



**OPTIMAL®**  
Your profit



# Assembly instructions



## PSA rear axle repair with OPTIMAL repair kits



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## 1. Introduction

In the case of older PSA Group models, defective rear axles can mean a total write-off since the manufacturer's recommendation to exchange the rear axle is usually too expensive to implement. But this is now a thing of the past. PSA rear axle repair kits by OPTIMAL now make efficient and economical repair possible.

### 1.1. Background

Peugeot and Citroën vehicles (for models, see table on p.2) were long fitted with torsion-bar rear axles. This meant the chassis components could be arranged in a space-saving manner. However, the weakness of this lies in the bearing support of the trailing arm. Increased mechanical wear occurs in the support and on the stub shaft, while the sealing material becomes hard and brittle, making it impossible to prevent water from entering the bearing points. Worn bearings and corroded stub shaft are the result. The defective support causes noise and a tilting of the rear wheels becomes visible, with serious consequences for the vehicle's safety on the road.

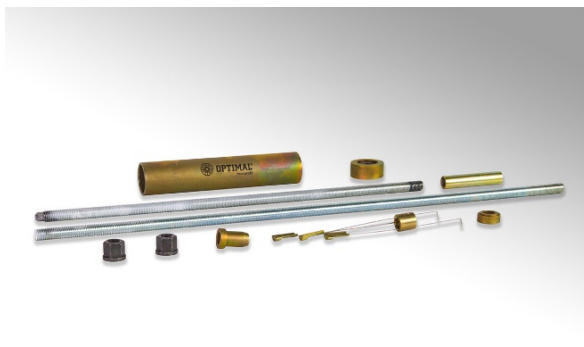


In such cases, the manufacturer prescribes a complete exchange of the rear axle. And this, for most vehicles, means a complete write-off.



### 1.2. Repair is possible!

It is cheaper and more efficient to repair the rear axle using the new PSA repair kits by OPTIMAL. In cooperation with Paschke Profitec, OPTIMAL engineers have developed a non-wearing and cost-effective tool (see photo below), enabling an economical repair to be carried out.



## 2. The advantages

### 2.1. Advantages of the OPTIMAL repair kit:

- ✓ Low-cost vehicle repair
- ✓ No need to remove the rear axle
- ✓ Low tool costs
- ✓ Repair on one side possible (left/right)
- ✓ Complete kit in a single pack
- ✓ Assembly instructions enclosed with link to repair video
- ✓ Assembly can also be performed using other tools
- ✓ All components manufactured in comparable OE quality

### 2.2. Advantages of the OPTIMAL tool:

- ✓ **No welding** is necessary for pulling the stub shaft
- ✓ Long pressure pipe, meaning greater distance to the side part and 360° turns possible
- ✓ Wear-resistant spindle with standard metric thread saves time thanks to a greater transmission ratio of strength and rotation angle
- ✓ The standard thread means there is no self-locking effect (as is the case with fine threads)
- ✓ The spindle has a hexagon allowing it to be countered
- ✓ Torsion-proof spindle nuts (driving nut)
- ✓ Axial bearing unit encapsulated in pressure piece for greater dirt protection
- ✓ A sophisticated stub shaft pulling procedure makes exchanging on one vehicle side possible
- ✓ The mechanical tool can be adapted to common hydraulic hollow piston cylinders (less effort required, huge time saving)

## 3. The PSA repair kits

Applications	OPTIMAL reference no.	Corresponding reference no. *	Note
205, 306, 309, Xsara (Picasso), ZX	G8-272	965905S	Without tool
206 with RA disc brake (Org. 9501→)	G8-277	965906S	
206 with RA disc brake (→ Org. 9500)	G8-248	965911S	
206 with RA drum brake	G8-197	965913S	
405, Partner, Berlingo, Xsara Picasso	G8-276-5017	965912S+965900	Oversize stub shaft
405, Partner, Berlingo, Xsara Picasso	G8-276-5020	965912S+965901	Oversize stub shaft
106, AX, Saxo without stabilizer	G8-274	965909S	
106, AX, Saxo with stabilizer	G8-275	965908S	

\*Attention please. All foreign and original numbers from automobile manufacturers listed in this table are for comparison purposes only and may not be used in invoices to car owners.

