

VOLKSWAGEN AG

VAS 581 009

Unpacking instructions
Placing into service instructions
Quick start guide

V2.00 05/18

Please read carefully!



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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
shockHazardous
gasesWarning of gas
cylindersDanger of
suffocation

Mandatory signs



Wear protective goggles



Wear gloves



Refrigerant 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

After a **gas leak**: Keep unprotected persons away. Ventilate rooms well. Wear protective gear and self-contained breathing apparatus. Close valves / stop gas leak. Avoid entry into cellars, pits and similar enclosures (danger of suffocation).

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.

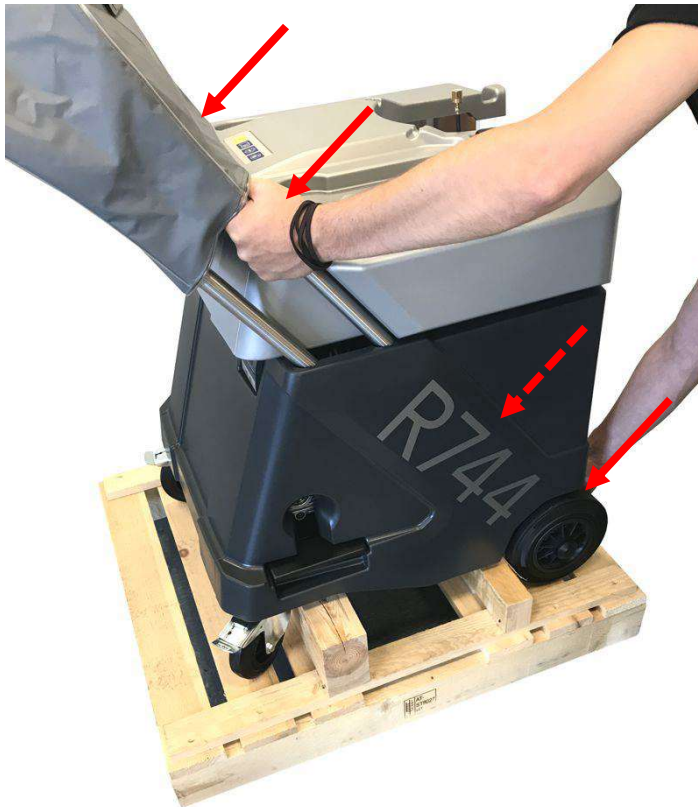


Fig. 2-2

3 Scope of delivery

No.	VAS No.	Components	Item number	
			AVL DiTEST	VOLKSWAGEN
1.		Basic device VAS 581 009 cplt.	VS9155	ASE VAS 581 009 00 000
2.		Operating instructions on CD	BO7960	
3.		Unpacking instructions, placing into service instructions, quick start guide, printed	AT7912EN	
4.		Inspection log book, printed	AT7914EN	
5.		Quick connector CO2 HP red	GE7520	
6.		Quick connector CO2 LP blue	GE7522	
7.		Filling hose CO2 HP red	SS7520	
8.		Filling hose CO2 LP blue	SS7521	
9.		Cover	MK7532	
10.		Acceptance report		
11.		Cylinder adapter W21, 8x1/14" incl. seal for connecting the R744 cylinder to the VAS 581 009 Notice: It is possible that the supplied cylinder adapter is not compatible with a cylinder available in your country. This is why we offer a variety of different adapters. See "Available accessories".	DN7469	
12.		Protective goggles	GE7432	
13.		Protective gloves	GE7435	
14.		Cylinder adapter seal	DA7451	
15.		Printing paper	HP7003	
16.		Power cable EU	EX7075	
17.		Heating tape	BV8313	

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.

