Volkswagen-Certified Collision Repair Facility Training

The 2011 Jetta
Welcome
Welcome to the VW-Certified Collision Repair Facility program training for the 2011 Jetta. This program provides an overview of the 2011 Jetta, including new features over the previous model, and specific body repair information that is relevant to the collision repair of this vehicle.

It is important to note that while portions of the repair manual are referenced, this is not a reference source that should be used to conduct the collision repairs. All specific recommendations, such as step-by-step procedures, specific structural measurements, and sectioning locations are to be obtained from the online electronic service information such as ElsaWeb or Erwin.

Topics that will be discussed in this program include:

- 2011 Volkswagen Jetta overview
- Technology overview
- Restraint system overview
- Inspection/replacement items following restraint system deployment
- Body structure composition
- Factory joining processes
- Tool recommendations
- Measuring and straightening recommendations
- Structural part replacement.
- Sectioning recommendations
# Table Of Contents

Warnings and Cautions ................................................................. 3  
Welcome ....................................................................................... 4  
2011 Volkswagen Jetta Overview .................................................. 6  
New Technologies ......................................................................... 7  
Outer Body Structure Design ....................................................... 12  
Restraint System Overview .......................................................... 13  
Inner Body Structure Design ....................................................... 15  
Factory Joining Processes ........................................................... 16  
Tool Recommendations ............................................................... 17  
Structural Part Replacement ........................................................ 19  
Sectioning Recommendations ....................................................... 28
2011 Volkswagen Jetta Overview

The 6th generation Volkswagen Jetta is a new body style that is 3.5" longer than the previous model, which in turn has allowed for 2.6" of increased leg room. The larger wheelbase also allows for increased interior widths.

* May vary, depends on model equipment.

(Figure 1 – The 2011 Volkswagen Jetta has slightly larger dimensions than its predecessor. Lengths and widths noted in mm.)
New Technologies
Navigation/Infotainment
The 2011 Jetta can be equipped with a radio navigation system. This system has a touch sensitive 6.5” high-resolution screen. This system provides the data entry input for the radio, navigation, and MP3.

(Figure 2 – The radio navigation system is an option for the Jetta.)
Media Device Interface (MDI)
The Media Device Interface (MDI) allows mobile audio and other multimedia devices to be connected to the infotainment system and to the display. The system will display the contents of the devices and allow operation of the devices from the system and play through the speaker system and/or the infotainment display units. The control unit is installed in a housing located in the glove box.

(Figure 3 – The connector for multimedia devices is located in the glove box.)
Electronic Stabilization Program (ESP)

The 2011 Jetta has electronic stability control as standard equipment. The unit used on the 2011 Jetta is the same unit used on the 2009 Volkswagen Golf. The electronic stabilization program is switched on permanently; there is no ON/OFF switch.

The new ESP unit, when compared to the previous model, no longer requires a sensor cluster with a yaw rate sensor and longitudinal and transverse acceleration sensors. These sensors are not integrated in the printed circuit board in the control unit for ABS/ESP.

(Figure 4 – This is the ESP unit that commands electronic stability control.)
Tire Pressure Monitoring System

The tire pressure monitoring system was added for the 2011 Jetta. This system uses a software module in the control unit for the ABS/ESP that evaluates the wheel speed sensor data to monitor tire inflation pressure.

To determine if a tire is under-inflated, the system calculates the rotation of a tire. An under-inflated tire reduces the rolling radius of the wheel, which causes the wheel to rotate faster than a properly inflated tire.

A resonance frequency is also measured. This helps provide a more precise measurement. The tire pressure monitor is capable of detecting a gradual loss in all wheels simultaneously.

It is important that if a tire is changed, or refilled with air, the system be recalibrated. This requires pressing the button for the tire pressure monitor in the glove box.

(Figure 5 – The tire pressure reset button is located in the glove box.)
Headlamps
The headlamps on the 2011 Jetta are designed using clear glass technology. The side marker lamps are integrated into the headlamps on the outside left and right.

(Figure 6 – This is the headlamp assembly with the integrated side marker lamp for the 2011 Jetta.)

VW Jetta Option Packages
The model packages for the 2011 Jetta include the S, SE, SEL, and the TDI® Clean Diesel.

