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2 - SAFETY INFORMATION

Signal word definitions

Personal safety



This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible death or injury.

Throughout this manual you will find the signal words DANGER, WARNING, and CAUTION followed by special instructions. These precautions are intended for the personal safety of you and those working with you.

Read and understand all the safety messages in this manual before you operate or service the machine.

⚠ DANGER indicates a hazardous situation that, if not avoided, will result in death or serious injury.

⚠ WARNING indicates a hazardous situation that, if not avoided, could result in death or serious injury.

⚠ CAUTION indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

FAILURE TO FOLLOW DANGER, WARNING, AND CAUTION MESSAGES COULD RESULT IN DEATH OR SERIOUS INJURY.

Machine safety

NOTICE: *Notice indicates a situation that, if not avoided, could result in machine or property damage.*

Throughout this manual you will find the signal word Notice followed by special instructions to prevent machine or property damage. The word Notice is used to address practices not related to personal safety.

Information

NOTE: *Note indicates additional information that clarifies steps, procedures, or other information in this manual.*

Throughout this manual you will find the word Note followed by additional information about a step, procedure, or other information in the manual. The word Note is not intended to address personal safety or property damage.

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3 - CONTROLS/INSTRUMENTS

ACCESS TO OPERATOR'S PLATFORM

Frame - Access/Exit

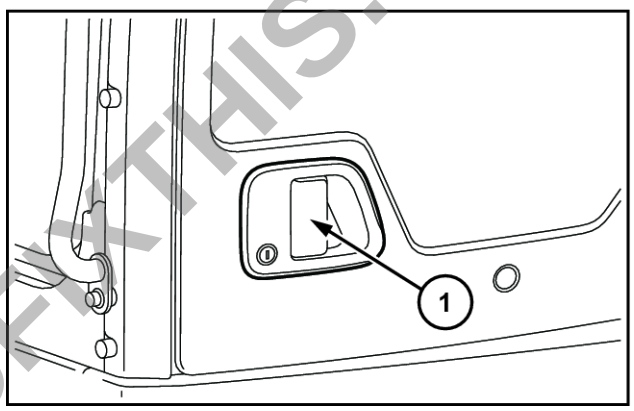
Cab door

⚠ CAUTION

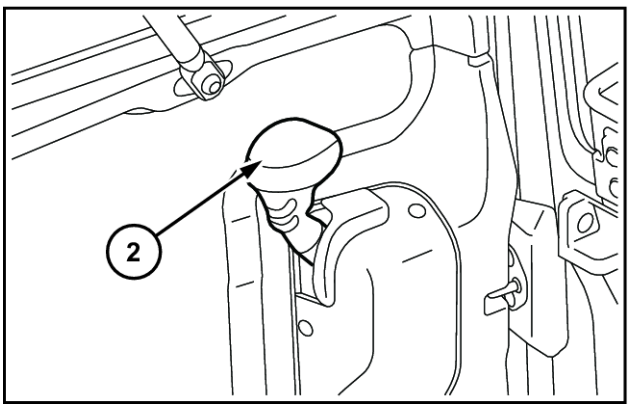
Pinch hazard!
Be careful not to get your hand, clothes, etc. caught in the door when closing it.
Failure to comply could result in minor or moderate injury.

C0046A

To open the door, use the handle **(1)** from the outside and use the handle **(2)** from the inside.



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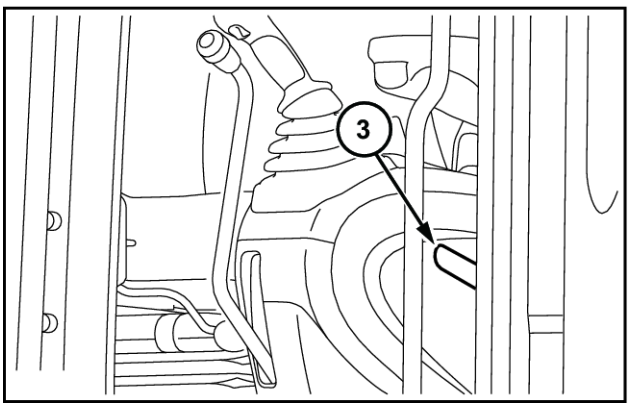


SMIL13CEX2565AB 2

The door can be latched in completely open position. To unlatch the door, tilt the lever **(3)** downward.

