

Service and Repair Instructions

ACCUVAC Rescue



*Aspirator
WM 10600*

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Introduction

For decades Weinmann has been developing, manufacturing and marketing appliances for emergency medical treatment, oxygen therapy and inhalation therapy.

In 1986 Weinmann launched the first ACCUVAC aspirator on the market.

The improved ACCUVAC Rescue aspirator provides users with an appliance that is an indispensable aid in many emergency health care situations. The ACCUVAC Rescue is used not only to clear the airways, as when preparing for intubation, for example, but also for removing vomited material.

In stable positioning of injured patients the ACCUVAC Rescue aspirator can be used for deflating vacuum mattresses and inflatable splints.

Using the ACCUVAC Rescue aspirator gives the user more time to look after the patient and perform other measures.

The purpose of these Service and Repair Instructions is to make sure you as an **expert specialist** are familiar with the ACCUVAC Rescue aspirator: its functionality and technology and how to repair it. Combined with training you have already re-

ceived from Weinmann, this makes you a member of the "authorized expert personnel" category, which means you can give your customers proper instruction, remedy faults independently, perform the final checks specified in the Operating Instructions, and carry out any repairs in accordance with these Service and Repair Instructions.

In the event of a warranty claim the ACCUVAC Rescue aspirator is to be sent to Weinmann.

So that we can process warranty claims or requests for generous treatment of complaints, please send the purchase receipt (invoice) with the appliance.

Repairs may only be carried out by Weinmann or by expert personnel.

You are responsible for any repairs you make and for the relevant warranty!

Only **original Weinmann spare parts** must be used for repairs.

Please remember:

Your customer trusts you and relies on your quality, just as you rely on Weinmann.

Note:

For the following information, please consult the ACCUVAC Rescue Operating Instructions:

- Safety information
- Assembly with wall bracket, Fitting accessories
- Operation
- Hygienic preparation
- Warranty

1. Overview

ACCUVAC Rescue from front with disposable collection canister

- 1 On/Off switch
- 2 Vacuum control
- 3 Capacity indicator
- 4 Membrane keyboard
- 5 Release catch
- 6 Re-usable collection canister
- 7 Motor unit
- 8 Tube holder plate

ACCUVAC Rescue from rear without collection canister

- 5 Release catch
- 9 Loops for accessory bag
- 10 Connection cable
- 11 Power socket (hidden)
- 12 Muffer (hidden)
- 13 Suction port

ACCUVAC Rescue - interior

- 14 Fuse F1
- 15 Fuse F2
- 17 Plug X3
- 16 Power pack

Re-usable collection canister

- 18 Vent tab
- 19 Filter cover
- 20 Bacteria filter
- 21 Locking tab
- 22 Bracing clip
- 23 Secretion cover
- 24 Ball (overflow guard)
- 25 Sealing ring
- 26 Nozzle with fingertip
- 27 Aspiration tube
- 28 Collection canister
- 29 Support
- 10 Connection cable

Accessories

- 30 Disposable bag container WM 15268
- 31 Aspiration tube with nozzle and fingertip
- 32 Intermediate tube
- 33 Disposable bag
- 34 Vacuum tube
- 35 T-piece
- 36 Collection canister

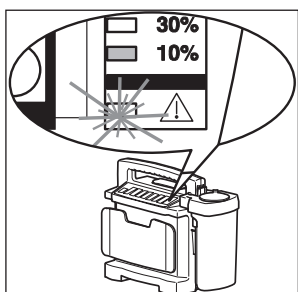
- Wall bracket WM 15208
- Accessory bag WM 10655
- 37 Holder set WM 15172
- Mains/charger unit WM 2645

2. Safety instructions

2.1 Special symbols on the appliance



The symbol on the filter cover **19** draws attention to the built-in bacteria filter **20**. This must be changed or sterilized after use to prevent the risk of infection (see "5. Cleaning and disinfecting" in the operation manual).



The warning symbol in the capacity indicator **3** draws attention to the risk of complete discharging, which could damage the power pack **16**. If the 10% LED lights up, it is time to recharge the ACCUVAC Rescue immediately (see "4.4 Charging the ACCUVAC Rescue" in the operation manual).

3. Description

3.1 Purpose

ACCUVAC Rescue is a mobile and portable electrically powered aspirator (suction pump).

It is used for:

- aspirating accumulations of blood, secretions and food from the oral cavity, the nose and throat region and the bronchial system;
- deflating vacuum mattresses and inflatable splints.

ACCUVAC Rescue:

- can when used by a skilled operator eliminate obstruction of the respiratory tract and hence the risk of respiratory failure;
- cuts energy consumption by reducing power output on reaching the necessary vacuum;

- can optionally be powered
 - by a rechargeable internal power pack;
 - or by an external DC source supplying 12.0 - 13.8 V;
- is also suitable for use in wards.

The ACCUVAC Rescue must **not** be used:

- in medical rooms where potential equalization is necessary (e.g. heart surgery);
- in explosion-risk areas.



3.2 Function

An electrically powered diaphragm pump generates the vacuum necessary for aspiration.

Use the vacuum control **2** to preselect the desired vacuum between -0.05 bar and -0.8 bar. The membrane keyboard **4** is illuminated so that you can see the operating status even after dark.

Note

Once the preselected vacuum is reached, the pump switches to standby. If the vacuum changes, the pump starts up again to restore the vacuum to the preselected level.

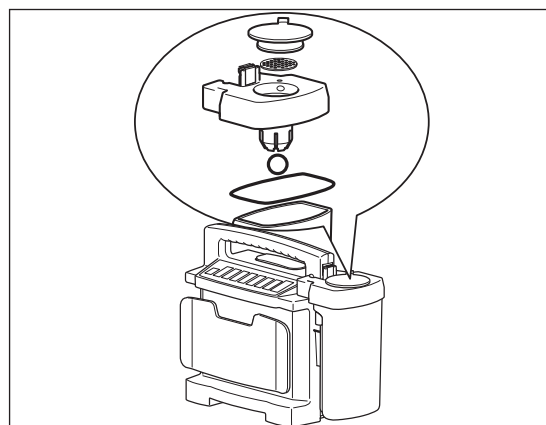
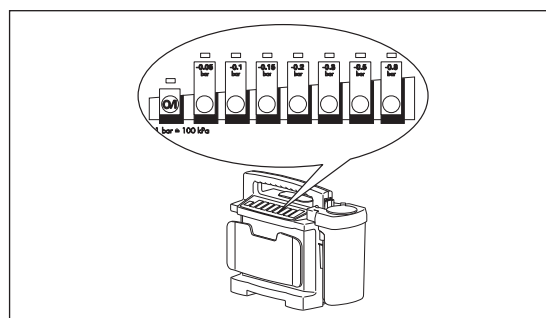
The aspirated material passes through the aspiration tube **27** into the collection canister.

Re-usable collection canister

The re-usable collection canister **6** is fixed to the side of the motor unit and directly connected to the suction port **13** of the motor unit **7**. There is thus no need for an intermediate tube.

A replaceable hydrophobic bacteria filter **20** in the secretion cover **23** prevents bacteria and droplets of moisture from finding their way into the motor unit **7** and passing into the environment via the muffler **12**.

The bacteria filter is designed for multiple re-use and sterilisation.



Important: Do not immerse the bacteria filter in disinfectant liquid, as this adversely affects its hydrophobic properties.

An overflow system prevents secretions from entering the motor unit. The ball **24** floats on the surface of the secretion until it blocks the exit.

