

AF01 - Replacing Lower Suspension Arms for Front Axle (Recall Campaign)

Vehicle Type: **918 Spyder**

Model Year: **2015**

Concerns: **Lower suspension arms for front axle**

Information: **The front axle of the Porsche 918 Spyder was fitted with lower suspension arms from a batch whose durability cannot be guaranteed due to a manufacturing error.**

The affected components can start to crack, causing the component to break and as a result, vehicle handling can be impaired.

Action Required: Replace lower suspension arms for front axle.

Service Level:



Information

This campaign must be carried out by a Service Level 2 Porsche Dealer.

Service Level 0 or 1 Dealers are NOT authorized to carry out this campaign. In accordance with the service concept for the 918 Spyder, the vehicle must be transferred to a Service Level 2 Dealer in order to carry out this recall. If the vehicle should require transport from your dealership to a Level 2 Dealer and transportation has not previously been arranged by the 918 Client Relationship Team, you should contact Roadside Assistance at 1-844-918-SPYD (7793) to facilitate the transfer. Instructions for claiming the appropriate transport costs are outlined in Attachment B. Further information can be found under Attachment "B" at the end of this document.

The vehicle must be checked for defects and damage **each time** it is handed over, transferred or delivered. Confirmation that the vehicle is in good condition or details of any damage to the vehicle must be documented and archived for feedback purpose.

Affected Vehicles: The VIN(s) can be checked by using PIWIS Vehicle Information link to verify if the campaign affects the vehicle. This campaign is scope specific to the VIN! Failure to verify in PIWIS may result in an improper repair. This campaign affects 44 vehicles in North America.

Parts Info: **NOTE: PARTS WILL NOT BE AUTOMATICALLY ALLOCATED TO YOUR DEALERSHIP. ALL PARTS MUST BE ORDERED VIA A PTEC/PAV.**

Part No.	Designation	Qty.
918.341.053.01	⇒ Lower suspension arm for front axle	2 ea.

The following parts are **also** required **for each vehicle**:

- Vehicles with **Racetrack (Weissach) package (I-no. 808)**:

Part No.	Designation – Use	Qty.
000.043.209.95	⇒ Set of fastening parts for Racetrack (Weissach) package – Lower suspension arm for front axle	2 ea.

Contains:

999.311.502.02	Fit bolt, M12 x 1.5 – Lower suspension arm to auxiliary support	2 ea.
999.311.604.02	Fit bolt, M10 x 1.5 x 81 – Tie rod to wheel carrier	1 ea.
999.311.606.02	Fit bolt, M10 x 1.5 x 72 – Spring strut to lower suspension arm	1 ea.
999.311.602.02	Fit bolt, M10 x 1.5 x 65 – Upper suspension arm to wheel carrier	1 ea.
999.073.572.01	Lens-head screw, M6 x 8 – Brake disc to wheel hub	2 ea.
999.084.655.01	Hexagon nut, M12 x 1.5 – Lower suspension arm to wheel carrier	1 ea.
999.084.656.01	Hexagon nut, M10 – Upper suspension arm to wheel carrier – Tie rod to wheel carrier – Connecting link to wheel carrier – Brake caliper to wheel carrier – Spring strut to lower suspension arm	6 ea.

or

- Vehicles **without** Racetrack (Weissach) package:

Part No.	Designation – Use	Qty.
000.043.209.94	⇒ Set of fastening parts – Lower suspension arm for front axle	2 ea.
Contains:		
999.311.502.01	Fit bolt, M12 x 1.5 – Lower suspension arm to auxiliary support	2 ea.
999.311.604.01	Fit bolt, M10 x 1.5 x 81 – Tie rod to wheel carrier	1 ea.
999.311.606.01	Fit bolt, M10 x 1.5 x 72 – Spring strut to lower suspension arm	1 ea.
999.311.602.01	Fit bolt, M10 x 1.5 x 65 – Upper suspension arm to wheel carrier	1 ea.
999.073.572.01	Lens-head screw, M6 x 8 – Brake disc to wheel hub	2 ea.
999.084.655.01	Hexagon nut, M12 x 1.5 – Lower suspension arm to wheel carrier	1 ea.
999.084.656.01	Hexagon nut, M10 – Upper suspension arm to wheel carrier – Tie rod to wheel carrier – Connecting link to wheel carrier – Brake caliper to wheel carrier – Spring strut to lower suspension arm	6 ea.

