

# **UNIC HYDRAULIC CRANE**

**MODEL**

# **URV500 SERIES**

## **OPERATION & MAINTENANCE MANUAL**

**FURUKAWA UNIC CORPORATION**

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Shinagawa-ku, Tokyo 140-0002, JAPAN

**OMURV500200011A**

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## ***Request to those who operate UNIC crane***

The instruction manual describes correct operation methods, easy inspection and service for the UNIC crane.

Be sure to read this manual carefully to carry out correct and safe operation of the machine.

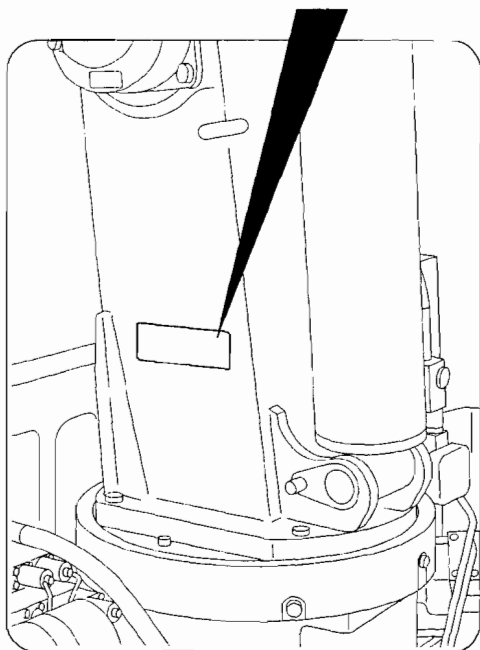
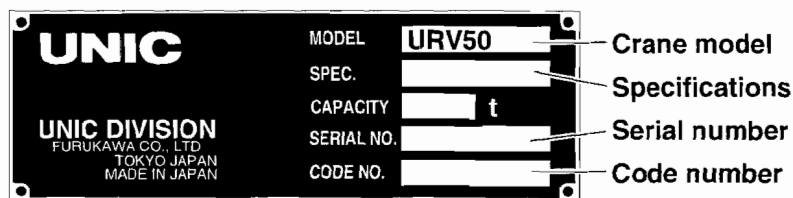
Operate the machine after you have understood the contents of this manual.

Although we take all possible measures to ensure quality of the machine, you are requested to contact our business offices, UNIC sales agents, or authorized service stations whenever you have anything you do not understand.

### ◆ **When making inquiries**

When making inquiries, ordering spare parts, and requesting repairs, be sure to give us the crane model, specification, serial number, date of manufacture, and the vehicle type.

### ◆ **Name plate** of the machine is located at the side of column.



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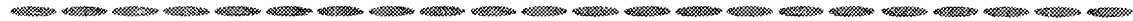
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# SETUP OF THIS MANUAL

## SETUP OF THIS MANUAL

Cranes covered in this manual are somewhat different in operation of the cranes in accordance with how to store hook and specifications with or without the cable or the radio remote control.

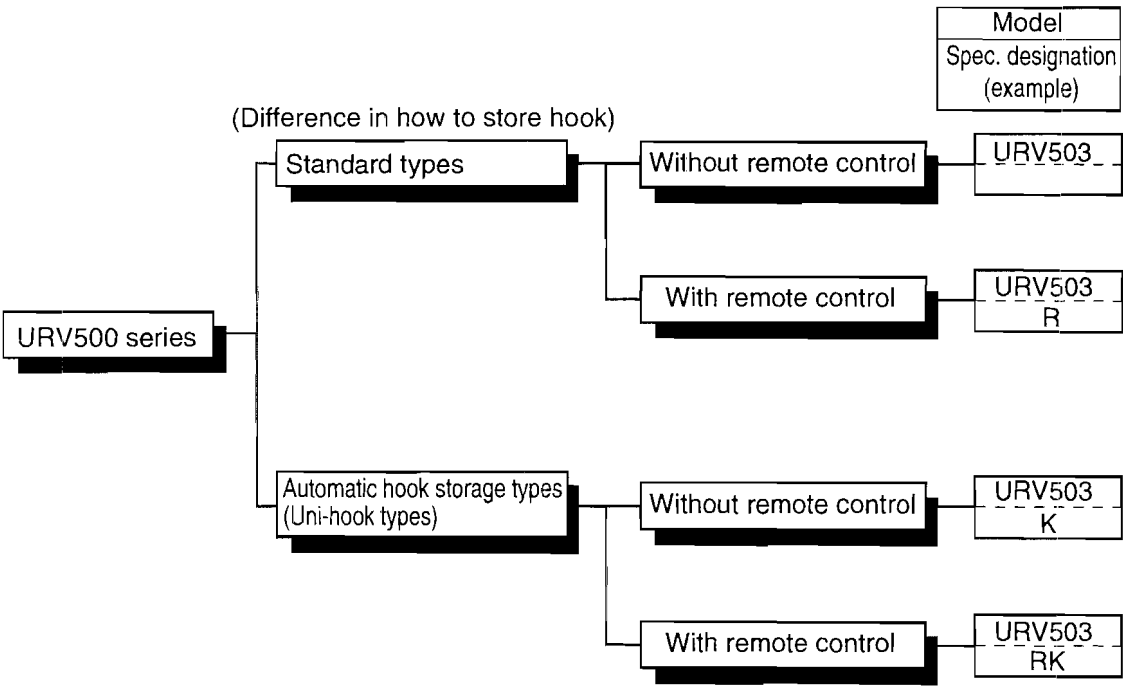
Difference in operation due to crane specifications is separately illustrated in the manual for each specification.

Refer to separate "Radio remote control instruction manual" or "Cable remote control instruction manual" for operation and maintenance of the cable or the radio remote control.

### 1. Designation of specification

Crane specifications covered in this manual are divided broadly into two categories according to how to store hook.

And each specification is sub-divided into two according to operation with or without the cable or the radio remote control.



### 2. Designation of model

URV500 series of crane model is to be designated according to the number of sections of telescoping boom.

(Model)	(Number of boom-sections)
URV503	3
URV504	4
URV505	5
URV506	6

# 1. FOR SAFETY OPERATION

## Observe all the safety regulations !



★ Read preventive measures against danger and cautions in this manual for proper understanding.

★ Most accidents of crane occur due to operation, maintenance, and inspection which have failed in observing basic safety regulations.

### 1 Request to customers

◆ Never fail to observe **⚠ WARNING** and **⚠ CAUTION** described in the manual as they are of great importance in safety and operation.

**⚠ WARNING** . Failure to observe this may invite an accident resulting in injury or death.

**⚠ CAUTION** . Failure to observe this may cause damage to the crane and the vehicle.

- ◆ Store the instruction manual where it is easily accessible to read it over and over again.
- ◆ Failure to observe the right operation and maintenance/inspection as illustrated in this manual may cause trouble in the crane and may invite an accident, and this will not only shorten its service life but will impair safety in the crane operation.  
Please remember, in such cases, that no warranty will be given even if the crane is within warranty period.
- ◆ In order to prevent injury or death to crane operators and to those who stand close to crane operating area due to operational mistake, caution plates are stuck on the crane.  
Read them carefully.
- ◆ Do not alter the crane.
  - ★ If you want to make an alteration, contact with UNIC sales agent or authorized service shop.
  - ★ UNIC does not bear any responsibility for troubles and accidents due to un-authorized alteration.





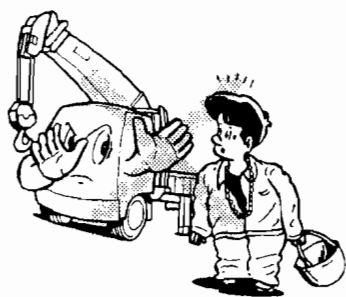
## 2. SAFETY PRECAUTIONS ON CRANE OPERATION

### **! WARNING**

★ Observe the cautions for securing safety.

Failure to observe the cautions may cause trouble or serious accident.

#### *Before operation*



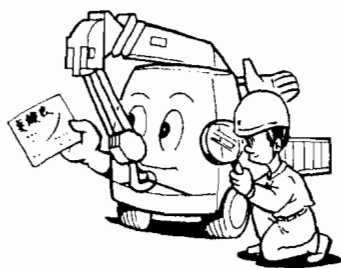
**1** Dress neatly and wear protectors such as helmet, safety shoes, and gloves without fail.

★ Do not wear baggy clothes and accessories which can be caught by control levers and fittings and oil-stained working clothes which can catch fire.



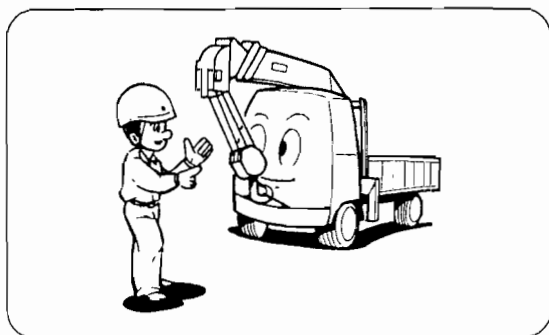
**2** Be sure to make inspection before operation and periodical inspection for slinging implements.

★ If a defective slinging implement is used, the fall of lifted cargo may result.



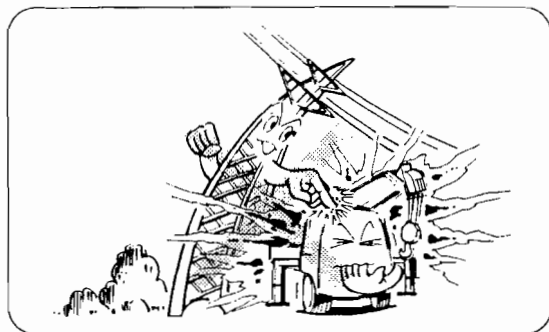
**3** Be sure to make inspection before operation and periodical self-inspection. Make repairs without delay if found as abnormal.

## SAFETY PRECAUTIONS ON CRANE OPERATION



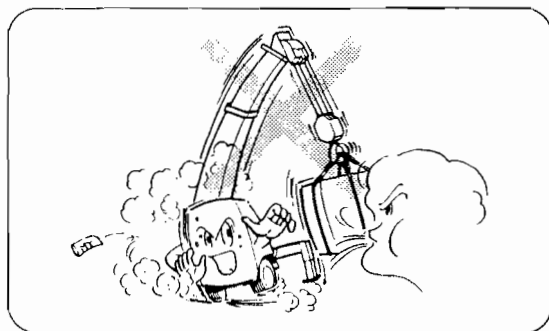
**4** Make sure that the safety device is always functioning properly.

★ Be sure to turn ON the "overwinding alarm switch" before starting crane operation.



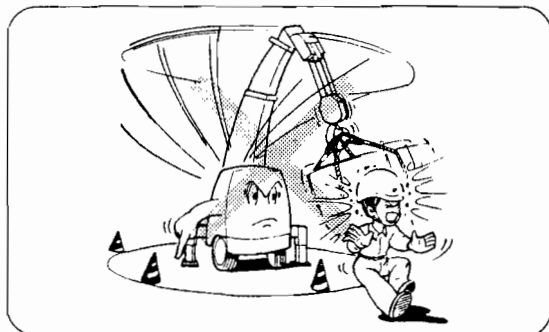
**5** Keep a safety distance away from the high-voltage line to avoid an electric shock.

★ The crane is not electrically insulated.



**6** When wind velocity exceeds 10m/sec. and/or when thundering, stop the crane operation with a lifted cargo lowered down on the ground.

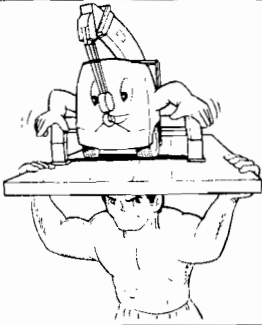
★ Crane operation while strong wind is blowing can cause the fall of a lifted cargo or overturn of the vehicle as the boom and/or a lifted cargo are hit by a gust wind.



**7** Pay attention that anyone except persons concerned will not enter within a working radius of the crane.

★ Take good care to carry out safety operation by keeping a close watch around the working area.

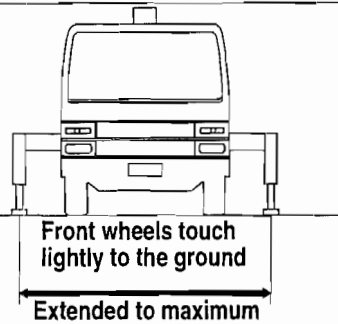
## SAFETY PRECAUTIONS ON CRANE OPERATION



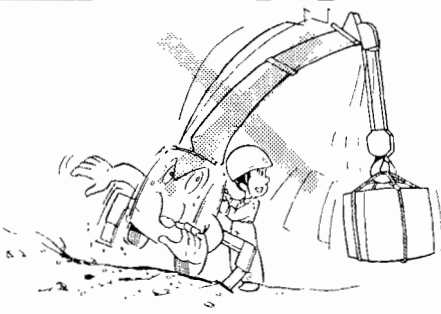
**8** Make sure that the ground on which the outriggers are to be set up is solid and firm.

★ When setting up the outriggers on a unlevelled ground or on a slope, be sure to place a support (plank, steel plate etc.) under the outrigger foot plates to keep the vehicle level.

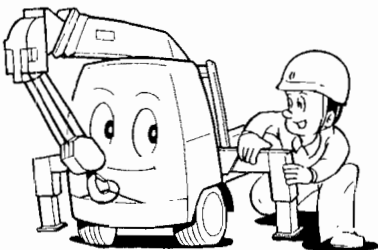
In addition, when the crane is to be operated on a soft ground, take the same measures to prevent the outrigger foot flanges from sinking into the ground when a cargo is lifted up.



**9** When setting up the outriggers, prevent the front wheels of vehicle from being raised away from the ground to level the vehicle.



**10** Crane operation with the vehicle kept leaning makes the vehicle unstable when a cargo is lifted up. This may cause vertical members of outrigger to break or the crane to be overturned.

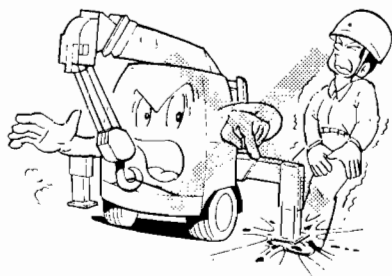


**11** In normal operation of the crane, be sure to set up the outriggers level with the outriggers fully extended.

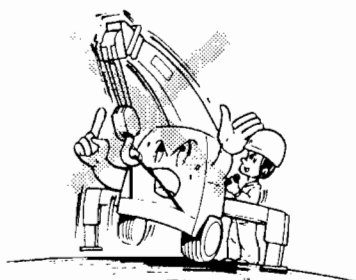
★ The stability of the vehicle varies with the extended width of the outriggers. Accordingly, be careful that the crane reduces in lifting capacity when the horizontal outriggers are in minimum or halfway state than when they are in maximum extended state.

## SAFETY PRECAUTIONS ON CRANE OPERATION

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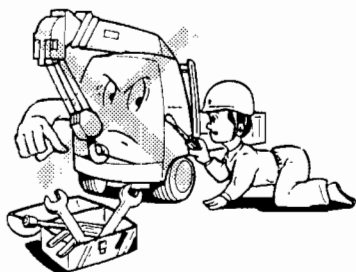
**12** Do not put your foot under outrigger foot plate while vertical members of outrigger are being extended.



**13** Lower the hook slowly when carrying out unhooking a cargo.

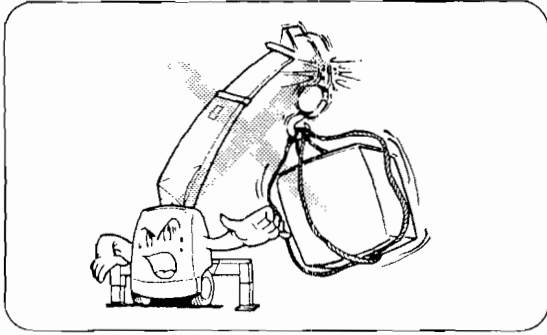
★ Do not mistake this for winding-up operation.

Winding-up the hook may cause damage to chassis frame, fixing rope, and retaining hardware.



**14** Do not adjust hydraulic equipment.

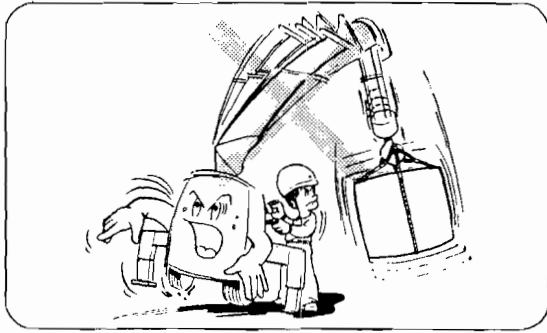
### During operation



**15** Pay attention that the hook will not be overwound. Be sure to turn ON the "overwinding alarm switch".

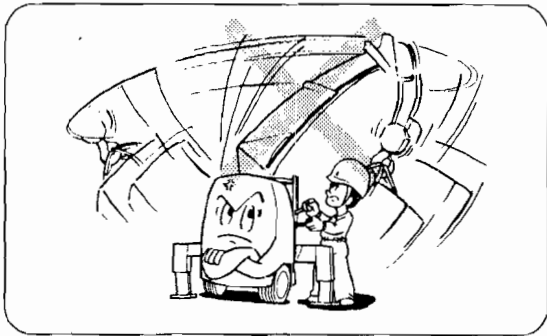
★ Remember that the hook is wound-up when boom is extending.

★ If the hook hits against the boom top due to overwinding of the hook, it may cause damage to wire rope and the sheaves at the boom top and may cause the fall of lifted



**16** Operate levers slowly and smoothly.

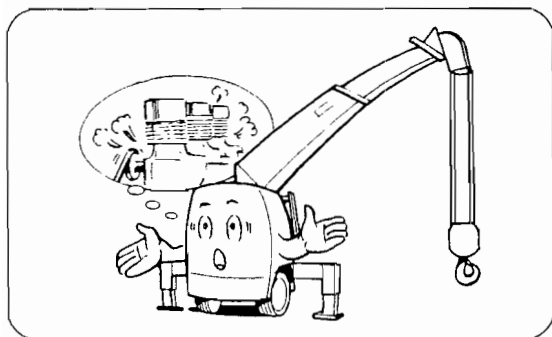
★ An abrupt lever operation with a cargo lifted gives an excessive shock to the crane causing damage or overturn to the crane.



**17** Slew the crane at low speed.

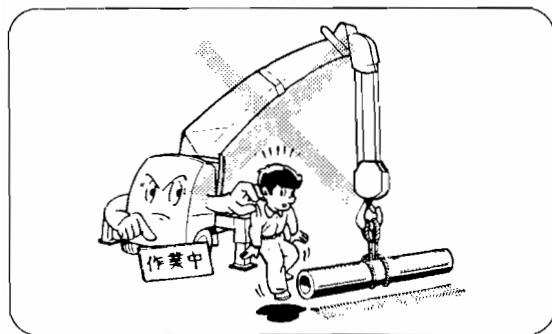
★ Swing of a lifted cargo increases working radius of the crane causing it to be overloaded.

## SAFETY PRECAUTIONS ON CRANE OPERATION



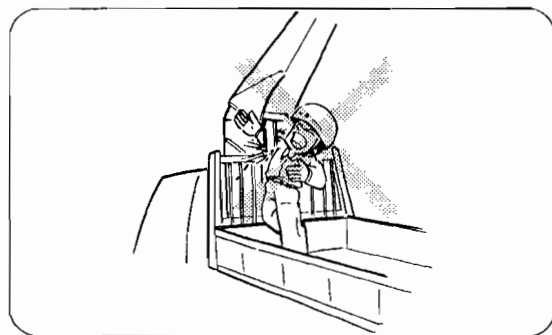
**18** If the engine speed is slow when operating the crane, increase the speed a little bit.

★ Crane operation with the engine running at low speed may cause to swing a cargo hoisted due to engine pulsation. This is not a malfunction but impairs smooth control of the crane.

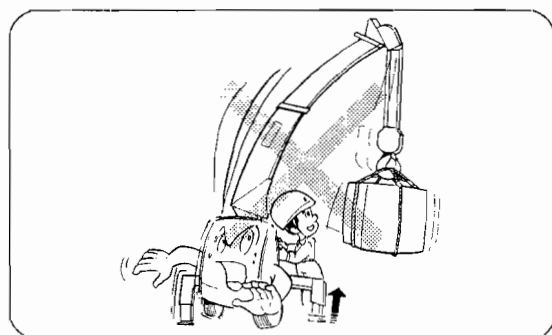


**19** Do not take anybody in the driver's seat during crane operation.

★ If a someone in the driver's seat might accidentally step on the accelerator pedal, working speed of crane is suddenly increased which may cause an accident.



**20** Do not enter between the boom and the vehicle body or do not put your hand or arm in the movable members.



**21** Never try to retract vertical members of outrigger when a cargo is being lifted or boom is extended.

★ It may cause the vehicle to overturn.

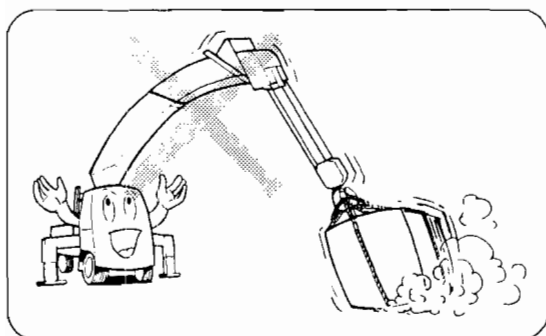
## SAFETY PRECAUTIONS ON CRANE OPERATION



### 22 Overloaded operation is strictly prohibited.

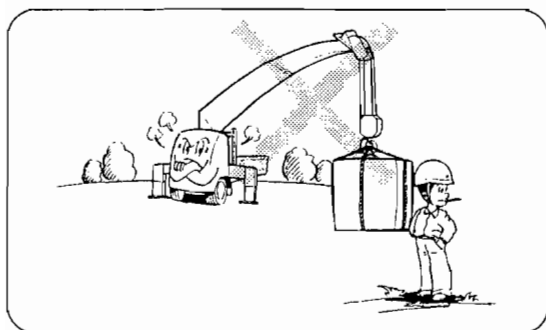
★ Crane operation with a load exceeding the rated load may cause damage to the crane or the vehicle to overturn.

★ Take special care not to overturn the vehicle when operating with a full load as specified in the "chart of rated load", especially in case where slewing it from the rear toward the side or from the side toward the rear because these slewing directions make the vehicle unstable.



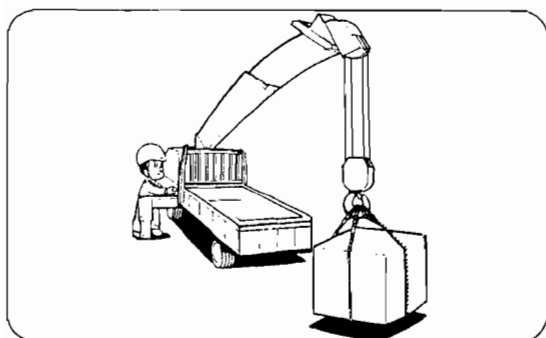
### 23 Pulling a cargo (sideways, straight, or obliquely) is strictly prohibited.

★ These operations may cause slewing members, booms, columns, and derrick cylinder to be damaged.



### 24 Do not leave from operating position with a cargo hoisted.

★ Lower a hoisted cargo onto the ground before leaving from the operation site.



### 25 When a cargo being lifted is detached from the ground, stop hoisting temporality to confirm safety.

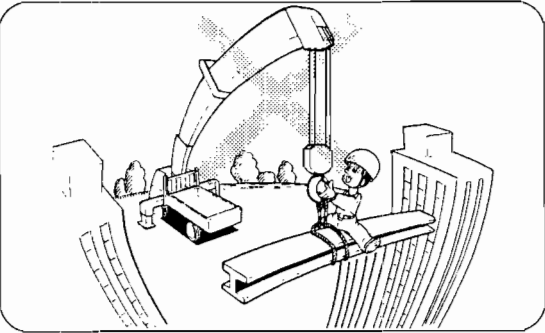
★ When a cargo being lifted is detached from the ground, stop hoisting temporality to make sure that cargo is kept horizontally, the vehicle maintains its stability, and the rope slinging up the cargo is positioned properly. Then start winding up the rope.

★ For lowering a cargo, stop lowering immediately before it touches the ground then lower it again gradually.

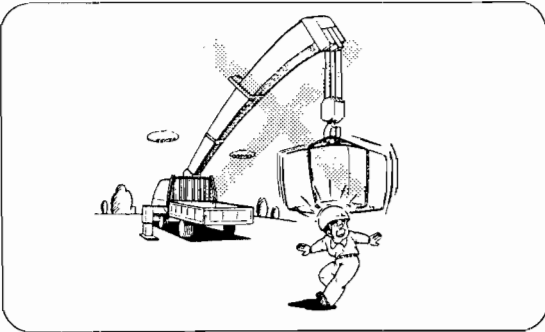


**SAFETY PRECAUTIONS ON CRANE OPERATION**

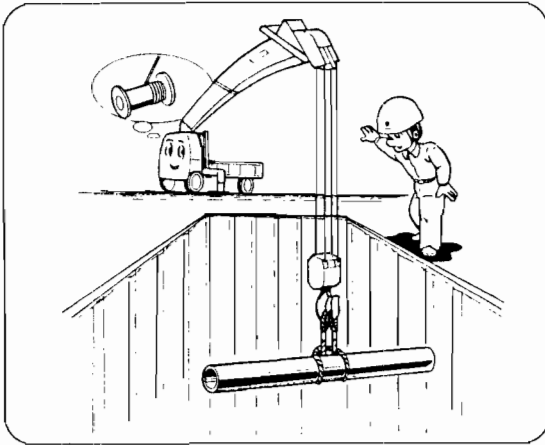
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**26** Do not get up on a cargo being hoisted.  
★ This may cause a fall from a cargo being hoisted.

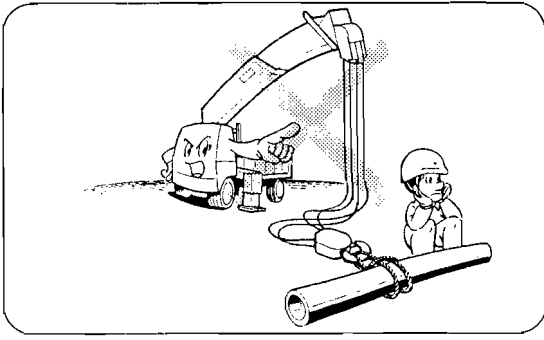


**27** Do not stay under a hoisted cargo.



**28** Pay extra attention to underground crane work in which the hook must be lowered longer than the ground work.  
★ When paying out the wire rope, be sure that more than 3 turns of wire rope are always left on the drum.

