



**Audi 2.8l and 3.2l FSI engines  
with Audi valvelift system**

Self-Study Programme 411

Audi has again extended its current vee engine series to include an additional power plant. The new 2.8l FSI engine fills the gap between the 2.4l MPI engine, which will be produced until mid-2008, and the 3.2l FSI engine. Moreover, this engine is a new technology platform.

Featured new technologies are:

- the Audi valvelift system,
- a flow-regulated oil pump with dual-stage pressure control and
- trioval sprockets.

The primary targets for development were to improve friction and fuel efficiency.

Internal engine friction was reduced through the following modifications:

- Reduction of pre-load on the 2nd and 3rd piston rings
- Use of the Audi valvelift system (small intake stroke at partial throttle)
- Reduction of the exhaust valve stroke (10 mm -> 9 mm)
- Replacement of the bucket tappets in the high-pressure pump drive with cylindrical tappets
- Adoption of roller chains for chain drives A to C
- Development of trioval sprockets with a friction-enhanced chain tensioner design
- Downsizing of the oil pump
- Integration of an oil pump flow regulator with dual-stage pressure control
- Downsizing of the coolant pump and increasing of the thermostat temperature

The new technologies will also be featured on forthcoming versions of the current engines. The 3.2l FSI engine will be the next in line. Due to the commonalities between the 2.8l and 3.2l FSI engines, both units are described in this Self-Study Programme.

**2.8l FSI engine**



411\_001



**3.2l FSI engine**

411\_123

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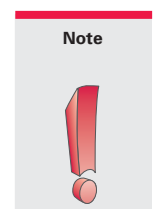
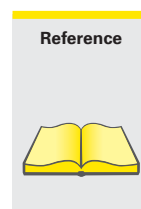
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The Self-Study Programme teaches the design and function of new vehicle models, automotive components or technologies.

**The Self-Study Programme is not a Repair Manual.**  
All values given are intended for reference purposes only and refer to the software version valid at the time of preparation of the SSP.

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



## 2.8l FSI engine

### Specifications

|  |   |
|--|---|
| <b>Engine code</b>                     | BDX   |
| <b>Type of engine</b>                  | 6-cylinder vee engine with 90° included angle |
| <b>Displacement</b> in cm <sup>3</sup> | 2773  |
| <b>Max. power</b> in kW (bhp)          | 154 (210) at 5500 – 6800 rpm                  |
| <b>Max. torque</b> in Nm               | 280 at 3000 – 5000 rpm                        |
| <b>No. of valves per cylinder</b>      | 4   |
| <b>Bore</b> in mm                      | 84.5  |
| <b>Stroke</b> in mm                    | 82.4  |
| <b>Compression ratio</b>               | 12 : 1  |
| <b>Firing order</b>                    | 1–4–3–6–2–5                                   |
| <b>Engine weight</b> in kg             | 165   |
| <b>Engine management</b>               | Simos 8.1                                     |
| <b>Fuel grade</b>                      | 95 RON*) or higher                            |
| <b>Exhaust emission standard</b>       | EU 4  |
| <b>Injection/ignition system</b>       | Simos 8.1                                     |
| <b>Exhaust gas recirculation</b>       | no  |
| <b>Charging</b>                        | no  |
| <b>Knock control</b>                   | yes   |
| <b>Variable valve timing</b>           | yes   |
| <b>Intake manifold changeover</b>      | yes   |
| <b>Secondary air system</b>            | no  |

\* Unleaded fuel with 91 RON can also be used, but this can cause a slight loss of power

#### Torque/power curve

- Max. torque in Nm
- Max. power in kW