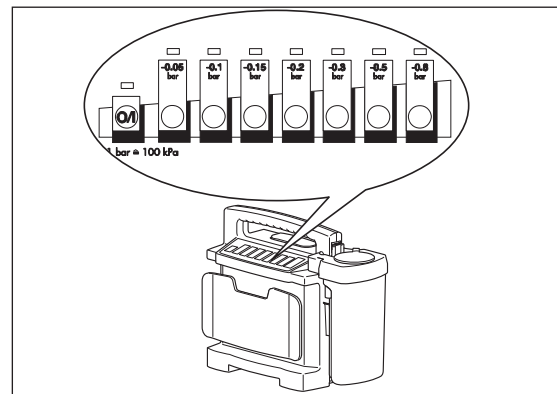
Power supply

Power can be drawn from:

- the built-in power pack **16**.
- a 12-volt vehicle electrical system, using the connecting cable.
- the mains and charger unit available as an accessory.

The capacity indicator **3** shows the charge status of the power pack in percent.

Charging of the power pack starts automatically as soon as the appliance is switched off and connected to an external power supply (see "13. Technical Data" on page 30).



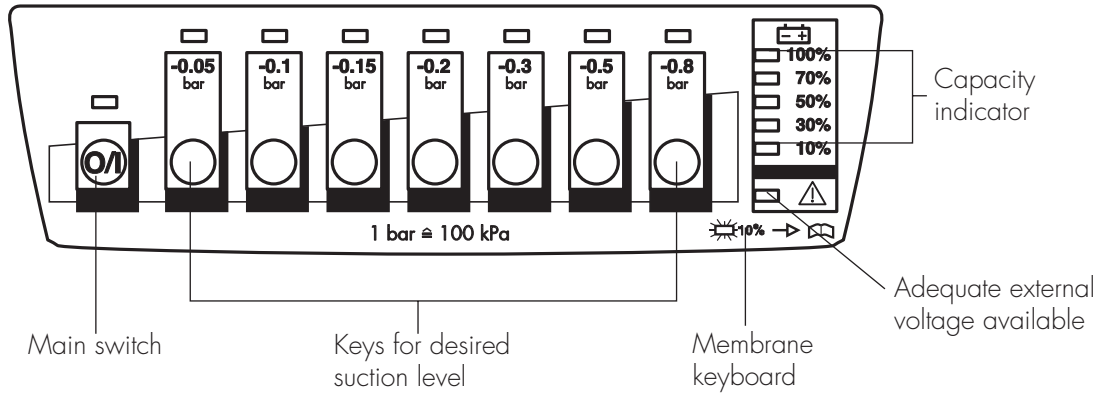
4. Operation

ACCUVAC Rescue may only be used by trained staff instructed in aspiration techniques. Incorrect use can cause serious bodily harm.

Operation is described in the operating instructions.

5. Operating and Display Elements

5.1 Operation



5.2 Service

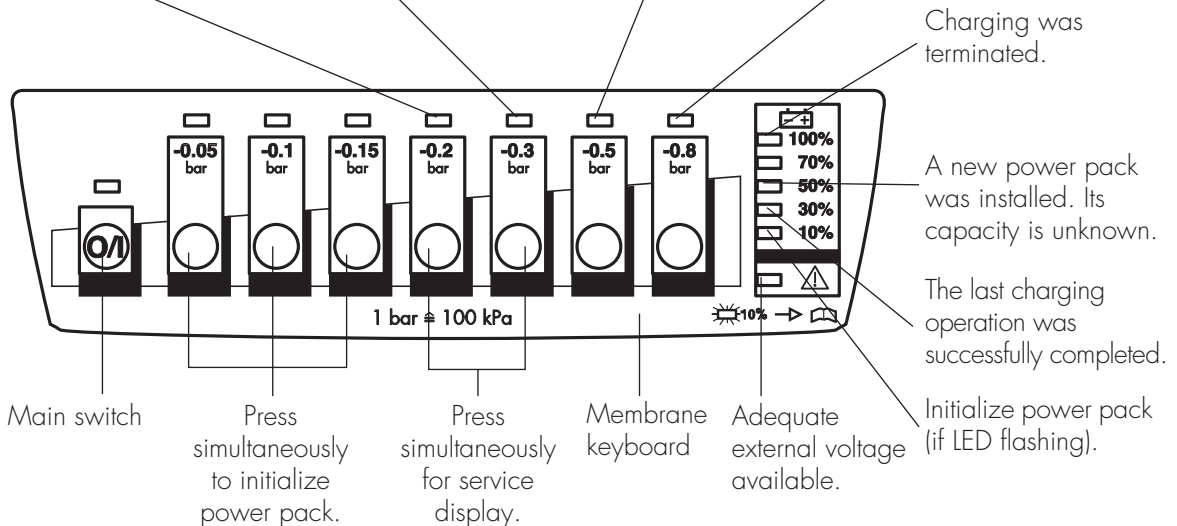
Bring up service display by pressing keys **-0.2** and **-0.3** simultaneously.

Charging was terminated due to power pack overvoltage.

Charging was terminated due to incorrect temperature of power pack.

Charging was terminated due to maximum charging time being exceeded.

Power pack was discharged down to discharging limit voltage.



6. Maintenance

The ACCUVAC Rescue needs no maintenance, but please be sure to observe the intervals specified for regular final checks (see "7.1 Intervals" on page 9).

To maintain battery operation and service life we recommend performing calibration every 8 weeks according to item 7.1.2 of the description and

operating instructions. This process involves the necessary specific battery discharging and recharging.

We recommend that you have any servicing, such as inspections and repair work, carried out by the manufacturer – Weinmann – or by expert personnel.

6.1 Disposal



Do not dispose of the unit with domestic waste. For proper waste disposal of the equipment, please contact an approved and certified waste disposal site for electronic goods. Ask your Environmental Officer or town council for the address.

7. Function checks

If the final check reveals defects or deviations from the specified values, the ACCUVAC Rescue must not be used again until the faults have been rectified.

We recommend that you always keep a stock of the following:

- Aspiration tube **27**, WM 10662
- Nozzle with fingertip **26**, WM 10666
- Filter **20**, WM 10675

7.1 Intervals

To ensure that a properly functioning ACCUVAC Rescue is always available, it is essential to observe the following intervals.

Before every use

- Perform a function check (see "7.2 Performing the function check" on page 10).

After every use

- Clean, disinfect and/or sterilize the unit and its parts (see operating instructions "5. Cleaning and disinfecting");
- Perform a function check (see "7.2 Performing the function check" on page 10).

Every 6 weeks

- Check the power pack charge level by switching on the ACCUVAC Rescue and reading the

capacity indicator. If the capacity is 50% or less, you should recharge the power pack (see operating instructions "4.4 Charging the ACCUVAC Rescue").

At least every 6 months

- Perform a function check (see "7.2 Performing the function check" on page 10).
- Make a visual inspection of the muffler for clogging. If it is clogged, fit a new muffler (see "9.13 Changing the muffler" on page 25).

After all repairs

- Clean, disinfect and/or sterilize the unit and its parts (see operating instructions "5. Cleaning and disinfecting");
- Perform a function check (see "7.2 Performing the function check" on page 10).

7.2 Performing the function check

1. Assemble ACCUVAC Rescue ready for use.
2. Check that all tubes, the collection canister **28**, secretion cover **23** and filter cover **19** are in perfect condition. Any damaged and/or worn parts must be replaced.

4. Switch on the ACCUVAC Rescue.

All LEDs light up for one second after switching on. After that, only those LEDs that indicate the operating status stay on. Check the charge level of the power pack by reading the capacity indicator **3**. If necessary, recharge the power pack (see operating instructions "4.4 Charging the ACCUVAC Rescue").

5. **Battery test**

A battery test should always be performed when there are doubts about the performance of the rechargeable battery, however at the latest two years after the battery was last changed.

Procedure:

Charge the ACCUVAC Rescue for 8 hours using the WM 2645 mains charger or for 14 hours using the WM 10750 plug-in power supply unit. Set a short interval timer to 20 minutes and start the ACCUVAC. After an operating time of 20 minutes the red LED should not be lit up and the ACCUVAC should be in operation.

