

OPERATOR'S MANUAL

UNIC HYDRAULIC CRANE

MODEL

URV346-C

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OMURV346-C 201008A

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.**

OWNER : _____

SOLD AND SERVICED BY : _____

DEALER : _____

ADDRESS : _____

TELEPHONE : _____

MODEL No. _____ SERIAL No. _____

THIS MODEL IS EQUIPPED WITH THESE OPTIONS :



COMPANY NAME : _____

ADDRESS : _____

PHONE NUMBER : _____

UNIC MODEL No. _____ SERIAL No. _____

DATE PURCHASED : _____

PURCHASED FROM : _____



TABLE OF CONTENTS

■ SAFETY

SAFETY RULES	1- 1
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■ OPERATOR'S STATION

1.INTRODUCTION	2- 1
2. DESCRIPTION OF MAJOR EQUIPMENTS	2- 2
2-1. Names of Crane Parts	2- 2
3. SPECIFICATIONS	2- 3
4. OPERATIONS.....	2- 5
4-1. CONTROLS IDENTIFICATION	2- 5
4-2. OPERATING INSTRUCTIONS	2-10
4-3. MAXIMUM LOAD AND BOOM ANGLE CHART	2-14
4-4. GENERAL RULES	2-20
4-5. OPERATING THE UNIT	2-21
4-6. LIFTING THE LOAD	2-28
4-7. ROADING THE UNIT	2-29
5.PLACARDS	2-30

■ MAINTENANCE SECTION

1. PERIODIC MAINTENANCE.....	3- 1
2. PERIODIC MAINTENANCE/DAILY	3- 2
2-1. WALK-AROUND INSPECTION.....	3- 2
2-2. INSPECTION FOR FUNCTION	3- 3
2-3. WIRE ROPE INSPECTION.....	3- 4
3.PERIODIC MAINTENANCE/WEEKLY	3- 6
4.PERIODIC MAINTENANCE/MONTHLY	3- 7
4-1. LUBRICATE SWING BEARING	3- 7
4-2. CHECK GEAR OIL LEVEL	3- 7
4-3. LUBRICATE WIRE ROPE FOR BOOM EXTENSION	3- 8
5.PERIODIC MAINTENANCE/ANNUAL	3- 9
5-1. CHANGE GEAR OIL	3- 9
5-2. CHECKING SWING BEARING MOUNTING BOLTS	3-10
6.PERIODIC MAINTENANCE/REPLACEMENT OF EXPENDABLE PARTS	3-11

■ OTHERS

1.RECOMMENDED GREASE	4- 1
2.RECOMMENDED GEAR OIL	4- 1
3. RECOMMENDED HYDRAULIC OIL	4- 2
4.HYDRAULIC CIRCUIT	4- 3
5.EMERGENCY RELEASE	4- 4

■ 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.



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.**



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 load line 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.

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.
- Play 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) .

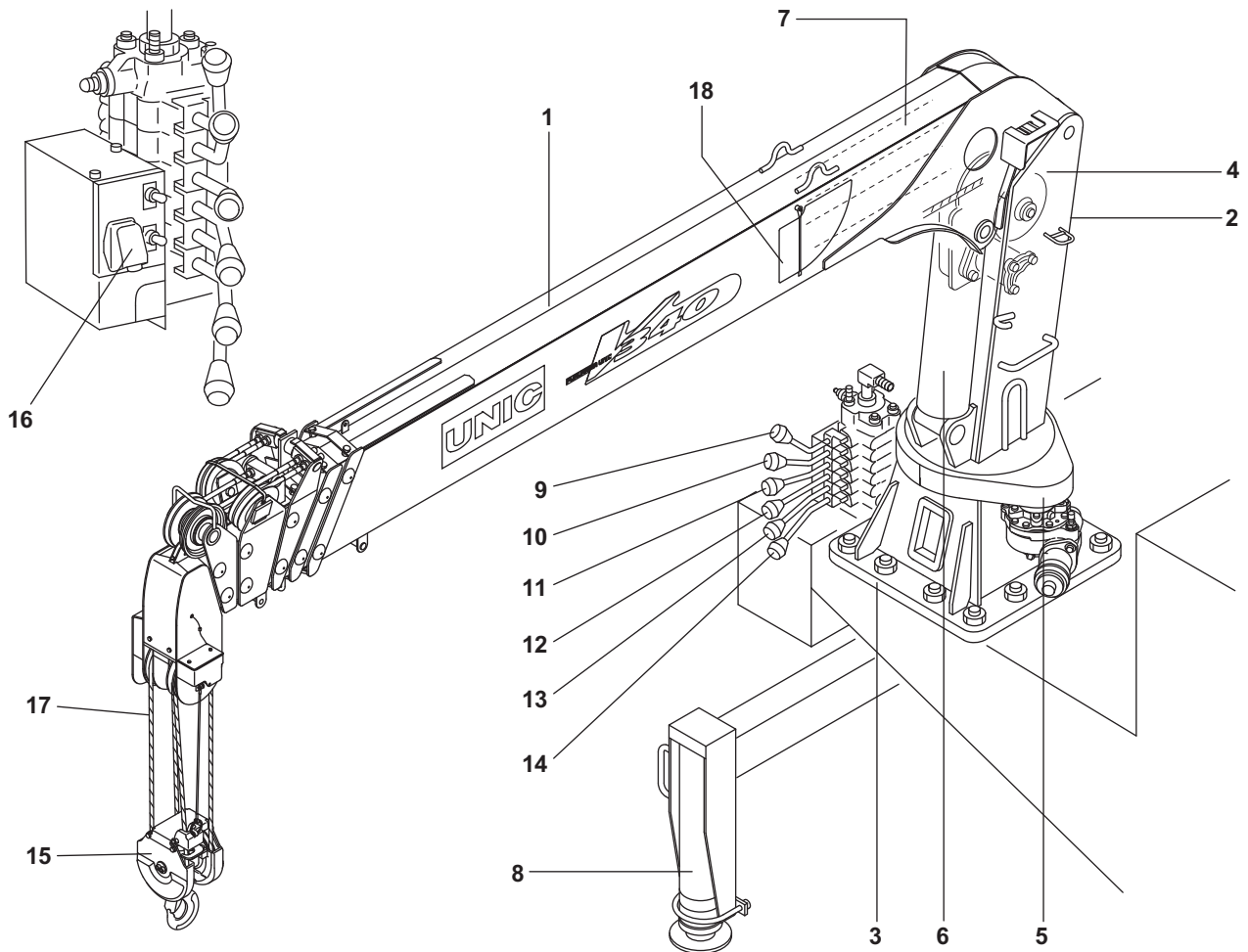
■ OPERATOR RESPONSIBILITY

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.

2. DESCRIPTION OF MAJOR EQUIPMENTS

2-1. Names of Crane Parts



No.	Descri ption
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

No.	Descri ption
10	Winch control lever
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

3. SPECIFICATIONS

CRANE CAPACITY:

LIFTING CAPACITY	: Max. 8000 lbs. at 6.8 ft. with 4 part loadline.
HOOK HEIGHT ABOVE GROUND	: Max. 52.0 ft. (Approx.)
WORKING RADIUS	: Min. 2.4 ft. to Max. 47.3 ft.

<u>BOOM:</u>	6-section box beam type telescoping boom with boom angle indicator.
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Boom Length	
All booms retracted;	11.9 ft.
Second stage extended;	19.2 ft.
Third stage extended;	26.4 ft.
Fourth stage extended;	33.6 ft.
Fifth stage extended;	40.7 ft.
Sixth stage extended;	47.9 ft.
Boom Telescoping Cylinder;	Double acting type with counterbalance valve.
Boom extending speed;	36.0 ft/20 sec.
Boom Raising Cylinder;	Double acting type with counterbalance valve.
Boom raising speed;	1° to 78°/7 sec.

<u>WINCH:</u>	Hydraulic motor driven, spur gear reduction, with automatic mechanical brake.
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Single Line Pull ;	2000 lbs.
Hoisting Speed	
Single line speed;	249 ft/min. at 4th layer.
Hook speed;	62.3 ft/min. at 4th layer with 4 part loadline.
Hook Block;	8000 lbs. capacity, 2 sheaves with latch.
Hydraulic Motor;	Axial plunger type.
Wire Rope	
Construction ;	6 × 26 Warrington-seale (ISO 2408)
Diameter × Length;	5/16 in. × 279 ft.
Breaking force;	37.4 KN

<u>SWING:</u>	Hydraulic motor driven, worm and spur gears reduction, worm self-locking brake.
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Swing Range;	360° continuous rotation on a ball bearing race.
Hydraulic Motor;	Trochoid type.
Swing Speed;	2.5rpm.

OUTRIGGERS:

Vertical Jacks;	Vertical jacks and horizontal beams. Double acting hydraulic cylinders with pilot-operated check valves.
Horizontal Beams;	Drive side: Fixed Curb side: manually extendable and retractable type.
Outrigger Span	
Retracted;	6.99 ft.
Extended;	10.34 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;	2,990 psi.
Recommended Hydraulic Pump	
Rated pressure;	2,990 psi.
Rated delivery;	15.9 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.

ELECTRICAL SYSTEM

12 volt DC.

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.D. is to be engaged.



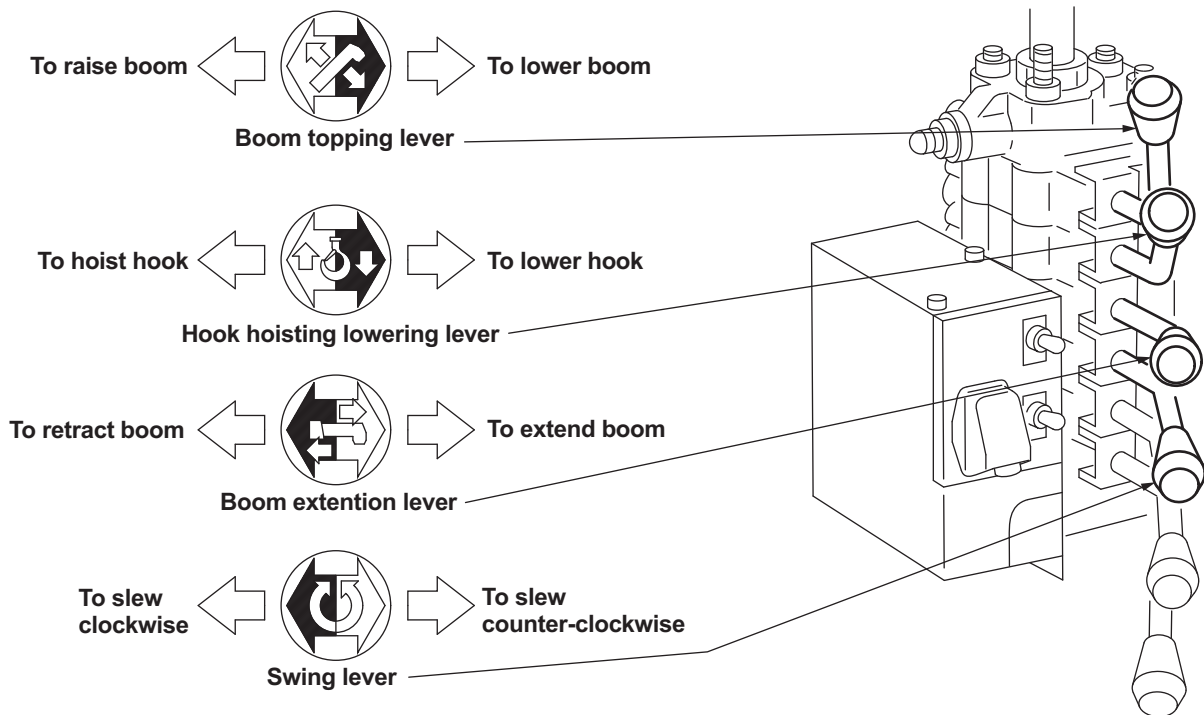
Disengage P.T.O. before driving truck. Failure to do so will cause damage to the transmission and pump.

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 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**.