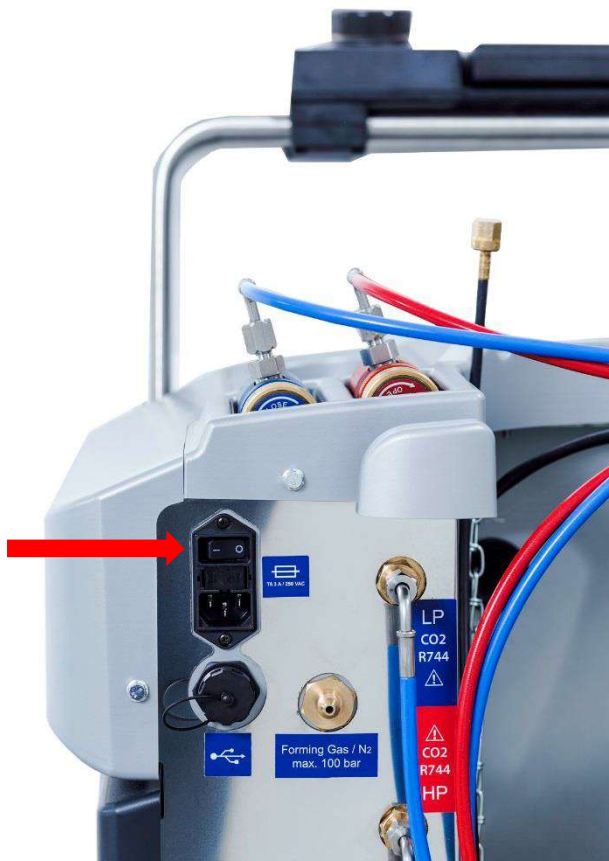








Fig. 4-3

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.



Fig. 4-4

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 <ul style="list-style-type: none">  Automatic mode ⇨ Operating instructions, Sec. 3 "<i>Automatic mode</i>"  Manual mode ⇨ Operating instructions, Sec. 4 "<i>Manual mode</i>"  Settings ⇨ Operating instructions, Sec. 5 "<i>Settings</i>"  Maintenance ⇨ Operating instructions, Sec. 6 "<i>Maintenance</i>"  Service ⇨ Operating instructions, Sec. 7 "<i>Service</i>"  Overview ⇨ Operating instructions, Sec. 8 "<i>Overview</i>"

User prompts

	Up Selects previous function
	Down Selects next function
	Back Goes back one step.
	Start Starts functions.
	Cancel Cancels 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.

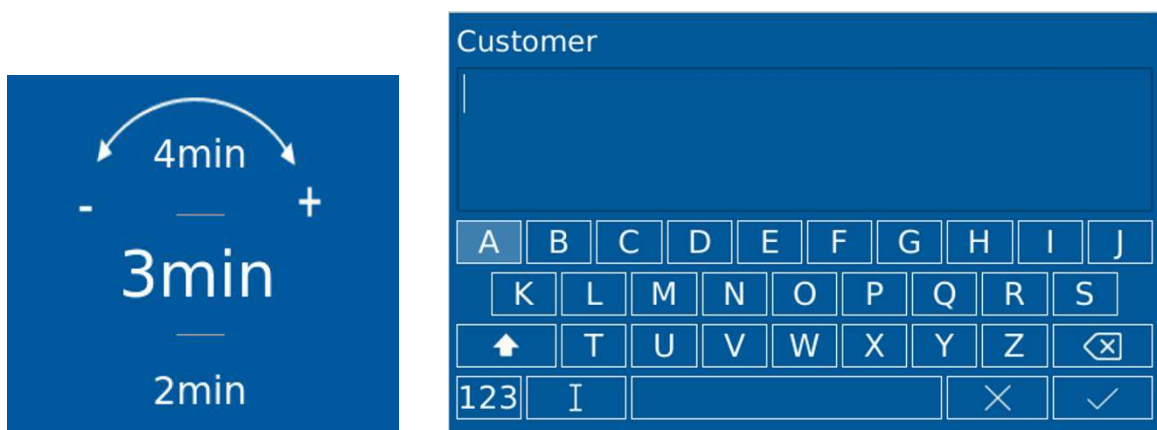


Fig. 4-5 Example input

Multi-functional dial

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

Meaning	Indicator state
System start	Blue
Status OK / completed	Green
Ongoing process	Yellow
User information	Yellow flashing (1-2 Hz)
Error	Red flashing (1-2 Hz)
System error	Red fast flashing (10 Hz)

- Self-test is being carried out automatically.
- The following message appears after a successful self-test.

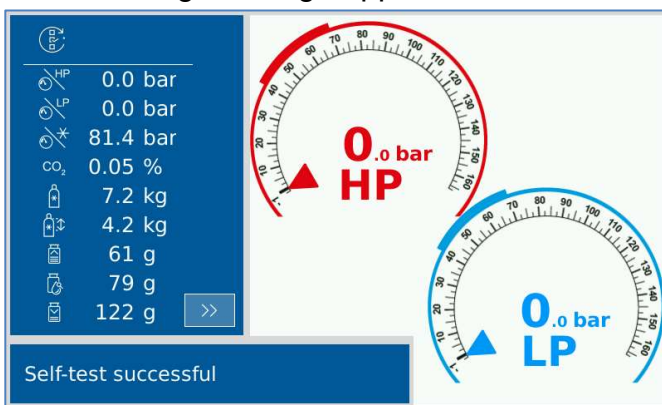



Fig. 4-6 Self-test successful

- Continue with .
- You are in the main menu.

