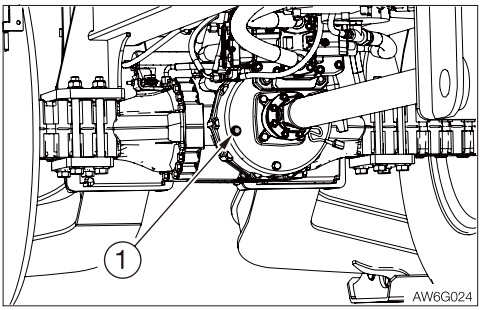
INSPECTING THE TRANSMISSION GEAR OIL

⚠ WARNING

- **Stop the engine and allow each part of the machine to cool down before performing maintenance.**
  - **The transmission 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.
- **The pressure in the reduction gear case of transmission may cause oil or the plug to fly out. Loosen the plug slowly to release the pressure.**

1. Park the machine on a level surface and stop the engine.



2. Remove the plug (1).
3. If oil is left on your finger when it is inserted through the hole, the oil level is proper.
4. If the level is too low, add oil through the hole of the plug (1) until the oil flows from the hole.
5. Install the plug (1) and tighten it.
   - Tightening torque: 35 to 50 N·m (25.8 to 36.9 ft-lb.)

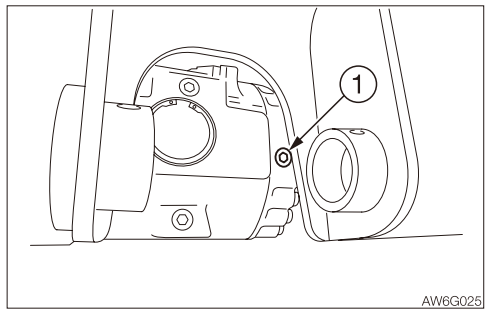
INSPECTING THE DIFFERENTIAL GEAR OIL

⚠ WARNING

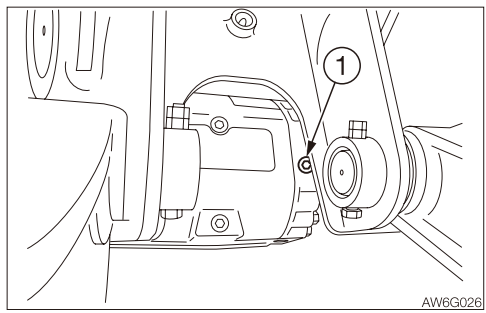
- **Stop the engine and allow each part of the machine to cool down before performing maintenance.**
  - **· The differentials are hot immediately after the engine is stopped. Touching them will cause burns.**
  - **· The gear oil is also hot and under high pressure immediately after the engine is stopped.**
    Be careful not to touch the oil when loosening the plugs. Working on the machine under these conditions could result in burns or injuries.
- **The pressure in the gear case of differentials may cause oil or the plug to fly out. Loosen the plug slowly to release the pressure.**

1. Park the machine on a level surface and stop the engine.

<Front>



<Rear>



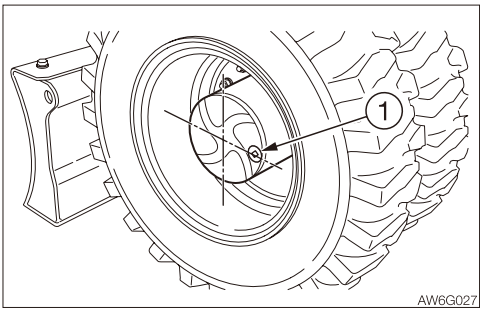
2. Remove the plug (1).
3. If oil is left on your finger when it is inserted through the hole, the oil level is proper.
4. If the level is too low, add oil through the hole of the plug (1) until the oil flows from the hole.
5. Install the plug (1) and tighten it.
   · Tightening torque: 35 to 50 N·m (25.8 to 36.9 ft-lb.)

INSPECTING THE HUB GEAR OIL

⚠ WARNING

- **Stop the engine and allow each part of the machine to cool down before performing maintenance.**
  - **The hubs are hot immediately after the engine is stopped. Touching them 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.**
- **The pressure in the reduction gear case of hubs may cause oil or the plug to fly out. Loosen the plug slowly to release the pressure.**

1. Park the machine on a level surface and stop the engine.
2. Set the hub so that the plug (1) is in a level position.



3. Remove the plug (1).
4. If oil is left on your finger when it is inserted through the hole, the oil level is proper.
5. If the level is too low, add oil through the hole of the plug (1) until the oil flows from the hole.
6. Install the plug (1) and tighten it.
   - Tightening torque: 35 to 50 N·m (25.8 to 36.9 ft-lb.)

CLEANING THE RADIATOR FINS AND THE OIL COOLER FINS

⚠ WARNING

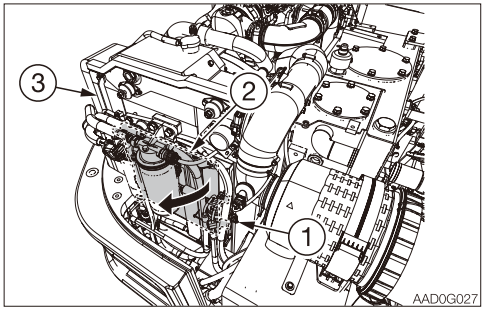
- Wear required appropriate equipment such as protective goggle and filter mask when using compressed air, as metal fragments or other objects can fly and cause serious injury.
- Before performing maintenance on top of the work bench, clean the footing and observe the following precautions to prevent falling.
  - · Do not spill oil or grease.
  - · Do not leave tools scattered around.
  - · Watch your step when walking.
- Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).
- Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.

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 engine hood and side cover.
2. Release the lock by pushing and turning the pull ring (1) counterclockwise. (Or remove the screw (1).)
3. Open the condenser (2).
4. Blow compressed air on the fins (3) to remove mud and dirt stuck on them.

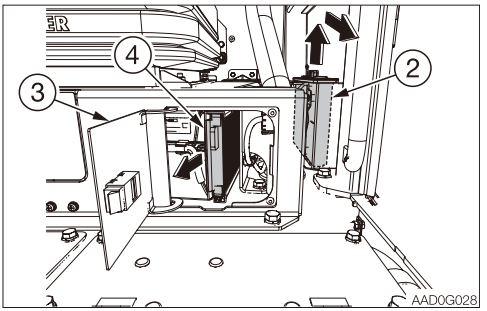
CLEANING THE AIR FILTERS (AC)

⚠ WARNING

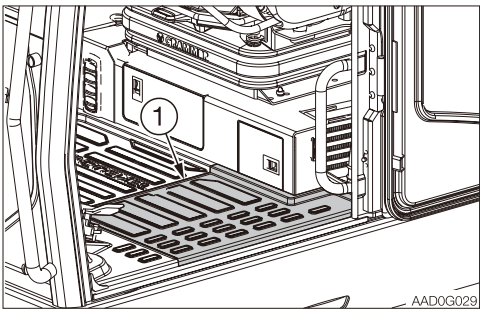
Wear required appropriate equipment such as protective goggle and filter mask when using compressed air, as metal fragments or other objects can fly and cause serious injury.

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. Open the cab door.
2. Pull out the ventilation filter (2) upward and remove it.
   Ventilation filter (2): parts No. 19115-17127



3. Remove the floor mat (1).
4. Open the cover (3).
5. Remove the circulation filter (4).
   Circulation filter (4): Part No. 19115-17103
6. Clean the filter.

Cleaning
Tap it lightly to remove dusts.

Note: Do not wash it with water.

Replacing
Replace the filter with a new one once a year or if it is still clogged after cleaning.

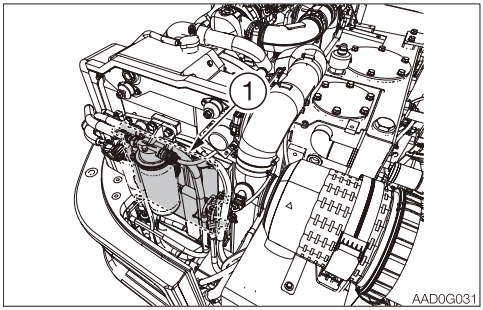
CLEANING THE CONDENSER (AC)

⚠ 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.
- Before performing maintenance on top of the work bench, clean the footing and observe the following precautions to prevent falling.
  - · Do not spill oil or grease.
  - · Do not leave tools scattered around.
  - · Watch your step when walking.
- Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).
- Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.

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.



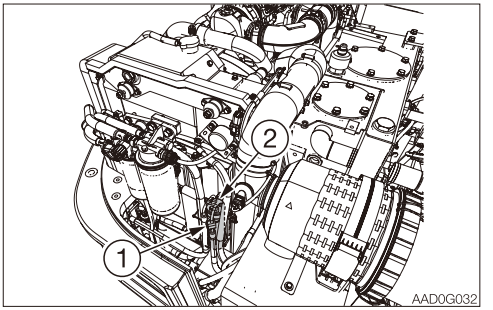
1. Open the engine hood.
2. Clean the condenser (1).

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.**
- **Before performing maintenance on top of the work bench, clean the footing and observe the following precautions to prevent falling.**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
- **Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).**
- **Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.**

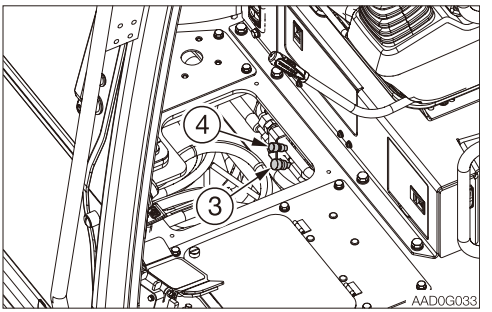
The cooling capacity decreases if the amount of refrigerant is insufficient.
Inspect the refrigerant level using the sight glass (2) on the top of the receiver dryer (1).



1. Open the engine hood.
2. Inspect the places for the conditions below.

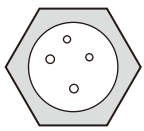
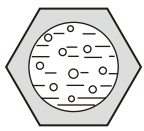
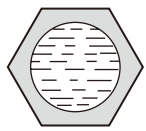
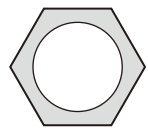
Places for inspection	Conditions
Cab door	Fully open
Temperature control	Minimum temperature
Fan speed	Maximum speed
Ventilation / Circulation select	Circulation
Engine speed	Maximum speed
Air conditioner	ON

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 5-59.



4. 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 5-59.

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 Almost transparent with some bubbles. Fully transparent when the engine speed is increased or decreased.	 AG7G065 Flow of bubbles can be seen constantly. Sometimes transparent or white with bubbles.	 AG7G066 Mist-like flow is faintly visible.	 AG7G067 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 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 (810 to 890 g or 1.79 to 1.96 lb.).

EVERY 500 HOURS

REPLACING THE TRAVEL LINE FILTER

Refer to “Replacing the travel line filter” on page 5-41.

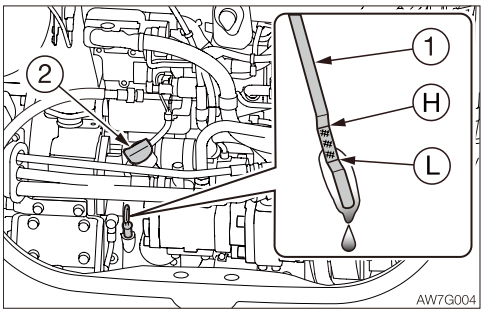
INSPECTING AND ADJUSTING THE SERVICE BRAKE

This operation requires experience. Ask your sales or service dealer for it.

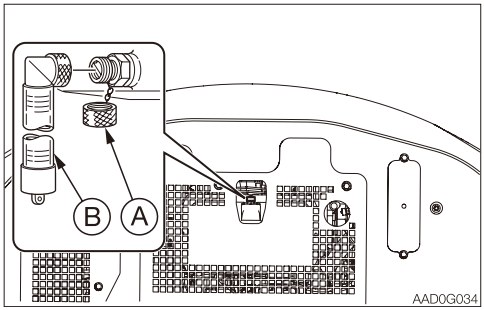
REPLACING THE ENGINE OIL AND THE OIL FILTER

⚠ 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.
- Before performing maintenance on top of the work bench, clean the footing and observe the following precautions to prevent falling.
  - Do not spill oil or grease.
  - Do not leave tools scattered around.
  - Watch your step when walking.
- Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).
- Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.

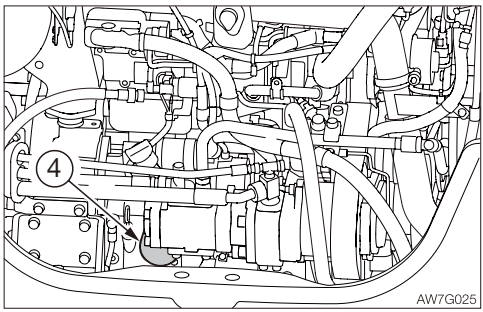


1. Open the engine hood and remove the oil filler cap (2).



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



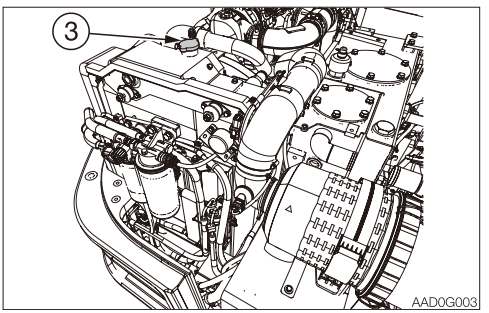
5. Turn the filter (4) counterclockwise with the filter wrench and remove it.
6. Clean the surface on which the filter stand is installed.
7. Apply a thin layer of oil on the packing of the new filter.
8. Install the new filter by hand.
9. Securely tighten the filter with the specified torque after its packing comes in contact with the surface of installation. Tightening torque: 10 to 12 N·m (7.4 to 8.9 ft-lb)
10. 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.
11. Tighten the oil filler cap (2).
12. Perform the engine warm-up procedure. (When the engine oil temperature is lower than 80°C)
13. 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

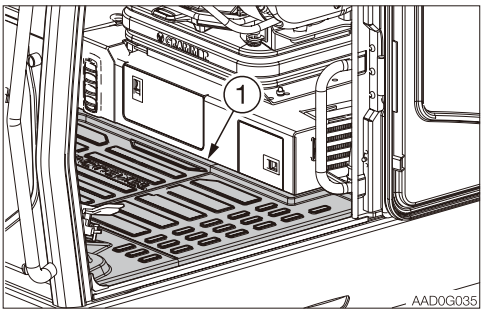
- **Do not remove the radiator cap or the drain plug when the cooling water is hot. Stop the engine and wait until the engine and the radiator cool before slowly loosening the radiator cap and the drain plug to remove them.**
- **Always wear the protective goggle and gloves when handling coolant (antifreeze). 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.**
- **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 stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.**

1. Open the engine hood.

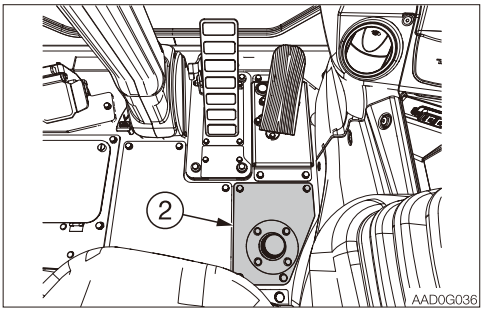


2. Remove the radiator cap (3), and check the concentration of the coolant additive.
3. Adjust the concentration of the coolant additive, as necessary.
4. Install the radiator cap (3).

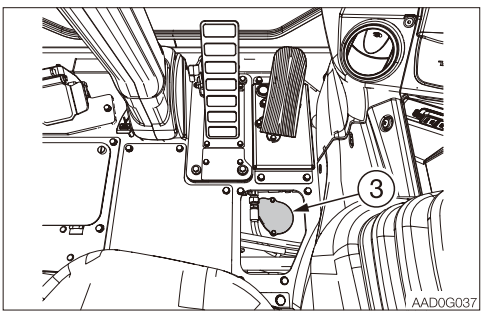
INSPECTING THE SLEW PINION GEAR



1. Remove the floor mat (1).



2. Remove the cover (2).



3. Remove the cover (3).
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: 8.5 L (2.2 US gal) or 7.7 kg (17 lbs.)
5. Install the cover (3).
6. Install the cover (2).
7. Install the floor mat (1).

EVERY 1000 HOURS

REPLACING THE HYDRAULIC OIL RETURN FILTER

Refer to “Replacing the hydraulic oil return filter” on page 5-39.

REPLACING THE PILOT LINE FILTER

Refer to “Replacing the pilot line filter” on page 5-40.

REPLACING THE TRANSMISSION GEAR OIL

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

REPLACING THE DIFFERENTIAL GEAR OIL

Refer to “Replacing the differential gear oil” on page 5-48.

REPLACING THE HUB GEAR OIL

Refer to “Replacing the hub gear oil” on page 5-49.

INSPECTING AND ADJUSTING THE NEGATIVE BRAKE

This operation requires experience. Ask your sales or service dealer for it.

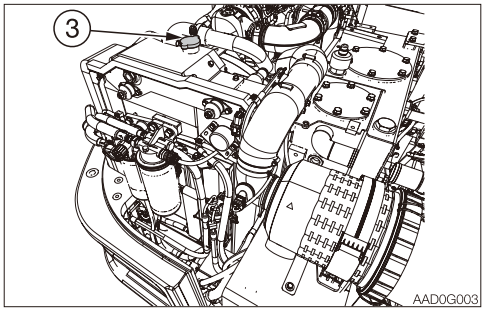
REPLACING THE ENGINE COOLING SYSTEM

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

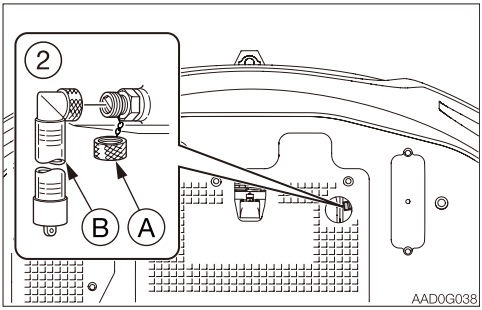
⚠ WARNING

- 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.
- Before performing maintenance on top of the work bench, clean the footing and observe the following precautions to prevent falling.
  - Do not spill oil or grease.
  - Do not leave tools scattered around.
  - Watch your step when walking.
- Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).
- Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.

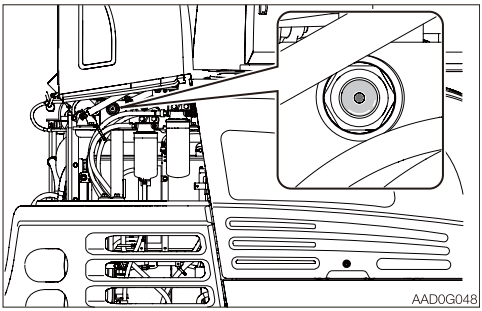
1. Open the engine hood.



2. Gradually loosen the radiator cap (3) to release the internal pressure, and then remove the cap.



3. Place a pan for catching the waste coolant under the drain plug (2).
4. Remove the cap (A), install the connector (B), and then drain the coolant. (The coolant comes out when the screw is tightened.)
5. Clean the cooling system, as necessary.
6. Remove the connector (B) and install the cap (A).
7. 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.



Directly add cooling water to the radiator (3) until the gauge is filled.

8. Close the radiator cap (3).
9. Warm up the engine. Use the meters to check that there are no irregularities in the cooling system at this time.
10. Increase the water temperature to at least 90°C (194°F). Then, run the engine for about 10 minutes with the thermostat kept open.
11. 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.
12. Close the radiator cap (3).
13. 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.
    Fill the radiator up to the full level.

REPLACING THE AIR CLEANER ELEMENT

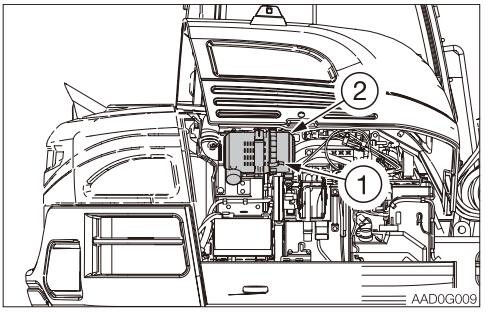
⚠ WARNING

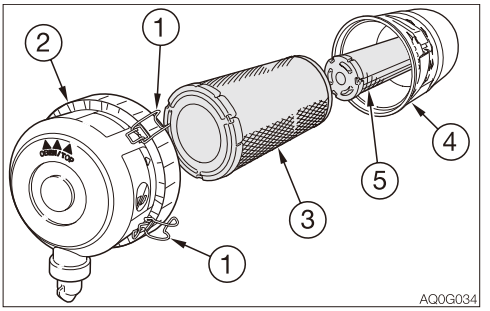
Stop the engine and allow the machine to cool down before performing maintenance.

