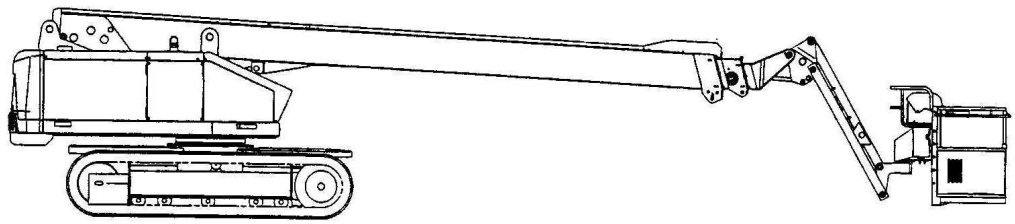
FS-289S

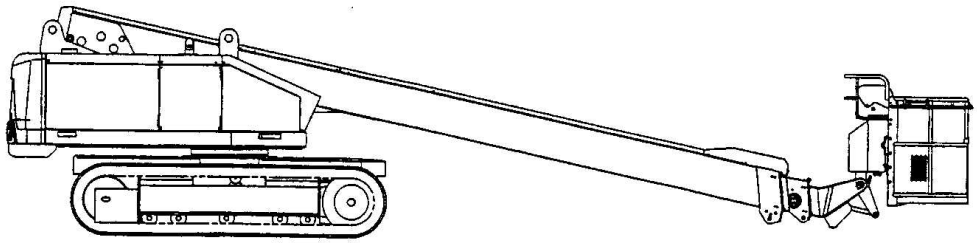
OPERATION MANUAL

Self-propelled Crawler type Aerial platform

Model SR18AJ/SR21AJ



Model SR18A/SR21A



* Important : Please read this manual before operating the machine.

MICHI CORPORATION

1152 RYOKE, AGEO, SAITAMA, JAPAN

Introduction

Thank you very much for making your purchase from Aichi Corporation.

This manual describes the correct operation and handling procedures for the self-propelled crawler type aerial platform **SR18AJ/ISR60J** and **SR21AJ/ISR70J**. Reading and reference to this manual will ensure the maximum operational efficiency of these machines.

Operation of these machines not in accordance with the instructions in this manual may lead to problems, resulting in damage and increasing risk of danger. Please, be sure to read and understand this manual before using these machines.

* Always keep this manual and the record of Aichi pre-delivery functional tests with the machine.

* When you transfer the use or ownership of the machine, please attach this manual to the machine for the next user.

* For any doubts you may have about handling, inspection or spare parts, please do not hesitate to contact our business offices or the authorized service shops nearest to you. In this case, you are requested to quote the model, serial number, manufactured date marked on the serial number plate.

* Use only the spare parts approved by the manufacturer, particularly for load-supporting and safety-related components.

* Do not make any modifications to the machine without obtaining the manufacturer’s approval. The design check, the manufacturing check as well as the practical tests should be conducted by the approved agent, if a modification which would affect the stability, strength or performance of the machine is made. Detail of major alterations or repairs must be recorded in the service manual.

* The user of this machine shall obtain the guidance and approval of the manufacturer, in the event of any special working method or conditions, which are outside those specified by the manufacturer.

* Your attention is drawn to certain changes in illustration or contents which may be made without notice.

INDEX

I Qualifications of Operator

The operator of this machine must receive safety training to ensure safe operation.

Safety training

Incorrect use of the machine may cause serious danger.

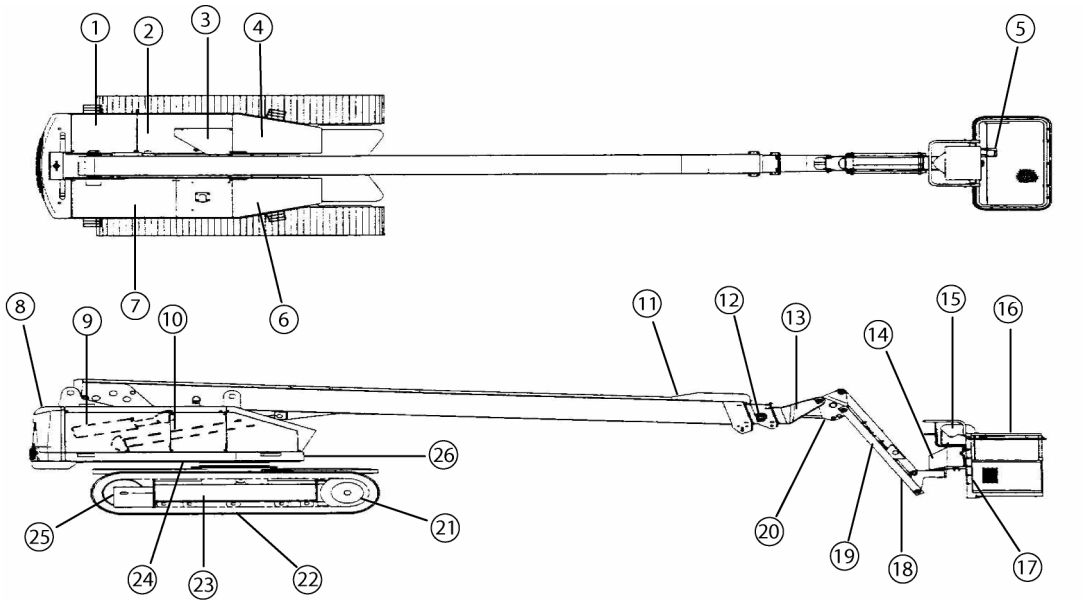
All personnel who operate this machine are requested to receive safety training, and only the trained and authorized personnel are allowed to operate this machine.

(For safety training, use this manual.)

Safety Training!

Certificate of Safety training

II Name of Components



No.	Name	No.	Name
1	Lower control	14	Platform rotation device
2	Fuel tank	15	Upper control
3	Hydraulic oil tank	16	Platform
4	Rotation lock pin	17	Manual holder
5	Foot switch	18	Fly jib
6	Rotation gearbox	19	Fly jib cylinder
7	Engine compartment	20	Leveling cylinder, Upper
8	Turntable	21	Drive sprocket
9	Leveling cylinder, Lower	22	Track
10	Elevation cylinder	23	Chassis frame
11	1st boom section	24	Rotation bearing
12	2nd boom section	25	Idler wheel
13	3rd boom section	26	Serial number plate

III Specifications

1. Main specifications

Model					*SR18AJ / ISR60J*	*SR21AJ / ISR70J*
Dimensions	Overall length				10.04 m (32ft – 10in)	11.57m (38ft – 0in)
	Overall width				2.46 m (8ft – 1in)	ß
	Overall height				2.35 m (7ft – 9in)	ß
	Minimum ground clearance				425 mm (16.7 in)	ß
	Tail swing				1.13 m (3ft – 8in)	ß
Gross weight					12,900 kg (28,400 LBS)	15,200 kg (33,500 LBS)
Maximum ground contact pressure					0.85 kg/cm^2 (12 PSI)	1.0 kg/cm^2 (14 PSI)
Platform	Rated load				227 kg (500 LBS) or 2 persons + Tools 67 kg (148 LBS)	ß
	Maximum allowable manual side force				400 N (41 kg) (90LBS)	ß
	Maximum platform floor height				18.0 m (59ft – 1in)	21.0 m (69ft – 11in)
	Maximum outreach				15.8 m (51ft – 10in)	17.8 m (58ft – 5in)
	Rotation angle				180 degrees	ß
Boom	Boom angle				-12 ~ +70 degrees	ß
	Boom length				6.91 ~ 15.48 m (22ft – 8in ~ 50ft – 9in)	8.44 ~ 18.69 m (27ft – 8in ~ 61ft – 4in)
	Rotation angle				360 degrees (Continuous)	ß
Fly jib	Jib angle				-60 ~ +70 degrees	ß
	Jib length				1.65 m (5ft – 5in)	ß
Engine	Model				Isuzu A-4JB1 PAA-22	ß
	Total displacement				2,771 cc (169 in^3)	ß
	Maximum output power				44.3 kw/2,400 rpm (59.4 HP/2,400 rpm)	ß
	Maximum output torque				19.5 kg-m/1,800 rpm (141 ft-lbs/1,800 rpm)	ß
	Fuel tank capacity				150 liters (39.6 gallons)	ß
	Engine rpm	Low (Idling)			1,000 rpm	ß
		Mid			1,400 rpm	ß
		High	CE Spec.		2,000 rpm	ß
			USA Spec.		1,800 rpm	ß
Battery voltage					DC24 volts	ß
Actuating speed	Boom elevation (with the boom fully retracted.)			UP	40 seconds	ß
				Down	40 seconds	ß
	Fly jib elevation			Up	35 seconds	ß
				Down	25 seconds	ß
	Boom telescope			Out	35 seconds	40 seconds
				In	25 seconds	30 seconds
	Boom rotation (with the outreach set to the minimum.)		CE Spec.	CW	95 seconds	110 seconds
				CCW	95 seconds	110 seconds
			USA Spec.	CW	80 seconds	80 seconds
				CCW	80 seconds	80 seconds
	Platform rotation			CW	30 seconds	ß
				CCW	30 seconds	ß

Model				*SR18AJ / ISR60J*	*SR21AJ / ISR70J*
Actuating speed	Horizontal movement		Out	200 mm/second (7.9 in/second)	ß
			In	200 mm/second (7.9 in/second)	ß
	Vertical movement		Up	200 mm/second (7.9 in/second)	ß
			Down	200 mm/second (7.9 in/second)	ß
	Traveling	High speed	CE Spec.	1.8 km/hour (1.12 MPH)	ß
			USA Spec.	3.0 km/hour (1.86 MPH)	
		Mid speed	CE Spec.	1.3 km/hour (0.81 MPH)	ß
			USA Spec.	1.5 km/hour (0.93 MPH)	
		Low speed		0.5 km/hour (0.31 MPH)	ß
Hydraulic system	Rated pressure	Traveling functions		320 kg/cm^2 (4,555 PSI)	ß
		Boom functions		210 kg/cm^2 (3,000 PSI)	ß
		Fly jib, Platform rotation		1400 kg/cm^2 (2,000 PSI)	ß
	Hydraulic tank capacity			200 liters (52.8 gallons)	ß
	Recommended hydraulic oil			Shell Tellus oil T22	ß

* Airborne noise emissions do not exceed a sound pressure level of 85 dB(A) at the operating positions.

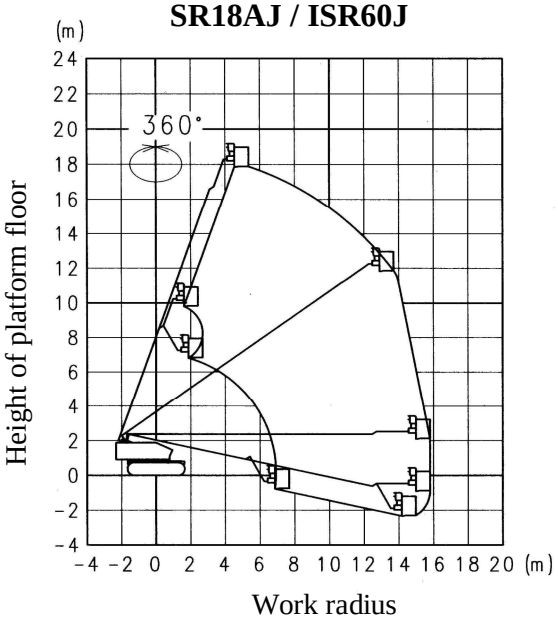
* The vibration emitted by the machine does not exceed 0.5m/s^2 (19.7 in/s^2) on the work platform.

* This machine is designed for both indoor and outdoor use.

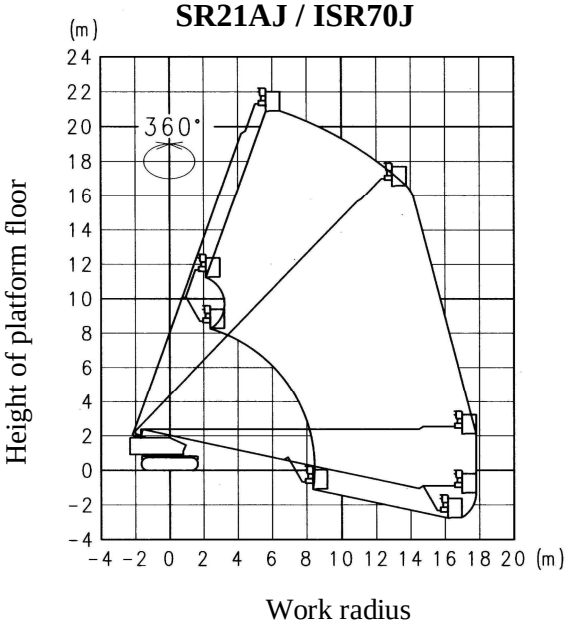
2. Work range diagram

Platform rated load is 227 kg (500 LBS).

SR18AJ / ISR60J



SR21AJ / ISR70J



1. The boom deflection is not taken into account in the above working range diagram.
2. The working range is the same in any boom-rotated directions.
3. It is assumed that the machine is on firm and level surface, and that the wind velocity is less than 12.5 m/sec (28 MPH).
4. The maximum allowable manual side force of the platform is 41 kg (90 LBS).

3. Counterweight table

The weight of the counterweight is marked on each counterweight.

Model	Number of counterweight						
	On chassis			On Turntable			
	2,550 kg 5,622 lbs	1,450 kg 3,197 lbs	350 kg 772 lbs	1,850 kg 4,079 lbs	670 kg 1,477 lbs	335 kg 739 lbs	90 kg 198 lbs
SR18AJ / ISR60J	0	1	0	1	0	0	5
SR21AJ / ISR70J	1	0	0	1	0	4	1

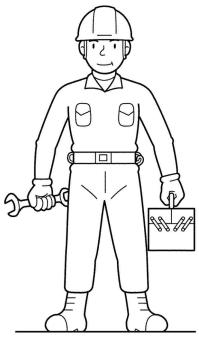
IV Pre-start Checks

1. Pre-start Checks

Always conduct the pre-start checks before using the machine.

Pre-start checks must also be conducted before using the machine which:

- has been stored for a long time.
- is a new machine.
- has been serviced or repaired.



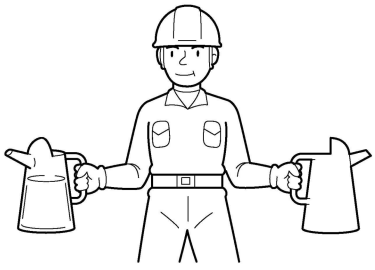
Set up the machine on firm and level surface and the following items should be check thoroughly.

Danger: When checking the machine under the platform or the boom, use safety support to prevent the platform and boom from unexpected descent.

Caution: If any abnormality is observed, stop using the machine and contact Aichi service shop for inspections.

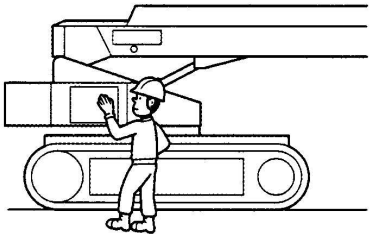
Advice: Use only the AICHI genuine parts for repairs.

(1) Check fuel, engine oil, cooling water and hydraulic oil and replenish, if necessary.

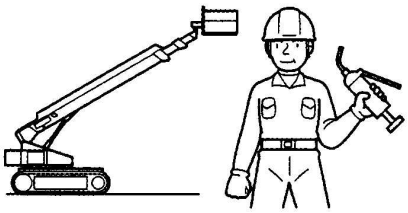


Advice: Retract and lower the boom fully before checking the hydraulic oil level.

(2) Check the boom, the platform and the chassis for cracks, deformations.
Also, check each bolt and nut for looseness.



(3) Check that the greasing points are lubricated sufficiently.



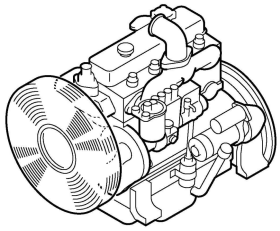
(4) Check that all of the decals are readable.

Caution: Damaged or dirty decals can not be read properly and should be replaced.

(5) Turn the engine key switch to ON position and make sure that that the alarm buzzer sounds three times, just after turning on.

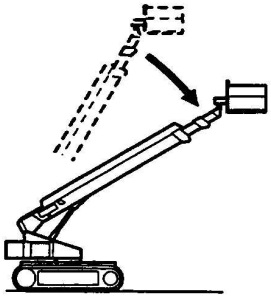
Caution: If the buzzer does not sound properly, the machine is faulty. Do not use the faulty machine and contact Aichi service shop for inspections.

(6) After starting and warming up the engine, operate the machine thoroughly and make sure that all of the functions are smooth without any abnormal noise.



Caution: Check the functions by operating the machine from the lower control first, then from the upper control.

(7) Check the safety devices and make sure that all of the safety devices work properly.



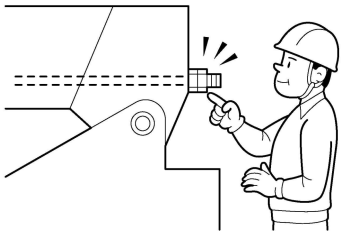
Caution: Always check that the work range limit system is working correctly.
For detail, see the following clause of "2. Pre-start checks for Work range limit system".

(8) Check the hydraulic components, hoses and pipes for oil leakage.

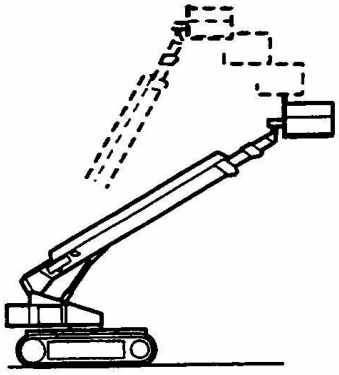
(9) Check the boom telescoping wire ropes for any damage.

(a) No wobble or unsteady movements when telescoping the boom.

(b) No damage on the wire rope ends.



(10) Elevate the platform, then make sure that the platform does not descend naturally.



(11) If there are no abnormalities or problems so far, step on the platform and check the following items.

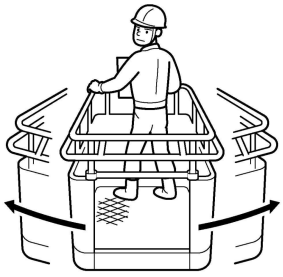
(a) Lower the boon under the horizontal, extend the boom about one meter and set the travel speed select switch to “High” and “Mid” positions. Then, make sure that the machine travels in the low speed.

