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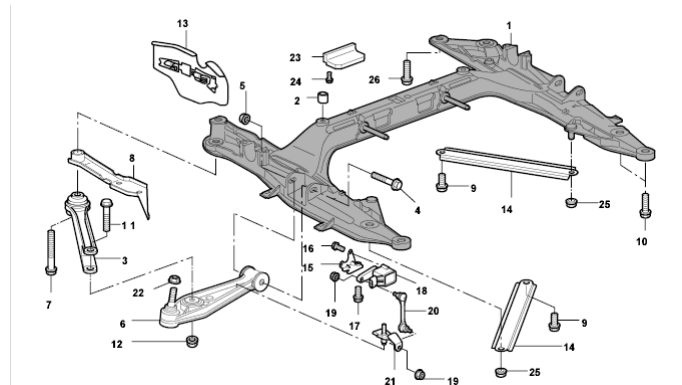
WM 400119 Removing and installing front axle

Technical values

Location	Description	Type	Basic value	Tolerance 1	Tolerance 2
Hexagon-head bolt (cross member to front body), M14 x 1.5 x 120		Tightening torque, M14 front	160 Nm (118 ftlb.)		
Hexagon-head bolt (cross member to rear body), M14 x 1.5 x 50		Tightening torque, M14 rear	160 Nm (118 ftlb.)		
Hexagon-head bolt (cross member to front body), M12 x 1.5 x 30		Tightening torque, M12	100 Nm (74 ftlb.)		
Stud on front-axle cross member		Tightening torque	20 Nm (15 ftlb.)		
Fastening nuts on stud		Tightening torque	65 Nm (48 ftlb.)		
Spring-strut supporting mount to body, M8		Tightening torque	33 Nm (24 ftlb.)		
Pressure and return lines to steering gear (tension shackle), M10 x 20		Tightening torque	23 Nm (17 ftlb.)		
Universal joint (steering shaft) to steering gear, M8 x 35		Tightening torque	23 Nm (17 ftlb.)		
Drive shaft to front-wheel drive halfshaft flange, M8	All-wheel drive	Tightening torque	39 Nm (29 ftlb.)		
Longitudinal restraining straps for fuel tank cover	Observe installation position (marking L = left and R = right)	Tightening torque	23 Nm (17 ftlb.)		
Crash stop to body, M12 x 1.5	Hexagon-head bolts	Tightening torque	100 Nm (74 ftlb.)		
Diagonal braces to front-axle cross member, M12 x 1.5	Hexagon nuts	Tightening torque	100 Nm (74 ftlb.)		
Threaded joint securing brake calliper to wheel carrier, M12 x 1.5	Replace bolts on front and rear axle each time they are removed.	Tightening torque	85 Nm (63 ftlb.)		
Suspension/stabiliser to anti-roll bar, M10	Please note: Observe three-stage tightening procedure! Do not grease threaded connections in Dacromet finish - aluminium colour.	Three-stage tightening procedure (1st stage: tighten to 50 Nm (37 ftlb.). 2nd stage: loosen by 90 degrees. 3rd stage: tighten to 65 Nm (48 ftlb.).	65 Nm (48 ftlb.)		
Brake hose bracket to wheel carrier, M6		Tightening torque	10 Nm (7.5 ftlb.)		

Information

Component overview



Overview of front axle

- 1** - Front-axle cross member
- 2** - Roll pin
- 3** - Diagonal control arm
- 4** - Screw, M12
- 5** - Lock nut, M12
- 6** - Control arm
- 7** - Screw, M14
- 8** - Plate
- 9** - Screw, M12
- 10** - Screw, M14
- 11** - Screw, M14
- 12** - Lock nut, M14
- 13** - Spoiler
- 14** - Diagonal brace (different length for C2 and C4)
- 15** - Holder (not generally fitted)
- 16** - Screw, M5 (not generally fitted)
- 17** - Screw, M6
- 18** - Sensor (not generally fitted)
- 19** - Nut (not generally fitted)
- 20** - Linkage (not generally fitted)
- 21** - Holder (not generally fitted)
- 22** - Lock nut, M12
- 23** - Crash stop (only fitted for all-wheel drive)

24 - Screw, M12 (only fitted for all-wheel drive)

25 - Lock nut, M12

26 - Screw, M12

Preliminary work

Preliminary work

1. Raise the vehicle at the prescribed jacking points.

→ *4X00IN01 Lifting the vehicle*



Vehicle can fall down

- Risk of squashing or crushing
- Risk of damage to the vehicle

- Do not place any solid objects under the raised vehicle.
- Ensure that the lifting platform is prevented from lowering.
- Remove solid objects before lowering the vehicle.
- Raise the vehicle only at the jacking points provided.
- The outer jacking points should be used primarily.