- **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 right side cover.



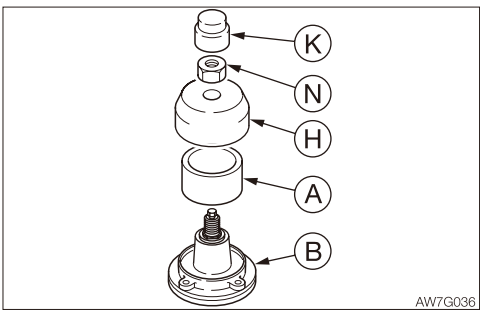


2. Loosen the clamps (1) and remove the dust cup (2).
3. Clean the inside of the dust cup (2).
4. Remove the primary element (3).
   Do not remove the secondary element yet.
5. Clean the inside of the body (4).
6. Remove the secondary element (5).
7. Install the new elements. Press them firmly into the body (4).
8. Install the dust cup (2) with its "▲▲▲ OBEN/TOP" mark facing up, and then fasten it with the clamps (1).

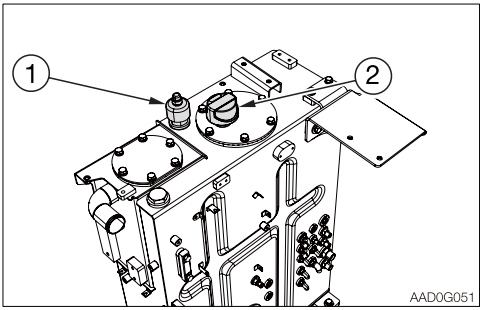
REPLACING THE AIR BREATHER FILTER

⚠ 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 top of the work bench, clean the footing and observe the following precautions to prevent falling.**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
- **Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).**
- **Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.**
- **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 tank pressure.**



1. Open the right side cover.
2. Press the button (K) to relieve the internal pressure from the tank.
3. Remove the button (K).
4. Remove the nut (N) on the air breather (1).
5. Remove the cover (H).
6. Replace the filter (A).
7. Install the cover (H) on the body (B).
8. Install the nut (N).

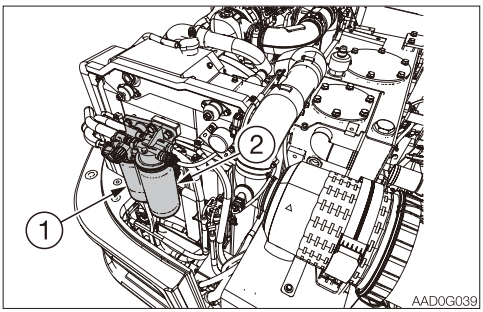


9. Turn the air breather (2) counterclockwise by hand or with the wrench and remove it.
10. Apply a thin layer of oil on the packing of the new air breather.
11. Install the new air breather by hand.
    - Tightening torque: 9 N·m (6.6 ft-lb)

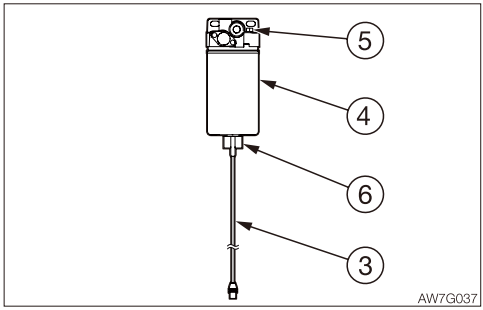
REPLACING THE FUEL FILTERS

⚠ 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.
- Before performing maintenance on top of the work bench, clean the footing and observe the following precautions to prevent falling.
  - · Do not spill oil or grease.
  - · Do not leave tools scattered around.
  - · Watch your step when walking.
- Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).
- Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.

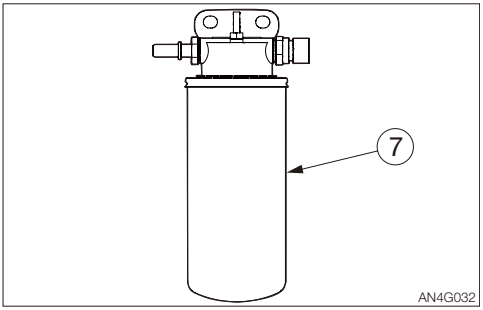


Pre-fuel filter



1. Open the engine hood.
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. Tighten the vent plug (5).
   Tightening torque: 6.5±1.3 N·m (4.8±1 ft-lb)
10. Install the electric wiring.
11. Bleed air.
    Refer to “Bleeding air from the fuel system” on page 6-13.

Main fuel filter



1. Open the engine hood.
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 6-13.

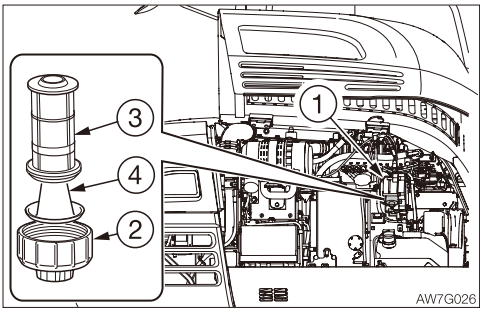
REPLACING THE DEF/ADBLUE® SUPPLY MODULE FILTER

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 right 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 5-74.

INSPECTING THE ENGINE INSTALLATION CONDITION

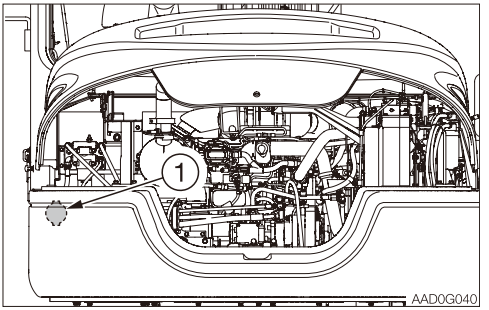
Check for damage or loose bolt. Repair or replace as necessary.
This operation requires experience. Ask a Takeuchi service agent for it.

INSPECTING THE LOW-TEMPERATURE STARTING DEVICE

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

EVERY 2000 HOURS

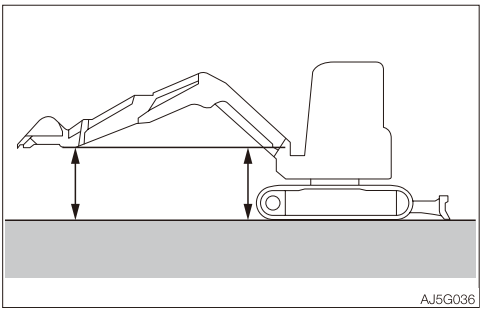
INSPECTING THE ACCUMULATOR



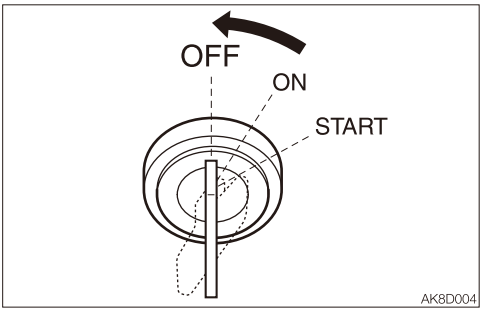
⚠ WARNING

- **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.**

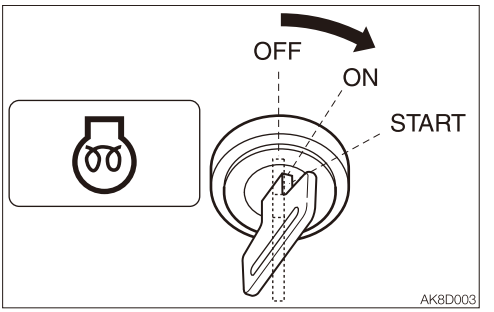
IMPORTANT: If the accumulator (1) fails, the boom cannot be lowered or the residual pressure in the hydraulic circuit cannot be released while the engine is stopped.



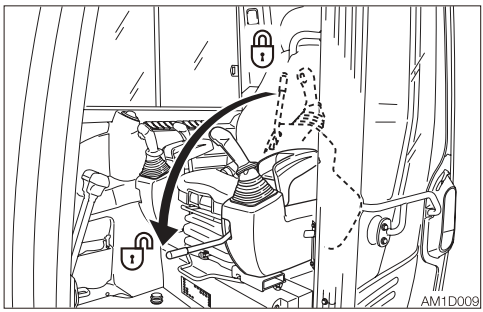
1. Start the engine, then fully retract the arm and bucket cylinders.
2. Operate the boom so that the tip of the arm is positioned at the bottom of the boom.



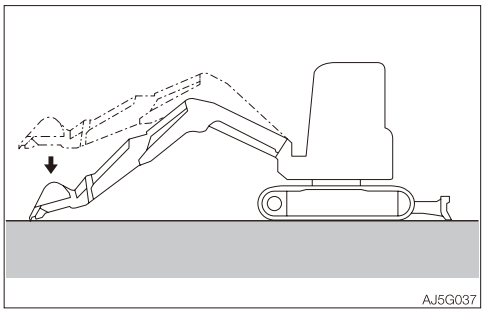
3. Turn the starter key to the OFF position to stop the engine.



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



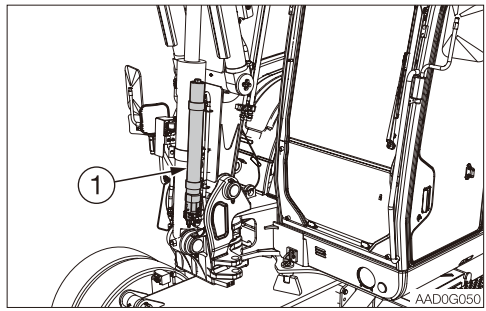
5. Fully lower the safety lock lever to disengage the lock.



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.

FOR BOOM SUSPENSION SPECIFICATION



⚠ 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 touch or loosen the gas valve.**
  - **The accumulator may become hot. Be careful not to burn yourself.**
  - **The accumulator may become electrically charged and generate sparks. Be careful to prevent fire.**
  - **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.**
  - **A large amount of nitrogen may be released during disposal. Be careful of the risk of suffocation.**
- **Clear all personnel from the work area.**
- **Sound the horn to warn people around the machine.**

If the accumulator (1) fails, the boom suspension cannot be operated. Press the boom suspension switch to ensure the boom suspension operates correctly. If it is failed, contact a Takeuchi service dealer. Refer to “Boom suspension switch (If equipped)” on page 2-71.

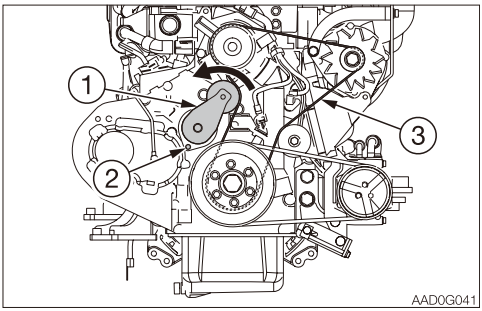
EVERY 3000 HOURS

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.**
- **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).

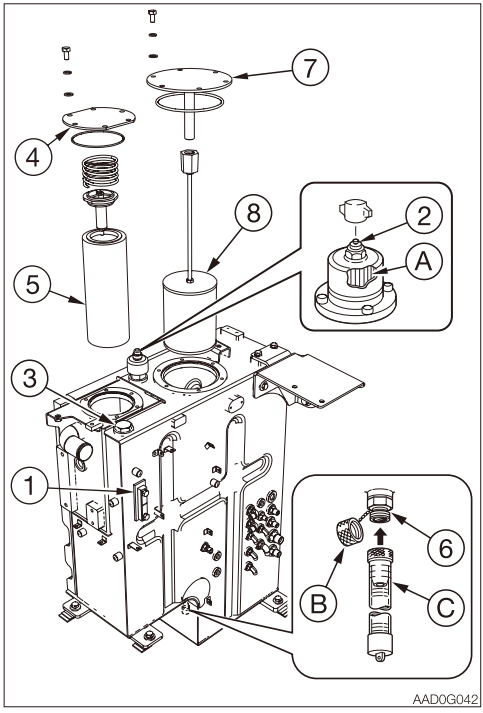
EVERY 4000 HOURS

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 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 oil spurting out.
- **Before performing maintenance on top of the work bench, clean the footing and observe the following precautions to prevent falling.**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
- **Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).**
- **Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.**
- **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 60° clockwise and set the machine to the hydraulic oil level inspection posture.
   Refer to “Inspecting the hydraulic oil tank level and replenishing” on page 5-26.
2. Open the right side cover.



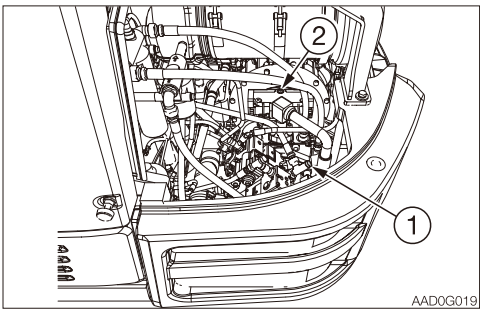
3. Press the button (2) to relieve the internal pressure from the tank.
4. Replace the air breather filter (A).
   Refer to “Replacing the air breather filter” on page 5-68.
5. Remove the plug (3).
6. Place a pan under the plug (6) to catch the waste oil.
7. Remove the cap (B), install the connector (C), 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 (7).
11. Remove the suction strainer (8) and clean it.
12. Clean the inside of the hydraulic oil tank.
13. Remove the connector (C) and install the cap (B).
14. Install the suction strainer (8) on the tank and then install the flange (7).
15. Install the new return filter (5) and the flange (4) on the tank.
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 5-26.

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 engine hood.
2. Loosen the air-bleeding plugs (1) and (2).
3. Tighten the plugs (1) and (2) once the hydraulic oil overflows from the air-bleeding plug holes (1) and (2).

• **Cylinders**

1. Start the engine, let it run at a low-idling speed for 10 minutes.
2. Maintain the engine at low idle, and then slowly extend and retract each cylinder 4 or 5 times, without letting them reach the stroke end.
3. While running the engine at high speed, slowly extend and retract each cylinder 4 or 5 times, without letting them reach the stroke end.
4. Return the engine speed to low idle, and then slowly extend and retract each cylinder 4 or 5 times to the stroke end.

• **Emergency shut-off valve**

This operation is dangerous and requires experience. Ask your sales or service dealer for help.

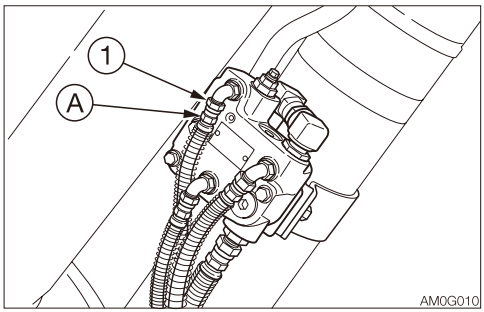
If air is not released, the working equipment could become slow in reacting to the operation of the operator and show unexpected behavior.

⚠ WARNING

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.

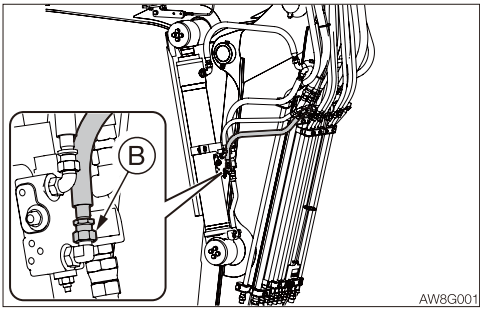
1. Place a pan under the hose (A) or (B) to catch the waste oil.
2. Start the engine and run it at low idle.
3. Fully lower the safety lock lever to the unlock position.

Boom

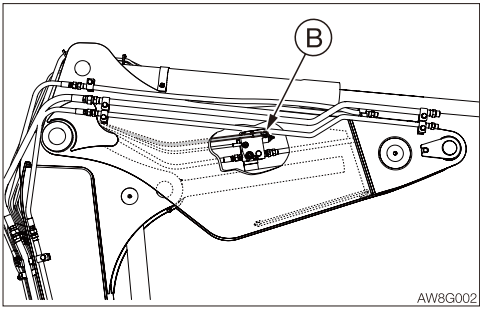


4. Hold the hose fitting (A) in place with a wrench and slowly loosen the hose nut (1).
5. Slowly move the boom in the “Boom lower” direction a little until there are no more air bubbles coming from the hose nut (1) joint.
6. Hold the hose fitting (A) in place with a wrench and tighten the hose nut (1).

Second boom (2-Piece boom)
<Two cylinders>

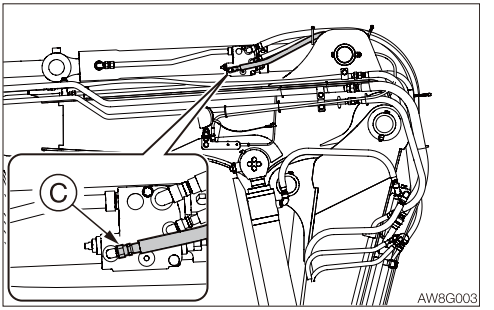


<One cylinder>



4. Loosen the hose (B) slowly.
5. Slowly move the second boom in the pull direction until there are no more air bubbles coming from the hose (B) joint.
6. Tighten the hose (B).

Arm



7. Loosen the hose (C) slowly.
8. Slowly move the arm in the “Arm in” direction a little until there are no more air bubbles coming from the hose (C) joint.
9. Tighten the hose (C).

WHEN REQUIRED

REPLACING THE BUCKET TEETH AND THE SIDE CUTTERS

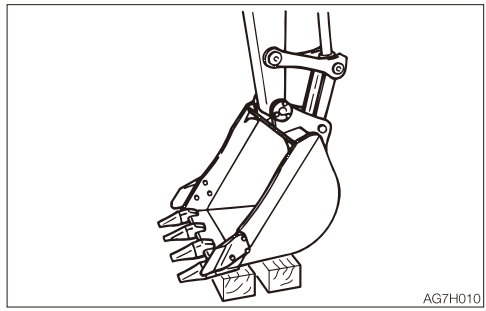
Replace the bucket teeth if the tooth points are worn. Do not wait until the bucket is damaged.

⚠ WARNING

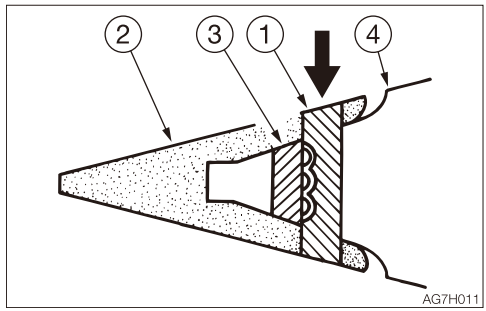
- **Before performing maintenance or repairs under the machine, lower all moveable working equipment to the ground or in the lowermost position.**
- **To prevent unexpected movement, firmly secure the working equipment when repairing or replacing the bucket teeth or side cutter.**
- **When using a hammer, pins may fly out or metal particles may be scattered. This may lead to serious injury.**
  - **If hard metal parts such as pins, bucket teeth, side cutter or bearings are hit with a hammer, wear protective gear such as safety goggles and gloves.**
  - **When hitting pins or bucket teeth, always check that there is no one in the surrounding area.**
- **Do not allow unauthorized personnel in the work area while working.**

Removing

1. Clean the bucket and park the machine on a flat and rigid ground.



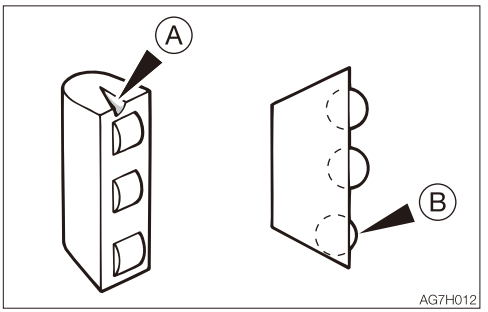
2. Place the bucket with its bottom flat on the blocks so that the locking pin can be knocked out.
3. Remove the key, and then check that the bucket is stable.



4. Knock out the locking pin (1) and remove the point (2).

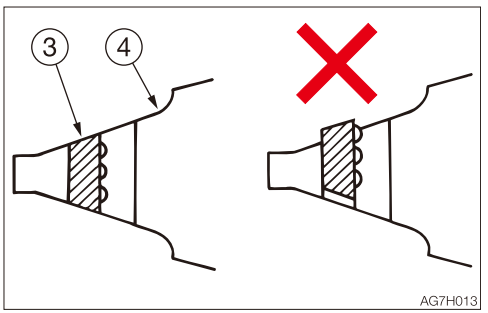
Note: If the drift is set against rubber pin lock (3) when it is hit, the rubber pin lock may break. Set it against the back of the locking pin.

