

**CASE**

PROFESSIONAL PARTNER

**REPAIR MANUAL  
FOR CNH U.K. ENGINES**

**667TA/EEG  
667TA/EEC  
667TA/EBF  
667TA/EED  
667TA/EBD**



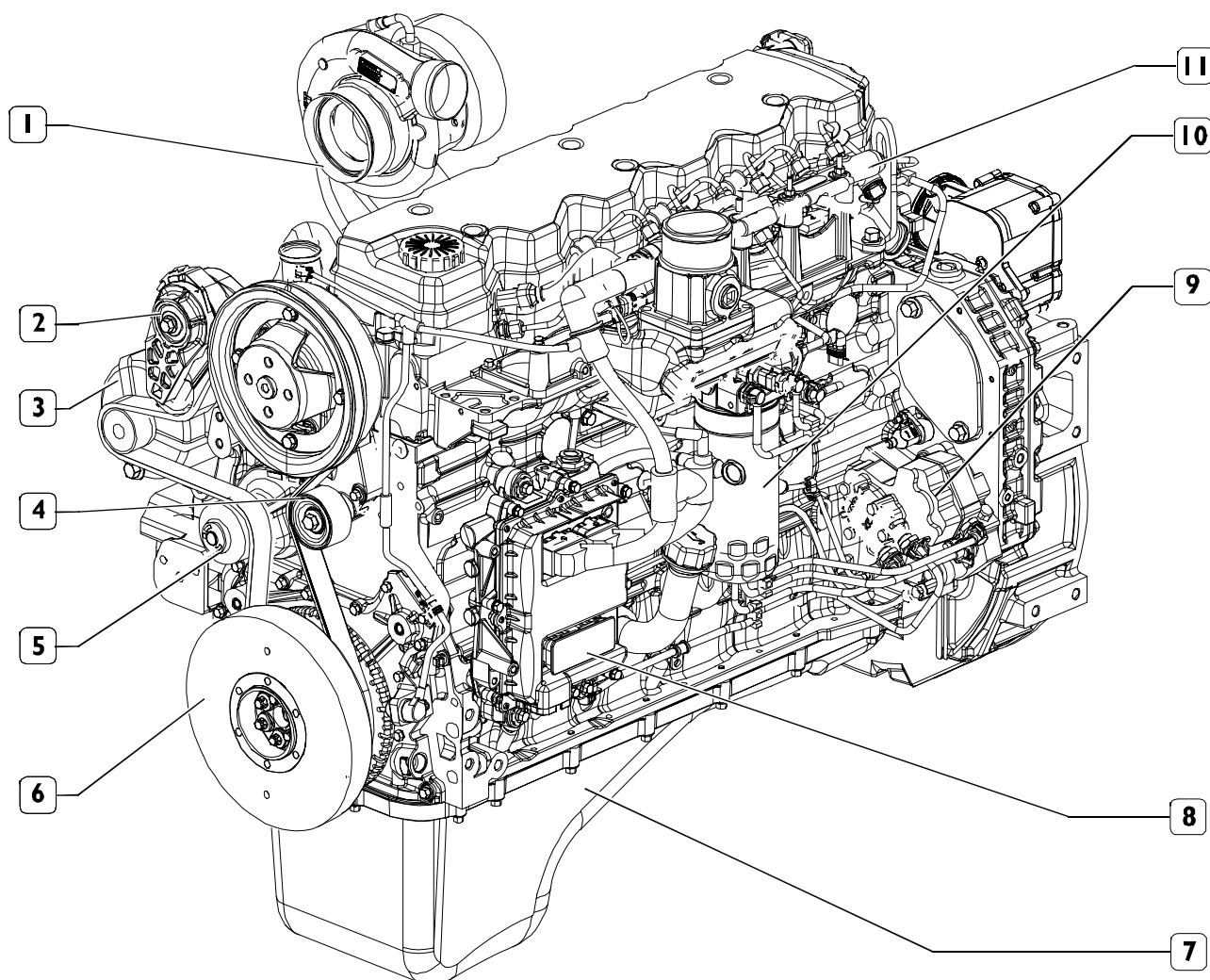
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Issued 1-2007

## 667TA ENGINE OVERHAUL

## 667TA ENGINES

Figure 4



1. Turbocompressor – 2. Automatic belt stretcher – 3. Alternator – 4. Fixed guide pulley –  
5. Water pump – 6. Damper flywheel – 7. Oil sump – 8. Electronic central unit –  
9. High pressure pump with feed pump – 10. Diesel oil filter – 11. Common rail

