



ACS 255



BOSCH

en Original instructions
A/C service unit

de EG-Konformit tskennikering
en EU Declaration of Conformity
fr. Declaration de conformit  "CE"
es. Declaraci n de conformidad CE

it. Dichiarazione di conformit  CE
sv. EG-f rkl ran om  verensst mmelse
da. EF-Konformit tskennikering
hr. EZ. Izjava o sukladnosti

nl. EG-conformiteitsverklaring

ACS 23X - F 002 DG6 4JX

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Maschinerichtlinien / Machine guidelines / Directives des machines / Directiva relativa alle macchine /
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richtlijn / Direktiv 'Compatibilitate electromagnetic ' / EMV-ir nyev / Direktiva o elektromagnethoj kompatibilnosti (2004/108/EG)

Druckger t-Richtlinie / Pressure Equipment Directive / Directiva sur les  quipements sous pression / Directiva sobre equipos a presi n /
Directiva in materia di attrezzature a pressione / Direktiva om trykkr ndende anordninger / Direktiv om trykappar ter / Richtlijn voor
printers / Directiva sobre equipamentos sob presso / Nyom sboroz s eszk zok ir nyelv / Direktiva o t chna opremi / 67/23/EEG *

Benannte Stelle / Notified body:
Dokumentnummer / Refer to document number:
MD - Richtlinie  ber Messger te / Directiva on measuring instruments / Directiva relative aux instruments de mesure / Directiva sobre
instrumentos de medida / Directiva sugli apparecchi di misurazione / Direktiv  ver m tinstreument / Direktiv om m lkestreument /
Richtlijn betreffende meetinstrumenten / Directiva sobre aparelhos de medi o / Ir nyelv a m r m szenekr l / Direktiva o mjernim
instrumentima (2004/22/EG)

BITE - Richtlinie  ber Funkanlagen und Telekommunikations-einrichtungen / Radio equipment and telecommunications
terminal equipment / Equipments terminaux de t l communications / Directiva sobre equipos
radioteletr nicos y equipos terminales de telecomunicaci n / Apparecchiature radio e le apparecchiature terminali di telecom-
unicazione / Direktiv om radioutrustning og teleterminalutrustning / Direktiv om radioleing og telekommunikations-slutst y /
Radio-instalaci es en zondaparatuur voor telecommunicatie / Equipamentos de r dio e equipamentos terminais de telecom-
unica  o / Ir nyelv a r di s eszk zok ir nyelv / Informa  es t cnicas vigiando de r dio / Directiva o r diojko opremi /
telekomunikacijskej terminalnoj opremi (1999/5/EG)
Clas

BP - Richtlinie Eco-Design / Directive Eco-Design / Directiva Eco-Design / Directiva sobre diseno ecol gico / Directiva eco-design /
directiv Eco-design / direktiv Eco-design / rictiljir eco-design / Directiva Eco-Design / Ir nyelv Eco-Design / Directiva o zafjzima za
ekolojski dizajn / procedura kaj koniste energija. (2009/128/EG)

EG-Verordnung Standby / EU-Regulation Standby / R glement UE Standby / Reglamento Europeo para aparatos en
espera (standby) / Regolamento UE standby / EU-foerordning standby / EU-verordning stand-by /
EU-Regulation Standby / K zennelvet  vrendelhet / EZ. Uredba o stanju pripravnosti (1219/2008)

EG-Verordnung AC-Adapter / EU-Regulation AC-Adapter / R glement UE Adaptateur CA / Reglamento Europeo Adaptadores CA /
Reglamento UE adaptador AC / EU-foerordning AC-adapter / EU-foerordning AC-adapter / EU-verordning AC-adapter /
EU-Regulation AC-adaptor / CA / EU-foerordning AC-adapter / EU-foerordning AC-adapter / EU-verordning AC-adapter /
Reglamento UE adaptador AC / EU-foerordning AC-adapter / EU-foerordning AC-adapter / EU-verordning AC-adapter /
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Primljenine nacionalne norme i tehničke specifikacije i/ili podaci i o skloppovima sukladno Direktivi o strojevima:
Tank and double freon cylinder, Cat. II, Mod B + C1, F 002 DG3 4P)

Pressure switch, Cat IV, Mod B + D, F 002 DG3 4EU

Piping components (hoses, pipes): Article 3 (3)



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25/05/14

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sigurnosne napomene u priloenoj dokumentaciji proizvoa.

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1. Symbols used

1.1 In the documentation

1.1.1 Warning notices - Structure and meaning

Warning notices warn of dangers to the user or people in the vicinity. Warning notices also indicate the consequences of the hazard as well as preventive action. Warning notices have the following structure:

Warning symbol **KEY WORD – Nature and source of hazard!** Consequences of hazard in the event of failure to observe action and information given.
 ➤ Hazard prevention action and information.

The key word indicates the likelihood of occurrence and the severity of the hazard in the event of non-observance:

Key word	Probability of occurrence	Severity of danger if instructions not observed
DANGER	Immediate danger impending	Death or severe injury
WARNING	Possible danger impending	Death or severe injury
CAUTION	Possible dangerous situation	Minor injury

1.1.2 Symbols in this documentation

Symbol	Designation	Explanation
!	Attention	Warns about possible property damage.
i	Information	Practical hints and other useful information.
1. 2.	Multi-step operation	Instruction consisting of several steps.
➤	One-step operation	Instruction consisting of one step.
⇨	Intermediate result	An instruction produces a visible intermediate result.
→	Final result	There is a visible final result on completion of the instruction.

1.2 On the product

! Observe all warning notices on products and ensure they remain legible.



Caution!

Contact with the refrigerant can cause blindness and severe injuries.

- Read this operating manual and all technical documentation for the used components.
- Wear protective gloves.
- Wear protective goggles.



2. User information

2.1 User group

The product may be used by skilled and instructed personnel only. Personnel scheduled to be trained, familiarized, instructed or to take part in a general training course may only work with the product under the supervision of an experienced person.

All work conducted on pressurized equipment may be performed by persons with sufficient knowledge and experience in using pressurized devices and, also be aware of the risks involved in the use of pressurized devices.

2.2 Agreement

Your use of the product means that you accept the following conditions:

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Warranty

Any use of non-approved hardware and software will result in a modification to our product and thus to exclusion of any liability and warranty, even if the hardware or software has in the meantime been removed or deleted. No changes may be made to our products. Our products may only be used in combination with original accessories and original service parts. Failing to do so, will render null and void all warranty claims.

2.3 Obligation of contractor

The contractor is obliged to ensure that all measures geared towards the prevention of accidents, industrial diseases, labor-related health risks are taken and measures towards making the workplace fit for people to work in are carried out.

The contractor is bound to ensure that all electrical equipment and operating material is set up, modified and maintained by skilled electricians only or under the guidance and supervision of a skilled electrician in accordance with electrical engineering principles.

Furthermore, the contractor must ensure that all electrical equipment and operating material is operated in keeping with electrical engineering principles.

If a piece of electrical equipment or operating material is found to be defective, i.e. it does not or no longer complies with electrical engineering principles, the contractor must ensure that the fault is rectified immediately and, in the event that imminent danger exists, also ensure that the electrical equipment or the electrical operating material is not used.

2.4 Safety Instructions

All safety instructions are to be read thoroughly before using the Bosch product and they must be observed.