Materials:

Part No.	Designation – Use	Qty.
000.043.302.72	⇒ Protective wax Pfinder AP14/4 – Threaded joint securing suspension arm to wheel carrier	100g tube As much as required

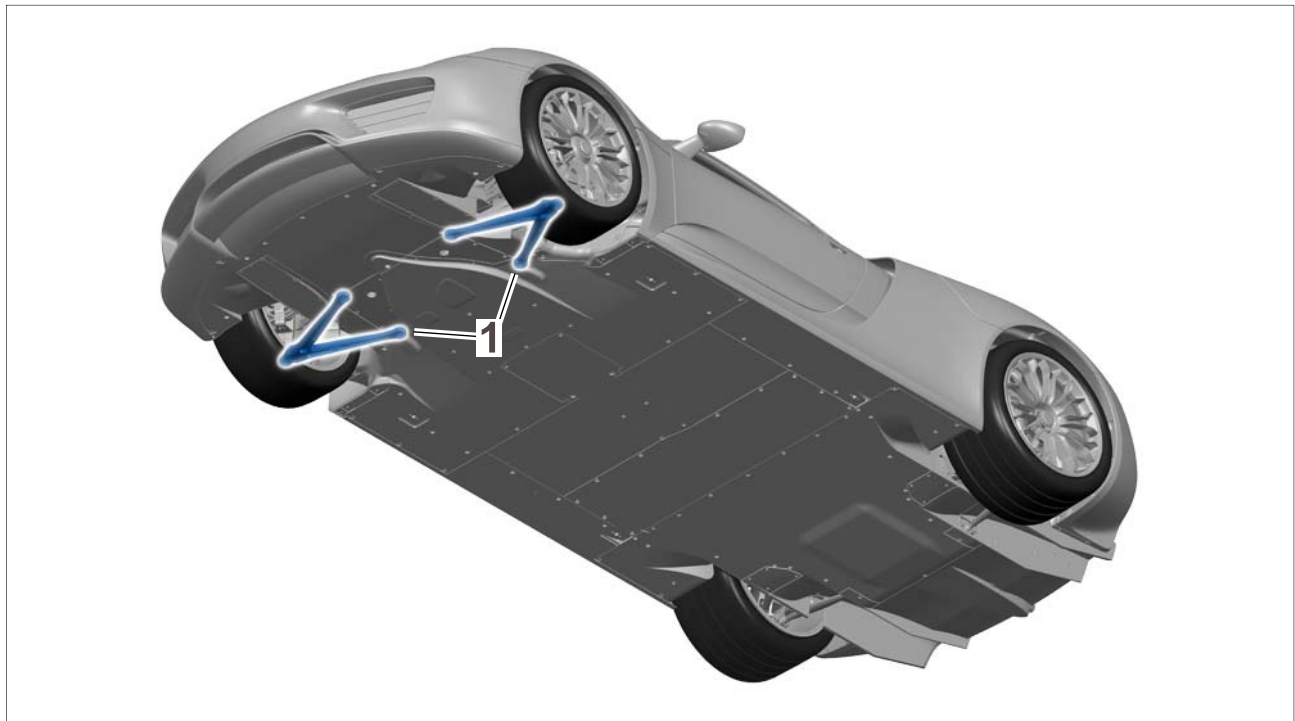
000.043.300.35	⇒ McLube Sailkote High Performance Dry Lube – Central wheel lock Also commercially available at marine supply stores.	428g spray can As much as required
000.043.981.00	⇒ Autol Top 2000 grease – Conical area of suspension arm to wheel carrier	25 ml tube As much as required

Tools:

- **9002 - Lifting platform holders**
- **9453 - (or similar) Access ramps**
- **9003 - Socket wrench** for central wheel lock
- **9004 - Socket wrench** for central wheel lock cover
- Torque wrench, 150 – 800 Nm (111 – 592 ftlb.), e.g. **V.A.G. 1601 - Torque wrench 150-800 Nm (111-592 ftlb.)**
- **9768 - (or similar) Electronic torque wrench, 2 - 100 Nm (1.5 - 74 ftlb.)**
- **VAS 6828 - Central fastener with precision aluminum spoiler adapter**
- Steering wheel level, e.g. **VAS 6826 - Steering wheel alignment gauge** or similar
- **9647 - Hook wrench**
- Suitable engine jack, e.g. **VAS 6931 - Transmission and engine jack**
- **9818 - PIWIS Tester II**

Installation

Position:

*Overview of lower suspension arms for front axle*

1 – Lower suspension arms for front axle

Work See Attachment "A".
Procedure:

Claim See Attachment "B".
Submission:

Attachment "A": **Work Procedure**

Preliminary Work



Information

The precision and calibration of the wheel alignment equipment to be used on this campaign must have been verified within the prior 365 days.

Given the narrow tolerances of the wheel alignment values and the variability of wheel alignment systems used at dealerships, the original factory wheel alignment values must be verified and recorded **before carrying out the campaign. A printed copy must be attached to the PQIS Job!**

Due to the large number of threaded joints on the chassis to be loosened as part of this campaign, the wheel alignment values must be verified and recorded again **after replacing** the lower suspension arms for the front axle. **A printed copy must be attached to the PQIS Job!**

The **before** and **after** wheel alignment values must then be compared and adjustments made as necessary to restore the original factory values. This ensures optimal adjustment of the wheel alignment positions after replacing the suspension arms. **A printed copy must be attached to the PQIS Job!**

If, however, the individual wheel alignment values are **not within the prescribed adjustment tolerances** ⇒ *Workshop Manual '4X00IN Adjustment values for suspension alignment'* as a result of bumping into curbs, for example, the relevant wheel alignment positions must be set to the **wheel alignment values specified in the Workshop Manual** after **replacing** the suspension.