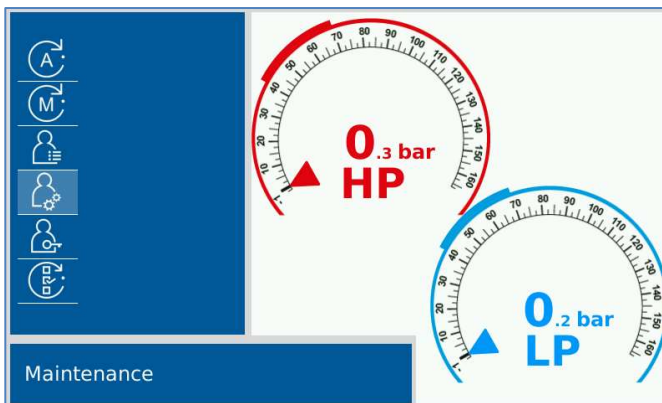


Fig. 4-7 Main menu

7. Tap **Settings**.

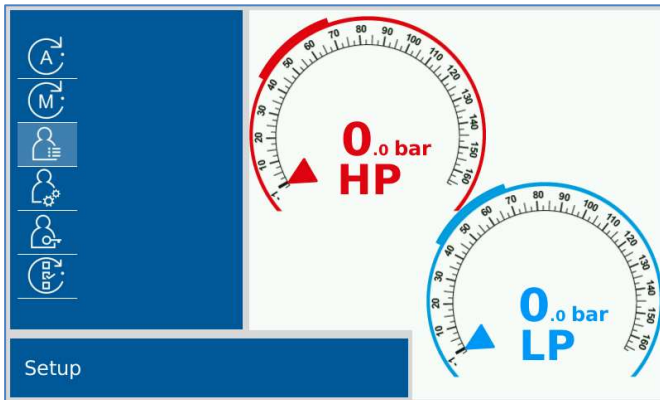


Fig. 5-8 Main menu - Settings

8. Tap **Language**.

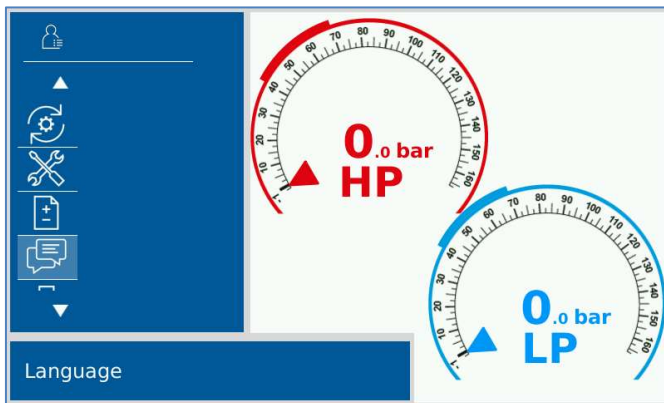


Fig. 5-9 Settings - Language

9. Select your language.

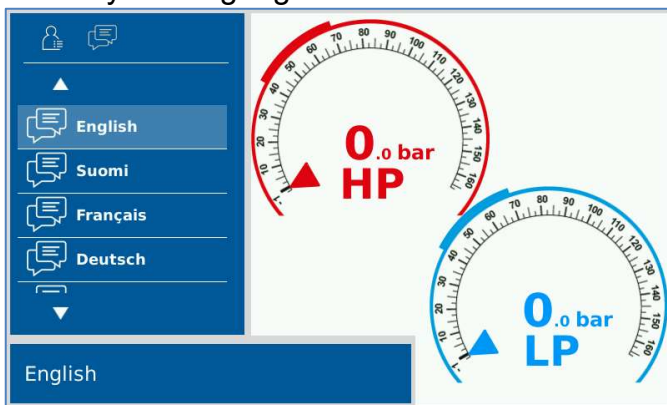


Fig. 5-10 Language - Language selection

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.