2. Remove front wheels.

→ *44051900 Removing and installing wheel - section on "Removing"*

3. Remove front underbody panel.

→ *519219 Removing and installing cover for front underbody - section on "Removing"*

4. Drain coolant.

→ *193817 Draining and filling in coolant (includes bleeding the system)*



Hot fluid

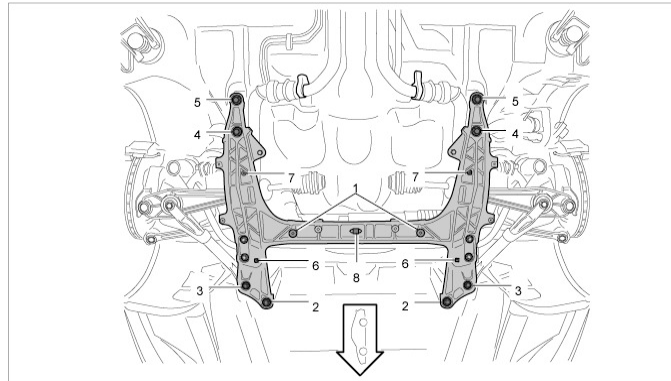
- Danger of scalding

- Let the fluid cool down.
- Wear personal protective gear.

Removing and installing front axle

Removing front axle

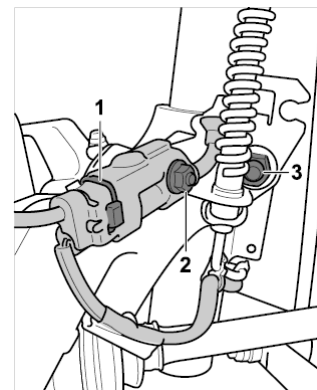
The front axle is removed complete with spring struts, wheel carriers, drive shafts (for all-wheel drive), steering gear and tie rods. Drain coolant and remove the brake calliper at the wheel carrier (brake hydraulic system not open).



Overview of front-axle cross member

- (1) - Hexagon-head bolt for steering gear, M10. (Must not be loosened!)
- 2 - Hexagon-head bolt for front axle, M12
- 3 - Hexagon-head bolt for front axle, M14
- 4 - Hexagon-head bolt for front axle, M14
- 5 - Hexagon-head bolt for front axle, M14
- (6) - Hexagon-head bolt for coolant pipe, M6. (Must not be loosened!)
- (7) - Hexagon-head bolt for coolant pipe, M6. (Must not be loosened!)
- (8) - Holder for coolant pipe. (Must not be loosened!)

1. Remove brake line holder and electric cable plug.



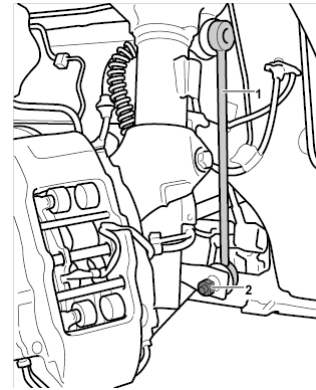
Brake line holder

- 1.1. Remove brake line holder on the wheel carrier at the left and right by loosening and unscrewing the screw **-3-** .
- 1.2. Loosen electric cable plug by loosening and unscrewing the nut **-2-** .

- 1.3. Disconnect electric cable plug **-1-** for the wheel speed sensor and brake pad wear indicator.

2. Remove connecting link on anti-roll bar.

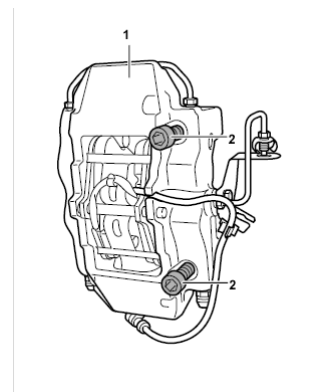
Loosen the nut **-2-** and remove connecting link **-1-** from the anti-roll bar.



