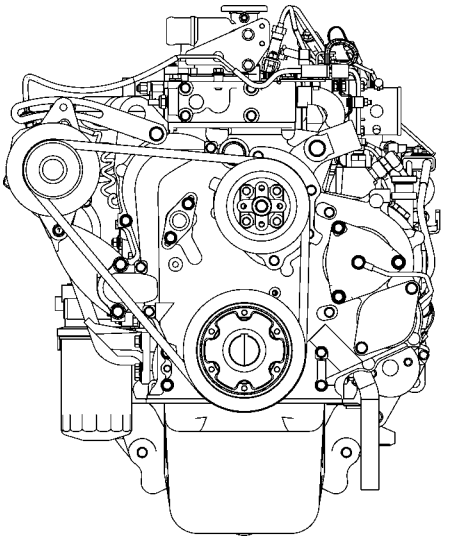
W04D-J, S05C-B, S05C-TA, S05C-TB ENGINES

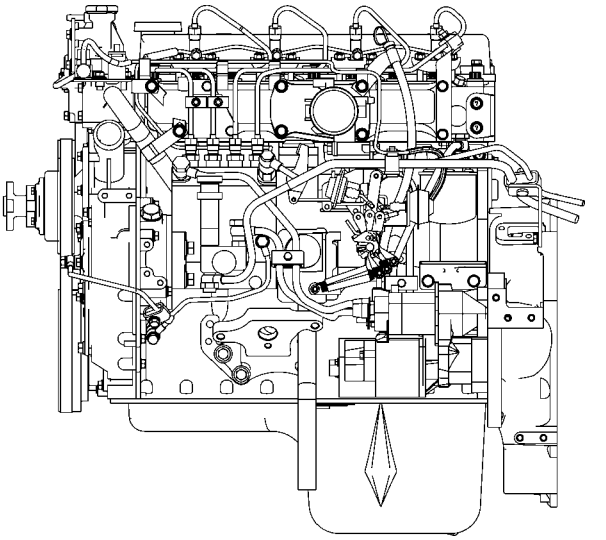
■DESCRIPTION

1. General

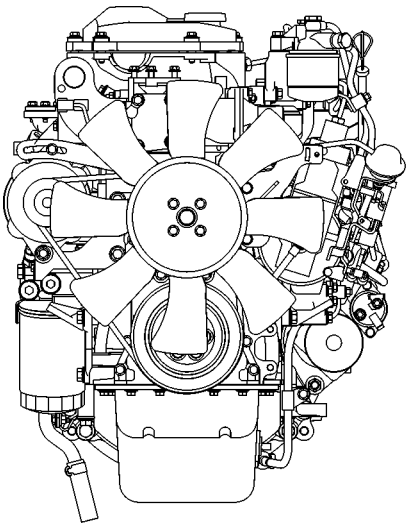
The W04D-J and S05C-B are low-emission engines that developed in the pursuit of fuel economy.
The S05C-TA is also low-emission engine equipped with turbocharger and intercooler system, that developed in the pursuit of fuel economy and high output.
The S05C-TB is also low-emission engine equipped with common rail system, turbocharger and intercooler system, that developed in the pursuit of fuel economy and high output and more cleaner exhaust emission (in terms of black smoke and NOx).
With high-rigidity construction and ideal exhaust configuration with optimally designed muffler construction, these engines run quietly, so it is ideal for city driving conditions.

