hose)	
		Hydraulic oil tank return hose	
		Hydraulic oil cooler line hose	
		Hydraulic hose (Valve to hydraulic oil tank return hose)	
	Front Attachment	Lift arm cylinder line hose	
		Bucket cylinder line hose	
		Pilot hose	
Cab		Seat belt	Every 3 years

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

MAINTENANCE

Maintenance Guide

Shaded columns in the table indicate maintenance interval.

A. Greasing

Parts		Quantity	Interval (hours)							Page
			10	100	250	500	1000	2000	4000	
1.	Bucket Pin	2	★		★★					7-27
2.	Bucket Link Pin	2	★		★★					7-27
3.	Bucket Cylinder Pin	2	★		★★					7-27
4.	Bell Crank Pin	1	★		★★					7-27
5.	Lift Arm Cylinder Rod Pin	2	★		★★					7-27
6.	Lift Arm Pivot Pin	2	★		★★					7-28
7.	Lift Arm Cylinder Pin	2	★		★★					7-28
8.	Steering Cylinder Pin	2	★							7-28
9.	Steering Cylinder Rod Pin	2	★							7-28
10.	Frame Center Hinge Pin	2								7-29
11.	Axle Support Pin	2								7-29
12.	Front Propeller Shaft Universal	1							★★★	7-29
13.	Propeller Shaft Center Support	1								7-30
14.	Front Propeller Shaft Universal	2							★★★	7-30
15.	Front Propeller Shaft Spline	1						★★★		7-30
16.	Rear Propeller Shaft Universal	2							★★★	7-31
17.	Rear Propeller Shaft Spline	1						★★★		7-31
18.	Center Propeller Shaft Universal	2							★★★	7-31

- ★ : Add grease daily during first 50 hours of operation.
If the machine is engaged in excavation in mud, water or snow, add grease after each work shift.
- ★★ : After 50 hours of operation, carry out next greasing at the first 250 hours of operation.
Carry out greasing every 500 hours of operation afterwards. Shorten greasing intervals when the machine is operated under severe conditions or when the machine is continuously operated for a long period of time.
- ★★★ : Shorten greasing intervals when the machine is operated under severe conditions or when the machine is continuously operated for a long period of time.

IMPORTANT: Grease bucket and link pivots every day until break-in period (50 hours) is complete.

MAINTENANCE

B. Engine

IMPORTANT: Be sure to use the specified oil. Change oil at the exactly specified intervals. If unspecified oil is used, or the oil change intervals are arbitrarily extended, serious engine failure or damage may result.

Parts			Quantity	Interval (hours)							Page
				10	50	100	250	500	1000	2000	
1.	Engine Oil	Check Oil Level	-								7-32
2.	Engine Oil	Change	24 L								7-33
3.	Engine Oil Filter	Replace	1					★			7-35
4.	Check Crankcase Breather Tube		-								7-36
5.	Replace Crankcase Air Breather Element		1								7-37
6.	Check Vibration Damper		1								7-39

★ : Replace the engine oil filter every time the engine oil is changed.

C. Power Train

Parts				Quantity	Interval (hours)						Page	
					10	50	100	250	500	1000		2000
1.	Transmission Oil	Check Oil Level		-								7-40
2.	Transmission Oil	Change *Oil capacity (Amount of oil change)		51 L (40 L)				★				7-41
3.	Transmission Oil Filter	Replace		2				★				7-41
4.	Suction Strainer	Clean		1								7-41
5.	Torque Converter Air Breather	Clean		1								7-44
6.	Axle Oil	Check Oil Level										7-45
7.	Axle Oil	Change (Front)	ZW310-6	48 L								7-46
			ZW330-6	60 L								
		Change (Rear)	ZW310-6	48 L								7-46
			ZW330-6	60 L								
8.	Check Surroundings Around Axle and Covers for Oil Leaks			-								7-47
9.	Axle Housing Air Breather	Clean		Each 1 (F/R)								7-47

★ : 250 hours at only first time

* : Transmission oil capacity indicates the entire amount of oil, including oil in the transmission oil sump, devices and lines. Amount at oil change means the amount of oil that is changed during inspection and maintenance.

MAINTENANCE

D. Hydraulic System

Parts		Quantity	Interval (hours)									Page
			10	50	100	250	500	1000	1500	2000	4000	
1.	Check Hydraulic Oil Level	-										7-50
2.	Change Hydraulic Oil *Oil capacity (Amount of oil change) / Clean Hydraulic Oil Tank	200 L (137 L)									★	7-51
3.	Clean Suction Filter	1	(When changing hydraulic oil)									7-53
4.	Clean Pilot Oil Filter (Brake Circuit)	1										7-54
5.	Clean Pilot Oil Filter (Steering Circuit)	1										7-56
6.	Replace Hydraulic Tank Oil Filter	1										7-57
7.	Replace Air Breather Element	1										7-59
8.	Check Pilot Circuit Accumulator Function, Gas Leakage, Looseness, and Damage	1										7-60
9.	Check Ride Control Accumulator Function, Gas Leakage, Looseness, and Damage	1										7-61
10.	Check Gas Pressure in Ride Control Accumulator	1										7-61
11.	Check Gas Pressure in Steering Accumulator	2										7-61
12.	Check Hoses and Lines for Leaks	-										7-62
	Check Hoses and Lines for Cracks, Bend, etc.	-										7-62

★ : Hydraulic oil changing interval differs according to the kind of hydraulic oil used.

* : Hydraulic oil capacity indicates the entire amount of oil, including oil in the hydraulic oil tank, devices and lines.
Amount at oil change means the amount of oil that is changed during inspection and maintenance.

E. Fuel System

IMPORTANT: Be sure to use the specified fuel. Failure to do so may result in malfunction or damage on the engine.

	Parts	Quantity	Interval (hours)							Page
			10	50	100	250	500	1000	2000	
1.	Check Fuel Level	-								7-67
2.	Drain Water and Sediment from Fuel Tank	1								7-69
3.	Drain Fuel Pre-Filter	1								7-70
4.	Replace Fuel Main Filter Element	1								7-72
5.	Replace Fuel Pre-Filter Element	1								7-73
6.	Clean Fuel Pump Strainer	1								7-74
7.	Check Fuel Hoses for Leak, Cracks, etc.	-								7-76
	Check Fuel Hoses for Cracks, Bent, etc.	-								7-76

MAINTENANCE

F. Air Cleaner

Parts				Quantity	Interval (hours)						Page
					10	50	100	250	500	1000	2000
1.	Air Cleaner Element	Replace	ZW310-6	1	Indicator comes ON						7-77
		Clean	ZW330-6	1	Indicator comes ON						7-78
		Replace	ZW330-6	1	After cleaning 6 times or after 1 year						7-78
2.	Dust Ejection Valve (ZW310-6 Only)			-							7-79
3.	Check Air Inlet System			-							7-80

G. Cooling System

Parts		Quantity	Interval (hours)							Page
			10	50	100	250	500	1000	4000	
1.	Check Coolant Level	-								7-83
2.	Check Drive Belt									7-84
3.	Check Drive Belt Tensioner									7-85
4.	Replace DCA4 Coolant Filter Cartridge									7-86
5.	Change Coolant	44 L	*							7-88
6.	Clean Radiator/Oil Cooler and Other Cooling System	1					★			7-90

★ : Shorten the maintenance interval when the machine is operated in extremely dusty areas.

* : Use Hitachi genuine coolant, change every two years or 2000 operating hours, whichever comes first.

H. Electrical System

Parts			Quantity	Interval (hours)							Page
				10	50	100	250	500	1000	2000	
1.	Batteries	Check Electrolyte Level	2								7-93
		Check Electrolyte Specific Gravity	2								7-94
2.	Check Monitor Functions and All Other Instrument Operation		-								7-95
3.	Check Work Lights		-								7-96
4.	Check Horn and Reverse Buzzer		-								7-97
5.	Check Electrical Harnesses and Fuses		-								7-98

MAINTENANCE

I. Brake System

Parts		Quantity	Interval (hours)							Page
			10	50	100	250	500	1000	2000	
1.	Check Right and Left Brake Interlocking Performance									7-100
2.	Check Parking Brake Force									7-101
3.	Check Accumulator Function, Gas Leakage, Looseness, and Damage									7-102
4.	Check Gas Pressure in Accumulator								★	7-103
5.	Check Brake Disks (Service and Parking)									7-103

★ : If the ride control function is equipped, check the ride control accumulator at the same time.

J. Tire

Parts			Quantity	Interval (hours)						Page	
				10	50	100	250	500	2000		4000
1.	Air Pressure	Check	4								7-104
		Adjustment	4	As required						7-104	
2.	Check Tire for Damage		4								7-105
3.	Check Wheel Bolt Torque		4		★						7-105

★ : 50 hours at only first time

K. Air Conditioner

Parts				Quantity	Interval (hours)						Page	
					10	50	100	250	500	1000		2000
1.	Check Air Conditioner Filter	Fresh Air Filter	Clean	1			★					7-109
			Replace	1	After Cleaning 10 times						7-109	
		Circulating Air Filter	Clean	1			★					7-112
			Replace	1	After Cleaning 10 times						7-112	
2.	Check Air Conditioner			-	Every 6 months						7-113	
3.	Check Air Conditioner Piping			-	Every 6 months						7-113	
4.	Check Air Conditioner Condenser			1	Every 6 months						7-114	
5.	Check Air Conditioner Drive Belt			1	Every 6 months						7-114	
6.	Check Refrigerant			1	Every 6 months						7-115	
7.	Replace Air Conditioner Receiver Dryer			1	Every 3 years or 6000 hours						7-115	
8.	Check Compressor and Pulley			1	Once a year						7-115	

★ : Clean every 100 hours or every week whichever comes first.

If the machine is operated at a dusty job site, clean or replace the filter element earlier than the normal interval.

MAINTENANCE

L. Miscellaneous

	Parts	Quantity	Interval (hours)								Page
			10	50	100	250	500	1000	2000	5000	
1.	Check Bucket Teeth and Cutting Edge	-									7-116
2.	Check and Replace Seat and Seat Belt	1		Every 3 years							7-117
3.	Check ROPS cab, Resin Cab Roof, and Roof Mounting Bolts	-									7-117
4.	Check Windshield Washer Fluid Level	-									7-117
5.	Check Play Amount in Steering Wheel Stroke	-									7-118
6.	Check Accelerator Pedal Operation, and Exhaust Gas Color and Noise	-									7-119
7.	Check Rearview Mirror and Inside Rearview Mirror	-									7-120
8.	Check Steps and Handrails for Damage and Looseness	-									7-120
9.	Clean Engine Compartment and Hood	-									7-121
10.	Check Sound Absorbing Mat Around Engine	-									7-121
11.	Cleaning of Rear View Camera Lens										7-121
12.	* Check and Adjust Valve Clearance										7-122
13.	* Retighten Front Axle and Rear Axle Support Mounting Bolts	-		★							7-122
14.	Tightening and Retightening Torque of Nuts and Bolts	-		★							7-123

 NOTE: * Contact your authorized Hitachi dealer for maintenance.

★ : 50 hours at only first time

M. Aftertreatment Device

	Parts	Quantity	Interval (hours)								Page
			10	50	100	250	500	1000	2000	4500	
1.	Check and Clean Aftertreatment Device	-	As required								7-136

N. Urea SCR System

	Parts	Quantity	Interval (hours)								Page
			10	50	100	250	500	1000	2000	4500	
1.	Check DEF/AdBlue®	1									7-139
2.	Change DEF/AdBlue®	1	As required								7-141
3.	Replace DEF/AdBlue® Supply Module Main Filter	1									7-142

MAINTENANCE

Kind of Oils

Brand Names of Recommended Grease

Kind of Grease		Lithium Grease
Application		Front Joint Pins, etc.
Air Temp.		-20 to 40 °C (-4 to 104 °F)
Recommended Products		Hitachi Genuine Grease NLGI EP-2
Alternative Products	Specification	NLGI 2 EP

IMPORTANT:

- **Hitachi Genuine Greases are specially designed and tested to provide optimum performance for Hitachi construction machinery, hence we recommend to use Hitachi Genuine Greases.**
- **Do not use greases which do not meet the above specification or requirements. Use of unsuitable grease may lead to damage which is excluded from Hitachi Warranty Policy.**

Recommended Engine Oil

Kind of Oil		Engine Oil
Application		Engine Crank Case
Air Temp.		-20 to 40 °C (-4 to 104 °F)
Recommended Products		Hitachi Genuine Engine Oil 10W-40 DH-2
Alternative Products	Viscosity	10W-40
	Specification	JASO DH-2

IMPORTANT:

- **Hitachi Genuine Engine Oils are specially designed and tested to provide optimum performance for Hitachi construction machinery, hence we recommend to use Hitachi Genuine Engine Oils.**
- **Do not use oils which do not meet the above specification or requirements. Use of unsuitable oil may lead to engine damage which is excluded from Hitachi Warranty Policy.**

MAINTENANCE

Brand Names of Recommended Transmission Oil

Kind of Oil	Engine Oil (API 10W, CD Class)
Application	Transmission
Air Temp.	-25 °C or higher
Manufacturer (INPO)	
Hitachi	* Transmission Oil 10W

IMPORTANT: When the atmospheric temperature is below -25°, consult your authorized Hitachi dealer.

 **NOTE:** The machine shipped from factory is filled with transmission oil marked with *.

Brand Names of Recommended Axle Oil

Kind of Oil	Axle Oil
Application	Axle
Manufacturer	
Hitachi	High Gear Oil TKTT 15150-4th

IMPORTANT:

- Hitachi Genuine Axle Oils are specially designed and tested to provide optimum performance for Hitachi construction machinery, hence we recommend to use Hitachi Genuine Axle Oils. If other oil is used, which may lead to damage on the machine.
- Do not use oils which do not meet the above specification or requirements. Use of unsuitable oil may lead to damage which is excluded from Hitachi Warranty Policy.

MAINTENANCE

Brand Names of Recommended Hydraulic Oil

Kind of Lubricant		Hydraulic Oil		
Where to be applied		Hydraulic System		
Environmental Temp.		-20 to +40 °C (-4 to +104 °F)		
Recommended Products		Hitachi Genuine Hydraulic Oil 5000	Hitachi Genuine Hydraulic Multi	
Alternative Products	Specification			Product Conforming to JCMAS HK VG46W
Change Interval		4000 hours	1500 hours	

 **NOTE:** A different interval of oil change may be required for Alternative Products.

For details, contact your authorized dealer.

IMPORTANT:

- **Hitachi Genuine Hydraulic Oils are specially designed and tested to provide optimum performance for Hitachi construction machinery, hence we recommend to use Hitachi Genuine Hydraulic Oils.**
- **Do not use oils which do not meet the above specification or requirements. Use of unsuitable oil may lead to damage which is excluded from Hitachi Warranty Policy.**

Recommended Coolant

Kind of Coolant	Long-Life Coolant
Application	Radiator
Standard	ASTMD-6210
Manufacturer/ Recommended Products	Hitachi Genuine Long Life Coolant

Long-Life Coolant Mixing ratio [%]	Coolant Capacity: 44.0L	
	Long-Life Coolant [L] *	Soft Water [L]
50	22.0	22.0

 **NOTE:** * Use concentrate type coolant.

If the premix 50/50 type is used, do not mix with water.

MAINTENANCE

List of Consumable Parts

1. Filter Elements

	Part No.	
Engine Oil Filter	YL00009256	
Fuel Main Filter	YL00008001	
Fuel Pre-Filter Element	YL00008002	
Air Cleaner Element (outer)	YL00009254 (ZW310-6)	3098170830 (ZW330-6)
Air Cleaner Element (inner)	YL00009255 (ZW310-6)	3098170820 (ZW330-6)
Hydraulic Oil Tank Suction Filter	4033560150	
Hydraulic Oil Tank Filter	YA00058645	
Pilot Oil Filter (Brake Circuit)	4033060610	
Pilot Oil Filter (Steering Circuit)	3098170720	
Transmission Oil Filter	3111570040	
Crankcase Air Breather Element	K5263190	
DCA4 Coolant Filter (WF2072)	YL00007415	
DEF/AdBlue® Supply Module Main Filter	YL00008298	

2. Drive Belts

	Part No.	
Air Conditioner Drive Belt	7802211240	

MAINTENANCE

3. Bucket Parts

		ZW310-6	
		Part No.	Quantity
Cutting Edge	Center	563H050451	1
	Right and Left side	2678882611	2
	Bolt	2678882291	12
	Nut	5660054751	12
Bucket teeth		YA00031197	10
O-ring	Bucket pin	263G872351	4
	Bucket Link pin	263G872351	2
Wear Plate	Wear Plate	4165660020	2
	Bolt	5660051371	8
	Nut	5660054751	8

		ZW330-6	
		Part No.	Quantity
Cutting Edge	Center	3093524320	2
	Right and Left side	3093525160	2
	Bolt	4392720310	14
	Washer	4601120010	14
	Nut	3761260030	14
Bucket Teeth	Center	3680020340	6
	Left side	3681520190	1
	Right side	3681520200	1
	Bolt	4392720300	16
		4392720310	6
	Washer	4601120010	22
	Nut	3761260030	22
O-ring	Connection of Lift Arm and Bucket	263G872351	4
	Connection of Bucket Link and Bucket	263G872351	2
Wear Plate	Wear Plate (Common with Cutting Edge and Teeth Type Bucket)	4165620470	2
	Bolt	4392720250	8
	Washer	6271018221	8
	Nut	3761260020	8

MAINTENANCE

4. Combination Light and Other Light (ZW310-6)

			Part No.
Front Combination Light	Front Combination Light Assembly (Right)		YA00018873
	Front Combination Light Assembly (Left)		YA00018872
	Bulb	Head Light	YA00020460 (24V 75/70W)
		Clearance Light	263G247101 (24V 4W)
		Turn Signal Light	263G247091 (24V 21W)
Rear Combination Light (LED)	Rear Combination Light Assembly (Right)		YA00044902
	Rear Combination Light Assembly (Left)		YA00044902
	Bulb	Turn Signal Light	4661236 (24V 21W)
Number Plate Light	Number Plate Light Assembly		3231505R91
	Bulb		0925308C10 (24V 10W)
Work Light	Front (Cab)	Work Light Assembly	XB00004669
	Front (Add On Cab)	Work Light Assembly	4274478
		Bulb	4285648 (24V 70W)
	Rear (Cab)	Work Light Assembly	4274478
		Bulb	4285648 (24V 70W)
	Rear	Work Light Assembly	4489060370
		Bulb	3848071120 (24V 55W)
Work Light (LED)	Front (Cab)	Work Light Assembly	YA00015760
	Front (Add On Cab)	Work Light Assembly	YA00031518
	Rear (Cab)	Work Light Assembly	YA00031518
	Rear	Work Light Assembly	YA00065311

MAINTENANCE

4. Combination Light and Other Light (ZW330-6)

			Part No.
Front Combination Light	Front Combination Light Assembly (Right)		2640242432
	Front Combination Light Assembly (Left)		2640242432
	Bulb	Head Light	3848070850 (24V 75/70W)
		Clearance Light	3848070940 (24V 5W)
		Turn Signal Light	3848070930 (24V 25W)
Rear Combination Light (LED)	Rear Combination Light Assembly (Right)		YA00044902
	Rear Combination Light Assembly (Left)		YA00044902
	Bulb	Turn Signal Light	4661236 (24V 21W)
Work Light	Front (Cab)	Work Light Assembly	4336570
	Front (Add On Cab)	Work Light Assembly	4274478
		Bulb	4285648 (24V 70W)
	Rear (Cab)	Work Light Assembly	4274478
		Bulb	4285648 (24V 70W)
	Rear	Work Light Assembly	4489060370
		Bulb	3848071120 (24V 55W)
Work Light (LED)	Front (Cab)	Work Light Assembly	YA00015760
	Front (Add On Cab)	Work Light Assembly	YA00031518
	Rear (Cab)	Work Light Assembly	YA00031518
	Rear	Work Light Assembly	YA00065311

5. Slow Blow Fuses

	Part No.
70A	4315073
120A	3988070240
140A	YA00021809

MAINTENANCE

A. Greasing

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

NOTE:

- Until break-in operation is performed for more than 50 hours, lubricate the machine every day to get initial operational concordance.
- If excavation is made in mud, water or snow, lubricate the machine after operation is complete.
- Sufficiently add high quality grease through the grease fittings. After removing contamination around the grease fitting, add grease. After greasing, thoroughly remove the old grease that was pushed-out from the seals.

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

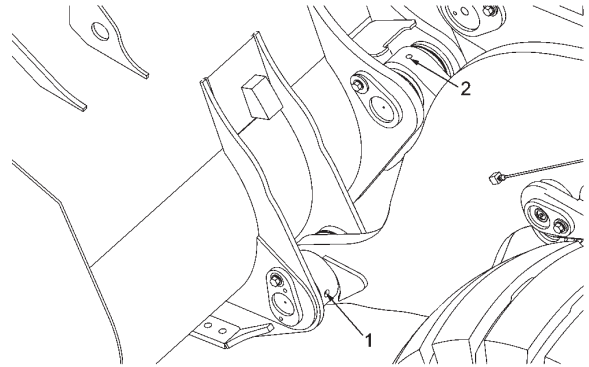
2. One point each to bucket link pins (2 and 3).
--- every 500 hours (250 hours at first time only)

3. One point to bucket cylinder pin (4).
--- every 500 hours (250 hours at first time only)

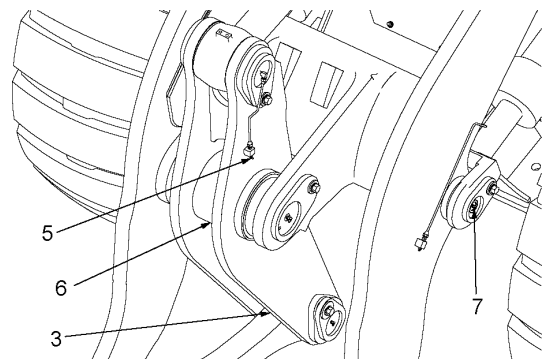
One point to bucket cylinder rod pin (5).
--- every 500 hours (250 hours at first time only)

4. One point to bell crank pin (6).
--- every 500 hours (250 hours at first time only)

5. One point each to right and left lift arm cylinder rod pins (7).
--- every 500 hours (250 hours at first time only)

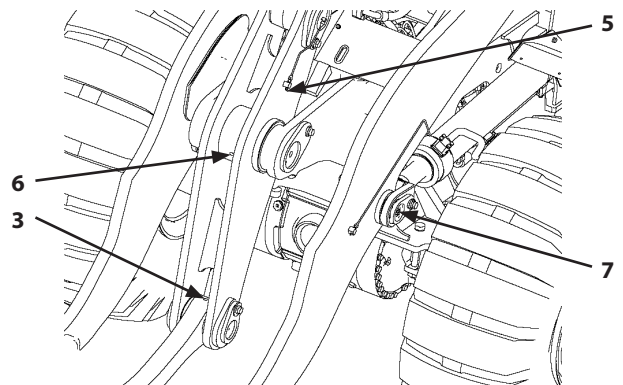


90Z7-7-20-1



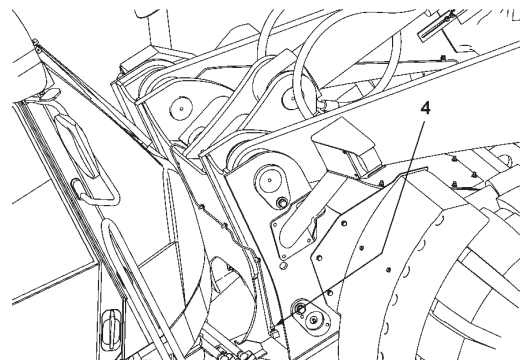
ZW310-6

90Z7-7-20-5



ZW330-6

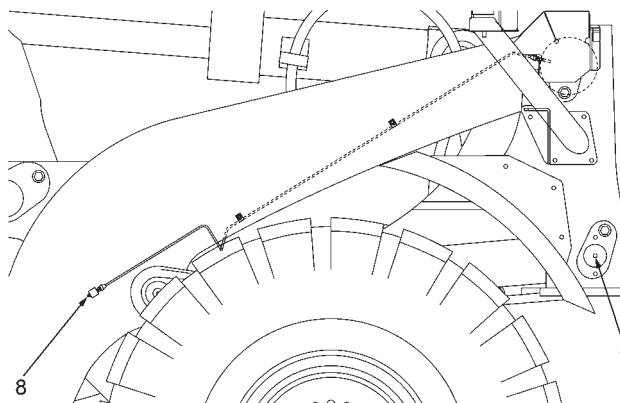
92Z7B-7-20-4



90Z7-7-20-3

MAINTENANCE

6. One point each to right and left lift arm pivot pins (8).
--- every 500 hours (250 hours at first time only)
7. One point each to right and left lift cylinder pins (9).
--- every 500 hours (250 hours at first time only)

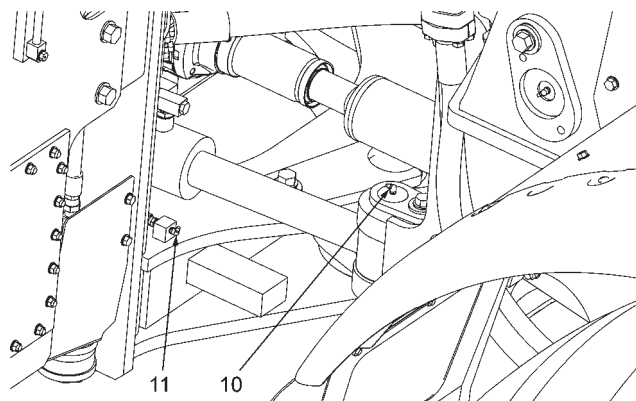


90Z7-7-21-1

8. Two points to right steering cylinder pins (10 and 11).
--- every 250 hours

Cylinder right front (10)

Cylinder right rear (11)

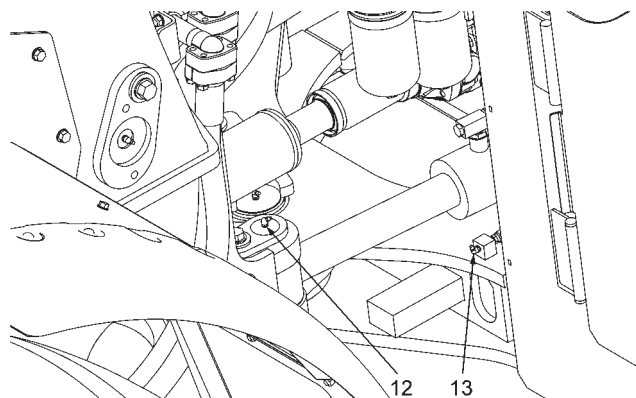


90Z7-7-21-2

9. Two points to left steering cylinder pins (12 and 13).
--- every 250 hours

Cylinder left front (12)

Cylinder left rear (13)



90Z7-7-22-1

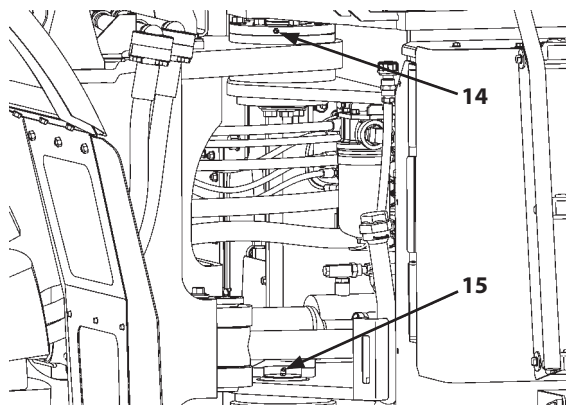
MAINTENANCE

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

--- every 250 hours

Upper (14)

Lower (15)



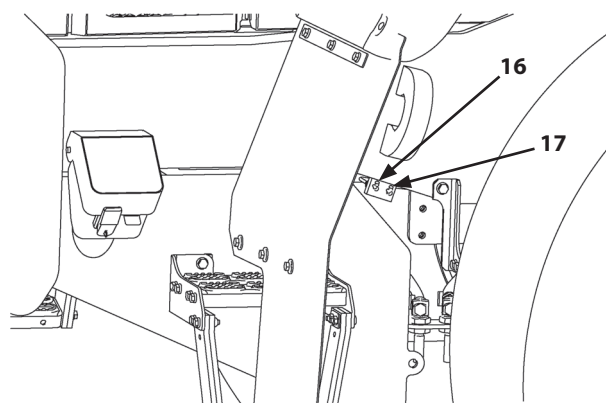
90Z7-7-22-2

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

--- every 100 hours

Front (17)

Rear (16)

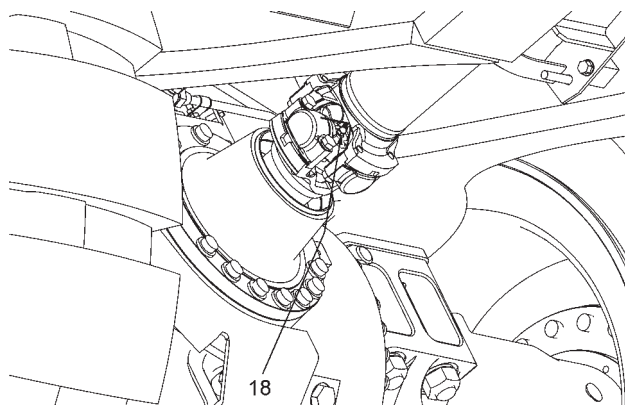


90Z7B-7-23-1

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

--- every 4000 hours

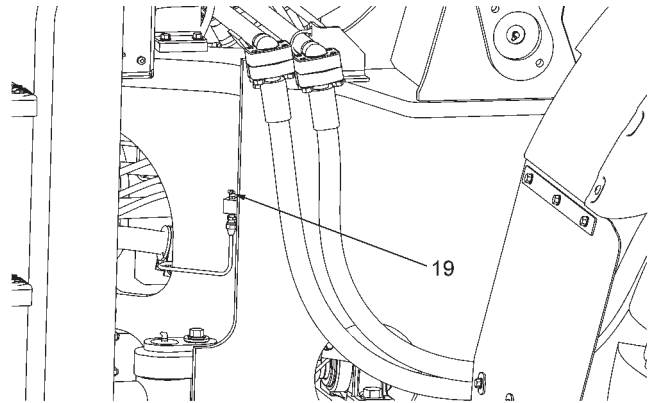
 **NOTE:** When the machine is continuously operated under severe conditions for a long time, shorten the greasing intervals.



90Z7-7-23-2

MAINTENANCE

13. One point to propeller shaft center support (19).
--- every 250 hours

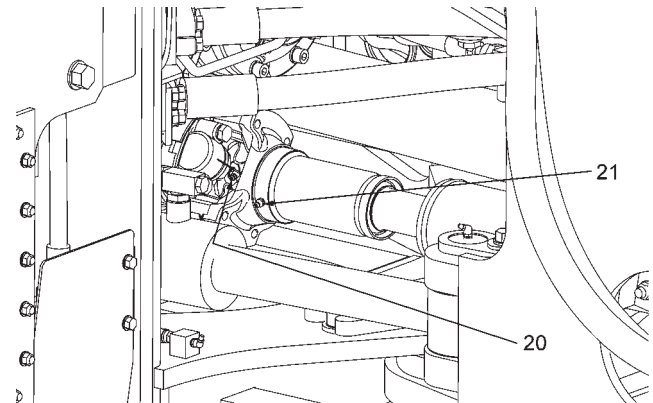


90Z7-7-24-1

14. One point to front propeller shaft universal front (20).
--- every 4000 hours

One point to front propeller shaft universal rear (22).
--- every 4000 hours

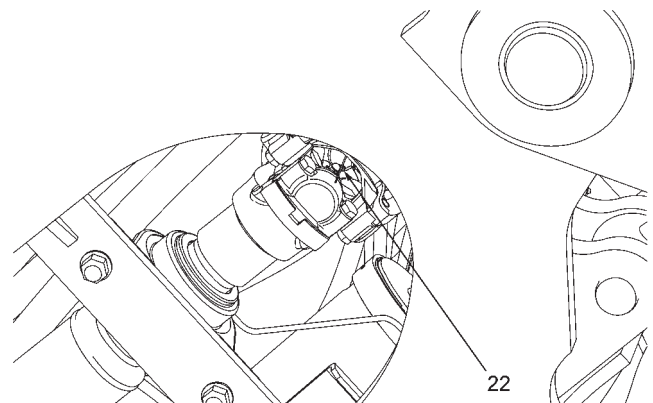
15. One point to front propeller shaft splines (21).
--- every 2000 hours



90Z7-7-24-2

 **NOTE:** When greasing spline (21), steer the machine fully to the right or left, and stop the engine. Lubricate the fitting, start the engine and slowly turn the machine from side to side 2 or 3 times after greasing to lubricate the spline enough.

IMPORTANT: When greasing with the machine positioned in straight, remove the fitting on the sleeve yoke before starting the engine.

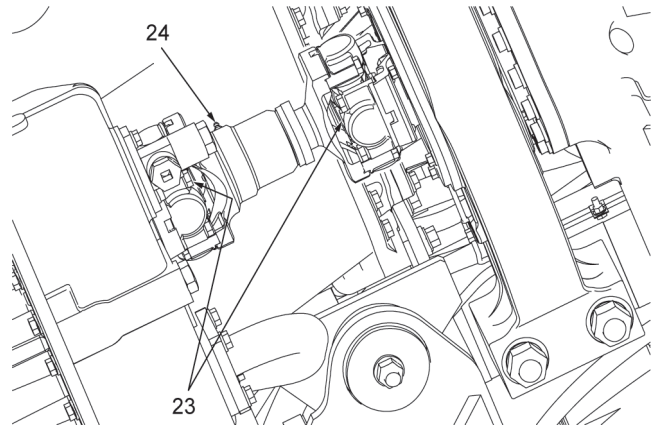


90Z7-7-24-3

MAINTENANCE

16. Two points to rear propeller shaft universal (23).
--- every 4000 hours

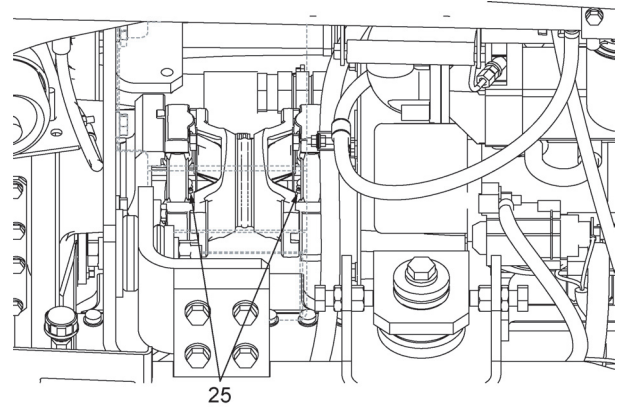
17. One point to rear propeller shaft splines (24).
--- every 2000 hours



90Z7-7-24-4

18. Two points to center propeller shaft universal (25).
--- every 4000 hours

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



90Z7B-7-24-4

MAINTENANCE

B. Engine

1

Check Engine Oil Level

--- every 10 hours (before starting the engine)

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

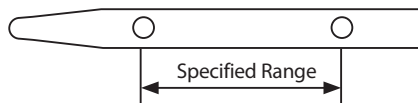
If engine oil level is too high, control the oil level to the proper quantity before starting the engine.

Check oil level before starting the engine. Pull out oil level gauge (1). Check for mixing of foreign matter or contamination in the oil. Wipe oil level gauge (1) with cloth, re-insert it into the pipe to the end, and then pull it out again. The oil level should be between the upper and lower marks on oil level gauge (1).

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

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

Recheck oil level.



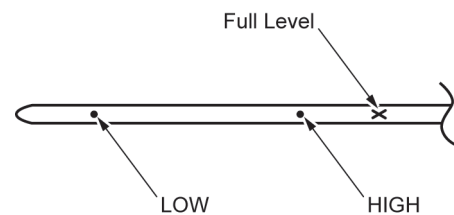
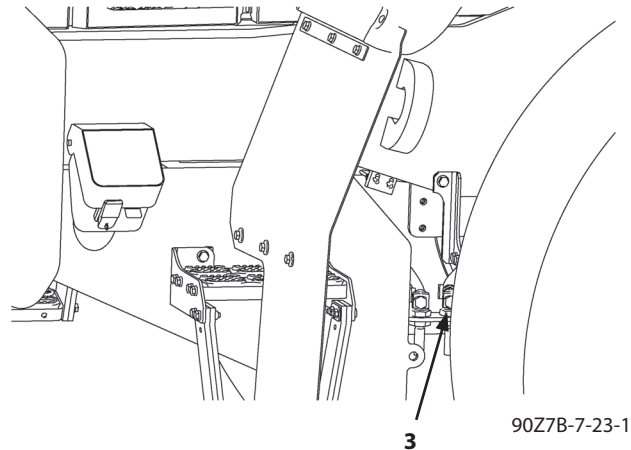
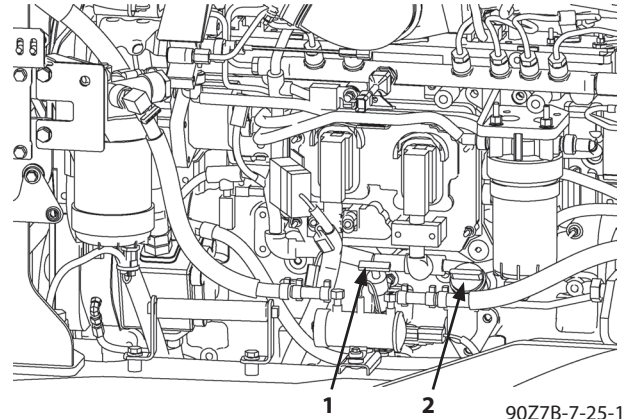
NOTE: Level the engine when adding oil or inspecting oil level.

When required to check oil level after operating the machine, first stop the engine. Wait for more than 15 minutes. Then check oil level.

(This means that the oil level will become stabilized after all oil delivered to respective lubrication area returns to the oil pan.)

If the oil color changes, severe contamination and/or mixing of foreign matter may be seen, change the oil.

WARNING: Do not spill oil while changing oil. Spilled fuel and oil, and trash, grease, debris, accumulated coal dust, and other flammable materials may cause fires.



MAINTENANCE

2 Change Engine Oil --- every 500 hours

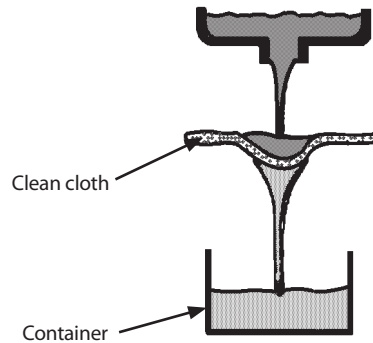
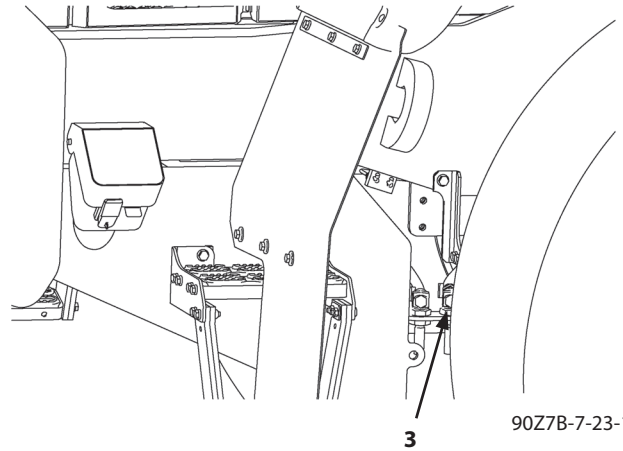
⚠ WARNING: Immediately after the machine has been operated, all engine parts are hot. Wait for the engine to cool before starting any maintenance work. Failure to do so may cause severe burns.

✎ NOTE: Improper disposal of waste oil can threaten the earth's environment and ecology.

Consult professional collection trader or authorized Hitachi dealer for disposing used oil and filters.

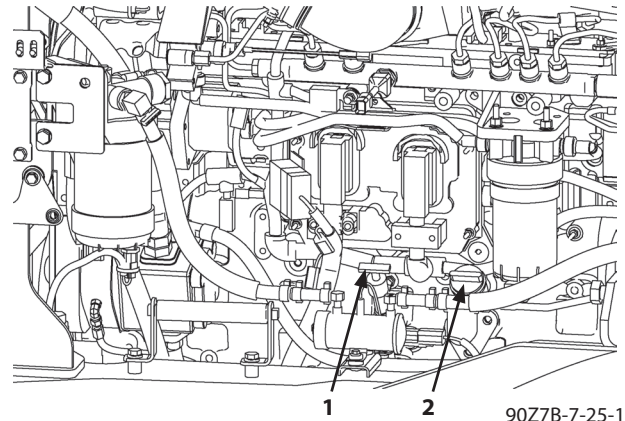
Be sure to replace the engine oil filter when changing the engine oil at the same time.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/ maintenance work.
2. Clean the areas around the drain plug and the oil filter.
3. Arrange a 30 liter- capacity container to receive the drain oil.
4. Remove drain plug (3) provided on the fuel tank side to allow oil to drain.
5. Drain oil from the oil filter cartridge.
6. Allow oil to drain through a clean cloth to check that no foreign matters such as metal pieces are included in the oil.
7. Install a new oil filter.
(Refer to the descriptions for **3** Replace Engine Oil Filter.)
8. Securely tighten drain plug (3).
Tightening torque: 80 N·m (8 kgf·m)



MAINTENANCE

9. Remove oil filler cap (2). Supply the specified amount of engine oil.
Engine Oil amount : 24 liters
10. Securely tighten oil filler cap (2).
11. Check that the oil level is between the maximum and minimum level scales on oil level gauge (1). Then, start the engine.
12. After starting the engine, check the sealing surfaces for any oil leakage.
13. Keep the engine running at low idle speed for 5 minutes and stop the engine. About 15 minutes later, recheck the oil level. If necessary, add oil.



90Z7B-7-25-1

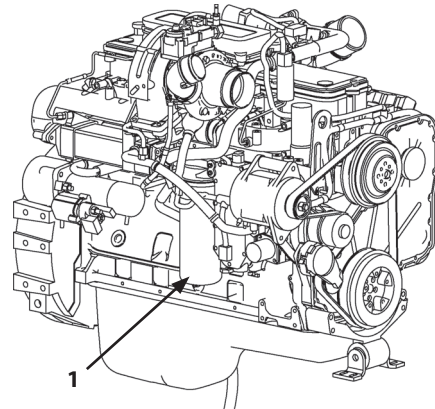
MAINTENANCE

3 Replace Engine Oil Filter

--- every 500 hours (each time when engine oil is changed)

WARNING: Immediately after the machine has been operated, all engine parts are hot. Wait for the engine to cool before starting any maintenance work. Failure to do so may cause severe burns.

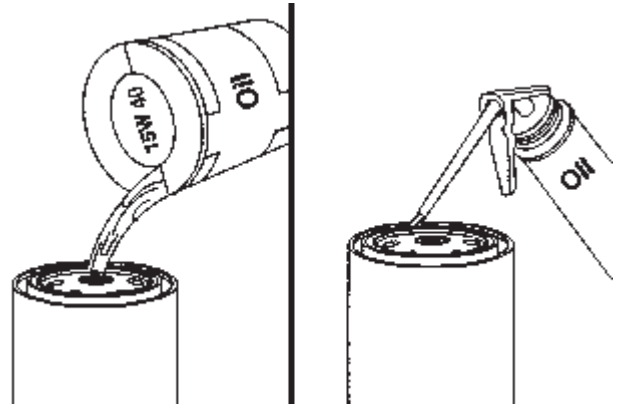
1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Clean the areas around the oil filter.
3. Before removing cartridge type element (1), loosen the drain plug to drain oil from the cartridge. The oil is drained through the drain hose. After draining the oil, tighten the drain plug.



90Z7B-7-32-1

IMPORTANT:

- Take care not to allow foreign matter such as dirt to enter the oil filter.
 - Be careful not to damage the filter body when removing or installing the filter.
 - Never reuse a cartridge type element.
4. Remove cartridge type element (1) by turning it counterclockwise with a filter wrench.
 5. Pour new oil into new element (1), being careful not to let it overflow.
 6. After coating a new cartridge gasket with engine oil, turn the cartridge clockwise until the gasket comes in contact with the sealing surface.
 7. Tighten the cartridge 3/4 turn more by hand. Take care that if the cartridge is excessively tightened, the cartridge may be deformed.



90Z7B-7-30-1

NOTE: Install the cartridge with care so that the gasket is not damaged due to twisting.

Check for any oil leakage at the filter mounting area.

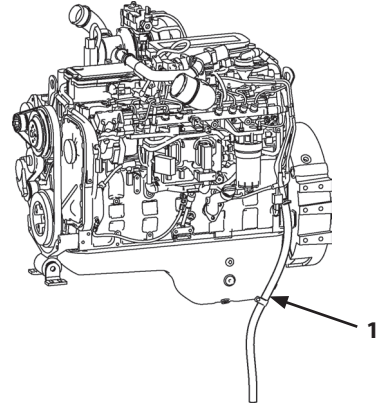
8. Supply the specified amount of engine oil.
(Refer to the descriptions for **2** Change Engine Oil.)

MAINTENANCE

4 Check Crankcase Breather Tube --- every 10 hours (daily)

⚠ WARNING: Immediately after the machine has been operated, all engine parts are hot. Wait for the engine to cool down before starting any maintenance work. Failure to do so may cause severe burns.

1. Park the machine following the same procedure as described on page 7-8 for preparation of inspection/ maintenance work.
2. Check tube (1) for sludge, debris, or ice in the tube.
3. If sludge, debris, or ice is found clean the tube with detergent and warm water or a solvent. Dry the tube with compressed air.
4. Visually check the tube for cracks or damage. If damage is found, replace the crankcase breather tube.
5. Check for any oil leakage or loose clamps at the connection with the crankcase breather tube (1).
6. Check for loose clamp securing tube (1) to the engine.



90Z7B-7-28-1

MAINTENANCE

5 Replace Crankcase Air Breather Element

--- Every 2000 hours

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

1. Park the machine following the same procedure as described on page 7-8 for preparation of inspection/maintenance work.
2. Disconnect the battery cables.
Steam clean crankcase breather cover (1) area and dry with compressed air.
3. Remove bolts (2) from crankcase air breather cover (1).

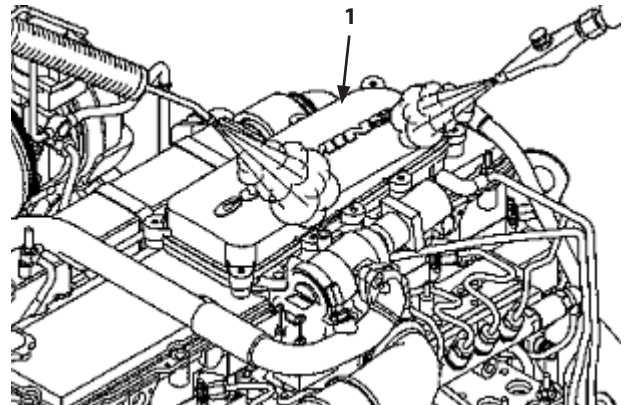
NOTE: The six bolts attaching crankcase breather base (4) to the valve cover do not need to be removed.

