

FITTING INSTRUCTIONS making everyday smoother





• Increased comfort • Better driveability • More safety



VOLKSWAGEN CADDY Maxi

with VB-FullAir 2-Corner rearaxle air suspension FOR SET 105 09 09 22X

What's changed?

New version number:		V1.1		
Release date:		10/12/2012		
Changed compared to		V1.0		
Page: (New version) Changes				
5	Calibration support heights added			
6	Heat shield added			
7	Remark about hole in lower clamping plate			
8	Remark about cutting end of wire			
10	Mounting heat shield to air spring			
10-11	Panhardrod mounting order changed			
11	Mounting bump stops			
12	Mounting panhardrod ball joint bracket changed			
12	Mounting Air spring with heat shield			
13	Information about fasteners when towbar present			
13	Mounting under bumper on page 13 in stead of 14			
13	Remark over black corrugated hose			
15	Remark about vehicles with control unit for batterymonitoring			
16	Tip for guiding the connectors into the vehicle			
16	Mounting fu	ise holder t <mark>o fu</mark> se ho	older bracket	
17	Speed signal connection updated			
25	Heat shield added in exploded view			

airsuspension

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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 torque.

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.

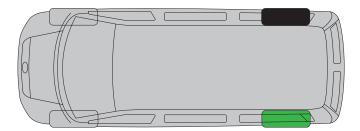
Fitting of the air suspension kit can only be done in a from VB-Airsuspension authorised workshop. The fitting can only be done by authorised mechanics. The mechanics must have proper experience in electric/electronics, pneumatics and regular vehicle technics.

- 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:	Partnumbers:
Rear axle	X = 285mm	009 000 00 57

• 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.

Colour	Description
Green	Left rear
Black	Right rear



3. Overview of the air-suspension kit



The air-suspension kit consists of numerous different parts. To keep things clear, only the main parts have been included on the above picture. The more common parts, like for example the fitting materials, have been left out.

Number	Description
1	Upper mounting bracket right
2	Upper mounting bracket left
3	Panhardrod reactionrod
4	Distance washer
5	Original clamping plate
6	Main spring
7	Upper clamping plate
8	Panhardrod
9	Lower clamping plate
10	Compressorbox protection cap
11	Compressorbox
12	Compressorbox bracket
13	Air spring
14	Heightsensor

Number	Description
15	Piston
16	Shock absorber
17	Heightsensorrod
18	Upper air spring plate left
19	Upper air spring plate right
20	Bump stop
21	Panhardrod ball joint bracket
22	Panhardrod bracket
23	Panhardrod ball joint
24	Filling plate
25	Heat shield

For an overview of the place where the different parts are located, please see the chapter "Exploded View" in chapter 8. You can also find the partnumbers there.

4. Mounting the air spring system 4.1 Preparations

- 1. Support the vehicle properly.
- 2. Remove the spare wheel.
- 3. Remove the rear bumper.
- 4. Remove the under bumper or towbar if mounted.
- 5. Remove the shock absorbers, the bolts and nuts will be re-used.
- 6. Remove the U-bolts.
- 7. Remove the rear leaf spring bracket bolts.
- 8. Remove the front leaf spring bracket bolts.
- 9. Remove the leaf springs.
- 10. Remove the rear leaf spring brackets.
- 11. Remove the bump stops.
- 12. Remove the rear part of the heat shield, the original fasteners will be re-used.



4.2 Mounting the air suspension system

- 1. Place the M12X80 bolt in the left and right lower clamping plate.
- 2. Mount the top side of the shock absorber. **Don't secure the bolts yet.**

2 x Original bolts*



Use sealant to secure the bolts.

Mount the lower clamping plate with the shock asborber to the rear axle.
 Don't secure the bolts yet.



2 x Bolt M12x80 10.9* 4 x Washer M12 2 x Lock nut M12



Use the rear hole.





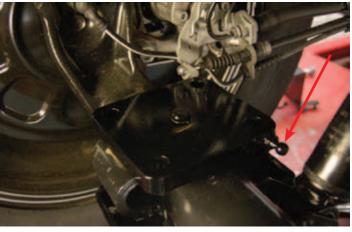
Mount the main springs in the front leaf spring brackets.
 Don't secure the bolts yet.