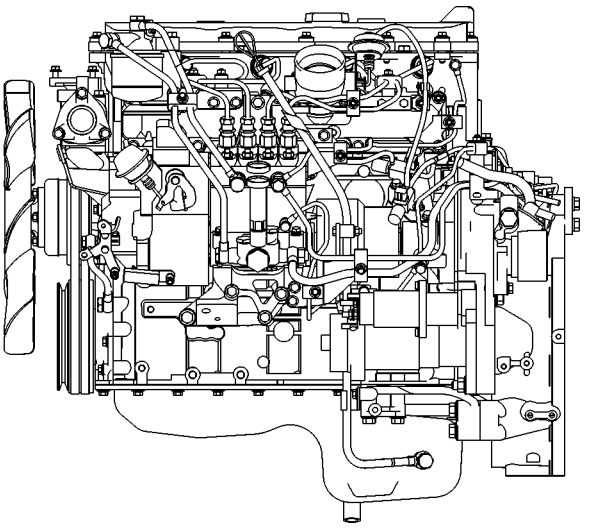
▶ W04D-J ◀



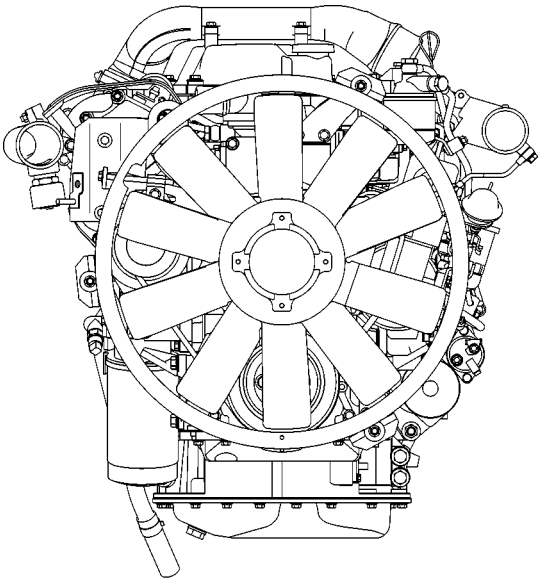


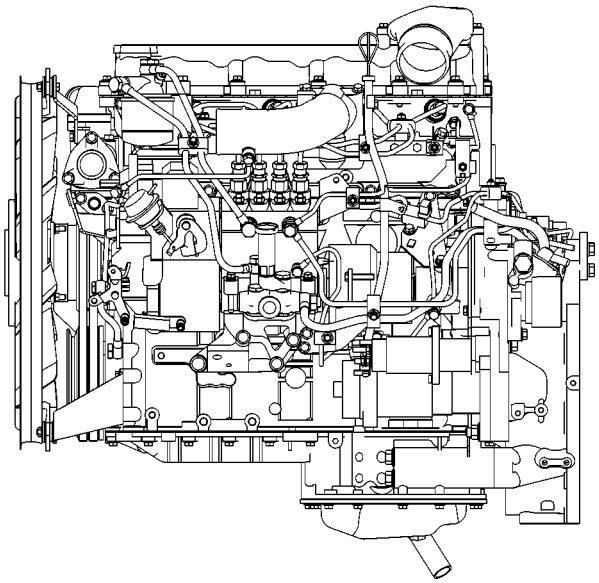
▶ S05C-B ◀



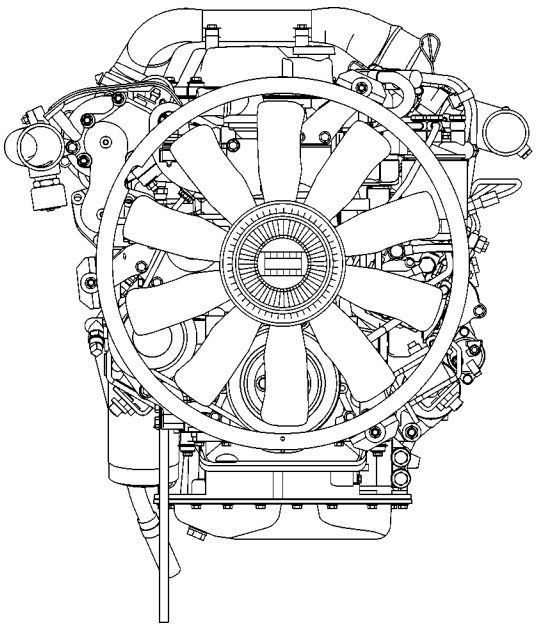


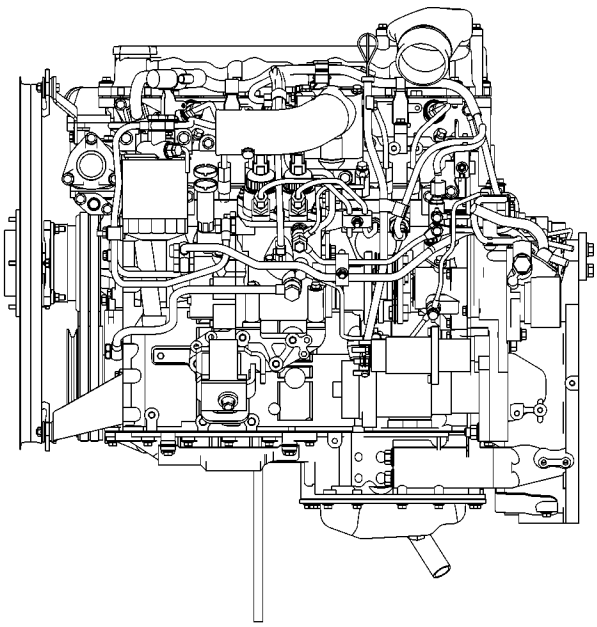
▶ S05C-TA ◀





▶ S05C-TB ◀





2. Engine Specifications

Engine Type	W04D-J	S05C-B	S05C-TA	S05C-TB
No. of Cyls. & Arrangement	4 Cylinder, In-line			
Valve Mechanism	8-Valve, OHV Gear Drive	16-Valve, OHC, Gear Drive		
Combustion Chamber	Direct Injection			
Manifolds	Cross-Flow			
Displacement cm^3 (cu.in.)	4009 (244.6)	4613 (281.4)		
Bore × Stroke mm (in.)	104 × 118 (4.09 × 4.65)	114 × 113 (4.48 × 4.44)		
Compression Ratio	19.2 : 1		18.5 : 1	
Injection Pump Type	In-line type			Common rail type
Firing Order	1 - 3 - 4 - 2			

3. Features of W04D-J, S05C-B, S05C-TA, S05C-TB

- The W04D-J is a compact engine with excellent overall performance. With its reliable highpressure in-line injection pump and high-rigidity construction, this engine run quietly, so it is ideal for city driving conditions.
- The S05C series are newly developed engine based on the J05C design. They have a lowered cylinder block height so they can be mounted in light-duty trucks. They deliver output levels as high as those that the J05C takes pride in, combined fuel economy and low emission, and is built for durability.
- The S05C-B is equipped with an in-line type injection pump.
- The S05C-TA is equipped with an in-line type injection pump and high-performance turbocharger and inter-cooler.
- The S05C-TB is equipped with an electronically controlled common-rail type fuel injection system and high-performance turbocharger and inter-cooler.

▶ Features ◀

	Features	W04D-J	S05C-B	S05C-TA	S05C-TB
High performance, low fuel consumption, and exhaust gas cleaning characteristics	Engine electronic control system				○
	OHC, 4-valve cylinder head		○	○	○
	Optimum combustion chamber shape	○	○	○	○
	Direct-type fuel injection	○	○	○	○
	Full water jacket, cylinder liner	○	○	○	○
	High-rigidity crankshaft	○	○	○	○
	Common-rail type fuel injection system				○
	High-pressure injection pump (NB or A)	○	○	○	
	High-performance turbocharge			○	○
	Inter cooler			○	○
Low noise, low vibration	High-rigidity engine unit	○	○	○	○
