

Operation & Maintenance Manual

PC360LC-10

PC390LC-10

HYDRAULIC EXCAVATOR

SERIAL NUMBERS	PC360LC-10 A32001 and up PC360LC-10 K64001 and up PC390LC-10 A30001 and up
-----------------------	-------------------------------------------------------------------------------------------------------

ENGINE	6D114E-5
---------------	-----------------

This material is proprietary to Komatsu America Corp. and is not to be reproduced, used, or disclosed except in accordance with written authorization from Komatsu America Corp.

It is our policy to improve our products whenever it is possible and practical to do so. We reserve the right to make changes or improvements at any time without incurring any obligation to install such changes on products sold previously.

Due to this continuous program of research and development, revisions may be made to this publication. It is recommended that customers contact their distributor for information on the latest revision.

Copyright 2017 Komatsu
Printed in U.S.A.
Komatsu America Corp.

CONTENTS

INTRODUCTION.....	1-1
Foreword.....	1-2
Safety Alert Symbol and Signal Words.....	1-3
Basic Machine Introduction.....	1-4
Product Information.....	1-6
 SAFETY.....	 2-1
Safety Labels.....	2-2
Location of Safety Labels.....	2-3
General Precautions Common to Operation and Maintenance.....	2-14
Precautions Before Starting Operation.....	2-14
Preparations for Safe Operation.....	2-14
Fire and Explosion Prevention.....	2-15
Precautions When Getting On or Off the Machine.....	2-17
Precautions for Cab and Working Around Machine.....	2-19
Operation Precautions.....	2-21
Precautions at Jobsite.....	2-21
Precautions in Starting Engine.....	2-23
Precautions During Operation.....	2-25
Transportation Safety.....	2-31
Towing Precaution.....	2-32
Lifting Objects With Bucket.....	2-32
Maintenance Precautions.....	2-34
Precautions Before Inspection and Maintenance.....	2-34
Precautions During Inspection and Maintenance.....	2-37
 OPERATION.....	 3-1
Visual Overview of Machine.....	3-2
General Machine View.....	3-2
General View of Cab.....	3-4
Controls and Gauges.....	3-5
Machine Monitor Overview.....	3-6
Machine Monitor Components.....	3-7
Basic Operation of Machine Monitor.....	3-7
Starting Engine When Situation is Normal.....	3-7
Starting Engine While Engine Shutdown Secondary Switch is ON.....	3-9
Stopping Engine When Situation is Normal.....	3-9
If There is Abnormality When Starting Engine.....	3-10
If Any Abnormality Occurs During Operation.....	3-11
Warning Lamps.....	3-12
Action Level Display.....	3-13
Warning Lamp Table.....	3-14
Occurred Error List Display.....	3-16
Warning Lamp Details	3-17
Pilot Display.....	3-23
Pilot Lamp Details.....	3-23
ECO Guidance.....	3-27
Gauge and Meter Display.....	3-28

Gauge and Meter Details.....	3-29
Monitor Switches.....	3-32
Guidance Icons and Function Switches.....	3-32
Working Mode Selector Switch.....	3-34
Auto-Deceleration Switch.....	3-35
Travel Speed Selector Switch.....	3-35
Wiper Switch.....	3-37
Window Washer Switch.....	3-38
Buzzer Cancel Switch.....	3-39
Air Conditioner Switch.....	3-39
Camera Screen Selector Switch.....	3-40
Display of One Camera View on Screen.....	3-40
Displaying Two Camera Views Simultaneously.....	3-41
Allowed Mode Operations When Displaying Camera View.....	3-41
Error or Warning While in Camera View.....	3-43
User Menu.....	3-44
Energy Saving Guidance Tab.....	3-46
Machine Settings.....	3-54
KDPF Regeneration Tab.....	3-58
Maintenance Setting.....	3-58
Monitor Settings Tab.....	3-60
Message Display Tab.....	3-66
Operator Cab Switches.....	3-69
Control Levers and Pedals.....	3-76
Air Conditioner Operations.....	3-79
Air Conditioner Control Switches and Sensor.....	3-80
Using A/C in Auto Mode.....	3-84
Using A/C in Manual Mode.....	3-85
Blowing Cold Air to Face, Warm Air to Feet.....	3-87
Using Defrost Mode.....	3-88
Radio Operations.....	3-91
Radio Buttons and Display.....	3-91
Radio Setting and Adjusting.....	3-92
Auxiliary Electric Power.....	3-94
Fuses.....	3-95
Cab Windows.....	3-97
Opening and Closing Roof Window.....	3-97
Opening and Closing Windshield.....	3-97
Opening Windshield.....	3-98
Closing Windshield.....	3-100
Removing Lower Windshield.....	3-101
Emergency Escape Hammer.....	3-102
Cab Door.....	3-103
Containers and Fire Extinguisher.....	3-104
Engine Hood.....	3-106
Opening Engine Hood.....	3-106
Closing Engine Hood.....	3-107
Caps and Covers with Lock.....	3-109
Open and Close Caps with Locks.....	3-109
Open and Close Covers with Locks.....	3-110
Lock and Unlock Engine Hood.....	3-110
Lock and Unlock the Cab Door.....	3-111
Battery Disconnect Switch.....	3-112
System Operating Lamp.....	3-113
Komatsu Diesel Particulate Filter (KDPF).....	3-114
Manual Stationary Regeneration Procedure.....	3-117

KDPF Regeneration Disable Procedure.....	3-119
Disable Regeneration When Not Being Performed.....	3-120
Stopping Regeneration When Being Performed.....	3-121
Canceling KDPF Regeneration Disable.....	3-122
Komatsu Closed Crankcase Ventilation (KCCV).....	3-123
KOMTRAX.....	3-124
Daily Checks and Preparations Before Starting Engine.....	3-126
Walk-Around Checks.....	3-126
Drain Water and Sediment from Fuel Tank.....	3-127
Drain Water and Sediment in Water Separator.....	3-127
Greasing Drain Valve.....	3-127
Check and Add to Oil Level in Hydraulic Tank.....	3-129
Check and Add to Coolant Level.....	3-130
Check and Add to Oil in Engine Pan.....	3-131
Check Electrical Wiring.....	3-131
Check and Add to Fuel Level.....	3-132
Check Working Lamp Switch.....	3-133
Check Horn Function.....	3-133
Preparing to Use Operator's Cab.....	3-133
Operator Seat Adjustment.....	3-133
Adjusting Mirrors.....	3-135
Adjusting Rear View Camera Angle.....	3-139
Seat Belt Inspection.....	3-141
Adjusting Seat Belt.....	3-142
Operations Before Starting Engine.....	3-143
Starting the Engine.....	3-146
Manual Preheating When Starting Engine.....	3-148
Turbocharger Protection Function.....	3-148
Operations and Checks After Starting the Engine.....	3-149
Engine Warm-Up.....	3-150
Canceling Engine Warm-Up.....	3-151
Hydraulic System Warm-Up.....	3-151
Stopping the Engine.....	3-157
Moving and Steering Machine.....	3-158
Moving Machine Forward.....	3-159
Moving Machine in Reverse.....	3-160
Stopping the Machine.....	3-160
Steering the Machine.....	3-161
Swinging the Machine.....	3-163
Operating Work Equipment.....	3-165
Working Mode.....	3-167
Operating the Working Mode Selector Switch.....	3-168
Prohibited Operations.....	3-170
Rules for Traveling.....	3-174
Traveling on Slopes.....	3-176
Recommended Applications.....	3-179
Replacing and Inverting Bucket.....	3-181
Replacing the Bucket.....	3-181
Inverting the Bucket.....	3-182
Parking Machine.....	3-184
After Finishing Work.....	3-186
Checks After Finishing Daily Work.....	3-186
Locking the Machine.....	3-186
Transporting the Machine.....	3-187
Loading and Unloading with Trailer.....	3-187
Loading Machine on Trailer.....	3-189