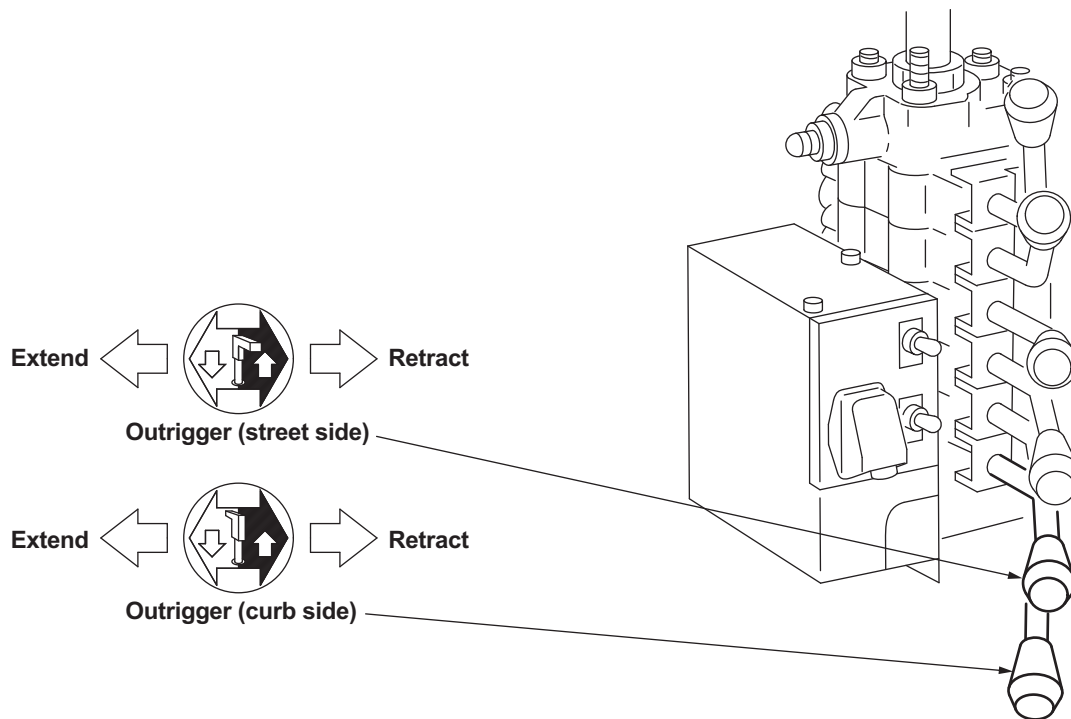
Note: Controls must be used together to achieve combinations of movements.

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

C. OUTRIGGER CONTROLS

WARNING

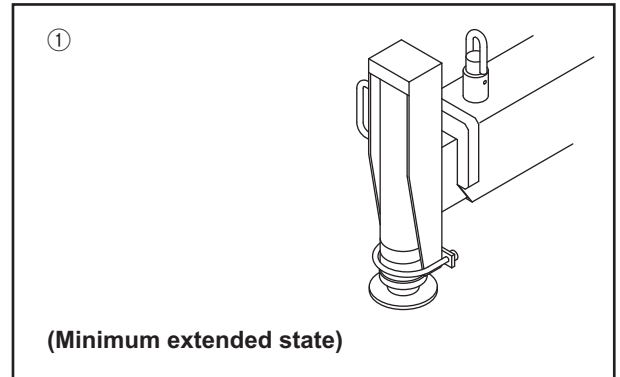
1. Stand clear of outriggers to avoid crushing injury.
2. Do not operate outriggers without determining clearance from obstructions or personnel.
3. Never lower or raise any outrigger unless you or the signal person assisting you can see the outrigger shoe and the ground where the outrigger will make 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.



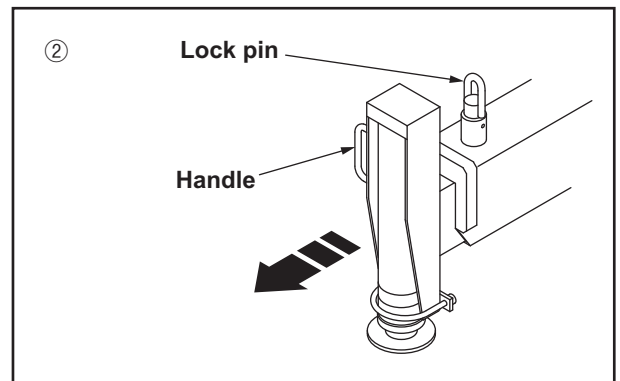
Outriggers: To extend outrigger cylinder, move lever to **left**;
To retract outrigger cylinder, move lever to **right**.

★ Set up the outriggers in the following manner.

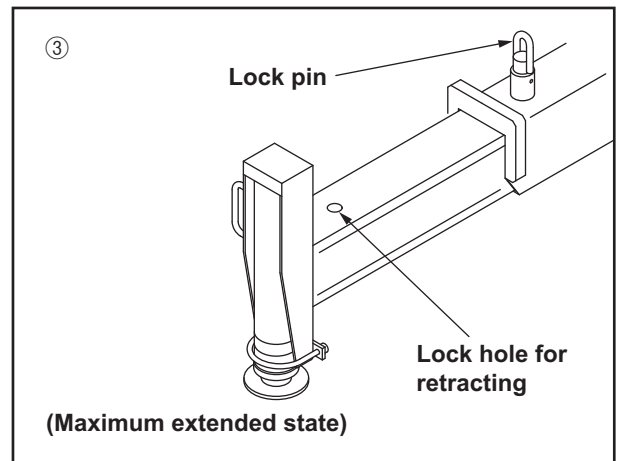
- (1) Pull out the pin to extend the outrigger laterally. The pin is secured with a chain and locating cotter pin.



- (2) 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.



- (3) Move the outrigger control lever to push to extend the outrigger cylinders.
- (4) In order to brace the vehicle, for crane operation adjust the extension of each outrigger cylinder by the control lever.
- (5) After setting up the vehicle, return the control levers to the neutral positions.

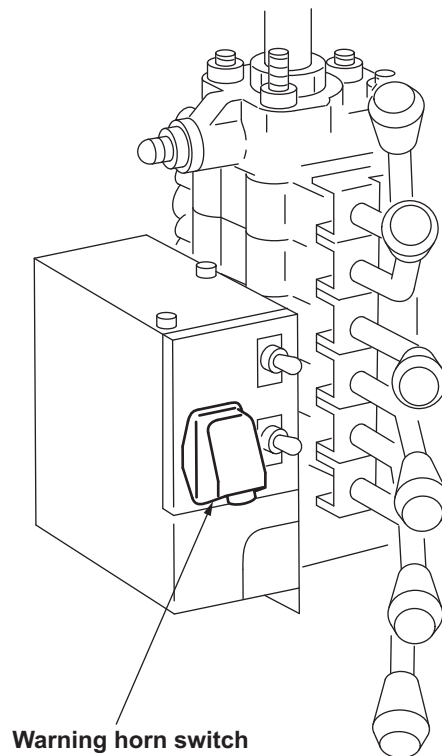


 CAUTION

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.



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.



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.

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.

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.

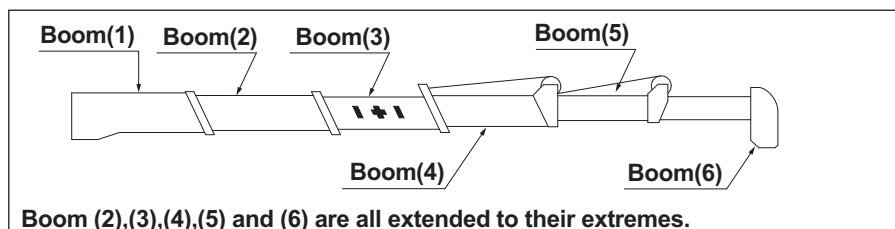
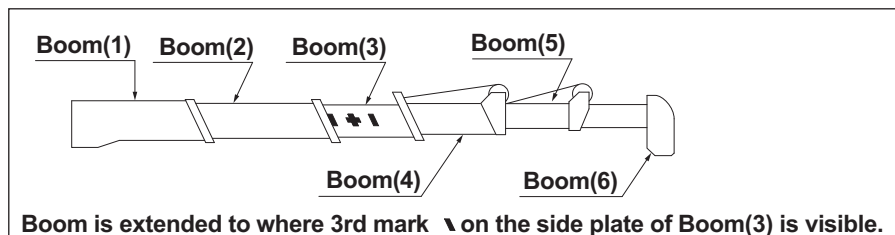
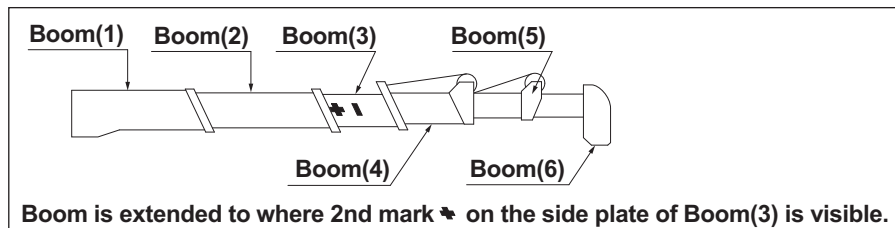
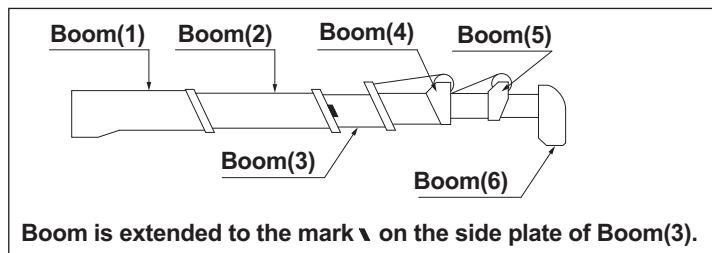
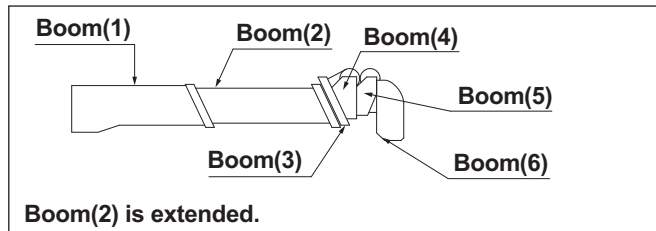
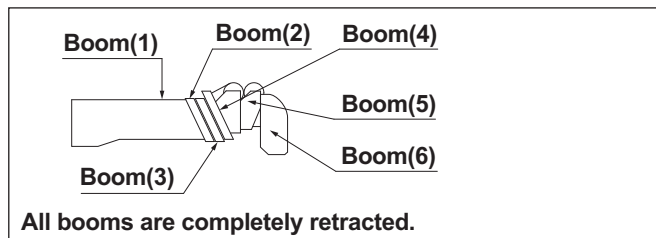
OPERATING CONDITIONS OF BOOMS

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

(1) 6- section boom.

The booms (2) and (3) extend in the order stated, and then the booms (4) , (5) and (6) extend simultaneously.

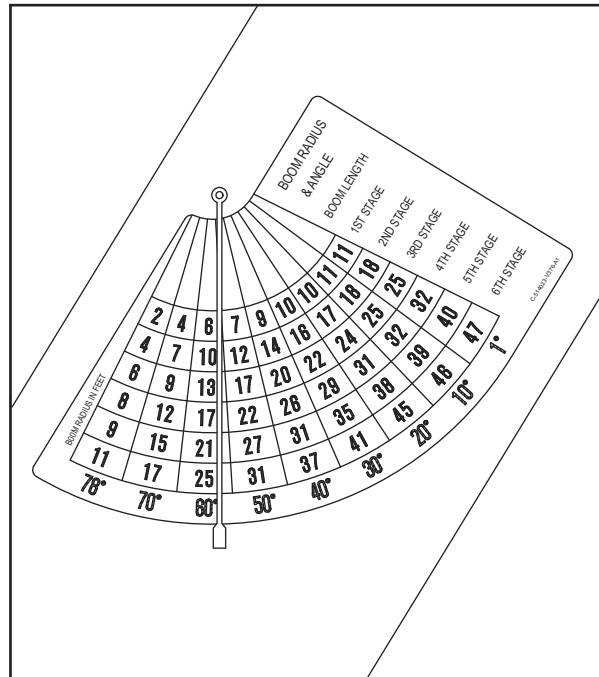
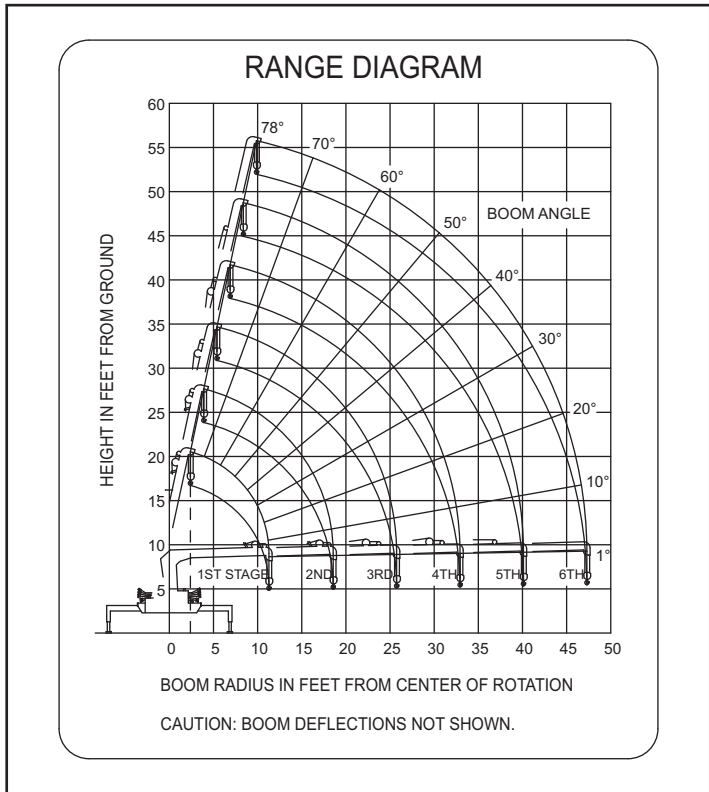
The booms (6) , (5) and (4) retract first simultaneously and then the booms (3) and (2) retract in the order stated.



