

UNIC HYDRAULIC CRANE

MODEL

RC-500

Radio Remote Control Device

OPERATION & MAINTENANCE MANUAL

FURUKAWA UNIC CORPORATION

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OMRC-500200405A
PRINTED IN JAPAN

Request to those who operate the crane

The operator's manual describes correct operation methods, easy inspection, and service maintenance of the "radio remote control device".

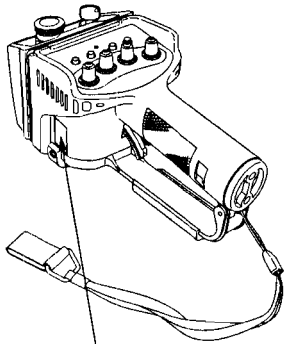
Be sure to read this manual together with the separate operator's manual of UNIC crane to carry out correct and safe operation of the control device.

Operate the system after you have read and understood the contents of this manual.

Although we take all possible measures to ensure quality of the control device, you are requested to contact UNIC offices, UNIC sales agents, or authorized service stations if there is anything you do not understand about the operation of crane and parts.

◆ When making inquiries

When making inquiries, be sure to inform us of model, serial number illustrated on the following label in the remote transmitter.



Serial number
AUS-HA10001

— 5-digit (consecutive number)

— Alphabets (frequency classification)

— Type clasification

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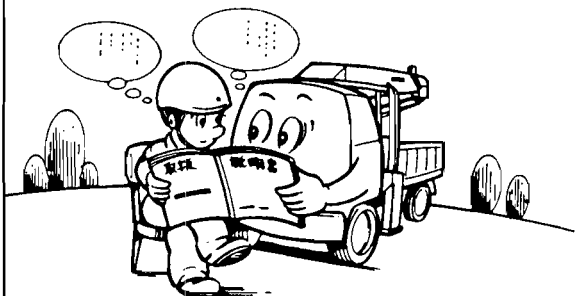
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1. FOR SAFETY OPERATION

Observe all the safety regulations !



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

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

1 Request to customers

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

⚠ 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 crane mounting vehicle.

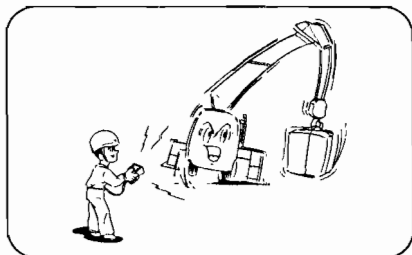
- ◆ Store this operator's manual where it is easily accessible to read it over and over again.
- ◆ Failure to observe the right operation and maintenance/inspection illustrated in this manual may cause trouble in the crane and may invite an accident, and this will not only shorten its service life but will impair safety in the crane operation.
Please remember, in such cases, that no warranty will be given even if the crane is within valid 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 to call attention.
You are requested to read them carefully.
- ◆ Do not alter the crane.
 - ★ If you want to make an alteration, contact UNIC sales agent or an authorized service shop.
 - ★ UNIC does not bear any responsibility for troubles and /or accidents due to unauthorized alteration.

2. SAFETY PRECAUTIONS FOR CARRIER OPERATION

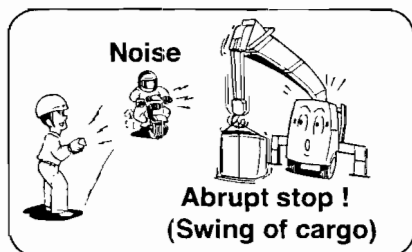
WARNING

★Observe the cautions for securing safety.

Failure to observe the cautions may invite troubles or serious accidents.



1 Pay special attention to the crane and its surroundings to prevent the crane from being tumbled down as operators stand at a distance from the crane.



2 Pay attention to the swing of lifted cargo as the crane may make an abrupt stop when operating it through radio remote control device because it may be affected by radio interference, radio jamming, and noise coming from outside.

In order for the crane system not to be affected easily by interference mentioned above, operate the crane with the following in mind:

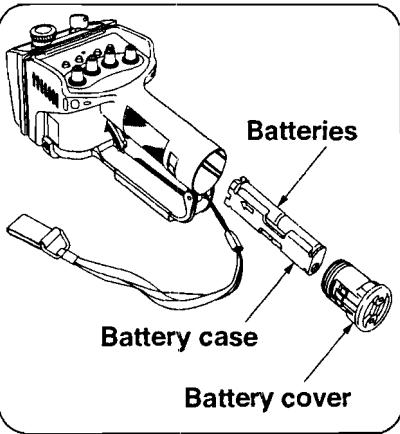
- ① Operator must not leave the crane unnecessarily.
Operate the crane within working radius of the crane.
- ② Correct or repair the transmitting antenna (located at the stem of transmitter) if it has been distorted or damaged.

●Remarks

Typical source of noise interference:

- Ignition noise emitted from the engines such as of motorcycles or of portable generators.
- Buzzers using contacts such as for alarming when reversing vehicles.
- Electric motors of air-conditioner fan, electric fan, and flashing beacon mounted in cab compartment.

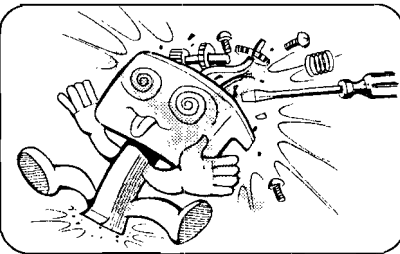
SAFETY PRECAUTIONS FOR CARRIER OPERATION



3 Remove the batteries when the crane will not be used for a long period of time. Otherwise, leakage of battery may result.

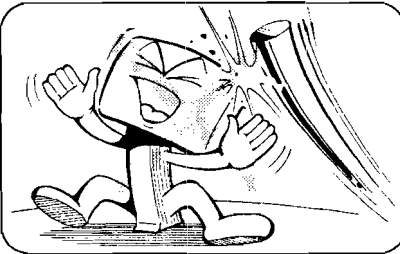
Be sure to observe the cautions indicated on the battery as liquid of battery will leak due to wrong use of it.

4 Dispose of used batteries in accordance with the regulations.



5 Never try disassembly or alteration of transmitter, receiver, and control box.

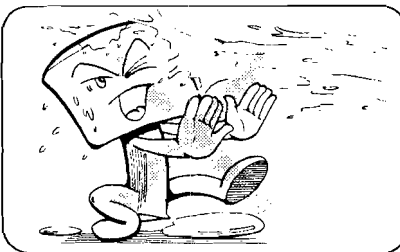
Do not remove the stay of transmitter as the transmitting antenna is built in it.



6 Do not drop or hit the transmitter against something, or give a strong shock, as it may cause damaging the enclosure or breakdown of electronic components.

In addition, dropping or giving a strong shock to the transmitter may damage batteries inside causing generation of heat.

If the transmitter has been given a strong shock, be sure to check batteries and replace them if damaged.

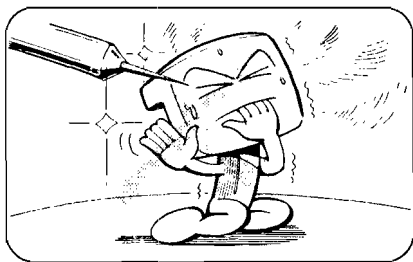


7 Do not wash the transmitter with water directly.

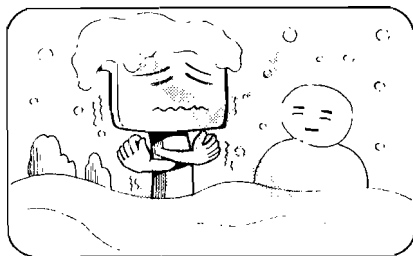
Wipe dirt off the transmitter with a piece of cloth wet with water or diluted detergent.

Avoid using an alkaline detergent, an alcohol, or a spraying washing agent as they may crack the plastic housing of transmitter.

SAFETY PRECAUTIONS FOR CARRIER OPERATION

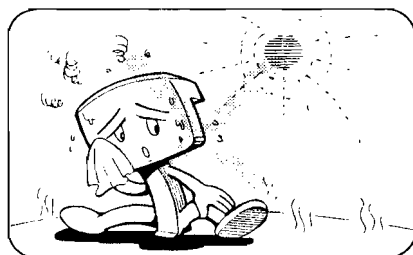


8 Do not thrust the control panel in the transmitter and/or control keys with a sharp article as it may make a hole resulting in entering water inside.



9 Do not give the transmitter an abrupt temperature change.

An abrupt temperature change may cause a fault due to building-up condensation inside of the transmitter.



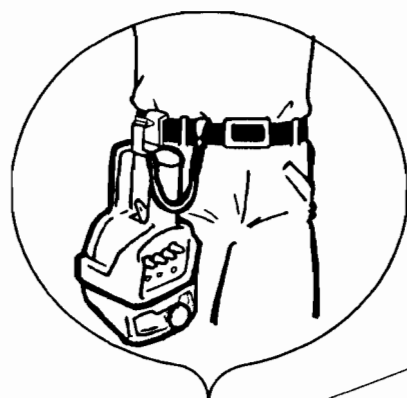
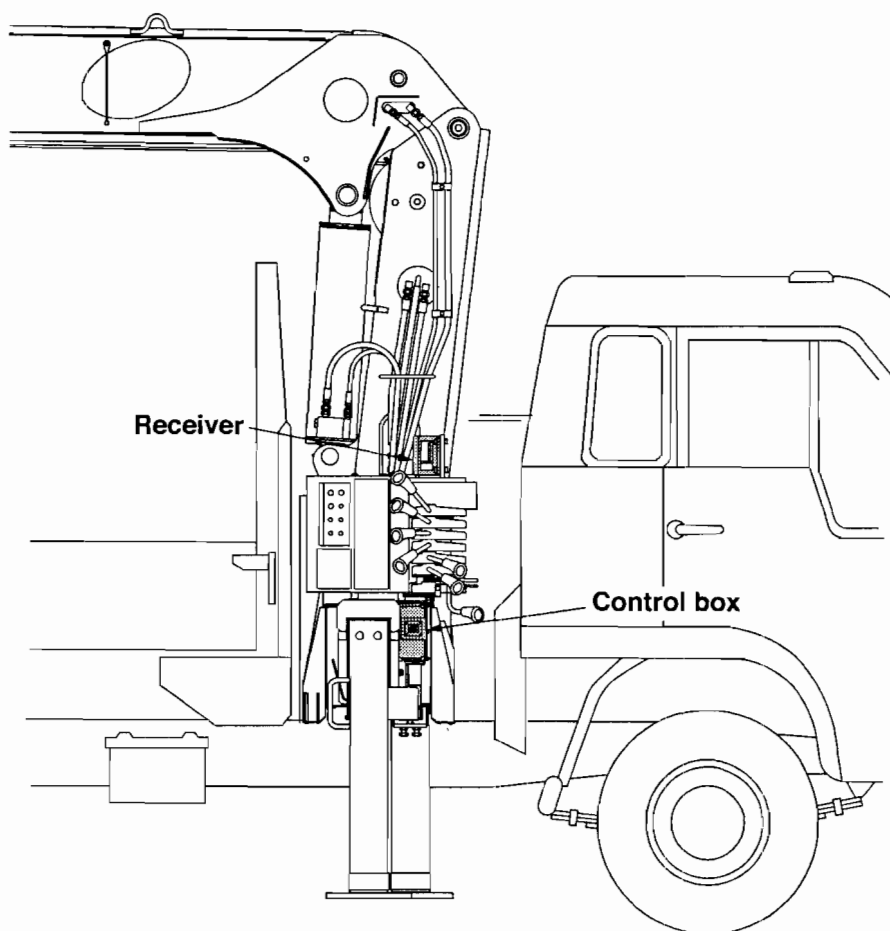
10 Do not put or store the transmitter where:

- It is in direct sunlight.
- It is in front of hot air exhausted out of the vehicle, and
- It is close to a heating apparatus or it is too humid.