- Avoid the refrigerant coming into contact with the skin. The low boiling point of the refrigerant (approximately -30 °C at atmospheric pressure) can cause frostbite. In case of contact with the skin, remove wet clothing immediately and rinse the affected area of skin with plenty of water.



Do not breathe in refrigerant or oil vapors. The vapors can irritate the eyes and the breathing passage of the nose. If liquid refrigerant/oil gets into the eyes, rinse the eyes thoroughly with water for 15 minutes. Then, seek medical attention, even if the eyes do not hurt.

- Before the ACS 255 is connected to the vehicle A/C system or to an external refrigerant tank, ensure that the quick couplers do not leak. Use only external refrigerant tanks that are fitted with safety valves and approved in accordance with the applicable standards.
- Before turning off the ACS 255, ensure that all the service phases are complete. This prevents refrigerant from escaping into the environment.



Do not use compressed air with R134a.

Some mixtures of air and R134a are highly flammable at high pressure. These mixtures are potentially hazardous and can cause fires or explosions resulting in damage to property and injury to persons.

- Refrigerant extracted from the vehicle A/C system might be contaminated with moisture, lubricant, dirt and traces of other gases.
 - The ACS 255 does not have any refrigerant identifier system. If refrigerants other than R134a are used, it might lead to contamination.
 - R134a is colorless, odorless and heavier than air. It expels oxygen and can flow into repair pits. If the refrigerant escapes, there is a risk of suffocation in poorly ventilated rooms or repair pits.
 - R134a may not be used in environments with a risk of explosion. Fire, naked flames and smoking are prohibited. No welding or soldering is allowed. High temperatures and UV radiation can cause R134a to chemically separate. The resulting products cause coughs and nausea.
 - R134a may not be mixed with other refrigerants. Mixing refrigerants can cause damage to the vehicle A/C system.
 - The ACS 255 must always be monitored during operation. Do not leave the ACS 255 unattended when it is switched on.
 - Vehicle A/C service, using the ACS 255, must be prepared and carried out in such a way that the vehicle A/C circuit is not opened (for example, radiator or engine removal).
 - The ACS 255 should be positioned with all four wheels on a flat, vibration-free surface to ensure correct operation of the load sensors. The ACS 255 can be prevented from rolling away by applying the brake.
 - The ACS 255 must always be transported in a vertical position. Do not invert the ACS 255.
 - There are no additional safety provisions for protecting the ACS 255 unit against damage in the event of natural calamities like earthquakes, fires, floods etc.
 - Except for maintenance work, do not remove any pressurized equipment inside the ACS 255 unit. Adhere to the national laws or regulations for ensuring safety of pressurized equipment.
- We recommend that calibration of load sensors be done at least once every year. Contact customer service for calibration of load sensors.
 - The ACS 255 must be regularly inspected by service personnel or the approved authorities to ensure safety of the unit.



Warning - Risk of frostbite in the event of refrigerant leakage!

If refrigerant escapes, there is a risk of frostbite to the hands and body.

- Wear protective goggles.
- Wear protective gloves.
- Ensure that the HP and LP hoses are not damaged.
- Ensure that the quick couplers are tightly fixed to the hoses.



Warning - Risk of frostbite during removal of service hoses!

If refrigerant escapes, there is a risk of frostbite to the hands and body.

- Carefully disconnect service hoses as all hoses can contain pressurized refrigerant.

- Only connect to a properly grounded electrical outlet.
- Do not attempt to shut off the valves on the R134a tank when the ACS 255 is in operation.
- For the purposes of safety, it is recommended to use an Earth Leakage Circuit Breaker (ELCB) with the following specifications:

Parameter	Specification
Rated voltage	230 VAC +/- 10%
Rated frequency	50/60 Hz
Rated current	10 A
Rated trip current	30 mA
Tripping curve	C

2.5 Safety devices

- Pressure switch - Switches the compressor off if the normal operating pressure is exceeded.
- Safety valve: Operates when the design pressure is exceeded.
- Fuse: Interrupts excessive current flow into the ACS 255.

3. Product description

3.1 Application

The ACS 255 is used to perform the following basic services for passenger car A/C systems in manual or automatic mode:

- Refrigerant recovery
- Oil recharge
- Vacuuming and leak tests
- Refrigerant recharge

The ACS 255 should be used with car A/C systems that use R134a.

3.2 Delivery specification

Description

ACS 255
Hose - HP
Hose - LP
Quick coupler - HP
Quick coupler - LP
Can assembly - Used oil
Can assembly - Fresh oil
Operating instructions
Adapter for filling internal refrigerant tank

3.3 Description of unit

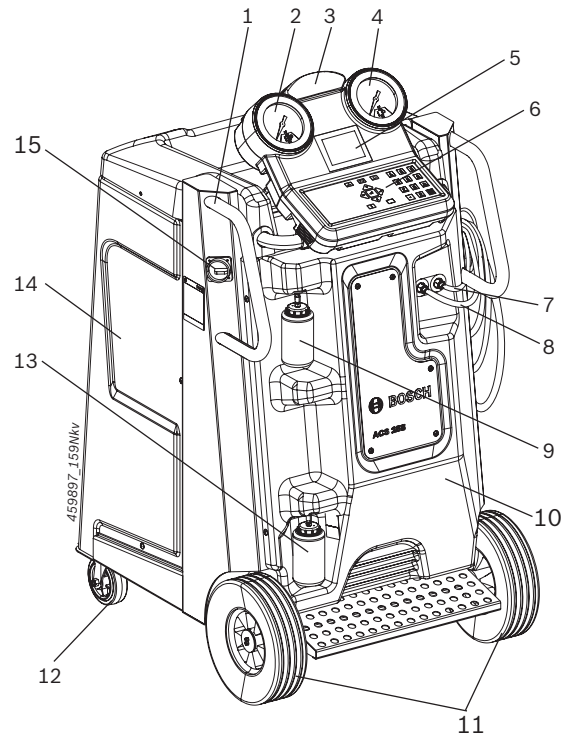


Fig. 1: Front view

- 1 Handle (x 2)
- 2 HP gauge
- 3 Status and warning light
- 4 LP gauge
- 5 LCD
- 6 Keypad
- 7 LP hose
- 8 HP hose
- 9 Fresh oil bottle
- 10 Front panel
- 11 Front wheels
- 12 Rear wheel (x 2)
- 13 Used oil bottle
- 14 Left-hand side panel
- 15 Master switch

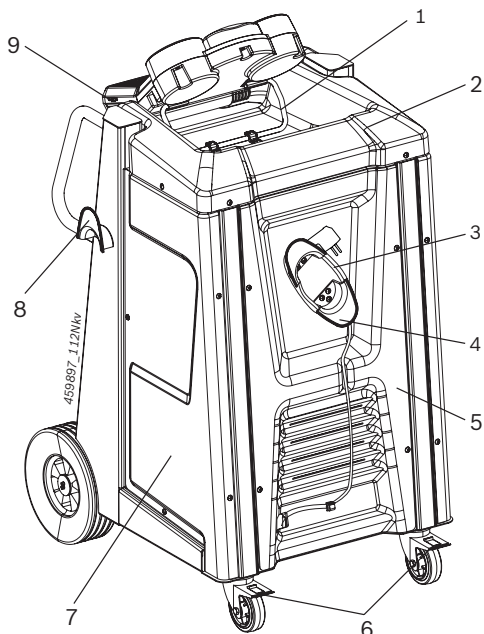


Fig. 2: Rear view

- 1 HMI support
- 2 Painel superior
- 3 Power cable
- 4 Cable holder
- 5 Rear panel
- 6 Brakes
- 7 Right-hand side panel
- 8 Hose holder
- 9 USB port

3.3.1 Human Machine Interface (HMI)

The HMI consists of:

- Pressure gauges - The pressure during the service is displayed on the gauges.
- Status and warning lights - The status of service and disruptions during service are indicated by the status and warning light.