## SAFETY PRECAUTIONS ON CRANE OPERATION

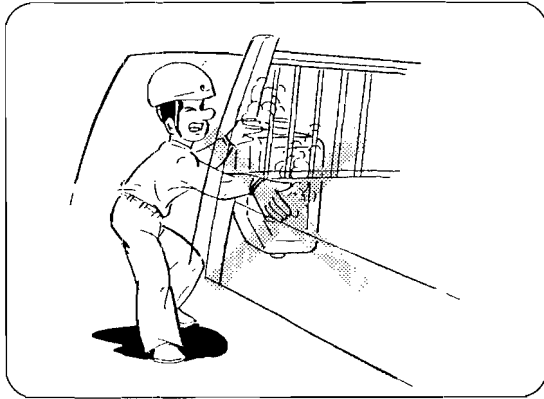


**29** Pay attention that wire ropes will not be payed out unnecessarily to prevent the rope from being wound irregularly around the drum.

★ Operations, such as paying out wire ropes with a cargo placed on the ground, retraction and/or derricking down of boom, loosen the ropes causing them irregular winding which results in remarkable shortening service life of the rope.

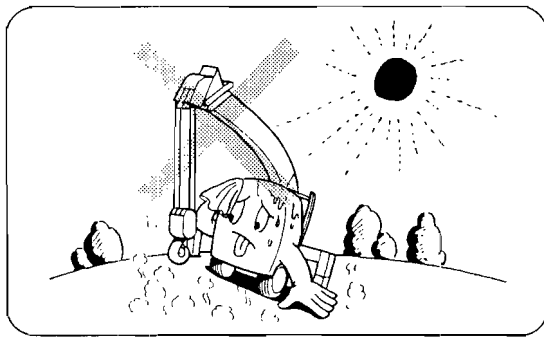
★ Wind the first layer of rope firmly and regularly around the drum.

★ Correct kinks of wire rope with a mallet immediately.



**30** Do not make an careless contact with the hydraulic tank.

★ Since the hydraulic tank has been at a high temperature, it is likely that you may get burned if you touch the hydraulic tank carelessly.

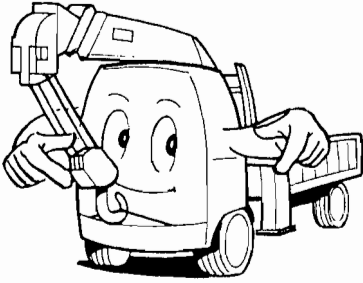


**31** Stop crane operation when temperature of hydraulic oil exceeds 80°C.

★ Oil temperature is apt to rise easily if repeated operation of winding up and down the hook, especially in a high lift, is required.

★ Higher temperature of hydraulic oil damages high-pressure hoses and gaskets being employed to cause the oil to spout out so that a scald may result.

### After operation

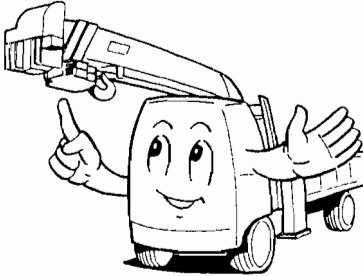


**32** Make sure that booms, outriggers, and the hook are stored and securely fixed before traveling the vehicle.

★ Before traveling the vehicle, be sure to fully retract and store the outriggers and check that blue mark on the extension lever is fully visible and any of outrigger inner boxes is not protruded.

★ Be sure to fasten the outriggers with lock levers.

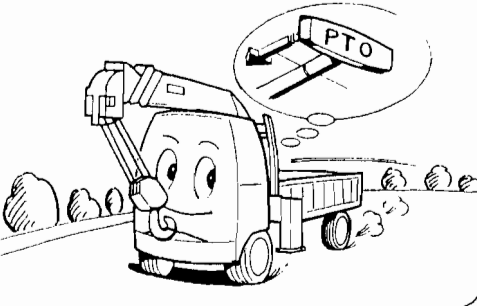
★ Traveling the vehicle with incomplete storage of or fastening of the boom, the outriggers and the hook allows them to loosen or to swing which may cause accidents such as damage to each crane member or bumping into vehicles running in the opposite direction.



**33** Be sure to turn off P.T.O. before traveling the vehicle.

★ Traveling the vehicle without P.T.O. turned off allows the hydraulic pump to keep running so that damage to the hydraulic pump may result.

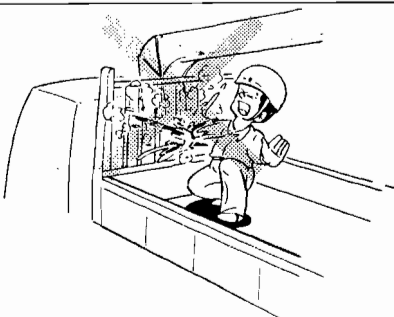
★ For a crane with automatic hook storing mechanism, the automatic locking against slewing fails to function causing booms to swing.



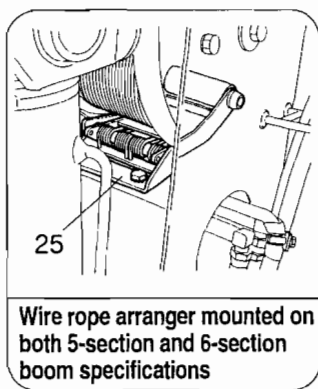
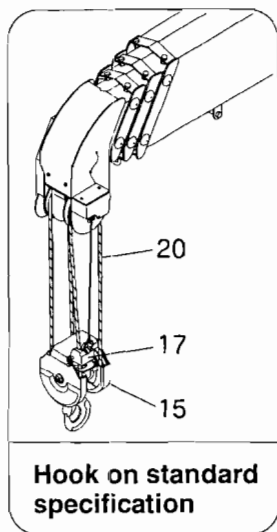
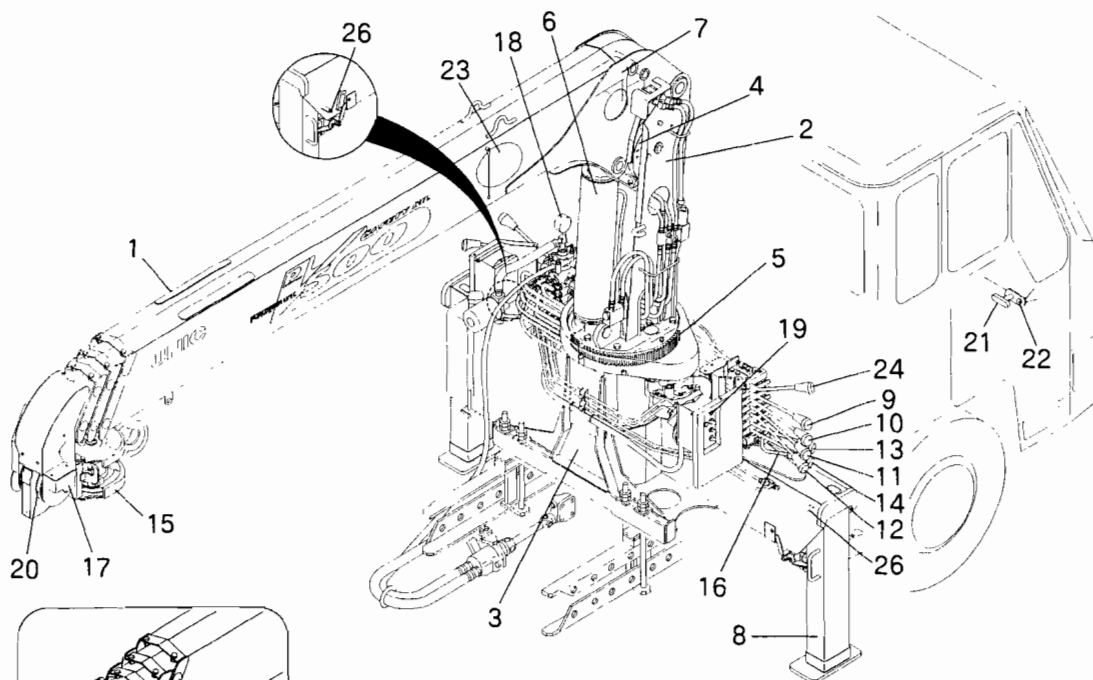
**34** Do not carry out maintenance check while temperature of both hydraulic and gear oils is high.

★ Temperature of both hydraulic and gear oils is high immediately after crane operation so that accumulated high pressure still remains.

Removing filling cap, draining oil, or replacing oil filter while oil temperature is high allows hydraulic and/or gear oil to spout out and a scald may result.



### 3. DESCRIPTION OF MAJOR EQUIPMENT



## ! CAUTION

★ The illustration shows the crane on 4-section boom and Uni-hook type.

Therefore, the illustration is somewhat different according to crane specifications such as of the number of boom section, of standard, and of the cable or the radio remote control.

★ The illustration shows a behind-cabin mounting type.

Mounting position of the crane may differ according to vehicles to be mounted.

★ The illustration does not imply that the vehicle has been prepared to drive on the road.

## **DESCRIPTION OF MAJOR EQUIPMENT**

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### **1. Boom**

It extends and retracts by hydraulic cylinder and the hook is mounted at its top.

### **2. Column**

This is a vertical member of the crane in which boom, winch, and derrick cylinder are installed.

The column can be turned by slewing device.

### **3. Base**

This is fixed on the vehicle to support the column and outriggers.

### **4. Hoist winch**

This is a device which rotates wire drum by hydraulic motor to hoist up and down a cargo via wire rope.

### **5. Slewing device**

This turns the column by hydraulic motor.

### **6. Derrick cylinder**

This raises and lower the boom.

### **7. Telescoping cylinder**

This extends and retracts the boom.

### **8. Outrigger**

This supports the vehicle to maintain its stability while crane is under operation.

### **9. Boom derricking lever**

This controls the derrick cylinder to change the boom angle.

### **10. Winch hoisting/lowering lever**

This controls hydraulic motor to rotate the winch drum allowing the hook to lift up and down.

### **11. Boom telescoping lever**

This controls cylinder in the boom to extend and retract the boom.

### **12. Slewing lever**

This controls the slewing device to turn the column allowing the boom to turn clockwise or counterclockwise.

### **13.14. Outrigger control lever**

This vertically extends and retracts either side of outrigger individually.

### **15. Hook**

### **16. Accelerator lever**

This adjusts engine speed as necessary.

### **17. Overwinding alarm**

**(Equipped on standard type)**

When the hook comes close to the boom top, this makes an alarm to warn that the wire rope is overwound.

### **17. Overwinding stop**

**(Equipped on Uni-hook type)**

When the hook comes close to the boom top, this stops function of the crane to prevent the wire rope from being overwound.

### **18. Load meter**

This reads weight of a cargo being hoisted.

### **19. Warning horn**

Depression of warning switch sounds the vehicle horn for warning.

This is to warn co-workers and others in the operation site.

### **20. Wire rope**

### **21. P.T.O. lever**

This transmits engine power to hydraulic pump.

### **22. P.T.O. indicator**

The lamp lights when the P.T.O. lever is pulled to its extreme.

**23. Load indicator**

This reads the rated load value corresponding to extend length of the boom and its angle.

**24. Hook storing lever**

**(Equipped on Uni-hook type)**

This is to store the hook under the boom.

**25. Wire rope arranger**

**(Mounted on 5-section and 6-section boom type)**

**(Optional for 3-section and 4-section boom type)**

This prevents wire rope wound around the winch drum from slackening.

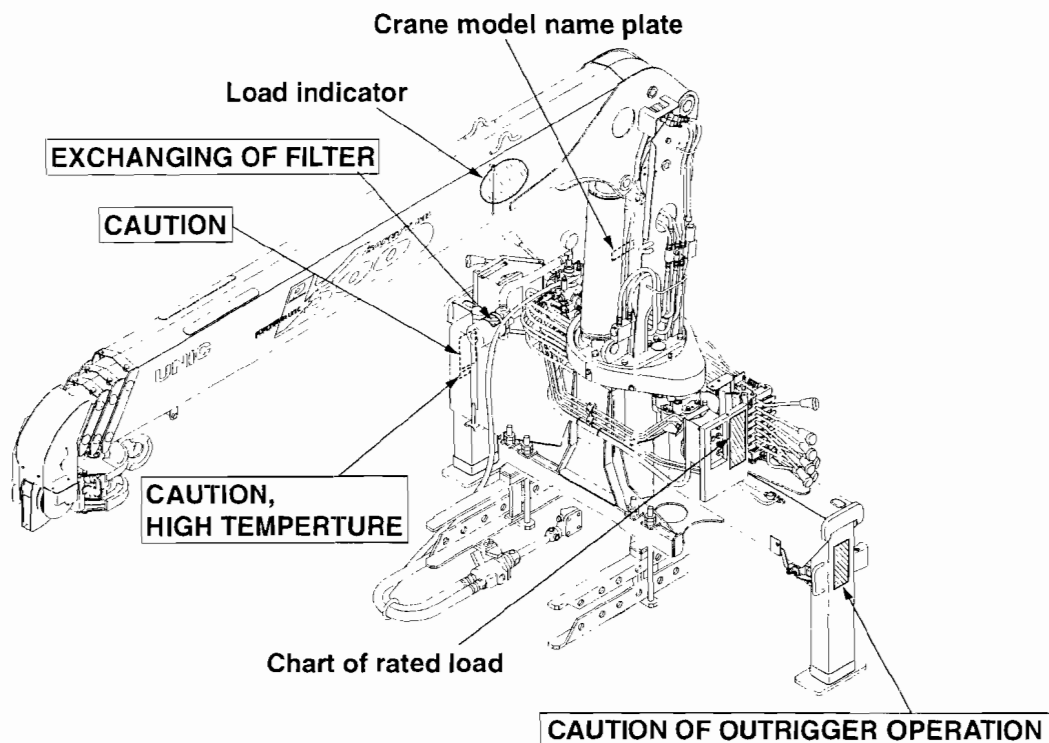
**26. Level**

A device to find a degree of horizontality of crane mounting vehicle.

## 4. NAME PLATES

### 1 Description of name plates(Stickers)

The machine is provided with stickers indicating cautions(framed in box ☐ ) and specifications, in addition to stickers showing control levers, switches, and instructions for lubrication.



## 2 Caution plates in detail

### CAUTION

- ★ Always keep cleaning up the stickers so that they can be read clearly.
- ★ If any of the stickers comes off, stick it again or replace it with new one.
- ★ When ordering stickers, specify the part number shown at the bottom-right of the sticker concerned.

## Sticker [CAUTION]

### CAUTION

1. Peruse the OPERATING INSTRUCTION MANUAL before operating this crane.
  2. Fully extend all outriggers on solid, level surface leveling vehicle.
  3. RATED LOADS are based on the CRANE STRENGTH RATHER THAN STABILITY.
  4. Reduce rated loads in accordance with vehicle weight and loaded condition of truck, crane mounting position, wind, ground condition and operating speed.
  5. Deduct weights of hook, slings, and any accessories from rated loads.
  6. Ensure AMPLE SPACE BETWEEN BOOM TOP AND HOOK BLOCK when extending boom.
  7. Use the load meter ONLY WHEN HOISTING. Hoist under no-load condition and regulate engine speed with the pointer pointing to 0. After that hoist a load at the speed and read the scale.
- ※ NO WARRANTY CAN BE GIVEN ON OVERLOAD OPERATION.
- ※ ANY CLAIM DUE TO MIS-OPERATION WITHIN RATED LOADS SHALL NOT BE ACCEPTED.

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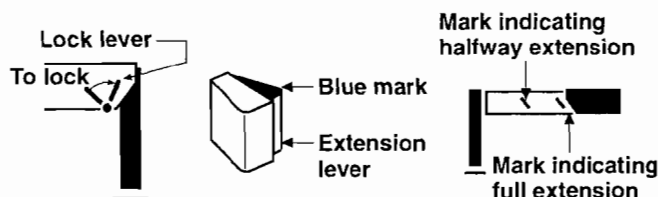


## Sticker[CAUTION OF OUTRIGGER OPERATION]



### CAUTION OF OUTRIGGER OPERATION

- In principle, operate crane with outriggers fully extended.
- Set up crane on a flat and solid ground by using a level.
- Be sure to release lock lever when operating crane.
- Pulling out of outriggers to the first stop means halfway extension.  
Hold the extension lever again to pull outriggers out to full extension.
- The first "↘" mark is to be visible on the inner box when outriggers are extended halfway.
- The second "↘" mark is to be visible on the inner box when outriggers are fully extended.
- Before traveling the carrier and/or after outriggers have been extended, be sure to check that blue mark on the extension lever is fully exposed.
- While traveling the carrier, check that each horizontal member of outriggers is retracted to its extreme for storage, horizontal members of outrigger do not come out, and lock lever is locked.



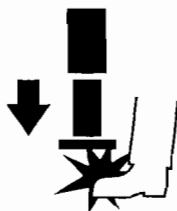
**Watch your finger**



**Watch your foot**



Watch your finger not to be caught in while horizontal members of outrigger are being stored.



Watch your foot while vertical members of outrigger are being extended.

091U86040-V344

## Sticker[EXCHANGING OF FILTER]

### **EXCHANGING OF FILTER**

1. Lubricate oil to the packing for filter and then screw in and tighten with all your strength.
2. Exchange after the initial 3 month operation, there after charge annually.

089181070

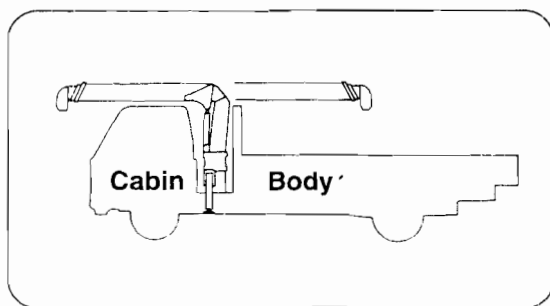
## Sticker[Caution, High temperature]



**Caution,  
High temperature**

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## 5. DEFINITION OF TERMS

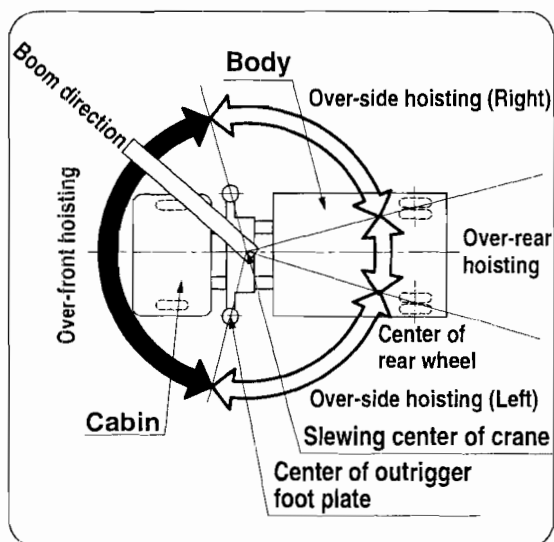


### 1 Behind-cabin mounting

Arrangement in which crane is mounted between the cabin and the body of vehicle.

#### ●Remarks

The instruction manual covers the performance of the behind-cabin mounting type. For middle position mounting in which crane is mounted at a middle position of the vehicle body, and for the rear mounting which crane is mounted at the rear of the vehicle body, the capacity of each crane is different from that covered in this manual.



### 2 Over-front hoisting

Crane operation within a range of cabin-side area created by drawing lines from the slewing center of crane to each center of both outrigger foot flanges as shown in the figure in the left.

### 3 Over-side hoisting

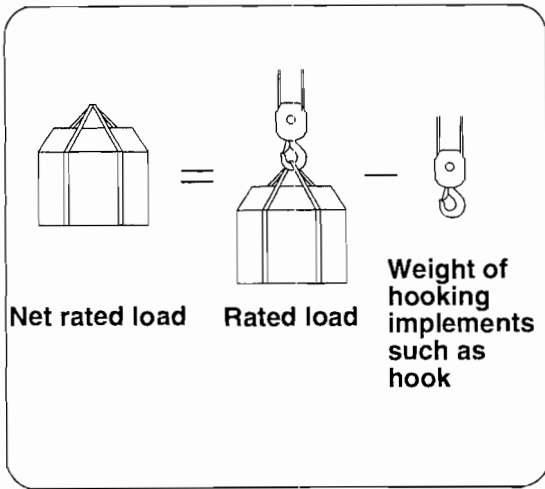
Crane operation within a range of rear-side area created by drawing lines from the slewing center of crane to each center of both rear wheels of vehicle as shown in the figure in the left.

Right : Refers to area on the right-hand side in the driving direction of vehicle.

Left : Refers to area on the left-hand side in the driving direction of vehicle.

### 4 Over-rear hoisting

Crane operation within a range of body-side area created by drawing lines from the slewing center of crane to each center of both rear wheels of vehicle as shown in the figure in the left.



## 5 Net rated load

Net load which can be lifted by hook determine on the basis of strength of crane.

## 6 Rated load

Maximum load including the hook and hooking implements which can be lifted according to boom angle and/or boom length determined on the basis of strength of crane.

## 7 Lifting capacity

This refers to maximum load of the rated load described section 6 above.

## 8 Working radius

This refers to horizontal distance from the slewing center to the center of hook.

## 9 Boom length

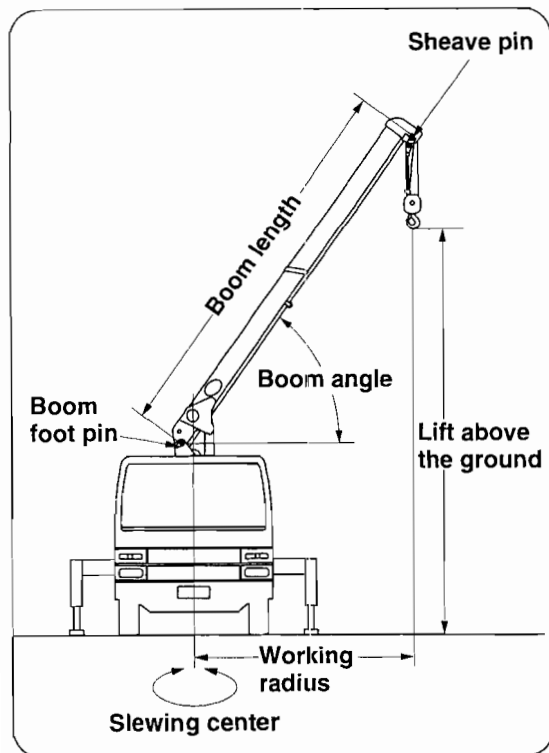
This refers to distance from the foot pin to the sheave pin in the boom.

## 10 Boom angle

This refers to an angle made by the boom line and the horizontal line.

## 11 Lift above the ground

This refers to vertical distance between bottom end of the hook to the ground with the hook wound up to touch the overwinding alarm detector.

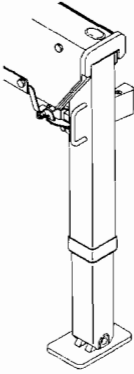


**12 Outrigger extension**

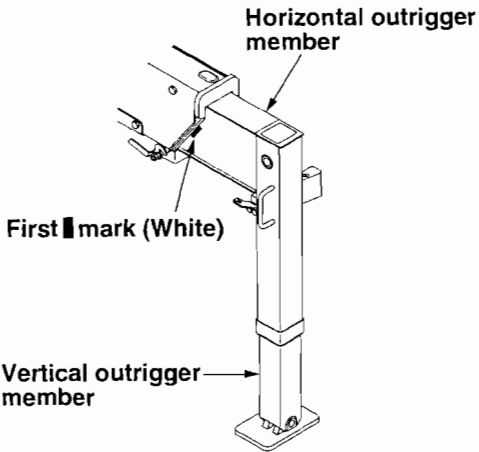
Outriggers allow the vehicle to keep stable during crane operation and they can be extended to three (3) positions, minimum, halfway, and maximum.

Outriggers consist of two (2) outrigger members, horizontal and vertical as illustrated in the figures.

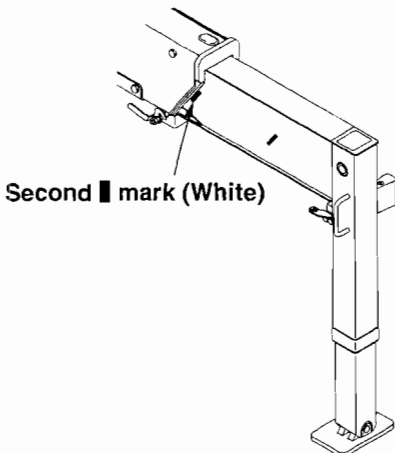
Crane is operated with the horizontal members of outrigger extracted as necessary and the vertical members lowered on the ground to support the vehicle.



**Extended to minimum**



**Extended to halfway**

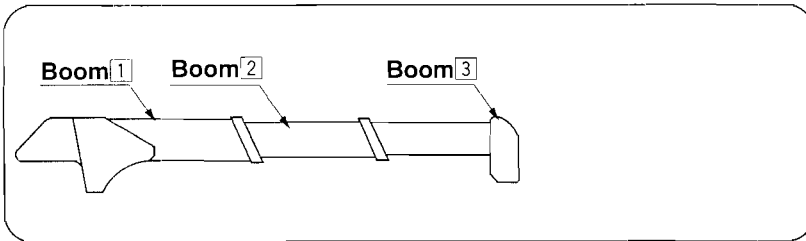


**Extended to maximum**

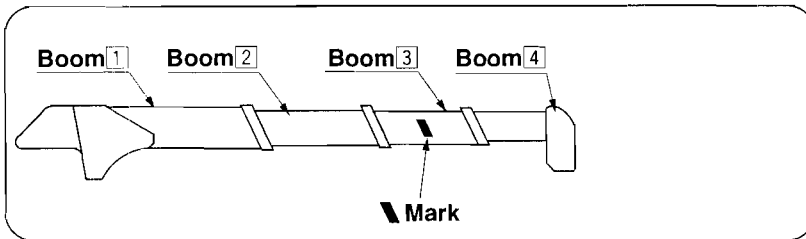
### 13 Booms employed

Designation of each boom is as illustrated in figures.

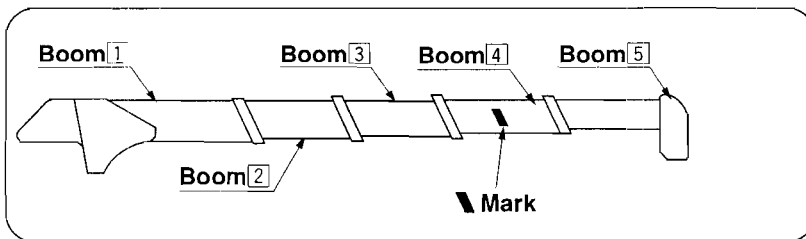
For simultaneous telescoping booms, \ marks are provided on the intermediate booms to indicate the crane capacity for each boom being extended to a certain length.



