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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FURUKAWA UNIC CORPORATION, Nihonbashi nishikawa Bldg., 5-3, Nihonbashi 1-chome, Chuo-ku, Tokyo 103-0027, Japan

MADE IN JAPAN
OWNER: 

SOLD AND SERVICED BY: 

DEALER: 

ADDRESS: 

TELEPHONE: 

MODEL No. SERIAL No. 

THIS MODEL IS EQUIPPED WITH THESE OPTIONS: 

ATTENTION! SECOND OWNERS.......PLEASE MAIL TO:

COMPANY NAME: 

ADDRESS: 

PHONE NUMBER: 

UNIC MODEL No. SERIAL No. 

DATE PURCHASED: 

PURCHASED FROM:
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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.

⚠️ BEFORE THE OPERATION

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.
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 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.
  One foot additional clearance is required for every additional 30,000 volts or less.

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.
- 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.


- 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.
- Payout loadline before extending or raising boom.
- When operating unit, keep boom clear or 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 the written factory approval.

■ GENERAL DESCRIPTION

The UNIC crane is hydraulically powered and consists of a base with outriggers. Each outrigger is independently controlled and has double acting cylinders to actuate its legs. A hydraulic motor, driven through 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.
## 2. DESCRIPTION OF MAJOR EQUIPMENTS

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Boom</td>
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<tr>
<td>2</td>
<td>Column</td>
</tr>
<tr>
<td>3</td>
<td>Base</td>
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<tr>
<td>4</td>
<td>Hoist winch</td>
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<td>5</td>
<td>Swing device</td>
</tr>
<tr>
<td>6</td>
<td>Topping cylinder</td>
</tr>
<tr>
<td>7</td>
<td>Telescoping cylinder</td>
</tr>
<tr>
<td>8</td>
<td>Outrigger</td>
</tr>
<tr>
<td>9</td>
<td>Boom topping control lever</td>
</tr>
<tr>
<td>10</td>
<td>Winch control lever</td>
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<td>11</td>
<td>Boom telescoping control lever</td>
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<td>12</td>
<td>Swing control lever</td>
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<tr>
<td>13</td>
<td>Outrigger control lever (Curb side)</td>
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<tr>
<td>14</td>
<td>Outrigger control lever (Street side)</td>
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<tr>
<td>15</td>
<td>Front outrigger control lever (Curb side)</td>
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<td>16</td>
<td>Front outrigger control lever (Street side)</td>
</tr>
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<td>17</td>
<td>Warning horn</td>
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<tr>
<td>18</td>
<td>Wire rope</td>
</tr>
<tr>
<td>19</td>
<td>Boom angle chart</td>
</tr>
<tr>
<td>20</td>
<td>Single line hook</td>
</tr>
<tr>
<td>21</td>
<td>Front outrigger</td>
</tr>
</tbody>
</table>
3. SPECIFICATIONS

3-1. URV504-A2L

CRANE CAPACITY:

LIFTING CAPACITY: Max. 10,000 lbs. at 7.0 ft. with 4-parting of loadline.

SHEAVE HEIGHT:
- ABOVE GROUND: Max. 82.61 ft. (Approx.)
- WORKING RADIUS: Min 4.1 ft. to Max. 72.5 ft.

BOOM:
- Four-section box beam type telescoping boom with boom angle indicator.

Boom Length
- All booms retracted: 22.5 ft.
- Second stage extended: 44.0 ft.
- Third stage extended: 64.0 ft.
- Fourth stage extended: 74.0 ft.

Boom Telescoping Cylinder:
- Double acting type with counterbalance valve.
- Boom extending speed: 51.5 ft./60s

Boom Raising Cylinder:
- Double acting type with counterbalance valve.
- Boom raising speed: -7° to 78° / 13s

Winch Wire Rope:
- Diameter: 3/8 in. (9.5mm)
- Breaking Strength: 15,100 lbs.

SWING:
- Hydraulic motor driven, worm and spur gears reduction, worm self-locking brake.
- Slewing Range: 360° continuous rotation on a ball bearing race
- Slewing Speed: 2.5 rpm
- Hydraulic Motor: Axial plunger type with automatic lock mechanism
**OUTRIGGERS:**  
Vertical jacks and horizontal beams

Vertical Jacks;  
Double acting hydraulic cylinders with pilot-operated check valves

Horizontal Beams;  
Manual extension type

Outrigger Span  
Retracted; 7.1 ft.  
Extended; 15.7 ft.

