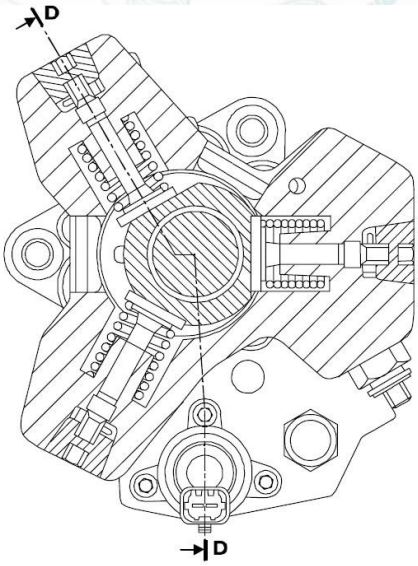
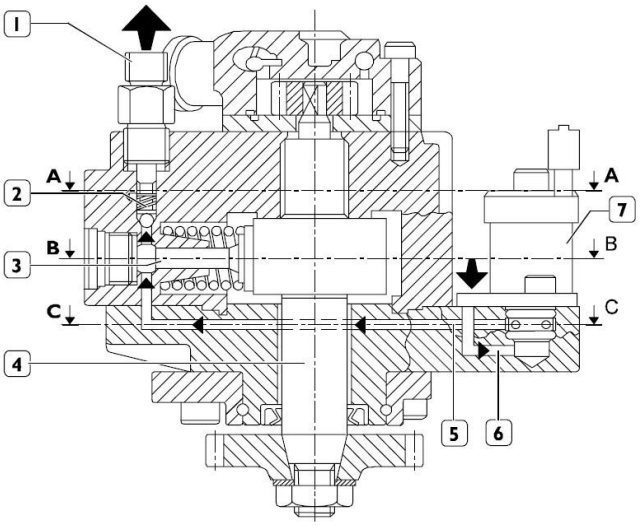
principle of operation

Fig



Section B-B



Section D-

72597

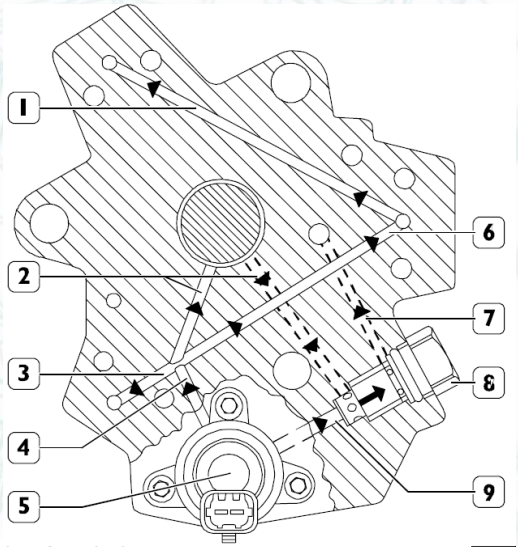
1. Oil outlet connector (to common rail) 2. Oil outlet valve 3. Piston 4. Pump shaft 5. Oil supply pipeline

6. Pressure regulator oil supply pipeline 7. Pressure regulator

The piston (3) faces the cam of the pump shaft (4).

During oil supply, the piston is supplied with oil by the oil supply pipeline (5). The amount of fuel supplied to the piston is controlled by the pressure regulator (7). The regulator calculates the fuel flow to the piston according to the PWM signal sent by ECU. In the piston compression stage, when the fuel reaches the required pressure value, open the oil outlet valve (2) and supply oil to the common rail through the oil outlet joint (1).

Figure 9



Section C-C

1. Oil supply pipeline 2. Lubrication pipeline 3. Oil supply pipeline 4. Main oil supply pipeline

5. Regulator 6. Oil supply pipeline 7. Regulator oil outlet pipeline 8. 5bar

Pressure relief valve 9. Oil discharge pipeline (from the inlet of pressure regulator)

Fig. 9 shows the low-pressure fuel passage in the pump body, and highlights the following parts: main oil supply pipeline (4), oil supply pipeline (1-3-6), lubricating pipeline (2), pressure regulator (5), 5 bar pressure relief valve (8) and oil discharge pipeline (7).

The pump shaft is lubricated by the fuel in the lubrication pipe (2).