(b) Retract the boom fully, raise the boom more than 5 degrees over the horizontal and set the travel speed select switch to “High” and “Mid” positions. Then, make sure that the machine travels in the low speed.

(c) Conduct the boom raising and lowering operation and make sure that the boom raising and lowering speed slows down corresponding to the boom extended length. (The boom raising and lowering speed becomes slower, the further the boom is extended.)

(d) Conduct the boom rotating operation and make sure that the boom rotating speed slows down corresponding to the outreach of the platform.
(The boom rotating speed becomes slower as the platform outreach is increased.)

(e) Rotate the platform and make sure that the platform rotates smoothly without excessive free play.



2. Pre-start checks for work range limit system

The pre-start checks for the working range limit system are conducted as follows with the pre-start check switch held in its ON position.

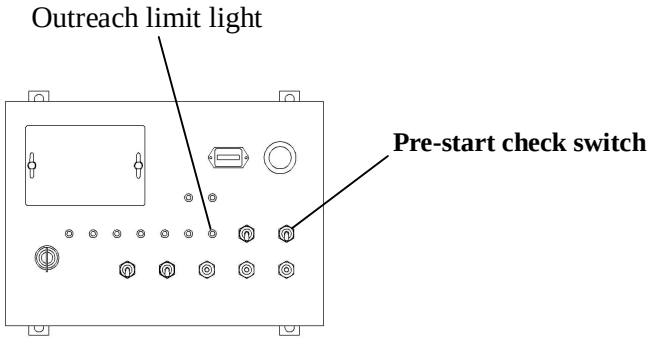
CAUTION
- Do not conduct the pre-start checks with the platform loaded.
- Operate the machine from the lower control when conducting the pre-start checks.
- If any fault is detected in the pre-start checks, stop the pre-start checks and contact Aichi service shop for inspections.

(1) Set up the machine on firm and level surface, unload the platform, and then rotate the platform in its central position.

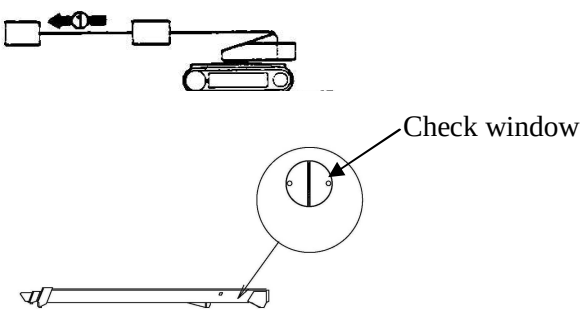
(2) Turn on the engine key switch and make sure that the alarm buzzer sounds three times.

(3) Press the emergency stop switch at the upper control, then pull the emergency stop switch and make sure that the alarm buzzer sounds three times.

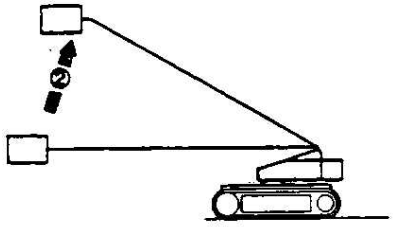
(4) Retract the boom fully, set the boom horizontally and make sure that the outreach limit light is off.



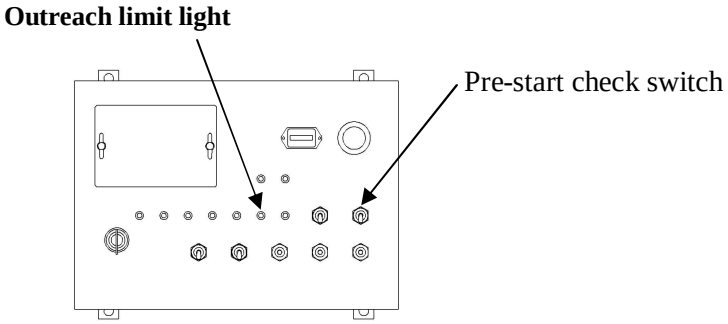
(5) Extend the boom until the green decal • affixed on the 2nd boom section overlaps the check window ⓘ located on the 1st boom section. ◉



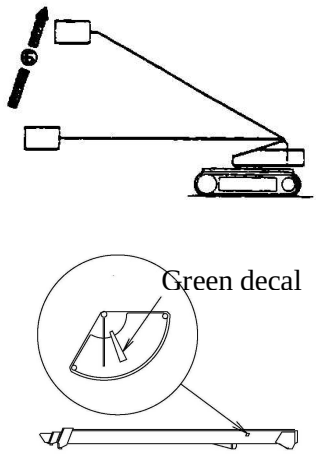
(6) Raise the boom and set at an angle of about 30 degrees making sure that the pointer of the boom angle gauge has passed the green decal.



(7) Hold the pre-start check switch in its ON position, then proceed to the pre-start check as follows.

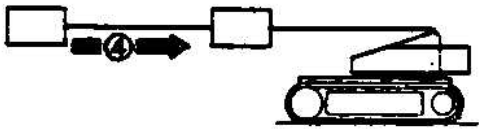


(8) Lower the boom and make sure that the movement stops when the pointer is within the green decal zone on the boom angle gauge and the outreach limit light goes off on the lower control panel.

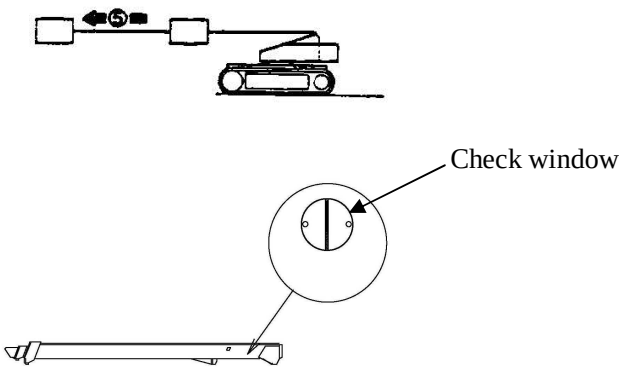


Caution: If the pointer of the boom angle gauge goes beyond the green decal zone, stop the pre-start checks and contact Aichi service shop for inspections.

(9) Retract the boom fully and make sure that the outreach limit light goes off.

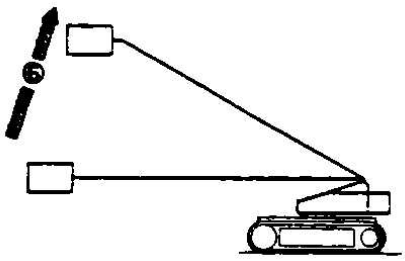


(10) Extend the boom, and then make sure that the boom movement stops where the green decal affixed on the 2nd boom section overlaps the check window. Also, make sure that the outreach limit light goes on.



Caution: If the boom is extended beyond the green decal, stop the pre-start checks and contact Aichi service shop for inspections.

(11) Raise the boom fully and make sure that the outreach limit light goes off.

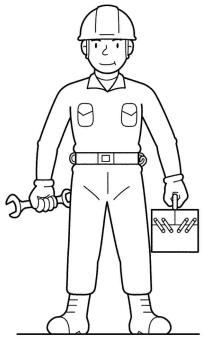


(12) Release the pre-start check switch.
The pre-start checks for the working range limit system are now completed.

Caution:
- If the working range limit system is normal, the boom movement stops automatically when the outreach of the platform reaches the specified value. The engine stops automatically to prevent the machine from tipping over, if the boom movement continued beyond the specified outreach during the pre-start checks. In this case, restart the engine with the engine key switch and return the boom in the stowed position. Then, contact Aichi service shop for inspections.
- If the pre-start check switch is turned on while the platform is positioned out of the specified outreach, the engine stops automatically. This is not a failure.

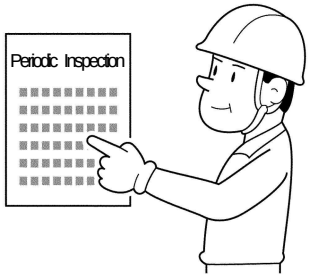
V Periodic Inspections

* Conduct monthly and annual inspections and keep all records for three years.



Advice: * Use the separate service manual for recording the inspection results.

* For inspections, contact Aichi service shop.



Danger: When the inspections or repairs are conducted under the boom and the platform, use safety support to prevent the boom and the platform from unexpected descent.

VI For Safety

1. Before starting operation

(1) Only the trained and authorized personnel are allowed to operate the machine.

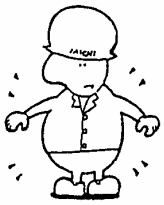
PERSONNEL WHO HAVE COMPLETED
SAFETY TRAINING COURSE SHOULD
OPERATE THE MACHINE !

(2) Always wear safety gears e.g. helmet, safety shoes and safety harness. The authorized safety harness should be used.

WEAR HELMET AND
SAFETY SHOES !

(3) Wear neat and fitting clothes to avoid snagging.

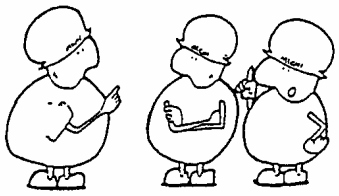
OPERATE WITH
RIGHT CLOTHES !



(4) Nominate a supervisor and operate the machine according to his/her instructions.

FOLLOW THE
SUPERVISOR'S
INSTRUCTIONS !

Supervisor

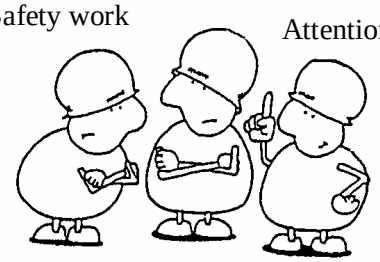


(5) Read the guidelines for safe operation and follow them. Always follow the correct procedures and safety rules outlined in this manual, and also by your supervisor.

Safety work

Attention

Prevent accident



Procedure

(6) Observe all of the national and local laws and regulations.

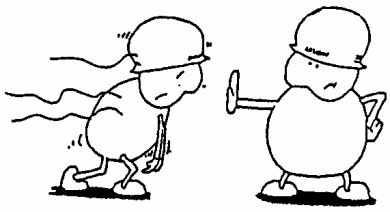
OBSERVE
THE LAWS !

Hum . . .
Hum . .

(7) Keep inflammable substances (fuel, oil, etc.) away from fire.

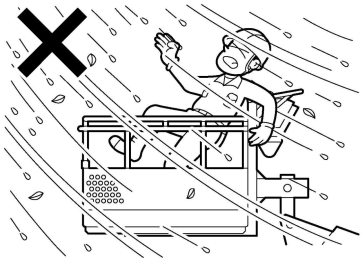
(8) Do not operate the machine when you are intoxicated or fatigued.

Don't work!



(9) Stop operation in bad weather.

STOP OPERATION IN
BAD WEATHER !



Advice: Criteria of bad weather.

- Strong wind · · · · Average wind velocity over l0 minute period is over 12.5 m/sec (28 MPH).
- Heavy rain · · · · Rainfall of 50 mm (2.0 inches) or more.
- Heavy snow · · · Settled snow of 25 cm (9.8 inches) or more.
- Thunder / Lightening.

Even in conditions below the criteria above, follow the instructions of your supervisor.

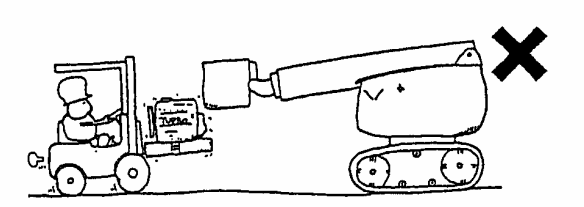
* The criteria of wind velocity at 10 meters (33 feet) above ground are as follows.

Wind velocity at 10 m (33 feet) above ground	Situation on the ground
5.5 ~ 8.0 m (12.3 ~ 17.9 MPH)	Dust rises and paper flies. Twigs move.
8.0 ~ 10.8 m (17.9 ~ 24.2 MPH)	Heavily-leaf trees sway and waves cresting in ponds or lakes can be seen.
10.8 ~ 13.9 m (24.2 ~ 31.1 MPH)	Large trees sway. Overhead power lines hum. Umbrellas are difficult to use.
13.9 ~ 17.2 m (31.1 ~ 38.5 MPH)	Whole trees swing. Walking against the wind is difficult.

Generally, the higher we go, the higher the wind velocity is.
Therefore, when the platform is elevated, be careful so that the wind velocity at the platform does not exceed 12.5 m/sec (28MPH).

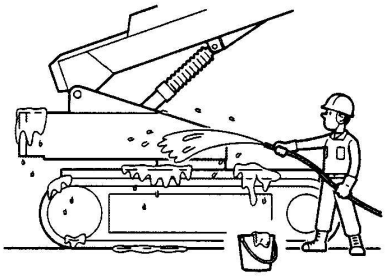
(10) Do not make any modifications to the machine without obtaining the manufacturer's approval.

MODIFICATION IS PROHIBITED.



Advice: Do not add anything to the machine, which could increase the wind load, e.g. "Notice boards" on the platform.

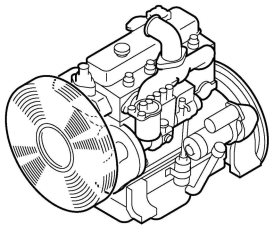
(11) Do not wash the sections where the washing prohibition decals are affixed.
(In particular, do not use pressurized water)



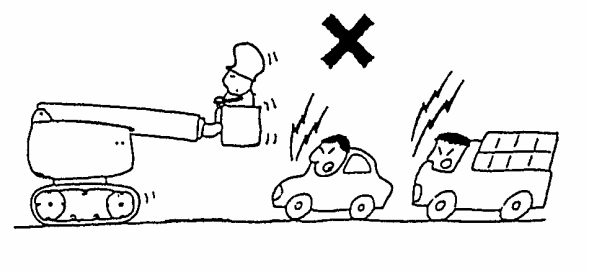
Advice: Wipe off dirt from electrical components using dry cloths.

2. During operation

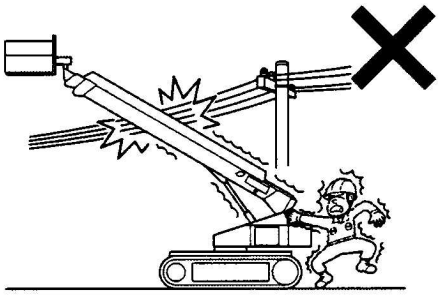
(1) After starting the engine, warm up the machine without loading the engine.



(2) This machine is not allowed to travel on the public highway.



(3) Do not use the machine near electric power lines.

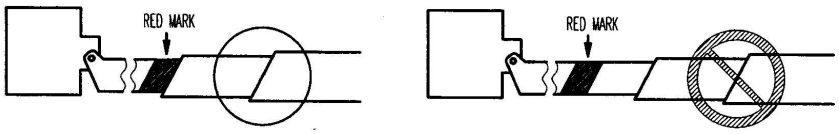


Danger:
- This machine is not electrically insulated. Do not approach or make contact electrical conductors.
- Keep a safe distance from electric power lines and apparatus. Failure to do so may result in death or serious injury.

For safe distance, check the national or local regulations. If no national or local regulation is available, use the table below.

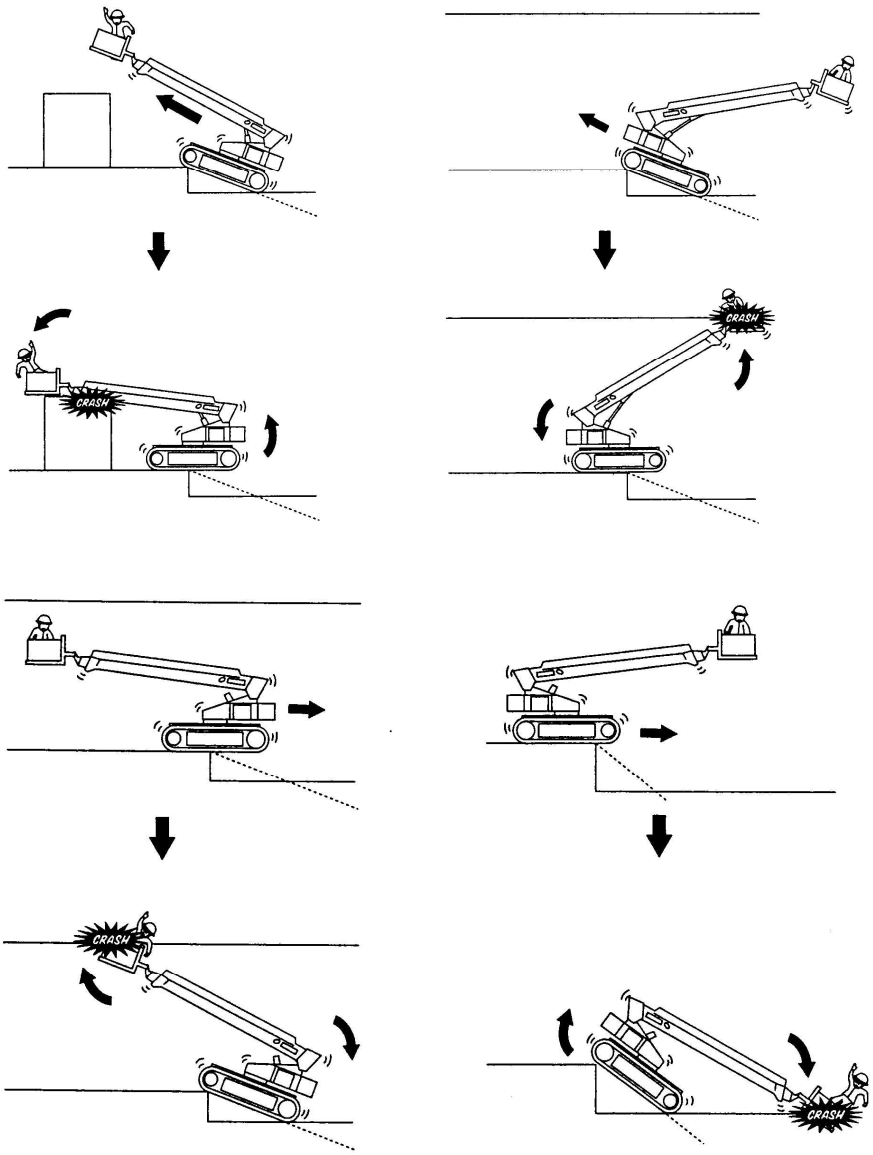
Voltage range (Phase to Phase)	Minimum safe approach distance
0 to 300 V	Avoid contact
Over 300V to 50 KV	3.05 meters (10 feet)
Over 50 KV to 200 KV	4.60 meters (15 feet)
Over 200 KV to 350 KV	6.10 meters (20 feet)
Over350 KV to 500 KV	7.62 meters (25 feet)
Over 500 KV to 750 KV	10.67 meters (35 feet)
Over 750 KV to 1,000 KV	13.72 meters (45 feet)

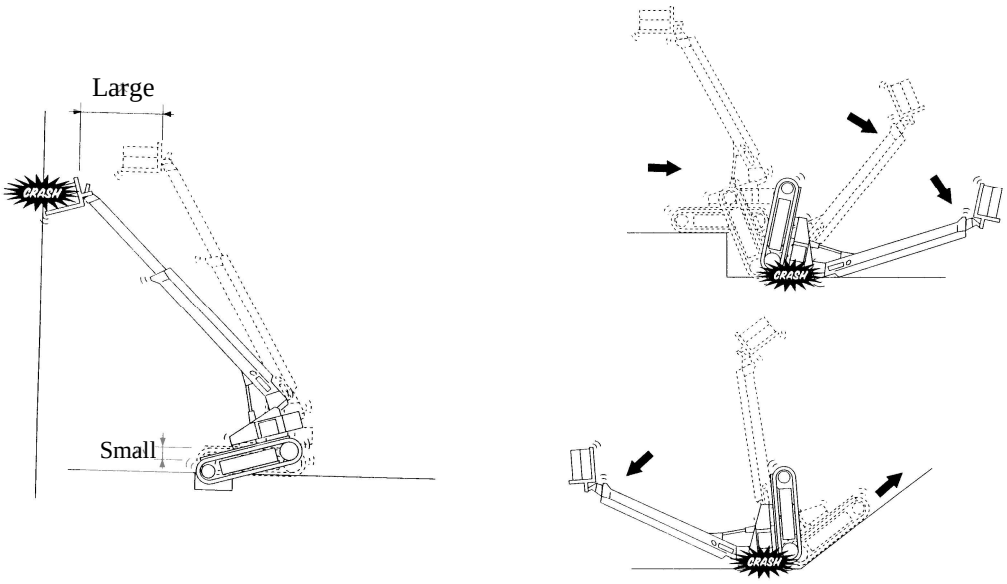
(4) If it is necessary to travel over a curb or on any rough terrain, the boom must be retracted to the red mark located on the 3rd boom section.
For the machine with CE specifications, the travel function is disabled when the boom is extended to the red mark located on the 3rd boom section.