**FRONT OUTRIGGERS:**  
Vertical jacks and horizontal beams

(Option)

Vertical Jacks;  
Double acting hydraulic cylinders with pilot-operated check valves

Horizontal Beams;  
Manual extension type

Front Outrigger Span  
Retracted; 7.1 ft.  
Extended; 15.7 ft.

**HYDRAULIC SYSTEM:**

Hydraulic valves

Control valve; Multiple control valve, spring centered, spool-type, with pressure relief valve.

Pressure relief valve setting; 2,990 psi

Recommended Hydraulic Pump  
Rated pressure; 2,990 psi  
Rated delivery; 15.9 gpm

**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.

**ELECTRICAL SYSTEM:**  
12 volt DC.

**WARNING HORN:**  
Horn switch is equipped with each side of crane body.
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 pulled out and disengaged when the knob is pushed in.

The truck gear shift must be in the neutral position when the P.T.O. is to be engaged.

⚠️ 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

With the dual operator control station the **UNIC CRANE** can be operated on either side of the unit. The controls on the base 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 lower boom, move lever to push;  
To raise boom, move lever to pull.

Hoist: To lower hook, move lever to push;  
To hoist 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.

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.
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.

<Rear mouting type>
Outriggers: To extend outrigger cylinder, move lever to "push";
To retract outrigger cylinder, move lever to "pull";
★ Set up the outriggers in the following manner.

(1) Release the lock lever.

(2) Hold the extension lever to pull out the outrigger.

(3) After the outriggers are completely extended fully, be sure to check that the blue mark at the top of extension lever is fully visible.
(4) Shift the outrigger control lever to [Extension].
   The control levers (each on both sides) can be shifted either simultaneously or independently.

<Rear mounting type>

To extend . . . . Move the control lever to “push” to extend the vertical members of outrigger.
To retract . . . . Move the control lever to “pull” to retract the vertical members of outrigger.
To stop . . . . . Return the lever to neutral position to stop extension and retraction of outriggers.
(5) Adjust each vertical member of outrigger with the levers so that the vehicle can be set up horizontally.

**CAUTION**

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

(6) Return each control lever to neutral position after the outriggers have been set up.

**D. WARNING HORN**

The warning horn switch is installed to each side 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.

⚠️ 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.
CAPACITY ALERT SYSTEM

This system is designed to prevent structural damage that can be caused by excessive overloads. The capacity alert system works through the hydraulic system. The operator must refer to the maximum load chart for correct load radius and capacity. Always position the crane on a firm and level surface. Use blocking pads under the outriggers when soft or sandy soil conditions exist.

If, in spite of all precautions, an overload condition is reached, the oil supply is diverted from those functions which would increase the overload condition. These functions are raising the load, extending the boom and lowering the boom. Operation may be resumed by reversing the above control functions; for example, raising the boom until the load is at the proper load radius.

The capacity alert system does not protect the crane from “SIDE LOAD” pulls with the hoist (i.e., Dragging a heavy load on the ground. See general rules). The system does not protect the unit when the boom is fully depressed below horizontal or when supported with the boom rest.

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.

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 shall remain operational.

OUTRIGGER WARNING ALARM
An outrigger warning alarm will sound an audible signal whenever an outrigger leg is moving. The audible signal is distinctive to be easily discerned from the vehicle horn or the vehicle backup alarm if the vehicle is so equipped.

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

⚠️ CAUTION
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 you 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.

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 charts also shown are located on the base boom just above the operator's station. Their purpose is to show the boom angle and radii at various points.

OPERATING CONDITIONS OF BOOMS

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

(1) 4- section boom.
   The booms (2), (3) and (4) extend simultaneously.
   The booms (4), (3) and (2) retract simultaneously.