Secure Machine to Trailer.....	3-191
Unload Machine from Trailer.....	3-195
Lifting Machine.....	3-197
Lift Standard Specification Machine.....	3-197
Spread and Narrow Track Frame Gauge.....	3-199
Narrowing Gauge.....	3-199
Spreading Gauge.....	3-200
Cold Weather Operation.....	3-201
Long-Term Storage of Machine.....	3-203
Common Phenomena That are Not Failures.....	3-205
Towing Machine.....	3-206
Towing with Machine.....	3-207
Disconnect and Charge Battery.....	3-208
Jumper Cables to Start Engine.....	3-210
Attaching Jumper Cables to Machine.....	3-210
Start Engine with Jumper Cables Attached.....	3-211
Disconnect Jumper Cables from Machine.....	3-211
Troubleshooting: Common Troubles and Actions to Take.....	3-212
Error List Screen.....	3-216

MAINTENANCE.....4-1

Rules for Maintenance.....	4-2
Outline of Service.....	4-4
Handling Oil, Fuel, Coolant, and Performing Oil Clinic.....	4-4
Handling Oil, Fuel, and Coolant.....	4-4
Performing Oil Clinic.....	4-6
Handling Electrical Components.....	4-7
Consumable Parts.....	4-8
Safety Critical Parts.....	4-10
Torque Specifications.....	4-12
Recommended Fuel, Coolant, and Lubricant.....	4-14
Hydraulic Breaker Maintenance Interval.....	4-18
Maintenance Schedule.....	4-19
Maintenance Schedule Table.....	4-19
Maintenance Procedures as Required.....	4-21
Air Cleaner Element Maintenance.....	4-21
Air Cleaner Element Cleaning.....	4-21
Air Cleaner Element Replacement.....	4-24
Cooling System Cleaning	4-27
Track Shoe Bolts.....	4-31
Track Tension Inspection.....	4-32
Track Tension Increase.....	4-33
Track Tension Decrease.....	4-34
Vertical Pin Bucket Teeth Replacement.....	4-34
Horizontal Pin Bucket Teeth Replacement.....	4-38
Bucket Clearance Adjustment.....	4-39
Window Washer Fluid Level And Mixture Ratio.....	4-40
Air Conditioner Maintenance.....	4-40
Washable Cab Floor and Floor Mat.....	4-41
Setting Machine at Angle.....	4-44
Gas Spring Maintenance.....	4-45
Bleeding Air From Hydraulic System.....	4-46
Bleeding Air from Fuel Circuit.....	4-48
Maintenance for First 500 Hours.....	4-49
Maintenance Every 50 Hours.....	4-50

Lubrication Every 50 Hours.....	4-50
Maintenance Every 250 Hours.....	4-51
Battery Electrolyte Level Check.....	4-51
Air Conditioner Compressor Belt Check and Tension Adjustment.....	4-53
Maintenance Every 500 Hours.....	4-55
Lubrication Every 500 Hours.....	4-55
Engine Oil and Filter Cartridge Replacement.....	4-56
Fuel Pre-filter Cartridge Replacement.....	4-57
Swing Pinion Grease Level.....	4-59
Radiator, Cooler, and Condenser Fins Maintenance	4-60
Recirculated Filter and Fresh Air Filter Maintenance.....	4-62
Hydraulic Tank Breather Element Replacement.....	4-63
Hydraulic Tank Additional Breather Element Replacement.....	4-64
Swing Machinery Case Oil Level.....	4-65
Final Drive Case Oil Level.....	4-66
Maintenance Every 1000 Hours.....	4-67
Hydraulic Oil Filter Element Replacement.....	4-67
Swing Machinery Case Oil Change.....	4-68
Damper Case Oil Level.....	4-69
Fuel Main Filter Cartridge Replacement.....	4-70
Maintenance Every 2000 Hours.....	4-72
Final Drive Case Oil Change.....	4-72
Hydraulic Tank Strainer Cleaning.....	4-73
Accumulator Nitrogen Gas Pressure.....	4-74
KCCV Filter Element Replacement.....	4-77
Maintenance Every 4000 Hours.....	4-80
Water Pump Check.....	4-80
Vibration Damper Check.....	4-81
Accumulator Replacement (Control Circuit).....	4-81
High Pressure Mounting Checks.....	4-82
Fuel Spray Prevention Cap Check.....	4-83
Maintenance Every 4500 Hours.....	4-84
Maintenance Every 5000 Hours.....	4-85
Hydraulic Tank Oil Change.....	4-85
Maintenance Every 8000 Hours.....	4-87

SPECIFICATIONS..... 5-1

Specifications: PC360/390LC-10.....	5-2
-------------------------------------	-----

OPTIONS, ATTACHMENTS..... 6-1

General Attachment Safety Precautions.....	6-2
Machine Options.....	6-3
Straight Travel Pedal.....	6-3
Machine Control Pattern.....	6-3
Machine Attachments.....	6-5
Explanation of Attachment Components.....	6-5
Hydraulic Circuit.....	6-8
Switching Hydraulic Circuit.....	6-8
Hydraulic Circuit Connection.....	6-9
Oil Flow Path.....	6-10
Breaker Filter Element Replacement	6-11
Breaker Pilot Element Replacement	6-13
Attachment Guide.....	6-15
Track Shoes Selection.....	6-15

Hydraulic Specifications.....6-16

Attachment Storage.....6-16

Attachment Operations.....6-17

Attachment Removal..... 6-17

Attachment Installation..... 6-18

Hydraulic Breaker..... 6-20

General Attachments.....6-23

Prohibited Usage..... 6-24

Index.....8-1

INTRODUCTION

FOREWORD

The operation and maintenance manual explains the operation, methods of inspection and maintenance for this machine that must be obeyed to use this machine safely. Most accidents are caused by the failure to follow fundamental safety rules for the operation and maintenance of machines.

The precautions in this manual must be followed at all times. Accidents can be prevented by knowing conditions ahead of time that may cause a hazard when performing operation and maintenance.