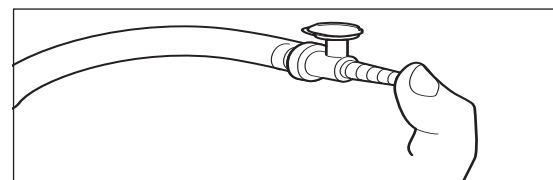
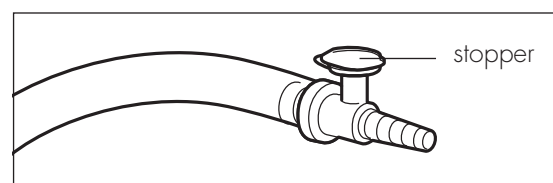
If the red LED lights up after 20 minutes, or the ACCUVAC is no longer working, the battery is spent and must be replaced. In this case please replace the battery as described in section 9.6.

6. Insert the stopper in the fingertip.

3. Check that all tubes are securely connected and that the secretion cover **23** is firmly in place.

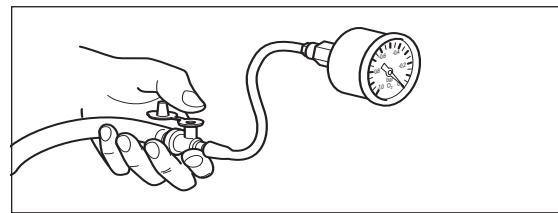
7. Use your thumb to hold the nozzle **26** closed.
8. Switch on the aspirator and preselect the maximum vacuum of -0.8 bar. The ACCUVAC Rescue must reach this vacuum in not more than 20 seconds. You can tell that this is the case because the pump stops.

If it takes more than 20 seconds before the pump stops, the suction capacity is reduced. Check for possible faults (see "8. Troubleshooting" on page 12).



9. Open the suction opening of the nozzle **26**.
The aspirator must start running again.
10. Preselect a vacuum of -0.3 bar.
11. Close the end of the nozzle **26** again.
12. As soon as the pump stops, select a vacuum of -0.2 bar without opening the fingertip.
The vacuum must not fall to -0.2 bar within 10 seconds.


You can tell that the vacuum is falling off by the fact that the LED above the -0.2 bar button starts flashing and the pump starts up. This means there is a leak. In this case check all tube connections and the re-usable collection canister **6**.
13. Connect the test pressure gage 0 to -1 bar to the fingertip.
14. Check the accuracy of all suction levels with the test pressure gage. Start at -0.05 bar. The tolerance of the individual suction levels must not exceed ± 0.04 bar (5% of end value on scale).
15. Remove the test pressure gage from the fingertip.
16. Switch off the ACCUVAC Rescue.



8. Troubleshooting

Fault	Cause	Localize fault	Remedy
Appliance does not start. O/I indicator and capacity indicator show ready for operation	Vacuum in system	Detach tube from pressure sensor. Switch appliance off and on again. Pump must now run.	Clear blockage in tube system.
	Controller hanging.	Perform reset.	Disconnect external power supply and power pack from circuit board for at least 2 minutes.
Appliance does not start. O/I indicator and capacity indicator show ready for operation	Front membrane faulty	If display test functions on switching on and the appropriate set value LED flashes when the relevant set value key is pressed, the front membrane is in order. If not, the cause of the fault may be either the front membrane or the circuit board.	First check the connection between the circuit board and the front membrane. Otherwise fit new front membrane.
	Circuit board defective	Connect circuit board to functioning pump and switch on. If pump does not run, fit new circuit board (9.10, page 22)
	Pump defective	Connect pump to functioning circuit board and switch on. If pump does not run, fit new pump (9.11, page 24)
	Controller hanging	Perform reset	Disconnect external power supply and power pack from circuit board for at least 2 minutes.
Appliance does not start. O/I indicator does not show ready for operation	Fuse F1 or F2 in appliance defective	If Rescue does not charge up, fuse F1 is probably defective.	Fit new fuse (9.8, page 21)
	Fuse in vehicle plug defective		Fit new fuse (9.12, page 25)
	Power pack fully discharged		Perform several charge/discharge cycles. If unsuccessful, fit new power pack (9.6, page 19)
	Incorrect polarity of vehicle power socket	If an external power supply with incorrect polarity is connected, a protective diode ensures that fuse F1 blows to protect the electronic system.	Correct polarity and if necessary replace fuse F1 (9.8, page 21)
Snap-in connection between circuit board and power pack not properly engaged		Make sure connection snaps in	

Fault	Cause	Localize fault	Remedy
Appliance does not reach maximum vacuum of -0.8 bar in 20 seconds, but capacity indicator shows ready for operation	Leak in suction side of appliance	Disconnect secretion container from pump unit. Switch on pump and run at a setting of 0.8 bar. Hold thumb over suction port. The maximum vacuum is reached within 5 sec. and the pump stops. If the pump starts up again within 10 to 20 sec., the leak is in the pump unit.*	Check that all tubes are securely connected and that filter cover and secretion cover are firmly installed
	Power pack not sufficiently charged	Connect charger VM 2645. If the pump now runs much more "powerfully" than with the power pack, you must charge power pack (9.6, page 19)
	Filter clogged		Fit new filter (operating instructions 5.3)
	Fault in pump	Connect pump to functioning circuit board and switch on. If pump does not run fit new pump (9.11, page 24)
	Muffler clogged		Fit new muffler (9.13, page 25)
	Pump keeps on starting up	Leak on suction side of appliance.	see above*
	External power supply too weak.	Check service display (2.1, page 5). If the x-bar LED lights up, the external power supply is in order.	External power supply must be between 12.0 and 13.8 V.
	Temperature of power pack too high. No charging possible above +40° C	Check service display (2.1, page 5). If the 0.3 bar LED lights up, the power pack temperature is not in the operating range 5°C to 45°C	Allow appliance to cool below +40° C
	Temperature of power pack too low. No charging possible below +5° C	Check service display (2.1, page 5). If the 0.3 bar LED lights up, the power pack temperature is not in the operating range 5°C to 45°C	Warm appliance to above +5° C
	Fuse F1 or F2 defective	Check service display (2.1, page 5). If the 0.2 bar LED lights up (power pack overvoltage), the fuse F2 may have blown.	Fit new fuse (9.8, page 21)
Fuse in vehicle plug defective		Fit new fuse (9.12, page 25)	
Snap-in connection between power pack and circuit board not properly engaged	Check service display (2.1, page 5). If the 0.2 bar LED lights up (power pack overvoltage), the connector to the power pack may be loose.	Make sure connection snaps in (9.9, page 21)	

Fault	Cause	Localize fault	Remedy
Green 10% LED flashing.	Capacity counter cleared. Charging and aspiration continue to work properly despite this message	Check service display. If the 50% LED lights up, the software has detected an "unknown" power pack. This happens when changing the power pack, fitting a new fuse F2, and sometimes if power pack is fully discharged, i.e. whenever the power pack is disconnected from the circuit board. The software sets the capacity counter to 0% (red LED is on during pumping and charging) if it detects a power pack voltage of < 10 V during pump operation.	Initialize (see "9.7 Initializing the power pack" on page 20)
100% LED does not light up on completion of charging	Charger does not meet specifications Vehicle electrical system is not supplying 12.0 – 13.8 V 	Check service display (2.1, page 5). If the 30% LED lights up, the power pack was fully charged during the last charging operation. Tip: it may be that the capacity counter is on 99%, with the result that the 100% LED does not light up. Switch on pump for approx. 30 sec. and then charge again. After a few minutes the 100% LED should light up. If not, the capacity counter is completely out of adjustment. In that case you must ...	Use mains/charger unit VM 2645 Check vehicle electrical system ... initialize (see "9.7 Initializing the power pack" on page 20)
	Power pack damaged by being fully discharged Power pack at end of service life	Charge appliance, switch on and set to 0.8 bar. If the pump power falls off after a few minutes, the power pack is damaged. Check service display (2.1, page 5). If the 0.2 bar LED lights up (power pack overvoltage), the internal resistance of the power pack may be very high due to age.	Perform several charge/discharge cycles (operating instructions 4.4, page 17). If unsuccessful, fit new power pack (9.6, page 19).

