



Technical Bulletin

Model(s)	Year	Eng. Code	Trans. Code	VIN Range From	VIN Range To
Touareg	2009-2012	3.0L TDI CATA	All	All	All
Passat	2012	2.0L TDI CKRA	All	All	All

Condition

23 16 01 February 15, 2016 **2041057** Supersedes Technical Bulletin V231508 dated December 9, 2015 to include Passat In-Tank fuel pump part number and updates to Touareg part numbers.

MIL ON, No Start, or Rough Running with DTCs P0087, P0088 or P0191 Stored in ECM Fault Memory (TDI ONLY)

MIL ON, No Start, or Rough Running with one or more of the following DTCs Stored in ECM Fault Memory:

DTC	Description
P0087	Fuel Rail/System Pressure - Too Low
P0088	Fuel Rail/System Pressure - Too High
P0191	Fuel Rail Pressure Sensor "A" Circuit Range/Performance

Technical Background

When diagnosing the condition above on a common rail diesel vehicle, if no root cause is found after checking all other components and all GFF diagnostic procedures have been performed, it may be necessary to check for metallic particles in the High Pressure Fuel Pump using the service section of this bulletin.

If such an inspection is necessary, the following guidelines must be observed when removing the N290 Fuel Metering Valve.

Production Solution

No production change required.



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Service

Section A – Initial Diagnosis of the High Pressure Fuel Pump (HPFP)

Note:

Removing the N290 Fuel Metering Valve to inspect for metallic particles should only be considered as a last step after all GFF diagnostic procedures have been performed. This includes testing supply pressure to the high pressure fuel pump (low pressure side), and checking for internal leakage from the injectors and the N276 Pressure Regulating Valve



Figure 1. Surrounding Area

Note:

Prior to removing the N290 Fuel Metering Valve, the area surrounding the valve (Figure 1) must be clean and dried with compressed air to remove ALL debris from the area. See Repair Manual Group 20 Fuel Supply, General Information, Clean Working Conditions in Elsa.

If debris enters the fuel system, components may be damaged.



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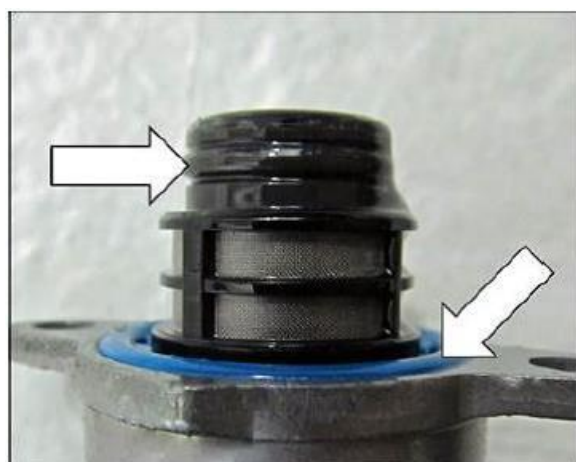


Figure 2. N290 Fuel Metering Valve and Valve Bore

1. Remove the N290 Fuel Metering Valve and inspect the valve and valve bore for the presence of metallic particles (**see Figure 2**).

2. If metallic particles are found on the N290 Fuel Metering Valve or in the valve bore (**see figure 2**), replacement of the high pressure fuel pump and major components of the fuel system are necessary. **Proceed to Section B – Fuel Sample Pre-Analysis**

3. If no metallic particles are found on the N290 Fuel Metering Valve or in the valve bore, do not replace the high pressure fuel pump. **Continue with diagnosis, this bulletin does not apply.**



Note:

To prevent fuel system damage, ensure that the N290 Fuel Metering Valve is free of any contaminants before reinstalling.

Prior to reinstallation of the N290 Fuel Metering Valve, ensure that both O-rings are not damaged. If they are damaged, the high pressure fuel pump must be replaced.

To prevent damaging the O-rings when reinstalling the N290 Fuel Metering Valve, lubricate the O-rings with diesel fuel (**see Figure 3**).

Figure 3. N290 Fuel Metering Valve O-rings

4. Install the N290 Fuel Metering Valve into the valve bore using light pressure.

5. Install and hand tighten both M5 fasteners, ensuring that the threads are clean and dry.

Pre-tighten to 2 Nm, then to 6.5 – 7 Nm.



