

PART NO. ENMLBA-NA1-3

HITACHI

Reliable solutions

Operator's Manual

ZAXIS

190W-5N

230W-5N

Wheeled Excavator

Serial No.

ZX190W-5N 003001 and up

ZX230W-5N 003001 and up

INDEX

MACHINE NUMBERS

SAFETY

SAFETY SIGNS

COMPONENTS NAME

GETTING ON/OFF THE MACHINE

OPERATOR'S STATION

BREAK-IN

OPERATING ENGINE

DRIVING MACHINE

OPERATING MACHINE

TRANSPORTING

MAINTENANCE

MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS

STORAGE

TROUBLESHOOTING

SPECIFICATIONS

OPTIONAL ATTACHMENTS

INDEX

CONTENTS

MACHINE NUMBERS	1	Avoid Heating Near Pressurized Fluid Lines	S-33
SAFETY	S-1	Avoid Applying Heat to Lines Containing Flammable Fluids	S-33
Recognize Safety Information	S-1	Precautions for Handling Accumulator and Gas Damper.....	S-33
Understand Signal Words.....	S-1	Remove Paint Before Welding or Heating	S-34
Follow Safety Instructions.....	S-2	Beware of Asbestos and Silicon Dust and Other Contamination	S-34
Prepare for Emergencies.....	S-3	Prevent Battery Explosions	S-35
Wear Protective Clothing.....	S-3	Service Air Conditioning System Safely	S-35
Protect Against Noise	S-4	Handle Chemical Products Safely.....	S-36
Inspect Machine	S-4	Dispose of Waste Properly.....	S-36
General Precautions for Cab.....	S-5	Never Ride Attachment.....	S-37
Use Handholds and Steps	S-6	Notes for Muffler Filter.....	S-37
Adjust the Operator's Seat.....	S-6	Precautions for Communication Terminal.....	S-37
Ensure Safety Before Rising from or Leaving Operator's Seat	S-7	Precaution for Communication Terminal Equipment	S-38
Fasten Your Seat Belt.....	S-7	Notes on Protection of Operator's Station When the Machine Rolls Over.....	S-41
Move and Operate Machine Safely.....	S-8	SAFETY SIGNS	S-42
Operate Only from Operator's Seat	S-8	COMPONENTS NAME	1-1
Jump Starting	S-9	Components Name	1-1
Keep Riders off Machine	S-9	GETTING ON/OFF THE MACHINE	1-2
Precautions for Operations	S-10	OPERATOR'S STATION	1-3
Investigate Job Site Beforehand	S-11	Muffler Filter	1-3
Install OPG Guard	S-12	Cab Features (Std. Model)	1-6
Restriction of Attachment Installation	S-13	Column Box	1-7
Provide Signals for Jobs Involving Multiple Machines....	S-13	Steering Wheel and Travel Horn Switch	1-8
Confirm Direction of Machine to Be Driven.....	S-13	Accelerator Pedal.....	1-9
Drive Machine Safely.....	S-14	Brake Pedal	1-10
Avoid Injury from Rollaway Accidents.....	S-15	Tilt Pedal	1-11
Avoid Injury from Back-Over and Swing Accidents	S-16	F-N-R Switch	1-12
Keep Person Clear from Working Area.....	S-17	Combination Switch (Turn Signal Switch, Light Switch, Dimmer Switch, Passing Switch)	1-13
Never Position Bucket Over Anyone	S-17	Turn Signal Switch	1-13
Avoid Undercutting.....	S-18	Light Switch	1-14
Avoid Tipping.....	S-18	Dimmer Switch, Passing Switch.....	1-15
Never Undercut a High Bank.....	S-19	Brake Switch	1-16
Dig with Caution.....	S-19	Working Brake	1-18
Operate with Caution	S-19	Working Brake Operation 1	1-19
Avoid Power Lines.....	S-20	Working Brake Operation 2.....	1-19
Precautions for Lightning.....	S-20	Confirmation	1-19
Object Handling	S-21	Auto Axle Lock Switch	1-20
Protect Against Flying Debris	S-21	Operation Procedure	1-20
Park Machine Safely.....	S-22	Confirmation	1-20
Handle Fluids Safely—Avoid Fires.....	S-22	Hazard Switch.....	1-21
Transport Safely	S-23	Blade/Outrigger/Front Attachment Pilot Control Switch.....	1-22
Practice Safe Maintenance.....	S-24	Pilot Control Shut-Off Lever	1-23
Warn Others of Service Work	S-25	Engine Stop Switch.....	1-23
Support Machine Properly.....	S-25	Swing Lock Lever.....	1-24
Stay Clear of Moving Parts	S-26	Engage Swing Lock	1-24
Prevent Parts from Flying	S-26	Disengage Swing Lock	1-24
Avoid Injury from Attachment Falling Accident	S-27	Switch Panel.....	1-25
Support Maintenance Properly.....	S-27	Return to Previous Screen (Monitor)	1-26
Prevent Burns.....	S-28		
Replace Rubber Hoses Periodically.....	S-28		
Avoid High-Pressure Fluids	S-29		
Prevent Fires.....	S-29		
Evacuating in Case of Fire.....	S-31		
Beware of Exhaust Fumes.....	S-31		
Precautions for Welding and Grinding	S-32		

