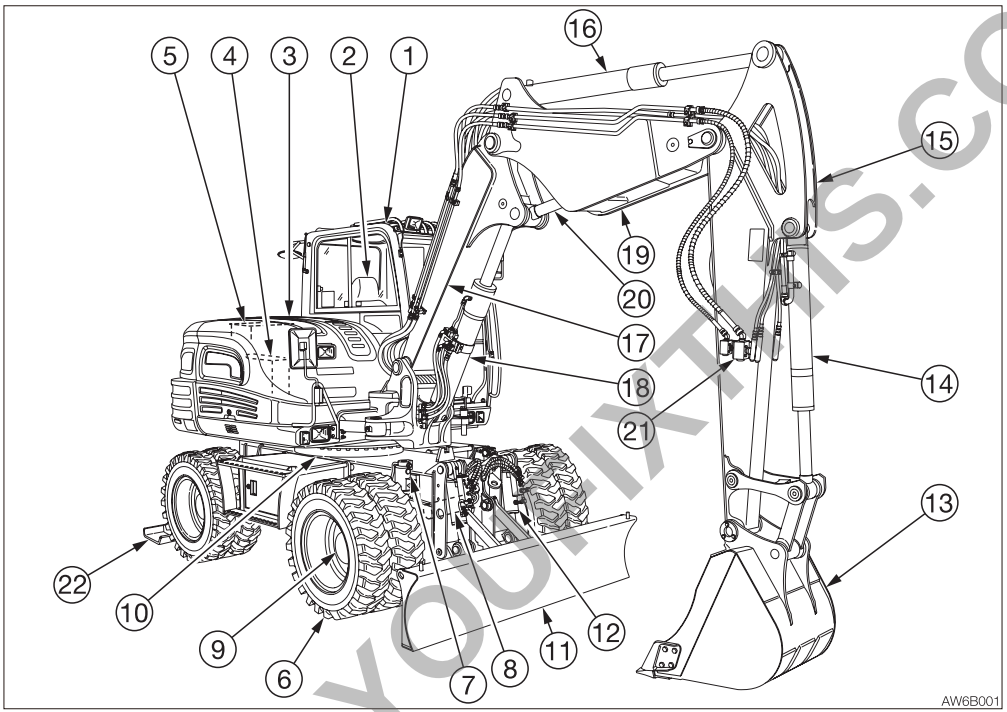
NAMES OF COMPONENTS

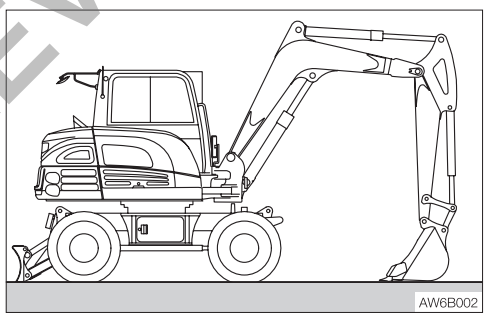


Upperstructure
1. Cab
2. Seat
3. Engine hood
4. Fuel tank
5. Hydraulic oil tank

Undercarriage
6. Tire
7. Ram lock cylinder
8. Steering device
9. Hub
10. Chassis

Working equipment
11. Dozer blade
12. Blade cylinder
13. Bucket
14. Bucket cylinder
15. Arm
16. Arm cylinder
17. Boom
18. Boom cylinder
19. Second boom
20. Second boom cylinder
21. Auxiliary hydraulic line
22. Outrigger (If equipped)

Mono boom



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OPERATION



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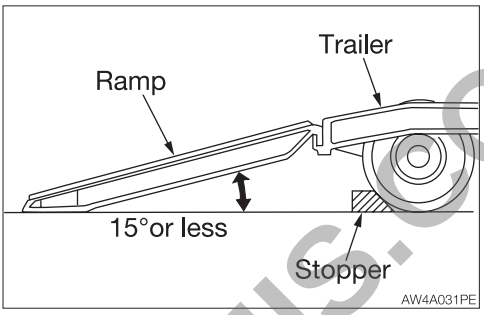
LOADING AND UNLOADING

