

# Operation & Maintenance Manual



# GALEO BZ210-1 MOBILE SOIL RECYCLER

SERIAL NUMBERS 1101 and up

**GALEO**

BZ210-1



**⚠ WARNING**

Unsafe use of this machine may cause serious injury or death. Operators and maintenance personnel must read this manual before operating or maintaining this machine. This manual should be kept near the machine for reference and periodically reviewed by all personnel who will come into contact with it.

**NOTICE**

Komatsu has Operation & Maintenance Manuals written in some other languages. If a foreign language manual is necessary, contact your local distributor for availability.



# FOREWORD

## **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.

## **CALIFORNIA**

### **Proposition 65 Warning**

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

**Wash hands after handling.**

## FOREWORD

This manual provides rules and guidelines which will help you use this machine safely and effectively. The precautions in this manual must be followed at all times when performing operation and maintenance. Most accidents are caused by the failure to follow fundamental safety rules for the operation and maintenance of machines. Accidents can be prevented by knowing beforehand conditions that may cause a hazard when performing operation and maintenance.



### WARNING

**Operators and maintenance personnel must always do as follows before beginning operation or maintenance.**

- Always be sure to read and understand this manual thoroughly before performing operation and maintenance.
- Read the safety messages given in this manual and the safety labels affixed to the machine thoroughly and be sure that you understand them fully.

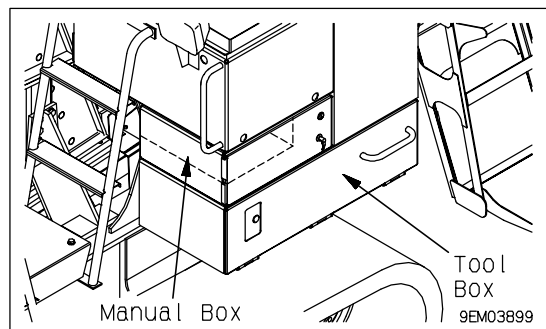
**Keep this manual at the storage location for the Operation and Maintenance Manual given below, and have all personnel read it periodically.**

**If this manual has been lost or has become dirty and cannot be read, request a replacement manual immediately from Komatsu or your Komatsu distributor.**

**If you sell the machine, be sure to give this manual to the new owners 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 or purchased from someone 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.**

Storage location for the Operation and Maintenance Manual:  
The manual is kept in a pocket inside the toolbox.



## EMISSION CONTROL WARRANTY

## EMISSION CONTROL WARRANTY STATEMENT (APPLIES TO CANADA ONLY)

## 1. Products Warranted

Komatsu America International Company, Komatsu Mining Systems Inc. and Komatsu Utility Corporation (collectively "Komatsu") produce and/or market products under brand names of Komatsu, Dresser, Dressta, Haulpak and Galion. This emissions warranty applies to new engines bearing the Komatsu name installed in these products and used in Canada in machines designed for industrial off-highway use. This warranty applies only to these engines produced on or after January 1, 2000. This warranty will be administered by Komatsu distribution in Canada.

## 2. Coverage

Komatsu warrants to the ultimate purchaser and each subsequent purchaser that the engine is designed, built and equipped so as to conform, at the time of sale by Komatsu, with all U.S. Federal emission regulations applicable at the time of manufacture and that it is free from defects in workmanship or material which would cause it not to meet these regulations within five years or 3,000 hours of operation, whichever occurs first, as measured from the date of delivery of the engine to the ultimate purchaser.

## 3. Limitations

Failures, other than those resulting from defects in materials or workmanship, are not covered by this warranty. Komatsu is not responsible for failures or damage resulting from what Komatsu determines to be abuse or neglect, including, but not limited to: operation without adequate coolant or lubricants; over fueling; over speeding; lack of maintenance of lubricating, cooling or intake systems; improper storage, starting, warm-up, run-in or shutdown practices; unauthorized modifications of the engine. Komatsu is also not responsible for failures caused by incorrect fuel or by water, dirt or other contaminants in the fuel. Komatsu is not responsible for non-engine repairs, "downtime" expense, related damage, fines, all business costs or other losses resulting from a warrantable failure.

**KOMATSU IS NOT RESPONSIBLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

This warranty, together with the express commercial warranties, are the sole warranties of Komatsu. **THERE ARE NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

## GARANTIE SUR LE CONTRÔLE DES ÉMISSIONS

## ÉNONCÉ DE GARANTIE SUR LE CONTRÔLE DES ÉMISSIONS (APPLICABLE AU CANADA SEULEMENT):

## 1. Produits garantis:

Komatsu America International Company, Komatsu Mining Systems Inc. et Komatsu Utility Corporation (collectivement Komatsu) produisent et/ou font la mise en marché de produits portant les noms de marque Komatsu, Dresser, Dressta, Haulpak et Galion. Cette garantie sur les émissions s'applique à tous les nouveaux moteurs portant le nom Komatsu, installés dans ces produits et utilisés au Canada dans des machines conçues pour utilisation industrielle non-routière. Cette garantie s'applique seulement sur les moteurs produits à partir du 1er Janvier 2000. Cette garantie sera administrée par la distribution de Komatsu au Canada.

## 2. Couverture:

Komatsu garantit à l'acheteur ultime et chaque acheteur subséquent que le moteur est conçu, construit et équipé en toute conformité, au moment de la vente par Komatsu, avec toutes les Réglementations fédérales américaines sur les émissions applicables au moment de la fabrication et qu'il est exempt de défauts de construction ou de matériaux qui auraient pour effet de contrevenir à ces réglementations en dedans de 5 ans ou 3000 heures d'opération, mesuré à partir de la date de livraison du moteur au client ultime.