- Procedure:
- 1 Move the vehicle onto the wheel alignment platform then measure and record the vehicle heights, camber and alignment values for the front axle per ⇒ *Workshop Manual '449503 Suspension alignment, complete'*.
A visual check for damage must also be performed on all relevant chassis components related to this campaign.
 - 2 Raise the vehicle on a lifting platform ⇒ *Workshop Manual '4X00IN Lifting the vehicle'*.
 - 2.1 Position the vehicle between the arms of the lifting platform and push it onto the **9453** (or similar) access ramps.
 - 2.2 Remove underbody covers and fit mounting plates **9002 - Lifting platform holders**, ⇒ *Workshop Manual '518119 Removing and installing jacking points'*.

2.3 Jack and raise the vehicle at the mounting plates.

- 3 Remove both front wheels ⇒ *Workshop Manual '440519 Removing and installing wheel'.*
- 4 Remove front wheel housing liner (front part) at the left and right ⇒ *Workshop Manual '50561901 Removing and installing front wheel housing liner (front part)'.*
- 5 Remove front wheel housing liner (rear part) at the left and right ⇒ *Workshop Manual '50561905 Removing and installing front wheel housing liner (rear part)'.*
- 6 Remove cover for center underbody (at the sides) at the left and right ⇒ *Workshop Manual '51931901 Removing and installing cover for centre underbody (at the sides)'.*
- 7 Remove cover for front underbody ⇒ *Workshop Manual '519219 Removing and installing cover for front underbody'.*
- 8 Remove cover for center underbody ⇒ *Workshop Manual '51931900 Removing and installing cover for centre underbody'.*



Information

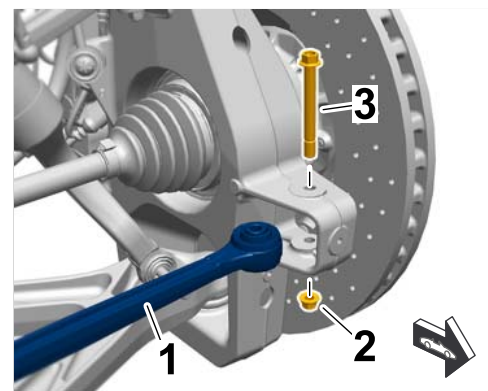
- **Do not open the brake hydraulic system (brake line remains connected).**

- 9 Remove front brake caliper at the left and right ⇒ *Workshop Manual '473919 Removing and installing front brake calliper'.*
Suspend the brake caliper on the vehicle using a tie-wrap, for example.
- 10 Remove front PCCB brake disc at the left and right ⇒ *Workshop Manual '465119 Removing and installing front PCCB brake disc'.*

Replacing lower suspension arms for front axle

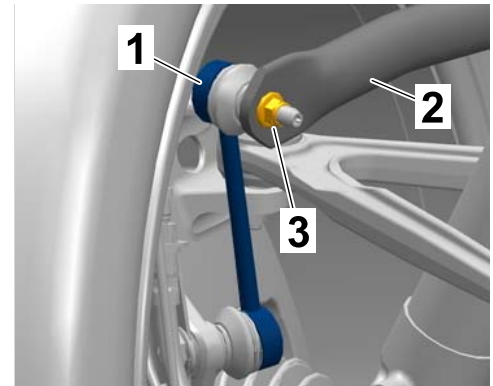
Procedure: 1 Remove lower suspension arm for front axle at the left.

- 1.1 Loosen and remove nut ⇒ *Loosening tie rod -2-* on the wheel carrier.
Remove bolt ⇒ *Loosening tie rod -3-* on the wheel carrier and pull out tie rod ⇒ *Loosening front connecting link at the top -1-* out of the wheel carrier.



Loosening tie rod

- 1.2 Loosen and remove nut ⇒ *Loosening front connecting link at the top -3-* at the connecting link ⇒ *Loosening front connecting link at the top -1-*. Remove connecting link from the anti-roll bar ⇒ *Loosening front connecting link at the top -2-* and turn it to the side.



