

Model(s)	Year	Eng. Code	Trans. Code	VIN Range From	VIN Range To
Touareg	2011- <mark>2015</mark>	All	All	All	All

#### **Condition**

**48 15 01** January 13, 2015 **2038140** Supersedes Technical Bulletin V481406 dated November 19, 2014 to include model year 2015 applicability.

#### **Vibrations in Steering Wheel**

#### The customer may state:

- 1. Shimmy/rotational vibration in the steering wheel at constant speed.
  - Shimmy/rotational vibrations in the steering wheel at various speeds.
- 2. Shimmy/rotational vibrations in the steering wheel when braking.
- 3. Vibration felt in the entire vehicle:

The vibration can be felt in the seat surfaces, in the underbody, in the foot well, or in the pedal.

The vibration is more prevalent when braking/accelerating.

### **Technical Background**

#### Flatspots:

After a short stationary period (sometimes as little as a few hours) flat spots can develop after the warm tire has cooled down. The effect the flat spotted tire has on the vehicles performance depends on the type, dimension, make, and pressure of the tire.

Flat spots alter the radial force variation and must be driven out before balancing the wheel.

#### Effects of increased radial forces on the vehicle:

Increased radial forces on the front or rear tires cause vibrations in the vehicle.

Increased radial forces on the front tires amplified by braking can also lead to vibrations in the vehicle.

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#### **Explanations and definitions:**

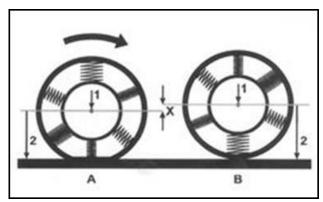


Figure 1

#### **Radial force variation (RFV)**

The radial force or wheel load is the force with which a tire is compressed (Figure 1) Tires have softer and stiffer areas along their circumference, which is illustrated using springs (Figure 1, A and B). Figure 1 shows the same tire at different points of rotation (A and B), as it rolls on level road with constant load (radial force).

### Tip:

If this wheel rolls, the center of the wheel rises and falls X distance with a constant wheel load (illustration 1, arrow 1). This change in arrow 1 by X distance can be felt in the vehicle as vibration or shaking of the steering wheel.



The attached questionnaires must be filled out and submitted to the chassis team email box VWGoA.Chassis@vw.com and kept on file for warranty purposes.

### **Production Solution**

No production change required.

### **Service**

#### **Procedure:**

Complete the following steps to eliminate vibrations (flat spots) and radial force fluctuations.



#### Warm balancing / matching of wheels

- 1. Check all tires for the following points:
- Tread and side wall damage (for example: broken tread, impact damage/bubbles and so on).
- Tread depth.



#### **WARNING:**

The manufacturer recommends:

Replace tires damaged by external influences (for example impact damage/bubbles and so on). Damaged tires are an increased safety risk.

Replace tires with a tread depth of under 4 mm, otherwise this procedure will not be totally effective.

- 2. Check and correct the tire pressure of every wheel to at least 36 PSI or the permitted maximum specified value.
- **3.** Perform a test drive of at least 18 miles, if possible on a highway, traffic and road conditions permitting over different speed ranges (up to 60 mph).



Make sure that you do not endanger yourself or others during the test drive.

During the test drive observe all traffic laws.

**4.** After the road test, raise the vehicle immediately and begin removing the wheels for balancing.



New flat spots can develop during a short stationary period while the tires cool down so it is important to put the vehicle on the lift immediately following the test drive.



**5.** Balance the wheels on a stationary balancing machine.



The manufacturer recommends to balance / road force the wheels on the -VAS 6230 A/B- Hunter machine.

Measure, balance and (if necessary) match the wheel according to the instructions of the equipment.

When tightening the wheel on the balancing machine make sure the contact surfaces of flange and wheel are clean, the wheel is correctly centered and a suitable cone and/or flange are used. We recommend the use of a five-finger flange.



The fluctuation of the radial force does not depend on the turning direction and is measured as the difference between maximum and minimum radial force (road force).

If the radial force cannot be reduced below the specified value of 26 lbs. by matching, replace the tire.

The wheels must be installed on the vehicle according to the instructions of the manufacturer and the repair manual.

#### Securing the wheel on the vehicle

Note: This is the most sensitive and critical portion of the repair!

- Check whether the contact surfaces on the brake disc and wheel are free of corrosion and dirt, clean if necessary.
- Check whether the centering hole of the wheel and the centering of the hub are free of corrosion and dirt, clean if necessary.
- The wheels holes and the wheel bolts must be free of dirt and corrosion. It must be possible to lightly turn the wheel bolts by hand without using a tool.



Severely corroded or damaged bolts must be replaced according to the repair manual/ETKA.

Make sure that the wheel bolts are the correct version and length.

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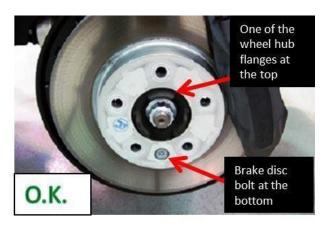
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Each wheel bolt hole is assigned a number from 1 to 5. These numbers will be referenced below. (Star pattern)

Figure 2

• Align the position of the brake disc holes/hub threads as shown in Figure 3 below.



### Example of proper brake disc hole/hub thread positioning.

- The brake disc bolt should be in the 6 o'clock position as seen in the picture.
- Wheel bolt hole number 1 should be in the 12 o'clock position. See Figure 2 above for wheel bolt hole numbering.
- One of the three hub flanges should also be in the 12 o'clock position.

Figure 3

• The reason this position is important is the weight of the wheel must be supported in order for proper centering to occur. When the there is one of the hub flanges on top the weight of the wheel is supported while the wheel is secured in wheel bolt hole number 1.





