



FITTING INSTRUCTIONS

making everyday smoother



- Increased comfort • Better driveability • More safety



VOLKSWAGEN CRAFTER
MAN TGE
3.0t-4.0t
VB-FullAir 2C
REAR AXLE

FOR KIT:

10509222XX

Revision table

Document number	730105092203		
New revision:	01		Old revision: 00
Release date (yyyy-mm-dd):	2017-07-21		
Page (new):	Changes:		
10..18	Update chapter 3 (modified height sensor support and modified panhard rod bracket)		



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1. Safety rules

Personal safety rules


- Always wear suitable protective clothing and safety boots.
- Do not wear rings, watches or loose clothing.
- Never 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 that the vehicle is properly supported when necessary.
- Ensure that the vehicle cannot roll away.
- Improper installation could create hazardous situations.

Symbols used



Caution

	<p>Where the warning symbol is shown, information is given which is very important for the safety and/or health of those involved.</p> <p>This symbol is also used for procedures that are critical for the correct installation of the air suspension kit.</p>
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Tip

	<p>Where the tip symbol is shown, information is provided that will help to make installation of the air suspension kit easier.</p>
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Torque

		<p>This manual includes a check box next to each bolted joint that shows the torque to be used when tightening the bolted joint.</p>
	xx Nm	

2. Fitting instructions

This manual has been put together with great care and it 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. Installation may only be carried out by suitably authorised personnel.

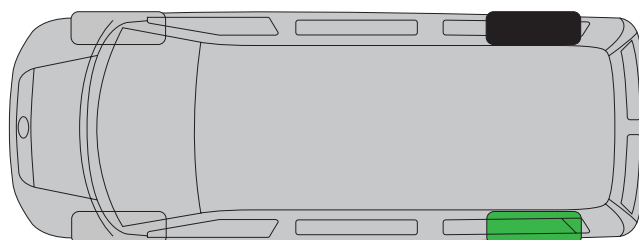
Staff must be experienced in working on light commercial vehicles, particularly in relation to electrics/electronics, pneumatics and general vehicle mechanics.

- Use vehicle workshop manuals where necessary.
- Always follow the vehicle manufacturer's conversion instructions, unless expressly stated otherwise in this manual.
- Keep the workplace clean and tidy.
- Always tighten nuts and bolts to the specified torque.
- If alterations are made to the original anti-corrosion system, this must be remedied immediately. Use spray wax or a protective coating for this purpose.
- Always refit pipes and wires that have been removed in the same way that they were originally fitted.
- Secure pipes and wires with a sufficient number of tie-wraps. Ensure that tension cannot be applied to the wires.
- The supply cable must be at least 100 mm away from the ABS/ESP block, the sensors and other control equipment.
- Ensure that there are no tight bends in air tubes and that they cannot be kinked or chafe against other parts.
- Never attach air tubes, wires or other parts to the vehicle's brake lines.
- Do not leave any tools, cleaning cloths or other materials behind after completing work.
- Use the checklist to check the air suspension system after fitting.
- Check the system for air tightness after fitting.
- Take the vehicle for a test drive after fitting.
- Ensure that the correct calibration supports are available. The correct calibration supports to be used with this kit are:

Axle:	Calibration height:	Order number:
Rear axle	152 mm	009 006 00 24

- 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
Green	Rear left
Black	Rear right



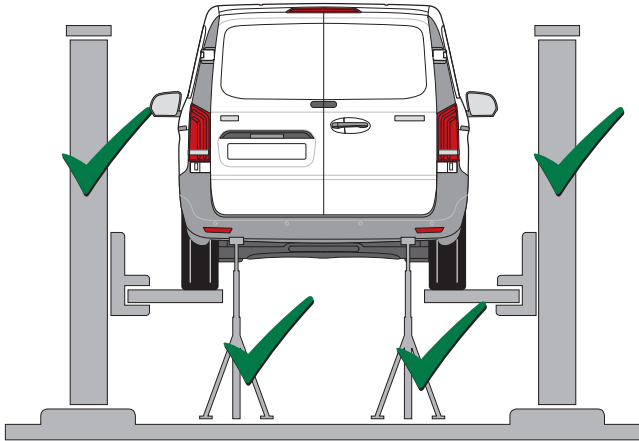
3. Fitting the air suspension kit for the rear axle



PLEASE NOTE: the basic vehicle must always be equipped with order code: **IS1**

3.1 Preparations

1. Ensure that the vehicle is properly supported.
2. Remove spare wheel (if present).
3. Remove the shock absorbers.

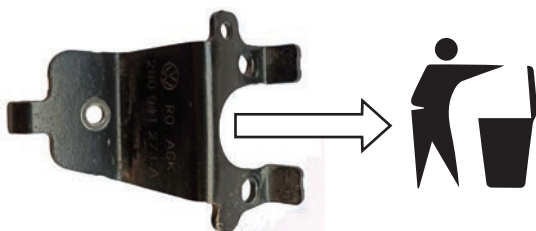


4. Remove the stabiliser bars.
5. Remove the stabiliser clamps.
6. Remove the stabiliser rubbers.
7. Remove the roll stabiliser.

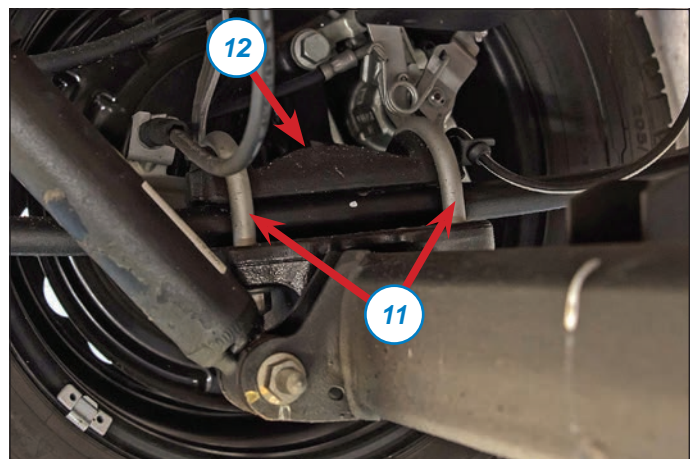
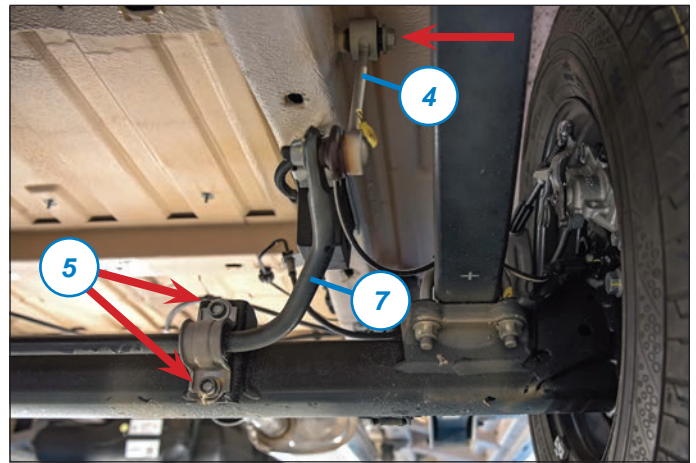
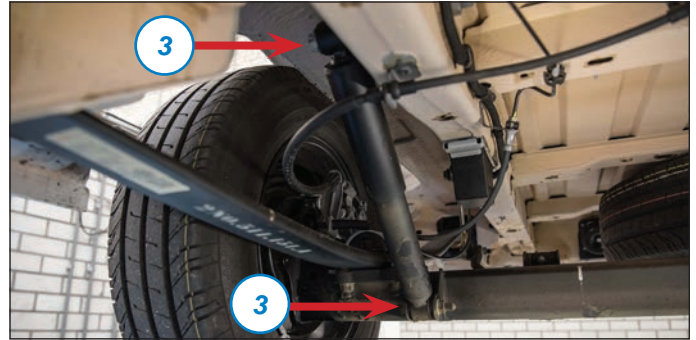


PLEASE NOTE: if the vehicle has **LED headlights**, remove the **LED height control (9)**. Bolts are re-used.

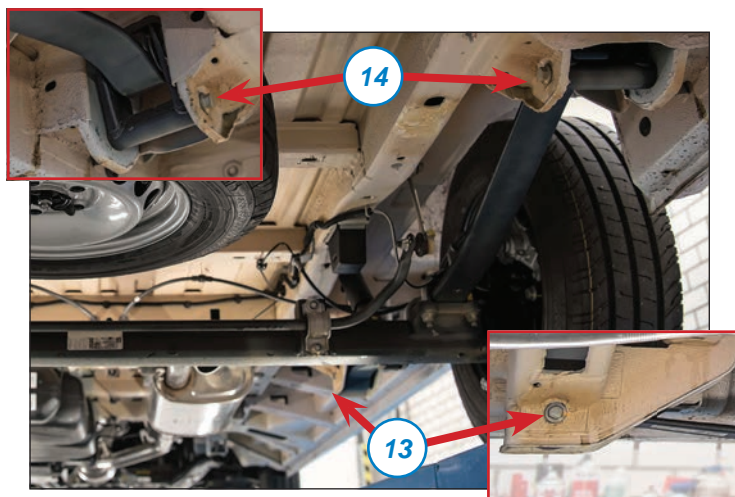
8. Remove the LED height control (if applicable).
9. Remove the height sensor rod.
10. Remove both bolts.



11. Remove the U-bolts.
12. Remove the spring plate.

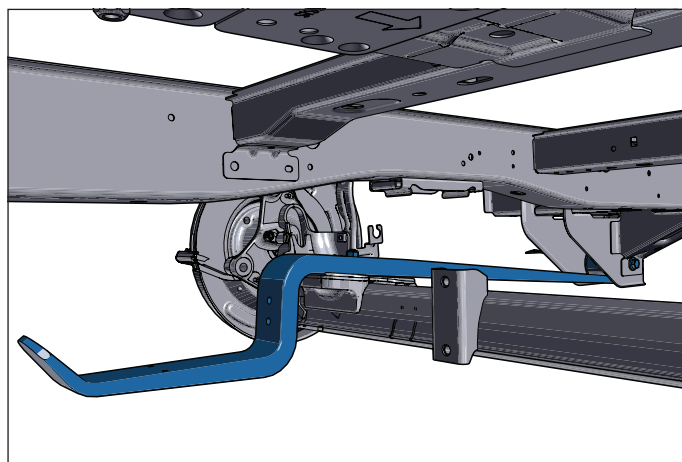


13. Remove the frontmost spring bolt.
14. Remove the rearmost spring bolt.

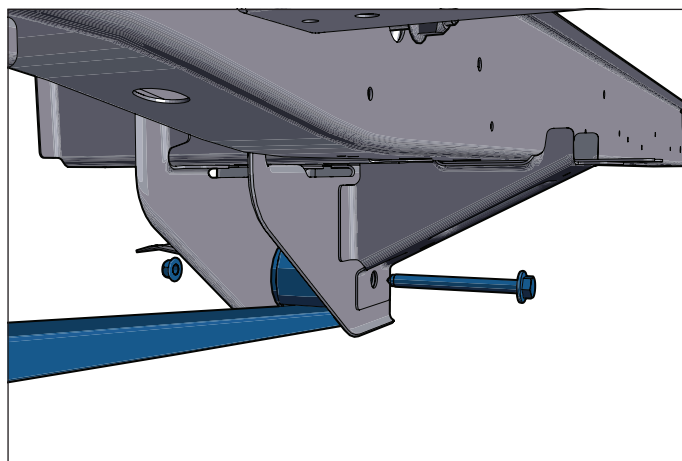


3.2 Main springs and shock absorbers

1. Place the main spring on the spring seat.



2. Fit the main spring in the front leaf-spring bracket.
**** Do not tighten the bolts yet. Tighten them once the vehicle is at the ride height.**



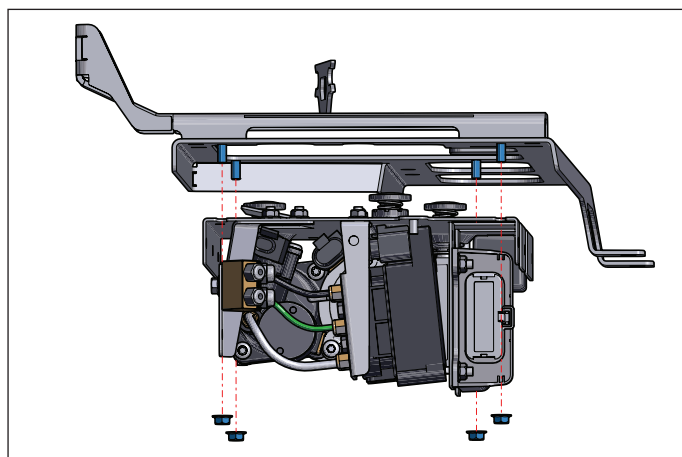
2 x flange bolt	M12 x 125 x 1.5
2 x flange lock nut	M12 x 1.5