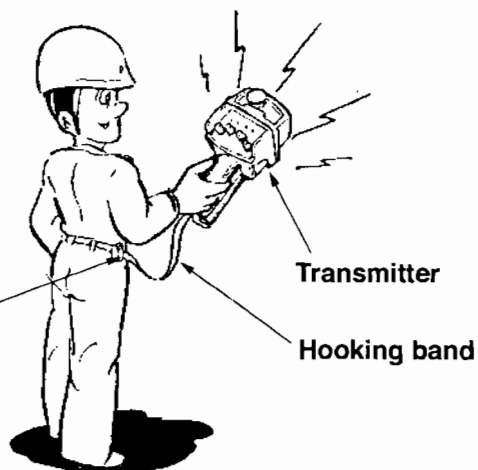
3. DESCRIPTION OF MAJOR EQUIPMENT

1 Overall radio remote control device

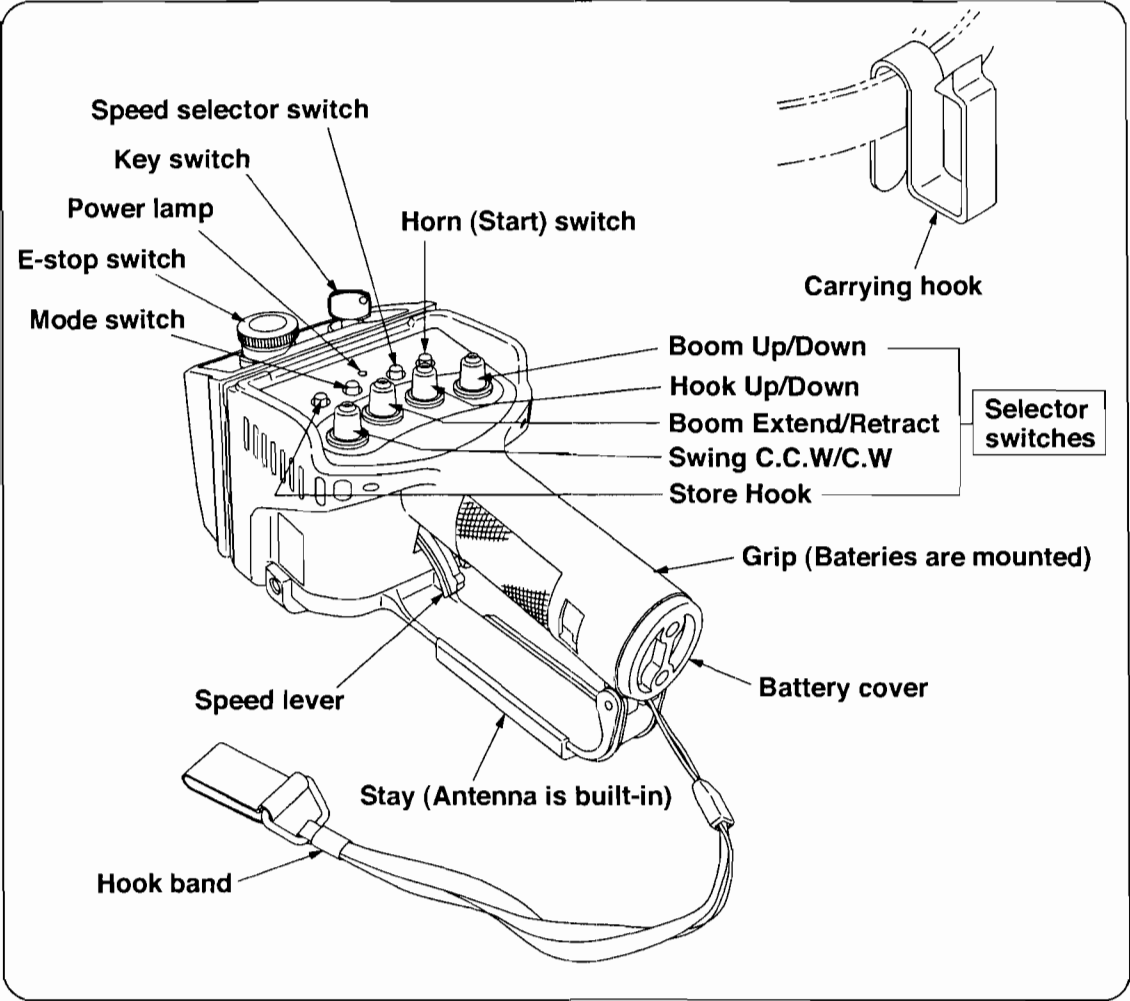
(Showing typical mounting example)



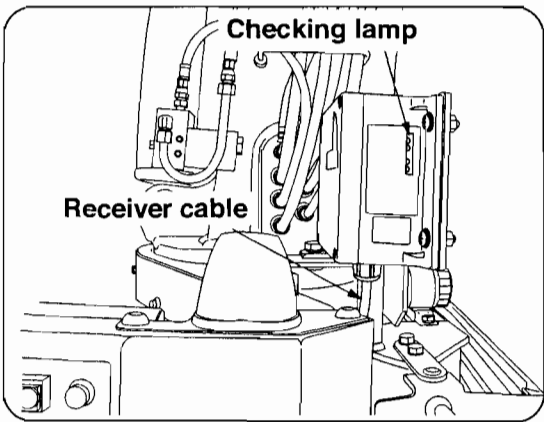
Carrying hook



2 Description of each part of transmitter

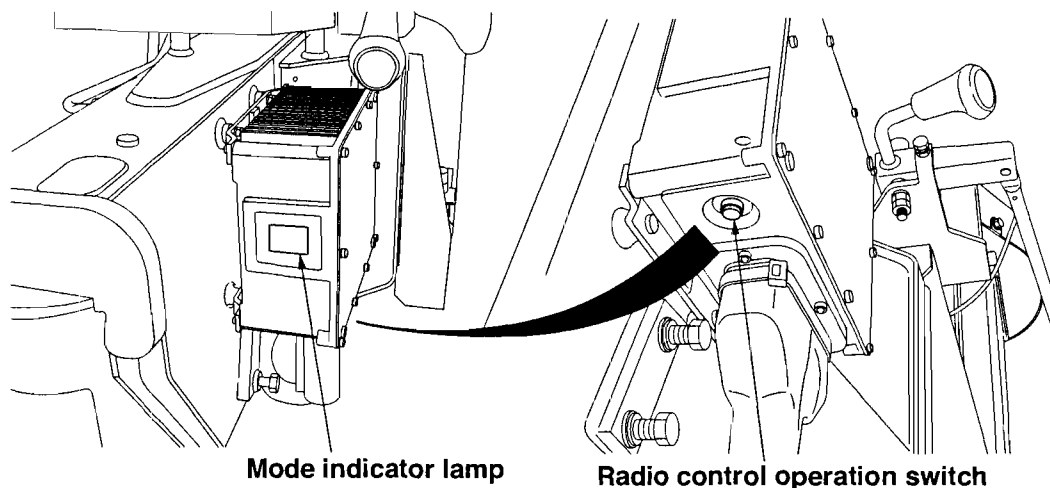


3 Description of each part of receiver



*Receiving antenna is built in the receiver.

4 *Description of each part of control box*



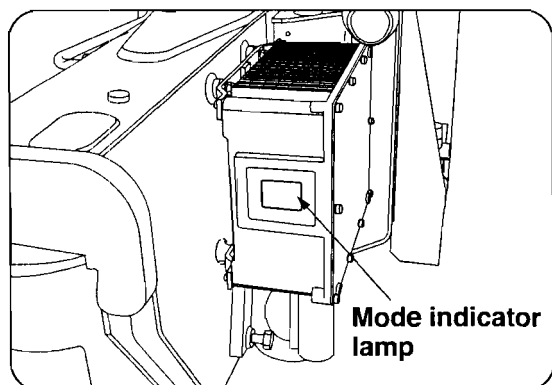
4. INSPECTION BEFORE CRANE OPERATION

Before crane operation, check if the crane operates correctly as follows;

●Remarks

The “control box” is turned ON automatically when PTO is engaged and the “mode indicator lamp” lights as the power to “control box” is supplied by engagement/disengagement of PTO.

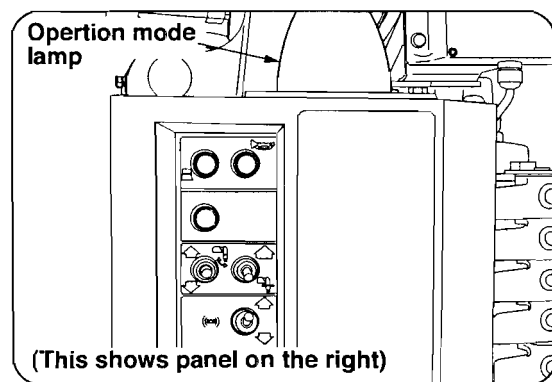
And the “power indicator lamp” on the “receiver” lights in green.



1 Checking mode indicator lamp

The “mode indicator lamp” makes a full lighting as in [B.B.] for about 3 seconds after PTO has been engaged.

(The “operation mode lamp” located in upper part of the switch panel lights for about 1 second after PTO has been engaged regardless of operation modes.)



2 System diagnosis

The crane is carrying out system diagnosis while the “mode indicator” is fully lit up.

What is to be checked during system diagnosis is if;

- Electronic circuit in the control box is functioning correctly,
- Manual control lever is at its neutral position, and
- Radio control receiver is connected to the crane and the receiver functions normally.

! CAUTION

★ Do not make a crane operation while system diagnosis is being carried out.

If the crane is operated during the system diagnosis, voice message, “Beep, Service remote control, Service remote control”, sounds and the crane is turned into inoperable conditions.

If this happened, turn OFF the PTO once and turn it ON again.

INSPECTION BEFORE CRANE OPERATION

If it was found normal after the system diagnosis has been completed, the mode indicator lamp lights and following voice message sounds in accordance with each operation mode.

Mode	Information	Indication priority
00	Current operation mode is on radio remote control mode and power to transmitter has been turned ON.	6
01	Current operation mode is on manual control mode.	5
04	Current operation mode is on outrigger radio control operation mode and power to transmitter has been turned ON.	3
10	Hook hits against weight for over-winding alarm.	4
15	Outriggers fail to touch the ground.	2
90	Current operation mode is on radio control operation mode or on outrigger radio control operation mode and power to transmitter has been turned OFF.	1

• Since priority is assigned for each mode, it is to be indicated in the order of higher priority.

Operation mode	Voice message	Operation mode lamp
Manual	Crane mode, Crane mode	OFF
Radio remote control	Remote control ready, Remote control ready	Lights
Outrigger radio remote control	Outrigger mode, Outriggers moving, Outriggers moving	Blinks

●Remarks

If the “operation mode lamp” blinks, it is operated on outrigger radio remote control mode.

In this situation, the crane cannot be operated other than simultaneous extension and retraction of outriggers through radio remote control device.

When operating the crane, turn OFF the “outrigger radio control operation switch” (It is to be applied only to “high outrigger type”).

CAUTION

★ If the “mode indicator lamp” fails to make a full lighting during system diagnosis, or the voice message, “Beep, Service remote control, Service remote control”, is issued despite the fact that the crane has not been operated, take measures according to the section 9. ③ “Trouble inspection”. (page 9-3).

3 Checking emergency stop switch

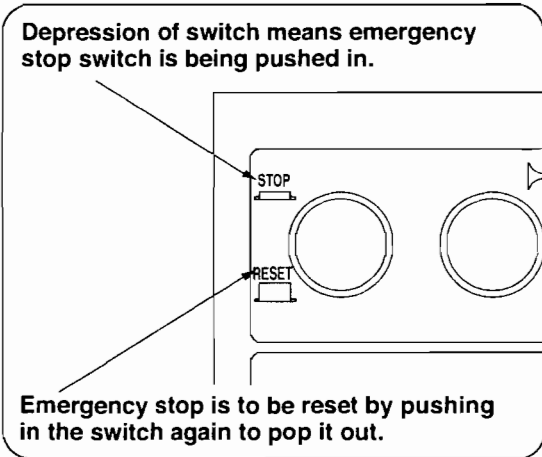
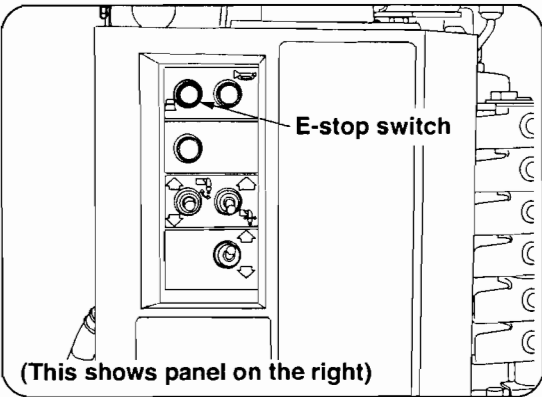
Check that the “E-stop switch” has been reset.

If the “E-stop switch” has been depressed, the crane will not work.

If the “E-stop switch” has been depressed, depress it again for reset.

●Remarks

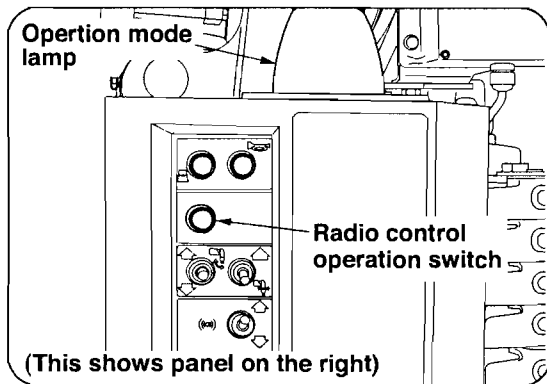
Although the engine speed may increase for a short time when the “E-stop switch” has been pushed in again to reset the emergency stop, this is not a fault.



5. HOW TO SWITCH CRANE OPERATION MODE

The crane can be operated either by manual control levers located on both sides of the crane or by the radio remote control transmitter.

Switch crane operation mode to the manual control mode for operating the crane with manual control lever, and to the radio remote control mode for operating the crane through radio remote control transmitter.



How to switch operation mode

Switching of manual control mode between radio remote control modes is to be made by the radio control selector switch mounted on the switch panel of the crane.

Depression of radio control operation switch when operated on manual operation mode allows to switch it into the radio control operation mode and following voice message is issued:

“Remote control ready, Remote control ready”

The operation mode lamp lights when switched to the radio control operation mode.