5. Remove the rubber pin lock (3). Check if the rubber pin lock is still usable. Replace it if it is as follows.

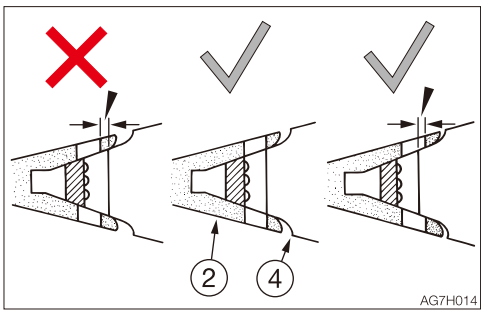


A .....There are cracks in the rubber and the roller is coming off.
B .....The roller is dented when pressed with a finger.

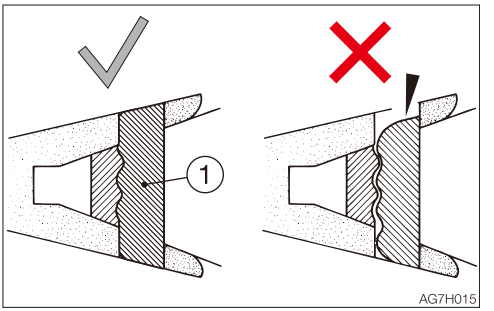
Installation



1. Remove the dirt on the surface of adaptor and the inner part of tooth, make the better contact on the mating part.
2. Push rubber pin lock (3) into the welding adaptor (4).
   Do not let the rubber pin lock stick out from the welding adaptor surface.

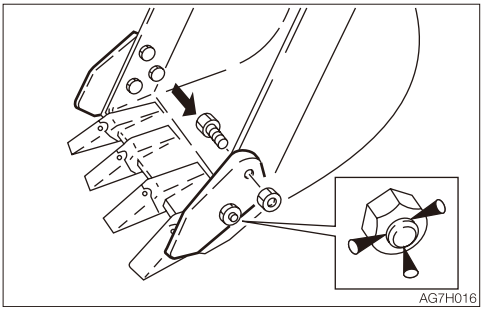


3. Install the point (2) onto the welding adaptor (4).
   Insert the point so that the surface behind the point's pin hole is aligned with the surface behind the welding adapter's pin hole.



4. Knock out the locking pin (1).
   Check that the end surfaces of the locking pin just knocked out are aligned with the upper and lower surface of the point. Do not use the worn locking pin.
   The life of the teeth can be lengthened and the frequency of its replacement can be reduced by turning it upside down so that it will wear evenly.
   Replace the rubber pin lock and locking pin at the same time as replacing the teeth. This makes it possible to prevent the teeth from falling out

• Side cutter
Installation



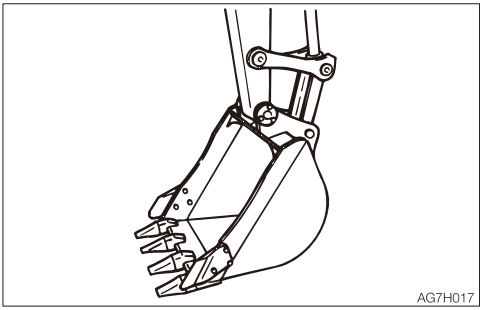
1. Insert the bolts from the inner of the bucket and tighten the side cutter with nuts.
   Tightening torque: 475 N·m (350 ft-lb.)
2. Caulk the bolts with a punch at three spots along the periphery of the screw to prevent the nuts from coming loose.

REPLACING THE BUCKET

⚠ WARNING

- Before performing maintenance or repairs under the machine, lower all working equipment to the ground or in the lowermost position.
- 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.
- When using a hammer, pins may fly out or metal particles may be scattered. This may lead to serious injury.
  - If hard metal parts such as pins, bucket teeth, side cutter or bearings are hit with a hammer, wear protective gear such as safety goggles and gloves.
  - When hitting pins or bucket teeth, always check that there is no one in the surrounding area.
- When aligning the pin holes, always do so by checking them visually. Do not insert your finger in the pin hole, or you could lose your finger.

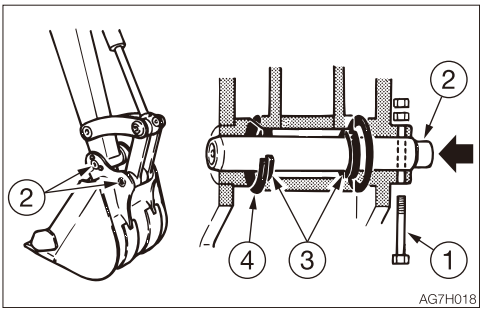
Removing



1. Lower the bucket to the ground as shown on the figure above in a stable position.

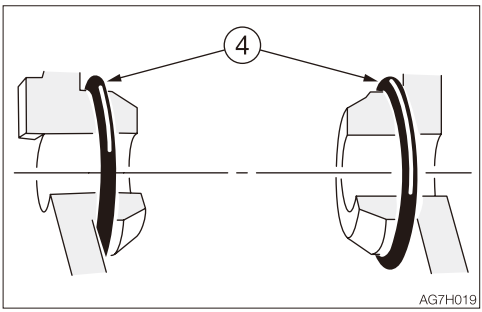
Note: When removing pins, set the bucket so that it is barely touching the ground. If the bucket is firmly touching the ground, the resistance will be great and it will be difficult to remove the pin.

2. Set the safety lock lever to the locked position and stop the engine.

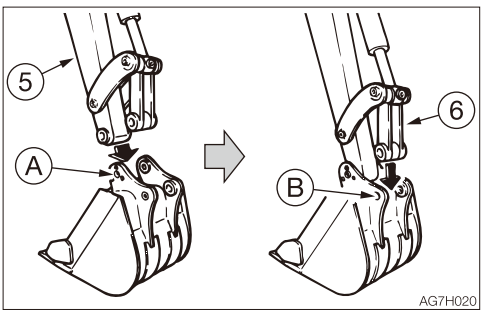


3. Remove the bolt (1).
4. Hammer the pin (2) out of the bucket.
5. Remove the bucket.
   Inspect the pin seal (3) and replace it if it is deformed or damaged. (See next page.)

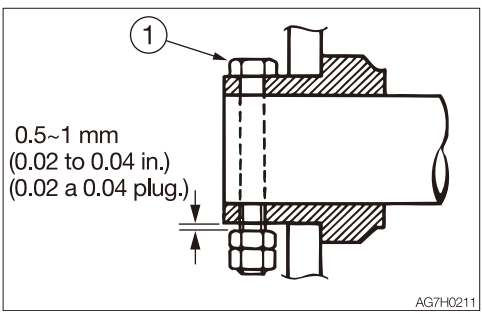
Installation



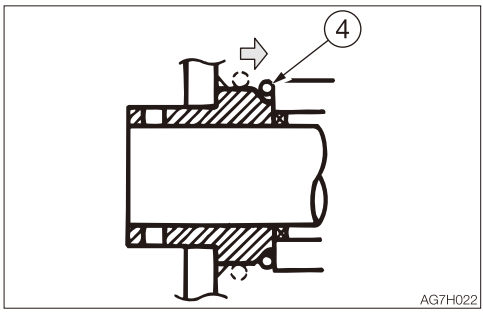
1. Set the O-ring (4) on the bucket as shown on the figure above.



2. Align the pin hole (A) on the bucket with the pin hole on the arm (5), and install the pin (2).
3. Operate the cylinder, align the pin hole (B) on the bucket with the pin hole on the link arm (6), and install the pin (2).

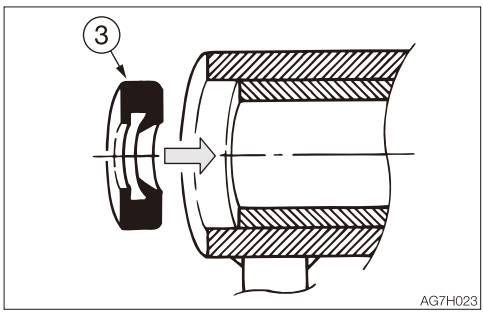


4. Align the turn prevention holes, and then install the bolt (1) and the nut. Be sure to leave a gap of about 0.5 to 1 mm (0.02 to 0.04 in.) between the nut and bucket bush, or the nut will come loose.



5. Adjust the gap between the bucket and the arm.
   Refer to “Adjusting the gap between the bucket and arm (If equipped)” on page 5-84.
6. Slide the O-ring (4).

Replacing the pin seal

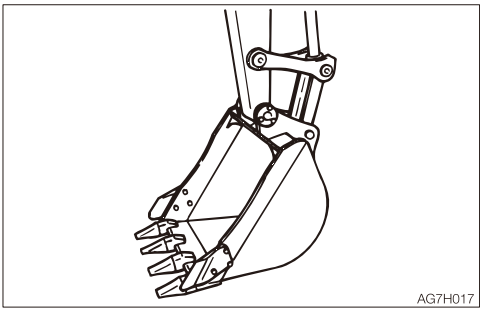


1. Set the pin seal (3) in the direction shown on the figure above.
2. Use a mallet to slowly press the pin seal in. Be careful not to damage the seal.

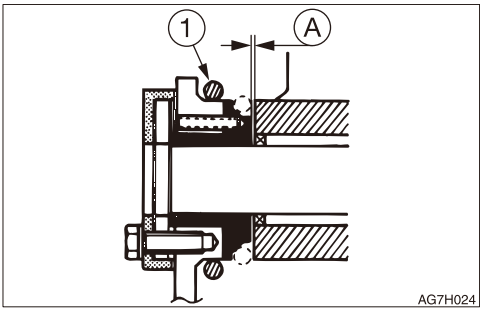
ADJUSTING THE GAP BETWEEN THE BUCKET AND ARM (IF EQUIPPED)

⚠ WARNING

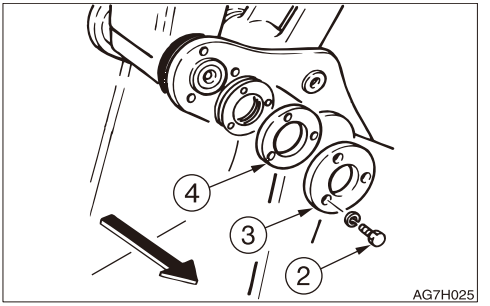
- **Before performing maintenance or repairs under the machine, lower all working equipment to the ground or in the lowermost position.**
- **To prevent unexpected movement, securely block the working equipment when adjusting the gap.**



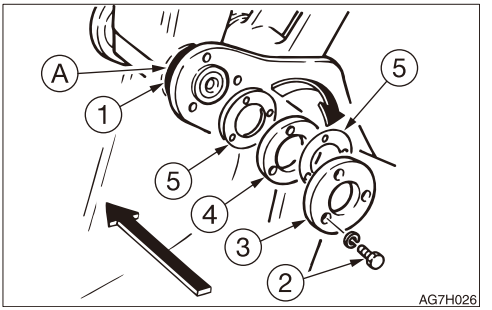
1. Lower the bucket to the ground as shown on the figure above in a stable position.
2. Check that the bucket dose not move, and then set the safety lock lever to the locked position and stop the engine.



3. Move the O-ring (1) to bring the gap (A) into view and measure the width of the gap (A).
   The gap (A) should be 0.5 mm (0.02 in.). Swing the upperstructure slightly to the left and lightly press the arm point to the left side of the bucket (the side without an adjuster).



4. Remove the three bolts (2), the end plate (3) and flange (4).



5. Pull out the adjustment shim(s) (5) corresponding to the gap (A) from between the flange (4) and the bucket body.
   Adjustment shim thickness : 0.5 mm (0.02 in.)
   Be careful that the gap is no less than 0.5 mm (0.02 in.) after adjustment.

Note:
Example (for a gap of 2 mm or 0.08 in.):
2 mm - 0.5 mm (standard value)= 1.5 mm (0.06 in.)
In the above example, three shims (5) should be removed.

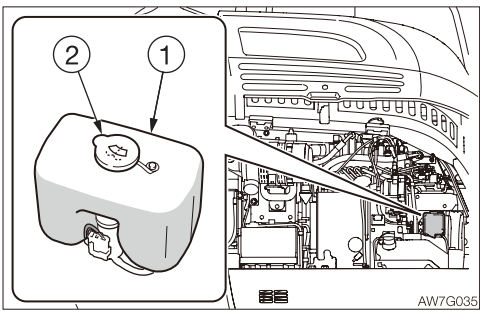
6. Insert the adjustment shim(s) (5) removed in step 5 above between the end plate (3) and the flange (4), and then fasten it in place with the three bolts (2).
   · Tightening torque for bolts (2): 83 N·m (61.5 ft-lb.)
7. Return the O-ring (1) to the original position.

INSPECTING AND REPLENISHING THE WINDSHIELD WASHER FLUID

⚠ WARNING

- **Choose ethyl alcohol as washer solution.**
  - **Do not use methyl alcohol as washer solution. It could damage the eyes.**
- **Before performing maintenance on top of the work bench, clean the footing and observe the following precautions to prevent falling.**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
- **Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).**
- **Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.**

Use a windshield washer fluid designed specifically for motor vehicles. Follow the instructions included with the washer fluid.



Inspection

1. Open the right side cover.
2. Inspect the washer tank (1) and add washer fluid if the level is low.

Replenishing

1. Mix the washer fluid to the prescribed concentration.
2. Remove the cap (2) and add washer fluid. Keep the dust away while replenishing the washer fluid.
3. Install the cap (2).

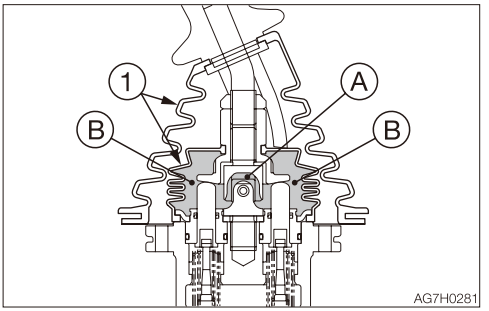
LUBRICATING THE LEVERS AND PEDALS

⚠ WARNING

Set the machine to the parking posture, stop the engine, remove the starter key and store it. Failure to do so may result in the machine moving abruptly, leading to serious injury or death.

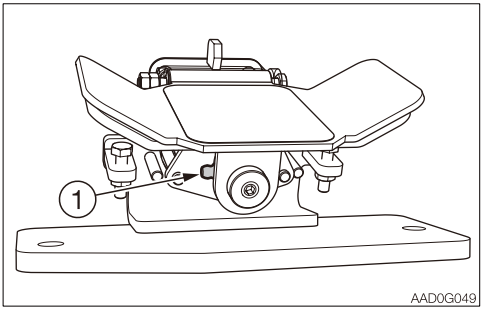
If the levers or pedals no longer move smoothly, grease them.

Operating levers



1. Remove the lower mount section of the boot (1) and turn it upward.
2. Wipe off the old grease.
3. Apply grease to points (A) and (B).
4. Set the boot (1) back as it was.

Boom swing/Second boom pedal



1. Apply grease on the grease fitting (1) with the grease gun.
2. Wipe off the expelled grease.

REPLACING THE DIESEL PARTICULATE FILTER

The DPF must be replaced if the ash lamp lights up or flashes. Refer to “20. Standstill regeneration in process/Demand indicator lamp” on page 2-28.
This operation requires experience. Ask a Takeuchi service agent for it.

EVERY 2 YEARS

REPLACING THE RECEIVER DRYER

This operation requires experience. Ask your sales or service dealer for it.

MAINTENANCE DURING EXTENDED STORAGE PERIOD

Storage procedures

If the machine is to be stored for 30 days or more, store it indoors. If it must be stored outdoors, park the machine on a surface laid with lumber on a flat ground, and place a waterproof cover over it so that it stays dry.

1. Clean the machine.
2. Inspect for oil leakage, water leakage, cracks and loose nuts and bolts.
3. Add fuel and replace the hydraulic oil and oil.
4. To prevent the DEF/AdBlue® solution from evaporating, fill up the DEF/AdBlue® tank.
5. To prevent rusting and freezing, replace the engine coolant with long-life coolant (LLC).
   Refer to “Replacing the engine cooling system” on page 5-65.
6. Use the grease gun to lubricate the grease fittings.
7. Fully retract the bucket and arm cylinders and lower the bucket and dozer blade to the ground.
8. Apply rust-inhibiting oil to the hydraulic cylinder rods.
9. Disconnect the negative cable from the battery and cover the battery to prevent freezing.

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.

During storage

⚠ WARNING

- **Do not operate the machine in an enclosed area without adequate ventilation.**
- **If natural ventilation is not possible, install ventilators, fans, exhaust extension pipes or other venting devices.**

1. To prevent rusting, operate the machine once a month so that the oil can be circulated throughout the system.
2. Inspect the battery and recharge it as necessary.
   Ask your sales or service dealer for recharging.

Starting the machine after storage

IMPORTANT: If the above “Storage procedures” have not been followed during the extended storage periods, consult your sales or service dealer before starting the machine again.

1. Wipe off the rust-inhibiting oil that was applied on the piston rods of the hydraulic oil cylinders.
2. Add oil or grease as necessary.
3. If the storage period has been four months or more, replace DEF/AdBlue®. There is a risk that the SCR system may malfunction; contact a Takeuchi service dealer for assistance.

Returning the engine to service

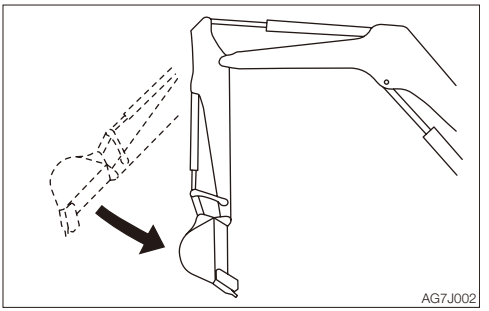
1. Perform the daily checks.
2. The engine should be pre-oiled before startup.
   a. Crank the engine, leaving the fuel system shut off so the engine will not start, for 15 seconds.
   b. Then pause for 30 seconds.
   c. Repeat the procedure until you have cranked the engine for a total of one minute. This will circulate the oil in the engine's lubrication system.
3. Prime the fuel system.
4. Start the engine. Allow the engine to idle for approximately 15 minutes while you check for:
   - Proper oil pressure
   - Fuel, engine oil or coolant leaks
   - Proper operation of the indicators and/or gauges
5. Avoid prolonged operation at minimum or maximum engine speeds and loads for the remainder of the first hour of operation.

TROUBLESHOOTING

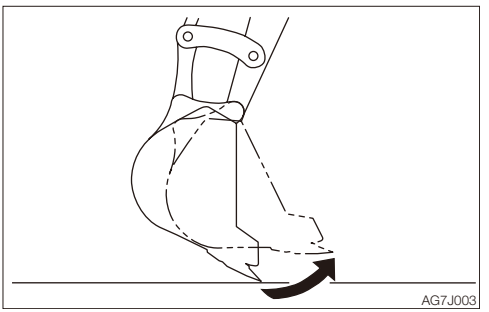


SYMPTOMS THAT ARE NOT MALFUNCTIONS

The symptoms listed below are not malfunctions.



- The arm retracting speed momentarily slows down when it reaches an almost vertical position while the engine is running at low speed.



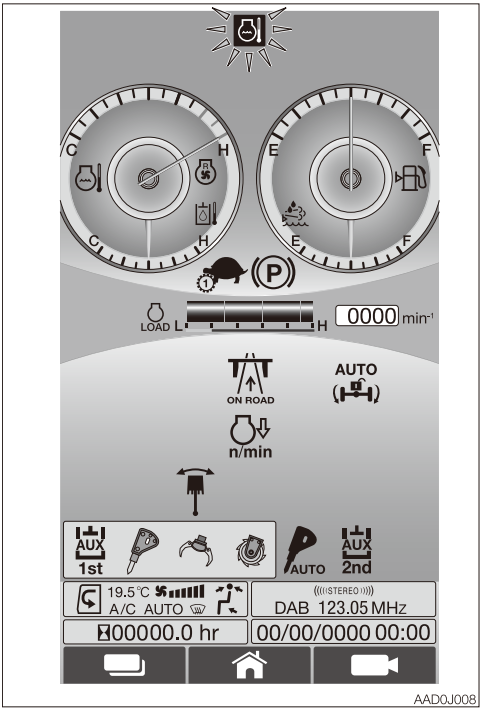
- The bucket teeth moving speed momentarily slows down when it reaches an almost horizontal position while the engine is running at low speed.
- The slew motor produces noise at the beginning and end of the slewing.
- The travel motor produces noise when stopped suddenly from its high speed traveling.
- The control valve produces noise if excessive force is applied to the working equipment or when it moved to the stroke end.
- It becomes less easy to operate the machine when an attachment weighing more than a standard arm or bucket is installed.