70 Nm + 180°

3.2.1 Compressor

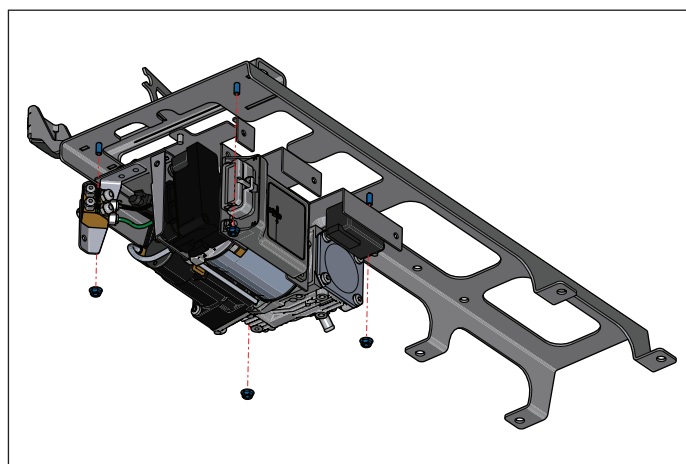
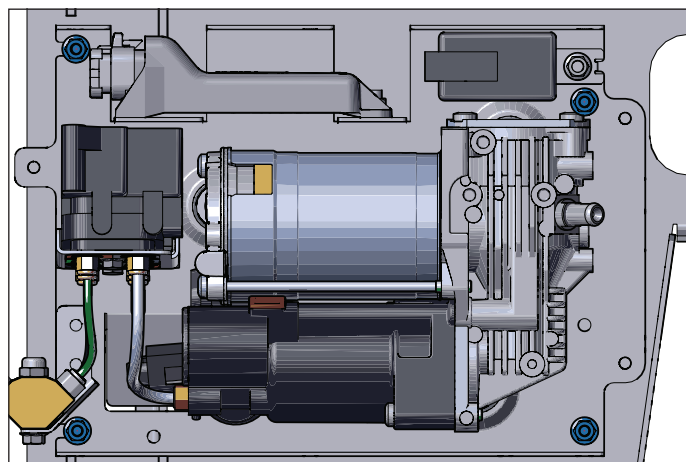
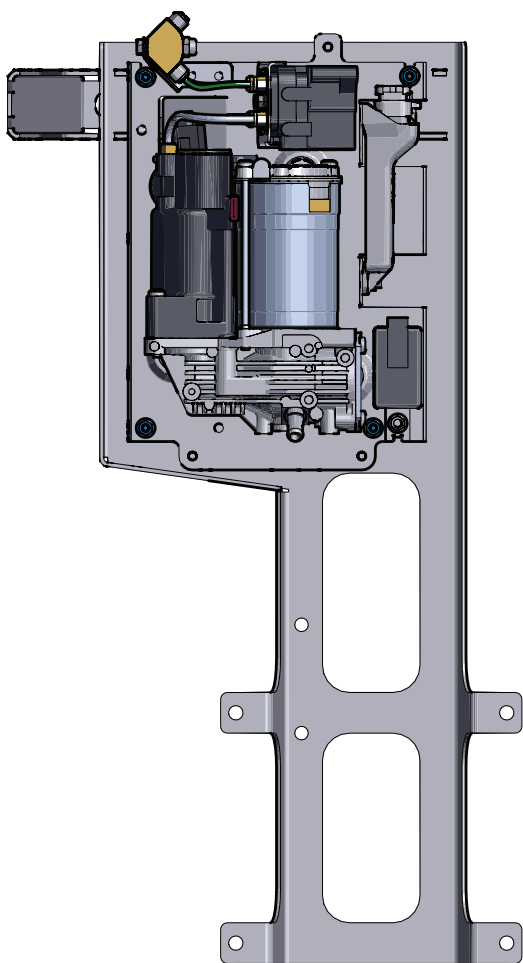
1. Fit the compressor to the compressor support.



4 x flange lock nut	M6
---------------------	----



8 Nm

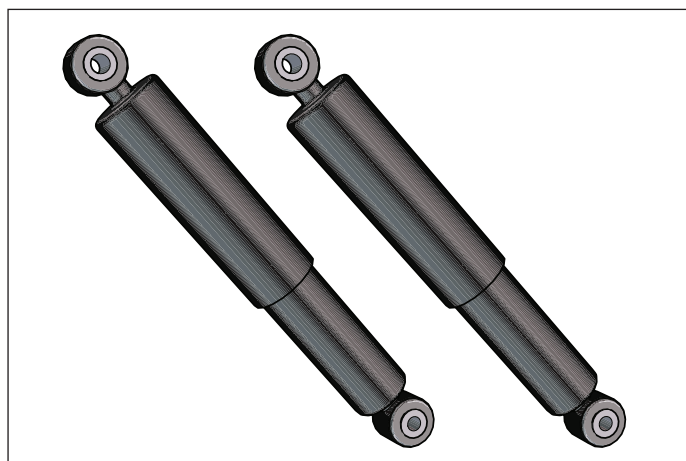


3.2.2 Shock absorbers

1. Shock absorbers must be vented before they are fitted.



Always hold the shock absorber with the top pointing up to prevent air entering the shock absorber again.

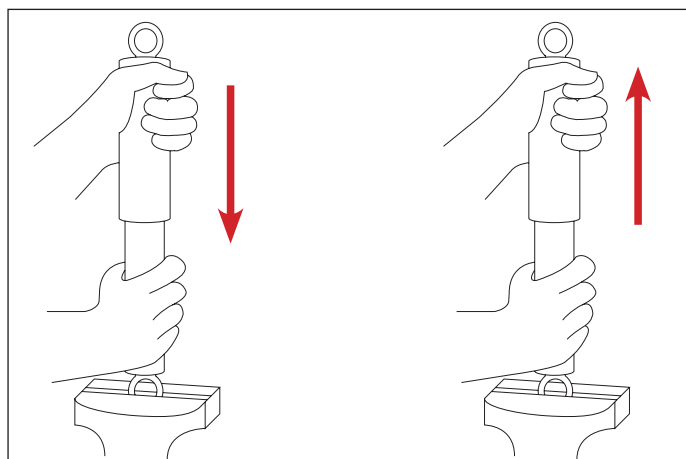


2. Clamp the shock absorbers vertically in a bench vice.



The wide end of the shock absorbers is viewed as the top.

3. Gently push the top down and then slowly pull it up again.
4. A slurping noise can be heard at the end of the turn; this indicates the presence of air.
5. Continue this pumping action until the slurping noise is no longer heard.

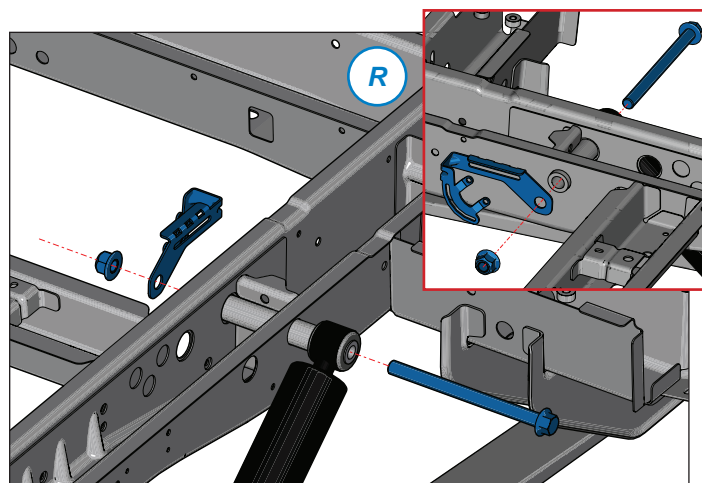


6. Fit the upper side of the right shock absorber together with the LED height control bracket.
**** Do not tighten the bolts yet. Tighten them once the vehicle is at the ride height.**

1 x flange bolt	M14 x 175 x 1.5
1 x flange lock nut**	M14 x 1.5



130 Nm + 180°



7. Fit the underside of the right shock absorber.
**** Do not tighten the bolts yet. Tighten them once the vehicle is at the ride height.**

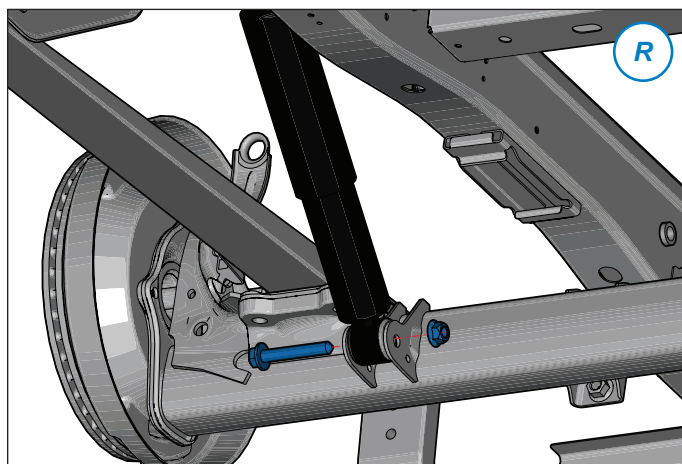
1 x flange bolt	M12 x 75 x 1.5
1 x flange lock nut**	M12 x 1.5



70 Nm + 180°



Always hold the shock absorber with the top pointing up to prevent air entering the shock absorber again.

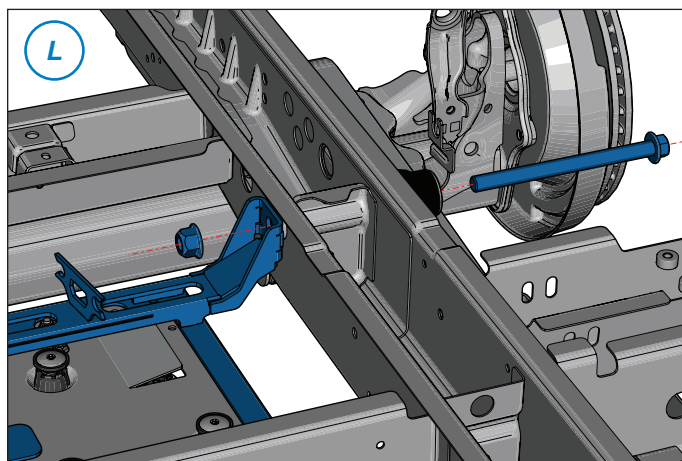


8. Fit the upper side of the left shock absorber together with the compressor support.
**** Do not tighten the bolts yet. Tighten them once the vehicle is at the ride height.**

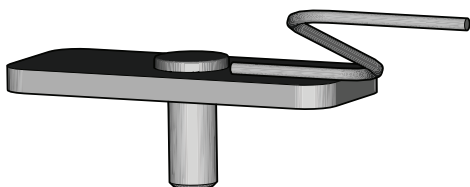
1 x flange bolt	M14 x 175 x 1.5
1 x flange lock nut**	M14 x 1.5



130 Nm + 180°



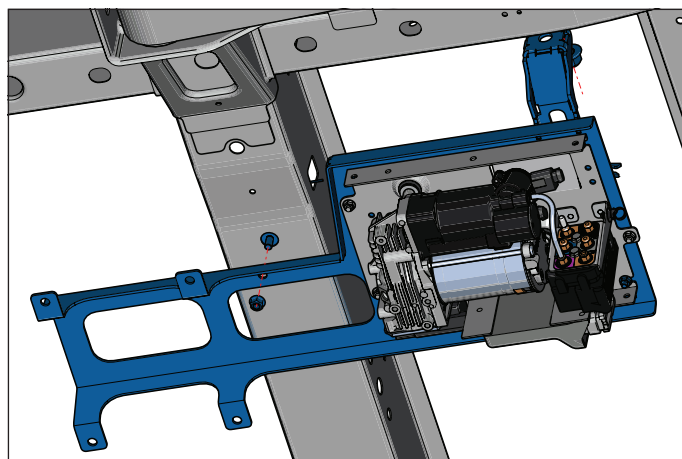
9. Fit the compressor support with the bolt plate to the cross beam.

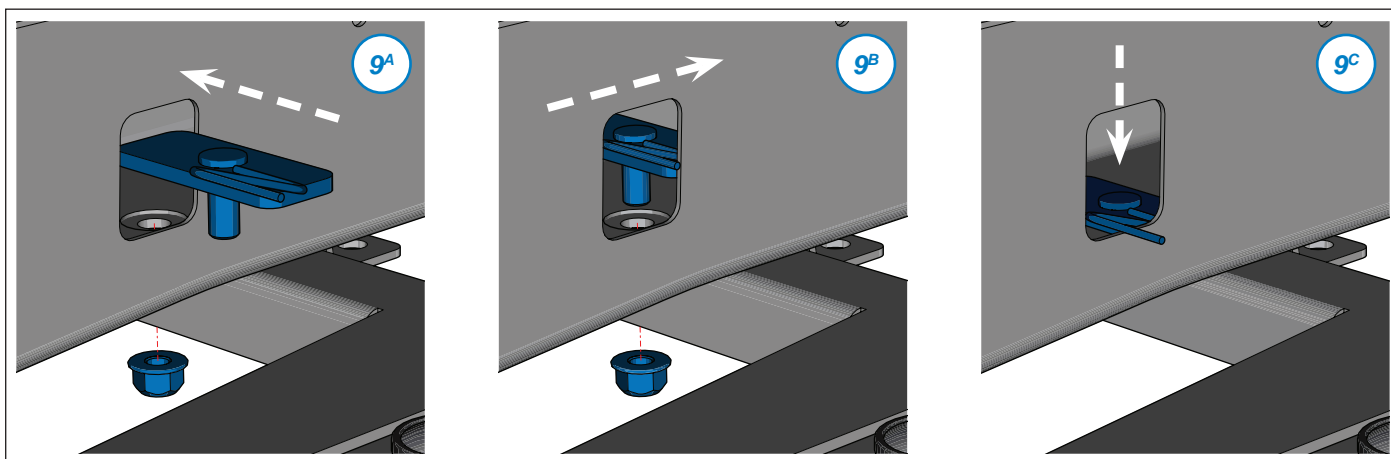


1 x flange lock nut	M8
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20 Nm





10. Fit the underside of the left shock absorber.
***** Do not tighten the nuts yet. Tighten them once the vehicle is at the ride height.**

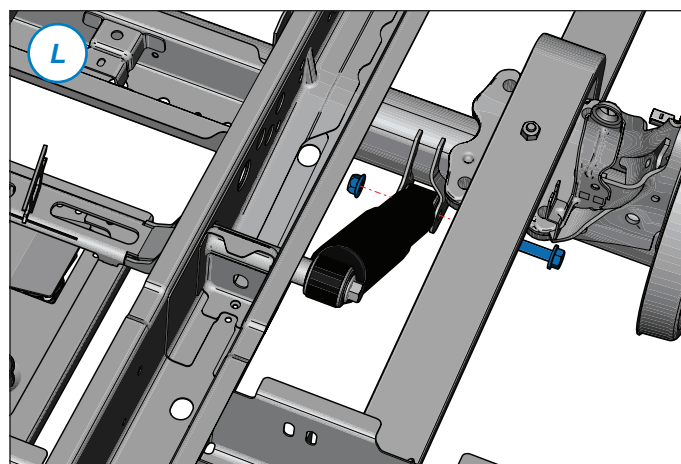
1 x flange bolt	M12 x 75 x 1.5
1 x flange lock nut**	M12 x 1.5



70 Nm + 180°



Always hold the shock absorber with the top pointing up to prevent air entering the shock absorber again.