The pressure regulator (5) is used to determine the fuel quantity delivered to the piston. Overburning

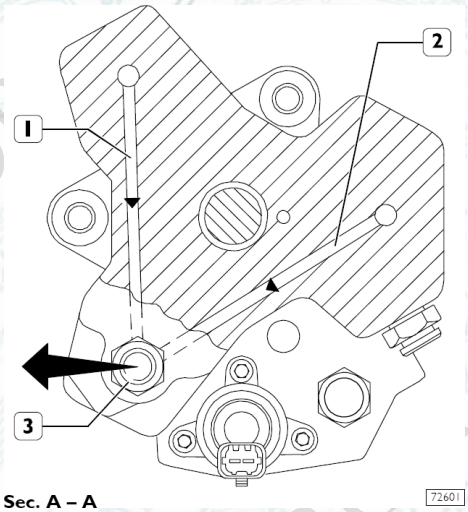
The oil will be discharged through the oil discharge pipe (9).

The 5 bar pressure relief valve is used for fuel discharge, and the inlet pressure of the regulator is reduced.

Maintain the force at 5 bar.

Figure 10

Section A-A



Sec. A – A

1. Oil pipeline 2. Oil pipeline

3. Oil outlet joint (to common rail)

Fig. 10 is a schematic diagram of high-pressure fuel flowing through the pump body.

operate

When the oil supply pressure reaches enough to open the oil outlet valve on the pump body (about 2 bar), the high pressure chamber will be filled through the oil valve.

The quantity of fuel delivered to the high pressure chamber is controlled by the pressure regulator. The voltage regulator is installed in the low-voltage system and controlled by EDC7 through PWM signal. When the fuel is delivered to the high-pressure chamber, the piston will move downward (oil suction stroke) Cheng). When the piston stroke turns, the oil inlet valve is closed, and the fuel in the cavity (which cannot be discharged) is compressed, and its pressure will be higher than the existing oil supply pressure in the common rail.

Subsequently, the oil outlet valve is opened under this pressure, and the compressed fuel enters the high-pressure circuit.

The piston continues to compress the fuel until it reaches the top dead center (fuel supply stroke). Then, the pressure drops until the oil outlet valve closes.

When the piston returns to the bottom dead center, the residual fuel will be decompressed.

When the chamber pressure is less than the oil supply pressure, the oil inlet valve is opened again, and the above circulation process is repeated.

The movement of the oil outlet valve must always be smooth. The oil outlet valve contains no impurities and has no oxidation.

The common rail pressure is controlled by a pressure regulator.

The high-pressure oil pump is lubricated and cooled by fuel.

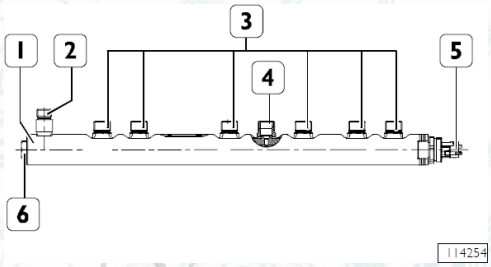
Compared with the traditional high-pressure oil pump, the radial compression pump of the engine does not need

Set, its disconnection-reconnection time will be greatly reduced.

If the pipeline between the fuel filter and the high-pressure oil pump needs to be disassembled and reassembled, make sure that the operator's hands and components are absolutely clean.

Common rail pipe (pressure accumulator)

Figure 11



1. Common rail pipe 2. Oil return connector 3. Oil outlet connector (to injector) 4. Oil supply connector (from high pressure oil pump) 5. Pressure sensor 6. Safety valve.

Under the conditions of starting, idling and high speed, the small-sized rail pipe volume can be used to boost the pressure quickly.

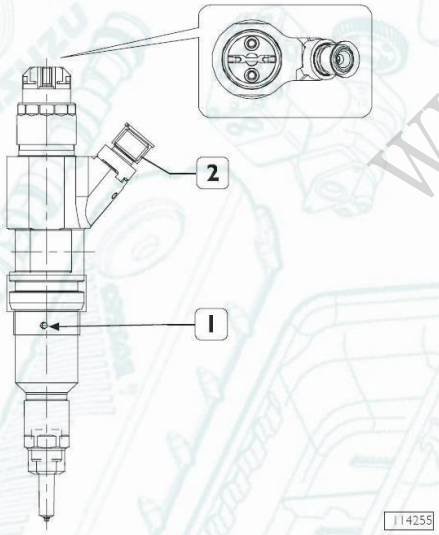
In any case, the common rail pipe has enough volume, so that the use frequency of the gas collection cavity can be minimized (caused by the switch operation of the fuel injector and the operation of the high-pressure pump). This function is enabled by a calibration hole arranged downstream of the high-pressure pump.

