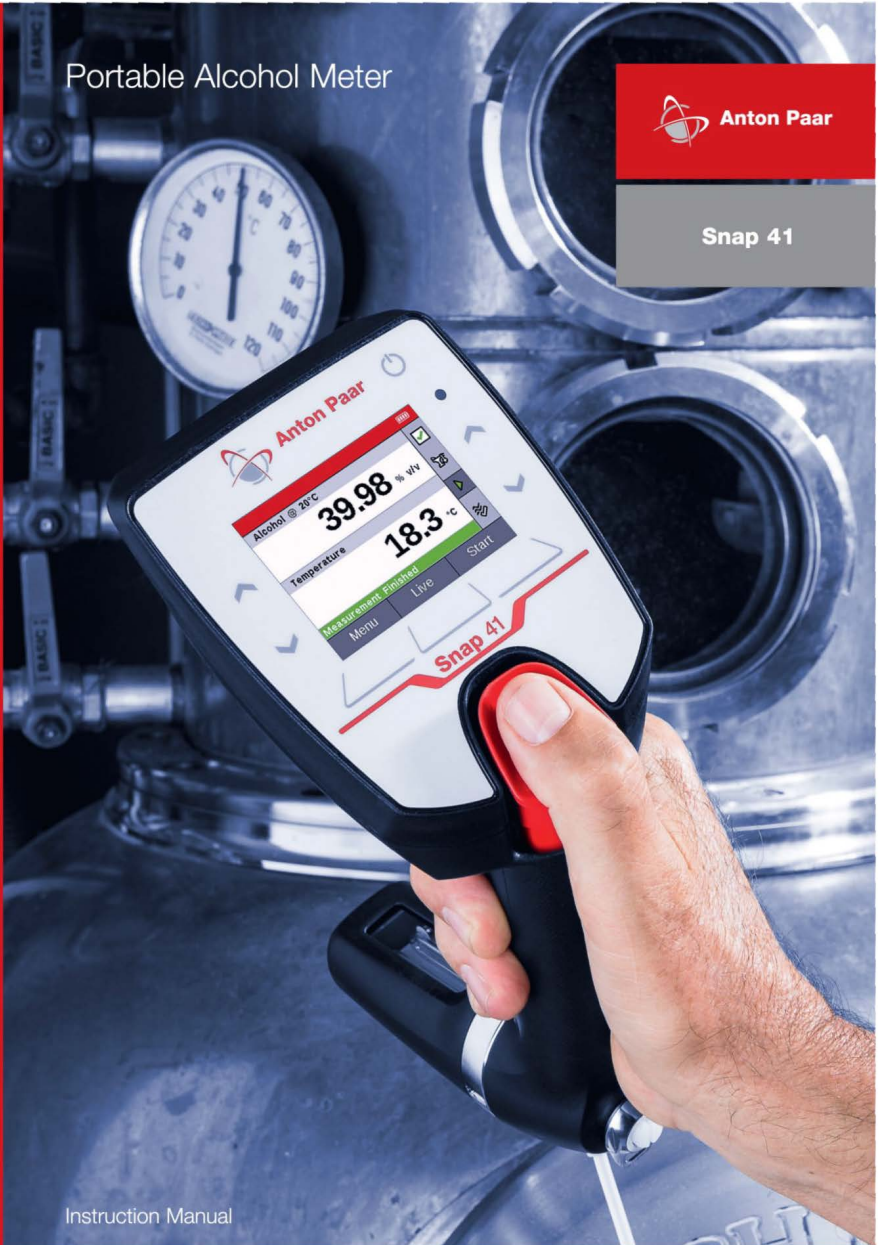


Portable Alcohol Meter



Snap 41



Instruction Manual

Instruction Manual and Safety Information

Snap 41

Portable Alcohol Meter

instrument software version: from 1.0
(Original Instructions)

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Further information

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1 Safety Instructions

- Read the documentation before using the instrument.
- Follow all hints and instructions in the documentation to ensure the correct use and safe functioning of the instrument.
- The documentation is a part of the product. Keep it for the complete working life of the product and make it easily accessible for all persons involved with the product. If you receive any additions or revisions to the documentation from Anton Paar GmbH, these must be treated as part of the documentation.

