5-2 Electric diagram

5-2-1 Steering column

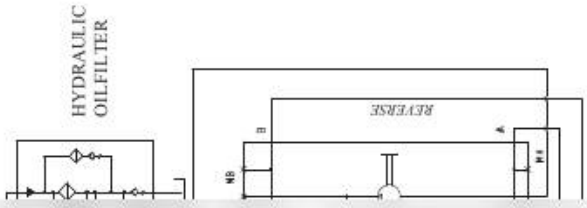


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2-6 Hydraulic Circuit Schematic



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4-2-4 Cylinder Head

Cylinder Head Components

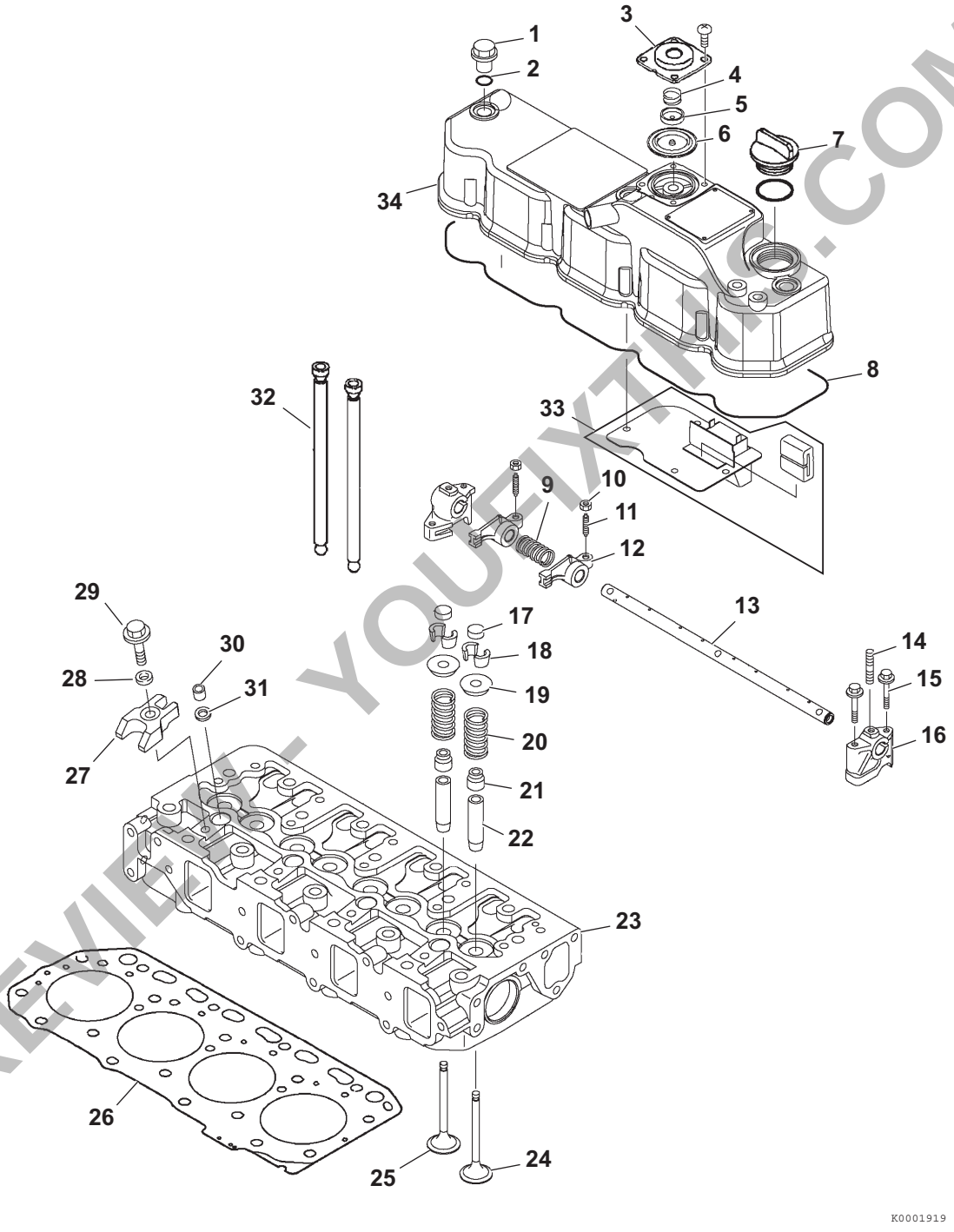


Figure 4-2-1

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FUEL SYSTEM SPECIFICATIONS

Special Torque Chart

Component	Tightening torque	Lubricating oil application (Thread portion and seat surface)
Fuel injector retainer bolt	39.2 N·m	Not applied

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Failure Diagnostic List

Symptoms and conditions of failures / Cause	Defective start					Engine stall after start			Defective rotation control						Insufficient engine output			Noise/vibration				Lubricant				Cooling water		Intake		Exhaust				Fuel			Electrics/electronics						Action	Referenced page number
	Starter not rotate		Starter rotates			Exhaust fume				Without load			At work		Exhaust color															At work														
	ECU indicator lamp not on just after key-on	ECU indicator lamp on just after key-on (2 seconds)	Engine not start (not even initial combustion)	Engine not start (stall after serial combustion)	Engine starts later then ever	None	Little	Much	Speed change by accelerator not available (constant speed)	Specified speed setting not available	Poor acceleration	Return to low speed not smooth	Hunting	Hunting	Normal	White		Knocking noise at combustion too high	Combustion noise uneven	Noise other than combustion from engine	Engine vibration too big	Lubricant consumption too much	Lubricant diluted with fuel	Lubricant mixed with water	Oil pressure too low (oil pressure lamp on)	Overheated (water temperature lamp on)	Water temperature too low	Pressure down (air cleaner lamp on)	Pressure up		Blow-by too much	Exhaust temperature up	Fuel consumption too much	Fuel mixed with water (oil-water separator lamp on)	Fuel filter contaminated too early	Battery charge defect (charge lamp on)	ECU indicator lamp flashing	ECU indicator lamp not on just after key-on (2 seconds)	Prescribed ECU control function not operate	Fuse meltdown, disconnection (repeated)		
Engine system																																											
Intake/exhaust valve clearance incorrect			○			○									○					○									○				○										Valve clearance adjustment	*See Measuring and Adjusting Valve Clearance on page 4-2-20.*
Compression failure at valve seat			○												○		○			○									○		○	○	○	○									Valve seat facing	*See Valve face and valve seat on page 4-2-14.*
Intake/exhaust valve seizure			○					○						○	○		○			○	○		○						○		○	○										Correction or replacement of intake/exhaust valve	*See Removal of intake/exhaust valves on page 4-2-10.*
Cylinder head gasket blow-out															○									○		○																Gasket replacement	*See Removal of cylinder Head on page 4-2-9.*
