

# **OPERATION & MAINTENANCE MANUAL**

## **CK850-II**

APPLICABLE : From GG05-04002

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## **IMPORTANT INFORMATION**

Thank you for your purchasing KOBELCO crawler crane. Our CK series full-hydraulically operated crawler crane, is manufactured based on our many years of experience and expertise. This manual describes important information about Model CK850-II.

Before operating the machine, be sure to thoroughly read this manual in order to use the machine safely and efficiently.

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**Do not operate or maintain this machine until you read this manual and understand the instructions. Improper operation or maintenance of this machine may cause accidents and could result in serious injury or death.**

**Always keep this manual in the operator's cab.**

**If it is missing or damaged, place an order to a KOBELCO authorize distributor for a replacement.**

**If you have any questions, please consult your KOBELCO authorize distributor.**


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### **SAFETY INFORMATION**

Most accidents, that occur during operation are due to neglect of precautionary measures and safety rules. Sufficient care should be taken to avoid these accidents.

Erroneous operation, lubrication or maintenance services are very dangerous and may cause injury to, or death of, personnel.

Precautionary measures or notes provided in this manual should be read and understood by personnel before starting each task.

Operation, inspection, and maintenance should be carefully carried out, and safety must be given first priority. Safety labels are indicated with  marks. The safety information contained in this manual is intended only general safety information.

Safety labels appear both in this manual and on the machine. All safety labels are identified by the words "DANGER", "WARNING" and "CAUTION". These words mean the following:



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



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 possible damage to the machine and its components.

**Note**

Supplementary explanation.

It is very difficult for us to forecast every danger that may occur during operation. However, safety can be ensured by operating this machine according to methods recommended by KOBELCO.

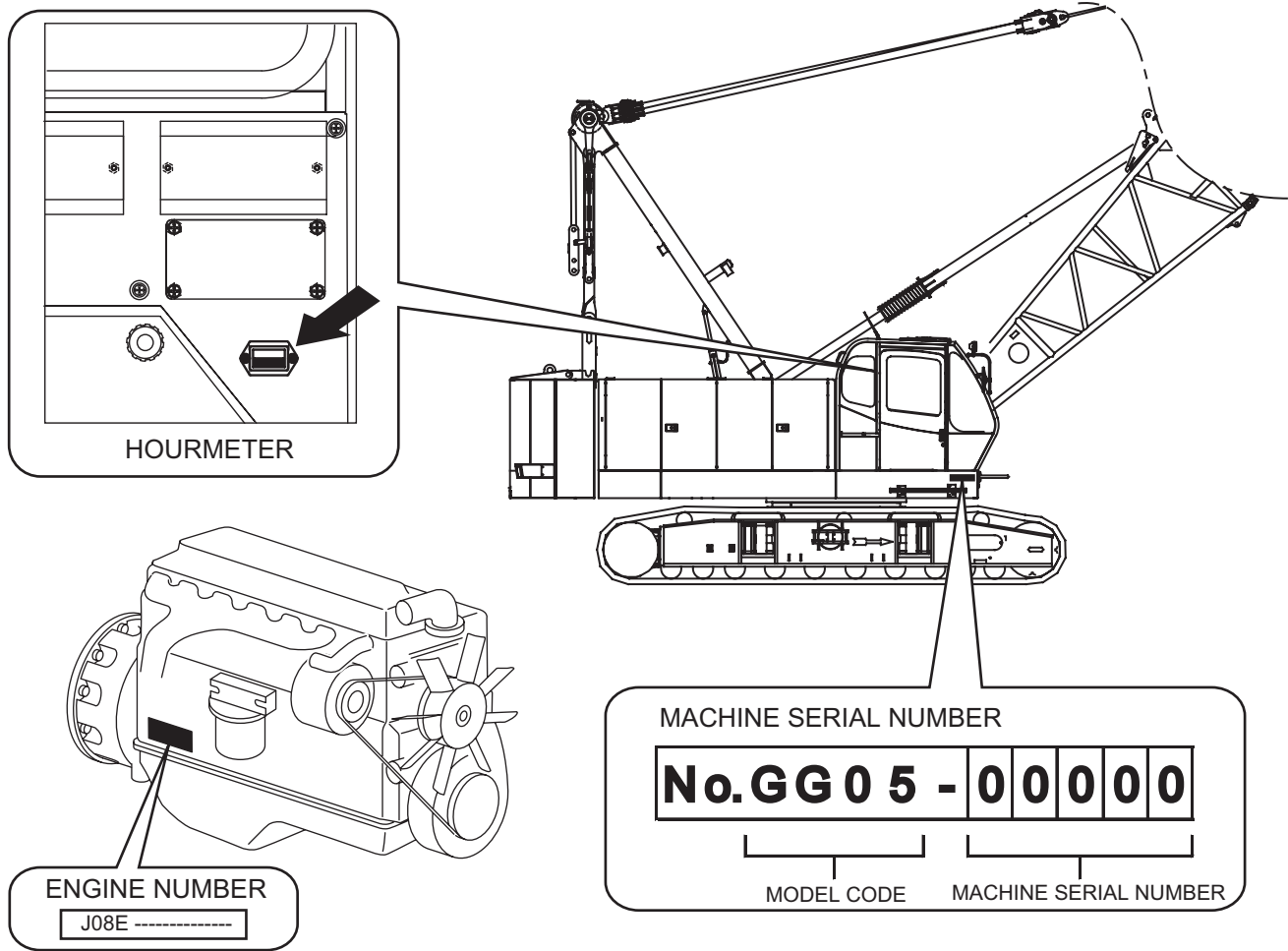
While operating the machine, be sure to perform work with great care, so as not to damage the machine or allow accidents to occur.

