⚠ SAFE OPERATION

Careful operation is your best insurance against an accident.

Read and understand this manual carefully, before operating the excavator.

Every user, however experienced, should carefully read and understand this manual and those of the attachments and accessories before operating the excavator. The owner is obliged to inform all operators of these instructions in detail.

Keep this manual in the storage location. (See "Where to keep Operator's Manual" in "MAINTENANCE" section.)

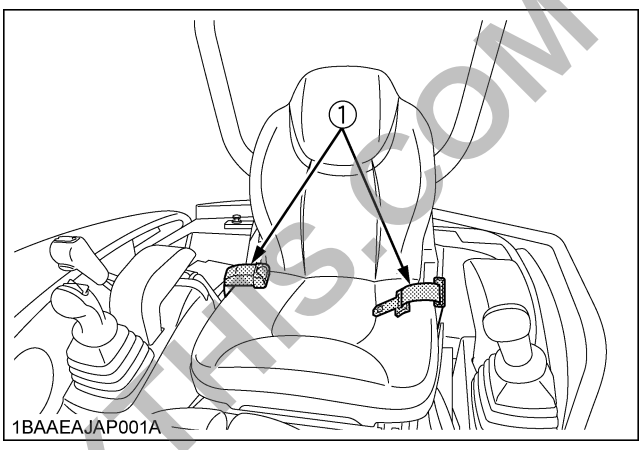
1. BEFORE OPERATION

1. Know your equipment and its limitations. Read and understand this entire manual before attempting to start and operate the excavator.
2. Pay special attention to and obey the danger, warning and caution labels on the machine.
3. For your safety, a ROPS/OPG (Top Guard Level I) with a seat belt is installed by KUBOTA.
   - ROPS: Roll-Over Protective Structure
   - OPG (Top Guard Level I): Operator Protective Guards of Top Guard Level I

   OPG (Top Guard Level I) in accordance with ISO10262 is equivalent in definition to FOPS (Falling Object Protective Structure).

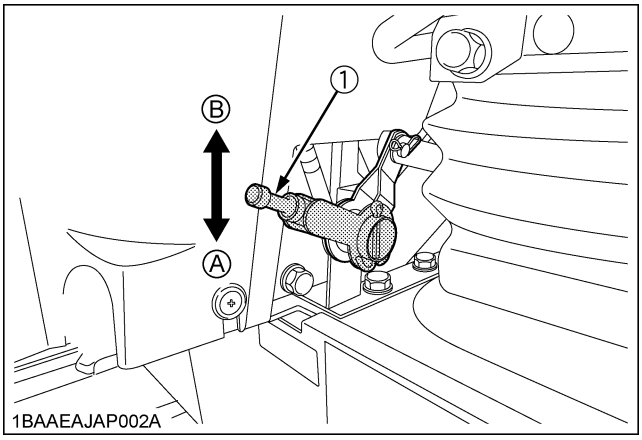
   Always use the seat belt when the machine is equipped with a ROPS/OPG (Top Guard Level I) as this combination will reduce the risk of serious injury or death, should the excavator be upset or falling objects occur.

   Do not modify any structural members of the ROPS/OPG (Top Guard Level I) by welding, drilling, bending, grinding or cutting, as this may weaken the structure. If any component is damaged, replace it. Do not attempt repairs. If the ROPS/OPG (Top Guard Level I) is loosened or removed for any reason, make sure all parts are reinstalled correctly. Tighten mounting bolts to proper torque.
4. ROPS meets requirements of ISO 3471.
   OPG (Top Guard Level I) meets requirements of OSHA 1926･1003/ISO 10262.
5. The seat belt must be inspected regularly and replaced if frayed or damaged.



(1) Seat belt

6. Always sit in the operator's seat when starting engine or operating levers or controls.
7. Study control lever pattern A and pattern B. Then choose the one which is most familiar.
   Familiarize yourself with the pattern selected by operating the unit slowly and at low engine speed.



(1) Pattern selector lever (Two Pattern Selection System:TPSS)
(A) "Pattern A"
(B) "Pattern B"