Loosening front connecting link at the top

NOTICE

Damage to the drive shaft

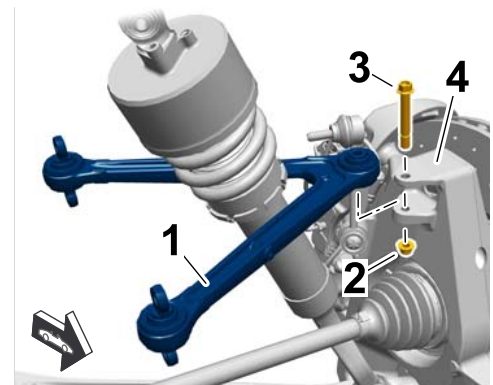
- Bellows can be overstrained or crack
 - Damage to the tripod joint
- ⇒ Support loosened wheel carrier using a suitable engine jack.
- ⇒ Carefully pull the wheel carrier outwards in order to remove the suspension arms.
- ⇒ Do NOT attempt to remove drive shafts!

NOTICE

Damage to ride height sensors and linkage

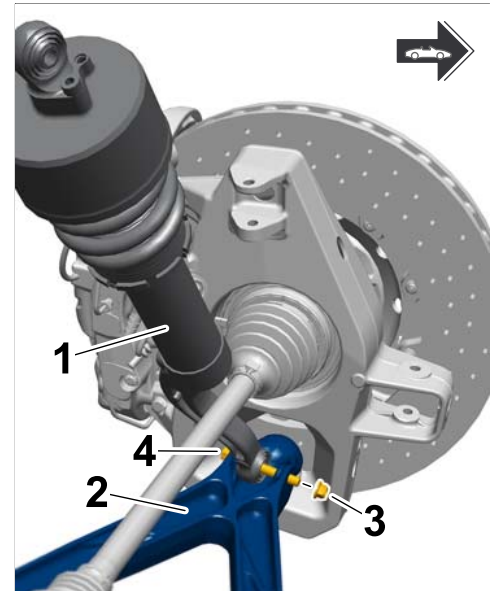
- ⇒ Take great care not to damage
- ⇒ Verify correct orientation of linkage

- 1.3 Loosen and remove nut ⇒ *Loosening upper suspension arm -2-* on the wheel carrier. Remove bolt ⇒ *Loosening upper suspension arm -3-* on the wheel carrier ⇒ *Loosening upper suspension arm -4-* and carefully pull the wheel carrier outwards away from the upper suspension arm ⇒ *Loosening spring strut -1-*. Move the upper suspension arm upward so that it clears the wheel carrier.
- 1.4 Support the wheel carrier using a suitable transmission carrier.



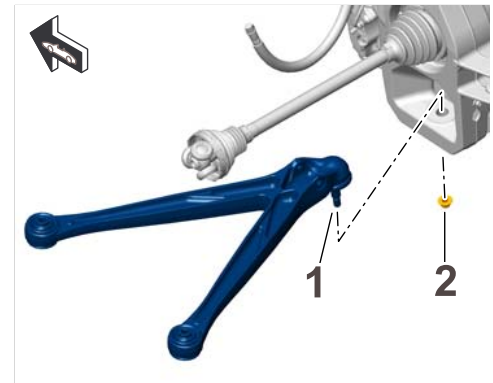
Loosening upper suspension arm

- 1.5 Loosen and unscrew nut \Rightarrow *Loosening spring strut -3-* on the spring strut \Rightarrow *Loosening spring strut -1-*.
Pull out and remove the bolt \Rightarrow *Loosening spring strut -4-* on the lower suspension arm \Rightarrow *Loosening spring strut -2-*.



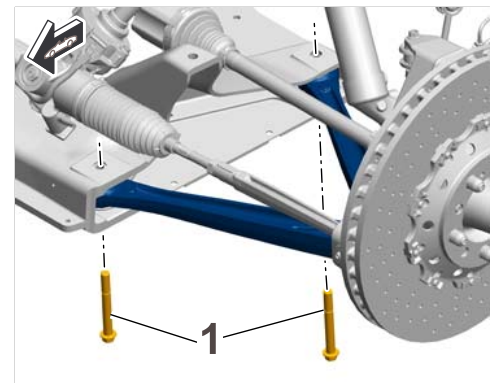
Loosening spring strut

- 1.6 Loosen and unscrew fastening nut \Rightarrow *Lower suspension arm on wheel carrier -2-* for the ball joint for the lower suspension arm \Rightarrow *Lower suspension arm on wheel carrier -1-* on the wheel carrier.
Press the ball joint out of the wheel carrier.
If necessary, loosen the ball joint from the wheel carrier by gently tapping with a plastic hammer.



Lower suspension arm on wheel carrier

- 1.7 Loosen and unscrew fastening screws \Rightarrow *Lower suspension arm on front-axle carrier -1-* for the lower suspension arm on the front-axle carrier.
Pull lower suspension arm out of the front-axle carrier and remove it.



Lower suspension arm on front-axle carrier

- 2 Install new lower suspension arm for front axle at the left.