Depression of radio control operation switch when operated on the radio remote control mode allows to switch it into the manual operation mode and following voice message is issued:

“Crane mode, Crane mode”

The operation mode lamp goes off when switched to the manual operation mode.

The crane can only be operated via manual control levers when it is on the manual control mode but it cannot be operated through the radio control transmitter.

HOW TO SWITCH CRANE OPERATION MODE

The crane can only be operated through the radio control transmitter when it is on the radio remote control mode but it cannot be operated via manual control levers (including outriggers).

List of available functions to be operated on each control mode

Crane operation		Operation mode	
		Manual	Radio remote control
Manual lever	Boom Up/Down	○	×
	Hook Up/Down	○	×
	Boom Extend/Retract	○	×
	Swing C.C.W./C.W.	○	×
	Outrigger on the right	○	×
	Outrigger on the left	○	×
	High-outrigger (For only high-outrigger type)	○	×
Radio remote control transmitter	Boom Up/Down	×	○
	Hook Up/Down	×	○
	Boom Extend/Retract	×	○
	Swing C.C.W./C.W.	×	○
	Storing hook	×	○
	Mode	×	○
	Speed select	×	○
	Horn	×	○
	Emergency stop	×	○

Operation ○: Possible ×: Impossible

●Remarks

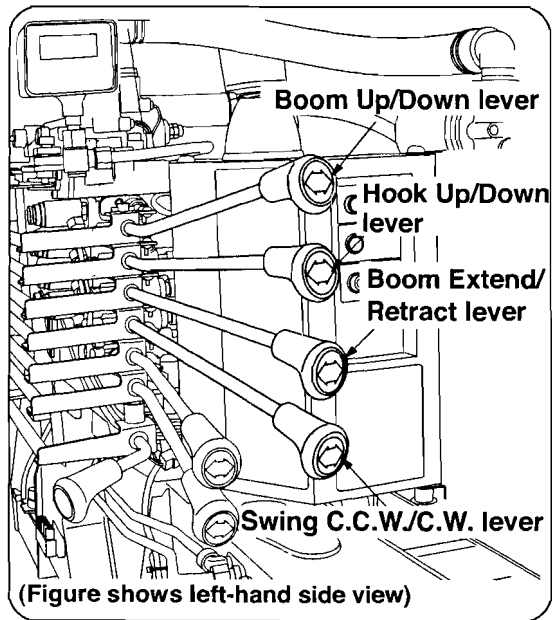
The crane cannot be operated both by manual and by radio remote control without selecting operation mode.

Operation mode of the crane can also be selected by “Radio control operation switch” located on lower side of the control box.

The operation mode is to be memorized even after power to the crane has been turned OFF.

6. HOW TO OPERATE CRANE MANUALLY

When operating the crane on manual mode, it can be operated by controlling control levers mounted on both sides of the crane after switched to manual operation mode. Refer to “Operator’s manual for UNIC crane” for detail.



7. HOW TO OPERATE CRANE THROUGH RADIO REMOTO CONTROL

1 Preparation before operation

1. Extend the outriggers to their maximum with the manual control lever and level the crane.

- The outriggers are to be controlled on manual operation mode.

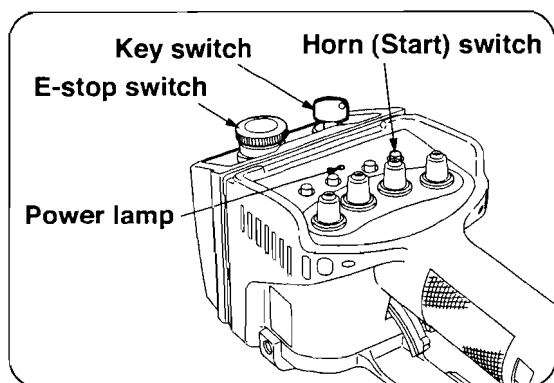
If manual mode has not been selected, depress the “radio remote control selector switch” on the switch panel to turn it to be operated on manual mode.

●Remarks

If a crane operation (such as boom Up/Down, hook Up/Down, boom Extend/Retract, and swing C.C.W./C.W.) is carried out while the outriggers are being extended or retracted by manual control lever, the crane will make an automatic stop to avoid dangerous situation.

(The “mode indicator lamp” blinks [□4]. Refer to section ”10 Mode indicator lamp” on page 10-1 for detail.)

If this has taken place, stop both operation of the crane and of the outriggers once and try carrying out extension and retraction of outriggers again.



2. Check that the “E-stop switch” on the transmitter has been reset to turn ON the “key switch”.

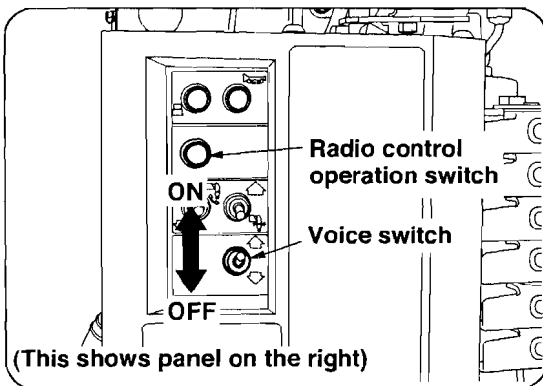
If the “E-stop switch” has not been reset, turn the switch clockwise to reset it.

- Emergency stop function is to be actuated if the “E-stop switch” is pushed in, and emergency stop resets when it is not being depressed.

HOW TO OPERATE CRANE THROUGH RADIO REMOTE CONTROL

3. Depression of the “horn (start) switch” on the transmitter energizes the transmitter and “power lamp” lights (in red, in orange, or in green).

- Power to the transmitter is to be turned OFF by pushing in the “E-stop switch”, or by turning OFF the “key switch”, or if time has passed for more than 5 seconds when no crane operation has been carried out.
- If the “power lamp” blinks or fails to be lit, replace batteries of transmitter according to the section 8. [3] “How to replace batteries” illustrated on page 8-3.



4. Check that the voice switch has been turned ON.
If not, turn it ON.

●Remarks

Voice message will not be issued when the voice switch has been turned OFF.

5. Depress the “radio remote control selector switch” on the switch panel to turn it to be operated on radio remote control mode.

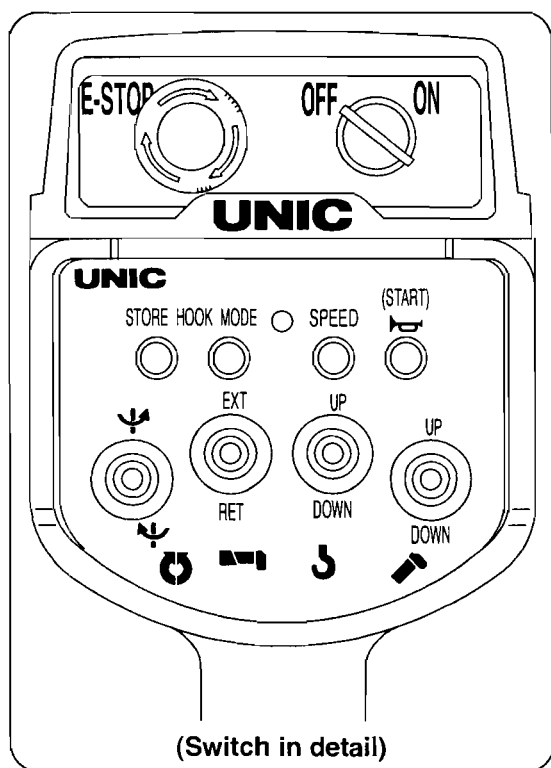
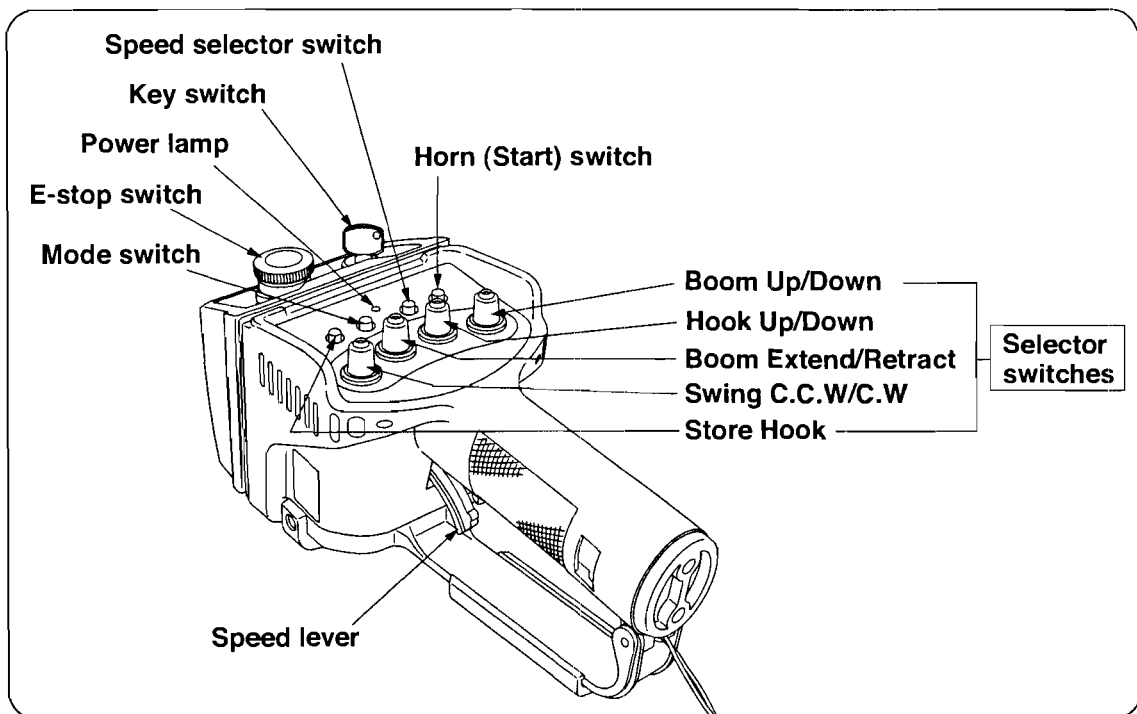
The mode indicator lamp indicates [□□] and the following voice message is issued:

“Remote control ready, Remote control ready”

- When the operation mode is switched to “radio remote control mode.” with power to transmitter turned OFF, the mode indicator lamp indicates [9□].

Turning ON the power to the transmitter allows the mode indicator lamp to indicate [□□].

2 How to operate



1. Operation of crane function

- (1) Throw a corresponding selector switch to the direction allowing the desired crane function.
- (2) Pull the “speed lever” slowly with the selector switch remained as it has been thrown.

If only one of the selector switches is to be operated, the crane starts to move slowly with the engine rotated at a low speed (idling speed) when pulling the “speed lever” slowly.

When the speed lever is pulled further, the engine speed increases to allow the crane to move faster.

● If the “speed lever” is being pulled with more than two “selector switches” thrown, the engine speed becomes faster than that in case of only one of selector switches is being pulled.

(However, maximum engine speed will not change. Refer to section “6. Engine speed control function” (on page 7-13) for detail.)

WARNING

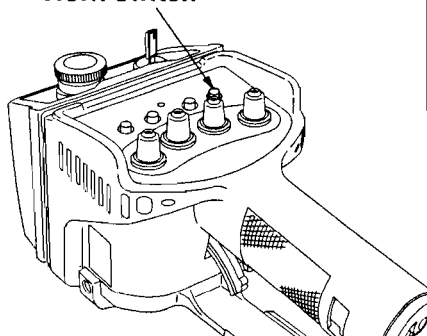
★ When operating the crane with the radio remote control transmitter, be sure not to touch any of manual levers as manual levers shift simultaneously.

- (3) When stopping the crane operation, return the “speed lever” slowly, and then return the “selector switch”.
- (4) Depression of the “horn switch” activates the horn on the vehicle.
Use it when calling attention to those who stand around the vehicle.

●Remarks

- Switches mounted on the remote controller are ON/OFF type which can be actuated with a light touch.
Do not apply strong force as it may cause damage to the switches.
- When the same radio wave (of specified small power radiation type radio system) is being used near the working site, response time of the crane it takes from the time when the radio remote control device has been operated may become longer to some extent which is not a fault.
- When operating with the remote controller, working speed may become a bit slower than that of manual operation.

Horn switch



2. How to confirm and change speed mode

When operating the crane with the engine running at a medium speed, or at a lower speed such as in case of working at night, the speed mode can be changed.

(1) How to confirm speed mode

Check the “power lamp” for lighting color, if it is lit in;

- ① Red : High speed mode
- ② Orange : Medium speed mode
- ③ Green : Low speed mode

If the “power lamp” is not lit, turn ON the power to transmitter to light the “power lamp”.

● Orange illumination is realized by lighting both red and green LED elements.

Red and green LEDs may be seen separately where it is in a lot of sunshine.

(2) How to change speed mode

Confirm that the “power lamp” is lit to depress the “speed selector switch”.