Please continue studying this manual until proper operation is completely understood.

# IMPORTANT INFORMATION

## MACHINE SERIAL NUMBER

When you order repair parts and when you need repair or service of the machine, always inform us the machine serial number stamped on the name plate and the total number of hours indicated on the hourmeter which is located in the gauge.



## ENTER MACHINE SERIAL NUMBER OF THIS MACHINE

MACHINE MODEL	CK850-II	MACHINE SERIAL No.	GG05-	ENGINE No.	J08E-
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## WARRANTY

The terms under which this machine is guaranteed are clearly defined in the accompanying WARRANTY. Trouble and damage occurred during the terms of guarantee shall be repaired at no cost to the purchaser according to the warrant description if the trouble or damage is recognized to be our responsibility. However, if you use the machine contrary to the instructions of this manual, the WARRANTY does not cover any damage to the machine.

## REPAIR PARTS

When servicing and repairing the machine, be sure to use genuine parts in order to make the machine performance display sufficiently. Since the important security parts are prepared to ensure safety and to protect the machine from an serious accident, be sure to replace them every specified period of time.

## EXPLANATION OF WARNING LABELS

Since the warning labels are installed in the machine and indicated with the three stages in the same way as the warning description, confirm the positions and contents of all warning labels first. Put them to the practical use to secure safety when operating, checking and performing maintenance.

**HANDLING OF WARNING LABELS**

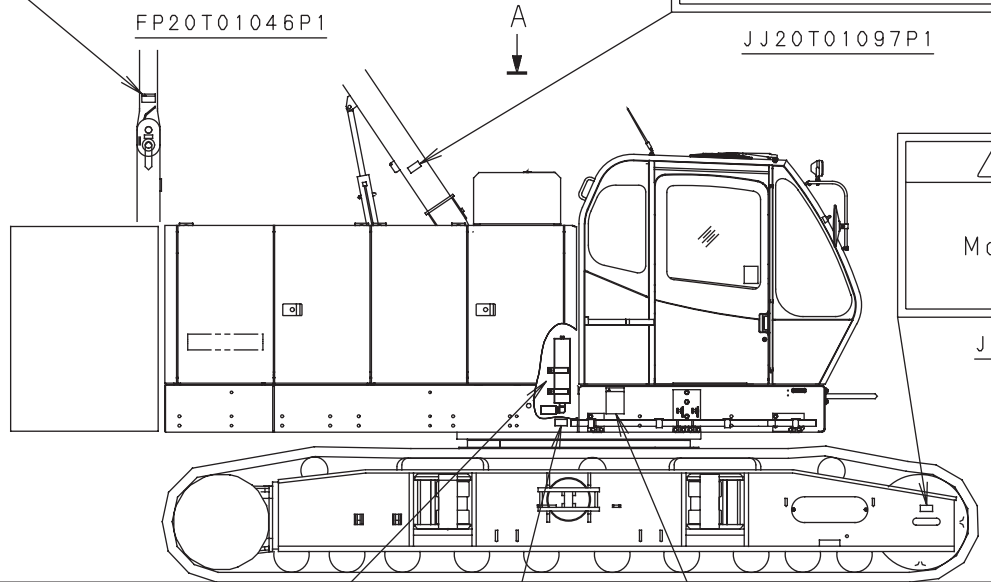
1. When the warning label is damaged or stained, order it to the designated service shop.
2. Do not remove the warning labels.
3. When the surface of the warning label is soiled and difficult to be seen, wipe it cleanly.

# IMPORTANT INFORMATION

**⚠ DANGER**  
 NEVER FORGET TO ENGAGE  
 GANTRY CONNECTION PINS  
 TO AVOID FALLING OF BOOMS, GANTRY  
 CONNECTION PINS MUST BE ENGAGED  
 WHEN GANTRY IS AT HIGH POSITION.  
 ALSO, LOWER PARTS OF TENSION BARS  
 MUST BE CONNECTED TO REVOLVING FRAME  
 OR COUNTERWEIGHT WHEN GANTRY IS AT  
 LOW POSITION.  
 FP20T01046P1