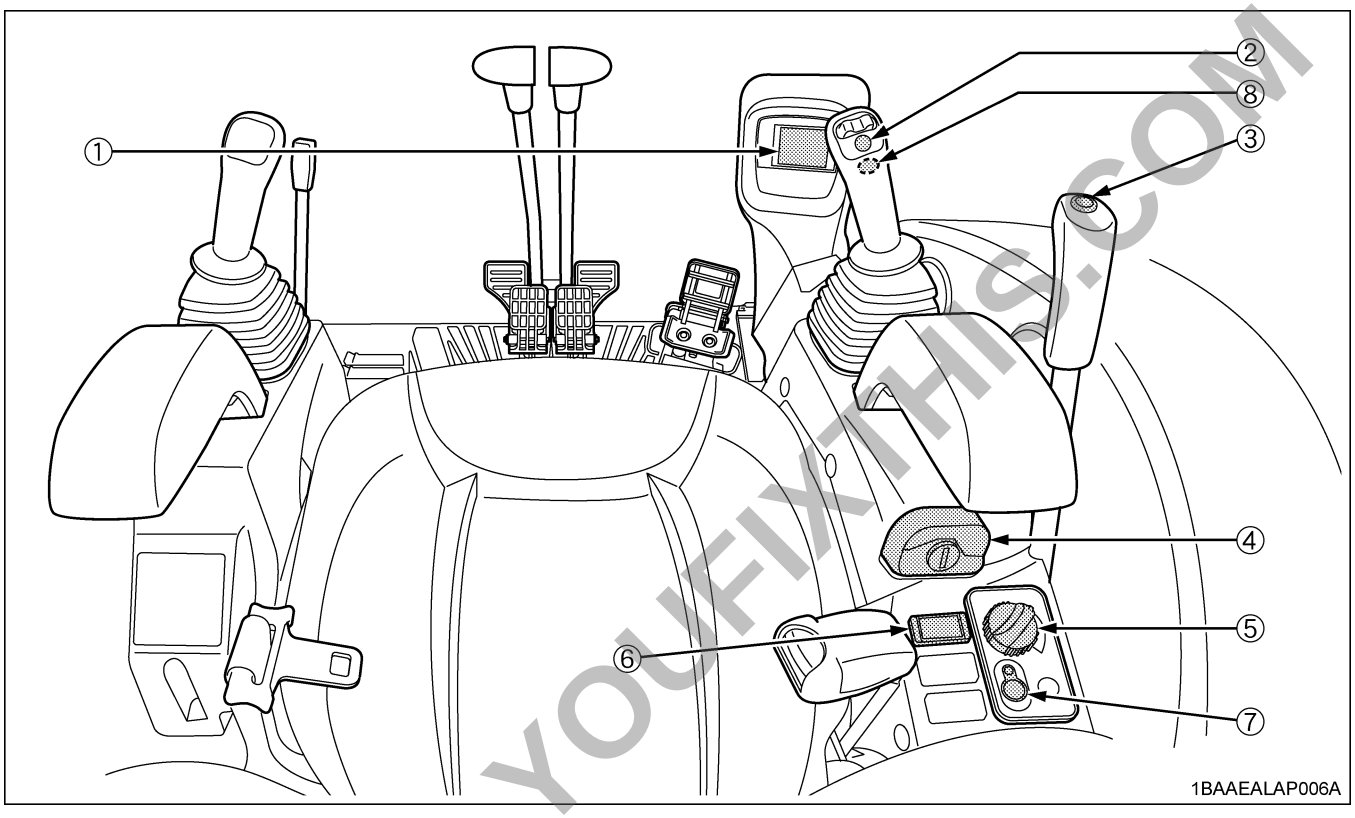
8. Do not operate the excavator while under the influence of alcohol, medication, controlled substances or while fatigued.

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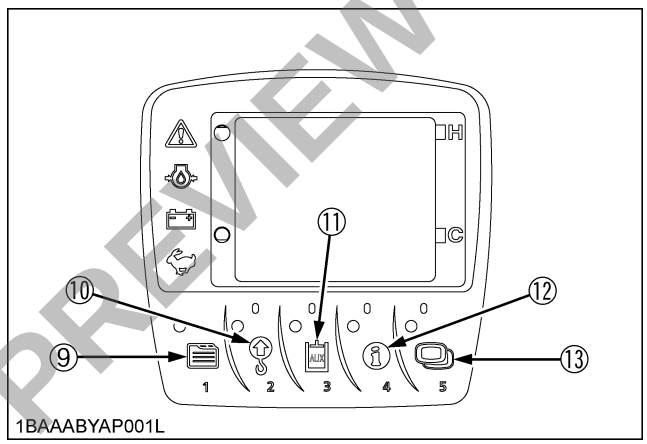
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INSTRUMENT PANEL AND CONTROL ELEMENTS

■ Instrument Panel, Switch



(1) LCD
(2) Horn switch
(3) Travel speed switch
(4) Starter switch
(5) Throttle potentiometer
(6) Light switch
(7) Auto idle control switch
(8) One way hold switch



(9) User setting switch (Switch 1)
(10) - (Switch 2)
(11) AUX port enable switch (Switch 3)
(12) Information switch (Switch 4)
(13) Display selector switch (Switch 5)

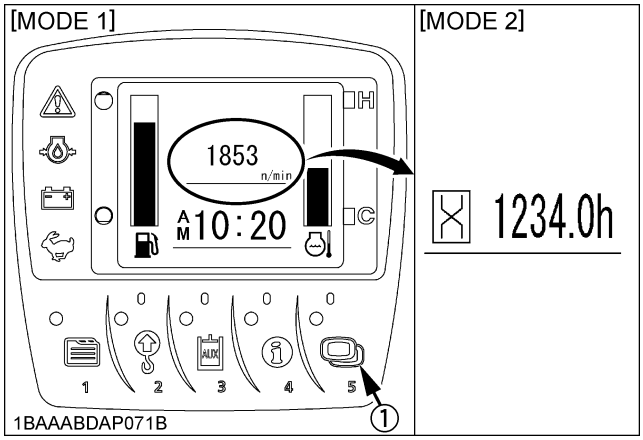
	Ref. page
Starter switch	7
Display selector switch	8
LCD	8
Fuel gauge	
Coolant temperature gauge	
Hour meter	
Engine tachometer	
Glow indicator	
Warning lamp	11
Information switch	11
User setting switch	13
Horn switch	18
Light switch	18
AUX port enable switch	18
Auto idle control switch	19
Throttle potentiometer	19
Travel speed switch	19

