VOLKSWAGEN AG

VAS 581 009

Unpacking instructions
Placing into service instructions
Quick start guide

Please read carefully!
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ASE 581 009 00 000

VAS 581 009 unpacking instructions, placing into service, quick start guide  1
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SAFETY INSTRUCTIONS

Sign and symbols

Symbols with the following meanings are used in the safety instructions of the operating instructions, unpacking instructions, placing into service instructions, quick start guide or other supplied instructions as well as on the display of the tester during operation and on the products themselves:

---

⚠️ **DANGER**
Indicates an **extreme** danger that can lead to death if not avoided.

---

⚠️ **WARNING**
Indicates an imminent danger that can lead to death or severe injury if not avoided.

---

⚠️ **CAUTION**
Indicates a danger that can lead to moderate or minor injuries.

---

Prohibition signs

🚫 **Fire and open flames prohibited**

---

Warning signs

⚠️ **General**
⚠️ **Risk of electric shock**
⚠️ **Hazardous gases**
⚠️ **Warning of gas cylinders**
⚠️ **Danger of suffocation**
Mandatory signs

- Wear protective goggles
- Wear gloves
- Refrigerating agent cylinder Secure CO₂ (R744)
- Wear protective shoes
- Wear respiratory protection
- Wear protective clothing

Other symbols

- Observe operating instructions
- Fuse
- First aid
- Gas cylinder

Notices

**NOTICE**
This text points to situations or mal operations that can lead to damage or data loss.

**Information**
This text indicates important information or instructions. Failure to comply with these instructions will prevent or significantly hinder the successful implementation of the actions described in this documentation.
SAFETY INSTRUCTIONS FOR CARBON DIOXIDE CO₂ (R744)

Always observe the manufacturer’s safety data sheet!

**WARNING**

Contact with the product can cause cold burns or frostbite. Gases/vapours are heavier than air. High concentration due to accumulation in closed rooms, work pits, cellars, etc. can cause asphyxiation, among other things. Symptoms: Loss of motor ability and consciousness. Affected persons do not realise that they are suffocating. Do not allow carbon monoxide to enter sewage systems, pits or similar enclosures where gas accumulation may be dangerous.

**Precautions and behaviour rules**

**WARNING**

**Storage:** Store container in a well-ventilated place at a temperature below 50 °C. Protect container against impacts and falls (secure with chain).

**Handling:** Avoid contact with eyes and skin. Do not inhale the gas. Ensure that no water enters the gas cylinder/container. Prevent the gas from flowing back into the gas tank. Only use equipment that is suitable for this product and the intended pressure and temperature. Check fittings, connections and lines for leaks. Eating, drinking and storing food in the working area are prohibited.

**Respiratory protection:** Self-contained breathing apparatus.

**Eye protection:** Tightly fitting protective goggles.

**Hand protection:** Protective gloves (material: leather).

**Body protection:** Protective clothing.
Behaviour in the event of danger


In case of fire: Wear protective gear and self-contained breathing apparatus. Stop gas leak if possible. Cool cylinders with a water jet from a secure position and remove them from the fire zone if possible to prevent explosion! The product itself is non-flammable.

Extinguishing agents: All known extinguishing agents can be used.

Escape routes: Escape routes must be known to staff.

Accident phone: The accident phone must be known to staff.

First aid

Please observe the instructions for use and safety of your refrigerant supplier.

SAFETY INSTRUCTIONS FOR NITROGEN N₂

Always observe the manufacturer's safety data sheet!

For safety instructions, please refer to the operating instructions.

OTHER SAFETY INSTRUCTIONS

For safety instructions, please refer to the operating instructions.

OPERATING AND AUXILIARY MATERIALS

Before using operating and auxiliary materials, the material safety data sheets for the product and the manufacturer's instructions must be read.

An appropriate safety concept must be developed and adhered to based on these material safety data sheets.

KEEP THESE INSTRUCTIONS IN A SAFE PLACE!
1 Important information

Dear Customer,
Please observe the following points in case of transport damage/incomplete delivery.

External damage to goods/packaging (without/with outer packaging):
• Describe the damage (condition of the goods/packaging)
• Include photos whenever possible (before and after unloading)
• Write down the damage on the freight documents and have the driver sign.
• Contact Volkswagen, K-VO-W department as soon as possible.