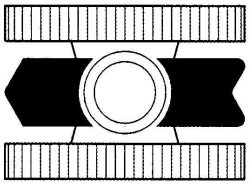
It is highly recommended to fully retract the boom and set it under the horizontal before traveling over a curb or on any rough terrain, then travel very slowly and carefully.
The machine suddenly inclines and the platform jumps up or down roughly just after the gravity center of the machine pass the curb as shown in the following figures.

Danger: Before traveling over a curb or on any rough terrain, check the overhead obstacles as well as the clearance between the platform and the ground, and then travel very slowly and carefully. If not, it may results in serious injury or death.





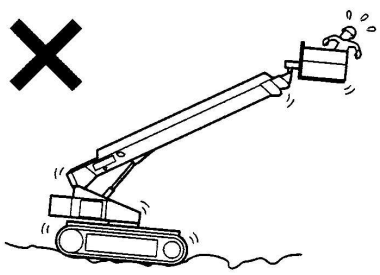
(5) Before starting traveling, make sure the traveling direction of the machine by checking the arrow marks attached on the chassis.



Advice * The arrow indicates the forward direction.

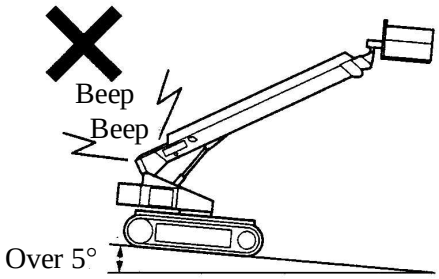
* Before traveling, check the surroundings and make sure that no obstacles are in the traveling direction.
If your vision is poor, have a guide to assist you.

(6) Do not elevate the platform on soft or uneven ground.
The maximum ground contact pressure of this machine is:
SR18AJ / ISR60J ------ 0.85 kgf/cm^2 (12 PSI).
SR21AJ / ISR70J ------ 1.0 kgf/cm^2 (14 PSI).



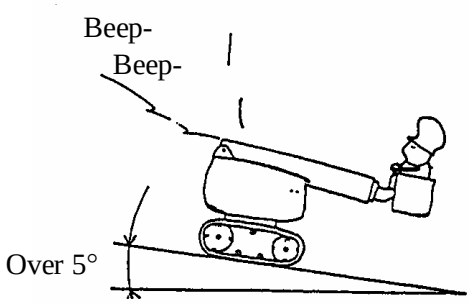
Danger: The machine may tip over on soft or uneven ground.

(7) Do not elevate the platform on a slope.



Danger: The tilt alarm buzzer sounds, if the machine tilts more than 5 degrees. Do not elevate the platform, if the tilt alarm buzzer sounds.

(8) When you are obliged to travel on the slope of more than 5 degrees for the purpose of transportation, be sure to retract the boom fully and lower the boom under the horizontal.

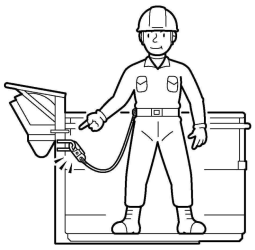


RETRACT BOOM FULLY AND LOWER BELOW LEVEL

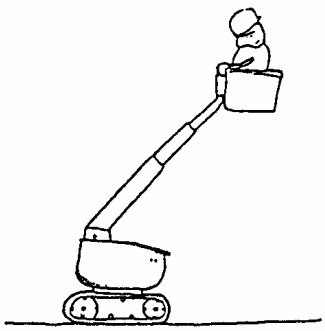
Caution: Do not attempt to travel on the steep slope, which exceeds the gradeability of the machine.

(9) Be sure to wear a safety harness, and fasten its lanyard to the specified anchor point on the platform. Only authorized safety harness should be used.

BE SURE TO WEAR A SAFETY HARNESS !



(10) Check the surroundings before traveling, and make sure that no person or obstacle is around the machine.



(11) Check the surroundings before operating the boom, and make sure that no person or obstacle is around you nor around the machine.

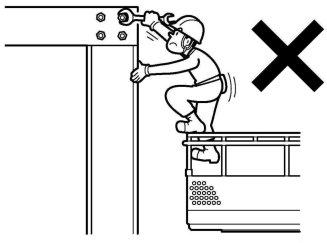
Caution:
- Make sure that no person or obstacle is around the turntable before rotating the boom.
- Take care that your hands on the handrail are not caught in other obstacles.

(12) Do not operate the machine roughly.

Caution: When you reverse the operating direction, bring the machine to a standstill, then operate the control lever or switch to the opposite direction.

(13) If any malfunction is in the platform leveling system, stop using immediately and contact Aichi service shop for inspections.

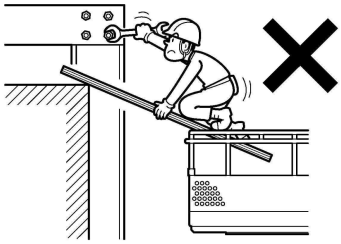
(14) Do not reach out of the platform.



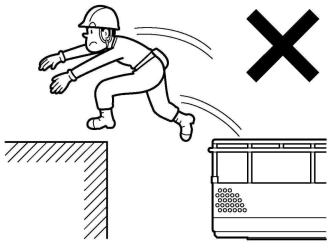
Danger: * Always keep your feet firmly on the platform floor and conduct operations with stable posture.

* Do not step on the handrail.

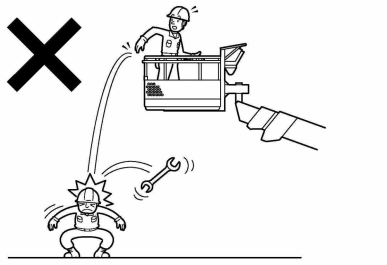
(15) Do not use a ladder or step on the platform.



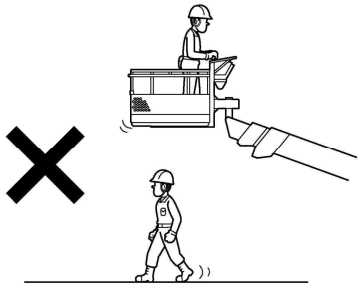
(16) Do not leave or enter the platform while the platform is elevated.



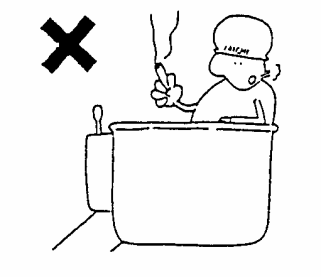
(17) Do not drop anything from the platform.



(18) Do not allow any person to get under the boom and the platform.



(19) No smoke or fire on the platform.



(20) When gas cutting or arc welding is conducted on the platform, take necessary measures. For example, cover the machine with fireproof sheet so that no sparks or fragments hit the machine, especially the batteries and the hydraulic hoses.

Danger: If a spark enters the machine, it may cause a fire.

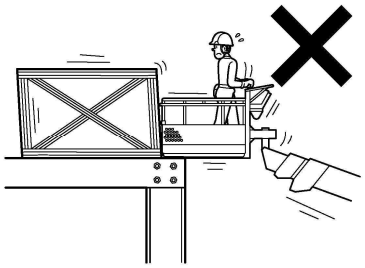
(21) If the counterweights hit an obstacle, the counterweight-mounting unit may be damage. In this case, contact Aichi service shop for inspections.

Danger: If the counterweight-mounting unit is damaged, the counterweight may be detached during traveling or transport, resulting in serious injury or death.

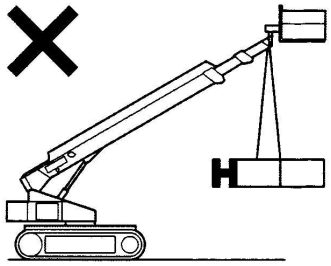
(22) Do not use the machine with the counterweight detached. The machine may tip over, resulting in serious injury or death.

(23) Do not conduct the following operations, which may cause the tipping over or serious damage to the machine.

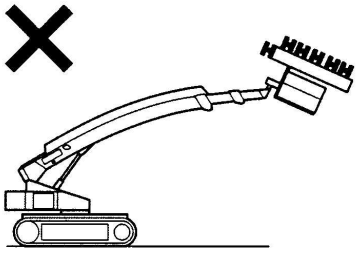
(a) Do not push or pull any objects by operating the machine.



(b) Do not hoist any objects with a hook or a rope fixed to the boom and the platform.

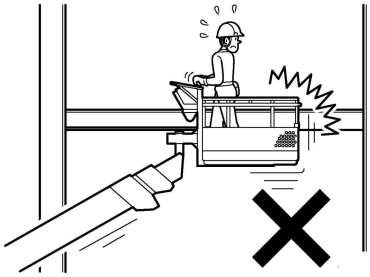


(c) Do not overload the platform. The specific working load is marked on the platform.

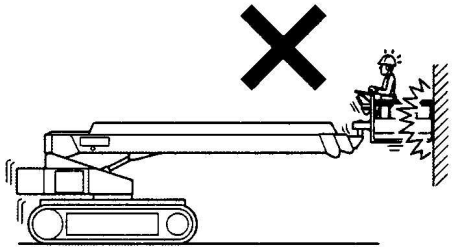


(24) Do not conduct the followings that may damage the platform leveling system.

(a) Do not press the platform against any overhead structure by elevating the platform.



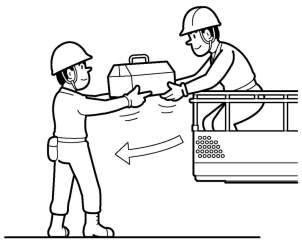
(b) Do not hit or push any objects by traveling.



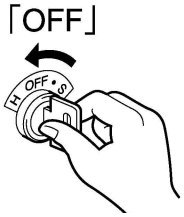
Danger: If either of the above operations has been conducted, stop using the machine and contact Aichi service shop for inspections.
If not, the platform may tilt excessively, resulting in serious injury or death.

3. After operation

- Take all tools and materials from the platform.



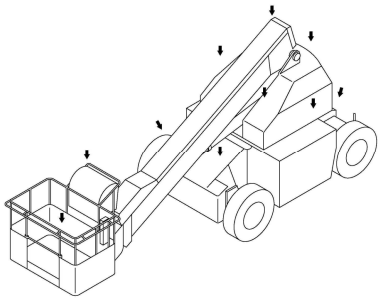
- Retract and lower the boom fully.
- Stop the engine by turning off the engine key switch.



Caution: Remove the key to prevent any possible danger caused by unauthorized use.

- If the machine is used for sand blasting operations, remove the sand from the machine as follows using the compressed air.

  (1) Use the air nozzle A and remove the sand lying on the machine.



Air nozzle **A**

Air nozzle **B**

Air nozzle **C**

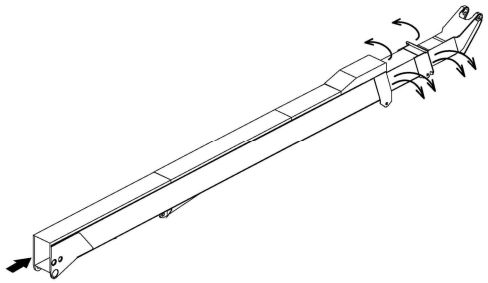
(2) Remove the sand lying in the boom as follows.

1) Extend the boom about 150 mm (6 inches), and then remove the sweepers installed on the top ends of the 1st and 2nd boom sections.

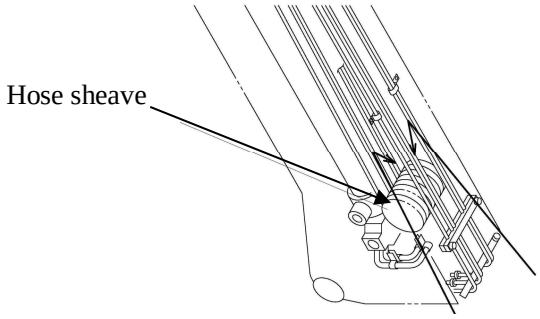
2) Remove the cover installed on the tail end of the 1st boom section and the covers installed on the upper surface of the 1st boom section.

3) Set the boom to the negative angle, and then blow air from the tail openings of each boom section using the air nozzle A.

4) Set the boom to the positive angle, insert the nozzle B in the 3rd boom section and remove the sand lying in the 3rd boom section by blowing air. The sand will fall off through the boom tail openings.



5) Insert the air nozzle C behind the hose sheave and remove the sand lying on the sheave by blowing air



(3) Blow air and remove the sand from any other part of the machine.

Advice: After the sand blasting operation, make sure to clean the air filter and remove the sand lying on the engine.

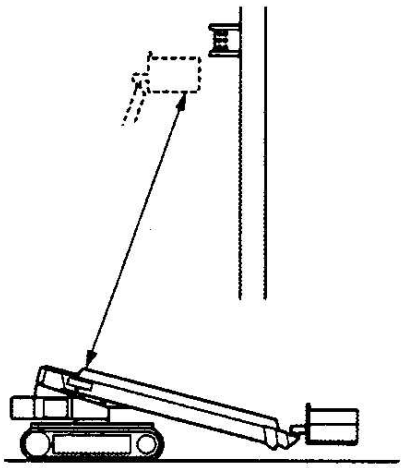
VII Machine setting up

(1) Always set up the machine on firm and level surface before elevating the platform.

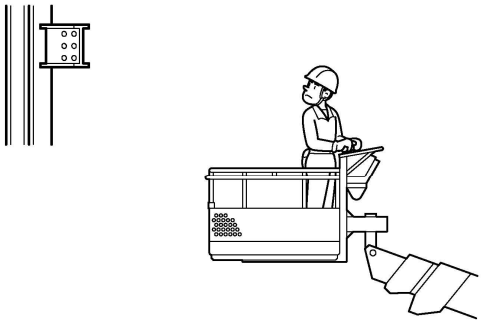
Danger: Do not elevate the platform on soft or uneven surface, as the machine may tip over, resulting in serious injury or death

Advice: The maximum ground contact pressure of this machine is;
SR18AJ / ISR60J ------ 0.85 kgf/cm^2 (12 PSI).
SR21AJ / ISR70J ------ 1.0 kgf/cm^2 (14 PSI).

(2) Park the machine near the working target.



(3) Do not obstruct the transit of other vehicles and passers-by, and do not permit any unauthorized person to enter the working area.



Caution: Place warning signs, indicate detours and install crash- prevention guard.

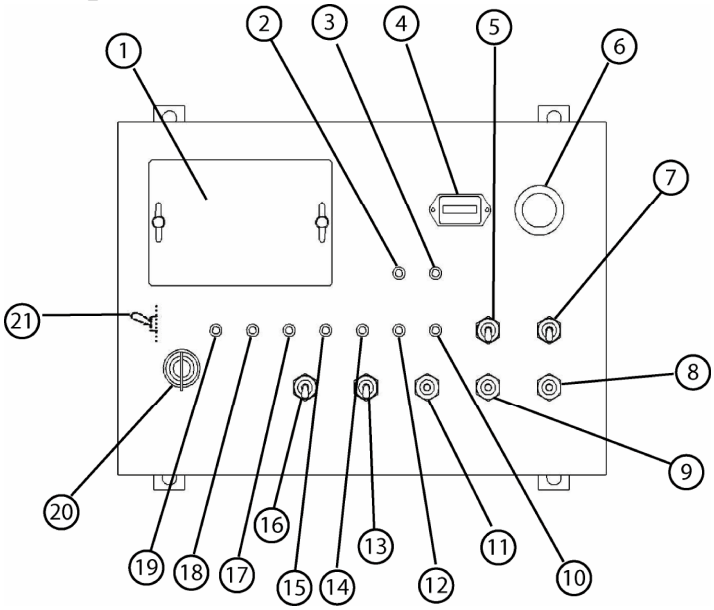
VIII Safety Devices

Safety devices are fitted for safe operation and for protecting the machine from damages.

