

# WM 4X00IN Central wheel lock: Component assessment

- [Central wheel lock: Component assessment](#)

## Central wheel lock: Component assessment

### Information on component assessment

The following illustrations compare central wheel lock components as **they normally look on vehicles that have been driven** with components that **show signs of excessive wear**.

The following applies to the **wheel hub**: The wheel hub must always be replaced if the loosening torque of the relevant central bolt is less than 400 Nm (296 ftlb.) or if the driving pins can be turned by hand. It really doesn't matter how the wheel hub looks in this case.

**Prerequisite:** The central bolt was originally tightened to the prescribed tightening torque and the vehicle has since been driven.

The following also applies: If the vehicle that is being checked shows at least one sign of wear as shown, the affected component and other components, if necessary, must be replaced in accordance with the relevant instructions.

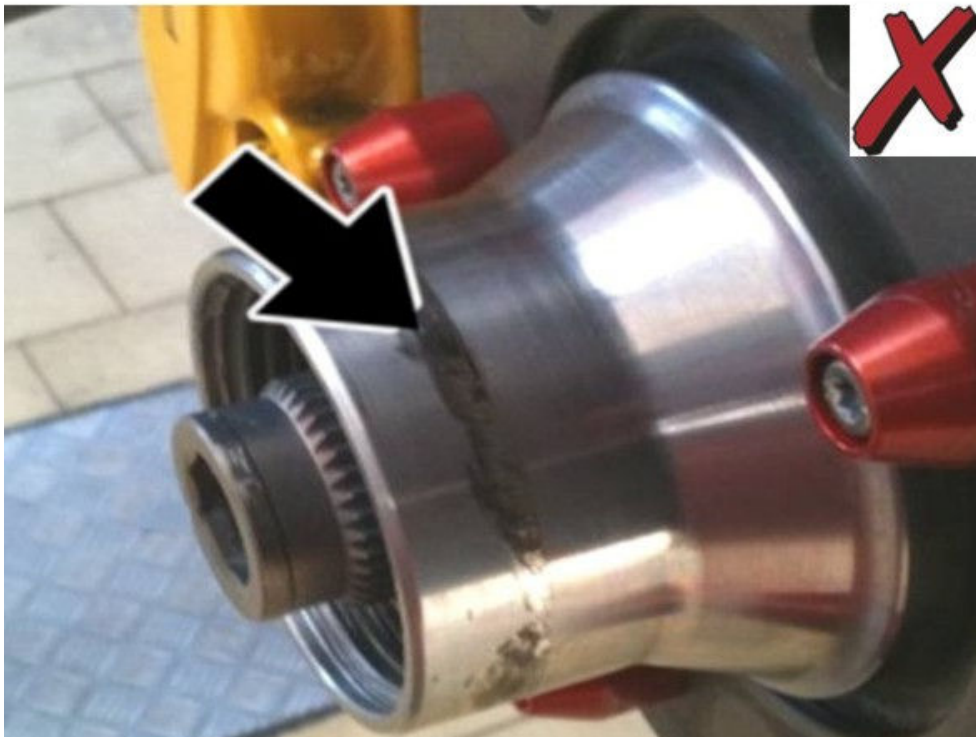
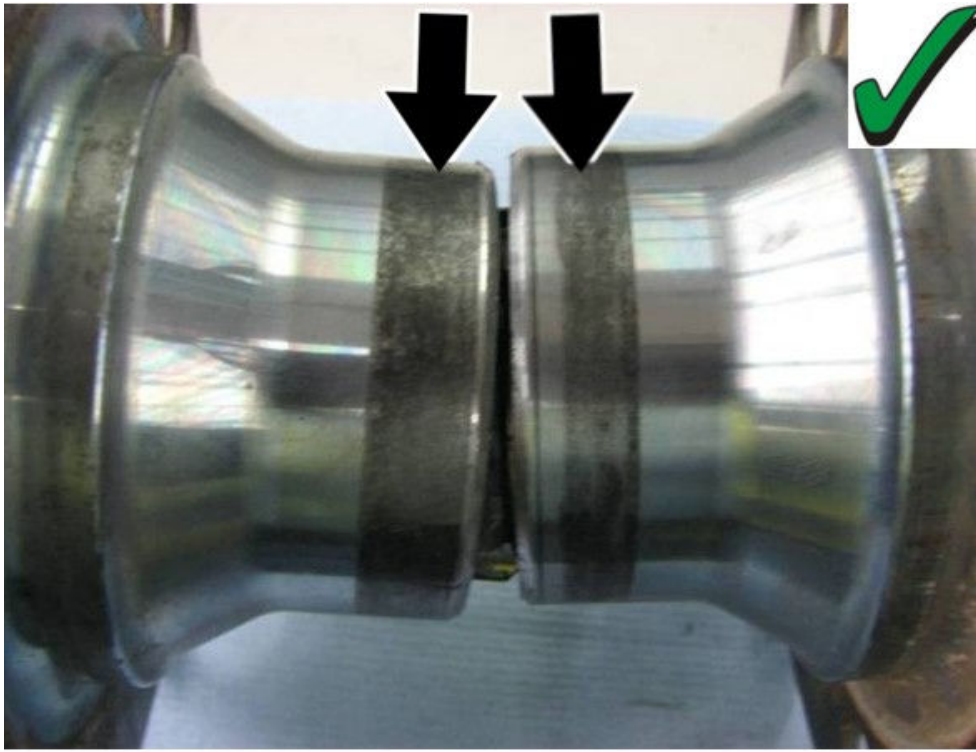
### Wheel hub assessment