9. Repairs: Information and Instructions

9.1 General

An ESD workplace is essential for making repairs to the ACCUVAC Rescue.

No work should be performed on the appliance without a thorough knowledge of the Operating Instructions and the Service and Repair Instructions, which must always be complied with.

ACCUVAC Rescue is only intended for the purpose described (see "3.1 Purpose" on page 6).

When replacing components or individual parts, be sure to use only original Weinmann parts.

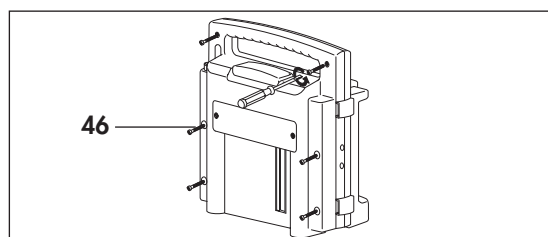
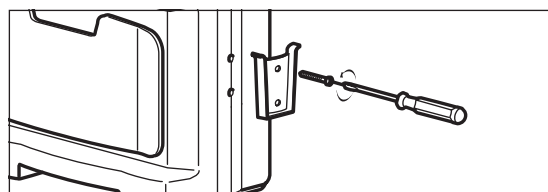
A function check (see "7.2 Performing the function check" on page 10) must be performed after every repair.

When ordering the rear part of the case, please state the appliance type, appliance number and year of manufacture.

9.2 Opening the device

Tools and equipment required:

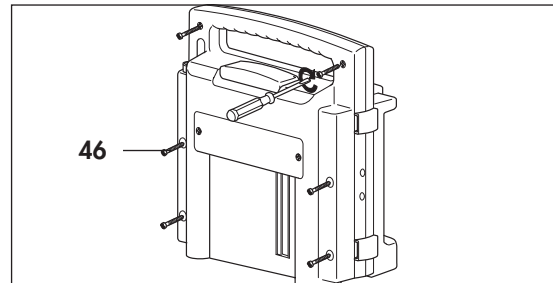
- Phillips screwdriver size 2.
1. Switch off the ACCUVAC Rescue.
 2. Disconnect the aspirator from the external power supply.
 3. Remove the collection canister **28** and any accessories.
 4. Unscrew the holder **29** for the collection canister.
 5. Open the case by unscrewing the 6 cross-head screws **46**. When opening the case, be careful not to damage the silicone sealing cord.
 6. Carefully pull the front and rear case elements apart.



9.3 Closing the device

Tools and equipment required:

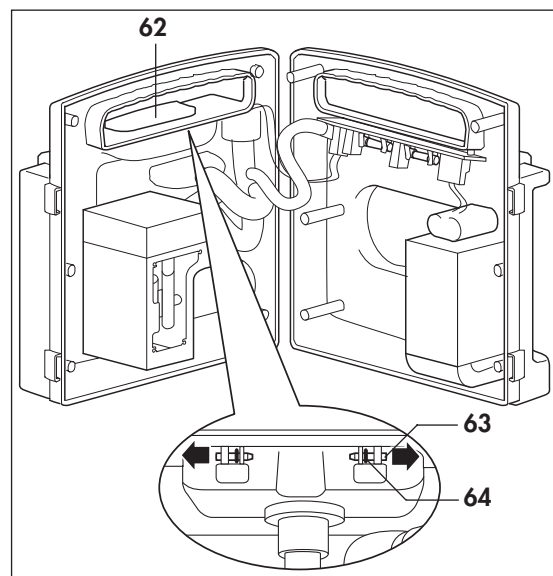
- Phillips screwdriver size 2
1. Carefully put the front and rear case elements together again.
 2. Screw the case together again, making sure that the silicone sealing cord is correctly inserted and is not jammed or otherwise damaged.
 3. Perform a function check (see "7.2 Performing the function check" on page 10).



9.4 Replacing release catch

Tools and equipment required:

- Phillips screwdriver size 2;
 - Screwdriver, size 1;
 - Flat or pointed pliers.
1. Open the device (see "9.2 Opening the device" on page 15).
 2. Place the ACCUVAC Rescue on its front.
 3. Push out retaining pins **63** from release catch **62** and remove them.
 4. Remove the old or defective release catch **62**. To do so, use a flat / blunt object to press down snap lock **65**, which is located below release catch **62**.
 5. Take the new release catch **62** and insert it in the rear wall of the case.
 6. Take O-ring **64** and locate it in the rear wall of the case between the loops of the release catch and the rear wall attachment point.
 7. Take the retaining pins **63** and insert them in the bushing from outside to inside until you hear them click into place.
 8. Close the device (see "9.3 Closing the device" on page 16).
 9. Perform a function check (see "7.2 Performing the function check" on page 10).

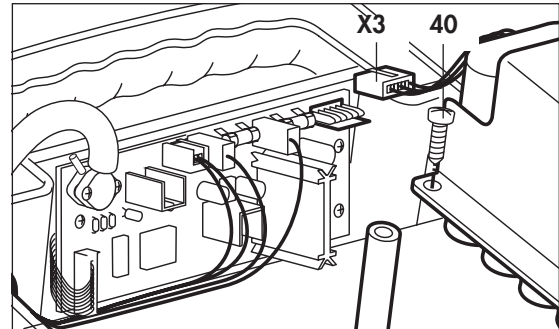


9.5 Replacing membrane keyboard

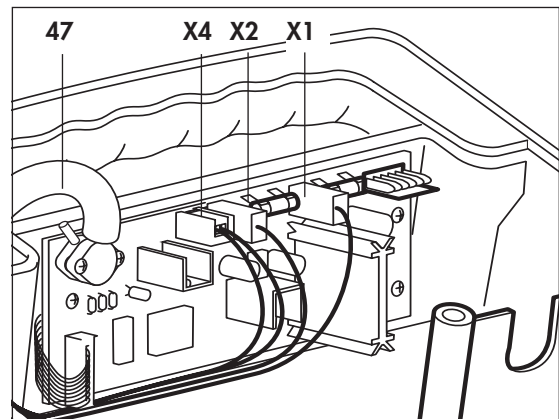
Tools and equipment required:

- Phillips screwdriver size 1;
- 7mm open-end wrench.

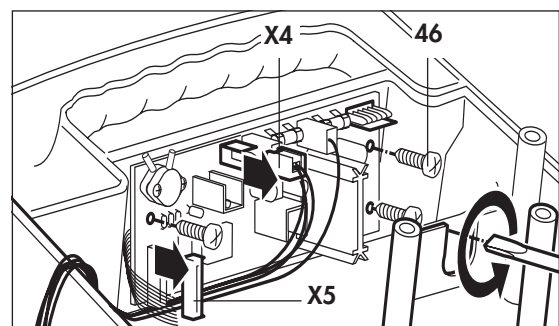
1. Open the device (see "9.2 Opening the device" on page 15).
2. Carefully detach electrical power pack connector **X3** from the circuit board.
3. Unscrew power pack holder (4 cross-head screws **40**).
4. Remove power pack.



5. Carefully detach electrical connectors **X1** and **X2** of internal wiring harness from circuit board.
6. Carefully detach electrical connector **X4** to motor from circuit board.
7. Carefully detach pressure measurement tube **47** from pressure sensor on circuit board.



8. Carefully open up cable grip of ribbon cable connector **X5**. Then carefully remove ribbon cable (do not touch the ribbon cable contacts with your fingers, as this can cause oxidation.)
9. Unscrew 4 retaining screws **46** from the circuit board. Remove the circuit board.
10. Detach the front keyboard **4** from inside through the front of the case, by pressing the membrane keyboard out upwards and carefully pulling it off.