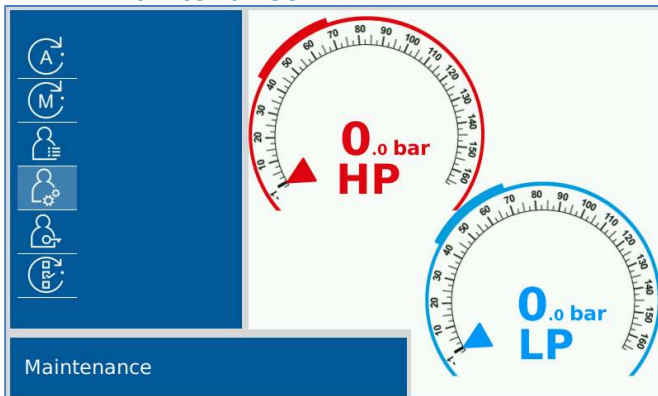


Fig. 4-11 Maintenance

2. Select **Reset to zero**.

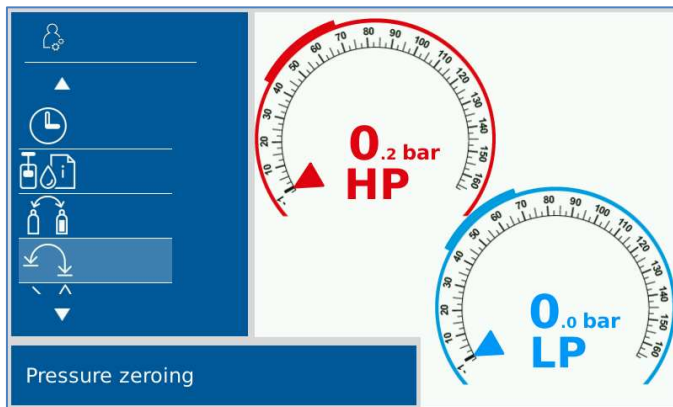



Fig. 4-12 Pressure zeroing

3. Start pressure zeroing with .

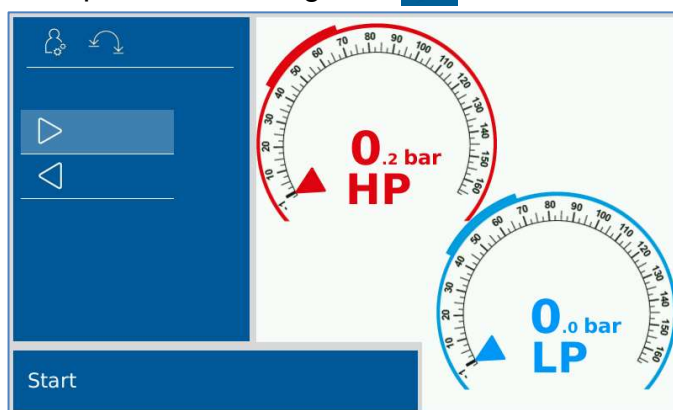



Fig. 4-13 Pressure zeroing - Start

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.**

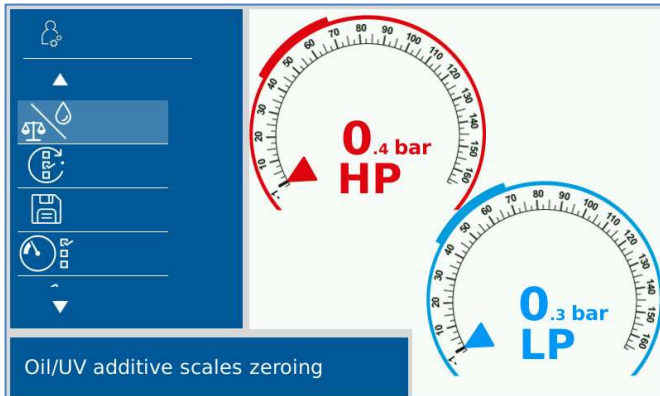


Fig. 4-14 Oil/UV additive scales zeroing

2. Start Oil/UV additive scales zeroing .

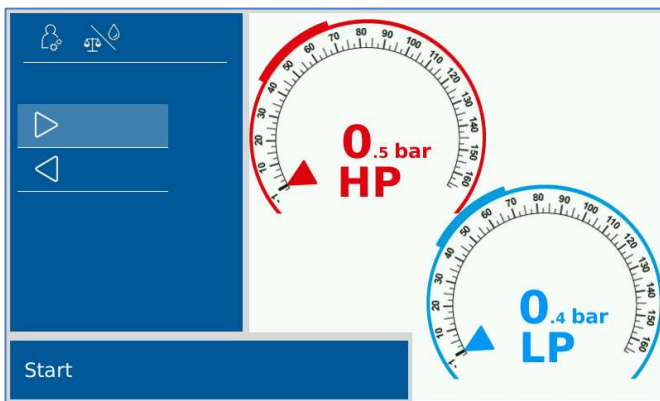



Fig. 4-15 Scales zeroing

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.