The wheel hub is assessed in three steps:

- Check the actual wheel hub (direct check)
- Check the wheel hub based on the appearance of the cone ring on the central bolt (indirect check)
- Check the wheel hub based on the appearance of the wheel cone (indirect check)

#### 1. Check the wheel hub.

Examine the cylindrical surface of the wheel hub in the area in which the cone ring on the central bolt sits when the wheel is fitted → [Checking wheel hub](#) .



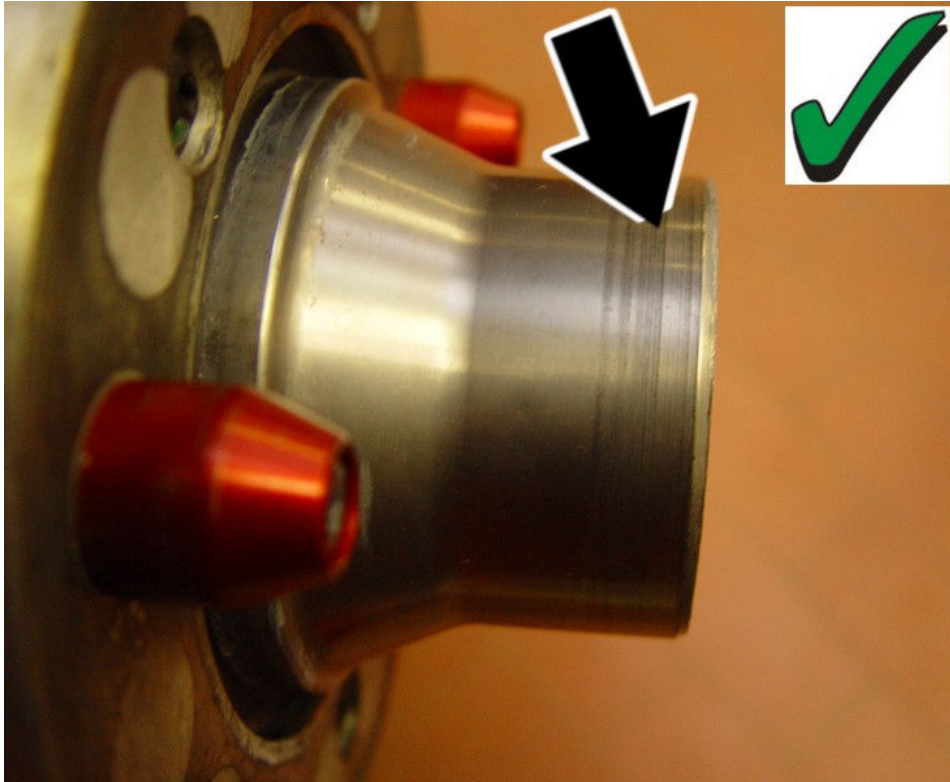
**Wheel hub assessment**

**Looks normal for a vehicle that has been driven**

**Excessive signs of wear**

<p><b>Wide contact pattern</b> → <a href="#">Wheel hub OK</a></p> <ul style="list-style-type: none"> <li>• Contact pattern is at least <b>10 mm</b> wide on the cylindrical surface of the wheel hub <b>-arrows-</b> .