

KOBELCO

OPERATOR'S MANUAL
HYDRAULIC EXCAVATOR
SK60

Applicable: LE14101~

S2LE1016E

10/00

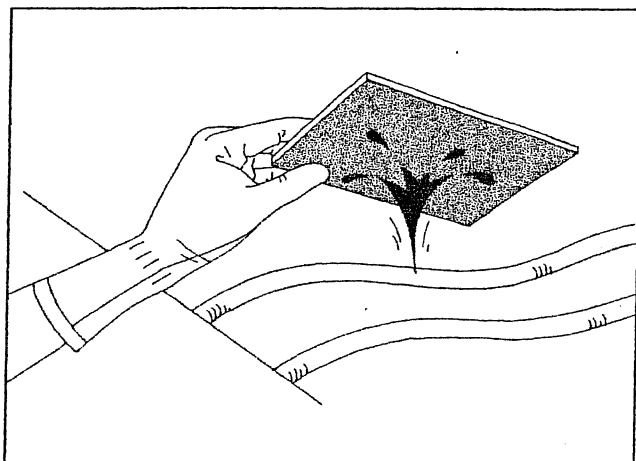
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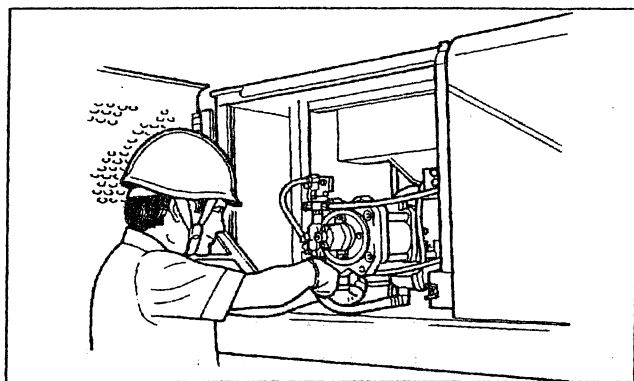
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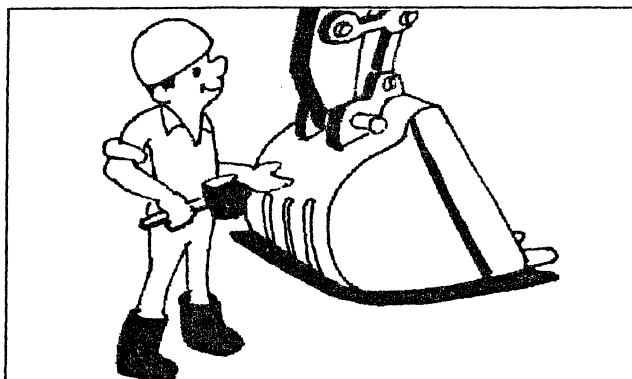
● **AVOID HIGH PRESSURE OIL**

Escaping oil from a high pressure hydraulic system will have sufficient force to penetrate the skin, causing serious injury. Before disconnecting hydraulic lines, be sure to bleed off all pressure. Before pressurizing the system, be sure connections are tight and lines, pipes and hoses are not damaged. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks. If injured by escaping oil, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.



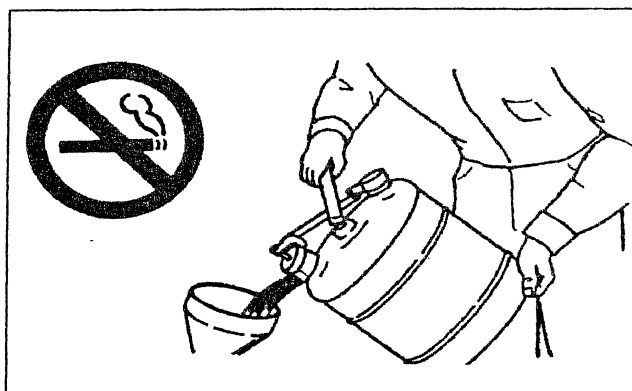
● **CLEAN TRASH FROM MACHINE**

Keep engine compartment, radiator, batteries, hydraulic lines, fuel tank, and operator's station clean.



● **MAKE REPAIRS SAFELY**

When you drive connecting pins in or out, protect yourself against injury from flying pieces of metal. Wear goggles or safety glasses, hard hat, and gloves.