	High-rigidity crankshaft	○	○	○	○
	Lightweight, high-rigidity piston	○	○	○	○
	Combustion speed control	○	○	○	○
	Optimally arranged engine insulators			○	○
	Optimal resonator layout			○	○
	Flexible joint front exhaust pipe	○	○	○	○
Maintainability	New diagnosis system				○
Other	Full complement of fail-safe function				○
	Dual valve spring		○	○	○
	Dual-system accelerator pedal sensor				○

4. Diagnostic Trouble Code Chart (S05C-TB)

DTC No.	Detection Item	Trouble Area	Check Engine Warning Light*1	Memory*2
12	Camshaft Position Sensor Circuit Malfunction (Auxiliary NE sensor)	• Open or short in camshaft position sensor circuit • Camshaft position sensor • Camshaft timing pulley • ECU	○	○
13	Engine Speed Sensor Circuit Malfunction 2 (NE sensor circuit)	• Open or short in crankshaft position sensor circuit • Camshaft position sensor • Crank angle sensor plate • ECU	○	○
17	IC Circuit Malfunction	• ECU	○	○
19 (1)	Accelerator Position Sensor Circuit Malfunction (Open/Short)	• Open or short in accelerator pedal position sensor circuit • Accelerator pedal position sensor • ECU	○	○
19 (2)	Accelerator Position Sensor Circuit Malfunction (IDL SW/ Range)	• Open or short in accelerator pedal position sensor circuit • Accelerator pedal position sensor • ECU	○	○
19 (3)	Accelerator Position Sensor Circuit Malfunction (Short)	• Open or short in accelerator pedal position sensor circuit • Accelerator pedal position sensor • ECU	○	○
19 (4)	Accelerator Position Sensor Circuit Malfunction (Open)	• Open or short in accelerator pedal position sensor circuit • Accelerator pedal position sensor • ECU	○	○
22	Water Temp. Sensor Circuit Malfunction	• Open or short in engine coolant temp. sensor circuit • Engine coolant temp. sensor • ECU	○	○
28	Solenoid For Exhaust Retarder Circuit Malfunction	• Exhaust Retarder solenoid circuit • Exhaust Retarder solenoid • Exhaust Retarder system • ECU	—	○
32	Injector Correction Resistance Malfunction	• Supply pump correction resister • Wire harness • ECU	○	○
35	Turbo Pressure Sensor Circuit Malfunction	• Open or short in turbo pressure sensor circuit • Turbo pressure sensor • Open or short in VSV for turbo pressure sensor circuit • VSV for turbo pressure sensor • Turbocharger • ECU	○	○