</li> <li>• On vehicles with low mileage, the contact pattern may not be continuous, but must extend over an area that is at least <b>10 mm</b> wide → <a href="#">Wheel hub OK (1)</a> .</li> <li>• The discolouration can vary from shiny metallic to dark grey.</li> </ul>	<p><b>Linear pattern</b> → <a href="#">Wheel hub not OK</a></p> <ul style="list-style-type: none"> <li>• Narrow (linear) contact pattern that is uneven or only in spots on the cylindrical surface of the wheel hub <b>-arrow-</b> .</li> </ul>
<p><i>Wheel hub OK</i></p>	<p><i>Wheel hub not OK</i></p>
<p><b>Result/Action required</b></p>	
<p>⇒ The <b>wheel hub</b> does <b>not</b> have to be replaced.</p>	<p>⇒ The <b>wheel hub</b> must be replaced.</p>

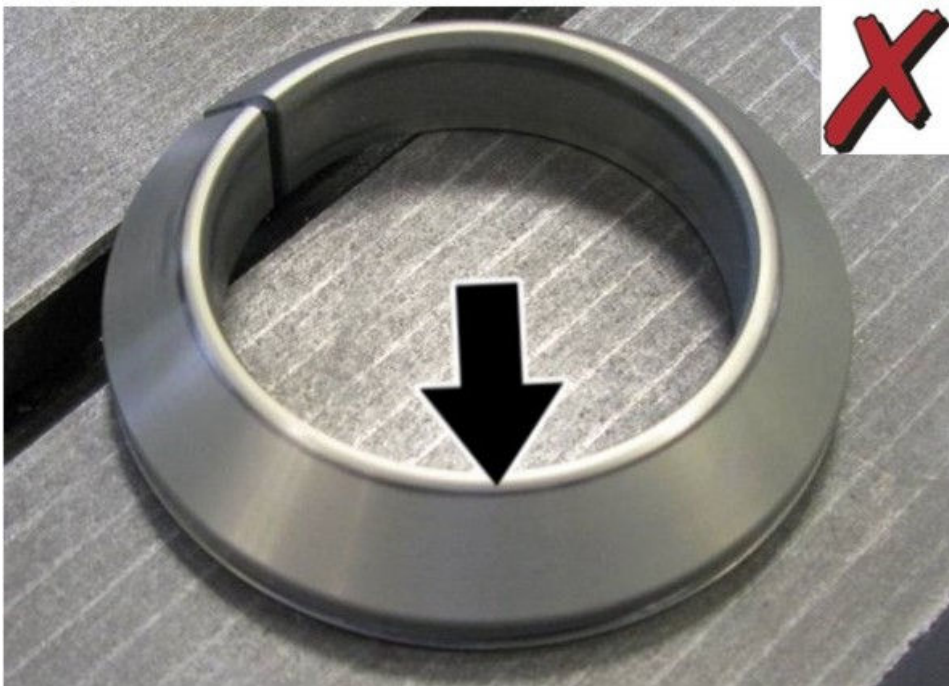
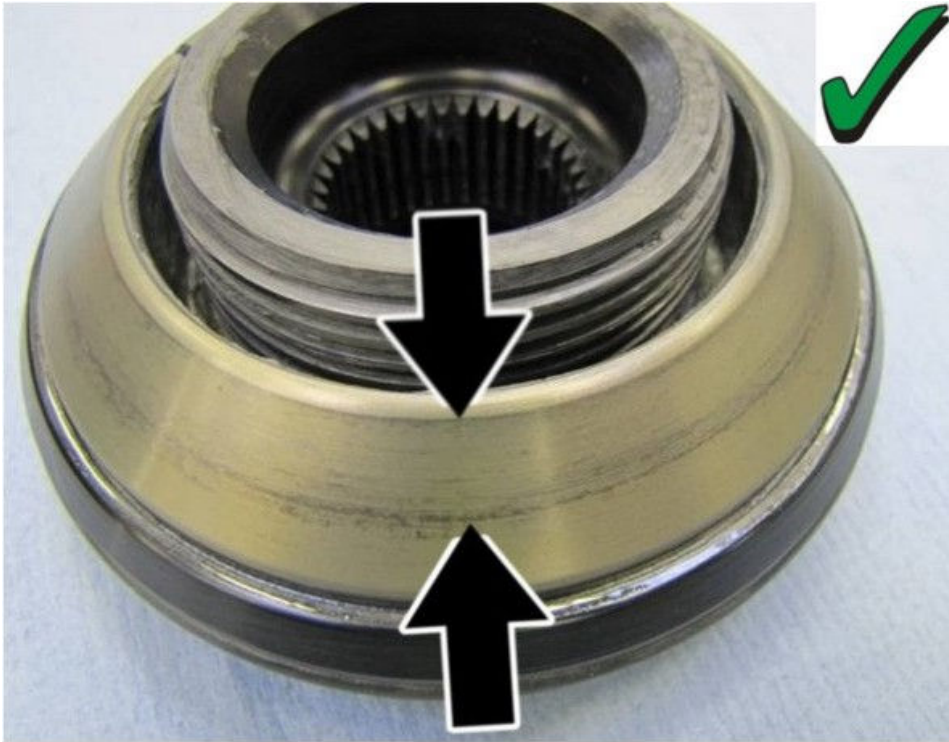
Additional picture of wheel hub OK