Removing and installing connecting link and wheel carrier

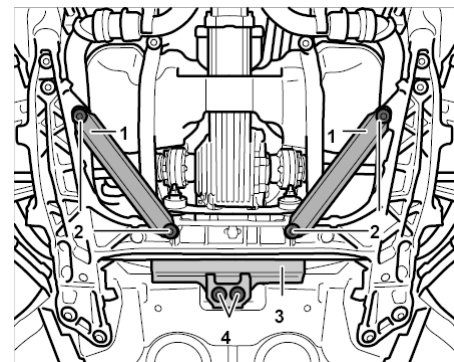
3. Remove left and right brake calliper.

Loosen screws **-2-**, remove brake calliper **-1-** from the wheel carrier and hang it to the side. Do not open the brake hydraulic system!



Removing and installing brake calliper

4. Remove diagonal braces and crash stop.
Crash stop is only fitted on all-wheel drive vehicles.



Diagonal brace

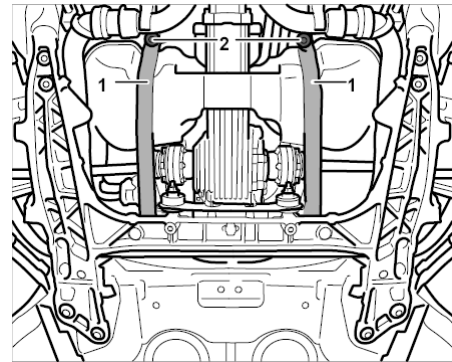
- 4.1. Remove diagonal braces **-1-**.

Unscrew screws **-2-** and remove diagonal braces **-2-**.

- 4.2. Remove crash stop (all-wheel drive only).

Loosen and remove screws **-4-** and then remove crash stop **-3-**.

5. Remove restraining straps on the fuel tank.



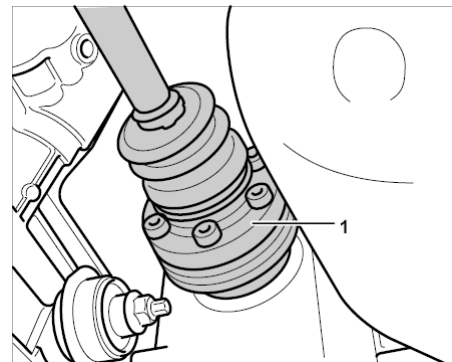
Removing and installing restraining straps

- 5.1. Loosen and remove screws **-2-** and then remove the restraining straps **-1-**.

- 5.2. Remove fuel tank cover.

6. For all-wheel drive vehicles: Remove the drive shafts on the transmission side.

Remove drive shafts **-1-** at the front by loosening and unscrewing the screws.



Removing and installing drive shaft



Information

- *Protect the drive shafts from mechanical damage.*

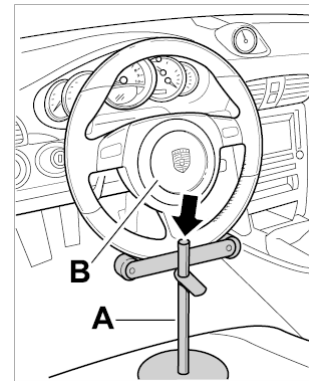
7. Remove universal joint at the steering spindle.



Information

- *Use only steering wheel holders **-A-** that do not project into the area of the airbag unit **-B-**.*

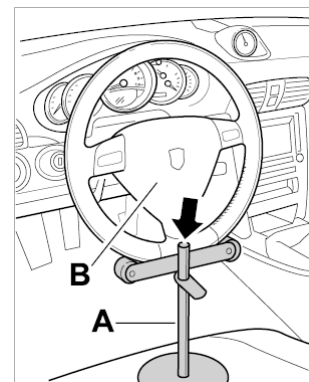
- *If necessary, shorten guiding rod at the top **-arrow-**.*



Steering-wheel holder (example shown)

7.1. Move steering wheel into centre position.

Secure the steering wheel in centre position using the steering-wheel holder **-A-** .