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CONTENTS

Return to Basic Screen (Monitor)	1-26	Air Conditioner.....	1-60
Selector Knob (Monitor)	1-26	Circulation Air Mode.....	1-60
Temperature Control Switch/Mode Switch (Air Conditioner)	1-26	Air Conditioner ON/OFF	1-60
AUTO/OFF Switch/Blower Switch (Air Conditioner) ...	1-26	Radio	1-61
AM/FM Selector/Tuning Switch (Radio).....	1-27	Work Mode	1-62
Power Switch/Volume Control Knob (Radio)	1-27	Attachment selection.....	1-62
Engine Control Dial	1-27	Mail (Optional).....	1-63
Key Switch	1-27	Meter Setting.....	1-65
Auto-Idle Selector.....	1-28	Switching Header Meter Display.....	1-66
Travel Mode Switch.....	1-28	Switching Main Meter Display	1-67
Engine Control Mode Selection Switch	1-29	Setting Menu	1-68
Power Mode Switch	1-30	Date and Time.....	1-69
Work Light Switch.....	1-31	Time adjustment.....	1-69
Wiper/Washer Switch	1-32	Date Adjustment.....	1-71
Numeric Keypad.....	1-33	Display Mode Setting.....	1-73
Switch Panel (for Optional Equipment).....	1-34	Attachment Adjustment.....	1-75
Travel Alarm Deactivation Switch (Optional).....	1-35	Flow Rate Adjustment.....	1-75
Swing Alarm Deactivation Switch (Optional)	1-35	Priority (arm roll-out).....	1-77
Rear Light Switch (Optional)	1-35	Attachment Name Input.....	1-79
Electrical Control Main Switch (Optional)	1-35	Auto Shut-Down	1-81
Front/Rear Attachment Selection Switch (Optional)	1-36	Auto Shut-down: ON/OFF.....	1-81
Right/Left Selection Switch (Optional)	1-36	Acting Time Setting.....	1-82
Seat Heater Switch (Optional) (7).....	1-37	Muffler Filter Regeneration Inhibited	1-83
Overload Alarm Switch (Optional) (8)	1-37	Setting Procedure.....	1-83
Revolving Light Switch (Optional) (9).....	1-37	Password Change (Optional).....	1-85
Electrical Control Main Switch (Optional).....	1-38	Sub Meter.....	1-89
Electrical Control Flow Rate Balance Adjustment Switch (Optional)	1-38	Rear View Camera Monitor	1-91
Right/Left Control Levers (AFL*)	1-38	Rear View Camera ON/OFF	1-91
AUX Function Lever 2 (Optional).....	1-39	Brightness Adjustment.....	1-93
Multi Function Monitor	1-40	Language Settings.....	1-95
Feature.....	1-40	Lists of Display Language.....	1-97
Screen Configuration.....	1-40	Unit Selection	1-98
Default Setting	1-41	Display Item Selection (Rear View Camera OFF)	1-100
Basic Screen.....	1-42	Main Menu Sequence Change	1-102
How to Use Screens.....	1-43	Information Menu.....	1-104
Displaying Basic Screen.....	1-43	Operation	1-105
Hour Meter.....	1-46	Fuel Consumption	1-105
Trip meter	1-46	Breaker Operation	1-107
Odometer	1-46	Attachment Operation.....	1-109
Clock.....	1-46	Travel Operation.....	1-111
Fuel Gauge	1-47	Actual operation	1-113
Coolant Temperature Gauge	1-47	Maintenance	1-115
Operating Status Icon Display.....	1-47	Maintenance Notice.....	1-115
Security Functions (Optional)	1-48	Remaining Time and Maintenance Interval	1-117
Input Password	1-48	Troubleshooting.....	1-119
Extending Password Duration Time.....	1-49	Monitoring.....	1-121
Alarm Occurrence Screen.....	1-50	Cigar Lighter.....	1-123
Remedy.....	1-52	Using Cigar Lighter	1-123
Muffler Filter.....	1-56	Using Cigar Lighter Port as External Power Source.....	1-123
Muffler Filter Condition Display.....	1-56	Cab Light Switch.....	1-124
Muffler Filter Manual Regeneration Request.....	1-57	Installing Fire Extinguisher (Optional)	1-124
Manual Regeneration Procedure	1-58	Fuse Box 1	1-125
Main Menu.....	1-59	Fuse Box 2	1-125
		Auto Air Conditioner	1-126
		Features:.....	1-126