<table>
<thead>
<tr>
<th>22.5ft. (6.86m) Boom</th>
<th>Operating condition of boom : ① Booms (1) Boom (2) Boom (3) ① Boom (4)</th>
<th>All booms are completely retracted.</th>
</tr>
</thead>
<tbody>
<tr>
<td>44ft. (13.41m) Boom</td>
<td>Operating condition of boom : ①+② Booms (1) Boom (3) ①+② Boom (4)</td>
<td>Boom (2) is extended as far as 1st &quot;&quot; mark.</td>
</tr>
<tr>
<td>64ft. (19.51m) Boom</td>
<td>Operating condition of boom : ①+②+③ Booms (1) Boom (3) ①+②+③ Boom (4)</td>
<td>Boom (2) is extended as far as 2nd &quot;&quot; mark.</td>
</tr>
<tr>
<td>74ft. (22.56m) Boom</td>
<td>Operating condition of boom : ①+②+③+④ Booms (1) Boom (3) ①+②+③+④ Boom (4)</td>
<td>Boom (2), (3) and (4) are all extended.</td>
</tr>
</tbody>
</table>
The following example is an example of how to use the load chart.

1. Extend the 4th 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 36.5 feet and the sheave height is approximately 74.5 feet. By looking at the load chart, the boom capacity is 1380 Lbs. This capacity must be reduced for some optional equipment.
WARNING

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
MAXIMUM LOAD CHART

This chart shows the maximum load including load handling equipment such as slings, buckets, hook blocks, etc. and the weight of material being handled. The weight of the load handling equipment must be deducted from maximum load rating to determine how much payload you can lift.

<table>
<thead>
<tr>
<th>BOOM ANGLE</th>
<th>HEIGHT IN FEET FROM GROUND</th>
<th>BOOM RADIUS IN FEET FROM CENTER OF ROTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>76°</td>
<td>10,000</td>
<td>22.5 FT BOOM</td>
</tr>
<tr>
<td>70°</td>
<td>10,000</td>
<td>44 FT BOOM</td>
</tr>
<tr>
<td>64°</td>
<td>10,000</td>
<td>64 FT BOOM</td>
</tr>
<tr>
<td>58°</td>
<td>10,000</td>
<td>74 FT BOOM</td>
</tr>
<tr>
<td>52°</td>
<td>10,000</td>
<td>76°</td>
</tr>
</tbody>
</table>

CAUTION

Keep at least 3 wraps of loadline on drum at all times.

Use only 3/8" diameter wire rope on this machine.

Removal of this placard is a violation of law.

FURUKAWA UNIC CORPORATION

This machine complies with OSHA regulations 1910.180 and 1926.550 where applicable at date of manufacture.

CAUTION

Use only 3/8" diameter wire rope on this machine.

Minimum breaking strength 15, 100 LBS.

Removal of this placard is a violation of law.

Furukawa Unic
Tokyo Japan

Serial number

Part IV

10,000

Keep at least 3 wraps of loadline on drum at all times.

BooM anGle

78° 70° 60° 50° 40° 30° 20° 10° 0°

BooM ANGLE

78° 70° 60° 50° 40° 30° 20° 10° 0°
4-4.LOAD METER

The meter shows weight of a cargo being hoisted. Read the scale corresponding to the wire-rope hooking system (number of wire ropes being hooked).

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

Dial of the load meter has:
- Scale band for 4-rope hooking system,
- Scale band for 3-rope hooking system, and
- Scale band for single-rope hooking system.

⚠️ CAUTION

- “Load meter” indicates the weight of a hoisted cargo only while the hook is being lifted up.
- Take the weight indicated on the “Load meter” as a judging criterion.
Follow the steps illustrated below when measuring the weight of hoisted cargo with the load meter.

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

Load meter has two hands.

1. Lower the engine speed.
2. Adjust engine speed so that the needle points at 0 (zero) on the load meter scale while the hook is lifting up with no-load.
3. As an example, let us take the case where a cargo is hoisted using 2-rope hooking system and extended boom configuration of “64FT” as shown in the figures.

The Boom angle chart shows that the crane can lift up the load up to [3150LBS] at the point (a) on the load chart as shown in Fig.1.

4. Read the load meter for the point (b) while a cargo hooked is being lifted up to approximately 30cm.

The meter shows [1000LBS] as the actual weight of the cargo.

This means that the crane can be operated with a margin of [2150LBS] in this example.

---

<table>
<thead>
<tr>
<th>BOOM RADIUS(FT.)</th>
<th>22FT BOOM</th>
<th>44FT BOOM</th>
<th>66FT BOOM</th>
<th>78FT BOOM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10000</td>
<td>10000</td>
<td>10000</td>
<td>10000</td>
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<tr>
<td>5</td>
<td>76°</td>
<td>76°</td>
<td>76°</td>
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<td>7</td>
<td>79°</td>
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<td>108°</td>
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</table>

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Fig.1 Load chart
(The chart is an example showing for URV504-A2L)
4-5. 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.