## DESCRIPTION OF MAIN MECHANIC ENGINE COMPONENTS

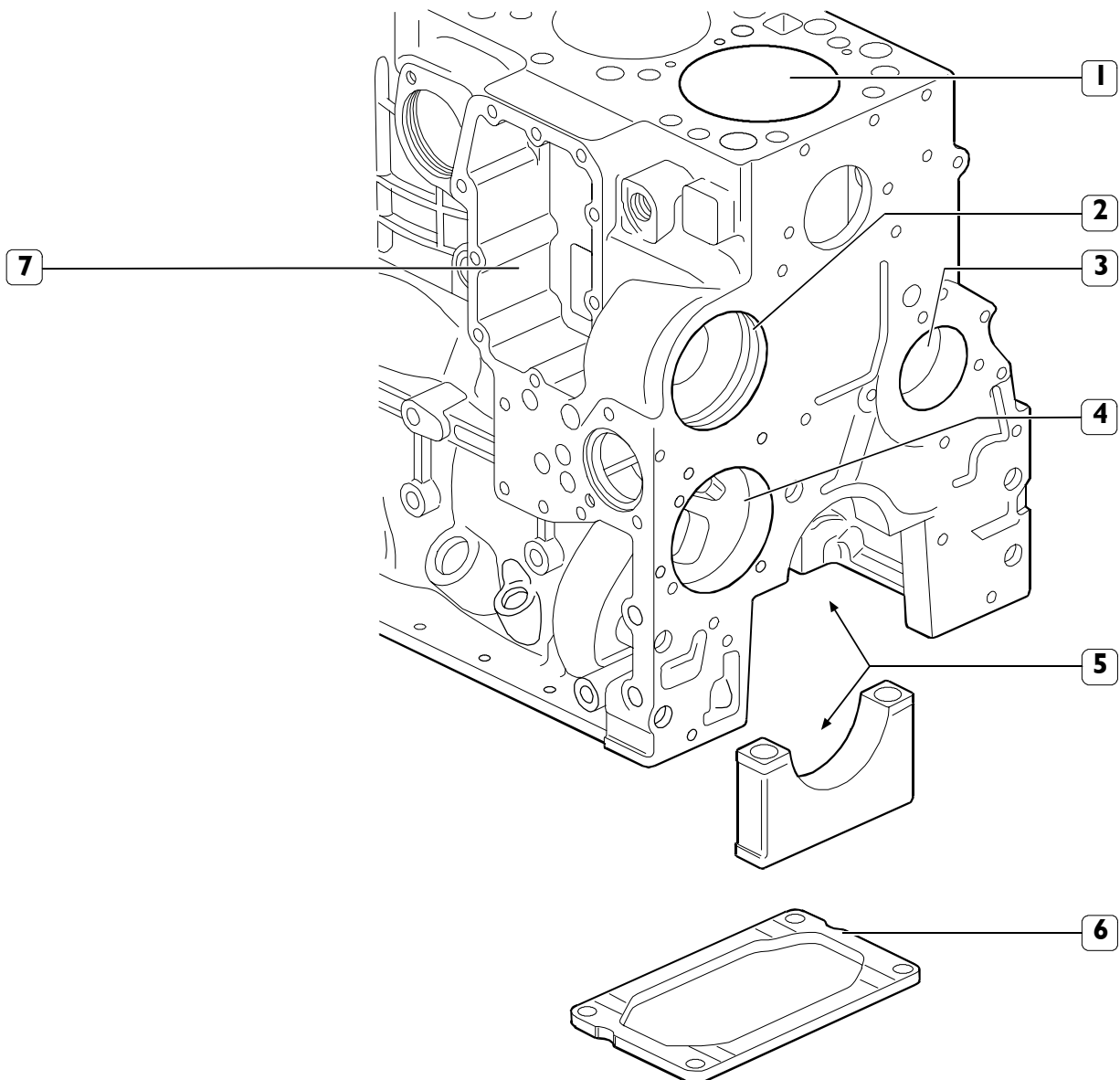
### Crankcase

It consists of a cast--iron structure in which the following items are realized: cylinder liners (1); bed supports (5) and seats for: distributing shaft bushings (3), tappets, water/oil heat exchanger (7), water pump (2) and oil pump (4).

It also incorporates the coolant circulation chambers and the engine member lubricating circuit ducts.

Plate (6) is fitted to the lower part of the crankcase and ensures greater resistance to forces and stress.

Figure 5



## 667TA ENGINE OVERHAUL

**Drive shaft**

It is made of steel and rests on seven induction-hardened supports.

Inside the drive shaft are the lubricating oil ducts.