Color indicated by the status and warning light	Status of service
Red	Error/Warning
Blinking green	Service in progress
Static green	Service complete

- LCD - The menu options and status of service are displayed on the LCD.

- Keypad - The selection of service menu options and service parameters can be done via the keypad. The alphanumeric input keys can be used to enter letters and special characters in input fields. In an input field, pressing a key several times in succession displays all the characters it can be used for (upper case letters, special characters).

i The alphabetical entries can be made in upper case only.

Keys	Description
△	Function keys, The function keys are assigned various functions in the ACS 255 software. The functions of the keys are specified in the soft key bar of the ACS 255 software.
□	
○	
↑ or ↓	Navigate up or down
→ or ←	Navigate right or left
↵	Enter
C	Clear
ABC 123	Switch between numeric and alphabetical entry
i	Display system information

- USB port - Firmware updates can be performed by plugging the USB disk into the USB port.

3.3.2 Scale for refrigerant tank

The quantity of refrigerant charged into the vehicle A/C system is controlled by a scale mounted beneath the refrigerant tank.

3.3.3 Oil bottles

! Do not apply excessive force while detaching or attaching the oil bottles.

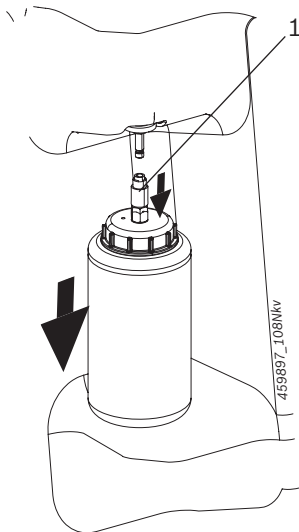


Fig. 3: Detaching the fresh oil bottle
1 Connector

To detach the fresh oil bottle, pull the connector (Fig. 3, Pos. 1) slightly downwards and pull down the bottle.

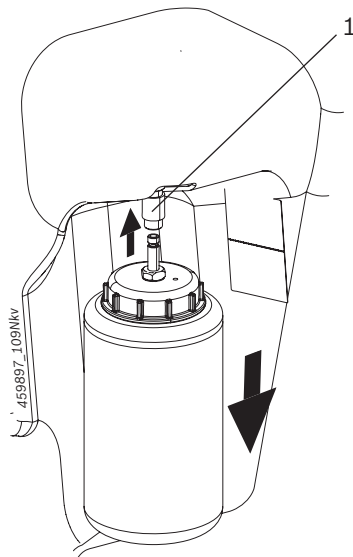




Fig. 4: Detaching the used oil bottle
1 Connector

To detach the used oil bottle, pull the connector (Fig. 4, Pos. 1) slightly upwards and pull down the bottle.

Observe the symbols on the front panel to identify the bottles. The following table lists the symbols and their description.

Symbol	Description
	Fresh oil bottle
	Used oil bottle

3.3.4 Quick couplers

The quick couplers (see fig. 8) are connected to the service connections on the vehicle A/C system to perform the service. To detach the quick couplers from the service connection on the car A/C system, grip the knurled portion of the coupler. Depress the coupler slightly and pull back the knurled portion gently to release the coupler.

To attach the coupler to the service connection on the vehicle A/C system, place the coupler on the service connection and pull back the knurled portion of the coupler. Press gently.

3.3.5 Brakes

The ACS 255 can be prevented from rolling away by applying brakes (Fig. 2, Pos. 6) on the rear wheels.

3.3.6 Power cable and master switch


The power cable is connected to the inlet and then to the mains supply. When not in use, the power cable can be wound on the cable holder (Fig. 2, Pos. 4). The ACS 255 can be powered on by turning the switch in the clockwise direction.

3.4 Description of function

The functions performed by the ACS 255 are:


- Recovery and recycling - Refrigerant is recovered from the car A/C system. It is then recycled to remove suspended particles and moisture. The cleaned refrigerant is stored in the refrigerant tank.
- Vacuuming and leak detection - A deep vacuum is created and car A/C system is checked for leaks.
- Recharging refrigerant - The refrigerant in the refrigerant tank is charged into the vehicle A/C system.
- Replenishing vehicle compressor oil along with refrigerant as specified by the vehicle manufacturer

4. Commissioning

 All the operations described in chapter 4 must be performed prior to initial vehicle A/C system servicing.

4.1 Removing the transport packaging

1. Remove the transport packaging.
2. Remove the components placed beneath the ACS 255.
3. Move the ACS 255 out of the packaging palette.
4. Disconnect the power cable from the power inlet.

 Do not disconnect electrical connections or tamper with the internal components. If there is any damage or oil spillage, contact customer service.

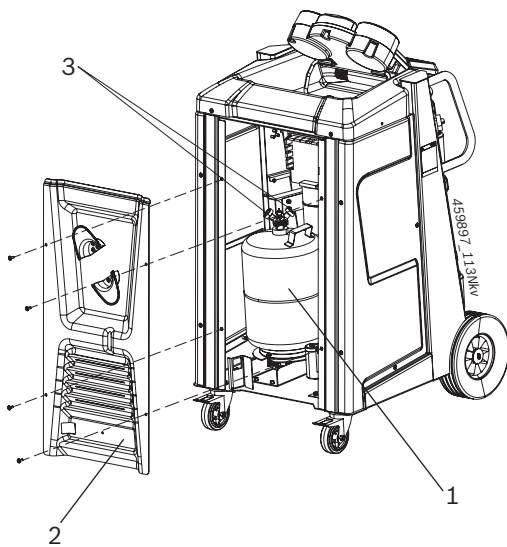


Fig. 5: Opening the rear panel

- 1 Refrigerant tank
 - 2 Rear panel
 - 3 Red and blue knobs
5. Open the rear panel (Fig. 5, Pos. 2).
 6. Ensure that the red and blue knobs on the refrigerant tank are open.
 7. Close the rear panel.

4.2 Before turning on for the first time

1. Remove the hoses, HP and LP couplers from the packaging box.
2. Apply the brakes on the rear wheels.
3. Open the front panel.
4. Open the screw cap of the vacuum pump (Fig. 6, Pos. 1).