Komatsu cannot predict every circumstance that might involve a potential hazard when the machine is used. Therefore, the safety messages in this manual and on the machine may not include all possible safety precautions. If you carry out any operation, inspection or maintenance under conditions not described in this manual, understand it is your responsibility to take the necessary precautions to ensure safety. In no event should you or others engage in prohibited uses or actions described in this manual.

WARNING

- **Read, understand and follow all precautions and warnings in this manual and that are on the machine before operating and performing maintenance. Failure to do so may result in serious injury or death.**
- **Improper operation and maintenance of the machine can be hazardous, and could result in serious injury or death.**

Always keep this Operation and Maintenance Manual in the location shown on the right so that all relevant personnel can read it at any time.

Storage location for the Operation and Maintenance Manual: magazine box on the left side of the operator's seat.

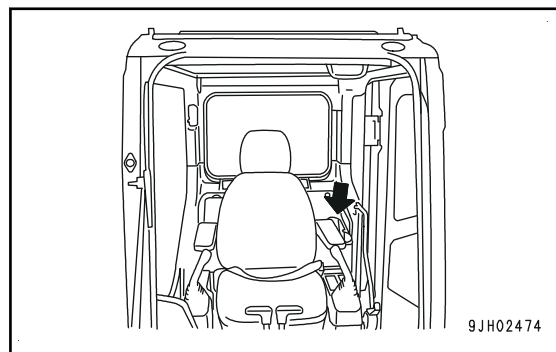
If you sell the machine, be sure to give this manual to the new owner together with the machine.

Komatsu delivers machines that comply with all applicable regulations and standards of the country to which it has been shipped. If this machine has been purchased in another country, it may lack certain safety devices and specifications that are necessary for use in your country. If there is any question about whether your product complies with the applicable standards and regulations of your country, consult Komatsu or your Komatsu distributor before operating the machine.

The explanations, values and illustrations in this manual have been prepared based on the latest information available as of the date of its publication. Continuing improvements in the design of this machine may lead to additional changes not reflected in this manual. Consult Komatsu or your Komatsu distributor for the latest information concerning your machine or with questions regarding information contained in this manual.

The numbers in circles in the illustrations correspond to the numbers in () in the text. For example: (1) in the text refers to ① on the image.

Fill out the section, *Your Machine Serial Numbers and Distributor* on page 1-7, and give the information to your distributor when calling for repair or assistance. If this manual is lost or damaged, contact your distributor immediately to arrange for its replacement.



SAFETY ALERT SYMBOL AND SIGNAL WORDS

The precautions and warnings included in this manual as well as the safety signs attached to the machine must always be observed. These enable you to use the machine safely and prevent injury to operators, service personnel and bystanders.

Identify important safety messages in the manual and on machine labels with the safety alert symbol (Exclamation point in triangle), followed by key signal words.

The safety alert symbol (Exclamation point in triangle) identifies important safety messages on machines, in manuals and elsewhere. When you see this symbol, be alert to the risk of personal injury or death. Follow the instructions in the safety message. The following signal words are used to inform you there is a potentially hazardous situation that may lead to personal injury or damage to the machine.



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is limited to the most extreme situations.



Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

The following signal words alert you to information that must be followed to avoid damage to the machine.

NOTICE

This precaution is given where the machine may be damaged or the service life reduced if the precaution is not followed.

REMARK

This word is used for information that is useful to know.

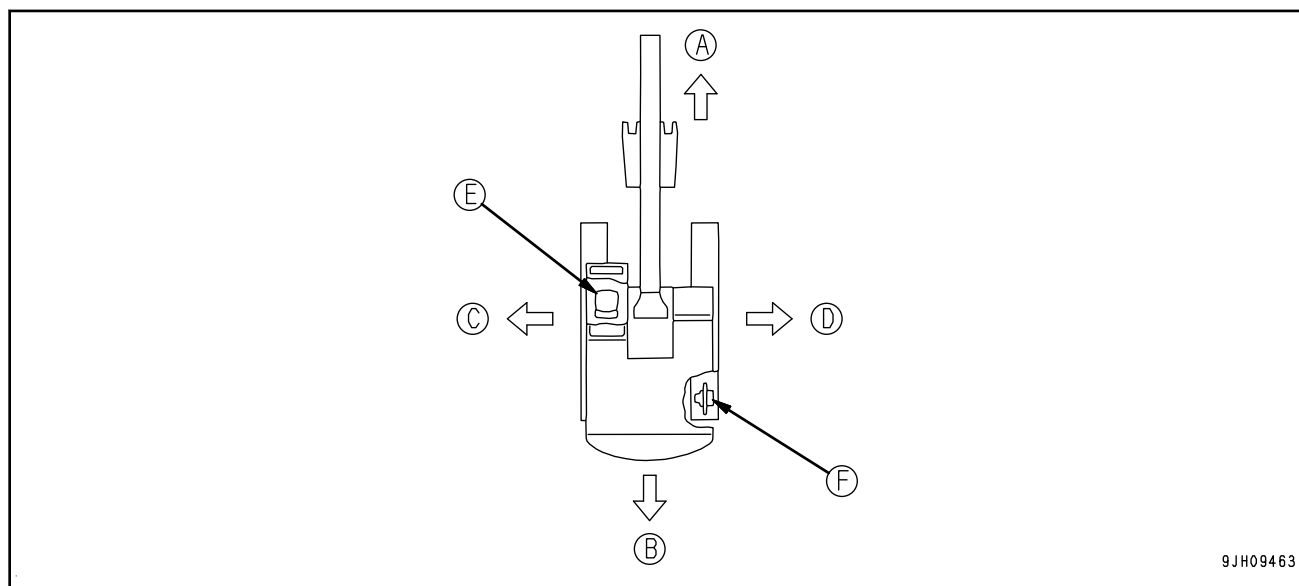
BASIC MACHINE INTRODUCTION

This Komatsu machine is designed mainly for the following types of work:

- Digging
- Leveling
- Ditching
- Loading
- Demolition

Directions of Machine

In this manual terms front, rear, left and right refer to the travel direction as seen from the operator's seat when the operator's seat is facing the front and the sprocket is at the rear of the machine.



