

OPERATOR'S MANUAL

E55Bx

Tier 3

Compact Hydraulic Excavator

Part number S2HS00017ZE01

1st edition English

April 2014



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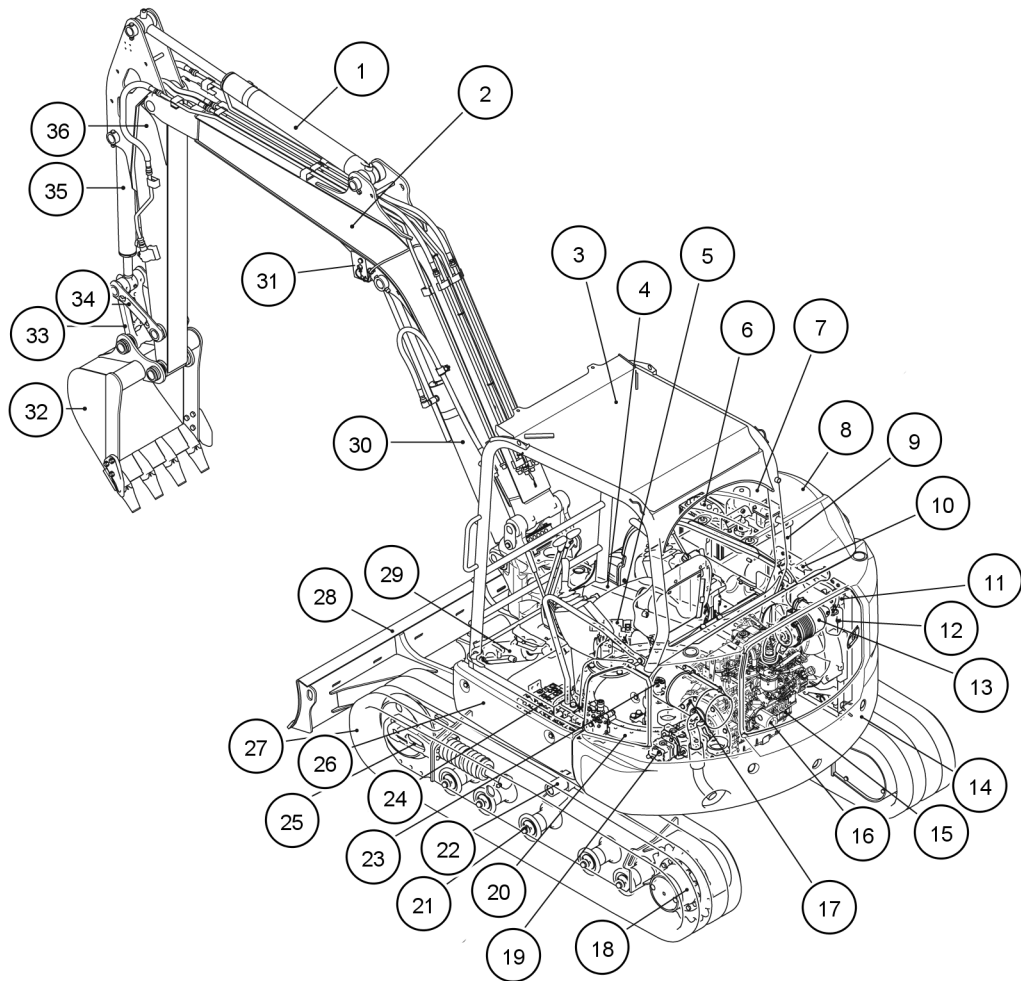
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Machine components



RAIL14CEX0009GA 1

- | | | |
|-----------------------|--------------------|-----------------------|
| 1. Arm cylinder | 13. Air cleaner | 25. Idler assembly |
| 2. Boom | 14. Counterweight | 26. Guard |
| 3. Cab or canopy | 15. Engine | 27. Rubber track shoe |
| 4. Swing cylinder | 16. Oil filter | 28. Dozer blade |
| 5. Swing motor | 17. Exhaust pipe | 29. Dozer cylinder |
| 6. Battery | 18. Travel motor | 30. Boom cylinder |
| 7. Fuel tank | 19. Hydraulic pump | 31. Work light |
| 8. Right side cover | 20. Swing bearing | 32. Bucket |
| 9. Hydraulic oil tank | 21. Lower roller | 33. Bucket link |
| 10. Radiator | 22. Upper roller | 34. Idler link |
| 11. Engine hood | 23. Swivel joint | 35. Bucket cylinder |
| 12. Reserve tank | 24. Control valve | 36. Arm |

⚠ Do Not Operate tag ⚠

Before you start servicing the machine, attach a 'Do Not Operate' warning tag to the machine in an area that will be visible.

⚠ General maintenance safety ⚠

Keep the area used for servicing the machine clean and dry. Clean up spilled fluids.

Service the machine on a firm, level surface.

Install guards and shields after you service the machine.

Close all access doors and install all panels after servicing the machine.

Do not attempt to clean, lubricate, clear obstructions, or make adjustments to the machine while it is in motion or while the engine is running.

Always make sure that working area is clear of tools, parts, other persons and pets before you start operating the machine.

Unsupported hydraulic cylinders can lose pressure and drop the equipment, causing a crushing hazard. Do not leave equipment in a raised position while parked or during service, unless the equipment is securely supported.

Jack or lift the machine only at jack or lift points indicated in this manual.

Incorrect towing procedures can cause accidents. When you tow a disabled machine follow the procedure in this manual. Use only rigid tow bars.

Stop the engine, remove the key, and relieve pressure before you connect or disconnect fluid lines.

Stop the engine and remove the key before you connect or disconnect electrical connections.

Scalding can result from incorrect removal of coolant caps. Cooling systems operate under pressure. Hot coolant can spray out if you remove a cap while the system is hot. Allow the system to cool before you remove the cap. When you remove the cap, turn it slowly to allow pressure to escape before you completely remove the cap.

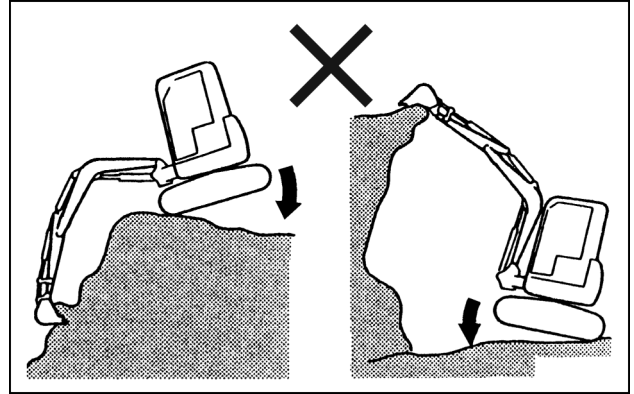
Replace damaged or worn tubes, hoses, electrical wiring, etc.

The engine, transmission, exhaust components, and hydraulic lines may become hot during operation. Take care when you service such components. Allow surfaces to cool before you handle or disconnect hot components. Wear protective equipment when appropriate.

When welding, follow the instructions in the manual. Always disconnect the battery before you weld on the machine. Always wash your hands after you handle battery components.