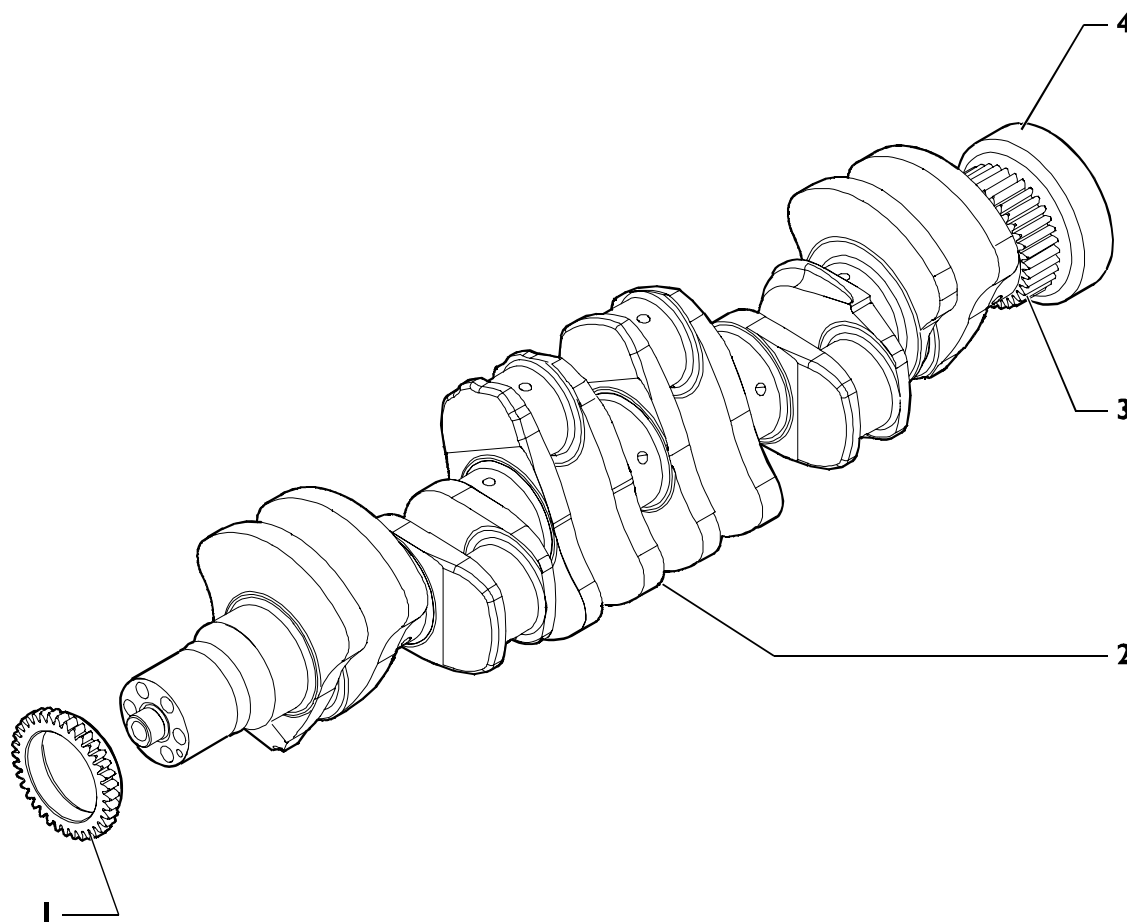
The following items are force-fitted on the front shank: oil pump drive gear, phonic wheel, damper flywheel and auxiliary component drive pulley.

The following items are force-fitted on the rear shank: distributing shaft drive gear and engine flywheel mounting hub.

The main half bearings are made of steel with an anti-friction alloy coating.

The penultimate main half bearings are equipped with a shoulder to restrain the drive shaft end play. Parts (1) and (3) are mounted in an interfering manner on the rear shank and cannot be replaced.

Figure 6



1. Oil pump drive gear – 2. Drive shaft – 3. Valve gear drive gear –  
4. Flywheel attachment hub

**Drive shaft seal rings**

The front and rear seal rings are of the “box” type, with radial seal. They can be removed by means of tools 380000980 and 380000981, and mounted by means of tools 380000983 and 380000984.

**Connecting rods**

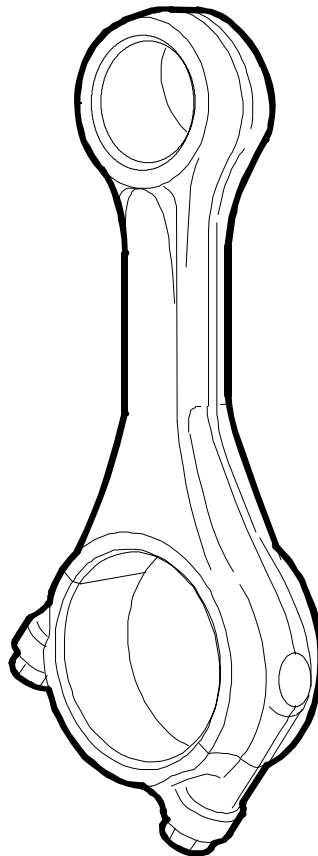
They are steel-stamped, of the oblique cut type, with separation of the cap obtained by an advanced technology (fracture split) instead of mechanic machining.