Note: Load chart data 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 3rd 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 13 feet and the hook height is approximately 28 feet. By looking at the load chart, the boom capacity is 3100 Lbs. This capacity must be reduced for some optional equipment.



BOOM RADIUS (FT.)	ALL BOOMS RETRACTED (LBS.)	2ND STAGE EXTENDED (LBS.)	3RD STAGE EXTENDED (LBS.)	4TH STAGE EXTENDED (LBS.)	5TH STAGE EXTENDED (LBS.)	6TH STAGE EXTENDED (LBS.)
6	8,000	8,000				
6.8	8,000	8,000				
8	6,300	6,300	4,900			
8.9	5,500	5,500	4,900			
10	4,900	4,900	4,400	2,300		
11	4,400	4,400	3,900	2,300		
13		3,600	3,100	2,300	1,400	
16		2,900	2,400	1,900	1,400	700
18.5		2,400	2,000	1,700	1,100	600
22			1,600	1,400	900	550
25.7			1,400	1,200	800	500
29				1,000	700	450
32.9				900	600	400
36					550	350
40.1					500	350
44						300
47.3						300

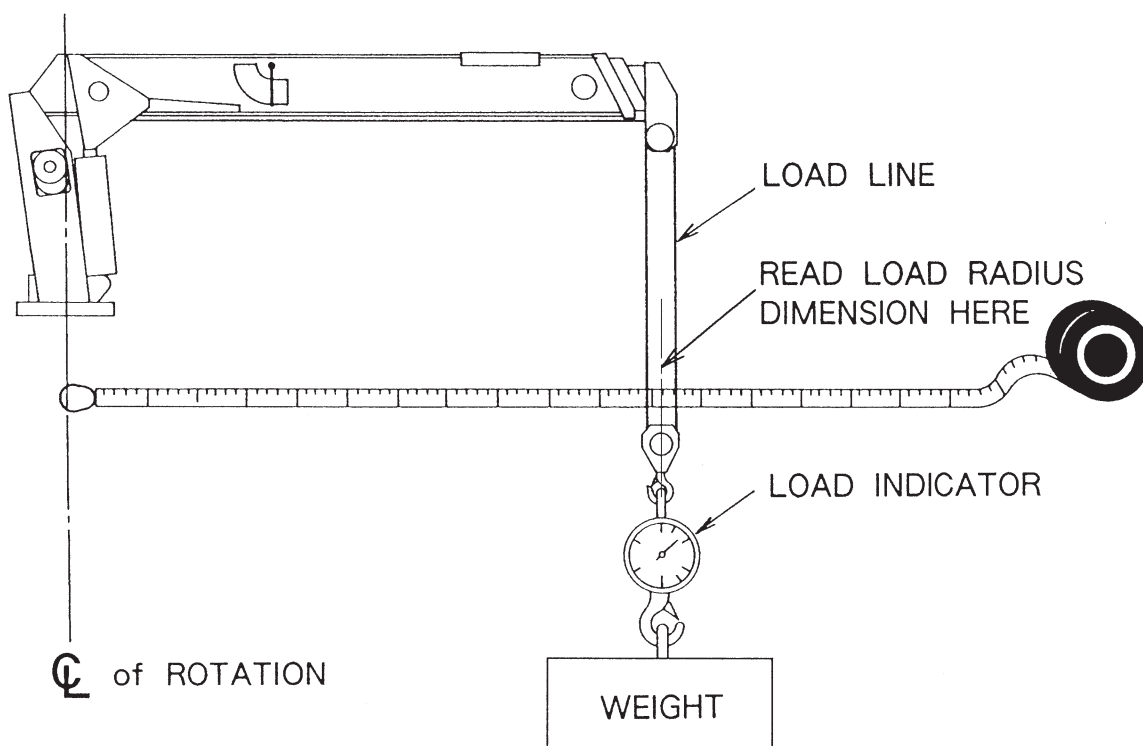
WARNING

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



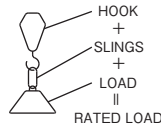
LOAD CHART URV346-C

RATED LOADS

BOOM RADIUS (FT.)	ALL BOOMS RETRACTED (LBS.)	2ND STAGE EXTENDED (LBS.)	3RD STAGE EXTENDED (LBS.)	4TH STAGE EXTENDED (LBS.)	5TH STAGE EXTENDED (LBS.)	6TH STAGE EXTENDED (LBS.)
6	8,000	8,000				
6.8	8,000	8,000				
8	6,300	6,300	4,900			
8.9	5,500	5,500	4,900			
10	4,900	4,900	4,400	2,300		
11	4,400	4,400	3,900	2,300		
13		3,600	3,100	2,300	1,400	
16		2,900	2,400	1,900	1,400	700
18.5		2,400	2,000	1,700	1,100	600
22			1,600	1,400	900	550
25.7			1,400	1,200	800	500
29				1,000	700	450
32.9				900	600	400
36					550	350
40.1					500	350
44						300
47.3						300

CAUTION

1. RATED LOADS SHOWN ON CHART ARE MAXIMUM ALLOWABLE LOADS WITH THE OUTRIGGERS FULLY EXTENDED ON A FIRM LEVEL GROUND AND BASED ON THE ACTUAL WORKING RADIUS INCLUDING THE DEFLECTION OF THE BOOM.
2. WEIGHTS OF HOOK (70lbs.), SLINGS, AND ANY ACCESSORIES TO THE BOOM OR LOADLINE MUST BE DEDUCTED FROM THE RATED LOADS.
3. WHEN A LOAD IS LIFTED IN THE VEHICLE FRONT, OPERATE THE CRANE WITH A LOAD LESS THAN 25% OF THE RATED LOADS.



ROPE AND REEVING MAX. LIFT IN POUNDS



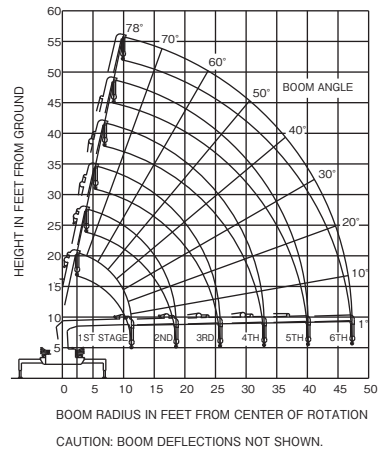
CAUTION

KEEP AT LEAST
3 WRAPS OF
LOADLINE ON DRUM
AT ALL TIMES.

USE ONLY 5/16"
DIAMETER WIRE ROPE
ON THIS MACHINE.
MINIMUM BREAKING STRENGTH
9,520 LBS.

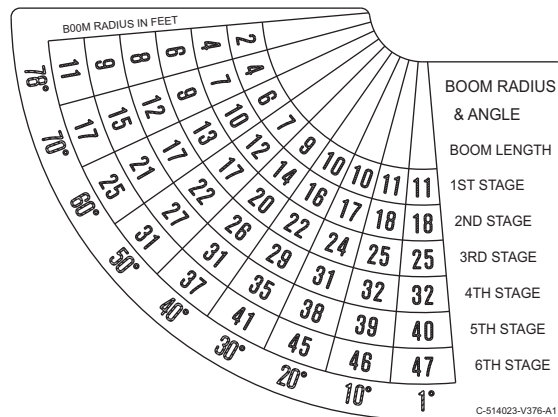
C-514025-V376-A1

RANGE DIAGRAM

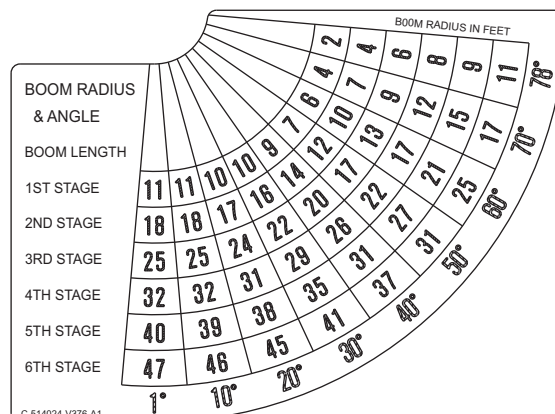


B-523167-V376-A1

BOOM ANGLE CHART



C-514023-V376-A1



C-514024-V376-A1

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.

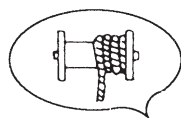


The boom and loadline must form a straight line between boom and load.

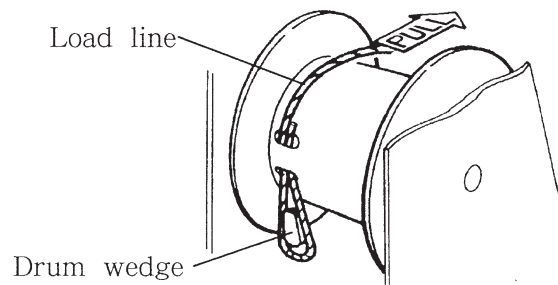
6. When lifting a load, you must always make certain that three (3) full wraps of rope remain on winch drum before raising the boom. Maintain tension on the loadline at all times to prevent rope from becoming twisted or kinked and to keep cable properly seated on drum and sheaves. The proper maintenance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



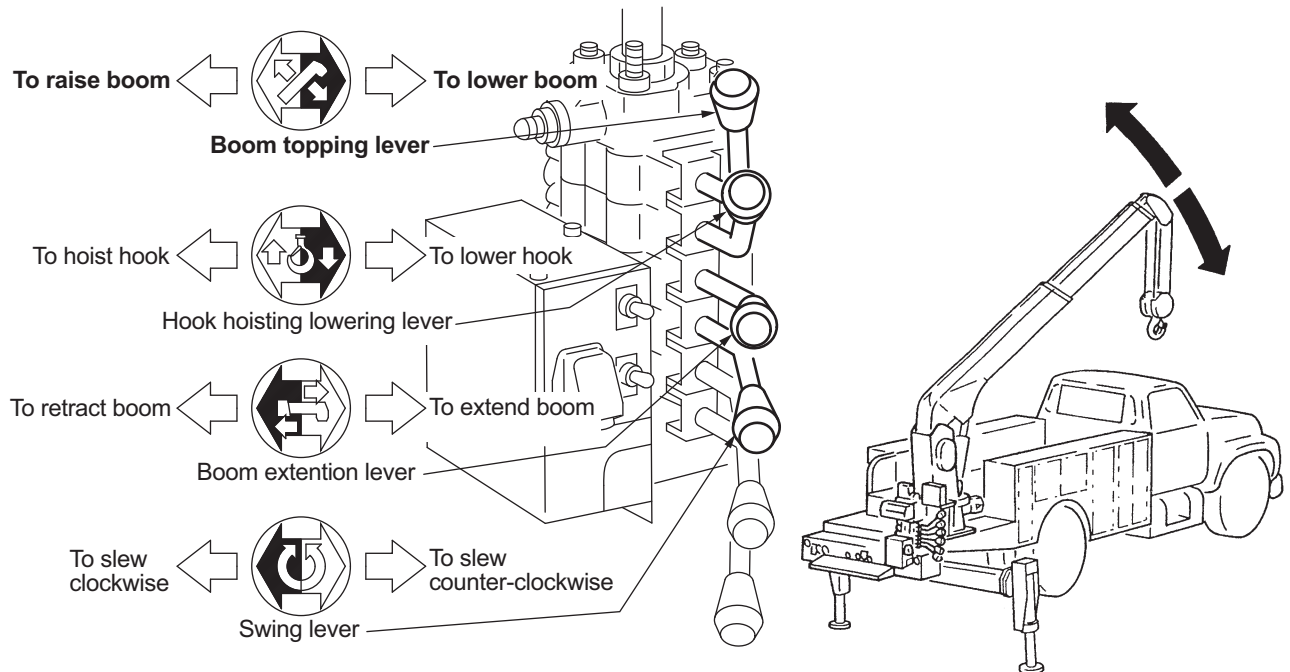
WARNING

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. CRANE MANUAL CONTROLS

Boom Topping



To lower the boom..... Move the control lever to **right**.

