UNIC Hydraulic Crane

UNIC Hydraulic Cranes

URA343-C

OPERATORS MANUAL

FURUKAWA UNIC Corporation

A FEW WORDS BEFORE YOU READ THIS MANUAL:
THIS MANUAL'S PURPOSE IS TO EMPHASIZE TO YOU THE SAFETY
ASPECTS OF OPERATING THE UNIC CRANE. OUR
GOAL IS TO DESCRIBE EQUIPMENT, EXPLAIN THE OPERATING
CHARACTERISTICS, AND TO PROVIDE EXAMPLES OF PROCEDURES
YOU WILL ENCOUNTER IN DAY TO DAY OPERATIONS.

SAFETY IS OF PRIME CONCERN TO **FURUKAWA UNIC CORPORATION**. THIS MANUAL WAS WRITTEN TO PROMOTE YOUR SAFETY AND THE SAFETY OF OTHERS.

NOTICE

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MADE IN JAPAN

[Caution]

CHANGES OR MODIFICATIONS TO THE CRANE NOT EXPRESSLY APPROVED BY THE MANUFACTURER COULD VOID THE WARRANTY.

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SOLD AN	ID SERVICED BY:			
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	THIS MODEL	IS EQUIPPED	WITH THESE	OPTIONS:
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■ SAFETY

SAFETY RULES

Your safety depends on the condition of the crane and the use of proper operating procedures. The checks and maintenance procedures described in this manual will help to keep your crane in reliable condition. Use of the recommended operating procedures will help you avoid unsafe practices.

Danger and warning notes have been included throughout this manual to help you avoid injury and to prevent damage to the equipment.

These notes are not intended to cover all eventualities; It would be impossible to anticipate and evaluate all possible applications and methods of operation for this equipment.

It is important that any procedure not specifically recommended be thoroughly evaluated from the standpoint of safety before it is placed in practice.



YOU MUST NOT OPERATE THIS CRANE UNLESS:

- 1. You have been trained in the safe operation of this crane.
- 2. You read, understand and follow the safety and operating recommendations contained in the crane manufacturer's manuals, your employer's work rules and applicable government regulations.
- 3. Handle the remote controller with care.
- Do not leave the remote controller in the rain.
 Be careful not to splash it with water when washing the vehicle.
- 5. Handle the remote control unit cable with care, avoiding bends, twists, and keeping the cable clear of areas where it may be pinched or severed.



ELECTROCUTION HAZARD THIS CRANE IS NOT INSULATED.

- Maintain safe clearances from electrical lines.
 Allow for boom, electrical line, and load line swaying.
- This crane does not provide protection from contact with or proximity to an electrically charged conductor.
- Maintain clearance between any part of the crane, loadline or load and any electrical line as per CP Rail Engineering instruction.

DEATH OR SERIOUS INJURY WILL RESULT FROM CONTACT OR INADEQUATE CLEARANCE.

⚠ WARNING

FAILURE TO OBEY THE FOLLOWING CAN RESULT IN DEATH OR SERIOUS INJURY.

- Do not operate any outrigger unless you or a signal person can see that all personnel are clear of the outrigger and its ground contact point.
- For crane stability use only solid, level surface with outriggers properly extended.
- Crane must be level. (If it is necessary to operate the crane with the vehicle on elevated track then consult the relevant load charts for guidance.)
- Operate all controls slowly and smoothly.
- Never operate the crane with personnel under boom or load.
- Keep at least 3 wraps of loadline on winch drum.
- Do not overload.
 - Always know your operating radius, and the actual weight of load being lifted.
- Never hoist personnel on hook, load or any device attached to loadline.
- For travel, boom and outriggers must be in stowed position.
- Do not operate the crane simultaneously by manual and remote control.

A CAUTION

- Inspect vehicle and crane including operation, prior to use daily.
- Failure to allow oil to warm up may cause damage to pump and slow response to function controls.
- Pay loadline out before extending or lowering boom.
- When operating unit, keep boom clear of overhead obstructions.
- Keep load under boom tip.
 Do not side load boom or drag loads.
 Avoid free swinging loads.
- Disengage P.T.O. before driving truck.
- Do not modify or alter this crane without written UNIC factory approval.
 Use only UNIC approved or factory supplied attachments or spare parts on this crane.
- Crane must be mounted on factory recommended chassis. If remounted or rebuilt, the crane must be recertified.

■ OPERATOR'S STATION

1. INTRODUCTION

This manual is furnished with your **UNIC** crane. Its purpose is to acquaint you with the safety rules, operating characteristics and equipment checks. To properly utilize the full potential of your crane, we feel you must:

- 1. Observe all safety rules.
- 2. Understand the equipment.
- 3. Do not operate this crane until you read and understand this manual.

FURUKAWA UNIC CORPORATION cranes are manufactured in accordance with the applicable portions of OSHA regulation, #1910.180 and 1926.550 as in effect at date of manufacture.

Note: OSHA prohibits the alteration or modification of this crane without written factory approval.

■ GENERAL DESCRIPTION

The **UNIC** crane is hydraulically powered and consists of a base and independent outriggers. Each outrigger is independently controlled and has double acting cylinders to actuate its legs. A hydraulic motor, driven through a worm gear assembly, powers the rotating bull gear attached to the turntable. The units are equipped with dual control stations, hoist winch, and multistage extending boom assembly. The power source is provided by the truck engine driving the hydraulic pump with a transmission mounted P.T.O. (Power-Take-Off).

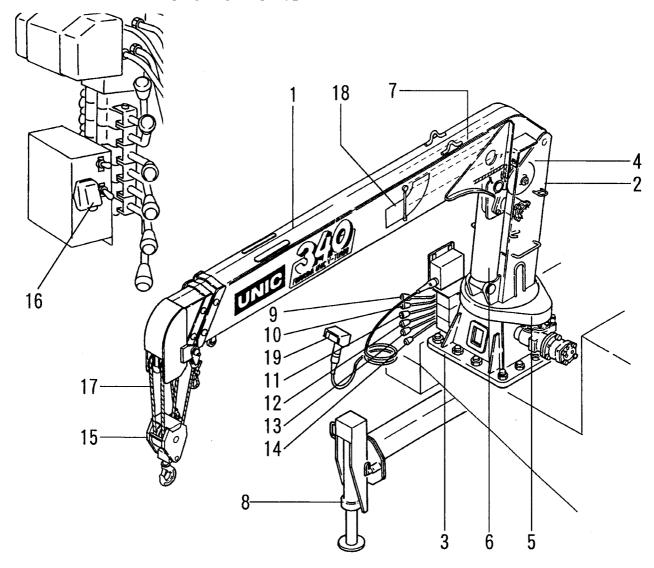
■ OPERATOR RESPONSIBILITY

You are the key safety factor in achieving good performance and long life of the unit. Even though you may be experienced in crane operations, you must read, understand and follow the instructions in this manual. Learn to operate the unit in a safe and efficient manner.

If the crane is supplied with optional equipment, read and understand additional instructions supplied by **FURUKAWA UNIC** CORPORATION or the authorized dealer. Questions concerning application, operating procedures or maintenance should be directed to the **TOMEN AMERICA** INC., ATLANTA OFFICE, GWINNETT PARK, 4295-A INTERNATIONAL BLVD., NORCROSS, GA 30093.

2. DESCRIPTION OF MAJOR EQUIPMENTS

2-1 Names of Crane Parts

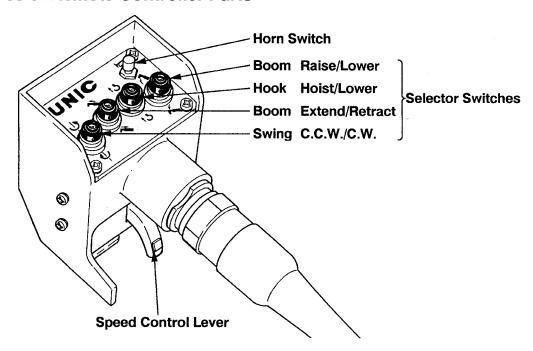


No.	Description		
1	Boom		
2	Column		
3	Base		
4	Hoist winch		
5	Slewing gear		
6	Topping cylinder		
7	Telescoping cylinder		
8	Outrigger		
9	Boom topping control lever		
10	Winch control lever		

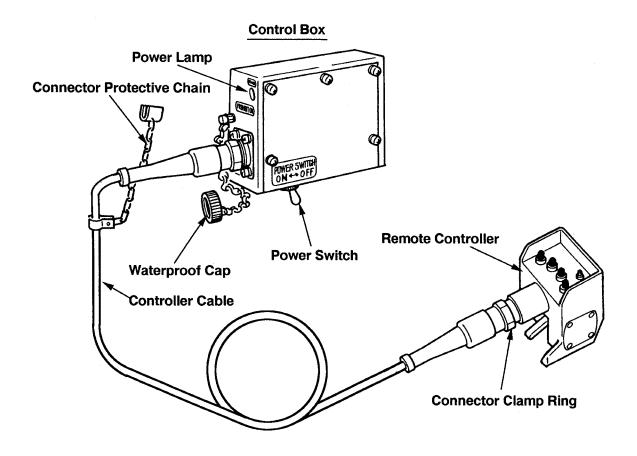
No.	Description		
11	Boom telescoping control lever		
12	Swing control lever		
13	Outrigger control lever (Street side)		
14	Outrigger control lever (Curb side)		
15	Hook block		
16	Warning horn		
17	Wire rope		
18	Boom angle indicator		
19	Remote controler		

2-2 Components of Remote Controller

A. Names of Remote Controller Parts



B. Names of Parts of Control Box and Controller Cable



3. SPECIFICATIONS

CRANE CAPACITY:

LIFTING CAPACITY: Max. 8,000 lbs. at 5.2 ft. with 4 part loadline.

HOOK HEIGHT

ABOVE GROUND: Max. 30.1 ft. (Approx.)