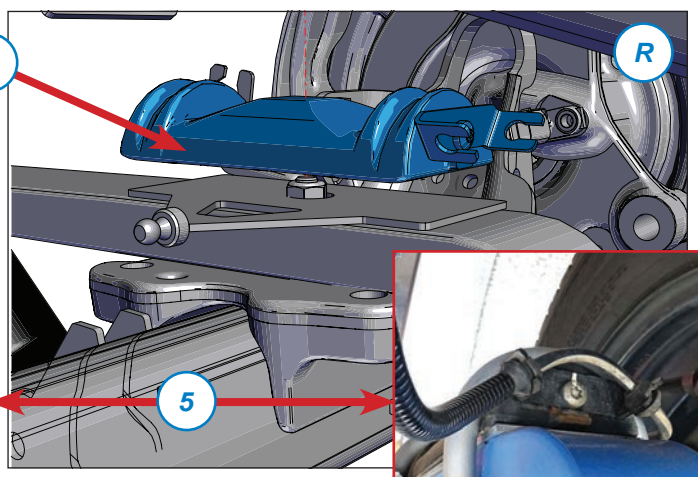
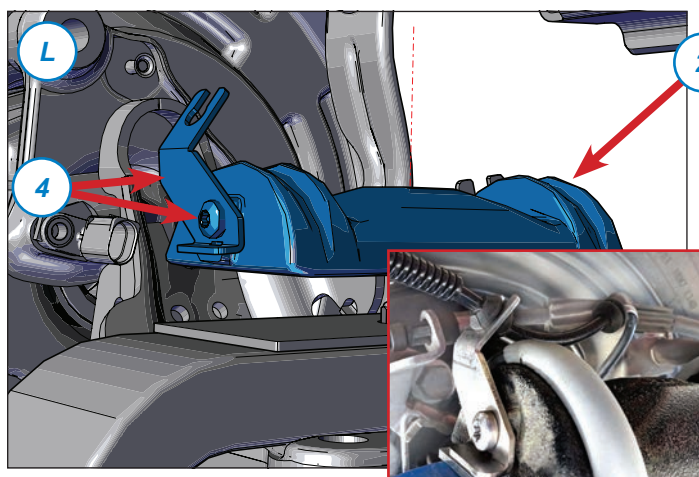
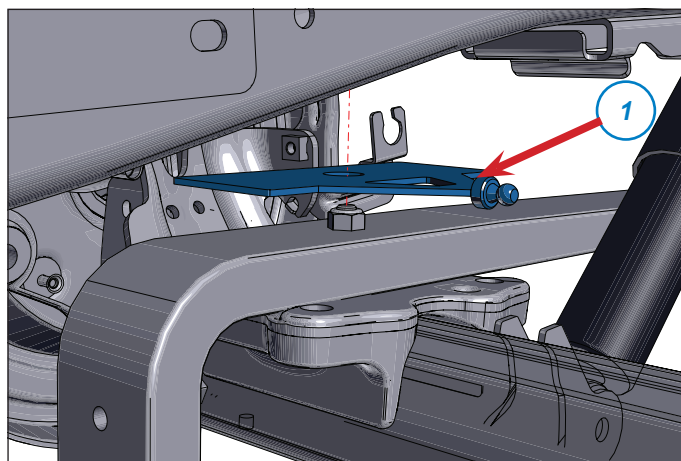
3.2.3 Main spring

1. Place the ball-joint bracket on the main spring.



The ball-joint on the ball-joint bracket must point towards the front and the inside of the vehicle.

2. Place the spring clamping plates on the ball-joint brackets.
3. Remove the original ABS cable bracket from the left spring clamping plate.
4. Fit the VB-ABS cable bracket (reuse the OEM bolt).
5. Fit the ABS wires in the brackets.

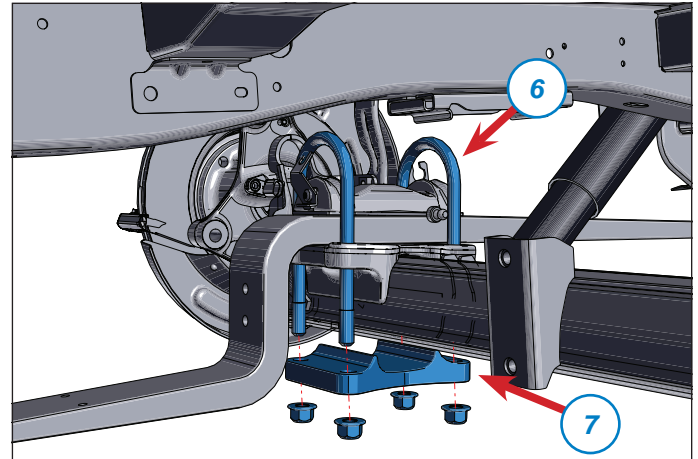


6. Fit the U-bolts.
7. Fit the axle clamping plate.
**** Do not tighten the nuts yet. Tighten them once the vehicle is at the ride height.**

8 x round conical flange lock nut M14 x 1.5**



175 Nm

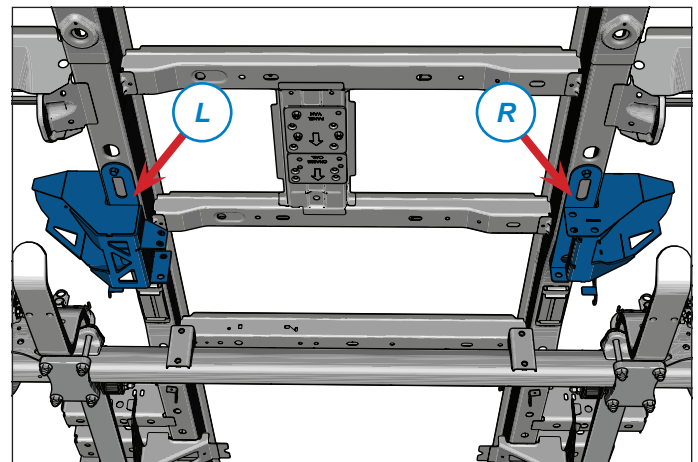
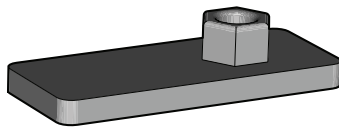


3.3 Upper cross beam

1. Fit the upper spring plates.
Be careful to distinguish between left and right.



The colour markings indicate which part is for the left and which for the right.



2. Fit the left upper spring plate.
3. Use the nut plate.

1 x flange bolt M8 x 25

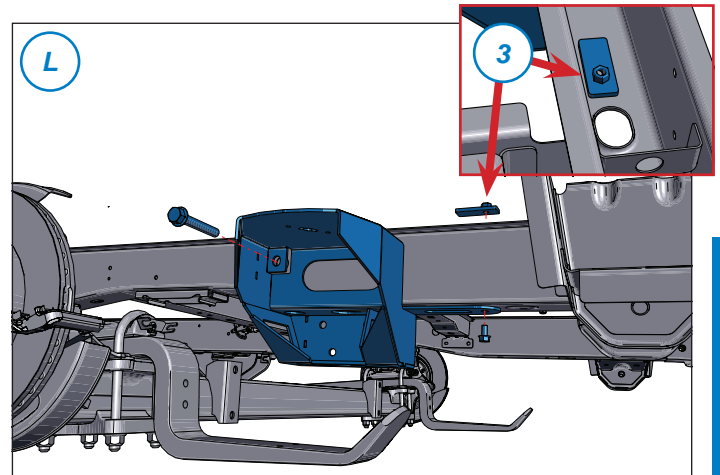


20 Nm

1 x flange bolt M12 x 30 x 1.5



110 Nm



4. Fit the right upper spring plate.

1 x flange bolt M8 x 25

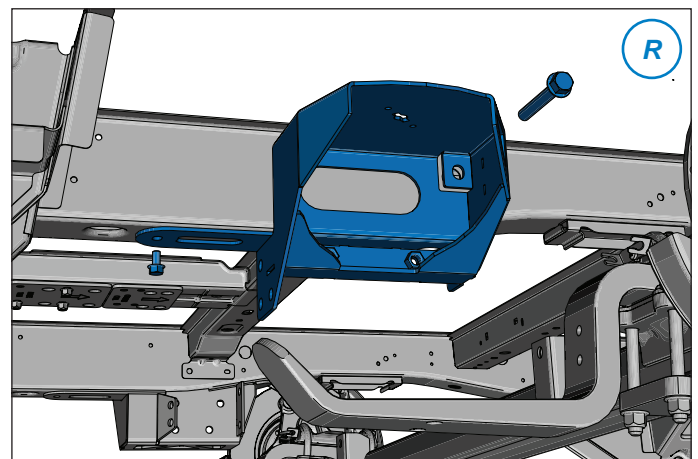


20 Nm

1 x flange bolt M12 x 30 x 1.5



110 Nm

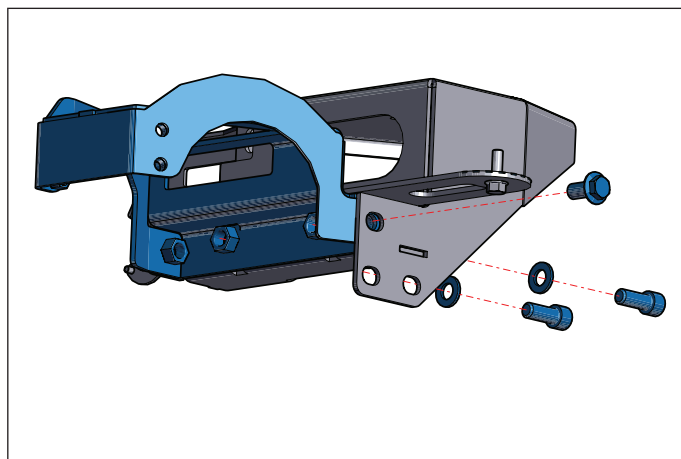


5. Fit the intermediate piece to the right upper spring plate.
**** Tighten once the upper cross beam has been fully assembled.**

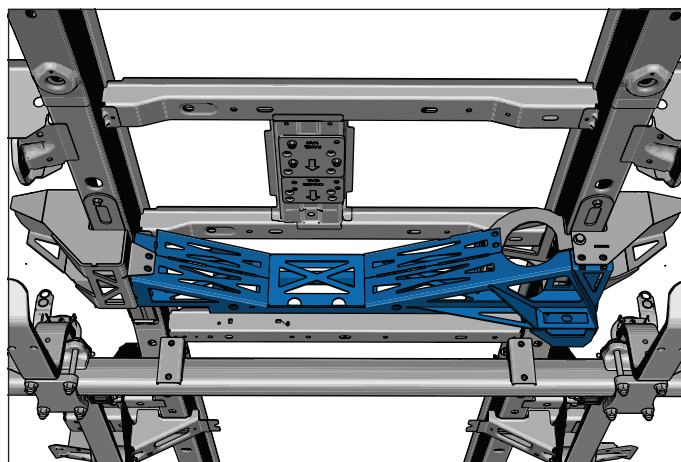
1 x flange bolt**	M12 x 25
2 x Allen screw**	M12 x 30
2 x washer	