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Section B – Fuel Sample Pre-Analysis



Note:

A fuel sample must be taken and analyzed using the VAS 6774 tool before performing further repairs to the vehicle.

Please review the instructional DVD included in the tool case titled 'Fuel-Identification Kit VAS 6774'. Here you will find a user manual, an FAQ, and a video that will describe the proper way to use, clean, and maintain this tool. The instructions are also posted to ServiceNet by going to ServiceNet> Workshop Equipment> Tool Information> Instruction Manuals & Videos> Manuals> VAS 6774 Fuel Identification Unit Operating Instructions.



Note:

It is important that the specific gravity of the fuel sample be tested first before proceeding with sensor head testing. Fuels with a specific gravity of 6.5 or lower cannot be tested using the VAS 6774/7 under any circumstances. For this reason please disregard the order of testing as seen in the video and follow the order in the manual that came with the tool.

1. Obtain a 500 mL fuel sample from the vehicle.
2. Following the instructions included with the VAS 6774 kit, test the specific gravity of the fuel sample. A correct specific gravity measurement is any reading between 9 and 13. **(See Figure 5)** If the specific gravity reading falls outside of those numbers proceed to section C – **Fuel Sampling and Laboratory Analysis**. If the specific gravity is between 9 and 13 proceed to step 2a.
- 2a. If the specific gravity test results in a reading between 9 and 13 a sensor head test is required to check for gasoline particles. If the specific gravity test results in a “Fail” continue onto section C. – **Fuel Sampling and Laboratory Analysis**.



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Measurement result	interpretation	
below 0	case for the fuel laboratory (neither petroleum nor diesel fuel)	
0 - 5.5	petroleum fuel EN 228	
4.5 - 6.5	E 85 (85 % Ethanol, 15 % petroleum fuel)	
Approx. 7	E 100 (pure Ethanol)	
7 - 9	case for a fuel laboratory (neither petroleum nor diesel fuel)	
9 - 11	Diesel in Asia (Russia, India)	Diesel in USA (typical value, density is NOT specified in D-975)
10 - 13	Diesel in accordance with EN 590 (Europe)	
13 - 15	case for a fuel laboratory	
15 - 17	Biodiesel case for a fuel laboratory	
greater than 17	case for a fuel laboratory	

Figure 5



Note:

Fuel samples which have a specific density between 0 and 6.5 indicate a fuel mixture which might be flammable under certain conditions. If the specific gravity of the fuel sample is 6.5 or lower **DO NOT** use the VAS 6774/7 to perform a sensor head test, proceed to section C – **Fuel Sampling and Analysis**.



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2b A sensor head test must be performed next to check the fuel for gasoline residue. Follow the instructions included with the tool to perform a sensor head test. If the sensor head test results in a “Pass” continue to step 3. If the sensor head results in a “Fail” continue to section C – **Fuel Sampling and Laboratory Analysis**.

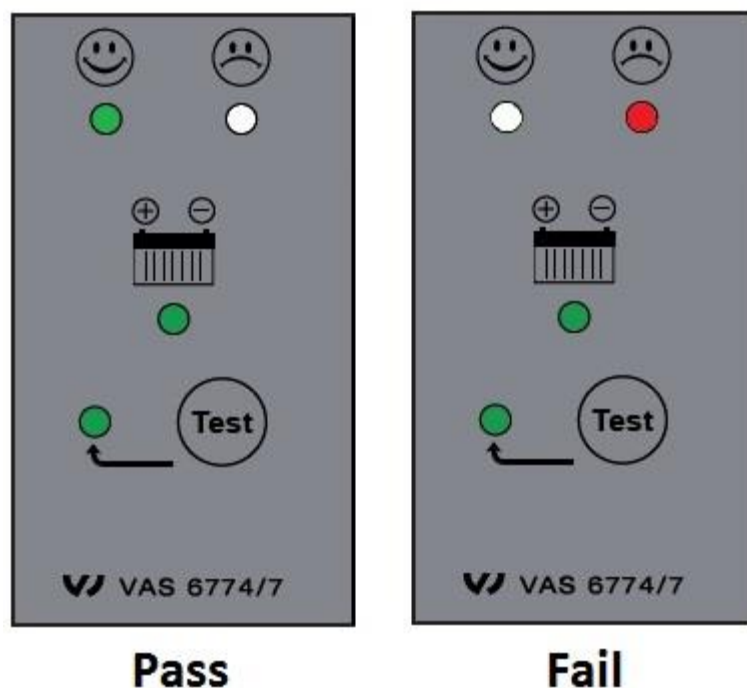


Figure 6



Note:

If the specific gravity is above 13 or below 9 the fuel has failed the test and must be sent out for laboratory testing.

