Service Training



Self Study Program 896803 Tiguan Overview



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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. The Tiguan with its many highlights opens the market segment of compact SUVs (Sport Utility Vehicles) for Volkswagen. Although often referred to as Touareg's little brother, the Tiguan has a solid character of its own and establishes new standards in the areas of chassis, engine, and comfort.

Features such as the chassis off-road functions, offroad navigation, and bumpers that allow negotiating inclines up to 18 degrees assure the Tiguan's success. Already the name has stirred up quite a furor. 350,000 readers of the German automotive magazine AutoBild chose the name Tiguan, a word creation made up of TIger and LeGUAN (Leguan is the German word for Iguana). This self-study program will demonstrate how the Tiguan lives up to its name.

Enjoy your self-guided study.



Where is the Tiguan manufactured?

The compact SUV Tiguan 2008 is manufactured for Volkswagen by Auto 5000 GmbH in Wolfsburg, Germany, in addition to the successful Touran compact van.

Production starts with the body and goes all the way through the paint shop and on to final assembly at the Auto 5000 GmbH plant.

State-of-the-art production and logistics methods have proven successful since the start of vehicle production at Auto 5000 GmbH in November 2002. These methods are continuously improved by implementing innovative concepts, resulting in the flexible design of the assembly line which is now being used for both Touran and Tiguan production.



Touran models are not sold in North America.

The Auto 5000 GmbH Volkswagen Manufacturing Plant, Wolfsburg



The Auto 5000 GmbH is a subsidiary of Volkswagen AG and its production facilities are located at the headquarters of the Volkswagen group in Wolfsburg.

The project "5000 x 5000" (5000 workplaces at 5000 DM) initiated the fast-paced success story of Auto 5000 GmbH in the fall of 1999. The primary goal of Auto 5000 GmbH was to prove that it was possible to create new and secure workplaces in Germany and, at the same time, build an automobile that was able to compete internationally. The success of Auto 5000 GmbH speaks for itself and confirms the concept. Over 750,000 Touran models have already left the production plant.

A decisive success factor was the close interaction of working and learning. The consistent qualification and continuous training of the employees had even been stipulated in a separate qualification labor agreement.

The factory accommodates a "Learning Factory" for each division serving as a place of learning and communication and providing a platform for the employees to exchange their experiences.



Overview

The Tiguan 2008 by Volkswagen

• Radio Navigation System RNS 510

TIGUAN

- Tire Pressure Monitoring System
- B-Pillar with Two Stability Zones
- Parking Assistant

- Brake System with Roll-Over Prevention
 - Bumper with 18° Incline Angle

• Electromechanical Steering with Axially Parallel Drive



• All-Wheel Clutch Generation IV

- Back-Up Light In Rear Bumper
- Trailer Hitch Preparation

Overview

Technical Data

Overall Dimensions and Weights



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Overall Dimensions

Length	174.29 in. (4427 mm)						
Width	71.22 in. (1809 mm)						
Height	66.50 in. (1686 mm)						
Wheelbase	102.52 in. (2604 mm)						
Track Width, Front	61.81 in. (1570 mm)						
Track Width, Rear	61.85 in. (1571 mm)						

Weight/Additional Data

Gross Vehicle Weight	4784 lb (2170 kg)						
Empty Weight without Driver	3408 (1546 kg)						
Maximum Roof Load	220 lb (100 kg) *						
Tow Load (Braked)	2200 lb (998 kg) up to 12% gradient						
Tank Capacity	16.9 gal (64 liters)						
Drag Coefficient	0.37						

* With roof rail.

Interior Dimensions



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Interior Dimensions and Capacities

Interior Length (Maximum)	69.21 in. (1758 mm)
Trunk Capacity	23.77 ft ³ (673 liters) *
Trunk Capacity with Folded Down Backrest (Maximum)	56.10 ft ³ (1589 liters) **

* Depending on equipment and rear seat bench position.

** Depending on equipment

Head Room Front	39.06 in. (992 mm)							
Head Room Rear	39.02 in. (991 mm)							
Shoulder Room Front	56.22 in. (1428 mm)							
Shoulder Room Rear	54.76 in. (1391 mm)							

Body Structure

The front end and the center platform of the Tiguan body is based on the body design of the Passat. The A5 Jetta/Rabbit design was used for the rear end of the vehicle. The combined structure is a completely new engineering development.

