

EN

FITTING INSTRUCTIONS

making everyday smoother



**PEUGEOT BOXER
FIAT DUCATO
CITROËN JUMPER
X250/X290 AL-K0**

**Wide track ALC 4x2, 6x2
VB-FullAir 2C/4C**

For kit: 1051808215, 1051808235, 1051808416, 1051808436



REVISION TABLE

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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

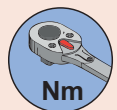
- If possible, always use a hydraulic ramp while working.
- Ensure the vehicle is properly supported when necessary.
- Ensure the vehicle is not able to roll away.
- Improper installation may result in a hazardous situation.



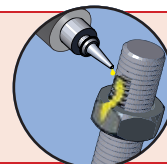
Where the warning symbol is displayed, information is given which is very important for the safety and/or health of those involved. This symbol is also used for procedures critical for the correct installation of the air suspension kit.



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



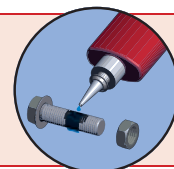
Each bolt connection in this manual contains a tightening torque with which the bolt connection must be secured and then marked with a safety paint for screws. When reusing the original bolts and nuts, follow the vehicle manufacturer's guidelines for proper tightening torques.



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. FITTING INSTRUCTIONS

- 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.

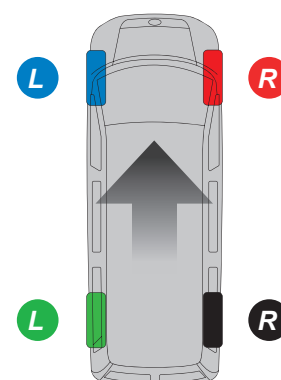
VB-Airsuspension is not liable for any damage resulting from not following these fitting instructions.

- 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.

Axle:	Calibration height:	Order number:
Front axle	SHF = 199 MM	009 000 00 62
Rear axle	X = 300 MM	009 000 01 15

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

Colour	Description	Colour	Description
Green	Rear left	Blue	Front left
Black	Rear right	Red	Front right



3. EXPLANATION TO THIS FITTING INSTRUCTION

This fitting instruction is written for the air suspension kits for Wide track ALC:

- 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 1051808215, 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 double rear axle with kitnumber 1051808235, 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 rear axle with kitnumber 1051808416, 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 front and double rear axle with kitnumber 1051808436, 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.

A short overview on which chapter to follow:

Which axle?	Kitnumber	Chapter
Single rear axle	105 18 08 215	4, 5, 8
Double rear axle	105 18 08 235	4, 6, 8
Front and single rear axle	105 18 08 416	4, 5, 7, 8
Front and double rear axle	105 18 08 436	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**.



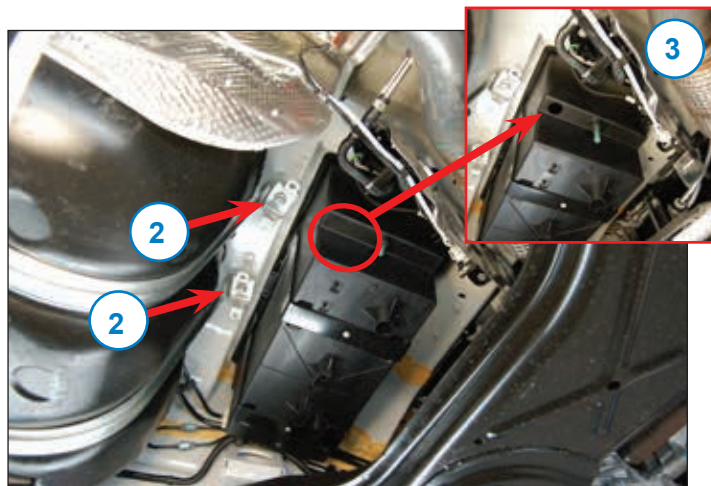
4. COMPRESSOR BOX AND WIRING HARNESS

4.1 COMPRESSOR BOX

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

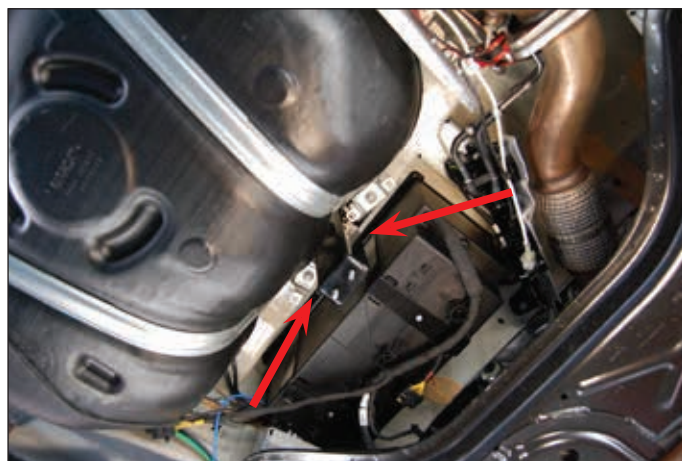


2. Loosen the marked bolts. Do not remove them.
3. Drill a $\varnothing 22$ mm hole at indicated position.



Ensure that no parts in the battery housing are damaged by drilling the hole.

4. Fit the compressor mounting bracket under the bolts loosened in point 2, pushing the bracket under the bolts from the rear.

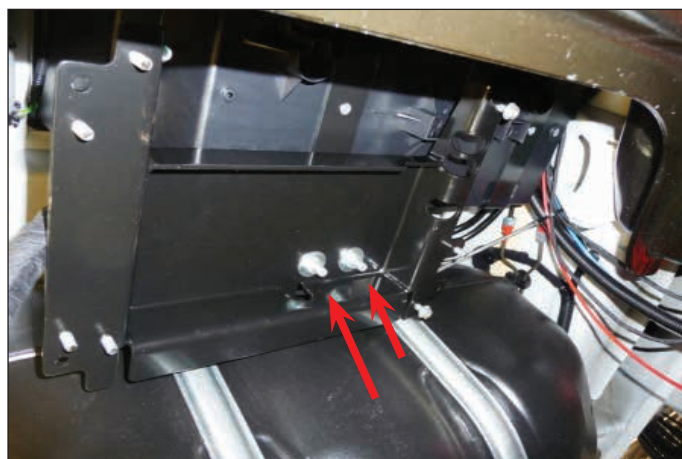


Original fasteners



30 Nm

5. Place the compressor support on the compressor mounting bracket.

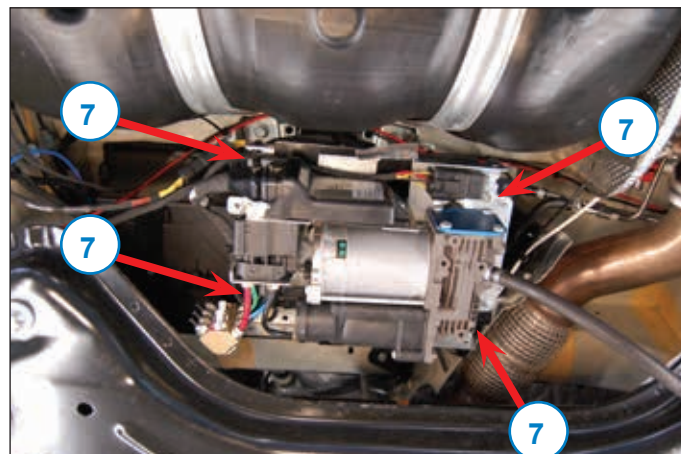


2 x lock nut M8
2 x large washer M8



20 Nm



6. Remove the cover of the compressor box.
7. Fit the compressor box on the bracket.
8. Tighten the nuts.

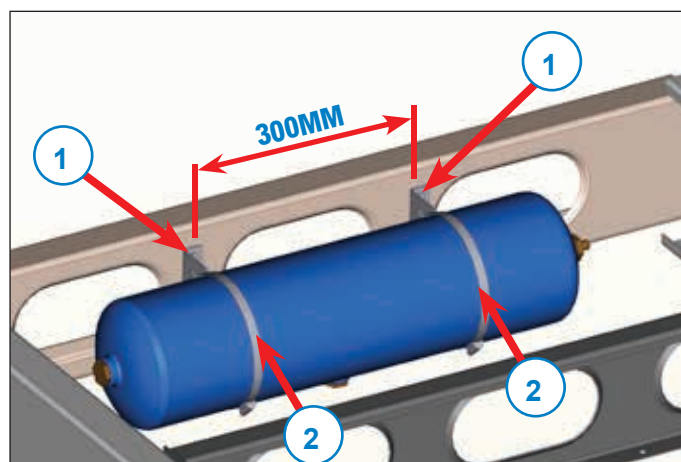


4 x flange lock nut	M6
	8 Nm

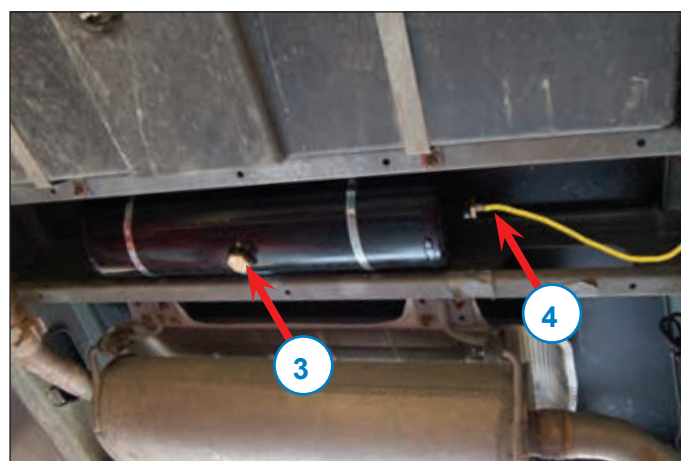
4.2 AIR TANK

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

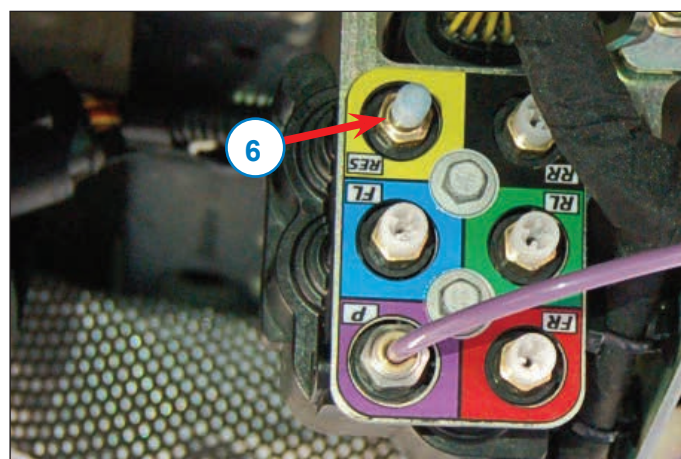
	The maximum distance between the air tank and compressor box must not exceed 1.5 m.
4 x lock nut	M8
4 x washer	M8
	20 Nm



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 (1).
2. Remove the entry trim on the left-hand side. (2).
3. Take the cover off the right-hand side B-pillar by undoing the marked screws.
4. Remove the cover (3).
5. Remove the entry trim on the right-hand side. (4).
6. Route the VB wiring harness inside through the hole drilled in point 3 section 4.1.



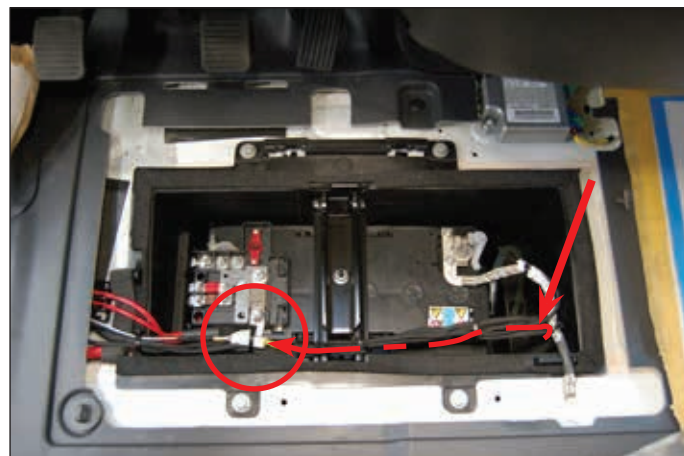
7. Carefully pull the wire into the battery housing.
8. Route the two wires with the white connectors to the left around the battery.



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!

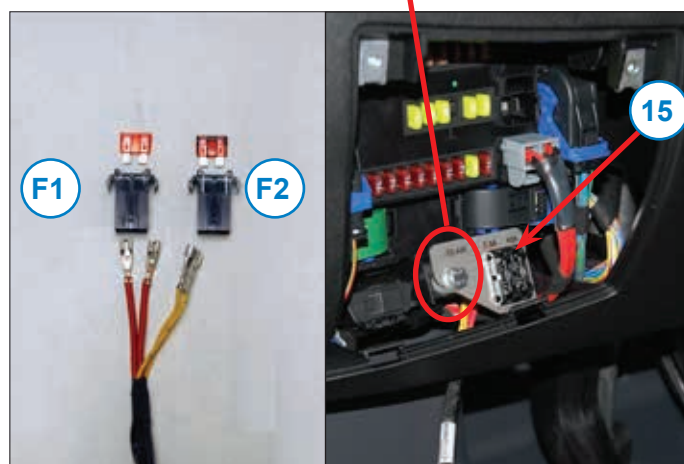


12. Connect the two red wires to the fuse block to which the **F1 40A** fuse will later be connected.
13. Connect the two yellow wires to the fuse block to which the **F2 7,5A** fuse will later be connected.
14. Fit the fuse blocks in the fuse block support.
15. **(For 4C Air suspension: do not install yet):** Fit the fuseblock support on the fuse box using the supplied distance bushes.

1 x bolt **M6 x 30**
1 x washer **M6**
1 x distance bush Ø15 L=11



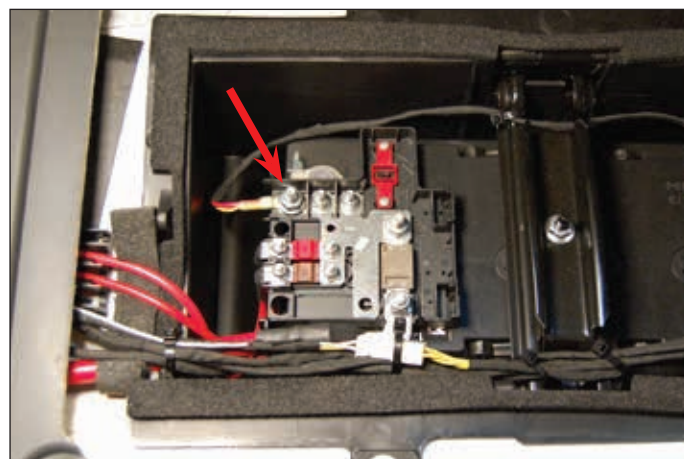
8 Nm



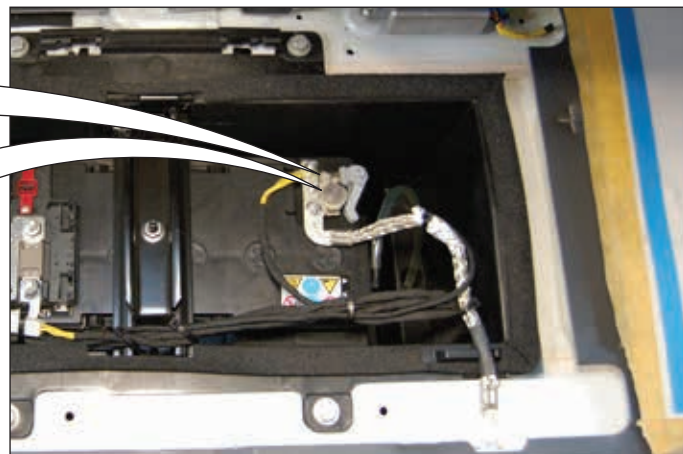
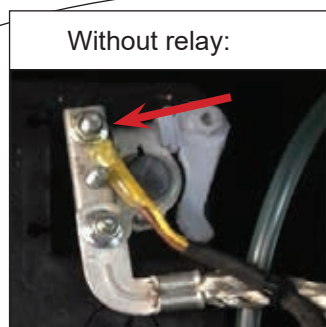
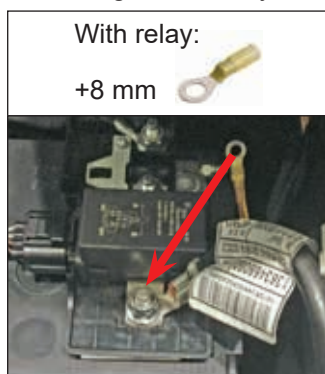
16. Do not fit the fuses yet.
17. Connect the red wire to the marked connection of the positive battery terminal (+).



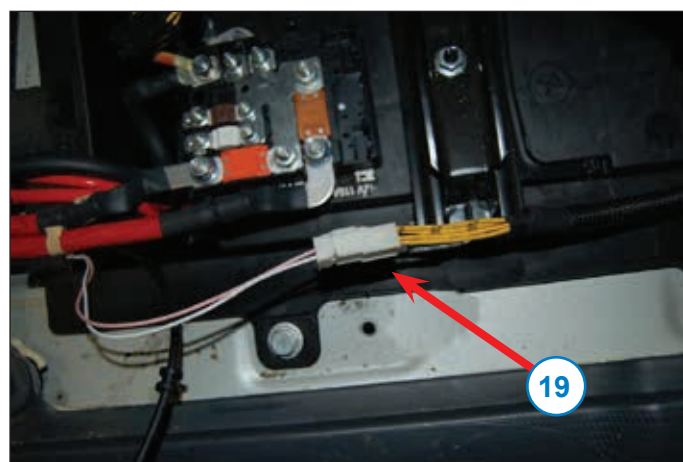
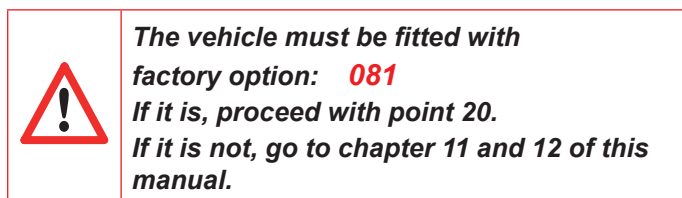
If there are 2 batteries, always use the original starter battery and not the accessories battery.