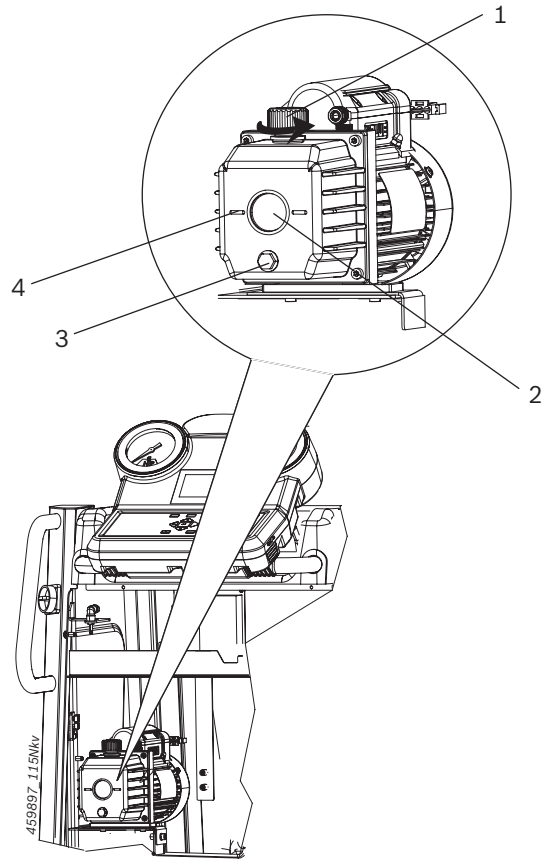



Fig. 6: Filling vacuum pump oil

- 1 Screw cap
 - 2 Sight glass
 - 3 Drain plug
 - 4 Level indicator
5. Observe the oil level in the vacuum pump sight glass (Fig. 6, Pos. 2). If the oil quantity is inadequate, open the screw cap of the vacuum pump.
 6. Top up the oil.
-  Ensure that you use VPO46 High vacuum pump oil. The maximum quantity of oil that can be filled is 400 ml.
7. Close the screw plug of the vacuum pump.
 8. Close the front panel.
 9. Fix the oil bottles to the connectors.

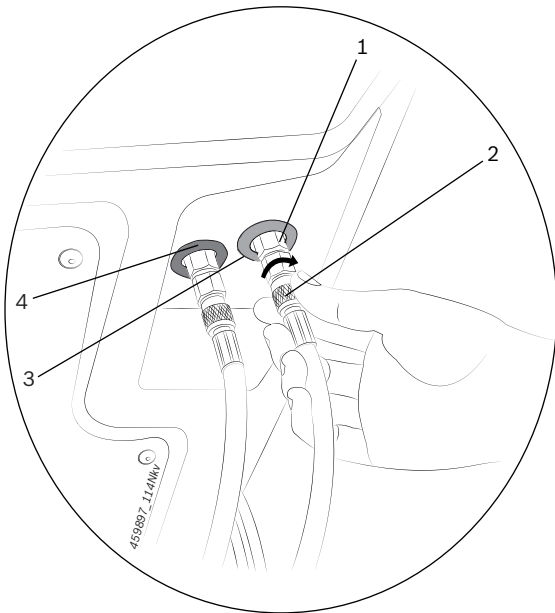


Fig. 7: Connecting the service hoses

- 1 Hose connection
- 2 Service hose end connection
- 3,4 Identification for HP and LP hose connection

10. Connect the end connectors of the service hoses (Fig. 7, Pos. 2) to the hose connections (Fig. 7, Pos. 1). Observe the red / blue identification stickers on the front panel before connecting the hoses. Tighten the hose connection.

! Tighten the service hose end connectors by hand. Do not use any tools.

i The HP hose (red hose) should be connected to the hose connection with the red identification sticker (Fig. 7, Pos. 4). The LP hose (blue hose) should be connected to the hose connection with the blue identification sticker (Fig. 7, Pos. 3). Do not interchange the HP and LP hose connections.

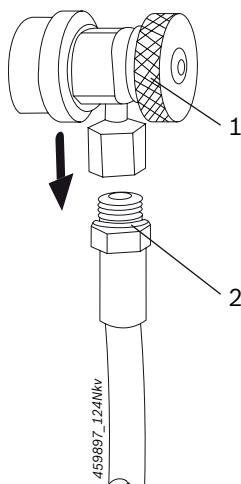


Fig. 8: Fixing the couplers to the hoses

- 1 Coupler
- 2 O-ring

11. Insert the coupler into the hoses and tighten. Ensure that the O-rings used for connecting the couplers to the hoses are properly placed before tightening the coupler.

4.3 Powering on the ACS 255

1. Move the ACS 255 to a flat, vibration-free surface.
2. Apply the brake to prevent the unit from rolling away.
3. Connect the power cable to the power inlet of the ACS 255.
4. Connect the power cable to the mains supply.

i Refer chapter 9 for the specifications of power supply.

5. Turn on the master switch.
 - ⇒ The self-test is initiated automatically. After the self test is complete, the **"Date and Time"** screen is displayed.

i When the unit is powered on for the first time, the ACS 255 starts in English.

6. Enter the date in the format dd.mm.yy.
7. Enter the time. Press ←.
 - ⇒ A list of languages is displayed.
8. Select your language with ↑ or ↓ (e.g. for English select **"English"**).
9. Press ← to confirm the language selected.
10. Enter your workshop data. Press ↑ or ↓ to switch between fields.

i A maximum of 27 characters can be entered.

11. Press ←.
 - The main menu is displayed.

4.4 Changing the system defaults

If the system defaults are not set, the default values of the parameters set at the factory will be used during automode service.

i Refer to the vehicle documentation for the values of the parameters.

To change the default settings, execute the following procedure.

1. From the main menu, select **"ACS Settings" >> "System Defaults"**.
2. Press ←.
3. Set the automode service parameters. To set the default values again, press Δ.
 - The system defaults are set.

4.5 Filling the internal refrigerant tank

Before the ACS 255 can be used, the internal refrigerant tank must be filled with R134a.

The refrigerant can be procured from the local gas supplier. The refrigerant is normally stored and transported in tanks with connection fittings.

If cylinders without dip tube are used, the liquid ports of the external cylinders should be connected to the internal refrigerant cylinder. The cylinder should be placed in an inverted position during the filling process. If external cylinders with dip tube are used, the cylinders can be placed in an upright position.

1. Power off the ACS 255.
2. Disconnect the power cable from the mains supply.
3. Apply the brakes on the rear wheel.
4. Connect the adapter to the connection on the external refrigerant tank.
5. Connect the HP quick coupler of the ACS 255 to the connecting adapter on the external refrigerant tank.
6. Open shut off valves on the external refrigerant tank.
 - ⇨ The pressure of the external refrigerant tank is displayed on the HP manometer.
7. Connect the power cable to the mains supply.
8. Turn on the master switch.
9. In the main menu select **"Vehicle A/C Service" >> "Additional Services" >> "Internal Bottle Fill"**. Alternatively, press \bigcirc and select **"Additional Services" >> "Internal Bottle Fill"**.

\bigcirc To ensure reliable operation, it is recommended to use the optimum refrigerant quantity. The optimum refrigerant quantity for the ACS 255 is 4 kg - 7 kg. If the quantity is too less, you may not be able to recharge the refrigerant during service. If the quantity is too high, you may not be able to recover the refrigerant during service.

10. Enter the quantity of R134a to be filled and press \leftarrow .
 - ⇨ The filling of the internal refrigerant tank starts.
11. After the internal refrigerant tank is filled, close the valves on the external refrigerant tank. Press Δ .
12. Disconnect the adapter from the external tank. Press Δ .
13. Press Δ to execute the hose drain.
 - ➔ After the hose drain is completed, the internal refrigerant tank is filled. The quantity of refrigerant filled is displayed.

4.6 Viewing system information


➤ Press the **i** key.