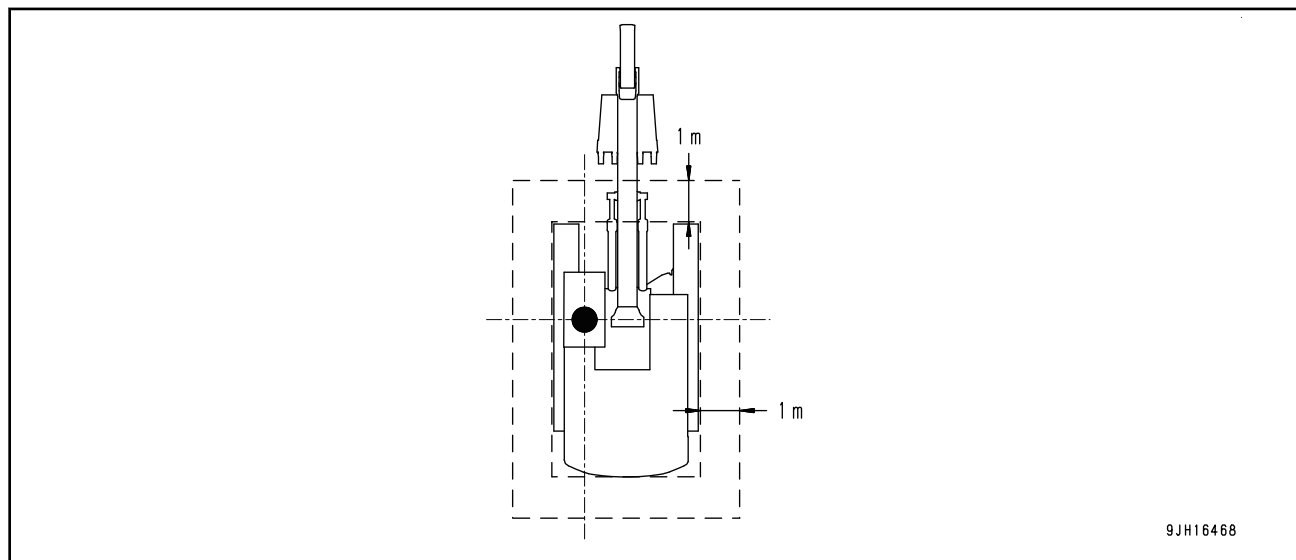
- A. Front
- B. Rear
- C. Left

- D. Right
- E. Operator's Seat
- F. Sprocket

9JH09463

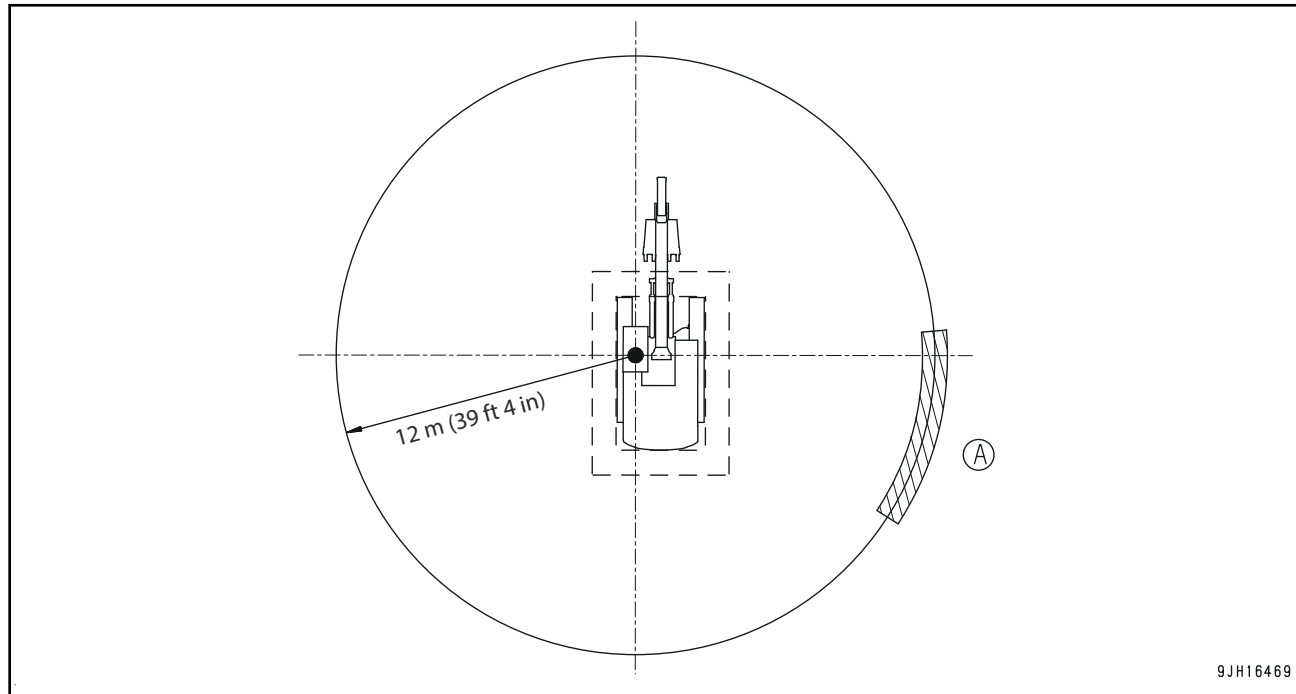
Close Visibility

The figure below shows a visibility from the operator's seat at a spot 1.0 m (3 ft 3 in) away from the side of the machine and 1.5 m (4 ft 11 in) above the ground.



Visibility for a Circumference of 12 m (39 ft 4 in)

The figure below shows visibility on the machine at a circumference of a 12 m (39 ft 4 in) radius. Shaded area (A) in the figure shows an area whose view is blocked by a part of the machine when the machine is equipped with the mirrors, rear view camera and other visibility assistant devices. Operate the machine, fully aware that the machine has a portion that an operator cannot see.



Structure to Protect the Operator

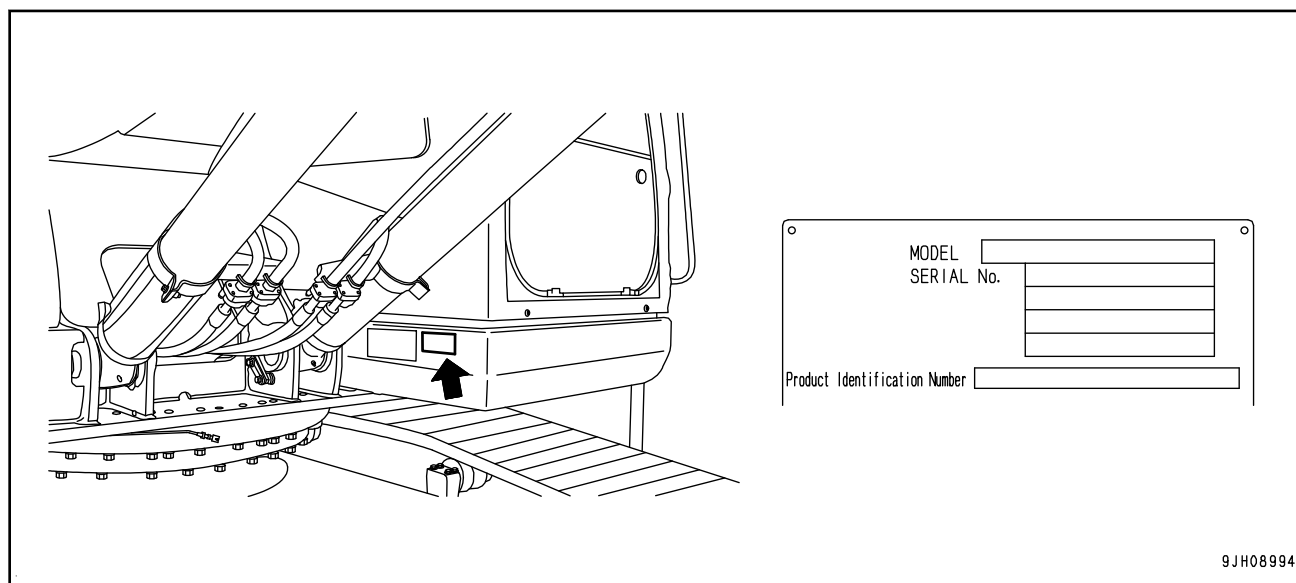
This machine is equipped with a structure to protect the operator (*Roll-Over Protective Structure (ROPS)*) conforming to ISO12117-2.