1.1 Liability

- This document does not claim to address all safety issues associated with the use of the instrument and samples. It is your responsibility to establish health and safety practices and to determine the applicability of regulatory limitations.
- Anton Paar GmbH only warrants the proper functioning of the instrument if no modifications are made to mechanics, electronics, or software.
- Use the instrument only for the purpose described in the documentation. Anton Paar GmbH is not liable for damages caused by incorrect use of the instrument.
- The results delivered by the instrument depend not only on the correct functioning of the instrument, but also on various other factors. We therefore recommend that you have the results checked (e.g. plausibility tested) by skilled persons before consequential actions are taken based on the results.

1.2 Installation and Use

- The installation procedure shall be carried out only by authorized persons who are familiar with the installation instructions.
- Use only accessories and consumables supplied or approved by Anton Paar GmbH.

- Ensure that all operators have been trained beforehand to use the instrument safely and correctly.
- Ensure that the instrument is sufficiently supervised during operation.
- In case of damage or malfunction, do not continue operating the instrument. Do not operate the instrument under conditions which could result in damage to goods or injuries or loss of life.
- Do not expose the instrument to temperatures below 0 °C (32 °F) when the measuring cell contains water. Freezing water will cause rupture of the measuring cell.
- The instrument is not insulated against high voltages. Measuring samples under high voltage (e.g. in energized battery banks) bears the risk of an electric shock. Define appropriate testing procedures and safety measures to protect yourself from any electric shock.

Operation in areas with risk of explosion

- The instrument is **not** explosion-proof and therefore must not be operated in areas with risk of explosion.

General precautions

- Observe and adhere to your national safety regulations regarding the handling of all substances associated with your measurements (e.g. use safety goggles, gloves, respiratory protection, etc.).
- Before a measurement check the wetted parts of the instrument for chemical resistance to the samples and cleaning agents used.

Precautions for flammable samples and cleaning agents

- Keep potential sources of ignition, like sparks or open flames, at a safe distance from the instrument.
- Store only the minimum required amount of sample, cleaning agents, and other flammable materials near the instrument.
- Do not spill sample/cleaning agents or leave their containers uncovered. Immediately remove spilled sample/cleaning agents.
- Ensure that the setup location is sufficiently ventilated. The environment of the instrument must be kept free from flammable gases and vapors.
- Provide fire-extinguishing equipment.

Battery Handling

- Never open the battery compartment in hazardous areas. Exchange the batteries only outside hazardous areas.

1.3 Service and Repairs

- Service and repair procedures may be carried out only by authorized persons or by Anton Paar GmbH.

1.4 Disposal

- Concerning the disposal of the instrument, observe the legal requirements in your country.

1.5 Conventions for Safety Messages

The following conventions for safety messages are used in this document:



WARNING

Description of risk

Warning indicates a hazardous situation which, if not avoided, **could** result in death or serious injury.



CAUTION

Description of risk

Caution indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Description of risk

Notice indicates a situation which, if not avoided, could result in damage to property.

2 Snap 41 – An Overview

Snap 41 is a portable alcohol meter for the determination of the alcohol concentration in distilled spirits that can be considered to be binary mixtures of ethanol and water. The concentration determination is based on density measurement by the oscillating U-tube method.

Quick on-site measurements

The robust instrument measures samples directly out of the sample container – without the necessity to pour the sample into a measuring cylinder. After pressing down the lever of the pump, the tube is immersed directly into the storage vessel to suck up 2 mL of sample. Within seconds the instrument displays the alcohol concentration with an accuracy of 0.2 % v/v.

Owing to the compact design, it is easy to perform measurements of samples that are difficult to access. A TFT display ensures clear visibility of results, even in dark surroundings. At the same time the backlight of the oscillator enables you to observe the filling process in detail.

Snap 41 is operated via keys on the front.

Samples are filled into the measuring cell using the built-in pipette-style pump or a syringe.

One instrument for distilled spirits of all strengths

Snap 41 covers a measuring range from 0–100 % v/v (0–200 °Proof), and therefore measures distilled spirits of all strengths – be it pure distilled spirits, samples during the dilution of pure distilled spirit to drinking strength, or a check of the final product.

