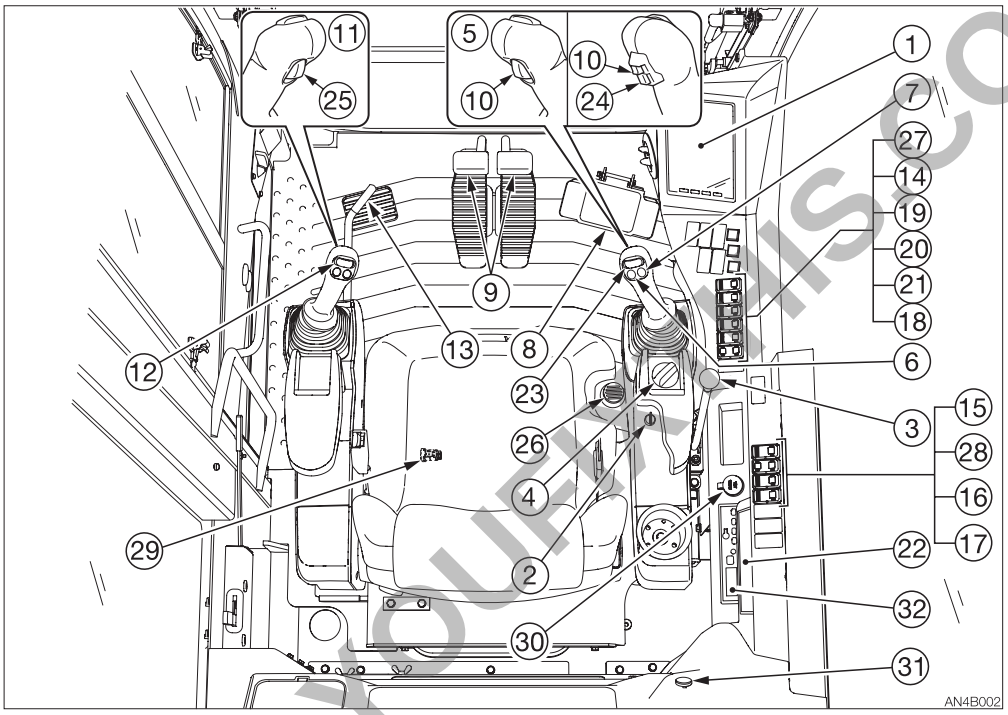


1. Multi-information display
2. Starter switch
3. Blade lever
4. Throttle controller
5. Right operating lever
6. Horn button
7. Deceleration button
8. Boom swing pedal
9. Travel levers/Pedals
10. Travel speed button
11. Left operating lever
12. Auxiliary 1st switches
13. Safety lock lever
14. Light switch
15. Detent mode switch
16. Lift overload warning switch*
17. Beacon lamp switch*
18. Power/Highland mode switch
19. Wiper switch
20. Washer switch
21. Automatic deceleration switch*
22. AC Control panel
23. Auxiliary 2nd/4th switch*
24. Auxiliary 2/4 select button*
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26. Third auxiliary hydraulic switch*
27. Standstill regeneration/stop switch
28. Auxiliary 1st auto tank switch*
29. Engine shutdown switch
30. Power supply socket (24V)
31. Power supply socket (12V)
32. Radio

*: Subject to the specifications or optional products selected

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

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VEHICLE ERROR CODE LIST

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

Error code	Error details
9	Impossible to sense ACC key
402	CAN 0 communication error
502	CAN communication error (ECM)
602	CAN communication error (cluster gauge)
612	CAN communication error (OX)
652	CAN communication error (IOX)
702	CAN communication error (HVAC)
1703	Main power supply voltage error (too high)
1704	Main power supply voltage error (too low)
1713	OX power supply voltage error (too high)
1714	OX power supply voltage error (too low)
1733	IOX power supply voltage error (too high)
1734	IOX power supply voltage error (too low)
2503	MC sensor voltage error (too high)
2504	MC Sensor voltage error (too low)
2513	IOX sensor voltage error (too high)
2514	IOX sensor voltage error (too low)
3300	Alternator charge faulty
3401	Engine oil pressure error
3500	Overheat
3600	Air cleaner clogged
3700	Water separator
3820	Hydraulic oil temp. too high
3823	Hydraulic oil temp. sensor voltage error (too high)
3824	Hydraulic oil temp. sensor voltage error (too low)

