

EN

FITTING INSTRUCTIONS

making everyday smoother



**PEUGEOT BOXER, FIAT DUCATO, CITROËN JUMPER
X250/X290 AL-K0
NORMAL TRACK ALC 4X2, 6X2**

VB-FullAir 2C/4C

FOR KIT: 1051808205, ..8207, ..8225, ..8406, ..8407, ..8426



REVISION TABLE

New document number	730105180803	Old document number	730105090803
New revision:	V1.3	Old revision:	V1.2
Release date (yyyy-mm-dd):	2024-11-01		
Page (new):	Changes:		
36	paragraph 7.1 step 9 and 10		
36	paragraph 7.2 step 3		
37	paragraph 7.2: added step 6		

CONTENTS

1. Safety regulations	4
2. General fitting regulations	5
3. Explanation to this fitting instruction	6
4. Compressor box and wiring harness	7
4.1 <i>Kompressorbox</i>	7
4.2 <i>Air tank</i>	9
4.3 <i>Wiring harness</i>	10
4.4 <i>Handbrake signal</i>	13
4.5 <i>Remote control</i>	14
5. Mounting the air suspension for the rear axle with a 4x2 vehicle	15
5.1 <i>Preparations</i>	15
5.2 <i>Spring plates</i>	16
5.3 <i>Air springs</i>	20
5.4 <i>Height sensors</i>	21
5.5 <i>Axle parts</i>	22
5.6 <i>Air tubes</i>	22
5.7 <i>Warranty stickers</i>	24
6. Mounting the air suspension for the rear axle with a 6x2 vehicle	25
6.1 <i>Preparations</i>	25
6.2 <i>Spring plates</i>	26
6.3 <i>Air springs</i>	31
6.4 <i>Height sensors</i>	32
6.5 <i>Axle parts</i>	32
6.6 <i>Air tubes</i>	33
6.7 <i>Warranty stickers</i>	34
7. Fitting the air suspension kit to the front axle	35
7.1 <i>Preparations</i>	35
7.2 <i>Suspension strut</i>	36
7.3 <i>Height sensors</i>	37
7.4 <i>Air tubes</i>	40
7.5 <i>Warranty stickers</i>	40
8. Calibration	41
9. Checklist	44
10. Wiring diagram	45
11. Annex remaining signals without manufacturer option Euro 4 model	47
11.1 <i>Speedsignal</i>	47
11.2 <i>15+ signal</i>	47
12. Annex remaining signals without manufacturer option euro 5 model	48
12.1 <i>Speedsignal</i>	48
12.2 <i>15+ signal</i>	48
13. Fitting the air suspension kit for the 34° rear axle	49

1. SAFETY REGULATIONS

PERSONAL SAFETY RULES

- Always wear suitable protective clothing and safety boots.
- Do not wear rings, watches or loose clothing.
- Do not carry loose items in your pockets.
- Tie back long hair.
- Never use broken tools. Only use tools for their intended purpose.
- Wear safety goggles.

GENERAL SAFETY RULES

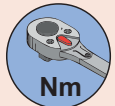
- If possible, always use a hydraulic ramp while working.
- Ensure the vehicle is properly supported when necessary.
- Ensure the vehicle is not able to roll away.
- Improper installation may result in a hazardous situation.



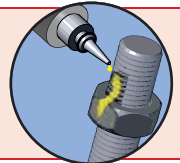
Where the warning symbol is displayed, information is given which is very important for the safety and/or health of those involved. This symbol is also used for procedures critical for the correct installation of the air suspension kit.



Important: for installation/removal, check the manufacturer's workshop manual.
If in doubt, always follow the vehicle manufacturer's instructions.



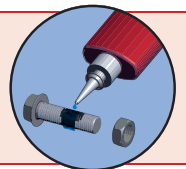
Each bolt connection in this manual contains a tightening torque with which the bolt connection must be secured and then marked with a safety paint for screws. When reusing the original bolts and nuts, follow the vehicle manufacturer's guidelines for proper tightening torques.



Important: all parts that are removed and reinstalled must be checked to ensure they are working properly.



If thread locking is specified, use Loctite 243 as a minimum or a similar thread locker with the same characteristics.



2. GENERAL FITTING REGULATIONS

- This manual has been put together with great care and contains a description of all the steps required to install the air suspension as stated on the front page. The content of this manual is a snapshot view of the situation as at the time it was written. VB-Airsuspension reserves the right to introduce technical changes at any time without warning.
- The warranty is only valid if installation is carried out by a specialist workshop. The VB-FullAir-/VB-NivoAir kit may only be fitted by persons who have been authorised by VB-Airsuspension. Staff must be experienced in working on light commercial vehicles, particularly in relation to electrics/electronics, pneumatic technology and general vehicle mechanics.
- Your vehicle may differ from the one shown in the fitting instructions.

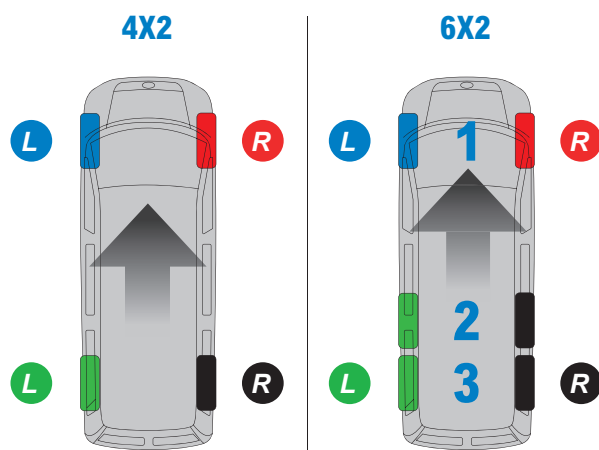
VB-Airsuspension is not liable for any damage resulting from not following these fitting instructions.

- Take the vehicle for a test drive before installing the air suspension.
- Check whether the TÜV documentation is valid for the vehicle.
- Ensure the correct calibration supports are available.
- Keep the work site clean and tidy.
- Use vehicle workshop manuals where necessary.
- The air suspension kit is supplied for four corners. If a part is intended for one specific corner, it is identified with a coloured sticker. Fit the air tubes in accordance with the colour code system used by VB-Airsuspension.
- Always follow the vehicle manufacturer's conversion instructions, unless expressly stated otherwise in this manual.
- Mark the removed parts to ensure they are refitted back in the right vehicle.
- All parts that are removed and reinstalled must be checked to ensure they are working properly.
- Always tighten the supplied nuts and bolts to the specified torque, unless expressly stated otherwise in this manual. In this case, follow the vehicle manufacturer's guidelines.
- Mark the bolted joint using security check paint marker.
- If alterations are made to the original anti-corrosion system, this must be rectified immediately. Use spray wax or a protective coating for this purpose.
- Always refit pipes and wires that have been removed in the same way as they were originally fitted.
- Secure pipes and wires with a sufficient number of tie-wraps. Ensure that no tension can be applied to the wires.
- Ensure there are no tight bends in air tubes and they cannot be kinked or chafe against other parts.
- Never attach air tubes, wires or other parts to the vehicle's brake lines.
- The supply cable must be at least 100 mm away from the ABS/ESP block, the sensors and other control equipment.
- Wires must not be routed above or across the battery.
- Do not leave any tools, cleaning cloths or other materials behind after completing work.
- Check the system for air tightness after fitting.
- Check that the air springs always have an all-round clearance of at least 10 mm at maximum pressure.
- After fitting, check the air suspension against the checklist. (This checklist should be retained by the dealer and must be available to VB-Airsuspension for inspection on request.)
- Follow the vehicle manufacturer's instructions, including when parking the vehicle.
- Take the vehicle for a test drive after fitting.
- When the vehicle is a 6x2, the first rear axle is axle number 2, the second rear axle is number 3.

Axle:	Calibrationheight:	Part number:
Front axle	SHF = 199 MM	009 000 00 62
Rear axle	X = 300 MM	009 000 01 15
Rear axle 34°	X = 315 MM	

- The air suspension kit is supplied for four corners. If a part is specifically for one corner, it is identified with a coloured sticker.

Color	Description	Color	Description
Green	Left rear	Red	Right front
Black	Right rear	Blue	Left front



3. EXPLANATION TO THIS FITTING INSTRUCTION

This manual is intended for the following **NORMAL TRACK** vehicles with ALC shock absorbers:

- Fiat Ducato X250/X290 with AL-KO chassis
- Peugeot Boxer X250/X290 with AL-KO chassis
- Citroën Jumper X250/X290 with AL-KO chassis

In this fitting instructions are the proceedings described to mount the air suspension on the front and/of rear axle. Depending which kit has been ordered, follow the chapters who corresponding with the kitnumber.

When ordered the air suspension for the rear axle with kitnumber 105180820X, follow chapter 4, 5 and 8. First mount the compressorbox and then the rear axle air suspension kit.

When ordered the air suspension for the front and rear axle with kitnumber 105180840X, follow chapter 4, 5, 7 and 8. First mount the compressorbox, then the rear axle air suspension kit and at last the front axle air suspension kit.

When ordered the air suspension for the double rear axle with kitnumber 105180822X, follow chapter 4, 6 and 8. First mount the compressorbox and then the double rear axle air suspension kit.

When ordered the air suspension for the front and double rear axle with kitnumber 105180842X, follow chapter 4, 6, 7 and 8. First mount the compressorbox, then the double rear axle air suspension kit and at last the front axle air suspension kit.

For an air spring set with **34°** axle, article number 1051808XX7, additional information can be found in among chapter 13.

A short overview on which chapter to follow:

Which axle?	Kitnumber	Chapter
Single rear axle	105 18 08 20X	4, 5, 8
Double rear axle	105 18 08 22X	4, 6, 8
Front and single rear axle	105 18 08 40X	4, 5, 7, 8
Front and double rear axle	105 18 08 42X	4, 6, 7, 8

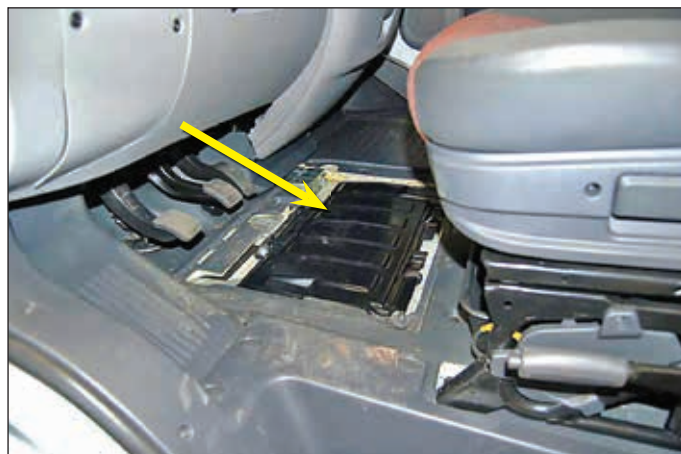
This manual describes the steps for fitting the air suspension to X250 and X290 vehicles. If the fitting instructions for a X250 differ from those for a X290, the instructions are marked explicitly **X250** or **X290**.



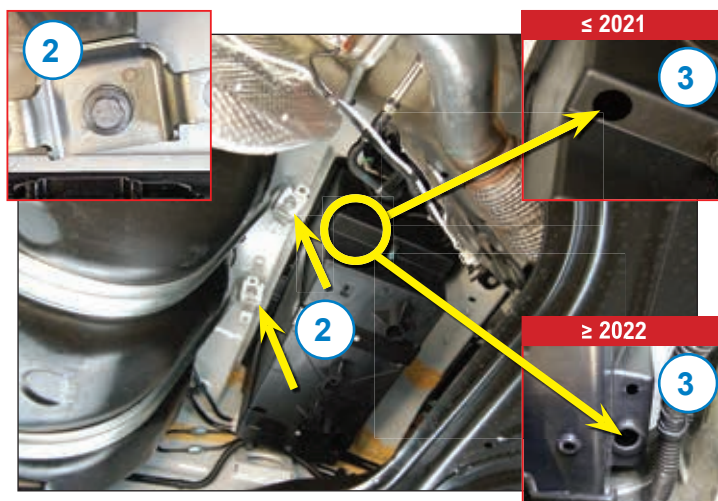
4. COMPRESSOR BOX AND WIRING HARNESS

4.1 KOMPRESSORBOX

1. Open the battery housing under the driver's seat floor mat.



2. Loosen the marked bolts. Do not remove them.
3. Drill a $\varnothing 22$ mm hole in the place indicated.



Beim Bohren des Lochs dürfen keine Teile im Batteriegehäuse beschädigt werden.

4. Mount the compressor bracket below the bolts loosened in step 2. Slide the bracket under the bolts, looking from the rear.

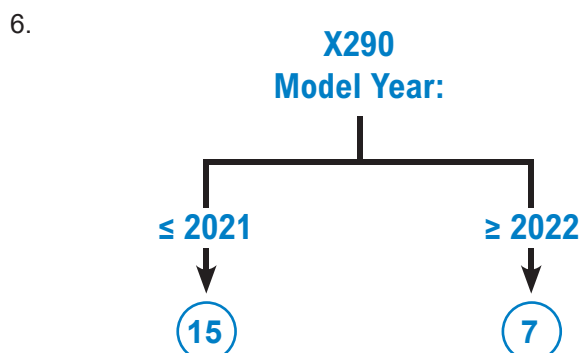


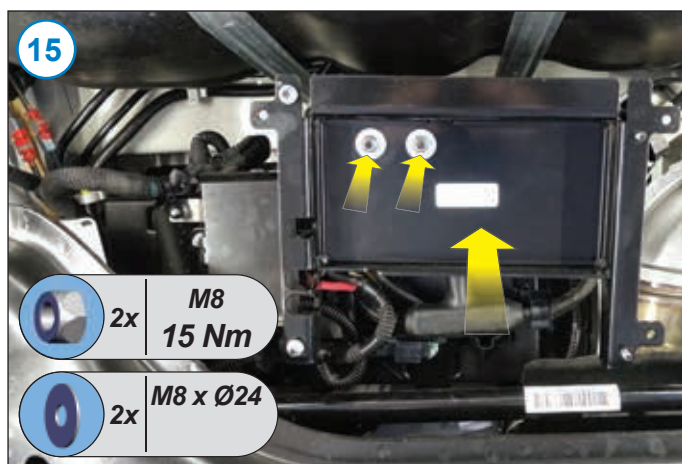
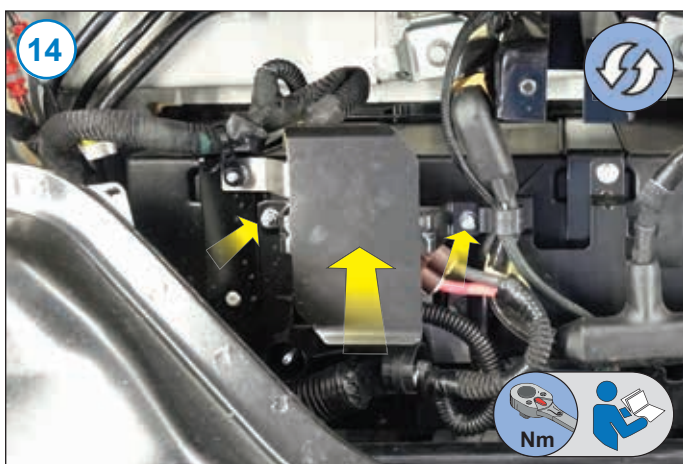
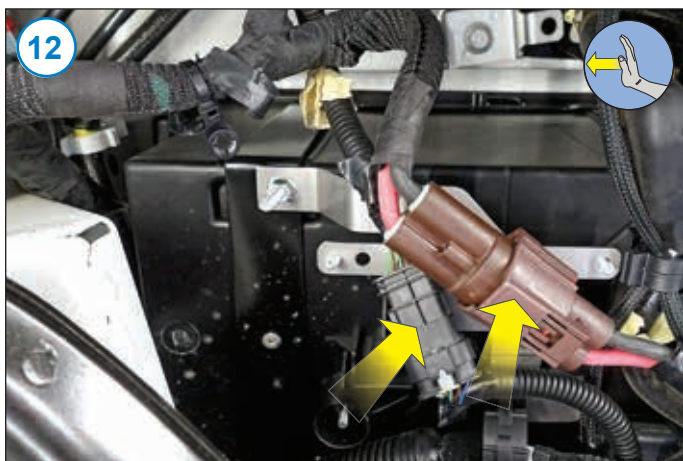
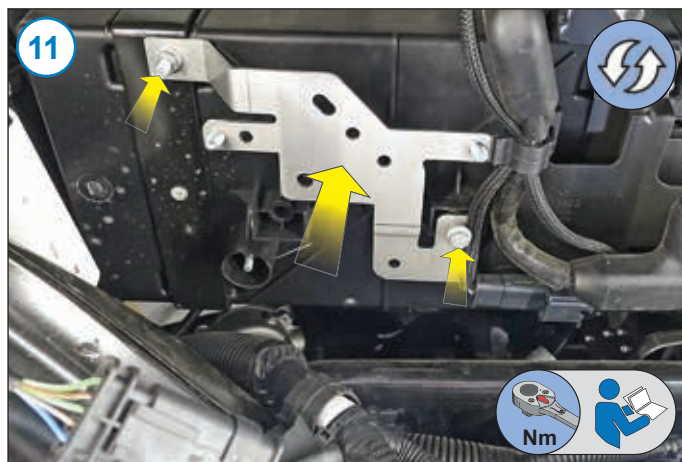
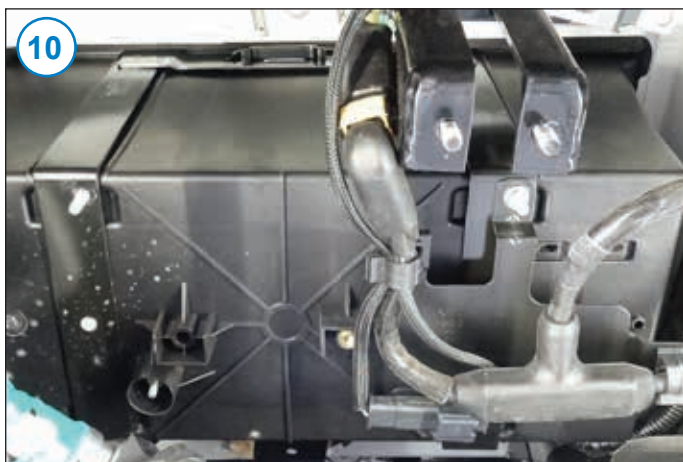
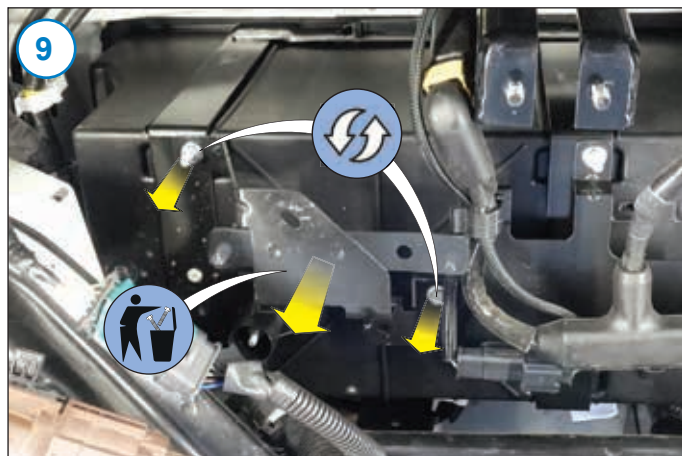
Original-Befestigungsmaterial



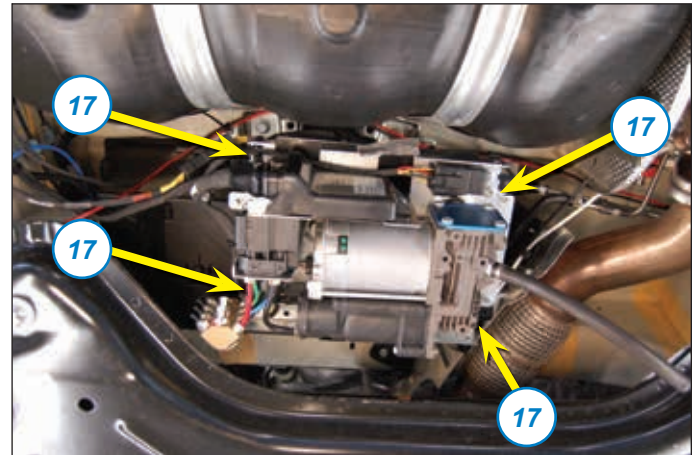
41 Nm

5. Remove the cover from the compressor box.







16. Fit the compressor box to the bracket.
17. Tighten the nuts.

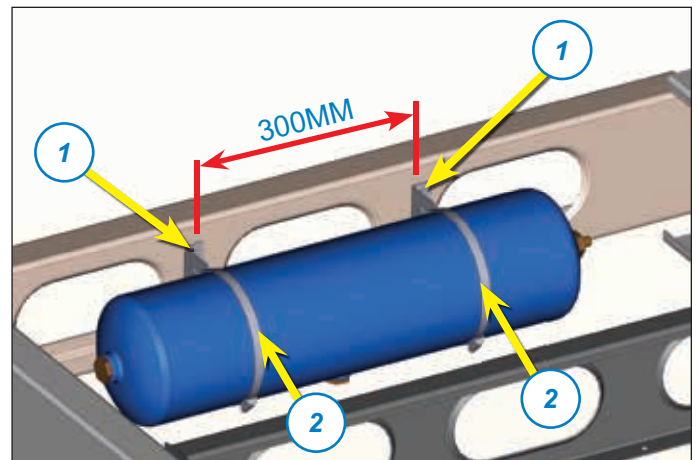


4 x flange lock nut	M6
	8 Nm

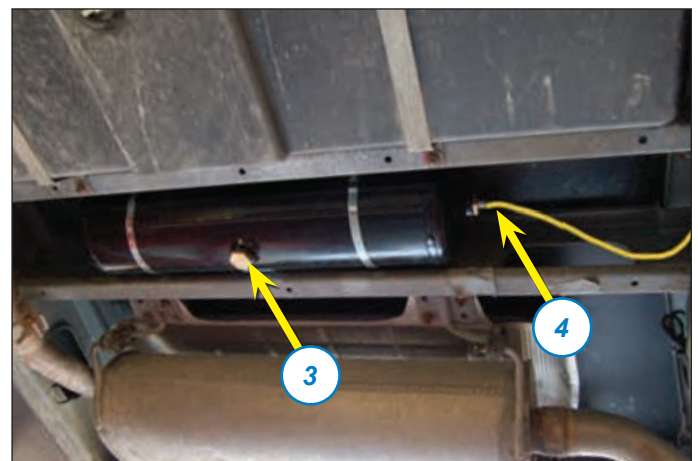
4.2 AIR TANK

1. Fit the air tank brackets to the AL-KO cross beam.

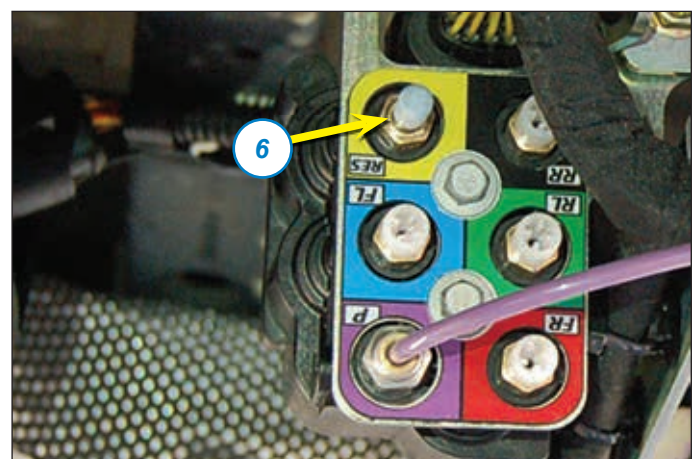
	The maximum distance between the air tank and compressor box must not exceed 1.5 m.
4 x lock nut	M8
4 x washer	M8
	20 Nm



2. Fit the air-tank with the attachment strips to the air-tank bracket.
3. Make sure the sealing plug is positioned on the underside.
4. Connect the yellow air tube to the air tank.

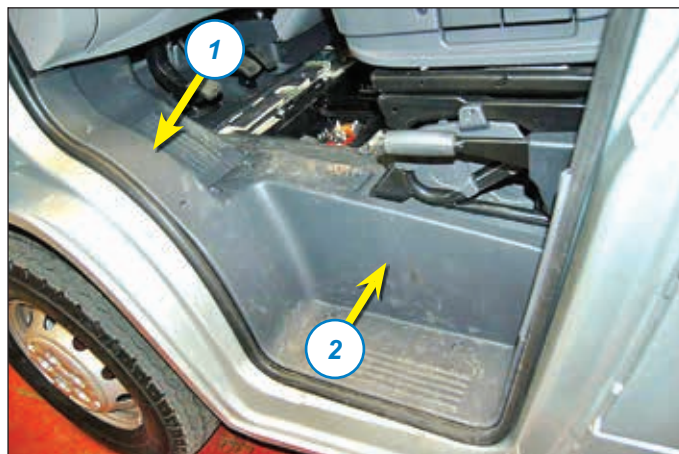


5. Route the yellow air tube to the compressor box.
6. Connect the yellow air tube to the air coupling on the valve block.



