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KATO

INSTRUCTION MANUAL

Machine Section

Applicable serial No.: 6110051－

Roughter SR-300L

⚠ WARNING

- You must read and understand this manual before operating or servicing this crane.
  If you do not do so, you may cause serious injury or death including damage to the equipment etc.
- All people who come into contact with this crane must read and be familiar with the contents of this manual. Keep it in the crane so it will be available to anybody who needs it.
- If you need a copy of this manual in another language, ask your authorised KATO dealer.

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KATO

SR-300L

INSTRUCTION MANUAL

21521

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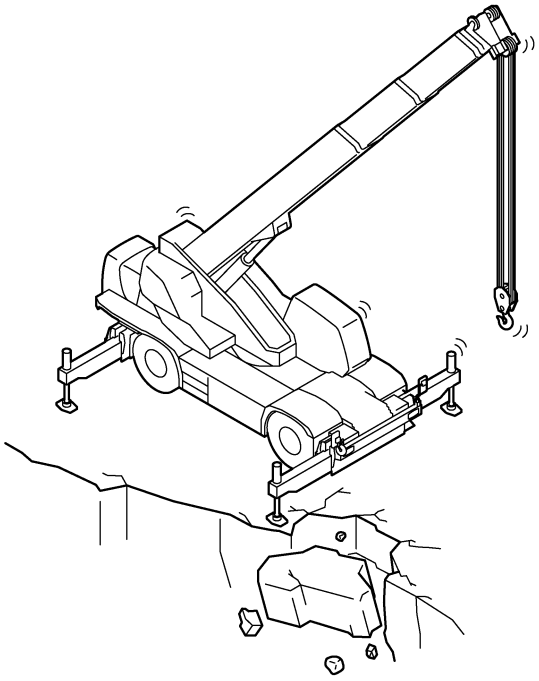
⚠ DANGER

Cautions on setting outriggers

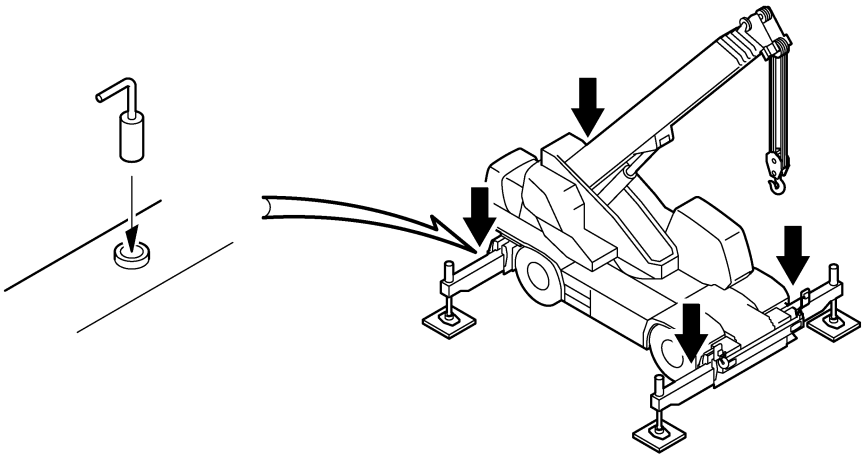
Inadequate setting of the outriggers or an error in setting the outrigger status to the ACS could result in the crane tipping over. So be sure to check the following before starting work.

① Has the strength of the ground where the outriggers will be set been suffciently discussed with the work supervisor ?
② Is the crane set horizontal ?
③ Are the tires off the ground ?



0099-00820

④ Are the outriggers fully extended ?
⑤ Are the outrigger stopper pins inserted ?
⑥ Has the outrigger extension width been correctly set to the ACS ?



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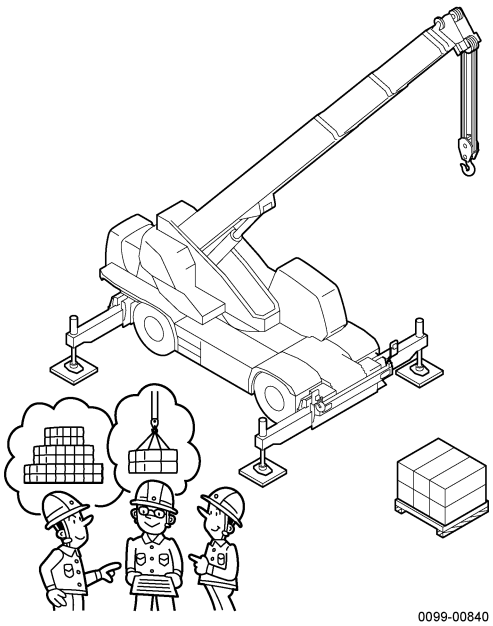
⚠ DANGER

All operations in accordance with rated lifting capacity chart

Make sure that all crane operations are in accordance with the rated lifting capacity chart for the crane.
Accidents such as the crane tipping over or damage to the boom etc. cannot be attributed but to operation beyond the rated lifting capacity of the crane.
The 1st step toward safe operation is to set the crane level on firm ground using the outriggers, and then operate according to the rated lifting capacity chart.
Operation very close to or slightly in excess of the limits could result in an accident.
Everyone including the crane operator and site supervisor must perform work with a sufficient safety margin.

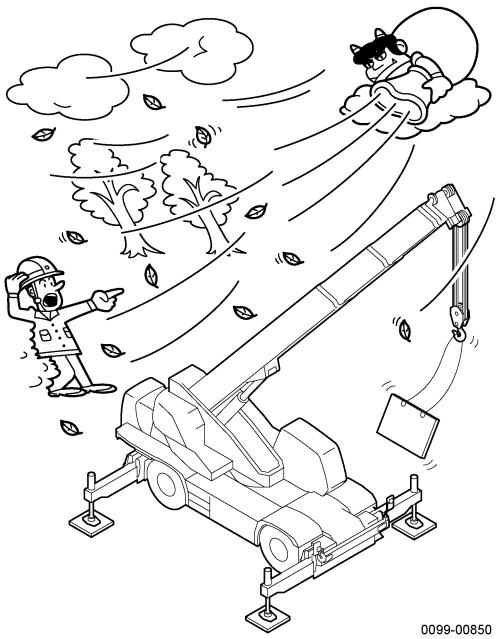


(0099-0002-0E)

⚠ DANGER

Beware of wind !!

When operating with the boom extended or when hoisting/ lowering a large load, the wind could produce unexpected moment against the crane and cause the boom to break or the crane to tip over.
Be especially careful about wind striking the side of the boom or when operating in the space between buildings.



(0099-0003-1E)

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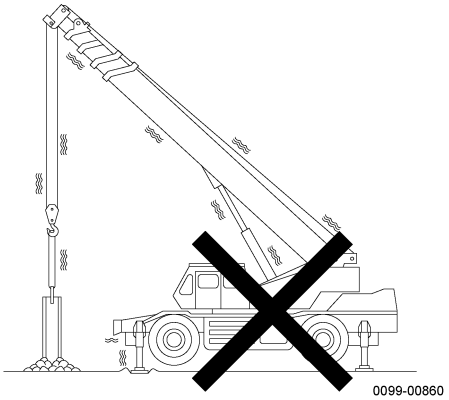
⚠ DANGER

Don't use the crane to lift the planet !!

If you use the crane to pull up or break off objects which have been driven into the ground or buried (sheet piles, H-beams, posts, pipes etc.), or if you try to drag a load toward the crane by raising the boom, you place a strong diagonal load on the boom which may exceed rated lifting capacity by many times. Pulling or breaking off driven or buried objects by raising the boom is recklessly dangerous as if you would use the crane to lift the planet. Therefore raising the boom in any way that may apply diagonal loads is forbidden. If you ignore the danger and the warning of the ACS and continue such an operation, an excessive load will act, possibly breaking the boom or the wire rope. Even if there is no final collapse during operation, the crane will be damaged resulting in progressive damage even when working within rated lifting capacity and leading to sudden catastrophic failure.

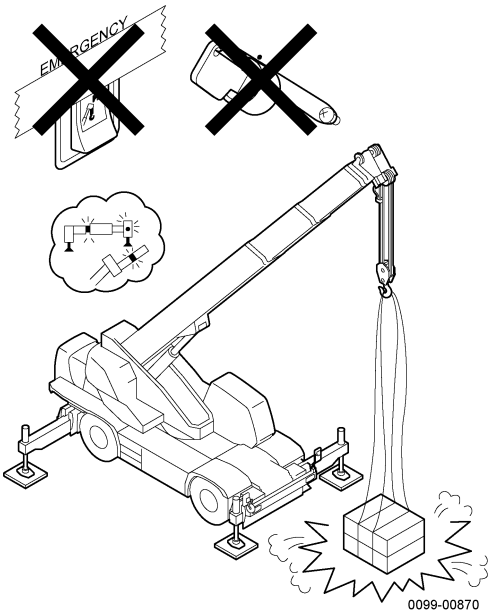


(0099-0004-0E)

⚠ DANGER

Absolutely avoid releasing !!

Working with the ACS emergency switch and the overhoisting emergency switch turned to the release positions risks causing accidents. Before you start work, always check that both switches are positioned correctly.



(0099-0099-0E)

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Introduction (0099-0045-0E)

Thank you for choosing KATO.
Correct operation and handling of the crane is essential for maximum safety and performance and will help to improve working efficiency and work rate.
We have prepared this manual to help you to do just that. Do not start using the crane before you have read this manual thoroughly and understood its contents.

⚠ WARNING

(1) Modifications

If you modify this crane from the state in which it left our factory, you may impair its safety or performance.

KATO bears no responsibility for accidents or malfunctions which arise as a result of unauthorised modifications.

(2) Optional parts and attachments

Refer to the instruction manuals provided when you install genuine optional parts or designated attachments. Attachments not designated by KATO may impair safety or performance. They may cause tip-over accidents or have an adverse effect on the lifespan of the crane.

KATO bears no responsibility for accidents or malfunctions which arise as a result of the fitting of unauthorised attachments.

(0099-0100-0E)

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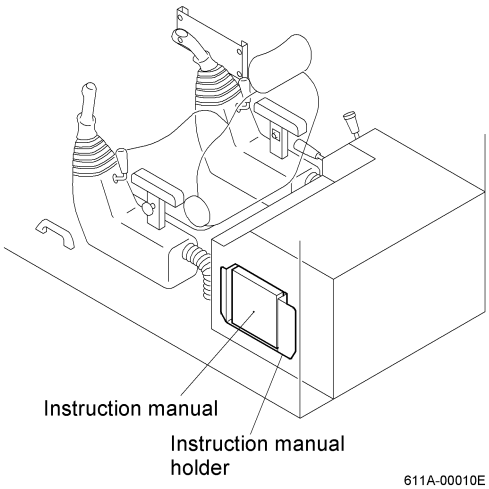
How to use this manual (0099-0101-1E)

- You must read this manual fully and understand its contents before you operate, inspect or service this crane.
  This manual is intended to be a guide to safe operation and regular servicing so it should be kept in the designated place inside the cab available to all those who use the crane.
- The sections in this manual and safety signs on this crane include safety information.
  The labels " ⚠DANGER", " ⚠WARNING" and " ⚠CAUTION" are used in this manual and safety signs on this crane, so that you can understand the important items for safety operations and procedures.
  Read them fully and understand them before you operate, inspect or service this crane.



> ⚠ DANGER
>
> Indicates warnings concerning direct risks of serious injury or death.

(0099-0048-0E)

> ⚠ WARNING
>
> Indicates warnings concerning potential risks of serious injury or death.

(0099-0049-0E)

> ⚠ CAUTION
>
> Indicates warnings concerning potential risks of injury or major damage to the crane.

(0099-0050-0E)

- If this manual is lost or seriously damaged, please order a replacement immediately from your authorised KATO dealer.
- When the user changes through resale or other circumstances, the instruction manuals must be transferred together with the crane.
- This manual has been written as a standard for general handling in specified operations.
  Before attempting any operations not covered by this manual or when you are unsure of any aspect of its contents, contact your authorised KATO dealer.
- Any operations which do not conform to the contents of this manual are at the operator's own risk and responsibility. KATO will bear no responsibility for any accident or damage which occurs as a result.
- In addition to the contents of this manual, further safety information and requirements are to be found on the safety signs on the crane and are contained in laws, regulations, ordinances, insurance conditions and other sources. You must also adhere to these conditions.
  Further observe the safety regulations and laws of the country where the crane is used.
- Please also refer to the separate instruction manuals.

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Inspection and servicing (0099-0102-0E)

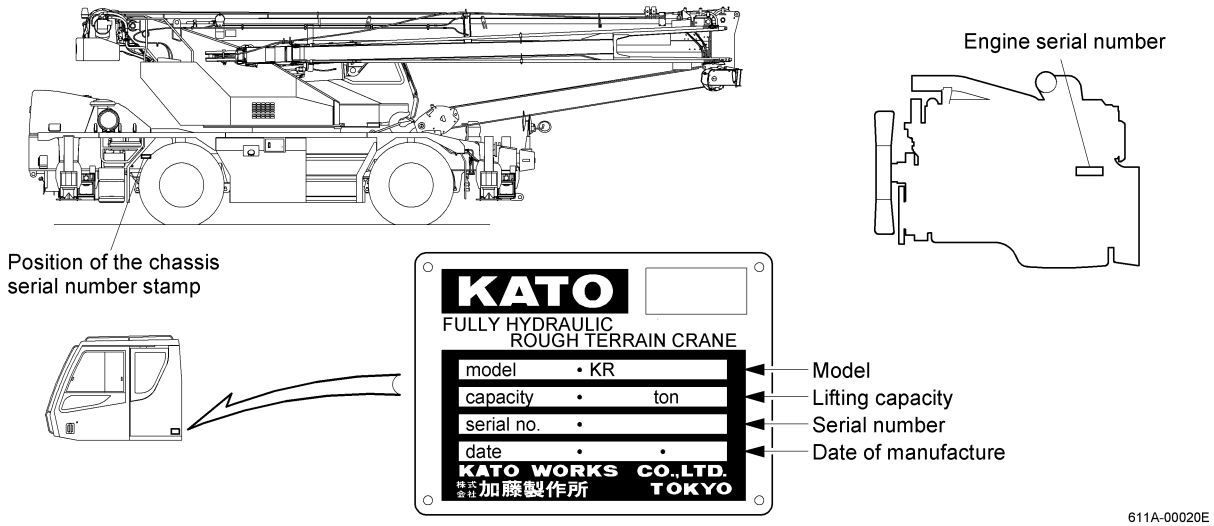
The inspection and servicing operations listed in this manual are a guide for extending the lifespan of the crane and improving its work rate. Carry out the regular inspection and servicing tasks on the basis of this manual and regulations of the country where the crane is used without fail.

This manual details the procedures for preoperational, monthly and annual inspection and servicing. Record the results of each inspection and servicing measures taken in the separate "Inspection Sheet".

Refer to the separate "Service Manual" for servicing procedures for breakdowns and disassembly.

Serial number nameplate (0099-0221-0E)

When you order parts or repairs from your authorised KATO dealer, please help to ensure smooth processing by quoting the model and serial number of the crane at the same time.



When you take delivery of the crane, make a record of its serial number, engine serial number and delivery date.

Serial number	
Engine serial number	
Delivery date	

(0099-0053-0E)

Operation qualifications (0099-0054-0E)

⚠ WARNING

- Before operating this machine, make sure you have obtained all necessary qualifications following the regulations and law of the country where the machine is used.
- You must not operate without these qualifications.

(0099-0225-0E)

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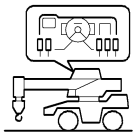

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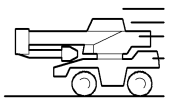

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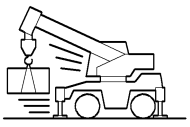

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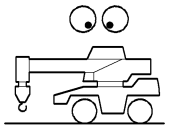
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Preoperational checks/
Pre-drive checks

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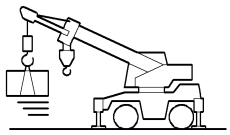
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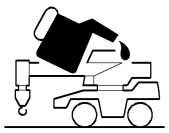
Manual Jib Section

Separate manual

214531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Inspection and Servicing Section

Separate manual

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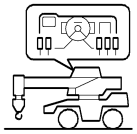
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General devices (for driving and crane)

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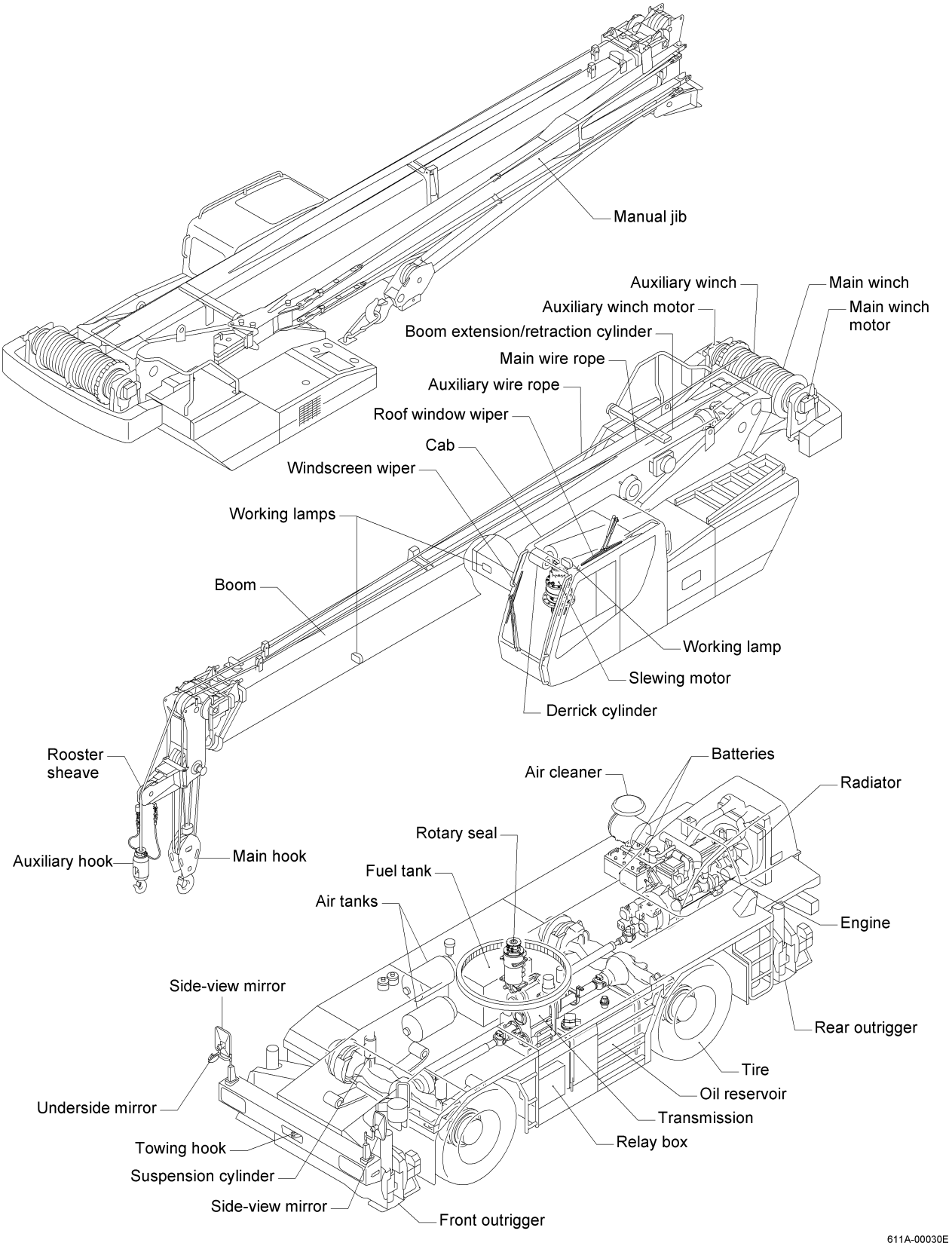
1. Part names and terms (541A-0019-0E)

1-1 Part names (541A-0020-0E)

1-1-1 Exterior (541A-0268-0E)



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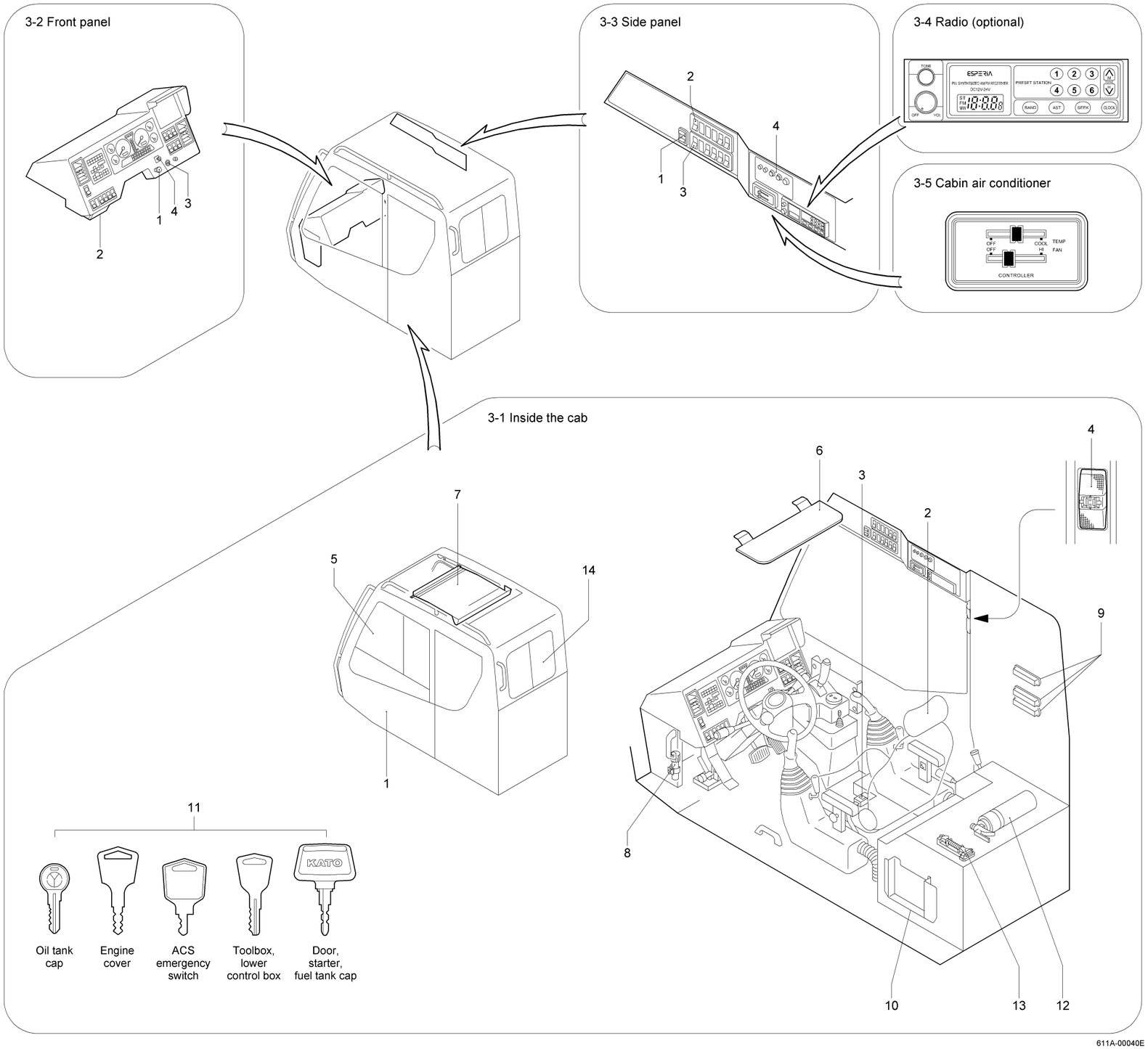
1-1-2 General operation devices (611A-0003-0E)

(1) Inside the cab



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3-1 Inside the cab
1. Door
2. Seat
3. Seatbelt
4. Interior lamp
5. Left window
6. Sun visor
7. Sunshade
8. Flare (optional)
9. Fuse box
10. Holders for the rated lifting capacity chart and instruction manual
11. Keys
12. Fire extinguisher (optional)
13. Emergency kit
14. Rear window

3-2 Front panel
1. Lighter
2. Ashtray
3. Starter switch
4. Idle speed knob

3-3 Side panel
1. Roof window wiper/washer switch
2. Fan switch (optional)
3. Defroster switch
4. Heater switch (optional)

3-4 Radio (optional)

3-5 Cabin air conditioner

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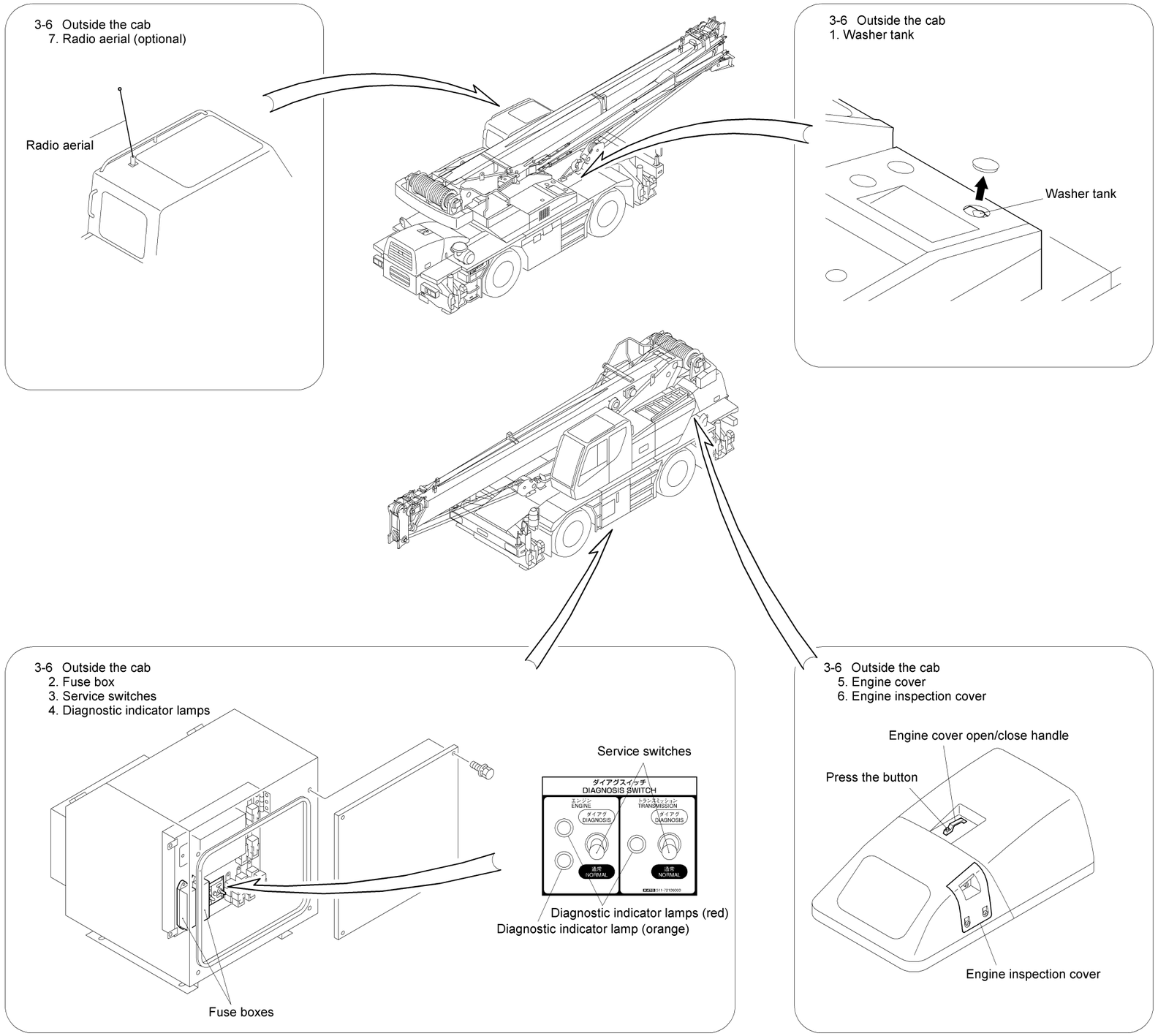
(2) Outside the cab



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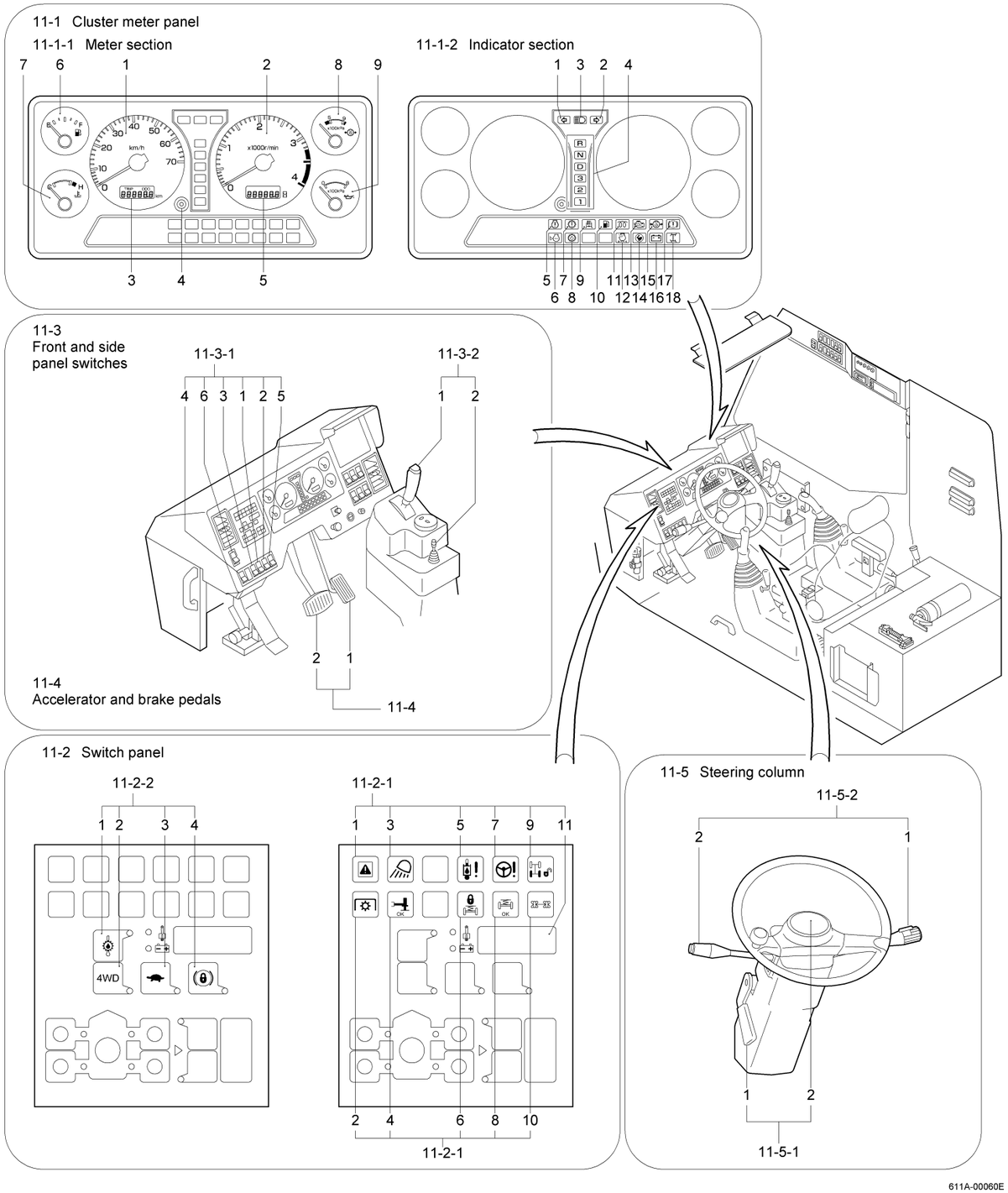
1-1-3 Drive operation devices (611A-0004-0E)

(1) Inside the cab



11-1 Cluster meter panel
11-1-1 Meter section
1. Speedometer
2. Tachometer
3. Odometer/trip meter
4. Odometer/trip meter switch
5. Hour meter
6. Fuel gauge
7. Engine water temperature gauge
8. Air pressure gauge
9. Engine oil pressure gauge

11-1-2 Indicator section
1. Turn signal indicator lamp (left)
2. Turn signal indicator lamp (right)
3. High beam indicator lamp
4. Shift position indicator lamp
5. Engine trouble warning lamp
6. Radiator coolant level warning lamp
7. AT/M (automatic transmission) malfunction warning lamp
8. Torque converter trouble warning lamp
9. Exhaust brake indicator lamp
10. Fuel level warning lamp
11. Preheat indicator lamp
12. Air cleaner blockage warning indicator lamp
13. Engine control warning lamp
14. Overrun warning lamp
15. Low air pressure warning lamp
16. Battery charge indicator lamp
17. Parking brake/brake fluid level warning lamp
18. Rear steering lock release indicator lamp

11-2 Switch panel
11-2-1 Indicator section
1. Multiplex communication error warning lamp
2. PTO indicator lamp
3. Working lamp indicator lamp
4. Outrigger operation OK indicator lamp
5. Hydraulic oil warning lamp
6. Suspension locked indicator lamp
7. Power steering pressure warning lamp
8. Suspension operation OK indicator lamp
9. Rear steering lock release confirmation indicator lamp
10. Rear steering central position indicator lamp
11. Digital display

11-2-2 Switch section
1. Torque converter oil temperature display switch
2. Two/four wheel drive switch
3. High/low speed switch
4. Brake lock switch

11-3 Front and side panel switches
11-3-1 Front panel switches
1. Suspension lock/release switch
2. Suspension retraction switch
3. Rear steering lock/release switch
4. Parking brake switch
5. Revolving warning lamp switch (optional)
6. Hazard warning switch

11-3-2 Side panel
1. Shift lever
2. Rear steering switch (self-reset type)

11-4 Accelerator and brake pedals
1. Accelerator pedal
2. Brake pedal

11-5 Steering column
11-5-1 Steering wheel
1. Height and angle adjustment lock lever
2. Horn switch

11-5-2 Combination switch
1. Combination switch
   - Windscreen wiper switch
   - Windscreen washer switch
   - Exhaust brake lever
2. Turn signal and dimmer switch
   - Turn signal switch
   - Lighting switch
   - Dimmer switch

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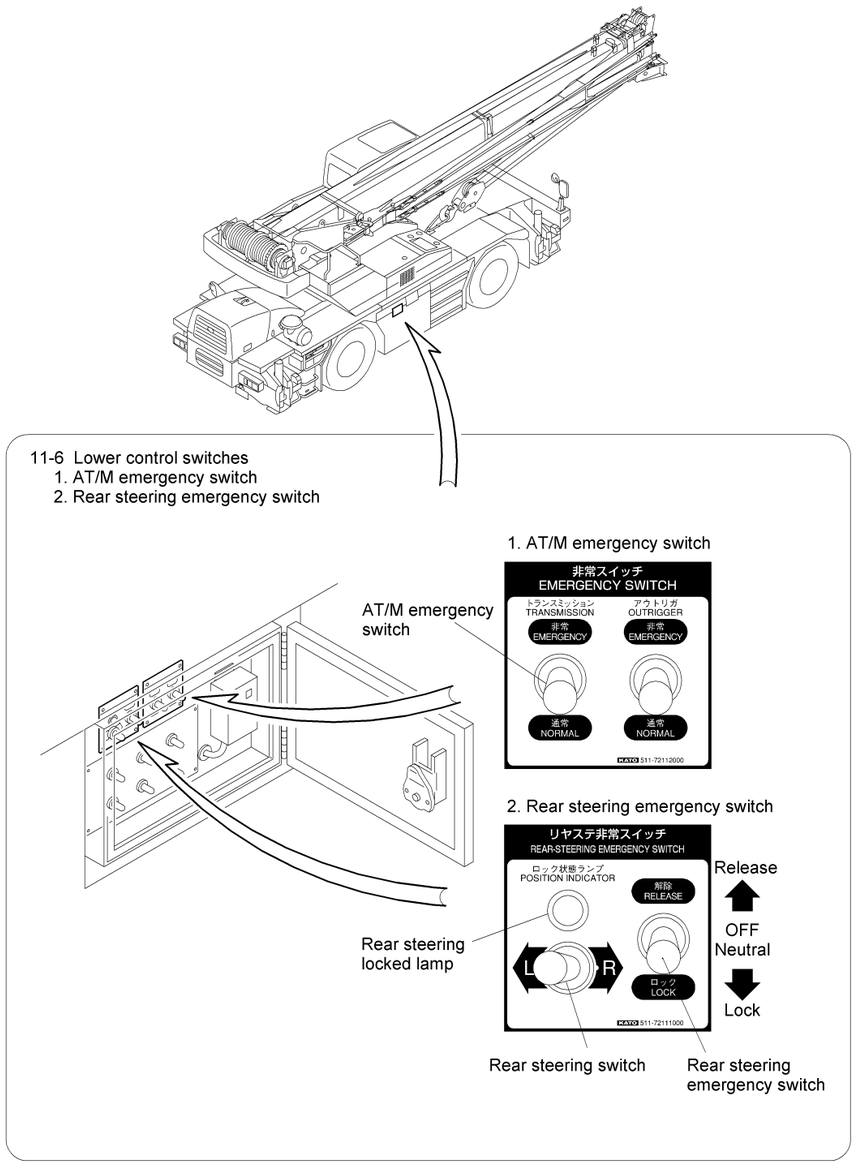
(2) Outside the cab



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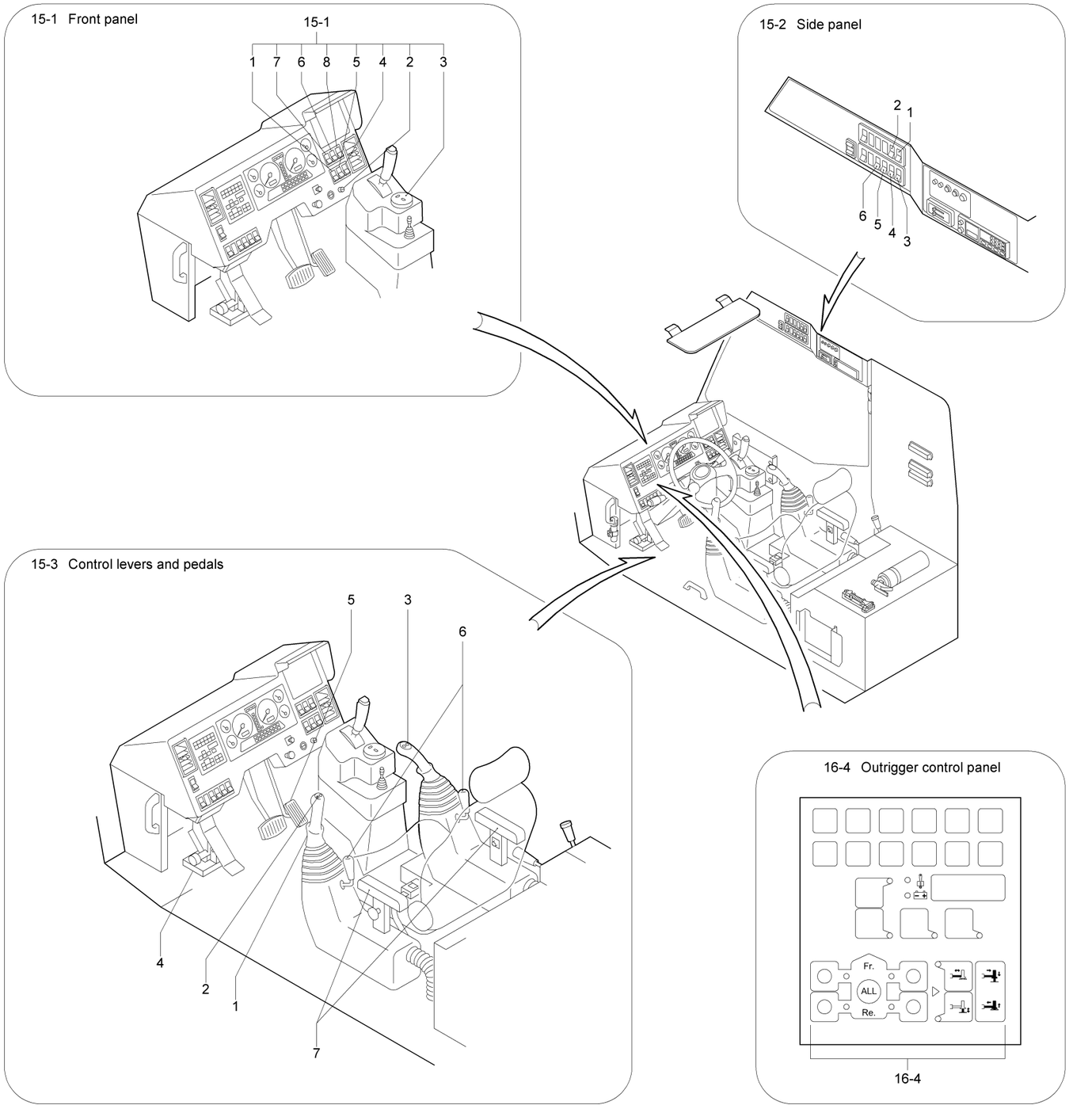
1-1-4 Crane operation devices (611A-0005-0E)

(1) Inside the cab



611A-00080E

15-1 Front panel

1. PTO switch
2. ACS emergency switch (self-reset type)
3. Level gauge
4. Crane operation switch
5. Slewing brake switch
6. Main winch switch
7. Auxiliary winch switch
8. Boom extension/retraction switch

15-2 Side panel

1. Overhoisting emergency switch (self-reset type)
2. Boom extension/retraction emergency switch (self-reset type)
3. Jib side-lifting switch (self-reset type)
4. Slewing free/lock switch
5. Drum rotation detector switch
6. Working lamp switch

15-3 Control levers and pedals

1. Left control lever
2. Slewing alarm button
3. Right control lever
4. Boom extension/retraction pedal
5. Accelerator pedal
6. Console lock lever
7. Armrest

16-4 Outrigger control panel

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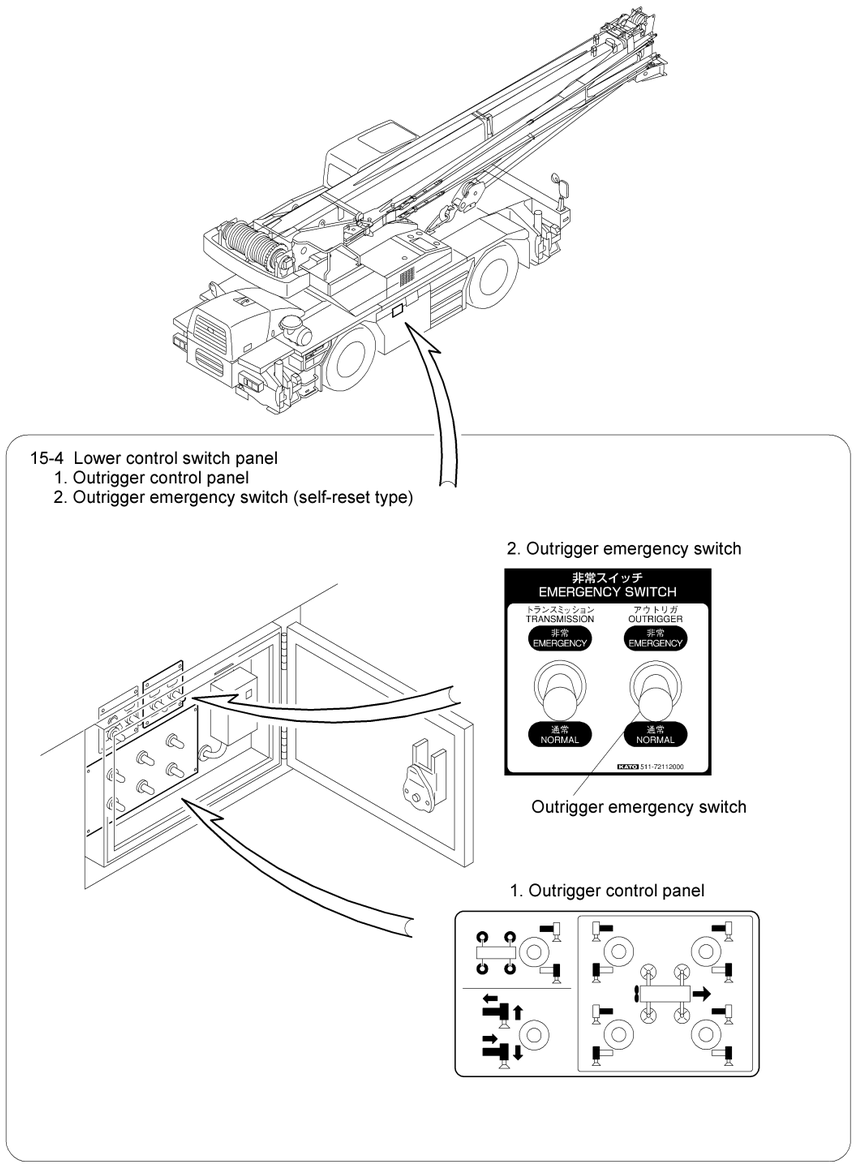
(2) Outside the cab



611A-00090E

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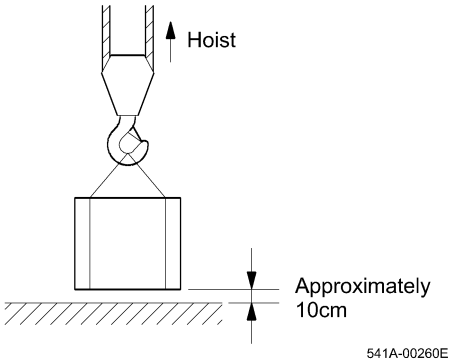
1-2 Terms (541A-0021-3E)

The following names and terms are used frequently in this manual and they are defined as follows.

- Boom····· The box-shaped structural element which bears the load through the sheave, hoisting rope etc. and varies the working radius by derricking, lowering, extending and retracting. It is composed of the boom base, boom sections 2, 3 and 4 which, except the boom base, extend and retract.
- Jib ····· An auxiliary component mounted on the top of the boom to increase its length for lifting comparatively light loads to higher places.
- Rooster sheave ····· The auxiliary sheave mounted on the top of the boom. Used within the area reached by the boom to hoist comparatively light loads on a single part of line.
- Winch····· This device hoists and lowers the load via the hoisting rope. There are winches for the main winding and the auxiliary winding and their drums are driven by hydraulic motors.
- Counterweight ····· A weight provided to counterbalance the moment due to the load (lifted load weight × working radius).
- Outriggers ····· Used to level the machine. They extend sideways from four locations on the carrier body and support the machine.
- Load lifting off the ground ····· Lifting the load and pausing briefly when the load is slightly clear off the ground.

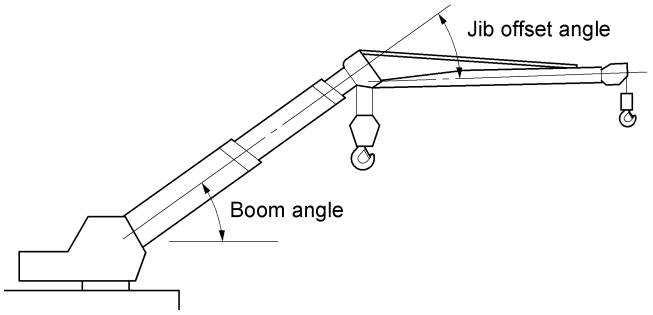


- Front and rear, left and right····· The boom top with the machine in the driving configuration is defined as the front. Rear, left and right are determined accordingly.
- Operation with outriggers····· Crane operation carried out with the outriggers extended to the specified width and the machine set up horizontally.
- Suspension lock····· The status where the suspension cylinders are fully retracted and the suspension function is disabled.
  Always lock the suspension cylinders during crane operation (including the operation without load lifting).
- Suspension free····· The status where the suspension cylinders freely extend or retract according to the bumpy road and the suspension function is operated.
  When driving on the road, always release the suspension lock. (Release the suspension lock when the crane operation is over).
- Stationary crane-on-rubber operation····· Crane operation with the suspension cylinders locked and the outriggers not extended. The term refers to any crane operation in this condition, regardless of whether any load is lifted.
- Pick and carry operation····· Driving with the suspension cylinders locked and a lifting load held (without crane operation).

https://truckmanualshub.com/

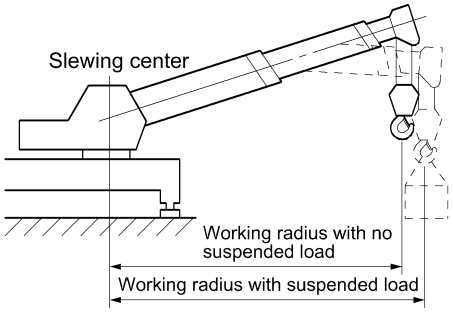
• Boom angle ····· The angle between the boom center line and the horizontal.
The rated lifting capacity for jib use is based on the boom angle.

• Jib offset angle····· The angle between the boom center line and the jib center line.



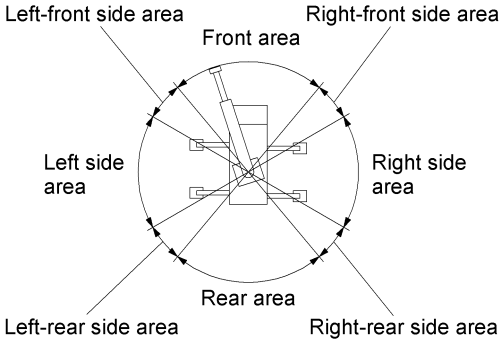
541A-00270E

• Working radius····· The horizontal displacement between the slewing center and the center line of the hook. If the working radius changes so does the rated lifting capacity value (except the rated lifting capacity for jib use).
The value on the rated lifting capacity chart indicates the actual working radius under load including deflection of the boom.



541A-00281E

• Hoisting direction····· The direction of the boom top in the driving configuration is defined as the front and the right, left and rear are determined accordingly.
The actual rated lifting capacity may vary depending on the hoisting direction, even if all the other various crane parameters are identical, such as whether or not outriggers are used (stationary crane-on-rubber operation, pick and carry operation).
The capacity will also vary depending on how far outriggers are extended in each hoisting region.



541A-00290E

NOTE

Refer to the separate ACS instruction manual for slewing position display on the ACS.

https://truckmanualshub.com/

2. For safe operation (0099-0104-1E)

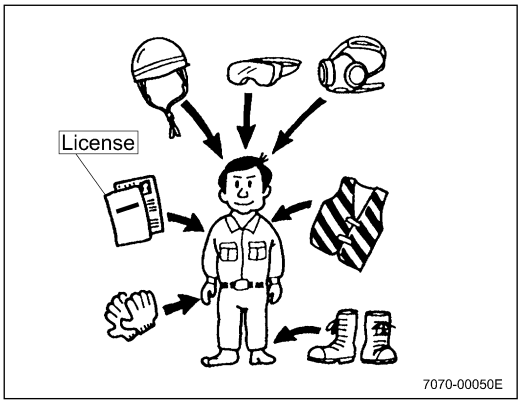
- This section lists precautions you should observe when operating this crane.
- Make sure you fully understand these points before you start operation and observe them to operate safely.
- In this section, pictures which illustrate dangerous situations or working practices are marked with a large "×" .
- The illustrations in this section are intended to attract attention and supplement the main text.
  They do not give a full and detailed account of the content of the text.
- Further precautions may be necessary due to the attachments in use or the conditions of the site.
- Observe the safety regulations and laws of the country where the crane is used.

2-1 General precautions (0099-0008-0E)

2-1-1 General precautions (0099-0226-0E)

(1) Wear protective clothing and equipment

- When operating the crane, do not wear clothing which might catch on control levers or mechanical parts.
- Wear a helmet, protective goggles, safety boots, a mask, gloves etc. as necessary.

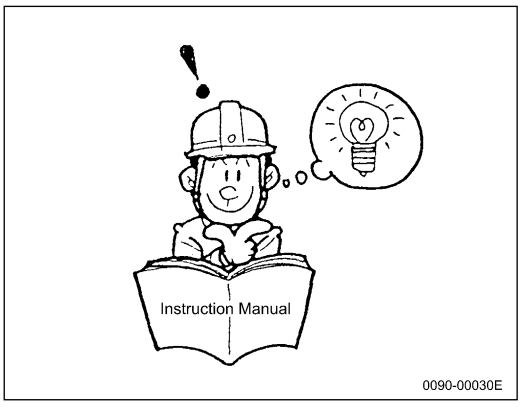


(2) Do not work when you are unwell

Do not attempt to operate the crane when you are sick, excessively fatigued or otherwise unwell.

(3) Read the instruction manual thoroughly and understand it.

Incorrect operation, inspection or servicing can damage the crane or cause accident and injury. Read the manual thoroughly before you start work and be sure you fully understand the methods of operation, inspection and servicing. Do not attempt to work with the crane before you fully understand it.



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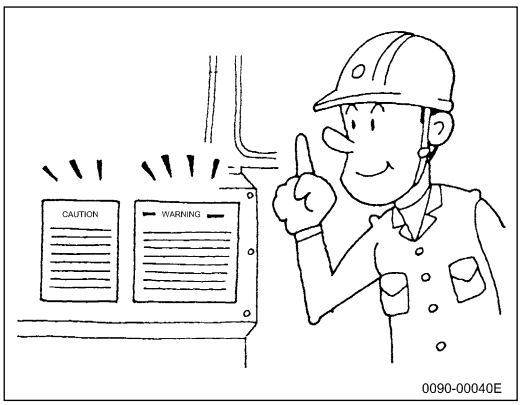
⚠ WARNING

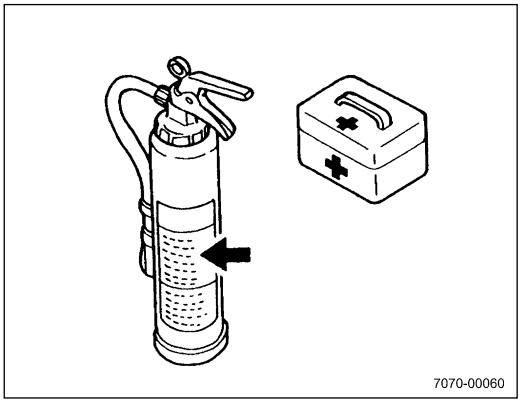
(4) Follow instructions and warnings

This instruction manual and the safety signs mounted on the crane contain instructions and warnings which are necessary for safe operation. Read them first. If you ignore instructions or warnings, you risk injury or fatal accident. If there is something you do not understand, have it explained to you. If the manual is lost or a safety sign is illegible, you should immediately order a replacement from your authorised KATO dealer.



(5) We urge you to carry a fire extinguisher and first aid kit

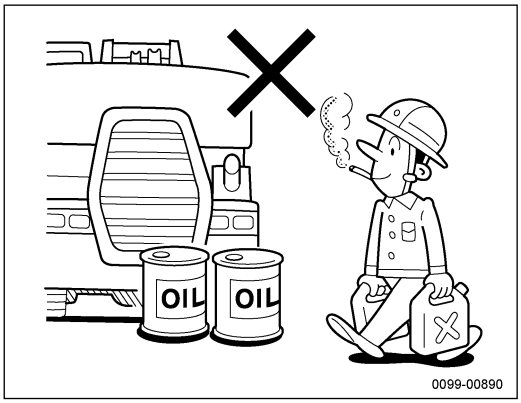
- Fit a fire extinguisher to guard against fire and read its instructions on the label before you need it.
- You are advised to carry a first aid kit.



(6) How to handle fuel and oil

If you smoke or use fire near fuel, oil, Long Life Coolant or battery, there is the risk that it could ignite.

- Extinguish all fires and potential sources of ignition when handling these flammable materials and do not allow them nearby.
- Switch off the engine before refueling and check that there are no fires or potential sources of ignition nearby.
- After refueling or inspections, fasten all fuel and oil caps securely and wipe off any spillage.
- Refuel and change oil in a well-ventilated work area.

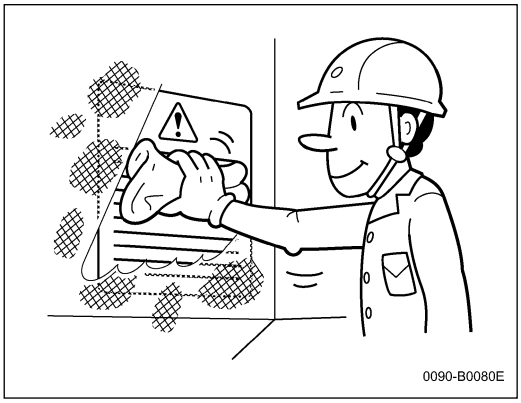


(7) Keep the safety signs clean

- If a safety sign is dirty

  Use water or a neutral cleaner to remove the dirt. Do not use gasoline or organic solvents.
- If it is not possible to remove the dirt, or if a safety sign is damaged or peeling, replace the safety sign with new.

  Refer to the parts list on the crane and order a new sign from your authorised KATO dealer to replace the safety sign.
- When you replace a safety sign, always check that it is identical to the original.



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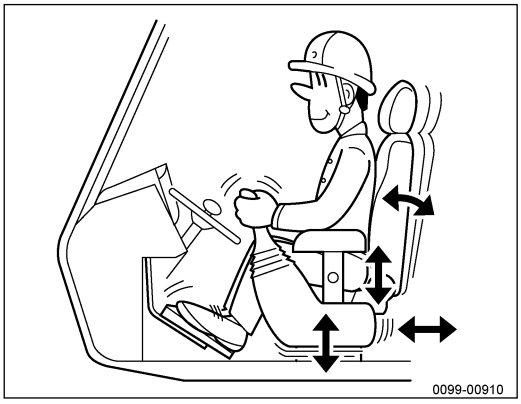
(8) Keep the area of the operator's seat clean and tidy

Do not leave parts, tools or other objects in the area of the operator's seat. These can cause unexpected accidents while you are working.

Do not put aerosol spray cans, paint thinner, or other dangerous combustibles in the cab. They could cause a fire.

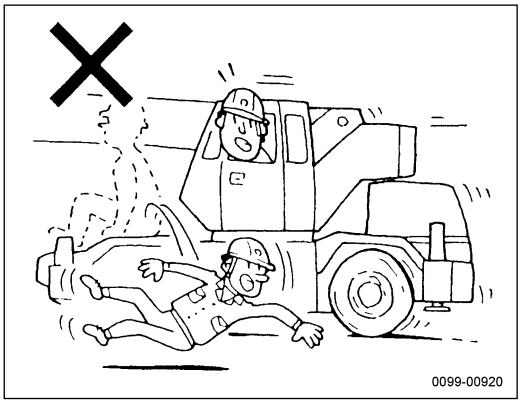
(9) Adjusting the operator's seat and seatbelt

Adjust the operator's seat before starting the engine so that you can reach all control levers and pedal comfortably with your back resting on the seat-back, and fasten the seatbelt.



(10) Only the operator may be in the cab

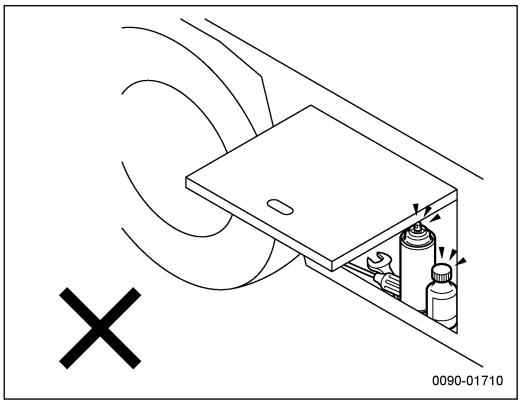
Before and during work, nobody other than the operator may sit in the operator's seat or climb onto the crane. Passengers may collide with obstructions or be thrown off the crane, or they may cause a hazard by obstructing the operator's field of view.



(11) Do not put flammable items in the toolbox

Do not put aerosol spray cans, paint thinner, or other dangerous combustibles in the toolbox.

They could cause a fire.

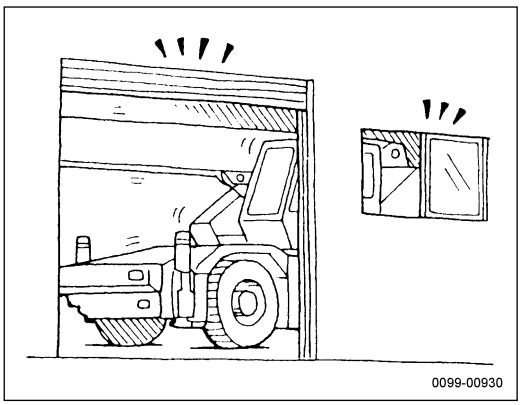


https://truckmanualshub.com/

⚠ WARNING

(12) Precautions when starting the engine indoors

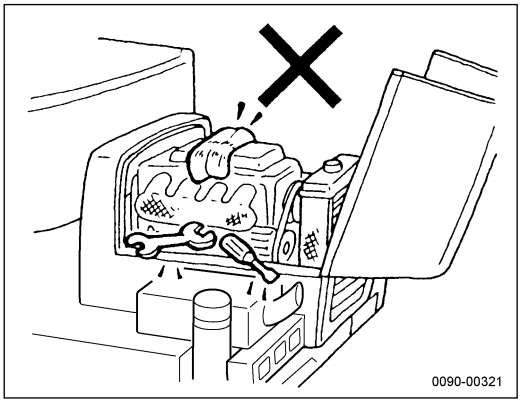
If you need to start the engine indoors, open doors and windows to ensure good ventilation.



(13) Keep the surroundings of the engine clean and tidy

Do not leave tools, rags etc. lying around in the engine compartment.

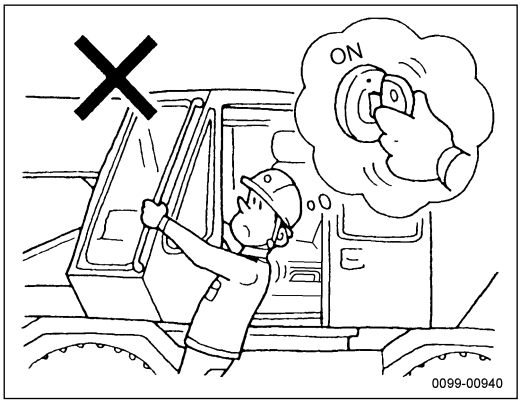
Clear everything away as soon as you finish inspection or servicing. Cleanly wipe away any spilled oil or fuel. Check that paper scraps or other flammable materials are not scattered about or piled up near the engine.



(14) Start the engine from the operator's seat

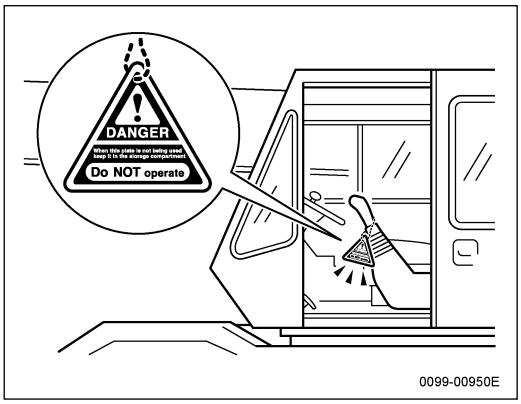
Always start the engine while seated in the operator's seat.

If you are not in the operator's seat when you start the engine, you will not know the positions of the control levers or the condition of the monitor display, so this is a dangerous practice.



(15) Do not use the crane if it has a warning tag attached

If there is a warning tag on the control lever, the crane is in the process of inspection and servicing, so do not start the engine.



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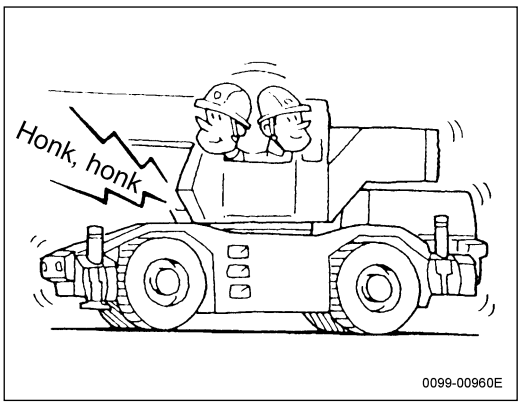
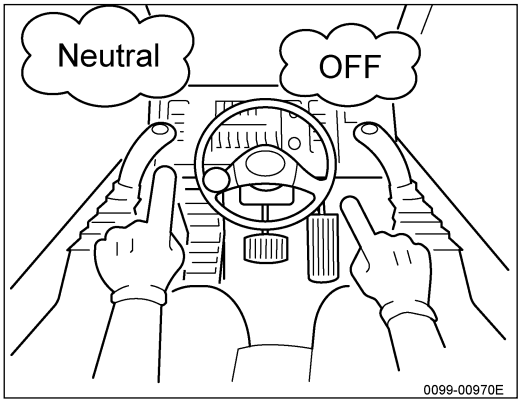
(16) Sound the horn before you start the engine

- Before you board the crane, check that there is nobody nearby.
- When you are about to start the engine, sound the horn to warn people nearby.



(17) Before you start the engine, check that all the levers, pedals and switches are in their neutral or OFF positions.



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MEMO

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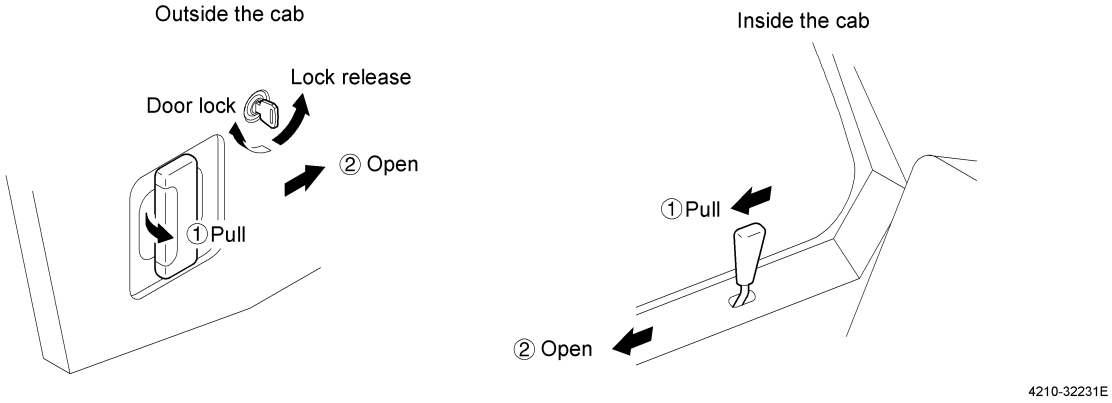
3. General operation devices (061A-0003-1E)

3-1 Inside the cab (611A-0006-0E)

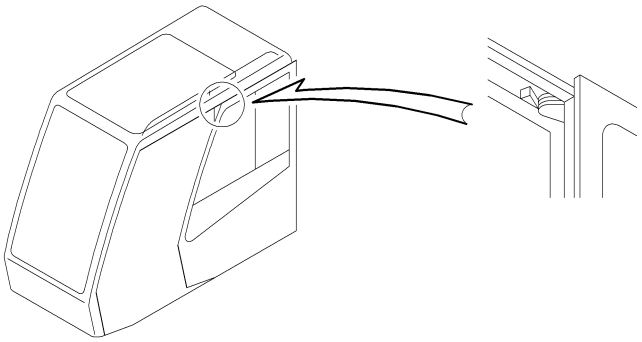
(1) Door

The door can be opened with a starter key. After you finish work, turn the starter switch to the off position and always lock the door. The key should be kept by the operator.



⚠ WARNING

- Do not put your hands or head out through the door or windows while the crane is working.
- If you operate the crane with the door open, open it all the way back until it engages on the door lock. If you operate the crane with the lock not engaged, the door could slam dangerously during slewing operation. Also take care not to put your hands or head out through the open door during crane operation.
- Always shut and lock the door while driving on roads.
- Do not hang on to the door when getting on or off the cab.

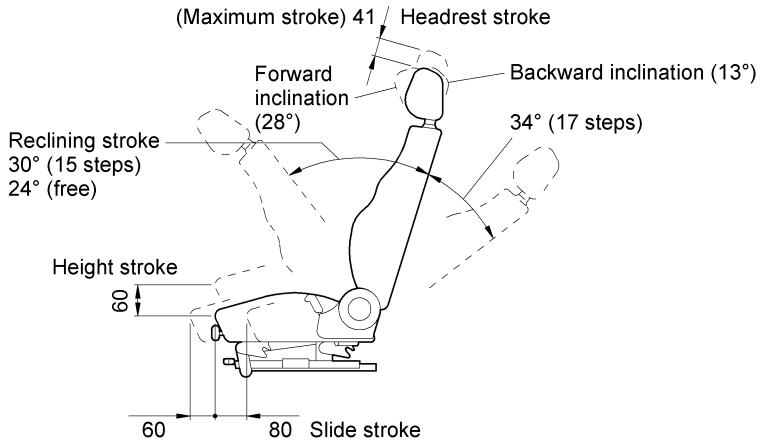


(4210-0003-1E)

https://truckmanualshub.com/

(2) Seat

Adjust it to the easiest position for you to operate the controls.



9210-00170E

⚠ CAUTION

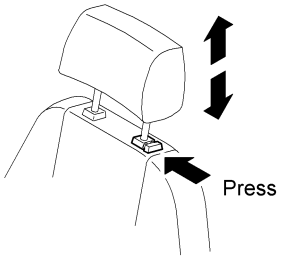
It is dangerous to adjust the seat while you are operating the crane.

(8210-0021-0E)

1) Headrest

Sit in the seat and adjust the height of the headrest.

Press the knob while adjusting for height.

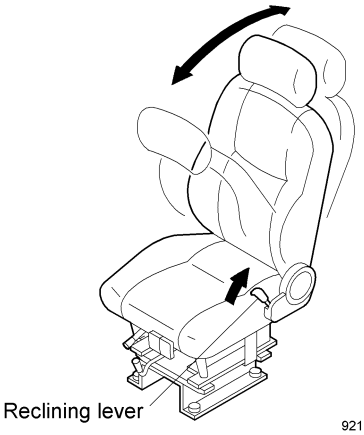


321A-00311E

2) Reclining lever

Sit in the seat and adjust the reclining angle of the seat-back.

Pull the reclining lever and adjust using your body weight until the angle is right.



9210-00180E

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3) Front and rear height levers

You can adjust the height of the front or rear of the seat base independently.

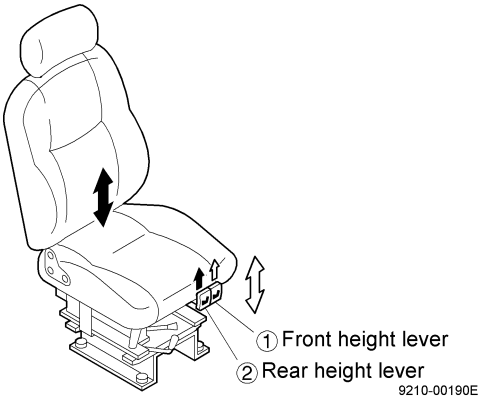
Operate either of the levers to raise or lower the seat base.

① Front height lever

The front edge rises or lowers, pivoting about the rear of the seat.

② Rear height lever

The rear edge rises or lowers, pivoting about the front of the seat.

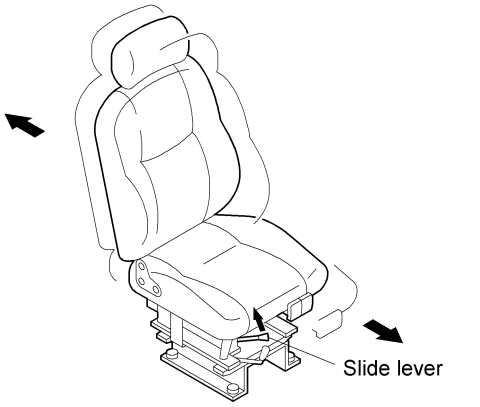


9210-00190E

4) Slide lever

You can adjust the position of the seat forward or backward.

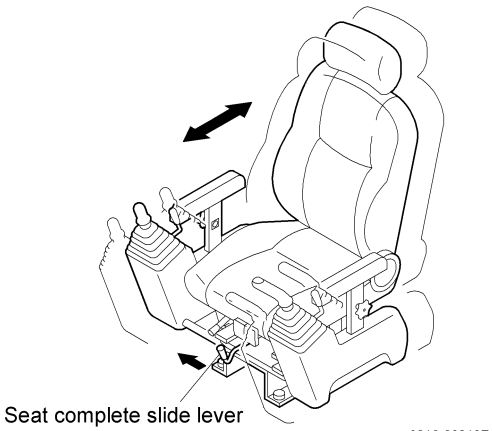
Sit in the seat and adjust the seat position matching the accelerator pedal.



9210-00200E

5) Seat complete slide lever

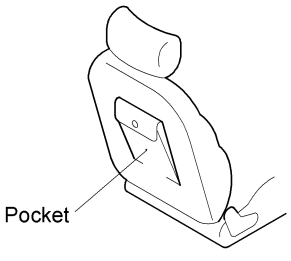
If you adjust the slide lever with the console locked, you can adjust the position of the seat complete forward or backward without changing the positional relationship between the seat and left/right control levers.



9210-00210E

6) Pocket

Documents etc. can be kept here.



9210-00220E

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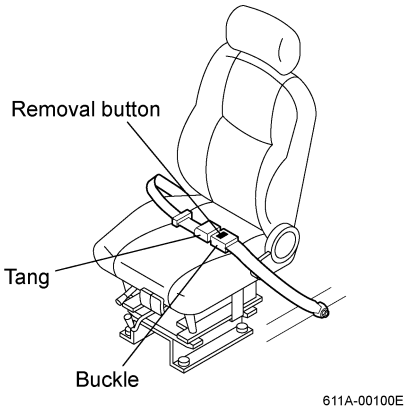
(3) Seatbelt

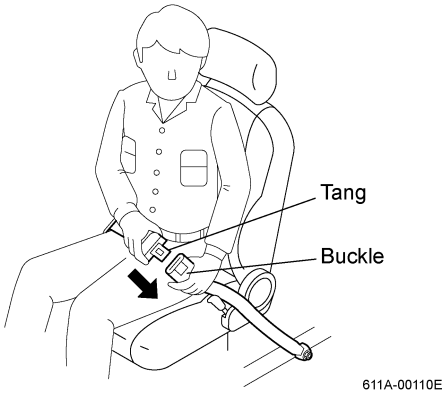
Always fasten the seatbelt for safety while driving the machine.

1) How to put on the seatbelt

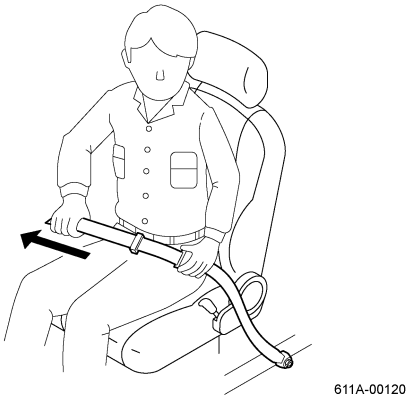
① Press the removal button on the buckle to remove the tang from the buckle.



② Sit in the seat and insert the tang into the buckle and push until it clicks.



③ Pull the seatbelt as far as your hip and adjust the fastening pulling the belt end through the tang.



2) How to remove and tow the seatbelt

Press the removal button on the buckle once and remove the tang from the buckle.

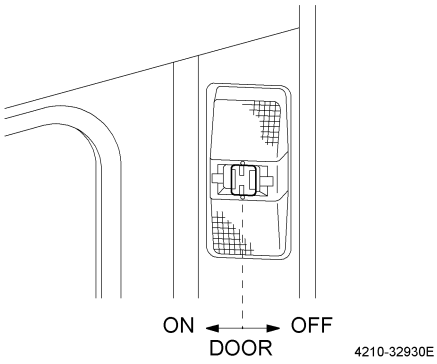
https://truckmanualshub.com/

(4) Interior lamp

ON ····· The lamp is switched on regardless of the door opening/ closing.

DOOR·····The lamp is linked to the door to light when the door is open.

OFF·····The lamp is switched off regardless of the door opening/ closing.

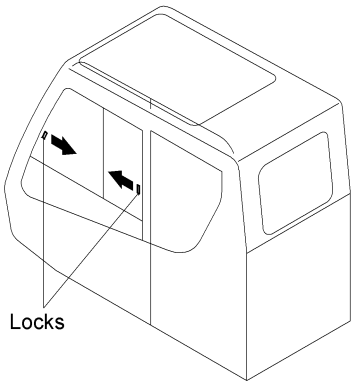


4210-32930E

(5) Left window

Grip and pull out the lock to slide open the window.

- The right-hand side of the window is a fixed window.
- The only left-hand side of the door window can slide.



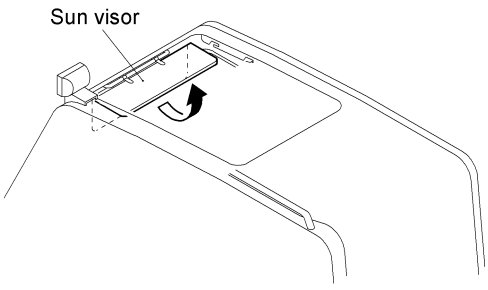
611A-00140E

⚠ CAUTION

- After you finish work, close the window firmly until it locks.
- If you slide the window very rapidly, you could break the lock, so slide it slowly.
- If you open the window during crane operation, do not put your hands, head etc. through the open window.
  Your hands, head etc. could be caught in the derrick cylinder or boom.

(541A-0027-0E)

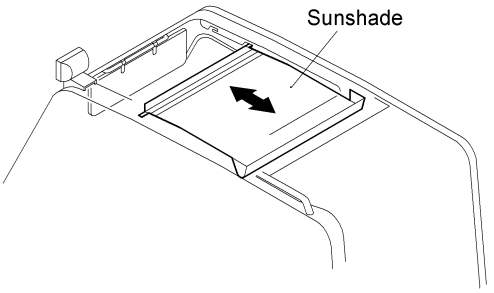
(6) Sun visor



4210-32940E

(7) Sunshade

When using the sunshade, make sure that it does not come out of its rails. Also, make sure that the locking mechanism is fully latched.



4210-32950E

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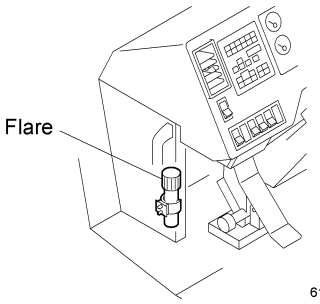
(8) Flare (optional)

A flare is stored in a holder on the left front side of the seat. It is intended for signaling in emergencies.

The expiry date and method of use are indicated on the label affixed to the flare, so check them before using the flare.