## 3. Limitations:

Les bris, autres que ceux résultant de défauts de matériaux ou de construction, ne sont pas couverts par cette Garantie. Komatsu n'est pas responsable pour bris ou dommages résultant de ce que Komatsu détermine comme étant de l'abus ou négligence, incluant mais ne se limitant pas à: l'opération sans lubrifiants ou agent refroidissants adéquats; la suralimentation d'essence; la survitesse; le manque d'entretien des systèmes de lubrification, de refroidissement ou d'entrée; de pratiques non-propices d'entreposage, de mise en marche, de réchauffement, de conditionnement ou d'arrêt; les modifications non-autorisées du moteur. De plus, Komatsu n'est pas responsable de bris causés par de l'essence inadéquate ou de l'eau, des saletés ou autres contaminants dans l'essence. Komatsu n'est pas responsable des réparations non-relées au moteur, des dépenses encourues suite aux temps d'arrêts, des dommages relatifs, amendes, et de tout autre coût d'affaires ou autres pertes résultant d'un bris couvert par la garantie.

**KOMATSU N'EST PAS RESPONSABLE DES INCIDENTS OU DOMMAGES CONSÉQUENTS.**

Cette garantie, ainsi que les garanties expresses commerciales, sont les seules garanties de Komatsu. **IL N'Y A AUCUNE AUTRE GARANTIE, EXPRESSE OU SOUS-ENTENDUE, MARCHANDABLE OU PROPICE A UNE UTILISATION PARTICULIÈRE.**

**INFORMATION IMPORTANTE SUR LE MOTEUR**  
 CE MOTEUR EST CONFORME AUX NORMES AMÉRICAINES DE L'EPA (ANNÉE DU MODÈLE) ET DE LA CALIFORNIE POUR LES MOTEURS LARGES NON-ROUTIERS À IGNITION PAR COMPRESSION. CE MOTEUR EST CERTIFIÉ POUR OPÉRER À ESSENCE DIESEL.

**AVERTISSEMENT**  
 DES BLESSURES PEUVENT RÉSULTER ET LA GARANTIE S'ANNULER SI LES RPM DU TAUX D'ESSENCE OU L'ALTITUDE EXCÈDENT LES VALEURS MAXIMALES PUBLIÉES POUR CE MODÈLE ET SON APPLICATION.

**IMPORTANT ENGINE INFORMATION**  
 THIS ENGINE CONFORMS TO YYYY MODEL YEAR U.S. EPA REGULATION AND THE CALIFORNIA REGULATIONS LARGE NON ROAD COMPRESSION IGNITION ENGINES. THIS ENGINE IS CERTIFIED TO OPERATE ON DIESEL FUEL.

**WARNING**  
 INJURY MAY RESULT AND WARRANTY IS VOIDED IF FUEL RATE RPM OR ALTITUDES EXCEED PUBLISHED MAXIMUM VALUES FOR THIS MODEL AND APPLICATION.

ENGINE MODEL	SERIAL NO.	DISPLACEMENT	LITERS
ENGINE FAMILY			
EXHAUST EMISSION CONTROL SYSTEM		FIRING ORDER	1 - 5 - 3 - 6 - 2 - 4
ADV. LOAD OUTPUT	Kw ( HP)	RPM	
VALVE LASH COLD (mm)	IN. EX.	FUEL RATE AT ADV.	mm <sup>3</sup> /STROKE
IDLE SPEED	RPM	FAMILY EMISSION LIMIT	
INITIAL INJECTION TIMING	DEG. BTDC	DATE OF MANUFACTURE	
KOMATSU LTD. MADE IN JAPAN			

MODÈLE DU MOTEUR

FAMILLE DU MOTEUR

SYSTÈME DE CONTRÔLE DES ÉMISSIONS D'ÉCHAPPEMENT

CHARGE DE SORTIE ADV.

PORTÉE DE VALVE À FROID (mm)

VITESSE STATIQUE

RÉGLAGE DE L'ALLUMAGE - INJECTION INITIALE

DEG. BTDC

NO. SÉRIE

DÉPLACEMENT

LITRES

SÉQUENCE DE MISE À FEU

mm<sup>3</sup>/BAITTEMENT

TAUX D'ESSENCE À ADV.

LIMITE D'ÉMISSION DE LA FAMILLE

DATE DE FABRICATION

KOMATSU LTD.  
FABRIQUÉ AU JAPON

ENGINE DATAPLATE - ENGLISH / FRENCH




## SAFETY INFORMATION

To enable you to use this machine safely, safety precautions and labels are given in this manual and affixed to the machine to give explanations of situations involving potential hazards and of the methods of avoiding such situations.

### Signal words

The following signal words are used to inform you that there is a potential hazardous situation that may lead to personal injury or damage.

In this manual and on machine labels, the following signal words are used to express the potential level of hazard.

- |  |   |
|--|---|
|  <b>DANGER</b>  | Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.  |
|  <b>WARNING</b> | Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.   |
|  <b>CAUTION</b> | Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. This word is used also to alert against unsafe practices that may cause property damage. |

### Example of safety message using signal word

 <b>WARNING</b>
<b>When standing up from the operator's seat, always place the safety lock lever in the LOCK position. If you accidentally touch the control levers when they are not locked, this may cause a serious injury or death.</b>

### Other signal words

In addition to the above, the following signal words are used to indicate precautions that should be followed to protect the machine or to give information that is useful to know.

