# FITTING INSTRUCTIONS

**making everyday smoother**

airsuspension


• Increased comfort • Better driveability • More safety

# RENAULT KANGOO
# MERCEDES BENZ CITAN
# X61

**with VB-FullAir 2C rear axle air suspension**

**FOR KIT 10532262XX**

## What has changed?

| | |
|---|---|
| New version number: | V1.3 |
| Release date: | 6/03/14 |
| Changed compared to | V1.2 |
| Page: | What is changed: |
| 11 | Connecting the black air tube from the compressor |
| 11 | Picture of the compressorbox and valve block changed |
| 15 | The yellow cable with the ignition signal can also be white or red |
| 20 | Exploded view removed |

# Contents

# 1. Safety regulations

### Personal safety regulations

- Always wear appropriate safety clothes and safety shoes.
- Do not wear any rings, watches, or free hanging clothes.
- Never keep any loose goods in pockets of clothes.
- Bind long hair together.
- Never use defect tools. Use tools only for the purpose where it is meant for.
- Wear safety goggles.

### General safety regulations

- Always use a car lift to perform the operations.
- Be sure the vehicle is always supported properly when necessary.
- Be sure the vehicle can not roll away.
- Incapable fitting operations may result in dangerous situations.

### Used Symbols

***Attention***

| | |
|---|---|
|  | ***When the warning symbol is displayed, information of great importance to the safety and / or health of the involved persons is provided. This symbol is also used in operations that are crucial for the correct mounting of the air suspension set.*** |

***Tip***

| | |
|---|---|
|  | ***When the tip symbol is displayed, advice is given to make the mounting of the air suspension set more easy.*** |

***Torque***

| | |
|---|---|
|  | ***Every bolted joint in this manual comes with a checkbox and a torque.*** |
| ***xxx Nm*** | |

# 2. General fitting regulations

This manual has been carefully crafted to provide the best way to fit the air suspension mentioned on the cover of this manual. However, the manual is a random indication of the technical specifications at any given time.
VB-Airsuspension reserves the right to make technical changes in the air suspension kit without any notification.

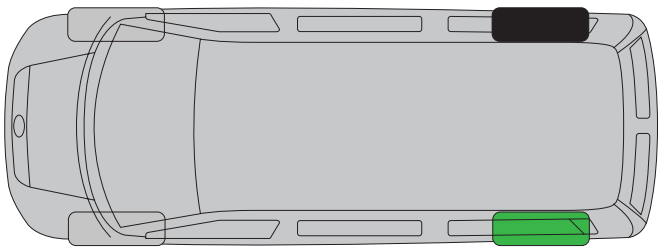
Fitting of the air suspension kit can only be done in a from VB-Airsuspension authorised workshop. The fitting can only be done by authorised mechanics. The mechanics must have proper experience in electric/ electronics, pneumatics and regular vehicle technics.

- When necessary, use the work-shop manuals of the vehicle.
  Always follow the directions of the vehicle manufacturer, unless otherwise expressly stated in this manual.
- Work clean.
- Always tighten the bolts and nuts according the recommended torque.
- Whenever changes are made to the original corrosion protection, restore it immediately. For this purpose use for example protective coating or spray wax.
- Always re-fit the removed wires and tubes on the original way.
- Always secure the wires and air tubes with plenty of tie-wraps. Secure all connectors properly and make sure that there is no stress on them.
- All electrical cables must be kept at least 100 mm away from the ABS/ESP block, its sensors and other controllers.
- Make sure the air-tubes do not make sharp corners and can not bend or wear against other parts.
- Connecting electrical cables or air-tubes to brake lines is strictly prohibited!
- Make sure no tools, cleaning rags or other materials remain under the car.
- Check the air suspension after finishing the fitting according the checklist.
- Check after the fitting, the system for air leakage.
- When finishing the fitting, always make a test drive.
- Make sure that the right calibration support are available, for this kit the right calibration support are:

| Axle | Calibration height: |
|---|---|
| Rear axle | **X = 425mm** |

- The air-suspension is split up in two corners, which correspond to one corner of the vehicle. When a part is specific for one corner, this will be marked with a coloured sticker.

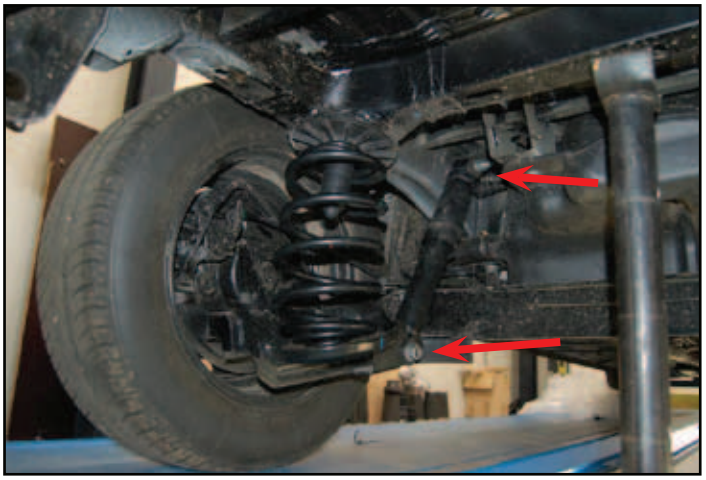
| Color | Description |
|---|---|
| *Green* | *Left rear* |
| ***Black*** | ***Right rear*** |



# 3. Fitting the air suspension kit

## 3.1 Preparations

1. Remove the shock absorbers



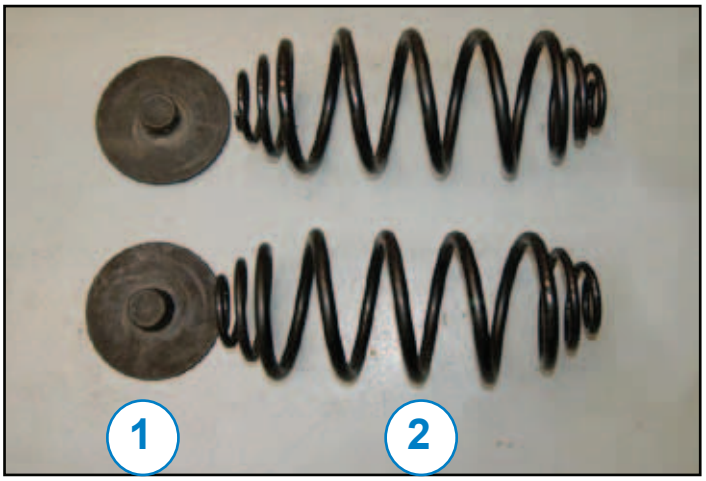
| | |
|---|---|
| ⚠ | ***Bolts and nuts will be re-used.*** |

| | |
|---|---|
| ⚠ | ***Be sure the vehicle is supported properly. Support the rear axle properly. Always secure the rear axle to prevent tension in the parts. Tension can induce unexpected behaviour and result in damage or even injuries!*** |