611A-01720E

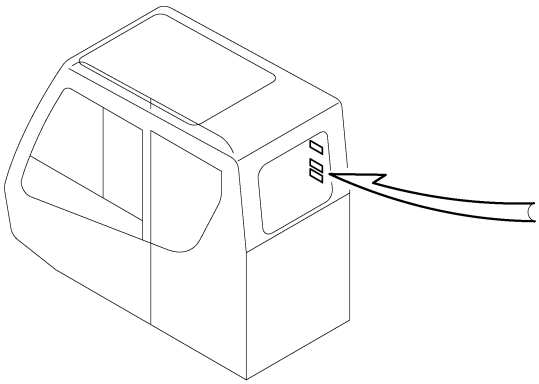
(9) Fuse box

If a fuse blows, investigate and repair the cause before replacing the fuse with a spare fuse from inside the fuse box.

⚠ WARNING

- If a fuse blows, investigate the cause with the starter switch in the "OFF" position. After checking that there are no short circuits in the wiring, replace the blown fuse with a spare fuse of the same capacity.
- Never use a fuse with a higher capacity than specified or a wire, etc.

(8230-0025-0E)



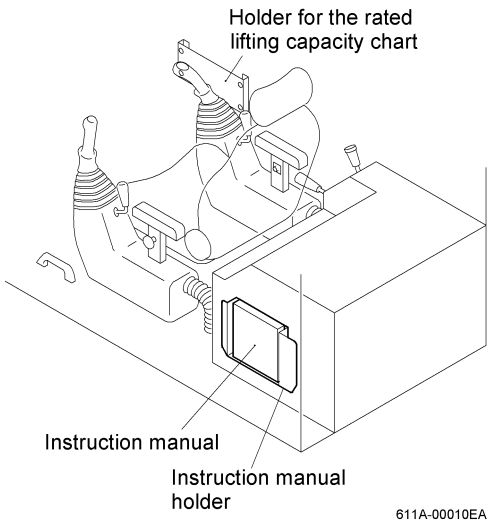
A 611-75109000			
⑪	10A	①	20A
ACS		Working lamp	
⑫	5A	②	20A
PTO		Cab cooler	
⑬	5A	③	10A
ACS		Roof wiper	
⑭	5A	④	5A
Buzzer		Roof washer	
⑮	5A	⑤	5A
Fan		Front washer	
⑯	3A	⑥	5A
Slewing brake		Slewing horn	
⑰	3A	⑦	5A
Charge unload		Revolving lamp	
⑱	10A	⑧	5A
Starter switch		Shift lever	
⑲	5A	⑨	20A
Automatic stop		Cab heater	
⑳	5A	⑩	20A
Telescopic cylinder selector		Defroster	

B 611-75110000			
⑪		①	10A
		Starter switch	
⑫	10A	②	
Turn signal			
⑬	20A	③	5A
Cab cooler		COR	
⑭	5A	④	5A
Cab heater		COR	
⑮		⑤	5A
		COR	
⑯	5A	⑥	5A
Interior lamp		COR	
⑰		⑦	5A
		COR	
⑱	5A	⑧	5A
ACS		COR	
⑲	5A	⑨	
ACS			
⑳	5A	⑩	5A
Meter		COR	

C 611-75111000			
⑪		①	
⑫	5A	②	
Meter			
⑬	5A	③	5A
Exhaust brake		Radio	
⑭	5A	④	5A
Suspension lock		Spare	
⑮		⑤	5A
		Headlight	
⑯	5A	⑥	10A
Parking brake		Front wiper	
⑰		⑦	10A
		Clearance lamp	
⑱		⑧	10A
		Cigarette lighter	
⑲	5A	⑨	10A
Rear steering lock		Turn signal lamp	
⑳		⑩	5A
		PTO	

611A-00150

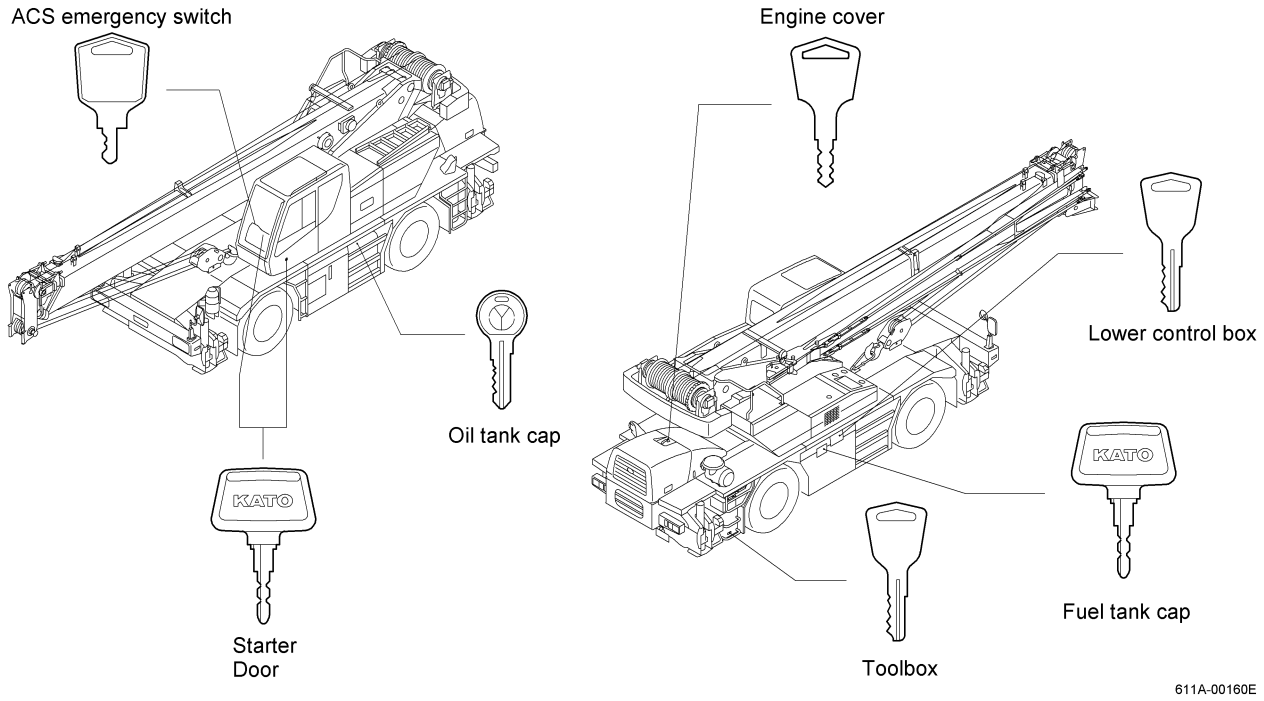
(10) Holders for the rated lifting capacity chart and instruction manual



611A-00010EA

https://truckmanualshub.com/

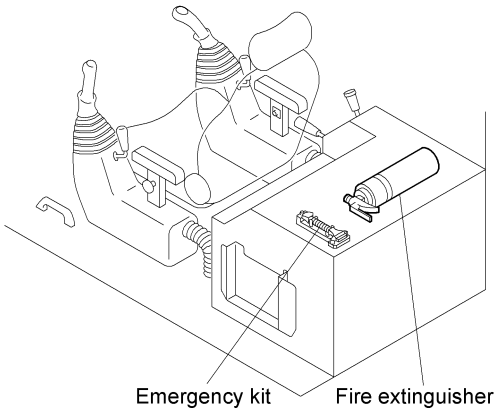
(11) Keys



(12) Fire extinguisher (optional)

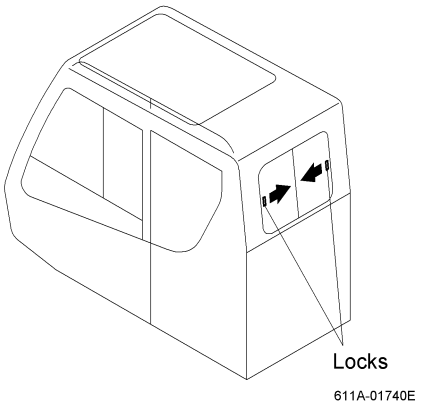
Refer to the label on the fire extinguisher to check its instructions and limit of use.

(13) Emergency kit



(14) Rear window

Grip and pull out the lock to slide open the window.

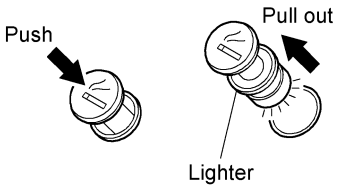


https://truckmanualshub.com/

3-2 Front panel (611A-0007-0E)

(1) Lighter

Push it in and pull it out to use it once it springs out.



591A-00200E

NOTE

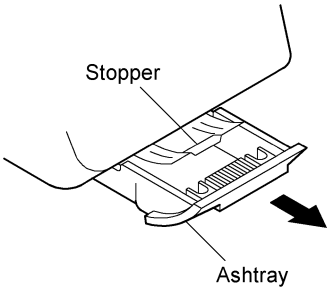
The lighter operates on 24V.

> ⚠ CAUTION
>
> ・Do not use the socket as a power source for anything other than the lighter.
> ・The metallic part of the lighter becomes hot, so do not touch the metallic part when lighting a cigarette.

(541A-0032-1E)

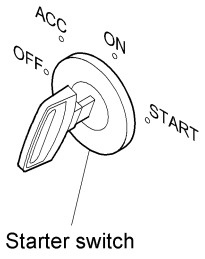
(2) Ashtray

When cleaning it, pull it toward you with pressing down the stopper and remove.



611A-00190E

(3) Starter switch



511A-00560E

OFF; In this position, the key may be inserted and withdrawn and the power to the radio etc. is cut off. If you leave the operator's seat, take the key out.

> ⚠ CAUTION
>
> When you turn the key to OFF to stop the engine, it takes 4 －5 seconds for the indicator lamps to go out, even if the engine has stopped. This is for circuit protection and is quite normal.

(541A-0033-2E)

ACC; The engine stops in this position. You can use the radio etc.

> ⚠ CAUTION
>
> If you use the radio or other accessories for long periods while the engine is stopped, the battery will run down. Do not use the radio etc. for long periods.

(541A-0034-1E)

ON; The engine is running in this position.

> ⚠ CAUTION
>
> - Do not leave the key in this position for a long time when the engine is not running as this can run down the battery.
> - When the starter switch is turned to the "ON" position, the lamps on the cluster meter panel and on the switch panel will all light for three seconds and a buzzer will sound. This indicates that the duplex communications system check is running. If no problem is detected, normal operation will begin automatically, but if an error code is displayed, refer to the "inspection and servicing section" to find what the error code means. In particular check that there are no error messages displayed before you start the engine.

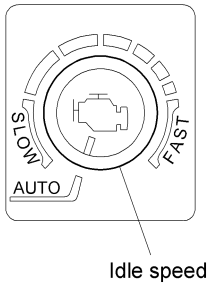
(541A-0035-2E)

START; You can start the engine in this position. Once the engine has started, let go of the key. It will return to the "ON" position automatically. (The engine starts only when the shift lever is in the "N" position.)

(4) Idle speed knob

Normally leave idle speed set to "AUTO" .

Turning the knob clockwise about 30 degrees sets the idle speed to "SLOW" for warm-up running. Turning it further clockwise sets it to "FAST". Turning it back to "SLOW" reduces the engine revolutions again.



881A-00190E

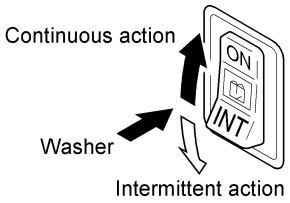
https://truckmanualshub.com/

3-3 Side panel (541A-0036-1E)

(1) Roof window wiper/washer switch

Set this switch to "ON" to have the roof window wiper work continuously and "INT" for intermittent action.

Press the center of the switch to spray cleaning fluid from the washer tank through the nozzle. Even if the wiper switch is "OFF" (in the neutral position), the wiper will work for a few strokes every time the washer switch is pressed to use the sprayed fluid to clean the roof window.



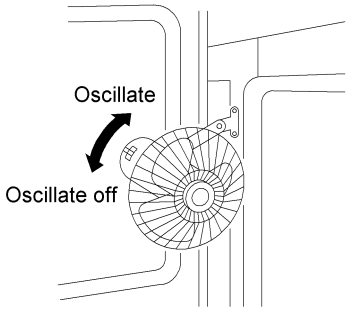
4210-33270E

> ⚠ CAUTION
>
> Do not press the washer switch for more than 15 seconds continuously at one time. If you keep pressing the switch for a long time, the pump could break down. Do not press the switch if the washer tank is empty as this could burn out the pump.

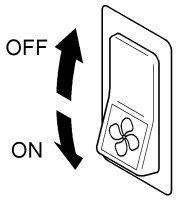
(591A-0081-0E)

(2) Fan switch (optional)

When this switch is in the "ON" position, the fan works.



2010-00850E



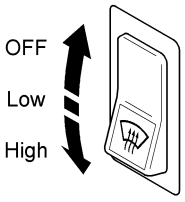
4210-33220E

NOTE

Use the lever on the fan to turn oscillation on and off.

(3) Defroster switch

Use this switch to defrost the windscreen and side windows.



4210-33280E

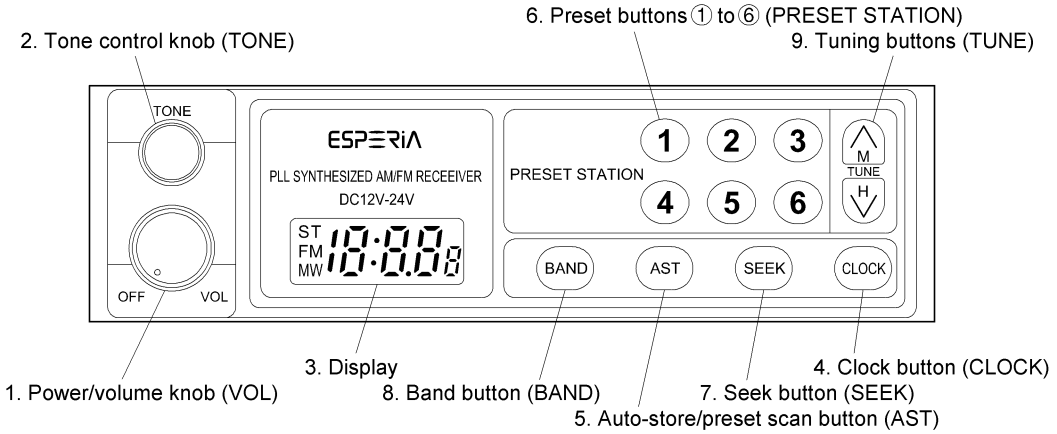
(4) Heater switch (optional)

Refer to the separate instruction manual.

https://truckmanualshub.com/

3-4 Radio (optional) (591A-1098-0E)

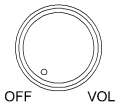
(1) Name of each part



591A-11650E

1) Power/volume knob (VOL)

To switch the power ON, turn the knob to the right until it clicks. Keep turning it to the right to increase the volume.



591A-11660

2) Tone control knob (TONE)

Turn the knob to the right to amplify high tone or to the left to reduce high tone.

591A-11670

3) Display

Used to display the clock, radio frequency and operation mode.

591A-11680

4) Clock button (CLOCK)

Press this button to switch to the clock display. Press it again to switch back to the frequency display.

591A-11690

5) Auto-store/preset scan button (AST)

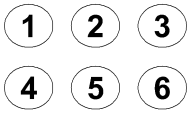
Pressing this button plays each preset station for 5 seconds. To select the desired station and return to normal radio reception mode, press it again when the desired station is being played.

Hold this button down for more than 2 seconds to switch to the auto-memory mode.

591A-11700

6) Preset buttons ① to ⑥ (PRESET STATION)

Each button can be preset to one station each in AM (MW) and FM frequency bands. (See section (6) "Setting presets" regarding how to preset stations.)



591A-11710

https://truckmanualshub.com/

7) Seek button (SEEK)

Pressing this button will automatically search for and stop at the next available station.

591A-11720

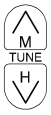
8) Band button (BAND)

Press this button to switch between AM (MW) and FM frequency bands.

591A-11730

9) Tuning buttons (TUNE)

Press the "up button (∧)" to increase the frequency and "down button (∨)" to decrease the frequency. Hold the button down to increase/decrease frequency rapidly.



591A-11740

(2) Replacing fuses

The radio is equipped with an internal fuse, which cannot be replaced.

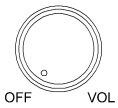
If a fuse failure is suspected, contact your authorised KATO dealer for service.

> ⚠ CAUTION
>
> Do not attempt to replace the fuse by disassembling the radio.
> Doing so could cause smoke or fire.

(591A-1099-0E)

(3) Listening to the radio

1) Turn the starter switch to the "ON" position and supply power to the radio.

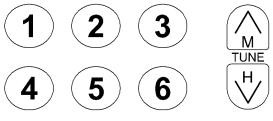


591A-11660

2) Press the "BAND" button to select either AM (MW) or FM.

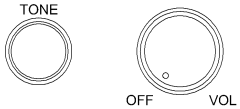
591A-11730

3) Use the preset buttons or tuning buttons to select the desired station.



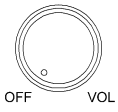
591A-11750

4) Adjust the volume and tone as desired.



591A-11760

5) To turn the radio OFF, turn the "VOL" knob to the left until it clicks.



591A-11660

https://truckmanualshub.com/

(4) Using the "SEEK" button to search for stations (automatically)

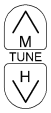
Pressing the "SEEK" button will cause the radio to automatically start increasing the frequency until it finds a station. Once it finds an available station, it will stop at that frequency.

591A-11720

(5) Selecting stations by manual tuning

Pressing the "up button (∧)" increases the frequency and pressing the "down button (∨)" decreases the frequency.

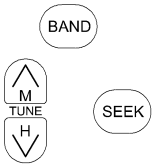
Holding either button down will change the frequency rapidly in the corresponding direction.



591A-11740

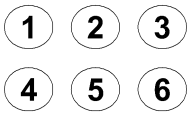
(6) Setting presets

1) Press the "BAND" button to select the desired frequency band, then use the "TUNE" or "SEEK" buttons to select the desired station.



591A-11770

2) Press the desired preset number, to which the current station will be assigned, and hold it down for at least 2 seconds. When the button number appears on the display, presetting is finished.



591A-11710

3) Preset the other buttons in the same way, as described in steps 1) and 2) above.

- Pressing a preset button already set to a particular station for more than 2 seconds will change the preset setting.
- If preset settings are deleted, such as when the battery is replaced on the machine, reset the presets as described above.
- Each of the preset buttons, from 1 to 6, can be preset to one AM station and one FM station.

(7) Auto-store/preset scan

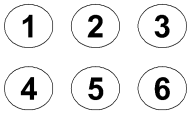
- Pressing the "AST" button for more than 2 seconds while the radio is ON will cause it to automatically search for available stations within the current frequency band and assign them to the six preset buttons (Auto-store function).

591A-11700

> ⚠ CAUTION
>
> The auto-store function will delete any stations recorded in memory.
> If a station is not stored for the desired button, preset the station to the button, as described above.

(591A-1100-0E)

- Pressing the "AST" button for less than 2 seconds will cause the radio to play each preset station for 5 seconds each. Pressing the button again returns it to the normal mode (Preset scan function).



591A-11710

https://truckmanualshub.com/

(8) Automatic stereo/mono reception

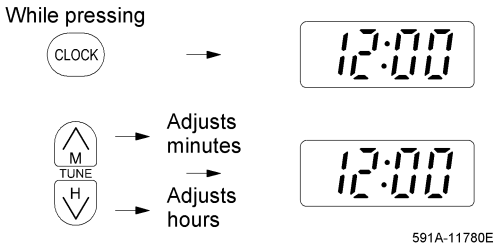
If the signal from an FM station becomes too weak, due to distance, mountains, or other reasons, reception will automatically switch from stereo to monaural modes to reduce undesired noise.

If the signal becomes stronger again, the radio will automatically switch back to the stereo broadcast.

(9) Setting the clock

If the display is showing the frequency, press the "CLOCK" button to display the time. While holding the "CLOCK" button down, press the "up button (∧)" to change the minutes and the "down button (∨)" to change the hours.

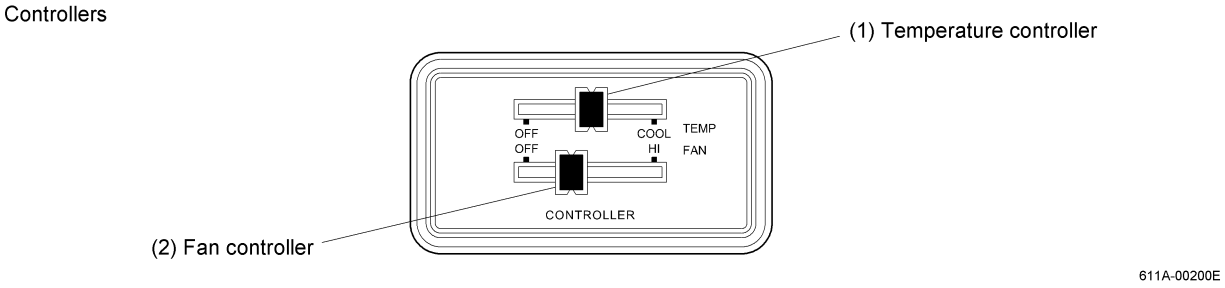
Releasing the "CLOCK" button will return to the previous mode.



https://truckmanualshub.com/

3-5 Cabin air conditioner (611A-0008-0E)

3-5-1 Name and function of control sliders (611A-0009-0E)

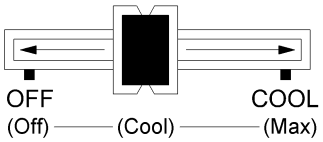


611A-00200E

(1) Temperature controller

Adjusts the air flow temperature.

- Cooling increases the farther the slider is moved to the right (toward "COOL").
- In the OFF position, cooling will shut off, but if the fan controller is left ON, then uncooled air will continue to blow.

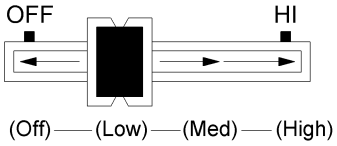


611A-00210E

(2) Fan controller

Controls the air flow rate and functions as the main air conditioner switch.

- Air flow can be adjusted to three levels – Low, Medium, or High.
- Move the slider to OFF to switch the air conditioner off.



611A-00220E

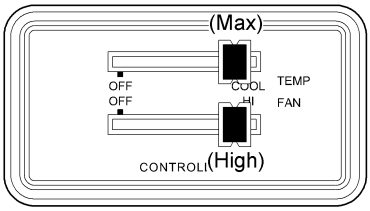
3-5-2 Operating the air conditioner (611A-0010-0E)

(1) Cooling as quickly as possible

To cool the cab as quickly as possible.

① Slide the temperature controller all the way to the right (toward "COOL").

② Slide the fan controller to "HI".



611A-00230E

> **⚠ CAUTION**
>
> Be sure to ventilate by opening a window before operating the air conditioner while parked in hot weather.

(611A-0011-0E)

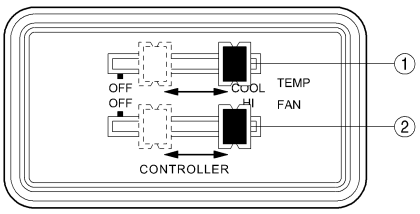
https://truckmanualshub.com/

(2) Normal operation

To dehumidify the cab for increased comfort.

① Slide the temperature controller to the desired position.

② Slide the fan controller to the desired position.



611A-00240

> ⚠ CAUTION
>
> - If the air inside the cab becomes dirty, such as with cigarette smoke, open the window.
> - If the temperature controller is set to "Max" and the fan controller to "Low", when the compressor rpm is high or humidity is high, frost may form on the cooling system and reduce the air flow.
>
> If this occurs, moving the temperature controller to the lowest setting (while maintaining air flow) will remove the frost.

(611A-0012-0E)

3-5-3 Operating precautions (611A-0013-0E)

(1) Parking in hot sun

If parked in the hot sun for an extended period, the interior temperature will become very high.

If this occurs, open the windows completely and ventilate the hot air, then operate the air conditioner. Once the interior air begins cooling down, close the windows and adjust the air conditioner to the desired temperature.

(2) Scratchy eyes

Smoking in the cab with the windows closed and the air conditioner on may cause eye irritation, but this is due to the dry interior air drying out the viscous film on the eyes and making them more prone to irritation.

If this occurs, open the windows and ventilate the smoke.

(3) Appropriate cooling temperature

The air conditioner provides a comfortable atmosphere by lowering the temperature and reducing humidity.

Normally, a temperature that feels slightly cool when entering the cab is considered optimal for health (about 5 or 6℃ cooler than the outside air temperature).

Cooling the air too much may have various detrimental health effects. Therefore, choose the temperature setting carefully.

(4) If the glass becomes foggy

Glass can fog up especially easily on rainy days and can reduce visibility.

This fogginess can be removed by operating the air conditioner.

https://truckmanualshub.com/

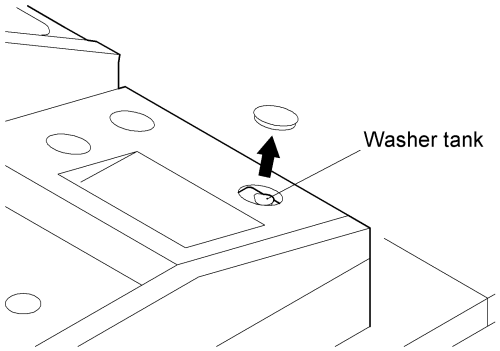
3-6 Outside the cab (611A-0014-0E)

(1) Washer tank

The tank, which is located on the front end inside the right machine compartment, has a capacity of 2.2L. Use automobile cleaning fluid.

NOTE

This tank is used for both the front and roof wipers.



611A-00250E

⚠ CAUTION

- Beware of freezing washer fluid at night or in winter.
- If you press the washer switch while the washer fluid is frozen, you will damage the pump.
- Always check that there is enough fluid in the washer tank.
  If you press the washer switch while the tank is empty or continue to hold the switch down for a long period, you could cause the pump to break down, so refill the tank before it becomes empty.

(8270-0115-2E)

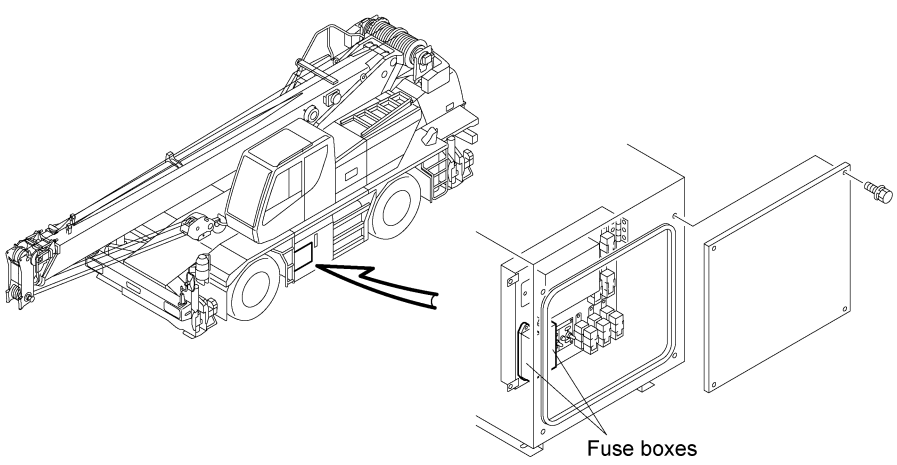
(2) Fuse box

If a fuse blows, investigate and repair the cause before replacing the fuse with a spare fuse from inside the fuse box.

⚠ WARNING

- If a fuse blows, investigate the cause with the starter switch in the "OFF" position. After checking that there are no short circuits in the wiring, replace the blown fuse with a spare fuse of the same capacity.
- Never use a fuse with a higher capacity than specified or a wire, etc.

(8230-0025-0E)



A 611-75503000

①	20A	Headlamp high	
②	15A	Headlamp low	
③	10A	Stop lamp	
④	10A	Clearance lamp	
⑤	10A	Reversing lamp	
⑥			
⑦	10A	Side back lamp	
⑧	20A	E/G ECU main power source	
⑨	5A	E/G ECU starter	
⑩			
⑪	20A	Outrigger	
⑫	15A	Air drier	
⑬	5A	Radiator water level sensor	
⑭	15A	Alternator	
⑮			
⑯			
⑰	10A	Autogreaster	
⑱	5A	Glow heater	
⑲	10A	Exhaust brake • EGR	
⑳			

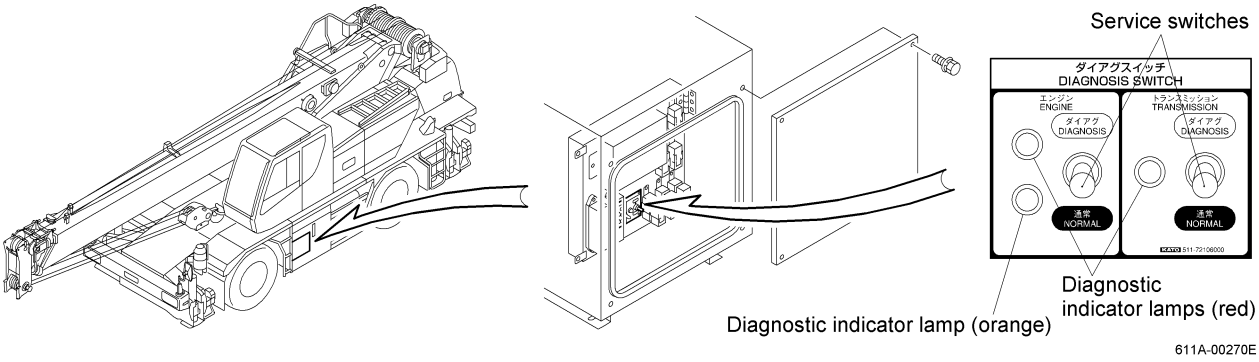
B 611-75504000

①	5A	COR power source 1	
②	5A	COR power source 2	
③	5A	COR DO (0 – 3)	
④	5A	COR DO (4 – 7)	
⑤	5A	COR DO (8 – 11)	
⑥	5A	COR DO (12 – 15)	
⑦	5A	COR DO (16 – 19)	
⑧	5A	COR DO (20 – 23)	
⑨	5A	COR DO (24 – 27)	
⑩	5A	COR DO (28 – 31)	
⑪	5A	COR DO (32 – 35)	
⑫			
⑬	5A	COR DO (40 – 43)	
⑭	5A	COR PRV 1	
⑮	5A	COR PRV 2	
⑯	10A	AT ECU	
⑰	5A	Rear steering lock confirmation	
⑱	10A	Rear steering independent	
⑲	5A	PTO • Suspension lock	
⑳	5A	Power steering pressure	

611A-00260E

(3) Service switches

These switches are used exclusively for servicing the engine and automatic transmission and are set for normal operation when shipped from KATO.



⚠ WARNING

Service switches are used exclusively for servicing.

Never disturb these switches unless instructed to do so by your authorised KATO dealer or KATO service representative.

(491A-0004-0E)

(4) Diagnostic indicator lamps

1) Engine diagnostic indicator lamps

If the system that controls the engine operating status malfunctions, a red lamp or orange lamp lights to indicate the malfunction.

If the service switch is set to normal operation, these indicator lamps indicate the same information as the engine control warning lamp on the cluster meter panel, as shown below.

	Diagnostic indicator lamp	Engine control warning lamp	Buzzer
Malfunction that prevents driving (or dangerous to driving)	Red lamp lights	Lights	Rapid intervals (every 0.5 seconds)
Malfunction that permits driving (only to obtain servicing or other emergency use)	Orange lamp lights	Flashes rapidly (every 0.5 seconds)	No sound

(491A-0036-0E)

⚠ CAUTION

- Do not operate the machine when the red diagnostic indicator lamp is lit.
- When the orange diagnostic indicator lamp is lit, it is possible to drive in the backup mode, but it cannot be controlled properly. Therefore, only drive for emergency purposes.
  Then contact your authorised KATO dealer for instructions as soon as possible.

(491A-0005-0E)

2) Automatic transmission diagnostic indicator lamp

If the system that controls the automatic transmission malfunctions, the red lamp will light to indicate the malfunction.

NOTE

Follow the instructions provided in "10-4 Handling a malfunction in the automatic transmission system".

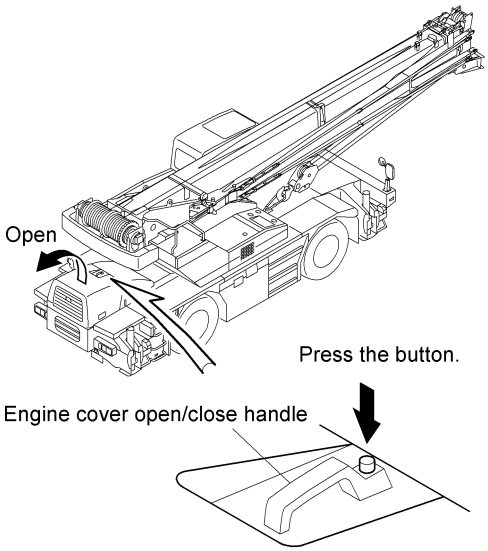
https://truckmanualshub.com/

(5) Engine cover

1) Opening and closing the engine cover

① Opening the engine cover

To open the engine cover, grip the handle on the front of the engine cover and press the button.



611A-00280E

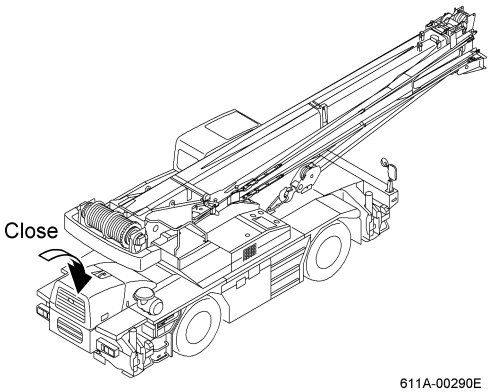
⚠ WARNING

- Due to the danger of rotating parts, such as the cooling fan and belts, only open the engine cover when the engine is stopped.
- When opening the engine cover, be careful of being burned by a hot engine cover, engine, or muffler cover. The engine cover itself may become very hot immediately after operating the engine.
  Therefore, make sure the engine has cooled down sufficiently before opening the engine cover to inspect the engine.
- Leaving the engine cover open can be dangerous as it may close unexpectedly from wind gusts or other causes.
- When opening the engine cover, open it completely without stopping part way.
  Do not open the engine cover in strong winds.

(591A-0083-1E)

② Closing the engine cover

Grip the handle and close the engine cover toward the front, confirming it is fully locked.



611A-00290E

⚠ CAUTION

- Close and lock the engine cover before driving or operating the crane.
- Be careful not to pinch hands or other body parts when closing the cover.

(541A-0039-1E)

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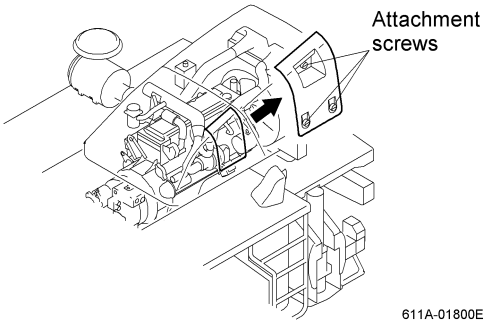
(6) Engine inspection cover

Remove this cover to check the engine oil level.



611A-01800E

⚠ WARNING

- Due to the danger of rotating parts, such as the cooling fan and belts, only open the engine cover when the engine is stopped.
- When opening the engine cover, be careful of being burned by a hot engine cover, engine, or muffler cover. The engine cover itself may become very hot immediately after operating the engine.
  Therefore, make sure the engine has cooled down sufficiently before opening the engine cover to inspect the engine.
- Leaving the engine cover open can be dangerous as it may close unexpectedly from wind gusts or other causes.
- When opening the engine cover, open it completely without stopping part way.
  Do not open the engine cover in strong winds.

(591A-0083-1E)

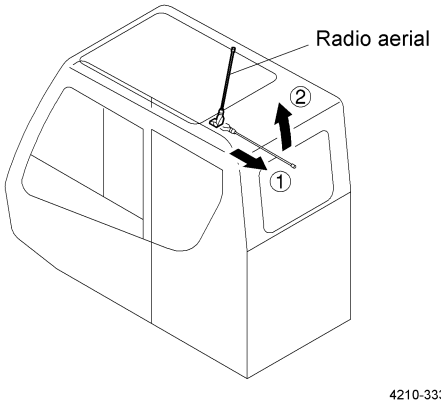
⚠ CAUTION

Before driving or operating the crane, tighten the attachment screws of the engine inspection cover securely.

(491A-0007-0E)

(7) Radio aerial (optional)

To use the radio, pull the aerial out before tilting it upright. Tilt the aerial over during driving.



4210-33311E

https://truckmanualshub.com/

4. Safety signs (611A-0015-0E)

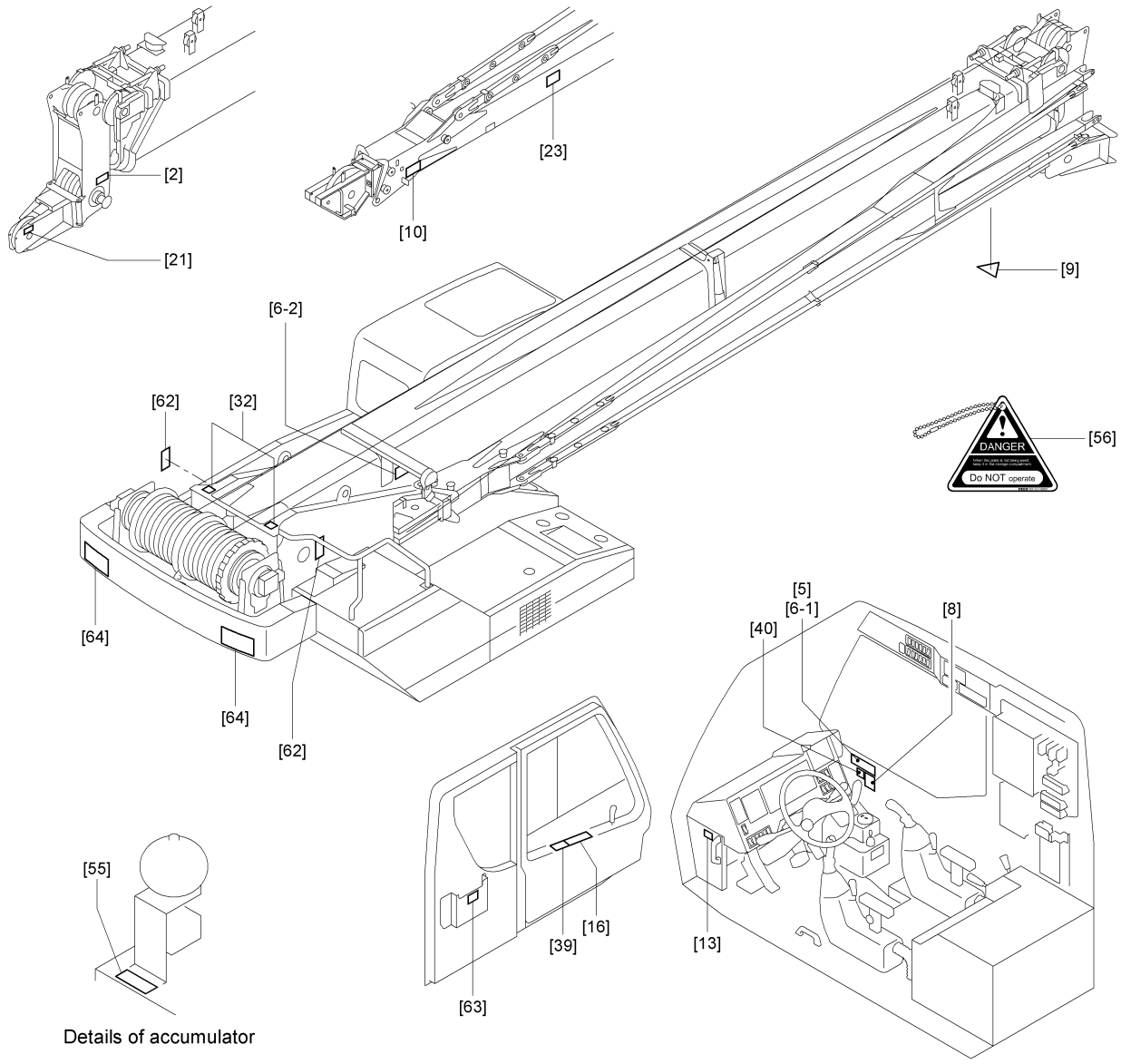
The safety signs are stuck on in the places shown in the diagram. Check all of them before you start to operate the crane.

Keep the safety signs clean at all times so that they are clearly visible and easy to read.

> ⚠ CAUTION
>
> - If a safety sign is dirty, use water or a neutral cleaner to remove the dirt. Do not use gasoline or organic solvents.
> - If it is not possible to remove the dirt or if a safety sign is damaged or peeling, replace the safety sign with new.
>
> Refer to the parts list on the crane and order a new sign from your authorised KATO dealer to replace the safety sign.
> - When you replace a safety sign, always check that it is identical to the original.

(541A-0041-2E)

(1) Superstructure



611A-01770E

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⚠ WARNING

[5]

Content: Notes for the rated lifting capacity chart

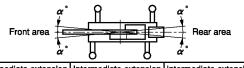
Location: Inside the cab

Part No.: 611-75105001

KATO SR-300L Notes for the Rated Lifting Capacity Chart

Rated lifting capacity charts (1), (2) and (3) when outriggers are used.

1. The rated lifting capacity charts are based on the jib stowed on the boom side.
2. The rated lifting capacity chart indicates the maximum load which can be lifted by this crane provided it is level and standing on firm level ground. The values in the chart include the mass of the main hook and slings for boom operation, and auxiliaiy hook and slings for jib operation. [90 ton hook (mass: 250kg), 4 ton hook (mass: 80kg)].
   Within the chart the figures in the area bordered with a thick line are based on structural limitations while other figures are determined by stability limitations.
3. The working radii are the actual values allowing for boom and jib deflection. Therefore you must always operate the crane on the basis of the working radius.
4. The jib working radius is based on the jib mounted on the end of the 30.5m boom. When operating at other boom lengths, use the boom angle alone as the criterion.
5. Do not operate the jib when the outriggers are completely retracted.
6. The lifting capacities for the over sides vary with the outriggers extension width. Therefore for each outriggers extension condition you should work according the rated lifing capacity chart. Use the rated lifting capacity chart of outriggers full extended for both front and rear areas lifting capacities.

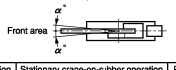


Outrigger extension status	Intermediate extension (6.0m)	Intermediate extension (5.0m)	Intermediate extension (3.8m)	Full retraction
area α °	35	30	20	3

7. The rated lifting capacity of the rooster sheave is the rated lifting capacity of the boom minus the mass of all attached hook, slings etc. to the boom, with an upper limit of 4,000kg.
   [The hook for use with the rooster sheave is the 4 ton hook (mass: 80kg) with one part of line.]
8. If the boom length, boom angle and/or working radius exceeds the rated value, use the rated lifting capacity for the rated value or for the next one, whichever gives the smaller rated lifting capacity.
9. If you are working with the boom while the jib is rigged, subtract 2.2 ton plus the mass of all attached hook, slings, etc. to the boom from the each rated lifting capacity of the boom, with an upper limit of 14 ton.
   Do not use the rooster sheave in this situation. And do not operate the boom while the jib is rigged, when the outriggers are retracted.
10. In whatever working conditions the corresponding boom critical angle is shown in the chart. The crane can tip over if the boom is lowered below the critical angle even if unloaded. Therefore, never lower the boom below these angles.
11. The standard parts of line for each boom length are as indicated in the chart. If you work with a non-standard number of parts of line, do not exceed 37.2 kN (3.8 tf) per wire rope respectively.
12. Crane operation is permissible up to a wind speed of 10m/s. Even in relatively light wind conditions, extra care should be taken when handling loads presenting large wind catching areas.
13. Kato bears no liability whatsoever for damage, crane tipping or other accident caused by crane operations which differ from the directions contained in the instruction manual and the

Rated lifting capacity chart (4) when outriggers are not used.

1. The rated lifting capacity chart indicates the maximum load the crane can lift when its body is level on firm level ground with all tires inflated to the rated pressure and the suspention cylinder completely retracted. The values in the chart include the mass of the main hool and slings.
   Within the chart the figures in the area bordered with a thick line are based on structural limitations while other figures are determined by stability limitations.
   [Rated tire pressure: 900 kPa (9.0 kgf/cm²)]
2. The working radii are the actual values allowing for boom deflection. Therefore you must always operate the crane on the basis of the working radius.
3. The rated lifting capacitiy differs between the front area capacity and the full range capacity. When slewing from the front to the side, take care that the crane could not be over loaded.



Crane operation	Stationary crane-on-rubber operation	Pick and carry operation
Area α °	1	1

4. Do not work with the jib or with a boom length of more than 23.45 m.
5. For stationary crane-on-rubber operation, the parking brake and service brake lock device must be engaged.
6. For pick and carry operation, the super-slow speed switch must be switched to "ON" and the shift lever set to speed 1.
7. For pick and carry operation, lower the load to just above the ground and keep your speed strictly below 2km/h to avoid swinging the load.
   Take particular care to avoid sharp turns, sudden starts and stops.
8. Never operate the crane during pick and carry operation. The slewing brake must be applied.
9. Other than the above precautions observe points (1), (7), (8), (10), (11), (12) and (13) of the section "Precautions on outrigger use".

KATO 611-75105001

611-75105001a

[6-1]

Content: Notes for crane operation

Location: Inside the cab

Part No.: 611-75106000

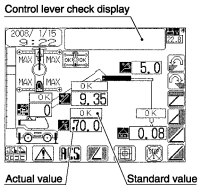
KATO SR-300L Notes for the Crane Operation

Starting

1. The shift lever must always be in the "N" position when you start the engine.
2. To start the engine turn the starter switch to the "ON" position and wait for the start-up check on the front panel to finish (the warning buzzer should stop). Check that there is no problem then go on to start the engine.
3. After the engine starts, run it at idling speed for long enough to warm it.
4. Check that the hydraulic oil level is within the scale range on the level gauge. The crane should be in the driving position.
   * If any malfunction remains indicated on the front panel or an error is indicated, stop the engine immediately and contact your authorised KATO dealer.

ACS preoperational checks

1. Fully extend the outriggers and check that the crane is placed on the level. Set the outrigger and boom configurations on the working status setting screen.
   * The preoperational checks are impossible if the outriggers are set for stationary crane-on-rubber operation or for pick and carry operation, so always extend the outriggers fully.
   * Set the boom status other than jib setting.
2. Engage the slewing lock with the crane facing forward and press the ⚠ switch on the touch panel to call up the ACS preoperational check display.
3. Check that the actual values of the boom length and boom angle match the standard values on the check display. If you operate the jib or boom with the jib, also check the jib offset angle. At this time, the hooks should be located a little below the top of the boom or jib. Check that the standard values displayed at this stage are "OK".
4. Derrick and lower the boom, hoist and lower the winch and extend and retract the boom to check that the crane will not move and that the control lever check display matches the real movements of the levers.
   * Press the ⊗ switch at the lower right on the touch panel to cancel the automatic stop function.
5. Release the slewing lock while "OK" is displayed. Move the slewing lever left and right to check that the crane will not slew and that the control lever check display matches the real movements of the lever.
   * Press the ⊗ switch at the lower right on the touch panel to cancel the automatic stop function.



6. Set the display mode to the ACS screen and check the outrigger setting status and boom operation status before starting work.
7. If you cannot clear the malfunction of the ACS, or if any points are unclear, contact your authorised KATO dealer to clarify the problem before you go on.
   * Make the above checks with the standard slings fitted and the machine set on the firm, level ground.
   * Refer to the ACS instruction manual for details of the ACS preoperational checks.

Outrigger operation

1. Before you extend the outriggers, move the suspension retraction switch while the suspension operation OK lamp is lit to retract the suspension.
2. Before you extend the outriggers, the PTO switch must be in the "ON" position and the outrigger operation OK lamp must be lit.
3. Check the level gauge to ensure that the body of the crane is level to extend the outriggers and then insert the stopper pins without fail.

Slewing operation

1. Pay attention to the positions of any nearby obstacles when slewing.
2. Work the control lever carefully to avoid starting and stopping the slewing suddenly.
3. When slewing from the front or rear to the side, it could be overloaded due to difference in rated lifting capacity, so take special care.
4. Apply the slewing brake once the slewing operation is complete.

Winch operation

1. Do not work with excess loads, drag loads forwards or sideways, or work the levers suddenly.
2. Set the winch switch which you do not operate to the "OFF" position to prevent misoperation.

Boom extension, retraction, derricking and lowering

1. Lower the hook an adequate distance below the boom end before boom extension, retraction, derricking and lowering.
2. Set the boom extension/retraction switch to the boom sections 3 and 4 side to extend or retract the boom sections 3 and 4.
3. Avoid sudden lever operation in boom extension, retraction, derricking and lowering operations.

Preparations for general drive

1. Fasten the boom, jib, hooks, outriggers, rooster sheave, winch mirror etc. in their correct locations.
2. Stow the outriggers and insert their stopper pins without fail.
3. Engage the slewing brake and slewing lock.
4. Fasten the rear wheels in the steering lock device. Do not lock the rear steering with the outriggers extended.
5. Turn the PTO switch to "OFF" and set the suspension lock/release switch to the "lock release" side.

Oiling and inspection

1. Check for low hydraulic oil, oil leakage, grease on the equipment, damage to the wire rope etc. thoroughly after you finish crane operation. Oil and grease or replace parts as necessary.

Read the instruction manual thoroughly and be sure you understand it before you start work.

KATO 611-75106000

611-75106000a

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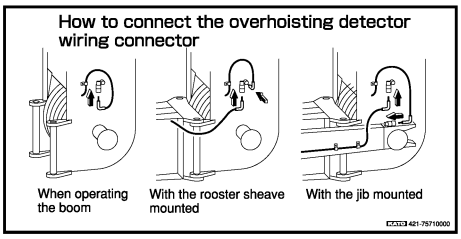
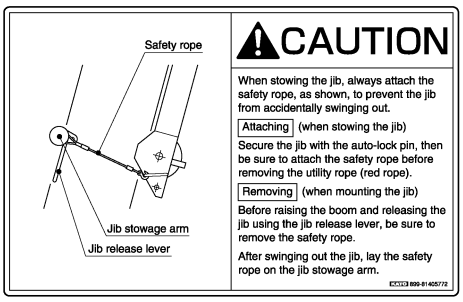
[2]



421-75710000a

Content: How to connect the overhoisting detector wiring connector
Location: Left side of the boom top
Part No.: 421-75710000

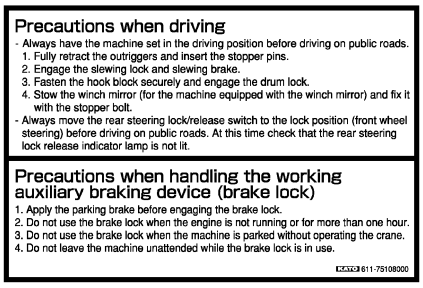
[6-2]



899-81405772a

Content: Attaching the safety rope for stowing jib
Location: Right side of the boom base
Part No.: 899-81405772

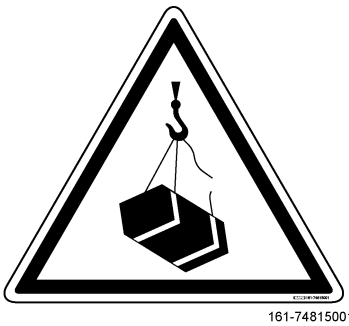
[8]



611-75108000a

Content: Precautions when driving and handling the brake lock
Location: Inside the cab
Part No.: 611-75108000

[9]



161-74815001a

Meaning: Do not allow anybody, even other site workers, to pass under the suspended load.
Location: Underside of the boom base
Part No.: 161-74815001

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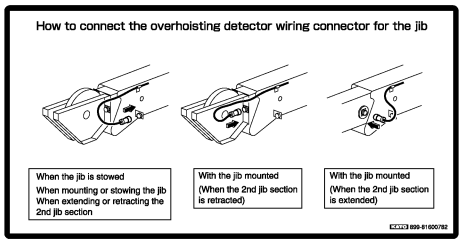
⚠ WARNING

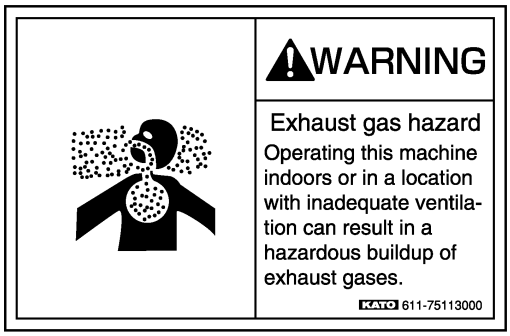
[10]



899-81600782a

Content: How to connect the overhoisting detector wiring connector (for the jib)
Location: Left side of the jib top
Part No.: 899-81600782

[13]

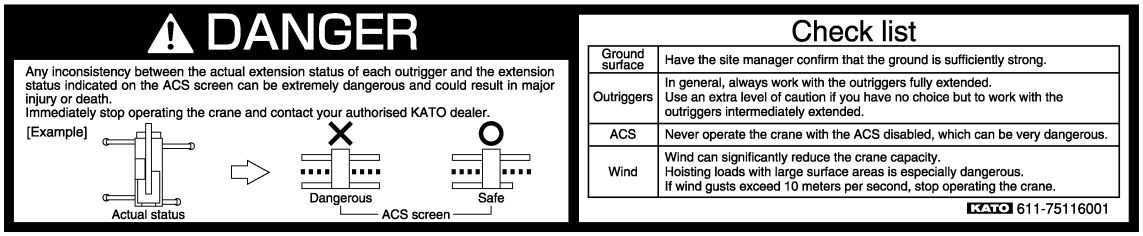


611-75113000a

Content: Exhaust gas hazard
Location: Inside the cab
Part No.: 611-75113000

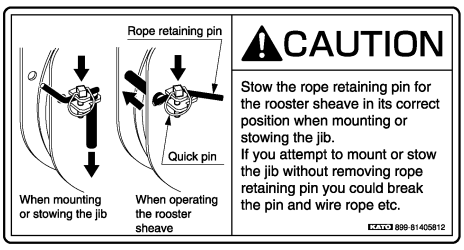
[16]

Content: Check list for outrigger setting
Location: Inside the cab
Part No.: 611-75116001



611-75116001a

[21]

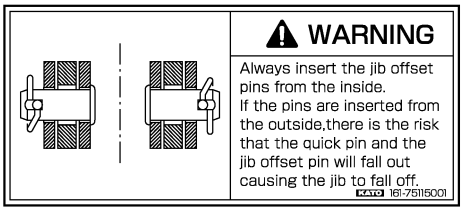


899-81405812a

Content: Note for the rope retaining pin
Location: Left side of the rooster sheave
Part No.: 899-81405812

https://truckmanualshub.com/

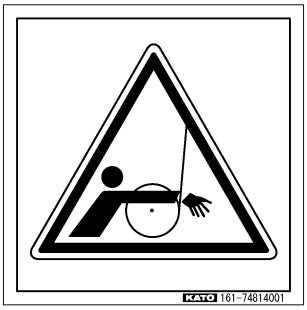
[23]



161-75115001a

Content: Insert the jib offset pin from the inside to the outside and fasten it with the quick pin.
Location: Left side of the jib top
Part No.: 161-75115001

[32]



161-74814001a

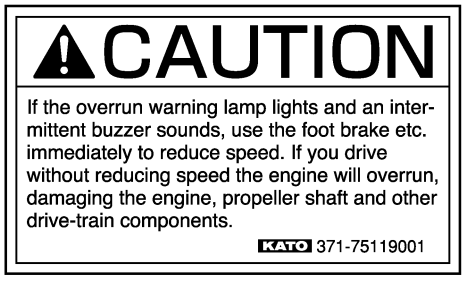
Meaning: Take care not to trap fingers, arms, head or any other parts of the body in the sheave.
Location: Top surface of the table
Part No.: 161-74814001

[39]

371-75118001a

Content: Warning of suspension lock release with the outriggers extended
Location: Inside the cab
Part No.: 371-75118001

[40]



371-75119001a

Content: Precaution when going downhill and overrunning
Location: Inside the cab
Part No.: 371-75119001

[55]

707-75109001a

Content: Warning when handling the accumulator
Location: Near the accumulator
Part No.: 707-75109001

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⚠ WARNING

[56]

707-75118001a

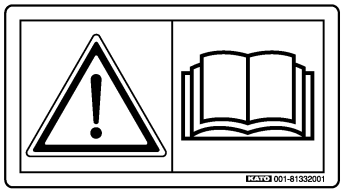
Meaning: Operation prohibition
Part No.: 707-75118001

[62]

001-81302010a

Meaning: Beware of falling. Climb up and down with care.
Location: Left and right sides of the table
Part No.: 001-81302010

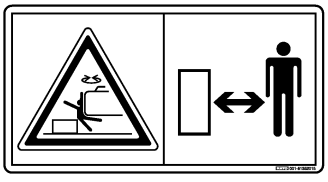
[63]



001-81332001a

Meaning: Always keep the instruction manuals in the cab and check their contents frequently.
Be sure to read the instruction manuals carefully and familiarise yourself with the contents before operating the crane.
When you cannot understand how to manipulate or deal with the crane during working, check and read the instruction manuals repeatedly.
Location: In the crane operation cab where the instruction manuals are kept
Part No.: 001-81332001

[64]



001-81352015a

Meaning: Do not allow anybody, even other site workers, to enter the rear slewing radius.
Location: Left and right sides on the rear of the superstructure
Part No.: 001-81352015

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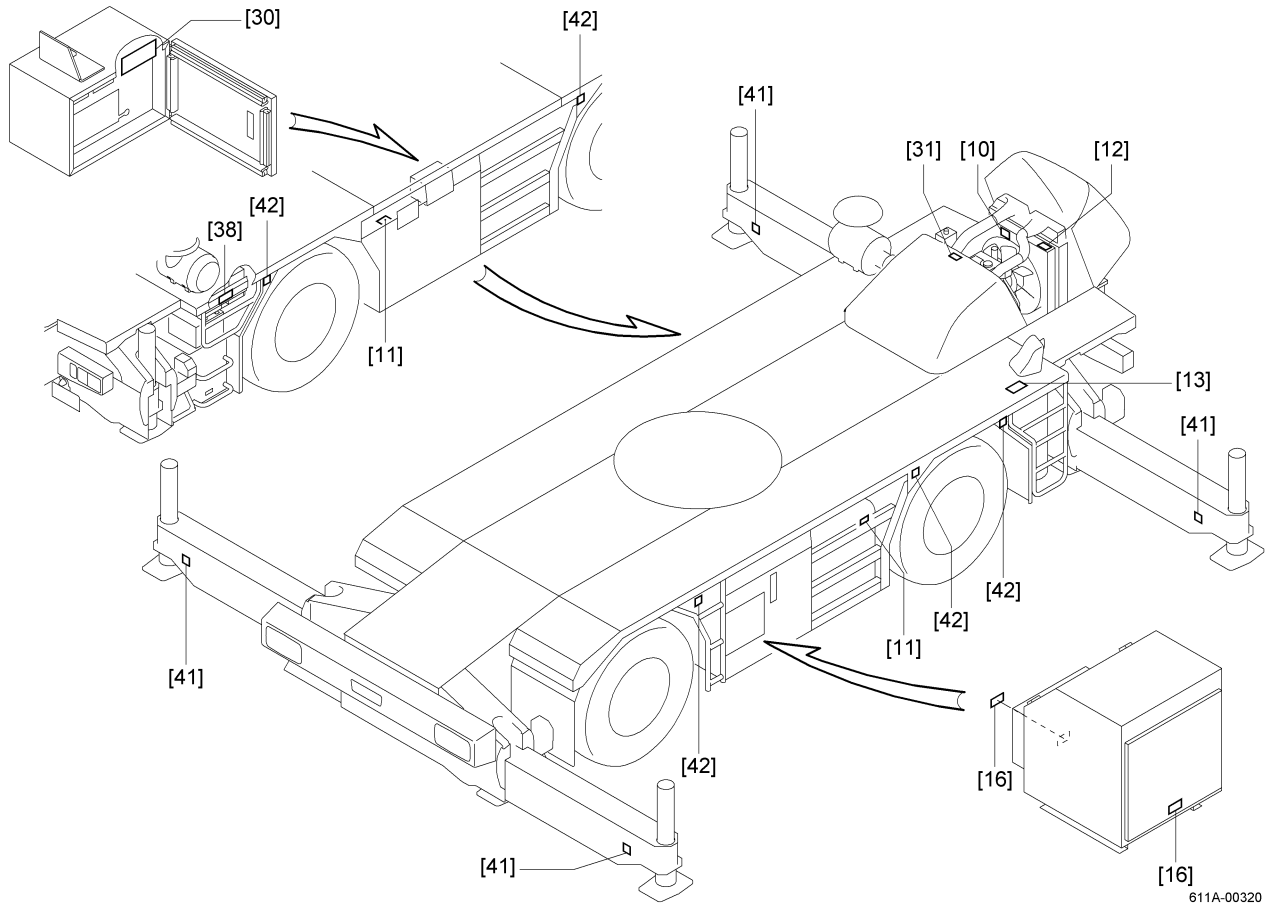
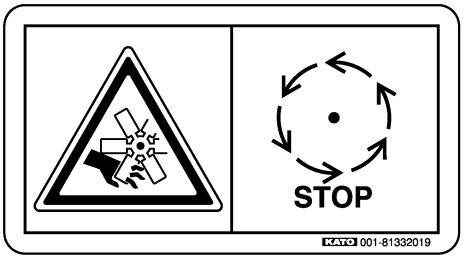
(2) Lower structure



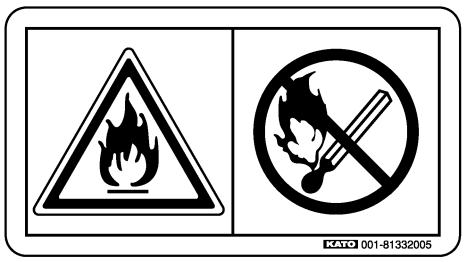
[10]



001-81332019a

Meaning: Do not touch the engine, its surrounding, the fan belt or the rotating parts of the fan while the engine is running or immediately after it has stopped.
Location: Inside the engine cover
Part No.: 001-81332019

[11]



001-81332005a

Meaning: Never bring any flame or source of ignition near the fuel tank and the oil reservoir.
Location: Side of the fuel tank and inside surface of the oil reservoir cover
Part No.: 001-81332005

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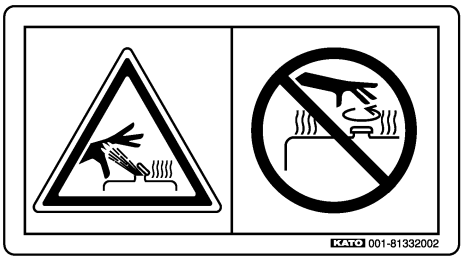
⚠ WARNING

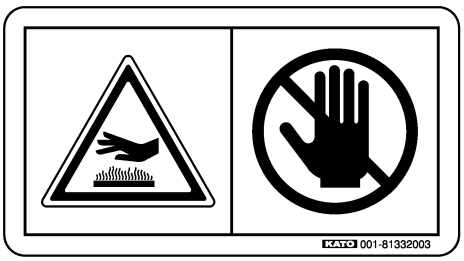
[12]



001-81332002a

Meaning: The coolant will be hot while the engine is running or immediately after it has stopped. Do not open the radiator cap before the coolant has had time to cool.
Location: Inside the engine cover
Part No.: 001-81332002

[13]



001-81332003a

Meaning: Beware of high temperature.
If touched carelessly, you will get burned or serious injury.
Location: Near the exhaust pipe
Part No.: 001-81332003

[16]

453-75006001a

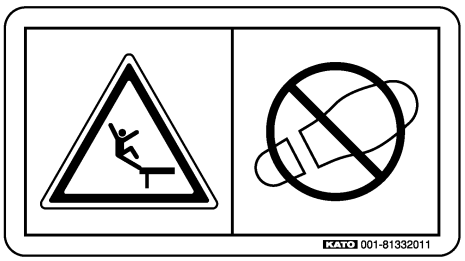
Content: Prohibition of high pressure cleaning
Location: Front side of the relay box
Part No.: 453-75006001

[30]

233-75111001a

Content: Precaution when operating the outriggers
Location: Inside the cover of the outrigger control panel
Part No: 233-75111001

[31]



001-81332011a

Meaning: Climbing prohibition
Location: Top surface of the engine cover
Part No.: 001-81332011

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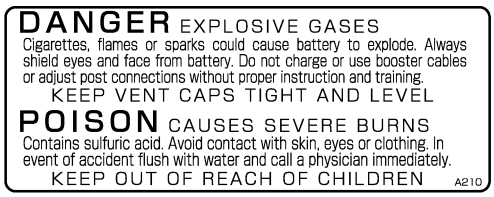
[38]



707-75122001a

Content: Precautions on handling the battery
Location: Top surface of the batteries
Part No.: 707-75122001

[41]

161-74806001a

Meaning: Do not use the outriggers to climb onto or off the machine, or climb onto or off the outriggers themselves.
Location: Side of each outrigger beam
Part No: 161-74806001

[42]

161-74809001a

Meaning: Beware of falling. Climb up and down with care.
Location: Both sides of the lower structre
Part No.: 161-74809001

https://truckmanualshub.com/

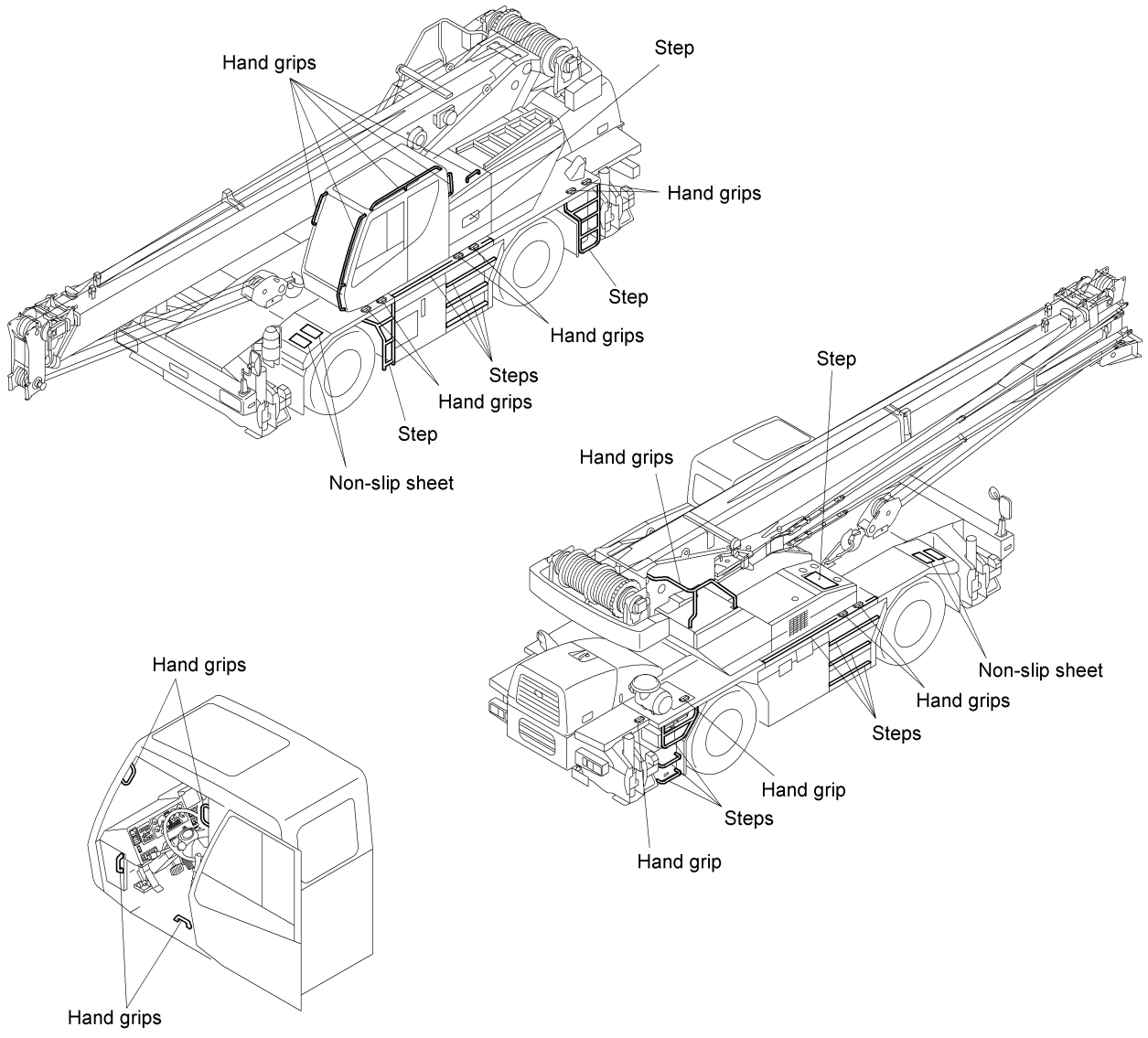
⚠ WARNING

5. Precautions on getting on and off the machine (541A-0042-0E)

⚠ CAUTION

- When you get on and off the machine, face toward it and use the hand grips and steps to support yourself.
  Keep at least three points of support at all times on the hand grips and steps.
  Do not use the control levers to hold on to.
- Jumping onto or off the machine can cause injury.
  It is also dangerous to get on or off the machine while it is in motion.
- The hand grips, steps, etc. are slippery when they have mud or oil on them, so wipe them clean before you get on or off the machine.
- If attachment bolts of hand grips or steps are loose, tighten them securely before you get on of off the machine.

(541A-0043-2E)



611A-00330E

https://truckmanualshub.com/

6. Precautions when filling with fuel (611A-0059-0E)

Strictly observe the following precautions when filling with fuel.

⚠ DANGER

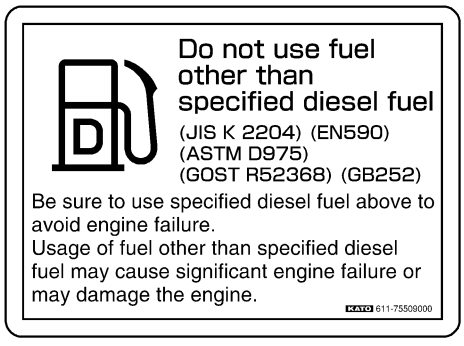
- Do not carry any other fuel or fuel container than the fuel tank.
- Always fill with specified fuel.
  If you use a non-recommended fuel, performance will be impaired and a major accident could result.
- Stop the engine and turn the starter switch to OFF before you start filling.
- Stop the engine in a well ventilated place and check that there is nobody inside before you start filling.
- Do not allow any fire or source of ignition nearby.
- Take care not to spill fuel on hot areas.
  If any fuel spills, wipe it up immediately.
- As soon as you finish filling, close the filler cap.

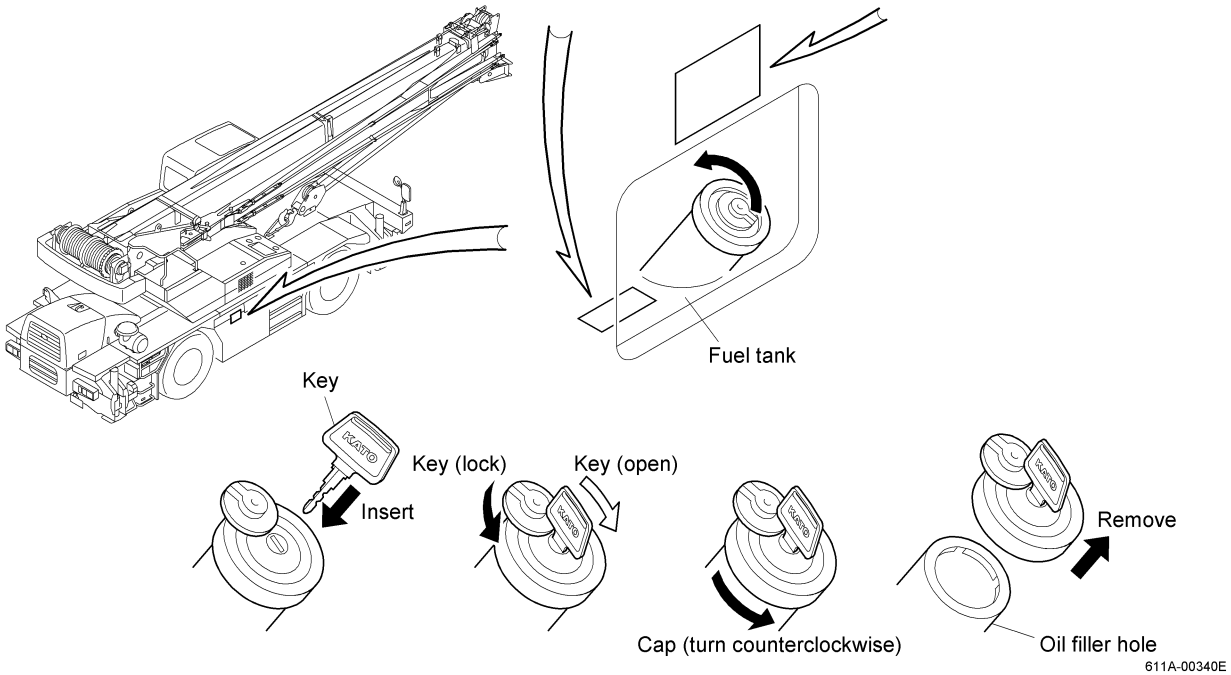
(611A-0078-0E)

NOTE

Fuel for filling……Diesel fuel

Fuel tank capacity ……300L





https://truckmanualshub.com/

⚠ WARNING

(1) Engine fuel and filter maintenance

Only use specified fuel.

Using anything other than the specified fuel is not covered by the warranty, of course, but also could cause a major malfunction. In addition, the appropriate fuel filter element for this engine has been specified as well, so it is important to use genuine KATO fuel elements.

(2) Fuel

1) Selecting fuel

Diesel engine fuel should satisfy the following criteria.

① Does not contain even fine dust

② Has adequate viscosity

③ Has a high cetane number

④ Has good low-temperature flowability

⑤ Has low sulfur content

⑥ Has low carbon residue

Use standard automotive diesel fuels (JIS K 2204, EN590, ASTM D975, GOST R52368, GB252) that meet the requirements above.

> ⚠ WARNING
>
> Never use diesel fuel that does not meet the requirements. Doing so may prevent maximizing the functionality and performance of the engine and may cause engine malfunction or failure.
>
> Any malfunction or failure resulting from using non-specified fuel is not covered by the warranty.

(611A-0080-0E)

https://truckmanualshub.com/

7. Starting and stopping the engine (541A-0054-0E)

7-1 Starting the engine (511A-0006-0E)

Go through the "preoperational checks" before you start the engine then start it as described below.

(1) Check the position of the parking brake

Check that the parking brake switch is set to the "brake" side.

(2) Check the position of the shift lever

Always check that the shift lever is in the "N" position before you start the engine. The engine will not start if the lever is in the wrong position.

(3) Check the status of the duplex communication system

When the starter switch is turned to the "ON" position, the status of the duplex communication system will be checked for approximately 3 seconds. The buzzer will sound with all warning lamps lit. If no problem is detected, the buzzer will stop and all warning lamps will go out.

> ⚠ CAUTION
>
> If the buzzer continues to sound with all warning lamps lit or all warning lamps do not light with no buzzer, stop the engine start procedure and contact your authorised KATO dealer.

(121A-0077-0E)

(4) Starting the engine

1) In normal

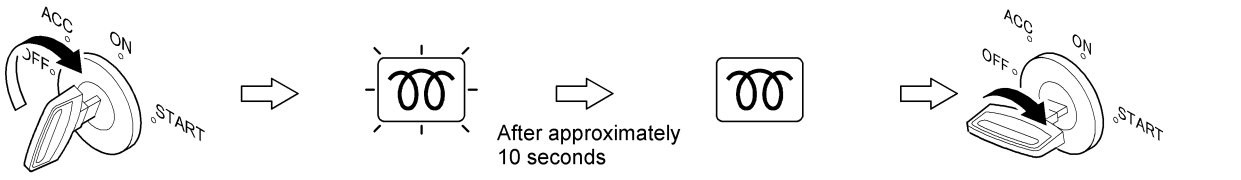
Turn the starter switch to the "START" position to start the engine. Once the engine starts, release the key. It will spring back to the "ON" position.

> ⚠ CAUTION
>
> If the engine has trouble starting in cold weather etc., do not run the starter motor for more than 15 seconds continuously as it could burn out.
>
> If the engine does not start within 15 second, release the key and wait for at least 20 seconds before trying again.

(541A-0057-0E)

2) In cold weather

① To improve starting performance in cold weather, turn the starter switch to the "ON" position. The preheat indicator lamp will light and engine preheating will start. When the indicator lamp goes out (after approximately 10 seconds), the engine is ready to start.



511A-00170E

② If the engine does not start, turn the key beck to the "OFF" position and wait for about one minute before trying the procedure in ① above.