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

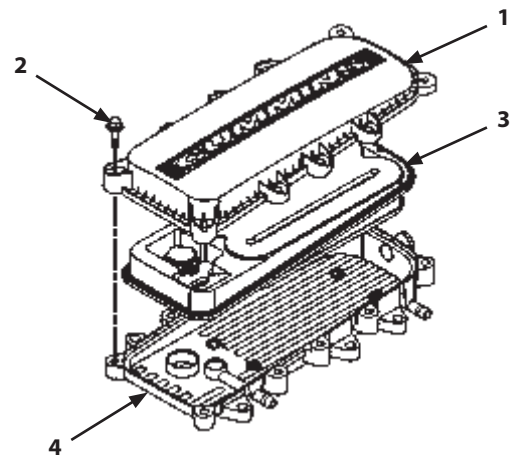
CAUTION: Be sure to wear safety glasses and gloves when using detergent for cleaning.

6. Inspect crankcase air breather cover (1) and base (4) for cracks or other damage.
Check for internal obstructions or sludge buildup.
7. Clean crankcase air breather cover (1) with hot, soapy water and a soft brush.
Rinse the cover with clean water and dry with compressed air.

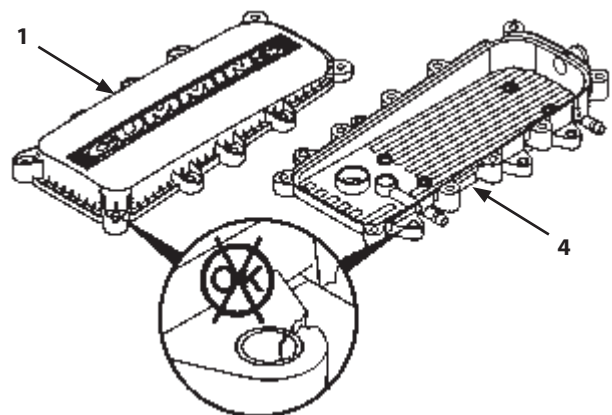
NOTE: Do not use soapy water to clean or rinse breather base (4). Clean the base with a wet rag to prevent water from entering the crankcase.



90Z7B-7-29-1



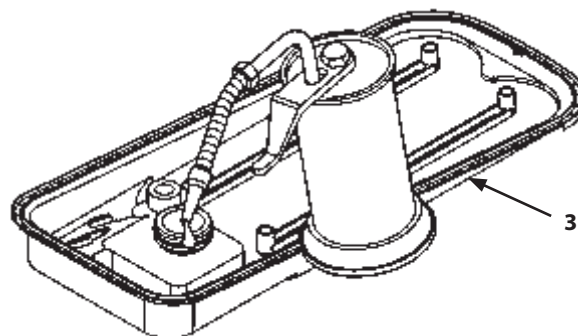
90Z7B-7-29-2



90Z7B-7-29-3

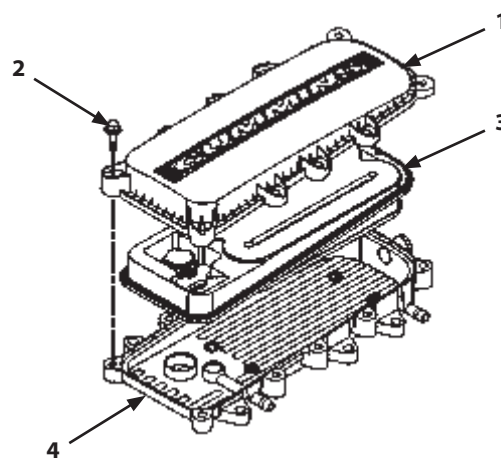
MAINTENANCE

8. Lubricate the breather element O-ring seal with clean lubricating oil.



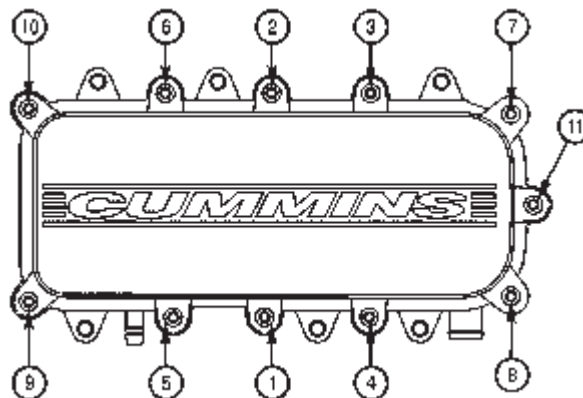
90Z7B-7-29-4

9. Install new air breather element (3) onto breather base (4).
10. Install crankcase air breather cover (1).
11. Install bolts (2) (11 used).
Tightening torque: 10 N·m (89 in·lb)



90Z7B-7-29-2

 **NOTE:** Tighten the bolts in the sequence shown.



90Z7B-7-29-5

MAINTENANCE

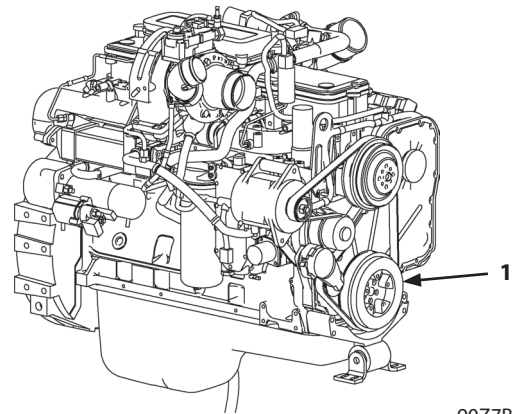
6 Check Vibration Damper

--- Every 2000 hours

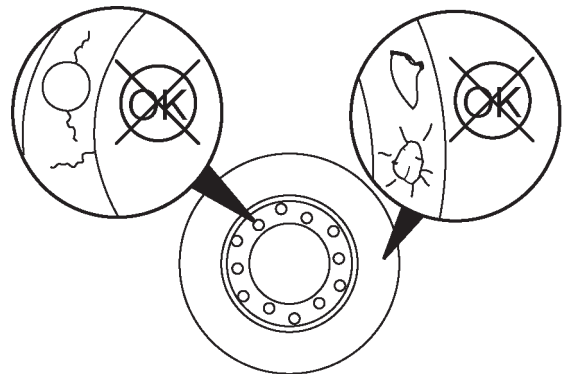
1. Park the machine following the same procedure as described on page 7-8 for preparation of inspection/maintenance work.

CAUTION: The silicone fluid in the vibration damper will become solid after extended service and will make the damper inoperative. An inoperative vibration damper can cause major engine or drivetrain failures.

2. Check vibration damper (1) on the fan end of the engine crankshaft for evidence of fluid loss, dents, and wobble.
Inspect the vibration damper thickness for any deformation or raising of the damper cover plate.
3. If any of these conditions are identified, consult your authorized dealer for check and repair.

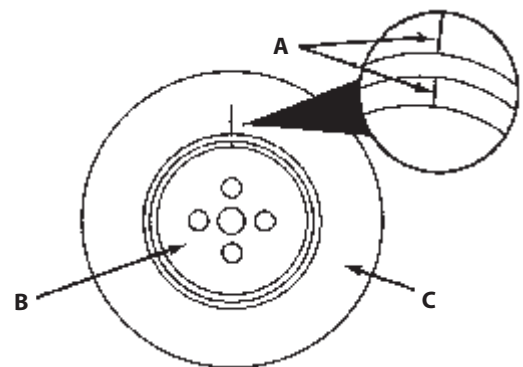


90Z7B-7-32-1



MNEC-07-117

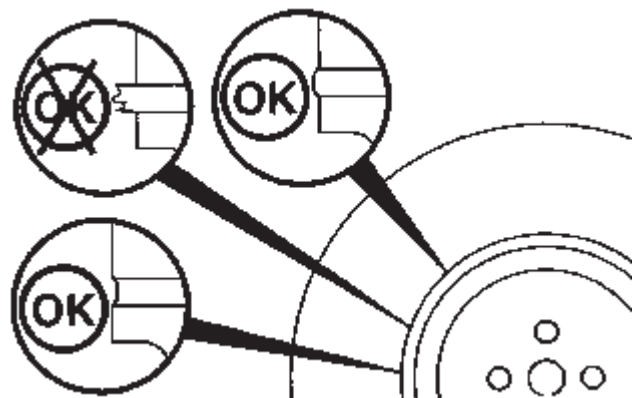
4. Check the index lines (A) on the damper hub (B) and the inertia member (C).
If the lines are more than 1.59 mm (1/16 in) out of alignment, replace the damper.
5. Inspect the vibration damper hub (B) for cracks.
Replace the damper if the hub is cracked.



90Z7B-7-32-2

6. Inspect the rubber member for deterioration.
If pieces of rubber are missing or if the elastic member is more than 3.18 mm (1/8 in) below the metal surface, replace the damper.

NOTE: Also look for forward movement of the damper ring on the hub. Replace the damper if any movement is detected.



90Z7B-7-32-3

MAINTENANCE

C. Power Train

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

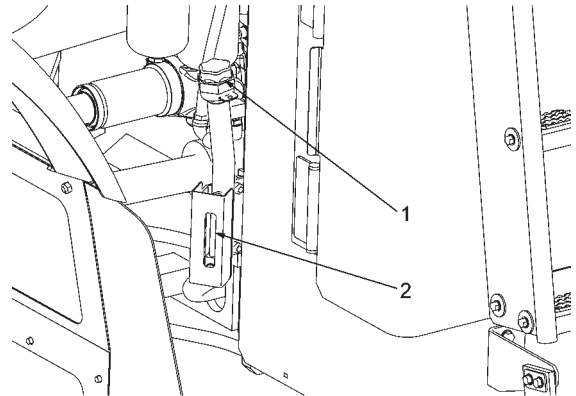
WARNING: Check the oil level while running the engine with care about the following points.

- Move forward/reverse lever to neutral and turn parking brake switch ON.
- After leveling the bucket on the ground, move the control lever lock switch to the lock (🔒) position.
- Set the articulation lock bar.

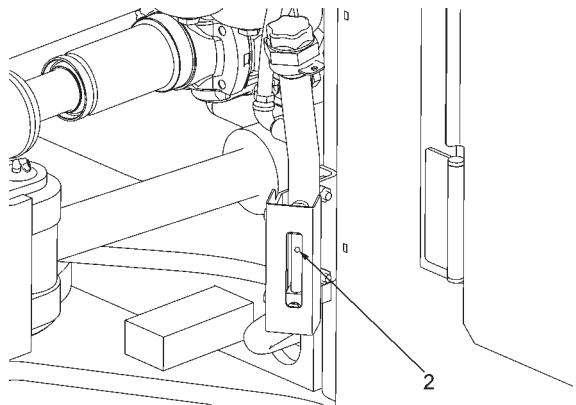
IMPORTANT:

- Do not start the engine when the transmission oil level is low. Damage to the transmission may result. Do not use transmission oils other than those listed in the "Brand Names of Recommended Transmission Oil".
- Never spray high pressure water to the cap and vicinity of the cap. Water may enter into the transmission, damage to the transmission may result.

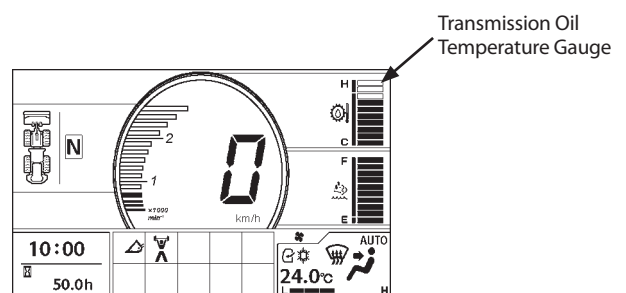
Check the oil level while the engine is at idle.
Normal oil level is at the center of oil level sight gauge (2).
If the oil level is lower than the specified, add recommended oil from filler port (1) while the engine is at idle.
Do not overfill.



90Z7-7-29-1



90Z7-7-29-2



MNEK-01-103EN

MAINTENANCE

- 2** Change Transmission Oil
--- every 1000 hours (250 hours at only first time)
- 3** Replace Transmission Oil Filter
--- every 500 hours (250 hours at only first time)
- 4** Clean Transmission Oil Suction Strainer
--- every 1000 hours

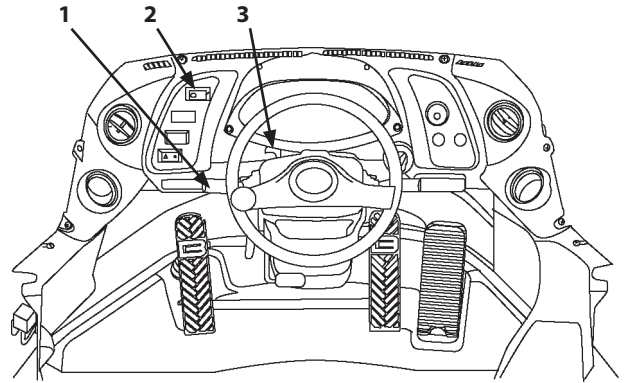
WARNING:

- Unexpected movement of the machine may cause a serious accident. When parking the machine, place F-N-R lever (1) in neutral and neutral lever lock (3) in the lock (🔒) position. Then, apply parking brake (2) and stop the engine.
- Before changing oil, install articulation lock bar (4) to securely hold the front and rear frames to avoid an accident due to unexpected machine movement. Avoid accidents due to unexpected movement of the machine.

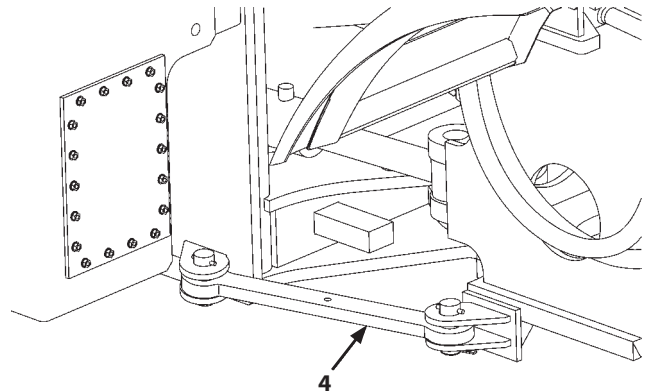
IMPORTANT: Do not use transmission oils other than those listed in the "Brand Names of Recommended Transmission Oil".

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

1. Operate the machine until the transmission oil is heated to the appropriate temperature.
2. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
3. Install articulation lock bar (4) to the front and rear of the frame by following the procedures described on page 7-10.



MNEC-01-036



90Z7-7-30

MAINTENANCE

IMPORTANT: The machine is equipped with a turbocharged engine. Perform cool down operation before stopping the engine. Failure to do so may cause the lubricant on the turbocharger bearing surfaces to desiccate due to the intense heat present inside the turbocharger, possibly causing damage to the turbocharger.

4. Turn the key switch OFF to stop the engine. Leave the machine untouched for 10 minutes.
5. Prepare a container of more than 60 L capacity to receive the drain oil.

 **NOTE:** Drain plug (12) is magnetized. If excessive amount of metal pieces are found adhered to drain plug (12), contact your authorized dealer.

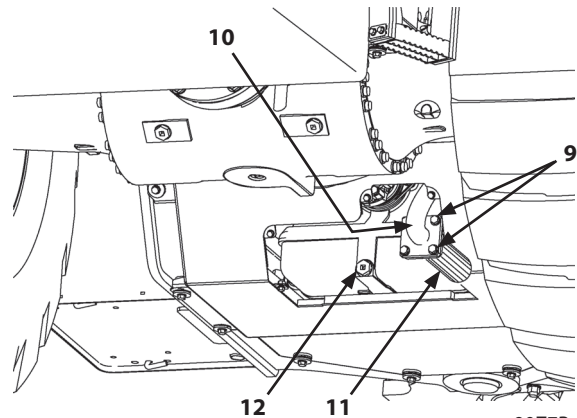
6. Remove drain plug (12) from the transmission bottom to drain the oil. Dispose of the drain oil in the proper way.
7. Securely tighten drain plug (12).

 **NOTE:** Do not apply sealant to drain plug (12).

Wrench size: 36 mm (1.42 in)

Tightening torque: 140 N·m (14.3 kgf·m, 103 lbf·ft)

8. Remove bolts (9) (4 used) and disconnect suction tube (10).
9. Take out and clean strainer (11) in clean oil. Replace strainer (11) if any abnormality is observed.
10. Install strainer (11) with a new gasket correctly. Install suction tube (10) with bolts (9) (4 used).
Tightening torque: 90 N·m (9.18 kgf·m, 66 lbf·ft)



90Z7B-7-35-1

MAINTENANCE

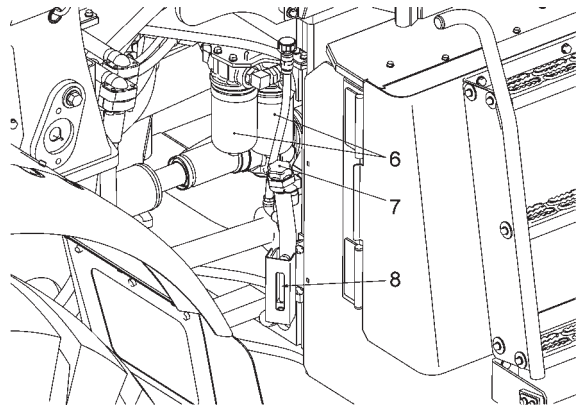
11. Using a filter wrench, turn cartridge filter (6) counterclockwise to remove it.
12. Clean the filter-seating surface. After coating the new cartridge filter gasket surface with new oil, lightly turn the cartridge filter clockwise by hand until the cartridge filter sealing surface comes in contact with the filter-seating surface.
13. At this time, further tighten the cartridge filter 3/4 turns using a filter wrench. Take care not to excessively tighten the cartridge filter. Be careful not to damage filter cartridge by overtightening.

Tightening torque: 25 ± 5 N·m (2.5 ± 0.5 kgf·m)

14. Refill the specified amount of oil through transmission oil filler port (7).

Oil capacity : 51 liters
Amount of oil change : 40 liters

15. Start the engine and keep it running for two minutes.
16. Check that the oil level is within the specified range in oil level gauge (8). If necessary, add oil.



90Z7-7-32

 **NOTE:** Never reuse cartridge type element (6).

Install the cartridge with care so that the O-ring is not damaged due to twisting.

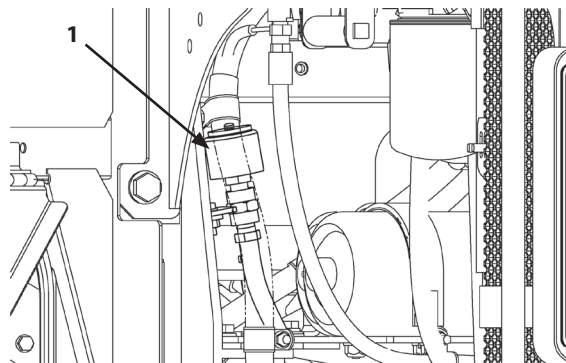
Check for any oil leakage at the drain plug and the filter mounting area.

MAINTENANCE

5 Torque Converter Air Breather --- every 1000 hours

1. Open the machine left side cover. The air breather is located near the accumulator.
2. Clean the vicinity around air breather (1).
3. Put a cover on the air breather port to prevent foreign matter from entering.

⚠ WARNING: Be sure to wear safety glasses when cleaning the air breather with compressed air.



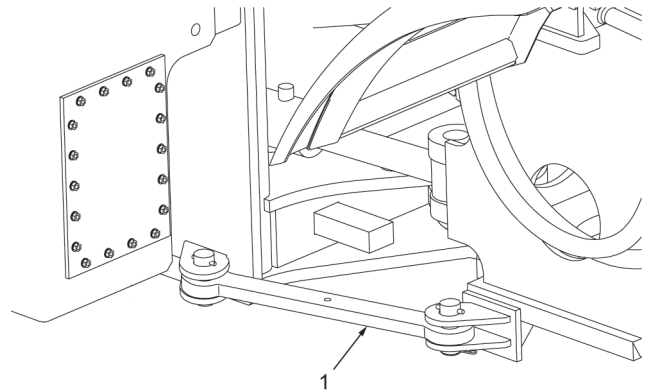
90Z7B-7-37-1

4. Clean the air breather using compressed air.
If completely contaminated, wash the air breather with a cleaning solvent, blow it dry and reinstall it.
5. Take care not to allow foreign matter to enter when reinstalling the air breather.

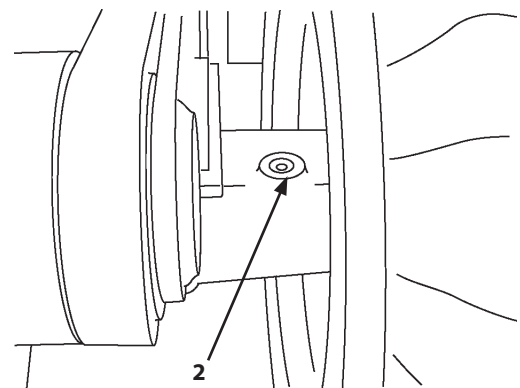
MAINTENANCE

6 Check Axle Oil Level --- every 250 hours

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation lock bar (1) to the front and rear of the chassis by following the procedures described on page 7-10.
3. Clean the vicinity of oil level plug (2).
4. Remove oil level plug (2). Clean the tip of dipstick (3) connected to oil level plug (2) with a clean cloth.
5. Make the plug lower surface contact to the axle seat face. Oil level must be between marks H and L (4) on the dipstick (3). If necessary, add oil.

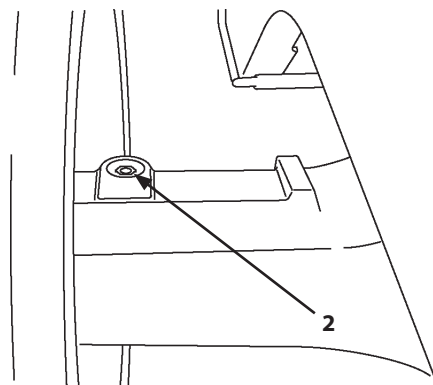


MNFA-07-001



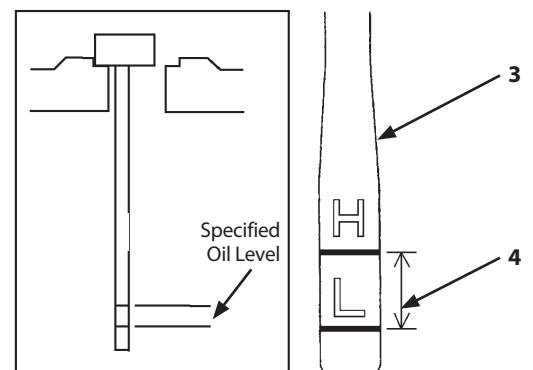
Front Axle

M4GB-07-037



Rear Axle

M4GB-07-038



M4GB-07-039

MAINTENANCE

7 Change Axle Oil --- every 2000 hours

WARNING: Take care about the following points.

- Starting repair work immediately after operation may cause burns. Wait for the oil to cool before starting any maintenance work.
- Lock the front and rear frames with the articulation lock bar.

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

Change Axle Oil

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Clean the areas around the drain plug and the oil filter.
4. Arrange a container of 60 liters capacity to receive the drain oil.
5. Remove drain plug (1) to drain the oil.
6. Securely tighten drain plug (1).
7. Refill the specified amount of oil through oil level plug (2) hole.

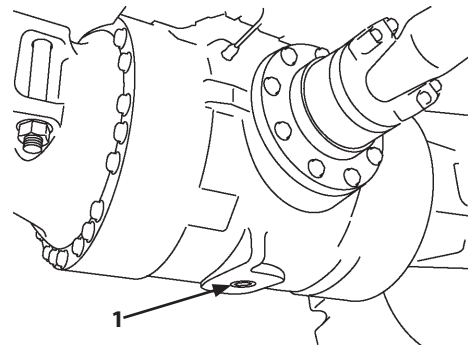
Oil amount

	Front Axle	Rear Axle
ZW310-6	48 liters	48 liters
ZW330-6	60 liters	60 liters

IMPORTANT: It takes time for oil to fully lubricate the overall front axle.

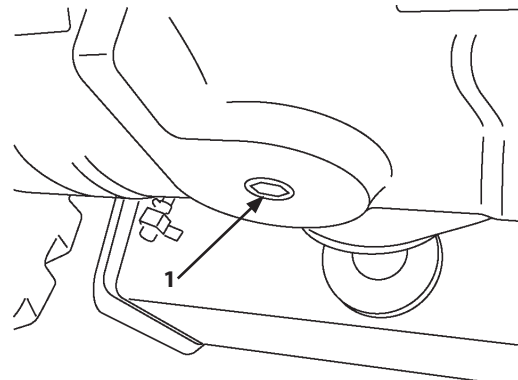
After installing the plug, allow the machine to drive for several minutes. Then, stop the engine and check the axle for any oil leaks.

8. Check the oil level. (Refer to descriptions for **6** check Axle Oil Level)



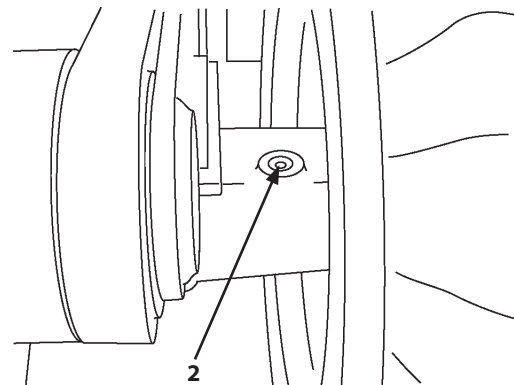
Front Axle

M4GB-07-035



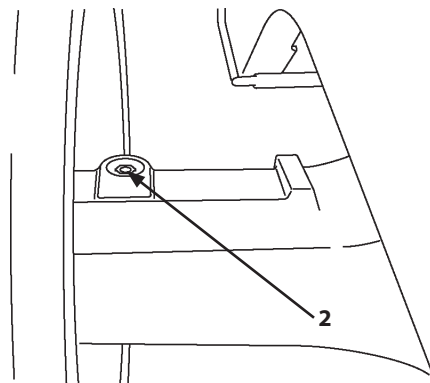
Rear Axle

M4GB-07-036



Front Axle

M4GB-07-037



Rear Axle

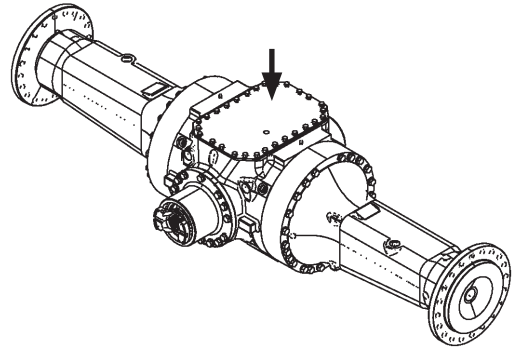
M4GB-07-038

MAINTENANCE

8 Check Surroundings Around Axle and Covers for Oil Leaks

--- every 1000 hours

Check the surroundings around the axle and covers for oil leaks. If any oil leaks are found, check the bolts in the oil leaking area for looseness. Retighten as needed.



M4GB-07-159

9 Clean Axle Housing Air Breather

--- every 500 hours

Front Axle Breather (1)

Rear Axle Breather (2)

1. Clean the vicinity around the air breather before removing the air breather.

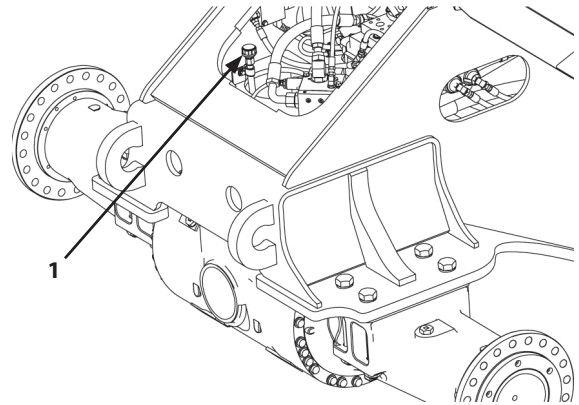
Open the machine front cover. Front axle air breather (1) is located at the right side.

Open the machine side cover. Rear axle air breather (2) is located at the left side.

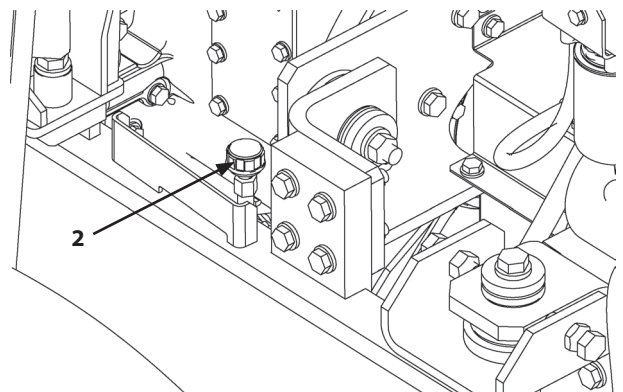
2. Put a cover on the air breather port to prevent foreign matter from entering.

CAUTION: Be sure to wear safety glasses when cleaning the air breather with compressed air.

3. Clean the air breather using compressed air. If completely contaminated, wash the air breather with a cleaning solvent and reinstall it.
4. Take care not to allow foreign matter to enter into the axle housing when reinstalling the air breather.



90Z7-7-36-1



90Z7B-7-43-3

MAINTENANCE

D. Hydraulic System

Inspection and Maintenance of Hydraulic Equipment

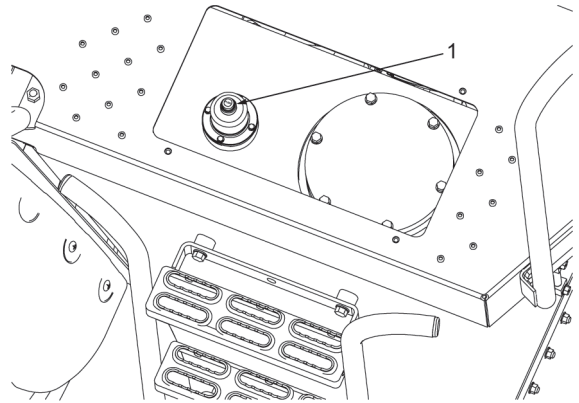
CAUTION: When checking and/or servicing the hydraulic components, pay special attention to the following points.

During operation, the parts of the hydraulic system become very hot. Allow the machine to cool down before beginning inspection or maintenance.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Begin servicing hydraulic components only after components, hydraulic oil and lubricants are completely cooled, and after releasing residual pressure.
 - 2.1 Release internal pressure.
 - 2.2 Be sure to relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (1).
 - 2.3 Allow the machine to cool down. Note that servicing heated and pressurized hydraulic components may cause hot parts and/or oil to fly off or escape suddenly, possibly resulting in personal injury.

Keep body parts and face away from plugs or screws when removing them. Hydraulic components may be pressurized even when cooled.

Never attempt to service or inspect the hydraulic circuits on slopes. They are highly pressurized due to self-weight.



90Z7-7-37

MAINTENANCE

IMPORTANT:

- When connecting hydraulic hoses and pipes, take special care to keep seal surfaces free from dirt and to avoid damaging them. Keep these precautions in mind.
- Wash hoses, pipes, and the tank interior with a washing liquid and thoroughly wipe off before reconnecting them.
- Only use O-rings that are free of damage or defects. Be careful not to damage them during reassembly.
- Do not allow high pressure hoses to twist when connecting them. The life of twisted hoses will be shortened considerably.
- Carefully tighten low pressure hose clamps. Do not overtighten them.
- When adding hydraulic oil, always use the same brand of oil; do not mix brands of oil. As the machine is filled with Hitachi Genuine Hydraulic Oil 5000 when it is shipped from the factory, use it as a general rule. When selecting to use another brand of oil listed in the table "Brand names of recommended hydraulic oil", be sure to completely replace the oil in the system.
- Do not use hydraulic oils other than those listed in the table "Brand names of recommended hydraulic oil".
- Never run the engine without oil in the hydraulic oil tank.

MAINTENANCE

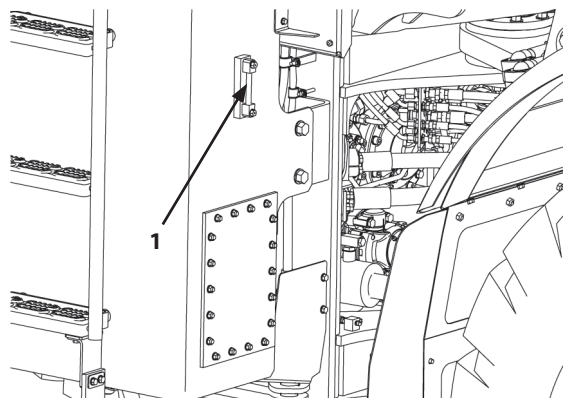
1 Check Hydraulic Oil Level --- every 10 hours (daily)

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

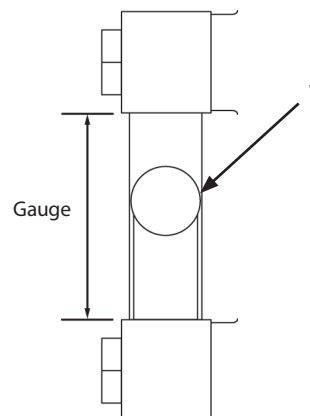
If the oil level is higher than the level gauge, drain oil down to the appropriate level using a pump.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Check oil level with level gauge on hydraulic oil tank. Float (1) must be between marks on the gauge. If necessary, add oil.

 **NOTE:** During cold weather season, check the oil level after warming up the hydraulic oil by referring to the instructions described in the "Warm up operation" group.



90Z7-7-39



90M4GB-07-160

MAINTENANCE

2 Change Hydraulic Oil/Clean Hydraulic Oil Tank --- every 4000 hours

Changing and cleaning procedure

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

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

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation lock bar (1) to the front and rear of the frame by following the procedures described on page 7-10.
3. Before changing the hydraulic oil, be sure to relieve the air pressure from the hydraulic oil tank (4) by pressing air bleed valve (2).

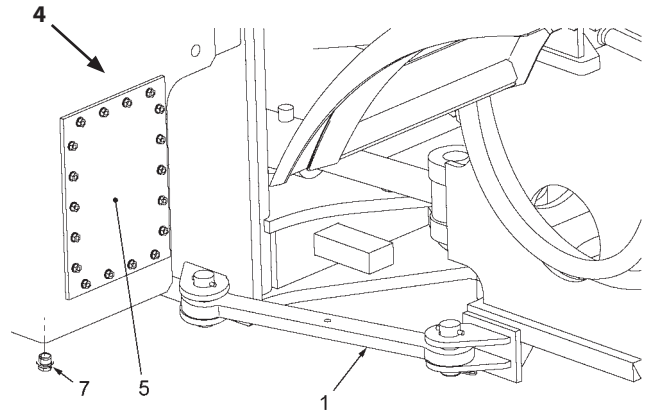
IMPORTANT: When changing hydraulic oil, take care not to permit foreign matter such as dirt, water, and /or sand to enter into the hydraulic oil tank.

4. Remove air bleed valve (2).

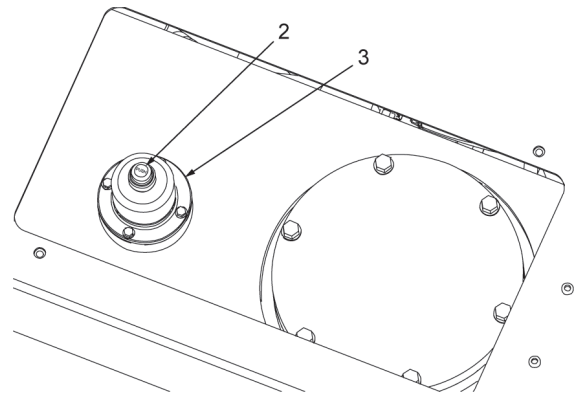
Arrange a container of approx. 200 liters.

Remove hydraulic oil using an oil supply pump. Remove drain plug (7) to drain hydraulic oil.

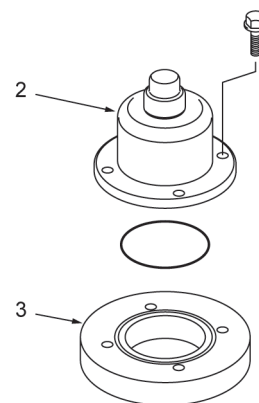
5. Remove cleaning cover (5) on the side of hydraulic oil tank (4). Clean the tank bottom with cleaning oil. Install the cover and a new gasket to the original position after cleaning.
6. Install drain plug (7).



MNFB-07-003



90Z7-7-40-2



T4A breather valve2

MAINTENANCE

7. Supply hydraulic oil through cover (3) hole on the top of the hydraulic oil tank while checking the oil level at level gauge (6).

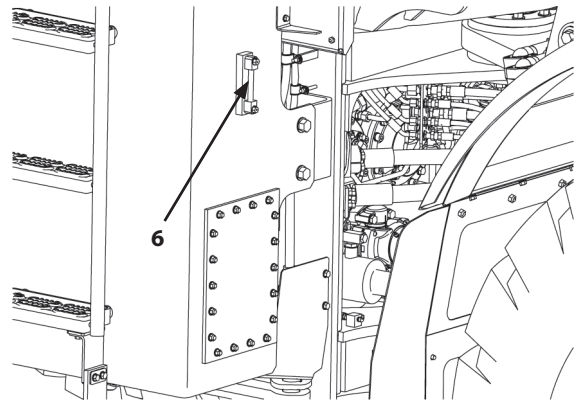
Oil capacity : 200 liters

Amount of oil change : 137 liters

8. Install air bleed valve (2) with bolts (4 used).

Tightening torque: 50 N·m (5.0 kgf·m)

IMPORTANT: When changing hydraulic oil, take care not to permit foreign matter such as dirt, water, and/or sand to enter into the hydraulic oil tank.



90Z7-7-41

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

Bleed Air from the Hydraulic System.

After changing hydraulic oil or replacing the return filter, pilot filter and/or suction filter, bleed air from the hydraulic system following the procedures below.

Bleed Air from the Hydraulic Circuit.

1. After supplying oil, start the engine. Do not exceed 1000 min⁻¹. Move the bucket and lift arm cylinders several times to bleed air mixed in the hydraulic circuit. Do not operate the cylinders to stroke end.
2. Rest the bucket on the ground to resume the hydraulic oil level check position.
3. Stop the engine. Check the oil level. Add oil as needed.

MAINTENANCE

3 Clean Suction Filter

--- each time the hydraulic oil is changed.

A suction filter is located on the bottom of the hydraulic oil tank.

Clean the suction filter when changing hydraulic oil.

1. After draining hydraulic oil, remove cover (1) with gasket. Remove lock nut (2) and washer (3).

2. Remove suction filter (4) from the oil pipe.

When removing the suction filter, take care not to allow trapped dust to fall into the tank.

Wrench size: 17 mm

3. Clean the suction filter and the hydraulic oil tank inside with cleaning oil.

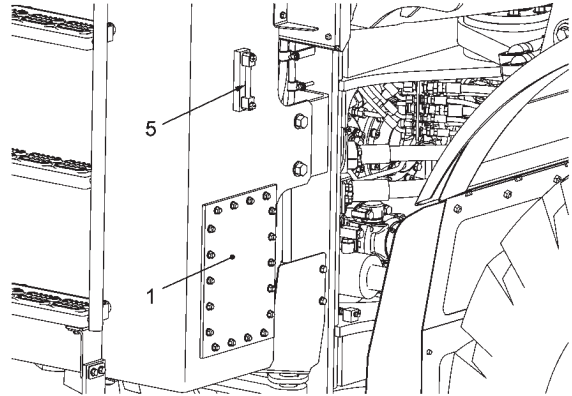
4. Install cleaned suction filter (4) to the oil pipe, and tighten lock nut (2) with washer (3).

Tightening torque: 38 N·m (3.8 kgf·m)

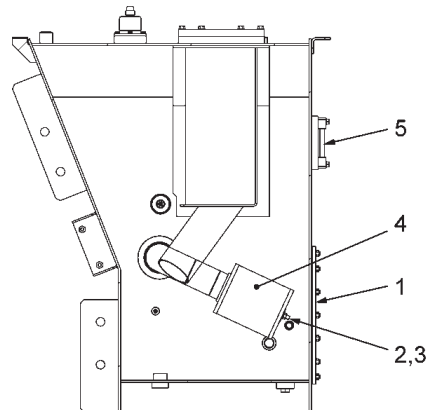
5. Install cover (1) and a new gasket with nuts.

 **NOTE:** Make sure to replace the cover gasket with new one.

6. Fill the tank to level with the specified volume of oil through the oil filling port. Check the oil level at the oil sight gauge.
7. Start the engine. While slowly raising or lowering the arm and tilting the bucket forward and backward, check for any abnormality. Stop the engine. Check the oil level using level gauge (5).



90Z7-7-42-1



90Z7-02522-04851

MAINTENANCE

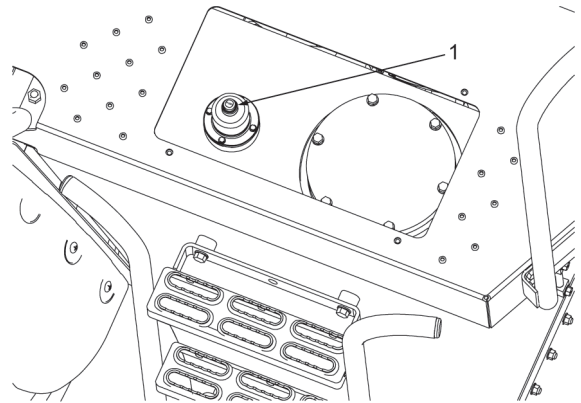
4 Clean Pilot Oil Filter (Brake Circuit)

--- every 2000 hours

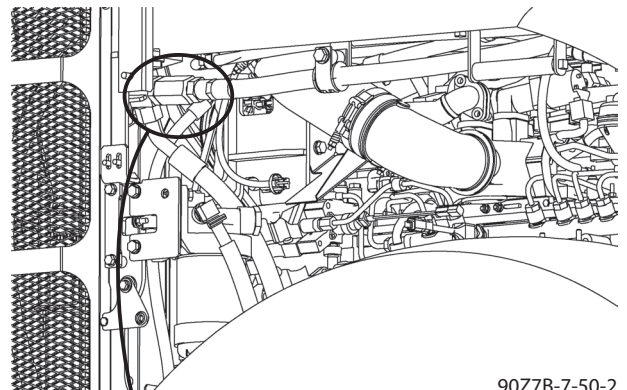
Replace

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

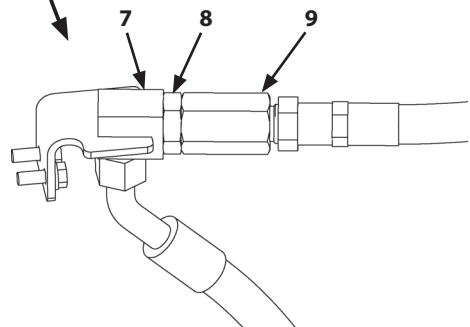
1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
 2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
 3. Before replacing the filter element, be sure to relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (1).
4. Place a suitable container under the filter.
 5. Disconnect hoses and remove adapter (7). Remove adapter (9) including washer (10) and filter (11) inside.



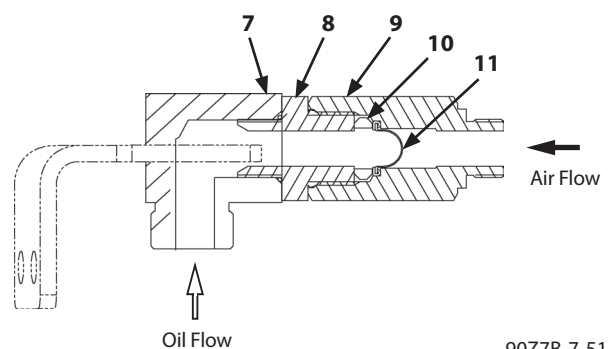
90Z7-7-37



90Z7B-7-50-2



90Z7B-7-50-3



90Z7B-7-51-1

MAINTENANCE

CAUTION: Wear goggles or safety glasses when using compressed air [less than 0.2 MPa (2 kgf/cm²)].

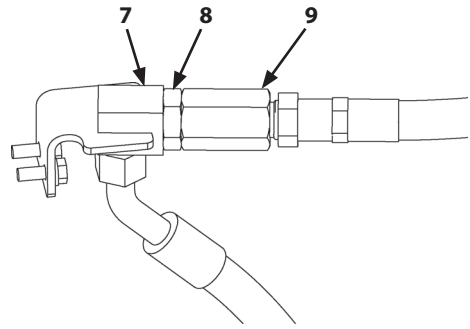
6. Remove adapter (8) from adapter (9) and clean filter (11) by blowing compressed air or cleaning solution from the oil flow outlet side.
7. Install the cleaned filter with washer (10) and adapters (7, 8, 9).

NOTE: If washer (10) and filter (11) are removed, carefully install the washer evenly in adapter (9), otherwise, adapter (8) cannot be fully tightened, causing leakage.

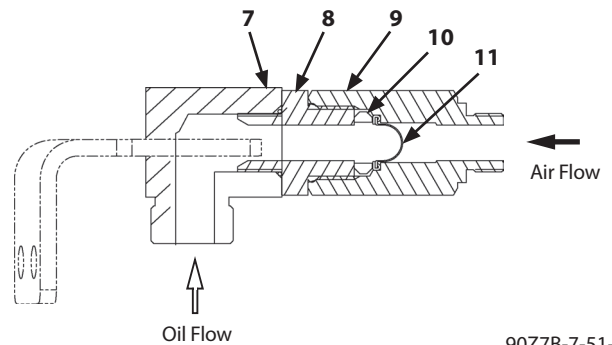
8. After cleaning the filter, bleed air from the hydraulic pump and check the oil level in the hydraulic oil tank.
(Refer to the descriptions for "Bleed air from the hydraulic system" in item **2**.)

If the machine is operated without bleeding the air mixed in the hydraulic circuit, damage to the hydraulic pump may result.

NOTE: Clean the element at the regular intervals to maintain clean hydraulic oil and extend the service life of the hydraulic components.



90Z7B-7-50-3



90Z7B-7-51-1

MAINTENANCE

5 Clean Pilot Oil Filter (Steering Circuit)

--- every 2000 hours

Replace

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

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Before replacing the filter element, be sure to relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (1).
4. Place a suitable container under reducing valve (2).
5. Remove plug (4) with O-ring (5).