⚠ WARNING

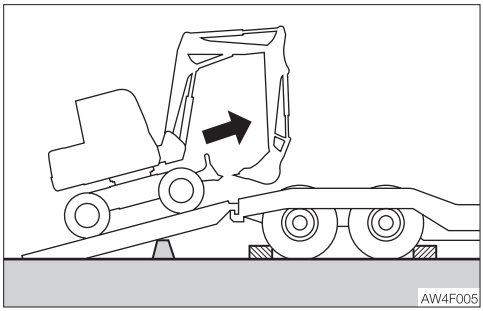
The machine may roll or tip over or fall while being loaded or unloaded. Take the following precautions:

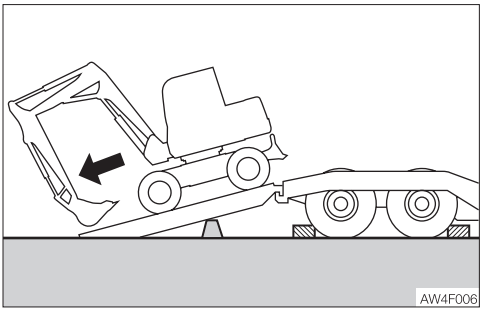
- **Select a firm, level surface and keep sufficient distance from road shoulders.**
- **Secure ramps of adequate strength and size to the truck bed. The slope of the ramps must not exceed 15°.**
- **Never use the working equipment to load or unload the machine. Doing so may result in tipping over or falling down of the machine.**
- **Keep the truck bed and loading ramps clean of oil, soil, ice, snow and other materials to prevent the machine from sliding sideways. Clean the tires too.**
- **Chock the transporter wheels to prevent movement.**
- **When traveling on the uneven road or sharp slope, turn off the deceleration switch and the auto-deceleration switch. If the machine is operated on such roads with these switches turned on, the engine speed may increase, causing the machine to travel unexpectedly rapidly (for machines with the deceleration and auto-deceleration switches).**
- **When being loaded or unloaded, travel slowly in low gear by following the signal from the signal person.**
- **Never change courses on the ramp.**
- **Do not slew on the ramp. The machine may tip over.**
- **When slewing on the truck bed, do it slowly as the footing should be unstable.**

When loading or unloading the machine, be sure to use ramps or a platform and follow the procedure below.



1. Set the parking brake on the transporter and chock the wheels.
2. Fix the ramps securely to the truck bed. The slope of the ramps must not exceed 15°.
3. Align the center of the truck bed with the center of the machine, and of the ramp with the center of the tires.
4. Make sure the dozer blade does not hit the ramps.
5. Lower the hoe attachment as far as possible without letting it touch the transporter.
6. Decrease the engine speed.





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GENERAL

MAINTENANCE OVERVIEW

To keep the machine in good condition and use if for a long period, perform the inspection and maintenance properly and safely following the procedures recommended by this manual.

The inspection and maintenance items are divided into groups according to the machine's total operating time: every 10 hours (walk-around and daily inspection), every 50 hours, every 250 hours, etc. Refer to the hour meter readings to determine when to schedule an inspection and maintenance. Items for which it is not possible to determine the inspection and maintenance interval are included under "When Required".

When operating the machine in extremely harsh environments (with high dust levels or high temperatures), inspection and maintenance should be performed earlier than the times specified on the Maintenance List.

CAUTIONS ON MAINTENANCE

Do not perform any other inspection and maintenance works than those listed in this manual.
For works not listed in this manual, ask your sales or a service dealer for help.

Keep the machine clean

- Clean the machine before performing inspection and maintenance and try to keep it clean.
- Stop the engine before washing the machine. Cover the electrical parts so that water cannot enter. Water on electrical parts could cause short-circuits or malfunctions. Do not use water or steam to wash the battery, electronic control components, sensors, connectors or the operator's compartment.