Design engineering's primary focus was comfort and crash properties without losing sight of lightweight construction. Reaching the target objectives for both on-road and off-road use presented a challenge.

The high standards that were achieved are reflected in the superior static and dynamic stiffness, resulting in a good lightweight quality figure.

Lightweight quality L = 2.4

(e.g. Rabbit, L = 2.5)

The lightweight quality figure is derived from the relationship of vehicle mass to vehicle size and stiffness.

Body-Chassis Connection

To achieve the SUV capabilities of the Tiguan, the body was raised to increase ground clearance. The axles were positioned lower which raises the body.

The mounting position of the front axle was lowered 1.22 inches (31 mm) and that of the rear axle 1.61 inches (41 mm).

Larger wheels provide additional ground clearance.



Body



B-Pillar

The special feature of the B-pillar is its single-piece construction with two stability zones. Partial pressquenching gives the upper section a very high strength to withstand extreme stresses. The lower section has a lower stability and higher deformability for controlled deformation in a crash.

Body Innovations

Door Design

The front and rear doors are of conventional construction and consist of a door base body and a bolted-on subassembly carrier. The door locks, window lifts, and loudspeakers are pre-assembled on each carrier.

Front Door with Subassembly Carrier



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Rear Door with Subassembly Carrier





Taillamps

The taillamps are assembled with the help of two mounting screws and a lateral guide into which the taillamps are inserted until they engage.



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Two threaded bushings with hexagon sockets are located under the mounting screws and are used to set the gaps.



Storage

The storage design of the Tiguan offers ample storage space for large and small items.

• Glove Compartment with Cooling Feature

• Storage Trays in the Instrument Cluster

- Storage Pockets in the Front Door Trim Panels and Beverage Holders for Bottle Sizes up to 1.6 Quarts (1.5 Liters)
 - Storage Trays in the Center Console (Depends on the Equipment): Up to Four Cup Holders (Two Front, Two Rear) Connector Sockets Armrest with Extra-large Storage Compartment, or Armrest with Small Storage Compartment and CD Changer

• Roof Console with Sunglass Tray and Three Additional Compartments Lined with Rubber Pads with Solid-Roof Version

11150/111/

• Storage Pockets in the Rear Door Trim Panels and Beverage Holders for Bottles up to 1.6 Quarts (1.5 Liters)

• Cup Holders in the Rear Center Armrest

• Trunk with Different Loading Area Levels and Storage Options as well as Cargo Management for the Storage of a Wide Variety of Items

Occupant Protection

Safety Features

Air Bags and Seat Belts

The airbag triggering system consists of Airbag Control Module J234 in the front area of the frame tunnel with three internal acceleration sensors, two sensors in the longitudinal vehicle direction and one in the lateral vehicle direction as well as four external sensors for side-crash detection. Two of them are designed as pressure sensors and are located in the two front doors and two lateral acceleration sensors are located in the area of the C-pillars.

- Seat Belt Fastening Prompt for Driver and Passenger
- Seat Belt Pretensioner and Force Limiter for the Front Seats
 - Seat Belt Force Limiters for the Rear Outer Seats
 - Optional Rear Side Airbags in Connection with Seat Belt Pretensioners for the Rear Outer Seats
 - Three-Point Safety Belts on all Seats
 - LATCH Anchors on the Rear Outer Seats
 - Pressure Sensors in the Front Doors

• Driver and Passenger Airbag

Occupant Protection

- Head Airbags for Front and Rear Occupants
- Acceleration Sensors in the C-Pillar Areas Ø 11150/2011
- Side Airbags in the Front Seats

2.0-Liter TSI Turbocharged Engine

The 2.0-Liter TSI Turbocharged engine is a completely new design with the following features:

- Chain-driven camshafts
- Balance shafts integrated into block
- Belt-driven coolant pump
- New oil filter location
- Piston colling jets bolted to crankcase
- New crankcase breather
- Spur teeth on crankshaft, gear wheel module, and vibration damper
- Intake camshaft with continuously variable valve timing
- New high-pressure fuel pump
- Direct fuel injection

2.0L TSI Turbo Technical Data

Туре	4-cylinder in-line
Displacement	121 cu. in. (1984 cm ³)
Bore	3.2 in. (82.5 mm)
Stroke	3.7 in. (92.8 mm)
Valves per cylinder	4
Compression ratio	9.6 : 1
Maximum power output	200 hp (147 kW) at 5100 – 6600 rpm
Maximum torque	207 lbs - ft (280 Nm) at 1800 – 4700 rpm
Engine management	Bosch MED 17.5
Camshaft adjustment	Variable to 60-degree crank angle
Fuel type recommendation	Premium Plus unleaded Premium unleaded Regular unleaded with slight reduction in power
Exhaust gas treatment	ULEV 2, three-way catalytic converters with oxygen sensor regulation



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2.0L TSI Turbo Torque and Power



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Engine

Engine and Transmission Combinations

The Tiguan with the 2.0-Liter TSI turbocharged engine can be combined with a six-speed manual or a six-speed automatic transmission.