PRODUCT INFORMATION

When requesting service or ordering replacement parts, please inform your Komatsu distributor of the following items: Product Identification Number, Machine Serial Number, EPA Regulations and Engine Number, and requested information from your service meter.

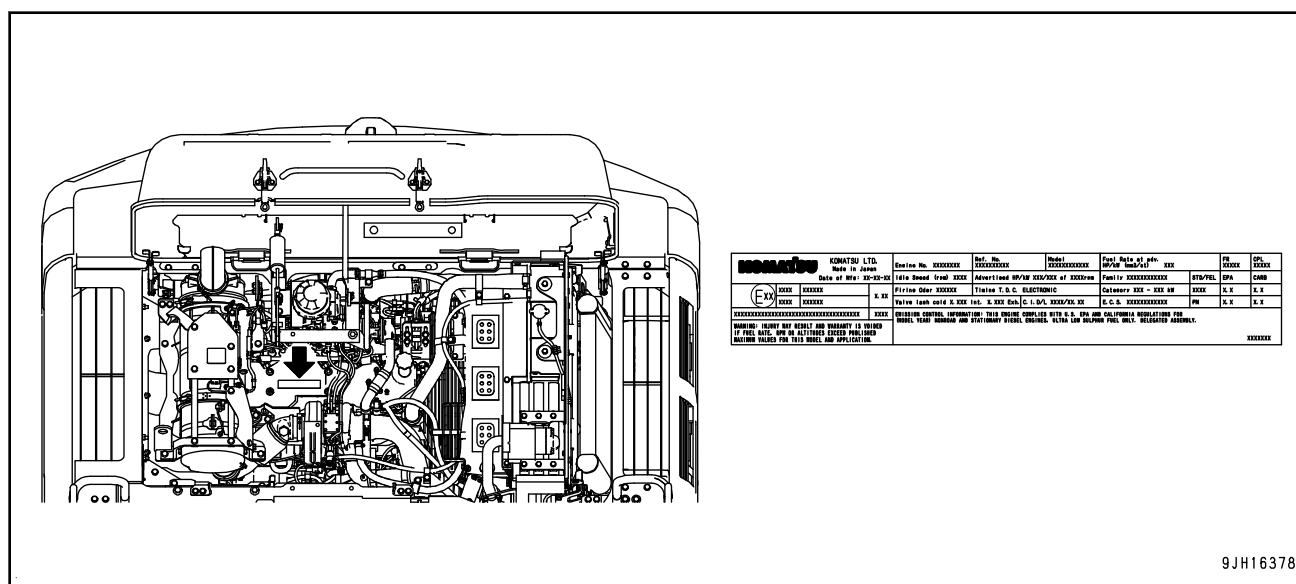
Product Identification Number (Pin) / Machine Serial No. Plate

On the bottom right of the operator's cab. The design of the nameplate differs according to the territory.



EPA* Regulations, Engine Number Plate

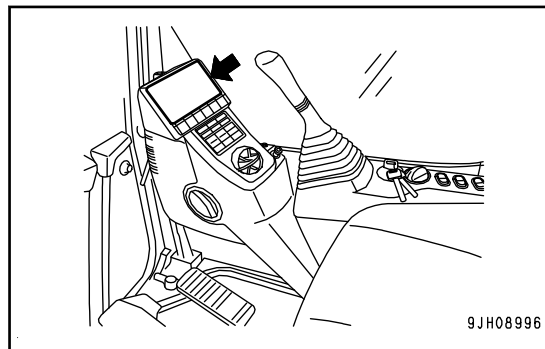
On the upper side of the engine cylinder head cover.



*EPA: Environmental Protection Agency, U.S.A.

Service Meter Location

On top of the machine monitor.



Your Machine Serial Numbers and Distributor

Machine serial No.	
Engine serial No.	
Product Identification Number (PIN)	
Distributor name	
Address	
Phone/Fax	
Service Personnel	

Engine Acronyms

Acronym	Stands For
KDPF	<i>Komatsu Diesel Particulate Filter (KDPF)</i>
KCCV	<i>Komatsu Closed Crankcase Ventilator (KCCV)</i>
VGT	Variable Geometry Turbocharger