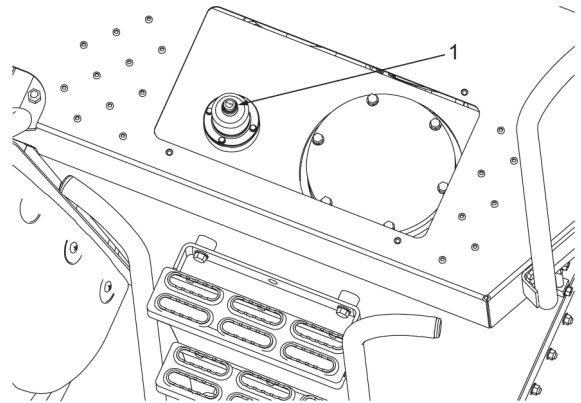
CAUTION: Wear goggles or safety glasses when using compressed air [less than 0.2 MPa (2 kgf/cm²)].

6. Remove filter element (3) from reducing valve (2) and clean it by applying air or cleaning solution from the oil flow outlet side.
7. Install filter element (3), O-ring (5) and tighten plug (4).
8. After cleaning the filter, bleed air from the hydraulic pump and check the oil level in the hydraulic oil tank.

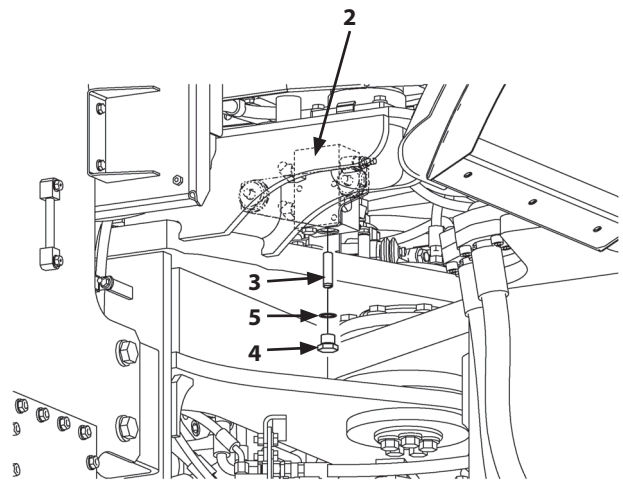
(Refer to the descriptions for "Bleed air from the hydraulic system" in item **2**.)

If the machine is operated without bleeding the air mixed in the hydraulic circuit, damage to the hydraulic pump may result.

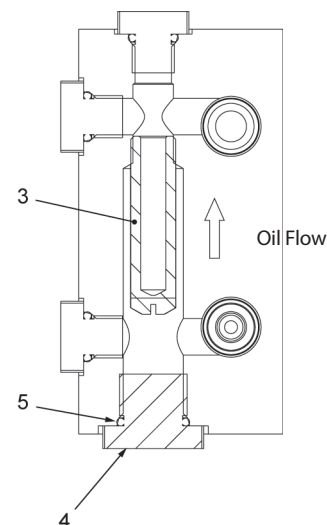
NOTE: Clean the element at the regular intervals to maintain clean hydraulic oil and extend the service life of the hydraulic components.



90Z7-7-37



90Z7B-7-51-2



90Z7-38511-31770

MAINTENANCE

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

Replace

WARNING: Hydraulic oil becomes hot and pressurized during operation.

Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.

Especially when removing the filter, be aware that the remaining oil in the filter may spill. Use extra care.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Clean the vicinity around cover plate (1).
4. Arrange a container and workshop towels to receive the spilled oil and the element. Relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (8).
5. Loosen bolts (2) (6 used) to remove cover (1) and O-ring (3).

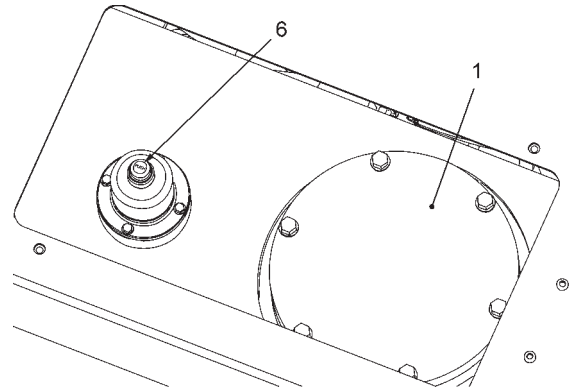
When removing cover (1), slowly remove the cover while pressing the cover downward so that spring (4) does not fly off.

6. Remove spring (4), valve (5) and element (6).
7. Replace element (6) and O-ring (3) with new ones. Install new element and O-ring in the hydraulic oil tank.

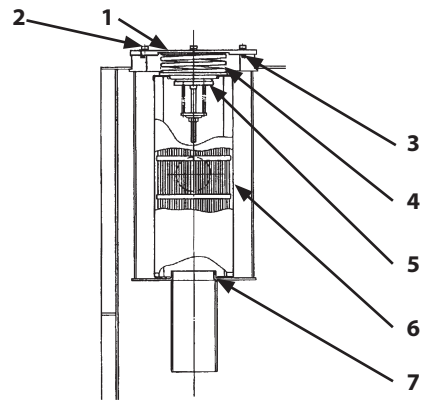
Before installing element (6), make sure that rubber (7) is present.

8. Install cover (1) with bolts (2) (6 used).

Tightening torque: 50 N·m (5.0 kgf·m)



90Z7-7-44-1



M4GB-07-052

MAINTENANCE

9. After replacing the filter, bleed air from the hydraulic pump and check the oil level in the hydraulic oil tank.

(Refer to the descriptions for "Bleed air from the hydraulic system" in item **2**.)

If the machine is operated without bleeding the air mixed in the hydraulic circuit, damage to the hydraulic pump may result.



NOTE: Replace the element at the regular intervals to maintain clean hydraulic oil and extend the service life of the hydraulic components.

MAINTENANCE

7 Replace Air Breather Element

--- every 2000 hours

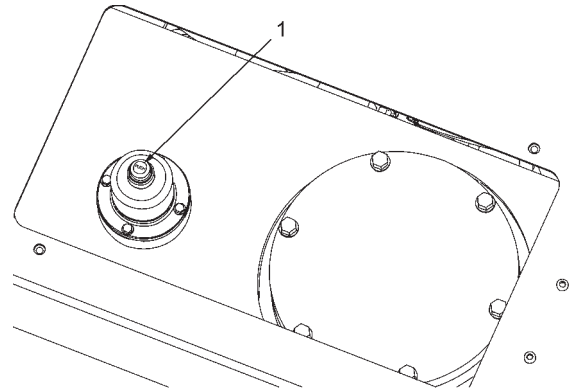
WARNING: Hydraulic oil becomes hot and pressurized during operation.

Severe burns may result if skin comes in contact with escaping hydraulic oil immediately after operation. Wait for the oil to cool before starting any maintenance work.

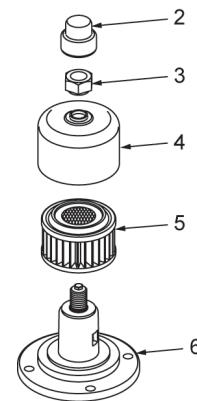
Replace

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
 2. Before replacing the filter element, be sure to relieve the air pressure from the hydraulic oil tank by pressing air bleed valve (1).
 3. Remove cap (2) and remove nut (3) by rotating it counterclockwise.
 4. Rotate cover (3) counterclockwise and remove it. Remove element (4).
 5. Install new element (4). Tighten cover (3) clockwise. After cover (3) come in contact with the inside element, tighten the cover by 1/4 turn further.
 6. Install nut (3) and cap (2).
- Tightening torque: 8 to 10 N·m (0.8 to 1.0 kgf·m)
7. Take care not to allow water or dust to enter the clearance (air discharge port) between cover (3) and body (5).

NOTE: Replace the element at the recommended regular intervals to keep the hydraulic oil clean and to extend the service life of the hydraulic components.



90Z7-7-46-1



T4A breather valve

MAINTENANCE

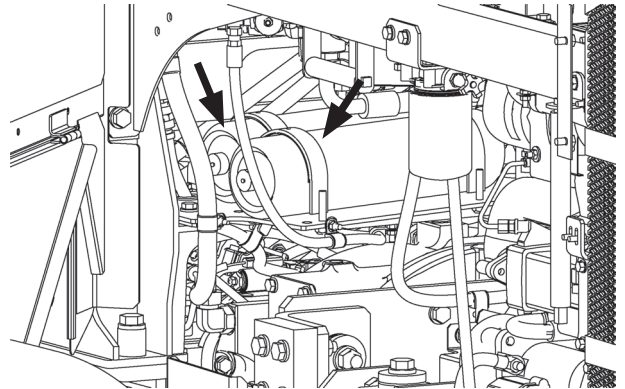
8 Check Pilot Circuit Accumulator Function, Gas Leakage, Looseness, and Damage

--- every 2000 hours

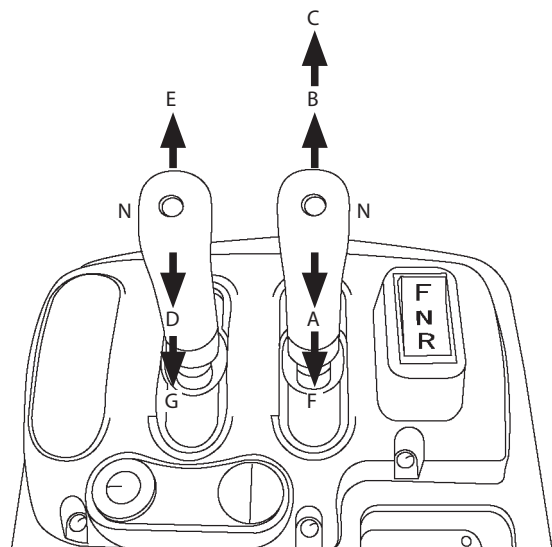
WARNING:

- Allow only qualified personnel to handle the accumulator.
- High-pressure nitrogen gas is enclosed in the accumulator. Caution is required to prevent fires from occurring.
- Never strike the accumulator. Keep the accumulator away from sparks and/or flames.
- Do not directly heat the accumulator. Do not weld the accumulator housing.
- Be sure to release pressure before starting to work on the pipe lines.

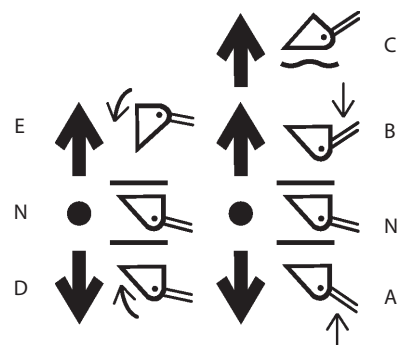
1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Raise the lift arm at the maximum height, and then set the lift arm control lever in the Neutral (N) position.
3. Turn the key switch OFF to stop the engine.
4. Turn the key switch ON but do not start the engine.
5. Confirm the safety around the machine.
6. Place the lift arm control lever to FLOAT position (C) and lower the bucket 1 m off the ground within 2 minutes after stopping the engine.
7. Place the lift arm control lever to the LOWER position (B) and lower the bucket on the ground.
8. Ensure the lift arm does not stop halfway. If the lift arm stops halfway, the accumulator function may be deteriorated. Consult your authorized Hitachi dealer for check and repair.



90Z7B-7-54-1



MNEC-03-003



M4GB-01-072

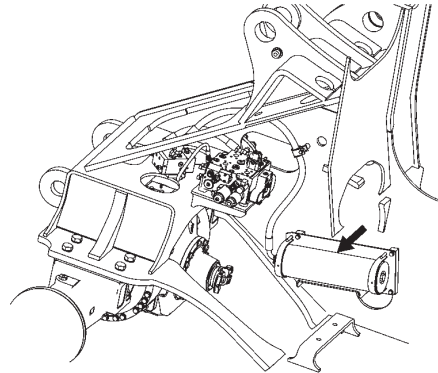
MAINTENANCE

9 Check Ride Control Accumulator Function, Gas Leakage, Looseness, and Damage

--- every 500 hours

WARNING:

- Allow only qualified personnel to handle the accumulator.
- High-pressure nitrogen gas is enclosed in the accumulator. Caution is required to prevent fires from occurring.
- Never strike the accumulator. Keep the accumulator away from sparks and/or flames.
- Do not directly heat the accumulator. Do not weld the accumulator housing.
- Be sure to release pressure before starting to work on the pipe lines.



90Z7-7-48

Let the machine travel with the ride control switch turned AUTO and OFF to compare the machine's vertical vibration during travel. Travel the machine at a speed faster than "Ride Control Drive Speed Setting" displayed on the multi-monitor. If the machine's vertical vibration is not dampened when letting the machine travel with the ride control function activated, the accumulator may be faulty. Consult your authorized Hitachi dealer for check and repair.

10 Check Gas Pressure in Ride Control Accumulator

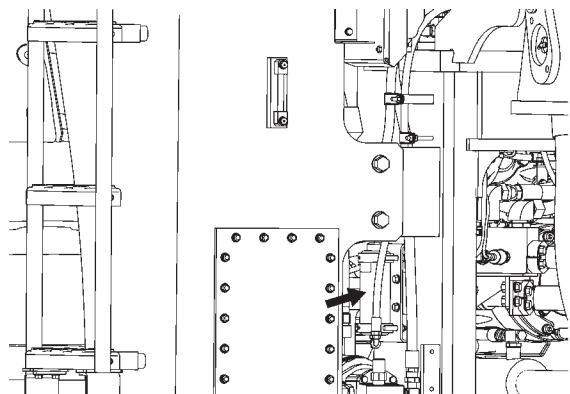
--- every 2000 hours

Check the gas pressure at a regular interval. Ask your authorized Hitachi dealer for checking.

11 Check Gas Pressure in Steering Accumulator

--- every 2000 hours

Check the gas pressure at a regular interval. Check the gas pressure if the machine vibrates and the turning is not smooth when the steering wheel is operated. Consult your authorized Hitachi dealer for checking the gas pressure.



90Z7-7-48-2

MAINTENANCE

12

Check Hoses and Lines

--- every 10 hours (daily) / every 250 hours

⚠ WARNING: Escaping fluid under pressure can penetrate the skin causing serious injury. To avoid this hazard, search for 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.

Any fluid injected into the skin must be surgically removed within a few hours or gangrene may result.

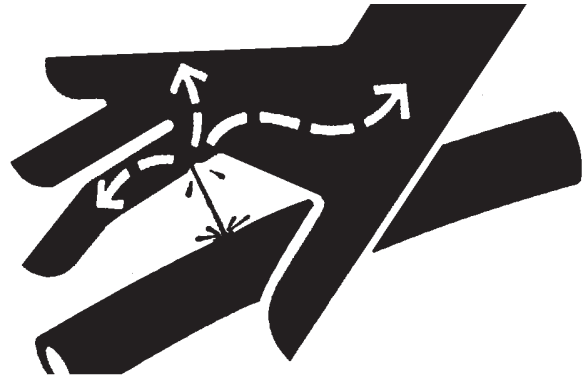
⚠ WARNING: Hydraulic oil and lubricant leaks can lead to fire that may result in serious injury.

To avoid this hazard :

- Park the machine on a firm, level surface. Lower the bucket to the ground. Stop the engine. Remove key from the key switch. Push the control lever lock switch to the lock (🔒) position.
- Check for missing or loose clamps, kinked hoses, lines or hoses that rub against each other, damaged oil cooler, and loose oil cooler flange bolts, and for leaks.

Check hoses, lines and oil cooler at the check points indicated below for leaks and other damage that may result in future leaks. If any abnormalities are found, replace or retighten them, as shown in Tables below.

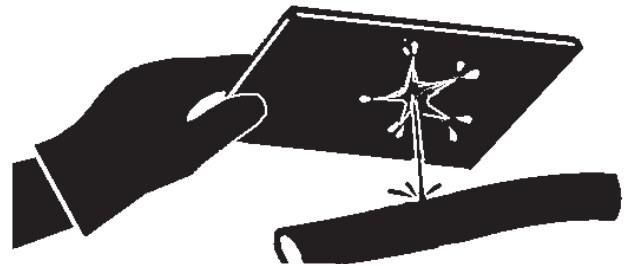
- Tighten, repair or replace any missing, loose or damaged clamps, hoses, lines, oil cooler, and loose oil cooler flange bolts. Do not bend or strike high-pressure lines.



SA-031



SA-292

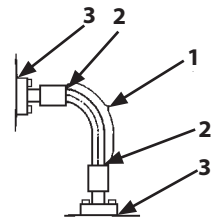


SA-044

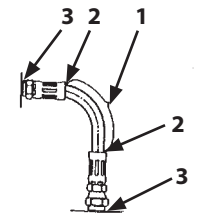
MAINTENANCE

Hose

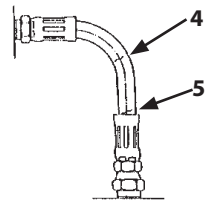
Interval (hours)	Check Points	Abnormalities	Remedies
Every 10 hours (daily)	Hose covers	Leak (1)	Replace
	Hose ends	Leak (2)	Replace
	Fittings	Leak (3)	Retighten or replace hose or O-ring
		Crack	
Every 250 hours	Hose covers	Crack (4)	Replace
	Hose ends	Crack (5)	Replace
	Hose covers	Exposed reinforcement (6)	Replace
	Hose covers	Blister (7)	Replace
	Hose	Bend (8), Collapse (9)	Replace (Use proper bend radius)
	Hose ends and Fittings	Deformation or Corrosion (10)	Replace



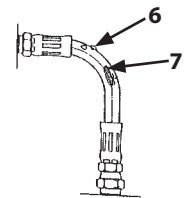
M137-07-008



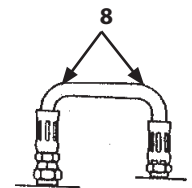
M115-07-145



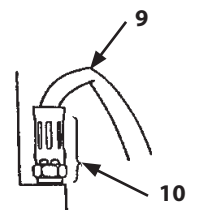
M115-07-146



M115-07-147



M115-07-148

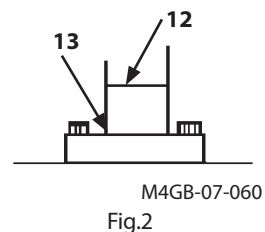
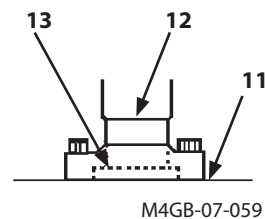


M115-07-149

Fig.1

MAINTENANCE

Interval (hours)	Check Points	Abnormalities	Remedies
Every 10 hours (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



MAINTENANCE

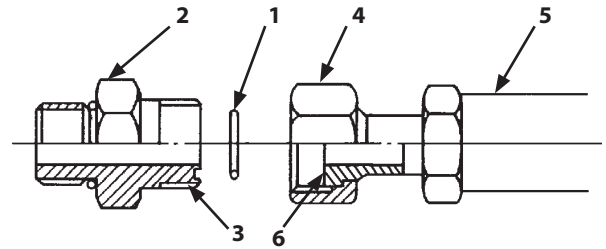
Service Recommendations for Hydraulic Fittings

Two hydraulic fitting designs are used on this machine.

Flat Face O-ring Seal Fitting (ORS Fitting)

An O-ring is used on the sealing surfaces to prevent oil leakage.

1. Inspect fitting sealing surfaces (6). They must be free of dirt or defects.
2. Replace O-ring (1) with a new one when assembling fittings.
3. Lubricate O-ring (1) and install it into groove (3) using petroleum jelly to hold it in place.
4. Tighten fitting (2) by hand, pressing the fitting joint together to ensure O-ring (1) remains in place and is not damaged.
5. Tighten fitting (2) or nut (4) to the torque values shown. Do not allow hose (5) to twist when tightening fittings.
6. Check for leaks. If oil leaks from a loose connection, do not tighten fitting (2). Open the connection, replace O-ring (1) and check for correct O-ring position before tightening the connection.



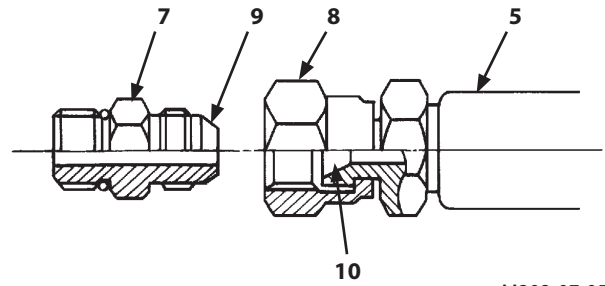
M104-07-033

MAINTENANCE

Metal Face Seal Fittings

Fittings are used on smaller hoses and consist of metal flare (9) and metal flare seat (10).

1. Tighten fitting (7) by hand.
2. Tighten fitting (7) or nut (8) to the torque values shown.
Do not allow hose (5) to twist when tightening fittings.



M202-07-051

MAINTENANCE

E. Fuel System

1

Check Fuel Level

--- every 10 hours (daily)



DANGER: 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) (ASTM D-975) (EN-590) which contains 15 ppm or lower sulfur.

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.

Using fuel other than ultra low-sulfur or low-sulfur diesel fuel has adverse effects on the engine and the aftertreatment device, which may result in malfunction.

MAINTENANCE

Refueling

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.

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

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

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

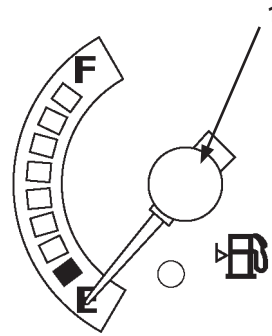
IMPORTANT: Keep all dirt, dust, water and other foreign materials out of the fuel system.

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

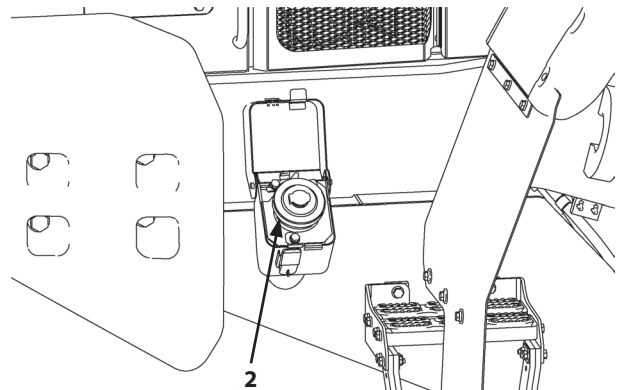
Fuel tank capacity: 375 liters

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

🔑 NOTE: Fuel port (2) has vandal-proof cover.



MNEC-01-002

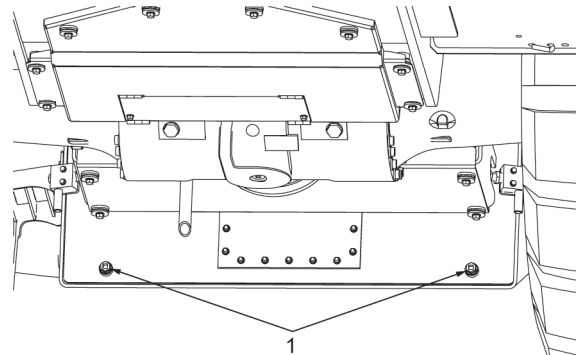


90Z7B-7-62-1

MAINTENANCE

2 Drain Water and Sediment from Fuel Tank --- every 1000 hours

Before starting to operate the machine, loosen drain plug (1) to drain water and/or sediment from the fuel tank. Tighten plug (1) when no more water is draining, and only fuel drainage is seen.



90Z7-7-56

MAINTENANCE

3 Drain Fuel Pre-Filter --- every 10 hours (daily)

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

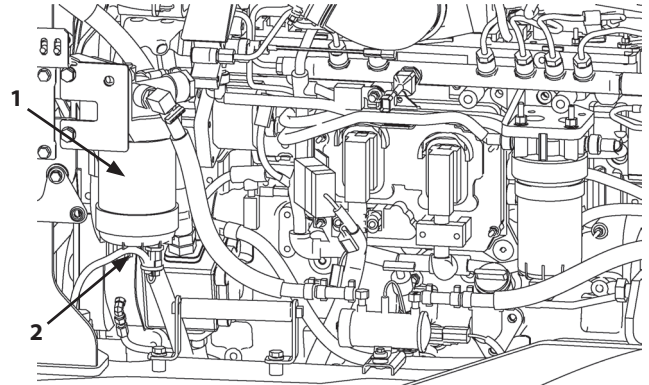
Fuel pre-filter (1) has water separator function, which drains water. Drain water when the engine trouble indicator flashes.

Draining Procedures

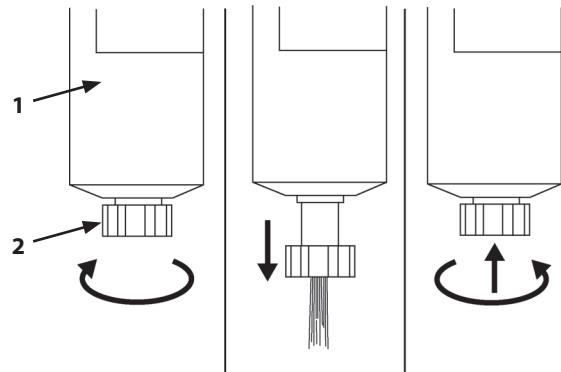
1. Place 0.5 liters or larger capacity container under drain valve (2) to hold the drained water.
2. Turn valve (2) counterclockwise approximately $3\frac{1}{2}$ turns by hand. Until the valve drops down 25.4 mm (1 in) and draining occurs.
3. Drain water until clear fuel is visible.

IMPORTANT: When closing drain valve (2), do not overtighten the valve. Overtightening can damage the threads.

4. To close the valve, lift the valve and turn clockwise until it is hand-tight.
5. Start the engine. Check drain valve (2) for fuel leaks.



90Z7B-7-64-1



90Z7B-7-64-2

MAINTENANCE

Bleed Air from the Fuel System

Air in the fuel system may make the engine hard to start or make it run rough or not run at all.

After draining water and sediment from the fuel filter, replacing the fuel filter, cleaning the fuel pump strainer or running the fuel tank dry, be sure to bleed the air from the fuel system according to the following procedure.

Air Bleeding Procedure

This machine is equipped with a fuel priming solenoid pump.

 **CAUTION: Fuel leaks may lead to fires.**

1. Turn the key switch to ON position. The fuel lift pump operates to help prime the fuel system.

IMPORTANT: DO not start the engine.

2. The engine control module (ECM) operates the fuel lift pump through a priming cycle which lasts at least 30 seconds. Cycle the lift pump several times by keying OFF, waiting 10 seconds, and keying ON again.
3. Keep the key switch at ON position for at least 30 seconds after filling the main fuel filter.
4. Once the engine is started, slowly increase the engine speed while air is purged from the fuel line.
5. 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.

If Air Mixed Downstream of Common Rail



WARNING: INJECTION HAZARD

Fuel under high pressure

High pressure common rail, high pressure lines fuel lines and high pressure fuel injection lines contain high pressure fuel.

High pressure fuel injection into skin can cause injury or death.

Keep hands away from injection lines while turning engine with starter or while running engine.

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 fails to start, return key switch to OFF. Wait more than about 60 seconds, and then try again.

MAINTENANCE

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

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 note 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 system.**

Procedures

1. Remove cartridge filter (2) from fuel filter (1) by using a filter wrench.

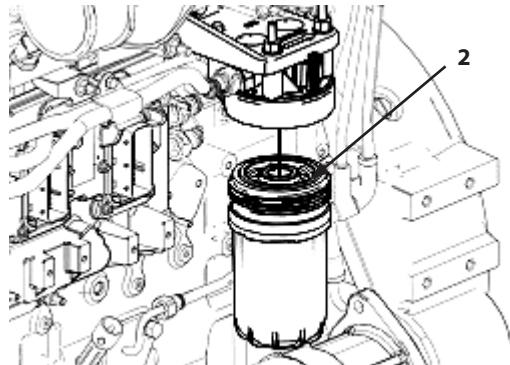
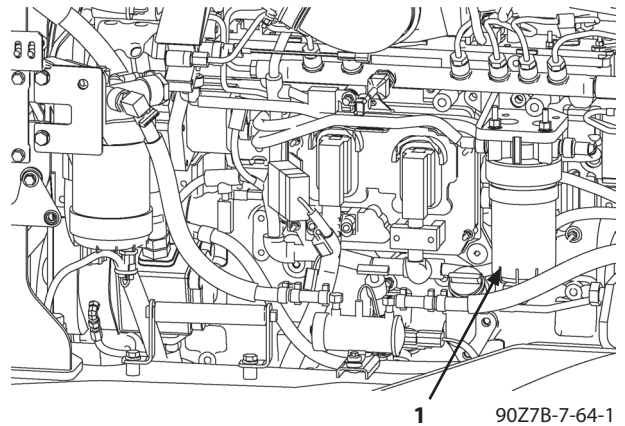
Arrange a container to receive fuel for safety and to prevent ground from contamination.
2. Apply a thin film of clean fuel to the gasket of new cartridge filter (2).
3. Turn cartridge filter (2) clockwise by hand until the gasket touches the contact area.
4. Using the filter wrench, tighten the cartridge 3/4 turn more.

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

5. Bleed Air from the Fuel System

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

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



MAINTENANCE

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

IMPORTANT:

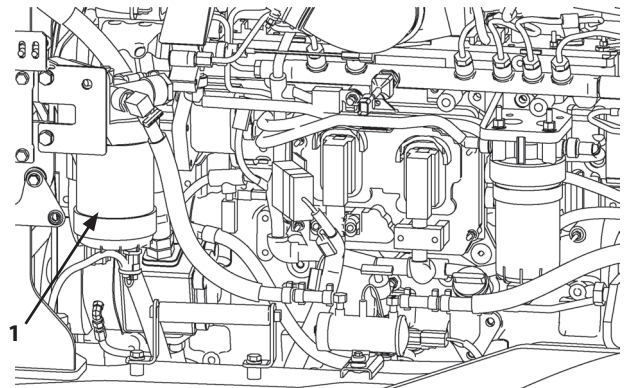
- **Be sure to use only genuine Hitachi elements for the main fuel filter and the pre-filter. Failure to do so may deteriorate the engine performance and/or shorten the engine service life. Please note that all engine failures caused by using other manufacturers' elements are excluded from Hitachi Warranty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

Procedures

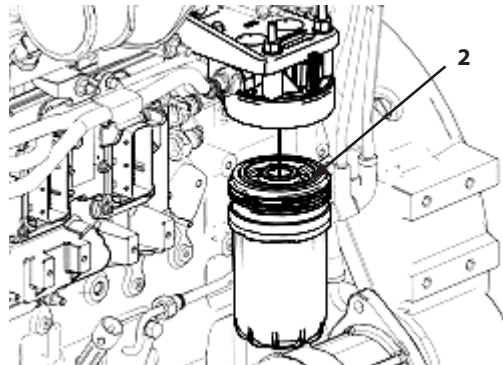
1. Remove cartridge filter (1) by using a filter wrench.
Arrange a container to receive fuel for safety and to prevent ground from contamination.
2. Apply a thin film of clean fuel to the gasket of new cartridge filter element (2). Fill fuel pre-filter with clean fuel.
3. Turn cartridge filter element (2) clockwise by hand until the gasket touches the contact area.
4. Using the filter wrench, tighten the cartridge turn more.
Be careful not to overly tighten cartridge filter (1).
Deformation of the cartridge may result.
5. Bleed Air from the Fuel System

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

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



90Z7B-7-64-1



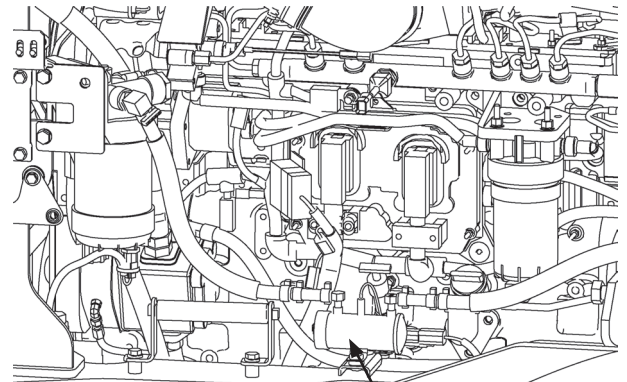
90Z7B-7-68-2

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.



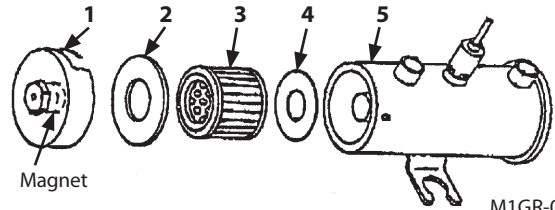
90Z7B-7-64-1

Fuel Solenoid Pump

MAINTENANCE

Disassembling/ Assembling

To remove cover (1), loosen with a spanner. After cover (1) is removed, gasket (2), strainer (3), and gasket (4) are easily removed in order. Wash removed strainer (3) with light oil. Install the strainer in the reverse order of disassembling. At that time, install gasket (2) into cover (1) first. Securely tighten cover (1) to pump (5) using a spanner.

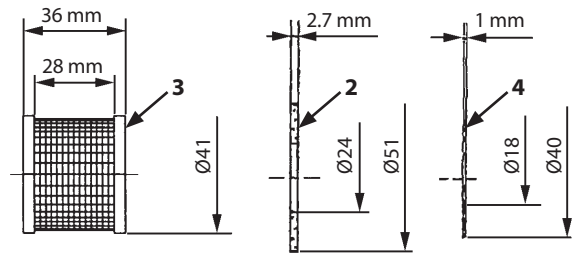


M1GR-07-004

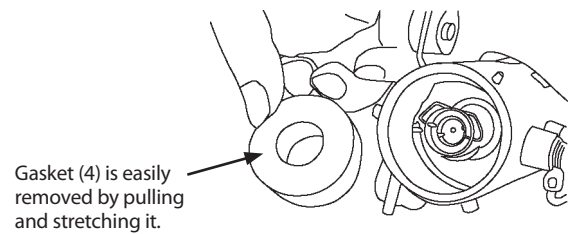
NOTE: Wrench size: 17 mm

IMPORTANT:

- Only carry out 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.

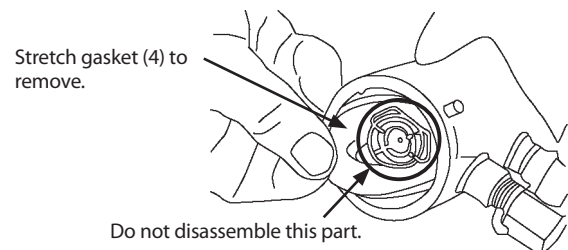


M1U1-07-006



Gasket (4) is easily removed by pulling and stretching it.

MDAA-07-054



Stretch gasket (4) to remove.

Do not disassemble this part.

MDAA-07-053

MAINTENANCE

7 Check Fuel Hoses --- every 10 hours (daily) / every 250 hours

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

Check for kinked hoses, hoses that rub against each other, and any fuel leaks.

Repair or replace any loose or damaged hoses.

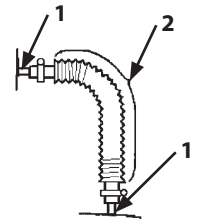
Never reinstall bent or damaged hoses.

According to the check points shown below, check hoses for oil leaks and damage.

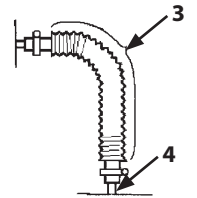
If any abnormality is found, replace or retighten as instructed in the table.

Hose

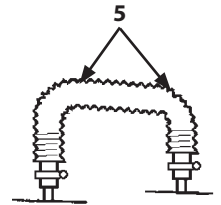
Interval (hours)	Check Points	Abnormalities	Remedies
Every 10 hours (daily)	Hose ends	Leak (1)	Retighten or replace
	Hose covers	Wear, crack (2)	
Every 250 hours	Hose covers	Crack (3)	Replace
	Hose ends	Crack (4)	Replace
	Hose	Bend (5), Collapse (6)	Replace
	Hose fittings	Corrosion (7)	Replace



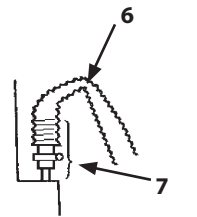
M4GB-07-071



M4GB-07-072



M4GB-07-073



M4GB-07-074

MAINTENANCE

F. Air Cleaner

1 Replace Air Cleaner Element (ZW310-6)

Replace --- when the monitor indicator is lit

Air cleaner (1) is comprised of double elements, the outer element and inner element.

IMPORTANT: Do not reuse outer element (4). Replace it when the indicator is lit.

Replace inner element (5) every after replacing outer element (4) twice. Before reusing inner element (5), ensure there is no damage on the filter surface, O-ring and outer shape.

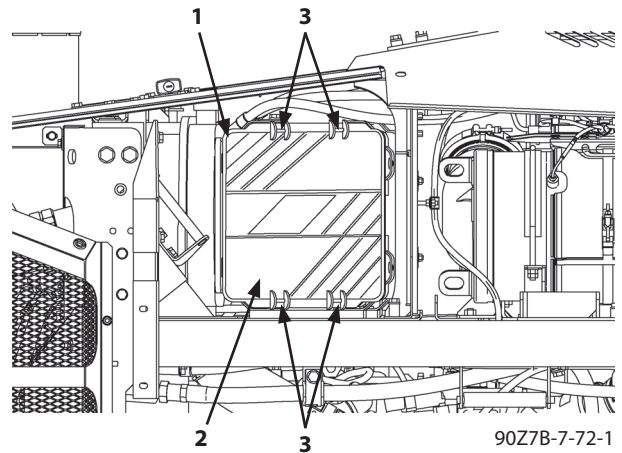
1. Park the machine following the same procedure as described on page 7-8 for preparation of inspection/ maintenance work.

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

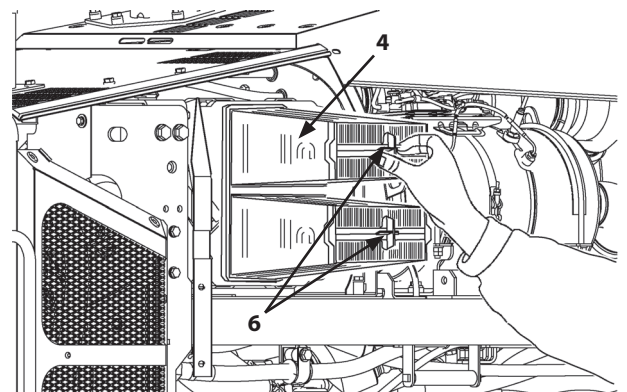
2. Remove clip band (3) and remove cover (2).
3. Hold the outer element release knob (6). Pull out outer element (4) from the air cleaner to remove it.
4. Clean inside the air cleaner (1) with a wet cloth.
5. Hold inner element (5) release knob (7). Pull out inner element (5) from air cleaner (1) to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

IMPORTANT: An O-ring is fit on the circumference of inner element (5). Push inner element (5) into the air cleaner. Be sure there is no gap between the O-ring and air cleaner.

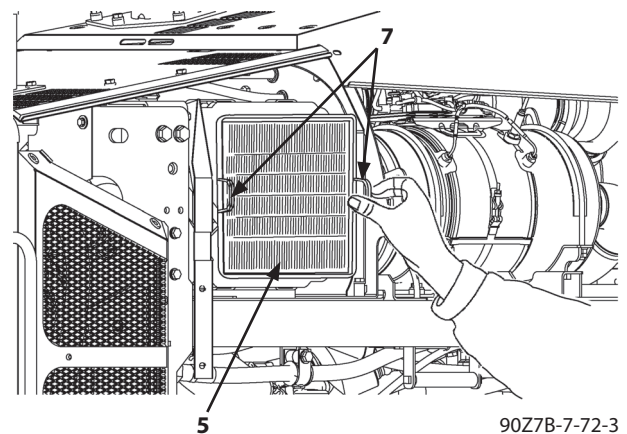
7. Install cover (2) and tighten it with clip band (3).
8. Start the engine after the cleaning is done. Ensure the indicator light is not ON.



90Z7B-7-72-1



90Z7B-7-72-2



90Z7B-7-72-3

MAINTENANCE

1 Clean Air Cleaner Outer Element (ZW330-6)

--- when the restriction indicator comes ON

Replace Air Cleaner Outer and Inner Elements (ZW330-6)

--- after cleaning 6 times or after 1 year

Air cleaner (1) is comprised of double elements, the outer element and inner element.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.

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

2. Loosen clip band (3) and remove dust cap (2). Clean off dust inside the cap.

 **NOTE:** When removing dust cap (2), turn it counterclockwise as shown to release the dust ejection valve on the bottom of cap.

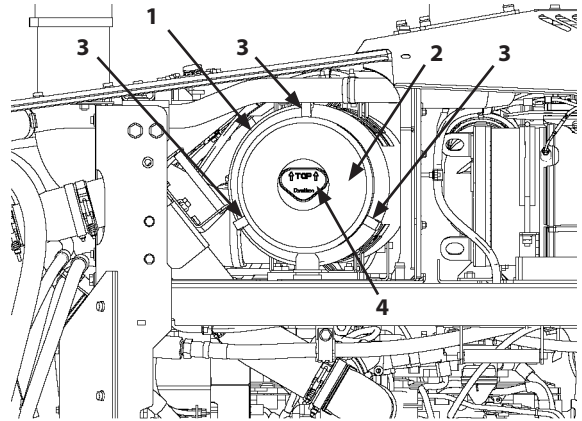
 **CAUTION:** Wear goggles or safety glasses when using compressed air [less than 0.2 MPa (2 kgf/cm²)].

IMPORTANT: To clean elements (5) (6), avoid giving shocks or striking element with other objects.

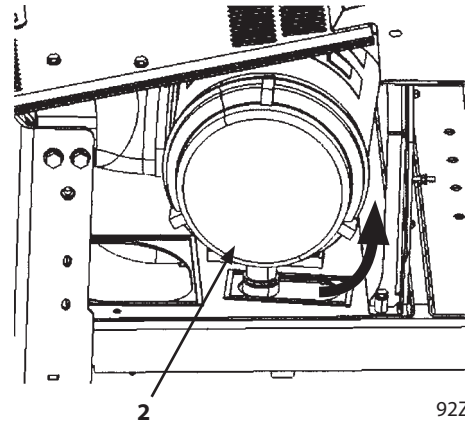
3. Clean outer element (6) by blowing compressed air [less than 0.2 MPa (2 kgf/cm²)] outward from the inside of the filter element. After cleaning, be sure to check element (6) for any damage. If any damage is found, replace the element with a new one.

IMPORTANT: Do not reuse inner element (5).

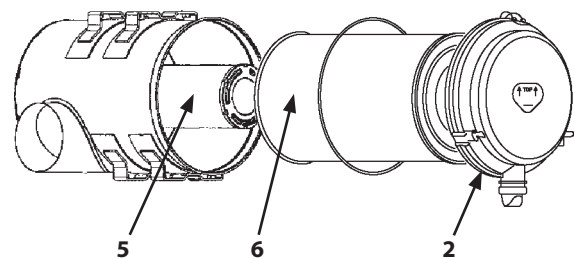
4. In case the air filter restriction indicator lights soon after cleaning outer element (6) even if the cleaning times are less than 6 times, replace both outer and inner elements with new ones.
5. Install dust cap (2) in the original position so that arrow marks (4) (↑TOP↑) point upward.
6. After cleaning is complete, run the engine at slow speed. Then, check that the air filter restriction indicator is not ON.



92Z7B-7-67-1



92Z7B-7-67-3



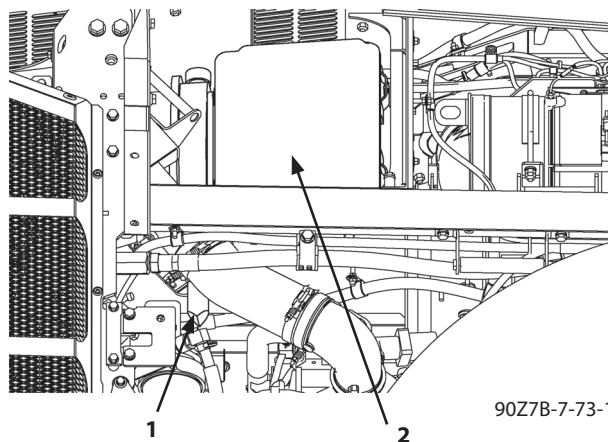
92Z7B-7-67-2

MAINTENANCE

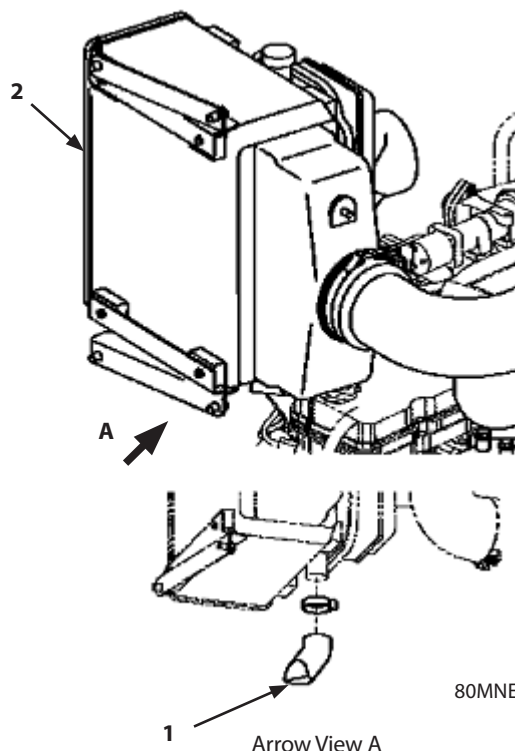
2 Dust Ejection Valve (ZW310-6 Only) --- every 10 hours (daily)

Clean

Hold down the valve from both sides by using your fingers until the end of dust ejection valve opens. If dust is difficult to remove, loosen the clip at the root of dust ejection valve to remove the dust ejection valve. Clean inside the valve. Check the dust ejection valve for any damage.

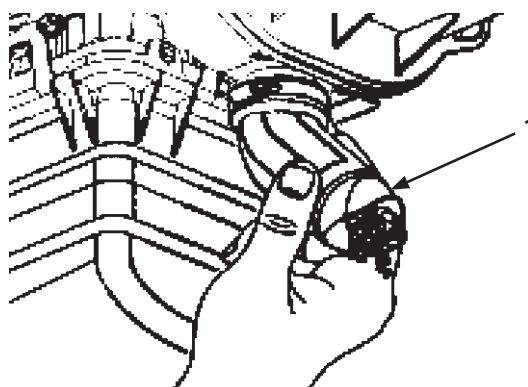


90Z7B-7-73-1



80MNEC-07-120

Arrow View A



MNEC-07-120

MAINTENANCE

3

Check Air Inlet System

--- every 10 hours (daily)

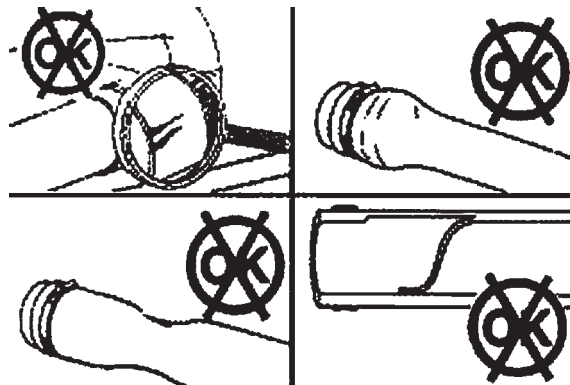
Check pipes and hoses of the air inlet system for wear, damage or loose connections and clamps. Replace damaged pipes and hoses. Retighten loose clamps.