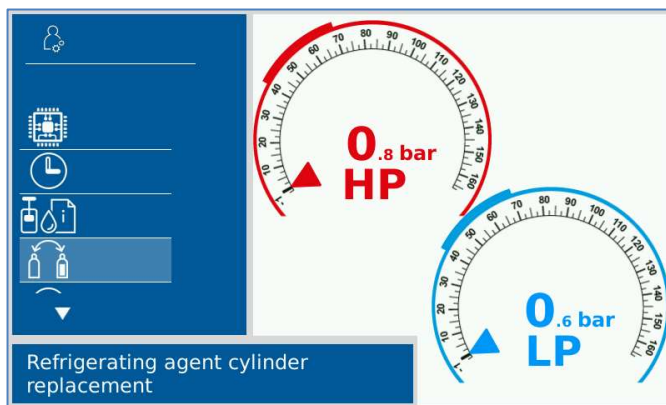


Fig. 4-16 Replacing refrigerating agent cylinder

2. Now select **Cylinder content**.

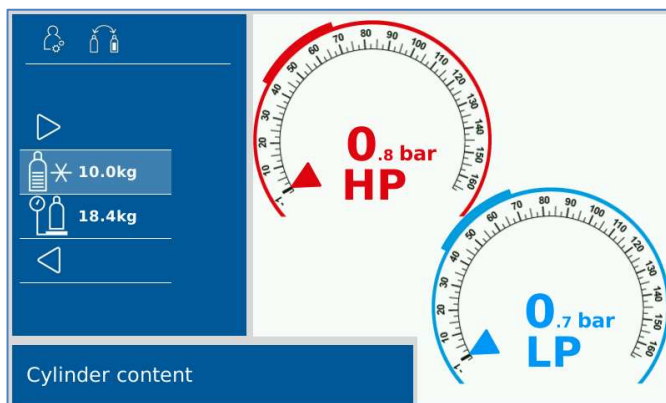


Fig. 4-17 Replacing refrigerating agent cylinder

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.

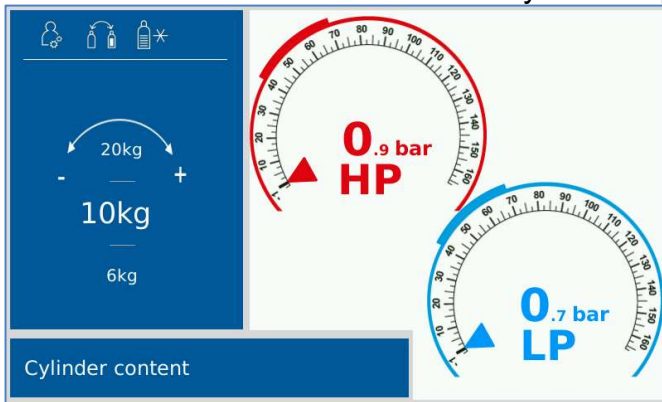


Fig. 4-18 Cylinder capacity

4. Select **tare weight**.

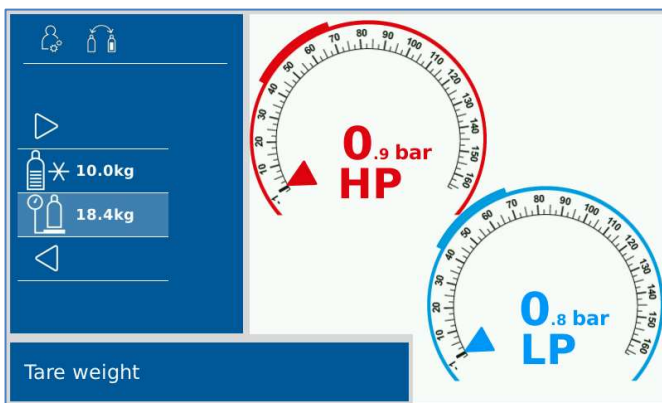


Fig. 4-19 Tare weight

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.