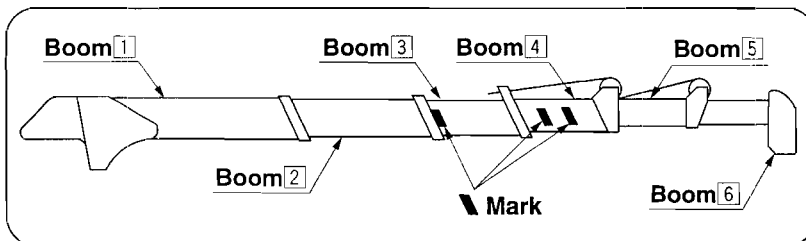
● 3-section boom



● 4-section boom



● 5-section boom



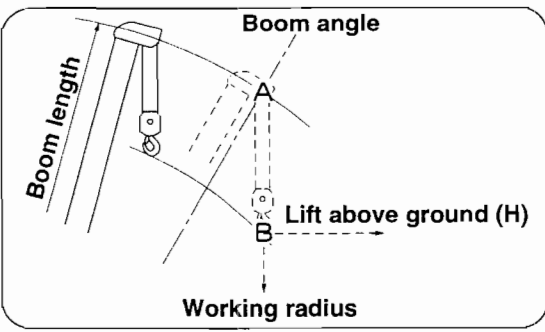
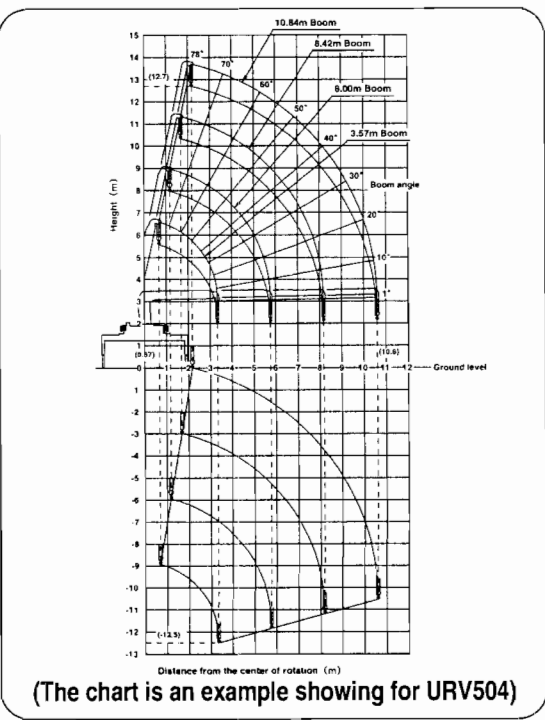
● 6-section boom

# 6. HOW TO REFER TO "WORKING RANGE CHART"

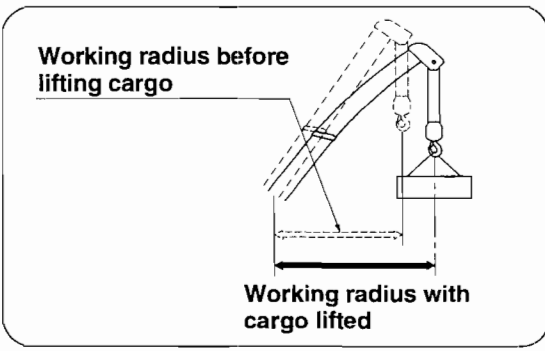
How to refer to the charts is illustrated as follows:

## 1 Working range chart

The chart shows the relation among boom length and working radius, boom angle, and lift above the ground.



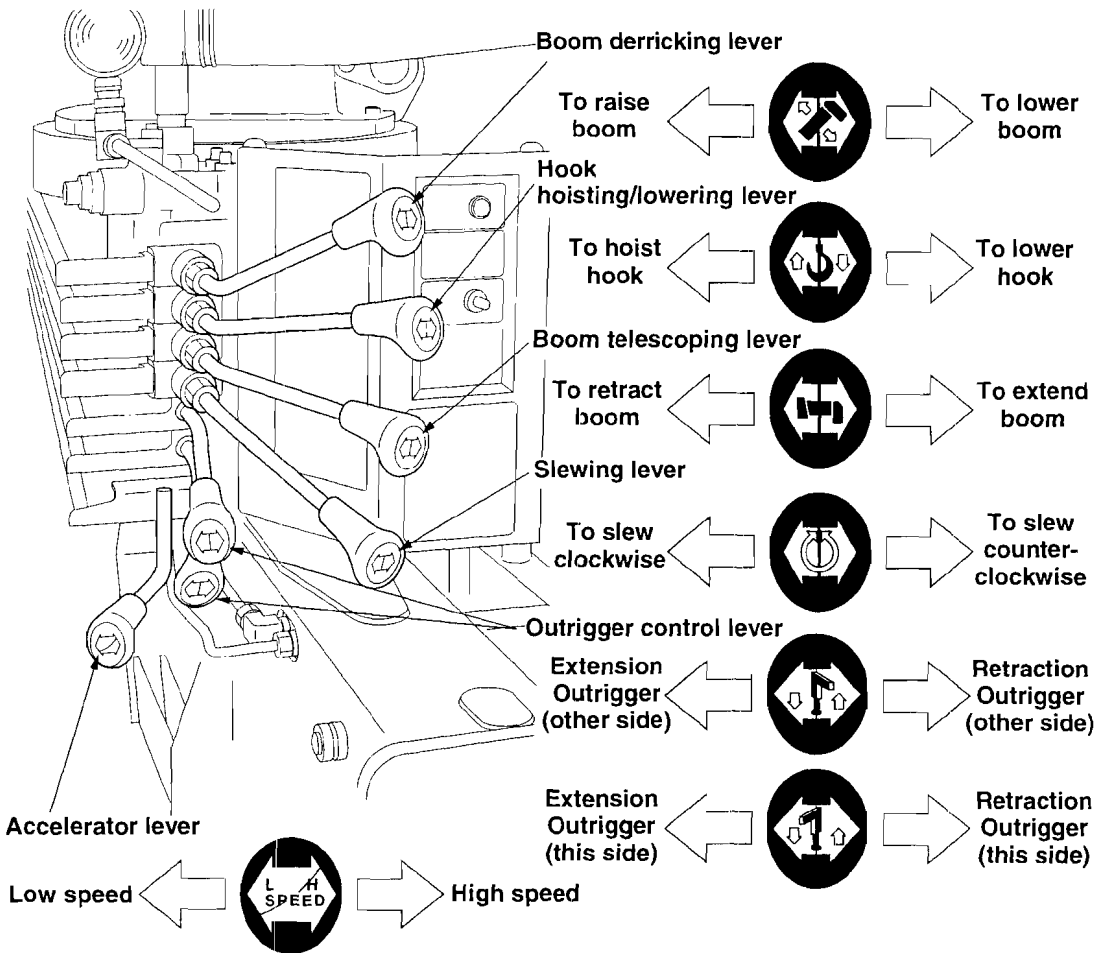
Although the point-A and the point-B follow the tracks along the same working radius, the point-A refers to the boom angle and the point-B the lift above the ground.



The working range chart does not incorporate any shift due to deflection of boom. Keep in mind that the actual working radius is somewhat extended due to boom deflection when a cargo is being hoisted.

# 7. DESCRIPTION OF EACH CONTROL DEVICE

## 1 Designation of control levers and their arrangements

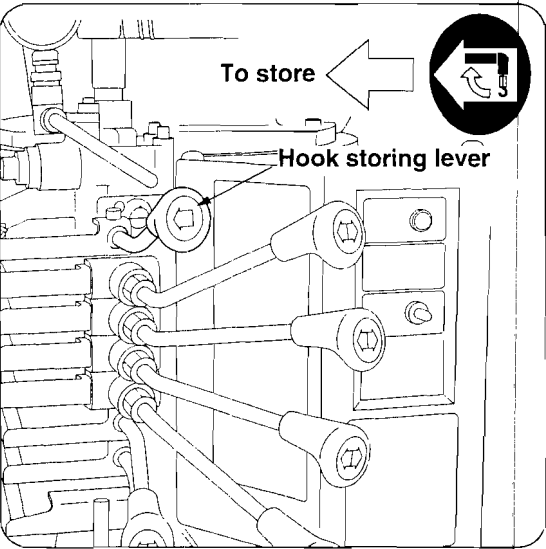


(Figure shows left-hand side view)



**DESCRIPTION OF EACH CONTROL DEVICE**

**◆ Hook storage lever(for Uni-hook type)**



## 2 Automatic accelerator mechanism

The machine is equipped with an automatic accelerator mechanism for levers of boom derricking, hook winding up/down, boom telescoping, and slewing.

Operating speed of the crane can freely be changed from low to high by controlling each control lever.

### ◆ How to operate the automatic accelerator mechanism

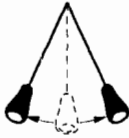
#### 1 Position of lever before operation

Each control lever is in the neutral position.



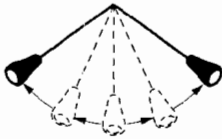
#### 2 For low-speed crane operation

When a control lever is shifted toward the desired operation, the crane starts functioning at a low speed.



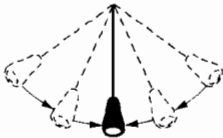
#### 3 For high-speed crane operation

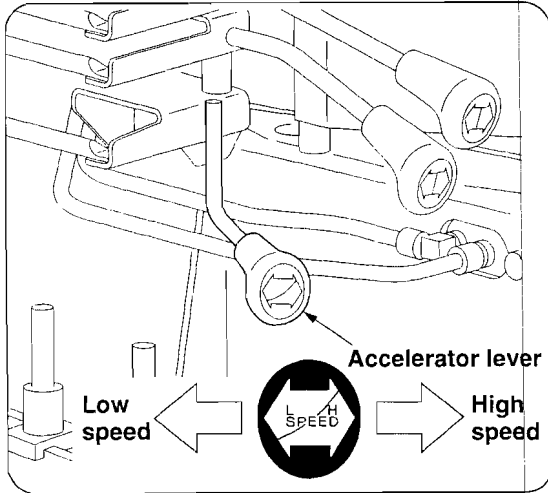
When the control lever is shifted further, the engine speed increases to allow the crane to operate at higher speed according to the movement of the lever as it is interlocked with the accelerator.



#### 4 For stopping crane operation

Release of the control lever allow the lever to return to the neutral position automatically to stop the crane operation.





### 3 Accelerator lever

#### ◆ Function of accelerator lever

#### 1 Operating speed control

Accelerator lever can control operating speed of both the crane and the outriggers.

#### 2 Adjustment of idling speed

In some engines, it may vibrate because idling speed of the engines too low.

In such cases, pull the accelerator lever slightly toward higher speed position to adjust the idling speed before starting operation.

### ⚠ CAUTION

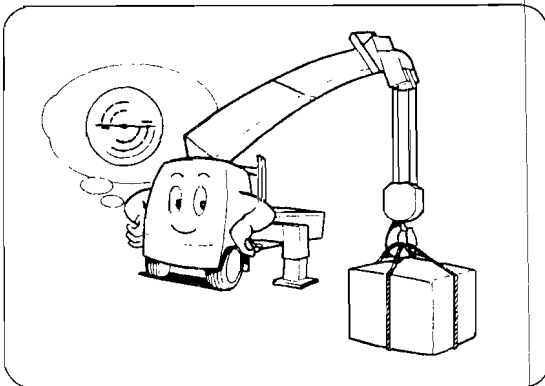
★ When starting and stopping each crane function, be sure to return accelerator lever to low speed position to avoid abrupt starts and stops.

★ Return the accelerator lever to low speed position before operating it by using automatic accelerator mechanism.

★ Be sure to return the accelerator lever to low speed position where it come to a stop after crane operation.

#### ● Remarks

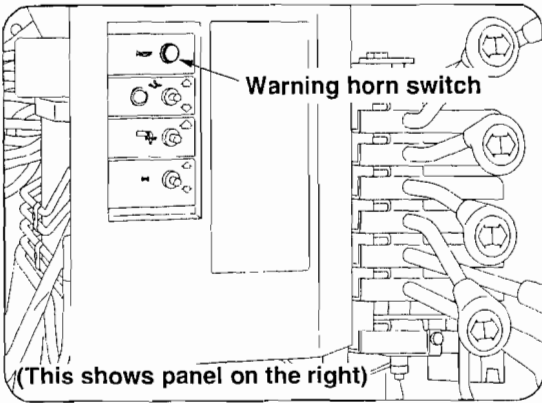
It is convenient that the accelerator lever is used when making an adjustment for load meter calibration or when warming-up the engine in wintertime.

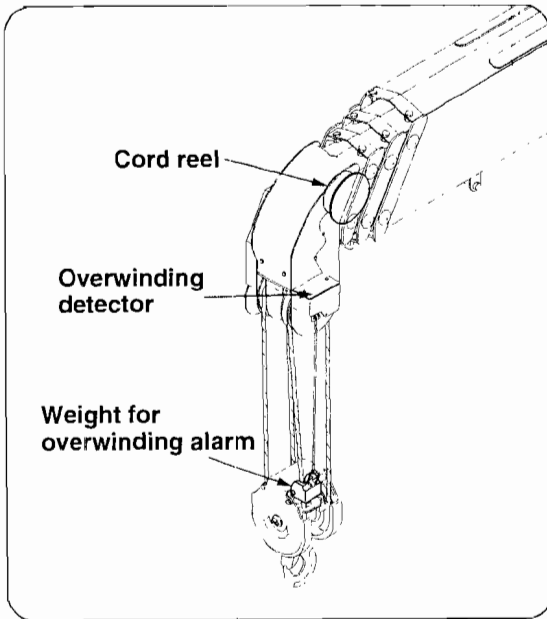


#### **4 Warning horn**

Depress either of warning horn switches located on both sides of control panel to give warning sound to those who have entered within the slewing range during crane operation, or to co-workers in charge of slinging work standing close to the cargo or in a course through which the cargo is to be lifted up before starting the crane operation.

Vehicle horn gives warning sound while the switch is depressed.

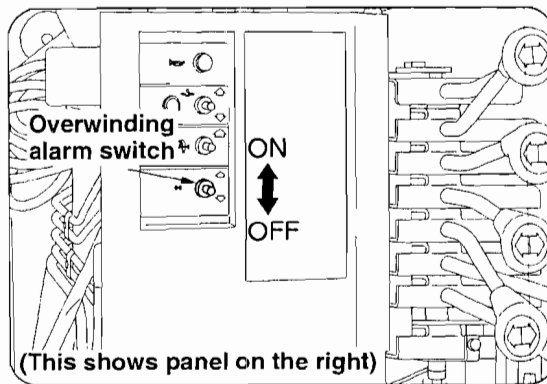




### 5 Overwinding alarm

#### ◆1.Function of overwinding alarm

The device automatically makes an alarm sound to warn that the wire rope is overwound when the hook comes close to the boom top.



#### ◆2.Procedures for operation

**1** Turn ON the overwinding alarm switch before starting the crane operation.

If the alarm sounds while the hook is being hoisted or the boom is being extended, stop the crane operation immediately and lower the hook or retract the boom.

**2** Turn the switch OFF after completion of the crane work.

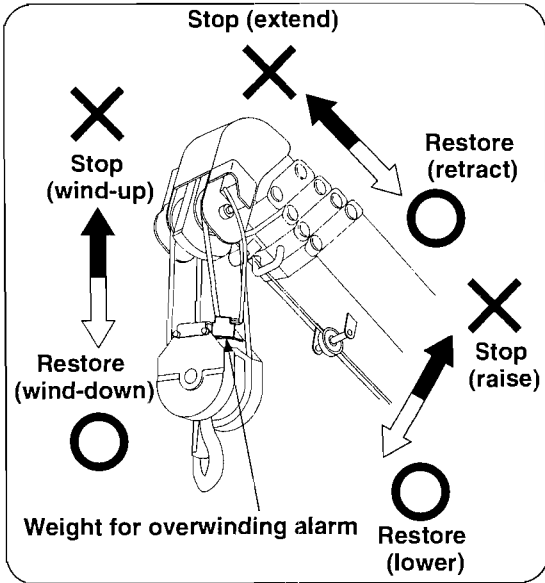
## ! CAUTION

★ The overwinding alarm will not function even if the hook is under overwound condition with the overwinding alarm switch turned OFF. Be sure to turn the switch ON before starting crane work and check that the alarm sounds every time when the weight for overwinding alarm is lifted up.

★ Since the length of wire rope hanging the weight is specified by laws and regulations concerned, do not make it short at random.

★ The alarm will not sound if the wires(cords) connected to the overwinding detector at the boom top is broken. Pay attention to the wires(cords).

## 6 Automatic stop for overwinding (for Uni-hook type)



### ◆1 Functions of automatic stop for overwinding

If hook comes close to the boom top and it hits against the weight for overwinding alarm, the buzzer sounds and winding-up of hook, extension and raising-up of boom automatically stop functioning.

When the alarm is activated, lower the hook, retract or lower the boom until the buzzer stops sounding.

This recovers the automatic stop being activated into normal.

#### ● Remarks

Since viscosity of hydraulic oil increases during winter or in low temperature environment, functions of winding-up of hook, or boom extension may not make a perfect stop but it allows to make a slight movement even if the hook hits against the weight when the oil is cold.

Since this is not a disorder, warm-up the engine. The automatic stop recovers functioning when temperature of hydraulic oil rises to a certain level.

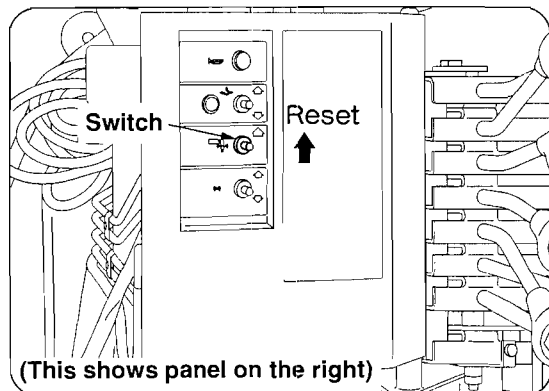
### ◆2 How to reset when automatic stop for overwinding is found abnormal

If crane operation can not be carried out due to malfunction of the automatic stop for overwinding alarm, reset the automatic stop and store the crane.

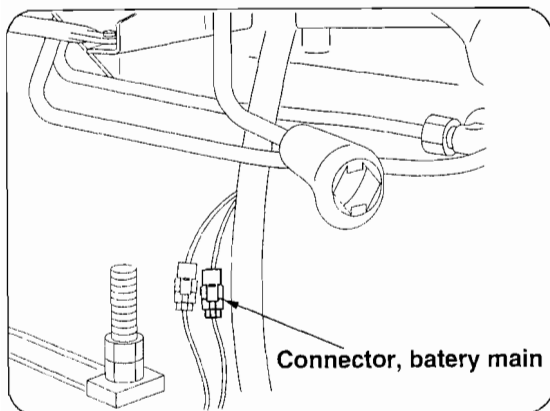
#### ● Step 1

Put the switch (for automatic stop for overwinding) located on the panel on the right to "Reset" to reset the automatic stop.

Then wind-up the hook, extend the boom, or raise the boom by operating each control lever.



## DESCRIPTION OF EACH CONTROL DEVICE



### ● Step 2

If the crane failed to be operated by following "Step 1", operate the crane as follows:

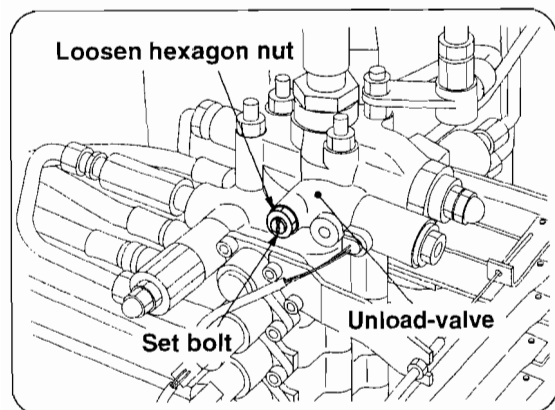
■ Separate mating of the connector located under the control valve.

This can operate the crane to store the crane by operating control lever.



## CAUTION

★ Do not detach the connector when using cranes with the super ML radio controller. Refer to separate instruction manual on the "radio controller".



### ● Step 3

If the crane can not be operated by following the **step 2** above, operate the crane by following the steps illustrated below.

■ Loosen the hexagon nut on the unload-valve attached to the upper part of control valve and tighten the locked set bolt until it comes to a stop to make the crane operational.

Store the crane by operating each control lever.



## CAUTION

★ Be sure to repair the crane at an authorized UNIC service shop after the crane has been stored as the measures illustrated above are temporary.

### 7 Load indicator (with angle indicator)

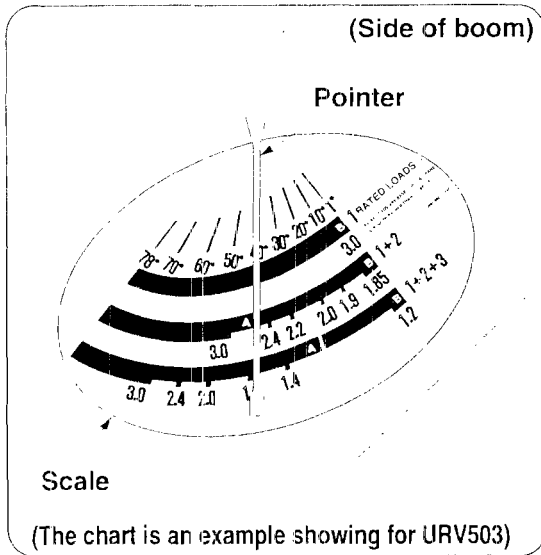
The indicator reads the rated load corresponding to extended length of the boom and its angle to show the maximum cargo weight which can be hoisted at this point.

#### ◆ 1. Rated load

The value to which the pointer on the scale is the rated load in each combination of boom-sections being extended.

#### ◆ 2. Boom angle

Pointer deflection on the angle scale reads the boom angle.



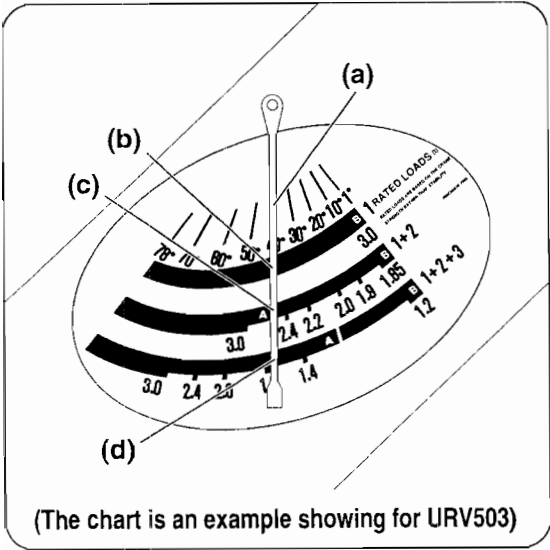
## ! CAUTION

★ The load indicator reads the rated load that is based on the crane strength rather than stability.

★ Graduations on the load indicator scale are different according to the number of boom-sections and vehicles being loaded.

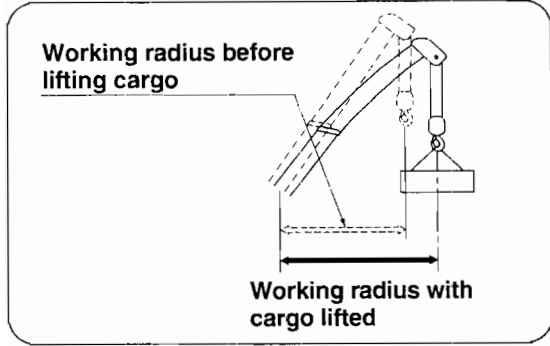


## DESCRIPTION OF EACH CONTROL DEVICE



[Example] How to read each value when the pointer deflects as shown in the figure.

- (1) Boom angle reads  $41^\circ$  at point (a) on the boom angle scale.
- (2) Maximum load to be hoisted (rated load) reads:
  - For boom **1** (with all boom-sections retracted), 3.0t at point (b),
  - For boom **1+2** (with boom **2** extended), 2.5t at point (c), and
  - For boom **1+2+3** (with boom **3** extended), 1.8t at point (d).



## CAUTION

- ★ For securing safety, when a boom is extended to halfway, use the value with the boom concerned fully extended.
- When boom **2** is extended from boom **1**, take the value for boom **1+2** (2.5t in the example shown above).
- When boom **3** is extended from boom **2**, take the value for boom **1+2+3** (1.8t in the example shown above).
- ★ Since the working radius increases due to deflection of the boom when a cargo starts lifting up, set the boom angle so that the hook comes to somewhat inner side.

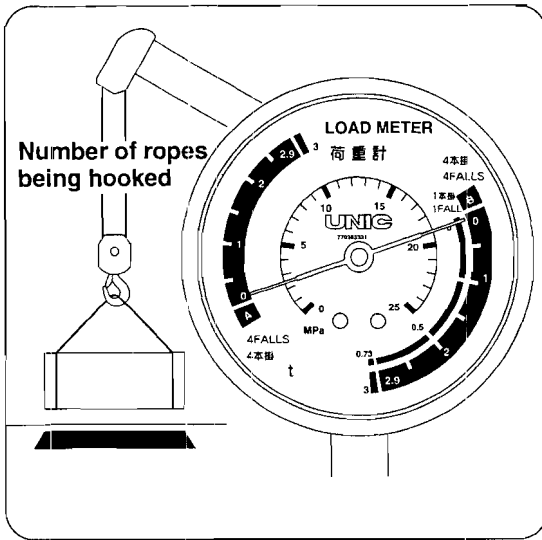
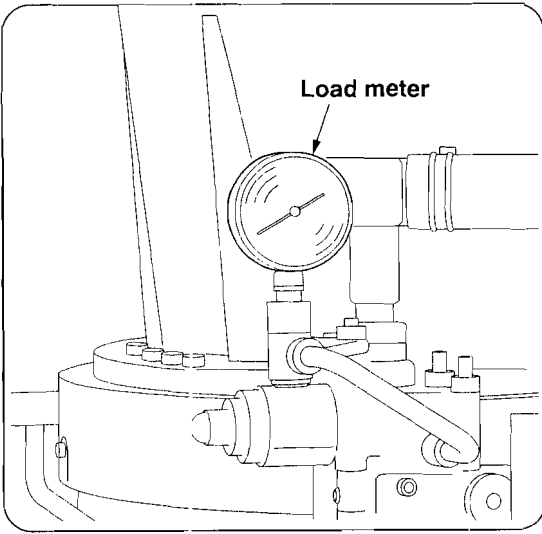
## 8 Load meter

The meter shows weight of a cargo being hoisted.

Read the scale corresponding to the wire-rope hooking system(number of wire ropes being hooked).

### ● Remarks

Since the load meter is designed to be rotated, rotate it to where the dial can easily be read from the operating position.



### ◆ Dial of the load meter has:

- Scale bands corresponding to A and B of the "load indicator" for 4-rope hooking system, and
- Scale band for single-rope hooking system.



## CAUTION

★ "Load meter" indicates the weight of a hoisted cargo only while the hook is being lifted up .