● **HANDLE FUEL SAFELY-AVOID FIRES**

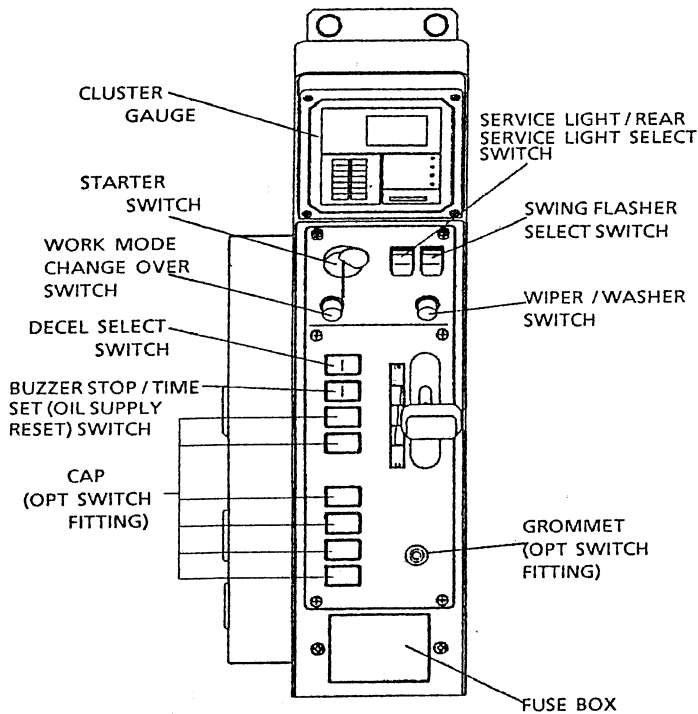
Handle fuel with care: it is highly flammable. Do not refuel the machine while smoking or when near open flame or sparks.

Always stop engine before refueling machine.

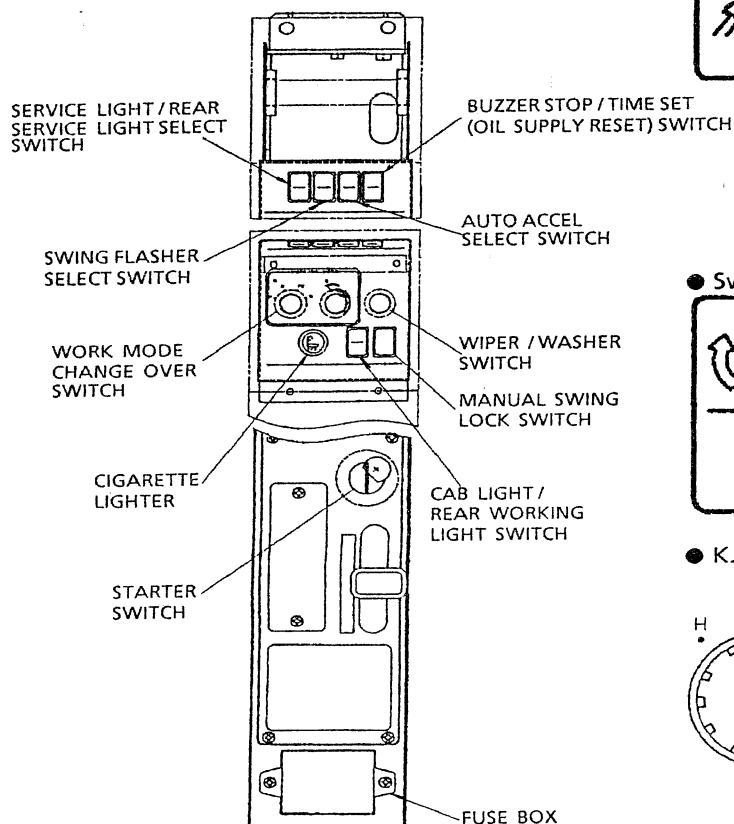
Prevent fires by keeping machine clean of accumulated trash, grease, and debris. Always clean up spilled fuel.

OPERATING CONTROLS

● Long lever spec. machine

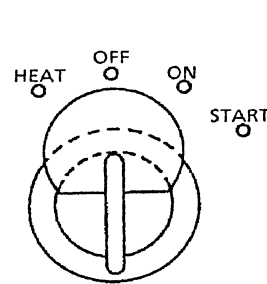


● Wrist spec. machine



■ CONTROL BOARD

● Starter switch



HEAT Pre-heating the engine
 OFF Stops the engine and key removal position
 ON Turning on the ignition
 START Starting the engine

☞ The key can be used in the following three points.