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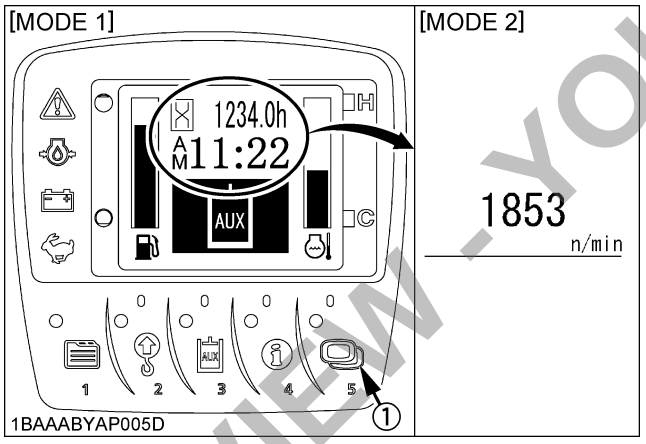
■Display Selector Switch

Press the display selector switch while the engine is running. The LCD meter display will change from one indication mode to the other.
Change the **two-mode** display according to your jobs.



(1) Display selector switch

◆ **AUX port in use**



(1) Display selector switch

NOTE :

- Even with the starter key not yet inserted, press the electronic meter's user setting switch or the display selector switch, and the LCD shows the hour meter, fuel gauge, water temperature gauge and clock for 10 seconds.

■LCD for Normal Operation

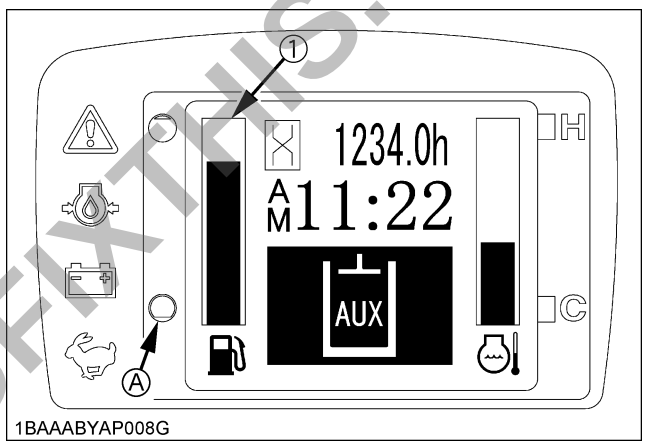
◆ **Fuel gauge**

WARNING

To avoid personal injury or death:

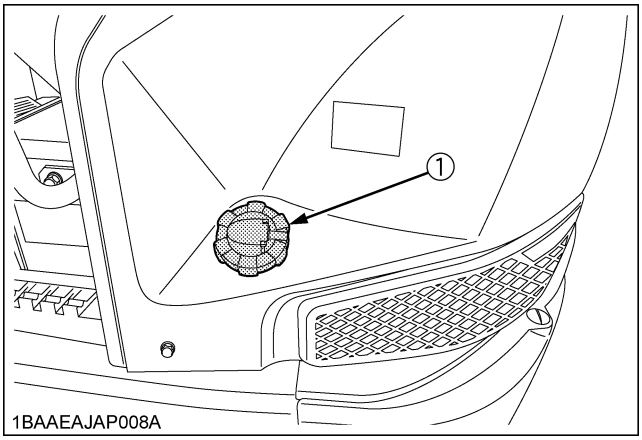
- **Before adding fuel, be sure to stop the engine.**
- **Be sure to keep open flame away from the machine. Otherwise a fire may result.**

With the starter key at the "**RUN**" position, the fuel remaining in the fuel tank is indicated in the block.



(1) Fuel gauge (A) "E"

If the fuel runs short, open the cap and refuel the tank.



(1) Fuel cap

IMPORTANT :

- If the fuel gauge indicator is near the **"E"** or the **"Feed fuel"** message appears, add fuel as soon as possible. If the indicator is near **"E"** and the machine is operated on a slope, the engine may run out of fuel.

NOTE :

- To open the fuel cap, keep the key inserted.