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.



Fig. 4-21 Ttare weight

c) Mark the location of the outlet valve on the refrigerating agent cylinder.



Fig. 4-22 Mark

d) Re-attach the protective cap.



Fig. 4-23 Protective cap

6. Enter the tare weight.

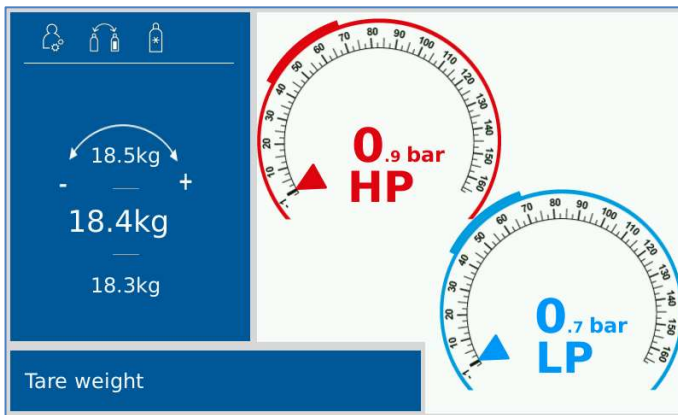


Fig. 4-24 Tare weight

7. Press  to continue replacing the cylinder.

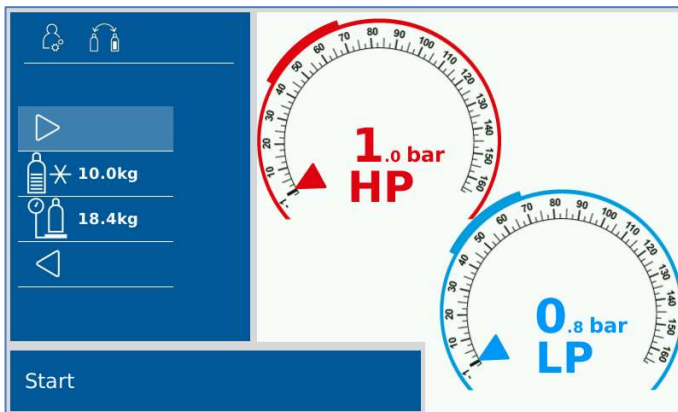



Fig. 4-25 Start

8. Skip this message by clicking  .
The hose is automatically emptied.

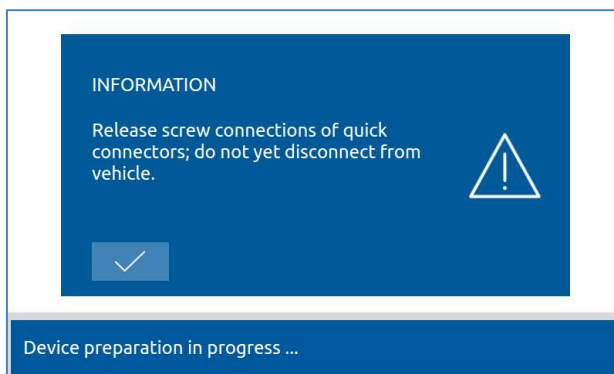



Fig. 4-26 Unscrew the screw connection

9. Continue with  .

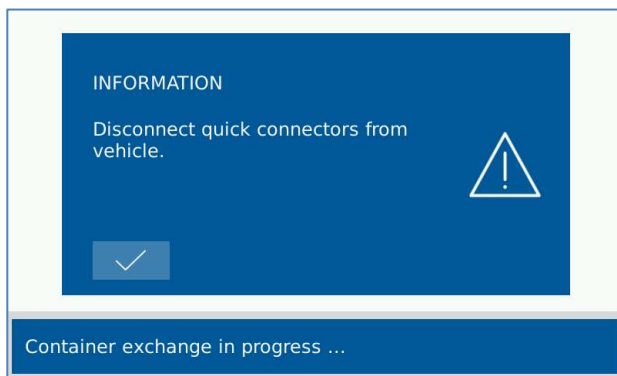



Fig. 4-27 Disconnecting the quick connectors