➔ The system information is displayed.

\bigcirc To dismiss the information screen, press the **i** key again.

5. Troubleshooting

Error code	Messages	Actions
1001	RECOVERY - Service Timeout	Check for blockage in the vehicle A/C system.
1004	RECOVERY - Internal Tank full	<ul style="list-style-type: none"> Weight limit reached. Reduce quantity of refrigerant in refrigerant tank. Load cell is defective. Contact customer service.
100A	RECOVERY - Low pressure in A/C	<ul style="list-style-type: none"> Ensure quick couplers are connected properly to the service ports on the vehicle A/C system. If the couplers are connected properly, try to perform A/C service. If the error persists, contact customer service.
2001	VACUUMING - Perform Recovery	The pressure is greater than 1400 mbar while vacuuming: <ul style="list-style-type: none"> Continue the recovery. Abort the recovery.
2002	VACUUMING - Leak Detected	Repair the vehicle A/C system.
5001	R134A RECHARGE - Service Timeout	<ul style="list-style-type: none"> Check for blockage in the ACS 255. Check if quick couplers are open.
5002	R134A RECHARGE - Insufficient R134a	Fill the internal refrigerant tank.
5005	R134A RECHARGE - Internal Tank full	<ul style="list-style-type: none"> Weight limit reached. Reduce quantity of refrigerant in internal refrigerant tank. Load cell is defective. Contact customer service.
5006	R134A RECHARGE - Perform Recovery	<ul style="list-style-type: none"> Continue the recovery. Abort the recovery.
5007	R134A RECHARGE - Perform Vacuuming	Perform vacuuming.
7100	Safety Switch - SS shutdown	<ul style="list-style-type: none"> Allow the unit to cool for 30 minutes and switch on the ACS 255. Try recovery/hose drain. Check if the blue knob on the refrigerant tank is closed. Open the blue knob if it is closed. Contact customer service if the problem persists.
7302	PS - Sensor failure	<ul style="list-style-type: none"> Contact customer service. For error messages 7501, 7502, 7503, 8000 and C001, contact customer service
9102	FACTORY SETTING - Not Complete	<ul style="list-style-type: none"> Self-test failed. See the self test report and take corrective action.
A101	TANK FILL - Service Timeout	Check for blockage in the ACS 255.
A103	TANK FILL - Internal Tank full	<ul style="list-style-type: none"> Weight limit reached. Reduce quantity of refrigerant in refrigerant tank. Load cell is defective. Contact customer service.
A105	TANK FILL - Check Ext. valve	<ul style="list-style-type: none"> Check if the valve on the external tank is open. Check if R134a is available in the external tank.
A601	R134a TOP UP - Service Timeout	<ul style="list-style-type: none"> Check if the vehicle A/C system is on. Check for blockage in the ACS 255. Check the refrigerant tank scale. Check for blockage in the hoses
A602	R134a TOP UP - Insufficient R134a Quantity	<ul style="list-style-type: none"> Check if the vehicle A/C system is on. Check for blockage in the ACS 255.
C002	OIL RECHARGE - Perform Recovery	The pressure is greater than 1400 mbar while recharging. Perform recovery.
C003	OIL RECHARGE - Perform Vacuuming	The pressure is greater than 900 mbar while recharging. Perform vacuuming.
C005	OIL RECHARGE - AC high pressure	<ul style="list-style-type: none"> Check if the fresh oil bottle is connected Contact customer service
D003	PERFORMANCE TEST - Perform Hose drain	The pressure is greater than 1400 mbar. Perform hose drain.

 The message "Service Timeout" indicates the service timeout for any service phase which is in progress. The following table indicates the service timeout duration for different service phases.

Service phase	Timeout duration (mins)	Service phase	Timeout duration (mins)
Refrigerant recovery	120	Recharge refrigerant	15
Recharge oil	6	Hose drain	5

6. Program description

6.1 ACS 255 operating modes

The software in the ACS 255 provides the following possibilities for performing vehicle A/C service:

- Automatic mode - In the automatic mode, all the phases in the A/C service are executed in sequence automatically.
- Manual mode - In the manual mode, only the selected phase is executed. For example, upon selecting "**Recovery**", only the recovery phase will be executed.

6.2 Preparations for A/C service

! The ACS 255 should not be used for servicing a vehicle A/C system that has been repaired with a chemical sealant. The sealant could damage the ACS 255 and the vehicle A/C system. Non-compliance invalidates the warranty.

Before servicing the vehicle A/C system, execute the following preparatory procedure:

1. Move the ACS 255 to a flat vibration-free surface close to the vehicle.
2. Apply the brakes to prevent the ACS 255 from rolling away.



Caution!

Hot engine parts can cause severe burns to the hands.

- Allow the engine to cool down before work.

3. Connect the power cable to the mains supply.
4. Turn on the master switch.

6.3 Configuring the custom database

The ACS 255 features a programmable database, to which a maximum of 50 vehicles can be added. The vehicle model and R134a quantity for the vehicles can be entered at the workshop.

i Refer to the vehicle documentation for the service parameters and other vehicle details.

To configure the custom database:

- In the main menu, select **ACS Settings >> Custom Database**.

6.3.1 Adding new vehicle details to the vehicle database

1. Select **New**.
 2. Enter the following details:
 - Model name
 - R134a quantity
 3. Press **←** to confirm.
- ➔ The vehicle details are added to the custom database.

6.3.2 Editing vehicle details in the custom database

1. Select **Edit**.
 - ⇒ The vehicles in the custom database are displayed.
 2. Select the required vehicle and press **←**.
 3. Edit the vehicle details.
 4. Press **←** to confirm.
- ➔ The vehicle details are edited.

6.3.3 Deleting vehicle details from the custom database

1. Select **Delete**.
 2. Select the required vehicle and press **←**.
- ➔ The vehicle details are deleted from the custom database.

6.3.4 Viewing custom database information

It is possible to view the number of vehicles stored and the number of entries available in the custom database.

- To view the custom database information select **Info**.
- ➔ The number of entries used and the number of entries available in the custom database are displayed.

6.3.5 Transferring the custom database from one ACS 255 to another

i Bosch does not accept any liability for the integrity of data transferred from an ACS 255 to another.

It is also possible to transfer the entries in the custom database from an ACS 255 to another. Contact Bosch customer service.

6.4 Accessing the custom database

1. In the main menu, select "**Vehicle A/C Service**" >> "**Custom Database**" and press **←**. Alternatively, press **Δ** and select "**Custom Database**".
 2. Select the vehicle and press **←**. Alternatively, enter the vehicle model name.
- ➔ The vehicle model and the R134a quantity are displayed.

6.5 Automatic mode

6.5.1 Overview of automatic mode

Serviços em modo automático podem ser realizados das seguintes maneiras:

- Seleção do veículo a partir do banco de dados personalizado
- Definição de parâmetros personalizados

6.5.2 Selecting the vehicle from the custom database

! Use only new oil to replace the amount removed during the recovery process. Used oil should be discarded as per applicable regulations.

i Before starting the service, refer to chapter 6.2.

1. Execute the procedure in chapter 6.4 to access the vehicle database.
2. Press **←**.
⇒ The automode parameters are displayed.

i To change the automode parameters, refer to chapter 4.5.

3. Check the type of service connection on the vehicle A/C system.

! Do not use any tools to tighten the couplers.