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

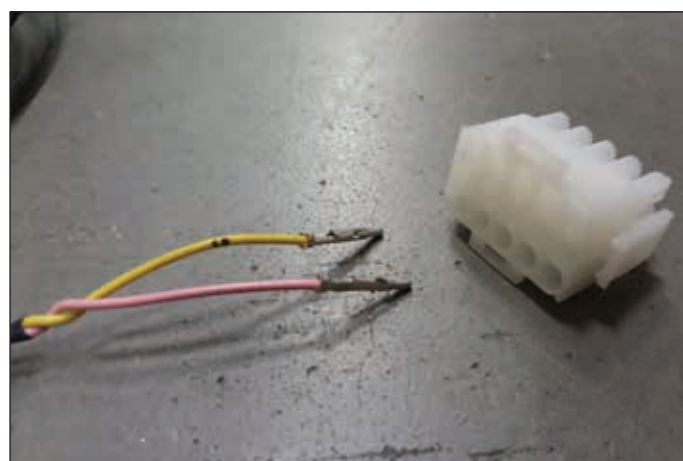


19. Connect the supply cable to the white connector.

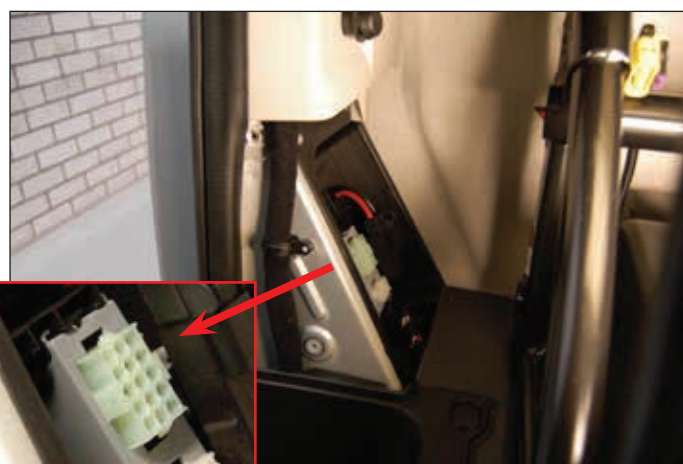


20. Route the supply cable under the trim to the right-hand side of the vehicle.

21. Connect the yellow wire to position 3 of the white connection supplied for option 081.
22. Connect the pink wire to position 13 of the white connection supplied for option 081.

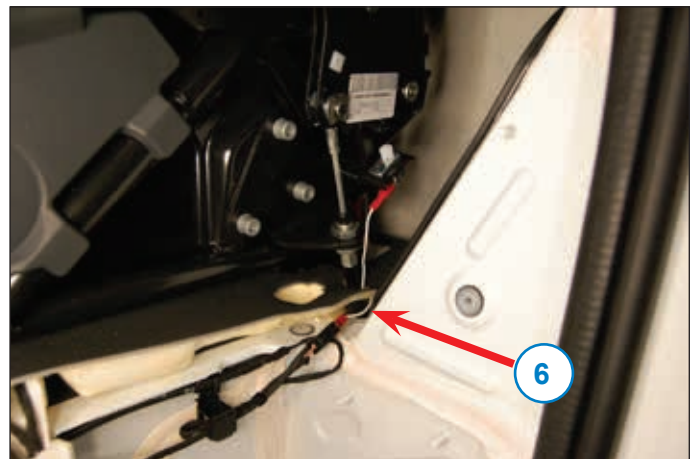
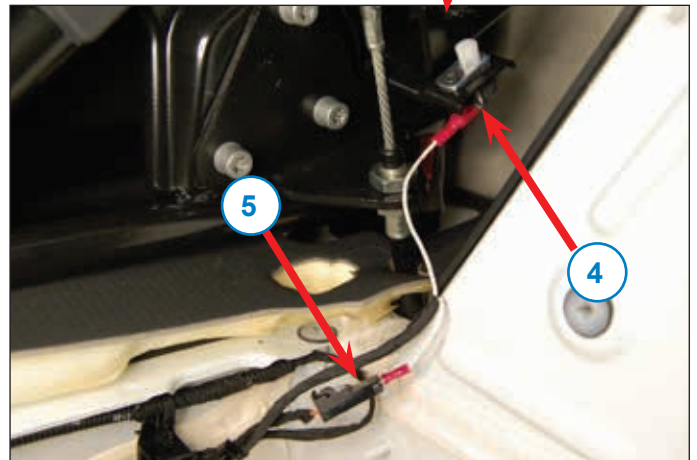


23. The white connector for option 081 is located in the B-pillar on the right-hand side
24. Connect the white connector supplied for option 081 to the white connector.



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.



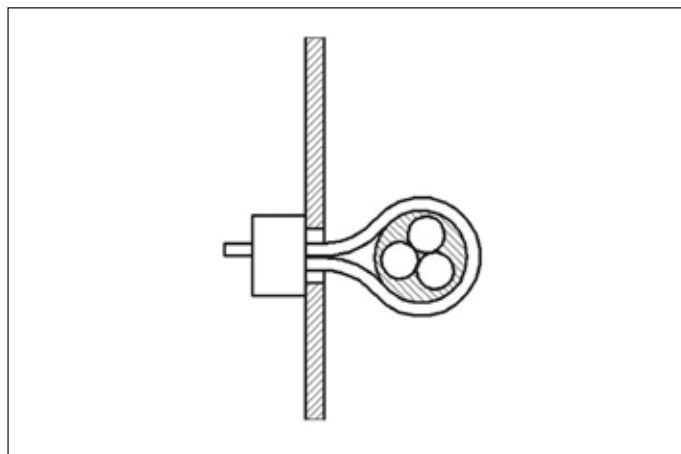
Make sure that no underlying parts can be damaged during installation.

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.

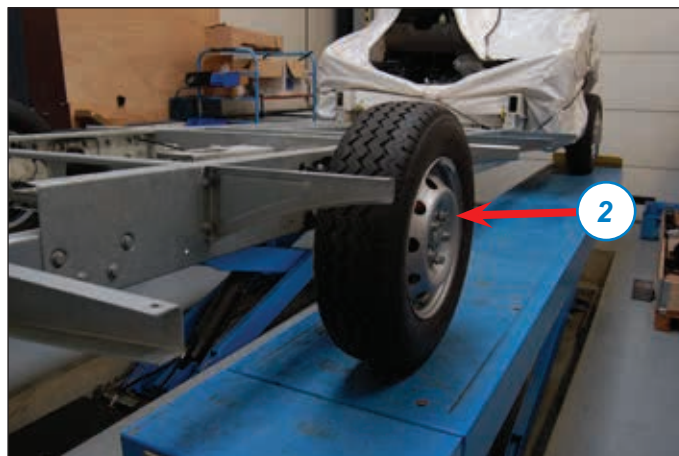
6. Route the remote-control wire to the VB wiring harness under the seat console.
7. Connect the remote control wire to the VB wiring harness.
8. Refit the interior components removed earlier.



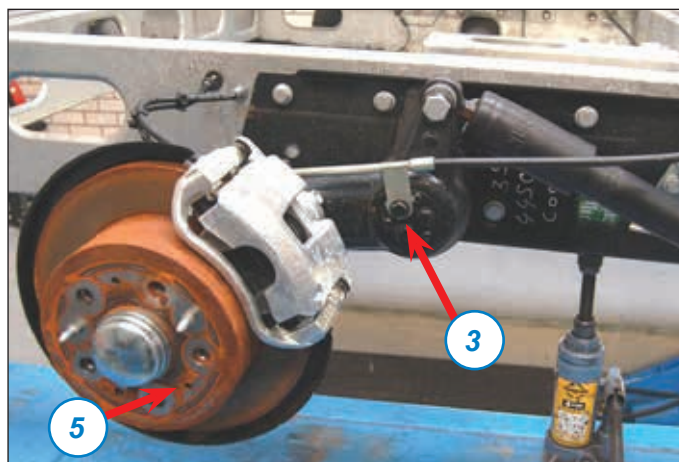
5. MOUNTING THE AIR SUSPENSION FOR THE REAR AXLE WITH A 4X2 VEHICLE

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.

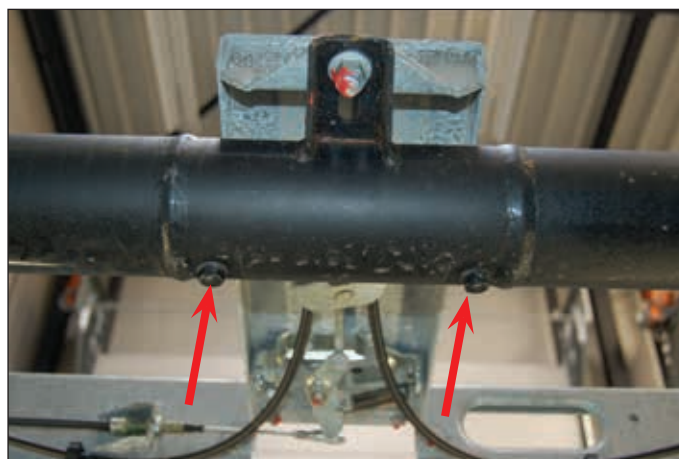


Avoid tension in the brake line.

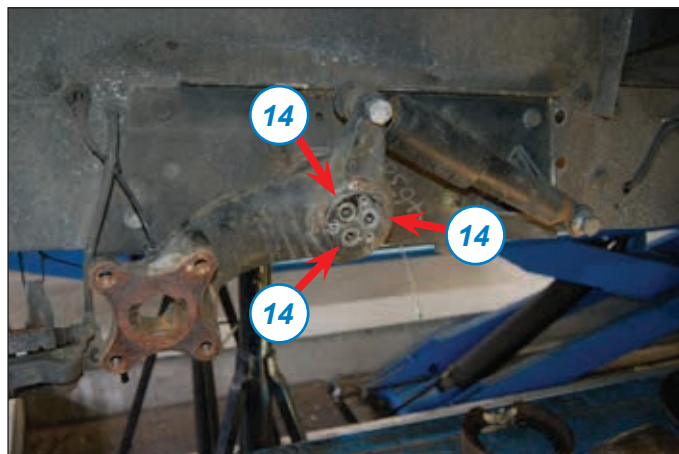
6. Remove the wheel bearing.
7. Remove the handbrake cable.
8. Remove the brake mechanism.
9. Remove the brake guard.
10. Remove the stub axle.



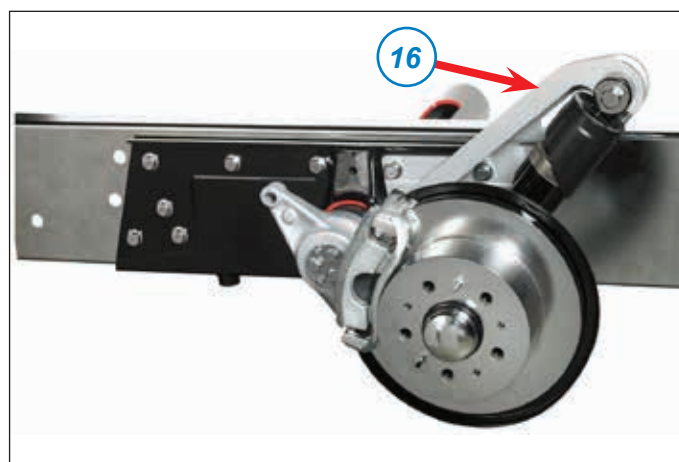
11. Remove the marked bolts.



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. Remove the suspension arm.
18. Remove the sealing cups. These will be reused.



5.2 UPPER SPRING PLATES

1. Using the frontmost bolts, fit the upper spring plates to the chassis.



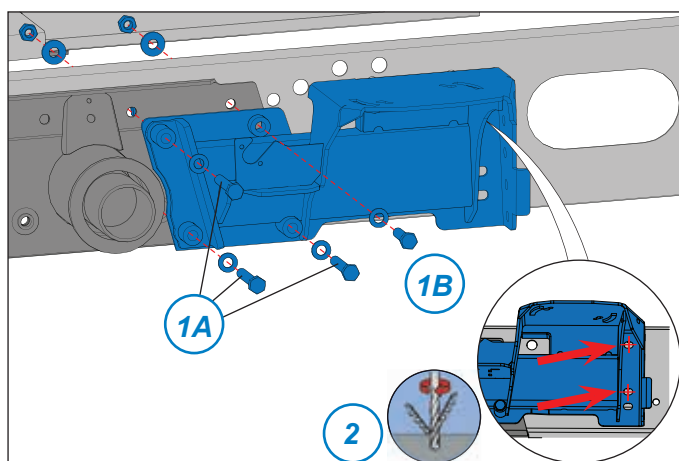
**The colour markings indicate which part is for the left and which for the right.
See 'Fitting instructions'.**

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



100 Nm

2. Drill holes (Ø13 mm) in the place indicated.

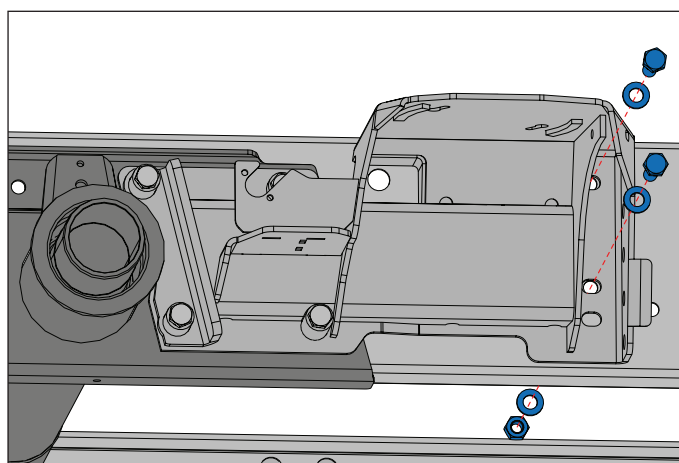


3. Using the rearmost bolts, fit the upper spring plates to the chassis.

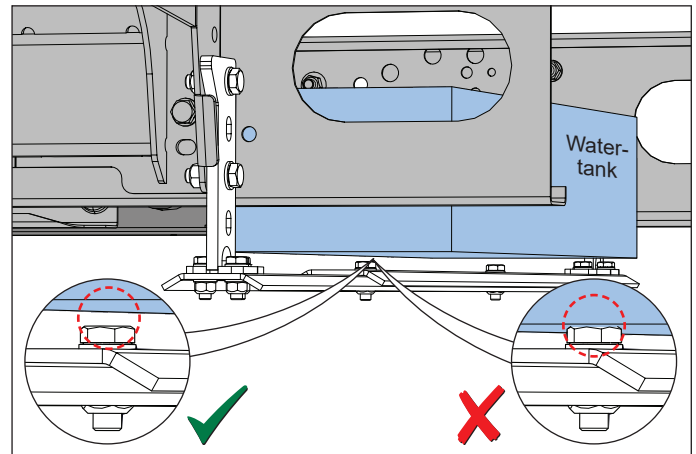
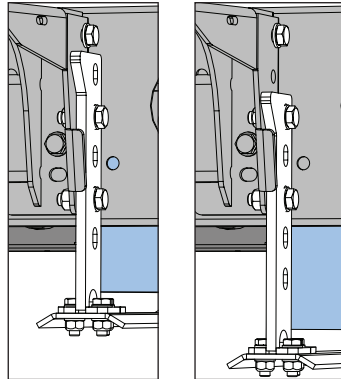
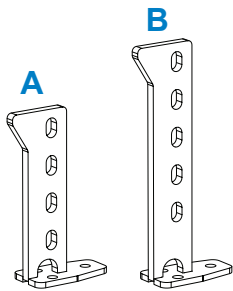
4 x bolt	M12 x 40
8 x washer	M12
4 x lock nut	M12



100 Nm



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

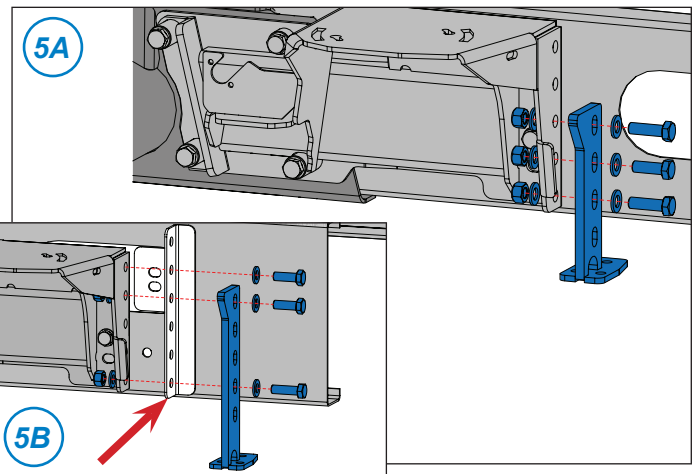


5. Fit the cross beam bracket to the chassis (**5A**).
Use the extra bracket for chassis height 260 .. 291 mm (**5B**).

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



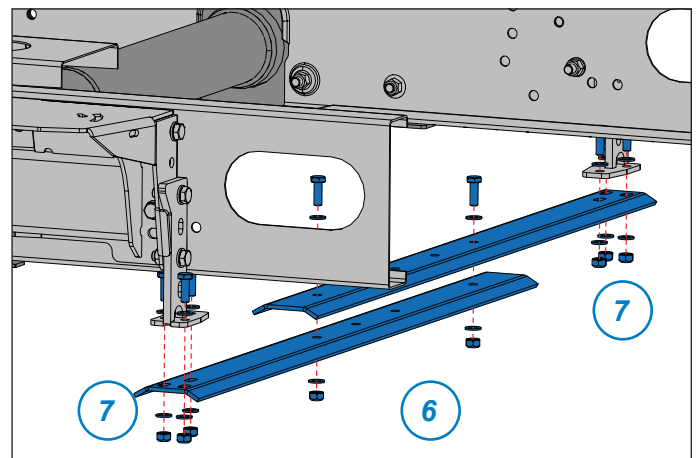
60 Nm

7. Fit the cross beam to the chassis.

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



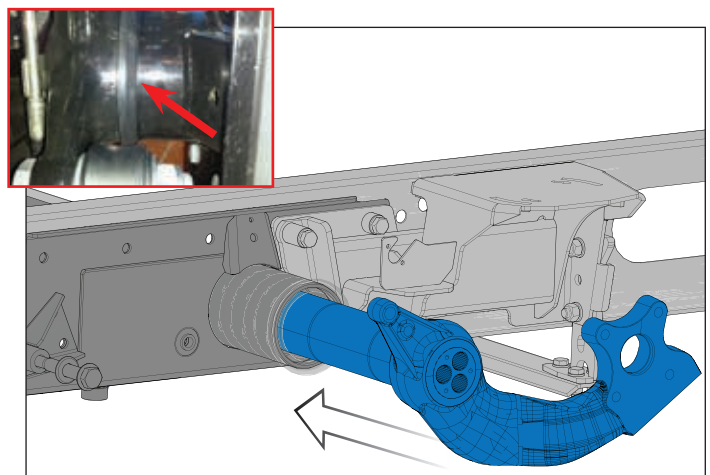
60 Nm



8. Fit the new suspension arm. Ensure the sealing cup is fitted correctly.




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




9. Fit the new shock absorber brackets.

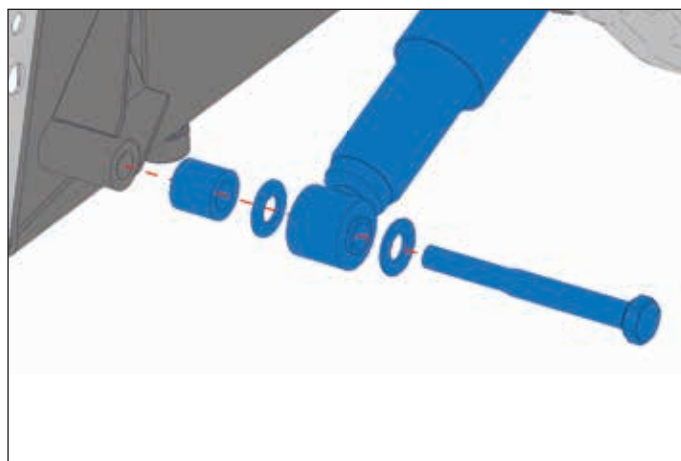
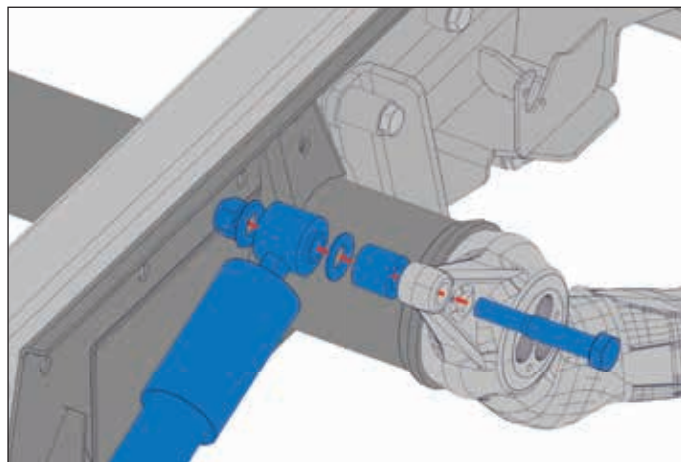