If it is not possible to determine clearly based on the contact pattern of the wheel hub whether the wheel hub looks normal for a vehicle that has been driven or whether it shows signs of wear, the **cone ring on the central bolt** and the **conical area on the wheel** must be examined in order to further assess the wheel hub (indirect check on wheel hub, see Steps 2 and 3).

2. Check the wheel hub based on the appearance of the **cone ring on the central bolt** ( → [Checking cone ring on central bolt](#) ).



*Checking cone ring on central bolt*

**Assessment of cone ring on central bolt**

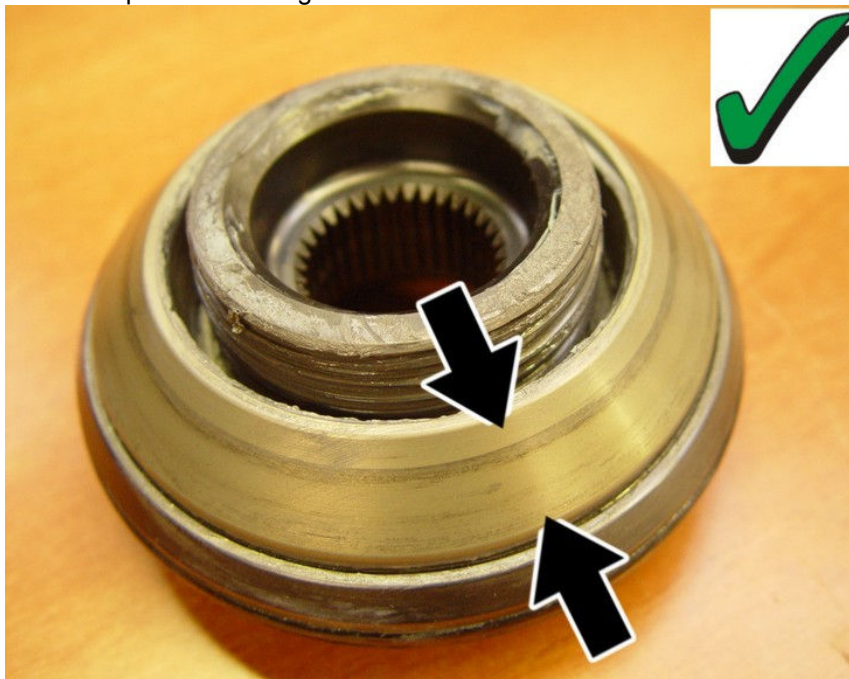
**Looks normal for a vehicle that has been driven**