The connecting rod half bearings are made of steel, with anti-friction alloy coating.

Each connecting rod is marked:

- By a number (on the connecting rod body and cap) indicating its respective match and the cylinder in which it is mounted.
- By a letter (on the connecting rod body) indicating the weight class of the factory-assembled connecting rod.

Figure 7



## 667TA ENGINE OVERHAUL

**Pistons**

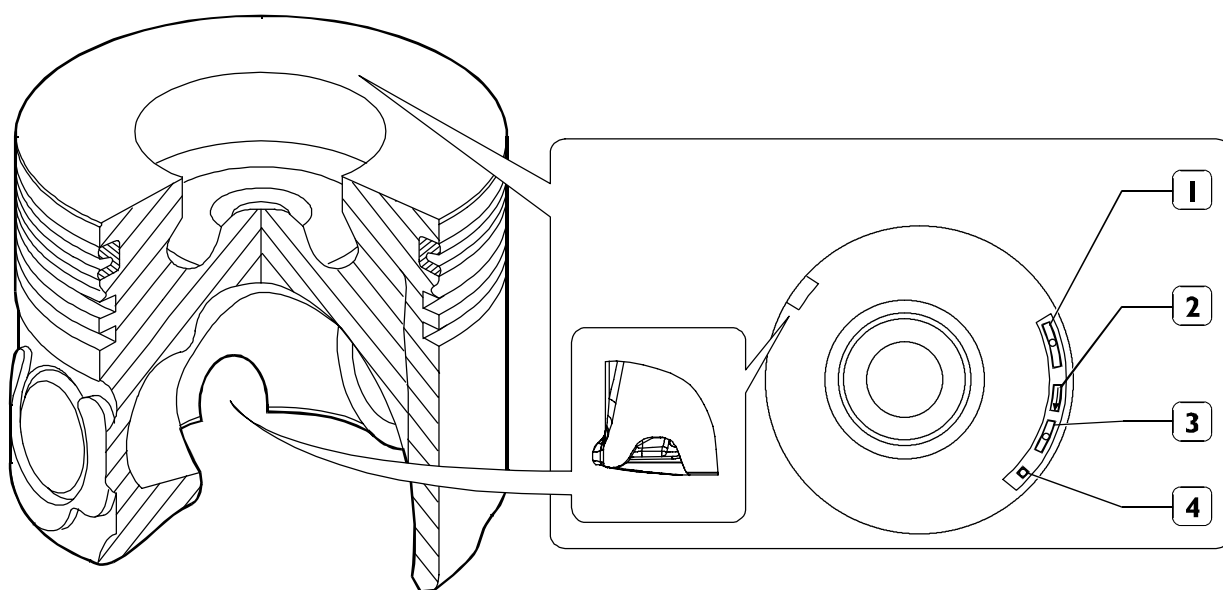
The combustion chamber is found on the piston crown. The crown is cooled by the engine oil delivered by the nozzle fitted to the crankcase.

Recesses, housing spring rings, are three; the 1<sup>st</sup> one is made of a cast iron insert.

The following reference data are engraved on the piston crown:

1. Spare part number and design modification number
2. Inscription (facing the crankcase front side) indicating the mounting sign of the piston in the cylinder liner.
3. Date of manufacture;
4. Stamping indicating 1<sup>st</sup> recess insert testing.

Figure 8



### Distributing shaft

The distributing shaft rests on seven supports in the crankcase.