2 x Original Bolts M12x120* 2 x Lock nut M12 2 x Washer M12

5. Place the upper clamping plate on the axle. The ball joint have to point to the inner and front side of the vehicle.





6. Mount the original clamping plates. **Don't secure the bolts yet.**



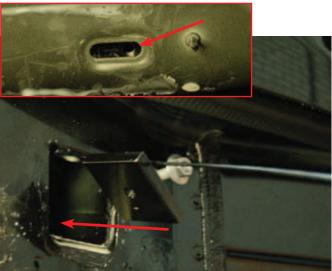
8 x Bolt M12x160* 8 x Lock nut M12 16 x Washer M12



7. Slide the litte clamping plate in the chassis from the back side of the vehicle untill the hole of the clamping plate matches with the slothole of the vehicle.



Cut the end of the wire off.



8. Mount the upper mounting brackets.



2 x Allan screw M8x25 2 x Washer M8

Use the bolt of the bump stop for alignment of the mounting brackets.

9. Mount the air couplers to the air springs.





10. Mount the heightsensors to the upper spring brackets. Pay attention to the position of the heightsensor (see right image)



4 x Bolt M5x10 4 x Washer M5



See the top view for the position of the heightsensor.

11. Mount the upper spring bracket to the air springs.



2 x Bolt M6x12 2 x Washer M6



Pay attention to the colors, black is for right, green is for left.





12. Mount the heat shield to the right air spring. **Don't secure the bolt yet, the panhardrod must be mounted first.



2 x Bolt M6x12** 2 x Washer M6



13. Slide the upper spring bracket in the hole in the chassis.



The air couplers have to point to the innerside of the vehicle.



14. Mount the panhardrod bracket to the right upper mounting bracket.



2 x Bolt M10x30 10.9 2 x Washer M10



15. Mount the panhardrod reaktionbar to the right panhardrod bracket.



2 x Bolt M10x30 10,9 4 x Washer M10 2 x Lock nut M10



16. Cut a piece of the heat shield as shown in the picture and fold it to the inside of the chassis.



17. Mount the panhardrod rectionrod to the left upper mounting bracket.



1 x Bolt M10x30 10.9 1 x Washer M10



- 18. Mount the bump stop with the distance washer on the right side of the vehicle.
- 19. Mount the bump stop on the left side of the vehicle.



2 x Bolt M10x75 10.9 2 x Washer M10



20. Mount the air spring with the piston to the main spring. Mount the filling plate between the piston and main spring. *Don't secure the bolts yet.*



2 x Countersunk Allanscrew M10x90*



Use the rear hole of the main spring.

 Pump with a extern air supply air in the air spring. Pump as many untill the right value X X= between the main spring and the upper air spring bracket.





For an overview of the right calibration supports for this kit, please see chapter 2.

22. Mount the panhardrod ball joint bracket to the left lower clamping plate.

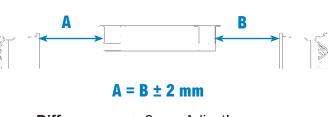


60 Nm

- Use sealant to secure the bolts.
 - 3 x Bolt M10x30 8.8 3 x Washer M10









> 2mm, Adjust! < 2mm, Good

By rotating the panhard rod 1 turn, the adjustment of the displacement is 1.5 mm.





Supplied nut and washer on ball joint.

24. Mount the panhardrod to the panhardrod ball joint.

Don't secure the nut yet.



1 x Supplied nut M14*

25. Mount the panhardrod with the heat shield to the panhardrod bracket.
 *Don't secure the bolt yet.



- 1 x Bolt M12x90 10,9* 2 x Washer M12 1 x Lock nut M12
- 26. Secure the bolt of section **4.2** step **12**
- 27. Measure the distance (A) between the chassis and the rim edge on the left-hand side. Measure the distance (B) between the chassis and the rim edge on the right-hand side. If the distance between left and right is more than 2 mm, loosen the lock nut and remove the panhard rod bolt.
 28. Turn the panhard rod:
 - Left: when A < B
 Right: when A > B
 Size difference > 2mm, Adjust!
 Size difference < 2mm, Go further!
- 29. Secure the lock nut.

- 30. Check the length of the heightsensor rods.
 165 mm measured from heart to heart.
- 31. Mount the height sensor rods to the height sensors.
- 32. Mount the height sensor rods to the ball-joints brackets.