**Excessive signs of wear**

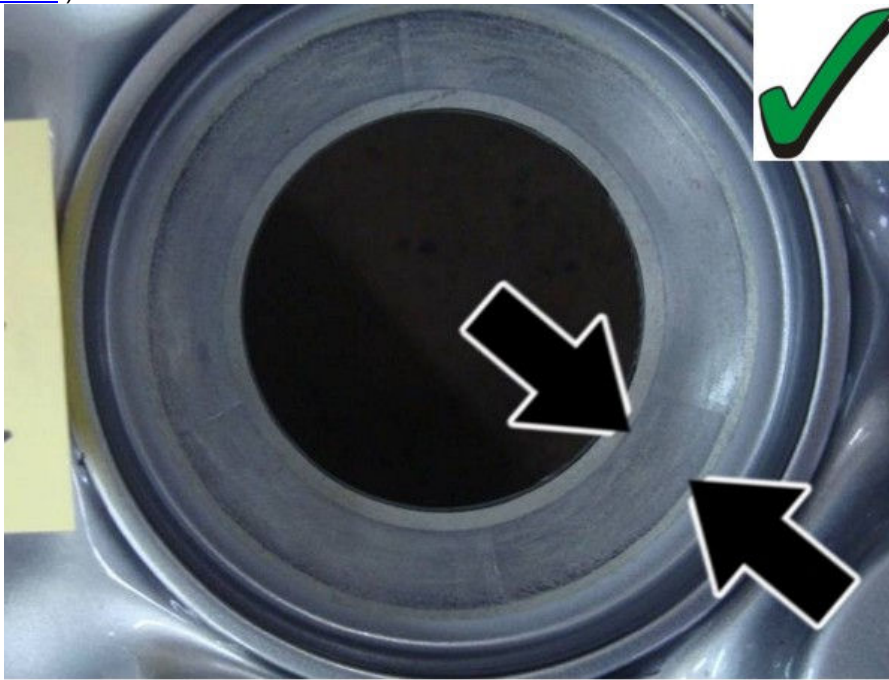


<p><b>Wide contact pattern</b> → <a href="#">Cone ring OK</a></p> <ul style="list-style-type: none"> <li>• There is no discolouration on the coating of a new cone ring on the central bolt.</li> <li>• After a certain mileage, a grey/black contact pattern that is <b>approx. 10-15 mm</b> wide forms, with the main pressure point in the centre - <a href="#">arrows</a> - .</li> <li>• The complete surface is blackened on vehicles with high mileage.</li> </ul>	<p><b>Narrow line</b> → <a href="#">Cone ring not OK</a></p> <ul style="list-style-type: none"> <li>• Only a narrow line can be seen on the small diameter of the cone ring on the central bolt <a href="#">-arrow-</a> .</li> </ul>
<p><i>Cone ring OK</i></p> <ul style="list-style-type: none"> <li>• <b>Additional picture:</b></li> </ul>	<p><i>Cone ring not OK</i></p>
<p><b>Result/Action required</b></p>	
<p>⇒ The <b>wheel hub</b> does <b>not</b> have to be replaced.</p>	<p>⇒ The <b>wheel hub</b> must be replaced.</p>