NOTICE: *do not leave the door ajar. Fix it in a latched position.*

NOTICE: *when seated in the operator's compartment, with the engine running, make sure that you do not operate the left-hand control lever inadvertently when unlocking the door. To prevent any incident, always raise the gate lock lever.*



SMIL13CEX2566AB 3

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4 - OPERATING INSTRUCTIONS

STARTING THE UNIT

Anti-theft protection

To prevent the machine from being stolen it is possible to use the anti-theft protection, which makes it necessary for a special code to be entered before the machine can be operated. To configure the anti-theft protection, consult your CASE CONSTRUCTION Dealer.

The effects of the device are:

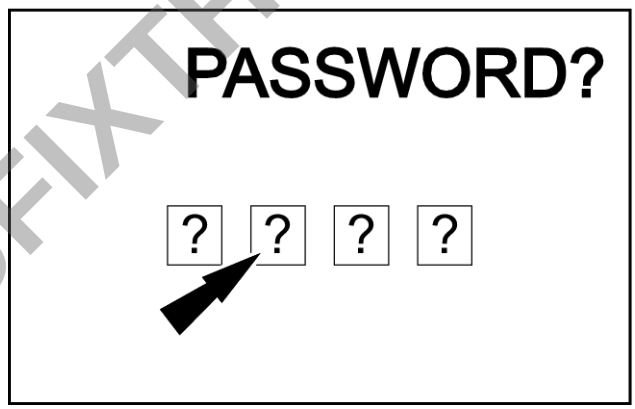
- The engine runs at idle speed.
- The audible alarm device will sound.
- The engine stops if the machine is handled.

Once the machine has been configured, a special access code has to be recorded which must be entered whenever you start the engine.

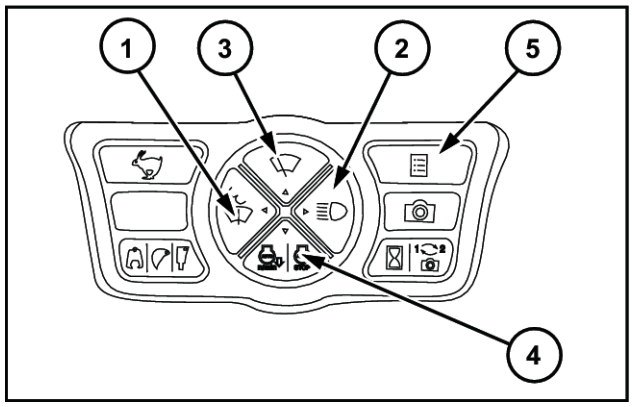
Code recording

1. Turn the ignition key to the **ON** position. The message **PASSWORD?** and four boxes will appear on the display screen.
2. Move the cursor to the left with the windshield washer button **(1)**.
   Move the cursor to the right with the working light button **(2)**.
   Increase the value with the front glass wiper button **(3)**.
   Decrease the value with the engine idling select button **(4)**.
3. Press the menu button **(5)** to register the password code. The screen returns to the normal display.

NOTE: *once the code has been recorded, do not forget it, as it can not be changed without consulting your CASE CONSTRUCTION Dealer. Be sure to keep a record of the code number.*



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Quick coupler (optional)

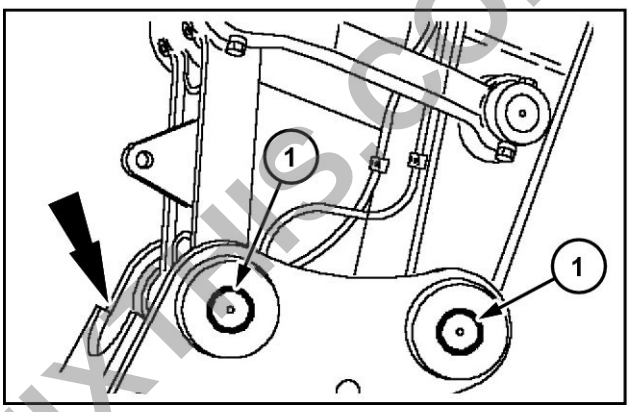
⚠ WARNING

Crushing hazard!
Never put your hands inside the quick coupler when the engine is running. Turn off the engine and wait for all movement to stop.
Failure to comply could result in death or serious injury.

W0252A

Install the quick coupler on the dipper and on the connecting rod using the CASE CONSTRUCTION linkage pins **(1)** supplied and then make the supply line connections.