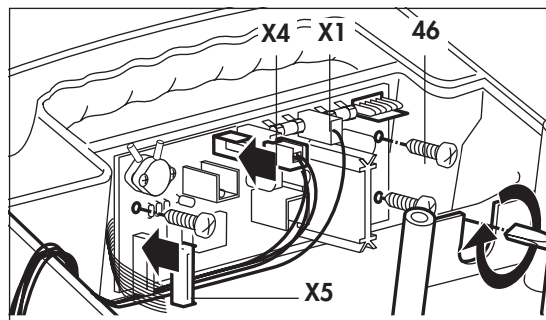


11. Clean the old adhesive area until no adhesive residues are left.
12. Take the new membrane keyboard and remove the protective layer from the adhesive surface. Run the ribbon cable through the opening in the case front.

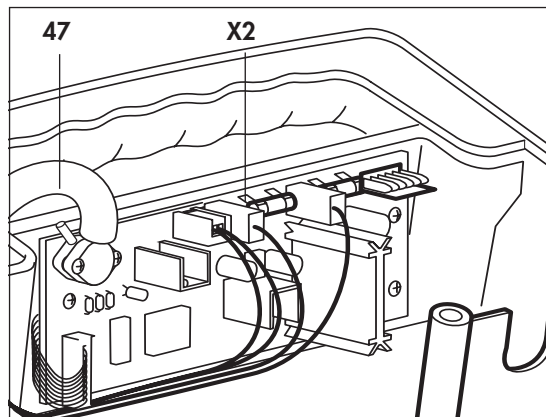
Take care when inserting the ribbon cable through the opening in the housing; it must be properly routed without any kinks.

13. Stick the new membrane keyboard in the correct position on the case.

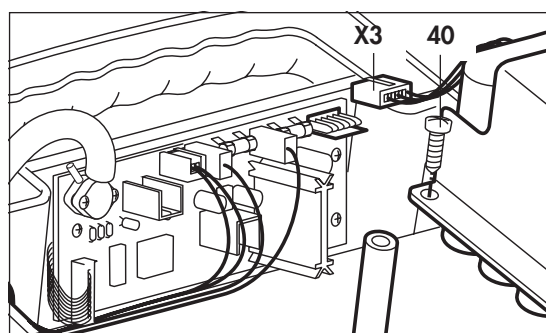
14. Pull the protective film off the new membrane keyboard.
15. Insert the circuit board again and screw it up firmly.
16. Carefully restore electrical connections **X1**, **X4** and **X5**.



17. Carefully attach electrical connector **X2**.
18. Fit tube **47** onto the board again.



19. Insert the power pack again and screw it firmly in place.
20. Make the electrical connection **X3** to the power pack.



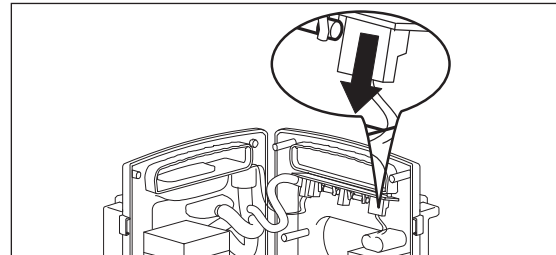
21. Close the device (see "9.3 Closing the device" on page 16).
22. Perform initialization (see "9.7 Initializing the power pack" on page 20).
23. Perform a function check (see "7.2 Performing the function check" on page 10).

9.6 Changing the power pack

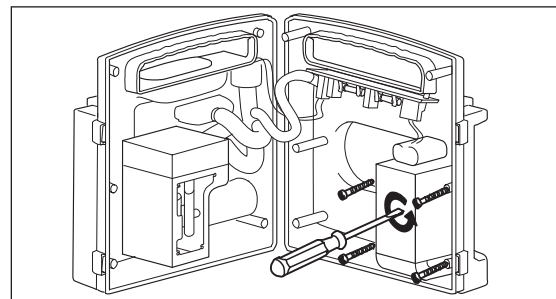
The ACCUVAC Rescue is fitted with a high-grade nickel-cadmium power pack.

Tools and equipment required:

- Phillips screwdriver size 2.
1. Open the device (see "9.2 Opening the device" on page 15).
 2. Carefully disconnect the power pack connector **X3** from the circuit board.



3. Unscrew the power pack holder (4 cross-head screws).



4. Remove the faulty power pack **16**.

Help protect the environment!

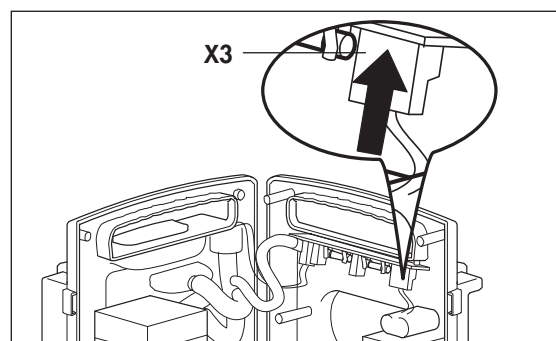
Don't throw the old power pack in the garbage can – take it to a local collection point for environmentfriendly disposal.

5. Wait half a minute before fitting the new power pack. This will allow the capacitors on the circuit board to discharge.
6. Fit the new power pack with its holder.
7. Carefully push power pack connector **X3** onto the circuit board until it snaps into place.
8. Close the device (see "9.3 Closing the device" on page 16).
9. Perform initialization (see "9.7 Initializing the power pack" on page 20).

Note:

The green 10% LED of the capacity indicator 3 continues to flash until the electronic control system is synchronized with the power pack. Although the ACCUVAC Rescue will function when the power pack is charged, the indicator will not show the charge status of the power pack unless the system is initialized.

10. Perform a function check (see "7.2 Performing the function check" on page 10).



9.7 Initializing the power pack

Initialization matches the capacity indicator **3** to the energy content of the power pack.

The power pack must be initialized:

- every time a new power pack is fitted;
- every time fuse F2 is changed;
- if the 10 % LED is flashing.

Perform initialization as follows:

1. Charge the ACCUVAC Rescue for about 5 minutes.
2. Disconnect the ACCUVAC Rescue from the external power supply.
3. Press the **O/I** button to switch on the ACCUVAC Rescue.
4. Press the following three buttons simultaneously: **-0.05 bar**, **-0.1 bar**, **-0.15 bar**.

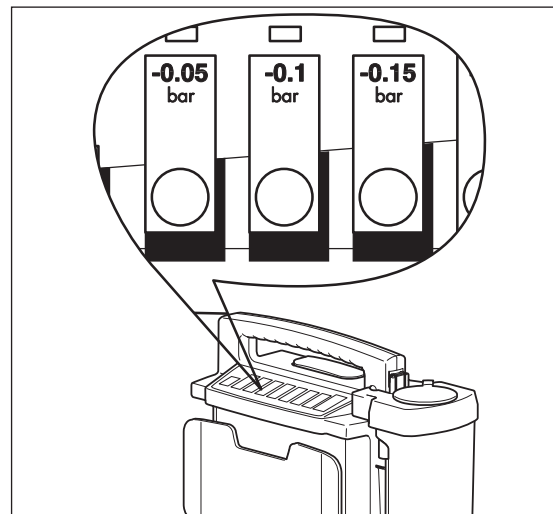
The power pack is now being initialized. All the LEDs in the capacity indicator strip are flashing.

5. Press the **-0.8 bar** button.

The pump now runs at the highest speed and the power pack discharges until it is completely empty without suffering any damage. Once the power pack is discharged, the pump stops automatically. With an empty power pack the initialization process takes about 5 minutes, with a full power pack up to 45 minutes.