SAFETY

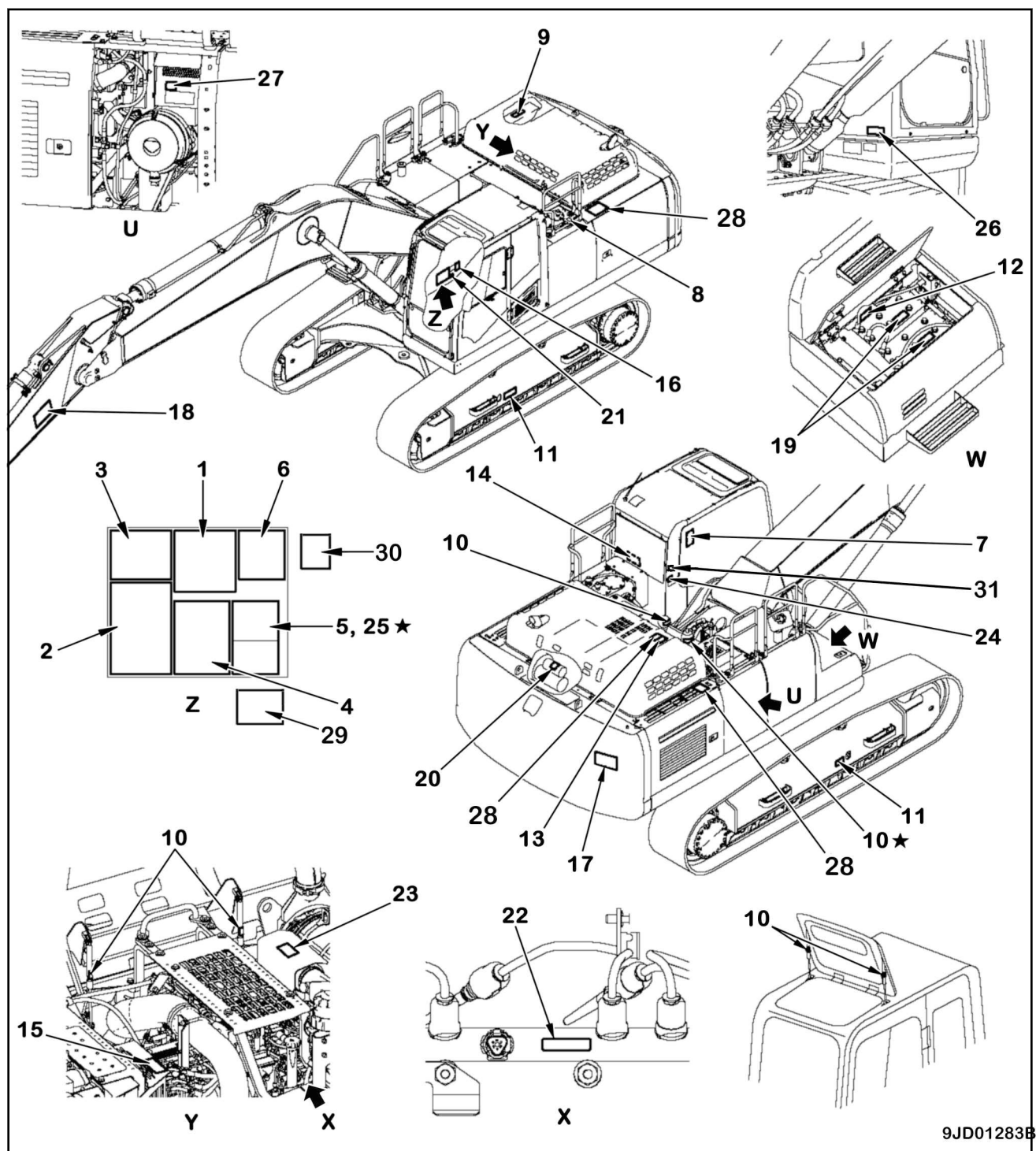
WARNING

Please read and make sure that you fully understand the precautions described in this manual and the safety labels on the machine. When operating or servicing the machine, always follow these precautions strictly.

SAFETY LABELS

The following warning signs and safety labels are used on this machine.

- Be sure you fully understand the correct position and content of safety labels.
- To ensure content of labels can be read properly, check that they are in the correct place and always keep them clean. When cleaning them, do not use organic solvents or gasoline. These may cause the labels to peel off.
- There are labels on the machine in addition to the warning signs and safety labels. Handle those labels the same way you handle safety labels.
- If the labels are damaged, lost, or cannot be read properly replace them with new ones. For details of the part numbers for the labels see this manual or the actual label, and place an order with your Komatsu distributor.



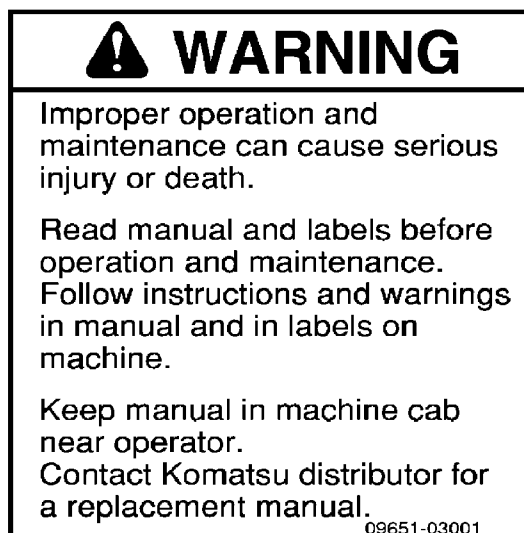
9JD01283B

★: If equipped.

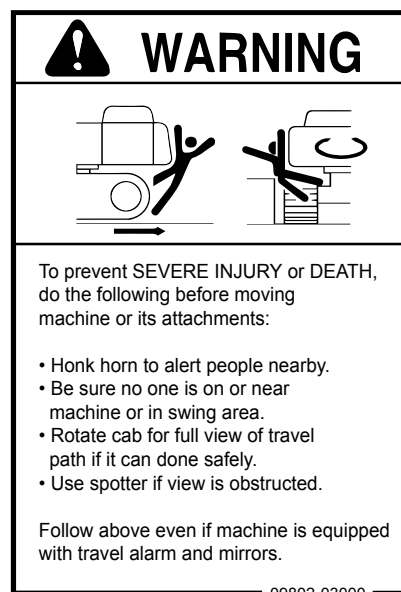
LOCATION OF SAFETY LABELS

The safety label descriptions correspond to the number in the diagram.

1. Warning for operation, inspection and maintenance. (09651-03001)



2. Warning before operating. (09802-03000)



3. Warning for leaving operator's seat. (09654-03001)



4. Danger for going close to electric cables.
(09801-03002)

DANGER

Electrocution Hazard

Serious injury or death will occur if machine or attachments are not kept away from electric lines.

Maintain a minimum clearance in accordance with this chart.

VOLTAGE	MIN. DISTANCE
50 kV or Less	3.1 m (10 ft)
50 kV to 200 kV	4.6 m (15 ft)
200 kV to 350 kV	6.1 m (20 ft)
350 kV to 500 kV	7.7 m (25 ft)
500 kV to 750 kV	10.7 m (35 ft)
750 kV to 1,000 kV	13.8 m (45 ft)

09801-03002

5. Warning for operating pattern. (09822-03000)

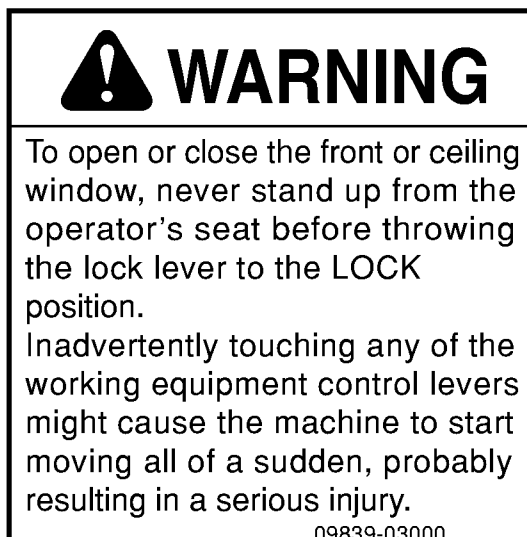
WARNING

In order to prevent an accident resulting in injury or death caused by error-operation, confirm the machine motion and indicated operating pattern, when operating machines. Pay attention to the circumference and operate slowly when confirming the machine motion.