4. Connect the appropriate coupler/s to the service connection on the vehicle A/C system.
5. Press **←**.
⇒ The service begins in the automatic mode. Each phase is executed automatically. After the service is complete, the **Hose Drain** menu is displayed.
6. Turn the HP/LP quick couplers in the counterclockwise direction disconnect from the service connections on the vehicle A/C system.
7. Press **←**.
8. Press **←** to start draining refrigerant from the hoses.
⇒ Once the refrigerant is drained, a summary screen is displayed.

→ The servicing of the vehicle A/C system is complete.

6.5.3 Setting custom parameters

i Once set, custom parameters are valid only for a single service.

i Before starting the service, refer to chapter 6.2.

i Refer to the vehicle-specific documentation for the A/C service parameters.

! Use only new oil to replace the amount removed during the recovery process. Used oil should be discarded as per applicable regulations.

1. In the main menu, select "**Vehicle A/C Service**" >> "**Automatic Mode**" >> "**Custom Parameters**". Alternatively, press **Δ** and select "**Custom Parameters**".
⇒ The automode service parameters are displayed.

i To change the automode parameters, refer to chapter 4.4.

2. Check the type of connection on the vehicle A/C system.

! Do not use any tools to tighten the couplers.

3. Connect the appropriate coupler/s to the service connection on the vehicle A/C system.
4. Press **←**.
⇒ The service begins in the automatic mode. Each phase is executed automatically. After the service is complete, the **Hose Drain** menu is displayed.
5. Turn the HP/LP quick couplers in the counterclockwise direction disconnect from the service connections on the vehicle A/C system.
6. Press **←**.
7. Press **←** to start draining the refrigerant from the hoses.
⇒ Once the refrigerant is drained, a summary screen is displayed.

→ The servicing of the vehicle A/C system is complete.

6.6 Manual mode

6.6.1 Overview of manual mode

In the manual mode, only the selected phase is executed. For example, upon selecting "**Recovery**", only the recovery phase will be executed. It is also possible more than one service phase.

The default values of the parameters in each stage are listed in the following table:

Service phase	Parameter	Default value
Recovery	Pressure increase time	1 min
Vacuum	Vacuum time	20 min
	Vacuum hold time	4 min
Oil recharge	Refrigerant quantity	500 g
	Oil quantity	10 ml

Tab. 1: Default values of parameters

6.6.2 Recovery


In the recovery phase, the following parameters can be set:

- Duration for the pressure increase test
- Hose selection
 - HP hose
 - LP hose
 - HP and LP hoses

6.6.3 Vacuuming phase

In the vacuuming phase, the following parameters can be set:


- Vacuum creation time
- Vacuum test time
- Hose selection
 - HP hose
 - LP hose
 - HP and LP hoses

 Ensure that you perform recovery before the vacuuming.


6.6.4 Oil recharge phase


In the oil recharge phase, the following parameters can be set:

- Oil quantity
- Refrigerant quantity
- Hose selection
 - HP hose
 - LP hose
 - HP and LP hoses

 Oil injection can only be carried out on an A/C system that is under vacuum.

 Every time oil is recharged, R134a is also recharged.

 The quantity of oil added to the vehicle A/C system corresponds to the quantity drawn during the recovery phase. When filling a vehicle A/C system for the first time, refer to the vehicle documentation or the vehicle-specific repair manual for the specified oil recharge quantity.


 Use oil grade specified by the vehicle manufacturer. Use only new oil to replace the oil removed during the recovery process. Used oil should be discarded as per local regulations.





6.6.5 Recharge phase


In the recharge phase, the following parameters can be set:


- Refrigerant quantity
- Hose selection
 - HP hose
 - LP hose
 - HP and LP hoses



6.7 Performing service in manual mode


 Use only new oil to replace the amount removed during the recovery process. Used oil should be discarded as per applicable regulations.




1. In the main menu, select "**Vehicle A/C Services**" >> "**Manual Mode**". Alternatively, press .
 - ⇒ The phases that can be executed in the manual mode are displayed on the screen.
2. Press the  or  keys to scroll to a particular phase. To select a particular phase or multiple phases for execution, press .

 Refer to the vehicle-specific documentation for the A/C service parameters.

 Always pay attention to the vehicle-specific info before changing the quantity of oil and R134a.

3. Press  and then .
 - ⇒ The service parameters for the selected phases are displayed.
4. Set the values of the service parameters.
5. Check the type of connection on the vehicle A/C system.

 Do not use any tools to tighten the couplers.

6. Connect the appropriate coupler/s to the service connection on the vehicle A/C system.
7. Press .
 - ⇒ The selected service phase starts. At the end of the service, **Hose Drain** menu is displayed.
8. Turn the HP/LP quick couplers in the counterclockwise direction and disconnect from the service connections on the vehicle A/C system.
9. Press .
10. Press  to start draining the refrigerant from the hoses.
 - ⇒ Once the refrigerant is drained, a summary screen is displayed.

→ The servicing of the vehicle A/C system is complete.

6.8 Additional services

6.8.1 Refrigerant top up

If there is a decrease in the quantity of refrigerant in the vehicle A/C system, an additional quantity can be added.

Before doing a top up, the quantity of refrigerant already present in the car A/C system is not known. In such a scenario, topping up might result in overcharging of the refrigerant. A top up should be performed only after ascertaining the quantity of refrigerant already present in the car A/C system. Else, a complete A/C service should be performed.

1. In the main menu, select "**Vehicle A/C Service**" >> "**Additional Services**". Alternatively, press **O** and select "**Additional Services**".
2. Select "**Refrigerant Top Up**" and press **←**.
3. Connect the LP coupler to the LP service connection on the vehicle A/C system and press **Δ**.
4. Start the vehicle and switch on the A/C. Press **Δ**.
5. Enter the quantity of refrigerant to be topped up. Press **Δ**.

I The valid top up quantity range is between 20 and 100 grams.

6. Press **Δ**.
 - ⇒ The refrigerant top up starts. At the end of the service, **Hose Drain** menu is displayed.
 7. Turn the HP/LP quick couplers in the counterclockwise direction and disconnect from the service connections on the vehicle A/C system.
 8. Press **Δ**.
 9. Press **Δ** to start draining the refrigerant from the hoses.
 - ⇒ Once the refrigerant is drained, a summary screen is displayed.
- You have successfully topped up the refrigerant in the vehicle.

6.8.2 Hose drain

After every recharge / top up, some quantity of refrigerant is left in the hoses. It is necessary to drain the refrigerant from the hoses.

1. In the main menu, select "**Vehicle A/C Service**" >> "**Additional Services**". Alternatively, press **O** and select "**Additional Services**".
2. Select "**Hose Drain**" and press **←**.
 - ⇒ The **Hose Drain** menu is displayed.

3. Turn the HP/LP quick couplers in the counterclockwise direction and disconnect from the service connections on the vehicle A/C system.
 4. Press **Δ**.
 5. Press **Δ** to start draining the refrigerant from the hoses.
 - ⇒ Once the refrigerant is drained, a summary screen is displayed.
- The hose drain is complete.

6.8.3 A/C performance test

The condition of the vehicle A/C system can be monitored by checking the pressure and temperature at a specific location as recommended by the vehicle manufacturer. The A/C performance can be done before or after vehicle A/C service.