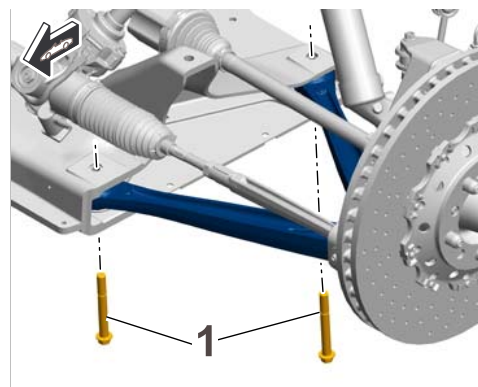


Information

Always use new fastening screws and lock nuts from the set of fastening parts.

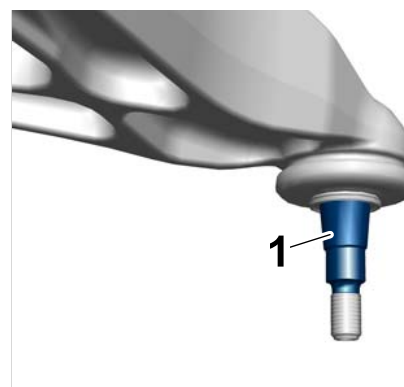
- 2.1 Push lower suspension arm into the front-axle carrier.
Install the bolts \Rightarrow *Lower suspension arm on front-axle carrier -1-* for the lower suspension arm on the front-axle carrier and tighten using the **three-step tightening procedure**:

- Step 1 – **Initial tightening to 80 Nm (59 ft-lb.):**
- Step 2 – **Loosening 180°**
- Step 3 – **Finally tightening to 80 Nm (59 ft-lb.):**



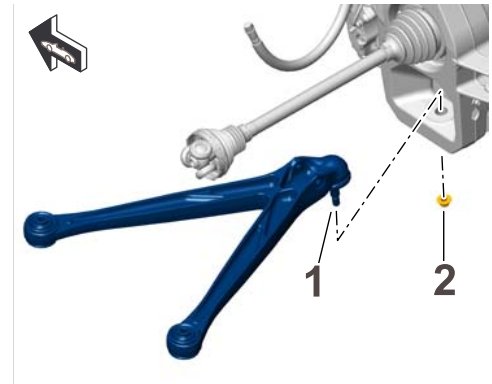
Lower suspension arm on front-axle carrier

- 2.2 Apply a thin coat of Autol Top 2000 grease, Part No. 000.043.981.00, to the conical area on the ball joint \Rightarrow *Greasing conical area -1-* for the lower suspension arm.



Greasing conical area

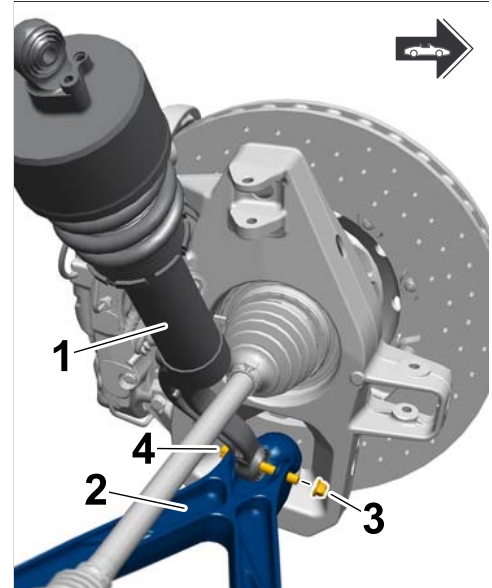
- 2.3 Carefully press the ball joint \Rightarrow *Lower suspension arm on wheel carrier -1-* for the suspension arm into the tapered bore on the wheel carrier.
Initially install the nut \Rightarrow *Lower suspension arm on wheel carrier -2-* for ball joint by only a few turns.



Lower suspension arm on wheel carrier

- 2.4 Press lower suspension arm \Rightarrow *Securing spring strut -2-* together with the wheel carrier using the transmission and engine jack until the spring strut \Rightarrow *Securing spring strut -1-* is at the correct installation position on the suspension arm.
Install bolt \Rightarrow *Securing spring strut -4-* through the wheel carrier and spring strut and secure with the nut \Rightarrow *Securing spring strut -3-*.
Tightening torque 55 Nm (41 ftlb.)

- 2.5 Remove transmission and engine jack.



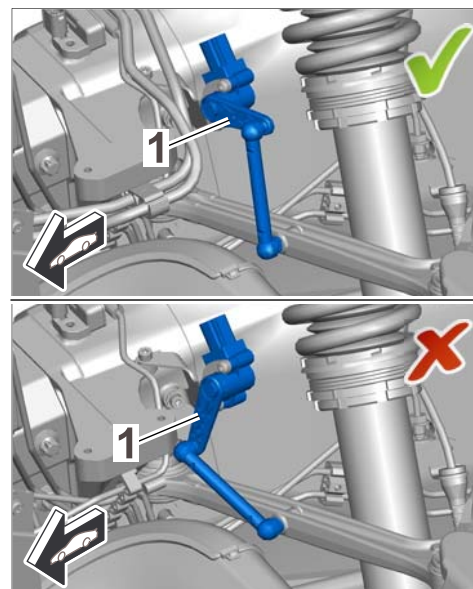
Securing spring strut

NOTICE

Incorrect positioning of the horizontal banner arm (lever arm) for level sensor

- Damage to the level sensor
 - Damage to the connecting link for the level sensor
- \Rightarrow Make sure that the ride height sensors and linkage is pointing outwards towards the wheel.
- \Rightarrow Do not bend the horizontal banner arm (lever arm) and connecting link or press them aside.