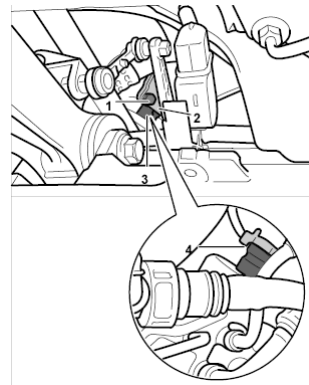


Steering-wheel holder

7.2. Remove universal joint.

Loosen screw **-1-** on the universal joint **-2-** and remove it. Pull universal joint **-2-** off the steering spindle **-3-** .

Make sure not to pull the red lug -4- down as well because this will only increase the amount of assembly work required.



Removing and installing universal joint

8. Pull connector off the range adjustment sensor (left side of vehicle only).

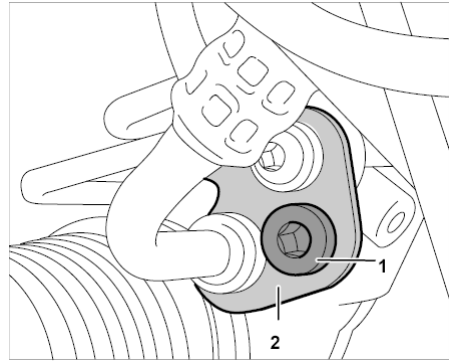
9. Remove pressure and return lines at the steering gear.



Information

- Before the feed and return lines are loosened, place a suitable container underneath to collect steering fluid.
- Wear protective goggles and gloves.

- 9.1. Place an oil collection pan underneath the repair area.



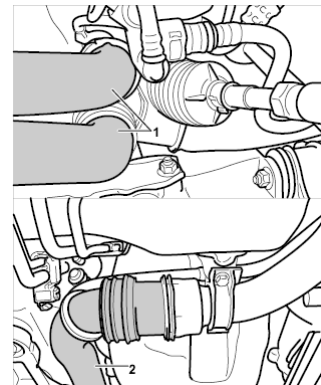
Tension shackle for steering-oil lines

- 9.2. Remove tension shackle **-2-** for steering-oil lines on the steering gear. Unscrew screw **-1-** and remove tension shackle **-2-** .

10. Disconnect coolant lines at the front and rear.

- 10.1. Disconnect front coolant lines (at the left and right).

Loosen spring clamps on the couplings and pull off coolant hoses **-1-** .



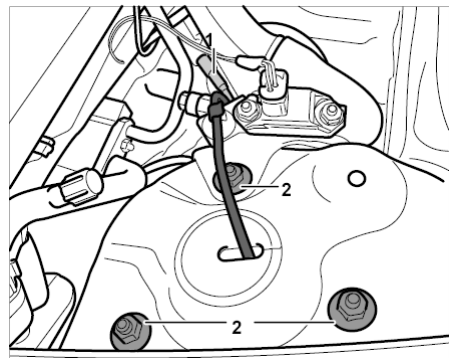
Coolant lines on front axle

- 10.2. Disconnect rear coolant lines (at the left and right).

Loosen spring clamps on the couplings and pull off coolant hoses **-2-** .

11. Loosen spring struts at the spring-strut dome.

- 11.1. Loosen trim panel in the luggage compartment.



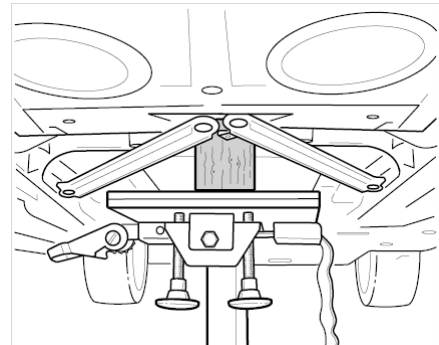
Removing and installing spring struts for front axle

11.2. Disconnect cable plug **-1-** for the PASM line.

11.3. Loosen spring struts at the spring-strut dome by loosening and unscrewing the nuts **-2-** .

12. Remove front axle.

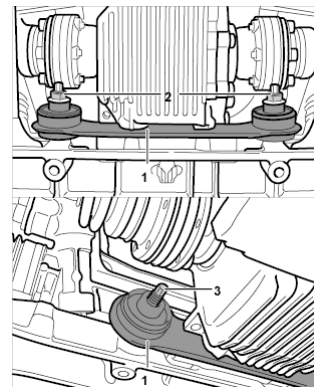
12.1. Support the front axle and fuel tank.



