LIST OF TOOLS (IF EQUIPPED)

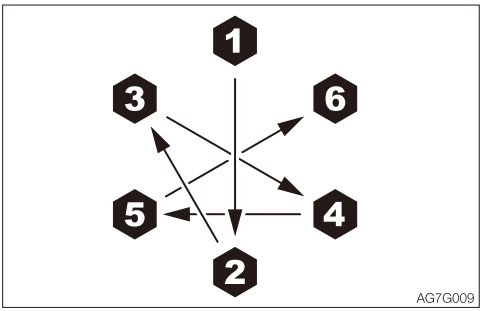
Code	Part name	Part No.	Remarks
1	Spanner	16900-01012	10-12
2	Spanner	16900-01417	14-17
3	Screwdriver	16902-20205	(+) (–) replaceable shank
4	Hammer	16903-00330	3/4
5	Adjustable wrench	16904-00250	250 mm
6	Pliers	16905-00200	200 mm
7	Spanner	16900-01013	10-13
8	Spanner	16900-01922	19-22
9	Spanner	16900-02427	24-27
10	Spanner	16900-02730	27-30
11	Spanner	16900-03236	32-36
12	Spanner	16909-00019	19
13	Spanner	16901-00041	41
14	Hex. wrench	16906-00250	2.5 mm
15	Hex. wrench	16906-00500	5 mm
16	Hex. wrench	16906-00600	6 mm
17	Hex. wrench	16906-00800	8 mm
18	Hex. wrench	16906-01000	10 mm
19	Hex. wrench	16906-01200	12 mm
20	Tool case	16914-00005	
21	Grease gun	16910-60610	500 cc
22	Drain connector	15545-12201	90-degree type

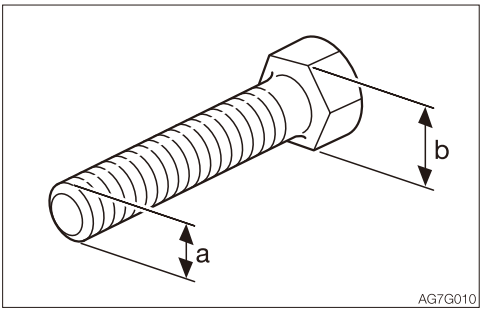
LIST OF TIGHTENING TORQUES

Nuts and Bolts (for ISO strength category 10.9)

Tighten nuts and bolts at the torques shown on the table below, unless otherwise specified.

- The tightening torques used for the mounted plastic covers are not listed in the table below. Consult your sales or service dealer for details. They will be damaged if over tightened.
- When replacing nuts and bolts, replace them with nuts and bolts of the same size and standards.
- Tighten nuts and bolts alternately (top, bottom, left then right) or in 2 or 3 times so that they are evenly tightened.





Classification	Head width (b)	Size (a) x pitch	Tightening torque	
			General connection points	
	mm	mm	N·m	ft-lb
Coarse	10	M6 x 1.0	9.8±0.8	7.2±0.6
	12, 13	M8 x 1.25	23±1.8	17±1.4
	14, 17	M10 x 1.5	47±3.8	35±2.8
	17, 19	M12 x 1.75	83±6.6	62±5
	19, 22	M14 x 2.0	134±10.7	99±7.9
	22, 24	M16 x 2.0	208±16.6	153±12.2
	27, 30	M20 x 2.5	411±32.9	303±24.2
Fine	12, 13	M8 x 1.0	25±2	18±1.4
	14, 17	M10 x 1.25	50±4	37±3
	17, 19	M12 x 1.5	87±7	64±5.1
	19, 22	M14 x 1.5	135±10.8	100±8
	22, 24	M16 x 1.5	221±17.7	163±13
	27, 30	M20 x 1.5	452±36.2	333±26.6

MEMO

SAFETY-CRITICAL PARTS

To use the machine safely, periodically perform inspection and maintenance. The safety-critical parts listed below must be periodically replaced for an increased safety.
Serious injury or a fire could result if they are worn or damaged.

List of safety-critical parts

Unit		Safety-critical parts to be replaced periodically	When to replace
Fuel system		Fuel hoses	Every 2 years
		Packing on fuel filler cap	
Engine		Engine oil filter hoses	
Cooling system		Rubber hoses	
Heater & AC systems		Heater hoses	
		Air conditioner hoses	
Hydraulic system	**Main body**	Hydraulic hoses (pump - delivery)	
		Hydraulic hoses (pump - suction)	
		Hydraulic hoses (slew motor)	
		Hydraulic hoses (travel motor)	
	Working equipment	Hydraulic hoses (boom cylinder piping)	
		Hydraulic hoses (arm cylinder piping)	
		Hydraulic hoses (bucket cylinder piping)	
		Hydraulic hoses (blade cylinder)	
		Hydraulic hoses (pilot valve)	
		Hydraulic hoses (auxiliary piping)	
		Seat belt	Every 3 years
		Non-slip sheet	
Engine		V-rib belt	Every 3000 hrs.

The material of the safety-critical part listed above tends to change over time and cause wear or deterioration. It is difficult to determine the degree of deterioration at the periodic inspection, and thus they need to be replaced with new ones after a certain time to maintain their proper performance even if they appear in good condition. Note that regardless of the replacement schedule, replacement must be performed immediately if a symptom of wear is found. If a hose clamp is deformed or cracked, replace it together with the hose immediately. When replacing the safety-critical parts, ask your sales or service dealer.
In addition to the safety-critical parts, inspect the hydraulic hoses and retighten or replace as necessary. When replacing the hydraulic hoses, replace the O-rings and seals at the same time.
Check the fuel and hydraulic hoses according to the periodic schedule described below. Refer to “Maintenance”.

Type of inspection	Inspection item
Daily inspection	Leakage from the connecting parts of hydraulic or fuel hoses Damage to cab - replace*
Monthly inspection	Leakage from the connecting parts of hydraulic or fuel hoses Damaged hydraulic or fuel hoses (cracks, wear and tear)
Annual inspection	Leakage from the connecting parts of hydraulic or fuel hoses Deteriorated, twisted, damaged hydraulic or fuel hoses (cracks, wear and tear) or hoses in contact with other parts of the machine

*: Cab parts No. 05786-00161

MAINTENANCE LIST

Inspection and maintenance item	Page
Walk-around inspection	
Inspecting by opening the covers	5-20
Inspecting by walking around the machine	5-21
Inspecting while sitting in the operator's seat	5-21
Daily inspection (every 10 hours)	
Inspecting and replenishing the coolant	5-22
Inspecting and replenishing the engine oil	5-24
Cleaning the dust screen	5-25
Inspecting the pre-fuel filter and draining	5-26
Inspecting the fuel level	5-27
Inspecting the hydraulic oil tank level and replenishing	5-28
Inspecting and cleaning the air cleaner	5-30
Lubricating the working equipment	5-32
Checking the DEF/AdBlue® level and refilling	5-33
After the initial 50 hours (only for new machines)	
Replacing the hydraulic oil return filter	5-36
Replacing the pilot line filter	5-37
Inspecting and adjusting the compressor belt (AC)	5-38
Every 50 hours	
Inspecting and adjusting the crawler tension	5-40
Draining the water from the fuel tank	5-42
Inspecting the battery fluid level and replenishing	5-43
After the initial 250 hours (only for new machines)	
Replacing the slew motor gear oil	5-45
Replacing the travel motor gear oil*	5-47

*: If the percentage of the traveling time within the total operating time is high, replace the gear oil earlier than the specified time.
(AC): Air conditioner

Inspection and maintenance item	Page
Every 250 hours	
Inspecting the slew motor gear oil	5-48
Cleaning the cooler fins	5-49
Inspecting and adjusting the compressor belt (AC)	5-49
Cleaning the air filters (AC)	5-50
Cleaning the condenser (AC)	5-51
Inspecting the refrigerant (gas) level (AC)	5-52
Every 500 hours	
Lubricating the slew bearing	5-54
Replacing the engine oil and the oil filter	5-55
Inspecting the concentration of coolant additive	5-56
Inspecting the slew pinion gear	5-57
Every 1000 hours	
Replacing the hydraulic oil return filter	5-58
Replacing the pilot line filter	5-58
Replacing the slew motor gear oil	5-58
Replacing the travel motor gear oil*	5-58
Replacing the engine cooling system	5-59
Replacing the air cleaner element	5-61
Replacing the air breather filter	5-62
Replacing the fuel filters	5-63
Replacing the DEF/AdBlue® supply module filter	5-64
Inspecting and adjusting the V-rib belt	5-64
Inspecting the engine installation condition	5-64
Inspecting the low-temperature starting device	5-64

*: If the percentage of the traveling time within the total operating time is high, replace the gear oil earlier than the specified time.
(AC): Air conditioner

Inspection and maintenance item	Page
Every 2000 hours	
Inspecting the accumulator	5-65
Every 3000 hours	
Replacing the V-rib belt	5-67
Every 4000 hours	
Replacing the hydraulic oil and cleaning the suction strainer	5-68
When required	
Replacing the bucket teeth and the side cutters	5-71
Replacing the bucket	5-73
Adjusting the gap between the bucket and arm (If equipped)	5-76
Inspecting and replenishing the windshield washer fluid	5-77
Lubricating the levers and pedals	5-78
Inspecting the rubber crawlers	5-79
Replacing the rubber crawlers	5-80
Replacing the diesel particulate filter <Applicable machine models 514901229 or later>	5-81
Every 2 years	
Replacing the receiver dryer	5-82

*: If the percentage of the traveling time within the total operating time is high, replace the gear oil earlier than the specified time.

MEMO

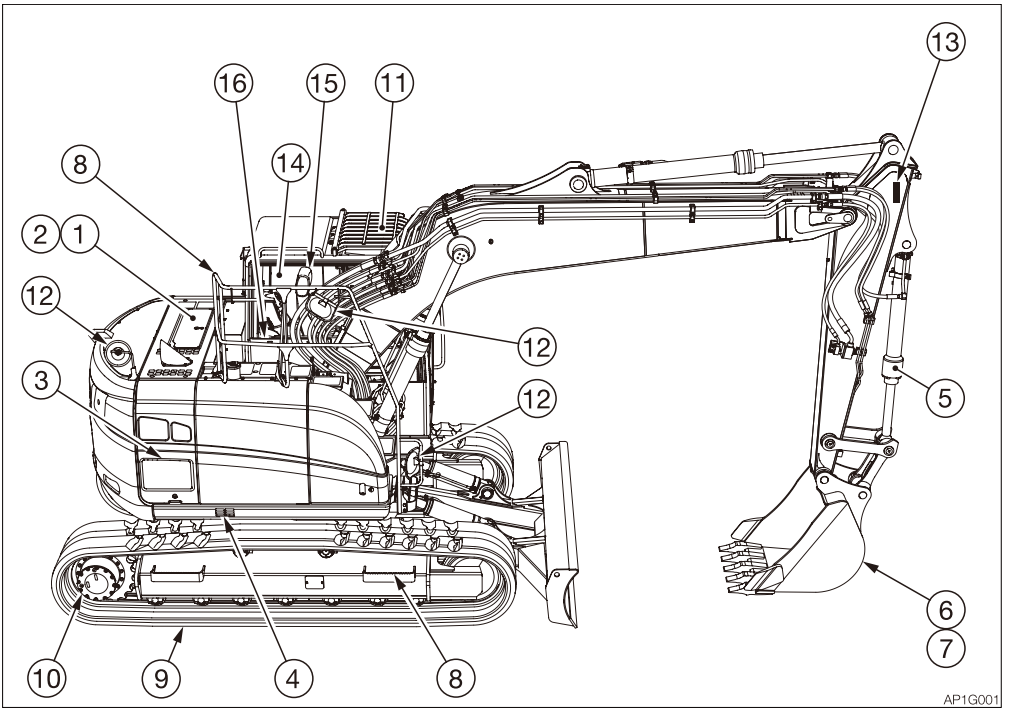
WALK-AROUND INSPECTION

Perform the following inspections every day before starting the engine for the first time.

⚠ WARNING

- **Before operating, perform the walk-around inspections and make repairs immediately where necessary.**
- **Be sure to properly secure the cover if it is to be left open for some time. Do not leave the cover open on a windy day or if the machine is parked on a slope.**

Before starting the engine, look around the machine and clean any combustibles from the surroundings of the engine. Also, inspect if oil or water is leaking and any nuts, bolts or electric wiring are loosened or damaged.



INSPECTING BY OPENING THE COVERS

1. Check for any twigs, leaves, oil or other combustible materials around the engine and battery.
2. Check for leakage of oil, fuel, DEF/AdBlue® or engine cooling water around the engine.
3. Check for oil leakage from the hydraulic oil tank, hydraulic devices, hoses or connections.

INSPECTING BY WALKING AROUND THE MACHINE

4. Check lights for dirt, damage and burnt out bulbs.
5. Check attachments and hoses for damage.
6. Check the bucket, bucket teeth and side cutter for wear, damage and looseness.
7. Check the hook, slip stopper and hook mount of buckets with hooks for damage. (Option)
8. Check the handrail, the steps and the slip-resistant surfaces for damage and loose bolts.
9. Check the crawlers, carrier rollers, track rollers, idlers and sprockets for damage, wear and loose bolts.
10. Check for oil leakage from the travel motor, carrier rollers, track rollers and idlers.
11. Check the cab and guard for damage and loose nuts and bolts.
12. Check the mirrors for dirt or damage, and adjust them.
13. Check the labels for dirt and damage.