10. Continue with  .

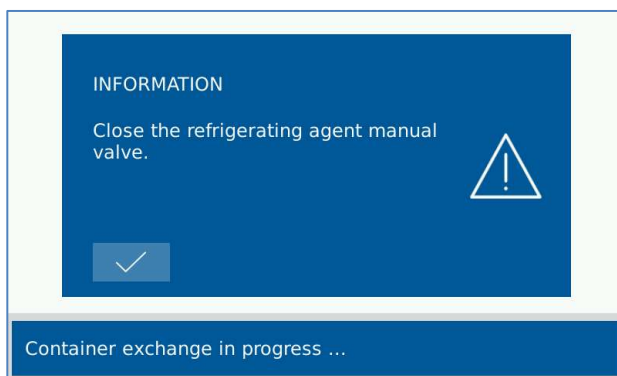



Fig. 4-28 Close manual valve

11. Continue with  .

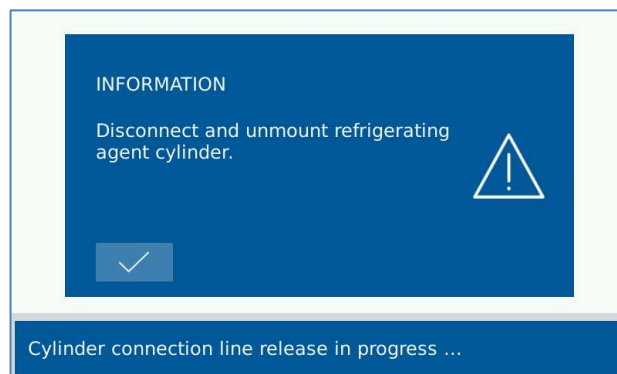


Fig. 4-29 Disconnecting refrigerating agent cylinder

12. Follow the instructions. Make sure the scales are unladen.

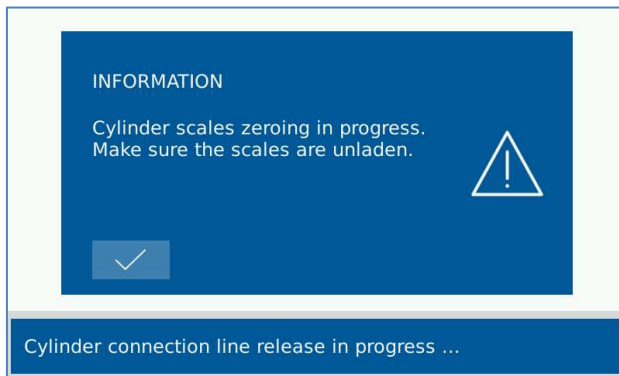



Fig. 4-30 Information

13. Continue with  .

14. Follow the instruction.

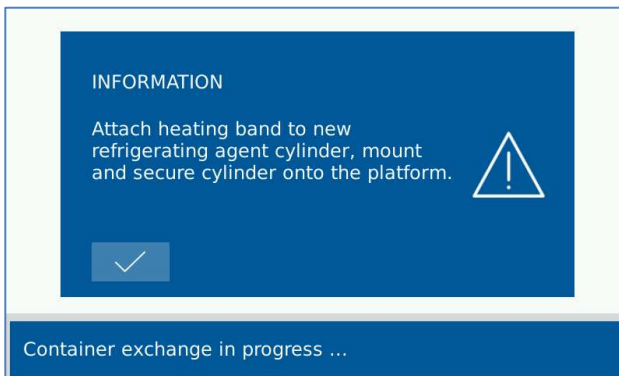


Fig. 4-31 Information

- 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.



Fig. 4-32 Heating band

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.

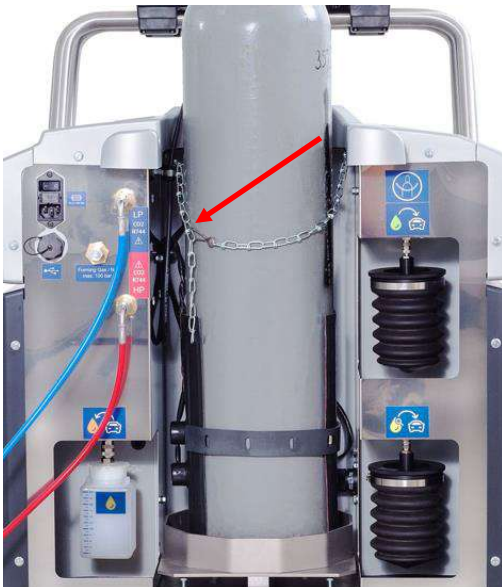



Fig. 4-34 Securing chain

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.