• Additional pic of Cone ring OK



3 Check the wheel hub based on the appearance of the **wheel cone** ( → [Checking wheel cone](#) ).

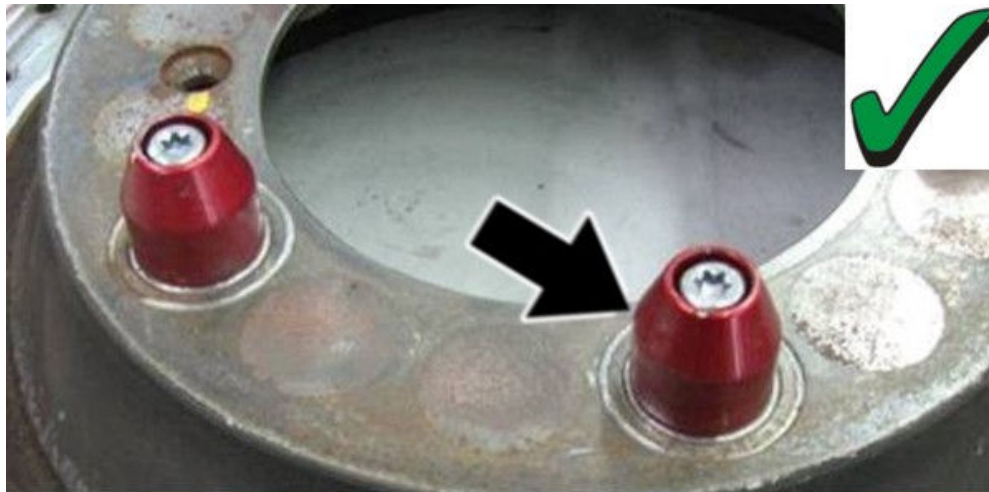


Wheel cone assessment	
Looks normal for a vehicle that has been driven	Excessive signs of wear
<p><b>Wide contact pattern</b> → <a href="#">Wheel cone OK</a></p> <ul style="list-style-type: none"> <li>• After a certain mileage, an even contact pattern that is <b>approx. 10-15 mm</b> wide forms on the wheel cone <a href="#">-arrows-</a>.</li> <li>• At first, this is just a shimmering surface, but the surface turns completely black on vehicles with higher mileage.</li> </ul>	<p><b>Narrow contact pattern</b> → <a href="#">Wheel cone not OK</a></p> <ul style="list-style-type: none"> <li>• Narrow (linear) contact pattern that is uneven or only in spots <a href="#">-arrows-</a>.</li> </ul>
<i>Wheel cone OK</i>	<i>Wheel cone not OK</i>
Result/Action required	
⇒ The wheel hub does <b>not</b> have to be replaced.	<p>⇒ The <b>wheel hub</b> must be replaced.</p> <p>Checking the wheel cone is only an indirect way of checking the wheel hub.</p> <p>The actual <b>wheel</b> does <b>not</b> need to be replaced if the wheel cone looks like this.</p>



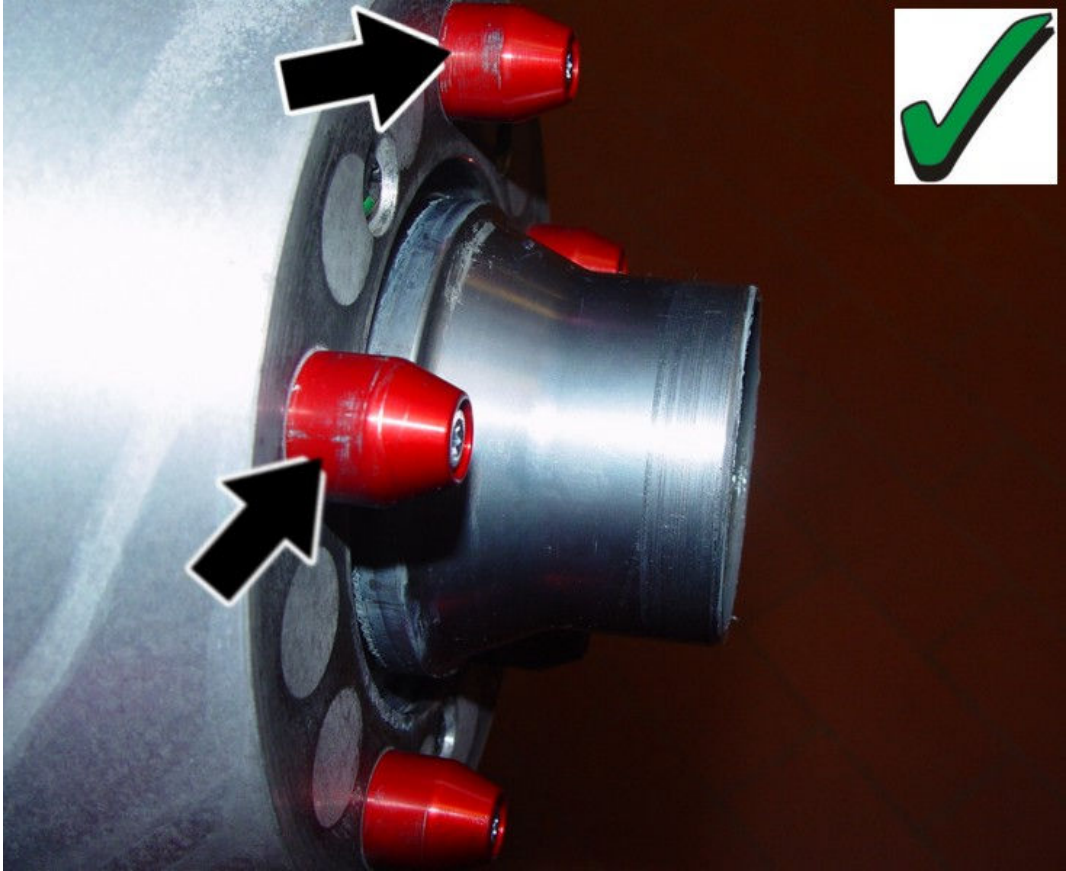
## Assessment of wheel adapters, wheel and brake disc