6. Now connect the ACCUVAC Rescue to an external power supply in order to recharge it. The charging process takes about 2 hours.

If the pump ran for a long time when discharging because of substantial residual capacity in the power pack, this may have heated up the power pack. In this case charging will not start until the power pack has cooled down below 40 °C. Depending on residual capacity this may take up to 45 minutes.



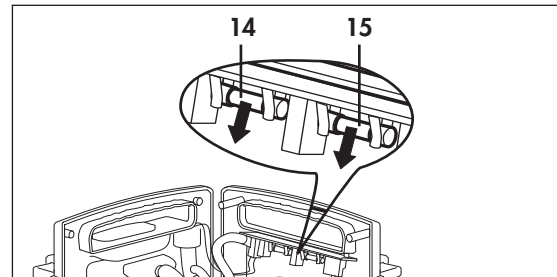
9.8 Changing fuse F1 or F2

Important

Never touch the circuit board, as this can damage the electronic system.

Tools and equipment required:

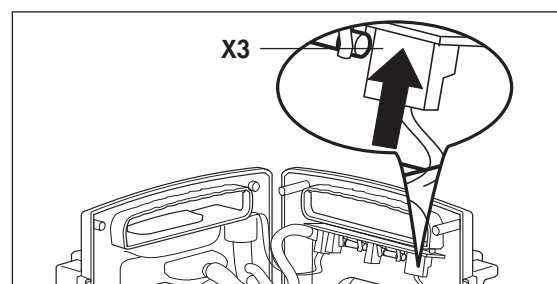
- Phillips screwdriver size 2.
1. Open the device (see "9.2 Opening the device" on page 15).
 2. Remove the faulty fuse **14/15**. The fuses are identified on the circuit board.
 3. Insert a new fuse. Always use approved fuses (see "13. Technical Data" on page 30).
 4. Close the device (see "9.3 Closing the device" on page 16).
 5. Perform initialization if you have removed fuse **15** (F2) from its holder (see "9.7 Initializing the power pack" on page 20).
 6. Perform a function check (see "7.2 Performing the function check" on page 10).



9.9 Checking connector between circuit board and power pack

Tools and equipment required:

- Phillips screwdriver size 2.
1. Open the device (see "9.2 Opening the device" on page 15).
 2. Check connector **X3**.
 3. Close the device (see "9.3 Closing the device" on page 16).
 4. Perform initialization (see "9.7 Initializing the power pack" on page 20).
 5. Perform a function check (see "7.2 Performing the function check" on page 10).



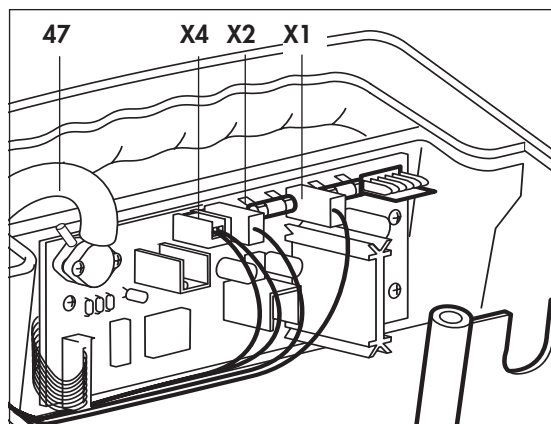
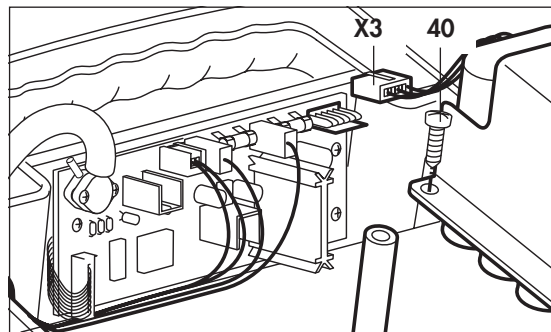
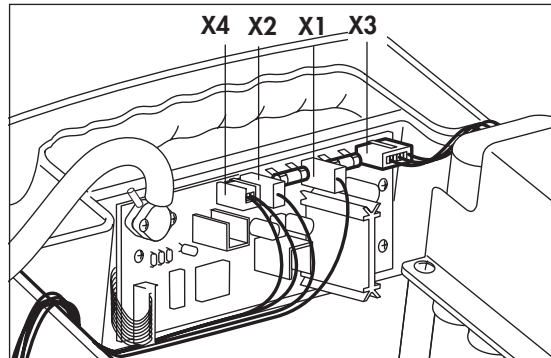
9.10 Fitting new circuit board WM 10680

Important!

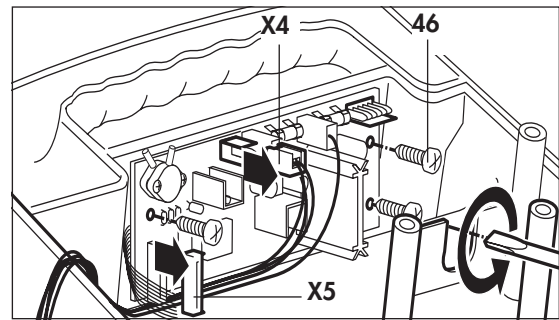
For this operation it is essential to use an ESD workplace because of the risk of damage to the circuit board by static electricity.

Tools and equipment required:

- Phillips screwdriver size 2.
1. Open the device (see "9.2 Opening the device" on page 15).
 2. Carefully detach electrical power pack connector **X3** from the circuit board.
 3. Unscrew power pack holder (4 cross-head screws **40**).
 4. Remove power pack.
 5. Carefully detach electrical connectors **X1** and **X2** of internal wiring harness from circuit board.
 6. Carefully detach electrical connector **X4** to motor from circuit board.
 7. Carefully detach pressure measurement tube **47** from pressure sensor on circuit board.



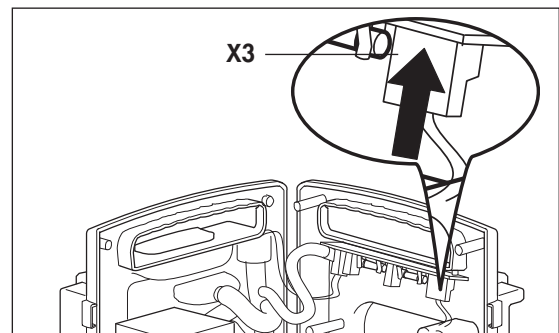
8. Carefully open up cable grip of ribbon cable connector **X5**. Then carefully remove ribbon cable (do not touch the ribbon cable contacts with your fingers, as this can cause oxidation.)
9. Unscrew 4 retaining screws **46** from the circuit board.



10. Insert the new circuit board in reverse order. Then route connecting cable so it cannot come into contact with the pump.

- **Attention!**
Do not connect electrical power pack connector **X3** yet.
- **Wait half a minute to allow the capacitors on the circuit board to discharge.**

11. Carefully connect electrical power pack connector **X3**.
12. Close the device (see "9.3 Closing the device" on page 16).



13. Perform initialization (see "9.7 Initializing the power pack" on page 20).

The green 10% LED of the capacity indicator continues flashing until the electronic control system has been synchronized with the power pack. Although the fully charged ACCUVAC Rescue can be used, the power pack charge status is not displayed.