(5) Warm-up running

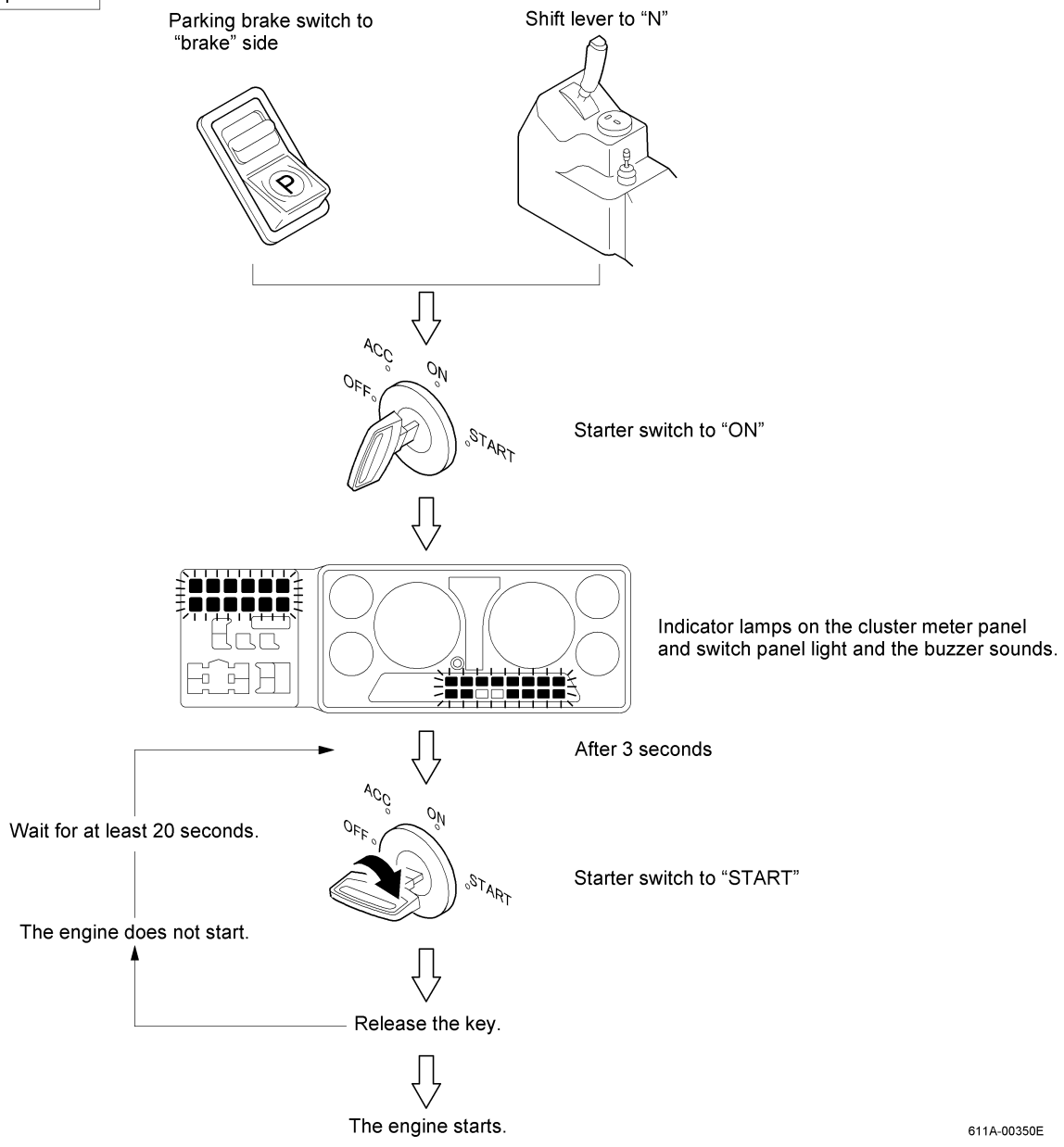
Once the engine has started, set the idle speed knob to the "AUTO" position enough to warm the engine and the torque converter.

This warm-up time can be used for going through the after-starting engine tests.

> ⚠ CAUTION
>
> Raising the engine speed without doing warm-up running for the engine and torque converter could cause a seizure, fast wear, damage etc. due to poor lubrication (from high oil viscosity). Properly perform warm-up running and confirm that the needle of the engine water temperature gauge is above point "C", then start to drive or set the PTO switch to the "ON" position.

(541A-0058-0E)

Engine start procedure



611A-00350E

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7-2 Stopping and parking (511A-0008-0E)

(1) Always apply the parking brake when parking the machine.

> ⚠ CAUTION
>
> On slopes etc., place chocks in front of the wheels if necessary.

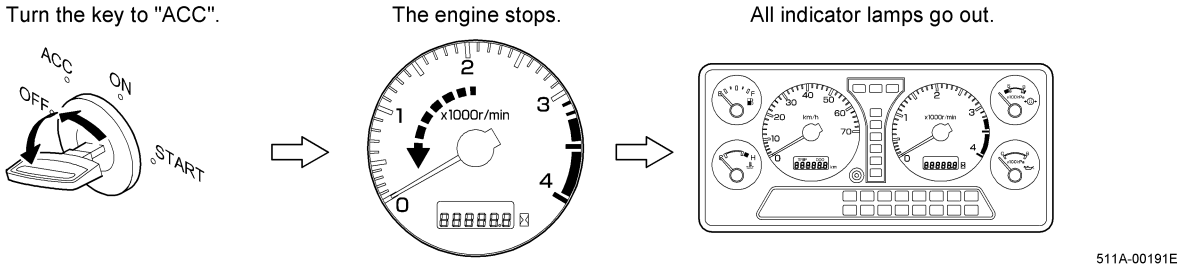
(541A-0060-1E)

(2) When you stop the machine, bring it to a stop, lift your foot from the accelerator pedal and leave the engine idling for about five minutes to cool down.

> ⚠ CAUTION
>
> If you switch the engine off immediately after bringing the machine to a stop, the temperature of coolant will rise, possibly causing seizure of pistons and other sliding parts in the engine and further seizure in the turbocharger bearing because the supply of lubricating oil to the turbocharger stops.

(541A-0061-0E)

(3) Turn the starter switch to the "ACC" position to stop the engine.
Once the engine has completely stopped, turn the starter switch to the "OFF" position and take the key out.



511A-00191E

NOTE

If the machine is going to the left parked for a long time, the area of the tire in contact with the ground will become flattened, creating what is known as a "flat spot". This can cause uncomfortable vibration during later driving, but the tire will regain its original shape after driving for some distance, so there is cause for concern. The formation of flat spots can be avoided by using the outriggers to jack up the machine so that the tires are off the ground.

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8. Handling the machine in winter and summer (541A-0062-0E)

8-1 Handling in winter (541A-0063-1E)

If the outside temperature drops to −5°C or below, problems can occur such as a difficulty in starting the engine, poor lubrication, abnormal noise from the pump etc. In areas where the temperature could fall to the −15°C— −20°C range, the fuel and engine oil must be changed. In areas which can get as cold as −20°C or below, adjust the concentration of Long Life Coolant before the onset of winter. If you are working at temperatures of −15°C or below, contact your authorised KATO dealer.

(1) Fuel

For fuel, use diesel fuel with a fluidity point at least −5° C below the minimum outside air temperature. For example, if the outside air temperature falls to −15°C, use an oil which remains fluid at −20°C.

> **⚠ WARNING**
>
> Use of a non-recommended fuel will reduce performance and could cause a major accident.
> Such problems are not subject to guarantee.

(541A-0065-1E)

(2) Engine oil

Use engine oil with an API service classification of CD or higher. Engine oil becomes more fluid at higher temperatures and more viscous at lower temperatures, so the viscosity of the oil must suit the temperature. Particularly in winter, using oil of the wrong viscosity can make it difficult to start the engine.

Outside air temperature at start time	−20°C — 40°C	−10°C — 40°C
Oil viscosity	SAE 10W-30	SAE 20W-40

(541A-0066-0E)

(3) Gear oil (GL-5 grade)

Outside air temperature	−20 — +30°C	0 — +50°C
SAE No.	90	140

(8230-0166-0E)

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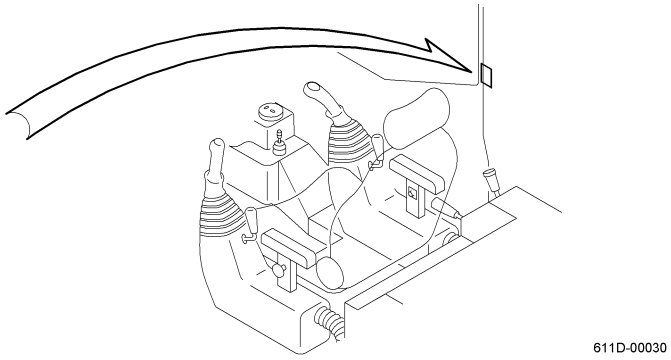
(4) Long Life Coolant

To prevent the engine coolant freezing during the shipping period between leaving the factory and arriving at the point of delivery, the cooling system is filled with Long Life Coolant as shown below, regardless of the season.



611D-00030

> ⚠ CAUTION
>
> - Use soft water (tap water) to prepare coolant.
> - Use Long Life Coolant concentration of at least 25% even in warm regions.
>   If the concentration is lower, the coolant will lose its anti-corrosive effect, leading to problems from rust.
> - If the coolant level runs low while the engine is running, check the cause and make any necessary repairs then add more of the same coolant to restore the concentration.
> - Do not mix with other types or brands of antifreeze or anti-corrosion additives.

(541A-0069-2E)

(5) Batteries

Normally battery electrolyte does not freeze in cold weather, but if the battery charge is low, some freezing is possible. A battery which has frozen is permanently unusable, so take precautions to maintain the battery temperature.

8-2 Handling in summer (541A-0070-2E)

Overheating can easily occur in summer, so pay attention to the following points.

(1) Cleaning and inspection of the cooling system

Overheating is more likely to occur when scale and corrosion build up in the cooling system.

Refer to "Cooling system" in the inspection and servicing section to clean the cooling system before summer starts.

Mud, dirt and insects etc. stuck to the core of the radiator will reduce its cooling performance, so make sure the radiator is clean.

(2) Battery electrolyte inspection

Consumption of battery electrolyte is faster in summer, so increase the frequency of inspection and keep the electrolyte level at the "UPPER" level.

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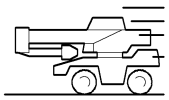
MEMO

https://truckmanualshub.com/


541A-00140

Driving operation 214521

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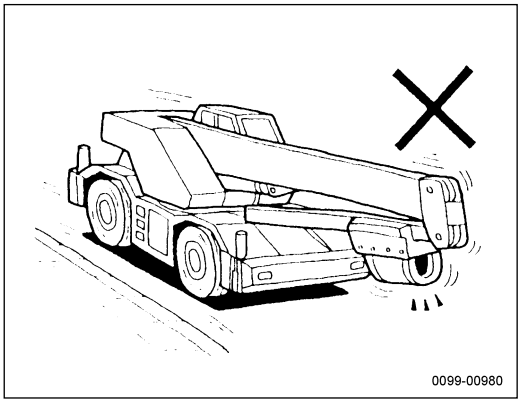
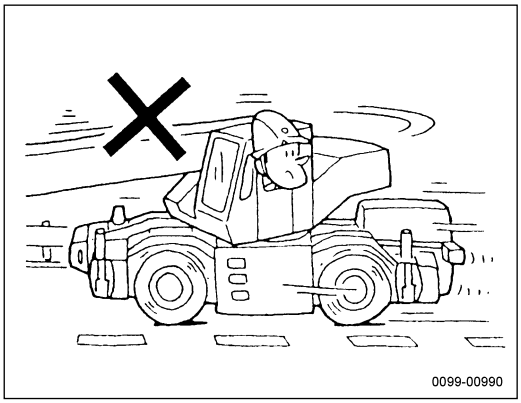
9. Driving safely (0099-0227-0E)

In addition to the precautions listed below, always drive safely and carefully, observing basic precautions and driving etiquette.

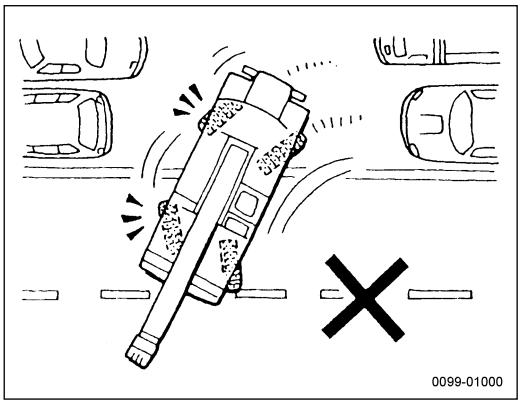
(1) Do not keep anything other than the standard equipment on the body of the machine when driving on the roads.
Additional objects on the machine could cause accidents or damage, so keep to the standard driving position and equipment.



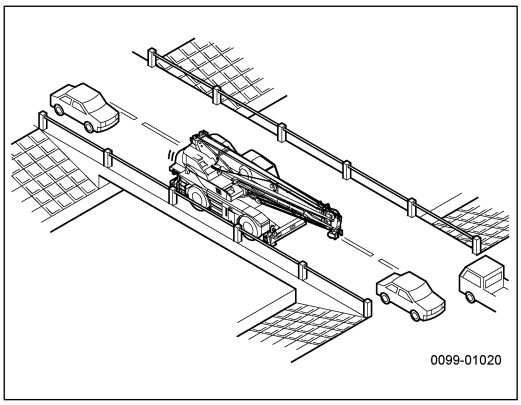
(2) Set the "PTO switch" to the "OFF" position and return the machine to the driving position before driving on the roads. Never operate the crane in any way when driving on the roads.



(3) Precaution for rear steering
Always keep the rear steering locked and use only front two-wheel steering when driving on the roads.
If the rear steering lock is released, the rear steering lock release lamp will light.



(4) Observe the conditions for road driving
Before driving on the roads, check the preconditions for allowing a crane to drive on the road in the country concerned.



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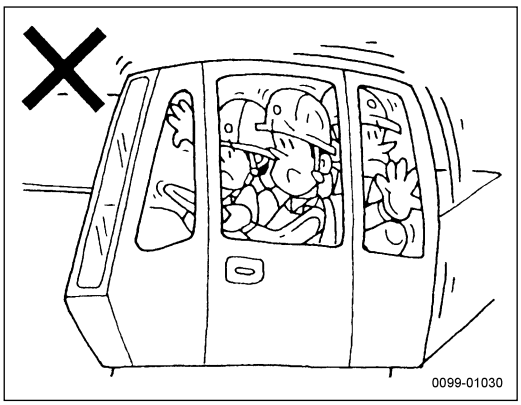
⚠ WARNING

(5) Do not allow extra passengers on the machine

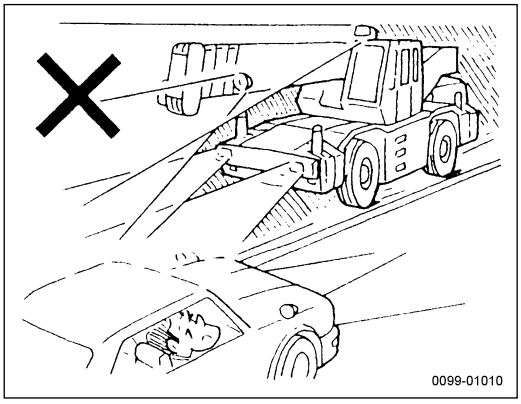
Never allow more people in the cab while driving than the number described in the machine specifications.

Driving with excess people in the machine can cause accidents.



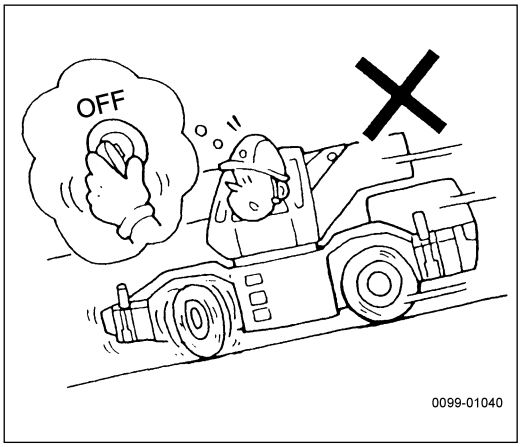
(6) Keep the working lamps off when driving on the roads

Keep all working lamps and other lamps on the crane switched off when driving on the roads at night. Use of these lamps disturbs other drivers, and it may be forbidden by law. Follow the relevant safety regulations and laws in the country of use.



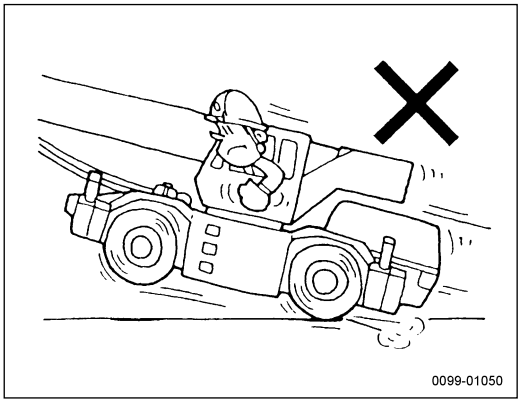
(7) Coasting with the engine turned off is hazardous and should never be attempted.

If the engine is switched off, the steering will be inoperable and the compressed air tank will not be charged with air, which can disable the brakes dangerously.



(8) Sudden acceleration, braking and cornering should be avoided unless required in an emergency.

These maneuvers cause rapid wear of the tires and brakes.



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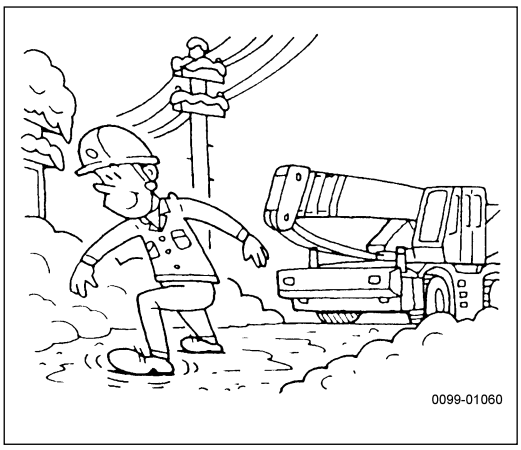
(9) Pay attention to road surface conditions

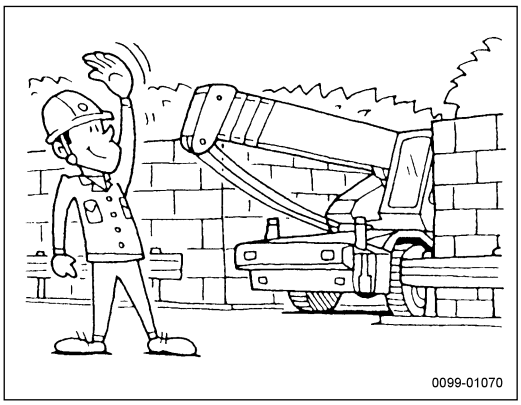
Drive slowly and cautiously for maximum safety on snow-covered or icy roads, irregular road surfaces, inclined ground, roads sloping up and down etc.

Check the road surface before you drive over it, and if necessary, fit tire chains or improve the road surface.



(10) Have another worker guide you through narrow openings or place with poor visibility.

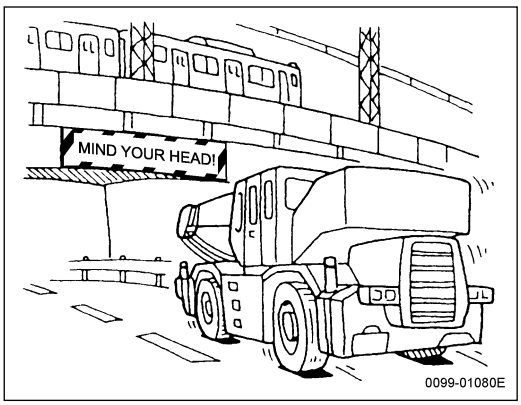
This guidance will help to avoid scrapes or impacts with obstacles, people or machines etc.



(11) Take care around train power cables and bridge spans

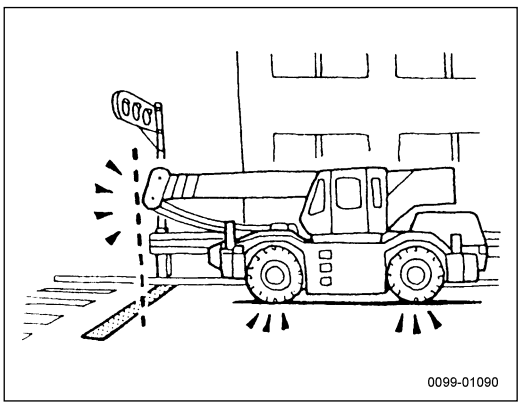
When driving, pay close attention to the distance from the machine in front, machine height and width and distance to any obstacles.

In particular, check the height and width of the opening in advance when driving under power cables or bridges.



(12) Allow adequate distance for stopping

Allow adequate distance for stopping so that the front of the machine (i.e. the boom top) does not cross over stop lines.



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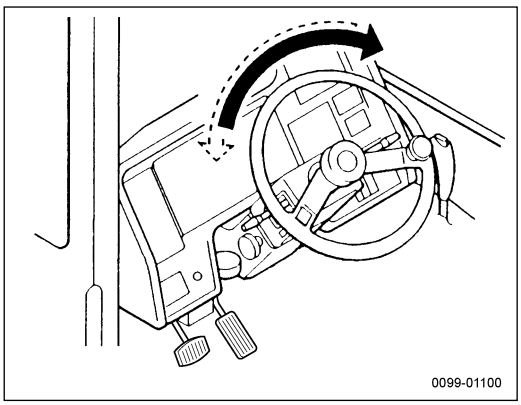
⚠ WARNING

(13) Steering control

This machine is equipped with fully hydraulic power steering. This makes the steering wheel lighter to turn, but means that it does not return to the center when released. After turning the steering wheel to either side, return it to the center position by hand. Do not keep the steering wheel at either full lock for long periods.

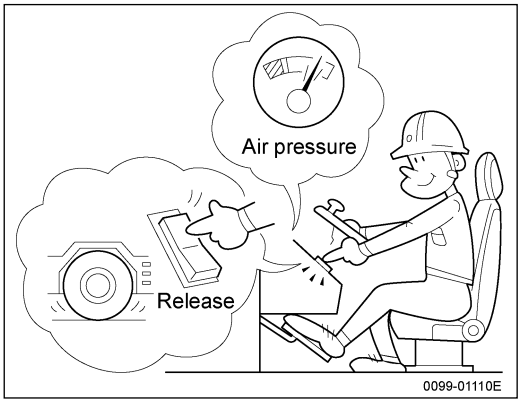


(14) Brake operation

1) Check that air pressure is normal, then release the parking brake.

If you try to release the parking brake when the compressed air pressure is below the rated pressure, the buzzer will sound to warn of inadequate air pressure.

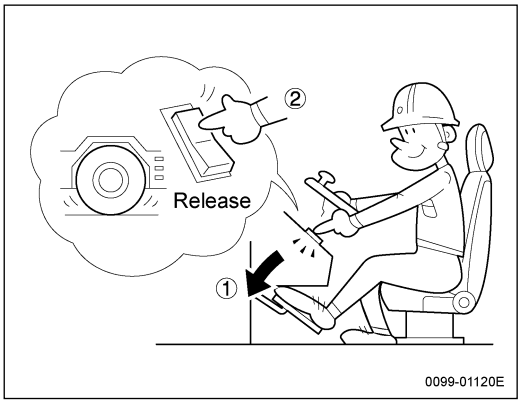
In this case, it will not be possible to release the parking brake.



2) Make a habit of depressing the foot brake before releasing the parking brake.

If you try to move the machine while the parking brake is applied, the parking brake will become scorched rapidly and the braking force will be lost.

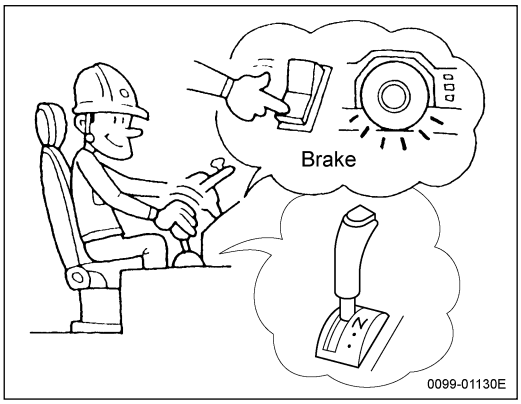
If you move the shift lever to any position other than "N" while the parking brake is applied, the warning buzzer will sound.



3) When stopping temporarily at crossings or traffic lights etc., use the parking brake and return the shift lever to the "N" (neutral) position.

If you use the foot brake while the machine is at rest, the brake fluid will heat up.

Try to release the foot brake as much as possible to allow the brake fluid to cool.



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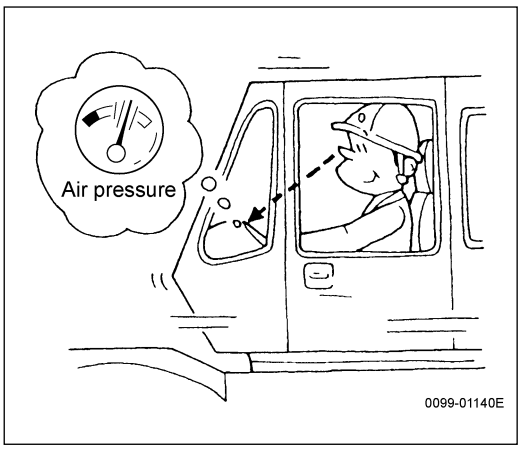
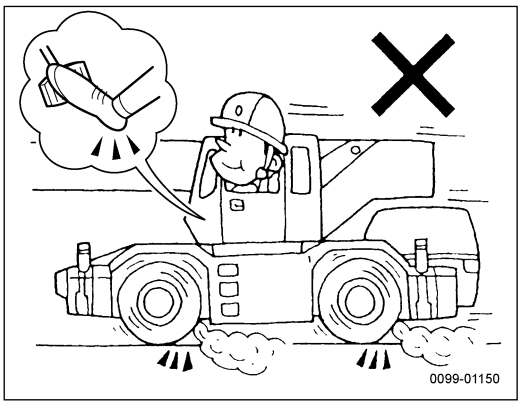
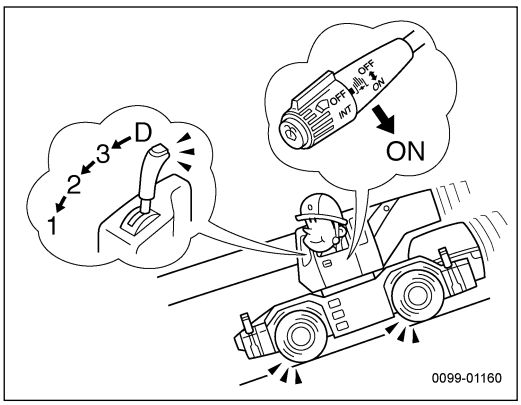
4) While driving, keep checking the air pressure gauge which displays the air pressure for the foot brake.
Reduced air pressure leads to a large reduction in braking capacity, so close observation is required. If the low air pressure warning lamp lights and an intermittent buzzer sounds while the machine is in motion, bring the machine to rest in the nearest available safe place and inspect the air pipe system.



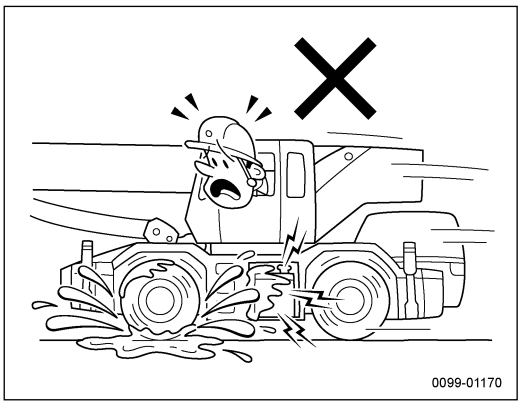
5) Do not drive with your foot resting on the brake pedal. Doing so could increase the brake and brake fluid temperature and result in "fading or vapor lock", which could cause an accident.



6) Braking on a downhill
Be particularly careful braking when going downhill.
Excessive braking can reduce the air pressure and cause the brakes to stop working. Reduce speed adequately by downshifting or using the exhaust brake. When downshifting, downshift one gear at a time. Downshifting 2 or 3 gears at once could damage the engine, transmission or other drive equipment.



(15) When driving into puddles, be careful to prevent water from getting on electrical systems, which could cause short circuiting or other damage that might disable control functions.



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MEMO

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10. What to do when the machine breaks down (541A-0072-0E)

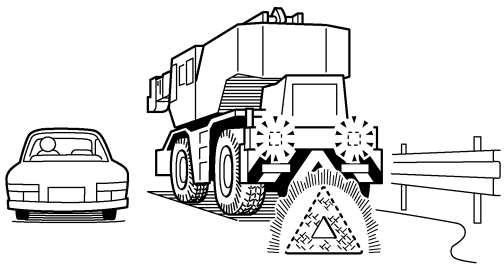
10-1 Cautions on breakdown (541A-0073-0E)

(1) If the machine breaks down, pay attention to following machines and traffic safety and start the machine's hazard warning lamps flashing. Bring the machine gradually to a stop in a safe place.

(2) Post warnings to indicate that the machine has broken down. If you fail to post these warnings, following machines could crash into the back of your machine. Always use one of the methods below to warn other drivers of the breakdown.

1) Breakdown warning methods

- Emergency signal equipment (emergency signal lights)
- Red flag or red lamp
- Stop sign
- Tie a handkerchief etc. in a prominent place on the back of the machine.



611A-00360

(3) You must place blocks etc. as chocks in front of the wheels.

(4) Investigate the cause of the breakdown and repair it if you are able to do so yourself. While doing so, always pay attention to your surroundings and particularly to passage of traffic to safeguard yourself.
If the breakdown occurs in a tunnel, even a simple repair can be dangerous and can lead to serious secondary damage, so never attempt any repair within a tunnel.

(5) If you cannot repair the breakdown, contact your authorised KATO dealer to order a repair.

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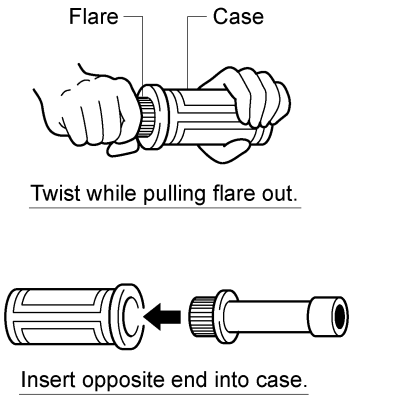
10-2 Using the flare (611A-0066-0E)

To use an emergency flare to signal danger in an emergency, such as when the machine breaks down on train tracks or roads and cannot be moved, follow the instructions below.

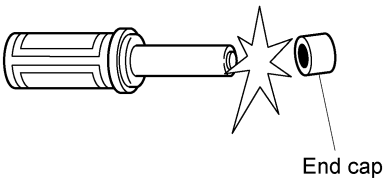
(1) Remove the flare provided in the operation cab.

(2) Take the flare outside and twist it as it is removed from its case, then insert it back into the case, facing the opposite direction.



541A-00760E

(3) Ignite the flare by removing the end cap and rubbing the igniter material on the cap against the tip of the flare, being careful to hold them as far away as possible. When ignited, the flare will emit a flame about 15 cm long.



541A-00770E

(4) Once ignited, a flame is emitted for about 5 minutes.

⚠ CAUTION

- Be sure to read the instructions indicated on the label affixed to the flare case before using a flare.
- The flare should be used within 4 years. Be sure to replace the flare with a new flare by the "use by" date indicated on the label affixed to the flare case.
- When igniting a flare, keep it away from your body, anyone nearby, and flammable materials. When the flare ignites, it will emit a flame about 15 cm long.
- Place the ignited flare away from flammable materials and at a location that provides other motorists a safe stopping distance.
- Do not use the flare inside a tunnel or other enclosed location. The smoke may impair visibility.
- Never let children or other unauthorized people touch the flare.
- Only use the flare when necessary.

(541A-0074-0E)

NOTE

- Use adequate caution when using the flare.
- The flare is mounted on the left side of the operation cab.

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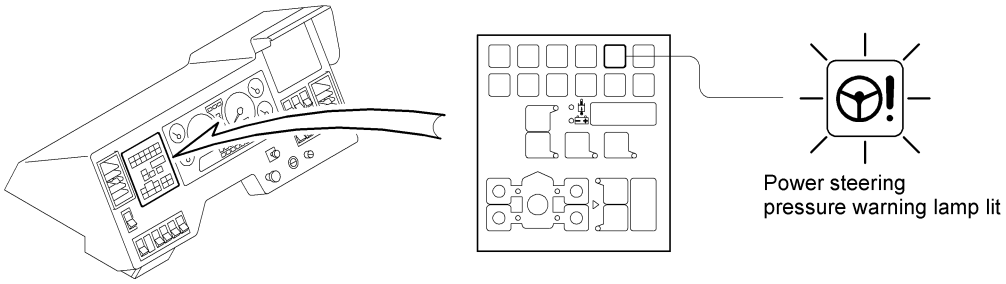
10-3 Emergency power steering (541A-0075-1E)

This machine is equipped with an emergency steering pump connected directly to the transmission to enable power steering in the event of sudden engine failure or steering pump breakdown while in motion.

> **⚠ WARNING**
>
> Violent operation of the shift lever or the starter switch during evasive maneuvers can cause sudden highly dangerous failure of the emergency power steering.

(541A-0274-0E)

(1) If the "power steering pressure warning lamp" on the switch panel lights while the machine is in motion, leave the starter switch "ON" and steer gently while checking the safety of your surroundings to roll to a stop in a safe place.



611A-00370E

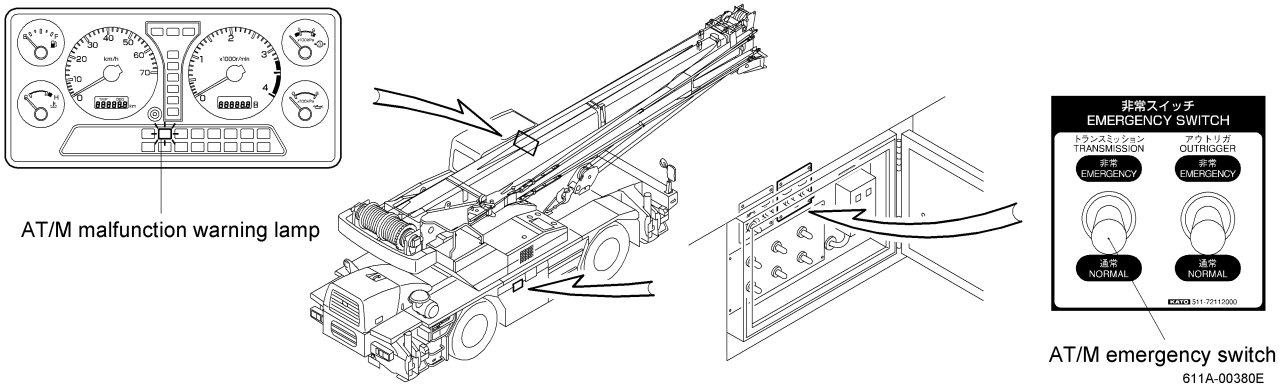
NOTE

If you move the shift lever to "N" during evasive maneuvers, the emergency power steering will be disabled. Be sure to move the shift lever to any position other than "N".

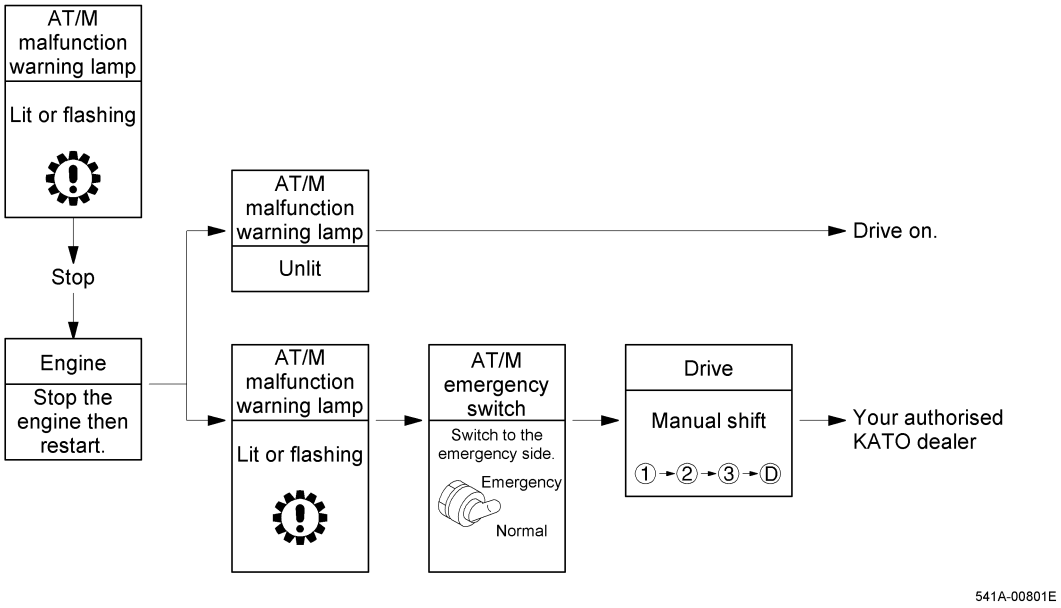
(2) After bringing the machine to a stop, move the shift lever to "N", apply the parking brake and move the starter switch to "OFF". If you have to park by the roadside, put out signs etc. to indicate to other drivers that the machine has broken down.

10-4 Handling a malfunction in the automatic transmission system (471A-0018-0E)

If a malfunction occurs in the automatic transmission, the AT/M malfunction warning lamp on the cluster meter panel in the cab will light to alert the driver. Depending on the cause of the malfunction, the automatic shift control may not function, in which case it will be impossible to go on driving. In this case, use the system switch (AT/M emergency switch) which is located in the lower control panel on the left side of the lower structure. This will allow you to continue driving using manual transmission.



(1) Procedure for switching to manual transmission



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⚠ WARNING

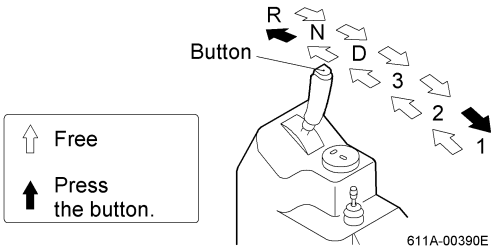
- If the AT/M malfunction warning lamp lights, park the machine in a safe place immediately. After stopping in a safe place, stop the engine then start it again. If the AT/M malfunction warning lamp is still lit, leave the machine where it is and contact your authorised KATO dealer for instructions.
- When the AT/M emergency switch is switched to the "emergency" side to continue to drive unavoidably, normal driving with the shift lever in the "D" range (automatic gear change) is impossible, so use manual gear change to continue driving. You must choose the optimum gear for the speed range you are driving in at any time.
  (It is impossible to use manual gear change in the low range.)

Manual shift position guidelines for machine speeds (high range)

Position	Speed range
1	0 －18km/h
2	18－26km/h
3	26－38km/h
D	38－49km/h

(121A-0012-1E)

- When the AT/M emergency switch is switched to the "emergency" side, the lockup mechanism is released, so engine braking will not function.
  Reduce the driving speed not to overuse the brakes.



(541A-0077-3E)

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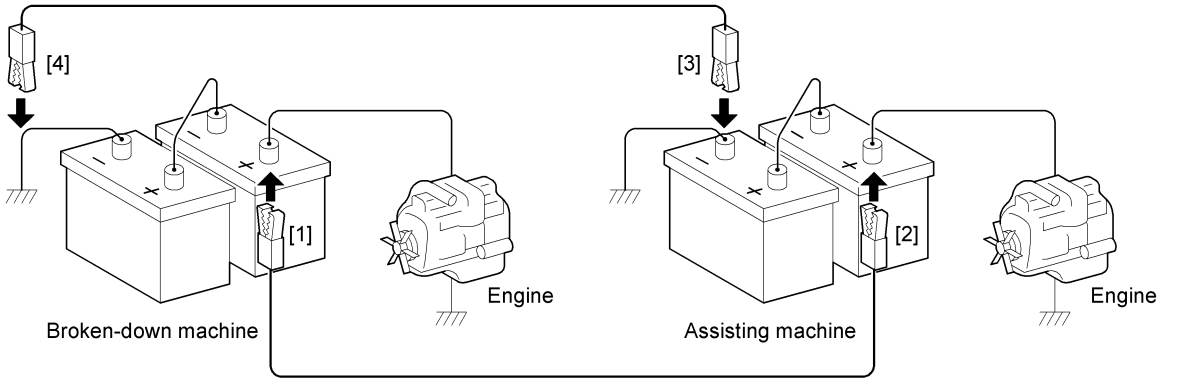
10-5 Dealing with breakdowns (541A-0079-0E)

10-5-1 Flat battery (541A-0275-2E)

If you have the booster cables, use the battery of another machine as the electrical source to start the engine.
The booster cable connection method is as follows.

(1) Make connections [1], [2], [3] and [4] in order as shown below.
Attach the (+) connectors first, followed by the (−) connectors.



541A-00822E

(2) After making the above connections, increase the speed of the assisting machine engine slightly.

(3) Refer to the section "Starting the engine" for details of engine starting.

(4) Once the engine starts, disconnect the booster cables in the reverse order from the connection order above. Have the battery completely recharged or replaced by a gas station or your authorised KATO dealer as soon as possible.

> ⚠ CAUTION
>
> If you make a mistake in connecting the booster cables, the following problems could result, so work with care.
>
> ・ Serial connection with an assisting machine using 24V
> Voltage will exceed 24V, which will burn out the starter motor and could cause a fire.

(541A-0080-1E)

10-5-2 Overheating (541A-0276-1E)

(1) Overheating while driving

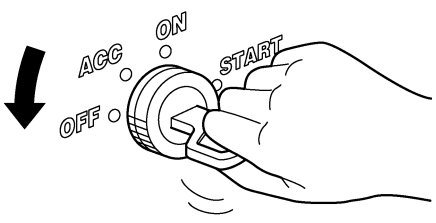
1) Stop the machine in a safe place.

2) Keep the engine at idling speed and open the engine cover to allow air to blow through.

> ⚠ CAUTION
>
> When you have the engine idling and open the engine cover, take care to avoid burns from the engine cover which could be very hot. Also take care to keep your fingers clear of the rotating section on the V-belt, fan belt etc. which could trap them.

(541A-0081-0E)

3) Once the temperature on the water temperature gauge has fallen, stop the engine.



511A-00220

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4) Once the engine has cooled sufficiently, check the followings:
- The volume of coolant
- Extreme amounts of dirt, debris etc. clogging the core of the radiator
- Loose V-belt

> **⚠ CAUTION**
> - Do not try to fill the radiator with coolant before the water already in the radiator has had time to cool. Sudden cooling due to the addition of coolant can crack the engine block.
> - The inside of the radiator is under pressure. If you open the cap carelessly, steam and hot water could spurt out, causing serious burns. To avoid spurting steam etc., allow the radiator to cool and cover the cap with a cloth etc. before you open it.

(541A-0082-1E)

(2) Overheating during crane operation

1) Stop using the crane.

Do the same procedure as "(1) Overheating while driving", 2)－4) above.

10-5-3 Towing (541A-0277-2E)

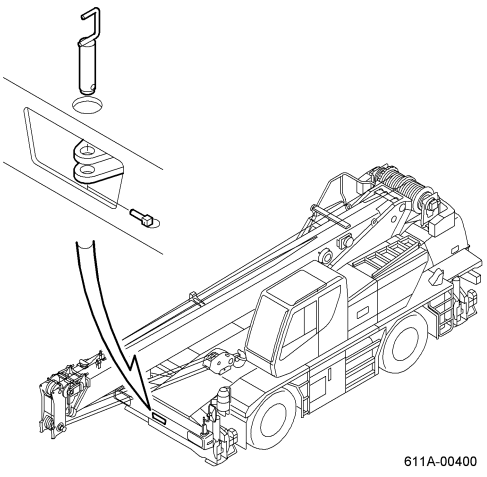
Investigate the cause of the breakdown. If you consider it impossible to repair on site, have the machine towed away for repairs. In this case follow the procedure below.

> **⚠ WARNING**
> - Contact your authorised KATO dealer to have it make the necessary preparations for towing, then proceed cautiously with towing according to the applicable laws.
> - Exercise extreme caution when towing, keeping your speed low and constant.
>
> Sudden change of speed could break the "tow bar" or the "wire rope".
>
> If the engine has broken down, remove the propeller shaft between the transmission and the axle before towing the machine. If the propeller shaft remains in place, towing could damage the torque converter.
> - Pay careful attention to the air tank pressure when towing. If the pressure is low, the braking effect will be lost or the parking brake will be applied suddenly.

(541A-0083-1E)

(1) If the cause of the breakdown is not the engine and the engine may be used without causing problems:

1) Shift lever…… "N"
2) Start the engine.
3) Hazard warning switch …… "ON"
4) Allow an adequate distance between the towed and towing machines and join the machines with a strong "wire rope" or "tow bar" etc.
5) Attach a red flag etc. to the front and back of the broken-down machine to show other drivers that this machine is under tow.
6) Position a guide machine in front of the towing machine and a supervising machine behind the towed machine.
7) "Release" the parking brake and remove the "chocks" in front of the wheels.
8) Begin towing.



611A-00400

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(2) If the engine is the cause of the breakdown

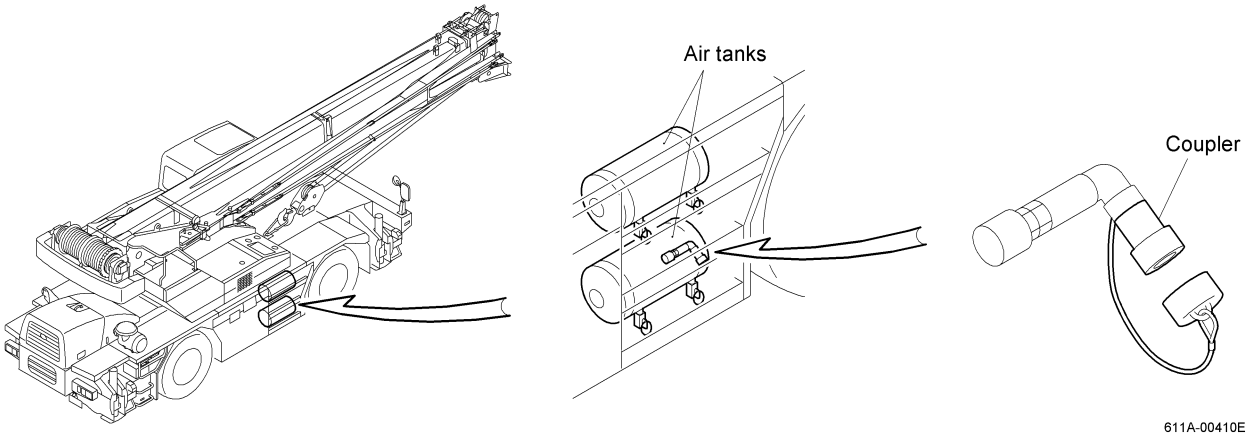
1) Starter switch····· "ON"

2) Shift lever ····· "N"

3) Supply compressed air to the broken-down machine.

Use a hose to connect the compressed air tank of the towing machine to that of the broken-down machine.

The supply of compressed air to the broken-down machine can be provided through the coupler on the underside of the compressed air tank.



Then take the same actions as 4) − 8) described in (1) above " If the cause of the breakdown is not the engine and the engine may be used without causing problems".

⚠ CAUTION

- If you do not provide the broken-down machine with compressed air, the parking brake cannot be released and the foot brake will not work during towing.
  Supply compressed air until the "low air pressure warning lamp" goes out and remains unlit.
- Be sure the compressed air supply hose does not get caught in the tires or touch the ground.
- If the engine breaks down, the alternator will no longer supply the battery with electricity. Be sure the battery has an adequate charge.
- If the battery voltage is too low, the parking brake cannot be released. If the low-voltage warning buzzer sounds while being towed, immediately stop towing the machine before the parking brake is applied.

(541A-0084-2E)

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11. Drive operation devices (061A-0012-0E)

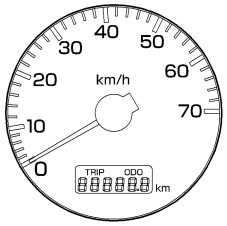
Familiarize yourself with the names and operation methods of the devices such as levers, meters, switches etc. before you start to drive.

11-1 Cluster meter panel (541A-0086-0E)

11-1-1 Meter section (881A-0067-1E)

(1) Speedometer

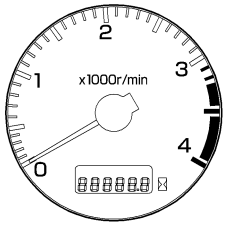
Indicates the speed at which the machine is driving.



881A-01530

(2) Tachometer

Indicates the engine revolutions per minute.



881A-01540

(3) Odometer/trip meter

1) Odometer

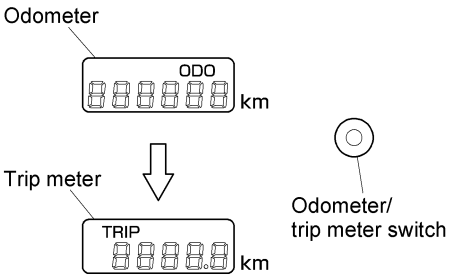
Displays the cumulative distance driven by the machine.

(Displays up to 6 digits, in 1 km increments.)

2) Trip meter

Displays the distance driven since the last time it was reset.

(Displays up to 5 digits, in 0.1 km increments.)



881A-01550E

(4) Odometer/trip meter switch

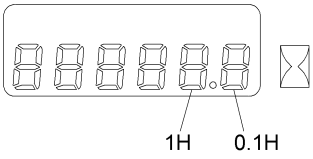
1) A short press switches between odometer and trip meter modes.

2) A long press (at least 1 second) in trip meter mode resets the trip meter to "0.0".

(5) Hour meter

This counts the time the engine is running to display the total number of hours the machine has been operated.

(Displays up to 6 digits, in 0.1 hour increments.)



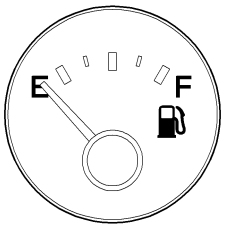
881A-01560

https://truckmanualshub.com/

(6) Fuel gauge

Indicates how much fuel is remaining.

"F" indicates full and "E" indicates a small amount is remaining.

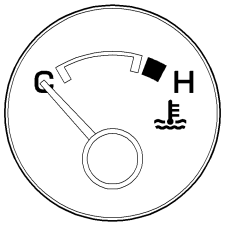


881A-01570

(7) Engine water temperature gauge

Indicates the temperature of the engine coolant.

If the needle lies between C and H, the temperature is normal. If the needle reaches H, take action as described in the section "Overheating".



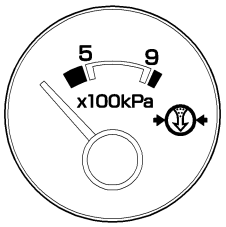
881A-01580

(8) Air pressure gauge

Indicates the pressure inside the compressed air tank.

The needle should normally be pointing between 5 and 9. If the air pressure is 5 or below, check that it climbs back to the 5 — 9 range when the engine is running.

If the air pressure climbs above 9, stop the engine immediately and contact your authorised KATO dealer.



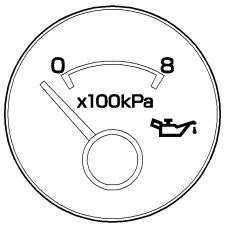
881A-01590

(9) Engine oil pressure gauge

Indicates the pressure of engine oil.

Check that the needle lies between 0 and 8.

Pressure rises when the engine oil is cold and falls when it gets warmer.



881A-01600

> ⚠ CAUTION
>
> When the needle is pointing 0kPa (0kg/cm^2) or below, stop the engine and contact your authorised KATO dealer.

(541A-0087-1E)

11-1-2 Indicator section (611A-0017-0E)

(1) Turn signal indicator lamp (left)

(2) Turn signal indicator lamp (right)

These lamps flash to show which of the turn signal lamps is flashing.

881A-01610

(3) High beam indicator lamp

This lamp lights when the headlamps are on high beam.

881A-01620

https://truckmanualshub.com/

(4) Shift position indicator lamp

The position lamp which corresponds to the position of the shift lever lights.

881A-01630

(5) Engine trouble warning lamp

When any of the problems listed below occurs, this lamp lights and an intermittent buzzer sounds. Stop the machine in a safe place and investigate the problem.

881A-01640

① Abnormal engine oil pressure (the buzzer will not sound in this case.)

② Overheating of coolant (check the engine water temperature gauge.)

③ Engine oil filter blockage

> ⚠ CAUTION
>
> If there is any problem with the engine oil pressure sensor or its wiring, the lamp will flash.

(541A-0088-0E)

(6) Radiator coolant level warning lamp

This lamp lights when the level of coolant in the radiator is too low.

881A-01650

Check the volume of coolant.

(7) AT/M (automatic transmission) malfunction warning lamp

This lamp flashes or lights when there is any malfunction in the AT/M controller, sensors or switches etc.

881A-01660

> ⚠ CAUTION
>
> When the AT/M malfunction warning lamp flashes or lights, stop the machine in a safe place and contact your authorised KATO dealer quickly.

(541A-0089-1E)

https://truckmanualshub.com/

(8) Torque converter trouble warning lamp

881A-01670

This lamp lights when the pressure of oil supplied to the clutch inside the torque converter goes below or above the rated pressure or when the oil temperature inside the torque converter rises above the rated temperature.

If the machine is driven when pressure is below the rated pressure, the clutch for the transmission will wear away, so stop the machine immediately and contact your authorised KATO dealer.

If any of the problem listed below occur, stop the machine immediately and contact your authorised KATO dealer.

> ⚠ CAUTION
>
> - If pressure is above the rated pressure …… The warning lamp lights. (The buzzer does not sound.)
> - If pressure is below the rated pressure…… The buzzer sounds intermittently. (0.5 seconds intervals)
> - If oil temperature is above the rated temperature … The buzzer sounds intermittently. (1 second intervals)
> - If there is a problem with sensors or wiring…… The warning lamp flashes.

(541A-0090-0E)

(9) Exhaust brake indicator lamp

881A-01680

This lamp lights when the exhaust brake is operated.

The exhaust brake works when the accelerator is not operated under the speed of 10km/h or more with the exhaust brake lever being in the "ON".

(10) Fuel level warning lamp

881A-01700

The capacity of the fuel tank is 300L. When the volume of remaining fuel falls to approximately 50L, this lamp lights.

Keep a supply fuel (diesel fuel) available and refuel early.

> ⚠ CAUTION
>
> - When the warning lamp flashes at 0.5 seconds intervals, drain water from the fuel filter.
> - If there is a problem with sensors or wiring, the warning lamp flashes. (1 second intervals)

(511A-0012-0E)

(11) Preheat indicator lamp

881A-01720

When you turn the starter switch to the "ON" position, engine preheating starts automatically if necessary and this indicator lamp lights.

When the preheating is completed, the indicator lamp goes out. Then turn the starter switch to the "START" position.

https://truckmanualshub.com/

(12) Air cleaner blockage warning indicator lamp

This lamp lights when the air cleaner filter element is blocked.

881A-01730

> **⚠ CAUTION**
>
> If the indicator lamp lights, clean or replace the air cleaner filter element.

(541A-0093-0E)

(13) Engine control warning lamp

This lamp lights or flashes to indicate a malfunction has occurred in the system that controls engine operating status. An intermittent warning buzzer also sounds if the malfunction prevents driving. The following table describes respective modes.

881A-01740

	Engine control warning lamp	Warning buzzer
Malfunction that prevents driving (or dangerous to driving)	Lights	Rapid intervals (every 0.5 seconds)
Malfunction that permits driving (only to obtain servicing or other emergency use)	Flashes rapidly (every 0.5 seconds)	No sound

(491A-0017-0E)

> **⚠ CAUTION**
>
> If the engine control warning lamp lights or flashes, immediately move to a safe place and stop the machine, then call the closest authorised KATO dealer and follow their instructions.
> If the lamp flashes, driving is still possible in the backup mode, but the engine is not being controlled properly, so operate the machine very carefully and only for emergency purposes.
> If you continue to drive with the lamp lit, the engine could be damaged.

(491A-0018-0E)

(14) Overrun warning lamp

When driving speed exceeds the rated speed or if the engine speed exceeds the rated revolutions, this lamp lights and a slow intermittent warning buzzer sounds. If this warning lamp lights, you must apply the brakes to reduce speed and shift down to a lower gear, then proceed at a safe speed.

881A-01750

> **⚠ WARNING**
>
> If the warning lamp is ignored and the machine continues to be operated in the overrun state, a warning buzzer sounds to indicate the condition.
> Ignoring the warning buzzer and operating the machine in the overrun state could result in engine, propeller shaft, or other drivetrain component damage or brake lining wear and could cause a serious accident. Therefore, if the warning lamp lights, slow down promptly.

(541A-0095-2E)

https://truckmanualshub.com/

(15) Low air pressure warning lamp

This lamp lights when the compressed air pressure inside the air tank falls below the rated level. If you release the parking brake under this condition, an intermittent warning buzzer will sound.

881A-01760

After air pressure has been raised above the rated level, release the parking brake and move off.

If any of the problems listed below occurs, stop the machine immediately and contact your authorised KATO dealer.

> ⚠ CAUTION
>
> If there is a problem with sensors or wiring, the warning lamp flashes.

(541A-0091-1E)

(16) Battery charge indicator lamp

This lamp lights when the starter switch is turned to the "ON" position. It goes out once the engine has started and started running at slightly higher speed. It also flashes when the battery voltage drops below 20V and the warning buzzer sounds. Increase engine speed to regain battery voltage. If this lamp lights while the machine is in motion, it is due to a malfunction of the alternator system. Contact your authorised KATO dealer.

881A-01770

(17) Parking brake/brake fluid level warning lamp

・This lamp lights and an intermittent buzzer sounds at 0.5 seconds intervals irrespective of the condition of the parking brake when the brake fluid level falls below the LOW level.

881A-01780

> ⚠ CAUTION
>
> If the volume of brake fluid has decreased without any external leakage, the pads of the disk brakes may be excessively worn, so check the pads as well as adding the brake fluid.

(491A-0019-0E)

・If the brake fluid level is appropriate, this lamp lights while the parking brake is engaged. If you move the shift lever to any position other than "N" while the parking brake is engaged, the lamp flashes slowly at 1 second intervals and the continuous warning buzzer sounds.

(18) Rear steering lock release indicator lamp

This lamp lights while the rear steering lock is released.

If this lamp lights or flashes while you are driving on the roads, stop the continuous machine immediately and contact your authorised KATO dealer.

881A-01790

> ⚠ CAUTION
>
> ・When the rear steering emergency switch has been switched …… Rapid flashing (0.5 seconds intervals)
>
> ・When a malfunction occurs in rear steering-related devices…… Slow flashing (1 second intervals)

(541A-0096-0E)

https://truckmanualshub.com/

11-2 Switch panel (541A-0097-0E)

11-2-1 Indicator section (611A-0018-0E)

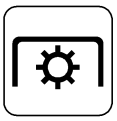
(1) Multiplex communication error warning lamp

This lamp flashes when any malfunction occurs in the multiplex communications system. An error number is displayed on the digital display and an intermittent buzzer sounds (0.5 seconds intervals). If the malfunction lies between the ACS and the communications system, this lamp flashes, an error number is displayed on the digital display and an intermittent buzzer sounds (1 second intervals). If this lamp flashes, stop the engine immediately and contact your authorised KATO dealer.

591A-11800

(2) PTO indicator lamp

This lamp lights when the PTO switch is "ON".



591A-11810

(3) Working lamp indicator lamp

This lamp lights when the working lamps are turned on.

591A-11820

(4) Outrigger operation OK indicator lamp

- This lamp lights when the PTO switch is "ON" and the machine is within the pick and carry capacity, or when jib setting is selected.
- Outrigger operation is only possible when this lamp is lit.

591A-11830

(5) Hydraulic oil warning lamp

- This lamp lights when the hydraulic oil temperature rises above the set temperature.
  Stop work and wait for the hydraulic oil to cool.
- This lamp lights when there is a blockage in the return filter.
  Replace the filter element immediately.

591A-11840

(6) Suspension locked indicator lamp

This lamp lights when the suspension is locked.

591A-11850

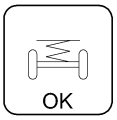
(7) Power steering pressure warning lamp

This lamp lights when the power steering pressure falls while the machine is in motion.

An intermittent warning buzzer also sounds.

591A-11860

(8) Suspension operation OK indicator lamp

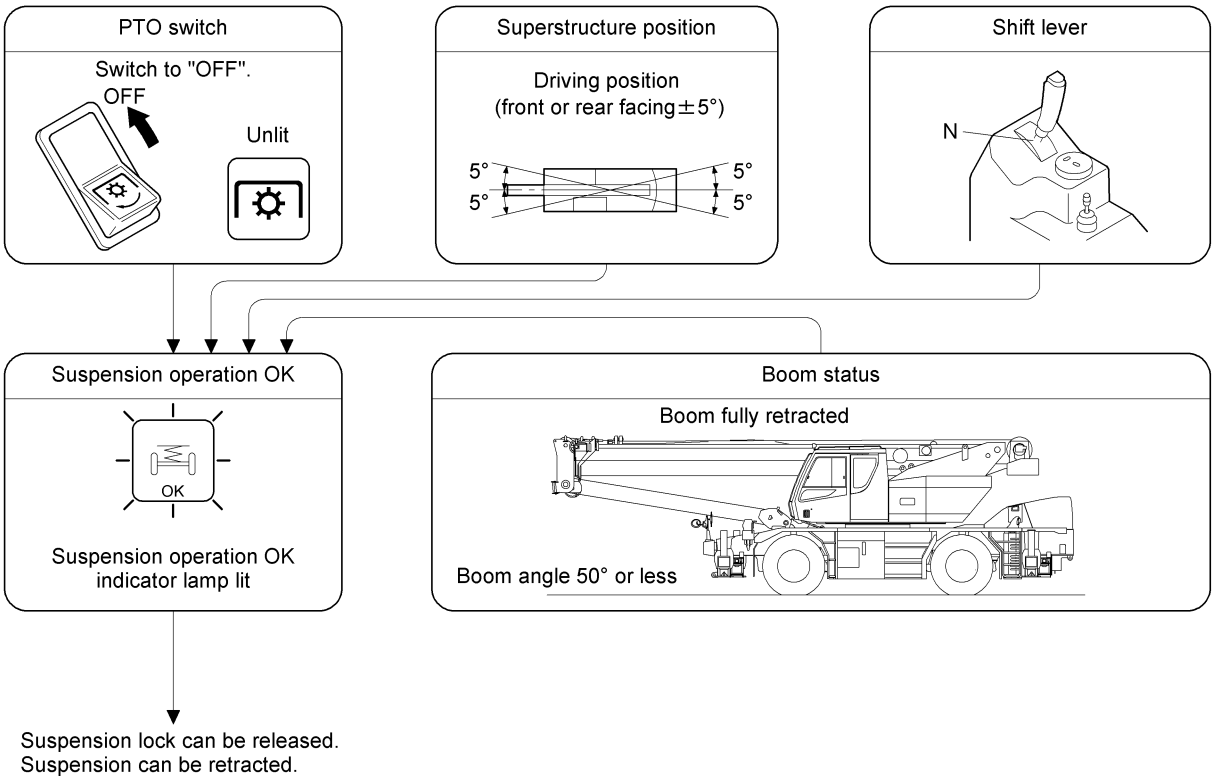


591A-11870

This lamp lights when the following conditions for suspension operation are satisfied.

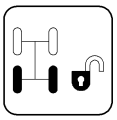
- Boom angle ····· 50°or less
- Boom length ····· Fully retracted
- Superstructure position ····· Within font 0°± 5°
  Within rear 180°± 5°
- PTO switch ····· OFF
- Shift lever ····· N (neutral) position

Suspension operation except suspension lock operation is only possible when the "suspension operation OK indicator lamp" is lit.



611A-00420E

(9) Rear steering lock release confirmation indicator lamp



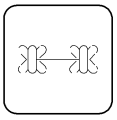
591A-11880

This lamp lights when the rear steering lock/release switch is set to the "release" position to release the rear steering lock.

NOTE

At the same time, the "rear steering lock release indicator lamp" on the cluster meter panel will also light.

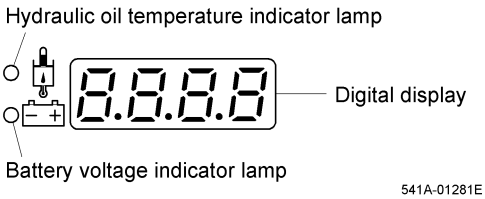
(10) Rear steering central position indicator lamp



591A-11890

When the rear steering lock is released, use the steering wheel or the rear steering switch to move the rear wheels to the central position. This lamp lights when they are in position.

(11) Digital display



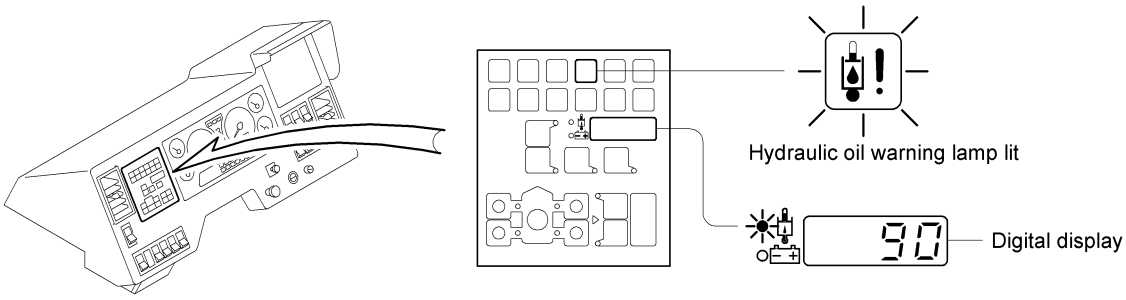
This display indicates the battery voltage, hydraulic oil and torque converter oil temperature, or rear steering angle. When an error occurs, the hydraulic oil temperature indicator lamp and the battery voltage indicator lamp go out and priority is given to the display of the corresponding error numbers on the digital display.

When the voltage drops, the voltage is displayed irrespective of PTO.

When the hydraulic oil is overheating, the temperature is displayed irrespective of PTO.

1) When the PTO is "ON" (during crane operation)

When the hydraulic oil overheats, the hydraulic oil warning lamp lights on the switch panel and the current value is displayed. The hydraulic oil temperature indicator lamp also lights.

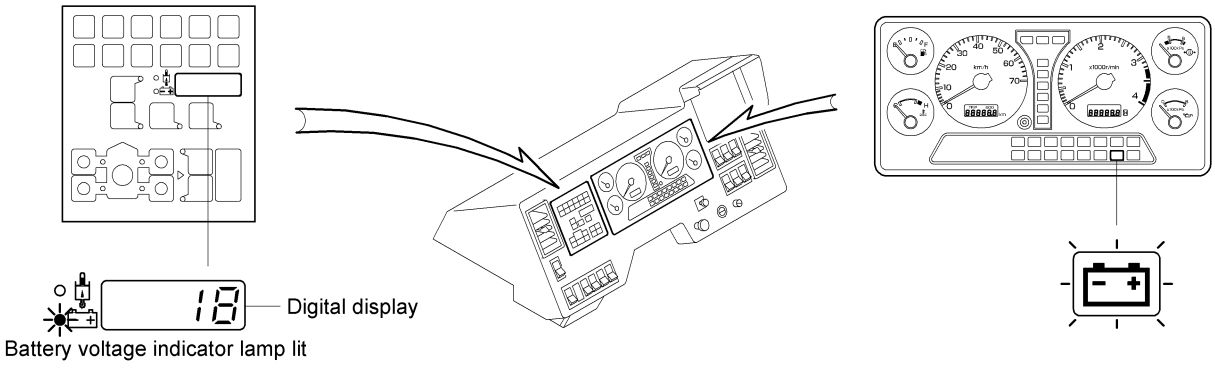


When no error is displayed or the torque converter oil temperature is not displayed, press the outrigger extension and retraction switches simultaneously for two seconds or more to display the current hydraulic oil temperature irrespective of any alarms.

2) When the PTO is "OFF" (for driving on roads)

When the battery voltage falls below the rated voltage (20V), the battery charge indicator lamp on the cluster meter panel starts to flash and the warning buzzer sounds.

At the same time, the current value is displayed and the battery voltage indicator lamp lights.

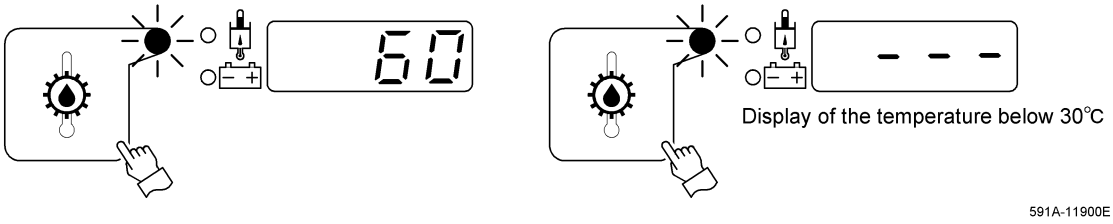


When no error is displayed or the torque converter oil temperature is not displayed, press the outrigger extension and retraction switches simultaneously for two seconds or more to display the current battery voltage irrespective of any alarms.

3) When the torque converter oil temperature display switch is pressed

When the "torque converter oil temperature display switch" on the switch panel is pressed to light the indicator lamp while the parking brake is engaged, both the battery voltage and hydraulic oil temperature indicator lamps will go out and the torque converter oil temperature will be displayed.

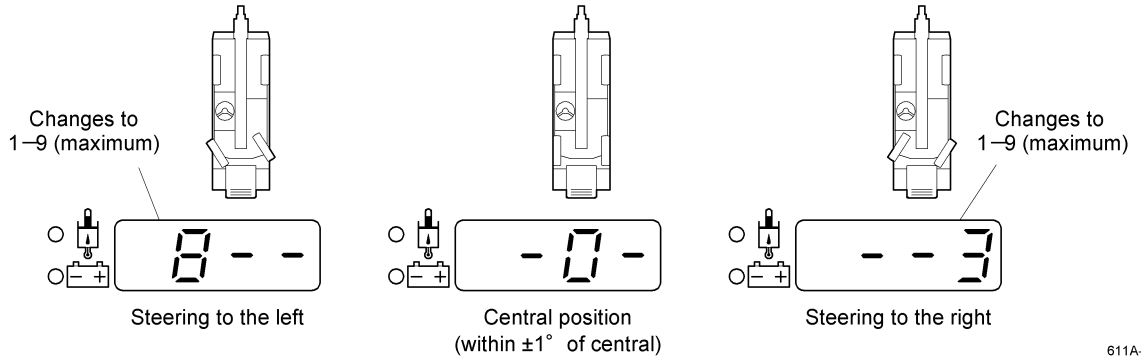
If the temperature is below 30℃, the display will be [---].



4) When the rear steering lock has been released

The rear wheels steering angle will be displayed.

The display shows the current angle as a proportion of the maximum angle, expressed on a scale of 1—9.



NOTE

When the maximum steering angle "9" is displayed, it will flash at 1 second intervals.

11-2-2 Switch section (611A-0019-0E)

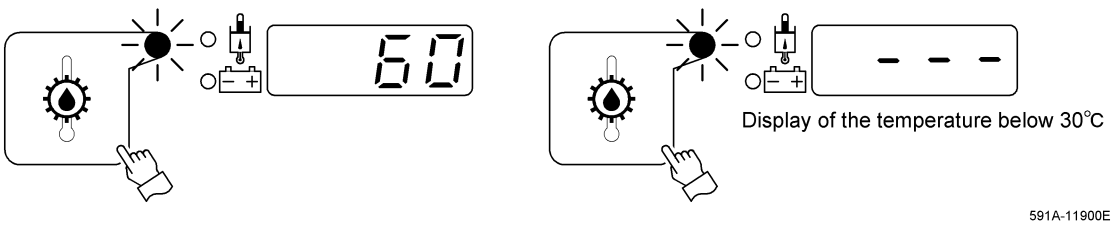
Each switch is accompanied by an indicator lamp.

When a switch operation resisters, it makes a "pip" tone and the indicator lamp lights.

If there is some misoperation, the conditions for the operation have not been met, or for any other reason the switch operation does not resister, the misoperation warning buzzer will sound.

(1) Torque converter oil temperature display switch

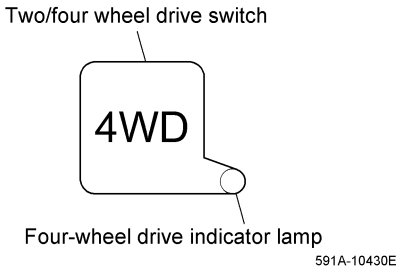
If you press the torque converter oil temperature display switch while the parking brake is engaged, the torque converter oil temperature will appear on the digital display.



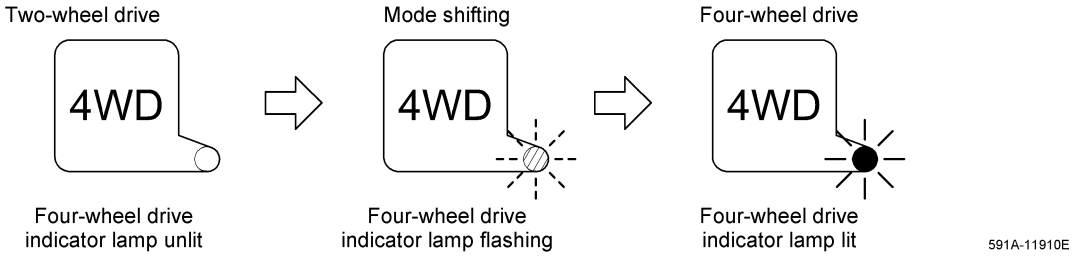
https://truckmanualshub.com/

(2) Two/four wheel drive switch

Use this switch to choose the driven wheels.



1) If the four-wheel drive indicator lamp is not lit, the machine is in two-wheel drive mode. Press the switch to switch to four-wheel drive. When you press the switch, the confirmation tone "pip" will sound and the four-wheel drive indicator lamp will flash (mode shifting) and light steadily, indicating that the machine is in four-wheel drive mode.



2) To shift to two-wheel drive, press the switch while the four-wheel drive indicator lamp is lit. The confirmation tone "pip" will sound and the four-wheel drive indicator lamp will flash (mode shifting) and go out, indicating that the machine is back in two-wheel drive mode.

> ⚠ CAUTION
>
> - Press the switch firmly for at least 0.3 seconds.
> - If you attempt to shift while driving at 3km/h or more, the misoperation warning buzzer will sound.

(591A-0018-0E)

NOTE

When low range has been selected, two-wheel drive is unavailable. If you try to use two-wheel drive in low range, the misoperation warning buzzer will sound.

https://truckmanualshub.com/

(3) High/low speed switch

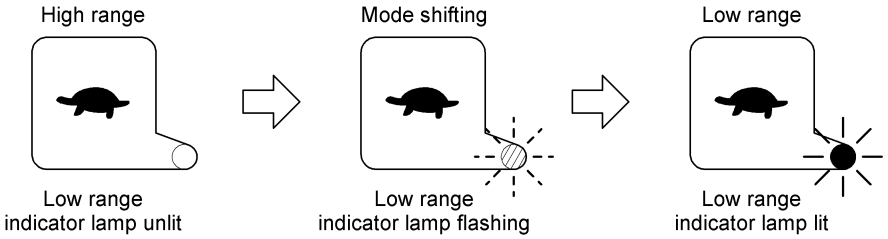
This switch selects high or low range transmission.

⚠ CAUTION

- Press the switch firmly for at least 0.3 seconds.
- Stop the machine before shifting between high and low range. If you attempt to shift while driving at 3km/h or more, the misoperation warning buzzer will sound.
- When switching between high and low range at over 3km/h, the low range indicator lamp will flash rapidly.

(061A-0018-1E)

1) When the low range indicator lamp is unlit, the transmission is in high range. Press this switch in this state to switch to low range. The confirmation tone "pip" will sound and the low range indicator lamp will flash (mode shifting) and then light steadily, indicating that the machine is in low range.



611A-00460E

2) Press the switch while the low range indicator lamp is lit to switch to high range.

The confirmation tone "pip" will sound and the low range indicator lamp will flash (mode shifting) and go out, indicating that the machine is in high range.

NOTE

If you switch the high/low speed switch to low range while the machine is in two-wheel drive, it will automatically switch to four-wheel drive.

https://truckmanualshub.com/

(4) Brake lock switch

The brake lock switch applies the brakes on the front and rear wheels independently of the brake pedal.

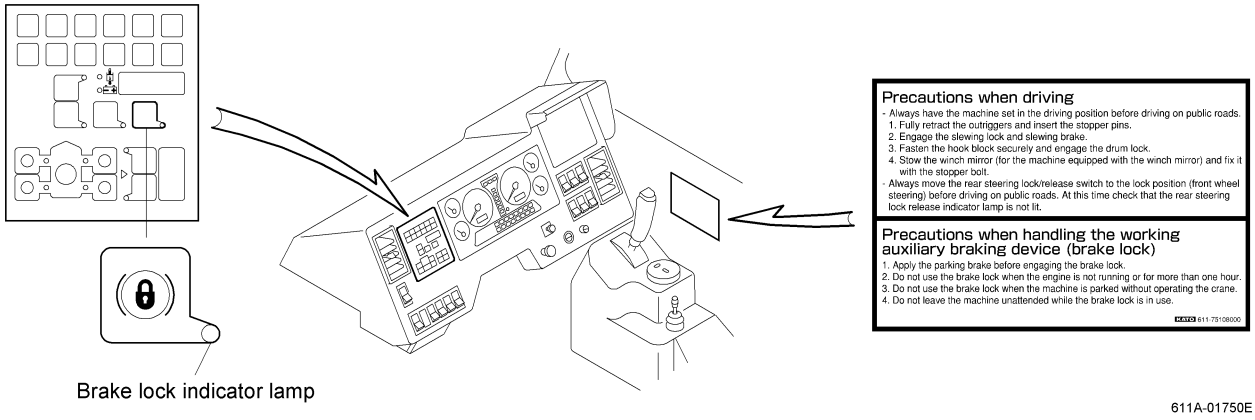
This is an "auxiliary braking device for use during crane operation" which can be used together with the parking brake while setting the outriggers or during stationary crane-on-rubber operation.

Before you use the brake lock, the engine must be running and the parking brake engaged. Press the brake lock switch (ON) to activate the brake lock. The buzzer will sound until the brake lock is fully engaged. Once the brake lock process is complete, the brake lock indicator lamp will light and the buzzer will stop.

The engine must keep running while the brake lock is engaged.

To release the brake lock, press the switch again while the parking brake is engaged to turn it back to the "OFF" position.

When the indicator lamp goes out, the brake lock has disengaged.



611A-01750E

⚠ DANGER

The brake lock must not be used as a substitute for the parking brake.

The brake lock can only be used while the engine is running and the parking brake is engaged.

(541A-0100-0E)

⚠ WARNING

- If air pressure inside the compressed air tank drops while the brake lock is engaged, the warning buzzer sounds. Raise the engine revolutions to increase pressure in the compressed air tank.
- When the engine is switched off, air is not supplied to the compressed air tank. If the pressure inside the compressed air tank falls for some reason or other, the brake lock may release itself.
- Do not leave the machine unattended while the brake lock is engaged.

(541A-0101-1E)

⚠ CAUTION

If you release the parking brake while the brake lock is engaged, the brake lock indicator lamp will flash.

Release the brake lock first and then proceed to release the parking brake.

(541A-0102-1E)

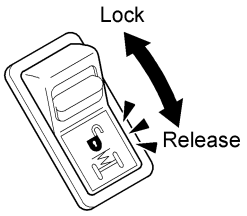
https://truckmanualshub.com/

11-3 Front and side panel switches (541A-0103-0E)

11-3-1 Front panel switches (611A-0020-0E)

(1) Suspension lock/release switch

This switch can be used to switch the suspension state between locked and free (lock released in driving position) to suit the task the crane is performing.



611A-01610E

⚠ DANGER

Do not operate the suspension while the outriggers are extended.

When the suspension lock is released, there is some risk that the axles could drop off.