No external damage to goods/packaging / subsequently discovered defects / missing parts:
• Describe the damage
• Include photos if possible
• Check the delivery; see unpacking instructions, placing into service instructions, Sec. 2 "Scope of delivery"
• Please contact AVL DiTEST Fax +49 9103 7131-112 immediately

Warranty
The warranty period is 12 months starting from the day of registration / activation of the device.
Please use the information provided on the device to register/activate and place the device into service.

For further information, please contact:
AVL DiTEST Deutschland
Tel.: +49 9103 7131-200
Fax: +49 9131 7131-112
e-mail: vas.service@avl.com
2 Unpacking instructions

Required tools:
- Scissors/side cutter
- Size-14 spanner
- Size-25 spanner

Fig. 2-1 Packaging VAS 581 009

1. Cut the packaging tape and remove the cardboard box. Keep the cardboard box in case you need to return the device.

2. Carefully remove the protective foil from the VAS 581 009.

3. Use the scissors/side cutter to cut the four zip ties used to additionally secure the VAS 581 009 to the pallet.
**WARNING**

**Danger of crushing**
The VAS 581 009 can topple from the pallet.

4. Carefully lift the VAS 581 009 from the pallet with the help of another person.

![Fig. 2-2](image)
3 Scope of delivery

<table>
<thead>
<tr>
<th>No.</th>
<th>VAS No.</th>
<th>Components</th>
<th>Item number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>Basic device VAS 581 009 cpl.</td>
<td>VS9155</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>Operating instructions on CD</td>
<td>BO7960</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>Unpacking instructions, placing into service instructions, quick start guide, printed</td>
<td>AT7912EN</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>Inspection log book, printed</td>
<td>AT7914EN</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>Quick connector CO2 HP red</td>
<td>GE7520</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td>Quick connector CO2 LP blue</td>
<td>GE7522</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td>Filling hose CO2 HP red</td>
<td>SS7520</td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td>Filling hose CO2 LP blue</td>
<td>SS7521</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td>Cover</td>
<td>MK7532</td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td>Acceptance report</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td></td>
<td>Cylinder adapter W21, 8x1/14&quot; incl. seal for connecting the R744 cylinder to the VAS 581 009</td>
<td>DN7469</td>
</tr>
<tr>
<td>12.</td>
<td></td>
<td>Protective goggles</td>
<td>GE7432</td>
</tr>
<tr>
<td>13.</td>
<td></td>
<td>Protective gloves</td>
<td>GE7435</td>
</tr>
<tr>
<td>14.</td>
<td></td>
<td>Cylinder adapter seal</td>
<td>DA7451</td>
</tr>
<tr>
<td>15.</td>
<td></td>
<td>Printing paper</td>
<td>HP7003</td>
</tr>
<tr>
<td>16.</td>
<td></td>
<td>Power cable EU</td>
<td>EX7075</td>
</tr>
<tr>
<td>17.</td>
<td></td>
<td>Heating tape</td>
<td>BV8313</td>
</tr>
</tbody>
</table>
4  Placing into service

⚠️ WARNING
Placing into service must be performed by qualified personnel under strict observance of these instructions.

4.1  Installation location / stability

⚠️ WARNING
Make sure that the VAS 581 009:
- is horizontal and stable
- is located in a room with adequate ventilation and/or air exchange
- is at least 10 cm away from other objects
- is protected against rain, excessive humidity, direct sunlight and/or excessive dust
- is not operated in explosive environments

⚠️ CAUTION
Temperature equalisation
If the VAS 581 009 is delivered in winter, it must be ensured that no condensation can occur inside the device. This is why we request that you leave the device standing unplugged at the site of use for about three hours.
4.2 Checking the vacuum pump oil
Check the oil level through the gauge glass. Top up with vacuum pump oil if necessary; see operating instructions, Sec. 5.2.1.

Fig. 4-1 Checking the vacuum pump oil

4.3 Power connection
Use the supplied power cable to connect the VAS 581 009. Connect the power cable to the power supply.
4.4 Switching on the VAS 581 009

1. Apply the wheel brakes.

Fig. 4-2 Applying the wheel brakes

2. Switch on the VAS 581 009.

Fig. 4-3
User interface

The user interface is controlled via a multi-functional dial. The individual functions (buttons) are selected by turning the dial. To start a function, the dial must be pressed.