Fuel, lubricant and grease

- Choose fuel, lubricant and grease by following to the "Fuel and lubricant table".
- Use fuels, lubricants and greases which do not contain water, and be careful to keep dirt out when changing or replenishing fuel, lubricant or grease.
- Store fuels, lubricants and greases in the prescribed places and in such a way that no water or dirt can get in them.

Cautions on refueling

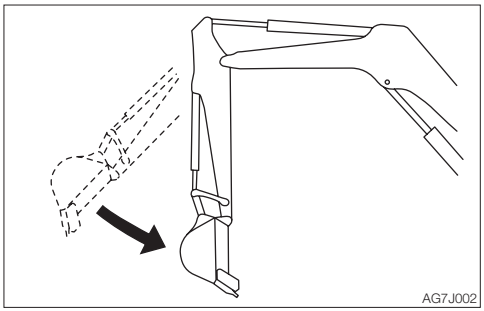
- If the port includes a strainer, do not remove the strainer when fueling.
- After fueling, be sure to securely tighten the fuel filler cap.
- Do not add more than the specified amount of fuel.

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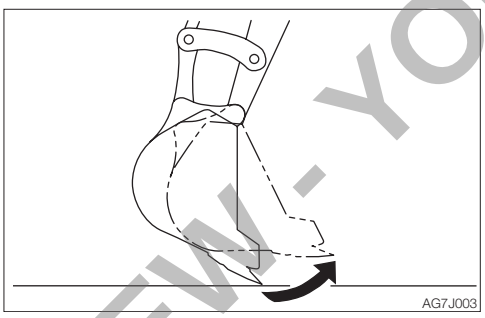
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SYMPTOMS THAT ARE NOT MALFUNCTIONS

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.

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SPECIFICATIONS



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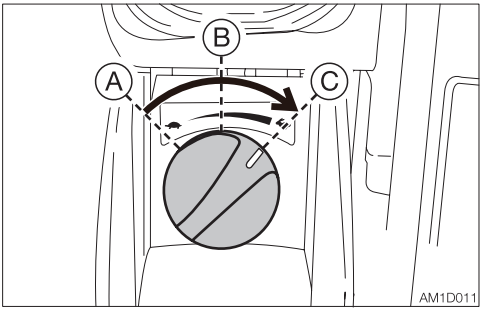
OPTIONS



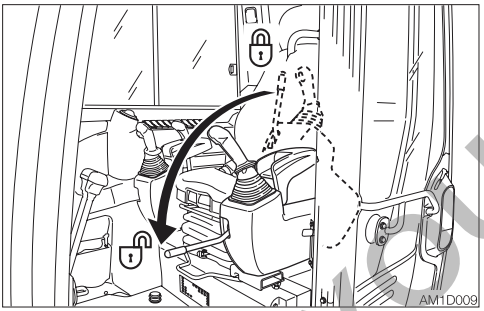
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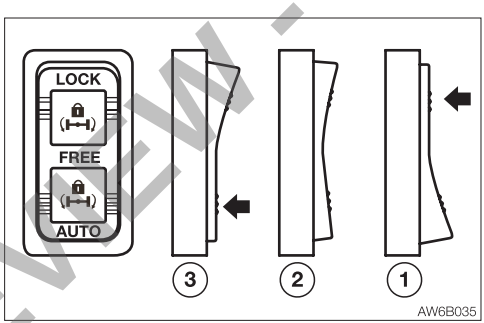
Moving forward and in reverse



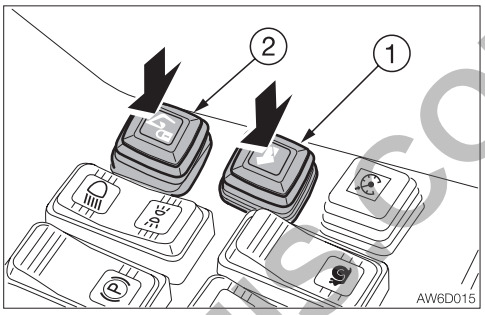
1. Increase the engine speed.