**⚠ DANGER**  
 When lock pin is not installed,  
 do not stand under gantry.  
 JJ20T01097P1

**⚠ CAUTION**  
 Moving parts.  
 JJ20T01086P1

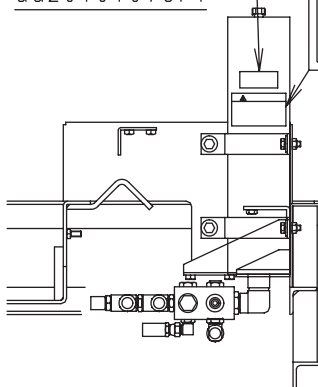


**⚠ CAUTION**  
 Stay out from  
 crane swing area.  
 JJ20T01095P1

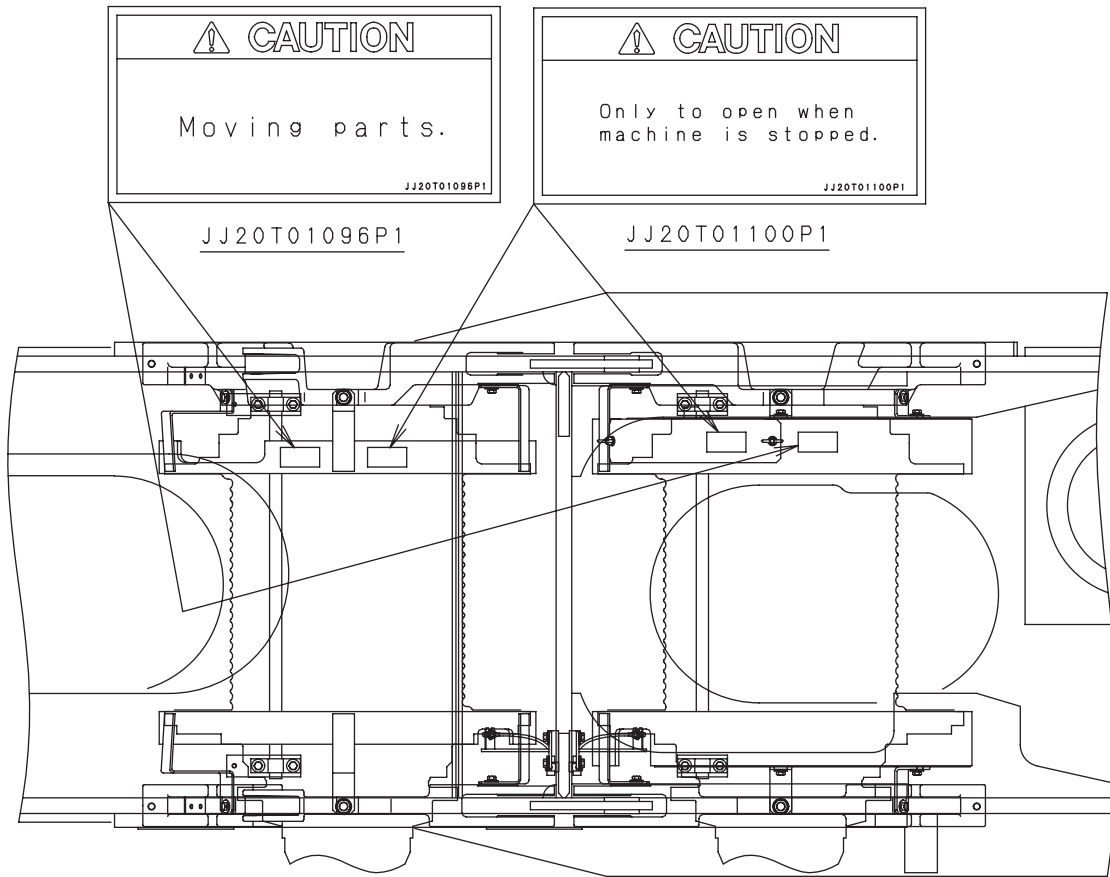
**⚠ DANGER**  
 DEATH OR INJURY MAY RESULT IF  
 MACHINE, LOAD, OR LOAD LINE TOUCHES  
 OR COMES CLOSE TO ELECTRICAL LINES.  
 ALWAYS MAINTAIN A CLEARANCE OF  
 AT LEAST 10 FEET (3 METERS)  
 BETWEEN THE CRANE OR THE LOAD  
 BEING HANDLED AND POWERLINES.  
 UNLAWFUL TO PLACE ANY PART OF  
 THIS MACHINE OR LOAD WITHIN 10 FEET  
 (3 METERS) OF HIGH VOLTAGE LINES OF  
 50,000 VOLTS OR LESS.  
 GREATER CLEARANCES ARE REQUIRED  
 FOR HIGHER VOLTAGES. SEE YOUR LOCAL  
 STATE, AND FEDERAL REGULATIONS.  
 ALWAYS NOTIFY ELECTRIC COMPANY IF  
 THERE ARE ELECTRIC LINES IN THE AREA  
 WHERE MACHINE WILL BE WORKING.  
 GG20T01127P1

ACCUMULATOR  
 CHARGING GAS PRESSURE.  
 3.4~3.7Mpa  
 (35~38 Kg/cm<sup>2</sup>)  
 GG20T01079P1

**⚠ WARNING**  
 AVOID EXPLOSION WHEN  
 HANDLING ACCUMULATOR  
 THIS CASE IS CHARGED WITH  
 HIGH PRESSURE NITROGEN GAS.  
 NEVER ATTEMPT TO WELD, GAS-CUT,  
 PUT ON FIRE, NOR DISASSEMBLE  
 THE CASE TO AVOID EXPLOSION.  
 FP20T01042P1




DETAIL C  
 (ACCUMULATOR)