Every time the “speed selector switch” is depressed, the “power lamp” lights in the order of

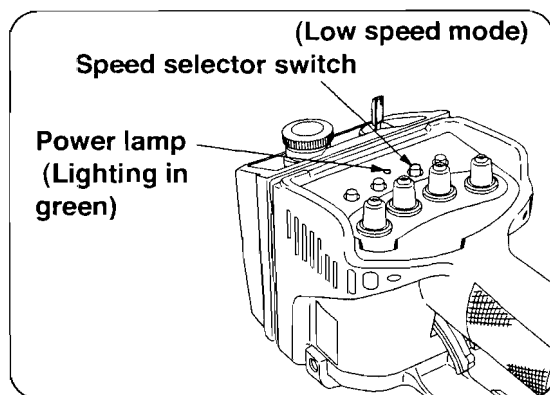
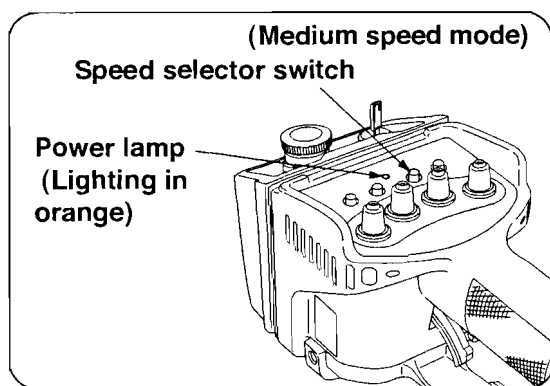
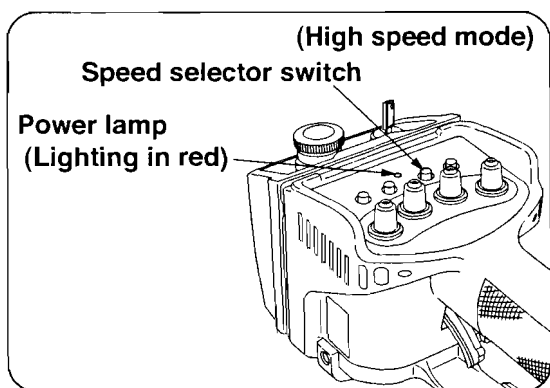


changing speed mode accordingly.

Depression of the “speed selector switch” with the “power lamp” lit in red allows the lamp to light in orange changing it into on medium speed mode.

Depression of the “speed selector switch” with the “power lamp” lit in orange allows the lamp to light in green changing it into on low speed mode.

Depression of the “speed selector switch” with the “power lamp” lit in green allows the lamp to light in red changing it into on high speed mode.



3. Interlocking balance control function

When interlocking operation (operation of speed lever with more than 2 of “selector switches” thrown) is carried out through the radio control transmitter, the system equips the function controlling movement of each control lever for each combination of the “selector switches”.

Therefore, when the speed lever is pulled to its extreme, movement of each control lever varies in accordance with combination of “selector switches”.

In some cases, the control lever may not be shifted to its full extent despite the fact that the speed lever on the radio control transmitter has been fully pulled which is not a fault.

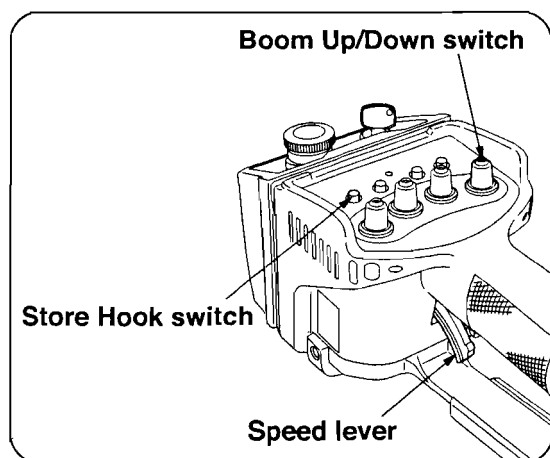
●Remarks On interlocking balance retaining function:

The crane equips interlocking retaining function which prevent its operating speed from making an abrupt increase when interlocking operation is switched to independent operation,

When operation is switched from interlocking to independent (change from operation of speed lever with more than 2 of “selector switches” thrown to operation of speed lever with one of “selector switches” thrown), control speed may become slower as oppose to that of the independent operation, which is not a fault.

In order to correct this, release all the “selector switches” once and go back to independent operation again.

For immediate returning to normal speed of independent operation when it is switched from interlocking to independent, validity of interlocking balance retaining function can be switched through the transmitter.



In order for the interlocking balance retaining function to be invalid, depress the “store hook” switch with the “boom Up/Down” switch turned to “Down”.

Voice message, “Change control mode, Change control mode”, sounds and the interlocking balance retaining function changes to be invalid.

(The voice message does not sound when the function remains as it was.)

Switching condition of the interlocking balance retaining function can be confirmed as the mode indicator is to be lit as in [$\square F$] (meaning “invalid”) while the switch is being controlled.

3. Interlocking balance control function

When interlocking operation (operation of speed lever with more than 2 of “selector switches” thrown) is carried out through the radio control transmitter, the system equips the function controlling movement of each control lever for each combination of the “selector switches”.

Therefore, when the speed lever is pulled to its extreme, movement of each control lever varies in accordance with combination of “selector switches”.

In some cases, the control lever may not be shifted to its full extent despite the fact that the speed lever on the radio control transmitter has been fully pulled which is not a fault.

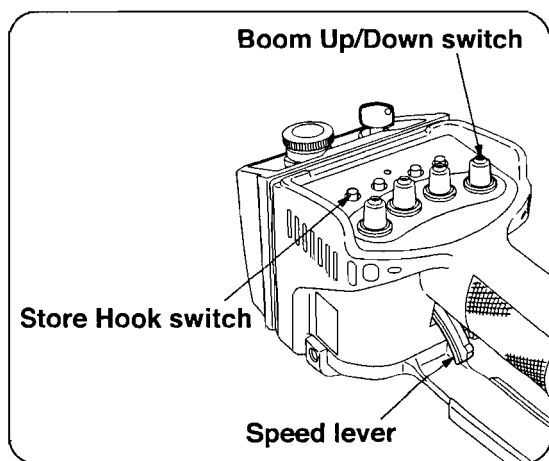
●Remarks On interlocking balance retaining function:

The crane equips interlocking retaining function which prevent its operating speed from making an abrupt increase when interlocking operation is switched to independent operation,

When operation is switched from interlocking to independent (change from operation of speed lever with more than 2 of “selector switches” thrown to operation of speed lever with one of “selector switches” thrown), control speed may become slower as oppose to that of the independent operation, which is not a fault.

In order to correct this, release all the “selector switches” once and go back to independent operation again.

For immediate returning to normal speed of independent operation when it is switched from interlocking to independent, validity of interlocking balance retaining function can be switched through the transmitter.



In order for the interlocking balance retaining function to be invalid, depress the “store hook” switch with the “boom Up/Down” switch turned to “Down”.

Voice message, “Change control mode, Change control mode”, sounds and the interlocking balance retaining function changes to be invalid.

(The voice message does not sound when the function remains as it was.)

Switching condition of the interlocking balance retaining function can be confirmed as the mode indicator is to be lit as in [$\square F$] (meaning “invalid”) while the switch is being controlled.

In order for the interlocking balance retaining function to be valid, depress the “store hook” switch with the “boom Up/Down” switch turned to “Up”.

Voice message, “Change control mode, Change control mode”, sounds and the interlocking balance retaining function changes to be valid.

(The voice message does not sound when the function remains as it was.)

Switching condition of the interlocking balance retaining function can be confirmed as the mode indicator is to be lit as in [□□] (meaning “valid”) while the switch is being controlled.

CAUTION

★Be careful that the operation speed returns to that of independent operation immediately when it is switched from interlocking to independent with the interlocking balance retaining function switched to be invalid.

●Remarks

If the “boom Up/Down” switch is controlled before depression of the “store hook” switch, voice message, “Ping-pong, Secure lifting hook, Secure lifting hook”, may sounds which is not a fault.

The interlocking balance retaining function switches regardless of sounding voice message.

The interlocking balance retaining function is to be memorized even after power to the crane has been turned OFF.

4. Temporary changing function of interlocking balance (Click operation)

When interlocking operation with 2 “selector switches” thrown (2-interlocking operation) is carried out with the radio control transmitter, each speed balance can be changed temporarily.

Click a “selector switch” for which faster speed is needed during 2-interlocking operation.

Operating speed related to the “clicked” switch becomes faster than that of other operation.

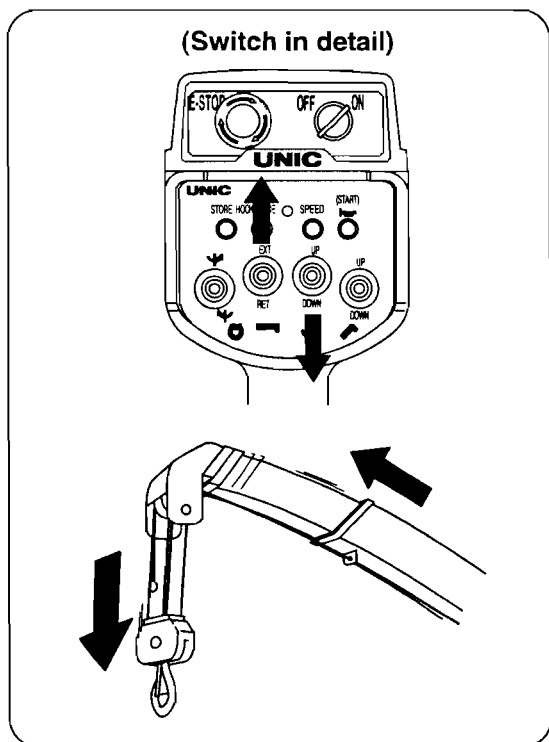
The more number of times a switch has been clicked, the faster the operation related to the clicked switch becomes as opposed to against that of other operation relatively.

Turning OFF both “selector switches” on 2-interlocking operation releases the function to allow them to return to previous conditions.

HOW TO OPERATE CRANE THROUGH RADIO REMOTE CONTROL

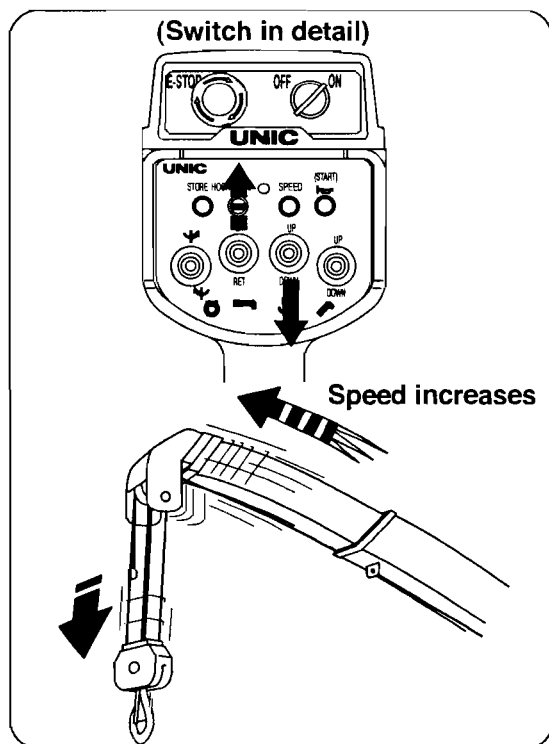
● Example of operation

Interlocking operation of both “extending boom” and “hook down”.



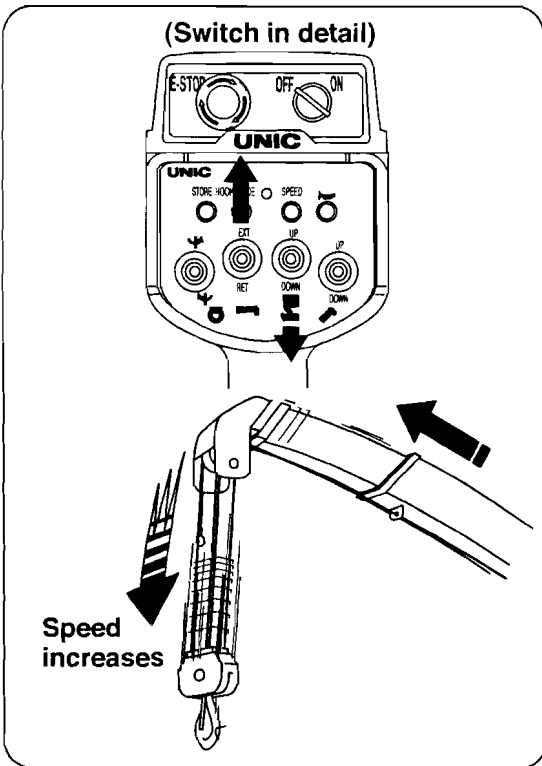
Pull the speed lever with the “hook Up/Down” switch thrown to “Down” and the “boom Extend/Retract (P ON/OFF)” switch put to “Extend (P ON)”.

The hook lowers and the boom starts to extend.



●To increase extending speed of boom
Click (operate it quickly in order of ON→OFF→ON) the “boom Extend/Retract (P ON/OFF)” switch to “Extend (P ON)” side. This allows extending speed of boom to become faster than that of hook down.