Piston ring sticking or breakage			○					○					○			○				○	○	○			○				○		○	○										Piston ring replacement	*See Reassembly of pistons on page 4-2-40.*
Wear of piston ring, piston or cylinder			○					○								○					○	○							○		○										Horning work and usage of over-sized parts	*See Honing and Boring on page 4-2-39.*
Seizure of crank pin metal or bearing parts			○			○							○	○						○	○										○											Repair or replacement	*See Inspection of crankshaft on page 4-2-37.*
Closed gap position fault of piston ring						○										○						○										○										Correction of closed gap position	*See Reassembly of pistons on page 4-2-40.*
Reverse assembling of piston ring																○						○								○		○										Correction of assembling	*See Reassembly of pistons on page 4-2-40.*
Wear of crank pin metal and journal metal													○	○	○					○	○				○																	Measurement and replacement	*See Inspection of crankshaft on page 4-2-37.*
Connecting rod bolt loose																				○	○				○																	Tightening at specified torque	*See Torque for Bolts and Nuts on page 6-21.*
Foreign material entered into combustion chamber			○																	○		○									○											Disassembling and repair	*See Disassembly of Engine on page 4-2-23.*
Gear backlash too big																				○																						Gear mesh adjustment	*See Checking timing gear backlash on page 4-2-25.*
Wear of intake/exhaust valve guide																○						○										○										Measurement and replacement	*See Inspection of valve guides on page 4-2-12.*
Governor misalignment			○			○						○	○	○							○																					Adjustment	
Open/close timing failure of intake/exhaust valve			○													○	○			○										○	○											Valve clearance adjustment	*See Measuring and Adjusting Valve Clearance on page 4-2-20.*
Engine vibration isolating support loose, damage													○	○						○	○																						Repair or replacement of faulty parts	
Cooling water system																																											
Radiator super cooled																											○				○											Thermostat replacement	*See Disassembly of Engine Coolant Pump on page 4-4-5.*
Insufficient radiator cooling																○									○						○											Thermostat replacement or check for fan belt loose	*See Disassembly of Engine Coolant Pump on page 4-4-5.*
Insufficient cooling water quantity																○									○						○											Water leak inspection of cooling water system	*See Engine Coolant System Check on page 4-4-4.*
Water jacket cracks																								○	○	○																Repair or replacement	*See Disassembly of Engine Coolant Pump on page 4-4-4.*
Fan belt elongation																○									○						○											Adjustment of belt tension	
Thermostat fault																○									○	○					○											Inspection or replacement	*See Disassembly of Engine Coolant Pump on page 4-4-4.*

