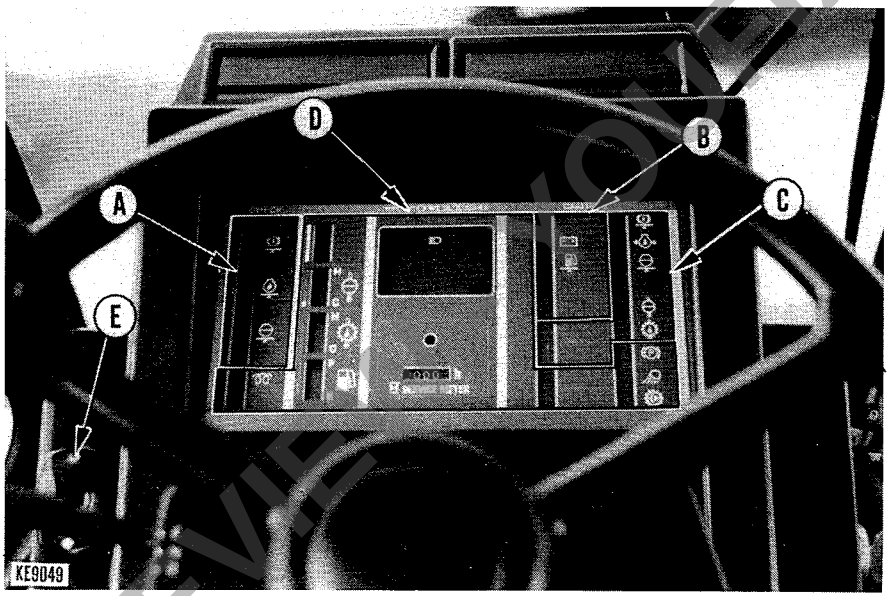
INSTRUMENTS AND CONTROLS

MONITOR PANEL

This monitor system consists of monitor lamp groups (ⒶⒷⒸ), meter group Ⓓ and warning lamp Ⓔ.



- To check the monitor system, turn the starting switch to ON before starting the engine. Then all the monitor lamps, the gauges and the warning lamp light up for about 3 seconds and the alarm buzzer sounds for about 2 seconds. Three figures, 188, are displayed on the speedometer while the monitor system is being checked. After that all lamps go off and the buzzer stops. If any monitor lamp does not light up, ask your Komatsu distributor to inspect that monitor lamp.

★ When the starting switch is turned to ON, if the directional lever is not at neutral, the warning lamp will flash and the alarm buzzer will continue to sound. If this happens, return the lever to neutral. The lamp will go out and the buzzer will stop.

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MAINTENANCE TABLE

No.	ITEM	SERVICE	PAGE
	CHECK BEFORE STARTING		
a	Walk-around check		45
b	Monitor panel	Check	45
c	Coolant	Check and supply	45
d	Engine oil pan	Check and supply	46
e	Fuel tank	Check and supply	47
f	Battery electrolyte	Check level	47
g	Dust indicator	Check	48
h	Brake oil tank	Check and supply	48
i	Water separator	Check	49
j	Parking brake	Check function	49
k	Foot brake	Check function	49
l	Horn	Check function	49
m	Lamps	Check function	49
n	Rear view mirror	Check	49
o	Exhaust gas and color	Check	49
p	Instrument	Check function	49
q	Steering wheel	Check play	49
r	Back-up buzzer	Check function	49
s	Electrical wiring	Check	49
	EVERY 50 HOURS SERVICE		
a	Fuel tank	Drain water and sediment	86
b	Tires	Check air pressure and damage	86
	EVERY 100 HOURS SERVICE		
a	Hydraulic tank	Check and supply	87
b	Air conditioner filter	Clean	87
c	Lubricating		88
-1	Rear axle pivot pin	Lubricate 2 points	88
	INITIAL 250 HOURS SERVICE		
a	Fuel filter	Replace cartridge	88