A pressure sensor (5) is arranged on the common rail pipe. The sensor sends a feedback signal to ECU. The ECU checks the common rail pressure value according to this signal. If necessary.

Yes, it should be revised.

Electronically controlled injector

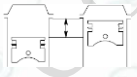
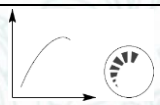
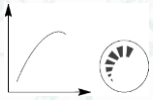
Figure 12



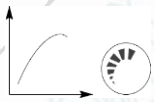
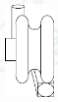
1. Oil return hole 2. Oil inlet

Engine disassembly

technical parameter

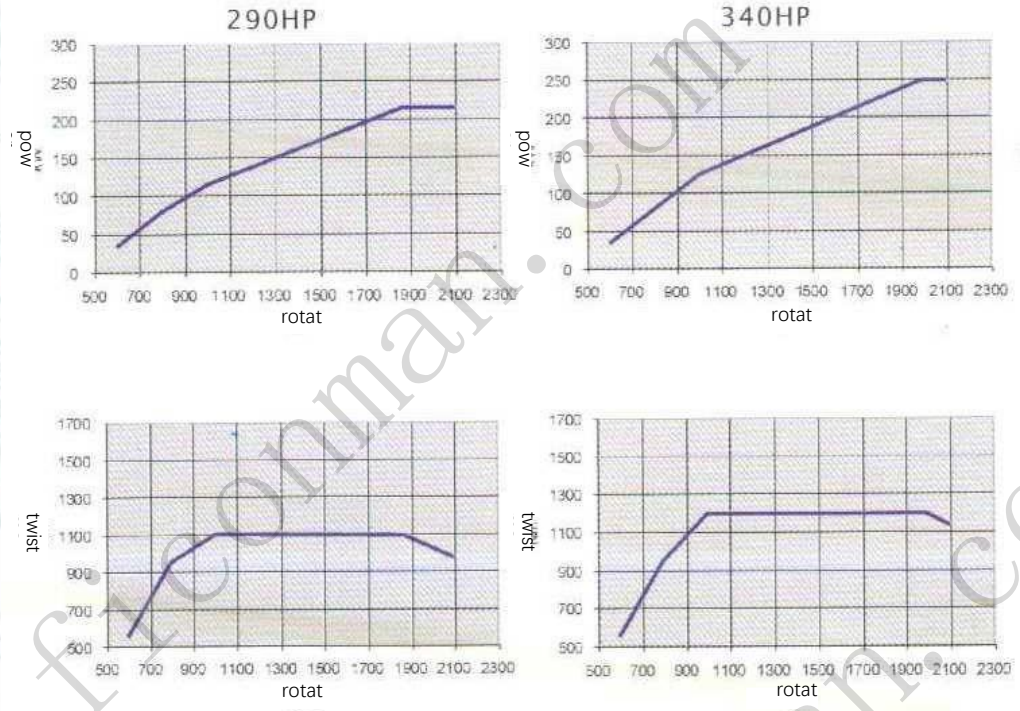
project		Technical coding
	model	**F2CE0681D*B...**
	circulate	Four-stroke diesel engine
	Air intake mode	turbocharge
	Fuel injection	Direct injection
	Number of cylinders and arrangement mode	6 in-line
	bore mm	117
	schedule mm	135
	Total displacement cm^3	8710
	Compression ratio	1:15.9 ± 0.8
	Maxi mum pow er kW （HP） rpm	213 （290） 2100
	maximum torque Nm （kgm） rpm	1200 （122） 1500
	Idle speed of no-load engine rpm	600
	Maximum speed of no-load engine rpm	2420
	**pressurize**	Intercooled direct injection
	Turbocharged type	HX40
	**lubricate**	Oil is delivered through oil pump, pressure reducing valve and oil filter.
	Oil pressure (thermal engine) - idling bar - Maximum speed bar	 2 5
	cooling liquid Water pump driving mode	The liquid passes through the belt
	Thermostat initial opening temperature c	85