The height sensor arm must be pointing to the back of the vehicle!

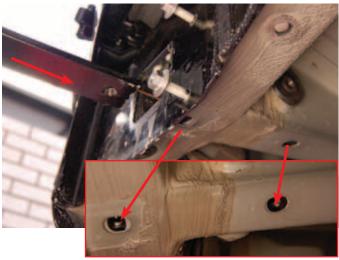
4.3 Compressorbox



When the vehicle has a towbar, please mount the towbar and continue with step 2.

1. Slide the clamping plates in to the chassis from the rear side untill the holes match with the holes of the vehicle.





2. Mount the compressorbox bracket to the holes as shown.

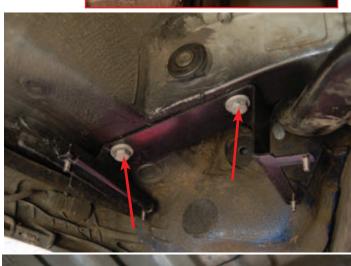


When the vehicle has a towbar, please use the bolts of the towbar and not the supplied fasteners.



2 x Bolt M12x25 8.8 2 x Washer M12

- 3. Mount the under bumper.
- 4. Protect the black air tube with a black corrugated hose.
- 5. Lead the **black** air tube to the right air spring by leading it through the rear cross member of the chassis from the air spring to the compressorbox bracket.
- 6. Lead the **green** air tube from the left air spring along the chassis to the compressorbox bracket.



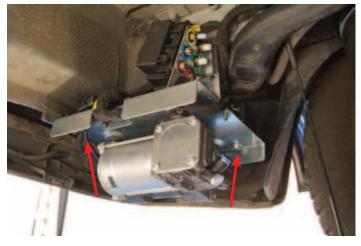


7. Mount the compressorbox to the bracket with only the two marked nuts.



2 x Flare lock nut M6

8. Cut the air tube at the right length and push the **green** air tube in the valve block.



- 9. Cut the air tube at the right length and push the **black** air tube in the valve block.
- 10. Lay the complete wiring harness to the left heightsensor.
- 11. Mount the compressor protection cover.



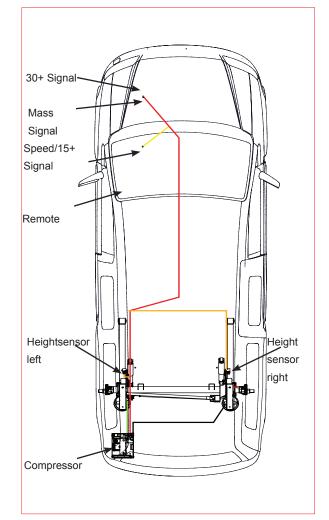
4 x Flare lock nut M6

- 12. Push the compressor air intake tube in the hole of the filling pipe of the fueltank.
- 13. Mount the rear bumper back.



4.4 Wiring harness 4.4.1 Wiring harness

- 1. Place the wiring harness along the vehicle as in the picture.
- 2. Lay the wiring harness from the compressor along the left side of the fuel tank to the front of the car. Use sufficient cable ties to mount the wiring harness to the vehicle.





Make sure that the air tubes aren't near hot or moving parts.

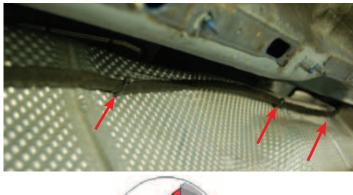
- 3. Connect the connector with the left heightsensor. The cable for the right heightsensor should be mounted above the fueltank and the heat shield to the right side of the vehicle at height of the front leaf spring bracket. Mount the cable with cable ties.
- 4. Disassemble the underside of the heat shield and carefully make holes of Ø6,5mm in it as shown in the picture.
- 5. Mount with cable ties with feet Ø6,5mm the wiring harness to the heat shield.
- 6. Place the wiring harness further to the battery on the left frontside of the vehicle. Use sufficient cable ties to mount the wiring harness to the vehicle.

Recommend to remove the cover of the air intake box and the battery.



For models with a control unit for batterymonitoring it is not allowed to de-mount the battery. The control unit can be reconigzed on the extra box on the ground cable (blue marked in the picture).