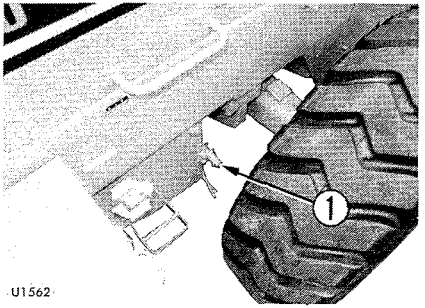
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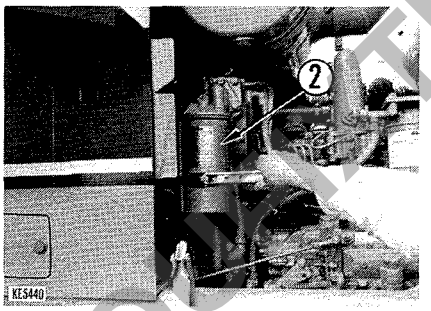
EVERY 250 HOURS SERVICE

★ **Maintenance for every 50 hours should be carried out at the same time.**

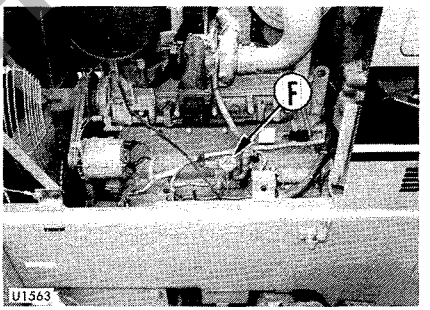
a. ENGINE OIL PAN AND FILTER



1. Open the engine hood and apply the hood lock at the side of the radiator.
2. Open oil filler (F) and remove drain plug (1) to drain oil. After draining, tighten the drain plug.
3. Using a filter wrench, remove cartridge (2) of the engine oil filter by turning it counterclockwise.



4. Clean the filter base and fill a new filter cartridge with engine oil. Then, apply engine oil or a thin coat of grease to the seal.
★ To install cartridge, bring its packing surface into contact with sealing surface of filter base and then tighten cartridge 1/2 to 3/4 turn by hand.
★ Be sure to fit a genuine Komatsu cartridge.



5. After replacing the cartridge, pour in the specified quantity of engine oil from oil filler (F).
6. After refilling with oil, start the engine and idle it for a while. Then stop the enigne and check the oil level.

★ Refill capacity: 19 ℓ

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TROUBLE SHOOTING GUIDE

This guide is not intended to cover every conditions, however many of the more common possibilities are listed.

ELECTRICAL SYSTEM

Lamp does not glow brightly even when engine runs at high speed.
Lamp flickers while engine runs.
- Check for loose terminals and open-circuit wiring.
- Adjust belt tension.

Charge monitor does not go out even when engine runs at high speed.
- Replace the alternator.
- Inspect and repair wiring.

Unusual noise is emitted from the alternator.
- Replace the alternator.

Starting motor does not turn when starting switch is turned on.
- Inspect and repair the wiring.
- Charge the battery.

The pinion of the starting motor keeps going in and out.
- Charge the battery.

Starting motor turns the engine sluggishly.
- Charge the battery.
- Replace the starting motor.

The starting motor disengages before the engine starts up.
- Check and repair the wiring.
- Charge the battery.

The engine pre-heating monitor does not flash.
- Check and repair wiring.
- Replace the heater relay.
- Replace the monitor.

The engine oil pressure monitor does not light up when engine is stationary (when the starting switch is in ON position.)
- Replace the monitor.
- Replace the monitor switch.

Charge monitor does not light up when the engine is stationary. (When the starting switch is in ON position.)
- Replace the monitor.
- Inspect and repair the wiring.

Outside the electrical intake air heater is not warm when touched with the hand.
- Check and repair wiring.
- Replace the electrical intake air heater.
- Check and repair the heater switch.

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FUEL, COOLANT AND LUBRICANTS

PROPER SELECTION OF FUEL, COOLANT AND LUBRICANTS

RESERVOIR	KIND OF FLUID	AMBIENT TEMPERATURE	CAPACITY (ℓ)	
		−22 −4 14 32 50 68 86 104 122°F −30 −20 −10 0 10 20 30 40 50°C	Specified	Refill
Engine oil pan	Engine oil	SAE 30 / SAE 10W / SAE 10W-30 / SAE 15W-40	24	19
Brake	Engine oil	SAE 10W / SAE 5W	1	1
Transmission case	Engine oil	SAE 10W	35	31
Hydraulic system	Engine oil	SAE 10W	120	60
Axle (Front and rear)		See NOTE (4)	each 24	each 24
Fuel tank	Diesel fuel	ASTM D975 No. 1 / ASTM D975 No. 2	200	—
Cooling system	Water	Add antifreeze	38	—