100 Nm



6. Fit the upper cross beam.

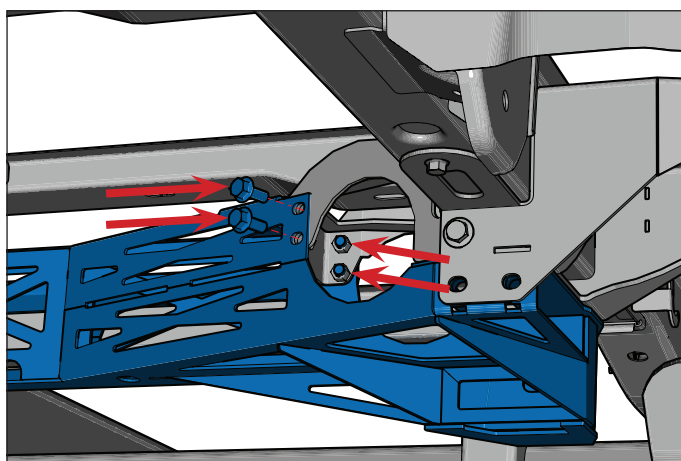


7. Fit the upper cross beam to the intermediate piece.

4 x flange bolt**	M10 x 25
-------------------	----------



60 Nm

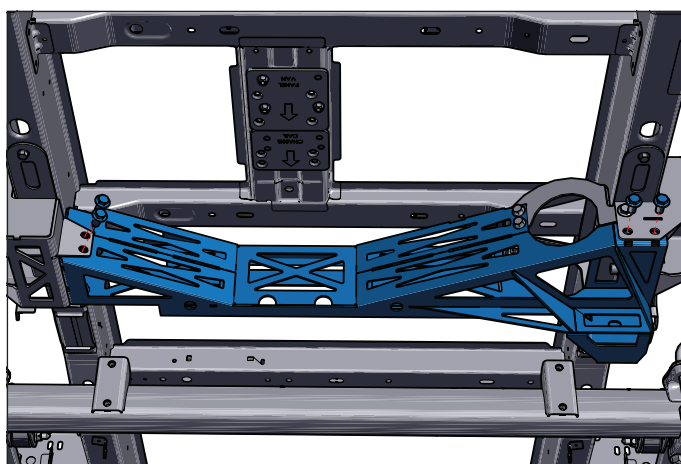


8. Fit the upper cross beam to the upper spring plates.

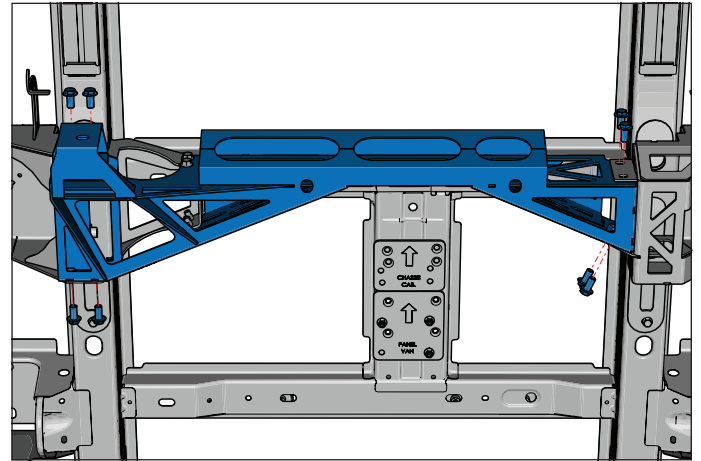
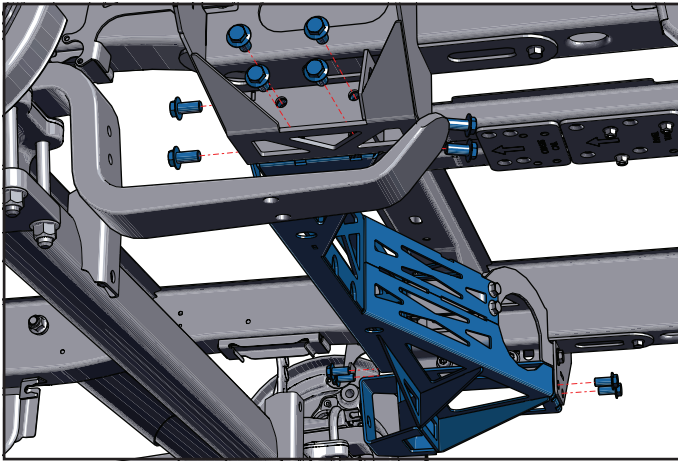
12 x flange bolt**	M12 x 25
--------------------	----------



100 Nm



9. **** Tighten all bolts.**



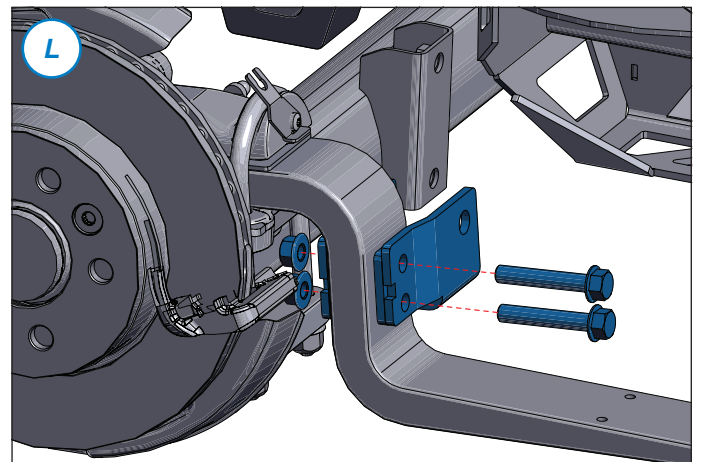
3.4 Panhard rod

1. Fit the panhard rod bracket to the left main spring.

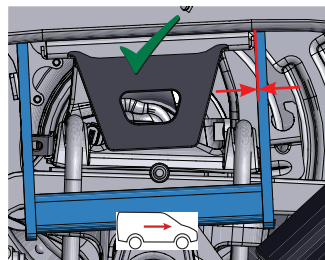
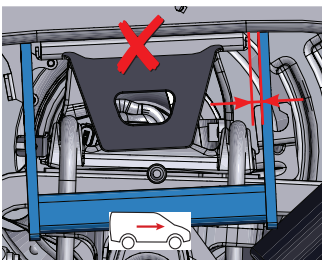
2 x flange bolt	M12 x 70 x 1.5
2 x flange lock nut	M12



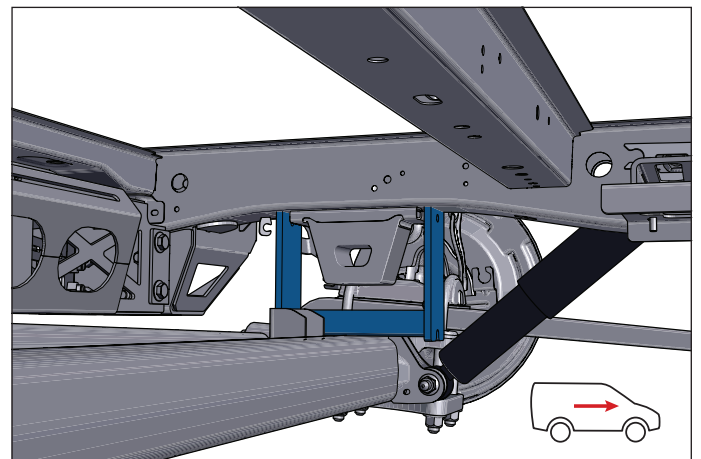
110 Nm



2. Lower the vehicle onto the calibration supports (see chapter 2).



The following step can be carried out only when the vehicle is at the ride-height.



3. Fit the left-hand side of the panhard rod to the panhard rod bracket.

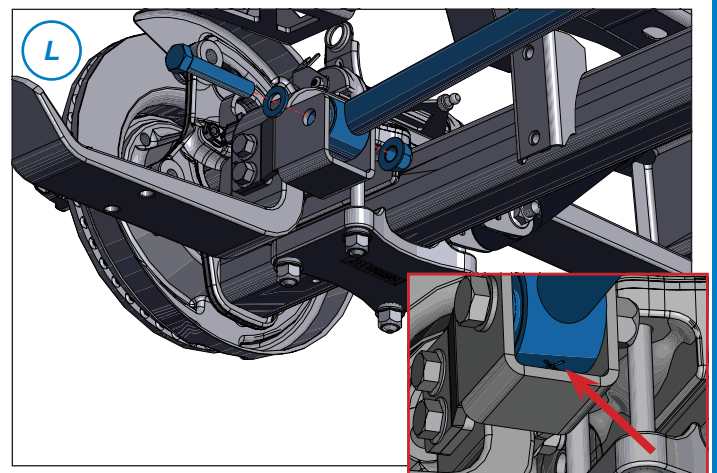


Please note: the X must be visible from underneath.

1 x bolt + washer	M16 x 85 x 1.5
1 x flange lock nut	M16

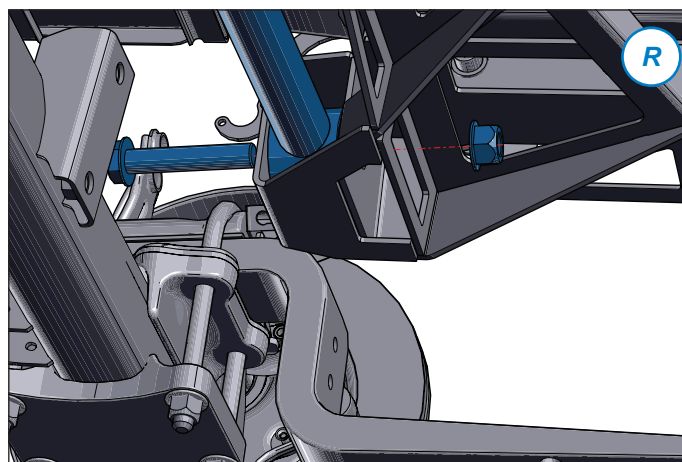


200 Nm



4. Fit the right-hand side of the panhard rod to the upper cross beam.

Do not tighten the nut yet.

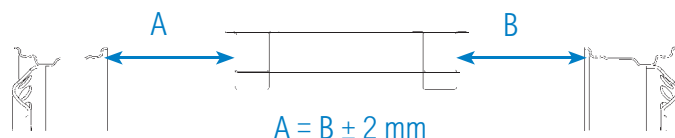


1 x bolt	M16 x 85 x 1.5
1 x flange lock nut	M16
1 x washer	M16



200 Nm

5. Measure the distance (**A**) between the chassis and rim edge on the left-hand side.
6. Measure the distance (**B**) between the chassis and rim edge on the right-hand side.



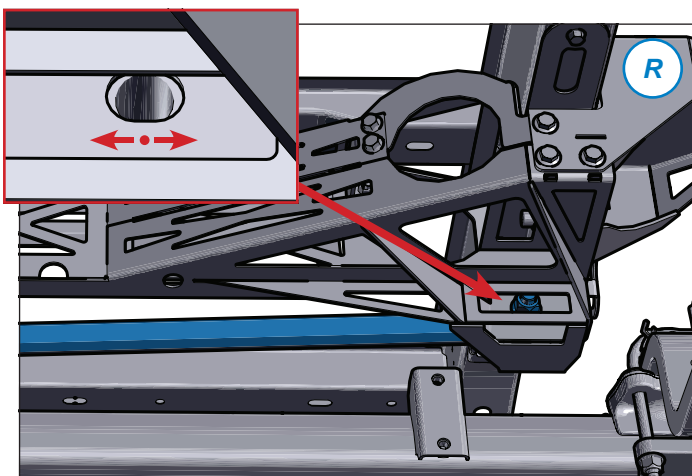
7. If there is a difference greater than 2 mm between the left and right measurements, unscrew the bolt several turns and slide the panhard rod:

If the difference is > 2 mm, adjust!

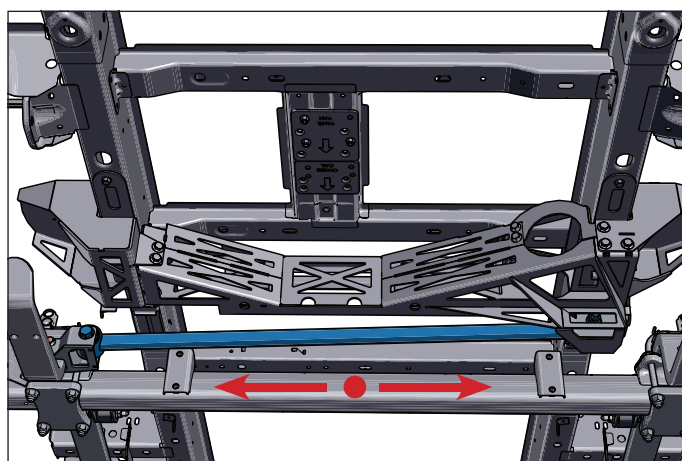
If the difference is < 2 mm, continue!