![User Interface Diagram]

1  **HP High Pressure**
High pressure HP display of the refrigerating agent circuit

2  **LP Low Pressure**
Low pressure LP display of the refrigerating agent circuit

3  **Multi-functional dial**
To select and start a function, see below.

4  Operating modes

   ![Automatic mode]
   Automatic mode 
   Operating instructions, Sec. 3 "Automatic mode"

   ![Manual mode]
   Manual mode 
   Operating instructions, Sec. 4 "Manual mode"

   ![Settings]
   Settings 
   Operating instructions, Sec. 5 "Settings"

   ![Maintenance]
   Maintenance 
   Operating instructions, Sec. 6 "Maintenance"

   ![Service]
   Service 
   Operating instructions, Sec. 7 "Service"

   ![Overview]
   Overview 
   Operating instructions, Sec. 8 "Overview"
User prompts

- **Up**
  Selects previous function

- **Down**
  Selects next function

- **Back**
  Goes back one step.

- **Start**
  Starts functions.

- **Cancel**
  Cansels an ongoing operation.
  Confirms questions with "No".

- **RESET**
  Resets values.

- **OK**
  Confirms questions with "Yes" or "OK".

- **Next**
  Continues to the next step.

- **Print**
  Prints logs.

Text and number inputs

If a number or letter is expected as an input, turning the dial will show the letters and numbers in sequential order. Pressing the dial will select the letter or number.

![Example input](image-url)
Multi-functional dial

The multi-functional dial is equipped with an indicator. Meaning of the indicator:

<table>
<thead>
<tr>
<th>Meaning</th>
<th>Indicator state</th>
</tr>
</thead>
<tbody>
<tr>
<td>System start</td>
<td>Blue</td>
</tr>
<tr>
<td>Status OK / completed</td>
<td>Green</td>
</tr>
<tr>
<td>Ongoing process</td>
<td>Yellow</td>
</tr>
<tr>
<td>User information</td>
<td>Yellow flashing (1-2 Hz)</td>
</tr>
<tr>
<td>Error</td>
<td>Red flashing (1-2 Hz)</td>
</tr>
<tr>
<td>System error</td>
<td>Red fast flashing (10 Hz)</td>
</tr>
</tbody>
</table>

3. Self-test is being carried out automatically.

4. The following message appears after a successful self-test.

![Self-test successful](Fig. 4-6 Self-test successful)

5. Continue with 🚶‍♂️.

6. You are in the main menu.

![Main menu](Fig. 4-7 Main menu)
7. Tap **Settings**.

![Main menu - Settings](image)

**Fig. 5-8** Main menu - Settings

8. Tap **Language**.

![Settings - Language](image)

**Fig. 5-9** Settings - Language

9. Select your language.

![Language - Language selection](image)

**Fig. 5-10** Language - Language selection

10. The VAS 581 009 restarts and performs a self-test after a language has been selected.
4.5 Pressure zeroing

1. Select **Maintenance** in the main menu.

![Maintenance](image1)

Fig. 4-11 Maintenance

2. Select **Reset to zero**.

![Pressure zeroing](image2)

Fig. 4-12 Pressure zeroing

3. Start pressure zeroing with <.

![Start](image3)

Fig. 4-13 Pressure zeroing - Start

**Pressure zeroing** takes about 60 seconds. The counter is displayed. Wait until the process is complete.

4. "Pressure zeroing" is complete.

5. Exit "Pressure zeroing" with >>.
4.6 Oil/UV additive scales zeroing

1. Select **Reset Oil/UV additive scales to zero**.

![Oil/UV additive scales zeroing](image1)

Fig. 4-14 Oil/UV additive scales zeroing

2. Start Oil/UV additive scales zeroing.

![Scales zeroing](image2)

Fig. 4-15 Scales zeroing

Follow the instructions on the display. (e.g. mount empty oil/UV additive containers, etc.).

Note:
The mounted oil containers must be completely empty for zeroing. If this is not the case, an error message may occur during zeroing.

3. "Oil/UV additive scales zeroing" is complete.

4. Exit "Oil/UV additive scales zeroing" with.
4.7 Connecting the refrigerating agent cylinder CO2 (R744)

NOTICE

The VAS 581 009 is suitable for standard CO₂ (R744) refrigerating agent cylinders with a built-in riser tube. The following cylinder sizes can be used: 5 kg, 6 kg, 10 kg or 20 kg. Required purity equal or better than carbon dioxide 3.0 (99.9% purity).