IF THE ENGINE OVERHEATS

⚠ WARNING

- **Do not open the engine hood when steam is coming from it. The steam or hot water may spurt out and cause burns.**
- **Do not try to remove the radiator cap or the drain plug when the cooling water is hot. Stop the engine, wait until the engine and the radiator cool, and then slowly loosen the radiator cap to release the internal pressure.**
- **Before performing maintenance, stop the engine and allow the machine to cool down.**
- **Before performing maintenance on top of the work bench, clean the footing and observe the following precautions to prevent falling.**
  - **Do not spill oil or grease.**
  - **Do not leave tools scattered around.**
  - **Watch your step when walking.**
- **Never jump down from the machine or the work bench. When getting on or off the machine or work bench, use the steps, handrails or work bench to support your body. Your weight should be evenly distributed among the three contact points (one hand and two feet or two hands and one foot).**
- **Do not stand on the dozer blade and perform maintenance work. Doing so is dangerous because of the unsteady foothold. Use the work bench.**

The symptoms listed below indicate overheating.



AAD0J008

- An alarm is sounded and the engine emergency lamp and the coolant temperature warning lamp start flashing.
- The water temperature gauge level is in the red zone.
- Steam comes from the engine room.

IF THE ENGINE OVERHEATS

Remedy procedure

1. Park the machine in a safe place.
2. Check if steam is coming out of the closed engine hood.
3. If there is steam, stop the engine immediately and contact your sales or service dealer for repair. If steam, is not coming out run the engine at low idle and let the water temperature cool down.
4. When the water temperature gauge level drops in the green zone, stop the engine.
5. Perform the inspections and the remedies listed below once the engine cools down.
   - V-rib belt slack ..... Adjust
     Refer to page 5-74.
   - Coolant level ..... Add
     Refer to page 5-22.
   - Water leakage..... Repair
   - Radiator fins..... Clean
     Refer to page 5-55.
   - Sediment in cooling system
     ..... Clean
     Refer to page 5-65.

If the problem persists after the above remedies, contact your sales or service dealer for repair.

IF THE BATTERY GOES DEAD

The symptoms below indicate that the battery is dead.
- The starter motor does not turn or fails to start the engine.
- The horn is too weak.

Remedy procedure

Start the engine using the booster battery on the other vehicle (booster vehicle) and the jumper cables.

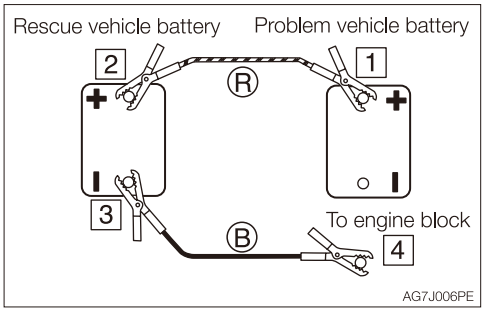
⚠ WARNING

- **When starting the engine using the jumper cables, be sure to connect the cables by following the proper steps. Improper use of jumper cables can result in battery explosion or unexpected machine motion.**
  - **Do not allow the booster vehicle and the machine with a dead battery (dead machine) to touch each other.**
  - **Do not allow the positive (+) and the negative (–) clips of the jumper cables to touch each other.**
  - **When connecting, attach the jumper cable to the positive (+) terminals first. When disconnecting, remove the cable from the negative (–) terminal (ground) first.**
  - **Connect the last clip of the jumper cable to a point as far away from the battery as possible.**
- **Always wear the protective goggle when jump starting the engine by using the jumper cables.**

IMPORTANT: Use the jumper cables and clips of a size suited to the capacity of battery. Do not use damaged or corroded jumper cables and clips.
IMPORTANT: Be sure that the battery of the booster vehicle has the same capacity as the battery of the dead machine.
IMPORTANT: Be sure to connect the clips securely.

Connecting the jumper cables

IMPORTANT: Set the starter keys of the booster vehicle and the dead machine to the OFF position.



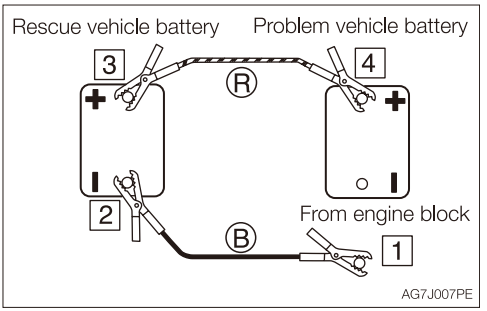
1. Connect the clip of jumper cable (R) to the positive (+) battery terminal of the dead machine.
2. Connect the other clip of jumper cable (R) to the positive (+) battery terminal of the booster vehicle.
3. Connect the clip of jumper cable (B) to the negative (–) battery terminal of the booster vehicle.
4. Connect the other clip of jumper cable (B) to the engine block of the dead machine. Connect the clip to a place as far from the battery as possible.

Starting the engine

1. Check that the clips are securely connected to the terminals.
2. Start the engine of the booster vehicle and run it at high speed.
3. Start the engine of the dead machine.

Disconnecting the jumper cables

Once the dead machine is successfully running, remove the jumper cables by following the same steps as for connection in the reverse order.



1. Disconnect the clip of jumper cable (B) from the engine block of the dead machine.
2. Disconnect the other clip of jumper cable (B) from the negative (–) battery terminal of the booster vehicle.
3. Disconnect the clip of jumper cable (R) from the positive (+) battery terminal of the booster vehicle.
4. Disconnect the clip of jumper cable (R) from the positive (+) battery terminal of the dead machine.

Recharging

Ask your sales or service dealer for recharging the dead battery.

IF A FUSE BLOWS

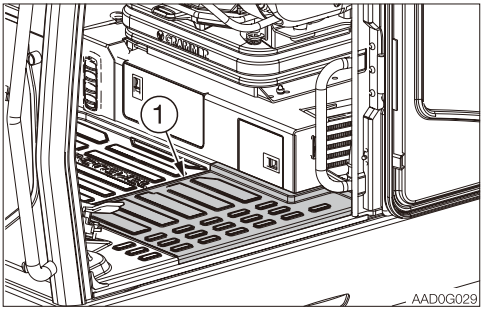
If a light does not come on or the electrical system does not work, a fuse may be blown. Inspect the fuses.

INSPECTING AND REPLACING THE FUSE

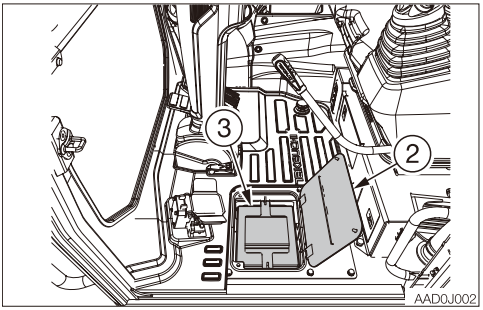
⚠ WARNING

If the fuse blows again soon after replacement, then the electric system is likely faulty. It may pose a fire hazard if not properly repaired. Contact your sales or service dealer for advice.

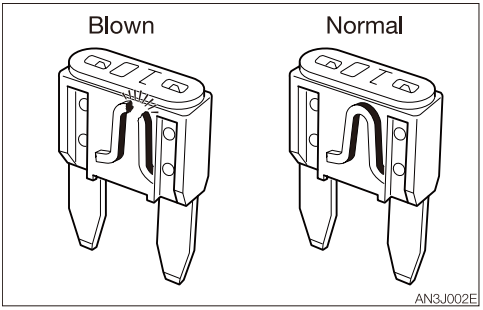
1. Turn the starter key to the OFF position to stop the engine.



2. Remove the floor mat (1).

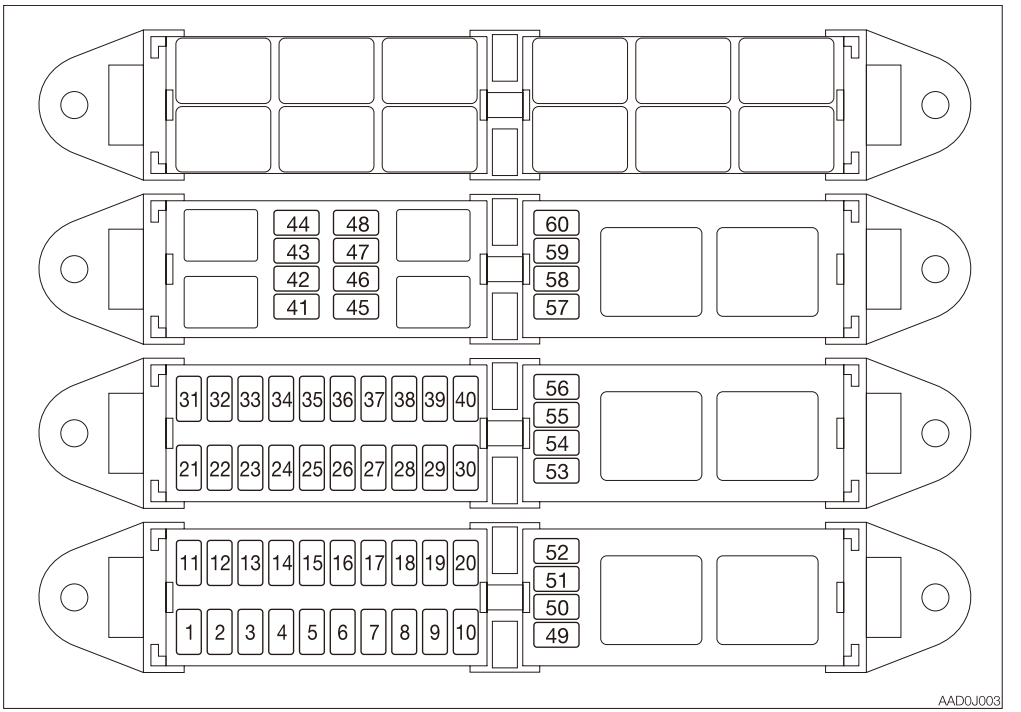


3. Open the cover (2).
4. Remove the fuse box cover (3).
5. Check for any blown fuses.



6. If a fuse is blown, replace it with a spare fuse of the same capacity.

Fuse layout and circuits protected



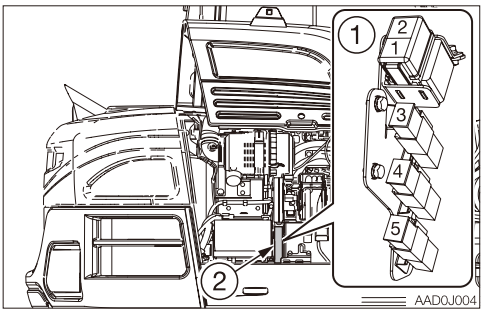
No.	Capacity	Symbol	Protected circuit	Fuse No.
1	30A		ECU	F101
2	30A		SCR controller	F102
3	10A		Feed pump	F103
4	10A		Refill switch	F104
5	3A		GPS	F105
6	25A	CTL	Main controller_Power supply	F106
7	10A		Starter switch	F107
8	10A		Horn	F108
9	10A	CAB (B+)	Cab	F109
10	10A		Turn signal	F110
11	15A		Headlight	F111
12	10A		Position light	F112

No.	Capacity	Symbol	Protected circuit	Fuse No.
13	20A		Fuel supply pump	F113
14	5A	OPT (A)	Option (A)	F114
15	20A	OPT (B)	Option (B)	F115
16	5A	OPT (C)	Option (C)	F116
17	20A	OPT (D)	Option (D)	F117
18	10A		Urea tank	F118
19	10A	CTL (1)	Main controller	F119
20	5A		Glow signal	F120
21	10A		Beacon	F201
22	15A	CTL (DC2)	Controller (DC2)	F202
23	10A	CTL (QCM)	Controller (QCM)	F203
24	15A	OPT (1)	Option (1)	F204
25	15A	OPT (2)	Option (2)	F205
26	7.5A	OPT (E)	Option (E)	F206
27	5A	OPT (F)	Option (F)	F207
28	15A	OPT (G)	Option (G)	F208
29	5A	OPT (H)	Option (H)	F209
30	7.5A	OPT (I)	Option (I)	F210
31	10A		Wiper	F211
32	10A	CAB (ACC)	Cab (ACC)	F212
33	5A		Servo motor	F213
34	15A		Blower	F214
35	10A		Compressor	F215
36	10A	AUTO	Auto greasing	F216
37	20A		Seat suspension	F217
38	15A		Seat heater	F218
39	7.5A		Rear light	F219
40	-	-	-	F220
41	10A	(LEFT)	Headlight_Low (Left)	F301

No.	Capacity	Symbol	Protected circuit	Fuse No.
42	10A	(RIGHT)	Headlight_Low (Right)	F302
43	10A	(LEFT)	Headlight_High (Left)	F303
44	10A	(RIGHT)	Headlight_High (Right)	F304
45	5A		Front position light (inside headlight)	F305
46	5A	(LEFT)	Rear position light (Left)	F306
47	5A	(RIGHT)	Rear position light (Right)	F307
48	5A	(OPT)	ATT position light (Option)	F308
49	10A		Cluster	F501
50	5A*		Joystick steering	F502
51	15A	NOx	NOx sensor	F503
52	5A		Throttle valve	F504
53	15A	CTL (2)	Controller (2nd)	F601
54	15A	CTL (UC)	Controller (UC)	F602
55	15A		Working light	F603
56	-	-	-	F604
57	5A		Anti theft (ACC)	F701
58	10A		Lever lock	F702
59	-	-	-	F703
60	15A	OPT (24V)	Socket (24V)	F704

*: If equipped

INSPECTING THE SLOW BLOW FUSE



If the machine is not turned on after turning the starter switch to the ON position, the cartridge type slow blow fuse (1) is likely blown.

1. Open the right side cover.
2. Loosen the bolts and remove the cover (2).
3. Inspect the slow blow fuse (1).
4. If there is a break, please contact your sales or service dealer.

Note: Slow blow fuses are large type fuses used in high current applications. Like a regular fuse, they act as fuses by protecting the electric components and wirings from damage caused by excessive current draw.

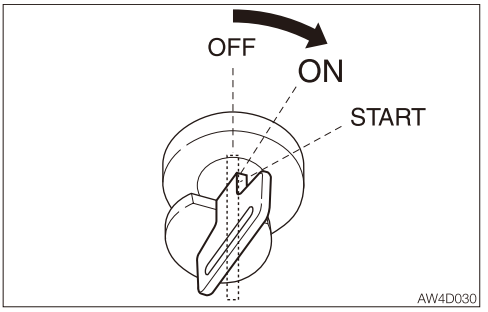
No.	Capacity	Symbol	Protected circuit	Fuse No.
1	60A	S.B.F.1	S.B.F.1	-
2	100A	S.B.F.2	S.B.F.2	-
3	65A	S.B.F.3	S.B.F.3	-
4	65A	S.B.F.4	S.B.F.4	-
5	65A	S.B.F.5	S.B.F.5	-

RESTARTING AFTER ADDING FUEL

BLEEDING AIR FROM THE FUEL SYSTEM

IMPORTANT: NEVER use the starter motor to crank the engine in order to prime the fuel system. This may cause the starter motor to overheat and damage the coils, pinion gear and/or ring gear.
IMPORTANT: If the engine stalls due to fuel shortage, add fuel, turn the key to the ON position for 60 seconds, and then turn it to the START position. Running the starter for a long time before there is enough fuel is going through can cause the starter to fail.

1. Add fuel.



2. Turn the starter switch to the ON position and hold it there for 20 seconds.
   Air is released from the pump during this period.
3. Turn the starter switch to the OFF position, and then to the ON position. Hold it there for 20 seconds again.
   Repeat this step at least 4 times until air is completely released.

Note: Air in the fuel system causes the engine to fail to start or to have other problems. Always bleed air when the fuel tank is emptied or when there is air in the fuel system.

RESTARTING WHEN THE DEF/ ADBLUE® LEVEL IS LOW OR THE TANK IS EMPTY

1. Turn the starter switch to the OFF position.
2. Refill the DEF/AdBlue® tank
3. Perform the warm-up operation until the warning lamp goes out.
4. If the warning lamp does not go out, turn the starter switch to the OFF position, and then restart the machine.

MEMO

IF A WARNING LAMP FLASHES

If an alarm is sounded or a warning lamp starts flashing during operation, park the machine in a safe place and perform the remedy procedures described below.

Warning lamp	Lamp name	Causes and remedies
 AW4J0041	**ECM error warning lamp**	There is a problem in the engine. If an error code is displayed on the multi-information display, inform your sales or service dealer of the code and ask for help. Refer to “Multi-information display” on page 2-20 to 2-64. Refer to “Engine error code list” on pages 6-24 to 6-56.
 AN4J005	**Engine stop request warning lamp**	
 AW4J007	**Vehicle and engine emergency lamp**	There is a problem in the machine. Refer to the respective warning lamp below. Get the vehicle or engine error code number from the multi- information display and consult your sales or service dealer referring to the number on the “Vehicle error code list” or “Engine error code list”. Refer to “Multi-information display” on page 2-20 to 2-64. Refer to “Vehicle error code list” on pages 6-20 to 6-23. Refer to “Engine error code list” on pages 6-24 to 6-56.
 AG7J018	**Coolant temperature warning lamp**	The coolant temperature is too high and the engine is overheating. Refer to “If the engine overheats” on page 6-3.
 AN4J006	**Coolant level warning lamp**	The coolant level is too low. Make sure that there is no leakage, and then add the coolant.

Warning lamp	Lamp name	Causes and remedies
 AG7J017	**Engine oil pressure warning lamp**	There is a problem in the engine lubrication system. Check the engine oil level. If the lamp is flashing when the level is normal or even after replenishment of oil or coolant, consult your sales or service dealer. Refer to “Inspecting and replenishing the engine oil” on page 5-24.
 AN4J008	**DEF/AdBlue® level warning lamp**	The DEF/AdBlue® level is low. Make sure that there is no leakage, and then add the DEF/AdBlue® solution. Refer to “Checking the DEF/AdBlue® level and refilling” on page 5-31.
 AR0J004	**SCR system warning lamp**	There is a problem in the SCR system. Contact a Takeuchi service dealer for advice.
 AR0J005	**DEF/AdBlue® quality indicator lamp**	The DEF/AdBlue® quality is deteriorated. Replace with the DEF/AdBlue® solution that complies the correct Standard.
 AG7J019	**Battery charge warning lamp**	There is a problem with the V-rib belt or charger. Check the V-rib belt for slack or breakage and adjust as necessary. If the lamp continues flashing after maintenance, there is likely a problem with the charger. Contact a Takeuchi service dealer for assistance. Refer to “Replacing the V-rib belt” on page 5-74.

Warning lamp	Lamp name	Causes and remedies
 AW4J009	**Water separator warning lamp**	Water is in the water separator. Drain water. Refer to “Inspecting the pre-fuel filter and draining” on page 5-25.
 AG7J020	**Air cleaner warning lamp**	The air cleaner is clogged. Clean it. Refer to “Cleaning the air cleaner” on page 5-28.
 AU7J002	**Hydraulic oil temp. warning lamp**	The hydraulic oil temperature became too high due to machine overworking. Stop operation, run the engine at low idle and let the hydraulic oil cool down.
 AU5J003	**Travel line filter warning lamp**	The hydraulic oil travel line filter is clogged. Stop the engine and replace the filter immediately. Continuing to operate the machine while the lamp is flashing could damage the line filter and hydraulic equipment. Refer to “Replacing the travel line filter” on page 5-41. Cold climate operation: Hydraulic oil is not warmed up. Refer to “Warming up the machine (hydraulic oil)” on page 3-10.
 AW4J011	**Brake oil pressure warning lamp**	The brake oil pressure is too low. Consult your sales or service dealer for assistance.
 AAD0J011	**Emergency steering warning lamp (If equipped)**	There is a problem in the steering hydraulic system. Consult your sales or service dealer for assistance.

Warning lamp	Lamp name	Causes and remedies
 AQ0J004	**Third auxiliary hydraulic warning lamp**	Pressure in the third auxiliary hydraulic line is too low. Consult your sales or service dealer for help.
 AW4J010	**Fuel level warning lamp**	The fuel level is too low. Add fuel. Refer to “Inspecting the fuel level” on page 5-26.
 AM1J005	**Lift overload warning lamp**	This lamp starts flashing if the overload warning device is activated. If it occurs, reduce the load to be lifted. Refer to “Lift overload warning switch” on page 2-80.
 AW4J013	**Upperstruc-ture position warning lamp**	This lamp lights if the upperstructure and the undercarriage become misaligned to the right or left in the travel mode. When traveling on a public road, be sure that the upperstructure and the undercarriage are aligned and this lamp is off.
 AW7J003	**Exhaust temperature warning indicator lamp**	The exhaust gas is very hot. Check for any flammable items around the machine.
 AW8J001	**Auto greasing indicator lamp (Red)**	The grease tank is empty or the fuse is blown; greasing is disabled. • Add grease to the grease tank • Identify the blown fuse and replace it with a new one.
 AAD0J009	**Reverse rotation fan warning lamp**	The reverse rotation fan does not operate since the coolant temperature is 108 °C or above, the engine is running for 10 minutes or below, or the interval from the previous operation is not elapsed. • Set the coolant temperature at 108 °C or below. • Run the engine for more than 10 minutes, or wait until the interval from the previous operation is elapsed.