To the left: when $A < B$

To the right: when $A > B$

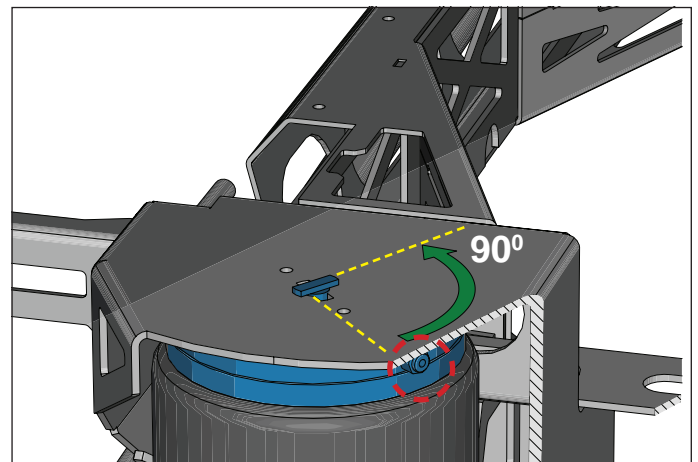
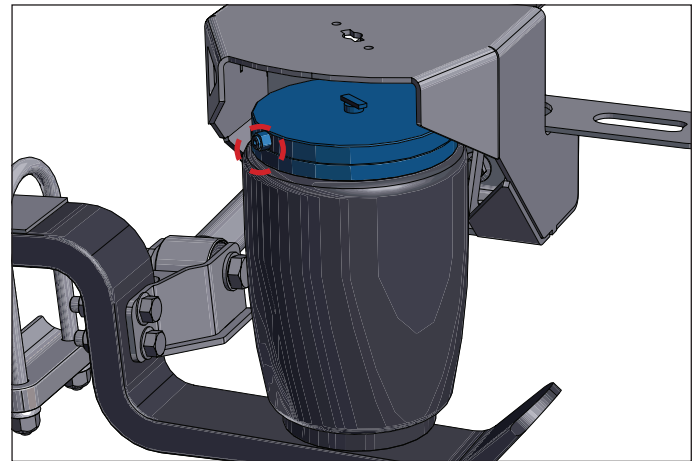


8. Tighten the nut.



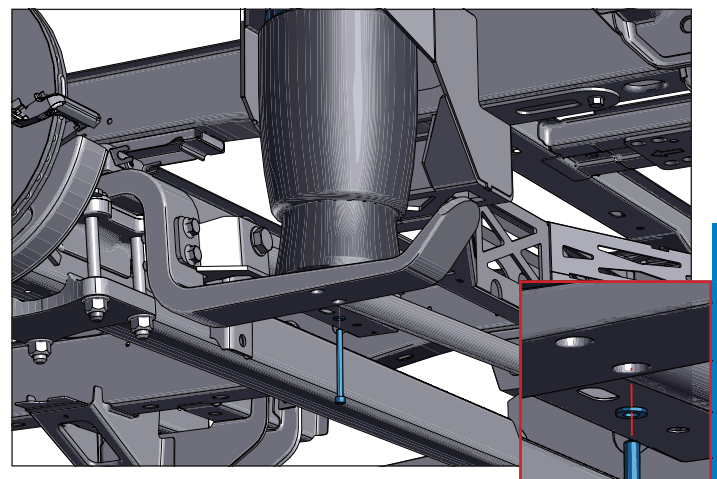
3.5 Air springs

1. Fit the air springs to the upper spring plates with the quick coupling.

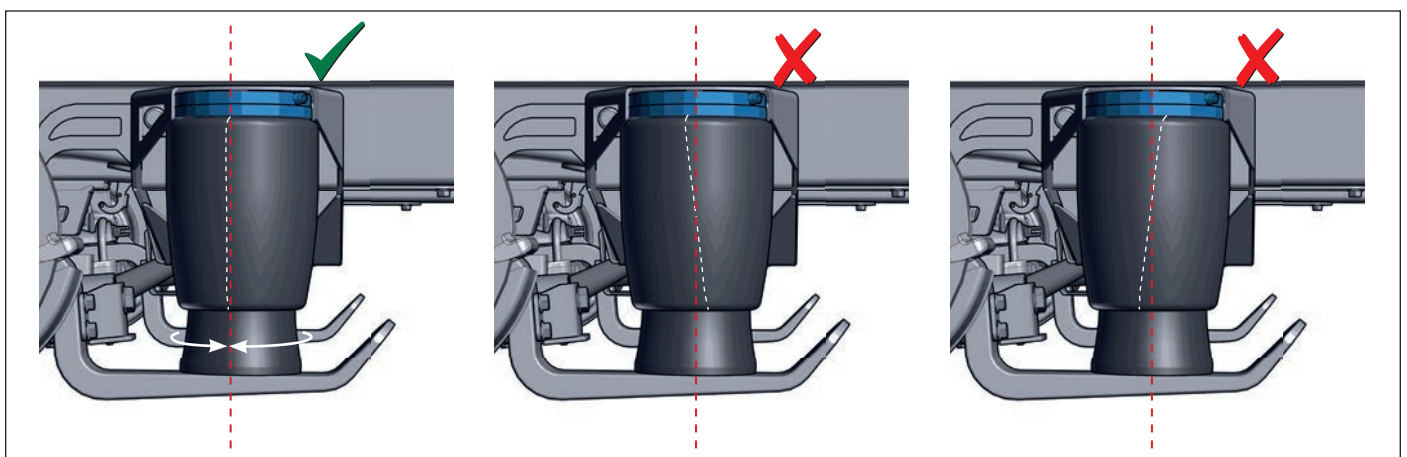


2. Fit the cups to the main springs.
Use the innermost holes of the main spring.

2 x Allen screw	M6 x 70 tuflok
2 x washer	M6
 8 Nm	



Ensure that the air spring does not rotate when it is being secured!

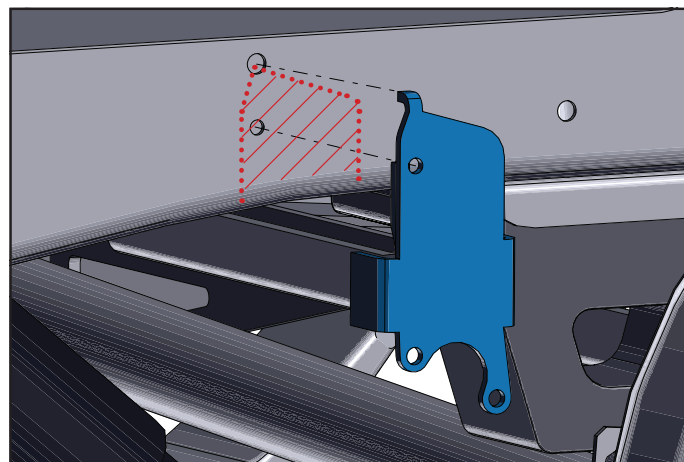


3.6 Height sensors

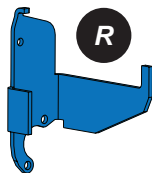
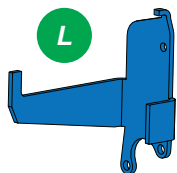
1. Remove the anti-corrosion agent from the chassis member (keep within the area marked in red).



Protect surface with anti-corrosion agent where it has become bare.

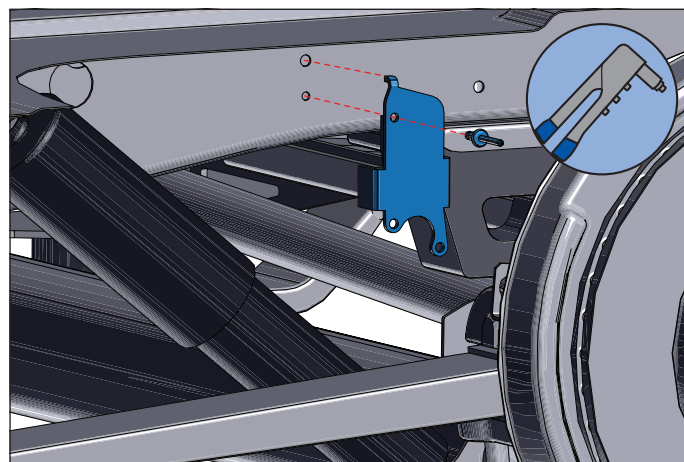


2. Fit the height sensor brackets to the chassis.



2 x blind rivet

4,8 x 10



3. Fit the height sensors to the height sensor brackets. Check the position of the connector.

4 x bolt

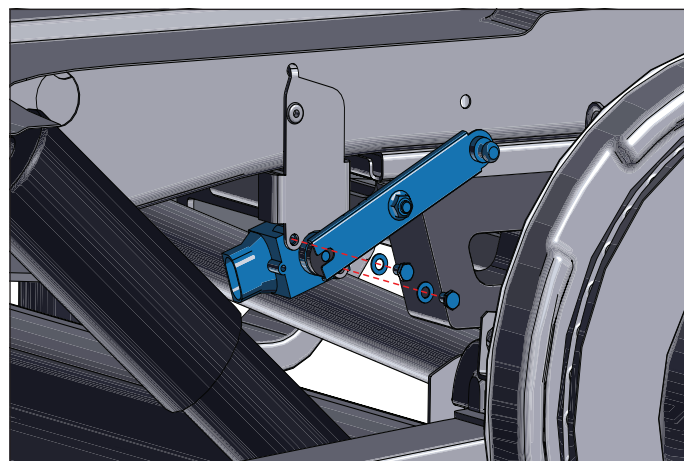
M5 x 10

4 x washer

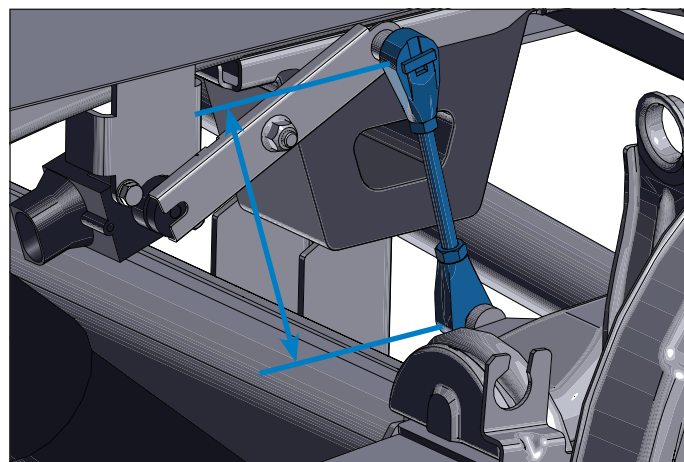
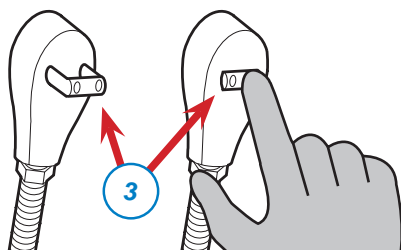
M5



6 Nm



4. Fit the height sensor rods to the ball-joints. Check the length of the height sensor rods (**110 mm**) measured centre to centre.
5. Secure the height sensor rods by pushing in the clips.



3.7 Air tank

1. Fit the air-tank to the compressor support using the air tank brackets.
Ensure that the air connection is on the left.

4 x flange bolt	M8 x 16
	20 Nm

2. Fit the yellow air tube to the air tank.
3. Route the yellow air tube to the compressor box.
4. Fit the yellow air tube to the compressor box valve block.



Use sufficient tie-wraps to secure the wires!

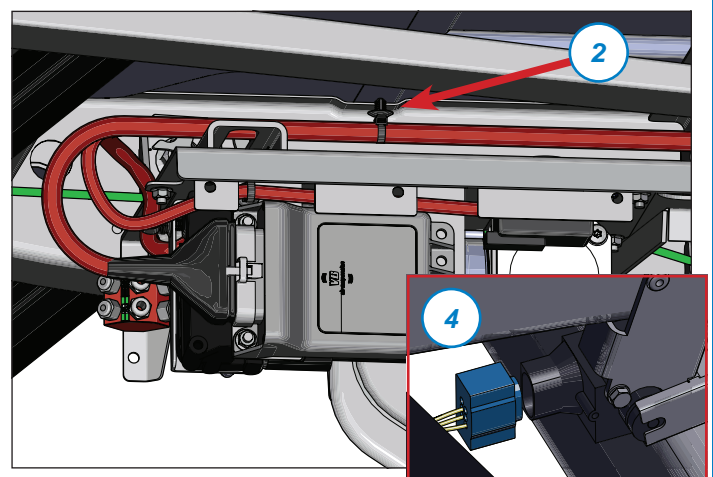
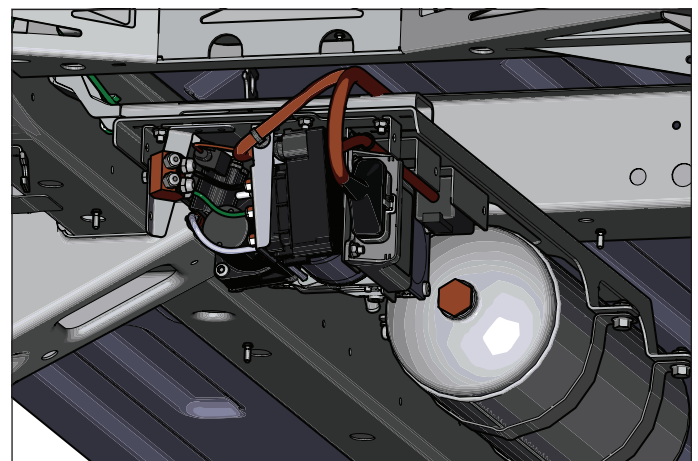
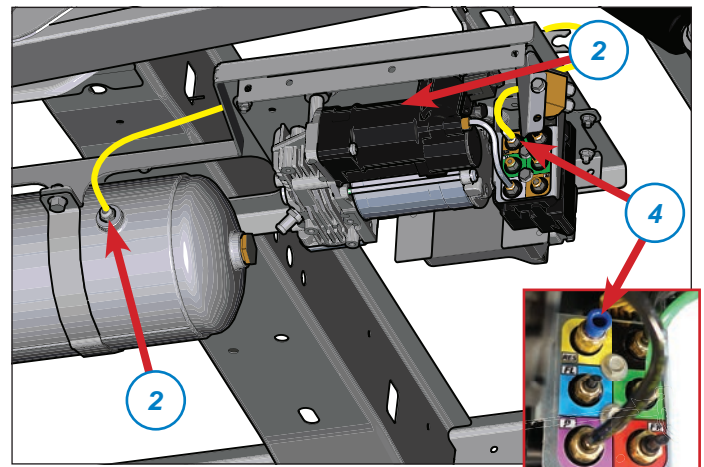
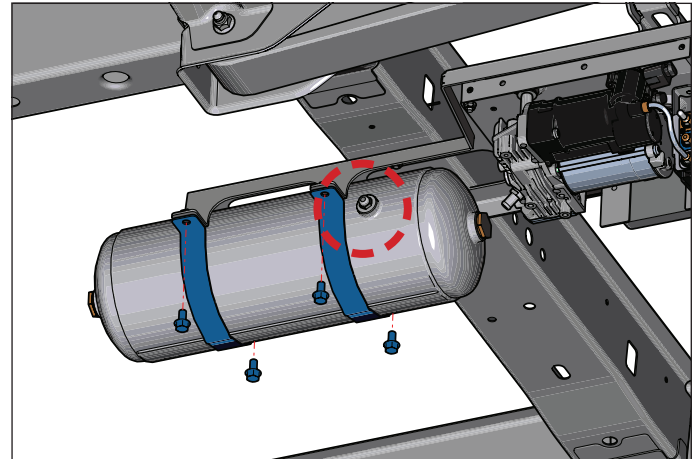
3.8 Wiring harness

1. Route the wiring harness over the upper side of the compressor box mounting bracket to the front.

2. Secure the wire to the upper side of the compressor box mounting bracket using sufficient tie-wraps.
3. Route the wiring harness along the left chassis member to the front of the vehicle.
4. Fit the left height sensor cable to the height sensor.