- Six-Speed Manual Transmission 0A6 is available on front-wheel-drive vehicles.
- Six-Speed Automatic Transmission 09M is available on both front-wheel-drive and 4Motion vehicles.
 - The six-speed automatic transmission 09M has been adapted to the Tiguan frame.

Six-Speed Manual Transmission 0A6 (FWD)



Six-Speed Automatic Transmission 09M (FWD and 4Motion)

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Haldex All-Wheel Drive Clutch Generation IV

The power transfer through the multiplate pack of the Haldex all-wheel drive clutch generation IV is nearly identical to the previous Haldex models. Generating the pressure with an electrical pump is a new feature.

Torque transfer is determined by the All Wheel Drive Control Module J492 by changing the aperture of Haldex Clutch Control Valve N373. Speed differences between front and rear axle are no longer a prerequisite for activating the all-wheel drive clutch.

Technical Features

- Electro-hydraulically controlled multiplate clutch
- Integrated in the rear axle drive
- Simplified hydraulic circuit
- Optimized demand-controlled pump selection

Advantages

- Clutch selection independent from the driving situation
- Rapid torque built-up through pilot control
- Permanent rear wheel drive capacity
- Unrestricted compatibility with the slip control systems (e.g. ESP, ABS)



For information on this topic, refer to the Self-Study Program 861803 *Tiguan Haldex All-Wheel Drive.*



Overview

The Tiguan chassis combines typical passenger car driving characteristics on the road with superb offroad capabilities. These demanding requirements on the Tiguan chassis were achieved by the further development and modification of the A5 and B6 chassis components.

• Stop Absorber in Front Suspension Dampers

- Ground Clearance: 7.68 inches (195 mm)
- Brake System: ABS/ESP TRW 450 EBC with Roll-Over Prevention (ROP)
- Tire Monitoring System
 - Revised Steering
 Column Clamping
 - Electro-Mechanical Steering with Parallel Axle Drive and Torque Steer Compensation
 - ESP Sensor Unit G419 is integrated in the Electro-Mechanical Parking Brake Control Module J540.

LIGUAN

Chassis



- Electromechanical Parking Brake with Planetary Gear and New Switch in the Center Console
- Weight-Optimized Rear Auxiliary Frame made of High-Strength Steel

Front Axle

The front axle is basically the McPherson axle with lower A-arms and wheel-guiding spring struts. The sub-frame and the A-arms are made of aluminum. There are six connecting points between sub-frame and body. This provides the body with a very high rigidity.



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Stop Absorbers

The newly developed shock strut on the front axle is equipped with a plastic boot acting as stop absorber when the vehicle rebounds.

This stop absorber helped to improve chassis comfort characteristics during off-road driving.

Shock is absorbed by the compression of the boot. The stop absorber is also equipped with oil boreholes allowing the absorber oil to escape. This results in a hydraulic shock absorbing effect.



Rear Axle

The rear axle of the Tiguan is based on the four-link 4Motion rear axle from the Passat. The aluminum sub-frame was replaced by a weight-optimized new development of high-strength steel elements. In addition, new vibration absorbers are used. They have a large oil capacity. This prevents the absorber oil from becoming too hot during off-road driving.

4Motion Rear Axle

The rear axle of the Passat is used on the 4Motion Tiguan. The absorption characteristics, the springs and stabilizers are adapted corresponding to the axle loads.

Rear Axle for Front-Wheel Drive

The 4Motion rear axle is also used for the frontwheel-drive version of the rear axle. Only the propeller shaft, the rear differential, and the drive shafts are omitted. Wheel suspension and wheel bearings of the front-wheel-drive version are installed.