Original fasteners	M12
 Nm	100 Nm

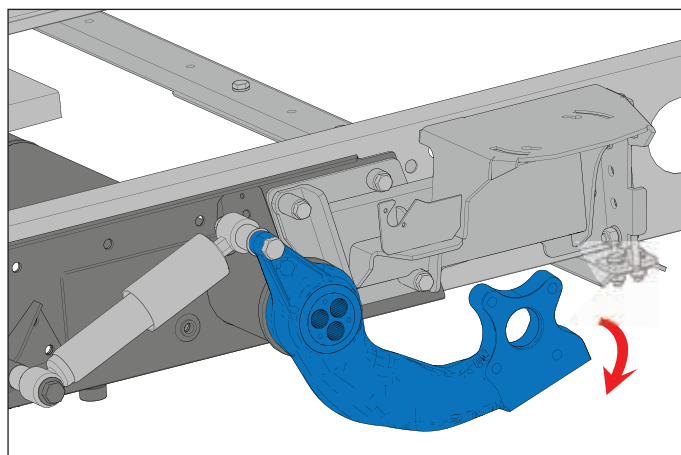
10. Fit the new shock absorbers.

2 x bolt	M16 x 140
2 x bolt	M16 x 160
8 x washer Ø34	M16
4 x lock nut	M16
2 x original washer	M16
4 x distance bush	Ø30 x Ø17 x 30
 Nm	120 Nm

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



11. Allow the axle to hang freely in the shock absorber.



12. Fit the 'new' supplied torsion bars (2x for each side).



Note the colour marking 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.



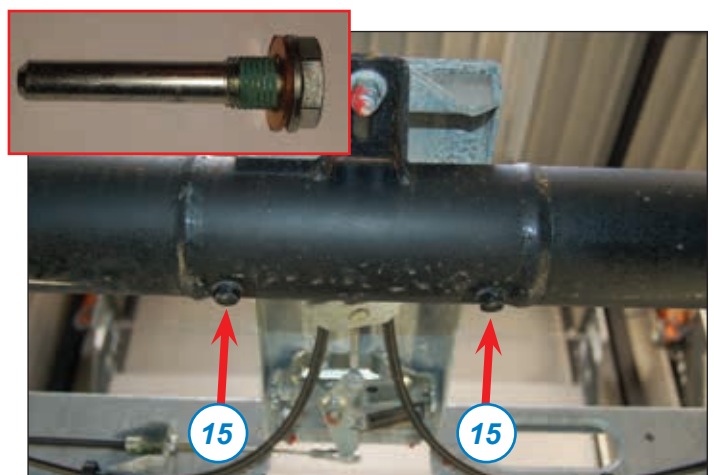
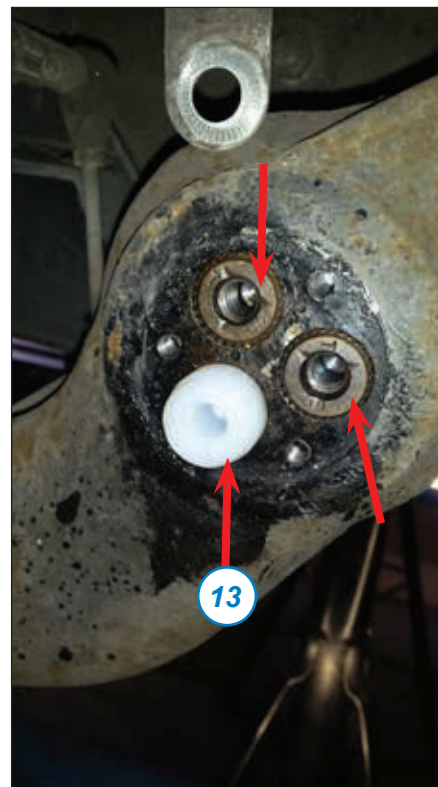
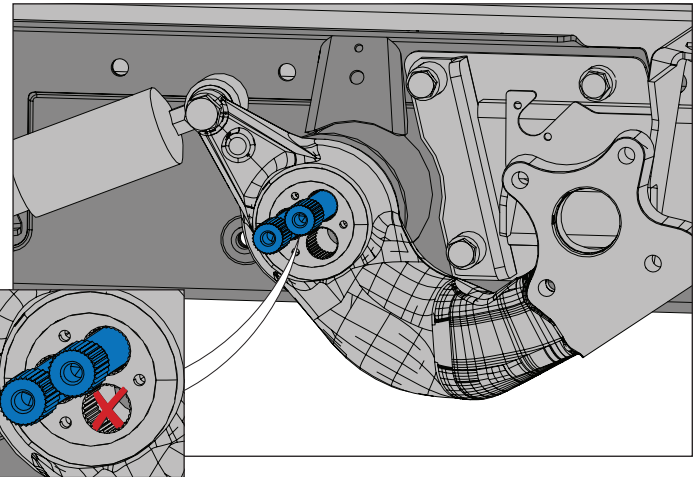
Ensure that the hole on the nylon stop is on the outside.

15. Fit the original locking pins.





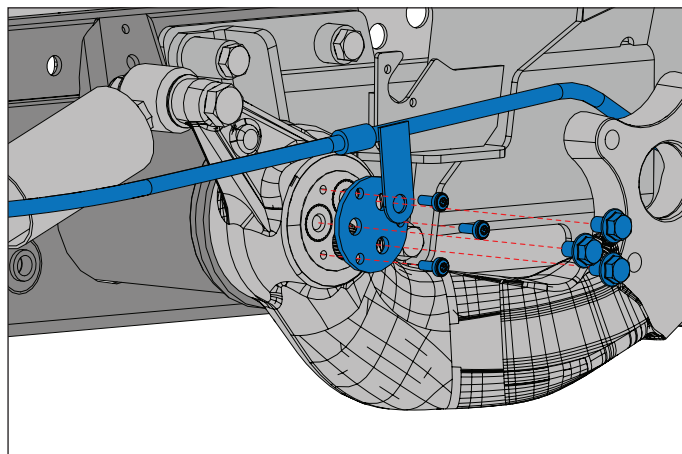
Vehicle manufacturer's guidelines

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.





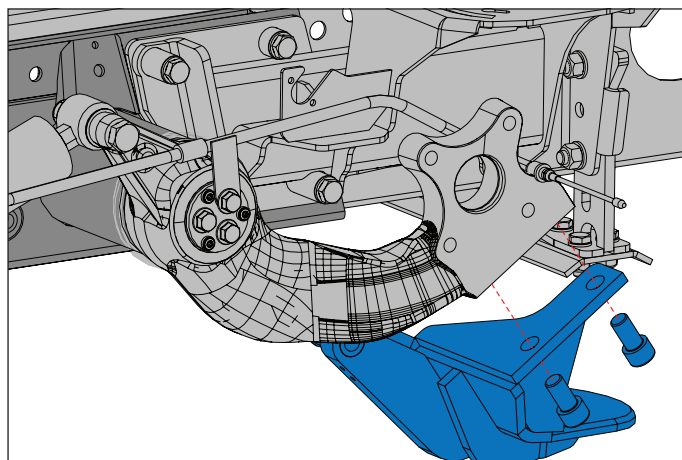
17. Fit the cover using the M6 bolts.
18. Fit the existing hand brake cable.
19. Tighten the bolts.

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



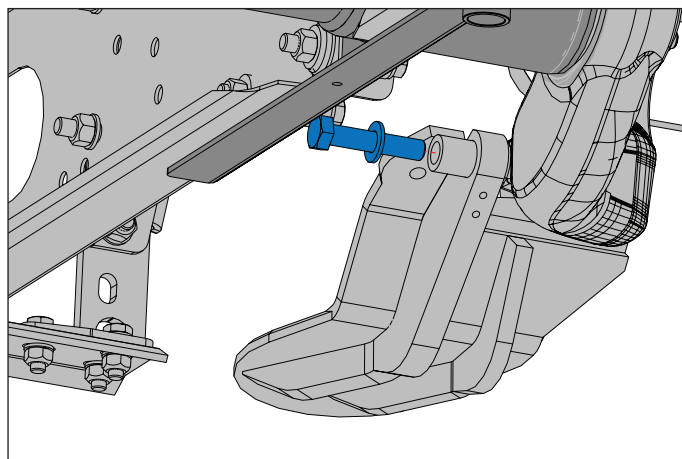
20. Fit the spring plates.

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'.



21. Fit the bolts.

2 x bolt	M14 x 70 x 1.5
2 x washer	M14
	120 Nm



22. Fit the ball-joint brackets.

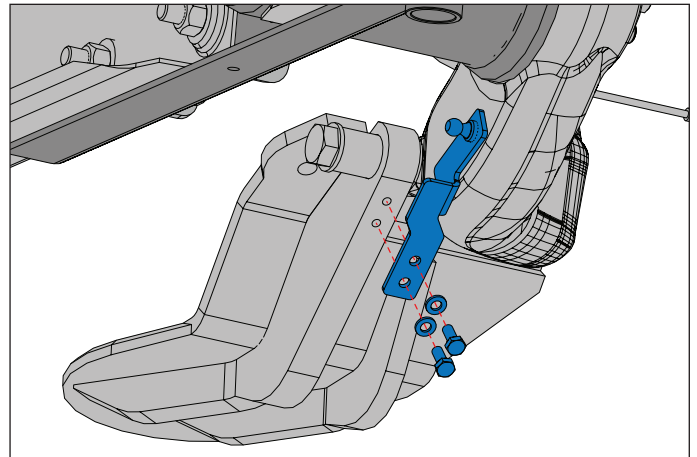


The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.

4 x bolt M6 x 16
4 x washer M6



8 Nm

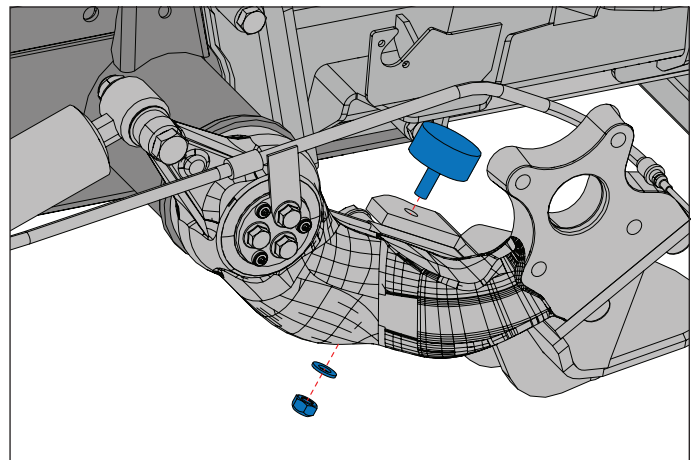


23. Fit the new bump stops.

2 x nut M10
2 x washer M10



40 Nm

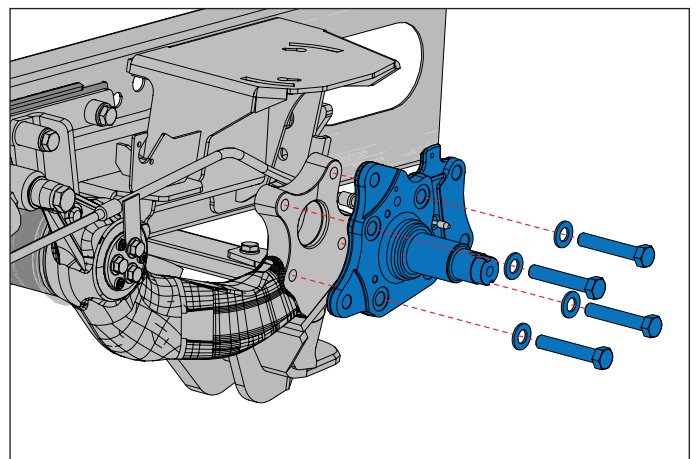


24. Fit the stub axles.

Original fasteners



**Vehicle
manufacturer's
guidelines**



5.3 AIR SPRINGS

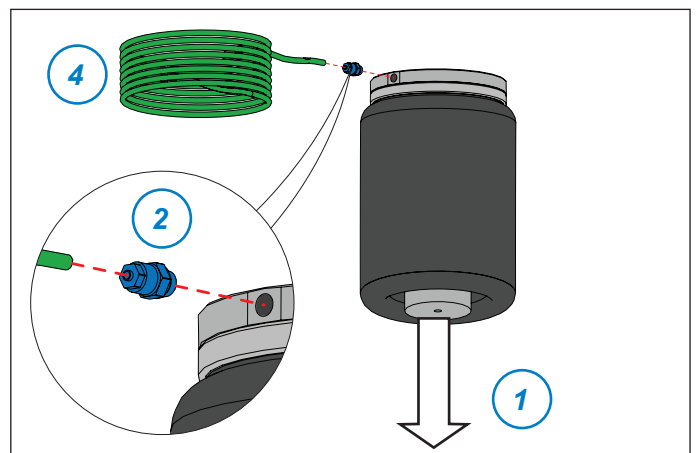
1. Pull out the plug under the air-spring.
2. Fit the air couplings to the air springs.