Refrigerating cylinders can vary in size and design depending on the country. In these instructions the two most common types are described.

1. Select **Replace refrigerating agent cylinder** in the maintenance menu.

Fig. 4-16  Replacing refrigerating agent cylinder

2. Now select **Cylinder content**.

Fig. 4-17  Replacing refrigerating agent cylinder
3. Enter the weight of the cylinder content. 
(= nominal quantity of the content / nominal capacity of the cylinder, not the actual cylinder capacity!) Incorrect entries inevitably result in incorrect calculations of the available/usable cylinder capacity.

![Cylinder content diagram](image)

Fig. 4-18  Cylinder capacity

4. Select **tare weight**.

![Tare weight diagram](image)

Fig. 4-19  Tare weight
5. Refrigerating agent cylinder with protective cap:
   a) In order to read the tare weight, the protective cap must be removed from the refrigerating agent cylinder.

   ![Protective cap image]

   **Fig. 4-20** Protective cap

   b) Note down the tare weight. The tare weight represents the net weight of the used cylinder (empty). This weight is usually shown on the cylinder, sometimes embossed.

   ![Tare weight image]

   **Fig. 4-21** Tare weight
c) Mark the location of the outlet valve on the refrigerating agent cylinder.

![Mark](image1.png)

**Fig. 4-22 Mark**

d) Re-attach the protective cap.

![Protective cap](image2.png)

**Fig. 4-23 Protective cap**
6. **Enter the tare weight.**

![Tare weight](image1)

**Fig. 4-24  Tare weight**

7. **Press** ![Play Button](image2) **to continue replacing the cylinder.**

![Start](image3)

**Fig. 4-25  Start**

8. **Skip this message by clicking** ![Checkmark](image4) **.**

The hose is automatically emptied.

![Information](image5)

**Fig. 4-26  Unscrew the screw connection**
9. Continue with ☑.

**INFORMATION**

Disconnect quick connectors from vehicle.

Fig. 4-27  Disconnecting the quick connectors

10. Continue with ☑.

**INFORMATION**

Close the refrigerating agent manual valve.

Fig. 4-28  Close manual valve

11. Continue with ☑.

**INFORMATION**

Disconnect and unmout refrigerating agent cylinder.

Fig. 4-29  Disconnecting refrigerating agent cylinder
12. Follow the instructions. Make sure the scales are unladen.

![Information](image)

**INFORMATION**
Cylinder scales zeroing in progress. Make sure the scales are unladen.

**Cylinder connection line release in progress ...**

Fig. 4-30  Information

13. Continue with ![checkmark].

14. Follow the instruction.

![Information](image)

**INFORMATION**
Attach heating band to new refrigerating agent cylinder, mount and secure cylinder onto the platform.

**Container exchange in progress ...**

Fig. 4-31  Information

a) Attach the cylinder heater (heating band) around the lower third of the cylinder.

**Important:** The closure of the cylinder heater must be located on the opposite side of the outlet valve.

![Heating band](image)

**Outlet valve**

Fig. 4-32  Heating band
Placing into service

b) Make sure that the cylinder heater (heating band) is connected.

Fig. 4-33 Connecting heating band

c) Place the new refrigerating agent cylinder onto the refrigerating agent scales. Note that the bottle heating cable is not placed on the balance during the assembly of the bottle. Attach the securing chain.

Fig. 4-34 Securing chain

15. Continue with ✅.
16. Refrigerating agent cylinder with protective cap:
Remove the protective cap. Make sure that the connection of the refrigerating agent cylinder is facing the device and not away.

![Information]

Fig. 4-35 Information

17. Zeroing and hose emptying are performed automatically.

![Refrigerating agent cylinder]

Fig. 4-36 Refrigerating agent cylinder

18. Remove the hose from the plastic cap if necessary.

![Plastic cap]

Fig. 4-37 Plastic cap
19. Remove the plastic cap on the outlet valve if necessary.

Fig. 4-38  Refrigerating agent cylinder with Plastic cap

20. Attach the supplied cylinder adapter.
    Torque: 30 … 32 Nm, max. 35 Nm.

Fig. 4-39  Refrigerating agent cylinder with cylinder adapter

21. Connect the hose to the cylinder adapter. Spanner width: 14 mm
    Torque: 16 … 18 Nm, max. 20 Nm.

Fig. 4-40  Connect the hose to the cylinder adapter
22. Continue with ✓.