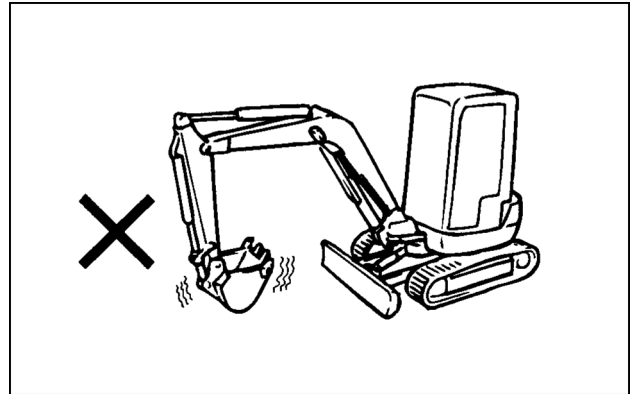
2 - SAFETY INFORMATION

Do not tip or raise the machine to obtain power to dig. Before digging a hard bedrock, crack it into pieces by another method.



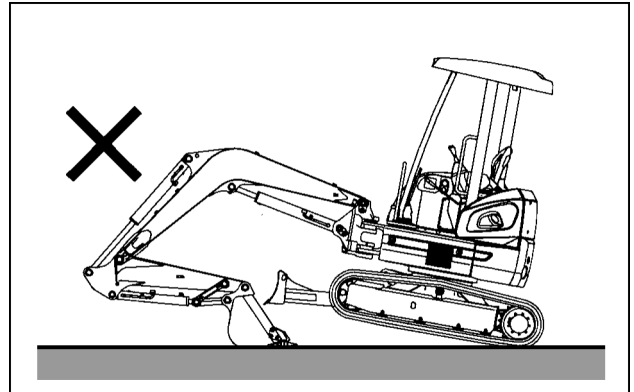
RAIL14CEX0139AA 5

Do not operate the bucket to the stroke end of the bucket to generate impact to remove dirt. It may cause damage to the equipment, attachment, and cylinders.



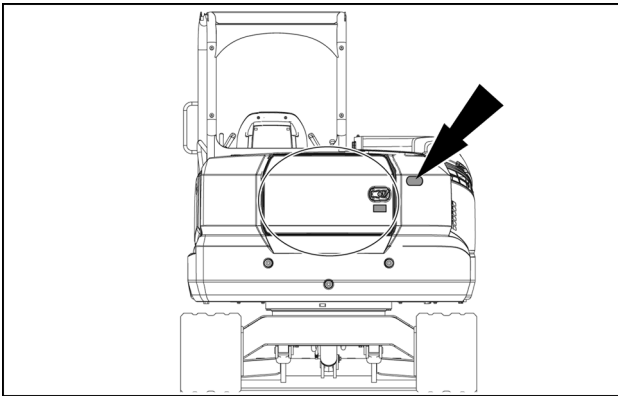
RAIL14CEX0140AA 6

Never lift up the machine with the arm cylinder to the stroke end. It may cause damage to the equipment/attachment and cylinder



RAIL14CEX0141AA 7

DANGER — Keep clear of swing area



RAILCEX140043AA 11



PS20T01041P1 12

DANGER

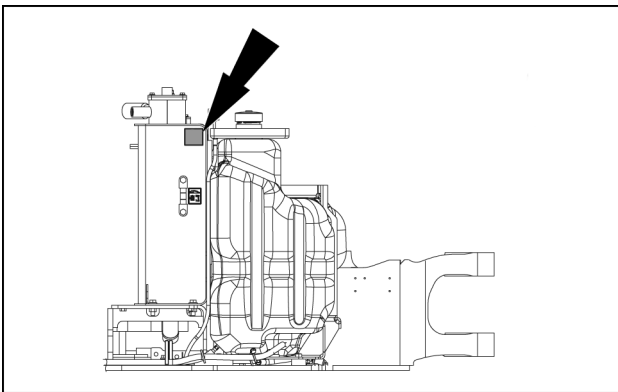
Keep clear of swing area. Failure to comply will result in death or serious injury.

This DANGER safety sign is located on the counterweight.

Safety sign number: PS20T01041P1

Quantity: 1

WARNING — Internal hydraulic oil tank pressure



RAIL14CEX0036AA 13



YT20T01414P1 14

WARNING

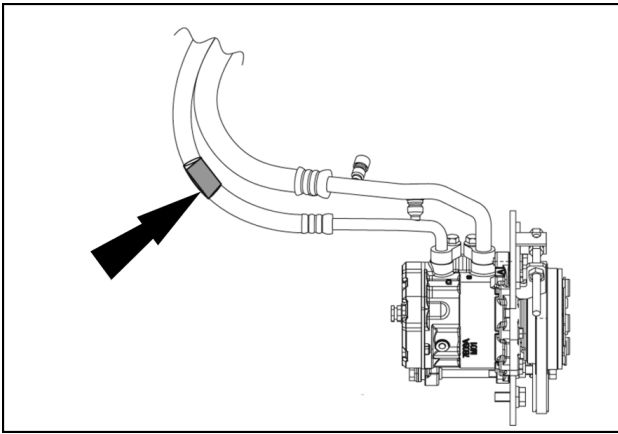
Pressurized hot oil can cause burns. Depress stem or remove cap slowly with engine off to relieve hydraulic tank pressure. Failure to comply could result in death or serious injury.

This WARNING safety sign is located on the hydraulic oil tank. Access the hydraulic oil tank from the right-hand side of the machine.

Safety sign number: YT20T01414P1

Quantity: 1

CAUTION — Burn hazard



RAIL14CEX0038AA 45



PS20T01192P1 46

CAUTION

Tube may be hot which could cause burns. Do not touch tube until it cools down. Failure to comply could result in minor or moderate injury.

This CAUTION safety sign is located on the cooler hose.

Safety sign number: PS20T01192P1

Quantity: 1

Windows

⚠ CAUTION

Pinch hazard!

Make sure you correctly follow the instructions in this manual when handling the windshield. If you do not handle the windshield correctly, it could slip and injure your fingers or hands.

Failure to comply could result in minor or moderate injury.

C0045A

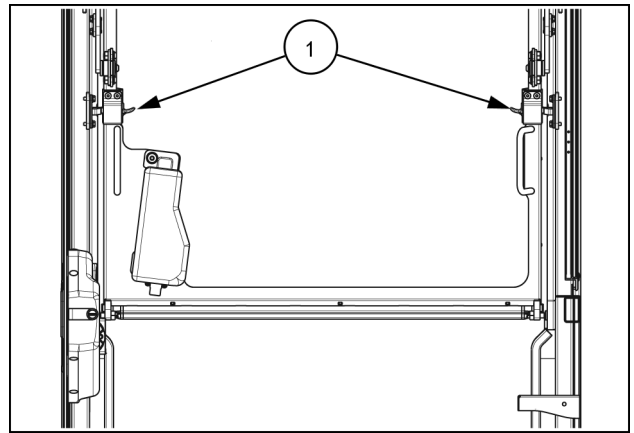
Open and close the front upper window

To open the window:

1. Push down on the lock levers **(1)** on both sides of the upper front window to release the lock.
2. Hold the left and right handles, lift the front window up and slide it overhead until it locks at the rear side of the roof.

To close the window:

3. Perform the reverse procedure of the above steps 2 and 3.

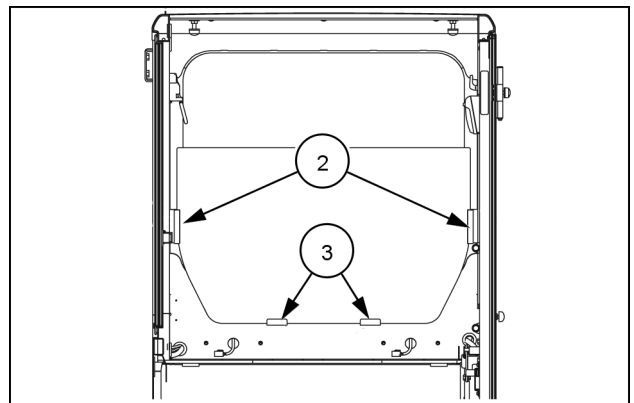


RAIL14CEX0076AA 4

Remove and store the lower front window

After you lock the upper front window in the ceiling:

1. Remove the lower front window by hand from the window frame.
2. Securely store the lower front window in the holder located in the rear of the cab behind the operator's seat.
3. To store the window, insert the right and left sides of the glass into the side holders **(2)** and support it with the holders **(3)** on the lower section of the window frame.