Cross member support

12.2. For all-wheel drive: Loosen and unscrew the nuts **-2-** on the transmission support **-1-** .

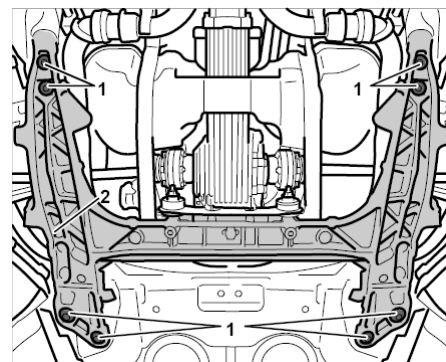
Loosen and unscrew studs **-3-** on transmission support **-1-** and remove transmission support **-1-** .



Stud on transmission support (all-wheel drive)

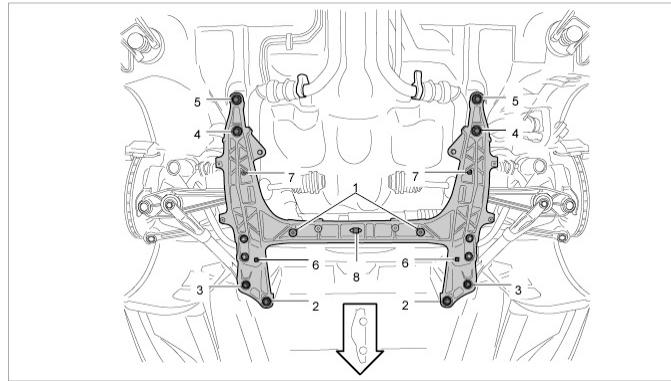
12.3. Loosen and remove screws **-1-** securing front axle to body.

Lower front axle **-2-** using the spring struts and remove in a downward direction.



Front-axle threaded joint

Installing front axle

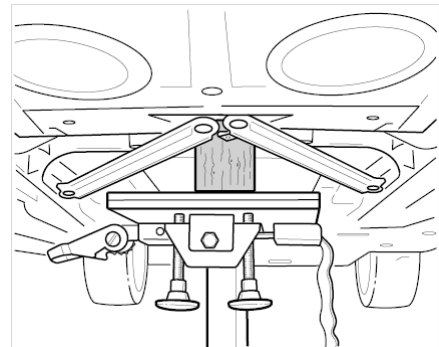


Overview of front-axle cross member

- (1) - Hexagon-head bolt for steering gear, M10
- 2 - Hexagon-head bolt for front axle, M12 x 1.5 x 30, tightening torque: 100 Nm (74 ftlb.)
- 3 - Hexagon-head bolt for front axle, M14 x 1.5 x 120, tightening torque: 160 Nm (118 ftlb.)
- 4 - Hexagon-head bolt for front axle, M14 x 1.5 x 50, tightening torque: 160 Nm (118 ftlb.)
- 5 - Hexagon-head bolt for front axle, M14 x 1.5 x 50, tightening torque: 160 Nm (118 ftlb.)
- (6) - Hexagon-head bolt for coolant pipe, M6
- (7) - Hexagon-head bolt for coolant pipe, M6
- (8) - Holder for coolant pipe

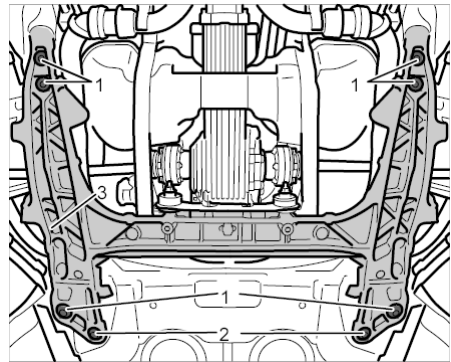
Replace all lock nuts. Replace screw(s) securing universal joint (steering shaft) to steering gear and brake calliper to wheel carrier.