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STOPPING THE ENGINE

WARNING

To avoid personal injury or death:

- **Do not keep the bucket or dozer in an elevated position, as a person could accidentally touch the levers and cause serious accidents.**

1. **Place the bucket and dozer on the ground.**
2. **After slowing the engine to idle, turn the key to "STOP".**
3. **Remove the key.**
4. **Pull the pilot control lock lever to "LOCKED" position.**

■Engine Stop Button

WARNING

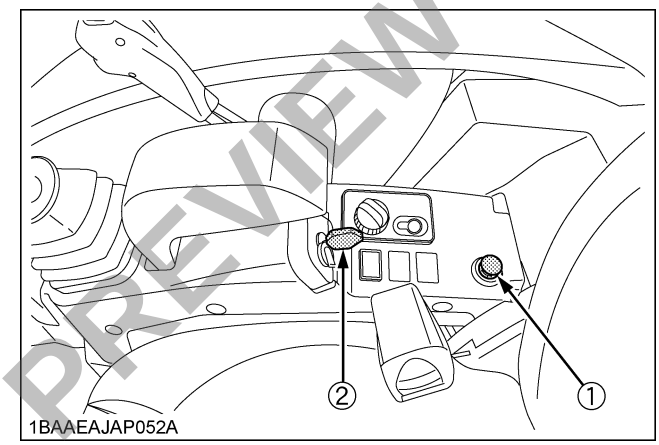
To avoid personal injury or death:

- **Keep hands away from rotating parts.**

IMPORTANT :

- Be sure to return the stop button to former position after the engine stops.

The engine stops when the starter key is turned off. If the engine does not stop, pull the stop button to stop the engine.



(1) Stop button
(2) Starter key

■Precautions in case of Overheat

WARNING

To avoid personal injury or death:

- **Do not open the radiator cap during operation or just after shut-down. Otherwise, steam or very hot coolant may gush out, getting you scalded. Make sure the radiator has cooled down enough before opening its cap.**

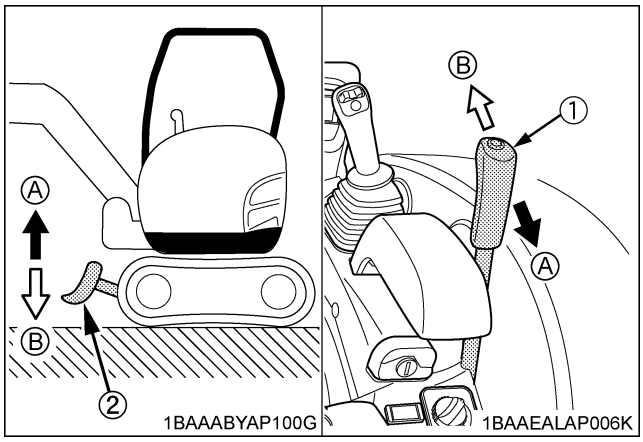
If by any chance the coolant temperature rises close to or above the boiling point (**"H"** on the water temperature gauge) (overheat condition), take the following steps.

1. Stop operating the machine.
   (Relieve the engine of any load.)
2. Do not shut off the engine suddenly. Before shutting off the engine, keep it idling under no load for about 5 minutes.
3. Stay away from the engine or overflow for 10 minutes or until the steam overflow stops.
4. Be sure that there is no danger of getting scalded. Pinpoint and remove the cause of overheat, referring to the **"TROUBLESHOOTING"** section. Once the issue is resolved, the engine may be restarted.

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3. Activate the dozer control lever to raise the dozer.



(1) Dozer control lever
(2) Dozer
(A) "Raise"
(B) "Lower"

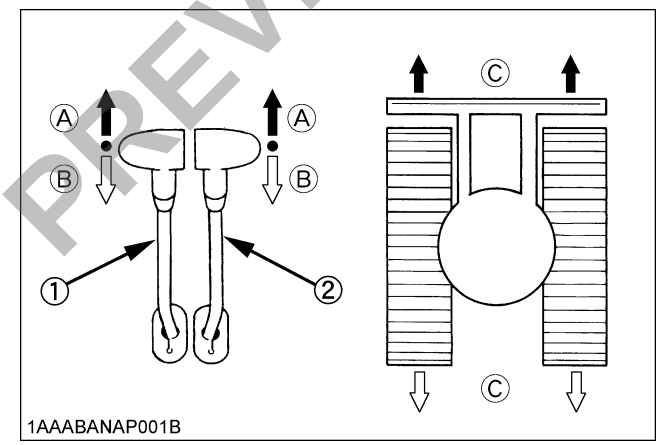
■Drive Levers (Right,Left)

WARNING

To avoid personal injury or death:

- **When driving the excavator keep the dozer blade in front. To move the excavator forward, move the drive levers to (A) and to move in reverse, move the drive levers to (B) with dozer blade in front. If the dozer blade is behind operator station, then the controls are reversed, moving the excavator forward will require (B) and moving the excavator backwards will require (A), but this is not recommended.**

Pushing the drive levers forward, moves the excavator forwards, and vice-versa. The front of the excavator is the side where the dozer is located; the drive sprocket is in the rear of the excavator.