⚠️ CAUTION

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.

⚠️ CAUTION

Polypropylene rope must not be used with set screw to seat it on the drum. Wire rope only.
4-6. 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 P.T.O.
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

Boom Topping

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

★ Payout loadline 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.
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 (paying 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.
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

★ Payout 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, Payout loadline to reset.
Swing

To rotate boom counter clockwise
·········· Move the lever to push.

To rotate boom clockwise
·········· Move the lever to pull.

To stop swinging
·········· Return the lever to the neutral position, and the turntable will stop.

⚠️ 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)

<table>
<thead>
<tr>
<th>HOIST</th>
<th>LOWER</th>
<th>USE MAIN HOIST</th>
</tr>
</thead>
<tbody>
<tr>
<td>With forearm vertical, forefinger pointing up, move hand in small horizontal circle.</td>
<td>With arm extended downward, forefinger pointing down, move hand in small horizontal circle.</td>
<td>Tap fist on head; then use regular signals.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>USE WIHLINE (Auxiliary Hoist).</th>
<th>RAISE BOOM</th>
<th>LOWER BOOM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tap elbow with one hand; then use regular signals.</td>
<td>Arm extended, fingers closed, thumb pointing upward.</td>
<td>Arm extended, fingers closed, thumb pointing downward.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MOVE SLOWLY.</th>
<th>RAISE THE BOOM AND LOWER THE LOAD.</th>
<th>LOWER THE BOOM AND RAISE THE LOAD.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist slowly shown as example.)</td>
<td>With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.</td>
<td>With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.</td>
</tr>
</tbody>
</table>
SWING. Arm extended, point with finger in direction of swing of boom.

STOP. Arm extended, palm down, move arm back and forth horizontally.

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

TRAVEL. Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.

DOG EVERYTHING. Clasp hands in front of body.

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 other fist, rotated vertically in front of body. (For land cranes only.)

EXTEND BOOM (Telescoping Booms). Both fists in front of body with thumbs pointing outward.

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

EXTEND BOOM (Telescoping Boom). One Hand Signal. One fist in front of chest with thumb tapping chest.

RETRACT BOOM (Telescoping Boom). One Hand Signal. One fist in front of chest, thumb pointing outward and heel of fist tapping chest.
4-7. 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 per-
formed.

⚠️ WARNING

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, yokes personnel platforms, load blocks, etc.

2. Consult the maximum load chart on your crane and determine the correct boom radius
   allowed based upon 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.
4-8. 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.
   - Stow booms on the boom rest if unit is so equipped.
   - Otherwise, stow booms in a horizontal position parallel with truck frame.
2. Using D-ring on rear of truck, attach loadline hook and hoist in until slack is taken up.
3. Fully retract all outriggers.

⚠️ CAUTION

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

(1) After the outriggers are completely stored, check the following.
   ① Release the grip of extension lever.
   ② Blue mark on the top of extension lever is fully visible.
   ③ The horizontal members of outrigger are securely locked so that they will not stick out sideways out of the vehicle.

Note; Fully visible blue mark indicates that the lock pin for the horizontal member of outrigger is inserted into the hole.
(2) Shift the lock lever for lock.

**Note:** Shifting the lock levers for lock prevents the horizontal members of outrigger from sticking out by careless grip of extension lever. In addition, this prevents a rattling noise from the horizontal members of outrigger while the vehicle is traveling.

4. Disengage power take off (P.T.O.).
5. Secure any load or lifting attachments to the flatbed.
**WARNING**

Always know your maximum road height and observe all overhead obstructions. Failure to do so may result in severe damage to the crane/vehicle and/or death or serious injury to operating personnel.

A placard like the one shown above, which shows the height of your crane as manufactured and installed at the factory, is attached to the dash board inside the truck cab.

Severe personal injury, as well as damage to the crane and truck, can result from failure to observe overhead obstructions during repositioning at the job site or during road travel.
5. EMERGENCY OPERATION

If crane fails to operate due to trouble of the automatic stop for overwinding, the crane can be restored operation as temporary measures by releasing the automatic stop.

PATTERN 1
Throwing “EMERGENCY RELEASE” switch on street side upward releases the automatic stop for overwinding by which the crane operation becomes possible.