The more number of times the switch has been clicked toward “Extend (P ON)” , the faster the boom extension becomes as oppose to that of hook down.



●To increase speed of hook Down

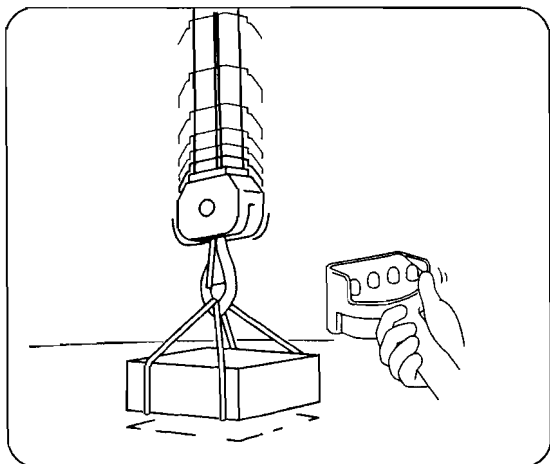
Click the “hook Up/Down” switch to “Down” side.

This allows the speed of hook Down to become faster than that of boom extension.

The more number of times the switch has been clicked toward “Down”, the faster the speed of hook Down becomes as oppose to that of boom extension.

●Remarks

- Repeated clicks allow the other operation not to function in the end. If this happened, release all the “selector switches” once, or click the “selector switch” for which operation is inactivated.
- When one of “selector switches” is released during the clicking operation, speed of crane under operation may become faster.
- The clicking function is possible only when in 2-interlocking operation. It will not be applied to operation such as of 3-interlocking and 4-interlocking.



5. Shock-less function

The system equips a “shock-less” function allowing the crane to stop gently even when the crane has been made an abrupt stop by radio control transmitter.

Since the crane will not make an abrupt stop against a sharp operation, it eases shock to the crane and/or to the mounted vehicle, and it is also effective to prevent the wire rope from jumping up and a lifted cargo from swinging when the hook has stopped winding-up.

CAUTION

★ Pay attention that the crane makes a slight movement due to shock-less function after the radio control operation has been stopped abruptly.

●Remarks

When making the crane a sudden stop:

If the crane has to be made a sudden stop, actuate the “selector switch” controlling opposite function while the shock-less is functioning.

(Do not pull the speed lever in this case.)

Otherwise, the shock-less function is released to allow the crane to make a sudden stop.

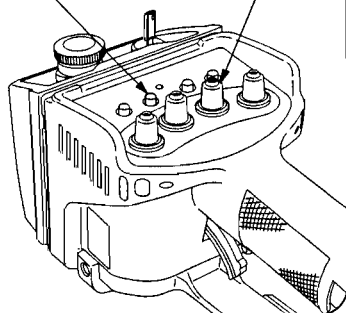
When canceling the shock-less function:

If the shock-less function is unnecessary, you can inactivate it.

The shock-less can be activated/inactivated by the radio control transmitter.

HOW TO OPERATE CRANE THROUGH RADIO REMOTE CONTROL

Mode switch Hook Up/Down switch



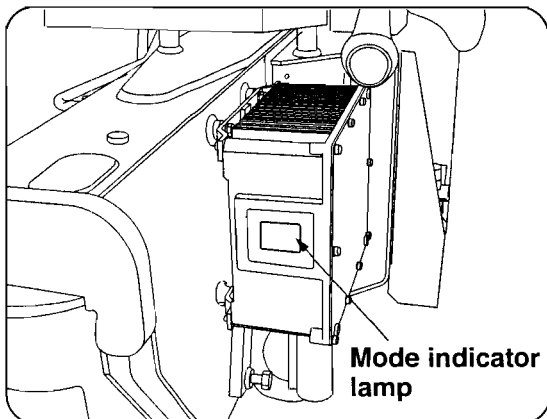
In order to inactivate the shock-less function, throw the “hook Up/Down” switch to “Down” with the “mode switch” depressed. The shock-less will not be functioning.

In order to activate the shock-less function, throw the “hook Up/Down” switch to “Up” with the “mode switch” depressed. The shock-less starts functioning.

When the shock-less function is active and the “mode indicator lamp” shows any of [00], [01], [04], [06] and [07], switching it to be inactive allows the figure indicated on the left to change to [–].

Switching the shock-less function to be active allows the mark [–] indicated on the left to change to [0].

Mode display	
When shock-less function active:	When shock-less function inactive:
00	–0
01	–1
04	–4
06	–6
07	–7



CAUTION

★ Be sure to check if the mode indicator changes accordingly after the shock-less function has been switched.

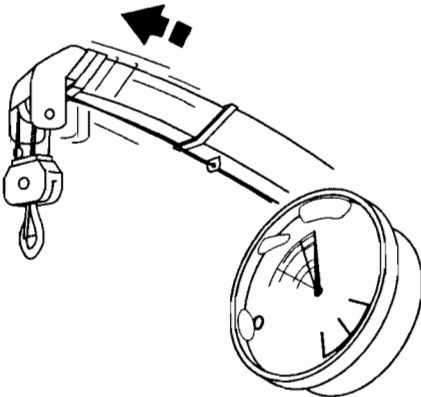
●Remarks

When the mode indicator shows [10] (over-wound condition), no change happens even after the shock-less function has been switched.

When checking condition of the shock-less function, remove the over-wound condition by operation of lowering hook or retracting boom.

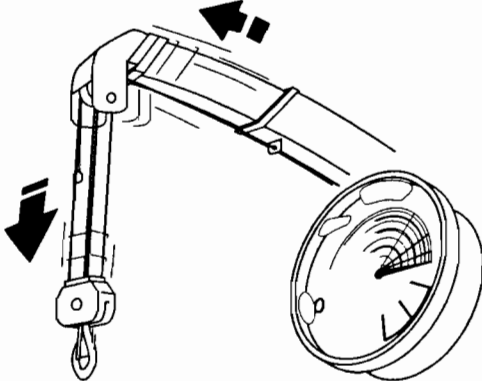
Setting of shock-less function is to be memorized after power to the crane has been turned OFF.

Independent operation



Engine speed is restricted

Interlocking operation



Engine speed increases

6. Engine speed control function

The system equips a function controlling the engine running at a suitable speed according to operating condition of the crane.

The function helps save energy because it can ease temperature rise of hydraulic oil and restrict the unnecessary increase of engine speed by controlling the engine to run at an appropriate speed.

- On independent crane operation, it allows the engine speed not to be increased unnecessarily while the crane is operating functions such as boom Down, retracting boom, swing C.C.W./C.W., and simultaneous retraction of vertical member of outriggers (applied only to hi-outrigger type).
- The engine speed increases when the crane operation has been switched from independent to interlocking. (But no change in maximum engine speed.)
- The engine runs at a medium speed while the outriggers are being extended and retracted.
- When swinging the crane on independent operation by controlling manual lever, swinging speed may become faster when the independent operation is switched to interlocking operation by controlling other one of levers.
This is not a fault.

3 *How to operate new super uni-hook type (KK type)*

! WARNING



★ Do not operate other selector switches while the hook is being released.

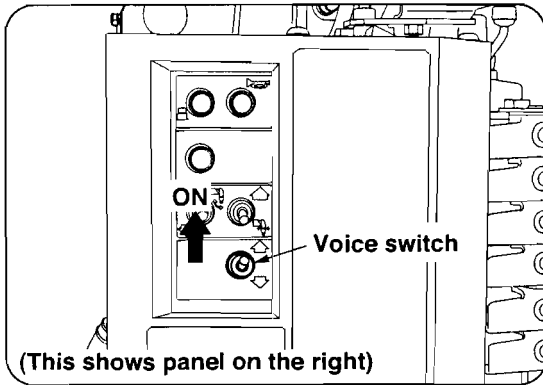
This may cause an incorrect action and/or a breakdown of the crane.

★ When the automatic stop for over-winding is not functioning normally, releasing the hook may cause damage to the boom, to the hook, and to the wire rope.

★ Standing under or in front of the hook while the hook is being eased from where it has been stored may cause an accident.

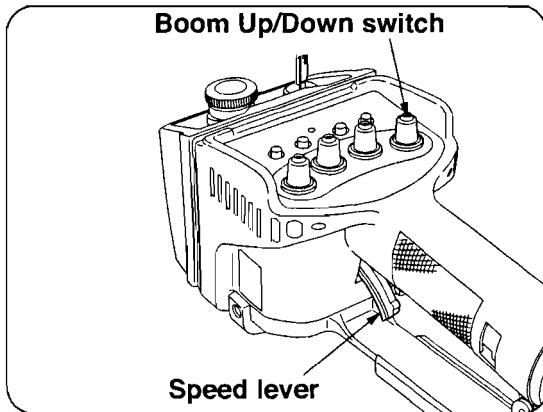
★ The “boom Up” operation is strictly prohibited when the automatic stop for over-winding has been actuated during crane work because it allows the hook to be released to let it fall down which is very dangerous.

★ Pay attention that each manual control lever for “boom Up/Down” and “hook Up/Down” moves toward “Up” and “Down” side respectively when releasing a cargo being hooked.



1. How to release hook

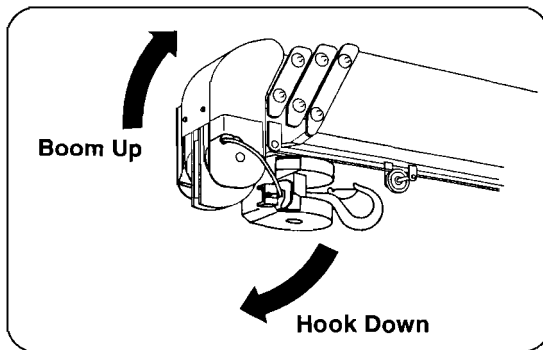
- (1) Check that the voice switch has been turned ON, and turn it ON if it turned OFF.



- (2) Check that the “mode indicator lamp” is indicating [1□] (over-wound condition).

●Remarks

When the “mode indicator lamp” is lit as in [1□], it is under over-wound condition. If the “mode indicator lamp” fails to be lit as in [1□] despite the fact that the hook has been stored, it is possible that the automatic stop for over-winding will not be functioning correctly.



- (3) Pulling the “speed lever” while the “boom Up/Down” of selector switches is being turned to “Up” side allows the hook to be released out of the stored position by carrying out interlocking operation of “hook Down” and “boom Up”.

The “mode indicator lamp” shows [12] while hook releasing operation is being carried out.

●Remarks

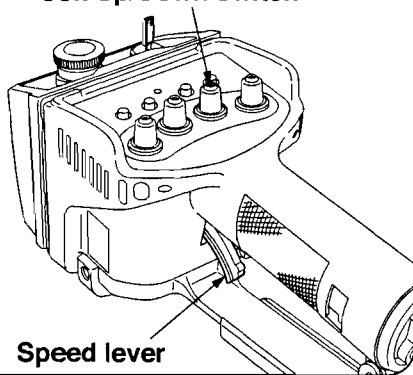
Although the “boom Up” speed during hook releasing operation becomes slower than that of the speed in normal operation, this is not a fault.



In order to carry out interlocking operations of “hook Down” and “boom Up” suitably, the system controls the speed.

CAUTION

★In order to realize interlocking operations of “hook Down” and “boom Up” suitably, pull the “speed lever” by more than 1/3 of the entire stroke.

Hook Up/Down switch



- (4) When a sufficient space where the hook is to be winding-down has been secured, suspend the hook releasing operation once, then pull the “speed lever” while the “hook Up/Down” of selector switches is being turned to “Down” side to lower the hook until the weight for over-winding alarm detaches from the hook (indication of “mode indicator lamp” changes from [] to []).
- (Refer to section 10 “Mode indicator lamp” on page 10-1 for mode indication in detail.)

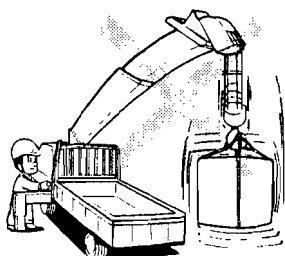
This can operate the crane.

●Remarks

The hook cannot be released with the “storing/releasing hook” switch on the switch panel when operated on radio remote control mode.

2. How to store hook

WARNING

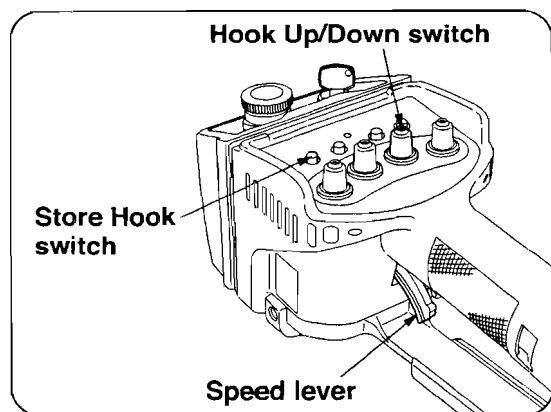


★ It is strictly prohibited to operate the crane with the “store hook” switch as this is very dangerous.

★ Do not operate the “store hook” switch with any one of selector switches at the same time.