Safety device	Functions
Relief valves	Protect the hydraulic components by relieving abnormally high pressure in the hydraulic system.
Boom elevating safety device (Holding valve)	Prevents the natural descent of the boom when the hydraulic hose is broken.
Boom extension safety device (Holding valve)	Prevents the boom from natural retraction or extension when the hydraulic hose is broken.
Fly jib safety device (Holding valve)	Prevents the natural descent of the fly jib when the hydraulic hose is broken.
Platform leveling safety device (Holding valve)	Maintains the platform level when the hydraulic hose is broken.
Motion alarm buzzer	The motion alarm buzzer sounds while the machine is in motion to warn the personnel nearby.
Foot switch	The boom, fly jib, traveling and platform rotating operations from the platform are disabled unless the foot switch is pressed.
Emergency stop switch	Stops all of the movements of the machine when this switch is pressed.
Tilt Alarm buzzer	When the machine tilts more than 5 degrees, the tilt alarm buzzer sounds.
Emergency pump	Auxiliary hydraulic pump driven by the battery. And used to lower the platform in the event of engine or main pump in failure.
Alarm horn	Before starting operation, sound the alarm horn to warn the personnel near the working area.
Work range limit system	This system automatically limits the work range (outreach) of the platform within the specific range.
Travel speed limit device	The high and mid speed traveling is disabled, if the boom is extended or is raised over the horizontal.
Boom wire rope failure detecting system	This system stops the boom extending movements in the event of the wire rope failure.
Overload sensing system	This system disables all of the functions when the platform is overloaded.
Boom rotation speed limit system	This system automatically reduces the boom rotation speed to ensure the safe speed as the outreach of the platform increases.
Boom elevation speed limit system	This system automatically reduces the boom raising and lowering speed to ensure the safe speed as the boom extends.
Travel speed limit system	This system automatically reduces the traveling speed to ensure the safe speed as the boom extends.
Boom / Travel function interlock system (For CE specifications only)	This system disables all of the functions when the travel and boom or fly jib functions are conducted simultaneously.
Travel limit system (For CE specifications only)	The travel function is disabled when the boom is extended to the red mark located on the 3rd boom section. Under this condition, the “Tilt / Travel” light blinks when the travel control lever is operated.
	The travel function automatically stops, if the machine tilts over 5 degrees and either of the following conditions applies. a) The boom is raised over 45 degrees. b) The boom is extended more than 1 meter (3ft – 3 in).

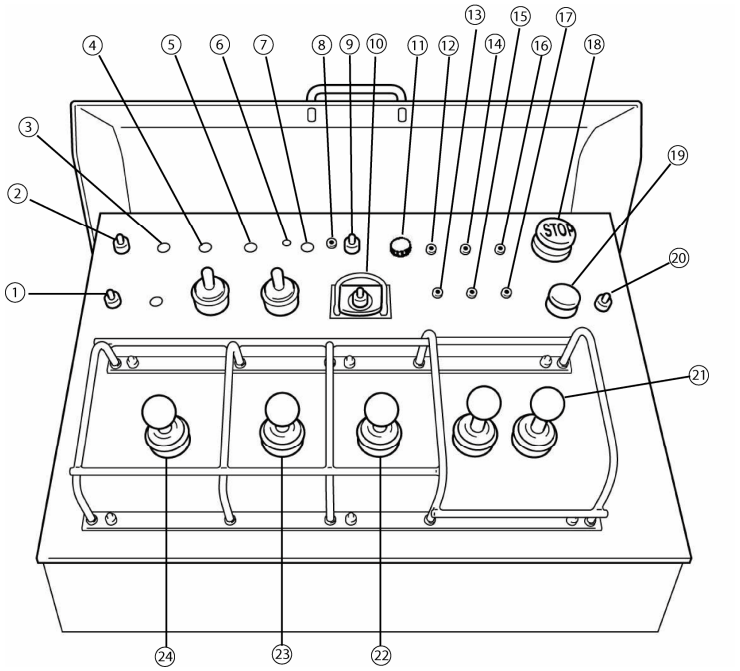
IX Control Panels

1. Lower control panel



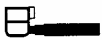
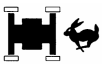
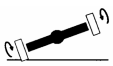
No.	Name
1	Fuse holder
2	System failure light
3	Overload sensing light
4	Hour meter
5	Emergency pump switch
6	Emergency stop switch
7	Pre-start check switch
8	Boom elevation switch
9	Boom telescope switch
10	Outreach limit light
11	Boom rotation switch
12	Air filter clog light
13	Charge light
14	Fly jib switch
15	Water temperature light
16	Dead-man switch
17	Oil pressure light
18	Fuel level light
19	Pre-heat light
20	Engine key switch
21	Limit cancel switch

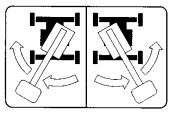
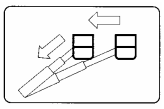
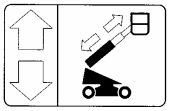
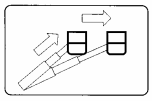
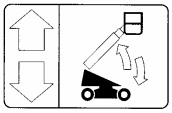
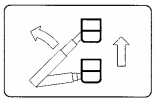
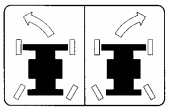
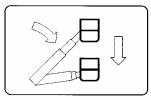
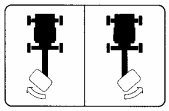
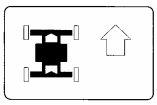
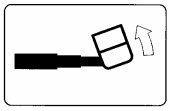
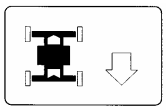
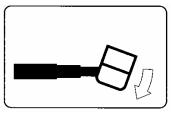
2. Upper control panel



No.	Name	No.	Name
1	Travel speed select switch	13	Overload light
2	Emergency pump switch	14	Fuel level light
3	Work light switch (Option)	15	Outreach limit light
4	Platform rotation switch	16	Engine failure light
5	Hydraulic generator light (Option for USA)	17	Tilt / Travel light (CE spec.) Tilt light (USA spec.)
6	Fly jib switch	18	Emergency stop switch
7	Hydraulic generator switch (Option for USA)	19	Horn switch
8	Horizontal / Vertical light	20	Engine start switch
9	Horizontal / Vertical select switch	21	Travel control lever
10	Platform level adjust switch	22	Boom elevation control lever
11	Horizontal / Vertical speed adjust handle (Option)	23	Boom telescope control lever
12	System failure light	24	Boom rotation control lever

3. Pictorial symbols

	OFF		Engine failure indicator
	Lower control		Horizontal / vertical movements
	Pre-heat		Tilt warning indicator
	Engine start		Platform contact release
	Upper control		Engine start
	Pre-heat indicator		Emergency pump
	Fuel level indicator		Pre-start check
	Oil pressure indicator		High speed
	Water temperature indicator		Low speed
	Charge indicator		High speed traveling
	Outreach limit indicator		Differential lock

	Boom rotation		Telescope / Horizontal (IN)
	Boom telescope		Telescope / Horizontal (OUT)
	Boom elevation		Elevation / Vertical (UP)
	Steering		Elevation / Vertical (DOWN)
	Platform rotation		Traveling (FWD)
	Platform level adjust (UP)		Traveling (REV)
	Platform level adjust (DOWN)		Horn

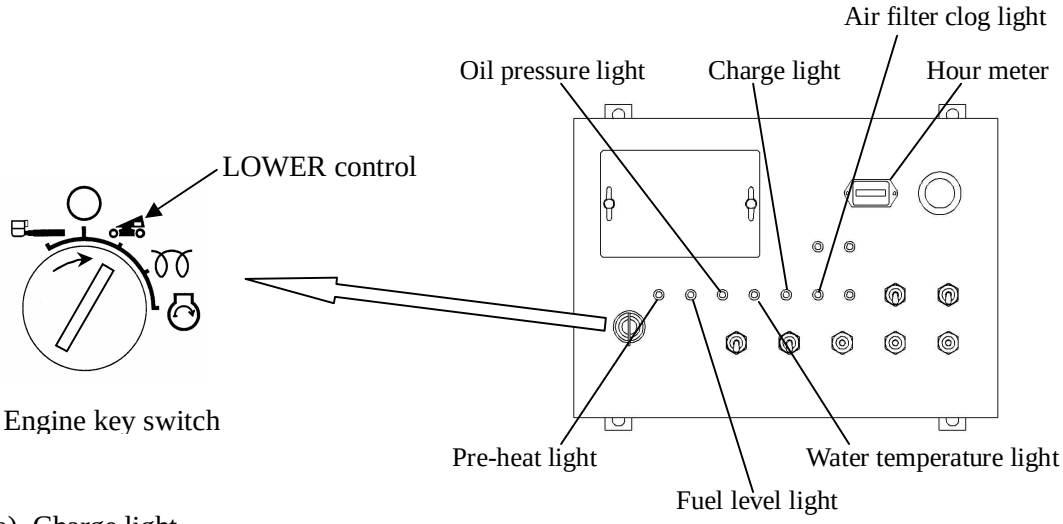
X Operating Method

1. Engine start operation

1.1 Engine start operation from Lower control

Start the engine from the lower control as follows.

(1) Turn the engine key switch on the lower control to LOWER control position. Then, make sure that both of the oil pressure and charge lights go on.



(a) Charge light.

After starting the engine the charge light goes off. If the light goes on whilst the engine is in motion, it is because of a charging system failure.

Caution: If this light goes on whilst the engine is in motion, stop using the machine and check the charging system, e.g. alternator and fan belt.

(b) Oil pressure light.

After starting the engine the oil pressure light goes of. If this light goes on whilst the engine is in motion, it is because of an engine lubrication system failure.

Caution: If this light goes on whilst the engine is in motion, check the engine lubrication system, e.g. shortage or leakage of engine oil or oil filter clogging.

(c) Air filter clog light.

This light goes on when the air filter is clogged. Clean or replace the air filter element, if this light goes on while the engine is in motion.

(d) Water temperature light.

When the engine cooling water temperature goes up abnormally, the engine stops and this light goes on to protect the engine from overheat. This light stays off when the engine key switch is just turned to the LOWER control position.

Danger: When the engine is overheated, do not remove the radiator cap. As the heated water may splash out, resulting in scald.

Caution: If this light goes on during operations, stop using the machine and check the engine cooling system, e.g. coolant shortage and broken fan belt.

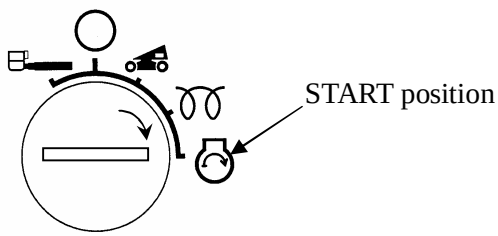
(e) Fuel level light.

This light goes on when the fuel level is low. Refill with fuel, if this light goes on.

(f) Hour meter

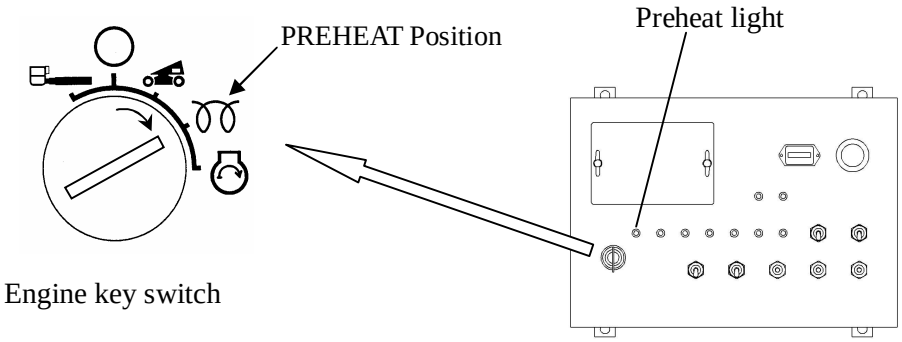
The hour meter works only when the engine is in motion.

(2) Push in the key and turn the engine key switch to "START" position to start the engine.



Caution: Once the engine is started, immediately release the key from the start position. Do not hold the key in the start position for more than 10 seconds continuously, as this may cause damage to the starter motor.

(3) If the engine is cold and difficult to start, turn the engine key switch to PREHEAT position and hold there till the preheat light goes off.

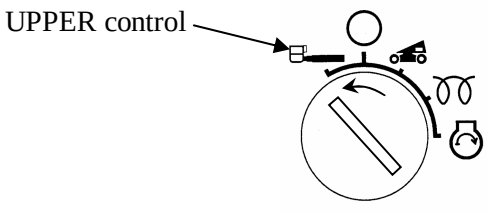


Caution: The preheat light goes on when the engine key switch is turned to LOWER control or PREHEAT position and the light goes off when the preheating is completed.

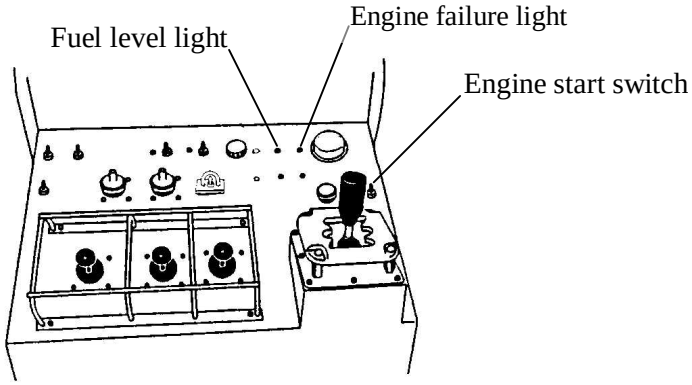
(4) After starting the engine, idle the engine for about 5 minutes for warming up.

1.2 Engine start operation from Upper control

(1) Turn the engine key switch to UPPER control position.



(2) Step on the platform, then operates the engine start switch without pressing down the foot switch.



Advice: *** Engine failure light.**
When the engine key switch is set to UPPER control position, the engine failure light on the upper control panel goes on, and then the light goes off as soon as the engine starts.

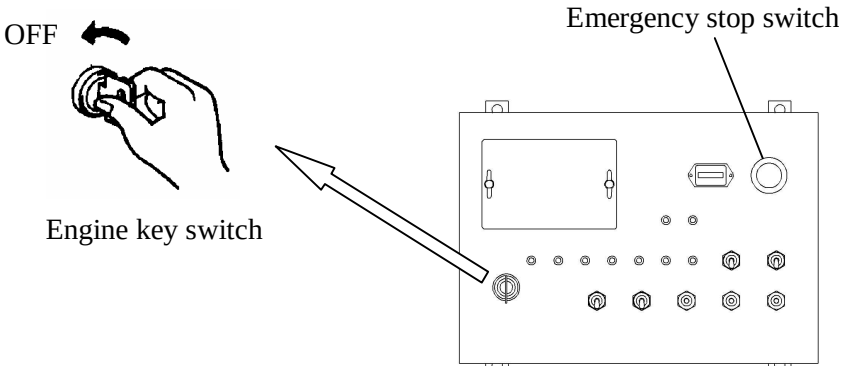
*** Fuel level light.**
This light goes on when the fuel level is low. Refill with fuel, if this light goes on.

Caution: If the engine failure light goes on whilst the engine is in motion, it is because of an engine failure, so stop using the machine immediately and check the engine. To identify the engine failure, check the charge, oil pressure, water temperature and air filter clog lights on the lower control panel.

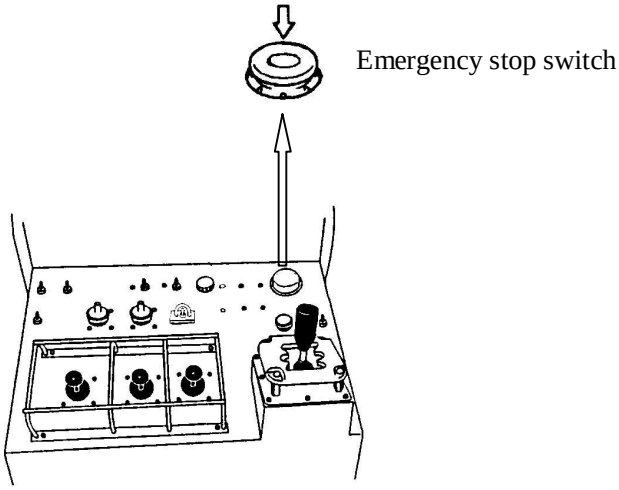
2. Engine stop operation

To stop the engine from the lower control, either press the emergency stop switch or turn the engine start switch to “OFF” position.

When stopping the engine from the upper control, press the emergency stop switch.



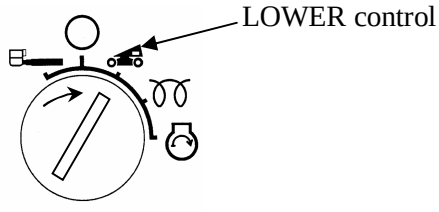
Lower control panel



Upper control panel

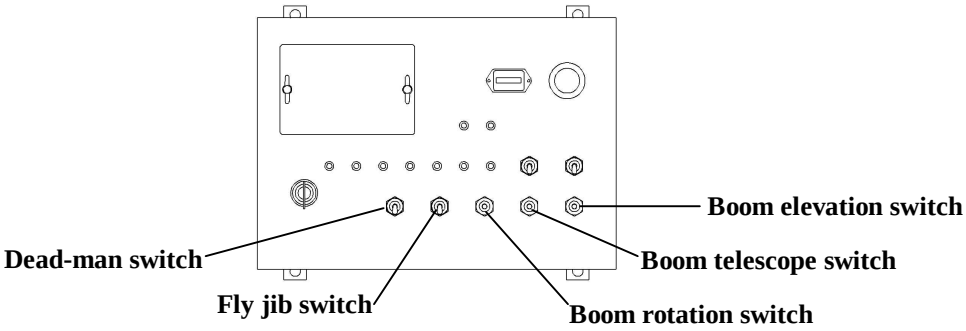
3. Lower control (Operation from Ground)

Be sure to set the engine key switch in LOWER control position to operate the machine from the lower control.



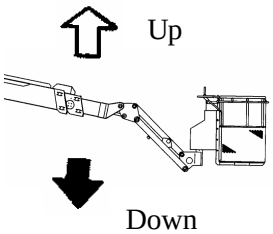
3.1 Boom and Fly jib operation

Hold the dead-man switch in its ON position and operate each boom control switch or the fly jib switch to operate the boom and fly jib functions.



3.1.1 Boom raising and lowering operation

Hold the dead-man switch in its ON position and operate the boom elevation switch to raise or lower the boom.