## DESCRIPTION OF EACH CONTROL DEVICE

◆ Follow the steps illustrated below when measuring the weight of hoisted cargo with the load meter.

Compare the reading on the load meter with the reading on the load indicator.

Load meter has two hands.

Read weight of a cargo where each hand indicates, i.e. the scale band [A] for red hand and the scale band [B] for white hand.

- ① Lower the engine speed.
- ② Adjust engine speed so that the needle points at 0 (zero) on the load meter scale while the hook is lifting up with no-load
- ③ As an example, let us take the case where a cargo is hoisted using 4-rope hooking system and extended boom configuration of  $1+2+3$  as shown in the figures; The load meter shows that the crane can lift up the load up to [1.7t] on the scale band [A] at the point (a) on the load indicator as shown in Fig.1.
- ④ Read the load meter for the point (b) on the scale band [A] while a cargo hooked is being lifted up to approximately 30cm. The meter shows [0.8t] as the actual weight of the cargo. This means that the crane can be operated with a margin of [0.9t] in this example.

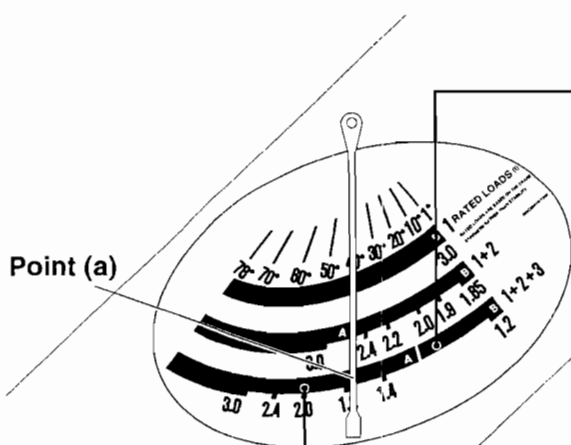
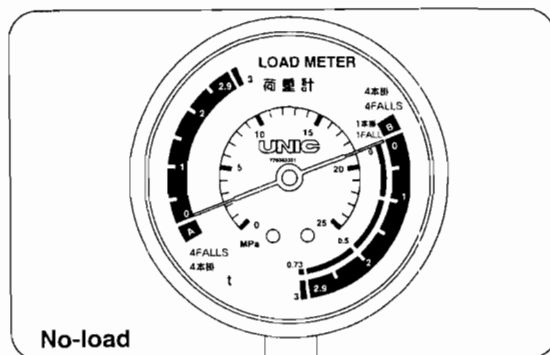
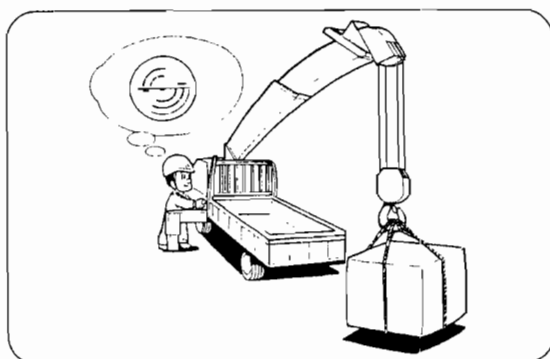


Fig. 1 Load indicator

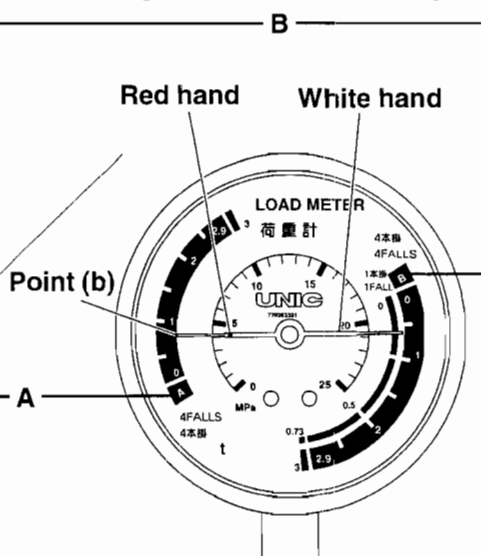
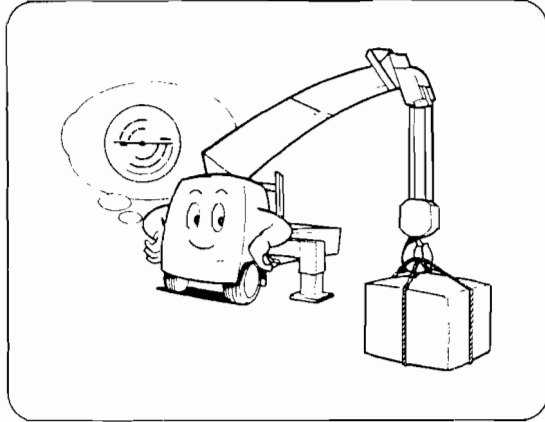


Fig. 2 Load meter

(The chart is an example showing for URV503)

### ◆ Check for safety operation

- ① If a crane is loaded so much that readings on the load meter exceeds the rated load, the crane may be damaged or overturned. In such case, move the vehicle toward the cargo to be hoisted to decrease the working radius then operate the crane again within the rated load.
- ② When the load meter reads less than the specified in chart of the rated load, the cargo can be lifted up safely.

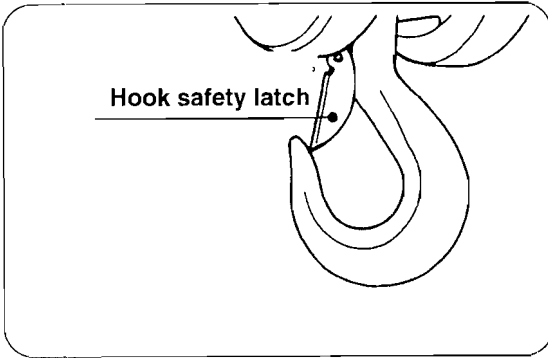


## DESCRIPTION OF EACH CONTROL DEVICE

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### **9** *Hook safety latch*

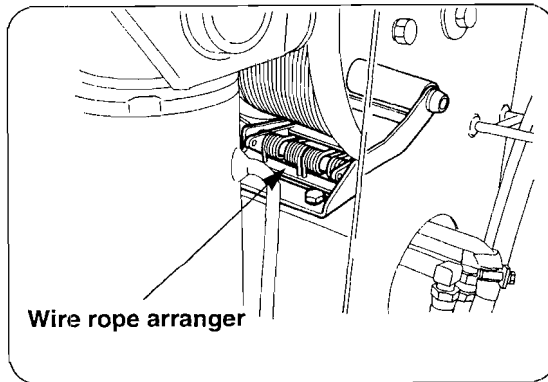
The mechanism is to prevent slinging wire ropes from being disengaged out of the hook.



### **10** *Wire rope arranger*

(Mounted on both 5-section and 6-section booms as standard)

The assembly is to keep wire rope wound around winch drum from slackening. This prevents wire rope wound around winch drum from slackening possibly be occurring when the hook is wound up and down in high-speed, made an abrupt stop, and lowered onto the ground.



## 8. HOW TO OPERATE THE CRANE

### 1 How to start hydraulic pump

#### ◆ Procedure for operation

#### 1 Confirm a condition of the ground where crane is to be set up.

Make sure that the ground on which the vehicle is to be parked to set up the crane is solid and firm.

#### 2 Secure crane-mounted-vehicle immovable.

- ① Pull the parking brake lever to allow the vehicle to check motion.
- ② Be sure to use a drag when operating the crane at slanted areas such as on a slope or on a road in a mountain.

#### 3 Confirm where each control lever is positioned.

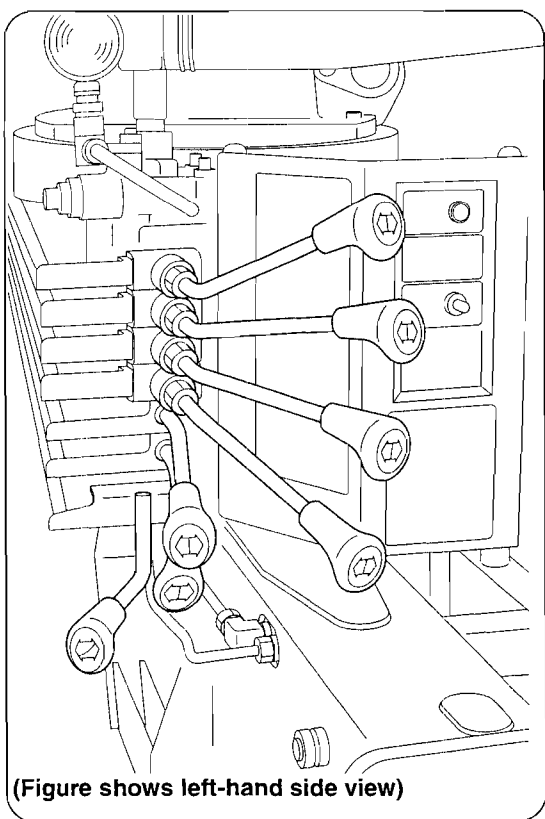
- ① Check that the accelerator lever in the crane is returned to low speed position.
- ② Check that each control lever is in its neutral position.

#### 4 Confirm position of gearshift lever.

Move the gearshift lever on the vehicle to its neutral position.

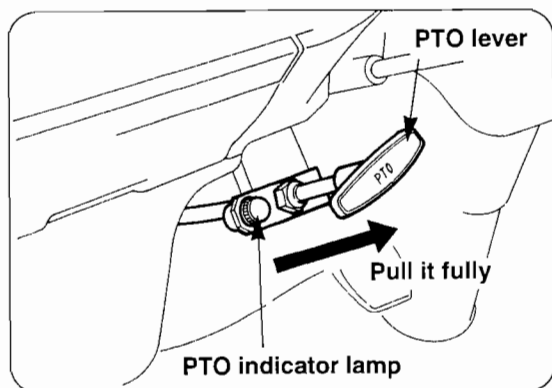
#### 5 Start engine.

Start the engine running.



(Figure shows left-hand side view)

## HOW TO OPERATE THE CRANE

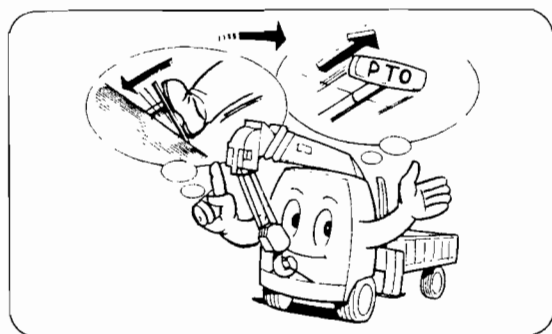


### 6 Pull the PTO lever.

- ① Depress the clutch pedal fully to disengage the clutch.
- ② Pull the PTO lever to its extreme.
- ③ Release the clutch pedal gradually.
- ④ Check that the PTO indicator lamp lights.

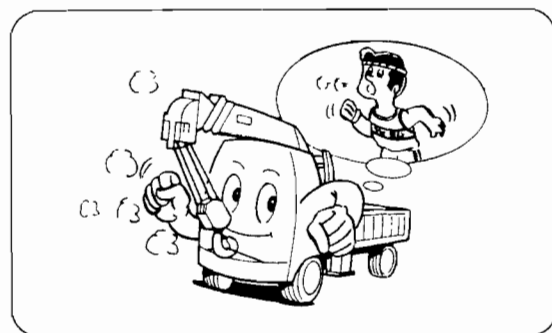
### CAUTION

★ The PTO fails to engage smoothly unless the clutch is completely disengaged.



### 7 Start hydraulic pump.

This starts the hydraulic pump running.



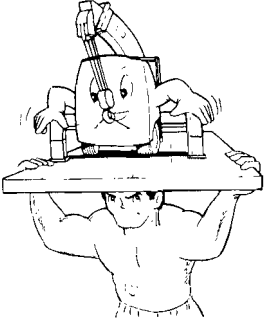
### CAUTION

★ In wintertime, try not to operate the crane immediately but run the hydraulic pump for a while to warm it up even if the crane is ready for operation.

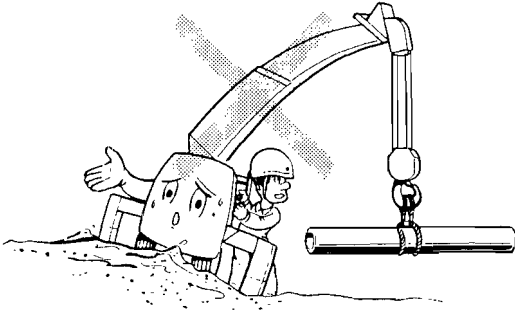
★ Viscosity of hydraulic oil is high when the oil temperature is low. For that reason, if the hydraulic pump is operated in high speed with the hydraulic oil at low temperature, the pump may be damaged due to seizure because the oil will not be sufficiently circulated.

## 2 Procedures to set up outriggers

### ! WARNING



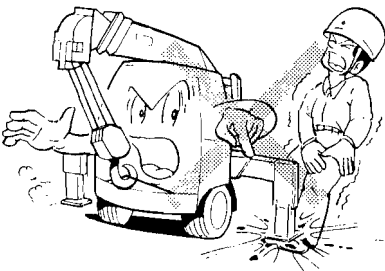
★ Crane operation without setting up outriggers is strictly prohibited.



★ When setting up the outriggers on a leveled ground or on a slope, be sure to place a support (such as plank, steel plate) under the outrigger foot plates to keep the vehicle level.

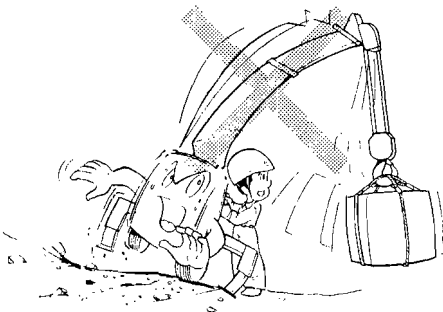
In addition, when the crane is to be operated on a soft ground, take the same measures to prevent the outrigger foot flanges from sinking into the ground when a cargo is lifted up.

Setting up the crane on the ground where it is not solid and firm enough may cause the crane to be overturned.



★ Putting your foot under the outrigger foot plate while vertical members of outrigger are extending may invite an accident such as crush of foot.

★ Crane operation with the vehicle kept leaning makes the vehicle unstable when a cargo is lifted up. This may cause the vertical members of outrigger to break or the crane to be overturned.

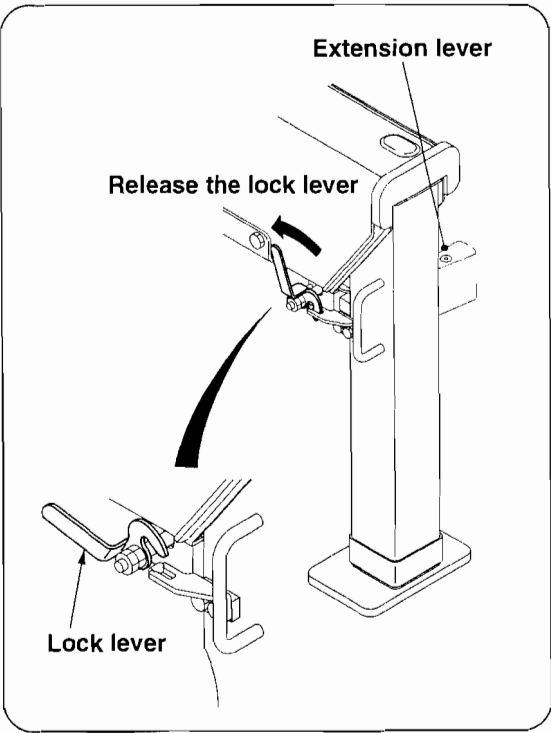




# HOW TO OPERATE THE CRANE

Follow the procedures when setting up outriggers;

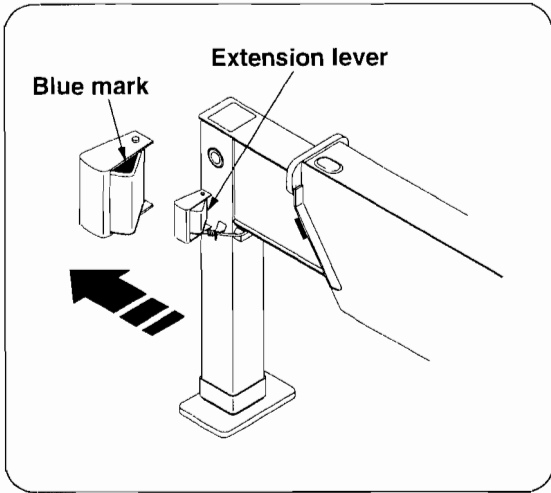
**1** Release the lock lever.



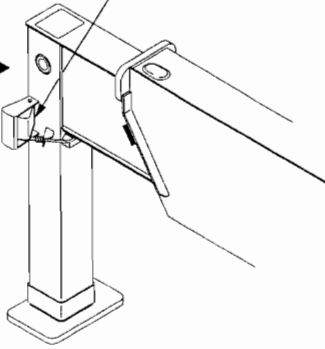
## CAUTION

★ Be sure to release the lock lever even when operating the crane with the minimum extension of outrigger.

**2** Hold the extension lever to pull out the outrigger.



Extension lever



**3** Position of the first stop is where the outrigger is extended to halfway.

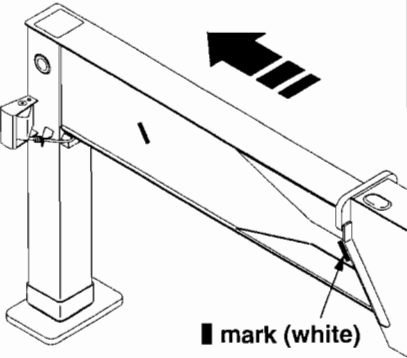
Grip the extension lever again and pull out the outrigger to extend to its extreme.

When the outriggers are fully extended, the second “■” mark appears on each side of horizontal member of outriggers.

Blue mark

■ mark (white)

Extension lever



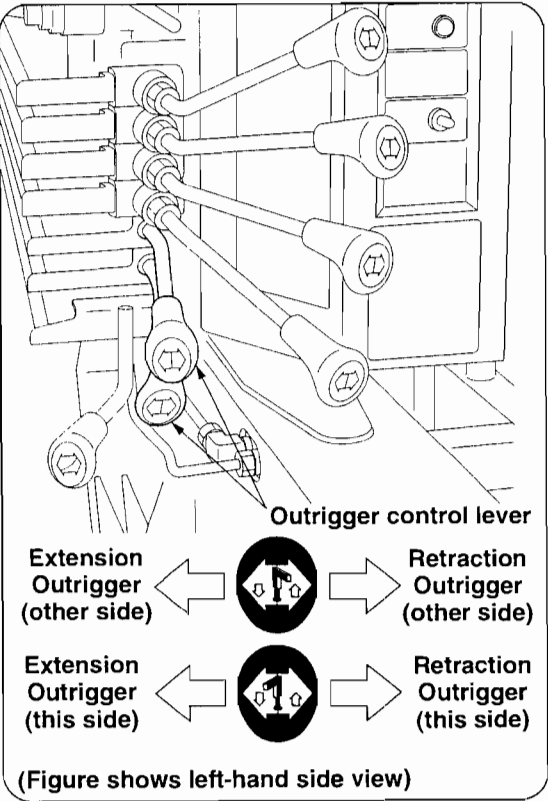
**4** After the outriggers are completely extended fully, be sure to check that the blue mark at the top of extension lever is fully visible.



### CAUTION

★ Extend the outriggers to the maximum in normal crane operation.

# HOW TO OPERATE THE CRANE



**5** Shift the outrigger control lever to [Extension].

The control levers(each on both sides) can be shifted either simultaneously or independently.

**To extend** . . . . Shift the lever to "EXT" to extend the vertical members of outrigger.

**To retract** . . . . Shift the lever to "RET" to retract the vertical members of outrigger.

**To stop** . . . . . Return the lever to neutral position to stop extension and retraction of outrigger.

## ◆ Automatic accelerator

When the control lever is shifted further to "EXT" or "RET", the engine speed increases according to the movement of the lever which in turn increases extending and retracting speed of outriggers as the lever is interlocked with the accelerator.

## ◆ Use of accelerator lever together with automatic accelerator

Although engine speed increases from idling to the highest, how it increases varies from vehicle to vehicle.

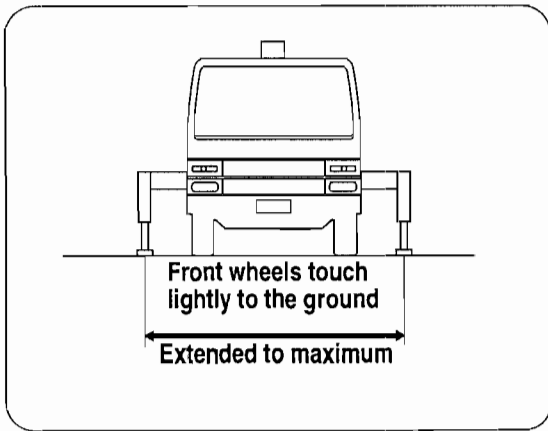
Operate the outriggers smoothly by using the accelerator lever together with the automatic accelerator.

**6** Adjust each vertical member of outrigger with the levers so that the vehicle can be set up level.

## ! CAUTION

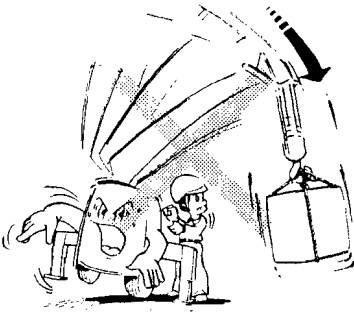
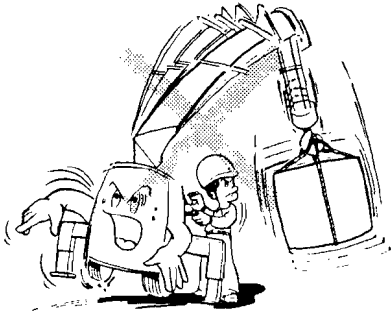
★ Set up the outriggers so that the front wheels of the vehicle touch lightly to the ground.

**7** Return each control lever to neutral position after the outriggers have been set up.



### 3 How to operate for derricking boom

## ! WARNING

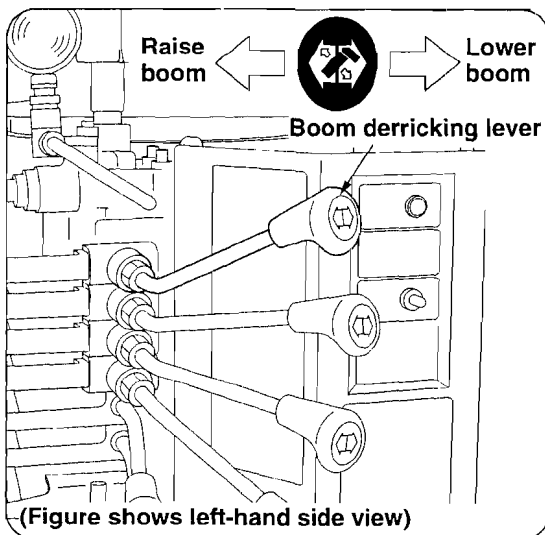


★ An abrupt crane operation while a cargo is being lifted gives an excessive shock to the crane which may cause damage to the crane or overturn of the vehicle. Be sure to move levers slowly.

★ The longer the boom is extended, the faster a cargo is lifted up and down by boom derricking operation. Move the control lever slowly.

★ When lowering the boom with a cargo being lifted, the working radius increases and this decreases the capacity specified in the chart of "rated load".

Check the readings of load indicator to confirm the safety before the boom is lowered.



To raise . . . . . Shift the lever to "RAISE" to raise the boom..

To lower . . . . . Shift the lever to "LOWER" to lower the boom..

To stop . . . . . Return the lever to neutral position to stop the boom derricking.

#### ◆ Automatic accelerator

When the control lever is shifted further to "RAISE" or "LOWER", the engine speed increases according to the movement of the lever which in turn increases derricking speed of the boom as the lever is interlocked with the accelerator.

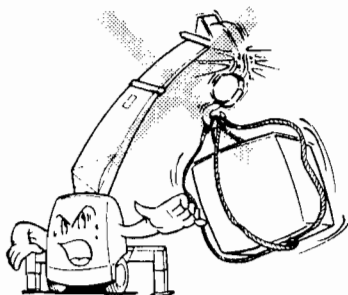
#### ◆ Use of accelerator lever together with automatic accelerator

Although engine speed increases from idling to the highest, how it increases varies from vehicle to vehicle.

Operate the derricking boom smoothly by using the accelerator lever together with the automatic accelerator.

### 4 How to hoist and lower the hook

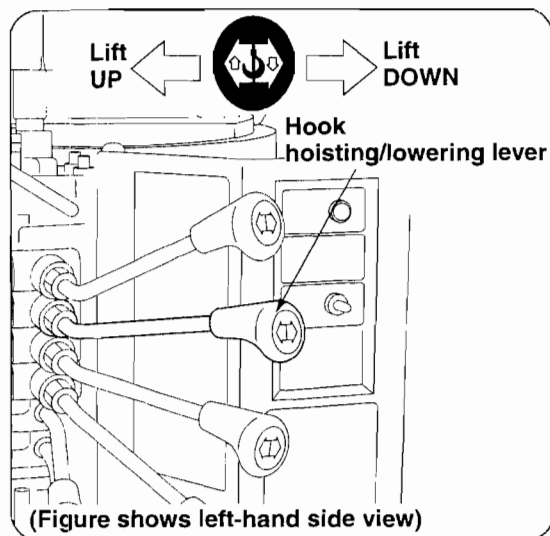
#### **WARNING**



★ Pay attention that the hook will not be overwound.

Be sure to turn the "overwinding alarm switch" ON.

★ If the hook hits against the boom top due to being overwound of the hook, it may cause damage to the wire rope and the sheaves at the boom top and may cause the fall of the lifted cargo.



To hoist . . . . . Shift the lever to "UP" to hoist the hook.

To lower . . . . . Shift the lever to "DOWN" to lower the hook.

To stop . . . . . Return the lever to neutral position to stop winding up/down.

#### ◆ Automatic accelerator

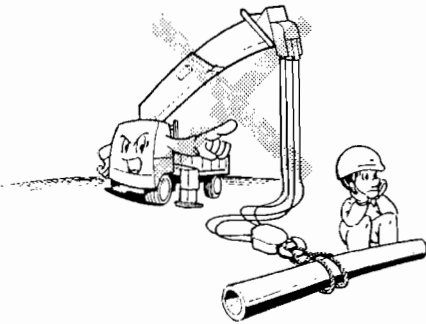
When the control lever is shifted further to "UP" or to "DOWN", the engine speed increases according to the movement of the lever which in turn increases hoisting speed of the hook as the lever is interlocked with the accelerator.