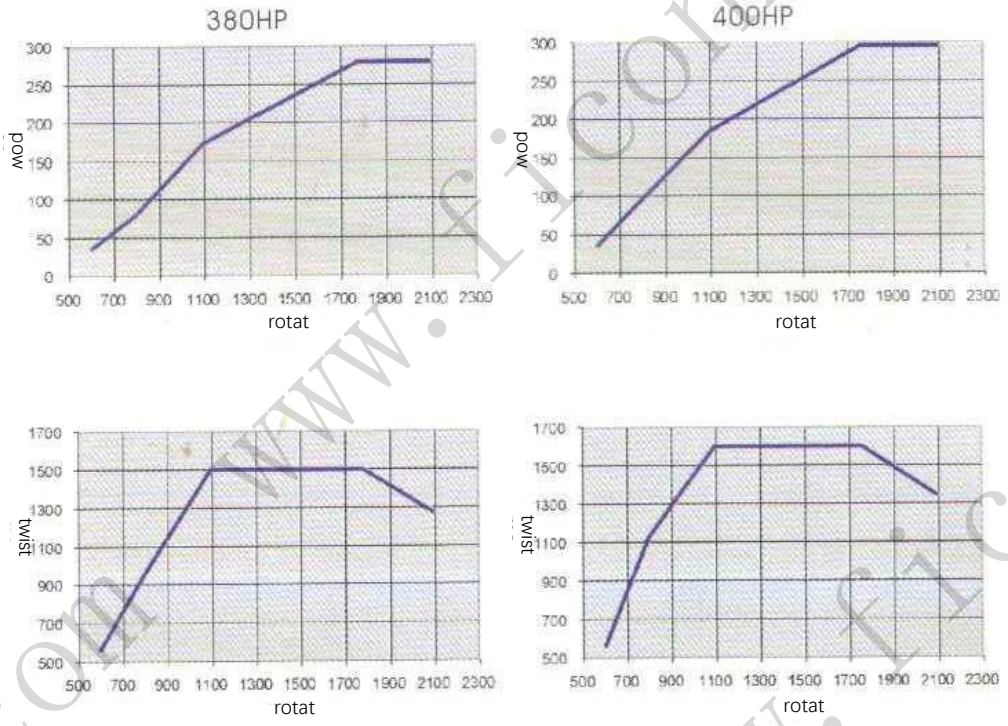
project		Technical coding
	model	**F2CE0681C*B...**
	circulate	Four-stroke diesel engine
	Air intake mode	turbocharge
	Fuel injection	Direct injection
	Number of cylinders and arrangement mode	6 in-line
	bore mm	117
	schedule mm	135
	Total displacement cm^3	8710
	Compression ratio	1:15.9 ± 0.8
	Maxi mu m pow er kW （HP） rpm	250 （340） 2100
	maximum torque Nm （kgm） rpm	1300 （122） 1500
	Idle speed of no-load engine rpm	600
	Maximum speed of no-load engine rpm	2420
	**pressurize**	Intercooled direct injection
	Turbocharged type	HX52W
	**lubricate**	Oil is delivered through oil pump, pressure reducing valve and oil filter.
	Oil pressure (thermal engine) - idling bar - Maximum speed bar	 2 5
	cooling liquid Water pump driving mode	The liquid passes through the belt
	thermostat Initial opening temperature °C	85

project		Technical coding
	model	**F2CE0681B*B...**
	circulate	Four-stroke diesel engine
	Air intake mode	turbocharge
	Fuel injection	Direct injection
	Number of cylinders and arrangement mode	6 in-line
	bore mm	117
	schedule mm	135
	Total displacement cm^3	8710
	Compression ratio	1:15.9 ± 0.8
	Maxi mu m pow er kW （HP） rpm	279 （380） 2100
	maximum torque Nm （kgm） rpm	1500 （153） 1500
	Idle speed of no-load engine rpm	600
	Maximum speed of no-load engine rpm	2420
	**pressurize**	Intercooled direct injection
	Turbocharged type	HX52W
	**lubricate**	Oil is delivered through oil pump, pressure reducing valve and oil filter.
	Oil pressure (thermal engine) - idling bar - Maximum speed bar	 2 5
	cooling liquid Water pump driving mode	The liquid passes through the belt
	thermostat Initial opening temperature °C	85

project		Technical coding
	model	**F2CE0681A*B...**
	circulate	Four-stroke diesel engine
	Air intake mode	turbocharge
	Fuel injection	Direct injection
	Number of cylinders and arrangement mode	6 in-line
	bore mm	117
	schedule mm	135
	Total displacement cm^3	8710
	Compression ratio	1:15.9 ± 0.8
	Maxi mu m pow er kW （HP） rpm	294 （400） 2100
	maximum torque Nm （kgm） rpm	1600 （163） 1200
	Idle speed of no-load engine rpm	600
	Maximum speed of no-load engine rpm	2420
	**pressurize**	Intercooled direct injection
	Turbocharged type	HE431V
	**lubricate**	Oil is delivered through oil pump, pressure reducing valve and oil filter.
	Oil pressure (thermal engine) - idling bar - Maximum speed bar	 2 5
	cooling liquid Water pump driving mode	The liquid passes through the belt
	thermostat Initial opening temperature c	85