VEHICLE ERROR CODE LIST

If an error code appears on the display, consult your sales or service dealer.

Error code	Error details
9	ACC key undetectable
402	CAN0 communication error
412	CAN1 communication error
502	CAN communication error (ECM)
512	CAN communication error (DEF tank)
602	CAN communication error (cluster gauge)
672	CAN communication error (sub-controller)
677	Incorrect part number of sub-controller
679	Sub-controller internal error
702	CAN communication error (HVAC)
742	CAN communication error (tiltrotator)
747	CAN communication error (tiltrotator)
812	CAN communication error (switch assy)
822	CAN communication error (immobilizer)
832	CAN communication error (jog dial)
842	CAN communication error (radio)
852	CAN communication error (multifunction grip L)
862	CAN communication error (multifunction grip R)
872	CAN communication error (UC controller)
877	Incorrect part number of UC controller
879	UC controller internal error
922	Steering controller CAN communication error
929	Steering controller status error
1703	Main controller power supply voltage error (too high)
1704	Main controller power supply voltage error (too low)
1763	Sub-controller power supply voltage error (too high)
1764	Sub-controller power supply voltage error (too low)
1773	UC controller sensor supply voltage error (too high)
1774	UC controller sensor supply voltage error (too low)
2503	Main controller sensor voltage error (too high)
2504	Main controller sensor voltage error (too low)

Error code	Error details
2563	Sub-controller sensor voltage error (too high)
2564	Sub-controller sensor voltage error (too low)
2573	UC controller sensor voltage error (too high)
2574	UC controller sensor voltage error (too low)
3300	Alternator charge faulty
3360	DPF overloaded (Lv2)
3401	Engine oil pressure error
3500	Overheat
3600	Air cleaner clogged
3700	Water separator alarm
3810	Line filter clogged
3820	Hydraulic oil temperature overheat
3825	Hydraulic oil temperature sensor cable break
5303	Accelerator sensor error (short circuit)
5304	Accelerator sensor error (cable break)
5313	Foot accelerator sensor error (too high pressure)
5314	Foot accelerator sensor error (too low pressure)
5317	Accelerator pedal neutral error
5318	Foot accelerator sensor error (drift 1)
5319	Foot accelerator sensor error (drift 2)
5503	Fuel sender voltage error (too high)
5504	Fuel sender voltage error (too low)
5603	Lift alarm sensor error (short circuit)
5604	Lift alarm sensor error (cable break)
5683	Swing pedal voltage value error (too high)
5684	Swing pedal voltage value error (too low)
5688	Swing pedal voltage error (drift)
5689	Swing pedal neutral error
5693	Blade lever voltage value error (too high)
5694	Blade lever voltage value error (too low)
5698	Blade lever voltage value error (drift)
5699	Blade lever neutral error

Error code	Error details
5963	Voltage error of front wheel brake pressure sensor (too high)
5964	Voltage error of front wheel brake sensor (too low)
5968	Brake pressure sensor diagnosed as abnormal
5973	Voltage error of rear wheel brake pressure sensor (too high)
5974	Voltage error of rear wheel brake pressure sensor (too low)
5983	Voltage error of brake accumulator pressure sensor (too high)
5984	Voltage error of brake accumulator pressure sensor (too low)
5993	Voltage error of main control valve pressure sensor (too high)
5994	Voltage error of main control valve pressure sensor (too low)
6003	Voltage error of sub-valve pressure sensor (too high)
6004	Voltage error of sub-valve pressure sensor (too low)
6503	L grip slide switch voltage value error (too high)
6504	L grip slide switch voltage value error (too low)
6509	AUX1 slide switch neutral error
6519	AUX1 (L) switch error
6529	AUX1 (R) switch error
6603	R grip slide switch voltage value error (too high)
6604	R grip slide switch voltage value error (too low)
6609	AUX2 slide switch neutral error
6709	AUX3 switch error (grip)
6719	AUX3 switch error (foot)
6809	Ram lock switch error
6829	FNR switch error
6849	Brake pressure sensor error
6859	Grease level low
6869	Auto cruise switch error
6879	4WS select switch error
6887	Gear position1 switch
6897	Gear position2 switch
6909	AUX4 slide switch neutral error
6947	Differential lock position switch
6957	Speed sensor cable break
6989	Boom suspension switch error
6999	Multifunctional grip function assignment error (joystick steering)

Error code	Error details
8005	Pump PWM output current error (too low)
8015	AUX1 (L) PWM output current error (too low)
8025	AUX1 (R) PWM output current error (too low)
8035	AUX2 (L) PWM output current error (too low)
8045	AUX2 (R) PWM output current error (too low)
8055	Output current error of hydraulic fan solenoid (too low)
8075	Output current error of travel FWD HST pump solenoid (too low)
8085	Output current error of travel REV HST pump solenoid (too low)
8215	Auto tank solenoid output error
8429	Extension output 1 switch error
8439	Extension output 2 switch error
8449	Extension output 3 switch error
8459	Extension output 4 switch error
8465	Extension output 5 A-side PWM output current error (low)
8469	Extension output 5 slide switch neutral position error
8475	Extension output 5 B-side PWM output current error (low)
8715	AUX1 pressure SOL output current error (too low)
8725	AUX2 pressure SOL output current error (too low)
8735	AUX4 (L) PWM output current error (too low)
8745	AUX4 (R) PWM output current error (too low)
8795	Output current error of adjust cylinder extend solenoid (too low)
8805	Output current error of adjust cylinder retract solenoid (too low)
9125	Output current error of swing left solenoid (too low)
9135	Output current error of swing right solenoid (too low)
9145	Output current error of blade raise solenoid (too low)
9155	Output current error of blade lower solenoid (too low)
9165	Current error of 4WS (small slewing) solenoid (too low)
9175	Current error of 4WS (crab steering) solenoid (too low)
9185	Current error of 4WS selector valve detent solenoid (too low)
9235	Boom suspension 1 current error (low)
9245	Boom suspension 2 current error (low)
9255	Digging brake 1 current error (low)
9265	Digging brake 2 current error (low)
9271	Steering hydraulic pressure error
9285	Emergency steering solenoid current error (low)
9900	TFM parameter change

UC: UnderCarriage

ENGINE ERROR CODE LIST

If an error code appears on the display, consult your sales or service dealer.

DTC-Code	SPN	FMI	Fault description
P000F	5571	15	Engine - Pressure relief valve (PRV) - Data abovenormal operational range (Least severe level)
P000F	5571	16	Engine - Pressure relief valve (PRV) - Data abovenormal operational range (Moderately severe level)
P006D	1209	2	Engine - TC exhaust pressure sensor - Data erraticintermittent or incorrect
P0072	171	4	Engine - Ambient air temperature sensor - Voltagebelow normal or shorted to low source
P0073	171	3	Engine - Ambient air temperature sensor - Voltageabove normal or shorted to high source
P007A	105	0	Engine - Charge air temperature sensor - Data abovenormal operational range (Most severe level)
P007A	105	0	Engine - Charge air temperature sensor - Data abovenormal operational range (Most severe level)
P0087	7103	1	Engine - Rail pressure pump - Data below normaloperational range (Most severe level)
P0088	7103	0	Engine - Rail pressure pump - Data above normaloperational range (Most severe level)
P008A	94	1	Engine - Fuel low pressure sensor - Data below normaloperational range (Most severe level)
P008A	94	1	Engine - Fuel low pressure sensor - Data below normaloperational range (Most severe level)
P008B	94	15	Engine - Fuel low pressure sensor - Data above normaloperational range (Least severe level)
P00C6	94	1	Engine - Fuel low pressure sensor - Data below normaloperational range (Most severe level)
P00E8	105	1	Engine - Charge air temperature sensor - Data belownormal operational range (Most severe level)
P00E8	105	0	Engine - Charge air temperature sensor - Data abovenormal operational range (Most severe level)
P00FA	1209	4	Engine - TC exhaust pressure sensor - Voltage belownormal or shorted to low source
P00FB	1209	3	Engine - TC exhaust pressure sensor - Voltage abovenormal or shorted to high source
P0106	102	2	Engine - Charge air pressure sensor - Data erraticintermittent or incorrect
P0107	102	4	Engine - Charge air pressure sensor - Voltage belownormal or shorted to low source
P0108	102	3	Engine - Charge air pressure sensor - Voltage abovenormal or shorted to high source
P0111	105	2	Engine - Charge air temperature sensor - Data erraticintermittent or incorrect
P0112	105	4	Engine - Charge air temperature sensor - Voltage belownormal or shorted to low source
P0113	105	3	Engine - Charge air temperature sensor - Voltage abovenormal or shorted to high source
P0116	110	2	Engine - Coolant temperature sensor - Data erraticintermittent or incorrect

DTC-Code	SPN	FMI	Fault description
P0117	110	4	Engine - Coolant temperature sensor - Voltage belownormal or shorted to low source
P0118	110	3	Engine - Coolant temperature sensor - Voltage abovenormal or shorted to high source
P012B	1209	1	Engine - TC exhaust pressure sensor - Data belownormal operational range (Most severe level)
P012B	1209	15	Engine - TC exhaust pressure sensor - Data abovenormal operational range (Least severe level)
P012B	1209	2	Engine - TC exhaust pressure sensor - Data erraticintermittent or incorrect
P018F	5571	16	Engine - Pressure relief valve (PRV) - Data abovenormal operational range (Moderately severe level)
P0190	157	4	Engine - Rail pressure metering unit - Voltage belownormal or shorted to low source
P0190	157	3	Engine - Rail pressure metering unit - Voltage abovenormal or shorted to high source
P0196	175	16	Engine - Oil temperature - Data above normaloperational range (Moderately severe level)
P0196	175	0	Engine - Oil temperature - Data above normaloperational range (Most severe level)
P0197	175	4	Engine - Oil temperature - Voltage below normal orshorted to low source
P0198	175	3	Engine - Oil temperature - Voltage above normal orshorted to high source
P0201	5358	6	Engine - Fuel injection quantity injector 1 - Currentabove normal or grounded circuit
P0201	5358	6	Engine - Fuel injection quantity injector 1 - Currentabove normal or grounded circuit
P0201	5358	5	Engine - Fuel injection quantity injector 1 - Currentbelow normal or open circuit
P0202	5359	6	Engine - Fuel injection quantity injector 2 - Currentabove normal or grounded circuit
P0202	5359	6	Engine - Fuel injection quantity injector 2 - Currentabove normal or grounded circuit
P0202	5359	5	Engine - Fuel injection quantity injector 2 - Currentbelow normal or open circuit
P0203	5360	6	Engine - Fuel injection quantity injector 3 - Currentabove normal or grounded circuit
P0203	5360	6	Engine - Fuel injection quantity injector 3 - Currentabove normal or grounded circuit
P0203	5360	5	Engine - Fuel injection quantity injector 3 - Currentbelow normal or open circuit
P0204	5361	6	Engine - Fuel injection quantity injector 4 - Currentabove normal or grounded circuit
P0204	5361	6	Engine - Fuel injection quantity injector 4 - Currentabove normal or grounded circuit
P0204	5361	5	Engine - Fuel injection quantity injector 4 - Currentbelow normal or open circuit
P0205	5362	6	Engine - Fuel injection quantity injector 5 - Currentabove normal or grounded circuit
P0205	5362	6	Engine - Fuel injection quantity injector 5 - Currentabove normal or grounded circuit

DTC-Code	SPN	FMI	Fault description
P0205	5362	5	Engine - Fuel injection quantity injector 5 - Currentbelow normal or open circuit
P0206	5363	6	Engine - Fuel injection quantity injector 6 - Currentabove normal or grounded circuit
P0206	5363	6	Engine - Fuel injection quantity injector 6 - Currentabove normal or grounded circuit
P0206	5363	5	Engine - Fuel injection quantity injector 6 - Currentbelow normal or open circuit
P0207	5364	6	Engine - Fuel injection quantity injector 7- Current above normal or grounded circuit
P0207	5364	6	Engine - Fuel injection quantity injector 7- Current above normal or grounded circuit
P0207	5364	5	Engine - Fuel injection quantity injector 7- Current below normal or open circuit
P0208	5365	6	Engine - Fuel injection quantity injector 8- Current above normal or grounded circuit
P0208	5365	6	Engine - Fuel injection quantity injector 8- Current above normal or grounded circuit
P0208	5365	5	Engine - Fuel injection quantity injector 8- Current below normal or open circuit
P0217	110	0	Engine - Coolant temperature sensor - Data abovenormal operational range (Most severe level)
P0217	110	0	Engine - Coolant temperature sensor - Data abovenormal operational range (Most severe level)
P0219	190	0	Engine - Rotation speed - Data above normaloperational range (Most severe level)
P0251	7103	6	Engine - Rail pressure pump - Current above normal orgrounded circuit
P0251	7103	4	Engine - Rail pressure pump - Voltage below normal orshorted to low source
P0251	7103	3	Engine - Rail pressure pump - Voltage above normal orshorted to high source
P0251	7103	5	Engine - Rail pressure pump - Current below normal oropen circuit
P02E7	132	2	Engine - Air mass - Data erratic intermittent or incorrect
P0336	4201	8	Engine - Crankshaft rotation speed sensor - Abnormalfrequency or pulse width or period
P0336	4201	14	Engine - Crankshaft rotation speed sensor - Specialinstructions
P033F	723	13	Engine - Camshaft rotation speed sensor - Out ofcalibration
P0341	723	8	Engine - Camshaft rotation speed sensor - Abnormalfrequency or pulse width or period
P0341	723	14	Engine - Camshaft rotation speed sensor - Specialinstructions
P0405	411	4	Engine - EGR differential pressure - Voltage belownormal or shorted to low source
P0406	411	3	Engine - EGR differential pressure - Voltage abovenormal or shorted to high source
P040A	412	4	Engine - EGR temperature sensor - Voltage belownormal or shorted to low source

DTC-Code	SPN	FMI	Fault description
P040A	412	3	Engine - EGR temperature sensor - Voltage abovenormal or shorted to high source
P040A	412	17	Engine - EGR temperature sensor - Data below normaloperational range (Least severe level)
P040A	412	15	Engine - EGR temperature sensor - Data above normaloperational range (Least severe level)
P040A	412	2	Engine - EGR temperature sensor - Data erraticintermittent or incorrect
P0425	4765	4	Exhaust aftertreatment - Temperature bevor DOC -Voltage below normal or shorted to low source
P0425	4765	3	Exhaust aftertreatment - Temperature bevor DOC -Voltage above normal or shorted to high source
P0425	4765	2	Exhaust aftertreatment - Temperature bevor DOC -Data erratic intermittent or incorrect
P0425	4765	2	Exhaust aftertreatment - Temperature bevor DOC -Data erratic intermittent or incorrect
P0425	4765	15	Exhaust aftertreatment - Temperature bevor DOC -Data above normal operational range (Least severelevel)
P042A	4766	4	Exhaust aftertreatment - Temperature after DOC -Voltage below normal or shorted to low source
P042A	4766	3	Exhaust aftertreatment - Temperature after DOC -Voltage above normal or shorted to high source
P042A	4766	2	Exhaust aftertreatment - Temperature after DOC - Dataerratic intermittent or incorrect
P042A	4766	15	Exhaust aftertreatment - Temperature after DOC - Dataabove normal operational range (Least severe level)
P042E	27	7	Engine - Position EGR valve - Mechanical system notresponding or out of adjustment
P042F	27	7	Engine - Position EGR valve - Mechanical system notresponding or out of adjustment
P046C	411	2	Engine - EGR differential pressure - Data erraticintermittent or incorrect
P046D	411	2	Engine - EGR differential pressure - Data erraticintermittent or incorrect
P0480	1071	5	Engine - Fan drive output - Current below normal oropen circuit
P0489	27	4	Engine - Position EGR valve - Voltage below normal orshorted to low source
P0490	27	3	Engine - Position EGR valve - Voltage above normal orshorted to high source
P0522	100	4	Engine - Oil pressure sensor - Voltage below normal orshorted to low source
P0523	100	3	Engine - Oil pressure sensor - Voltage above normal orshorted to high source
P0524	100	18	Engine - Oil pressure sensor - Data below normaloperational range (Moderately severe level)
P0524	100	1	Engine - Oil pressure sensor - Data below normaloperational range (Most severe level)

DTC-Code	SPN	FMI	Fault description
P0541	729	4	Engine - Preheating relay - Voltage below normal orshorted to low source
P0542	729	3	Engine - Preheating relay - Voltage above normal orshorted to high source
P0543	729	5	Engine - Preheating relay - Current below normal oropen circuit
P0616	677	4	Engine - Starter relay - Voltage below normal or shortedto low source
P0617	677	3	Engine - Starter relay - Voltage above normal or shortedto high source
P0627	1347	4	Engine - Fuel supply pump - Voltage below normal orshorted to low source
P0627	1347	3	Engine - Fuel supply pump - Voltage above normal orshorted to high source
P0627	1347	5	Engine - Fuel supply pump - Current below normal oropen circuit
P062A	1347	11	Engine - Fuel supply pump - Root cause not known
P062B	3055	14	Engine - Fuel system monitoring - Special instructions
P0638	51	6	Engine - Throttle valve position - Current above normalor grounded circuit
P0638	51	4	Engine - Throttle valve position - Voltage below normalor shorted to low source
P0638	51	3	Engine - Throttle valve position - Voltage above normalor shorted to high source
P0638	51	5	Engine - Throttle valve position - Current below normalor open circuit
P0667	1136	17	Engine - ECU temperature - Data below normaloperational range (Least severe level)
P0667	1136	15	Engine - ECU temperature - Data above normaloperational range (Least severe level)
P0667	1136	1	Engine - ECU temperature - Data below normaloperational range (Most severe level)
P0667	1136	0	Engine - ECU temperature - Data above normaloperational range (Most severe level)
P0667	1136	2	Engine - ECU temperature - Data erratic intermittent orincorrect
P0686	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P0687	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source
P0691	1071	4	Engine - Fan drive output - Voltage below normal orshorted to low source
P0692	1071	3	Engine - Fan drive output - Voltage above normal orshorted to high source
P06B0	3509	14	Engine - ECU sensor supply voltage - Specialinstructions
P06B1	3509	6	Engine - ECU sensor supply voltage - Current abovenormal or grounded circuit
P06B1	3509	1	Engine - ECU sensor supply voltage - Data belownormal operational range (Most severe level)
P06B2	3509	0	Engine - ECU sensor supply voltage - Data abovenormal operational range (Most severe level)
P06B3	3510	14	Engine - ECU sensor supply voltage 2 - Specialinstructions
P06B4	3510	6	Engine - ECU sensor supply voltage 2 - Current abovenormal or grounded circuit
P06B4	3510	1	Engine - ECU sensor supply voltage 2 - Data belownormal operational range (Most severe level)

DTC-Code	SPN	FMI	Fault description
P06B5	3510	0	Engine - ECU sensor supply voltage 2 - Data abovenormal operational range (Most severe level)
P06E6	3511	14	Engine - ECU sensor supply voltage 3 - Specialinstructions
P06E6	3511	11	Engine - ECU sensor supply voltage 3 - Root cause notknown
P06E7	3511	6	Engine - ECU sensor supply voltage 3 - Current abovenormal or grounded circuit
P06E7	3511	1	Engine - ECU sensor supply voltage 3 - Data belownormal operational range (Most severe level)
P06E8	3511	0	Engine - ECU sensor supply voltage 3 - Data abovenormal operational range (Most severe level)
P1001	2797	14	Engine - Injector group - Special instructions
P1002	164	2	Engine - Rail pressure - Data erratic intermittent orincorrect
P1003	2797	6	Engine - Injector group - Current above normal orgrounded circuit
P1004	2798	6	Engine - Injector group 2 - Current above normal orgrounded circuit
P1005	520280	11	Engine - Injection driver metering unit - Root cause notknown
P1006	7103	3	Engine - Rail pressure pump - Voltage above normal orshorted to high source
P1007	7103	4	Engine - Rail pressure pump - Voltage below normal orshorted to low source
P1008	5571	2	Engine - Pressure relief valve (PRV) - Data erraticintermittent or incorrect
P1009	5571	2	Engine - Pressure relief valve (PRV) - Data erraticintermittent or incorrect
P100A	5571	0	Engine - Pressure relief valve (PRV) - Data abovenormal operational range (Most severe level)
P100B	5571	2	Engine - Pressure relief valve (PRV) - Data erraticintermittent or incorrect
P100C	5571	2	Engine - Pressure relief valve (PRV) - Data erraticintermittent or incorrect
P100D	5571	13	Engine - Pressure relief valve (PRV) - Out of calibration
P100E	5571	16	Engine - Pressure relief valve (PRV) - Data abovenormal operational range (Moderately severe level)
P1010	652	13	Engine - Injector 2 - Out of calibration
P1011	653	13	Engine - Injector 3 - Out of calibration
P1012	654	13	Engine - Injector 4 - Out of calibration
P1013	655	13	Engine - Injector 5 - Out of calibration
P1014	656	13	Engine - Injector 6 - Out of calibration
P1015	7103	13	Engine - Rail pressure pump - Out of calibration
P1016	7103	13	Engine - Rail pressure pump - Out of calibration
P1017	7103	13	Engine - Rail pressure pump - Out of calibration
P1018	7103	2	Engine - Rail pressure pump - Data erratic intermittentor incorrect
P1019	5357	14	Engine - Fuel injection quantity multiple cylinder -Special instructions