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BASIC SPECIFICATIONS

Type				Cab
MASS				
Operating mass	kg (lb)	Rubber crawlers		15095 (33280)
		Steel crawlers		15120 (33334)
PERFORMANCE				
Bucket capacity (Standard bucket)	m^3 (cu. ft.)	Heaped		0.45 (15.89)
		Struck		0.34 (12.01)
Slew speed	min^{-1} (rpm)			10.8 (10.8)
Travel speed	km/h (mph)	Rubber crawlers	1st	3.1 (1.93)
			2nd	5.5 (3.42)
		Steel crawlers	1st	—
			2nd	—
Gradeability	(degrees)			35
Ground pressure	kPa (psi)	Rubber crawlers		47.1 (6.83)
		Steel crawlers		47.7 (6.92)
Noise level dB (A)		Sound power level		L_{WA} 98
		Emission sound pressure level at the operator's position (ISO 6396,2008:)		L_{pA} —
ENGINE				
Manufacturer and model				DEUTZ TCD3.6L4
Rated output	Net (ISO 14396)	kW/min^{-1} (hp/rpm)		85/2000 (113.9/2000)
Displacement		ml (cu.in.)		3621 (221)
Starter		V-kW		24-4.0
Alternator		V-kW		28-2.24
Battery (IEC 60095-1)		V-A·h		12-90 X 2

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- Turn on the light switch to check if the boom light, front light, side lights, tail lamps and meter light turn on.
- Check the fuel level.
- Check the DEF/AdBlue® level.

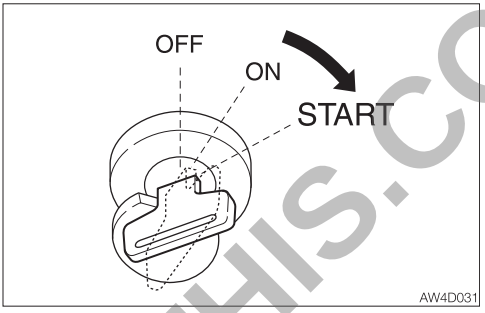
STARTING THE ENGINE

⚠ WARNING

- **Clear all personnel from the work area.**
- **Sound the horn to warn people around the machine.**

IMPORTANT: Do not run the starter motor for more than 20 consecutive seconds. If the engine fails to start, wait for 1 minute, and then try again to start.
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.
IMPORTANT: If the error lamp lights up to indicate that the engine has failed to start, the electronic controller on the engine initiates the start lock to protect the engine.
To cancel the start lock, leave the key in the OFF positon for approximately two minutes.

Normal starting



1. Turn the key to the START position and start the engine.
   The engine does not start unless the safety lock lever is in the locked position at this point.
2. Once the engine starts, release the key.
   The key automatically returns to the ON position.
3. Check that the warning lamps are off.
   For safety reasons, it is designed that the deceleration function is activated to set the engine revolutions to low idling whenever the engine is started.
   Cancel the deceleration mode by pressing the deceleration button as necessary.
4. Warm up the engine.
   Refer to “Warming up the engine” on page 3-6.
5. After the completion of the warming up, press the deceleration button to cancel the deceleration mode.

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KWP-Code	SPN	FMI	Error details
300	523605	9	Timeout Error of CAN-Receive-Frame TSC1AE; Traction Control
301	523606	9	Timeout Error of CAN-Receive-Frame TSC1AR; Retarder
305	898	9	Timeout Error of CAN-Receive-Frame TSC1TE; Setpoint
306	520	9	Timeout Error of CAN-Receive-Frame TSC1TR; control signal
360	523982	0	Power stage diagnosis disabled; high battery voltage
361	523982	1	Power stage diagnosis disabled; low battery voltage
376	630	12	Access error EEPROM memory (delete)
377	630	12	Access error EEPROM memory (read)
378	630	12	Access error EEPROM memory (write)
381	411	4	Physical range check low for EGR differential pressure
387	523612	12	Internal software error ECU; injection cut off
389	190	0	Engine speed above warning threshold (FOC-Level 1)
390	190	11	Engine speed above warning threshold (FOC-Level 2)
391	190	14	Engine speed above warning threshold (Overrun Mode)
417	171	3	Sensor error SCR-System environment temperature; DPF-System air inlet temperature; signal range check high
418	171	4	Sensor error SCR-System environment temperature; DPF-System air inlet temperature; signal range check low
419	190	8	Sensor camshaft speed; disturbed signal
420	190	12	Sensor camshaft detection; out of range, signal disrupted; no signal
421	190	2	Offset angle between crank- and camshaft sensor is too large.
422	190	8	Sensor crankshaft detection; out of range, signal disrupted; disturbed signal
423	190	12	Speed detection; out of range, signal disrupted Sensor crankshaft speed; no signal
464	97	3	Sensor error water in fuel; signal range check high
465	97	4	Sensor error water in fuel; signal range check low.
472	94	3	Sensor error low fuel pressure; signal range check high
473	94	4	Sensor error low fuel pressure; signal range check low
474	94	1	Low fuel pressure; warning threshold exceeded