- 7. Lay the wiring harness along the red line in the picture to the battery, use the original cable clamps.
- 8. Mount the mass cable to the vehicle masspoint in the motorcompartiment.
- 9. The supply cable with the fuses must be lead to the fusebox on the leftside of the vehicle under the bonnet.

10. The rest of the cables can be directed through the rubber thule in the vehicle.



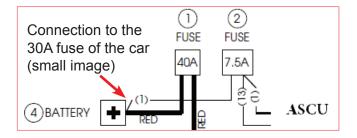
Tape the connectors together with a longer pin. Now, the connectors are easily guided to the inside of the vehicle.



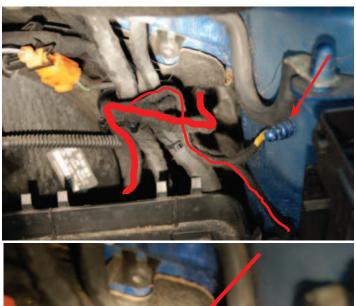
Be careful that the rubber thule don't damaged. if damaged, there's a chance that water comes in the vehicle.

4.4.2 Fuseholder

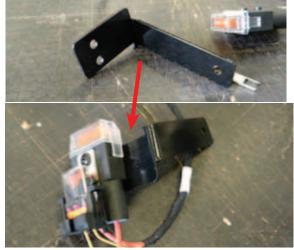
- 1. Mount the fuseholder to the fuseholderbracket.
- Mount the fuseholderbracket to the body of the vehicle as in the picture. Don't mount the fuses yet.
- 3. Lay the yellow/red cable from the fuseholder to the original fusebox (along the red line) and connect it to the 30A fuse (see small picture).



- 4. Mount the wiring harness to the original wiring harness so the wiring harness don't hang free anywhere.
- 5. The wiring harness inside the vehicle has two white connectors, 1 for the remote control and 1 for the contact+ and speedsignal.











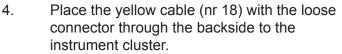
When the speedsignal option is ordered, please continue with paragraph 4.4.4

4.4.3 Handbrake signal

- 1. Remove the cover of the handbrake lever.
- 2. Search for the braun/yellow cable of the handbrake.
- 3. Connect the yellow VB-cable (19) with the braun/yellow cable.
- 4. Place the VB-cable underneath the middle console trough to the white connector under the steering wheel.
- 5. Mount the covers in reversed order.

4.4.4 Speed signal

- 1. Remove the instrument cluster by loosen the two indicated bolts. Now pull gently untill the instrument cluster comes to you.
- 2. Remove the outer side of the connector.
- 3. Slide the plastic part to the right untill you see the cables.



5. Place this cable in position 28 of the 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 28 of the connector.

6. Re-Mount the connector and the instrument cluster in reverse order.

4.4.5 Contact plus (15+)

- 1. Remove the lower cover under the steering wheel.
- 2. Disassemble the original fusebox.

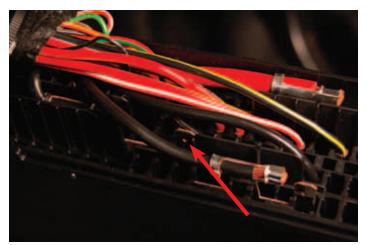




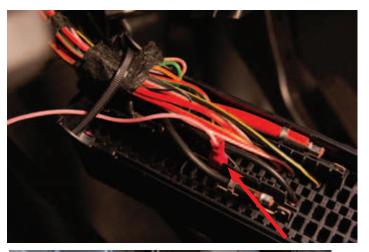




3. On the backside of the fusebox there is a pin (see arrow).



- 4. Stick the pink cable on the pin.
- 5. Mount the fuse holder and covers in reverse order.
- 6. Mount the white connector with the pink and yellow cable to the VB wiring harness in the car.
- 7. Mount the wiring harness with cable ties to the original wiring harness.



4.4.6 Remote control



VB-Airsuspension recommended the place on the picture. Make sure, that the remote control never comes in the way of the airbag.

- 1. Mount the remote holder on the partition wall and place the remote in it.
- 2. Place the cable along the left door sill cover to the fuse holders.
- 3. Lay the cable to the fusebox of the vehicle.
- 4. Mount the connector next to the EOBD connector of the car.
- 5. Connect the connector from the remote with the VB wiring harness.
- 6. Mount the VB wiring harness to the original wiring harness with cable ties.