- Cab door
- Guard
- Filler cap of the fuel tank

● Service light / rear service light select switch

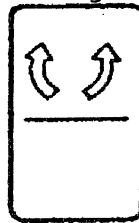


Front position.....Turns on the service light located on the right-hand and left-hand sides of the boom and the frame.

Neutral position.....Turns off both the service light and the rear service light.

Rear position.....Turns on all the service lights and the rear service lights on the boom and the frame (both sides).

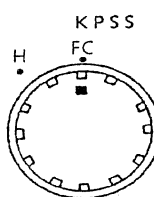
● Swing flasher select switch



If the symbol mark is pressed forward, the swing flashers on the right-hand and left-hand sides light during swing action.

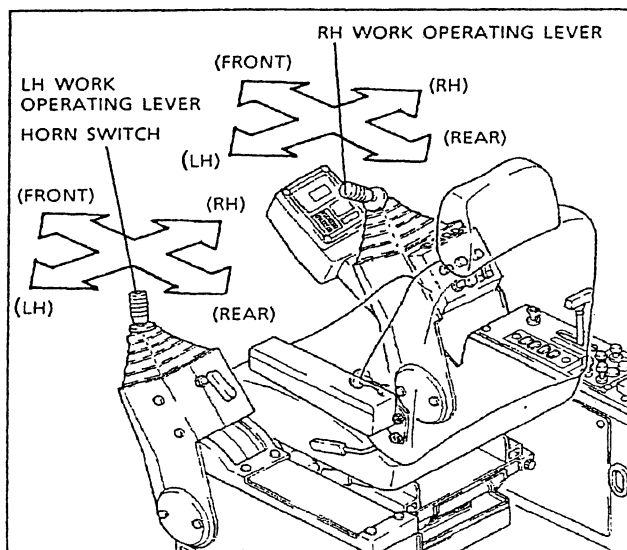
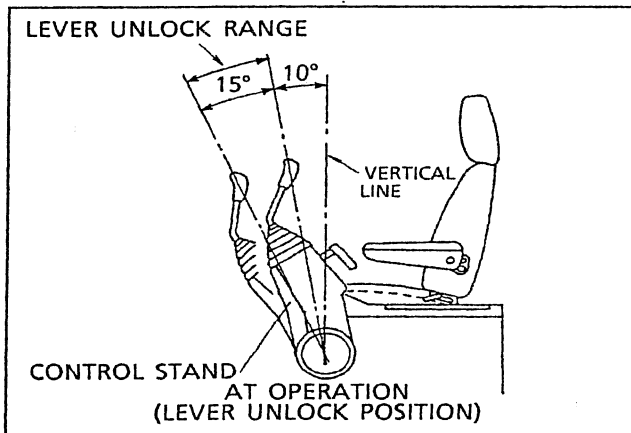
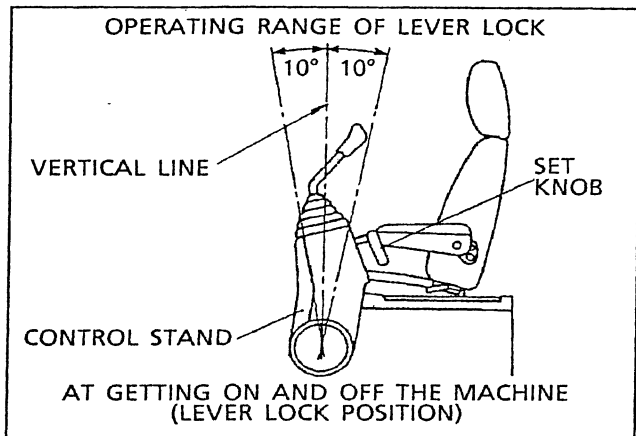
If the switch is pushed backward, the swing flashers do not light.

● K.P.S.S. work mode change over switch



H..... For heavy digging operation
 FC.....For fine manipulation

☞ For more complete information or which mode to select, refer to chapter 3. Operation.



■ CONTROL STAND SET KNOB (LONG LEVER SPEC)

If you turn the set knob on the left-hand control stand through 30° to the left, the control stand moves back and forth. If you return the set knob, control stand is fixed.