<b>NOTICE</b>	This word is used for precautions that must be taken to avoid actions which could shorten the life of the machine.
---------------	--

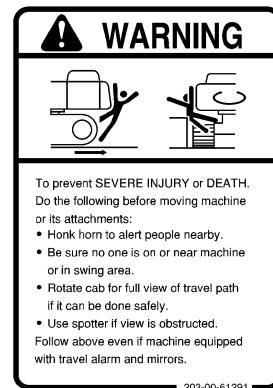
<b>REMARKS</b>	This word is used for information that is useful to know.
----------------	---

### • Safety labels

Safety labels are affixed to the machine to inform the operator or maintenance worker on the spot when carrying out operation or maintenance of the machine that may involve hazard.

This machine uses "Safety labels using words" and "Safety labels using pictograms" to indicate safety procedures.

#### Example of safety label using words



Part No.

#### Safety labels using pictogram

Safety pictograms use a picture to express a level of hazardous condition equivalent to the signal word. These safety pictograms use pictures in order to let the operator or maintenance worker understand the level and type of hazardous condition at all times. Safety pictograms show the type of hazardous condition at the top or left side, and the method of avoiding the hazardous condition at the bottom or right side. In addition, the type of hazardous condition is displayed inside a triangle and the method of avoiding the hazardous condition is shown inside a circle.



Part No.

Komatsu cannot predict every circumstance that might involve a potential hazard in operation and maintenance. Therefore, the safety messages in this manual and on the machine may not include all possible safety precautions. If any procedures or actions not specifically recommended or allowed in this manual are used, it is your responsibility to take the necessary steps to ensure safety.

In no event should you engage in prohibited uses or actions described in this manual.

The explanations, values, and illustrations in this manual were prepared based on the latest information available at that time. Continuing improvements in the design of this machine can lead to changes in detail which may not be reflected in this manual. Consult Komatsu or your Komatsu distributor for the latest available information of your machine or for questions regarding information in this manual.

The numbers in circles in the illustrations correspond to the numbers in ( ) in the text. (For example: ① -> (1))

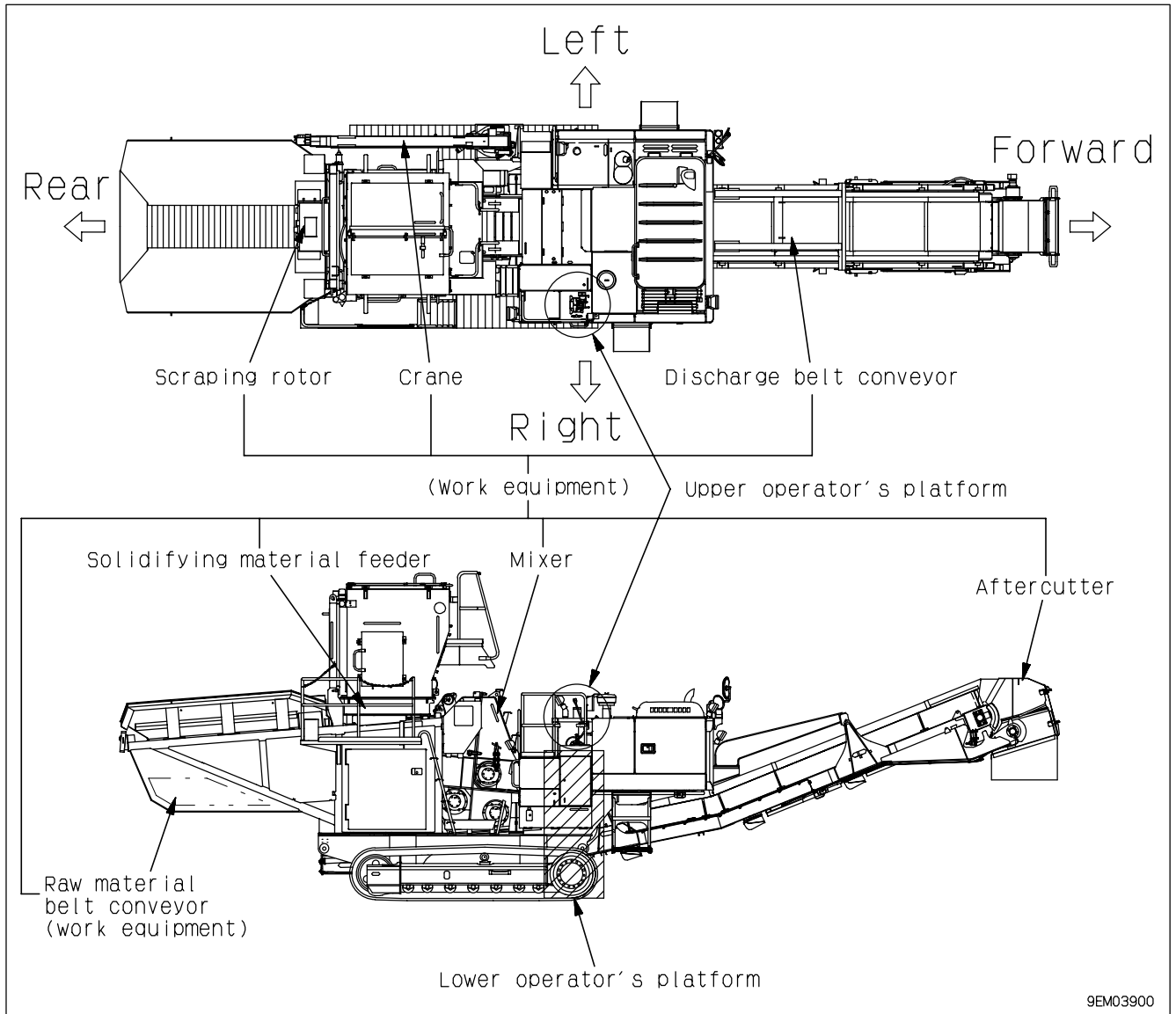
# INTRODUCTION

This Komatsu machine is designed to be used mainly for the following work:

- Soil improving work

For details on the soil improving work, see "OPERATION (PAGE 3-55)".