Tightening torque:

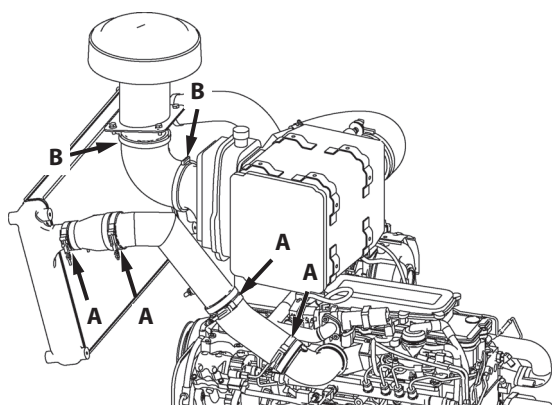
Clamp A: 9 N·m (0.9 kg·m)

Clamp B: 17 to 20 N·m (1.7 to 2.0 kg·m)

Clamp C: 10 N·m (1.0 kg·m)

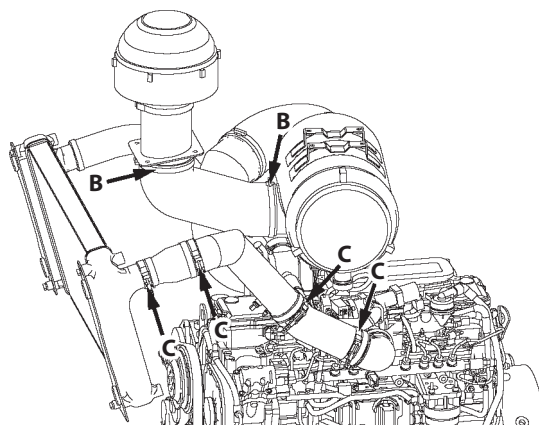


MNEC-07-121



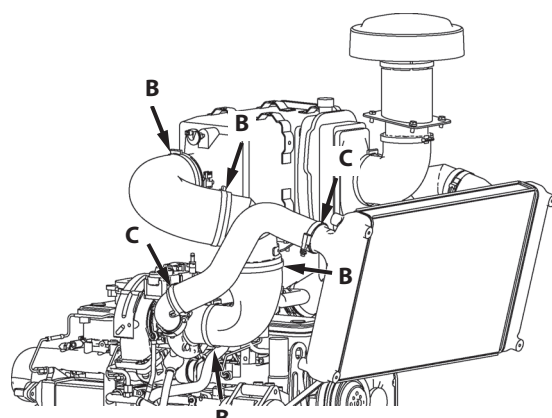
ZW310-6

90Z7B-7-74-2



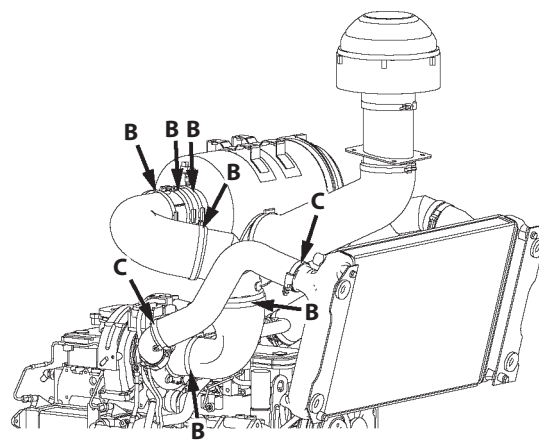
ZW330-6

92Z7B-7-77-2



ZW310-6

90Z7B-7-74-3



ZW330-6

92Z7B-7-77-3

MAINTENANCE

G. Cooling System

Coolant

Use soft water or demineralized water as a coolant. Do not use strongly acid or strongly alkaline water. Use the coolant with Hitachi genuine coolant mixed by 50 %.

Precautions for handling antifreeze

 **WARNING:** 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.
- Pay attention to fire hazards. LLC is specified as a dangerous substance in the fire protection law.
- When storing or disposing of antifreeze, be sure to comply with all local regulations.

Mixing ratio [%]	Coolant Capacity: 44.0 L	
	LLC [L] *	Soft Water [L]
50	22.0	22.0

 **NOTE:** * Use concentrate type coolant.

If the premix 50/50 type is used, do not mix with water.

MAINTENANCE

Supplement Coolant Additive DCA4

The coolant contains the supplement coolant additive (SCA) DCA4 chemistry. The DCA4 concentration level must be maintained through routine maintenance.

To maintain the proper DCA4 level, change the coolant filter using the specified filter WF2072 every 500 hours.

Refer to the following table for the filters and coolant additive to be used.

	Filter	SCA	
	Type	Type	Quantity
Every 500 hours	WF2072	Not needed	-
When replacing coolant	WF2072	DCA65L	1
		DCA60L	1

When adding coolant or the coolant concentration is adjusted, the DCA4 level maybe lowered.

Contact your nearest authorized dealer for the DCA4 level check and adjustment.

Precautions for Using DCA4

⚠ WARNING: DCA4 includes alkali. Avoid splashing DCA4 in your eyes or swallowing it. If DCA4 is splashed into your eyes or swallowed, follow the instructions shown below. Keep out of reach of children.

- Exposure tolerances

Slight skin exposure to DCA4 will cause no serious problems. However, longer or repeated exposure times, inhaling, swallowing or splashing DCA4 in your eyes will cause serious problems. Take the emergency measures shown below.

Cause	Symptoms	Emergency Measure
Inhaling	The nose smarts.	Breathe fresh air.
Long or repeated exposure	The skin smarts.	Wash with fresh water. Take off clothes contaminated with DCA4 and clean them thoroughly.
Splashing in eyes	The eyes smart.	Wash immediately with fresh water for 15 minutes and see a physician.
Swallowing		Drink a lot of carbonated beverages and see a physician.

- Disposal

Be careful not to spill DCA4 on machine or ground. If DCA4 is spilt, wipe it up and clean contaminated surface thoroughly.

Use a container to collect spilt DCA4 and consign it to professional disposers. Disposal of surplus DCA4 when changing coolant should also be assigned to professional disposers.

MAINTENANCE

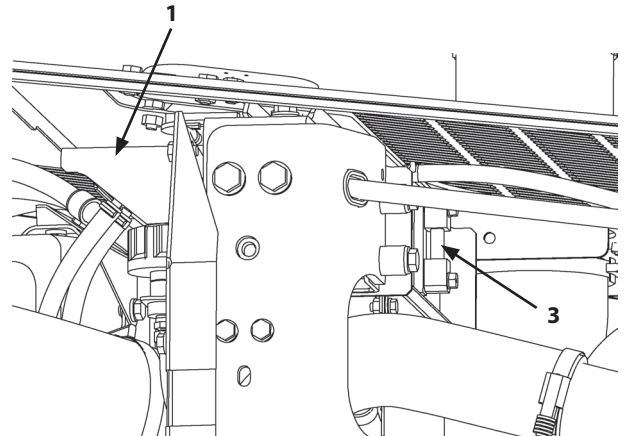
1 Check Coolant Level --- every 10 hours (daily)

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

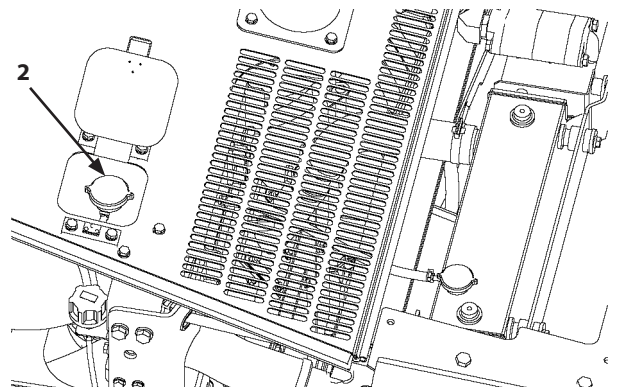
Check the coolant level at expansion tank (1). Sight gauge (3) of expansion tank (1) should be filled with coolant at normal level. If not, add the coolant mixture via cap hole (2) on the expansion tank (1).

🔧 NOTE: Do not fill up expansion tank (1).

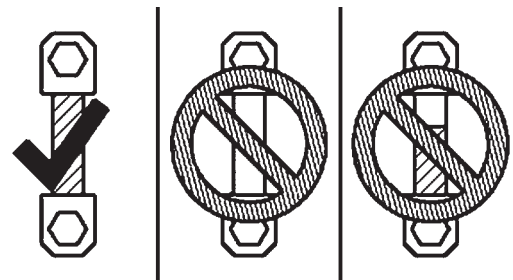
- When refilling a long life coolant (LLC), use the same brand product and the same mixture ratio as already used in the machine.
- If only water is refilled, the mixture ratio in the long life coolant (LLC) is diluted so that anti-rust and antifreeze effect in the coolant will become deteriorated.



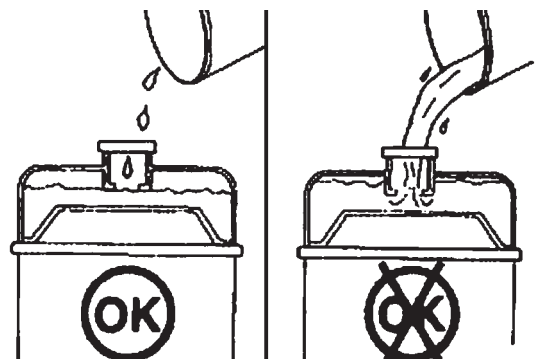
90Z7B-7-76-1



310-7-76-2



90Z7B-7-76-3



90Z7B-7-76-4

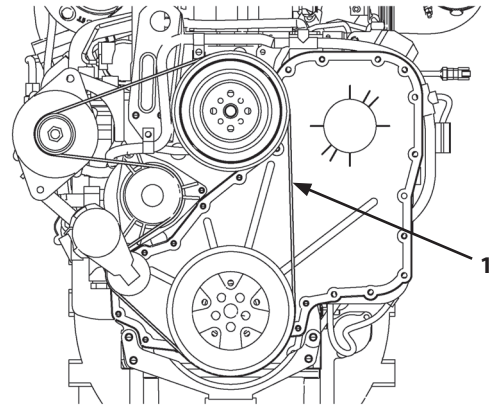
MAINTENANCE

2

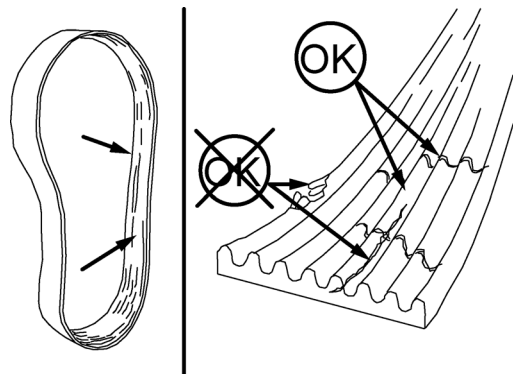
Check Drive Belt

--- every 10 hours (daily)

Check drive belt (1) for any abnormality. If any cracks are found, replace the belt with a new one.



90Z7B-7-77-1



OM0099

MAINTENANCE

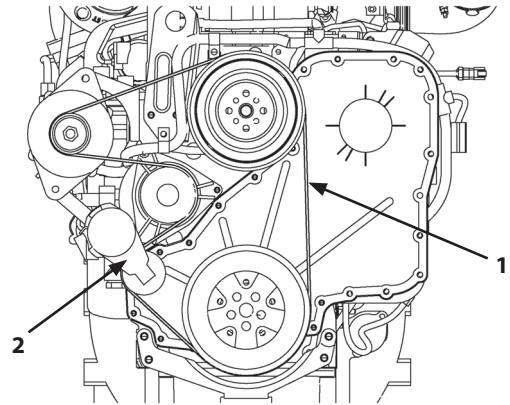
3

Check Drive Belt Tensioner

--- every 1000 hours or once a year

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Open the side cover to access the engine.
4. Check the belt deflection at the longest span of belt (1). The deflection must be checked at the center of the span.

The maximum deflection allowed in the belt is 9.5 to 12.7 mm (3/8 to 1/2 in).



90Z7B-7-77-1

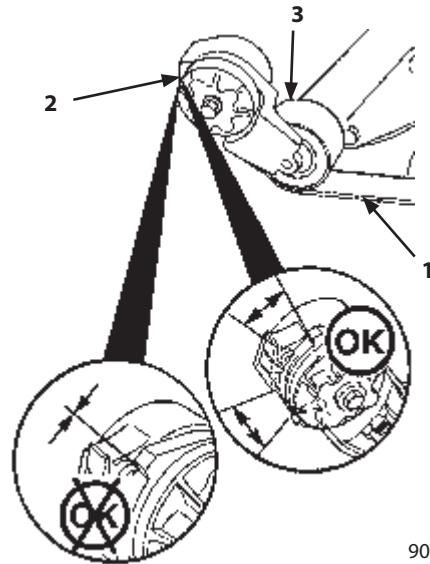
 **NOTE:** The belt tension is automatically adjusted by the belt tensioner. No adjustment is necessary.

5. With the belt installed, verify that neither tensioner arm stop is in contact with the spring casing stop. If either stop is touching, drive belt (1) must be replaced.

After replacing the belt, if the tensioner arm stops are still in contact with the spring case stop, the belt tensioner must be replaced.

6. Check tensioner (2) for cracks on arm, pulley, and stops. If any cracks are observed, the drive belt tensioner must be replaced.

 **NOTE:** Consult your nearest authorized dealer for the drive belt tensioner replacement.



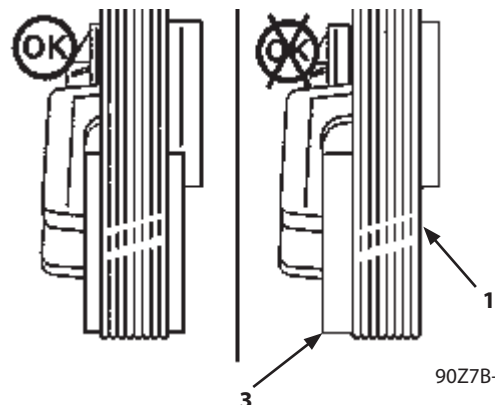
90Z7B-7-77-2

7. Check belt tensioner pulley (3) for any dirt or damage. If it is dirty or damaged, contact your nearest authorized dealer for cleaning or replacement.

8. Check the location of drive belt on belt tensioner pulley (3).

The belt must be centered on, or close to the middle of, the pulley.

Misaligned belts, either too far forward or backward, can cause belt wear, belt roll-off failures, or increase uneven tensioner bushing wear.



90Z7B-7-77-3

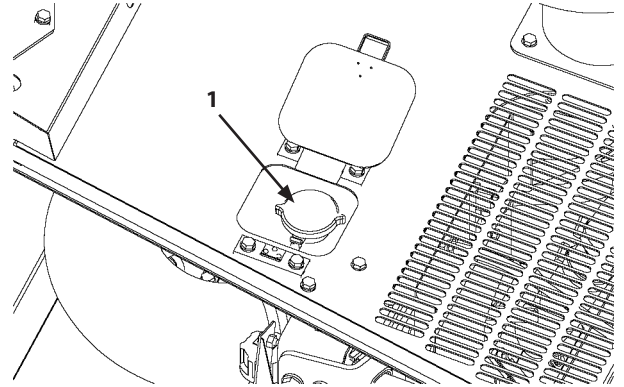
MAINTENANCE

4 Replace DCA4 Coolant Filter Cartridge --- every 500 hours

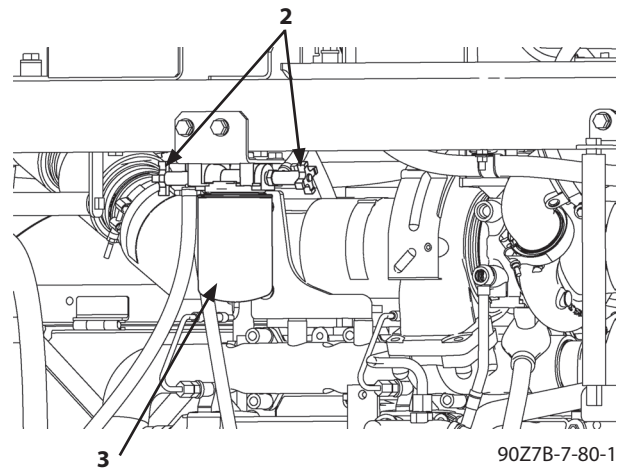
⚠ WARNING: Do not remove expansion tank cap (1) until the coolant temperature in the radiator is cool. Hot steam may spout out, possibly causing severe burns. After the coolant temperature cools, slowly loosen expansion tank cap (1) to release the inside air pressure before removing expansion tank cap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

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Turn to remove cap (1) slowly.
3. Turn to close coolant shut-off valves (2).
4. Remove and properly dispose of coolant filter (3).
5. Clean the filter head gasket surface.
6. Apply a light film of clean engine oil to the gasket surface of a new DCA4 coolant filter cartridge (WF2072).

✎ NOTE: The filter WF2071 is initially installed when the machine is shipped from the factory. Refer to page 7-82 for the filter to be used.



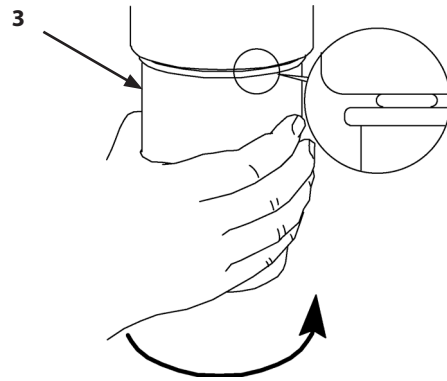
310-7-80-2



90Z7B-7-80-1

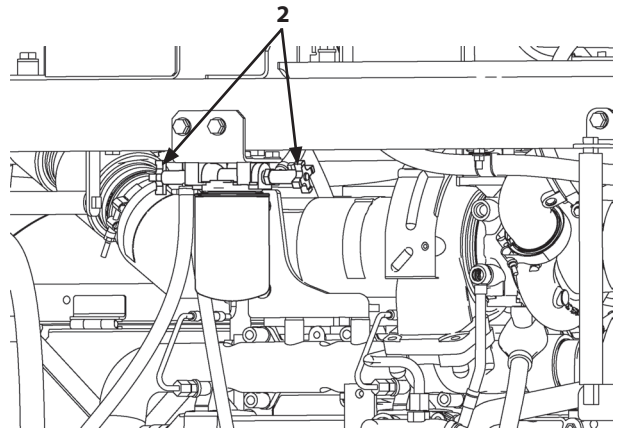
MAINTENANCE

7. Install filter (3) firmly by hand.
Follow the instructions supplied with the filter.



OM0200

8. Open coolant shut-off valves (2) and install radiator cap (1).
9. Run the engine and check for coolant leaks.
10. Idle the engine for about five minutes to purge all the air from the coolant.
11. After air has been purged from the system, stop the engine and check the coolant level again.
12. If needed, add required amount of the coolant.



90Z7B-7-80-1

 **NOTE:** Refer to page 7-81 for the correct mixture.

13. Check the DCA4 concentration in coolant as follows.

 **NOTE:** The coolant concentration may be outside the specification according to operation conditions or due to an unexpected failure. Then, it is recommendable to check the concentration.

MAINTENANCE

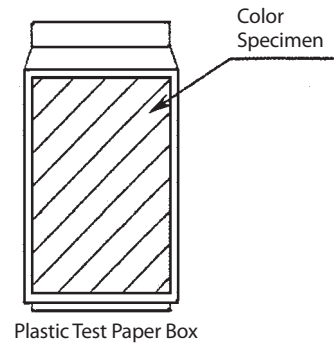
Inspection Procedures of Coolant Concentration

Check the concentration of DCA4 in coolant using the inspection kit shown below.

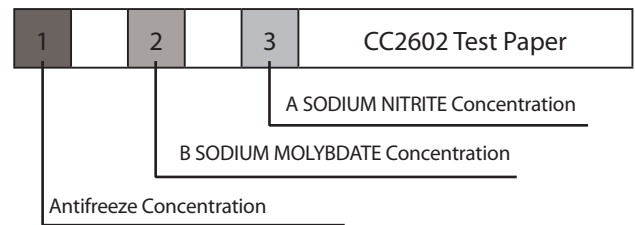
Name of Kit	Cummins Part No.	Hitachi Part No.
Inspection Kit CC2602	-	4404083

• Outline

- Both A and B reagents are coated on CC2602 test paper, allowing to measure the color changes on both A and B reagents.
- At the same time, one more reagent is coated to easily determine the antifreeze concentration through color change.
(The antifreeze concentration checked by this method should be just a guide line. When the exact antifreeze concentration is required, measure it using a specified equipment.)
- Do not use diluted coolant for measurement. Collect coolant into a sample container. Directly dip the test paper into the collected coolant. Compare the reagent color change on the test paper with the color specimen coated on the test paper box 45 seconds after desiccating.



M162-07-077-1



MAINTENANCE

• Precautions for Using CC2602 Test Kit

Maintain coolant temperature to 10 to 54 °C (50 to 129.2 °F) while checking. Otherwise, incorrect color change may result.

Compare the reagent color with the color specimen to measure the concentration in daylight. In case it is difficult to specify the color concentration through the comparison of the reagent color with the color specimen, adopt the lighter side concentration as a safer value.

The reagents provided in the test kit are sensitive to light, heat, and excessive moisture so that they should be stored in a plastic container. Unless the test papers are used, be sure to close the container cover correctly.

Avoid to expose the test kit to the direct ray of the sun while storing and maintain the ambient temperature of the storing place to 32 °C (89.6 °F) or lower.

The effective life time of the reagent is printed on the upper section of the CC2602 container.

Do not use any reagents after the effective life time expires.

If the reagent color has changed to light brown or pink, avoid using such reagent.

If the color specimen was spoiled, wipe stain with a cloth. Do not use any soap or solvent.

The reagent color continues to change from soon after being dipped into coolant and stops after it is dried up. Therefore, measure the coolant concentration within the specified time range.

Concentration Check Table
% GLYCOL/FREEZEPOINT (°F)

25%	33%	40%	50%	60%
				
+10	+5	0	-5	-10
			-20	-30
				-45
				-60

DCA Unit/3.78L (1 US gal)
(DCA UNITS PER GALLON)

(SODIUM MOLYBDATE LEVEL)	ROW 6	0.0	1.7	2.8	3.1	3.7	4.1	4.9	5.7
	ROW 5	0.0	1.7	2.3	2.7	3.1	3.5	4.3	5.1
	ROW 4	0.0	1.4	1.8	2.0	2.4	2.8	3.6	4.4
	ROW 3	0.0	1.2	1.5	1.7	2.1	2.5	3.3	4.1
	ROW 2	0.0	1.0	1.2	1.4	1.8	2.2	3.0	3.8
	ROW 1	0.0	0.6	0.9	1.1	1.5	1.9	2.7	3.5
	ROW 0	0.0	0.3	0.6	0.8	1.2	1.6	2.4	3.2
	A	B	C	D	E	F	G	H	
(SODIUM NITRITE LEVEL)									

MAINTENANCE

• How to Use Test Kit

IMPORTANT: Measure time precisely to obtain the correct test results. Use a stop watch or watch with a second hand. If the reagent color change is checked too early or too late, correct measurement results will not be obtained. If coolant is maintained based on incorrect check data, damage to the engine may result.

1. Use coolant collected from the radiator or the engine drain cock for checking. Wait to cool the collected coolant temperature to 10 to 54 °C (50 to 129.2 °F) before checking.
2. As soon as one test paper is taken out of the plastic container, close the cover correctly. Do not touch the area coated with the reagent. If the area has already changed to light brown use another test paper.
3. Dip the test paper into the collected coolant for one second. After taking up the test paper, desiccate the extra coolant.
4. Wait 45 seconds. Then, compare the changed reagent color on the test paper with the color specimen and determine the coolant concentration by following procedures.
 - 1) Take a record of the anti freeze concentration by comparing the color on reagent section (1) with the anti freeze color specimen printed on the test paper plastic box.
 - 2) Take a record of concentration by comparing the color on reagent section (2) with the SODIUM MOLYBDATE color specimen printed on the test paper plastic box.
 - 3) Take a record of concentration by comparing the color on reagent section (3) with the SODIUM NITRITE color specimen printed on the test paper plastic box.
5. Complete all color comparison check within 75 seconds after dipping the test paper into the coolant.
6. In case the reagent color corresponds to that between the color specimens, take the intermediate value. If it is difficult to determine which value should be taken, adopt the lighter color side concentration as a safer value.
7. Using the concentration check table, find the intersection between the recorded SODIUM MOLYBDATE concentration and the SODIUM NITRITE concentration.
This intersection shows the coolant additive agent concentration per 3.78 L (1 US gal) of the coolant.
8. The colored concentration values in the concentration check table printed on the test paper box represents the values to be applied when the LLC concentration is 50%. When the LLC concentration is 40% or less, do not determine by color. Determine by figure values.
9. Record the measured coolant additive agent concentration value on the maintenance record sheet as reference data when performing next maintenance services.

MAINTENANCE

5

Change Coolant

--- every 2000 hours or two years

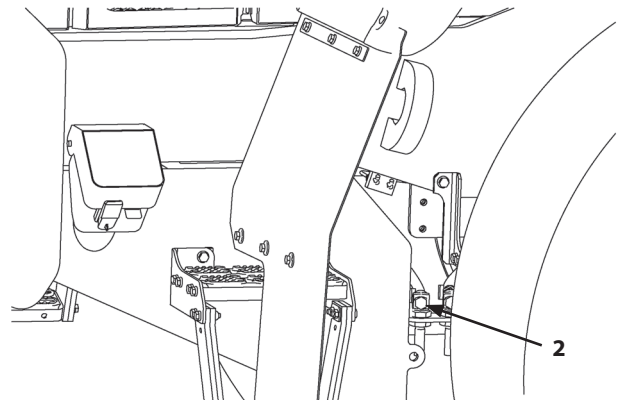
CAUTION: Do not remove the radiator cap (1) until the coolant temperature in the radiator is cool. Hot steam may spout out, possibly causing severe burns. After the coolant temperature cools, slowly loosen cap (1) to release the inside air pressure before removing cap (1).

IMPORTANT: Use Hitachi genuine coolant. Change the coolant every two years or 2000 hours whichever comes first.

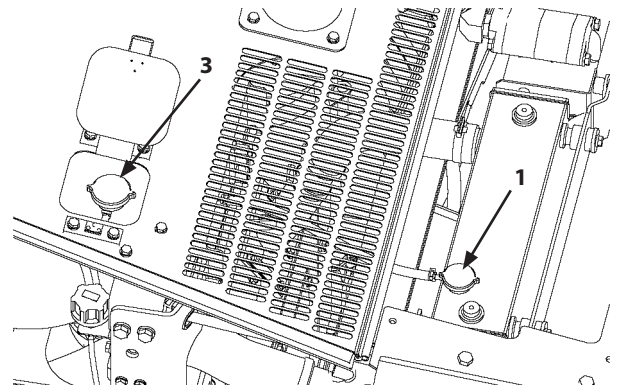
1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation stopper (lock bar) to the front and rear of the chassis by following the procedures described on page 7-10.
3. Loosen radiator drain plug (2) and drain coolant into a suitable container (approx. 50 liters).

IMPORTANT: Do not open radiator cap (1) before draining coolant to prevent overflowing coolant due to the vertical interval between the expansion tank and the radiator.

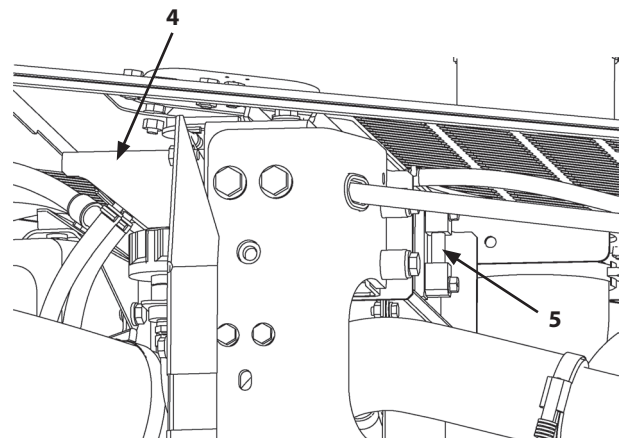
4. Slowly turn and remove expansion tank cap (3).
5. Close drain plug (2).
Supply low impurity soft water or tap water into expansion tank (4) to the FULL level of sight gauge (5). When adding coolant, do so slowly to avoid mixing air in the system. Check the water level after three minutes, and add if necessary.
6. Start and idle the engine for 5 minutes with expansion tank cap (3) opened.
Stop the engine and wait until the engine has cooled. Check the water level and add if necessary.



90Z7B-7-78-2



310-7-76-2



90Z7B-7-76-1

MAINTENANCE

7. Start the engine and wait for one minute, then run at slightly higher than the low idle speed for about 30 minutes until the water temperature reaches above 85°C.

Take care of the water level especially for the first 5 minutes, and add water via expansion tank cap (3) as needed.

IMPORTANT: The water temperature must be kept at 85°C or higher during flushing to open the thermostat in order to circulate the water within the radiator.

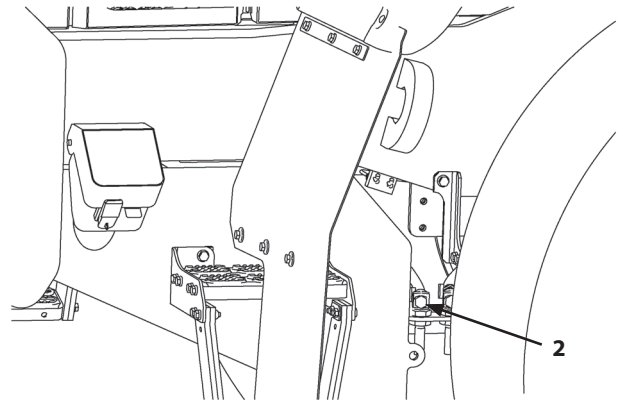
8. Let the engine cool down naturally with the engine shut "OFF".
9. Stop the engine and loosen drain plug (2) to drain the cooling system. Tighten drain plug (2).
10. Repeat flushing steps 5 through 9 above until the water is clean.
11. Tighten drain plug (2) and fill the system with the premixed coolant by taking steps 5 and 6.

 **NOTE:** Refer to page 7-81 for the mixing instruction.

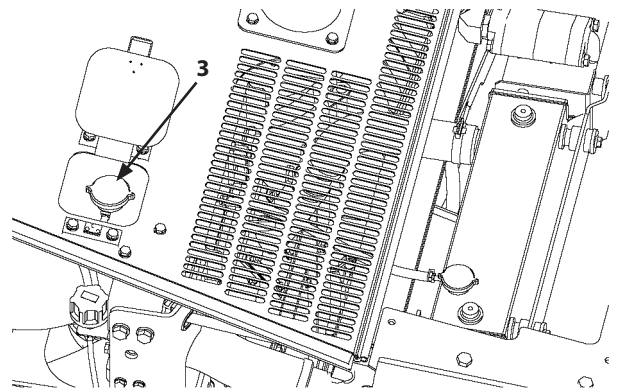
12. Start the engine and wait for one minute, then run at slightly higher than the low idle speed for about 30 minutes until the coolant temperature reaches above 85°C.
Let the engine cool down naturally with the engine shut "OFF".
13. Wait until the engine has cooled.
Check the coolant level and add if necessary.
14. Add coolant additive via expansion tank cap (3).

 **NOTE:** Refer to page 7-82 for the coolant additive.

15. Replace the DCA4 coolant filter.
Refer to page 7-82 for the procedure.
16. Reinstall expansion tank cap (3).



90Z7B-7-78-2



310-7-76-2

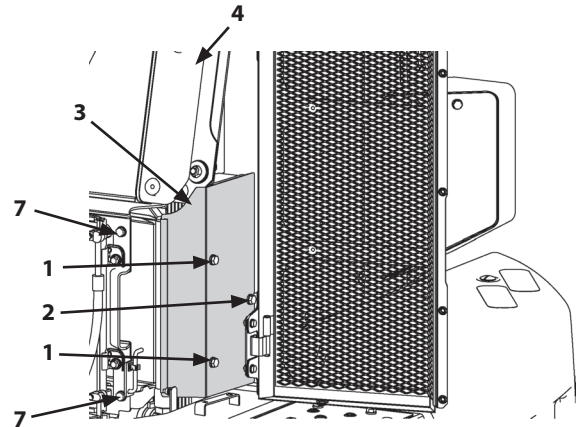
MAINTENANCE

6 Clean Radiator/Oil Cooler and Other Cooling System --- every 500 hours or when the core is clogged.

CAUTION: Wear goggles or safety glasses when using compressed air [less than 0.2 MPa (2 kgf/cm²)].

IMPORTANT: If compressed air with the pressure of more than 0.2 MPa (2 kgf/cm²) or tap water with high delivery pressure is used for cleaning, damage to the radiator/oil cooler fins may result.

Keep the nozzle away from the core surface more than 500 mm.

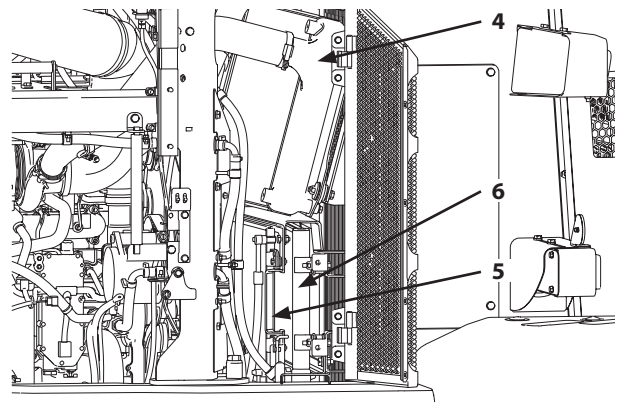


90Z7B-7-79-0

Over the Side Cover

1. Remove bolts (1) (2 used) and loose bolt (2). Remove cover (3).
2. Check and clean intercooler (4), air conditioner condenser (5), and hydraulic oil cooler (6). When air conditioner condenser (5) is moved away by removing bolts (7), clearance in front of hydraulic oil cooler (6) can be cleaned.
3. Install cover (3) and fix with bolts (1) (2 used) and bolt (2).

IMPORTANT: Make sure to install cover (3) to the original position to prevent troubles due to overheat.

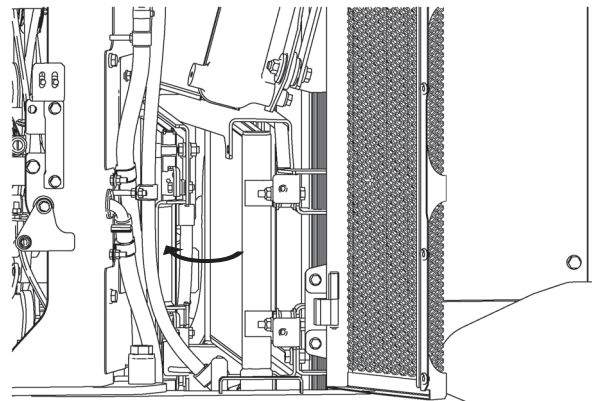


90Z7B-7-79-1EU

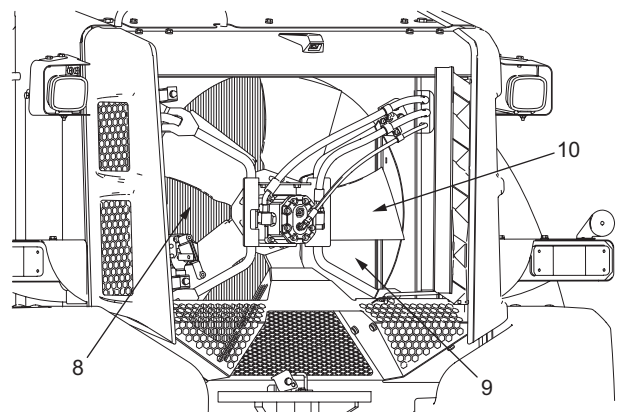
Over the Rear Grille

CAUTION: Make sure the fan is not rotating before opening the rear grille.

1. Check and clean radiator (8), torque converter oil cooler (9), and hydraulic driven fan (10).
2. If dirt or dust is accumulated on the radiator/oil cooler cores, clean the radiator/oil cooler cores with compressed air pressure (lower than 0.2 MPa (2 kgf/cm²)) or tap water. It will prevent a reduction in cooling system performance.



90Z7B-7-79-2



90Z7B-7-79-3EU

MAINTENANCE

H. Electrical System

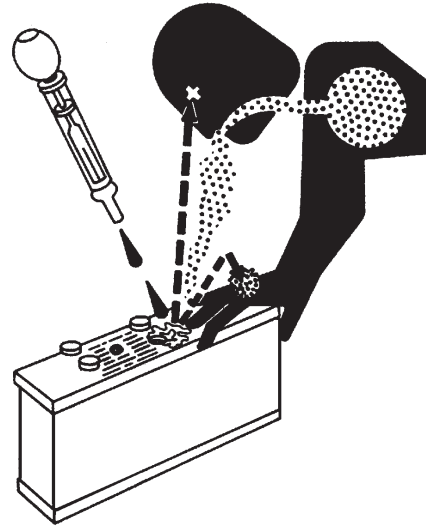
IMPORTANT:

- Improper radio communication equipment and associated parts, and/or improper installation of radio communication equipment affects the machine's electronic parts, causing involuntary movement of the machine.

Improper installation of electrical equipment may cause machine failure and/or a fire on the machine.

Be sure to consult your authorized dealer when installing radio communication equipment or additional electrical parts, or when replacing electrical parts.

- Never attempt to disassemble or modify the electrical/electronic components. If replacement or modification of such components is required, contact your authorized dealer.



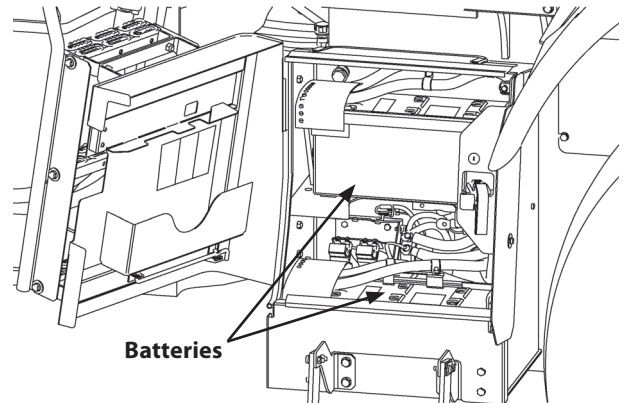
SA-036

1 Batteries



WARNING:

- Battery gas can explode. Keep sparks and flames away from batteries.
- Do not keep tools, metals or flammable materials around the battery or inside the battery room. If a metal tool is placed across the battery terminal and a vehicle component such as the engine block, sparks may be created, possibly resulting in fire and/or explosion.
- Use a flashlight to check the battery electrolyte level.
- Do not continue to use or charge the battery when electrolyte level is lower than specified. Explosion of the battery may result.
- Charge the batteries in a well ventilated location.
- Sulfuric acid in battery electrolyte is poisonous. It is strong enough to burn skin, eat holes in clothing, and cause blindness if splashed into the eyes.



90Z7B-S-48-1US

MAINTENANCE

Avoid hazard by:

1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Using proper booster battery starting procedures.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. If splashed in eyes, flush with water for 10 to 15 minutes. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk.
3. Get medical attention immediately.

IMPORTANT:

- Add water to batteries in freezing weather before you begin operating your machine for the day, or else charge the batteries.
- 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: If 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.

MAINTENANCE

Electrolyte Level Check --- every 100 hours (monthly)

1. Check the electrolyte level at least once a month.
2. Park the machine on level ground and stop the engine.
3. Check the electrolyte level.

3.1 When checking the level from the battery side:

Clean around the level check lines with a wet towel. Do not use a dry towel. Static electricity may be developed, causing the battery gas to explode. Check if the electrolyte level is between U.L (Upper Level) and L.L (Lower Level).

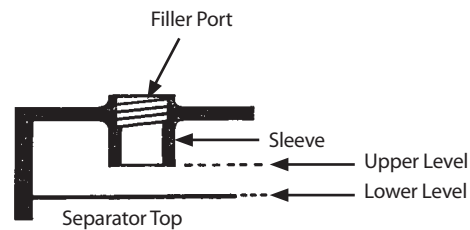
If the electrolyte level is lower than the middle level between the U.L and L.L, immediately refill with distilled water or commercial battery fluid.

Be sure to refill with distilled water before recharging (operating the machine).

After refilling, securely tighten the filler caps.



M146-07-109



M146-07-110

3.2 When impossible to check the level from the battery side or no level check mark is indicated on the side:

After removing the filler plug from the top of the battery. Check the electrolyte level by viewing through the filler port. It is difficult to judge the accurate electrolyte level in this case. When the electrolyte level is at the U.L, the level is judged to be proper. Referring to the illustrations at the right side, check the level. When the electrolyte level is lower than the bottom end of the sleeve, refill with distilled water or commercial battery fluid up to the bottom end of the sleeve.

After refilling, securely tighten the filler caps.

Be sure to refill with distilled water before recharging (operating the machine).

Specified Electrolyte Level



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



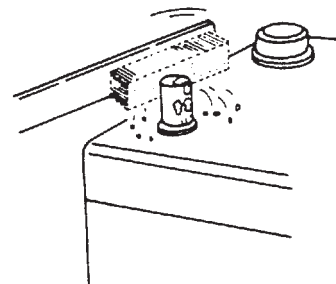
When the electrolyte surface is lower than the bottom end of the sleeve, the electrode ends are seen straight.

M146-07-112

3.3 When an indicator is available to check the level, follow its check result.

4. Always keep the area around the battery terminals clean to prevent battery discharge.

Check terminals for loose and/or rust. Coat terminals with grease or petroleum jelly to prevent corrosion build up.



M409-07-072

MAINTENANCE

Check Electrolyte Specific Gravity --- every 250 hours

⚠ WARNING:

- Battery gas can explode. Keep sparks and flames away from batteries.
Use a flashlight to check the battery electrolyte level.
- 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.
- Never check the battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Avoid hazard by:

1. Filling batteries in a well-ventilated area.
2. Wearing eye protection and rubber gloves.
3. Avoiding breathing fumes when electrolyte is added.
4. Avoiding spilling or dripping electrolyte.
5. Using proper booster battery starting procedures.

If you spill acid on yourself:

1. Flush your skin with water.
2. Apply baking soda or lime to help neutralize the acid.
3. If splashed in eyes, flush with water for 10 to 15 minutes. Get medical attention immediately.

If acid is swallowed:

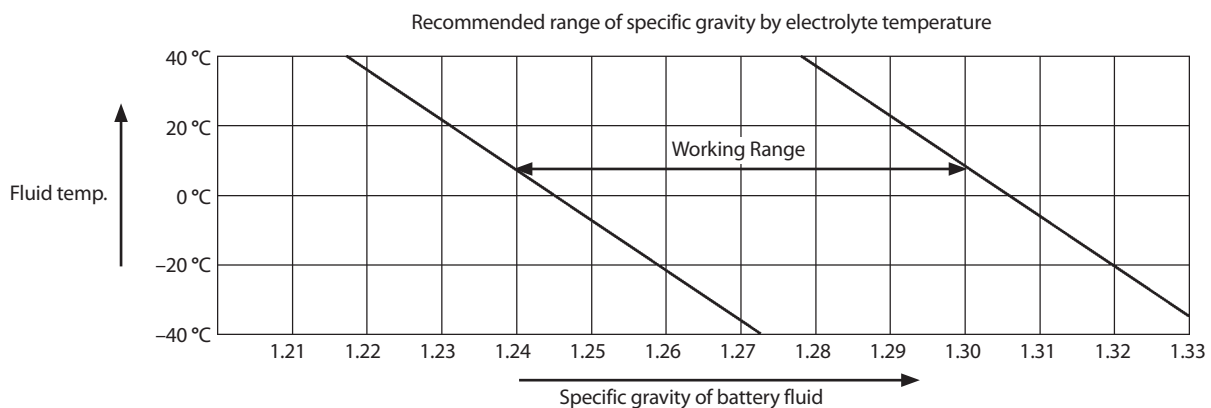
1. Do not induce vomiting.
2. Drink large amounts of water or milk.
3. Get medical attention immediately.

IMPORTANT: Check the electrolyte specific gravity in each battery cell.

The lowest limit of the specific gravity for the electrolyte varies depending on electrolyte temperature.

Check the electrolyte specific gravity in each battery cell.

The lowest limit of the specific gravity for the electrolyte varies depending on electrolyte temperature. The specific gravity should be kept within the range shown below. Charge the battery if the specific gravity is below the limit.



M104-07-054

MAINTENANCE

Replace Batteries

IMPORTANT: Before adjusting the electrical system or welding on the machine, disconnect the negative (-) wiring from the battery. If the machine is equipped with the battery disconnect switch, turn the disconnect switch OFF.

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.

2

Check Monitor Functions and All Other Instrument Operation

--- every 10 hours (daily)

Run the engine at low idle speed when checking the instruments.

The monitor indicates alarm, caution and confirmation status in red, orange, and normal operative condition in blue or green respectively.

Check each gauge or meter if its needle is moved with the key switch ON. The needle shall be moved to the blue range when normal and to the red range when abnormal.

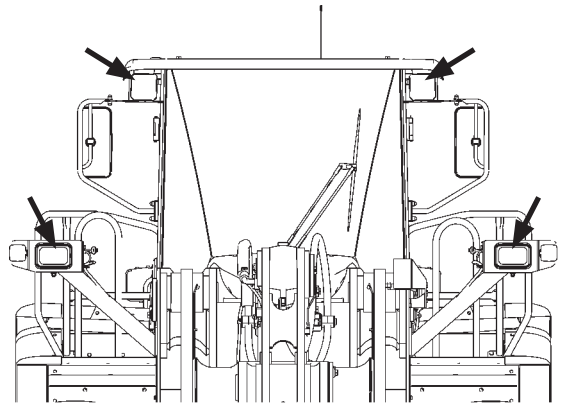
Refer to the Group of Operator's Station in Section 1 for more information.