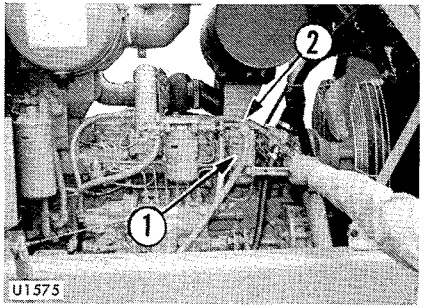
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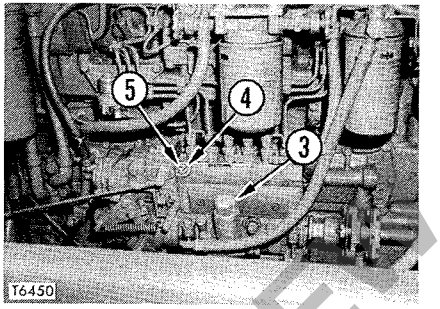
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EVERY 500 HOURS SERVICE

★ **Maintenance for every 50, 100 and 250 hours should be carried out at the same time.**

a. FUEL FILTER





1. Open the engine hood and apply the hood lock at the side of the radiator.
2. Using a filter wrench, remove cartridge (1) by turning it counterclockwise.
3. Clean the filter base, fill the new cartridge with fuel and refit it after applying a dab of oil to the gasket face.

★ To refit the cartridge, place the gasket face in contact with the seal face of the filter stand, then screw up the cartridge by hand 1/2 to 3/4 of a turn (be careful not to tighten it up excessively).

4. After replacing the cartridge, slacken off air vent plug (2).
5. Loosen the knob of feed pump (3) and move the pump up and down to draw off fuel until air ceases to come out of plug (2).
6. Tighten up air vent plug (2).
7. Hold the fuel injection pump sleeve (4) and loosen air vent plug (5). Bleed air from the fuel injection pump using the same procedure as described for the fuel filter.
8. After air bleeding, tighten plug (5) with holding sleeve (4).
   Push in feed pump knob (3) and tighten it.

★ After replacing the cartridge, start up the engine and check the filter seal face for possible fuel leakage.

★ Be sure to use a genuine Komatsu cartridge.

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ENGINE

The engine oil pressure monitor flashes when engine speed is raised after completion of warm-up.
- Add the oil to the specified level.
- Replace the oil element.
- Check oil leakage from the pipe or the joint.
- Replace the monitor.

Steam is emitted from the top part of the radiator (the pressure valve).
The radiator cooling water level monitor flashes.
- Supply the coolig water and check leakage.
- Adjust fan belt tension.
- Wash out inside of cooling system.
- Clean or repair the radiator fin.
- Replace the thermostat.
- Tighten the radiator cap firmly or replace the gasket of it.
- Replace the monitor.

The engine does not start when the starting motor is turned over.
- Add fuel.
- Repair where air is leaking into fuel system.
- Replace the injection pump or the nozzle.
- Check the valve clearance.
- Check engine compression pressure.
- Refer to the section of electrical system.

Exhaust gas is white or blue.
- Adjust to specified oil quantity.
- Replace with specified fuel.

Exhaust gas occasionaly turns black.
- Clean or replace the air cleaner element.
- Replace the nozzle.
- Check engine compression pressure.
- Clean or replace the turbocharger.

Combustion noise occasionally changes to breathing sound.
- Replace the nozzle.

Unusual combustion noise or mechanical noise.
- Replace with specified fuel.
- Check over-heating.
- Replace the muffler.
- Adjust valve clearance.