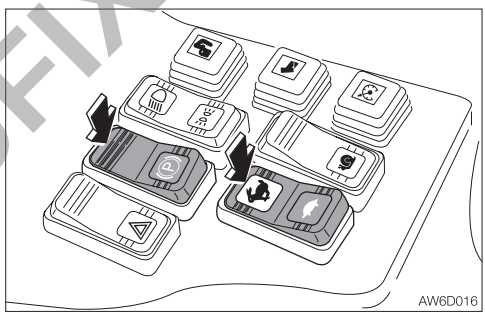
2. Fully lower the safety lock lever to disengage the lock.



3. Press the ram lock switch to the free position to disengage the ram lock.



4. Press the travel pedal button (1) while the brake pedal is depressed.
   (When entering the foot accelerator mode)
5. Press the attachment lock button (2) to lock the working equipment.



6. Press the low/high-speed travel switch to choose the proper speed.
7. Press the parking brake switch (the side without a symbol) to disengage the parking brake.
8. Operate the travel pedal as follows.

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Error code		Error details	DTC
SPN	FMI		
132	2	Air flow sensor error	P0101
	3	Air flow sensor error (high-voltage error)	P0103
	4	Air flow sensor error (low-voltage error)	P0102
157	3	Common rail pressure sensor error (high-voltage error)	P0193
	4	Common rail pressure sensor error (low-voltage error)	P0192
	0	Common rail pressure rise (2nd stage)	P0088
	15	Common rail pressure error (over pumping)	P0089
	16	Common rail pressure rise (1st stage)	P0088
158	3	Battery line high-voltage error	P0563
	4	Battery line low-voltage error	P0562
172	3	Air-intake temp. sensor error (high-voltage error)	P0113
	4	Air-intake temp. sensor error (low-voltage error)	P0112
173	0	Exhaust temp. sensor 1 high-temp. error (CSF inlet)	P0426
	1	Exhaust temp. sensor 1 low-temp. error (CSF inlet)	P0426
	3	Exhaust temp. sensor 1 error (CSF inlet) (high-voltage error)	P0428
	4	Exhaust temp. sensor 1 error (CSF inlet) (low-voltage error)	P0427
174	2	Fuel temp. sensor error	P0181
	3	Fuel temp. sensor error (high-voltage error)	P0183
	4	Fuel temp. sensor error (low-voltage error)	P0182
190	0	Engine overspeed	P0219
628	2	ROM error	P0601
633	7	Pressure limiter open	P0087
636	2	Cam sensor error (no signal)	P0340
	2	Cam sensor error (abnormal signal)	P0340
	7	Cam-Crank phase error	P0016
639	2	CAN timeout error	U0101
	19	CAN BusOff error	U0073
651	5	Injector #1 failure	P0201
652	5	Injector #2 failure	P0202
653	5	Injector #3 failure	P0203
654	5	Injector #4 failure	P0204
675	5	Glow lamp failure	P0381
676	5	Glow relay failure	P0380
677	5	Starter cut relay failure	P0615

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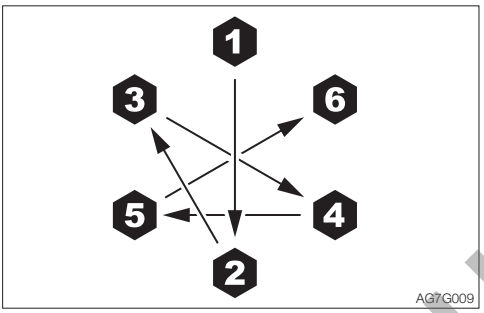
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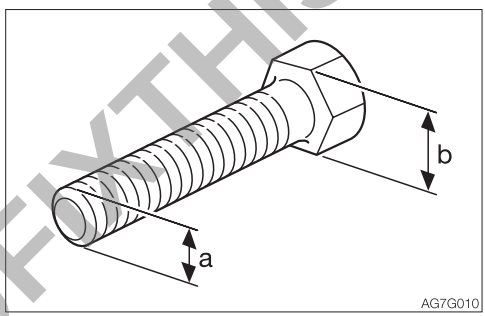
LIST OF TIGHTENING TORQUES