MAINTENANCE

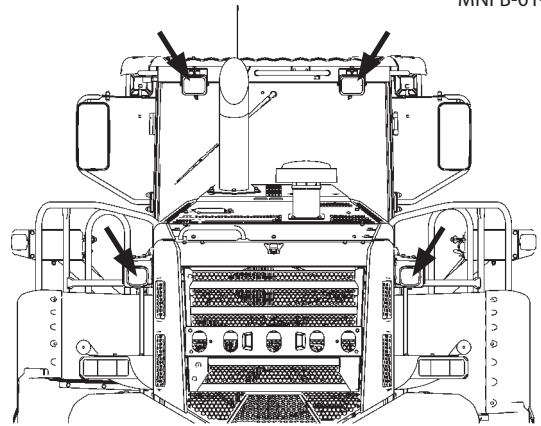
3 Check Work Lights --- every 10 hours (daily)

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

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



MNFB-01-002



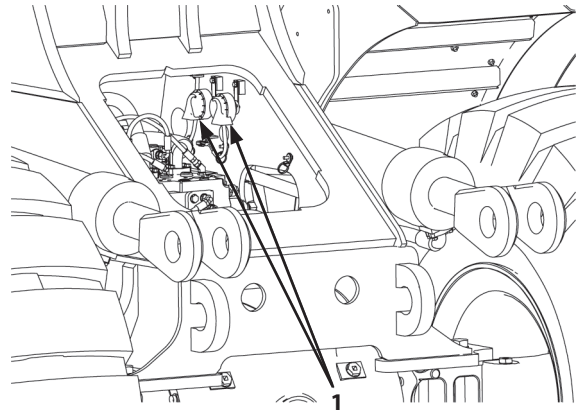
MNFB-01-001

MAINTENANCE

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

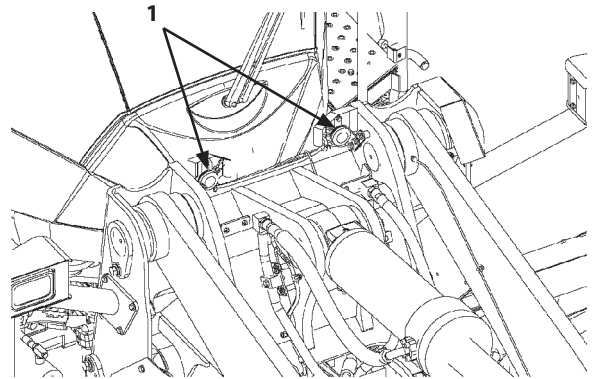
⚠ WARNING: Before checking the horn and/or the reverse buzzer, always apply the parking brake and clear the machine's vicinity of other personnel.

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



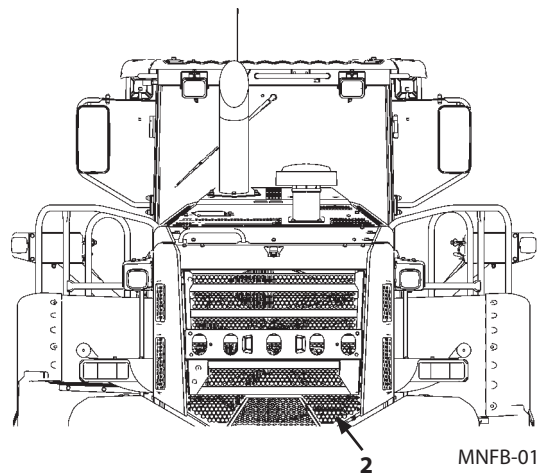
ZW310-6 Only

90Z7-7-76-3



ZW330-6, 310-6 (New)

92Z7B-7-93-3



MNFB-01-001

MAINTENANCE

5 Check Electrical Harnesses and Fuses

--- every 50 hours

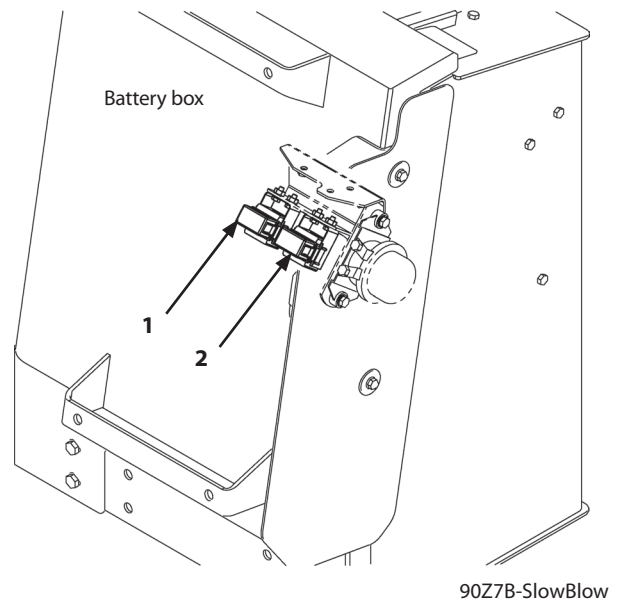
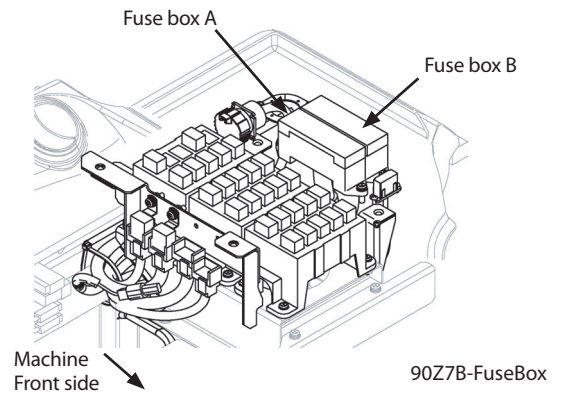
CAUTION: If dirt or dust is adhered on the wirings or relays, it may cause fire on the machine.

Check the electrical harness and terminals of the batteries, starter motor, and alternator for loose connection and/or short circuit (broken shield). Remove dirt or dust if necessary. If any burned mark or an abnormal smell is noticed on a harness, consult your nearest Hitachi dealer.

Replace Fuse:

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

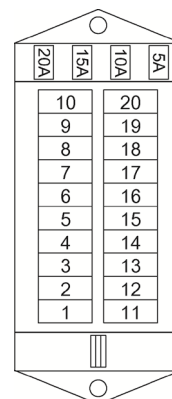
- 1- 120A x 2
- 2- 70A, 140A



MAINTENANCE

Fuse Box A

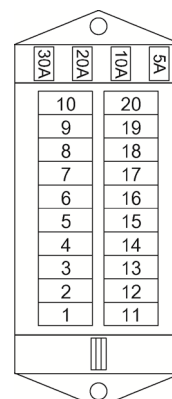
10- PARKING SOLENOID 5 A 9- AIR CONDITIONER 1 10 A 8- TURN SIGNAL, STOP LAMP 5 A 7- BACK LAMP, BACK BUZZER 5 A 6- HEAD LAMP (LEFT) 5 A 5- CABIN FRONT WORKING LAMP 20 A 4- WIPER FRONT 15 A 3- SOCKET (24 V) 20 A 2- HEAD LAMP (RIGHT) 5 A 1- FUEL PUMP 5 A	20- OPTION 4 10 A JSS 5 A 19- OPTION 3 (15 A) 18- AdBlue LINE HEATER 15 A 17- AdBlue SUPPLY MODULE 15 A 16- AdBlue SENSOR 10 A 15- AIR CONDITIONER 2 20 A 14- KEY SWITCH STARTER 10 A 13- SEAT HEATER 15 A 12- OPTION 2 (20 A) 11- OPTION 10 A



90Z7B-FuseBoxA

Fuse Box B

10- ECM 30 A 9- - 8- CONTROLLER 10A 7- FLASHER 10 A 6- HORN 10 A 5- OPTION CAN 5 A 4- OPTION 1 (BATTERY) (15 A) 3- CAB ROOM LAMP 20 A 2- LIGHTING SWITCH 10 A 1- RADIO 5 A	20- EMERGENCY STEERING 5 A 19- HIGH BEAM 10 A 18- WIPER REAR 10 A 17- WORKING LAMP REAR 20 A 16- LOADER CONTROL 5 A 15- MC 10 A 14- PARKING RELAY 5 A 13- POWER ON 10 A 12- POSITION 2 5 A 11- POSITION 1 5 A



90Z7B-FuseBoxB

MAINTENANCE

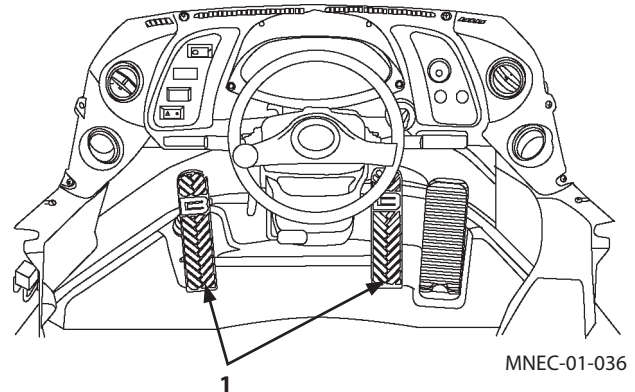
I. Brake System

1 Check Right and Left Brake Interlocking Performance

--- every 10 hours (daily)

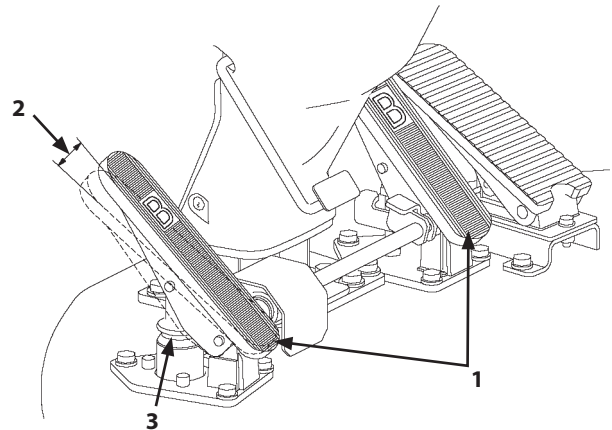
⚠ WARNING:

- Put up a no admission notice for the range of 100m ahead in the forward machine travel direction. Arrange a safety monitor person.
- Do not allow dust and/or soil to accumulate in vicinity (3) of the brake pedal. The brake may become inoperable.



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

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



95Z7B-7-86-2

Check Brake Performance

1. Turn "OFF" the clutch cut position switch.
2. Firmly step on the left hand brake pedal.
3. Release the parking brake.
4. Select the transmission shift lever 2nd and FORWARD.
5. Slowly accelerate the engine to full speed.
6. The machine should not move.

⚠ CAUTION: If machine moves when firmly step on right hand brake with transmission in 2nd and FORWARD, there is some problem with service brake. Do not operate until problem has been corrected.

Check Play in Brake Pedal Stroke

Measure the pedal stroke at pedal tip (2) by pressing the pedal with your hand until you feel an intermittent feed back from the pedal.

Correct Play (2) : 4 to 13 mm

If the play is outside the specified range, consult your nearest Hitachi dealer.

If abnormal pedal operation and/or performance is noticed, consult your nearest Hitachi dealer. Get the machine checked and repaired.

MAINTENANCE

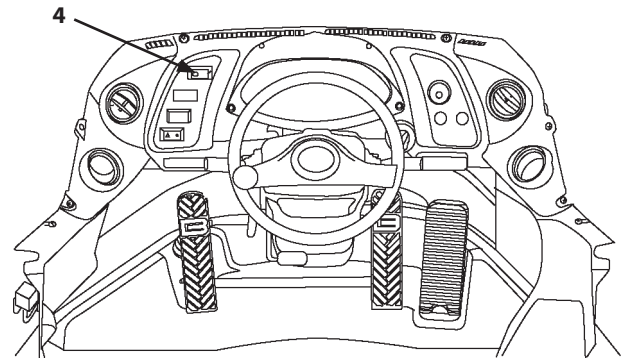
2 Check Parking Brake Force --- every 10 hours (daily)

⚠ WARNING: Check the machine in a place where no one is present or ahead in the traveling direction.

Keep bystanders away from the machine.

Park the machine with no load applied on a 20 % (11.3°) inclining dry surface slope. The machine must not move with the parking brake switch (4) ON.

Should the machine move during inspection, consult your nearest Hitachi dealer. Get the brake system checked and repaired.



MNEC-01-036

MAINTENANCE

3 Check Accumulator Function, Gas Leakage, Looseness, and Damage --- every 500 hours

⚠ WARNING:

- Allow only qualified personnel to handle the accumulator.
- High-pressure nitrogen gas is enclosed in the accumulator. Caution is required to prevent fires from occurring.
- Never strike the accumulator. Keep the accumulator away from sparks and/or flames.
- Do not directly heat the accumulator. Do not weld the accumulator housing.
- Be sure to release pressure before starting to work on the pipe lines.

1. Precheck that alarm function is activated:

Precheck that when the brake pedal is strongly stepped more than 5 strokes with the key switch ON and the engine stopping, the monitor indicators come ON.

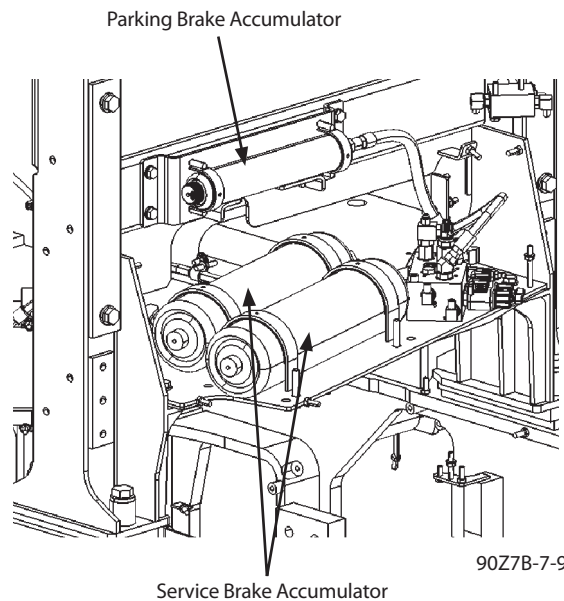
2. Precheck that alarm function is deactivated:

Start the engine. Run the engine at middle speed to pressurize the accumulator. When the pressure builds in the accumulated in the accumulator, the alarm buzzer stops sounding and the brake oil pressure indicator goes OFF. At the same time, ensure the brake oil pressure gauge on the monitor screen indicates maximum value.

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

Check that the brake pedal can be stepped more than 5 strokes before the monitor indicators come ON with the key switch ON and the engine stopping.

Three points described above must be confirmed as normal. Besides the above points, check the accumulator for gas leakage, looseness, and damage. If any abnormality is found, immediately consult your nearest Hitachi dealer.



90Z7B-7-98-1

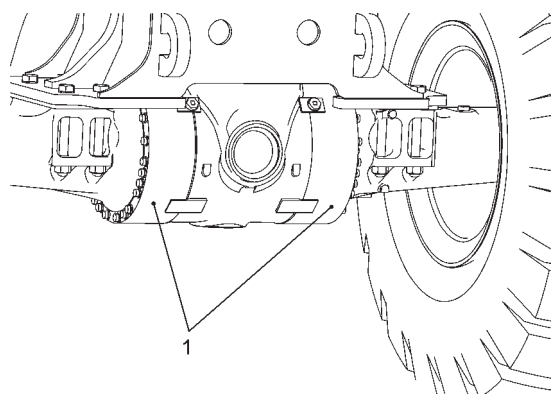
MAINTENANCE

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

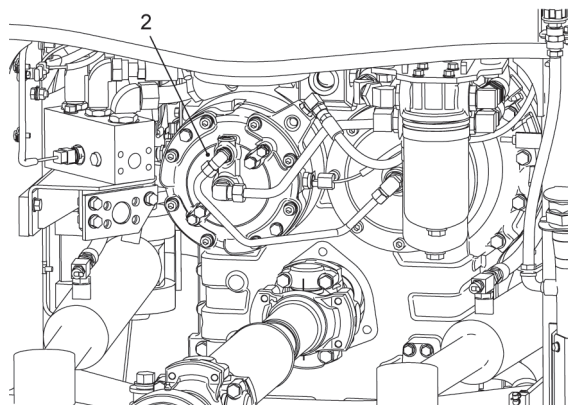
Check the gas pressure at a regular interval. If the machine is operated with the gas pressure lower than specified value, normal brake operation and/or loading operation may not be achieved, possibly creating very hazardous situations. Ask your nearest Hitachi dealer for checking.

5 Check Brake Disks (Service and Parking) --- every 2000 hours

Service brake (1) is a closed wet type brake.
Parking brake (2) is a closed wet type disk brake. Parking brake (2) is mounted in the transmission.
Consult your nearest Hitachi dealer for checking.



90Z7-7-82-1



90Z7-7-82-2

MAINTENANCE

J. Tire

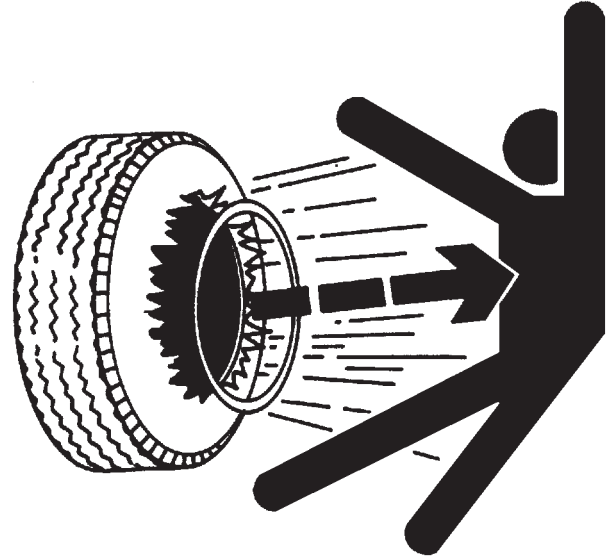
- 1** Check Air pressure
--- every 10 hours (daily)
Adjustment
--- as necessary

! WARNING:

- Secure the front and rear frames with the articulation lock bar and pins.
- When inflating tires, stand behind the tread and use the self-attaching chuck.
- Avoid welding near tires, which could potentially cause the tires to explode.
- Tires may explode if a tire is smoking such as if the machine catches fire, the tires become abnormally hot, or the air smells of rubber or tire bead burning.

IMPORTANT:

- Always maintain the correct tire pressure.
- Even if only one tread pattern has worn out, replace the tire with a new one. Before operating the machine, check the tires for any breaks, damage or foreign matter.
- When replacing one tire, use a new tire having the same tread pattern and specification as the other tires.



SA-249

Check Air Pressure

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

Bias ply tire (standard)	Pattern	Standard Air pressure	
		Front	Rear
26.5-25-20PR	L-3~L-5	422~441 kPa (4.3~4.5 kgf/cm ²)	324~343 kPa (3.3~3.5 kgf/cm ²)

Radial tire (option)	Standard Air pressure	
	Front	Rear
26.5R25	471~490 kPa (4.8~5.0 kgf/cm ²)	373~392 kPa (3.8~4.0 kgf/cm ²)

2. Check the external appearance of tires for any damage, metal piece and extraneous material.

MAINTENANCE

2 Check Tire for Damage --- every 10 hours (daily)

WARNING: If tire has external damage such as scoring, an accident due to puncture or bursting of the tire may occur, possibly resulting in personal injury or death.

Check the external appearance of tires for any damage.

3 Check Wheel Bolt Torque --- every 500 hours (50 hours at first time only)

Be sure to check the wheel bolt torque by turning the bolt in the tightening direction.

Tightening torque: 890 N·m (91 kgf·m)

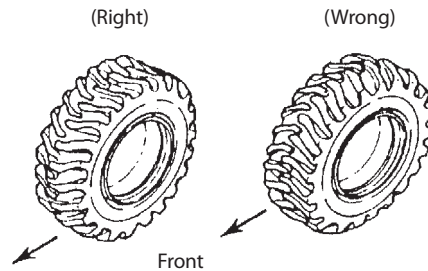
Replace Tire

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

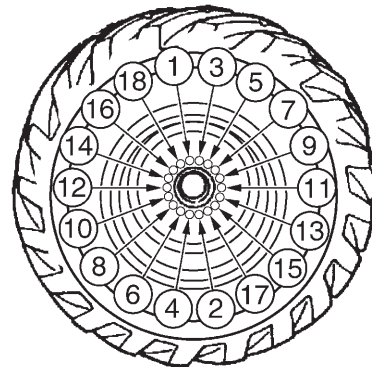
IMPORTANT: Height of the machine may change according to the types of tires to be installed.

Do not change the specifications of the registered machine by using unauthorized tire sizes.

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Loosen all wheel bolts one turn.
Note which way the tread pattern is facing.
4. After jacking up the machine, securely support the machine with blocks.
5. Remove the wheel bolts. Replace the tire.
6. With the tire raised off the ground, lightly tighten the wheel bolts in order as illustrated to the right.
7. Lower the machine. Retighten the wheel bolts to specification in the order as illustrated to the right.



M4GB-07-104



M4GB-07-102

MAINTENANCE

Applicable Tire Size

 **NOTE:** Consult your authorized Hitachi dealer for tread pattern of optional tires.

The machine may vibrate while driving depending on the tread pattern of tires. This is a sympathetic vibration due to tread pattern, not a malfunction.

Bias ply tire

Size	Pattern	Air pressure kPa (psi)	
		Front	Rear
26.5-25-20PR	L-3	422~441 (61~64)	324~343 (47~50)
	L-4		
	L-5		

Radial tire

Size	Air pressure kPa (psi)	
	Front	Rear
26.5 R25	471~490 (68~71)	373~392 (54~57)

 **NOTE:** Adjust air pressure according to the size and type of tires provided in the table above regardless of the tread pattern.

Adjust tire pressure in conformity with the work mode the machine is engaged in.

Consult your nearest Hitachi dealer for more detailed information.

- Driving on Public Roads: ... Standard Pressure
- Loading/excavation on normal ground surface: ... Standard or slightly higher than standard pressure
- Heavy-duty excavation: ... Higher pressure in the standard pressure range
- Operation on soft terrain or sandy territory: ... Slightly lower than standard pressure

MAINTENANCE

Tire Rotation

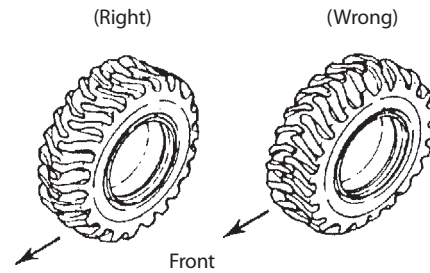
Rotate tires when uneven or abnormal wear is recognized on either front or rear, or right and left tire. Tire rotation is recommended to achieve uniformity of wear on tires or equalization of tire service life.

Rotation Procedure

WARNING: Install tire with no external damage such as score and abnormal wear.

Failure to do so may cause the puncture or the tire to blowout, possibly resulting in personal injury or death since tire load is increased when the machine is loaded or braked during operation.

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



M4GB-07-104

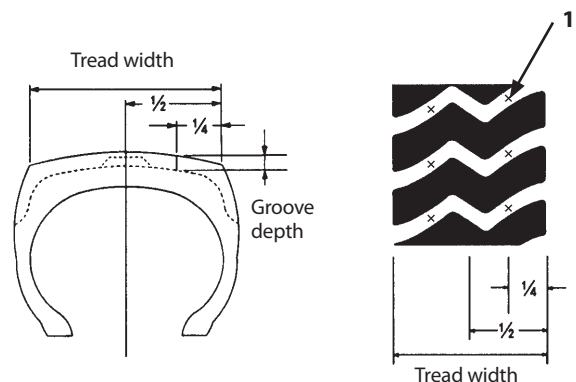
How to Check Wear Amount (Tread Design Groove Depth):

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

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

IMPORTANT: If the machine is operated with such tires at either rear or front being extremely worn or different in type, construction, or size, the travel driving system such as axles or transmission will be adversely affected in their performance and/or endurance.

When replacing tires, be sure to use the same tires in type, construction and size to the four wheels. It is recommended to replace tires of the four wheels at the same time.



MNEC-07-122

MAINTENANCE

Removal and Installation of Tire

⚠ WARNING: Wheel with tire is a very heavy, making removal and installation of a tire is hazardous and difficult work. In addition, a crane to lift a tire is required when removing or installing the tire to the wheel. Consult your nearest Hitachi dealer or a professional tire sales shop for tire removal and installation work.

If jacking up the machine is required, be sure to observe the following points.

- Select dry, solid and flat ground for a work site.
- Work in a group of more than two personnel. One person shall mainly engage in practicing the work and others shall work as assistants and/or ensure safety.
- Do not use the bucket to raise the front wheels.
- Do not raise the machine off the ground higher than necessary.
- When the front (rear) wheels are raised off the ground, wedge wheel stoppers under the rear (front) wheels.
- After the machine is raised off ground, be sure to block the machine using rigid supports. Never leave the machine to be supported only by jacks.
- The rear wheels oscillate. Insert wooden blocks between the axle and the frame to stop oscillation.
- When removing the wheel bolts, lift the wheel with a crane so that the wheel bolt remaining at the top position is finally removed.
- Wheel bolt tightening torque: 890 N·m (90.8 kgf·m, 656 lbf·ft)

Tire Wheel

⚠ WARNING: When a tire wheel must be removed, ask a professional person to do so.

Allow only an authorized person to inflate a tire after the tire was installed onto the wheel.

Sufficiently remove rust from the wheel. Severe rust may cause the wheel to crack, possibly causing the machine trouble and/or personal accidents.

MAINTENANCE

K. Air Conditioner

1 Clean/Replace Air Conditioner Circulation/Fresh Air Filters

Clean filters

--- every 100 hours (or once a week whichever comes first)

Replace filter

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

 **NOTE:** If the machine is operated at a dusty job site, clean or replace the filter element earlier than the normal interval.

Clean Fresh Air Filter

1. Remove the filter:

The fresh air filter is installed behind cover (1) on the left rear side of the cab exterior. Open cover (1) with the starter key.

Loosen wing nuts (3) and remove plate (2). Remove fresh air filter (4).

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

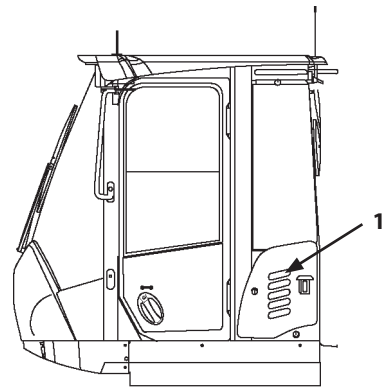
IMPORTANT: If compressed air delivery pressure is high, damage to the filter fins may result. Always use compressed air at the lower pressure than 0.2 MPa (2kgf/cm²). Keep the nozzle more than 500 mm away from the core surface.

2. Clean fresh air filter (4).

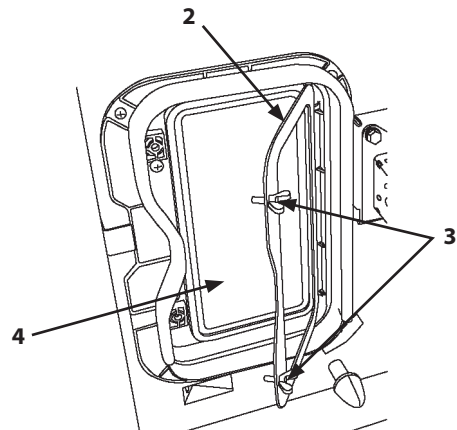
Clean fresh filter (4) using compressed air or by washing with water.

Washing procedure with water is as follows:

- 2.1 Use tap water.
- 2.2 Submerge the filter in water containing a neutral detergent for about 5 minutes
- 2.3 Clean the filter with water again.
- 2.4 Sufficiently dry the filter.



MNEC-01-505



MNEC-07-043

MAINTENANCE

IMPORTANT: Inappropriate installation of the filter may cause dust to enter into the air conditioner, causing malfunction or breakdown of the air conditioner.

Before installing the filter element, clean off dust around the mounting area; install the filter element with extra care.

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

MAINTENANCE

Clean and Replace Double Filter (Optional)

--- When cleaning fresh air filter

1. Remove the double filter:

The double filter is installed behind cover (1) on the left rear side of the cab exterior. Open cover (1) with the starter key.

Loosen wing nuts (3) and remove plate (2) with double filter (7).

Remove bolts (5) (4 used), plate (6), and double filter (7) from plate (2).

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

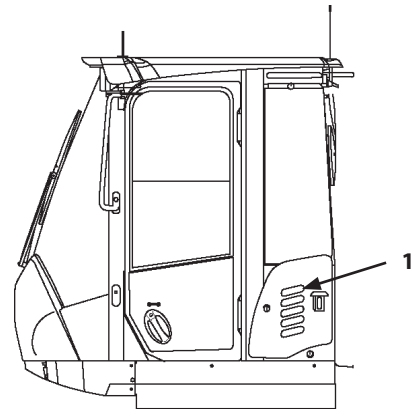
IMPORTANT: If compressed air delivery pressure is high, damage to the filter fins may result. Always use compressed air at the lower pressure than 0.2 MPa (2kgf/cm²). Keep the nozzle more than 500 mm away from the core surface.

2. Clean double filter (7).

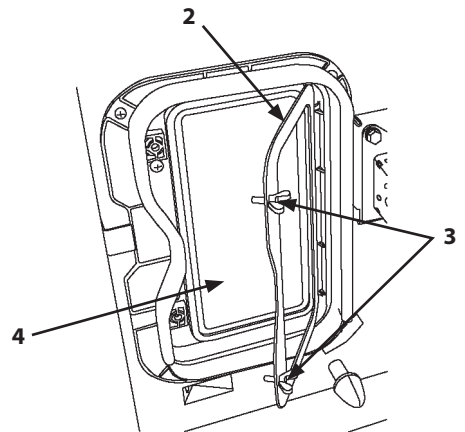
Clean double filter (7) using compressed air or by washing with water.

Washing procedure with water is as follows:

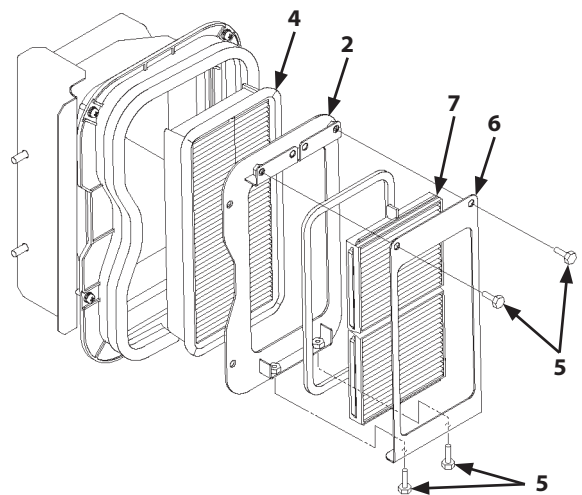
- 2.1 Use tap water.
 - 2.2 Submerge the filter in water containing a neutral detergent for about 5 minutes
 - 2.3 Clean the filter with water again.
 - 2.4 Sufficiently dry the filter.
3. Install the cleaned double filter or a new filter by following the filter removal procedure described in step 1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



MNEC-01-505



MNEC-07-043



MNHE-07-048

MAINTENANCE

Clean Circulation Air Filter

1. Remove the filter:

Remove screw (6) under cup holder (5) and tilt the cup holder forward. Hold handle (7) and pull handle (7) toward you to remove circulation air filter (8).

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

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

2. Clean circulation air filter (8).

Clean circulation air filter (8) using compressed air or by washing with water.

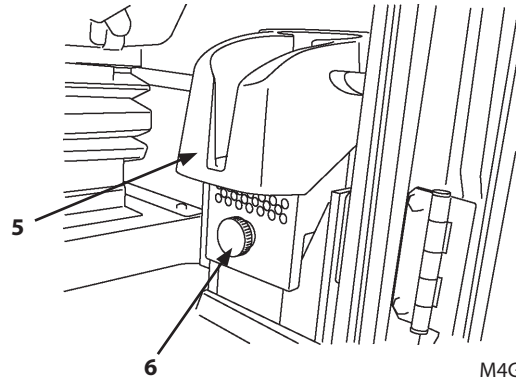
Washing procedure with water is as follows:

- 2.1 Use tap water.
- 2.2 Submerge the filter in water containing a neutral detergent for about 5 minutes
- 2.3 Clean the filter with water again.
- 2.4 Sufficiently dry the filter.

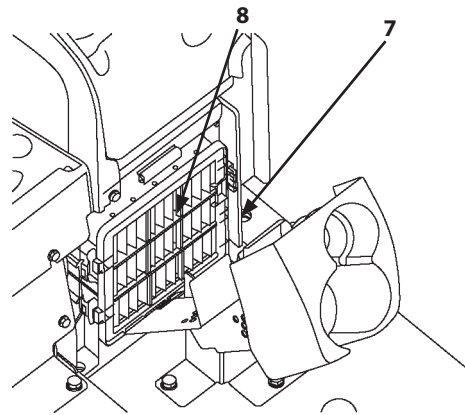
IMPORTANT: Inappropriate installation of the filter may cause dust to enter into the air conditioner, causing malfunction or breakdown of the air conditioner.

Before installing the filter element, clean off dust around the mounting area; install the filter element with extra care.

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



M4GB-07-108



MNEC-07-044

MAINTENANCE

2 Check Air Conditioner --- every 6 months

Check the air conditioner switch panel, air conditioner unit, and condenser mounting areas for any abnormality, and check hoses for any damage.



NOTE: When the season to use the air conditioner comes close, check the air conditioner to get it ready to use at all times.

When not required to use the air conditioner for a long period of time, operate the air conditioner in the cooling mode once a week to prevent lack of lubrication.



WARNING: Do not clean the compressor and receiver tank with steam.

The refrigerant gas pressure will increase, possibly causing the hoses to break.

3 Check Air Conditioner Piping --- every 6 months



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

Do not overly tighten piping.

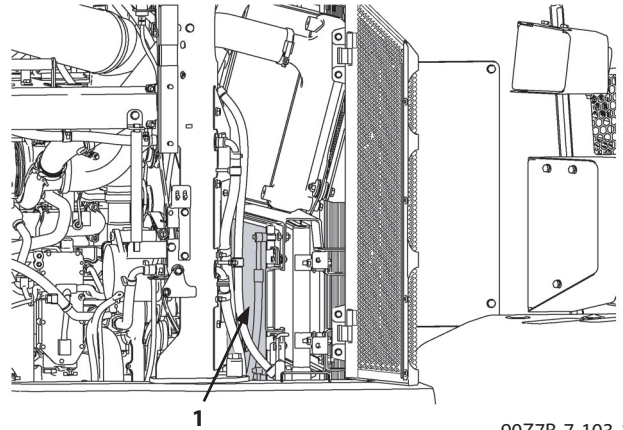
Check the piping for abnormal deformation and/or damage. If a pipe joint is contaminated with oil, refrigerant leakage may be suspected. Check for leakage using a gas leak detector.

MAINTENANCE

4 Check Air Conditioner Condenser

--- every 6 months

If condenser (1) is covered with dirt and/or insects, air conditioner cooling performance will be reduced. Remove dirt or stain from fins of condenser (1) using tap water. If the condenser has been severely contaminated, use a soft brush. Do not use a hard brush, which may damage the fins.



90Z7B-7-103-1

5 Check Air Conditioner Drive Belt

--- every 6 months

Check the belt for abnormal deflection and damage. Check drive belt tension by depressing the midpoint shown with ↓ mark in the illustration by using tension gauge.

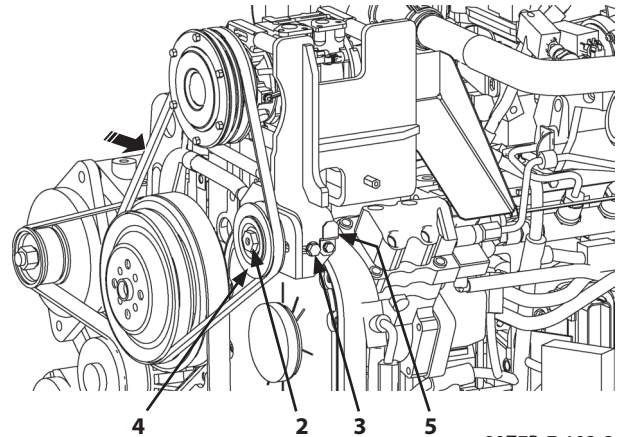
Belt tension: 343 ± 49 N (35 ± 5 kgf)

 **NOTE:** The belt tension should be 490 ± 98 N (50 ± 10 kgf, 110 ± 22 lbf) when the belt is replaced with new one.

Belt Tension Adjustment Procedure

1. Loosen lock nut (2) of tension pulley (4).
2. Remove plate (5) and move tension pulley (4) to adjust belt tension by turning belt tension adjustment bolt (3).
3. Securely tighten lock nut (2) and install plate (5).

Tightening torque: 30.4 to 31.4 N·m (3.1 to 3.2 kgf·m)



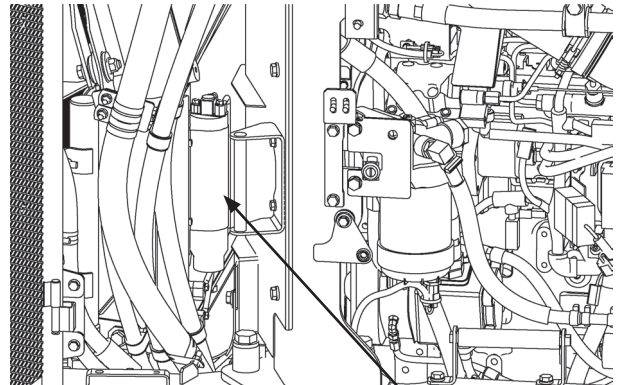
90Z7B-7-103-2

MAINTENANCE

6 Check Refrigerant --- every 6 months

Start the engine and run at approximately 1500 min⁻¹ (rpm). Turn the air conditioner switch to ON. Set the blower switch to HI and set the temperature control switch to the coolest position (18 °C on the monitor screen). Operate the air conditioner 2 to 3 minutes. Check if cool air comes out from the vent in the cab.

IMPORTANT: If recovery or refill of refrigerant is required during the machine maintenance (including disposing the machine), contact your refrigerant supplier or your authorized dealer.

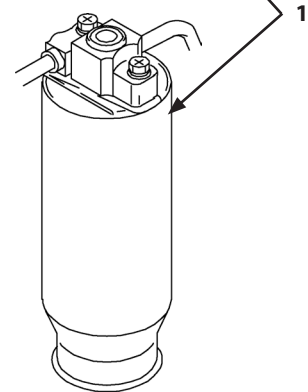


90Z7B-7-104-1

7 Replace Air Conditioner Receiver Dryer --- every 6000 hours or three years

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

Before charging refrigerant, all the refrigerant must be recovered from the system. Consult your nearest authorized dealer to replace receiver dryer (1) or to charge the refrigerant.



90Z7-OM0144

Type	Refrigerant No.	Quantity kg
HFC	R134a	0.9±0.05

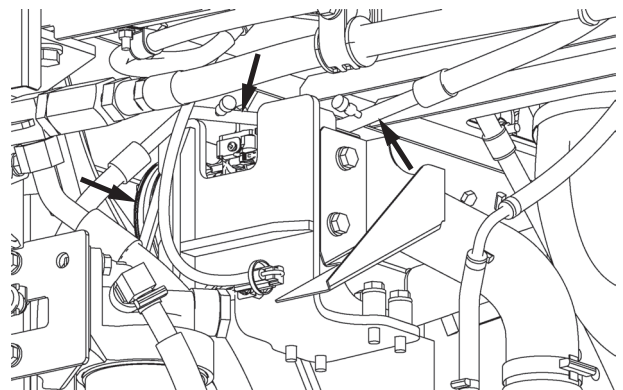
8 Check Compressor and Pulley --- once a year

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

Check Compressor:

After operating the air conditioner for 5 to 10 minutes, check temperature at both the high pressure pipe and the low pressure pipe.

Normally, the high pressure pipe must be hot and the low pressure pipe must be cool.



90Z7B-7-104-2

MAINTENANCE

L. Miscellaneous

1 Check Bucket Teeth and Cutting Edge --- every 10 hours (daily)

Check bucket teeth for wear and looseness.

Replace

WARNING: Guard against injury from flying pieces of metal.

Wear goggles or safety glasses, hard hat and face shield.

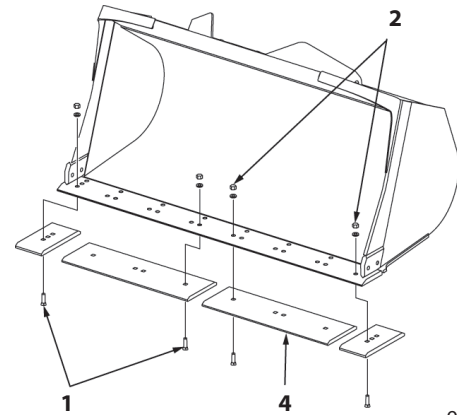
Cutting Edge

1. Lift the bucket so its bottom is level. Lift the bucket to an appropriate height and wedge a block under it so the bucket will not come down. Stop the engine.
2. Loosen bolts (1) and nuts (2). Remove cutting edge (4).
3. Install new cutting edge (4). If the reverse side of a cutting edge is not worn much, use it again with the face reversed. If both sides are worn out, replace it with a new one.
4. Tighten nuts (2).

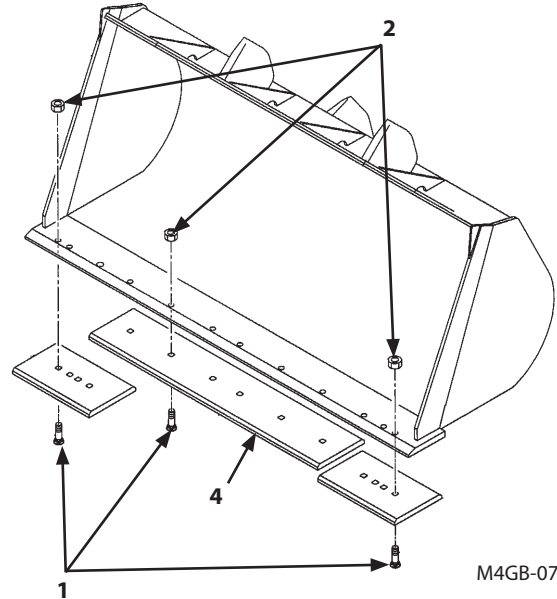
Tightening torque

Cutting edge : 1068 N·m (107 kgf·m)

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



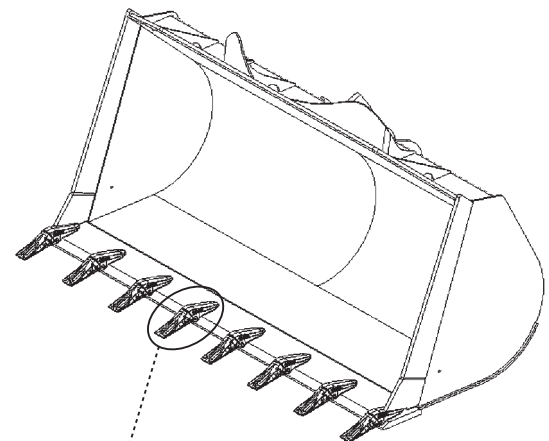
90Z7-7-95-2



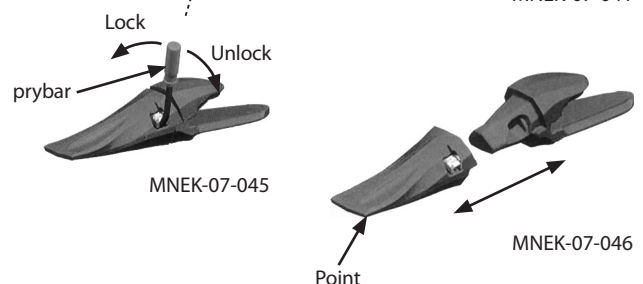
M4GB-07-116

Bucket Teeth

1. Lift the bucket so its bottom is level. Lift the bucket to an appropriate height and wedge a block under it so the bucket will not come down. Stop the engine.
2. Insert a prybar into the locking part of the tooth, unlock it and remove the point.
3. Remove the point of the tooth.
4. Mount a new point and lock it with the prybar.
5. After operating the machine for several hours, check and make sure there are no problems with the mounting of the point.



MNEK-07-041



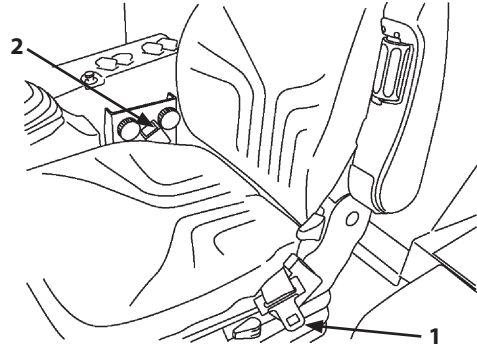
MAINTENANCE

2 Check and Replace Seat and Seat Belt

Check appearance --- every 10 hours (daily)
Replace --- every 3 years

Examine buckle (1), attaching hardware (2) and seat belt web. Replace the seat belt web, buckle, or attaching hardware if they are damaged, or worn. Also check the wind-up condition of the seat belt.

Replace seat belt every 3 years, regardless of appearance. Inspect the seat for large play or damage. Replace it if necessary.

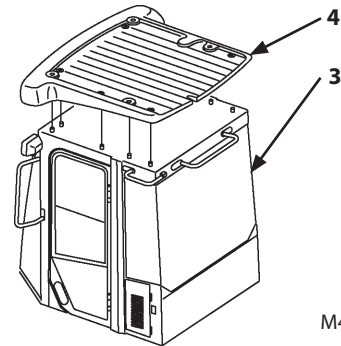


M4GB-07-117

3 Check ROPS cab, Resin Cab Roof, and Roof Mounting Bolts

--- every 10 hours (daily)

Check the appearance of ROPS cab (3) and resin cab roof (4) for any abnormal damage or deformation.



M4GB-07-118

4 Check Windshield Washer Fluid Level

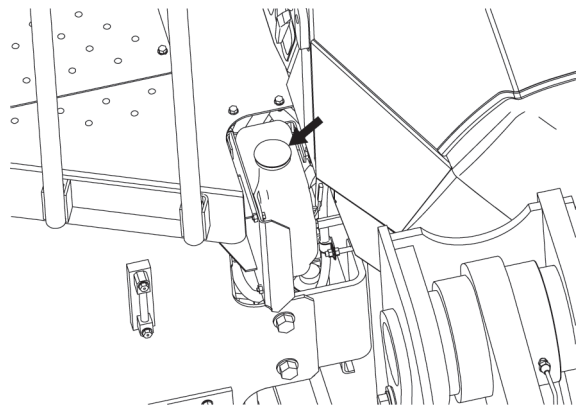
--- every 10 hours (daily)

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

Use anti-freeze type washer fluid in cold weather.