air coupling



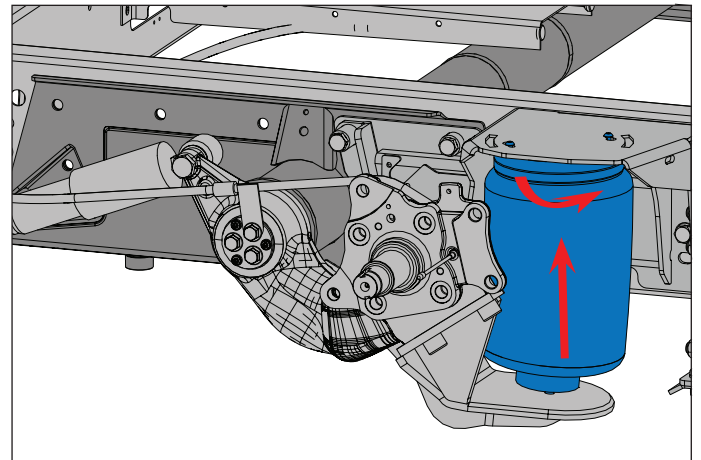
3 Nm

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

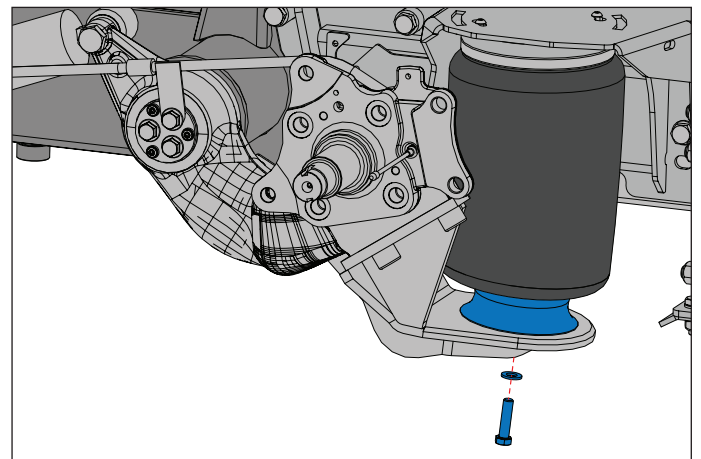




5. Fit the air springs to the upper spring plates.



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



20 Nm

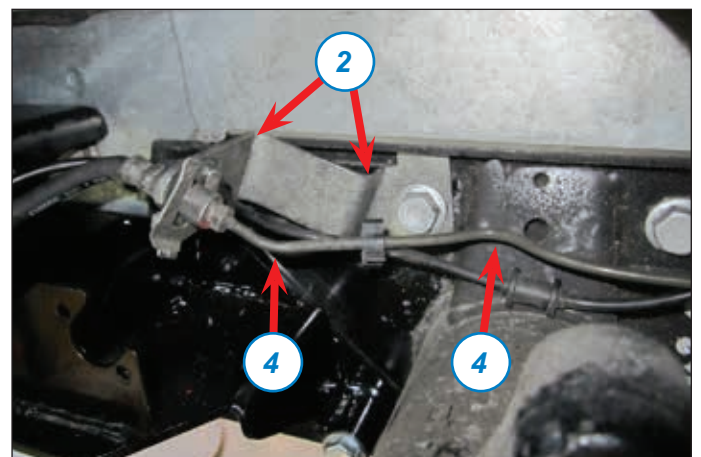
5.4 HEIGHT SENSORS

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

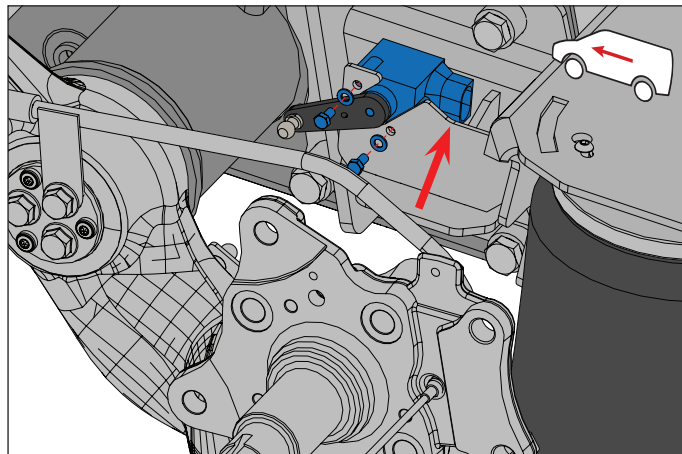
M5 x 10

4 x washer

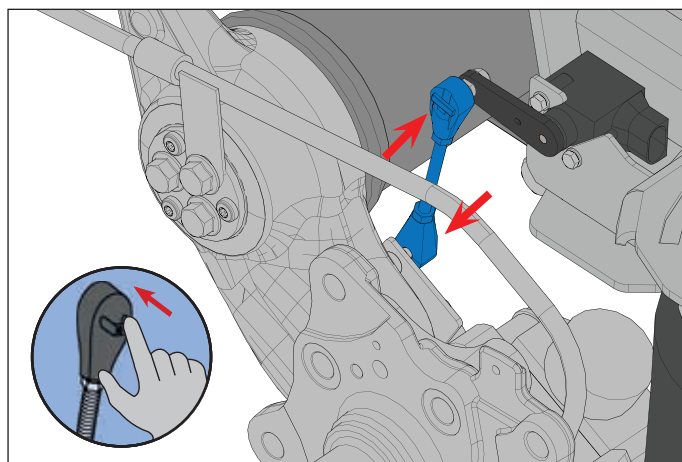
M5



6 Nm



7. Check the length of the height sensor rods - **115mm** - 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.



5.5 AXLE COMPONENTS

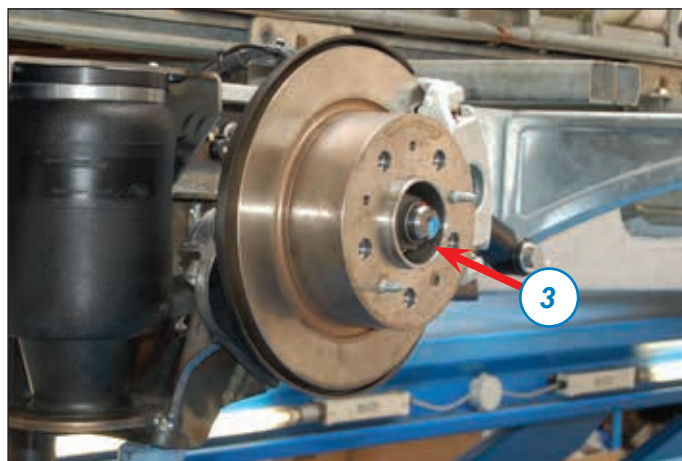
1. Fit the protecting cap.
2. Fit the new handbrake cable.
3. Fit the wheel bearing¹.

New hub nuts

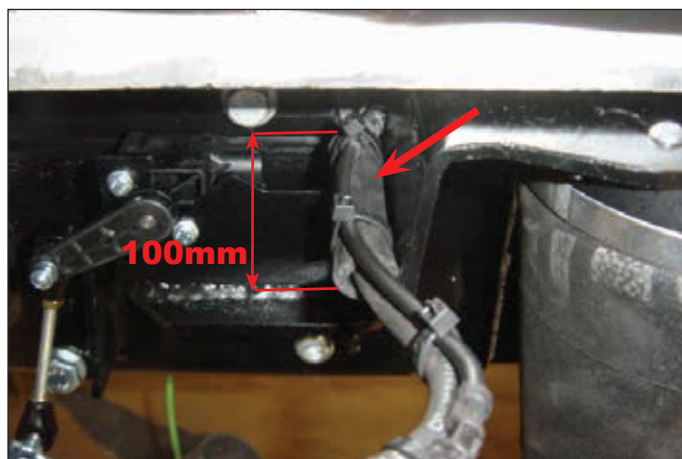
4. Secure the nut by banging the edge of the nut into the recess using a suitable chisel.
5. Fit the brake shoes.
6. Fit the brake disc¹.
7. Fit the brake calliper¹



¹ Vehicle manufacturer's guidelines



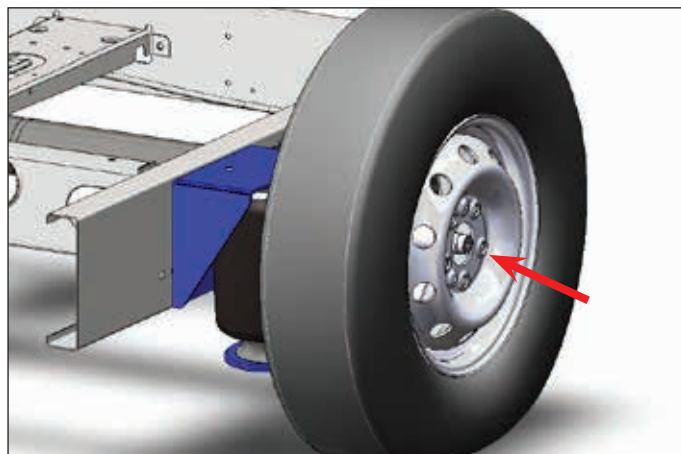
8. Place the protective hose around the brake line (2x).



9. Fit the wheels.

			Vehicle manufacturer's guidelines
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	Following installation, lubricate the axle components with grease via the grease nipples.
--	--



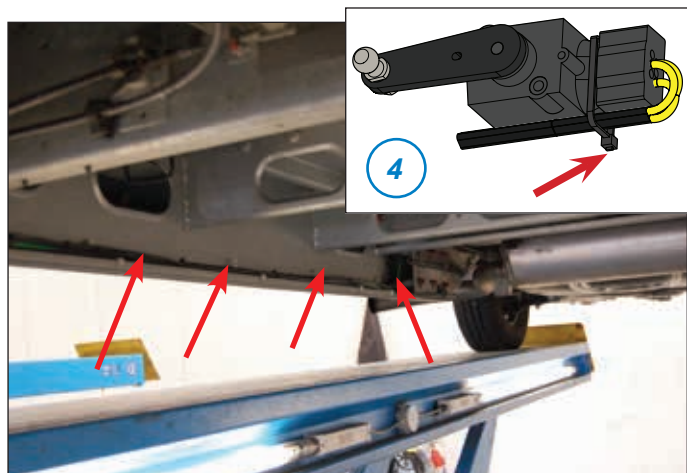
5.6 AIR TUBES

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.

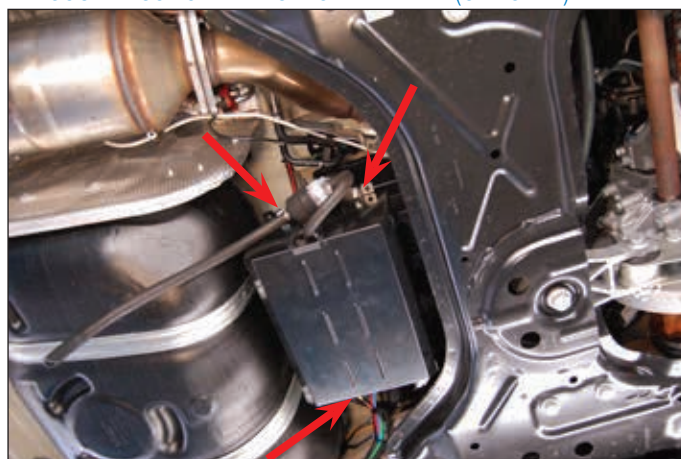
	Use sufficient tie-wraps to secure the wires!
--	--

	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.

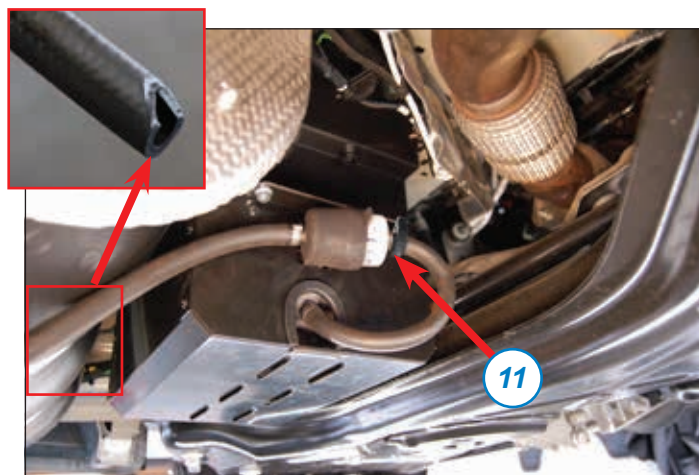


AIR COUPLINGS FOR EMERGENCY VALVE KIT (OPTIONAL)



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

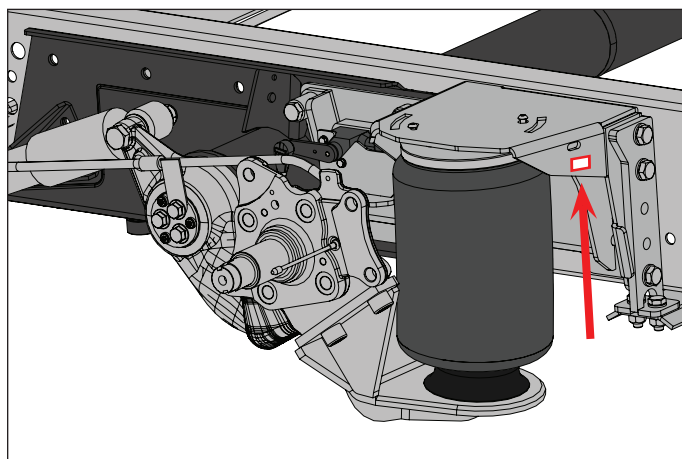
A



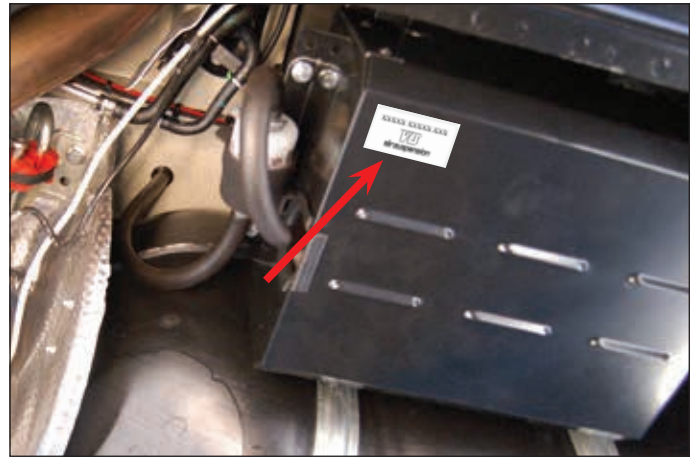
B



3. Affix sticker **B** to the upper spring plate.



4. Affix sticker **A** on the compressor box.
5. Apply the protective film over the stickers.



If kit 105 18 08 2XX for the rear axle has been fitted, continue from chapter 8 „Calibration“.

If kit 105 18 08 4XX for the front and rear axle has been ordered, continue from chapter 7.

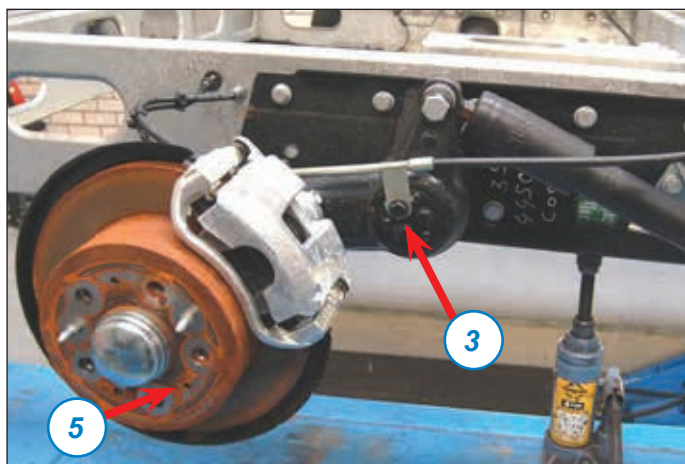
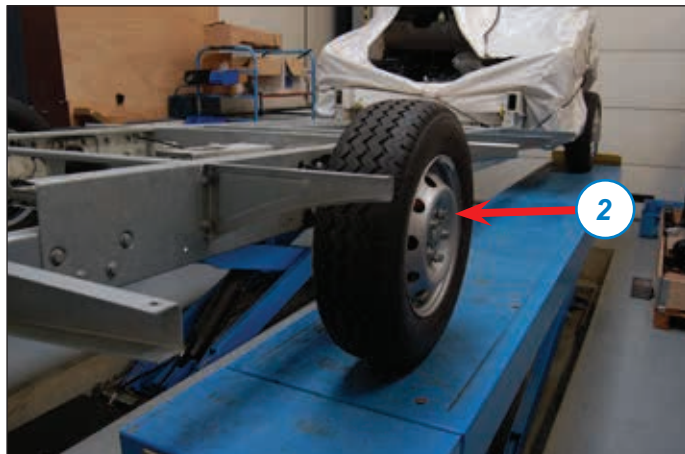
6. FITTING THE AIR SUSPENSION KIT FOR THE REAR AXLE ON A 6X2 VEHICLE



Carry out all the steps in this section for 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 hand brake cable brackets.
4. Remove the entire brake caliper.
5. Remove the brake disc.

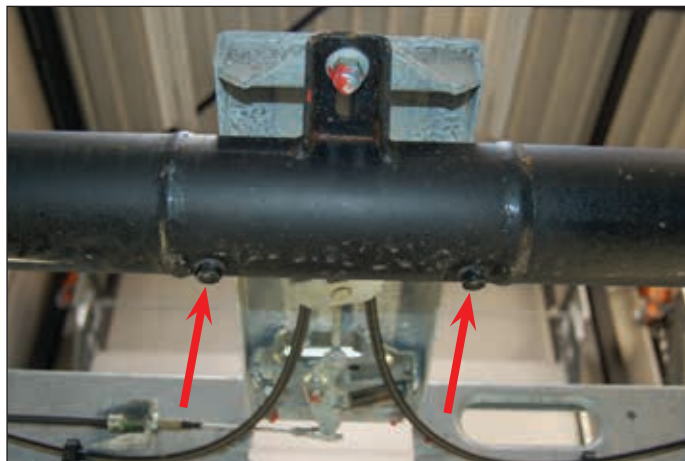


Avoid putting tension on the brake line.

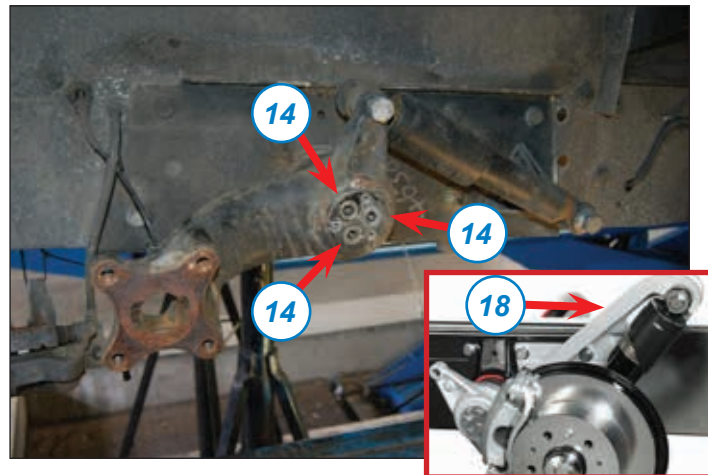
6. Remove the wheel bearing.
7. Remove the handbrake cable.
8. Remove the brake mechanism.
9. Remove the protecting cap.
10. Remove the stub axle.



11. Loosen the marked bolts.



12. Remove the bolts.
13. Remove the plate.
14. Remove all torsion bars from the axle (on both sides).
15. Remove the shock absorbers.
16. Remove the suspension arm.
17. Remove the sealing cups. These will be reused.
18. Remove the shock absorber bracket from axle **2** & **3**.



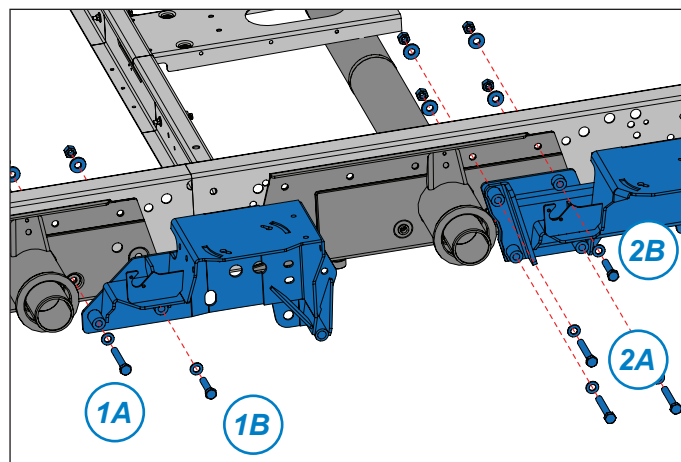
6.2 UPPER SPRING PLATES

1. On axle **2**, secure the upper spring plates (at the shock absorber attachment points) to the chassis using the frontmost bolts.
2. On axle **3**, fit the other upper spring plates to the chassis using the frontmost bolts.

8 x bolt (1A, 2A)	M12 x 80
4 x bolt (1B, 2B)	M12 x 55
12 x washer	
12 x original washer ø30	M12
12 x lock nut	M12



100 Nm

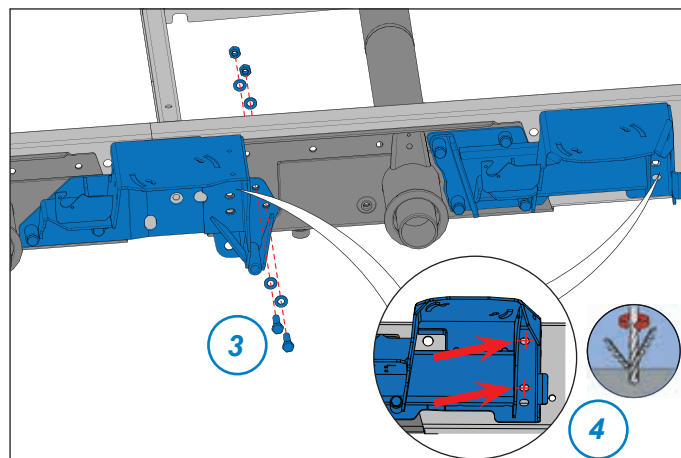


3. On axle **2**, fit the rearmost bolts.

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



100 Nm



4. Drill holes (Ø13 mm) in the place indicated.



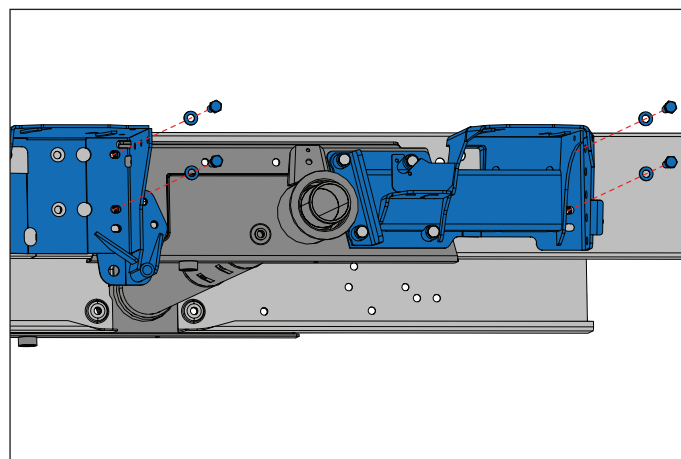
The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.