4.3 WIRING HARNESS

1. Remove the cover.
2. Remove the entry trim on the left-hand side.

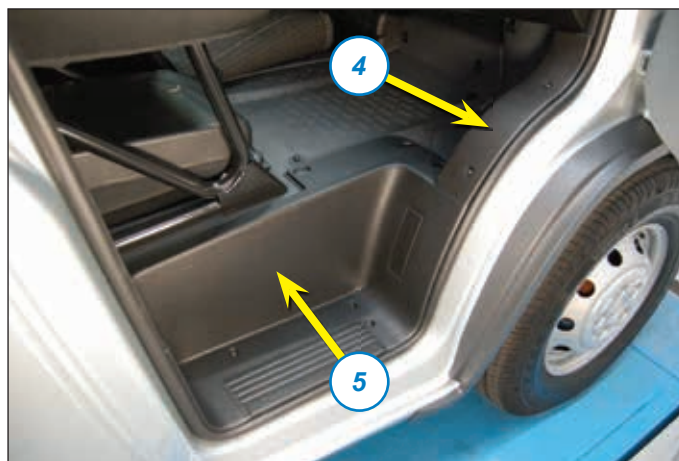


*The vehicle must be fitted with factory option: **081**. If it is, proceed with point 3. If it is not, proceed with point 6.*

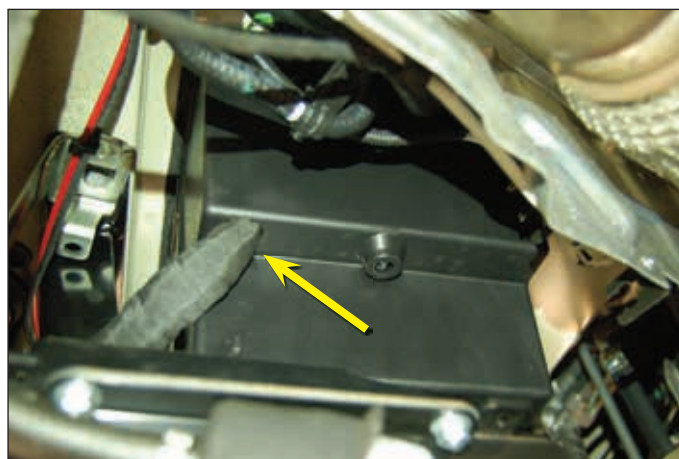
3. Take the cover off the right-hand side B-pillar by undoing the marked screws.



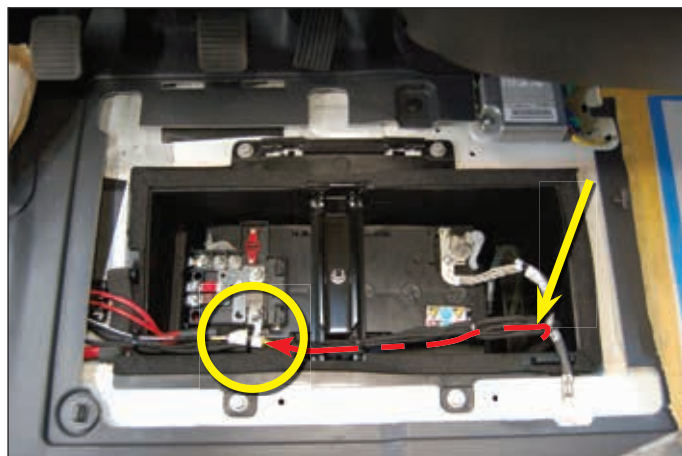
4. Remove the cover.
5. Remove the entry trim on the right-hand side.





6. Route the VB wiring harness inside through the hole drilled in point 3 section 4.1.




7. Carefully pull the wire into the battery housing.
8. Route the two wires with the white connectors to the left around the battery.



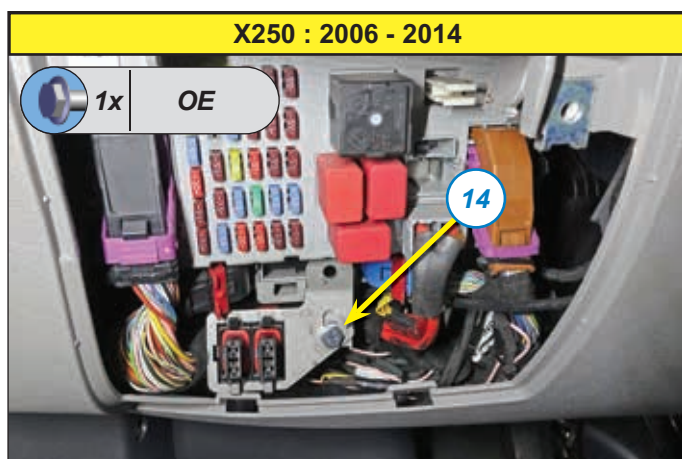
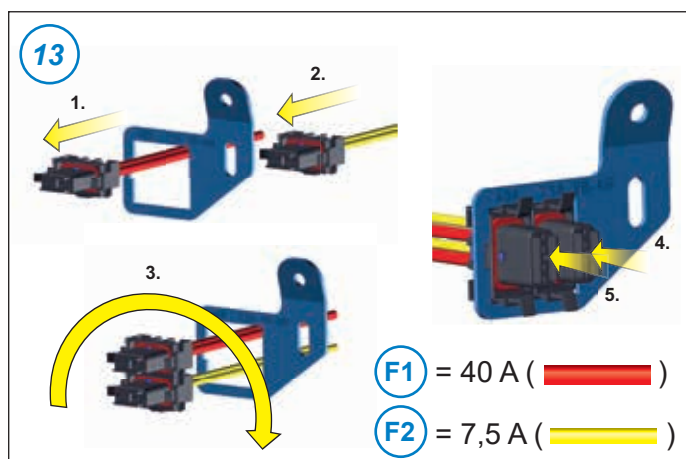
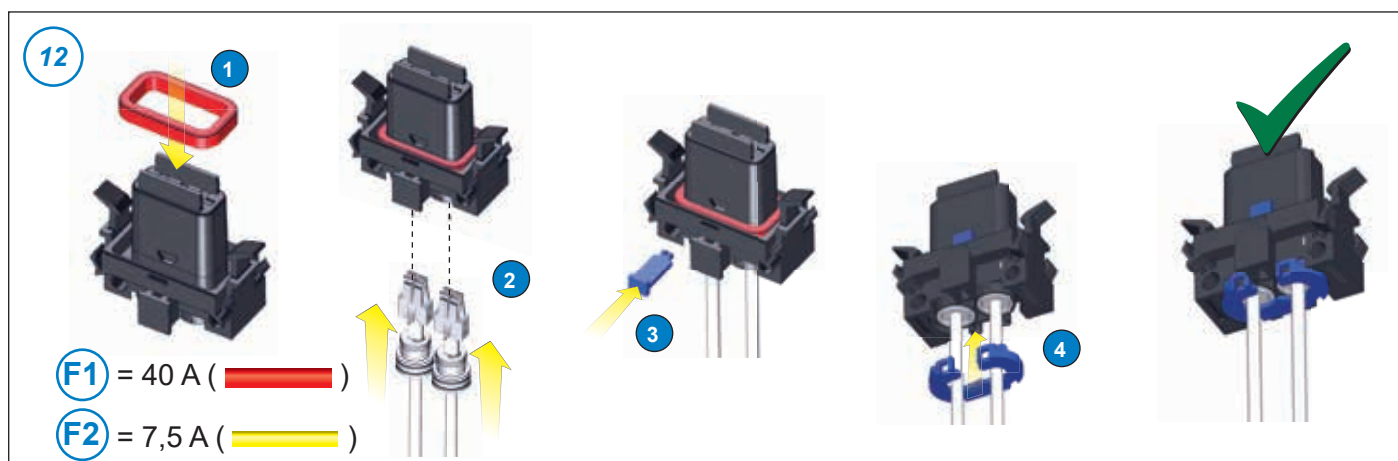
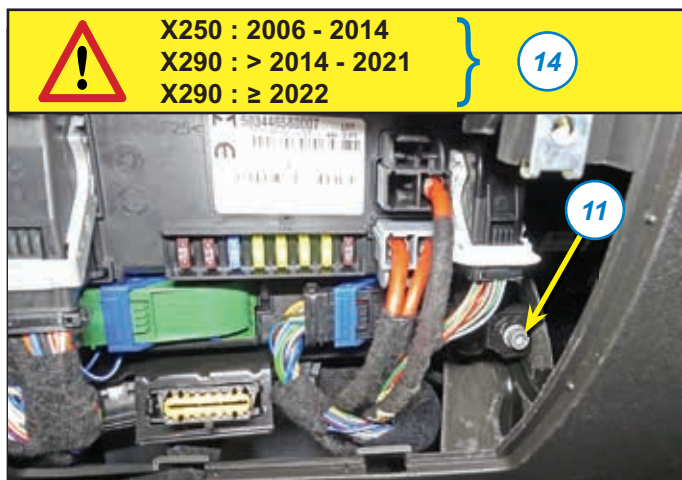
 **Ensure that tubes or wires cannot be placed under tension or become damaged.**

 **Use sufficient tie-wraps to secure the wires!**

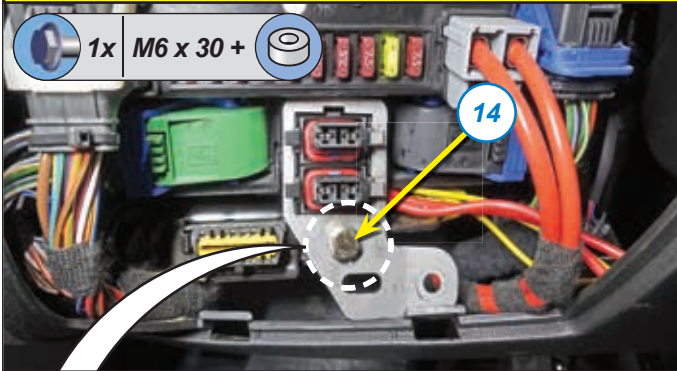
9. The two red and yellow wires must be routed to the fuse box at the front left.
10. Route the white connector for the remote control as far as the fusebox.
11. Remove the bolt.

 **Use sufficient tie-wraps to secure the wires!**

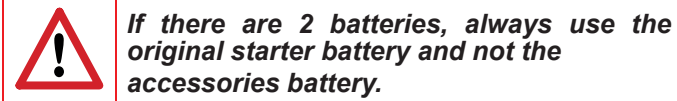
 **The fuse block may differ from the fuse block in the picture**



X290 : > 2014 - 2021



14. (For 4C Air suspension: do not install yet): Fit the fuseblock support on the fuse box using the supplied distance bushes.
15. Do not fit the fuses yet.
16. Connect the red wire to the marked connection of the positive battery terminal (+).



17. Connect the yellow and brown wire to the negative battery terminal (-).

With relay:

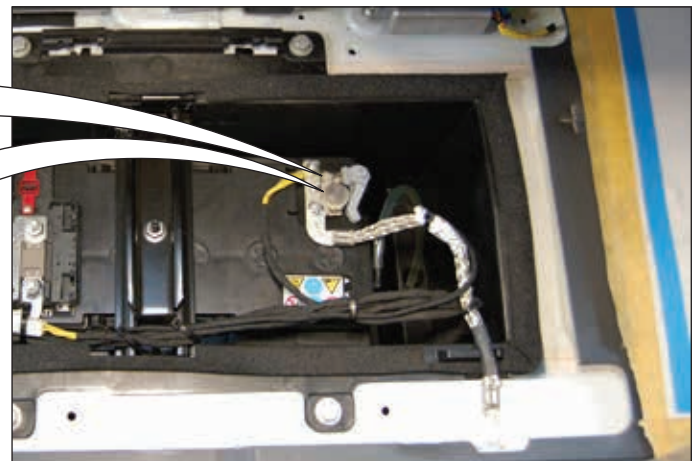
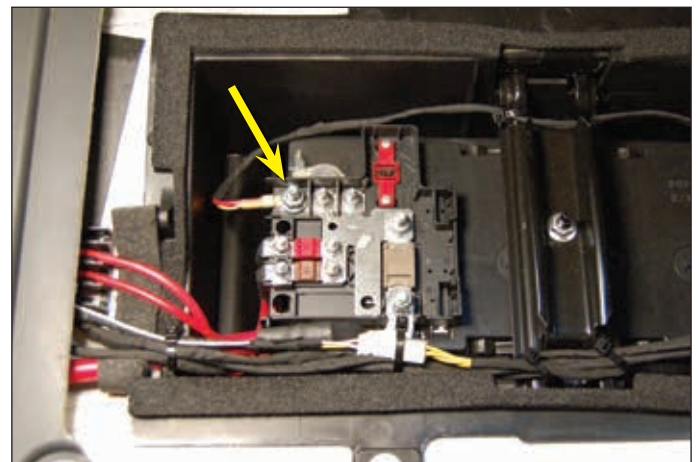
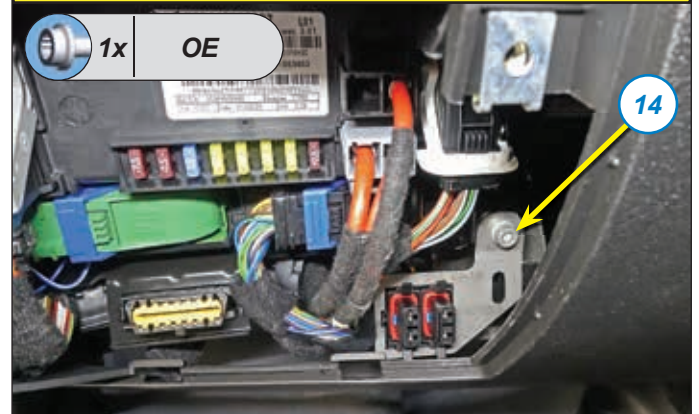
+8 mm



Without relay:



X290 : ≥ 2022

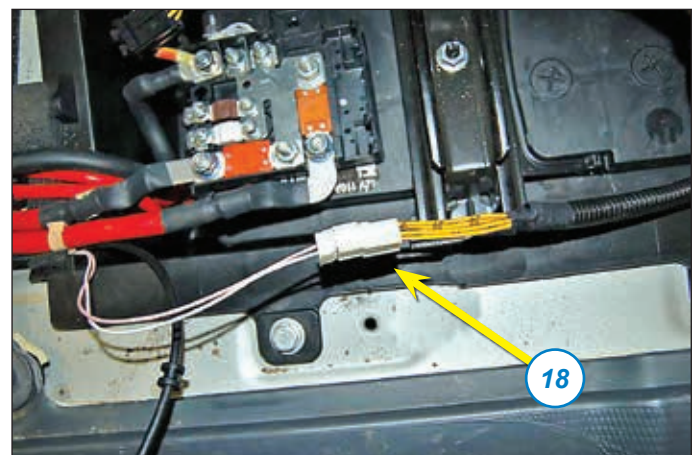


If VB-Set **1052201294** is also to be fitted for this vehicle, first read the accompanying VB fitting instructions **730105180718**.

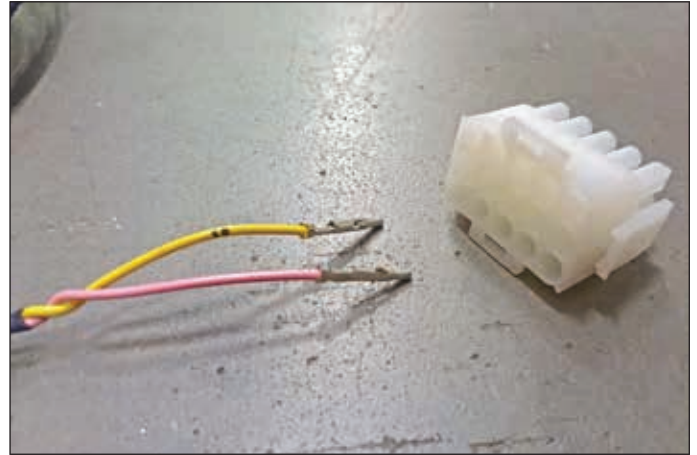
18. Connect the supply cable to the white connector.



The vehicle must be fitted with factory option: **081**
If it is, proceed with point 20.
If it is not, go to sections 11 and 12.

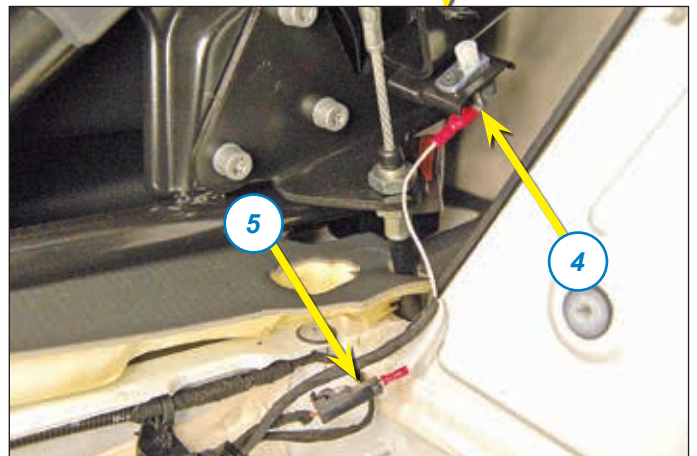


19. Route the supply cable under the trim to the right-hand side of the vehicle.
20. Connect the yellow wire to position **3** of the white connection supplied for option **081**.
21. Connect the pink wire to position **13** of the white connection supplied for option **081**.
22. The white connector for option **081** is located in the B-pillar on the right-hand side
23. Connect the white connector supplied for option **081** to the white connector.



4.4 HANDBRAKE SIGNAL

1. Remove the handbrake cover.
2. Route the white wire of the supply cable to the handbrake.
3. Remove the connector of the handbrake.
4. Fit the connector of the supply cable to the handbrake.
5. Fit the connector of the handbrake to the supply cable.



6. Route the wire as illustrated.
7. Refit the handbrake cover.



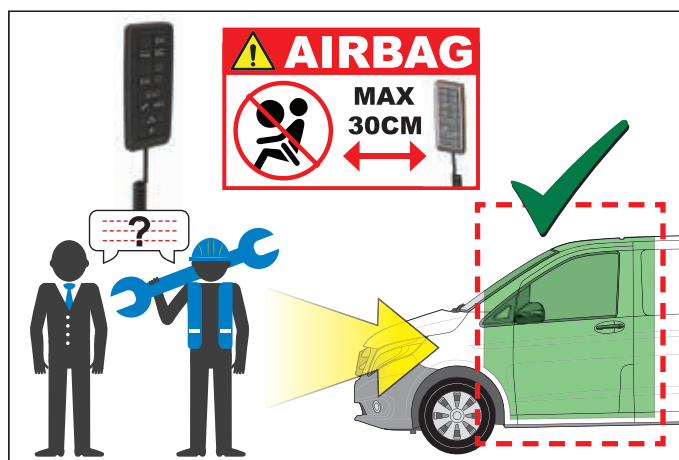
4.5 REMOTE CONTROL

1. In consultation with the customer, identify a suitable location to install the remote control.
2. Mount the remote holder.



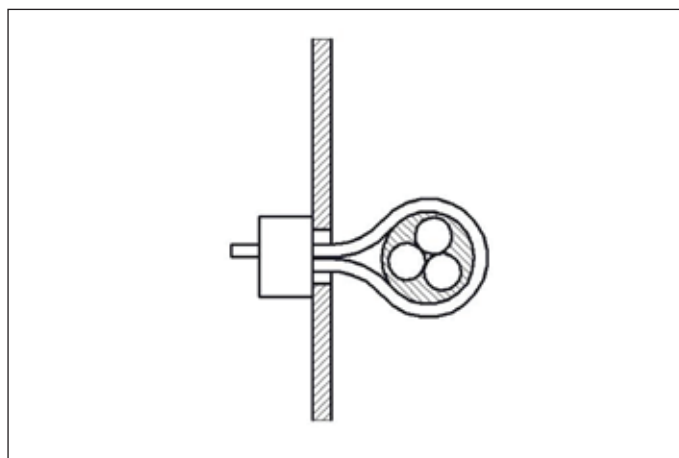
Make sure that no underlying parts can be damaged during installation.

3. Place the remote control in the holder.
4. Ensure the connector is not under tension.
5. Secure the end of the wire with a tie-wrap.



Ensure that the remote control is never in the way of the airbags.

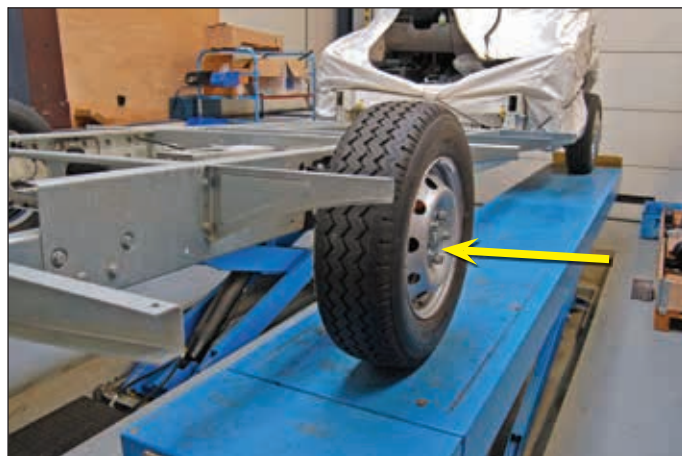
6. Route the remote-control wire to the VB wiring harness under the seat console.
7. Connect the remote control wire to the VB wiring harness.
8. Refit the interior components removed earlier.



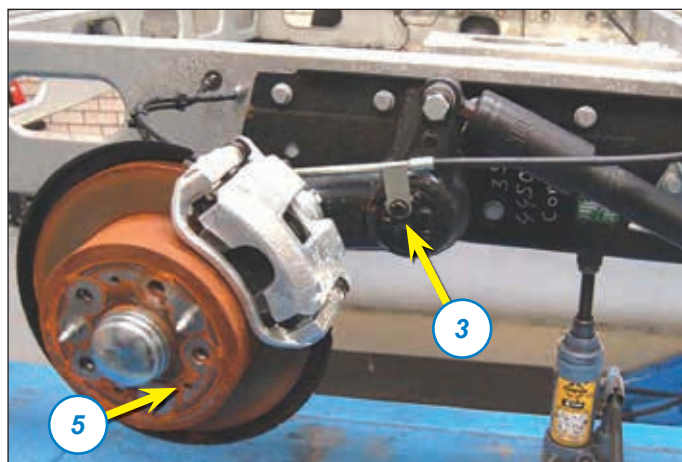
5. MOUNTING THE AIR SUSPENSION FOR THE REAR AXLE WITH A 4X2 VEHICLE

5.1 PREPARATIONS

1. Support the vehicle and the axle properly.
2. Remove the wheels.



3. Remove the handbrake cable brackets.
4. Remove the brake calliper in one piece.
5. Remove the brake disc.

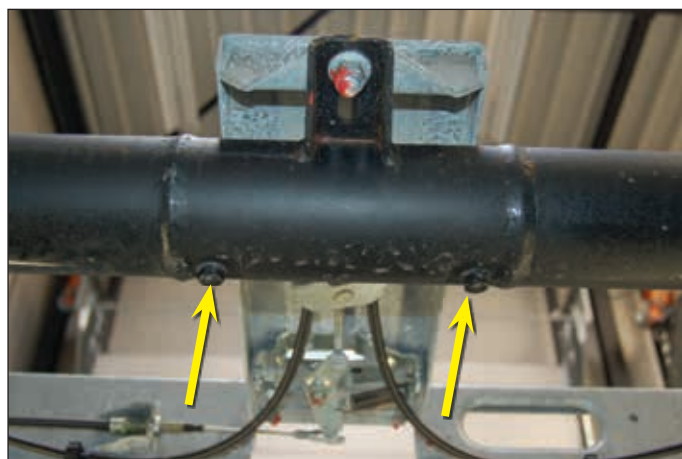


Avoid tension in the brake line.

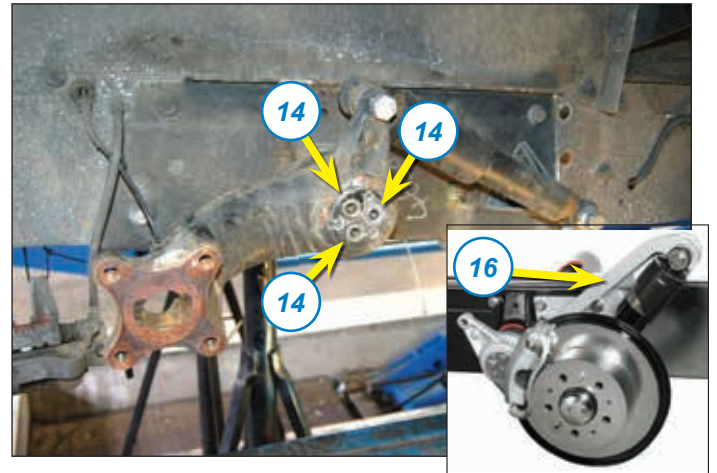
6. Remove the wheel bearing.
7. Remove the handbrake cable.
8. Remove the brake mechanism.
9. Remove the brake guard.
10. Remove the stub axle.