(541A-0106-0E)

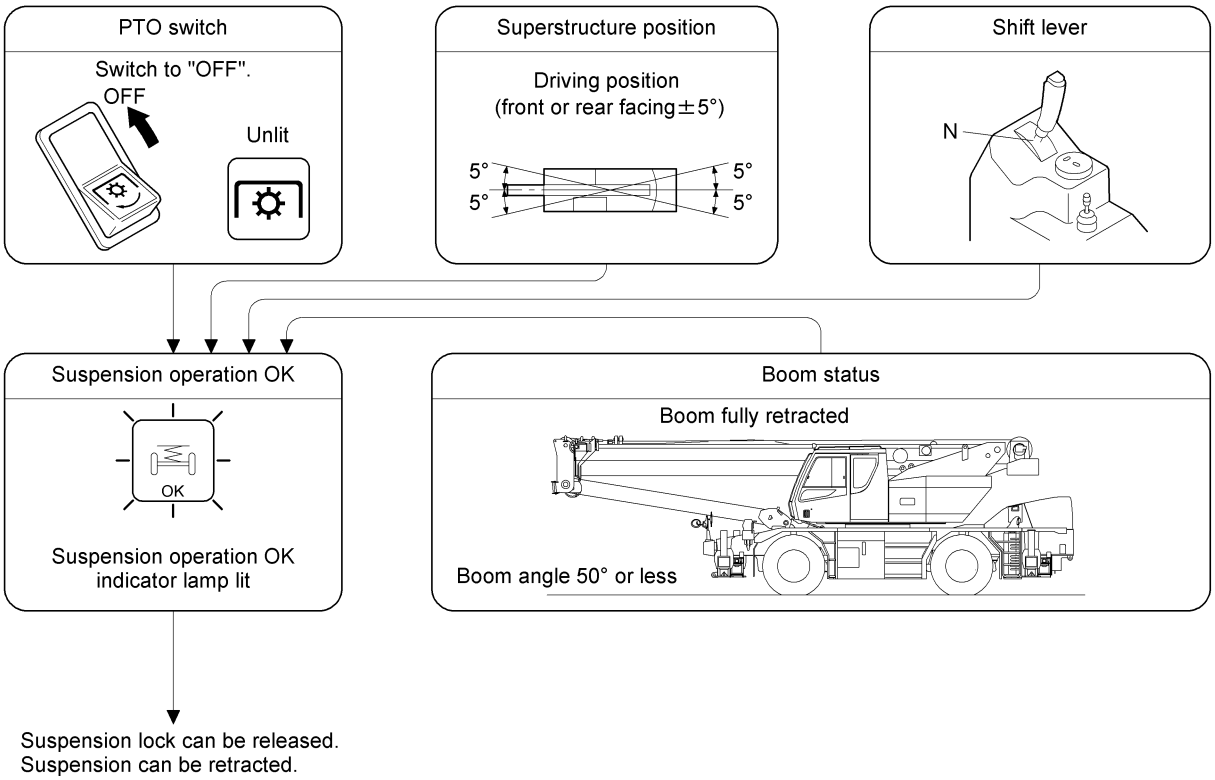
⚠ CAUTION

- Stop the machine before operating the suspension.
- Release the suspension lock when driving on the roads.

(541A-0107-0E)

When you lock or release the suspension, the following conditions must be satisfied.

Suspension control is only possible when the "suspension operation OK indicator lamp" is lit.

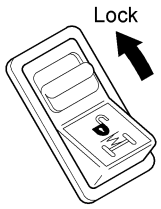


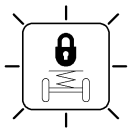
611A-00420E

https://truckmanualshub.com/

1) Suspension lock

Set the suspension lock/release switch to the "suspension lock" side and use the suspension retraction switch to retract the suspension cylinders fully. When you release the switch, the suspension cylinders will be held at that position and the suspension locked indicator lamp will light.





Suspension locked indicator lamp lit

611A-01620E

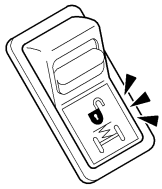
⚠ WARNING

The suspension lock cylinders will only be locked if they are fully retracted.

(541A-0108-1E)

2) Releasing the suspension lock

Move the suspension lock/release switch to the "suspension lock release" side while the suspension cylinders are locked. The suspension lock will be released, the suspension cylinders will return to the driving position and the suspension locked indicator lamp will go out.



Suspension locked indicator lamp unlit

611A-01630E

⚠ CAUTION

If you set the PTO switch to the "ON" position while the suspension lock is released (for the driving position), the suspension cylinders will be locked at that position.

Even if you set the PTO switch to the "OFF" position at this status, the suspension lock will not be released.

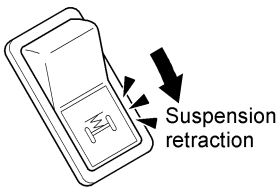
At this time the suspension locked indicator lamp will flash rapidly.

Move the suspension lock/release switch to the "suspension lock" position and then move it to the "suspension lock release" side to release the suspension lock.

(611A-0060-0E)

(2) Suspension retraction switch

Move the suspension retraction switch to the "suspension retraction" side while the suspension lock is released to retract the suspension cylinders as long as you press the switch.



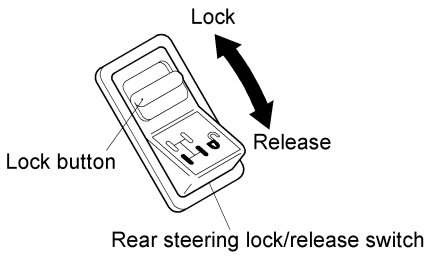
611A-01640E

https://truckmanualshub.com/

(3) Rear steering lock/release switch

This switch is used to lock or release the rear steering automatically.

When you release the rear steering lock, set the switch to the release side while pressing the lock button.



611A-01650E

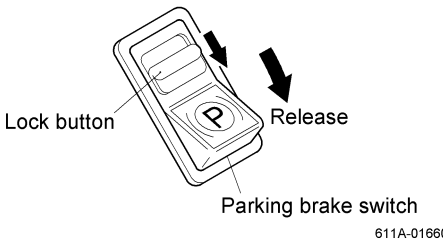
⚠ CAUTION

- Lock the rear steering before you stop the engine.
- Lock the rear steering for driving on roads.
- Check that there is nobody near the rear wheels before you lock the rear steering.
- As a rule the machine should be at rest for rear steering locking/releasing.
- If you cannot lock the rear steering because the rear steering lock pin will not fit into place, drive the machine at extremely low speed while locking the steering.
  If the machine moves at more than 7km/h at this stage, the misoperation warning buzzer will sound.
- If you drive the machine at more than 7km/h by mistake to lock or release the rear steering, the rear steering lock release confirmation indicator lamp will flash and the misoperation warning buzzer will sound. Reduce the driving speed to 7km/h or less and return the rear steering lock/release switch to the original position. Then try again to lock or release the rear steering.
- A pressure of at least 500kPa (5kgf/cm^2) in the compressed air tank is required.
  If you attempt this operation while the low air pressure warning lamp is lit, the rear steering lock release confirmation indicator lamp will flash and the misoperation warning buzzer will sound. Raise the pressure in the compressed air tank to more than 500kPa (5kgf/cm^2) and return the rear steering lock/release switch to the original position. Then try again to lock or release the rear steering.
- When there is a malfunction in any device related to rear steering or when the rear steering emergency switch is "ON", the rear steering mode cannot be switched. The misoperation warning buzzer will sound.
- If it is impossible to release the rear steering lock, move the machine forward slightly. Then move the rear steering lock/release switch again.
- If the machine moves at a speed of more than 15km/h with the rear steering released, the warning buzzer will sound and the speed will be reduced automatically.
- Take particular care when moving down a slope.

(611A-0067-0E)

(4) Parking brake switch

Press the lock button and push the switch to "release" side to release the parking brake.



611A-01660E

https://truckmanualshub.com/

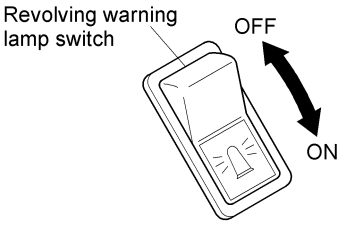
⚠ CAUTION

- If the compressed air pressure is below the rated pressure, the parking brake will not release even if the switch is moved to the release position.
- If you try to drive while the parking brake id engaged, the parking brake indicator lamp will flash and the warning buzzer will sound.

(541A-0111-0E)

(5) Revolving warning lamp switch (optional)

When this switch is in the "ON" position, the revolving warning lamp lights.



611A-00480E

(6) Hazard warning switch

All turn signal lamps flash simultaneously to indicate a hazard.

Only use this switch in an emergency.

This switch functions even when the starter switch is "OFF".

611A-01670E

11-3-2 Side panel (611A-0021-0E)

(1) Shift lever

This lever shifts the transmission gear as follows.

R····· To drive the machine in reverse

N····· To start the engine and keep it running in neutral

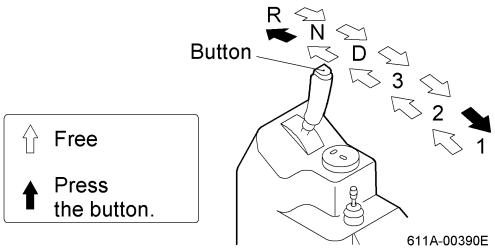
D····· For normal driving

(Gear ratio varies automatically to suit all speeds from moving off to high speed.)

3····· Use this setting to apply engine brake, fixing speed range to a maximum of speed 3.

2····· Use this setting to apply engine brake, fixing speed range to a maximum of speed 2.

1····· Use this setting to apply strong engine brake, fixing speed range to a maximum of speed 1.



611A-00390E

・Guideline for speed change and range

Position	Speed shift range	Speed range
1	Speed 1	0－18km/h
2	Speed 1 ⇔ 2	0－26km/h
3	Speed 1 ⇔ 2 ⇔ 3	0－38km/h
D	Speed 1 ⇔ 2 ⇔ 3 ⇔ 4	0－49km/h
R	Reverse speed 1	0－26km/h

(511A-0016-0E)

https://truckmanualshub.com/

⚠ CAUTION

- If you move the shift lever to any position other than "N" while the machine is at rest, it may start to move even if you are not pressing the accelerator pedal. Always keep the brake pedal pressed down when changing gear while the machine is at rest.
- When the machine is lifted off the ground on the outriggers and the parking brake is engaged, the shift lever should only be in the "N" position.
  Changing to any other position could break the differential gear.
  Only change gear while all wheels are on the ground.

(541A-0115-1E)

NOTE

If you move the shift lever to any position other than "N" while the parking brake is engaged, the warning buzzer will sound.

NOTE

If you shift down but do not reduce speed to a suitable level for that gear, the transmission will not shift down to the lower position. Also on downhill slopes with speeds 1, 2 or 3 selected when the driving speed exceeds the speed range for the selected gear, the transmission will automatically shift up one position. In this case, the effect of engine brake will be lost. Take care to keep the machine's speed within the range for the selected shift position.

NOTE

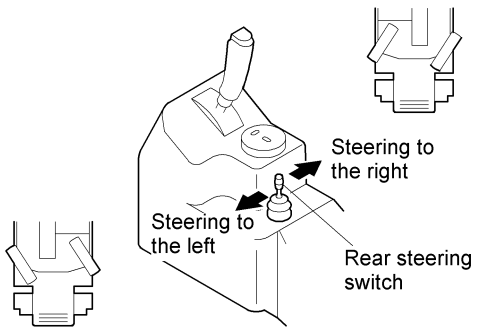
If the AT/M malfunction warning lamp lights or flashes, the shift lever will change over to manual shift by switching the AT/M emergency switch to the "emergency" side. Refer to the section "Handling a malfunction in the automatic transmission system".

(2) Rear steering switch (self-reset type)

When the rear steering lock is released (the rear steering lock release confirmation indicator lamp is lit), moving the rear steering switch will steer the rear wheels in the direction the switch is moved for as long as it is held in that direction.

NOTE

If you try to move the rear steering switch while the rear steering is locked, misoperation warning buzzer will sound.



611A-00500E

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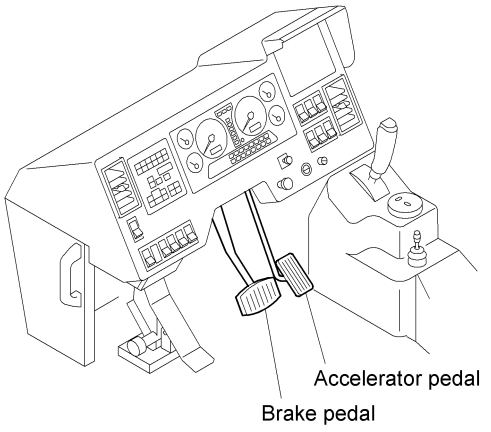
11-4 Accelerator and brake pedals (541A-0117-0E)

(1) Accelerator pedal

This pedal controls the engine speed and therefore the speed of the machine in motion.

Sudden acceleration while driving is dangerous. Always work the accelerator smoothly and steadily.



> ⚠ CAUTION
>
> Before operating the accelerator pedal, confirm that the needle of the engine water temperature gauge is above point "C".
>
> Operating the accelerator pedal while the engine coolant temperature is low could cause a seizure, fast wear, damage etc. due to poor lubrication (from high oil viscosity) of the engine and torque converter.
>
> Properly perform warm-up running.

(541A-0158-2E)

(2) Brake pedal

This is the foot brake for use while the machine is in motion.

The disk brakes on the front and rear wheels act when the pedal is pressed in proportion to the amount of pedal depression.

> ⚠ CAUTION
>
> If the air pressure in the foot brake circuit falls below the rated pressure (500－900kPa (5－9kgf/cm^2)), the available braking force will be inadequate. Use the air pressure gauge on the cluster meter panel to check the compressed air pressure while driving. When driving down a long slope, use the engine brake and the exhaust brake and avoid overusing the foot brake.
>
> If air pressure in the foot brake circuit falls below 500kPa (5kgf/cm^2), the "low air pressure warning lamp" on the cluster meter panel will light and an intermittent buzzer will sound to alert the driver to the danger of brake failure. Stop the machine and raise the air pressure to within the rated range before driving on.

(611A-0068-0E)

https://truckmanualshub.com/

11-5 Steering column (541A-0119-0E)

11-5-1 Steering wheel (541A-0284-2E)

Loosen the lock lever which is located on the left side of the steering column to adjust the angle and height of the steering wheel.

(1) Height and angle adjustment lock lever

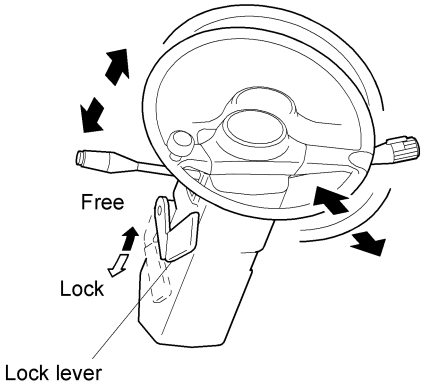
Loosen the lock lever on the left side of the steering column to adjust the angle and height of the steering wheel, then tighten the lever again to lock the adjusted position.

NOTE

The ranges of adjustment are as follows.

Height adjustment·····40mm

Angle·····10°



611A-00520E

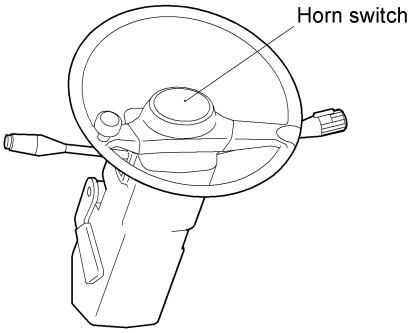
> **⚠ DANGER**
>
> - Only adjust the steering wheel position while the machine is at rest.
> - Always fasten the lock lever securely after adjusting the angle and height of the steering wheel. If the lever is loose, the steering wheel could move unpredictably while the machine is in motion and cause an accident.

(541A-0120-1E)

(2) Horn switch

Press the horn switch in the center of the steering wheel to sound the air horn.

When the horn does not sound even if the switch is pressed, contact your authorised KATO dealer to order a repair before starting to drive.



611A-00530E

https://truckmanualshub.com/

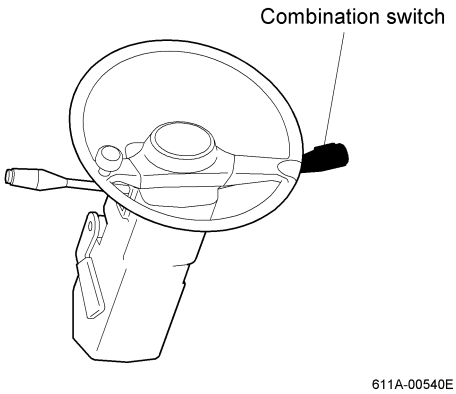
11-5-2 Combination switch (611A-0069-0E)

The combination switch is mounted on the steering column. The steering column incorporates the following switches.

(1) Combination switch

The combination switch has the following switching functions.

- Windscreen wiper switch
- Windscreen washer switch
- Exhaust brake lever



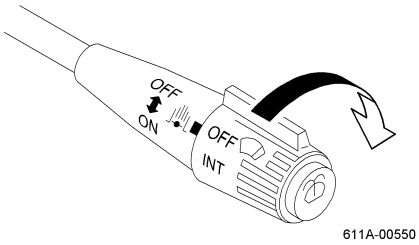
611A-00540E

1) Windscreen wiper switch

The knob on the end of the combination switch acts as the windscreen wiper switch. Turn it clockwise to the position for the necessary wiper action.

Knob setting position	Wiper action
OFF	Stop
INT	Intermittent
LO	Slow
HI	Fast

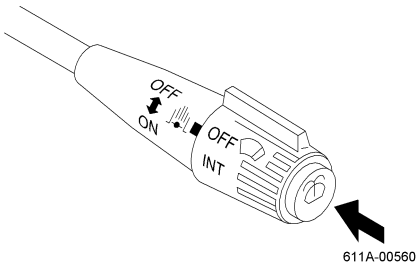
(541A-0121-1E)



611A-00550

2) Windscreen washer switch

The windscreen washer switch is located on the end of the knob. Press it to spray cleaning liquid from inside the windscreen washer tank out through the nozzle. After the windscreen washer sprays, the wiper will work for a few strokes even if it is not switched on to use the sprayed liquid for effective cleaning of the windscreen.



611A-00560

> ⚠ CAUTION
>
> Do not press the washer switch for more than 15 seconds continuously at one time. If you keep pressing the switch for a long time, the pump could break down. Do not press the switch if the washer tank is empty as this could burn out the pump.

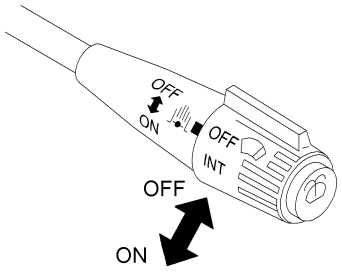
(591A-0081-0E)

3) Exhaust brake lever

Use the exhaust brake to increase the effect of engine braking while driving down a long slope.

Move the lever to the "ON" position and take your foot off the accelerator pedal to activate the exhaust brake.

The exhaust brake will disengage when you depress the accelerator pedal again.



611A-00570

> ⚠ CAUTION
>
> The exhaust brake will not act when the shift lever is in the "N" position.

(541A-0122-0E)

NOTE

The exhaust brake acts when the machine is driving at 10km/h or more.

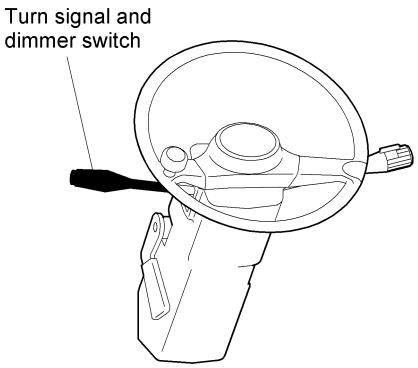
NOTE

When the exhaust brake acts, the "exhaust brake indicator lamp" on the cluster meter panel will light.

(2) Turn signal and dimmer switch

This switch incorporates the following switching functions.

- Turn signal switch
- Lighting switch
- Dimmer switch



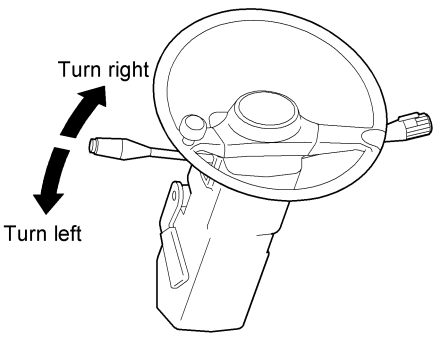
611A-00580E

1) Turn signal switch

Move the lever in the direction you are going to move the steering wheel to make all turn signal lamps on the relevant side of the machine flash.

When you turn the steering wheel back in the other direction, the lever will return to its central "OFF" position to switch off all turn signal lamps.

If the motion of the steering wheel is slight and the lever does not reset automatically, reset it by hand.

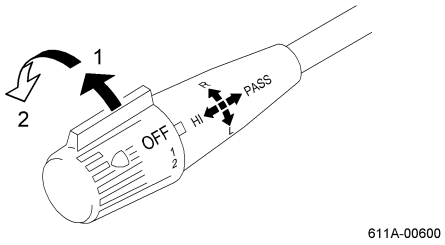


611A-00590E

2) Lighting switch

The knob on the end of the lever is the lighting switch.

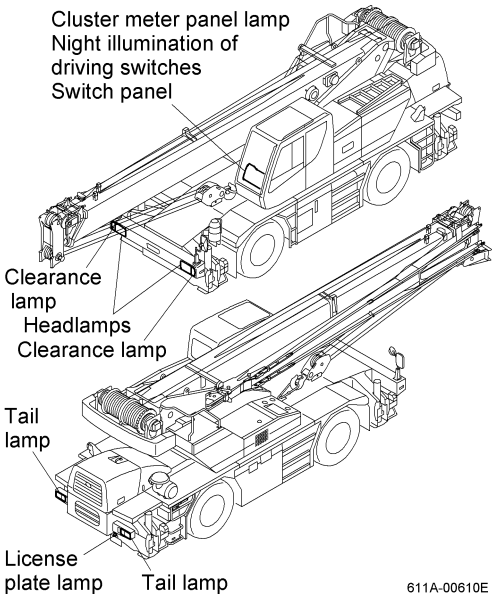
Turn the knob counterclockwise to light the lamps as described below according to the switch position.



611A-00600

Switch position		OFF	1	2
Lamp	Clearance lamps Tail lamps License plate lamp Cluster meter panel lamp Switch panel Night illumination of driving switches	Off	Lit	
	Headlamps	Off		Lit

(611A-0170-0E)

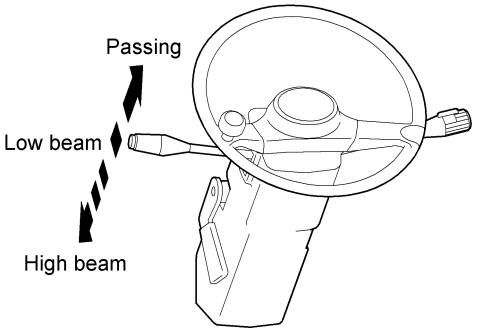


611A-00610E

3) Dimmer switch

Move the lever forward and backward to work the dimmer switch.

- High beam··· Move the lever forward with the lighting switch in position 2 to turn the headlamps to high beam. The high beam indicator lamp ( ) on the cluster meter panel also lights.
- Passing ····· Move the lever toward you in any lighting switch position to turn the headlamps to high beam only for as long as you lift the lever. The high beam indicator lamp on the cluster meter panel also lights while the headlamps are on high beam. When you let go of the lever, it will return to its central position and high beam will be canceled.



611A-00620E

https://truckmanualshub.com/

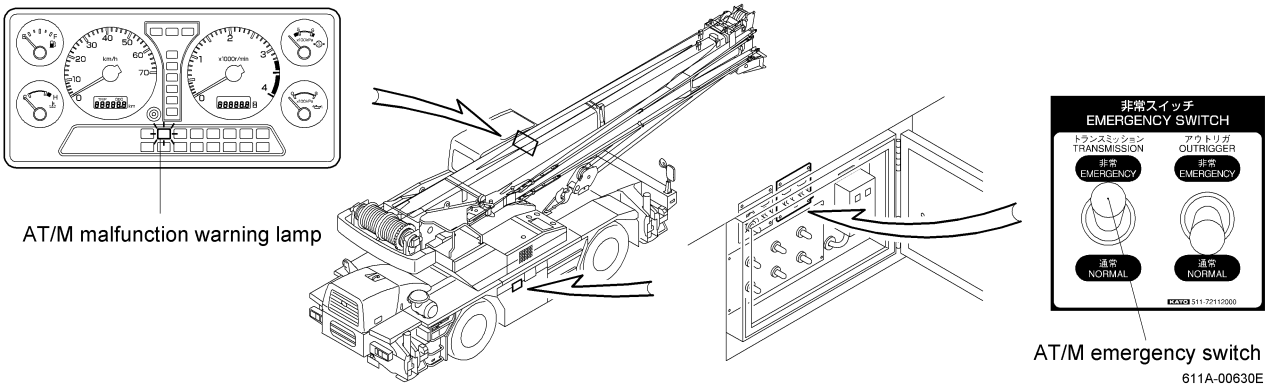
11-6 Lower control switches (611A-0022-0E)

(1) AT/M emergency switch

If there is a malfunction indicated by the AT/M malfunction warning lamp on the cluster meter panel and you cannot continue driving in "D" range, turn this switch to the "emergency" position. You may now continue driving using manual transmission.

The shift positions now correspond to fixed gears: D is fourth speed, 3 is third, 2 is second and 1 is first.

Choose the optimum gear at all times to prevent the engine from over-running. Persistent over-running of the engine could lead to seizure and severe damage.



NOTE

It is impossible to use manual gear change in the low range.

⚠ WARNING

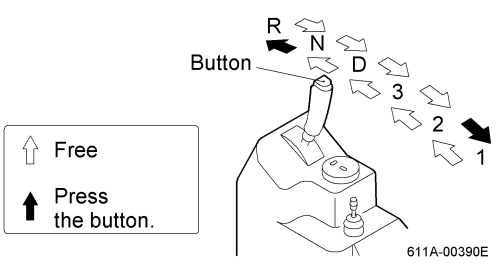
- If the AT/M malfunction warning lamp lights, park the machine in a safe place immediately. After stopping in a safe place, stop the engine then start it again. If the AT/M malfunction warning lamp is still lit, leave the machine where it is and contact your authorised KATO dealer for instructions.
- When the AT/M emergency switch is switched to the "emergency" side to continue to drive unavoidably, normal driving with the shift lever in the "D" range (automatic gear change) is impossible, so use manual gear change to continue driving. You must choose to optimum gear for the speed range you are driving in at any time.
  (It is impossible to use manual gear change in the low range.)

Manual shift position guidelines for machine speeds (high range)

Position	Speed range
1	0 －18km/h
2	18－26km/h
3	26－38km/h
D	38－49km/h

(121A-0012-1E)

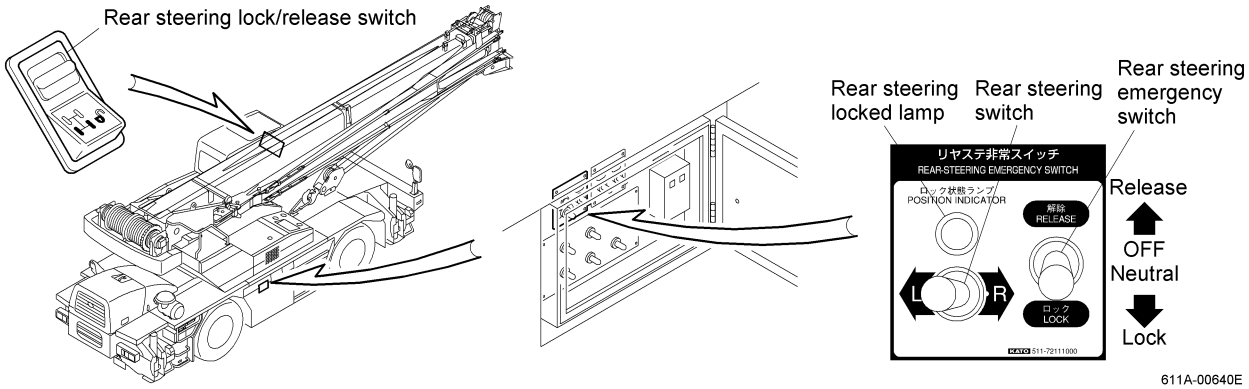
- When the AT/M emergency switch is switched to the "emergency" side, the lockup mechanism is released, so engine braking will not function.
  Reduce the driving speed not to overuse the brakes.



(541A-0077-3E)

(2) Rear steering emergency switch (for lower structure)

If the rear steering cannot be locked or released automatically by the action of the rear steering lock/release switch (when the multiplex communication error warning lamp lights or when any rear-steering related device is malfunctioning etc.), use the "rear steering emergency switch" located on the lower control panel on the side of the lower structure to temporarily switch the steering manually so that you can continue working.



611A-00640E

⚠ WARNING

During normal driving the rear steering emergency switch should be in the "central" position. Do not drive with it in the "release" position.

(541A-0025-0E)

⚠ WARNING

When you return the rear steering emergency switch back to its central position (to cancel emergency operation) and return to automatic, the rear steering lock release indicator lamp may continue flashing on the cluster meter panel if the rear steering lock/release switch and the lock release condition do not match. Set the rear steering lock/release switch again. If in emergency mode lock and release cannot be confirmed when the rear steering emergency switch is returned to its central position, error No. 2412 will be displayed.

(611A-0061-0E)

⚠ CAUTION

- When using the rear steering emergency switch, the rear steering lock release indicator lamp on the cluster meter panel inside the cab will flash rapidly (every 0.5 seconds) to indicate that "rear steering emergency mode" is in effect.
  The "rear steering emergency mode" will remain in effect for two seconds after the rear steering emergency switch is returned to its central position.
- Steering with the machine parked is impossible while you are using the rear steering emergency switch.
- Do not use the rear steering switch while the rear steering lock is engaged.

(541A-0127-1E)

NOTE

The "rear steering locked lamp" on the rear steering emergency switch panel can be used to check the condition of the rear steering lock pin.

Unlit:	Lock confirmed
Slow flash (2 seconds):	Mode shifting (Lock ⇔ Release)
Lit:	Release confirmed
Fast flash (0.4 seconds):	Error status

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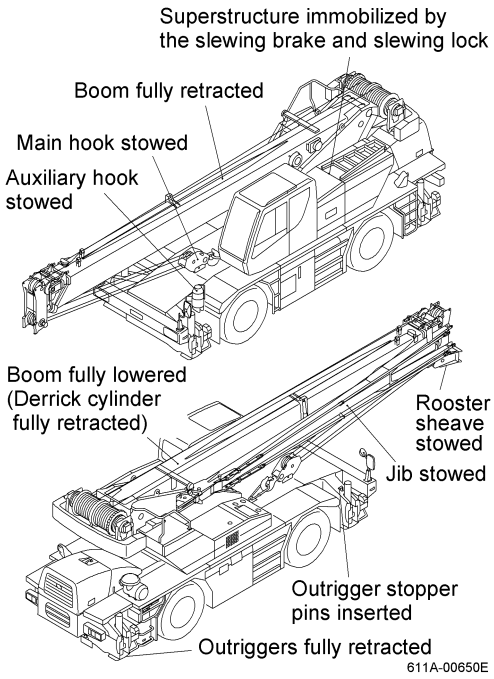
12. Driving the machine (371A-0038-0E)

Check the relevant safety regulations and laws in the country concerned before you drive this machine on the road.

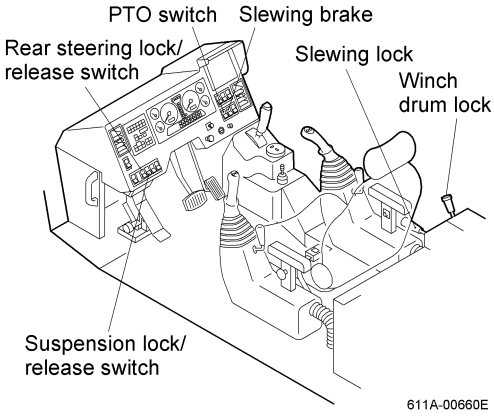
12-1 Preparations for driving on the roads (611A-0023-0E)

The machine must always be in the position shown below for road driving.

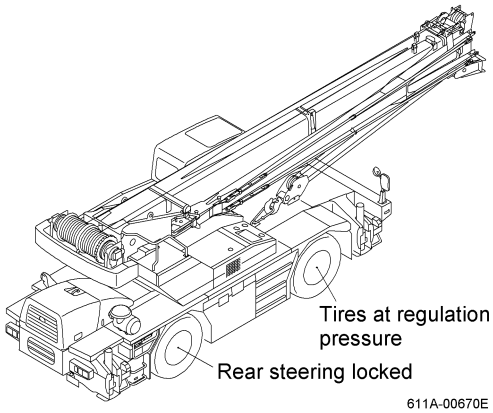
(1) Fully retract the boom and stow the jib and rooster sheave.
(2) Stow the auxiliary hook in the specified position.
(3) Fasten the main hook in its stowage position on the front side of the machine.
(4) Fully retract the derrick cylinder and face the boom forward with respect to the machine.
(5) Engage the slewing brake and slewing lock to immobilized the superstructure.



(6) Engage the winch drum lock.
(7) Fully retract the four vertical cylinders and the four horizontal cylinders to stow the outriggers. Always insert the stopper pins and check that the outriggers are completely stowed away.
(8) Always set the PTO switch to "OFF".



(9) Check that the tires are at the rated pressure.
(Air pressure: 900kPa (9.00kgf/cm^2))
(10) Check that rear steering lock/release switch is set to the lock position and that the rear steering lock release indicator lamp on the cluster meter panel is not lit.

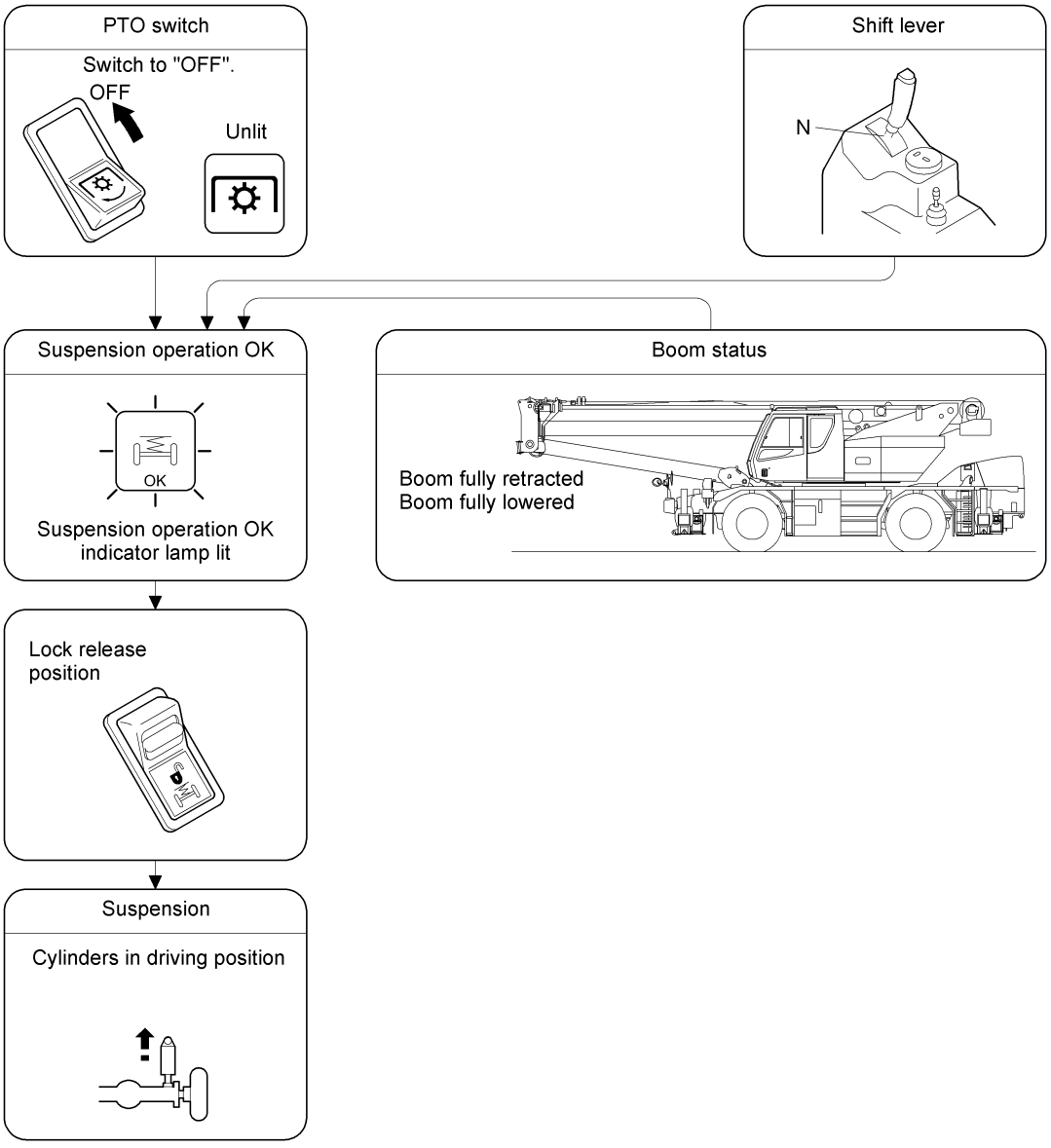


(11) Return the suspension from locked to free state. The procedure for returning the suspension to the free state is as follows.

① Move the shift lever to the "N" position.

② Check that the suspension operation OK indicator lamp is lit.

③ Push the suspension lock/release switch to the lock release side to extend the suspension cylinders to the position required for driving.



611A-00680E

⚠ CAUTION

The machine should be on the firm level ground for suspension operation.

(541A-0130-0E)

(12) Check that no warning lamps are lit.

(13) Check that the turn signal lamps flash correctly.

(14) Check that the foot brake operates and that the brake lamps lights.

(15) Check that the crane working lamps are not lit.

(16) Check that each lamp etc. lights.

(17) Check that the needle of the engine water temperature gauge is above point "C".

(18) Check that the covers of the engine, toolbox and outrigger control panel are closed and locked.

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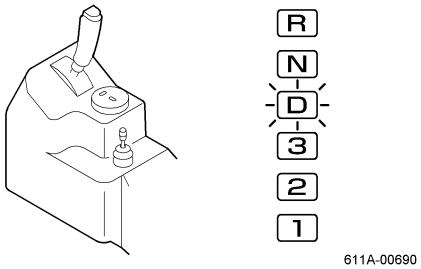
12-2 General driving (611A-0024-0E)

(1) Normal driving

Move the shift lever to the "D" position and press the accelerator pedal. As the machine accelerates, the computer will read its changing speed and automatically change from speed 1 to speed 4 in response to the machine speed.

If you want to maintain a low speed, select the position "1", "2" or "3" as required.



611A-00690

⚠ WARNING

Do not return the shift lever to the "N" position while the machine is in motion.

(541A-0134-0E)

Speed range table

Lever position	Speed shift range	1	2	3	4	Speed range km/h
R N D 3 2 1	1	●				0 — 18 (0 — 8)
R N D 3 2 1	2	●	●			0 — 26 (0 — 12)
R N D 3 2 1	3	●	●	●		0 — 38 (0 — 18)
R N D 3 2 1	D	●	●	●	●	0 — 49 (0 — 26)

● High-range drive
○ Low-range drive

121A-01312E

NOTE

If you move the shift lever to a lower position before decelerating to the shift down speed, the transmission will not shift until the speed has reduced sufficiently.

(2) Driving on slopes

1) When climbing a slope, move the shift lever to D, 3, 2 or 1 depending on the gradient.

2) When driving down a slope, take great care not to deplete the foot brake force because loss of brake force is extremely dangerous. Use the foot brake effectively in short bursts as necessary to minimize heating. At the same time, shift down to take advantage of engine braking and use the exhaust brake for efficient speed reduction. If you drive with your foot resting constantly on the brake pedal, an accident is only a matter of time.

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⚠ CAUTION

Precautions when driving down a slope

1. Make a constant habit of testing your brakes before starting to move down a steep slope or a long gentle slope. If you notice during the descent that your brakes are weak, there is nothing you can do about it.
2. Do not use the foot brake excessively while driving.
   Instead reduce speed by engine braking through appropriate down-shifting and use the exhaust brake, supplementing these as necessary with short bursts of foot brake. Excessive use of the foot brake risks overheating and reduced braking force as well as bubbling in the brake fluid (vapor lock) which can completely disable the foot brake. Intermittent use of the foot brake serves to minimize heating and allows adequate braking force. Use of the brake for long periods with the pedal depressed half way leads to overheating which reduces braking force and invites accidents.
3. After periods of parking or brief stops, depress the brake pedal to check brake function before you move off again. For a short period after stopping the machine (5－20 minutes), the heat of the brake is transmitted through the brake fluid, so the temperature of the brake fluid is higher than it was while the machine was in motion. The brake fluid can become very hot after heavy brake use on a long downhill or after a sudden stop. If the machine is at rest after that, bubbles can form in the brake fluid, completely disabling the foot brake by a phenomenon called soaking.
   If you do not notice this situation until after you start driving, it is already too late. Instead make a habit of applying the foot brake as you start to move the machine to gauge its strength.
4. Take care not to overrun the engine when driving downhill.
   Excessive speed while driving downhill can cause the engine to overrun. If the engine overruns, the overrun warning lamp lights and an intermittent buzzer sounds. If this happens, use the foot brake immediately to reduce speed.
   Engine overrun can cause seizure and ultimately destruction of the engine, so take care to avoid it.
5. Before starting to descend a steep slope, choose the gear that you would use to climb that slope and shift to that position.
6. Exercise caution when shifting down to descend a steep slope.
   If shifting down does not reduce speed adequately, shifting down to another lower position will not shift the transmission.
   If you are driving down a slope with gear 1, 2 or 3 selected and the machine's speed exceeds the allowable speed range for the gear you are using, the transmission will automatically shift up to accommodate the machine's speed. In this case any engine braking effect will be lost. Take great care to ensure that the machine's speed does not exceed the range for the shift position you have chosen.

(611A-0025-0E)

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12-3 Specialized driving (611A-0026-0E)

> ⚠ CAUTION
>
> Before driving on the road, check that the lamps on the high/low speed switch and rear steering lock/release switch and two/four wheel drive switch are not lit.

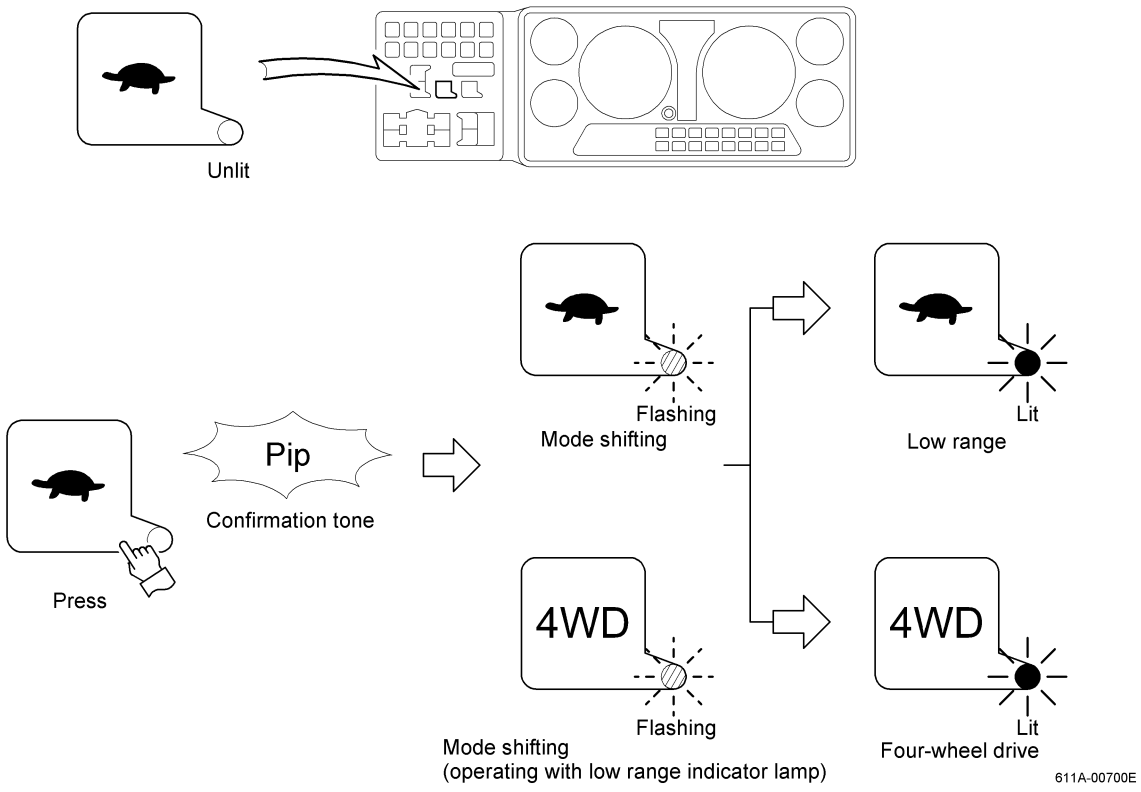
(611A-0027-0E)

12-3-1 Low range drive (121A-0073-0E)

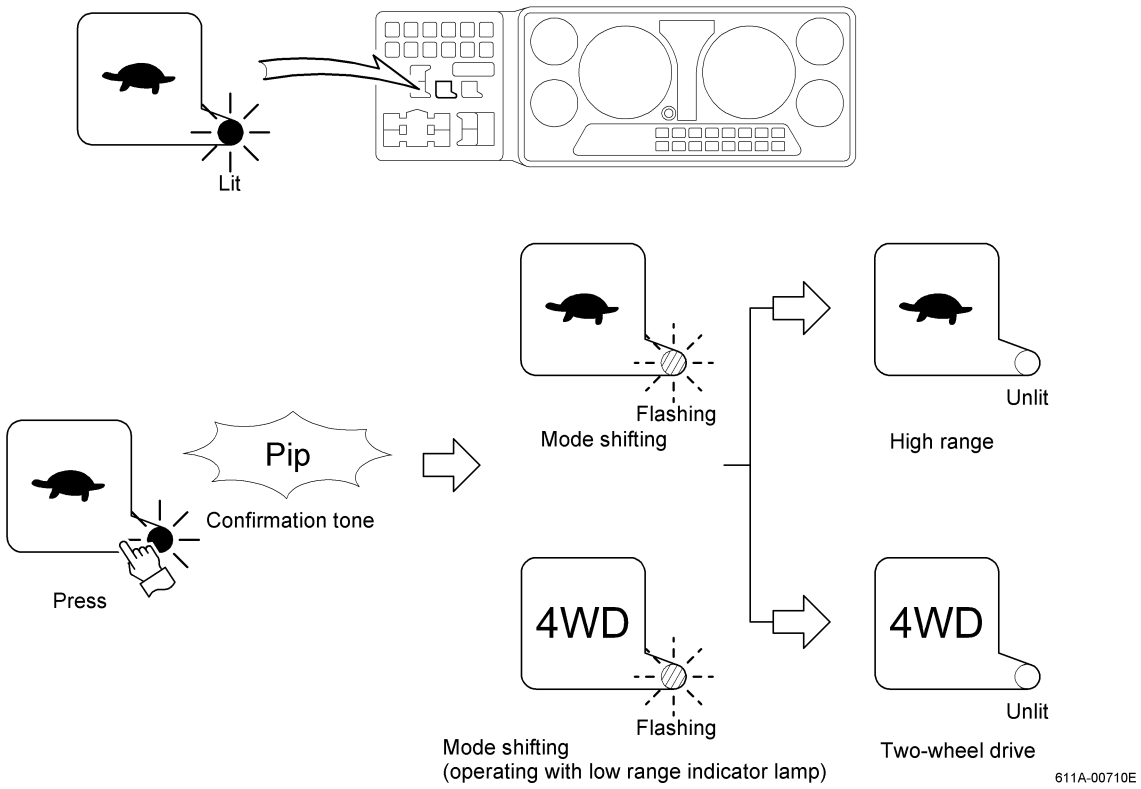
(1) Use high range for normal drive and switch to low range for driving on particularly steep roads or even or soft ground, or for pick and carry operation. When you set low range, four-wheel drive is selected automatically.

(2) High/low range switching

1) Switching from high range to low range



2) Switching from low range to high range



⚠ CAUTION

- Stop the machine before changing between high and low range.
- If you change between ranges when the machine is moving at 3km/h or more, the range gear could be broken or damaged and the engine could overrun.
- While switching between high and low range, the lamp flashes to indicate mode shifting in process. Never start the machine moving while the lamp is still flashing as the gear could be broken as a result.

(061A-0028-0E)

NOTE

The following are the available combinations of high/low range with two/four wheel drive.

- High range + two-wheel drive
- High range + four-wheel drive
- Low range + four-wheel drive (automatic switching)

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12-3-2 Rear steering (611A-0070-0E)

(1) Releasing the rear steering lock

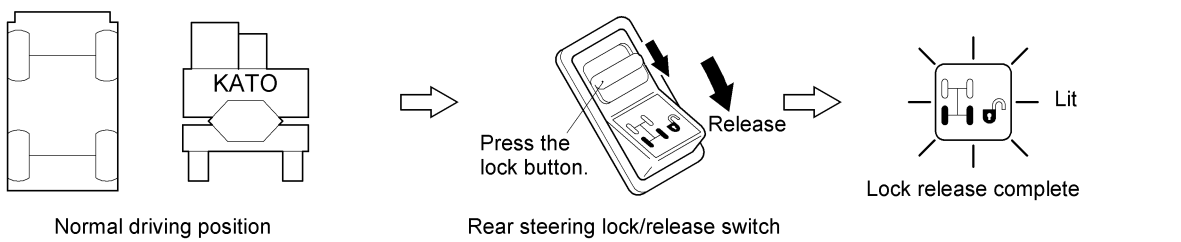
1) Stop the machine.

2) In order to release the rear steering lock, set the rear steering lock/release switch to the release side. While it is releasing, a buzzer sounds and the rear steering lock release confirmation indicator lamp flashes rapidly. When the buzzer stops and the rear steering lock release confirmation indicator lamp lights steadily, the release process is complete and rear steering is possible, independent of the front wheel steering.

⚠ CAUTION

- Lock the rear steering before you stop the engine.
- Lock the rear steering for driving on roads.
- Check that there is nobody near the rear wheels before you lock the rear steering.
- As a rule the machine should be at rest for rear steering locking/releasing.
- If you cannot lock the rear steering because the rear steering lock pin will not fit into place, drive the machine at extremely low speed while locking the steering.
  If the machine moves at more than 7km/h at this stage, the misoperation warning buzzer will sound.
- If you drive the machine at more than 7km/h by mistake to lock or release the rear steering, the rear steering lock release confirmation indicator lamp will flash and the misoperation warning buzzer will sound. Reduce the driving speed to 7km/h or less and return the rear steering lock/release switch to the original position. Then try again to lock or release the rear steering.
- A pressure of at least 500kPa (5kgf/cm^2) in the compressed air tank is required.
  If you attempt this operation while the low air pressure warning lamp is lit, the rear steering lock release confirmation indicator lamp will flash and the misoperation warning buzzer will sound. Raise the pressure in the compressed air tank to more than 500kPa (5kgf/cm^2) and return the rear steering lock/release switch to the original position. Then try again to lock or release the rear steering.
- When there is a malfunction in any device related to rear steering or when the rear steering emergency switch is "ON", the rear steering mode cannot be switched. The misoperation warning buzzer will sound.
- If it is impossible to release the rear steering lock, move the machine forward slightly. Then move the rear steering lock/release switch again.
- If the machine moves at a speed of more than 15km/h with the rear steering released, the warning buzzer will sound and the speed will be reduced automatically.
- Take particular care when moving down a slope.

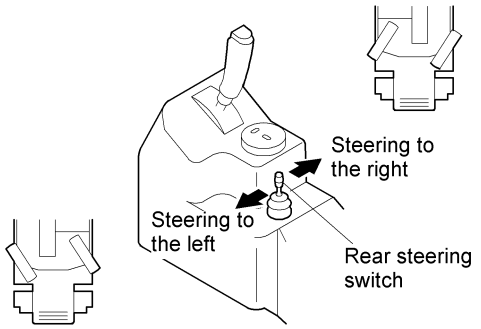
(611A-0067-0E)



611A-00720E

(2) Rear steering

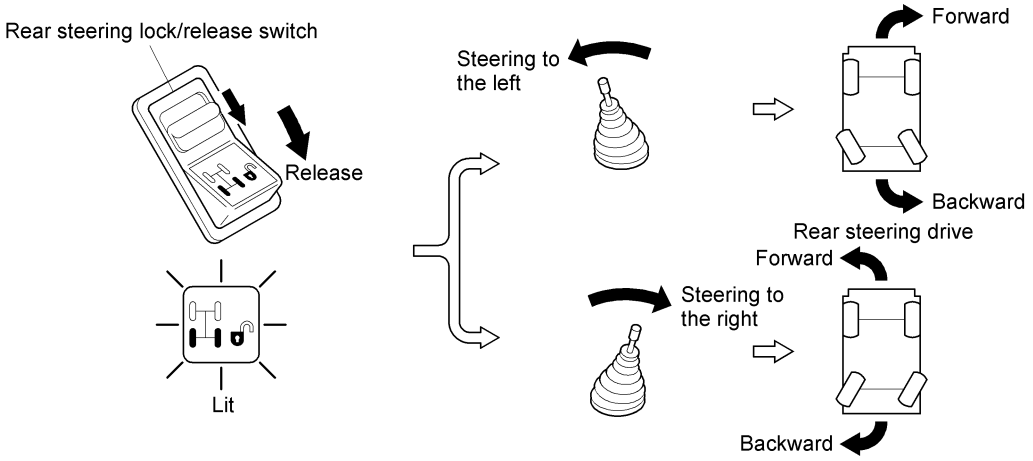
1) Release the rear steering lock (the rear steering lock release confirmation indicator lamp is lit) and the rear steering (rear wheels) can be done to the left and right using the rear steering switch on the side panel.



611A-00500E

2) Steer the rear wheels by operating the rear steering switch in the direction you would like to turn. The rear steering will function as long as the switch is held in that direction.

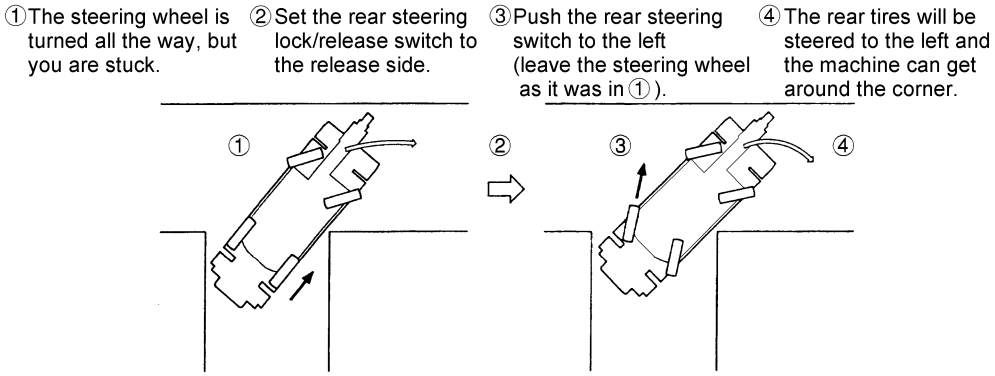
3) The direction of the rear wheels can be seen from the digital display on the switch panel.
When you drive, be especially careful that the direction in which you will drive is safe, and always be careful of which way the rear wheels are pointed.



611A-01680E

NOTE

Steering examples



591A-01450E

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(3) Locking the rear steering

1) Stop the machine.

2) In order to lock the rear steering, set the rear steering lock/release switch to the lock side.

While it is locking, a buzzer sounds and the rear steering lock release confirmation indicator lamp flashes rapidly. When the buzzer stops and the rear steering lock release confirmation indicator lamp goes out, the locking process is complete.

⚠ CAUTION

- Lock the rear steering before you stop the engine.
- Lock the rear steering for driving on roads.
- Check that there is nobody near the rear wheels before you lock the rear steering.
- As a rule the machine should be at rest for rear steering locking/releasing.
- If you cannot lock the rear steering because the rear steering lock pin will not fit into place, drive the machine at extremely low speed while locking the steering.
  If the machine moves at more than 7km/h at this stage, the misoperation warning buzzer will sound.
- If you drive the machine at more than 7km/h by mistake to lock or release the rear steering, the rear steering lock release confirmation indicator lamp will flash and the misoperation warning buzzer will sound. Reduce the driving speed to 7km/h or less and return the rear steering lock/release switch to the original position. Then try again to lock or release the rear steering.
- A pressure of at least 500kPa (5kgf/cm^2) in the compressed air tank is required.
  If you attempt this operation while the low air pressure warning lamp is lit, the rear steering lock release confirmation indicator lamp will flash and the misoperation warning buzzer will sound. Raise the pressure in the compressed air tank to more than 500kPa (5kgf/cm^2) and return the rear steering lock/release switch to the original position. Then try again to lock or release the rear steering.
- When there is a malfunction in any device related to rear steering or when the rear steering emergency switch is "ON", the rear steering mode cannot be switched. The misoperation warning buzzer will sound.
- If it is impossible to release the rear steering lock, move the machine forward slightly. Then move the rear steering lock/release switch again.
- If the machine moves at a speed of more than 15km/h with the rear steering released, the warning buzzer will sound and the speed will be reduced automatically.
- Take particular care when moving down a slope.

(611A-0067-0E)

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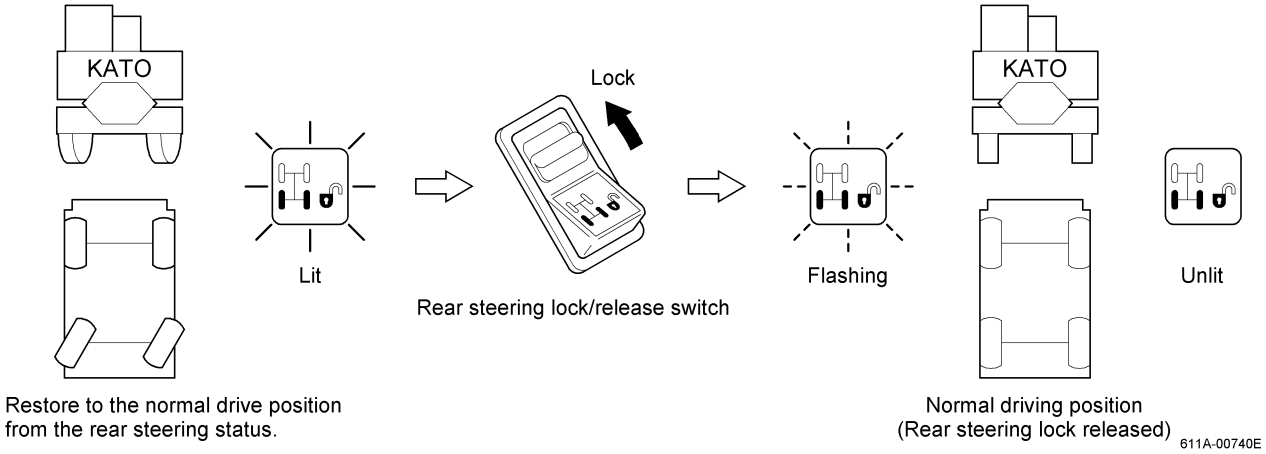
NOTE

If the rear steering lock/release switch does not lock or release the rear steering automatically or the rear steering switch does not move the rear wheels, use the rear steering emergency switch on the lower control panel of the lower structure to temporarily switch the rear steering control to manual so that you can continue working. (Refer to the section "Rear steering emergency switch".)



12-3-3 Two/four wheel drive selection (121A-0074-0E)

(1) Use two-wheel drive for normal drive and switch to four-wheel drive for driving on particularly steep roads or even or soft ground, or for pick and carry operation.

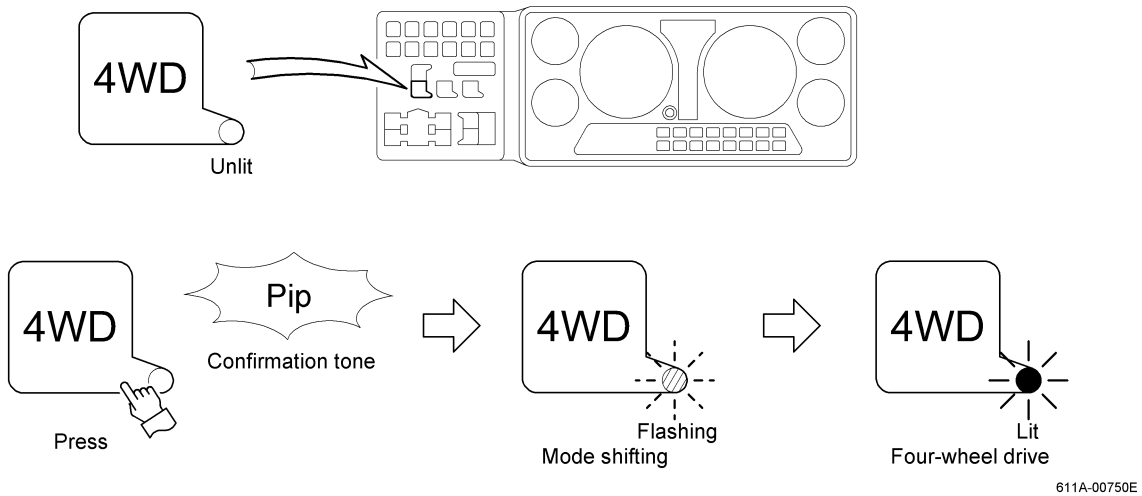
(2) If you are using four-wheel drive when you come to a road that could be traversed without using four-wheel drive, stop the machine immediately and switch to two-wheel drive.

NOTE

If you select low range while the machine is in two-wheel drive, it will automatically switch to four-wheel drive.

(3) Two/four wheel drive switching

1) Switching from two-wheel drive to four-wheel drive

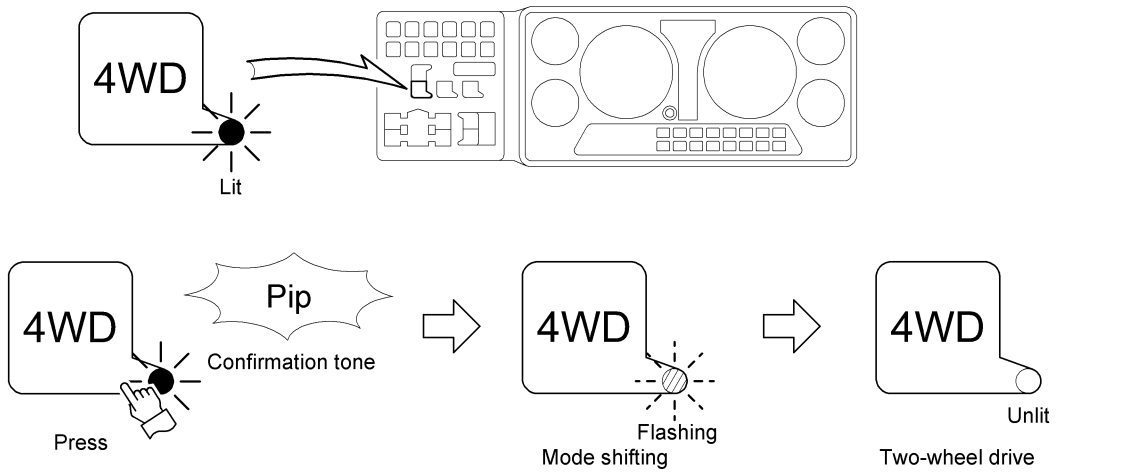


2) Switching from four-wheel drive to two-wheel drive

This switching operation is only possible in high range.

NOTE

When low range has been selected, two-wheel drive is unavailable.



611A-00760E

NOTE

The following are the available combinations of high/low range with two/four wheel drive.

- High range + two-wheel drive
- High range + four-wheel drive
- Low range + four-wheel drive (automatic switching)

⚠ WARNING

While switching between four-wheel drive and two-wheel drive, the lamp flashes to indicate mode shifting in process.

Never start the machine moving while the lamp is flashing as the gear could be broken as a result.

(061A-0030-0E)

⚠ CAUTION

- Stop the machine to change between four-wheel drive and two-wheel drive.
  If it is difficult to switch, do so while driving at extremely low speed.
  Changeover is not possible if the machine is moving at 3km/h or more. If you do so at 3km/h or more, the misoperation warning buzzer will sound.
- Four-wheel drive is provided for driving on unusual surfaces which are impassable when using two-wheel drive.
  Driving on roads for long periods using four-wheel drive imposes an excessive load on the transmission and the axle reduction gear, causing increased tire wear and possibly breakdown in the transmission and the axle reduction gear.

(061A-0031-1E)

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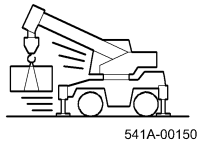

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13. For safe operation (0099-0104-1E)

- This section lists precautions you should observe when operating this crane.
- Make sure you fully understand these points before you start operation and observe them to operate safely.
- In this section, pictures which illustrate dangerous situations or working practices are marked with a large "×" .
- The illustrations in this section are intended to attract attention and supplement the main text.
  They do not give a full and detailed account of the content of the text.
- Further precautions may be necessary due to the attachments in use or the conditions of the site.
- Observe the safety regulations and laws of the country where the crane is used.

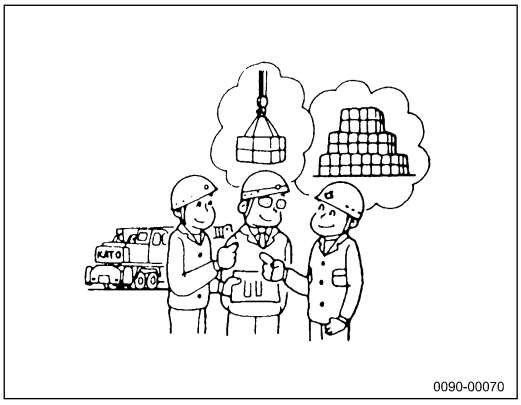
13-1 General precautions (0099-0008-0E)

13-1-1 Precautions on working environment (0099-0228-0E)

(1) Always discuss the work plan with all those involved before you start

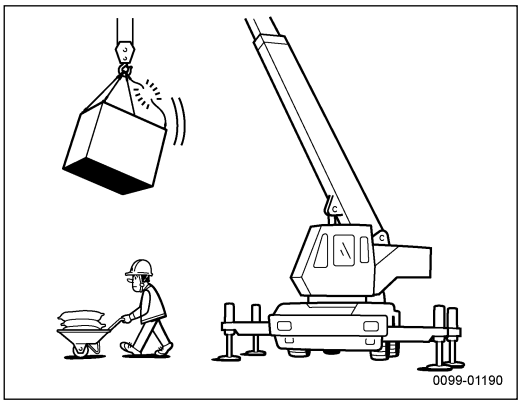
Discuss the work plan thoroughly with the site supervisor before you start work.

A full knowledge of what the job involves and a proper work plan will ensure safety and increase your working efficiency.



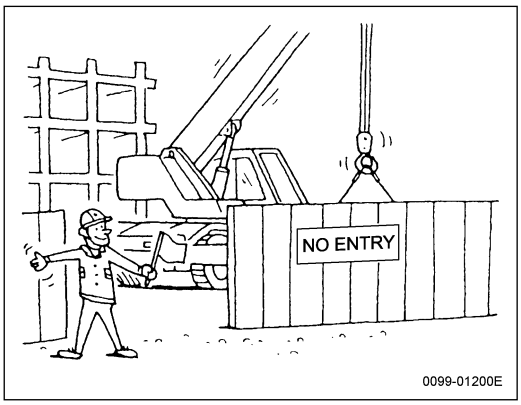
(2) Check for the working position, roads and the presence of obstructions

Finally before the operator starts work, he should check the safety of the area with his own eyes.



(3) No entry into the working area

People, objects etc. should be absolutely prohibited from entering into the crane working area. Always be aware of your surroundings while you work.



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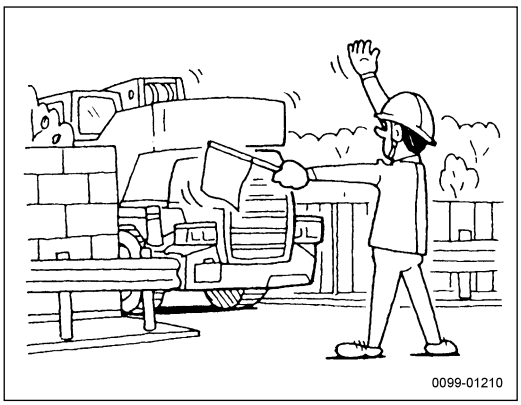
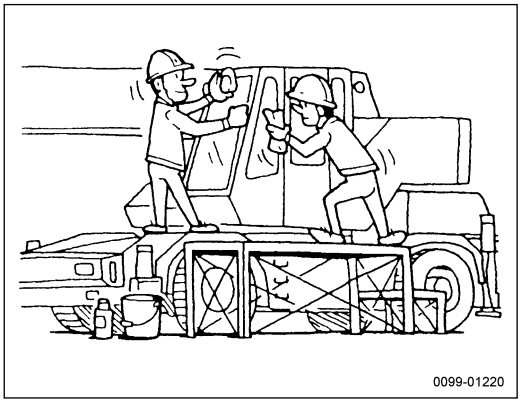
⚠ WARNING

(4) Keeping good visibility

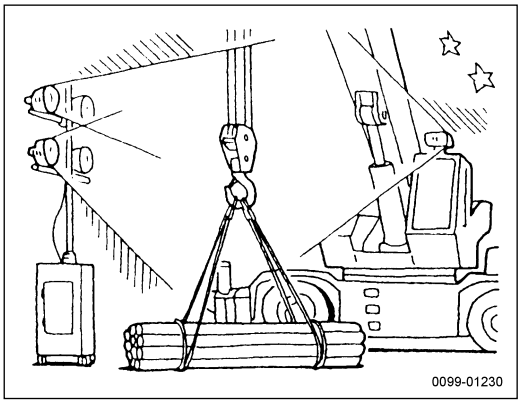
1) When you need to slew or reverse in areas of restricted visibility, place a guide and a signaler and do as they instruct you.



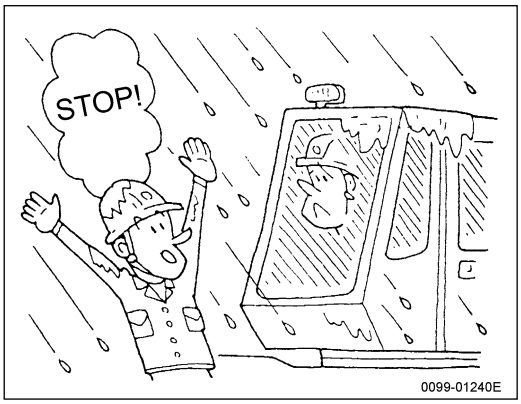
2) Always keep the cab windows, mirrors, wipers and working lamps clean.



3) When working in dark places, switch on the working lamps mounted on the crane and place further illumination where necessary.



4) When visibility is bad due to fog, snow, rain or other conditions, stop work and do not start again until conditions have cleared enough to no longer reduce visibility.



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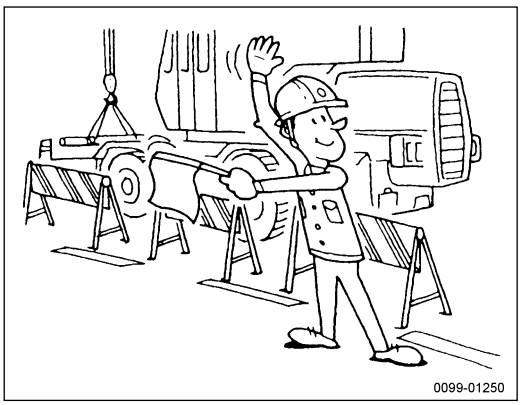
(5) Precautions on working in the public road

Position a guide in the road and erect fences etc. to ensure the safety of passing vehicles and pedestrians.

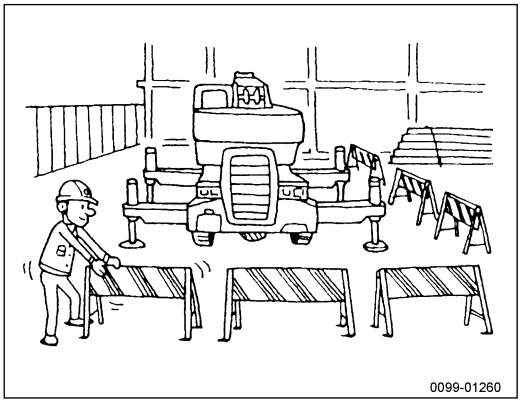
Further observe the safety regulations and laws of the country where the crane is used.



(6) Maintain a good work site and environment for the crane.

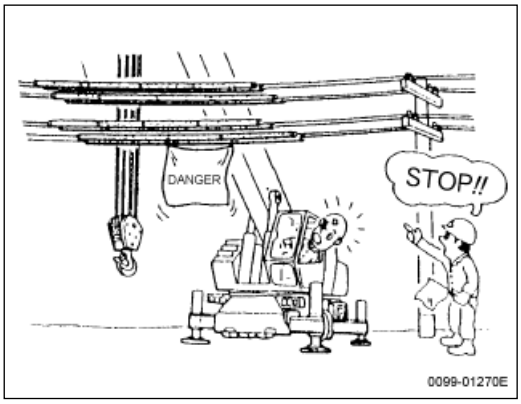
If people or other machines enter the working area, they could cause collisions or personal injury.

Before you start work, always check that your working area is free of people and obstructions. Keep the working area a no entry zone by placing fences or posting a supervisor.



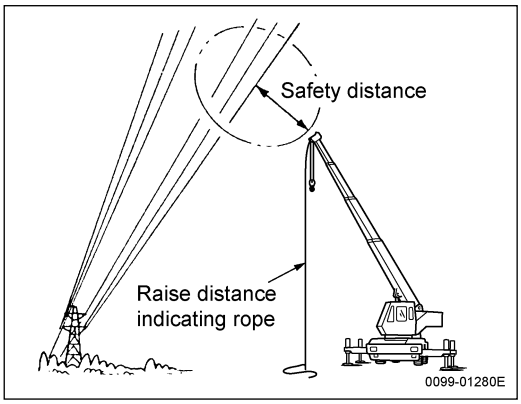
(7) Precautions when working near power cables

・If you are working close to power cables, you can receive a shock even if the crane does not actually touch the cables.



・Contact the managing company in advance and fit protective devices such as tubular coverings and warning signs.

・Keep a safe distance between the crane and the power cables. Before you start work, the electricity company should be consulted on the location and voltage of cables on the site and the necessary isolation distance.



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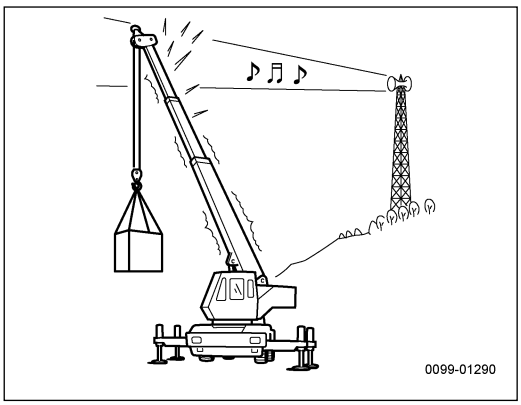
⚠ WARNING

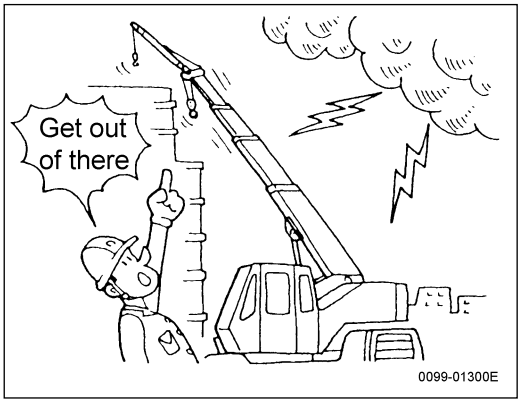
(8) Precautions when operating the crane near high-power electromagnetic wave emitters

High voltages with painful and dangerous consequences can be induced in the vicinity of radio and television transmitters and radar stations. Contact the relevant authority before starting work.



(9) Precautions against lightning strike

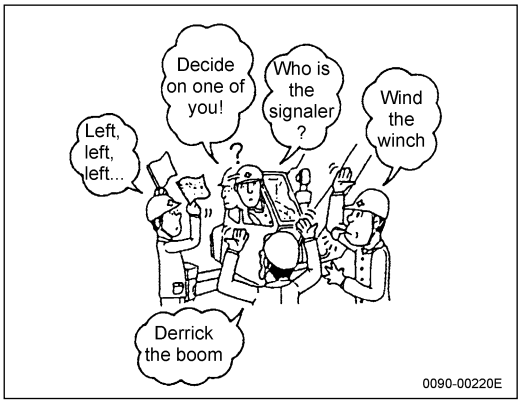
A crane operating with a long boom is prone to lightning strikes. If thunder clouds approach, retract the boom and get out of the crane.



(10) Work according to signals

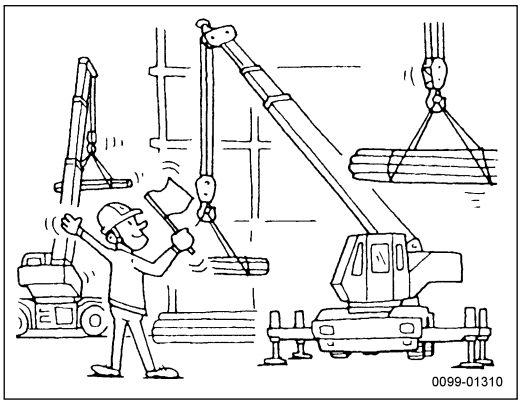
Choose one person to be the signaler.

If the signaler does not signal appropriately with the sling handler and other workers, the working efficiency will fall and there is the risk of accidents. Before starting the job, the controller, signaler, sling handler and other workers who are involved should confer on signal procedures in order to work safely and steadily under the direction of the signaler.



(11) Determine signals for joint operations

If two or more cranes are working together on a site, determine the signaler and the signals in advance.



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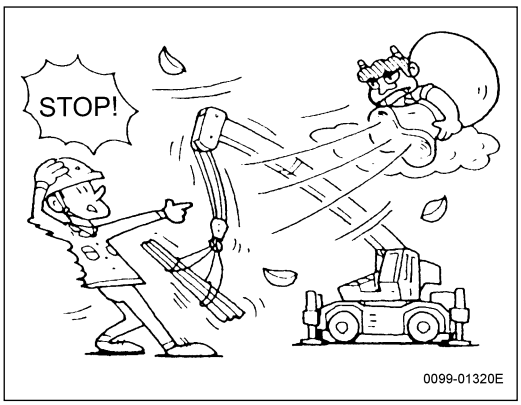
(12) Stop work in strong winds

Loads of high volume or side area and long booms are subject to strong wind loads due to wind pressure.