INSPECTING WHILE SITTING IN THE OPERATOR'S SEAT

14. Check the windshield for dirt or damage.
15. Check the seat and seat belt for dirt or damage.
    Check the operator's seat for dirt, oil or other combustible materials.
16. Check the monitor, instruments and switches for dirt or damage.

DAILY INSPECTION (EVERY 10 HOURS)

Perform the following inspections every day before starting the engine for the first time.

⚠ WARNING

- **Before operating, perform the daily inspections and make repairs immediately where necessary.**
- **Be sure to properly secure the cover if it is to be left open for some time. Do not leave the cover open on a windy day or if the machine is parked on a slope.**

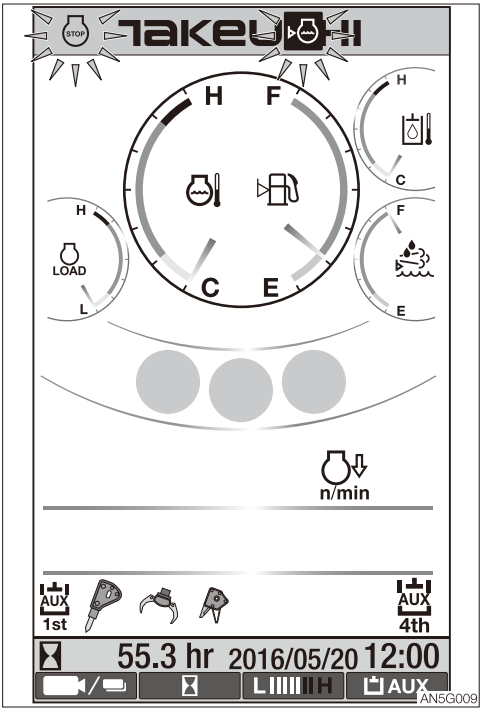
INSPECTING AND REPLENISHING THE COOLANT

Select a firm, level work area. Make sure there is adequate light and, if indoors, ventilation.

⚠ WARNING

- **Do not remove the radiator cap, the drain plug or the expansion tank cap when the cooling water is hot. Stop the engine and wait until the engine and the radiator cool before slowly loosening the radiator cap, the drain plug and the expansion tank cap to remove them.**
- **Always wear the protective goggle and gloves when handling coolant (antifreeze). If any coolant (antifreeze) comes in contact with eyes or skin, wash it off with clean water. Otherwise, it could result in injures.**
- **When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
  - **Lower the boom so that the attachment rests on the ground.**
- **Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.**

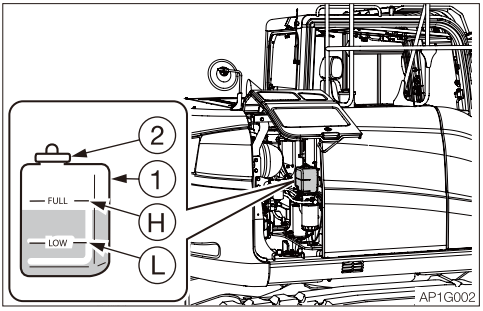
Inspection



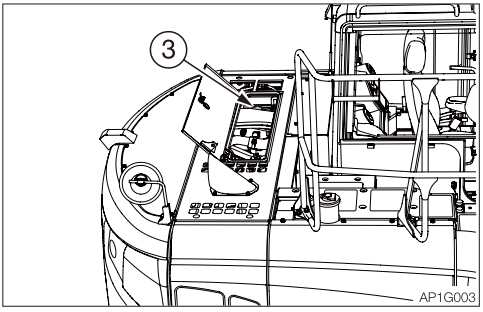
Inspect the coolant level by checking the coolant level warning lamp on the multi information display.
Refer to “4. Coolant level warning lamp” on page 2-21.
If the lamp is flashing, add the coolant.

Replenishing

Note: Use only clean water (soft water) to replenish the cooling water loss due to evaporation. Use coolant (antifreeze) and clean water (soft water) of the specified mixing ratio to replenish the cooling water loss due to leaking.

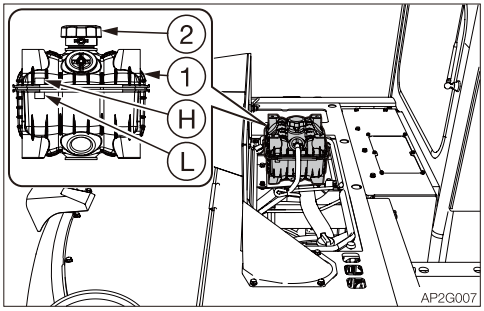


1. Remove the cap (2) of the reserve tank (1).



2. Add cooling water up to the upper limit (H) of the reserve tank (1).
   If the reserve tank (1) is found empty at the inspection, check for water leakage and then the water level in the radiator (3). Add water to the radiator (3) as required, and then to the reserve tank (1).
3. Install the cap (2).

<Low noise package>



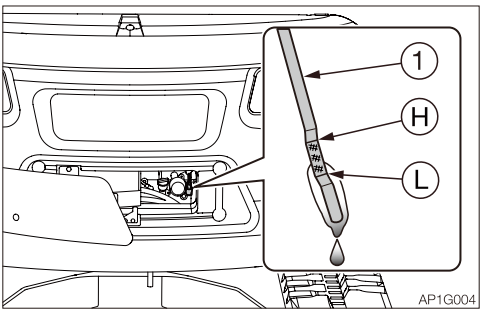
1. Remove the cap (2) of the expansion tank (1).
2. Add cooling water up to the upper limit (H) of the expansion tank (1).
3. Install the cap (2)

INSPECTING AND REPLENISHING THE ENGINE OIL

⚠ WARNING

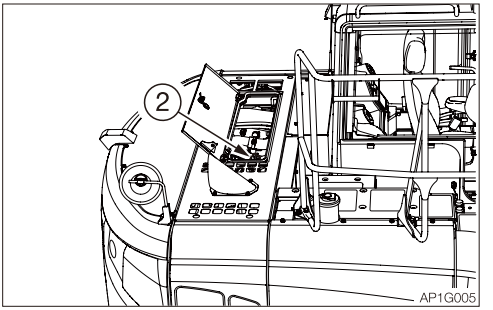
- **Be sure to stop the engine before performing the inspection and maintenance.**
- **The parts of the machine are hot immediately after the engine is stopped. Be careful not to burn yourself.**
- **Be aware of the high-temperature engine oil. You could burn yourself with it.**
- **When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
  - **Lower the boom so that the attachment rests on the ground.**
- **Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.**

Inspection



1. Open the maintenance cover A.
2. Take out the dipstick (1) and wipe off the oil with a rag.
3. Fully insert the dipstick (1) again, and then pull it out.
4. Check the oil left on the dipstick (1).
   The level should be between the upper limit (H) and the lower limit (L).
   If it is below the lower limit (L), replenish.

Replenishing

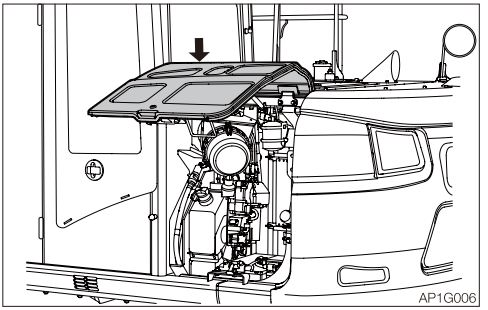


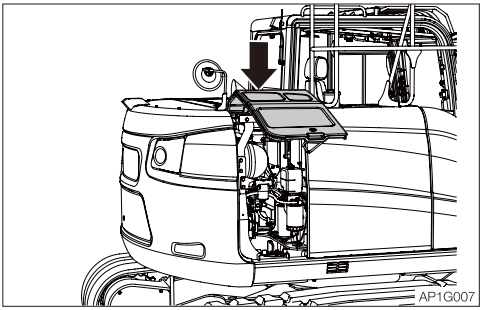
1. Open the maintenance cover B.
2. Remove the oil filler cap (2).
3. Add oil up to between the upper limit (H) and the lower limit (L) of the dipstick (1). Problems could arise if the oil level is either too low or too high.
4. Tighten the oil filler cap (2).
5. Perform the engine warm-up procedure. (When the engine oil temperature is lower than 80°C)
6. Park the machine on a level ground and wait for five minutes. Inspect the oil level again while the engine oil is still warm.

CLEANING THE DUST SCREEN

⚠ WARNING

Stop the engine and allow each part of the machine to cool down before performing maintenance.





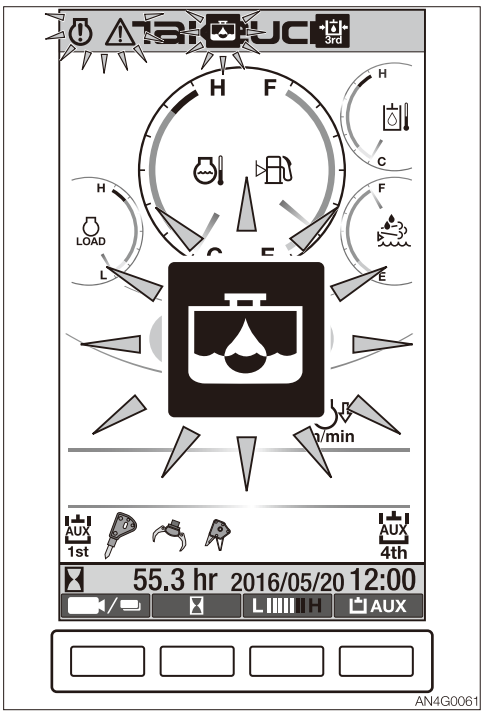
1. Open the cover.
2. Inspect if any dirt or bugs are on the dust screen.
3. Clean the dust screen.

INSPECTING THE PRE-FUEL FILTER AND DRAINING

⚠ WARNING

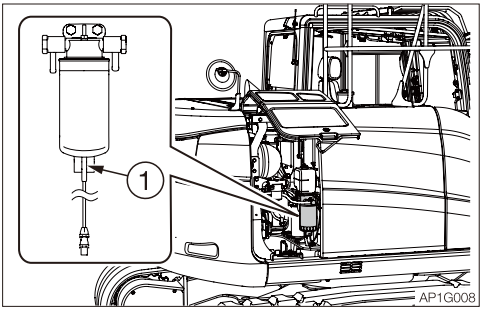
- Do not smoke or permit open flames while handling fuel or working on the fuel system.
- Stop the engine in a well-ventilated place and allow it to cool down before performing maintenance.
- Clean up spilled fuel immediately.

Inspection



1. Turn the starter switch to the ON position.
2. Inspect the water separator warning lamp.
3. If the warning lamp is flashing, drain the water.

Draining

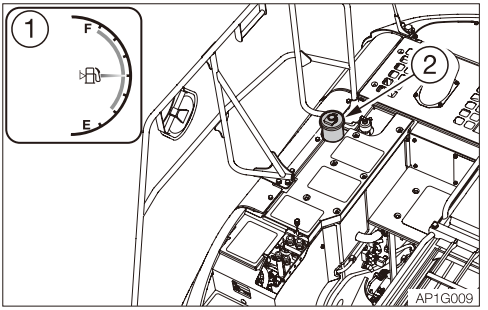


1. Turn the starter key to the OFF position to stop the engine.
2. Open the right side cover.
3. Remove the electric wiring.
4. Place a pan for catching fuel under the drain valve (1).
5. Loosen the drain valve (1) to drain water until the pure fuel comes out.
6. Tighten the drain valve (1).
   Tightening torque: 1.6±0.3 N·m (1.2±0.2 ft-lb)
7. Install the electric wiring.

INSPECTING THE FUEL LEVEL

⚠ WARNING

- When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:
  - Do not spill oil or grease.
  - Do not leave tools scattered around
  - Watch your step when walking.
  - Lower the boom so that the attachment rests on the ground.
- Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.
- Do not smoke or permit open flames while handling fuel or working on the fuel system.
- Never remove the fuel cap or add fuel when the engine is running or still hot. Do not spill fuel on the hot surface of the machine.
- Fill the fuel tank in a well ventilated place.
- Clean up spilled fuel immediately.
- Do not fill the fuel tank to capacity. Allow room for oil expansion.
- Securely tighten the fuel filler cap.
- Use the correct grade of fuel for the operating season.



1. Check the fuel level using the fuel gauge (1).
   F: Full
   E: Empty
2. If the level is low, add fuel from the fuel port (2) while watching the fuel gauge (1). Refer to “Fuel filler port” on page 2-5.

INSPECTING THE HYDRAULIC OIL TANK LEVEL AND REPLENISHING

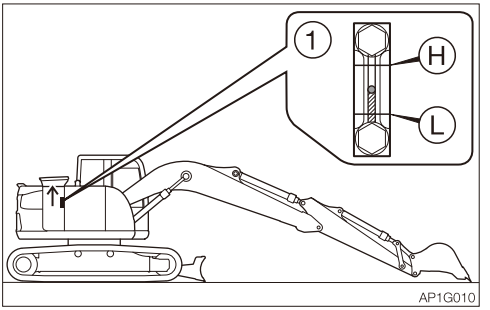
⚠ WARNING

- Before performing maintenance on the top of the machine, clean the place you will work on and observe the following to prevent falling.
  - · Do not spill oil or grease.
  - · Do not leave tools scattered around.
  - · Watch your step when walking.
  - · Lower the boom so that the attachment rests on the ground.
- Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.
- Oil may spurt out if caps or filters are removed or pipes are disconnected before releasing the pressure in the hydraulic system.
  - · Press the air breather button to relieve the internal pressure from the tank.