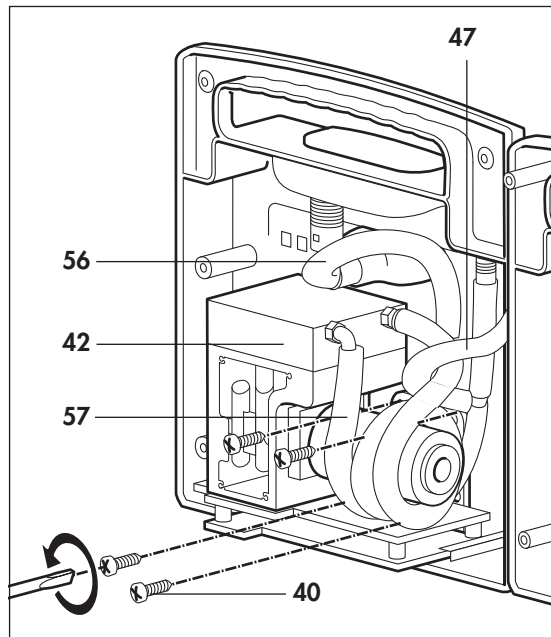
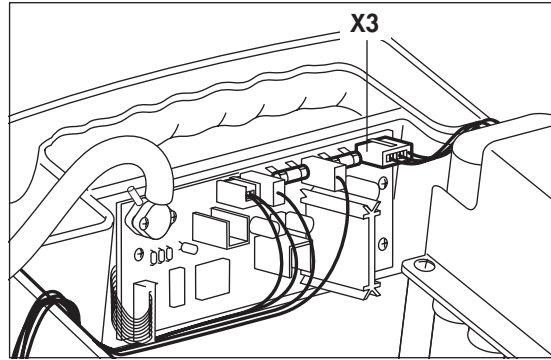
14. Perform a function check (see "7.2 Performing the function check" on page 10).

9.11 Fitting new pump

The pump is only available as a complete replacement unit.

Tools and equipment required:

- Phillips screwdriver size 2.
1. Open the device (see "9.2 Opening the device" on page 15).
 2. Carefully detach electrical power pack connector **X3** from the circuit board.
 3. Open the cable clamp and use a diagonal cutter to cut through the cable binder. Then remove the motor cable.
 4. Remove the O-ring.
 5. Unscrew 4 screws **40** from support.
 6. Detach silicone fabric tube **57** from inlet port of pump.
 7. Unwind the rolled-up silicone fabric tube **56** from the motor.
 8. Detach tube **56** from faulty vacuum pump, attach it to outlet of new pump **42** and wind it round motor.
 9. Finish fitting the new vacuum pump in reverse order. To prevent damage, pressure measurement tube **47** must be routed between the inlet and outlet tubes of the pump.
 10. Close the device (see "9.3 Closing the device" on page 16).
 11. Perform a function check (see "7.2 Performing the function check" on page 10).



9.12 Changing fuse in vehicle plug

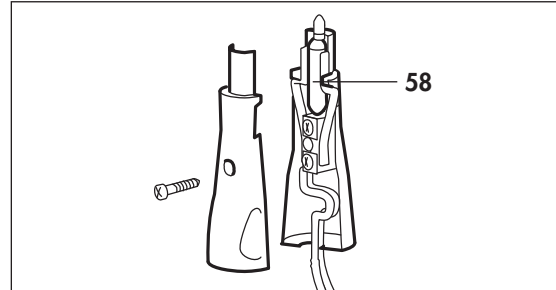
Tools and equipment required:

- Phillips screwdriver size 2.

1. Use a screwdriver to open the vehicle plug.

Note: The central contact of the plug is the plus pole. The plus lead of the cable has either a square cross-section or colored markings. The outer contact of the plug is the minus pole. The minus lead of the cable is round and black.

2. Change the faulty fuse **58**. Use only approved fuses (see "13. Technical Data" on page 30).
3. Screw the vehicle plug together again.
4. Perform a function check (see "7.2 Performing the function check" on page 10).

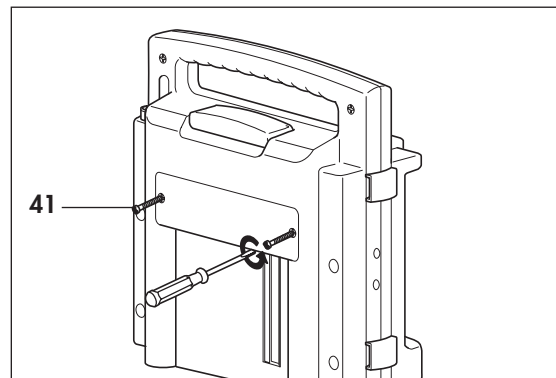


9.13 Changing the muffler

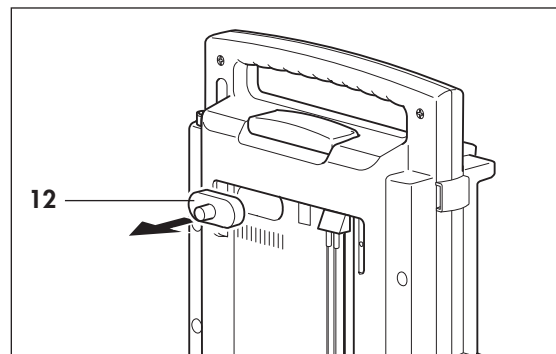
Tools and equipment required:

- Phillips screwdriver size 2.

1. Use a screwdriver to unscrew the cover plate (2 cross-head screws **41**).

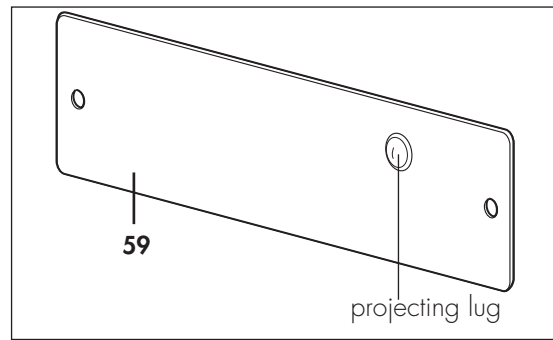


2. Remove the old muffler **12**.

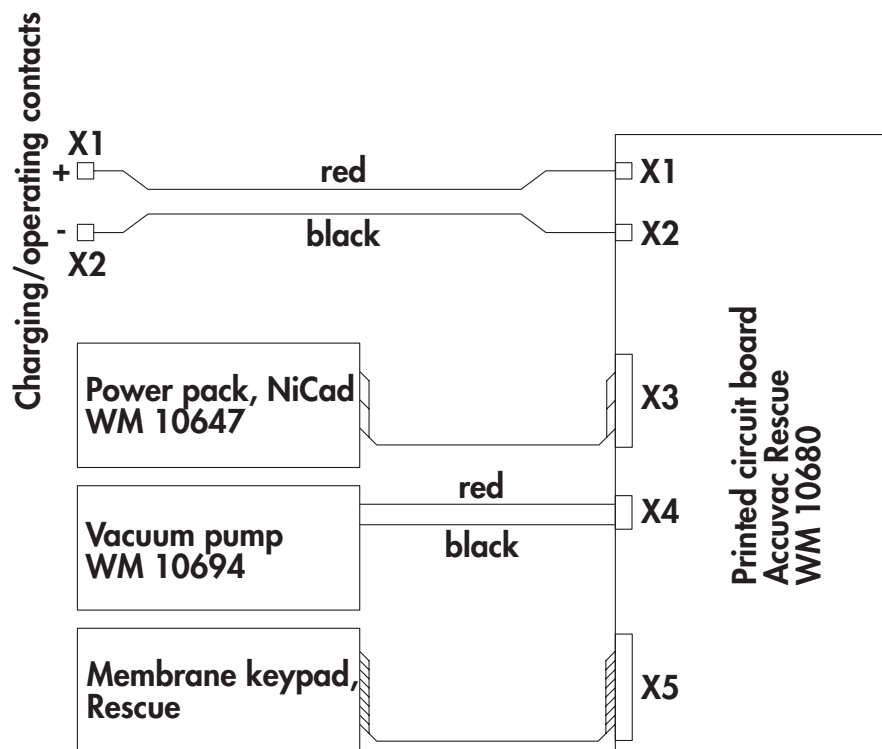


3. Insert a new muffler **12**.

4. Refit the cover plate **59**.
 Note that there is a projecting lug on the back of the cover plate. Be sure to fit the cover plate so that this lug locates the muffler in position.
5. Perform a function check (see "7.2 Performing the function check" on page 10).