11. Remove the marked bolts.



12. Remove the bolts.
13. Remove the plate.
14. Use a pull-tool to remove all torsion bars from both sides of the axle.
15. Remove the shock absorbers.
16. Remove the shock absorber brackets.
17. If **34°**: Remove the swing arms.
18. If **34°**: Remove the seals. These will be re-used.



5.2 SPRING PLATES

1. Fit the upper spring-plates to the chassis with the front bolts.

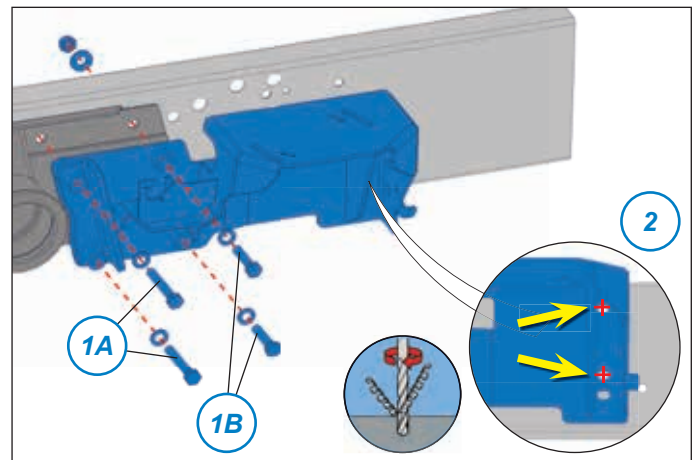


The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.

4 x bolt (1A)	M12 x 80
4 x bolt (1B)	M12 x 55
8 x steel lock nut	M12
8 x washer	M12
8 x original washer ø30x4	



100 Nm



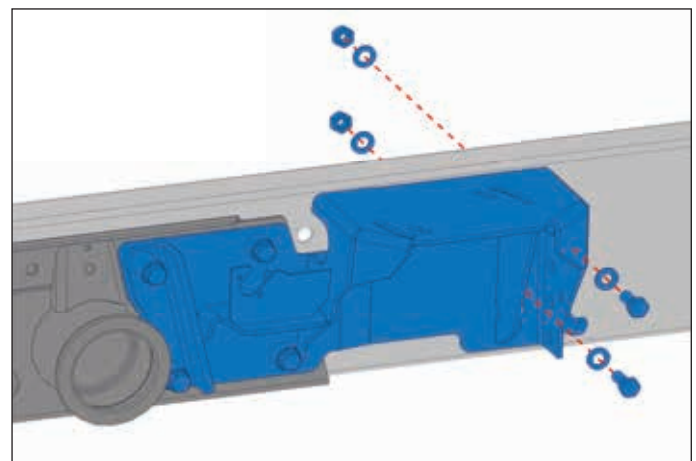
2. Drill Ø13mm holes at the indicated place.

3. Using the rearmost bolts, fit the upper spring plates to the chassis.

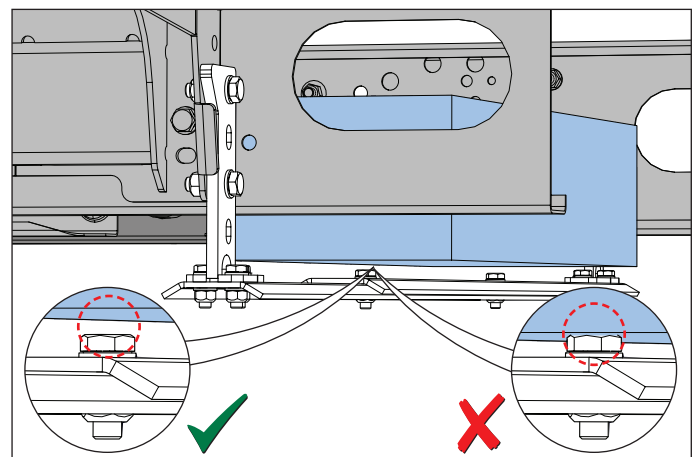
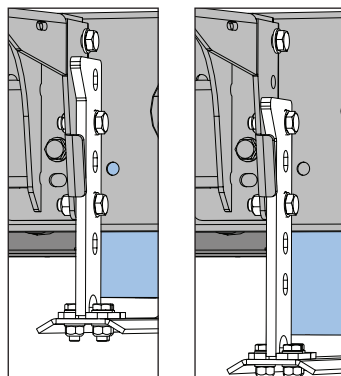
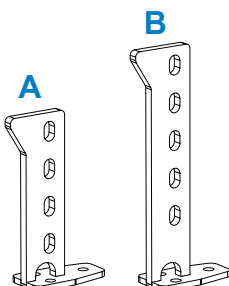
4 x bolt	M12 x 40
8 x washer	M12
4 x steel lock nut	M12



100 Nm



4. Determine the correct position for the cross beam bracket (A or B).

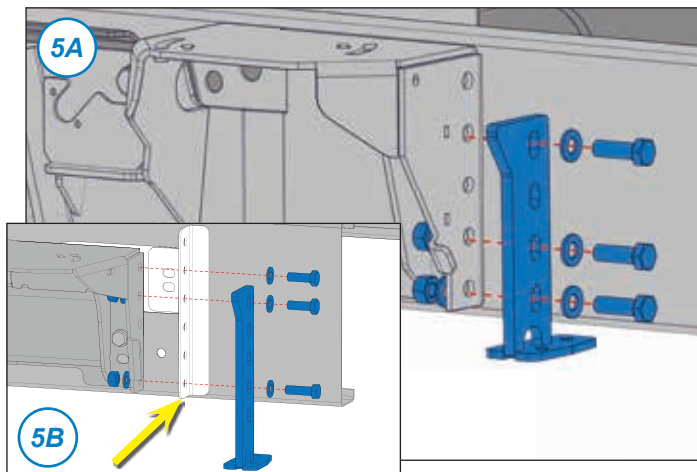


5. Fit the cross beam bracket to the chassis (5A).
Use the extra bracket for chassis height 260 .. 291 mm (5B).

6 x bolt	M12 x 40
12 x washer	M12
6 x steel lock nut	M12



100 Nm

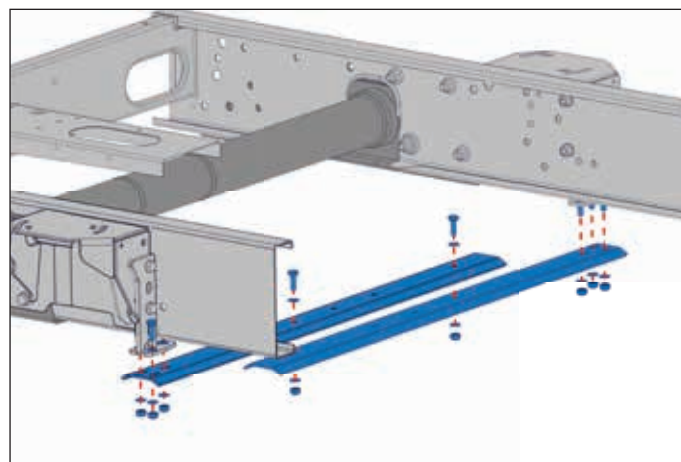


6. Fit the cross beam components together.

2 x bolt	M10 x 30
4 x washer	M10
2 x steel lock nut	M10



60 Nm



7. Fit the cross beam to the chassis.

6 x bolt	M10 x 30
12 x washer	M10
6 x steel lock nut	M10



60 Nm

8. If 34°: Fit the new swing arm. Re-use the seal. Make sure the seal is fitted properly.



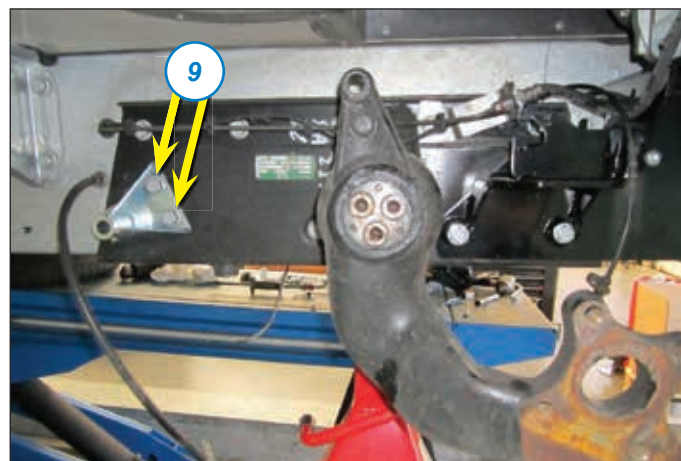
Lubricate the supporting surface for the axle with grease before installation.

9. Fit the new shock absorber brackets

Original fasteners M12



100 Nm



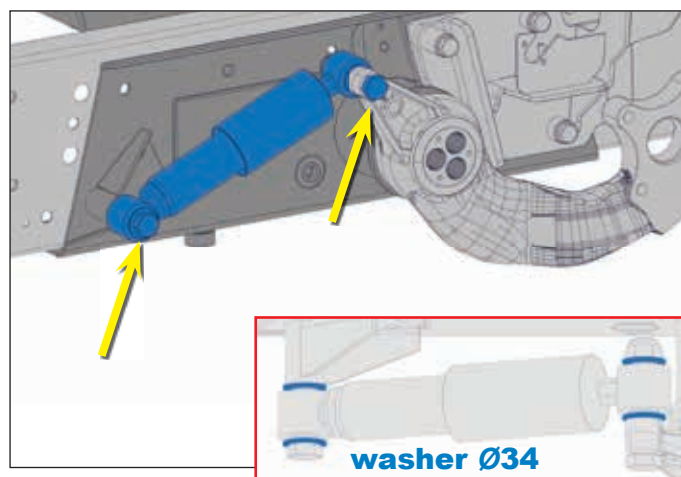
10. Fit the new shock absorbers.

2 x bolt *	M16 x 100
2 x bolt *	M16 x 115
2 x original washer *	M16
4 x lock nut *	M16
8 x washer Ø34	M16

*** If 34°: use original fasteners**

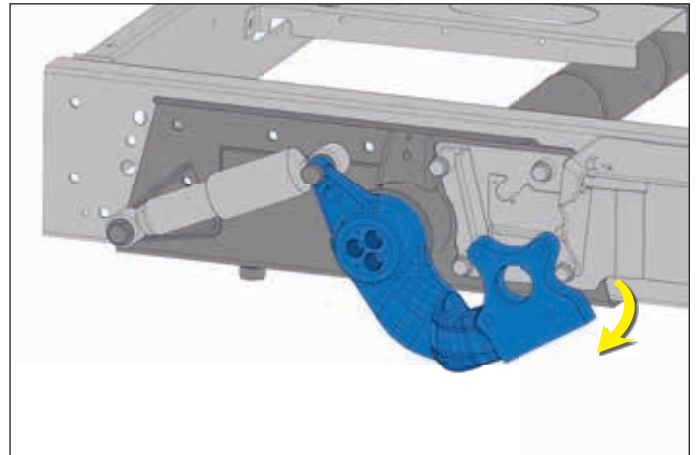


120 Nm

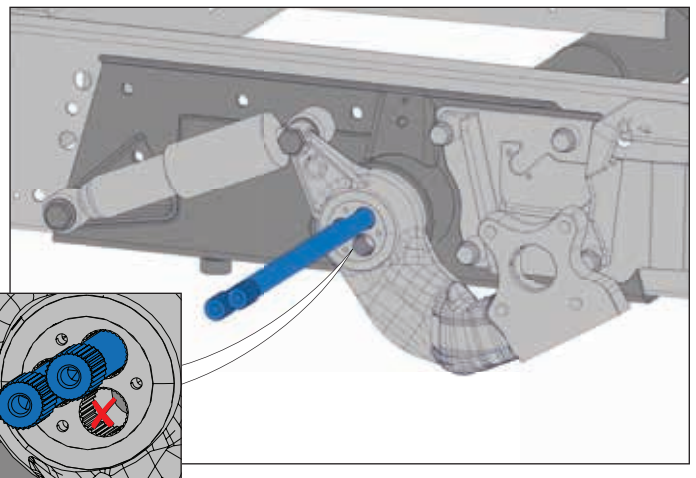


Use the washers Ø34 on both sides of the shock absorber.

11. Lower the axle to the maximum length of the shock absorber.



12. Fit the new, supplied torsion bars (2 per side) in the bottom and top hole.



Note the colour code and apply plenty of grease to the splines and the locking part of the torsion axle.



**Colour code for new torsion bars:
Left = red/white
Right = white/yellow**



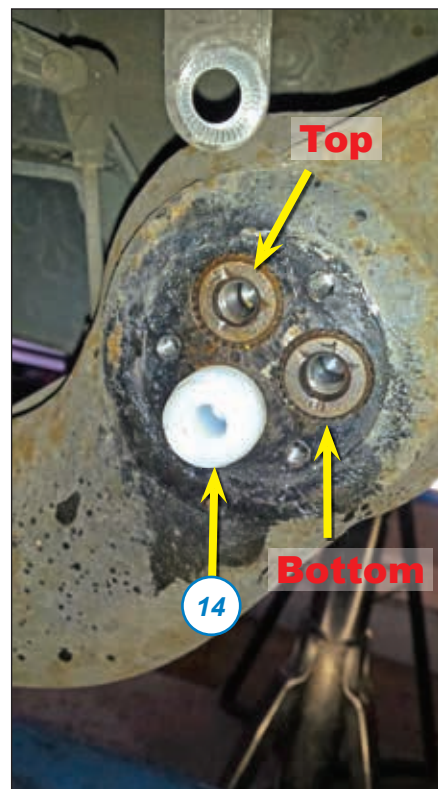
When the torsion bars are installed properly, the end will be flush with the surface of the shaft end.

13. Ensure that the torsion bar is inserted in the corresponding, opposite hole in the axle body.



The new, supplied torsion bars are thinner than the ones that have been removed. Additionally, each new supplied torsion bar has splines at both ends.

14. Using a plastic hammer bang the nylon stop into the unused torsion bar hole on the shaft end.



Ensure that the hole on the nylon stop is on the outside.

15. Fit the original locking pins.

			Vehicle manufacturer's guidelines
--	--	--	--

16. Feel and check that the locking pin drops into the locking slot on the torsion axle.
Check this by ensuring that the torsion bar can no longer be pulled out.

17. Fit the cover using the three M6 bolts and the three M10 bolts.
18. Fit the new hand brake cable.
19. Secure the bolts.

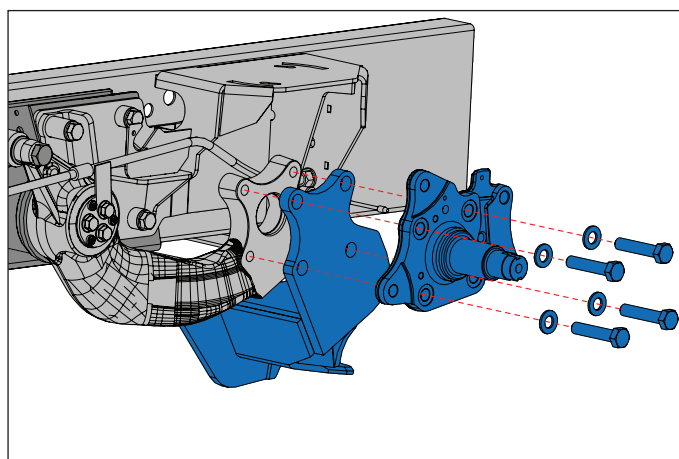
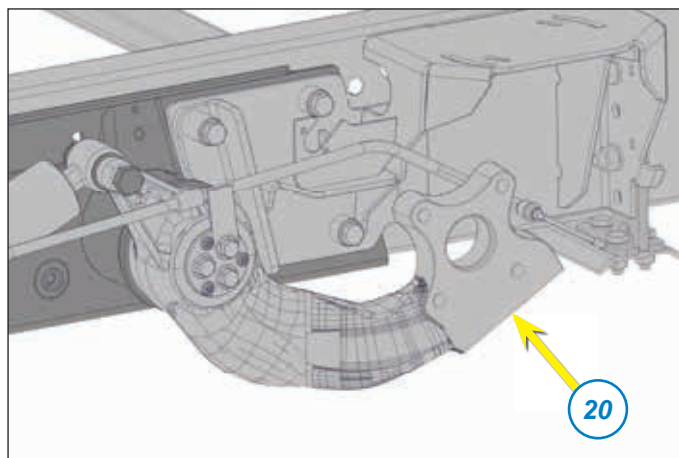
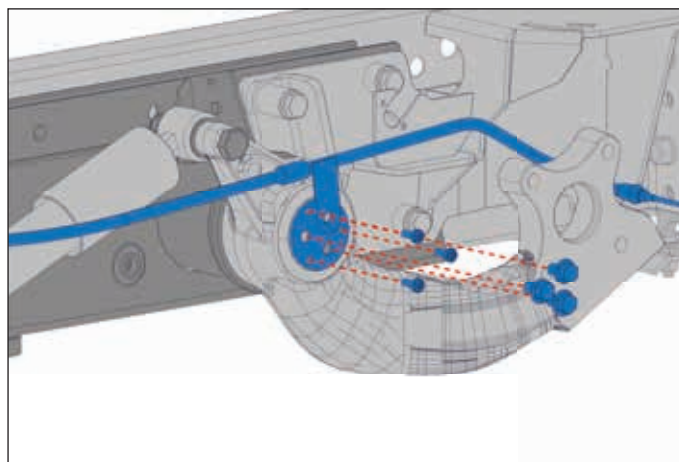
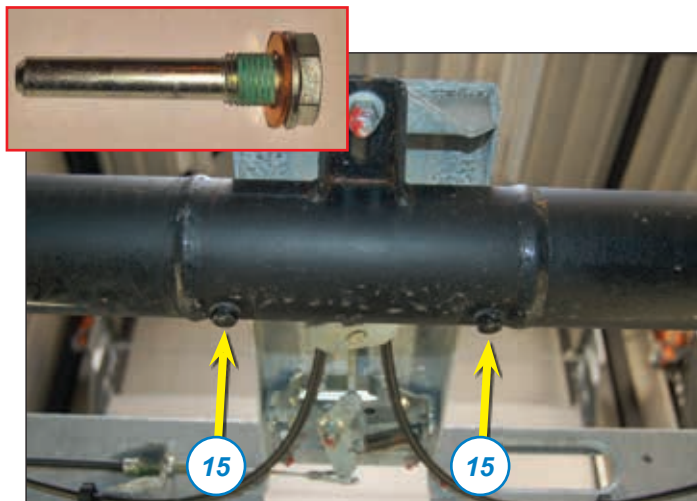
6 x original M10 bolt	
	60 Nm
6 x Taptite bolt	M6 x 16
	8 Nm

	If 34°: continu with chapter 13.
--	---

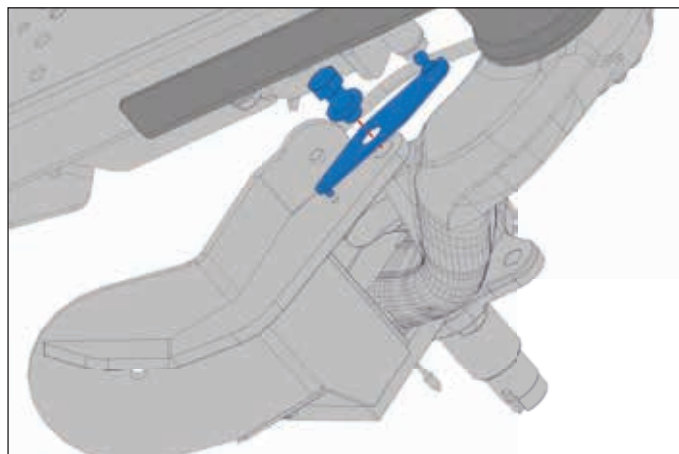
20. Clean and degrease the underside of the swing arm.
21. Apply kit to the underside of the swing arm (contact surface with lower spring plate).



22. Fit the lower spring plate together with the stub axle.

8 x bolt	M14 x 70 x 1,5
8 x washer	M14
	150 Nm

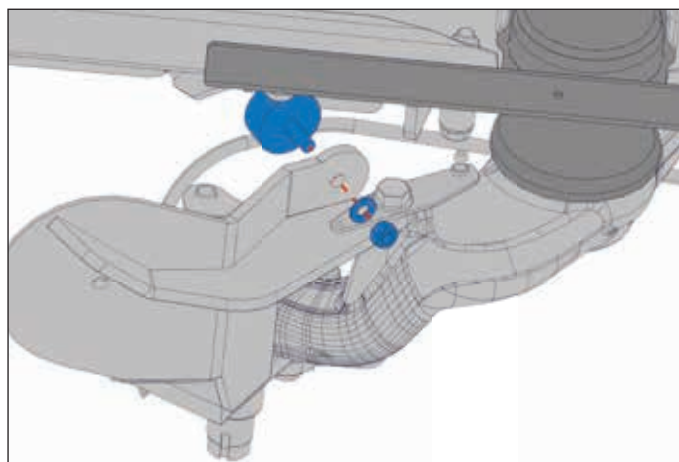


23. Fit the ball-joint brackets to the axle.
The ball-joints must be pointing to the centre of the vehicle.



 <p><i>The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.</i></p>	
2 x bolt	M14 x 30 x 1.5
2 x washer	M14
 <p>120 Nm</p>	


24. Fit the new bump stops.



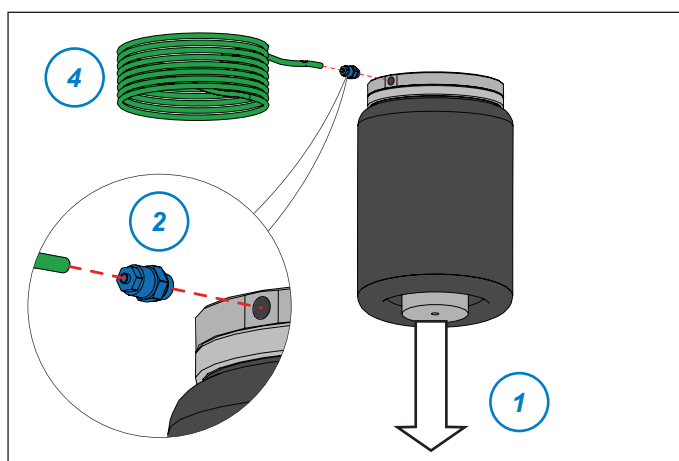
2 x nut	M10
2 x washer	M10
 <p>40 Nm</p>	

5.3 AIR SPRINGS

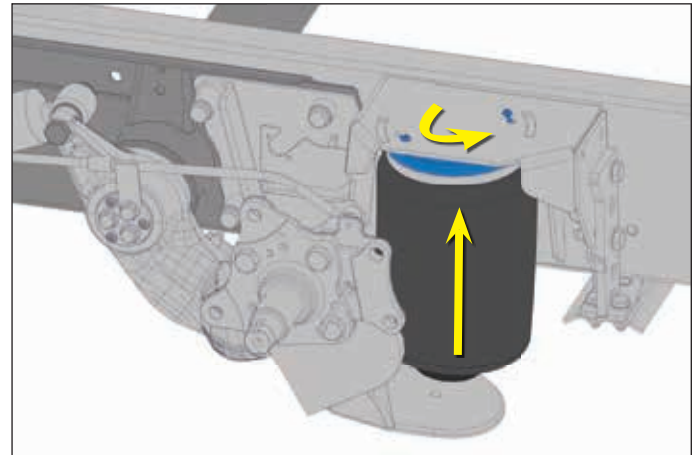
1. Pull out the plug under the air-spring.
2. Fit the air couplings to the air springs.

air coupling
 <p>3 Nm</p>

3. Connect the **black** air tube to the right air spring.
4. Connect the **green** air tube to the left air spring.



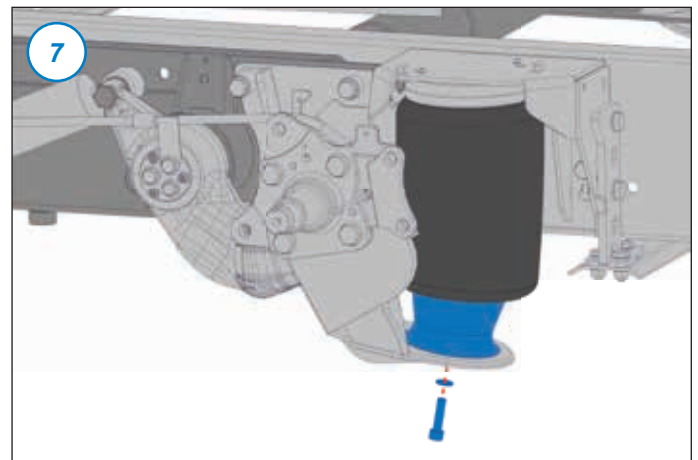
5. Fit the air springs to the upper spring plates.