To raise the boom..... Move the control lever to **left**.

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.**

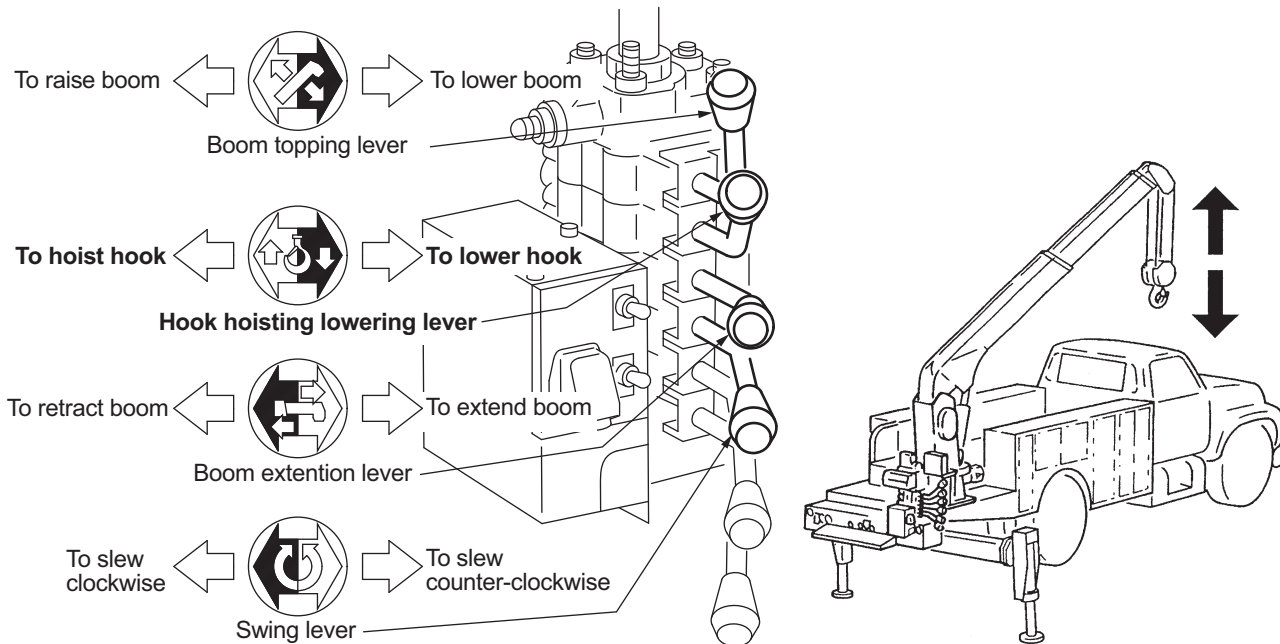
Failure to do so may cause loadline to break and / or damage the crane.

★ **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 **right**.

To hoist..... Move the control lever to **left**.

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

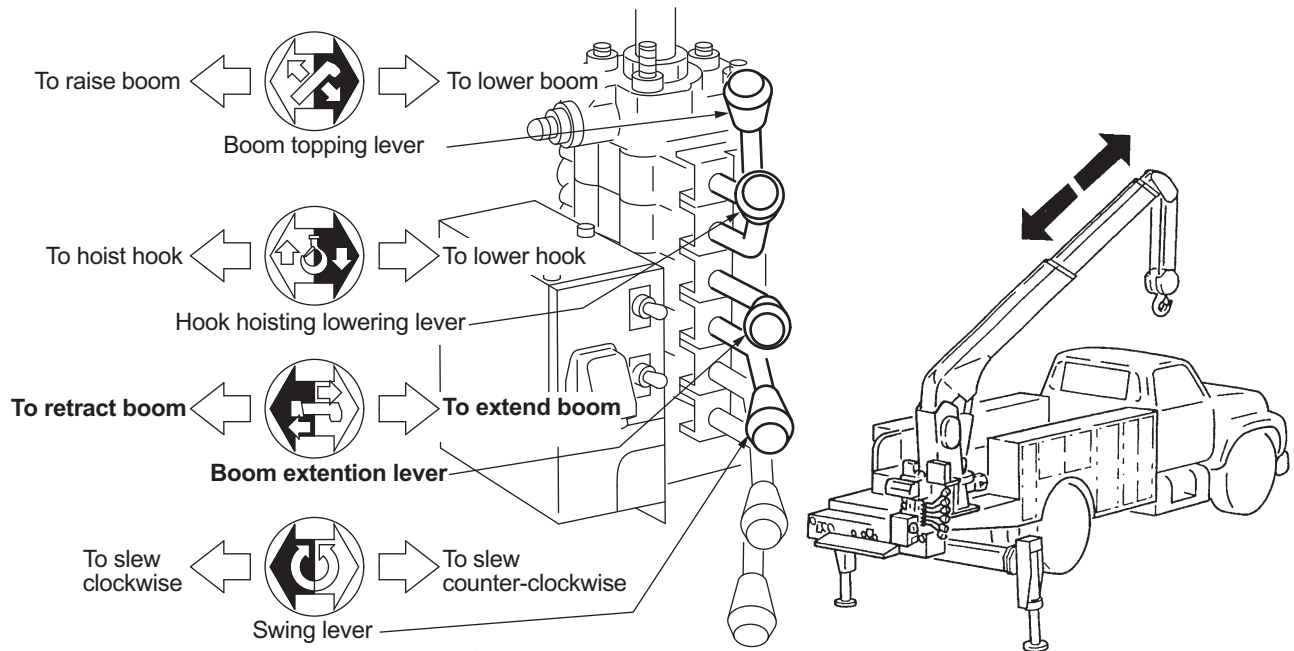
★ Do not keep lowering (playing out the wire rope) after the cargo (hook) has landed on the ground.

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 **right**.

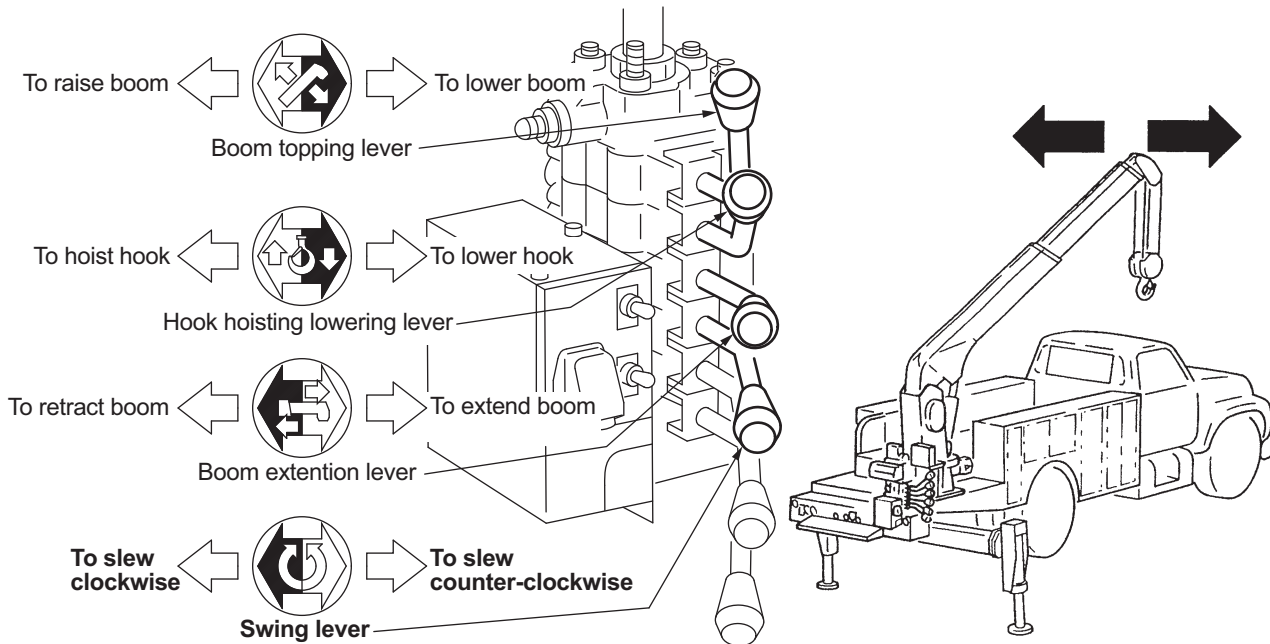
To retract the boom Move the lever to **left**.

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



To rotate boom counter clockwise

..... Move the lever to **right**.

To rotate boom clockwise

..... Move the lever to **left**.

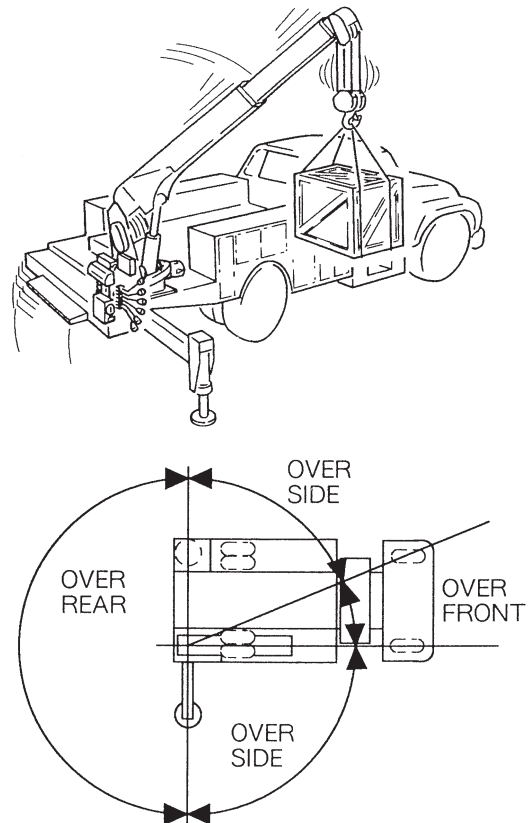
To stop swinging

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

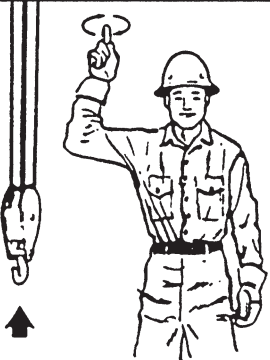
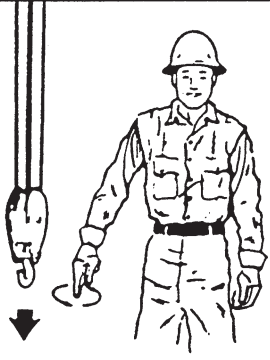
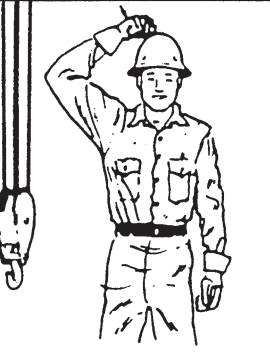
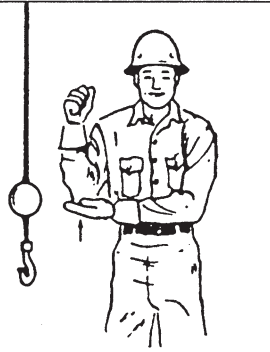
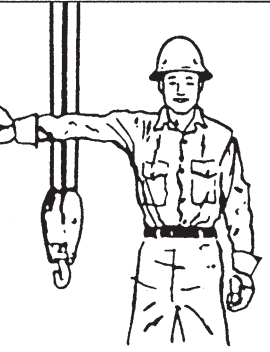
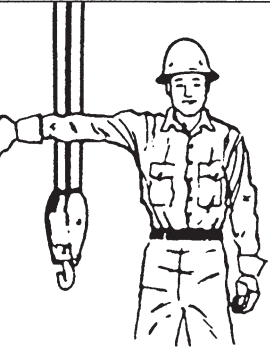
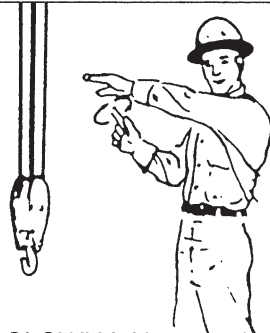
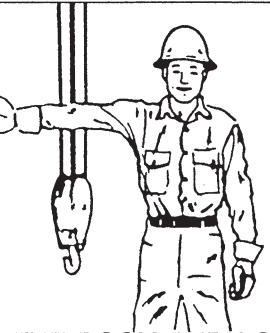
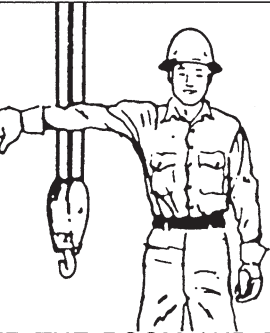