1. In the main menu, select "**Vehicle A/C Service**" >> "**Additional Services**". Alternatively, press **O** and select "**Additional Services**".
2. Select "**A/C Performance Test**".
3. Connect the HP and LP service hoses to the respective service connections on the vehicle A/C system. Press **Δ**.
4. Start the engine with the vehicle gear lever turned to **Neutral**.
5. Switch on the vehicle A/C to **Maximum** (cooling to maximum). Press **Δ**.
6. Press **Δ**.
7. Perform the A/C system test based on either of the following as per the vehicle manufacturer's recommendation:
 - Grill temperature
 - HP and LP pressure gauge readings
8. After the A/C system test is complete, turn off the engine and the vehicle A/C system.
9. Disconnect the HP and LP hoses from the service connections of the vehicle A/C system. Press **Δ**.
10. Press **Δ** to start the hose drain.
 - Upon completion of the hose drain, the A/C performance test is complete.

7. Maintenance

! Do not carry out any maintenance work that is not specifically recommended in this section.

7.1 Spare and wearing parts

Description	Order number
Filter dryer with set of inline filter elements	F 002 DG1 4J9
Set of inline filter elements	F 002 DG1 544

 Contact your local Bosch dealer for ordering spare and wearing parts.

7.2 Refilling the refrigerant tank

See chapter 4.5 for the procedure to fill the internal refrigerant tank.

7.3 Service record

Use the **"Service Record"** option to view the following information:

- Report of the last three vehicle A/C system services
- Report of the last self test
- Last five errors that occurred during vehicle A/C service

To view the service record menu, execute the following procedure:

- In the main menu, select **"ACS Maintenance" >> "Service Record"**. Press **←**.
- Alternatively, press **O**. Select **"ACS Maintenance" >> "Service Record"**
- ➔ The **Service Record** menu is displayed.

7.3.1 Viewing the last three vehicle A/C service reports

Use this option to view the last three vehicle A/C service reports.

- Select **"Last 3 System Service Reports"** and press **←**.

7.3.2 Last self test


Use this option to view the last self test report.

1. To view the last self test report, select **"Last Self Test Report"** and press **←**.

7.3.3 Last five errors during vehicle A/C service

Use this option to view the last five errors that occurred during vehicle A/C service.

- Select **"Last 5 Errors"** and press **←**.

 See chapter 5 for the description of the error messages.

7.4 Vacuum pump oil change

The vacuum pump oil needs to be changed after every 60 hours of operation. When it is time to change the vacuum pump oil, the message **Replace Vacuum Pump Oil** is displayed.


1. Perform hose drain (refer chapter 6.8.2).
2. Disconnect the HP and LP hoses from the respective connectors.
3. Turn off the master switch.
4. Disconnect the power cable from the mains supply.
5. Disconnect the power cable from the power inlet.
6. Disconnect the fresh oil bottle and the used oil bottle.
7. Open the front panel.



Warning - Risk of burns!

The hot surface of the vacuum pump can cause severe burns to the hands.


- Allow the vacuum pump to cool before commencing maintenance work

 Use a container to drain the vacuum pump oil.


8. Open the drain plug (Fig. 6, Pos. 3) and drain out the vacuum pump oil.
 9. Open the screw cap of the vacuum pump (Fig. 6, Pos. 1).
- !** Ensure that the oil does not spill over when you fill fresh oil.
10. Fill fresh vacuum pump oil. Observe the level indicator (Fig. 6, Pos. 4) to check if the oil is sufficiently filled.
 11. Close the screw plug.
 12. Close the front panel.
 13. Attach the fresh oil bottle and the used oil bottle.
 14. Connect the end connectors of the service hoses (Fig. 7, Pos. 2) to the hose connections (Fig. 7, Pos. 1). Observe the red / blue identification stickers on the front panel before connecting the hoses. Tighten the hose connections.
 15. Connect the power cable to the power socket.
 16. Connect the power cable to the mains supply.
 17. Start the ACS 255.
 18. In the main menu, select **"ACS Maintenance" >> "Maintenance"**. Press **←**.
 19. Select **"Reset Vacuum Pump"** and press **←**.
 20. Press **Δ** to reset maintenance counter.
 21. Press **Δ** to confirm.
- ➔ You have successfully added oil to the vacuum pump and reset the maintenance counter.

7.5 Replacing the filter drier

The filter drier removes the moisture and suspended particulate matter from the refrigerant. It is recommended to change the filter drier after the specified duration of usage. Reusing saturated filter driers may result in reduced recycling capability of the ACS 255. Consequently, the purity level of the refrigerant to be charged to the vehicle A/C system also reduces.

 The filter drier needs to be replaced after every 75 kg of refrigerant is recovered. When it is time to replace the filter drier, the message "Filter Drier Replacement Due" is displayed before starting vehicle A/C service.

As soon as the warning message is displayed, contact customer service for ordering a new filter drier.

 When inserting the new filter drier, ensure that it is installed in the correct position.

1. Perform hose drain (see chapter 6.8.2).
2. Disconnect the power cable from the mains supply.
3. Disconnect the power cable from the power socket.
4. Disconnect the fresh oil bottle and the used oil bottle.
5. Disconnect the HP and LP hoses from the respective connectors.
6. Open the front panel.

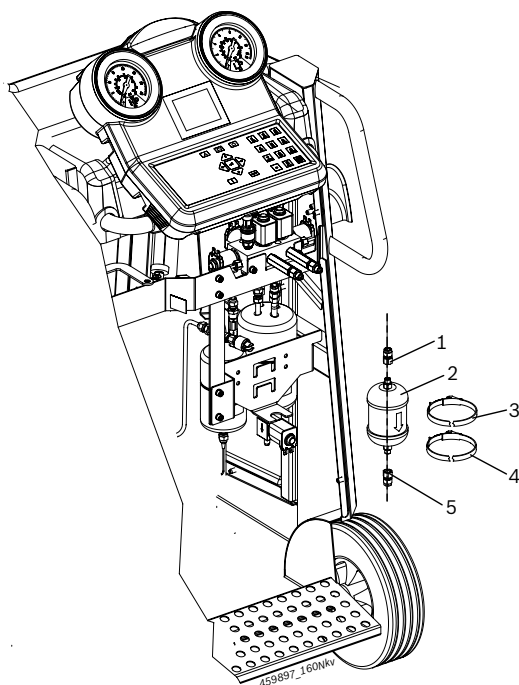




Fig. 9: Replacing the filter drier


- 1 Nut
- 2 Filter drier
- 3 Tie
- 4 Tie
- 5 Nut

7. Cut the cable ties (Fig. 9, Pos. 3, 4) that bind the filter drier to the bracket of the ACS 255.

 Use a suitable spanner to unfasten or fasten the nuts.

8. Hold the filter drier firmly and loosen the fastening nuts (Fig. 9, Pos. 1, 5).
9. Detach the filter drier (Fig. 9, Pos. 2).
10. Connect the new filter drier. Ensure that the O-rings are present at the mating part of the filter.

 Ensure that you tighten the fastening nut only after ensuring that the threads of the filter drier are engaged properly with the fitting.

 Ensure that you do not disturb the hose connections or the electrical connections while replacing the filter drier.