3. If the sensor head test results in a “Pass” and the specific gravity test results in a reading between 9 and 13 you may proceed with section D – **High Pressure Fuel Pump Replacement and Fuel System Repair**.



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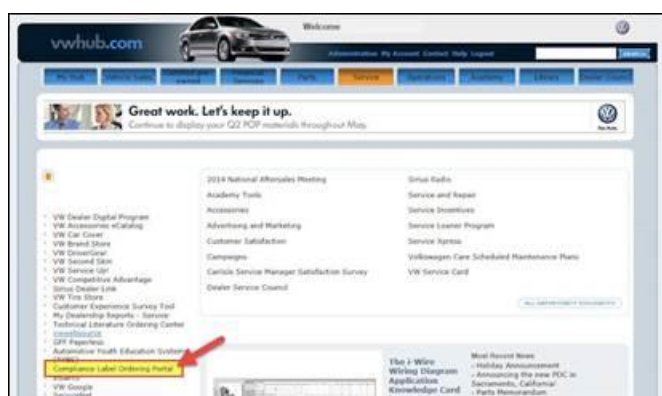
Section C – Fuel Sampling and Laboratory Analysis



Note:

This step must only be performed if either of the tests in Section B results in a “Fail”.

1. The fuel sample kit, P/N LQ1LKIT must be ordered via the Compliance Label Ordering Portal in vwhub.com. The fuel sample kit will be sent to the dealership within 1 business day*.



The Compliance Label Ordering Portal is available through the Service or Parts tab in VWHub.com

Figure 7. Compliance Label Ordering



Enter the VIN in the Quick VIN Order field.

Figure 8. Enter VIN

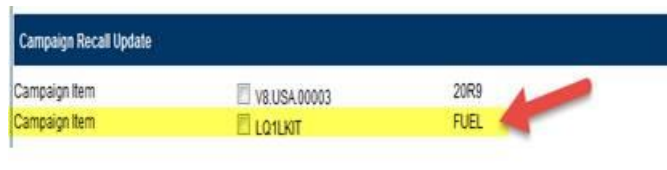


Figure 9. Select part number LQ1LKIT



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Tip:

When ordering LQ1LKIT on the Compliance Label Ordering Portal, please include a secondary email address (ie. service manager) in the purchase order field for dealer e-mail notification.

2. Each fuel sample kit will contain the prepaid shipping label, detailed packaging instructions, and all necessary packaging to send the fuel sample via FedEx ground to a designated test facility.



Note:

HAZMAT certification is required for packaging the fuel sample but NOT for shipping *. The diesel fuel sample may be shipped to the laboratory utilizing ground shipment services provided the dealer is using the Limited Quantity Kit (PN# LQ1LKIT).

3. The fuel analysis results will be available to the dealership within 3 to 5 business days once the fuel sample has been shipped to the laboratory. The dealer will be notified via an email to acquire a pdf copy of the analysis result certificate via an embedded link to VW Google Search. The dealer enters the VIN and the report is presented under the heading "Component Locations, Wiring Diagrams, and Share Folders" in the lower right hand corner of the search results screen.

4. Once the test results are obtained by the dealership, they will be clearly marked "PASS" or "FAIL" in the comments section (see figures 10 and 11).

5. Refer to the *Warranty Policies and Procedures* Manual and the applicable *Warranty Policy and Procedures* Bulletin(s) for coverage eligibility details.

Fuel Sample Analysis Results

If the fuel sample Certificate of Analysis indicates "**PASS**": Sections A & B & C & D will be reimbursed under warranty.

If the fuel sample Certificate of Analysis indicates "**FAIL**": Only sections A & B & C will be reimbursed under warranty.

6. When the fuel analysis process is complete, proceed to **Section D – High Pressure Fuel Pump Replacement and Fuel System Repair**.

*Hawaii, Alaska, Puerto Rico Dealers: Please follow step one. Once a fuel sample is ordered, you will be contacted by a Volkswagen of America representative who will provide further instructions. A third party will be used to package and ship your fuel samples to the laboratory.