9.14 Electrical circuit diagram



10. Spare Parts

10.1 Spare parts list

Note:

The item numbers in the following table are identical with the numbers used in these Service and Repair Instructions and the Operating Instructions.

Item No.	Spare Part	Order No.
4	Membrane keyboard ACCUVAC Rescue	WM 10645
6	Re-usable canister, complete	WM 10630
	consisting of:	
19	– Filter cover	WM 10632
20	– Bacteria filter	WM 10675
22	– Bracing clip	WM 10641
23	– Secretion cover	WM 10636
24	– Ball	WM 10643
25	– Sealing ring	WM 10635
26	– Nozzle with fingertip	WM 10666
27	– Aspiration tube	WM 10662
28	– Collection canister 900 ml	WM 10631
8	Tube holder plate, red	WM 10623
12	Muffler	WM 10665
14	Fuse, external power supply (F1)	WM 2692
15	Fuse, power pack (F2)	WM 2692
16	NiCad power pack	WM 10647
	Holder set for re-usable canister	WM 15271
	consisting of:	
29	– Holder	WM 10640
	– Fixing elements	WM 53053
30	Set, disposable bag container, complete	WM 15268
	consisting of:	
	– disposable bag container, complete	WM 10730
36	– Collection canister	WM 10731
33	– Disposable bag	WM 10732
31	– Aspiration tube with nozzle and fingertip	WM 10733
35	– T-piece	WM 10738
34	– Vacuum tube	WM 10740
37	Holder set	WM 15172
	consisting of:	
	– Holder	WM 10735
	– Fixing elements	WM 51091
38	Front case element, Rescue, assembled, reconditioned*	WM 10606
39	Rear case element, Rescue, assembled, reconditioned*	WM 10607
40	Oval head screw KB 40x14	WM 23158
41	Countersunk screw KB 40x12	WM 58360
42	Vacuum pump, complete (new)*	WM 10694

Item No.	Spare Part	Order No.
43	Vacuum pump, complete (exchange unit)*	WM 10605
44	PCB Rescue	WM 10680
45	PCB Rescue, exchange unit	WM 10604
46	Oval head screw M3x14	WM 53032
47	Pressure measurement tube consisting of: – Tube, silicone fabric 3x3; 220 mm long – Tube nozzle	WM 10661 WM 10761 WM 10658
48	Washer DIN 125	WM 50235
49	Spring washer DIN 127	WM 50350
50	Internal wiring harness, Rescue	WM 10686
51	Oval head screw for clip, KB 35x8	WM 58350
52	Washer 4.3 DIN 125	WM 50240
53	Tube, silicone 7x2.5; 690 mm long	WM 10668
54	Tube system, internal consisting of:	WM 10660
55	– T reducer 8-4-8	WM 10663
56	– Tube, silicone fabric 8x3.5; 210 mm long	WM 10669
57	– Tube, silicone fabric 8x3.5; 70 mm long	WM 10664
58	Fuse, vehicle plug	WM 10673
59	Cover plate, red	WM 10625
60	Round cord 930 mm long	WM 10612
61	Cable tie	WM 4668
5	Set release catch, red consisting of:	WM 15396
62	– Release catch, red *	WM 10624
63	– Retaining pin	WM 10697
64	– O-ring 2.9 x 1.78	WM 1145/80
65	– Snap lock	WM 10627
	Tube, silicone fabric 6x3.5; 50 mm long	WM 10766
	Tube, silicone fabric 6x3.5; 200 mm long	WM 10765
	Operating instructions	WM 16136

* When ordering, please state type, appliance no. and year of manufacture

11. Tools and Test Equipment

Following is a list of tools and test equipment mentioned in these Service and Repair Instructions.

See the relevant chapter for details of the tools and test equipment needed in each case.

Special tools can be obtained from the manufacturer, Weinmann.

- Cross-head screwdriver, size 1
- Cross-head screwdriver, size 2
- Pliers
- Vacuum test pressure gage set WM 15294

12. Technical Changes

Technical change	From Device No.	Date
Reinforced release catch	2117	09.11.98
Software update Version 3.0	4500	22.08.00
New holder for release catch	6730	16.07.01
Case reinforced, use of washers discontinued	8105	20.11.01
Printed circuit board with radio suppression	9145	07.06.02
Vacuum pump without side walls	10048	22.10.02
Appliance plate with e1 mark	13445	28.06.04

13. Technical Data

ACCUVAC Rescue	
Product category according to 93/42/EEC	II b
Dimensions WxHxD in mm	370x280x140
Weight	approx. 5.1 kg
Canister volume	900 ml
Suction capacity at 12 V with free flow	> 20 l/min
Max. vacuum at 12 V	0.8 bar (80 kPa)
Aspiration tube	diam. 10 mm, length 1300 mm
Hydrophobic bacteria filter	size rating 1 µm, water breakthrough pressure 0.3 bar
Motor output	50 W
Rated voltage	12 V
Maximum current consumption	3.5 A
Temperature range	
Operation	-18 °C to +40 °C
Charging	+ 5 °C to +40 °C
Storage	-40 °C to +70 °C
Electromagnetic compatibility:	
Radio interference suppression	EN60601-1-2
Radio interference resistance	EN 55011 IEC 1000-4 Parts 2-5 & 11
Classification according to EN 60601-1:	
Protection against electric shock:	class II; with charger: class I
Degree of protection against electric shock:	BF
Degree of protection against water:	IPX 1 (drip water)
Classification according to EN ISO 10079-1	high vacuum/high flow

ACCUVAC Rescue	
Norms complied with	EN 60601-1, EN ISO 10079-1, EN 1789
Vehicle plug fuse	8 A, DIN 72581, identification color white
Internal fuse F1 external power supply	4 A slow-acting, low breaking capacity G fuse links 5x20 mm, conforms to IEC 127
Internal fuse F2 power pack	4 A slow-acting, low breaking capacity G fuse links 5x20 mm, conforms to IEC 127
Power pack type	Nickel cadmium 2.8 Ah
Charging voltage	12.0 to 13.8 V===
Operating time after charging for 2 hours	45 min at maximum suction
Operating mode	S2 60 min
Service life of power pack	400 charge/discharge cycles in approx. 3 years
Materials	
Collection canister	APEC
Secretion cover	Silicone
Ball	PVDF
Filter cover	Silicone
Filter holder	APEC



From serial no. 13445/2004

(Subject to technical change without notice)

13.1 Safe distances

The ACCUVAC Rescue is intended for operation in an electromagnetic environment in which high-frequency interference variables are controlled. The customer or user of the ACCUVAC Rescue can help avoid electromagnetic interference by maintaining the minimum safe distance between portable and mobile high-frequency telecommunication devices (transmitters) and the ACCUVAC Rescue depending on the rated output of the transmitter as given below.

Recommended safe distances between portable or mobile HF telecommunication devices (e.g. mobile phones) and the ACCUVAC Rescue			
Rated output of HF device in W	Safe distance depending on transmission frequency in m		
	150 kHz - 80 MHz $d=(3,5/\sqrt{P}) \times \sqrt{P}$	80 MHz - 800 MHz $d=(3,5/\sqrt{P}) \times \sqrt{P}$	800 MHz - 2,5 GHz $d=(3,5/\sqrt{P}) \times \sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.37	0.37	0.74
1	1.17	1.17	2.33
10	3.69	3.69	7.38
100	11.67	11.67	23.33

For decades Weinmann has been developing, producing and marketing medical devices for markets around the world. In cooperation with our partners we design economic health systems for diagnosis and therapy in Sleep Medicine, Home Mechanical Ventilation, Oxygen Medicine and Emergency Medicine.

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