NOTICE: *The quick coupler can be used in conjunction with hydraulic breakers, but is not designed to withstand excessive vibration over long periods of the time. It is therefore recommended to remove the quick coupler, to reduce the risk of premature wear, failures or breakage. If you do decide to use a hydraulic breaker, always orientate the breaker towards the machine and never use it as a lever, as the stress would be borne by the quick coupler cylinder.*



SMIL13CEX2695AB 1

Quick tool installation and removal

⚠ WARNING

Hazard to bystanders!
ALWAYS make sure the work area is clear of bystanders and domestic animals before starting this procedure. Know the full area of movement of the machine. Do not permit anyone to enter the area of movement during this procedure.
Failure to comply could result in death or serious injury.

W0245A

NOTICE: *This quick coupler is designed to be used with CASE CONSTRUCTION buckets. This being said, other buckets may be used, provided the diameter of the pins and the width between the bucket lugs are modified to meet the dimensions needed to fit the quick coupler (pins, washers, bushings, etc.). Consult your CASE CONSTRUCTION Dealer.*

Installation

1. Make sure the tool to be installed is laying safely on flat, level ground and that it is fitted with the pins supplied with the quick coupler.

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5 - TRANSPORT OPERATIONS

SHIPPING TRANSPORT

Transporting the machine

NOTICE: *for transporting the machine without attachment, the counterweight must be removed, consult your CASE CONSTRUCTION Dealer.*

Removing the attachment from the machine

⚠ WARNING

Improper operation or service of this machine can result in an accident.
Assign a supervisor to direct worksite operations. Agree on all safety measures, procedures, and suitable hand signals.
Failure to comply could result in death or serious injury.

W0287A

⚠ WARNING

Crushing hazard!
The lifting systems must be operated by qualified personnel who are aware of the correct procedures to follow. Make sure all lifting equipment is in good condition, and all hooks are equipped with safety latches.
Failure to comply could result in death or serious injury.

W0256A

⚠ WARNING

Crushing hazard!
This operation may be dangerous. You are advised to wear suitable clothing and respect all relevant safety messages.
Failure to comply could result in death or serious injury.

W0283A

⚠ WARNING

Pressurized system!
Before removing the attachment from the machine, make sure the air pressure and hydraulic oil pressure are at zero.
Failure to comply could result in death or serious injury.

W0284A

The use of lifting systems is necessary for removal and installation of the machine attachment and counterweight. Refer to the Service Manual or consult your CASE CONSTRUCTION Dealer.

NOTICE: *prevent dust and contamination entering open circuits. Any contamination of circuits can cause malfunction of the machine.*

By rail

Since transport by rail is subject to special regulations, consult an approved organization.

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6 - MAINTENANCE

GENERAL INFORMATION

Basic instructions

⚠ WARNING

Improper operation or service of this machine can result in an accident.
If you do not understand a maintenance procedure, or doubt your ability to perform a maintenance procedure correctly, see your authorized dealer.
Failure to comply could result in death or serious injury.

W0157A

⚠ WARNING

Improper operation or service of this machine can result in an accident.
Raised equipment or machine movement without an operator can cause serious injury. Always do the following before performing any maintenance:
Park the machine on flat, level ground.
Lower the attachment to the ground.
Shut down the engine and remove the ignition key.
Lock the tracks.
Failure to comply could result in death or serious injury.

W0944D

NOTICE: *be sure all the service operations in this section are carried out punctually at the intervals given, in order to ensure optimum performance levels and maximum safety when using the machine.*

- Respect the maintenance intervals by checking the hour meter every day. Before starting maintenance, park the machine on flat, firm ground, away from any obstacles, with the dipper retracted and the bucket on the ground. Lower the dozer blade (if equipped) until it rests on the ground. Unless otherwise specified, all maintenance operations must be carried out with the engine stopped and the key removed from the ignition key. It is preferable to wait for all circuits to cool down before starting work.
- Clean the grease fittings before lubrication. Clean around plugs and filler holes before adding fluid. No dust or dirt must enter the components or the circuits. Wear suitable clothing and remember to use the necessary safety equipment.
- When carrying out service work on the machine, place a "Do not operate" tag on the instrument panel. Never climb down from the operator's compartment leaving the engine running.
- Remove the necessary lower panels during maintenance of certain machine components.

⚠ WARNING

Moving parts!
Make sure the lower panels are properly closed before driving the machine.
Failure to comply could result in death or serious injury.