If the wind is strong and is received from behind the crane, the wind load is added to the suspended load mass which can cause the crane to tip over.

If a long boom derricked to a high angle is subjected to a strong wind from the front, the crane can be tipped over.

If the wind has a gust speed of 10m/s or more, stop work immediately, retract the boom and lower the load. If you are working with a long boom or large load, stop work even if the wind does not reach 10m/s.



13-1-2 Precautions before you start work (0099-0166-1E)

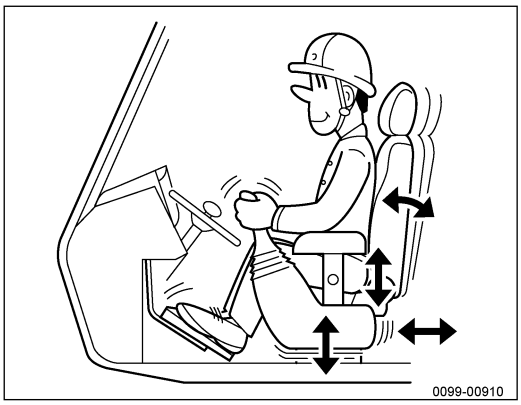
(1) Keep the area of the operator's seat clean and tidy

Do not leave parts, tools or other objects in the area of the operator's seat. These can cause unexpected accidents while you are working.

Do not put aerosol spray cans, paint thinner, or other dangerous combustibles in the cab. They could cause a fire.

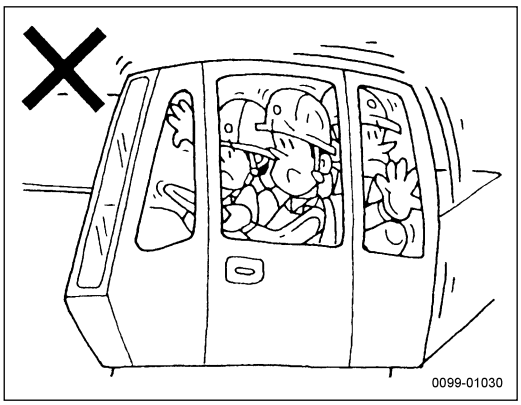
(2) Adjusting the operator's seat

Adjust the operator's seat before starting the engine so that you can reach all control levers and pedal comfortably with your back resting on the seat-back.



(3) Only the operator may be in the cab

Before and during work, nobody other than the operator may sit in the operator's seat or climb onto the crane. Passengers may collide with obstructions or be thrown off the crane, or they may cause a hazard by obstructing the operator's field of view.



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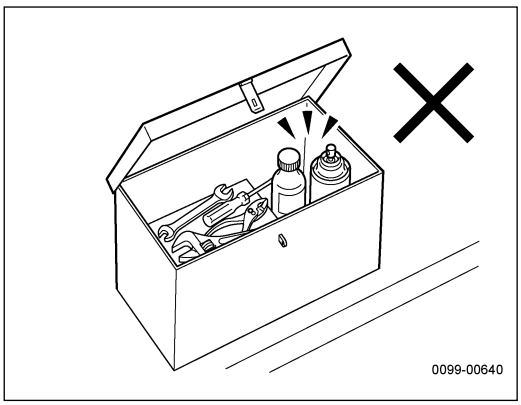
⚠ WARNING

(4) Do not put flammable items in the toolbox

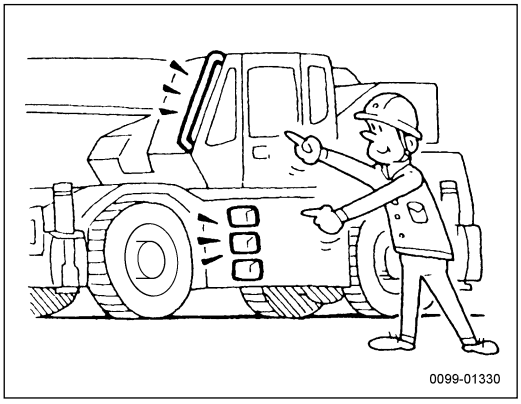
Do not put aerosol spray cans, paint thinner, or other dangerous combustibles in the toolbox.

They could cause a fire.



(5) Precautions when you get on and off the crane

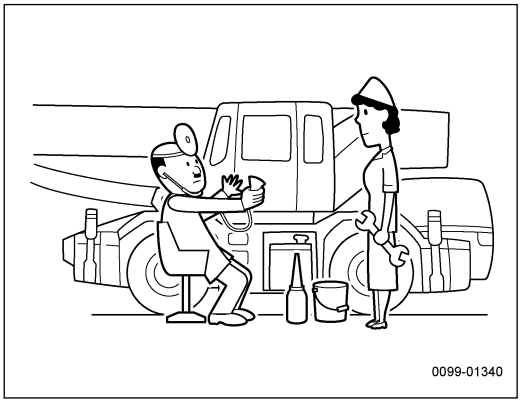
- Check that all guards and covers on the crane are fastened correctly. If any is damaged, have it repaired immediately.
- The floor, hand grips and steps can be slippery if there is mud, oil or snow stuck to them, so wipe any of these away before you start work.
- It is dangerous to jump onto or off the crane. It is also dangerous to hold onto the control levers, seat, control box or anything other than the hand grips when you get on or off the crane. When you get on or off the crane, face toward it and use the hand grips and steps.
- Getting on and off the crane while it is in motion is dangerous. Always wait until it is at rest.



(6) Perform crane preoperational checks

You should inspect the crane according to the preoperational check procedure detailed in this manual. These checks ensure safety and economy.

Before you start using the crane, thoroughly warm it up and check the operation of the control levers without a load.

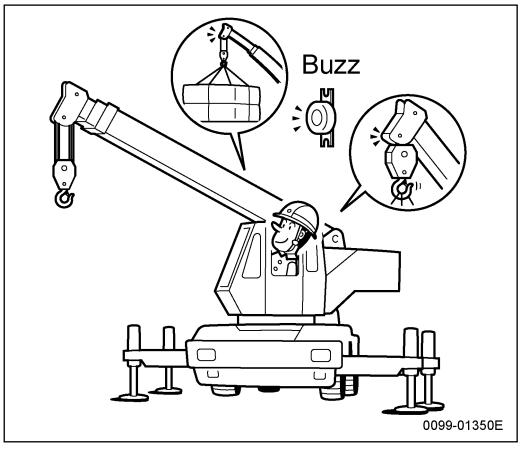


(7) Check ACS operation

Check the operation of the ACS according to the ACS preoperational check procedure described in the instruction manual which should always be kept in the cab.

(8) Check safety devices

In addition to the ACS, the crane is fitted with an overhoisting detector and other safety devices which you should check before starting work.



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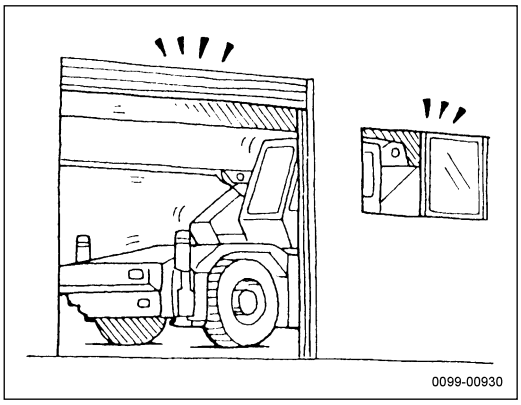
13-2 Precautions during operation (0099-0012-0E)

13-2-1 Precautions when starting the engine (0099-0108-2E)

(1) Precautions when starting the engine indoors

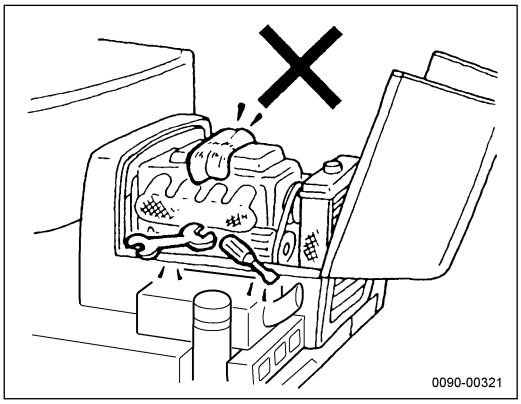
If you need to start the engine indoors, open doors and windows to ensure good ventilation or get exhaust gas out of doors with the additional exhaust pipe connected.



(2) Keep the surroundings of the engine clean and tidy

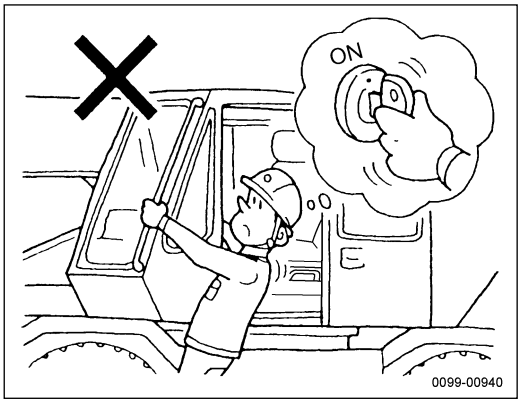
Do not leave tools, rags etc. lying around in the engine compartment.

Clear everything away as soon as you finish inspection or servicing. Cleanly wipe away any spilled oil or fuel. Check that paper scraps or other flammable materials are not scattered about or piled up near the engine.



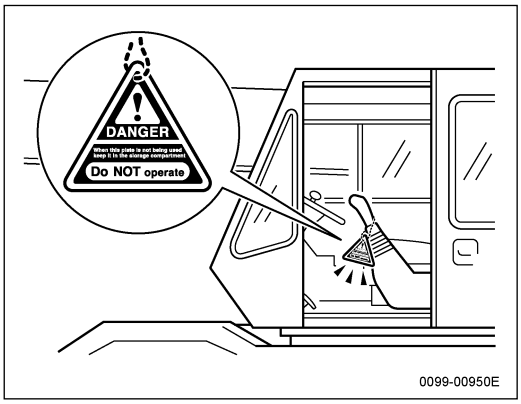
(3) Start the engine from the operator's seat

Always start the engine while seated in the operator's seat.



(4) Do not use the crane if it has an operation prohibition tag attached

If the crane is being inspected or serviced, attach the operation prohibition tag on a control lever to prevent an accidental operation.



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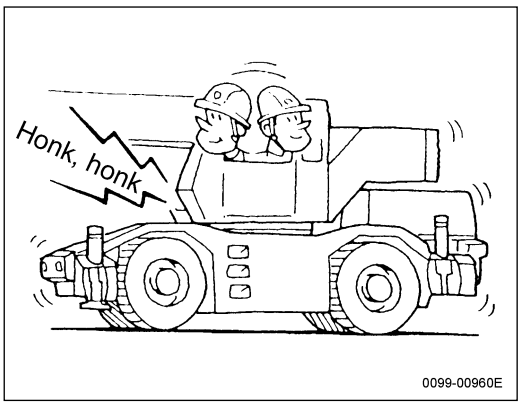
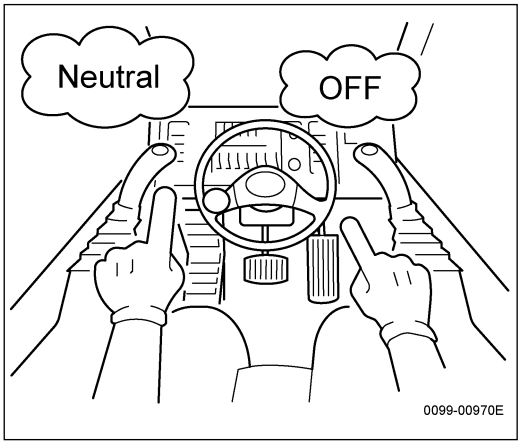
⚠ WARNING

(5) Sound the horn before you start the engine

- Before you board the crane, check that there is nobody nearby.
- When you are about to start the engine, sound the horn to warn people nearby.



(6) Before you start the engine, check that all the levers, pedals and switches are in their neutral or OFF positions.

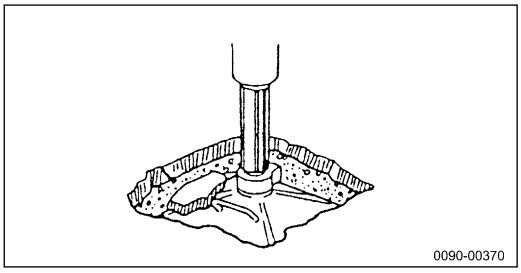


13-2-2 Precautions when setting outriggers (0099-0194-0E)

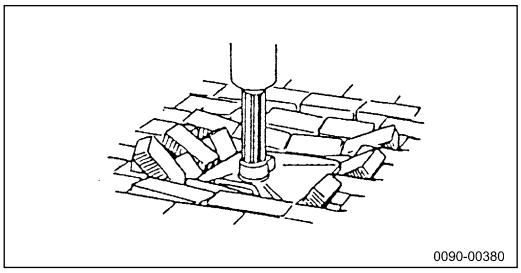
(1) Points to note when choosing outrigger setting positions

1) Avoid areas which are likely to suffer such problems as listed below, and set the outrigger floats on steel plates etc. of adequate areas and rigidity to guard against potentially weak soil.

- Surfaces paved with plain asphalt
- Surfaces paved with thin concrete

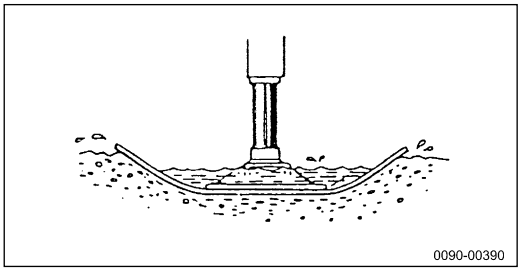


- Brick or cobbled road surfaces



- Areas where soil under the road paving has been eroded by water to leave a void
- Areas where the soil is very dry but soft
- Road shoulders or near construction excavations

Set the crane level with full consideration for the above points.



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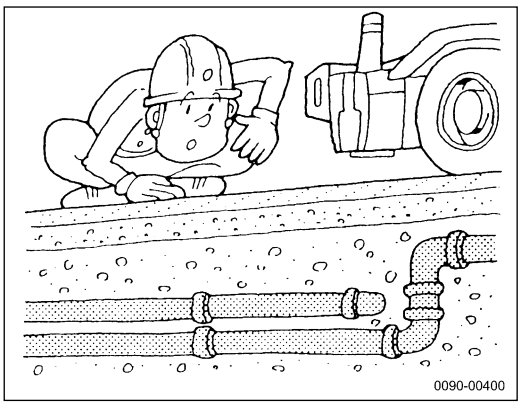
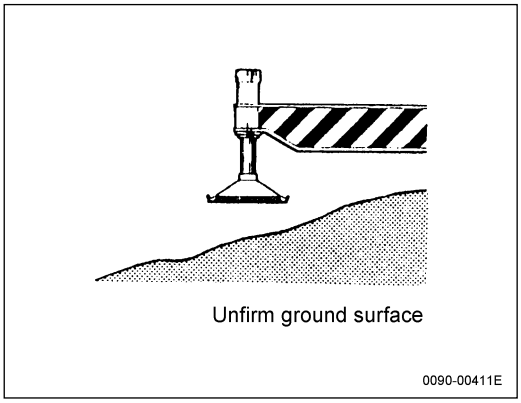
2) Beware of buried objects

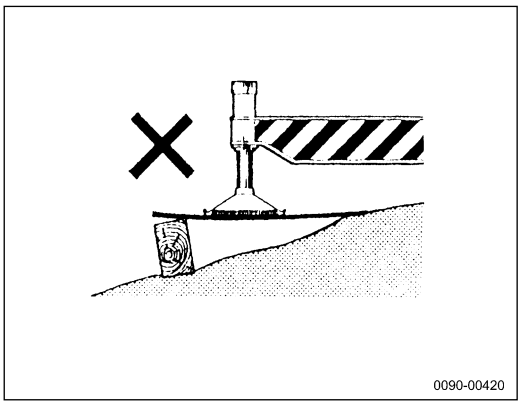
Before you start work, check with the firm in charge of the site for the existence and location of buried objects such as water and gas mains and high-voltage cable ducts.

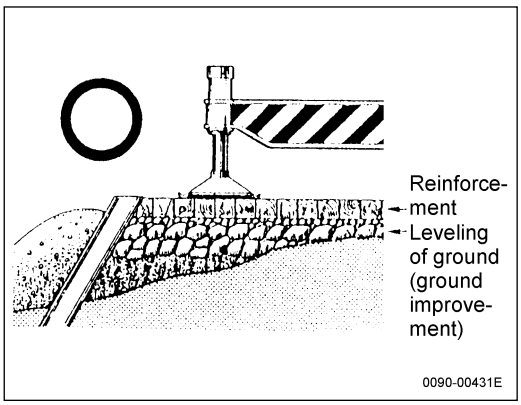


(2) Improving the ground surface for outrigger setting

Improve the ground surface as far as possible if it is soft, crumbly, uneven or sloping. Use wooden blocks etc. if necessary to produce a flat surface and then set the outriggers on steel plates etc. of adequate areas and rigidity to reduce surface pressure further.







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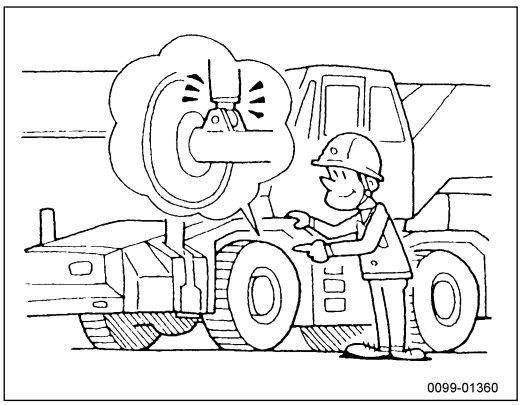
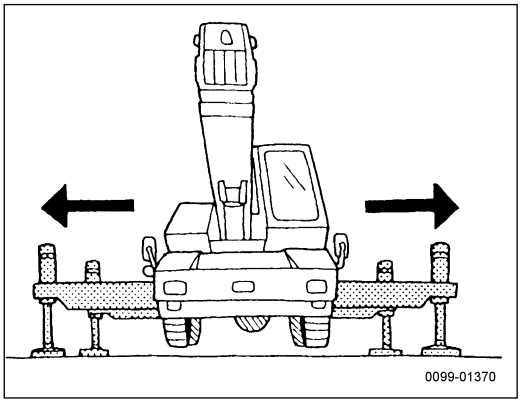
⚠ WARNING

(3) Lock the suspension with the lock pins before setting the outriggers.



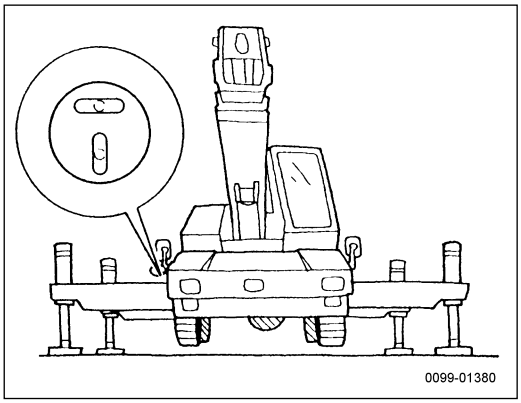
(4) Check outrigger extension width

Before starting work, check that the outriggers are extended to the width specified in the rated lifting capacity chart.



(5) Set up the crane level

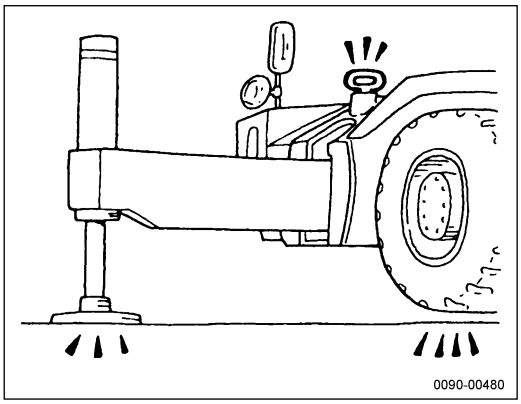
A leaning crane compromises stability and strength. This reduces the effective lifting capacity and can cause the crane to tip over. Use the level gauge to make sure the crane is level.



(6) Check the state of outrigger setting

If the outriggers are not set properly, the crane's lifting capacity will be reduced and the crane may be caused to tip over. Before starting work, check the following points with special care.

- Outrigger stopper pins
- Tires should be clear of the ground
- Outrigger floats in contact with the ground
- Crane level



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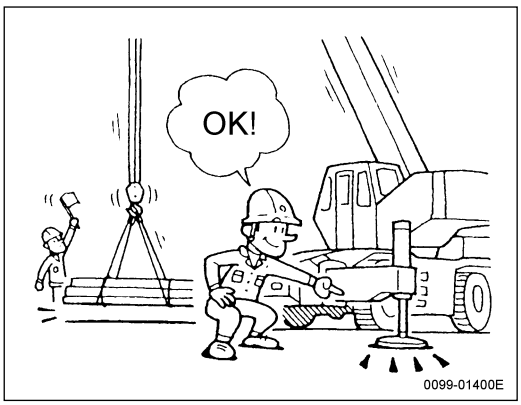
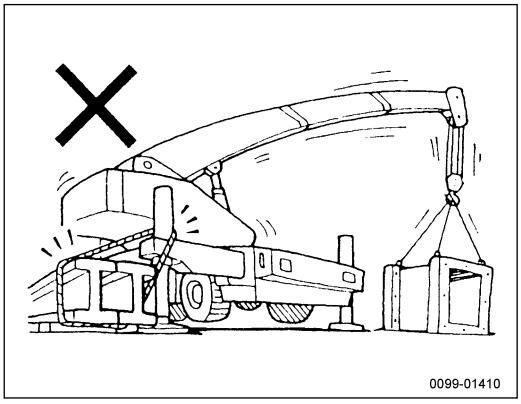
(7) Before beginning crane operation, lift the load off the ground to gauge the working condition and confirm that the ground supports the outriggers adequately. If an outrigger supervisor is appointed to observe outriggers during operation, safety will be enhanced.



(8) Use of anchors is prohibited

If the outriggers or other parts are held down by anchor ropes to lift the overload, the crane may be damaged by excessive loads and an accident might result. Never use an anchor rope.

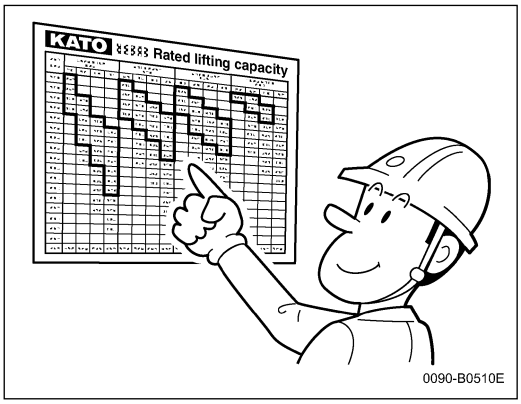


13-2-3 Precautions on operation (0099-0168-2E)

(1) Do not lift loads in excess of the rated lifting capacity

If you lift loads in excess of the rated lifting capacity, an excessive load acts on the crane which could cause it to break or tip over.

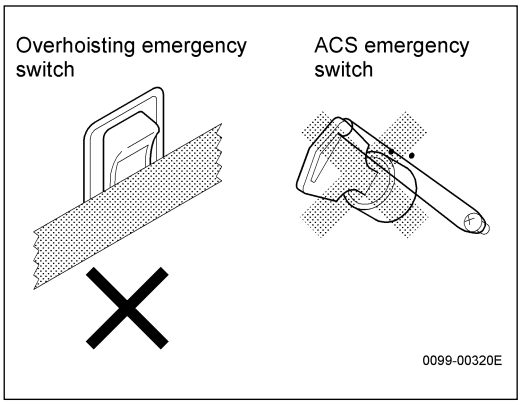
Before you start work, always confirm lifting capacity from the rated lifting capacity chart. Lifting capacity varies with boom length and working radius. Take care never to exceed the rated lifting capacity under any circumstances.



(2) Never disable safety devices

If you deliberately disable the operation of safety devices and continue work, you may apply an excessive load or overhoist the wire rope without noticing and cause an accident.

This crane is fitted with safety devices to sound alarms or automatically stop operations to prevent overloading or hook overhoisting. Only work while all safety devices are set correctly.



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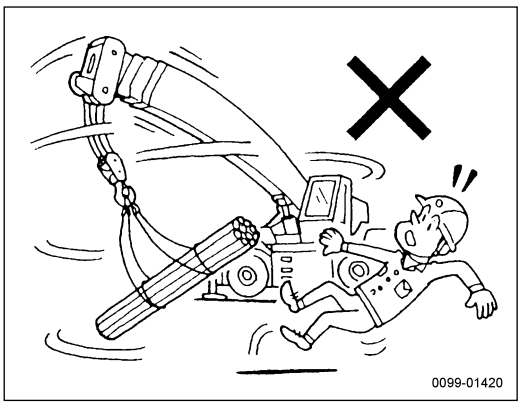
⚠ WARNING

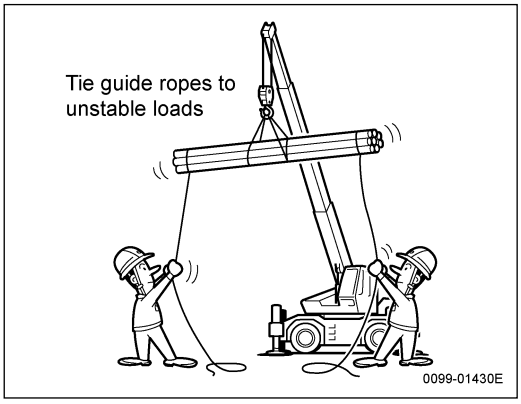
(3) Start and stop any lever operation gradually

Sudden starting, acceleration and stopping and other sudden or violent operations are dangerous as they reduce the stability of the load and cause the crane to break. Always operate the levers and pedals smoothly and securely.



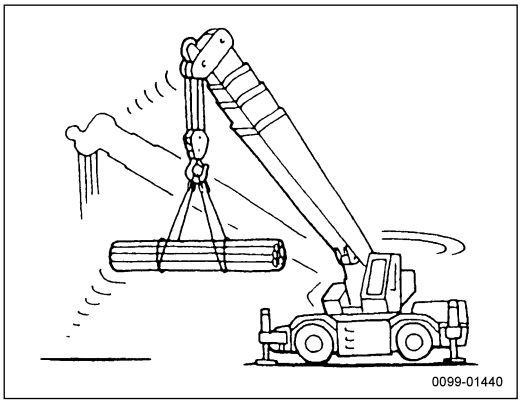
(4) Precautions when lifting long objects

Long loads are dangerous because they are unstable when lifted. In these cases, tie a guide rope to each end of the load and hold the lifting load stable.



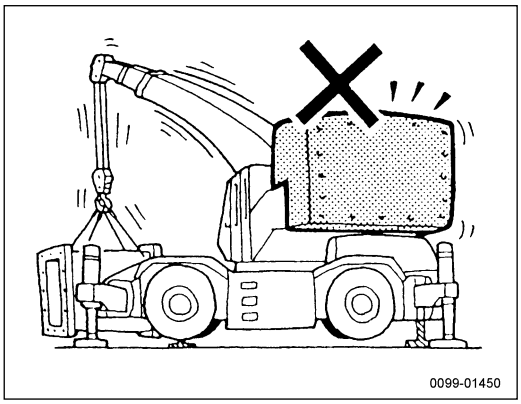
(5) Proceed cautiously with compound operations

Compound operations combining winch hoisting and lowering, slewing, and boom derricking and lowering will be slower than the individual operations. When switching from compound to single operation, work the controls slowly and smoothly with no sudden changes of speed.



(6) Addition of counterweights beyond the specification is forbidden

If counterweights not included in the specification are added, they put an unreasonable strain on the crane and may damage it. When the load is removed, the excessive counterweight may cause the crane to tip over to the rear. Never use counterweights which do not conform to the specification.



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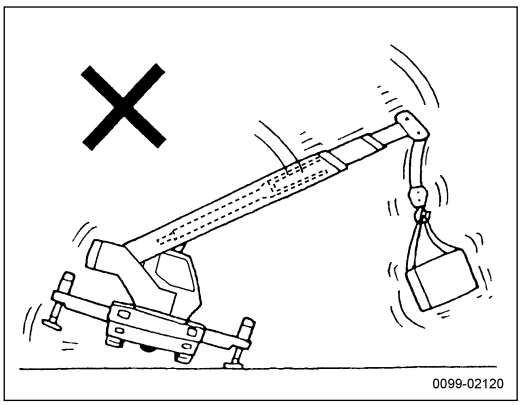
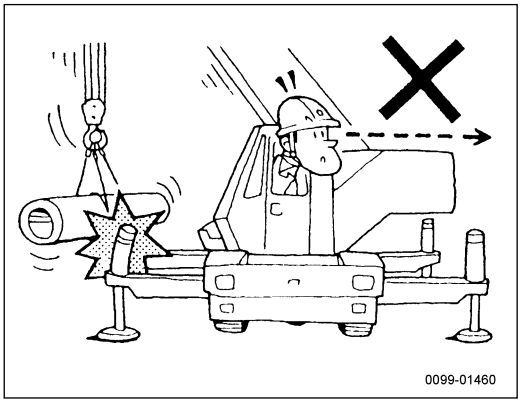
(7) Never remove the jib

Operating the crane with the jib removed compromises the safety factor and could cause the crane to tip over. The rated lifting capacity chart for boom operations is based on the assumption that the jib is stowed on the boom. Therefore, never operate the crane with the jib removed.



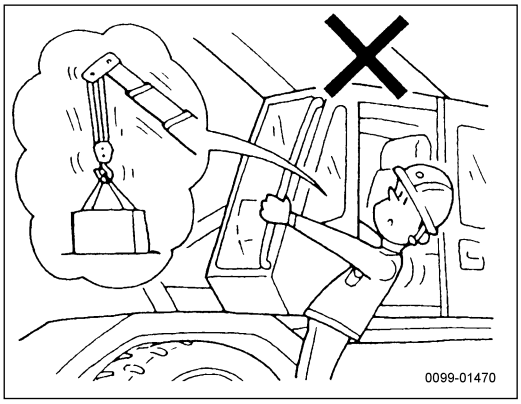
(8) No careless crane operation

If you are careless in operating the crane, the slightest slip or inattention can result in a major accident. Be constantly alert to ensure that the boom or the suspended load do not collide with people or buildings and that the load does not collide with the boom or outriggers.



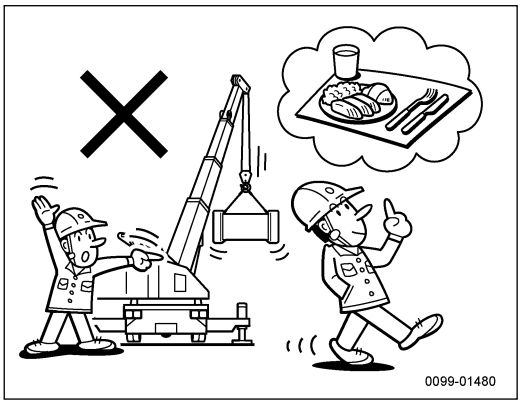
(9) Only operate the crane while seated in the operator's seat.

Operating the crane by reaching in through the door or window rather than while seated in the operator's seat is dangerous and can cause accidents and personal injury. Always sit in the operator's seat before you begin any operation.



(10) Never leave the crane while a load is suspended

You must never leave the operator's seat while a load is suspended.



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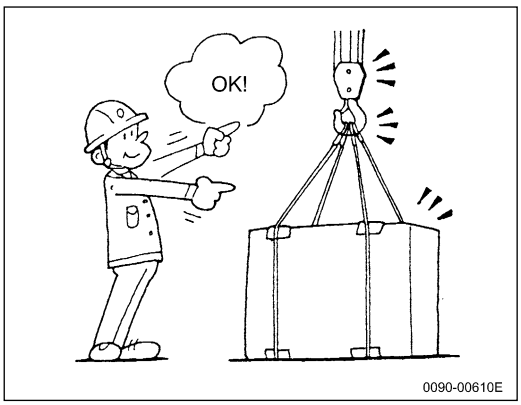
⚠ WARNING

(11) Confirmation before lifting the load

Failure to check the following points could result in major accidents such as dropping the load, damage to the boom or the crane, or crane tip over.

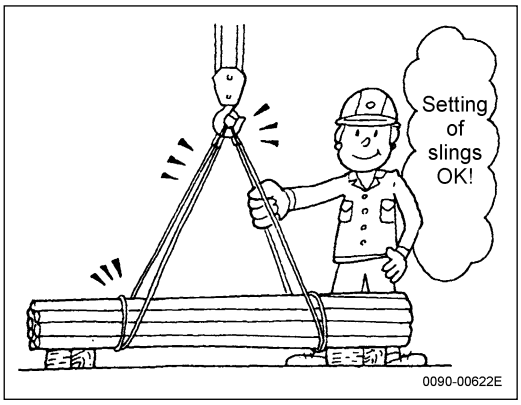
- Is the total mass of the load, the slings and the hook to be lifted below the rated lifting capacity?
- Is the number of parts of line on the main winding wire rope a standard number according to the rated lifting capacity chart ?
- Are the sling wire ropes placed correctly to hoist from above the load center of gravity ?
- Is the main winding wire rope hanging vertically ?
- After the load leaves the ground, pause until it has stopped any swinging and confirm that it is stable before you continue to hoist.



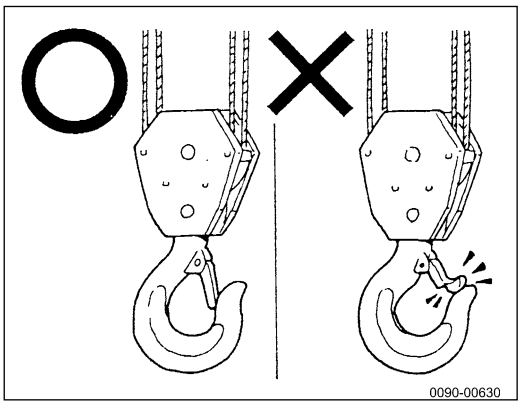
(12) Arrange slings securely

If the slings are not fitted securely, the load can fall off or slip out of the slings and fall down. Arrange slings securely with attention to the following points.

- The sling wire ropes or chains used to suspend the load from the hook should be the right size and undamaged. Damaged slings could break and drop the load. Arrange the slings so that they do not interfere or tangle with each other.

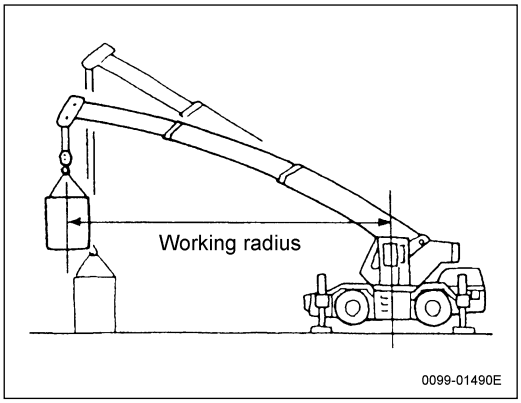


- The hook is fitted with a retainer to prevent the slings from slipping out. Check that it works correctly. If not, there is the risk that the slings could slip from the hook causing the load to fall. So have it repaired or replaced before you proceed with hoisting.
- Place protectors of some soft material to protect the sling wire ropes where they come into contact with corners of the suspended load or anywhere they are prone to damage.



(13) Consider deflection of the boom when hoisting a load

When a load is lifted, the boom deflects, increasing the working radius. Particularly when working with a very heavy load or a long boom, allow an extra margin below the rated lifting capacity to allow for alteration of the working radius due to boom deflection under the load.



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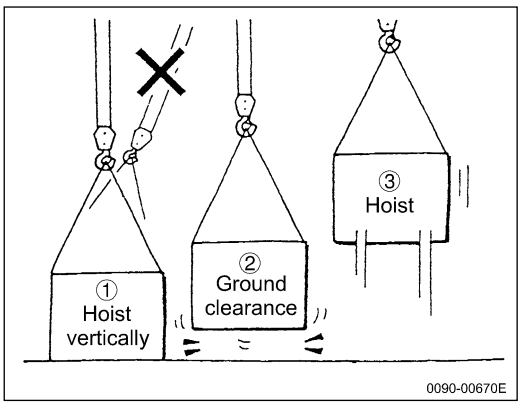
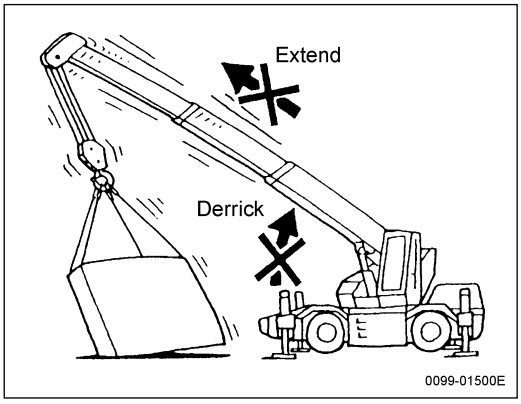
(14) Lift the load off the ground carefully

When the load is lifted, deflection of the boom increases the working radius, which can result in overload. Hoist the load vertically and pause briefly when the load is about 10 centimeters from the ground to confirm its sling and that there is no overload. Then carry on hoisting.



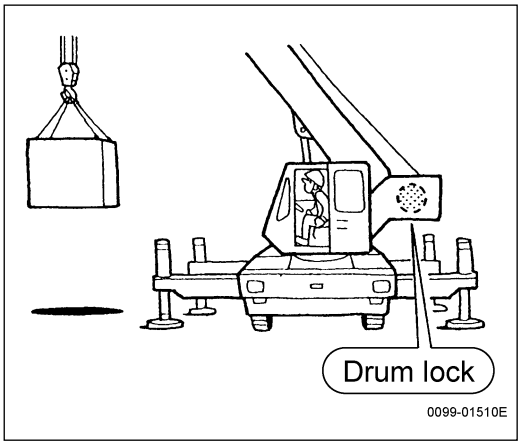
(15) Never lift the load off the ground by derricking or extending the boom

Do not hoist the load by derricking or extending the boom until it is a few centimeters off the ground.



(16) Apply the drum lock when you hold the load suspended

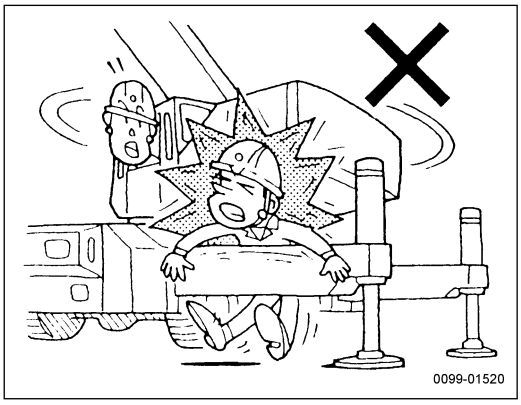
If the load is held aloft for a long period by the brake alone, the braking force can fade, allowing the load to fall. Apply the drum lock to prevent the load from descending.



(17) Before moving your load sideways, check the safety of your surroundings

People under the load or in contact with the superstructure could be killed and other serious accidents could result.

While you are working, there should be a fence around the slewing area and nobody else should be allowed into this area.



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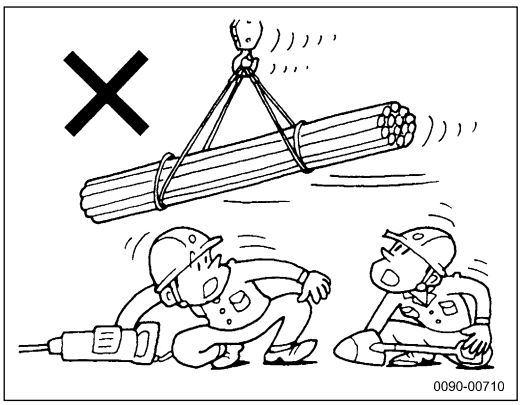
⚠ WARNING

(18) Do not move the suspended load above people's heads

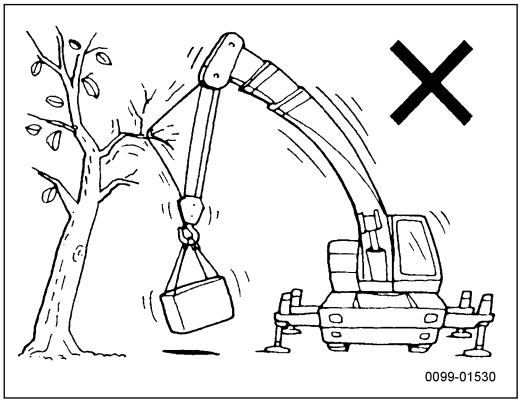
Never pass a suspended load or hook over the heads of other workers as this endangers their safety.



(19) Beware of contact and collision with obstacles

When you hoist or slew the load or hook and the wire rope becomes entangled with any obstacle, disentangle it carefully without hoisting or slewing it further by force and then resume hoisting.

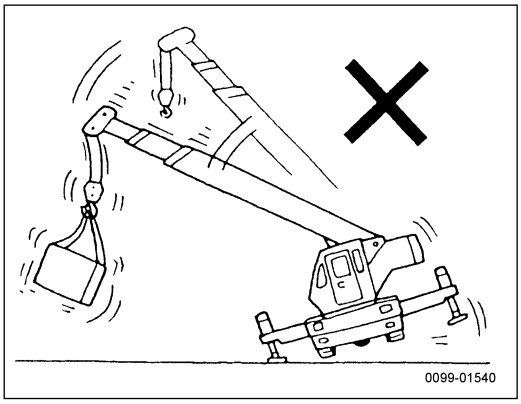
Put the load back on the ground and check that the wire rope wasn't damaged before hoisting the load any further.



(20) When an overload occurs during an operation

If you suddenly derrick or lower the boom, it makes the crane much more prone to tipping over.

Unwind the winch to lower the load to the ground.

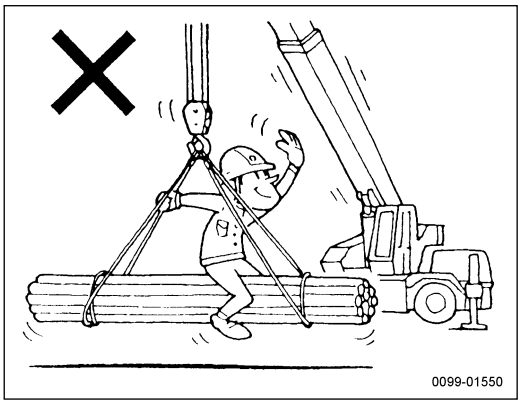


(21) Never hoist people

Using the crane to hoist or move people is forbidden.

A crane is nothing more than a machine for lifting objects and must not be used to lift people on the hook or on top of a load.

Further observe the safety regulations and laws of the country where the crane is used.



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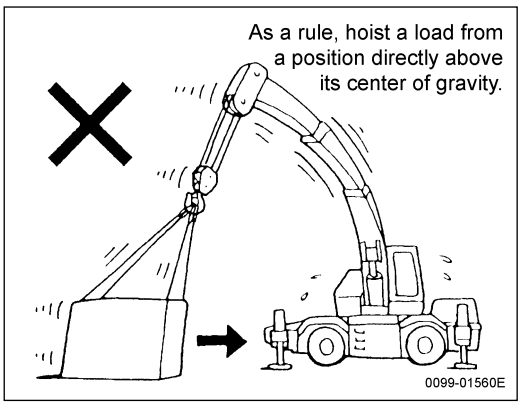
(22) Never drag a load sideways, hoist it diagonally or drag it toward the crane

Using boom lowering and derricking or winch operation to drag the load sideways or hoist it diagonally causes a bending force to act on the boom and can lead to damage of the boom and the slewing mechanism or tipping the crane over.

Follow the appropriate instructions of the signaler to hoist the load vertically.

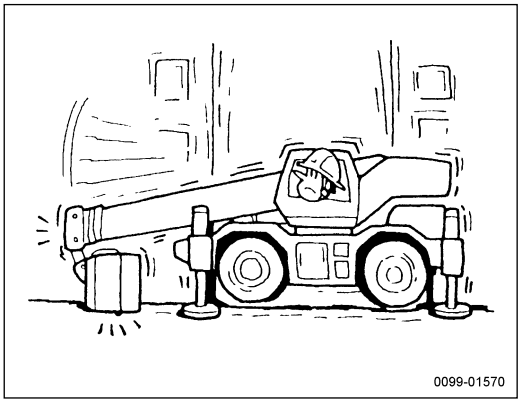


(23) What to do if an earthquake occurs during an operation

1) Earthquake during an operation

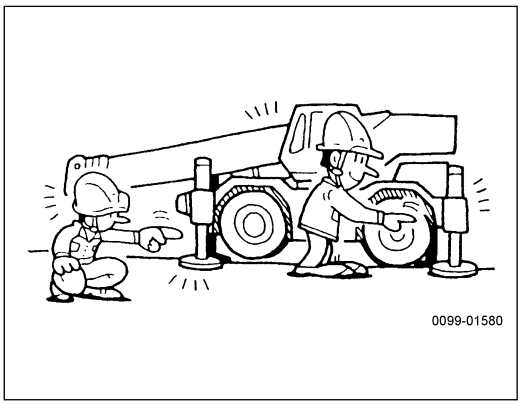
If an earthquake happens while the crane is working, the vibration feels greater and more alarming from the elevated position of the operator's seat. First stop work composedly and then respond to ground deformation or falling objects as follows.

- Lower the load to a safe place.
- Slew to an orientation away from the danger of falling or toppling objects while retracting the boom and then lower the boom.
- Stop the engine.
- To avoid being shaken out of the cab, fix yourself in position with your hands and feet and wait for the earthquake to die down. If the door is open, shut it firmly.



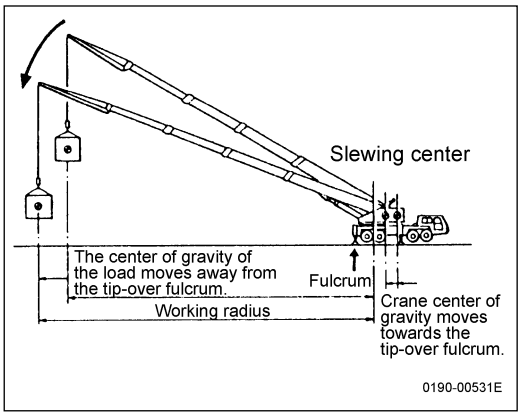
2) Resuming work after the earthquake

To resume work once the earthquake has died down and there is no concern over further tremors, check the condition of the ground and the placement of the outriggers, look for abnormalities in any part of the crane body, then check the ACS, the arrangement of slings and any other abnormal condition.



13-2-4 Boom derricking and lowering (0099-0111-1E)

(1) When you derrick and lower the boom, the working radius increases as the angle of the boom decreases, increasing the risk of tip over.



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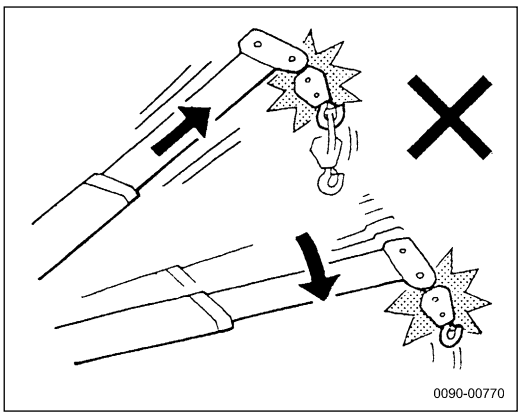
⚠ WARNING

(2) Beware of overhoisting the hook

When the boom is lowered or extended, the hook is wound up, possibly causing overhoisting and damage when the hook block hits the boom top. Normally the overhoisting detector will act to prevent this, but if the detector is inoperative and overhoisting occurs, lower the hook to the proper position.

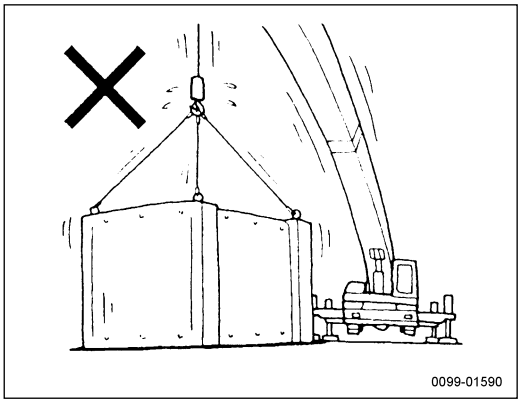
When a lifting load is overhoisted, the distance between the load and the boom is reduced and the load can hit the boom and damage it.

The size of the lifting load must also be taken into account.

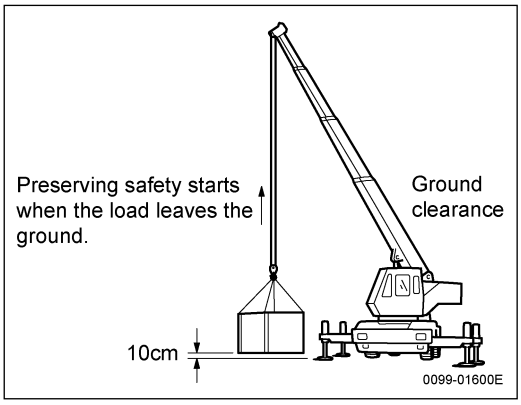


13-2-5 Winch operation (0099-0169-0E)

(1) Choose a hook and wire rope number of parts of line suitable for the mass of the load from the rated lifting capacity chart.

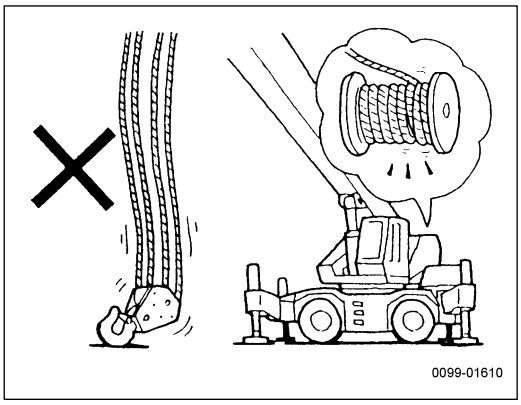


(2) When lifting the load, pause briefly when it has just left the ground to check for safety and then continue the operation.



(3) Do not unwind the winch so far that the hook touches the ground

If you continue unwinding operation even after the hook touches the ground, the wire rope can be tangled.



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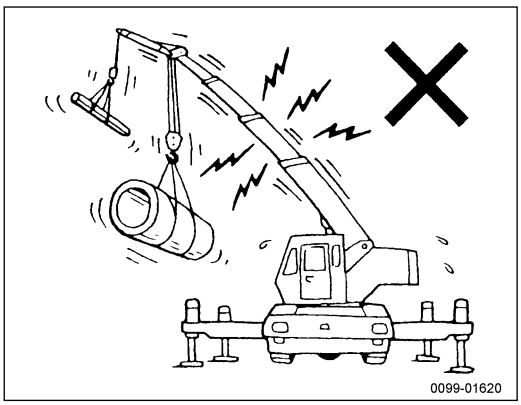
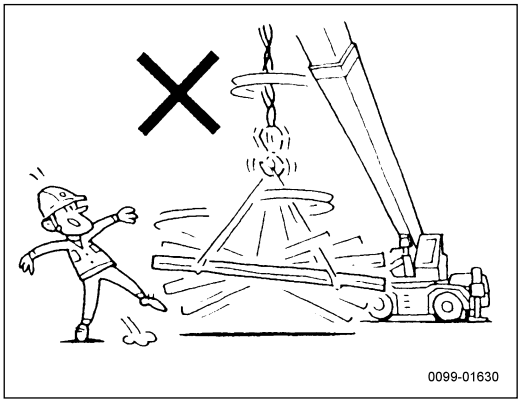
(4) Never use the main and the auxiliary winches at the same time

If the main winch hook and the auxiliary winch hook are each carrying one individual load, the boom and jib can be damaged and the crane may tip over. Never attempt this operation.



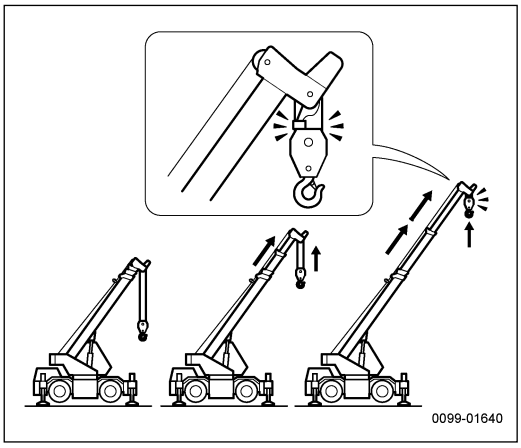
(5) If the wire rope has become twisted causing the hook to rotate, untwist the rope before starting work.



13-2-6 Boom extension and retraction (0099-0173-0E)

(1) Lower the hook sufficiently before you extend the boom.

Extending the boom can put the hook into an overhoisted condition which causes an automatic stop.

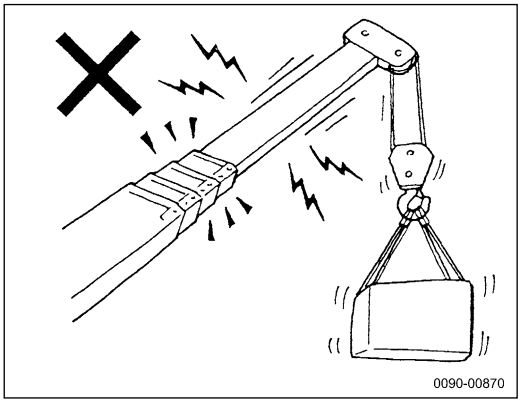


(2) Be careful when extending and retracting the boom with a load suspended on it.

(3) Confirm the boom extension/retraction sequence

Confirm the boom extension/retraction sequence and always control boom extension/retraction in the correct sequence. The figures in the rated lifting capacity chart are set based on the condition that the boom is extended and retracted in the correct sequence.

Lifting a load with the boom extended in an improper sequence is forbidden.



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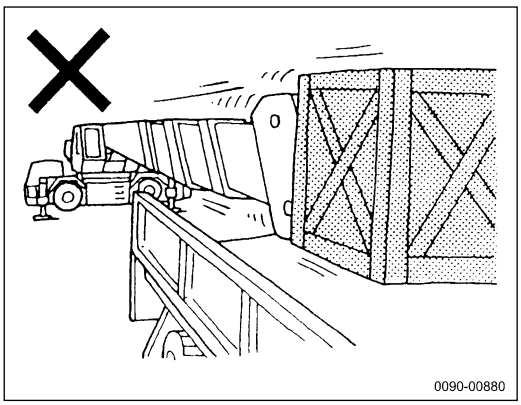
⚠ WARNING

(4) Never use the boom to push or pull objects

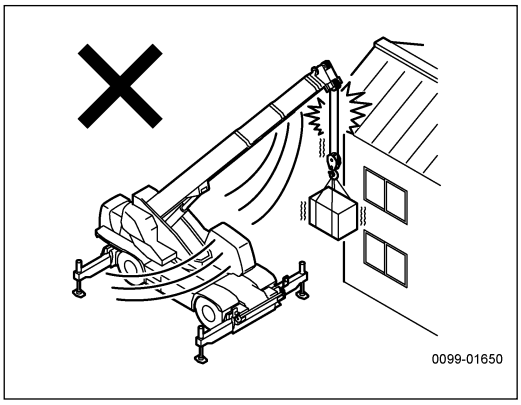
If you use the top of the boom to push cargo along a truck bed or push objects around the construction site, you will damage the boom top. If you push or pull objects by slewing the boom, you could bend the boom.

To move objects, you must completely hoist them clear of the ground even if this seems time consuming. Alternatively use a forklift or other specialist cargo handling machine. Do not use the crane for purposes it was not designed for.

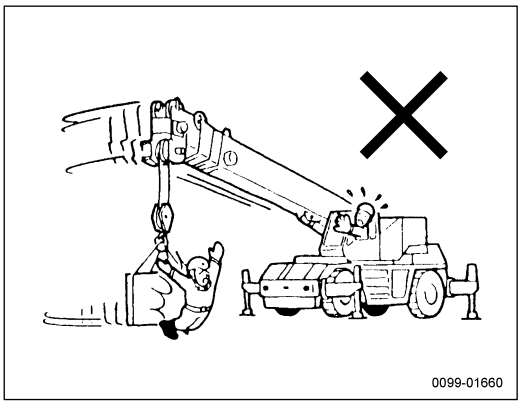


13-2-7 Slewing (0099-0170-1E)

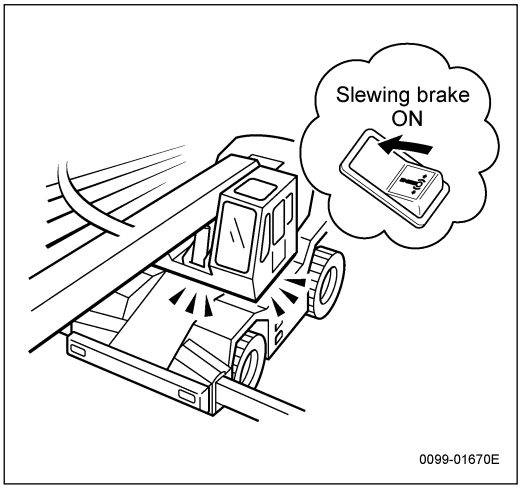
(1) Check that the slewing area is free of obstructions before slewing.



(2) Sound the horn before slewing.



(3) After you have completed slewing, always apply the slewing brake.



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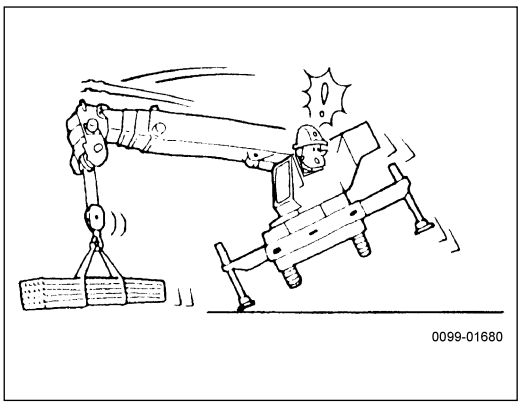
(4) Check the position of the slewing free/lock switch

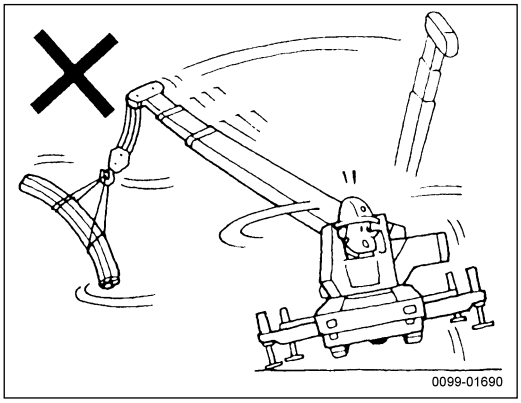
When the switch is in the free position, beware of slewing drift due to wind or inertia.



(5) Beware of centrifugal force when slewing

Slewing at high speed with a hoisted load causes centrifugal force to act on the load which in turn increases the working radius and can cause an overload with the risk of tip over. If you stop slewing abruptly, the load will swing uncontrollably imposing a further overload on the boom. Do not slew rapidly or stop abruptly as these operations lead to tip over and boom damage.

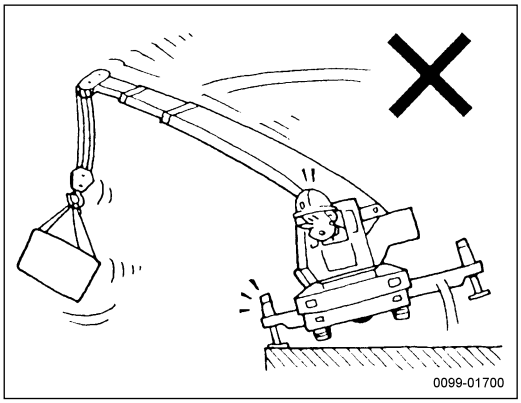
These problems are particularly severe at long boom lengths.



(6) Never slew carelessly

If you carelessly slew from a direction with long outrigger extension to one with short outrigger extension with a load suspended, the crane could tip over. Even if no load is suspended, careless slewing could cause the crane to tip over under some conditions of boom length, boom angle and outrigger extension.

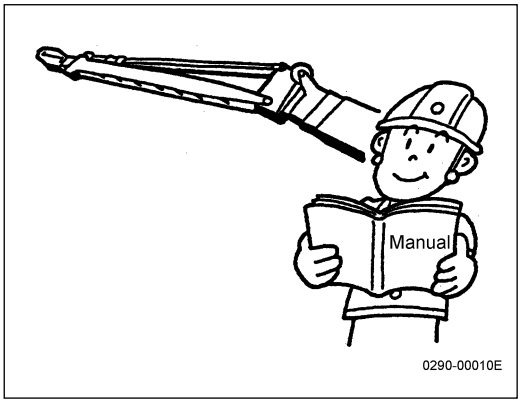
Secure the crane's footing and confirm that the actual outrigger extension widths match the set outrigger status on the ACS.



13-2-8 Handling the jib (0099-0174-0E)

(1) Follow the correct procedure when mounting or stowing the jib

Before you start to mount or stow the jib, refer to this manual to confirm the correct procedure. If you do not follow the right procedure, the crane could be damaged or the jib could drop off. Reconfirm the procedure before you start work.



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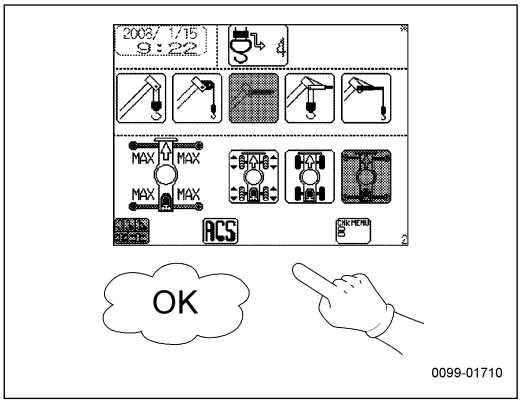
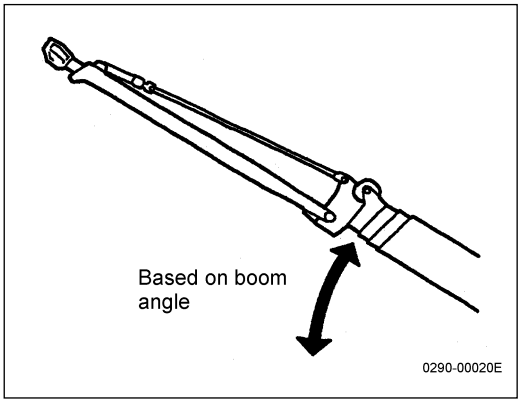
⚠ WARNING

(2) Set the working configuration setting of the ACS correctly according to the actual work to be done.



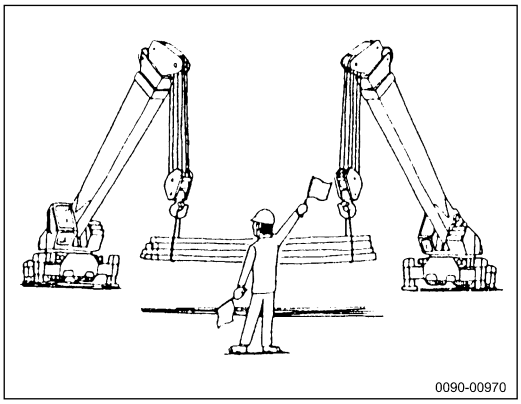
(3) In jib operation, the rated lifting capacity is determined on the basis of the boom angle, not the working radius.



13-2-9 Precautions for special types of crane operation (0099-0037-0E)

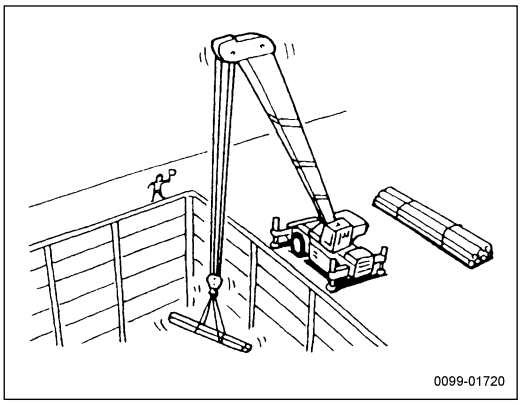
(1) Tandem lifting

1) Work with two cranes of the same model.
2) Select cranes which have ample capacity for the job.
3) Appoint one signaler for the entire operation.
4) As a rule, control the cranes by single lever operations and avoid compound lever operations.
5) Avoid slewing operations.



(2) Crane operation on sites with underground areas

1) Choose the number of parts of line with ample capacity for the job.
2) Choose outrigger setting positions with particular care.
3) Be particularly thorough in all aspects of signaling.
4) Since the load is out of your view, proceed with extra caution in all crane operations.
5) If the number of parts of line on a wire rope is unsuitable for the boom length, the hook will not reach the ground level and the wire rope will wind backwards onto the drum and suffer damage.



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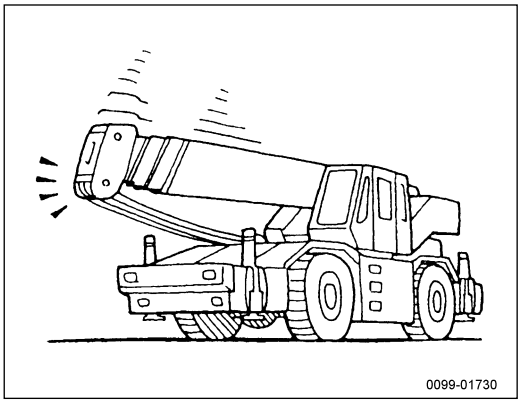
13-3 Precautions after operation (0099-0171-1E)

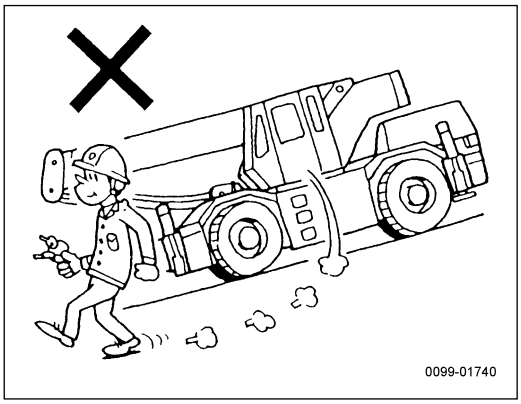
(1) Stow the boom (jib) away after you have finished work

Leaving the crane in its working position can inadvertently cause accidents. At the end of work, stow the boom (jib) and lock it.

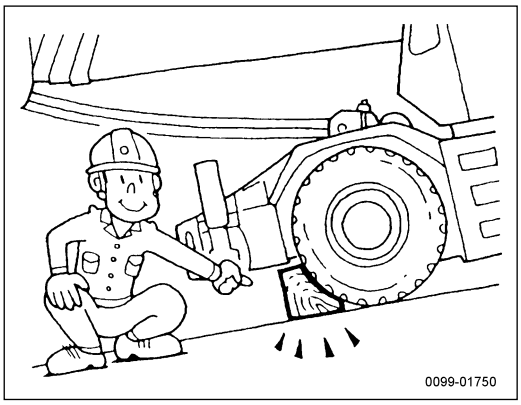


(2) Park in a safe, level location

Choose a level surface in which to park.



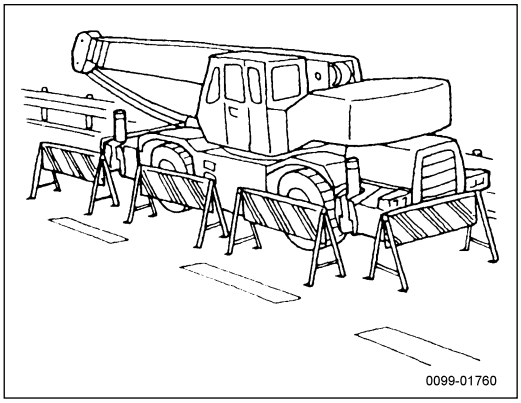
(3) If there is no alternative to parking on an incline, place chocks against the tires so that the crane cannot move.



(4) If there is no alternative to parking on a road, take appropriate safety measures

If you park the crane on a public road, place warning signs so that the crane can be clearly distinguished from other vehicles. Particularly at night you should place lights and signs for night use.

Observe the safety regulations and laws of the country where the crane is used.



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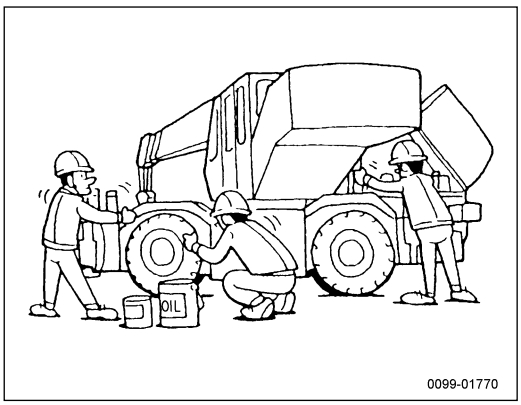
⚠ WARNING

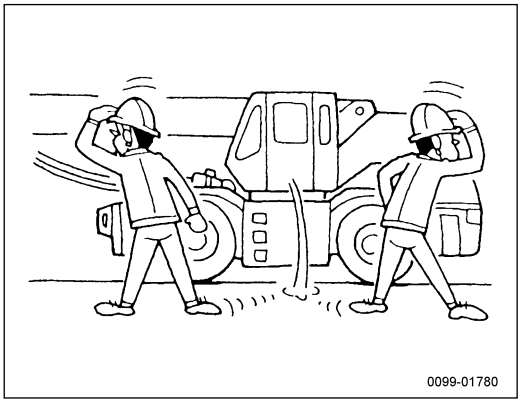
(5) Inspection after the end of crane operation

After you have finished operating the crane, check all its parts and add lubricants and fuel as required. If you find any defective parts, repair them immediately.



(6) Check the crane for safety before you leave it

When you leave the crane, set it to the driving position, stop the engine and lock the door.



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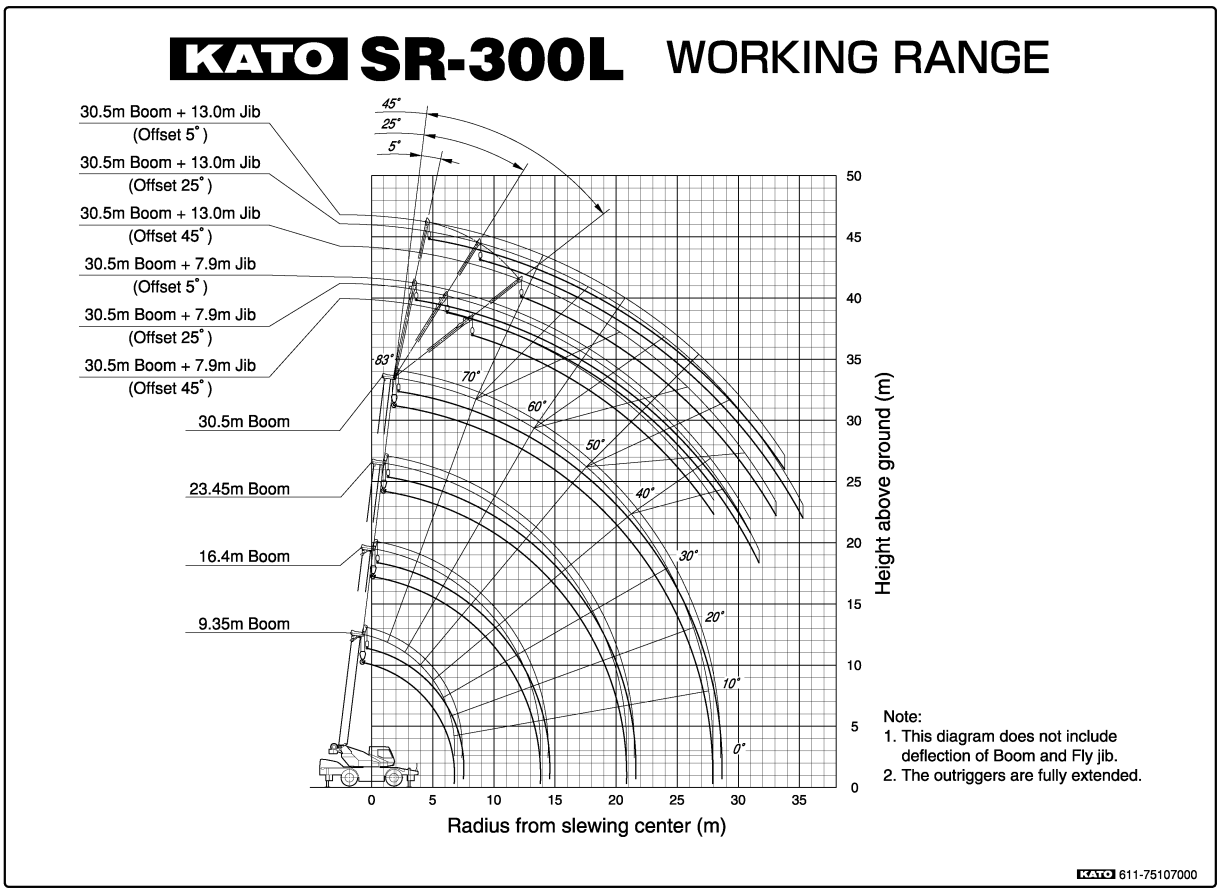
14. How to read the capacity charts (541A-0145-0E)

14-1 How to read the working area chart (541A-0146-2E)

The working area chart indicates the relationship between the working radius and height above the ground for each combination of the boom length, jib length, boom angle and jib offset angle.

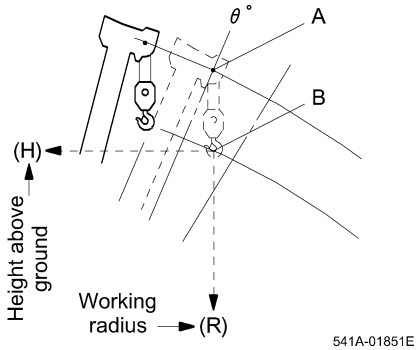


611-75107000a

(1) The working area chart does not include deflection of the boom and jib.
With a load suspended, the working radius will increase slightly due to deflection under the load.

(2) The working area chart is for the crane with all outriggers fully extended (all round).

(3) Points A and B are at the same working radius, but point A indicates the boom angle and point B indicates the height above the ground.



541A-01851E

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14-2 How to read the rated lifting capacity chart (541A-0147-2E)

> **⚠ CAUTION**
>
> The rated lifting capacity chart printed here is an extract from those which are attached to the crane. Before you start work, check the entire chart.

(541A-0148-1E)

KATO SR-300L RATED LIFTING CAPACITY (1)

Based on ISO 4305

Working radius (m)	Outriggers fully extended (6.6m) - 360° full range				Outriggers intermediately extended (6.0m) - over side				Outriggers intermediately extended (5.0m) - over side				Outriggers intermediately extended (3.8m) - over side				Outriggers completely retracted (blocked on vertical cylinders) - over side				Working radius (m)
	9.35m Boom	16.4m Boom	23.45m Boom	30.5m Boom	9.35m Boom	16.4m Boom	23.45m Boom	30.5m Boom	9.35m Boom	16.4m Boom	23.45m Boom	30.5m Boom	9.35m Boom	16.4m Boom	23.45m Boom	30.5m Boom	9.35m Boom	16.4m Boom	23.45m Boom	30.5m Boom	
2.5	30.00*	19.00	12.50		30.00*	19.00	12.50		30.00*	19.00	12.50		30.00*	19.00	12.50		12.00	10.35	9.10		2.5
3.0	30.00*	19.00	12.50		30.00*	19.00	12.50		30.00*	19.00	12.50		26.00	18.90	12.50		11.15	8.25	7.50		3.0
3.5	27.20*	19.00	12.50	7.50	27.20*	19.00	12.50	7.50	27.20*	19.00	12.50	7.50	20.20	15.20	12.50	7.50	9.00	6.75	6.30	5.50	3.5
4.0	23.00	19.00	12.50	7.50	23.00	19.00	12.50	7.50	23.00	19.00	12.50	7.50	16.35	12.60	11.40	7.50	7.45	5.60	5.35	5.15	4.0
4.5	21.20	18.65	12.50	7.50	21.20	18.65	12.50	7.50	21.20	17.30	12.50	7.50	13.65	10.65	9.85	7.50	6.25	4.65	4.60	4.50	4.5
5.0	19.40	17.30	12.50	7.50	19.40	17.30	12.50	7.50	18.85	14.70	12.50	7.50	11.40	9.10	8.60	7.50	5.30	3.95	3.95	3.95	5.0
5.5	17.80	16.15	12.50	7.50	17.80	16.15	12.50	7.50	15.65	12.65	11.80	7.50	9.50	7.90	7.55	7.25	4.50	3.30	3.45	3.45	5.5
6.0	16.30	15.15	12.25	7.50	16.30	15.15	12.25	7.50	13.15	11.05	10.45	7.50	8.10	6.90	6.70	6.50	3.85	2.80	3.00	3.05	6.0
6.5	15.10	14.25	11.50	7.50	15.10	13.50	11.50	7.50	11.25	9.75	9.35	7.50	7.05	6.05	6.00	5.85	3.30	2.35	2.60	2.70	6.5
7.0		13.45	10.80	7.50		12.00	10.80	7.50		8.70	8.40	7.50		5.35	5.40	5.35		2.00	2.25	2.40	7.0
7.5		12.70	10.20	7.50		10.75	10.20	7.50		7.75	7.60	7.40		4.75	4.85	4.85		1.65	1.95	2.15	7.5
8.0		11.80	9.65	7.50		9.65	9.35	7.50		7.00	6.95	6.80		4.25	4.40	4.45		1.40	1.70	1.90	8.0
9.0		9.70	8.65	6.80		7.95	7.85	6.80		5.75	5.80	5.75		3.40	3.60	3.70		0.90	1.25	1.50	9.0
10.0		7.90	7.85	6.15		6.50	6.70	6.15		4.70	4.90	4.95		2.75	3.00	3.15		0.55	0.90	1.15	10.0
11.0		6.50	6.90	5.60		5.35	5.75	5.60		3.85	4.20	4.30		2.20	2.50	2.65			0.60	0.85	11.0
12.0		5.45	6.00	5.10		4.50	5.00	5.05		3.15	3.60	3.75		1.75	2.10	2.30				0.65	12.0
13.0		4.55	5.20	4.70		3.75	4.35	4.50		2.60	3.10	3.30		1.35	1.70	1.95					13.0
13.5		4.20	4.85	4.50		3.45	4.05	4.20		2.40	2.90	3.05		1.20	1.55	1.80					13.5
14.0			4.50	4.35			3.75	4.00			2.70	2.90			1.40	1.65					14.0
15.0			3.90	4.05			3.25	3.55			2.30	2.55			1.15	1.40					15.0
16.0			3.45	3.75			2.85	3.20			2.00	2.25			0.95	1.15					16.0
17.0			3.00	3.35			2.50	2.85			1.70	1.95			0.75	1.00					17.0
18.0			2.65	2.95			2.15	2.50			1.45	1.75			0.60	0.80					18.0
19.0			2.35	2.65			1.90	2.20			1.20	1.55				0.65					19.0
20.0			2.05	2.35			1.65	2.00			1.05	1.35				0.50					20.0
20.5			1.95	2.25			1.55	1.85			0.95	1.25									20.5
21.0				2.10				1.75				1.15									21.0
22.0				1.90				1.55				1.00									22.0
24.0				1.50				1.20				0.70									24.0
26.0				1.20				0.95				0.50									26.0
27.9				0.95				0.70													27.9
Standard hook	for 30 ton				for 30 ton				for 30 ton				for 30 ton				for 30 ton				Standard hook
Hook mass	250 kg				250 kg				250 kg				250 kg				250 kg				Hook mass
Parts of line	9*/7	6	4	4	9*/7	6	4	4	9*/7	6	4	4	9*/7	6	4	4	7	6	4	4	Parts of line
Critical boom angle	—	—	—	—	—	—	—	—	—	—	—	20°	—	—	28°	41°	—	40°	55°	62°	Critical boom angle

(Unit: Metric ton)

KATO 611-75101000

(1)
(2)
(3)

611A-01760

(1) When you are going to operate the crane, find the outrigger status on the rated lifting capacity chart.