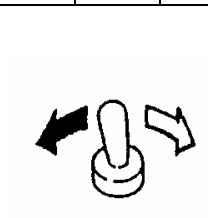
Boom up		
Stop		
Boom down		

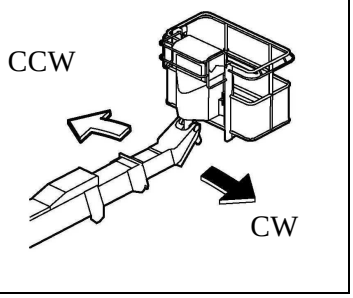
Caution: Do not press the boom against ground by lowering the boom.

3.1.2 Boom rotation operation

Hold the dead-man switch in its ON position and operate the boom rotation switch to rotate the boom.

CW	Stop	CCW





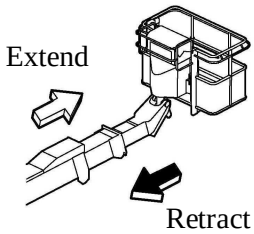
Caution: Before rotating the boom, check that no obstacle interferes with the turntable.

Advice: The boom may not rotate smoothly when the machine tilts.

3.1.3 Boom telescope operation

Hold the dead-man switch in its ON position and operate the boom telescope switch to extend or retract the boom.

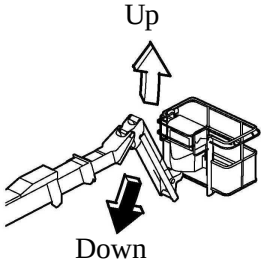
Extend
Stop
Retract



3.1.4 Fly jib operation

Hold the dead-man switch in its ON position and operate the fly jib switch to raise or lower the fly jib.

Up
Stop
Down



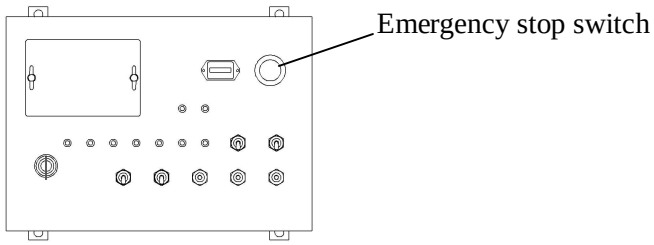
3.2 Emergency stop operation

Use the emergency stop switch. When the emergency stop switch is pressed, the engine stops and all of the functions are disabled. Press the emergency stop switch in the following cases;

(1) When shutting down the engine.

(2) When a person on the ground judges that the operation from the platform is unsafe.

(3) When the machine is uncontrollable due to malfunctions.



Advice: To resume operation, pull the emergency stop switch.

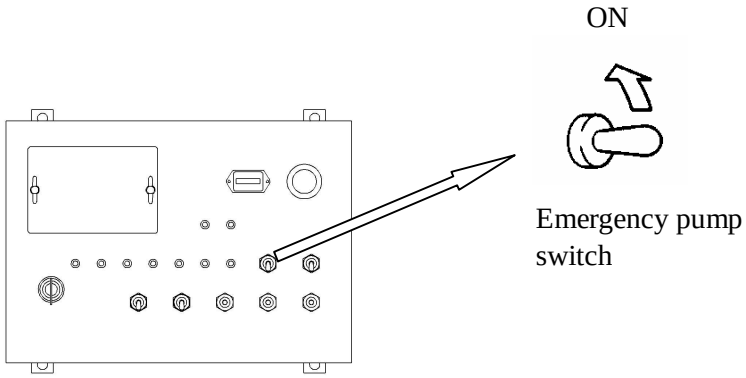
Caution:

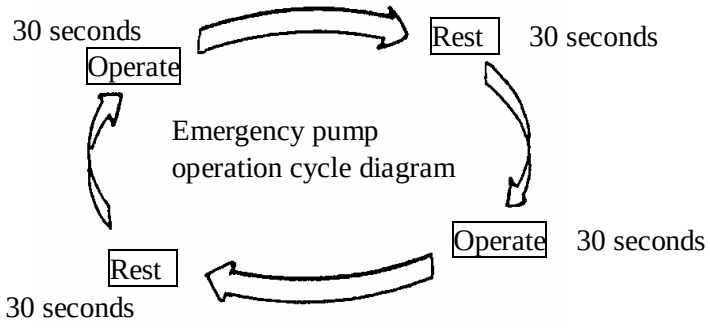
- If the boom descends gradually after the emergency stop switch is pressed, this may be a natural descent of the hydraulic cylinder. In this case, restart the engine with the engine key switch and operate the boom to prevent the boom and the platform from coming into contact with any obstacles. Then, lower the platform to the ground and stop using the machine.
- If the emergency stop operation was used as a result of malfunctions, stop using the machine immediately and contact Aichi service shop for inspections.

3.3 Emergency pump operation

If the machine does not work due to engine or main pump failure, use the emergency pump to lower the platform. To operate the boom and the fly jib by the emergency pump, operate each boom or fly jib control switch with holding the emergency pump switch in its ON position.

Advice: It is not necessary to hold the dead-man switch in its ON position when operating the boom and the fly jib by the emergency pump.





Caution: * Operate the emergency pump every other 30 seconds. Continuous operation in excess of 30 seconds may cause damage to the emergency pump.

* Do not impose heavy load to the emergency pump, e.g. by attempting travel operation.

Advice: In the event that the emergency stop switch has been pressed at the upper control with no operator on the platform, the boom can be lowered by operating the emergency pump switch and the boom control switches simultaneously from the lower control.

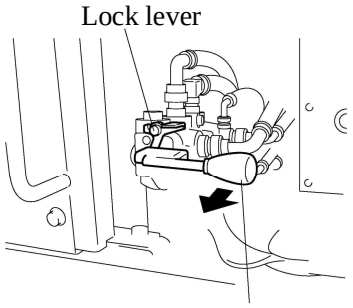
3.4 Platform level adjustment

If the platform is out of level, adjust as follows.

(1) Set up the machine on firm and level surface, and move the boom to the suitable position to adjust the platform level.

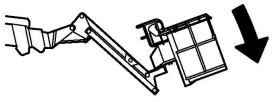
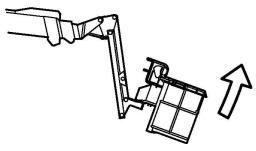
Danger: Do not allow any person or object on the platform when adjusting the platform level.

(2) Pull the platform level adjust lever while pushing down the lock lever located beside the lower control box.



(3) Hold the dead-man switch in its ON position and operate the boom telescope switch to adjust the platform level.

To tilt the platform forward, operate the boom telescope switch to “OUT”.
To tilt the platform backward, operate the boom telescope switch to “IN”.

Forward		OUT  IN
Backward		

(4) After adjusting the platform level, return the platform level adjust lever to its original position and also check that the lock lever is up.

(5) Repeat the boom raising, lowering and telescoping operations several times and make sure that the platform stays level.

Advice: If the boom is fully retracted, the tilting speed of the platform is very slow. To increase the speed, return the platform level adjust lever to its original position and extend the boom about one meter (3ft – 3in), then adjust the platform level as stated above.

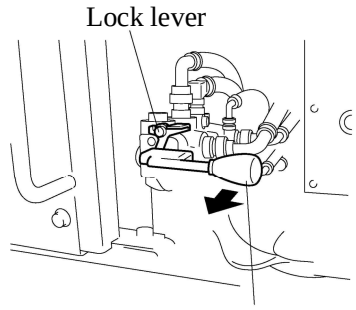
3.5 Bleeding air from platform leveling system

If the platform does not stay level even after adjustment, air may have entered the platform leveling system. In this case, bleed air as follows.

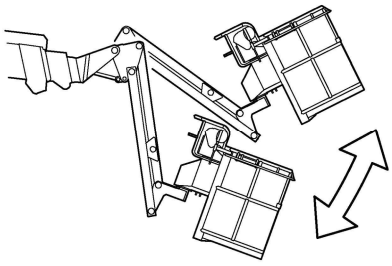
(1) Set up the machine on firm and level surface, and set the boom horizontally, then extend the boom about 1 meter (3ft – 3in).

Danger: Do not allow any person or object on the platform when bleeding air.

(2) Pull the platform level adjust lever while pushing down the lock lever located beside the lower control box.



(3) Hold the dead-man switch in its ON position and operate the boom telescope switch to fully tilt the platform backward and forward several times.

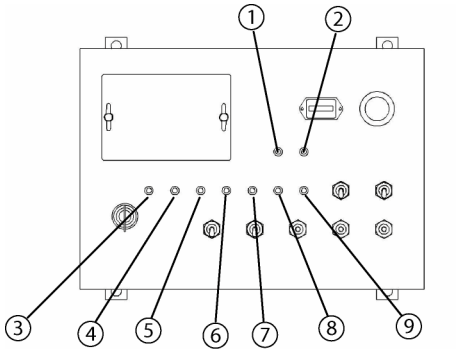


(4) After adjusting the platform level, return the platform level adjust lever to its original position.

(5) Repeat the boom raising, lowering and telescoping operations several times and make sure that the platform stays level.

3.6 Indicator lights

The following indicator lights are equipped on the lower control panel



1	System failure light	6	Water temperature light
2	Overload sensing light	7	Charge light
3	Pre-heat light	8	Air filter clog light
4	Fuel level light	9	Outreach limit light
5	Oil pressure light	10	----------

(1) System failure light

This light blinks, in the event of a computer control system failure.

Caution: Stop using the machine and contact Aichi service shop for inspections, if this light blinks. This light also blinks when the machine tilts excessively, but this is not a failure.

(2) Overload sensing light

When the platform is overloaded, this light blinks, the alarm buzzer sounds and all of the functions are disabled.

(3) Pre-heat light

This light goes on when the engine key switch is turned to the LOWER control or PRE-HEAT position and goes off when the preheating is completed.

(4) Fuel level light

This light goes on when the fuel level is low. Refill with fuel, if this light goes on.

(5) Oil pressure light

After starting the engine, this light goes off. Check the engine lubrication system, e.g. shortage of engine oil, if this light goes on while the engine is in motion.

(6) Water temperature light

When the engine cooling water temperature rises abnormally, the engine stops and this light goes on to protect the engine from overheat. Check the engine cooling system, e.g. coolant level and fan belt, if this light goes on.

(7) Charge light

After starting the engine this light goes off, check the charging system, e.g. alternator and fan belt, if this light goes on while the engine is in motion.

(8) Air filter clog light

This light goes on when the air filter is clogged. Clean or replace the air filter element, if this light goes on while the engine is in motion.

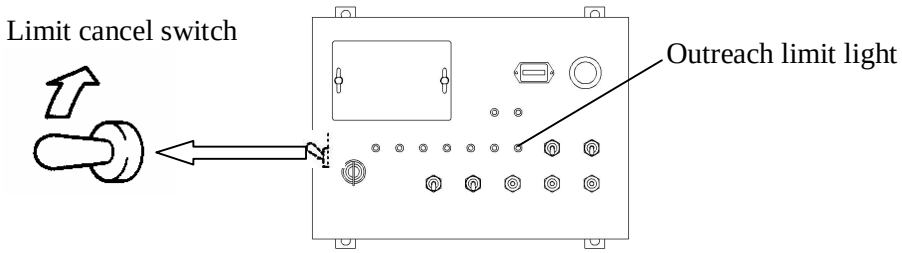
(9) Outreach limit light

This light goes on when the work range limit system limits the outreach of the platform by disabling the boom extending and lowering functions.

Caution: This light blinks when there is a failure in the work range limit system. Stop using the machine and contact Aichi service shop for inspections, if this light blinks.

3.7 Limit cancel switch operation

Caution: Do not use this limit cancel switch except for emergency.



If the machine does not work due to malfunctions, lower the platform to ground using this limit cancel switch as follows.

(1) Turn on the limit cancel switch and hold the switch in its ON position. The alarm buzzer sounds when the switch is turned on.

(2) Retract the boom fully by operating the boom telescope switch.

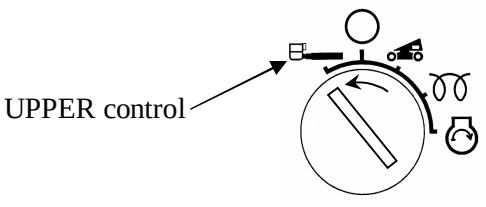
(3) Lower the boom by operating the boom elevation switch.

Danger:
- Neither the working range limit system nor the overload sensing system work, if this limit cancel switch is operated. Therefore, do not extend the outreach of the platform when lowering the platform using this limit cancel switch.

Caution:
- This limit cancel switch should only be used when the working range limit system is out of order or when the overload sensing system detects the overloaded platform.
- If the working range limit system fails, the outreach limit light blinks to indicate the failure. Stop using the machine and contact Aichi service shop for inspections, if this light blinks.

4. Upper control (Operation from Platform)

Be sure to set the engine key switch in UPPER control position to operate the machine from the platform.



Danger:

- Always wear an authorized safety harness and hook its lanyard to the specified anchor after stepping on the platform.
- Always stand on the platform floor firmly and maintain a safe posture.
- Do not reach out of the platform.

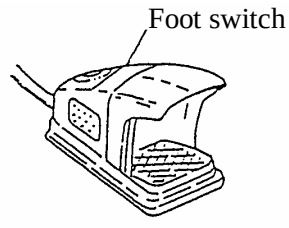
Caution:

- Prior to the operation, check that the platform is level and adjust the platform level by operating the platform level adjust switch, if necessary.
- When doing paintwork, first move the platform to the working position, and then be sure to close the cover of the upper control so that the decals do not become dirty.
- Wipe off oil and water spilt on the platform floor so that personnel do not slip and fall on the platform.
- Check the surroundings and make sure that no person or obstacle is around you or around the machine before operating the machine.
- Especially be careful before rotating the boom. Check that no person or obstacle is around the turntable.
- Do not put anything around the control levers, which may be caught in, causing unintended movements.

4.1 Foot switch

Press down the foot switch to operate the machine on the platform. However, the following operations are available without pressing down the foot switch.

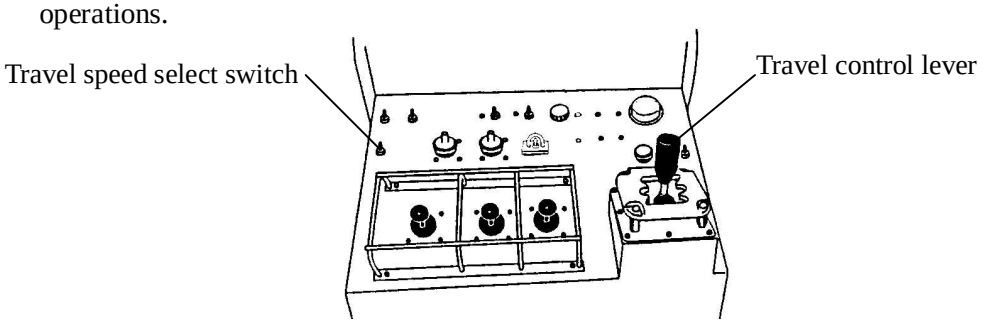
- Engine start operation
- Emergency stop operation
- Horn operation
- Work light operation (Option)



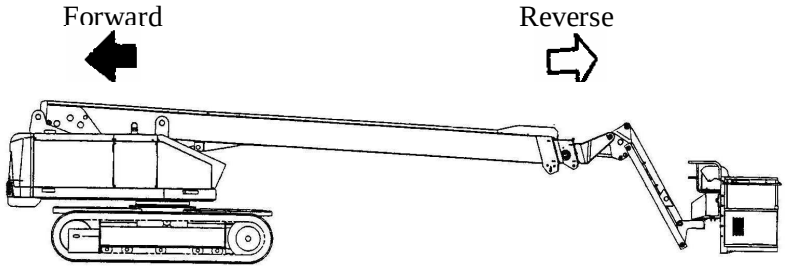
Caution: Do not disable the foot switch in any way e.g. by binding.

4.2 Travel operation

Use the travel control lever and the travel speed select switch to perform the travel operations.



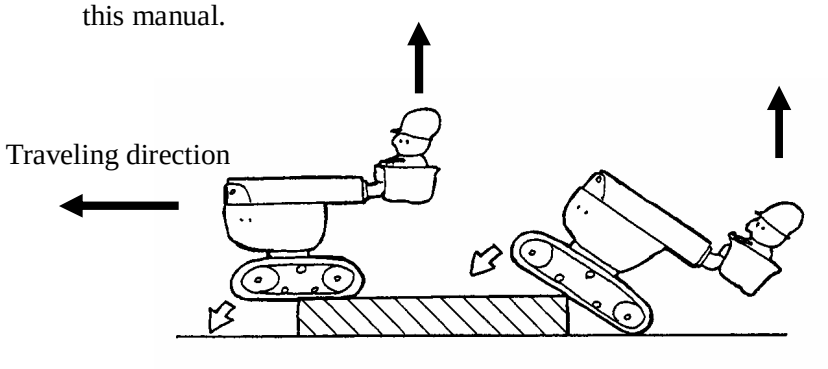
Caution: When the turntable is rotated 180 degrees, the traveling direction becomes the opposite of the control lever operating direction. Before traveling, make sure the traveling direction of the machine by checking the arrows located on the chassis.



Caution: * Before traveling, make sure that no persons or obstacles are in the traveling direction.

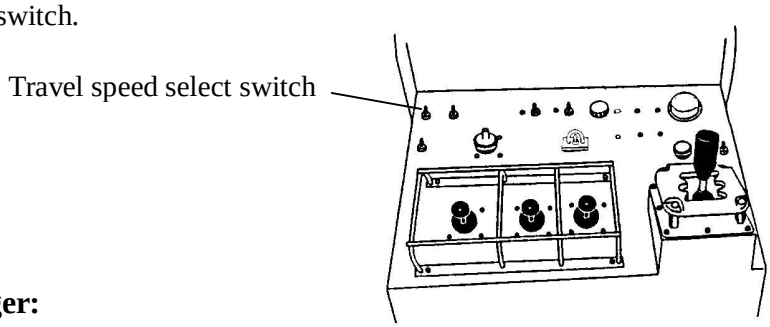
* When traveling on rough terrain or on slope, retract the boom fully and set the boom under the horizontal.

Danger: * When traveling over a curb, retract the boom fully and set it under the horizontal, then travel the machine very slowly and carefully. The machine suddenly inclines and the platform jumps up or down roughly just after the gravity center of the machine pass the curb as shown below. Check the overhead obstacles as well as the clearance between the platform and the ground, and then travel very slowly and carefully. If not, it may results in serious injury or death. For further detail, see the chapter “VI For Safety” of this manual.