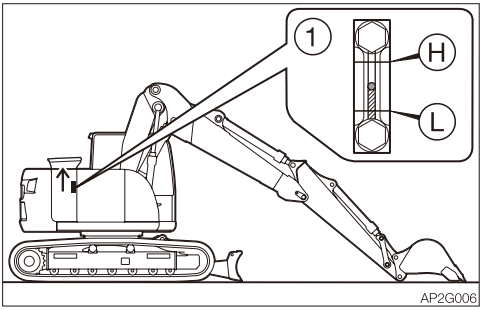
Inspection

The oil level changes with the oil temperature. Inspect the oil by maintaining the machine posture as shown in the figure.

- Machine posture for inspecting the hydraulic oil level

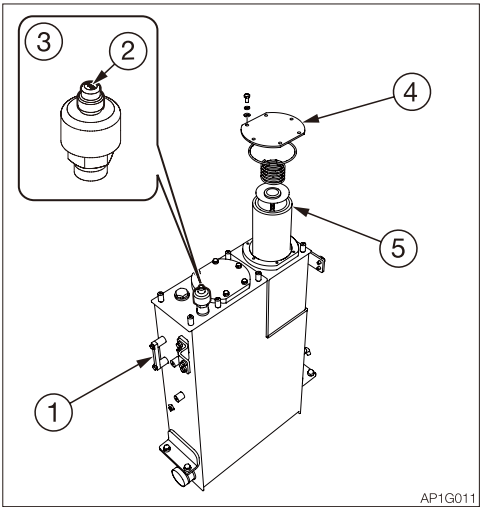


1. Start the engine and run it at low speed.
2. Fully retract the cylinders (arm and bucket), and lower the bucket to the ground.



   For the 2-piece boom, fully retract the cylinders (adjust, arm and bucket), and lower the bucket to the ground.
3. Lower the dozer blade, and then stop the engine.
4. Open the right side cover.
5. Inspect the oil level using the sight gauge (1).
   - · When the oil temperature is about 20°C (68°F):
     The level should be between the upper limit (H) and the lower limit (L).
     If it is below the lower limit (L), replenish.
   - · When the oil temperature is about 50 to 80°C (122 to 176°F):
     The level should be slightly below the upper limit (H).

Replenishing



IMPORTANT: Do not fill up to the level higher than the upper limit (H). It will damage the hydraulic circuits or result in oil spurting. If accidentally done, stop the engine and wait the hydraulic oil to cool, and then let the excessive oil to drain from the drain plug.

1. Press the air breather button (2) to relieve the internal pressure from the tank.
2. Remove the air breather (3).
3. Add the hydraulic oil up to the middle of the sight gauge (1).
4. Tighten the air breather (3).

INSPECTING AND CLEANING THE AIR CLEANER

⚠ WARNING

- **Stop the engine and allow the machine to cool down before performing maintenance.**
  - **The engine, muffler, radiator and many other parts of the machine are hot immediately after the engine is stopped. Touching it will cause burns.**
- **Wear required appropriate equipment such as protective goggle and filter mask when using compressed air, as metal fragments or other objects can fly and cause serious injury.**

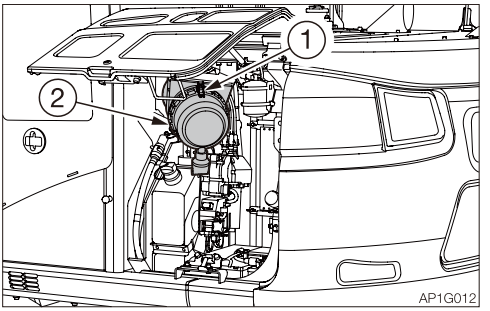
IMPORTANT: Be careful not to scratch the element. Do not use an element if it is damaged.
IMPORTANT: When operating the machine in very dusty places, perform inspection and maintenance operations every day.
IMPORTANT: Be sure to install the element and dust cap securely. If not, dust could be drawn into the cylinder, damaging the engine.

Inspection

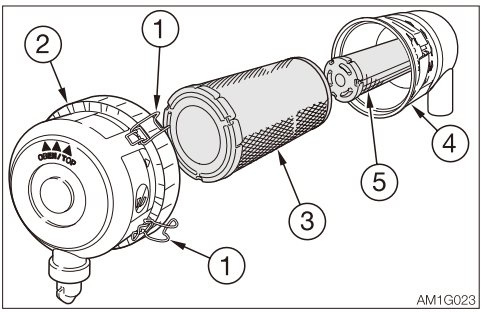
1. Turn the starter switch to the ON position.
2. Check the air cleaner warning lamp.
3. Clean the air cleaner if the warning lamp is flashing.
   If it is extremely dirty, replace the air cleaner element.
   Refer to “Replacing the air cleaner element” on page 5-61.

Cleaning the air cleaner

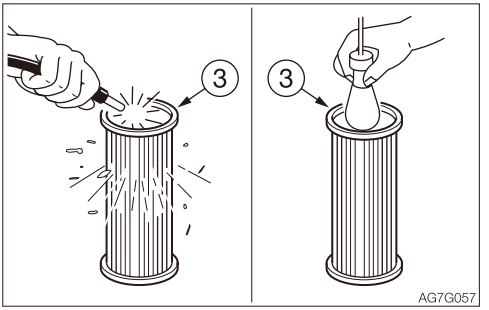
1. Open the left side cover.



2. Loosen the clamps (1) and remove the dust cup (2).

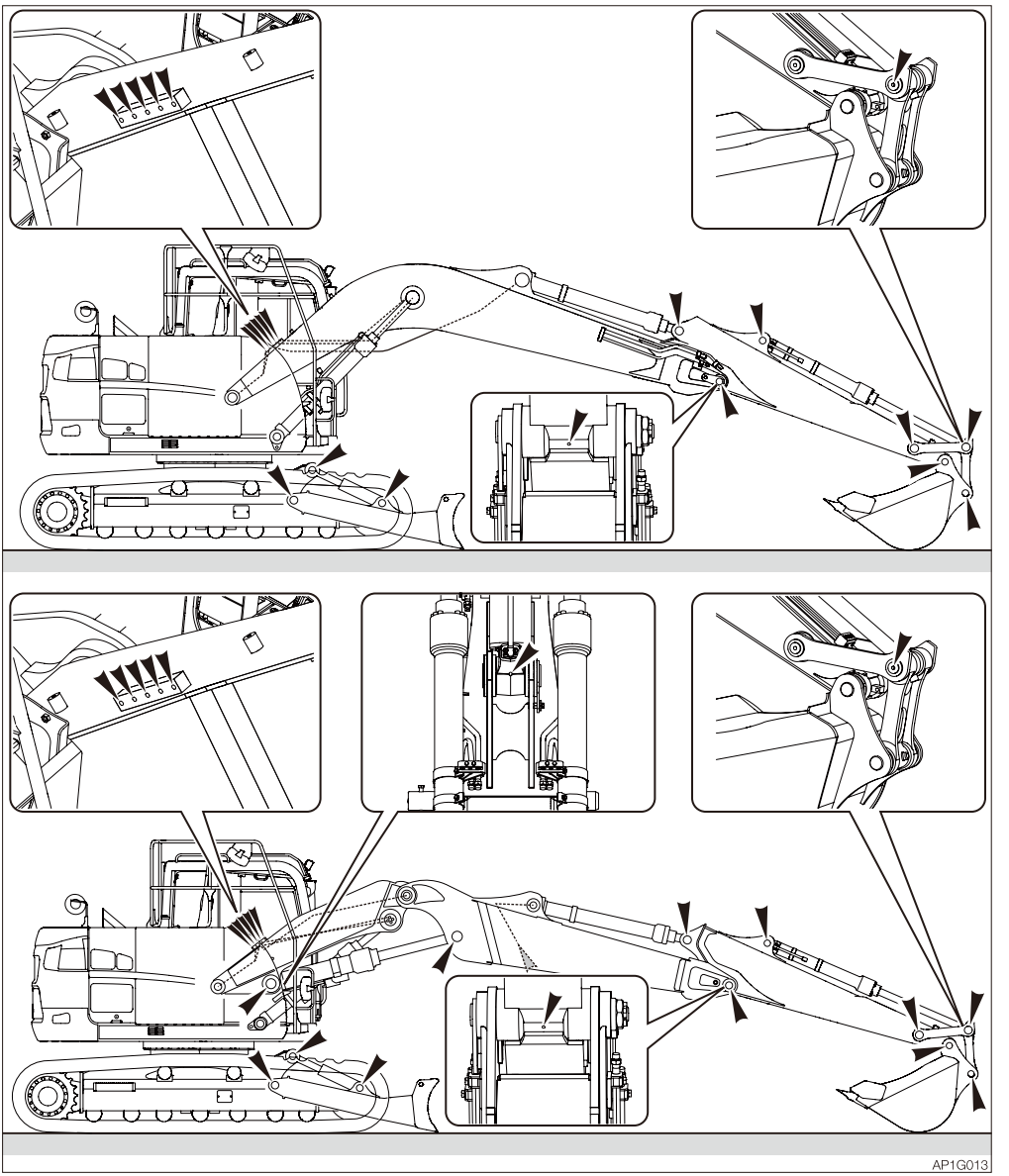


3. Clean the inside of the dust cup (2).
4. Remove the primary element (3).
   To prevent dirt from getting inside the engine, do not remove the secondary element (5).
5. Clean the inside of the body (4).



6. Clean the primary element (3) with dried compressed air (500 kPa/72.5 psi or less). First blow the air from the inside of the element along the pleats. Then blow the air from the outside and finally from the inside again.
7. Light up the inside of the primary element (3) with a light bulb, inspect it, and replace it if there are small holes or thin spots.
8. Install the primary element (3).
9. Install the dust cup (2) with its "▲▲▲ OBEN/TOP" mark facing up, and then fasten it with the clamps (1).

LUBRICATING THE WORKING EQUIPMENT



1. Keep the machine configuration for greasing as shown in the diagram above. To insure an easy greasing to the boom bracket vertical axis pin, let the tip of the attachment softly press the ground.
2. Stop the engine.
3. Use the grease gun to lubricate the grease fittings.
4. Wipe off the excess grease.

CHECKING THE DEF/ADBLUE® LEVEL AND REFILLING

⚠ WARNING

- When removing the cap from the DEF/AdBlue® tank, take care not to inhale steam.
- Do not put anything else other than DEF/AdBlue® solution in the DEF/AdBlue® tank. Putting liquids, particularly light oil or gasoline, in the tank could cause a fire or damage the SCR system. If this is accidentally done, contact a Takeuchi service dealer.

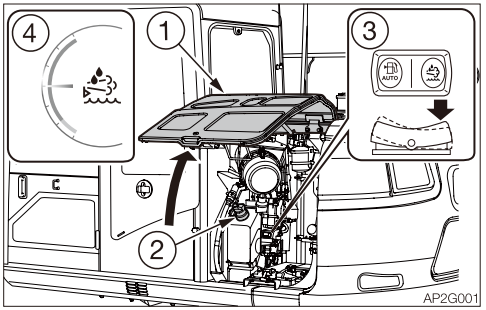
⚠ CAUTION

- DEF/AdBlue® is a colorless, transparent, odorless and non-hazardous aqueous solution (32.5% urea, 67.5% water, freezes at –11°C), and is harmless to the human body.
  In very rare cases, however, inflammation could occur in some people, and thus proper actions should be taken as follows.
- If skin contact occurs, flush with water. If there are changes in the skin condition or if there is pain, immediately seek medical attention.
- If accidentally swallowed, drink one or two glasses of water or milk and immediately seek medical attention.
- If eye contact occurs, immediately flush with a large amount of clean water and seek medical attention.

IMPORTANT:

- Do not use expired DEF/AdBlue® solution (including solution left in the tank) stored for a long period. Doing so could cause ammonia slip, degraded NOx conversion efficiency or device damage.
- When handling DEF/AdBlue®, do not use anything such as cotton work gloves whose fibers could get into the solution. Doing so could cause clogging of the DEF/AdBlue® filter or urea deposit at the DM injection port.
- When refilling, be sure to use DEF/AdBlue® conforming to ISO 22241. Do not dilute it or mix it with other chemicals.
- When removing the cap from the DEF/AdBlue® tank, take care not to allow any soil or dirt to enter the tank. Otherwise, the SCR system could fail.
- Do not overfill the tank with DEF/AdBlue® or top off the tank while the engine is running. Doing so could cause the solution to leak from the breather and to freeze. The frozen solution could damage the sensor.
- Do not stand on top of the DEF/AdBlue® tank or piping, and do not put things on them. Doing so could damage them.
- Wipe off any spill of DEF/AdBlue® and rinse it off with water.
- A dry white powder of DEF/AdBlue® may be deposited around the refill port. Wipe it off so that the powder does not enter the tank.
- If DEF/AdBlue® is added while the engine is running or the starter switch is ON, it takes a long time for the level of the DEF/AdBlue® solution to reach the correct level.

Checking the level



Use the DEF/AdBlue® level indicator (4) to check the amount of the DEF/AdBlue® solution remaining.

F: Tank is full.
E: Tank is empty.