Gasoline engine options include the:

- 2.5L, 20-valve, DOHC, in-line, 170 hp, 5-cylinder
- 2.0L, 8-valve, SOHC, 115 hp, 4-cylinder
- 2.0L, 140 hp TDI® Clean Diesel

Both gasoline engines are equipped with either a 5-speed manual transmission or 6-speed automatic. The 2.0 liter, 4-cylinder diesel, however, is equipped with a 6-speed automatic and 6-speed manual.
Outer Body Structure Design

Fenders
Both fenders are identical in construction and design. There may be noise insulation and foam pieces installed behind the fender that needs to be considered during removal and installation to ensure identical noise characteristics following repair.

Front Bumpers
The front and rear bumpers on the Jetta are made from a PP/EPDM plastic blend. Depending on the options of the vehicle being serviced, there may be slight variations in bumper cover removal and installation procedures. Volkswagen does allow for the repair of damaged plastic. Please refer to the vehicle service information to determine if the damage qualifies for plastic repair.

Doors
The doors are a conventional design equipped with the standard door intrusion beams.
Restraint System Overview
The 2011 Jetta is equipped with the following safety systems:

- Driver and passenger airbags
- Front side airbags
- Curtain airbags for front and rear occupants
- Seatbelt pre-tensioners for the front seats

Sensors for front and side airbag deployment are located in the front end, the front doors, and in the vicinity of the C-pillar.

(Figure 7 – The 2011 Jetta is equipped with six airbags.)
**Seat Sensor**

There is also a seat occupant classification sensor located in the front passenger seat that is used to turn the airbag off when the seat is not occupied, or deploy the airbag in lower speed collisions if the seat belt is not in use.

(Figure 8 – Seat sensors are located in the front passenger seat.)

**Airbags – Inspection and Replacement Items**

After a collision where the airbags deployed, the following parts must be replaced:

- Deployed airbags
- Support and bracket for the front passenger airbag unit with a deployed front passenger airbag
- Return ring with slip ring, if driver side airbag deployed
- All seat belts with triggered seat belt pre-tensioners
- Any damaged parts following visual inspection

If there was no deployment, verify that the airbag indicator lamp is not lit.
Inner Body Structure Design

Body Structure Composition

The overall weight of the vehicle was reduced compared to its predecessor, despite its longer body. This reduction was due to:

- The increased use of ultra high-strength and hot-formed steel,
- A reduction in steel thickness, and
- Changing the overall design of the vehicle to optimize part functionality. For example, weight can be saved by clean profiles and minor reinforcements at the correct points.

The strength of steel used in the construction of the Jetta includes:

- 220 MPa steel, used in 13% of the vehicle. The strength steel is used in the front lower rails, cowl panel, floor pans, rear rails, rear body panel, and additional rear body structural parts (blue).
- 420 MPa steel, used in 41% of the vehicle. These parts are used in the upper rails and strut towers, portions of the rocker assembly, roof bows, and inner quarter panel (yellow).
- 1000 MPa steel, used in 46% of the vehicle. These parts are used in the floor structure, B-pillar, and roof frame (red).

(Figure 9 – The Jetta uses very strong steel in the construction of the A-pillar and B-pillar.)
**Factory Joining Processes**

*Laser Welds*
Laser brazing is used to join the roof to the roof rail. In addition, the vertical portion of the deck lid is joined to the horizontal panel with a laser-brazed joint.

(Figure 10 – Laser welds are used to attach the roof rail and roof and in the construction of the deck lid.)

*Spot Welds*
Spot welds are the primary welding method used throughout the vehicle construction.

*Foam Identification*
Some of the hollow areas on the Jetta have been filled with foam inserts to reduce the amount of noise in the passenger compartment. Foam inserts can be found in the following areas:

- Behind the quarter panel
- Behind the sail panel near the roof rail
- Dog-leg area
- Base of the B-pillar
- A-pillar in the windshield pinchweld area
- Lower A-pillar
- Upper rail
Tool Recommendations

Spot Welders

Volkswagen has five spot welders that are part of their required tool list. The Volkswagen part numbers for these include:

- VAS 6530: Techna Inverter Welder
- VAS 6535: Elektron Inverter Welder
- VAS 6545: Wiedlander + Schill Inverter Welder

(Figure 11 – This is one of the Volkswagen-recommended spot welders.)