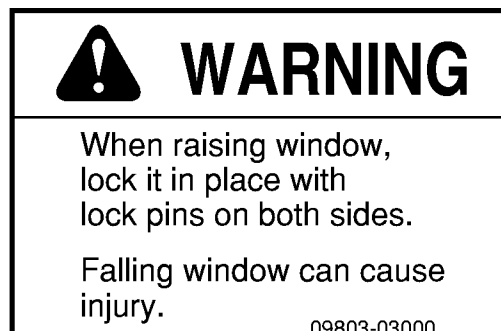
ISO pattern

09822-03000

6. Warning when opening or closing front window.
(09839-03000)



7. Warning when stowing front window.
(09803-03000)



8. Warning for high-temperature hydraulic oil.
(09653-03001)



9. Warning with high-temperature coolant.
(09668-03001)



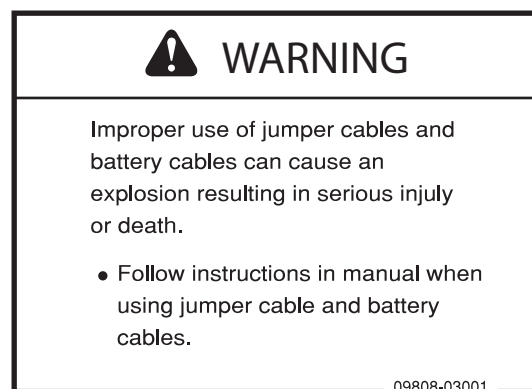
10. Warning for handling accumulator and gas spring (if equipped). (09659-53000)



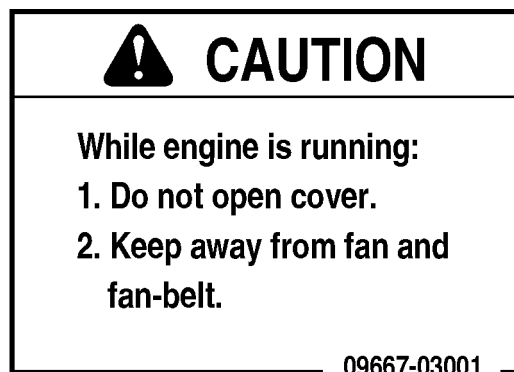
11. Warning for adjusting track tension.
(09657-03003)



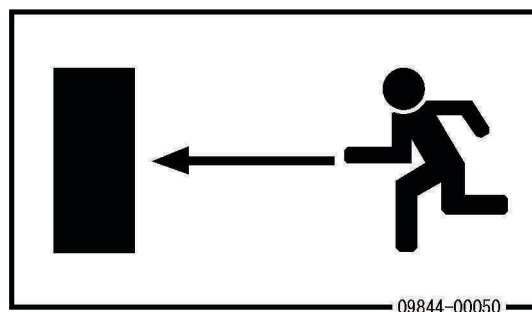
12. Warning for handling cables. (09808-03001)



13. Caution while engine is running. (09667-03001)



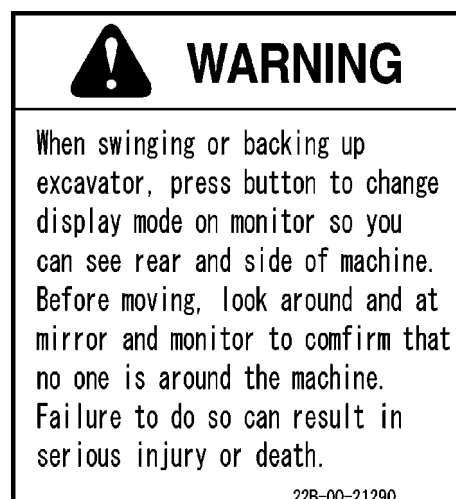
14. Emergency escape. (09844-00050). This is an emergency exit when the cab door will not open. In emergency, smash the window pane with an equipped hammer and get through there.



15. Caution against falling. (09805-13000)



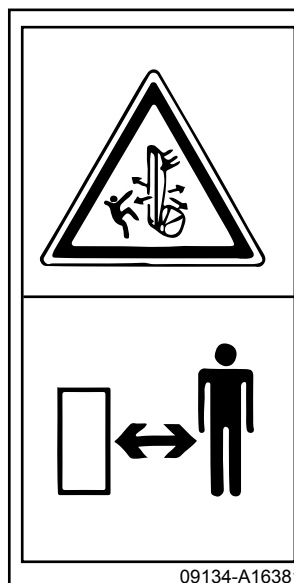
16. Warning when swinging or traveling in reverse. (22B-00-21290)



17. Keep off swing area. (09133-23000)



18. Beware of work equipment. (09134-A1681)



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

Keep away from machine during operation.

19. Danger when handling battery.
(09664-30014)

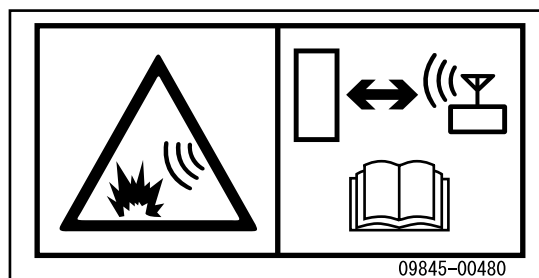


20. Prohibition of start by short-circuiting. (09842-A0481)



09842-A0481

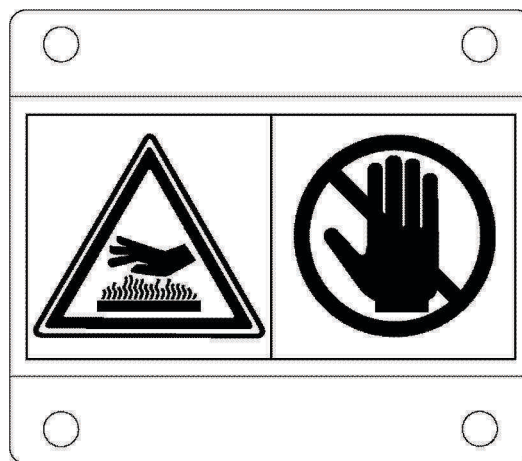
21. Caution at blast site. (09845-00480)



22. Warning for high-pressure fuel. (6754-71-1991)



23. Caution for high-temperature (09817-A0753). Sign indicates a burn hazard from touching heated parts, such as engine, motor, or muffler during or right after operation. Never touch when hot.

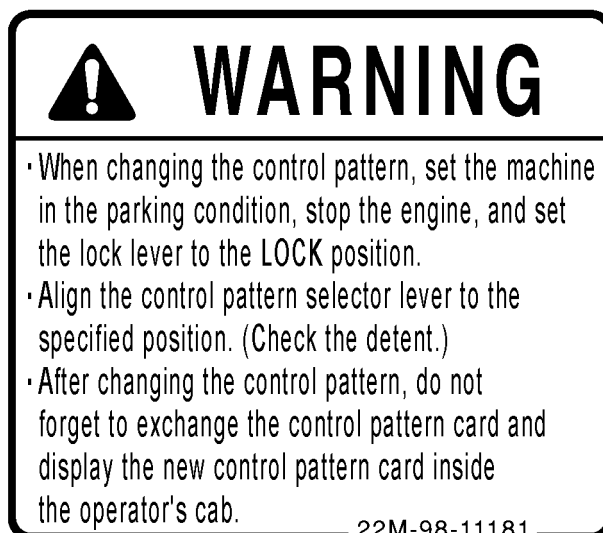


24. Warning to not use ether. (6732-81-4630)

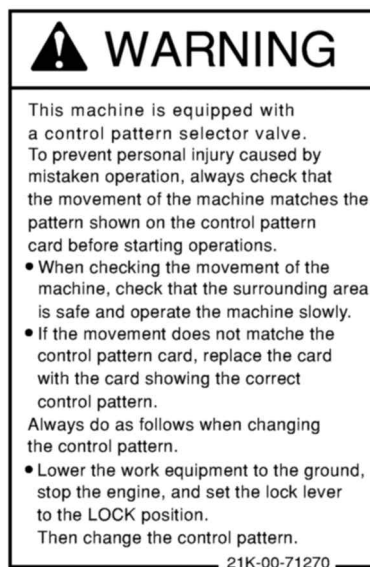


You may get injured from explosion.
Do not use starting aid such as ethel liquid spray etc. when starting engine.