## FRONT/REAR,LEFT/RIGHT DIRECTIONS OF MACHINE



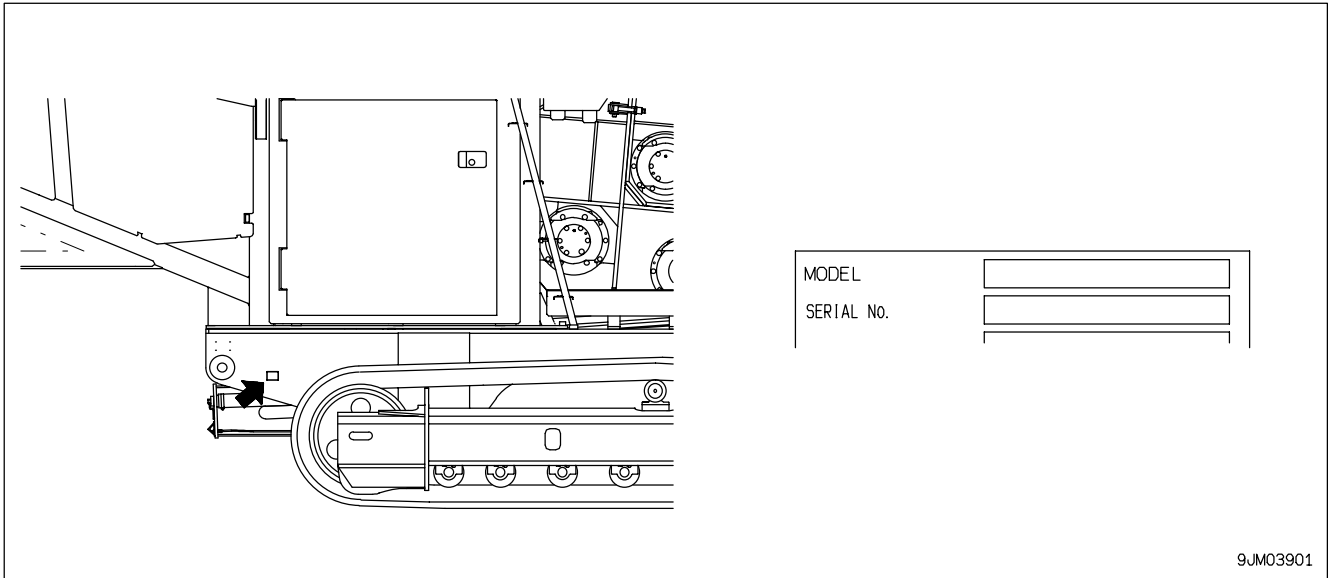


## NECESSARY INFORMATION

When requesting service or ordering replacement parts, please inform your Komatsu distributor of the following items.

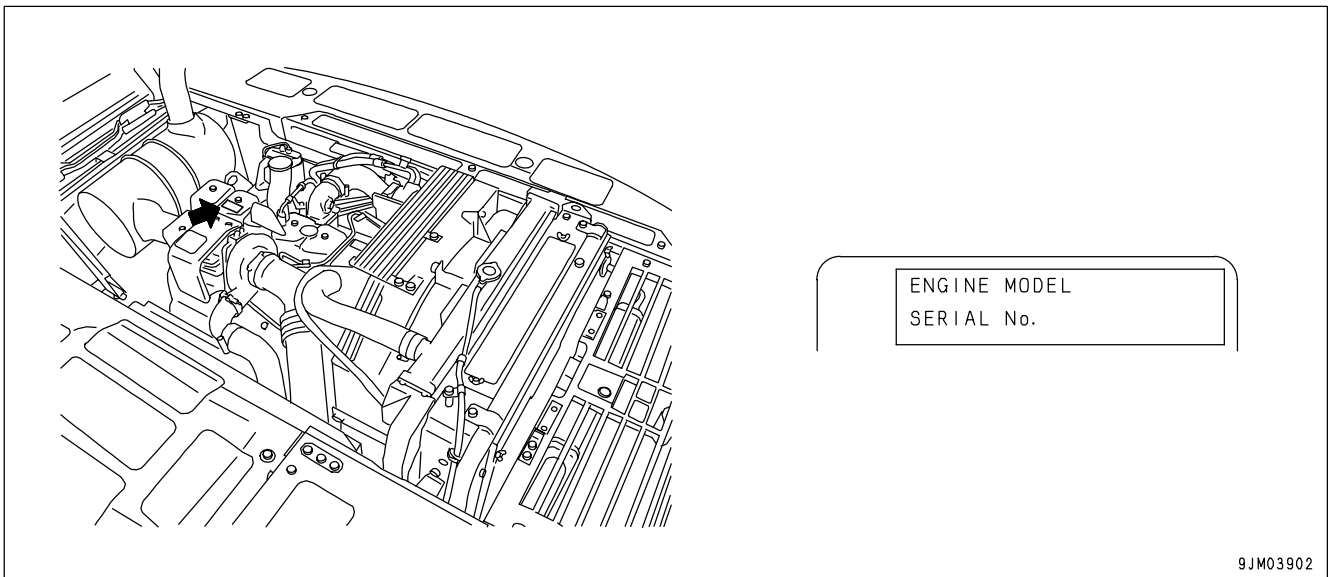
### MACHINE SERIAL NO. PLATE AND POSITION

Provided at the rear on the right side of the frame.