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INSPECTORATE

Certificate of Analysis

Vehicle / Share Tank: Example
 Product: Diesel
 Cleaner Reference: TSN
 Terminal / Port / Office: Volkswagen Group of America, Inc.
 Job ID:
 Sample Details: Diesel Data
 Comments: **PASS**

Sample Submitted By: Volkswagen Group of Amer
 Analysis Performed By:
 Date Sampled:
 Date Reported:
 Submission ID:

Method	Sample Number	Test	Result	Specification
ASTM D38		Initial Boiling Point, °F	307.0	300 Min.
		90% Recovered, °F / °C	386.0 / 197.2	
		95% Recovered, °F / °C	400.0 / 204.4	
		98% Recovered, °F / °C	466.0 / 208.9	280 - 330 °C
		Sulfur, %	0.10	
		Recovery, %	99.0	
		Residue, %	1.0	
		Loss, %	1.0	
ASTM D381 Pro. A		Flash Point, °C / °F	54.0 / 129	52.0 °C Min.
ASTM D155		Subsidity, Micro Aqueous, µm	540	
		Subsidity, Micro Aqueous, µm	540	
		Subsidity, Micro Aqueous, µm	540	500 Max.
ASTM D445		Test Temperature, °C	40	
		Test Temperature, °C	40°C (104°F)	
		Refractive Index, n _D 20	1.471	1.4 - 1.5
ASTM D381 Pro. B		Water Content, % Mass / % Vol	0.0001000%	0.05 % Vol Max.



Note:

Each Certificate of Analysis will contain a "Pass" or "Fail" comment as shown.

Figure 10. Example of a clean fuel sample analysis.

INSPECTORATE

Certificate of Analysis

Vehicle / Share Tank: Example
 Product: Diesel
 Cleaner Reference: TSN
 Terminal / Port / Office: Volkswagen Group of America, Inc.
 Job ID:
 Sample Details: Diesel Data
 Comments: **FAIL**

Sample Submitted By: Volkswagen Group of Amer
 Analysis Performed By:
 Date Sampled:
 Date Reported:
 Submission ID:

Method	Sample Number	Test	Result	Specification
ASTM D38		Initial Boiling Point, °F	307.0	300 Min.
		90% Recovered, °F / °C	386.0 / 197.2	
		95% Recovered, °F / °C	400.0 / 204.4	
		98% Recovered, °F / °C	466.0 / 208.9	280 - 330 °C
		Sulfur, %	0.10	
		Recovery, %	99.0	
		Residue, %	1.0	
		Loss, %	1.0	
ASTM D381 Pro. A		Flash Point, °C / °F	54.0	52.0 °C Min.
ASTM D155		Subsidity, Micro Aqueous, µm	540	
		Subsidity, Micro Aqueous, µm	540	
		Subsidity, Micro Aqueous, µm	540	500 Max.
ASTM D445		Test Temperature, °C	40	
		Test Temperature, °C	40°C (104°F)	
		Refractive Index, n _D 20	1.471	1.4 - 1.5
ASTM D381 Pro. B		Water Content, % Mass / % Vol	0.0001000%	0.05 % Vol Max.

Figure 11. Example of a contaminated fuel analysis.

Section D – High Pressure Fuel Pump Replacement and Fuel System Repair

1. Always use the latest information in Elsa for detailed removal and replacement instructions of the components listed in this technical bulletin.
2. Remove in-tank fuel pump (Sending unit).
3. Drain and clean the fuel tank using suction pump VAS5226.
4. Fill the fuel tank with **1.3 gallons** of fresh diesel fuel.
5. Drain and clean the tank completely using suction pump VAS5226.
6. Replace the in-tank fuel pump (Sending unit).



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7. Flush the fuel lines (both feed and return) from the fuel tank to the bulk head, using either mineral spirits or brake clean with compressed air. Alternate from both ends of the lines while using a shop towel to catch any debris that may still be in the line. Verify all metal is removed from both lines before proceeding.
8. Replace the following components as per Elsa: high pressure fuel pump, high pressure fuel lines, fuel rail (with both sensors included), all fuel injectors, fuel return lines (overflow lines), fuel filter, fuel filter housing, auxiliary fuel pump.
9. Once repairs are complete fuel the vehicle.
10. Ensure the fuel injector return lines are properly seated and sealed once installed.



Note:

The “injector quantity calibration” and the “injector voltage calibration” for the new injectors must be programmed into the Engine Control Module -J623- after replacing injectors. Refer to “Guided Functions” in the vehicle diagnostic tester.