(2) Look at the column for the boom length with which you will be working.

(3) Find the rated lifting capacity (load mass + hook mass + mass of slings) for the distance to the position where the load hangs, which is the working radius allowing for the deflection. The working radius available for the actual working condition can be found on the rated lifting capacity chart.

NOTE

For jib use, find the rated lifting capacity from the boom angle and the jib offset angle.

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14-3 Precautions on crane operation (541A-0149-2E)

Familiarize yourself with the following points before you start to operate the crane. There is a safety sign of the rated lifting capacity chart inside the cab on which the summary of these same points is also given. Always read them before you start to operate the crane.

14-3-1 Precautions when the outriggers are used (611A-0029-0E)

(1) The rated lifting capacity chart for boom operation is based on the assumption that the jib is stowed on the boom.

(2) The rated lifting capacities indicate the maximum load which the boom can lift when its body is level on firm, level ground. They include the mass of the main hook and slings for crane operation, and the mass of the auxiliary hook and slings for jib operation.
[30 ton hook: 250kg, 4 ton hook: 80kg]
Within the table, the capacities enclosed with bold lines are based on the structural strength of the crane while other capacities are based on the stability of the crane.

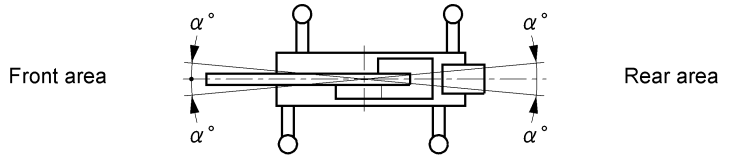
(3) The working radii written in the rated lifting capacity chart are the actual values allowing for boom deflection. Therefore you must always operate the crane on the basis of the working radius.

(4) The jib working radii in the rated lifting capacity chart are based on a boom length of 30.5m and the values indicated are for crane operation with the jib mounted on the end of this boom length. When operating at other boom lengths, do not use the working radius but the boom angle as the criterion.

(5) Lock the suspension first after arriving on site then set the outriggers. Keep this arrangement until all crane operations are complete and the machine is about to leave the site and drive on the road. Always keep the suspension locked for moving between different working positions on site. Never release the suspension lock.

(6) As a general rule, use the outrigger control panel on the carrier body to set the outriggers, but if you unavoidably have to operate the outriggers from the cab, ask another worker to insert the stopper pins and place the boards under the outrigger feet.

(7) The hoisting capacity can vary for different operating regions, depending on the extension status of respective outriggers. Therefore, to ensure safe operation, always fully extend all outriggers before operating the crane. However, if full extension is not possible, such as due to an immovable obstruction, contact the job supervisor to obtain authorization. Then check how far outriggers are extended and use the rated lifting capacity chart inside the crane to verify the crane capacity separately for each region.



611A-01780E

Outrigger extension status	Intermediate extension (6.0m)	Intermediate extension (5.0m)	Intermediate extension (3.8m)	Full retraction
Area α°	35	30	20	3

(511A-0050-0E)

(8) After setting the outriggers, you must insert the stopper pins into the outriggers and check the extension width. Also check carefully that all four tires are clear of the ground, that all floats are firmly in contact with the ground and that the ground on which the outrigger floats are resting is sufficiently strong.

(9) Set the "outrigger status" and "boom operation status" that will be used next on the ACS working status setting screen correctly. If you will not be able to fully extend all outriggers in the actual work site, move the crane to a more spacious area first, extend the outriggers fully and perform the ACS preoperational checks.

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(10) Check that the key of the ACS emergency switch has been extracted.

(11) If you work with the rooster sheave, subtract the mass of the 30 ton hook (250kg) from the figure in the boom rated lifting capacity chart, with an upper limit of 4,000kg.
[Hook for use with rooster sheave: 4 ton hook (mass: 80kg), parts of line: 1]

(12) If you are working with a different boom length other than in the rated lifting capacity chart, refer to the next longest and next shortest boom lengths and work at whichever rated lifting capacity is lower.

(13) If you are working with the boom while the jib is rigged, subtract 2,200kg from the boom rated lifting capacity as well as subtracting the mass of the hook and slings etc. with an upper limit of 14 tons.
When the jib is rigged, never operate the rooster sheave and operate the boom with the outriggers extended to the minimum extension width.

(14) The standard number of parts of line for each boom length are as indicated in the lifting capacity chart.
If you work with a non-standard number of parts of line, take 37.2kN (3.8tf) as the maximum load on any part of the wire rope.

(15) Raise the boom especially slowly near the maximum raised position when using the jib.

(16) The boom can tip over if the boom is lowered below the critical angle in the rated lifting capacity chart even if unloaded.

(17) If instantaneous wind speeds are expected to exceed 10 meters per second, immediately stop operating the crane. If a hoisted load swings sideways in the wind, it could not only damage the crane, but is extremely dangerous for workers as well. Be sure to stay aware of conditions and stop operations early.
The higher the height, the faster the wind speed. Therefore, be especially careful of the increased danger.

(18) If you work with a load in excess of the rated lifting capacity or use incorrect working procedures, you are risking damaging the crane or tipping it over. In such cases, the machine will not be guaranteed.

14-3-2 Precautions when the outriggers are not used (611A-0030-0E)

(1) The rated lifting capacity chart for boom operation is based on the assumption that the jib is stowed on the boom.

(2) The rated lifting capacity chart indicates the maximum load which the crane can lift when its body is set on firm, level ground with all tires inflated to the regulation pressure and with the suspension lock cylinders fully retracted. It includes the mass of the main hook and all other slings.
[30 ton hook: 250kg, 4 ton hook: 80kg]
Within the table, the capacities enclosed with bold lines are based on the structural strength of the crane while other capacities are based on the stability of the crane.

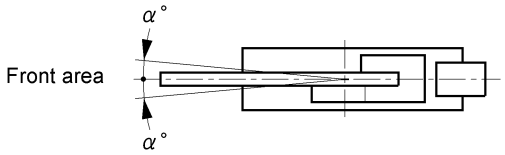
NOTE
Regulation tire pressure: 900kPa [9.0kgf/cm^2]

(3) Crane operation without outriggers includes any crane movement, whether or not any actual load is suspended.

(4) The working radii are the actual values allowing for boom deflection. Therefore you must always operate the crane on the basis of the working radius.

(5) Set the outrigger status correctly to either "stationary crane-on-rubber operation" or "pick and carry operation" on the ACS working status setting screen.

(6) The rated lifting capacity differs between the front area capacity and the full range capacity. When slewing from the front to the side, it could be overloaded, so take special care.



611A-01790E

Crane operation	Stationary crane-on-rubber operation	Pick and carry operation
Area α°	1	1

(061A-0038-0E)

(7) If you work with the rooster sheave, subtract the mass of the 30 ton hook (250kg) from the figure in the boom rated lifting capacity chart, with an upper limit of 4,000kg.
The value includes the mass of all other slings.
[Hook for use with rooster sheave: 4 ton hook (mass: 80kg), parts of line: 1]

(8) Boom operation beyond a boom length of 23.45m and jib operation are prohibited.

(9) For stationary crane-on-rubber operation, the wheels must all be completely immobilized by the parking brake and brake lock.

(10) For pick and carry operation, apply the slewing brake, switch the high/low speed switch to "ON" (low range) and set the shift lever to speed 1.

(11) If the suspended load starts to swing during pick and carry operation, it is highly dangerous. If you feel that the load is about to start swaying, immediately lower the load to just above the ground and keep your speed strictly below 2km/h.
Avoid any sudden actions such as starting, steering, accelerating and decelerating.

(12) Never operate the crane during pick and carry operation.
If crane operation is absolutely necessary, stop the machine first.

(13) If you are working with a different boom length or working radius other than in the rated lifting capacity chart, refer to the next longest and next shortest boom lengths or working radii and work at whichever rated lifting capacity is lower.

(14) The critical angle for each working status is indicated in the chart. The boom can tip over if the boom is lowered below the critical angle even if unloaded.

(15) The standard number of parts of line for each boom length are as indicated in the chart. If you work with a non-standard number of parts of line, take 37.2kN (3.8tf) as the maximum load on any part of the wire rope.

(16) Crane operation is permissible up to a wind speed of 10m/s. Even in relatively light wind conditions, extra care should be taken when handling loads presenting large wind catching areas.

(17) If you work with a load in excess of the rated lifting capacity or use incorrect working procedures, you are risking damaging the crane or tipping it over. In such cases, the machine will not be guaranteed.

https://truckmanualshub.com/

14-3-3 Precautions on using the ACS (611A-0071-0E)

If you use the ACS which monitors crane safety incorrectly, a major accident could result.

Therefore read the separate ACS instruction manual and the following points thoroughly and operate the ACS correctly as described. There is a safety sign permanently in the crane operation cab which gives these same points. Read them before you start to operate the crane.

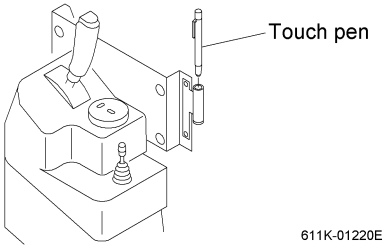
(1) The ACS will only work correctly provided you strictly adhere to the rated lifting capacity and the warnings and provisions noted in the instruction manual and safety signs.

(2) Do not subject the ACS body, display panel and sensors to excessive shock.

(3) If the PTO switch is not set to the "ON" side, the outriggers cannot be moved and no settings to the ACS can be made.

(4) Precautions on operating the ACS set switches

1) Press the switches lightly with an attached touch pen or your finger. Do not use sharp objects such as a ballpoint pen or pencil.



2) Press the switch and release it once the "pip" sounds. This sound means that the ACS has accepted the setting. If the "pip" does not sound when you press the switch, it means that the setting was not registered. Release the switch and press it again.

3) Always press switches one at a time to set the ACS and be sure that each press has registered. If you press two or more switches at the same time, the ACS will not be set correctly.

(5) To clean the display panel, use a soft cloth or cotton wool moistened with a neutral detergent or ethanol to wipe it gently. If wiping causes static electrical build-up in the display, it will not function correctly.

> ⚠ CAUTION
>
> Do not use solvents such as acetone, benzene, toluene or alcohol.

(511K-0044-0E)

(6) The ACS body, display panel and sensors are accurately adjusted and equipped with protective measures against temperature fluctuations. If humidity or dust enters these parts, they could cause the ACS to malfunction, so never open the case.

(7) Perform the ACS preoperational checks before you start work. The ACS preoperational checks can be performed only when all outriggers are extended fully. If you will not be able to fully extend all outriggers in the actual work site, move the crane to a more spacious area first, extend the outriggers fully and perform the ACS preoperational checks.

(8) Set the actual "outrigger status" on the ACS correctly.

Insert the stopper pins and check the extension width of each outrigger.

Check that the ACS outrigger configuration display matches the stopper pin positions and that the outrigger color marks (right: green, left: red) match the left/right outrigger configuration on the ACS display.

> ⚠ WARNING
>
> Incorrect setting of the working status setting screen risks crane damage or tipover. After you insert the outrigger stopper pins to confirm the outrigger extension width and check that the ACS display matches the actual outrigger status, set the "boom operation status" you are planning to use correctly.

(611A-0062-0E)

(9) When you use the outrigger control switches, the crane operation status previously set to the ACS will be canceled. When you change the outrigger status, you must rest the new crane operation status to the ACS. The crane will not work until the new setting on the ACS is complete.

(10) Set the "boom operation status" you are planning to use on the ACS working status setting screen correctly.

> **⚠ WARNING**
>
> Set the "boom operation status" you are planning to use on the ACS working status setting screen correctly. Incorrect setting can result in an exaggerated lifting capacity setting which risks crane damage or tipover.
> An unnecessarily small capacity setting could also result, which limits the crane's effectiveness and is uneconomic.

(511A-0064-0E)

(11) Before you start work, check that the key of the ACS emergency switch has been extracted. Also check that the overhoisting emergency switch is in the "working position" (OFF).

(12) If you perform slewing operation, hoist in a zone of smaller capacity (with shorter outrigger extension width) and slew to a zone of larger lifting capacity. If the ACS announces "Danger maximum lifting capacity" and the crane automatic stop works with the continuous chime alarm, immediately stop operation and take emergency action such as derricking and retracting the boom or lowering the lifted load to the ground while watching the safety level bar graph on the display to return it to the green zone before you continue work.

> **⚠ WARNING**
>
> The rated lifting capacity varies greatly according to the outrigger extension configuration and the slewing direction. Therefore when you are going to slew from a zone of larger rated lifting capacity to a zone of smaller capacity, work throughout within the lower capacity.

(881A-0066-0E)

(13) If any error code No. or error message is displayed during crane operation or preoperational checks, or if the problem occurs in the communication signal or circuit between the carrier and crane, stop work immediately and contact your authorised KATO dealer to ask for advice.

(14) Always move the PTO switch to the "OFF" position when you drive on the road, with the exception of pick and carry operation and on-site moving.

> **⚠ WARNING**
>
> - Always stow the ACS display panel when you drive on the road. Driving without stowing the ACS display panel is dangerous.
> - Always stow the ACS display panel when you leave the crane operation cab.

(061K-0002-0E)

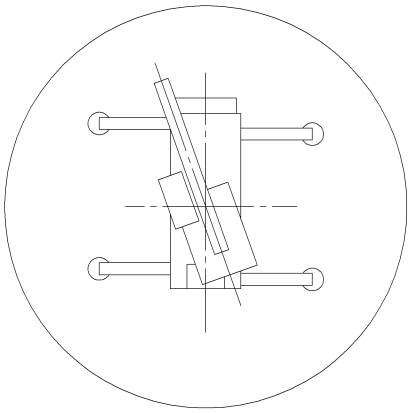
(15) If any breakdown or accident occurs as a result of the operator's failure to observe the above points, KATO will bear no responsibility.

https://truckmanualshub.com/

14-3-4 Crane performance tracks (when using outriggers) (541A-0293-0E)

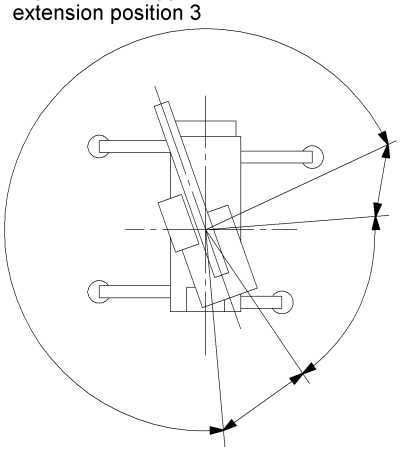
Work status 1

Outriggers fully extended
(same capacity in all directions)



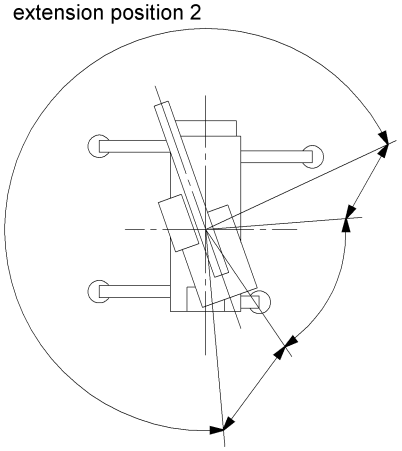
Work status 2

Left front and rear outriggers fully extended
Right front outrigger fully extended
Right rear outrigger extended to intermediate extension position 3



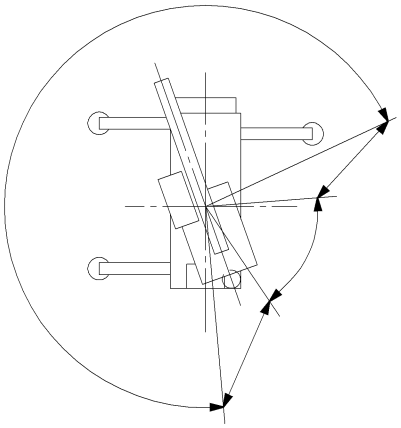
Work status 3

Left front and rear outriggers fully extended
Right front outrigger fully extended
Right rear outrigger extended to intermediate extension position 2



Work status 4

Left front and rear outriggers fully extended
Right front outrigger fully extended
Right rear outrigger fully retracted



611A-01690E

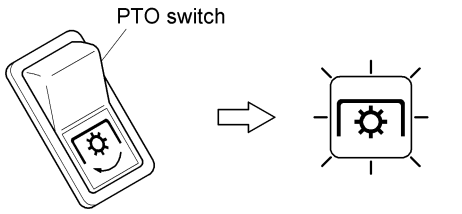
https://truckmanualshub.com/

15. Crane operation devices (061A-0005-0E)

15-1 Front panel (611A-0031-0E)

(1) PTO (Power Take Off) switch

When the PTO switch is set to the "ON" position, the pump is driven, power is supplied to the ACS and the slewing stop circuit is released. The PTO indicator lamp on the switch panel lights to tell the operator that crane operation is possible.



611A-00780E

⚠ DANGER

- Lock the suspension before you turn the PTO switch "ON".
  If you turn the PTO switch "ON" without locking the suspension, the suspension lock cylinders will lock where they are at different stages of extension.
- If you lock the suspension lock cylinders without fully retracting them and attempt any crane operations without the outriggers, the body will not be level and the crane will tip over.
- Fully retract and lock the suspension cylinders regardless of whether or not the outriggers will be used to turn the PTO switch "ON" before you start crane operation.

(541A-0155-2E)

⚠ CAUTION

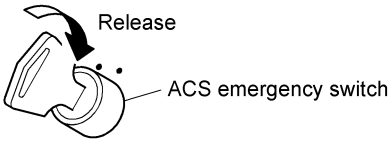
- Before you set the PTO switch to the "ON" position, confirm that the needle of the engine water temperature gauge is above point "C". Setting the PTO switch to the "ON" position while the engine coolant temperature is low could cause a seizure, fast wear, damage etc. due to poor lubrication (from high oil viscosity) of the engine and torque converter.
- Before you work the PTO switch, take your foot off the accelerator pedal so that the engine is idling.
- When the PTO switch is switched "OFF", the brake will be applied automatically to immobilize the superstructure regardless of the slewing brake switch position.
- Before you drive on the road, move the superstructure to the driving position, engage the slewing lock, stow the outriggers and set the PTO switch to the "OFF" position to return the suspension to the driving position (suspension free state).

(541A-0246-0E)

https://truckmanualshub.com/

(2) ACS emergency switch (self-reset type)

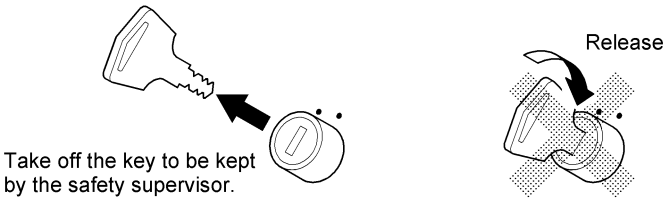
In an emergency such as a malfunction in ACS-related devices or crane stop etc. has occurred, set this switch to the "release" position to take appropriate emergency actions regardless of the ACS.



591A-00730E

⚠ WARNING

The ACS emergency switch is only used to take emergency action to avoid a serious accident. Before crane operation, take the key off the switch and it must be kept by the safety supervisor. If the ACS emergency switch is set to the"release" position intentionally when operating the crane, the crane tipping over or other serious accident can be caused.

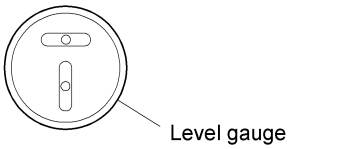


591A-00740E

(541A-0157-0E)

(3) Level gauge

Use this gauge to confirm that the crane is level when supported on the outriggers.



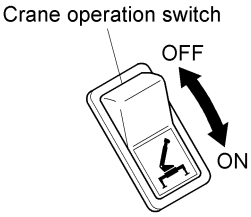
611A-00790E

(4) Crane operation switch

When operating the crane, set this switch to the "ON" position.

Slewing, boom derricking/lowering/extension/retraction and main and auxiliary winch operations cannot be performed if this switch is set to the "OFF" position.

If you do not operate the crane, set this switch to the "OFF" position to prevent misoperation etc.



611A-00800E

⚠ CAUTION

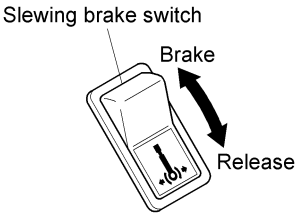
When you get out of the operator's seat, set this switch to the "OFF" position.

(611A-0072-0E)

(5) Slewing brake switch

If this switch is set to the "brake" position, the slewing brake will be applied.

Setting this switch to the "release" position will disengage the slewing brake.



611A-00810E

⚠ CAUTION

Apply the slewing brake after slewing has stopped.

The slewing brake must not be used for slowing or stopping the crane from slewing.

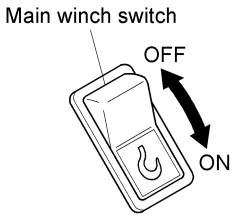
(4210-3262-0E)

https://truckmanualshub.com/

(6) Main winch switch

When operating the main winch, set this switch to the "ON" position.

If the main winch is not in use, set this switch to the "OFF" position to prevent misoperation etc.

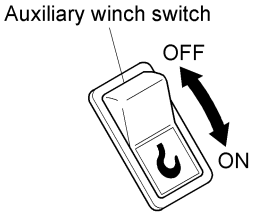


611A-00820E

(7) Auxiliary winch switch

When operating the auxiliary winch, set this switch to the "ON" position.

If the auxiliary winch is not in use, set this switch to the "OFF" position to prevent misoperation etc.

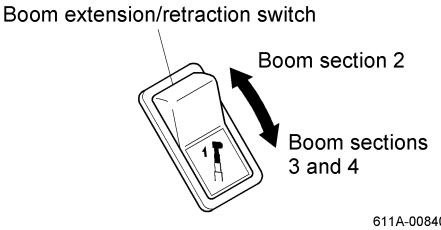


611A-00830E

(8) Boom extension/retraction switch

When operating the boom using the boom extension/retraction pedal, this switch works to switch the boom sections to be operated between the section 2 and sections 3&4. However the boom sections 3 and 4 will not extend before the boom section 2 has been fully extended.

Also the boom section 2 will not retract before the boom sections 3 and 4 have fully retracted.



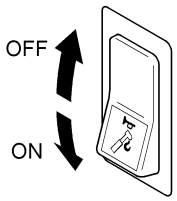
611A-00840E

https://truckmanualshub.com/

15-2 Side panel (611A-0032-0E)

(1) Overhoisting emergency switch (self-reset type)

In the event of a malfunction in the winch overhoisting detector or in a similar abnormal situation, press this switch to allow winch operation regardless of the condition of the overhoisting detector.



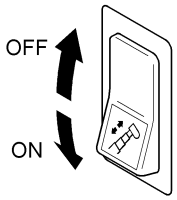
4210-33190E

> **⚠ WARNING**
>
> The overhoisting emergency switch is provided to avoid danger in an emergency. Crane operation with this switch pressed can cause the wire rope to snap or other major accidents.

(4210-0011-0E)

(2) Boom extension/retraction emergency switch (self-reset type)

Only use this switch if boom sections 3 and 4 will not extend or retract due to trouble in the boom sequential extension/retraction circuit, or when greasing the boom sections 3 and 4.

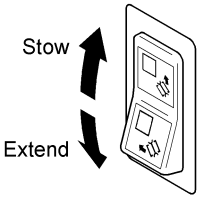


4210-33200E

(3) Jib side-lifting switch (self-reset type)

To swing out the jib, set this switch to the "extension" side. This will move the jib from the side to below the boom.

To stow the jib, briefly set the switch to the "extension" side to fully extend the jib side-lifting cylinder before setting the switch to the "stowage" side, which moves the jib from under the boom to the side.



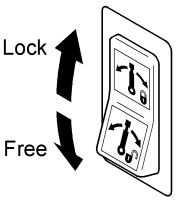
4210-33230E

(4) Slewing free/lock switch

This switch controls the slewing drift state while the superstructure comes to rest after the slewing lever has been returned to neutral.

Free: In this setting, slewing comes to a smooth inertial stop after the slewing lever is returned to neutral.

Lock: In this setting, slewing stops abruptly when the slewing lever is returned to neutral.
Control slewing very gently in this case.

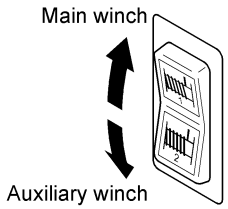


4210-33240E

https://truckmanualshub.com/

(5) Drum rotation detector switch

The rotation of the winch drum which is selected by this switch is detected during winch operation and a buzzer will sound to indicate that the winch drum is rotating.



611A-00850E

NOTE

The buzzer sound is the same for hoisting and lowering.

NOTE

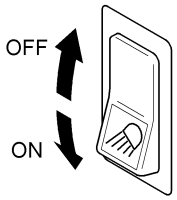
The buzzer sound becomes faster the faster the drum rotates.

When the drum speeds up further, the buzzer sounds continuously and then dies away.

(6) Working lamp switch

Use this switch to switch on working lamps on the boom, superstructure and cab when working at night or at other times when visibility is insufficient.

The working lamps will light only when the PTO switch is set to the "ON" position.



4210-33260E

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15-3 Control levers and pedals (611A-0033-0E)

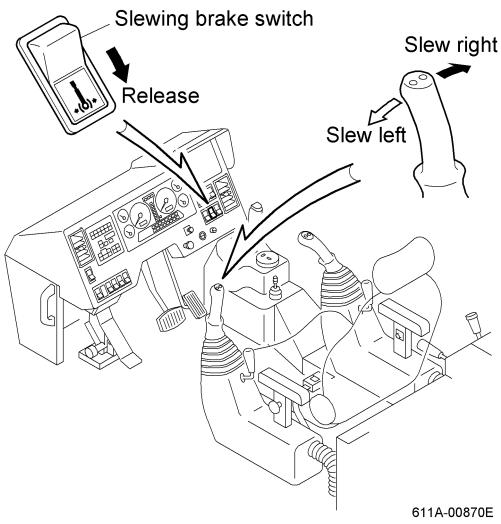
(1) Left control lever

1) Slewing operation

Set the slewing brake switch to the "release" position before slewing operation.

⬆ : Set the crane operation switch to the "ON" position and push the left control lever right to slew the crane right.

⇩ : Set the crane operation switch to the "ON" position and push the left control lever left to slew the crane left.

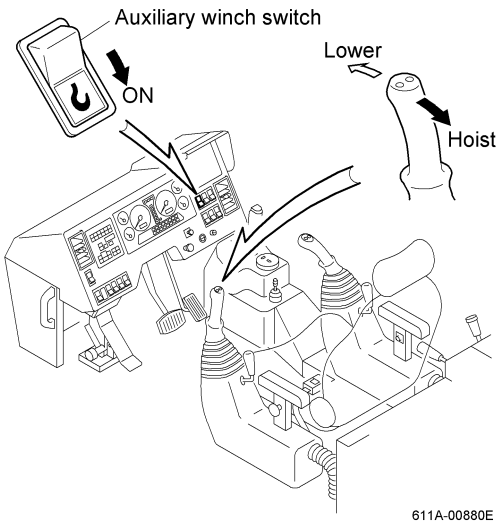


2) Auxiliary winch operation

Set the auxiliary winch switch to the "ON" position before operating the auxiliary winch.

⬆ : Set the crane operation switch to the "ON" position and pull the left control lever backward to wind up the winch.

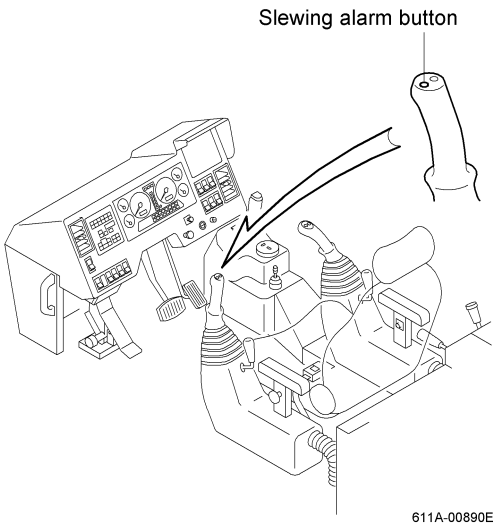
⇩ : Set the crane operation switch to the "ON" position and push the left control lever forward to lower the winch.



(2) Slewing alarm button

Press the button to sound the horn before starting the engine or slewing operation to warn those nearby.

The horn will sound only when the PTO switch is set to the "ON" position.



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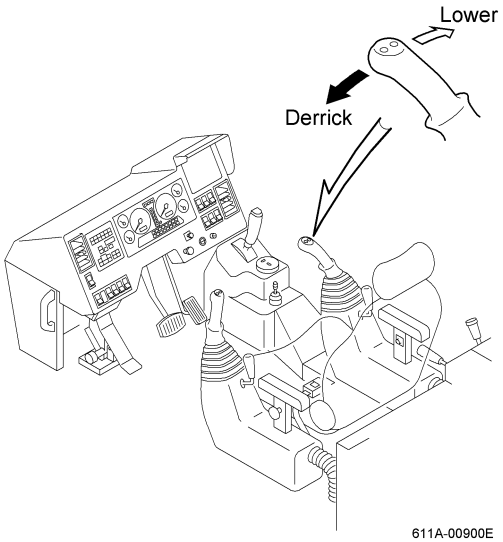
(3) Right control lever

1) Boom derricking/lowering operation

⬆ : Set the crane operation switch to the "ON" position and push the right control lever left to derrick the boom.

⇩ : Set the crane operation switch to the "ON" position and push the right control lever right to lower the boom.

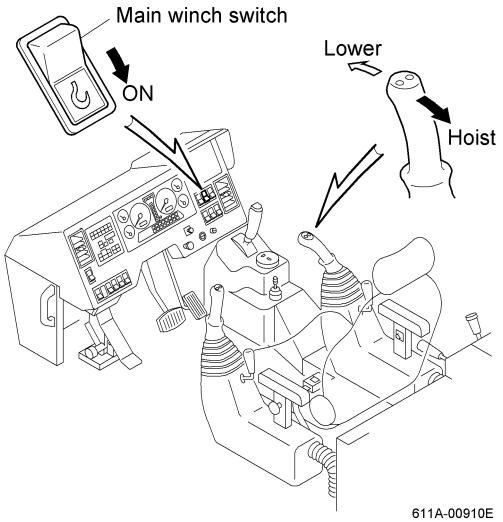


2) Main winch operation

Set the main winch switch to the "ON" position before operating the main winch.

⬆ : Set the crane operation switch to the "ON" position and pull the right control lever backward to wind up the winch.

⇩ : Set the crane operation switch to the "ON" position and push the right control lever forward to lower the winch.

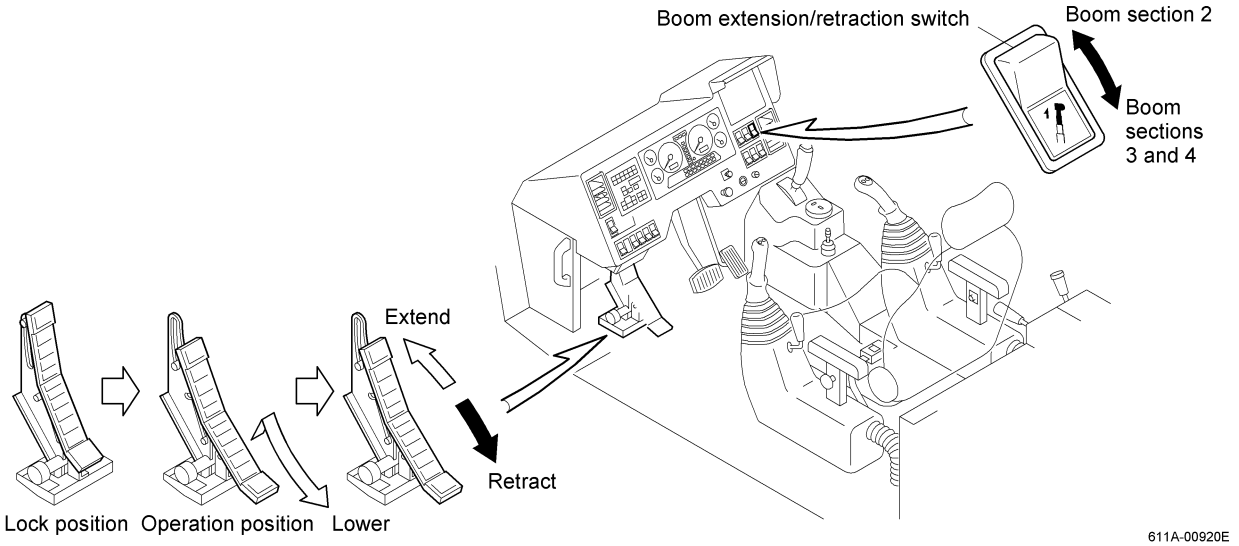


(4) Boom extension/retraction pedal

Use the boom extension/retraction switch to select the boom extending or retracting sections.

⇧ : Set the crane operation switch to the "ON" position and depress the boom extension/retraction pedal forward to extend the boom.

⬇ : Set the crane operation switch to the "ON" position and depress the boom extension/retraction pedal backward to retract the boom.



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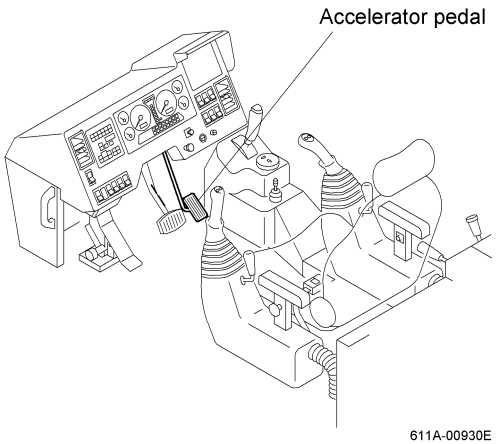
(5) Accelerator pedal

This pedal controls the operation speed during crane operation. Sudden acceleration during crane operation is dangerous. Always try to work the accelerator smoothly.



⚠ CAUTION

Before operating the accelerator pedal, confirm that the needle of the engine water temperature gauge is above point "C".

Operating the accelerator pedal while the engine coolant temperature is low could cause a seizure, fast wear, damage etc. due to poor lubrication (from high oil viscosity) of the engine and torque converter.

Properly perform warm-up running.

(541A-0158-2E)

NOTE

When the PTO switch is set to the "ON" position, the engine speed is controlled between about 670min^{-1} (670r.p.m.) and 1820min^{-1} (1820r.p.m.).

(6) Console lock lever

Before starting work, check that the console lock lever is in the lock position.

Pull the console lock lever toward you and raise the left console (left control lever) before you get out of your seat and leave the cab.

⚠ WARNING

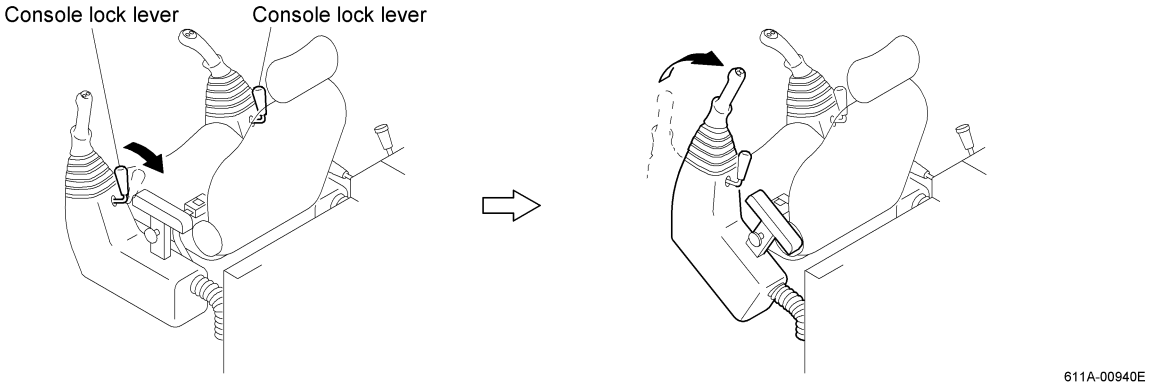
- Do not use the console lock lever as a hand grip when getting on or off the cab.
- When you lower the console, push down on the console lock lever or the console unit to lock it. Do not use the left control lever to lower the console, which is extremely dangerous.

(4210-3256-0E)

⚠ WARNING

The crane is automatically stopped when the left console is tilted (raised), so there will be no response to movement of the crane control levers, pedals etc.

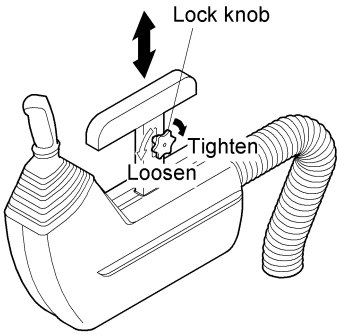
(611A-0073-0E)



611A-00940E

(7) Armrest

Adjust the armrest to the easiest height for you to operate.



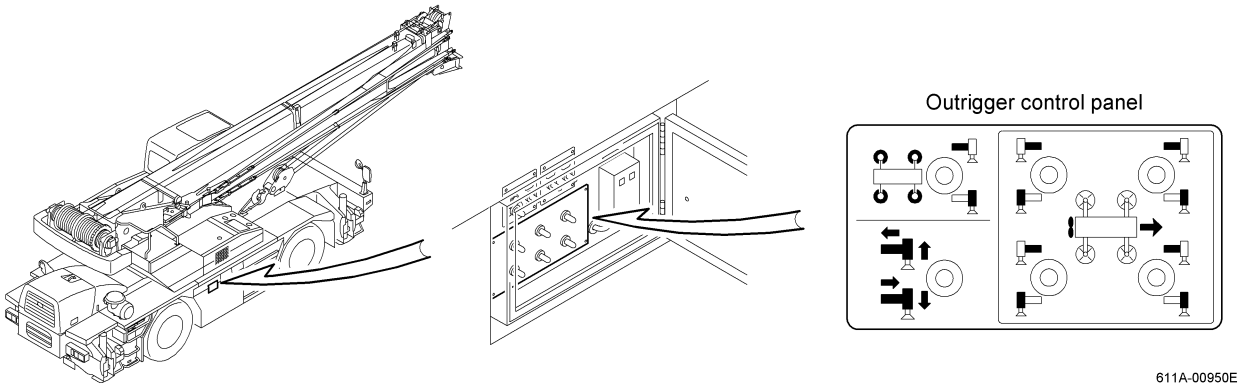
9210-02170E

https://truckmanualshub.com/

15-4 Lower control switch panel (541A-0169-2E)

(1) Outrigger control panel

Refer to the "Outrigger operation" section.



611A-00950E

⚠ CAUTION

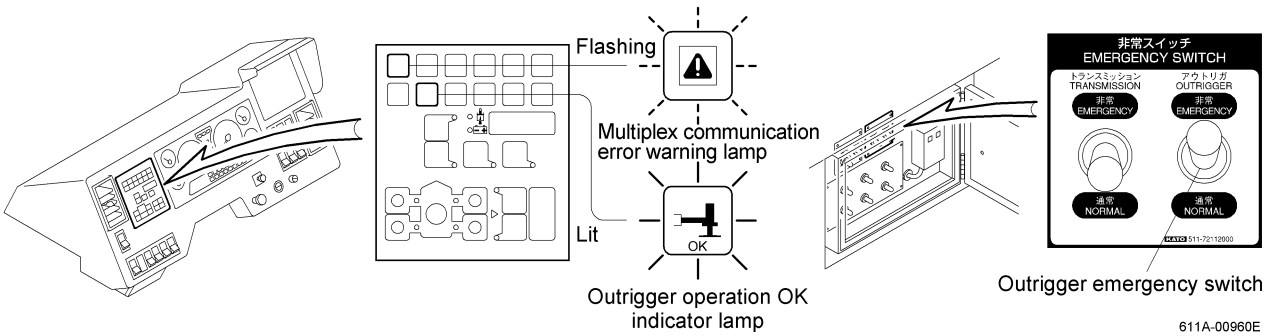
- When you operate the switches on the outrigger control panel, the ACS outrigger setting status will be canceled and the ACS will switch to the "working status setting screen".
- When you have used the outrigger control switches, insert the outrigger stopper pins and check the outrigger extension widths and check that all four outriggers are in the positions indicated on the ACS display, then press the ACS setting switch to rest the outrigger extension widths.

  If it is not reset on the ACS, the crane cannot be operated.

(491A-0043-1E)

(2) Outrigger emergency switch (self-rest type)

If the switches on the outrigger control panel fail to move the outriggers (when the multiplex communication error warning lamp flashes etc.), switch the outrigger emergency switch to the "emergency" position then use the switches on the outrigger control panel of the carrier as a temporary measure to stow the outriggers.



611A-00960E

⚠ CAUTION

When you use the outrigger emergency switch to stow the outriggers, always set the crane to the driving position.

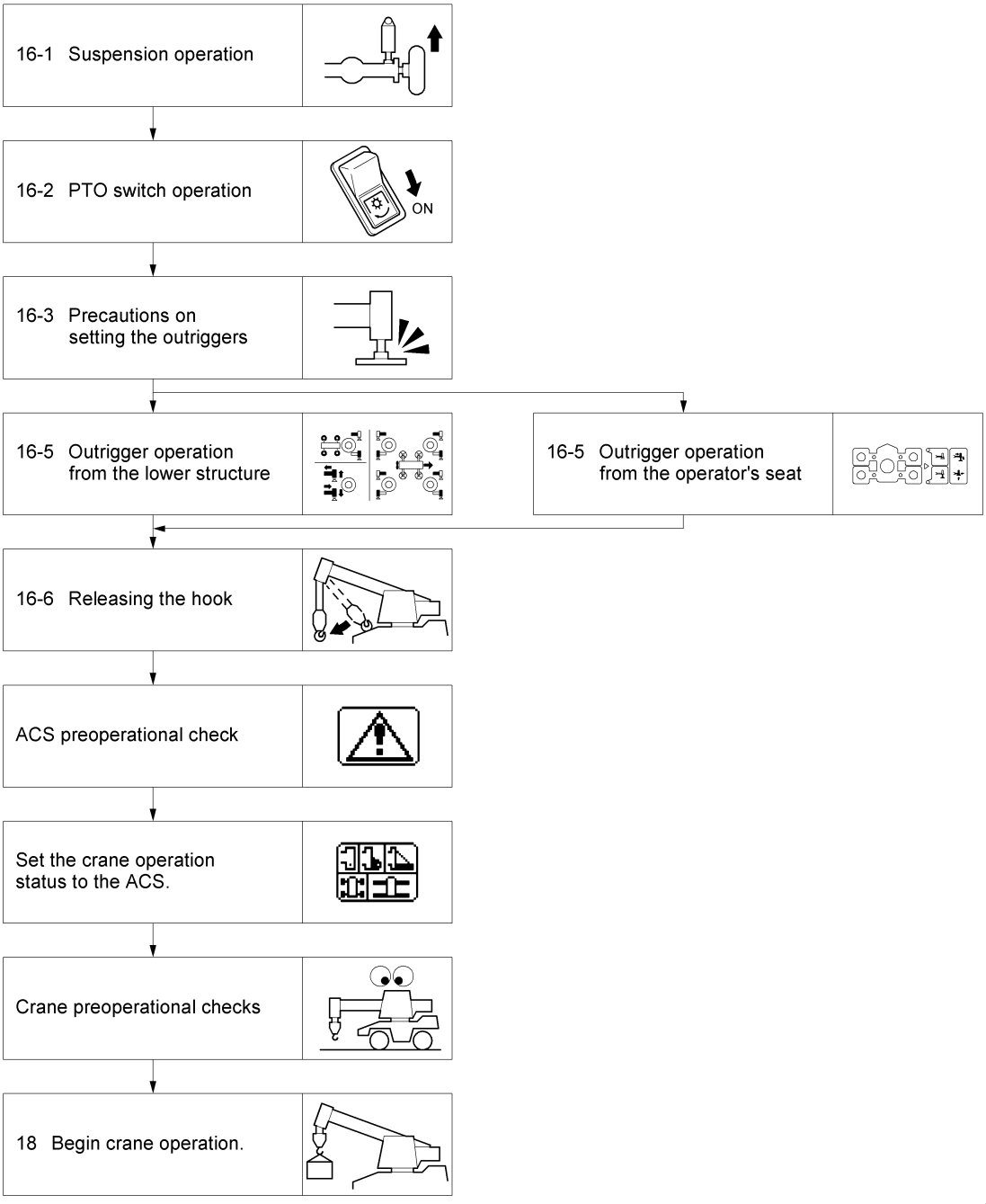
(121A-0079-0E)

https://truckmanualshub.com/

16. Crane operation when the outriggers are used (541A-0171-0E)

(1) Preparations for crane operation

Before starting crane operation, always follow the procedure below to change the machine's position from driving condition to a position suitable for crane operation.



611A-00970E

⚠ WARNING

Always follow the specified procedure and precautions strictly to set the machine in its working configuration before you start crane operation.

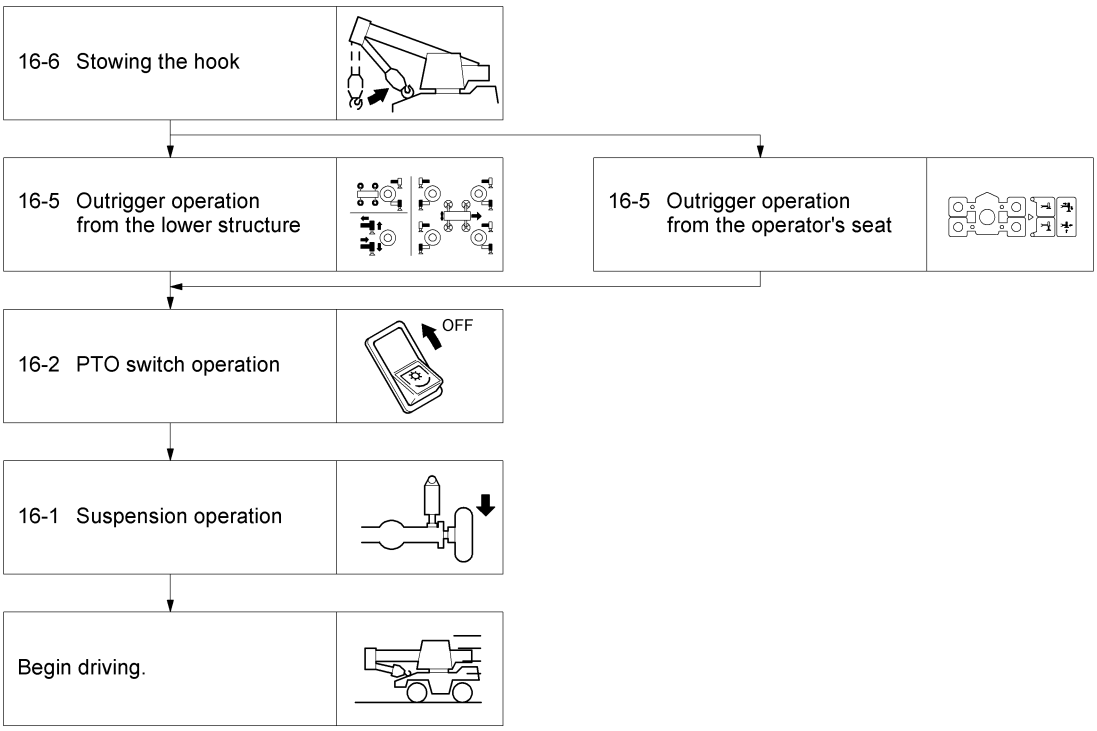
Crane operation with the crane in an incorrect position could cause severe accidents.

(541A-0172-0E)

https://truckmanualshub.com/

(2) After crane operation

Before driving on the roads, always follow the procedure below to change the machine's position from crane operation condition to a position suitable for driving.



611A-00980E

⚠ WARNING

Always follow the specified procedure and precautions strictly to set the machine in its driving configuration before you drive on the roads.

Driving on the roads with the crane in an incorrect position could cause severe accidents.

(541A-0173-0E)

https://truckmanualshub.com/

16-1 Suspension operation (541A-0373-0E)

⚠ DANGER

Any one of the faults below could cause the crane to tip over, so strictly observe all the relevant precautions.

- If you operate the crane without first locking the suspension, the crane could tip over, causing a major accident.
- When you operate the crane, fully retract the suspension lock cylinders to lock them.
- If you lock the suspension while the suspension lock cylinders are not fully retracted, the tires could be contact with the ground, causing a major accident.
- Do not release the suspension lock until all crane operations are complete and you are about to move the machine on the road.
- Push the suspension retraction switch to the "suspension retraction" side for about at least four seconds. When the suspension cylinders are fully retracted and locked, check that the suspension locked indicator lamp has lit.
- Only retract and lock the suspension when the machine is on firm, level ground with the outriggers stowed.
- Keep the suspension locked when moving around the site between working positions.
- Never drive on the road with the suspension locked.
  Always release the suspension lock before you move the machine onto the road.

(611A-0035-0E)

https://truckmanualshub.com/

16-1-1 Suspension retraction procedure (611A-0036-0E)

(1) Set the crane to the following conditions.

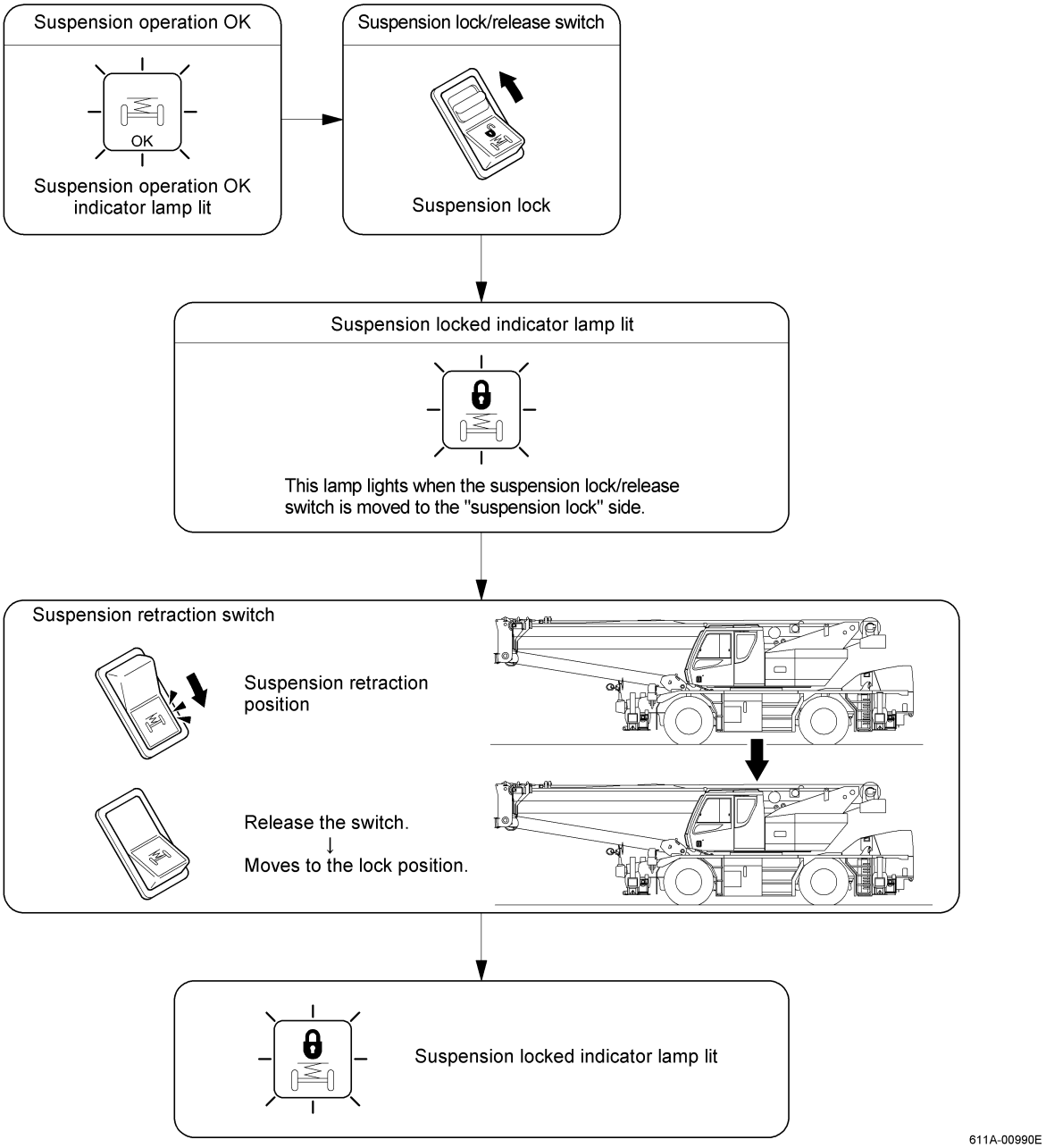
- Fully retract the boom and lower it to a boom angle of at least 50°
- Check that the superstructure is within ±5° of the front or rear facing.
- Check that the PTO switch is in the "OFF" position.
- Check that the shift lever is in the "N" position.
- Check that the suspension operation OK indicator lamp is lit.

(2) Move the suspension lock/release switch to the "suspension lock" side.

(3) Move the suspension retraction switch to the "suspension retraction" side to retract the suspension.

(4) Once the suspension lock cylinders have retracted, release the suspension retraction switch.

(5) The suspension locked indicator lamp will light.



https://truckmanualshub.com/

16-1-2 Suspension lock release procedure (611A-0037-0E)

> **⚠ DANGER**
>
> Do not operate the suspension while the outriggers are extended.
> When the suspension lock is released, there is some risk that the axles could drop off.

(541A-0175-0E)

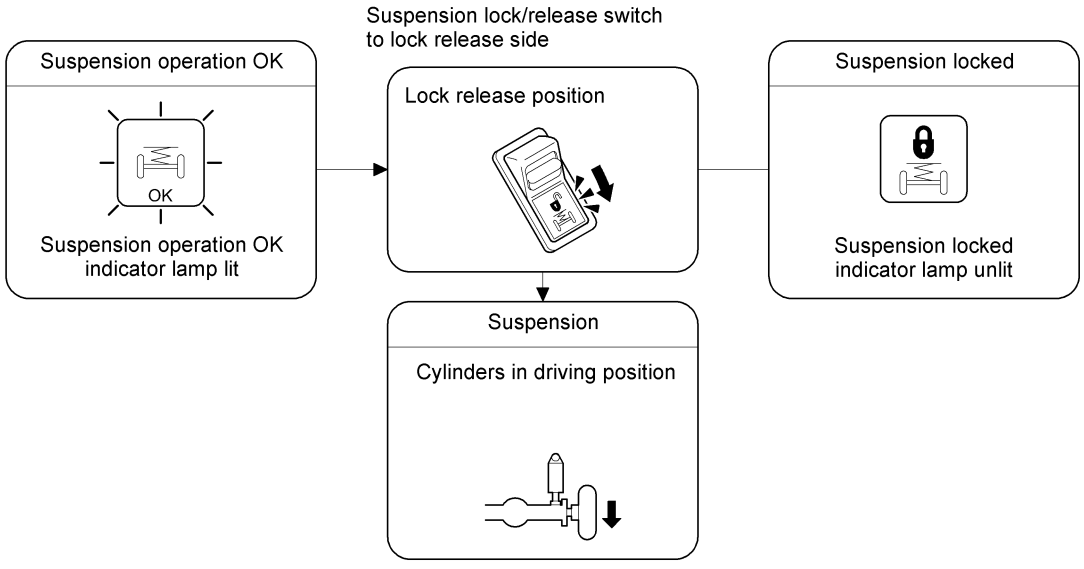
> **⚠ WARNING**
>
> - Release the suspension lock and return the machine to the driving position before you move the machine onto the road.
>   Never drive on the road with the suspension lock cylinders retracted.
> - Only retract and lock the suspension when the machine is on firm, level ground with the outriggers stowed.

(541A-0176-2E)

(1) Set the crane to the following conditions.
- Fully retract the boom and lower it to a boom angle of at least 50°.
- Check that the superstructure is within ±5° of the front or rear facing.
- Check that the PTO switch is in the "OFF" position.
- Check that the shift lever is in the "N" position.

(2) Check that the suspension operation OK indicator lamp is lit.
(3) Move the suspension lock/release switch to the "suspension lock release" side to release the suspension lock.
(4) The suspension locked indicator lamp will not light.

Suspension lock release

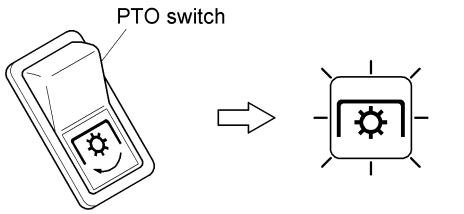


611A-01000E

https://truckmanualshub.com/

16-2 PTO switch operation (611A-0074-0E)

After locking the suspension, hold the engine at idling speed and move the PTO switch on the left side of the front panel to the "ON" position. At this time, the PTO indicator lamp on the switch panel will light.



611A-00780E

⚠ DANGER

- Lock the suspension before you turn the PTO switch "ON".
  If you turn the PTO switch "ON" without locking the suspension, the suspension lock cylinders will lock where they are at different stages of extension.
- If you lock the suspension lock cylinders without fully retracting them and attempt any crane operations without the outriggers, the body will not be level and the crane will tip over.
- Fully retract and lock the suspension cylinders regardless of whether or not the outriggers will be used to turn the PTO switch "ON" before you start crane operation.

(541A-0155-2E)

⚠ CAUTION

- Before you work the PTO switch, take your foot off the accelerator pedal so that the engine is idling.
- When the PTO switch is switched "OFF", the brake will be applied automatically to immobilize the superstructure regardless of the slewing brake switch position.
- Before you drive on the road, move the superstructure to the driving position, stow the outriggers, set the PTO switch to the "OFF" position and release the suspension lock to return the suspension lock cylinders to the "driving position".

(541A-0178-2E)

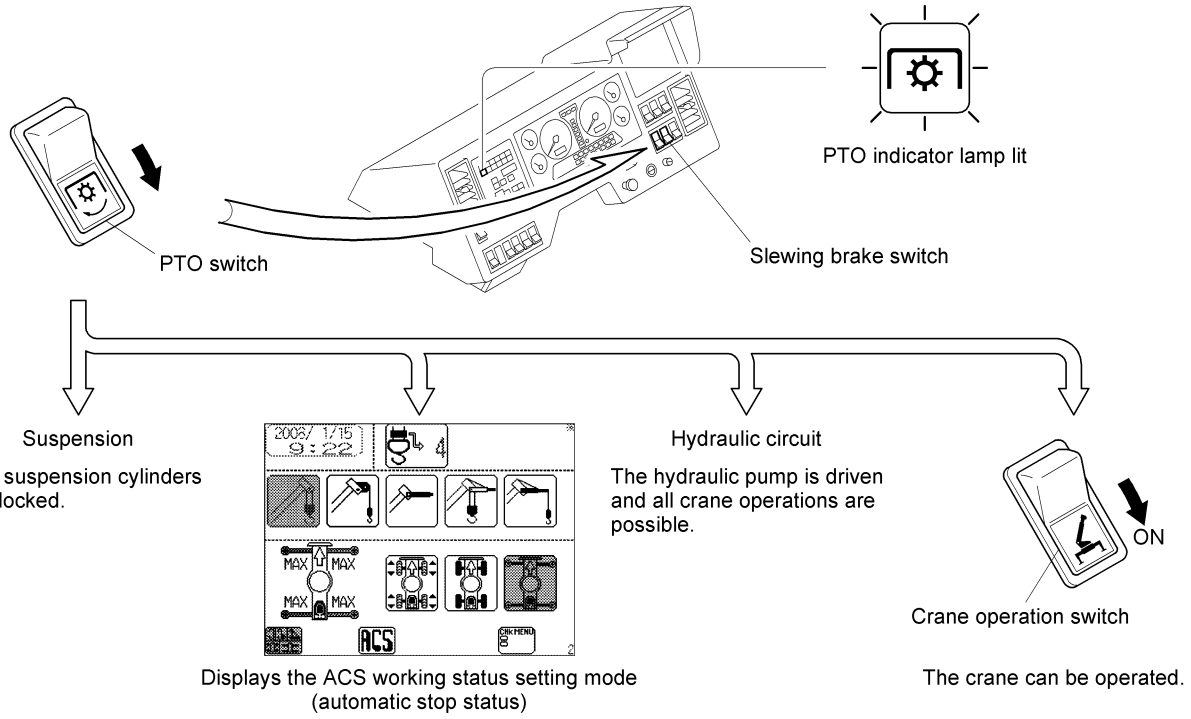
⚠ CAUTION

Work the PTO switch with the idle speed knob set to "AUTO".

(611A-0079-0E)

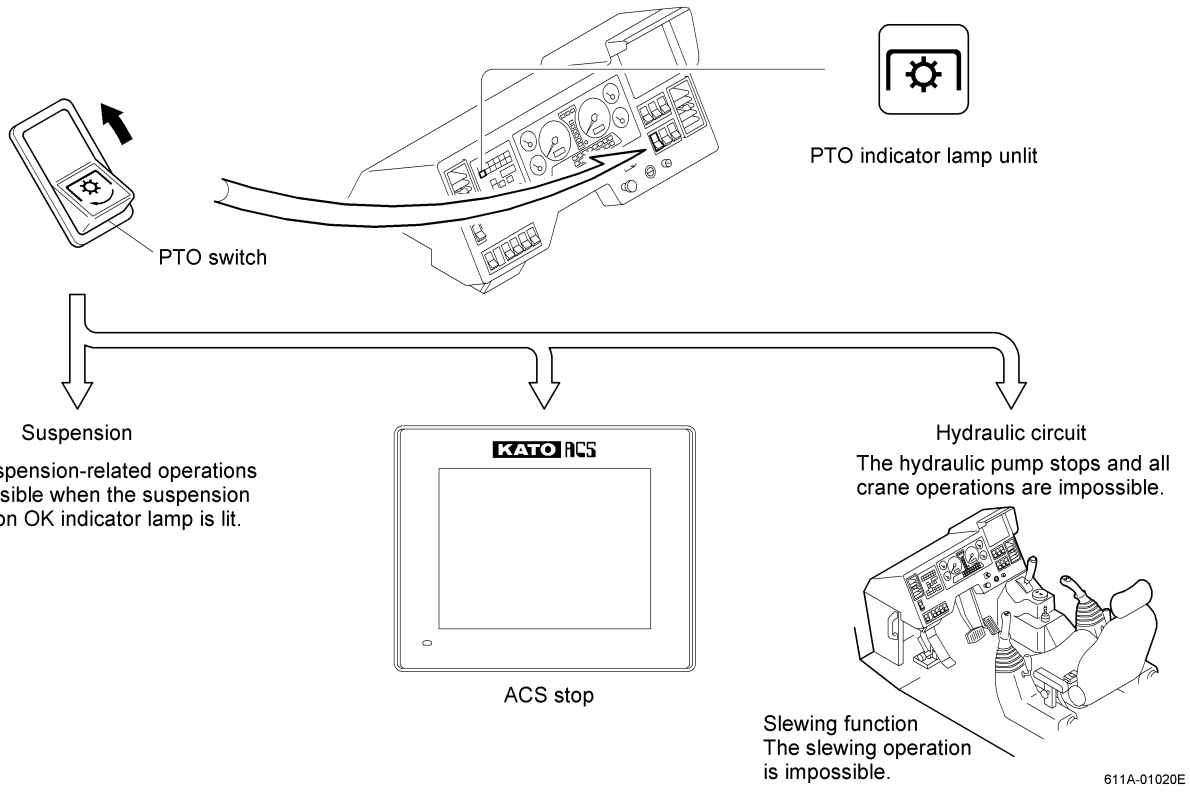
https://truckmanualshub.com/

ON



611A-01010E

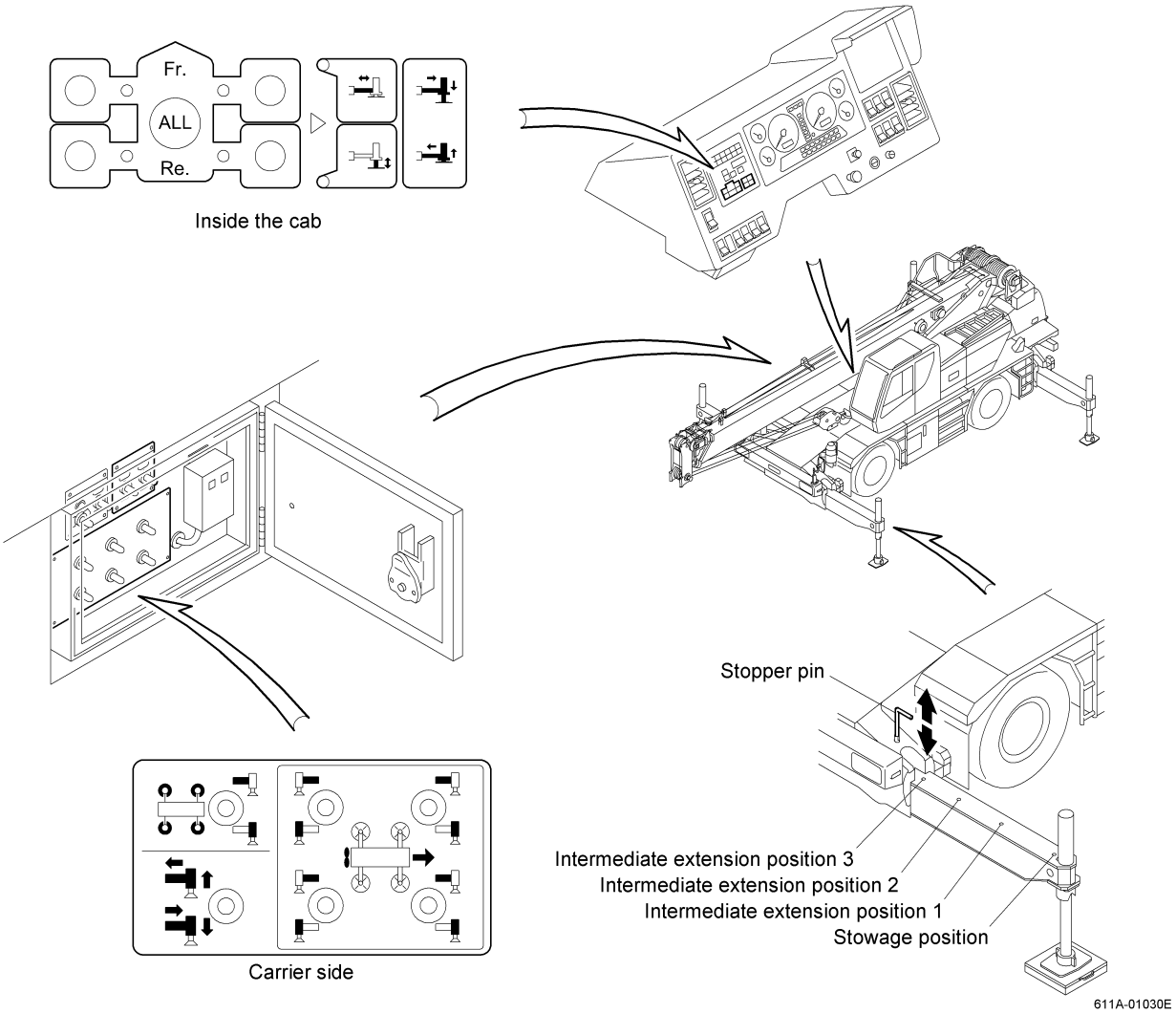
OFF



611A-01020E

16-3 Precautions on setting the outriggers (511A-0051-1E)

The outrigger control switches are located on the side of the carrier body and inside the cab. As a general rule, the control switches on the carrier body should be used, but if you unavoidably have to operate the outriggers from the cab, ask another worker to insert the stopper pins and place the boards under the outrigger feet.

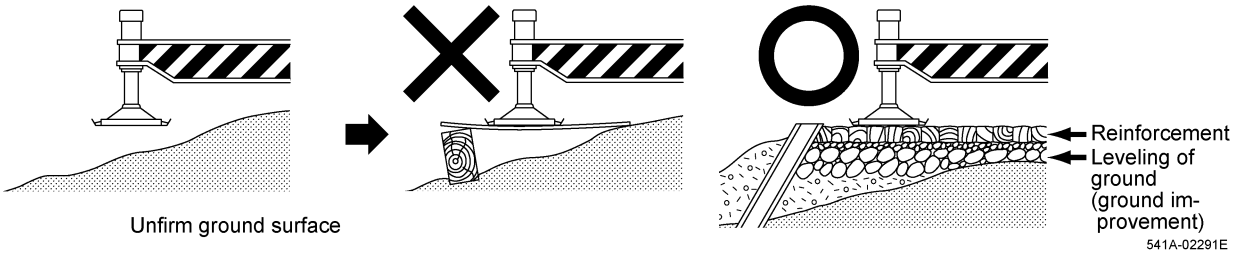


When the outriggers are used, the load values in the rated lifting capacity chart are based on the assumption that the crane is supported on the level by the outriggers. Therefore the strength of the ground where the outriggers are set is one of the most important factors for safety.

In some working positions, as much as 80% of the total mass of the crane plus the suspended load may act through a single outrigger, creating an enormous surface pressure under the outrigger float. If this happens, ground conditions below the surface can cause the float to sink into the ground, even in ground which appears to be level and firm at first sight.

Therefore always watch for the following points.

(1) Improve the ground surface as far as possible if it is soft, crumbly, uneven or sloping. Use wooden blocks etc. if necessary to produce a flat surface and then set the outriggers on steel plates etc. of adequate areas and rigidity to reduce surface pressure further.



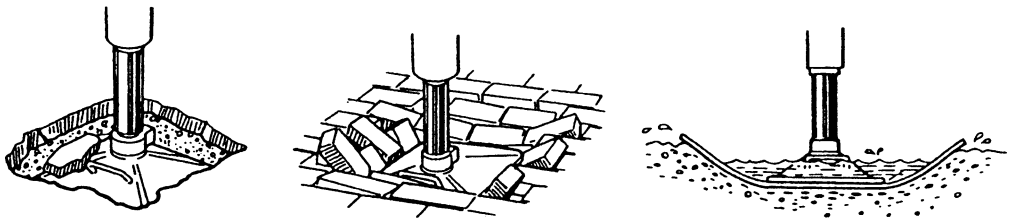
(2) Ground which appears to be strong can have dangerously inadequate strength due to ground conditions below the surface. Avoid areas which are likely to suffer such problems as listed below, and set the outrigger floats on steel plates etc. of adequate areas and rigidity to guard against potentially weak soil.

- Surfaces paved with plain asphalt
- Surfaces paved with thin concrete
- Brick or cobbled road surfaces
- Areas where soil under the road paving has been eroded by water to leave a void
- Areas where the soil is very dry but soft
- Road shoulders or near construction excavations

Set the crane level with full consideration for the above points.

> **⚠ CAUTION**
>
> If the crane is not set level, the reduction in the crane's lifting capacity can be unexpectedly severe. If you use the crane without noticing and correcting the inclination, it could tip over or the boom could be broken even if the load is well below the rated lifting capacity.

(541A-0180-1E)



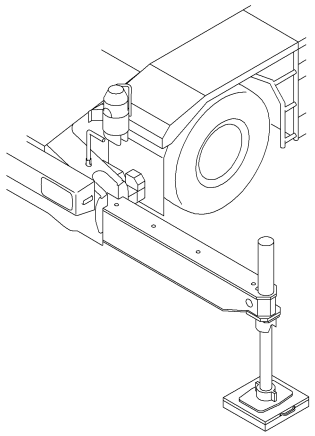
(3) Check that the suspension lock cylinders are fully retracted (suspension locked) before you set the outriggers.

(4) As a rule, all four outriggers should be extended fully. If you have no alternative but to use any outrigger at intermediate extension or full retraction or if the outriggers cannot be used at all, you must first obtain the permission of the site foreman and then proceed slowly and cautiously with safety as your prime concern.

(5) Check that nobody is near the outriggers and under the machine before you set the outriggers.

(6) While driving or when you set the outriggers, always check that the stopper pins are inserted to fasten the outriggers securely in the correct positions.

(7) After you have finished setting the outriggers, check that the tires are off the ground. If any tire is touching the ground, a reactive force will act which will impair stability.
If site conditions are such that any of tires are still in contact with the ground when the outrigger vertical cylinders are fully extended, place plates etc. under the outrigger floats until all tires are off the ground.



611A-01040

(8) After you have finished setting the outriggers, check that each outrigger float is in contact with the ground.
Also check that the ground is not deformed, the floats have not sunk down and the road shoulder is not crumbling.

(9) Set the "outrigger status" and "boom status" that will be used next on the ACS working status setting screen correctly. If you will not be able to fully extend all outriggers in the actual work site, move the crane to a more spacious area first, extend the outriggers fully and perform the ACS preoperational checks. The ACS preoperational checks can be performed only when all outriggers are extended fully.
(Refer to the ACS instruction manual for details.)

(10) At the start of lifting, lift the load just clear of the ground to gauge the working condition and confirm that the ground supports the outriggers adequately. If an outrigger supervisor is appointed to observe the outriggers during operation, safety will be enhanced.

(11) This machine is equipped with control switches for outrigger operation on the side of the carrier and inside the cab. Whichever switches you start moving, the ACS will automatically switch to the working status setting screen. Reset the ACS if you have changed the outrigger configuration.

https://truckmanualshub.com/

16-4 Outrigger control panel (121A-0027-0E)

(1) Control panel on the side of the lower structure

1) Extension/retraction switch (self-reset type)

Use this switch to extend or retract the horizontal or vertical cylinders.

2) Horizontal/vertical combined selection switch

Use to operate all the horizontal cylinders or all the vertical cylinders simultaneously. Move this switch to the correct side for the cylinders you want to use.

When you select this switch and use the extension/retraction switch, the engine speed will increase automatically.

3) Horizontal/vertical individual selection switches

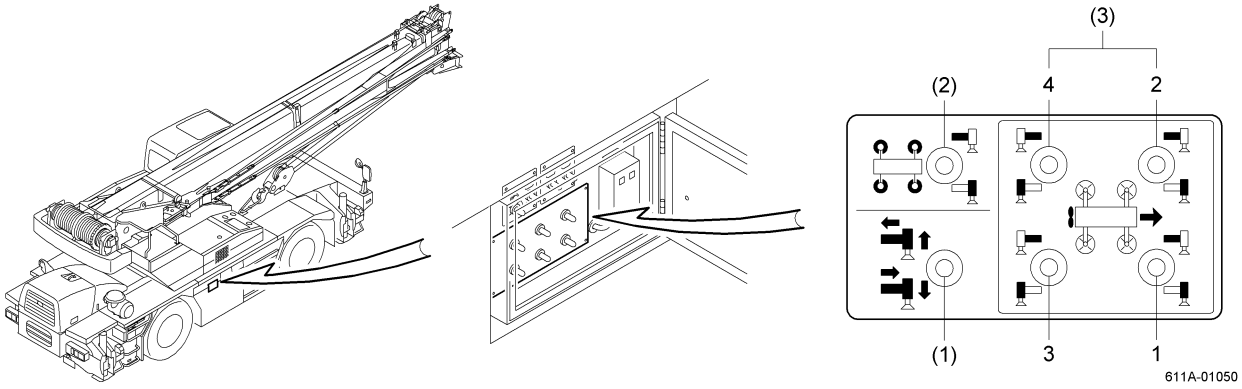
In order to operate each outrigger individually, select the relevant horizontal or vertical cylinder. When you select the individual switch and use the extension/retraction switch, the engine speed will not increase.

1 Left-rear horizontal/vertical selection switch

2 Right-rear horizontal/vertical selection switch

3 Left-front horizontal/vertical selection switch

4 Right-front horizontal/vertical selection switch



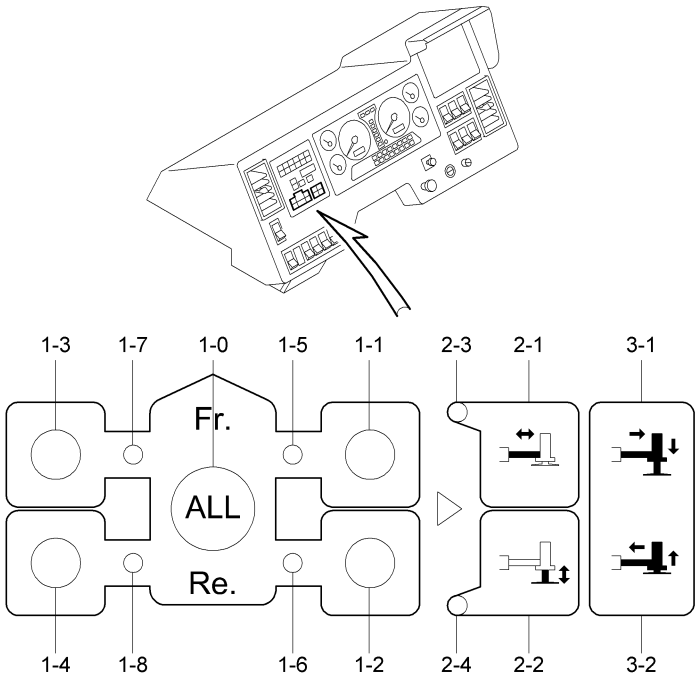
⚠ CAUTION

- When you operate the switches on the outrigger control panel, the ACS outrigger setting status will be canceled and the ACS will switch to the "working status setting screen".
- When you have used the outrigger control switches, insert the outrigger stopper pins and check the outrigger extension widths and check that all four outriggers are in the positions indicated on the ACS display, then press the ACS setting switch to reset the outrigger extension widths.