#### ◆ Use of accelerator lever together with automatic accelerator

Although engine speed increases from idling to the highest, how it increases varies from vehicle to vehicle.

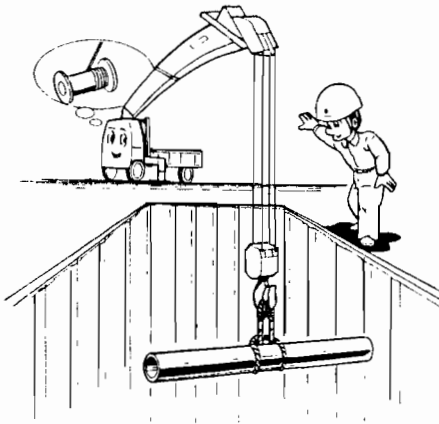
Operate the hoisting/lowering the hook smoothly by using the accelerator lever together with the automatic accelerator.

## ! CAUTION



★ Lowering operation of the hook with the hook or a cargo put on the ground loosens the ropes which causes the ropes to be wound irregularly and this results in remarkable shortening the service life of the rope.

★ When paying out the wire rope such as in underground crane operation, make sure that more than 3 turns of wire rope are always left on the drum.



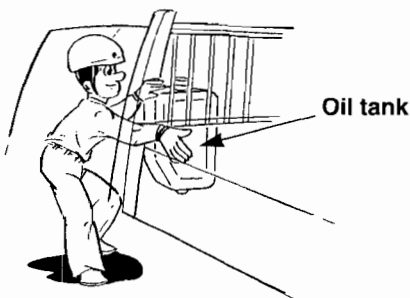
★ When the first layer of wire rope fails to be wound around the drum firmly and regularly, ropes wound over the first layer may dig into the inner layers to cause an irregular winding.

When the wire rope is unwound to or wound up from the first layer of rope, wind up/down the rope slowly so that the first layer of rope can be wound around the drum firmly and regularly.

★ Stop the crane operation when temperature of hydraulic oil exceeds 80°C.

Oil temperature is apt to rise easily if repeated operation of hoisting/lowering of the hook, especially in a high lift, is required.

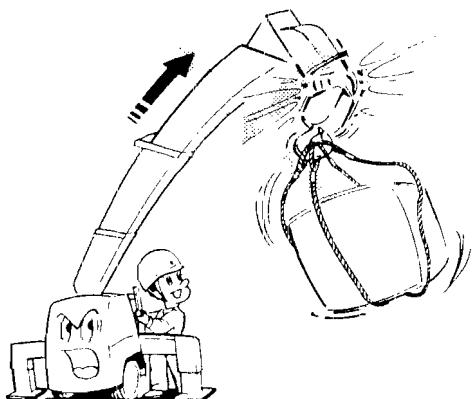
■ To know approximate oil temperature by sense of touch:



70°C	You can touch the oil tank (Lower part) with the palm of your hand for 3~4 seconds.
80°C	You can touch the oil tank (Lower part) with your finger tip for 1~2 seconds.
90°C	The moment you touch the oil tank (Lower part), you will let the hand off by reflex action.

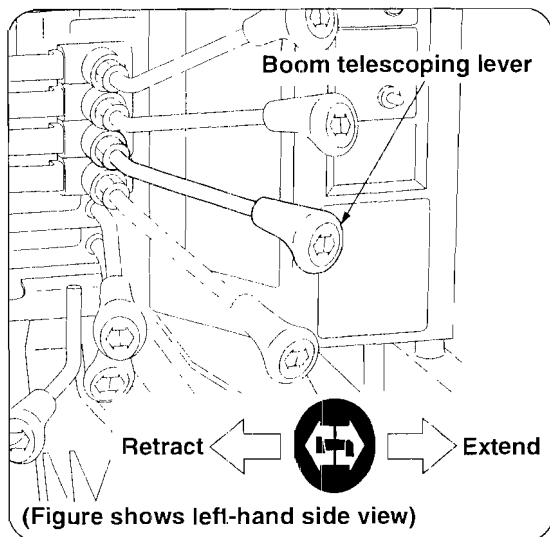
### 5 How to telescope the boom

#### **WARNING**



★ If the boom is extended with the hook come close to the boom top, the hook may hit against the boom top causing damage to the wire rope and to the sheaves at the boom top, and the fall of the lifted cargo may result.

★ Be sure to turn the "overwinding alarm switch" ON.



To extend . . . . Shift the lever to "EXT" to extend the boom.

To retract . . . . Shift the lever to "RET" to retract the boom.

To stop . . . . . Return the lever to neutral position to stop telescoping of the boom.

#### ◆ Automatic accelerator

When the control lever is shifted further to "EXT" or "RET", the engine speed increases according to the movement of the lever which in turn increases telescoping speed of the boom as the lever is interlocked with the accelerator.

#### ◆ Use of accelerator lever together with automatic accelerator

Although engine speed increases from idling to the highest, how it increases varies from vehicle to vehicle.

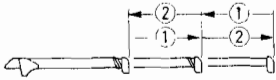
Operate the telescoping the boom smoothly by using the accelerator lever together with the automatic accelerator.

#### **CAUTION**

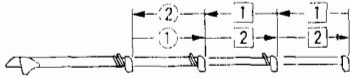
★ The hook is hoisted as the boom extends and is lowered as it retracts.

When telescoping the boom, pay attention to where the hook is.

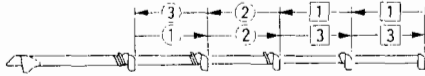
(3-section boom)



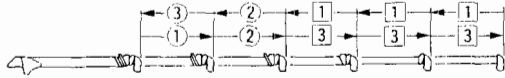
(4-section boom)



(5-section boom)



(6-section boom)



## Sequence of boom extension

The boom is to start extension from the outer section of boom.

## Sequence of boom retraction

The boom is to start retraction from the top section of boom.

### ● Remarks

Sections of boom shown in the box ☐ indicate that they are telescoping simultaneously.

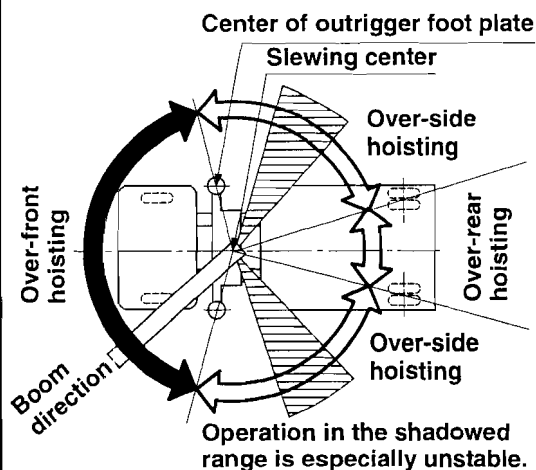
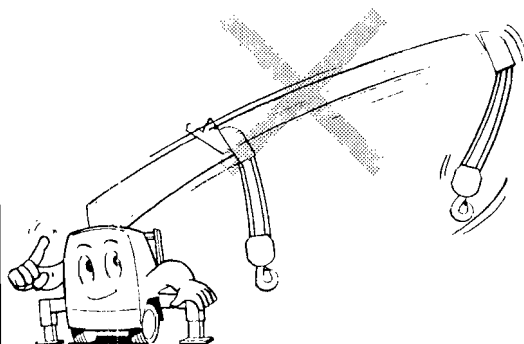
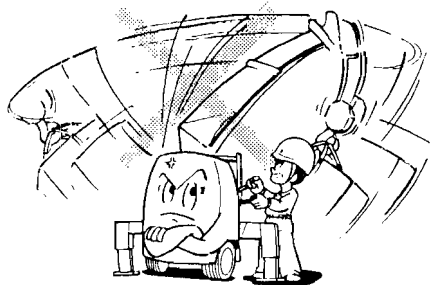
### ● Remarks

★ When telescoping speed of boom is decreased probably due to high viscosity of oil during winter or in low temperature environment, try telescoping the boom to and from one-cycle between the shortest and the longest to recover the speed as the cold oil in the boom is discharged to replace it with warm oil.



### 6 How to make the boom slewing

## ! WARNING



★ Perform slewing operation at low speed without racing the engine.

★ Operate levers slowly to start and stop slewing.  
An abrupt lever operation with a cargo lifted may cause it to swing and hit against other objects from which damage to the crane or overturn of the vehicle may result.

★ Swing of a lifted cargo increases working radius of the crane causing it to be overloaded.

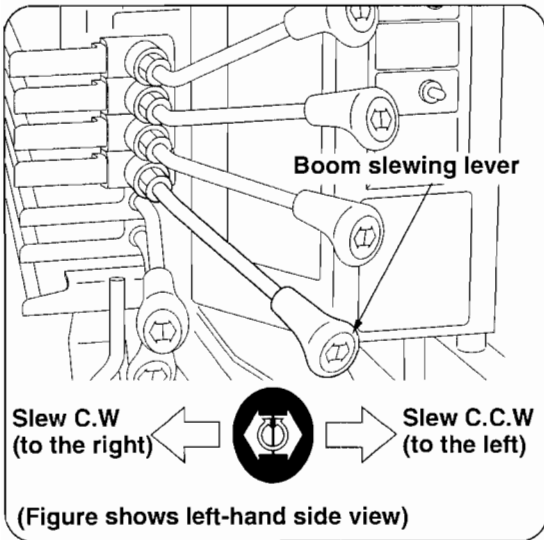
★ The longer the boom and the smaller the lift angle becomes larger the working radius and as a result the lifted cargo moves faster.

Perform the slewing operation slowly with the above in mind.

★ Slewing the boom, with a cargo hoisted at the vehicle body or in the rear side of vehicle, over from rear to side, or from side to front or to rear allows the vehicle to be more unstable.

In such cases, keep the hoisted cargo as close to the ground as possible to slew the boom.

## HOW TO OPERATE THE CRANE



**To slew C.W** ... Shift the lever to "↺" to slew it C.W..

**To Slew C.C.W** ... Shift the lever to "↻" to slew it C.C.W..

**To stop** ... Return the lever to neutral position to stop the boom slewing.

For slewing, clockwise(C.W.) direction is defined as "to the right" and counterclockwise(C.C.W.), "to the left".

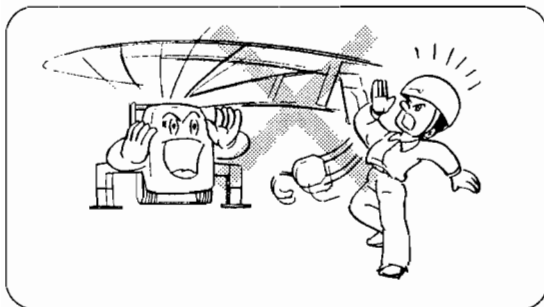
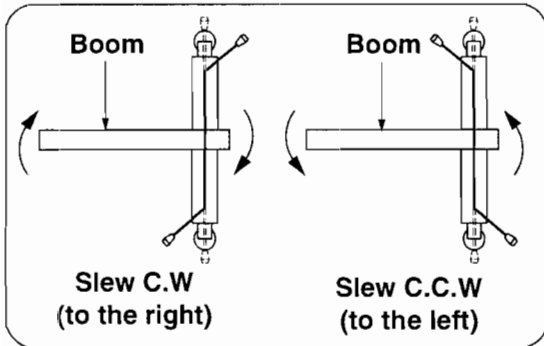
### ◆ Automatic accelerator

When the control lever is shifted further to "↺" or "↻" direction, the engine speed increases according to the movement of the lever which in turn increases slewing speed of the boom as the lever is interlocked with the accelerator.

### ◆ Use of accelerator lever together with automatic accelerator

Although engine speed increases from idling to the highest, how it increases varies from vehicle to vehicle.

Operate the slewing the boom smoothly by using the accelerator lever together with the automatic accelerator.

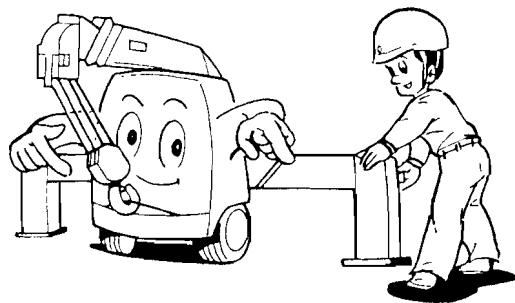


## ! CAUTION

★ Before starting slewing operation, sound the warning horn to warn those who are attending or have entered within the slewing range.

### 7 How to store outriggers

#### ! WARNING

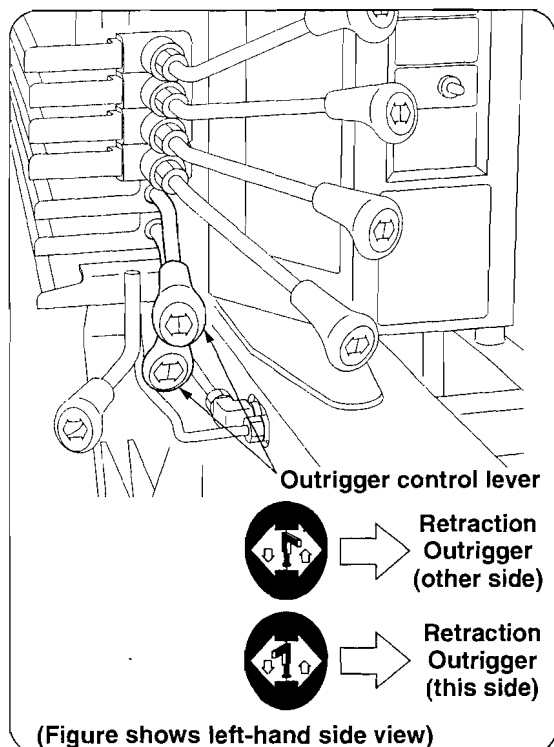


★ Start storing the outriggers after the boom has been stored.

★ There is a risk that your fingers may be caught in the outriggers when you roughly push in outriggers with your hand being touched other than the extension lever.

Be sure to hold the extension lever and push them in slowly.

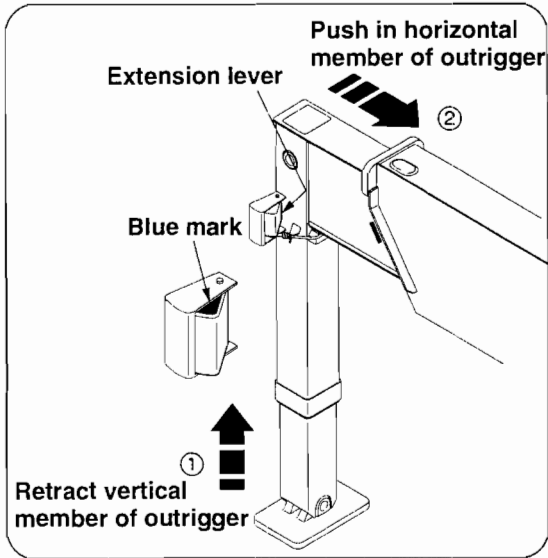
★ Unless horizontal members of outriggers are securely locked, they will stick out while vehicle is traveling and this may invite an accident.



**1** Shift the outrigger control levers to "RET" to retract the vertical members of outrigger.

#### ! CAUTION

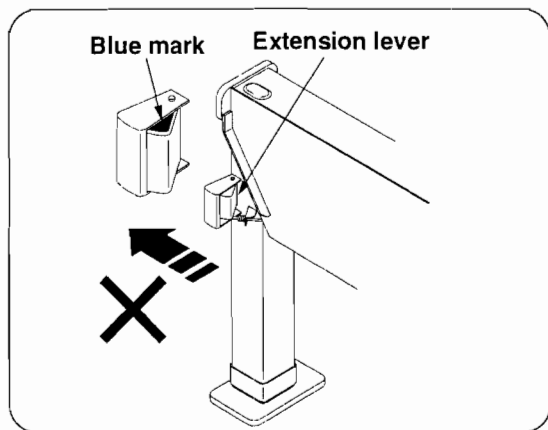
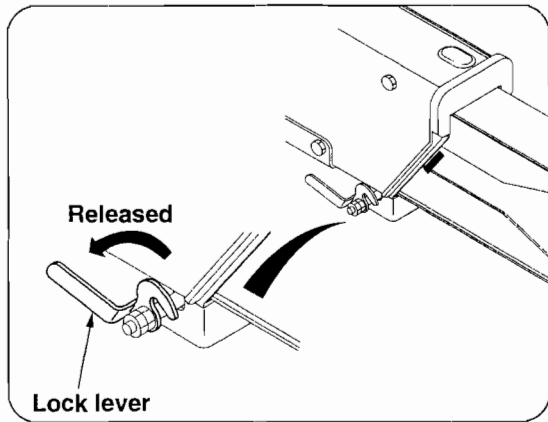
★ When retracting vertical members of outrigger, operate the levers so that either side of member can be retracted equally.



- 2** Hold the extension lever to push in each horizontal member of outrigger on both sides to store it after the vertical members of outrigger are completely retracted.

### CAUTION

★ Make sure that the vertical members of outrigger on both sides have been retracted to their minimum and each lock lever has been released before pushing in the horizontal members of outrigger.



- 3** After the outriggers are completely stored, check the following.

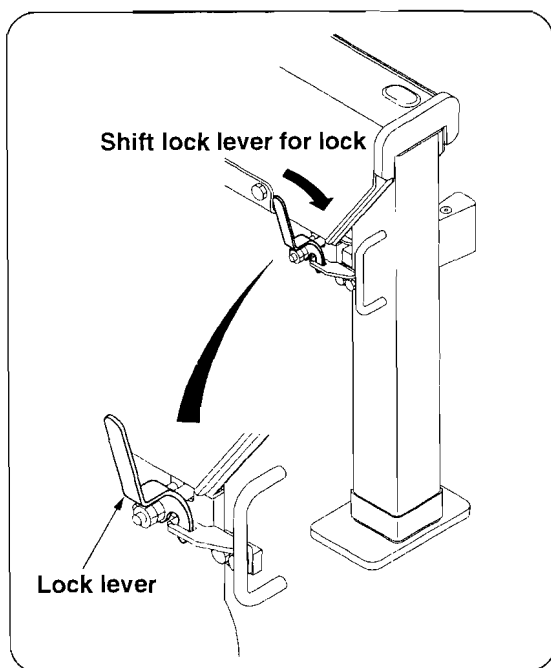
- ① Release the grip of extension lever.
- ② Blue mark on the top of extension lever is fully visible.
- ③ The horizontal members of outrigger are securely locked so that they will not stick out sideways out of the vehicle.

### ● Remarks

Fully visible blue mark indicates that the lock pin for the horizontal member of outrigger is inserted into the hole.

## HOW TO OPERATE THE CRANE

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**4** Shift the lock lever for lock.

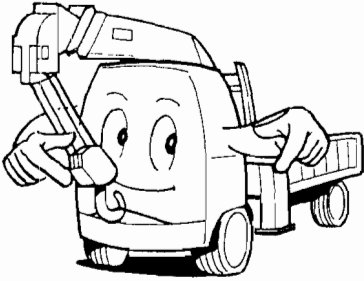
### ● Remarks

Shifting the lock levers for lock prevents the horizontal members of outrigger from sticking out by careless grip of extension lever.

In addition, this prevents a rattling noise from the horizontal members of outrigger while the vehicle is traveling.

## 8 Preparation before traveling vehicle

### ! WARNING

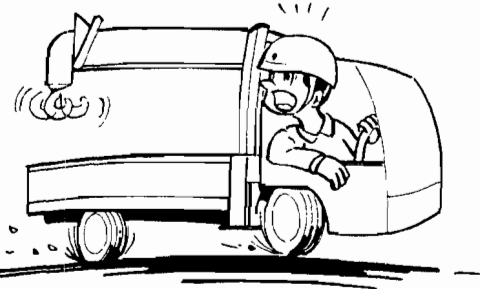


★ Make sure that the boom, the outrigger, and the hook have been stored and fixed securely before traveling the vehicle.

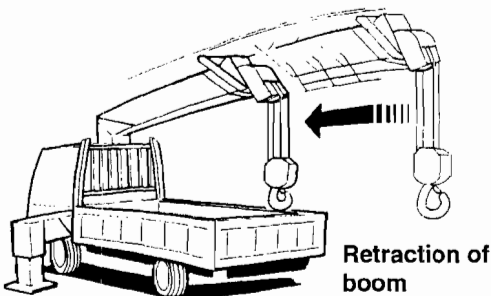
★ Be sure to fully retract and store the outrigger members and check that the blue mark at the top of extension lever on either side is fully visible and any of outrigger inner boxes is not protruded.

★ Be sure to fasten the outrigger members with lock levers.

★ Traveling the vehicle with incomplete storage of or fastening of the boom, the outrigger, and the hook allows them to be loose or to swing which may cause accidents such as of damage to each crane member or of bumping into vehicles running in the opposite direction.



Follow the procedures for traveling vehicle.

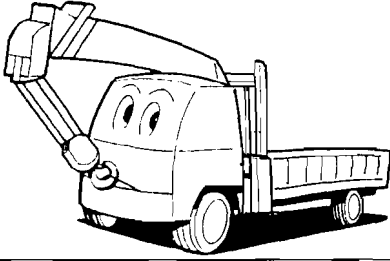


**1** Retract the boom.

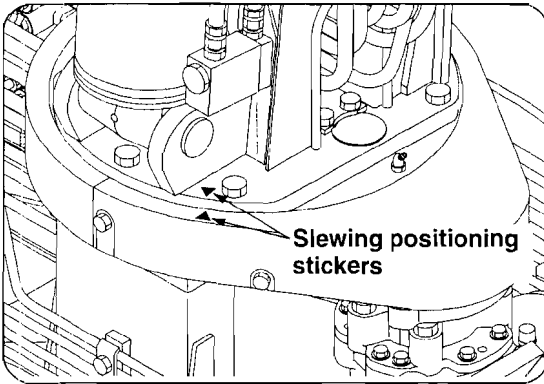
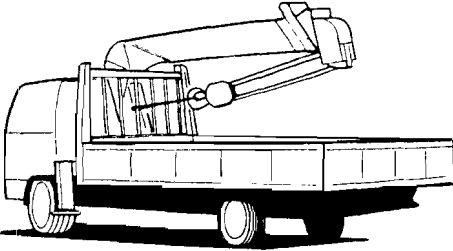
## HOW TO OPERATE THE CRANE

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Traveling with the boom stored to the front

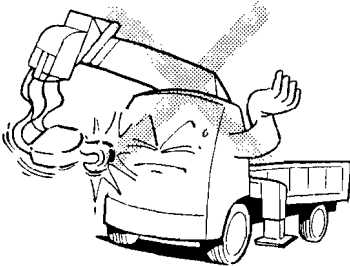


Traveling with the boom stored to the rear



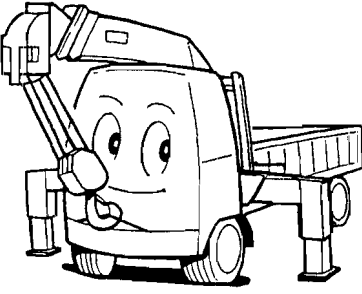
**2** Move the boom either to the front or to the rear.

Stop the boom slewing at the position where both of yellow positioning stickers are met.



**3** Lower the boom to its lowest extreme.

Pay attention that the hook will not strike against;  
The driver's cabin when storing it to the front,  
or  
The cargo loading body when storing it to the rear.



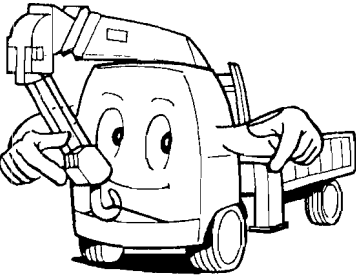
**4** Put the hooking wire rope on the hook.

**5** Hoist the hook gradually and stop it where the rope is pulled up with a moderate tension.



### CAUTION

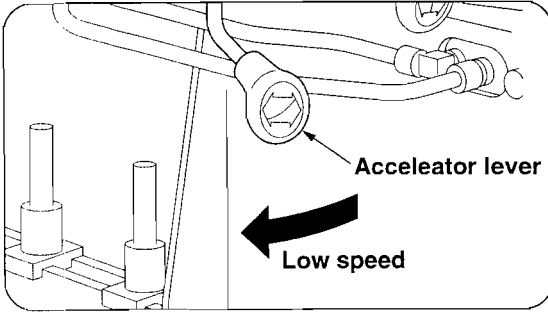
★ Do not give an excessive tension to the wire rope when storing the hook to the front. Otherwise, this may cause to bend the frame of vehicle or to damage the bumper.



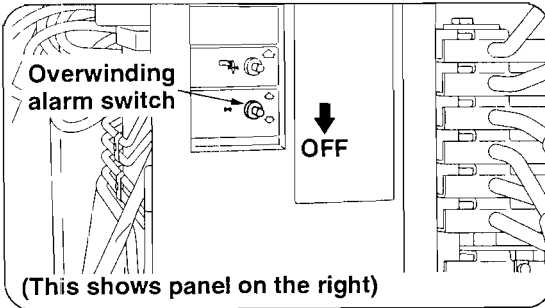
**6** Store either side of vertical and horizontal member of outrigger securely. Then, store the front outriggers. Store them in accordance with section **7** "How to store outriggers".



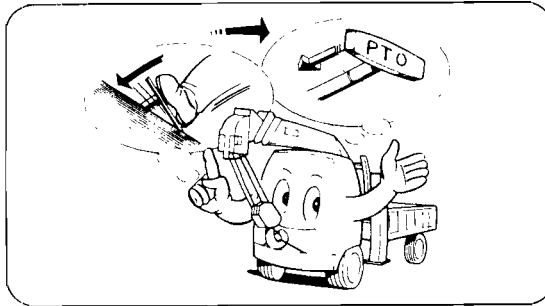
## HOW TO OPERATE THE CRANE



**7** Check that the accelerator control lever is returned to the position of lowest speed.



**8** Turn OFF the "overwinding alarm switch".



**9** Push in the P.T.O. lever fully with the clutch pedal in the driver's seat depressed, then release the pedal gradually. The P.T.O. indicator light turns off and the hydraulic pump stops running.

The vehicle is now ready for traveling.

### **CAUTION**

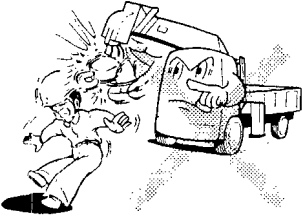
★ Traveling the vehicle without P.T.O turned off allows the hydraulic pump to keep running so that damage to the pump may result.