⚠️ CAUTION

Repair the crane after completion of the crane operation since the PATTERNs mentioned above are temporary measures.
MAXIMUM LOAD CHART

This chart shows the maximum load including load handling equipment such as slings, buckets, hook blocks, etc. and the weight of material being handled. The weight of the load handling equipment must be deducted from maximum load rating to determine how much payload you can lift.

<table>
<thead>
<tr>
<th>BOOM ANGLE</th>
<th>22FT BOOM</th>
<th>44FT BOOM</th>
<th>64FT BOOM</th>
<th>74FT BOOM</th>
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<tbody>
<tr>
<td>60°</td>
<td>10,000</td>
<td>77°</td>
<td>6,660</td>
<td>74°</td>
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<td>50°</td>
<td>6,660</td>
<td>74°</td>
<td>77°</td>
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<td>10°</td>
<td>1,550</td>
<td>74°</td>
<td>74°</td>
<td>3,700</td>
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</table>

This machine complies with OSHA regulations 1910.180 and 1926.550 where applicable at date of manufacture.

Removal of this placard is a violation of law.

CAUTION

Keep at least 3 wraps of loadline on drum at all times.

Use only 3/8" diameter wire rope on this machine.

Minimum breaking strength 15, 100 lbs.

FURUKAWA UNIC CORPORATION
TOKYO JAPAN

Serial number 381040-V504-A2L

Keep at least 3 wraps of loadline on drum at all times.

Use only 3/8" diameter wire rope on this machine.

Minimum breaking strength 15, 100 lbs.

CAUTION

Keep at least 3 wraps of loadline on drum at all times.

Use only 3/8" diameter wire rope on this machine.

Minimum breaking strength 15, 100 lbs.

FURUKAWA UNIC CORPORATION
TOKYO JAPAN

Serial number 381040-V504-A2L
OPERATING INSTRUCTIONS

BEFORE THE OPERATION
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.

⚠️ DANGER
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 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. One foot additional clearance is required for every additional 30,000 volts or less.
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.
- 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 exceed crane ratings. 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.

⚠️ 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.
- Payout loadline 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 PTO 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.
- If manuals are missing from this crane, contact manufacturer for replacement.

REMOVAL OF THIS PLACARD IS A VIOLATION OF LAW.
CAUTION OF OUTRIGGER OPERATION

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

Watch your finger Watch your foot

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

Grease, 6

Molybdenum grease, 1

Crane Model Name Plate, Column, 1

UNIC
FURUKAWA UNIC CORPORATION
TOKYO JAPAN MADE IN JAPAN

CAUTION, O/R Operation,
Outrigger Housing, 2

Grease, 6

Molybdenum grease, 1

Crane Model Name Plate, Column, 1
[Knob of Control Lever]

- Boom Topping, 2
- Hook Hoisting and Lowering, 2
- Boom Telescoping, 2
- Swing, 2
- Rear Outrigger (Curb Side), 2
- Rear Outrigger (Street Side), 2
- Front Outrigger (Curb Side), 2
- Front Outrigger (Street Side), 2
Electrocution Hazard

**DANGER**

**ELECTROCUTION HAZARD**
THIS CRANE IS NOT INSULATED
DEATH OR SERIOUS INJURY WILL RESULT FROM CONTACT OR INADEQUATE CLEARANCE
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 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. One foot additional clearance is required for every additional 30,000 volts or less.

Operator console, 2

DANGER, Two Blocking

Operator console, 2

DANGER, Hoisting Personnel

**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.

End of truckbed at hook, 1

DANGER, O/R Operation

**DANGER**

OUTRIGGERS CAN CAUSE SERIOUS CRUSHING INJURY STAND CLEAR

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 LOADLINE MAY SUBJECT THE RIDERS AND OTHERS TO DEATH OR SERIOUS INJURY.

Truckbed side, 3

Truckbed side, 3

2-39
CAUTION

1. INSPECT VEHICLE 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) CHART 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 POSITION.

CAUTION

DISENGAGE PTO BEFORE DRIVING
MAX ENGINE SPEED FOR CRANE OPERATION

RPM

MAX ROAD TRAVEL HEIGHT WITH 1° BOOM ANGLE

FT.