WORKING RADIUS : Min. 2.1 ft. to Max. 24.5 ft.

BOOM: 3-section box beam type telescoping boom with boom

angle indicator.

Boom Length

All booms retracted; 10.9 ft. Second stage extended; 18.1 ft.

Third stage extended; 25.2 ft.

Boom Telescoping Cylinder; Double acting type with counterbalance valve.

Boom extending speed; 14.3 ft/14 sec.

Boom Raising Cylinder; Double acting type with counterbalance valve.

Boom raising speed; 1° to 78°/9 sec.

WINCH: Hydraulic motor driven, spur gear reduction, with automatic

mechanical brake.

Single Line Pull; 2

2,000 lbs.

Hoisting Speed

Single line speed; 236 ft/min. at 4th layer.

Hook speed; 59 ft/min. at 4th layer with 4 part loadline.

Hook Block; 8,000 lbs. capacity, 2 sheaves with latch.

Hydraulic Motor; Axial plunger type.

Wire Rope

Construction; 6×26 Warrington-seale (ISO 2408)

Diameter \times Length; 5/16 in. \times 165 ft.

Breaking force; 37.4 KN

SWING: Hydraulic motor driven, worm and spur gears reduction,

worm self-locking brake.

Swing Range; 360° continuous rotation on a ball bearing race.

Hydraulic Motor; Axial plunger type.

Swing Speed; 2.5rpm.

OUTRIGGERS:

Vertical jacks and horizontal beams.

Vertical Jacks:

Double acting hydraulic cylinders with pilot-operated check

valves.

Horizontal Beams:

Drive side: Fixed

Curb side: manually extendable and retractable type.

Outrigger Span

Retracted;

7.20 ft.

Extended:

10.54 ft.

Note: The figures in relation to the speed are on the basis of no-load running at rated oil

flow condition.

HYDRAULIC SYSTEM:

Control Valve:

Multiple control valve, spring centered, spool-type, with

pressure relief valve.

Pressure relief

valve setting;

2,500 psi.

Recommended Hydraulic Pump

Rated pressure;

2,500 psi.

Rated delivery;

14.8 gal/min.

ANTI TWO-BLOCK SYSTEM

This system senses the presence of the load block in close proximity to the boom tip and automatically interrupts the operation of those boom functions which could bring the load block in contact with the boom tip.

Those boom functions which could be used to move the load block away from the boom tip remain operational.

This system is fully automatic and does not have any type

of manual overriding.

AUTOMATIC OVER-LOAD PROTECTION SYSTEM

Operations of hook hoisting, boom extending and boom lowering are automatically stopped and an alarm is activated when crane load exceeds pre-set safe operating conditions.

ELECTRICAL SYSTEM

12 volt DC.

CONTROL SYSTEM: Manual/remote control combined system

Control ; 1. Selective control: Boom raise/lower

> Hook hoist/lower Boom extend/retract

Swing clockwise/counterclockwise

2. Speed control

: Hydraulic control and engine Speed

control

3. Warning horn : Truck horn

: 15/32 in. diameter \times 49.2 π length vinyl cabtyre cable Controller cable

Power supply : Truck battery (DC12V)

: Approx. 70W (single selective operation at maximum Power consumption

operating speed)

Remote controller weight : Approx. 1.5 lbs.

Controller cable weight : Approx. 4.4 lbs.

Ambient temperature : +5°F to +140°F

 $: -4^{\circ} F \text{ to } +140^{\circ} F$ Storage temperature

Note: Crane operating speed may be a little lower by remote control than by manual control.

4. OPERATIONS

4-1. CONTROLS IDENTIFICATION

A. CAB CONTROLS

The P.T.O. / pump control is located within the driver's reach. The P.T.O. is engaged when the knob is moved up and disengaged when the knob is moved in. The truck gear shift must be in the neutral position when the P.T.O. is to be engaged.

A CAUTION

Disengage P.T.O. before driving truck. Failure to do so will cause damage to the transmission and pump.

Note; The park brake must be firmly set before leaving the cab to begin operation. If the ground surface is icy, slick or sloped, you will be required to help stabilize the truck with wheel chocks.

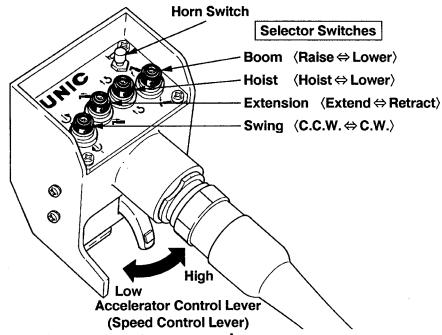
B. CRANE CONTROLS (Remote control)

- 1. Initiating Operation
- Extend the outriggers to the maximum span possible. Deploy the outrigger lift cylinders using the appropriate amount of blocking. Deployed outriggers should retain the original inclination of the vehicle, and should nor develop twisting in the truck chassis.
- 2. Connect the controller cable to the control box.

How to connect the connector.

Put the cable connector into the mating connector (receptacle) with their guides matched, then tighten the connector's clamp ring.

- Fix the connector protective chain to the hook beside the control box.
 (The chain protects the connector from damage when the controller cable is pulled too tightly.)
- 4. Set the power switch on the control box to the ON position. The power lamp on the control box lights, indicating that the remote controller is ready for use.



Boom: To raise boom, move lever to push;

To lower boom, move lever to **pull.**

Hoist: To hoist hook, move lever to push;

To lower hook, move lever to pull.

Extension: To extend boom, move lever to **push**;

To retract boom, move lever to pull.

Swing: To rotate boom counter-clockwise, move lever to push;

To rotate boom clockwise, move lever to **pull**.

Accelerator: To decelerate pump speed, move lever to push;

To accelerate pump speed, move lever to pull.

Note: Controls must be used together to achieve combinations of movements.

For instance, the boom extension and loadline (hoist) must be used together to maintain clearance between boom tip and hook block.

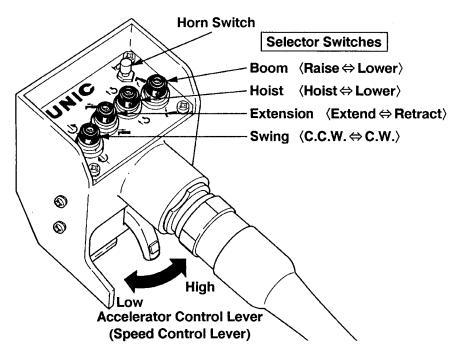
2. Operations

- 1. Before starting work, check the crane for each operation (boom raise/lower, hook hoist/lower, boom extend/retract, swing C.C.W./C.W.) with remote controller as follows:
- (1) Operate the selector switches, one at a time, for different types of crane operation.
- (2) With a selector switch pushed to an operating position, slowly pull the speed control lever while watching crane movement. When the speed control lever is slowly pulled, the crane starts moving with the engine idling. When the speed control lever is pulled further, engine speed increases to move the crane faster.
- (3) When the selector switch or the speed control lever is returned to its original position, the crane stops operating.

Note:

When the speed control lever is returned to its original position, hook hoist/lower or swing may still continue at a reduced rate.

- (4) Push the horn switch to check that the horn sounds.
- 2. You may now start to operate the crane if all the above checks are satisfactory.
 - (1) Move a selector switch to an operating position, and control crane operating speed with the speed control lever. Observe the following precautions to ensure safety without unsteady load handling.
 - ① Selector switches may be operated only after returning the speed control lever to the original position.
 - ② Slowly move the speed control lever.
 - (2) If the speed control lever is pulled to the maximum at once, it may take a little time for the engine to respond and reach the maximum speed. This does not mean anything is wrong.
- 3. The vehicle's horn sounds when the horn switch is pushed. Use it when necessary.
- 4. After using the crane, be sure to return the power switch on the control box to the OFF position.
- 5. Store the remote controller and controller cable in the service body.



! CAUTION

- 1. Selector switches on the remote controller are ON/OFF switches, and do not need to be forced. Undue force may damage the switches.
- 2. Keep the power switch on the control box in the OFF position except when operating the remote controller.

Otherwise, the crane may start running when remote controller switch is accidentally touched. Be sure to keep the power switch OFF when the crane is not in use.

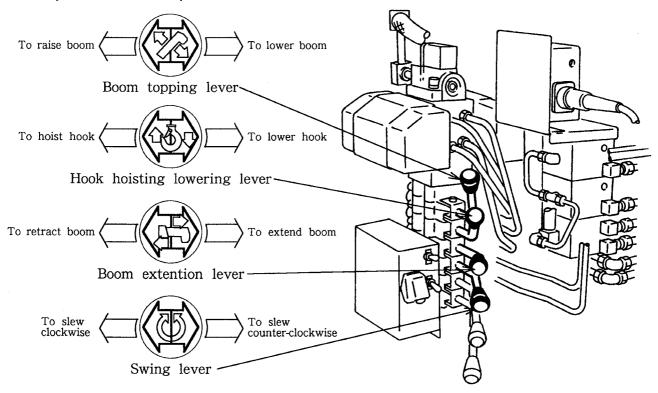
- 3. When the connector box is not to be used, always be sure to put the waterproof cap on it. Failure to do so will cause faulty contact between the connectors.
- 4. Do not connect or disconnect the connectors forcibly. When making a connection, push the connector into the other with their guides matched. Also, when fastening and unfastening the connector clampring (screw), be careful not to turn the other parts, or damage can result.

⚠ WARNING

When using the remote controller ensure that the cable does not loop around the manual control levers on the crane's base. failure to do so may result in uncontrolled crane movement.

C. CRANE MANUAL CONTROLS

The **UNIC** CRANE can be operated with the operator control station. The controls on the base side are; boom raise, hoist, telescope and boom swing and outrigger system. All controls and direction of actuation for desired movement are identified by the information placard mounted on knob of the control lever.