DTC-Code	SPN	FMI	Fault description
P101A	157	0	Engine - Rail pressure metering unit - Data abovenormal operational range (Most severe level)
P101D	2797	4	Engine - Injector group - Voltage below normal orshorted to low source
P101E	520426	6	Engine - Injection valve bank Secondary 0 - Currentabove normal or grounded circuit
P101F	520427	6	Engine - Injection valve bank Secondary 1 - Currentabove normal or grounded circuit
P1020	3509	3	Engine - ECU sensor supply voltage - Voltage abovenormal or shorted to high source
P1021	3509	4	Engine - ECU sensor supply voltage - Voltage belownormal or shorted to low source
P1022	520279	7	Machine - HMI return button - Mechanical system notresponding or out of adjustment
P1023	91	3	Machine - Position accelerator pedal - Voltage abovenormal or shorted to high source
P1024	2623	3	Machine - Accelerator pedal channel 2 - Voltage abovenormal or shorted to high source
P1025	29	3	Machine - Position accelerator pedal 2 - Voltage abovenormal or shorted to high source
P1026	2625	3	Machine - Accelerator pedal 2 channel 2 - Voltageabove normal or shorted to high source
P1027	91	4	Machine - Position accelerator pedal - Voltage belownormal or shorted to low source
P1028	2623	4	Machine - Accelerator pedal channel 2 - Voltage belownormal or shorted to low source
P1029	29	4	Machine - Position accelerator pedal 2 - Voltage belownormal or shorted to low source
P102A	2625	4	Machine - Accelerator pedal 2 channel 2 - Voltage belownormal or shorted to low source
P102B	677	5	Engine - Starter relay - Current below normal or opencircuit
P102C	677	3	Engine - Starter relay - Voltage above normal or shortedto high source
P102D	677	4	Engine - Starter relay - Voltage below normal or shortedto low source
P102E	91	11	Machine - Position accelerator pedal - Root cause notknown
P102F	29	11	Machine - Position accelerator pedal 2 - Root cause notknown
P1030	1041	14	Engine - Starter signal KL. 50 - Special instructions
P1031	3510	3	Engine - ECU sensor supply voltage 2 - Voltage abovenormal or shorted to high source
P1032	3510	4	Engine - ECU sensor supply voltage 2 - Voltage belownormal or shorted to low source
P1036	520417	31	Engine - Dummy element - Condition exists
P103D	520424	31	Engine - Controller access failed - Condition exists
P103E	5099	11	Machine - Oil pressure lamp - Root cause not known

DTC-Code	SPN	FMI	Fault description
P103F	5099	3	Machine - Oil pressure lamp - Voltage above normal orshorted to high source
P1040	5099	4	Machine - Oil pressure lamp - Voltage below normal orshorted to low source
P1041	3697	11	Machine - Particle filter lamp - Root cause not known
P1042	624	11	Machine - Amber warning lamp - Root cause not known
P1043	624	3	Machine - Amber warning lamp - Voltage above normalor shorted to high source
P1044	624	4	Machine - Amber warning lamp - Voltage below normalor shorted to low source
P1045	520458	11	Machine - Engine running lamp - Root cause not known
P1046	520458	3	Machine - Engine running lamp - Voltage above normalor shorted to high source
P1047	520458	4	Machine - Engine running lamp - Voltage below normalor shorted to low source
P1048	520459	11	Machine - Multi purpose lamp - Root cause not known
P1049	520459	3	Machine - Multi purpose lamp - Voltage above normal orshorted to high source
P104A	520459	4	Machine - Multi purpose lamp - Voltage below normal orshorted to low source
P104F	51	4	Engine - Throttle valve position - Voltage below normalor shorted to low source
P1050	27	3	Engine - Position EGR valve - Voltage above normal orshorted to high source
P1051	27	4	Engine - Position EGR valve - Voltage below normal orshorted to low source
P1052	27	3	Engine - Position EGR valve - Voltage above normal orshorted to high source
P1053	27	4	Engine - Position EGR valve - Voltage below normal orshorted to low source
P1054	27	6	Engine - Position EGR valve - Current above normal orgrounded circuit
P1055	27	5	Engine - Position EGR valve - Current below normal oropen circuit
P1056	27	5	Engine - Position EGR valve - Current below normal oropen circuit
P1057	27	11	Engine - Position EGR valve - Root cause not known
P1058	27	3	Engine - Position EGR valve - Voltage above normal orshorted to high source
P1059	27	4	Engine - Position EGR valve - Voltage below normal orshorted to low source
P105A	27	11	Engine - Position EGR valve - Root cause not known
P105B	27	2	Engine - Position EGR valve - Data erratic intermittentor incorrect
P105C	27	2	Engine - Position EGR valve - Data erratic intermittentor incorrect
P105D	51	6	Engine - Throttle valve position - Current above normalor grounded circuit
P105E	51	11	Engine - Throttle valve position - Root cause not known
P105F	51	6	Engine - Throttle valve position - Current above normalor grounded circuit
P1060	190	0	Engine - Rotation speed - Data above normaloperational range (Most severe level)
P1061	190	0	Engine - Rotation speed - Data above normaloperational range (Most severe level)
P1062	190	0	Engine - Rotation speed - Data above normaloperational range (Most severe level)

DTC-Code	SPN	FMI	Fault description
P1063	520435	11	Engine - Ouput torque - Root cause not known
P1064	1237	2	Engine - Shutdown override switch - Data erraticintermittent or incorrect
P1067	520491	2	Exhaust aftertreatment - Too many engine starts in tooshort a time - Data erratic intermittent or incorrect
P1068	520433	5	Machine - Resv Lamp - Current below normal or opencircuit
P1069	520433	11	Machine - Resv Lamp - Root cause not known
P106A	520433	3	Machine - Resv Lamp - Voltage above normal orshorted to high source
P106B	520433	4	Machine - Resv Lamp - Voltage below normal or shortedto low source
P106C	5100	11	Machine - Coolant temperature lamp - Root cause notknown
P106D	5100	3	Machine - Coolant temperature lamp - Voltage abovenormal or shorted to high source
P106E	5100	4	Machine - Coolant temperature lamp - Voltage belownormal or shorted to low source
P1070	598	10	Machine - Clutch signal - Abnormal rate of change
P1071	1109	2	Engine - Protection system requested shutdown - Dataerratic intermittent or incorrect
P1072	1109	14	Engine - Protection system requested shutdown -Special instructions
P1075	171	2	Engine - Ambient air temperature sensor - Data erraticintermittent or incorrect
P1076	110	2	Engine - Coolant temperature sensor - Data erraticintermittent or incorrect
P1077	4766	2	Exhaust aftertreatment - Temperature after DOC - Dataerratic intermittent or incorrect
P1078	4765	2	Exhaust aftertreatment - Temperature bevor DOC -Data erratic intermittent or incorrect
P1079	4765	2	Exhaust aftertreatment - Temperature bevor DOC -Data erratic intermittent or incorrect
P107A	1081	11	Machine - Cold start lamp - Root cause not known
P107B	1081	3	Machine - Cold start lamp - Voltage above normal orshorted to high source
P107C	1081	4	Machine - Cold start lamp - Voltage below normal orshorted to low source
P107D	520444	11	Machine - Vehicle speed control lamp - Root cause notknown
P107E	520416	5	Engine - Disc separator - Current below normal or opencircuit
P107F	520416	11	Engine - Disc separator - Root cause not known
P1080	520416	3	Engine - Disc separator - Voltage above normal orshorted to high source
P1081	520416	4	Engine - Disc separator - Voltage below normal orshorted to low source
P1082	520429	2	Engine - Main and Secondary ECU identification - Dataerratic intermittent or incorrect

DTC-Code	SPN	FMI	Fault description
P1083	520430	11	Engine - Exhaust flap failure - Root cause not known
P1085	677	11	Engine - Starter relay - Root cause not known
P1086	6655	11	Machine - ECU power off lamp - Root cause not known
P1087	6655	3	Machine - ECU power off lamp - Voltage above normalor shorted to high source
P1088	6655	4	Machine - ECU power off lamp - Voltage below normalor shorted to low source
P1089	520259	15	Engine - Temperature before engine inlet valve - Dataabove normal operational range (Least severe level)
P108A	520259	16	Engine - Temperature before engine inlet valve - Dataabove normal operational range (Moderately severelevel)
P108B	520259	1	Engine - Temperature before engine inlet valve - Databelow normal operational range (Most severe level)
P108C	107	0	Engine - Air filter differential pressure sensor - Dataabove normal operational range (Most severe level)
P108F	102	2	Engine - Charge air pressure sensor - Data erraticintermittent or incorrect
P1090	102	2	Engine - Charge air pressure sensor - Data erraticintermittent or incorrect
P1091	102	1	Engine - Charge air pressure sensor - Data belownormal operational range (Most severe level)
P1092	51	3	Engine - Throttle valve position - Voltage above normalor shorted to high source
P1093	51	4	Engine - Throttle valve position - Voltage below normalor shorted to low source
P1094	51	11	Engine - Throttle valve position - Root cause not known
P1095	520304	2	Engine - Status throttle valve - Data erratic intermittentor incorrect
P1096	520305	2	Engine - Signal error throttle valve - Data erraticintermittent or incorrect
P1097	520296	31	Engine - Torque reduction TC protection active -Condition exists
P1099	171	16	Engine - Ambient air temperature sensor - Data abovenormal operational range (Moderately severe level)
P109A	171	18	Engine - Ambient air temperature sensor - Data belownormal operational range (Moderately severe level)
P109B	520442	31	Engine - Intake air temperature sensor - Conditionexists
P109C	520443	31	Engine - Intake air temperature sensor not available -Condition exists
P109D	520492	18	Engine - Boost pressure regulation - Data below normaloperational range (Moderately severe level)
P109E	520492	16	Engine - Boost pressure regulation - Data above normaloperational range (Moderately severe level)
P10E0	657	13	Engine - Injector 7 - Out of calibration
P10E1	658	13	Engine - Injector 8 - Out of calibration
P1100	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source

DTC-Code	SPN	FMI	Fault description
P1101	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source
P1102	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P1103	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P1104	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source
P1105	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P1106	629	12	Engine - ECU - Bad intelligent device or component
P1107	629	12	Engine - ECU - Bad intelligent device or component
P1108	629	12	Engine - ECU - Bad intelligent device or component
P1109	629	12	Engine - ECU - Bad intelligent device or component
P110A	629	12	Engine - ECU - Bad intelligent device or component
P110B	629	12	Engine - ECU - Bad intelligent device or component
P110C	629	12	Engine - ECU - Bad intelligent device or component
P110D	629	12	Engine - ECU - Bad intelligent device or component
P110E	629	12	Engine - ECU - Bad intelligent device or component
P110F	629	12	Engine - ECU - Bad intelligent device or component
P1110	629	12	Engine - ECU - Bad intelligent device or component
P1111	629	12	Engine - ECU - Bad intelligent device or component
P1112	629	12	Engine - ECU - Bad intelligent device or component
P1113	629	12	Engine - ECU - Bad intelligent device or component
P1114	629	12	Engine - ECU - Bad intelligent device or component
P1115	629	12	Engine - ECU - Bad intelligent device or component
P1116	629	12	Engine - ECU - Bad intelligent device or component
P1117	629	12	Engine - ECU - Bad intelligent device or component
P1118	629	12	Engine - ECU - Bad intelligent device or component
P1119	629	12	Engine - ECU - Bad intelligent device or component
P111A	629	12	Engine - ECU - Bad intelligent device or component
P111B	629	12	Engine - ECU - Bad intelligent device or component
P111C	629	12	Engine - ECU - Bad intelligent device or component
P111D	629	12	Engine - ECU - Bad intelligent device or component
P111E	629	12	Engine - ECU - Bad intelligent device or component
P111F	629	12	Engine - ECU - Bad intelligent device or component
P1120	629	12	Engine - ECU - Bad intelligent device or component
P1121	629	12	Engine - ECU - Bad intelligent device or component

DTC-Code	SPN	FMI	Fault description
P1122	629	12	Engine - ECU - Bad intelligent device or component
P1123	629	12	Engine - ECU - Bad intelligent device or component
P1124	629	12	Engine - ECU - Bad intelligent device or component
P1125	629	12	Engine - ECU - Bad intelligent device or component
P1126	629	12	Engine - ECU - Bad intelligent device or component
P1127	629	12	Engine - ECU - Bad intelligent device or component
P1128	629	12	Engine - ECU - Bad intelligent device or component
P1129	629	12	Engine - ECU - Bad intelligent device or component
P112A	629	12	Engine - ECU - Bad intelligent device or component
P112B	629	12	Engine - ECU - Bad intelligent device or component
P112C	629	12	Engine - ECU - Bad intelligent device or component
P112D	629	12	Engine - ECU - Bad intelligent device or component
P112E	629	12	Engine - ECU - Bad intelligent device or component
P112F	629	12	Engine - ECU - Bad intelligent device or component
P1130	629	12	Engine - ECU - Bad intelligent device or component
P1131	629	12	Engine - ECU - Bad intelligent device or component
P1132	629	12	Engine - ECU - Bad intelligent device or component
P1133	629	12	Engine - ECU - Bad intelligent device or component
P1134	629	12	Engine - ECU - Bad intelligent device or component
P1135	629	12	Engine - ECU - Bad intelligent device or component
P1136	629	12	Engine - ECU - Bad intelligent device or component
P1137	629	12	Engine - ECU - Bad intelligent device or component
P1138	629	12	Engine - ECU - Bad intelligent device or component
P1139	629	12	Engine - ECU - Bad intelligent device or component
P113A	629	12	Engine - ECU - Bad intelligent device or component
P113B	629	12	Engine - ECU - Bad intelligent device or component
P113C	629	12	Engine - ECU - Bad intelligent device or component
P113D	629	12	Engine - ECU - Bad intelligent device or component
P113E	520370	2	Engine - ECU afterun not waited - Data erraticintermittent or incorrect
P113F	520371	2	Engine - ECU afterun too often not waited - Data erraticintermittent or incorrect
P1140	520372	2	Engine - ECU afterun too often consecutive not waited -Data erratic intermittent or incorrect
P1141	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source

DTC-Code	SPN	FMI	Fault description
P1142	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P1143	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source
P1144	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P1145	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source
P1146	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P1147	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source
P1148	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P1149	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source
P114A	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P114B	1485	3	Engine - ECU main relay - Voltage above normal orshorted to high source
P114C	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P114E	1485	4	Engine - ECU main relay - Voltage below normal orshorted to low source
P115A	3513	14	Engine - ECU sensor supply voltage 5 - Specialinstructions
P115A	3513	11	Engine - ECU sensor supply voltage 5 - Root cause notknown
P115B	3513	0	Engine - ECU sensor supply voltage 5 - Data abovenormal operational range (Most severe level)
P115C	3513	6	Engine - ECU sensor supply voltage 5 - Current abovenormal or grounded circuit
P115C	3513	1	Engine - ECU sensor supply voltage 5 - Data belownormal operational range (Most severe level)
P115D	3514	14	Engine - ECU sensor supply voltage 6 - Specialinstructions
P115D	3514	11	Engine - ECU sensor supply voltage 6 - Root cause notknown
P115E	3514	0	Engine - ECU sensor supply voltage 6 - Data abovenormal operational range (Most severe level)
P115F	3514	6	Engine - ECU sensor supply voltage 6 - Current abovenormal or grounded circuit
P115F	3514	1	Engine - ECU sensor supply voltage 6 - Data belownormal operational range (Most severe level)
P1168	520378	11	Machine - MCAN not enough memory - Root cause notknown
P1169	520379	11	Machine - MCANR not enough memory - Root causenot known
P116A	520425	4	Engine - Powerstage on CJ945 - Voltage below normalor shorted to low source
P116A	520425	3	Engine - Powerstage on CJ945 - Voltage above normalor shorted to high source
P116A	520425	5	Engine - Powerstage on CJ945 - Current below normalor open circuit
P116A	520425	12	Engine - Powerstage on CJ945 - Bad intelligent deviceor component
P1173	520437	31	Engine - Replacement fault code triggered by FIDUVMDSM04/V-engine: Main-secondary ECU swapped -Condition exists
P1174	520438	31	Engine - Replacement fault code triggered by FIDUVMDSM04 - Condition exists

DTC-Code	SPN	FMI	Fault description
P1175	520439	31	Engine - Replacement fault code triggered by FIDUVMDSM10 - Condition exists
P1176	520440	31	Engine - Replacement fault code triggered by FIDUVMDSM12 - Condition exists
P1177	520441	31	Engine - Replacement fault code triggered by FIDUVMDSM13 - Condition exists
P1178	520496	11	Engine - Exhaust flap internal fault - Root cause notknown
P1179	520497	11	Engine - Exhaust flap external fault - Root cause notknown
P117A	520498	13	Engine - Exhaust flap learning fault - Out of calibration
P119A	629	12	Engine - ECU - Bad intelligent device or component
P119B	629	12	Engine - ECU - Bad intelligent device or component
P119C	629	12	Engine - ECU - Bad intelligent device or component
P119D	91	14	Machine - Position accelerator pedal - Specialinstructions
P119E	190	2	Engine - Rotation speed - Data erratic intermittent orincorrect
P119F	5357	2	Engine - Fuel injection quantity multiple cylinder - Dataerratic intermittent or incorrect
P11A0	5441	2	Engine - Fuel injection timing error multiple cylinders -Data erratic intermittent or incorrect
P11A1	520281	2	Engine - Injection temperature compensation - Dataerratic intermittent or incorrect
P11A2	5357	2	Engine - Fuel injection quantity multiple cylinder - Dataerratic intermittent or incorrect
P11A3	523612	12	Engine - ECU - Bad intelligent device or component
P11A4	523612	12	Engine - ECU - Bad intelligent device or component
P11A5	523612	12	Engine - ECU - Bad intelligent device or component
P11A6	5357	2	Engine - Fuel injection quantity multiple cylinder - Dataerratic intermittent or incorrect
P11A7	5357	2	Engine - Fuel injection quantity multiple cylinder - Dataerratic intermittent or incorrect
P11A8	5442	2	Engine - Fuel injection pressure error multiple cylinders -Data erratic intermittent or incorrect
P11A9	29	2	Machine - Position accelerator pedal 2 - Data erraticintermittent or incorrect
P11AA	677	2	Engine - Starter relay - Data erratic intermittent orincorrect
P11AB	513	2	Engine - Actual percent totque - Data erratic intermittentor incorrect
P11AC	513	2	Engine - Actual percent totque - Data erratic intermittentor incorrect
P11AD	520250	2	Engine - Function monitoring - Data erratic intermittentor incorrect
P11AE	629	12	Engine - ECU - Bad intelligent device or component
P11AF	629	12	Engine - ECU - Bad intelligent device or component
P11B0	629	12	Engine - ECU - Bad intelligent device or component