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2. Technical Data

2-1 Specifications

Item	Unit	V7
Main specifications of machine		
Dimensions		
Standard bucket capacity	m^3	0,7

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2-4 Periodic Inspection and Servicing

○: Verification and adjustment ●: Replacement □: Cleaning ■: Greasing

Parts & Operations		Daily	Every 50h	Every 250h	Every 500h	Every 1000h / Every year	Every 2000h / Every two years
General.	Missing or broken parts	○					
	Tightening of nuts and bolts	○					
	Motor state	○					
	Machine	□					
	Tire pressure	○					
Transmissions	Epicyclic reducers		● 1st time		○	●	
	Differential reducers		● 1st time		○	●	
	Splitter		● 1st time		○	●	
Hydraulic circuit	Hydraulic oil	○				●	
	Hydraulic oil return filter		● 1st time		●		
Greasing	Greasing points	■					
	Lubricating the central hinge		■				
	Lubrication of universal joint gaskets		■				
Electrical equipment	Headlights, horn, travel alarm, Direction lights	○					
	Dashboard and indicators	○					
	System state	○					
	Battery electrolyte		○ 1st time		○		
Engine	GO filter			●			
	Fuel tank	○				□	
	Air filter		□		●		
	Secondary filter					●	
	Engine oil	○	● 1st time		●		
	Oil filter		● 1st time		●		
	Cooling fluid	○					●
	Belt	○				●	
	Radiator vents	○			□		
	Fuel hose, coolant hose						●
	Intake and exhaust valves					○	
	Injectors and injection pressure						○
Heating						○	