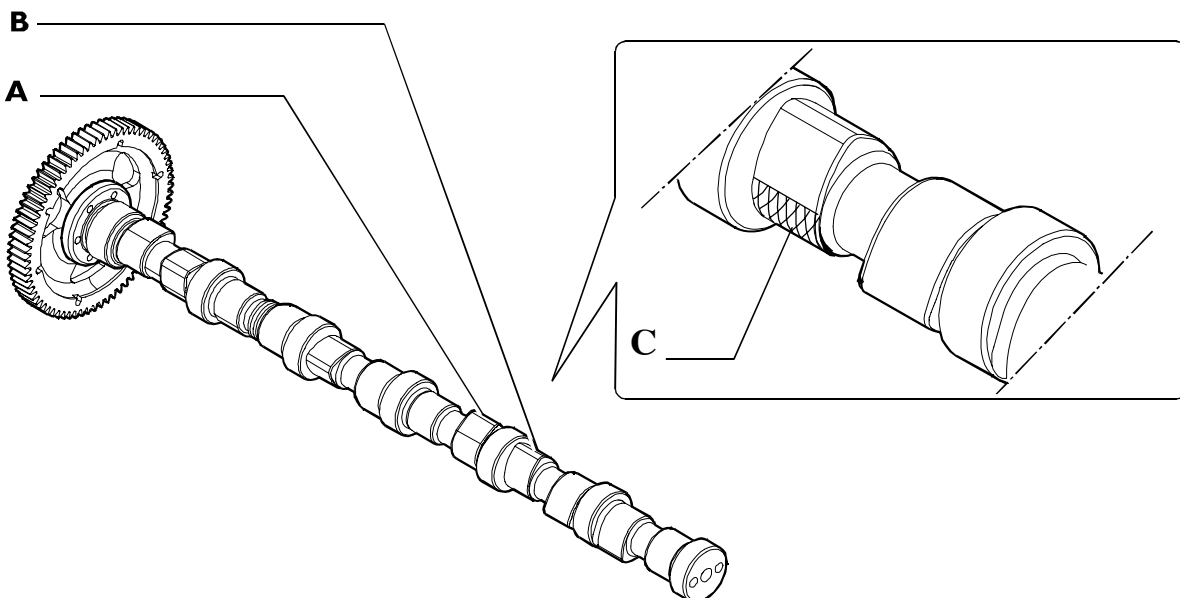
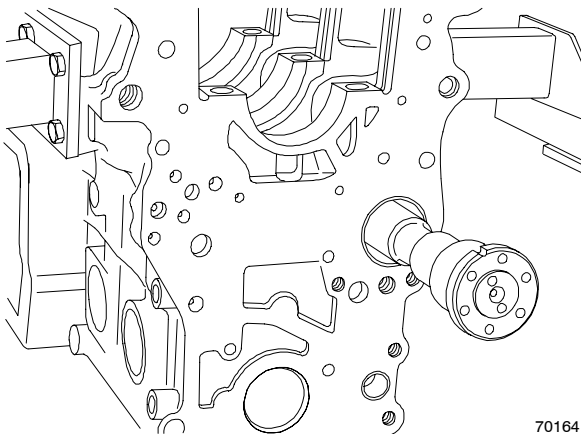
The rear bearing is equipped with steel bushes coated with friction-resistant material that are fitted with interference. There are two drive cams per cylinder.

**A.** Intake valve control

**B.** Exhaust valve control

The distributing shaft is controlled directly by the drive shaft by means of straight-tooth gears.

Figure 9



### EGR EXHAUST GAS RECIRCULATION SYSTEM

The exhaust gases can be partially conveyed back into the cylinders to lower the maximum values of the combustion temperature that are responsible for the production of nitrogen oxides (NO<sub>x</sub>).

The exhaust gas recirculation system (EGR), lowering the combustion temperature by decreasing the concentration of oxygen in the combustion chamber, is therefore an effective system to control the emission of NO<sub>x</sub>.