6. Push the cup around the underside of the air spring.

7. Fit the air springs to the spring plates.

**** Don't secure the air springs yet, only when the air springs are under pressure.**



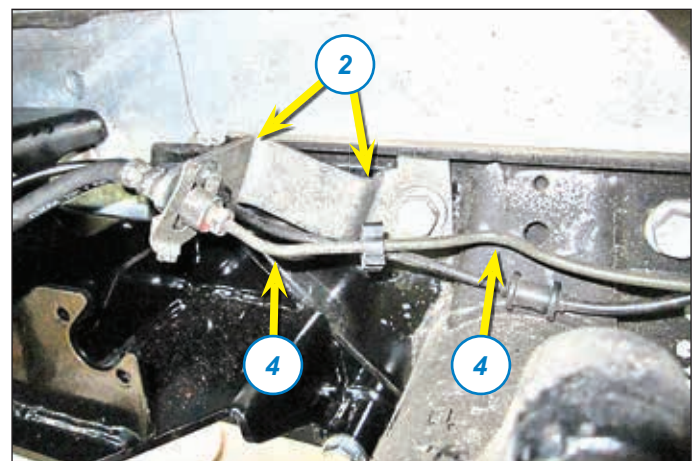
	2 x bolt** 2 x washer	$\frac{3}{8}$" x 1½" UNC M10	
	20 Nm		

5.4 HEIGHT SENSORS

1. Remove the brake line bracket.
2. Bend the brake line bracket.
3. Fit the brake line bracket.
4. Bend the brake line carefully.

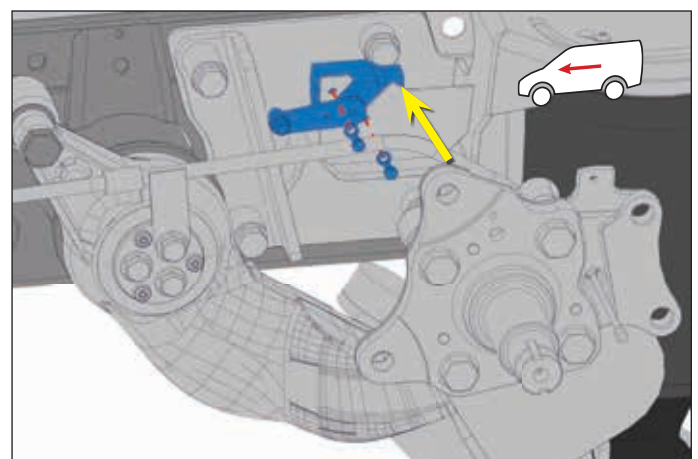
	Ensure that the brake line is not kinked when bending.
--	---

5. Fit the brake line to the brake line bracket.

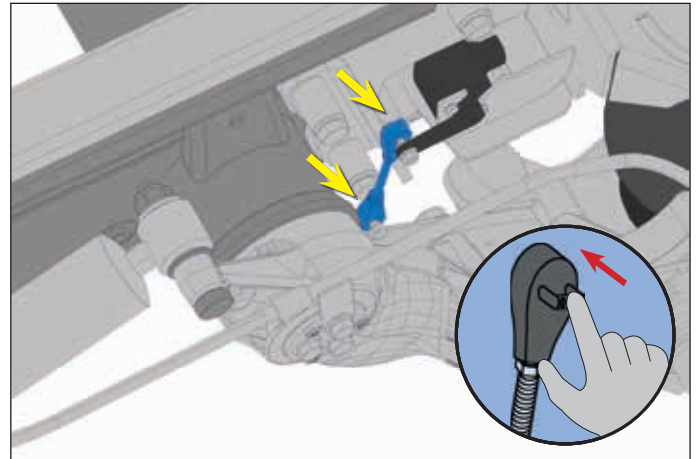


6. Mount the height sensors on the height-sensor brackets.

	The height sensor connector must point towards the rear of the vehicle.
4 x bolt 4 x washer	M5 x 10 M5
	6 Nm



7. Check the length of the height-sensor rods.
- **115 mm** - measured from heart-to-heart.
8. Mount the height-sensor rods to the height sensors.
9. Mount the height-sensor rods to the ball-joint brackets.
10. Secure the height-sensor rods, by pressing the clips.

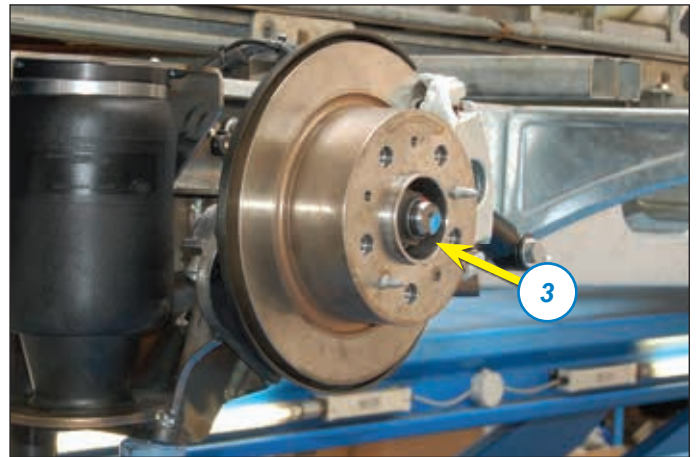


5.5 AXLE PARTS

1. Mount the brake guard.
2. Mount the new handbrake cable.
3. Fit the brake shoes.
4. Fit the wheel bearing¹.

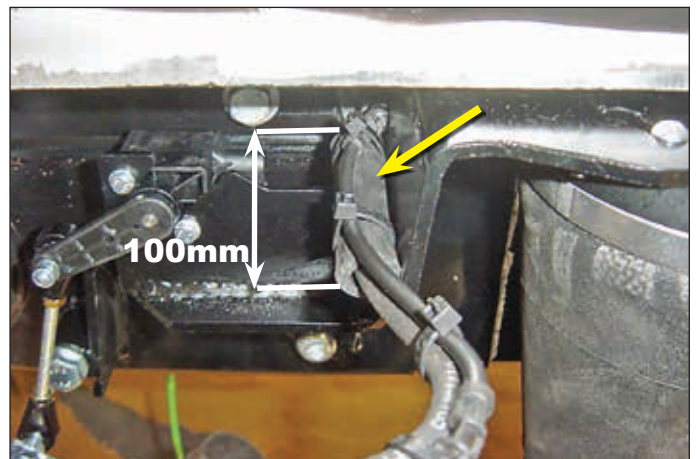
New hub nuts

5. Secure the nut by banging the edge of the nut into the recess using a suitable chisel.
6. Fit the brake disc¹.
7. Fit the brake calliper¹.



¹ **Vehicle manufacturer's guidelines**

8. Mount the cable conduit to the brake lining (2x).
9. Mount the wheels.



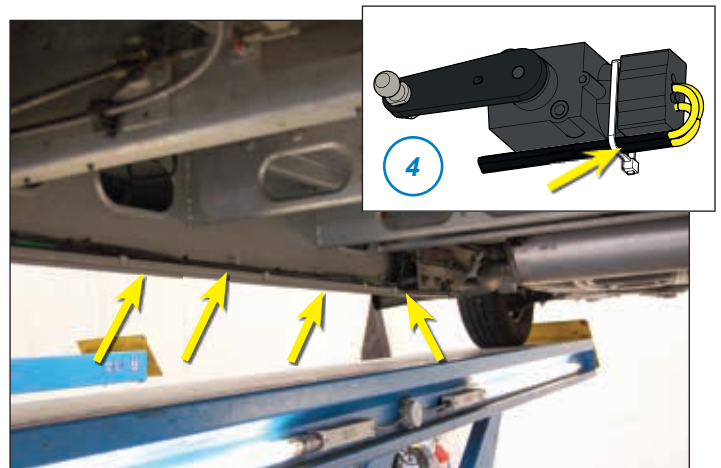
Vehicle manufacturer's guidelines



Lubricate the axleparts after mounting the kit through the grease nipples.

5.6 AIR TUBES

1. Route the air tubes along the left-hand side of the chassis to the compressor box.
2. Connect the height sensor wires at the rear to the connector with the white colour marking.
3. Route the height sensor wires along the air tubes towards the rear.
4. Connect the cables to the height sensors. Note the colour markings.

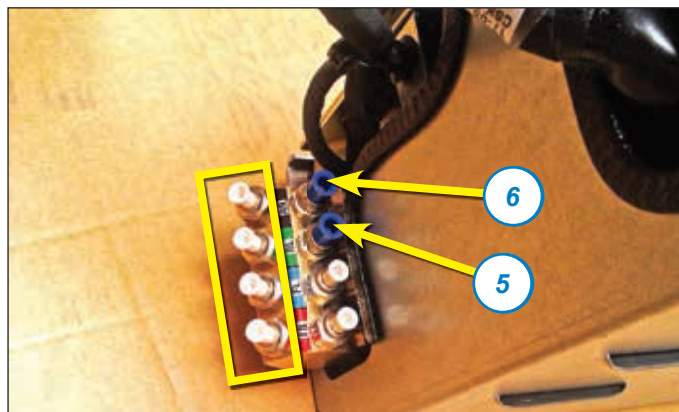


Use sufficient tie-wraps to secure the cables.

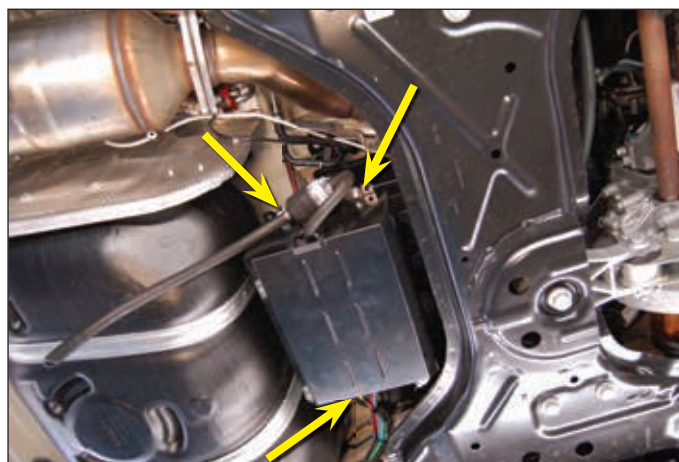


Never attach tubes, wires or other parts to the vehicle's brake lines.

5. Fit the **green** air tube to the middle air coupling on the junction block.
6. Fit the **black** air tube to the middle air coupling on the junction block.
7. Ensure that the colour markings match.
8. Seal the unused air couplings with the supplied end plugs.
9. If kit 105 18 08 4XX for the front and rear axle has been ordered, continue from chapter 7.
10. Fit the cover to the compressor box.



AIR COUPLINGS FOR EMERGENCY VALVE KIT (OPTIONAL)



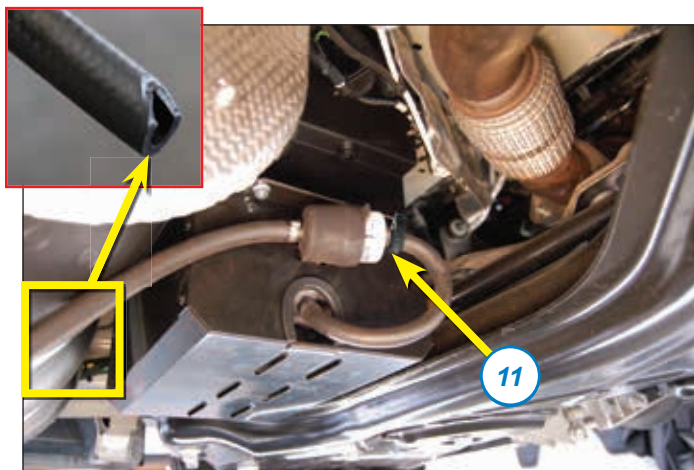
3 x flange lock nut

M6

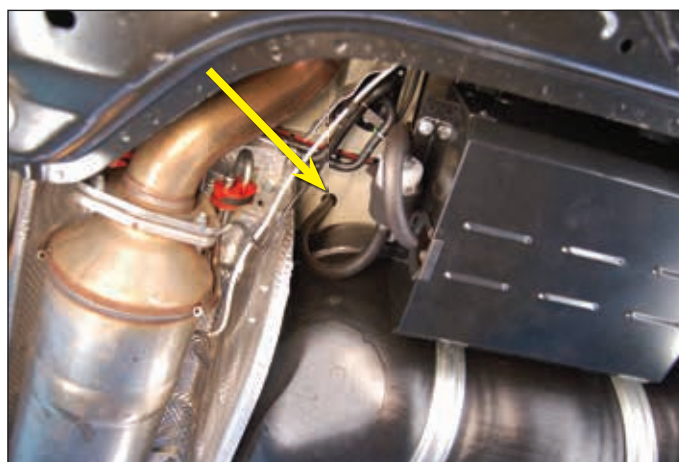


8 Nm

11. Fit the suction filter to the inlet line.



12. Fit the rubber grommet to the chassis.
13. Route the inlet line with the rubber grommet into the chassis.



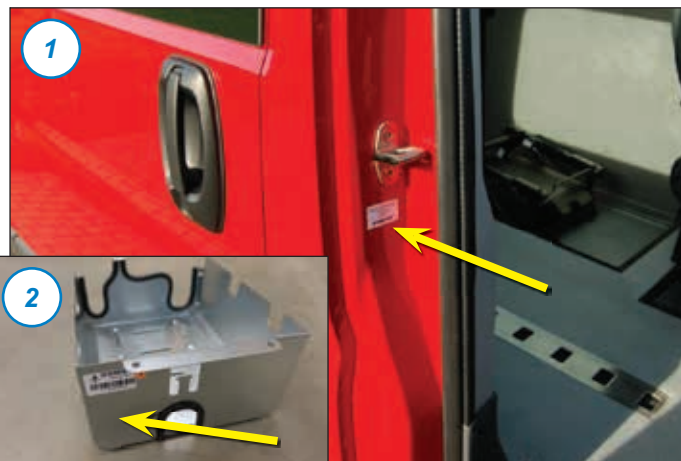
5.7 WARRANTY STICKERS

1. Place the warranty stickers **A + B** in the B-pillar on the passenger side.
2. Apply the protective film over the stickers.
3. Affix sticker **A** to the compressor box next to the part number sticker.

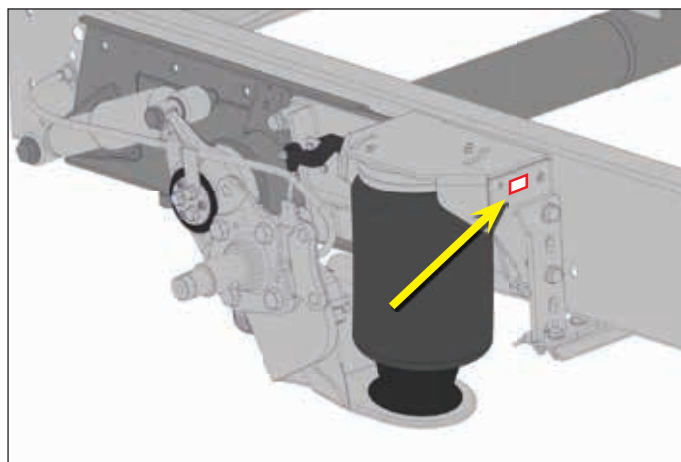
A



B



4. Place sticker **B** on the upper spring-plate.
5. Apply the protective film over the stickers.



When kit 105 18 08 20X or 105180821X for the rear axle is ordered, continue with chapter 8 Calibration.

When kit 105 18 07 4XX for the front and rear axle is ordered, continue with chapter 7.

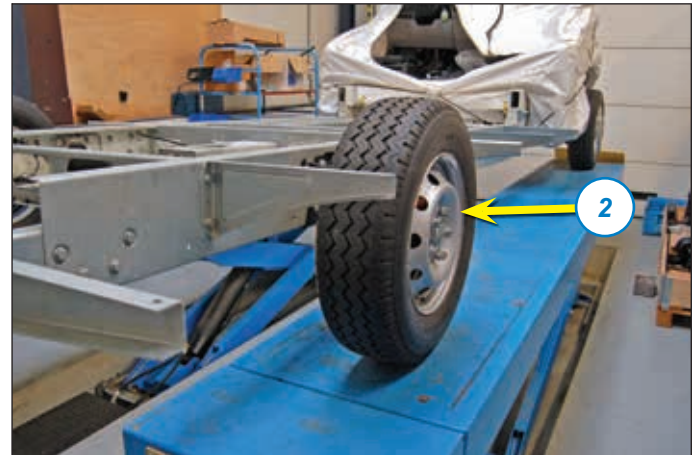
6. MOUNTING THE AIR SUSPENSION FOR THE REAR AXLE WITH A 6X2 VEHICLE



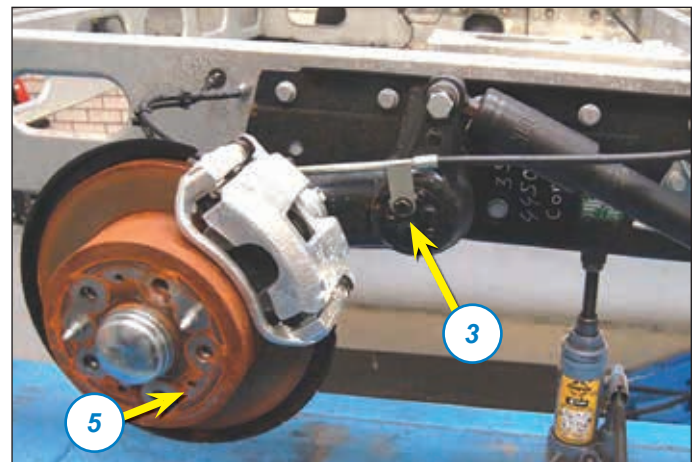
All actions in this chapter should be performed on both rear axles; axle 2 and 3, unless expressly stated otherwise.

6.1 PREPARATIONS

1. Support the vehicle and the axle properly.
2. Remove the wheels.



3. Remove the handbrake cable brackets.
4. Remove the brake calliper in one piece.
5. Remove the brake disc.

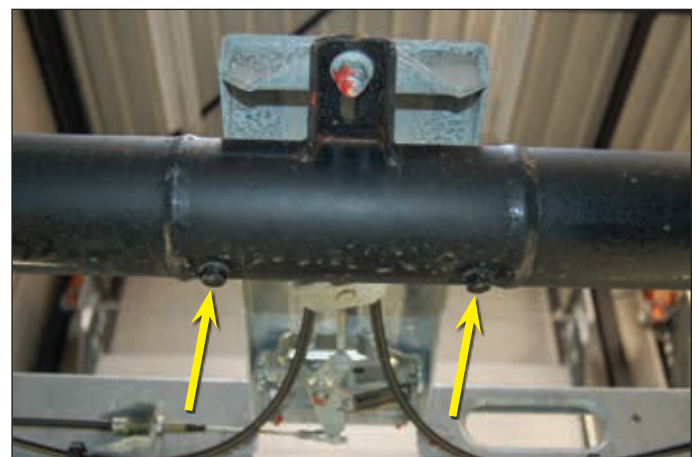


Avoid tension in the brake line.

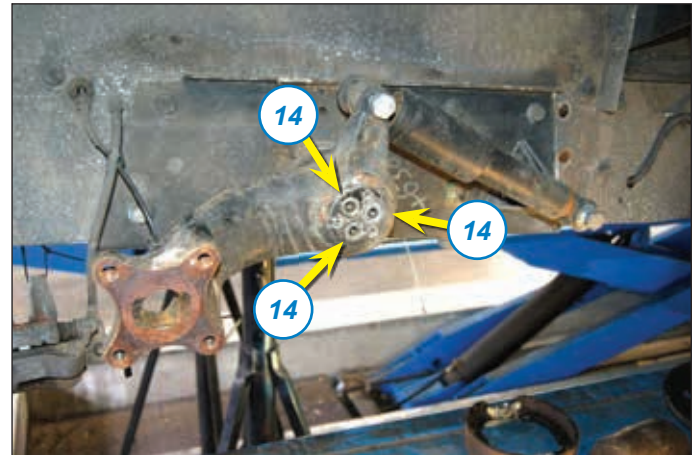
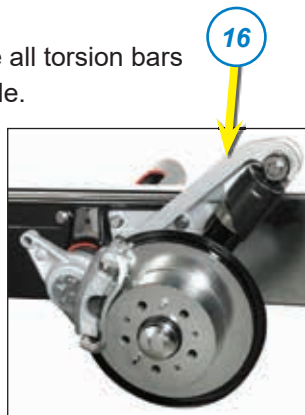
6. Remove the wheel bearing.
7. Remove the handbrake cable
8. Remove the brake mechanism.
9. Remove the brake guard.
10. Remove the stub axle.



11. Remove the marked bolts.



12. Remove the bolts.
13. Remove the plate.
14. Use a pull-tool to remove all torsion bars from both sides of the axle.
15. Remove the shock absorbers.
16. Remove the shock absorber brackets



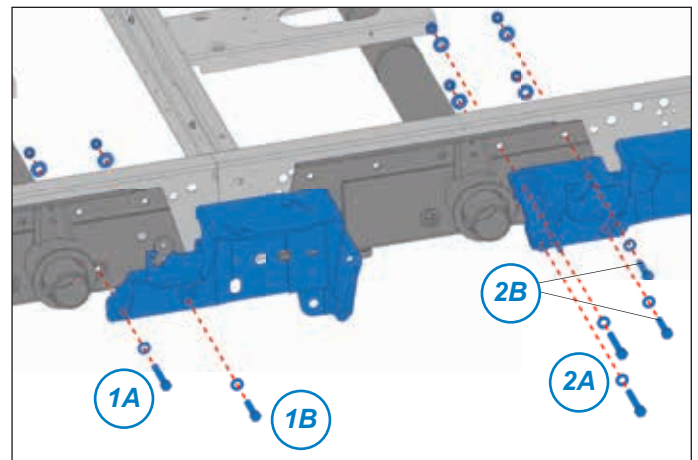
6.2 SPRING PLATES

1. Mount the upper spring-plates (with the fixing point of the rear shock absorber) to the chassis of axle 2 with the front bolts.
2. Mount the other upper spring-plates to the chassis of axle 3 with the front bolts.

6 x bolt (1A, 2A)	M12 x 80
6 x bolt (1B, 2B)	M12 x 55
12 x steel lock nut	M12
12 x washer	M12
12 x original washer $\varnothing 30 \times 4$	



100 Nm

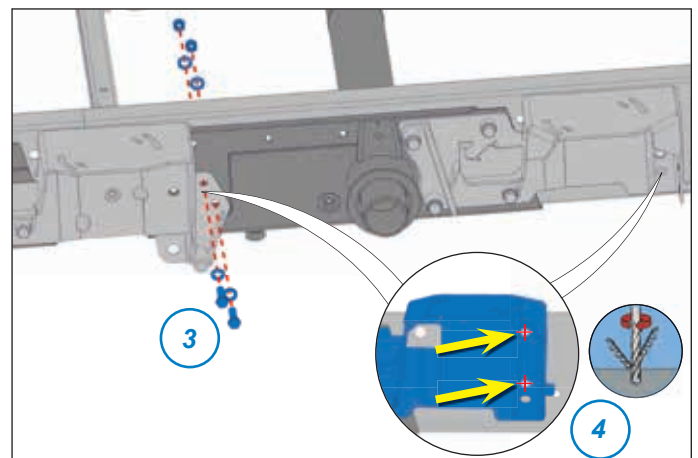


3. Fit the rear bolts at axle 2.

4 x bolt	M12 x 40
8 x washer	M12
4 x steel lock nut	M12



100 Nm



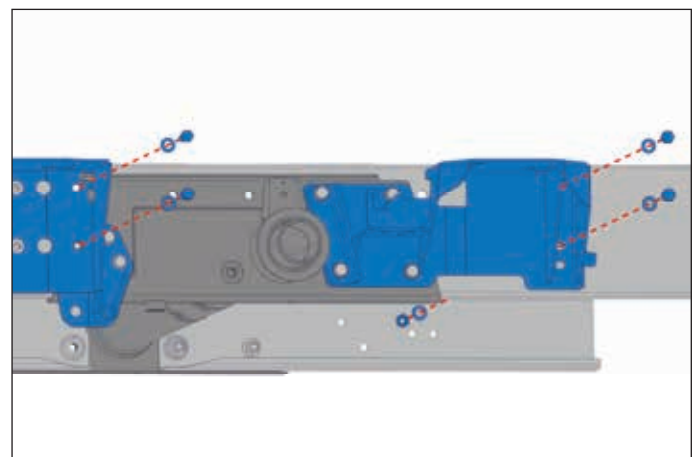
4. Drill $\varnothing 13$ mm holes at the indicated place.