  If it is not reset on the ACS, the crane cannot be operated.

(511A-0080-0E)

(2) Outrigger control switches inside the operation cab



1 Outrigger position selection switches
- 1-0: Combined selection switch
- 1-1: Right-front position selection switch
- 1-2: Right-rear position selection switch
- 1-3: Left-front position selection switch
- 1-4: Left-rear position selection switch
- 1-5: Right-front position indicator lamp
- 1-6: Right-rear position indicator lamp
- 1-7: Left-front position indicator lamp
- 1-8: Left-rear position indicator lamp

2 Horizontal/vertical selection switches
- 2-1: Horizontal selection switch
- 2-2: Vertical selection switch
- 2-3: Horizontal indicator lamp
- 2-4: Vertical indicator lamp

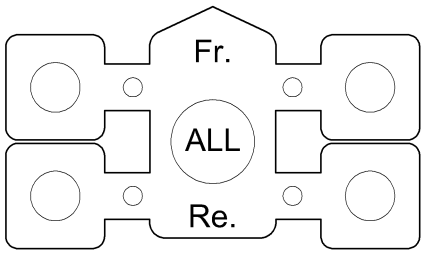
3 Extension/retraction selection switches
- 3-1: Extension switch
- 3-2: Retraction switch

611A-01060E

1) Outrigger position selection switches

Use these switches to specify which of the outriggers you will be operating.

When you press a switch, a "pip" confirmation tone sounds and the indicator lamp for the selected position lights. For combined operation, press (ALL) to light the indicator lamps in all four positions. To cancel a selection, press the same switch again. The indicator lamp will go out to indicate that the selection has been canceled.



591A-11980

⚠ CAUTION

- Press the switch firmly until the confirmation tone sounds.
- If the extension/retraction switch is not used within 30 seconds, all position selections will be canceled. They will also be canceled immediately if the PTO switch is turned "OFF".
- Outrigger operation is only possible when the outrigger operation OK indicator lamp is lit. If you press an outrigger position selection switch while the outrigger operation OK indicator lamp is not lit, a warning buzzer will sound.

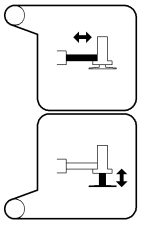
(541A-0185-0E)

2) Horizontal/vertical selection switches

Use these switches to select horizontal or vertical outrigger operation.

When you press the switch, a "pip" confirmation tone sounds and the indicator lamp for the selected operation lights. Press the same switch again or the other switch (horizontal or vertical) to cancel the selection.

The selected indicator lamp will go out to indicate that the selection has been canceled.



591A-11990

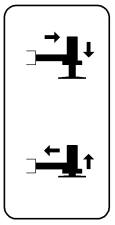
⚠ CAUTION

- Press the switch firmly until the confirmation tone sounds.
- If the extension/retraction switch is not used within 30 seconds, all selections will be canceled. They will also be canceled immediately if the PTO switch is turned "OFF".
- Outrigger operation is only possible when the outrigger operation OK indicator lamp is lit. If you press the horizontal/vertical selection switch while the outrigger operation OK indicator lamp is not lit, a warning buzzer will sound.

(541A-0186-1E)

3) Extension/retraction selection switches (self-reset type)

When you press either the extension switch or the retraction switch to operate the outriggers while the position selection and horizontal/vertical selection switches have been set, a "pip" confirmation tone will sound and the cylinders extend or retract as long as you press the switch.



591A-12000

⚠ CAUTION

- If you try to operate the outriggers while the PTO switch is turned "OFF", the misoperation warning buzzer will sound and the outriggers will not move.
- If you try to use extension/retraction switch before you have set both the position selection and horizontal/vertical selection switches, the misoperation warning buzzer will sound.
- When you extend or retract the outriggers, the ACS outrigger setting status will be canceled and the ACS will switch to the "working status setting screen".
- When you have used the outrigger control switches, insert the outrigger stopper pins and check the outrigger extension widths and check that all four outriggers are in the positions indicated on the ACS display, then press the ACS setting switch to reset the outrigger extension widths.

  If it is not reset on the ACS, the crane cannot be operated.

(511A-0065-0E)

https://truckmanualshub.com/

16-5 Outrigger setting and stowage procedures (061A-0085-0E)

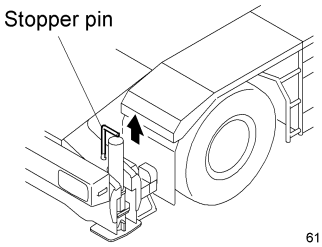
16-5-1 Outrigger setting procedure (061A-0086-3E)

(1) Check that the outrigger operation OK indicator lamp is lit.

Conditions for lighting

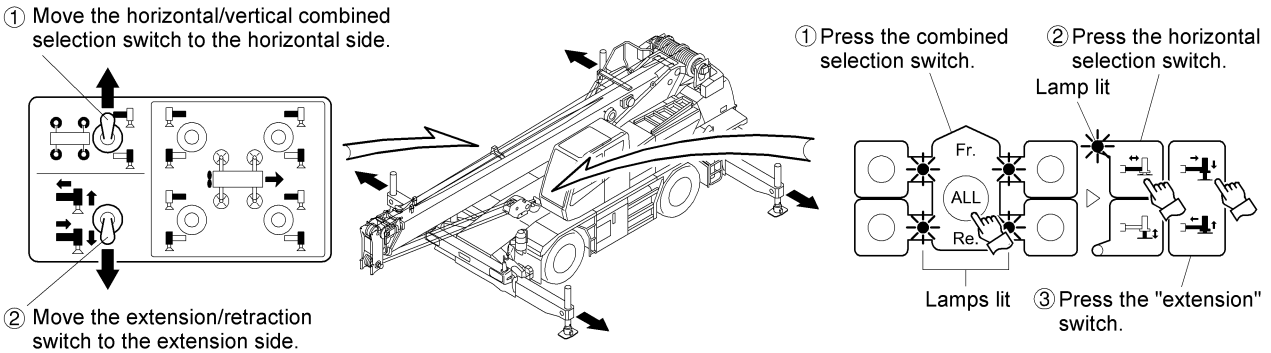
- If the crane position is in a boom length and boom angle as indicated on the capacity chart for pick and carry operation.
- If the ACS boom operation status is set to "jib setting".

(2) Extract all four stopper pins from the outriggers.



611A-01070E

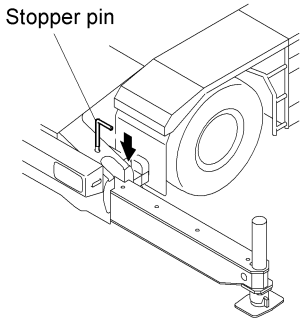
(3) Extending the four outrigger beams



611A-01080E

1) Extend the outrigger beams as far as the marks for the desired length (full or intermediate extension). When each outrigger beam reaches the desired length, release the extension/retraction switch.

2) Insert the stopper pin into each outrigger and confirm the extension length.



611A-01090E

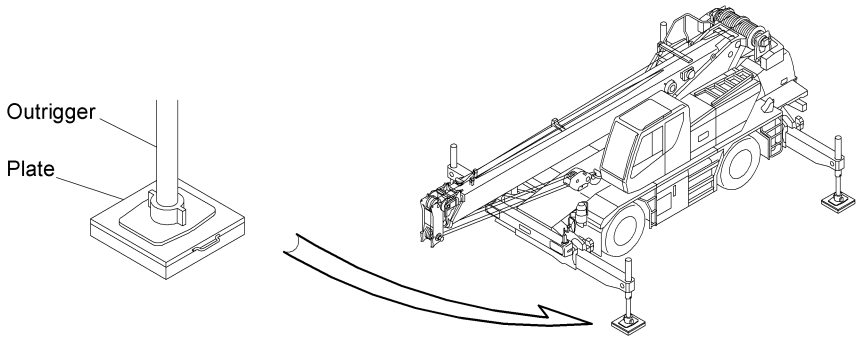
NOTE

If you cannot insert the stopper pin properly, use the extension/ retraction switch to "extend" or "retract" the outriggers repeatedly until the pin has been inserted firmly.

NOTE

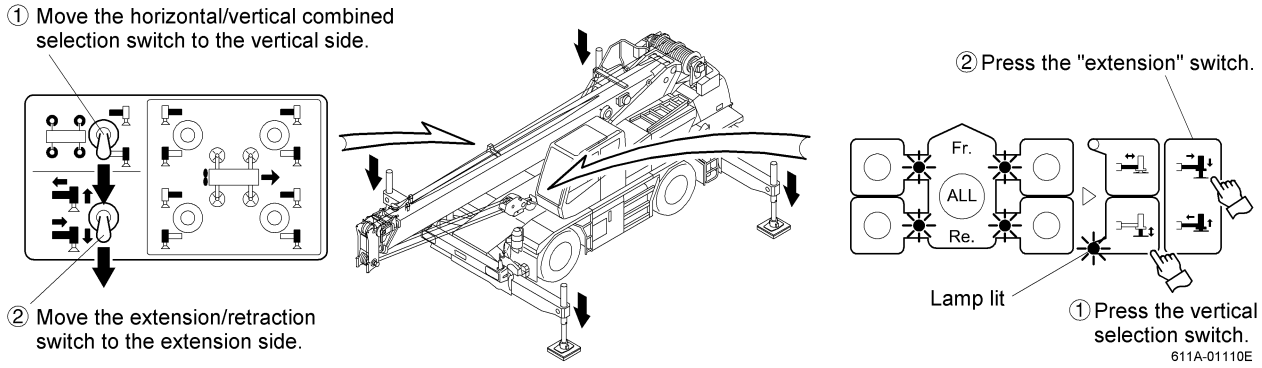
When you operate the outriggers from the operator's seat, adjust the engine speed with the accelerator pedal to keep a suitable speed of operation.

3) Place the outrigger floats on the plates.



611A-01100E

(4) Vertical cylinder extension



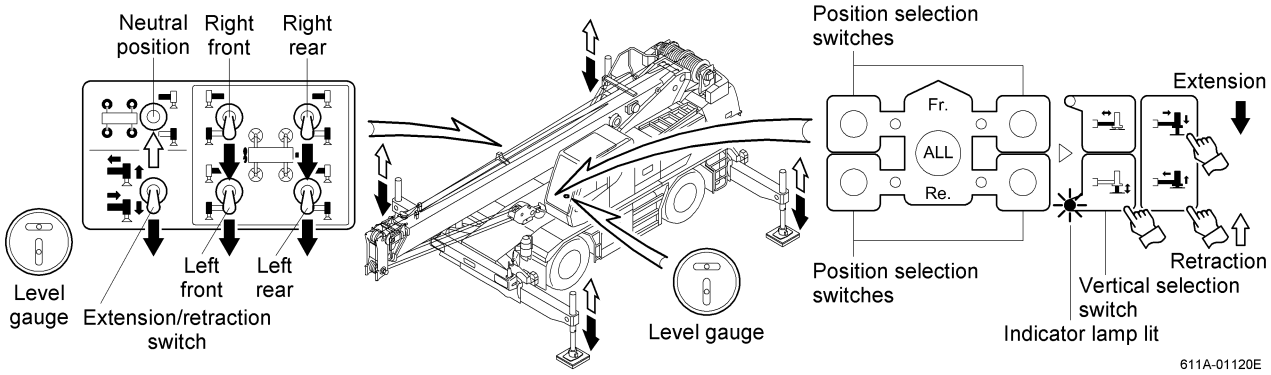
⚠ WARNING

- After you extend the vertical cylinders, check that there are no dangers such as sinking of the outrigger floats or crumbling of the road shoulder.
- After you extend the vertical cylinders, return all switches to their neutral positions to avoid accidentally retracting the outrigger beams.
- Check that four tires are not touching the ground.

(491A-0048-1E)

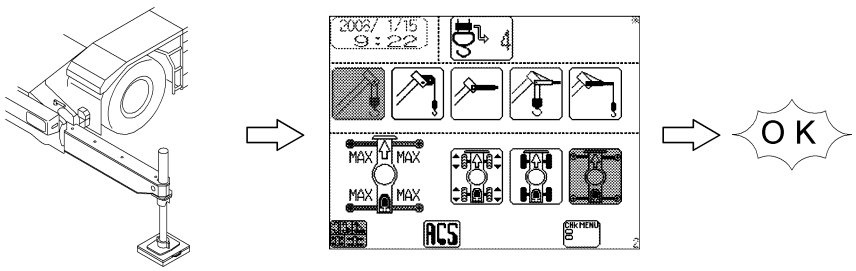
(5) Leveling the body

Watch the level gauge to level the body with as few operations as possible.



⚠ WARNING

- The data for each outrigger extension widths is set to the ACS automatically, but always insert the stopper pin into each outrigger beam and check the extension widths.
- Check that the positions of the stopper pins match the outrigger status shown on the ACS display, then set the "outrigger status" on the "working status setting screen".

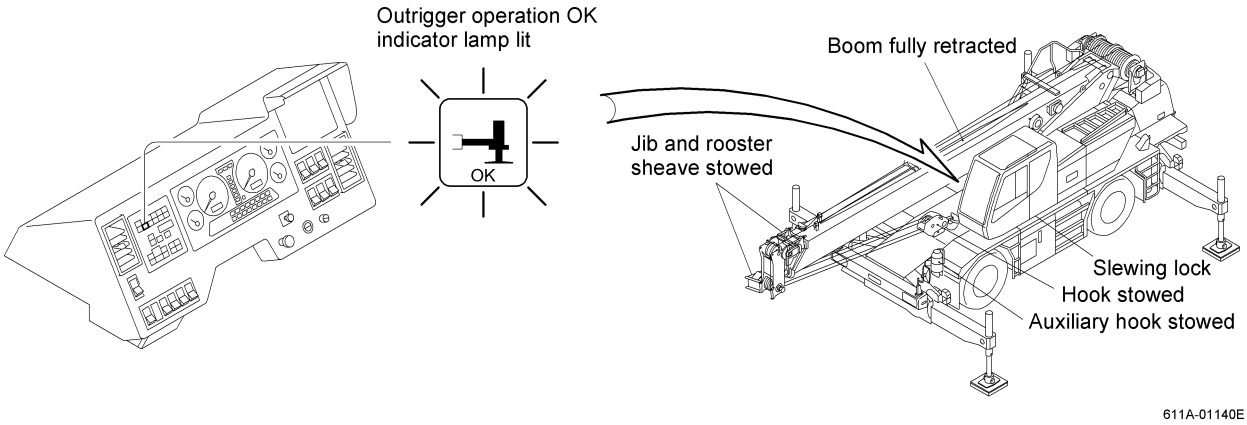


(511A-0052-0E)

https://truckmanualshub.com/

16-5-2 Outrigger stowage procedure (061A-0080-3E)

When you are going to stow the outriggers, always set the superstructure to the driving position as shown in the diagram below.

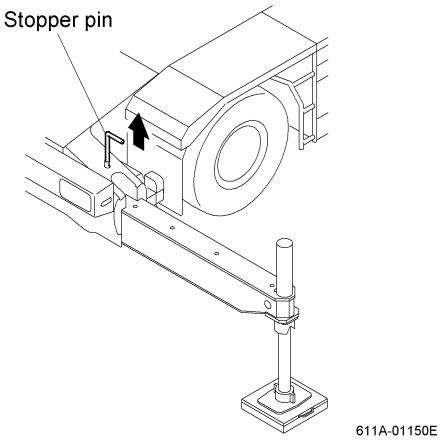


(1) Check that the outrigger operation OK indicator lamp is lit.

Conditions for lighting

- If the crane position is in a boom length and boom angle as indicated on the capacity chart for pick and carry operation.
- If the ACS boom operation status is set to "jib setting".

(2) Extract all four stopper pins from the outriggers.

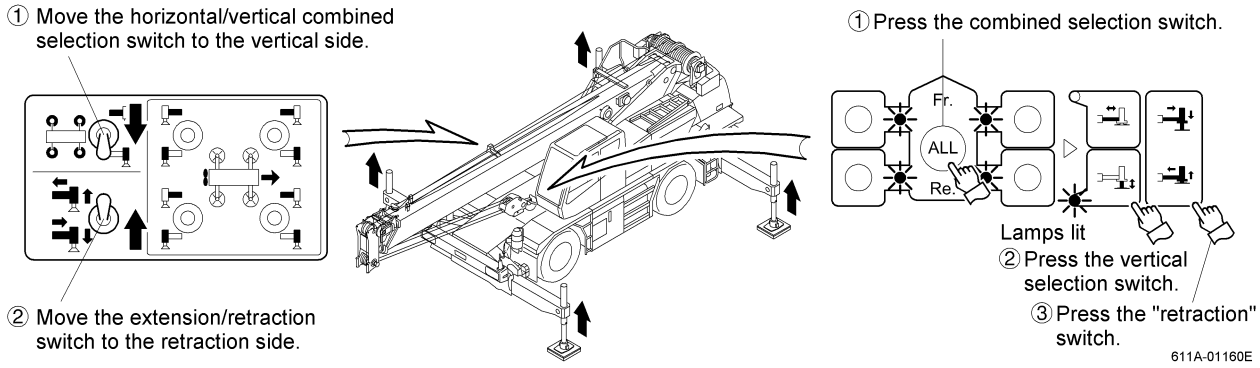


> ⚠ CAUTION
>
> If you cannot take an outrigger stopper pin out, retract the vertical cylinder first. Once it is fully retracted, extend (or retract) the outrigger beam until you can take the pin out.

(591A-0089-1E)

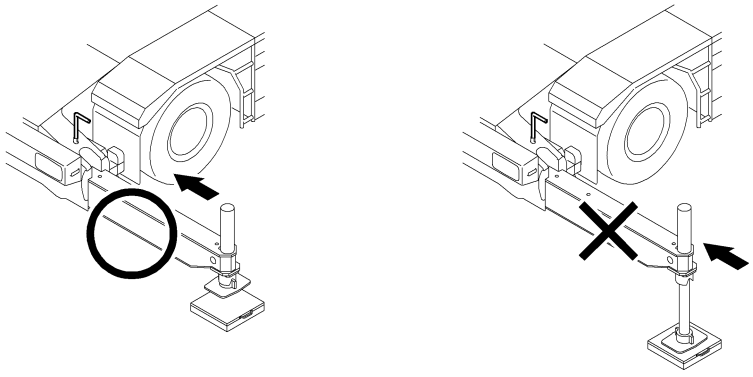
(3) Vertical cylinder retraction

Move the selection switch to the vertical side and the extension/retraction switch to the "retraction" side to retract the vertical cylinders fully.



⚠ WARNING

Do not retract the outrigger beam while the vertical cylinder is extended.



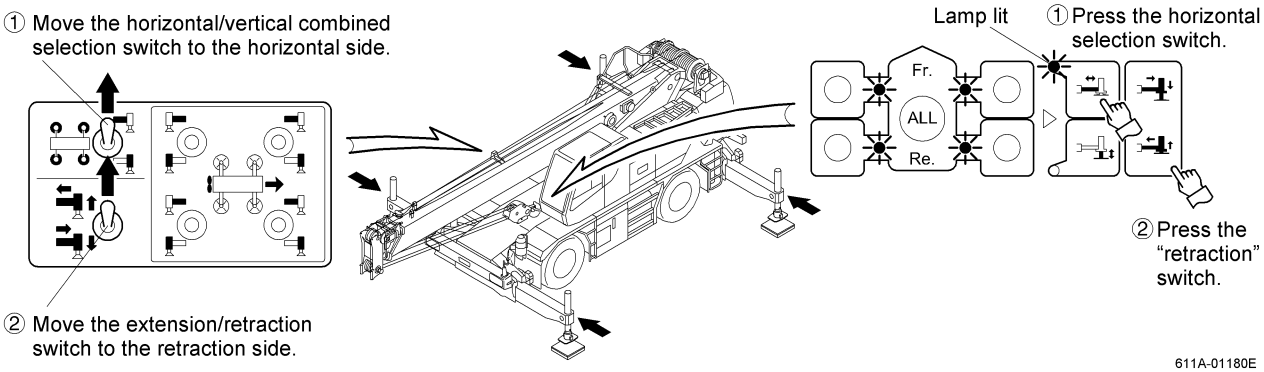
(541A-0183-1E)

(4) Outrigger beam retraction

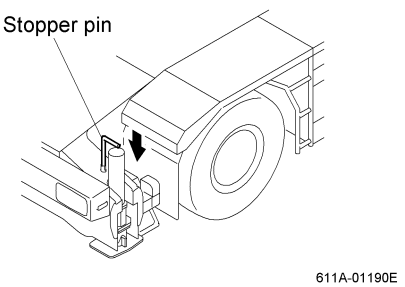
1) Check that the vertical cylinders are fully retracted, then move the selection switch to the horizontal side.

2) Move the extension/retraction switch to the "retraction" side to retract the outrigger beams fully.

3) Check that all outrigger beams are fully retracted.



(5) After you have confirmed that the outriggers are fully retracted, insert all four stopper pins.



https://truckmanualshub.com/

16-6 Stowing and releasing the main hook (541A-0188-1E)

Before driving, always stow the main hook on the frame. (Driving on the roads is permitted only when the hook is in this state.)

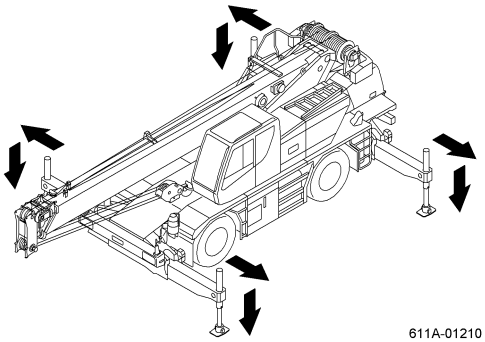
If you drive with the hook hanging unstowed, you could cause an accident for the following reasons.

(1) The swinging hook could obstruct another vehicle.

(2) If you stop the machine suddenly, the boom could be extended by inertia.

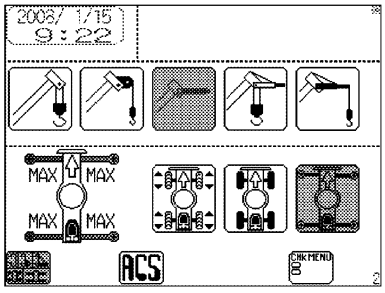
16-6-1 Hook releasing procedure (611A-0038-0E)

(1) Fully extend the four outriggers and confirm that the ACS outrigger status display matches the actual outrigger status.



611A-01210

(2) Set the ACS working status to "jib setting".



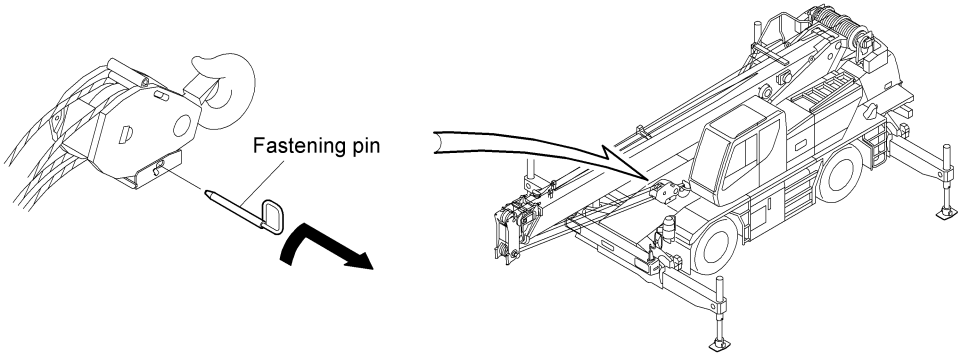
611A-01220

⚠ WARNING

- Always refer to the separate "ACS instruction manual" for ACS operation.
- When "jib setting" is set to the ACS, the overhoisting detector is disabled, so work with extra attention to the position of the hook.

(541A-0189-1E)

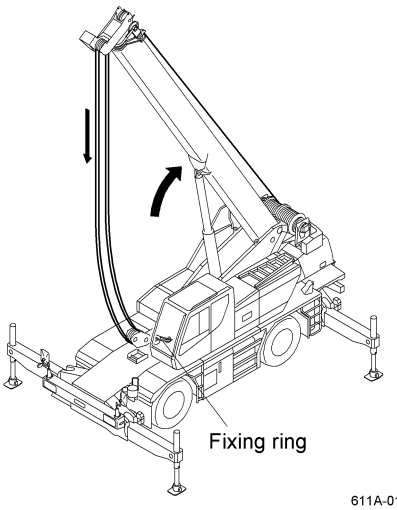
(3) Remove the hook fastening pin.



611A-01730E

https://truckmanualshub.com/

(4) Set the main winch switch to the "ON" position and move the right control lever to the "derricking" side and "lowering" side simultaneously to derrick the boom so that the hook can be released from the hook fixing ring.

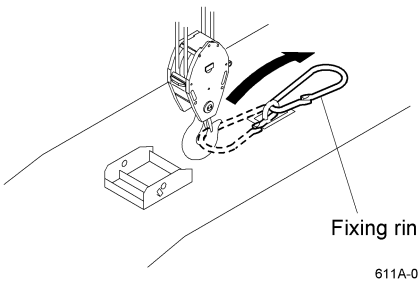


611A-01230E

> ⚠ CAUTION
>
> - When lowering the main winch, take care not to lower the wire rope further than necessary. The wire rope could get tangled on the drum.
> - When derricking the boom, take care that the wire rope does not get too tightened.

(491A-0054-0E)

(5) Release the main hook from the fixing ring and stow the ring.



611A-01240E

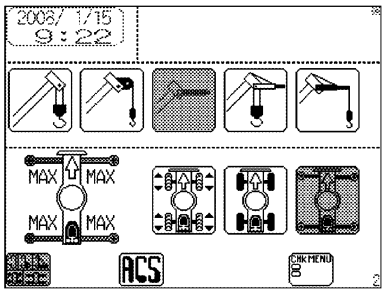
(6) Set the ACS boom operation status to "boom operation".

https://truckmanualshub.com/

16-6-2 Hook stowing procedure (611A-0039-0E)

(1) Extend the four outriggers to the intermediate extension position or more and confirm that the ACS display matches the actual outrigger status.

(2) Set the ACS working status to "jib setting".



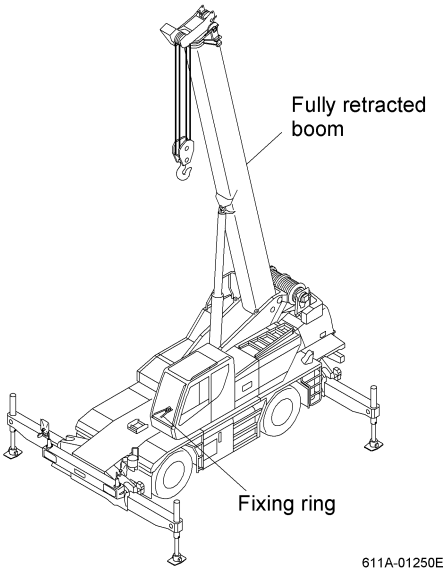
611A-01220

⚠ WARNING

- Always refer to the separate "ACS instruction manual" for ACS operation.
- When "jib setting" is set to the ACS, the overhoisting detector is disabled, so work with extra attention to the position of the hook.

(541A-0189-1E)

(3) Fully retract the boom and move the hook so it is directly above the fixing ring.



611A-01250E

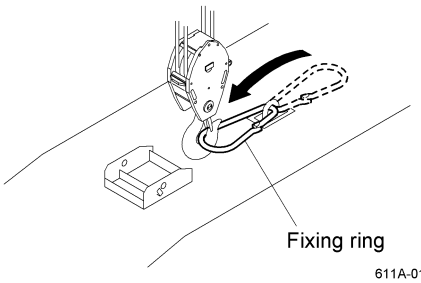
(4) Lower the winch so that the hook can be hooked into the fixing ring.

⚠ CAUTION

Take care that the hook does not touch the cab.

(491A-0057-0E)

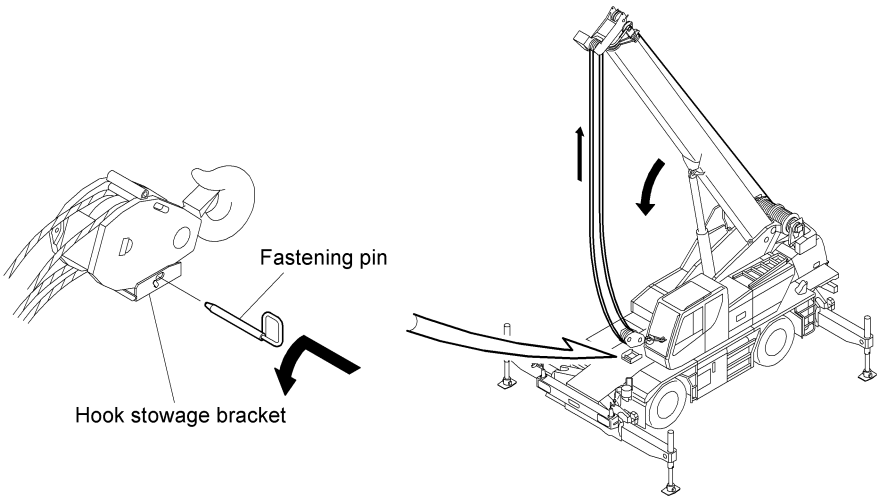
(5) Hook the hook into the hook fixing ring.



611A-01260E

https://truckmanualshub.com/

(6) Set the main winch switch to the "ON" position and move the right control lever to the "hoisting" side and "lowering" side simultaneously to lower the boom to the level.



611A-01270E

> **⚠ CAUTION**
>
> - Take care that the wire rope does not get tangled on the drum.
> - At this time, take care that the wire rope does not get too tightened.
>
> If excessive tension is applied to the wire rope, the automatic function will work.

(541A-0192-1E)

(7) Before driving on the roads after stowing the hook, set the machine in the driving position.

(8) Stow the four outriggers and insert the stopper pins to check that the outriggers are stowed completely.

(9) Set the PTO switch to the "OFF" position.

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17. Crane operation without outriggers (541A-0193-0E)

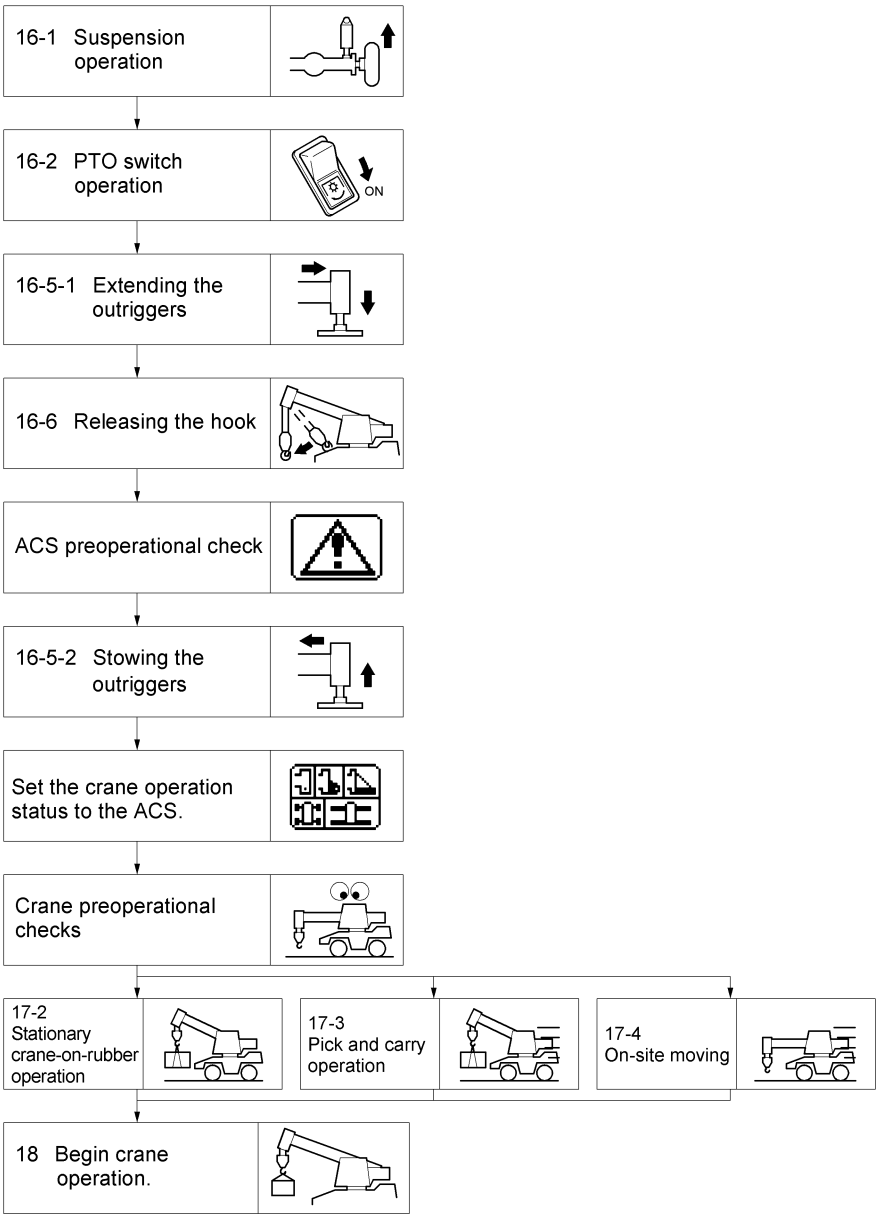
(1) Preparations for crane operation

Before starting crane operation, always follow the procedure below to change the machine's position from driving condition to a position suitable for crane operation.

⚠ CAUTION

The ACS preoperational check should be conducted when all outriggers are fully extended for maximum safety. If you will not be able to fully extend the outriggers in the actual work site, move to a more spacious area first, extend the outriggers fully and conduct the ACS preoperational check.

(491A-0078-1E)



611A-01280E

⚠ WARNING

Always follow the specified procedure and precautions strictly to set the machine in its working configuration before you start crane operation.

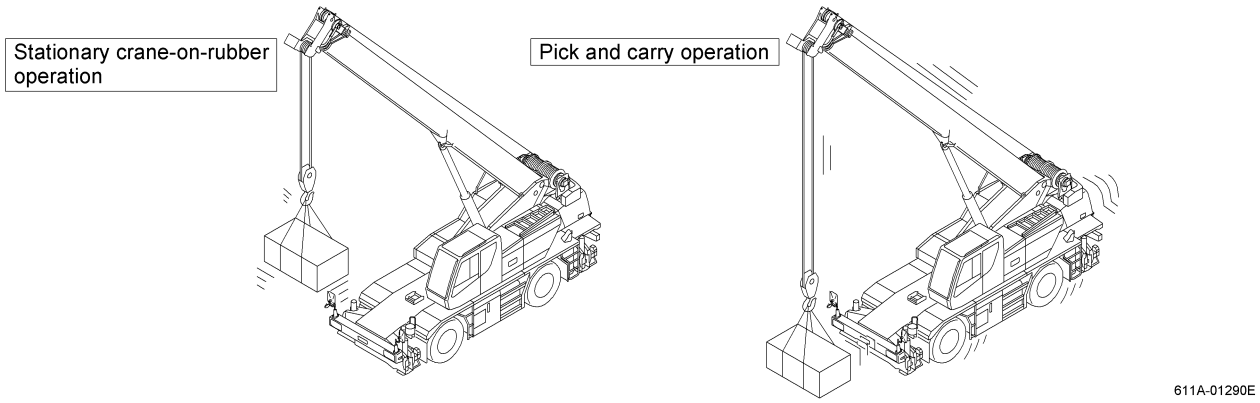
Crane operation with the crane in an incorrect position could cause severe accidents.

(541A-0172-0E)

https://truckmanualshub.com/

17-1 Precautions on crane operation without outriggers (541A-0194-1E)

In addition to normal crane operation with the outriggers set, this machine can perform some lifting tasks (stationary crane-on-rubber operation and pick and carry operation) without using the outriggers.



When the crane works without the outriggers, the tires must serve a substitute for the outriggers. However if the suspension lock cylinders which support the tires are not fully retracted (suspension locked) or if the tire pressure is below the rated value (900kPa (9kgf/cm^2)), they will not function adequately in place of the outriggers and crane operation without outriggers will not be possible.

- If the outriggers are not used, the working area or the lifting capacity differs greatly from those when the outriggers are used. Check the relevant rated lifting capacity chart before you start work.
- The crane's lifting capacity depends on the crane body being level, even when the outriggers are not used. However it is difficult to keep the body level without the outriggers, so be sure to choose a working area which is firm and level.

⚠ WARNING

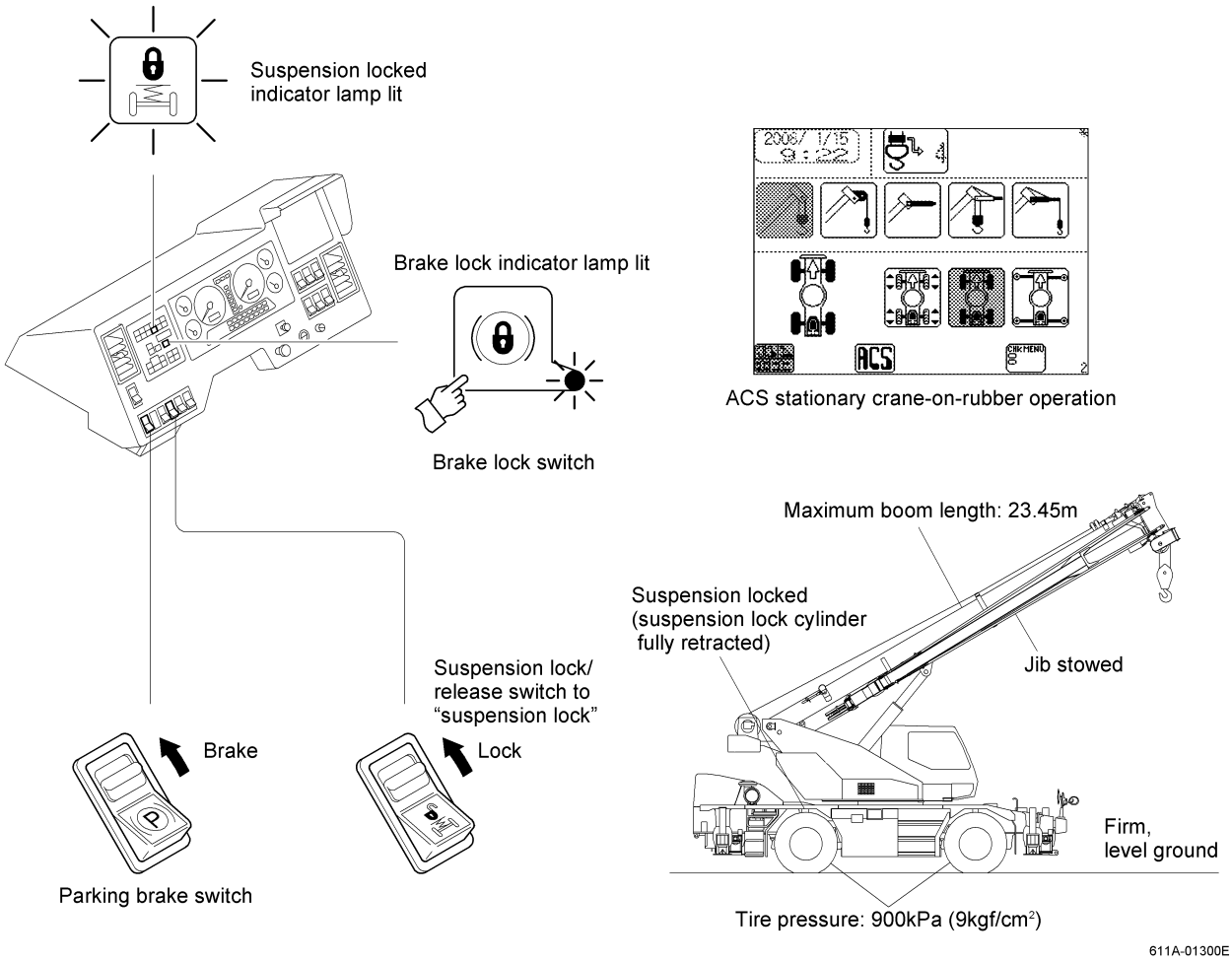
When the outriggers are not in use, any of the faults listed below can cause the crane to lose stability and tip over during any kind of operation, even if there is no suspended load.

- If the suspension lock cylinders are not locked.
- If the tire pressure is below the rated pressure in any tire.
- If the body is not level.
- If the crane moves beyond its specified range of operation.
- If the boom status is not as specified.
- If the ACS is not set correctly.

(541A-0195-0E)

17-2 Stationary crane-on-rubber operation (511A-0028-0E)

(1) Conditions for stationary crane-on-rubber operation



1) Maximum boom length: 23.45m
2) Suspension locked (suspension lock cylinders fully retracted)
3) Tire pressure: 900kPa (9kgf/cm^2) (same pressure as for driving)
4) Determine the boom status, working area and rated lifting capacity with reference to the rated lifting capacity chart for stationary crane-on-rubber operation.
5) Apply the parking brake and the brake lock at the same time.

⚠ WARNING

- When the pressure in the compressed air tank falls while the brake lock is in use and the foot brake cannot operate, a buzzer will sound. Before you are going to use the foot brake again, you must raise the engine speed to recharge pressure in the tank to the rated level.
- Do not use the brake lock when the engine is not running or when the crane is not in use and in any case never use it for more than one hour. Do not leave the machine unattended while the brake lock is in use.

(541A-0197-1E)

https://truckmanualshub.com/

(2) Procedure for stationary crane-on-rubber operation

1) Recheck the working area.

Check again that the ground in the area where you are going to perform stationary crane-on-rubber operation is firm and level.

If the ground is crumbly or muddy, stationary crane-on-rubber operation will not be possible there.

2) Recheck the rated lifting capacity chart.

Recheck the rated load, boom length and other conditions for the stationary crane-on-rubber operation and perform according to the values in the relevant rated lifting capacity chart.

3) Recheck the tire pressure.

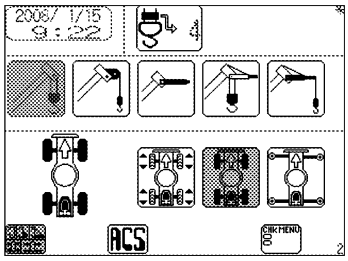
4) Lock the suspension.

5) Set the ACS working status.

Set the "stationary crane-on-rubber operation" on the "working status setting screen".

Any mistake in setting the ACS working status can be extremely dangerous.

6) When you have finished setting the ACS working status, proceed with crane operation.



ACS stationary crane-on-rubber operation

611A-01310E

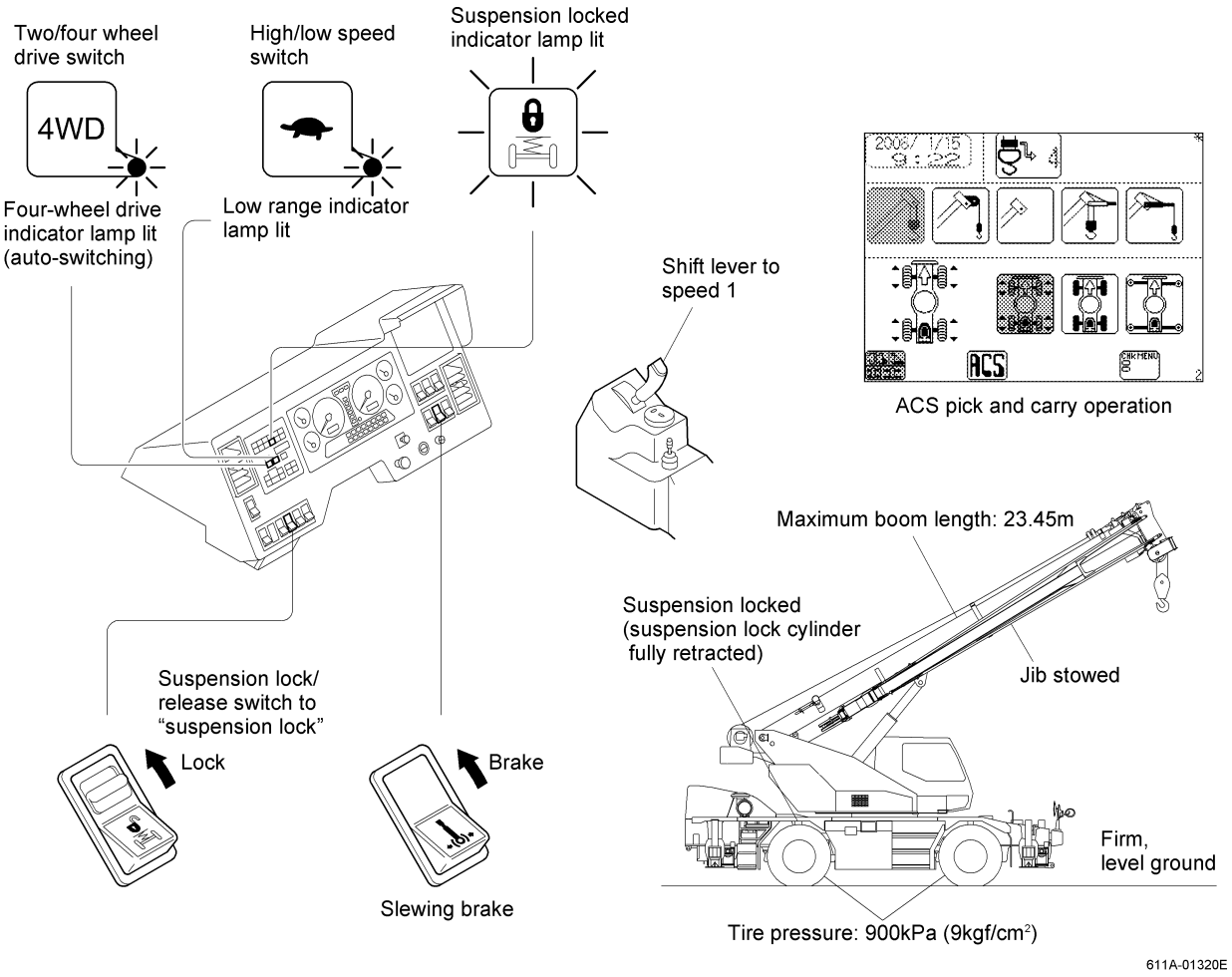
> ⚠ CAUTION
>
> In stationary crane-on-rubber operation in contrast to other operations which use the outriggers, the body of the crane is supported by the tires. This increases the amount of deflection and distortion, making this an unstable and hazardous operation. Observe the specified conditions strictly and work slowly and cautiously.

(541A-0198-1E)

https://truckmanualshub.com/

17-3 Pick and carry operation (511A-0029-0E)

(1) Conditions for pick and carry operation



(2) Procedure for pick and carry operation

Pick and carry operation involves traveling around a site while a load is suspended from the crane. The surface you travel on can change and cause instability which is highly hazardous. If traveling on an uneven surface causes the load to swing, the danger is exacerbated.

Therefore great caution is required, over and above strict observance of the conditions for the operation. Take adequate precautions, trying to foresee dangers, keeping all other personnel away from the crane and posting guides to supervise the operation.

⚠ WARNING

- Choose a path for pick and carry operation which is firm, level and without major irregularities.
- Never change the direction during pick and carry operation.
  Choose a path which will allow you to move in a continuous straight line.
- Keep the load close to the ground.
- All crane operations are forbidden during traveling.
  Always bring the machine to a complete stop before making any crane operations.
- Sudden braking and sharp steering while in motion will cause the suspended load to swing dangerously.

(541A-0200-2E)

https://truckmanualshub.com/

1) Recheck the working area.

   Check again that the ground in the area where you are going to perform pick and carry operation is firm and level.

   If the ground is crumbly or muddy, pick and carry operation will not be possible there.

2) Recheck the rated lifting capacity chart.

   Recheck the rated load, boom length and other conditions for the pick and carry operation and perform according to the values in the relevant rated lifting capacity chart.

3) Recheck the tire pressure.

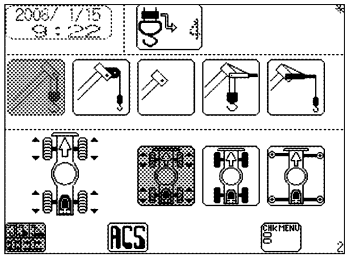
4) Lock the suspension.

   Lock the suspension with the cylinders fully retracted.

5) Set the ACS working status.

   Set the "pick and carry operation" on the "working status setting screen".

   Any mistake in setting the ACS working status can be extremely dangerous.



ACS pick and carry operation

611A-01330E

6) Apply the slewing brake to immobilize the superstructure.

7) Use the high/low speed switch on the switch panel to select "low range" and move the shift lever to speed 1.

8) When you have finished setting the ACS working status, proceed with crane operation.

> ⚠ CAUTION
>
> Crane operation while in motion is forbidden. If you must lift the load just off the ground and clear any irregularities on the ground surface, stop the crane, apply the parking brake and hoist the load sufficiently to avoid any obstacles.
>
> If this operation leaves the load hoisted a long distance above the ground, lower it back down close to the ground as soon as possible.

(541A-0201-2E)

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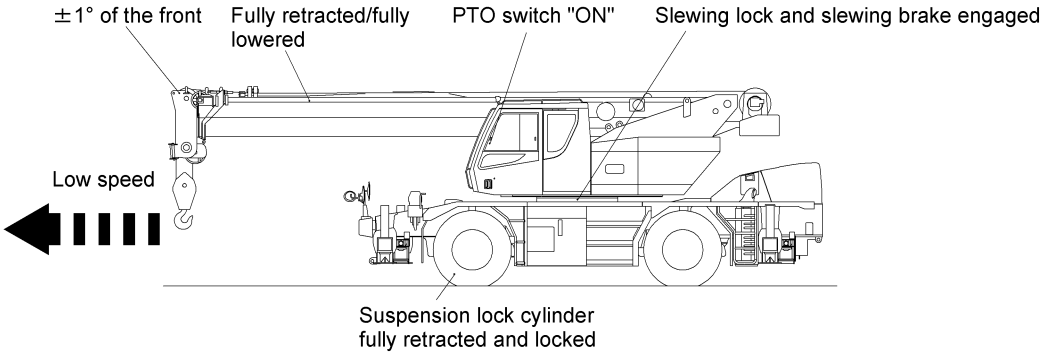
17-4 On-site moving (541A-0202-0E)

Always observe the following points when moving within a site to change working positions.

> **⚠ WARNING**
>
> Driving on public roads is not permitted when the machine is configured for on-site moving.
> Return the machine to the on-road moving configuration before driving on public roads.

(541A-0203-1E)

(1) Crane status: Driving mode (boom fully retracted, lowered and facing within ±1° of the front, and outriggers stowed)
(2) Suspension: Suspension cylinders fully retracted and secured in locked position
(3) PTO switch: ON position
(4) Slewing table: Slewing brake engaged and slewing lock in use
(5) Driving peed: Low speed



611A-01340E

> **⚠ WARNING**
>
> - Moving within a site to change working positions is within the scope of crane operations. Therefore, even if it involves driving, leave the suspension locked and the PTO switch "ON" as well.
> - If the machine is moved with the suspension unlocked (on-road driving) or the PTO switch "OFF", the operator may forget to fully retract the suspension at the next working position. Therefore, be sure to lock the suspension in the fully retracted position before starting work at the next position.

(541A-0204-1E)

https://truckmanualshub.com/

18. Crane operation (1610-0030-1E)

This crane is reasonably simple to operate, but even small slips can cause major accidents, so always work steadily one step at a time.

18-1 Preparations for crane operation (4210-3246-0E)

18-1-1 Preparations before operating the crane (611A-0040-0E)

(1) Move the crane to the firm ground. Fully retract the suspension lock cylinders to lock the suspension.

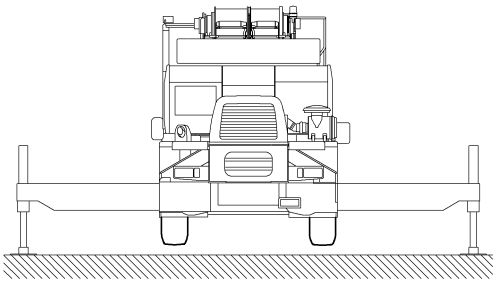
(2) Set the PTO switch to the "ON" position.

The ACS will begin its self-diagnostic process at that point.

(3) Outrigger setting

1) Use the outriggers to set the crane in a level position. As a rule, fully extend all outriggers as far as possible when leveling the crane and inset the stopper pins in each outrigger to check the extension width.

2) Check that all tires are lifted off the ground.



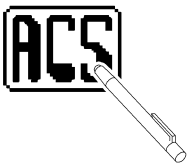
611A-01350

(4) ACS setting

1) Set the outrigger setting status that corresponds to the outrigger extension width on the working status setting screen.

2) Set the boom status that corresponds to the boom operation status on the working status setting screen.

3) Press the ACS display switch to complete the ACS setting.

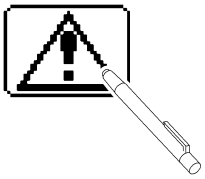


611A-01360

(5) Perform the ACS preoperational check procedure.

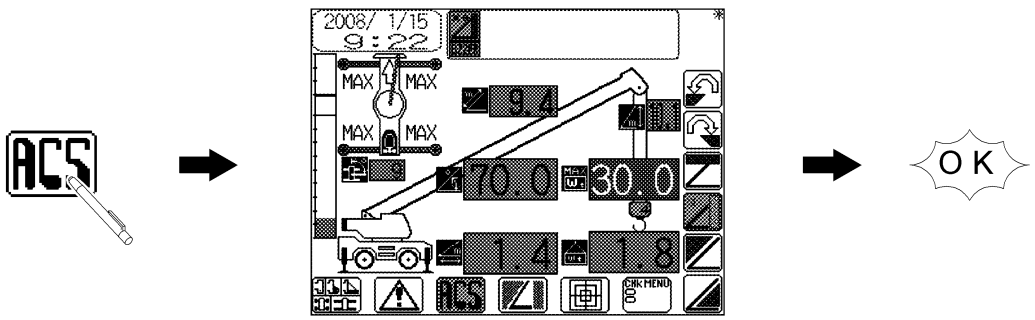
Be sure to perform the ACS preoperational checks before starting crane operations.

1) Press the function switch to display the ACS preoperational check screen. Check that the ACS is working correctly.



511K-01000

2) After inspection, return the display to the ACS screen.



Check the outrigger setting status and boom operation status

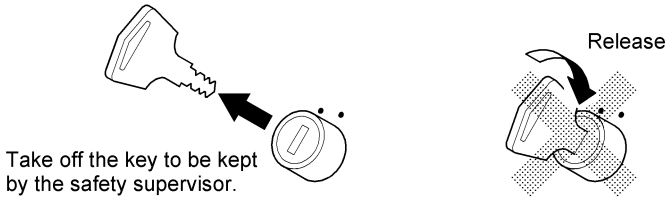
611K-00440E

(6) Confirming that the key is removed from the ACS emergency switch

Confirm that the key is not in the ACS emergency switch on the front panel. This switch is provided to avert possible danger in an emergency of the ACS system. Therefore, give the key to the safety supervisor when on the work site.

⚠ WARNING

The ACS emergency switch is only used to take emergency action to avoid a serious accident. Before crane operation, take the key off the switch and it must be kept by the safety supervisor. If the ACS emergency switch is set to the"release" position intentionally when operating the crane, the crane tipping over or other serious accident can be caused.

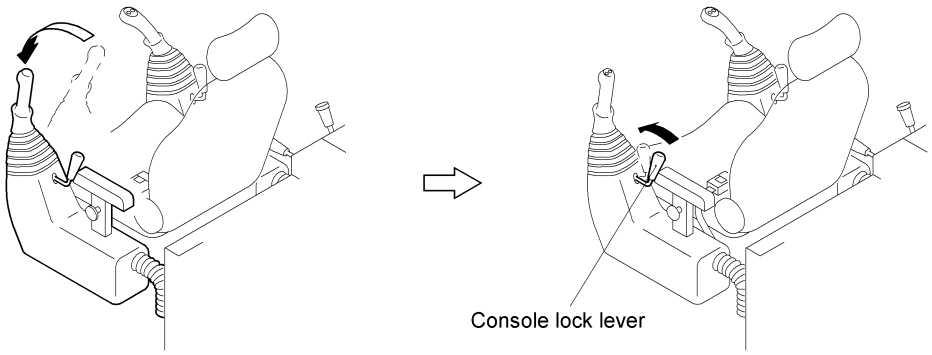


591A-00740E

(541A-0157-0E)

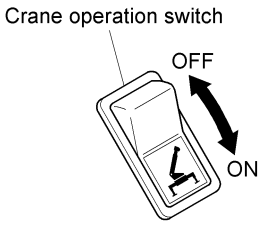
(7) Lever position

Sit in the operator's seat and lock the console lock lever to set it to the working position.



611A-01370E

(8) Set the crane operation switch to the "ON" position.



4210-33060E

⚠ WARNING

The crane is automatically stopped when the left console is tilted (raised), so there will be no response to movement of the crane control levers, prdals etc.

(611A-0073-0E)

https://truckmanualshub.com/

18-1-2 Precautions when operating the crane (611A-0041-0E)

(1) While operating the crane, pay attention to the ACS display status, the illumination status of the safety level bar graph, the sound alarms, and voice alarms. In particular, it is necessary to be especially cautious during slewing operations. Slewing is not stopped automatically.

(2) If the ACS automatically stops the crane motion, immediately take measures to avoid the danger, such as by raising the boom, retracting the boom, lowering the load, or reversing the slewing direction.

(3) If an error code is shown on the ACS auxiliary display, perform an inspection of the problem and contact your authorised KATO dealer if the error cannot be resolved.

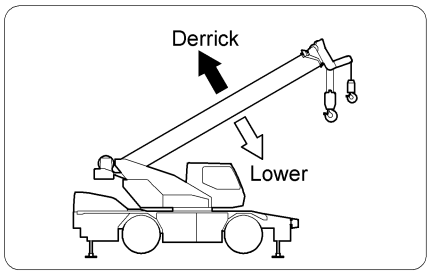
(4) Strictly observe the ACS operating precautions noted in the section 14-3-3.

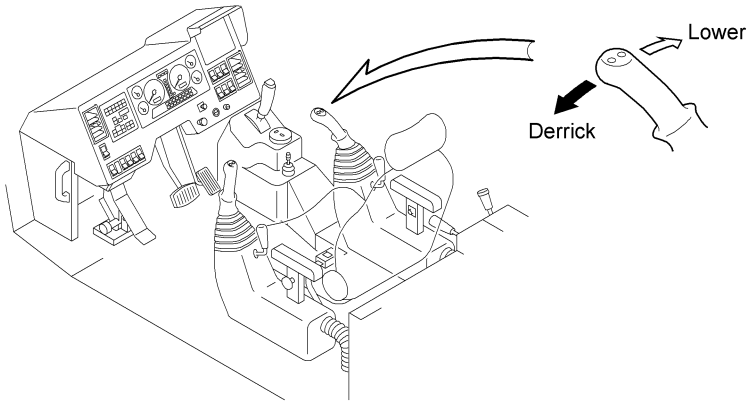
https://truckmanualshub.com/

18-2 Boom derricking and lowering (4210-3247-0E)

⬆ : Set the crane operation switch to the "ON" position and push the right control lever left to derrick the boom.

⇩ : Set the crane operation switch to the "ON" position and push the right control lever right to lower the boom.

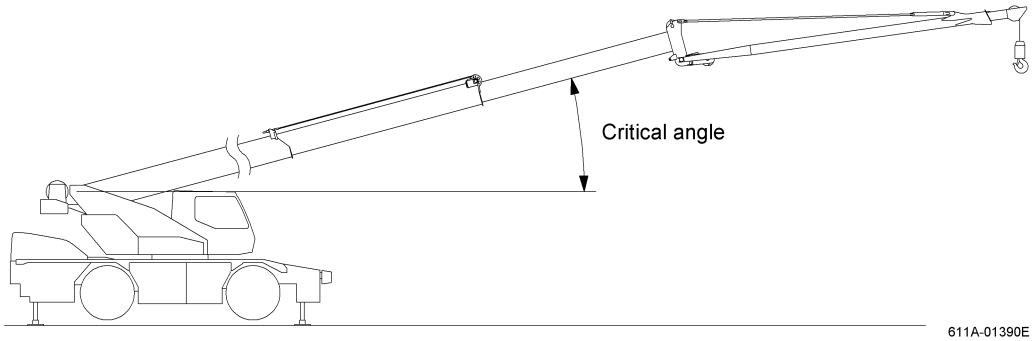




611A-01380E

⚠ WARNING

When the boom is long or the jib fitted, the crane will tip over if the boom is lowered below the critical angle even if there is no suspended load. Refer to Service data to find the critical angle.



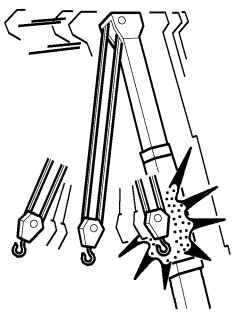
611A-01390E

(4210-0039-1E)

⚠ CAUTION

Precautions on derricking and lowering the boom

- Work the lever gently.
  Sudden lever operation causes strong shocks in the structure of the crane, particularly when a load is suspended, so work with care.
- The working radius increases as the boom lowers, possibly causing an overload which could tip the crane, so proceed with caution.
- Never try to drag a load sideway or toward the crane by derricking the boom.
- Rapid, careless derricking and lowering of the boom causes the hook to swing and strike the underside of the boom, making dents and deformation which harm the boom. Be particularly careful when the boom angle is large and when the hook is close to the boom top.



5010-00400

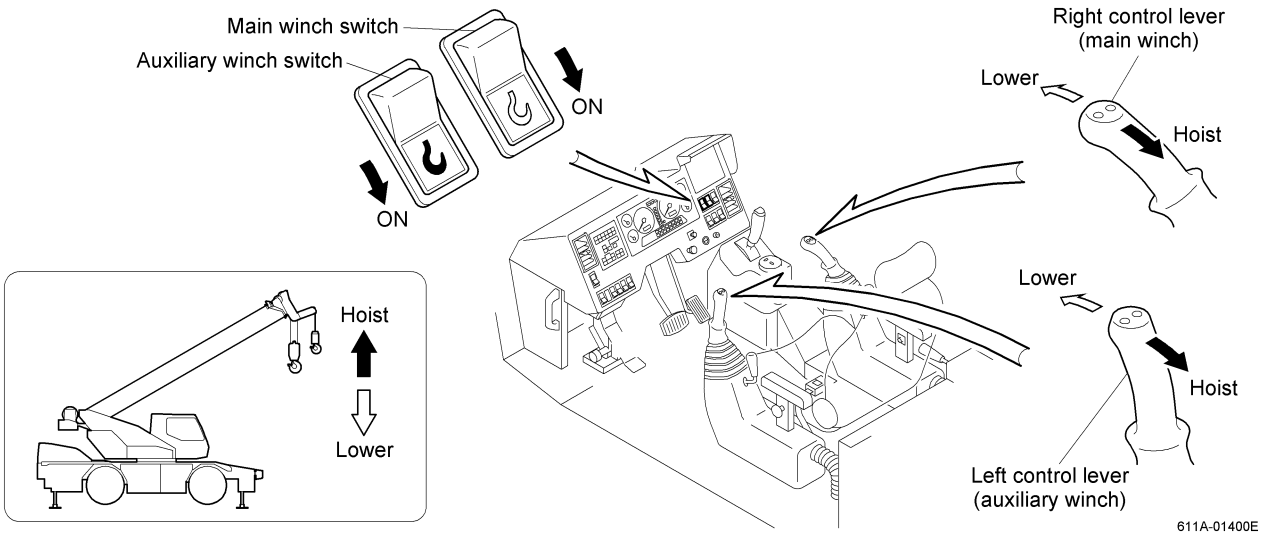
(4210-0040-0E)

https://truckmanualshub.com/

18-3 Hoisting and lowering (611A-0077-0E)

⬆ : Set the crane operation switch and main or auxiliary winch switch to the "ON" positions and pull the right or left control lever backward to wind up the winch.

⇩ : Set the crane operation switch and main or auxiliary winch switch to the "ON" positions and push the right or left control lever forward to lower the winch.



(1) Set the crane operation switch to the "ON" position.

(2) When operating the main winch, set the main winch switch to the "ON" position.

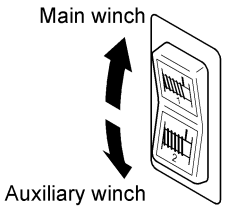
(3) When operating the auxiliary winch, set the auxiliary winch switch to the "ON" position.

(4) Use each winch lever to hoist or lower.

When you return each winch lever to neutral, the automatic brake device automatically applies the brake.

(5) Drum rotation detector switch

The rotation of the winch drum which is selected by this switch is detected during winch operation and a buzzer will sound to indicate that the winch drum is rotating.



NOTE

The buzzer sound is the same for hoisting and lowering.

NOTE

The buzzer sound becomes faster the faster the drum rotates.

When the drum speeds up further, the buzzer sounds continuously and then dies away.

⚠ WARNING

- When the wire rope number of parts does not correspond to the boom length, the hook will not reach the ground and the winch drum can wind up the wire rope in reverse, which can cause the wire rope to be damaged or the crane to tip over.
- When hoisting from below the ground or working with a long boom, refer to the table for wire rope standard number of parts and use the adequate number of parts for the boom length with which you are working.

(4210-3249-0E)

https://truckmanualshub.com/

⚠ CAUTION

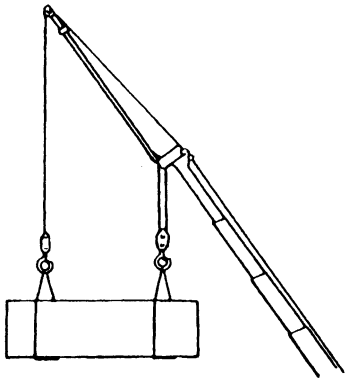
Precautions on hoisting and lowering

- Never drag a load sideways, pull it towards the crane or operate the lever violently as they are extremely dangerous to cause a serious accident.
- Never continue lowering after the hook has reached the ground as this can cause the wire rope to tangle on the drum.

(4210-3250-0E)

⚠ CAUTION

- Where it is absolutely necessary to use "joint hoisting" between the main hook and the auxiliary hook with the jib mounted, set the "boom operation status" to "jib operation" on the ACS "working status setting screen" and work at less than the rated lifting capacity of the jib.
- Further observe the safety regulations and laws of the country where the crane is used.



541A-02760

(611A-0042-0E)

NOTE

Using the flow control system, you can hoist or lower the load at a constant speed regardless of the weight of the load.

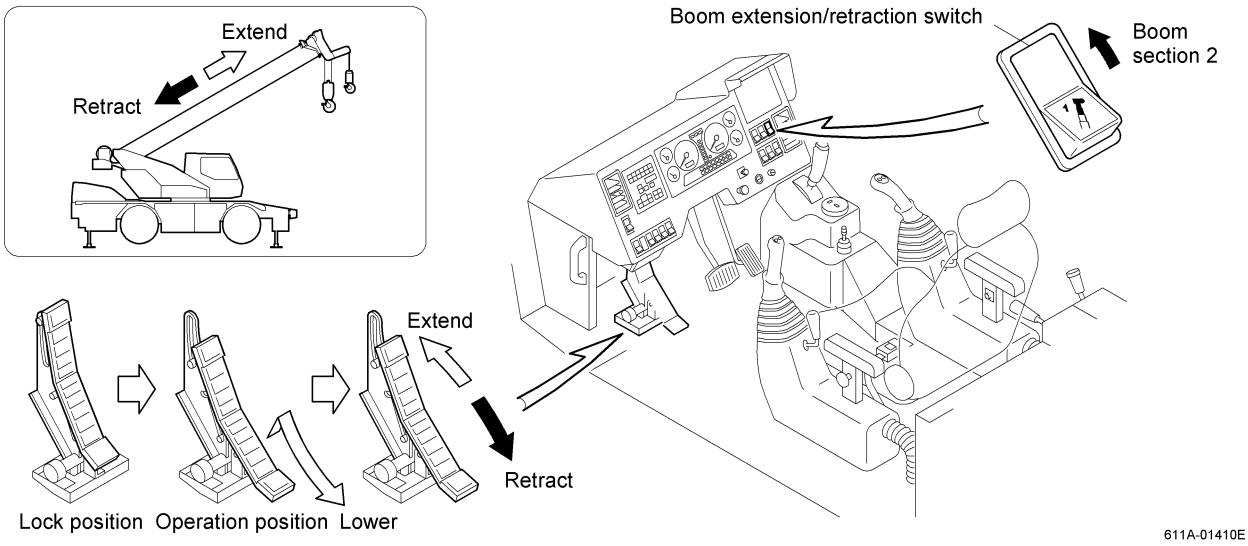
https://truckmanualshub.com/

18-4 Boom extension and retraction (4210-3251-0E)

Use the boom extension/retraction switch to select the boom extending or retracting sections.

⇧ Extend: Set the crane operation switch to the "ON" position and depress the boom extension/retraction pedal forward to extend the boom.

⬇ Retract: Set the crane operation switch to the "ON" position and depress the boom extension/retraction pedal backward to retract the boom.



18-4-1 Extension and retraction of the boom section 2 (611A-0043-0E)

(1) Extending the boom section 2

1) Set the crane operation switch to the "ON" position.
2) Set the boom extension/retraction switch to the "boom section 2" side.
3) Check that the main and auxiliary hooks are lowered sufficiently below the boom.
4) Release the lock of the boom extension/retraction pedal to move the pedal to the extension side.

(2) Retracting the boom section 2

1) Set the crane operation switch to the "ON" position.
2) Set the boom extension/retraction switch to the "boom section 2" side.
3) Check that the main and auxiliary hooks are not lowered more than necessary below the boom.
4) Release the lock of the boom extension/retraction pedal to move the pedal to the retraction side.

18-4-2 Extension and retraction of the boom sections 3 and 4 (611A-0044-0E)

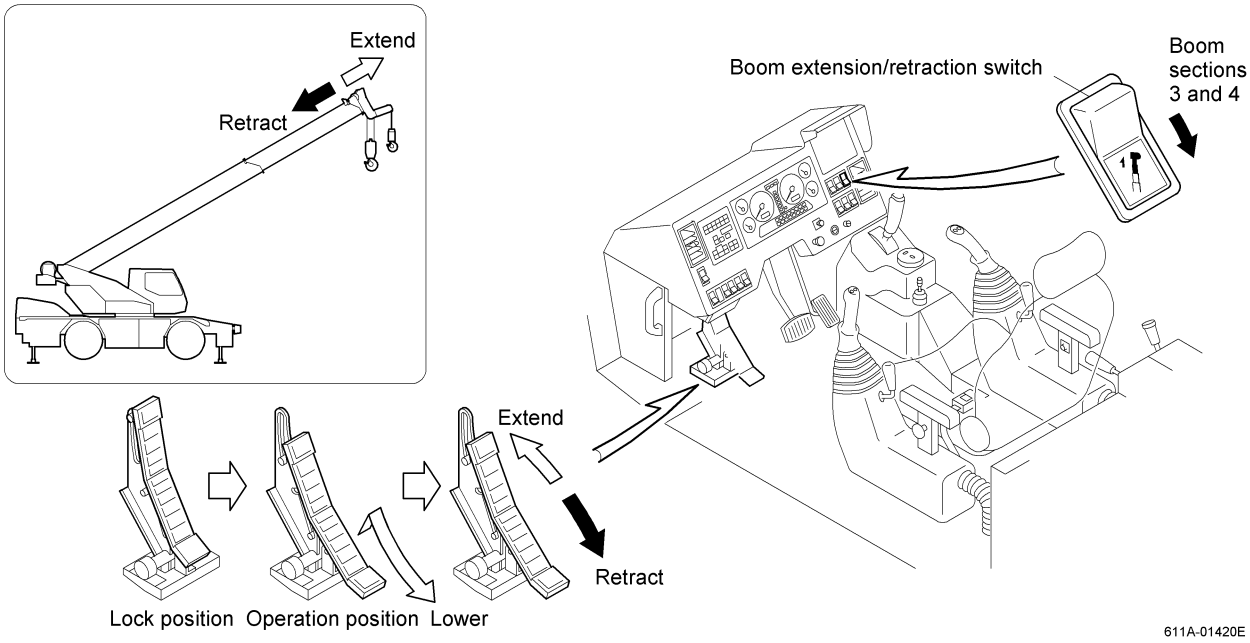
Start these operations when the boom section 2 is fully extended switching the boom extension/retraction switch to the boom sections 3 and 4 side.

⇧ Extend: Set the crane operation switch to the "ON" position and depress the boom extension/retraction pedal forward.

⬇ Retract: Set the crane operation switch to the "ON" position and depress the boom extension/retraction pedal backward.

> ⚠ CAUTION
>
> If the boom section 2 is not fully extended, the boom sections 3 and 4 cannot extend even if the boom extension/retraction switch is set to the boom sections 3 and 4 side.

(611A-0045-0E)



(1) Extending the boom sections 3 and 4

1) Set the crane operation switch to the "ON" position.
2) Fully extend the boom section 2.
3) Set the boom extension/retraction switch to the boom sections 3 and 4 side.
4) Check that the main and auxiliary hooks are lowered sufficiently below the boom.
5) Move the boom extension/retraction pedal to the extension side.

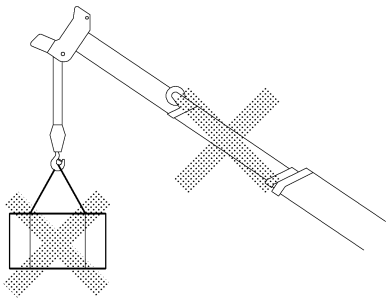
(2) Retracting the boom sections 3 and 4

1) Set the crane operation switch to the "ON" position.
2) Set the boom extension/retraction switch to the boom sections 3 and 4 side.
3) Check that the main and auxiliary hooks are not lowered more than necessary below the boom.
4) Move the boom extension/retraction pedal to the retraction side.
5) If you wish to go on to retract the boom section 2, first confirm that the boom sections 3 and 4 are completely retracted then return the pedal briefly to the neutral position before switching the boom extension/retraction switch to the boom section 2 side to retract the boom section 2.

https://truckmanualshub.com/

⚠ WARNING

When extending the boom, confirm that the boom sections 2 is fully extended before going on to extend the boom sections 3 and 4.
If you extend the only boom sections 3 and 4 and proceed to lift a load, the boom could break.
When you extend the only boom sections 3 and 4 for periodic inspection such as greasing the boom etc., do so with the outriggers fully extended and no suspended load.



541A-02820

(541A-0222-1E)

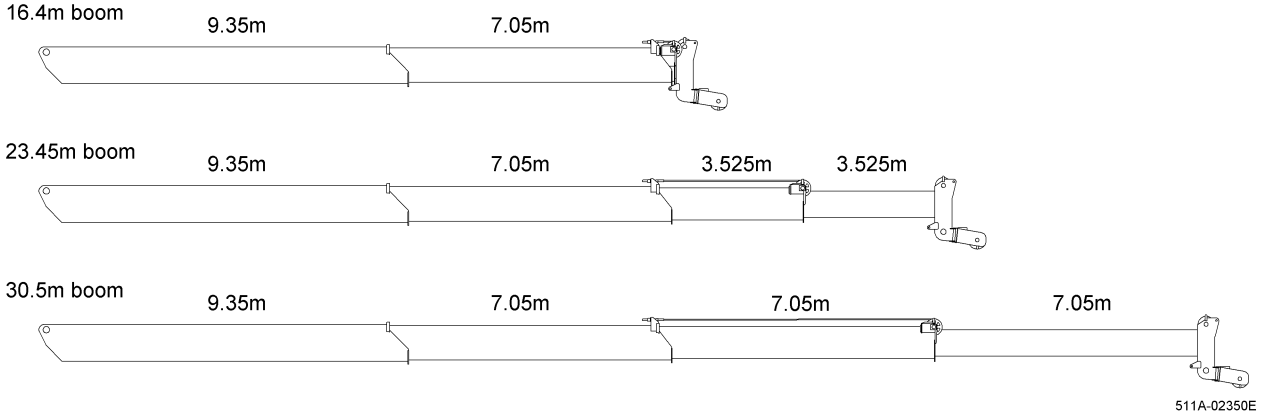
⚠ CAUTION

- If you extend or derrick the boom while the hydraulic oil is hot and then leave it to rest, the extended cylinder may retract as the oil cools. This is because the volume of oil has reduced and is not a malfunction.
  The degree of cylinder retraction depends on the amount of change in the oil temperature and the cylinder stroke position and can be as much as several percent of the cylinder's stroke. This phenomenon is most pronounced in the long telescopic cylinder or derrick cylinder and can lower the hook position, so take care to avoid problems due to this effect. Take necessary precautions in the following situations.
  (1) If you wait with a load suspended from a long boom, avoid extending the boom further than necessary and correct the boom length (extend it) from time to time.
  (2) If the boom angle is low and the load is close to the rated lifting capacity, correct the boom angle (by derricking) before the ACS alerts you to danger.
- When extending the boom, make sure the hooks are far enough below the boom top to avoid overhoisting.
- If it is not possible to retract the boom sections 3 and 4, move the boom extension/retraction emergency switch to the "release" position, set the boom extension/retraction switch to the boom sections 3 and 4 side and depress the boom extension/retraction pedal backward to retract the boom sections 3 and 4.