RAIL14CEX0077AA 5

Control levers

⚠ WARNING

Avoid injury!

Inspect the work area or job site to make sure that machine operation can be done safely. Confirm that the lever operation is the same as indicated on the control pattern labels. If not, immediately change the machine control pattern or the label displayed to match the machine control pattern.

Failure to comply could result in death or serious injury.

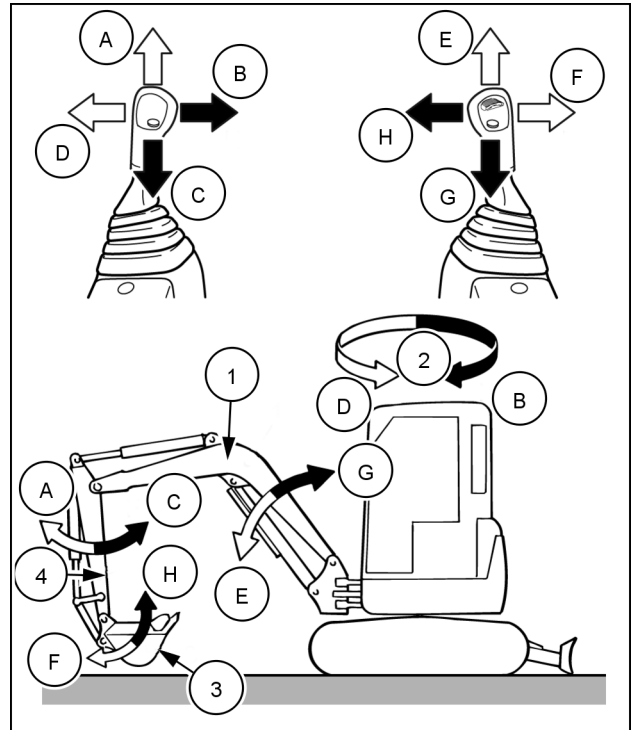
W1339A

Left and right control levers (ISO pattern)

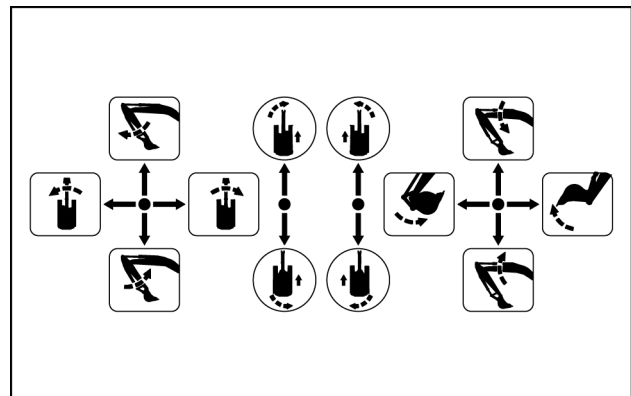
The control levers activate the functions illustrated on the right.

- Confirm that the working area is safe. Ensure that each lever operation is in accordance with the operating pattern indicated on the labels.
- If the configuration on the pattern label does not correspond to that of the control levers, immediately change the pattern label to prevent accidents and/or injury.
- Release the control levers to return them to the neutral position.
- All functions can be activated simultaneously.

Left control lever			Right control lever		
2	D	Swing left	1	E	Boom down
	B	Swing right		G	Boom up
4	A	Arm out	3	F	Bucket out
	C	Arm in		H	Bucket in



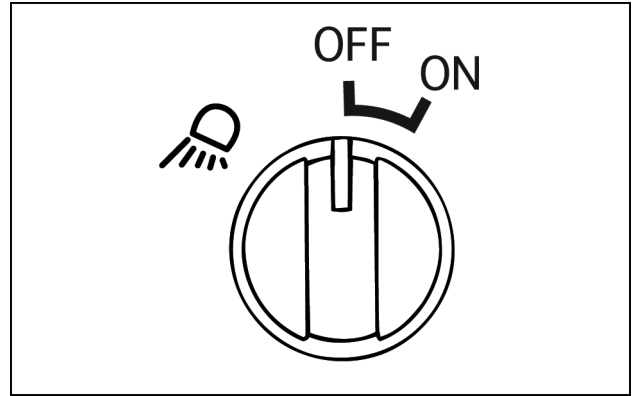
RAPH12CEX1735BA 1



LEL11E0147AA 2

Work lamp switch

The work lamp switch is located on the right-hand console. It is used to turn the work lights on and off on the boom and machine.



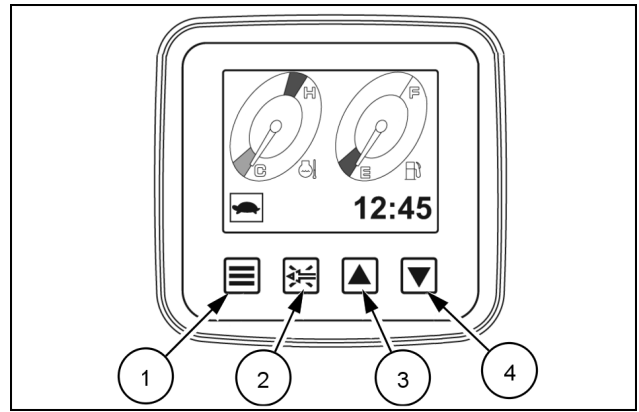
RAIL14CEX0099AA 6

Menu button

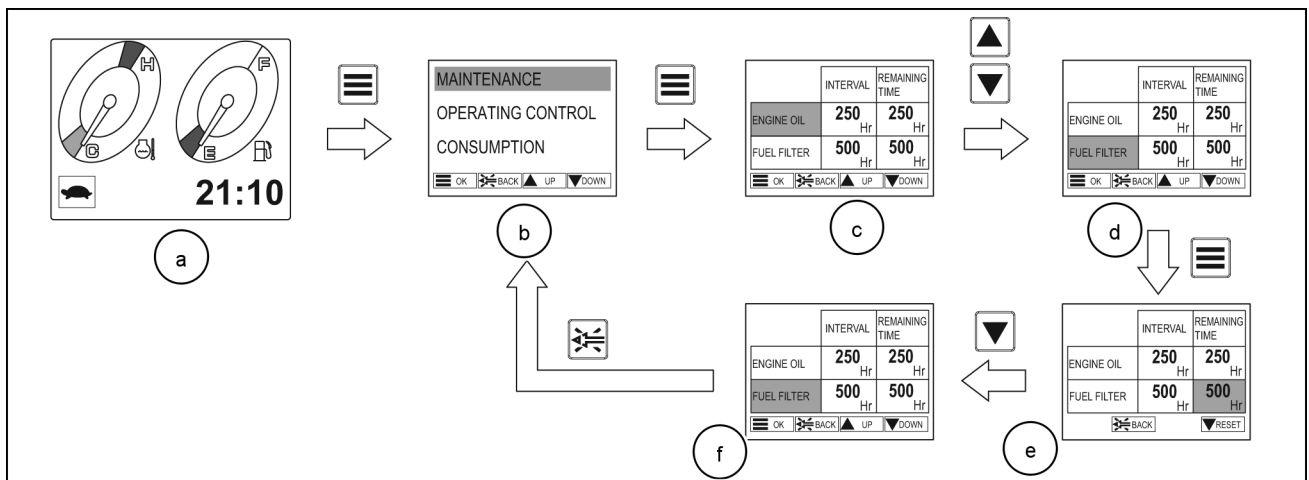
The menu button is available for clock setting and contrast adjustment.