Nuts and Bolts (for ISO strength category 10.9)

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

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





Classification	Head width (b)	Size (a) x pitch	Tightening torque	
			General connection points	
	mm	mm	N·m	ft-lb.
Coarse	10	M6 x 1.0	9.8±0.5	7.2±0.4
	12, 13	M8 x 1.25	22.6±1.1	16.6±0.8
	14, 17	M10 x 1.5	47.1±2.4	34.7±1.7
	17, 19	M12 x 1.75	83.4±4.1	61.5±3.0
	19, 22	M14 x 2.0	134.4±6.7	99.1±4.9
	22, 24	M16 x 2.0	207.9±10.4	153.3±7.7
	27, 30	M20 x 2.5	410.9±20.5	303.1±15.1
Fine	12, 13	M8 x 1.0	24.5±1.2	18.1±0.9
	14, 17	M10 x 1.25	50±2.5	36.9±1.8
	17, 19	M12 x 1.5	87.3±4.3	64.4±3.2
	19, 22	M14 x 1.5	135.3±6.8	99.8±5.0
	22, 24	M16 x 1.5	220.6±11	162.7±8.1
	27, 30	M20 x 1.5	452.1±22.6	333.4±16.6

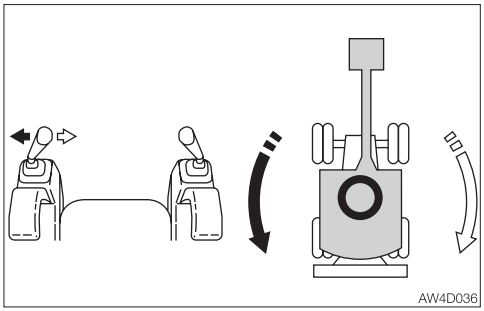
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Slewing

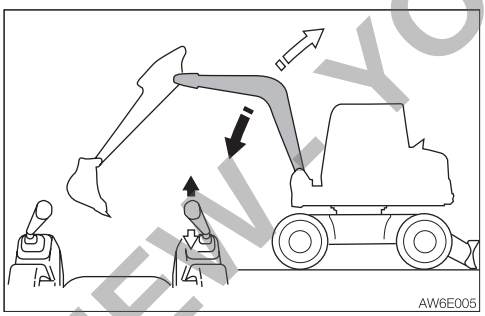
⚠ WARNING

Check the surrounding area for safety before slewing.



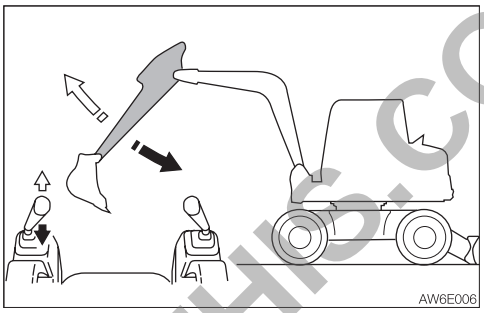
➡ Upperstructure slew left:
Tilt the left operating lever to the left.
⇨ Upperstructure slew right:
Tilt the left operating lever to the right.

Operating the boom



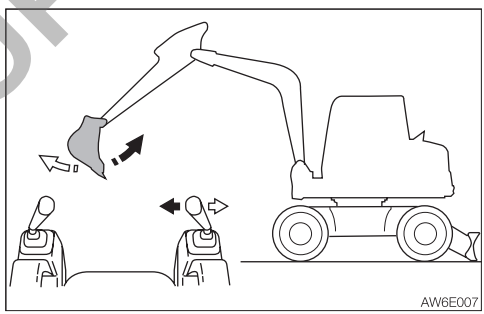
➡ Boom lower:
Tilt the right operating lever forward.
⇨ Boom raise:
Tilt the right operating lever backward.