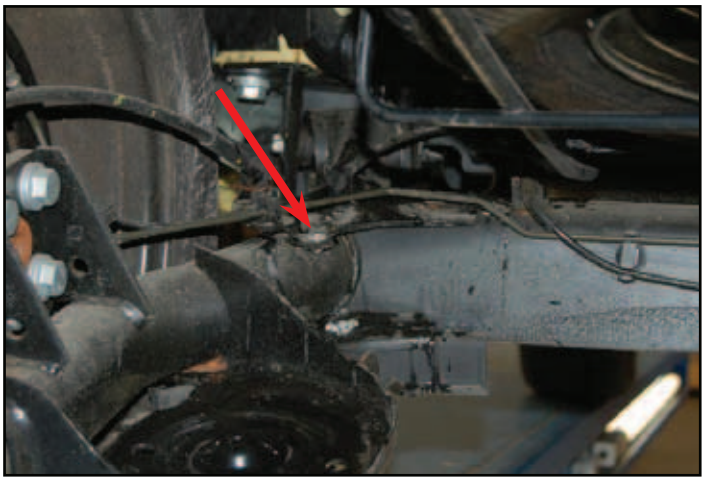
2. Remove the original coil-springs.

| | |
|---|---|
| 💡 | ***Lower the axle, so the leaf-spring can be removed easily.*** |

3. Remove the lower rubber plates (*1*) and the coil springs (*2*).
4. Remove the original bump stops.



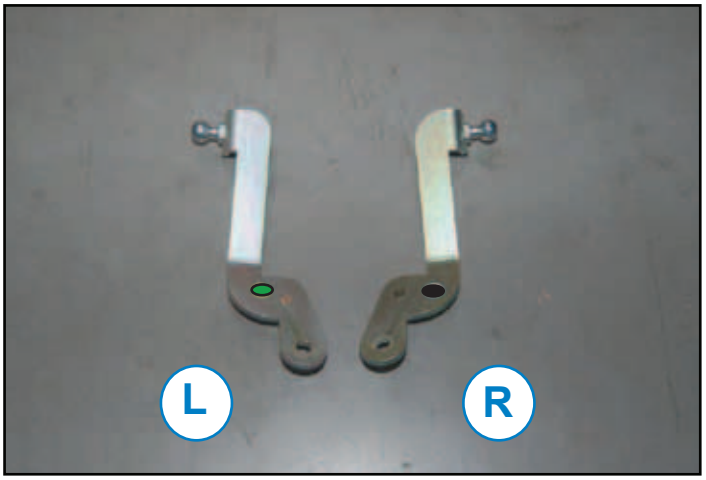

5. Remove the rivet on the marked place. Remove it on both sides of the vehicle!



## 3.2 Heightsensors

1. Take the ball-joint supports, pay attention to the difference between the left and right one!

| | |
|---|---|
| ⚠ | ***The colour marker shows, which bracket is for the left or right. See 'fitting regulations'.*** |

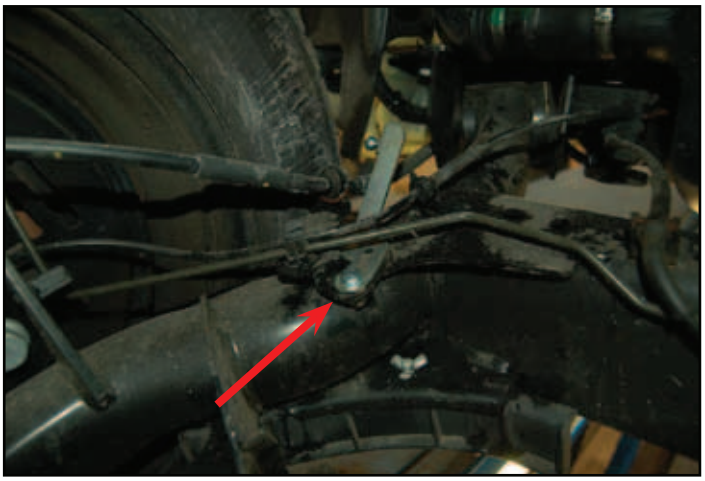



2. Slide the ball-joint support underneath the brake lines. Put the pin of the ball-joint support, into the hole in the rear axle.

| | |
|---|---|
| ⚠ | ***Pay attention to the little pin on the underside of the ball-joint support. It has to fit in the second hole.*** |

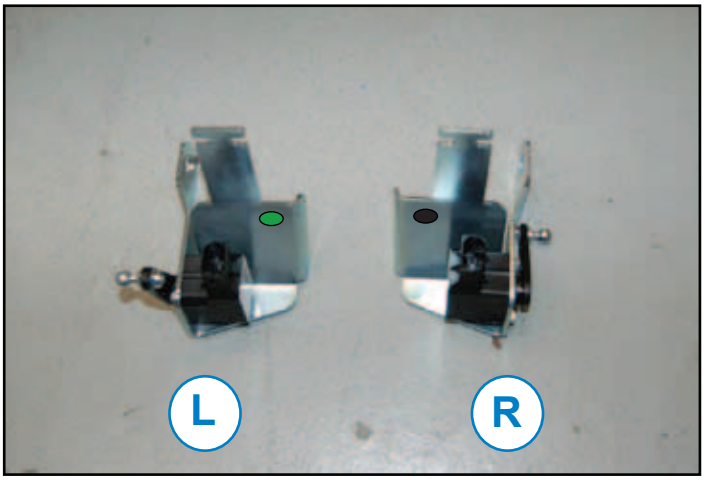
3. Mount the ball-joint support.

| | |
|---|---|
| 🔧 ***8,5 Nm*** | ***2 x Bolt M6x20***<br>***4 x Washer M6***<br>***2 x Lock nut M6*** |