1. Check wheel adapters → [Checking wheel adapters](#) .



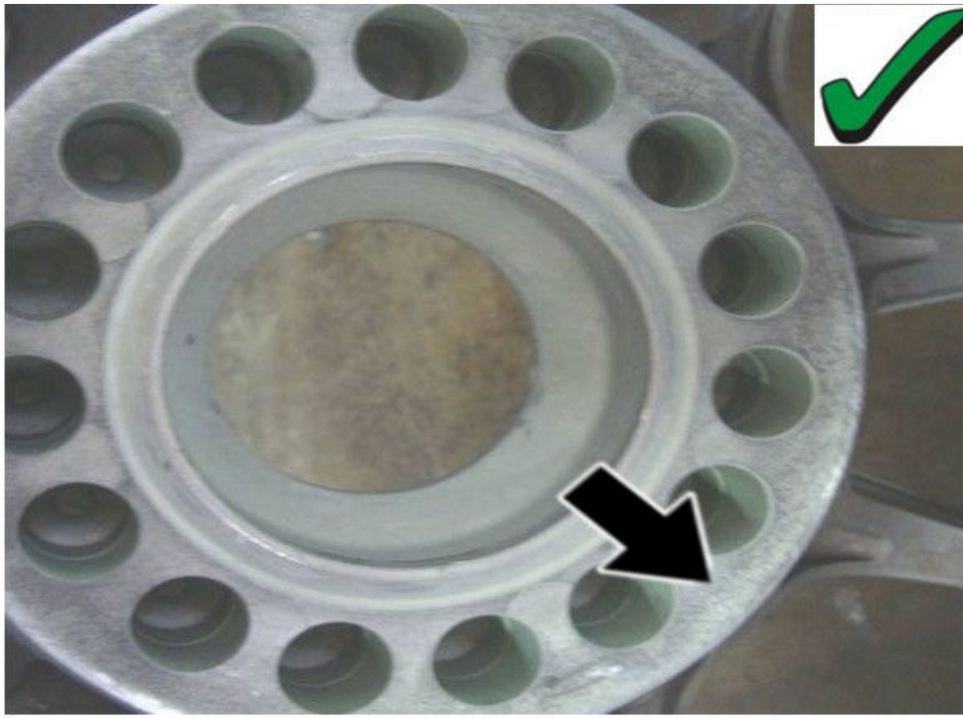
Assessment of wheel adapters	
Look normal for a vehicle that has been driven	Excessive signs of wear
<p><b>Light scratches on the surface</b> → <a href="#">Wheel adapters OK</a></p> <ul style="list-style-type: none"> <li>• There are light scratches on the surface of the wheel adapters <a href="#">-arrows-</a> .</li> <li>• The scratches are caused by removing and fitting wheels and can be deeper scratches or just minor scrapes, depending on how often the wheel has been changed.</li> </ul>	<p><b>Eloxal coating is completely worn down in places</b> → <a href="#">Wheel adapters not OK</a></p> <ul style="list-style-type: none"> <li>• The red Eloxal coating on the wide surface is completely worn down on the cylindrical surface of the wheel adapters <a href="#">-arrow-</a> .</li> <li>• The wheel adapters must also be replaced if they can be turned by hand.</li> </ul>
<i>Wheel adapters OK</i>	<i>Wheel adapters not OK</i>
Result/Action required	
⇒ The <b>wheel adapters</b> do <b>not</b> have to be replaced.	⇒ The <b>wheel adapters</b> and <b>wheel hub</b> must be replaced.