Automatic temperature compensation

Snap 41 measures sample temperatures from 5 °C to 30 °C, and automatically converts the measured result to compensate for the deviation from the required reference temperature (20 °C or 15 °C for % v/v alcohol, 60 °F for °Proof).

2.1 Measuring Principle

Definition of density

The density (ρ) of a sample is defined as its mass (m) divided by its volume (V):

$$\rho = \frac{m}{V}$$

As the volume changes with temperature, density is a temperature-dependent measuring unit.

The oscillating U-tube method

The sample is introduced into a U-shaped borosilicate glass tube that is being excited to vibrate at its characteristic frequency. The characteristic frequency changes depending on the density of the sample. With the determination of the characteristic frequency, the density of the sample can be calculated.

Due to the temperature dependency of the density value, the temperature of the sample has to be determined precisely and simultaneously with the density value. The sample temperature should be close to ambient temperature and the instrument's temperature in order to keep the temperature influence on the measured result to a minimum.

The density and temperature values are the basis for the calculation of the alcohol content, which is temperature compensated to correlate with a certain reference temperature.

Concentration measurement

In binary mixtures, the density of the mixture is a function of its composition. Thus, with the aid of density/concentration tables, the density value of a binary mixture can be used to calculate its composition.

This procedure is also applicable for so-called quasi-binary mixtures. These mixtures contain two major components and some additional ones in very small concentrations compared to the two main components.

Many decarbonated soft drinks, for example, can be considered to be quasi-binary mixtures of sugar and water because the concentrations of flavors and acids are very small compared to those of sugar and water. Hence, the sugar concentration can be determined with a density meter.

The same holds for the determination of the alcohol concentration in distilled spirits, which can be considered to be quasi-binary mixtures of ethanol and water.

In contrast, all kinds of liqueurs have to be considered as ternary solutions of water, ethanol, and sugar. They are typically produced by mixing distilled spirits with fruit juices, herbs, dairy products etc., and adding sugar. Therefore, the determination of the true alcohol concentration based on density measurement is not possible for liqueurs.

3 Checking the Supplied Parts

Snap 41 has been tested and packed carefully before shipment. However, damage may occur during transportation.

1. Keep the packaging material (box, foam pieces, transport protection) for possible returns or for questions from the transportation or the insurance company.
2. To check the delivery for completeness, compare the supplied parts to those listed in table 1.
3. If a part is missing, contact your local Anton Paar representative.
4. If a part is damaged, contact the transportation company and your local Anton Paar representative.

Table 1: Supplied parts


	Qty.	Article description	Mat. no.
	1	Snap 41 Portable Alcohol Meter	183054

Table 1: Supplied parts (cont.)

	Qty.	Article description	Mat. no.
	1	Pump lever with lock function	165216
	1	Rubber housing measuring cell	165214
	1	Instruction manual English	185360
	1	Filling tube 180 mm	172214
	1	Adapter Luer 1/4" UNF	172211
	1	Syringes 2 mL Luer (10 pcs)	58802
	1	Allen key 3 mm DIN 911	58264

Table 2: Optional accessories and consumables

Article description	Mat. no.
Rubber housing operating panel	177115
Screw plug ¼" UNF	172246
Filling tube 600 mm	178843
Spare wristband for portable instruments	92477
Set carrying strap DMA 35/Snap	177301
Bluetooth USB adapter	99180
Carrying case DMA 35/Snap 41	177345
Alkaline battery 1.5 V LR06 mignon AA	82610
Density standard ultra-pure water 5x10 mL	96044
Wall bracket for DMA 35, DMA 35 Ampere, DMA 35 Ex / Ex Petrol	244859

4 View of Snap 41



Fig. 1: Front view of the instrument

- | | |
|-----------------|--------------------|
| 1 Arrow keys | 5 Filling tube |
| 2 Function keys | 6 Measuring cell |
| 3 Filling pump | 7 Power ON/OFF key |
| 4 Screw plug | 8 LC display |

Keys on the front



	Power ON/OFF key	to switch the instrument on and off
	Arrow keys	to navigate in the quick access area, in menus, or in selection/character lists
	Function keys	to activate a key function displayed directly above



Fig. 2: Rear view of the instrument

- 1 Type plate with serial number*
- 2 Screw of the battery compartment*

5 Putting Snap 41 into Operation

5.1 Connecting the Filling Tube

Screw in the filling tube by hand until some resistance against further turning can be felt. Tighten with your fingers only, do not use any tools.