(611A-0075-0E)

NOTE

Extension sequence for each boom length



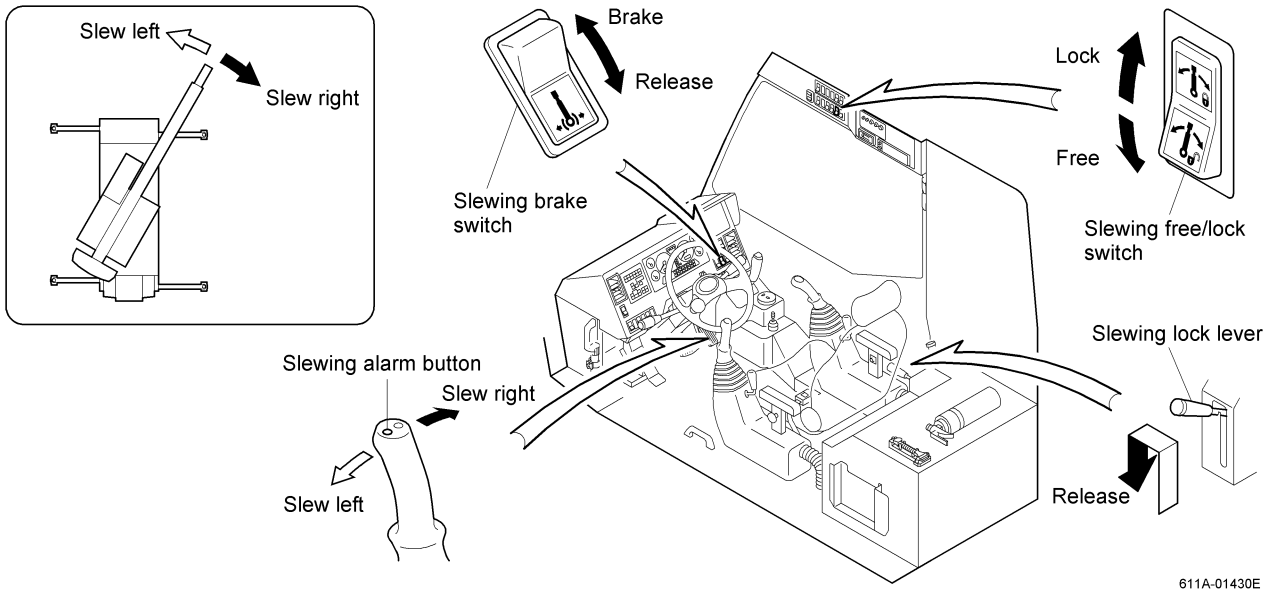
511A-02350E

https://truckmanualshub.com/

18-5 Slewing (4210-3254-0E)

⇧ : Set the crane operation switch to the "ON" position and push the left control lever left to slew the crane left.

⬇ : Set the crane operation switch to the "ON" position and push the left control lever right to slew the crane right.



(1) Set the crane operation switch to the "ON" position.

(2) Release the slewing lock lever.

(3) Set the slewing free/lock switch to free or lock as necessary for the operation to be carried out.

(4) Set the slewing brake switch to the "release" position.

(5) Press the slewing alarm button on the left control lever to sound the horn to warn nearby workers that you are about to slew the crane.

(6) Check again for safety around the crane and operate the left control lever to slew the crane right or left.

> ⚠ CAUTION
>
> Precautions when slewing
>
> - Do not use slewing to drag a load sideways.
> - Check the safety before slewing and pay attention to people and obstacles nearby while slewing.
> - When operating the crane with the outriggers at anything other than full extension, refer to the rated lifting capacity chart and work according to the applicable value in the chart.
> - If the ACS sound alarm is emitted during slewing operation, slow to a slewing speed which will allow you to stop quickly and safely at any time or stop slewing immediately and take emergency action such as reversing the slewing direction, derricking or retracting the boom, or lowering the load to the ground while watching the safety level indicator lamps until it reverts to the green zone.

(611A-0076-0E)

NOTE

During "inching" and other fine positioning movements, the slewing free/lock switch should be set to "lock", but if "lock" is in use and the slewing lever is returned suddenly to neutral, the superstructure stops suddenly, causing the load to swing and affecting the structure of the crane adversely, so work carefully in this case.

18-6 Function of the "slewing stop system" (511A-0057-0E)

When the outriggers are not fully extended, the "slewing stop system" functions by using the ACS to predict how much the crane load will increase as it slews and when the crane is about to enter a region specified in the ACS as restricted from slewing, then gently slowing the slewing movement and automatically stopping slewing before it causes a dangerous situation, such as the crane becoming overloaded or entering a restricted region. However, this system will not function properly unless it is level.

Crane status	Action of slewing stop system	Remarks
All outriggers fully extended	Slewing will not stop automatically	————
Outriggers unequally extended	＊Slewing will automatically stop	Will not stop at correct slewing position if machine is not level
All outriggers equally extended, but only partially extended or fully retracted		
Stationary crane-on-rubber or Pick and carry		
Slew-restricted region specified in ACS		

＊: Slewing may overrun and not stop at the correct position in strong winds.

(611A-0081-0E)

⚠ DANGER

When the crane is operated in the stationary crane-on-rubber or pick and carry modes, the front working area will become narrow. If the lever is operated suddenly, slewing may overrun. Consequently, if working in these modes, pay attention to the ACS safety level bar graph display and warnings and be careful to never overload the crane. Failing to use adequate caution and continuing to slew the machine when overloaded could cause the crane to tip over and result in tragic consequences.

(611A-0082-0E)

18-6-1 Slewing operations and system action (611A-0046-0E)

Actions by the "slewing stop system" depend on the crane status (when overloaded or slew-restricted region is specified in the ACS), as indicated below.

(1) Slewing control when overloaded

If the crane becomes overloaded when slewing from regions with a high rated lifting capacity (safer) to regions with a lower rated lifting capacity (more dangerous), the "slewing stop system" will function in the sequence indicated below to prevent the crane from tipping over.

1) Deceleration warning and corresponding slewing position

Continuing to slew will result in overloading the crane. Therefore, when slewing reaches a warning position (slewing angle) back-calculated from the point where the crane is predicted to be overloaded, a voice warning message "Caution when slewing" is emitted (one time) to warn the operator that slewing will be automatically decelerated.

2) Slewing deceleration and corresponding warning sound

After the voice warning, slewing is decelerated and a warning chime ("DING DONG DANG DONG, …") is emitted (continuously) as slewing approaches the slewing position where the crane will be overloaded, to notify the operator that the system is functioning. While slewing is decelerating (before automatically stopping), if the control lever is operated in the opposite direction, slewing will stop and the warning chime will stop if the crane is moved away from the overload point.

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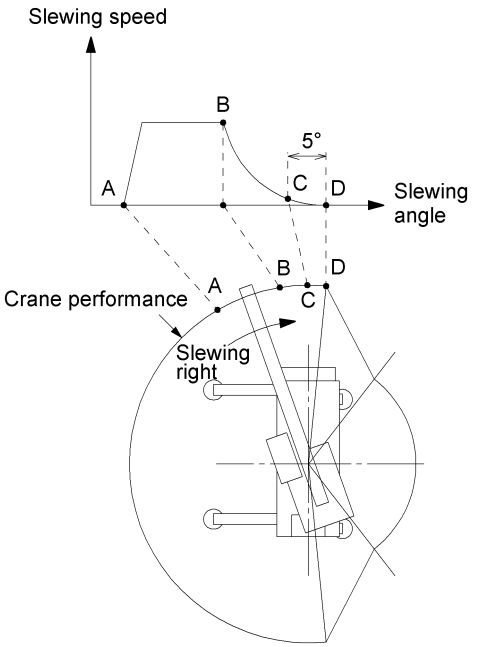
> ⚠ CAUTION
>
> If the voice warning message "Caution when slewing" is emitted and slewing begins automatically decelerating, try to stop slewing manually by operating the slewing lever in the opposite direction, while paying attention to the movement of the load. Waiting for slewing to stop automatically could result in not stopping properly and overrunning the overload point, if the machine is not level or if there is a strong wind.

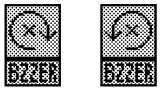
(611A-0047-0E)

3) Automatic stop and corresponding warning

When reaching the position (angle) immediately before the overload point, slewing will automatically smoothly stop and a voice warning message "Danger maximum lifting capacity" will be emitted (one time). Just before stopping, a warning chime ("DING DONG DANG DONG, ⋯") is emitted (continuously) to notify the operator that the system is functioning. If the control lever is operated in the opposite direction and the crane is slewed away from the overload point (angle), the warning chime will stop.



611A-01440E

Slewing position (slewing angle)	Voice warning	Warning sound	Slewing status	Display
A	————	————	Start	———
B	"Caution when slewing" (emitted 1 time)	————	Operator determined speed	———
B-C	————	————	Automatic deceleration	———
C-D	————	"DING DONG DANG DONG,⋯" (continuous)	Automatic deceleration	Slew right Slew left  511A-02970E
D	"Danger maximum lifting capacity" (emitted 1 time)	"DING DONG DANG DONG,⋯" (continuous)	＊Automatic stop	Slew right Slew left 511A-02980E

＊: If the machine is not level or there is a strong wind, slewing may not stop at the correct position and overrun the overload point.

(611A-0048-0E)

https://truckmanualshub.com/

18-6-2 Slewing control when a "slew-restricted region" is specified in the ACS (611A-0049-0E)

If a certain slewing region is specified as restricted in the ACS, such as to avoid hitting obstructions when operating on sites with limited working space or avoiding electrocution from nearby power lines, the "slewing stop system" will function in the follow sequence to avoid an accident.

(1) Deceleration warning and corresponding slewing position

When slewing reaches the warning point, which is back-calculated from the slew-restricted point (angle), a voice warning message "Caution when slewing" is emitted (1 time) to warn the operator that slewing will be automatically decelerated.

(2) Slewing deceleration and corresponding warning sound

After the voice warning, slewing is decelerated. Then when slewing approaches the restricted region, a warning chime ("DING DONG", "DING DONG", ⋯) is emitted (intermittently) to notify the operator that the stopping system is functioning.

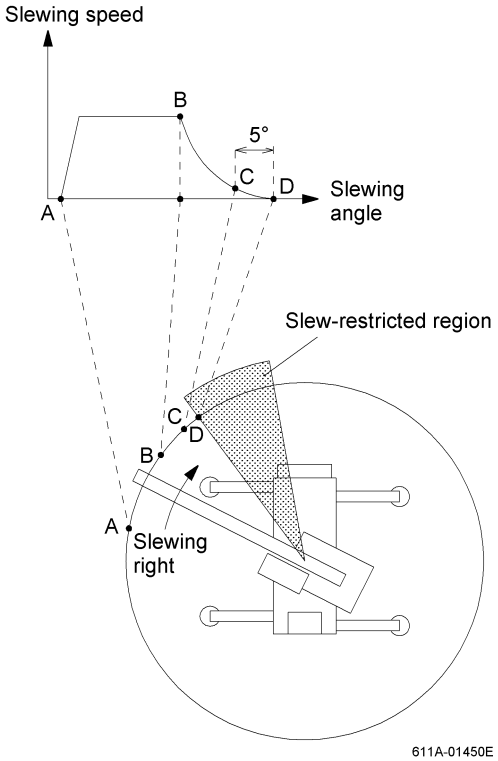
If the control lever is moved in the opposite direction while slewing decelerates (before automatically stopping), slewing will stop, then when the slew position starts moving away from the restricted region, the warning sound will stop.

> ⚠ CAUTION
>
> If the voice warning message "Caution when slewing" is emitted and slewing begins automatically slowing down, try to stop slewing manually before reach reaching the slew-restricted region by operating the slewing lever in the opposite direction, while paying attention to the movement of the load.
>
> Waiting for slewing to stop automatically could result in not stopping properly and overrunning the overload point if the machine is not level or if there is a strong wind, which could cause the crane to hit obstructions or electrocution.

(611A-0050-0E)

(3) Automatic stop and corresponding warning

When slewing reaches the point (angle) immediately before the slew-restricted region, slewing will come to a smooth stop and emit a voice warning message "Slewing limit reached" (1 time). A warning chime ("DING DONG", "DING DONG", ⋯) begins sounding (intermittently) just before stopping to notify the operator the stopping system is functioning. If the control lever is operated in the opposite direction and the crane begins slewing away from the restricted region (angle), the warning chime will stop.



611A-01450E

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Slewing position (slewing angle)	Voice warning	Warning sound	Slewing status	Display
A	————	————	Start	———
B	"Caution when slewing" (emitted 1 time)	————	Operator determined speed	———
B-C	————	————	Automatic deceleration	———
C-D	————	"DING DONG", "DING DONG", ··· (intermittent)	Automatic deceleration	Slew right Slew left 511A-03030E
D	"Slewing limit reached" (emitted 1 time)	"DING DONG", "DING DONG", ··· (intermittent)	＊Automatic stop	Slew right Slew left 511A-03040E

＊: If the machine is not level or there is a strong wind, slewing may not stop at the correct position and overrun the restricted region.

(611A-0051-0E)

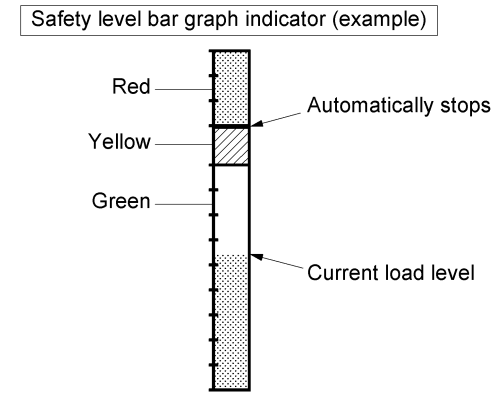
18-6-3 Emergency measures if the "slewing stop system" malfunctions (611A-0063-0E)

If the "slewing stop system" malfunctions and slewing is not automatically stopped correctly, follow the guidelines below and promptly contact your authorised KATO dealer and request repair.

Even if the "slewing stop system" is functioning normally, slewing may stop automatically under the conditions indicated below, such as an unlevel machine or strong winds.

(1) Situations where slewing may automatically stop when operating within rated load limits and slewing range limits

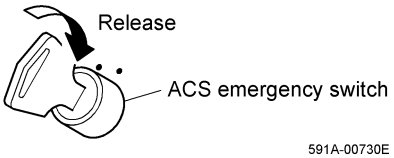
If slewing stops automatically even though the ACS safety level bar graph or slewing restriction region indicators appear as illustrated to the right, take the measures described in the following guidelines.



(Loading status when slewing automatically stops)

511A-02370E

1) Report the situation to the site safety manager and receive permission to turn the ACS emergency switch to "release" and continue working.
2) Obtain the key for the ACS emergency switch from the safety manager and turn the switch to "release" to switch the "slewing stop system" OFF.
3) Watch the safety level bar graph to confirm safety as the independent controls are used to carefully slew the crane to the desire position. However, if there is a risk of becoming overloaded or entering the slew-restricted region, slew the boom to the front of the machine and stop it there to avoid the danger.



591A-00730E

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⚠ DANGER

Only use the ACS emergency switch in emergency situations, such as when the "slewing stop system" malfunctions and does not allow slewing within the rated load range or slewing within the permitted slewing region. Furthermore, even in such situations, slew very cautiously, making sure to continuously monitor the safety level bar graph and ACS display for restricted slewing regions to confirm safety.

(611A-0064-0E)

⚠ WARNING

Always obtain permission from the site safety manager before turning the ACS emergency switch to "release" for slewing in an emergency. Furthermore, contact your authorised KATO dealer to request repair.

(611A-0065-0E)

NOTE

Even if the ACS emergency switch is turned to "release", the ACS will continue to emit the voice warnings "Caution when slewing", "Danger maximum lifting capacity", "Slewing limit reached", and "Danger overload", chime warnings, and emergency two-tone beep warnings (assuming the ACS is functioning normally).

NOTE

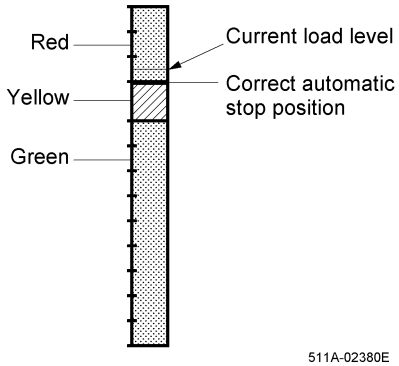
If the ACS emergency switch is used to disable the "slewing stop system", inertial slewing drift is controlled based on the "slewing free/lock switch" position, located on the side panel.

(2) If slewing does not stop when overloaded

If the crane is level and yet slewing does not automatically decelerate when the safety level bar graph approaches the yellow zone and does not stop even after reaching the red zone, use the following procedure to operate the crane and avoid danger.

1) If slewing does not automatically decelerate when the safety level bar graph approaches the yellow zone, move the slewing control lever to the neutral position, while keeping a close watch on the load movement, and let the engine idle.

Safety level bar graph indicator (example)



511A-02380E

2) If slewing doe not decelerate adequately and appears as though the safety level bar graph indicator will not stop within the yellow zone, forcibly stop the slewing motion by operating the lever in the opposite direction, being careful not to let the load swing.

3) If it is necessary to keep slewing in the same direction, keep slewing stopped and raise or retract the boom until the safety level bar graph enters the green zone, then use the independent slewing controls to slowly and cautiously slew the crane to the desired position, while carefully monitoring the safety level bar graph indicator.

⚠ DANGER

Never slew the crane when the safety level bar graph indicator is in the red zone, indicating the crane is overloaded. If outriggers are extended to different lengths, crane capacity can vary significantly depending on the slewing position. Forgetting this point and slewing the crane even when the safety level bar graph indicator is in the red zone can result in the crane tipping over and causing a major accident. If the voice warning message "Danger maximum lifting capacity" is emitted and the safety level bar graph is in the red zone, stop slewing as quickly as possible, while being careful of load swing.

(611A-0052-0E)

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(3) If slewing does not stop even after slewing into the slew-restricted region

If the crane is level and a "slew-restricted region" has been specified in the ACS, yet slewing does not automatically decelerate when approaching the restricted region and does not stop when slewing reaches the restricted region, use the following procedure to operate the crane and avoid danger.

1) If slewing does not automatically slow down as it approaches the "slew-restricted regions" indicated on the ACS screen, move the slewing control lever to the neutral position, while keeping a close watch on the load movement, and let the engine idle.
2) If slewing doe not decelerate adequately and appears as though slewing will not stop before entering the restricted region, forcibly stop the slewing motion by operating the lever in the opposite direction, being careful not to let the load swing.
3) If it is necessary to slew close to the restricted region, double-check the distance to any obstructions and slowly and cautiously slew the crane to the desired position.

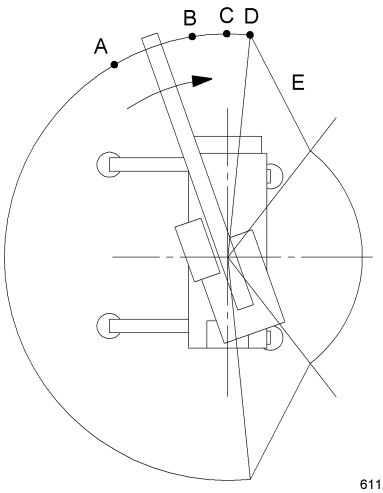
(4) Warning sounds and voice warnings emitted when slewing while overloaded or within a restricted region

If the associated danger is ignored and the crane is slewed when overloaded or into a restricted region, a voice warning, warning chime or emergency sound is emitted depending on how overloaded the crane is or how far it has slewed into the restricted region, to warn the operator of the extremely dangerous state.

1) Voice warning, warning chime or emergency sound emitted depending on extent of overload

If slewing does not stop automatically at the correct position, but overruns the overload point, due to a "slewing stop system" malfunction, unlevel machine or strong winds, a voice warning, warning chime or emergency sound is emitted, according to how overloaded the crane is, to notify the operator of the danger.

In addition, even if slewing is reversed to escape the danger, the warning sound will continue until the crane is no longer overloaded.



611A-01460

Slewing operation	Slewing position	% of load capacity	Voice warning	Warning sound (or emergency sound)
Continuing to slew in same direction	Point D	105%	"Danger maximum lifting capacity" (1 time)	"DING DONG DANG DONG,…"
	Region E	Less than 110%	———	"DING DONG DANG DONG,…"
	Region E	110% or more	"Danger overload" (1 time)	"DING DOGH, DING DOGH,…"
Reverse slewing	Up to point D	110% or more	———	"DING DOGH, DING DOGH,…"
		Less than 110%	———	"DING DONG DANG DONG,…"
	Point D and beyond	———	———	———

(611A-0053-0E)

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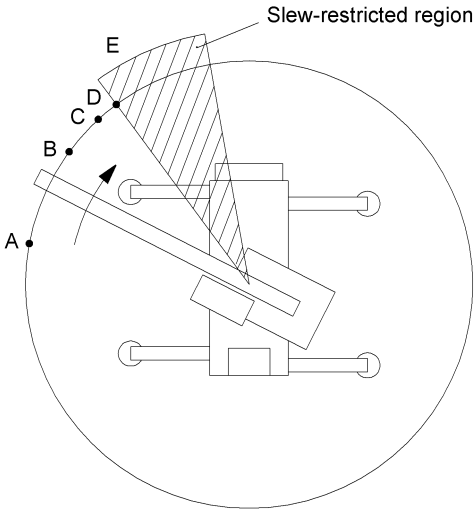
2) Voice warning, warning chime or emergency sound emitted depending on extent of entry into restricted region

If slewing does not stop automatically immediately before the restricted region, but overruns into the region due to a "slewing stop system" malfunction, unlevel machine or strong winds, a voice warning, warning chime or emergency sound is emitted, according to how far it slewed into the restricted region, to notify the operator of the danger.

In addition, even if slewing is reversed to escape the restricted region, the warning sound will continue until the crane is no longer in the restricted region.



611A-01470E

Slewing operation	Slewing position	Voice warning	Warning sound
Continuing to slew in same direction	Point D and beyond	———	"DING DONG", "DING DONG", ···
Restart slewing in same direction	Region E	"Slewing limit reached" (each time lever operated)	"DING DONG", "DING DONG", ···
	Region E and beyond (Point D + 20° or more)	———	———
Reverse slewing	From any point (from any slewing angle)	———	———

(611A-0054-0E)

⚠ DANGER

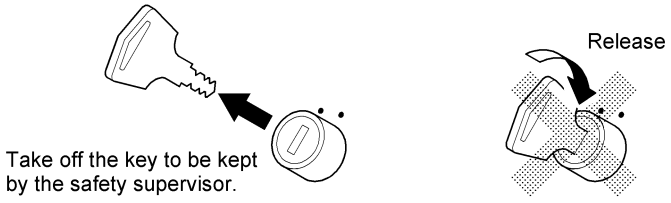
Be sure to always park and level the machine on firm ground before operating the crane. If not level, the slewing will not automatically stop at the correct position even if the "slewing stop system" is functioning normally. This can cause the crane to tip over, hit obstructions, electrocution or other accidents.

(541A-0241-1E)

⚠ WARNING

Always leave the key for the ACS emergency switch with the site safety manager before starting crane operations.

If it becomes necessary to switch the ACS emergency switch to "release", due to the "slewing stop system" or "ACS system" malfunctioning, always report the situation to the safety manager and obtain their permission.



591A-00740E

(611A-0055-0E)

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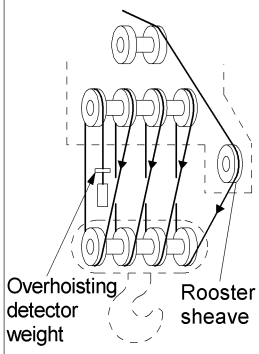
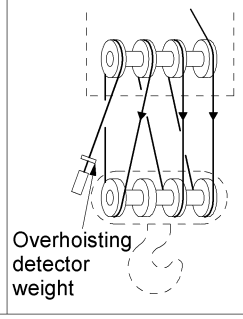
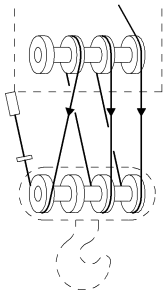
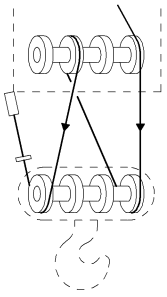
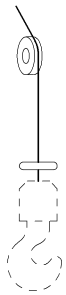
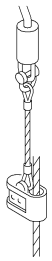
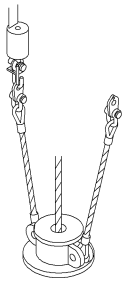
19. Changing the wire rope number of parts (541A-0245-0E)

19-1 Wire rope standard number of parts (511A-0054-0E)

The standard hook and number of parts of line for each boom length are as shown in the table below. If you use a non-standard number of parts of line, observe a limit of 37.2kN (3.8tf) on each part of wire rope.

Table for wire rope standard number of parts

Boom length	9.35m		9.35 — 16.4m	16.4 — 30.5m	Rooster sheave	Jib
Parts of line	9	7	6	4	1	1
Method of reeving						
Hook in use	30 ton hook				4.0 ton hook	
Hook mass	250kg				80kg	
Overhoisting detector weight						

611A-01480E

> ⚠ CAUTION
>
> - Attach the overhoisting detector weight in the position shown in the "method of reeving" of the "table for wire rope standard number of parts" above.
> - If the work site is below the ground, the length of the winch wire rope may become inadequate for the boom length used. In that case, reduce the number of parts of line so that at least three turns of the wire rope remain on the winch drum.
>
> When hoisting from below the ground, the length of the wire rope required is equal to the number of parts of line multiplied by the distance below the ground.
>
> Inadequate parts of line for a given boom length can result in the hook not reaching the desired below-ground level, which could cause the rope to start winding up on the drum in the opposite direction and damage the wire rope, or cause the crane to tip over.
> - Always wear strong working gloves for jobs such as detaching and reeving the wire rope.

(541A-0247-3E)

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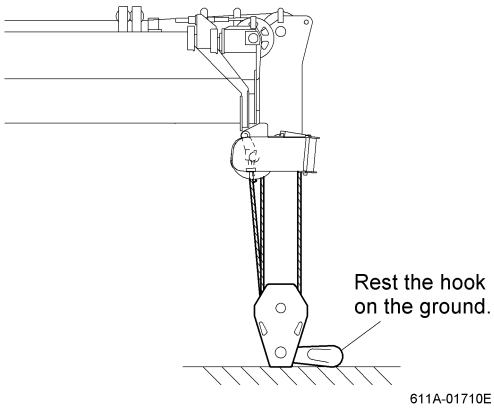
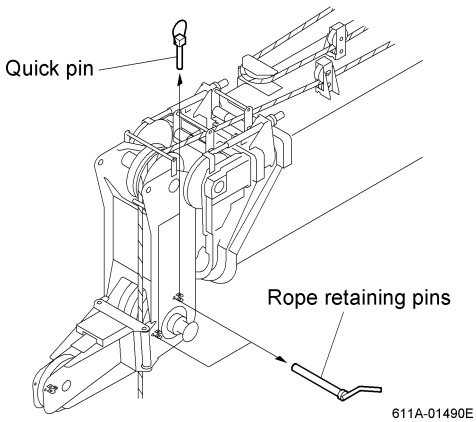
19-2 Changing the wire rope number of parts (511A-0037-1E)

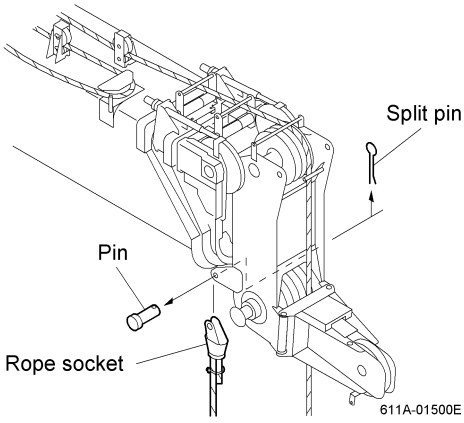
(1) Set the outriggers. Then retract and lower the boom fully and slew it to the side or front.



(2) Remove the rope retaining pins from the boom top.

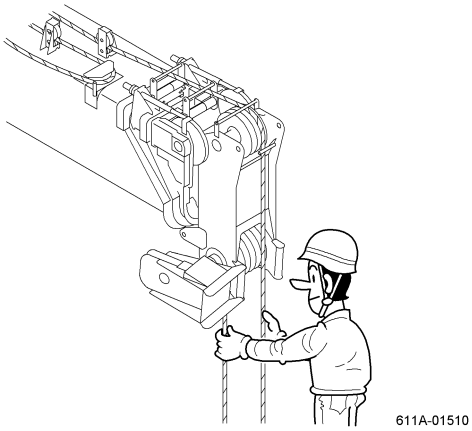


(3) Detach the rope socket.



(4) Remove the rope socket from the rope.

(5) Refer to the table for the wire rope standard number of parts to change the wire rope number of parts of line.



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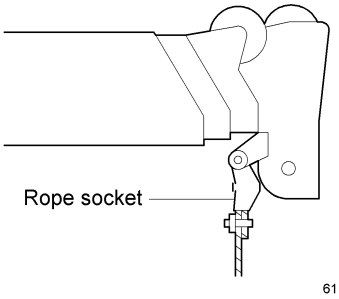
⚠ CAUTION

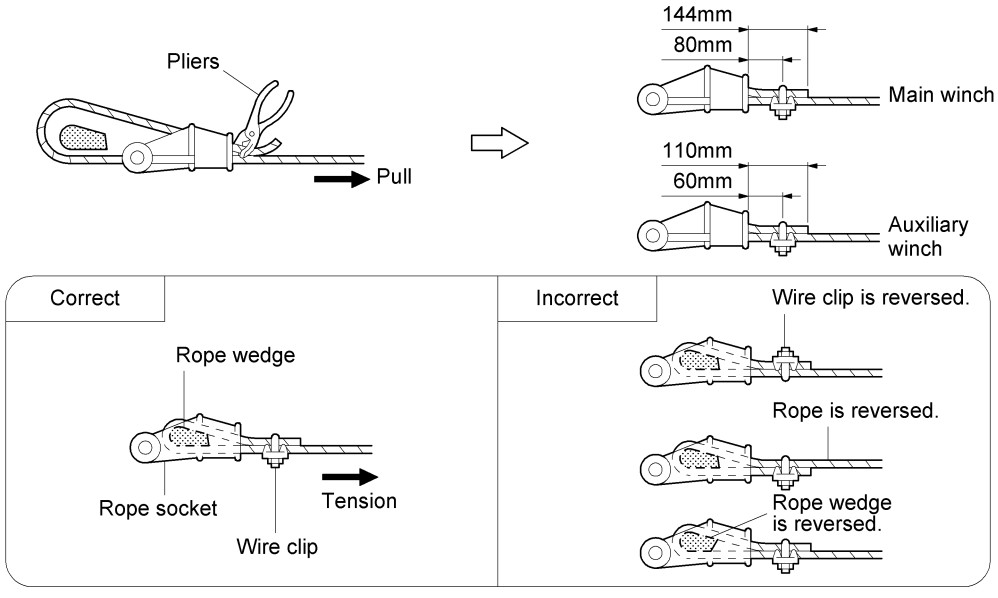
- If the length of the wire rope is not enough when you are changing the wire rope number of parts, lower the rope further while it is pulled out by hand, taking care that it does not become tangled on the drum.
- The rope socket should be attached in the orientation shown below.



(541A-0249-2E)

⚠ CAUTION

- Base the wire rope standard number of parts on the table for the wire rope standard number of parts.
- Take care not to tangle the wire rope.
- The rope socket and clip should be attached as shown in the diagram below.



(541A-0250-1E)

⚠ CAUTION

Refer to "Wire rope handling" in the inspection and servicing section for the replacement criteria.

(541A-0251-1E)

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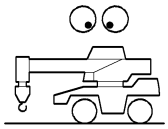

Preoperational checks/ Pre-drive checks

214521

20. Preoperational checks/Pre-drive checks ····· 195
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20. Preoperational checks/Pre-drive checks (511A-0040-0E)

The purpose of preoperational checks and pre-drive checks is to ensure safe and efficient work.
Before you start driving machine or operating the crane, make the following items of inspections.
Record the crane condition you observe in the course of the checks in the "Inspection sheet".
If you discover any problems or points which require lubrication, refer to the sections on "Greasing" and "Inspection and servicing of each part" for periodic inspection tasks.

⚠ CAUTION

- The intervals stated in the inspection and servicing table are based on the elapsed time indicated by the hour meter.
  Follow both the passage of dates and of hours of operation and carry out each inspection item when one of the times is reached, whichever occurs sooner.
- If you discover any damage, breakdown or malfunction, repair it immediately. Do not leave it for later and do not start work before it is repaired.
- For the inspection and replacement methods for the engine, refer to the separate engine manual.
- The inspection intervals for this machine are based on standard operations and working conditions.
  Under severe conditions, the inspection and replacement intervals should be shortened accordingly.
- If any method or interval of inspection and servicing is unclear, contact your authorised KATO dealer.

(541A-0259-0E)

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20-1 Pre-drive checks (511A-0073-0E)

20-1-1 Pre-drive check sheet (511A-0074-0E)

Inspection/servicing item			Daily inspection		Inspection procedure	Notes
Inspection location		Inspection item	Before start	After start		
Steering system	Steering wheel	Steerability	○			
	Others	Lubrication using autogreaster and grease quantity	○			Machine equipped with autogreaster
Braking system	Air pressure gauge	Air pressure increase		○	The needle should normally be pointing between 5 and 9. If the air pressure is 5 or below, check that it climbs back to the 5 — 9 range when the engine is running. If the air pressure climbs above 9, stop the engine immediately and contact your authorised KATO dealer.	
	Brake pedal	Pedal stroke length	○			Excluding machines equipped with air brakes
		Braking effect		○	Test the foot brake while the machine is moving very slowly to check that the braking force is adequate and applied evenly.	
	Parking brake	Lever stroke length		○		Check the function of the parking brake switch.
	Reserve tank	Brake fluid level	○		Check that the brake fluid level is between the level marks (LEVEL and MIN). If there is no external leakage but the level has dropped, check the disk brake pads for wear. If there is no problem with the brake pads, add brake fluid.	
	Brake valve, quick release valve, and relay valve	Sound of brake valve exhaust	○			
Drive system	Tires	Air pressure	○		・Check the tire pressure with a tire gauge while the tires are still cool before driving anywhere. Adjust the pressure as necessary to the rated pressure. ・Check that there is no damage to the sidewalls and no cracks or abnormal wear to the treads. Replace any tires which have exposed canvas, regardless of their age. ・Check whether the treads are worn to the limit of use. Also check for metal fragments, nails, stones and other foreign bodies stuck into the treads or caught in the tread grooves. ・Check the depth of the tread grooves and look for abnormal wear. Worn tires are dangerous as they could burst or allow skidding. ・Replace any tires where the limit of wear indicator is visible. ・There are six points at a depth of 1.6mm spaced around the circumference of the tire which serve to indicate when the limit of wear has been reached.	Air pressure: 900kPa (9kgf/cm^2) Tire size: 385/95 R25 170E ROAD
		Crack and damage	○			
		Abnormal wear	○			
		Tread groove depth	○			
	Wheels	Attachment status of disk wheels	○			
		Loosening of wheel nuts or bolts	○		Check that none of the wheel nuts is loose. If any are loose, tighten them immediately to the regulation torque.	Tightening torque: 568－627N・m (58－64kgf・m)
Suspension	Hydraulic suspension	Leveling and other functionality		○		
Electrical system	Battery	Battery fluid level	○		The battery electrolyte level should be between the "UPPER" and "LOWER" levels. If the level is at "LOWER" or below, top it up to the "UPPER" level with battery electrolyte or distilled water.	

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Inspection/servicing item			Daily inspection		Inspection procedure	Notes
Inspection location		Inspection item	Before start	After start		
Prime mover	Main unit	Deceleration and acceleration status		○	・After starting the engine, depress the accelerator pedal and check the following. If you notice anything abnormal, stop the engine immediately and investigate the cause. ・Does the engine rise smoothly to high revolutions when you depress the accelerator pedal ? ・The accelerator doesn't rest before the engine reaches high revolutions. ・After the engine reaches high revolutions, take your foot off the pedal to check whether the engine speed declines smoothly.	
		Startability and abnormal noises		○		
	Lubrication system	Oil level	○		Check the engine oil when the machine is parked on the level. Use the level gauge to check the level of the engine oil and add more oil if the level is low. Change the engine oil if it is extremely dirty.	Engine oil volume: 15L
	Fuel system	Inspect water separator and remove water	○		Look at the level gauge on the water separator to check how much moisture there is in the fuel.	Remove water properly.
	Cooling system	Loosening, tension status, or damage of the fan belt	○		Excessive slack in the fan belt can cause overheating and inadequate generation by the alternator. Excessive tension can damage the engine bearings and snap the fan belt. Check the tension of the fan belt and adjust it if necessary.	
		Water level in radiator and other parts of the cooling system	○		The engine should be cool when you check the coolant level. Make sure that the body of the machine is level and use the level gauge on the side of the reserve tank to check the coolant level. The coolant level should lie between the "FULL" and "LOW" levels. If the level is "LOW" or below, add more coolant through the cap on the top of the reserve tank.	Total coolant volume: about 30L Engine: 13L Radiator: 9L Sub-tank: 1.5L (When FULL) Piping: 4L
Lamps and turn indicators		Lighting and flashing status, dirt, or damage		○	・Work the combination switch to check that the headlamps, clearance lamps, tail lamps, license lamp, meter lights etc. light normally. ・Turn the headlamps on and use the lever on the left side of the combination switch to switch between high beam and low beam. At the same time, check that the high beam indicator lamp lights at the right time. ・Use the lever on the left side of the combination switch to check that all the turn signal lamps on the machine light normally, and at the same time confirm that all indicator lamps are flashing. ・Keep the pressure reading on the pressure gauge above 500kPa (5kgf/cm^2) and depress the brake pedal to check that the brake lamps light. ・Engage the parking brake and then move the shift lever to "R" to check that the reverse lamp lights and the reverse buzzer sounds. If the parking brake is not engaged, the machine could start reversing which is hazardous.	
Warning sound emitter, windscreen wipers, windscreen washer, defroster, and lock system		Windscreen washer fluid level and spraying status		○	Work the wiper switch to check that the wiper works and that it switches normally between high and low speed. Also check that the wiper blade is not damaged.	
		Windscreen wiper wiping status		○	Press the button on the wiper switch to check that water sprays well out of the spray nozzle, the nozzle is not blocked and the reservoir is not empty.	
Air compressor		Condensation in the air tank	○			
Rear view mirrors and reflectors		Image status	○		When sitting in the cab, always adjust the mirror positions and clean them if necessary to get an adequate field of view.	
Location of anything unusual noticed during driving		Check for any problems at corresponding location		○		
Others		Oil leakage from any part of the chassis	○			

(511A-0075-2E)

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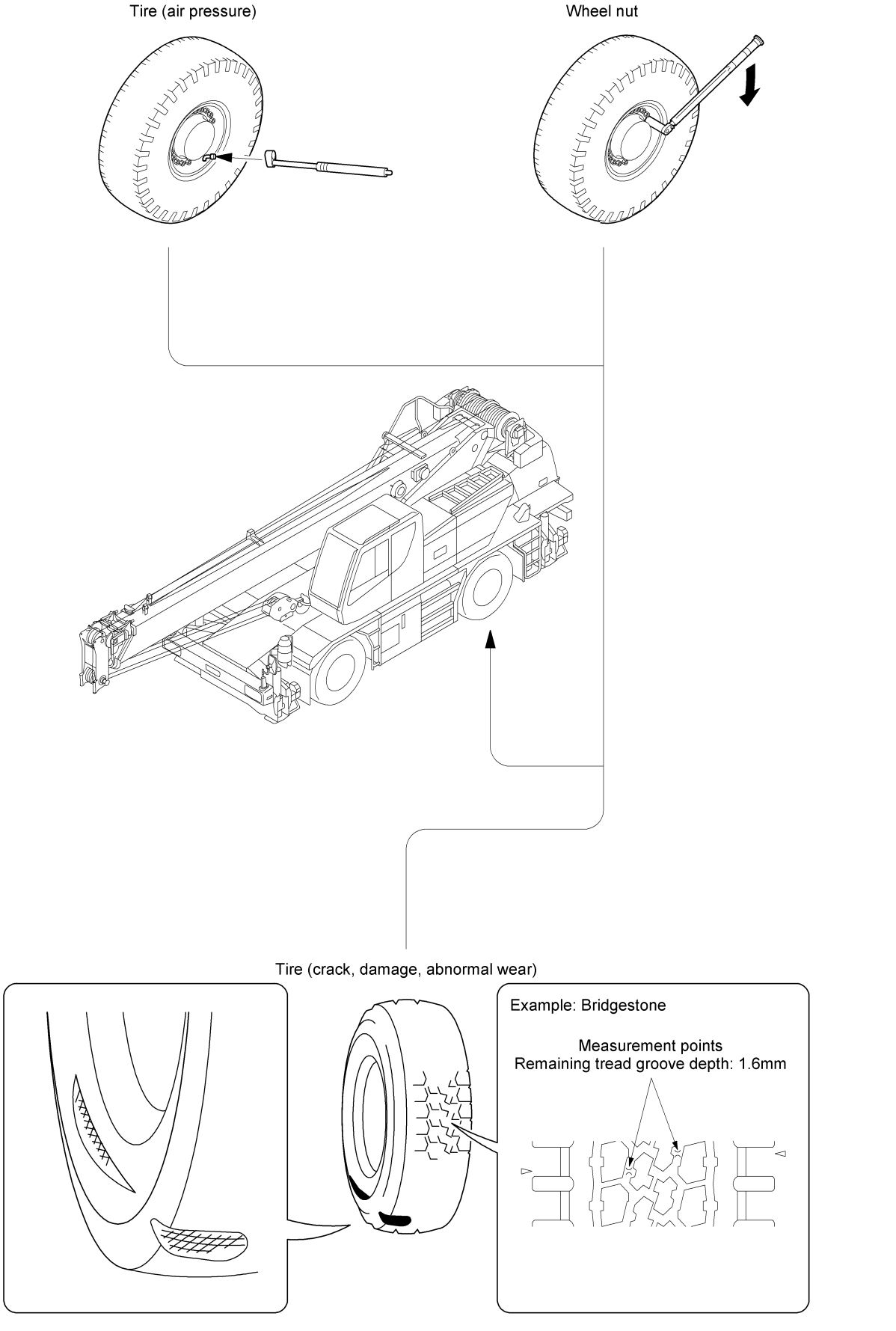
20-1-2 Points for pre-drive checks (511A-0076-0E)



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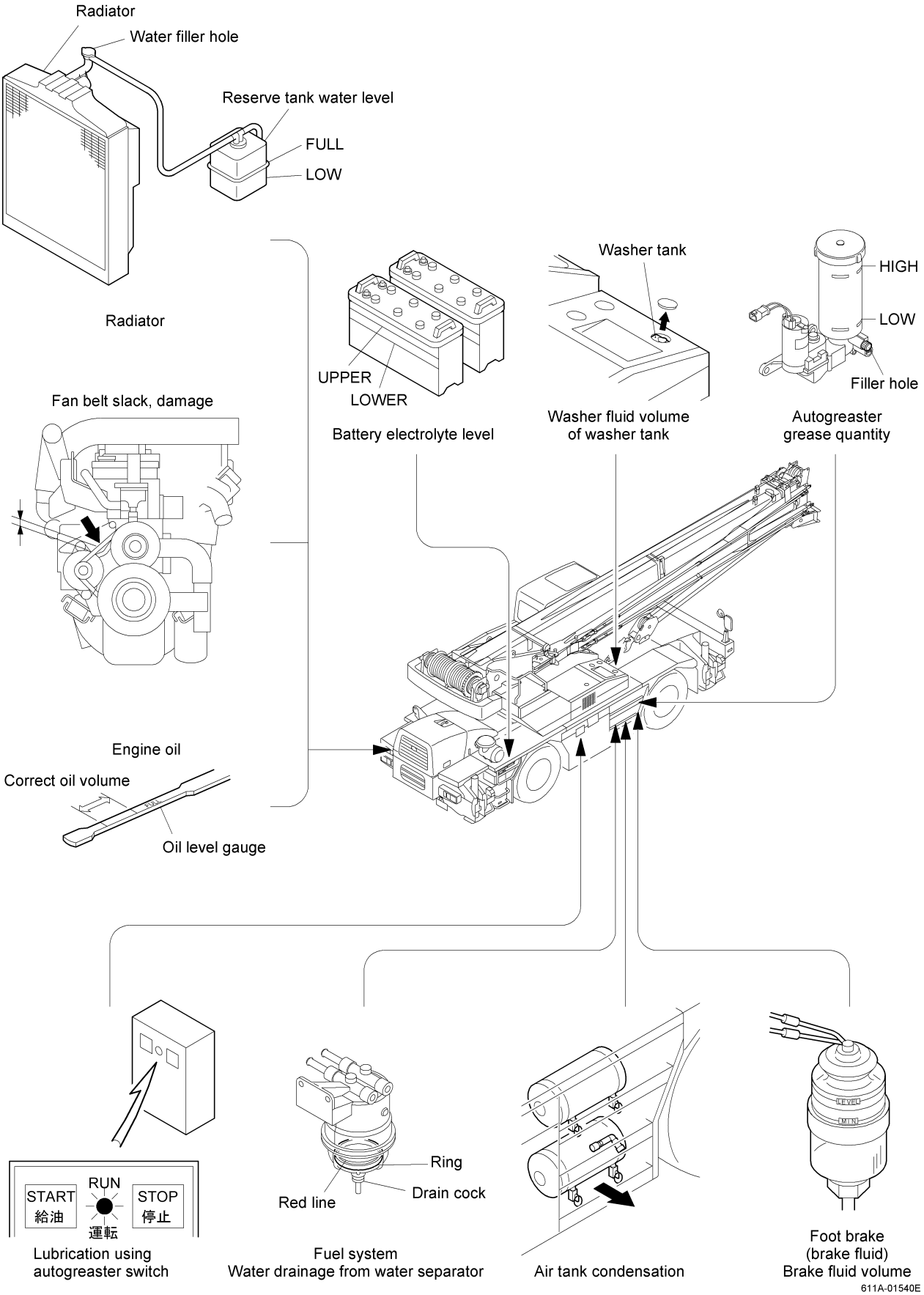

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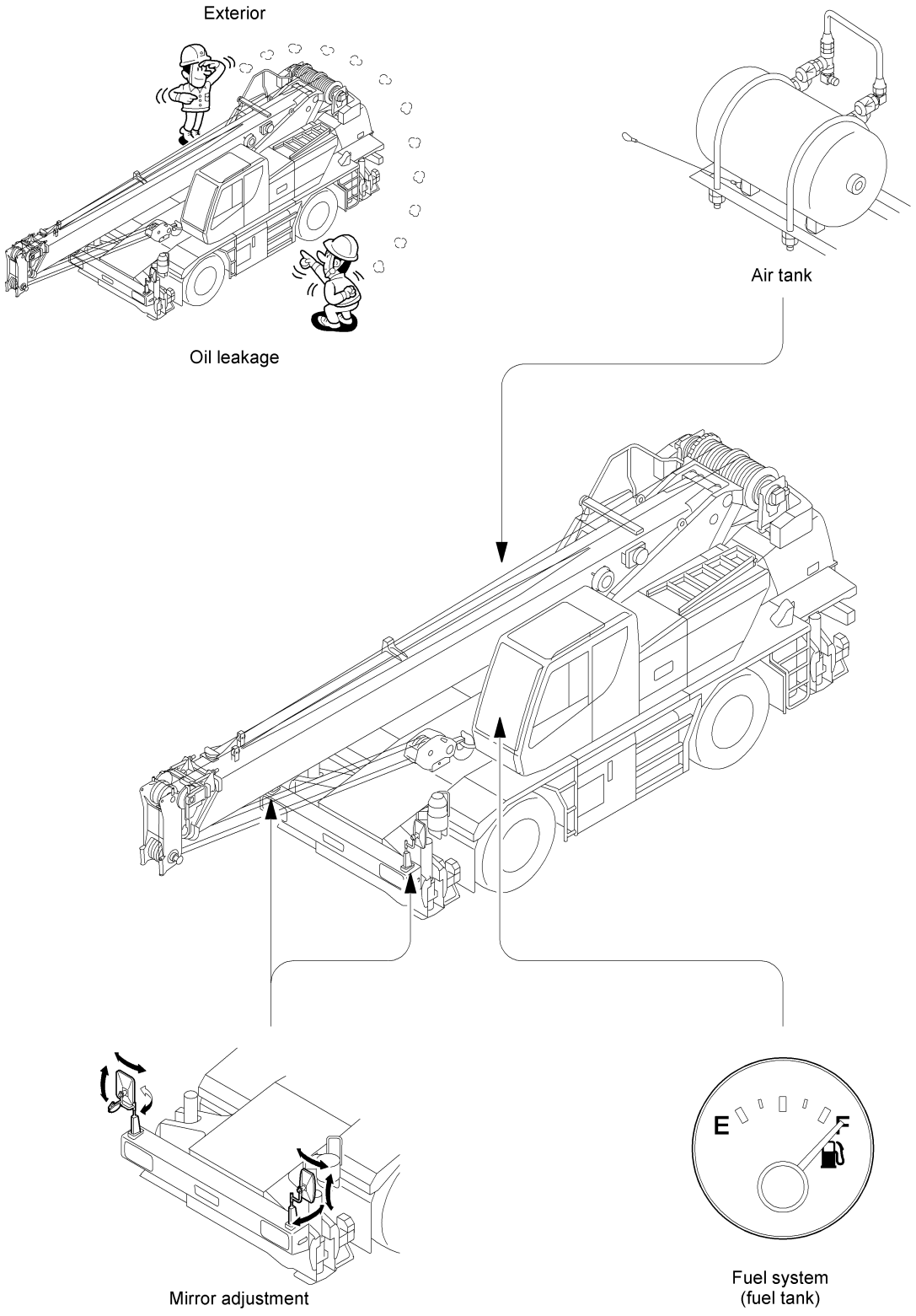

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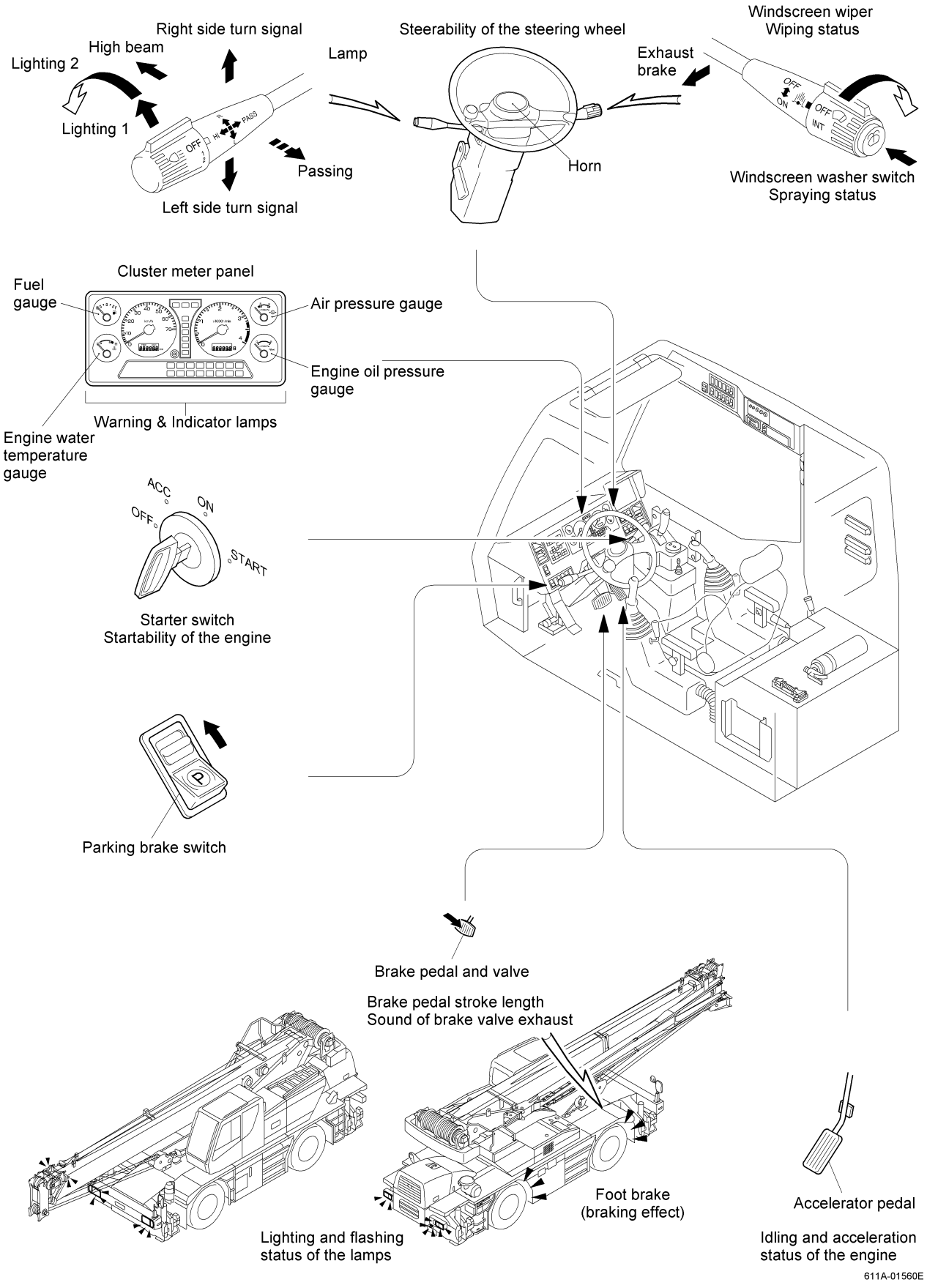

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20-2 Preoperational checks (511A-0077-0E)

20-2-1 Preoperational check sheet (511A-0078-0E)

	Part		Inspection location and service task	Task	When defective	Engine		Inspection procedure	Notes
						Before start	After start		
Exterior	Cover etc.		Dents and other damage	Inspect		○	○	Before starting the day's work, make a habit of looking all over the crane to inspect the exterior. Start the engine according to the correct procedure then make another exterior inspection to check for leaks of oil, water or air. Check for abnormal noise or vibration from any of the covers etc. If you notice any, stop the engine immediately and investigate the cause.	
	Hose etc.		Oil leakage	Inspect		○	○		
			Air leakage	Inspect		○	○		
	Device and equipment		External damage	Inspect		○			
Engine-related	Engine and engine mountings		Does the engine start well?	Inspect		○			
			Exhaust gas color	Inspect			○	Extremely white or black exhaust gas indicates a problem. However black smoke when the load on the engine is high or the accelerator pedal is depressed hard is not abnormal, and neither is white smoke in winter.	
			Abnormal noise on starting, running or stopping	Inspect			○	If you notice abnormal noise or vibration from any cover etc., stop the engine immediately and investigate the cause. If you notice a smell of burning, scorching or fuel after starting the engine, stop the engine immediately and investigate the cause.	
			Stopping behavior	Inspect			○		
			Slack in the exhaust pipe or silencer	Inspect		○			
			Fan belt slack	Inspect		○		Excessive slack in the fan belt can cause overheating and inadequate generation by the alternator. Excessive tension can damage the engine bearings and snap the fan belt. Check the tension of the fan belt and adjust it if necessary.	
	Oil pan		Engine oil	Check oil level		○		Check the engine oil when the machine is parked on the level. Use the level gauge to check the level of the engine oil and add more oil if the level is low. Change the engine oil if it is extremely dirty.	Engine oil volume: 15L Oil pan: 11L Oil filter: 2.3L Others: 1.7L
	Radiator		Radiator core, fin and tank	Inspect		○		The engine should be cool when you check the coolant level. Make sure that the body of the machine is level and use the level gauge on the side of the reserve tank to check the coolant level. The coolant level should lie between the "FULL" and "LOW" levels. If the level is "LOW" or below, add more coolant through the cap on the top of the reserve tank.	Total coolant volume: about 30L Engine: 13L Radiator: 9L Sub-tank: 1.5L (When FULL) Piping: 4L
			Coolant	Check water level		○			
			Cracks and damage to hoses of the cooling system	Inspect		○			
	Air cleaner element			Inspect		○		Look at the air cleaner blockage warning indicator lamp on the cluster meter panel to check how dirty the air cleaner element is.	
	Fuel system	Fuel tank		Check oil level		○		Look at the fuel gauge in the cab to check how much fuel is left.	Fuel tank volume: 300L
		Water separator		Check for water content		○		Look at the level gauge on the water separator to check how much moisture there is in the fuel. If the level is above the red line, extract the water as described in the section "Water separator inspection"	
				Drain water	○				

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	Part		Inspection location and service task	Task	When defective	Engine		Inspection procedure	Notes
						Before start	After start		
Engine-related	Accelerator	Pedal slack and play		Inspect		○		・After starting the engine, depress the accelerator pedal and check the following. If you notice anything abnormal, stop the engine immediately and investigate the cause. ・Does the engine rise smoothly to high revolutions when you depress the accelerator pedal ? ・The accelerator doesn't rest before the engine reaches high revolutions. ・After the engine reaches high revolutions, take your foot off the pedal to check whether the engine speed declines smoothly.	
		Acceleration and deceleration in response to pedal movement		Inspect			○		
Hydraulic system-related	Oil reservoir		Hydraulic oil	Check oil level		○		Park the machine on the level ground in the driving position and check the oil level from the level gauge on the side of the oil reservoir. The oil level changes with oil temperature, so always check the oil level before you start the engine. With reference to the ambient air temperature, check that the oil level is within the scale and add more oil if the level is too low.	Reservoir capacity: 400L
	Cylinder		Oil leakage	Inspect		○			
			Responsivity	Inspect			○		
	Hydraulic pump		Oil leakage	Inspect		○			
			Abnormal noise	Inspect			○		
	Oil cooler		Oil leakage	Inspect			○		
	Rotary seal		Oil leakage	Inspect			○		
	Hydraulic valve		Oil leakage	Inspect			○		
Slewing-related	Slewing gear	Bearing	Abnormal noise on slewing	Inspect			○		
	Slewing brake action			Inspect			○	Move the slewing brake switch to the "brake" side then check that the superstructure does not slew even when you work the slewing control.	
Winch-related	Hook		Attachment bolt	Inspect		○		Check the hook for play, abnormal wear, screw deformation, damage to the wire rope retainer, opening of the key etc.	
			Bearing play	Inspect		○			
			Sheave wear	Inspect		○			
			Wire rope retainer	Inspect		○			
			Hook	Inspect		○			
			Protector attachment bolt	Inspect		○			30 ton hook
	Wire rope			Inspect		○			
	Drum lock			Inspect		○		Operate the winch drum lock lever to check that the lock device has locked securely.	
Boom-related	Boom extension/retraction wire rope			Inspect		○			
	Boom slide plates (upper, lower)			Inspect		○			
	Sheave			Inspect		○		Check that the groove depth is less than 37mm. Check that there is no play, crack and damage.	

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	Part	Inspection location and service task	Task	When defective	Engine		Inspection procedure	Notes
					Before start	After start		
Air conditioner	Heater	Oil	Inspect			○		
	Air conditioner	Cooling	Inspect			○		
		Heating	Inspect			○		
		Defroster	Inspect			○		
		Refrigerant gas	Inspect			○		
		Belt tension	Inspect		○			
		Condenser	Clean		○			
		Filter	Clean and inspect		○			
			Replace	○				
Drive-related	Tires	Air pressure	Inspect		○		・Check the tire pressure with a tire gauge while the tires are still cool before driving anywhere. Adjust the pressure as necessary to the rated pressure. ・Check that there is no damage to the sidewalls and no cracks or abnormal wear to the treads. Replace any tires which have exposed canvas, regardless of their age. ・Check whether the treads are worn to the limit of use. Also check for metal fragments, nails, stones and other foreign bodies stuck into the treads or caught in the tread grooves. ・Check the depth of the tread grooves and look for abnormal wear. Worn tires are dangerous as they could burst or allow skidding. ・Replace any tires where the limit of wear indicator is visible. ・There are six points at a depth of 1.6mm spaced around the circumference of the tire which serve to indicate when the limit of wear has been reached.	Air pressure: 900kPa ($9kgf/cm^2$) Tire size: 385/95 R25 170E ROAD
		Crack, damage, abnormal wear	Inspect		○			
		Lodged metal fragments, stones etc.	Inspect		○			
	Wheel nut		Inspect		○		Check that none of the wheel nuts is loose. If any are loose, tighten them immediately to the regulation torque.	Tightening torque: 568－627N･m (58－64kgf･m)
Brake-related	Foot brake	Depression distance	Inspect		○			
		Braking effect	Inspect			○	Test the foot brake while the machine is moving very slowly to check that the braking force is adequate and applied evenly.	
		Brake fluid	Inspect		○		Check that the brake fluid level is between the level marks (LEVEL and MIN). If there is no external leakage but the level has dropped, check the disk brake pads for wear. If there is no problem with the brake pads, add brake fluid.	
	Parking brake	Braking effect	Inspect		○			
	Air tank		Water extraction		○		Maintain the air pressure in the air tank at the rated level and pull the drain cock lever under the air tank to drain any water that has accumulated inside the tank. In winter, this water can freeze and block pipes, so drain the water at least twice a day, not just during the preoperational check.	
	Exhaust brake action		Inspect			○	Apply the exhaust brake while the machine is moving very slowly to check its action and that each relevant indicator lamp lights.	
	Air drier	Drain water	Inspect			○		

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	Part	Inspection location and service task	Task	When defective	Engine		Inspection procedure	Notes
					Before start	After start		
Electrical system	Battery		Check electrolyte volume		○		The battery electrolyte level should be between the "UPPER" and "LOWER" levels. If the level is at "LOWER" or below, top it up to the "UPPER" level with battery electrolyte or distilled water.	
	Inside the cab	Warning horn	Check action		○		Press the horn switch when the pressure in the air tank is high enough and check that it sounds normally.	
		Wiper	Check action			○	Work the wiper switch to check that the wiper works and that it switches normally between high and low speed. Also check that the wiper blade is not damaged. Press the button on the wiper switch to check that water sprays well out of the spray nozzle, the nozzle is not blocked and the reservoir is not empty.	
		Lamp	Inspect		○		・Work the combination switch to check that the headlamps, clearance lamps, tail lamps, license lamp, meter lights etc. light normally. ・Turn the headlamps on and use the lever on the left side of the combination switch to switch between high beam and low beam. At the same time, check that the high beam indicator lamp lights at the right time. ・Use the lever on the left side of the combination switch to check that all the turn signal lamps on the machine light normally, and at the same time confirm that all indicator lamps are flashing. ・Keep the pressure reading on the pressure gauge above 500kPa (5kgf/cm^2) and depress the brake pedal to check that the brake lamps light. ・Engage the parking brake and then move the shift lever to "R" to check that the reverse lamp lights and the reverse buzzer sounds. If the parking brake is not engaged, the machine could start reversing which is hazardous.	
Cab-control and steering systems	Steering wheel	Play, slack and looseness	Inspect		○			
		Ease of steering	Inspect			○		
		Height and angle	Inspect		○			
			Adjust		○			
	Mirrors	Side-view mirror	Inspect		○		When sitting in the cab, always adjust the mirror positions and clean them if necessary to get an adequate field of view.	
		Underside mirror	Inspect		○			
		Door mirror	Inspect		○			
	Seatbelt		Inspect		○			
	Shift lever	Gear change	Inspect			○	Shift through all positions in high range to check that the function is normal. "D range" Four-stage automatic shift through four speeds "1" Speed 1 "2" Two-stage shift through speed 1 and speed 2 "3" Three-stage shift through speeds 1, 2 and 3 "R" To move the machine backwards	
	Control lever and pedal	Actions, play, force for operation	Inspect		○		Check that all the levers and pedals are in their neutral positions when the engine is off. In any lever or pedal is not in the neutral position but rather hangs at an angle, adjust it before you start work.	

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	Part	Inspection location and service task	Task	When defective	Engine		Inspection procedure	Notes
					Before start	After start		
Cab-control and steering systems	Cluster meter panel		Inspect		○	○	Check that the indicator lamps do not indicate any problem. If there is any problem, you must stop the engine and investigate the cause.	
	Switch panel		Check action		○		Switch the starter switch "ON" and check that all indicator lamps on the switch panel light and the buzzer sounds for around three seconds. The buzzer should then stop and normal operation start. Check that no error numbers appear on the digital display. The numbers on the digital display depend on the model and specification. If the multiplex communication error warning lamp flushes and an intermittent buzzer sounds, do not start the engine and contact your authorised KATO dealer.	
	Action of the door and cover locks		Inspect		○			
Crane safety devices	ACS		Inspect			○	The ACS automatically switches to the "working status setting screen" when the engine has started and the PTO switch is switched on. If any problem is indicated while the "working status setting screen" is displayed, investigate the cause of the problem before you start work. You must also make a "preoperational check" as described in the separate instruction manual for the ACS.	
	Overhoisting detector	Buzzer	Inspect			○	Lift the weight of the overhoisting detector and check that the warning buzzer in the cab sounds and the crane stops automatically. At the same time, check the condition of the ropes of the overhoisting detector weight and the cord reel.	
		Automatic stop	Inspect			○		

(611A-0057-0E)

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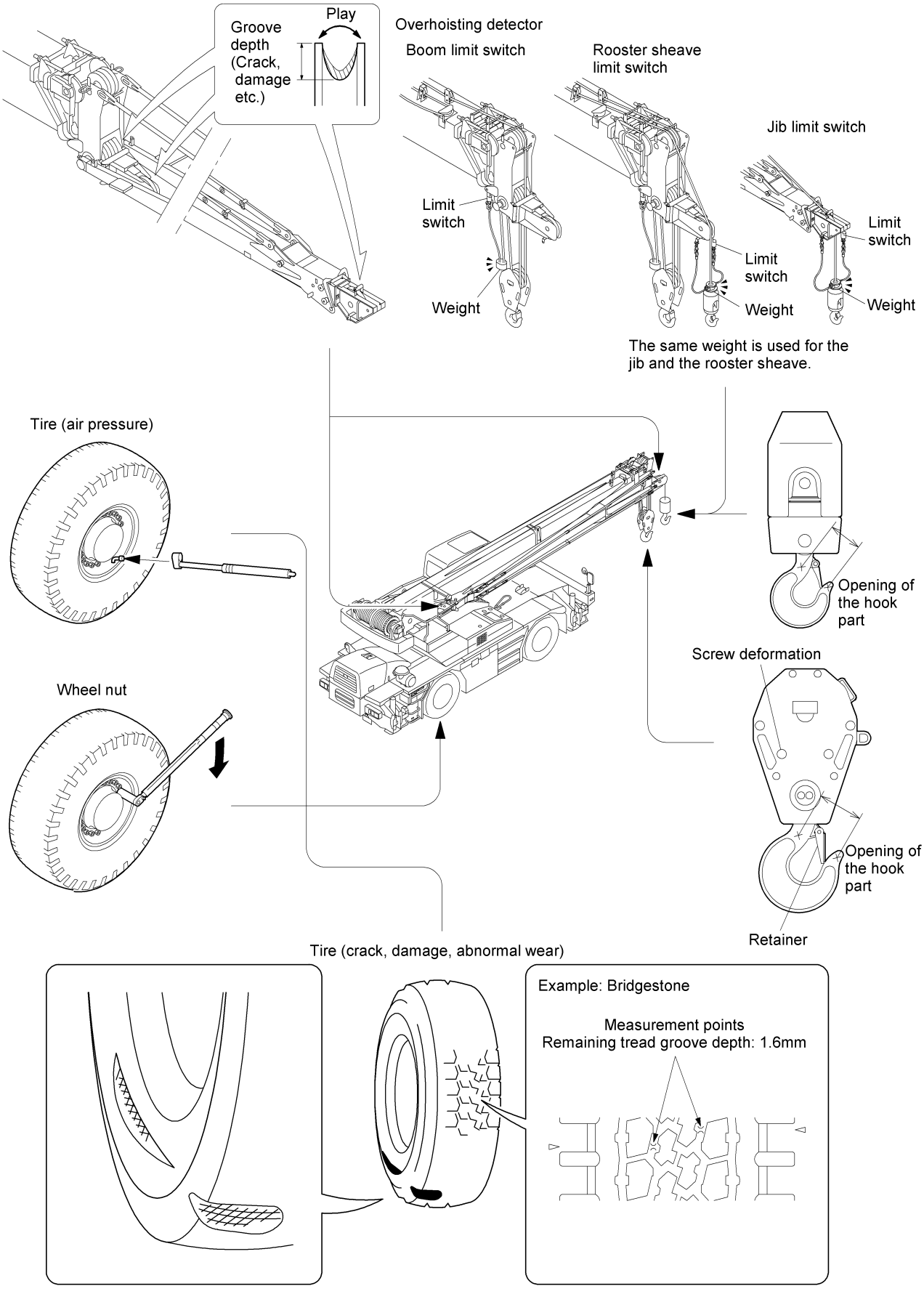
20-2-2 Points for preoperational checks (511A-0079-0E)



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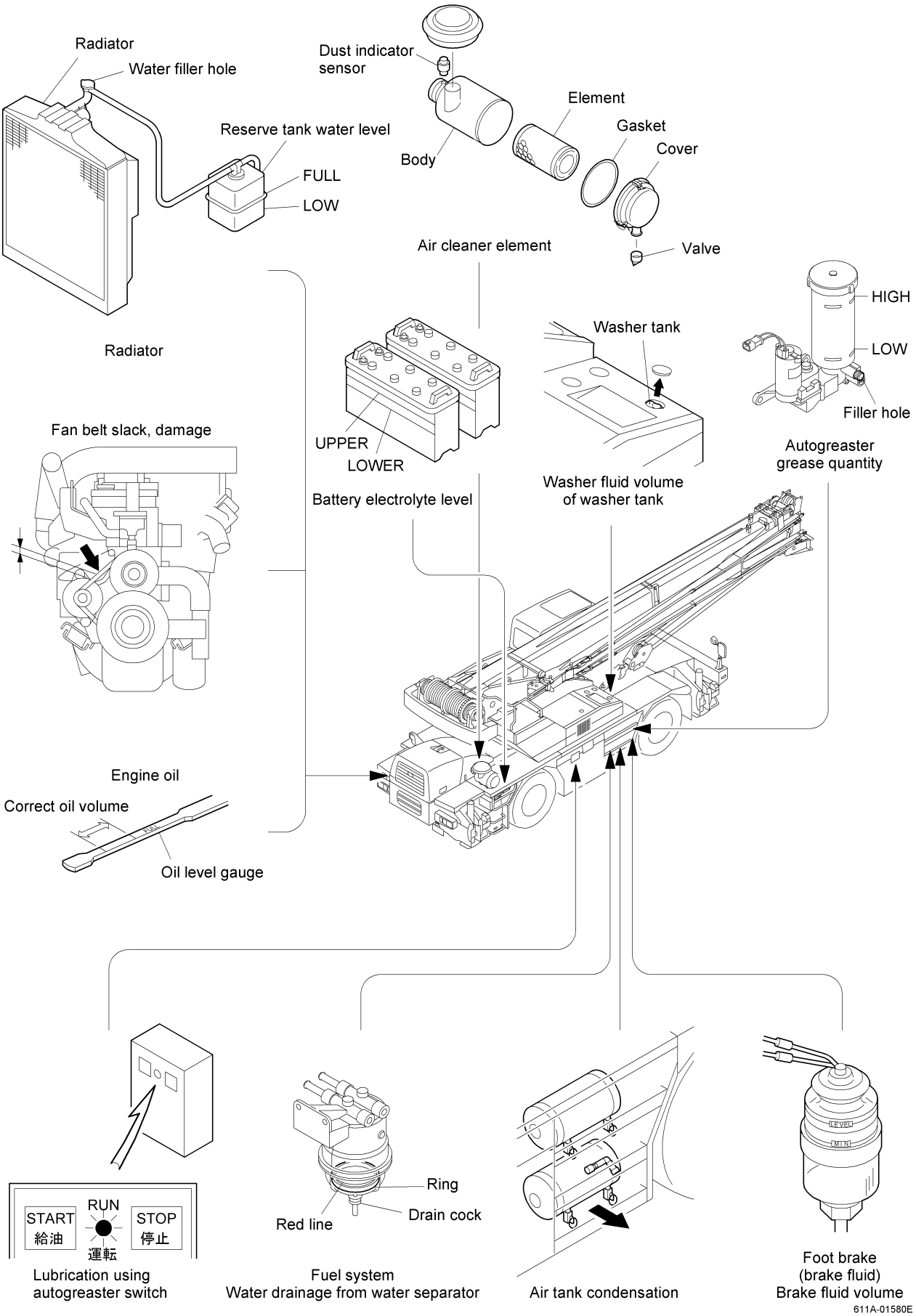

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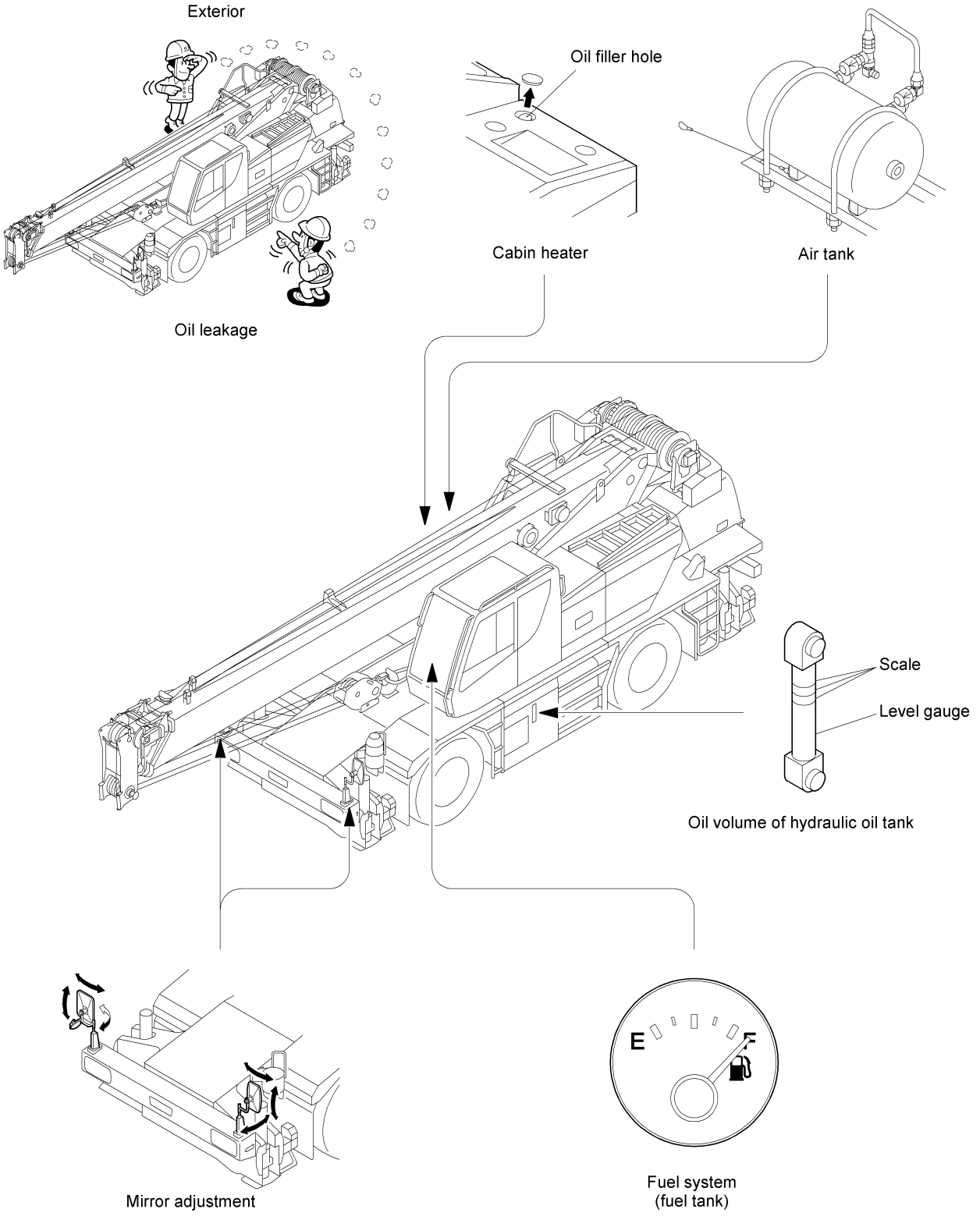

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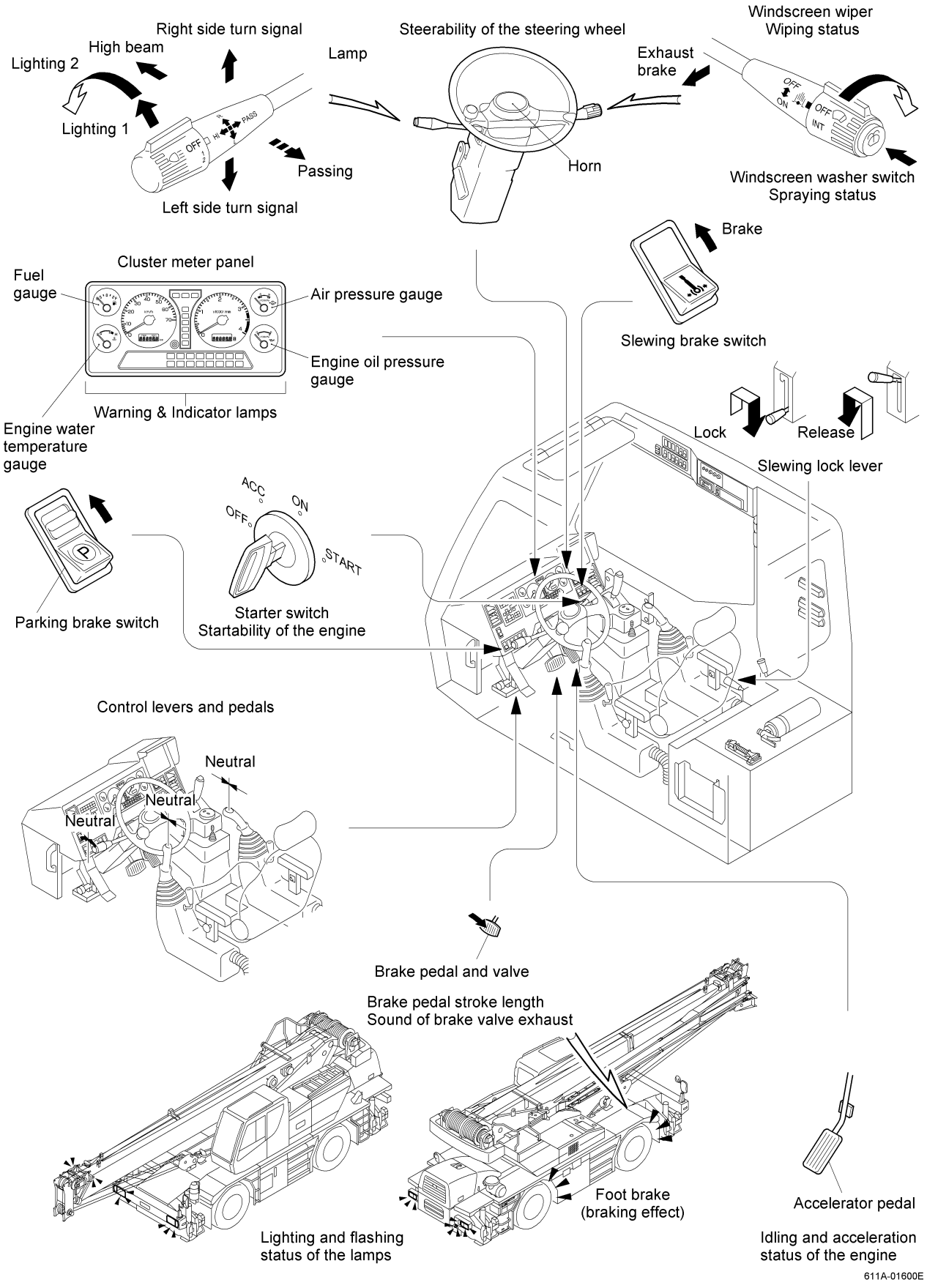

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