Electromechanical Steering with Axially Parallel Drive

Electromechanical steering with belt-driven ball screw drive and an axially parallel electric motor are used. This new design provides a shock-free, sensitive, precise, and powerful steering system. Functions such as tracking correction and countersteer support are integrated.



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Torque Steer Compensation

Torque steer compensation is a new function of the electromechanical power steering system for front-wheel-drive vehicles. It prevents sideways pulling during acceleration with powerful engines and drive shafts with different lengths. The two drive shafts also have different angles of deflection, so different torques are generated on the wheels around the vertical axis during acceleration. These torque variations can cause a sideways pull. This torque steer is compensated for automatically by the electromechanical power steering system.



Steering Column

The Tiguan steering column can be adjusted by about 2 inches (50 mm) in height and 2 inches (50 mm) in length. The steering column is locked mechanically.

Steering Column Clamp

The operating lever of the steering column clamp is made of plastic and has been placed ergonomically at the left side. This helps to improve crash safety in the knee area significantly without requiring the use of a knee airbag.

The locking mechanism and the force required to lock the steering column clamp have been revised to improve ease of handling.



Brake System

Brake Equipment

All Tiguan models have the same brake equipment.

- Front brake: Diameter 12.28 x 0.98 inches (312 x 25 mm), with bolted steering knuckle.
- Rear brake: Diameter 11.26 x 0.47 inches (286 x 12 mm), with electromechanical parking brake.

Electronic Stabilization Program ABS/ESP TRW EBC 450

The ESP system by TRW, already known from the 2006 Passat, has been modified for the Tiguan and its off-road characteristics. The Tiguan has the following additional ABS/ESP function in addition to those already known from other Volkswagen models:

 Roll-Over Prevention (ROP) The ROP is a roll-over prevention especially for vehicles with a high center of gravity.

ESP and hydraulic brake assistant (HBV) are standard equipment on the Tiguan.



Electromechanical Parking Brake with Planetary Gear

Tiguan standard equipment includes an electromechanical parking brake with a new planetary gear.



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The button for the electromechanical parking brake is located together with the pushbutton for Auto Hold in the center console.



The Electromechanical Parking Brake Switch cannot be removed from the top of the center console without breaking the holding clips. It must be removed from below with the center console lifted. Pushbutton for Electromechanical Parking Brake in the Center Console

Electrical System

Fuse Boxes and Relay Locations in the Vehicle Electrical System

Mounting Locations

Electrical Box, In the Engine Compartment, Left Side

Series Fuse Box, In the Engine Compartment, Left Side

Relay Bracket, Above the Vehicle Electrical System Control Module J519, Below the Dashboard, Left Side

> Relay Bracket, On the Vehicle Electrical System Control Module J519, Below the Dashboard, Left Side



Fuse Holder, On the Vehicle Electrical System Control Module J519, Below the Dashboard, Left Side

Networking

The Data Bus On Board Diagnostic Interface J533 constitutes the interface for the communication of the data bus systems:

- CAN data bus drive
- CAN data bus comfort
- CAN data bus infotainment
- CAN data bus station wagon
- CAN data bus diagnostics

The following data bus systems are added in series in the form of bus subsystems following a CAN data bus system:

- LIN data busses
- CAN data bus sensor
- CAN data bus cornering lamps

Transmission Speeds

- CAN data bus drive: 500 kBit/s
- CAN data bus comfort: 100 kBit/s
- CAN data bus infotainment: 100 kBit/s
- CAN data bus sensor: 500 kBit/s
- CAN data bus station wagon: 500 kBit/s
- CAN data bus diagnostics: 500 kBit/s
- CAN data bus cornering lamps: 500 kBit/s
- LIN data busses: 19.2 kBit/s