#### Internal EGR acting on the exhaust valves

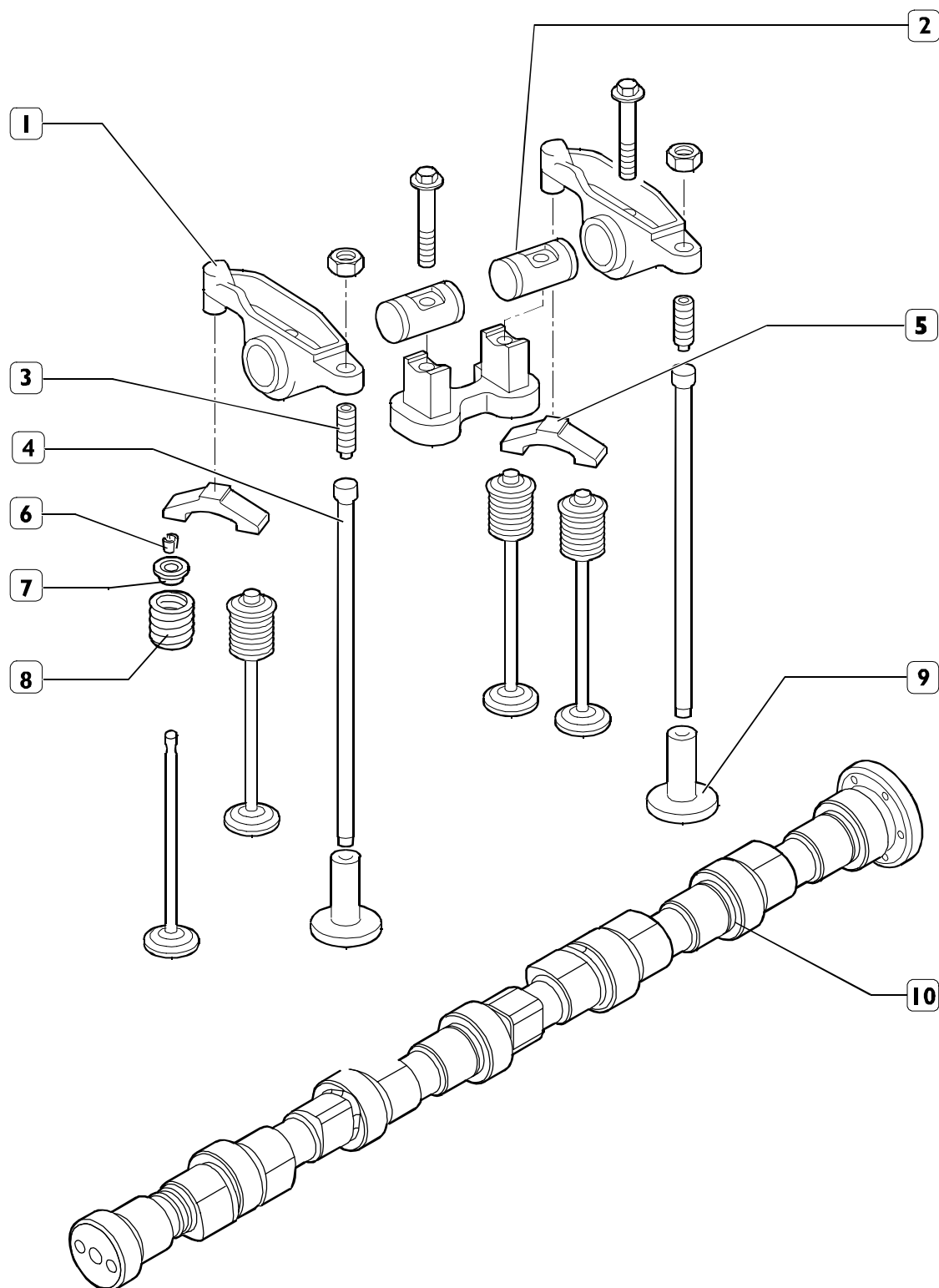
The internal EGR system, thanks to an appropriate exhaust cam design permits some of the exhaust gases to be reintroduced back into the engine cylinders. This type of EGR, internal EGR is not provided with any electronically controlled element: the system is always on. Its configuration doesn't need any additional elements such as control valves, pipes or heat exchangers.

The exhaust cam, besides the main lobe, has an additional lobe (C) compared to the configuration without EGR. During the intake stroke of the cylinder under examination, this lobe permits briefly opening the exhaust valve. In this way, recirculation is generated on the cylinder in the intake stroke due to the greater pressure of the exhaust gases compared to the intake gases.

## 667TA ENGINE OVERHAUL

## Valve control

Figure 10



1. Rocker arm – 2. Arbour – 3. Adjusting screw – 4. Rod – 5. Jumper – 6. Lock cones – 7. Cup –  
8. Spring – 9. Tappet – 10. Distributing shaft