Boom: To raise boom, move lever to **left**;

To lower boom, move lever to **right**.

Hoist: To hoist hook, move lever to **left**;

To lower hook, move lever to **right**.

Extension: To retract boom, move lever to **left**;

To extend boom, move lever to **right**.

Swing: To rotate boom clockwise, move lever to **left**;

To rotate boom counter-clockwise, move lever to **right**.

Note: Controls must be used together to achieve combinations of movements.

For instance, the boom extension and loadline (hoist) must be used together to maintain clearance between boom tip and hook block.



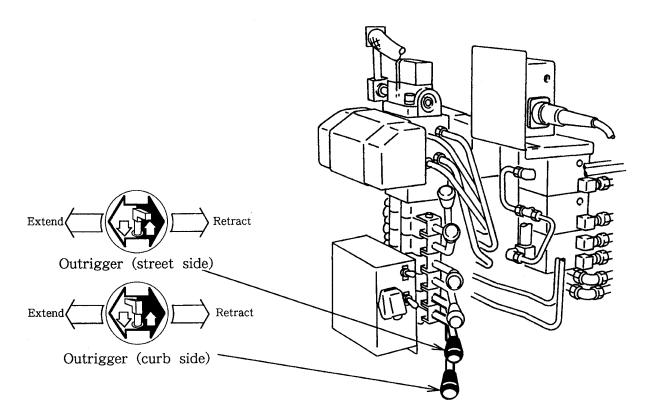
Do not operate the crane simultaneously by manual and remote control.

The crane can be manually operated using the manual control levers on the base of the crane. Manual operation and remote control operation can be freely selected without special switching. Select either of these modes of operation to suit the occasion.

D. OUTRIGGER CONTROLS

⚠ WARNING

- 1. Stand clear of outriggers to avoid crushing injury.
- 2. Do not operate outriggers without determining clearance from obstructions or personnel.
- 3. Never lower or raise any outrigger unless you or the signal person assisting you can see the outrigger shoe and the ground where the outrigger will make contact and can confirm the area is clear of all personnel.
- 4. Failure to follow this procedure may result in a serious crushing injury to workmen, property damage, or crane instability.



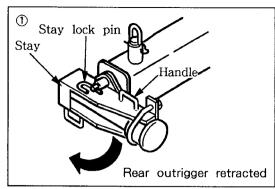
Outriggers: To extend outrigger cylinder, move lever to left;

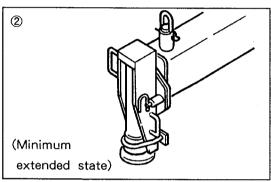
To retract outrigger cylinder, move lever to right.

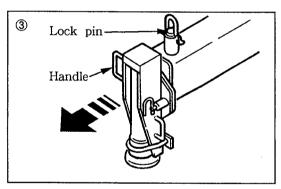
★ Set up the outriggers in the following manner.

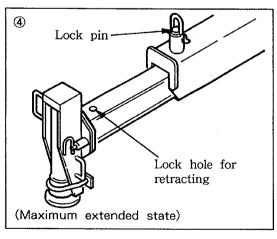
(1) Pull out the stay lock pin and hold the handle to rotate the stay by 1/4 turn to direct it downward.

- (2) When the stay is turned to upright, release the stay lock pin and make sure that the pin is inserted into the hole securely. The pin is spring loaded.
- (3) Pull out the pin to extend the outrigger laterally. The pin is secured with a chain and locating cotter pin.
- (4) After the outrigger has been extended, return the lock pin back into place and check to confirm that the pin is inserted securely into the hole by pushing the outrigger in.
- (5) Move the outrigger control lever to push to extend the outrigger cylinders.
- (6) In order to brace the vehicle, for crane operation adjust the extension of each outrigger cylinder by the control lever.
- (7) After setting up the vehicle, return the control levers to the neutral positions.







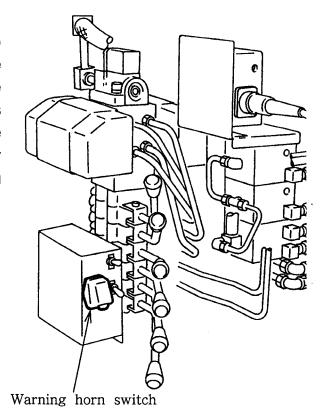




When pulling out the stay lock pin, be sure to lift the handle up and support the outrigger with your hand to extract the lock pin.

D. WARNING HORN

The warning horn switch is installed to horn on curb side only as well as remote of the crane body. The horn of the vehicle will sound to warn if the switch is pressed. Warn the co-worker near the load when starting crane operation or anyone who has entered the swinging range during crane operation.



4-2. OPERATING INSTRUCTIONS

A. TRAINING

It is extremely important that you have a thorough knowledge of all the operating characteristics of your crane.

This crane will not be safe if improperly used!

B. SAFETY DEVICES

Certain safety devices on your **UNIC** crane are described below. These devices will help to maintain control of a load should power or hydraulic line failure occur. You must understand the function and operation of these devices so that a continual check on their performance can be made.

⚠ WARNING

YOU MUST NOT OPERATE THIS CRANE UNLESS:

- 1. You have been trained in the safe operation of this crane.
- 2. You read, understand and follow the safety and operating recommendations contained in the crane manufacturer's manuals, your employer's work rules and applicable government regulations.

A CAUTION

Should any of these devices fail to function, stop all operations and consult your authorized UNIC dealer.

This crane can be overloaded by an operator who fails to follow the instructions contained in this manual.

■ BOOM LIFT CYLINDER HOLDING VALVE

A holding valve is subplate mounted to the cylinder base. This valve holds the boom in the elevated position should power or hydraulic pressure line failure occur. Should any of these happen, "STOP NOW". If the boom creeps down, consult your authorized **UNIC** dealer.

■ EXTENSION CYLINDER HOLDING VALVE

A holding valve is subplate mounted to the cylinder rod end for more than 2nd stage extension. This valve holds the cylinder in the extended position should power or hydraulic pressure line failure occur. If the boom creeps in under the load, consult your authorized **UNIC** dealer.

OUTRIGGER CYLINDER HOLDING VALVE

All outriggers are equipped with internal cartridge type lock valves. If outriggers creep up under load, or down while roading, consult your authorized **UNIC** dealer.

■ WINCH SAFETY BRAKE

To determine if the brake is working, raise the load a few feet and release control lever. Shut truck engine off; Actuate winch control lever in down direction. If the load creeps down, consult your authorized **UNIC** dealer.

■ SWING DRIVE BRAKE (ROTATION GEAR BOX)

The rotation gear drive will have a worm self-locking brake.

■ ANTI TWO-BLOCK

An anti-two-block system senses the presence of the load block in close proximity to the boom tip and will automatically interrupt the operation of those boom functions which could bring the load block in contact with the boom tip. Those boom functions which could be used to move the load block further from the boom tip remain operational.

■ AUTOMATIC OVER-LOAD PROTECTION SYSTEM

The system has been set up to prevent damage to the crane resulting from being overloaded.

When overloaded, operation of the winding-up winch, extending boom, and lowering boom stop automatically and an alarm of intermittent beeping is sounded.

In this case, return the lever immediately to neutral position to carry out operations (unwinding winch, retracting boom, or raising boom) for restoration.

C. COLD WEATHER OPERATION

In winter and cold weather, the crane must not be operated immediately after engaging the P.T.O.



Failure to allow oil to warm up may cause damage to pump and slow response to function controls.

D. WORK SITE POSITION

The best possible work site should always be sought when you are positioning the crane. An ideal location is where the ground is firm, level and dry, and situated in close proximity to the work station. The site also should be as free of overhead obstructions as possible. Maintain safe clearances from electrical power lines and apparatus. You must allow for boom and platform sway, rock or sag and electrical line and loadline swaying.

E. OUTRIGGER POSITIONING

Before conducting any boom operation you must extend all outriggers to a firm and level surface. In the event that other conditions exist such as: loose or sandy soil; crusty or frosty surface with soft soil underneath; icy or slick pavement; sloping surfaces, etc., you will be required to restrict operations. In some areas you may be able to level your crane with the use of outrigger pads or blocks. These pads must be made of adequate material.

F. LOAD HANDLING OPERATIONS

Before moving a load, you must study the capacity placards carefully and adhere to the load capacities and radii of operation given. The information provided on this load chart is based on 85 % of tipping. During operations when lifting, swinging, or extending the load the controls should always be metered when beginning or terminating movement to prevent sudden starting or stopping which imposes undue shock loads on the equipment. This is especially true when handling heavy loads.

The controls should be metered to begin slow continuous movement, then slowly increased to desired operating speed. Failure to meter the crane's operation at the start and finish of movements may result in shock loads which activate the overload protection system.

Never hold a control lever in the open position after the function has reached the end of its travel. This will impose unnecessary stresses on the components, reduce service life, and generate heat in the hydraulic oil.

4-3. MAXIMUM LOAD AND BOOM ANGLE CHART

The maximum load charts shown are located on the operator console. Their purpose is to show you the load capacities at the various radii or boom angle and hook heights.

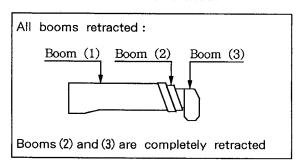
The boom angle indicator is located on the boom just above the operator's station. Its purpose is to show the boom angle. This information may be used in conjunction with the load charts.

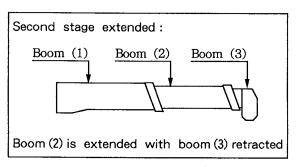
OPERATING CONDITIONS OF BOOMS

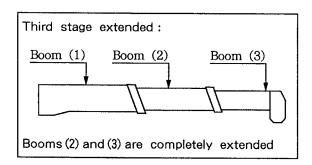
The booms start to extend with the outer boom and to retract with the top boom.