5. Using the rearmost bolts, fit the upper spring plates to the chassis.

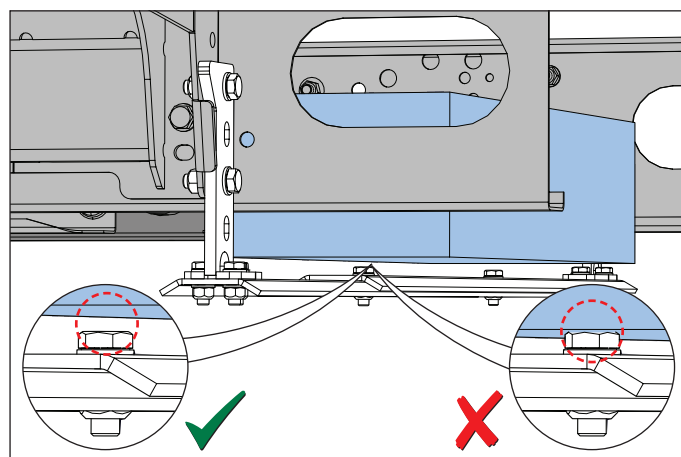
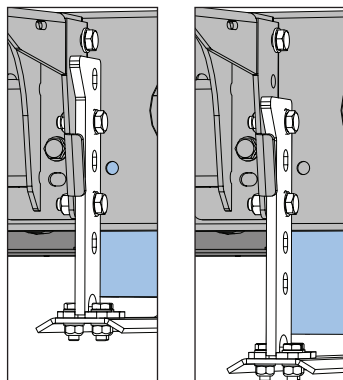
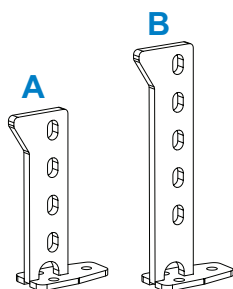
8 x bolt	M12 x 40
16 x washer	M12
8 x steel lock nut	M12



100 Nm



6. Determine the correct position for the cross beam bracket (**A** or **B**).

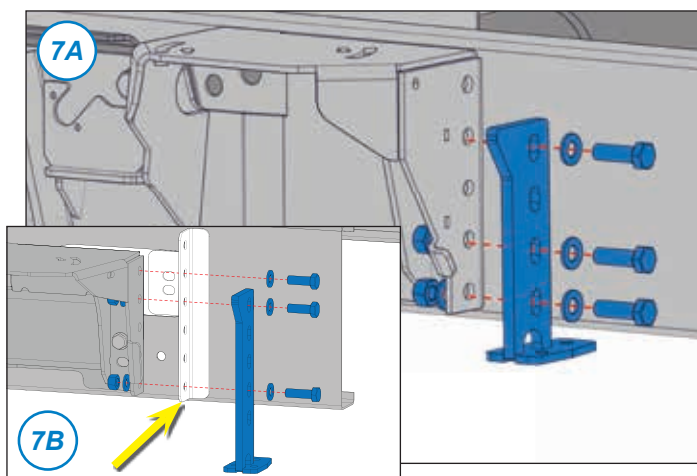


7. Fit the cross beam bracket to the chassis (**7A**).
Use the extra bracket for chassis height 260 .. 291 mm (**7B**).

6 x bolt	M12 x 40
12 x washer	M12
6 x steel lock nut	M12



100 Nm

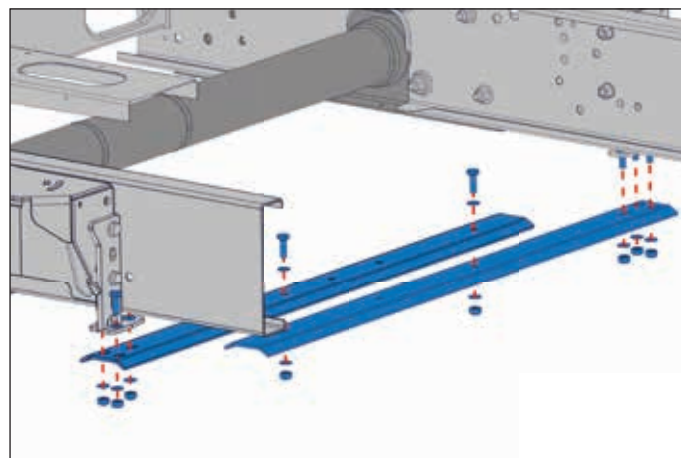


8. Fit the cross beam components together.

2 x bolt	M10 x 30
4 x washer	M10
2 x steel lock nut	M10



60 Nm



9. Fit the cross beam to the chassis.

6 x bolt	M10 x 30
12 x washer	M10
6 x steel lock nut	M10



60 Nm

10. Fit the new shock absorber brackets of axle 2.

Original fasteners **M12**



100 Nm



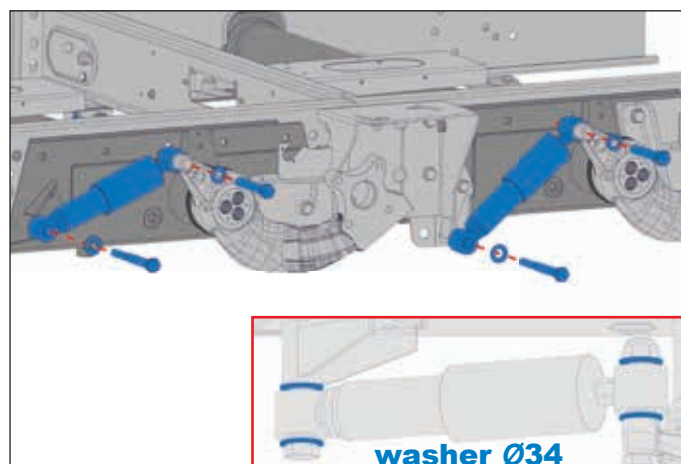
11. Fit the new shock absorbers. The shock absorber of axle 3 is fitted to the upper spring plates of axle 2.

4 x bolt	M16 x 100
4 x bolt	M16 x 115
4 x original washer	M16
8 x lock nut *	M16
16 x washer Ø34	M16

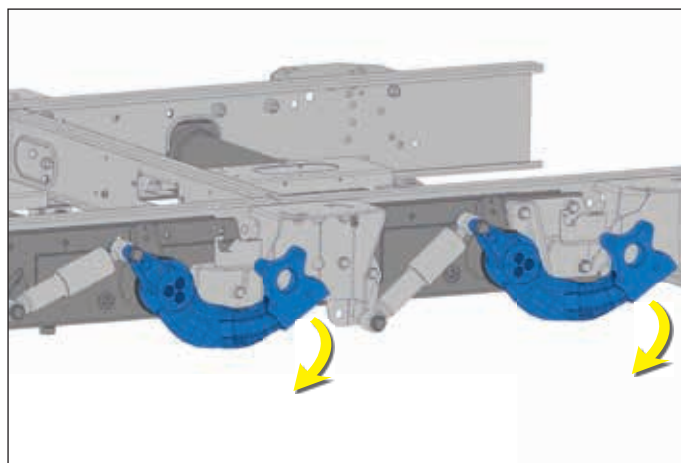


120 Nm

Use the washers Ø34 on both sides of the shock absorber.



12. Lower the axle to the maximum length of the shock absorber.



13. Fit the new, supplied torsion bars (2x 2 per side) in the bottom and top hole.



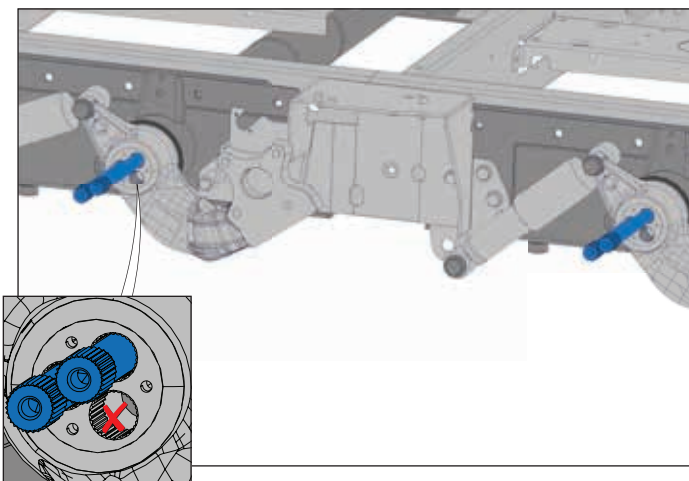
Note the colour code and apply plenty of grease to the splines and the locking part of the torsion axle.



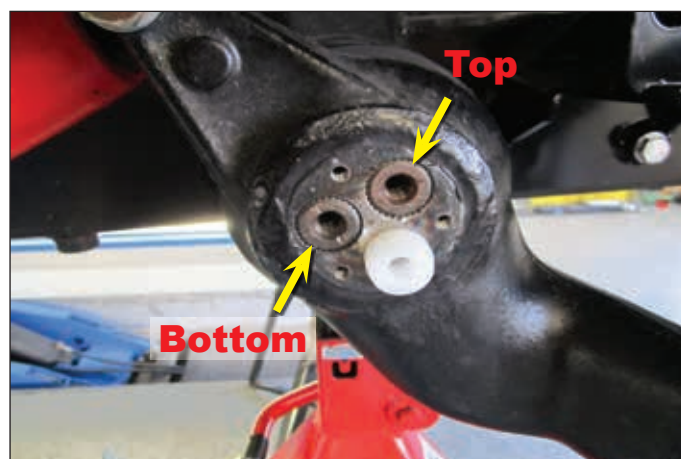
Colour code for new torsion bars:
Left = red/white
Right = white/yellow



When the torsion bars are installed properly, the end will be flush with the surface of the shaft end.



14. Ensure that the torsion bar is inserted in the corresponding, opposite hole in the axle body.





The new, supplied torsion bars are thinner than the ones that have been removed. Additionally, each new supplied torsion bar has splines at both ends.

15. Using a plastic hammer bang the nylon stop into the unused torsion bar hole on the shaft end.



Ensure that the hole on the nylon stop is on the outside.

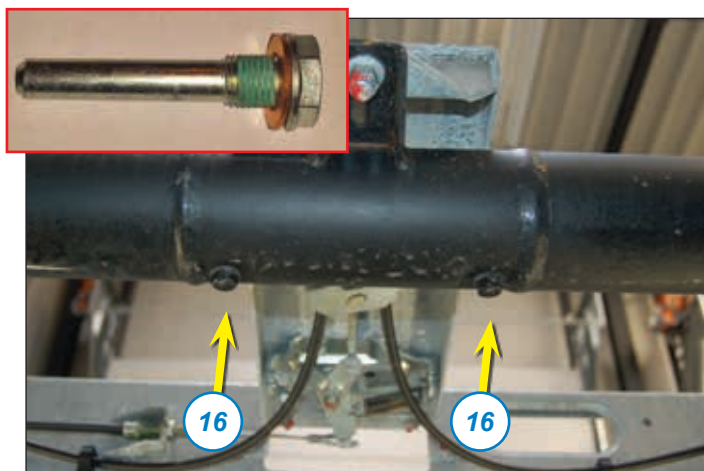


16. Fit the original locking pins.

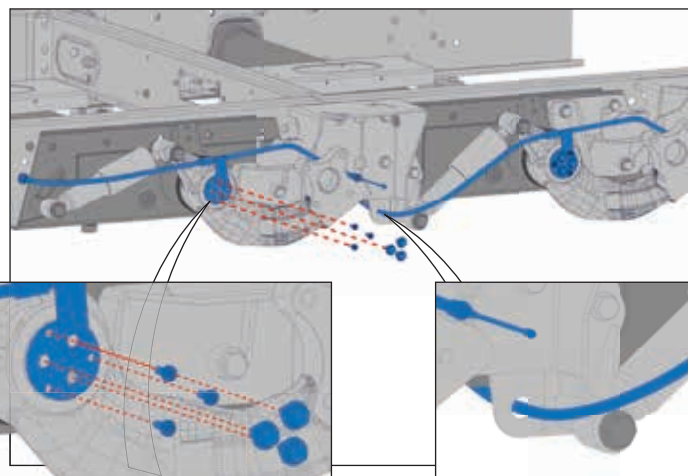


Vehicle manufacturer's guidelines

17. Feel and check that the locking pin drops into the locking slot on the torsion axle. Check this by ensuring that the torsion bar can no longer be pulled out.



18. Fit the cover using the three M6 bolts and the three M10 bolts.
19. Mount the new hand brake cable.
20. Secure the bolts.



12 x original M10 bolt



60 Nm

12 x Taptite bolt

M6 x 16



8 Nm

21. Mount the new handbrake cable for axle 3 with the distance block and pipe clamp to the chassis.

2 x bolt

M6 x 70

2 x washer

M6

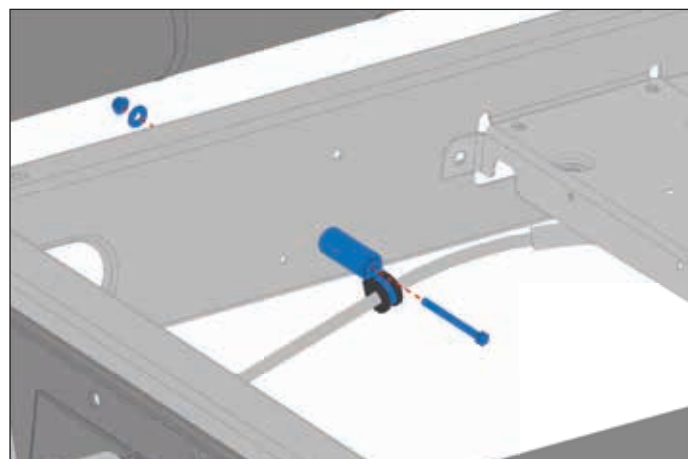
2 x distance bush $\varnothing 22 \times 50$

2 x lock nut

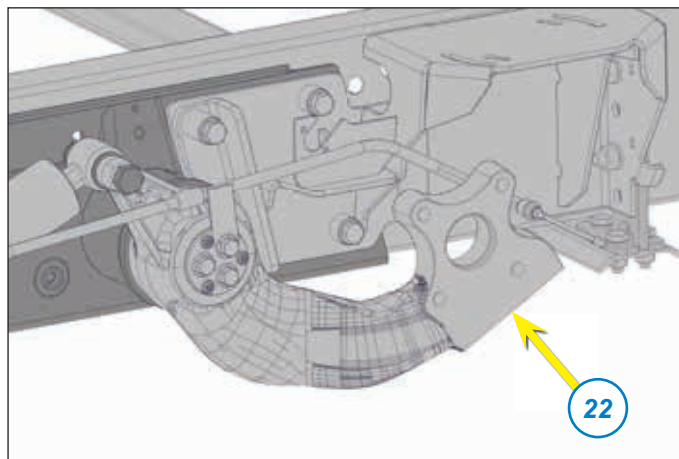
M6



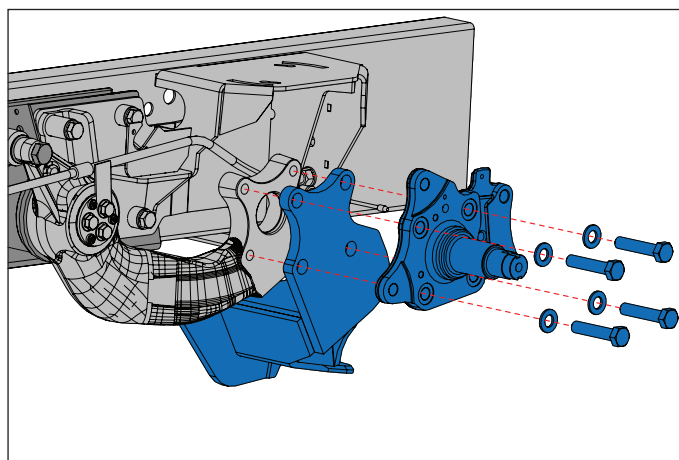
8 Nm



22. Clean and degrease the underside of the swing arm.
23. Apply kit to the underside of the swing arm (contact surface with lower spring plate).

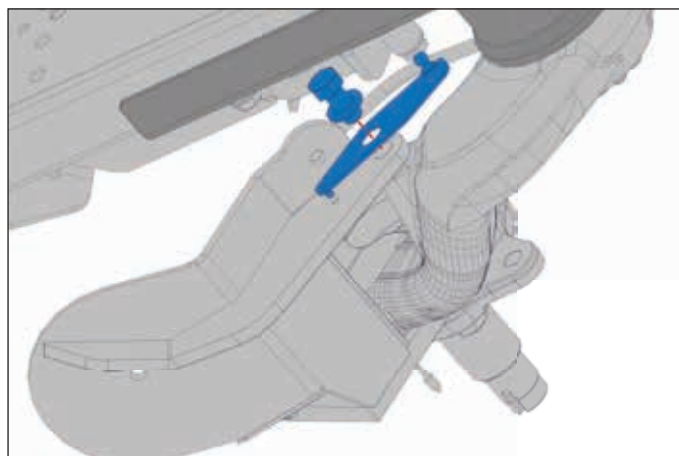


24. Fit the lower spring plate together with the stub axle.



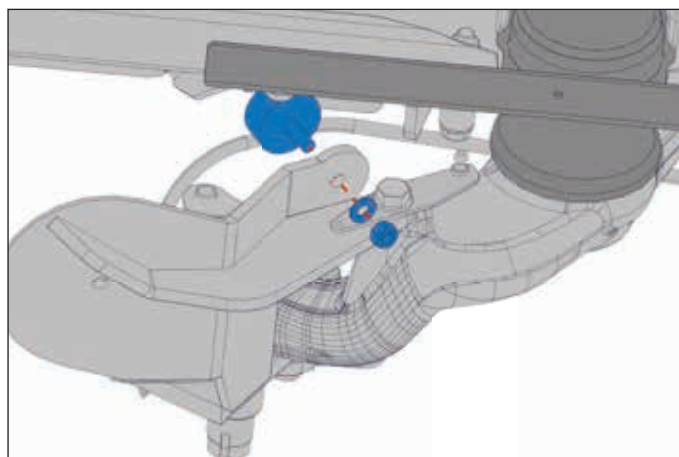
	<p>The colour marker shows, which part is for the left or right. See 'fitting regulations'.</p>
<p>16 x bolt 16 x washer</p>	<p>M14 x 70 x 1,5 M14</p>
<p> 150 Nm</p>	

25. Mount the ball-joint brackets to axle 2.
26. The ball-joints must be pointing to the centre of the vehicle.



	<p>The colour marker shows, which bracket is for the left or right. See 'fitting regulations'.</p>
<p>2 x bolt 2 x washer</p>	<p>M14 x 30 x 1.5 M14</p>
<p> 120 Nm</p>	

27. Mount the new bump stops.



<p>4 x nut 4 x washer</p>	<p>M10 M10</p>
<p> 40 Nm</p>	

6.3 AIR SPRINGS

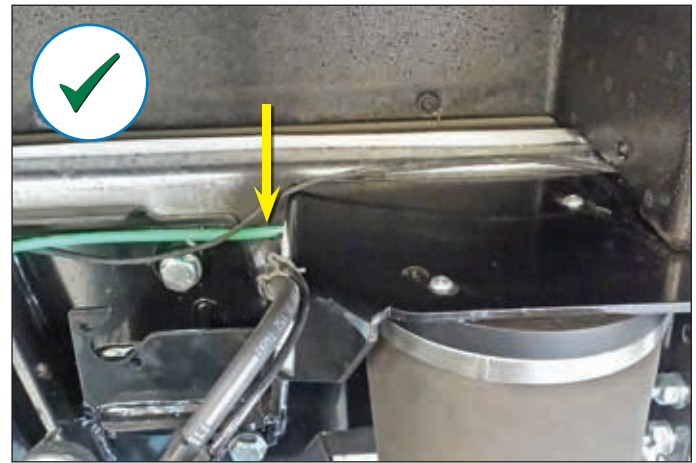
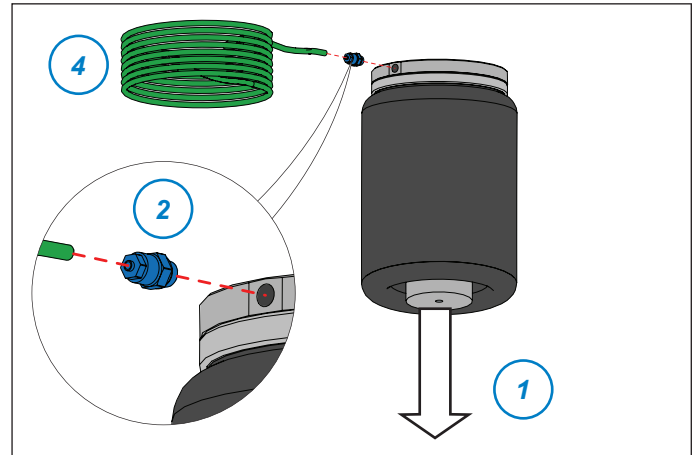
1. Pull the plug out from the underside of the air spring.
2. Mount the air couplings to the air springs.

air coupling

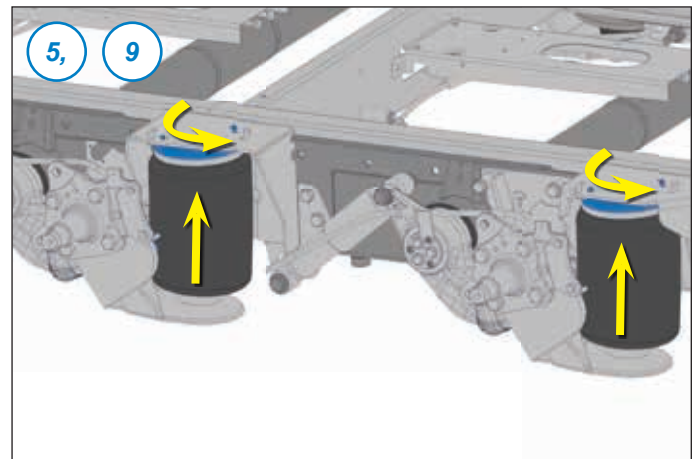


3 Nm

3. Connect the **black** air tube to the right air spring of axle 3.
4. Connect the **green** air tube to the left air spring of axle 3.



5. Mount the air springs to the upper spring-plate of axle 3.
6. Lead the air tubes to axle 2 and connect the T-couplings.
7. Connect the **black** air tube to the right air spring of axle 2.
8. Connect the **green** air tube to the left air spring of axle 2.
9. Mount the air springs to the upper spring-plate of axle 2.
10. Lead the air tubes to the T-coupling and connect them to the T-coupling.



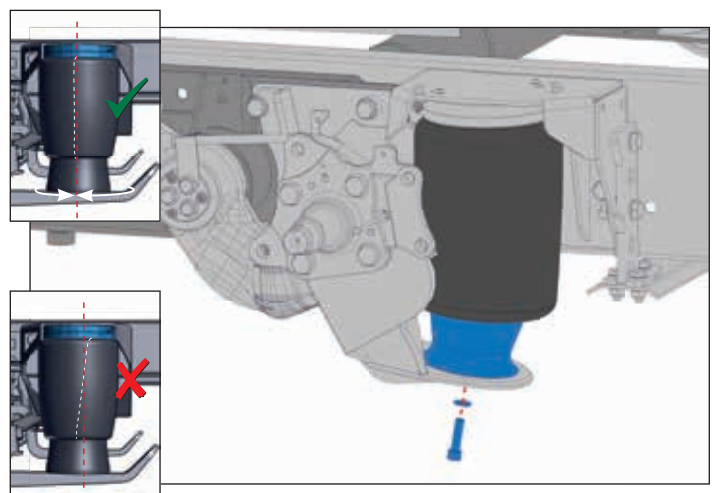
11. Mount the piston to the underside of the air spring.
12. Mount the air springs to the lower spring-plates.
**** Don't secure the air springs yet, only when the air springs are under pressure.**

4 x bolt**
4 x washer

$\frac{3}{8}$ " x 1 $\frac{1}{2}$ " UNC
M10



20 Nm



6.4 HEIGHT SENSORS

1. Remove the brake line bracket.
2. Bend the brake line bracket.
3. Fit the brake line bracket.
4. Bend the brake line carefully.



Ensure that the brake line is not kinked when bending.

5. Fit the brake line to the brake line bracket.
6. Mount the height sensors on the height-sensor brackets of axle 2. Pay attention to the direction of the connector.

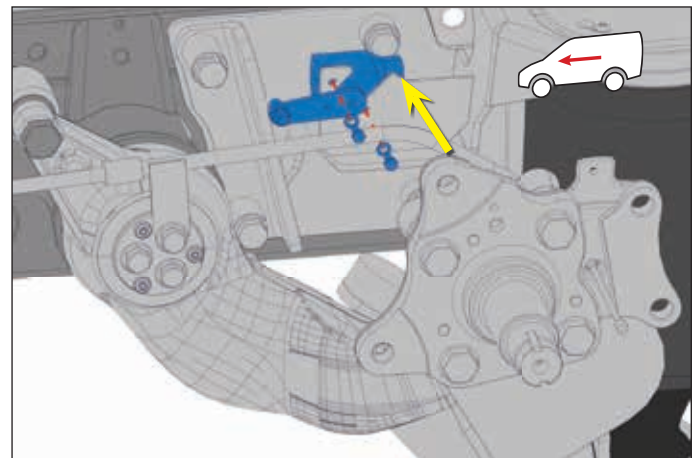
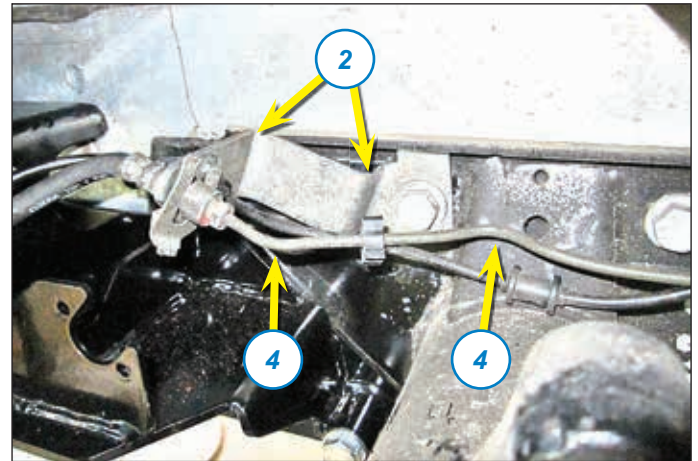
4 x bolt	M5 x 10
4 x washer	M5



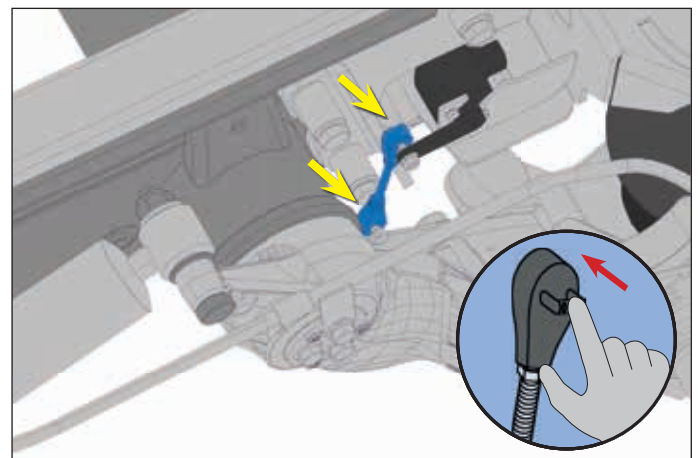
6 Nm



The connector of the height sensor should be pointing to the back of the vehicle.