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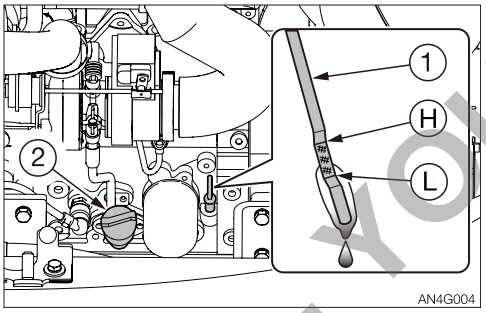
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INSPECTING AND REPLENISHING THE ENGINE OIL

⚠ WARNING

- **Be sure to stop the engine before performing the inspection and maintenance.**
- **The parts of the machine are hot immediately after the engine is stopped. Be careful not to burn yourself.**
- **Be aware of the high-temperature engine oil. You could burn yourself with it.**

Inspection



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

Replenishing

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

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KWP-Code	SPN	FMI	Error details
101	111	1	Coolant level too low
121	1109	2	Engine shut off demand ignored
122	523698	11	Shut off request from supervisory monitoring function
129	3224	2	DLC Error of CAN-Receive-Frame AT1IG1Vol; NOx sensor.
130	3224	9	Timeout Error of CAN-Receive-Frame AT1IG1Vol; NOx sensor.
134	523939	9	Broadcast Announce Message of the calibration message of the upstream catalytic NOx sensor has failed.
138	3234	2	DLC Error of CAN-Receive-Frame AT1O1Vol NOx
139	3234	9	Timeout Error of CAN-Receive-Frame AT1OG1Vol.
140	523941	9	Timeout Error (BAM to packet) for CAN-Receive-Frame AT1OGCVol2.
141	523942	9	Calibration message 1 of the after catalyst NOx sensor has failed.
142	523943	9	Timeout Error (PCK2PCK) for CAN-Receive-Frame AT1OGCVol2.
164	523211	9	Timeout Error of CAN-Receive-Frame EBC1
167	523704	12	Timeout Error of CAN-Transmit-Frame EEC3
168	523935	12	Timeout Error of CAN-Transmit-Frame EEC3VOL1; Engine send messages
169	523936	12	Timeout Error of CAN-Transmit-Frame EEC3VOL2; Engine send messages
171	523212	9	Timeout Error of CAN-Receive-Frame ComEngPrt; Engine Protection
172	523741	14	Engine shut off request through CAN No detailed information!
179	523240	9	Timeout CAN-message FunModCtl; Function Mode Control
198	523216	9	Timeout Error of CAN-Receive-Frame PrHtEnCmd; pre-heat command, engine command
281	523766	9	Timeout Error of CAN-Receive-Frame Active TSC1AE
282	523767	9	Timeout Error of CAN-Receive-Frame Passive TSC1AE
283	523768	9	Timeout Error of CAN-Receive-Frame Active TSC1AR
284	523769	9	Timeout Error of CAN-Receive-Frame Passive TSC1AR
291	523776	9	Timeout Error of CAN-Receive-Frame TSC1TE - active
292	523777	9	Passive Timeout Error of CAN-Receive-Frame TSC1TE; Setpoint
293	523778	9	Timeout Error of CAN-Receive-Frame TSC1TR
294	523779	9	Passive Timeout Error of CAN-Receive-Frame TSC1TR

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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 multi-information display, 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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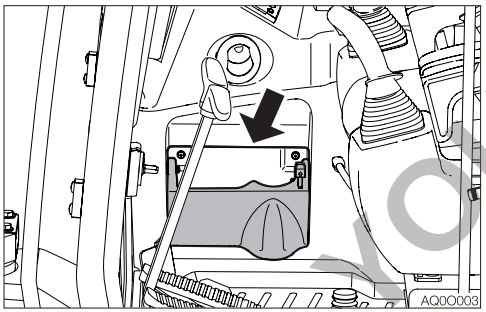
INTRODUCTION

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.