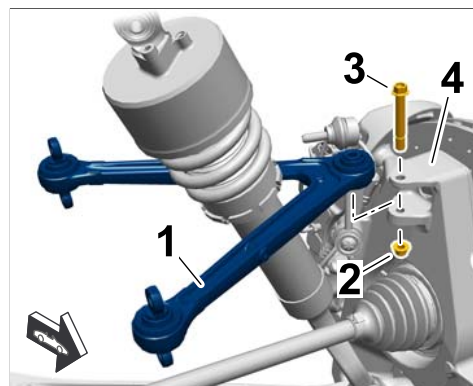
- 2.6 Verify the ride height sensor and \Rightarrow *Installation position of level sensor -1-* is oriented correctly (Top illustration).



Installation position of level sensor

- 2.7 Install the bolt \Rightarrow *Securing upper suspension arm -3-* on the wheel carrier \Rightarrow *Securing upper suspension arm -4-* and upper suspension arm \Rightarrow *Securing upper suspension arm -1-* and secure with the nut \Rightarrow *Securing upper suspension arm -2-*. Tighten to 42 Nm (31 ft.-lb.)

- 2.8 Position connecting link \Rightarrow *Securing front connecting link -1-* on the anti-roll bar \Rightarrow *Securing front connecting link -2-* and secure with the fastening nut \Rightarrow *Securing front connecting link -3-* using the **two-step tightening procedure**:



Securing upper suspension arm

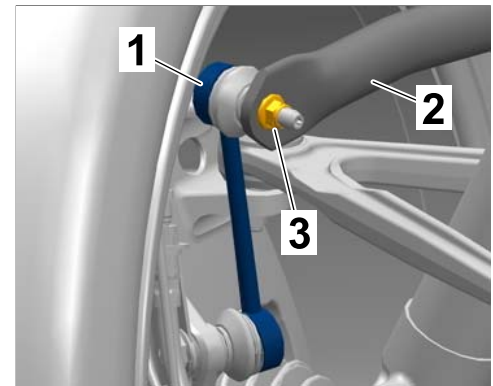
- Step 1 – **Initial tightening**: Tightening torque 40 Nm (30 ftlb.)
- Step 2 – **Final tightening**: Torque angle 30°

- 2.9 Position tie rod \Rightarrow *Securing tie rod -1-* on the wheel carrier. Install bolt \Rightarrow *Securing tie rod -3-* and secure with nut \Rightarrow *Securing tie rod -2-*.

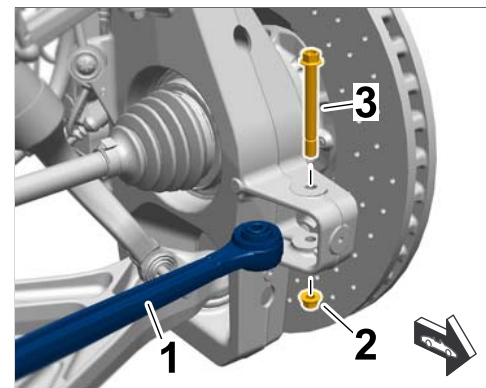
Tightening torque 42 Nm (31 ftlb.)

- 2.10 Tighten nut \Rightarrow *Lower trailing arm on wheel carrier -2-* for lower suspension arm using the **three-step tightening procedure**:

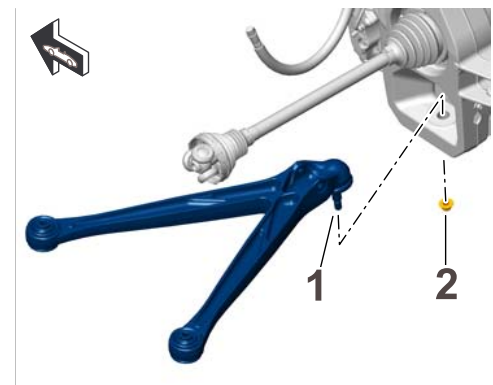
- Step 1 – **Initial tightening**: Tightening torque 75 Nm (56 ftlb.) \pm 2.5 Nm (\pm 2 ftlb.)
- Step 2 – **Loosening process**: Torque angle 180°
- Step 3 – **Final tightening**: Tightening torque 75 Nm (56 ftlb.) \pm 2.5 Nm (\pm 2 ftlb.)