CONTENTS

Components Name	1-127	BREAK-IN	2-1
Controller Part Name and Function	1-128	Break-in Operation for New Machine.....	2-1
Cab Heater Operation	1-130	OPERATING ENGINE.....	3-1
Cooling Operation	1-131	Inspect Machine Daily Before Starting	3-1
Defroster Operation	1-132	Before Starting Engine	3-3
Cool Head/Warm Feet Operation.....	1-132	Starting the Engine.....	3-4
Tips for Optimal Air Conditioner Usage	1-133	Check Instruments After Starting.....	3-10
For Rapid Cooling	1-133	Using Booster Batteries	3-11
When Windows Become Clouded	1-133	Stopping the Engine	3-13
Off-Season Air Conditioner Maintenance.....	1-133	Engine Auto-Stop in Extremely Low Temperature	3-14
AM/FM Radio Operation.....	1-134	DRIVING MACHINE	4-1
Controls on the radio.....	1-134	Driving the Machine.....	4-1
Tuning Procedure	1-134	Engine Speed Control.....	4-3
Station Presetting Procedure.....	1-135	Travel Mode Switch	4-4
Station Auto-Presetting Procedure	1-136	Starting to Travel	4-4
TONE Control	1-137	Stopping and Restarting	4-5
Audio Input (Optional)	1-138	Driving Instructions	4-5
Audio Input Selection	1-138	Precautions for Traveling on a Slope.....	4-7
Connecting audio device.....	1-138	Traveling in Water or on Soft Terrain	4-8
Volume Control of audio device.....	1-138	Extrication from Soft Ground.....	4-8
Side Monitor (Optional)	1-139	Parking	4-9
Monitor Operation	1-139	Precautions to be Taken if Machine Failure Occurs.....	4-10
Cab Door Release Lever	1-140	Travel Alarm (Optional)	4-11
Opening/Closing and Removing Cab Inside		OPERATING MACHINE	5-1
Window	1-141	Control Lever (ISO Pattern)	5-1
Opening Upper Front Window	1-142	Pilot Control Shut-Off Lever	5-2
Opening Upper Front Window	1-142	Warming Up Operation.....	5-3
Removing and Storing Lower Front Window	1-143	Engine Speed Control.....	5-4
Opening Side Windows.....	1-144	Auto-Idle.....	5-5
Opening/Closing Overhead Window (Std. Model)	1-145	Auto Shut-Down.....	5-7
Opening/Closing Overhead Window (Clear Hatch: If		Muffler Filter Manual Regeneration.....	5-10
Equipped)	1-146	Work Mode	5-12
Emergency Exit	1-147	Power Boost Switch	5-15
Adjusting the Seat.....	1-148	Power Mode Switch.....	5-16
Backrest Adjustment	1-148	Parking/Stopping Machine on a Slope (In Case of	
Seat Fore-Aft Adjustment	1-148	Emergency)	5-17
Weight Adjustment.....	1-148	Raising Machine Front Above Ground with Boom and	
Seat Height Adjustment.....	1-148	Arm Function	5-17
Console and Seat Fore-aft Adjustment.....	1-149	Operating Differential Gear at High-speed for a Long	
Seat Depth Adjustment.....	1-149	Periods of Time is Prohibited	5-18
Inclination Adjustment.....	1-149	Operating Backhoe.....	5-19
Armrest Adjustment	1-149	Shovel.....	5-20
Adjusting Operator's Seat (Optional).....	1-150	Grading Operation.....	5-21
Adjusting Seat Height	1-150	Do not Strike the Ground with Bucket Teeth	5-22
Console and Seat Fore-aft Adjustment.....	1-150	Avoid Hammer Work	5-22
Seat Fore-Aft Adjustment	1-150	Avoid Abusive Operation	5-23
Suspension Adjustment	1-150	Avoid Side Load the Bucket.....	5-23
Seat Depth Adjustment.....	1-151	Pilot Accumulator Function.....	5-24
Inclination Adjustment.....	1-151	How to Lower Boom In Case of Emergency and When	
Backrest Adjustment	1-151	Engine Stops.....	5-25
Armrest	1-151	Precautions for After Operations.....	5-26
Seat Belt.....	1-152	TRANSPORTING	6-1
Seat Belt.....	1-152	Transporting by Road	6-1
Installation and Adjustment of Mirrors	1-153	Loading/Unloading on a Trailer	6-2
Battery Disconnect Switch.....	1-154		