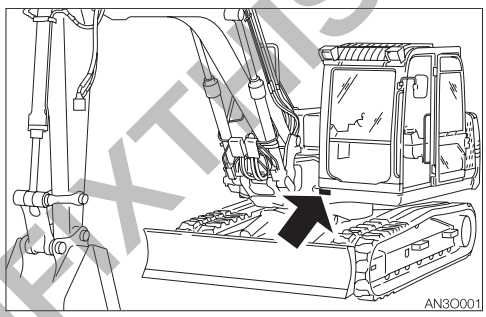


1. Open the cover behind the seat.
2. After using the manual, place it in the plastic pouch and store it back in the manual storage compartment.

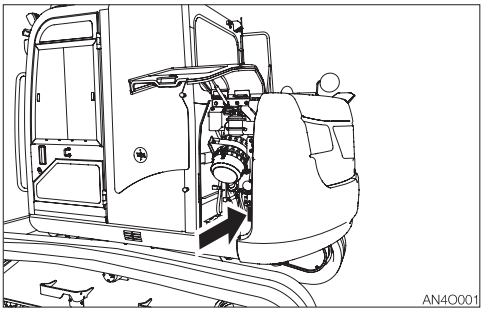
SERIAL NUMBERS

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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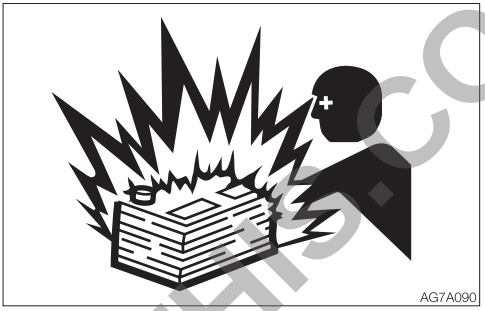
Handling of the accumulator



Be sure to handle the high-pressure nitrogen gas enclosed in the accumulator with care. If handled incorrectly, it could explode and cause serious injury. Strictly observe the following precautions:

- Do not disassemble.
- Do not allow flame near 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 service agent for help.

Disconnect the battery wiring



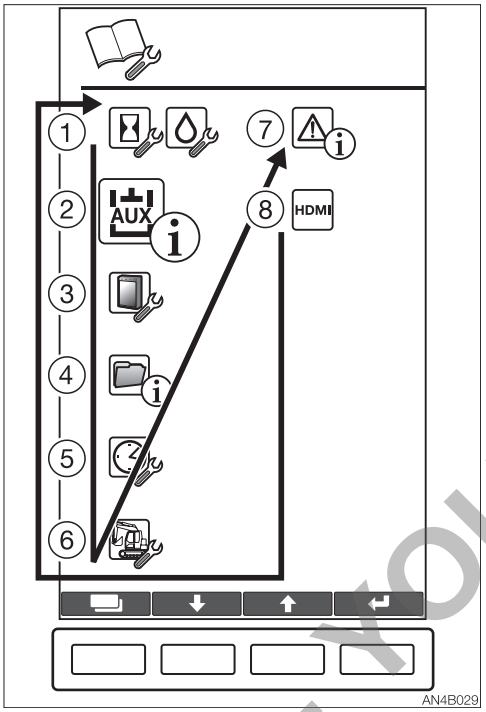
- Disconnect the battery wiring before working on the electrical system or doing electric welding. Disconnect the negative (–) battery cable first. When reconnecting, connect the negative (–) battery cable last.
- The SCR system operates for up to 2 minutes after the starter switch is turned to the OFF 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.

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SCREEN NAVIGATION

• Menu screen



Press and hold the Menu key while on the Home or the camera image screen for one second to switch to the Menu screen.

(1) Trip meter setting
(2) Auxiliary line flow rate display
(3) LCD setting
(4) Data display
(5) Date and time setting
(6) Machine setting
(7) Error code display
(8) HDMI input image

Use the Up (↑) or Down (↓) key to go to the desired item to set, and then press the Enter key to confirm. (The selected item is displayed enlarged.) Press the Menu key to return to the Menu screen.
The wrench symbol indicates that “the setting can be edited” and the (i) mark indicates information only.

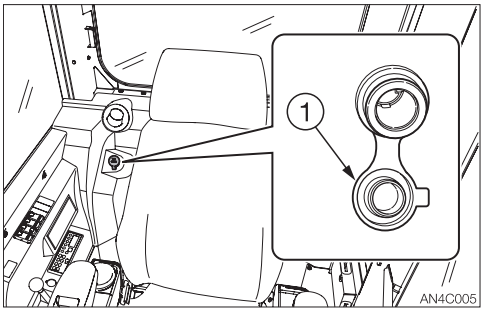
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12 V POWER SOCKET

⚠ WARNING

Use only those electric products which comply with the specifications of this socket.