Refilling

1. Turn the starter key to the OFF position to stop the engine.
2. Open the left side cover (1).
3. Turn the DEF/AdBlue® tank cap (2) counterclockwise and remove it.
4. Press the DEF/AdBlue® symbol side of the refill switch (3) to refill while the buzzer is sounding.
   (The corresponding switch lamp lights up or flashes in conjunction with the buzzer.)
   Buzzer keeps sounding: 100%
   Buzzer sounds at intervals of 0.6 seconds: 80 to 100%
   Buzzer sounds at intervals of 2 seconds: Under 80%
   Buzzer sounds at intervals of 0.3 seconds: Failure
   Upon completion of refilling, press the refill switch (3) again to stop the buzzer sounding. (The buzzer automatically stops sounding after 20 minutes.)
5. Install the DEF/AdBlue® tank cap (2) on the refill port, and then turn the cap clockwise to close.
6. Close the left side cover (1).

Notes:
- If any solution other than DEF/AdBlue® is used, the warning lamp lights up and the buzzer sounds. Refer to “8. DEF/AdBlue® quality indicator lamp” on page 2-23.
- The engine speed is limited if the DEF/AdBlue® solution is insufficient. Running the engine with insufficient DEF/AdBlue® causes the engine to idle.
- If the tank is faulty, please contact a Takeuchi service dealer for advice.

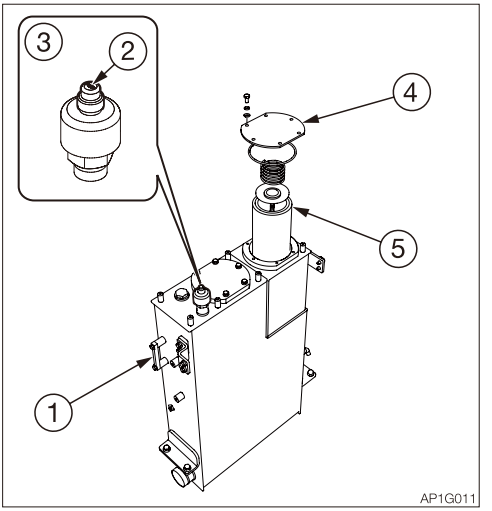
When DEF/AdBlue® is low or the tank is empty:
Corresponding to the DEF/AdBlue® level in the tank, the warning lamp lights up or flashes. Also, the engine output and RPM are limited.
To refill the tank under these conditions, refer to “Restarting when the DEF/AdBlue® level is low or the tank is empty” on page 6-12.

AFTER THE INITIAL 50 HOURS (ONLY FOR NEW MACHINES)

REPLACING THE HYDRAULIC OIL RETURN FILTER

⚠ WARNING

- Stop the engine and allow each part of the machine to cool down before performing maintenance.
  - The engine, the hydraulic system and many other parts of the machine are hot immediately after the engine is stopped. Touching these parts will cause burns.
  - The hydraulic oil is also hot and under high pressure.
    Be careful not to touch the hydraulic oil when loosening the cap or plug. Working on the machine under these conditions could result in burns or injuries due to the hot oil spurting out.
- Before performing maintenance on the top of the machine, clean the place you will work on and observe the following to prevent falling.
  - Do not spill oil or grease.
  - Do not leave tools scattered around.
  - Watch your step when walking.
  - Lower the boom so that the attachment rests on the ground.
- Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.
- Oil may spurt out if caps or filters are removed or pipes are disconnected before releasing the pressure in the hydraulic system.
  - Press the air breather button to relieve the internal pressure from the tank.
  - When removing plugs or screws, or when disconnecting hoses, stand to the side and loosen them slowly to gradually release the internal pressure before removing.

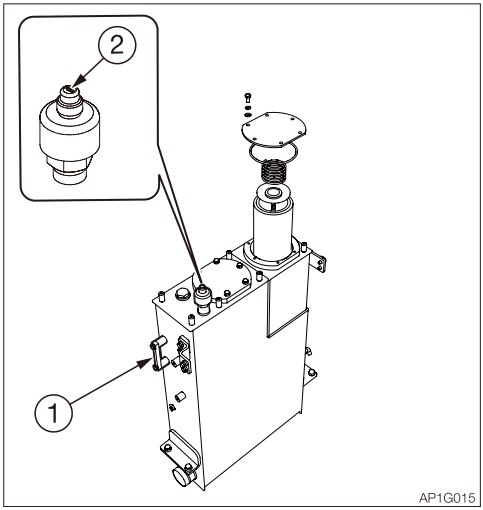


1. Press the air breather button (2) to relieve the internal pressure from the tank.
2. Loosen the bolts and remove the flange (4).
3. Remove the return filter (5).
4. Install a new return filter.
5. Install the flange (4) on its original position.
6. Inspect the level with the sight gauge (1), and replenish if the level is too low.
   Refer to “Inspecting the hydraulic oil tank level and replenishing” on page 5-28.

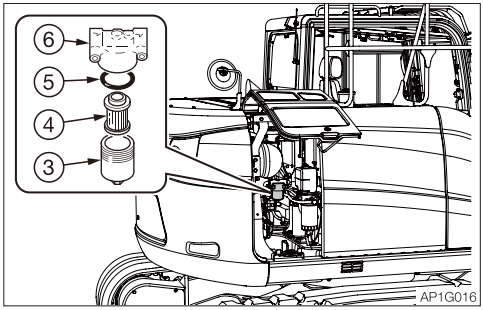
REPLACING THE PILOT LINE FILTER

⚠ WARNING

- Stop the engine and allow each part of the machine to cool down before performing maintenance.
  - The engine, the hydraulic system and many other parts of the machine are hot immediately after the engine is stopped. Touching these parts will cause burns.
  - The hydraulic oil is also hot and under high pressure immediately after the engine is stopped.
    Be careful not to touch the oil when loosening the cap or plug. Working on the machine under these conditions could result in burns or injuries due to the hot oil spurting out.
- Oil may spurt out if caps or filters are removed or pipes are disconnected before releasing the pressure in the hydraulic system.
  - Press the air breather button to relieve the internal pressure from the tank.
  - When removing plugs or screws, or when disconnecting hoses, stand to the side and loosen them slowly to gradually release the internal pressure before removing.



1. Press the air breather button (2) to relieve the internal pressure from the tank.



2. Open the right side cover.
3. Turn the case (3) counterclockwise and remove it.
4. Remove the element (4) and O-ring (5).
5. Clean the inside of the case (3).
6. Apply a thin layer of oil on the O-ring of the new filter.
7. Install the new element on the filter stand (6).
8. Apply a thin layer of oil on the new O-ring (5).
9. Install the new O-ring (5) and the case (3) on the filter stand (6).
   Tightening torque:78.5 ± 4.9 N·m (57.9 ± 3.6 ft-lb)
10. Inspect the level with the sight gauge (1) and replenish if the level is too low.
    Refer to “Inspecting the hydraulic oil tank level and replenishing” on page 5-28.

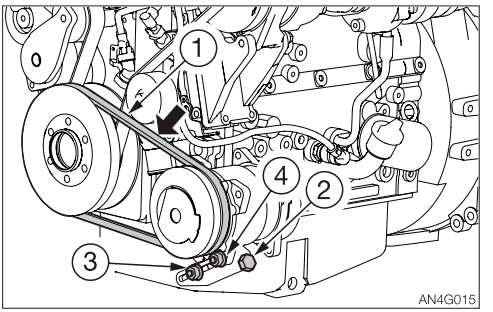
INSPECTING AND ADJUSTING THE COMPRESSOR BELT (AC)

⚠ WARNING

- **Stop the engine and allow the machine to cool down before performing maintenance.**
  - **The engine, muffler, radiator, hydraulic lines, sliding parts and many other parts of the machine are hot immediately after the engine is stopped. Touching these parts will cause burns.**
- **The high-pressure pipes of the air conditioner can be very hot (80 to 120°C or 176 to 248°F). Be careful not to burn yourself.**

IMPORTANT: Do not let any oil or grease get on the belt. It will cause the belt to slip, decrease the cooling capacity or shorten the service life of the air conditioner.

If the belt is too slack, it will slip and vibrate, resulting in decreased cooling capacity. The service life of the air conditioner also will be shortened. Adjust the belt tension to the standard value (approximately 8 mm or 0.31 in).



Inspection

1. Remove the under cover.
2. The belt tension is normal if the belt tension gauge indicates the following value.
   400±50 N (90±11 lbf)

Adjustment

If the belt tension is not normal, adjust it with the adjuster bolt (2).

1. Loosen the locking nuts (3) and (4).
2. Turn the adjuster bolt (2) as follows.
   - Tighten: Clockwise
   - Loosen: Counterclockwise
3. Tighten the locking nuts (3) and (4) after adjustment.

Note: When replacing with a new belt, run the engine at low idle speed for about 15 minutes to break in the new belt, and then adjust the tension again.
The belt tension must be adjusted as follows:
650±50 N (146±11 lbf)

Replacing

Replace the belt in the following cases:

- There are cuts or cracks.
- The belt is worn and touches the bottom of the V groove in the pulley.
- The belt stretched too loose to be adjusted.

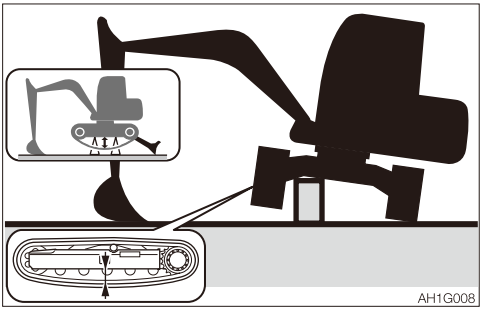
EVERY 50 HOURS

INSPECTING AND ADJUSTING THE CRAWLER TENSION

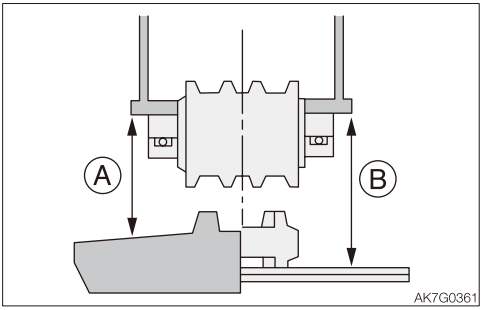
⚠ WARNING

- If you must work beneath the raised machine or working equipment, always use wood blocks, jack-stands or other rigid and stable supports. Never get under the machine or working equipment if they are not sufficiently supported. This procedure is especially important when working on hydraulic cylinders.
- Be careful with the high-pressure grease In the track adjuster, the grease has been injected under high pressure. If the tension is adjusted without following the prescribed procedure, the grease discharge valve may fly off, resulting in injury.
  - Never loosen the grease fitting.
  - Loosen the grease discharge valve slowly. Do not turn it more than 1 turns.
  - Do not put your face, arms, legs or body in front of the grease discharge valve.
  - If grease does not come out when the grease discharge valve is loosened, the valve is faulty. Ask a Takeuchi service agent for repair.

Inspection



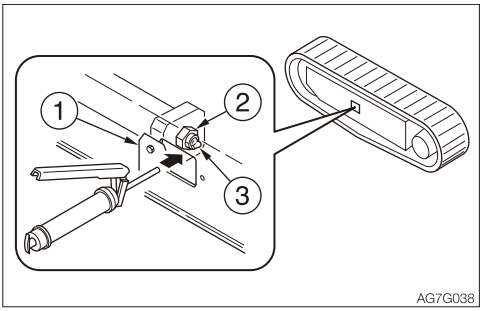
1. Use the working equipment to lift the machine body. Operate the levers slowly.



2. Inspect the gap (A or B) between the bottom surface of the frame at the center of the crawler frame and the top surface of the crawler.
   The gap (A or B) must be within the following range:

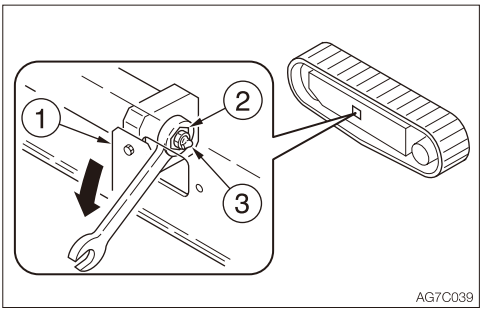
   (A) Rubber crawler
   155 to 165 mm (6.1 to 6.5 in.)
   (B) Steel crawler
   250 to 280 mm (9.8 to 11 in.)
   (B) Segmental rubber crawler
   235 to 265 mm (9.3 to 10.5 in.)

Adjustment
Increasing the tension



1. Remove the cover (1).
2. Using the grease gun, insert grease through the grease fitting (3) in the grease discharge valve (2).
3. Inspect the crawler tension.

Decreasing the tension



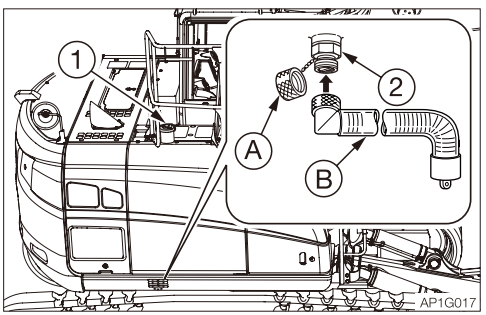
1. Remove the cover (1).
2. Using the spanner, slowly loosen the grease discharge valve (2) (one turn) and drain the grease.
   If the grease does not drain easily, move the machine forward or backward.
3. Tighten the grease discharge valve (2).
   · Tightening torque: 59 to 88 N·m (43.4 to 65.1 ft-lb.)

