

Audi 6.3l W12 FSI engine

A twelve cylinder is the pinnacle of engine design, and traditionally a hallmark of luxury class cars in particular. The first-generation A8 was available with an engine of this type from 2001 onwards, and a more advanced version could be obtained from 2004 onwards in the following model series.

Audi's engineers have now thoroughly revised the W12, increasing its displacement to 6.3 litres and equipping it with petrol direct injection for higher power and efficiency.

The 6.3l W12 FSI engine gives the long-wheelbase Audi A8 '10 sportscar-like performance: it sprints from zero to 100 kph in just 4.9 seconds; the electronically governed top speed of 250 kph is a mere formality.

The engine runs exceptionally smoothly, and only at high engine loads and speeds do the car's occupants sense any of this supreme power at work.

For use in the long-wheelbase A8 '10, Audi's engineers have converted the W12 engine to FSI petrol direct injection. This involved extensive modification of the cylinder heads.

The high fuel economy of the 6.3l W12 FSI engine compared with its competitors is mainly a result of technologies from Audi's modular efficiency platform – which is used throughout the A8 model line.



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Learning objectives of this Self Study Programme:

In this Self Study Programme you will learn about the technology of the 6.3l W12 FSI engine.

When you have worked your way through this Self Study Programme, you will be able to answer the following questions:

- ▶ Which adaptations have been made for the use of petrol direct injection?
- ▶ How does the crankcase breather work?
- ▶ How is the oil circuit designed?
- ▶ What are the special features of the fuel system?
- ▶ What modifications have been made to the engine management system?
- ▶ What are the points to note when servicing the vehicle?

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► The Self Study Programme teaches a basic knowledge of the design and functions of new models, new automotive components or new technologies.

It is not a Repair Manual! Figures are given for explanatory purposes only and refer to the data valid at the time of preparation of the SSP.

For maintenance and repair work, always refer to the current technical literature.

Terms written in italics or indicated by an asterisk are explained in the glossary at the back of this Self Study Programme.



Note

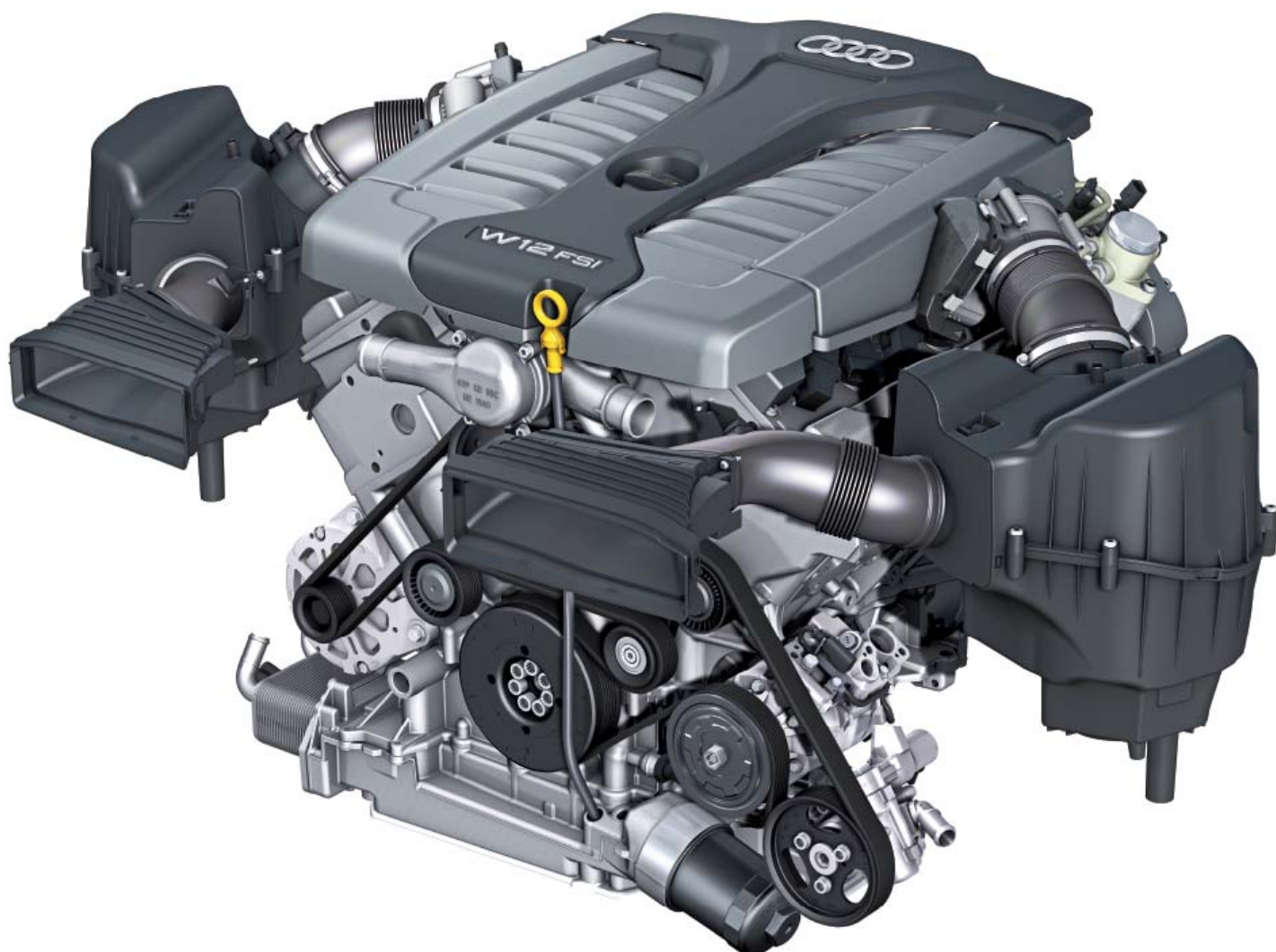


Reference

Introduction

Brief technical description

- ▶ Twelve-cylinder petrol engine with four rows of three cylinders arranged in a W configuration
- ▶ The engine is controlled by a multi-element chain drive (optimised for low friction)
- ▶ More compact dimensions than a comparable V8 engine
 - ▶ Length / width / height: approx. 50 cm / 70 cm / 70 cm
- ▶ FSI petrol direct injection with twin high-pressure fuel pumps, twin fuel rails and six-port high-pressure injectors
- ▶ Two cylinder heads with four valves per cylinder and two camshafts per bank including hydraulic camshaft adjusters
- ▶ *Recuperation system** for energy recovery during deceleration phases



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Reference

For further information about the basic design of the W12 engine, refer to Self Study Programmes 267 "The Audi 6.0l W12 engine in the Audi A8 - Part 1" and 268 "The Audi 6.0l W12 engine in the Audi A8 - Part 2".