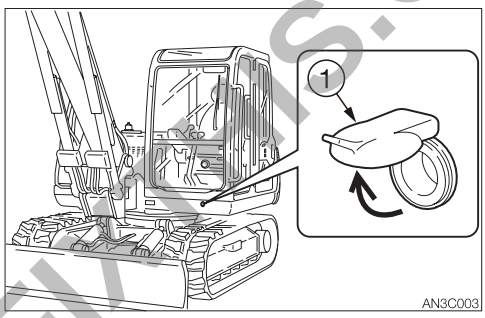


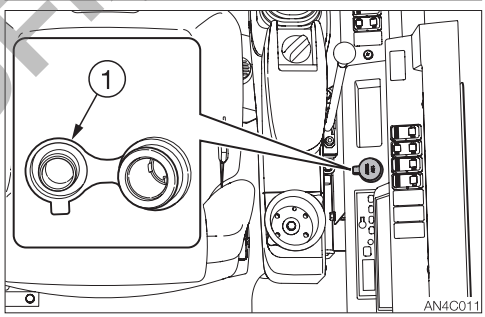
Use this socket to connect the 12 V power supply. When using, be careful not to exceed 12 V/5 A.
To use, open the cap (1).

24 V EXTERNAL POWER SOCKETS

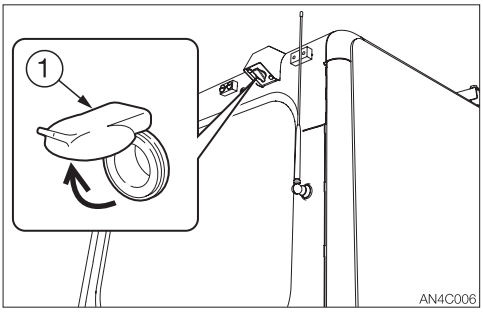
⚠ WARNING

Use only those electric products which comply with the specifications of these sockets.





For beacon



Use these sockets to connect the external power supply. When using, be careful not to exceed 24 V/5 A.
To use, open the cap (1).

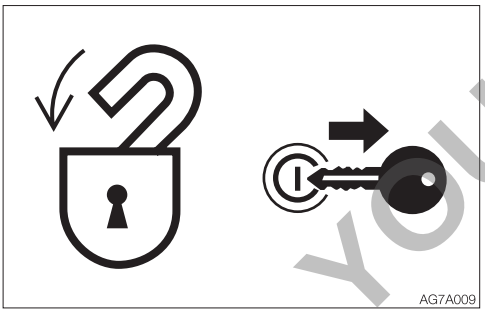
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INSPECTION AND CHECKS AFTER STOPPING THE ENGINE

1. Check for oil or water leak and inspect the working equipment, covers and undercarriage. If any irregularities are found, repair.
2. Fill up the fuel tank.
   Refer to “Inspecting the fuel level” on page 5-27.
3. Remove any paper scraps or dirt from the engine room.
4. Remove any mud from the undercarriage.

Locking
Be sure to lock the following places:



- Cab door
- Fuel filler cap
- Covers

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INSPECTING AND CLEANING THE AIR CLEANER

⚠ WARNING

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

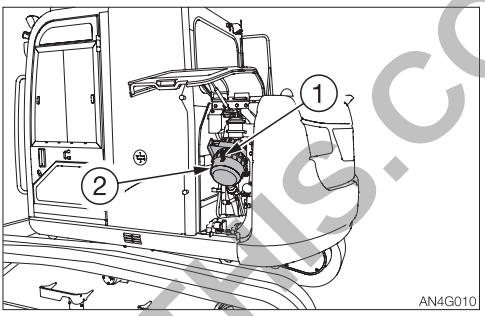
IMPORTANT: Be careful not to scratch the element. Do not use an element if it is damaged.
IMPORTANT: When operating the machine in very dusty places, perform inspection and maintenance operations every day.
IMPORTANT: Be sure to install the element and dust cap securely. If not, dust could be drawn into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

Inspection

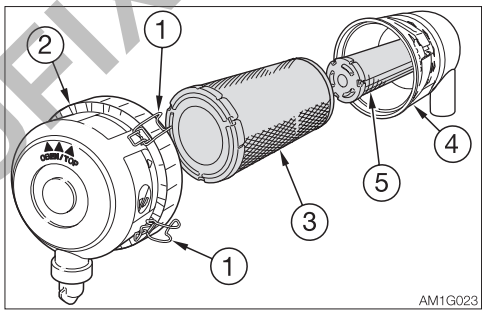
1. Turn the starter switch to the ON position.
2. Check the air cleaner warning lamp.
3. Clean the air cleaner if the warning lamp is flashing.
   If it is extremely dirty, replace the air cleaner element.
   Refer to “Replacing the air cleaner element” on page 5-61.