Press the buzzer stop button (2) when you make an adjustment to the contrast or set the clock to return to the main screen.

- Menu button (1)
- Buzzer stop button (2)
- Up arrow button (3)
- Down arrow button (4)



RAIL14CEX0547AA 7



RAIL14CEX0557BA 8

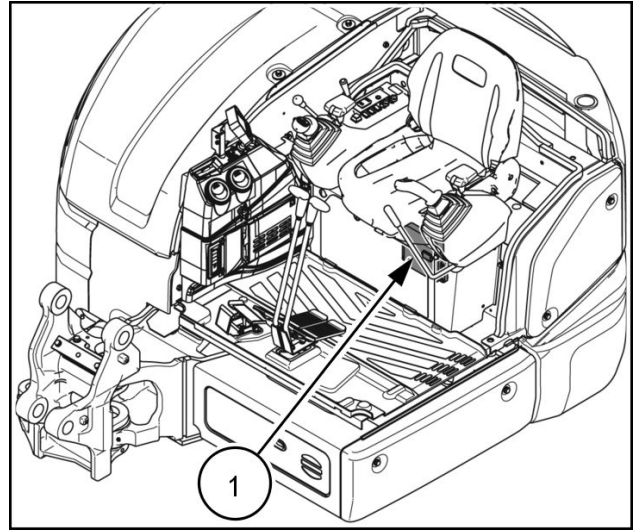
1. Turn the ignition switch ON to display the main screen (a). Press the menu switch (1) to enter the user menu screen (b).
2. Use the up and down arrow switches (3,4) and move the cursor to “MAINTENANCE”. Press the menu switch (1) to enter “MAINTENANCE”.
3. Use the up and down arrow switches (3,4) and move the cursor to the one of the following items: “ENGINE OIL”, “FUEL FILTER”, “HYD.FILTER”, “HYD.OIL”, or “EXHAUST GAS FILTER”.
4. Press the menu switch (1) and the background color of “REMAINDER” turns blue.
5. Press the down arrow switch (4) to reset “REMAINDER”.
6. Press the buzzer stop switch (2) to return to the user menu screen (b).

Electronic Control Unit (ECU)

Handling the Electronic Control Unit (ECU)

Then Electronic Control Unit (ECU) is located under the seat stand cover.

NOTICE: Be careful not to splash water, mud, or drinks on the controller. It may cause failure of the machine. If an error occurs on the controller, do NOT disassemble it. Contact your authorized dealer for repair.



RAIL14CEX0965AA 1

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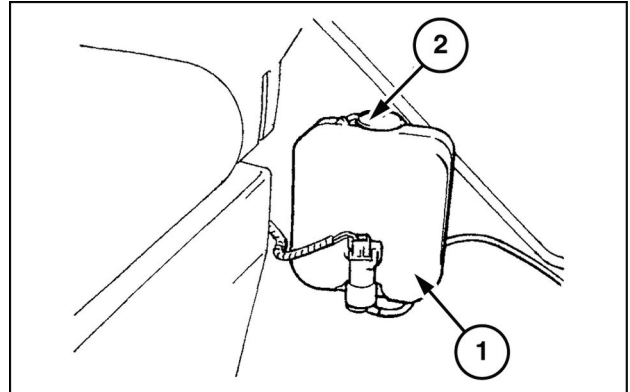
Windshield washer reservoir (cab only)

Windshield washer reservoir

The window washer reservoir (1) is located inside the cab near the lower left side of the operator's seat.

When the fluid level becomes low, remove the cap (2) and fill the reservoir with washer fluid.

NOTICE: Do not operate the windshield washer when the reservoir is empty. This could cause damage the windshield washer reservoir motor.



LEL11E0163AB 1

Hydraulic oil warm up

NOTICE: Do not start working prior to completing a correct hydraulic oil warm up, since the hydraulic functions would be slowed down and unexpected movements of the machine could occur. Also, some hydraulic components could be damaged by insufficient lubrication.

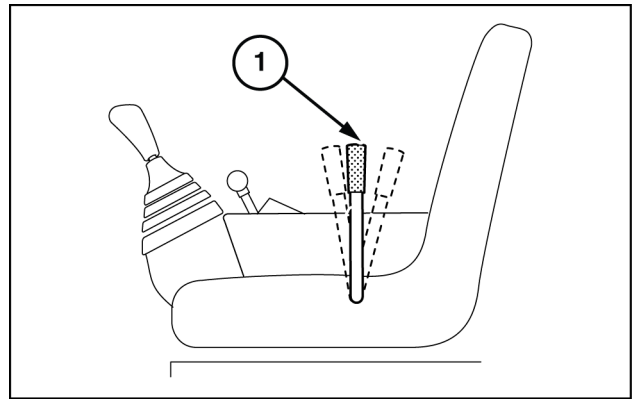
The hydraulic oil temperature must be between **50 °C (122 °F)** and **80 °C (176 °F)**.

Avoid machine operation when the hydraulic oil temperature is below **20 °C (68 °F)**.

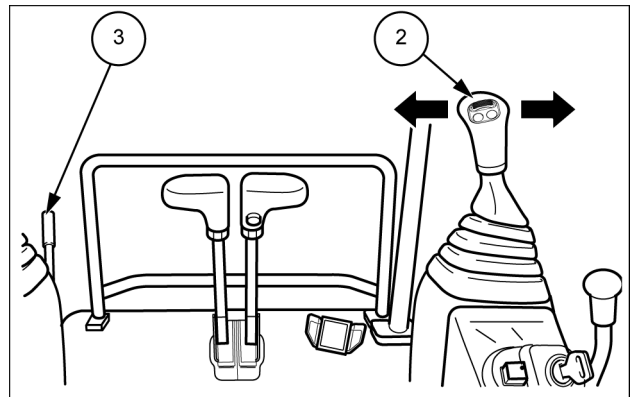
To warm up the hydraulic oil, proceed as follows:

- Make sure to perform the engine warm up.
- Place the safety lock lever **(3)** in the UNLOCK position and the engine throttle lever **(1)** on an intermediate speed position.
- Operate the boom control lever **(2)** to maintain sufficient ground clearance.
- Operate the bucket control lever to retract it or extend it completely. Hold in this position for **5 min**, then release the lever **(2)**.
- After the hydraulic oil warms up, slowly extend and retract all cylinders several times. Swing and travel the machine lightly to complete the warm-up operation.

NOTICE: In extremely cold climate it may be necessary to increase the preheating time to ensure proper and safe operation. While operating the machine with cold hydraulic oil, the operator may experience slow or unexpected movements of the functions. Likewise, cold hydraulic oil will not provide adequate lubrication to hydraulic components; thus, reducing the life expectancy of the machine.