5. Fit the bolts.

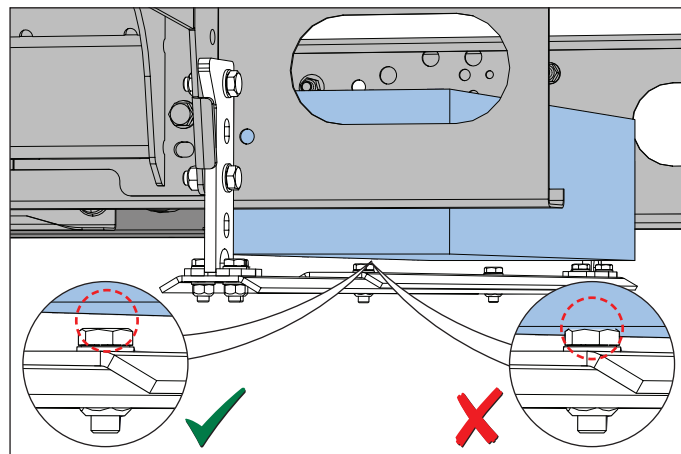
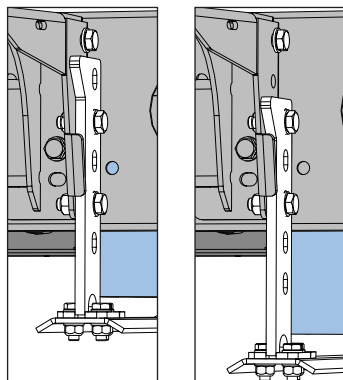
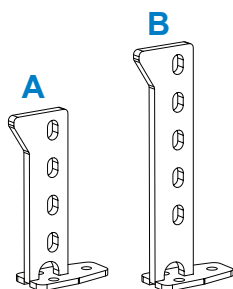
8 x bolt	M12 x 40
16 x washer	M12
8 x lock nut	M12



100 Nm



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

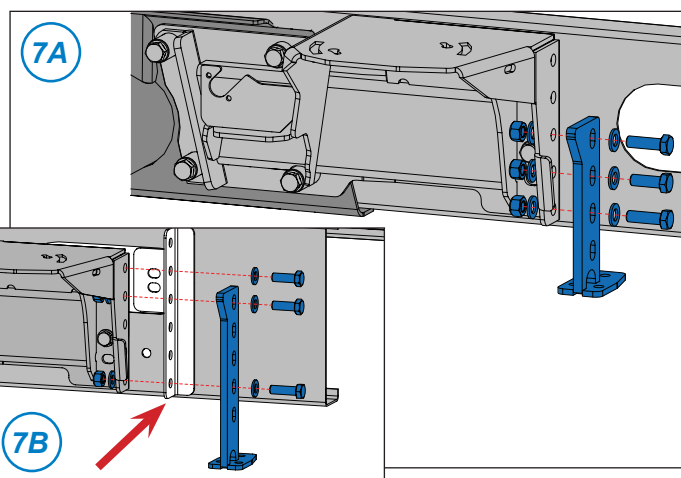


7. Fit the cross beam bracket to the chassis (**7A**).
Use the extra bracket for chassis height 260 .. 291 mm (**7B**).

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



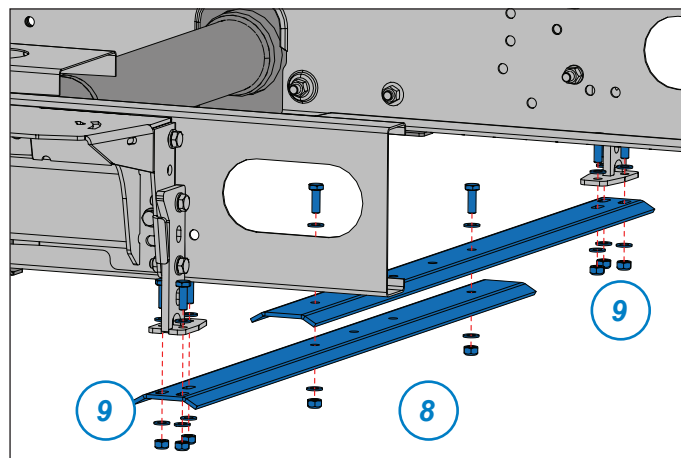
60 Nm

9. Fit the cross beam to the chassis.

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



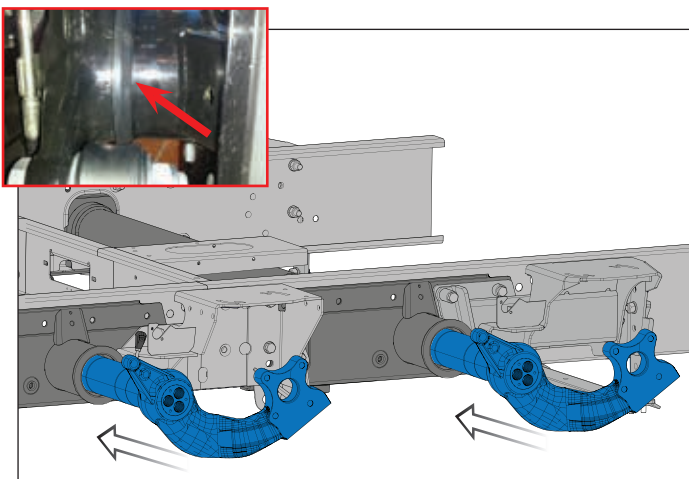
60 Nm



10. Fit the new suspension arm. Ensure the sealing cups are fitted correctly.



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



11. Fit the new shock absorber brackets.



If the vehicle has a 6x2 configuration, only fit the new shock absorber brackets for axle 2.

Original fasteners M12



100 Nm



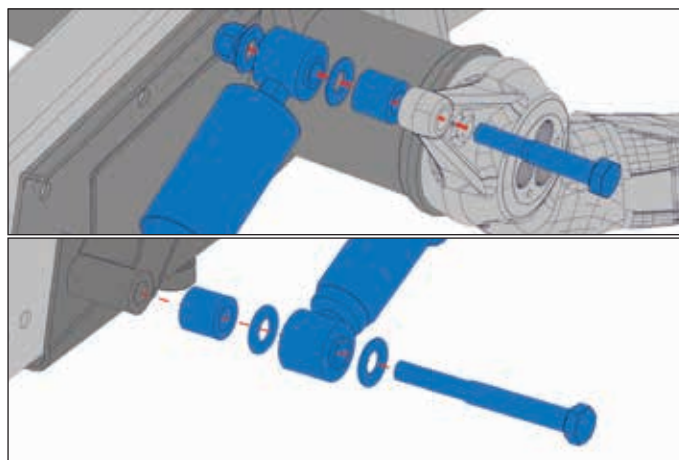
12. Fit the new shock absorbers. The bottom sides of the shock absorbers on axle 3 are fitted to the upper spring plate on axle 2.

4 x bolt M16 x 140
4 x bolt M16 x 160
16 x washer Ø34 M16
8 x lock nut M16
4 x original washer M16
8 x distance bush Ø30 x Ø17 x 30

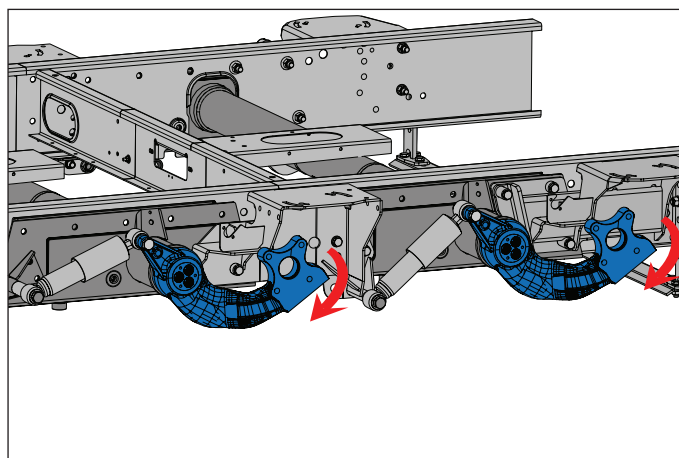


120 Nm

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



13. Allow the axles to hang freely in the shock absorbers.



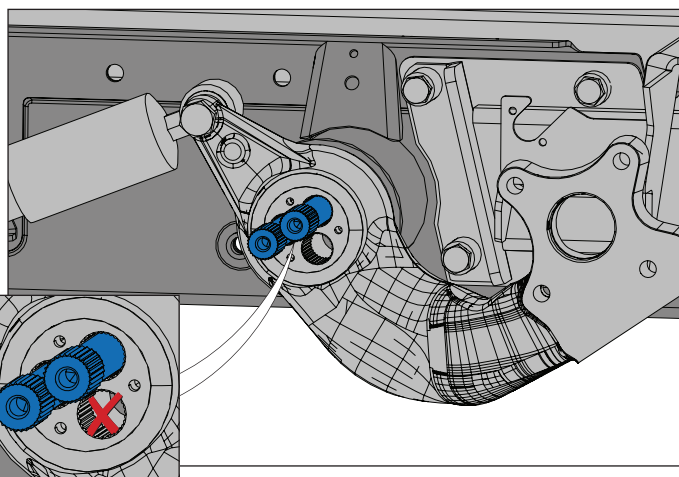
14. Fit the 'new' supplied torsion bars (2x 2 for each side).



Note the colour marking 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.

15. 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.

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



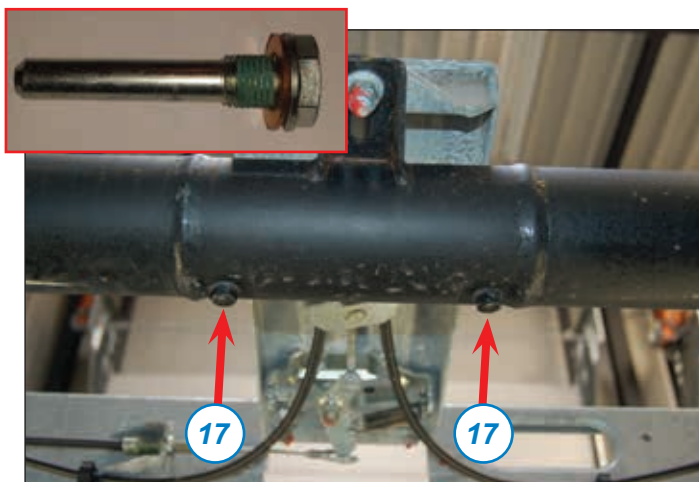
Ensure that the hole on the nylon stop is on the outside.

17. Fit the original locking pins.



**Vehicle
manufacturer's
guidelines**

18. 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.



19. Fit the cover using the M6 bolts.
20. Fit the existing handbrake cables.
Route the handbrake cable from axle 3 through the upper spring plate on axle 2.
21. Tighten the bolts.

12 x Taptite bolt

M6 x 16

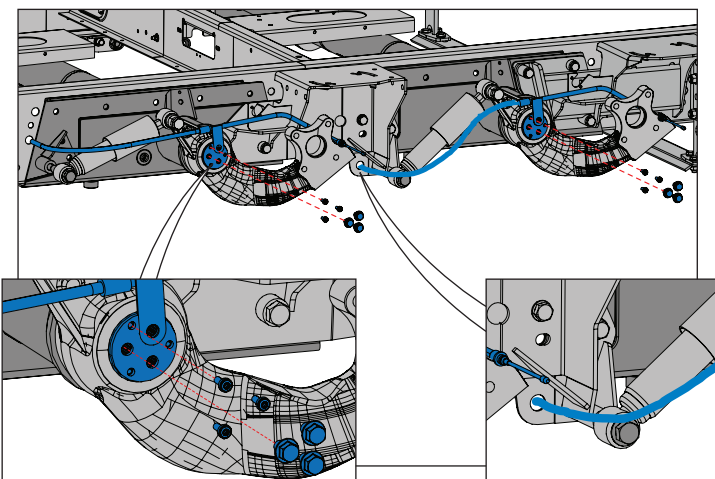


8 Nm

12 x original M10 bolt



60 Nm

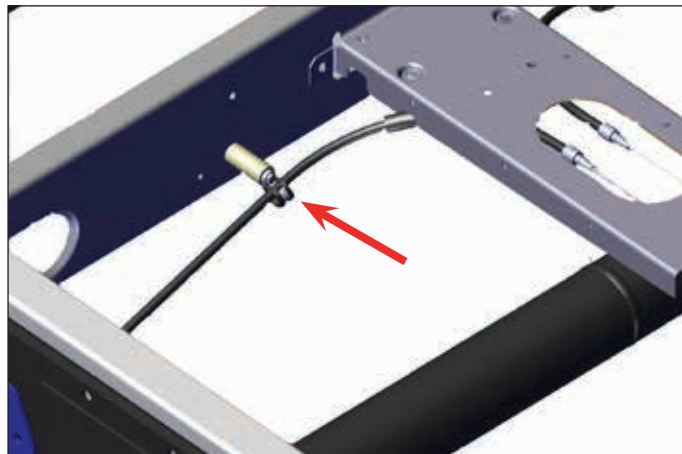


22. Fit the existing handbrake cable for axle **3** to the chassis using the distance bush and pipe clamp.

2 x bolt	M6 x 70
2 x washer	M6
2 x distance bush $\varnothing 22 \times 50$	
2 x lock nut	M6



8.5 Nm



23. Fit the spring plates.

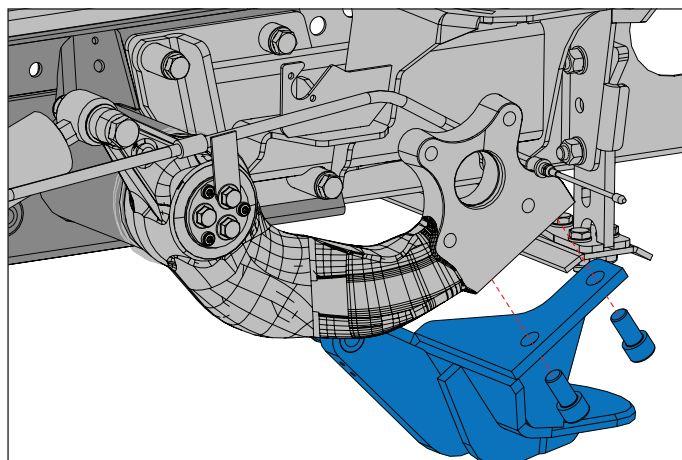


The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.

8 x Allen screw	M16 x 30 x 1.5
------------------------	-----------------------



180 Nm

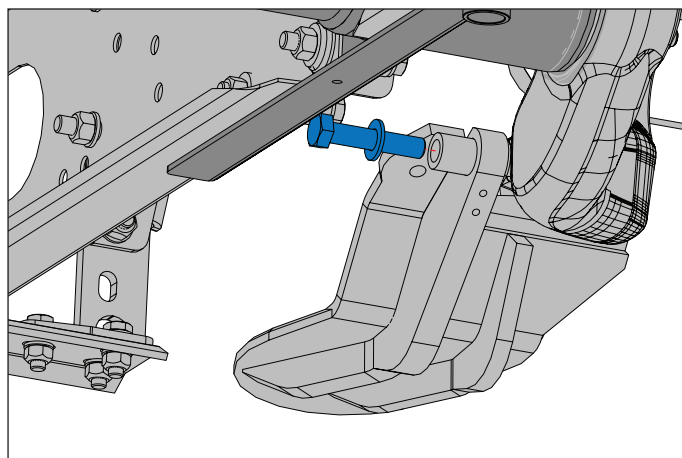


24. Fit the bolts.

4 x bolt	M14 x 70 x 1.5
4 x washer	M14



120 Nm



25. Fit the ball-joint brackets to axle **2**.

26. The ball-joints must point inwards.

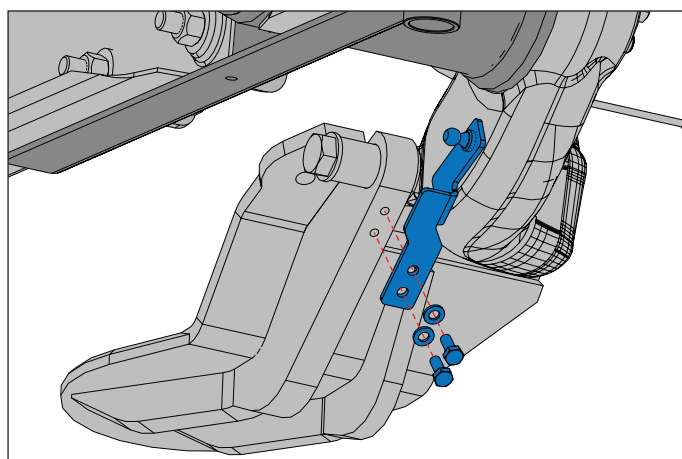


The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.