CONTENTS

Towing Machine	6-6	Drain Fuel Filter.....	7-74
Lifting Machine	6-9	Draining Procedures (Pre-Filter)	7-75
MAINTENANCE.....	7-1	Bleed Air from the Fuel System.....	7-76
Correct Maintenance and Inspection Procedures.....	7-1	Replace Fuel Main Filter Element.....	7-78
Check the Hour Meter Regularly.....	7-3	Replace Fuel Pre-Filter Element.....	7-80
Layout.....	7-4	Clean Fuel Solenoid Pump Strainer.....	7-82
Maintenance Guide Table	7-5	Check Water Separator (Optional)	7-84
Preparations for Inspection and Maintenance	7-7	Check Fuel Hoses	7-86
Maintenance Guide	7-11	H. Air Cleaner	7-87
Periodic Replacement of Parts.....	7-17	Clean and Replace Air Cleaner Element (Outer)	7-87
Kind of Oils.....	7-18	Replace Air Cleaner Element (Inner)	7-89
A. Greasing.....	7-23	I. Cooling System	7-90
Front Joint Pins	7-23	Check Coolant Level	7-91
Swing Bearing	7-25	Change Coolant.....	7-93
Swing Internal Gear.....	7-26	Clean Radiator/Oil Cooler/Inter Cooler Core.....	7-95
Front Axle.....	7-27	Clean Oil Cooler, Radiator and Inter Cooler Front	
Propel Shaft (Front and Rear)	7-27	Screen	7-97
Equalizer Pin	7-28	Clean Air Conditioner Condenser	7-98
B. Engine	7-29	Clean Fuel Oil Cooler	7-98
Engine Oil Level.....	7-29	J. Electrical System	7-100
Change Engine Oil	7-31	Battery.....	7-101
Replace Engine Oil Filter.....	7-31	Replace Batteries	7-106
Check and Clean Around the Engine.....	7-33	Replacing Fuses	7-107
C. Transmission.....	7-34	Check Monitor Functions and All Other	
Pump Transmission	7-34	Instrument Operation.....	7-109
Swing Reduction Gear	7-35	Check Work Lights	7-109
Transmission Oil	7-36	Check Horn.....	7-109
Front Axle.....	7-37	K. Miscellaneous	7-110
Rear Axle	7-38	Check and Replace Bucket Teeth	7-110
Front and Rear Hub Reduction Devices	7-39	Change Bucket.....	7-112
D. Brake (Traveling).....	7-41	Convert Bucket Connection Into Face Shovel	7-113
Bleed air from the brake system.....	7-41	Adjust Bucket Linkage	7-114
Check Brake Accumulator.....	7-43	Check and Replace Seat Belt.....	7-115
Check Service Brake and Parking Brake Force.....	7-44	Check Windshield Fluid Level.....	7-116
Check and Clean Brake Oil Pipings.....	7-44	Check Play Amount in Steering Wheel Stroke.....	7-117
E. Tire.....	7-45	Check Rearview Mirror and Inside Rearview	
Tire Inspection and Replacement Procedure	7-46	Mirror	7-117
F. Hydraulic System.....	7-47	Clean and Replace Air Conditioner Filter	7-118
Inspection and Maintenance of Hydraulic Equipment... 7-47		Check Air Conditioner	7-120
Change Hydraulic Oil and Replace Full-Flow Filter		Clean Cab Floor.....	7-122
Element.....	7-49	Retighten Cylinder Head Bolt.....	7-123
Check Hydraulic Oil Level	7-51	Inspect and Adjust Valve Clearance	7-123
Change Hydraulic Oil.....	7-52	Measure Engine Compression Pressure.....	7-123
Clean Suction Filter	7-52	Check Starter and Alternator.....	7-123
Air Bleeding Procedures	7-54	Check and Replace EGR Device	7-123
Replacement of Full-Flow Filter (Filter-Paper		Clean EGR Cooler	7-124
Element).....	7-57	Check Turbocharger.....	7-124
Replacement of Full-Flow Filter Element (High		Check and Clean Injector	7-124
Performance Element) (Optional)	7-60	Check Gas Damper	7-124
Replace Pilot/Brake and Steering Filter Element.....	7-62	Tightening and Retightening Torque of Nuts and	
Replace Air Breather Element.....	7-64	Bolts.....	7-124
Check Hoses and Lines	7-65	L. Muffler Filter.....	7-138
G. Fuel System	7-70	Check and Clean Filter Element of Muffler Filter	7-138
Recommended Fuel.....	7-70	Check and Clean Muffler Filter	7-138
Check Fuel Level.....	7-71		
Drain Fuel Tank Sump.....	7-73		