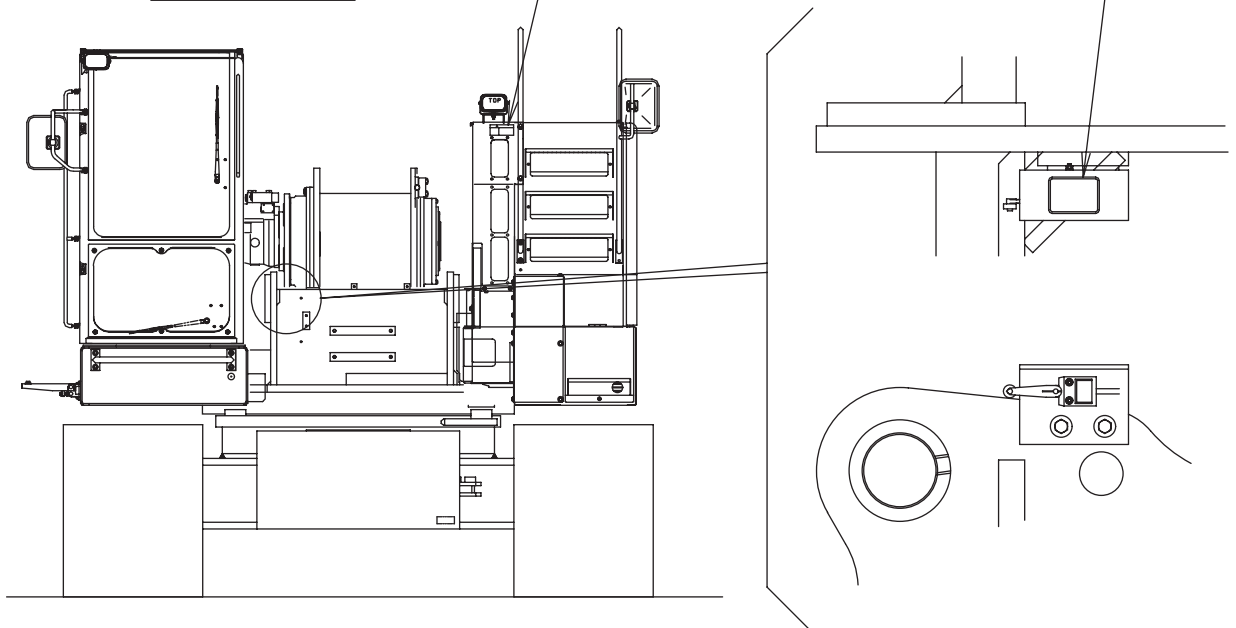
VIEW A

	<h3>WARNING</h3>
	<p>WALKING ON GUARDS MAY CAUSE STUMBLING AT PROJECTED ITEMS AND SLIPPING BY OIL, WATER, OR GREASE.</p>
	<p>PROTECTOR SHOULD BE EMPLOYED WHEN WALKING FOR MAINTENANCE JOB, TO AVOID TIPPING OVER AND FALLING DOWN FROM THE MACHINE.</p>
<small>FP20T01051P1</small>	

FP20T01051P1

	<h3>CAUTION</h3>
<p>Do not crush. Important part inside.</p>	
<small>FP20T01064P1</small>	

FP20T01064P1



# IMPORTANT INFORMATION

**⚠ WARNING**

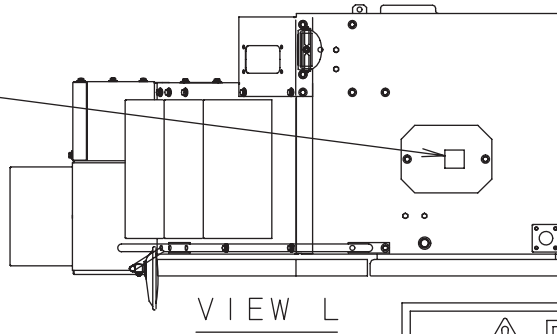
Steam of hot coolant can cause injury or blindness.

Never loosen or open radiator cap when coolant is hot and under pressure.

Before opening radiator cap:

- Cool down engine completely.
- Cover radiator with cloth rag.
- Loosen cap slowly to relieve pressure.

YN20T01010P1



**⚠ CAUTION**

Only to open when engine is stopped.

JJ20T01098P1

JJ20T01098P1

**⚠ DANGER**

When lock pin is not installed, do not stand under gantry.

JJ20T01097P1

JJ20T01097P1

**⚠ DANGER**

NEVER FORGET TO ENGAGE GANTRY CONNECTION PINS

TO AVOID FALLING OF BOOMS, GANTRY CONNECTION PINS MUST BE ENGAGED WHEN GANTRY IS AT HIGH POSITION. ALSO, LOWER PARTS OF TENSION BARS MUST BE CONNECTED TO REVOLVING FRAME OR COUNTERWEIGHT WHEN GANTRY IS AT LOW POSITION.

FP20T01046P1

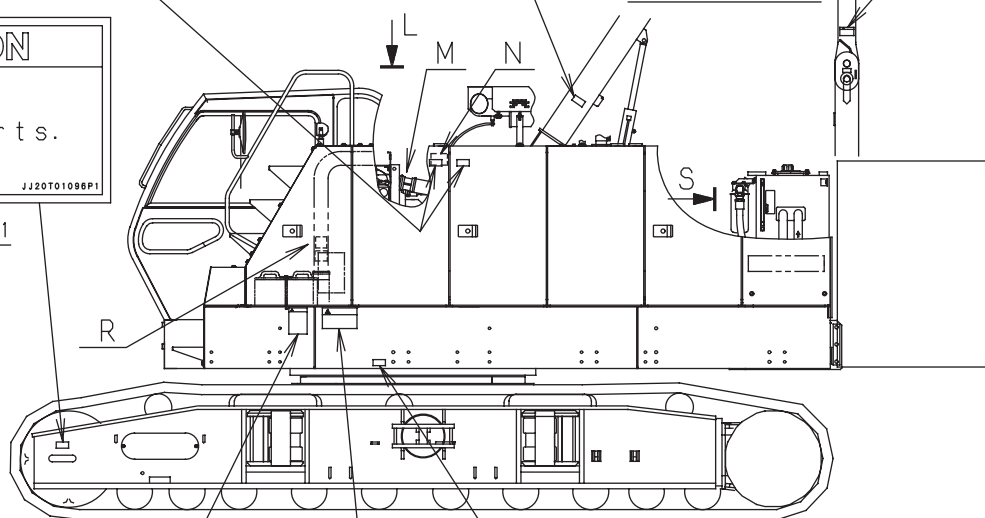
FP20T01046P1

**⚠ CAUTION**

Moving parts.