1. Control position stand at getting on and off the machine

If the left-hand control stand is turned to the lever lock position, it serves as a safety lock that prevents the travel system and the attachment from operating by accidental contact with the lever.

- ⚠ • When leaving the cab, do not fail to stop the engine and bring the lever to the lever lock position.
- Always bring the lever to the lever lock position when the machine is not operated or transported.

☞ If you turn the lever clockwise, the set knob will be broken always turn it counterclockwise.

2. Control stand position during operation

Incline the control stand approximately 10° forward as against the vertical line during operation.

☞ The control stands on the right and left can be adjusted steplessly at the same time. Choose the best suited position depending upon types of work the machine performs.

■ CONTROL STAND

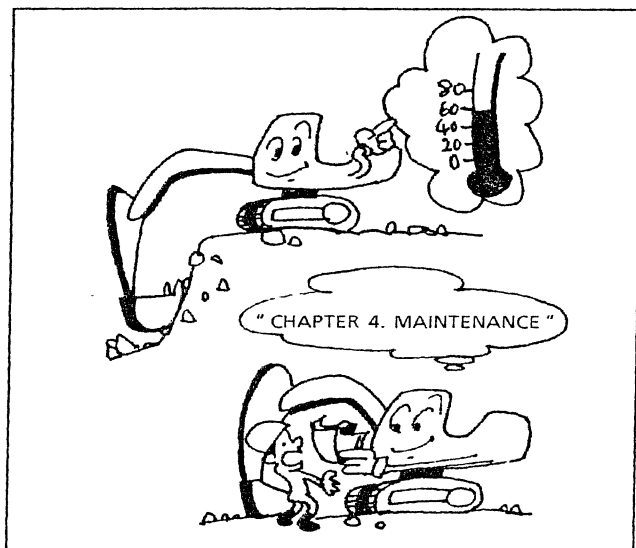
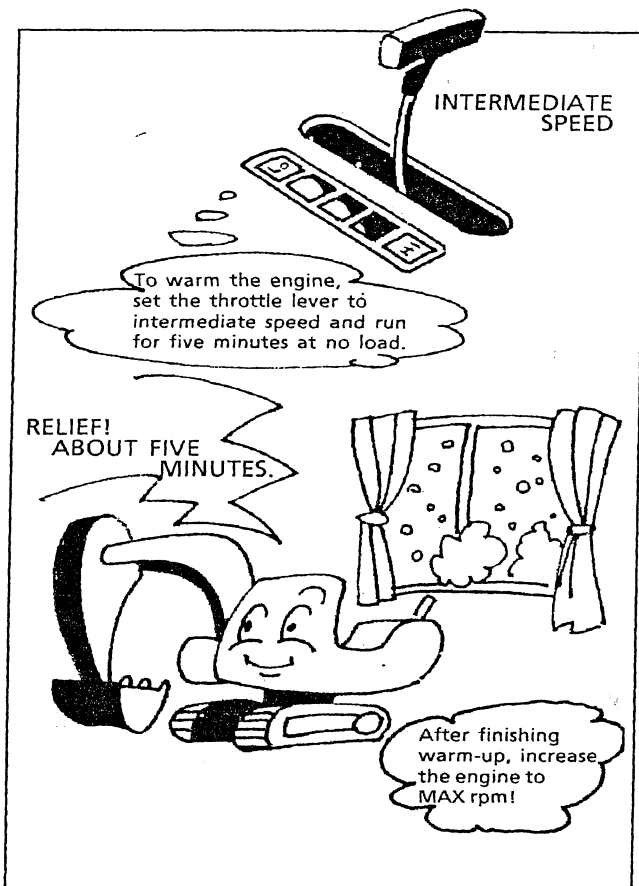
● WORK OPERATING LEVER

It enables boom, arm, bucket, and swing motions to be done singly or at the same time. Operating speed changes according to how far you push the lever. The lever returns to neutral automatically when released. For further information on operating patterns, refer to "Operation".

● HORN SWITCH

Sound the horn by pushing button attached to the grip of the LH work operating lever. (for ISO method)

- ⚠ Always blow the horn before starting the machine.



■ WARM-UP RUNNING

● Warming-up Engine

1. Run the engine for five minutes at no load.
2. Inspect the engine when running. (Check for unusual color of the engine exhaust, abnormal sounds and irregular vibration.)

● Warming Hydraulic Oil

After the engine has warmed up, allow the hydraulic oil to warm up for five minutes. Cold hydraulic oil may not allow all components to operate properly.