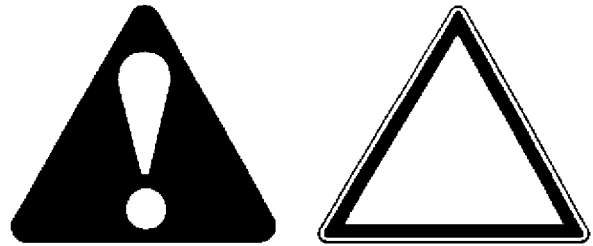
CONTENTS

MAINTENANCE UNDER SPECIAL ENVIRONMENTAL CONDITIONS	9-1
Maintenance Under Special Environmental Conditions...	9-1
STORAGE	10-1
Storing the Machine.....	10-1
TROUBLESHOOTING.....	11-1
Troubleshooting	11-1
SPECIFICATIONS	12-1
Specifications ZX190W-5N (Standard Gauge, Rear Blade)	12-1
Specifications ZX190W-5N (Standard Gauge, Rear Outrigger).....	12-2
Specifications ZX190W-5N (Standard Gauge, Front Blade Rear Outrigger).....	12-3
Specifications ZX190W-5N (Standard Gauge, Front Outrigger Rear Blade).....	12-4
Specifications ZX190W-5N (Standard Gauge, Front Outrigger Rear Outrigger)	12-5
Working Ranges ZX190W-5N Monoblock Boom.....	12-6
Working Ranges ZX190W-5N 2-Piece Boom	12-7
Specifications ZX230W-5N (Rear Blade).....	12-8
Specifications ZX230W-5N (Rear Outrigger)	12-9
Specifications ZX230W-5N (Front Blade Rear Outrigger).....	12-10
Specifications ZX230W-5N (Front Outrigger Rear Blade)	12-11
Specifications ZX230W-5N (Front Outrigger Rear Outrigger)	12-12
Working Ranges ZX230W-5N Monoblock Boom.....	12-13
Working Ranges ZX230W-5N 2-Piece Boom	12-14
OPTIONAL ATTACHMENTS	13-1
Operation of Optional Attachments	13-1
Blade and Outrigger.....	13-4
2-Piece Boom	13-9
Hydraulic Breaker, Hydraulic Crusher and Quick Coupler	13-14
Piping for breaker and crusher (optional)	13-15
Secondary Relief Pressure Adjustment	13-16
Attachment Pedal (Hydraulic Breaker) (Optional)	13-17
Precautions for Breaker Operation.....	13-18
Attachment Pedal (Hydraulic Crusher) (Optional).....	13-22
Precautions for Crusher Operation	13-23
Attachments	13-26
Allowable Weight Limits of Installed Attachment	13-26
Attachment Connection Parts.....	13-28
Precaution For Arm Roll-In/Bucket Roll-In Combined Operation.....	13-30
Change Hydraulic Oil and Replace Full-Flow Filter Element	13-31
INDEX.....	14-1

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.



3


Understand Signal Words

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



IMPORTANT



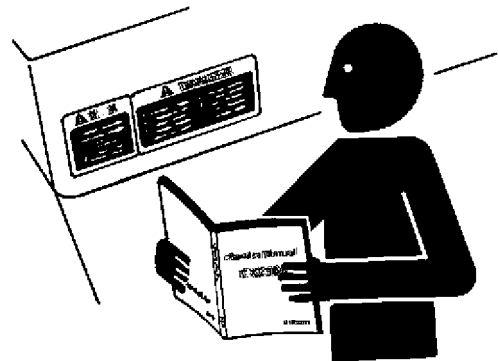
- To avoid confusing machine protection with personal safety messages, a signal word **IMPORTANT** indicates a situation which, if not avoided, could result in damage to the machine.
-  **NOTE**: indicates an additional explanation for an element of information.