(1) 3- section boom.

The booms (2) and (3) extend in the order stated, and the booms (3) and (2) retract in the order stated.







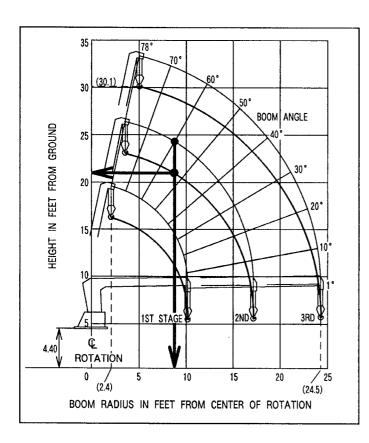
Note: Load chart date provided in this manual reflects the design capacity of the crane. The capacity of the crane is also affected by the configuration of the vehicle and operational conditions: super elevated track, outriggers 2/3 deployed.

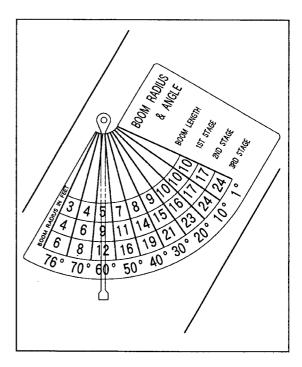
Direction must be taken from supplemental load charts provided on or with each vehicle. In some applications crane capacity will be de-rated.

★ The following example is an example of how to use the load chart.

- 1. Extend the 2nd stage boom completely.
- 2. Using the boom angle indicator as your guide, raise boom to 60° elevation. As can be seen, the boom radius is approximately 9 feet and the hook height is approximately 21 feet.

By looking at the load chart, the boom capacity is 4600 Lbs. This capacity must be reduced for some optional equipment.





BOOM RADIUS			
(FT.)	ALL BOOMS RETRACTED (LBS.)	SECOND STAGE EXTENDED (LBS.)	THIRD STAGE EXTENDED (LBS.)
4.4	8,000	8,000	5,100
5.2	8,000	7,100	5,100
6	7,300	6,400	5,100
7	6,500	5,700	5,100
7.5	6,200	5,300	5,100
8	5,800	5,100	4,800
9	5,300	4,600	4,400
10	4,300	4,300	4,000
12		3,700	3,600
14		3,300	3,100
16		2,800	2,800
17		2,400	2,700
18			2,600
20			2,300
22			2,100
24.5			1,600



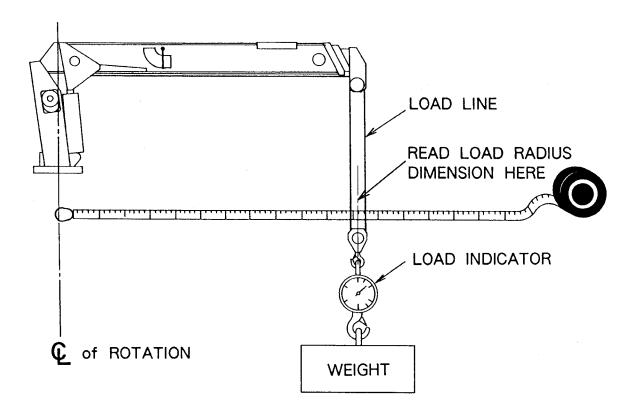
It is important that you know the weight of any material that you attempt to handle.

This can be determined by use of a dynamometer or scales.

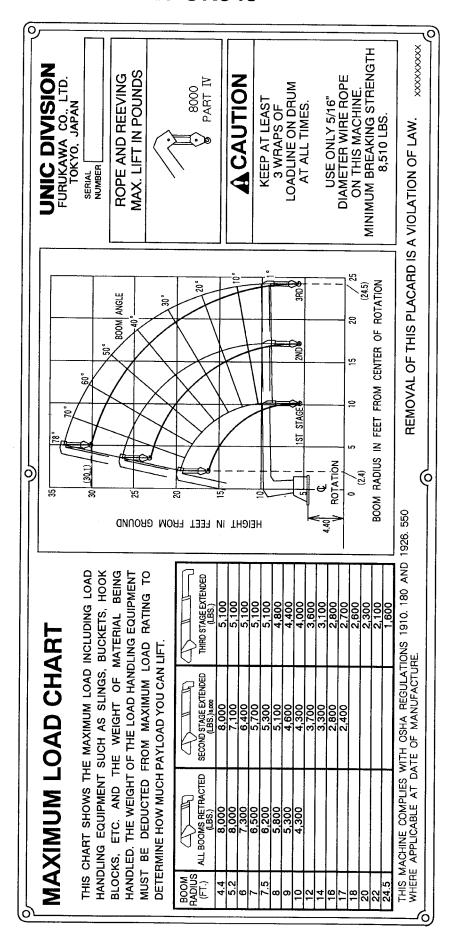
Note: The maximum load chart shows the maximum load including load handling equipment such as slings, buckets, hook block, etc., and the weight of material being handled.

The weight of load handling equipment must be deducted from the maximum load rating to determine how much pay load you can lift.

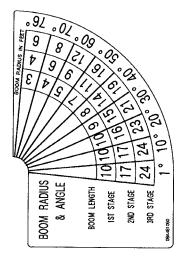
DETERMINING LOAD RADIUS

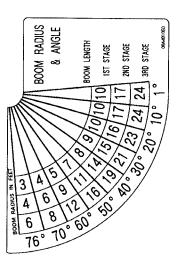


LOAD CHART UR343



BOOM ANGLE CHART





4-4. GENERAL RULES

- 1. Always operate controls to lower the loadline while extending or lowering the boom. This will maintain clearance between boom tip and hook block.
- 2. Make certain loadline is not twisted or kinked, and that loadline is properly seated on drum and in sheave.
- 3. During winching, meter all controls and apply power smoothly. No sudden acceleration or deceleration.
- 4. When raising a load, raise it a few inches and allow controls to return to neutral to determine if brake on winch is working properly.
- 5. You must not make side pulls with the boom. This type of loading can damage the boom and rotation mechanism.



The boom and loadline must form a straight line between boom and load.

6. When lifting a load, you must always make certain that three (3) full wraps of rope remain on winch drum before raising the boom. Maintain tension on the loadline at all times to prevent rope from becoming twisted or kinked and to keep cable properly seated on drum and sheaves.

The proper maintenance and care of the wire rope loadline on your **UNIC** TRUCK CRANE is most important. Refer to standard ANSI / ASME B30.5 - 1982 for wire rope inspection and maintenance procedures as well as special provisions for handling maximum rated loads with rotation resistant ropes.

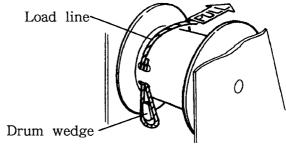
Loadline loop and drum wedge must be properly seated inside winch drum before winding loadline on drum.



Only wire rope shall be used on the lifting winch.



THREE WRAPS MINIMUM
ALL WINCHES



4-5. OPERATING THE UNIT

Now that you are familiar with the controls and function of the **UNIC** crane, practice making some typical lifts. As with any piece of equipment, practice is required to develop the coordination and knowledge necessary for smooth and efficient operation.

A. INITIATING OPERATION

- 1. If possible, position the unit at the job site in such a manner as to assure all work operations can be performed without repositioning the truck (see "work site position"). However, strict observance of load weight radius and maximum load rating must always be complied with.
- 2. Set brake securely.
- 3. Engage PTO.
- 4. Position wheel chocks.
- 5. Extend all outriggers to make firm contact with ground. (see "outrigger positioning.") Provide outrigger pads if terrain is soft or if outriggers tend to sink into ground.
- 6. Position yourself at the operator's console and accelerate the truck engine to desired speed. Maximum pump speed should not exceed 2,000 R.P.M.
- 7. Bring the hydraulic oil up to operating temperature. (see "cold weather operation.")
- 8. Check all controls for proper operations. During all operations, the controls should be metered to prevent sudden starting and stopping.

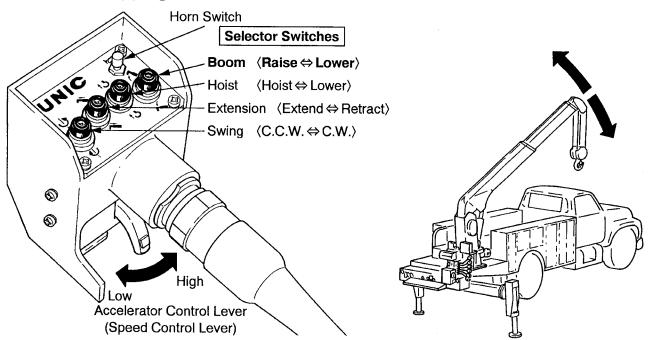
⚠ WARNING

Failure to meter your controls induces undue shock loads on the equipment which may result in structural failure or overturning of the crane.

Death or serious injury may result.

B. OPERATIONS





To lower the boom Move the control lever to push.

To raise the boom Move the control lever to pull.

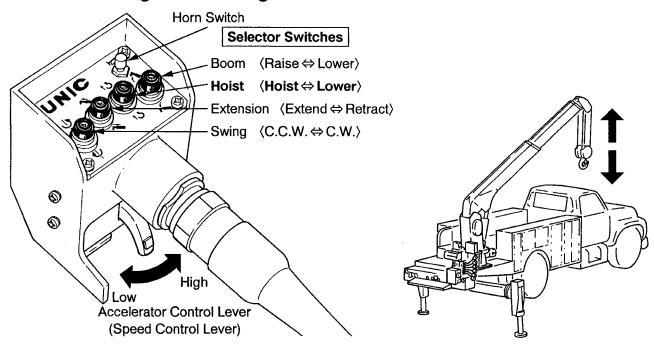
To stop the boom Release the control lever, and it will automatically return to the neutral position and the boom stop

moving.