This may cause an incorrect action and/or a breakdown of the crane.

★ Pay attention that each manual control lever for “boom Up/Down”, for “hook Up/Down”, and for “boom Extend/Retract” moves toward “Down”, “Up”, and “Retract” side respectively when storing the hook.



(1) Wind up the hook with the “hook Up/Down” of selector switches.

The hook stops to be wound-up automatically when it hits against the weight for over-winding alarm.

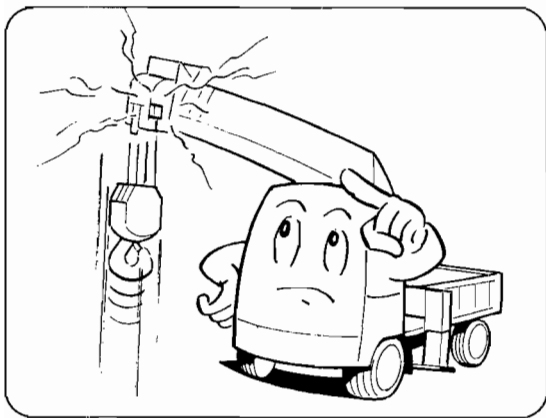
● When it stops winding-up, following voice message, “**Beep, Stop winch up, Stop winch up, Beep, Beep**” is issued.

The last part of voice message, “**Beep, Beep**”, will not sound when the operation concerned has been stopped.

(2) Depress the “store hook” switch after the hook is at a standstill.

● Following voice message, “**Ping-pong, Secure lifting hook, Secure lifting hook**” is issued.

HOW TO OPERATE CRANE THROUGH RADIO REMOTE CONTROL

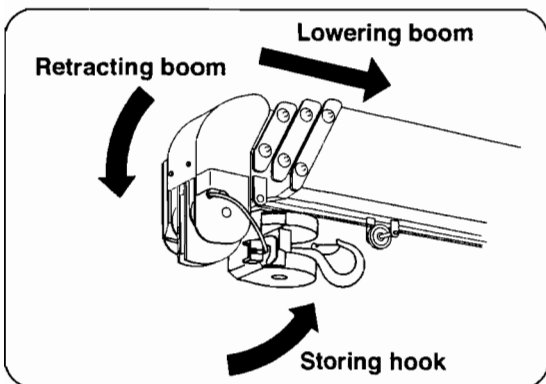


- (3) When pulling the “speed lever” with the “store hook” switch depressed, the hook starts being wound up slowly.

The “mode indicator lamp” shows [13] while the hook is being stored.

CAUTION

★ Storing the hook while it is swinging may cause damage to the boom, to the hook itself, and to the wire rope.



- (4) The hook is to be stored in position in such a way that the roller located at the upper side of hook is raised up along the guide on the boom top. Then, continue the storing operation allowing the boom starts lowering while retracting until the boom retracts and is lowered to its extreme. Storing hook operation stops when the “speed lever” is returned and then the “store hook” switch is returned.

● **Remarks**

The engine is still running at a low speed (idling) while the hook is being stored.

The hook cannot be released with the “storing/releasing hook” switch on the switch panel when operated on radio remote control mode.



CAUTION

★In case where the roller located at the upper side of hook touches the guide on the boom top to start rotation, and if the roller makes a slanting touch to the guide on the boom top or it is off the guide halfway, wind-down the hook to try storing operation again.

★Continue storing hook until the boom retracts and is lowered to its extreme.

★In some cases, although the boom may retract or lower while the hook is being wound-up, this is not a fault.

4 How to operate outriggers (high-outrigger type)

High-outrigger type can be extended and retracted with the radio control transmitter.

1. Preparation before operation

Switch the crane mode into radio remote control mode and turn ON the "outrigger radio control selector" switch on the switch panel.

The operation mode lamp should blink. Indication on the "mode indicator lamp" changes to [□4] and the following voice message, "Ping-pong, Outrigger mode, Outriggers moving, Outriggers moving" is issued.

●Remarks

When operated on outrigger radio control mode, it can allow the buzzer to sound.

When making the buzzer to sound, depress the "store hook" switch with the "hook Up/Down" selector switch turned to "Up" side.

This allows the buzzer to sound.

(The mode indicator lamp shows [□4] while the switch is being depressed.)

In order to inactivate the buzzer, depress the "store hook" switch with the "hook Up/Down" selector switch turned to "Down" side.

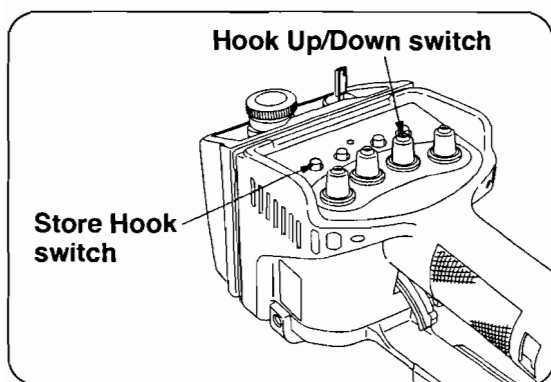
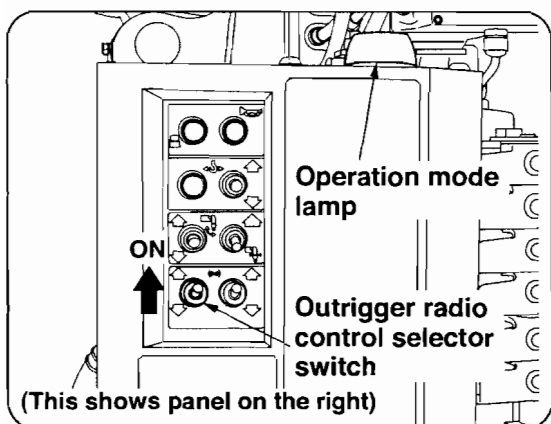
This makes the buzzer to be inactive.

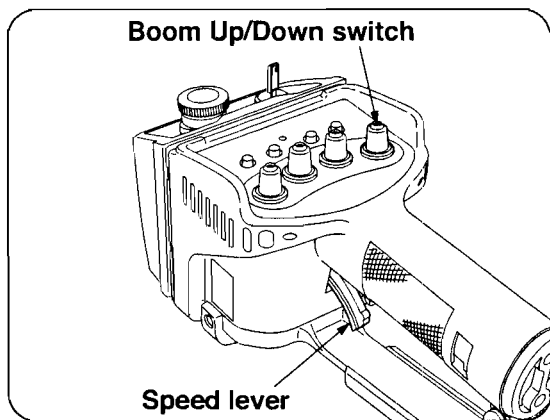
(The mode indicator lamp shows [□F] while the switch is being depressed.)

If the "store hook" switch has been depressed before the "hook Up/Down" switch is controlled when allowing the buzzer to switch ON/OFF, voice message, "Ping-pong, Secure lifting hook, Secure lifting hook", may be issued which is not a fault.

Sounding of buzzer can be switched ON/OFF regardless of voice message.

The setting of buzzer sounding is to be memorized even after power to the crane has been turned OFF.





2. Operation

Turn the “boom Up/Down” switch to where it is to be operated, and pull the “speed lever” slowly.

As the “speed lever” is pulled, vertical members of outrigger start moving with the engine running at a low (idling) speed and it becomes faster as the engine speed is increased by pulling the “speed lever” further.

To extend

Turn the switch to “UP” to pull the “speed lever”.

To retract

Turn the switch to “DOWN” to pull the “speed lever”.

To stop

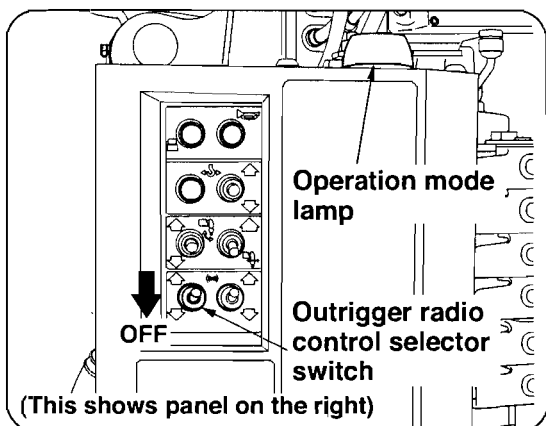
Return the “boom Up/Down” switch after the “speed lever” has been returned slowly.

●Remarks

Turning ON the “outrigger radio control selector” switch allows each normal crane operation such as “boom Up/Down”, “hook Up/Down”, “boom Extend/Retract”, “swing C.C.W./C.W.”, and “store hook” to be impossible.

Only the simultaneous extension/retraction of vertical members of the outrigger can be carried out through the radio control transmitter.

When operating vertical members of outrigger separately, use the manual outrigger control lever after the crane has been switched into manual operation mode.



3. Closing operation

When extending/retracting operation of high-outrigger through the radio control transmitter has been over, be sure to turn OFF the “outrigger radio control selector” switch.

The operation mode lamp changes from blinking to continuous lighting and the buzzer stop sounding.

Indication of the “mode indicator lamp” changes either to [□□] or to [□□], and voice message, “**Remote control ready, Remote control ready**”, is issued:

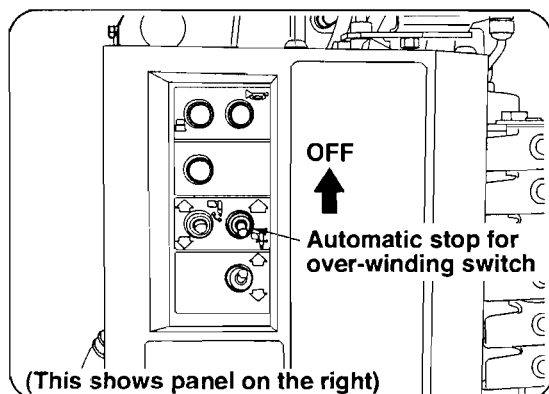
(Refer to the section 10 “Mode indicator lamp” on page 10-1 for mode indication in detail.

! CAUTION

★Take a special care that your foot will not be stamped while extending outriggers.

★Secure the hook in place while high-outriggers are being operated.

5 How to restore operation when in trouble with automatic stop for over-winding



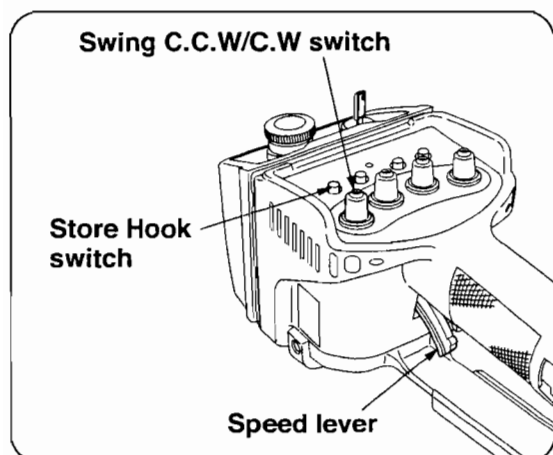
In case where operations of “hook Up”, “boom Extend”, and “boom Up” become impossible due to trouble with the automatic stop for over-winding, operate it with the automatic stop switch for over-winding on the crane side put to “Reset”

Operation of “hook Up”, “boom Extend”, and “boom Up” can be carried out.

6 How to correct when engine speed becomes unstable due to low temperature

The crane controls the engine speed. When in winter season or when temperature is too low, the engine speed may become unstable as viscosity of hydraulic oil increases.

In this case, switch the system to “low temperature operation mode” to allow the engine speed to be stabilized.



1. Switching to low temperature operation mode

After the crane has been switched to operate on the radio control mode, depress the “store hook” switch with the “swing C.C.W./C.W.” switch turned to “C.C.W.”. Indication of the “mode indicator lamp” changes to [05], and voice message, “**Ping-pong, Change control mode, Change control mode**”, is issued: (Indication will not change if the “mode indicator lamp” is showing [04] or [10].)

●Remarks

When switching it to low temperature operation mode, and if the “store hook” switch is operated before the “boom Up/Down” switch is controlled, voice message, “**Ping-pong, Secure lifting hook, Secure lifting hook**”, may sounds which is not a fault.

It can be switched to the low temperature operation mode regardless of sounding voice message.

Switching to the low temperature operation mode is impossible if operated on manual control mode.

2. Resetting low temperature operation mode

Depress the “store hook” switch with the “swing C.C.W./C.W.” switch turned to “C.W.”. Indication of “mode indicator lamp” changes to [□□] and voice message, “**Ping-pong, Change control mode, Change control mode**”, is issued.
(Indication will not change if the “mode indicator” is showing [□4] or [!□].)

In addition, the low temperature operation mode is to be reset automatically after approx. 10 minutes from the time when it has been switched to the “low temperature operation mode”. Voice message, “**Ping-pong, Change control mode, Change control mode**”, is issued at this time.

●Remarks

Response of the crane functions becomes slower when operated on low temperature operation mode.

In normal case, operate the crane after warming-up for a while to raise temperature of hydraulic oil.

Under extreme low temperature, crane operation may still be unstable even after the system has been switched to the “low temperature operation mode”.

In this case, take measures such as by carrying out warm-up operation to raise temperature of hydraulic oil or by using hydraulic oil suitable for extreme low temperature.