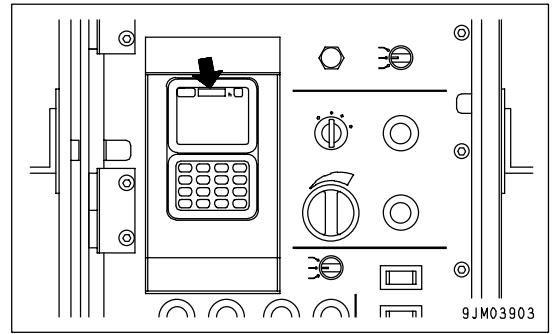
### ENGINE SERIAL NO. PLATE AND POSITION

Provided at the side of the engine cylinder head cover.



**POSITION OF SERVICE METER**

Provided above the monitor panel on the control panel.



**TABLE OF ENTER SERIAL NO. AND DISTRIBUTOR**

Machine serial No.	
Engine serial No.	
Distributor name	
Address	----- ----- ----- -----
Service Personnel	----- -----
Phone/Fax	

# CONTENTS

FOREWORD .....	1- 1
FOREWORD .....	1- 2
SAFETY INFORMATION .....	1- 5
INTRODUCTION .....	1- 7
FRONT/REAR,LEFT/RIGHT DIRECTIONS OF MACHINE .....	1- 7
NECESSARY INFORMATION .....	1- 8
MACHINE SERIAL NO. PLATE AND POSITION .....	1- 8
ENGINE SERIAL NO. PLATE AND POSITION .....	1- 8
POSITION OF SERVICE METER .....	1- 9
TABLE OF ENTER SERIAL NO. AND DISTRIBUTOR .....	1- 9
SAFETY .....	2- 1
SAFETY .....	2- 2
SAFETY LABELS .....	2- 5
POSITIONS OF SAFETY PICTOGRAMS .....	2- 6
SAFETY LABELS .....	2- 7
GENERAL PRECAUTIONS .....	2- 14
PRECAUTIONS FOR OPERATION .....	2- 22
STARTING ENGINE .....	2- 22
OPERATION .....	2- 24
PRECAUTIONS FOR SOIL IMPROVING WORK .....	2- 27
TRANSPORTATION .....	2- 31
BATTERY .....	2- 32
TOWING .....	2- 34
PRECAUTIONS FOR MAINTENANCE .....	2- 35
OPERATION .....	3- 1
GENERAL VIEW .....	3- 2
GENERAL VIEW OF MACHINE .....	3- 2
CONTROL PANEL .....	3- 3
EXPLANATION OF COMPONENTS .....	3- 5
MONITOR DISPLAY PORTION .....	3- 5
MACHINE MONITOR .....	3- 5
SWITCHES AND DIALS .....	3- 34
SWITCHES .....	3- 40
CONTROL LEVERS .....	3- 41
CAP, COVER WITH LOCK .....	3- 43
REVOLVING WARNING LAMP .....	3- 45
ADDITIONAL WORKING LAMP .....	3- 46
FUSIBLELINK .....	3- 46
FUSE .....	3- 47
CONTROLLERS .....	3- 48
RADIO CONTROL UNIT .....	3- 49
MANUAL BOX .....	3- 54
GREASE GUN HOLDER .....	3- 54
OPERATION .....	3- 55
SETTING UP MACHINE .....	3- 55
CHECK BEFORE STARTING ENGINE .....	3- 56
STARTING ENGINE .....	3- 70
OPERATIONS AND CHECKS AFTER STARTING ENGINE .....	3- 74
STOPPING ENGINE .....	3- 77