Securing front connecting link



Securing tie rod

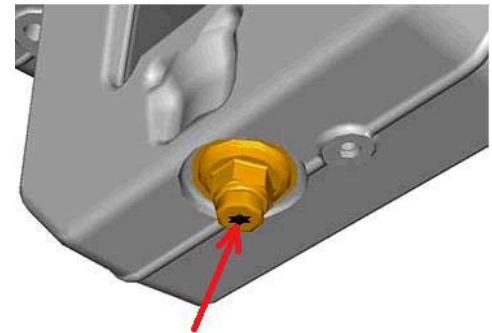


Lower trailing arm on wheel carrier



Information

Seal the threaded joint as shown in with protective wax Pfinder AP14/4, Part No. 000.043.302.72, after fitting. Cover the **projecting area of the thread**, the **hexalobular socket area** and the joints between the **nut and wheel carrier** and **nut and projecting area of the thread**, in particular, completely with wax.



Hexalobular Socket

Applying wax on the suspension are threaded joint

- 3 Replace lower suspension arm for front axle at the right.
To do this, carry out **Step 1.1 to 2.10** on the **right-hand side of the vehicle**.

Subsequent work

- Procedure:
- 1 Install front PCCB brake disc at the left and right ⇒ *Workshop Manual '465119 Removing and installing front PCCB brake disc'*.
 - 2 Install front brake caliper at the left and right ⇒ *Workshop Manual '473919 Removing and installing front brake calliper'*.
 - 3 Install cover for center underbody ⇒ *Workshop Manual '51931900 Removing and installing cover for centre underbody'*.
 - 4 Install cover for front underbody ⇒ *Workshop Manual '519219 Removing and installing cover for front underbody'*.
 - 5 Install cover for center underbody (at the sides) at the left and right ⇒ *Workshop Manual '51931901 Removing and installing cover for centre underbody (at the sides)'*.
 - 6 Install front wheel housing liner (rear part) at the left and right ⇒ *Workshop Manual '50561905 Removing and installing front wheel housing liner (rear part)'*.
 - 7 Install front wheel housing liner (front part) at the left and right ⇒ *Workshop Manual '50561901 Removing and installing front wheel housing liner (front part)'*.
 - 8 Fit both front wheels ⇒ *Workshop Manual '440519 Removing and installing wheel'*.
 - 9 Lower the vehicle and remove it from the lifting platform ⇒ *Workshop Manual '4X00IN Lifting the vehicle'*.
- 9.1 Lower the vehicle onto the **9453 - access ramps** with the lifting platform.

- 9.2 Remove mounting plates **9002 - Lifting platform holders** and install the covers on the underbody ⇒ *Workshop Manual '518119 Removing and installing jacking points'*.



Information

Due to the large number of threaded joints on the chassis to be loosened as part of this campaign, the **wheel alignment** on the front axle must be checked **after replacing the suspension arms**. Given the low set point value tolerances of the wheel alignment values and the different wheel alignment systems used in the dealer organization, the wheel alignment positions must therefore be compared with the **wheel alignment values determined beforehand during the initial measurement** and may have to be reset to these values after carrying out the campaign. This ensures optimal adjustment of the wheel alignment positions after replacing the suspension arms.

If individual wheel alignment values are **not within the prescribed adjustment tolerance** during the **initial measurement** as a result of bumping into curbs, for example, the relevant wheel alignment positions must be set to the **wheel alignment values specified in the Workshop Manual**, ⇒ *Workshop Manual '4X00IN Adjustment values for suspension alignment'*. A visual check for damage must also be performed on all relevant chassis components in this case.

- 10 Measure the vehicle height as well as the camber and toe adjustment values on the front axle and adjust them to the values determined beforehand if necessary ⇒ *Workshop Manual '449503 Suspension alignment, complete'*.
To do this, raise the vehicle on a wheel alignment platform.
- 11 Enter the recall campaign in the Warranty and Maintenance booklet.

Attachment "B": **Claim Submission** - Recall Campaign AF01

Warranty claims should be submitted via WWS/PQIS.

Open campaigns may be checked by using either the PIWIS Vehicle Information system or through PQIS Job Creation.

Labor, parts, and sublet will be automatically inserted when Technician is selected in WWS/PQIS. If necessary, the required part numbers will need to be manually entered into warranty system by the dealer administrator.

Information: **This campaign must be carried out by a Service Level 2 Porsche Dealer.**

Service Level 0 or 1 Dealers are NOT authorized to carry out this campaign. In accordance with the service concept for the 918 Spyder, the vehicle must be transferred to a Service Level 2 Dealer in order to carry out this recall. If the vehicle should require transport from your dealership to a Level 2 Dealer and transportation has not previously been arranged by the 918 Client Relationship Team, you should contact Roadside Assistance at 1-844-918-SPYD (7793) to facilitate the transfer.