CAUTION

- ★ Play loadline out before extending or lowering boom.
 Failure to do so may cause loadline to break and / or damage the crane.
- ★ Operate the control lever as slowly as possible.
 Do not operate the lever jerkily especially when a cargo is being hoisted.
 Failure to do so can cause the crane to break or overturn due to a shock load.

Hook Hoisting and Lowering



To lower Move the control lever to push.

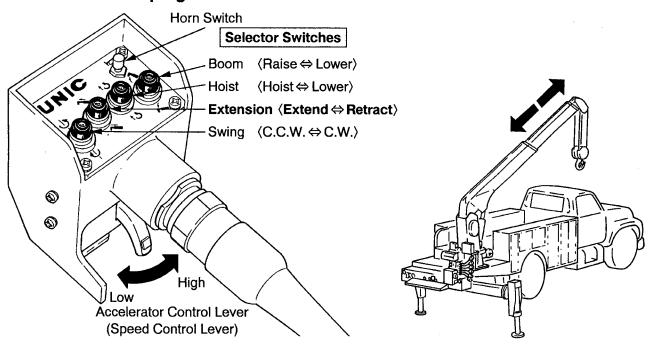
To hoist Move the control lever to pull.

To stop......Release the control lever, and it will return to the neutral position and the mechanical automatic brake will be actuated to stop hoisting or lowering the cargo.

⚠ CAUTION

- ★ Do not keep lowering (playing out the wire rope) after the cargo (hook) has landed on the ground.
 - Failure to do so can cause disordered windings of rope around the drum, and shortening the service life.
- ★ If the first layer is not properly wound on the drum, the wire rope may easily stick in the gaps in the second and subsequent layers, causing winding disorder.
 - Operate slowly and assure proper winding of the first layer on the drum.

Boom Telescoping



To extend the boom Move the lever to push.

To retract the boom Move the lever to pull.

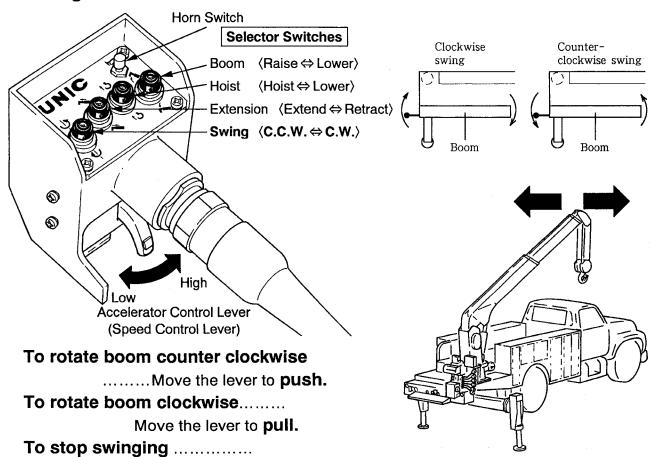
To stop the boom Return the lever to the neutral position, and the

boom will stop operating.

⚠ CAUTION

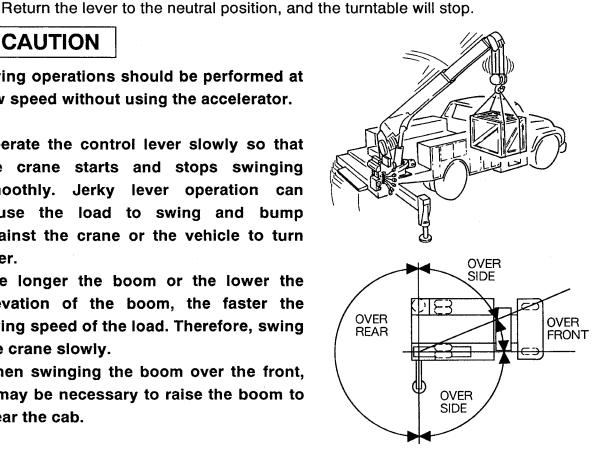
- ★ Play out loadline before extending or lowering.
- ★ The boom extension and loadline must be used together to maintain clearance between boom tip and hook block.
- ★ When the ANTI-TWO-BLOCK system functions, Play out loadline to reset.

Swing

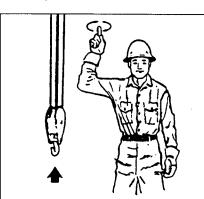


CAUTION

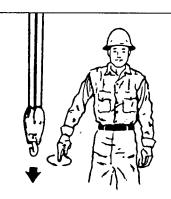
- ★ Swing operations should be performed at low speed without using the accelerator.
- ★ Operate the control lever slowly so that the crane starts and stops swinging smoothly. Jerky lever operation can cause the load to swing and bump against the crane or the vehicle to turn over.
- ★ The longer the boom or the lower the elevation of the boom, the faster the swing speed of the load. Therefore, swing the crane slowly.
- ★ When swinging the boom over the front, it may be necessary to raise the boom to clear the cab.



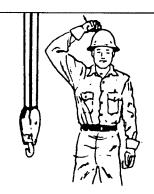
C. OPERATOR'S COMMUNICATION CHART (ANSI / ASME B30.5)



HOIST. With forearm vertical, forefinger pointing up, move hand in ward, forefinger pointing down, then use regular signals. small horizontal circle.

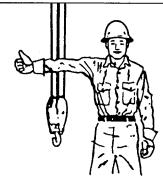


LOWER. With arm extended down - USE MAIN HOIST. Tap fist on head; move hand in small horizontal circle.

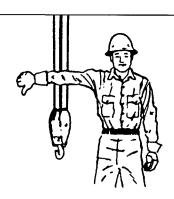




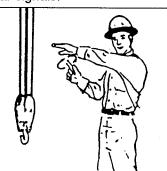
USE WHIPLINE (Auxiliary Hoist). Tap elbow with one hand; then use regular signals.



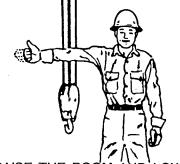
BOOM. Arm extended, RAISE closed, thumb pointing fingers upward.



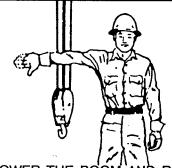
LOWER BOOM. Arm extended, fingers closed, thumb pointing downward.



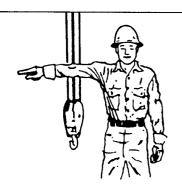
MOVE SLOWLY. Use one hand to RAISE THE BOOM AND LOWER LOWER THE BOOM AND RAISE give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example.)



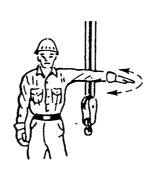
THE LOAD. With arm extended, thumb pointing up, flex fingers in thumb pointing down, flex fingers and out as long as load movement in and out as long as load is desired.



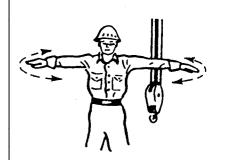
THE LOAD. With arm extended. movement is desired.



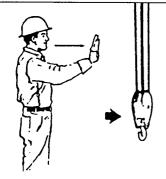
SWING. Arm extended, point with STOP. Arm extended, palm down, finger in direction of swing of boom.



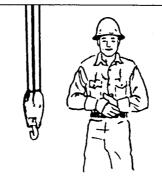
move arm back and forth horizontally.



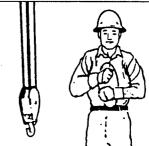
EMERGENCY STOP. Both arms extended, palms down, move arms back and forth horizontally.



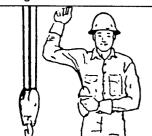
hand open and slightly raised, make in front of body. pushing motion in direction of travel.



TRAVEL. Arm extended forward, DOG EVERYTHING. Clasp hands



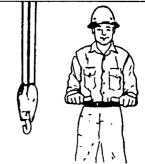
TRAVEL (Both Tracks). Use both fists in front of body, making a circular motion about each other, indicating direction of travel, forward or backward. (For land cranes only.)



TRAVEL.(One Track)Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of EXTEND other fist, rotated vertically in front of Booms). Both fists in front of body body. (For land cranes only.)



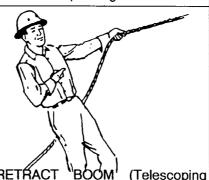
BOOM (Telescoping with thumbs pointing outward.



RETRACT BOOM (Telescoping Booms). Both fists in front of body with thumbs pointing toward each other.



(Telescoping RETRACT Boom). One Hand Signal. One fist Boom). One Hand Signal. One fist in in front of chest with thumb tapping front of chest, thumb pointing out chest.



ward and heel of fist tapping chest.

4-6. LIFTING THE LOAD

Always inspect hook block, loadline, and/or any load handling equipment before operation for damage or excessive wear.

Follow the recommended procedures for work site position, outrigger positioning, and control metering.

The following general instructions should be adhered to each time a lifting operation is performed.

MARNING

It is important that you know the weight of any material that you attempt to handle. This can be determined by use of a dynamometer or scales.

STEPS TO LIFTING A LOAD

1. Determine what the total load weighs.

Note: Total load includes the weight of the material being lifted plus any material handling devices such as slings, load blocks, etc.

- 2. Consult the maximum load chart on your crane and determine the correct boom radius allowed based uppon your load weight.
- 3. Rotate the boom tip until it is directly over the material to be lifted.
- 4. Attach loadline to material and begin operation.

4-7. ROADING THE UNIT

! CAUTION

Never leave the work site or reposition the truck crane without first securing the boom in road travel position.

Before leaving the work site or repositioning the crane at the work site, always:

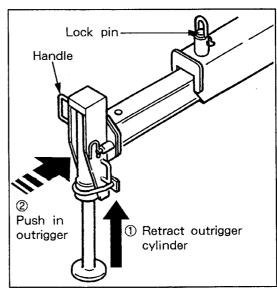
1. Retract all boom.