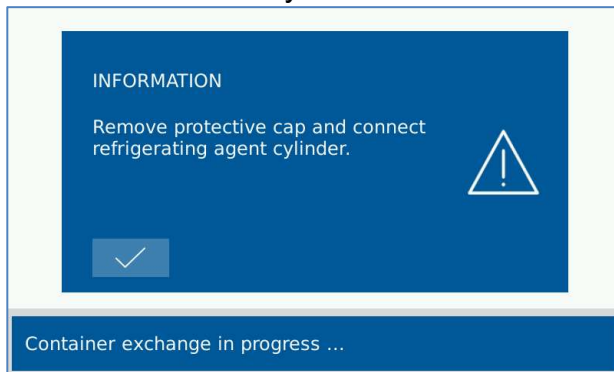


Fig. 4-35 Information

17. Zeroing and hose emptying are performed automatically.



Fig. 4-36 Refrigerating agent cylinder

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



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.

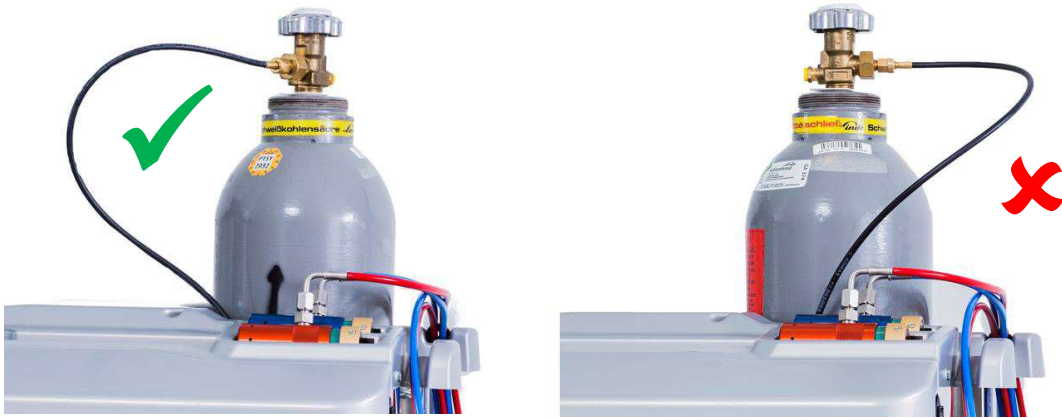


Fig. 4-41 Hose connection

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

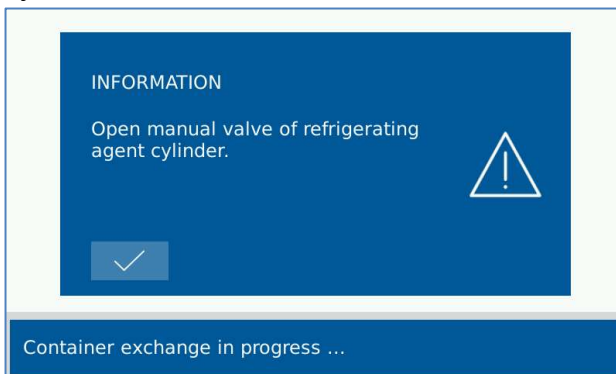


Fig. 4-42 Information




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.

5 Available accessories


























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














WARNING

Only use accessories approved by AVL DiTEST!

6 Quick start guide

 	<p>OBSERVE SAFETY INSTRUCTIONS</p> <p>Wear personal protective equipment!</p>
	<p>Switch on VAS 581 009; Self-test runs automatically.</p>
	<p>Select "Automatic cycle" in main menu.</p>
           	<p>Enter parameters:</p> <ul style="list-style-type: none"> - 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 <p>Check and confirm inputs</p>
 	<p>Connect quick connectors with vehicle and confirm</p>
 	<p>Open gas supply of quick connectors</p>
<p>"Automatic cycle" runs automatically</p>	<p>Automatic cycle</p> <ul style="list-style-type: none"> - Safety self-test - Drain refrigerating agent - Vacuum generation - Filling of air conditioning system
 	<p>Close gas supply of quick connectors and confirm. Hoses are emptied in VAS 581 009.</p>
 	<p>Disconnect quick connectors from vehicle and confirm.</p>
	<p>Print report [Yes/No]</p>



	Up Selects previous function
	Down Selects next function
	Back Goes back one step.
	Start Starts functions.
	Cancel Cancels 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.

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.