1. Bucket Relief Valve

Increase engine speed to maximum RPM and operate the bucket lever intermittently for about five minutes to allow oil flow through the relief valve.

2. Warming Up Attachments

Bring the engine RPM back to an intermediate level and operate the arm, boom, and swing systems at no load till the cooled hydraulic oil circulates throughout the hydraulic equipment.

3. After Warming Hydraulic Oil;

Increase the engine RPM to maximum and proceed with operation.

☞ In a cold season, warm the machine longer than usual!

- Continue warming the engine till the water temperature gauge begins to work.
- To warm the hydraulic oil, operate the machine at light load till the engine coolant temperature gauge indicator is in the green area.
- 50°~80°C (122°~176°F) is the optimum temperature range for the hydraulic oil.



Caution

Do not attempt normal machine operations when the hydraulic oil is cold. Slow or unexpected movement of the hydraulic functions may result. Always perform the warm up procedure before attempting normal operations. Always keep personnel away from the area around the machine during the warm up procedure.

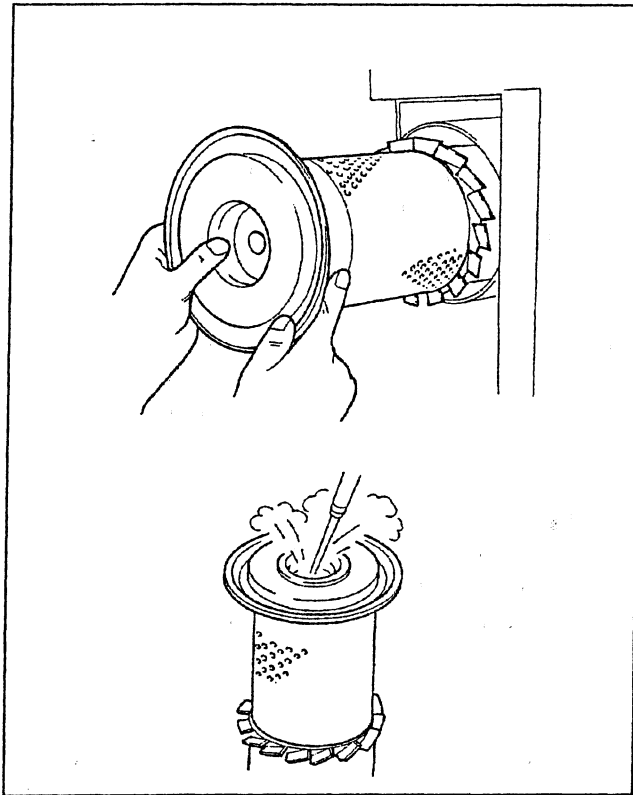
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■ AIR CLEANING ELEMENT

● Cleaning Air Cleaner

- 1) Remove the wing nut and the element.
- 2) Clean the inside of the body.
- 3) Blow compressed air ($7\text{kg}/\text{cm}^2$ (100psi) or below) along the pleats of the element from the inside of the element.

⚠ Wear safety goggles when using compressed air.

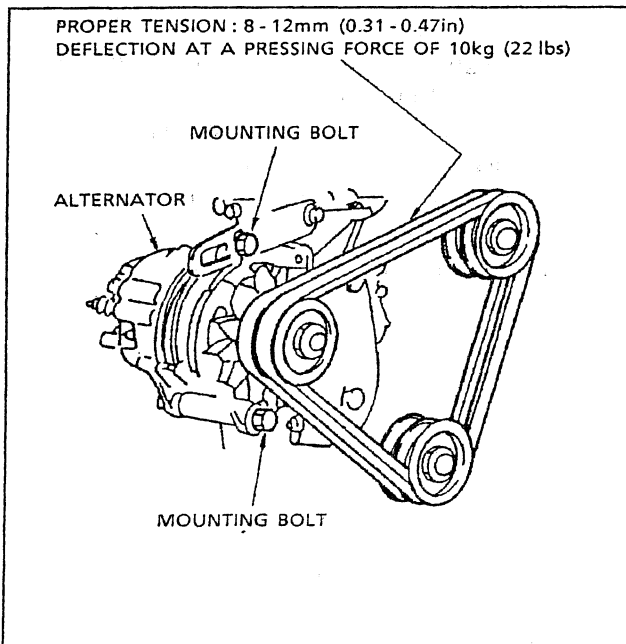
- 4) Do not reuse an element when pleats or gaskets are damaged.