The spot welders are equipped with computer programs designed to provide the proper power to the welding tips to weld varying types of high-strength and ultra-high-strength steels. They are also equipped with varying arm configurations to aid in the spot welding process on hard-to-reach areas.

Caution
• Before welding (either spot welding or GMA (MIG)), the battery must be completely disconnected on both battery posts. Additionally, the battery should be removed if welding operations are near the battery.
• Before disconnection, make sure the radio code is available.
• Connect the ground connection of the welder directly to the part being welded. Make sure that no electrically insulated parts are between the ground connection and the welding point.
• Follow all safety recommendations outlined in the electronic service information.

Measuring And Straightening Recommendations
For the Jetta, the MZ Plus straightening system from Celette (part #VAS 6630) can be used along with the 2010 Jetta alignment bracket set (part #6638).

Gap Gauges
Gap gauges are available from Volkswagen. Part number 3371 is used to determine panel gaps for the hood to fender, fender to A-pillar, fender to door, roof to roof rail, etc.

(Figure 12 – Volkswagen provides a set of gap gauges to verify panel gaps during vehicle repair.)

Tolerance
The point-to-point dimensions in the ElsaWeb service information provides a ±2 mm tolerance. Measurements that are greater than this tolerance require additional straightening or part replacement depending on the location and severity of the damage.
Structural Part Replacement

The 2011 Jetta has sectioning options depending on the part being repaired. There may be multiple locations on one part, so it’s important to verify cut locations with ElsaWeb.

Below is a summarized list of what parts can be sectioned on the Jetta:

<table>
<thead>
<tr>
<th>Part Identification</th>
<th>Sectioning Procedure Available</th>
<th>Complete Replacement Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Front Rail</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lower Front Rail</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Outer A-Pillar</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A-Pillar Reinforcement</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>B-Pillar – Outer</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>B-Pillar Reinforcement</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Outer Rocker Panel</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Rear Rail</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Rear Body Panel</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Quarter Panel</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

Lower Rail

When replacing the front lower rail, note that the complete assembly is not removed. The portion of the front rail that extends below the floor pan is left in place, while the rail section in the engine compartment area is completely removed.

(Figure 13 – This is the rear sectioning location for the front lower rail.)
To remove the complete front lower rail assembly, begin by removing the spot welds connecting the front lower rail to the:

- Apron assembly
- Near the cowl panel

Make a separation cut with 50 mm offset on the front rail and the cover plate for the front rail.

(Figure 14 – The lower front rail must be separated from the apron assembly and firewall during removal.)

Make an offset cut on the outside of the front lower rail using a 50 mm offset cut between the front rail and the cover plate.

Remove any residual material once the front rail has been removed from the vehicle.
Front Lower Rail Installation
Installing the front lower rail includes:

• Transferring the cut locations to the replacement part,
• Separating the original joint between the front lower rail and the cover plate,
• Using the proper alignment fixtures, attaching the part to the vehicle and securing it in place,
• Checking the fit with adjacent parts.
• Spot welding and GMA (MIG) welding the part in place using the original weld locations as guides for the new weld locations (the cover plate is welded along the apron assembly), and
• Installing the bumper bracket after welds are completed.

Roof
The roof panel is laser-brazed to the vehicle structure along the roof rails. Before removal of the roof panel, it is recommended to apply fabric tape along the roof rails adjacent to the laser-brazed joint. This prevents any damage to the roof rails.

Removing the roof panel requires:

• Removing the spot welds from the windshield and backglass pinchweld flanges,
• Separating the bonded joint between the roof panel and roof crossmember,
• Cutting the roof from the vehicle structure. The cuts are made parallel to the laser-brazed joint (a distance of 15 mm to the roof rail is maintained so that it does not get damaged), and
• Removing the residual material (when removing the brazing material, it is recommended to use a Lamellar disc instead of a rough blade).

Roof Panel Replacement
Roof panel installation on the 2011 Jetta is performed using a combination of spot welds and adhesives.