## 667TA ENGINE OVERHAUL

**Cylinder head engines: 667TA/EBF – 667TA/EBD – 667TA/EED**

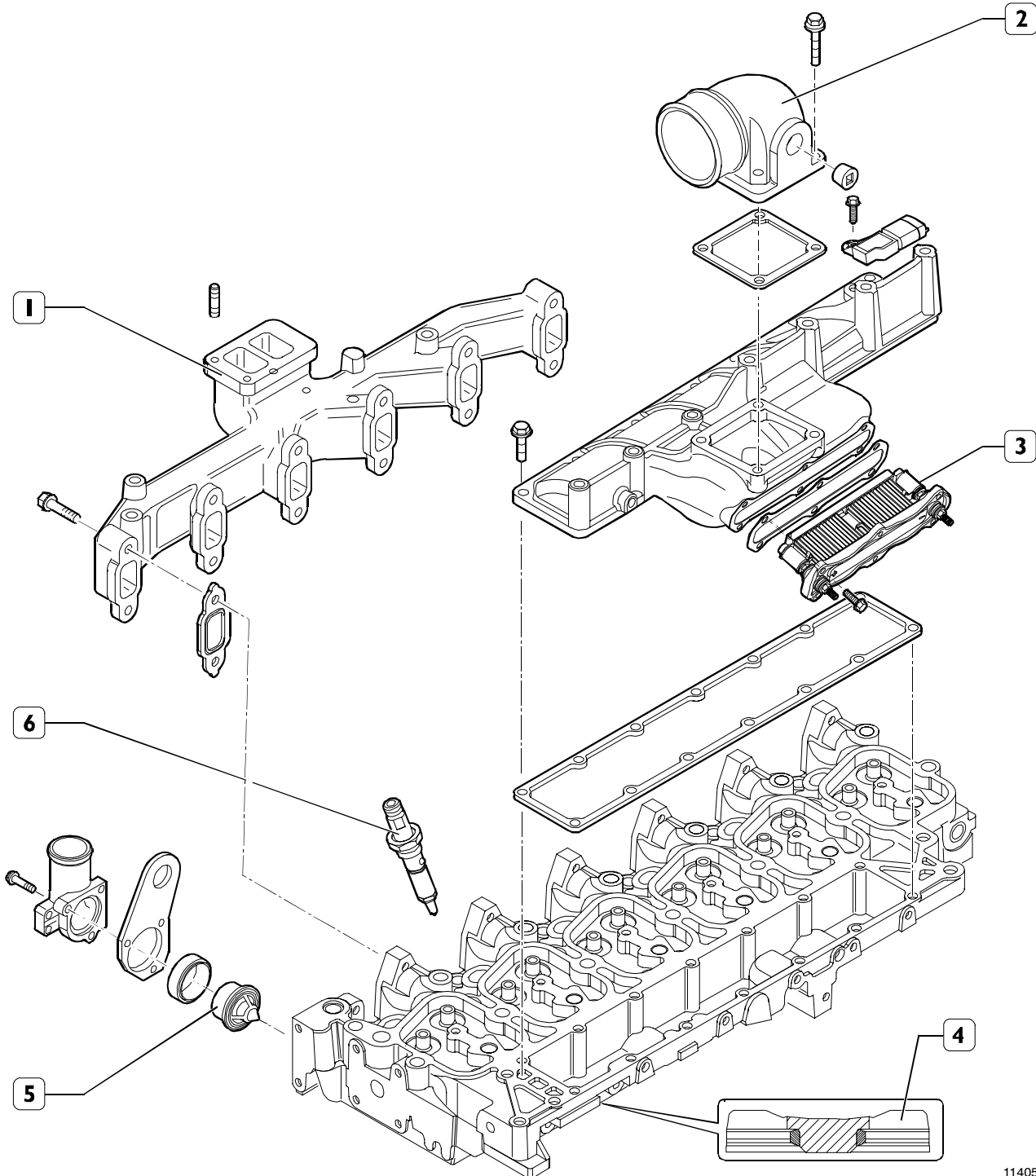
The seats of the following parts are obtained on the cast-iron cylinder head:

- inserted valve seats (4);
- injectors (6);
- thermostat (5);

Moreover, the following components are inserted on the heads:

- single-block exhaust manifold (1);
- intake manifold (2) with seat for cold start air heater (3).

Figure 11



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DETAIL OF CYLINDER HEAD WITH INSERTED VALVE SEATS

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**Cylinder head engines: 667TA/EEG - 667TA/EEC**