Example of improper positioning.

Figure 4



Example of improper positioning.

Figure 5

- Insert the wheel on the hub and secure it loosely by hand it starting with wheel bolts number 1 and 2 (See figure 2 above 4).
- Screw in the remaining wheel bolts by hand in the star pattern specified in Figure 5. This will ensure precise centering of the wheel. Initially tighten the wheel bolts to 30 Nm.

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Tighten all the wheel bolts in the star pattern specified in the picture.

Tighten the wheel bolts to the specified tightening torque with a torque wrench by hand.



Do not use a pneumatic impact gun to install the wheel bolts.

#### Figure 6

- Lower the vehicle until the tires just begin to touch the floor. Torque the bolts by hand to the specified value in ElsaPro using a torque wrench.
- · Lower the vehicle to the floor.
- Ensure the correct vehicle-related tire pressure.
- · Test drive the vehicle.
- · Assess the vehicle again in the affected speed range.



If the vibrations persist, call the helpline for further assistance. Before calling the helpline all steps in this bulletin must be completed and documented. Please be as specific as possible regarding the steps used and customer complaint when calling the helpline.

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### Warranty

To determine if this procedure is covered under Warranty, always refer to the Warranty Policies and Procedures Manual <sup>1)</sup>								
Model(s)	Year(s)		Eng. Code(s)	Trans. Code(s)	VIN Range From		VIN Range To	
Touareg	2011-2015		All	All	All		All	
SAGA Coding								
Claim Type:	nim Type: Use app		licable Claim Type	1)				
Service Numl	Service Number:		Damage Code	нѕт		Damage Location (Depends on Service No.)		
4405	4405		0013				Use applicable when indicated in ElsaWeb (L/R)	
Parts Manufacturer		Touareg		WWO <sup>2)</sup>				
Labor Operation 3):								
Balance 2 wheels			44059400 = 50 TU					
Or Release 4 wheels			44059404 = 90 TU	Ī				
Balance 4 wheels  Labor Operation <sup>3)</sup> :			14033404 = 30 10	<u>'</u>				
Clean 2 front whe				40643050 = 10 TU				
AND/OR								
Clean 2 rear wheel hubs			42683050 = 10 TU					
Causal Part: Select Labor Operation			4405940*					
Diagnostic Time <sup>4)</sup>								
GFF Time expenditure 01500000 = 00 TU			max.		N	0		



Road Test	01210002 = 10 TU 01210004 = 10 TU	YES
Technical Diagnosis: Check all tires:	01320000 = 10 TU max.	YES
• Damage		
Tread depth		
Tire pressure		

Claim Comment: Input "As per Technical Bulletin 2038140" in comment section of Warranty Claim.

### **Required Parts and Tools**

Part No:	Part Description	Quantity
See ETKA	Wheel Weights	As required

Tool Description	Tool No:
Wheel Balacing Machine	VAS 6230 A/B- Hunter
	Or equivalent

#### **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.

<sup>1)</sup> Vehicle may be outside any Warranty in which case this Technical Bulletin is informational only

<sup>&</sup>lt;sup>2)</sup> Code per warranty vendor code policy.

<sup>3)</sup> Labor Time Units (TUs) are subject to change with ELSA updates.

<sup>4)</sup> Documentation required per Warranty Policy Procedures Manual.

### **Tire information sheet**

Be as specific as possible. Speed ra acceleration, vibrations (only) when b				
2. Vehicle data				
VIN number:	Ve	hicle delivery dat	e:/_	
Mileage of affected tires:		hicle mileage:		
Urban/country/highway driving in				d:
Wheels installed? Factory  Make of tire:  Dimension:		Tire type:		, AOE, R01)
Make of balancing machine:	Las	st calibration date	of machine:	
	Front left	Front right	Rear left	Rear right
DOT (last four digits mm-yy)				
DOT (last four digits mm-yy)  Tyre pressure in bar				
	correct  incorrect	correct  incorrect	correct incorrect	correct  incorrect
Tyre pressure in bar			_	
Tyre pressure in bar  Tire pressure according to label  Tread depth in mm			_	
Tyre pressure in bar  Tire pressure according to label  Tread depth in mm outside / center / inside  Existing wheel weights				

	Front left	Front right	Rear left	Rear right
Tire pressure in bar				
Road force value in pounds (lbs) before matching				
Road force value in pounds (lbs) after matching				
Missing weight per level/track in gram outside/inside				

<sup>\*</sup>Road force values can be established with Hunter tester VAS 6230

### Vibrations, steering wheel vibrations and juddering

A test drive with the customer is necessary.

Divide the complaint into the following symptoms:	VIN number:
The complaint occurs	FRED report number:
at the beginning of the journey and gradually eases of	or disappears altogether
at constant speed the and remains while driving at the	
in acceleration and overrun and when pressin	·
in acceleration and overrun, but <u>not</u> when pres	
in acceleration and overrun. It involves a judde	·
with pressed clutch or position N at an engine	
stronger when accelerating. Occurs in acceleration ar	
only when braking, whereby the pedal pressure is	<u> </u>
when braking the complaint gets worse, when the peo	
The complaint can be felt in the*:	an process to Emagnify Emanating
•	ever, $\square$ pedal, $\square$ footwell, $\square$ centre console or tunnel, $\square$ rear seats
It involves*:	
	ions,   traction disruption,   juddering,   misfiring,
humming or droning noises.	,
Additional information*:	
→ speed of mph to mph	→ in which gears or driving modes:
→ since when does the complaint occur?	(since x weeks, since vehicle purchase or tire change,)
→ with summer or winter tires	*select all that apply