Use sufficient tie-wraps to secure the wires!

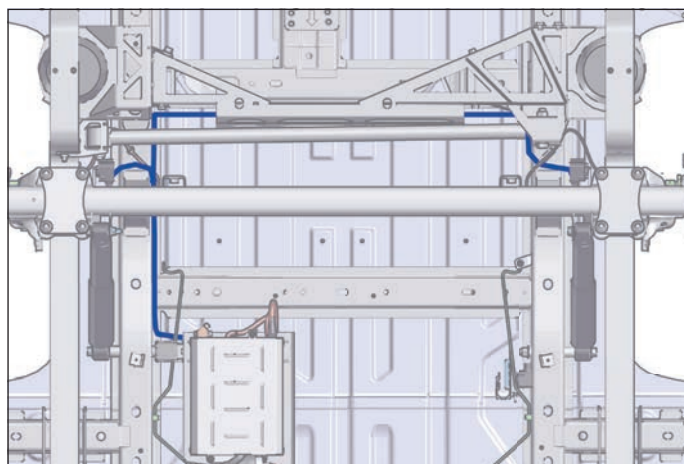


5. Place a cable conduit over both ABS wires.

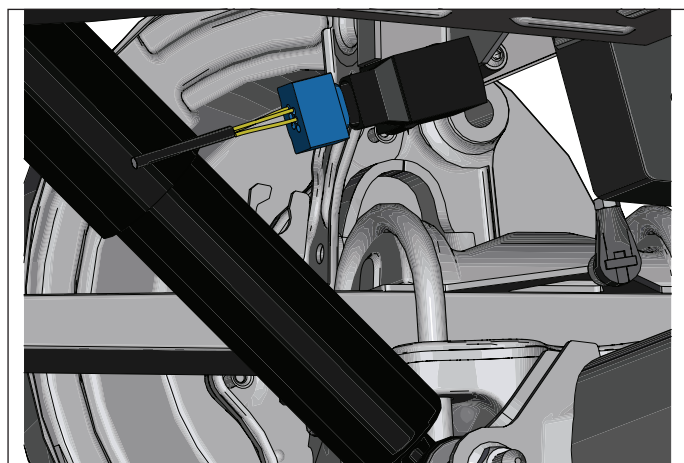


2 x cable conduit	Ø7.5 x 27 cm
--------------------------	---------------------

6. Route the right height sensor cable along the top of the upper cross beam. Use the supplied tie-wraps.

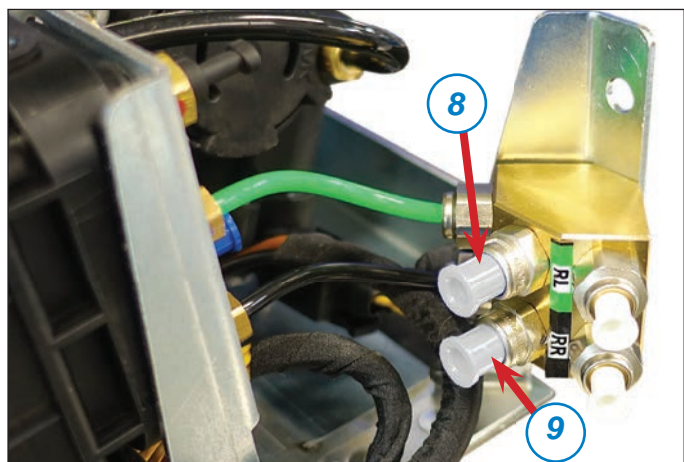


7. Fit the right height sensor cable to the height sensor.

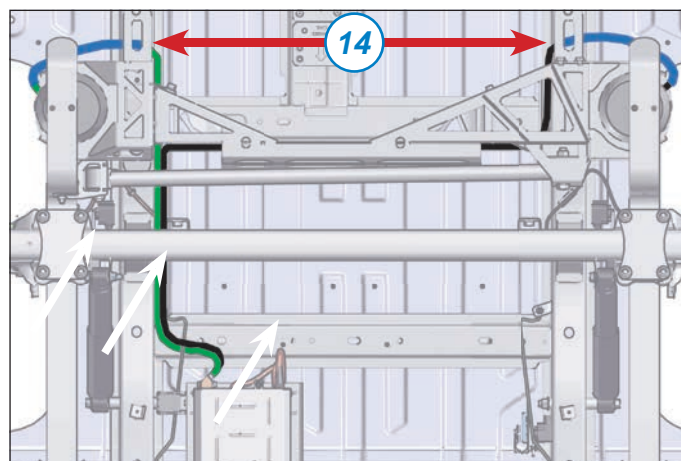


Use sufficient tie-wraps to secure the wires!

8. Fit the green air tube to the compressor box junction block.
9. Fit the black air tube to the compressor box junction block.



10. Secure the air tubes.
11. Connect the green air tube to the left air spring.
12. Route the black air tube along the upper cross beam to the right air spring.
13. Connect the black air tube to the right air spring.
14. Place a cable conduit over both air tubes.



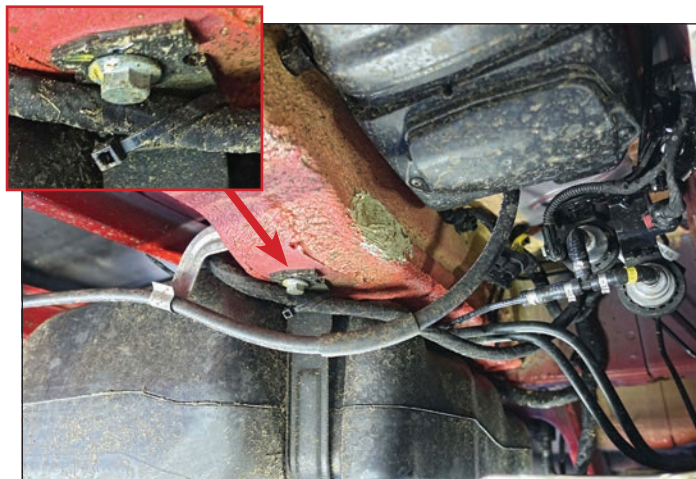
2 x cable conduit	Ø4.5 x 50 cm
--------------------------	---------------------

15. Route the rest of the wiring harness through the chassis to the front of the vehicle.
16. Route the wiring harness between the floor panel and fuel tank.

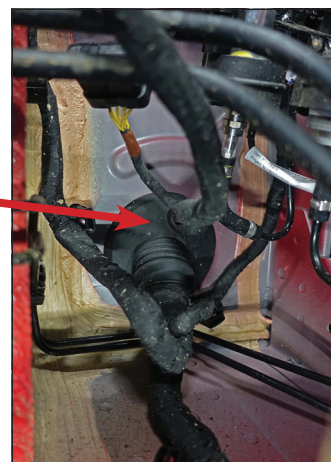


Use sufficient tie-wraps to secure the wires!

17. Fit the wiring harness to the fuel tank bracket using a tie-wrap.

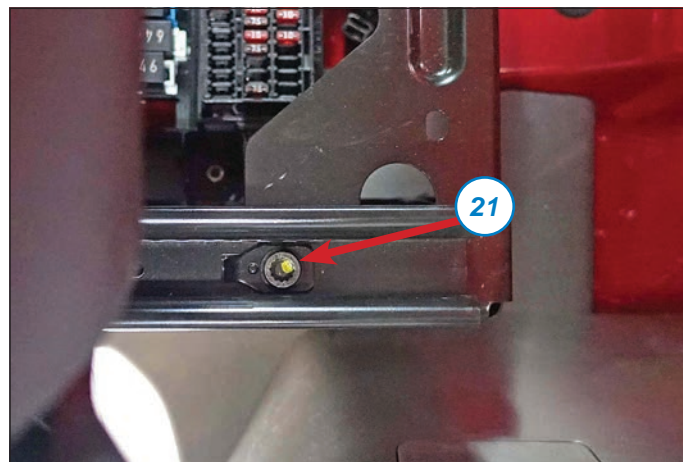


18. Route the wiring harness upwards behind the fuel tank and guide the wiring harness through the rubber grommet.



Use sufficient tie-wraps to secure the wires!

19. Remove the driver's seat:
20. Push the driver's seat forward.
21. Remove the bolts.

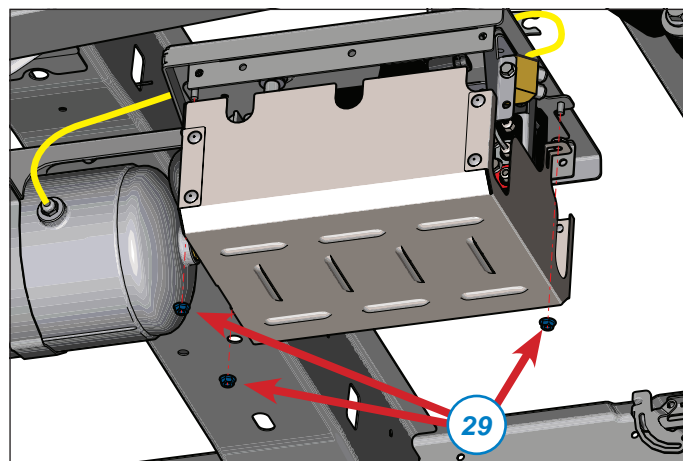


PLEASE NOTE: ensure that the battery cable is disconnected so that a side airbag (if fitted) cannot be deployed.

22. Push the driver's seat backwards.
23. Remove the bolts.
24. Disconnect any wires from the driver's seat.
25. Place the seat next to the vehicle.
26. The hole through which the wiring harness protrudes from the chassis is located underneath the driver's seat.
27. Remove the plastic cover.
28. Route the wire to the inside.



29. Fit the cover.



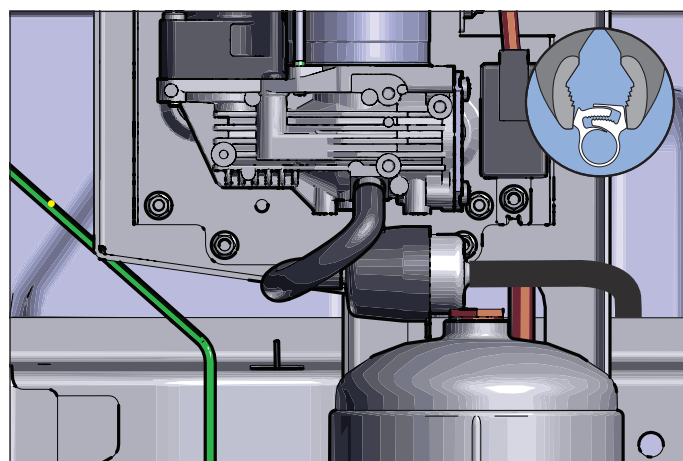
4 x flange lock nut

M6



8 Nm

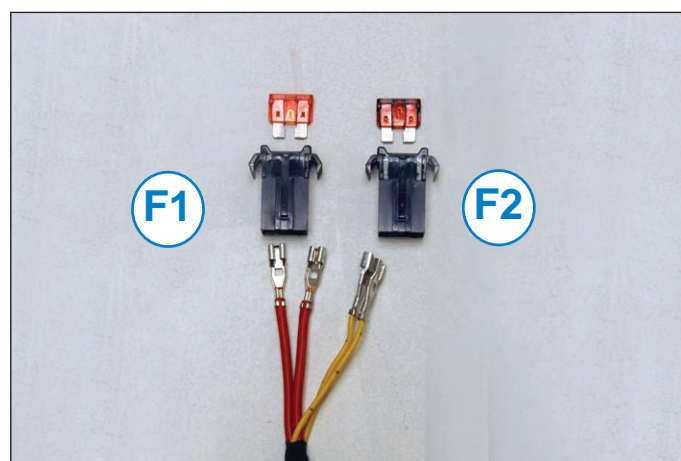
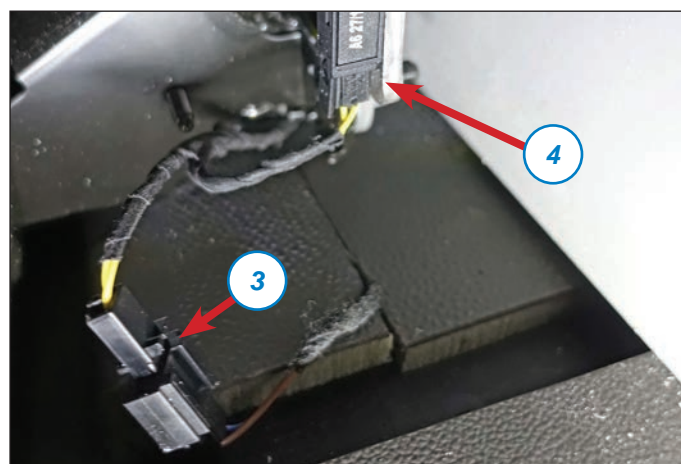
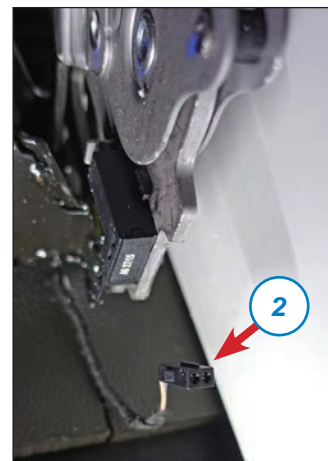
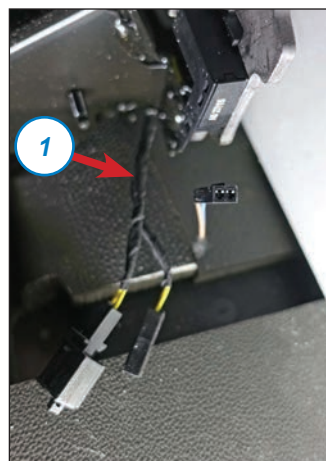
30. Fit the filter in the inlet line.
31. Route the end of the inlet line into the chassis.