SA-1223

SAFETY

Follow Safety Instructions

- Carefully read and follow all safety signs on the machine and all safety messages in this manual.
- Safety signs should be installed, maintained and replaced when necessary.
 - If a safety sign or this manual is damaged or missing, order a replacement from your authorized dealer in the same way you order other replacement parts (be sure to state machine model and serial number when ordering).
- Learn how to operate the machine and its controls correctly and safely.
- Allow only trained, qualified, authorized personnel to operate the machine.
- Keep your machine in proper working condition.
 - Unauthorized modifications of the machine may impair its function and/or safety and affect machine life.
 - Do not modify any machine parts without authorization. Failure to do so may deteriorate the part safety, function, and/or service life. In addition, personal accident, machine trouble, and/or damage to material caused by unauthorized modifications will void Hitachi Warranty Policy.
 - Never attempt to modify or disassemble the inlet/exhaust parts and the muffler filter. Avoid giving shocks on the muffler filter by striking elements with other objects or dropping the elements. Failure to do so may affect the exhaust gas purifying device, possibly damaging it or lowering its performance.
 - Do not use attachments and/or optional parts or equipment not authorized by Hitachi. Failure to do so may deteriorate the safety, function, and/or service life of the machine. In addition, personal accident, machine trouble, and/or damage to material caused by using unauthorized attachments and/or optional parts or equipment will void Hitachi Warranty Policy.
- The safety messages in this SAFETY chapter are intended to illustrate basic safety procedures of machines. However it is impossible for these safety messages to cover every hazardous situation you may encounter. If you have any questions, you should first consult your supervisor and/or your authorized dealer before operating or performing maintenance work on the machine.



SA-003

SAFETY

Prepare for Emergencies

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



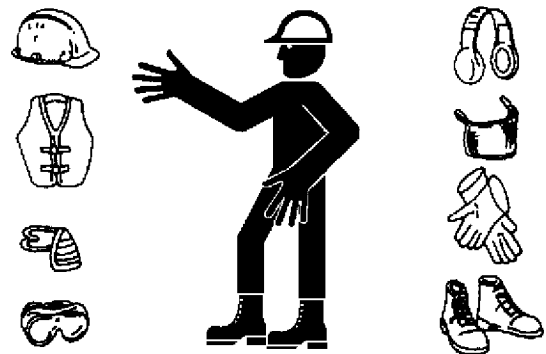
SA-437

Wear Protective Clothing

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

You may need:

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



SA-438

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

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

SAFETY

Protect Against Noise

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



SA-434

Inspect Machine

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



SA-435

SAFETY

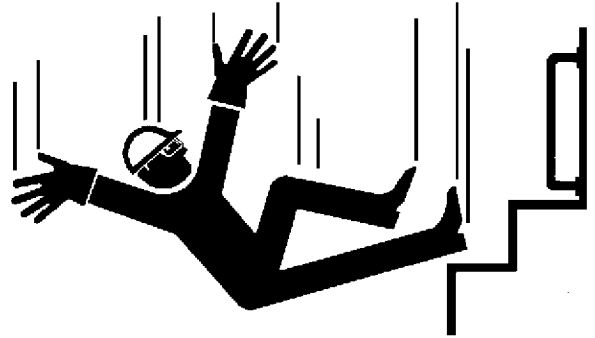
General Precautions for Cab

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

SAFETY

Use Handholds and Steps

- Falling is one of the major causes of personal injury.
 - When you get on and off the machine, always face the machine and maintain a three-point contact with the steps and handrails.
 - Do not use any controls as hand-holds.
 - Never jump on or off the machine. Never mount or dismount a moving machine.
 - Before getting on or off the machine, check the condition of the steps and handrails for sticking or 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

Adjust the Operator's Seat

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



SA-378

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 pilot control shut-off lever to the LOCK position, and put the brake switch in the P (parking brake) position. Failure to do so may allow the machine to unexpectedly move when a body part unintentionally comes in contact with a control lever and/or pedal, possibly resulting in serious personal injury or death.
- Before leaving the machine, be sure to first lower the front attachment to the ground and then move the pilot control shut-off lever to the LOCK position, and put the brake switch in the P (parking brake) position. Turn the key switch OFF to stop the engine.
- Before leaving the machine, close all windows, doors, and access covers and lock them.

Fasten Your Seat Belt

- If the machine should overturn, the operator may become injured and/or thrown from the cab. Additionally the operator may be crushed by the overturning machine, resulting in serious injury or death.
 - Prior to operating the machine, thoroughly examine webbing, buckle and attaching hardware. If any item is damaged or worn, replace the seat belt or component before operating the machine.
 - Be sure to remain seated with the seat belt securely fastened at all times when the machine is in operation to minimize the chance of injury from an accident.
 - We recommend that the seat belt be replaced every three years regardless of its apparent condition.