7. Check the length of the height-sensor rods.
- **115mm** - measured from heart-to-heart.
8. Mount the height-sensor rods to the height sensors.
9. Mount the height-sensor rods to the ball-joint brackets.
10. Secure the height-sensor rods, by pressing the clips.



6.5 AXLE PARTS

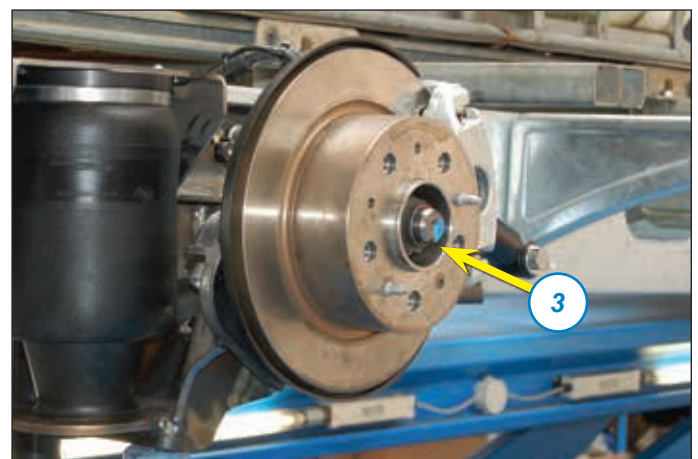
1. Mount the brake guard.
2. Mount the new handbrake cable.
3. Fit the brake shoes.
4. Fit the wheel bearing¹.

New hub nuts

5. Secure the nut by banging the edge of the nut into the recess using a suitable chisel.
6. Fit the brake disc¹.
7. Fit the brake calliper¹.

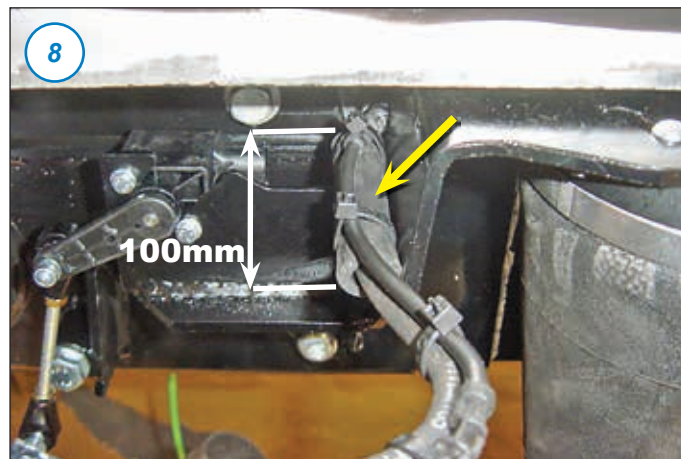


¹ Vehicle manufacturer's guidelines



8. Mount the cable conduit to the brake lining (4x).
9. Mount the wheels.

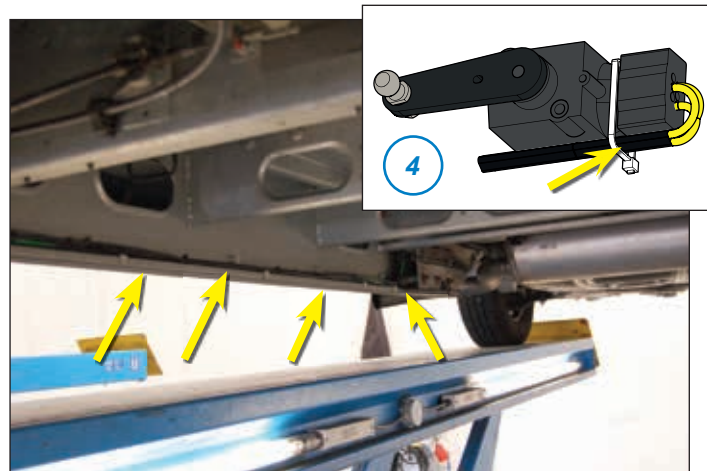
		Vehicle manufacturer's guidelines
	Lubricate the axle parts after mounting the kit through the grease nipples.	



6.6 AIR TUBES

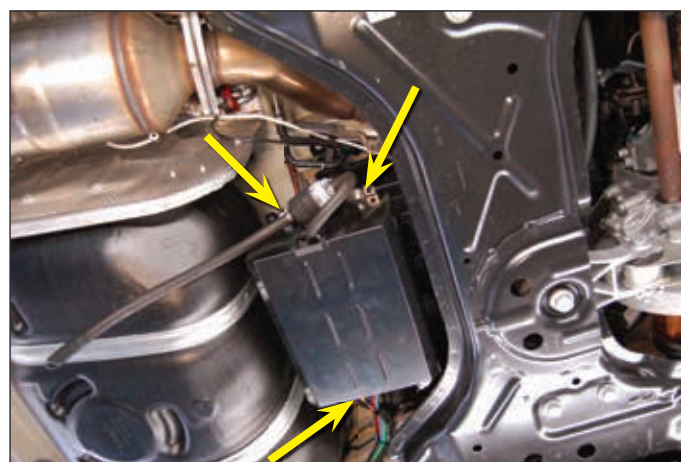
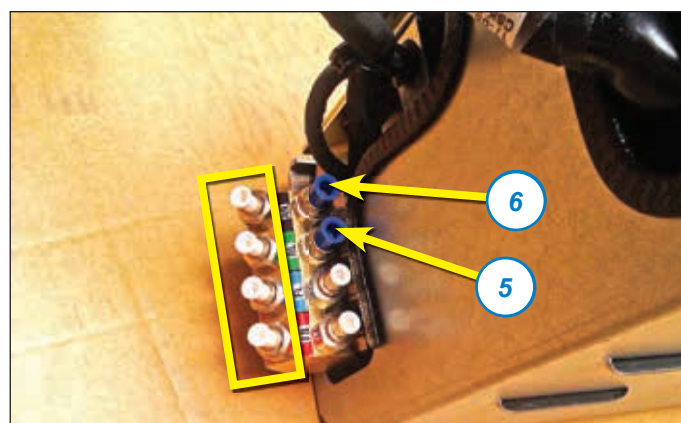
1. Lead the air tubes along the left side of the chassis to the compressor box.
2. Connect the rear axle height-sensor cable to the connector with the white mark.
3. Lead the height-sensor cables along the air tubes to the rear height sensors.
4. Connect the connectors to the heightsensors.

	Use sufficient tie-wraps to secure the cables.
--	---



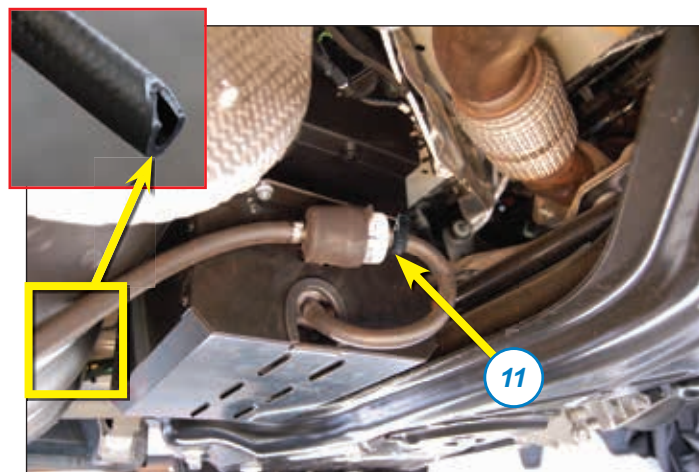
	Never attach tubes, wires or other parts to the vehicle's brake lines.
--	---

5. Fit the **green** air tube to the middle air coupling on the junction block.
6. Fit the **black** air tube to the middle air coupling on the junction block.
7. Ensure that the colour markings match.
8. Seal the unused air couplings with the supplied end plugs.
9. If kit 105 18 08 4XX for the front and rear axle has been ordered, continue from chapter 7.
10. Fit the cover to the compressor box.

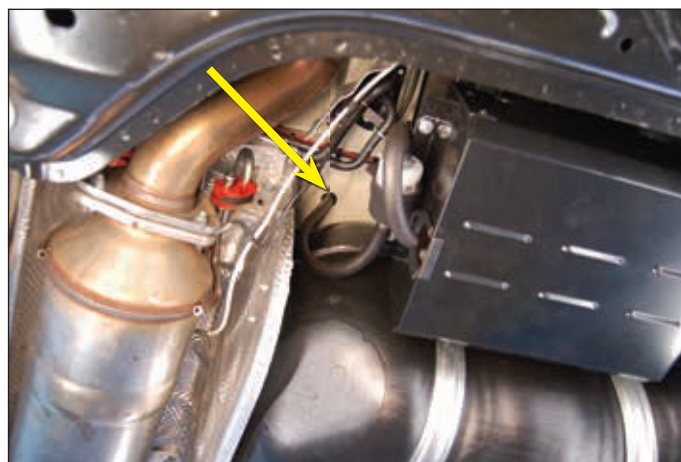


3 x flange lock nut	M6
	8 Nm

11. Fit the suction filter to the inlet line.



12. Fit the rubber grommet to the chassis.
13. Route the inlet line with the rubber grommet into the chassis.



6.7 WARRANTY STICKERS

1. Place the warranty stickers **A+B** in the B-pillar on the passenger side.
2. Apply the protective film over the stickers.
3. Affix sticker **A** to the compressor box next to the part number sticker.

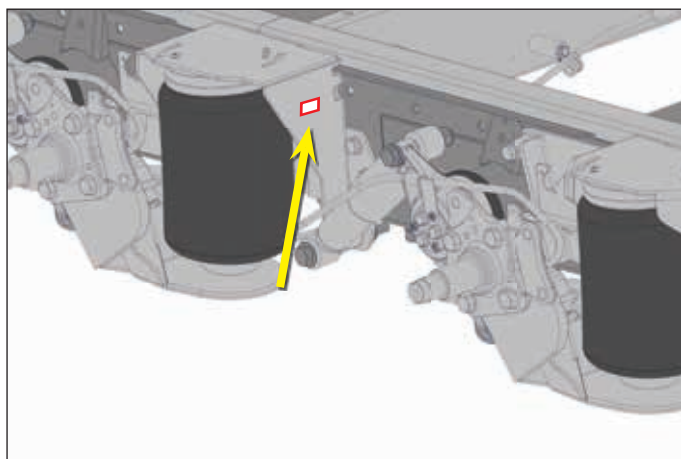
A



B



4. Place sticker **B** on the upper spring-plate.
5. Apply the protective film over the stickers.



When kit 105 18 08 20X or 105 18 08 21X for the rear axle is ordered, continue with chapter 8 Calibration.

When kit 105 18 08 4XX for the front and rear axle is ordered, continue with chapter 7.

7. FITTING THE AIR SUSPENSION KIT TO THE FRONT AXLE

7.1 PREPARATIONS

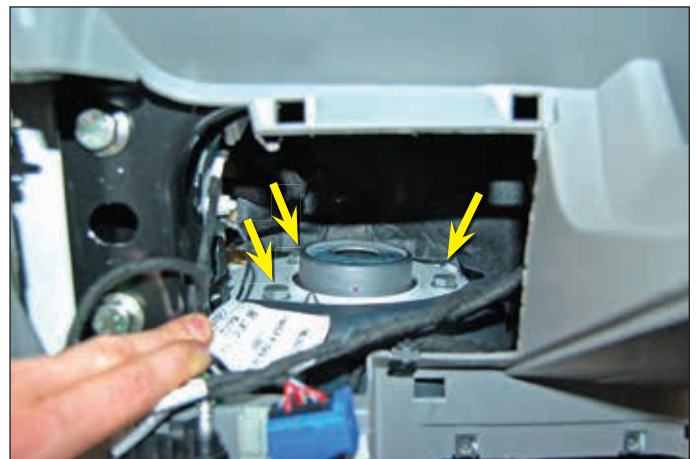
1. Support the vehicle and the axle properly.
2. Remove the wheels.



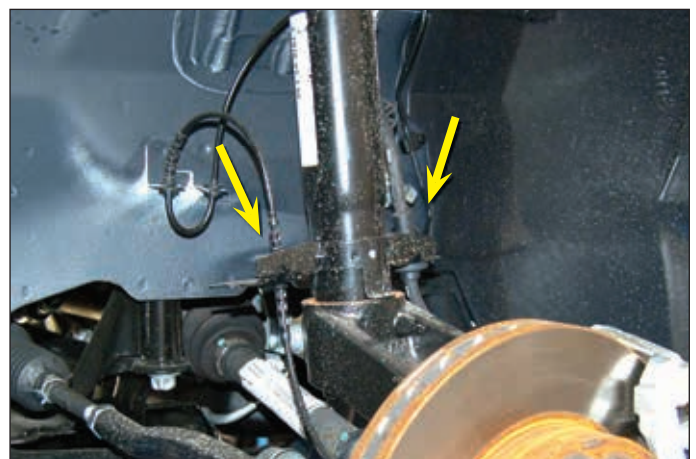
3. Remove the plastic cover.
4. Do this on both sides.
5. Remove the fuse box.



6. Remove the insulating material.
7. Undo the bolts, leave 1 bolt loosely in place (a few turns).



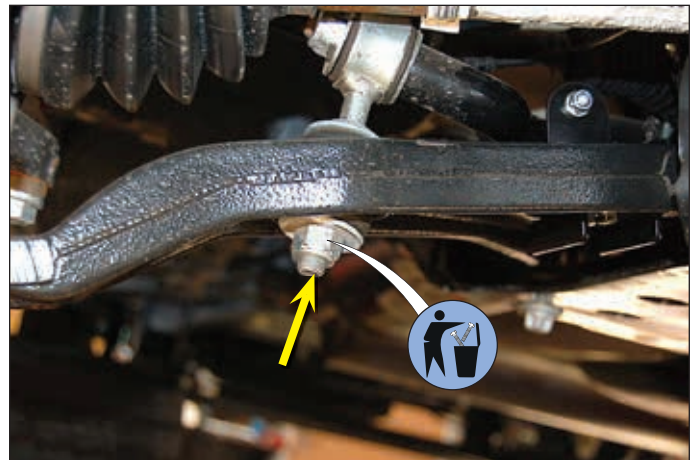
8. Remove the tubes from the bracket.



9. Undo the bolts.
Bolts are reused, lock nuts are not.

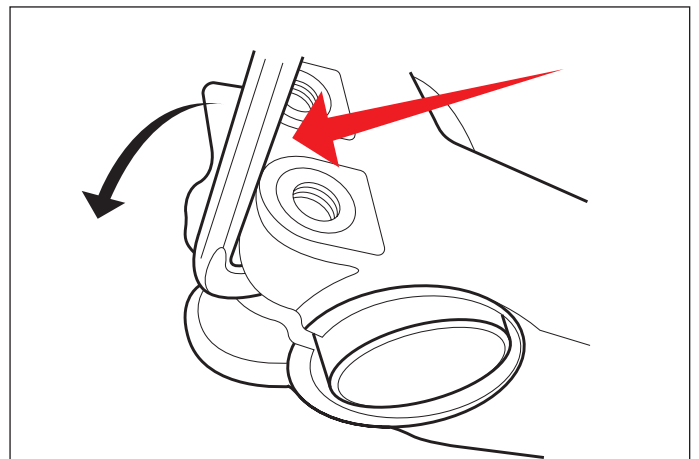


10. Unscrew the stabiliser arm.
Lock nuts are not reused.



11. Use a tyre lever on the inside of the stub axle to remove the suspension strut.
12. Remove the suspension strut.

	Ensure the drive shaft is not pulled out of the gearbox.
	Ensure that tubes cannot be placed under tension or become damaged.

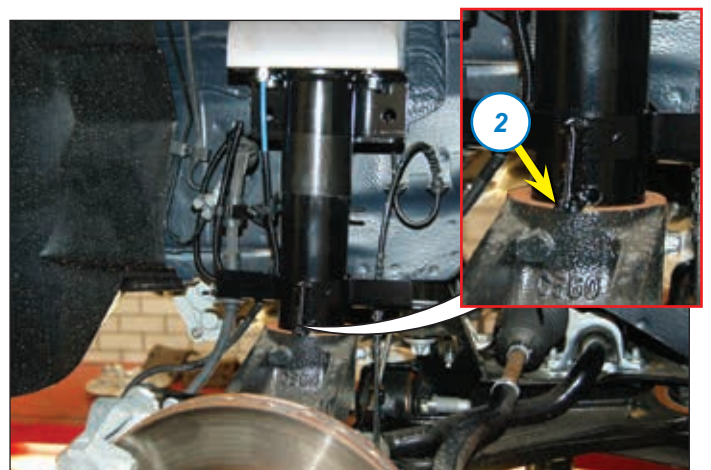


7.2 SUSPENSION STRUT

- Place the new suspension strut in the stub axle.
- Ensure that the lip abuts the stub axle.
- Fit the bolt.
**** Do not tighten the bolts yet. Tighten them once the vehicle is at the ride height.**

2 x original bolt**	
2 x original nut (M12 nylon)	M12x1,25 / M14x2
	X250 (M12) : 120 Nm X290 (M14) : 170 Nm

	The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.
--	---



4. Check that the locating pins drop into the holes.
5. Fit the top of the suspension strut.

**** Do not tighten the bolts yet. Tighten them once the vehicle is at the ride height.**

6 x bolt**	M10 x 30 x 1.25
6 x washer	M10



60 Nm



Mount the fuse box together with the fuse holder bracket with the OE bolt (see section 4.3 step 14). Replace the plastic covers (see 7.1 step 3).

6. Install the reaction arm of the stabilizer bar from section 7.1 step 10.

2 x Lock nut nylon	M12	x 1,25
--------------------	-----	--------

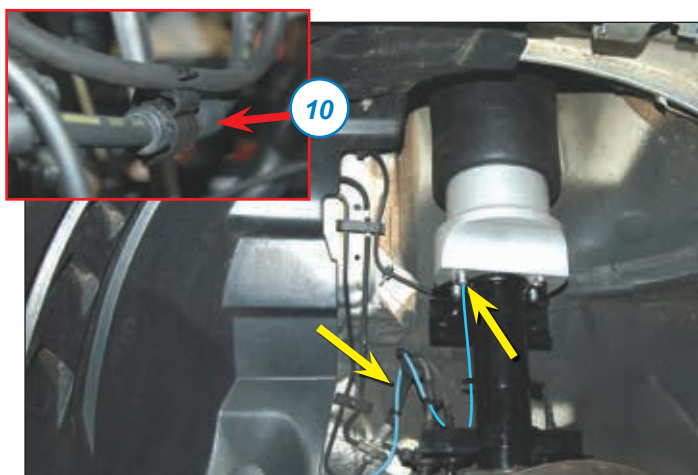
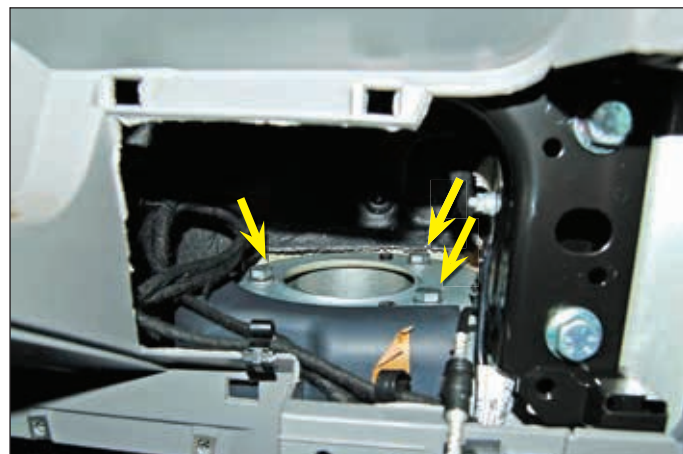


56 Nm

7. Fit all tubes and wires to the suspension strut.
8. Connect the **red** air tube to the right air spring.
9. Connect the **blue** air tube to the left air spring.
10. Lay the air tube along the route indicated to the compressor box.
11. Secure the air tube with the special clips.



Push the tube at least 80 mm into the air coupling.



7.3 HEIGHT SENSORS

1. Fit the height sensors to the height sensor brackets as shown in the figure.
2. Be careful to check whether it is the left or right bracket.

4 x bolt	M5 x 10
4 x washer	M5



6 Nm

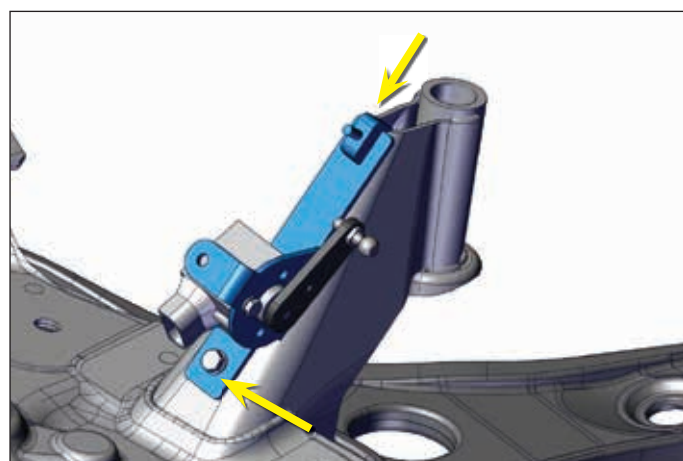


3. Mount the height sensor brackets in the position indicated.

2 x bolt	M6 x 50
4 x washer	M6
2 x lock nut	M6




8 Nm



4. Fit the ball-joints to the ball-joint brackets.

2 x ball joint	M6
2 x washer	M6
2 x lock nut	M6
 8 Nm	



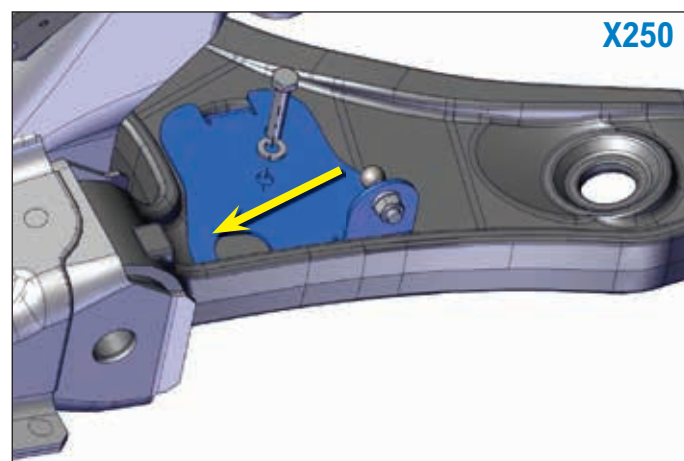
The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.




5. If the vehicle model year is up to 2014, continue from point 7.
6. If the vehicle model year is from 2014 onwards, continue from point 11.