DRAINING THE WATER FROM THE FUEL TANK

⚠ WARNING

- **Before performing maintenance on the top of the machine, clean the place you will work on and observe the following to prevent falling.**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
  - **Lower the boom so that the attachment rests on the ground.**
- **Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.**
- **Do not smoke or permit open flames while handling fuel or working on the fuel system.**
- **Never remove the fuel cap or add fuel when the engine is running or still hot. Do not spill fuel on the hot surface of the machine.**
- **Fill the fuel tank in a well ventilated place.**
- **Do not fill the fuel tank to capacity. Allow room for oil expansion.**
- **Clean up spilled fuel immediately.**
- **Securely tighten the fuel filler cap.**
- **Use the correct grade of fuel for the operating season.**

Do the draining operation before starting the machine.



1. Remove the fuel filler cap (1).
2. Place a pan under the drain valve (2).
3. Remove the cap (A), install the connector (B) and then drain water and sludge from the bottom of the tank. (The water comes out once the screw is tightened.)
4. Remove the connector (B) and install the cap (A).
5. Add fuel.
6. Tighten the fuel filler cap (1) and lock it.
7. Bleed air.

Bleeding air from the fuel system
Refer to “Bleeding air from the fuel system” on page 6-11.

Note: Air in the fuel system causes the engine to fail to start or to have problems. Bleed air when the fuel tank is emptied, using the same procedure above.

INSPECTING THE BATTERY FLUID LEVEL AND REPLENISHING

⚠ DANGER

- Do not use the battery when the fluid level is below the lower level limit. Doing so will hasten the deterioration of the internal portions of the battery and shorten the battery life. It also can cause rupturing (explosion).
- Batteries generate flammable hydrogen gas which may explode. Keep away from flame, sparks, fire or lighted cigarettes.
- Use a dampened cloth to clean above the fluid level line and check the fluid level. Do not clean with a dry cloth; otherwise it can cause static electricity to build up, resulting in ignition or explosion.
- Do not use the cable if it's connecting terminal is loose or corroded. If used, ignition or explosion may occur.

⚠ WARNING

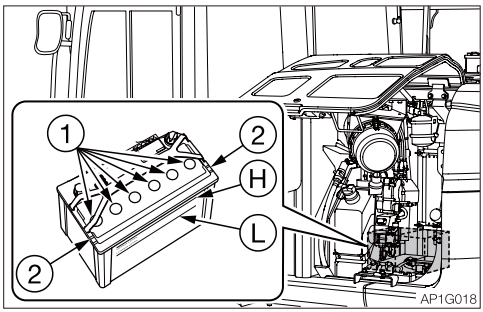
- Wear protective goggle and clothing when working with batteries.
- Do not add the distilled water above the upper level limit. Doing so could cause the fluid to leak. This fluid can cause skin damage if contacted, or can cause the machine components to corrode.
- Batteries contain sulfuric acid which will damage eyes or skin if contacted.
  - If eye contact occurs, flush immediately with clean water and get prompt medical attention.
  - If accidentally swallowed, drink large quantities of water or milk and call a physician immediately.
  - If acid contacts skin or clothing, wash off immediately with a lot of water.

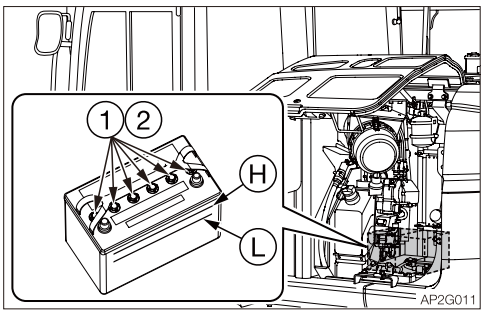
Inspection

Turn the starter switch to ON and check the battery voltage on the display. The battery is normal if the voltage is 24 V or more.
Refer to "(4) Data display" on page 2-37.

IMPORTANT: Check the fluid level of all cells following the steps below, even when the fluid level can be checked using the indicator.
IMPORTANT: The SCR system operates for up to 2 minutes after the starter switch is turned to the OFF position.
When removing the batteries or electrical connectors for inspection or maintenance, wait for at least 2 minutes after the starter switch is turned to the OFF position. Otherwise, the system could fail.

Note: Under normal operating conditions, the maintenance-free battery does not require addition of water because of the special plate designed to minimize fluid loss. However, for those machines that are heavily used or operated under severe conditions (for example, in high ambient temperature), the fluid level often becomes low. If that is the case, check the fluid level of the maintenance-free battery and add water as needed.





1. Open the left side cover.
2. Inspect the fluid level.
   The fluid level must be between the upper level line (H) and lower level line (L). If not, add distilled water up to the line (H).
3. Check the battery terminal for looseness, dirt and corrosion.
4. Check the exhaust holes (2) for dirt.
5. Check the battery voltage. Confirm it is 24 V or more.
   Refer to “(4) Data display” on page 2-37.

Replenishing

1. Loosen the sealing plugs (1) and add distilled water up to the highest level line (H).
2. Securely tighten the sealing plugs (1).

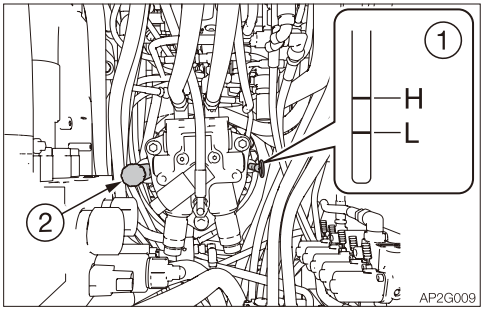
AFTER THE INITIAL 250 HOURS (ONLY FOR NEW MACHINES)

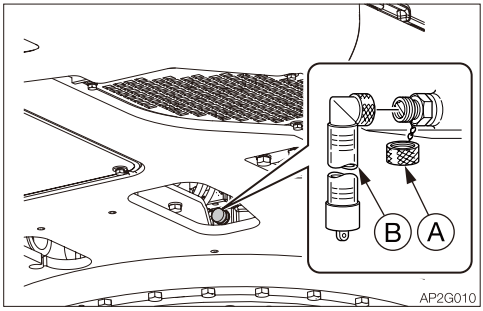
REPLACING THE SLEW MOTOR GEAR OIL

⚠ WARNING

- Stop the engine and allow each part of the machine to cool down before performing maintenance.
  - The slew motor is hot immediately after the engine is stopped. Touching it will cause burns.
  - The gear oil is also hot and under high pressure immediately after the engine is stopped.
    Be careful not to touch the oil when loosening the plug. Working on the machine under these conditions could result in burns or injuries.
- When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:
  - Do not spill oil or grease.
  - Do not leave tools scattered around.
  - Watch your step when walking.
  - Lower the boom so that the attachment rests on the ground.
- Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.
- The pressure in the reduction gear case of slew motor may cause oil or the cap to fly out. Loosen the cap slowly to release the pressure.

1. Remove the cover.





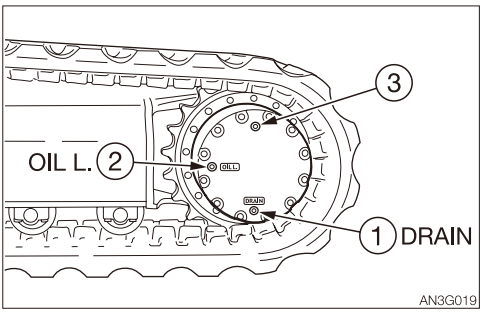
2. Remove the cap (2).
3. Place a pan under the plug to catch the waste oil.
4. Remove the cap (A), install connector (B) and drain the oil. (The oil comes out when the screw is tightened.)
5. Remove the connector (B) and install the cap (A).
6. Add oil up to the upper limit (H) of the level gauge (1).
   Problems could arise if the oil level is either too low to too high.
7. Tighten the cap (2).

REPLACING THE TRAVEL MOTOR GEAR OIL

⚠ WARNING

- **Stop the engine and allow the machine to cool down before performing maintenance.**
  - **The travel motor is hot immediately after the engine is stopped. Touching it will cause burns.**
  - **The gear oil is also hot and under high pressure immediately after the engine is stopped. Be careful when loosening the plugs. Working on the machine under these conditions could result in burns or injuries.**
- **The pressure in the reduction gear case of travel motor may cause oil or the plug to fly out. Loosen the plug slowly to release the pressure.**

IMPORTANT: If the percentage of the traveling time within the total operating time is high, replace the gear oil earlier than the specified time.



1. Set the travel motor so that plug (1) is at the very bottom.
2. Place a pan under the plug (1).
3. Remove the plugs (1), (2) and (3) and drain the oil.
4. Rewrap the plugs with new sealing tape.
5. Tighten the plug (1).
   - Tightening torque: 98 N·m (72.3 ft-lb.)
6. Add oil through the hole of the plug (3) until oil flows out of the hole of the plug (2).
7. Tighten the plugs (2) and (3).
   - Tightening torque: 98 N·m (72.3 ft-lb.)

EVERY 250 HOURS

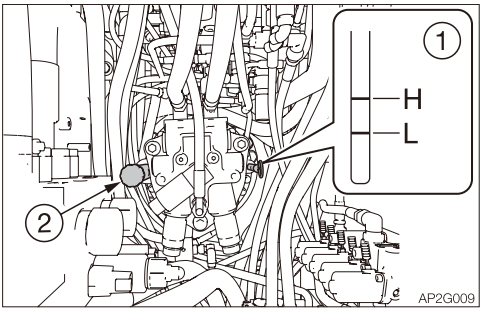
INSPECTING THE SLEW MOTOR GEAR OIL

⚠ WARNING

- Stop the engine and allow each part of the machine to cool down before performing maintenance.
  - The slew motor is hot immediately after the engine is stopped. Touching it will cause burns.
  - The gear oil is also hot and under high pressure immediately after the engine is stopped.
    Be careful not to touch the oil when loosening the plugs. Working on the machine under these conditions could result in burns or injuries.
- When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:
  - Do not spill oil or grease.
  - Do not leave tools scattered around.
  - Watch your step when walking.
  - Lower the boom so that the attachment rests on the ground.
- Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.
- The pressure in the reduction gear case of slew motor may cause oil or the plug to fly out. Loosen the plug slowly to release the pressure.

Inspection

1. Remove the cover.



2. Take out the level gauge (1) and wipe off the oil with a rag.
3. Fully insert the level gauge (1) again, and then pull it out.
4. Check the oil left on the level gauge (1). The level should be between the upper limit (H) and the lower limit (L).
   If it is below the lower limit (L), replenish.

Replenishing

1. Remove the oil filler cap (2).
2. Add oil up to between the upper limit (H) and the lower limit (L) of the level gauge (1). Problems could arise if the oil level is either too low or too high.
3. Tighten the oil filler cap (2).

CLEANING THE COOLER FINS

⚠ WARNING

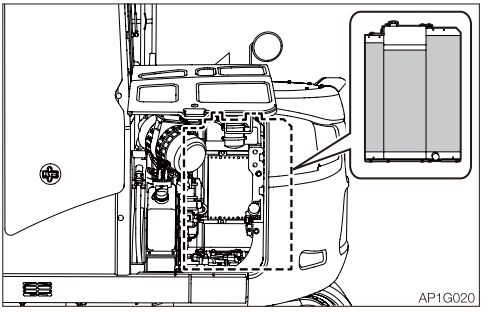
Wear required appropriate equipment such as protective goggle and filter mask when using compressed air, as metal fragments or other objects can fly and cause serious injury.

IMPORTANT: Be careful not to damage the fins when cleaning.

- **When using compressed air or pressurized water, make sure the pressure is no higher than 200 kPa (28 psi) and hold the nozzle sufficiently away from the fins.**

IMPORTANT: When using water, cover the electrical system to prevent water from getting in.

IMPORTANT: When operating the machine in very dusty places, perform inspection and maintenance operations every day.



1. Open the left side cover.
2. Blow compressed air on the fins to remove mud and dirt stuck on them.

INSPECTING AND ADJUSTING THE COMPRESSOR BELT (AC)

Refer to “Inspecting and adjusting the compressor belt (AC)” on page 5-38.

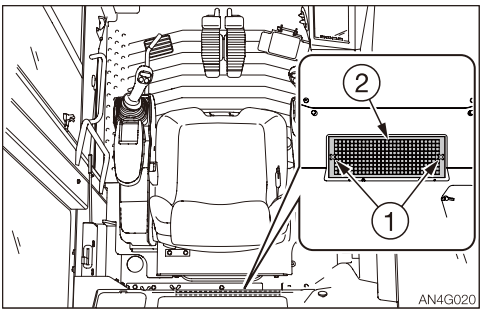
CLEANING THE AIR FILTERS (AC)

⚠ WARNING

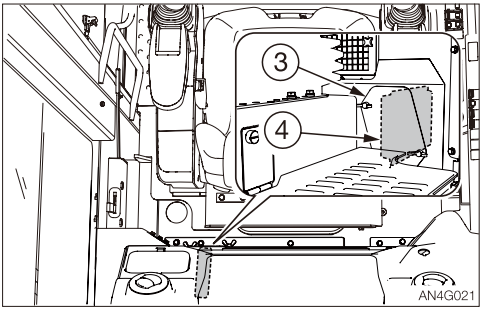
Wear required appropriate equipment such as protective goggle and filter mask when using compressed air, as metal fragments or other objects can fly and cause serious injury.

Clean the filters immediately after operating in dusty places.
If the filters are clogged, the air flow is reduced and a booming sound is heard from the air conditioner unit.