4.2.1 Travel speed select switch

The three traveling speeds, low, mid and high can be selected with the travel speed select switch.



Danger:

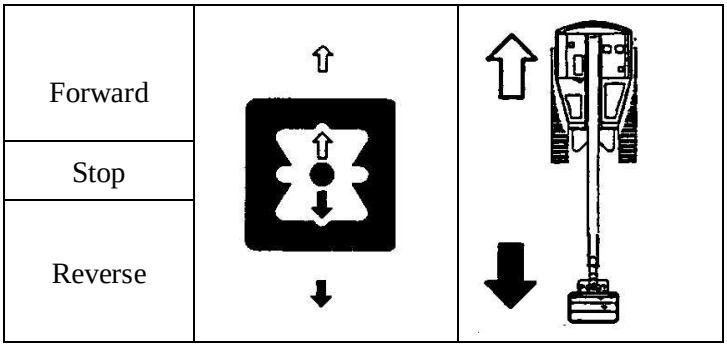
- Do not set the travel speed select switch to HIGH or MID speed positions and travel in high or mid speed when traveling over a curb.

Advice:

- The high and mid traveling speeds are available only when the boom is retracted and lowered under the horizontal. In other than this condition, the machine travels in low speed, even when the travel speed select switch is set to the high or mid speed position.
- The travel function automatically stops, if the machine tilts over 5 degrees and either of the following conditions applies.
  a) The boom is raised over 45 degrees.
  b) The boom is extended more than 1 meter (3ft – 3in)
  To resume the travel function, lower the boom under 45 degrees and retract it fully.
- When traveling on rough terrain, retract the boom fully and set it under the horizontal, then set the travel speed select switch to the mid speed position, so that you can obtain the largest traction.
- The engine rpm automatically rises when traveling in either mid or high speed. Do not operate the travel speed select switch while traveling to avoid shocks that are caused by sudden change of the traveling speed.

4.2.2 Straight forward and reverse

Press down the foot switch and operate the travel control lever to the traveling direction.

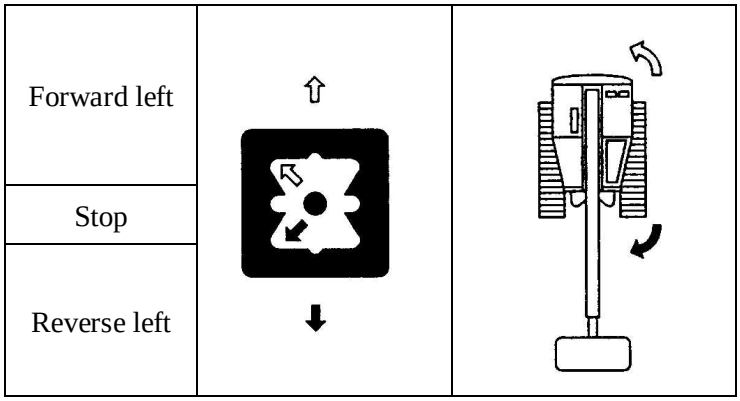


Caution: Before traveling, check the traveling direction by the arrow decals affixed on the chassis.

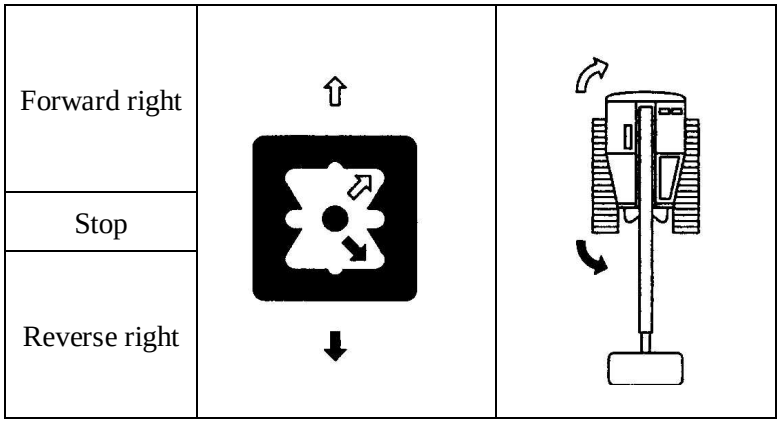
4.2.3 Pivot turn

Press down the foot switch and operate the travel control lever as shown in the figures below.

(a) Forward / Reverse turn to the left

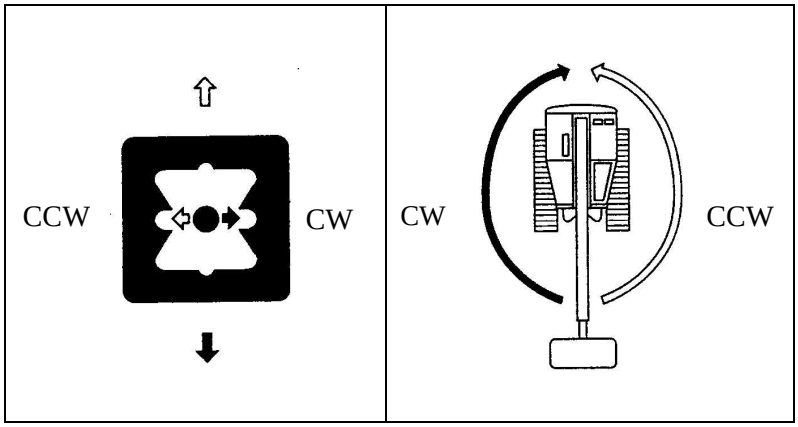


(b) Forward / Reverse turn to the right



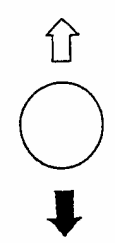
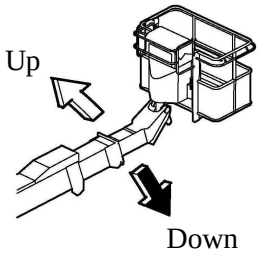
4.2.4 Spin turn

Press down the foot switch and operate the control lever as shown in the figure below to make the CW or CCW spin turn.



4.3 Boom raising and lowering operation

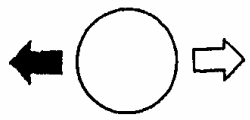
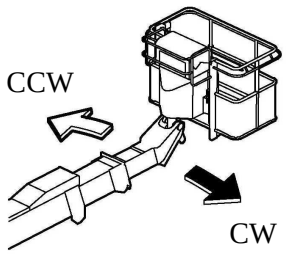
Press down the foot switch and operate the boom elevation control lever to raise or lower the boom

Boom up		
Stop		
Boom down		

Caution: Do not press the boom or the platform against the ground by lowering the boom.

4.4 Boom rotation operation

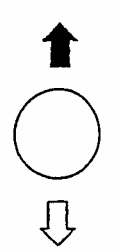
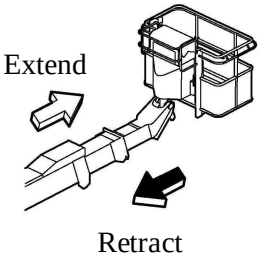
Press down the foot switch and operate the boom rotation control lever to rotate the boom.

CW	Stop	CCW	
			

Danger: Before rotating the boom, make sure that no person or obstacle is around the turntable as the turntable protrudes beyond the machine width.

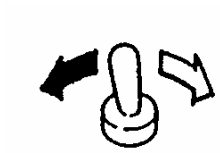
4.5 Boom telescope operation

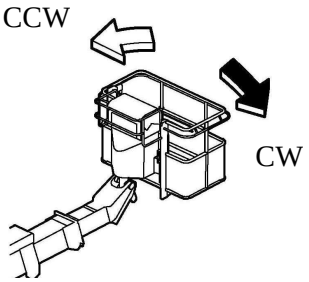
Press down the foot switch and operate the boom telescope control lever to extend or retract the boom.

Retract		
Stop		
Extend		

4.6 Platform rotation operation

Press down the foot switch and operate the platform rotation switch to rotate the platform.

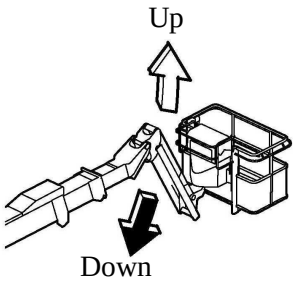
CW	Stop	CCW
		



Caution: When traveling, rotate the platform to the central position.

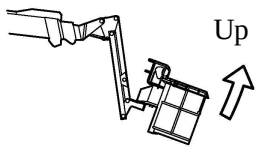
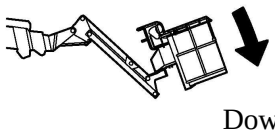
4.7 Fly jib operation

Press down the foot switch and operate the fly jib switch to raise or lower the fly jib.

Up		
Stop		
Down		

4.8 Platform level adjusting operation

Press down the foot switch and operate the platform level adjust switch to adjust the platform level.

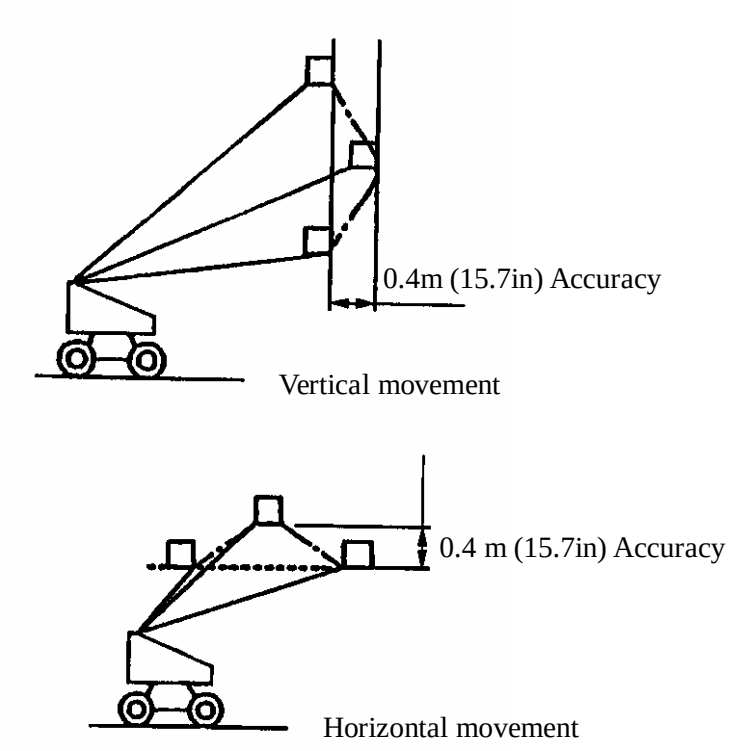
Up		
Stop		
Down		

4.9 Horizontal and vertical movement operation

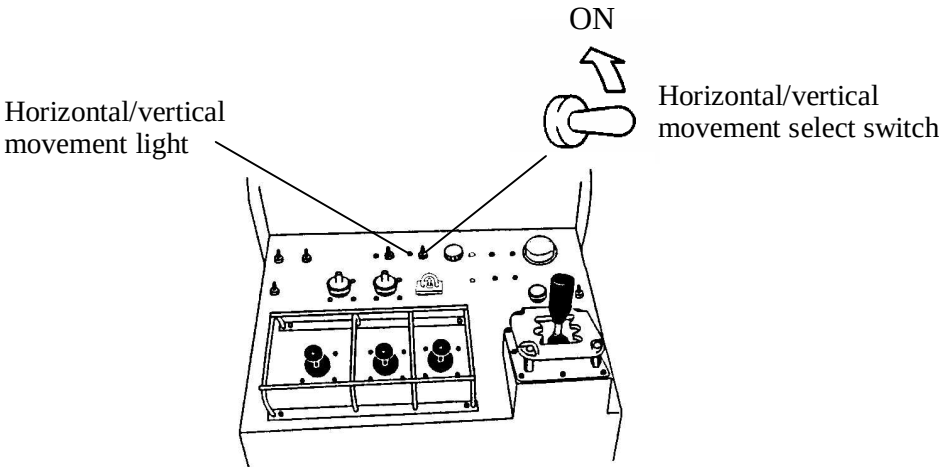
The horizontal / Vertical movement select switch and the boom elevation and telescope control levers are used for the horizontal and vertical movement.

Caution:

- The accuracy of the horizontal and vertical movements is 0.4 m (15.7 inches), so pay attention to the obstacles near the platform to safely perform the horizontal and vertical movement operation. Otherwise, the platform may interfere with the obstacles during the operation.
- The horizontal and vertical movement stops automatically and the horizontal/vertical indicator light blinks, if the platform deviates from the moving route and reaches the accuracy limit (0.4 m or 15.7 in). To restart the operation, first return the control lever to the neutral position, and then operate the control lever again.



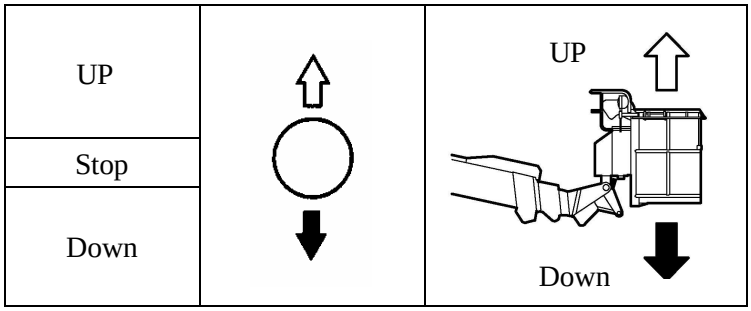
(1) Turn on the horizontal/vertical movement select switch on the upper control panel and press the foot switch, then make sure that the horizontal/vertical movement light goes on.



Advice: The horizontal / vertical movement light does not go on, unless the foot-switch is pressed.

(2) Vertical movement

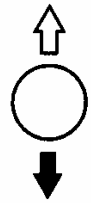
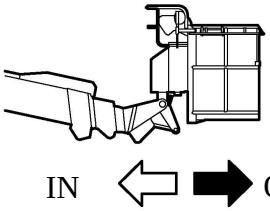
Operate the boom elevation control lever to move the platform vertically.



Advice: The motion alarm buzzer sounds during the vertical movement.

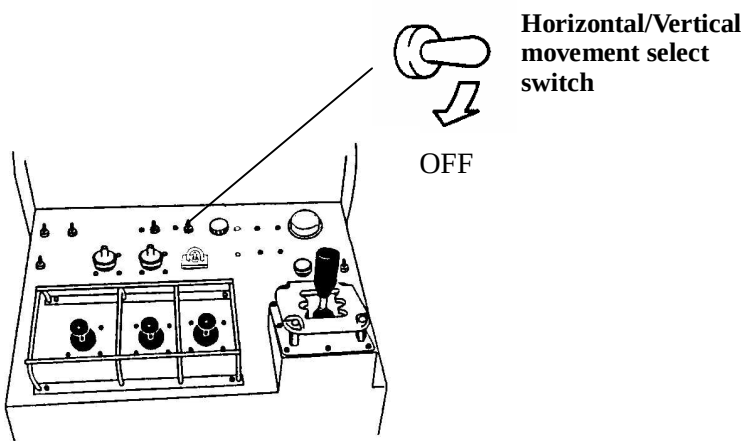
(3) Horizontal movement

Operate the boom telescope control lever to move the platform horizontally.

Retract (IN)		
Stop		
Extend (IN)		

Advice: The motion alarm buzzer sounds during the horizontal movement.

(4) After finishing horizontal and vertical movement, be sure to turn off the horizontal/vertical movement select switch.



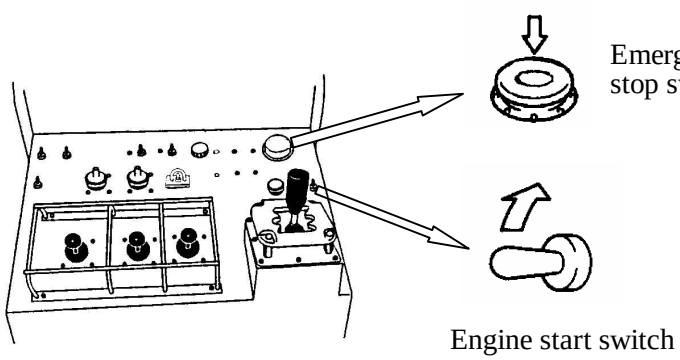
4.10 Emergency stop operation

Press the emergency stop switch. When this switch is pressed, the engine stops and all of the functions are disabled.
Press the emergency stop switch in the following cases:

(1) When stopping the engine.

(2) When personnel on the platform stops the machine movements to avoid danger.

(3) When the machine is uncontrollable due to malfunction.



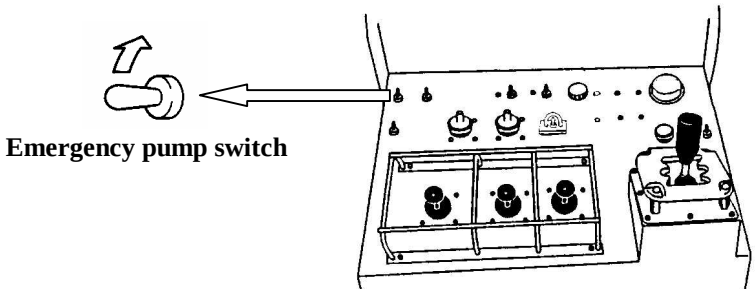
Advice: To resume the operations, pull the emergency stop switch.

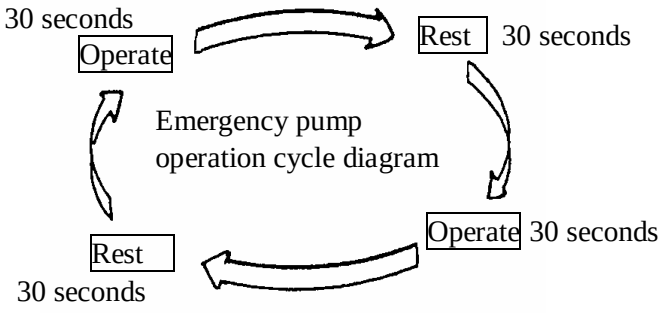
Danger: * If the boom descends gradually after pressing the emergency stop switch, this may be caused by a natural descent of the hydraulic cylinder. In this case restart the engine with the engine start switch and operate the boom and the fly jib to prevent the boom, the fly jib and the platform from coming into contact with any obstacles. Then, lower the platform to the ground and stop using the machine.