JJ20T01096P1

JJ20T01096P1



**⚠ DANGER**

DEATH OR INJURY MAY RESULT IF MACHINE, LOAD, OR LOAD LINE TOUCHES OR COMES CLOSE TO ELECTRICAL LINES.

ALWAYS MAINTAIN A CLEARANCE OF AT LEAST 10 FEET (3 METERS) BETWEEN THE CRANE OR THE LOAD BEING HANDLED AND POWERLINES.

UNLAWFUL TO PLACE ANY PART OF THIS MACHINE OR LOAD WITHIN 10 FEET (3 METERS) OF HIGH VOLTAGE LINES OF 50,000 VOLTS OR LESS.

GREATER CLEARANCES ARE REQUIRED FOR HIGHER VOLTAGES. SEE YOUR LOCAL, STATE, AND FEDERAL REGULATIONS.

ALWAYS NOTIFY ELECTRIC COMPANY IF THERE ARE ELECTRIC LINES IN THE AREA WHERE MACHINE WILL BE WORKING.

GG20T01127P1

GG20T01127P1

**⚠ CAUTION**

Stay out from crane swing area.

JJ20T01095P1

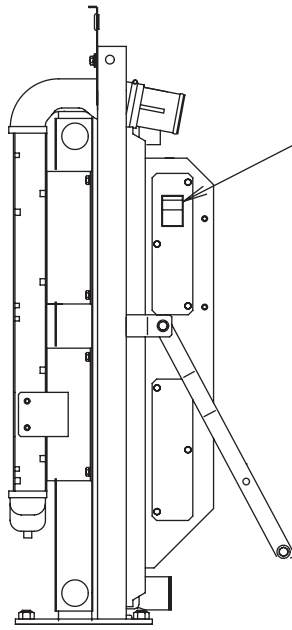
JJ20T01095P1

**⚠ DANGER**

STAY AWAY FROM MACHINE IF CLOSE TO POWER LINES. MACHINE, LOAD AND GROUND MAY BECOME ELECTRIFIED AND DEADLY.

GG20T01128P1

GG20T01128P1



DETAIL M

**⚠ WARNING**

Rotating parts can cause personal injury.  
Keep away from fan and belt when engine is running.  
Stop engine before servicing.  
YN20T01009P1

YN20T01009P1

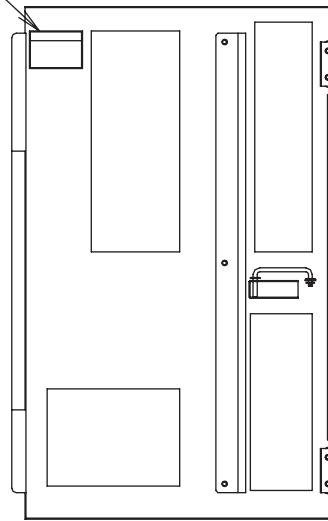
**⚠ CAUTION**

CAUTION  
FOR HIGH TEMPERATURE

AS ENGINES AND MUFFLERS MAY BE HEATED TO HIGH TEMPERATURES, DO NOT DIRECTLY TOUCH THEM BY HAND.

FP20T01043P1

FP20T01043P1

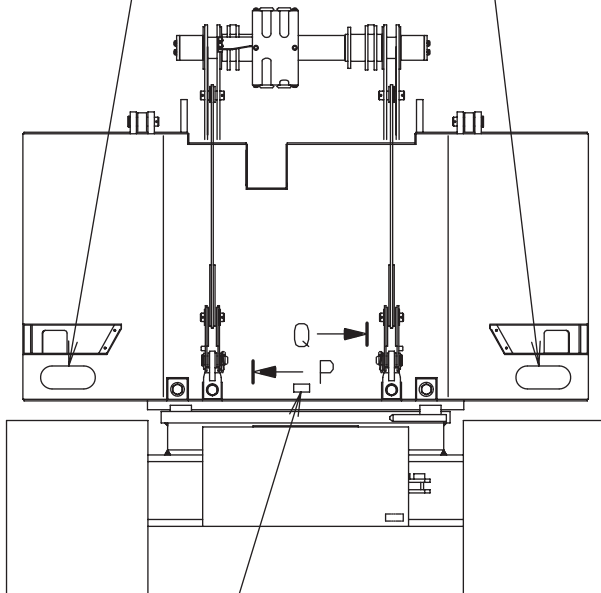


DETAIL N  
(VIEW FROM INNER OF DOOR)

**⚠ DANGER**

KEEP CLEAR OF SWING AREA

YN20T01003P2



**⚠ CAUTION**

Stay out from crane swing area.

JJ20T01095P1

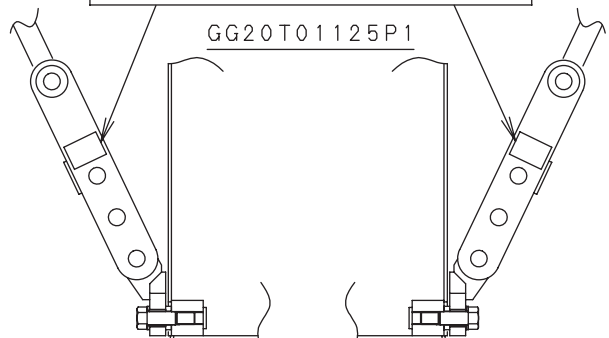
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**TENSION BAR CONNECTIONS**