(1) Drive lever (left)
(2) Drive lever (right)
(A) "Forward"
(B) "Backward"
(C) "Straight"

TURNS

WARNING

To avoid personal injury or death:

- **Do not change direction on steep slopes, or the excavator could tip over.**
- **Before changing direction, beware of people in the work area.**

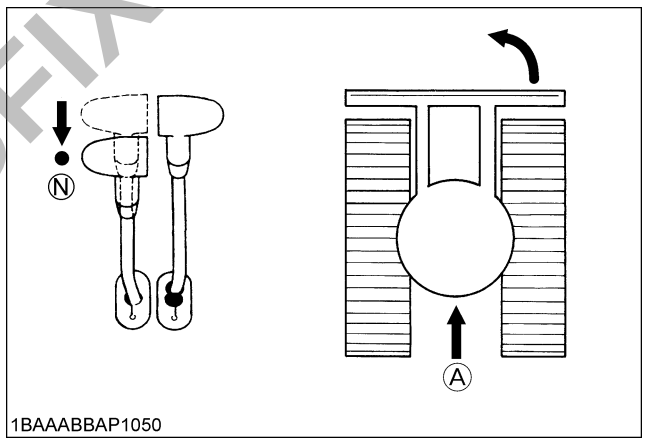
■Pivot Turn

NOTE :

- Movement as illustrated is done with the dozer blade in front of the operator.

◆ Change of Direction while Travelling

1. While travelling forward, bring the left drive lever into the neutral position;
   the excavator will turn in the direction of the arrow of the illustration below.



(A) "Travelling forward"
(N) "Neutral position"

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TROUBLESHOOTING

If the excavator does not show the desired performance, or when trouble arises, refer to the table below and undertake appropriate measures.

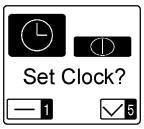
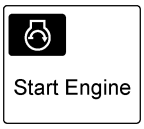
Trouble		Cause	Countermeasure
Engine	Starting difficulties	Pilot control lock lever in "UNLOCK" position	* Bring pilot control lock lever into "LOCKED" position.
		Fuel is too viscous.	* Check fuel tank and filter. * Remove impurities and water. * If necessary, replace filter.
		Air or water in the fuel system	* Remove water from the fuel tank. * Check fuel pipe joint bolts and nuts for looseness. * Purging of the fuel system (for fuel filter and injection pump, see "PURGING OF THE FUEL SYSTEM" in the chapter "OTHER ADJUSTMENTS AND REPLACEMENTS".)
		Oil viscosity is too high the engine runs sluggishly in winter.	* Pour hot water over the radiator.
		Battery is almost dead; insufficient compression.	* Recharge battery.
	Insufficient engine power	Low fuel level	* Check fuel and add if necessary.
		Clogged air cleaner	* Clean the air filter element.
	Engine suddenly stops.	Low fuel level	* Check fuel and add if necessary. * Purge the fuel system.
	Abnormal exhaust gas color	Poor fuel	* Use high quality fuel.
		Too much engine oil	* Drain engine oil to prescribed oil level.
	Water temperature in red zone (Overheating)	Defective seal of the water pump	* Replace.
		Worn or torn V-belt	* Adjust or replace.
		Thermostat is defect.	* Replace.
		Coolant level too low	* Fill to prescribed level.
		Radiator grill or fins are clogged.	* Clean.
		Coolant is contaminated with rust from the cylinder head or crank case.	* Replace coolant fluid and add anti-rust.
		Defective radiator cap (Evaporation)	* Replace.
		Corroded coolant pipes	* Clean.
		Continuous operation under full load	* Reduce load.

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NAVIGATION LIST OF SCREENS

If an error occurs with the machine, one of the following messages appears in the LCD.
In case of trouble, immediately contact your local dealer for inspection and repair.
While the (ℹ) (information mark) appears onscreen, press the information switch, and detailed information will be displayed.
Notify your local dealer of this and other information.

No.	Message	Problem or failure (What happened)	Machine behavior (Provisional measure)	Correction
1	Clock setting request  1BAABBLAP255B	The battery is disconnected, thereby requiring to set the clock.	Press Switch 5 to set the clock.	-
2	Tilt up the lock lever.  1BAABBLAP142B	This message indicates a procedural step.	Tilt up the pilot control lock lever. This message disappears by tilting up the pilot control lock lever.	-
3	Tilt down the lock lever.  1BAABBLAP257B	This message indicates a procedural step.	Tilt down the pilot control lock lever. This message disappears by tilting down the pilot control lock lever.	-
4	Start the engine.  1BAABBLAP258B	This message indicates a procedural step.	Start the engine. This message then disappears.	-
5	Failure to pull out the key  1BAABBLAP259B	This message appears if the key switch is set at "STOP" and left at this position for a while.	Draw out the key.	-
6	Press Switch 3.  1BAAABYAP031A	This message appears if the AUX function is tried without pressing the AUX port enable switch.	Press the AUX port enable switch.	-

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LIFTING OF THE EXCAVATOR

DANGER

To avoid serious injury or death:

- **The correct instructions for safe handling are described here. Read these instructions carefully before moving the machine. Make sure that the operating personnel read the operator's manual carefully.**

■ Basics when Lifting with Cables or Straps

1. The lifting and crane operation is to be undertaken according to the safe operation guidelines described.
2. The equipment used for lifting mentioned in these instructions are only given as reference, the standards concerning strength, control and other details are based on the respective applicable guidelines.