CHECK AFTER STOPPING ENGINE .....	3- 77
MACHINE OPERATION .....	3- 78
STEERING MACHINE .....	3- 82
PREPARATIONS BEFORE STARTING MIXING WORK .....	3- 84
PREPARATIONS FOR CRANE WORK .....	3- 85
FEEDING SOLIDIFYING MATERIALS .....	3- 88
MIXING WORK .....	3- 89
HOW TO CHECK SET CONDITIONS .....	3- 95
EMERGENCY STOP .....	3- 97
PROHIBITIONS FOR OPERATION .....	3- 98
GENERAL OPERATION INFORMATION .....	3- 99
PRECAUTIONS WHEN TRAVELING UP OR DOWNHILLS .....	3-100
SAFETY FUNCTIONS .....	3-101
FINISHING MIXING WORK .....	3-102
CLEANING AFTER FINISHING WORK .....	3-103
CHECK AFTER FINISHING WORK .....	3-107
LOCKING .....	3-108
DETAILED EXPLANATIONS ON CHARACTERISTICS OF FIXED RATE FEED RAW MATERIAL AND SOLIDIFYING MATERIAL .....	3-109
FOR SOIL IMPROVING WORK BASED ON MORE PRECISE FEED RATIO .....	3-110
CALIBRATION METHOD BY CALIBRATION SWITCH .....	3-111
CALIBRATION OF RAW MATERIAL .....	3-117
WHEN NOT USING SOIL CUTTER .....	3-120
SETTING USE OR NO USE OF SOIL CUTTER .....	3-122
SETTING BATCH PROCESSING .....	3-123
SETTING USE OR DO NOT USE OF ECO ACCELERATOR .....	3-127
SOLIDIFYING MATERIAL (IN FLEXIBLE CONTAINER BAG) FEED METHUSING SEMI-AUTO POSITIONING FUNCTION .....	3-129
SCRAPING ROTOR'S FUNCTION OF REVERSE ROTATION .....	3-130
WHEN YOU DO NOT WANT TO USE SOLIDIFYING MATERIAL .....	3-131
DISPLAY OR DO NOT DISPLAY OF CUMULATIVE VALUES .....	3-133
SETTING DETECTION PRESSURE FOR SOIL CUTTER'S AUTO SPEED CHANGE .....	3-134
WHEN A CHANGE OF SETTING IS REQUIRED .....	3-136
WHEN MACHINE'S FIRM POWER IS SHUT OFF .....	3-139
TRANSPORTATION .....	3-141
TRANSPORTATION PROCEDURE .....	3-141
TRANSPORTATION OF SOLIDIFYING MATERIAL HOPPER .....	3-141
LOADING, UNLOADING WORK .....	3-142
LIFTING MACHINE .....	3-149
MACHINES OF STANDARD SPECIFICATIONS .....	3-149
REMOVING PARTS FOR TRANSPORTATION AND INSTALLING AGAIN .....	3-150
COLD WEATHER OPERATION .....	3-154
PRECAUTIONS FOR LOW TEMPERATURE .....	3-154
AFTER COMPLETION OF WORK .....	3-155
AFTER COLD WEATHER .....	3-156
LONG-TERM STORAGE .....	3-157
BEFORE STORAGE .....	3-157
DURING STORAGE .....	3-157
AFTER STORAGE .....	3-157
TROUBLESHOOTING .....	3-158

AFTER RUNNING OUT OF FUEL .....	3-158
PHENOMENA THAT ARE NOT FAILURES .....	3-158
METHOD OF TOWING MACHINE .....	3-158
LIGHTWEIGHT TOWING HOOK .....	3-158
IF BATTERY IS DISCHARGED .....	3-159
OTHER TROUBLE .....	3-163
TABLE FOR JUDGING OVERLOAD AND RESULTANT MOTION OF WORK EQUIPMENT .....	3-174
TABLE FOR FUNCTION OF MONITOR LAMPS .....	3-182
MAINTENANCE .....	4- 1
GUIDE TO MAINTENANCE .....	4- 2
OUTLINE OF SERVICE .....	4- 4
HANDLING OIL, FUEL, COOLANT, AND PERFORMING OIL CLINIC .....	4- 4
RELATING TO ELECTRIC SYSTEM .....	4- 7
OUTLINE OF HYDRAULIC EQUIPMENT .....	4- 8
AIR-BLEEDING FROM HYDRAULIC CIRCUIT .....	4- 9
WEAR PARTS .....	4- 10
WEAR PARTS LIST .....	4- 10
ROTARY HAMMER AND SOIL CUTTER .....	4- 11
LINING INSIDE MIXER .....	4- 14
DISCHARGE BELT CONVEYOR .....	4- 15
USE OF FUEL, COOLANT AND LUBRICANTS ACCORDING TO AMBIENT TEMPERATURE .....	4- 17
PROPER SELECTION OF FUEL, COOLANT AND LUBRICANTS .....	4- 17
STANDARD TIGHTENING TORQUES FOR BOLTS AND NUTS .....	4- 21
TORQUE LIST .....	4- 21
PERIODIC REPLACEMENT OF SAFETY CRITICAL PARTS .....	4- 22
SAFETY CRITICAL PARTS .....	4- 22
MAINTENANCE SCHEDULE CHART .....	4- 23
MAINTENANCE SCHEDULE CHART .....	4- 23
SERVICE PROCEDURE .....	4- 25
INITIAL 250 HOURS MAINTENANCE (ONLY AFTER THE FIRST 250 HOURS) .....	4- 25
WHEN REQUIRED .....	4- 26
CHECK BEFORE STARTING .....	4- 49
EVERY 100 HOURS SERVICE .....	4- 50
EVERY 250 HOURS SERVICE .....	4- 54
EVERY 500 HOURS SERVICE .....	4- 59
EVERY 1000 HOURS SERVICE .....	4- 67
EVERY 2000 HOURS SERVICE .....	4- 71
EVERY 4000 HOURS SERVICE .....	4- 74
EVERY 5000 HOURS SERVICE .....	4- 75
SPECIFICATIONS .....	5- 1
SPECIFICATIONS .....	5- 2
ATTACHMENTS, OPTIONS .....	6- 1
GENERAL PRECAUTIONS .....	6- 2
PRECAUTIONS RELATED TO SAFETY .....	6- 2
INDEX .....	7- 1