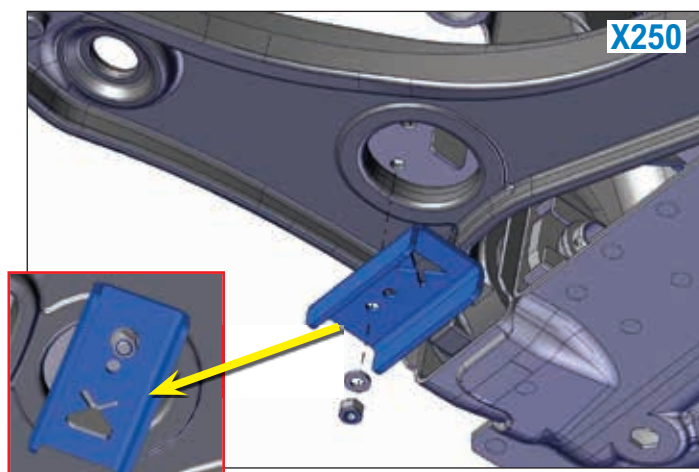


7. Place the ball-joint brackets on the suspension arm.

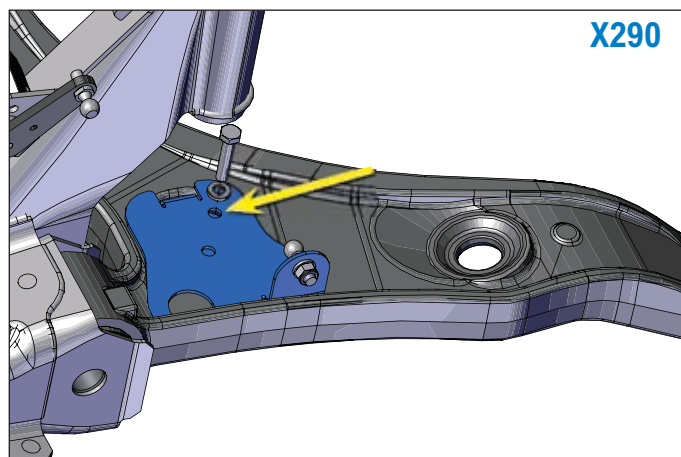


8. Fit the plate on the underside.
9. Tighten the bolts.
10. Continue from point 14.

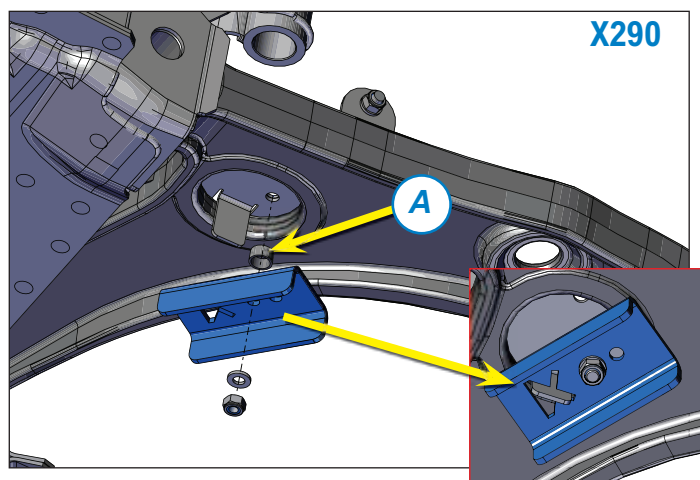
2 x bolt	M6 x 30
4 x washer	M6
2 x lock nut	M6
 8 Nm	



11. Place the ball-joint brackets on the suspension arm.



12. Fit the plate on the underside. Use spacer bush (A).
13. Tighten the bolts.

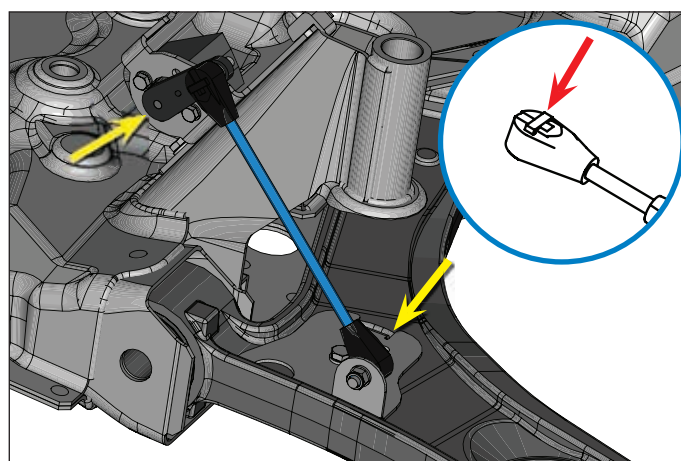


2 x bolt	M6 x 30
4 x washer	M6
2 x lock nut	M6
2 x distance bush	



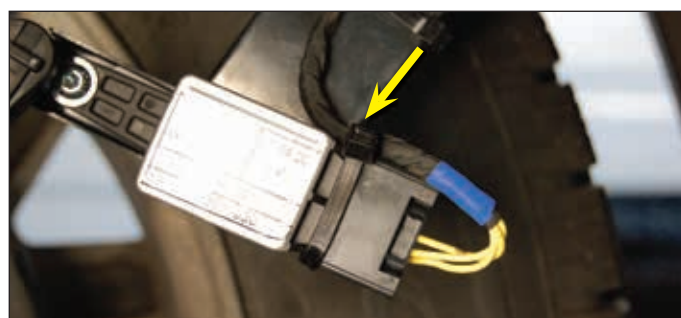
8 Nm

14. Check the length of the height sensor rods **165 mm** - measured centre to centre.
15. Mount the height sensor rods on the height sensors and ball joints.
16. Secure the height sensor rods by pushing in the clips.



The height sensor rods must point upwards.

17. Connect the front axle height sensor cable using the connector marked in brown.
18. Route the tubes to the compressor box.
19. Route the left height sensor cable along the **blue** air tube to the front left height sensor.
20. Route the right height sensor cable along the **red** air tube to the front right height sensor.
21. Connect the connectors. The illustration is for indicative purposes only for showing the height sensor cable mounting bracket.
22. Fit the wheels.¹



¹ Vehicle manufacturer guidelines.

7.4 AIR TUBES

1. Fit the **red** air tube to the air coupling marked red on the junction block on the outside of the compressor box.
2. Fit the **blue** air tube to the air coupling marked blue on the junction block on the outside of the compressor box.
3. Ensure that the colour markings match.
4. If supplied, fit the emergency valve kit.
5. Seal the unused air couplings with the supplied end plugs.

6. Fit the cover to the compressor box.

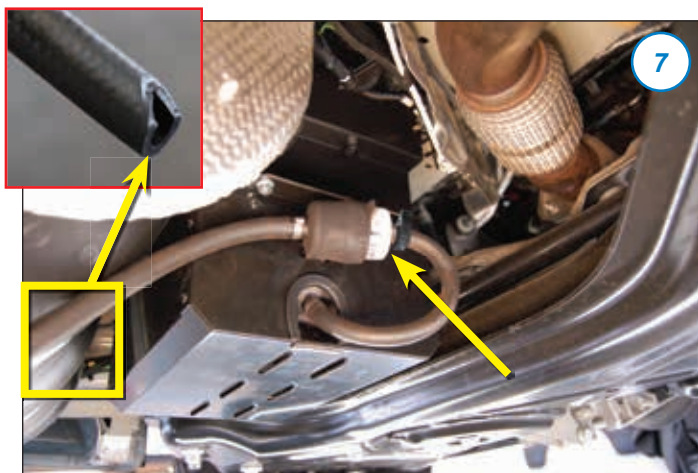
3 x flange lock nut

M6

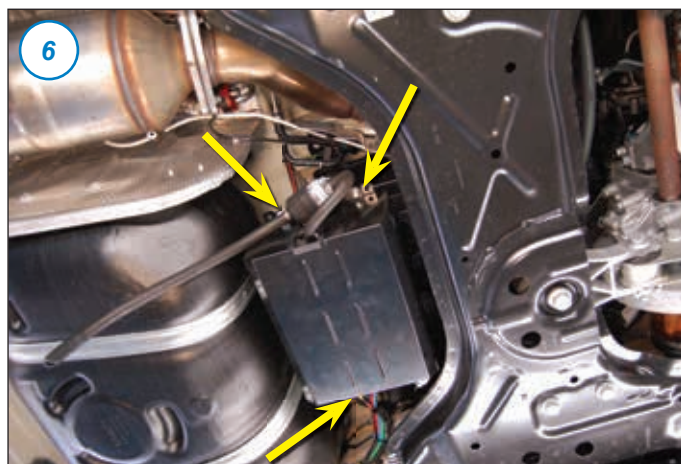
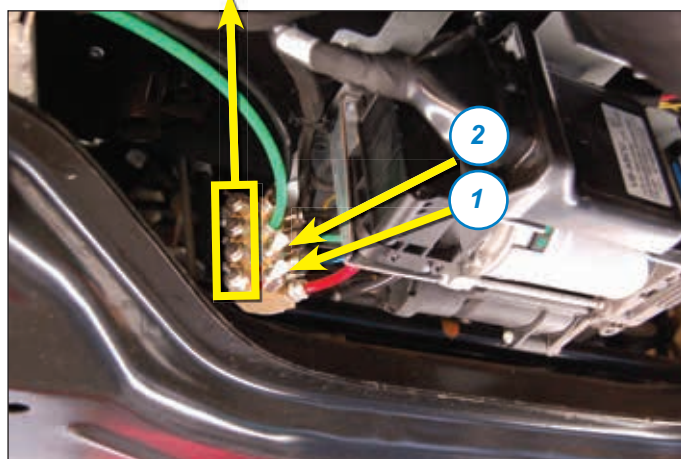


8 Nm

7. Fit the suction filter to the inlet line.
8. Fit the rubber grommet to the chassis.
9. Route the inlet line with the rubber grommet into the chassis.



Air couplings for optional emergency valve kit

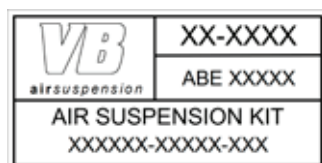


7.5 WARRANTY STICKERS

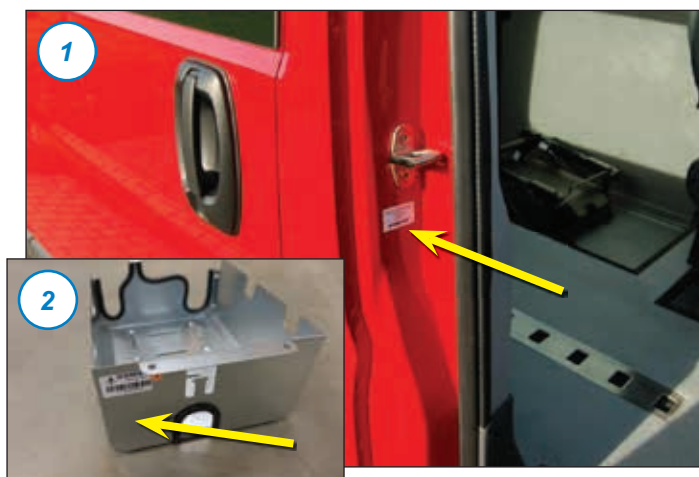
1. Affix the supplied warranty stickers **A + B** to the B-pillar on the passenger's side.
2. Apply the protective film over the stickers.

A

B



3. Affix sticker **A** to the compressor box next to the part number sticker.
4. Apply the protective film over the stickers.

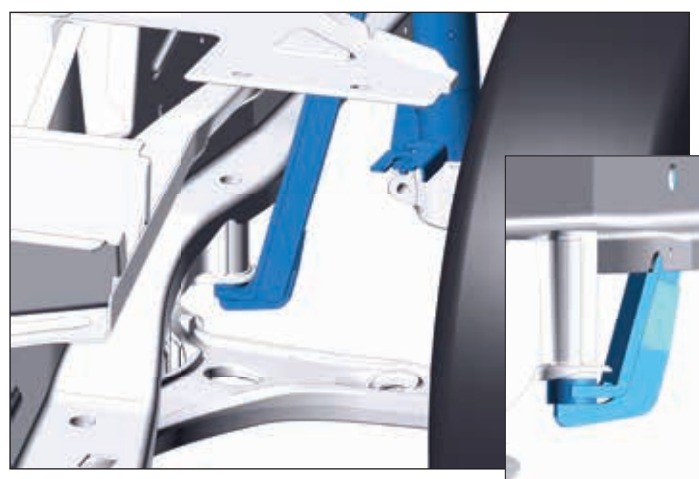
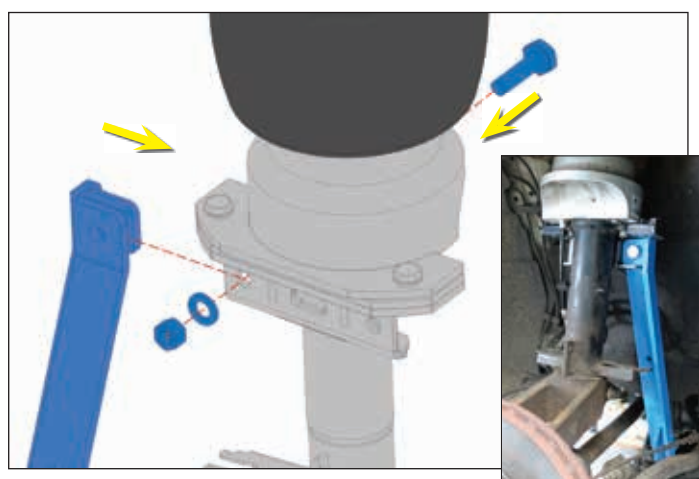
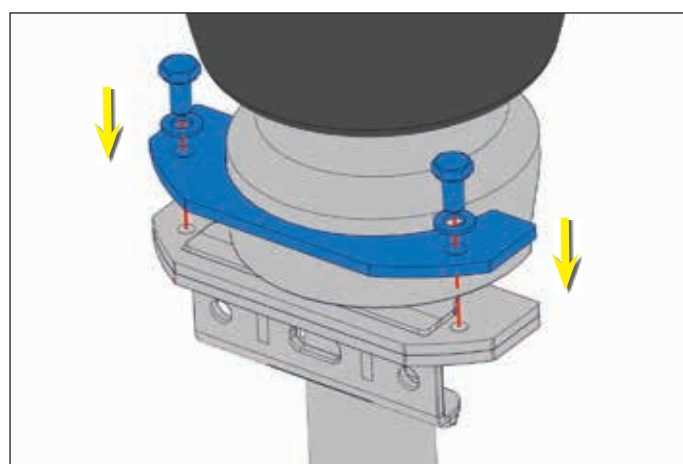
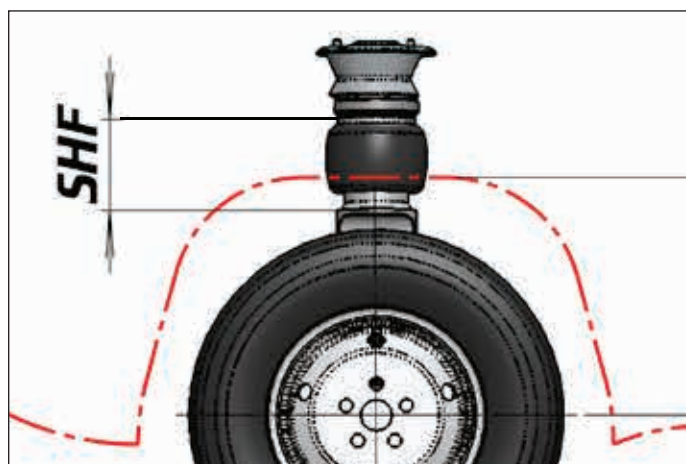


8. CALIBRATION

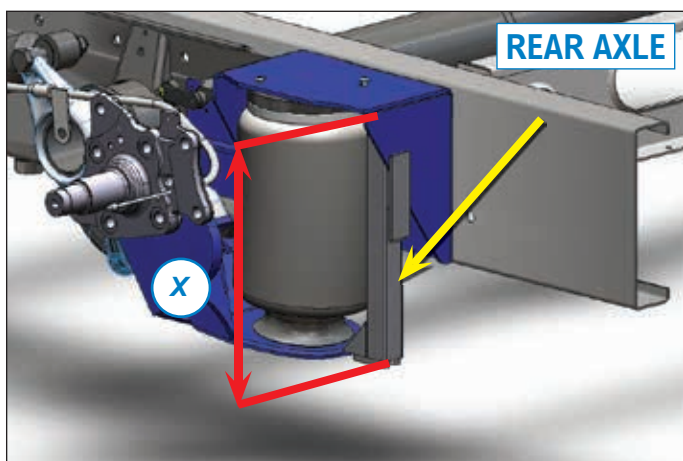


Go to section 2 for details of the correct calibration supports for this kit.


FRONT AXLE



REAR AXLE




- Place the fuses in the fuse blocks.
(F1 = 40 A + F2 = 7.5A).
- Program the VB-ASCU via the SMT according to manual 733105000001 in the SMT.
- Calibrate the vehicle via the SMT, or via the steps below:

1. Turn the ignition on.
2. Pull the handbrake slightly.
3. Ensure that the vehicle is resting on the wheels on a flat surface.
4. Briefly press the -button once (LED lights up).
Enter the following code within 10 seconds:






1 – **3** – **4** – **2**

The LEDs on the remote control will go out.

5. Press the -button within 3 seconds and hold down the button until a long tone is heard.
6. Enter the following code within 20 seconds:

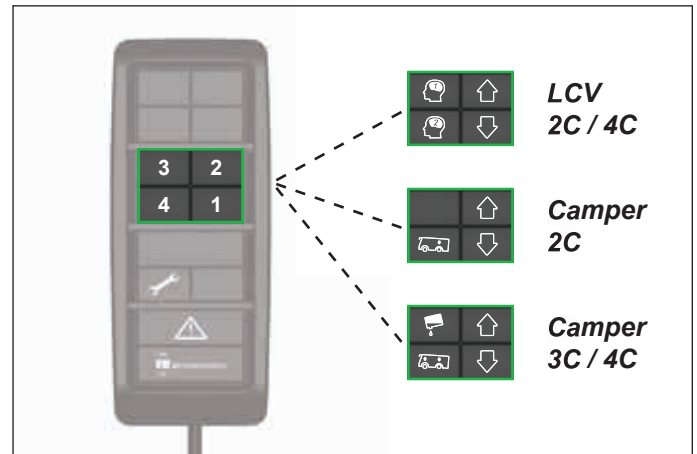
2 – **4** – **3** – **1**






Calibration mode has been activated.

7. The -LED and the -LED will start to flash.
8. Press button **2** or  to raise the vehicle.
9. Place the calibration supports under the vehicle.
10. Hold down button **1** or  to allow all the air to vent from the air-springs.
The air-springs are empty once the hissing sound can no longer be heard.
The calibration height has been reached.
11. Hold down the -button until the long tone is heard.
The ride height has been stored.



2C calibration: Continue at step 14.
4C calibration: Continue at step 12.

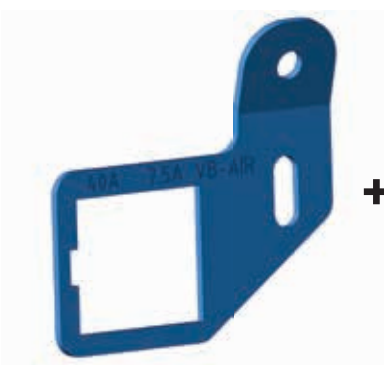


12. Briefly press the -button once (LED lights up).
The system restarts.
13. Repeat steps 8 through 11
14. Briefly press the -button once.
calibration mode is closed.
The system restarts.
15. Briefly press the -button once.
-mode is closed.
16. Press button **2** or  to raise the vehicle.
17. Remove the calibration supports from under the vehicle.
18. Set the vehicle to the ride-height.
19. Turn the ignition off.
20. Tighten all nuts and bolts indicated in the manual with ******.

21. Have the headlamp adjustment checked by a dealer.
22. Check the vehicle using the checklist in the manual.



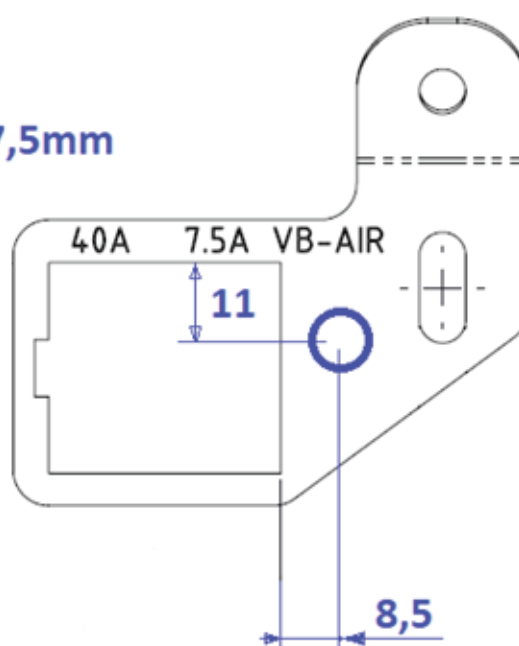
See page: 12



+



Ø 7,5mm



X290 : > 2014 - 2021

9. CHECKLIST

Final checks

- 1.1 ☐ Safety rules and fitting instructions read and followed.
- 1.2 ☐ Ride height correctly calibrated.
- 1.3 ☐ Front axle/rear axle aligned.
- 1.4 ☐ Height sensors correctly fitted.
- 1.5 ☐ Shock absorbers vented.
- 1.6 ☐ Bolted joints tightened to the correct torque and marked with security check paint marker.
- 1.7 ☐ Air tubes, wires and connectors properly secured.
- 1.8 ☐ All parts that were removed have been refitted and checked to ensure they are working properly.
- 1.9 ☐ System checked for air tightness.
- 1.10 ☐ Clearance around air springs checked.
- 1.11 ☐ Identification stickers, plus protective film, affixed to the vehicle.
- 1.12 ☐ Headlamp adjustment checked.
- 1.13 ☐ If required, have ADAS (Advanced Driver Assistance Systems) recalibrated.
- 1.14 ☐ If required, have the vehicle aligned.
- 1.15 ☐ VB-ID card inside cover of user manual.
- 1.16 Documentation present in vehicle:
 - ☐ - User manual
 - ☐ - TÜV/ABE documentation
 - ☐ - Original vehicle documentation
- 1.17 ☐ Battery voltage (<12.4 volt = charge).
- 1.18 ☐ Tyre pressures correct.

System functions

- 2.1 ☐ * Raise manually.
- 2.2 ☐ * Lower automatically.
- 2.3 ☐ * Lower manually.
- 2.4 ☐ * Raise automatically.
- 2.5 ☐ Test drive carried out.

☐ **SYSTEM OK**

* Not for VB-NivoAir

Completed as a true and accurate record:

Date: - -

VIN:

Dealer: _____

VB-ID-no.: - -

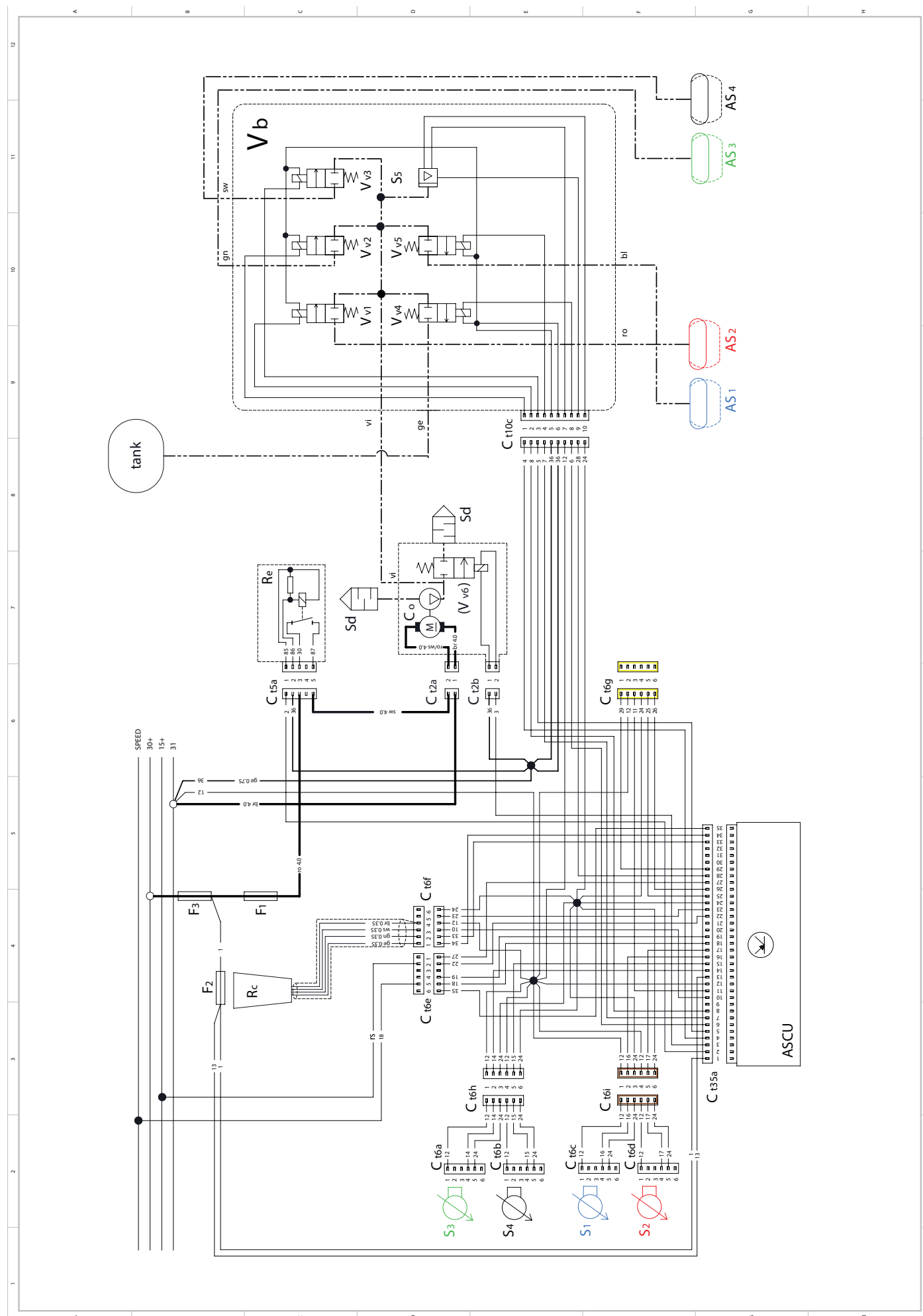
Kit numbers(s):

Fitting instructions no.:

Version:

This checklist should be retained by the dealer and must be available to VB-Airsuspension for inspection on request.