■ Safety Aspects when Lifting with Cables or Straps

Abide by the following steps when lifting:

1. Do not lift loads that exceed the maximum load capacity of the crane.
2. Choose correct equipment suitable to the weight, size and form of the load.
3. First assess the center of gravity of the load, position the hook directly over the load and lift the load so that the center of gravity of the load is as low as possible.
4. The steel cables or straps must be fixed in the middle of the hook.
5. The load must be lifted vertically from the ground.
6. Do not enter the working area under suspended loads and do not move the load over people. The load must only be moved in an area where the balance can be easily maintained.

■ Lifting Procedure for the Excavator

WARNING

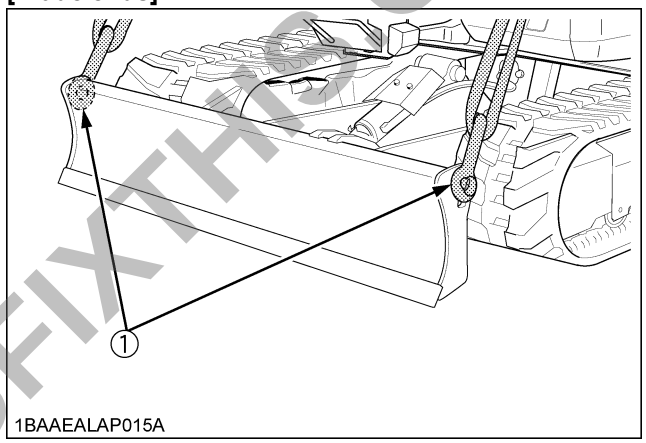
To avoid personal injury or death:

- **Do not use the hooks on the roof of canopy and CAB for lifting the excavator.**
- **When applying the shackles through the boom's and blade's openings for lifting, be sure to do two-point lifting for added safety.**

◆ General guidelines for lifting

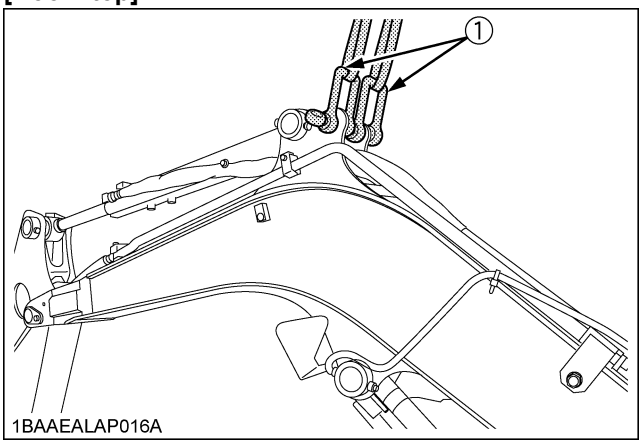
1. Lifting position. (see illustration below)
   (1) Rotate the upper swivel structure until the blade positions itself 180-degree opposite the attachment.
   (2) Raise the blade all the way.
   (3) Raise the boom and get the bucket and arm in their crowded position. Next set the pilot control lock lever to the **"LOCKED"** position.
   (4) With the boom not swinging, set the swing pedal to the neutral position, place the pedal cover and stop the engine.
   (5) Apply shackles (3200 kg or heavier-duty) through the openings at both ends of the blade. And apply shackles (2000 kg or heavier-duty) through the two openings at the boom top. Pass wire ropes through these shackles.

[Blade ends]



(1) Shackle

[Boom top]



(1) Shackle

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MAINTENANCE

MAINTENANCE INTERVALS

No.	Check points		Measures	Hour meter indicator									Interval	Ref. page		
				50	100	150	200	250	300	350	400	450				
1	Coolant		check	Daily check										58		
			change										every 2 years	75		
2	Fuel		check	Daily check										58		
3	Engine oil		check	Daily check										59		
			change	◉				○					every 250 hrs	70		
4	Hydraulic oil		check	Daily check										59		
			change										every 1000 hrs	73	*1	
5	Grease front attachments	Bucket and bucket link pin	-	Daily check										61		
		Boom swing fulcrum	-	Daily check										62		
		Others	-	Daily check										61		
6	Radiator and oil cooler		check	Daily check										60		
7	Washer liquid		check	Daily check										61		
8	Engine and electrical wiring		check	Daily check										61		
9	Fuel tank, Water separator		drain	○	○	○	○	○	○	○	○	○	every 50 hrs	63,63		
10	Battery condition		check	○	○	○	○	○	○	○	○	○	every 50 hrs	64		
11	Greasing swing bearing teeth		-	○	○	○	○	○	○	○	○	○	every 50 hrs	65		
12	V-belt tension		check	Daily check										60		
			adjust				○				○		every 200 hrs	66		
			replace										every 500 hrs	72		
13	Radiator hoses and clamps		check				○				○		every 200 hrs	67		
			replace										every 2 years	75		
14	Air filter element	Outer element	clean				○				○		every 200 hrs	67	*2	@
			replace										every 1000 hrs	74	*2	
		Inner element	replace										every 1000 hrs	74	*2	
15	Greasing swing ball bearing		-				○				○		every 200 hrs	67		
16	Fuel filter cartridge		replace										every 500 hrs	71		@
17	Engine oil filter		replace	◉				○					every 250 hrs	70		
18	Drive unit oil		change	◉									every 500 hrs	71		
19	Breather filter		replace										every 500 hrs	72		
20	Hydraulic return filter element		replace					◉					every 500 hrs	72		
21	Hydraulic suction filter element		replace										every 1000 hrs	73		
22	Filter in the pilot hydraulic system		replace										every 1000 hrs	72		
23	Fuel injection nozzle injection pressure		check										every 1500 hrs	74	*4	@
24	Front idler and track roller oil		change										every 2000 hrs	74		
25	Alternator and starter motor		check										every 2000 hrs	74		
26	Injection pump		check										every 3000 hrs	74	*4	@
27	Radiator system		rinse										every 2 years	75		
28	Fuel line and Intake air line		check				○				○		every 200 hrs	68		@
			replace										every 2 years	77	*3	