4 x bolt	M6 x 16
4 x washer	M6

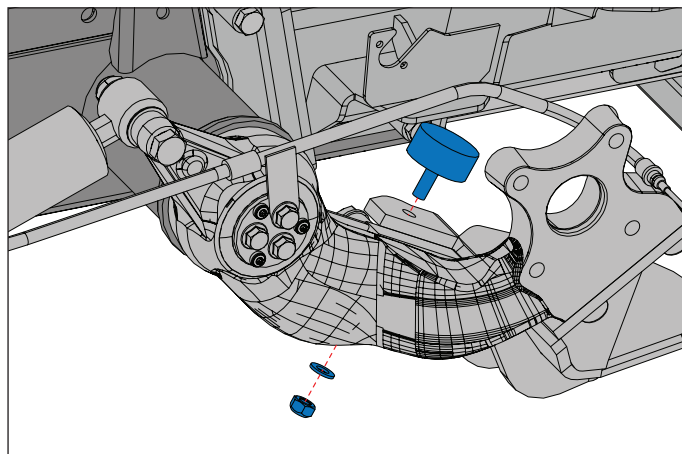


8 Nm



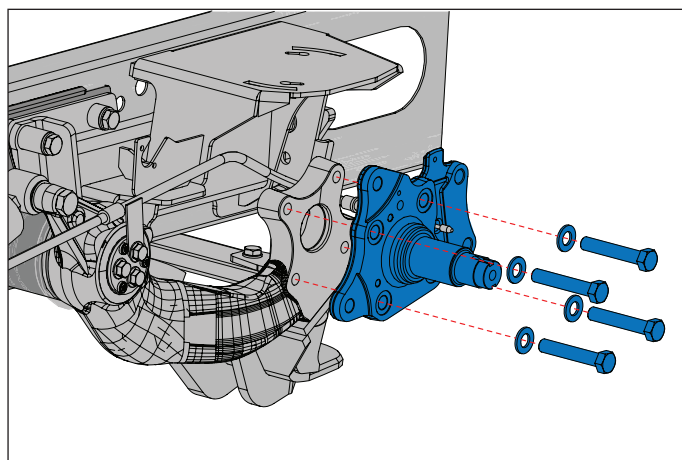
27. Fit the new bump stops.

4 x steel lock nut	M10
4 x washer	M10
	40 Nm




28. Fit the stub axles.

Original fasteners		
		
Vehicle manufacturer's guidelines		

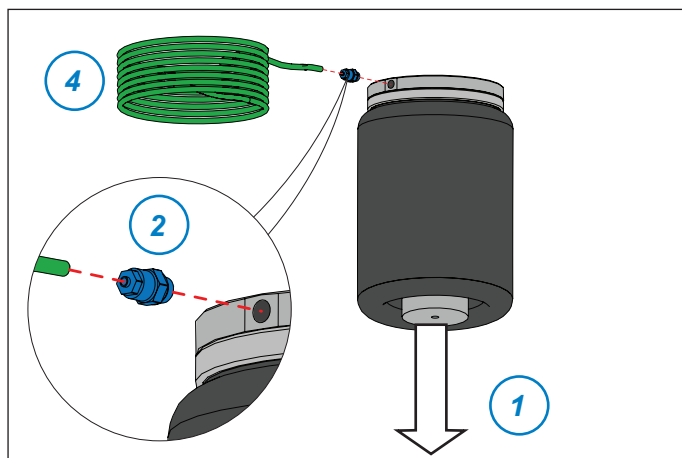


6.3 AIR SPRINGS

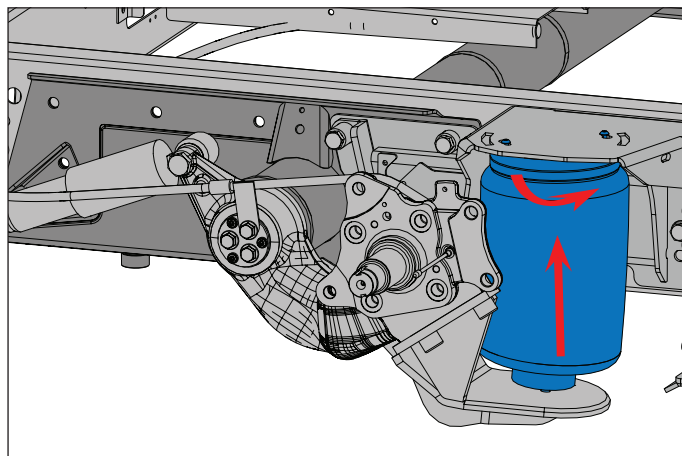
1. Pull out the plug under the air-spring.
2. Fit the air couplings to the air springs.

air coupling	
	3 Nm

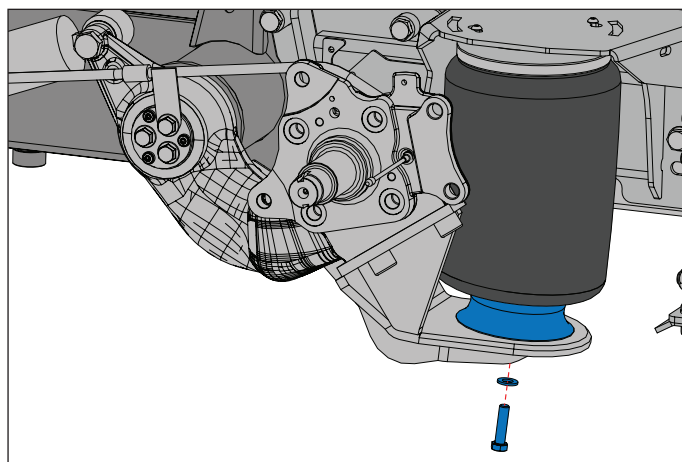
3. Connect the 1.5 m long **black** air tube to the right air spring for axle 3.
4. Connect the 1.5 m long **green** air tube to the left air spring for axle 3.



5. Fit the air springs for axle 3.
6. Route the air tubes to axle **2** and fit the T connectors here.
7. Connect the **black** air tube to the right air spring for axle **2**.
8. Connect the **green** air tube to the left air spring for axle **2**.
9. Route the air tubes to the T connectors and connect them up.
10. Fit the air springs for axle 2.



11. Push the cups onto the underside of the air springs.
12. Fit the air springs to the spring plates.
**** Only tighten this bolt when the air springs are pressurised.**



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



20 Nm

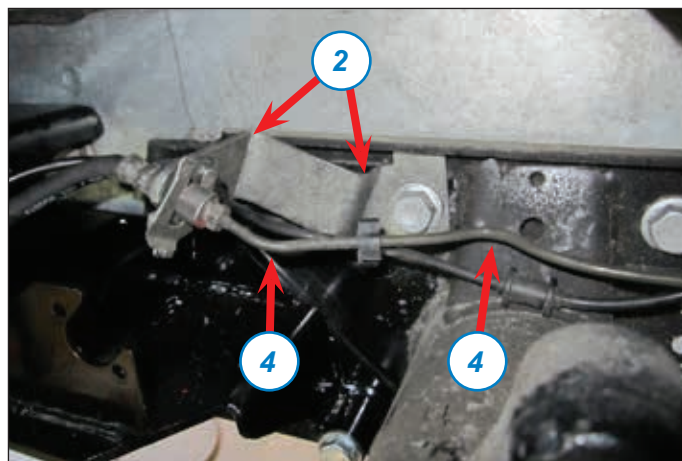
6.4 HEIGHT SENSORS

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. Fit the height sensors to the height sensor brackets for axle **2**.
 Check the position of the connector.

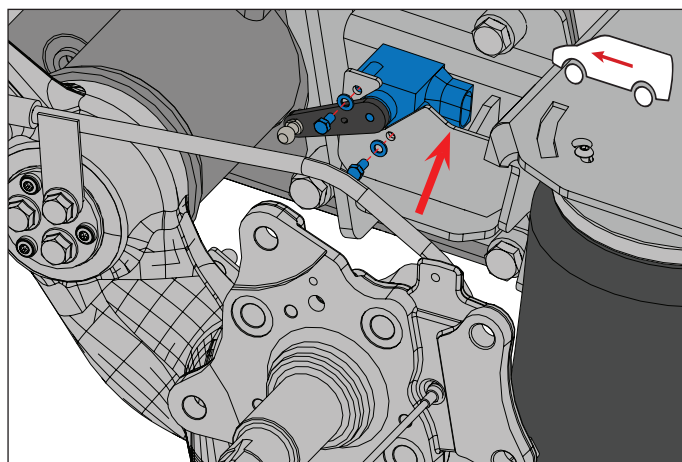


The height sensor connector must point towards the rear of the vehicle.

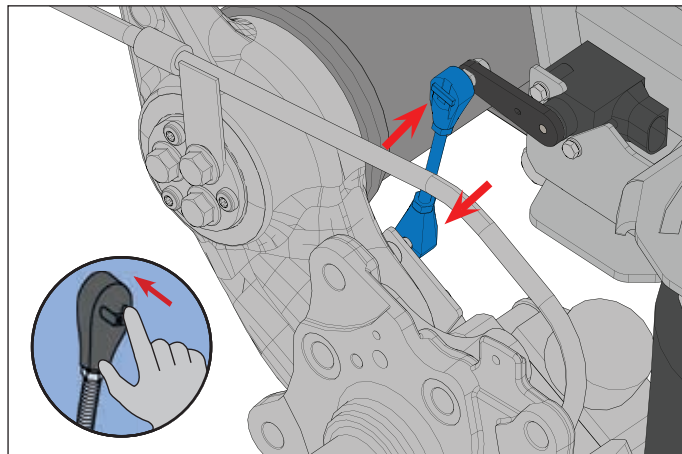
4 x bolt M5 x 10
 4 x washer M5



6 Nm



7. Check the length of the height sensor rods - **115mm** - 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.

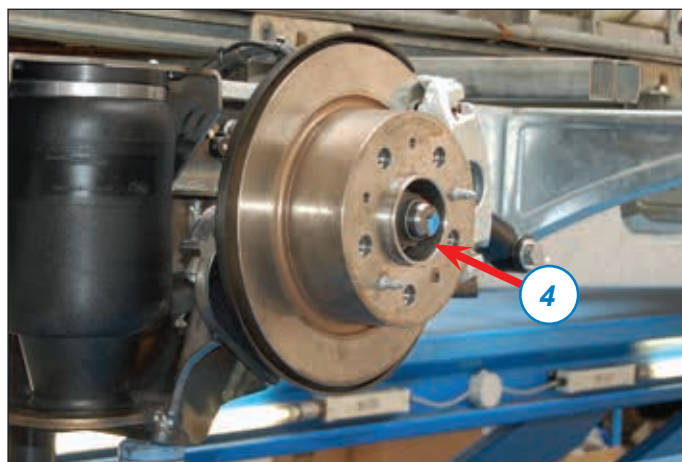


6.5 AXLE COMPONENTS

1. Fit the protecting cap.
2. Fit the new handbrake cable.
3. Fit the brake shoes.
4. Fit the wheel bearing¹.

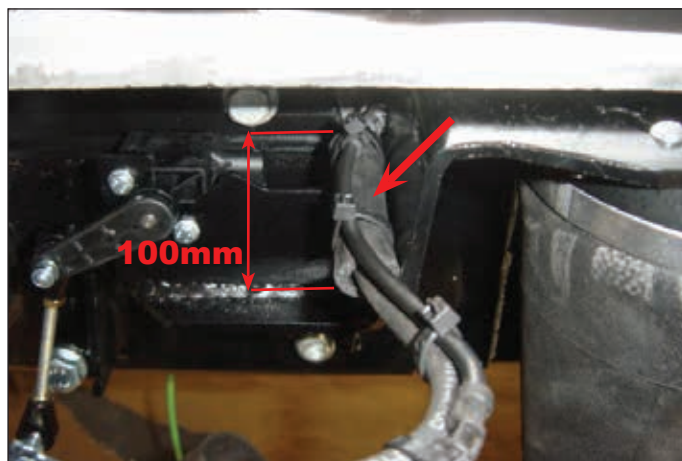
New hub nuts

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



¹ Vehicle manufacturer's guidelines

8. Place the protective hose around the brake line (4x) as shown.



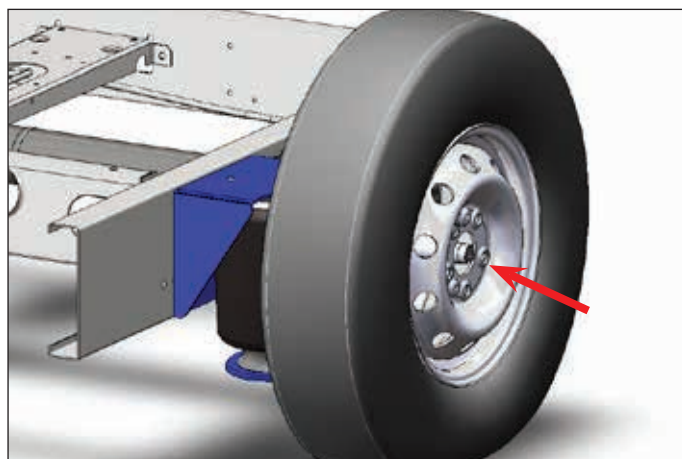
9. Fit the wheels.



Vehicle manufacturer's guidelines



Following installation, lubricate the axle components with grease via the grease nipples.



6.6 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 wires!



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.

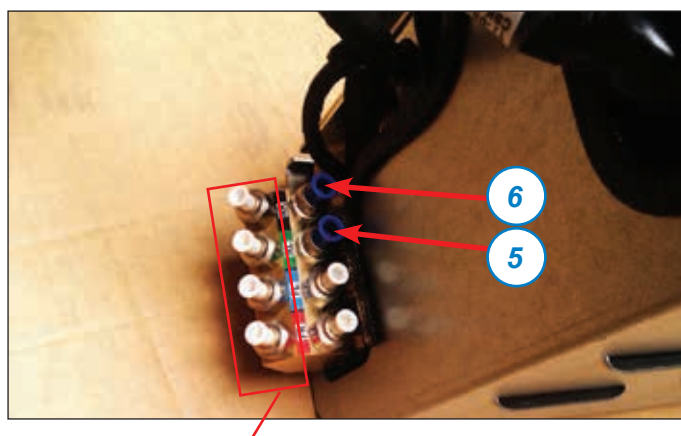
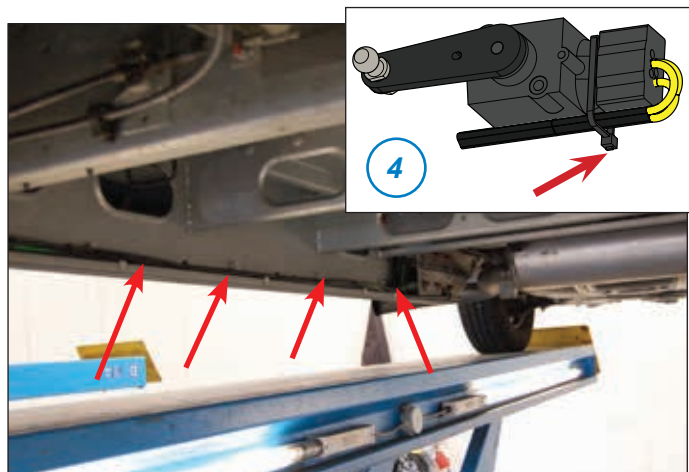
3 x flange lock nut

M6

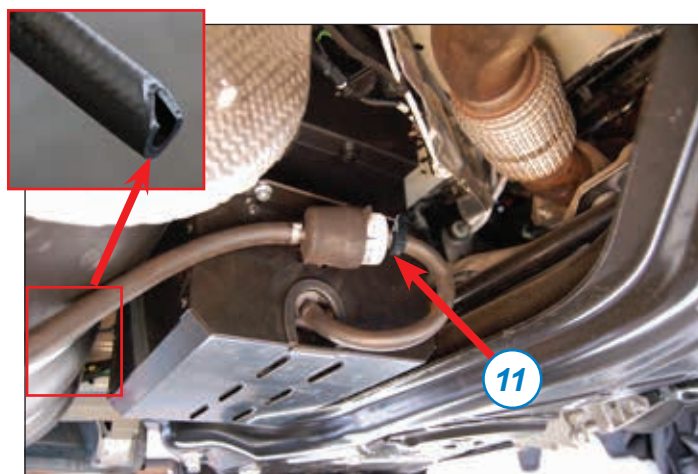
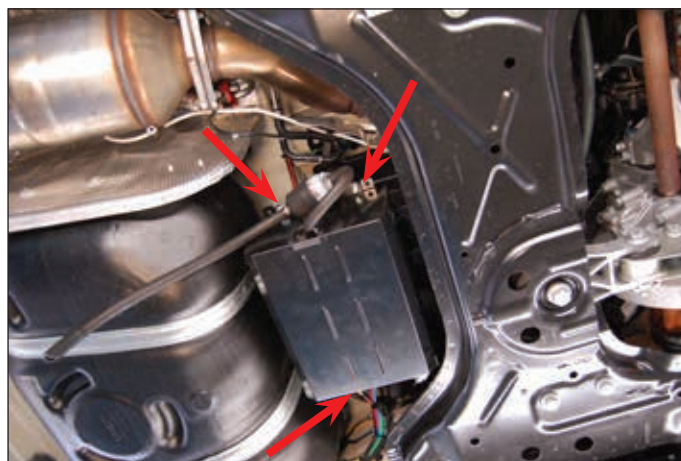


8 Nm

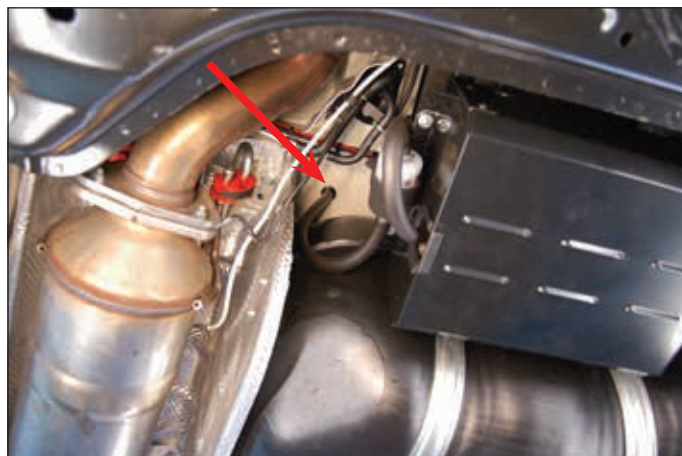
11. Fit the suction filter to the inlet line.