Replacement Warning, Operator console, 2

CAUTION, RPM Reading, Cab, 1
CAUTION

- Peruse the OPERATING INSTRUCTION MANUAL before operating this crane.
- Fully extend all outriggers on solid, level surface leveling vehicle.
- RATED LOADS are based on the strength of the crane.
- Lifting capacities will vary according to the type of truck and payload. Give special ATTENTION to the STABILITY of machine WHEN SLEWING FROM THE REAR TOWARD SIDEWAYS.
- Deduct weights of hook, slings, and any accessories from rated loads.
- Ensure that there is a SUFFICIENT LENGTH OF ROPE BETWEEN BOOM TOP AND HOOK BLOCK when extending the boom.

※ NO WARRANTY CAN BE GIVEN ON OVER-LOAD OPERATION.
※ ANY CLAIM DUE TO MIS-OPERATION WITHIN RATED LOADS SHALL NOT BE ACCEPTED.
## PLACARD LOCATION CHART

<table>
<thead>
<tr>
<th>No.</th>
<th>Part Name</th>
<th>Part No.</th>
<th>Q'ty</th>
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<td>1</td>
<td>Crane Model Name Plate</td>
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<td>2</td>
<td>Panel</td>
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<td>3</td>
<td>Placard (Raise / Lower)</td>
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<tr>
<td>4</td>
<td>Placard (Hoist)</td>
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<td>5</td>
<td>Placard (Telescoping)</td>
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<td>Placard (Swing)</td>
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<td>Placard (Maximum Load Chart)</td>
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<td>Placard (Operating Instructions)</td>
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<td>Placard (Replacement Warning)</td>
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<td>Placard (Eye mark)</td>
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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.

⚠️ CAUTION

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.

<table>
<thead>
<tr>
<th>Device</th>
<th>Servicing item</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Hydraulic oil reservoir</td>
<td>Oil leakage</td>
</tr>
<tr>
<td>2 Hydraulic pump</td>
<td>Loose mounting</td>
</tr>
<tr>
<td></td>
<td>Oil leakage</td>
</tr>
<tr>
<td>3 Outriggers</td>
<td>Cracks in welded parts</td>
</tr>
<tr>
<td></td>
<td>Oil leakage</td>
</tr>
<tr>
<td>4 Base</td>
<td>Fastening tightness of crane body mounting bolts</td>
</tr>
<tr>
<td>5 Control Valve</td>
<td>Oil leakage</td>
</tr>
<tr>
<td>6 Swing device</td>
<td>Loose bolts and nuts</td>
</tr>
<tr>
<td>7 Hydraulic piping</td>
<td>Oil leakage from joints</td>
</tr>
<tr>
<td>8 Topping cylinder</td>
<td>Damage in fulcrum pin and boss</td>
</tr>
<tr>
<td></td>
<td>Oil leakage</td>
</tr>
<tr>
<td>9 Boom</td>
<td>Damage in fulcrum pin and boss</td>
</tr>
<tr>
<td></td>
<td>Cracks in welded parts</td>
</tr>
<tr>
<td>10 Sheave pin</td>
<td>Damage of fulcrum pin and boss</td>
</tr>
<tr>
<td></td>
<td>Rust on boss</td>
</tr>
<tr>
<td>11 Hook</td>
<td>Rotation of hook</td>
</tr>
<tr>
<td></td>
<td>Damage of sheave</td>
</tr>
<tr>
<td>12 Others</td>
<td>Sling wire and other equipment necessary for crane operation</td>
</tr>
<tr>
<td>13 Control lever</td>
<td>Control lever return</td>
</tr>
</tbody>
</table>
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 outrigger warning alarm operates correctly.
4. Check that the warning horn switch operates correctly.
5. 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 1/32 in. (0.8 mm) for diameters 3/8 in. (9.5 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.)
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 hook block.
★ 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.
   If they were still twisted, repeat the same adjustment.
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.

<table>
<thead>
<tr>
<th>Application</th>
<th>Lubricant</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boom slide plate [undersides of inner boom]</td>
<td>Molybdenum grease</td>
<td>Brush</td>
</tr>
<tr>
<td>Boom foot pin</td>
<td>Chassis grease</td>
<td>Grease gun</td>
</tr>
<tr>
<td>Topping cylinder upper support pin</td>
<td>Chassis grease</td>
<td>Grease gun</td>
</tr>
<tr>
<td>Topping cylinder lower support pin</td>
<td>Chassis grease</td>
<td>Grease gun</td>
</tr>
<tr>
<td>Wire rope</td>
<td>Rope grease</td>
<td>Spray</td>
</tr>
<tr>
<td>Rotation gear teeth</td>
<td>Chassis grease</td>
<td>Brush</td>
</tr>
<tr>
<td>Control lever (pins on both sides and bearing)</td>
<td>Chassis grease</td>
<td>Brush</td>
</tr>
</tbody>
</table>
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 swing gear box.