LEL11E0187AB 1



SMIL13MEX0024AB 2

Shipping transport

Lifting the machine

▲ WARNING

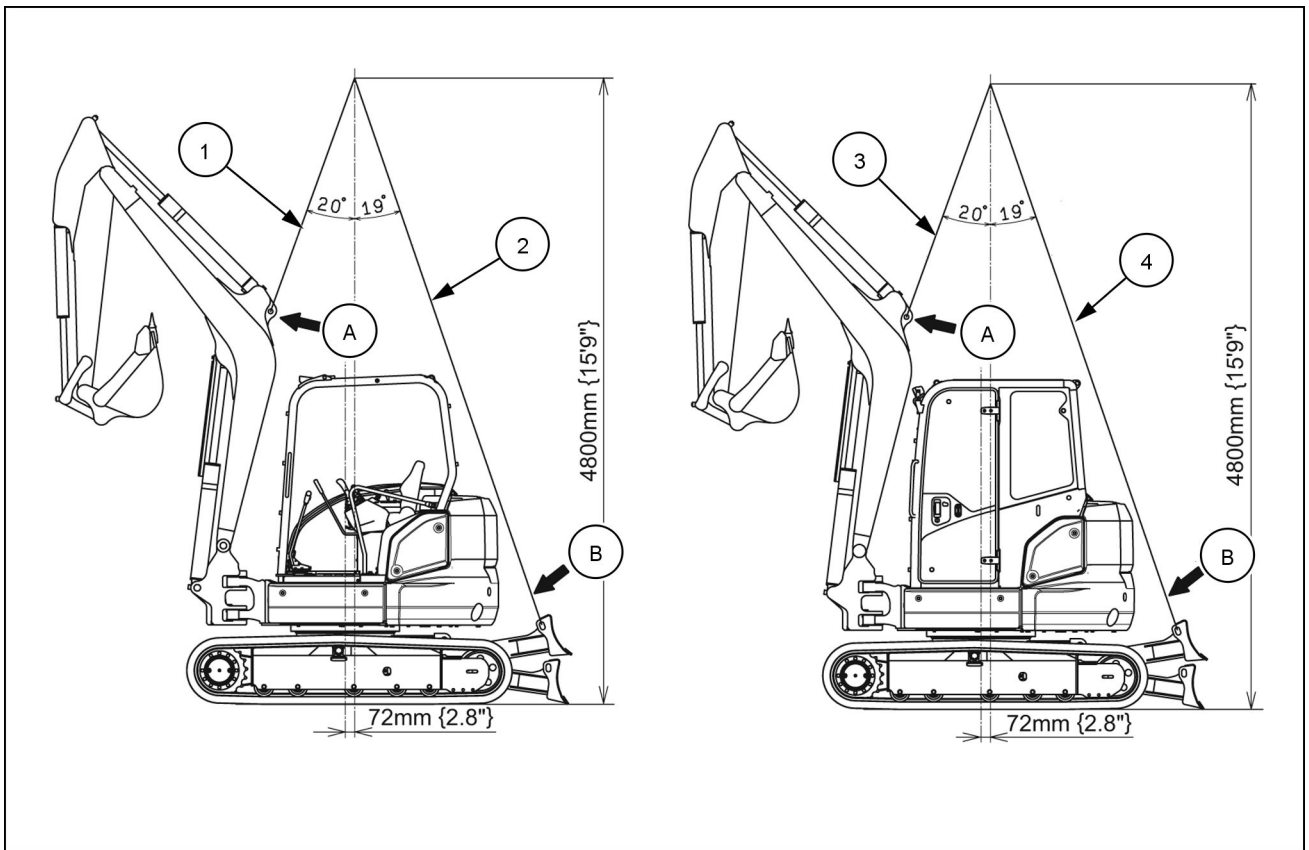
Crushing hazard!

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

The following procedures are for lifting the machine, as built by NEW HOLLAND CONSTRUCTION. This procedure does not take into account modifications made to the machine that affect machine mass or center of gravity.



RAIL14CEX0148FA 1

	Cab	Canopy
Rubber shoe	4950 kg (10913 lb)	4900 kg (10803 lb)
Iron shoe	5120 kg (11288 lb)	5040 kg (11111 lb)
Cable (1,3) (Quantity - 1)	22.4 mm (0.9 in) X 1900 mm (75 in)	22.4 mm (0.9 in) X 1900 mm (75 in)
Cable (2,4) (Quantity - 2)	22.4 mm (0.9 in) X 4500 mm (177 in)	22.4 mm (0.9 in) X 4500 mm (177 in)

NOTE: This lifting up procedure is applicable for machines in standard specification. The lifting procedure differs for each attachment type and each machine in option. In such cases, contact your authorized dealer.

Lift the machine from firm level ground as follows:

1. Operate the control levers to set the attachment as shown.
2. Use the swing pedal to straighten the boom.
3. Stop the engine and move safety lock lever to the locked position. Remove the starter key and get off

the machine. Check the operator's seat and area for any loose item, tools, etc. that could fall or cause a problem or injury during the procedure. Remove or secure them.

4. Attach shackles to the two lifting holes (B) on both ends of the dozer blade. Attach the wire rope (2,4) to the shackles.

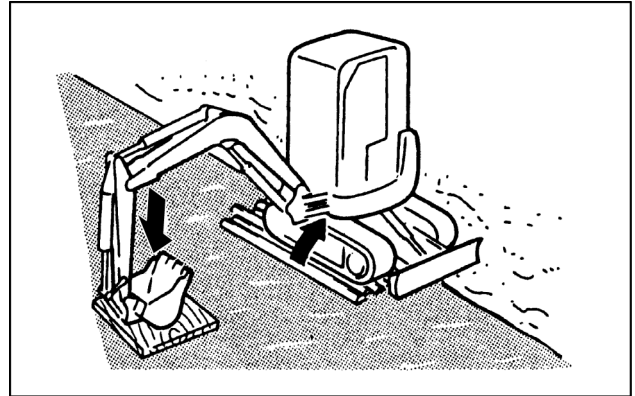
Getting out of soft ground

If possible, avoid travelling on soft ground. Avoid getting caught in the mud. In the event that the machine gets caught in the mud, get out of it as follows.

One crawler caught in mud

When a crawler gets caught in mud, lay logs or boards on the mud to form a base. Raise the dozer blade and Operate boom and arm to form a crossing angle between **90 - 110 °**. Push outer side of bucket against the ground to lift the machine body.

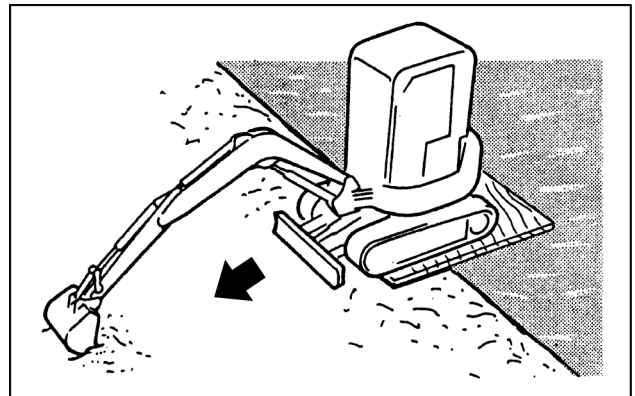
NOTICE: When you lift up the machine use the bottom of the bucket, not the teeth, to push on the ground.



LELI11E0224AB 1

Both crawlers caught in mud

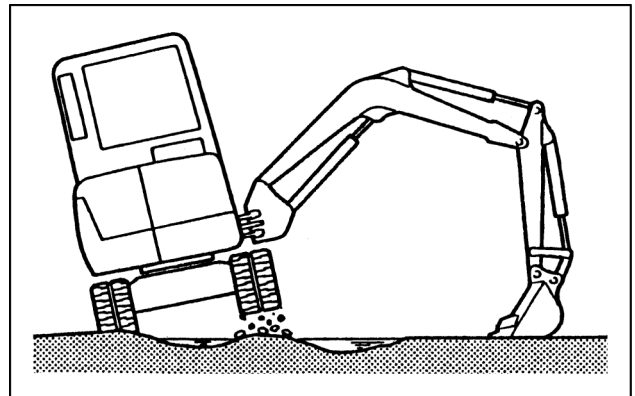
When both crawlers get caught in mud and the machine does not move because it skids, provide logs and boards, as described in the previous step and anchor the bucket firmly to the ground so that you can help the machine to come out from mud.