Operating the arm



➡ Arm in:
Tilt the left operating lever backward.
⇨ Arm out:
Tilt the left operating lever forward.

Operating the bucket



➡ Bucket load:
Tilt the right operating lever to the left.
⇨ Bucket dump:
Tilt the right operating lever to the right.

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ENGINE ERROR CODE LIST

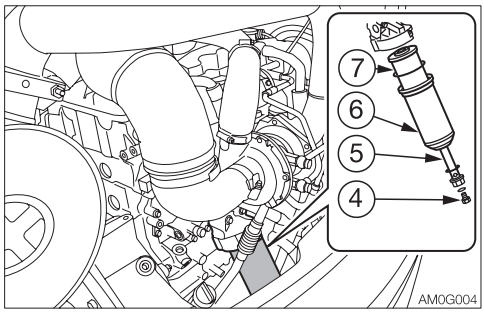
If an error code appears on the display, consult your sales or service dealer.

Error code		Error details	DTC
SPN	FMI		
81	0	DPD differential pressure high	P2453
	1	DPD differential pressure low	P2452
	2	Zero-point learning error in the DPD differential pressure sensor	P2456
	3	DPD differential pressure sensor error (high-voltage error)	P2455
	4	DPD differential pressure sensor error (low-voltage error)	P2454
91	3	Accelerator sensor 1 error (high-voltage error)	P2123
	4	Accelerator sensor 1 error (low-voltage error)	P2122
	2	Accelerator sensor 1-2 comparison error	P2138
	3	Accelerator sensor 2 error (high-voltage error)	P2128
	4	Accelerator sensor 2 error (low-voltage error)	P2127
100	3	Engine oil pressure sensor error (high-voltage error)	P0523
	4	Engine oil pressure sensor error (low-voltage error)	P0522
102	0	Turbo boost pressure, over	P0234
	1	Turbo boost pressure, under	P0299
	3	Boost pressure sensor error (high-voltage error)	P0238
	4	Boost pressure sensor error (low-voltage error)	P0237
105	3	Turbo boost temp. sensor error (high-voltage error)	P1113
	4	Turbo boost temp. sensor error (low-voltage error)	P1112
108	2	Barometric sensor error	P2227
	3	Barometric sensor error (high-voltage error)	P2229
	4	Barometric sensor error (low-voltage error)	P2228
110	0	Engine overheat	P0217
	2	Water temp. sensor error	P0116
	3	Water temp. sensor error (high-voltage error)	P0118
	4	Water temp. sensor error (low-voltage error)	P0117

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Engine oil filter



7. Place a pan for catching the waste oil under the engine oil filter.
8. Remove the drain plug (4) and drain the oil from the filter case (6).
9. Loosen the bolt (5) and remove the filter case (6).
10. Clean the inside of the filter case (6) and install a new element (7).
11. Clean the surface to install the filter stand and coat the new O-rings with thin oil.
12. Install the case (6) and secure it with the bolt (5).
    - Tightening torque: 44.1 N·m (32.5 ft-lb.)
13. Install the drain plug (4).
    - Tightening torque: 24.5 N·m (18.1 ft-lb.)
14. 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. It takes around 15 minutes for all of the added oil to go down to the oil pan.
15. Tighten the oil filler cap (2).
16. Start the engine, run it at low idle for about 5 minutes, and then stop it.
17. After about 10 to 20 minutes, inspect the oil level.

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GENERAL PRECAUTIONS

It is your responsibility to observe all pertinent laws and regulations and to follow the manufacture's instructions on machine operation, inspection and maintenance.

Virtually all accidents occur as the result of a failure to observe basic safety rules and precautions.
Most accidents can be prevented by identifying the potentially hazardous situations beforehand.
Read and understand all safety messages which describe how to prevent accidents.
Do not operate the machine until you are sure that you have gained a proper understanding of its operation, inspection and maintenance.