🔧 Replace any element after six cleaning or one year of service.

● ATTACHING THE AIR CLEANER ELEMENT

- 1) Secure the element in the body with a wing nut.

⚠ When a fault sign is indicated on the multi-display of the cluster gauge and the buzzer sounds, check and clean the air cleaner element.



■ FAN BELT

● Checking V-belt

Belt tension is normal if deflection is about 8~12mm (0.31~0.47in) when you depress the center of the belt with your thumb. If the belt is loose, adjust it by loosening the mounting bolts at the top and the bottom of the alternator.

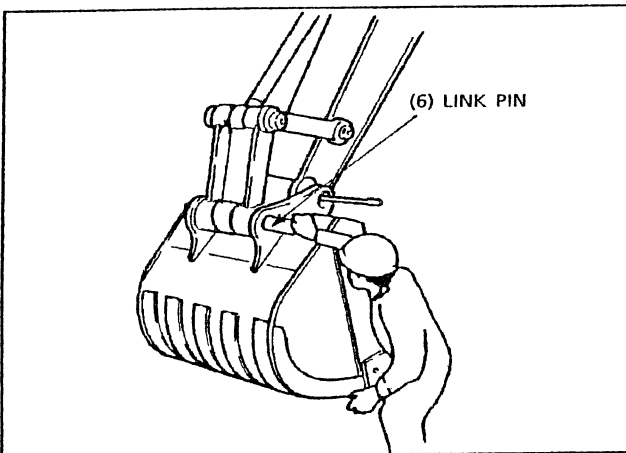
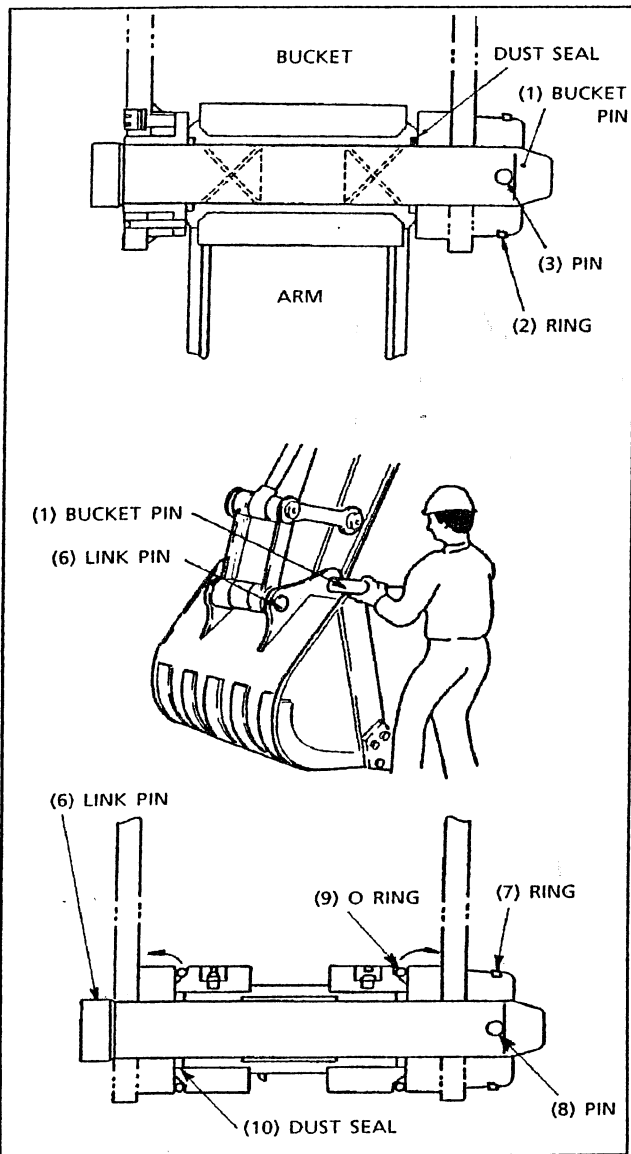
🔧 ● After tension adjustment, tighten the mounting bolts and the nuts securely. Overtightening belts will damage the belts and the bearings.

● Use care to prevent oil and grease from contacting the belt. Oil or grease can cause the belts to slip, which can shorten the service life.