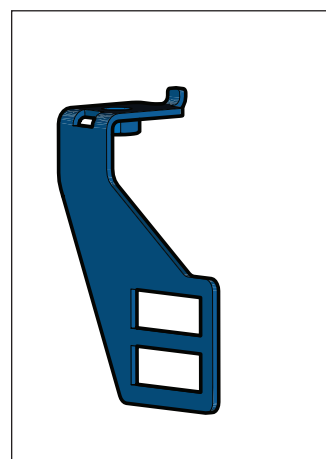
3.9 In the cabin

3.9.1 Handbrake signal

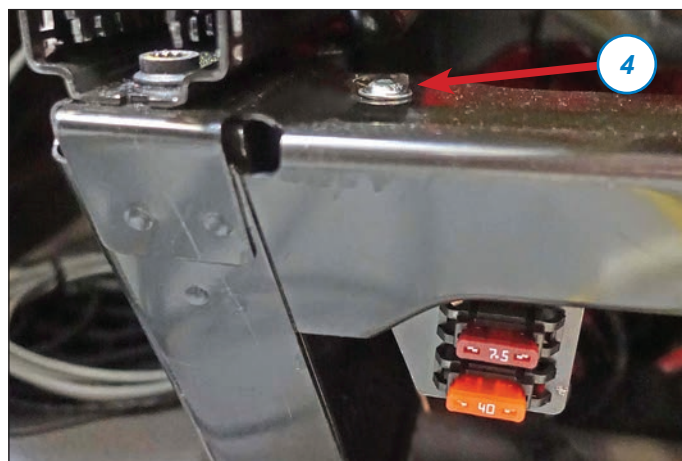
1. Route the wire of the supply cable to the handbrake under the seat console.
2. Remove the original connector from the handbrake.
3. Connect the original connector that was removed to the supply cable connector.
4. Fit the other connector of the supply cable to the connection point on the handbrake.




3. Fit the fuse blocks to the fuse block support.

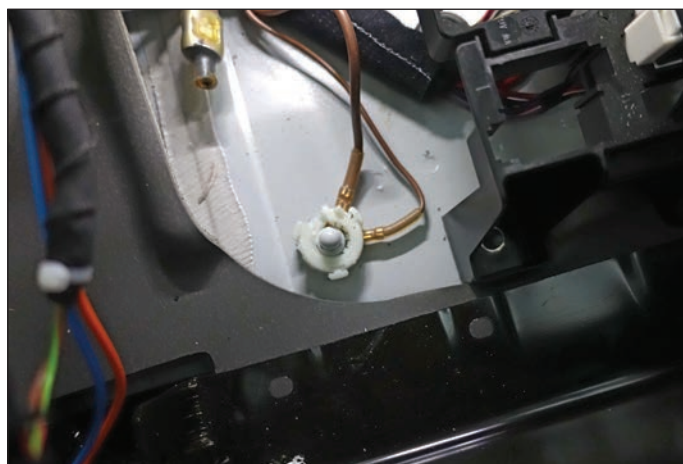


4. Fit the fuse block support in the position indicated underneath the driver's seat.



1 x flange bolt	M6 x 16
	8 Nm

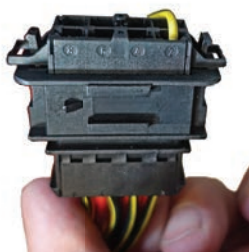
5. Connect the brown wire to the earth point (-) underneath the driver's seat.



6. Route the red wire to the positive (+) terminal of the battery under the trim of the driver's seat.



7. Route the yellow wire of the supply cable to the IS1 electrical connector block. The electrical connector block is located behind the trim on the right-hand side near the passenger footwell. You may need to use the KFG connector supplied separately. Connect the wire to pin 2, 4, 6 or 8.



3.10 Remote control

1. Identify a suitable location to install the remote control. VB-Airsuspension recommends the inside of the B-pillar on driver's side.
2. Fit the holder in the desired location.
3. Place the remote control in the holder.
4. Route the remote-control wire to the VB wiring harness under the seat console.
5. Connect the white connector to the VB wiring harness.
6. To protect the connector, secure the end of the wire using a tie-wrap.

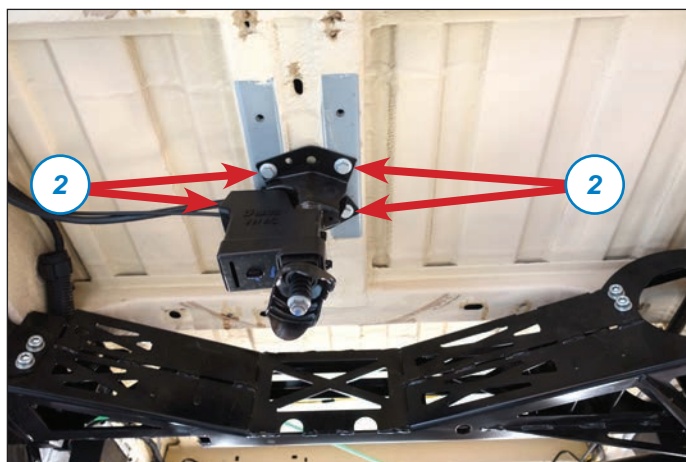


3.11 Final steps

1. Refit all removed panels and covers.
2. Refit the driver's seat.

4. Moving the spare wheel

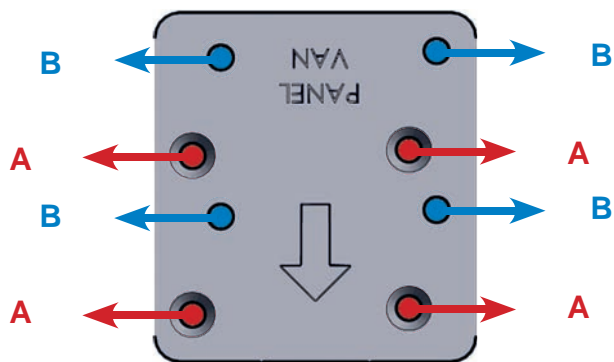
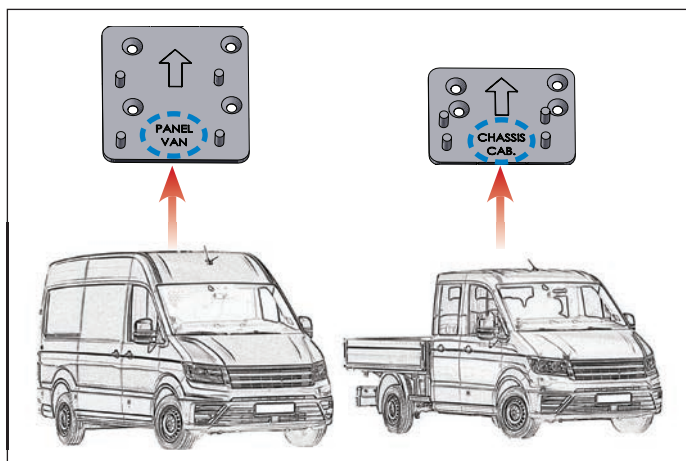
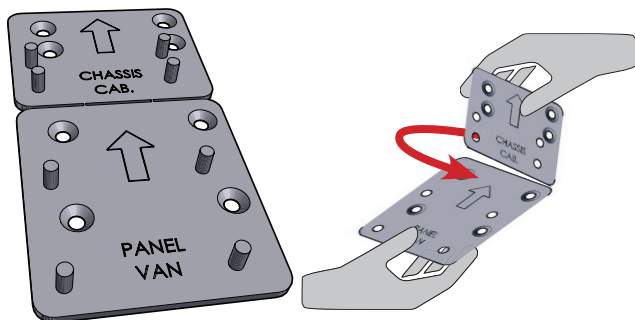
1. Remove the spare wheel.
2. Remove the spare wheel winch.
3. Fit the correct spare wheel bracket to the chassis using the four bolts (A). Fit the spare wheel winch to the spare wheel bracket using the four bolts (B).



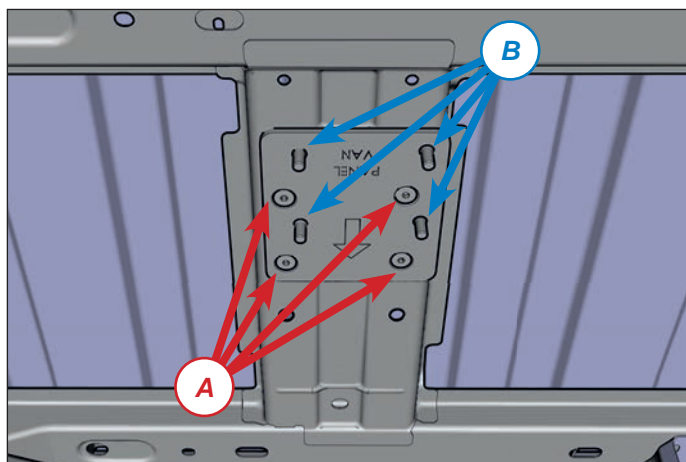
4 x countersunk Allen screw M8 x 20
4 x flange lock nut M8



30 Nm

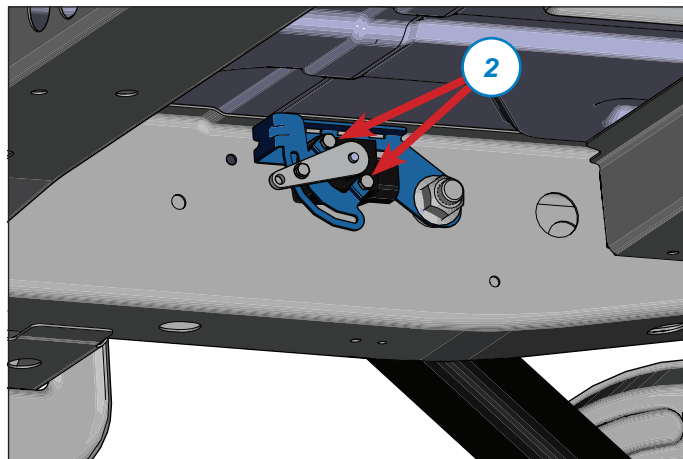


PLEASE NOTE: fit the spare wheel bracket so that the arrow is pointing in a horizontal direction and the text is legible!