CAUTION

★If viscosity of a hydraulic oil is too high at a low temperature, excessive load will be imposed on hydraulic pumps which may cause damage to them.

In order to avoid this, be sure to carry out warming-up to raise temperature of hydraulic oil to an appropriate temperature to operate the crane.

Closing crane operation

When closing the crane operation, switch the crane mode to manual operation mode after the boom and the hook have been stored in their places and store the outriggers.

After the outriggers have been stored, disengage the PTO to turn OFF the power supplied to the crane.

8. HOW TO REPLACE BATTERIES OF TRANSMITTER

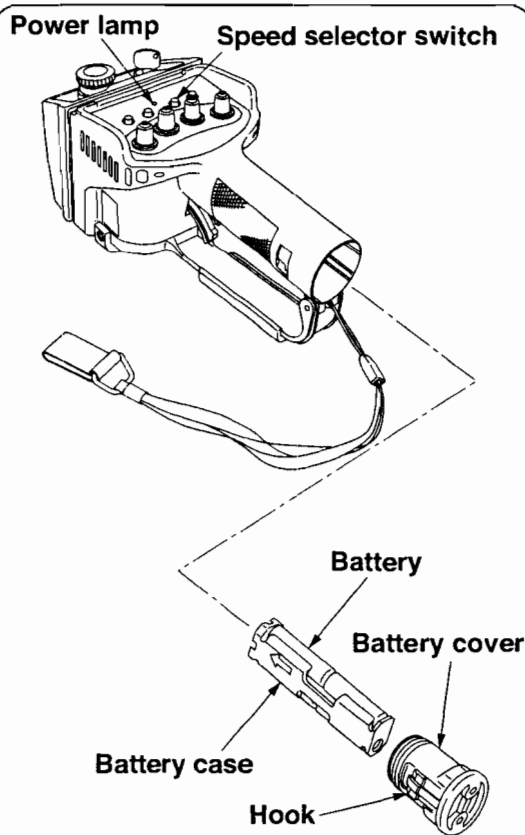
1 When to replace batteries

! CAUTION

★ When the power lamp of transmitter starts blinking, replace the batteries as early as possible.

Leaving them as they were may cause the liquid in the batteries to leak.

★ In case where leakage of battery liquid is found, wipe it off the battery holder and the battery case thoroughly to put new batteries in it.



● Check the “power lamp” for lighting with the “speed selector switch” on the transmitter depressed.

- ① Continuous lighting: Radio control transmitter can be used.
- ② Blinking in low frequency (a flash every second): It allows the radio control transmitter to be used for about 1 hour after the blinking has started.
Replace the batteries as early as possible as they are close to running out.
- ③ Blinking in high frequency (a flash every 0.1 second): The radio control transmitter can not to be used as the batteries have run out.
- ④ No lighting: The radio control transmitter can not to be used as the batteries have completely run out.

● If the “power lamp” blinks slow as in condition ② above, following voice message, “Ping-pong, Low transmitter battery, Low transmitter battery”, is issued.

The trouble lamp on the receiver blinks in red, and the “mode indicator lamp” shows [99] in blinking.

2 Battery to be employed

a size AAA battery: 4 pieces

Use alkaline-type battery.

(Manganese-type battery has a short service life.)

●On use of rechargeable batteries

Although UNIC recommends the use of alkaline type battery in the radio control transmitter, other rechargeable batteries such as nickel-hydrogen type and nickel-cadmium type may also be used.

Pay attention to the following when a rechargeable battery is used:

- Message suggesting replacement of battery may not be issued.
Be sure to prepare alkaline-type batteries when operating the crane through radio remote control device because rechargeable batteries tend to become inoperable suddenly.
- In some cases, service life of rechargeable battery may become shorter than that of alkaline battery in accordance with the capacity.
- There is a disadvantage such as memory effect comparing with alkaline-type battery.



CAUTION

★Do not mix up batteries of old and new, of different manufacturers, or of different types.

3 ***How to replace batteries***

- (1) Turn OFF power to the crane (by disengagement of PTO).
- (2) Pull out the battery cover with the hook on the cover pushed in.
- (3) Replace old batteries in the battery holder with new ones.



CAUTION

★ Pay attention to polarity of batteries.

(Put them as indicated on the battery case.)

★ Do not connect between terminals of (+) and (-) directly with a metal piece.

- (4) Insert the battery holder into the transmitter grip to tighten up the battery cover securely.



CAUTION

★ Take care that a drop of water will not enter inside of the grip.

- (5) Turn ON power to the crane to check that the “power lamp” lights.

9. DAILY CHECKS, TROUBLE INSPECTION

1 Daily checks

For cranes with radio remote control device, you are requested to inspect your crane for following items as well as carry out daily checks on your crane (read operator's manual of UNIC crane concerned for detail).

Check that;

1. Each enclosure of transmitter, receiver, and control box has not been damaged.
If the enclosure has been damaged, repair it immediately because moisture and/or dust entered through the break may cause a failure to electronic parts inside and cause incorrect operation of the crane concerned.
2. The stay on the transmitter has not been broken or deformed.
The transmitting antenna is built in the stay.
If break or remarkable deformation is found in the stay, replace or repair it as soon as possible because it may cause radio interference.
3. Switches and control levers on the radio control transmitter make a smooth operation.
Using the remote control transmitter with dust, dirt, and mud being stuck on may lead to failure especially in operation of switches and/or control levers.
Wipe them off with a piece of cloth after use.
If any of the selector switches fails to function correctly due to contamination, ask a UNIC authorized service shop for cleaning.



CAUTION

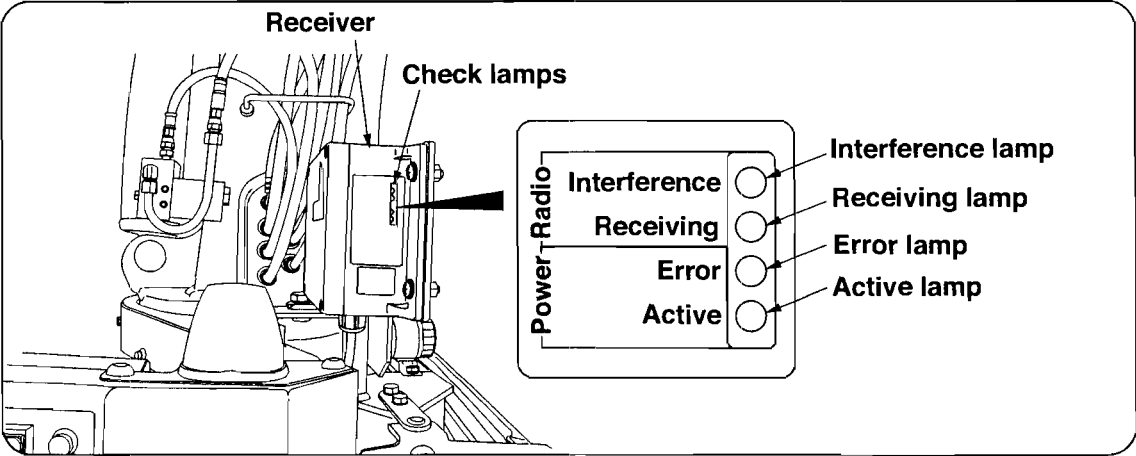
★Never try disassembly or alteration of the transmitter, the receiver, and the control box.

★Electric system is very sensitive to moisture.

Do not wash the transmitter, the receiver, and the control box with water directly.

2 Check lamps (Radio control receiver)

Check lamps are mounted on the radio receiver, and they light as follows when it is in normal operating condition:



● Active lamp

When the receiver is energized by engaging PTO, it blinks in green.

● Receiving lamp

When the receiver is received radio wave transmitted from the transmitter correctly, it blinks in green.

● Interference lamp

If it lights in red when power to the transmitter is turned OFF, it indicates that the receiver is receiving unnecessary radio wave from outside.

If it lights in red when power to the transmitter is turned OFF, response time during radio control operation may become longer to a certain extent.

● Error lamp

It blinks in red when something is wrong with the radio control transmitter/receiver.

It also blinks in red when batteries in the transmitter have been run out

3 *Trouble inspection*

If a trouble is found in the radio remote control device, check the following and then contact the nearest UNIC authorized service shop.

Check if:

- ① The crane is controlled by manual levers.
- ② The “power lamp” on the transmitter lights. If it blinks or does not light, replace the batteries in the transmitter.
- ③ Switches and control levers on the transmitter make a correct operation.
- ④ The stay on the transmitter (antenna is built in) has not been broken or deformed.
If the “mode indicator” blinks, refer to section “8. Mode indicator” (on page 8-1).
- ⑤ The “mode indicator lamp” on the control box lights and the “power lamp” on the receiver blinks in green when power to the control box is turned ON.
If the “mode indicator lamp” blinks, refer to section “10. Mode indicator” (on page 10-1).

If the “error lamp” on the receiver blinks in red, turn OFF the power once and turn it ON (by disengaging and engaging PTO) again.

If blinking of “error lamp” persists, repair is needed as the radio remote control device is in failure.

4 *How to make an emergency stop*

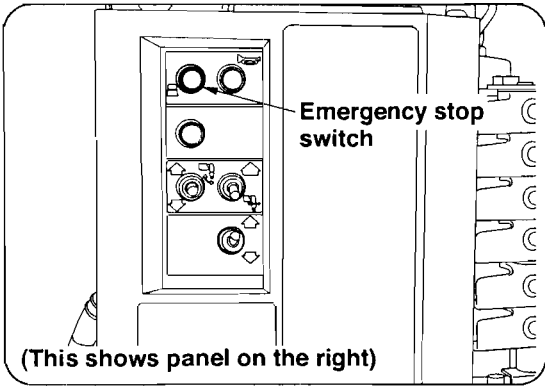
In case of emergency such as that the crane does not stop operation or the engine speed will not return to idling speed even if no crane operation has been made, depress the “EMERGENCY” switch on the switch panel.

This makes the crane to stop operation forcibly.

WARNING

★When resetting the emergency stop switch, do it while no crane operation is being carried out .

Resetting the emergency stop switch while operating the crane allows the crane to make an abrupt move as it is very dangerous.



●How to make an emergency stop for the crane and reset it

Depress the "EMERGENCY" stop switch on the switch panel of the crane.

The switch is held pushed in allowing the crane to stop operation.

When the switch is depressed again, the switch button returns to its original position to reset the emergency stop condition restoring the crane to be ready for normal operation.

●Remarks

When the emergency stop is reset by pushing the "EMERGENCY" stop switch again after the crane has been stopped by depression of "EMERGENCY" stop switch, the engine speed may increase in a moment which is not abnormal.

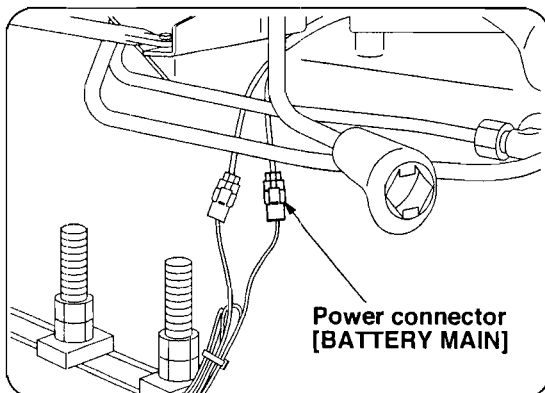
When the crane is operated with the "EMERGENCY" stop switch held pushed in, voice message, "Beep. Service remote Service remote control" may be issued or the mode indicator lamp may show incorrect indication.

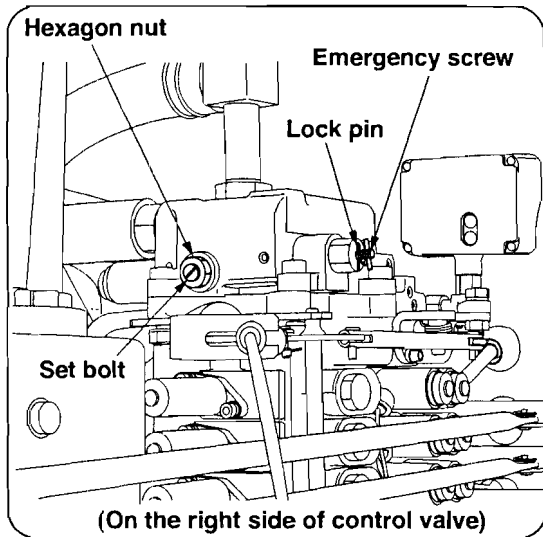
5 Operation in an emergency

If the crane fails to be operated either by radio remote control or by manual control, operate the crane by taking procedures as follows:

Procedure 1

- ① Disconnect the power connector [BATTERY MAIN] located under the control valve.





- ② Remove the lock pin attached to the emergency screw to tighten the screw lightly to its extreme by turning it clockwise.
(Pay attention that the screw may break if it is tightened with an excessive force.)
- ③ Check that all manual control levers are at their neutral positions.
If a lever has been caught in halfway, return it to its neutral position.
- ④ Unfasten the hexagon nut attached to upper part of control valve to tighten the locked set bolt until it comes to a stop.
This allows the crane to be operated.