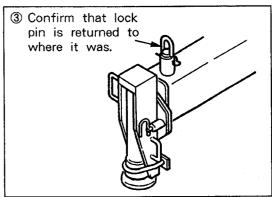
Attach block hook to storage loop on the trestle. Stow booms in a horizontal position parallel with truck frame.

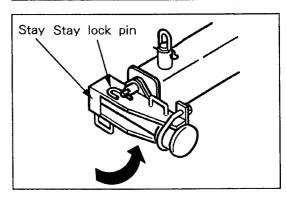
- 2. Hoist in winch until slack is taken up.
- 3. Fully retract all outriggers.

The outrigger should be stored in the following manner.

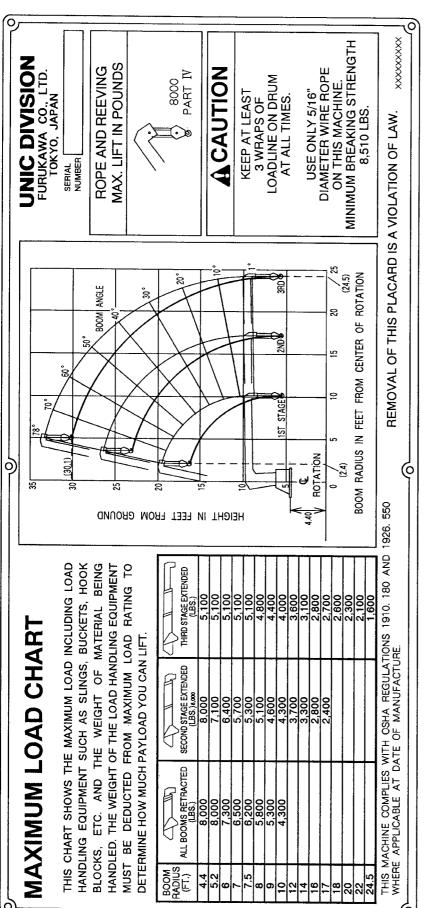
- (1) Move the outrigger lever to pull to retract the outrigger cylinders.
- (2) After the outrigger cylinders on both sides have retracted fully, pull out the lock pin along the guide then hold the the handle to push in the outrigger for storage.
- (3) After the outrigger has been stored entirely, return the lock pin back into place to lock the outrigger sliding arm securely. Secure lock pin with the cotter pin.
- (4) Pull out the stay lock pin then hold the handle to rotate the stay by 1/4 turns to rest it horizontally.
- (5) When the stay is positioned horizontally, release the lock pin and make sure that it is inserted into the hole securely.
- 4. Disengage power take off (P.T.O.).
- 5. Secure any load or lifting attachments to the flatbed.



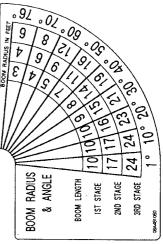




5. PLACARDS



Operator Console, 2 Max. Load Chart, . 91 BOOM RADIUS IN FEET 9 Boom Angle LH, Boom base, 3



BOOM LENGTH

IST STAGE

3RD STAGE

| 24 | 24 |

53

10°

BOOM RADIUS & ANGLE

Boom Angle RH, Boom base,

BOOM RADIUS IN FEE 3 6

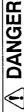
4

8 6 76°

OPERATING INSTRUCTIONS

YOU MUST NOT OPERATE THIS CRANE UNLESS: BEFORE THE OPERATION

- You have been trained in the safe operation of this crane.
- 2. You read, understand and follow the safety and operating recommendations contained in the crane manufacturer's manuals, your employer's work rules and applicable government regulations.



THIS CRANE IS NOT INSULATED **ELECTROCUTION HAZARD**

- Allow for boom, electrical line, and load line swaying. Maintain safe clearances from electrical lines.
 - This crane does not provide protection from contact with or proximity to an electrically charged conductor
 - One foot additional clearance is required for every Maintain a clearance of at least 10 feet between any part of the crane, loadline or load and any electrical line carrying up to 50,000 volts. additional 30,000 volts or less.

DEATH OR SERIOUS INJURY WILL RESULT FROM CONTACT INADEQUATE CLEARANCE.

MARNING WARNING

FAILURE TO OBEY THE FOLLOWING CAN RESULT IN DEATH OR SERIOUS INJURN

- Do not operate any outrigger unless you or a signal person can see that all personnel are clear of the outrigger and its ground contact point.
 - · For crane stability use only solid, level surface with outriggers properly extended.
 - Crane must be level.
- Operate all cotnrols slowly and smoothly.
- Never operate the crane with personnel under boom or load
 - Keep at least 3 wraps of loadline on winch drum. Do not exceed crane ratings.
- Always know your operating radius, and the actual Never hoist personnel on hook, load or any device weight, of load being lifted.
- For travel, boom and outriggers must be in stowed attached to loadline. position

- Inspect vechicle and crane including operation,
- · Failure to allow oil to warm up may canse damage to pump and slow response to function controls. prior to use daily
 - When operating unit, keep boom clear of overhead Payout loadline before extending or lowering boom. obstructions.
 - · Keep load under boom tip.
- Do not side load boom or drag loads. Avoid free swinging loads.
- Do not modify or alter this crane without written Disengage PTO before driving truck.
- Use only UNIC approved or factory supplied attachments or spare parts on this crane. UNIC factory approval
- chassis. If remounted or rebuilt, the crane must be Crane must be mounted on factory recommended recertified
 - If manuals are missing from this crane, contact manufacturer for replacement.

REMOVAL OF THIS PLACARD IS A VIOLATION OF LAW

08A481080

TOMEN AMERICA INC., ATLANTA OFFICE FOR FURTHER INFORMATION CONTACT TELEPHONE 404 / 923 - 3327

CAUTION — **OUTRIGGER OPERATION**

1. CRANE OPERATION

Rotate both stays by 1/4 turn to direct feet downward. Check that stay lock pins engage. Extend curb-side horizontal beam to desired position and fully insert lock pin. Extend the vertical jacks.

2. TRAVELLING

Retract vertical jacks completely. Return horizontal beam to minimum span and insert lock pin. Secure lock pin with locating pin. Rotate both stays by 1/4 turn to return cylinders to horizontal position. Check that both stay lock pins are fully engaged.

CAUTION, O/R Operation, Outrigger Housing, 2

8000 LBS.

Maximum Load, Side plate of Hook Block, 2

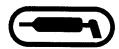
EXCHANGING OF FILTER

- Lubricate oil to the packing for filter and then screw in and tighten with all your strength.
- Exchange after the initial 3 month operation, thereafter change annually, 089181070

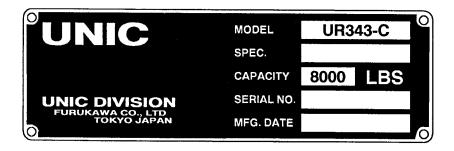
Exchanging of Filter, Filter body, 1



Horn, Operator console, 2



Grease, 6



Crane Model Name Plate, Column, 1

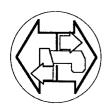
[Knob of Control Lever]



Boom Topping, 2



Hook Hoisting and Lowering, 2



Boom Telescoping, 2



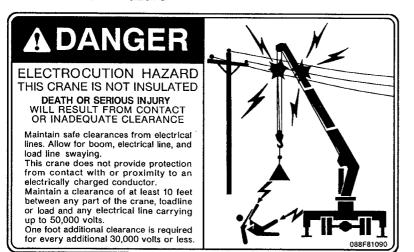
Swing, 2



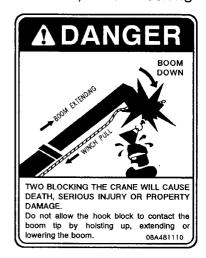
Outrigger (Street Side), 2



Outrigger (Curb Side), 2



DANGER, Two Blocking



Operator console, 2

Operator console, 2

DANGER, Hoisting Personnel

A DANGER

HOISTING PERSONNEL
ON CRANE LOADLINE
CAN RESULT IN
DEATH OR SERIOUS INJURY
Never hoist personnel on hook, load
or any device attached to loadline.

08A481130

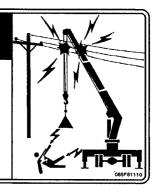
End of truckbed at hook, 1

Electrocution Hazard

ADANGER

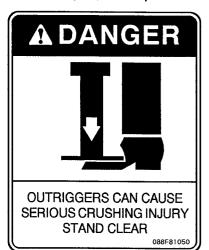
ELECTROCUTION HAZARD

DEATH OR SERIOUS INJURY will result from contact with the load, the crane or the vehicle if the boom or loadline should become electrically charged. KEEP CLEAR OF TRUCK AND LOAD



Truckbed side, 3

DANGER, O/R Operation



Outrigger housing, 2

DANGER, Ride Load line

DANGER

NEVER RIDE ON OR IN A PLATFORM, BUCKET OR OTHER TYPE OF LIFTING DEVICE ATTACHED TO THE LOADLINE OF THIS CRANE.

SUCH MISUSE OF THE LOAD-LINE MAY SUBJECT THE RIDERS AND OTHERS TO DEATH OR SERIOUS INJURY. 08A481120

Truckbed side. 3



- INSPECT VECHICLE AND CRANE INCLUDING OPERATION. PRIOR TO USE DAILY.
- 2. DO NOT USE THIS EQUIPMENT EXCEPT ON SOLID, LEVEL SURFACE WITH OUTRIGGERS PROPERLY EXTENDED AND CRANE MOUNTED ON FACTORY-RECOMMENDED TRUCK.
- 3. BEFORE OPERATING THE CRANE, REFER TO MAXIMUM LOAD (CAPACITY) CAHRT ON CRANE FOR OPERATING (LOAD) LIMITATIONS.
- 4. OPERATE ALL CONTROLS SLOW AND SMOOTH TO AVOID DAMAGE TO CRANE OR INJURY TO PERSONNEL.
- 5. DO NOT OPERATE, WALK OR STAND
 BENEATH BOOM OR A SUSPENDED LOAD.
- 6. FOR TRAVEL, BOOM MUST BE IN STOWED

08A481090

CAUTION, Inspect Vehicle, Operator console, 2

ALL SIGNS AND CHARTS ON THIS CRANE APPEAR ALSO IN THE OWNER'S MANUAL. IF ANY OF THEM BECOMES DIFFICULT TO READ, OR IS REMOVED OR DAMAGED, CONSULT ITS DUPLICATE IN THE MANUAL AND CONTACT UNIC CORPORATION FOR A REPLACEMENT.