WITHOUT COUNTERWEIGHT    WITH COUNTERWEIGHT

TRAVEL KITS (OPT.)  
GG20T01125P1


GG20T01125P1



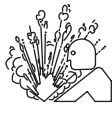
VIEW P

VIEW Q

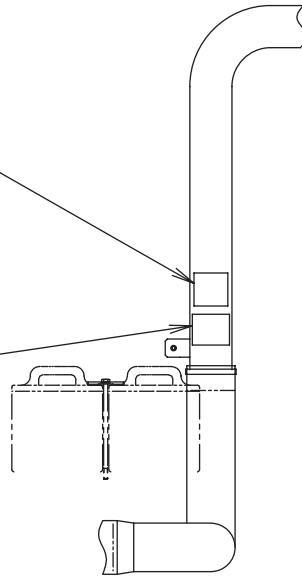
# IMPORTANT INFORMATION

	<b>⚠ WARNING</b>
	<p><b>AVOID ACID BURNS</b></p> <ul style="list-style-type: none"> <li>·Electrolyte is an acid and can cause injury or blindness if it contacts skin or eyes.</li> <li>·Wear eye protection and protective clothing when handling or servicing batteries.</li> <li>·If electrolyte contacts skin or eyes, flush affected areas immediately with clean water and seek medical attention immediately.</li> </ul> <p style="text-align: right;"><small>YN20T01017P1</small></p>

YN20T01017P1

	<b>⚠ WARNING</b>
	<p><b>PREVENT BATTERY EXPLOSION</b></p> <ul style="list-style-type: none"> <li>·Batteries give off hydrogen gases that can explode and cause personal injury.</li> <li>·Keep sparks, open flames and cigarettes away from batteries.</li> <li>·Keep metallic articles away from batteries.</li> <li>·Keep all ventilation caps tightly secured.</li> <li>·Never check charge by placing metal articles across battery terminals.</li> <li>·Leave battery box open to improve ventilation when charging.</li> </ul> <p style="text-align: right;"><small>YN20T01001P1</small></p>

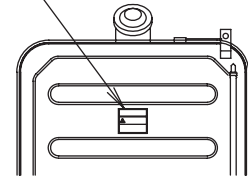
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DETAIL R

FUEL TANK
<b>⚠ CAUTION</b>
USE DIESEL FUEL ONLY
<small>FP20T01050P1</small>

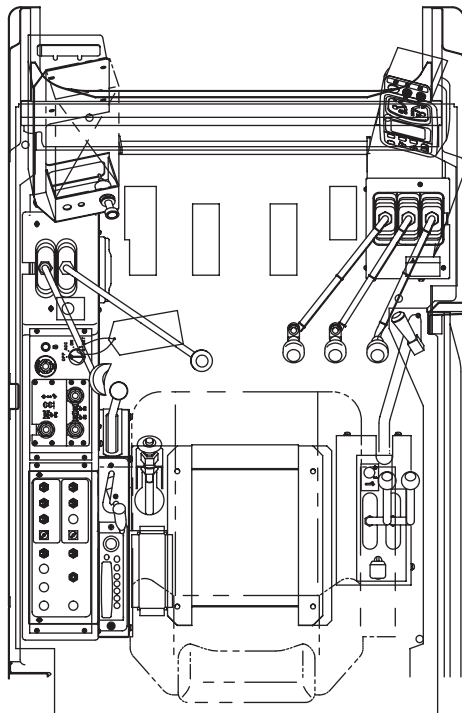
FP20T01050P1



FUEL TANK

<b>⚠ DANGER</b>
<p>CRANE WORK SHOULD BE EXERCISED ON 'NEUTRAL BRAKE MODE'. OPERATIONS ON 'FREE FALL MODE' MAY CAUSE FALLING OF LOADS DUE TO OPERATIONAL ERROR.</p> <p style="text-align: right;"><small>FP20T01045P1</small></p>

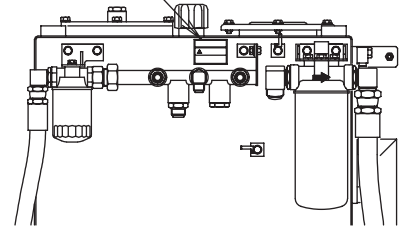
FP20T01045P1



SECTION U-U

HYDRAULIC TANK
<b>⚠ CAUTION</b>
HIGH TEMPERATURE DO NOT TOUCH
<small>FP20T01049P1</small>


FP20T01049P1



VIEW S  
(HYD. OIL TANK)



**⚠ DANGER**  
**AVOID TIPPING OVER**  
**WHEN CRAWLERS ARE RETRACTED**  
 MACHINES ON RETRACTED CRAWLERS HAVE LESS STABILITY AND MAY CAUSE TIPPING OVER WHEN SWINGED TO SIDES. OPERATE ONLY ON CONDITIONS NOTED ON OPERATORS MANUAL.



FP20T01048P1

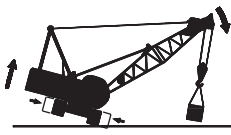
FP20T01048P1

**⚠ CAUTION**  
**READ BEFORE OPERATION**  
 OPERATORS MANUAL SHOULD BE READ AND UNDERSTOOD BEFORE OPERATION. DAILY MAINTENANCE SHOULD ALWAYS BE EXERCISED. ALSO, CAUTIONS NOTED IN RATING PLATES MUST BE OBSERVED DURING OPERATION.