## 9. UNI-HOOK TYPE (K TYPE)

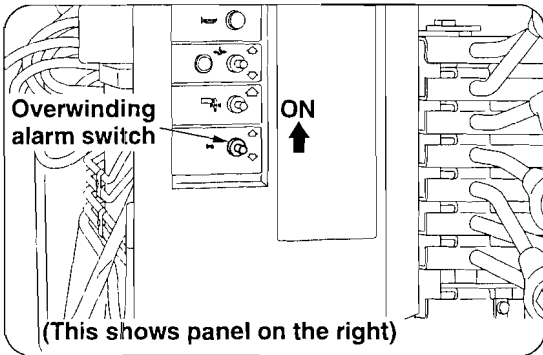
This is the type on which the hook can be stored under the boom and this section discusses the matters which is different from the standard type.

### 1 Preparation for crane operation

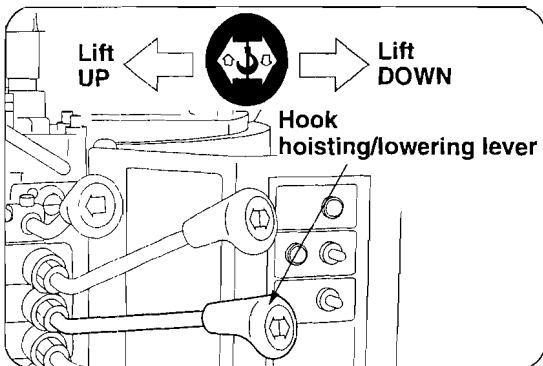
#### **WARNING**



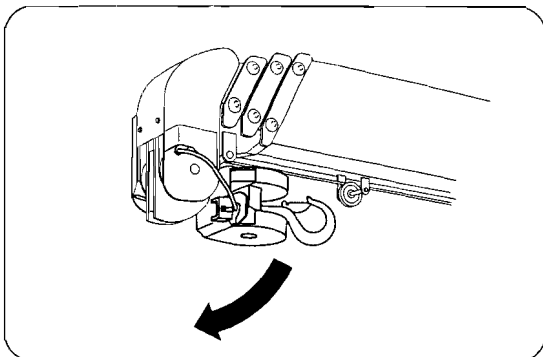
★ In order to avoid an accident, do not stand under and/or in front of the auto-stored hook as it swings when it is released.



1 Turn ON the "overwinding alarm" switch. The overwinding alarm sounds.



2 Operate the hook hoisting/lowering lever to allow the hook lowering to loosen it from where it has been stored.



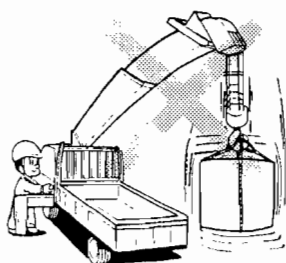
Do not stand under or in front of the hook when releasing the hook as the hook swings.

Lower the hook until it detaches from the weight for overwinding alarm to stop the buzzer to sound.

This crane is now operational.

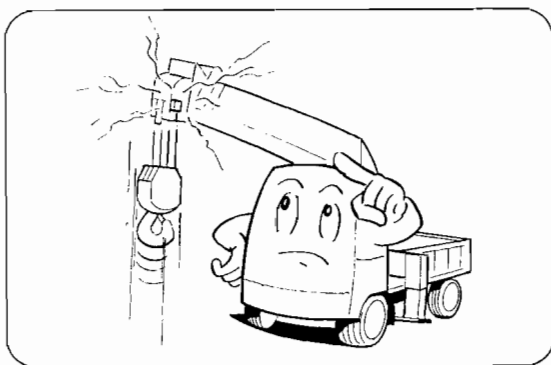
## 2 Procedures for storing hook

### **! WARNING**



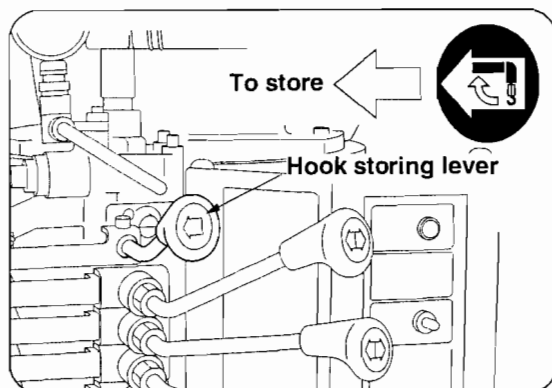
★ Never try to operate the crane by controlling the hook storing lever as this is dangerous.

★ Store the hook after all sections of boom have been retracted and the boom has been lowered fully.



**1** Hoist the hook by the hook hoisting/lowering lever.

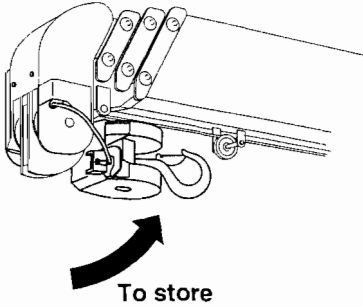
The hook stops being hoisted when the hook hits against the weight for overwinding alarm.



**2** Hoist the hook slowly by controlling the hook storing lever after the hook is at a standstill.

### **! CAUTION**

★ Storing operation while the hook is swinging may damage the boom, the hook, and the wire rope.



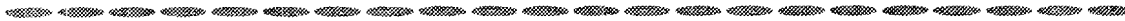
- 3** The hook is stored in its position in such a way that the roller at the upper side of the hook touches the guide on the boom top which in turn the hook is raised up by the roller along the guide for storage. Return the lever to neutral position to stop storing operation of the hook.



## **CAUTION**

★ If the roller located at upper side of the hook starts rotation because it hits against the guide on the boom top, or the roller hits against the guide on the boom top obliquely or off the guide halfway, lower the hook and try storing operation again.

# MEMORANDUM



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SUBJECT : \_\_\_\_\_

DATE : \_\_\_\_\_

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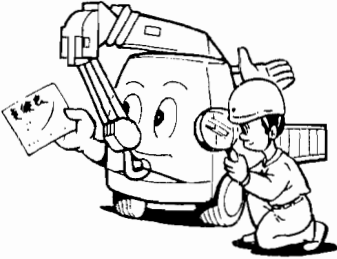
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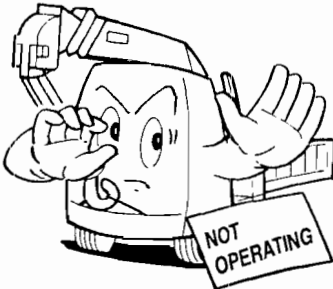
## 10. MAINTENANCE AND INSPECTION

### WARNING



★ Inspection before operation and periodical inspection. Perform the inspection before operation and independent periodical (monthly and annual) inspection, and make repairs immediately when anything abnormal is found.

★ Caution signboard  
Whenever carrying out maintenance and inspection, be sure to hang out a "caution signboard" and do not try operating the crane.



★ Be sure to replace consumable items according to the replacement criteria. Failure to observe the replacement as specified may cause a breakdown and warranty will not be given even if it is within the period to be applied.

★ When parts need to be replaced or anything abnormal is found, ask an authorized UNIC service shop for inspection or repair as soon as possible.



**1 Inspection before operation**

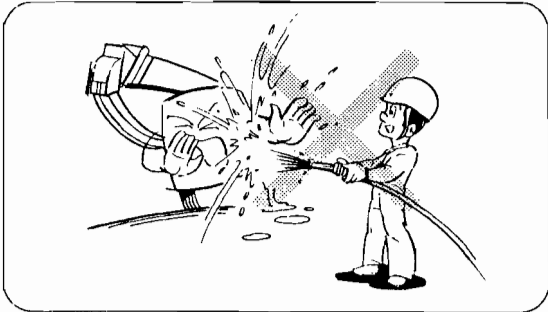
In order to secure safe operation and improve working efficiency, be sure to inspect each part of the crane according to the table as follows;

Device	Servicing item
P.T.O.	Oil leakage, Unusual noise
Hydraulic oil tank	Oil level, Oil leakage
Outriggers	Operation, Deformation, Damage, Oil leakage, Cracks
Hoisting winch	Operation, Braking func- tion, Irregular winding
Slewing device	Operation, Oil leakage
Boom(derrick- ing)	Operation, Oil leakage, Mounting of foot-pin
Boom(telescop- ing)	Operation, Oil leakage, Deformation, Cracks, Mounting of fixing pin
Hook	Rotation of hook, Function of hook safety latch

Device	Servicing item
Wire rope	Damage, Condition of rope-end
Overwinding alarm	Operation, Buzzer sound
Load meter	Oil leakage, Operation
Warning horn	Operation
Piping(hydraulic)	Oil leakage
Base	Fastening tightness of crane body mounting bolts
Slinging imple- ments	Missing necessary items
Uni-hook	Operation of automatic stop and storing function

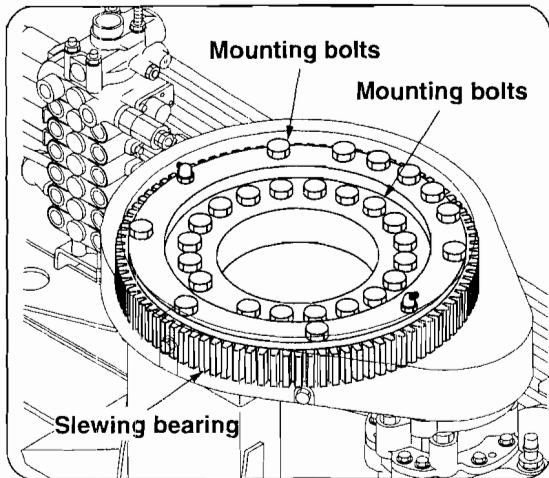
**! CAUTION**

★ Always keep the machine in good condition so that it is ready for normal operation.



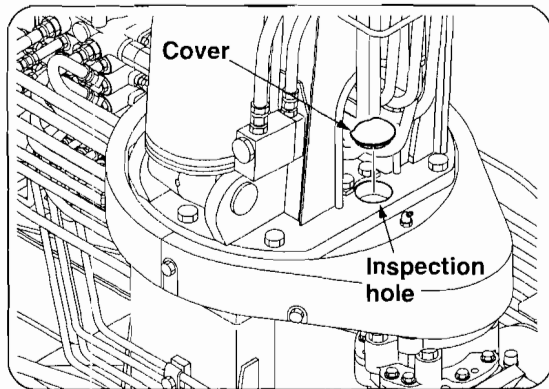
**2 Cleaning**

Keep the machine clean at any time. Sands and fine dusts may cause an abnormal wear of the machine. Do not wash the machine by splashing water with high-pressure to prevent the water from entering into the electric system which may cause malfunction of the machine.



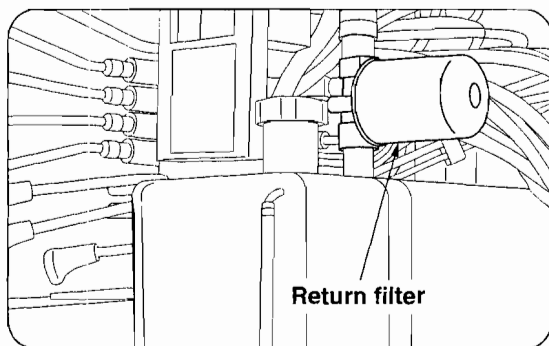
### 3 *Inspection of the slewing bearing mounting bolts*

When the slewing device makes an unusual noise while operating or traveling of the crane, or when a gap is created on the mounting surface, contact a UNIC authorized service shop for inspection and/or repair.



#### ◆ Inspection of mounting bolts located inner race

1. Remove the cover to inspection hole.
2. Slew the boom so that each mounting bolt comes to the center of inspection hole for inspection.
3. Fit the cover as it was after inspection.

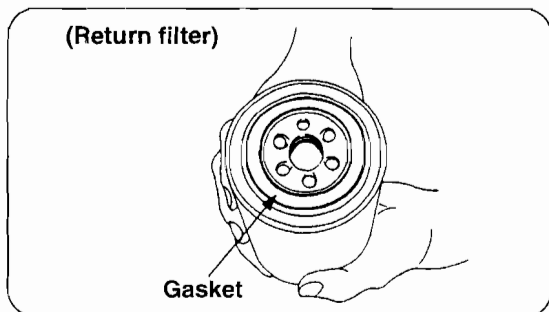


### 4 *Replacement of return filter*

The replacement of the return filter is depends on how often the crane has been operated, however, as a general rule, replace it after 3 months of initial operation and once a year thereafter.

#### How to replace

- Give the gasket a thin coat of oil.
- Screw in the cartridge and tighten it with your hand securely.





**5 Replacement of wire rope (for winding-up)**



Wire rope is an expendable article and it will be damaged or broken in its strand wires through a long period of use. Replace the rope according to following criteria.

**◆ 1. Replacement criteria**

1. A rope in which amount of broken strand wires (except filler wires) comes to more than 10% within a pitch of strand.

Replace the wire ropes intended for use with this crane if 13 pieces of strand wire have been broken within a pitch of strand.

2. A rope being kinked.

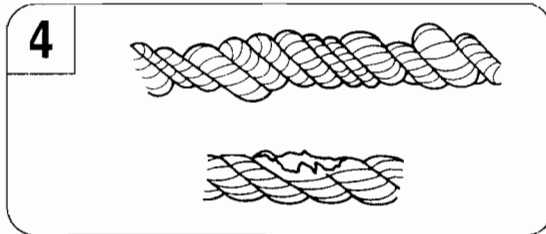
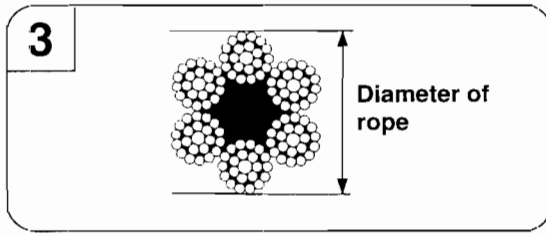
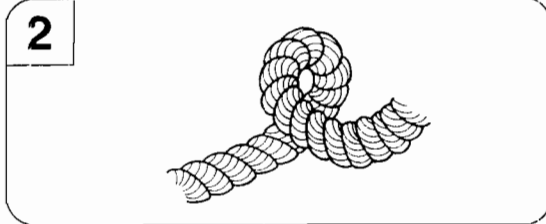
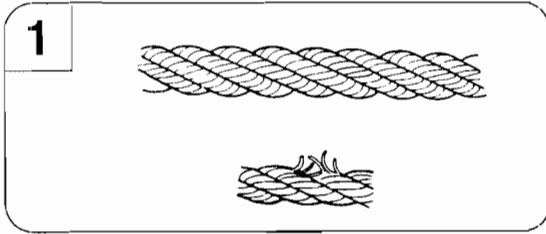
3. A rope from which its diameter has decreased by more than 7% of the nominal diameter.


For example, if wire rope with a nominal diameter of 8mm is used, replace it when the diameter becomes 7.5mm.

Refer to the section 12, MAJOR SPECIFICATIONS, for length and construction of the wire rope for winding-up.

4. A rope which has been deformed and/or corroded excessively.

★ Be sure to replace a wire rope when it comes under the criteria, item 1 through 4, illustrated above.

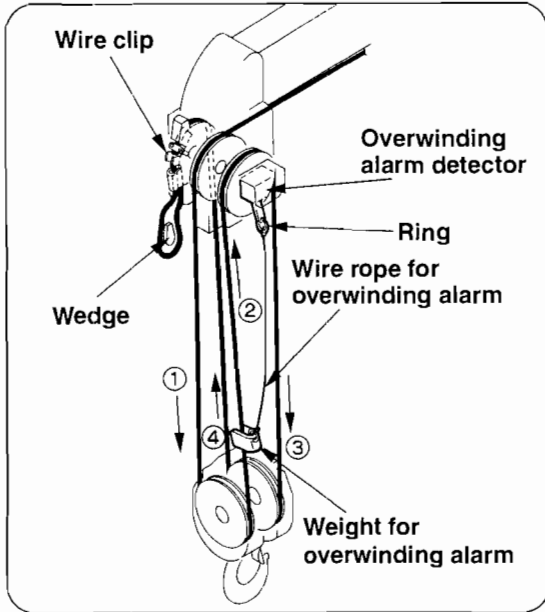


**CAUTION**

★ Wear leather gloves when replacing wire ropes.

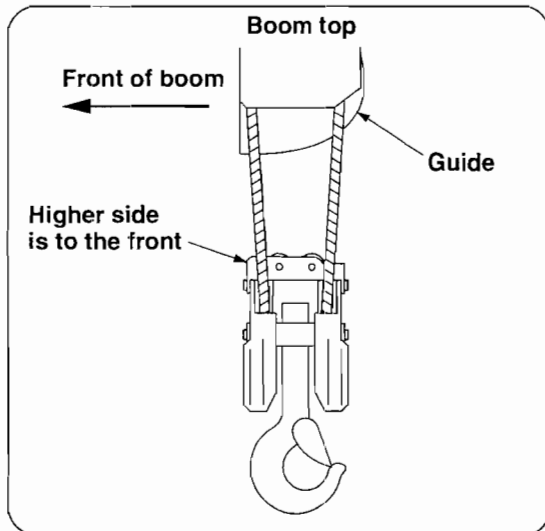
## ◆2. How to replace wire rope

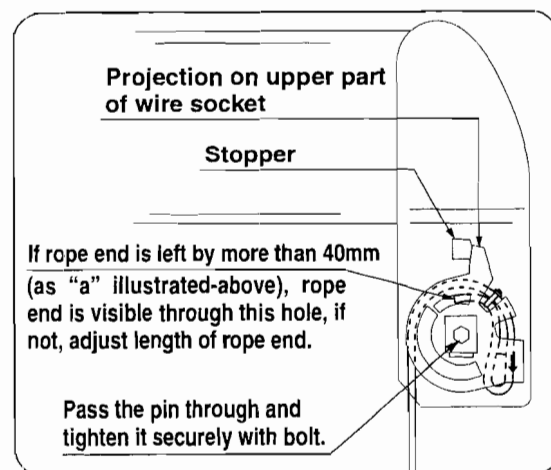
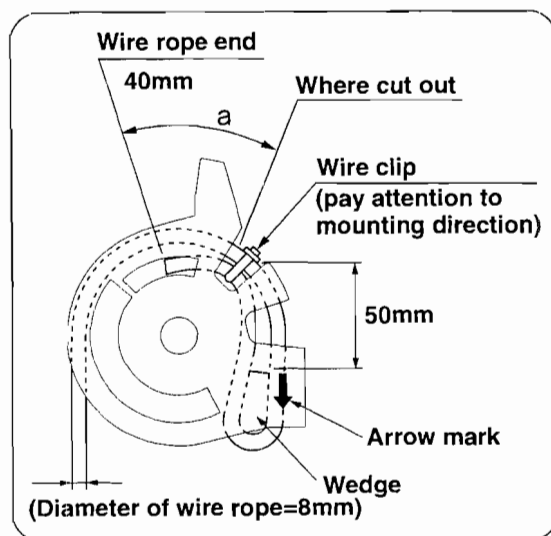
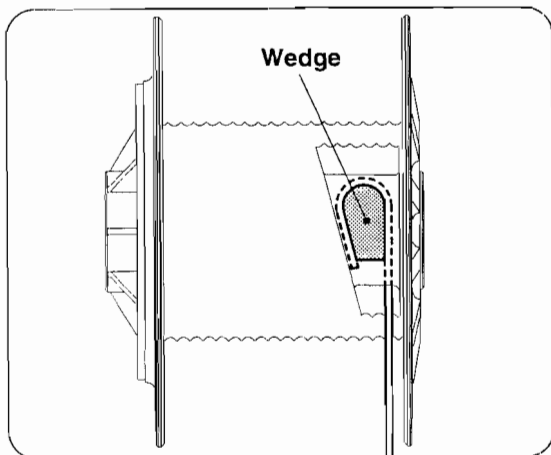
1. Refer to the figure in the left for how to hook the wire ropes for hoisting and for where to mount the weight for overwinding alarm.



### For Uni-hook type

Refer to the figure in the left for how to install hook.





### 2. How to fix the wire rope end

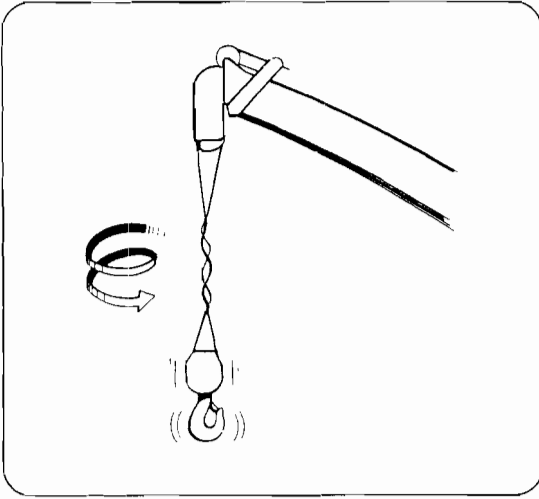
#### ● Winch drum

- ① When passing a wire rope end through the winch drum, pass it so that the rope end comes inside as illustrated in the left.
- ② Pay attention that wire rope end will not be jugged out of the winding-up area of winch drum.
- ③ In order to avoid irregular winding, wind up a wire rope slowly on the drum along its groove with a proper tension applied to the rope to form the 1st layer.  
From the 2nd layer on, wind up the rope over the wound-up layer so that it is fit in each gutter formed between ropes wound side by side of the layer below.

#### ● Wire socket

- ① When passing a wire rope end through the wire socket, be sure to pass it as indicated by the arrows on the socket.  
Leave the wire rope end more than 40 mm as "a" illustrated in the figure in the left. If it is passed from the opposite direction, service life of the wire rope shrinks as the wire rope is kept bent all the time.
- ② Do not forget to mount the wedge and the wire clip as illustrated in the figure in the left.
- ③ Pass the pin through with the wire socket held with your hand and tighten it with the bolt securely.

## ◆3. How to correct the twisted wire ropes



Wire ropes tend to turn in the untwisting direction when they are under tension.

If two or more wire ropes are hooked together, they tend to be twisted particularly while they are new.

The twist will decrease as the ropes are getting fit to the crane.

If wire ropes are twisted, correct them as follows;

1. Unload the hook.
2. Extend the boom fully.
3. Set the boom to an angle of approximately  $65^{\circ}$ .

4. Unwind the hook until it comes close to the ground.

5. Check how many turns the wire rope has been twisted.

6. Hoist the hook and retract the boom to be on a stored condition.

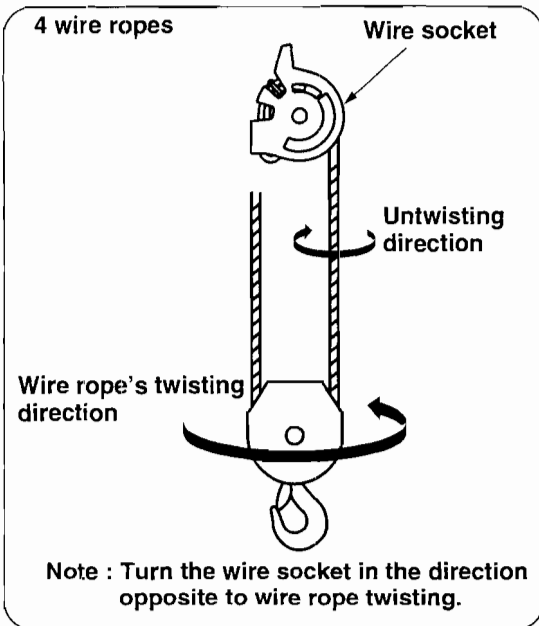
7. Remove the wire socket and turn the socket in the untwisting direction by as many turns as the wire ropes have been twisted multiplied by the number of wire ropes hooked.

Remember, however, the wire socket may be turned up to 4 turns at a time.

8. Attach the wire socket and repeat hoisting and lowering the rope 2 or 3 times between extremes of lift.

Then check that twist of the wire ropes is corrected.

If they remain twisted, repeat the procedures shown above.



### 6 Replacement of expendable parts

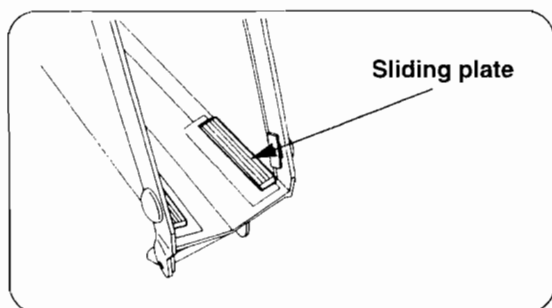
#### ◆1. Replacement of gaskets and seals for each cylinder

Although timing of replacing a part varies according to how frequently the crane has been operated, replace gaskets and seals used in each cylinder after every 3 years of operation (period during which crane is not operated is included) in order to operate the crane safely.

Ask a local UNIC authorized service shop for replacement of gaskets and/or seals.

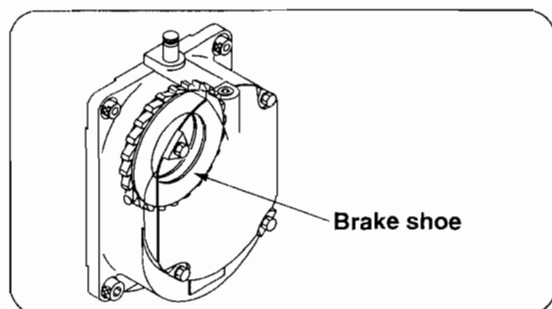
#### ◆2. Replacement of sliding plate of boom

Replace it every 3 years.



#### ◆3. Replacement of brake shoe in hoisting winch

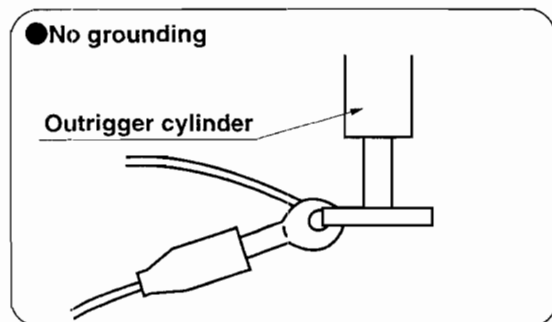
Replace it every 3 years.



### 7 Welding precautions

#### ●No grounding

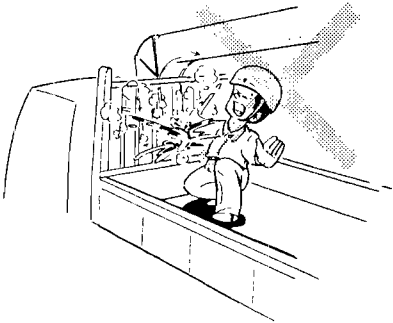
Outrigger cylinder



When welding is needed for some reason, do not use outrigger cylinder for welding ground as the cylinder rod and/or the piston may be damaged by electric sparks due to current flown in the inner part of cylinder.

## 11. LUBRICATION

### WARNING



★ Do not carry out maintenance and service while temperature of hydraulic oil is still high.

★ Temperature of both hydraulic and gear oils is high immediately after crane operation so that accumulated high pressure still remains inside.

Uncapping the filler port, draining oil, and replacing filter while oil temperature is high allow hydraulic and/or gear oils to spout out and a scald may result.