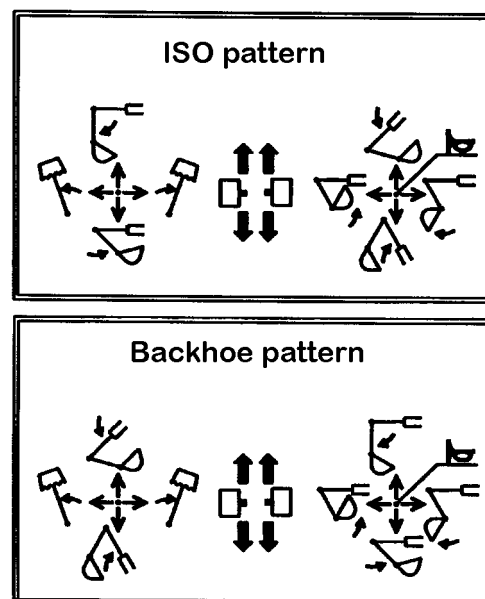
25. Warning for changing operating patterns.
(22M-98-11181)



26. Warning for operating pattern. (21K-00-71270)



27. Pattern Change Alert (09822-A1131)

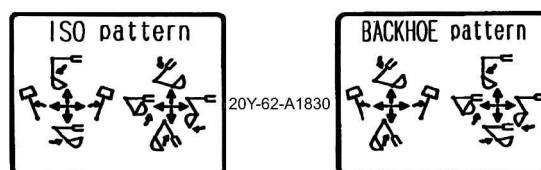


09822-A1131

28. Caution when handling ROPS (09620-T2001)

KOMATSU ROPS (for H/E) OPG TOP GUARD CERTIFICATION			
This protective structure complies with the standard provided that it is properly equipped on the machine which mass is less than the specified maximum mass.			
MODEL	ROPS : ISO 12117-2 : 2008	TOP GUARD LEVEL I	ISO 10262 : 1998
SERIAL No.		MACHINE MODEL	
		MAX. MASS	kg (Lb)
WARNING <ul style="list-style-type: none"> - If any modification is applied to the ROPS, it may affect the strength and may not comply with the standard. Do not drill, cut or weld on the ROPS structure. Any modification is prohibited. - ROPS may provide less protection if it has been structurally damaged or involved in roll-over. Consult Komatsu Distributor in that case. - Always wear seat belt when moving. 			
Komatsu Ltd.		2-3-6 Akasaka, Minato-ku, Tokyo, Japan	09620 - B2171 09620 - T2001

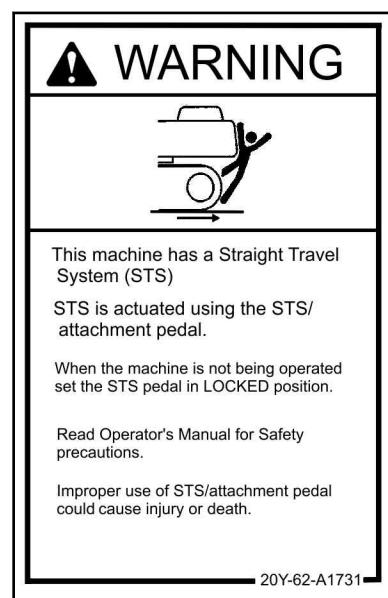
29. Control Pattern Table (20Y-62-A1830)



30. Caution for prohibition of a step (207-00-41490)



31. Warning for straight travel system (STS) (Option) (20Y-62-A1731)



GENERAL PRECAUTIONS COMMON TO OPERATION AND MAINTENANCE

PRECAUTIONS BEFORE STARTING OPERATION

Take necessary precautions before performing any work involving the machine.

Ensure Safe Operation

- Only trained and authorized personnel can operate and maintain the machine.
- Follow all safety precautions and instructions in this manual when operating or performing inspection or maintenance on the machine.
- If you are not feeling well or you are under the influence of alcohol or medication your ability to safely operate or repair the machine may be severely impaired. This puts yourself and everyone else on your jobsite in danger.
- When working with another operator or with the person on the worksite traffic duty, discuss the content of the operation beforehand and use the determined signals when carrying out the operation.

Understand the Machine

Before operating the machine, read this manual thoroughly. If there are any places in this manual you do not understand, ask the person in charge of safety to give an explanation.

PREPARATIONS FOR SAFE OPERATION

Be prepared before operating the machine, and prepare the machine before using it. Mistakes in operation, inspection or maintenance may result in serious personal injury or death. Before carrying out operation, inspection, or maintenance, always read this manual and the safety labels on the machine carefully and obey all the warnings.

Safety-Related Equipment

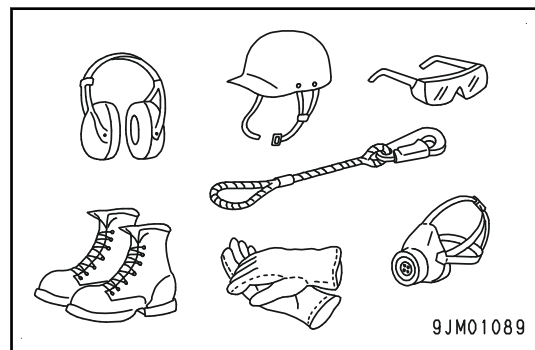
- Be sure that all guards, covers, cameras and mirrors are in their proper positions. Have them repaired immediately if any of them are damaged or missing.
- Understand how to use safety features and use them properly.
- Never remove or disarm any safety feature. Always keep them in good operating condition.

Machine Inspection

Check the machine before starting operations. If any abnormality is found, do not operate the machine until repairs of the problem have been completed.

Clothing and Personal Protective Equipment

- Do not wear loose clothes or any accessories, such as jewelry. If these catch on the control levers or protruding parts, there is danger that it may cause the machine to move unexpectedly.
- Always wear a hard hat and safety shoes. If your work requires it, or the nature of the work you are doing requires it, wear protective glasses, mask, gloves, ear plugs and safety belt when operating or maintaining the machine.
- If you have long hair there is a hazard it may get caught up in the machine. Tie loose hair up and be cautious around all equipment and moving parts.
- Check that all protective equipment functions and fits properly before using it.



This as a preview PDF file from **best-manuals.com**



Download full PDF manual at **best-manuals.com**