Fig. 3: Connecting the filling tube

5.2 Mounting the Syringe Adapter

For some applications, filling with a syringe may be more convenient. To do so, mount the syringe adapter.

1. Remove the screw plug (see fig. 1).
2. Screw in the adapter Luer ¼" UNF by hand until some resistance against further turning can be felt. Tighten with your fingers only, do not use any tools.

5.3 Switching the Instrument On/Off

- To switch Snap 41 on, tap and hold the  key until the display lights up.
- To switch Snap 41 off, tap and hold the  key until the instrument is switched off.

TIP: For proper operation, cover the entire key area with your finger.

The instrument switches itself off after 5 minutes when idle and not moved.

6 Operating the Instrument

6.1 Main Screen

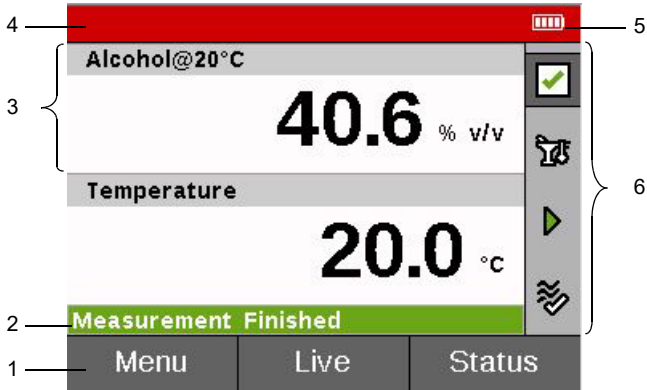




Fig. 4: Example main screen

- 1 Key functions
- 2 Status bar
- 3 Output field
- 4 Header
- 5 Battery charge status symbol
- 6 Quick access area

Symbols in the header

Symbol	Description
	The battery charge status symbol informs you about the battery charge status.
	The Bluetooth symbol shows in the header of the main screen when data are sent via Bluetooth (software update).

Output fields

The alcohol content of the sample and the measuring temperature are displayed on the main screen, each in an output field.

Status bar

The status bar shows the status of the instrument or a measurement. If applicable, a progress bar will show the progress of activities.

6.2 Key Functions

The key functions correspond to the function keys below/above the display (the assignment of keys adapts to the active selection). The following key functions are available:

Function	Description
Back	Leaves the menu and goes to the next higher menu level.
Cancel	Aborts an operation.
Edit	Switches into editing mode allowing you to change the current selection.
Live	“Unfreezes” the last measuring result and returns to showing continuous live readings.
Menu	Opens the main menu.
No	Rejects a proposition.
OK	Confirms a selection, or finishes a procedure.
Save	Saves adjustment data.
Start	Starts a procedure.
Yes	Accepts a proposition.







On the main screen, the right function key can assume the following functions according to the icon selected in the quick access area:

Function	Description
Check	Quick access to the water check.
Sample	Quick access to the selection of the measuring unit to be displayed.
Start	Quick access to start a measurement.
Status	Quick access to the measurement status and any associated warning or error message.

6.3 Quick Access Area

Use the arrow keys to select a quick access function. Activate the function with the right function key.

The following quick access functions are available:

Icon	Function
	“Status” function Use it to check the measurement status. The status indicator can assume 3 states: <ul style="list-style-type: none">• green check mark: status OK
	<ul style="list-style-type: none">• yellow symbol with exclamation mark: there is a warning message
	<ul style="list-style-type: none">• red symbol with lightning: there is an error message
	“Sample” function Use it to select the measuring unit for the next measurement.
	“Start” function Use it to start a measurement.
	“Check” function Use it to initiate a water check.

6.4 Menu Navigation

- Use the **function keys** to switch menus and to trigger selection-specific activities.
- Use the **arrow keys** to navigate within menus and to select an item.

With longer screen content, a black scroll bar will show on the right side of the scrollable area. Use the arrow keys to scroll through the content.