★ SWING GEAR BOX

For gear oil lubricate winch reduction gears, fill it up to a level between upper and lower limit works of the oil lever gauge (approx 1.2 liters)
Check oil lever not by tight up the oil level gauge cap but by just inserting the gauge in filler port.
4-3. LUBRICATE WIRE ROPE FOR BOOM EXTENSION

Spray the rope grease sufficiently to the wire ropes with the boom fully extended.
5. PERIODIC MAINTENANCE/ANNUAL

5-1. CHANGE GEAR OIL

for 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.

★ SWING GEAR BOX

1. Remove the drain plug and drain oil.
   Install the drain plug.
2. Fill oil up to a level between upper and lower limit marks of the oil level gauge.
   Check oil level not by tighten up the oil level gauge cap but by just inserting the gauge in the filler port.

Slewing reduction gear
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.

★ MOUNTING BOLTS LOCATED INNER RACE
1. Remove the cover to inspection hole.
2. Swing the boom so that each mounting bolt comes to the center of inspection hole for inspection.
3. Fit the cover as it was after inspection.
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.

<table>
<thead>
<tr>
<th>Replacement parts</th>
<th>Replacement intervals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boom wear pads</td>
<td>every 3 years</td>
</tr>
<tr>
<td>Packings, O-rings and Dust-seals</td>
<td>every 3 years</td>
</tr>
<tr>
<td>for telescoping cylinder, topping cylinder,</td>
<td></td>
</tr>
<tr>
<td>outrigger cylinder.</td>
<td></td>
</tr>
</tbody>
</table>
OTHERS
1. RECOMMENDED GREASE

(a) Chassis grease

Use NLGI No.2 grade for most temperatures.
Use NLGI No.1 grade for extremely low temperatures.

(b) Molybdenum grease

Use NLGI No.2 grade.

Petroleum Maker | Brand
---|---
EXXON MOBIL | Mobilgrease CM-P
CHEVRON | Moly greases EP 2 (Texaco Molytex EP 2)
SHELL | Retinax grease EPX 2 (Retinax grease AM)

2. RECOMMENDED GEAR OIL

Use the recommended lubricants listed below as gear oil for lubrication.

<table>
<thead>
<tr>
<th>Application</th>
<th>Petroleum Maker</th>
<th>Brand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reducer for slewing gear</td>
<td>Use API service GL-4 gear oils.(Refer to the followings)</td>
<td>CHEVRON Thuban GL4 90</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SHELL Shell Spirax EP 90</td>
</tr>
</tbody>
</table>

### 3. RECOMMENDED HYDRAULIC OIL

Use industrial-type hydraulic oil;
- ISO VG 46 for temperatures above 32F.
- ISO VG 32 for temperatures below 32F.

<table>
<thead>
<tr>
<th>Petroleum Maker</th>
<th>Brand</th>
<th>ISO VG 32</th>
<th>ISO VG 46</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXXON MOBIL</td>
<td>Mobil DTE 24</td>
<td>Mobil DTE 25</td>
<td></td>
</tr>
<tr>
<td>CHEVRON</td>
<td>Rando Oil HD ISO 32</td>
<td>Rando Oil HD ISO 46</td>
<td></td>
</tr>
<tr>
<td>SHELL</td>
<td>Shell Tellus Oil 32</td>
<td>Shell Tellus Oil 46</td>
<td></td>
</tr>
</tbody>
</table>
4. HYDRAULIC CIRCUIT

- Swivel Joint
- Load Meter
- Front Outrigger Cylinder
- Unlock Valve
- Rear Outrigger Cylinder
- Counter Balance Valve
- Differential Pressure Gauge
- Boom Topping Cylinder
- Lower
- Counter Balance Valve
- Hoist Motor
- Telescoping Cylinder
- Swing Motor
- C.W
- C.C.W
HEAD OFFICE: Nihonbashi nishikawa Bldg, 5-3, Nihonbashi 1-chome, Chuo-ku, Tokyo 103-0027, Japan