CAUTION

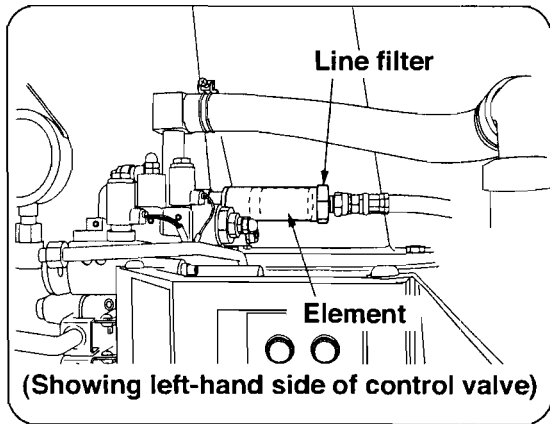
★Be sure to tighten up the set bolt after the emergency screw has been tightened.

If the set bolt has been tightened up without tightening the emergency screw, the crane may make an abrupt movement.

★In this situation, safety devices such as engine speed control, voice message, and automatic stop are not functioning so that careful operation is needed.

★Since this is a measure when in an emergency, be sure to repair the crane at an authorized UNIC service shop after it has been stored.

5 *Replacement of line filter element*

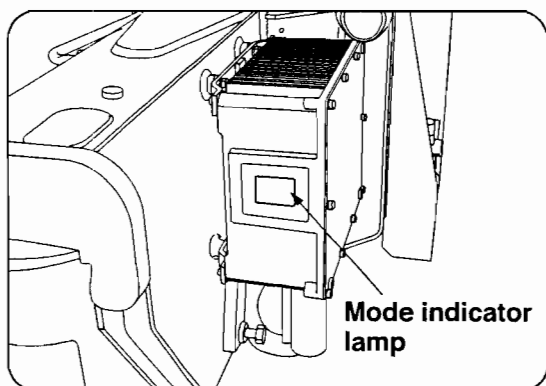


Replace the inner element of line filter after 1 year from the start of operation.

Be sure to replace the element when the hydraulic pump is replaced and replace it after 1 year from the start of operation of the pump.

10. MODE INDICATOR LAMP (Control box)

The “mode indicator lamp” is mounted in the control box indicating conditions of crane operation and troubles in detail.



When the “mode indicator lamp” lights, the crane system is working normally.

When the “mode indicator lamp” blinks, the crane system is in a trouble or prohibited operation is being carried out.

1 Mode indication when crane is in normal operation

It indicates each operation mode and condition of the crane when it is normal.
Description of mode indication when it is in normal is as follows:

Mode description when crane is in normal condition (lighting indication)

Mode	Mode description	Radio control operation	Manual operation	Priority
00	Current control is on radio control operation mode. Operation can be carried out through radio remote control device but not by manual control.	○	×	13
01	Current control is on manual operation mode. Operation can only be carried out manually but not through radio remote control device.	×	○	12
04	Current control is on outrigger radio control mode. Only simultaneous extension/retraction of vertical members of outrigger can be carried out through radio control operation. No operation other than for outriggers is possible either by manual control or by radio remote control.	○	×	8
06	Current control is on low temperature operation mode. Operation can be carried through radio remote control device but not by manual control.	○	×	11
07	Current control is on low temperature operation mode. Operation can be carried by manual control but not through radio remote control device.	×	○	10

MODE INDICATOR LAMP (Control box)

Mode	Mode description	Remote control operation	Manual operation	Priority
10	Hook hits against weight for over-winding alarm (over-wound condition).	—	—	9
12	During operation for releasing hook.	—	—	6
13	During operation for storing hook.	—	—	7
14	Automatic stop for over-winding reset switch is being controlled.	—	—	2
15	Outriggers fail to touch the ground or overturn limit alarm is actuated.	—	—	4
16	Outriggers fail to be set up on the ground or overturn alarm is actuated.	—	—	5
17	Overload prevention is actuated.	—	—	3
90	Current control is either on radio control operation mode or on outrigger radio control mode, but power to transmitter has not been turned ON.	×	×	1

●Remarks

Since priority is assigned for each mode, it is to be indicated in the order of higher priority.

When operated on radio control operation mode, only operation available is the simultaneous extension/retraction of vertical members of the outrigger.

When the shock-less function has been cancelled, the letter on the left indicated in the mode indicator changes to [–].

Refer to the section concerned on page 6-10 for detail.

Refer to the separate instruction manual of UNIC crane for detailed information on the overturn limit alarm and the turnover alarm.

2 Mode indication when crane is in trouble

When the “mode indicator lamp” is blinking figures larger than [42], the crane system is in trouble (system trouble indication).

If the system trouble indication is found on the “mode indicator lamp”, confirm and follow the mode description on the table illustrated below:

If the crane becomes impossible to be operated, store the crane by following procedures described in section 9. “5 Operation in an emergency” on page 9-4, and ask an authorized UNIC service shop for repair.

Mode description when crane is in trouble (Blinking indication)

Mode	Mode description	Radio control operation	Manual operation
42~46	No operation is possible either by radio control or by manual control.	×	×
47~50	Turn OFF power once then turn it ON. If the trouble persists, ask an authorized UNIC service shop for repair. (Although it can be operated either by radio control or by manually, shock-less function and interlocking balance retaining function are to be returned to “active”.)	○	○
51~53	No radio control operation is possible.	×	○
54	Radio control receiver is not connected. Check that cable connector (located inside switch box) to receiver is securely connected. Check cable to receiver for damage and break.	×	○
55	Either “hook storing/releasing switch” or “radio control selector switch” on the switch panel is faulty. (Failed switch cannot be controlled but crane operation is possible.)	○	○
56	No operation is possible either by radio control or by manual control.	×	×
57	No operation is possible either by radio control or by manual control. Turn OFF power once then turn it ON.	×	×
60~67	Manual lever is not at neutral position when power is turned ON. Do not operate the crane as it is carrying out system diagnosis for about 3 seconds after power has been supplied. If this appears even when the crane has not been operated, ask an authorized UNIC service shop for repair.	×	○

MODE INDICATOR LAMP (Control box)

Mode	Mode description	Remote control operation	Manual operation
70~74	Stop radio control operation to try controlling manual levers. Check that the manual control levers make a smooth movement and that any of levers will not interfere with anything. If indication fails to return to be normal, ask an authorized UNIC service shop for repair.	×	×
75	Engine speed is not controlled normally. Crane can be operated but if this appears frequently, ask an authorized UNIC service shop for repair.	○	○
76~79	No radio control operation is possible.	×	○
80~87	No operation is possible either by radio control or by manual control.	×	×
99	Batteries of transmitter are running out. Replace old batteries with new ones and turn OFF power once then turn it ON.	○	○

3 Mode indication when crane is mistakenly operated

When prohibited operation or combination of operation which may invites dangerous situations has been carried out, the “mode indicator lamp” will blink corresponding numbers (operation error indication).

When the operation error is indicated, the “mode indicator lamp” blinks showing corresponding numbers accordingly.

Confirm and follow the mode description concerned on the table illustrated below:

●Remarks

The operation error will not indicate that crane system is in trouble.

The error indication is to be reset when stopping the operation concerned.

Mode description when crane is mistakenly operated (Blinking indication)

Mode	Description of wrong operation	Measures
00	Crane on radio control operation mode is being operated by manual control.	Manual operation is impossible when crane is on radio control operation mode. For manual control, depress “radio control selector switch” located in the switch panel to switch it into manual control mode.
01	Crane on manual operation mode is being operated by radio remote control.	Radio remote control operation is impossible when crane is on manual operation mode. For radio remote control, depress “radio control selector switch” located in the switch panel to switch it radio remote control mode.
04	Crane is being operated when it is on outrigger radio control mode.	Crane operation is impossible when it is on outrigger radio control mode. For crane operation, turn OFF “outrigger radio control selector” switch to reset outrigger radio control mode.
	Crane is being switched into “outrigger radio control mode” during crane operation.	When switched into “outrigger radio control mode” during crane operation, it will not be switched immediately to “outrigger radio control mode” accordingly but it is to be switched when crane operation has been stopped.
	Crane and outriggers are operated simultaneously.	When crane and outriggers are operated simultaneously, both operating functions are stopped automatically to avoid a risk. Stop the simultaneous operation once and carry out either one of operation.

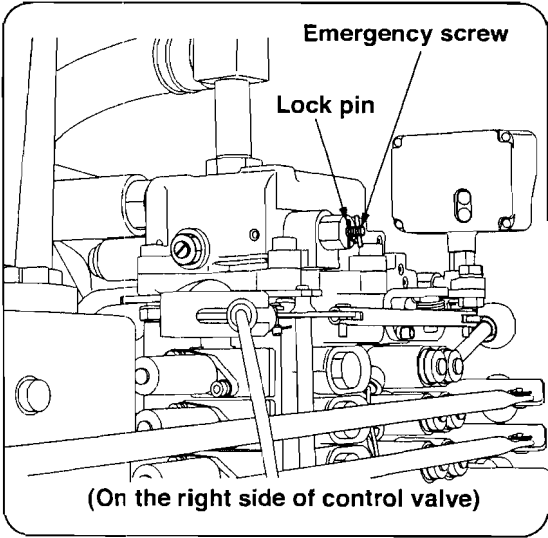
MODE INDICATOR LAMP (Control box)

Mode	Description of wrong operation	Measures
06	“Low temperature operation mode” Is being switched during crane operation.	In order to avoid a risk, “low temperature operation mode” cannot be switched during crane operation. Stop crane operation once to switch it to “low temperature operation mode”. For switching “low temperature operation mode”, refer to section 7. [6] “How to correct when engine speed becomes unstable due to low temperature” on page 7-23.
10	Either one of operation such as “boom Up”, “hook Up”, or “boom Extend” is being carried out while hook has hit against weight for over-winding alarm.	Detach hook off from weight for over-winding alarm. ● For new super uni-hook type, when raising boom through radio control device with hook hit against weight for over-winding alarm, boom is to be “Up” while hook is going “Down” as this operation allows hook to be released. Do not lift up a cargo while this is being indicated.
12	Releasing hook without hook hitting against weight for over-winding alarm.	Hook will not be released unless hook has been hit against weight for over-winding alarm.

11. MEASURES TO BE TAKEN IN AN EMERGENCY

Take measures when the crane does not operate correctly even if the “mode indicator” is indicating right.

Trouble	Possible cause	Measure to be taken
Crane fails to be operated by radio remote control device.	Batteries in transmitter has been run out or they are not put in it.	Replace batteries in transmitter.
Crane works just when a selector switch on transmitter is actuated.	Speed lever of radio control transmitter is faulty.	Repair radio control transmitter at a UNIC authorized service shop.
Crane works arbitrarily even when no controls have been made or a manual control lever has been shifted.	A solenoid valve in control valves is in failure.	<p>Push in EMERGENCY stop switch to stop crane operation immediately.</p> <p>Tighten the emergency screw lightly to its extreme by turning it clockwise. (Pay attention that the screw may break if it is tightened with an excessive force.)</p> <p>Depress EMERGENCY stop switch again to reset emergency stop.</p> <p>Check that crane does not work when no controls have been made.</p> <p>Store crane with manual levers and ask a UNIC authorized service shop for replacement of faulty solenoid valve.</p>



- Remarks

The emergency screw is fixed with a lock pin.

Remove the lock pin before turning the emergency screw.

12. MAJOR SPECIFICATIONS

Model	RC-500, Radio remote control device
Radio frequency	434 MHz band
Transmission output	10 mW
Frequency selection	Auto-scanning system
Range of radio wave	100m min. (when in good conditions)
System structure	Combined system of manual and radio remote control operation
Controls (functions operated through radio control transmitter)	<div>Selector switches:<div>Boom :Up/Down</div><div>Hook :Up/Down</div><div>Boom telescoping :Extend/Retract</div><div>Swing :C.C.W./C.W.</div><div>Store hook :Storage (New super Uni-hook type)</div></div> <div>Speed selector switch:<div>Switching to mode of : High/Medium/Low speed</div><div>Mode switch :Switching mode</div><div>Horn switch :Alarm (horn of mounting vehicle)</div><div>Speed lever :Both hydraulic control and engine speed control</div></div>
Power supply	Crane: Battery on mounting vehicle (DC 12V) Transmitter: a size AAA battery: 4 pieces
Power consumption	Crane operating single function at maximum speed: Approx. 50W, 120W max. (including control box) Transmitter (service life with alkaline batteries): 20 hours min.
Voice messages	“Crane mode” “Remote control ready” “Outrigger mode, outrigger moving” “Stop winch up” “Secure lifting hook” “Low transmitter battery” “Service remote control” “Change control mode”
Operating temperature range	-20°C~+60°C
Storing temperature range	-30°C~+75°C
Weight of remote controller	700g (including batteries)

★ The radio remote control device employs a unique data transmission system and an ID (identification) code is assigned to each equipment.
Therefore, the crane will not be worked by radio wave radiated from other radio equipment.

★ About auto-scanning system :

Auto-scanning system is a system that changes the current frequency to other frequencies automatically to avoid radio interference when a similar radio wave is being radiated nearby.

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