Observe all safety rules

- Operation, inspection and maintenance of this machine must be performed only by a trained and qualified person.
- All rules, regulations, precautions and safety procedures must be understood and followed when performing operation, inspection and maintenance of this machine.
- Do not perform any operation, inspection and maintenance of this machine when under the adverse influence of alcohol, drugs, medication, fatigue, or insufficient sleep.

When a problem is found on the machine

If any problem (noise, vibration, smell, disorder of instrument, smoke, oil leak, wrong indication of alarm or unusual indication in the instrument cluster, etc.) is detected during the operation or inspection and maintenance of the machine, immediately inform your sales or service dealer and take proper actions. Do not operate the machine until the trouble is cleared.

Operating temperature range

To maintain the performance of machine and to prevent it from early wear, observe the following operating conditions.

- Do not operate the machine if the ambient temperature is higher than +45°C (+113°F) or lower than –15°C (+5°F).
  - If operated at an ambient temperature of higher than +45°C (+113°F), the engine may overheat and cause the engine oil to degrade. Also, the hydraulic oil may become very hot, causing damage to the hydraulic equipment.
  - If operated at an ambient temperature of lower than –15°C (+5°F), the parts made of rubber such as gaskets may get hardened to cause an early wear or damage to the machine.
  - If the machine is to be used outside the ambient temperature range described above, consult your sales or a service dealer.

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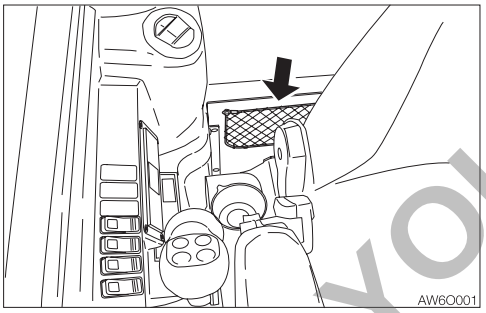
INTRODUCTION

FOREWORD

This manual describes operation, inspection and maintenance of the machine, as well as safety instructions to be heeded during these operations.
If you have any questions about the machine, please contact a Takeuchi sales or service outlet.

MANUAL STORAGE COMPARTMENT

A compartment for storing this manual is provided at the position shown on the diagram below.

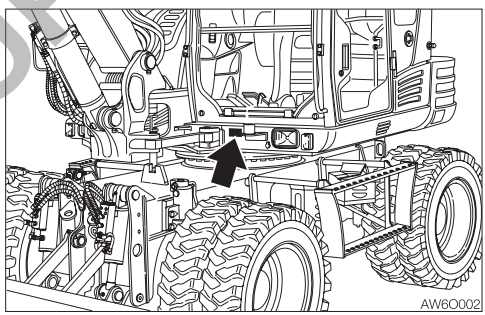


1. The storage place is located at the back of the seat.
2. After using the manual, place it in the plastic pouch and store it back in the manual storage compartment.

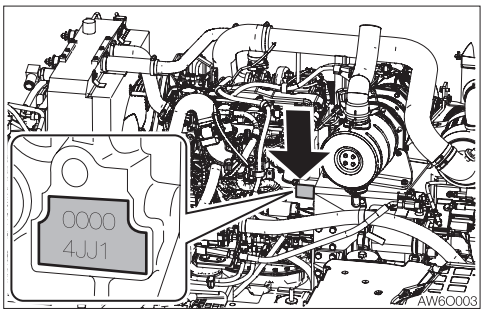
SERIAL NUMBERS

IMPORTANT: Do not remove the machine name plate with the serial number. Check the serial numbers of the machine and engine and write them down in the spaces below.