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

 **NOTE:** The location of the windshield washer fluid tank differs depending on the machine models.



90Z7-7-96-3

MAINTENANCE

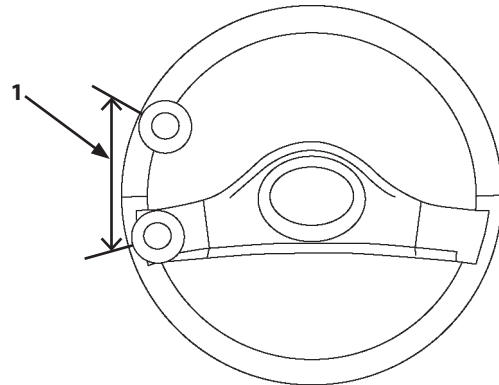
5 Check Play Amount in Steering Wheel Stroke

--- every 10 hours (daily)

⚠ WARNING: When the steering wheel is turned, the clearance between the front and rear frames becomes narrower, possibly creating a hazardous situation such as entanglement of limbs. Keep any personnel away from the frame articulation point during inspection.

Check that play (1) in steering wheel stroke is correct and that steering column tilt telescopic lever (2) and pedal (3) are securely held.

In addition, check that the steering wheel column normally comes in contact with the stopper when the steering wheel is fully turned and that the steering cylinder operates normally.



MNEC-07-050

1. Start the engine.

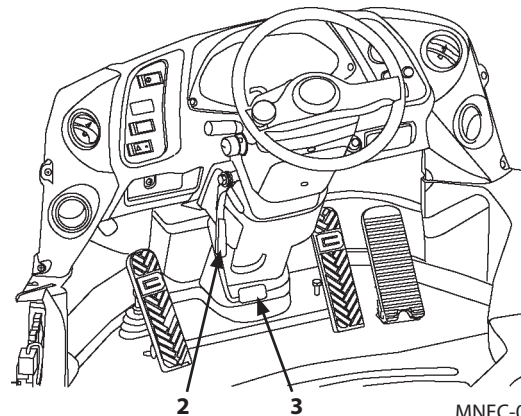
Turn the parking brake switch ON.

2. Slightly lift the bucket above the ground.

Place the control lever lock in the lock position.

3. While running the engine at slow speed, slightly rotate the steering wheel knob in both clockwise and counterclockwise direction. Measure the moving distance along the steering wheel circumference until both right and left steering cylinders start moving (check the movement of the bucket and/or tires).

Play amount (1) : 5 to 15 mm



MNEC-01-037

✎ 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.

MAINTENANCE

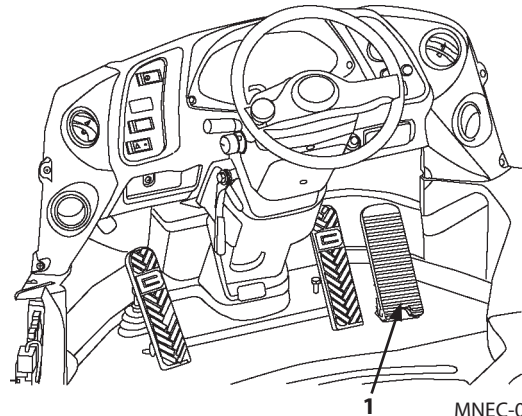
6 Check Accelerator Pedal Operation, and Exhaust Gas Color and Noise

--- every 10 hours (daily)

WARNING: Move the forward/reverse lever to neutral. Apply the parking brake. After horizontally resting the bucket on the ground, set the wheel stoppers.

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

If dust and/or soil accumulate in vicinity of accelerator pedal (1), remove them.



MNEC-01-037

Exhaust Gas Color and Noise:

DANGER: Ventilate the shop with fresh air when carrying out warm-up operation indoors. Failure to do so may cause intoxication by exhaust gas, possibly resulting in personal death accident.

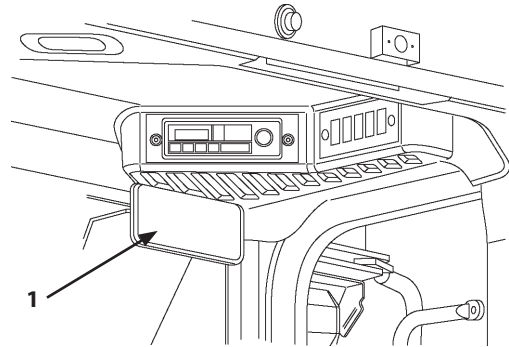
IMPORTANT: This machine is equipped with an engine that meets Stage IV emission requirements. Never attempt to modify the inlet and exhaust system.

Exhaust gas color is normally transparent or light blue. Although exhaust gas color slightly becomes white immediately after the engine is started or quickly accelerated, this symptom is not abnormal. If the exhaust gas color turns black, white, brown, or gray, check the engine oil level and the fuel supply system for any abnormality. In addition, check that no abnormal noise is heard coming from the engine or the muffler.

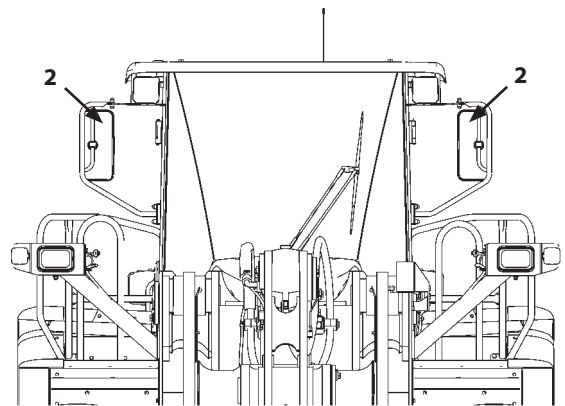
MAINTENANCE

7 Check Rearview Mirror and Inside Rearview Mirror --- every 10 hours (daily)

Check that the inside of rearview mirror (1) and rearview mirror (2) are facing a correct direction. Check inside rearview mirror (1) and rearview mirror (2) for contamination or damage.



M4GB-01-116

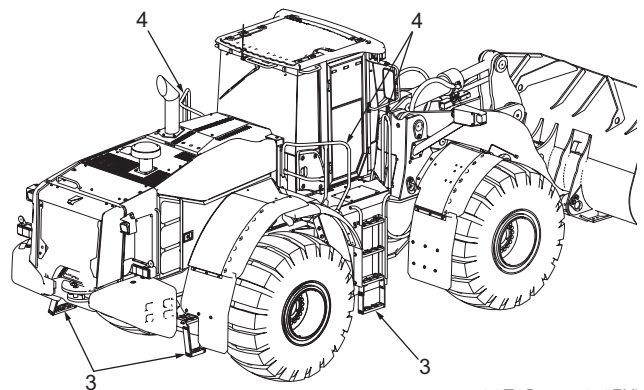


MNFB-01-002

8 Check Steps and Handrails for Damage and Looseness

--- every 10 hours (daily)

Check steps (3) and handrails (4) for any damage, looseness and contamination. If any slippery matter such as machine lubricants or mud becomes adhered to the steps and/or handrails (4), remove such contaminant. If the steps (3) and/or handrails (4) become damaged or loosened so that getting on and off the machine is difficult, immediately repair or replace.



90Z7B-7-110-2EU

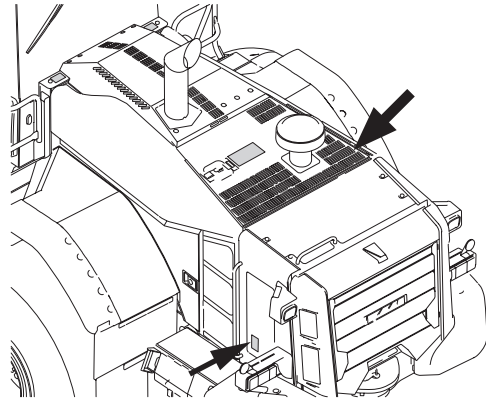
MAINTENANCE

9 Clean Engine Compartment and Hood

--- every 10 hours (daily)

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

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



90Z7B-S-44-1EU

10 Check Sound Absorbing Mat Around Engine

--- every 10 hours (daily)

CAUTION: If the sound absorbing mat in the engine compartment becomes unglued, the mat may come in contact with high temperature sections of the engine, possibly resulting in fires.

Check if the sound absorbing mat around the engine is unglued. If any part of the mat is found unglued, immediately contact your nearest Hitachi dealer for repair.

11 Cleaning of Rear View Camera Lens

--- every 10 hours (daily)

Oil, dust, moisture band, or others may obscure the image from the camera lens.

If image is not clear, clean the lens by following below procedure.

1. Gently wipe surface of the camera lens with a damp cloth.

IMPORTANT: Never use organic solvent.

Do not apply excessive force as it may damage the camera.

MAINTENANCE

12 Check and Adjust Valve Clearance --- every 5000 hours

Consult your nearest Hitachi dealer for check and repair.

13 Retighten Front Axle and Rear Axle Support Mounting Bolts --- every 2000 hours (50 hours at first time only)

Check front and rear axle support mounting bolts for looseness.

Tightening torques of the front axle and rear axle support mounting bolts

Front Axle Mounting Bolt	Rear Axle Support Mounting Bolt
1420 N·m (145 kgf·m)	1420 N·m (145 kgf·m)

MAINTENANCE

14 Tightening and Retightening Torque of Nuts and Bolts

--- every 250 hours (50 hours at first time only)

Tighten or retighten nuts and bolts used on this machine in accordance with the torque values shown in the following table. Check nuts and bolts for looseness and missing daily before and after operation. If any loose or missing nuts and/or bolts are found, retighten or supply replacement parts. Check tightness after the first 50 hours then every 250 hours. The nuts and bolts other than those shown in the table below shall be tightened in accordance with the torque values shown in the table on page 7-125.

※ LOCTITE #263 is used.

Figures with * mark are shown in Inch.

	Locations	Bolt Diameter	Quantity	Wrench Size	Torque N·m (kgf·m)
1	Front axle mounting bolt	30	8	46	1420 (145)
2	Rear axle support mounting bolt	30	10	46	1420 (145)
3	Wheel rim mounting bolt	24	80	36	890 (91)
4	Propeller shaft mounting bolt	12	24	19	※ 142 (14.5)
5	Propeller shaft support bearing mounting bolt	20	2	30	※ 400 (40)
6	Transmission mounting bolt: Bracket	16	24	24	※ 206 (21)
7	Transmission mounting bolt: Cushion rubber	20	4	30	※ 400 (40)
8	Engine mounting bolt	A 16	8	24	※ 206 (21)
		B 20	2	30	※ 400 (40)
		C 12	4	19	※ 90 (9.2)
		D 24	2	36	※ 700 (70)
		E 12	4	15	※ 115 (11.7)
		F 3.4 UNC	1	26	※ 325 (33.1)
9	Aftertreatment device mounting bolt/nut	A 12	8	19	90 (9.2)
		B 10	16	17	20 (2)

MAINTENANCE

	Locations		Bolt Diameter	Quantity	Wrench Size	Torque N·m (kgf·m)
10	Counterweight mounting bolt		24	8	36	700 (70)
11	Top center pin upper flange lock		16	8	24	210 (21)
12	Top center pin lower bushing lock		18	5	24	422 (43)
13	Bottom center pin lock		20	1	30	400 (40)
14	Loader front pin lock		20	13	30	400 (40)
15	Steering cylinder pin lock		16	4	24	210 (21)
16	Radiator mounting bolt	A	16	6	24	210 (21)
		B	10	2	17	37 (3.8)
		C	10	2	17	54 (5.5)
17	Oil cooler mounting bolt	A	10	4	17	50 (5)
		B	12	4	19	90 (9)
18	Air conditioner condenser mounting bolt		8	4	13	10.2 to15.2 (1.02 to1.52)
19	Air conditioner compressor mounting bolt	A	8	4	13	20 (2)
		B	8	4	17	50 (5)
20	Cab cushion rubber mounting nut		16	4	24	210 (21)
21	Cutting edge mounting bolt		*1-8 UNC	12	41	1068 (107)
22	Wear plate mounting bolt		*1-8 UNC	8	36	1068 (107)

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:

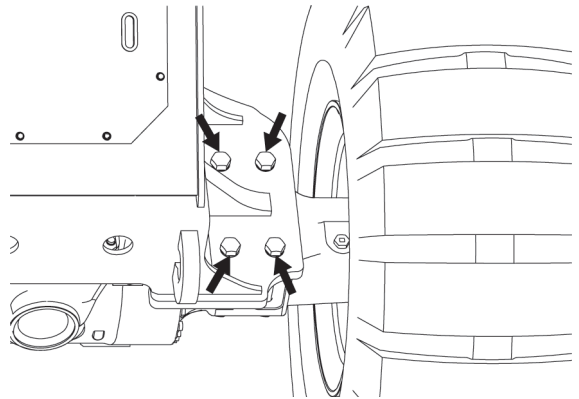
- Apply lubricant (e. g. white zinc B solved into spindle oil) to bolts and nuts to stabilize their friction coefficient.
- Remove soil, dust, and/or dirt from the nut and bolt thread surfaces before tightening.
- Tighten nuts and bolts to specifications. If tightened with excessively low or high torque, missing or breakage of nuts and/or bolts may result.

MAINTENANCE

1. Front axle mounting bolt

Bolt dia. mm	30
Quantity	8

 **NOTE:** DO NOT lubricate these bolts.

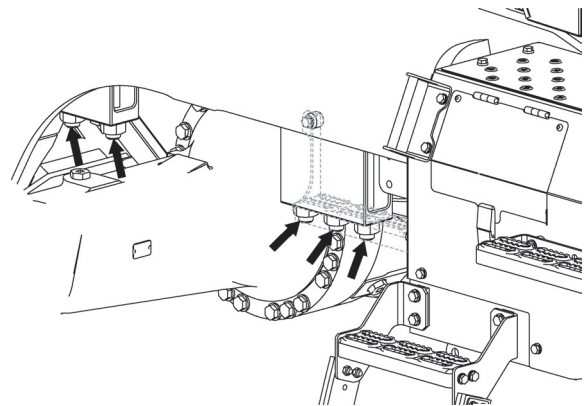


90Z7-7-105-1

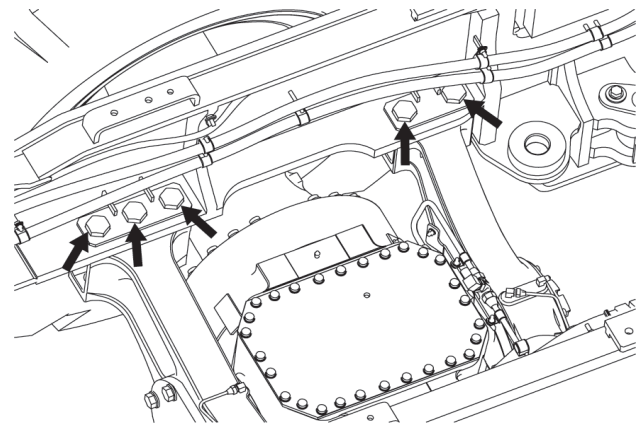
2. Rear axle support mounting bolt

Bolt dia. mm	30
Quantity	10

 **NOTE:** DO NOT lubricate these bolts.



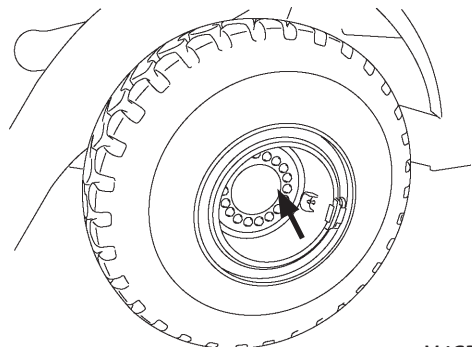
90Z7B-7-114-2



90Z7-7-105-3

3. Wheel rim mounting bolt

Bolt dia. mm	24
Quantity	80

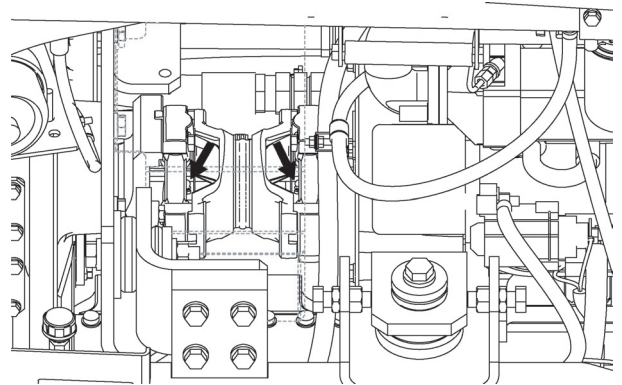


M4GB-07-127

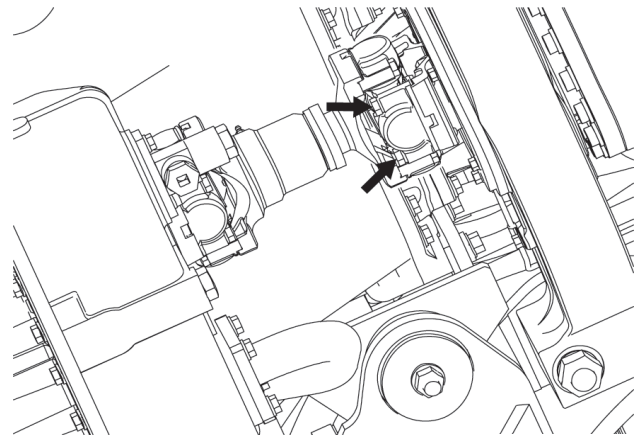
MAINTENANCE

4. Propeller shaft mounting bolt

Bolt dia. mm	12
Quantity	24



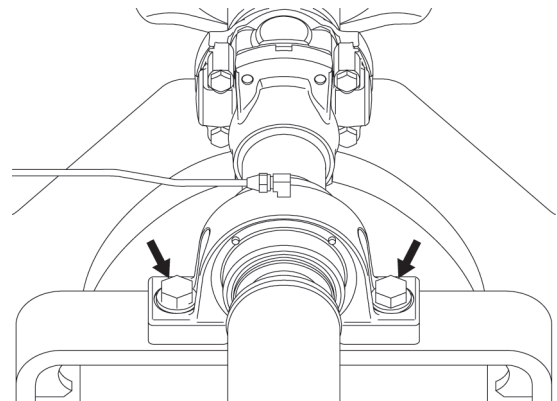
90Z7B-7-115-1



90Z7-7-106-1

5. Propeller shaft support bearing mounting bolt

Bolt dia. mm	20
Quantity	2

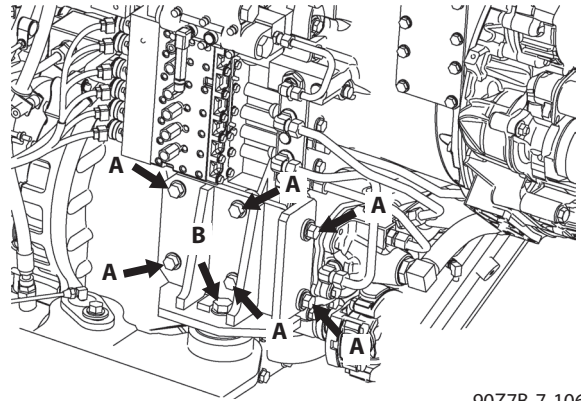


90Z7-7-106-2

MAINTENANCE

6. Transmission mounting bolt: Bracket

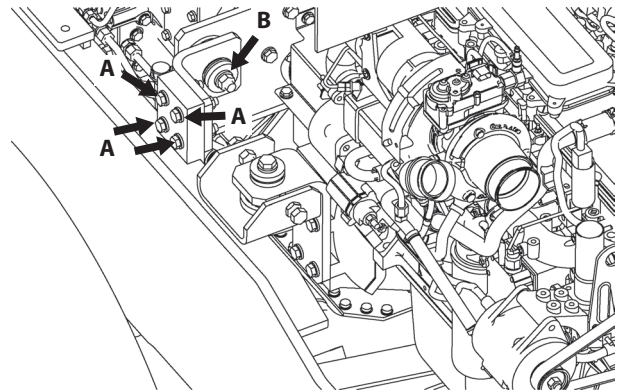
Bolt dia. mm	16
Quantity	24



90Z7B-7-106-3

7. Transmission mounting bolt: Cushion rubber

Bolt dia. mm	20
Quantity	4



90Z7B-7-116-2

MAINTENANCE

8. Engine mounting bolt

Bolt A

Bolt dia. mm	16
Quantity	8

Bolt B: Cushion rubber

Bolt dia. mm	20
Quantity	2

Bolt C

Bolt dia. mm	12
Quantity	4

Bolt D

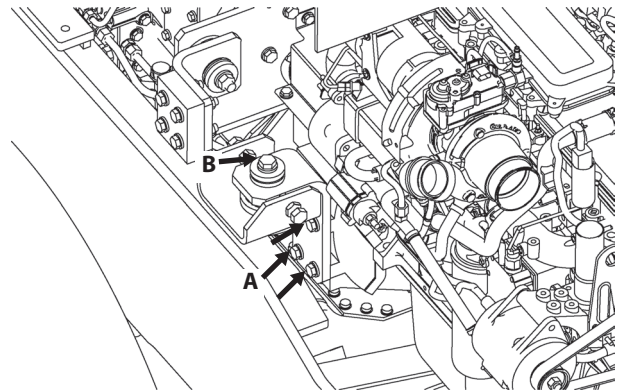
Bolt dia. mm	24
Quantity	2

Bolt E

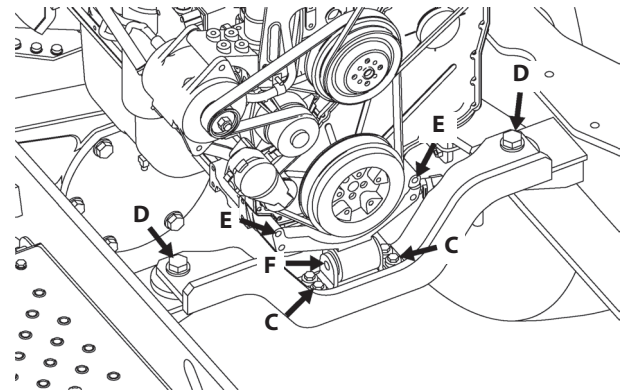
Bolt dia. mm	12
Quantity	4

Bolt F: Cushion rubber

Bolt dia. mm	3.4 UNC
Quantity	1



90Z7B-7-116-2



90Z7B-7-116-3

MAINTENANCE

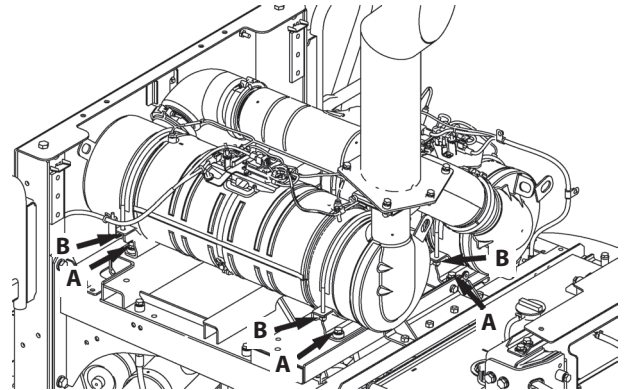
9. Aftertreatment device mounting bolt

Bolt A

Bolt dia. mm	12
Quantity	8

Nut B

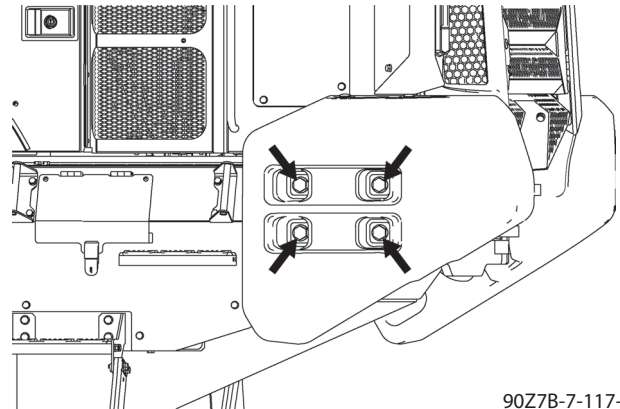
Bolt dia. mm	10
Quantity	16



90Z7B-7-117-1

10. Counterweight mounting bolt

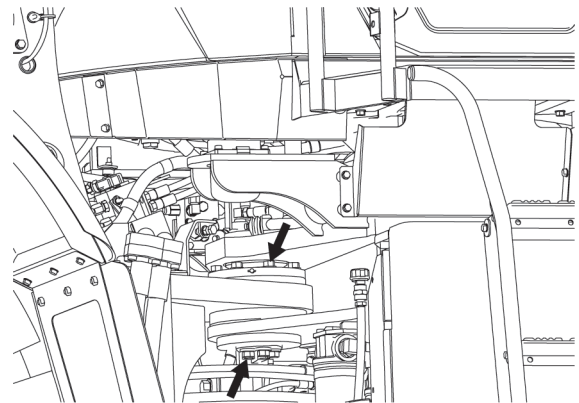
Bolt dia. mm	24
Quantity	8



90Z7B-7-117-2

11. Top center pin upper flange lock

Bolt dia. mm	16
Quantity	8



90Z7-7-108-3

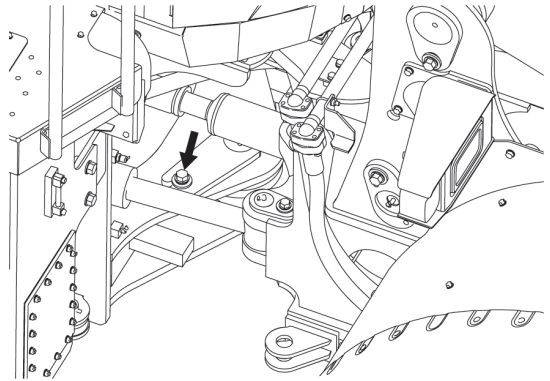
12. Top center pin lower bushing lock

Bolt dia. mm	18
Quantity	5

MAINTENANCE

13. Bottom center pin lock

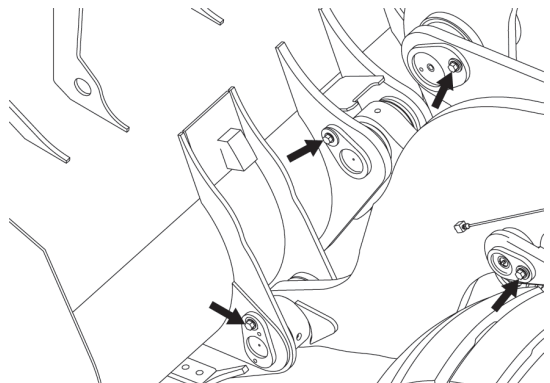
Bolt dia. mm	20
Quantity	1



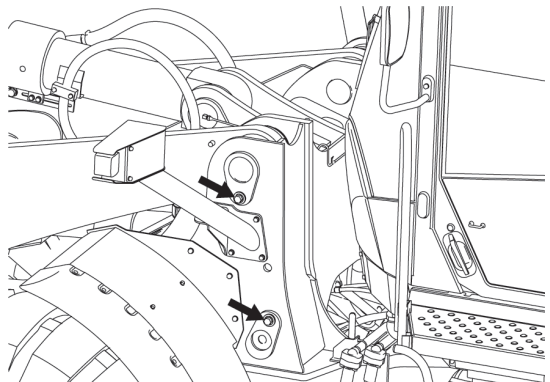
90Z7-7-109-1

14. Loader front pin lock

Bolt dia. mm	20
Quantity	13



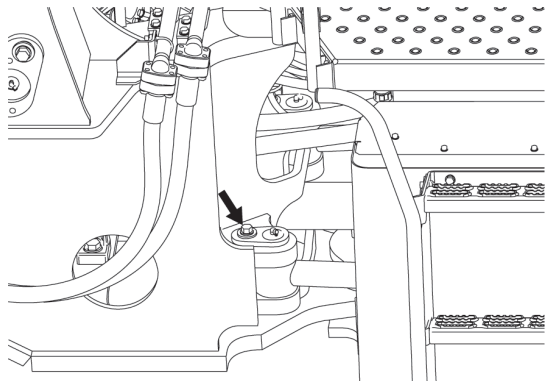
90Z7-7-109-2



90Z7-7-109-3

15. Steering cylinder pin lock

Bolt dia. mm	16
Quantity	4



90Z7-7-109-4

MAINTENANCE

16. Radiator mounting bolt

Bolt A

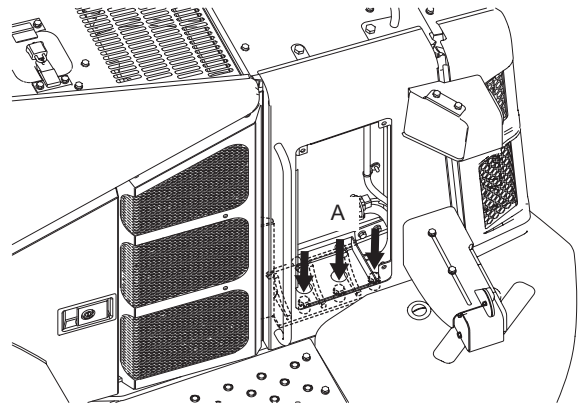
Bolt dia. mm	16
Quantity	6

Bolt B

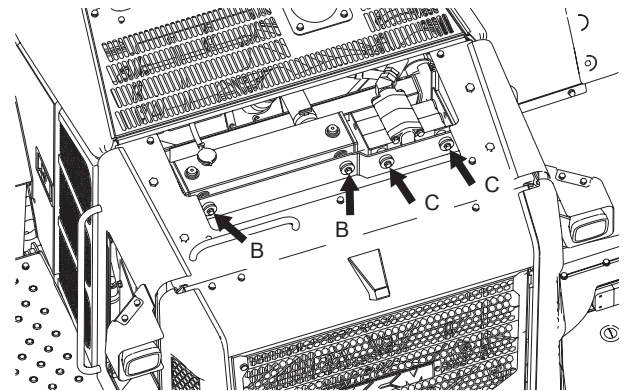
Bolt dia. mm	10
Quantity	2

Bolt C

Bolt dia. mm	10
Quantity	2



90Z7B-7-119-1EU



90Z7B-7-119-2EU

MAINTENANCE

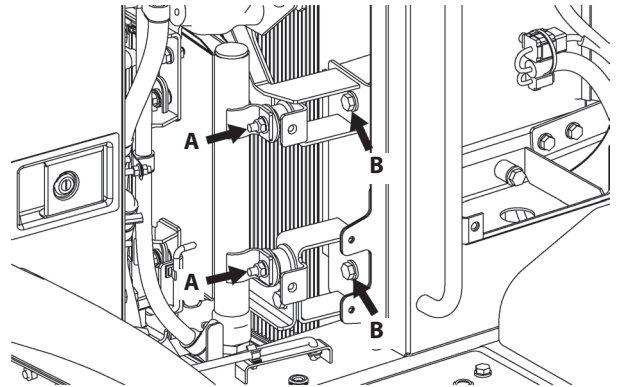
17. Oil cooler mounting bolt

Bolt A

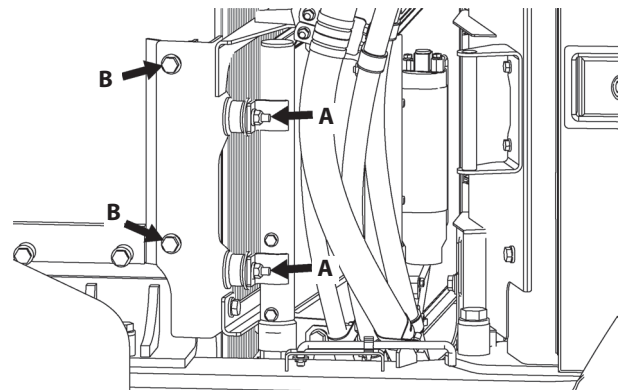
Bolt dia. mm	10
Quantity	4

Bolt B

Bolt dia. mm	12
Quantity	4



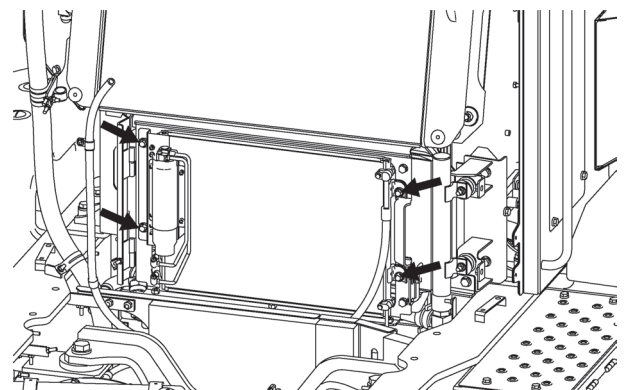
90Z7B-7-120-1



90Z7B-7-120-2

18. Air conditioner condenser mounting bolt

Bolt dia. mm	8
Quantity	4



90Z7B-7-120-3

MAINTENANCE

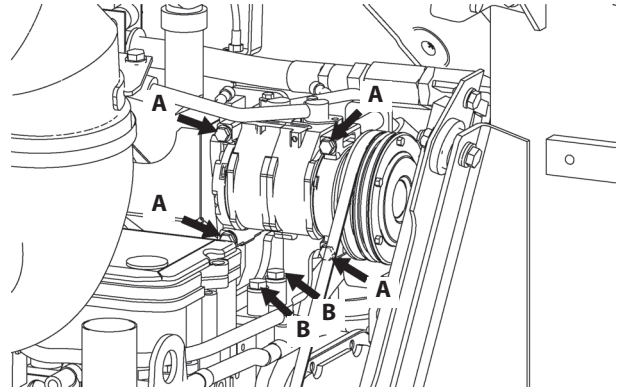
19. Air conditioner compressor mounting bolt

Bolt A

Bolt dia. mm	8
Quantity	4

Bolt B

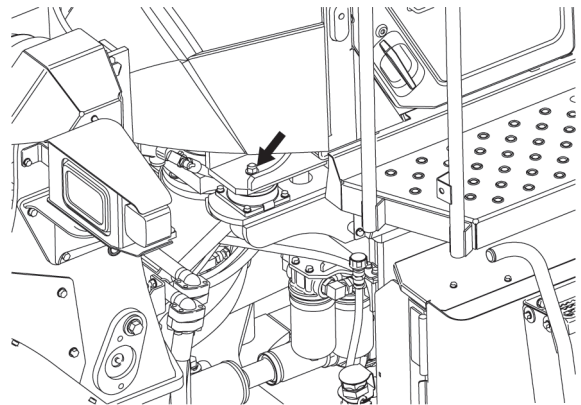
Bolt dia. mm	8
Quantity	4



90Z7B-7-121-1

20. Cab cushion rubber mounting nut

Nut dia. mm	16
Quantity	4

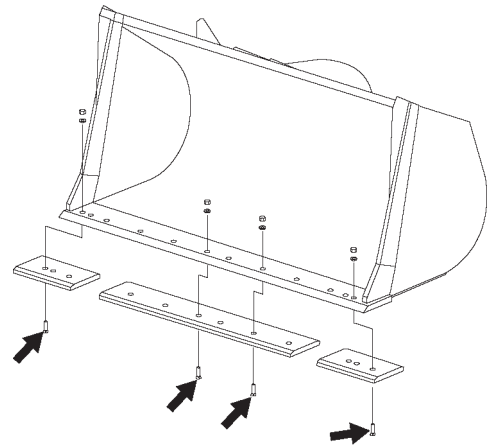


90Z7-7-112-2

MAINTENANCE

21. Cutting edge mounting bolt

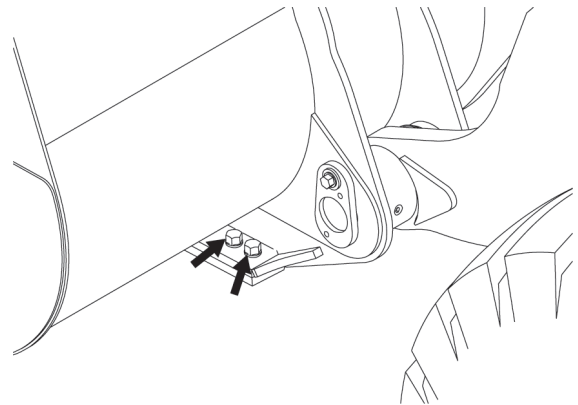
Bolt dia. inch	1-8UNC
Quantity	12



90Z7-7-113EU

22. Wear plate mounting bolt

Bolt dia. inch	1-8UNC
Quantity	8



90Z7-7-113-2

MAINTENANCE

M. Aftertreatment Device

- 1** Check and Clean Aftertreatment Device
--- as required

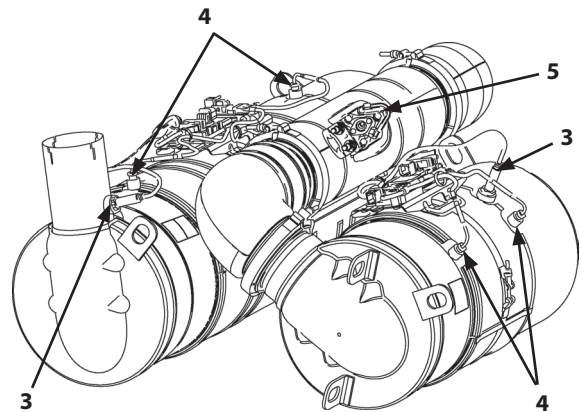
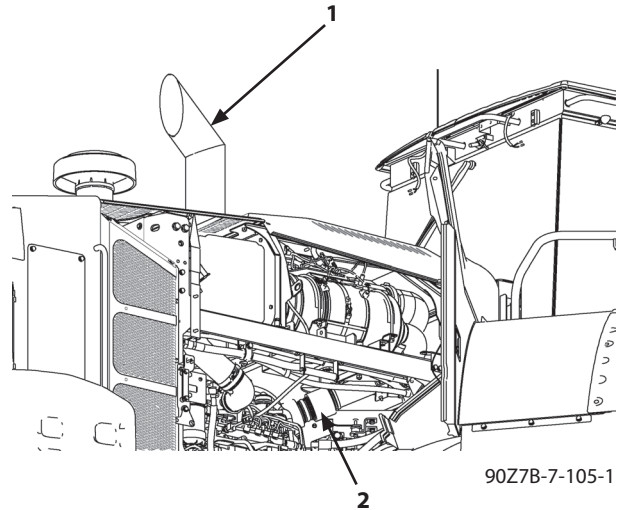
IMPORTANT:

- Check and clean flammable materials on the area around the Aftertreatment device.
- Condensation for dew may blow out from the exhaust outlet of the aftertreatment device and black deposition may be observed; it is not a malfunction.

Do not disassemble the base machine support parts and sensors.

When the machine is operated in dusty areas, refer to the page 9-1 "Maintenance Under Special Environmental Conditions".

1. Open the right and left side cover.
2. Check exhaust pipe (1) and bellows pipe (2) for cracks. Check the aftertreatment device units for loose or disconnection. Check the lagging cover for breaks.
3. Check the connectors and harnesses of NOx sensors (3), temperature sensors (4) and dosing module (5) for abnormality.
4. Close the side cover.



MAINTENANCE

N. Urea SCR System

 **WARNING:** Fill specified DEF/AdBlue® into the DEF/AdBlue® tank.

If improper DEF/AdBlue® is refilled, fire or system failure may result. If improper liquid is refilled in the DEF tank, consult your authorized dealer for check or repair.

Specified DEF/AdBlue®

Refill DEF/AdBlue® which meets Japanese Industrial Standards (JIS K2247), International Organization for Standardization (ISO 22241) or Deutsche Industrie Normen (DIN 70070). If improper liquid (diesel oil, kerosene or gasoline) is refilled in the DEF/AdBlue® tank, fire or system failure may result. The specified DEF/AdBlue® is colorless and odorless solution (urea 32.5%, water 67.5%) which begins to freeze at -11 °C. Store the DEF in -10 to 40°C environment.

In some cases, specified urea solution is referred to by one or more of these names:

- Aqueous Urea Solution 32
- AUS 32
- NOx Reduction Agent
- Catalyst Solution

 **NOTE:** AdBlue® is produced from suppliers which are licensed by the VDA (Verband der Automobilindustrie e.V).

Diesel Exhaust Fluid (DEF) is certified by the API (American Petroleum Institute) Diesel Exhaust Fluid Certification Program.

 **CAUTION:**

- **DEF/AdBlue® is colorless and harmless solution. It is harmless when contacting with the body, however, it may cause skin to become inflamed depending on the constitution of the individual. Flush DEF/AdBlue® with clean water when it contacts on the skin.**
- **If you swallow DEF/AdBlue® by mistake, drink 1 or 2 cups of water or milk and seek immediate medical attention.**
- **If DEF/AdBlue® is accidentally splashed into eyes, flush with water for 15 minutes or longer and get emergency medical attention.**

MAINTENANCE

IMPORTANT:

- **Use dedicated container recommended by the business entity who is handling DEF/AdBlue® to store DEF/AdBlue®. Do not use general container, a container used for other purpose and contaminated container because the quality of DEF/AdBlue® deteriorates.**
- **The DEF/AdBlue® is non-combustible, however, move DEF/AdBlue® to a safe place when fire occurs.**
- **Wash out spilled DEF/AdBlue® with clean water.**
- **Seal the container and store it in a well ventilated place. If DEF/AdBlue® freezes, the quality does not change just after freezing.**
- **As long as sealed by an airtight stopper, unless water evaporates DEF/AdBlue® will not deteriorate within the guarantee period.**
- **Do not pour waste DEF/AdBlue® and its containers onto the ground, and do not allow waste to flow into rivers and/or lakes. When disposing DEF/AdBlue®, make sure to let authorized industrial waste disposal contractor dispose of it appropriately.**

MAINTENANCE

1 Check DEF/AdBlue® --- every 10 hours (daily)

Park the machine on a level surface. Lower the bucket to the ground. Check the DEF/AdBlue® level with DEF/AdBlue® gauge (1).

If necessary, stop the engine and add DEF/AdBlue®.

Refill DEF/AdBlue®

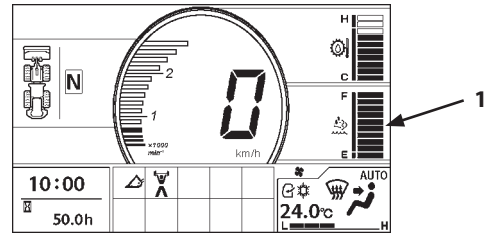
⚠ CAUTION:

- Refill DEF/AdBlue® which meets Japanese Industrial Standards (JIS K2247), International Organization for Standardization (ISO 22241) or Deutsche Industrie Normen (DIN 70070) in DEF/AdBlue® tank (2). If low density DEF/AdBlue® is refilled, alarm will be generated, restricting machine operation. Do not dilute DEF/AdBlue® with water.
- Wear safety equipment such as safety glasses or goggles, rubber gloves appropriate to the job. Wash DEF/AdBlue® with clean water when it contacts on the skin. If DEF/AdBlue® is accidentally splashed into eyes, flush with water for 15 minutes or longer and get emergency medical attention.

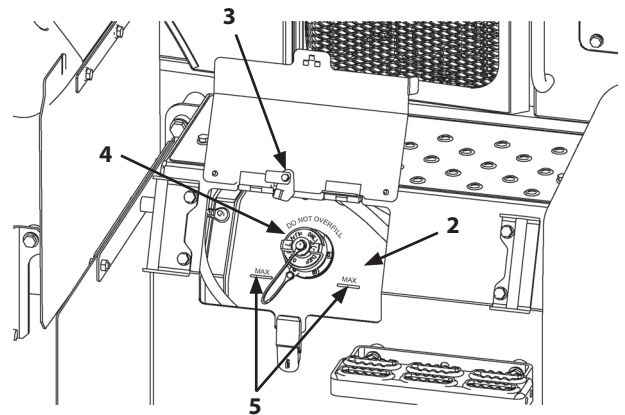
1. Park the machine according to the instruction on "Preparations for Inspection and Maintenance" (7-8).
2. DEF/AdBlue® tank (2) is located in the cover at left rear of the machine. Open the cover with the key. Holding the handle on the access cover, raise the cover until the cover is secured with catch.
3. Clean dust and mud around the filler port of DEF/AdBlue® tank with clean cloth.
4. Remove cap (4) from DEF/AdBlue® tank (2) and refill DEF/AdBlue®. Be sure to stop refilling before the "MAX" line (5).

IMPORTANT:

- Take care not to allow dust and/or water to enter the DEF/AdBlue® tank when refilling.
- If DEF/AdBlue® is filled above the "MAX" line, the system may be damaged during operation or tank (2) may be broken when frozen.



MNEK-01-103EN



90Z7B-7-118-2

MAINTENANCE

5. Install cap (4) after refilling DEF/AdBlue®. Turn stopper plate (3) to the original position. Close the tank cover and lock it with the key.

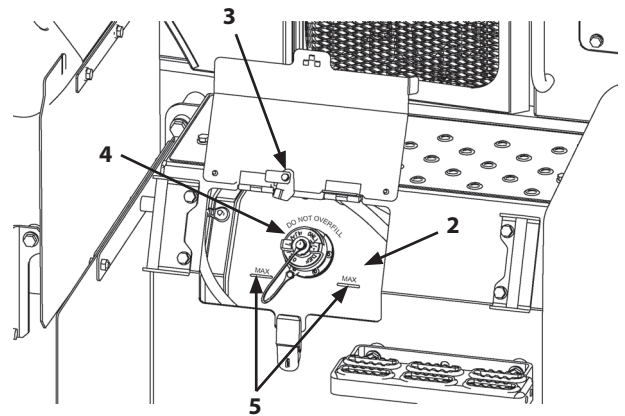
IMPORTANT:

- **Do not get on top of DEF/AdBlue® tank (2) or sensors and piping on the tank. Failure to do so may damage the machine.**
- **White deposits may be observed when DEF/AdBlue® is dried naturally; it is normal. Wash out DEF deposits with soft water. Never use a high pressure washer.**



NOTE:

- Wipe spilled DEF/AdBlue® and wash spilled area with plenty of water.
- The sound of flowing water may be heard from the tank after the engine stops. It is the sound of returning DEF/AdBlue® from piping to the tank, not a malfunction.
- DEF/AdBlue® will freeze at low temperature, and deteriorate (ammonification) at high temperature. Store DEF/AdBlue® at temperature between -10 and 40°C.
- Use dedicated container (purchased container) to store or carry DEF/AdBlue®. Alternatively use a polyethylene resin tank, or stainless steel tank.



90Z7B-7-118-2

MAINTENANCE

2 Change DEF/AdBlue®

---As required

CAUTION: Wear safety equipment such as safety glasses or goggles, rubber gloves appropriate to the job. Wash DEF/AdBlue® with clean water when it contacts with the skin. If DEF/AdBlue® is accidentally splashed into eyes, flush with water for 15 minutes or longer and get emergency medical attention.

IMPORTANT: When contaminated or deteriorated DEF/AdBlue® is used, malfunction may result. Change DEF/AdBlue® periodically to keep cleanliness in the tank.