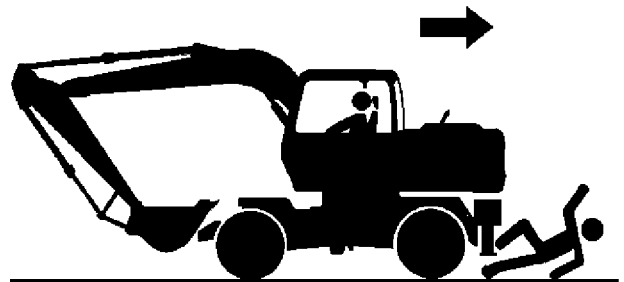


SA-237

SAFETY

Move and Operate Machine Safely

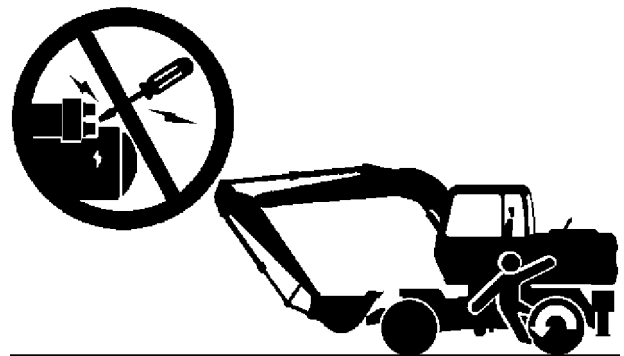
- Bystanders can be run over.
 - Take extra care not to run over bystanders. Confirm the location of bystanders before moving, swinging, or operating the machine.
 - Always keep the travel alarm and horn in working condition (if equipped). It warns people when the machine starts to move.
 - Use a signal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



SA-083

Operate Only from Operator's Seat

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

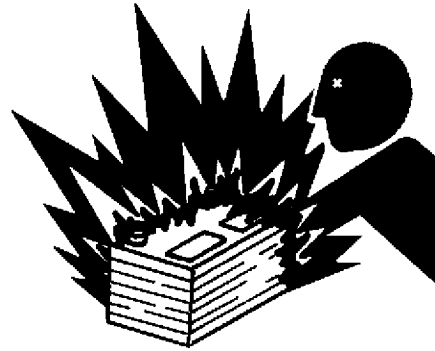


SA-084

SAFETY

Jump Starting

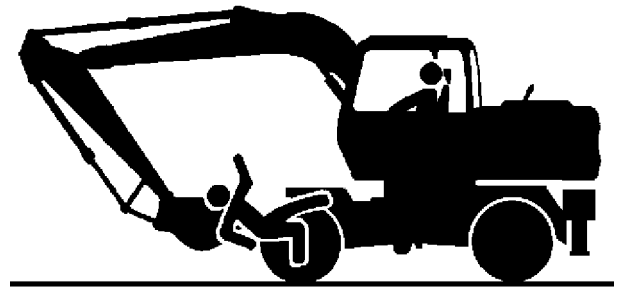
- Battery gas can explode, resulting in serious injury.
 - If the engine must be jump started, be sure to follow the instructions shown in the "OPERATING THE ENGINE" chapter in the operator's manual.
 - The operator must be in the operator's seat so that the machine will be under control when the engine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



SA-032

Keep Riders off Machine

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

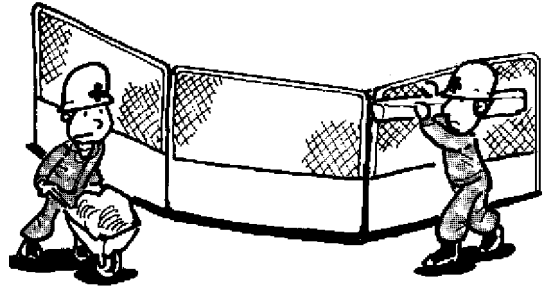
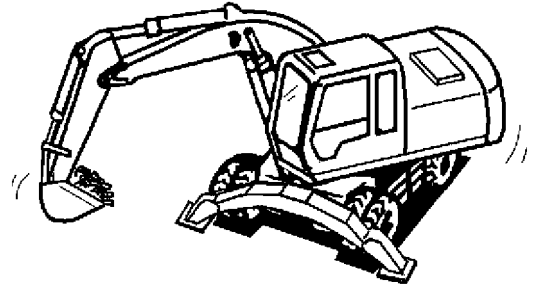


SA-091

SAFETY

Precautions for Operations

- Investigate the work site before starting operations.
 - Be sure to wear close fitting clothing and safety equipment appropriate for the job, such as a hard hat, etc. when operating the machine.
 - Clear all persons and obstacles from the area of operation and machine movement. Do not permit persons other than the operator to enter areas where there is danger such as flying objects. Always beware of the surroundings while operating. When working in a small area surrounded by obstacles, take care not to hit the upperstructure against obstacles.
 - When loading onto trucks, bring the bucket over the truck beds from the rear side. Take care not to swing the bucket over the cab or over any person.