In this case, Service Level 0 or 1 Porsche Dealers can invoice the cost items listed below for vehicle acceptance, transporting the vehicle and accepting the vehicle following return transport using the **new**

vehicle warranty for the vehicle in accordance with the specifications in the 918 Spyder AfterSales Fact Book 2014:

• Vehicle acceptance	100 TU
• Transporting the vehicle	100 TU
• Acceptance of the vehicle following return transport	50 TU
• Costs for transporting the vehicle to and from the Porsche Dealer	Amount as per invoice *

* Please document copy of invoice in PQIS.

Please invoice the costs by specifying **Damage code C902 097 000** and enter the technical reason by specifying **Coding C9020 9735** in PQIS. Also specify **Campaign AF01** under Comment.

Service Level 2 Porsche Dealers must always submit an invoice for the relevant **campaign scope**.



Information

The working times specified below were determined specifically for carrying out this campaign and may differ from the working times published in the Labor Operation List in PIWIS.

The time required for **measuring the vehicle height as well as the camber and toe adjustment values** on the front axle **before and after carrying out the campaign** is **included** in the working times.

All work that must be carried out in order to **adjust the wheel alignment positions** and parts required during the adjustment process are **not** included in the **scope of this campaign** and must be invoiced using a separate warranty claim.

Scope 1: Replacing lower suspension arms for front axle.

- Vehicles with **Racetrack (Weissach) package (I-no. 808)**.

Working time:

Replacing lower suspension arm for front axle at the left and right

Labor time: **636 TU**

Includes:

- Raising and lowering the vehicle
- Removing and installing front wheel at the left and right
- Removing and installing front wheel housing liner (front part) at the left and right
- Removing and installing front wheel housing liner (rear part) at the left and right
- Removing and installing cover for center underbody (at the sides)
- Removing and installing cover for front underbody
- Removing and installing cover for center underbody

Loosening and securing front brake caliper at the left and right
 Removing and installing front PCCB brake disc at the left and right
 Measuring vehicle height as well as camber and toe adjustment values on the front axle (2x)

Parts required:

918.341.053.01	Lower suspension arm for front axle, left/right	2 ea.
000.043.209.95	Set of fastening parts for Racetrack (Weissach) package, left/right	2 ea.

Additional materials required:

000.043.302.72	Protective wax Pfinder AP14/4, 100g tube	0.1 ea.
000.043.300.35	McLube Sailkote High Performance Dry Lube, 428g spray can Also commercially available at marine supply stores.	0.05 ea.
000.043.981.00	Autol Top 2000 grease, 25 ml tube	0.1 ea.

⇒ Damage code AF01 099 000 2

Scope 2: Replacing lower suspension arms for front axle.

- Vehicles **without** Racetrack (Weissach) package.

Working time:

Replacing lower suspension arm for front axle at the left and right

Labor time: **636 TU**

Includes:

- Raising and lowering the vehicle
- Removing and installing front wheel at the left and right
- Removing and installing front wheel housing liner (front part) at the left and right
- Removing and installing front wheel housing liner (rear part) at the left and right
- Removing and installing cover for center underbody (at the sides)
- Removing and installing cover for front underbody
- Removing and installing cover for center underbody
- Loosening and securing front brake caliper at the left and right
- Removing and installing front PCCB brake disc at the left and right

Measuring vehicle height as well as camber and toe adjustment values on the front axle (2x)

Parts required:

918.341.053.01	Lower suspension arm for front axle, left/right	2 ea.
000.043.209.94	Set of fastening parts, left/right	2 ea.

Additional materials required:

000.043.302.72	Protective wax Pfinder AP14/4, 100g tube	0.1 ea.
000.043.300.35	McLube Sailkote High Performance Dry Lube, 428g spray can Also commercially available at marine supply stores.	0.05 ea.
000.043.981.00	Autol Top 2000 grease, 25 ml tube	0.1 ea.

⇒ Damage code AF01 099 000 2

- References:
- ⇒ Workshop Manual '4X00IN Lifting the vehicle'
 - ⇒ Workshop Manual '4X00IN Tightening torques for front axle'
 - ⇒ Workshop Manual '4X00IN Adjustment values for suspension alignment'
 - ⇒ Workshop Manual '440519 Removing and installing wheel'
 - ⇒ Workshop Manual '449503 Suspension alignment, complete'
 - ⇒ Workshop Manual '465119 Removing and installing front PCCB brake disc'
 - ⇒ Workshop Manual '473919 Removing and installing front brake calliper'
 - ⇒ Workshop Manual '50561901 Removing and installing front wheel housing liner (front part)'
 - ⇒ Workshop Manual '50561905 Removing and installing front wheel housing liner (rear part)'
 - ⇒ Workshop Manual '518119 Removing and installing jacking points'
 - ⇒ Workshop Manual '519219 Removing and installing cover for front underbody'
 - ⇒ Workshop Manual '51931900 Removing and installing cover for centre underbody'
 - ⇒ Workshop Manual '51931901 Removing and installing cover for centre underbody (at the sides)'

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