DTC-Code	SPN	FMI	Fault description
P11B1	629	12	Engine - ECU - Bad intelligent device or component
P11B2	629	12	Engine - ECU - Bad intelligent device or component
P11B3	629	12	Engine - ECU - Bad intelligent device or component
P11B4	629	12	Engine - ECU - Bad intelligent device or component
P11B5	629	12	Engine - ECU - Bad intelligent device or component
P11B6	629	12	Engine - ECU - Bad intelligent device or component
P11B7	629	12	Engine - ECU - Bad intelligent device or component
P11B8	629	12	Engine - ECU - Bad intelligent device or component
P11B9	629	12	Engine - ECU - Bad intelligent device or component
P11BA	629	12	Engine - ECU - Bad intelligent device or component
P11BB	629	12	Engine - ECU - Bad intelligent device or component
P11BC	629	12	Engine - ECU - Bad intelligent device or component
P11BD	629	12	Engine - ECU - Bad intelligent device or component
P11BE	629	12	Engine - ECU - Bad intelligent device or component
P11BF	629	12	Engine - ECU - Bad intelligent device or component
P11C0	629	12	Engine - ECU - Bad intelligent device or component
P11C1	629	12	Engine - ECU - Bad intelligent device or component
P11C2	629	12	Engine - ECU - Bad intelligent device or component
P11C3	629	12	Engine - ECU - Bad intelligent device or component
P11C4	629	12	Engine - ECU - Bad intelligent device or component
P11C5	629	12	Engine - ECU - Bad intelligent device or component
P11C6	629	12	Engine - ECU - Bad intelligent device or component
P11C7	629	12	Engine - ECU - Bad intelligent device or component
P11C8	629	12	Engine - ECU - Bad intelligent device or component
P11C9	629	12	Engine - ECU - Bad intelligent device or component
P11CA	629	12	Engine - ECU - Bad intelligent device or component
P11CB	629	12	Engine - ECU - Bad intelligent device or component
P11CC	629	12	Engine - ECU - Bad intelligent device or component
P11CD	629	12	Engine - ECU - Bad intelligent device or component
P11CE	629	12	Engine - ECU - Bad intelligent device or component
P11CF	629	12	Engine - ECU - Bad intelligent device or component
P11D0	629	12	Engine - ECU - Bad intelligent device or component

DTC-Code	SPN	FMI	Fault description
P11D1	629	12	Engine - ECU - Bad intelligent device or component
P11D2	629	12	Engine - ECU - Bad intelligent device or component
P11D3	629	12	Engine - ECU - Bad intelligent device or component
P11D4	629	12	Engine - ECU - Bad intelligent device or component
P11D5	629	12	Engine - ECU - Bad intelligent device or component
P11D6	629	12	Engine - ECU - Bad intelligent device or component
P11D7	629	12	Engine - ECU - Bad intelligent device or component
P11D8	629	12	Engine - ECU - Bad intelligent device or component
P11D9	629	12	Engine - ECU - Bad intelligent device or component
P11DA	629	12	Engine - ECU - Bad intelligent device or component
P11DB	629	12	Engine - ECU - Bad intelligent device or component
P11DC	629	12	Engine - ECU - Bad intelligent device or component
P11DD	629	12	Engine - ECU - Bad intelligent device or component
P11DE	629	12	Engine - ECU - Bad intelligent device or component
P11DF	629	12	Engine - ECU - Bad intelligent device or component
P11E0	629	12	Engine - ECU - Bad intelligent device or component
P11E1	629	12	Engine - ECU - Bad intelligent device or component
P11E2	629	12	Engine - ECU - Bad intelligent device or component
P11E3	629	12	Engine - ECU - Bad intelligent device or component
P11E4	629	12	Engine - ECU - Bad intelligent device or component
P11E5	629	12	Engine - ECU - Bad intelligent device or component
P11E6	629	12	Engine - ECU - Bad intelligent device or component
P11E7	629	12	Engine - ECU - Bad intelligent device or component
P11E8	629	12	Engine - ECU - Bad intelligent device or component
P11E9	629	12	Engine - ECU - Bad intelligent device or component
P11EA	629	12	Engine - ECU - Bad intelligent device or component
P11EB	629	12	Engine - ECU - Bad intelligent device or component
P11EC	629	12	Engine - ECU - Bad intelligent device or component
P11ED	629	12	Engine - ECU - Bad intelligent device or component
P11EE	629	12	Engine - ECU - Bad intelligent device or component
P11EF	629	12	Engine - ECU - Bad intelligent device or component
P11F0	629	12	Engine - ECU - Bad intelligent device or component

DTC-Code	SPN	FMI	Fault description
P11F1	629	12	Engine - ECU - Bad intelligent device or component
P11F2	629	12	Engine - ECU - Bad intelligent device or component
P11F3	629	12	Engine - ECU - Bad intelligent device or component
P11F4	629	12	Engine - ECU - Bad intelligent device or component
P11F5	629	12	Engine - ECU - Bad intelligent device or component
P11F6	629	12	Engine - ECU - Bad intelligent device or component
P11F7	629	12	Engine - ECU - Bad intelligent device or component
P11F8	520473	31	Engine - Wrong engine ECU - Condition exists
P1251	520282	7	Exhaust aftertreatment - Lines DPF sensor inverted -Mechanical system not responding or out of adjustment
P1252	520283	14	Engine - Oil change request - Special instructions
P1253	520300	2	Exhaust aftertreatment - Pressure after DPF - Dataerratic intermittent or incorrect
P1254	4781	14	Exhaust aftertreatment - DEF soot load - Specialinstructions
P1255	10156	0	Exhaust aftertreatment - DPF regeneration time - Dataabove normal operational range (Most severe level)
P1256	3735	16	Exhaust aftertreatment - Time Stand Still - Data abovenormal operational range (Moderately severe level)
P1257	3735	0	Exhaust aftertreatment - Time Stand Still - Data abovenormal operational range (Most severe level)
P1258	4766	1	Exhaust aftertreatment - Temperature after DOC - Databelow normal operational range (Most severe level)
P1259	3251	14	Exhaust aftertreatment - DPF differential pressure -Special instructions
P125A	3251	14	Exhaust aftertreatment - DPF differential pressure -Special instructions
P125B	3251	14	Exhaust aftertreatment - DPF differential pressure -Special instructions
P125C	3251	14	Exhaust aftertreatment - DPF differential pressure -Special instructions
P125F	4766	2	Exhaust aftertreatment - Temperature after DOC - Dataerratic intermittent or incorrect
P1260	4766	2	Exhaust aftertreatment - Temperature after DOC - Dataerratic intermittent or incorrect
P1261	3734	0	Exhaust aftertreatment - Time Stand Still - Data abovenormal operational range (Most severe level)
P1262	520254	8	Exhaust aftertreatment - Time Stand Still - Abnormalfrequency or pulse width or period
P1263	520255	2	Exhaust aftertreatment - Lines DPF sensor wrongconected - Data erratic intermittent or incorrect
P1264	520434	14	Exhaust aftertreatment - Condition Stand Still - Specialinstructions
P1265	520472	11	Exhaust aftertreatment - ETV actuator light error - Rootcause not known

DTC-Code	SPN	FMI	Fault description
P1266	520493	15	Engine - PCD power reduction step 1 active - Dataabove normal operational range (Least severe level)
P1267	520494	0	Engine - PCD power reduction step 2 active - Dataabove normal operational range (Most severe level)
P1268	520495	14	Engine - Pre trigger for PCD inducement level 2 active -Special instructions
P1351	3226	0	Exhaust aftertreatment - NOx sensor behind SCR - Dataabove normal operational range (Most severe level)
P1352	3226	2	Exhaust aftertreatment - NOx sensor behind SCR - Dataerratic intermittent or incorrect
P1353	3216	2	Exhaust aftertreatment - NOx sensor infront of SCR -Data erratic intermittent or incorrect
P1354	520286	2	Exhaust aftertreatment - Calculated lambda value - Dataerratic intermittent or incorrect
P1355	7351	0	Exhaust aftertreatment - NOx emissiones after SCR Cat- Data above normal operational range (Most severelevel)
P1356	520287	2	Exhaust aftertreatment - NOx conversion SCR Cat -Data erratic intermittent or incorrect
P1358	520289	14	Exhaust aftertreatment - Emptying DEF supply system -Special instructions
P1359	6875	31	Exhaust aftertreatment - DEF metering pressure -Condition exists
P135A	520290	14	Exhaust aftertreatment - DEF pressure - Specialinstructions
P135B	6875	0	Exhaust aftertreatment - DEF metering pressure - Dataabove normal operational range (Most severe level)
P135C	520291	11	Exhaust aftertreatment - DEF warm up - Root cause notknown
P135D	520292	11	Exhaust aftertreatment - DEF metering valve blocked -Root cause not known
P135E	3226	0	Exhaust aftertreatment - NOx sensor behind SCR - Dataabove normal operational range (Most severe level)
P135F	3226	9	Exhaust aftertreatment - NOx sensor behind SCR -Abnormal update rate timeout
P1360	3226	13	Exhaust aftertreatment - NOx sensor behind SCR - Outof calibration
P1361	3226	31	Exhaust aftertreatment - NOx sensor behind SCR -Condition exists
P1362	3216	0	Exhaust aftertreatment - NOx sensor infront of SCR -Data above normal operational range (Most severelevel)
P1363	3216	9	Exhaust aftertreatment - NOx sensor infront of SCR -Abnormal update rate timeout
P1364	3216	13	Exhaust aftertreatment - NOx sensor infront of SCR -Out of calibration
P1365	3216	31	Exhaust aftertreatment - NOx sensor infront of SCR -Condition exists
P1366	4360	2	Exhaust aftertreatment - Temperature before SCR Cat -Data erratic intermittent or incorrect
P1367	4360	3	Exhaust aftertreatment - Temperature before SCR Cat -Voltage above normal or shorted to high source

DTC-Code	SPN	FMI	Fault description
P1368	4360	4	Exhaust aftertreatment - Temperature before SCR Cat -Voltage below normal or shorted to low source
P136A	3516	1	Exhaust aftertreatment - DEF concentration - Databelow normal operational range (Most severe level)
P136B	524087	11	Machine - DEF error lamp - Root cause not known
P136C	524087	3	Machine - DEF error lamp - Voltage above normal orshorted to high source
P136D	524087	4	Machine - DEF error lamp - Voltage below normal orshorted to low source
P136E	520375	15	Exhaust aftertreatment - SCR crystallisation monitoring -Data above normal operational range (Least severelevel)
P136F	520375	0	Exhaust aftertreatment - SCR crystallisation monitoring -Data above normal operational range (Most severelevel)
P1372	5746	5	Exhaust aftertreatment - DEF metering unit heater relay- Current below normal or open circuit
P1373	5746	3	Exhaust aftertreatment - DEF metering unit heater relay- Voltage above normal or shorted to high source
P1374	5746	4	Exhaust aftertreatment - DEF metering unit heater relay- Voltage below normal or shorted to low source
P1375	4334	2	Exhaust aftertreatment - DEF pump pressure - Dataerratic intermittent or incorrect
P1376	520311	11	Exhaust aftertreatment - DEF supply module heaterover temperature - Root cause not known
P1378	4376	5	Exhaust aftertreatment - DEF reverse valve - Currentbelow normal or open circuit
P1379	4376	3	Exhaust aftertreatment - DEF reverse valve - Voltageabove normal or shorted to high source
P137A	4376	4	Exhaust aftertreatment - DEF reverse valve - Voltagebelow normal or shorted to low source
P137E	520284	15	Engine - Power reduction step 1 active - Data abovenormal operational range (Least severe level)
P1380	5826	14	Exhaust aftertreatment - Power reduction - Specialinstructions
P1381	520285	0	Engine - Power reduction step 2 active - Data abovenormal operational range (Most severe level)
P1383	520293	15	Exhaust aftertreatment - Particle diagnostic powerreduction step 1 active - Data above normal operationalrange (Least severe level)
P1384	520294	14	Exhaust aftertreatment - Particle diagnostic pretriggerpower reduction step 2 active - Special instructions
P1385	520295	0	Exhaust aftertreatment - Particle diagnostic powerreduction step 2 active - Data above normal operationalrange (Most severe level)
P1386	520301	2	Exhaust aftertreatment - NOx conversion efficiency -Data erratic intermittent or incorrect
P1387	520302	2	Exhaust aftertreatment - Voltage for power supply DEFheater - Data erratic intermittent or incorrect
P1388	520303	11	Exhaust aftertreatment - Relay DEF heater - Root causenot known

DTC-Code	SPN	FMI	Fault description
P1389	3226	12	Exhaust aftertreatment - NOx sensor behind SCR - Badintelligent device or component
P138A	3226	31	Exhaust aftertreatment - NOx sensor behind SCR -Condition exists
P138B	3216	12	Exhaust aftertreatment - NOx sensor infront of SCR -Bad intelligent device or component
P138C	3216	31	Exhaust aftertreatment - NOx sensor infront of SCR -Condition exists
P138D	4360	11	Exhaust aftertreatment - Temperature before SCR Cat -Root cause not known
P138F	520375	15	Exhaust aftertreatment - SCR crystallisation monitoring -Data above normal operational range (Least severelevel)
P138F	520375	0	Exhaust aftertreatment - SCR crystallisation monitoring -Data above normal operational range (Most severelevel)
P1390	520373	9	Exhaust aftertreatment - CAN DEF quality sensor -Abnormal update rate timeout
P1391	520374	9	Exhaust aftertreatment - CAN DEF tanktemperature/level sensor - Abnormal update ratetimeout
P1392	3532	3	Exhaust aftertreatment - DEF tank level sensor -Voltage above normal or shorted to high source
P1393	3532	4	Exhaust aftertreatment - DEF tank level sensor -Voltage below normal or shorted to low source
P1394	3031	3	Exhaust aftertreatment - DEF tank temperature -Voltage above normal or shorted to high source
P1395	3031	4	Exhaust aftertreatment - DEF tank temperature -Voltage below normal or shorted to low source
P1396	7540	11	Exhaust aftertreatment - DEF backflow line heater relay- Root cause not known
P1397	5746	11	Exhaust aftertreatment - DEF metering unit heater relay- Root cause not known
P1398	7069	11	Exhaust aftertreatment - DEF pressure line heater relay- Root cause not known
P1399	5491	11	Exhaust aftertreatment - DEF heater relay cable - Rootcause not known
P139A	5746	8	Exhaust aftertreatment - DEF metering unit heater relay- Abnormal frequency or pulse width or period
P139B	520317	8	Exhaust aftertreatment - DEF supply module overtemperature - Abnormal frequency or pulse width orperiod
P139C	520445	2	Machine - DEF pump motor communication - Dataerratic intermittent or incorrect
P139D	520307	11	Exhaust aftertreatment - DEF heater relay overtemperature - Root cause not known
P139E	3520	2	Exhaust aftertreatment - DEF quality sensor - Dataerratic intermittent or incorrect
P139F	3520	2	Exhaust aftertreatment - DEF quality sensor - Dataerratic intermittent or incorrect
P13A0	3520	2	Exhaust aftertreatment - DEF quality sensor - Dataerratic intermittent or incorrect
P13A1	3520	2	Exhaust aftertreatment - DEF quality sensor - Dataerratic intermittent or incorrect
P13A2	3520	13	Exhaust aftertreatment - DEF quality sensor - Out ofcalibration

DTC-Code	SPN	FMI	Fault description
P13A3	3520	2	Exhaust aftertreatment - DEF quality sensor - Dataerratic intermittent or incorrect
P13A4	520436	11	Exhaust aftertreatment - DEF quality sensor - Rootcause not known
P13A5	520436	3	Exhaust aftertreatment - DEF quality sensor - Voltageabove normal or shorted to high source
P13A6	520436	4	Exhaust aftertreatment - DEF quality sensor - Voltagebelow normal or shorted to low source
P13A7	3532	2	Exhaust aftertreatment - DEF tank level sensor - Dataerratic intermittent or incorrect
P13A8	3532	2	Exhaust aftertreatment - DEF tank level sensor - Dataerratic intermittent or incorrect
P13A9	3532	2	Exhaust aftertreatment - DEF tank level sensor - Dataerratic intermittent or incorrect
P13AA	3532	2	Exhaust aftertreatment - DEF tank level sensor - Dataerratic intermittent or incorrect
P13AB	3031	2	Exhaust aftertreatment - DEF tank temperature - Dataerratic intermittent or incorrect
P13AC	3031	2	Exhaust aftertreatment - DEF tank temperature - Dataerratic intermittent or incorrect
P13AD	3031	2	Exhaust aftertreatment - DEF tank temperature - Dataerratic intermittent or incorrect
P13AE	4360	2	Exhaust aftertreatment - Temperature before SCR Cat -Data erratic intermittent or incorrect
P13AF	520489	2	Exhaust aftertreatment - DEF pump temperature - Dataerratic intermittent or incorrect
P13B0	5707	2	Exhaust aftertreatment - DEF pump heater temperature- Data erratic intermittent or incorrect
P13B1	520490	2	Exhaust aftertreatment - DEF pump pressure - Dataerratic intermittent or incorrect
P1452	520321	12	Engine - CAN Main Secondary no communication - Badintelligent device or component
P1453	520322	9	Exhaust aftertreatment - Collective fault on Main ECUtriggered by fault couple coordinator Secondary -Abnormal update rate timeout
P1454	520323	11	Exhaust aftertreatment - SCR diagnostic disabled onMain ECU triggered by fault on Secondary - Root causenot known
P1457	520326	11	Exhaust aftertreatment - SCR system turned off on MainECU triggered by fault on Secondary - Root cause notknown
P1458	520327	11	Exhaust aftertreatment - SCR system turned off/Systemon hold on Main ECU triggered by fault on Secondary -Root cause not known
P1459	520328	11	Exhaust aftertreatment - SCR system turned off/Systemon hold on Main ECU triggered by fault on Secondary -Root cause not known
P145A	520329	11	Exhaust aftertreatment - Standstill forbidden on MainECU - Root cause not known

DTC-Code	SPN	FMI	Fault description
P145B	520330	11	Engine - Power reduction request by 25% on Main ECUtriggered by failure Secondary - Root cause not known
P145C	520331	11	Engine - Power reduction request by 50% on Main ECUtriggered by failure Secondary - Root cause not known
P145D	520332	11	Engine - Collective fault on Main ECU triggered bySoftware-reset failure Secondary - Root cause notknown
P145E	520333	11	Engine- Collective fault on Main ECU triggered by noengine speed signal Secondary - Root cause not known
P145F	520334	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by light failure of ETV Secondary - Root causenot known
P1460	520335	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by severe failure of ETV Secondary - Rootcause not known
P1461	520336	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by DEF CAN sensor failure Secondary - Rootcause not known
P1462	520337	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by NOx sensor downstream failure Secondary- Root cause not known
P1463	520338	11	Exhaust aftertreatment - ETV safe position - Root causenot known
P1464	520339	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by dosing valve failure Secondary - Rootcause not known
P1465	520340	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by Stand Still temperature not reached failureSecondary - Root cause not known
P1466	520341	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by DEF pressure problems Secondary - Rootcause not known
P1467	520342	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by reverting valve failure Secondary - Rootcause not known
P1468	520343	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by DEF back flow line heater failure Secondary- Root cause not known
P1469	520344	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by NOx-Tailpipe emissions too high failureSecondary - Root cause not known
P146A	520345	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by DEF suction line heater failure Secondary -Root cause not known
P146B	520346	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by supply module heater lines failureSecondary - Root cause not known
P146C	520347	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by exhaust pressure upstream SCR failureSecondary - Root cause not known
P146D	520348	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by exhaust temperature upstream SCR failureSecondary - Root cause not known
P146E	520349	11	Exhaust aftertreatment - NCD timer activated on MainECU triggered by fault on Secondary - Root cause notknown
P146F	520350	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by DEF pressure line heater failure Secondary- Root cause not known
P1470	520351	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by DEF pump temperature failure Secondary -Root cause not known

DTC-Code	SPN	FMI	Fault description
P1471	520352	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by DEF heater relais failure Secondary - Rootcause not known
P1472	520353	11	Exhaust aftertreatment - PCD timer activated on MainECU triggered by fault on Secondary - Root cause notknown
P1473	520354	11	Engine - Collective fault on Main ECU triggered bymicrocontroller failure Secondary - Root cause notknown
P1474	520355	11	Engine - Collective fault on Main ECU triggered bysensor supply voltage failure Secondary - Root causenot known
P1475	520356	11	Engine - Collective fault on Main ECU triggered by dataset ID failure Secondary - Root cause not known
P1476	520357	11	Engine - Power reduction request by 25% on Main ECUtriggered by failure Secondary - Root cause not known
P1477	520358	11	Engine - Power reduction request by 50% on Main ECUtriggered by failure Secondary - Root cause not known
P1479	520360	11	Exhaust aftertreatment - NCD reduction fail timeractivated on Main ECU triggered by fault on Secondary -Root cause not known
P147A	520361	11	Exhaust aftertreatment - Standstill change main toafterrun phase Secondary - Root cause not known
P147B	520362	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by temperature upstream of DOC failureSecondary - Root cause not known
P147C	520363	11	Exhaust aftertreatment - power reduction, Stand Stillinhibited, ETV turned off on Main ECU triggered by faulton Secondary - Root cause not known
P147D	520364	11	Engine - Collective fault on Main ECU triggered byKeepAlive error at an external device Secondary - Rootcause not known
P147E	520365	11	Engine - Collective fault on Main ECU triggered bybattery voltage failure Secondary - Root cause notknown
P147F	520366	11	Engine - Collective fault on Main ECU triggered by CANfailure Secondary - Root cause not known
P1480	520367	11	Engine - Collective fault on Main ECU triggered byfunction monitoring failure Secondary - Root cause notknown
P1481	520368	11	Engine - Collective fault on Main ECU triggered bymicrocrontroller hardware failure Secondary - Rootcause not known
P1482	520369	11	Engine - Collective fault on Main ECU triggered by ECUtemperature failure Secondary - Root cause not known
P1483	520320	13	Engine - Main and Secondary ECU software versionmismatch - Out of calibration
P1484	520460	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by differential pressure sensor failureSecondary - Root cause not known
P1485	520461	11	Engine - Collective fault on Main ECU triggered byenvironment pressure sensor failure Secondary - Rootcause not known
P1486	520462	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by DEF-supply system failure Secondary -Root cause not known
P1487	520463	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by NH3 sensor failure Secondary - Root causenot known