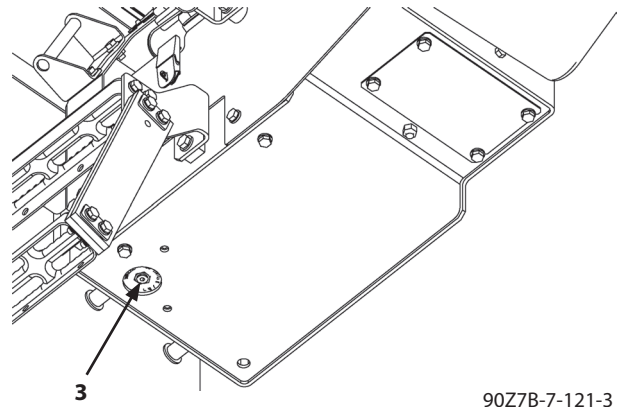
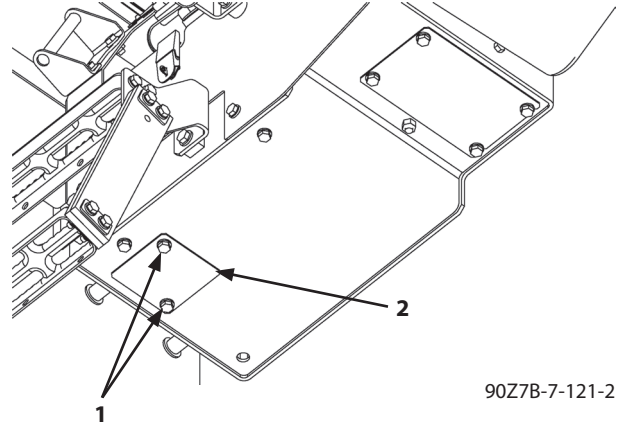
1. Remove bolts (1) and washers and remove cover (2).
2. Place a 50 liter or larger capacity container under drain plug (3).
3. Slowly loosen drain plug (3) to drain DEF/AdBlue®.
4. Tighten drain plug (3) after draining DEF/AdBlue®.

Wrench size: 6 mm

Tightening torque: 5 to 7 N·m (0.5 to 0.7 kgf·m)

5. Fix cover (2) with bolts (1) and washers.
6. Remove cap from DEF/AdBlue® tank and refill DEF/AdBlue®.

DEF/AdBlue® tank capacity: 35 L



MAINTENANCE

3 Replace DEF/AdBlue® Supply Module Main Filter --- every 4500 hours

A filter (4) is mounted in the DEF/AdBlue® supply module.
Periodically replace filter (4).

CAUTION: Use rubber glove and goggles or safety glasses for protection during operation. Wash DEF/AdBlue® with clean water when it contacts on the skin.

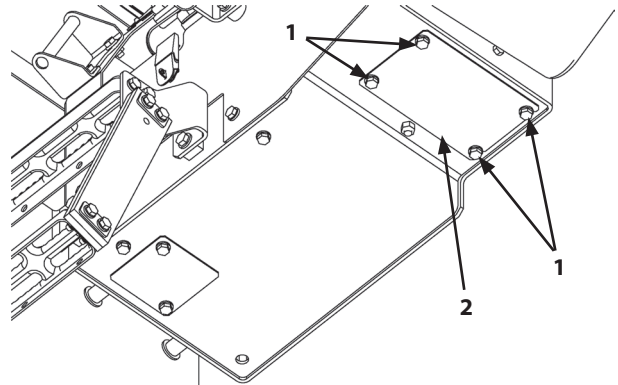
IMPORTANT:

- Take care not to allow dirt and/or water to enter the DEF tank while replacing filter (4).
- Check for leaks around the mounting position after replacement.
- White deposition may be observed when DEF is dried naturally; it is normal. Wash out DEF/AdBlue® deposition with clean water. Never use a high pressure washer.

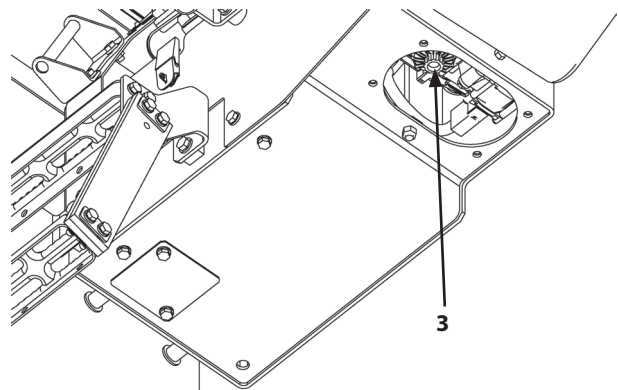
1. Park the machine according to the instruction on Preparations for Inspection and Maintenance (7-8).

NOTE: The DEF/AdBlue® supply module is located at the bottom of the machine, near the engine.

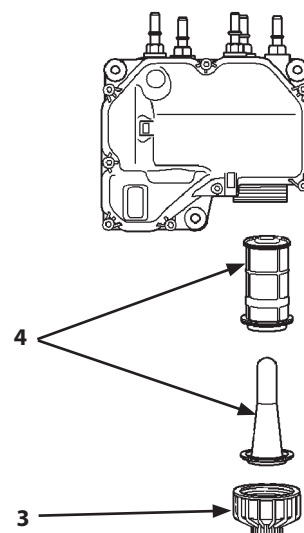
2. Remove bolts (1) and cover (2).
3. Remove cap (3) from the DEF/AdBlue® supply module by using a 27 mm bihexagon wrench.
4. Pull out filter (4) inside the supply module. As it is tightly mounted, it can not be pulled by hands. Use tools such as a pliers. Replace filter (4) assembly when replacing filter (4) of DEF/AdBlue® supply module.
5. Install new filter (4), and tighten cap (3) with 20 ± 5 N·m torque.
6. Fix cover (2) with bolts (1).



90Z7B-7-121-2



90Z7B-7-122-2



MDC1-07-044

MEMO

MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS

Maintenance Under Special Environmental Conditions

WARNING:

- Before operating the machine in a river, check the riverbed conditions in advance.
- Avoid driving the machine into a river where the riverbed is steep and deep or the current is strong.

Operating Conditions	Precautions for Maintenance	
Muddy Soil, Rainy or Snowy Weather	Before Operation	: Check tightness of plugs and all drain cocks.
	After Operation	: Clean the machine and check for cracks and damage. Check for loose or missing bolts and nuts. Lubricate all necessary parts without delay. If the machine should be submerged in water deeper than approximately 450 mm, water may get into the brake device (such as the parking brake), resulting in poor braking performance. Watch out when starting/stopping the machine.
Near the Ocean (or near chemical treatment place)	Before Operation	: Check tightness of plug and all drain cocks.
	After Operation	: Thoroughly clean the machine with fresh water to wash off salt. Service electrical equipment often to prevent corrosion.
Dusty Atmosphere	Air Cleaner	: Clean the element regularly at shorter service intervals.
	Radiator	: Clean the radiator core and every coolers core.
	Fuel System, Urea SCR System	: Clean the filter element and strainer regularly at shorter service intervals.
	Electrical Equipment	: Clean them regularly, in particular, the commutator surface of the alternator and starter.
	Engine, Aftertreatment Device	: Clean earlier than the normal interval to prevent dust from sticking and accumulating. Inhibit regeneration according to the machine operating condition.
Rocky Ground	Chassis	: Check for damage on tires, for loose, cracked, worn, and damaged bolts and nuts.
	Front Attachment	: Standard attachment may be damaged when digging rocky ground. Reinforce the bucket before using it, or use a heavy duty bucket. Consult your nearest Hitachi dealer.
Freezing Weather	Fuel	: Use high quality fuel suitable for low temperature. Check the fuel tank breather pipe freezing.
	Lubricant	: Use high quality low viscosity hydraulic oil and engine oil.
	Engine Coolant	: Be sure to use antifreeze.
	Battery	: Fully charge the batteries regularly at shorter service intervals. If not charged fully, electrolyte may freeze.
	Tires and Frames	: Keep tires and frames clean. Park the machine on a hard surface to prevent the tires from freezing to the ground.
	DEF/AdBlue®	: May become frozen but the machine can be operated normally.
When handling old paper and/or industrial waste	Engine compartment	: Remove old paper and/or waste accumulated around the radiator and in the engine compartment, possibly causing overheating or fires of the machine if not removed.
	Air cleaner	: Clean the element at shorter intervals.
	Fuel system	: Clean and replace the elements and the filters at shorter intervals.
	Loader frame	: Remove the accumulated paper and/or waste from the surroundings around the loader frame and the attachment. Failure to do so may cause damage of the machine.
	Radiator	: Wash as frequently as possible to prevent corrosion due to chemical materials.

IMPORTANT: If material to be handled is a substance that causes corrosion such as salt or chemical, consult your nearest Hitachi dealer. Special modification or treatment may be needed for the machine. If the machine continues to be used, malfunction may occur due to corrosion.

Consult your nearest Hitachi dealer when the machine is operated under special condition(s).

MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS

Precautions for Maintenance During Cold Weather Season

Before the atmospheric temperature becomes down below -0 °C, practice the following points.

- Water and oil in the machine will freeze.
- Road surfaces will freeze so that tires may slip.

Keeping the above points in mind, follow the advices below:

1. Refill fluids such as water and lubricants prior to operation (except fuel).
2. Mix LLC in the radiator (coolant). When this machine is shipped from the factory, LLC (long life coolant) is supplied. Therefore, this machine can operate normally without any problem.
3. Change the engine oil in the engine crankcase to cold weather type oil.
4. Use fuel (diesel fuel) of an antifreeze type. To prevent condensation of air into dew on the wall in the fuel tank, fully refill the fuel tank with an antifreeze type diesel fuel.
5. If the electrolyte in the battery case freezes, damage to the battery case may result. Maintain the batteries at fully charged condition. After completing work, turn all lights OFF. Perform cooling operation for five minutes.

Or by other way, dismount the batteries and store them in a warm indoor place. When it is possible to measure and adjust the specific gravity of the electrolyte, increase the specific gravity of the electrolyte up to 1.280. Do not increase more than 1.280.

6. Use anti-freeze type washer fluid.

After taking the measures as recommended above, start operation of the machine.

MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS

 **DANGER:** Sufficiently ventilate when carrying out warming up operation indoors. Failure to do so may cause intoxication by exhaust gas, possibly resulting in personal death accident.

7. After preheating the engine, start the engine. Sufficiently perform warm-up operation.
8. After warming up the engine, warm up the front attachment system. Slowly operate the control levers to move the cylinders full stroke several times.
9. Road surfaces covered with snow, especially when snow has been compacted, will become frozen. Use tire chains on four wheels.
10. Take anti-freeze measures after completing operation.
 - Cover the keyhole by sticking a tape on.
 - Rubber parts such as wiper may freeze. Keep other parts away from the rubber parts.
 - Remove packed snow from around the undercarriage and inside the machine with a bar or brush.
 - In case it is impossible to store the machine indoors, park the machine on a level dry surface and cover overall the machine with a large machine cover.
 - Keep 80% of tank capacity when storing DEF/AdBlue®. The DEF/AdBlue® tank maybe broken if frozen.

 **NOTE:** DEF/AdBlue® starts freezing at -10°C (12°F). Freezing does not affect its performance once thawed.

MEMO

STORAGE

Storing the Machine

⚠ WARNING: If it is unavoidable to perform the lubrication operation indoors, open windows and doors to maintain good air ventilation to prevent asphyxiation. Lubricant property will deteriorate even if the machine is kept stored. Check all lubricants before operating the machine after being stored.

Apply the parking brake while storing.

If the machine is to be stored for more than one month, observe the following precautions so that its function will not be impaired during storage.

PRECAUTION ITEMS FOR LONG TERM STORAGE

Item	Contents of Work
Wash Machine	Sufficiently wash the machine to remove stuck mud and/or dust.
Supply Oil and Grease	Check for low level/contamination of lubricating oil. Refill or change as necessary. Supply grease to greased parts. Apply a thin coat of oil to parts susceptible to rust. (i.e. cylinder rods etc.) Fill up fuel to prevent rust in the fuel tank.
Battery	Remove and fully recharge the battery, then store it. If the machine is equipped with the battery disconnect switch, turn the disconnect switch OFF.
Coolant	Supply a rust preventive agent without fail. If there is a possibility of freezing, also supply an antifreeze solution or fully drain the coolant. In this case, be sure to attach a "No Water in Radiator" sign in the operator's cab. If long-life coolant is used, the above measures are not necessary. Thoroughly wash the radiator by water and then dry it.
DEF/AdBlue®	DEF/AdBlue® may become ammonia when storing it under 40°C for one month or longer. Change DEF/AdBlue® if ammonia odor is observed when opening the tank cap.
Prevention of Dust and Moisture	Store the machine in a relatively dry garage and cover it.
Tools	Inspect and repair, then store.
Lubrication Operation No-load Operation at a Slow Speed for Several Minutes	If the oil films of the parts are broken and parts are rusted, they will be worn abnormally when operated the next time. To prevent this, operate the machine at least once a month to lubricate the parts. At this time, check the coolant and lubrication oil levels. Charge the batteries.

IMPORTANT: If the machine is operated without performing lubrication operation, damage to hydraulic equipment may result due to insufficient lubrication.

✎ NOTE: Lubrication operation means that a series of operations such as drive, and loader front operation are repeated a few times after performing warm-up.

Before operating the loader front attachment and steering wheel, remove rust-prevention oil coated on the hydraulic cylinder rods.

STORAGE

Taking the Machine Out of Storage

⚠ WARNING: If it is unavoidable to perform the lubrication operation indoors, open windows and doors to maintain good air ventilation to prevent asphyxiation. Lubricant property will deteriorate even if the machine is kept stored. Check all lubricants before operating the machine after being stored.

Apply the parking brake while storing.

IMPORTANT:

- Lubricants will deteriorate during storage of the machine.
- Thoroughly check lubricants and adequately perform lubrication operation before resuming operation of the machine. Avoid quick operation. Failure to do so may cause damage to the engine, hydraulic equipment, transmission, axle, etc. due to insufficient lubrication.
- If the lubrication operation is not performed for more than three months, start the engine and run the engine at slow idle speed for three minutes. Then carry out lubrication operation for cylinders.
If you suddenly started the engine or operated the cylinders without following the procedure above, it may cause damage to the machine such as engine seizure.
- When turning the battery disconnect switch from OFF to ON, preset radio station and the clock may be reset. Set them again.
- Check the DEF supply system, such as dozing module nozzle, for clogging due to dried remaining DEF in the line. Clean as needed. Follow the instruction by the engine manufacturer before starting the engine after long term storage.

STORAGE

1. Remove covers.
2. Remove grease from the cylinder rods if coated.
3. Fill the fuel tank. Bleed air from the fuel system. Check all fluid levels.
4. Adjust alternator and fan belt tension.
5. Check the oil level. Add oil as needed.
6. Install the battery.
If the machine is equipped with the battery disconnect switch, turn the disconnect switch ON.
7. Start the engine. Run the engine at half speed for several minutes before full load operation.
8. Repeat the process several times.
9. Stop the engine. Check each device for oil leaks.
10. Replace the fuel filter and engine oil filter with new one as needed. Change engine oil.
11. Check clamps of the suction hoses, air cleaner hoses and radiator hoses. Retighten them as needed.

Before operating the machine, thoroughly perform "Daily Check before Starting the Engine" on page 3-1. Sufficiently perform the warm up operation.

MEMO

[illegible]

TROUBLESHOOTING

Troubleshooting

If any abnormality is found on the machine, immediately take action to solve it. Find out the cause of the abnormality to prevent the recurrence of malfunction.

If the cause of malfunction is unknown or for inquiry on solution item with mark "*" on the list below, consult your authorized Hitachi dealer.

Do NOT attempt to adjust or disassemble hydraulics, electrical and electronic parts.

Engine

Consult your authorized Hitachi dealer for the engine troubleshooting.

Engine Auxiliaries

Symptom	Cause	Solution
Batteries will not charge.	Broken battery separator	Replace
	Faulty regulator	* Adjust, Replace
	Faulty ground line	* Repair
	Faulty alternator	* Repair, Replace
Batteries discharge quickly after being charged.	Shorted cable	* Repair, Replace
	Shorted battery separator	* Repair, Replace
	Increased sediment in battery	* Replace
Coolant temperature is too high.	Low coolant level	Refill
	Abnormal fan rotation	* Repair, Adjust
	Damaged rubber hose	* Replace
	Faulty thermostat	* Replace
	Faulty coolant temperature gauge	* Replace
	Faulty radiator cap seal	Replace
	Radiator fin plugged	Clean

* Consult your authorized Hitachi dealer.

TROUBLESHOOTING

Engine does not Start.

Symptom	Cause	Solution
The starter does not turn.	Reduced battery voltage	Charge the batteries. Replace.
	High resistance in the starter circuit	* Clean and/or retighten the battery terminals and starter terminals
	Faulty key switch	* Replace
	Damaged wire harness	* Repair, Replace
	Faulty battery relay	* Replace
	Blown slow blow fuse link	* Replace
	The forward/reverse selector lever is in either the forward or reverse position.	Return to neutral.
	Faulty starter	* Repair, Replace
	Battery disconnect switch is turned OFF.	Turn the switch ON.
Although the starter turns, the engine does not start.	Use of poor quality fuel, insufficient fuel, lack of fuel	Change fuel. Refill tank with good quality fuel.
	Faulty glow plug	* Replace glow plug
	Air mixed in the fuel supply line	Bleed air
	Faulty injection pump or nozzle	* Repair, Replace
	Reduced compression pressure	* Adjust
Engine speed does not increase.	During fan reversing operation, the F, R, or parking switch was deactivated or the Fan reverse rotation switch was turned OFF.	Rotate the fan in normal direction. Refer to the fan reverse switch on page 1-108.
	DEF/AdBlue® tank is empty.	Supply DEF/AdBlue®.
	The accelerator pedal function is abnormal.	Replace the accelerator pedal or parts.
Although the engine cranks, running speed is low and easy to stall.	Deteriorated engine oil	Change engine oil
	Contaminated injection nozzle	* Replace
	Clogged fuel filter	Replace
	Clogged fuel pre-filter	Replace
	Clogged feed pump strainer	Clean
	Air mixed in the fuel supply line	Bleed air
	Poor fuel quality	Replace

* Consult your authorized Hitachi dealer.

Control Lever

Symptom	Cause	Solution
Hard to move	Rusted joint	* Lubricate, Repair
	Worn pusher	* Replace
Does not move smoothly	Worn pusher	* Repair, 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, Replace
	Faulty pilot valve	* Replace
The lever is not held with magnetic detent.	Faulty magnetic solenoid	* Replace
	Faulty sensor	* Replace

* Consult your authorized Hitachi dealer.

TROUBLESHOOTING

Hydraulic System

After the machine has been kept stored for a long time, air in the oil may be separated and accumulate in the upper section in the cylinder, causing slow response time in operation or reducing cylinder power.

In case these symptoms appear, repeatedly operate all actuators several times.

Symptom	Cause	Solution
Loader front function is inoperable. (Hydraulic pump noise level increases)	Faulty hydraulic pump	* Repair, Replace
	Lack of hydraulic oil	Refill
	Broken suction pipe and/or hose	* Repair, Replace
All actuators have no power.	Malfunction due to worn hydraulic pump	* Replace
	Decrease in set pressure of main relief valve in control valve	* Adjust
	Lack of hydraulic oil	Refill
	Trapped foreign matter in hydraulic oil tank suction filter	Clean
	Aeration in suction side	Retighten
Only one actuator is inoperable.	Broken control valve spool	* Replace
	Trapped foreign matter in valve spool	* Repair, Replace
	Broken pipe and/or hose	* Repair, Replace
	Loose pipe line joint	Retighten
	Broken O-ring at pipe line joint	* Replace
	Broken actuator	* Repair, Replace
Only one cylinder is inoperable or has no power.	Broken oil seal in cylinder	* Repair, Replace
	Oil leak due to damage to cylinder rod	* Repair, Replace
Oil overheats	Contaminated oil cooler	Clean
	Faulty fan motor and pump	* Repair, Replace
	Abnormal fan rotation	* Repair, Adjust
Oil leak from low pressure hose	Loose clamp	Retighten
	Faulty suction pipe	* Repair, Replace

* Consult your authorized Hitachi dealer.

TROUBLESHOOTING

Drive Function

Steering System

Symptom	Cause	Solution
Steering wheel is heavy to operate.	Faulty hydraulic pump	* Repair, Replace
	Faulty steering device	* Repair, Replace
	Relief valve set pressure reduction	* Adjust
	Faulty steering column	* Repair, Replace
Steering wheel turns in unexpected direction.	Faulty steering device	* Repair, Replace

* Consult your authorized Hitachi dealer.

Accelerator Pedal

Symptom	Cause	Solution
Heavy to operate	Rusted joint	* Lubricate, Repair
Accelerator pedal play is excessive.	Worn joint	* Repair, replace

* Consult your authorized Hitachi dealer.

Parking Brake

Symptom	Cause	Solution
Parking brake is dragging.	Oil leak due to worn parking brake piston D-ring	* Repair, Replace
	Faulty disk brake	* Repair, Replace
Parking brake does not work properly	Worn or damaged brake spring in brake piston	* Replace
	Faulty disk brake	* Replace
	Seized piston, worn disk	* Repair, Replace

* Consult your authorized Hitachi dealer.

TROUBLESHOOTING

Service Brake

Symptom	Cause	Solution
Service brake does not work properly	Malfunction of brake valve	* Repair, Replace
	Oil leak from brake line, Air mixing	* Repair, Bleed air
Brake is dragged	Malfunction of brake valve	* Repair, Replace
	Faulty brake pedal	* Repair, Replace
Lack of brake fluid (hydraulic oil)	Oil leak from brake line and/or hose connector	* Retighten or repair
	Oil leak due to brake piston seal (inside axle)	* Repair, Replace

* Consult your authorized Hitachi dealer.

Transmission

Symptom	Cause	Solution
Transmission is noisy.	Lack or deterioration of gear oil	Refill, change
	Worn inner parts in transmission	* Repair, Replace
	Broken gear or bearing	* Repair, Replace
Oil overheats	Abnormal fan rotation	* Repair, Adjust

* Consult your authorized Hitachi dealer.

Propeller Shaft

Symptom	Cause	Solution
Propeller shaft vibrates.	Bent propeller shaft	* Repair, Replace
	Loosened parts, Loss of balance	* Retighten, Adjust
Propeller shaft is noisy	Excessively worn spline	* Replace
	Worn or seized spider bearing	* Replace
	Loosened parts	Retighten
	Insufficient greasing	Grease

* Consult your authorized Hitachi dealer.

Front Axle, Rear Axle

Symptom	Cause	Solution
Front and/or rear axle is noisy	Worn or broken gears	* Replace
	Lack or deterioration of gear oil	Refill, Replace
	Worn bearings, Excess play	* Replace
	Excess play on shaft spline	* Repair, Replace
Front and/or rear axle does not transmit power.	Broken axle	* Replace
	Broken gears	* Replace

* Consult your authorized Hitachi dealer.

Others

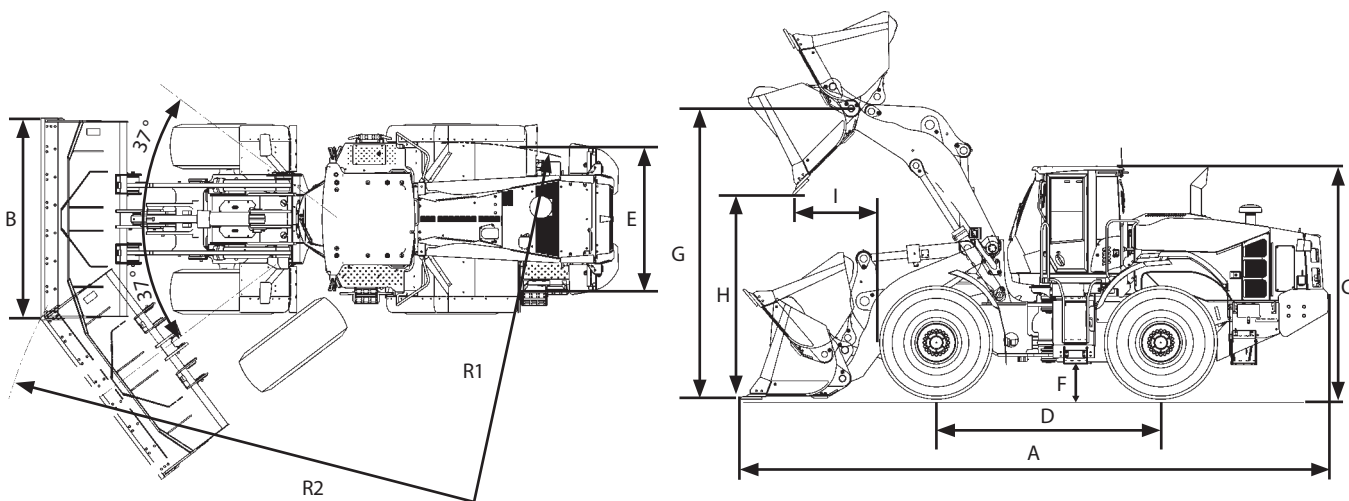
If there is a problem with the machine, a noise, excessive vibration, and abnormal smells may occurs.
Always be aware of the machine conditions during operation.

MEMO

This image shows a full page of a document template. It consists of a series of evenly spaced, horizontal grey lines running across the width of the page. The lines are thin and light in color, providing a guide for writing without being distracting. There are no margins, text, or other markings present on the page.

SPECIFICATIONS

Specifications



MNFB-12-001

		ZW310-6	ZW330-6
Bucket Capacity: heaped	m ³	4.3	4.8
Operating Weight	kg	24270	26190
Tipping Load (Full Turn)	kg	16710	17760
Engine		CUMMINS QSL9	
A: Overall Length	mm	9025	9255
B: Overall Width (Bucket)	mm	2980	3170
C: Overall Height	mm	3530	
D: Wheel Base	mm	3450	3550
E: Tread	mm	2230	
F: Ground Clearance	mm	505	
G: Bucket Hinge Height	mm	4425	4525
H: Dumping Clearance (45 °)	mm	3090	3175
I: Dumping Reach (45 °)	mm	1305	1440
R1: Minimum Rotation Radius	mm	6270	6420
R2: Bucket Carry Position	mm	7250	7535
Travel Speed Forward/Reverse	km/h	35.9/35.9	36.0/36.0
Transmission Speeds (F/R)	-	4/4	
Articulation Angle (Left/Right) deg	(°)	37	
Tire Size	-	26.5R25	



NOTE: • * BOC (Bolt-On Cutting Edge)

• These specifications are subject to change without notice.

SPECIFICATIONS

Sound Level Results

(2000/14/EC)

(2006/42/EC)

LwA: guaranteed sound power level of airborne noise (ISO 6395: 1988)

LpA: sound pressure level at operator's station (ISO 6396: 2008)

Unit: dB(A)

	LwA	LpA
ZW310-6, 330-6	107	69

Electric Fans

We consider our products exempted from EU regulation 327/2011, implementing EU directive 2009/125/EC, based on the fact that the fans are considered battery powered because the energy supply recharging the battery is not continuous nor at a constant level.

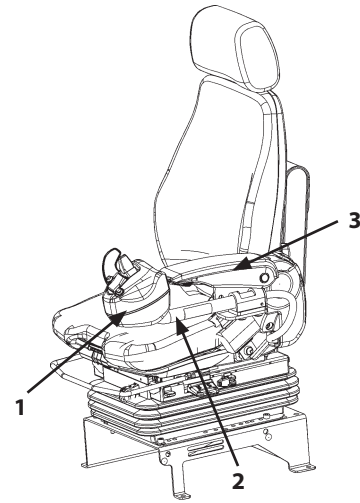
OTHER ATTACHMENTS

Joystick Steering

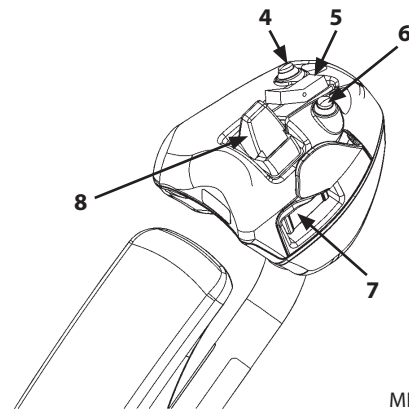
Joystick Steering (Optional)

Layout

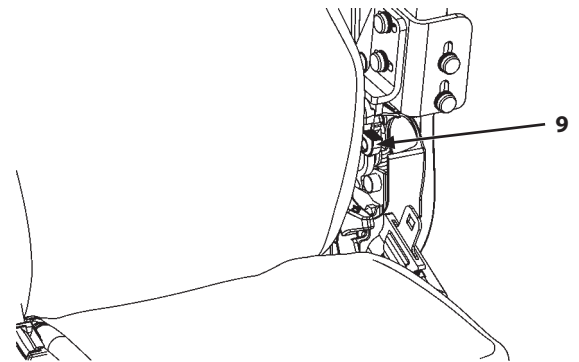
- 1- Switch Box
- 2- Left Console Pipe
- 3- Left Armrest
- 4- DSS (Down Shift Switch)
- 5- Forward/Reverse Switch (Left)
- 6- Wiper Switch
- 7- Joystick Steering Selector Switch
- 8- Joystick Steering Lever
- 9- Left Console Lock Release Lever
- 10- Switch Box Fore/Aft Adjustment Bolt
- 11- Left Console Height Adjustment Bolt
- 12- Left Armrest Angle Adjustment Dial
- 13- Switch Box Angle Adjustment Bolt
- 14- Joystick Steering Indicator
- 15- Forward/Reverse Selector Switch Indicator



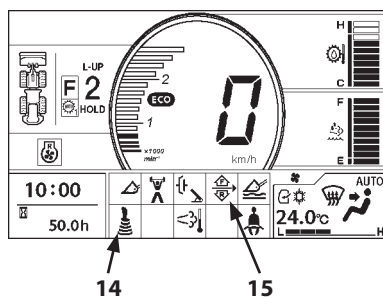
MNEK-13-001



MNEK-13-002

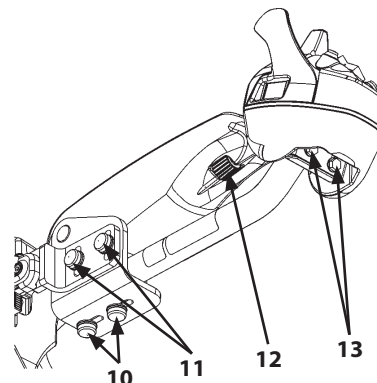


MNEK-13-003



MNEK-01-100

Multi-Function Monitor



MNEK-13-004

OTHER ATTACHMENTS

Joystick Steering

Joystick Steering Lever

This lever controls turning operations.

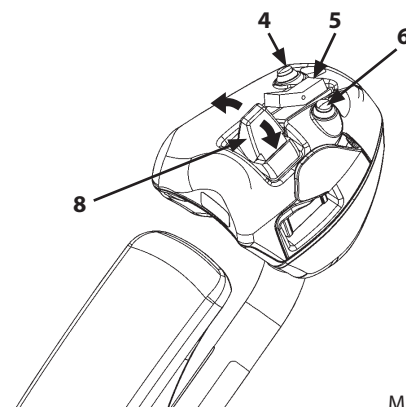
Pressing lever (8) down to the left turns the machine to the left.

Pressing lever (8) down to the right turns the machine to the right.

How far lever (8) is depressed, controls how fast the machine turns.

When operating the steering wheel at the same time, priority is given to the operation that is displaced further from the neutral position.

Under normal operating speeds, the steering wheel will be displaced further from the neutral position, so the steering wheel operation will have priority.



MNEK-13-002

Forward/Reverse Switch (Left)

This switch (5) is for changing the direction of travel, between forward, neutral and reverse.

F position : Forward travel

N position : Neutral

R position : Reverse travel

When the Forward/Reverse lever is operated, it is given priority.

DSS (Down Shift Switch)

When DSS (4) is pressed, it downshifts the transmission.

During normal operations, the 2nd speed setting is used, but when traveling forward and digging, if DSS (4) is pressed, it automatically shifts down to 1st, increasing the driving force and improving digging performance. If the position of Forward/Reverse switch (5) is switched to reverse (R), it automatically shifts to 2nd, returning to the original speed range. For details, refer to the section "DSS (Down Shift Switch)" in Chapter 1 "Operator's Station".

Wiper Switch

If you press the wiper switch (6), it actuates the front wiper one time.

OTHER ATTACHMENTS

Joystick Steering

Joystick Steering Selector

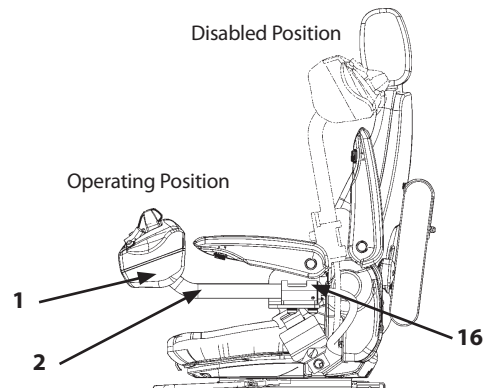
IMPORTANT: To use joystick steering selector switch (7), lower left console (16) to the operating position. If left console (16) is not in the operating position, both the joystick steering selector switch (7) and the Forward/Reverse switch (left) (right) cannot be operated.

Joystick steering selector switch (7) is the switch that activates joystick steering lever (8).

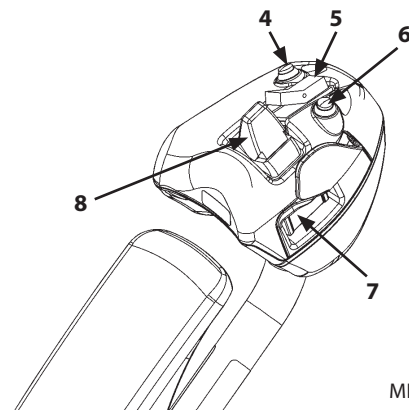
Prior to operating joystick steering selector switch (7), make sure Forward/Reverse lever (17) and the Forward/Reverse switches (right) and (left) are in the neutral (N) position.

Then, if joystick steering selector switch (7) is pressed in the ON position for one second, joystick steering lever (8) and Forward/Reverse switch (left)(5) are enabled. Joystick steering indicator (14) and Forward/Reverse selector switch indicator (15) are displayed on the monitor.

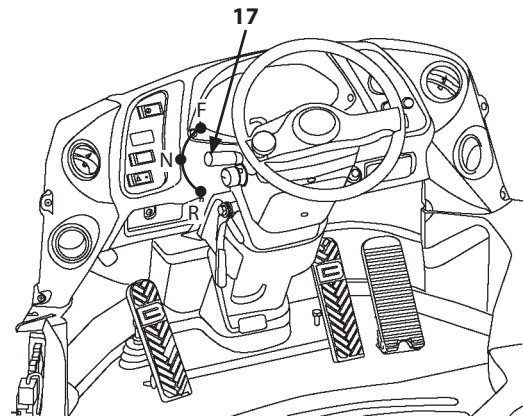
Wiper switch (6) and DSS (4) can always be operated.



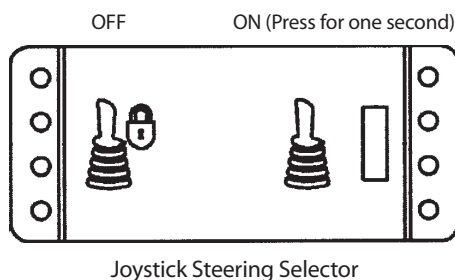
MNEK-13-005



MNEK-13-002

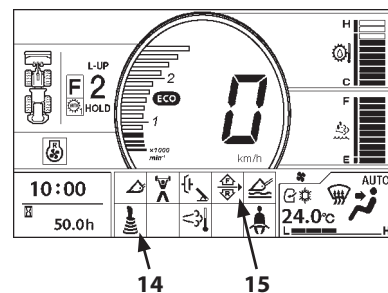


MNEK-01-037



Joystick Steering Selector

MNEK-13-015



MNEK-01-100

OTHER ATTACHMENTS

Joystick Steering

Forward/Reverse Switch

It is possible to choose between Forward/Reverse switch (left) (5) and Forward/Reverse switch (right) (19). When Forward/Reverse selector switch indicator (21) is displayed on the monitor, Forward/Reverse switch (left) (5) is selected. When Forward/Reverse selector switch indicator (22) is displayed on the monitor, Forward/Reverse switch (right) (19) is selected.

Forward/Reverse Switch (Left) (5)

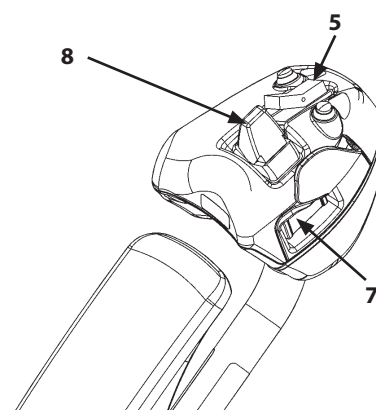
1. Put both Forward/Reverse switch (left)(5) and Forward/Reverse switch (right)(19) and Forward/Reverse lever (17) in neutral (N) position.
2. Press joystick steering selector switch (7) in the ON position for one second.
3. Check and make sure the Forward/Reverse selector switch indicator (21) is displayed on the monitor.

Forward/Reverse Switch (Right) (19)

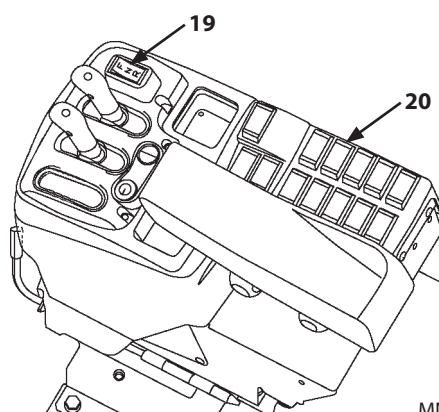
1. Put both Forward/Reverse switch (left)(5) and Forward/Reverse switch (right)(19) and Forward/Reverse lever (17) in neutral (N) position.
2. Long press Forward/Reverse selector switch (20) in the ON position for one second.
3. Check and make sure Forward/Reverse selector switch indicator (22) is displayed on the monitor.

NOTE: If the Forward/Reverse lever is put in any position other than neutral (N) position when joystick steering lever (8) is enabled, Forward/Reverse switch (left)(5) and (right)(19) become disabled.

To re-enable Forward/Reverse switch (left)(5) or (right)(19), put Forward/Reverse lever (17) and Forward/Reverse switch (left)(5) and (right)(19) in the neutral (N) position and turn joystick steering selector switch (7) OFF for a moment and then press it in the ON position for one second.

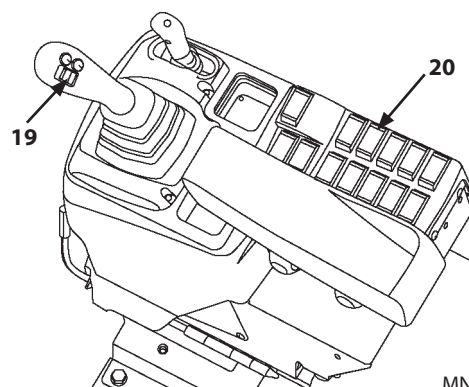


MNEK-13-002



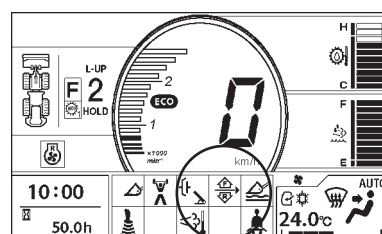
MNEC-01-526

Fingertip Control Type

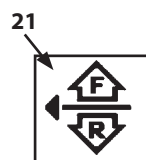


MNEC-01-043

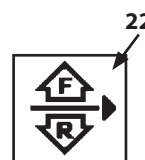
Multi-Function Joystick Type



MNEK-01-100



MNEK-13-012



MNEK-13-007

OTHER ATTACHMENTS

Joystick Steering

Left Console Lock Release Lever

⚠ WARNING: When leaving the operator's station, lift up left console (16) to the disabled position. Once left console (16) is lifted up to the disabled position, it is locked.

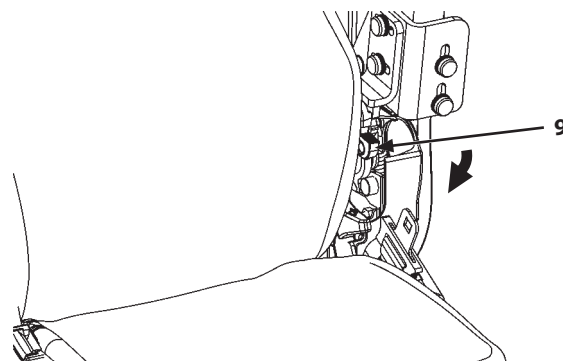
IMPORTANT:

- When raising or lowering left console (16), hold it by left console pipe (2). If the console is moved by holding switch box (1) or any other part, it may damage the device.
- Left console (16) is not locked when in the operating position. When the console is lifted 30° above the operating position, the joystick steering function is disabled. Do not lift up left console (16) while using the joystick steering function.

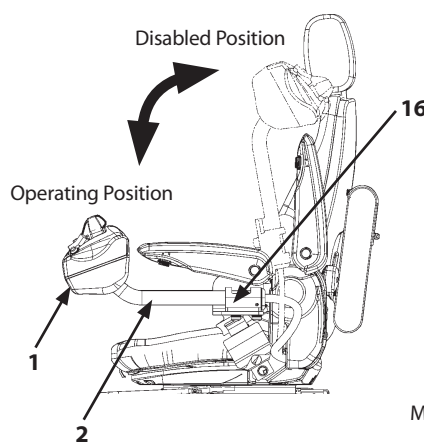
If left console lock release lever (9) is lowered while left console (16) is in the disabled position, left console (16) is unlocked and can be lowered into the operating position. If left console (16) is put in the disabled position, the joystick steering lever cannot be operated.

Some functions (switches) are disabled when the left console is put in the disabled position. The left console positions and their corresponding usable functions (switches) are shown in the table below.

Function or Switch	Left Console Position	
	Operating Position	Disabled Position
Joystick Steering Selector switch	Enabled	Disabled
Joystick Steering Lever	Enabled	Disabled
Forward/Reverse Switch (Left)	Enabled	Disabled
Forward/Reverse Switch (Right)	Enabled	Disabled
DSS (Down Shift Switch)	Enabled	Enabled
Wiper Switch	Enabled	Enabled
Forward/Reverse Lever	Enabled	Enabled
Engine Start	Can Start	Can Start



MNEK-13-003



MNEK-13-005

OTHER ATTACHMENTS

Joystick Steering

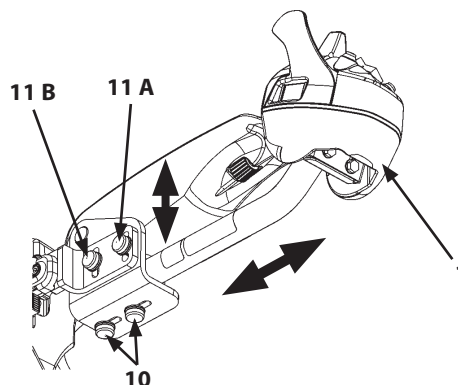
Adjusting the Switch Box Fore/Aft Position

If switch box fore/aft adjustment bolts (10) are loosened, the fore/aft position of switch box (1) can be adjusted through a range of 20 mm.

To loosen bolts (10), remove their caps. After adjusting the position, tighten bolts (10) again. After tightening them, put their caps back on.

Wrench Size: 17 mm

Tightening Torque: 50 N·m (5 kgf·m)



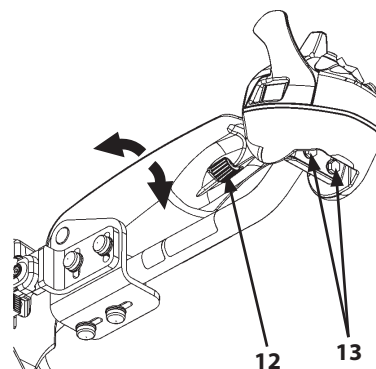
MNEK-13-004

Adjusting the Vertical Height of the Left Console

Remove bolt (11) A and loosen bolt (11) B. The vertical height can be adjusted by selecting from 3 positions (15 mm pitch, adjustment range of 30 mm). When loosening bolts (11) A and B, remove their caps. After adjusting the position, tighten bolts (11) A and B again. After tightening them, put their caps back on.

Wrench Size: 17 mm

Tightening Torque: 50 N·m (5 kgf·m)



MNEK-13-004

Left Armrest Angle Adjustment

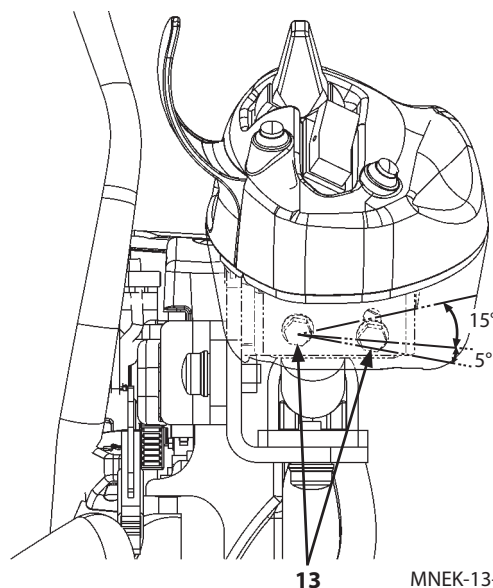
The armrest can be adjusted in a range of 30° vertically by turning armrest angle adjustment dial (12).

Switch Box Angle Adjustment

If 2 bolts (13) are loosened, the switch box angle can be adjusted in a range of 15° upwards and 5° downwards, relative to one bolt. After adjusting the position, tighten the bolts (13) again.

Wrench Size: 13 mm

Tightening Torque: 20 N·m (2 kgf·m)



MNEK-13-008

OTHER ATTACHMENTS

Joystick Steering

Operating Procedures

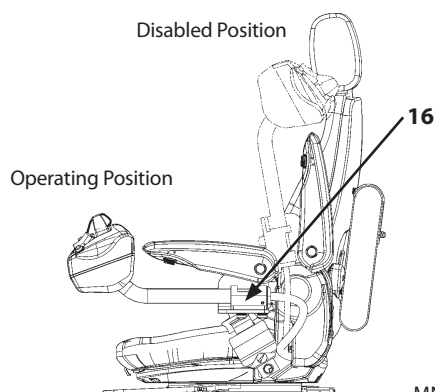
WARNING:

- When traveling on public roads, use steering wheel (18). The use of joystick steering lever (8) is prohibited.
- When traveling at high speeds or driving in narrow areas, use steering wheel (18).
- When operating with steering wheel (18), turn joystick steering selector switch (7) OFF. If part of the driver's body should touch the joystick, it could result in the machine moving unexpectedly and result in a serious personal injury.
- When operating steering wheel (18) and joystick steering lever (8) at the same time, priority is given to the operation that is displaced further from the neutral position.
- When the emergency steering function is activated, use steering wheel (18) for turning.
- If the machine steering activates despite not being operated with the joystick steering lever (8), immediately return the accelerator pedal to the idle position and correct the turning direction with steering wheel (18), then stop the machine with the service brake. Stop the engine and turn joystick steering selector switch (7) OFF. Contact your authorized dealer for repairs as soon as possible.