W0910A

Any modification to this machine without prior authorization could cause serious injury. Do not make any modifications without authorization. Consult your CASE CONSTRUCTION Dealer.

NOTICE: *if you use your machine in particularly harsh conditions (dusty or corrosive atmosphere, etc.), the servicing intervals should be reduced accordingly.*

NOTICE: *take particular care to replace all filters regularly. Clean filters mean longer engine running life.*

NOTE: *oil and fluid should not be thrown on the ground. They must be stored and removed by a company which is responsible for their recycling or their disposal.*

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7 - TROUBLESHOOTING

FAULT CODE RESOLUTION

Engine troubleshooting

NOTE: *this chapter shows how to easily diagnose problems relating to the engine and describes the solutions to be adopted. If you are unable to determine the cause of the failure, or if the latter is difficult to rectify, consult your CASE CONSTRUCTION Dealer.*

PROBLEM	POSSIBLE CAUSE	SOLUTION
Engine does not start. Starter does not rotate or rotation is weak	Battery is running out	Charge or replace
	Disconnection, looseness, or corrosion of the battery terminals	Repair the corroded area, and then tighten securely
	Starter ground wire terminal detached, loose, or corroded	Repair the corroded area, and then tighten securely
	Engine oil viscosity is too high	Replace it with oil with appropriate viscosity
	Starter or electrical system faulty	Consult your CASE CONSTRUCTION Dealer
Engine does not start. Starter turns over	No fuel in fuel tank	Check that there is no fuel leakage and refuel
	Air intrusion in the fuel system	Remove the air
	Clogging of the fuel filter	Remove moisture and replace the element
	Fuel is frozen	Warm up the fuel pipe with hot water, or wait until the air temperature rises
	Failure of the supply pump	Consult your CASE CONSTRUCTION Dealer
	Clogging of the supply pump strainer	Clean the strainer
	Failure of the engine control system	Consult your CASE CONSTRUCTION Dealer
	Preheating system faulty	
	Overflow valve remains open	Clean or replace the supply pump, fuel filter or fuel port overflow valve
The engine starts, but stops immediately	Clogging of the fuel filter	Remove moisture and replace the element
	Clogging of the pre-fuel filter	Clean or replace the element
	Failure of the engine control system	Consult your CASE CONSTRUCTION Dealer
	Clogging of the air cleaner	Clean or replace the element
	Failure of the supply pump	Consult your CASE CONSTRUCTION Dealer
	Clogging of the supply pump strainer	Clean the strainer
Engine revolution is unstable	Failure of the fuel system	Consult your CASE CONSTRUCTION Dealer
	Water or air intrusion in the fuel system	Remove the air
	Failure of the engine control system	Consult your CASE CONSTRUCTION Dealer
Engine rotation does not increase	Clogging of the fuel filter	Remove moisture and replace the element
The exhaust smoke is white	Insufficient warming-up	Perform warming-up
	Too much engine oil	Adjust to the appropriate oil amount
	Failure of the engine control system	Consult your CASE CONSTRUCTION Dealer
	Failure of the supply pump	
	Failure of the fuel system	
	Continuous idling for a long period (more than two hours)	Raise the engine speed and confirm that white smoke is not emitted

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8 - SPECIFICATIONS

Machine specifications

Engine

Manufacturer and type	**Isuzu AP-4LE2X**
Common rail, turbocharger with air cooled intercooler, fuel cooler	Equipped
Injection	Electronic control
Number of cylinders	**4**
Bore x stroke	**85 mm** (**3.35 in**) x **96 mm** (**3.78 in**)
Displacement	**2179 cm³** (**133 in³**)
Maximum torque (**ISO 9249**)	**193 N·m** (**142 lb ft**) at **1800 RPM**
Cooling	Water cooled
Battery starting	2 x **12 V 64 A·h**
Voltage	**24 V**
Alternator	**50 A**
Starter	**24 V**, **3.2 kW**

Working conditions

Speed	**1800 RPM**
Output (**ISO 9249**)	**40.0 kW** (**54.4 Hp**) at **2000 RPM**
Engine oil capacity (with remote oil filter)	**11.5 l** (**3.0 US gal**)
Fuel tank capacity	**120 l** (**31.7 US gal**)
Fuel filler pump	Option
Engine/pump assembly mounted on flexible mountings	
Filtration in dusty conditions	
Electronically controlled governor	