Removing the filters



1. Move the seat all the way forward, and then fold down the backrest toward the front.
2. Loosen the knobs (1) and remove the circulation filter (2).
   Circulation filter (2): Part No. 19115-06736



3. Loosen the knobs and remove the cover (3).
4. Remove the ventilation filter (4).
   Ventilation filter (4): Part No. 19115-13680
5. Use compressed air or water to clean the filters, depending on how dirty they are.

Cleaning

1. Blow dry, compressed air (138 kPa or 20 psi or less) directly on the filters from the inside, moving up and down along the pleats.
   Be sure to keep the nozzle at an adequate distance from the filters.
2. Wash the filter with neutral detergent if it is very dirty. Dry the filter completely after washing it.

Replacing

Replace the filter with a new one once a year or if it is still clogged after blow-drying with compressed air and washing.

CLEANING THE CONDENSER (AC)

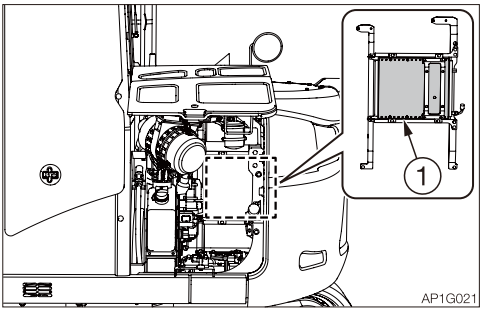
⚠ WARNING

Wear required appropriate equipment such as protective goggle and filter mask when using compressed air, as metal fragments or other objects can fly and cause serious injury.

IMPORTANT: Be careful not to damage the fins when cleaning.

- **When using compressed air or pressurized water, make sure the pressure is no higher than 200kPa (28 psi) and hold the nozzle sufficiently away from the fins.**

If the condenser is dirty, heat will not discharge properly. Wash dirt off the condenser with water.



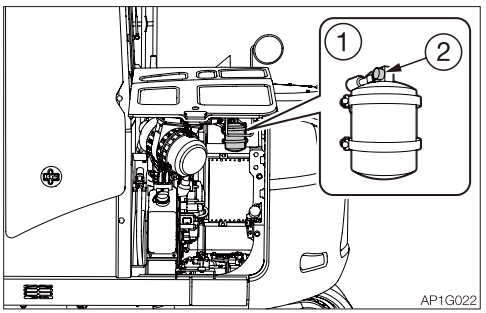
1. Open the left side cover.
2. Clean the condenser (1).

INSPECTING THE REFRIGERANT (GAS) LEVEL (AC)

⚠ WARNING

- **Exposure of the eyes or hands to the cooler's refrigerant could result in blindness or frostbite.**
  Never touch the refrigerant or loosen the parts of the cooling circuit.
- **Keep flames away if the refrigerant gas is leaking.**
- **The high-pressure pipes of the air conditioner can be very hot (80 to 120°C or 176 to 248°F). Be careful not to burn yourself.**

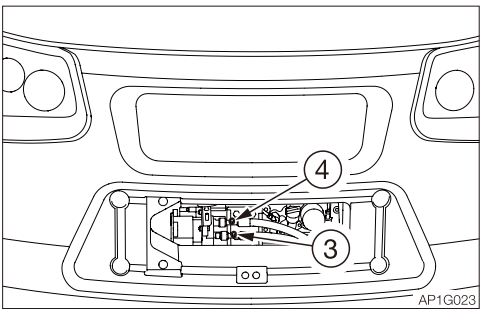
The cooling capacity decreases if the amount of refrigerant is insufficient.
Inspect the refrigerant level using the sight glass (2) on the top of the receiver dryer (1).



1. Open the left side cover.
2. Inspect the places for the conditions below.

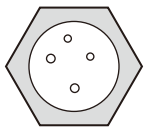
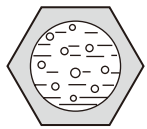
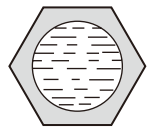
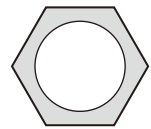
Places for inspection	Conditions
Cab door	Fully open
Temperature control	Minimum temperature
Fan speed	High
Ventilation / Circulation select switch	Circulation
Engine speed	Maximum speed
Air conditioner switch	ON

3. Inspect the refrigerant by watching the flow of air bubbles through the sight glass (2).
   Refer to "Check list for refrigerant volume" on page 5-53.
4. Open the engine hood.



5. Check the temperature of the compressor's high pressure pipe (3) and low pressure pipe (4).
   Refer to "Check list for refrigerant volume" on page 5-53.

Check list for refrigerant volume

Air conditioner	Normal	Abnormal		
High/low pressure pipe temperature	High pressure pipe is hot (80 to 120°C or 176 to 248°F), low pressure pipe is cold (8 to 15°C or 46 to 59°F). Clear difference in temperature between the pipes.	High pressure pipe is warm, low pressure pipe is slightly cool. No significant difference in temperature between the pipes.	Little difference in temperature between the high-pressure pipe and the low-pressure pipe.	High pressure pipe is hot, low pressure pipe is slightly cool. A significant difference in temperature between the pipes.
Pipe connection	Normal	Some places are dirty with oil.	Some places are extremely dirty with oil.	Normal
Sight glass	 AG7G064	 AG7G065	 AG7G066	 AG7G067
	Almost transparent with some bubbles. Fully transparent when the engine speed is increased or decreased.	Flow of bubbles can be seen constantly. Sometimes transparent or white with bubbles.	Mist-like flow is faintly visible.	No bubbles is visible, even when the fan is set to High and the engine is idling.
Refrigerant level	Proper level	Refrigerant may be leaking.	Refrigerant has leaked; little is left.	Refrigerant level too high

If the air conditioner is not working
If the air conditioner does not work well, set the fan switch to OFF and contact your sales or service dealer for inspection and/or repairs.

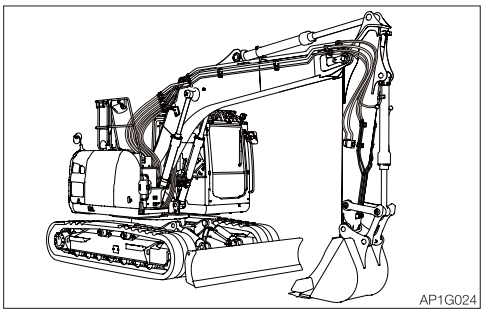
IMPORTANT: Continued use of the air conditioner when it is not working properly will damage its various parts.
IMPORTANT: Using the air conditioner when there is no refrigerant will damage the compressor.
IMPORTANT: Always consult your sales or service dealer for replacing the refrigerant. Be sure to use R134a refrigerant (1800 g or 4 lb.).

EVERY 500 HOURS

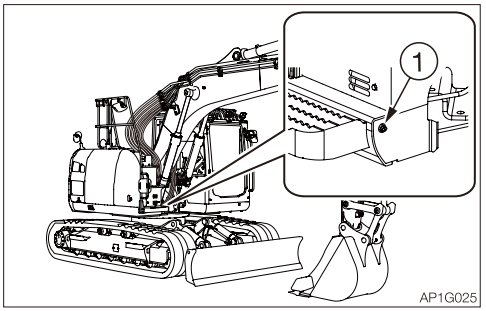
LUBRICATING THE SLEW BEARING

⚠ WARNING

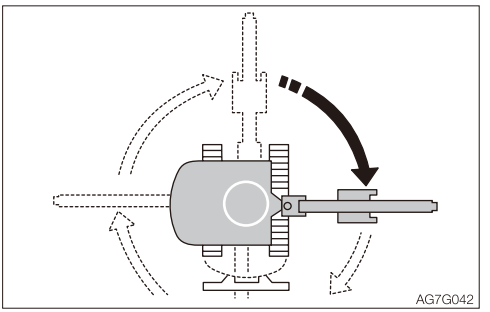
Do not slew while lubricating. Doing so is dangerous, as you may get caught in the machine.



1. Stop the engine with the machine in the posture shown on the figure above.



2. Use the grease gun to grease the grease fitting (1).

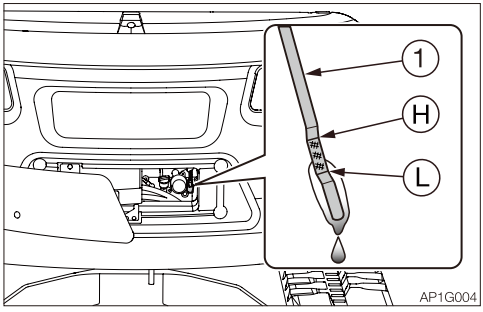


3. Start the engine, lift the bucket and slew clockwise 90°.
4. Lower the bucket to the ground, and then stop the engine.
5. Repeat the steps 2 to 4 above three times.
6. Wipe off the grease expelled from the slew bearing and grease fitting.

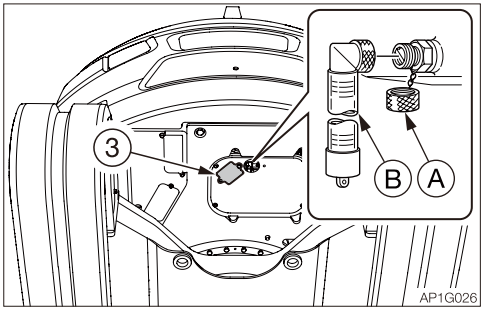
REPLACING THE ENGINE OIL AND THE OIL FILTER

⚠ WARNING

- When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:
  - Do not spill oil or grease.
  - Do not leave tools scattered around.
  - Watch your step when walking.
  - Lower the boom so that the attachment rests on the ground.
- Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.
- Be sure to stop the engine before performing the inspection and maintenance.
- The parts of the machine are hot immediately after the engine is stopped. Be careful not to burn yourself.
- Be aware of the high-temperature engine oil. You could burn yourself with it.



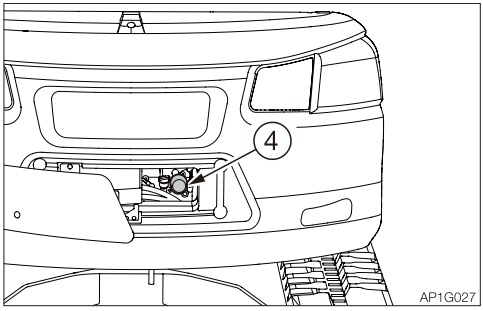
1. Open the maintenance cover B and remove the oil filler cap (2).



2. Loosen the bolts and remove the under cover (3).
3. Place a pan under the plug to catch the waste oil.
4. Remove the cap (A), install connector (B) and drain the oil. (The oil comes out when the screw is tightened.)
5. Remove the connector (B) and install the cap (A).

IMPORTANT: Check the waste oil for metal powder. If it contains large amount of metal powder, consult your sales or service dealer.

6. Install the under cover (3).



7. Turn the filter (4) counterclockwise with the filter wrench and remove it.
8. Clean the surface on which the filter stand is installed.
9. Apply a thin layer of oil on the packing of the new filter.
10. Install the new filter by hand.
11. Securely tighten the filter with the specified torque after its packing comes in contact with the surface of installation.

Tightening torque: 10 to 12 N·m (7.4 to 8.9 ft-lb)

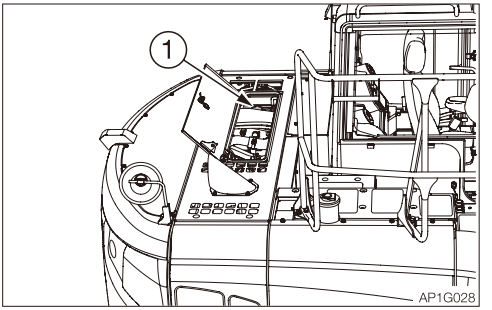
12. Add oil up to between the upper limit (H) and the lower limit (L) of the dipstick (1). Problems could arise if the oil level is either too low or too high.
13. Tighten the oil filler cap (2).
14. Perform the engine warm-up procedure. (When the engine oil temperature is lower than 80°C)
15. Park the machine on a level ground and wait for five minutes. Inspect the oil level again while the engine oil is still warm.

INSPECTING THE CONCENTRATION OF COOLANT ADDITIVE

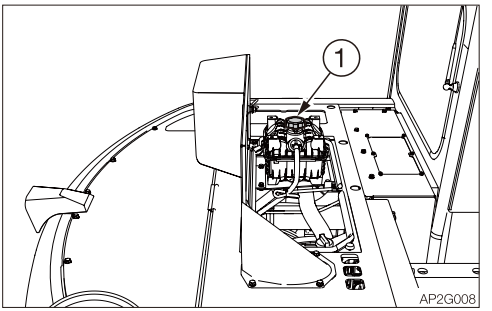
⚠ WARNING

- **Do not remove the radiator cap or the drain plug when the cooling water is hot. Stop the engine and wait until the engine and the radiator cool before slowly loosening the radiator cap and the drain plug to remove them.**
- **Always wear the protective goggle and gloves when handling coolant (antifreeze). If any coolant (antifreeze) comes in contact with eyes or skin, wash it off with clean water. Otherwise, it could result in injures.**
- **When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
  - **Lower the boom so that the attachment rests on the ground.**
- **Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.**

1. Open the maintenance cover B.



<Low noise package>

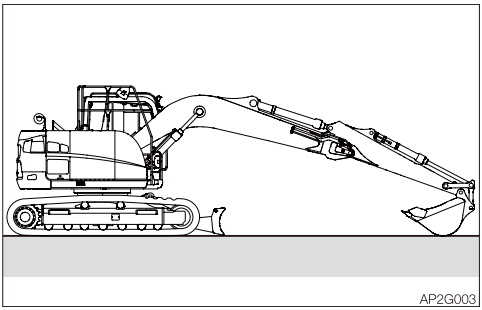


2. Remove the radiator cap or the expansion tank cap (1), and check the concentration of the coolant additive.
3. Adjust the concentration of the coolant additive, as necessary.
4. Install the radiator cap or the expansion tank cap (1).