## 4. Assembly instructions

Before assembling step by step, please consider the following information first:

### Important note:

**The installation may only be carried out by qualified specialists. Please check the availability of repair kits beforehand, since vehicles can no longer be moved once the rear axle has been dismantled! The repair or exchange of stub shaft may only be performed once per vehicle side!**

### 4.1. Preliminary work to be carried out on the vehicle:

- ✓ Always take the vehicle manufacturer's instructions into consideration
- ✓ Separate the mechanical and/or hydraulic connection of the brake to the trailing arms (hand brake, brake drum etc.)
- ✓ Disassemble shock absorbers
- ✓ Clean screw connections and toothings of the torsion bars and apply rust solvent
- ✓ Disconnect electrical plug connections (e.g. ABS sensors)
- ✓ Measure the distance between the highest point of the fender edge and wheel hub center (reference dimension for the height of the vehicle)

Depending on the execution:

- ✓ Remove plastic and retaining screw from the stabilizer plate (left side of vehicle)
- ✓ Turn M12x1.5x50 screw into the thread of the plastic screw in order to force the metal plate away from the stabilizer. Then detach the plate on the other side of the vehicle

Or:

- ✓ Unscrew clamping screws from the stabilizer, drive stabilizer out to the right

The next step is to remove the torsion bars:

- ✓ Remove screws and eccentric washers in front of the torsion bars and clean the grooves
- ✓ Mark the positions of the torsion bars using a prick punch (dimension for installation)
- ✓ Drive out torsion bars in the direction of the larger tothing
- ✓ Take off the swing arms or trailing arms
- ✓ Measure projection of the old stub shaft (reference dimension for new stub shaft)
- ✓ Remove coarse rust at the internal diameter of the stub shaft using a file

Please note that the OPTIMAL tool is universally applicable and can be used for all rear axles of these series. The individual components of the tool are not generally used depending on the vehicle model but on the inside diameter of the stub shaft to be pulled. Inside diameters of 26 mm, 28 mm and 34 mm are differentiated between. (Depending on the execution, the inside diameter may vary at the front and back. The smallest inside diameter shall be applicable.)

## 4.2. Removal

We will explain how to exchange the various stub shaft below.

### 4.2.1. Removal for the inside diameter of 26 millimeters

The two spindles (M20x1000mm = type no. 33819610, M20x740mm with hexagon = type no. 33819609) are to be screwed with the connection element (33819603) and a graphite spray is to be applied for lubrication. Then push the shells with spokes (33819501) through the stub shaft one after the other. You then need to position the first shell in the lower area behind the stub shaft; then successively align the two other shells. You can use the guide ring to help you, exerting a slight pull on the shells already aligned. The screwed-on spokes on the shells primarily serve for positioning and are bent 90° at their ends. Once all three shells are in the correct position, the spokes will each be 120° apart and pointing in different directions. With the chamfered hexagon in front, push the spindle into the axle tube from the opposite side of the vehicle. **When inserting the spindle, make sure that the shells remain in their position!** Then take a torch and check from the opposite side of the vehicle that the shells are correctly seated. Keep the spindle with the connection element lightly pressed against the shells in order to prevent the shells from slipping. You then need to slide the pressure pipe (33819604) and the pressure piece with bearing (33819605) over the spindle. Now turn the enclosed hexagon nut onto the spindle and then re-check the correct seating of the shells from the other side of the vehicle.

Now use a ring wrench (with an appropriately sized lever arm) to turn the nut to the right, until the stub shaft has been completely pulled out of the axle.



### 4.2.2 Removal for the inside diameter of 28 millimeters

The two spindles (M20x1000mm = type no. 33819610, M20x740mm with hexagon = type no. 33819609) are to be screwed with the connection element (33819603) and a graphite spray is to be applied for lubrication. You then slide the conical sleeve (33819602) onto the spindle. The plane side of the conical sleeve will be touching the connection element. Now push the spindle with conical sleeve from the opposite side of the vehicle (where there is an stub shaft with a diameter of 34 mm) into the axle tube. You then need to slide the pressure pipe (33819604) and the pressure piece with bearing (33819605) over the spindle. Now turn the enclosed hexagon nut onto the spindle. Finally, use a ring wrench (with an appropriately sized lever arm) to turn the nut to the right, until the stub shaft has been completely pulled out of the axle.