# 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

SAFETY LABELS .....	2- 5
POSITIONS OF SAFETY PICTOGRAMS .....	2- 6
SAFETY LABELS .....	2- 7
GENERAL PRECAUTIONS .....	2- 14
SAFETY RULES .....	2- 14
IF ABNORMALITIES ARE FOUND .....	2- 14
CLOTHING AND PERSONAL PROTECTIVE ITEMS .....	2- 14
FIRE EXTINGUISHER AND FIRST AID KIT .....	2- 14
SAFETY FEATURES .....	2- 14
KEEP MACHINE CLEAN .....	2- 15
PRECAUTIONS TO BE FOLLOWED IN UPPER OPERATION DECK .....	2- 15
ALWAYS APPLY LOCK WHEN LEAVING UPPER OPERATION DECK .....	2- 16
HANDRAILS AND STEPS .....	2- 17
MOUNTING AND DISMOUNTING .....	2- 17
CRUSHING OR CUTTING PREVENTION .....	2- 17
PREVENTION OF BURNS .....	2- 18
FIRE PREVENTION .....	2- 18
ACTION IF FIRE OCCURS .....	2- 19
PRECAUTIONS FOR ATTACHMENTS .....	2- 19
UNAUTHORIZED MODIFICATION .....	2- 19
SAFETY AT WORKSITE .....	2- 20
WORKING ON LOOSE GROUND .....	2- 20
DO NOT GO CLOSE TO HIGH-VOLTAGE CABLES .....	2- 20
ENSURE GOOD VISIBILITY .....	2- 21
VENTILATION FOR ENCLOSED AREAS .....	2- 21
CHECKING SIGNALMAN'S SIGNALS AND SIGNS .....	2- 21
BE CAREFUL ABOUT ASBESTOS DUST .....	2- 21

PRECAUTIONS FOR OPERATION .....	2- 22
STARTING ENGINE .....	2- 22
CHECKS BEFORE STARTING ENGINE .....	2- 22
PRECAUTIONS WHEN STARTING .....	2- 22
PRECAUTIONS IN COLD AREAS .....	2- 25
OPERATION .....	2- 24
CHECK BEFORE OPERATION .....	2- 24
PRECAUTIONS WHEN CHANGING DIRECTION .....	2- 24
PRECAUTIONS WHEN TRAVELING .....	2- 24
TRAVELING ON SLOPES .....	2- 25
PRECAUTIONS WHILE IN OPERATION .....	2- 25
OPERATE CAREFULLY ON SNOW .....	2- 25
PARKING MACHINE .....	2- 26
PRECAUTIONS FOR SOIL IMPROVING WORK .....	2- 27
CHECKING PERSONAL PROTECTION OUTFIT .....	2- 27
PRECAUTIONS FOR HANDLING SOLIDIFYING MATERIALS .....	2- 27
JOINT WORK WITH A HYDRAULIC EXCAVATOR AND NECESSARY SAFETY MEASURES .....	2- 27
CHECKING MIXER AND SOLIDIFYING MATERIAL HOPPER BEFORE STARTING WORK .....	2- 28
PRECAUTIONS DURING WORK .....	2- 28
SETTING MACHINE ON GROUND .....	2- 28
BEFORE STARTING WITH WORK .....	2- 28
BEFORE STARTING UP MACHINE .....	2- 28
DURING WORK .....	2- 28
FEEDING WITH RAW MATERIAL .....	2- 28
PRECAUTIONS WHEN FEEDING WITH SOLIDIFYING MATERIALS .....	2- 29
PRECAUTIONS WHEN CLEANING EACH PART OF MACHINE .....	2- 29
AVOIDING HAZARDS DURING SOIL IMPROVING WORK (EMERGENCY STOP) .....	2- 30
TRANSPORTATION .....	2- 31
LOADING AND UNLOADING .....	2- 31
SHIPPING .....	2- 31
BATTERY .....	2- 32
BATTERY HAZARD PREVENTION .....	2- 32
STARTING WITH BOOSTER CABLE .....	2- 33
TOWING .....	2- 34
WHEN TOWING .....	2- 34