* If the emergency stop operation was used as a result of malfunctions, stop using the machine and contact Aichi service shop for inspections.

4.11 Emergency pump operation

If the machine does not work due to engine or main pump failure, lower the platform using the emergency pump.

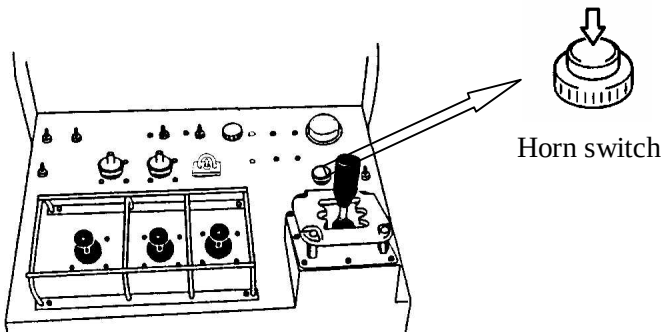




Caution:
- Operate the emergency pump every other 30 seconds. The continuous operation in excess of 30 seconds may damage the emergency pump.
- Do not impose heavy load to the emergency pump, e.g. by attempting travel operation.

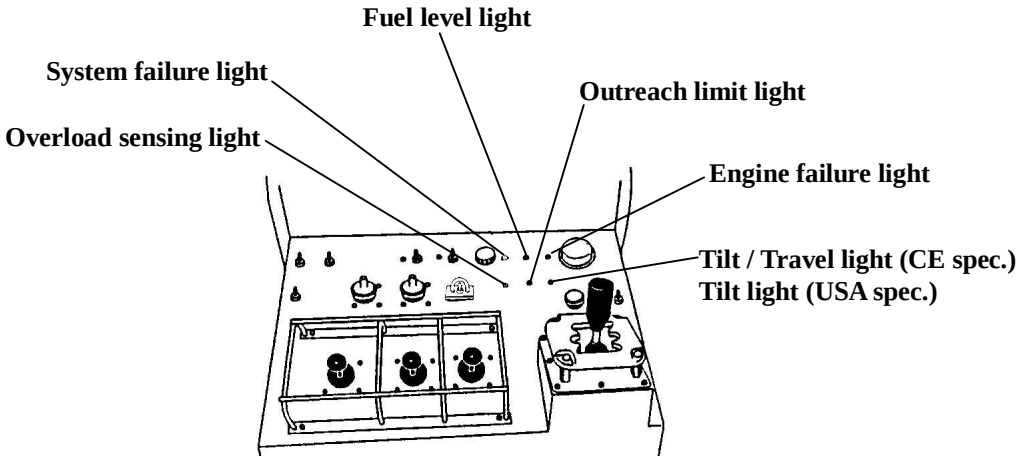
4.12 Alarm horn operation

The horn sounds when the horn switch is pressed. Sound horn to warn personnel in the working area before starting operations.



4.13 Indicator lights

The following indicator lights are installed on the upper control panel.



(1) Overload sensing light
When the platform is overloaded, this light blinks, the alarm buzzer sounds and all of the functions are disabled.

(2) System failure light
This light blinks, when any failure is in the computer control system.
Caution: Stop using the machine and contact Aichi service shop for inspections, if this light blinks. This light also blinks when the machine tilts excessively, but this is not a failure.

(3) Fuel level light
This light goes on when the fuel level is low. Refill with fuel when this light goes on.

(4) Outreach limit light
This light goes on when the work range limit system limits the outreach of the platform by disabling the boom extending and lowering functions.
Caution: This light blinks when any failure is in the work range limit system. Stop using the machine and contact Aichi service shop for inspections, if this light blinks.

(5) Engine failure light
This light goes on in the event of an engine failure e.g. failed charging system, abnormally low oil pressure and abnormally high cooling water temperature.
Check the indicator lights on the lower control panel to identify the cause.

(6) Tilt / Travel light (CE spec.)
This light goes on and the alarm buzzer sounds when the machine tilts more than 5 degrees. Do not elevate the platform, if this light goes on.
This light blinks to disable the travel functions when the travel control lever is operated with the boom extended to the red mark located on the 3rd boom section.

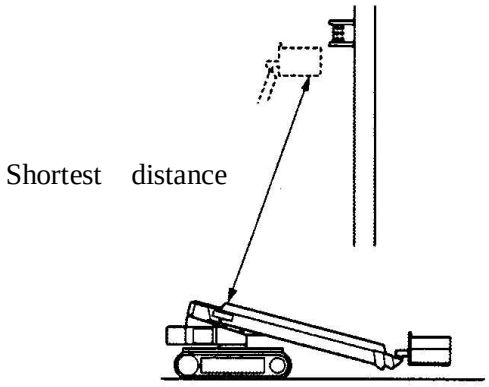
(7) Tilt light (USA spec.)
This light blinks and the alarm buzzer sounds when the machine tilts more than 5 degrees. Do not elevate the platform, if this light blinks.

XI Operation Points

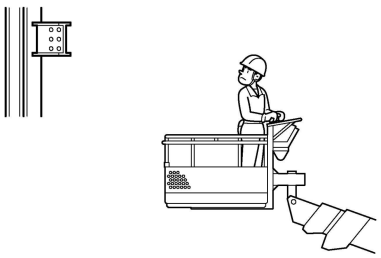
Park the machine on firm level ground before elevating the platform. The machine may tip over, if parked on soft or uneven ground.

* The maximum ground contact pressure of this machine is:
  SR18AJ / ISR60J --------- 0.85 kg/cm^2 (12 PSI).
  SR21AJ / ISR70J --------- 1.0 kg/cm^2 (14 PSI).

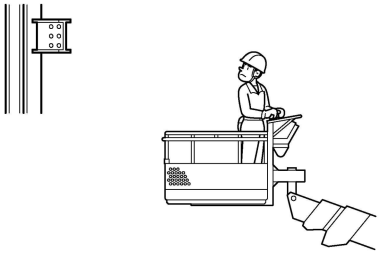
(1) Set up the machine close to the working target.



(2) Rotate, and elevate the boom until the working target is in line with the boom extending direction.



(3) Extend the boom till the working target is within a comfortable working range.



Advice: Operate the fly jib and rotate the platform, if necessary.

(4) After finishing the work, reverse the above procedures to lower the platform.

XII Transportation

1. When using loading ramp

When transporting the machine by a transport vehicle, observe the following items:

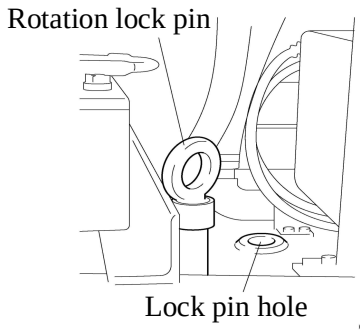
(1) Load/unload the machine to/from the transport vehicle on firm and level surface.

Danger: • The tracks of the machine may fall off, if the transport vehicle or the loading ramps incline excessively.

Caution: • When loading and unloading, be sure to have a guide assist you so that the tracks do not fall off the ramp and the transport vehicle bed.
• The system failure light may blink when the machine tilts excessively on the loading ramps. This is not a failure.

(2) Be sure to lock the turntable by inserting the rotation lock pin and prevent the turntable from being rotated during the transportation.

Caution: • Rotate the turntable slowly to align the both rotation lock pin holes on the turntable and the chassis, then insert the rotation lock pin in their holes.



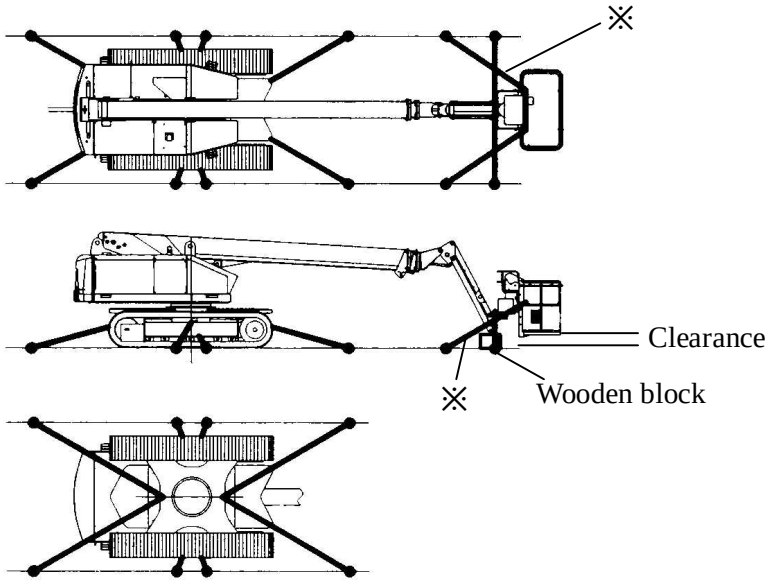
(3) Check that all doors and covers of the machine are closed and latched securely.

(4) Tie down the chassis of the machine to the transport vehicle bed securely.

(5) Tie down the fly jib with placing a wood block under the fly jib head to prevent the boom and the fly jib from bouncing during the transportation

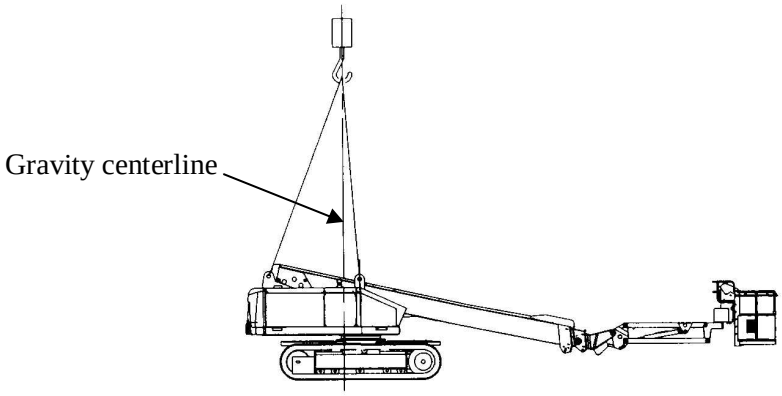
(6) Tie down the platform so that it is not swung during the transportation. At this time, be sure to allow the clearance between the bottom of the platform and the transport vehicle bed.

(7) Do not tighten the tie down chains marked (*) too much. Tighten them just so that the platform is not swung or bounced during the transportation.



2. When hoisting

Pass the sling chains or wire ropes through the hoisting rings located on the turntable and hoist the machine slowly.



Caution:

- Use a sling chains or wire ropes strong enough to withstand the weight of the machine.

Model	Weight
SR18AJ / ISR60J	12,900 kg (28,400 LBS)
SR21AJ / ISR70J	15,200 kg (33,500 LBS)

- Be sure to retract and lower the boom fully before hoisting the machine.

XIII Lubrication

1. Recommended lubricants

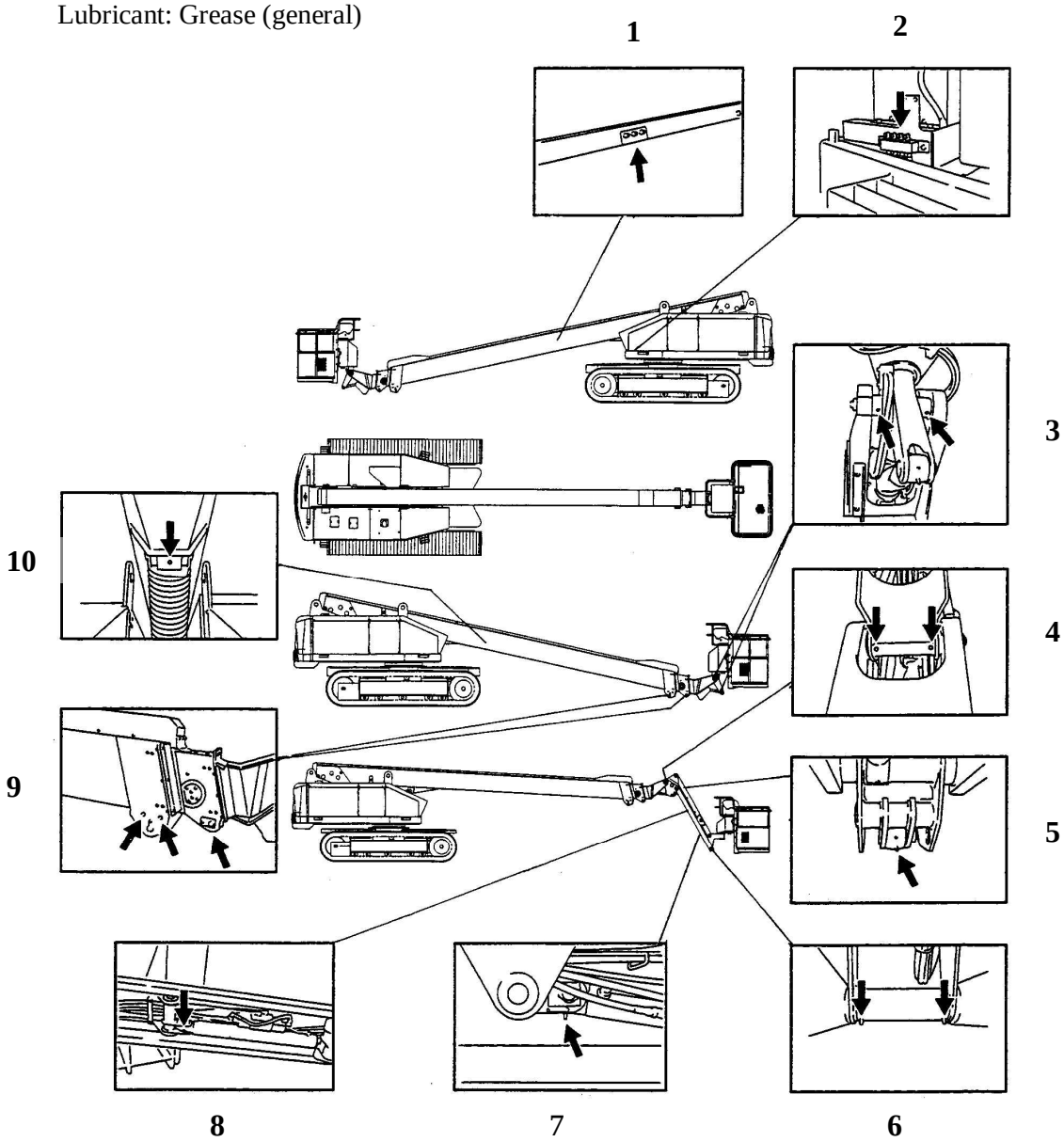
Manu-facturers	Hydraulic oil		Gear oil	Grease		
	General purpose	For cold region	Travel and Rotation gear boxes	General	Gear compound	Molyb-denum
Shell oil	Tellus oil 22 or k22	Tellus oil T15	Spirax EP 90	Alvania EP grease 2	Cardium compound A or D	Retinax AM
Esso oil	Nuto H22	–	Standard gear oil 90 Esso gear oil GP80	Lithtan EP2 Beacon EP2 Nidok EP2	JWS2563 Spartal EP2200	Beacon Q2
Mobil oil	DTE 24	–	Pegasus gear oil 90 Mobilube GX90	Mobilux EP2	Mobiltac QQ	Mobil grease special
Nippon oil	Super highland 22	Highland wide 15	Gearlube SP 90	Epiknock AP2	Cranoc compound 1	New molynick
Idemitsu kosan	Daphne super hydraulic oil 22	Daphne super hydro WR15	Apoloil gear HE 90	Daphne coronex grease EP No.2	Daphne open gear oil No.1	Daphne grease M No.2
Cosmo oil	Cosmo hydro AW22	–	Cosmo gear GL-4 90	Cosmo grease diner Max EP No.2	Cosmo gear compound No.2	Cosmo molybdenum grease No.2
Japan energy	Hydrax 22	–	Gear 4-90	Resonics grease EP-2	Gear compound No.2	Resonics grease M-2
Mitsubishi oil	Hydro fluid EP22	–	Diamond hypoid gear oil 90	Diamond multipurpose EP grease 2	Mitsubishi gear compound 2	Diamond multipurpose M grease 2
General oil	Panol 22	–	G-gear 4-90	Gemico grease ME-2	General gear compound 2	Gemico grease AD-1

* Supply proper amount of machine oil to the hinges.

2. Lubrication points and intervals

2.1 Lubricate every 100 hours or one month

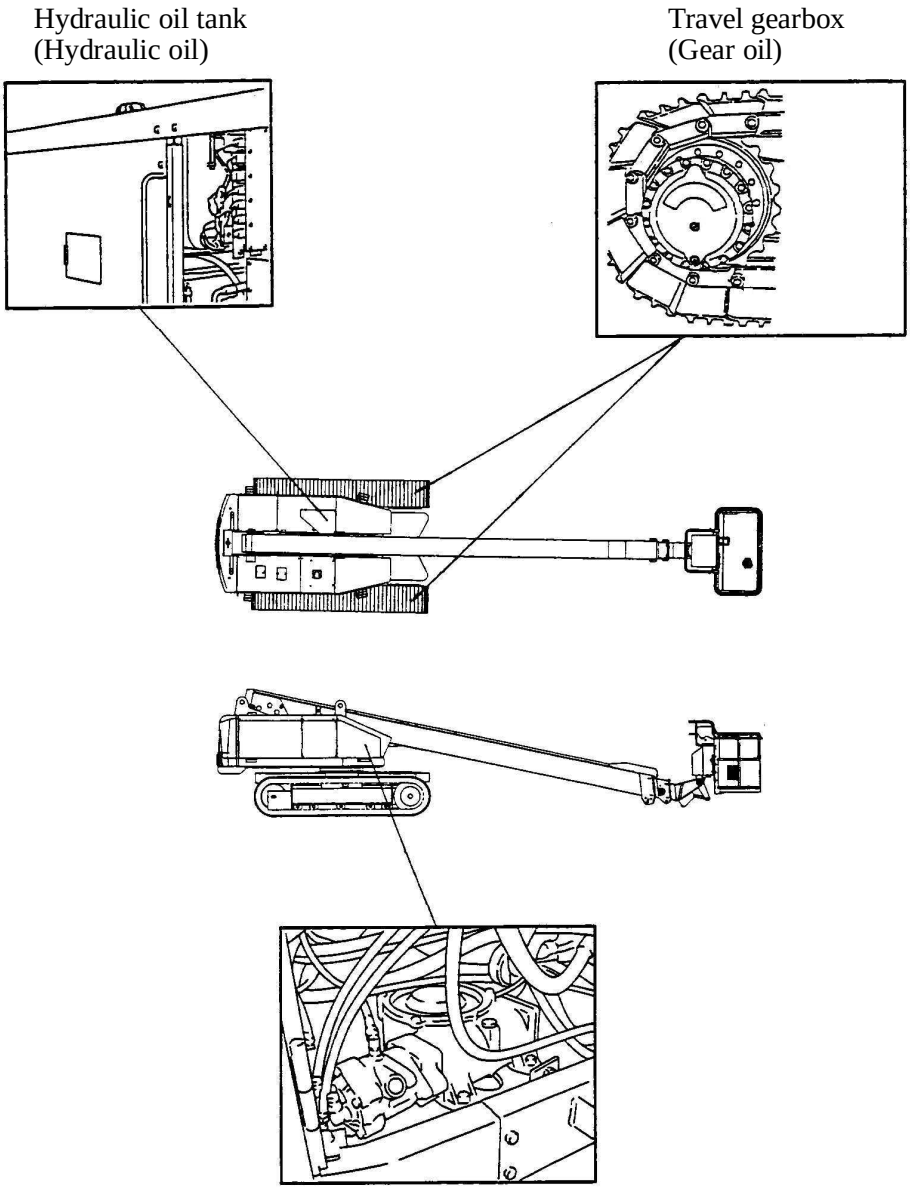
Lubricant: Grease (general)



1	Boom pivot pin, Anchor pin for Lower leveling cylinder.	6	Pivot pin for Fly jib.
2	Rotation bearing, Anchor pins for Elevation and Lower leveling cylinder.	7	Anchor pin for Fly jib cylinder.
3	Platform pivot pin, Anchor pin for Upper leveling cylinder.	8	Anchor pin for Fly jib cylinder.
4	Fly jib pivot pin.	9	Boom rollers.
5	Anchor pin for Upper leveling cylinder.	10	Anchor pin for Elevation cylinder.