DTC-Code	SPN	FMI	Fault description
P1488	520464	11	Engine - Collective fault on Main ECU triggered bycamshaft speed signal failure Secondary - Root causenot known
P148A	520466	11	Engine - Power reduction request by 50% on Main ECUtriggered by failure Secondary - Root cause not known
P148B	520467	11	Engine - Power reduction request by 25% on Main ECUtriggered by failure Secondary - Root cause not known
P148C	520468	11	Engine - Power reduction request by 50% on Main ECUtriggered by failure Secondary - Root cause not known
P148D	520469	11	Exhaust aftertreatment - Collective fault on Main ECUtriggered by SCR crystallization failure Secondary - Rootcause not known
P148E	520470	11	Exhaust aftertreatment - Standstill request fromSecondary ECU to Main ECU - Root cause not known
P148F	520475	11	Engine - Power reduction request by 25% on Main ECUtriggered by failure Secondary - Root cause not known
P1490	520476	11	Exhaust aftertreatment - Deactivation NOx MonitoringSecondary - Root cause not known
P1491	520477	11	Exhaust aftertreatment - Activation of replacement valuefor ETV Secondary - Root cause not known
P1492	520478	11	Exhaust aftertreatment - Deactivation NOx plausibilitycheck Secondary - Root cause not known
P1493	520479	11	Exhaust aftertreatment - Standstill forbidden on MainECU - Root cause not known
P1494	520480	11	Exhaust aftertreatment - Standstill forbidden on MainECU, execution only possible with service tool - Rootcause not known
P1495	520481	11	Engine - Set “FID” on Main ECU - Root cause notknown
P1496	520482	11	Exhaust aftertreatment - Activation of “Performanceintervention” on Main ECU - Root cause not known
P1497	520483	11	Exhaust aftertreatment - Forces SCR supply system on Main ECU in status “hold” - Root cause not known
P1498	520484	11	Exhaust aftertreatment - Collective fault on Main ECU triggered by electrical supply module failure Secondary -Root cause not known
P1499	520485	11	Exhaust aftertreatment - Deactivation DEF dosingadapation on Main ECU - Root cause not known
P149A	520486	11	Exhaust aftertreatment - Deactivation NOx downstreammonitoring on Main ECU - Root cause not known
P149B	520487	13	Engine - Inconsistent dataset on Main and SecondaryECU - Out of calibration
P149C	520488	0	Exhaust aftertreatment - SCR Crystallization - Dataabove normal operational range (Most severe level)
P202A	4366	5	Exhaust aftertreatment - DEF tank heating valve -Current below normal or open circuit
P202B	4366	4	Exhaust aftertreatment - DEF tank heating valve -Voltage below normal or shorted to low source

DTC-Code	SPN	FMI	Fault description
P202C	4366	3	Exhaust aftertreatment - DEF tank heating valve -Voltage above normal or shorted to high source
P203B	1761	0	Exhaust aftertreatment - DEF tank level sensor - Dataabove normal operational range (Most severe level)
P203B	1761	2	Exhaust aftertreatment - DEF tank level sensor - Dataerratic intermittent or incorrect
P203C	3532	4	Exhaust aftertreatment - DEF tank level sensor -Voltage below normal or shorted to low source
P203D	3532	3	Exhaust aftertreatment - DEF tank level sensor -Voltage above normal or shorted to high source
P203F	3532	1	Exhaust aftertreatment - DEF tank level sensor - Databelow normal operational range (Most severe level)
P2047	3361	6	Exhaust aftertreatment - DEF metering unit - Currentabove normal or grounded circuit
P2047	3361	5	Exhaust aftertreatment - DEF metering unit - Currentbelow normal or open circuit
P2048	3361	4	Exhaust aftertreatment - DEF metering unit - Voltagebelow normal or shorted to low source
P2049	3361	3	Exhaust aftertreatment - DEF metering unit - Voltageabove normal or shorted to high source
P204C	4334	4	Exhaust aftertreatment - DEF pump pressure - Voltagebelow normal or shorted to low source
P204D	4334	3	Exhaust aftertreatment - DEF pump pressure - Voltageabove normal or shorted to high source
P205B	3031	1	Exhaust aftertreatment - DEF tank temperature - Databelow normal operational range (Most severe level)
P205B	3031	0	Exhaust aftertreatment - DEF tank temperature - Dataabove normal operational range (Most severe level)
P205B	520319	11	Exhaust aftertreatment - DEF tank temperature error -Root cause not known
P205B	3031	2	Exhaust aftertreatment - DEF tank temperature - Dataerratic intermittent or incorrect
P205C	3031	4	Exhaust aftertreatment - DEF tank temperature -Voltage below normal or shorted to low source
P205D	3031	3	Exhaust aftertreatment - DEF tank temperature -Voltage above normal or shorted to high source
P206A	3520	2	Exhaust aftertreatment - DEF quality sensor - Dataerratic intermittent or incorrect
P207F	3520	1	Exhaust aftertreatment - DEF quality sensor - Databelow normal operational range (Most severe level)
P208A	7107	5	Exhaust aftertreatment - DEF pump - Current belownormal or open circuit
P208B	520306	11	Exhaust aftertreatment - DEF pump motor overtemperature - Root cause not known
P208C	7107	4	Exhaust aftertreatment - DEF pump - Voltage belownormal or shorted to low source

DTC-Code	SPN	FMI	Fault description
P208D	7107	3	Exhaust aftertreatment - DEF pump - Voltage abovenormal or shorted to high source
P209F	520312	11	Exhaust aftertreatment - DEF tank heater overtemperature - Root cause not known
P20B9	4341	5	Exhaust aftertreatment - Heater DEF supply line -Current below normal or open circuit
P20BA	520310	11	Exhaust aftertreatment - DEF suction line heater overtemperature - Root cause not known
P20BB	4341	4	Exhaust aftertreatment - Heater DEF supply line -Voltage below normal or shorted to low source
P20BC	4341	3	Exhaust aftertreatment - Heater DEF supply line -Voltage above normal or shorted to high source
P20BD	4343	5	Exhaust aftertreatment - Heater DEF pressure line -Current below normal or open circuit
P20BE	520309	11	Exhaust aftertreatment - DEF pressure line heater overtemperature - Root cause not known
P20BF	4343	4	Exhaust aftertreatment - Heater DEF pressure line -Voltage below normal or shorted to low source
P20C0	4343	3	Exhaust aftertreatment - Heater DEF pressure line -Voltage above normal or shorted to high source
P20C1	4345	5	Exhaust aftertreatment - Heater DEF return line -Current below normal or open circuit
P20C2	520308	11	Exhaust aftertreatment - DEF backflow line heater overtemperature - Root cause not known
P20C3	4345	4	Exhaust aftertreatment - Heater DEF return line -Voltage below normal or shorted to low source
P20C4	4345	3	Exhaust aftertreatment - Heater DEF return line -Voltage above normal or shorted to high source
P20C5	520471	5	Exhaust aftertreatment - DEF downstream line heater -Current below normal or open circuit
P20C6	520471	11	Exhaust aftertreatment - DEF downstream line heater -Root cause not known
P20C7	520471	4	Exhaust aftertreatment - DEF downstream line heater -Voltage below normal or shorted to low source
P20C8	520471	3	Exhaust aftertreatment - DEF downstream line heater -Voltage above normal or shorted to high source
P20E8	4334	1	Exhaust aftertreatment - DEF pump pressure - Databelow normal operational range (Most severe level)
P20E9	4334	0	Exhaust aftertreatment - DEF pump pressure - Dataabove normal operational range (Most severe level)
P20EE	5304	2	Exhaust aftertreatment - NOx Cat efficiency - Dataerratic intermittent or incorrect
P2100	51	5	Engine - Throttle valve position - Current below normalor open circuit
P2101	51	11	Engine - Throttle valve position - Root cause not known

DTC-Code	SPN	FMI	Fault description
P2102	51	4	Engine - Throttle valve position - Voltage below normalor shorted to low source
P2102	51	4	Engine - Throttle valve position - Voltage below normalor shorted to low source
P2103	51	3	Engine - Throttle valve position - Voltage above normalor shorted to high source
P2103	51	3	Engine - Throttle valve position - Voltage above normalor shorted to high source
P2111	51	7	Engine - Throttle valve position - Mechanical system notresponding or out of adjustment
P2112	51	7	Engine - Throttle valve position - Mechanical system notresponding or out of adjustment
P214A	4360	0	Exhaust aftertreatment - Temperature before SCR Cat -Data above normal operational range (Most severelevel)
P21C2	5491	5	Exhaust aftertreatment - DEF heater relay cable -Current below normal or open circuit
P21C3	5491	4	Exhaust aftertreatment - DEF heater relay cable -Voltage below normal or shorted to low source
P21C4	5491	3	Exhaust aftertreatment - DEF heater relay cable -Voltage above normal or shorted to high source
P2227	108	1	Engine - Ambient pressure sensor - Data below normaloperational range (Most severe level)
P2227	108	0	Engine - Ambient pressure sensor - Data above normaloperational range (Most severe level)
P2227	108	2	Engine - Ambient pressure sensor - Data erraticintermittent or incorrect
P2228	108	4	Engine - Ambient pressure sensor - Voltage belownormal or shorted to low source
P2229	108	3	Engine - Ambient pressure sensor - Voltage abovenormal or shorted to high source
P2264	97	0	Engine - Water in fuel sensor - Data above normaloperational range (Most severe level)
P2266	97	4	Engine - Water in fuel sensor - Voltage below normal orshorted to low source
P2267	97	3	Engine - Water in fuel sensor - Voltage above normal orshorted to high source
P226B	102	16	Engine - Charge air pressure sensor - Data abovenormal operational range (Moderately severe level)
P226B	102	0	Engine - Charge air pressure sensor - Data abovenormal operational range (Most severe level)
P229F	3226	2	Exhaust aftertreatment - NOx sensor behind SCR - Dataerratic intermittent or incorrect
P22FF	4360	1	Exhaust aftertreatment - Temperature before SCR Cat -Data below normal operational range (Most severelevel)
P242F	3720	16	Exhaust aftertreatment - DPF ash load - Data abovenormal operational range (Moderately severe level)

DTC-Code	SPN	FMI	Fault description
P244A	3251	18	Exhaust aftertreatment - DPF differential pressure -Data below normal operational range (Moderatelysevere level)
P244A	3251	1	Exhaust aftertreatment - DPF differential pressure -Data below normal operational range (Most severelevel)
P244B	3251	16	Exhaust aftertreatment - DPF differential pressure -Data above normal operational range (Moderatelysevere level)
P244B	3251	0	Exhaust aftertreatment - DPF differential pressure -Data above normal operational range (Most severelevel)
P2454	3251	4	Exhaust aftertreatment - DPF differential pressure -Voltage below normal or shorted to low source
P2455	3251	3	Exhaust aftertreatment - DPF differential pressure -Voltage above normal or shorted to high source
P2456	3251	2	Exhaust aftertreatment - DPF differential pressure -Data erratic intermittent or incorrect
P245F	520300	18	Exhaust aftertreatment - Pressure after DPF - Databelow normal operational range (Moderately severelevel)
P245F	520300	16	Exhaust aftertreatment - Pressure after DPF - Dataabove normal operational range (Moderately severelevel)
P2463	4781	16	Exhaust aftertreatment - DEF soot load - Data abovenormal operational range (Moderately severe level)
P2463	4781	0	Exhaust aftertreatment - DEF soot load - Data abovenormal operational range (Most severe level)
P24E1	4377	2	Exhaust aftertreatment - NH3 sensor - Data erraticintermittent or incorrect
P24E9	4382	2	Exhaust aftertreatment - NH3 sensor heater - Dataerratic intermittent or incorrect
P250A	98	2	Engine - Oil level - Data erratic intermittent or incorrect
P250A	98	31	Engine - Oil level - Condition exists
P250A	98	2	Engine - Oil level - Data erratic intermittent or incorrect
P250B	98	31	Engine - Oil level - Condition exists
P250E	98	14	Engine - Oil level - Special instructions
P2541	94	4	Engine - Fuel low pressure sensor - Voltage belownormal or shorted to low source
P2542	94	3	Engine - Fuel low pressure sensor - Voltage abovenormal or shorted to high source
P2560	111	1	Engine - Coolant level sensor - Data below normaloperational range (Most severe level)
P2604	729	12	Engine - Preheating relay - Bad intelligent device orcomponent
P2604	729	5	Engine - Preheating relay - Current below normal oropen circuit
P2604	729	12	Engine - Preheating relay - Bad intelligent device orcomponent
P260E	3697	4	Machine - Particle filter lamp - Voltage below normal orshorted to low source

DTC-Code	SPN	FMI	Fault description
P260E	3697	3	Machine - Particle filter lamp - Voltage above normal orshorted to high source
P268A	651	13	Engine - Injector 1 - Out of calibration
P26DF	3512	14	Engine - ECU sensor supply voltage 4 - Specialinstructions
P26DF	3512	11	Engine - ECU sensor supply voltage 4 - Root cause notknown
P26E0	3512	6	Engine - ECU sensor supply voltage 4 - Current abovenormal or grounded circuit
P26E0	3512	1	Engine - ECU sensor supply voltage 4 - Data belownormal operational range (Most severe level)
P26E1	3512	0	Engine - ECU sensor supply voltage 4 - Data abovenormal operational range (Most severe level)
P2D87	1071	11	Engine - Fan drive output - Root cause not known
U0010	1231	14	Machine - CAN - Special instructions
U0028	639	14	Machine - CAN - Special instructions
U1700	520261	9	Exhaust aftertreatment - CAN communication to NOxsensor before Cat - Abnormal update rate timeout
U1704	520265	9	Exhaust aftertreatment - CAN communication to NOxsensor after Cat - Abnormal update rate timeout
U170C	1669	14	Machine - CAN - Special instructions
U170D	520252	2	Exhaust aftertreatment - CAN control message - Dataerratic intermittent or incorrect
U170E	520269	2	Machine - CAN Engine start (GeraBox) checksum -Data erratic intermittent or incorrect
U170F	520270	2	Machine - CAN Engine start (Vehicle controller)checksum - Data erratic intermittent or incorrect
U1710	4207	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U1711	4207	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U1712	4207	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U1713	4207	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U1715	523212	9	Engine - CAN engine protection - Abnormal update ratetimeout
U1716	523741	14	Machine - CAN shut down request from engine shutdown - Special instructions
U1717	523240	9	Engine - CAN Functional mode control - Abnormalupdate rate timeout
U1718	520253	2	Exhaust aftertreatment - CAN control message - Dataerratic intermittent or incorrect
U1719	520271	2	Machine - CAN Engine start (GeraBox) rolling counter -Data erratic intermittent or incorrect
U171A	520272	2	Machine - CAN Engine start (Vehicle controller) rollingcounter - Data erratic intermittent or incorrect

DTC-Code	SPN	FMI	Fault description
U171B	4206	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U171C	4206	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U171D	4206	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U171E	4206	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U1720	520273	2	Machine - CAN Engine start (GeraBox) - Data erraticintermittent or incorrect
U1721	520274	9	Machine - CAN Engine start (GeraBox) - Abnormalupdate rate timeout
U1722	520275	2	Machine - CAN Engine start (Vehicle controller) - Dataerratic intermittent or incorrect
U1723	520276	9	Machine - CAN Engine start (Vehicle controller) -Abnormal update rate timeout
U1725	520278	9	Machine - CAN ETV actuator - Abnormal update ratetimeout
U1726	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U1727	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U1728	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U1729	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U172A	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U172B	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U172C	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U172D	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U172E	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U172F	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U1730	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U1731	3349	0	Machine - CAN torque rotation speed control - Dataabove normal operational range (Most severe level)
U1732	523982	0	Engine - Power stage diagnostic - Data above normaloperational range (Most severe level)
U1733	523982	1	Engine - Power stage diagnostic - Data below normaloperational range (Most severe level)

DTC-Code	SPN	FMI	Fault description
U1734	520256	9	Exhaust aftertreatment - CAN control message -Abnormal update rate timeout
U1737	520380	14	Machine - Exhaust aftertreatment CAN shortcut -Special instructions
U1738	520381	14	Machine - Main and Secondary CAN shortcut - Specialinstructions
U1739	520382	14	Machine - Engine CAN shortcut - Special instructions
U173A	520383	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U173B	520384	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U173C	520385	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U173D	520386	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U173E	520387	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U173F	520388	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1740	520389	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1741	520390	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1742	520391	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1743	520392	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1744	520393	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1745	520394	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1746	520395	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1747	520396	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1748	520397	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1749	520398	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U174A	520399	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U174B	520400	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U174C	520401	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U174D	520402	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U174E	520403	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U174F	520404	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1750	520405	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1751	520406	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1752	520407	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1753	520408	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1754	520409	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1755	520410	9	Engine - CAN Main Secondary - Abnormal update ratetimeout

DTC-Code	SPN	FMI	Fault description
U1756	520411	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1757	520412	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U1758	520413	2	Engine - CAN Main Secondary, ECU checksum - Dataerratic intermittent or incorrect
U1759	520414	2	Engine - CAN Main Secondary, time synchrounuslyprivate CAN - Data erratic intermittent or incorrect
U175A	520415	2	Engine - CAN Main Secondary, ECU rolling counter -Data erratic intermittent or incorrect
U175C	520431	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U175D	520432	9	Engine - CAN Main Secondary - Abnormal update ratetimeout
U175E	3349	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U175F	3349	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U1760	3349	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U1761	3349	2	Machine - CAN torque rotation speed control - Dataerratic intermittent or incorrect
U1762	520446	9	Machine - CAN-Receive-Frame ComMS_SWS10_MRcv- Abnormal update rate timeout
U1763	520447	9	Machine - CAN-Receive-Frame ComMS_SWS13_SRcv- Abnormal update rate timeout
U1764	520448	9	Machine - CAN-Receive-Frame ComMS_SWS14_SRcv- Abnormal update rate timeout
U1765	520449	9	Machine - CAN-Receive-Frame ComMS_SWS15_SRcv- Abnormal update rate timeout
U1766	520450	9	Machine - CAN-Receive-Frame ComMS_SWS16_SRcv- Abnormal update rate timeout
U1767	520451	9	Machine - CAN-Receive-Frame ComMS_SWS17_SRcv- Abnormal update rate timeout
U1768	520452	9	Machine - CAN-Receive-Frame ComMS_SWS18_SRcv- Abnormal update rate timeout
U1769	520453	9	Machine - CAN-Receive-Frame ComMS_SWS19_SRcv- Abnormal update rate timeout
U176A	520454	9	Machine - CAN-Receive-Frame ComMS_SWS20_SRcv- Abnormal update rate timeout
U176B	520455	9	Machine - CAN-Receive-Frame ComMS_SWS7_MRcv- Abnormal update rate timeout
U176C	520456	9	Machine - CAN-Receive-Frame ComMS_SWS8_MRcv- Abnormal update rate timeout
U176D	520457	9	Machine - CAN-Receive-Frame ComMS_SWS9_MRcv- Abnormal update rate timeout
U1770	520314	9	Machine - CAN ETV actuator Secondary - Abnormalupdate rate timeout

DTC-Code	SPN	FMI	Fault description
U1771	1638	2	Machine - Hydraulic oil temperature - Data erraticintermittent or incorrect
U1772	1638	9	Machine - Hydraulic oil temperature - Abnormal updaterate timeout
U1773	520313	9	Machine - CAN ETV actuator - Abnormal update ratetimeout
U3003	168	4	Machine - Battery voltage - Voltage below normal orshorted to low source
U3003	168	3	Machine - Battery voltage - Voltage above normal orshorted to high source
U3003	168	1	Machine - Battery voltage - Data below normaloperational range (Most severe level)
U3003	168	0	Machine - Battery voltage - Data above normaloperational range (Most severe level)
U3003	168	0	Machine - Battery voltage - Data above normaloperational range (Most severe level)
U3003	168	1	Machine - Battery voltage - Data below normaloperational range (Most severe level)