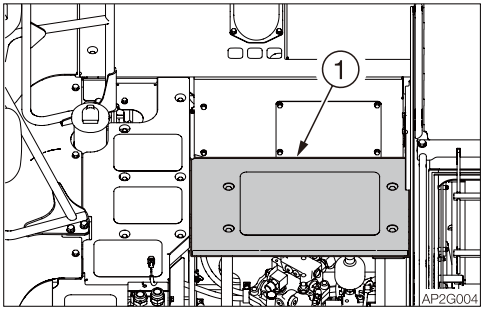
INSPECTING THE SLEW PINION GEAR

⚠ WARNING

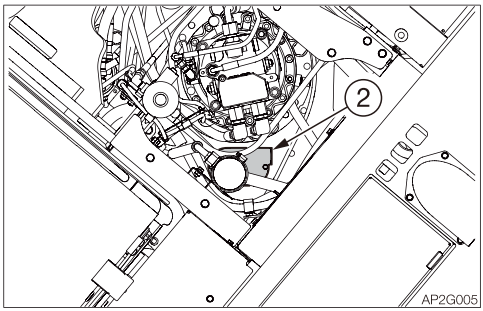
Before inspection, be sure to keep the machine configuration for greasing and stop the engine. Otherwise, you may get caught in the machine.



1. Keep the machine configuration for greasing.



2. Remove the cover (1).



3. Remove the cover (2).
4. Make sure that the gear tooth surface of the slew bearing is well greased.
   If the surface is not adequately greased, add grease.
   If the grease has turned white due to water or mud entered it, replace the whole grease. Consult your sales or service dealer for help.
   Grease full capacity: 12 L (3.2 US gal) or 10.8 kg (24 lbs.)
5. Install the cover (2).
6. Install the cover (1).

EVERY 1000 HOURS

REPLACING THE HYDRAULIC OIL RETURN FILTER

Refer to “Replacing the hydraulic oil return filter” on page 5-36.

REPLACING THE PILOT LINE FILTER

Refer to “Replacing the pilot line filter” on page 5-37.

REPLACING THE SLEW MOTOR GEAR OIL

Refer to “Replacing the slew motor gear oil” on page 5-45.

REPLACING THE TRAVEL MOTOR GEAR OIL

Refer to “Replacing the travel motor gear oil” on page 5-47.

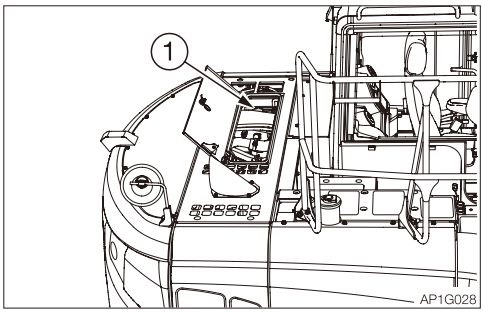
REPLACING THE ENGINE COOLING SYSTEM

Replace the coolant after the two-year operation even if the running time is less than 1000 hours.

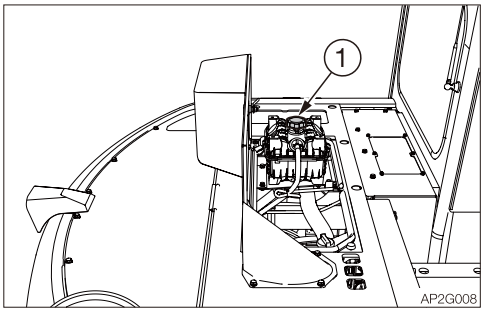
⚠ WARNING

- **Stop the engine and allow the machine to cool down before performing maintenance.**
  - **The engine, muffler, radiator and many other parts of the machine are hot immediately after the engine is stopped. Touching these parts will cause burns.**
  - **The engine coolant is also hot and under high pressure immediately after the engine is stopped. Be careful when loosening the caps or plugs. Working on the machine under these conditions could result in burns or injuries due to the hot coolant spurting out.**
- **If maintenance must be performed with the engine running, always work as a two person team communicating each other.**
  - **One person must sit in the operator's seat so that he/she can immediately stop the engine when necessary. He/she must take care not to touch the lever or pedal unless necessary.**
  - **The one who performs maintenance must make sure to keep his/her body or clothing away from the moving part of the machine.**
- **Standing at the back of the machine while the engine is running is extremely dangerous, as the machine could move suddenly. Never stand at the back of the machine while the engine is running.**
- **Do not remove the radiator cap or the drain plug when the cooling water is hot. Stop the engine and wait until the engine and the cooling water cool. Then, slowly loosen the radiator cap and the drain plug to remove them.**
- **When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
  - **Lower the boom so that the attachment rests on the ground.**
- **Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.**

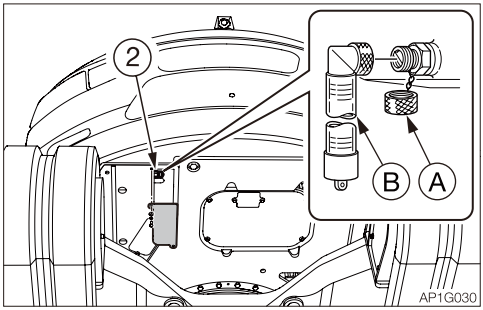
1. Open the maintenance cover B.



<Low noise package>



2. Gradually loosen the radiator cap or the expansion tank cap (1) to release the internal pressure, and then remove the cap.



3. Loosen the bolts and open the cover (2).
4. Place a pan for catching the waste coolant under the drain plug (3).
5. Remove the cap (A), install the connector (B), and then drain the coolant. (The coolant comes out when the screw is tightened.)
6. Clean the cooling system, as necessary.
7. Remove the connector (B) and install the cap (A).
8. Take time and slowly add the new coolant (mixture of antifreeze and tap water) to the radiator through the fill port until it is full.
9. Close the radiator cap (1).
10. Warm up the engine. Use the meters to check that there are no irregularities in the cooling system at this time.
11. Increase the water temperature to at least 90°C (194°F). Then, run the engine for about 10 minutes with the thermostat kept open.
12. Stop the engine, wait until the cooling water temperature becomes lower, and then check the level of coolant in the radiator.
    If necessary, add cooling water until the radiator is full.
13. Close the radiator cap (1) and the cover (2).
14. Clean the interior of the reserve tank, and then add coolant to the upper limit (H).
15. When the coolant has been replaced, inspect the coolant level once again after operating the machine.
    When the machine is operated, the coolant is distributed throughout the entire system, resulting in the lower coolant level.
    Add coolant up to the full level.

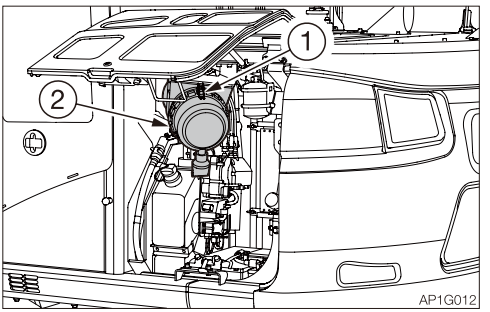
REPLACING THE AIR CLEANER ELEMENT

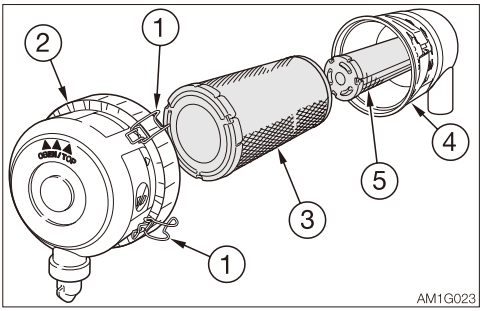
⚠ WARNING

Stop the engine and allow the machine to cool down before performing maintenance.
- **The engine, muffler, radiator and many other parts of the machine are hot immediately after the engine is stopped. Touching these parts will cause burns.**

IMPORTANT: Do not use an element if its pleats, gaskets or seals are damaged.
IMPORTANT: Be sure to install the element and dust cap securely. If not, dust could be drain into the cylinder, damaging the engine.

1. Open the left side cover.



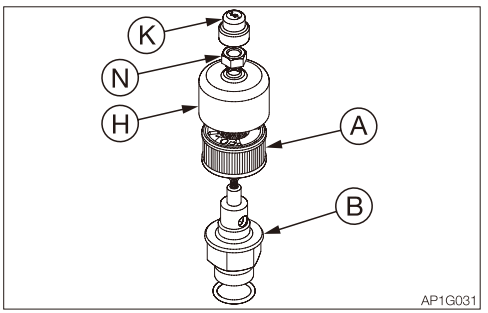


2. Loosen the clamps (1) and remove the dust cup (2).
3. Clean the inside of the dust cup (2).
4. Remove the primary element (3).
5. Clean the inside of the body (4).
6. Remove the secondary element (5).
7. Install the new elements.
8. Install the dust cup (2) with its "▲▲▲ OBEN/TOP" mark facing up, and then fasten it with the clamps (1).

REPLACING THE AIR BREATHER FILTER

⚠ WARNING

- **Stop the engine and allow each part of the machine to cool down before performing maintenance.**
  - **The engine, the hydraulic system and many other parts of the machine are hot immediately after the engine is stopped. Touching these parts will cause burns.**
- **Before performing maintenance on the top of the machine, clean the place you will work on and observe the following to prevent falling.**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
  - **Lower the boom so that the attachment rests on the ground.**
- **Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.**
- **Oil may spurt out if caps or filters are removed or pipes are disconnected before releasing the pressure in the hydraulic system.**
  - **Press the air breather button to relieve the internal pressure from the tank.**

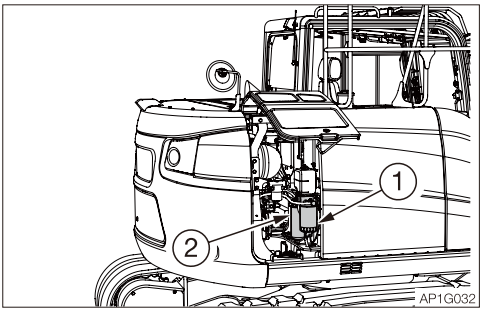


1. Press the button (K) to relieve the internal pressure from the tank.
2. Remove the button (K).
3. Remove the nut (N) by turning it counterclockwise.
4. Remove the cover (H) by turning it counterclockwise.
5. Replace the filter (A) with the “TOP” mark facing up.
6. Install the cover (H) on the body (B) by turning the cover (H) clockwise.
7. Install the nut (N) by turning it clockwise.
8. Install the button (K).

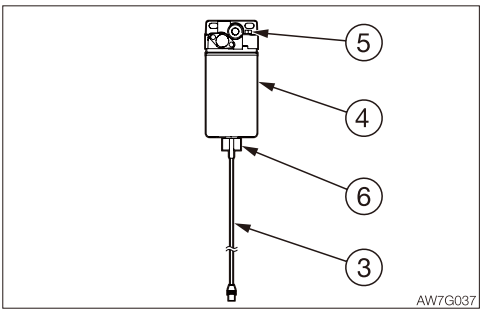
REPLACING THE FUEL FILTERS

⚠ WARNING

- **Do not smoke or permit open flames while handling fuel or working on the fuel system.**
- **Stop the engine in a well-ventilated place and allow it to cool down before performing maintenance.**
- **Clean up spilled fuel immediately.**

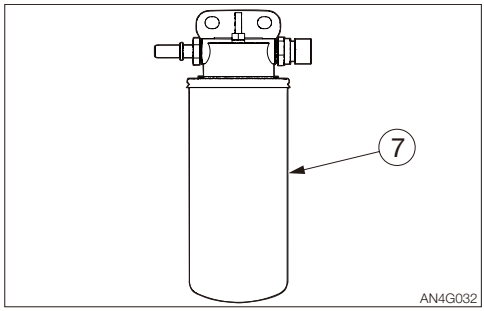


Pre-fuel filter



1. Open the right side cover.
2. Remove the electric wiring (3).
3. Place a pan under the pre-fuel filter (1) to catch fuel.
4. Loosen the vent plug (5) and the drain plug (6) to drain the fuel inside.
5. Remove the filter (4) with a filter wrench.
6. Remove dirt from the seal surface of the new filter and its mating surface.
7. Apply a thin layer of fuel on the seal surface of the filter (4), and then turn the filter clockwise to install it.
   Tightening torque: 17 to 18 N·m (12.5 to 13.3 ft-lb)
8. Install the drain plug (6).
   Tightening torque: 1.6±0.3 N·m (1.2±0.2 ft-lb)
9. Install the electric wiring.
10. Bleed air.
    Refer to “Bleeding air from the fuel system” on page 6-11.

Main fuel filter



1. Open the right side cover.
2. Place a pan under the main fuel filter (2) to catch fuel.
3. Remove the filter (7) with a filter wrench.
4. Remove dirt from the seal surface of the new filter and its mating surface.
5. Apply a thin layer of fuel on the gasket.
6. Install the filter (7) by turning it clockwise.
   Tightening torque: 10 to 12 N·m (7.4 to 8.9 ft-lb)
7. Bleed air.
   Refer to “Bleeding air from the fuel system” on page 6-11.