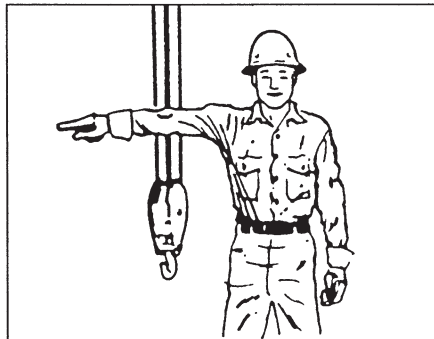
CAUTION

- ★ 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.

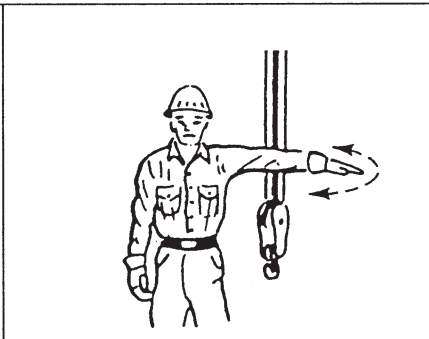


C. OPERATOR'S COMMUNICAUTION CHART
(ANSI / ASME B30.5)

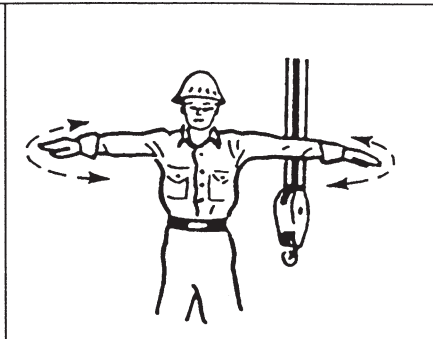
		
HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circle.	LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circle.	USE MAIN HOIST. Tap fist on head; then use regular signals.
		
USE WHIPLINE (Auxiliary Hoist). Tap elbow with one hand; then use regular signals.	RAISE BOOM. Arm extended, fingers closed, thumb pointing upward.	LOWER BOOM. Arm extended, fingers closed, thumb pointing downward.
		
MOVE SLOWLY. 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.)	RAISE THE BOOM AND LOWER THE LOAD. With arm extended, thumb pointing up, flex fingers in and out as long as load movement is desired.	LOWER THE BOOM AND RAISE THE LOAD. With arm extended, thumb pointing down, flex fingers in and out as long as load movement is desired.



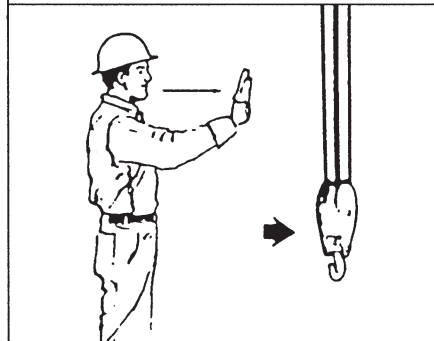
SWING. Arm extended, point with finger in direction of swing of boom.



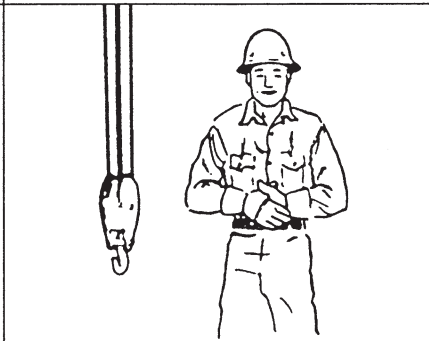
STOP. Arm extended, palm down, move arm back and forth horizontally.



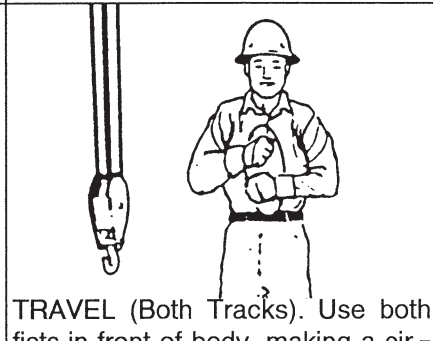
EMERGENCY STOP. Both arms extended, palms down, move arms back and forth horizontally.



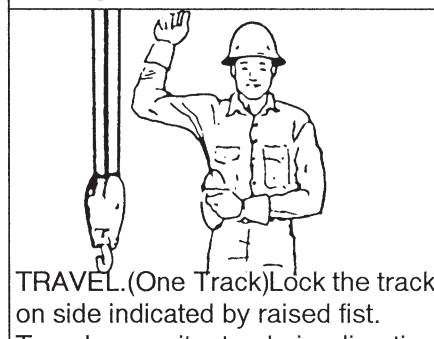
TRAVEL. Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.



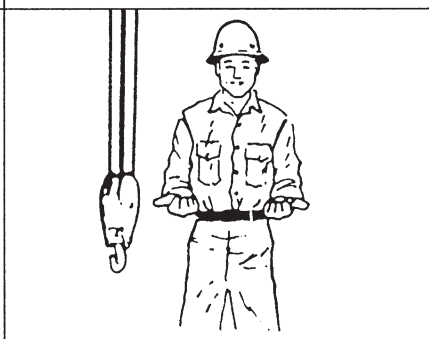
DOG EVERYTHING. Clasp hands in front of body.



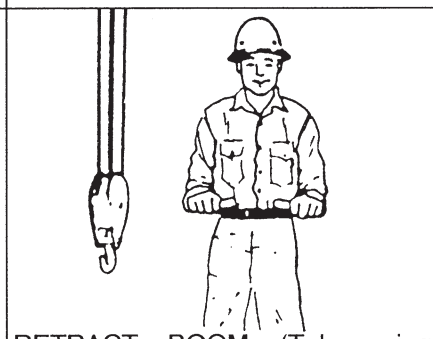
TRAVEL (Both Tracks). Use both fists in front of body, making a circular motion about each other, indicating direction of travel, forward or backward. (For land cranes only.)



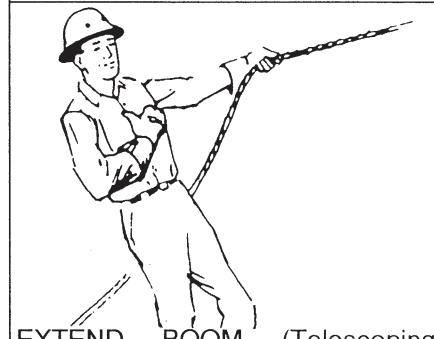
TRAVEL (One Track) Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of body. (For land cranes only.)



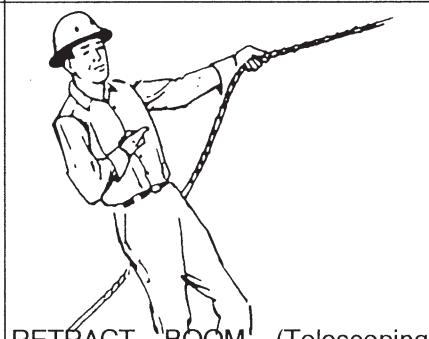
EXTEND BOOM (Telescoping Booms). Both fists in front of body with thumbs pointing outward.



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.

4-6. 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.



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 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.

4-7. ROADING THE UNIT



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.

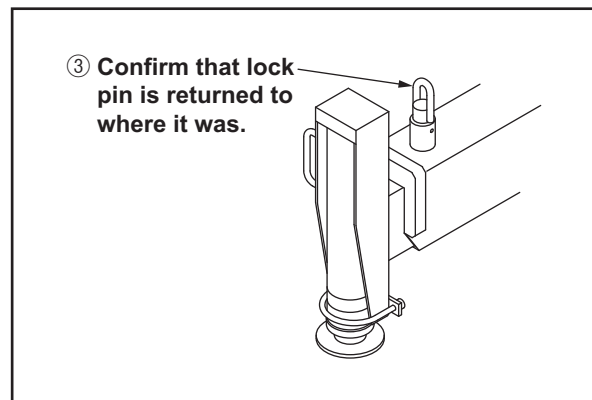
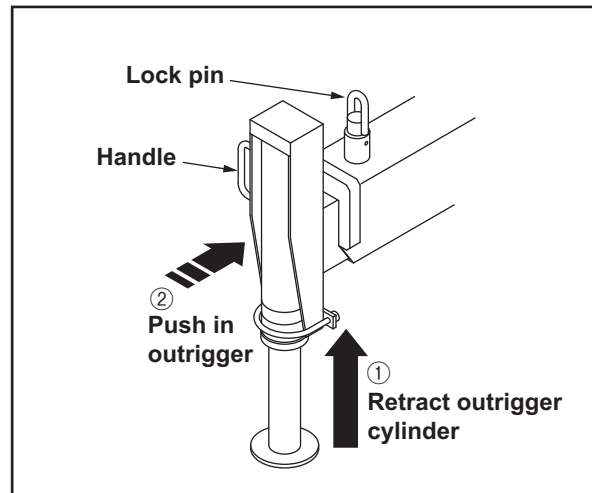
The outrigger should be stored in the following manner.

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



5.PLACARDS

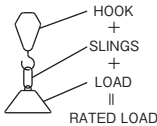
RATED LOADS

BOOM RADIUS (FT.)	ALL BOOMS RETRACTED (LBS.)	2ND STAGE EXTENDED (LBS.)	3RD STAGE EXTENDED (LBS.)	4TH STAGE EXTENDED (LBS.)	5TH STAGE EXTENDED (LBS.)	6TH STAGE EXTENDED (LBS.)
6	8,000	8,000				
6.8	8,000	8,000				
8	6,300	6,300	4,900			
8.9	5,500	5,500	4,900			
10	4,900	4,900	4,400	2,300		
11	4,400	4,400	3,900	2,300		
13		3,600	3,100	2,300	1,400	
16		2,900	2,400	1,900	1,400	700
18.5		2,400	2,000	1,700	1,100	600
22			1,600	1,400	900	550
25.7			1,400	1,200	800	500
29				1,000	700	450
32.9				900	600	400
36					550	350
40.1					500	350
44						300
47.3						300



CAUTION

1. RATED LOADS SHOWN ON CHART ARE MAXIMUM ALLOWABLE LOADS WITH THE OUTRIGGERS FULLY EXTENDED ON A FIRM LEVEL GROUND AND BASED ON THE ACTUAL WORKING RADIUS INCLUDING THE DEFLECTION OF THE BOOM.
2. WEIGHTS OF HOOK (70lbs.), SLINGS, AND ANY ACCESSORIES TO THE BOOM OR LOADLINE MUST BE DEDUCTED FROM THE RATED LOADS.
3. WHEN A LOAD IS LIFTED IN THE VEHICLE FRONT, OPERATE THE CRANE WITH A LOAD LESS THAN 25% OF THE RATED LOADS.



ROPE AND REEVING MAX.LIFT IN POUNDS



CAUTION

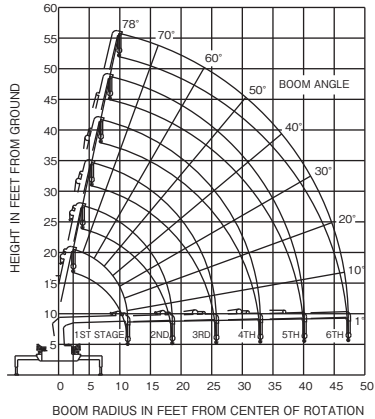
KEEP AT LEAST
3 WRAPS OF
LOADLINE ON DRUM
AT ALL TIMES.