● Replace the belt if it is stretched too far to adjust or shows cut marks or cracks.

● When the belts are used, always replace both belts at the same time.

ATTACHING, DETACHING AND TURNING OVER THE BUCKET



■ ATTACHING AND DETACHING THE BUCKET

● Detaching the Bucket

A. Pulling Out the Bucket Pin

- 1) Lower the bucket to flat ground, bracing it so the pin connecting the bucket and arm is not under load.
- 2) To remove bucket pin (1), take off ring (2) and pin (3).
- 3) Pull out bucket pin (1).

- ☞ • If the bucket pin is hard to pull out, it is still under a load. Moving the arm up and down will relieve this load.
- Pull out the pin carefully so the dust seal attached to the arm is not scored.

B. Pulling Out the Link Pin

- 1) Adjust link pin (6) by moving the operating lever so the link pin (6) is not under load.
- 2) Separate ring (7) and pin (8).
- 3) Side O-ring (9) (located between the idler link and the bucket boss) on to the embossment.
- 4) Pull out link pin (6), using care not to score dust seal (10).
- 5) Remove the bucket.

● Attaching the Bucket

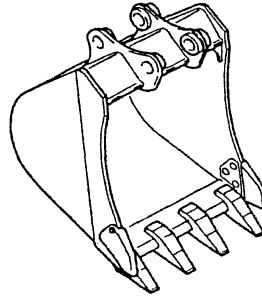
A. Inserting the Link Pin

- 1) Check for damage or cracks.
- 2) Replace the O-ring and dust seal.
- 3) Coat the bucket pin and the link pin with grease.
- 4) Put a pry bar into the bucket pin hole as shown in the figure and insert link pin (6).
- 5) Fix ring (7) and pin (8) in correct positions.

TYPES OF ATTACHMENTS AND COMBINATIONS

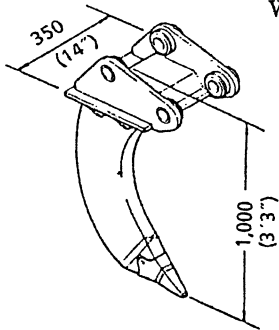
■ TYPES OF BUCKETS

HOE BUCKET



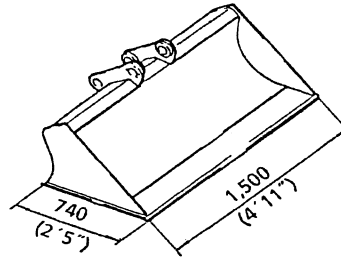
Heaped capacity m ³ (cuyd)	Outside width of bucket mm (ft-in)		No. of teeth	Equipped with side cutter	Possibility of turnover	Weight kg (lbs)
	With side cutter	With out side cutter				
0.1(0.13)	—	368(1' 2")	3	No	Yes	160(350)
0.16(0.21)	560(1' 10")	460(1' 6")	3	Yes	Yes	170(370)
0.2(0.26)	650(2' 2")	550(1' 10")	3	Yes	Yes	180(400)
0.25(0.33)	770(2' 6")	670(2' 2")	4	Yes	Yes	210(460)
0.3(0.39)	—	820(2' 8")	4	No	Yes	220(490)

RIPPER



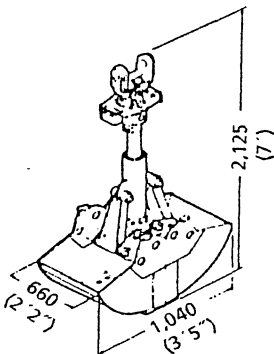
Turnover not possible
Weight : 210kg (460 lbs)

SLOPE FINISHING BUCKET



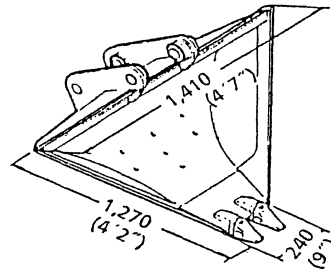
Turnover not possible
Capacity : 0.2m³ (0.26 cuyd)
Weight : 300kg (660 lbs)