4. Take the heightsensors. Pay attention to the difference between the left and right one!

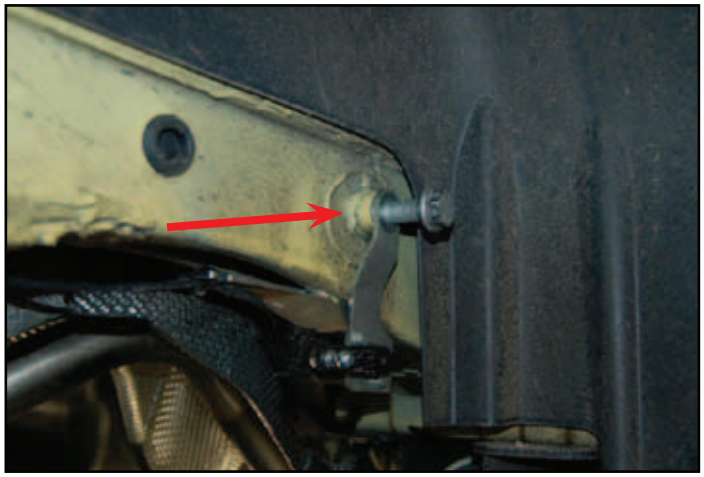
| | |
|---|---|
| ⚠ | ***The colour marker shows, which bracket is for the left or right. See 'fitting regulations'.*** |



5. Fit the heightsensors on the outside of the chassis. To fit this, use the original bolts on the same holes as the original shock absorber was mounted. Use the special washers ***between*** the chassis and the support!

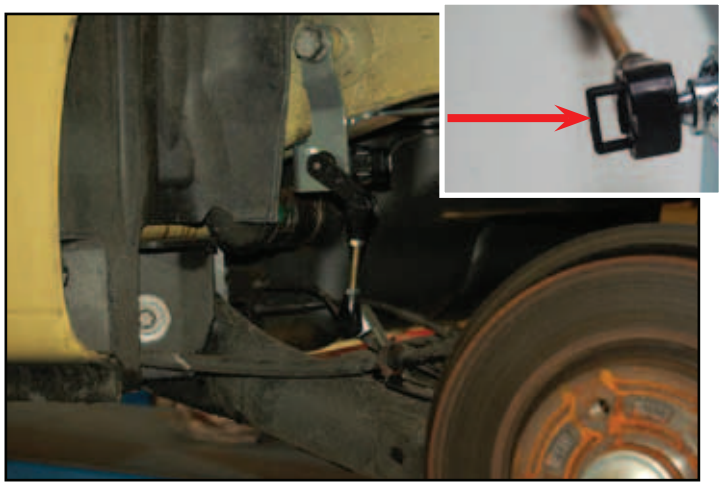
| | |
|---|---|
| | ***2 x Washer M14*** |

| | |
|---|---|
| | ***Do not secure the bolts yet, because the shock absorber has to be fitted first!*** |



6. Compare the length L of the height sensor rods. The length is measured between the centre of the two black ball-joints. ***L = 90mm.***

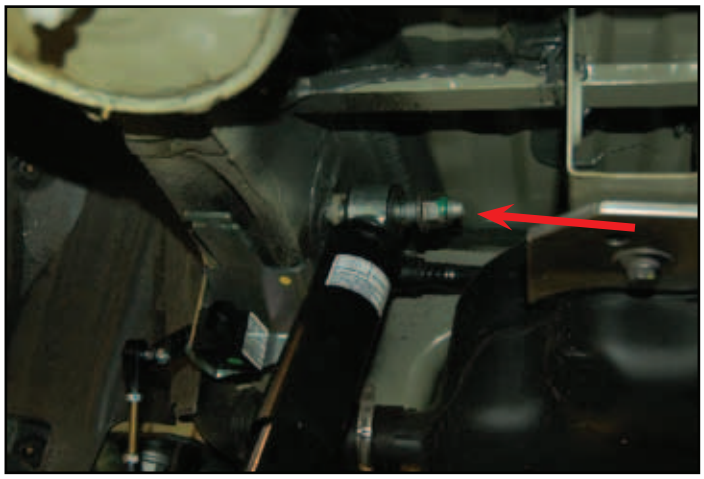
7. Fit the height sensor rods by pressing them onto the ball-joints at both ends, as can be seen on the picture on the right. Secure the rods by pressing the clips (see small picture).



## 3.3 Shock absorbers

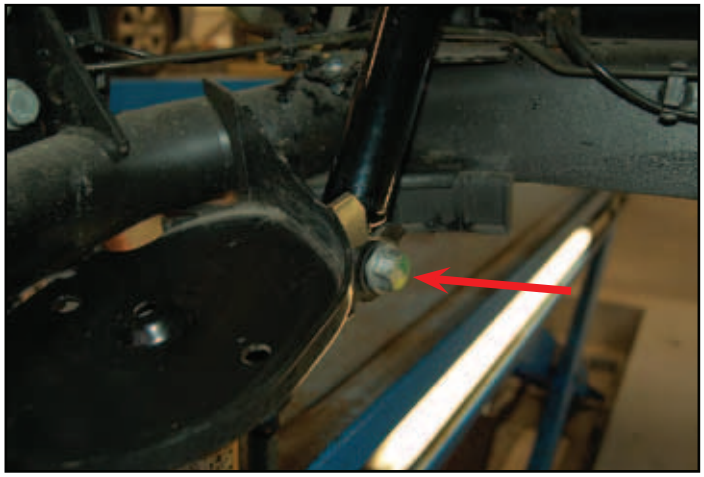
1. Fit the supplied shockabsorbers. Secure them on the original place using the original bolts and nuts, upper side first.
   ***** Do not secure these bolts yet! The vehicle has to be in driving height first!***

| | |
|---|---|
| ***180 Nm*** | ***Original fasteners*** |



2. Fit the lower side of the shock absorber on the original place, using the original bolts.
   ***** Do not secure these bolts yet! The vehicle has to be in driving height first!***

| | |
|---|---|
| ***205 Nm*** | ***Original fasteners*** |



## 3.4 Air springs

1. Now it's time to fit the new air springs to the vehicle. In the picture you can see them. Use some grease to slide the original bump-stop in the top of the air-spring.

2. Be sure the upper surface of the bump-stop and the surface on the chassis are ***clean and free of grease!***
3. Now put some kit on the surface as on the picture.