USE ONLY 5/16"
DIAMETER WIRE ROPE
ON THIS MACHINE.
MINIMUM BREAKING STRENGTH
9,520 LBS.

C-514025-V376-A1

Rated Loads Chart,
Operator Console,1

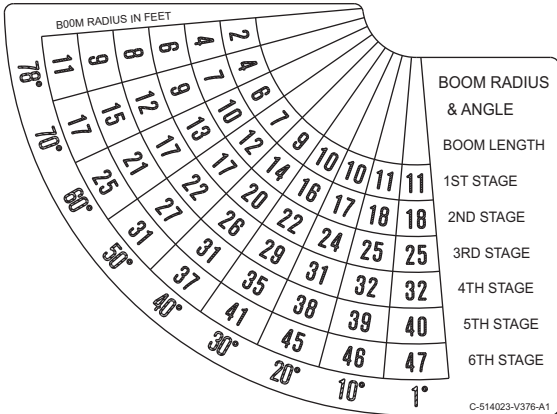
RANGE DIAGRAM



CAUTION: BOOM DEFLECTIONS NOT SHOWN.

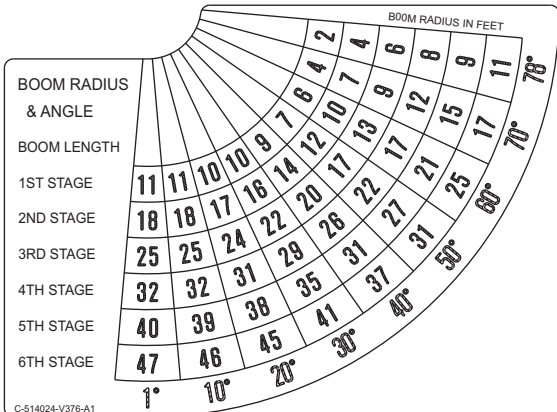
B-523167-V376-A1

Range Diagram,
Operator Console,1



C-514023-V376-A1

Boom Angle RH, Boom base, 1



C-514024-V376-A1

Boom Angle LH, Boom base, 1

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

REMOVAL OF THIS PLACARD IS A VIOLATION OF LAW.

08A481080

Operating Instructions, Operator Console, 1

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



Grease, 10

Molybdenum
grease

Molybdenum grease, 1

WORKING-LAMP

Working Lamp, 1



Horn,
Operator console, 1

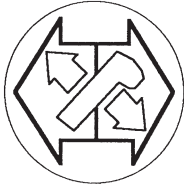
EMERGENCY
RELEASE

Emergency, 2

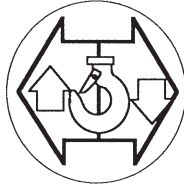
UNIC FURUKAWA UNIC CORPORATION TOKYO JAPAN MADE IN JAPAN	MODEL	URV346-C
	SPEC.	
	CAPACITY	8000 LBS
	SERIAL NO.	
	CODE NO.	

Crane Model Name Plate,
Column, 1

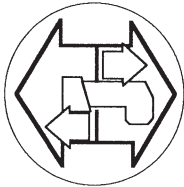
[Knob of Control Lever]



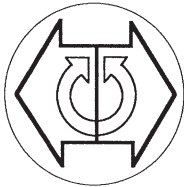
Boom Topping, 1



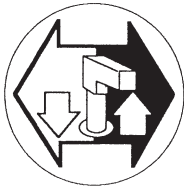
Hook Hoisting and Lowering, 1



Boom Telescoping, 1



Swing, 1

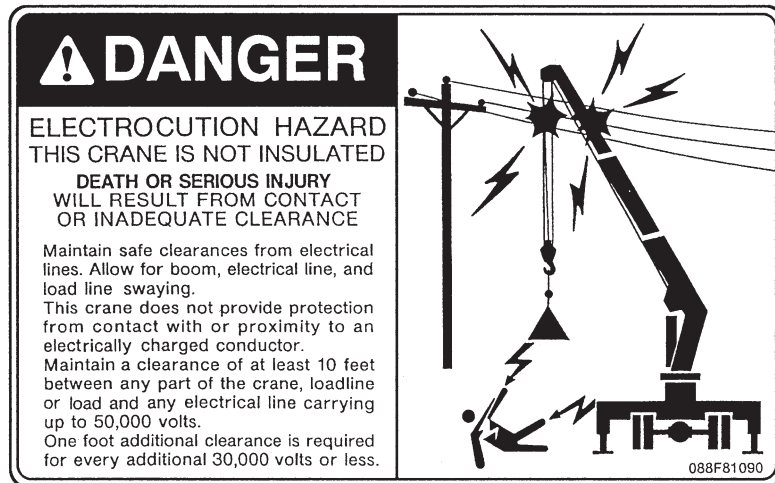


Outrigger (Street Side), 1



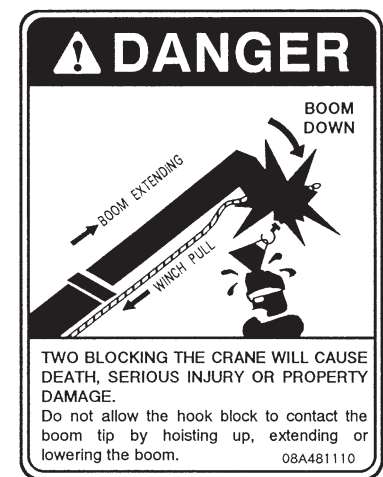
Outrigger (Curb Side), 1

Electrocution Hazard



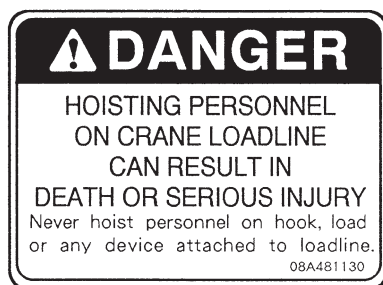
Operator console, 2

DANGER, Two Blocking



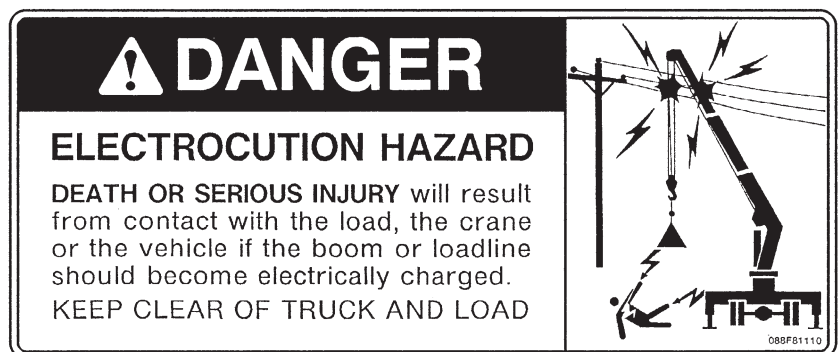
Operator console, 2

DANGER,
Hoisting Personnel



End of truckbed
at hook, 1

Electrocution Hazard



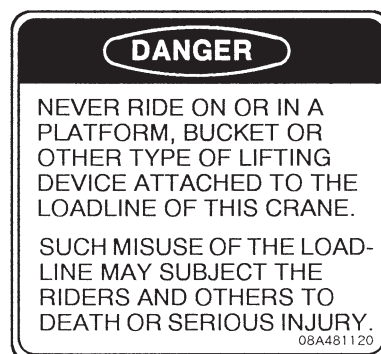
Truckbed side, 1

DANGER, O/R Operation



Outrigger housing, 2

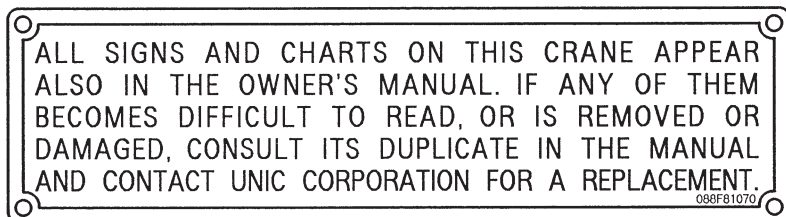
DANGER, Ride Load line



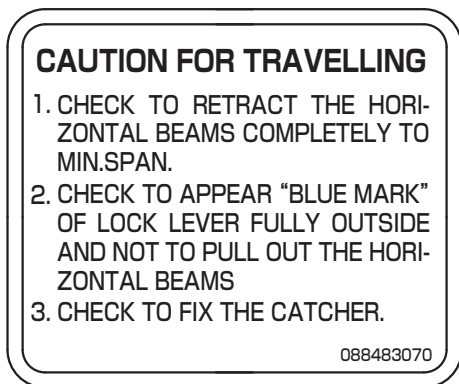
Truckbed side, 2



CAUTION, Inspect Vehicle,
Operator console, 2

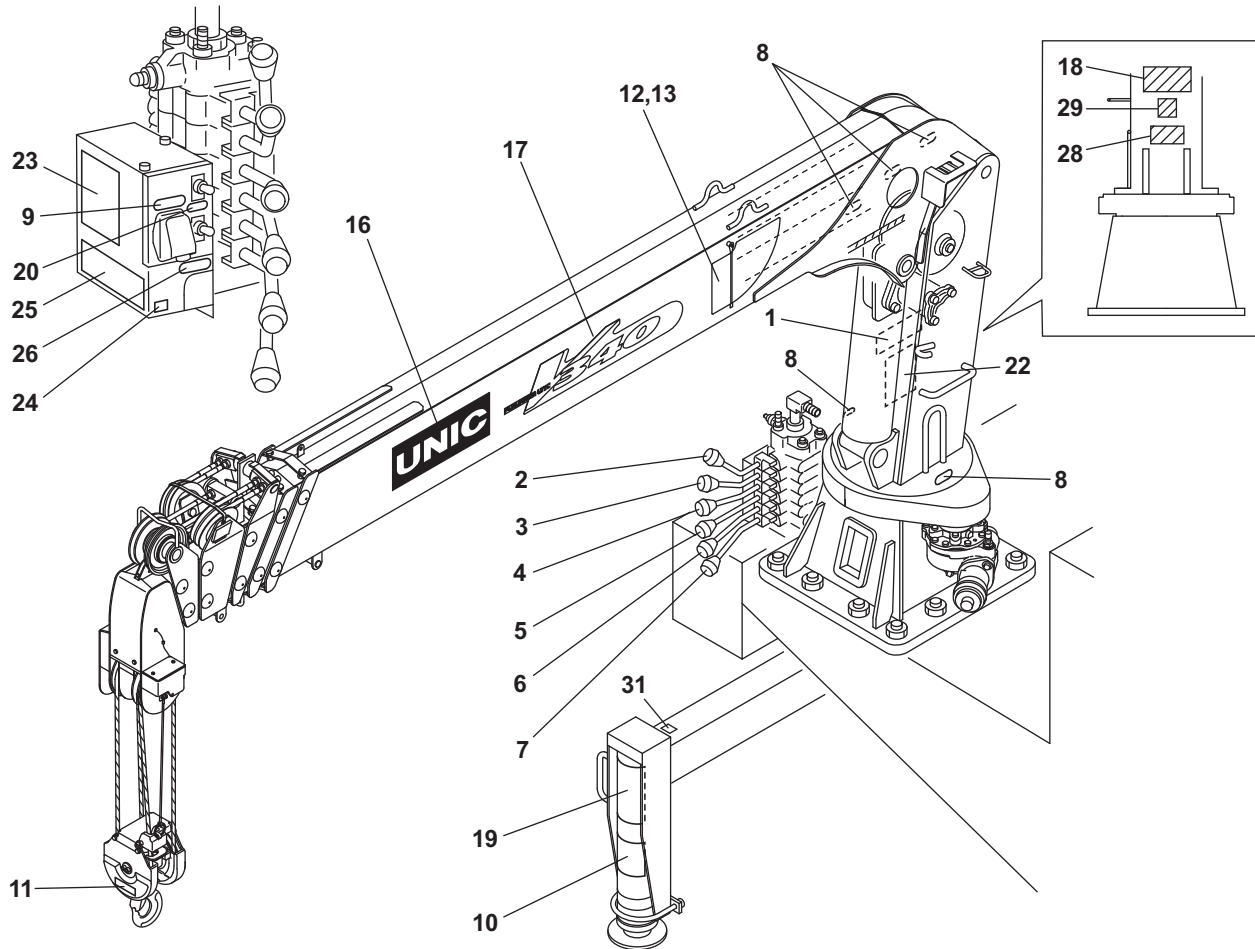


Replacement Warning,
Operator console, 2



CAUTION FOR TRAVELLING, 1

PLACARD LOCATION CHART



No.	Part Name	Part No.	Q'ty
1	Crane Model Name Plate	602104560	1
2	Placard (Raise / Lower)	080A86010	1
3	Placard (Hoist)	080A86020	1
4	Placard (Telescoping)	080A86030	1
5	Placard (Swing)	080B81120	1
6	Placard (Outrigger Street Side)	080A86050	1
7	Placard (Outrigger Curb Side)	080A86040	1
8	Placard (Grease)	080581060	10
9	Placard (Horn)	08J081240	1
10	Placard (Caution, O / R Operation)	08V883040	2
11	Placard (Hook)	08A481140	2
12	Placard (Boom Angle R.H.)	C-514023	1
13	Placard (Boom Angle L.H.)	C-514024	1
14	Placard (Rated Loads)	C-514025	1
15	Placard (Operating Instructions)	08A481080	1
16	Placard (UNIG)	090B81250	2