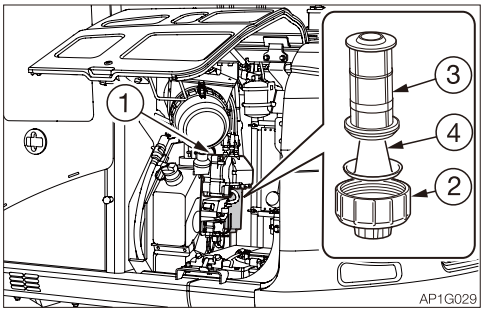
REPLACING THE DEF/ADBLUE® SUPPLY MODULE FILTER

Replace the DEF/AdBlue® supply module filter after three-year operation even if the running time is less than 1000 hours.

⚠ WARNING

Follow appropriate laws and regulations when disposing of the removed DEF/AdBlue® solution.

1. Turn the starter switch to the OFF position and wait for two minutes until the SCR system stops.
2. Open the left side cover.



3. Remove the electric wiring from the supply module (1).
   Cover the electric wiring just removed with a plastic bag so that it will not be splashed with the DEF/AdBlue® solution.
4. Place a pan under the cover (2).
5. Remove the cover (2).
   Socket wrench: 27 mm
6. Pull out the filter (3) and the compensation body (4).
7. Set a new filter (3) and a new compensation body (4).
8. Install the cover (2).
   Tightening torque: 22.5±2.5 N·m (16.6±1.8 ft-lb)
9. Install the electric wiring.

INSPECTING AND ADJUSTING THE V-RIB BELT

Check for wear and abnormality. Repair or replace as necessary.
Refer to “Replacing the V-rib belt” on page 5-67.

INSPECTING THE ENGINE INSTALLATION CONDITION

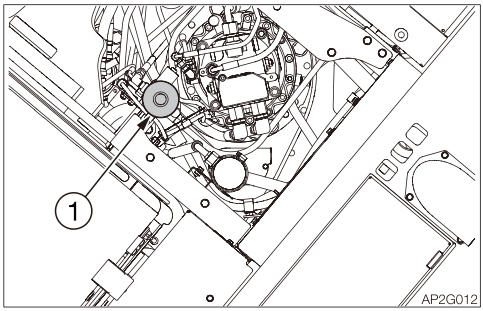
Check for damage or loose bolt. Repair or replace as necessary.
This operation requires experience. Ask a Takeuchi service agent for it.

INSPECTING THE LOW-TEMPERATURE STARTING DEVICE

This operation requires experience. Ask a Takeuchi service agent for it.

EVERY 2000 HOURS

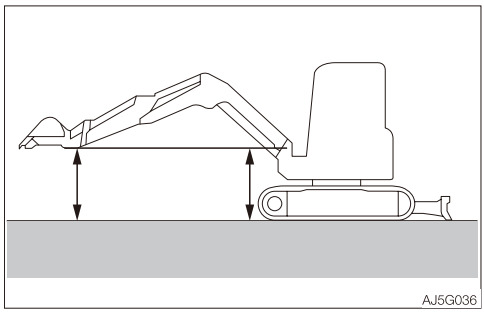
INSPECTING THE ACCUMULATOR



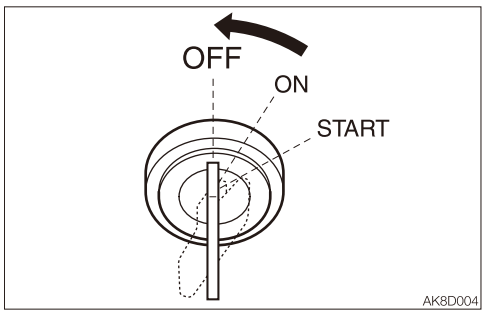
⚠ WARNING

- High-pressure nitrogen gas is enclosed in the accumulator (1). If handled incorrectly, it could explode and cause serious injury. Strictly observe the following precautions:
  - Do not disassemble.
  - Do not allow flame nearby or throw it into a fire.
  - Do not drill, weld or fuse.
  - Do not subject it to physical shock such as hitting, rolling or dropping.
  - Before disposing of the unit, the sealed gas must be drained. Contact a Takeuchi sales or service dealer for help.
- Clear all personnel from the work area.
- Sound the horn to warn people around the machine.

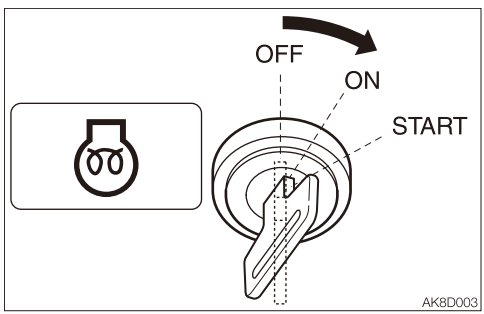
IMPORTANT: If the accumulator (1) fails, the boom cannot be lowered or the residual pressure in the hydraulic circuit cannot be released while the engine is stopped.



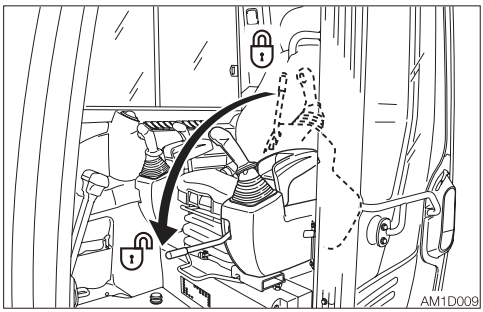
1. Start the engine, then fully retract the arm and bucket cylinders.
2. Operate the boom so that the tip of the arm is positioned at the bottom of the boom.



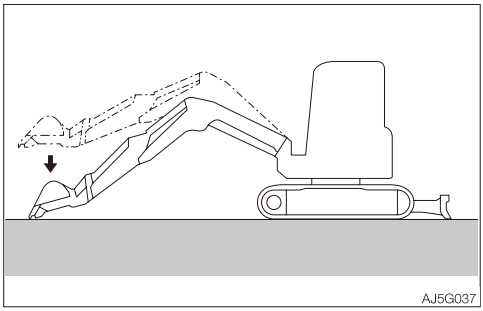
3. Turn the starter key to the OFF position to stop the engine.



4. Turn the key to the ON position. (Do not start the engine.)



5. Fully lower the safety lock lever to disengage the lock.



6. Lower the boom until the bucket contacts the ground.
   The machine is normal if the bucket is lowered to the ground. The accumulator (1) is probably faulty if the boom cannot be lowered or stops halfway. Consult a Takeuchi sales or service dealer for help.

Note: When the boom is lowered to lower the bucket to the ground, do it within 10 minutes of stopping the engine.

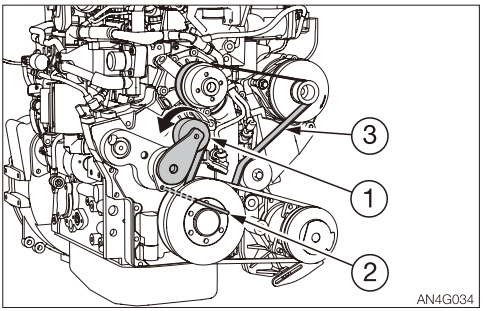
EVERY 3000 HOURS

REPLACING THE V-RIB BELT

⚠ WARNING

Stop the engine and allow the machine to cool down before performing maintenance.

- **The engine, muffler, radiator, hydraulic lines, sliding parts and many other parts of the machine are hot immediately after the engine is stopped. Touching these parts will cause burns.**
- **When performing maintenance on the machine, clean up the foot area and strictly observe the following so as not to fall:**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
  - **Lower the boom so that the attachment rests on the ground.**
- **Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.**



1. Use a wrench to push the tensioning pulley (1) in the direction of the arrow.
2. Secure the tensioning pulley (1) with the pin (2) and replace the V-rib belt with a new one.
3. Remove the pin (2) with the wrench and apply tension onto the V-rib belt (3).
4. Make sure that the V-rib belt (3) is properly seated on the guide of the tensioning pulley (1).

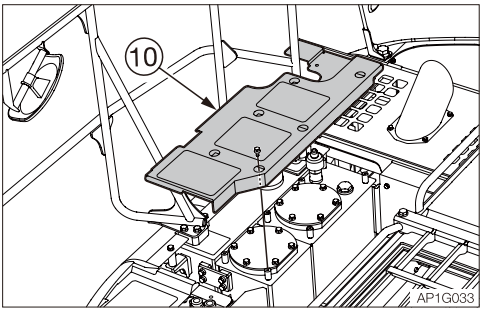
EVERY 4000 HOURS

REPLACING THE HYDRAULIC OIL AND CLEANING THE SUCTION STRAINER

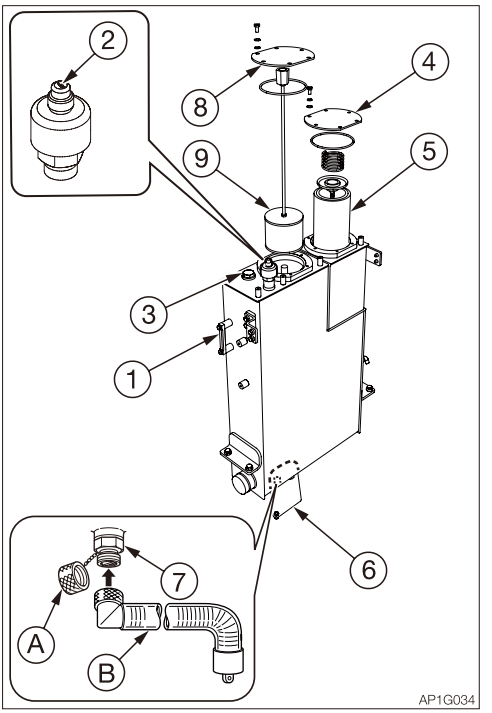
⚠ WARNING

- Stop the engine and allow each part of the machine to cool down before performing maintenance.
  - The engine, the hydraulic system and many other parts of the machine are hot immediately after the engine is stopped. Touching these parts will cause burns.
  - The hydraulic oil is also hot and under high pressure.
    Be careful not to touch the hydraulic oil when loosening the cap or plug. Working on the machine under these conditions could result in burns or injuries due to the hot oil spurting out.
- Before performing maintenance on the top of the machine, clean the place you will work on and observe the following to prevent falling.
  - Do not spill oil or grease.
  - Do not leave tools scattered around.
  - Watch your step when walking.
  - Lower the boom so that the attachment rests on the ground.
- Never jump down from the machine. Use the steps and handrails when climbing up and down the machine, and always support your body at three points with your hands and feet.
- Oil may spurt out if caps or filters are removed or pipes are disconnected before releasing the pressure in the hydraulic system.
  - Press the air breather button to relieve the internal pressure from the tank.
  - When removing plugs or screws, or when disconnecting hoses, stand to the side and loosen them slowly to gradually release the internal pressure before removing.

1. Slew 90° clockwise and set the machine to the hydraulic oil level inspection posture.
   Refer to “Inspecting the hydraulic oil tank level and replenishing” on page 5-28.



2. Press the button (2) to relieve the internal pressure from the tank.
3. Remove the cover (10).

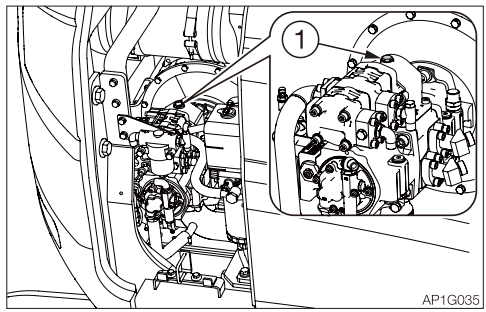


4. Remove the plug (3).
5. Loosen the bolts and remove the under cover (6).
6. Place a pan under the plug (7) to catch the waste oil.
7. Remove the cap (A), install the connector (B), and then drain the hydraulic oil. (The oil comes out once the screw is tightened.)
8. Loosen the bolts and remove the flange (4).
9. Remove the return filter (5).
10. Loosen the bolts and remove the flange (8).
11. Remove the suction strainer (9) and clean it.
12. Clean the inside of the hydraulic oil tank.
13. Install the suction strainer (9) on the tank and then install the flange (8).
14. Install the new return filter (5) and the flange (4) on the tank.
15. Remove the connector (B) and install the cap (A).
16. Add hydraulic oil from the hole of plug (3) up to the level between the upper limit (H) and the lower limit (L) in the sight gauge (1).
17. Tighten the plug (3).
18. Bleed air from the hydraulic oil circuit following “Bleeding air” below.
19. Set the machine to the hydraulic oil level inspection posture and inspect the oil level after the oil cools.
    Refer to “Inspecting the hydraulic oil tank level and replenishing” on page 5-28.
20. Install the under cover (6).

Bleeding air

IMPORTANT: After replacing the hydraulic oil or hydraulic devices, or after performing maintenance of the hydraulic devices, bleed air from the hydraulic circuits and hydraulic devices. Failure to do so may damage the hydraulic devices.

• Hydraulic pump



1. Open the right side cover.
2. Loosen the vent plug (1) on the hydraulic pump.
3. Once hydraulic oil overflows from the vent plug hole (1), tighten the vent plug (1).

If the boom or arm does not move normally, air may be present in the following locations. This operation is dangerous and requires experience. Ask your sales or service dealer for help.