1. Install front axle.
 - 1.1. Raise the front axle with the spring strut at the left and right and position it.



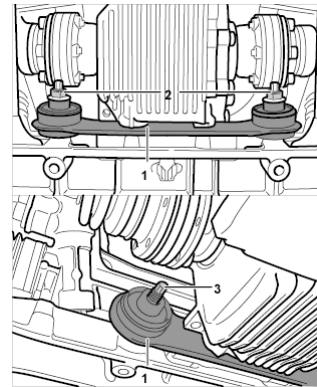
Cross member support

- 1.2. Screw in and tighten screws securing front axle to body **-1 and 2-**.
 - Screws **-1-** = rear: M14 x 1.5 x 50/front: M14 x 1.5 x 120.
 - Screws **-2-** = M12 x 1.5 x 30.
 - **Tightening torque, M14 front: 160 Nm (118 ftlb.)**
 - **Tightening torque, M14 rear: 160 Nm (118 ftlb.)**
 - **Tightening torque, M12: 100 Nm (74 ftlb.)**



Installing front-axle threaded joint

- 1.3. Screw in and tighten stud **-3-** on transmission support **-1-** .
 → **Tightening torque: 20 Nm (15 ftlb.)**

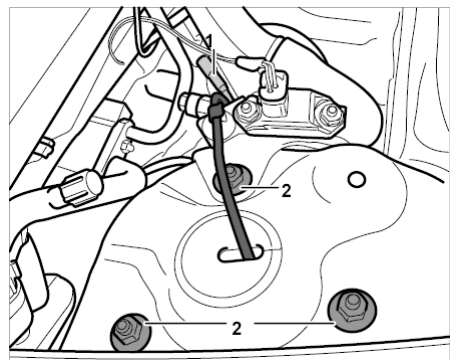


Stud on transmission support

- 1.4. Screw on and tighten nuts **-2-** on transmission support **-1-** .
 → **Tightening torque: 65 Nm (48 ftlb.)**

2. Tighten spring struts at the spring-strut dome.

- 2.1. Secure spring struts at the spring-strut dome by screwing on and tightening the nuts **-2-** .
 → **Tightening torque: 33 Nm (24 ftlb.)**



Removing and installing spring struts for front axle

- 2.2. Connect cable plug **-1-** for the PASM line.
- 2.3. Secure trim panel in the luggage compartment.
3. Connect coolant hoses.



Information

- The coolant hoses must lock with an audible click when pushed into the plug-in couplings.

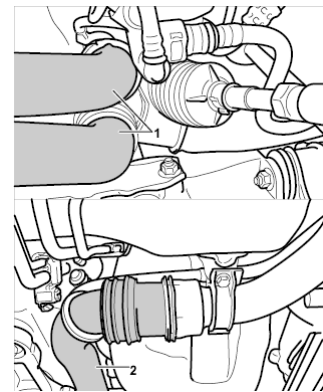


Information

- Check O-rings on the plug-in couplings and replace them if necessary.
- Clean plug connection and coolant hoses before assembly.
- Coat O-rings and coolant hoses with Klüber Plus Gel (Part No. 000.043.205.93).
- Remove stoppers before fitting the coolant lines and hoses.

3.1. Connect coolant hoses at the front.

Press on coolant hoses **-1-** until the spring clamps on the Henn couplings lock with an audible click.



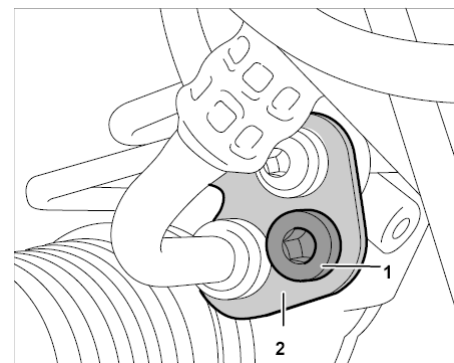
Coolant hoses on front axle

3.2. Connect coolant hose at the rear.

Press on coolant hose **-2-** until the spring clamp on the Henn coupling locks with an audible click.