4.5 Warranty sticker

- 1. Mount the spare wheel.
- 2. Place sticker **B** on the left upper air spring bracket.



- 3. Place the warranty stickers *A+B* onder the hood like in the picture.
- 4. Note the installation of the air-suspension kit in the maintenance booklet.





5. Calibration



For an overview of the right calibration supports for this kit, please see chapter 2.

- 1. Mount the fuses (**F1**= 40A + **F2**= 7,5A).
- 2. Switch on the ignition.
- 3. Make sure the vehicle is standing on it's wheels, on a level surface.
- 4. Press the **SERVICE**-key once (LED lights), and enter the following code within 10 seconds:



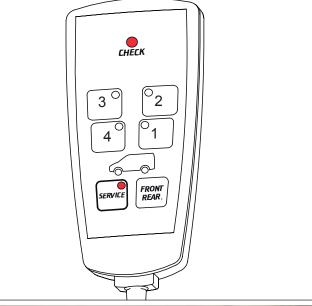
The system will give a long beep and reboot.

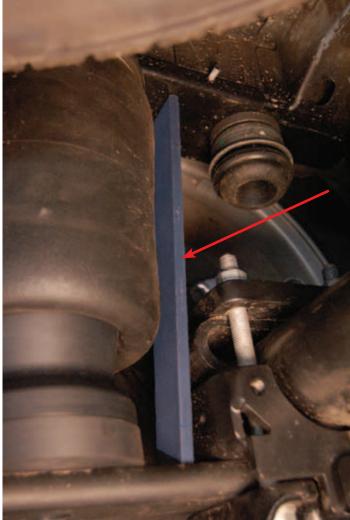
5. During the first beep, hold the **SERVICE**key, until a second long beep is heard. Now enter the following code within 10 seconds:



The calibration mode is activated. The rear axle LED and CHECK LED will blink.

- 6. Use the arrow key to lift the rear axle, so the calibration supports can be placed.
- 7. Put the vehicle on the calibration supports.
- 8. Use the arrow-keys to release all air from the air springs, until the hissing sound stops.
- 9. When the correct height is set, hold the *SERVICE*-key until a long beep is heard. The ride height is now stored.
- 10. Briefly press the **SERVICE**-key. The calibration mode is now closed. The system will reboot again.
- 11. Briefly press the **SERVICE**-key to leave the Service mode.
- 12. Use the arrow key to lift the vehicle, so the calibration supports can be removed.
- 13. Remove the calibration supports.
- 14. Set the vehicle at ride height.
- 15. Switch off the ignition.
- 16. Secure all bolts an nuts, which were marked in this manual with **
- 17. Let an official dealer check the head-light adjustment.
- 18. Check the vehicle according to the checklist in this manual.





6.1 System finishing

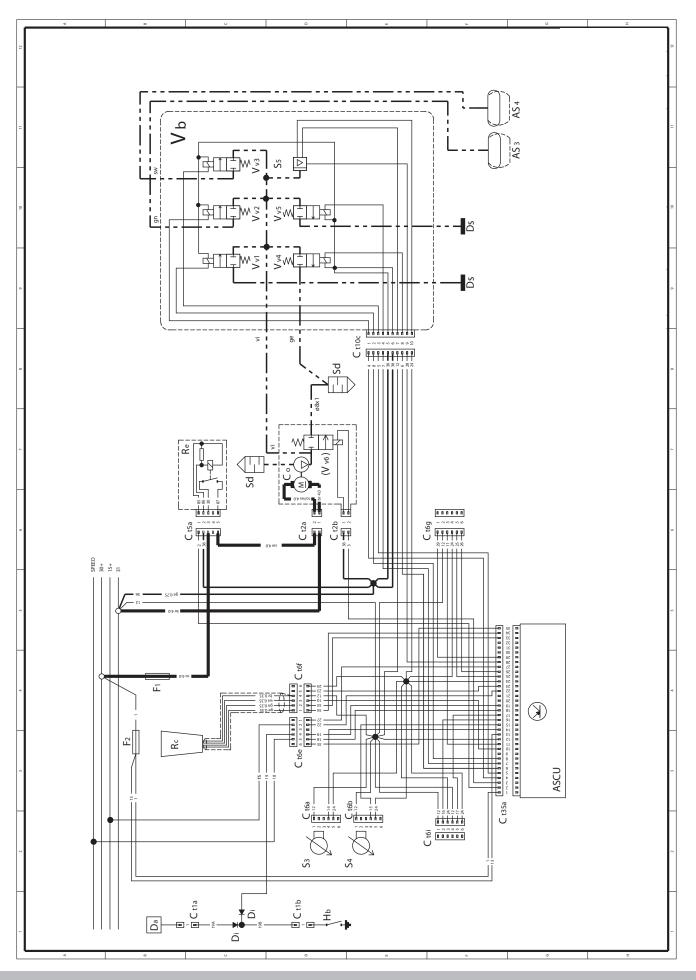
ΟΚ 1.1 Ride height correctly calibrated. 1.2 Rear axle aligned. 1.3 Height sensor correctly fitted. 1.4 Bolts tightened to the right torque and checked off. 1.5 Air tubes, cables and connectors correctly secured. 1.6 System checked for airtightness. 1.7 Space around the air springs checked. 1.8 Documentation present. 1.9 Head-light adjustment checked. 1.10 Warranty form filled out and identification sticker fitted.