2.2 Change oil every 1,200 hours or 12 months

(After 300 hours or 3 months for the new machine.)



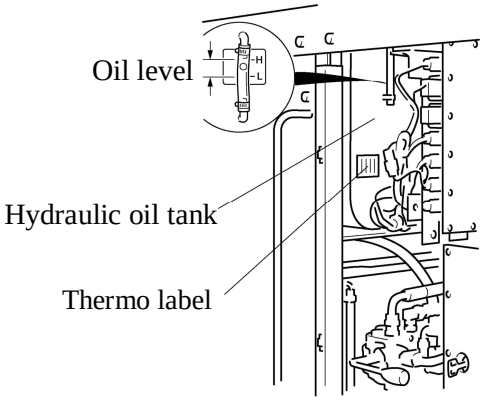
XIV Daily Care

Various materials are used in the construction of this machine and these materials wear or deteriorate gradually. Some parts may be difficult to check for safety, so those parts should be replaced periodically according to the predetermined serviceable lifetime.

1. Hydraulic oil

1.1 When replenishing

Check oil level with the oil level gauge equipped on the hydraulic oil tank, and refill to the level through the oil filler cap.



Advice: Retract and lower the boom fully, before checking the oil level.

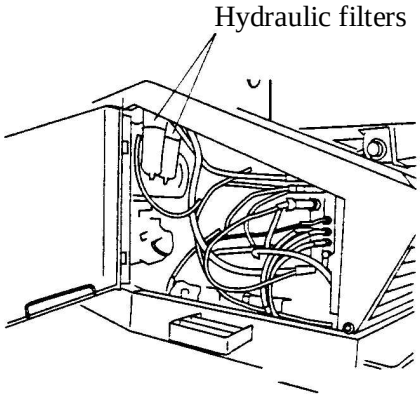
1.2 Hydraulic oil change (once a year)

(1) Lower and retract the boom fully.

(2) Remove the oil drain plug installed on the bottom of the tank and drain the hydraulic oil thoroughly, then reinstall the oil drain plug.

(3) Refill the tank with new hydraulic oil with checking the oil level.

(4) Replace the hydraulic oil filters at the same time.



Advice: Hydraulic oil tank capacity: 200 liters (52.8 gallons)

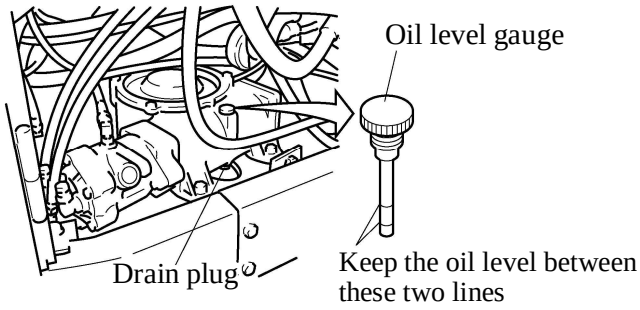
2. Gear oil for Rotation gearbox

Change the gear oil once a year or every 1,200 hours.

(1) Remove both of the oil drain and the oil level gauge and drain gear oil thoroughly.

(2) Reinstall the oil drain plug, and refill the gearbox with new gear oil.
Oil capacity: 1.7 liters (0.45 gallons).

(3) Reinstall oil level gauge.



3. Gear oil for Travel gearbox

Change the gear oil once a year or every 1,200 hours.

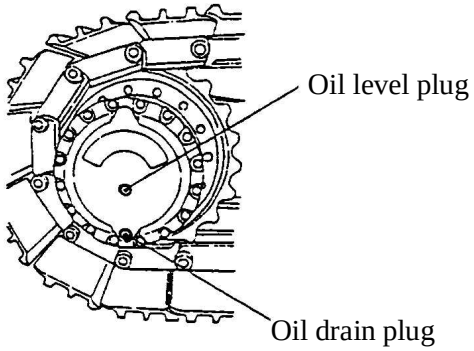
(1) Travel the machine and set the oil drain plug at the lowest position as shown in the figure below.

(2) Remove both of the oil drain and oil level plugs, and drain the gear oil.

(3) Reinstall the oil drain plug.

(4) Refill the gearbox with new gear oil from the oil level port till the oil level reaches the oil level port, and then reinstall the oil level plug.

Advice: Oil capacity: 2.5 liters (0.66 gallons) for one side

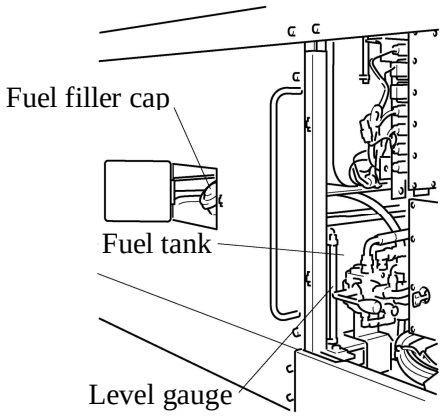


4. Fuel

Use gas oil as a fuel.

Check fuel level with the fuel level gauge, and refill to the level.

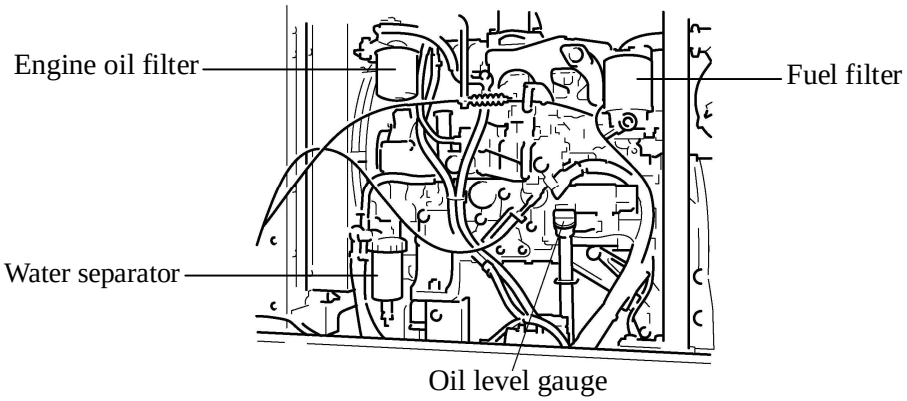
Advice: Tank capacity: 150 liters (39.6 gallons).



5. Engine

See the engine manufacturers manual for the detail of engine maintenance.

A long life coolant (Freezing temperature of – 40℃) is filled in the new machine by Aichi before shipping.



6. Wire ropes

Replace the wire rope, when any defects listed below are observed.

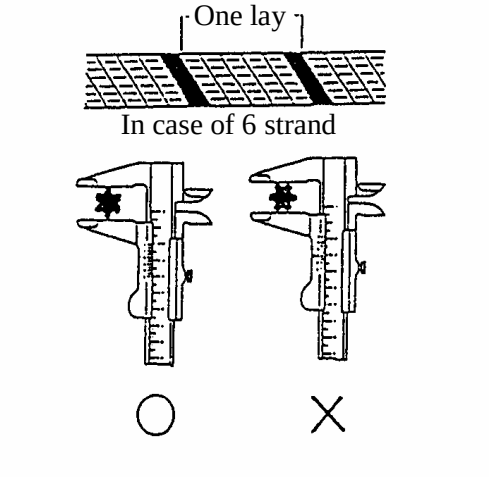
(1) Kinked rope.

(2) Stretched or corroded rope.

(3) Cut rope.

(4) If the decrease of the rope diameter exceeds 3% of the nominal diameter. See the figure below to check the rope diameter.

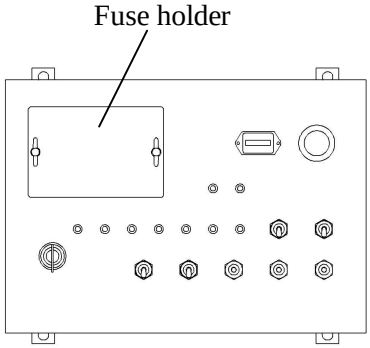
Advice: For replacement procedure, contact Aichi service shop.



7. Fuses

The fuse holder is located on the lower control panel. If the machine does not work, the fuse may have blown.

Advice: When replacing the fuse, be sure to turn the engine key switch to OFF position.



10A	5A	5A	5A	10A	5A
Engine start	Emergency pump	Lower control	Upper control	Horn	Hour meter
20A		10A		5A	
CPU, Upper	Engine	CPU, Lower	Work light	Glow (Fuel pump)	Fuse removing tool
20A	20A	10A	10A	5A	

Fuse holder detail

8. Hydraulic hoses

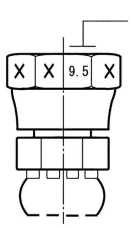
If oil leaks from the hydraulic hose, stop using the machine immediately and contact Aichi service shop. When ordering the hydraulic hose, notify the following items to the service shop.

(1) Type of the hose: Rubber or Nylon

(2) Installed location on the machine

(3) Length of hydraulic hose: The dimension between the tips of both hose fittings.

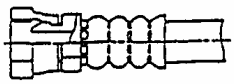
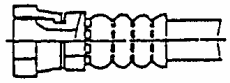
Advice: The length is indicated on the "Hose fitting" as shown in the figure below. But this is rubber hose only.



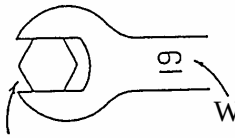
Example: 95 (9.5) **à** 950 mm
12 **à** 1,200 mm

(4) Type of "Hose fittings

Hose fitting (male) Hose fitting (female)

(5) Size of hydraulic hose: Identify the wrench size of the hose fitting.

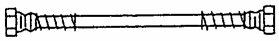


Wrench size
19, 22, 27

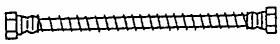
Hydraulic hose fitting

(5) Existence of armour

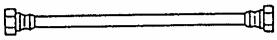
① Both side armoured



② All armoured



③ Non armoured



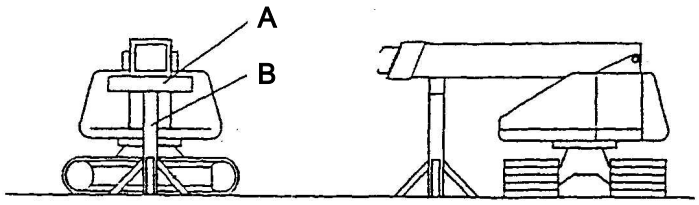
9. Crawler

Sagging may occur on the tracks due to wear, so you are requested to adjust the track tension periodically. If the tension is not appropriate, the tracks risk detachment.

9.1 Adjustment method

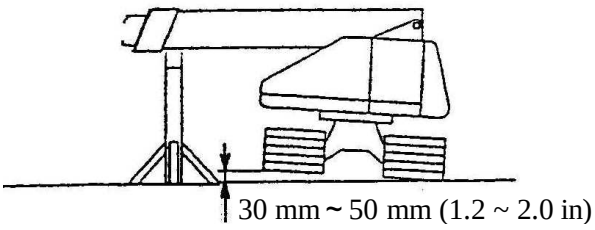
(1) Set up the machine on firm and level surface, retract the boom fully, and then rotate the boom to the right or left side of the chassis.

(2) Set the "Boom stand B" and the "Wood block A" under the 1st boom section as shown in the figure below.



Caution: The "Wood block A" shall be longer than the width of the 1st boom section, and arrange it so that the boom comes to the center of the wood block. In the interest of safety, make sure the stand is stable.

(3) Press the boom against the wood block by lowering the boom slowly, and allow the clearance of 30 ~ 50 mm (1.2 ~ 2.0 in) between the track and the ground.



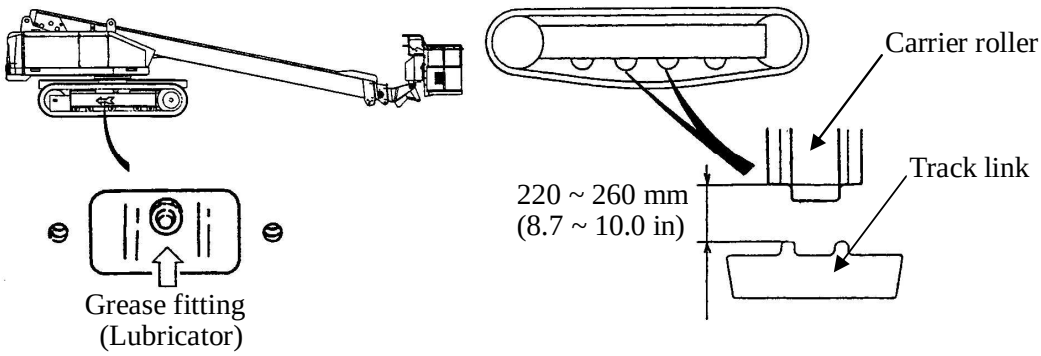
Danger:
- Be sure to conduct the boom operation from the "Lower control."
- Do not lift up the track more than 50 mm (2.0 in) above the ground. If the track is lifted up beyond what is necessary, the machine may become unstable.

(4) Supply grease to the “Grease cylinder” through the “Grease fitting” to apply more tension to the track.

Adjust the clearance between the track link and the track roller installed in the center to 220 ~ 260 mm (8.7 ~ 10.0 in).

If the track is too tight, unscrew the “Lubricator” part away till the grease exudes.

Danger:
- Do not loosen the grease fitting as it may pops out resulting in serious injury.
- Do not unscrew the “Lubricator” more than one full turn as it may pop out resulting in serious injury.



(5) After adjusting one side, rotate the boom 180°, and adjust the other side in the same manner.

Advice: It is important to adjust the tension of left and right tracks equally.

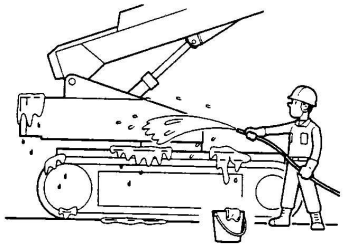
9.2 Adjustment interval

Adjust the track tension at the intervals mentioned below.

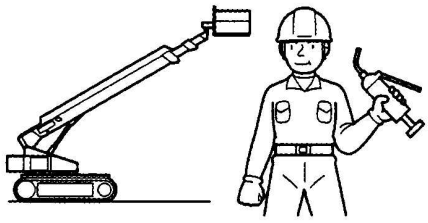
	Interval
First time on new machine	After 10 ~ 20 hours
Thereafter	Every 800 hours or 6 months

XV Storage for long periods

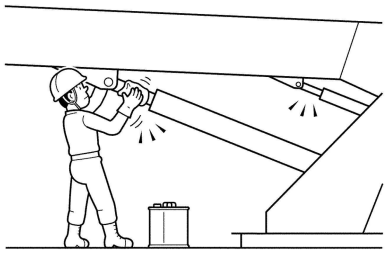
(1) Clean up the machine.



(2) Lubricate each part of the machine thoroughly.



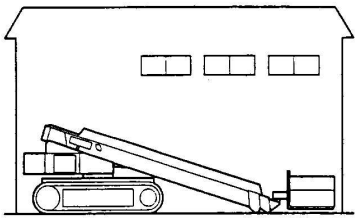
(3) Apply rust-prevention oil to the cylinder rods.



Caution: If the cylinder is left without rust-prevention oil, it may rust.

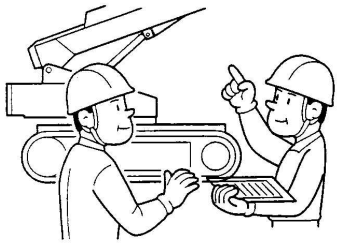
(4) Store in a dry room

If storage outside is unavoidable, park the machine on firm level ground and cover with a water proof sheet.



(5) During long-term storage, conduct the following operations periodically.

- Operate the boom to prevent corrosion of the lubricated sections.
- Drive the machine regularly to prevent rust forming on the track links.



Advice: Wipe off the rust-prevention oil applied on the cylinder rod before operating the boom.

XVI Optional Equipment Operating Method

Optional equipments can be installed on the request of the customer, so the items here may not always be equipped to the machine.

1. Work light

When the work light switch on the upper control panel is turned on, the work light on the platform goes on.

Advice: If the work light is kept lit while the engine is stopped, the battery on the machine may be dead. Use the work light when the engine is in motion.

2. Rotating beacon

The rotating beacon goes on as soon as the engine starts.

3. AC power outlet

Connect the mains to the AC input plug located at the turntable before using the electrical tools on the platform.

4. Travel remote control

The travel operation from the ground level is available by connecting the optional travel remote control to the lower control.