4. Put the air springs under the vehicle. Be sure the air-connection is pointing to the middle-back of the vehicle.

5. Use the tapping screws and washers to secure the bottom of the air spring to the rear axle.
   ***** Do not secure these bolts yet! The vehicle has to be in driving height first!***

| | |
|---|---|
| ***15 Nm*** | ***2 x Bolt M8x40*****<br>***2 x Washer M8*** |

6. Connect the air tubes to the air springs. Loosen the end of the air connector and slide this over a piece of air tube.

| | |
|---|---|
| ⚠ | ***Slide the line at least 15 mm in the air connection.*** |

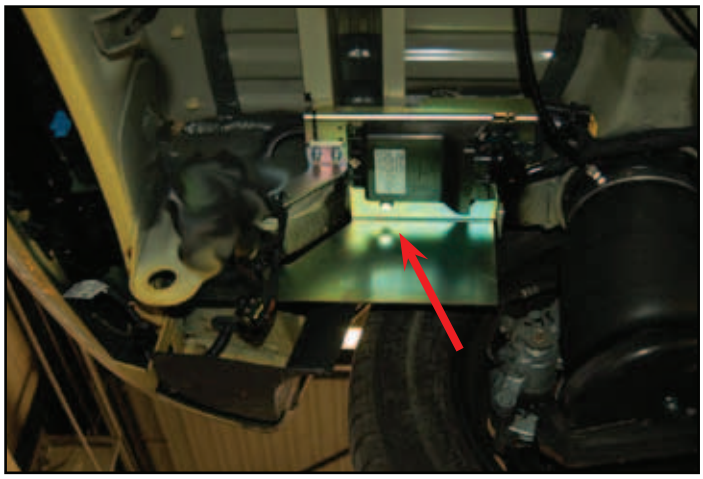
7. Use a tyre valve to pump some air-pressure into the air-springs. This is to press the upper plate properly against the chassis until the glue has hardened.

| | |
|---|---|
| ⚠ | ***The kit should harden for at least 5 hours, before the pressure of the air-springs can be released!*** |

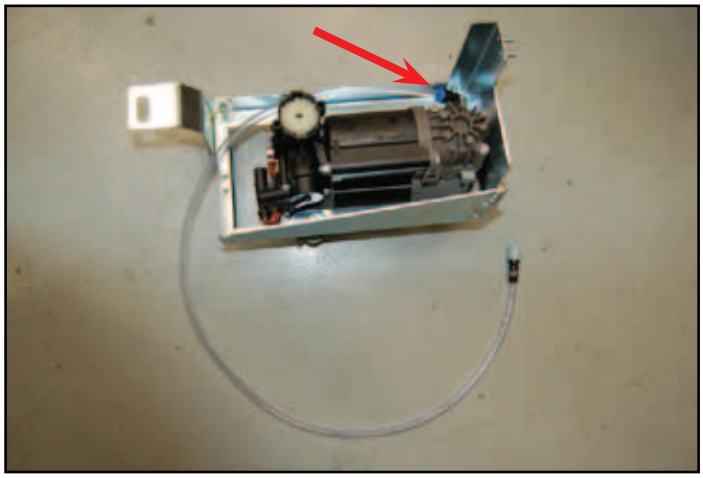
## 3.5 Compressorbox

1. Fit the upper half of the compressor box to the chassis. Use one bolt to secure it.

| | |
|---|---|
|  ***20,5 Nm*** | ***1 x Bolt M8x20***<br>***1 x Washer M8*** |



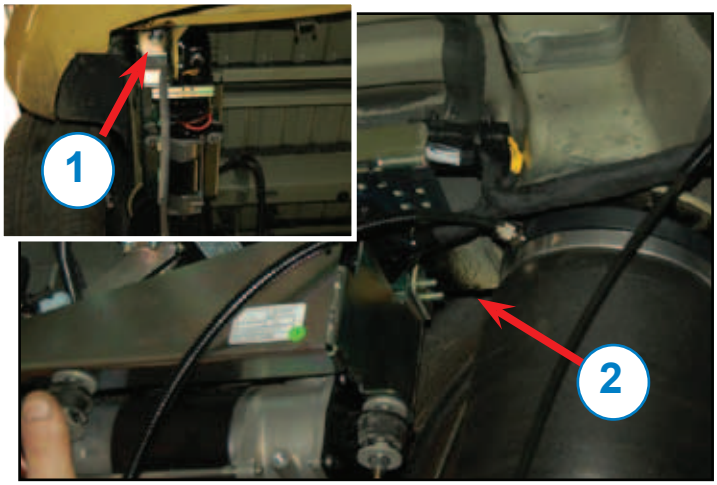
2. Connect the transparent air tube to the compressor as showed on the picture.



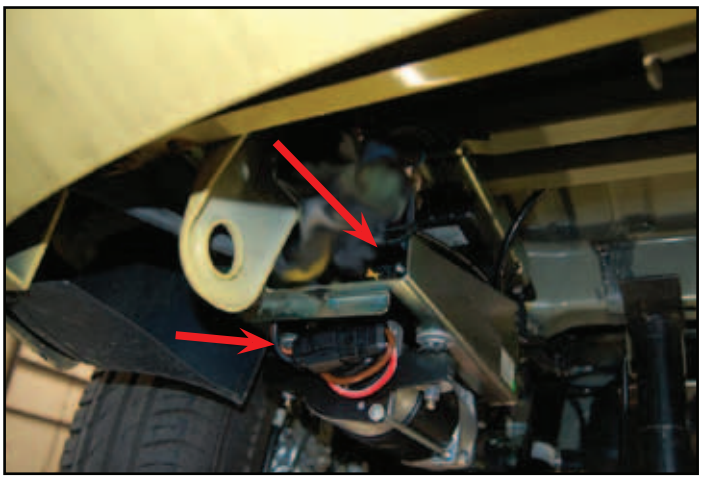
3. Now get the second part of the compressor-box and slide the two bolts into the holes. Secure the second part on the rear side with a bolt, see inlay picture. Secure the two thread ends with nuts.