4. Fit pressure and return lines at the steering gear.

4.1. Insert pressure and return lines with new sealing rings into the steering gear.



Tension shackle for pressure and return lines

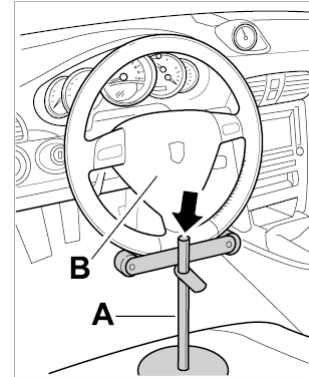
4.2. Fit tension shackle **-2-** for pressure and return lines at the steering gear by inserting the tension shackle

-2- and screwing in and tightening the screw -1- .

→ **Tightening torque: 23 Nm (17 ftlb.)**

5. Fit universal joint at the steering spindle. Use new fastening screw!

5.1. Steering wheel must be in centre position.



Steering-wheel holder

5.2. Fit universal joint on the steering spindle.

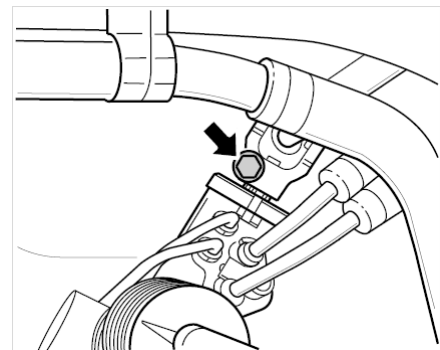
Fit universal joint on the steering spindle while paying attention to the installation position **-see arrows-** .



Universal joint for steering gear

5.3. Screw in and tighten M8 screw **-arrow-** on the universal joint.

→ **Tightening torque: 23 Nm (17 ftlb.)**

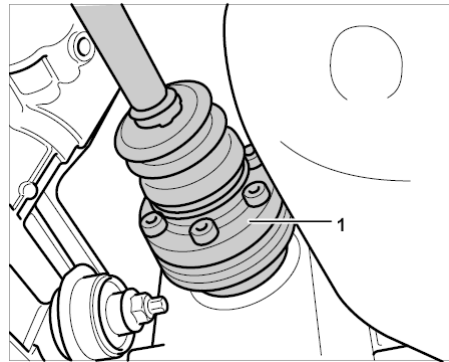


Universal joint

6. For all-wheel drive vehicles: Fit the drive shafts on the transmission side.

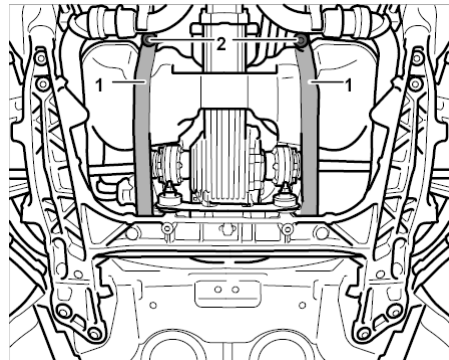
Fit drive shafts -1- at the front by screwing in and tightening the screws.

→ **Tightening torque: 39 Nm (29 ftlb.)**



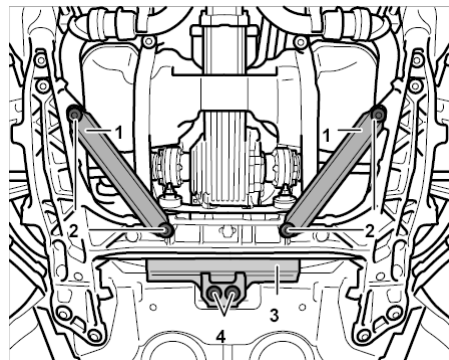
Removing and installing drive shaft

7. Fit restraining straps on the fuel tank.
Fit restraining straps -1- and screw in and tighten screws -2- .
→ **Tightening torque: 23 Nm (17 ftlb.)**



Removing and installing restraining straps

8. Install diagonal braces and crash stop.



Diagonal brace

- 8.1. Install crash stop -3- (all-wheel drive only).
Fit crash stop -3- and screw in and tighten screws -4- .
→ **Tightening torque: 100 Nm (74 ftlb.)**

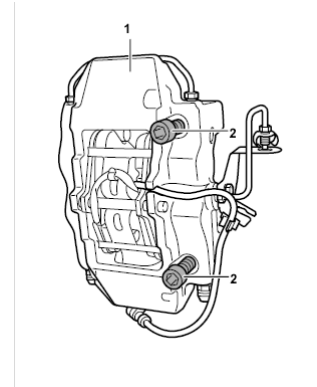
- 8.2. Install diagonal braces -1- .
Fit diagonal braces -1- and screw in and tighten screws -2- .
→ **Tightening torque: 100 Nm (74 ftlb.)**

9. Fit brake calliper.

Fit brake calliper **-1-** and screw in and tighten M12 screws **-2-** for brake calliper.