DTC No.	Detection Item	Trouble Area	Check Engine Warning Light*1	Memory*2
39	Fuel Temp. Sensor Circuit Malfunction	• Open or short fuel temperature sensor circuit • Fuel temperature sensor • ECU	○	○
42	Vehicle Speed Sensor Signal Circuit Malfunction	• Open or short in vehicle speed sensor circuit • Vehicle speed sensor • Combination meter • ECU	○	○
49	Common Rail Pressure Sensor Circuit Malfunction	• Open or short in fuel pressure sensor circuit for common rail • Fuel pressure sensor (built in common rail) • ECU	○	○
78 (1)	Fuel Pump Circuit Malfunction (Fuel Leakage)	• Leak on high pressure fuel line • Stuck on fuel supply line • Supply pump	○	○
78 (2)	Fuel Pump Circuit Malfunction (Open Circuit)	• Short in PCV2 circuit • PCV2 (built in supply pump) • ECU	○	○
78 (3)	Fuel Pump Circuit Malfunction (Over Force Feed)	• Open or short in fuel pressure sensor circuit • Fuel pressure sensor • Engine speed sensor • Supply pump • Injection timing • ECU	○	○
78 (4)	Fuel Pump Circuit Malfunction (Short circuit)	• Short in PCV1 circuit • PCV1 (built in supply pump) • ECU	○	○
79 (1)	Fuel Control Cylinder Balance System Malfunction (Cylinder 1)	• Fuel pipe (for common rail injector) • Injector • Flow damper (on common rail) • ECU	—	○
79 (2)	Fuel Control Cylinder Balance System Malfunction (Cylinder 2)			
79 (3)	Fuel Control Cylinder Balance System Malfunction (Cylinder 3)			
79 (4)	Fuel Control Cylinder Balance System Malfunction (Cylinder 4)			
81	Fuel Pump System Malfunction (No pressure/ Active Pressure Limiter)	• Fuel relief valve (on common rail) • Supply pump	○	○

EG

DTC No.	Detection Item	Trouble Area	Check Engine Warning Light*1	Memory*2
82	Engine Overrun	• Open or short SCV circuit • SCV (built into injection pump) • Fuel relief valve (built into common rail) • Injection pump • ECU	○	○
83	Common Rail System Malfunction	• Open or short in fuel pressure sensor circuit for common rail • Fuel pressure sensor (built in common rail) • ECU	○	○
84	Common Rail System Malfunction (Pressure dose not change)	• Fuel pressure sensor circuit • Fuel pressure sensor • ECU	○	○
85	PCV Relay Circuit Malfunction	• Open or short in PCV relay circuit • PCV relay • ECU	○	○
86 (1)	Injector Circuit Malfunction (Cylinder 1)	• Open or short in injector circuit • Injector (Cylinder 1) • Wire harness • ECU	○	○
86 (2)	Injector Circuit Malfunction (Cylinder 2)	• Open or short in injector circuit • Injector (Cylinder 2) • Wire harness • ECU	○	○
86 (3)	Injector Circuit Malfunction (Cylinder 3)	• Open or short in injector circuit • Injector (Cylinder 3) • Wire harness • ECU	○	○
86 (4)	Injector Circuit Malfunction (Cylinder 4)	• Open or short in injector circuit • Injector (Cylinder 4) • Wire harness • ECU	○	○
86 (5)	Injector Circuit Malfunction (Cylinder 5)	• Open or short in injector circuit • (No.1) • ECU	○	○
86 (6)	Injector Circuit Malfunction (Cylinder 6)	• Open or short in injector circuit • (No.2) • ECU	○	○
92	Engine Stop Switch Circuit Malfunction	• Open or short in engine stop switch circuit • Engine stop switch • Wire harness • ECU	○	○

*1: "○" displayed in the diagnosis mode column indicates that the check engine warning lighted up when a malfunction is detected.

*2: "○" in the memory column indicates that a DTC code is recorded in the ECU memory when a malfunction occurs. Accordingly, output of diagnostic results in the normal or test mode is done with the ignition switch ON.