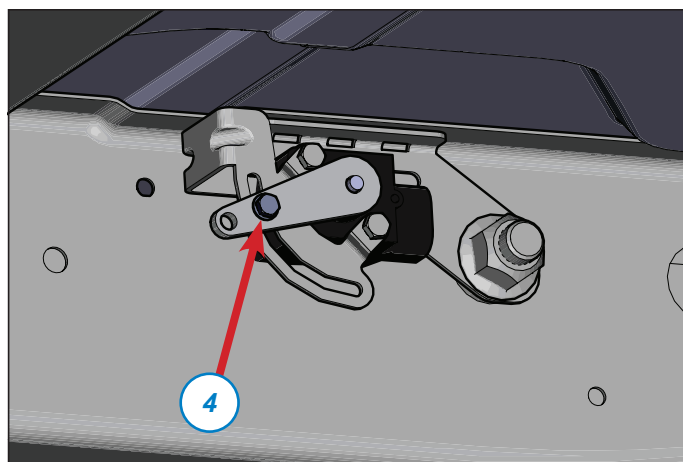


5. LED lighting modification

1. Lower the vehicle onto the calibration supports.
2. Fit the LED height control using the original bolts.



3. Adjust the height of the lights.
4. Secure the height sensor arm.



1 x bolt	M4 x 20
2 x washer	M4
1 x lock nut	M4



4 Nm



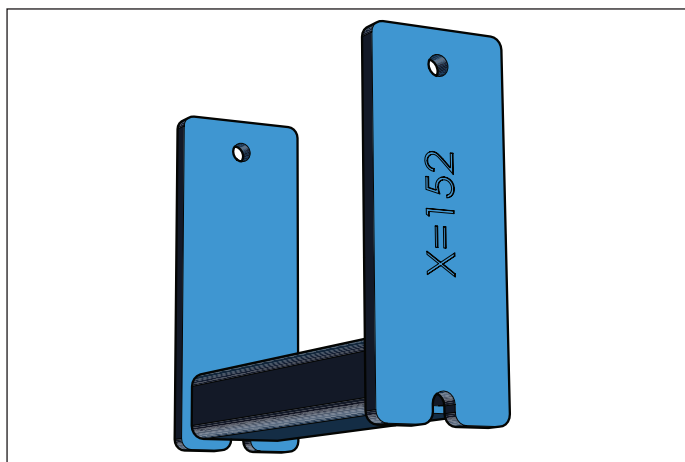
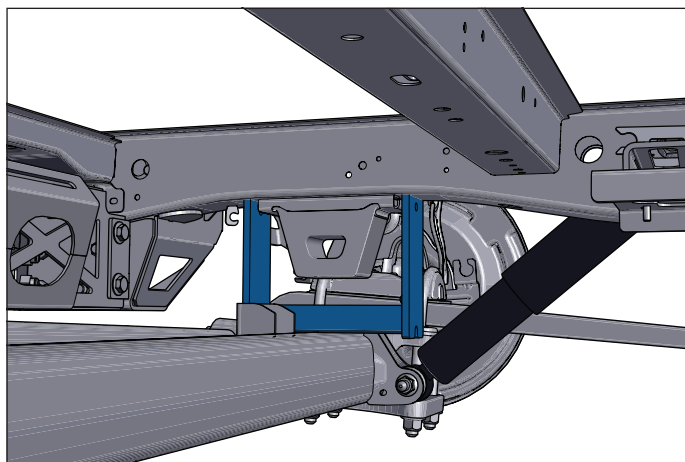
Please note: have the height of the lights checked by an officially recognised dealer.

6. Calibration

See document [730 105 000 001 Fitting Instructions calibration VB-FA 2C 4C](#) for the general calibration steps.



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



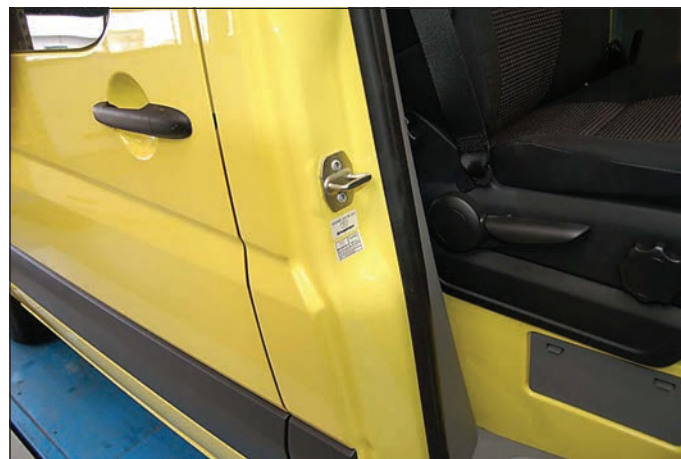
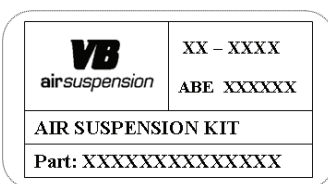
7. Warranty stickers

1. Affix the supplied warranty stickers **A + B** to the B-pillar on the passenger's side.

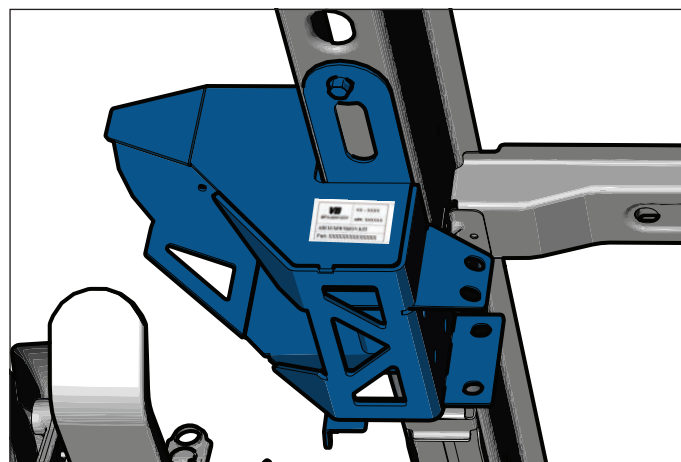
A



B



2. Affix sticker **B** to the left spring plate.



3. Affix the sticker with the fuse indication to the seat console.



4. Note the conversion to air suspension in the maintenance log.
5. Check the vehicle using the checklist in this manual.

Bestätigungen	
Aufbauhersteller	
1. Aufbauhersteller Folgende Arbeiten/Änderungen wurden durchgeführt, z. B. am Chassis, Fahrerhaus, Aufbau (Kasten), bzw. Montage von Zusatzaggregaten und Aufbauten: <i>Kaufbedingung Hinterachse</i>	Bitte ankreuzen: <input checked="" type="checkbox"/> Arbeiten und Ausführungen wurden entsprechend der Mercedes-Benz Aufbauanleitung durchgeführt. <input checked="" type="checkbox"/> Unbedenklichkeitsbescheinigung wurde bei der DaimlerChrysler AG, Abteilung für Aufbaugenehmigungen (siehe Aufbauanleitung) eingeholt. <input checked="" type="checkbox"/> Betriebsanleitung und Wartungsvorschriften für durchgeführte Arbeiten/Änderungen bzw. eingebaute Aggregate wurden dem Fahrzeug beigelegt. 6
Das Fahrzeug wurde hinsichtlich der durchgeführten Arbeiten/Änderungen einer Qualitätskontrolle/Endabnahme unterzogen. Es wurden keine Fehler oder Mängel festgestellt.	
R.O. Box 130 NL-7050 AC Versseveld T: +31 (0)315 241075 www.vbalrsuspension.com Stempel des Aufbauherstellers	

8. Checklist

8.1 Final checks

	OK
1.1 Ride height correctly calibrated.	<input type="checkbox"/>
1.2 Front axle/rear axle aligned.	<input type="checkbox"/>
1.3 Height sensors correctly fitted.	<input type="checkbox"/>
1.4 Shock absorbers vented.	<input type="checkbox"/>
1.5 Bolts tightened to correct torque and ticked off.	<input type="checkbox"/>
1.6 Air tubes, wires and connectors properly secured.	<input type="checkbox"/>
1.7 System checked for air tightness.	<input type="checkbox"/>
1.8 Clearance around air springs checked.	<input type="checkbox"/>
1.9 Headlamp adjustment checked.	<input type="checkbox"/>
1.10 Documentation present.	<input type="checkbox"/>
1.11 Warranty form completed and identification stickers affixed to vehicle.	<input type="checkbox"/>

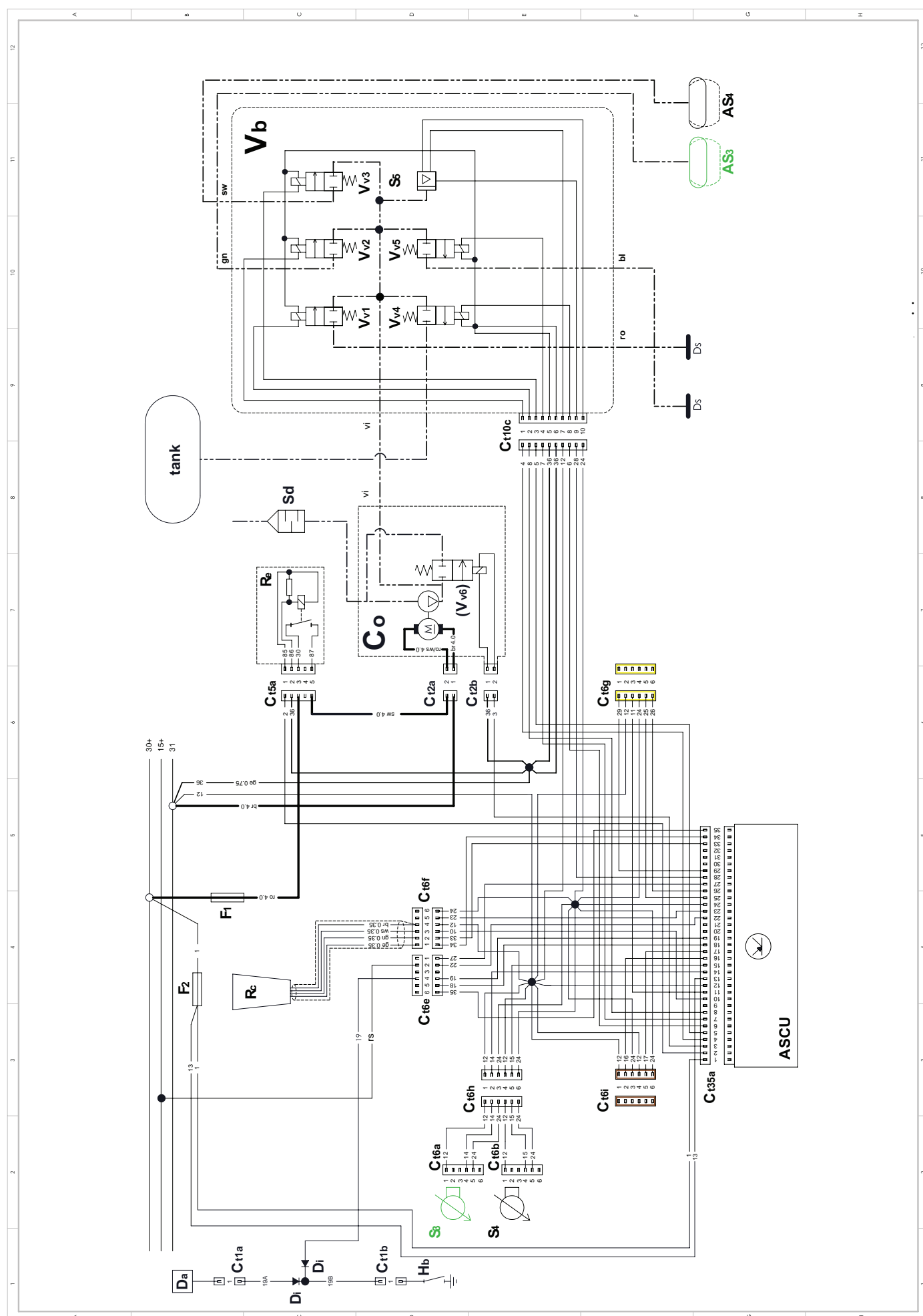
8.2 System functions

	OK
2.1 Raise manually.	<input type="checkbox"/>
2.2 Lower automatically.	<input type="checkbox"/>
2.3 Lower manually.	<input type="checkbox"/>
2.4 Raise automatically.	<input type="checkbox"/>
2.5 Test drive carried out.	<input type="checkbox"/>





SYSTEM OK

☐

9. Electrical diagram



Name	Description
ASCU	VB-ASCU (electronic control unit)
AS3	Air spring, rear left
AS4	Air spring, rear right
Ct1a	Connector, 1-pin, handbrake
Ct1b	Connector, 1-pin, handbrake
Ct2a	Connector, 2-pin, compressor power supply
Ct2b	Connector, 2-pin, dump valve on compressor
Ct5a	Connector, 5-pin, compressor relay
Ct6a	Connector, 6-pin, height sensor rear left
Ct6b	Connector, 6-pin, height sensor rear right
Ct6e	Connector, 6-pin, VB supply cable
Ct6f	Connector, 6-pin, remote control
Ct6g	Connector, 6-pin, connector option (yellow)
Ct6h	Connector, 6-pin, rear axle height sensors (white)
Ct6i	Connector, 6-pin, front axle height sensors (brown)
Ct10c	Connector, 10-pin, valve block
Ct35a	Connector, 35-pin, VB-ASCU
Co	Compressor
Da	Dashboard
Di	Diode
Ds	End plug
F1	Fuse, compressor, 40 A
F2	Fuse, VB-ASCU, 7.5 A
Re	Compressor relay
Rc	Remote control
S3	Height sensor, rear left
S4	Height sensor, rear right
S5	Pressure sensor on valve block
Sd	Air silencer/filter
Tank	Air tank (option)
Vb	Valve block
Vv1	Valve for front right air spring on valve block
Vv2	Valve for rear left air spring on valve block
Vv3	Valve for rear right air spring on valve block
Vv4	Dump valve to vent air on valve block
Vv5	Valve for front left air spring on valve block
Vv6	Dump valve on compressor

Name	Description
Colour codes (yellow with wire number is not indicated)	
bl	Blue
br	Brown
ge	Yellow
gn	Green
ro	Red
ro/ws	Red/white
rs	Pink
sw	Black
vi	Purple
ws	White
	0.50 mm²
	0.75 mm²
	4.00 mm²
	Air tubes



VB-Airsuspension is one of the few European manufacturers producing a wide range of (air) suspension systems. From semi air suspension and reinforced coil springs to complete, comprehensive air suspension systems: we offer our customers solutions for various vehicles, such as emergency vehicles, car transporters, motorhomes etc. Now you can see why an increasing number of truck and body manufacturers are incorporating VB-Airsuspension's systems in their own ranges.



Dealer:



www.vbairsuspension.com