11. Using the VAS tester, perform the guided function “Vent Fuel System”. (see Elsa for additional information under “Fuel System, Filling and Bleeding”).



Note:

If the test plan is unavailable through Guided Functions, switch to Self Diagnosis>Engine Electronics>Basic Settings>35 and perform the basic settings 3 times consecutively. For UDS vehicles, perform basic settings for initial fueling.

12. Once the repairs are complete, test drive the vehicle.
13. Inspect for fuel seepage at the fuel injector return line connector. If seepage is found the condition MUST be corrected.



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Warranty

Reimbursement for Sections A & B & C Only Where Fuel Analysis Result = FAIL



Note:

Active VW Customer Mobility Program (VWCMP) loaner vehicles are eligible to receive \$35 per day for loaner expense reimbursement under this warranty extension. For dealers enrolled in the VWCMP, a non-VWCMP loaner vehicle can be provided at a reimbursement rate of \$25 per day or a VW rental at \$35 if a VWCMP loaner is not available. These claims must be submitted in SAGA on a separate line using claim type 1SP. Refer to document VWS-14-01 for applicable labor operation.

To determine if this procedure is covered under Warranty, always refer to the Warranty Policies and Procedures Manual ¹⁾					
Model(s)	Year	Eng. Code	Trans. Code	VIN Range From	VIN Range To
Touareg	2009-2012	3.0L TDI CATA	All	All	All
Passat	2012	2.0L TDI CKRA	All	All	All
SAGA Coding					
Claim Type:	Use applicable Claim Type ¹⁾				
Service Number:	Damage Code	HST		Damage Location (Depends on Service No.)	
2374	0010	--		Use applicable when indicated in Elsa (L/R)	
Parts Manufacturer	Touareg, Passat		WWO ²⁾		
Causal Part: Select Labor Operation			01320000		
Outside Material: Diesel Fuel			Part Number: FUEL		
Diagnostic Time ⁴⁾					
GFF Time expenditure	01500000 = As required		YES		



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Road Test	01210002 = 00 TU 01210004 = 00 TU	NO
Technical Diagnosis	01320000 = As required	YES
Claim Comment: Input "As per Technical Bulletin 2041057" in comment section of Warranty Claim.		
¹⁾ Vehicle may be outside any Warranty in which case this Technical Bulletin is informational only ²⁾ Vendor code BPY or BPT must be recorded from the original High Pressure Fuel Pump. ³⁾ Labor Time Units (TUs) are subject to change with ELSA updates. ⁴⁾ Documentation required per Warranty Policies and Procedures Manual.		



Note:

Vendor code BPY or BPT must be recorded from the original High Pressure Fuel Pump for claiming purposes.

Reimbursement for Sections A & B & C & D Where Fuel Analysis Results = PASS



Note:

Active VW Customer Mobility Program (VWCMP) loaner vehicles are eligible to receive \$35 per day for loaner expense reimbursement under this warranty extension. For dealers enrolled in the VWCMP, a non-VWCMP loaner vehicle can be provided at a reimbursement rate of \$25 per day or a VW rental at \$35 if a VWCMP loaner is not available. These claims must be submitted in SAGA on a separate line using claim type 1SP. Refer to document VWS-14-01 for applicable labor operation.

To determine if this procedure is covered under Warranty, always refer to the Warranty Policies and Procedures Manual ¹⁾					
Model(s)	Year	Eng. Code	Trans. Code	VIN Range From	VIN Range To
Touareg	2009-2012	3.0L TDI CATA	All	All	All
Passat	2012	2.0L TDI CKRA	All	All	All
SAGA Coding					
Claim Type:	Use applicable Claim Type ¹⁾				



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Service Number:	Damage Code	HST	Damage Location (Depends on Service No.)
2374	0010	--	Use applicable when indicated in Elsa (L/R)
Parts Manufacturer	Touareg, Passat	BPY or BPT ²⁾	
Labor Operation ³⁾ : Fuel System Clean and Replacement		23744299 = 850 TU (Touareg)	
Labor Operation ³⁾ : Fuel System Clean and Replacement		23744299 = 750 TU (Passat)	
Causal Part: High Pressure Fuel Pump		*** 130 755 **	
Outside Material: Diesel Fuel		Part Number: FUEL	
Diagnostic Time ⁴⁾			
GFF Time expenditure	01500000 = As required	YES	
Road Test	01210004 = 10 TU	YES	
Technical Diagnosis	01320000 = As required	YES	
Claim Comment: Input "As per Technical Bulletin 2041057" in comment section of Warranty Claim.			
¹⁾ Vehicle may be outside any Warranty in which case this Technical Bulletin is informational only			
²⁾ Vendor code BPY or BPT must be recorded from the original High Pressure Fuel Pump.			
³⁾ Labor Time Units (TUs) are subject to change with ELSA updates.			
⁴⁾ Documentation required per Warranty Policies and Procedures Manual.			