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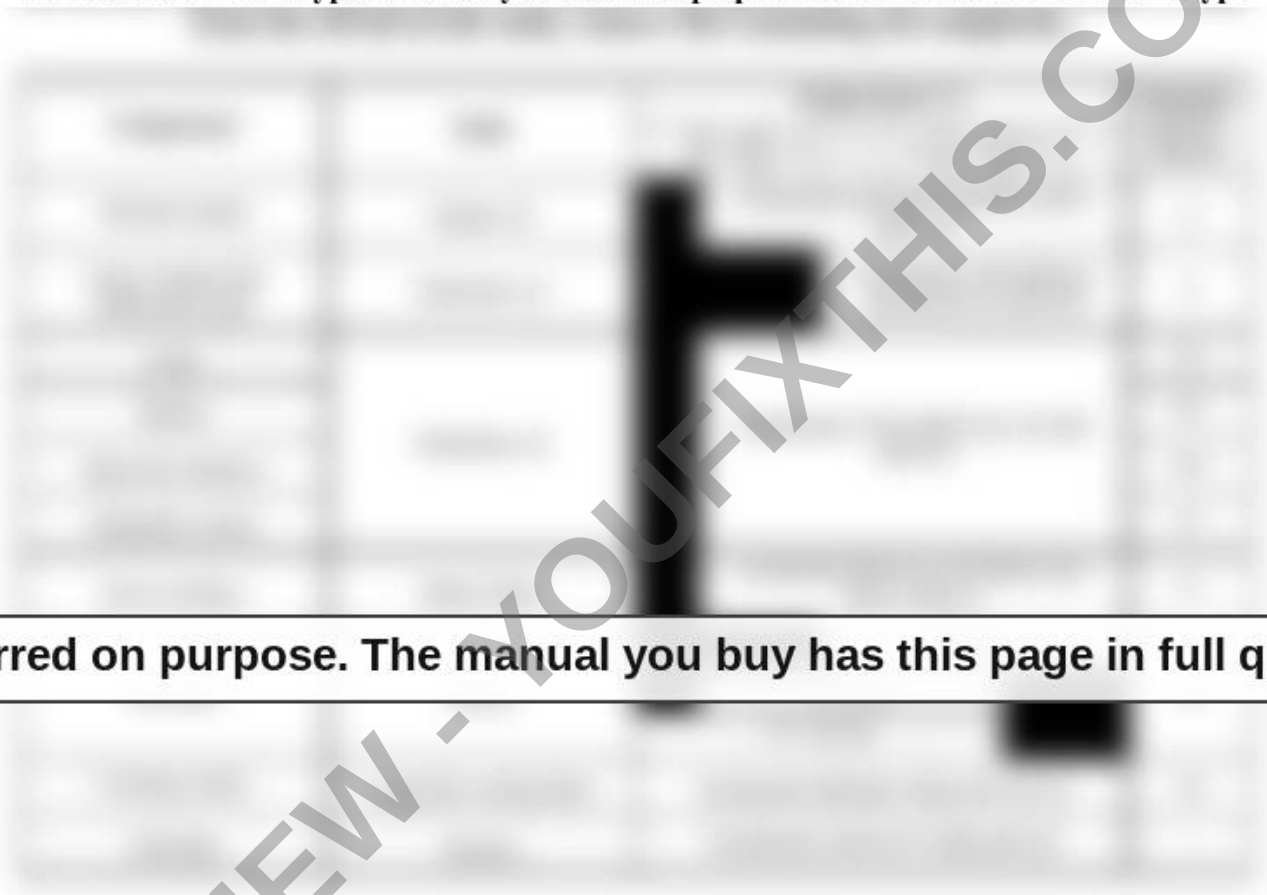
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2-5 Fuel, Lube Oil and Grease Recommended

- Select a fuel and an oil according to the machine's operating temperature.
- Always use a Yanmar long-life cooling fluid.

IMPORTANT

Do not mix different types of oils.If you need to top up the oil with a different make or type



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1 – Valve cover nut
2 – Valve cover nut O-ring
3 – Crankcase breather cover
4 – Diaphragm spring
5 – Diaphragm plate
6 – Crankcase breather diaphragm (non-turbocharged engines only)
7 – Oil fill cap
8 – Valve cover gasket
9 – Rocker arm shaft spring
10 – Valve adjusting screw lock nut
11 – Valve adjusting screw
12 – Rocker arm
13 – Rocker arm shaft
14 – Rocker arm shaft aligning stud
15 – Support bolt
16 – Rocker arm shaft support
17 – Valve cap
18 – Valve keepers
19 – Spring retainer
20 – Valve spring
21 – Valve stem seal
22 – Valve guide
23 – Cylinder head
24 – Intake valve
25 – Exhaust valve
26 – Cylinder head gasket
27 – Fuel injector retainer
28 – Washer
29 – Fuel injector retainer bolt
30 – Fuel injector nozzle protector
31 – Fuel injector nozzle seat
32 – Push rod
33 – Crankcase breather components
34 – Valve cover

Disassembly of Cylinder Head

Prepare a clean, flat working surface on a workbench large enough to accommodate the cylinder head assembly. Discard all gaskets, O-rings and seals. Use new gaskets, O-rings and seals on reassembly of cylinder head.