10. WIRING DIAGRAM



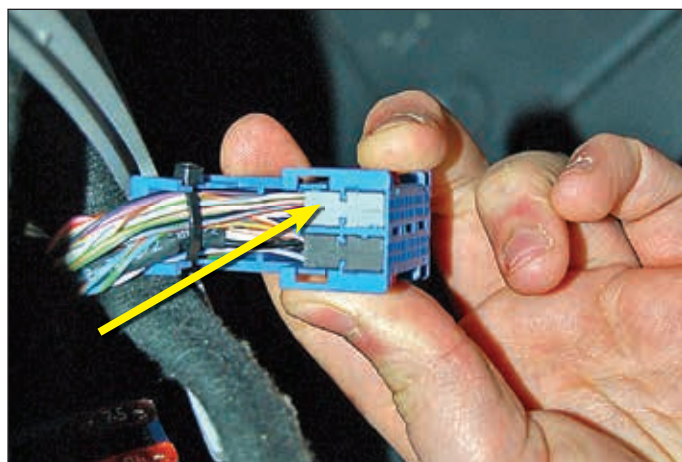
Name	Description
ASCU	VB-ASCU (control unit)
AS1	Air spring front left
AS2	Air spring front right
AS3	Air spring rear left
AS4	Air spring rear right
Ct1a	Connector, 1-pin, handbrake
Ct1b	Connector, 2-pin, compressor power supply
Ct2a	Connector, 2-pole, compressor
Ct2b	Connector, 2-pole, valve on compressor
Ct5a	Connector, 5-pole, relay Re
Ct6a	Connector, 6-pole, height sensor rear left
Ct6b	Connector, 6-pole, height sensor rear right
Ct6c	Connector, 6-pole, height sensor front left
Ct6d	Connector, 6-pole, height sensor front right
Ct6e	Connector, 6-pole, VB-supplycable
Ct6f	Connector, 6-pole, remote control
Ct6g	Connector, 6-pole, option connector (Yellow)
Ct6h	Connector, 6-pole, height sensor rear axle (White)
Ct6i	Connector, 6-pole, height sensor front axle (Brown)
Ct10c	Connector, 10-pole, valve block connection
Ct35a	Connector, 35-pole, VB-ASCU control unit
Co	Compressor
Da	Dashboard
Di	Diode
F1	Fuse compressor, 40A
F2	Fuse control unit, 7,5A
Hb	Handbrake
Rc	Remote control
Re	Compressor relay
S1	Height sensor front left
S2	Height sensor front right
S3	Height sensor rear left
S4	Height sensor rear right
S5	Pressure sensor on valve block
Sd	Air silencer
Speed	Speed signal
Vb	Valve block
Vv1	Valve for air spring, right front on valve block
Vv2	Valve for air spring, left rear on valve block
Vv3	Valve for air spring, right rear on valve block
Vv4	Dump valve, to release air on valve block
Vv5	Valve for air spring, left front on valve block
Vv6	Release valve on compressor box

Name	Description
Colour codes: (not mentioned is yellow with numbers)	
bl	Blue
br	Brown
ge	Yellow
gn	Green
ro	Red
ro/ws	Red/White
rs	Pink
sw	Black
vi	Violet
ws	White
_____	0,50 mm ²
_____	0.75 mm ²
_____	4,00 mm ²
- - - - -	Air tube

11. ANNEX REMAINING SIGNALS WITHOUT MANUFACTURER OPTION EURO 4 MODEL

11.1 SPEEDSIGNAL

1. Débrancher le connecteur bleu de la boîte à fusibles.
2. Ce connecteur présente une partie noire et une partie grise.
3. En position dix de la partie grise, il y a un fil gris/vert.
4. Couper la borne du fil jaune n° 18 du câble d'alimentation VB.
5. Raccorder le fil jaune n° 18 muni du connecteur rouge au fil gris/vert du signal de vitesse.



11.2 15+ SIGNAL

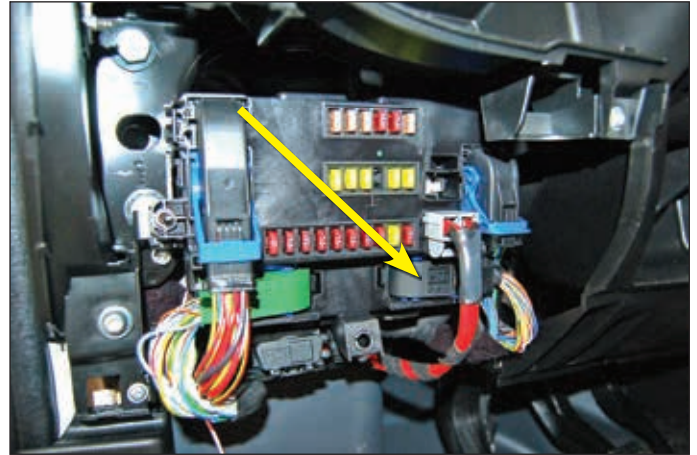
1. On the rearside of the fusebox is a connector.
2. On this connector there is one thick blue cable, positive contact.
3. Connect the pink cable with a blue duraseal to the thick blue cable.



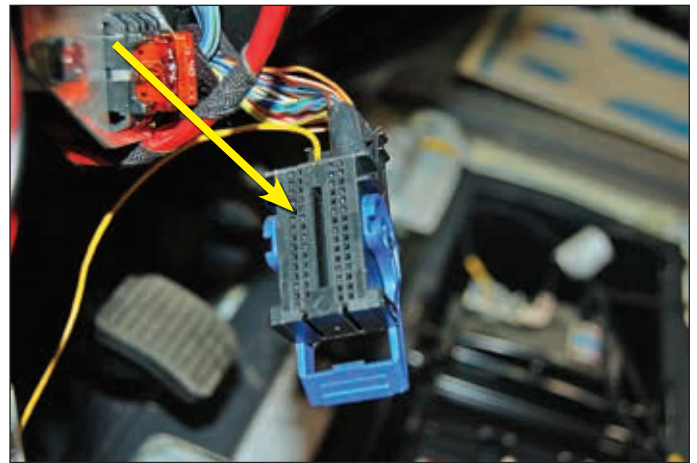
12. ANNEX REMAINING SIGNALS WITHOUT MANUFACTURER OPTION EURO 5 MODEL

12.1 SPEEDSIGNAL

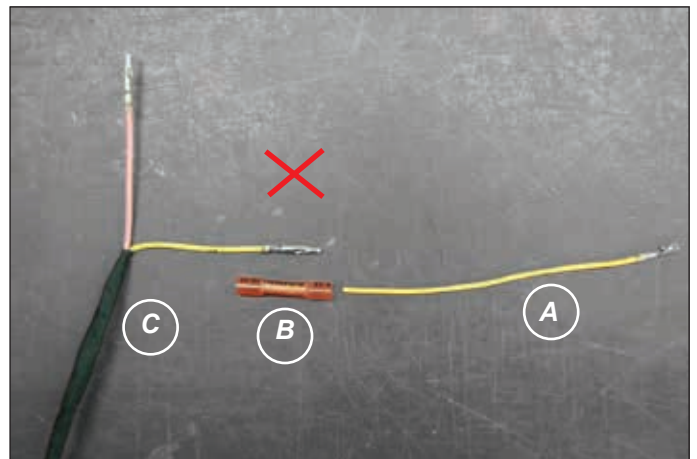
1. Release the black connector on the fuse box.



2. On pin 56 is the speed signal.



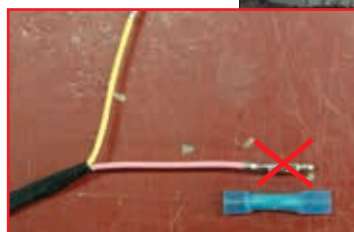
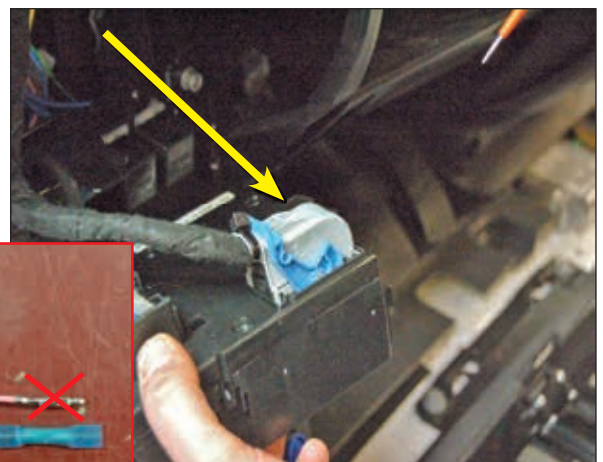
3. Cut the round terminal of the yellow cable as shown.
4. Mount the conversion cable (A) with terminal to the yellow supply cable (C) with the red duraseal (B).
5. Push the terminal of the yellow cable (nr. 18) in position 56 of the black connector.



If this pin is already occupied, cut the terminal of the yellow cable and connect the yellow cable (nr. 18) with the duraseal to the cable who is in pin 56 of the connector.

12.2 15+ SIGNAL



1. On the rearside of the fusebox is a connector.
2. On this connector there is one thick blue cable.
3. Cut the round terminal of the pink cable.
4. Connect the pink cable with a blue duraseal to the thick blue cable.

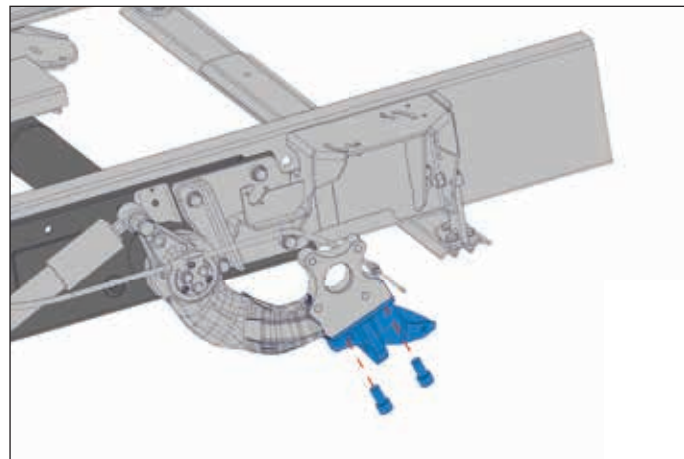


13. FITTING THE AIR SUSPENSION KIT FOR THE 34° REAR AXLE

13.1 SPRING PLATES

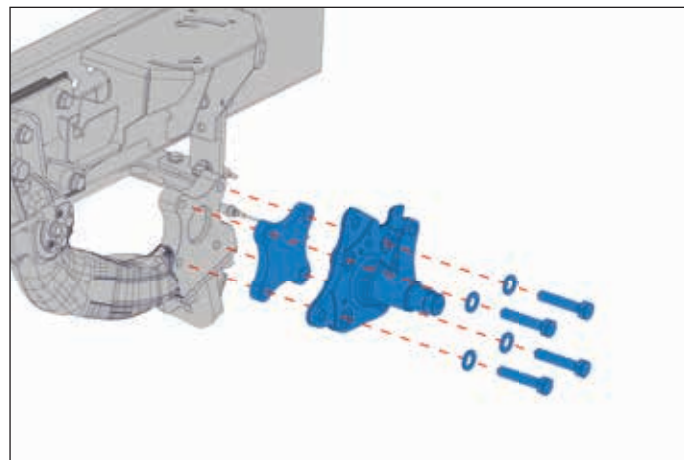
1. Fit the spring plates.

4 x Allen screw	M16 x 30 x 1.5
	180 Nm
	The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.





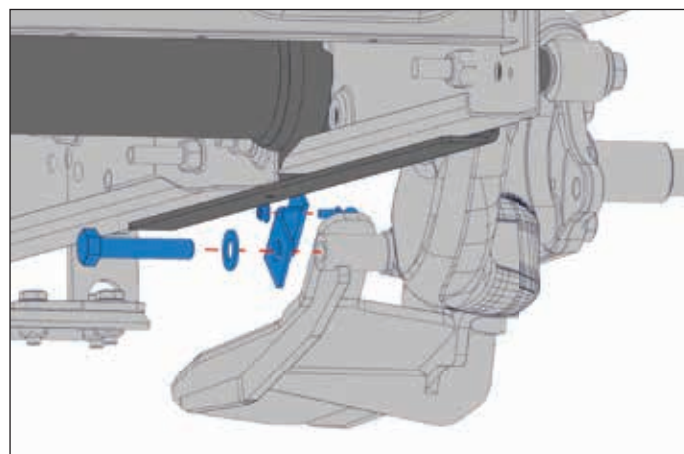
2. Fit the stub axle.

8 x bolt	M14 x 70 x 1,5
8 x washer	M14
	150 Nm




3. Fit the ball-joint brackets to the axle.
The ball-joints must be pointing to the centre of the vehicle.

	The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.
2 x bolt	M14 x 70 x 1,5
2 x washer	M14
	150 Nm

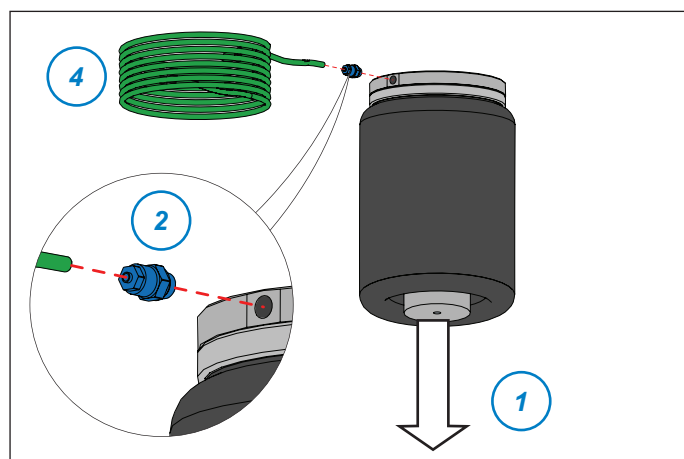


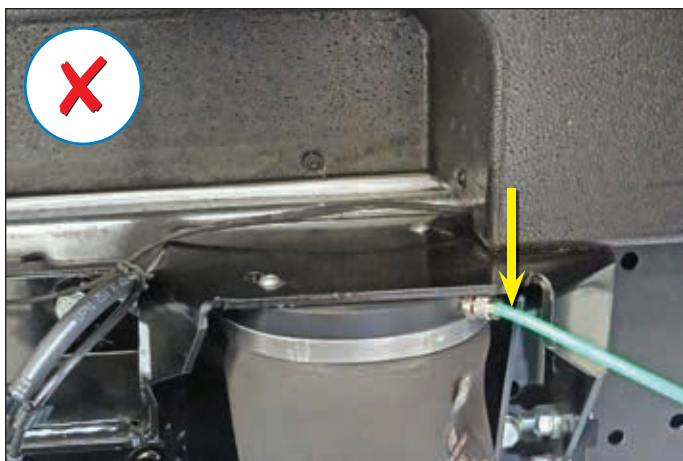
13.2 AIR SPRINGS

1. Pull out the plug under the air-spring.
2. Fit the air couplings to the air springs.

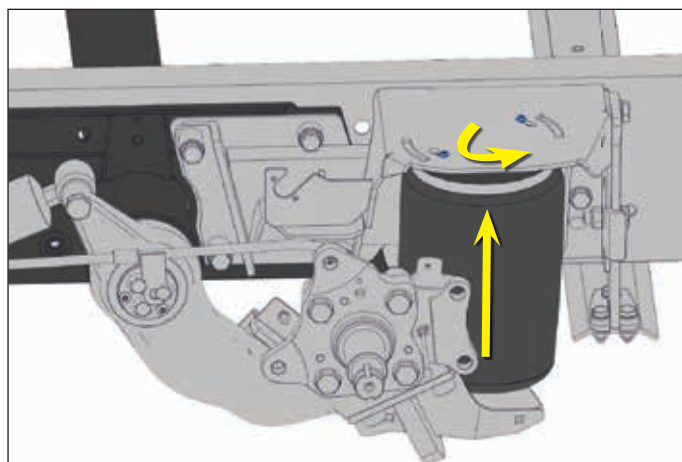
air coupling	
	3 Nm

3. Connect the **black** air tube to the right air spring.
4. Connect the **green** air tube to the left air spring.





5. Fit the air springs to the upper spring plates.

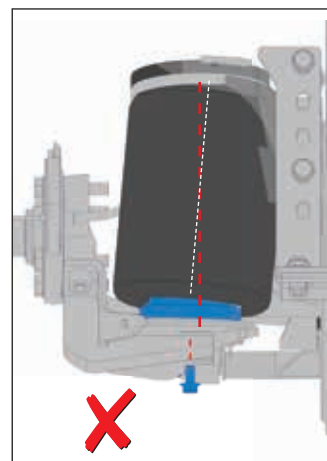
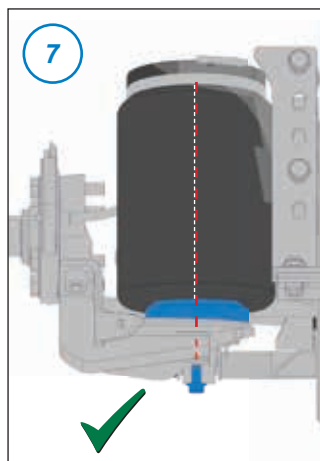


6. Push the cup around the underside of the air spring.

7. Fit the air springs to the spring plates.

**** Only tighten this bolt when the air springs are pressurised.**

2 x UNC bolt** 2 x washer		$\frac{3}{8}$ " x 2 $\frac{1}{4}$ " UNC M10	
		20 Nm	

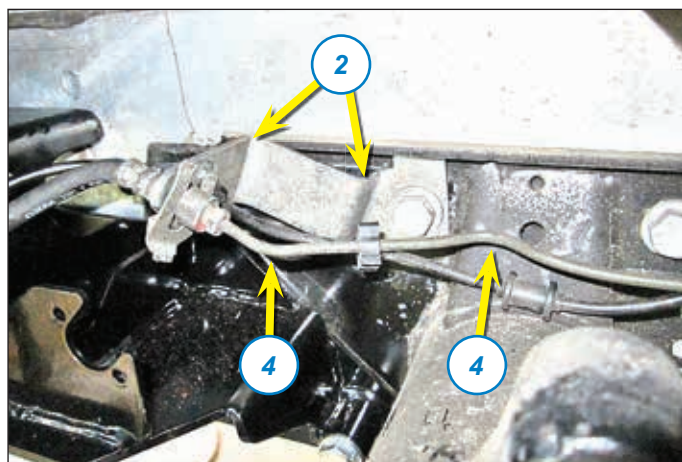


13.3 HEIGHT SENSORS

1. Remove the brake line bracket.
2. Bend the brake line bracket.
3. Fit the brake line bracket.
4. Bend the brake line carefully.

	Ensure that the brake line is not kinked when bending.
--	---

5. Fit the brake line to the brake line bracket.



6. Mount the height sensors on the height sensor brackets.
Check the position of the connector.



The height sensor connector must point towards the rear of the vehicle.

4 x bolt

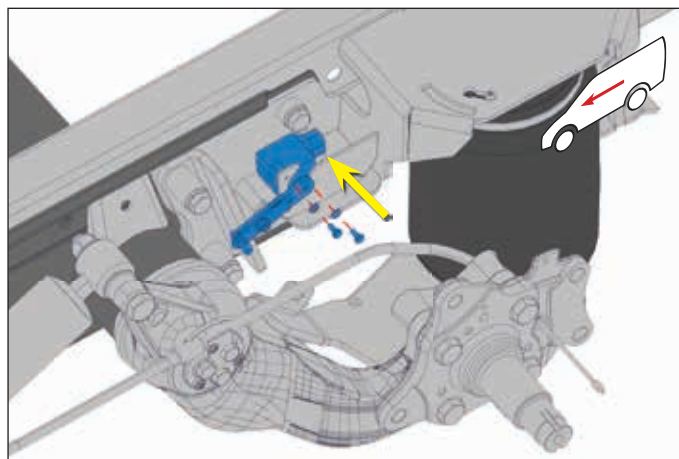
M5 x 10

4 x washer

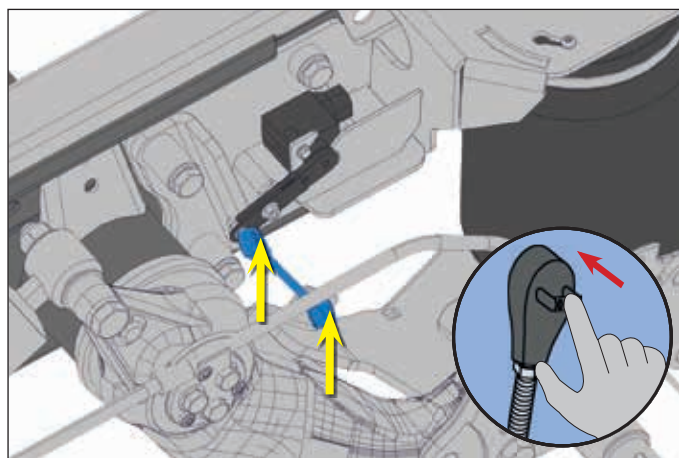
M5

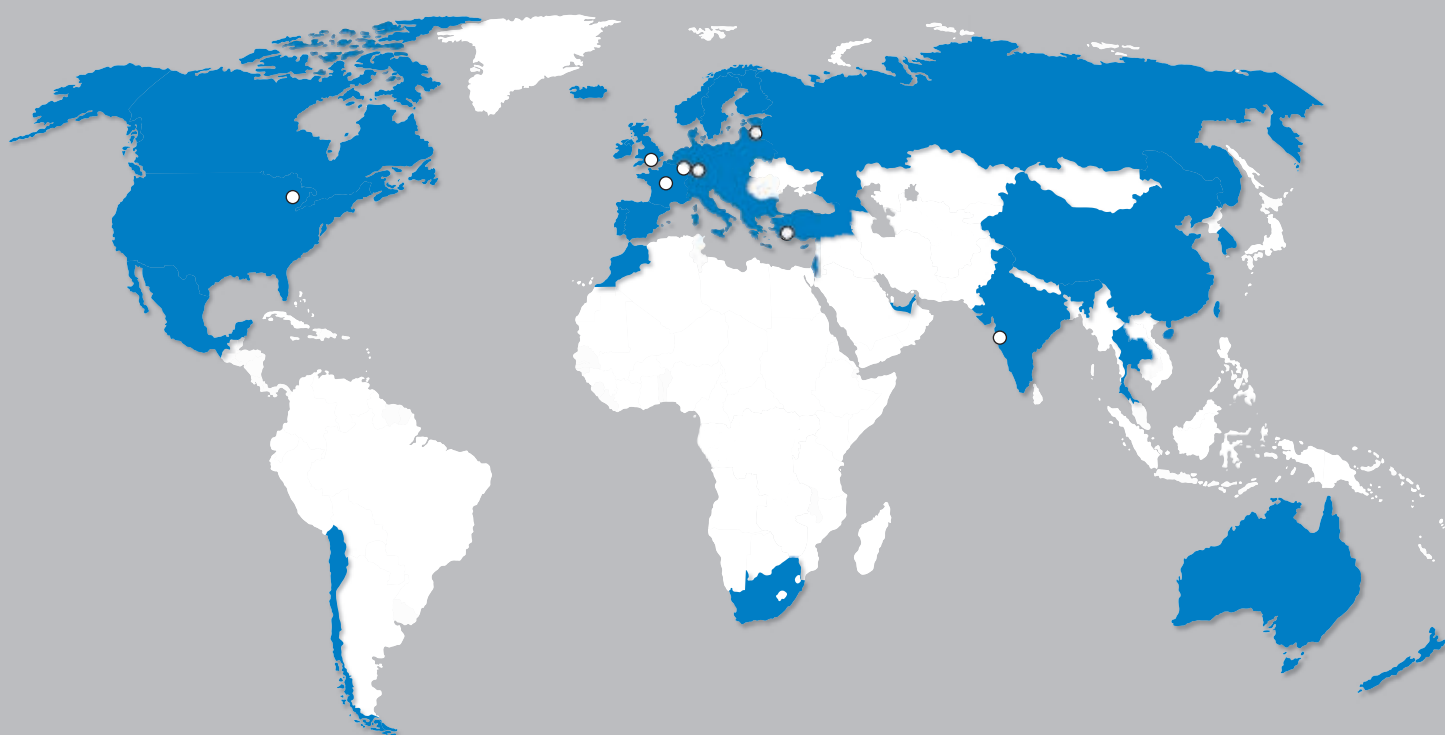


6 Nm



7. Check the length of the height sensor rods - **145mm** - measured centre to centre.
8. Fit the height sensor rods to the height sensors.
9. Fit the height sensor rods to the ball-joint brackets.
10. Secure the height sensor rods by pushing in the clips.
11. Continue with section 5.5 axle parts (4x2).





VB-AIRSUSPENSION,

INCREASED COMFORT, BETTER DRIVEABILITY, MORE SAFETY.