Engine characteristic curve



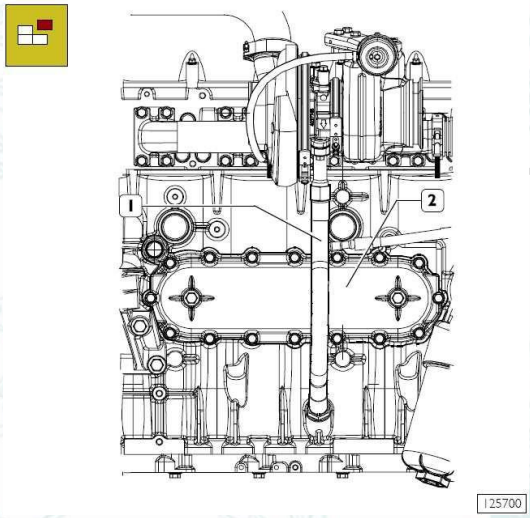


Engine disassembly

Disassembling and assembling the engine on the bench

Note: Before installing the engine on the rotating frame 99322230, remove the parts that may affect the installation of the bracket 99361042. Therefore, remove the oil radiator (2) and supercharger oil return pipe (1) as shown in the figure below.

figu

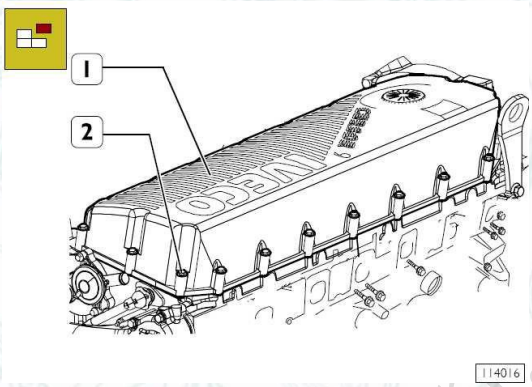


Place a container under the oil radiator (2) to drain the engine coolant. Loosen the fastening bolts and remove the oil radiator assembly (2).

Remove the supercharger return pipe (1).

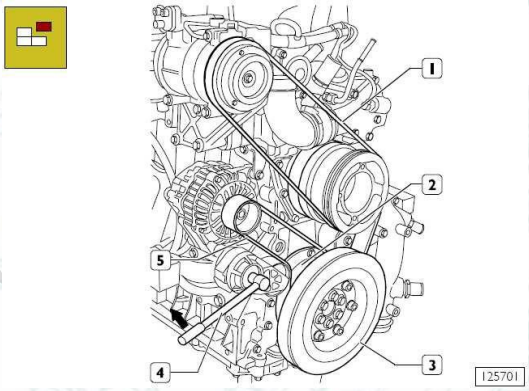
Install the engine on the rotary bracket 99322230. Drain the oil in the oil pan into a specific container.

Fig



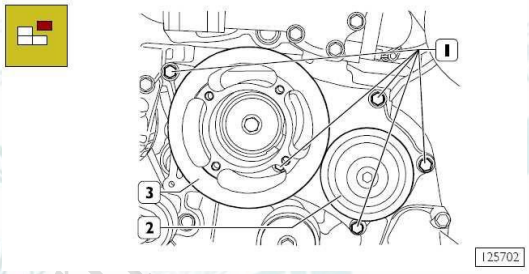
Loosen the fastening bolts (2) and remove the cylinder head cover (1), so as to remove the fuel injector and common rail harness. Remove all wire harnesses.

Fig



Remove the fan. Since the air conditioner compressor belt (1) can no longer be used, cut the belt. Use the special tool (4) to move in the direction of arrow to remove the water pump and generator belt (5). Loosen the bolts and remove the pulley (2) and the shock absorber (3).

Fig



Remove the water pump (2), pulley (3) and bolt (1).

Fig