Always replace M12 screws -2- for brake calliper before fitting.

→ **Tightening torque: 85 Nm (63 ftlb.)**

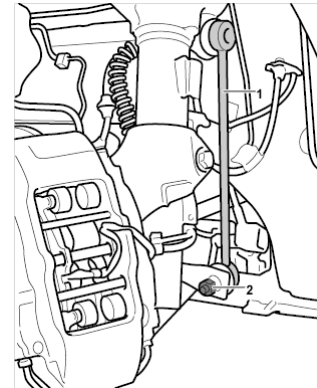


Removing and installing brake calliper

10. Fit connecting link on anti-roll bar.

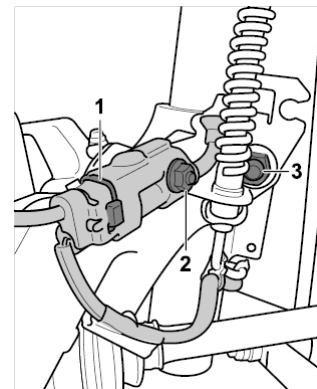
Fit connecting link **-1-** on anti-roll bar and screw on and tighten nut **-2-**.

→ **Three-stage tightening procedure (1st stage: tighten to 50 Nm (37 ftlb.). 2nd stage: loosen by 90 degrees. 3rd stage: tighten to 65 Nm (48 ftlb.): 65 Nm (48 ftlb.)**



Removing and installing connecting link and wheel carrier

11. Fit brake line holder and electric cable plug.



Brake line holder

11.1. Connect electric cable plug **-1-** for the wheel speed sensor and brake pad wear indicator.

11.2. Secure electric cable plug by screwing on and tightening the nut **-2-**.

11.3. Fit brake line holder on the wheel carrier at the left and right by screwing on and tightening the nut **-3-**.

→ **Tightening torque: 10 Nm (7.5 ftlb.)**

12. Fit connector on range adjustment sensor.

Subsequent work

1. Fill the steering hydraulic system with Pentosin and top up the fluid level in the cooling system.

Then bleed the steering and cooling system.

→ *48020150 Checking power-steering fluid level*

→ *193817 Draining and filling in coolant (includes bleeding the system)*



Information

When topping up or filling in Pentosin, make sure that it does not come into contact with the coolant hoses. Observe the specifications in order to avoid overfilling, and thus overflowing.

- *If coolant hoses come into contact with Pentosin, clean them thoroughly with water IMMEDIATELY.*
- *Replace visibly swollen coolant hoses.*
- *Tighten all threaded connections to the specified tightening torque.*

2. Install front wheels.

→ *44051900 Removing and installing wheel - section on "Installing"*

3. Install front underbody panels.

→ *519219 Removing and installing cover for front underbody - section on "Installing"*

4. Perform suspension alignment.

→ *44950300 Suspension alignment, complete*

997110, 997111, 997120, 997121, 997140, 997141, 997150, 997151, 997160, 997161, 997170, 997310, 997311, 997320, 997321, 997350, 997351, 997360, 997361, 997370, 997410, 997411, 997420, 997421, 997430, 997431, 997450, 997451, 997510, 997511, 997520, 997521, 997610, 997611, 997620, 997621, 997630, 997631, 997650, 997651, 997720, 997721, 997810, 997811, 997840, 997841, 997850, 997851, 997860, 997861, 997460, 997461, 997470, 997471, 997480, 997481, 997560, 997561, 997660, 997661, 997670, 997671, 997680, 997681, 997880, 997881

Model year as of 2005

C00, C02, C05, C06, C07, C08, C09, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C32, C33, C34, C35, C36, C37, C38, C39, C41, C45, C45, C46, C96, C97, C98, C99