### 1 Precautions on lubrication



Lubricate according to "Lubrication chart" and keep the following instructions in mind when carrying out lubrication.

1. Thoroughly clean filler ports and grease nipples before lubrication.
2. Always supply new lubricant and prevent dusts from entering inside.
3. When supplying grease into each nipples, be sure to inject it until old grease is forced out of it.

### CAUTION

★ In order to ensure smooth operation of each part of the crane, minimum wear, and longer service life, be sure to supply lubricant as well as hydraulic oil which is necessary to drive hydraulic equipment.

★ Warranty will not be given, even if it is within the period to be applied, for failure to observe the replacement of lubricant as specified.

## ◆ 1. List of recommended lubricants

### ★ RECOMMENDED GREASE

#### (a) Chassis grease

Use NLGI No. 1 grade.

Petroleum Maker	Brand
ESSO	Chassis grease L
MOBIL	HP221
CALTEX	Multifak EPI
SHELL	RETINAX-CD

#### (b) Molybdenum grease

Use NLGI No. 2 grade.

Petroleum Maker	Brand
ESSO	Beacon Q2
MOBIL	Mobilplex Special
CALTEX	Molytex Grease EP2
SHELL	Retinax AM

### ★ RECOMMENDED GEAR OIL

Use API Service GL-4 gear oils.

Petroleum Maker	Brand
ESSO	Standard gear oil 90
MOBIL	Mobilube SAE 90
CALTEX	Universal Thuban SAE 90
SHELL	Shel Spirax EP 90

### ★ RECOMMENDED HYDRAULIC OIL

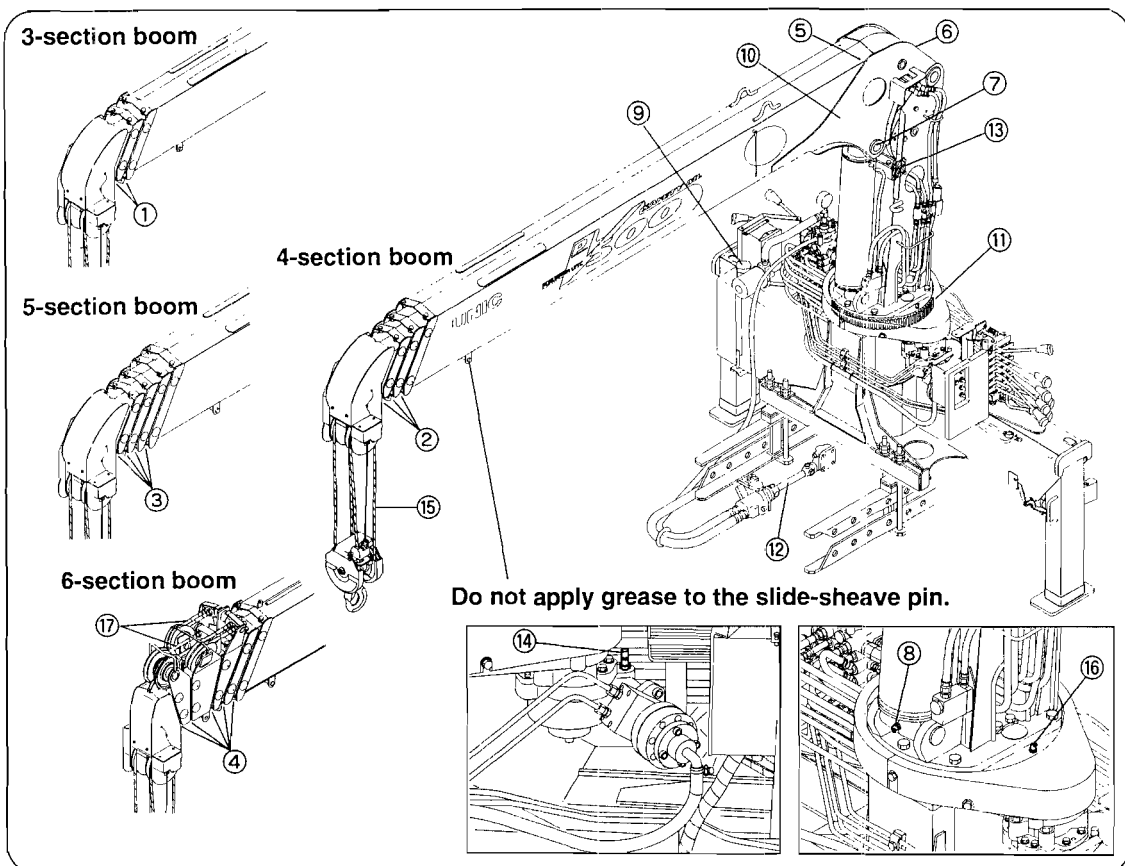
Use industrial-type hydraulic oil;

ISO VG 46 for most temperatures

ISO VG 32 extremely low temperatures

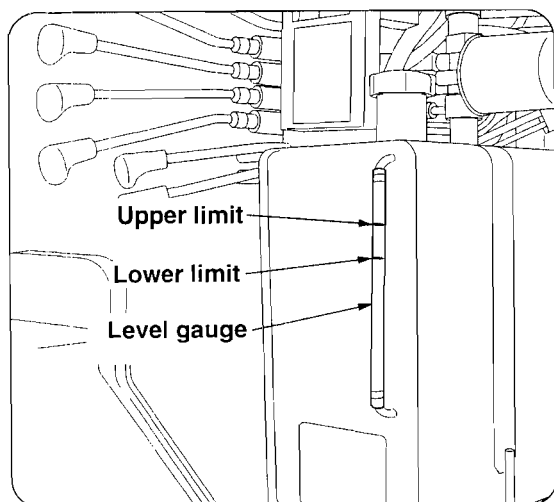
Petroleum Maker	Brand	
	ISO VG 32	ISO VG 46
ESSO	UNVICE J32	Teresso 46
MOBIL	Mobil DTE 13	Mobil DTE 25
CALTEX	Rando Oil HD AZ32	Rando Oil 46
SHELL	Shell Tellus Oil 32	Shell Tellus Oil 46

## ◆ 2. Lubrication chart



Service interval	Part to be lubricate	No. of part	Lubricant	Tool
Daily	① Boom slide plate(Underside/sides of boom sections②, ③) 3-section boom	2	Molybdenum grease	Manual application
	② Boom slide plate(Underside/sides of boom sections②, ③, ④) 4-section boom	3	Molybdenum grease	Manual application
	③ Boom slide plate(Underside/sides of boom sections②, ③, ④, ⑤) 5-section boom	4	Molybdenum grease	Manual application
	④ Boom slide plate(Underside/sides of boom sections②, ③, ④, ⑤, ⑥) 6-section boom	5	Molybdenum grease	Manual application
	⑤ Boom slide plate(Upper side of boom section ①)	2	Molybdenum grease	Grease pump
	⑥ Boom foot pin	1	Chassis grease	Grease pump
	⑦ Upper support pin of derrick cylinder	1	Chassis grease	Grease pump
	⑧ Lower support pin of derrick cylinder	1	Chassis grease	Grease pump
	⑨ Oil tank(59l)	1	Hydraulic oil(up to middle of level gauge)	
Weekly	⑩ Winch drum gear	1	Chassis grease	Grease pump
	⑪ Slewing gear(to gear-teeth)	1	Chassis grease	Manual application
	⑫ Propeller shaft	3	Chassis grease	Grease pump
Monthly	⑬ Winch reduction gear(approx.1.0l)	1	Gear oil	
	⑭ Slewing reduction gear(approx.1.2l)	1	Gear oil	
	⑮ Wire rope	1	Rope grease	Spray gun
	⑯ Slewing bearings	2	Chassis grease	Grease pump
	⑰ Wire rope for boom extension		Rope grease	Spray gun





## 2 Lubrication

### ◆ 1. Replacement of hydraulic oil

★ The amount required for oil change is 22 liters when filled up to the middle between upper and lower limits of the level gauge.

★ The oil should be replaced at early autumn because there is possibility of freezing moisture in the tank as well as in the hydraulic circuit when temperature goes below the freezing point. (Depending on the countries)

★ Air entering in the oil tank brings dirt and moisture.

In addition, since hydraulic equipment gradually wears to produce worn particles, replace the oil 3 months after the start of crane operation then once a year thereafter.

★ Tighten the cap securely with your hand after oil has been refilled. Remember that hydraulic oil may leak out if the cap is loosely tightened.

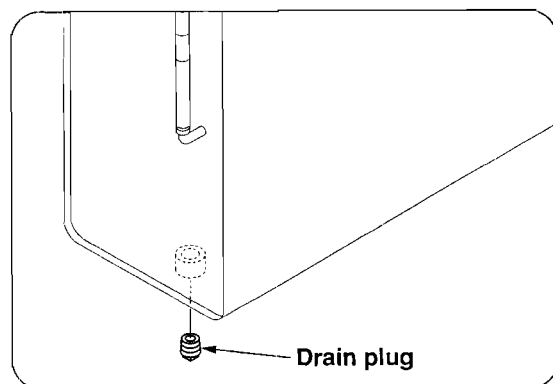
## ! CAUTION

★ Do not mix a different brand of hydraulic oil as properties of mixed oil deteriorates and damage to hydraulic equipment results.

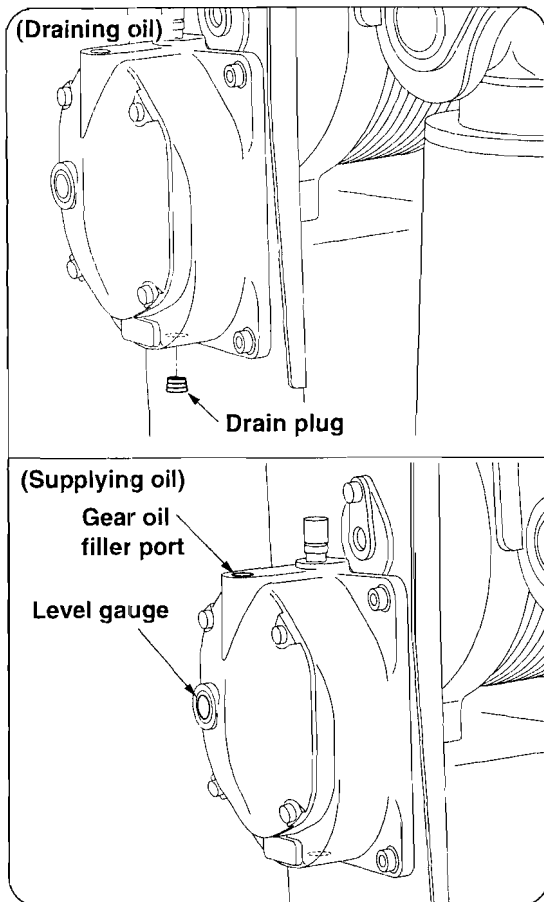
### ◆ 2. Draining hydraulic tank

Remove moisture in the hydraulic tank.

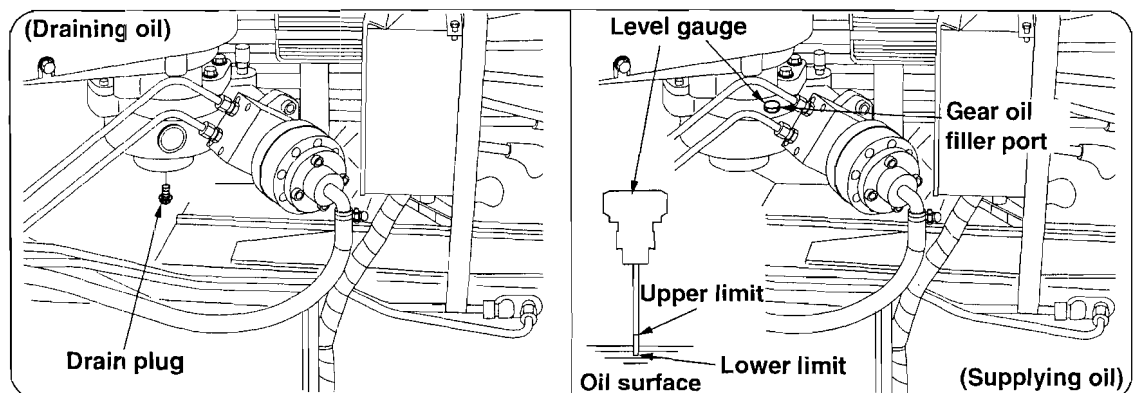
Moisture may enter through the air-breather and it is mixed with the hydraulic oil when the crane has been operated for a long time. Remove the drain plug located at lower part on the tank to drain the water.



## Winch reduction gear



## Slewing reduction gear



### ◆ 3. Replacement of gear oil

(Winch reduction gear · Slewing reduction gear)

★ Air enters in and out of the gear case so that dirt and moisture are brought in the gear case.

In addition, since hydraulic equipment gradually wears to produce worn particles, replace the oil 6 months after the start of operation.

★ After that replace gear oil;

- Once a year for winch reduction gear, and.
- Once every 2 years for slewing reduction gear.

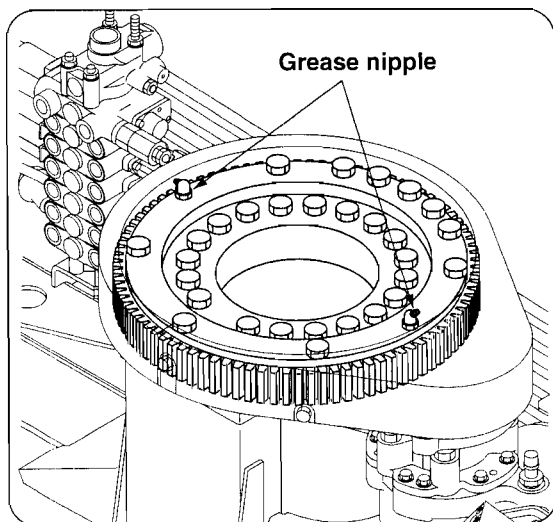
### ! CAUTION

★ Replace gear oil after oil temperature has dropped.

★ For gear oil to lubricate winch reduction gears, fill it up to the middle of the oil level gauge (approx. 1.0 liter).

★ For gear oil to lubricate slewing reduction gears, fill it up to a level between upper and lower limit marks of the oil level gauge (approx. 1.2 liters).

Check oil level not by tighten up the oil level gauge cap but by just inserting the gauge in the filler port.

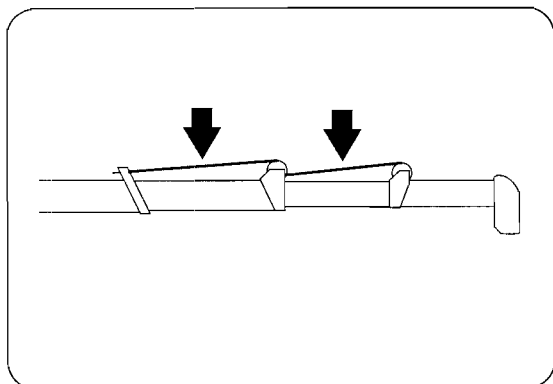


### ◆4. Lubrication to slewing bearings

The machine uses ball bearing as the slewing bearing.

Be sure to lubricate the bearing as insufficient lubrication may cause it to make unusual noise.

Grease in the nipples while slewing the boom once a month for moderate operation, and once a week for heavy-duty operation.



### ◆5. Lubrication to wire rope for boom extension

Spray the rope grease sufficiently once a month to the wire ropes with the boom fully extended.

## 12. MAJOR SPECIFICATIONS

### 1 URV503 (3-section boom)

(Operating speeds are on condition that oil temperature at 45~55℃ , no-load and rated oil flow.)

#### Major specifications

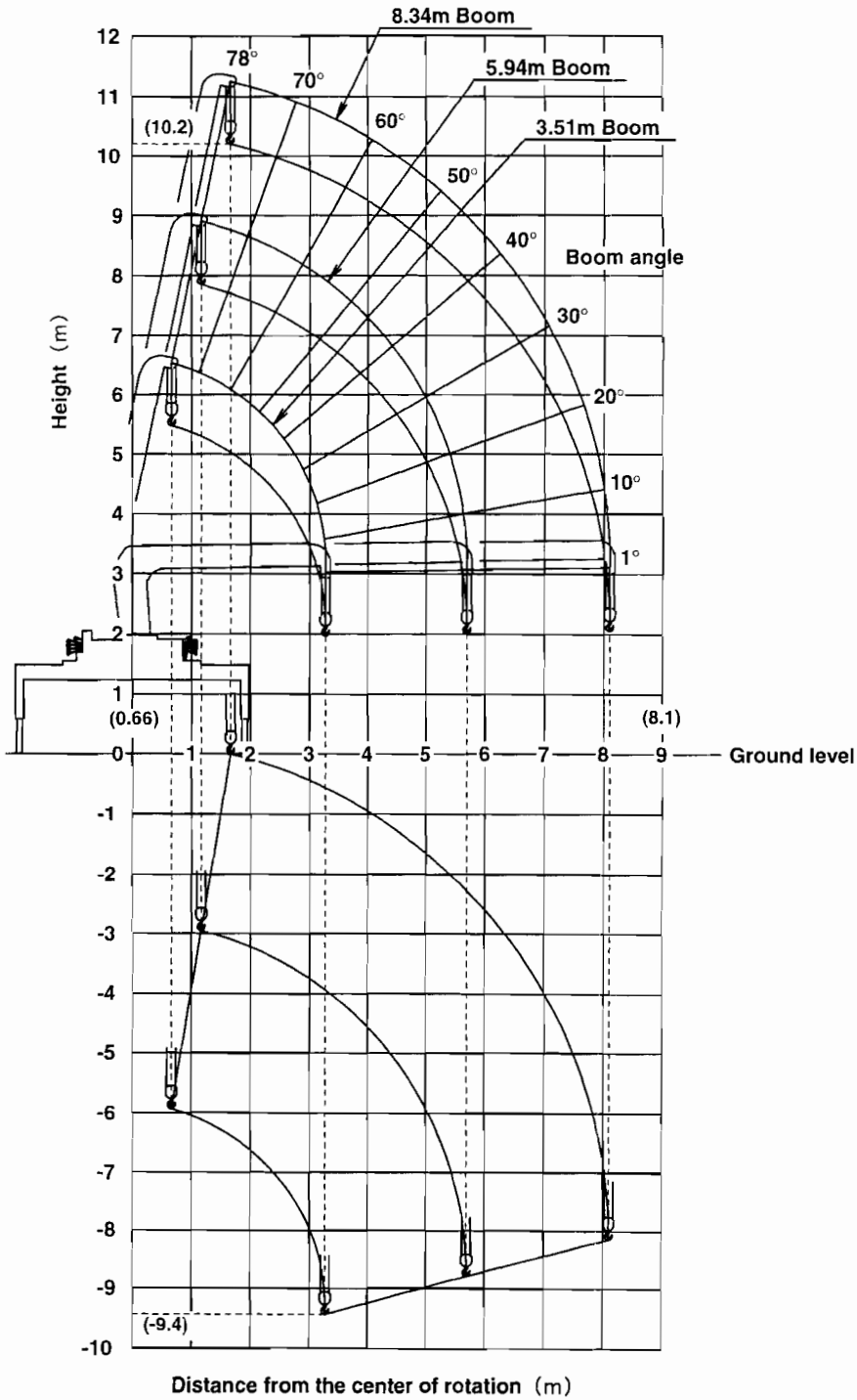
Model		URV503(3-section boom)
Crane capacity (lifting capacity)		3.03t × 4.1m (with outrigger extended to max.)
Maximum hook height above ground		10.2m
Boom length		3.51m~5.94m~8.34m
Maximum working radius		8.1m
Hoisting speed		19.0m/min.(at 4th layer on the drum) with 4-part line slinging
Boom extending speed		4.83m/17.5s
Boom raising speed		1°~ 78°/12s
Slewing speed		2.5rpm
Slewing range		360° (continuous)
Wire rope	Construction	IWRC 6 × WS(26) GRADE B
	Dia. × Length	8mm × 55m
Outrigger span	Halfway	3.0m
	Maximum	3.8m
Hydraulic pump	Rated pressure	20.6MPa{ 210kg/cm <sup>2</sup> }
	Rated delivery	60 L/min.
	Rated revolution	1400rpm
Hydraulic oil tank Capacity		59 L

## MAJOR SPECIFICATIONS (URV503)

### Equipment and construction

Model	URV503(3-section boom)
Boom telescoping	Boom : 3-section, hexagonal box beam
	Direct actuation by hydraulic cylinder (with hydraulic automatic locking device) (2nd and 3rd section extends sequentially)
Boom derricking	Hydraulic cylinder, direct actuation (with hydraulic automatic locking device)
Hoisting	Hydraulic motor : Axial plunger type
	Reduction gear : Spur-gear
	Brake : Automatic mechanical
Slewing	Hydraulic motor : Trochoid type
	Reduction gear : Worm-gear+Spur-gear (supported by ball bearing)
	Brake : Worm self-lock
Outrigger	(Horizontal) : Manual extension
	(Vertical) : Hydraulic cylinder, direct actuation (with hydraulic automatic locking device)
Hydraulic pump	Gear type
PTO	With indicator lamp
Safety devices	Pressure relief valve for hydraulic circuit
	Counterbalance valves for boom raising and boom telescoping cylinders
	Pilot-operated check valves for vertical outrigger cylinders
	Boom angle indicator with load indicator
	Hook safety latch
	Automatic mechanical brake for winch
	Loadmeter
	Overwinding alarm
Uni-hook type	With automatic lock mechanism for slewing
	With automatic stop for overwinding (Automatic stops for: winding-up hook, raising boom, and extending boom)

# Working range chart



Note: The above figures are based on no-load condition and do not include the deflection of the boom.

## MAJOR SPECIFICATIONS (URV503)

### Rated load

Unit : kg

Working Radius (m)	Boom length		
	3.51m	5.94m	8.34m
2.8	3030	3030	3030
3.5	(3.27) 3030	3030	3030
4.1		3030	3030
4.5		2580	2580
5.0		2280	2280
5.5		2000	2000
6.0		(5.7) 1880	1730
6.5			1580
7.0			1430
7.5			1330
8.1			1230

( ) : Working radius

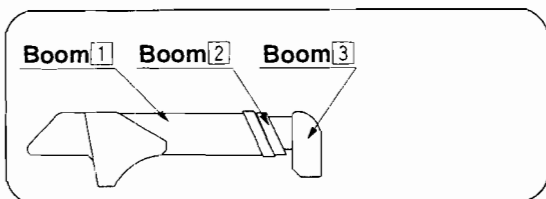
### CAUTION

1. Fully extend all outriggers on solid, level surface leveling vehicle.
2. Rated loads shown in the chart are based on the crane strength rather than stability.
3. Rated loads shown must be reduced in accordance with vehicle weight, loaded condition of truck, crane mounting position, wind, ground condition and operating speed.
4. The mass of hook(30kg), slings, and any accessories attached to the boom or loadline must be deducted from the above rated loads in the chart.
5. In accordance with our policy of constant product improvement, all specifications are subject to change without notice or obligations.

### ● Operating condition of booms;

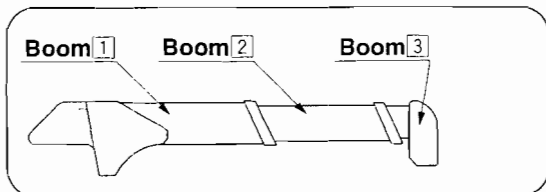
Boom **1** :

All booms are completely retracted.



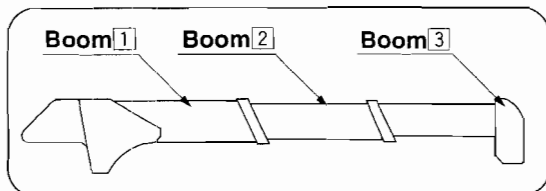
Boom **1+2** or **2** :

Boom **2** is extended.



Boom **1+2+3** or **3** :

Boom **2** and Boom **3** are extended.





MAJOR SPECIFICATIONS (URV504)

2 URV504 (4-section boom)

(Operating speeds are on condition that oil temperature at 45~55℃ , no-load and rated oil flow.)