| | |
|---|---|
| 41 Nm | *1 x Bolt M10x20 (1)*<br>*1 x Washer M10* |

| | |
|---|---|
| 8,5 Nm | *2 x Lock nut M6 (2)*<br>*2 x Washer M6* |



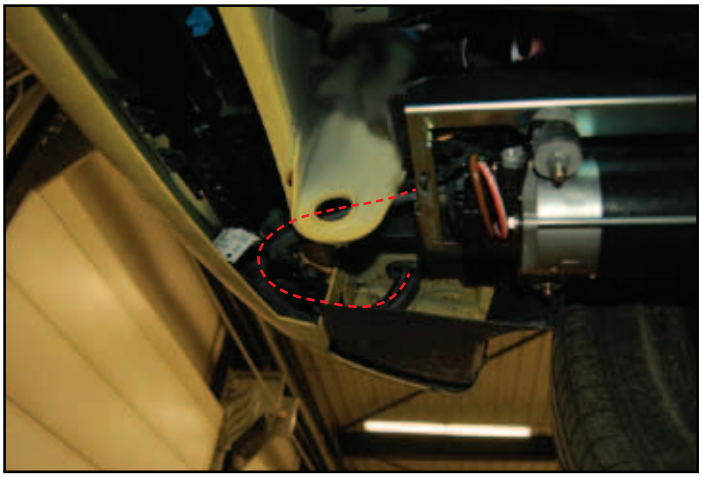

4. Connect the wiring harness to the compressor. Therefore, connect the two marked connectors.



5. Now lead the air tubes to the valve block and cut it to the right length. Connect the air tube to the correct position on the valve block.
***Connection P -> Black from compressor***
***Rear left -> Green***
***Rear right -> Black***

| | |
|---|---|
| ⚠ | ***Use sufficient tie-wraps to secure the air tubes.*** |
| ⚠ | ***Make sure that the cables cannot get near any heated of moving parts! Never secure anything to the brake lines!*** |

6. Lead the transparent air-tube along the marked way to the rubber cap. Lead it through the rubber cap inside.



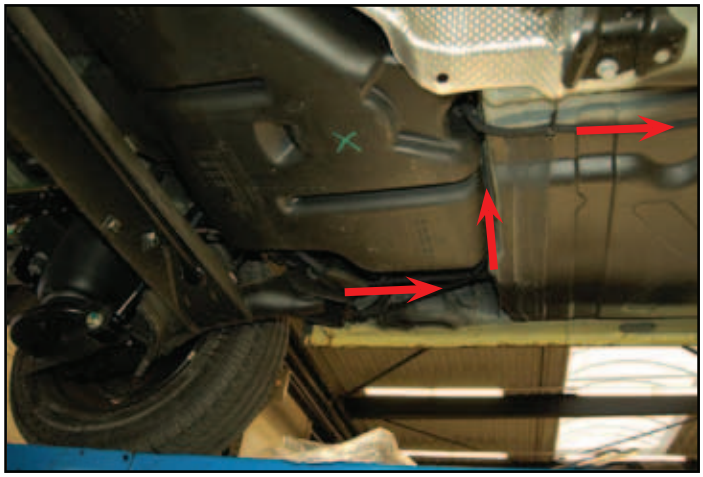
7. Lead the air-tube, on the inside of the vehicle, behind the cover, along the other wires and secure it with tie-wraps.
8. Fit the covers back.

### 3.6 Wiring harness

1. Lead the short wire for the heightsensor to the left sensor and the long wire to the right heightsensor and connect them.

> ***Use sufficient tie-wraps to secure the air tubes.***

2. Lead the thick wire over the fuel tank to the middle of the vehicle.

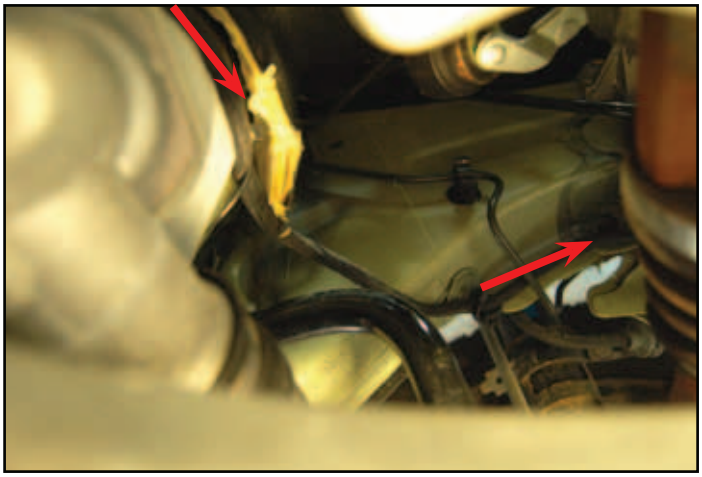


3. Lead it, along the pins, using the special tiewraps, to the front of the vehicle.

4. At the point of the junction, this has to lead through the marked hole. This is more easy to do this later on.

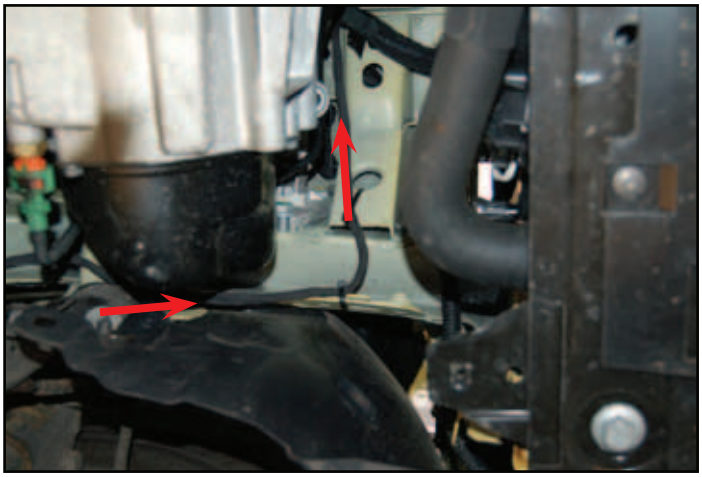
> ***Use sufficient tie-wraps to secure the air tubes.***

5. Lead the wire across the sub frame, along the steering house, to the chassis. From there lead the wiring along the chassis to the front of the vehicle.