No.	Part Name	Part No.	Q'ty
17	Placard (340)	090G81090	2
18	Placard (Electrocution Hazard)	088F81090	2
19	Placard (Danger, O / R Operation)	088F81050	2
20	Placard (Replacement Warning)	088F81070	2
21	Placard (Electrocution Hazard)	088F81110	1
22	Placard (Caution, Inspect Vehicle)	08A481090	2
23	Placard (Danger, Two Blocking)	08A481110	2
24	Placard (Hydraulic Release)	08V883030	1
25	Placard (Working Lamp)	08V883020	1
26	Placard (Overwinding Alarm)	602103291	1
27	Placard (Range Diagram)	B-523167	1
28	Placard (Hoisting Personnel)	08A481130	2
29	Placard (Ride Load Line)	08A481120	2
30	Placard (Molybden grease)	08AB83010	1
31	Placard (Caution For Travelling)	088483070	2

■ 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	Hydraulic pump	Loose mounting
		Oil leakage
3	Outriggers	Cracks in welded parts
		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	Oil leakage from joints
8	Topping cylinder	Damage in fulcrum pin and boss
		Oil leakage
9	Boom	Damage of fulcrum pin and boss
		Cracks in welded parts
10	Sheave pin	Damage of fulcrum pin and boss
		Rust on boss
11	Hook	Rotation of hook
		Damage of sheave
12	Hook latch	Tension of spring
		Deformation and damage
13	Others	Sling wire and other equipment necessary for crane operation
14	Control lever	Control lever return

2-2. INSPECTION FOR FUNCTION

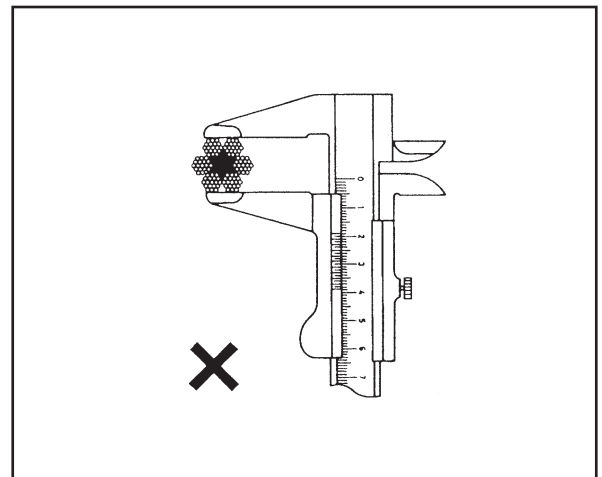
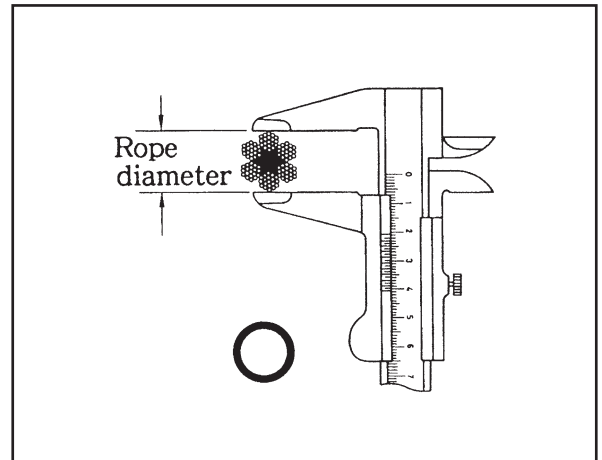
1. Check that each moving part of the crane operates smoothly.
2. Check that the Anti- two block device operates correctly.
3. Check that the warning horn switch operates correctly.
4. Check that the winch brake operates correctly.

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 $\frac{1}{3}$ 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 $\frac{1}{64}$ in. (0.4 mm) for diameters $\frac{5}{16}$ 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.)



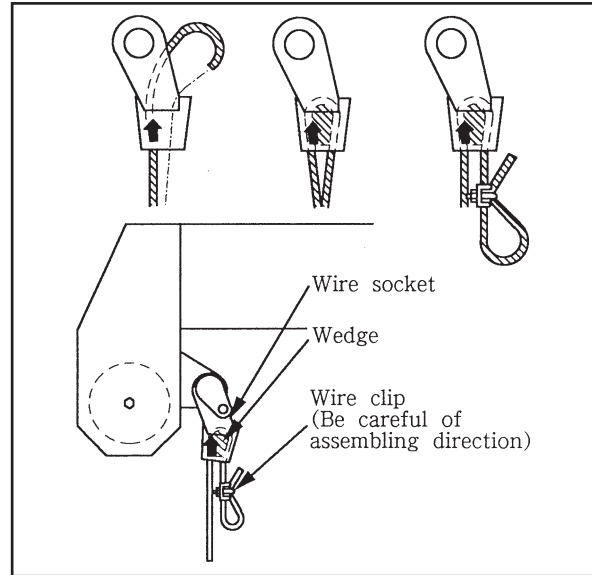


CAUTION

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.

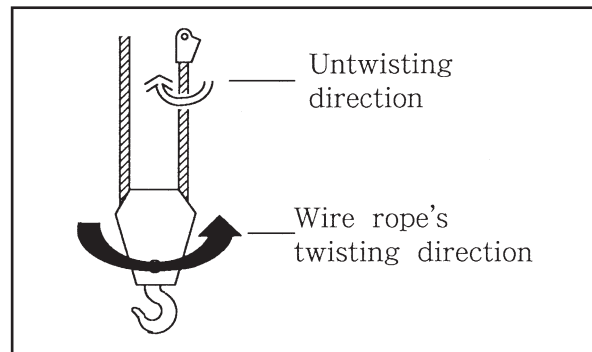
If the wire ropes are twisted, adjust them as described below:

- 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.

If they were still twisted, repeat the same adjustment.



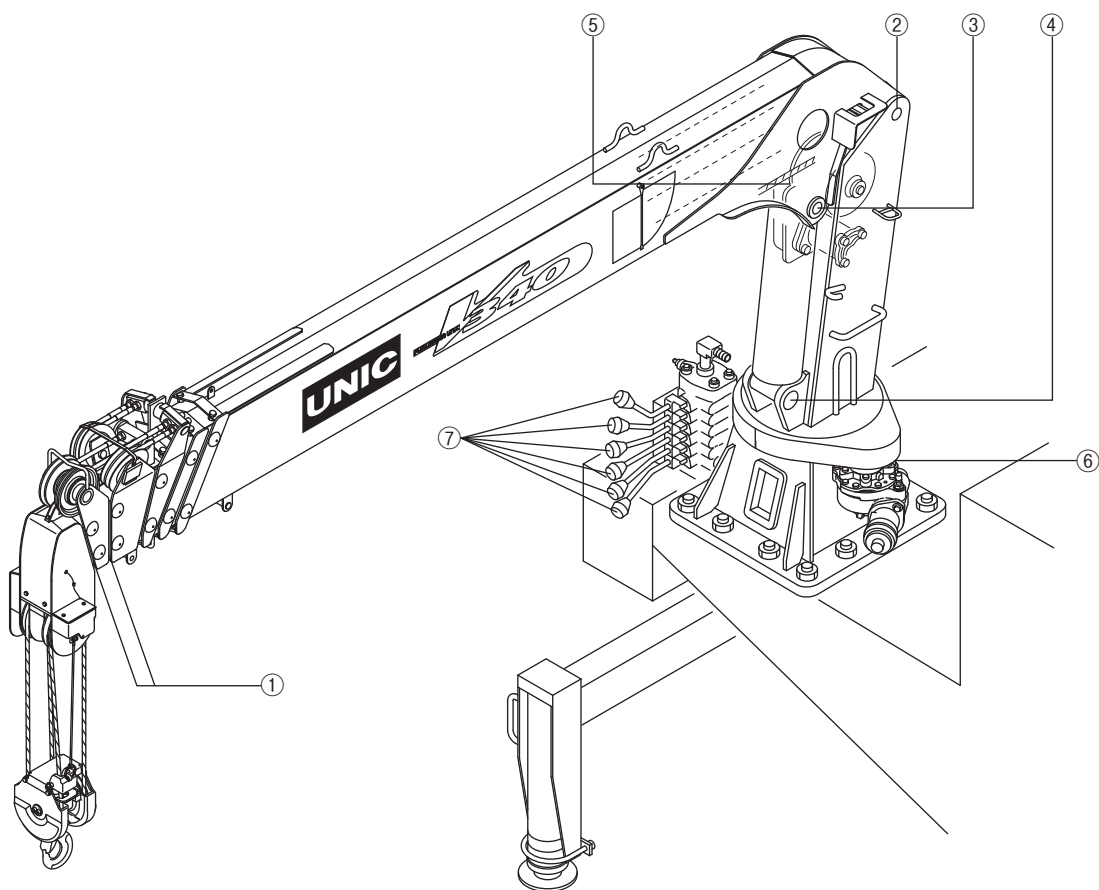
3.PERIODIC MAINTENANCE/WEEKLY

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.

	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
⑦	Control lever (pins on both sides and bearing)	Chassis grease	Grease gun

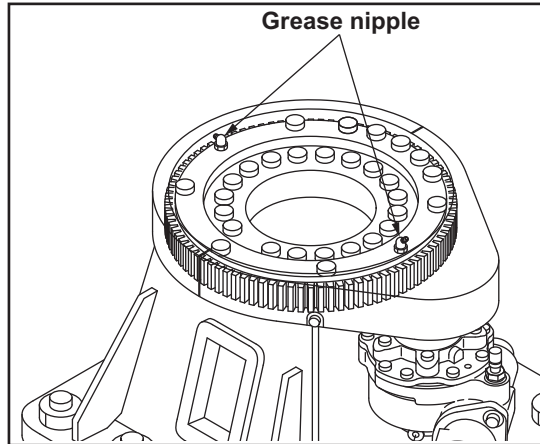


4.PERIODIC MAINTENANCE/MONTHLY

4-1. LUBRICATE SWING BEARING

Use chassis grease.

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

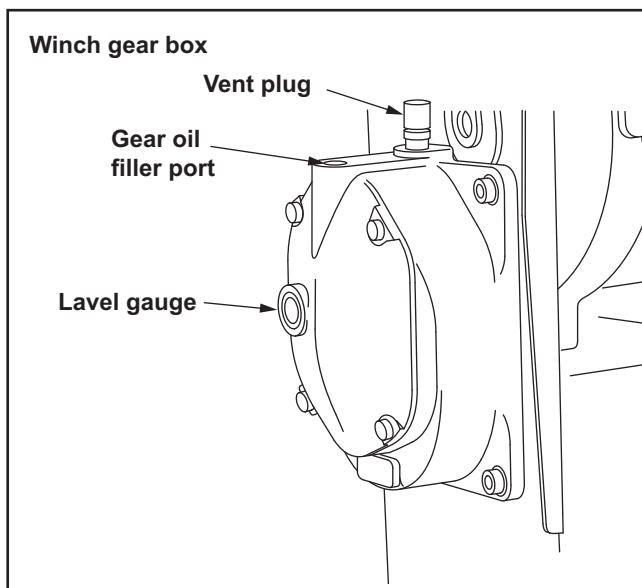


4-2. CHECK GEAR OIL LEVEL

for winch gear box and swing gear box.