Major specifications

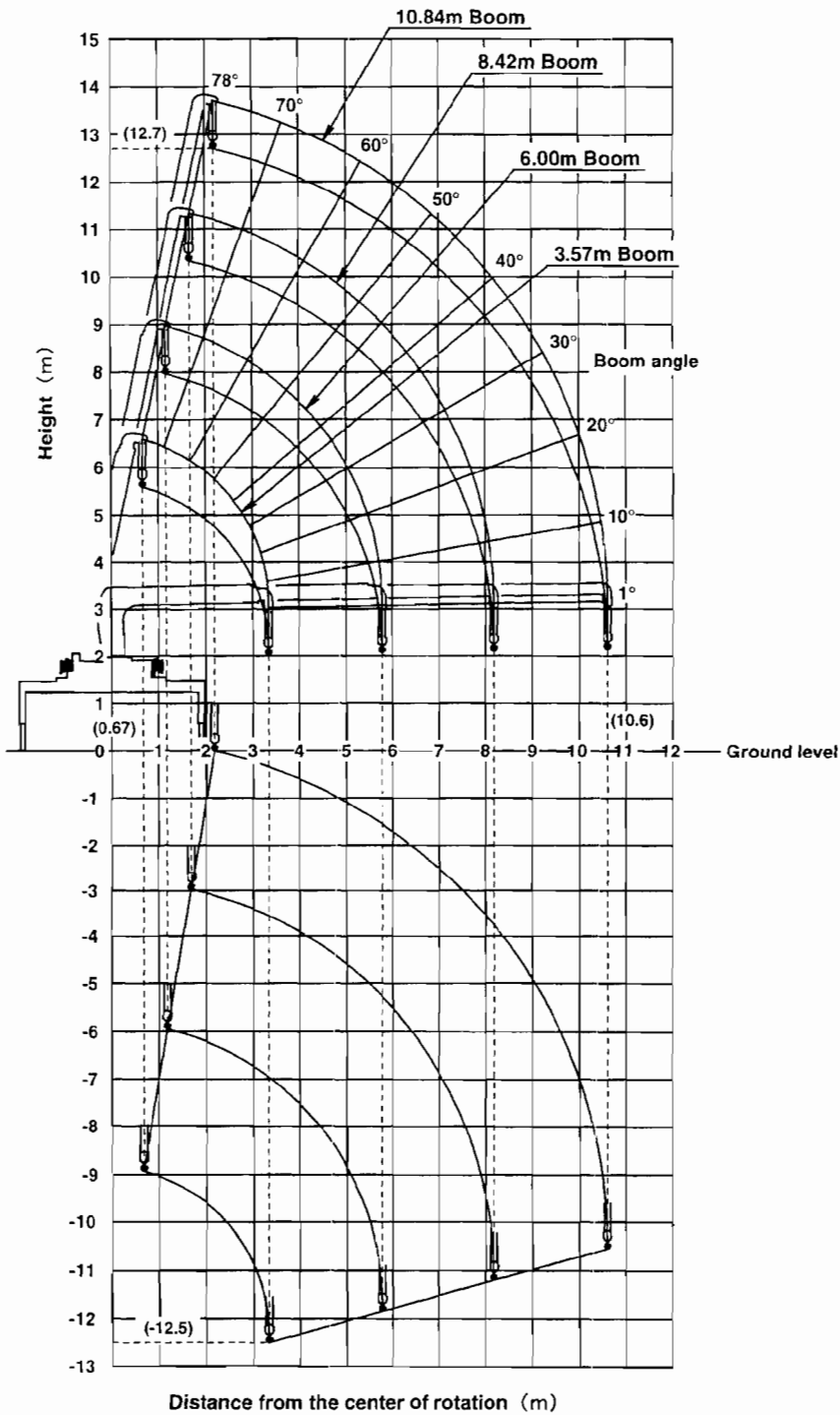
Model		URV504(4-section boom)
Crane capacity (lifting capacity)		3.03t ×4.1m (with outrigger extended to max.)
Maximum hook height above ground		12.7m
Boom length		3.57m~6.00m~8.42m~10.84m
Maximum working radius		10.6m
Hoisting speed		19.0m/min.(at 4th layer on the drum) with 4-part line slinging
Boom extending speed		7.27m/21.5s
Boom raising speed		1°~ 78°/12s
Slewing speed		2.5rpm
Slewing range		360° (continuous)
Wire rope	Construction	IWRC 6 ×WS(26) GRADE B
	Dia. ×Length	8mm ×68m
Outrigger span	Halfway	3.0m
	Maximum	3.8m
Hydraulic pump	Rated pressure	20.6MPa{210kg/cm²}
	Rated delivery	60 L/min.
	Rated revolution	1400rpm
Hydraulic oil tank Capacity		59 L

## Equipment and construction

<b>Model</b>	<b>URV504(4-section boom)</b>
Boom telescoping	Boom : 4-section, hexagonal box beam
	Direct actuation by hydraulic cylinder (with hydraulic automatic locking device) (2nd sections extend sequentially, 3rd and 4th sections simultaneously)
Boom derricking	Hydraulic cylinder, direct actuation (with hydraulic automatic locking device)
Hoisting	Hydraulic motor : Axial plunger type
	Reduction gear : Spur-gear
	Brake : Automatic mechanical
Slewing	Hydraulic motor : Trochoid type
	Reduction gear : Worm-gear+Spur-gear (supported by ball bearing)
	Brake : Worm self-lock
Outrigger	(Horizontal) : Manual extension
	(Vertical) : Hydraulic cylinder, direct actuation (with hydraulic automatic locking device)
Hydraulic pump	Gear type
PTO	With indicator lamp
Safety devices	Pressure relief valve for hydraulic circuit
	Counterbalance valves for boom raising and boom telescoping cylinders
	Pilot-operated check valves for vertical outrigger cylinders
	Boom angle indicator with load indicator
	Hook safety latch
	Automatic mechanical brake for winch
	Loadmeter
	Overwinding alarm
	With automatic lock mechanism for slewing
Uni-hook type	With automatic stop for overwinding (Automatic stops for: winding-up hook, raising boom, and extending boom)

MAJOR SPECIFICATIONS (URV504)

Working range chart



Note: The above figures are based on no-load condition and do not include the deflection of the boom.

## Rated load

Unit : kg

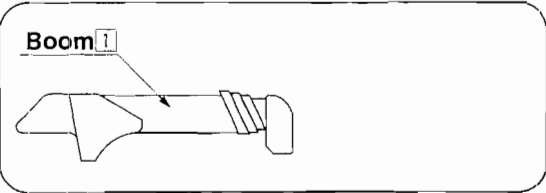
Working Radius (m)	Boom length			
	3.57m	6.00m	8.42m	10.84m
2.7	3030	3030	3030	
3.5	(3.33) 3030	3030	3030	2030
4.1		3030	3030	2030
4.5		2580	2580	2030
5.0		2280	2280	1830
5.5		1930	1930	1650
6.0		(5.76) 1780	1730	1480
6.5			1530	1330
7.0			1400	1230
7.5			1280	1150
8.0			(8.18) 1130	1080
9.0				980
10.0				850
10.6				830

( ) : Working radius

## CAUTION

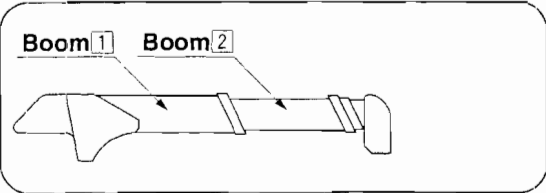
1. Fully extend all outriggers on solid, level surface leveling vehicle.
2. Rated loads shown in the chart are based on the crane strength rather than stability.
3. Rated loads shown must be reduced in accordance with vehicle weight, loaded condition of truck, crane mounting position, wind, ground condition and operating speed.
4. The mass of hook(30kg), slings, and any accessories attached to the boom or loadline must be deducted from the above rated loads in the chart.
5. In accordance with our policy of constant product improvement, all specifications are subject to change without notice or obligations.

# MAJOR SPECIFICATIONS (URV504)

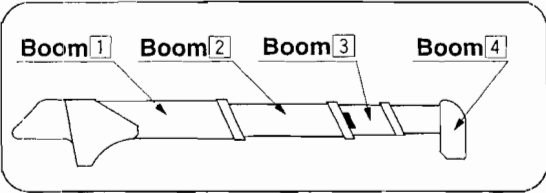



## ● Operating condition of booms;

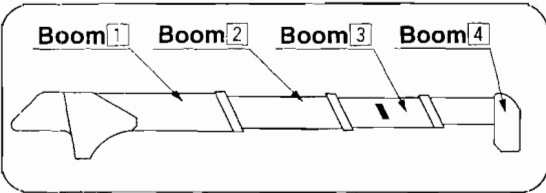
Boom 1 :  
All booms are completely retracted.



Boom 1+2 or 2 :  
Boom 2 is extended.



Boom 1+2+3 or 3 :  
Boom 3 is extended to the mark .



Boom 1+2+3+4 or 4 :  
Boom 2, 3 and 4 are extended to their extremes.

### **3 URV505 (5section boom)**

(Operating speeds are on condition that oil temperature at 45~55℃ , no-load and rated oil flow.)

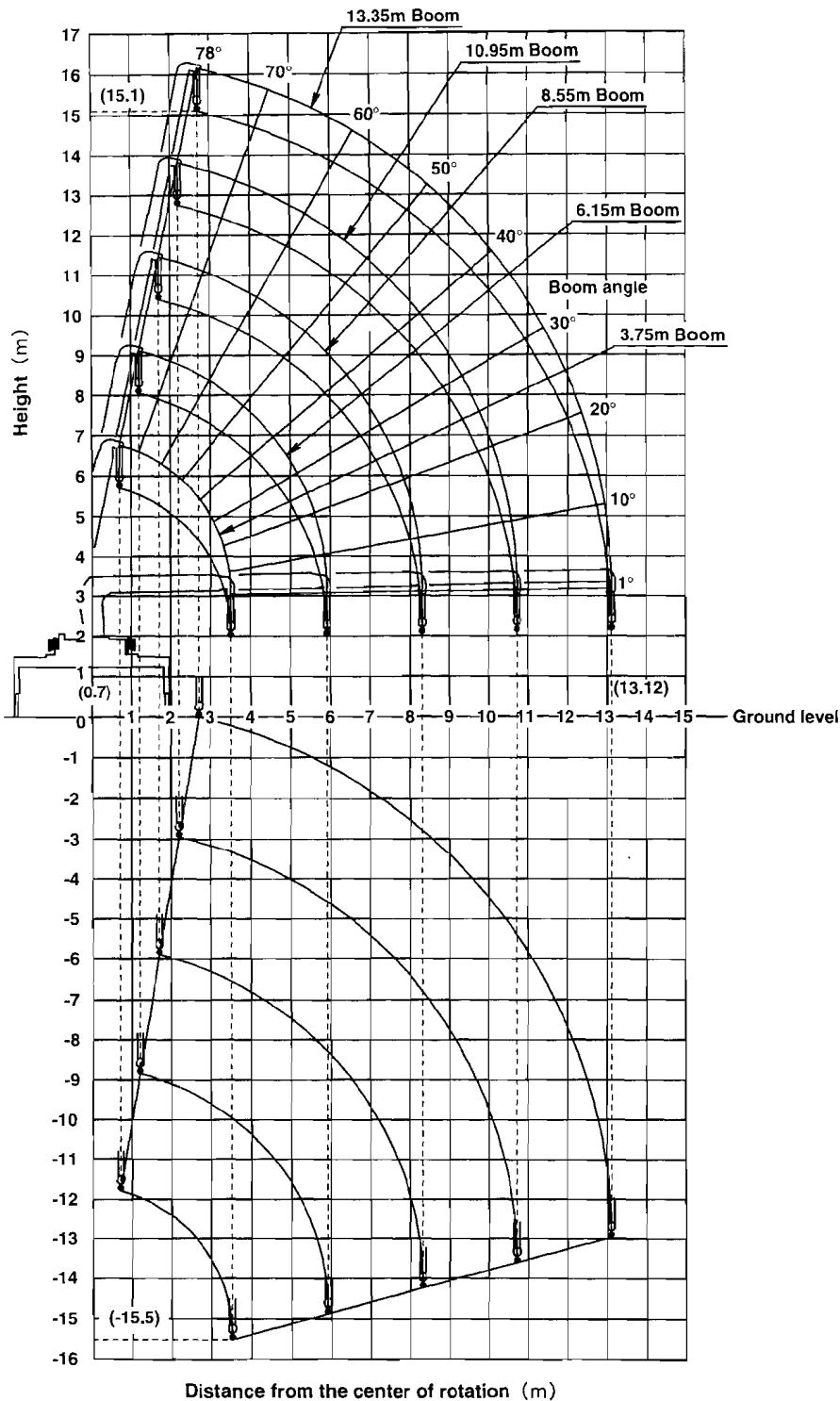
#### **Major specifications**

<b>Model</b>		<b>URV505(5-section boom)</b>
Crane capacity (lifting capacity)		3.03t × 3.9m (with outrigger extended to max.)
Maximum hook height above ground		15.1m
Boom length		3.75m~6.15m~8.55m~10.95m~13.35m
Maximum working radius		13.12m
Hoisting speed		19.0m/min.(at 4th layer on the drum) with 4-part line slinging
Boom extending speed		9.60m/26s
Boom raising speed		1°~ 78°/12s
Slewing speed		2.5rpm
Slewing range		360° (continuous)
Wire rope	Construction	IWRC 6 × WS(26) GRADE B
	Dia. × Length	8mm × 81.5m
Outrigger span	Halfway	3.0m
	Maximum	3.8m
Hydraulic pump	Rated pressure	20.6MPa{210kg/cm <sup>2</sup> }
	Rated delivery	60 L/min.
	Rated revolution	1400rpm
Hydraulic oil tank Capacity		59 L

**Equipment and construction**

Model	URV505(5-section boom)
Boom telescoping	Boom : 5-section, hexagonal box beam
	Direct actuation by hydraulic cylinder (with hydraulic automatic locking device) (2nd and 3rd sections extend sequentially, 4th and 5th sections simultaneously)
Boom derricking	Hydraulic cylinder, direct actuation (with hydraulic automatic locking device)
Hoisting	Hydraulic motor : Axial plunger type
	Reduction gear : Spur-gear
	Brake : Automatic mechanical
Slewing	Hydraulic motor : Trochoid type
	Reduction gear : Worm-gear+Spur-gear (supported by ball bearing)
	Brake : Worm self-lock
Outrigger	(Horizontal) : Manual extension
	(Vertical) : Hydraulic cylinder, direct actuation (with hydraulic automatic locking device)
Hydraulic pump	Gear type
PTO	With indicator lamp
Safety devices	Pressure relief valve for hydraulic circuit
	Counterbalance valves for boom raising and boom telescoping cylinders
	Pilot-operated check valves for vertical outrigger cylinders
	Boom angle indicator with load indicator
	Hook safety latch
	Automatic mechanical brake for winch
	Loadmeter
	Overwinding alarm
	With automatic lock mechanism for slewing
Uni-hook type	With automatic stop for overwinding (Automatic stops for:winding-up hook, raising boom, and extending boom)

Working range chart



Note: The above figures are based on no-load condition and do not include the deflection of the boom.



MAJOR SPECIFICATIONS (URV505)

Rated load

Unit : kg

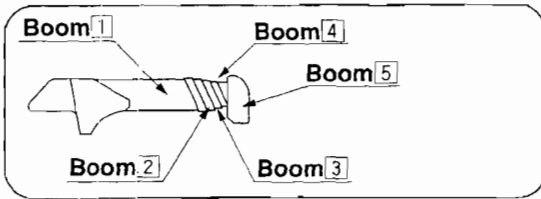
Working Radius (m)	Boom length				
	3.75m	6.15m	8.55m	10.95m	13.35m
2.7	3030	3030	3030		
3.0	3030	3030	3030		
4.0	(3.51) 3030	(3.9) 3030	(3.9) 3030	2030	
4.5		2430	2430	2030	1330
5.0		2130	2130	1830	1330
5.5		1880	1880	1650	1200
6.0		(5.91) 1680	1650	1480	1100
7.0			1330	1230	950
8.0			(8.31) 1080	1030	830
9.0				880	730
10.0				780	650
11.0				(10.71) 730	600
12.0					550
13.12					500

( ) : Working radius

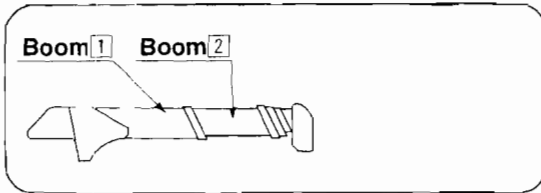
CAUTION

- 1. Fully extend all outriggers on solid, level surface leveling vehicle.
- 2. Rated loads shown in the chart are based on the crane strength rather than stability.
- 3. Rated loads shown must be reduced in accordance with vehicle weight, loaded condition of truck, crane mounting position, wind, ground condition and operating speed.
- 4. The mass of hook(30kg), slings, and any accessories attached to the boom or loadline must be deducted from the above rated loads in the chart.
- 5. In accordance with our policy of constant product improvement, all specifications are subject to change without notice or obligations.

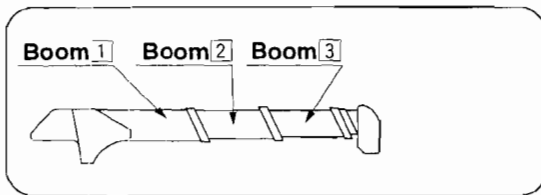
## ● Operating condition of booms;



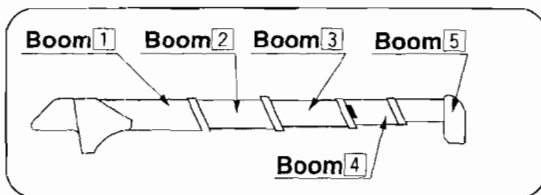
Boom **1** :  
All booms are completely retracted.



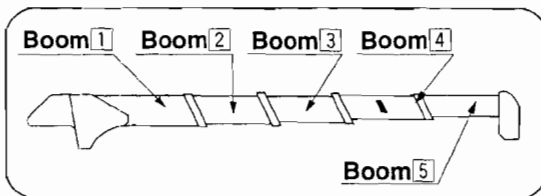
Boom **1+2** or **2** :  
Boom **2** is extended.



Boom **1+2+3** or **3** :  
Boom **2** and **3** are extended to their extremes.



Boom **1+2+3+4** or **4** :  
Boom **4** is extended to the mark .



Boom **1+2+3+4+5** or **5** :  
Boom **2**, **3**, **4** and **5** are extended to their extremes.

MAJOR SPECIFICATIONS (URV506)

4 URV506 (6section boom)

(Operating speeds are on condition that oil temperature at 45~55℃ , no-load and rated oil flow.)

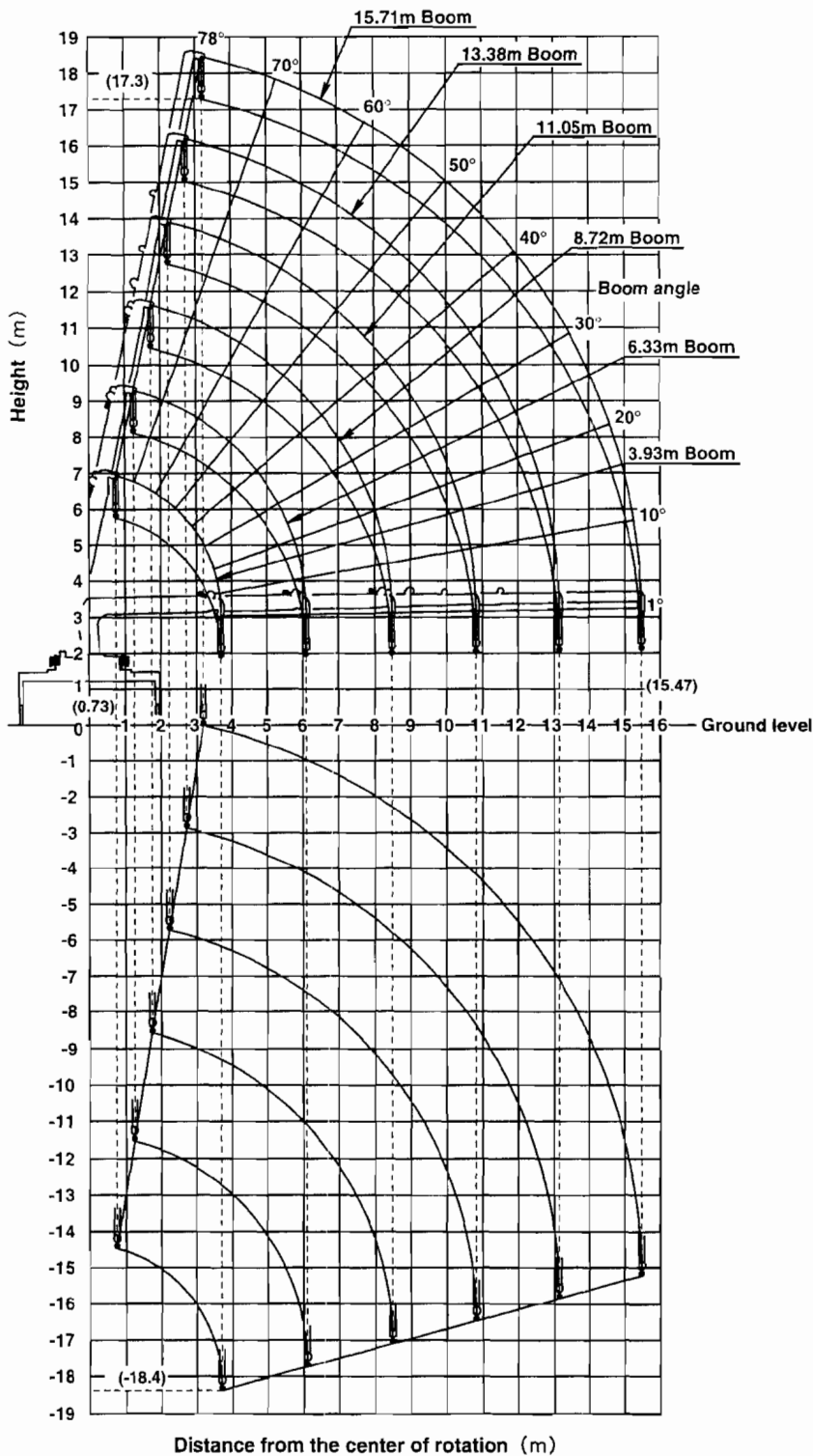
Major specifications

Model		URV506(6-section boom)
Crane capacity (lifting capacity)		3.03t ×3.9m (with outrigger extended to max.)
Maximum hook height above ground		17.3m
Boom length		3.93m~6.33m~8.72m~11.05m~13.38m~15.71m
Maximum working radius		15.47m
Hoisting speed		19.0m/min.(at 4th layer on the drum) with 4-part line slinging
Boom extending speed		11.78m/28s
Boom raising speed		1°~ 78°/12s
Slewing speed		2.5rpm
Slewing range		360° (continuous)
Wire rope	Construction	IWRC 6 × WS(26) GRADE B
	Dia. × Length	8mm × 91.5m
Outrigger span	Halfway	3.0m
	Maximum	3.8m
Hydraulic pump	Rated pressure	20.6MPa{ 210kg/cm² }
	Rated delivery	60 L/min.
	Rated revolution	1400rpm
Hydraulic oil tank Capacity		59 L

## Equipment and construction

<b>Model</b>	<b>URV506(6-section boom)</b>
Boom telescoping	Boom : 6-section, hexagonal box beam
	Direct actuation by hydraulic cylinder (with hydraulic automatic locking device) (2nd and 3ed sections extend sequentially, 4th, 5th and 6th sections simultaneously)
Boom derricking	Hydraulic cylinder, direct actuation (with hydraulic automatic locking device)
Hoisting	Hydraulic motor : Axial plunger type
	Reduction gear : Spur-gear
	Brake : Automatic mechanical
Slewing	Hydraulic motor : Trochoid type
	Reduction gear : Worm-gear+Spur-gear (supported by ball bearing)
	Brake : Worm self-lock
Outrigger	(Horizontal) : Manual extension
	(Vertical) : Hydraulic cylinder, direct actuation (with hydraulic automatic locking device)
Hydraulic pump	Gear type
PTO	With indicator lamp
Safety devices	Pressure relief valve for hydraulic circuit
	Counterbalance valves for boom raising and boom telescoping cylinders
	Pilot-operated check valves for vertical outrigger cylinders
	Boom angle indicator with load indicator
	Hook safety latch
	Automatic mechanical brake for winch
	Loadmeter
	Overwinding alarm
Uni-hook type	With automatic lock mechanism for slewing
	With automatic stop for overwinding (Automatic stops for: winding-up hook, raising boom, and extending boom)

Working range chart



Note: The above figures are based on no-load condition and do not include the deflection of the boom.

## Rated load

Unit : kg

Working Radius (m)	Boom length					
	3.93m	6.33m	8.72m	11.05m	13.38m	15.71m
2.7	3030	3030	3030			
3.0	3030	3030	3030			
4.0	(3.69) 3030	(3.9) 3030	(3.9) 3030	2030		
4.5		2430	2430	2030	1330	
5.0		2130	2130	1830	1330	
5.5		1880	1880	1650	1200	
6.0		(6.09) 1600	1630	1480	1100	530
7.0			1330	1230	950	430
8.0			(8.48) 1030	1030	830	380
9.0				880	730	380
10.0				780	650	330
11.0				(10.81) 730	600	330
12.0					550	280
13.0					(13.14) 500	280
14.0						250
15.47						230

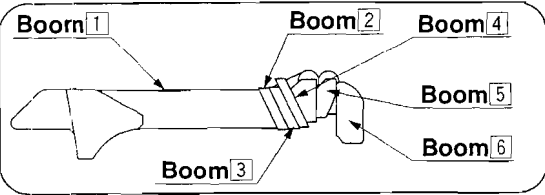
( ) : Working radius

## CAUTION

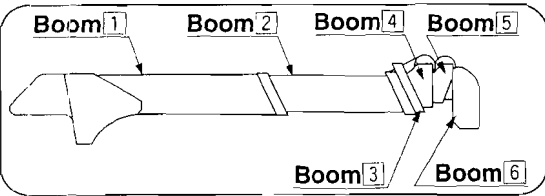
1. Fully extend all outriggers on solid, level surface leveling vehicle.
2. Rated loads shown in the chart are based on the crane strength rather than stability.
3. Rated loads shown must be reduced in accordance with vehicle weight, loaded condition of truck, crane mounting position, wind, ground condition and operating speed.
4. The mass of hook(30kg), slings, and any accessories attached to the boom or loadline must be deducted from the above rated loads in the chart.
5. In accordance with our policy of constant product improvement, all specifications are subject to change without notice or obligations.

MAJOR SPECIFICATIONS (URV506)

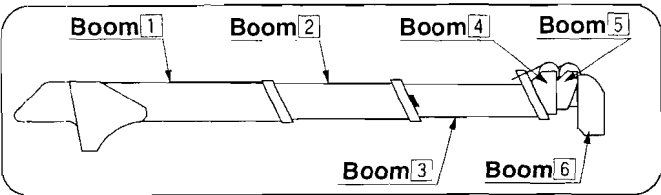
● Operating condition of booms;



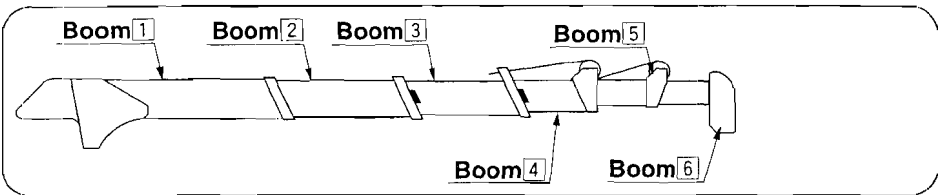
Boom 1 :  
All booms are completely retracted.



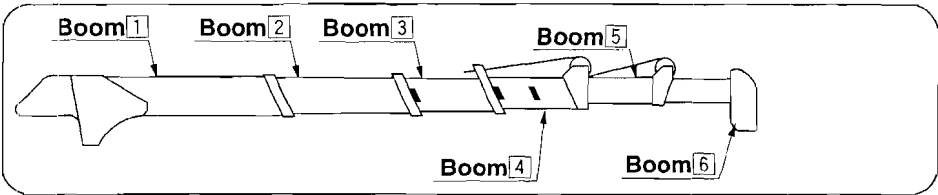
Boom 1+2 or 2 :  
Boom 2 is extended.



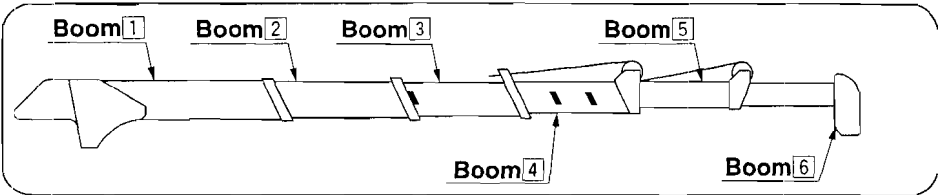
Boom 1+2+3 or 3 :  
Boom is extended to the mark ▼ on the side plate of Boom 3.



Boom 1+2+3+4 or 4 :  
Boom is extended to where 1st mark ▼ on the side plate of Boom 4 is visible.



Boom 1+2+3+4+5 or 5 :  
Boom is extended to where 2nd mark ▼ on the side plate of Boom 4 is visible.



Boom 1+2+3+4+5+6 or 6 :  
Boom 2, 3, 4, 5 and 6 are all extended to their extremes.





# **FURUKAWA UNIC CORPORATION**

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