AIR COUPLINGS FOR EMERGENCY VALVE KIT (OPTIONAL)



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

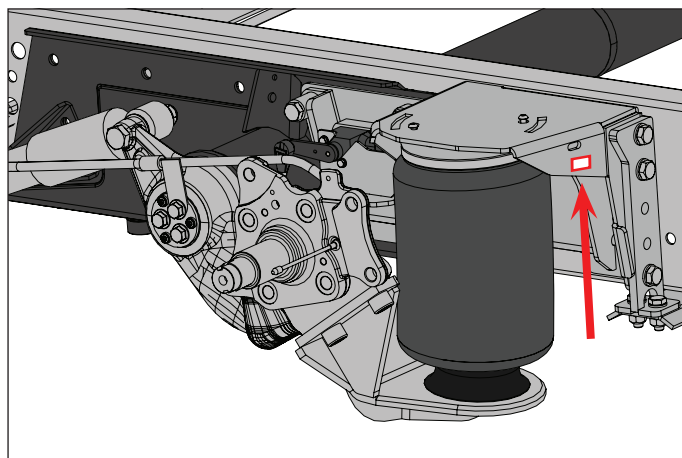


6.7 WARRANTY STICKERS

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



3. Affix sticker **B** to the upper spring plate.



4. Affix sticker **A** on the compressor box.
5. Apply the protective film over the stickers.



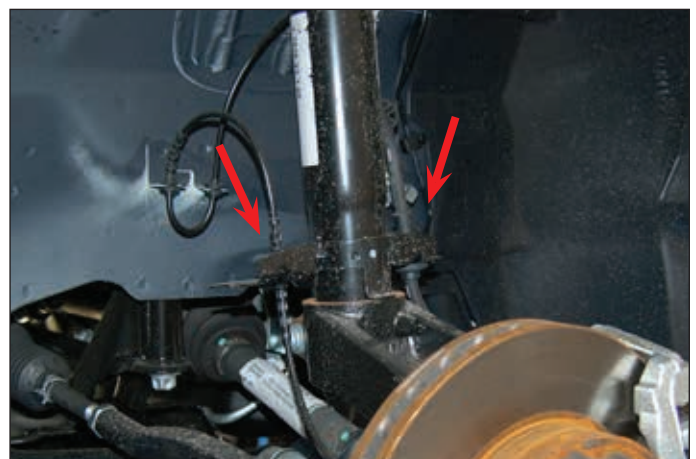
If kit 105 18 08 2XX for the rear axle has been fitted, continue from chapter 8 "Calibration".

If kit 105 18 08 4XX for the front and rear axle has been ordered, continue from 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.



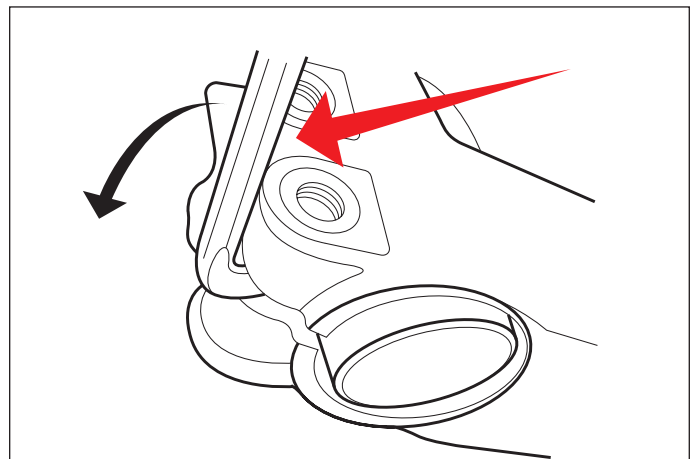
9. Undo the bolts.
The nuts and bolts will be re-used.



10. Unscrew the stabiliser arm.



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 or wires cannot be placed under tension or become damaged.

7.2 SUSPENSION STRUT

1. Place the new suspension strut in the stub axle.
2. Ensure that the lip abuts the stub axle.
3. Fit the bolt.
**** Do not tighten the bolts yet; this must be done when the vehicle is at ride height.**

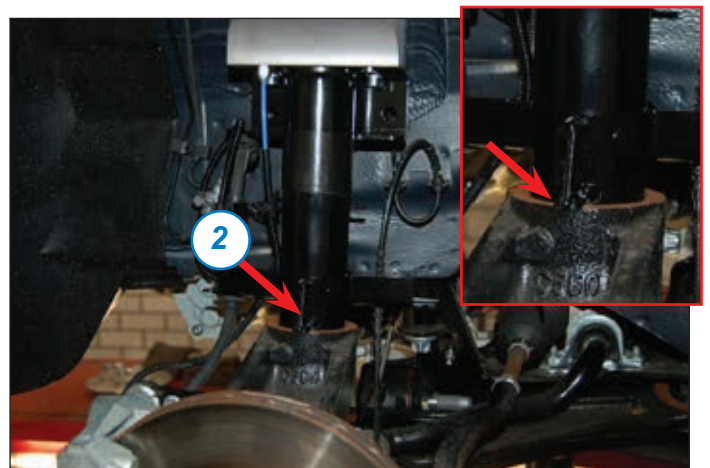
2 x original bolt**
2 x original nut



X250: 120 Nm
X290: 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; this must be done when the vehicle is at ride height.**

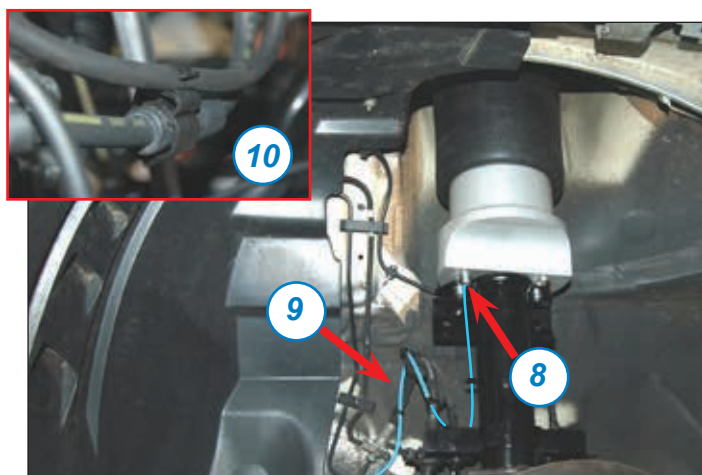


6 x bolt**	M10 x 30 x 1,25
6 x washer	M10



60 Nm

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



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

7.3 HEIGHT SENSORS

1. Mount the height sensors on the height sensor brackets.
2. Be careful to check whether it is the left or right variant.

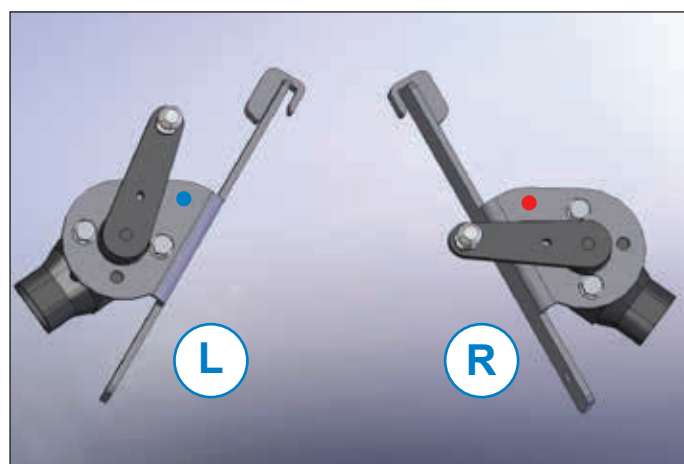
4 x bolt	M5 x 10
4 x washer	M5



6 Nm



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

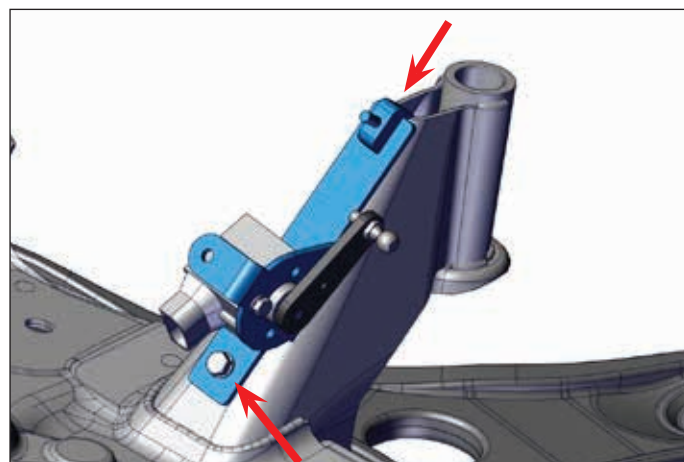


3. Mount the height sensor brackets in the position indicated.

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	



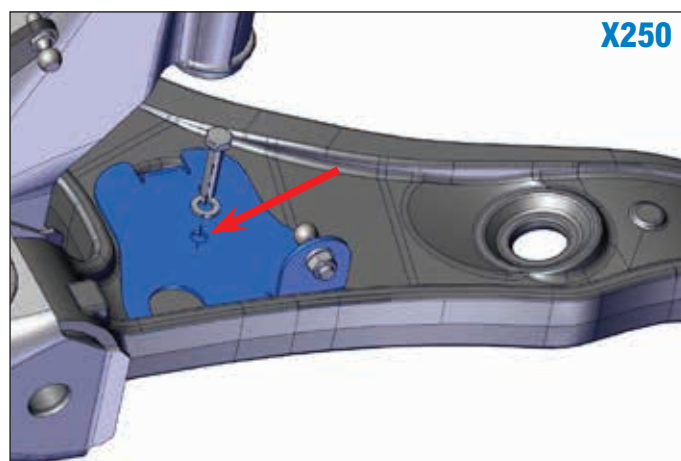
The colour markings indicate which part is for the left and which for the right. See 'Fitting instructions'.



5. If the vehicle is a X250 model (model year 2014 or earlier), go to point 7.
6. If the vehicle is a X290 model (model year 2014 or later), go to point 11.

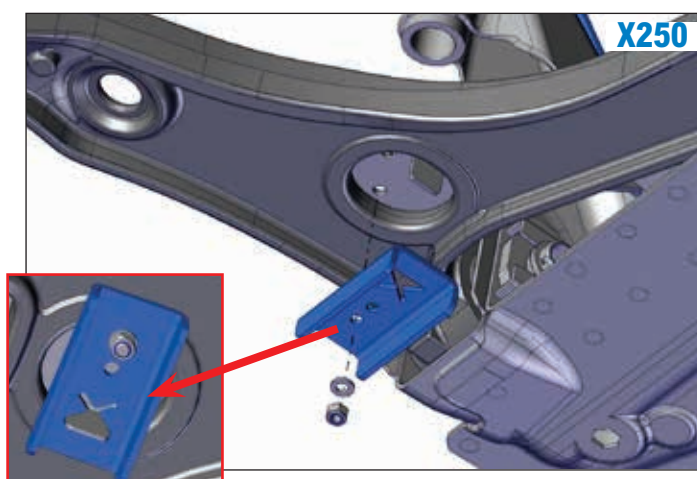


7. Place the ball-joint brackets on the suspension arm.

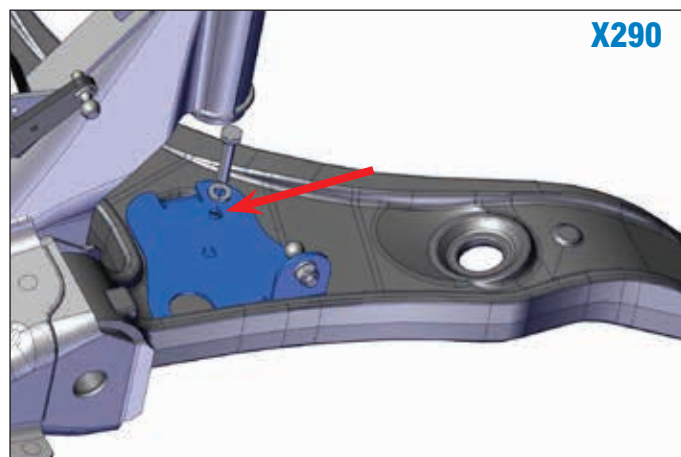


8. Fit the plate on the underside.
9. Tighten the bolts.
10. Continue at point 14.

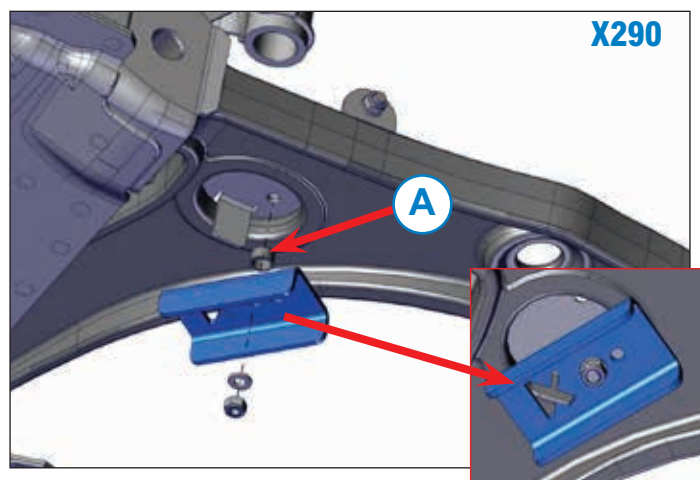
2 x bolt	M6 x 30
4 x washer	M6
2 x lock nut	M6
 8 Nm	



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



12. Fit the plate on the underside.
use the spacer here (A).
13. Tighten the bolts.

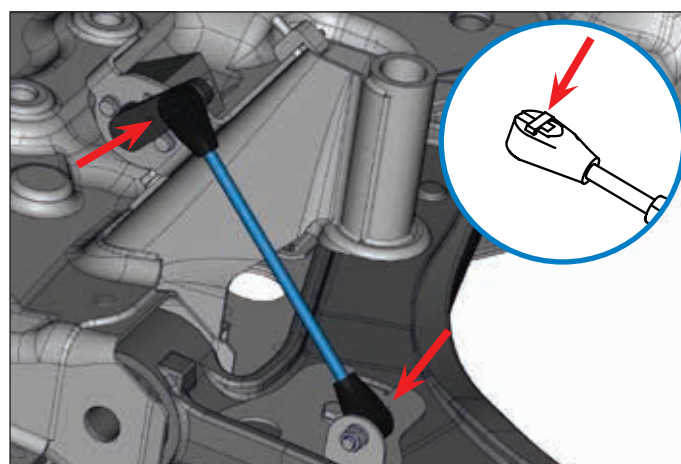


2 x bolt	M6 x 30
4 x washer	M6
2 x lock nut	M6
2 x Distance bush	



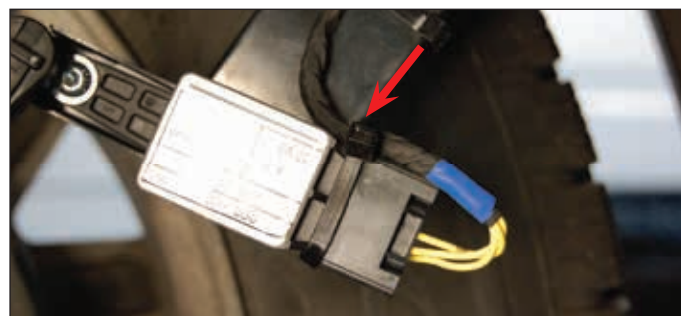
8 Nm

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 arms must point up.

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 (Image may differ from your vehicle. Image only used to indicate how to fit the height sensor cable.)
22. Fit the wheels.

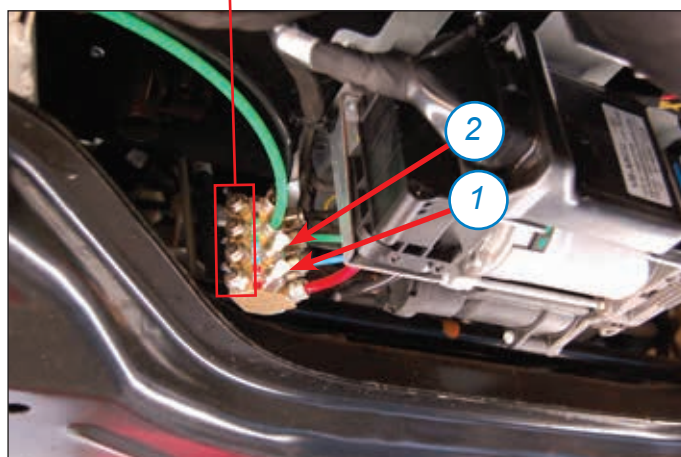


Vehicle manufacturer guidelines

7.4 AIR TUBES

1. Fit the **red** air tube to the red indicated air coupling on the junction block on the outside of the compressor box.
2. Fit the **blue** air tube to the blue indicated air coupling on the junction block on the outside of the compressor box.
3. Ensure that the colour markings match.
4. Seal the unused air couplings with the supplied end plugs.

AIR COUPLINGS FOR EMERGENCY VALVE KIT (OPTIONAL)



7.5 WARRANTY STICKERS

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



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



A



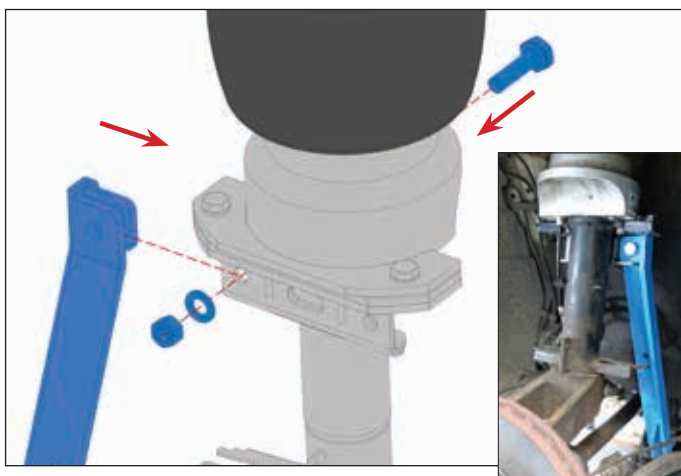
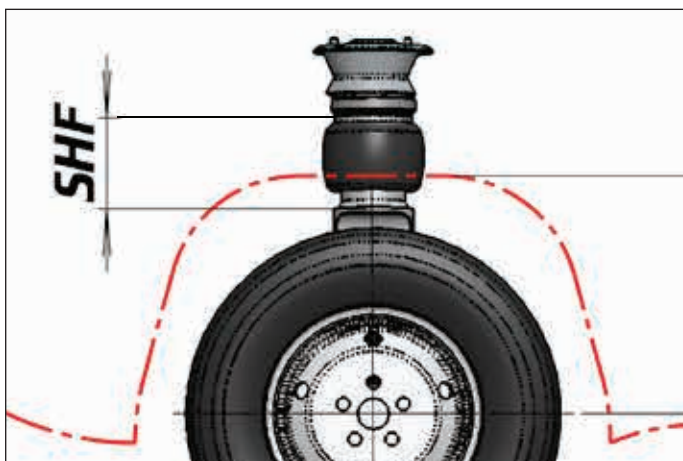
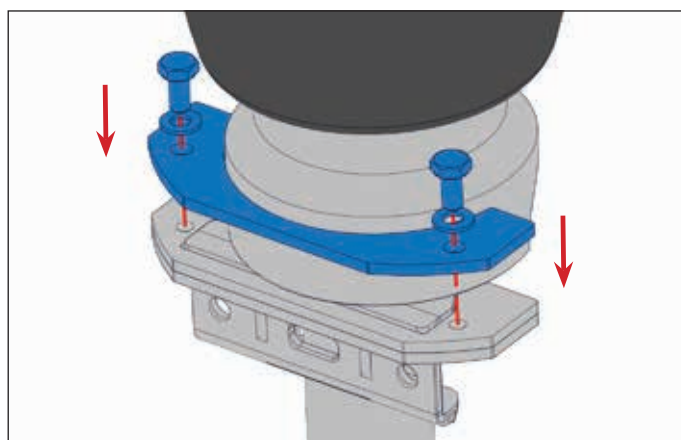
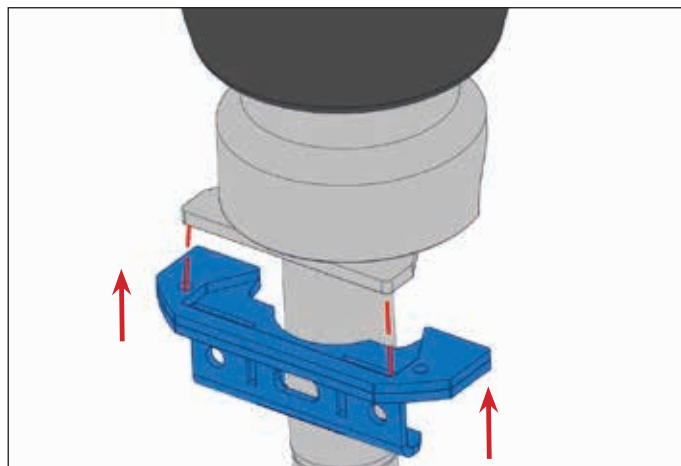
B



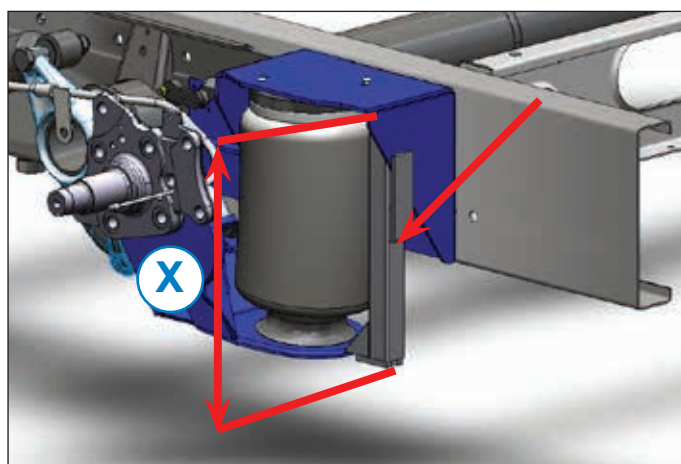
8. CALIBRATION



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



The calibration supports should be mounted on the first rear axle, where the height sensors are mounted.