Machine number:



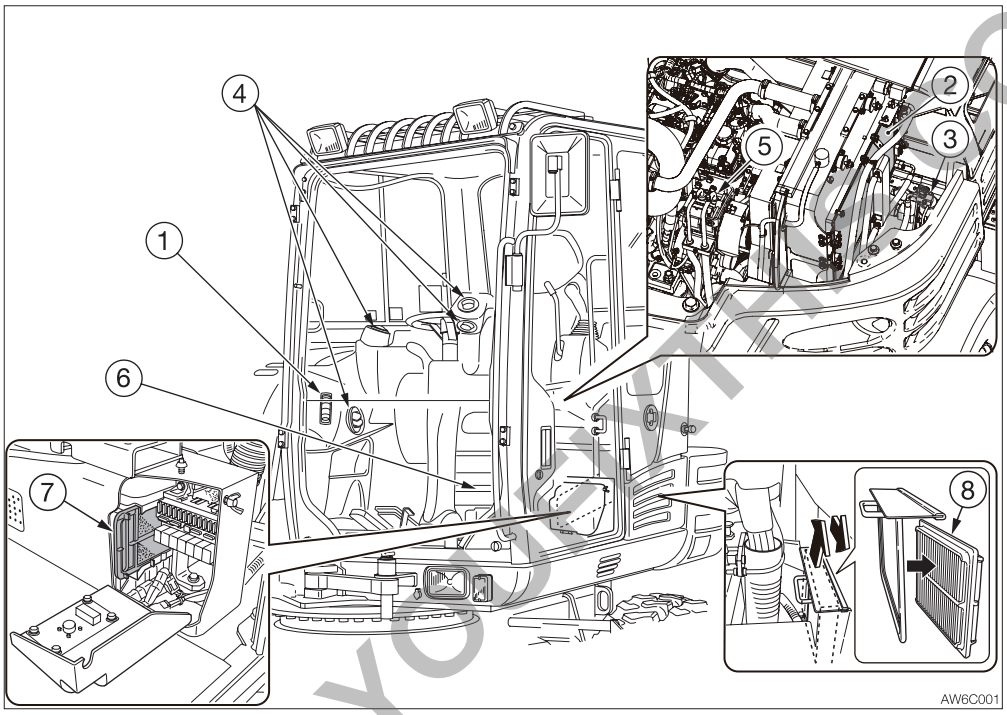
Engine number:



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NAMES OF COMPONENTS



1. Defroster
2. Condenser
3. Receiver dryer
4. Outlets
5. Compressor
6. Air conditioner unit
7. Circulation filter
8. Ventilation filter

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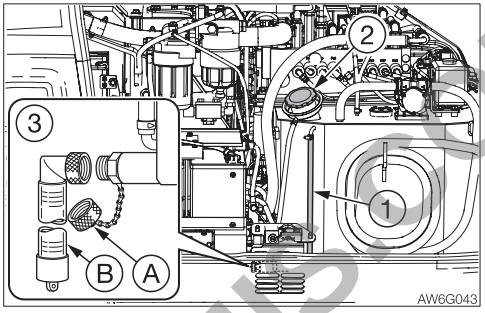
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DRAINING THE WATER FROM THE FUEL TANK

⚠ WARNING

- **Do not smoke or permit open flames while handling fuel or working on the fuel system.**
- **Never remove the fuel cap or add fuel when the engine is running or still hot. Do not spill fuel on the hot surface of the machine.**
- **Fill the fuel tank in a well ventilated place.**
- **Do not fill the fuel tank to capacity. Allow room for oil expansion.**
- **Clean up spilled fuel immediately.**
- **Securely tighten the fuel filler cap.**
- **Use the correct grade of fuel for the operating season.**
- **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.**

Do the draining operation before starting the machine.



1. Open the right side cover.
2. Remove the fuel filler cap (2).
3. Place a pan under the drain valve (3).
4. Remove the cap (A), install the connector (B), and then drain the water and sediment buildup in the bottom of the tank (the water comes out when the screw is tightened).
5. Remove the connector (B) and install the cap (A).
6. Add fuel while watching the sight gauge (1).
7. Tighten the fuel filler cap (2).
8. Close the right side cover and lock it with the key.
9. Bleed air.

Bleeding air from the fuel system
Refer to “Bleeding air from the fuel system” on page 6-8.

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

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