Electrical System





- D Ignition/Starter Switch
- E221 Control Module in Steering Wheel
- G85 Steering Angle Sensor
- G197 Magnetic Field Sensor for Compass
- G397 Rain/Light Recognition Sensor
- G419 ESP Sensor Unit
- H8 Alarm Horn
- J104 ABS Control Module
- J136 Memory Seat/Steering Column Adjustment Control Module**
- J217 Transmission Control Module (TCM)*
- J220 Motronic Engine Control Module (ECM)
- J234 Airbag Control Module
- J245 Power Sunroof Control Module
- J255 Climatronic Control Module
- J285 Instrument Cluster Control Module
- J362 Anti-Theft Immobilizer Control Module
- J386 Driver Door Control Module
- J387 Front Passenger Door Control Module
- J388 Left Rear Door Control Module
- J389 Right Rear Door Control Module
- J393 Comfort System Central Control Module
- J394 Roof Blind Control Module
- J400 Wiper Motor Control Module
- J412 Operating Electronics and Telephone Control Module
- J446 Parking Aid Control Module
- J492 All Wheel Drive Control Module
- J500 Power Steering Control Module
- J503 Radio/Navigation Display Unit Control Module
- J519 Vehicle Electrical System Control Module
- J520 Vehicle Electrical System Control Module 2
- J525 Digital Sound System Control Module
- J527 Steering Column Electronic Systems Control Module
- J533 Data Bus On Board Diagnostic Interface
- J540 Electro-Mechanical Parking Brake Control Module
- J667 Left Headlamp Power Output Stage
- J668 Right Headlamp Power Output Stage
- J745 Headlamp Range/Cornering Lamp Control Module
- J772 Rear View Camera System Control Module
- R Radio
- R190 Digital Satellite Radio Tuner**
- T16 16-Pin Connector (Diagnostic Connector)
- * Only for automatic transmission
- ** Only North-American Region (NAR)

Radio Systems in the Tiguan

The Premium 7 and RNS 510 radios are available for the Tiguan.

Premium 7 Radio

The Premium 7 radio with satellite radio has the following features:

- CDC 6 disc in dash
- CD changer ability
- External CD changer (optional)
- MP3 compatible
- CD-R compatible
- Amplifier
- Satellite Radio
- Two tuners



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Radio Navigation System RNS 510

- Touch-sensitive 6.5-inch TFT color display with a resolution of 800 x 480 pixels.
- Final stage with four times 20-Watt output.
- Satellite, FM, and AM Radio.
- DVD drive for navigation, audio, and video.
- Integrated hard disk to store navigation and audio data.
- Integrated SD memory card reader.
- Playback functions for MP3 and WMA audio data.
- Additional map presentation in 3-D bird's-eye-view.
- TMC function (the current traffic reports are stored) and Traffic Alert and Road Flow Data capable combined with Sirius service package.
- Can be controlled via multifunction steering wheel.
- Video function allowed when vehicle is not in motion.



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Antennas

Antenna Connection for Premium 7

The AM/FM reception for the Premium 7 radio is through the roof antenna.



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Antenna Connection for RNS 510

If the Tiguan is equipped with the RNS 510, in addition to the roof antenna, the antenna structure in the rear window is used for twin-tuner operation in the FM range.

AM and FM reception as well as the signals for the navigation system (GPS) are received via the roof antenna. An FM impedance converter is required for the connection of the second FM tuner via the rear window antenna. In addition, the rear window heating circuit must be isolated from the rest of the vehicle electrical system through two FM antiresonant circuits because of signal handling.



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Roof Antenna

Apart from the antenna structures in the rear or side windows and the proven shark fin roof antenna, a new roof antenna is now available that enables one antenna to facilitate reception of the various signals:

- Radio (AM/FM/SDARS)
- Navigation (GPS)

When developing the roof antenna, special emphasis was given to integrating the complex antenna electronics into the antenna base to reduce the installation effort of the electronic components.



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Heating and Air Conditioning

Air Conditioning System

The Tiguan uses two different types of air conditioning systems, which are also used in the Rabbit, Jetta, and Passat.:

- The semi-automatic heating and air conditioning system "Climatic"
- The fully-automatic heating and air conditioning system "2C Climatronic"



Operation

Depending on the vehicle equipment, control units are available in two different versions: with or without a potentiometer for the seat heater.

Climatic Control Unit



Climatronic Control Unit



Condenser and Dryer

Several improvements were made for the Tiguan on the condenser with integrated drier. To improve the crash behavior, the drier bottle of the condenser was shortened. This protects it better from a deformed bumper beam.

Serviceability has been improved by routing the connections of the coolant lines into the upper area of the engine compartment, making them more accessible when working on the condenser. The drier bottle can be replaced without having to remove the condenser.



An on-line Knowledge Assessment (exam) is available for this Self-Study Program.

The Knowledge Assessment may or may not be required for Certification.

You can find this Knowledge Assessment at:

www.vwwebsource.com

For Assistance, please call:

Volkswagen Academy

Certification Program Headquarters

1-877-491-4838

(8:00 a.m. to 8:00 p.m. EST)

Or, E-Mail:

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