CLAMSHELL BUCKET



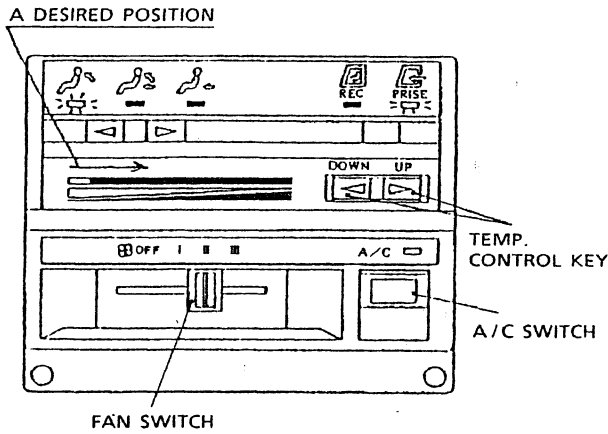
Capacity : 0.2m³ (0.26 cuyd)
Weight : 435kg (960 lbs)
Width of opening :
1,240mm (4ft1in)

V-BUCKET

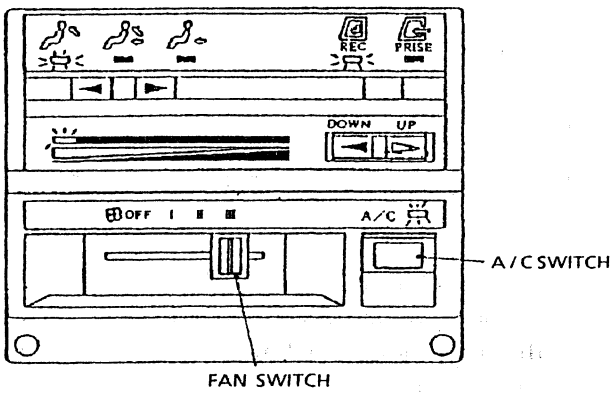


Turnover not possible
Capacity : 0.2m³ (0.26 cuyd)
Weight : 180kg (400 lbs)

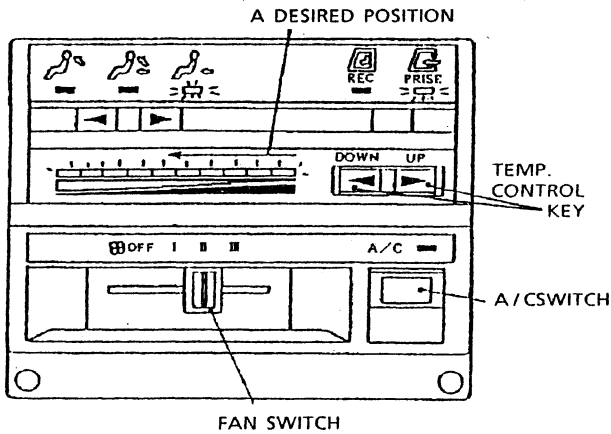
Normal cooling



Quick cooling



Normal cooling



■ OPERATING PROCEDURE

● Normal cooling

This mode performs cooling while exchanging the air with dust-removed outer air and removing moisture.

- 1) Place the fan switch in any desired position and turn on the air conditioner switch. (LED lights.)
- 2) Light an LED in a desired position by a corresponding key. Turn temperature control to a desired position.

● Maximum (quick) cooling

Eliminate moisture while circulating the inside air to perform the maximum (quick) cooling.

- 1) Set the fan switch to "III" position and turn on the air conditioner switch. (LED lights.)
- 2) Turn on an LED in a desired position by a corresponding key.

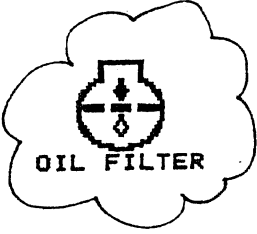
- ☞ When using the air-conditioner for a long time, turn the switch to PRISE (admitting outer air).
- If the machine is under sunshine and the cab interior is very hot, open the door and after thorough ventilation, cool it.

● Normal warming

This mode performs warming, exchanging the air with dust-removed outer air.

- 1) Bring the fan switch to a desired position.
- 2) Turn on an LED in a desired position by a corresponding key. Set the temperature control key to a desired position.
- 3) If window panes tend to get clouded in rainy days, turn on the air-conditioner switch.

- ☞ If the temperature control is set to the maximum level, hot & and cool box works as a hot box.

System	Trouble	Cause	Action
Multi-display warning	Buzzer sound and display on instrument panel. 	<ul style="list-style-type: none"> ● Engine oil filter clogged ● Wrong oil viscosity 	<ul style="list-style-type: none"> Replace element Replace with proper viscosity

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