- 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:



**LCV
2C / 4C**



**Camper
2C**



**Camper
3C / 4C**

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 and hold 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.

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 ☐ VB-ID card inside cover of user manual.
- 1.15 Documentation present in vehicle:
 - ☐ - User manual
 - ☐ - TÜV/ABE documentation
 - ☐ - Original vehicle documentation
- 1.16 ☐ Battery voltage (<12.4 volt = charge).
- 1.17 ☐ 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.: - -

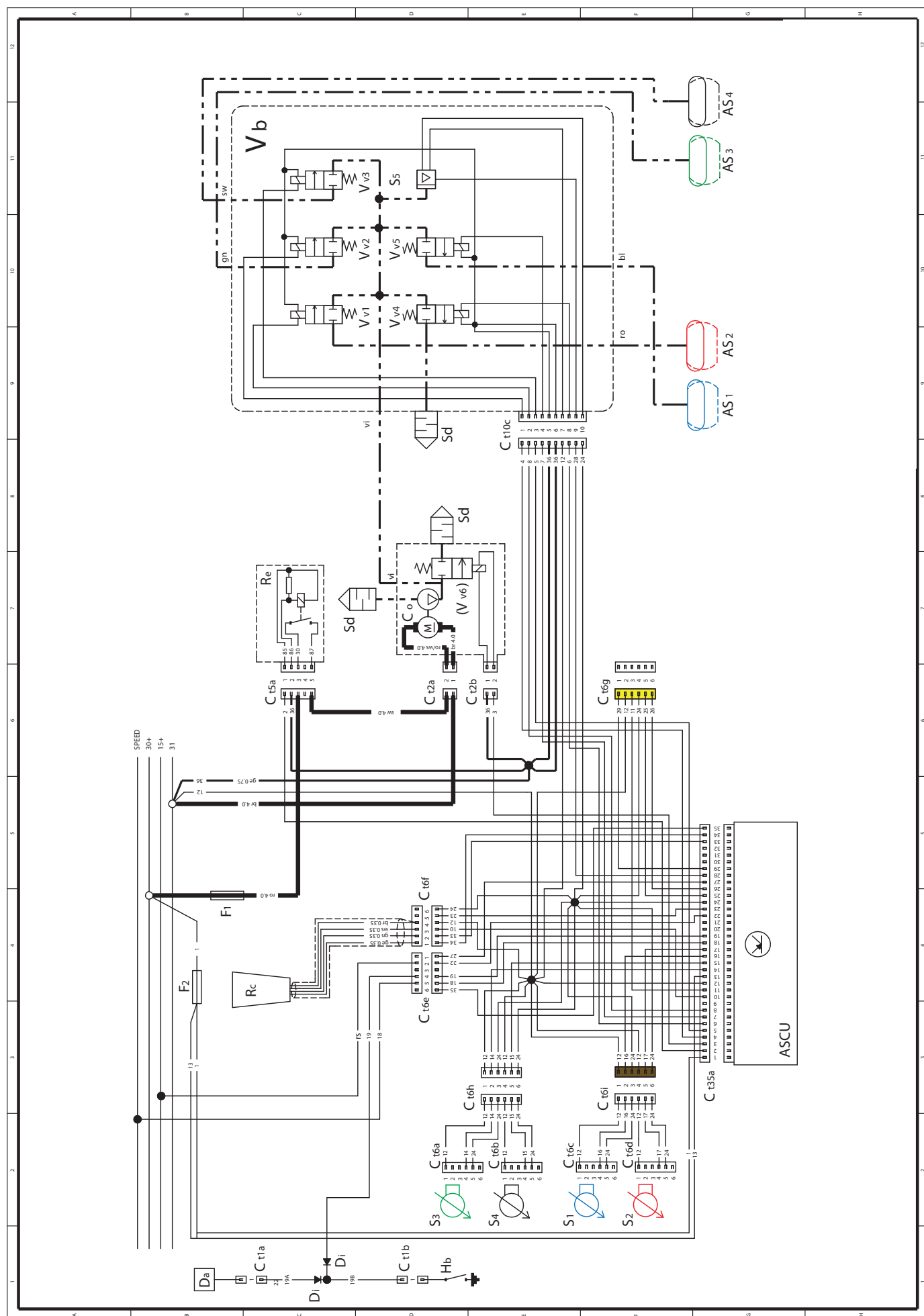
Kit numbers(s):

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



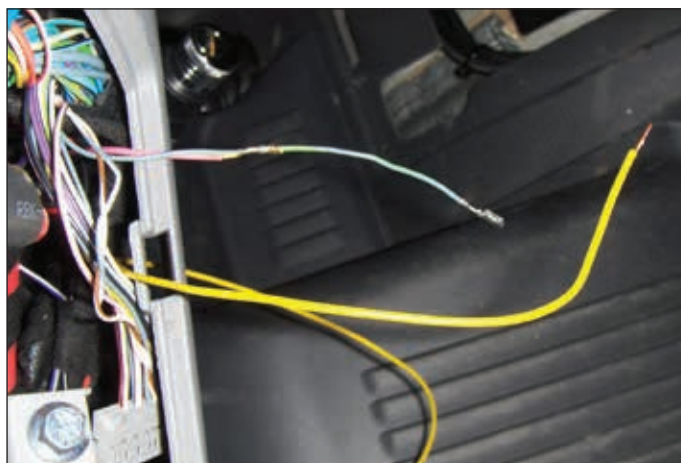
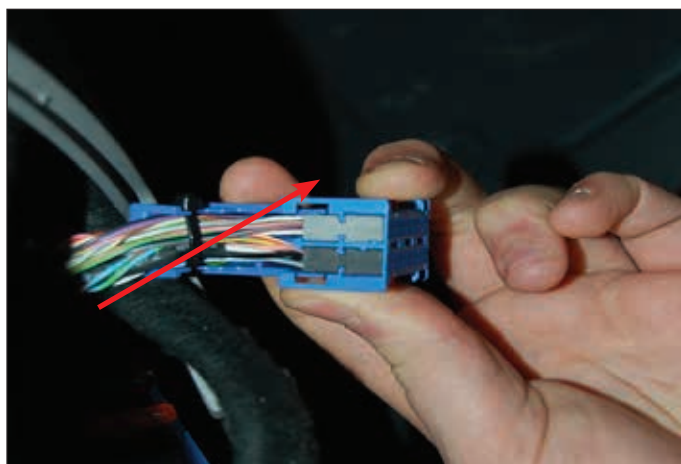
Name	Description
ASCU	VB-ASCU (control unit)
AS1	Air spring front left
AS2	Air spring front right
AS3	Air spring rear left
AS4	Air spring rear right
Ct1a	Connector, 1-pin, handbrake
Ct1b	Connector, 2-pin, compressor power supply
Ct2a	Connector, 2-pole, compressor
Ct2b	Connector, 2-pole, valve on compressor
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 MANUFACTUREROPTION EURO 4 MODEL

11.1 SPEEDSIGNAL

1. Disconnect the blue connector in the fuse box.
2. This connector has an gray and black part inside.
3. In the grey part, on position 10, the grey / green cable is the speedsignal.
4. Cut of the terminal from cable nr. 18.
5. Connect the yellow cable nr.18 to the grey/green cable with a red duraseal.



11.2 15+ SIGNAL

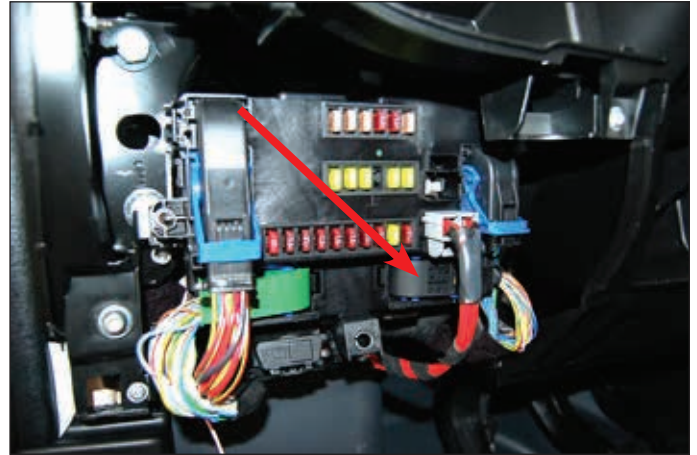
1. On the rearside of the fusebox is a connector.
2. On this connector there is one thick blue cable.
3. Connect the pink cable with a blue duraseal to the thick blue cable.
4. Continue to paragraph 3.3 handbrake signal.



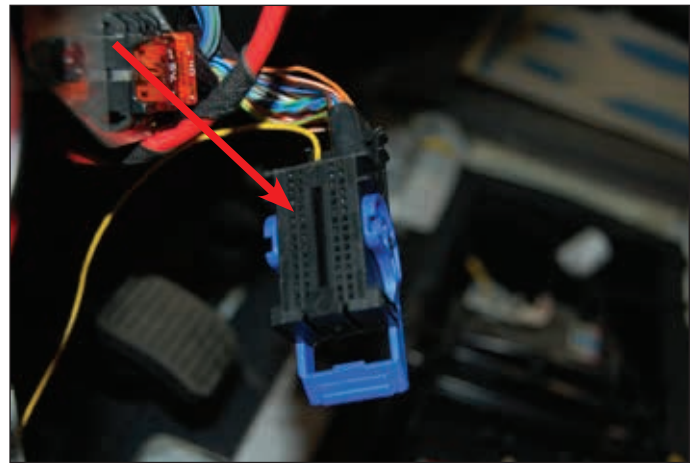
12. ANNEX REMAINING SIGNALS WITHOUT MANUFACTUREROPTION EURO 5 MODEL

12.1 SPEEDSIGNAL

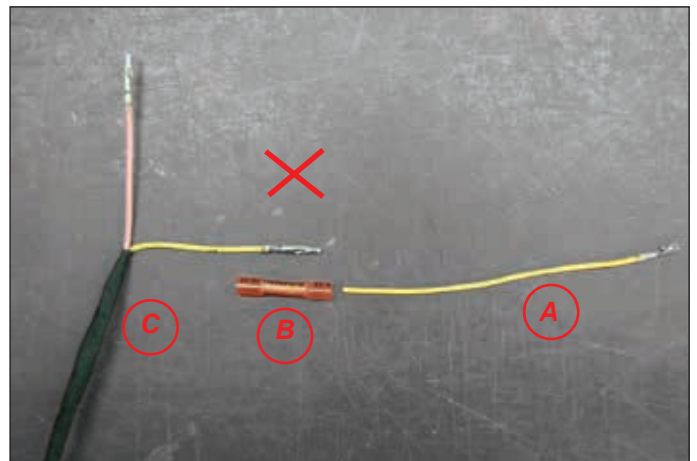
1. Release the black connector on the fuse box.



2. On pin 56 is the speed signal.



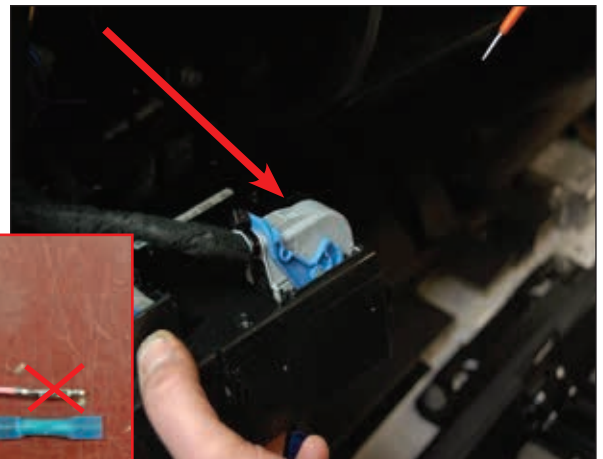
3. Cut the round terminal of the yellow cable as shown.
4. Mount the conversion cable (A) with terminal to the yellow supply cable (C) with the red duraseal (B).
5. Push the terminal of the yellow cable (nr. 18) in position 56 of the black connector.



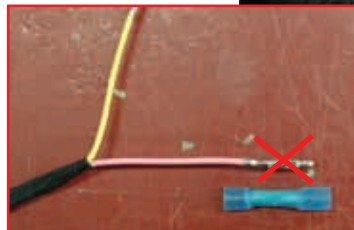
If this pin is already occupied, cut the terminal of the yellow cable and connect the yellow cable (nr. 18) with the duraseal to the cable who is in pin 56 of the connector.

12.2 15+ SIGNAL

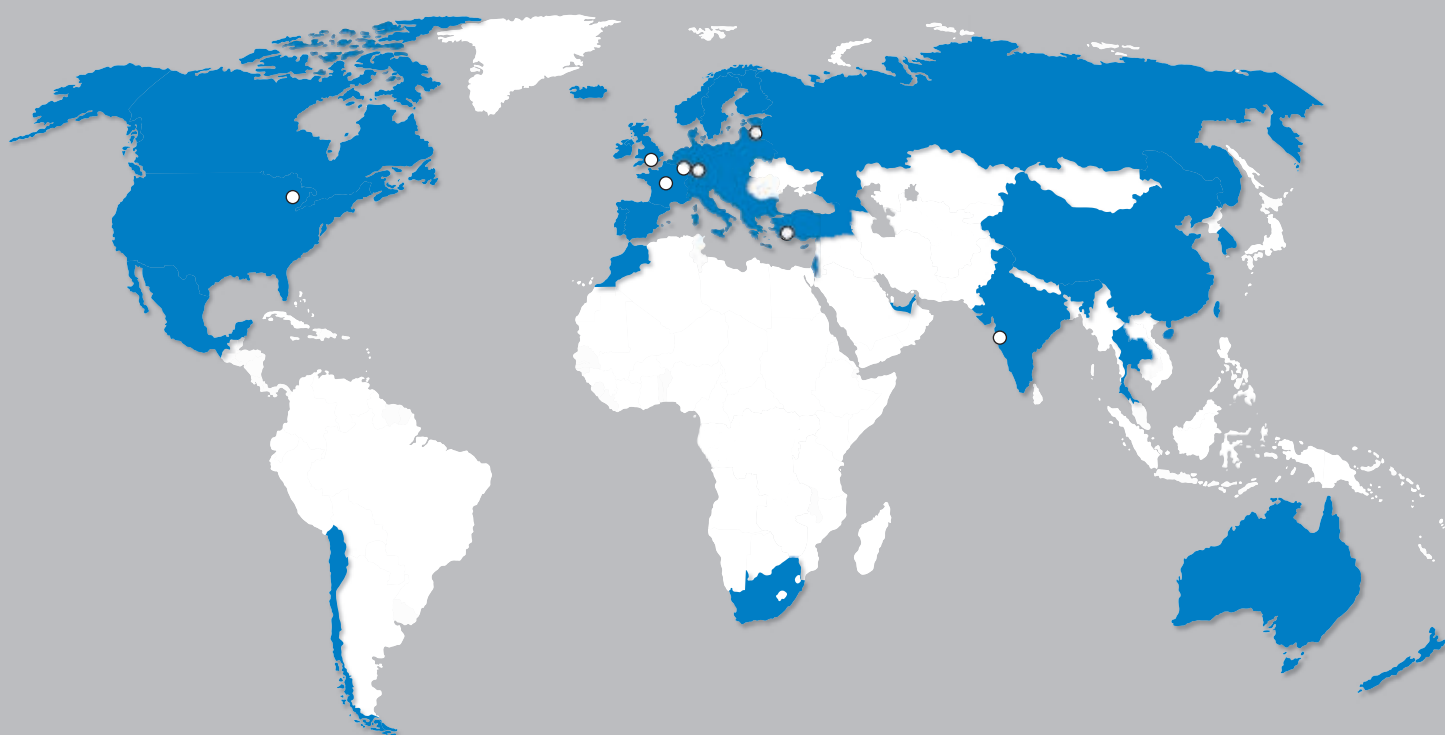
1. On the rearside of the fusebox is a connector.
2. On this connector there is one thick blue cable.
3. Cut the round terminal of the pink cable.
4. Connect the pink cable with a blue duraseal to the thick blue cable.



5. Continue to paragraph 3.3 handbrake signal.



This image shows a full page of blank, lined paper. It features approximately 30 evenly spaced horizontal grey lines across its entire width, typical of notebook or school paper. There are no margins, text, or other markings present.



VB-AIRSUSPENSION,

INCREASED COMFORT, BETTER DRIVEABILITY, MORE SAFETY.

