■MAJOR DIFFERENCE

The major differences of 2AD-FHV engine from 2AD-FTVengine are as follows:

Item	Outline
Features	● The D-CAT (Diesel-Clean Advanced Technology) system is used. For details, see page EG-115. ● A high-velocity piezo type injector is used to realize optimum fuel injection characteristics to reduce emissions and combustion noise, and to achieve high output. ● By setting the maximum fuel injection pressure at 180 MPa, the diameter of fuel spray particles is reduced. This enhances combustion efficiency and fuel economy. ● The 2AD-FTV engine has provided low compression ratio, but the compression ratio of 2AD-FHV engine is further lower. ● By adopting a lower compression ratio and a higher boost turbocharger, the mass of intake air and fuel injection at the point of maximum cylinder pressure, high output is achieved. This also reduces pumping loss, and thus enhances fuel economy. ● A ceramic glow plug with a higher operating temperature than that of conventional metal glow plugs is used to enhance startability, and reduce white smoke.
Engine Proper	● Along with the use of the piezo type injector, the shape of the cylinder head cover is changed due to a change in the mounting method of the injector. For details, see page EG-118. ● A hole to install the exhaust fuel addition injector is added to the No. 4 exhaust port of the cylinder head. For details, see page EG-118. ● The shape of the piston combustion chamber is changed. For details, see page EG-119.
Cooling System	The water circuit is changed due to the adoption of the water-cooled turbocharger. For details, see page EG-120.
Intake and Exhaust System	● A bypass passage with a switching valve is added to the EGR cooler. For details, see page EG-121. ● The turbocharger is changed to a water-cooled type. For details, see page EG-122. ● The exhaust manifold converter uses NSR (NOx Storage Reduction) and DPNR (Diesel Particulate-NOx Reduction) catalysts. For details, see page EG-122.
Fuel System	● A fuel outlet for the exhaust fuel addition injector is added to the supply pump. For details, see page EG-124. ● A pressure discharge valve is added to the common-rail. For details, see page EG-125. ● The fuel pressure sensor that contains two circuits (main and sub) is used. For details, see page EG-137. ● A piezo type injector is used. For details, see page EG-126. ● The exhaust fuel addition injector is added for catalyst support control. For details, see page EG-128.

(Continued)

Item	Outline
Engine Control System	● Catalyst support control is used in accordance with the adoption of the D-CAT system. For details, see page EG-141. ● A differential pressure sensor, an air-fuel ratio sensor, and two exhaust gas temperature sensors are added to perform catalyst support control. For details, see page EG-138, 139 and 141. ● Along with the addition of the EGR cooler bypass switching valve, the EGR control is changed. For details, see page EG-143.

Structures other than above are the same as those of the 2AD-FTV engine. For details, refer to 2AD-FTV engine section.