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No.	Supplier Name	**Engine Oil [CD]** SAE10W, SAE30, SAE10W/30, SAE15W/40	**Grease [Lithium-Base]** NLGI-2	**Anti-Freeze Coolant [Ethylene Glycol Base] [Permanent Type]**
1	AGIP	Diesel Sigma S Superdiesel Multigrade	GR M	–
2	AMOCO	Amoco 300	Super Permalube Grease	–
3	ARCO	Arco Fleet S-3 Plus	Litholine H-EP	–
4	BP	Vanellus C-3	Energrease L2 Energrease LS2	Antifreeze
5	CALTEX	RPM Delo 300 RPM Delo 400	Marfak Multipurpose Marfak All Purpose	AF Engine Coolant
6	CASTROL	RX Super CRD	LM Grease	Antifreeze
7	CHEVRON	Delo 300 Delo 400	Multi-Motive Grease Ultra-Duty Grease 2	–
8	ELF	Multiperformance 3C Performance 3C	Multi EPEXA 2	Glacelf
9	EXXON (ESSO)	Essolube D-3 Essolube XD-3 Essolube XD-3 Extra	Multi Purpose Grease Beacon EP2	–

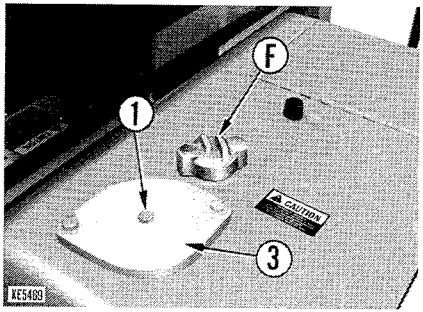
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EVERY 2000 HOURS SERVICE

★ **Maintenance for every 50, 100, 250, 500 and 1000 hours should be carried out at the same time.**

a. HYDRAULIC TANK AND FILTER

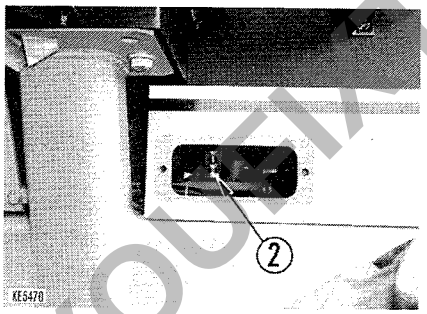


1. Lower the bucket horizontally to the ground and apply the parking brake, then stop the engine.
2. Remove the cap of oil filler (F) and air vent plug (1) on filter case.

⚠ **When removing the cap, turn it slowly to relieve inner pressure.**

3. Open drain valve (2) to drain oil. After draining, tighten the drain valve.

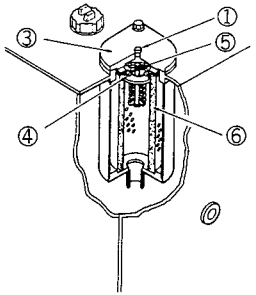
★ After loosing the drain valve, pull it out slowly to drain oil.



4. Remove the mounting bolt of filter cover (3), then remove the cover.

⚠ **The cover is pushed by a spring, so hold the cover when removing the bolts.**

5. Remove spring (4) and bypass valve (5), then remove element (6).



★ Check that there is no foreign matter inside the tank before cleaning it.

6. Install a new element, then install bypass valve (5), spring (4), and cover (3).

★ If the O-ring of the cover is damaged or deteriorated, replace it with a new part.

★ When installing the cover bolts, push down the cover and tighten the bolts evenly.

7. Pour in the specified quantity of engine oil from filler (F).

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SAFETY HINTS · · · ⚠

Protect yourself and others. Safety is always first.

OPERATION

GENERAL

- Wear well-fitting helmet, safety shoes and working clothes. If the nature of the work requires safety, wear protective goggles or mask, thick gloves, ear plugs or other protection.
- Take care of your health. Do not operate when tired, or after drinking.
- When there is a leader, fix standard signals and always follow these signals when operating.
- Learn the prohibitions, cautions and rules about work procedures in the work site.
- Read the Operation and Maintenance Manual carefully. Learn how to use the control devices, gauges and warning devices. Be sure you understand the meaning of the caution plates.
- Confirm that all gauges and warning devices are functioning correctly, and that the gauge readings are within the prescribed range.
- Learn about the safety devices on your own machine and about how to use them.
- Never allow another person to operate the machine.
- If there should be an accident or fire or any other such unexpected mishap, deal with it quickly, using the nearest apparatus.
  Learn beforehand the locations of the first aid boxes and fire extinguishers and how to use them. It is also important to know the emergency contact system.
- Fuel or oil are dangerous substances.
  Never handle fuel, oil, grease or oily cloth in places where there is any fire of flame.

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