Hydraulic system

Variable flow piston-type double pump. Main pump maximum flow (at **2000 RPM**)	2 x **74 l/min** (**19.5 US gpm**)
Fixed flow pump (pilot circuit) maximum flow	**18 l/min** (**4.8 US gpm**)
Attachment working pressure	**29.4 MPa** (**4264 psi**)
Oil cooler with air cooling from engine	
High pressure multispiral hoses minimum safety factor	2 to 4 times the working pressure
Self-lubricating hydraulic swivel	
Hydraulic reservoir capacity	**51 l** (**13.5 US gal**)
Hydraulic system total capacity	**96.3 l** (**25.4 US gal**)

Control valve

With Boom holding valve
One 5-spool valve for Right track travel, Bucket, Boom, Arm acceleration and Boom swing
One 5-spool valve for Left track travel, Auxiliary, Swing, Boom acceleration and Arm
One 1-spool valve for Blade

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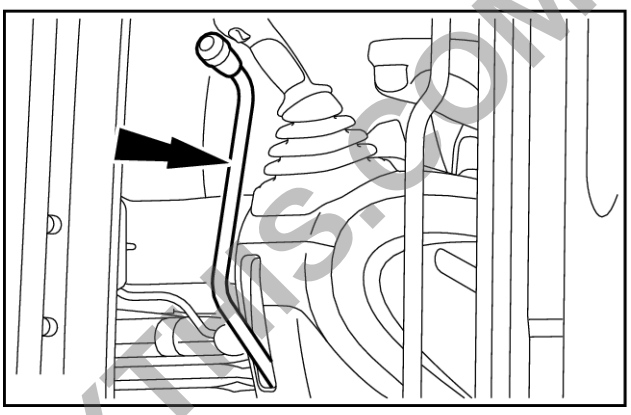
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Starting the engine

NOTE: *if the machine has been out of use for some time. (Refer to page **6-82**).*

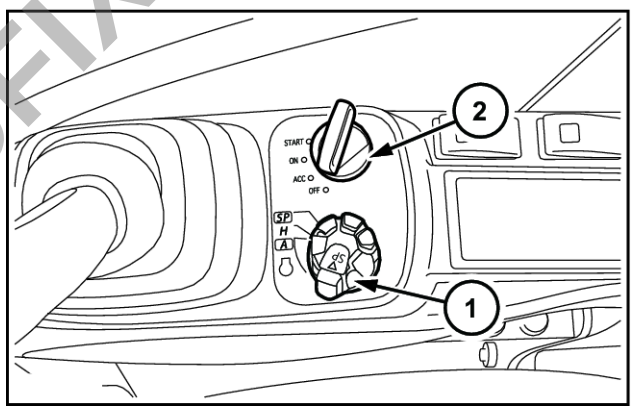
NOTE: *refer to page **6-36** if you have to start the engine using booster batteries.*

1. Take up position correctly in the operator's seat with the seat belt correctly fastened. (Refer to page **3-3**).
2. Always check that the gate lock lever (safety bar) is raised. The engine cannot be started unless the gate lock lever (safety bar) is raised.



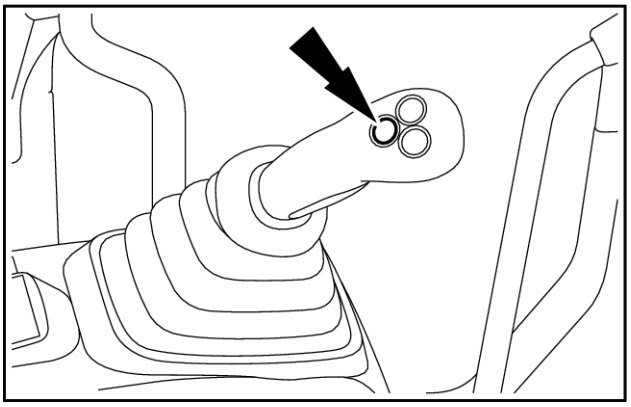
SMIL13CEX2669AB 1

3. Make sure the engine throttle button **(1)** is in low idle position. In cold weather, leave it in half-way position.
4. Turn the ignition key **(2)** to **ON** position.
5. If necessary, enter the anti-theft code. (Refer to page **4-1**).
   In cold weather, the "Engine pre heat" icon appears on the systems display panel.



SMIL13CEX2670AB 2

6. Sound the horn button on the left-hand control lever to give warning of your intention to start the machine.



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