Replacement Warning, Operator console, 2

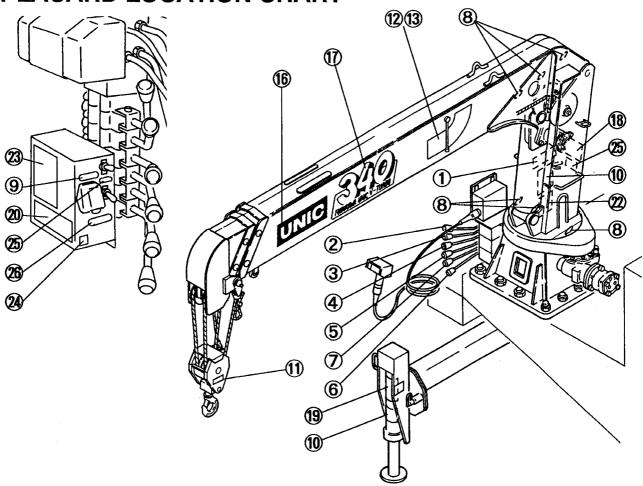
CAUTION DISENGAGE PTO BEFORE DRIVING		
MAX ENGINE SPEED FOR CRANE OPERATION		
MAX ROAL	O TRAVEL HEIGHT WITH 1°B0	OOM ANGLE FT.

CAUTION, RPM Roading, Cab. 1

HYDRAULIC OIL ONLY

Hydraulic Oil Only, Oil reservoir, 1

PLACARD LOCATION CHART



No.	Part Name	Part No.	Q'ty
1	Crane Model Name Plate	087E81011	1
2	Placard (Raise / Lower)	088D81011	2
3	Placard (Hoist)	088D81021	2
4	Placard (Telescoping)	088D81030	2
5	Placard (Swing)	088D81041	2
6	Placard (Outrigger Street Side)	08A481010	2
7	Placard (Outrigger Curb Side)	08A481020	2
8	Placard (Grease)	080581060	6
9	Placard (Horn)	080581070	2
10	Placard (Caution, O / R Operation)		2
11	Placard (Hook)	08A481040	2
12	Placard (Boom Angle R.H.)	08A481050	1
13	Placard (Boom Angle L.H.)	08A481060	1
14	Placard (Maximum Load Chart)		2
15	Placard (Operating Instructions)	08A481080	2
16	Placard (UNIC)	602105030	2
17	Placard (340)	08H681010	2
18	Placard (Electrocution Hazard)	088F81090	2
19	Placard (Danger, O / R Operation)	088F81050	2
20	Placard (Replacement Warning)	088F81070	2
21	Placard (Hydraulic Oil Only)	088F81060	1
22	Placard (Caution, Inspect Vehicle)	08A481090	2
23	Placard (Danger, Two Blocking)	08A481110	2
24	Placard (Hydraulic Release)	A-522250	1
25	Placard (Working Lamp)	A-522246	1
26	Placard (Overwinding Alarm)	602103291	1

■ MAINTENANCE SECTION

1. PERIODIC MAINTENANCE

The life of any piece of construction equipment is greatly influenced by operating techniques and the quality of the care it receives.

Routine checks and service are essential for preventing breakdowns, maintaining performance and keeping operation costs down. Also, lubrication is an important part of any good maintenance program.

Intervals on the periodic maintenance are for operating in normal conditions. If you operate your machine in difficult conditions, you should service it at shorter intervals.



While lubricating and / or servicing, be sure to hang a caution tag on the control lever to prevent the crane from being operated by the other personal.

2. PERIODIC MAINTENANCE / DAILY

Daily inspection to be made before operation.

Making the inspection before operation results in using the machine safely or prevents failures.

2-1. WALK-AROUND INSPECTION

For operator personnel safety and maximum service life of the machine, make a thorough walk-around inspection before starting the engine.

Inspect each part of the crane according to the following service schedule.

	Device	Servicing item	
1	Hydraulic oil reservoir	Oil leakage	
2	Hydraulia numa	Loose mounting	
	Hydraulic pump	Oil leakage	
3	Outriggers	Cracks in welded parts	
	Outriggers	Oil leakage	
4	Base	Fastening tightness of crane body mounting bolts	
5	Control Valve	Oil leakage	
6	Swing device	Loose bolts and nuts	
7	Hydraulic piping	Öil leakage from joints	
8	Topping cylinder	Damage in fulcrum pin and boss	
	ropping cylinder	Oil leakage	
9	Boom	Damage in fulcrum pin and boss	
	BOOM	Cracks in welded parts	
10	Sheave pin	Damage of fulcrum pin and boss	
	Officave pitt	Rust on boss	
11	Hook	Rotation of hook	
	1100K	Damage of sheave	
12	Hook latch	Tension of spring	
14	HOOK IAIGH	Deformation and damage	
13	Others	Sling wire and other equipment necessary for crane operation	

2-2. INSPECTION FOR FUNCTION

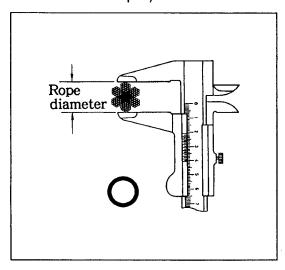
- 1. Check that each moving part of the crane operates smoothly.
- 2. Check that the Anti-two block device operates correctly.
- 3. Check that the warning horn switch operates correctly.
- 4. Check that the winch brake operates correctly.

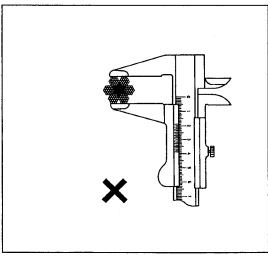
2-3. WIRE ROPE INSPECTION

Wire rope in active service should be visually inspected once every working day. A thorough inspection of such rope should be made at least once a month and dated records kept as to rope condition.

Replace the rope according to the following standard.

- (1) In running ropes, six randomly distributed broken wires in one rope lay, or three broken wires in one strand in one rope lay. (A rope lay is the length along the rope in which one strand makes a complete revolution around the rope.)
- (2) In pendants or standing ropes, evidence of more than one broken wire in one lay.
- (3) Abrasion, scrubbing, or peening causing loss of more than 1/3 of the original diameter of the outside wires.
- (4) Evidence of severe corrosion.
- (5) Severe kinking, severe crushing, or other damage resulting in distortion of the rope structure.
- (6) Evidence of any heat damage from a torch or arc caused by contact with electrical wires.
- (7) Reduction from nominal rope diameter of more than 1/64 in. (0.4 mm) for diameters 5/16 in. (8.0 mm);
 - Marked reduction in diameter indicates deterioration of the core, resulting in lack of proper support for the load carrying strands. Excessive rope stretch or elongation may also be an indication of internal deterioration.
- (8) Evidence of "bird caging" or other distortion resulting in some members of the rope structure carrying more load than others.
- (9) Noticeable rusting or development of broken wires in the vicinity of attachments. (Note: If this condition is localized in an operating rope and the section in question can be eliminated by making a new attachment, this can be done rather than replacing the entire rope.)



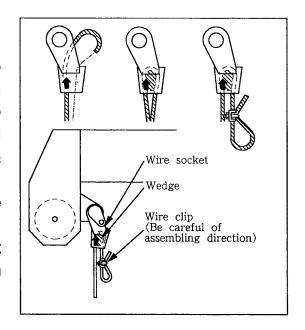


! CAUTION

When passing a wire rope end through the wire socket, be sure to pass it as indicated by the arrow on the wire socket. If it is passed in the opposite direction, the wire rope will be kept bent, which results in a shorter rope life.

Do not forget to mount the wedge and wire clip.

The arrow on the wire socket must face outward as shown above when it is mounted on the boom.



★ Adjustment when wire rope is twisted.

Under tension, wire rope turns in the untwisting direction. If two or more wire ropes are hooked together, they tend to be twisted, particularly while they are new. They will be free of twisting as they become used.

If the wire ropes are twisted, adjust them as described below:

- ① Extend the boom fully.
- 2 Set the boom to an angle of about 65°.
- ③ Free the boom of load.
- ④ Then, check how many turns the wire ropes are twisted.
- (5) Remove the wire socket, and turn the wire socket in the untwisting direction as many turns as the wire ropes were twisted multiplied by the number of wire ropes.

 Remember, however, that the wire socket may be turned only 4 turns at a time.
- 6 Attach the wire socket, wind the hoist to full hoist and unwind. Repeat this a few times, and see if the wire ropes are no longer twisted.

Untwisting direction

Wire rope's twisting direction

If they were still twisted, repeat the same adjustment.

2-4. REMOTE CONTROL INSPECTION

1. Check the remote controller, Control box and Connector box casings that they are not damaged.

If the casings are broken, water or dust may enter through the broken part, damaging the internal circuit parts and possibly causing faulty crane operation. Have broken casings repaired soon.

2. Check the insulating coverings of electric wires and cables that they are not damaged.

If an insulating covering is found so broken as to expose its core wires, temporarily repair it by winding vinyl tape round the broken part and replace the cable with a new one as soon as possible.

3. Check the connectors of the remote controller, controller cable and craneside connector box that they are not contaminated with water, dust and mud.

