

Service Training



Self Study Program 823603

VW 3.2 and 3.6 liter FSI Engine



Volkswagen of America, Inc.
Volkswagen Academy
Printed in U.S.A.
Printed 10/2006
Course Number 823603

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This Self-Study Program provides information regarding the design and function of new models. This Self-Study Program is not a Repair Manual.

This information will not be updated. For maintenance and repair procedures, always refer to the latest electronic service information.



Note



Important!

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Overview

The 3.2L and the 3.6L V6 FSI engines belong to the VR family of engines. Their reduced V-angle, compared with a traditional V-engine, gives them an extremely compact and space-saving design.

The VR engines have a long history at Volkswagen. The VR success began in 1992 with the start of production of the 2.8L VR6 engine. In 2002, the VR6 was converted to four-valve technology. In 2003 the capacity of the VR6 was increased to 3.2 liters, resulting in a power increase of up to 250 hp. Then, in 2006, the capacity was increased to 3.6 liters, resulting in a power increase of up to 280 hp.

The VR engines are highly suitable for a broad range of applications due to their compact design.

This self-study program is designed for use in the Volkswagen Group, and therefore does not address the application of the engine in a specific vehicle.

If reference is made to a particular vehicle, this is intended only as an example, to describe design, operation or to help better understand this manual.



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Overview



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The new 3.2L and 3.6L V6 FSI engines are the newest representatives of the VR engine series.

The displacement was increased to 3.2 liters or 3.6 liters, combined with the switch to the FSI technology. This yields a noticeable increase in power and torque compared with the previous engines.

The 3.6L engine has a maximum rated power of 280 hp (206 kW) and produces a maximum torque of 265 lb.fts (360 Nm).

Special Features of both Engines:

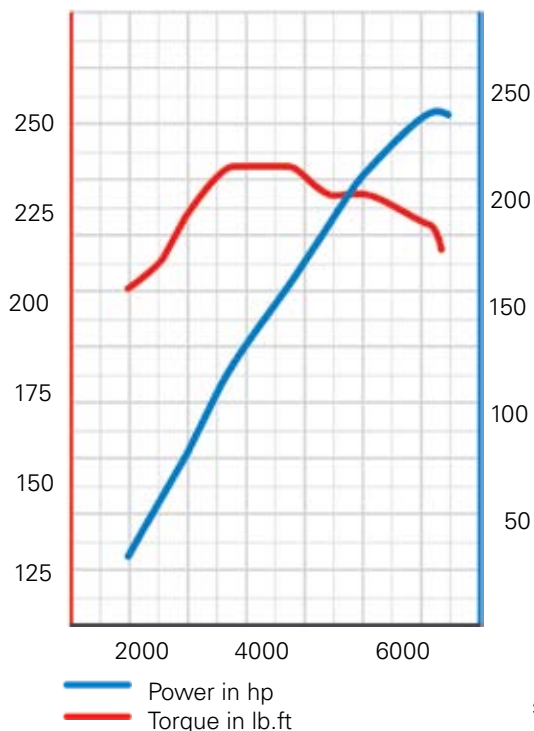
- Compact size
- FSI direct gasoline injection
- Four-valve technology with roller rocker arms
- Internal exhaust gas recirculation
- Single-piece variable-length intake manifold made of plastic
- Cast iron crankcase
- Chain drive located on the transmission side with integral drive for the high-pressure fuel pump
- Continuously variable intake and exhaust camshafts

The use of FSI direct fuel injection technology makes it possible to meet current Low Emission Vehicle (LEV2) emission standards.

Technical Data for the 3.2L V6 Engine

Construction	6 cylinders VR Engine
Displacement	193.3 cu.in (3168 cm ³)
Bore	3.4 in (86 mm)
Stroke	3.58 in (90.9 mm)
V Angle	10.6°
Valves per cylinder	4
Compression ratio	12:1
Max Output	250 hp (184 kW) @ 6250 rpm
Max Torque	243 lbs.ft (330 Nm) @ 2750-3750 rpm
Engine management	Motronic MED 9.1
Exhaust emission control	Three-way catalytic converters with O2 sensor
Emission standard	LEV2

Torque-power Curve

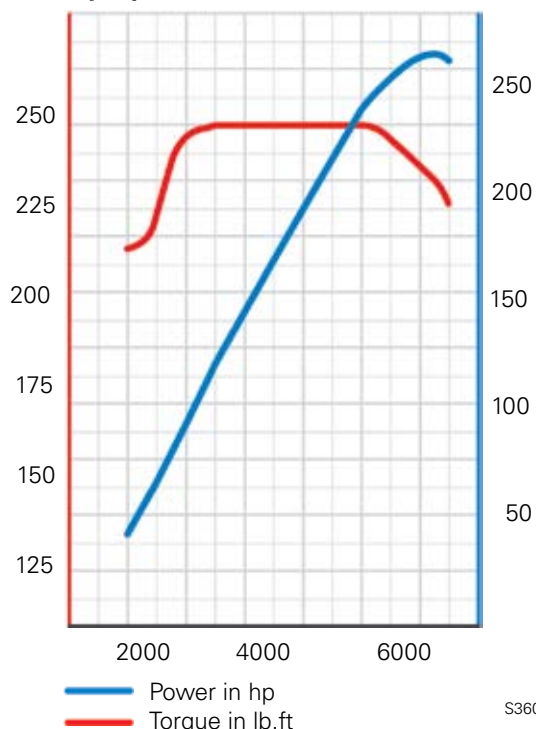


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Technical Data for the 3.6L V6 FSI Engine

Construction	6 cylinders VR Engine
Displacement	219.5 cu.in (3597 cm ³)
Bore	3.5 in (89 mm)
Stroke	3.8 in (96.4 mm)
V Angle	10.6°
Valves per cylinder	4
Compression ratio	12:1
Max Output	280 hp (206 kW) @ 6200 rpm
Max Torque	265 lbs.ft (360 Nm) @ 2500-5000 rpm
Engine management	Motronic MED 9.1
Exhaust emission control	Three-way catalytic converters with O2 sensor
Emission standard	LEV2

Torque-power Curve



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