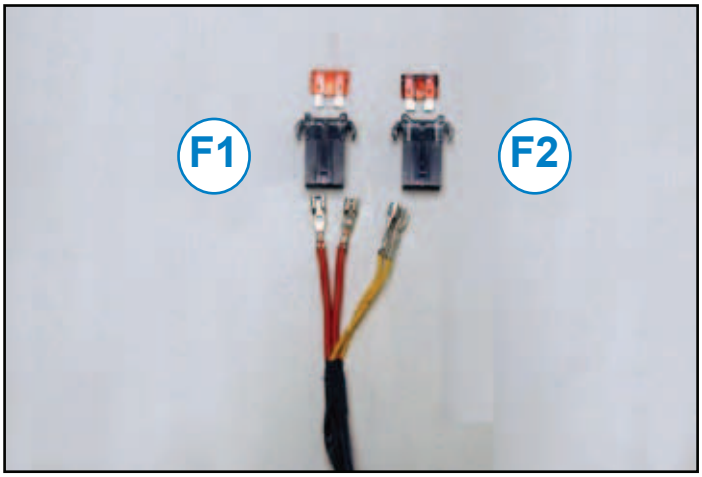
***Use sufficient tie-wraps to secure the air tubes.***

6. Lead the wire along the marked way up to the battery.

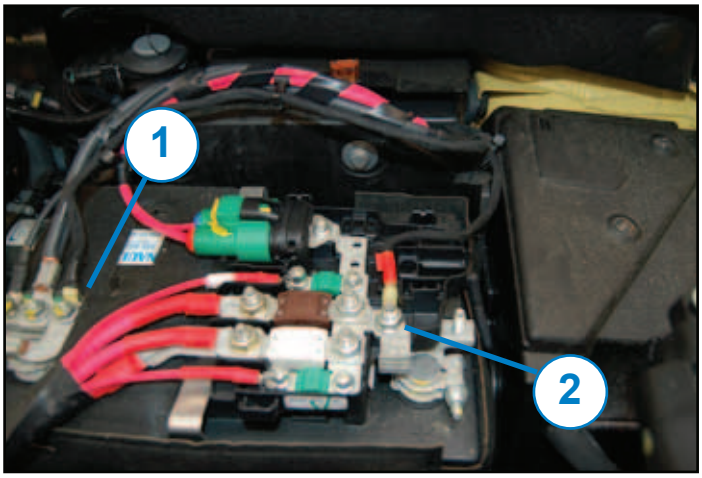


7. Now connect the fuse holders to the wiring harness. Connect both red wires to one fuse holder (***F1***) and connect both yellow wires to the other fuse holder (***F2***).

8. In the fuse holder F1 a ***40A*** fuse has to be fitted, in fuse holder F2 a ***7,5A*** fuse.



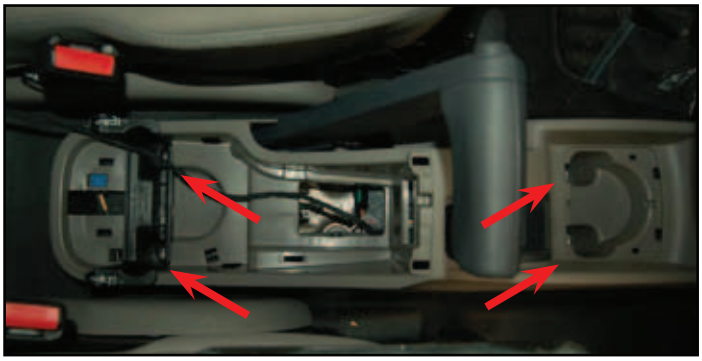

9. Connect the black cable to position ***1*** of the battery and connect the red cable to position ***2*** of the battery.



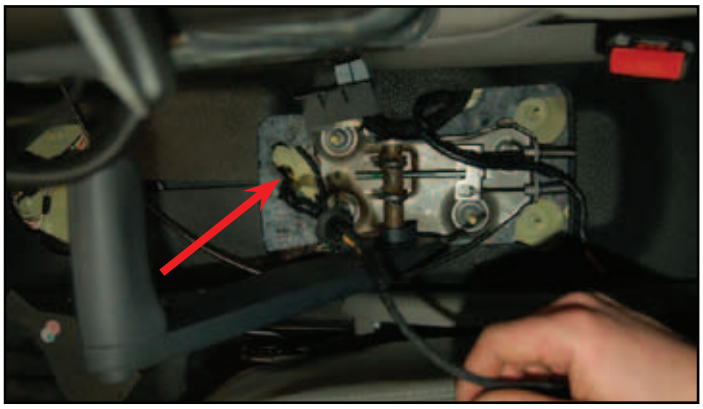

***Use sufficient tie-wraps to secure the air tubes.***

10. In the cab, remove the box between the two seats by removing the marked bolt on both sides.

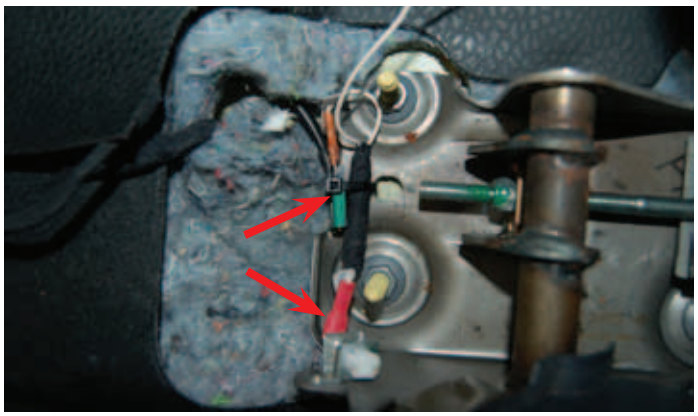
11. Loosen the marked bolts to remove the cover. Also loosen the wires on the underside of the cover.



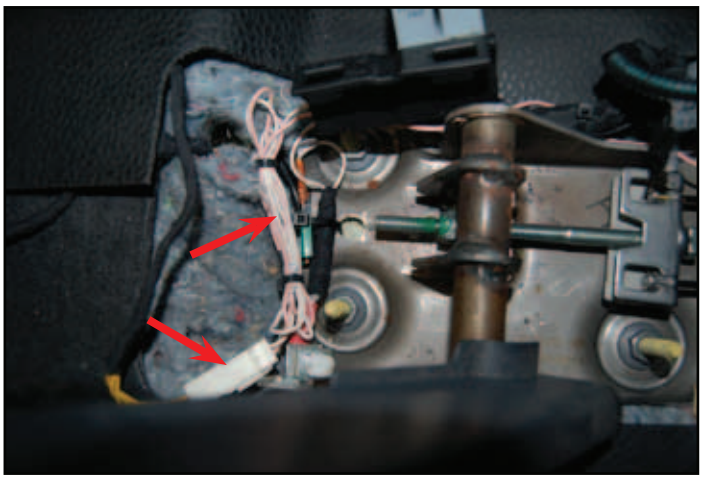
12. Now look under the isolation material for a rubber cap. Remove this cap and lead the shunt from under the car through the hole inside the vehicle.