23. Make sure that the hose/hose connection is facing the device. It must **not lead away from the rear** of the device. This could lead to a faulty measurement of the cylinder weight.

Fig. 4-41  Hose connection

24. Follow the instructions and open the manual valve of the refrigerating agent cylinder.

Fig. 4-42  Information

Fig. 4-43  Manual valve
25. End the replacement of the refrigerating agent cylinder with ✔.

The system is flushed with CO2, i.e. the filling hoses are first flooded with CO2, then the CO2 is discharged. The VAS 581 009 must not be connected to the vehicle at this time.

26. Exit the menu with ⨳.

27. Select ⬅ to return to the main menu.

28. The VAS 581 009 is now ready for use.
### Available accessories

<table>
<thead>
<tr>
<th>No.</th>
<th>VS No.</th>
<th>Components</th>
<th>Item number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td>Vacuum pump oil 500 ml (2 units per package)</td>
<td>GE7427</td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td>Printer paper 57 mm, (minimum order quantity: 5 units</td>
<td>HP7003</td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td>Cylinder heater (heating band) incl. connector</td>
<td>BV8261</td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td>External pressure test set</td>
<td>BO7948</td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td>Cylinder adapter incl. seal: W21.7x1/14&quot;</td>
<td>DN7470</td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td>Cylinder adapter incl. seal: 0.860&quot;x14TPI</td>
<td>DN7471</td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td>Cylinder adapter incl. seal: G3/4&quot;</td>
<td>DN7472</td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td>Cylinder adapter incl. seal: 0.825&quot;x14NGO</td>
<td>DN7473</td>
</tr>
<tr>
<td>9.</td>
<td></td>
<td>Cylinder adapter incl. seal: W27x2mm</td>
<td>DN7474</td>
</tr>
<tr>
<td>10.</td>
<td></td>
<td>Calibration kit BAS 581 009</td>
<td>BO7972</td>
</tr>
</tbody>
</table>

**WARNING**

Only use accessories approved by AVL DiTEST!
## 6 Quick start guide

### OBSERVE SAFETY INSTRUCTIONS

- Wear personal protective equipment!

### Switch on VAS 581 009; Self-test runs automatically.

### Select "Automatic cycle" in main menu.

#### Enter parameters:
- Configuration name
- Refrigerating agent [g]
- Oil quantity [g]
- Oil filling mode [REC+/ABS/NO]
- UV additive quantity [g]
- Vacuum time [min]
- Vacuum test time [min]
- Connection type [LP / HP+LP]
- Pressure test [OFF / 10% / 20%]
- Pressure test time [min]
- Pressure loss [mbar]
- Customer data

#### Check and confirm inputs

### Connect quick connectors with vehicle and confirm

### Open gas supply of quick connectors

#### "Automatic cycle" runs automatically

- Safety self-test
- Drain refrigerating agent
- Vacuum generation
- Filling of air conditioning system

### Close gas supply of quick connectors and confirm.

- Hoses are emptied in VAS 581 009.

### Disconnect quick connectors from vehicle and confirm.

### Print report [Yes/No]
### Quick start guide

<table>
<thead>
<tr>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up</td>
<td>Selects previous function</td>
</tr>
<tr>
<td>Down</td>
<td>Selects next function</td>
</tr>
<tr>
<td>Back</td>
<td>Goes back one step.</td>
</tr>
<tr>
<td>Start</td>
<td>Starts functions.</td>
</tr>
<tr>
<td>Cancel</td>
<td>Cancels an ongoing operation.</td>
</tr>
<tr>
<td></td>
<td>Confirms questions with &quot;No&quot;.</td>
</tr>
<tr>
<td>RESET</td>
<td>Resets values.</td>
</tr>
<tr>
<td>OK</td>
<td>Confirms questions with &quot;Yes&quot; or &quot;OK&quot;.</td>
</tr>
<tr>
<td>Next</td>
<td>Continues to the next step.</td>
</tr>
<tr>
<td>Print</td>
<td>Prints logs</td>
</tr>
</tbody>
</table>

### Text and number inputs

If a number or letter is expected as an input, turning the dial will show the letters and numbers in sequential order. Pressing the dial will select the letter or number.
7 Fault conditions

In the case of an error, please proceed as follows:

- Try to determine the cause and location of the error. Please refer to the "Troubleshooting" section in the operating instructions before contacting your service partner.