LELI11E0225AB 2

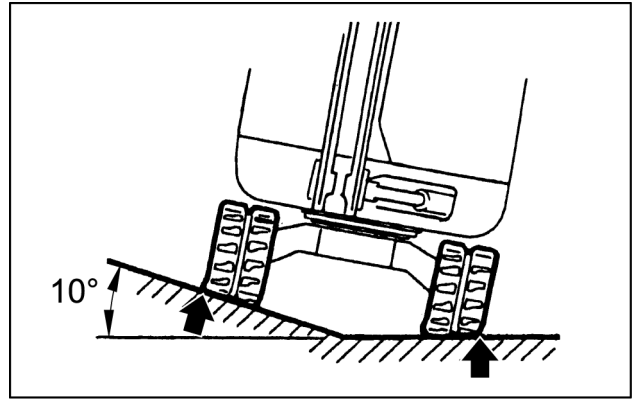
If the machine is unable to travel because the crawlers are stuck in mud, sand or gravel, raise each crawler side alternately by pushing the bucket against the ground and scraping off mud, sand or gravel. Gravel and mud may be cleared off by rotating the raised crawler back and forth.

NOTICE: Operate the machine from operator's seat only. Do not allow any person to come near the machine.



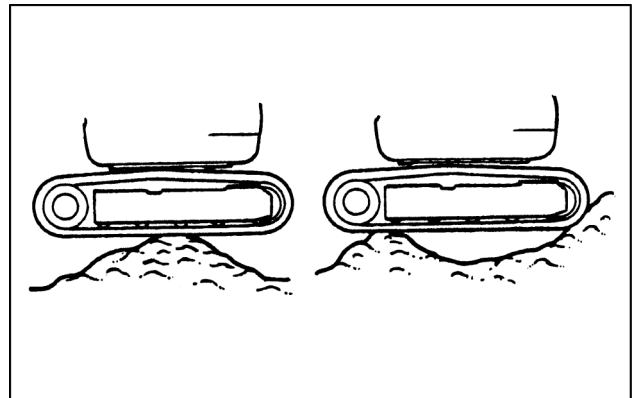
LELI11E0226AA 3

If you travel on a slope with the machine higher at one side, this will risk to damage the rubber crawler. Both machine sides must travel at the same level.



LEL11E0269AB 11

Do not change the direction of the machine with the rubber crawlers positioned on earth heaps, as this could cause the rubber crawler to come off or get damaged.

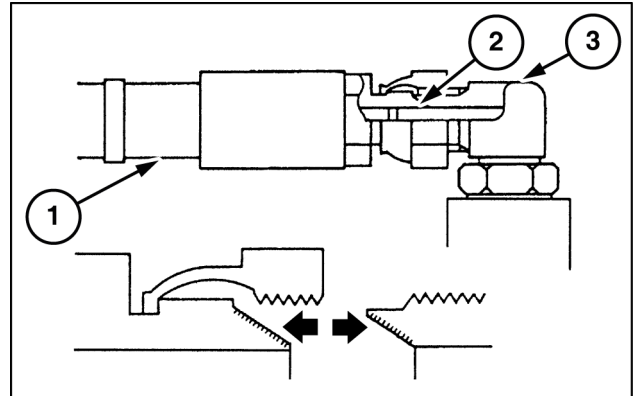


LEL11E0270AA 12

Installation

Metal fitting

The pressure exerted by the fitting (3) on the hose (1) ensures tightness (2). Use caution to assemble and disassemble both pieces in order not to damage the seat.



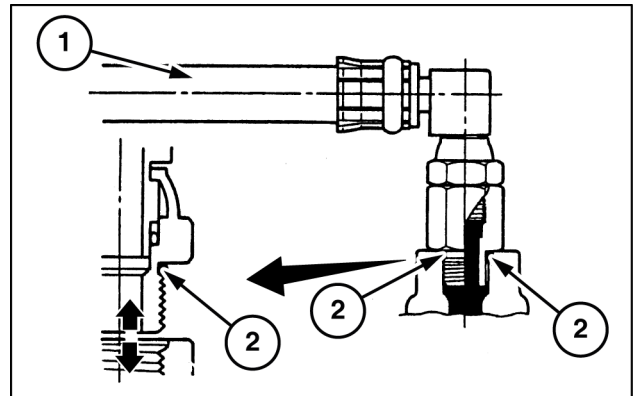
LEL111E0297AB 1

Fitting with O-ring

The O-ring (2), allows to insulate the oil pressure inside of hose (1) and to avoid oil spillages.

The tightening torque of the joint of each hydraulic hose (1) is determined by the diameter of the hose fitting thread. If you notice a fault of operation, repair hose connection or replace it.

When connecting worn parts, pay particular attention to keep sealing surfaces clean from dirt and try not to damage them.



LEL111E0298AB 2

O-ring

If the fitting is loose and oil leaks may occur, do not tighten it. It is necessary to install a new O-ring and to check again for tightness.

Never install a damaged and deteriorated O-ring even if it is new one. The use of an O-ring other than the specified one, causes oil leakage and short life of hydraulic equipment.

Joint

Be careful not to damage hoses, pipes or seal faces, this can impair the tightness.

Keep seal surfaces free from dirt.

Fitting with foreign matter inside causes oil leakage.

Hose

Avoid high pressure hoses to twist during connection. Life of twisted hoses is drastically reduced.

Wash pipes and hoses, both inside and outside, with washing fluid and accurately dry them before reconnection.

Boom, arm, and attachment grease points

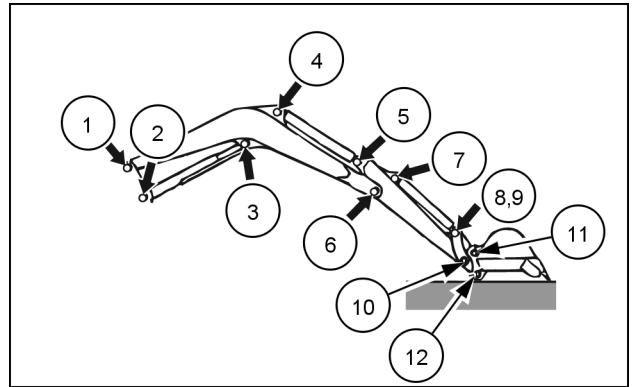
For a new machine, grease the greasing points of the attachment every 8 hours during the first 50 hours of operation. After that, grease them every 50 hours.

For the work with a special attachment, grease it before work every day.

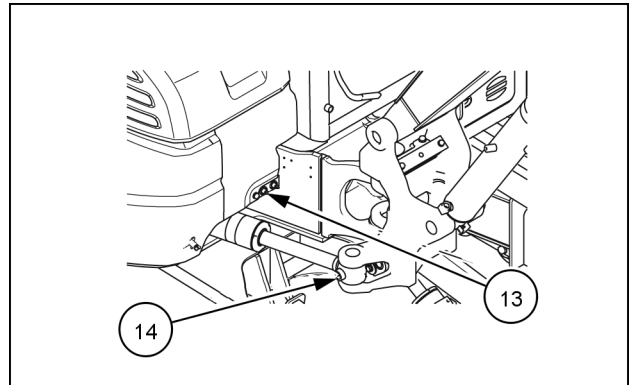
For the digging work in the water, grease the submerged parts before and after the work every day.