11. Tighten the fastening nuts.
 12. Close the front panel.
 13. Attach the fresh oil bottle and the used oil bottle.
 14. Connect the end connectors of the service hoses (Fig. 7, Pos. 2) to the hose connections (Fig. 7, Pos. 1). Observe the red / blue identification stickers on the front panel before connecting the hoses. Tighten the hose connections.
 15. Connect the power cable to the power inlet on the ACS 255.
 16. Connect the other end of the power cable to the mains supply.
 17. Power on the ACS 255.
 18. In the main menu, select "ACS Maintenance" >> "Maintenance".
 19. Select "Reset Filter" and press Δ.
 20. Press Δ to confirm.
- You have successfully replaced the filter drier and reset the maintenance counter.

7.6 Replacing the inline filters

The inline filters have to be changed every time the filter drier is changed. The inline filters consist of a filter insert (Fig. 10, Pos. 2) mounted inside the filter body.

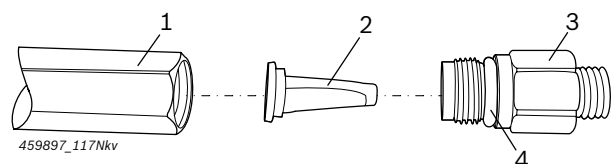


Fig. 10: Inline filter overview

1. Adapter for manifold
2. Filter insert
3. Adapter for hoses
4. O-ring

During replacement, replace only the filter insert.

1. Perform hose drain (see chapter 6.8.2).
2. Turn off the master switch.
3. Disconnect the power cable from the mains supply.
4. Disconnect the hoses from the inline filters.
5. Grip the adapter (Fig. 10, Pos. 1) with a spanner. Loosen the adapter for hoses (Fig. 10, Pos. 3) as shown in fig. 11.

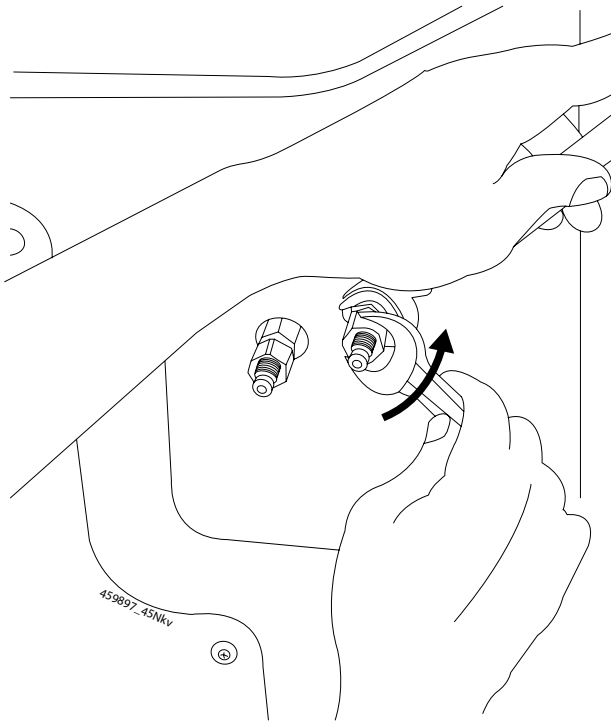


Fig. 11: Removing the adapter for the hoses.

6. Remove the filter insert (Fig. 12, Pos. 1) from within the adapter (Fig. 12, Pos. 2).

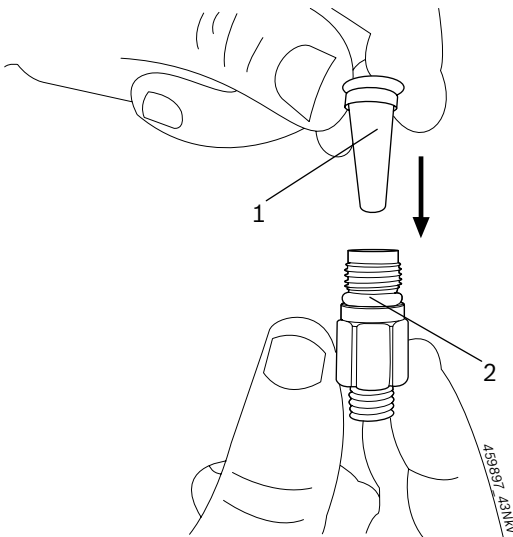




Fig. 12: Removing the filter insert

- 1 Filter insert
- 2 Adapter for hoses

7. Place the new filter insert within the adapter.

 Ensure that the O-ring is in place and not damaged. If damaged, change the O-ring.

8. Fasten the inline filters back to the adapter.

 Ensure that you do not damage the adapter for the manifold while tightening the adapter for hoses. Use tightening torque 9.5 N-m.

9. Connect the HP and LP hoses to the inline filters.


➔ You have successfully replaced the inline filters.

7.7 Self test


When the ACS 255 is powered on, a self test is initiated automatically. It is also possible to trigger the self test manually.


➤ In the main menu, select "**ACS Maintenance**" >> "**Self Test**". Press ←.

➔ The self test is initiated.



 If the self test fails, contact customer service.

7.8 Firmware update

 Updating the firmware does not affect the custom database.

 Bosch supplies USB disks for vehicle database updates. Contact your local Bosch dealer or customer service for further information.

1. Connect the power cable to the mains supply.
2. Turn on the master switch.
3. In the main menu, select "**ACS Maintenance**" >> "**Firmware Update**". Press ←.

 The current version number is displayed. The modules for which an update is available is marked with the symbol .

4. Plug in the USB to the USB port on the HMI module.
5. Follow the instructions on the screen to complete the software update.

7.9 Resetting factory settings

Use this option to change the system default.

1. In the main menu, select "**ACS Maintenance**" >> "**Maintenance**". Press ←.
2. Select "**Reset Factory Settings**". Press ←

3. Switch off and switch on.

➔ The settings have been reset to factory settings.

8. Decommissioning

8.1 Disposal of electronic items



This product is subject to European guidelines 2002/96/EG (WEEE).

Old electrical and electronic devices, including cables and accessories or batteries must be disposed of separate to household waste.

- Please use the return and collection systems in place for disposal in your area.
- Damage to the environment and hazards to personal health can be prevented by properly disposing of old equipment.

8.2 Disposal of LCD display, refrigerants, lubricants and oils

Please dispose of the LCD display in accordance with the local regulations for disposal of special waste.

Refrigerants that can no longer be used must be handed over to the gas suppliers for disposal.

The lubricants and oils recovered from the A/C systems must be handed back to the designated return points.

8.3 Disposal of filter drier

Dispose the filter drier through the designated return points or in accordance with local regulations.

8.4 Electromagnetic compatibility (EMC)

This product is compliant with EN 61000-6-2 and EN61000-6-4 standards.

9. Technical data

Property	Value/Range
Operating voltage	230 V ± 10 %
Frequency	50 / 60 Hz
Refrigerant	R134a
R134a scale	50 kg
LP manometer	-1 bar - 15 bar ± 1.6 % of final value
HP manometer	-1 bar - 34 bar ± 1.6 % of final value
Refrigerant tank capacity	12 l
Maximum system pressure PS	20 bar
Pset	18 bar
Medium group	Group 2
Power	700 W
Permissible ambient temperature TS	10 °C - 50 °C
Optimum filling weight of R134a for operation	4 kg - 7 kg
Dimensions (H x W x D) (mm)	1188 x 638 x 762
Weight	90 kg

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