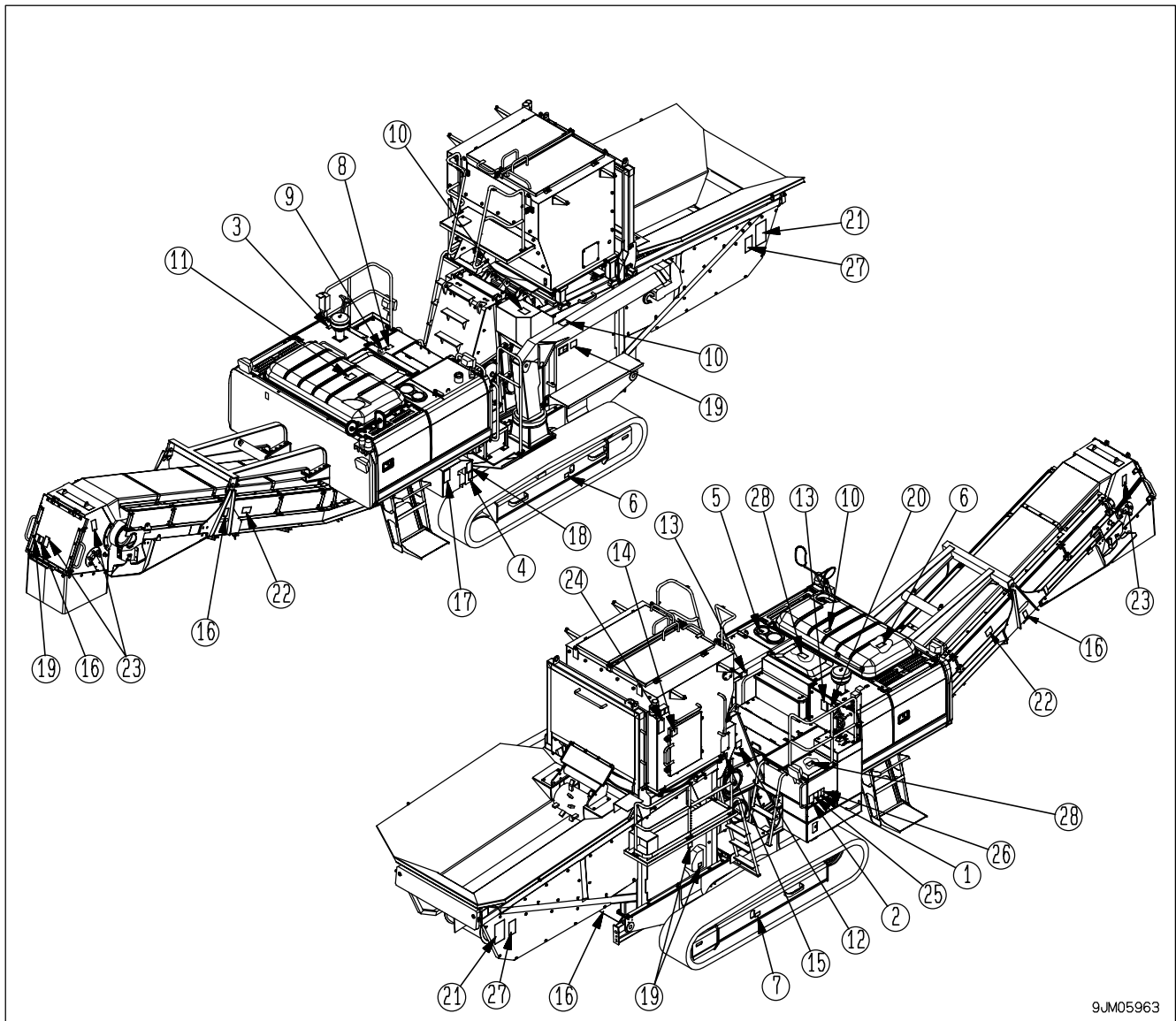
PRECAUTIONS FOR MAINTENANCE .....	2- 35
WARNING TAG .....	2- 35
KEEP WORK PLACE CLEAN AND TIDY .....	2- 35
APPOINT LEADER WHEN WORKING WITH OTHERS .....	2- 35
STOP ENGINE BEFORE CARRYING OUT INSPECTION AND MAINTENANCE .....	2- 36
TWO WORKERS FOR MAINTENANCE WHEN ENGINE IS RUNNING .....	2- 36
PRECAUTIONS FOR CONVEYOR MAINTENANCE .....	2- 37
PROPER TOOLS .....	2- 37
PERSONNAL .....	2- 37
PRECAUTIONS WHEN MOUNTING, DISMANTLING AND STORING ATTACHMENTS .....	2- 38
PRECAUTIONS FOR WORK UNDER MACHINE .....	2- 38
NOISE .....	2- 38
PRECAUTIONS WHEN USING HAMMER .....	2- 38
REPAIR WELDING .....	2- 38
REMOVING BATTERY TERMINAL .....	2- 39
PRECAUTIONS WHEN USING HIGH-PRESSURE GREASE TO ADJUST TRACK TENSION .....	2- 39
DO NOT DISASSEMBLE RECOIL SPRING .....	2- 39
PRECAUTIONS WITH HIGH-PRESSURE OIL .....	2- 39
HANDLING HIGH-PRESSURE HOSES .....	2- 40
WASTE MATERIAL .....	2- 40
COMPRESSED AIR .....	2- 40
PERIODIC REPLACEMENT OF SAFETY CRITICAL PARTS .....	2- 40

## **SAFETY LABELS**

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

- Be sure that you fully understand the correct position and content of labels.
- To ensure that the content of labels can be read properly, be sure 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 also other labels in addition to the warning signs and safety labels. Handle those labels in the same way.
- 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 Komatsu distributor.

### POSITIONS OF SAFETY PICTOGRAMS



**SAFETY LABELS**

(1) Precautions for machine operation, inspection and maintenance (09651-03001)

(2) Warning when operating the machine (8221-93-1611)

**⚠ WARNING**


Improper operation and maintenance can cause serious injury or death.

Read manual and labels before operation and maintenance. Follow instructions and warnings in manual and in labels on machine.

Keep manual in machine cab near operator.  
Contact Komatsu distributor for a replacement manual.

09651-03001

**⚠ WARNING**



To prevent SEVERE INJURY or DEATH, do the following before moving this machine.

- Sound horn to alert people nearby.
- Be sure no one is on or near this machine.
- Set watchman to guide this machine if view is obstructed.

Follow matters noted above, even if this machine equipped with travel alarm and mirrors.

8221-93-1611

(3) Precautions when leaving the upper operator's platform (8295-93-1380)

(4) Watch out electric wires (8255-98-4950)


**⚠ WARNING**

To avoid hitting unlocked travel levers, move TRAVEL LEVER SAFETY LOCK to LOCK position before leaving from operating area.

Sudden and unwanted machine movement can cause serious injury or death.

8295-93-1380

**⚠ DANGER**



Hazardous voltage hazard.

Bringing machine, boom, etc too near electric lines can cause serious accident or injury. When working near high-voltage lines, appoint a spotter and follow their directions.

VOLTAGE		SAFE DISTANCE
LOW VOLTAGE	100V 200V	2 m
	6,600V	2 m
	22,000V	3 m
SPECIAL HIGH VOLTAGE	66,000V	4 m
	154,000V	5 m
	187,000V	6 m
	275,000V	7 m
	500,000V	11 m

8255-98-4950