Grease the attachment before the work if it has not been used for one month or longer.

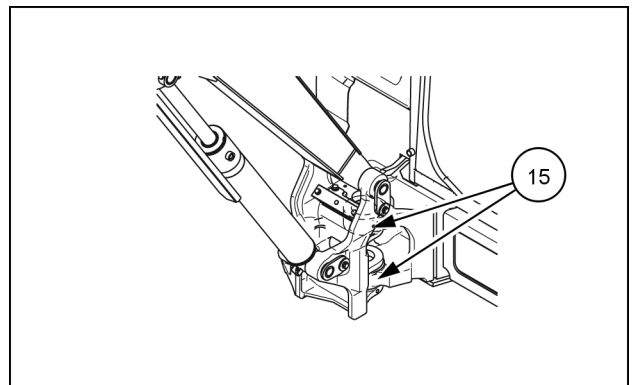
1. Set the attachment in the greasing position and then stop the engine.
2. Before greasing, wipe off the grease nipples. Replace any damaged nipples with new ones.
3. Use the grease gun to apply grease to the grease nipples.
4. After applying grease, wipe off old grease which is pushed out.



RAIL14CEX0987AA 1



RAIL14CEX0986AA 2



RAIL14CEX0988AA 3

ID	Parts to grease	No. of points	ID	Parts to grease	No. of points
1.	Boom foot pin	1	9.	Idler link pin	2
2.	Boom cylinder foot pin	1	10.	Arm and idler link connecting pin	1
3.	Boom cylinder rod pin	1	11.	Bucket link pin	1
4.	Arm cylinder foot pin	1	12.	Arm and bucket connecting pin	1
5.	Arm cylinder rod pin	1	13.	Swing cylinder foot pin	1
6.	Boom and arm connecting pin	1	14.	Swing cylinder rod pin	1
7.	Bucket cylinder foot pin	1	15.	Swing bracket and frame connecting pin	2
8.	Bucket cylinder rod pin	1			

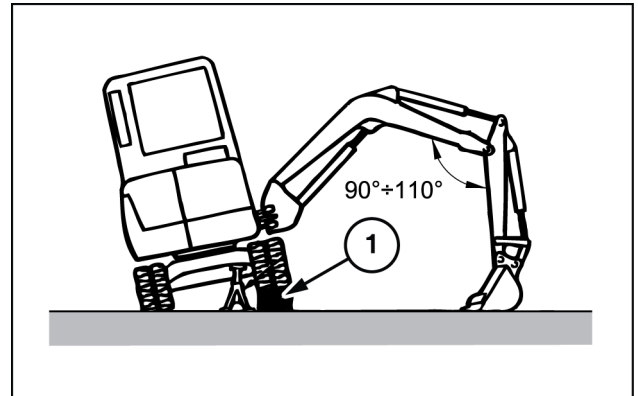
Installing rubber crawlers

Turn the upper structure by 90° and lower the bucket to lift the crawler as shown.

Keep the angle between the boom and the arm to 90° and 110° and position the round part of the bucket on the ground. Place some supports **(1)** under the frame to support the machine.

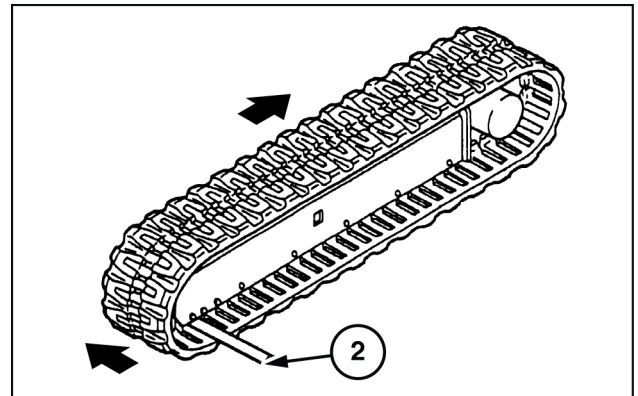
Engage the crawler into sprocket and engage it into the crawler idler.

Slowly rotate the sprocket backwards and set the rubber crawler into position.



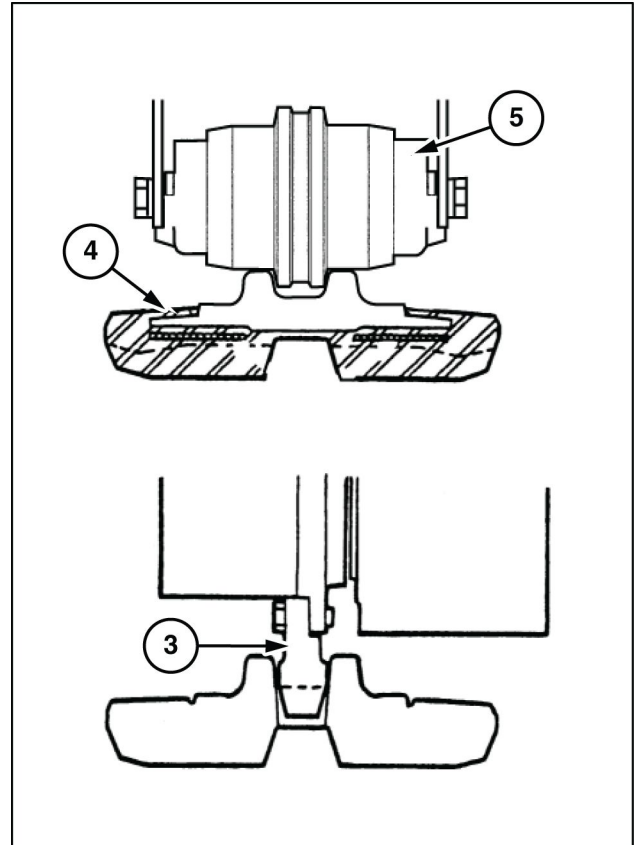
LEL11E0307AB 5

Engage a steel pipe **(2)** into the rubber crawler, and rotate the sprocket backward again to securely engage the rubber crawler with the idler adjuster.



LEL11E0308AB 6

Stop the sprocket **(3)** and check whether the rubber crawler **(4)** is correctly positioned on the crawler idler, on the lower rollers **(5)** and on the sprocket.



LEL11E0309BB 7

Bleed air from the fuel system

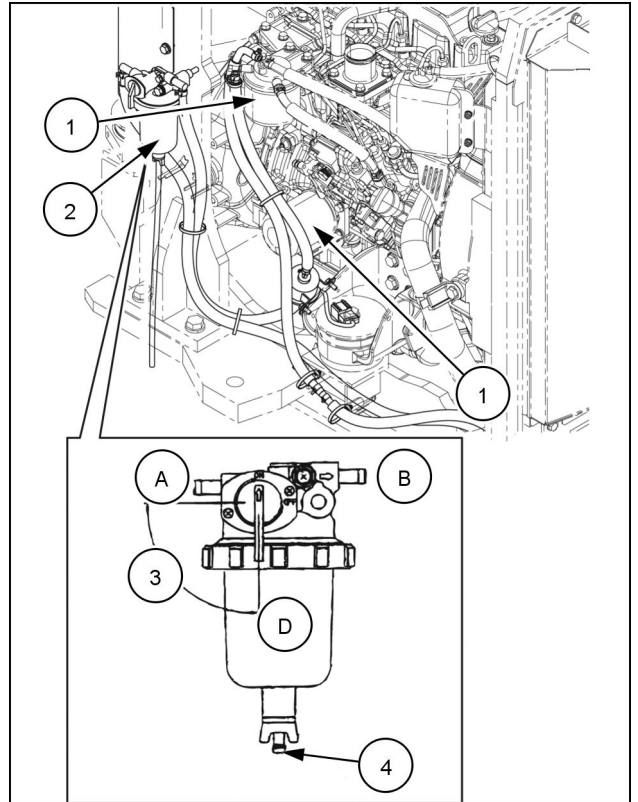
If air enters or remains in the fuel system, fuel cannot be sent to the fuel injection pump. When the fuel tank is emptied or when the fuel filter is replaced, be sure to bleed the remaining air.