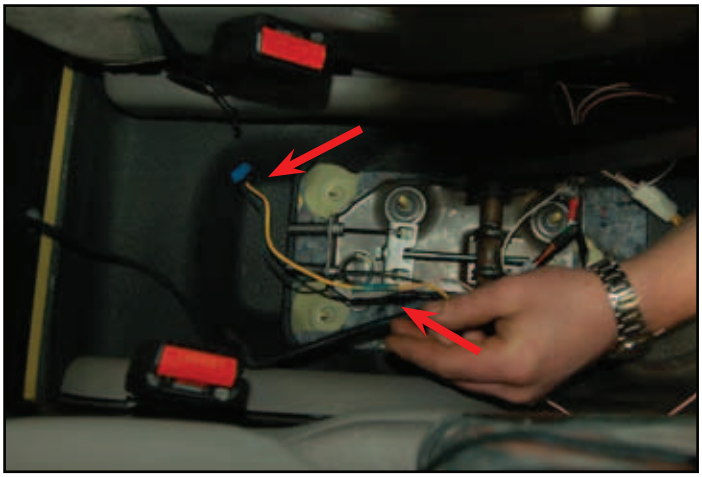
13. Lead the white wire to the handbrake. Disconnect the connector from the handbrake and connect the male-side of the white wire to the connector and the female-side to the handbrake.



14. Connect the supply-cable to the VB-wiring harness.



15. Find in the marked connector a yellow cable. If the yellow cable is not present, use the white or red cable with the ignition signal.
16. Cut this wire and connect this with an isolated cable connector to the pink cable.
17. Secure all of the cables with tie-wraps and refit the cover back.



18. Find a good position for the remote-holder and secure it. A good suggestion for the position is shown to the right.
19. Put the remote in the holder and secure the end of the cable with a tie-wrap to keep tension from pulling the cable out of the connector.
20. Connect the connector of the remote control to the VB-wiring harness.
21. Reinstall all the removed covers.

***Make sure the remote control never gets in the way of the airbags.***

### 3.7 Warranty stickers

1. Place the supplied warranty sticker ***A*** and ***B*** on the B-pillar on the passenger side as shown on the picture.

***A***

XXXXX XXXXX.XXX

VB airsuspension

***B***

VB airsuspension | XX – XXXX ABE XXXXXX

AIR SUSPENSION KIT

Part: XXXXXXXXXXXXXX

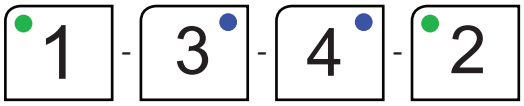
2. Place these stickers on the compressor box under the vehicle.

# 4. Calibration

1. Place the vehicle on a car lift and make the wheels hanging free from the ground. Turn the ignition on.

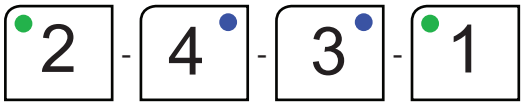
> ***Please make the air-springs pressure-free.***

2. Press the ***SERVICE***-key briefly (LED lights up) and then within 10 seconds the following code:



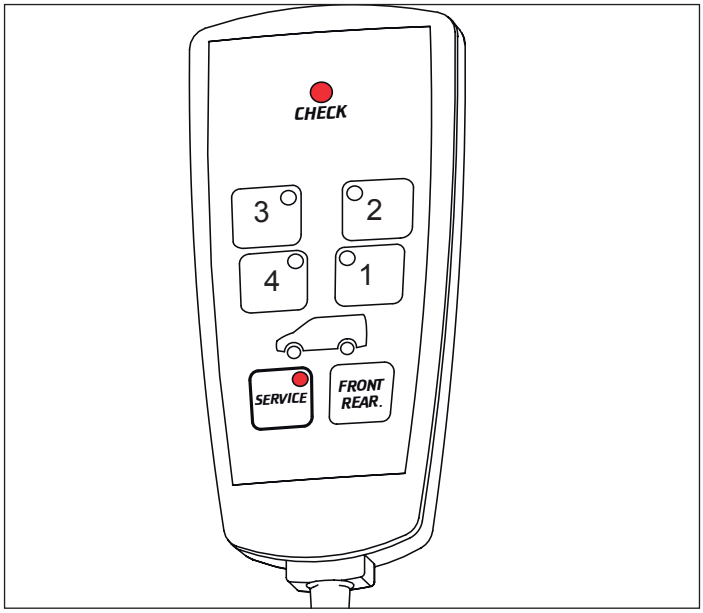

The system will give a long beep and reboot.

3. During the first beep, hold the ***SERVICE***-key, until a second long beep is heard. Now enter the following code within 10 seconds:




The calibration mode is now activated.

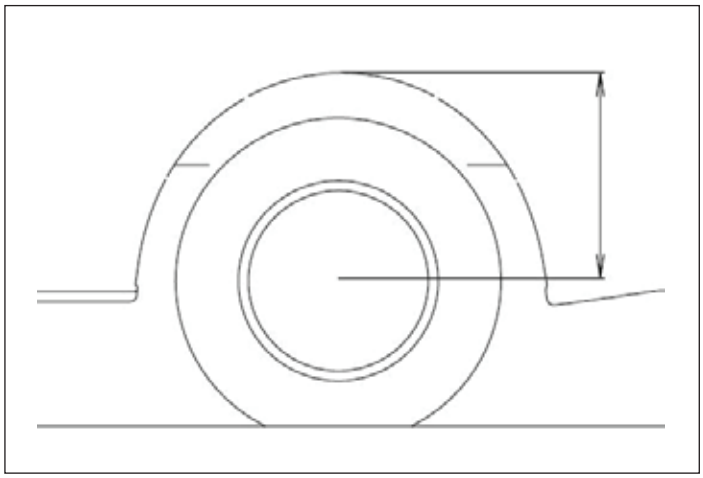
4. The vehicle will calibrate itself automatically.




> ***It can occur the LED of the down-button will light up. If so, push this button until the compressor starts.***

5. When the calibration is finished, the remote control will give a long signal. The air-suspension will restart automatically and the air-suspension is back in normal user mode.

6. The chassis height should now be ***425mm*** (+/- 5mm) measured as shown in the picture.



7. Finally, secure all bolts which have been marked by ***'** Do not tighten these bolts yet!'*** and check the vehicle according the checklist in the appendix!