The connectors must always be kept clean. Clean the inside of the connector well if mud has entered it. The electrical system is very weak to water. Take extra care not to allow water to get into the connectors. Remove water as soon as possible if entered. Further, if connector pins have been eroded or covered with dust or sand, it will cause faulty electrical contact in the connector connections. If this is the case, clean them with a contact-point cleaning compound and coat them with a contact-point restorative. Then connect and disconnect the connector two or three times repeatedly before use.

4. Check the remote controller switches and lever that they operate smoothly. If the remote controller is dirty with dust or mud, it may cause faulty operation of the switches and levers in particular. Clean the remote controller with a cloth after use. (Never wash it with water.)

A CAUTION

- Do not disassemble the component units yourself.
 Our warranty does not apply to cases where the remote controller is disassembled by the user. If you assemble it yourself, it may cause abnormal operation.
- 2. The electrical equipment is very susceptible to water. Never directly wash the remote controller, control box, connector box, etc. With water.

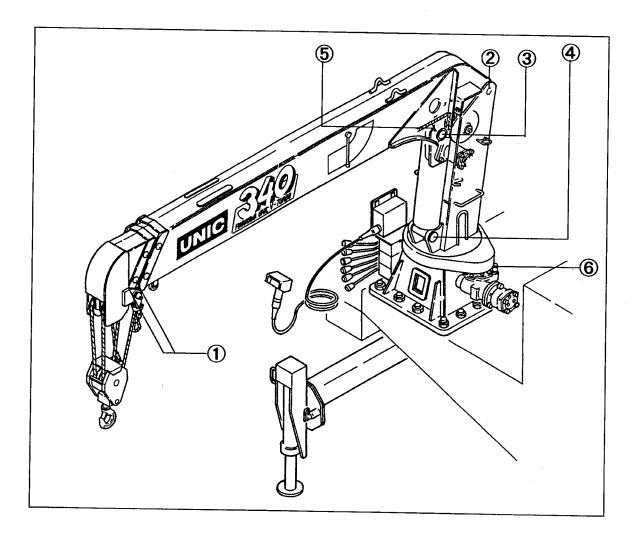
3. PERIODIC MAINTENANCE / WEEKLY

LUBRICATE THE FITTINGS

Thoroughly clean grease nipples before lubrication.

When supplying grease into a bushing, be sure to pump the grease gun until old grease is forced out of the bushing.

	Application	Lubricant	Procedure
1	Boom slide plate [undersides of inner boom]	Molybdenum grease	Brush
2	Boom foot pin	Chassis grease	Grease gun
3	Topping cylinder upper support pin	Chassis grease	Grease gun
4	Topping cylinder lower support pin	Chassis grease	Grease gun
⑤	Winch drum gear	Chassis grease	Grease gun
6	Rotation gear teeth	Chassis grease	Brush

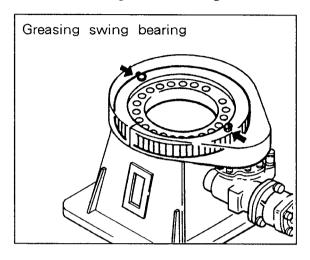


4. PERIODIC MAINTENANCE / MONTHLY

4-1. LUBRICATE SWING BEARING

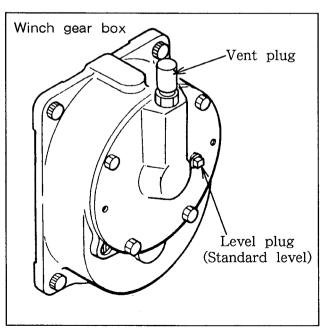
Use chassis grease.

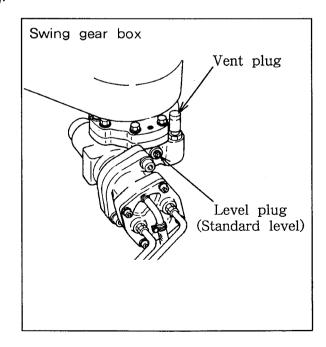
Be sure to fill grease into the bearing while turning it.



4-2. CHECK GEAR OIL LEVEL for winch gear box and swing gear box.

- 1. Remove the vent plug for filler port.
- 2. Remove the oil level plug.
- 3. Fill oil up to the standard level.
- 4. Install the oil level plug and the vent plug.





5. PERIODIC MAINTENANCE / ANNUAL

5-1. CHANGE GEAR OIL

for winch gear box and swing gear box

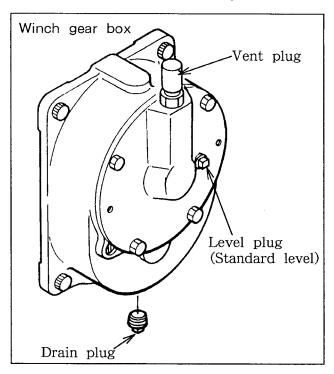
★ The gear oil should be changed after 6 months of initial operation, and once a year thereafter.

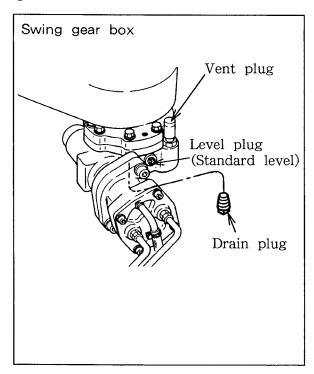
CAUTION

Hot oil and components can cause injury.

Do not allow hot oil or components to contact skin.

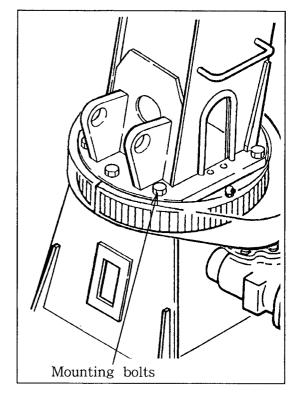
- Remove the drain plug and drain oil.
 Install the drain plug.
- 2. Remove the vent plug for filler port.
- 3. Remove the oil level plug.
- 4. Fill new oil up to the standard level.
- 5. Install the oil level plug and the vent plug.





5-2. CHECKING SWING BEARING MOUNTING BOLTS

When the swing device of this machine gives out unusual noise during operation or traveling, or when a gap is produced on the mounting surface, contact our authorized service shop for repairing.



6. PERIODIC MAINTENANCE / REPLACEMENT OF EXPENDABLE PARTS

Replace the following parts periodically in order that the strength and quality of the original machine may be maintained.

When you replace the above parts, contact **UNIC** CORPORATION or the authorized dealer.

Replacement parts	Replacement intervals
Hoist winch brake shoe	every 3 years
Boom wear pads	every 3 years
Packings, O-rings and Dust-seals for telescoping cylinder, topping cylinder, and outrigger cylinder.	every 3 years

■ OTHERS

1. 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

2. RECOMMENDED GEAR OIL

Use API Service GL-4 gear oils.

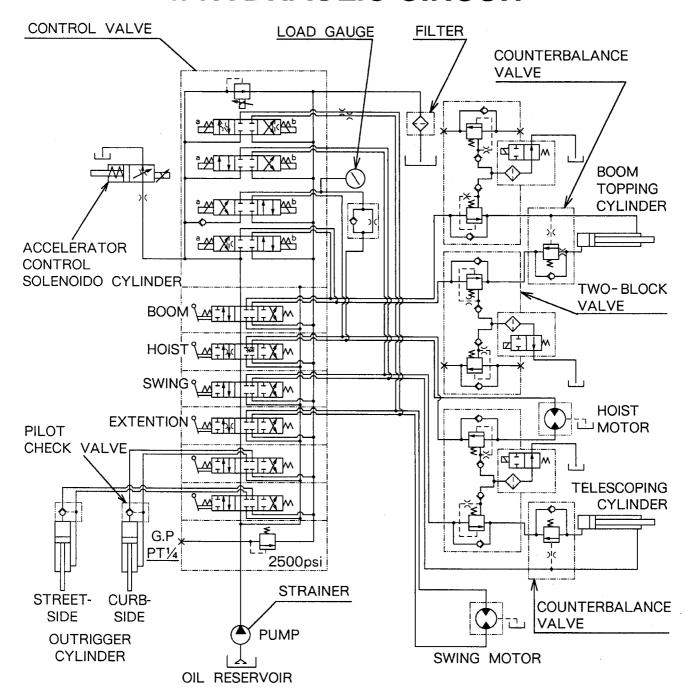
Petroleum Maker	Brand
ESSO	Standard gear oil 90
MOBIL	Mobilube SAE 90
CALTEX	Universal Thuban SAE 90
SHELL	Shell Spirax EP 90

3. RECOMMENDED HYDRAULIC OIL

Use industrial-type hydraulic oil; ISO VG 46 for most temperatures. ISO VG 32 extremely low temperatures.

Petroleum	Brand		
Maker	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	

4. HYDRAULIC CIRCUIT

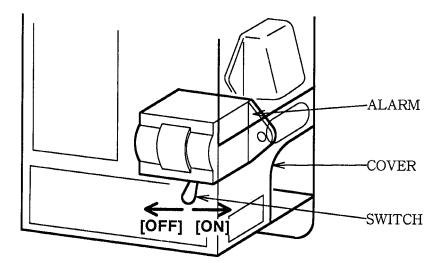


5. EMERGENCY RELEASE

When the crane can not be operated due to a malfunction in the ANTI TWO-BLOCK SYSTEM and/or in the AUTOMATIC OVER-LOAD PROTECTION SYSTEM, release the automatic stop and store the crane.

Remove the cover of the alarm and turn the switch [OFF] to release it.

When the crane fails to make raising/lowering because the boom has gone beyond the maximum boom angle as a result that the boom was raised with the engine speed excessively increased by the accelerator at a proximity of maximum boom angle, turn off the emergency release switch to lower the boom and then turn it on again to restore crane operation.



FURUKAWA UNIC Corporation