M202-05-014

SAFETY

Investigate Job Site Beforehand

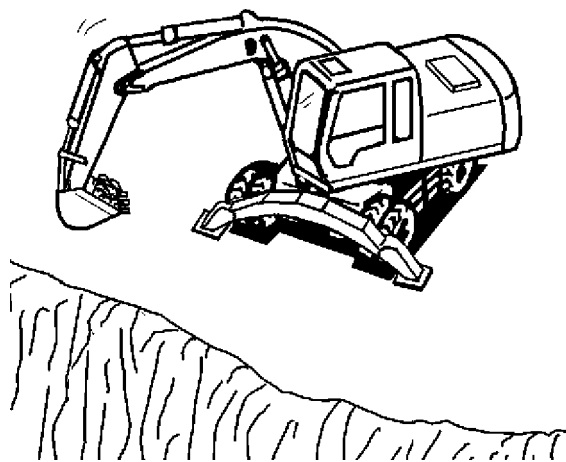
- When working at the edge of an excavation or on a road shoulder, the machine could tip over, possibly resulting in serious injury or death.
- Investigate the configuration and ground conditions of the job site beforehand to prevent the machine from falling and to prevent the ground, stockpiles or banks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



SA-085

SAFETY

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

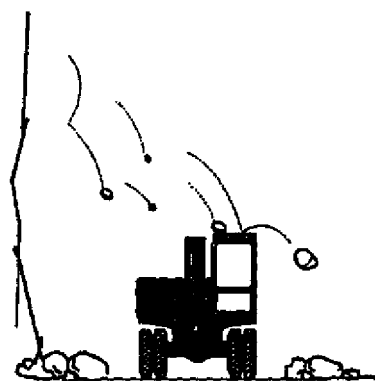


M202-05-015

Install OPG Guard

In case the machine is operated in areas where the possibilities of falling stones or debris exist, install the Hitachi OPG guard. Consult your authorized dealer for installing the OPG guard. In order not to impair operator protective structure: Replace damaged OPG guard. Never attempt to repair or modify the guard.

OPG: Operator Protective Guard



SA-686



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SAFETY

Restriction of Attachment Installation

- Do not install an attachment which exceeds specified weight for the machine structure.

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

Confirm Direction of Machine to Be Driven

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

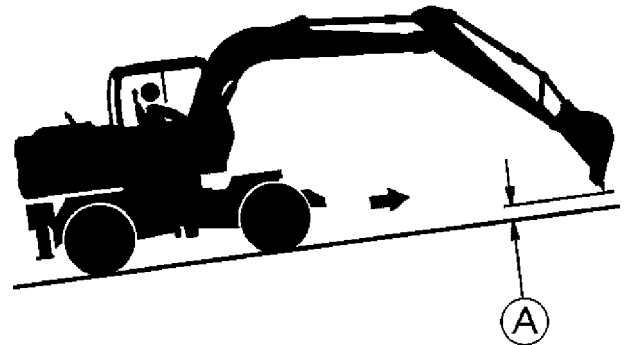


SA-092

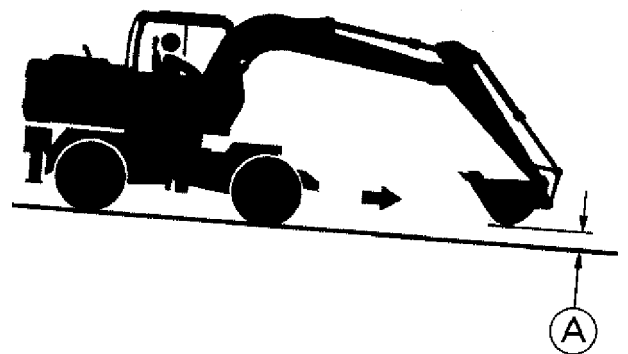
SAFETY

Drive Machine Safely

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



SA-090



SA-288

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