6.2 Functions of system

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

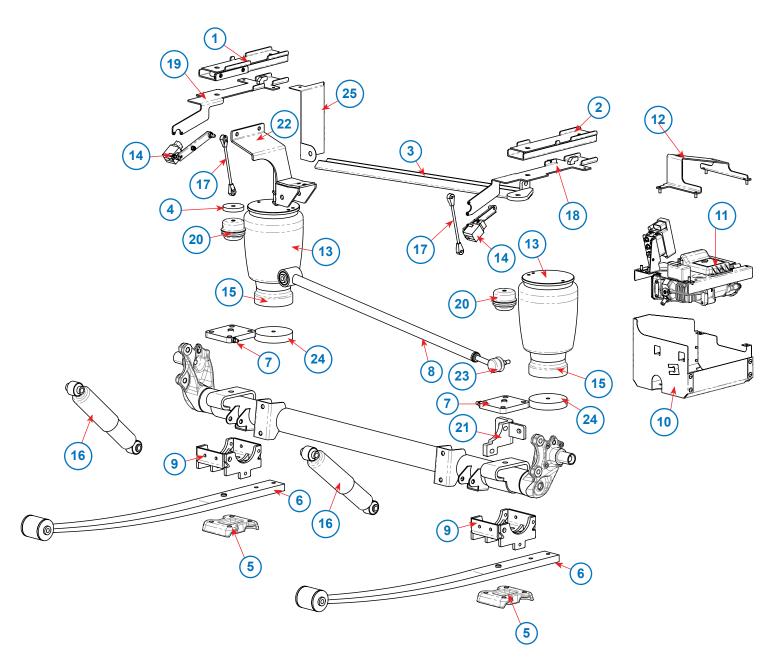
ΟΚ

7. Wiring diagram

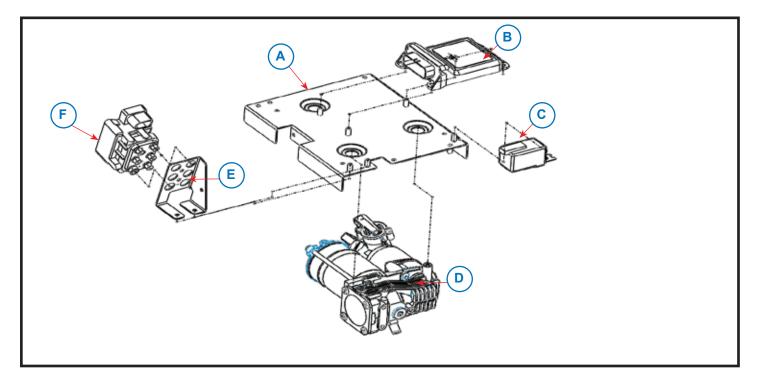


Description
VB-ASCU (control unit)
Air spring left
Air spring right
Compressor
Connector, 1-pole, to dashboad
Connector, 1-pole, to handbrake
Connector, 2-pole, compressor
Connector, 2-pole, valve on compressor
Connector, 5-pole, relay Re
Connector, 6-pole, height sensor S3
Connector, 6-pole, height sensor S4
Connector, 6-pole, VB-supply cable (white)
Connector, 6-pole, remote control Rc (white)
Connector, 6-pole, option connector
Connector, 10-pole, valve block connection
Connector, 35-pole, VB-ASCU control unit
Dashboard
Diode
Blind plug
Fuse compressor, 40A
Fuse compressor, 7,5A
Fuse BF1 on the battery 30A
Handbrake (Optional)
Speedsignal (Optional)
Remote control
Compressor relay
Height sensor left
Height sensor right
Pressure sensor on valve block
Valve block
Valve for air-spring, right front on valve block
Valve for air-spring, left rear on valve block
Valve for air-spring, right rear on valve block
Dump valve, to release air on valve block
Valve for air-spring, left front on valve block
Release valve on compressor
e: (not mentioned, is yellow with wire number)
Blue
Brown
Yellow
Green
Red
Red/White
Pink
Black
Violet
White
0,50 mm ²
0.75 mm ²
4,00 mm ²
Air-tube

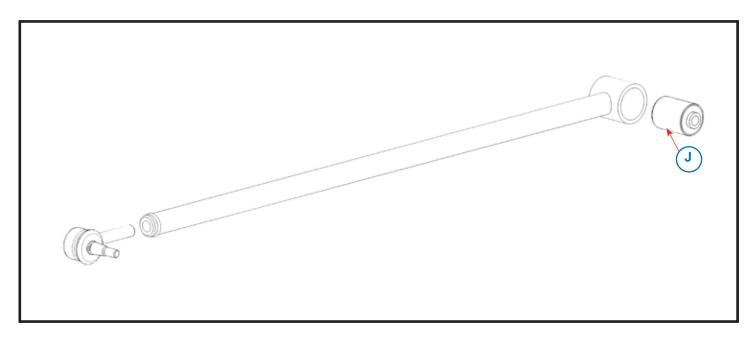
8. Exploded view



ltem	Qty.	Description	Article nr.
1	1	Upper mounting bracket right	105 204 01 57
2	1	Upper mounting bracket left	105 204 01 56
3	1	Panhardrod Reactionrod	105 206 02 08
4	1	Distance washer	105 202 57 23