Installing the roof panel assembly requires:

• Sanding the bonding areas on the roof and vehicle down to bare metal to ensure proper adhesion,
• Securing suction cups to the outer panel (these will be used to maneuver the roof panel),
• Mounting the roof to the vehicle and verifying panel fit (the fit between the roof and the windshield, and the roof and the backglass are checked. Also, the gap between the roof panel and the roof rails is checked. The gaps should be 6.0 mm (±0.5 mm)),
• Removing the roof and applying corrosion protection where necessary,
• Cleaning the bonding areas on the roof panel and vehicle with silicone remover (product #LSE 020 100 A3),
• Preparing the adhesive tube by cutting off approximately 2 cm of the application tip (this will provide the proper bead height and width),
• Applying the 1K adhesive to the vehicle (roof front and rear crossmembers and roof rails) using a compressed air pistol (part # VAG 1761/1) (the adhesive should be applied around the factory adhesive. If the vehicle has a roof reinforcement, adhesive is applied to the reinforcement, around the factory adhesive, not on the adhesive),

(Figure 15 – Adhesive is used on the front crossmember during roof panel installation.)
• Applying 1k adhesive to the inner side of the roof panel, parallel to the left and right roof flange,

(Figure 16 – 1K adhesive is used to install the roof panel to the roof rails.)
• Applying 2K adhesive to the roof rails (this bead of 2K adhesive will be applied next to the 1K bead of adhesive),
• Coating the flanges on the replacement roof panel with 2K adhesive,
• Mounting the roof to the vehicle and properly aligning it to the adjacent panels, making sure there are proper gaps,
• Using tensioning straps and locking pliers to secure the roof panel in place while the adhesive cures, and
• Removing any residual adhesive that may have squeezed out during the installation process.

It is recommended to let the vehicle stand on a level surface for 8–10 hours at room temperature while the adhesive cures.

• After the adhesive has cured, spot welding the roof panel at the windshield and at the backglass pinchweld flange,

(Figure 17 – In addition to adhesives, the roof panel is spot welded to the upper structure.)
- Applying seam sealer (part #AKD 476 KD5 05) to the seam between the roof and roof rail, and
- Applying anti-corrosion compound (part #AKR 321 M15 4) in the hollow areas of the roof panel assembly after painting. This restores the factory corrosion protection.

(Figure 18 – Seam sealer is applied between the replacement roof panel and the roof rail to ensure proper corrosion protection and prevent water leaks.)
Upper Rail
The upper rail consists of an adapter piece that is welded to the upper rail, a portion of the apron assembly, and the upper rail end plate. All three pieces are required for installation of the complete front upper rail assembly. Removing the complete upper rail requires:

- Disconnecting the original joint between the outer, upper rail and the inner upper rail (also, the joint between the connecting the upper rail to the A-pillar is disconnected),
- Separating the inner upper rail from the end plate,
- Disconnecting the original joint between the outer upper rail and the hinge reinforcement,
- Separating the original joint and the bonded areas on the inner, upper rail,
- Removing the residual material, and
- Completely removing adhesive remains and grinding bonding surfaces down to bare metal.

(Figure 19 – The upper rail must be separated from the hinge pillar and the outer upper rail.)

Replacement parts include the inner upper front rail, and the outer, upper front rail. Adhesive, part number D180 KD3 A2, will be used for reassembly.

Installing the upper front rail requires:

- Drilling 8 mm plug weld holes into the replacement parts,
- Test fitting the replacement parts to the vehicle and the part is secured using the proper fixtures,
- Attaching the adjacent parts to check for proper fit,
• Applying the adhesive to the replacement part in the area of the apron assembly (make sure the adhesive is applied to the same location as was applied at the factory),
• Welding the upper inner rail to the wheelhouse (this procedure requires spot welds and GMA (MIG) fillet welds), and
• Welding the upper rail to the hinge reinforcement with spot welds and GMA (MIG) welds.

Note that the replacement upper rail must be installed within 90 minutes after the adhesive has been dispensed to maintain the adhesion properties. Proceed by:

• Applying adhesive in the area on the hinge pillar reinforcement that was applied at the factory, and
• Welding the upper rail to the outside apron.

**A-Pillar Reinforcement**

Information regarding the repair of the A-pillar reinforcement has yet to be released by Volkswagen. Be sure to check ElsaWeb before you begin work on this area of the vehicle for updated repair information.
**Sectioning Recommendations**

*Upper Rails*

There is a sectioning procedure available for the front upper rail. The sectioning location is approximately 200 mm from the tip of the rail, and requires ordering the adapter piece that is attached to the end of the front upper rail.