FP20T01047P1

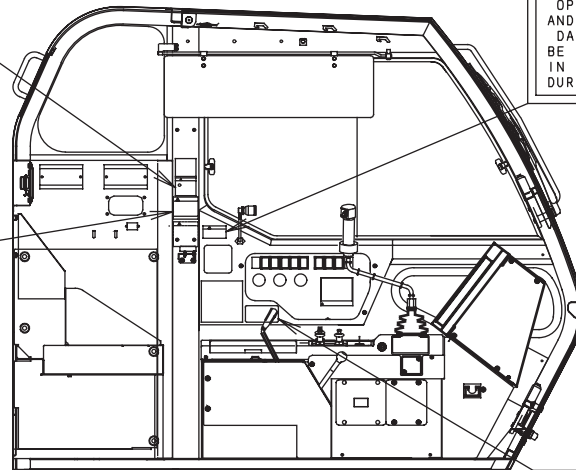
FP20T01047P1

**⚠ DANGER**  
**DO NOT LIFT WITH CRAWLERS RETRACTED**  
 EXTEND CRAWLERS TO PROPER POSITION WHEN LIFTING. FAILURE TO DO SO MAY CAUSE TIPPING OVER. DUE TO LACK OF STABILITY.



GB20T01197P1

GB20T01197P1



INSIDE VIEW (L/H)

**⚠ CAUTION**  
 WHEN LOCKING THE BRAKE PEDAL, STEP ON THE PEDAL FULLY TO LOCK THE PAWL AT THE BOTTOM NOTCH.

2432T5113

2432T5113

**⚠ CAUTION**  
 THIS MACHINE CONTAINS ALLOY AND HEAT TREATED STEELS. DO NOT WELD OR APPLY HEAT WITHOUT CHECKING WITH YOUR AUTHORIZED DEALER. UNAUTHORIZED MODIFICATIONS MAY WEAKEN THE MACHINE.

2432T4671

2432T4671

**⚠ DANGER**

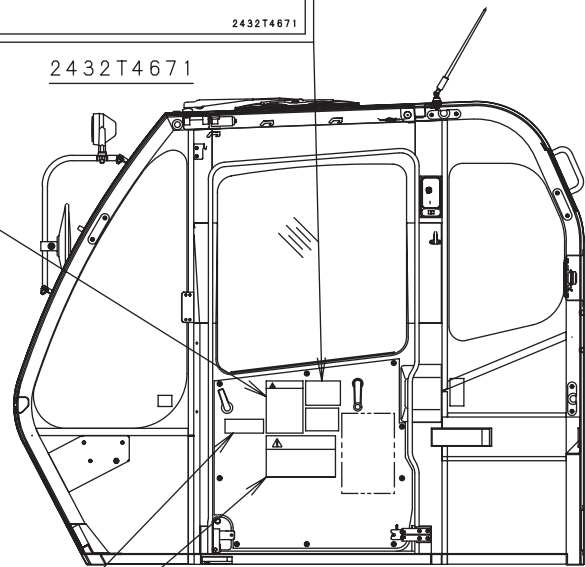
DEATH OR INJURY MAY RESULT IF MACHINE, LOAD, OR LOAD LINE TOUCHES OR COMES CLOSE TO ELECTRICAL LINES. ALWAYS MAINTAIN A CLEARANCE OF AT LEAST 10 FEET (3 METERS) BETWEEN THE CRANE OR THE LOAD BEING HANDLED AND POWERLINES.

UNLAWFUL TO PLACE ANY PART OF THIS MACHINE OR LOAD WITHIN 10 FEET (3 METERS) OF HIGH VOLTAGE LINES OF 50,000 VOLTS OR LESS. GREATER CLEARANCES ARE REQUIRED FOR HIGHER VOLTAGES. SEE YOUR LOCAL, STATE, AND FEDERAL REGULATIONS.

ALWAYS NOTIFY ELECTRIC COMPANY IF THERE ARE ELECTRIC LINES IN THE AREA WHERE MACHINE WILL BE WORKING.

GG20T01127P1

GG20T01127P1



INSIDE VIEW (R/H)

**⚠ CAUTION**  
 DO NOT LIFT PEOPLE WITH THIS CRANE. FAILURE TO DO SO MAY CAUSE SERIOUS INJURY.

2432T4668

2432T4668

**⚠ DANGER**  
**STAY AWAY FROM MACHINE IF CLOSE TO POWER LINES. MACHINE, LOAD AND GROUND MAY BECOME ELECTRIFIED AND DEADLY.**

GG20T01128P1

GG20T01128P1

# IMPORTANT INFORMATION

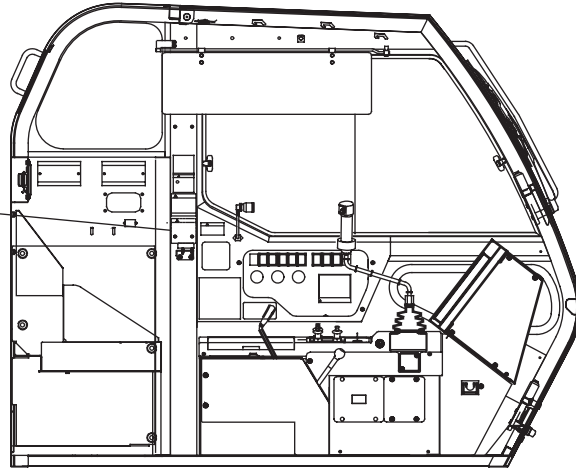
**CAUTION**

**STRUCTURAL FAILURE**

Gantry must be in high position  
Read operators manual for boom connecting length

BOOM TOP ONLY

40ft and shorter



**CAUTION**

**MOVING PARTS CAN CUT AND CRUSH  
STRUCTURAL DAMAGE**

Place guides in storing position after connecting spreader to boom.  
At first the guides should be held by hands and pins disengaged, and then should be placed in storing position.