IMPORTANT

Mark all valve train components so they can be installed in their original locations.

Note: Record all measurements taken during disassembly.

1. Drain coolant from engine into a suitable container.

NOTICE

Identify all parts and their location using an appropriate method. It is important that all parts are returned to the same position during the reassembly process.

---

2. Remove the coolant pump. *See Disassembly of Engine Coolant Pump on page 4-4-4.*
3. Remove the high-pressure fuel lines and fuel injectors from the cylinder head. *See Removal of Fuel Injectors on page 4-3-18.*

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4-3-7 FUEL INJECTION PUMP

Removal of Fuel Injection Pump

1. Loosen the cooling fan V-belt.
2. Remove the engine coolant fan guard (if equipped), engine coolant fan **(Figure 4-3-7, (2))**, spacer **(Figure 4-3-7, (3))** if equipped, V-pulley **(Figure 4-3-7, (4))** and cooling fan V-belt **(Figure 4-3-7, (1))**.

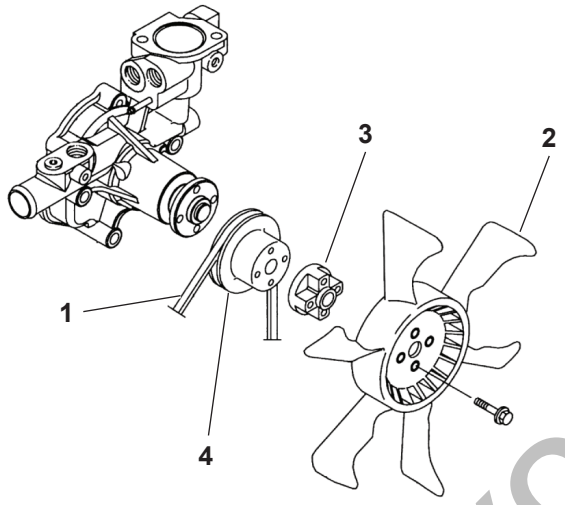


Figure 4-3-7

3. Close any fuel valves in the fuel supply line.
4. Place a drain pan under the fuel injection pump to catch any spillage.
5. Remove the high-pressure fuel injection lines as an assembly **(Figure 4-3-8, (1))**.

   Note: To prevent "rounding" the fuel line nuts always use a "line" or "flare nut" wrench. When loosening the fuel line nuts, always hold the fuel injection pump delivery valves with a "back up" wrench to prevent loosening of the delivery valves.
6. First loosen the fuel line nuts at the fuel injectors and then at the fuel injection pump.

NOTICE

Remove or install the high-pressure fuel injection lines as an assembly whenever possible. Disassembling the high-pressure fuel injection lines from the retainers or bending any of the fuel lines will make it difficult to reinstall the fuel lines.

7. Finish loosening all the fuel line nuts and remove the high-pressure fuel lines as an assembly being careful not to bend any of the fuel lines. Be sure to protect the fuel system from contamination by covering all open connections.
8. Disconnect the coolant lines from the cold start device **(Figure 4-3-8, (3))** on the fuel injection pump. Plug the open ends of the lines to minimize leakage and prevent contamination.
9. Disconnect the fuel return lines from the fuel return fitting **(Figure 4-3-8, (2)).** Plug the open ends of the lines to minimize leakage and prevent contamination.

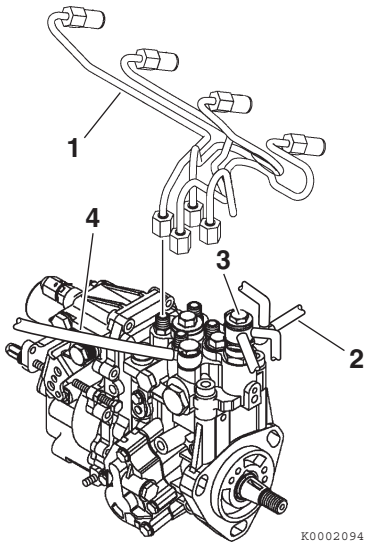


***Figure* 4-3-8**

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