6.5 Selecting from a List

After you have switched into editing mode, you see a selection list folded out:

1. Use the arrow keys to select your choice.
2. Tap <OK> to confirm the selected value.
Tap <Cancel> to abort selection.

6.6 Operation by Gestures

You can start or abort a measurement by gestures instead of key operation. To be able to do so, enable gesture control in the setup menu (see section 7.4).

To start a measurement

- Turn the instrument to the right as shown in fig. 5, and hold the position until the measurement starts.



Fig. 5: Instrument turned to the right

To abort a measurement

1. Turn the instrument to the left as shown in fig. 6, and hold the position until a confirmation message appears.



Fig. 6: Instrument turned to the left

2. Confirm:

- To confirm canceling, turn the instrument to the left again as shown in fig. 6, and hold the position until the measurement has stopped.
- To continue with the measurement, turn the instrument to the right as shown in fig. 5.

7 Instrument Settings

7.1 Setting the Language

1. Tap <Menu> and select *Setup > Language*.
2. Tap <Edit>.
3. Select the preferred language:
 - English
 - Deutsch /Japanese / Chinese
4. Tap <Back> repeatedly to return to the main screen.

7.2 Display Settings

In this menu you can activate/deactivate the automatic display rotation. Furthermore, you can set the display brightness as well as the time, after which the illumination of the display and the measuring cell will be automatically dimmed.

To activate/deactivate the automatic display rotation

1. Tap <Menu> and select *Setup > Display Settings*.
2. Select "Display Rotation" and tap <Edit>.
3. Select "On" or "Off" from the selection list.
4. Tap <Back> repeatedly to return to the main screen.

To set the display brightness

1. Tap <Menu> and select *Setup > Display Settings*.
2. Select "Display Brightness" and tap <Edit>.
3. Select one of three brightness options:
 - High
 - Mid
 - Low
4. Tap <Back> repeatedly to return to the main screen.

To set the display dimming

1. Tap <Menu> and select *Setup > Display Settings*.
2. Select “Display Dimming” and tap <Edit>.
3. Select one of three dimming options:
 - 30 Seconds
 - 60 Seconds
 - Off (no dimming)
4. Tap <Back> repeatedly to return to the main screen.

7.3 Sound Settings

When sound is enabled, the instrument beeps whenever a key is tapped.

1. Tap <Menu> and select *Setup > Sound*.
2. Tap <Edit>.
3. Select “On” or “Off” from the selection list.
4. Tap <Back> repeatedly to return to the main screen.

7.4 Enabling/Disabling Gesture Control


When gesture control is enabled, you can control certain operating steps by specific movements of the instrument in your hand.

1. Tap <Menu> and select *Setup > Gesture Control*.
2. Tap <Edit>.
3. Select “On” or “Off” from the selection list.
4. Tap <Back> repeatedly to return to the main screen.

8 Setting the Measuring Units

The two output fields on the main screen always show the two measurement parameters – the alcohol content of the sample and the measuring temperature. You can set one of three options for the corresponding measuring units:

- Alcohol % v/v @ 20 °C
- Alcohol % v/v @ 15 °C
- Alcohol °Proof @ 60 °F

1. In the quick access area, activate  (“Sample” function).
2. Tap <Edit>.
3. Select the preferred measuring unit.
4. Tap <Back> to return to the main screen.

9 Checks and Adjustments

Perform a water check every day before you start the measurements to verify that the instrument is measuring with adequate accuracy.


Perform a water adjustment if the water check advises you to do so.

IMPORTANT: *To obtain optimal results for the water check and the water adjustment, ensure that the water temperature is close to the ambient temperature.*

9.1 Performing a Water Check

Use freshly degassed ultra-pure water.

IMPORTANT: *To obtain optimal measuring results, perform the water check at a temperature close to the temperature during routine measurements.*

1. Clean the measuring cell as described in section 11.1.
2. Rinse the measuring cell until no residues of cleaning agent are present anymore.
3. In the quick access area, activate  (“Check” function).
4. Select “Water Check” and tap <OK>.
5. Follow the instructions on the screen.

6. After the procedure has finished, the check result is displayed.
If the deviation from the target value exceeds defined limits, you will see a recommendation to perform a water adjustment.
Tap <OK>.
7. Tap <Back> repeatedly to return to the main screen.

9.2 Performing a Water Adjustment

Use freshly degassed ultra-pure water.