5	2	Original clamping plate	-
6	2	Main spring	105 201 17 20
7	2	Upper clamping plate	105 202 00 09
8	1	Panhardrod	105 206 00 72
9	2	Lower clamping plate	105 202 00 08
10	1	Compressorbox protection cover	105 213 11 23
11	1	Compressorbox	105 213 01 28
12	1	Compressorbox bracket	105 213 11 18
13	2	Air spring	105 203 25 31
14	2	Heightsensor	105 209 01 50
15	2	Piston	105 203 01 25
16	2	Shock absorber	105 210 40 87
17	2	Heightsensorrod	105 209 50 66
18	1	Upper air spring plate left	105 203 01 80
19	1	Upper air spring plate right	105 203 01 79
20	2	Bump stop	105 215 12 70
21	1	Panhardrod ball joint bracket	105 206 00 73
22	1	Panhardrod bracket	105 206 00 74
23	1	Panhardrod ball joint	105 206 14 15
24	2	Filling plate	105 203 01 85
25	1	Heat shield	105 235 00 85



ltem	Qty.	Description	Article nr.
А	1	Compressor bracket	105 213 11 16
В	1	VB-ASCU	105 212 20 10
С	1	Relais	003 050 00 07
D	1	Compressor	105 211 11 00
Е	1	Valve block bracket	105 213 11 17
F	1	Valve block	105 225 06 71
G	1	Wiring harness (not shown)	105 220 11 64



ltem	Qty.	Description	Article nr.
Н	1	Rubber bush	105 206 14 15

9. Notes

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_
_

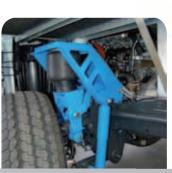


VB-Airsuspension is producing, as one of the few European manufacturers, a very broad range of different (air-) suspension systems. From reinforced coil springs, semi-air suspension systems, up to complete full air-suspension systems, we provide solutions for customers with different vehicle types, like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





Dealer:









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