# 5. Checklist

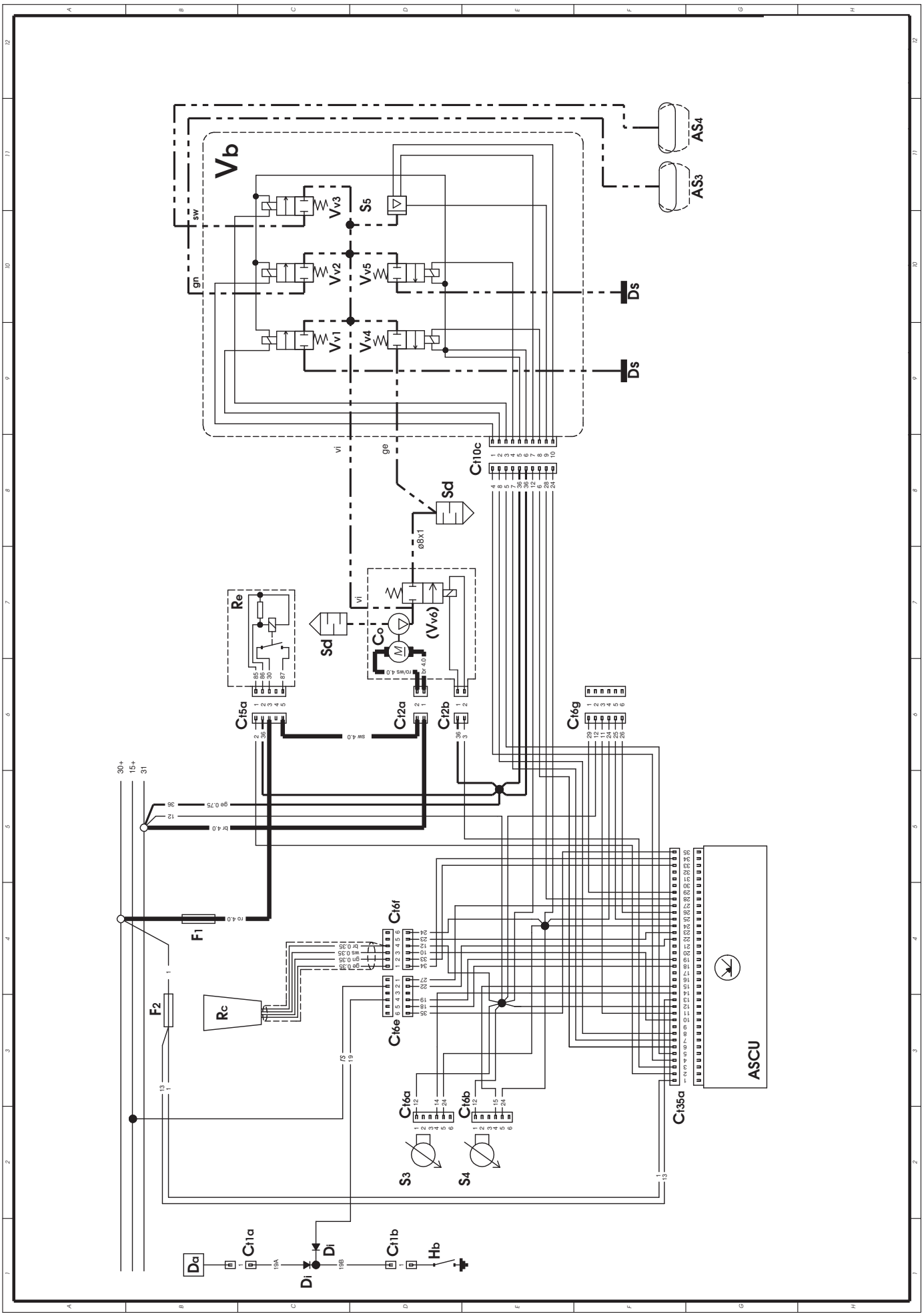
## 5.1 System finishing

| | | OK |
|---|---|---|
| 1.1 | Ride height correctly calibrated. | ☐ |
| 1.2 | Front/rear axle aligned. | ☐ |
| 1.3 | Height sensor correctly fitted. | ☐ |
| 1.4 | Shock absorber bled. | ☐ |
| 1.5 | Bolts tightened to the right torque. | ☐ |
| 1.6 | Air tubes, cables and connectors correctly secured. | ☐ |
| 1.7 | System checked for airtightness. | ☐ |
| 1.8 | Space around the air-springs checked. | ☐ |
| 1.9 | Head-light adjustment checked. | ☐ |
| 1.10 | Documentation present. | ☐ |
| 1.11 | Warranty form filled out and identification sticker fitted. | ☐ |
| 1.12 | Converting to air suspension filled in the service booklet of the car. | ☐ |

## 5.2 Functions of system

| | | OK |
|---|---|---|
| 2.1 | Manual raising. | ☐ |
| 2.2 | Automatic lowering. | ☐ |
| 2.3 | Manual lowering. | ☐ |
| 2.4 | Automatic raising. | ☐ |
| 2.5 | Test drive approved. | ☐ |

# 6. Wiring diagram



| Name | Description |
|---|---|
| ASCU | VB-ASCU (control unit) |
| AS3 | Air spring rear left |
| AS4 | Air spring rear right |
| Co | Compressor |
| Ct2a | Connector, 2-pole, compressor |
| Ct2b | Connector, 2-pole, valve on compressor |
| Ct5a | Connector, 5-pole, relay Re |
| Ct6a | Connector, 6-pole, height sensor S3 |
| Ct6b | Connector, 6-pole, height sensor S4 |
| Ct6e | Connector, 6-pole, VB-supplycable |
| Ct6f | Connector, 6-pole, remote control |
| Ct6g | Connector, 6-pole, option connector |
| Ct10a | Connector, 10-pole, valve block connection |
| Ct35a | Connector, 35-pole, VB-ASCU control unit |
| F1 | Fuse compressor, 40A |
| F2 | Fuse control unit, 7,5A |
| Rc | Remote control |
| Re | Compressor relay |
| S3 | Height sensor rear left |
| S4 | Height sensor rear right |
| S5 | Pressure sensor on valve block |
| Sd | Air silencer |
| 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 |
| ***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 mm² |
| ——— | 0.75 mm² |
| ——— | 4,00 mm² |
| - - - - | Air tube |

VB-Airsuspension is producing, as one of the few European manufacturers, a very broad range of different (air-) suspension systems. From reinforced coil springs, semi-air suspension systems, up to complete full air-suspension systems, we provide solutions for customers with different vehicle types, like ambulances, minibuses, car transporters, motorhomes, etc. Now you can see why more and more commercial vehicle body manufacturers specify VB-Airsuspension on their vehicles.

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