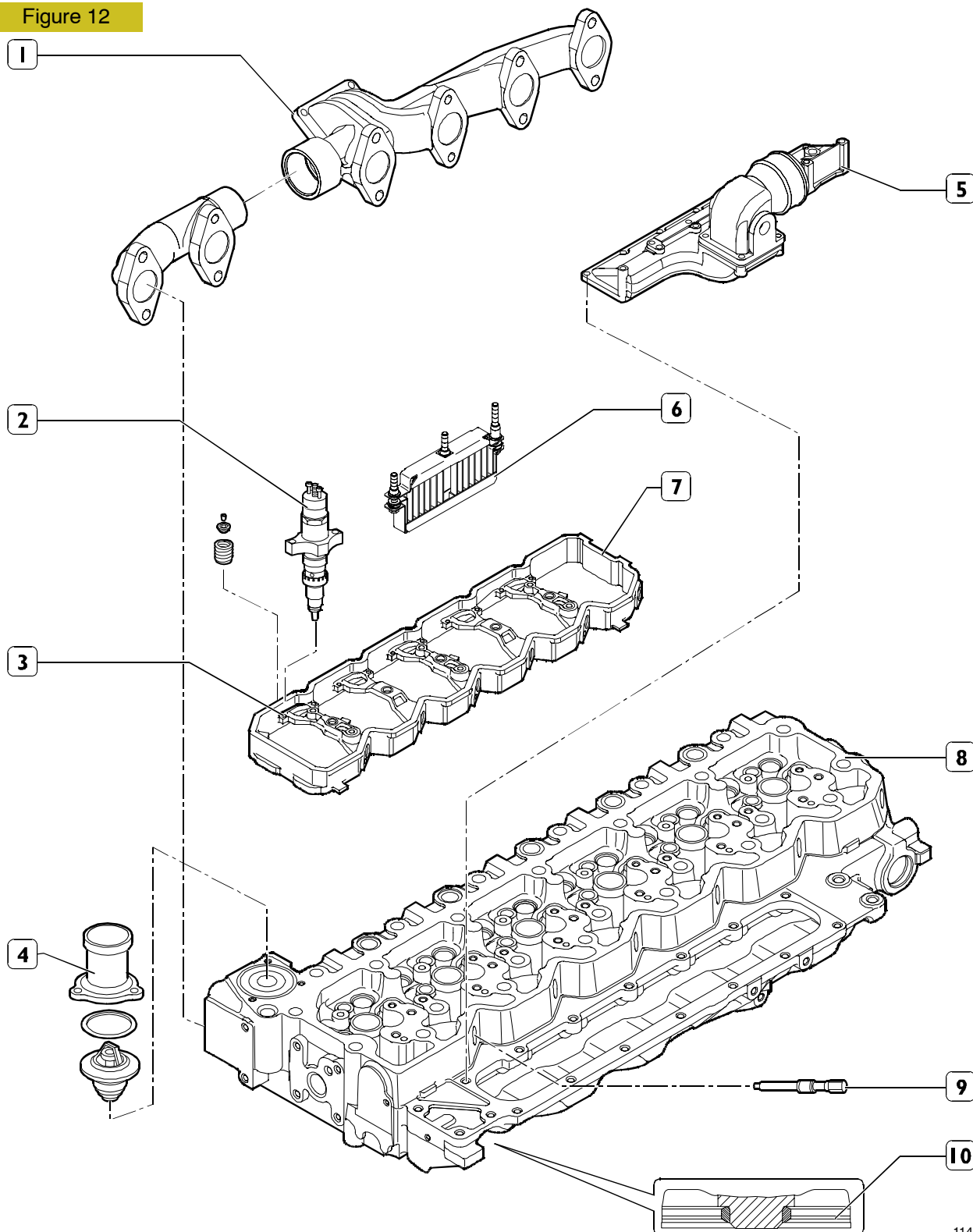
The seats of the following parts are obtained on the cast-iron cylinder (8) head:

- inserted valve seats (10);
- injectors (2);
- thermostat (4);

Moreover, the following components are inserted on the heads:

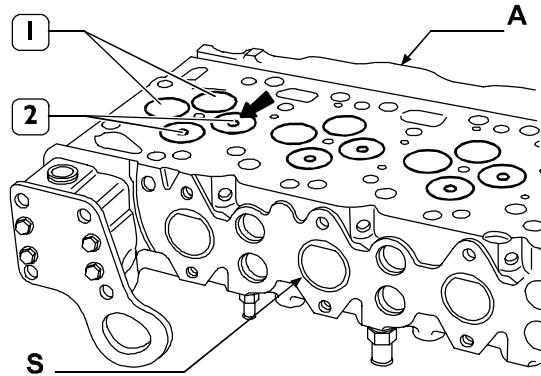
- exhaust manifold (1) in two parts
- intake manifold (2) with seat for cold start air heater (3).
- support (7) with injector wiring harness (3).

Figure 12



## Valves and valve seats

Figure 13



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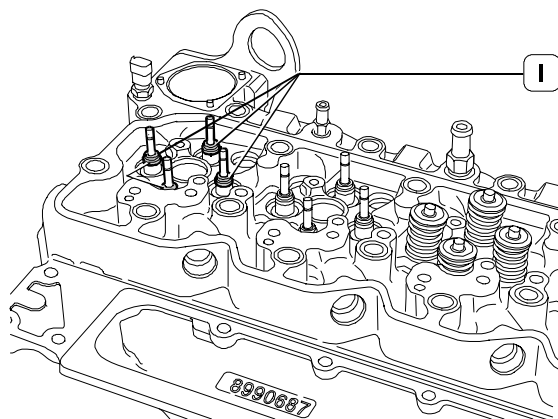
1. Intake valve – 2. Exhaust valve – A. Intake side – S. Exhaust side

Valve seats have following angles:

- 45° (exhaust valves)
- 60° (intake valves)

Exhaust valves 2 have a distinctive notch at the centre of the head.

Figure 14



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Figure 14 shows the oil seals mounted on valve stems.

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