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Required Parts and Tools

Passat



Note:

Part numbers are for reference only; please consult ETKA by VIN for most current information.

Part No:	Part Description	Quantity
03L 130 755AA	High pressure pump	1
03L 130 321Q	Line	1
03L 130 301AR	Line	1
03L 130 301AS	Line	1
03L 130 301AT	Line	1
03L 130 301BA	Line	1
03L 201 360AD	Fuel Line	1
03L 130 235AD	Return line	1
04L 130 216	Plate	2
WHT 004 739	Bolt	2
03L 130 277R	Injector	4
03L 130 089J	Rail	1
N 911 761 01	Bolt	3
N 107 145 01	Bolt	2
WHT 002 494	Bolt	1
N 910 488 04	Bolt	4
N 911 854 01	Bolt	3
038 109 454A	Nut	1



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WHT 004 739	Bolt	2
7N0 127 400D	Filter	1
561 130 307	Fuel Line	1
561 130 295D	Fuel Line	1
561 130 307B	Fuel Line	1
3AA 919 050H	In-Tank fuel pump (Sending unit)	1
	All torque to yield must be replaced	All

2009 - 2010 Touareg



Note:

Part numbers are for reference only; please consult ETKA by VIN for most current information.

Part No:	Part Description	Quantity
059 130 755 BC or 059 130 755 BT	High pressure pump	See ETKA
7L6 127 401H	Filter	1
059 130 216C	Plate	6
059 130 218 Q	Retention Valve	See ETKA
059 130 089 AM	Fuel Rail Left	1
059 130 090 AQ	Fuel Rail Right	1
059 130 855HX	Injector	6
059 130 241 CD	Pressure Lines	6
WHT 000 884	Seals	6
059 130 310 AK	Fuel Line	1



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059 130 309 AT	Fuel Line	1
059 130 300 EH	Fuel Line	1
059 130 758 J	Pressure Sensor	1
059 130 312 K	Fuel Line	1
7L6 919 715 H	Suction Jet Pump	1
1K0 906 089 C	Auxiliary fuel pump	1
7L6 130 295 AT	Auxiliary fuel pump supply line	1
059 130 300 DF	Fuel line with fuel temperature sensor	1
7L6 919 088 F	In-Tank fuel pump (Sending unit)	1
	All torque to yield bolts must be replaced	All

2011 - 2012 Touareg



Note:

Part numbers are for reference only; please consult ETKA by VIN for most current information.

Part No:	Part Description	Quantity
059 130 755 BT	High pressure pump	See ETKA
7P6 127 401	Filter	1
059 130 216C	Plate	6
059 130 218 AD	Retention Valve	See ETKA
059 130 089 AM	Fuel Rail Left	1
059 130 090 BR	Fuel Rail Right	1
059 130 277 AM	Injector	6
059 130 241 CD	Pressure Lines	6



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WHT 000 884	Seals	6
059 130 310 AK	Fuel Line	1
059 130 309 AT	Fuel Line	1
059 130 300 EG	Fuel Line	1
059 130 758 J	Pressure Sensor	1
059 130 312 K	Fuel Line	1
059 130 297S	Fuel Line	1
7P6 919 715 A	Suction Jet Pump	1
059 130 300 EG	Fuel line with fuel temperature sensor	1
7P6 919 088 B	In-Tank fuel pump	1
	All torque to yield bolts must be replaced	All

Tool Description	Tool No:
Midtronics Battery Tester/Charger	InCharge 940 (INC-940) or GRX3000VAS
VAS Fuel Identification Unit	VAS 6774
VAS Diagnostic Tool	VAS 6150/X & VAS 6160/X with ODIS Service with: current online updates

Additional Information

All part and service references provided in this Technical Bulletin are subject to change and/or removal. Always check with your Parts Dept. and Repair Manuals for the latest information.