#### 4.2.3 Removal for the inside diameter of 34 millimeters

The spindle with hexagon (33819609) is to be screwed with the connection element (33819603) and a graphite spray is to be applied for lubrication. You then slide the conical sleeve (33819602) onto the spindle. The plane side of the conical sleeve will be touching the connection element. The shells are now positioned in front of the conical tip and in doing so, these need to enclose the spindle. For this purpose, hold the shells on the spindle with one hand and insert the spokes and the guide ring into the stub shaft using your other hand, along with the spindle with the connection element and the shells.

In order to ensure that the shells are in the correct position and can no longer force each other to the side, pull the spindle slowly towards you. The cone will then spread the shells apart. Then take a torch and check from the opposite side of the vehicle that the shells are correctly seated. Now keep the spindle with the connection element and cone lightly pressed against the shells in order to prevent the shells from slipping. You then need to slide the pressure pipe (33819604) and the pressure piece with bearing (33819605) over the spindle. Now turn the enclosed hexagon nut onto the spindle and then re-check the correct seating of the shells from the other side of the vehicle. Finally, use a ring spanner again (with an appropriately sized lever arm) to turn the nut to the right, until the stub shaft has been completely pulled out of the axle.

#### 4.3. Installation

Before pressing in the new stub shaft, clean all contact surfaces in the axle yoke or axle tube and check that they are in sound condition.

The two spindles (M20x1000mm = type no. 33819610, M20x740mm with hexagon = type no. 33819609) are to be screwed with the connection element (33819603) and a graphite spray is to be applied for lubrication. You then need to slide these onto the axle. On the side where the defective stub shaft was removed, you now need to grease the new stub shaft and position or insert it on the short spindle (33819609) or into the axle yoke.

Now, on the opposite side of the vehicle, slide the pressure pipe (33819604) over the stub shaft, put on the pressure piece (33819605) and screw it with the hexagon nut. You then need to pull in the new axle journal using the pressure piece (33819607) and the hexagon nut. Please make sure that the stub shaft is pulled in straight, correcting with light knocks of a rubber mallet where necessary.



#### Important notes:

1. ***Please note the press-in depth measured beforehand and/or the marking on the stub shaft. Only turn the hexagon nuts on the side of the tool on which the pressure piece (33819605) with integrated axial bearing is located!***
2. **Note: For the Berlingo, Partner, Xsara Picasso and Peugeot 405 types, oversize stub shaft must be used since there is a small projection at the end of the original journal. This projection wears away material in the axle yoke, which is why the standard dimension cannot be worked with. Since this projection varies, Optimal offers two different oversize stub shaft.**
3. **Oversize stub shaft by OPTIMAL: G8-276-5017 corresponds to a dimension of 50.17mm and G8-276-5020 corresponds to a dimension of 50.20mm.**

Once the old stub shaft has been pulled out, you must measure the axle yoke using an inside caliper. For this purpose, you should classify the axle yoke into different 3 areas: The front, center and rear. You need to measure vertically and horizontally in each of these areas. On the basis of these 6 measurements, you



then need to determine the average and then use the actual value to select the appropriate new stub shaft from the following table of target values:

	G8-276-5017	G8-276-5020
Set value	50,133-50,155	50,155-50,185
Picture		

**Note: The actual values measured must not go below or exceed the target values!**

After pulling in the new stub shaft, you must exchange the bearings, seals and, if necessary, the spacer sleeves in the stub axle in accordance with manufacturer specifications. The bearings are to be freed from old bearing remains and corrosion beforehand and checked for damage. Then insert the trailing arms and torsion bars in the measured (or previously marked) positions. The installation of the shock absorbers, brake system etc. is then performed in reverse order.

## 5. Further information

You can also find our **assembly instructions** online by clicking on the following link:

[www.optimal-germany-marketing.de/upload/OPTIMAL\\_PSA\\_rear\\_axle\\_repair\\_en.pdf](http://www.optimal-germany-marketing.de/upload/OPTIMAL_PSA_rear_axle_repair_en.pdf)

To assist with PSA rear axle repair we have also made three **repair videos** that you can watch by clicking on the following links:

PSA rear axle repair with Bendix repair kits – part one: inside diameter 28 millimeters

<https://www.youtube.com/watch?v=y54S9Q50wK4>

PSA rear axle repair with Bendix repair kits – part two: inside diameter 34 millimeters

<https://www.youtube.com/watch?v=WT-9-cDZqls>

PSA rear axle repair with Bendix repair kits – part one: inside diameter 26 millimeters

[https://www.youtube.com/watch?v=rvm\\_60wAPw](https://www.youtube.com/watch?v=rvm_60wAPw)

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