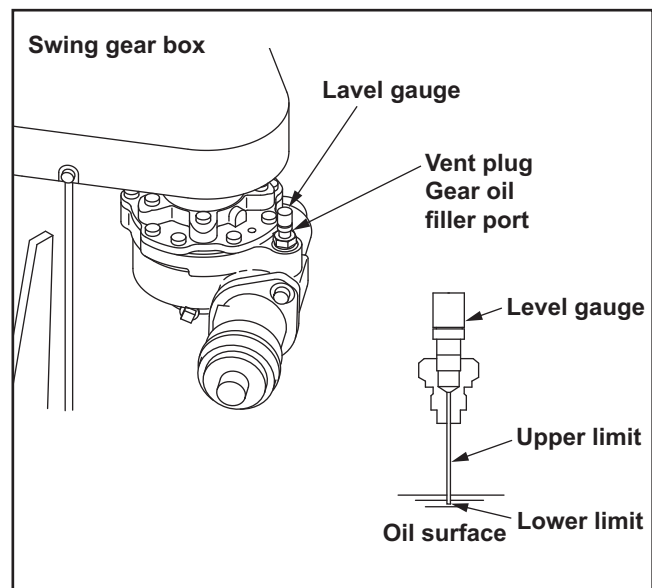
★ WINCH GEAR BOX

1. Remove the vent plug for filler port.
2. Fill oil up to the middle of the oil level gauge.
3. Install the vent plug.



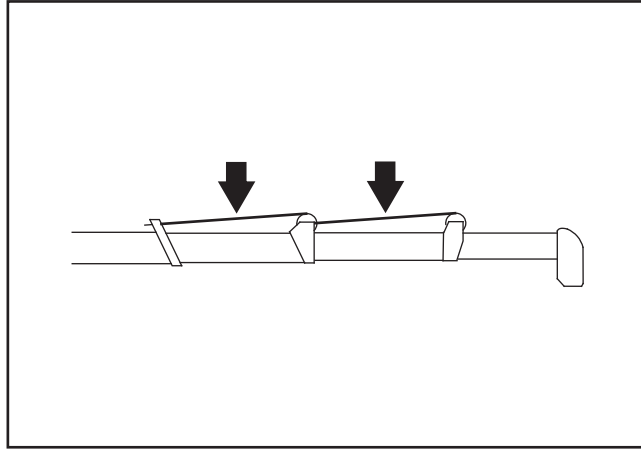
★ SWING GEAR BOX

1. Remove the vent plug for filler port.
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.
3. Install the vent plug.



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 winch gear box and swing gear box

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

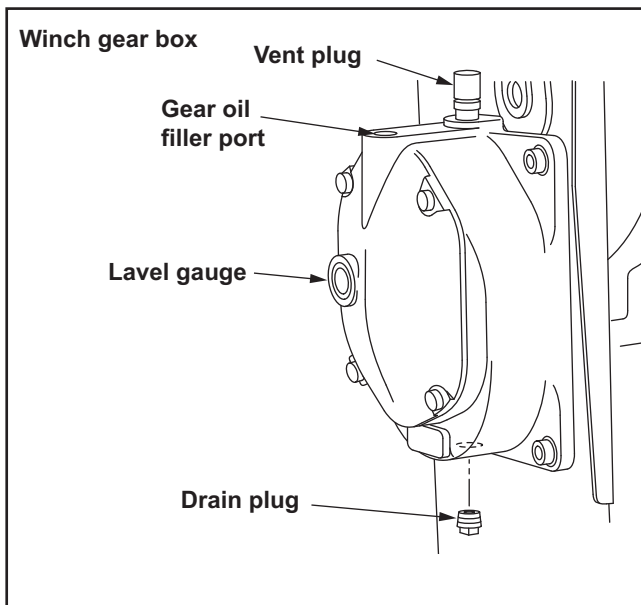
CAUTION

Hot oil and components can cause injury.

Do not allow hot oil or components to contact skin.

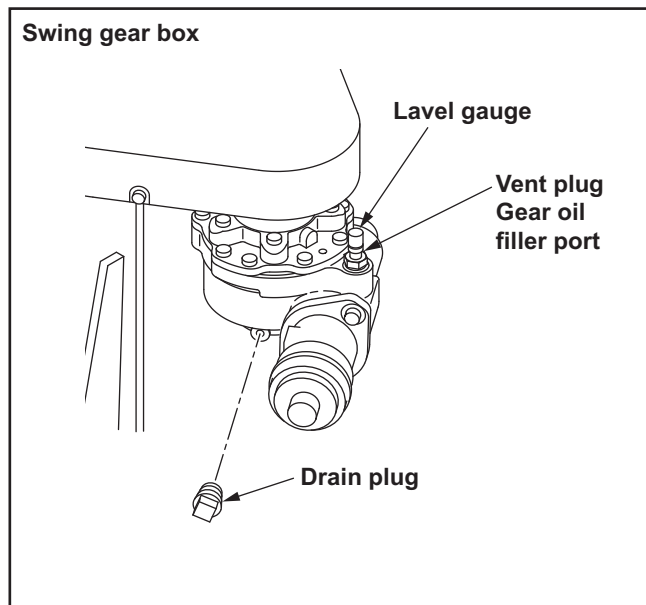
★ WINCH GEAR BOX

1. Remove the drain plug and drain oil.
Install the drain plug.
2. Remove the vent plug for filler port.
3. Fill new oil up to the middle of the oil level gauge.
4. Install the vent plug.



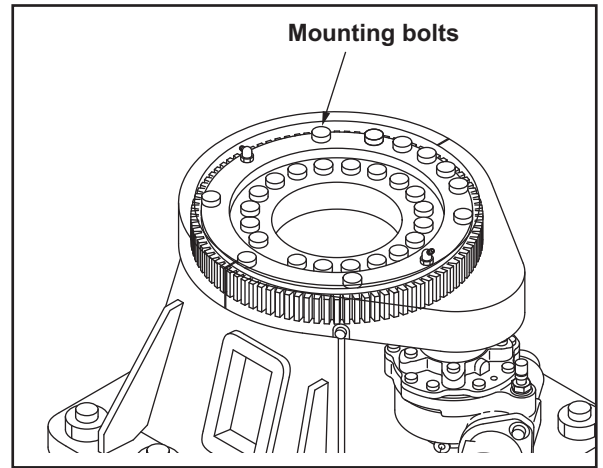
★ SWING GEAR BOX

1. Remove the drain plug and drain oil.
Install the drain plug.
2. Remove the vent plug for filler port.
3. 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.
4. Install 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.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
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 GX 90
CALTEX	Universal Thuban SAE 90
SHELL	Shell Spirax EP 90

3. RECOMMENDED HYDRAULIC OIL

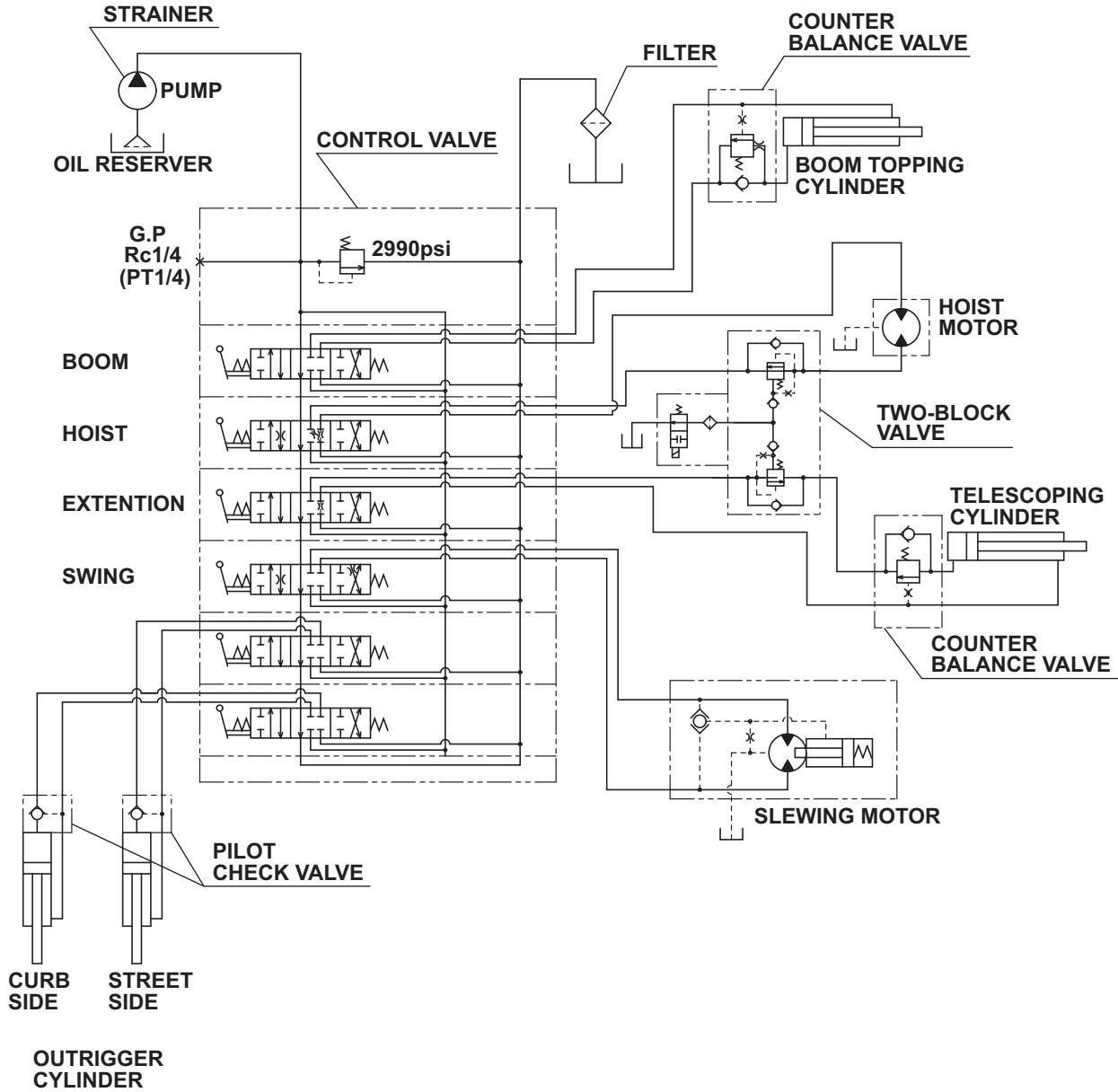
Use industrial- type hydraulic oil;

ISO VG 46 for temperatures above 32F.

ISO VG 22 for temperatures below 32F.

Petroleum Maker	Brand	
	ISO VG 22	ISO VG 46
ESSO	Spinesso 22	Teresso 46
MOBIL	Mobil DTE 22	Mobil DTE Oil Medium
CALTEX	Spindura oil 22	Rando Oil 46
SHELL	Shell Tellus Oil 22	Shell Tellus Oil 46

4.HYDRAULIC CIRCUIT

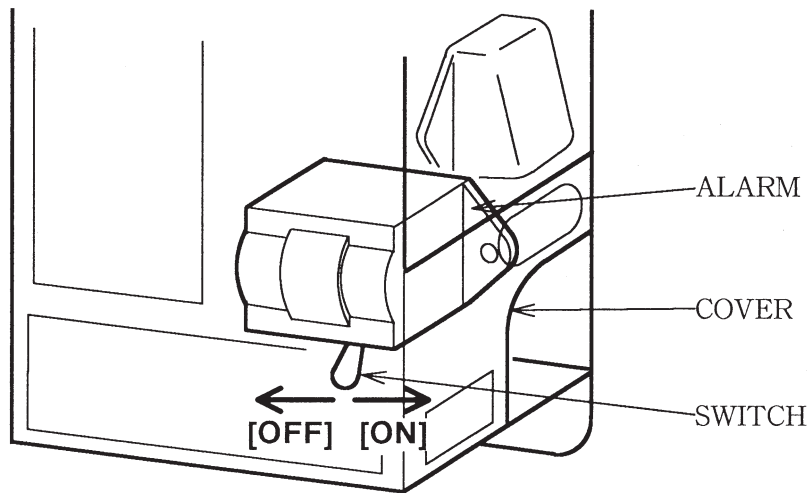


5. EMERGENCY RELEASE

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.



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