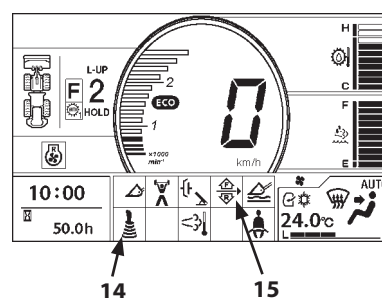
IMPORTANT: When joystick steering lever (8) is enabled, the maximum speed when traveling is limited to 25 km/h. For inquiries about the maximum speed settings, contact your authorized dealer.

Preparations before Operation

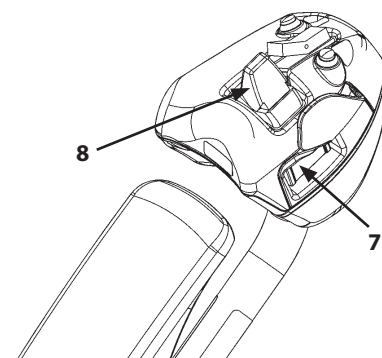
1. Perform inspections as detailed in "Check Before Starting" and then start the engine following the procedure in "Starting Engine".
2. Put left console (16) in the operating position.
3. Press joystick steering selector switch (7) for 1 second in its ON position. The joystick steering indicator (14) and the Forward/Reverse selector switch indicator (15) are displayed on the monitor.



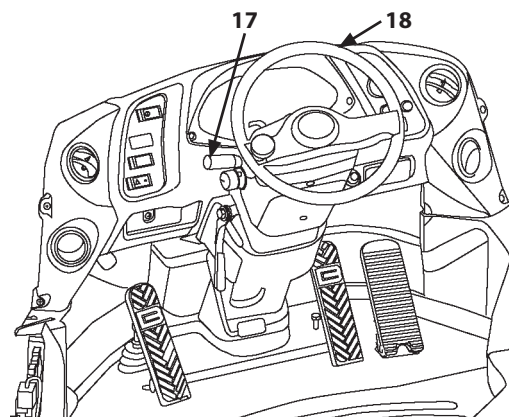
MNEK-13-005



MNEK-01-100



MNEK-13-002



MNEK-01-037

OTHER ATTACHMENTS

Joystick Steering

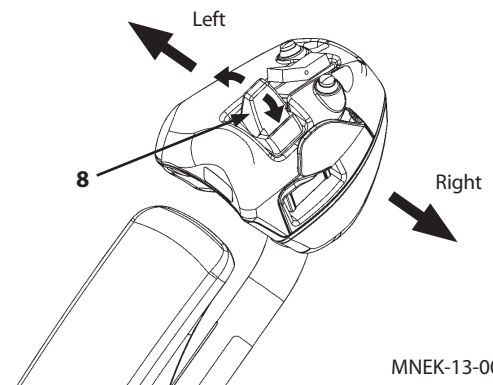
Operations

IMPORTANT: In cold weather, or if the hydraulic oil temperature is low, the turning speed may be slow when using the joystick steering. Perform a full warm-up by operating joystick steering lever (8) before operating the machine.

For information on the warm-up procedure, refer to the section "Warming Up Operation" in the chapter "OPERATING ENGINE".

Start the machine and operate joystick steering lever (8) to turn it. Pressing joystick steering lever (8) down to the left, the machine turns to the left. Pressing joystick steering lever (8) down to the right, the machine turns to the right. If joystick steering lever (8) is pressed further, the machine turning speed becomes faster.

Also the steering wheel can be operated instead of joystick steering lever (8) to turn the machine.



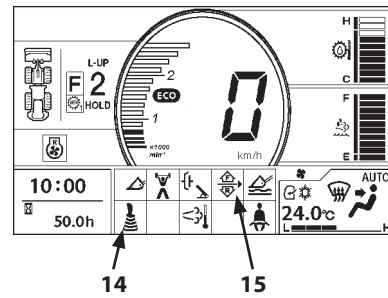
MNEK-13-002

OTHER ATTACHMENTS

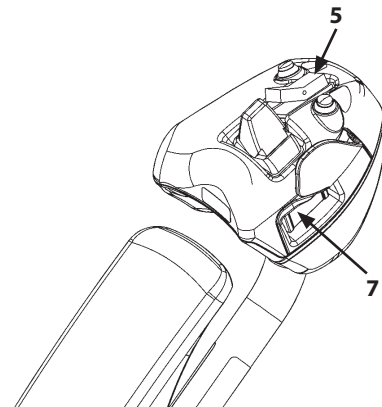
Joystick Steering

Canceling Operation

1. Stop the machine.
2. Put the Forward/Reverse switch (left) (5) in the neutral (N) position.
3. Turn joystick steering selector switch (7) OFF. Joystick steering indicator (14) and Forward/Reverse selector switch indicator (15) turn OFF on the monitor.
4. Follow the procedures for "Parking" and "Stop the Machine" and stop the engine.



MNEK-01-100



MNEK-13-002

OTHER ATTACHMENTS

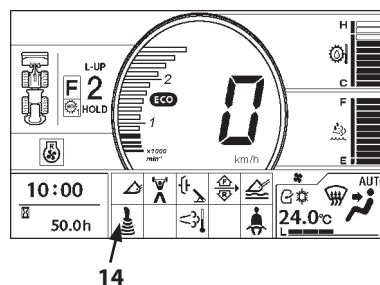
Joystick Steering

Descriptions of Warnings

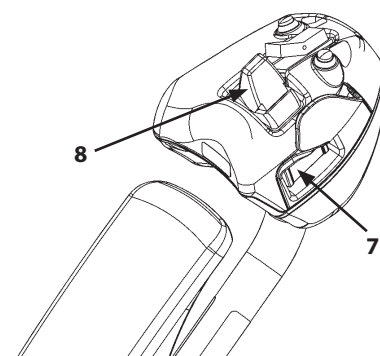
Joystick Steering Indicator

If a problem occurs in the joystick steering system, a warning mark is displayed in the joystick steering indicator (14) on the monitor.

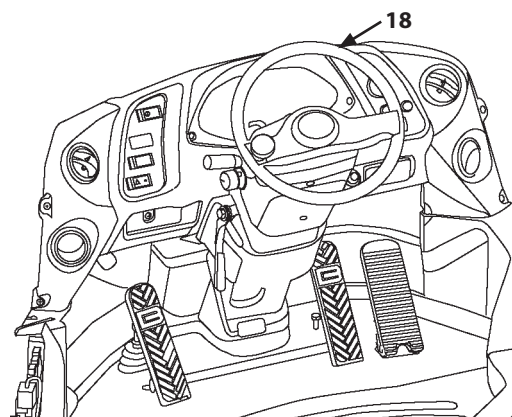
Display	Description
 Yellow (Lit)	There is a problem in the joystick steering system. Although joystick steering lever (8) can be used, turn joystick steering selector switch (7) OFF and use steering wheel (18) for turning. Check and/or repair the related parts.
 Yellow (Lit)	There is a problem in the joystick steering system. Joystick steering lever (8) does not operate. Use steering wheel (18) for turning and park the machine in a safe place. Contact your authorized dealer.
 Red (Lit)	There is a major problem in the joystick steering system. Joystick steering lever (8) does not operate. Use steering wheel (18) for turning and park the machine in a safe place. Contact your authorized dealer.



MNEK-01-100



MNEK-13-002



MNEC-01-037

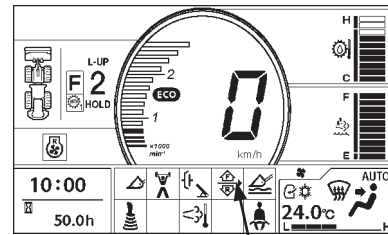
OTHER ATTACHMENTS

Joystick Steering

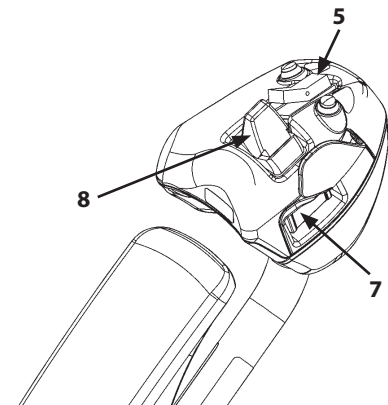
Forward/Reverse Selector Switch Indicator

If a problem occurs in the Forward/Reverse switch (right or left) system, a warning mark is displayed in the Forward/Reverse selector switch indicator (15) on the monitor.

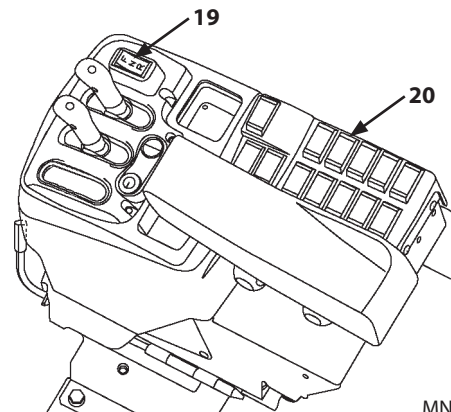
Display	Description
 Yellow (Lit)	There is a problem in Forward/Reverse switch (left)(5) system. Turn joystick steering selector (7) OFF and operate the machine with Forward/Reverse lever (17). Check and/or repair the related parts.
 Yellow (Lit)	There is a problem in Forward/Reverse switch (right)(19) system. Turn Forward/Reverse selector switch (20) OFF and operate the machine with Forward/Reverse lever (17). Check and/or repair the related parts.
 Yellow (Lit)	There is a problem in the Forward/Reverse switch (right or left) system. Operate the machine with Forward/Reverse lever (17) and park the machine in a safe place. Contact your authorized dealer.
 Red (Lit)	There is a serious problem in the Forward/Reverse switch (right or left) system. Operate the machine with Forward/Reverse lever (17) and park the machine in a safe place. Contact your authorized dealer.



MNEK-01-100

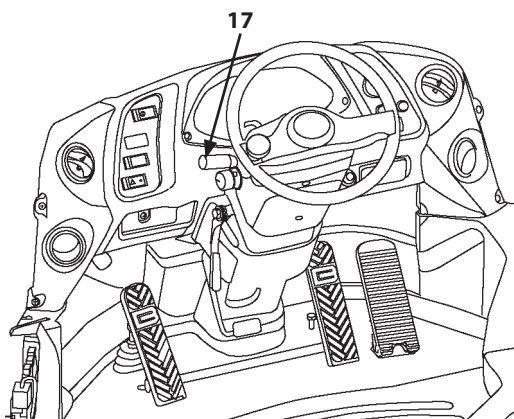


MNEK-13-002

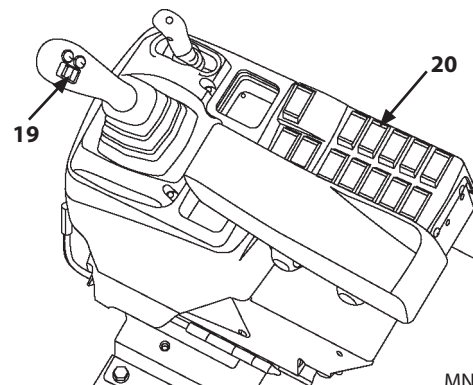


MNEC-01-526

Fingertip Control Type



MNEC-01-037



MNEC-01-043

Multi-Function Joystick Type

OTHER ATTACHMENTS

Axle Oil Cooler

Axle Oil Cooler (Optional)

Maintenance Guide of the Axle Oil Cooler

Shaded columns in the table indicate maintenance interval.

	Parts			Qty	Interval (hours)					
					10	100	250	500	1000	2000
1.	Axle Oil	Level check		-						
2.	Axle Oil	Change (Front)	ZW310-6	52 L						
			ZW330-6	64 L						
		Change (Rear)	ZW310-6	52 L						
			ZW330-6	64 L						
3.	Axle Oil Filter	Replace		2				★		

★: Replace the filter every 500 hours or every 3 months whichever comes first.

Axle Oil

Kind of Oil	Gear oil
Application	Axle
Manufacturer	
Hitachi	*High Gear Oil



NOTE: The machine shipped from factory is filled with gear oil marked with *. Be sure to use the gear oil listed above. If other oil is used, you may hear abnormal noise, which may lead to damage on the machine.

OTHER ATTACHMENTS

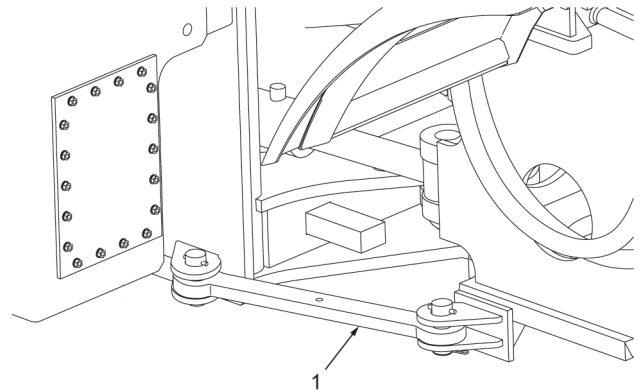
Axle Oil Cooler

1 Check Axle Oil Level

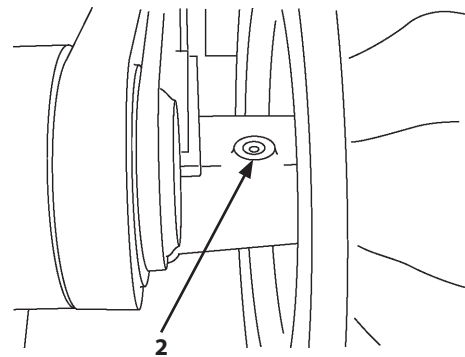
--- every 250 hours

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work. Run the engine at slow idle speed for several minutes, then stop the engine.
2. Install articulation lock bar (1) to the front and rear of the frame by following the procedures described on page 7-10.
3. Clean the vicinity of oil level plug (2).
4. Remove oil level plug (2). Clean the tip of dipstick (3) connected to oil level plug (2) with a clean cloth.
5. Make the plug lower surface contact to the axle seat face. Oil level must be between marks H and L (4) on the dipstick (3).

If necessary, add oil.

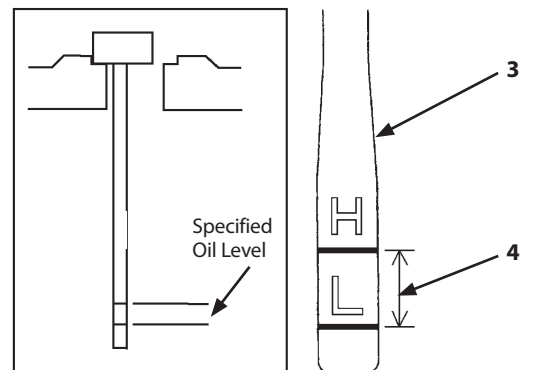


MNFA-07-001

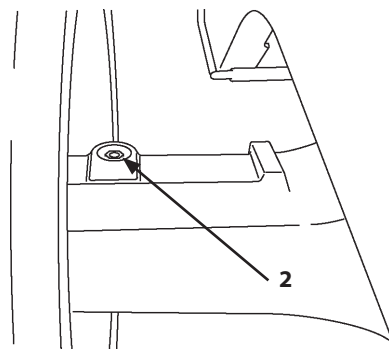


Front Axle

M4GB-07-037



M4GB-07-039



Rear Axle

M4GB-07-038

OTHER ATTACHMENTS

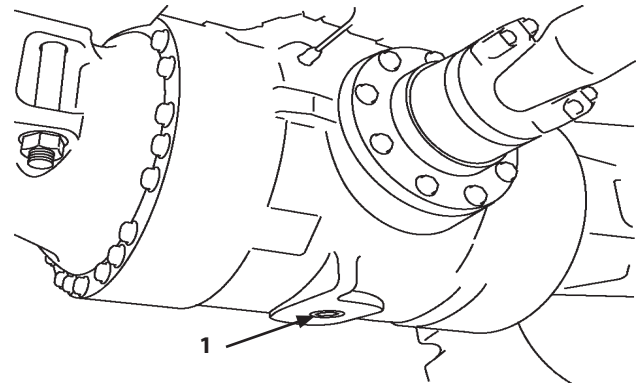
Axle Oil Cooler

2 Change Axle Oil --- every 2000 hours

WARNING: Take care about the following points.

- Starting repair work immediately after operation may cause burns. Wait for oil to cool before starting work.
- Lock the front and rear frames with the articulation lock bar.

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



Front Axle

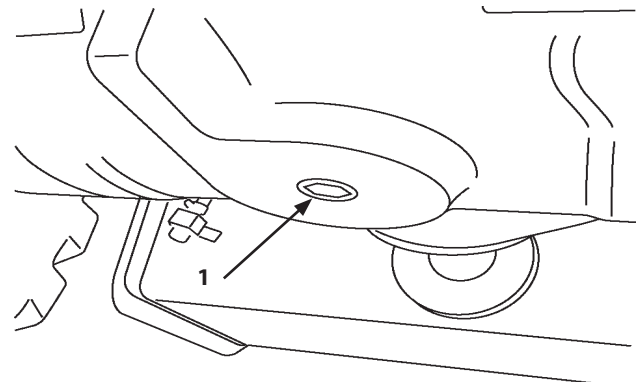
M4GB-07-035

Change Axle Oil

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Clean the areas around drain plug (1) and the oil filter.
4. Arrange a container of 70 liters capacity to receive the drain oil.
5. Remove drain plug (1) to drain the oil.
6. Securely tighten drain plug (1).
7. Refill the specified amount of oil through the oil level plug hole.

Oil amount

	Front Axle	Rear Axle
ZW310-6	48 liters	48 liters
ZW330-6	60 liters	60 liters



Rear Axle

M4GB-07-036

8. Securely tighten the oil level plug.
9. Run the engine at slow idle speed for several minutes.
10. Refill the specified amount of axle oil through the oil level plug hole.
Specified Oil Amount: 4 liters
11. Securely tighten the oil level plug.
12. Run the engine at slow idle speed for several minutes.
13. Recheck the oil level.

OTHER ATTACHMENTS

Axle Oil Cooler

3

Replace Axle Oil Filter

--- every 500 hours or every 3 month whichever comes first.



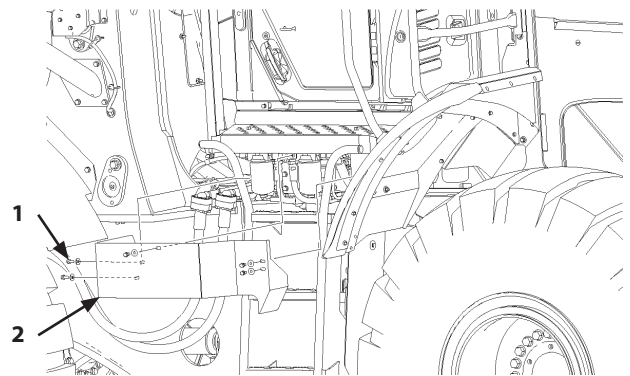
WARNING: Take care about the following points.

- Starting repair work immediately after operation may cause burns. Wait for oil to cool before starting work.
- Lock the front and rear frames with the articulation lock bar.

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

Replace Axle Oil Filter

1. Park the machine following the same procedures as described on page 7-8 for preparation of inspection/maintenance work.
2. Install articulation lock bar to the front and rear of the frame by following the procedures described on page 7-10.
3. Remove bolts (1) (5 used) and cover (2).



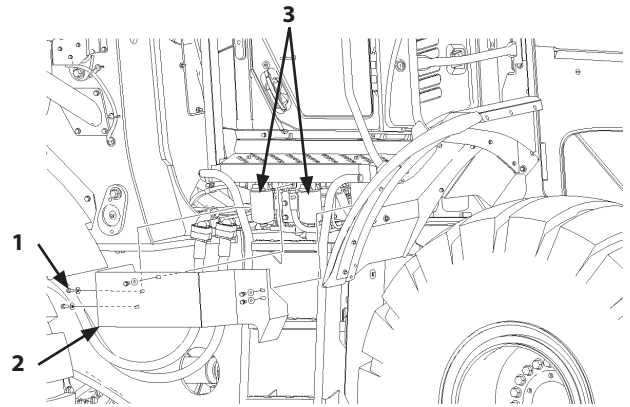
MNFA-13-002

OTHER ATTACHMENTS

Axle Oil Cooler

IMPORTANT: Be sure to replace two oil filters (3) at the same time.

4. Using a filter wrench, turn the oil filter cartridge counterclockwise to remove it.
5. Clean the filter gasket seating surface.
6. Fill new axle oil in the new cartridge carefully without spilling it. Apply thin film of clean oil on the gasket of cartridge.
7. Turn filter cartridge (3) clockwise by hand until it makes in contact with the gasket. Do not damage the gasket when installing the filter cartridge.
8. Carefully tighten oil filter (3) for 3/4 turn by using a filter wrench. Do not overtighten it.
9. Run the engine at slow idle speed for 5 minutes. Check no oil is leaking from the filter.
10. Install cover (2) with bolts (1) (5 used).
11. Check the oil level. (Refer to the descriptions for "Check Axle Oil Level" on page 13-13.)



MNFA-13-002

INDEX

A	
About Aftertreatment Device	1-3
Accelerator Pedal.....	1-94
Adjust Operator's Seat.....	5-6
Adjusting Operator's Seat (Air Suspension Type Seat).....	1-121
Adjusting the Switch Box Fore/Aft Position	13-6
Adjusting the Vertical Height of the Left Console	13-6
Adjustment.....	7-107
Adjustment of Bucket Auto Leveler.....	5-6
Adjustment of Dual Lift Arm Auto Leveler.....	5-8
Aftertreatment Device.....	2, 1-33, 7-139
Aftertreatment Device Condition Display.....	1-33
Aftertreatment Device Manual Regeneration Procedure	1-35, 5-11
Aftertreatment Device Manual Regeneration Request..	1-34
Aftertreatment Device Regeneration Inhibited	1-57
Air Cleaner	7-77
Air Conditioner	7-112
Air Filter Restriction Indicator (Red).....	1-14
Alarm Occurrence Screen.....	1-26
AM/FM Radio Operation.....	1-139
Armrest Adjust Handle	1-101
Articulation Lock Bar	1-171
Ash Tray.....	1-112
Audio Input	1-142
AUTO.....	1-107, 1-109
Auto Air Conditioner	1-113
Auto Shut-Down (Optional).....	1-53, 5-9
Auto Shut-Down: ON/OFF.....	1-53
Auto Shut-Down: Setting Time.....	1-54
Avoid Accidents from Backing Up and Turning	5-16
Avoid Applying Heat to Lines Containing Flammable Fluids	5-33
Avoid Heating Near Pressurized Fluid Lines	5-33
Avoid High-Pressure Fluids	5-29
Avoid Injury from Rollaway Accidents.....	5-15
Avoid Operation with Biased Loads	5-14
Avoid Overloading.....	5-14
Avoid Positioning Bucket or Attachment Over Anyone.....	5-17
Avoid Power Lines.....	5-19
Avoid Rapid Steering Changes and/or Sudden Braking.....	5-14
Avoid Tipping.....	5-17
Axle Oil Cooler	13-12
Axle Oil Cooler (Optional).....	13-12
B	
Basic Operation.....	1-146
Basic Screen.....	1-20
Batteries.....	7-94
Battery Disconnect Switch.....	1-169
Before Operation.....	5-13
Beware of Asbestos and Silica Dust and Other Contamination.....	5-34
Beware of Exhaust Fumes.....	5-32
Bleed Air from the Fuel System	7-71
Bleed Air from the Hydraulic System.....	7-52
Brake Oil Low Pressure Indicator (Red).....	1-11
Brake Pedal	1-94
Brake System.....	7-103
Break-in Operation for New Machine.....	2-1
Brightness Adjustment.....	1-42
C	
Cab Door.....	1-165
Cab Door Release Lever (ZW310-6)	1-168
Cab Features.....	1-6
Cab Heater Operation.....	1-117
Change Axle Oil.....	7-46, 13-14
Change Coolant	7-91
Change DEF/AdBlue®	7-144
Change Engine Oil	7-33
Change Hydraulic Oil/Clean Hydraulic Oil Tank.....	7-51
Change Transmission Oil	7-41
Changing Forward/Reverse Drive Direction.....	4-8
Check Accelerator Pedal Operation, and Exhaust Gas Color and Noise	7-122
Check Accumulator Function, Gas Leakage, Looseness, and Damage.....	7-105
Check After Starting	3-8
Check Air Conditioner.....	7-116
Check Air Conditioner Condenser.....	7-117
Check Air Conditioner Drive Belt.....	7-117
Check Air Conditioner Piping.....	7-116
Check Air Inlet System.....	7-80
Check Air pressure	7-107
Check Axle Oil Level	7-45, 13-13
Check Before Starting	3-3
Check Brake Disks (Service and Parking)	7-106
Check Bucket Teeth and Cutting Edge	7-119
Check Compressor and Pulley	7-118
Check Coolant Level	7-83
Check Crankcase Breather Tube	7-36
Check DEF/AdBlue®	7-142
Check Drive Belt.....	7-84
Check Drive Belt Tensioner	7-85
Check Electrical Harnesses and Fuses.....	7-101
Check Engine Oil Level	7-32
Check Fuel Hoses.....	7-76
Check Fuel Level	7-67
Check Gas Pressure in Accumulator	7-106
Check Gas Pressure in Ride Control Accumulator	7-61
Check Gas Pressure in Steering Accumulator	7-61
Check Horn and Reverse Buzzer	7-100
Check Hoses and Lines.....	7-62
Check Hydraulic Oil Level.....	7-50
Check Monitor Functions and All Other Instrument Operation.....	7-98
Check Parking Brake Force.....	7-104
Check Pilot Circuit Accumulator Function, Gas Leakage, Looseness, and Damage.....	7-60
Check Play Amount in Steering Wheel Stroke	7-121

INDEX

Check ROPS cab, Resin Cab Roof, and Roof Mounting		
Bolts	7-120	
Check Rearview Mirror and Inside Rearview Mirror	7-123	
Check Refrigerant.....	7-118	
Check Ride Control Accumulator Function, Gas Leakage, Looseness, and Damage.....	7-61	
Check Right and Left Brake Interlocking		
Performance	7-103	
Check Sound Absorbing Mat Around Engine.....	7-124	
Check Steps and Handrails for Damage and Looseness	7-123	
Check Surroundings Around Axle and Covers for Oil Leaks	7-47	
Check Tire for Damage	7-108	
Check Transmission Oil Level	7-40	
Check Vibration Damper.....	7-39	
Check Wheel Bolt Torque.....	7-108	
Check Windshield Washer Fluid Level.....	7-120	
Check Work Lights.....	7-99	
Check and Adjust Valve Clearance	7-125	
Check and Clean Aftertreatment Device	7-139	
Check and Replace Seat and Seat Belt.....	7-120	
Check the Hour Meter Regularly.....	7-3	
Cigar Lighter.....	1-112	
Clean Air Cleaner Outer Element (ZW330-6)	7-78	
Clean Axle Housing Air Breather.....	7-47	
Clean Engine Compartment and Hood.....	7-124	
Clean Fuel Solenoid Pump Strainer	7-74	
Clean Pilot Oil Filter (Brake Circuit)	7-54	
Clean Pilot Oil Filter (Steering Circuit).....	7-56	
Clean Radiator/Oil Cooler and Other Cooling System	7-93	
Clean Suction Filter	7-53	
Clean Transmission Oil Suction Strainer.....	7-41	
Clean/Replace Air Conditioner Circulation/Fresh Air Filters	7-112	
Cleaning of Rear View Camera Lens	7-124	
Clearance Light Indicator (Green)	1-17	
Clutch Cut Off Brake	1-94	
Clutch Cut Position Switch.....	1-103, 5-5	
Coat Hook	1-137	
Communication Error Indicator (Yellow)	1-12	
Components Name	1-114, 1-121	
Control Lever	1-98, 5-1	
Control Lever Lock Switch.....	1-101, 5-4	
Control lever lock indicator (Red).....	1-17	
Controller Part Name and Function.....	1-115	
Cool Head/Warm Feet Operation	1-119	
Coolant.....	7-81	
Coolant Temperature Gauge.....	1-15	
Cooling Operation	1-118	
Cooling System	7-81	
Correct Maintenance and Inspection Procedures.....	7-1	
D		
DAB.....	1-147	
DAB Operating (Optional).....	1-143	
Date Adjustment	1-49	
Date and Time.....	1-47	
DEF/AdBlue® Level Alarm.....	1-31	
DEF/SCR System Alarm.....	1-31	
Default Setting	1-19	
Defroster Operation	1-119	
Descriptions of Warnings	13-10	
Dig with Caution.....	5-18	
Discharge Warning Indicator (Red)	1-12	
Display Item Selection.....	1-70	
Display Mode Setting.....	1-51	
Display Switch	1-155	
Displaying Basic Screen	1-21	
Dispose of Waste Properly.....	5-36	
Door Lock Knob (ZW330-6)	1-166	
Door Open/Close Lever (ZW330-6)	1-168	
Dozing	5-21	
Drain Fuel Pre-Filter	7-70	
Drain Water and Sediment from Fuel Tank.....	7-69	
Drive Machine Safely (Work Site).....	5-13	
Drive Safely	5-12	
Drive Safely with Bucket Loaded	5-14	
Drive Speed Change.....	4-8	
Drive on Snow Safely	5-14	
DRIVING MACHINE	4-1	
Driving the Machine.....	4-1	
DSS (Down Shift Switch)	1-105, 13-2	
Dual Lift Arm Auto-Leveler	1-39	
Dust Ejection Valve (ZW310-6 Only).....	7-79	
E		
Electric Fans.....	12-2	
Electric Power Output (Optional)	1-126	
Electrical System.....	7-94	
Emergency Evacuation.....	4-19	
Emergency Evacuation Hammer	1-136	
Emergency Steering	4-10	
Emergency Steering Operation Check Switch.....	1-111	
Engine.....	7-32	
Engine Oil Low Pressure Indicator (Red)	1-13	
Engine Trouble Indicator (Red).....	1-13	
Ensure Safety Before Rising from or Leaving Operator's Seat	5-7	
Ensure Safety When Operating on Road Shoulders	5-13	
Equipment of Head Guard, ROPS, FOPS.....	5-11	
Evacuating in Case of Fire.....	5-32	
Excavation.....	5-15	
EXTERNAL.....	1-153	
F		
Fan Reverse Rotation Switch	1-108	
Fasten Your Seat Belt.....	5-7	
Fastening Machine for Transporting	6-4	
Features	1-113	
Fingertip Control Type.....	1-8, 1-96, 1-98	
Follow Safety Instructions.....	5-2	
For Rapid Cooling.....	1-120	
Forward/Reverse Lever.....	1-84	

INDEX

Forward/Reverse Lever/ Shift Switch	1-84	Left Armrest Angle Adjustment	13-6
Forward/Reverse Selector Switch.....	1-110	Left Console Lock Release Lever	13-5
Forward/Reverse Switch	13-4	Left Door Open/Close Lever (ZW310-6)	1-168
Forward/Reverse Switch (Left)	13-2	Lifting Machine	6-10
Front Console.....	1-7	Lifting Wheel Loader	5-22
Front/Rear Wiper Switch.....	1-90	Light Switch.....	1-87
Fuel Consumption.....	1-75	List of Consumable Parts	7-23
Fuel Gauge.....	1-15	List of Display Language.....	1-69
Fuel System.....	7-67	Loading	5-18
Fuse Box.....	1-127	Loading / Unloading on Trailer.....	6-2
Fuse Box A.....	1-128, 7-102	Lock Frames.....	7-10
Fuse Box B	1-128, 7-102	Lockup Setting	1-61
G		Low Steering Oil Pressure Indicator (Red)	1-12
General Precautions for the Cab	S-5	Lower Kickout ON/OFF, Stop Height Setting.....	1-41
Getting ON and OFF the Machine.....	1-2	M	
Grading	5-17	MACHINE NUMBERS	1
Greasing.....	7-27	Mail (Optional).....	1-44
H		Main Menu.....	1-37
Handle Chemical Products Safely.....	S-36	Main Menu Sequence Change	1-72
Handle Fluids Safely—Avoid Fires.....	S-24	Maintenance	1-77, 7-1
Handle Starting Aids Safely	S-8	Maintenance Guide	7-14
Hazard Switch.....	1-91	Maintenance Guide of the Axle Oil Cooler.....	13-12
Height Kickout ON/OFF, Stop Height Setting	1-40	Maintenance Notice	1-77
High Beam Indicator (Blue).....	1-16	Maintenance Under Special Environmental Conditions...9-1	
High-Low Beam Switch	1-88	Manual Operation	1-108
Hold Switch	1-105	Menus.....	1-156
Horn Switch	1-85	Mirror Installation Diagram	1-163
Hot/Cool Box.....	1-129	Miscellaneous	7-119
How to Use Screens.....	1-21	Modifications	1
Hydraulic Oil Level Indicator (Red).....	1-11	Monitor Operation.....	1-25
Hydraulic System.....	7-48	Monitor Panel	1-10
I		Monitoring.....	1-81
Information Menu	1-74	Move and Operate Machine Safely	S-8
Inspect Machine	S-4	Multi Function Monitor	1-18
Inspect Machine Daily Before Starting	3-1	Multi-Function Joystick Lever	1-100
Inspection and Maintenance of Hydraulic Equipment...7-48		Multi-Function Joystick Type.....	1-9, 1-97
Inspection/Maintenance Side Access Cover.....	1-173, 7-11	N	
Installation and Adjustment of Mirrors	1-162	Name of Components	1-1
Intended Use.....	1	Names of Parts.....	1-144
Investigate Job Site Beforehand	S-10	Neutral Lever Lock (for the Forward/Reverse Lever)	1-85
J		Never Ride Attachment.....	S-6
Joystick Steering	13-1	Never Undercut a High Bank.....	S-18
Joystick Steering (Optional)	13-1	Notes on Aftertreatment Device	S-37
Joystick Steering Lever	13-2	O	
Joystick Steering Selector	13-3	Object Handling	S-21
Jump Starting	S-9	OFF.....	1-107
K		Off-Season Air Conditioner Maintenance	1-120
Keep Riders Off Machine	S-12	Operate Only from Operator's Seat	S-9
Key Switch.....	1-88	OPERATING ENGINE.....	3-1
Kind of Oils.....	7-20	OPERATING MACHINE.....	5-1
L		Operating Procedures	13-7
Language Settings.....	1-67	Operation	1-75
Layout.....	7-4	Operational Procedure	1-110
		OPERATOR'S STATION	1-3
		OTHER ATTACHMENTS	13-1

INDEX

Outside Rear View Mirror	1-162	Replace Air Breather Element	7-59
Overheat Indicator (Red)	1-13	Replace Air Cleaner Element (ZW310-6)	7-77
P		Replace Air Cleaner Outer and Inner Elements (ZW330-6)	7-78
Parallel/Tandem Switching Setting.....	1-63	Replace Air Conditioner Receiver Dryer	7-118
Park Machine Safely.....	S-22	Replace Axle Oil Filter	13-15
Parking	4-18	Replace Crankcase Air Breather Element.....	7-37
Parking Brake Indicator (Red).....	1-11	Replace DCA4 Coolant Filter Cartridge	7-86
Parking Brake Switch.....	1-93, 4-7	Replace DEF/AdBlue® Supply Module Main Filter.....	7-145
Perform Truck Loading Safely	S-18	Replace Engine Oil Filter	7-35
Periodic Replacement of Parts.....	7-13	Replace Fuel Main Filter Element	7-72
Power Mode Switch.....	1-103	Replace Fuel Pre-Filter Element	7-73
Power Train	7-40	Replace Hydraulic Tank Oil Filter.....	7-57
Practice Safe Maintenance	S-25	Replace Rubber Hoses Periodically.....	S-29
Precaution for Communication Terminal Equipment.....	S-38	Replace Transmission Oil Filter	7-41
Precautions for After Operations.....	S-23	Retighten Front Axle and Rear Axle Support Mounting Bolts	7-125
Precautions for Communication Terminal.....	S-37	Ride Control Drive Speed Setting.....	1-38
Precautions for Driving on Slopes.....	4-14	Ride Control Switch	1-106
Precautions for Handling Accumulator and Gas Damper.....	S-33	Right Console.....	1-8
Precautions for Lightning.....	S-19	Right Console / Switches	1-96
Precautions for Maintenance During Cold Weather Season.....	9-2	Right Console Fore-aft Adjustment	1-101
Precautions for Operation.....	S-19, 5-13	Right Door Lock (ZW310-6)	1-166
Precautions for Welding and Grinding	S-32	Right Door Open/Close Lever (ZW310-6)	1-166
Precautions for handling antifreeze	7-81	Room Light (ZW310-6)	1-134
Precautions to be Taken if Machine Failure Occurs.....	4-15	Room Light (ZW330-6)	1-135
Preheat Indicator (Yellow).....	1-14	Room Rear View Mirror.....	1-165
Preparations for Inspection and Maintenance	7-8	ROPS Cab (ZW310-6).....	1-130
Prepare for Emergencies.....	S-3	ROPS Cab (ZW330-6).....	1-132
Prevent Battery Explosions	S-35	Rotary Light Switch (Optional)	1-138
Prevent Burns.....	S-28	S	
Prevent Fires.....	S-30	SAFETY	S-1
Prevent Parts from Flying	S-28	SAFETY SIGNS	S-42
Protect Against Flying Debris	S-21	Scooping	5-21
Protect Against Flying Debris and Falling Object.....	S-20	Seat Belt.....	1-178
Protect Against Noise	S-4	Seat Pocket	1-178
Provide Signals for Jobs Involving Multiple Machines....	S-11	Service Air Conditioning System Safely	S-35
Q		Service Brake.....	1-94
Quick Power Switch.....	1-104	Setting Menu	1-46
R		Setting Procedure	1-57
RADIO	1-151	Shift Change Delay Mode Setting	1-59
Rear Grille	1-174, 7-12	Shift Switch.....	1-84
Rear Tray	1-126	Sound Level Results.....	12-2
Rear View Camera Monitor	1-55	Specifications.....	12-1
Rear View Camera ON/OFF/AUTO	1-55	Starting Engine	3-5
Rear View Mirror Heater Switch (Optional)	1-138	Starting in Cold Weather.....	3-7
Recognize Safety Information	S-1	Starting to Move.....	4-2
Recommended Fuel	7-67	Stay Clear of Moving Parts	S-27
Refill DEF/AdBlue®.....	7-142	Steering.....	1-85
Refueling	7-68	Steering Wheel.....	4-9
Remaining Time and Maintenance Interval.....	1-79	Steps.....	1-175
Remedy	1-28	Stop and Restart of Driving	4-11
Removal and Installation of Tire.....	7-111	Stop the Machine	4-16
Remove Paint Before Welding or Heating	S-34	Stopping Engine.....	3-14
Removing Snow.....	5-22	STORAGE.....	10-1
		Store Attachments Safely	S-22

INDEX

Storing the Machine.....	10-1	Work Light Indicator (Yellow).....	1-16
Sun Visor	1-136	Work Light Switch	1-92
Support Machine Properly	S-26		
Support Maintenance Properly	S-27		
Switch Box Angle Adjustment	13-6		
Switch Operation.....	1-170		
Switches, Steering Wheel and Pedals.....	1-83		
T			
Tightening and Retightening Torque of Nuts and Bolts	7-126		
Tilt, Telescopic Lever/Steering Column Pop-up Pedal	1-95		
Time adjustment	1-47		
Tips for Optimal Air Conditioner Usage	1-120		
Tire	7-107		
Tire Wheel.....	7-111		
Tool Box	1-175		
Torque Converter Air Breather.....	7-44		
Towing Method.....	6-9		
Towing Pin	1-172		
Transmission Setting	1-59		
Transmission Warning Indicator (Red)	1-12		
Transport Safely	S-23		
TRANSPORTING.....	6-1		
Transporting Wheel Loader (Urgent Situation)	6-5		
Transporting by Road	6-1		
Transporting by Trailer	6-1		
Travel Mode Selector.....	1-102		
Travel on Public Roads Safely.....	S-15		
Tray and Drink Holder	1-129		
TROUBLESHOOTING.....	11-1		
Turn Signal Indicator (Green)	1-16		
Turn Signal Lever	1-86		
U			
Understand Signal Words.....	S-1		
Upper Switch Panel (Optional)	1-138		
Urea SCR System.....	7-140		
Urea SCR System Malfunction	1-32		
Use Handrails and Steps	S-6		
Using Booster Batteries	3-9		
Using Cigar Lighter	1-112		
V			
Vandal-Proof Devices	1-176		
VISIBILITY MAP	S-40		
W			
Warm Up Operation	1-65		
Warming Up Operation.....	3-11		
Warming Up Operation in Cold Weather	3-12		
Warn Others of Service Work	S-26		
Wear Protective Clothing.....	S-3		
When Fully Opening the Left Door (ZW310-6)	1-168		
When Windows Become Misty	1-120		
Window Open/Close Levers	1-167		
Wiper Operation	1-89		
Wiper Switch	1-89, 13-2		

INDEX

MEMO

[illegible]

CONFORMITY

The EU Declaration of Conformity includes the machine without accessory, unless fitted with accessories approved by Hitachi Construction Machinery.

This EU Declaration of Conformity will lose its validity for any modification of the machine without approval.

Legal Provisions;

The machine fulfills all relevant provisions of the following directives (and their amendments)

2014/53/EU Radio Equipment Directive

2006/42/EC Machinery Directive

2000/14/EC Outdoor Noise Emissions Directive

Manufacturer;

Hitachi Construction Machinery (Europe) N. V.
Siciliëweg 5, 1045 AT, Amsterdam, The Netherlands

Hitachi Construction Machinery Co., Ltd.
16-1, Higashiueno 2-chome, Taito-ku, Tokyo, Japan

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

Person authorized to compile the TCF;

General Manager, Engineering
Hitachi Construction Machinery (Europe) N. V.

Conformity assessment procedure followed;

Annex VI

CONFORMITY

Vibration levels

The level of vibrations transmitted from the machine to the operator depends mainly upon the ground conditions on which the operations take place, the mode of operation of the machine and the equipment used. Exposure to vibrations can be considerably reduced when taking into account the following recommendations:

- Select the right type and size of machine. Use equipment and tools compatible with the machine and suitable for the type of work to be done;
- Adjust the seat to the weight and size of the operator and lock the seat in the correct position;
- Inspect regularly the suspension of the seat. Adjust and repair if necessary;
- Perform maintenance of the machine at the prescribed intervals;
- Operate the equipment in a smooth way, preventing, as far as possible, aggressive movements or excessive loads;
- Adapt travelling speed and –route if necessary and avoid, as far as possible, rough terrain or hitting obstacles to prevent bouncing.
- Keep the terrain in good condition. Remove large obstacles and fill any ditched and holes.

This machine is equipped with an operator's seat, limiting the exposure of the operator's body to vibrations in accordance with ISO 7096:2008 when the machine is used as intended. The operator's seat has been tested in accordance with EM3 input spectral class and a SEAT transmissibility factor <1.0.

- The average acceleration value to which the operator's arms are subjected does not exceed 2.5 m/s².
- The average acceleration value to which the operator's body is subjected does not exceed 0.5 m/s². The results were obtained using an accelerometer during load and carry operations.

 **NOTE:** The vibration exposure values have been determined under particular operating and terrain conditions and therefore may not be representative for all possible operating conditions within the intended use of the machine.

Consequently, this single Whole-Body vibration emission value is not intended to determine the Whole-Body vibration exposure as required by European Directive 2002/44/EC. For this purpose it is recommended to conduct measurements under actual working conditions. If this is not feasible, information provided in the table below, taken from ISO/TR 25398: 2006 (*1), to estimate the daily vibration exposure is recommended. For regular operating activities, use the typical vibration levels as the estimated level. With an experienced operator and/or smooth terrain, subtract the standard deviation from the typical vibration level in order to obtain the estimated vibration level. For aggressive operations and/or rough terrain, add the standard deviation to the typical vibration level in order to obtain the estimated vibration level.

Operating activity	Typical vibration level [m/s ²]			Standard deviation [m/s ²]		
	1.4*a _{w,eqx}	1.4*a _{w,eqy}	a _{w,eqz}	1.4*s _x	1.4*s _y	s _z
Load and carry motion	0.84	0.81	0.52	0.23	0.2	0.14
Mining application	1.27	0.97	0.81	0.47	0.31	0.47
Transfer movement	0.76	0.91	0.49	0.33	0.35	0.17
V-shape motion	0.99	0.84	0.54	0.29	0.32	0.14

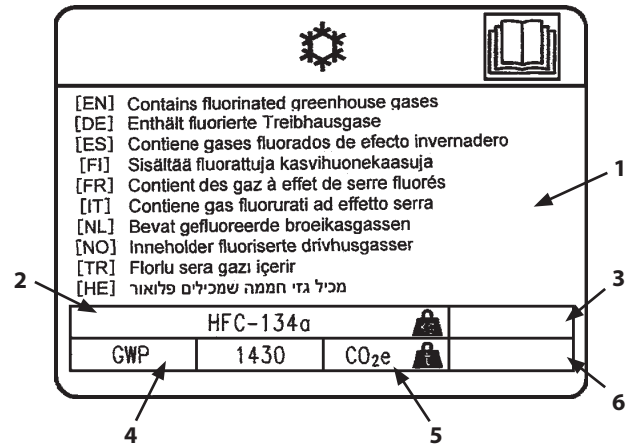
(*1) ISO/TR 25398:2006 Mechanical vibrations – Guidelines for assessment of exposure to whole-body vibration of ride-on machine – Use of harmonized data measured by international institutes, organizations and manufacturers.

CONFORMITY

Information on the fluorinated greenhouse gas contained in the machine

Label on the machine

1. Text showing this machine contains fluorinated greenhouse gases.
2. Type of Refrigerant: HFC-134a
3. Amount of refrigerant in kilogram
4. 'global warming potential (GWP)' means a climatic warming potential of a greenhouse gas relative to that of carbon dioxide.
5. 'tonne(s) of CO₂ equivalent (CO₂e)' means a quantity of greenhouse gases, expressed as the product of the weight of the greenhouse gases in metric tonnes and of their global warming potential.
6. CO₂e in tonnes



MPD8-00-001

* Immediately resolve any leakage to limit the environmental impact.

* For the refrigerant and CO₂e amount, please refer to the maintenance page for the Air Conditioner.

* Filling and retrieval should be performed by qualified personnel and waste refrigerant should be disposed in accordance with local regulations.

CONFORMITY

MEMO

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, unlimited hours of operation 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 WILLFULL 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.

Hitachi Construction Machinery Europe N.V. (HCME) Limited Warranty

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.

Wheel Loader ZW310-6/ZW330-6

Operator's Manual (Original Instruction)

Manual part number : ENMNFB-EN2-4

Hitachi Construction Machinery (Europe) N.V.
Address : Siciliëweg 5, 1045 AT, Amsterdam, The Netherlands
URL : <http://www.hitachi-c-m.com>