Air bleeding procedure

1. Move the safety lock lever to the "LOCKED" position and stop the engine.
2. Refill the fuel tank to the maximum.
3. Confirm that the valve of water separator (2) is set to "OPEN" position (D).
4. Turn the starter key to the "ON" position and wait for 15 to 20 seconds to send oil to the fuel system using the fuel supply pump.
 1. Fuel filter
 2. Water separator
 3. Fuel cock
 4. Drain cock

NOTE: If the entire piping is emptied due to running out of gas, wait for 60 seconds after turning the starter key to the "ON" position.)

- A. Fuel inlet
- B. Fuel outlet
- C. Close
- D. Open



RAIL14CEX0936BA 1

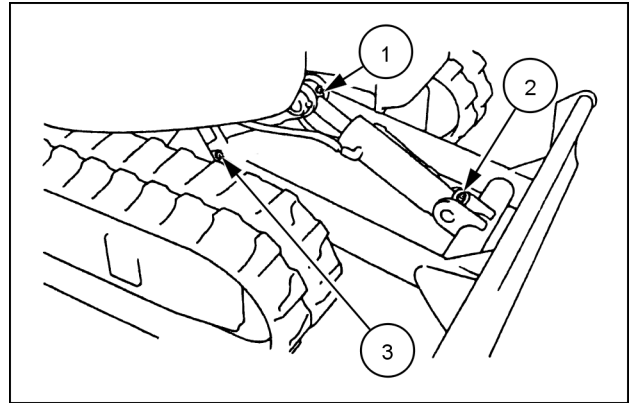
NOTICE: Do not continue to run the starter for 15 seconds or longer to send oil to the fuel system. It could heat the starter and might cause damage to the coil, pinion gear, and ring gear, etc.

NOTICE: Wait for 30 seconds or longer before using the starter again.

Dozer blade

Observe the following safety precautions:

- For the digging work in the water, grease the submerged parts before and after the work every day.
 - Grease the attachment before the work if it has not been used for one month or longer.
1. Set the attachment in the greasing position and then stop the engine.
 2. Before greasing, wipe off the grease nipples. Replace any damaged nipples with new ones.
 3. Use the grease gun to apply grease to the grease nipples.
 4. After applying grease, wipe off old grease which is pushed out.



RAIL14CEX0930AA 1

No.	Parts to grease	Points	No.	Parts to grease	Points
1	Dozer cylinder foot pin	1	3	Dozer foot pin	2
2	Dozer cylinder rod pin	1			

Every 1500 hours

Fuel injection system

Check, adjust, and clean the fuel injection valves

NOTICE: Contact your authorized dealer to perform this check and adjustment.

Poor condition of the fuel injection valves may cause:

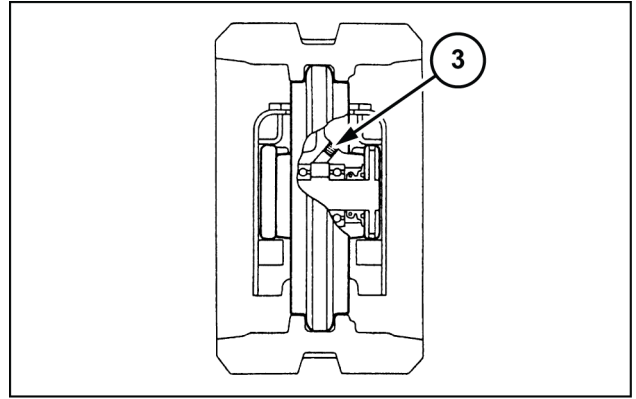
- Abnormal exhaust color
- A lower engine output than normal

Check and adjust the fuel injection timing

NOTICE: Contact your authorized dealer to perform this check and adjustment.

To have the best engine performance, have your authorized dealer adjust the timing.

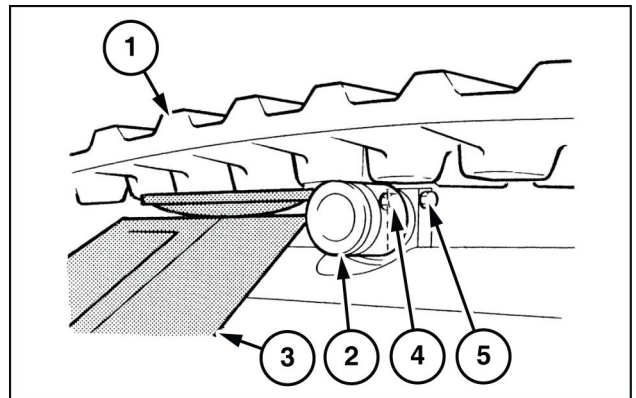
Apply a sealing (teflon) tape on the thread of the plug (3), then tighten the plug. Dry oil residues.
 Apply grease to the sliding surface (A) of the piston (4), of the cylinder (5) and of the crawler idler (2).
 Install the idler so that the plug (3) and the grease nipple (6) of the crawler idler are facing outwards.
 Tension the rubber crawler.
 After confirmation of rubber crawler engagement with the idler and the conditions for tension, lower the machine to the ground, removing the safety support, etc.



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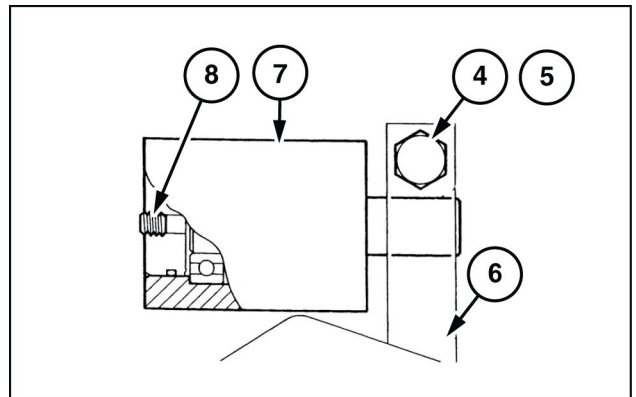
Upper roller

For oil discharge, remove rubber crawler according to relevant side.
 After stopping the engine, ensure that the machine is in parking position.
 Loosen the rubber track (1) of the side on which gear oil (2) is to be changed.
 Raise the track with a hydraulic jack (3).



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Remove the nuts (4) and the cap screws (5) from the support fixing the shaft of the upper roller (7). Remove roller.
 Remove oil filling plug (8) by means of a wrench and drain oil from reduction unit into a container.
 Fill reduction gear oil [55.0 cm³ (3.4 in³) through filling port (8).
 Apply sealing (teflon) tape on the thread of drain plug (8), and securely tighten it.
 Wipe off any oil around the plug.
 Install the roller in reverse order from removal.
 After applying thread lock sealant on thread of the cap screws (5), tighten the screws.
 Tightening torque: 59 - 73 N·m (43.5 - 53.8 lb ft).



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