(Figure 20 – The upper rail has one sectioning location.)

*Lower Rails*

The front lower rail has a laser-welded seem that cannot be cut during the sectioning procedure. Therefore, ElsaWeb has provided two potential sectioning locations based on the extent of damage. One is in front of the laser-welded seam, and one is behind it.
Sectioning the front lower rail requires:

- Making a separate cut on the cover plate and drilling out the spot welds. The cover plate is removed,
- Locating the sectioning cut line for the lower front rail (sectioning locations are 50 mm in front of or behind the laser-welded seam),
- Cutting both the lower rail and the inner reinforcement, and
- Removing the remainder of the reinforcement from the rail.

(Figure 21 – Sectioning the front lower rail requires cutting and removing the inner reinforcement.)

Installing the replacement section on the front lower rail requires:

- Transferring the cut locations to the replacement parts,
- Aligning the replacement part using the proper measuring fixtures and securing it in place,
- Checking the fit with adjacent parts to ensure the proper location,
- Welding the replacement rail in place using a GMA (MIG) seam weld,
- Spot welding the reinforcement in place,
- Welding the replacement top plate to the existing top plate using GMA (MIG) welds, and
- Spot welding the flanges of the top cover plate to the replacement lower front rail.
When the welds are complete, the front lower rail will be slightly longer than necessary and must be cut back. This will allow the bumper brackets to be properly installed. Transfer the scribe dimensions outlined in ElsaWeb pus 2 mm and make the cut accordingly. Proceed by:

- Attaching the bumper bracket to the front rail and aligning using the recommended measuring fixtures (note that there must be a 1–2 mm space between the lower rail and cover plate and the bumper bracket), and
- Welding the bumper bracket in place using GMA (MIG) seam welds.

**Uniside**
The uniside for the Jetta has a number of sectioning locations in the A-pillar, B-pillar, rockers panel, and quarter panel. Cut locations depend on the extent of damage.
**A-pillars**
The A-pillar is sectioned in the windshield pillar and down at the rocker panel. Panel installation requires drilling 8 mm plug weld holes in the leading edge of the replacement part.

(Figure 22 – The sectioning joints for the outer A-pillar are shown.)
Two part adhesive (part #D 180 KD3 A2) are also used during the installation of the replacement part. Specific locations are shown in the corresponding graphic. Following the application of adhesive and installation of the part, be sure to remove the residual material.

(Figure 23 – Adhesive is used to attach the A-pillar during vehicle construction.)
**B-pillars – Outer**
The outer B-pillar has sectioning locations in the upper B-pillar and in the rocker panel. It is important to note that there are areas in the outer B-pillar where welding is not permitted. Both of these areas are at the base of the outer B-pillar. There is foam at the base of the B-pillar near floor level. Installation requires applying 2K adhesive in the same areas as originally installed during vehicle assembly.

(Figure 24 – This highlights the outer B-pillar sectioning locations.)

**B-pillars – Inner**
Currently, there are no B-pillar reinforcement repairs. If there is any damage, it must be replaced. The B-pillar reinforcement must not be re-welded for safety reasons.

**Rocker – Outer**
The outer rocker panel can be sectioned in four areas depending on the extent of damage. The sectioning joints can be welded using MIG brazing or a GMA (MIG) seam weld. Do not weld the area at the bottom of the B-pillar.

When installing the outer rocker, a portion of the pinchweld flange is bonded to the vehicle structure with 2K adhesive. Additionally, spot welds are used through the adhesive in specific areas of the outer rocker panels structure.
Rear Rail
There are two sectioning locations for the rear rail. The joint chosen will be based on the extent of damage. When sectioning the longest piece, note that it will require the detachment and installation of a crossmember.

(Figure 25 – This shows the rear rail sectioning location.)

(Figure 26 – This shows the longer rear rail sectioning location which can be used for deeper damage.)
Conclusion

Congratulations! You have completed the 2011 Volkswagen Jetta Collision Repair Information training program. Thank you for taking the time to complete this course. You should now be able to:

• Provide an overview of the 2011 Volkswagen Jetta,
• List the option packages that are available,
• Provide an overview of the various types of body construction materials,
• Provide an overview of the factory joining processes,
• List spot welder recommendations,
• List roof panel replacement procedures, and
• List sectioning recommendations for primary structural parts.