Cleaning the air cleaner

1. Open the left side cover.



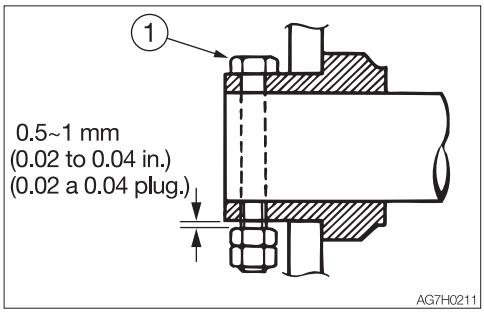
2. Loosen the clamps (1) and remove the dust cup (2).



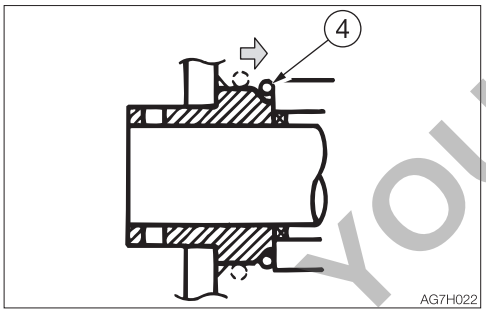
3. Clean the inside of the dust cup (2).
4. Remove the primary element (3).
   To prevent dirt from getting inside the engine, do not remove the secondary element (5).
5. Clean the inside of the body (4).

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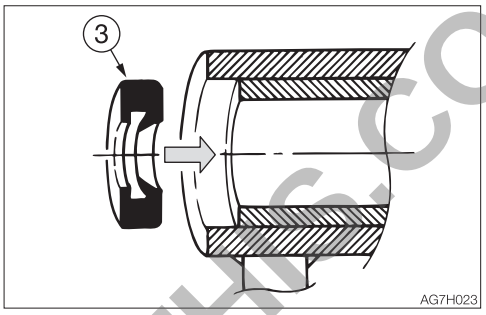


4. Align the turn prevention holes, and then install the bolt (1) and the nut. Be sure to leave a gap of about 0.5 to 1 mm (0.02 to 0.04 in.) between the nut and bucket bush, or the nut will come loose.



5. Adjust the gap between the bucket and the arm.
   Refer to “Adjusting the gap between the bucket and arm (If equipped)” on page 5-74.
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.

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OTHER SYMPTOMS

For symptoms not included in the table below or if the problem persists after the proper remedies have been taken, consult your sales or service dealer.

Symptoms	Major causes	Remedies
Left and right operating levers do not move smoothly	• Insufficient grease on the left and right operating levers	• Grease the levers. Refer to page 5-76.
Travel levers, blade lever and pedals do not move smoothly	• Insufficient grease on travel levers, blade lever and pedals	• Grease the levers and pedals. Refer to page 5-76.
Operation of hoe attachment, dozer blade, auxiliary hydraulics, slewing or traveling is not possible.	• Safety lock lever is raised (locked)	• Lower (release) the safety lock lever. Refer to page 2-62.
	• Fuse is blown	• Replace the fuse. Refer to page 6-7.
Digging force is insufficient	• Hydraulic oil level too low	• Add to the specified level. Refer to page 5-28.
	• Hydraulic oil is not warm enough	• Perform the warm-up. Refer to pages 3-10 to 3-11.
	• Air cleaner is clogged	• Clean the air cleaner. Refer to page 5-30.
	• Hydraulic oil is not of suitable type	• Replace the hydraulic oil. Refer to page 5-66.
Traveling is not possible or not smooth	• Stones or foreign objects are stuck	• Remove the foreign object.
Machine veers to the right/left	• Stones or foreign objects are stuck	• Remove the foreign object.
	• Crawler belt tension is faulty.	• Check and adjust (ask your sales or service dealer). Refer to pages 5-40 to 5-41.

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