STORING POSITION

WORKING POSITION (BOOM DISASSEMBLING / ASSEMBLING)

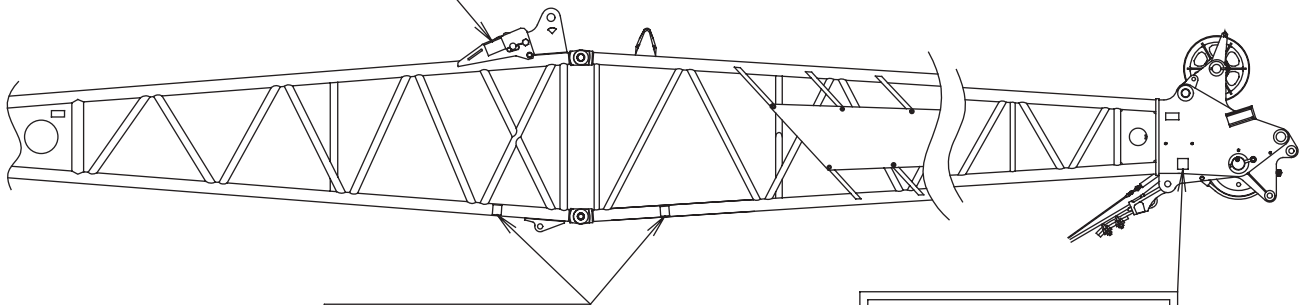
GUIDE CLEARANCE

PIN "A"

DISASSEMBLING OF PIN "A"

FP20T01124P1

FP20T01124P1



**DANGER**

**DO NOT ENTER UNDER BOOM**

TO AVOID SERIOUS INJURY CAUSED BY FALLING OF BOOM. DO NOT ENTER UNDER BOOM WHILE DISASSEMBLING/ASSEMBLING OF BOOM.

FP20T01013P1

FP20T01013P1

**CAUTION**

Boom top

Boom foot

Boom top

Boom foot

CORRECT

WRONG

GG20T01561P1

Install the rope socket in the correct direction. Otherwise, the rope socket or the wire rope may interfere with the boom, causing damage to the boom or cut of the wire rope.

GG20T01561P1

# 1. SAFE OPERATING PRACTICES FOR MOBILE CRANES

## INTRODUCTION

Because cranes have the ability to lift heavy loads to great heights, they also have a potential for accidents if safe operating practices are not followed. This book will help you prevent accidents that could result in injury, death, or property damage.

General safe practices for working on machinery must be followed as well as the safe operating practices recommended here.

## OPERATOR'S RESPONSIBILITY

The operator is the best safety feature in any crane. Safety must always be the operator's most important concern. He must refuse to operate when he knows it is unsafe and consult his supervisor when safety is in doubt.

He must read and understand the Operator's Manual and see that the machine is in proper order before operating.

He must understand how to read the rating plate and know that his machine can safely lift each load before attempting to lift it.

He must never lift a load without knowing the length of the boom, the weight of the load, and the load radius or boom angle.

Never attempt to operate the crane at conditions exceeding those shown on the rating chart. Such operation can cause tipping or structural failure of the crane that can result in damage, injury, or death.

He must be alert, physically fit, and free from the influences of alcohol, drugs, or medications that might affect his eyesight, hearing, reactions, judgment.

He must see that unnecessary people, equipment, and material are kept out of the work area. The area around the machine should be properly barricaded.

When an operator's vision is restricted or when operating in hazardous places such as near electrical power lines or around people, a signalman must be used. Because the operator is not always in the best position to judge distances and can not see all parts of the jobsite, a signalman may also be necessary at other times. Operators must understand standard crane signals and take signals only from designated signalmen.

## 1. SAFE OPERATING PRACTICES FOR MOBILE CRANES

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### SIGNALMAN'S RESPONSIBILITY

The primary duty of a signalman is to assist the operator in safe and efficient operation. Operators depend on designated signalmen to assist them in making movements without endangering people or property.

Signalmen must have a clear understanding of the work to be done so that they can safely coordinate each job with operators and other crew members. Signalmen must place themselves where they can be clearly seen and where they can safely observe the entire operation. Standard crane signals must be used unless other methods of signaling, such as two way radios or flags have been agreed upon.

### CREW MEMBER'S RESPONSIBILITY

Any unsafe condition or practice must be corrected or reported to the job supervisor.

Everyone who works around the crane, including riggers and oilers, must obey all warning signs and watch out for his own safety and the safety of others. Crew members setting up machines or handling loads are expected to know proper machine erection and rigging procedures.

Watch for hazards during operations and alert the operator and signalmen of dangers such as power lines, the unexpected presence of people, other equipment or unstable ground conditions.

### MANAGEMENT'S RESPONSIBILITY

See that operators are trained, competent, physically fit and, if required, licensed. Good vision is required, as are good judgment, coordination and mental ability. Any person who lacks any of these qualities must not be allowed to operate a crane.

Signalmen must have good vision and sound judgment, know standard crane signals and be able to give signals clearly. They must have enough experience to be able to recognize hazards and signal the operator to avoid them.

Riggers must be trained to determine weights and distances and to select proper lifting tackle. Rigging is a complex subject far beyond the scope of this manual. It is management's responsibility to employ qualified riggers.

Crew members must be given specific safety responsibilities and instructed to report any unsafe conditions to their supervisors.