Additional pic of wheel adapter okay



2 Check the contact surface for the brake disc on the **wheel** ( → [Checking wheel contact surface](#) ).

*Checking wheel contact surface*



**Assessment of wheel contact surface**

**Looks normal for a vehicle that has been driven**

**Excessive signs of wear**



<p><b>Discolouration or slight irregularities on the surface</b> → <a href="#">Wheel contact surface OK</a></p> <ul style="list-style-type: none"> <li>• Discolouration or slight irregularities on the surface due to the slightest movements while driving (micro-movements) are OK - <a href="#">arrow</a> - .</li> <li>• The contact surface is smooth (flat).</li> <li>• Material is not worn down.</li> </ul>	<p><b>Material erosion</b> → <a href="#">Wheel contact surface not OK</a></p> <ul style="list-style-type: none"> <li>• There is material erosion on the outer edge <a href="#">-arrow-</a> of the wheel contact surface.</li> <li>• The edge is worn down (eroded) so much that there is a radius on the outer edge <a href="#">-arrow-</a> .</li> <li>• The wheel contact surface is uneven.</li> <li>• Signs of wear can also be seen on the <b>wheel hub</b> and <b>brake disc</b> in accordance with the relevant description.</li> </ul>
<p><i>Wheel contact surface OK</i></p>	<p><i>Wheel contact surface not OK</i></p>
<p><b>Result/Action required</b></p>	
<p>⇒ The <b>wheel</b> does <b>not</b> have to be replaced.</p>	<p>⇒ The <b>wheel</b> and <b>wheel hub</b> must be replaced.</p> <p>⇒ If there are visible signs of wear on the <b>brake disc</b> in accordance with the description below, the brake disc must also be replaced.</p>

Additional  
pic of  
wheel  
contact  
surface  
ok



3. Check the contact surface for the wheel on the **brake disc** ( → [Checking brake disc](#) ).

Checkin  
g brake  
disc



Brake disc assessment	
Looks normal for a vehicle that has been driven	Excessive signs of wear
<p><b>Discolouration or slight irregularities on the surface</b> → <a href="#">Brake disc OK</a></p> <ul style="list-style-type: none"> <li>• Discolouration or slight irregularities on the surface due to the slightest movements while driving (micro-movements) are OK <a href="#">-arrow-</a> .</li> <li>• The contact surface is smooth (flat).</li> <li>• Material is not worn down.</li> </ul>	<p><b>Material erosion</b> → <a href="#">Brake disc not OK</a></p> <ul style="list-style-type: none"> <li>• Material erosion and some crater-shaped cracks can be seen on the wheel contact surface <a href="#">-arrow-</a> .</li> <li>• The contact surface is uneven.</li> </ul>
<i>Brake disc OK</i>	<i>Brake disc not OK</i>
Result/Action required	
⇒ The <b>brake disc</b> does <b>not</b> have to be replaced.	<p>⇒ The <b>brake disc</b>, <b>wheel adapters</b> and <b>wheel hub</b> must be replaced.</p> <p>⇒ If there are visible signs of wear on the <b>wheel contact surface</b> in accordance with the previous description, the <b>wheel</b> must also be replaced.</p>

Additional pic of brake disc ok