∗ 500 thru 1000 continued to the following table.

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CHECKS BEFORE START

DAILY CHECKS

In order to avoid damage, it is important to check the condition of the excavator before starting.

WARNING

To avoid personal injury or death:

- **Do maintenance work on the excavator only on level ground with the engine off and the pilot control lock lever in the "LOCKED" position.**

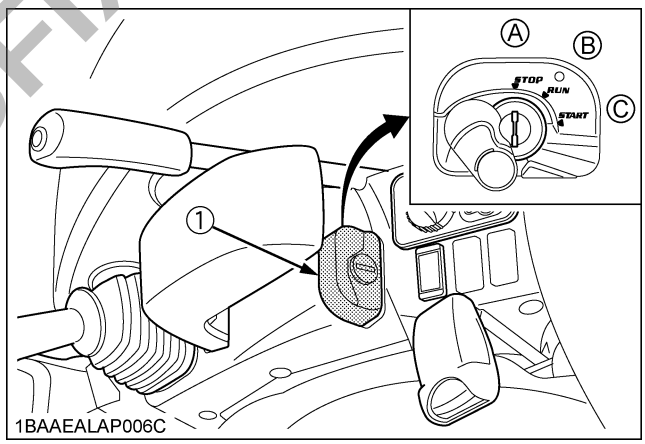
Checks

Go around the excavator and check for visual damage and wear.
Check coolant level. (See "DAILY CHECKS" in "MAINTENANCE" section.)
Check fuel level.
Check engine oil level.
Check hydraulic fluid level.
Check air filter for clogging.
Check all grease points.
Check all control lamps, indicators, tachometer and hour meter.
Confirm all controls move freely and do not stick.
Check the light system.
Check the seat belt and the ROPS / OPG (Top Guard Level I) safety device.
Check the condition of the safety and warning labels.
(See "DANGER, WARNING AND CAUTION LABELS" in "SAFE OPERATION" section.)
Inspect ROPS / OPG (Top Guard Level I) for damage and if damage is found, contact your KUBOTA dealer for repair.

CHECKING THE DEVICES

■Starter Switch

- **[STOP]**
  The key can be inserted at the "STOP" position.
- **[RUN]**
  Turn the key one click from the "STOP" position to the "RUN" position. All the circuitry gets energized to start preheating. The glow indicator is displayed.
  To check for any lamp breakage, however, the lamp lights up and stays on for about 1 second.
- **[START]**
  Move the pilot control lock lever to the "LOCKED" position. Turn the key from the "RUN" position another click to the "START" position. The starter motor is then activated to get the engine started.
  Release your hand from the key, and the key returns itself to the "RUN" position. In other words, once the engine has started, be sure to free the key.



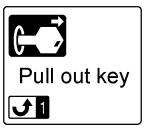
1BAAEALAP006C

(1) Starter switch
(A) STOP
(B) RUN
(C) START

NOTE :

- If the key is repositioned from "RUN" to "STOP" but not pulled out, the message **"pull out key"** appears onscreen.
- With the key off and pulled out, nothing appears onscreen.

[Status with the key off but not pulled out]



1BAABBLAP259B

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FOREWORD

You are now the proud owner of a KUBOTA Excavator. This excavator is a product of KUBOTA quality engineering and manufacturing. It is made of fine materials and under a rigid quality control system. It will give you long, satisfactory service. To obtain the best use of your excavator, please read this manual carefully. It will help you become familiar with the operation of the excavator and contains many helpful hints about excavator maintenance. It is KUBOTA's policy to utilize as quickly as possible every advance in our research. The immediate use of new techniques in the manufacture of products may cause some small parts of this manual to be outdated. KUBOTA distributors and dealers will have the most up-to-date information. Please do not hesitate to consult with them.

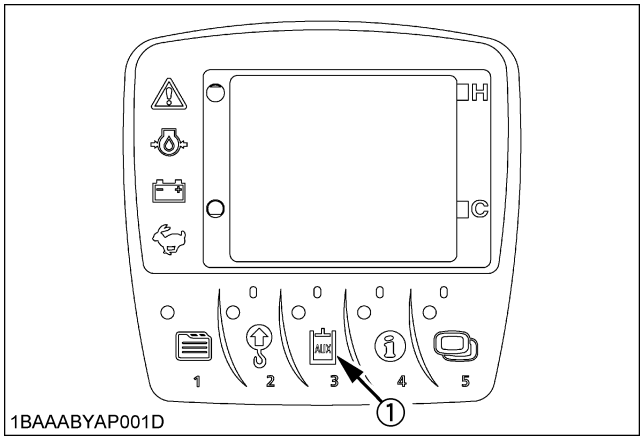
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SAFETY FIRST

This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully. It is essential that you read the instructions and safety regulations before you attempt to assemble or use this unit.

DANGER :	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING :	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION :	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
IMPORTANT :	Indicates that equipment or property damage could result if instructions are not followed.
NOTE :	Gives helpful information.

3. Push the AUX port enable switch (switch 3).



1BAAABYAP001D

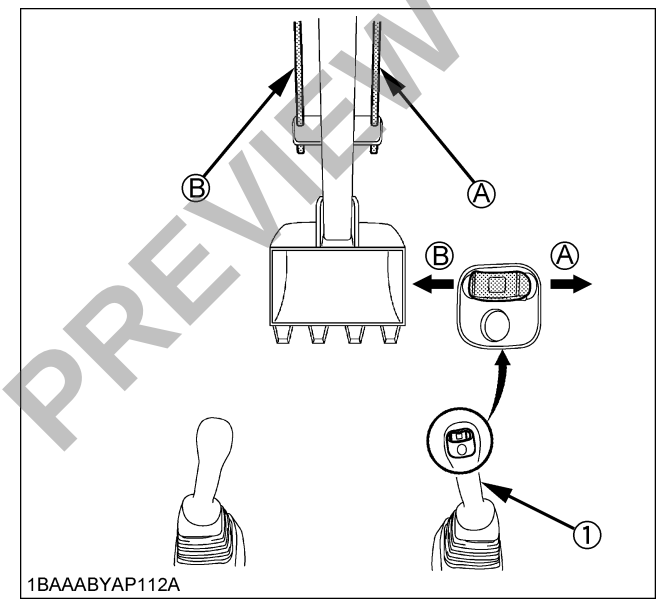
(1) AUX port enable switch (Switch 3)

NOTE :
- If the pilot control lock lever is at the "LOCKED" position, the following message appears onscreen. Down this lever to the "UNLOCK" position and then press the AUX port enable switch (switch 3).



1BAABBLAP257B

4. Move the AUX port knob of the right attachment control lever to the right to send oil to the AUX port 1. Move the AUX port knob to the left to send oil to the AUX port 2.



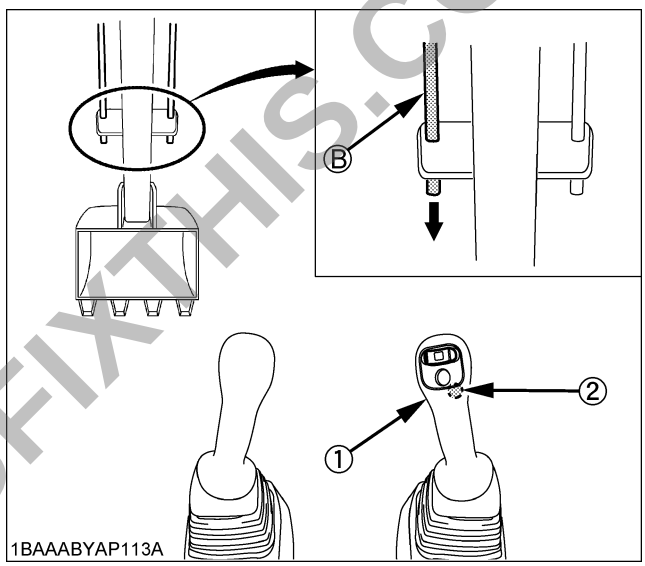
1BAAABYAP112A

(1) Attachment control lever (right) (A) "AUX port 1"
(B) "AUX port 2"

IMPORTANT :
- Proportional control of the AUX port knob allows for slow-to-fast movement of attachment.
  Example; If you move the AUX port knob halfway, the attachment will move at approximately one-half speed.

◆ One way hold

Press the one way hold switch of the right attachment control lever, and the oil continues to flow through the AUX port 2. Press this switch again or move the AUX port knob, and the oil flow is interrupted.



1BAAABYAP113A

(1) Attachment control lever (right) (B) "AUX port 2"
(2) One way hold switch (right)

NOTE :
- Even if the one way hold switch of the right attachment control lever is pressed, no function is assigned. In this case, the following message appears onscreen.



1BAAABYAP064A

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