IMPORTANT: *To obtain optimal measuring results, perform the water adjustment at a temperature close to the temperature during routine measurements.*

1. Clean the measuring cell as described in section 11.1.
2. Rinse the measuring cell until no residues of cleaning agent are present anymore.
3. Tap <Menu> and select *Setup > Water Adjustment*.
4. Fill in ultra-pure water with 5 °C to 30 °C (41 °F to 86 °F).
5. Tap <Start>.
6. After the procedure has finished, the density deviation from the previous adjustment is displayed.
7. To save the new adjustment, tap <Save>.
To refuse the adjustment, tap <Cancel>.

9.3 Reset to Factory Adjustment

If you want to undo all your adjustments, reset the instrument to factory adjustment.

1. Tap <Menu> and select *Setup > Factory Adjustment*.
2. Tap <Yes> to reset the instrument to factory adjustment.
The factory adjustment will be restored.
3. Tap <Back> repeatedly to return to the main screen.

10 Measuring



WARNING

Handling samples with temperatures of more than 70 °C bears the risk of heavy burns.

- Wear protective clothes or ensure alternative protection from burns when you handle high temperature samples.

NOTICE

Before you perform a measurement, make sure that the wetted parts are resistant to the sample (see appendix A.3).

IMPORTANT: *To obtain the highest possible accuracy, ensure that the sample temperature is close to the ambient temperature.*

IMPORTANT: *Samples containing dissolved CO₂ create bubbles in the measuring cell rendering the measurement results invalid. Degas the sample properly before measurement by:*

- *boiling it for several minutes,*
- *stirring it vigorously for 5 to 15 minutes until bubbling ceases, or*
- *putting it into an ultrasonic bath for approximately 5 to 10 minutes until bubbling ceases.*

10.1 Filling the Sample

You can fill the measuring cell using the filling tube or a syringe. When you fill samples with a syringe, place Snap 41 on your workbench.

TIP: *The pump lever with lock function (supplied with the instrument) is suited for any filling method. However, when you fill with the filling tube, the pump lever without lock function is more convenient. This is why Snap 41 comes with this pump lever already mounted.*

Take care that you fill without bubbles and that the measuring cell is entirely filled.

Possible reasons for bubbles in the measuring cell are:

- gas bubbles in the sample,
- a leaky connection of the filling tube, the pump, or the screw plug / syringe adapter.

10.1.1 Filling with the Filling Tube

1. Press down the pump lever as far as it will go (see fig. 7).
2. Sink the filling tube into the sample.
3. Slowly release the pump lever.

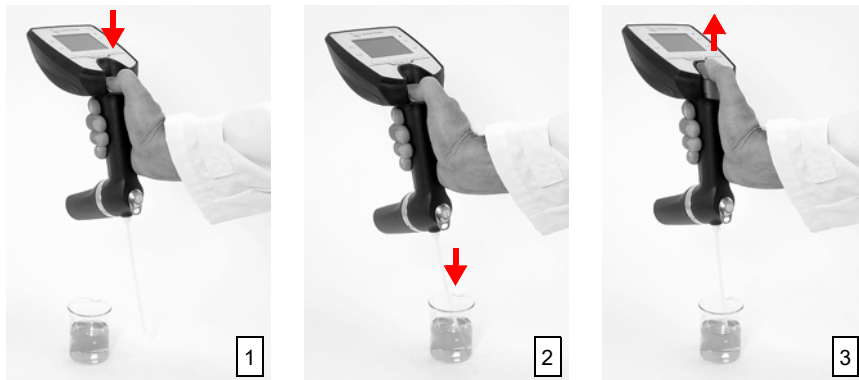


Fig. 7: Filling sample with the filling tube

10.1.2 Filling with a Syringe



WARNING

If you remove the pump while filling with a syringe, or if you remove the syringe directly after filling, the system will become leaky. Harmful liquids leaking from the instrument may cause injuries.

- Do not remove the pump during routine operation.
- Do not remove the syringe during measurement.

IMPORTANT: *The instrument comes with the pump lever without lock function already mounted. For filling with a syringe, replace this pump lever with the pump lever with lock function (supplied with the instrument) as described in section 11.6.*

1. Mount the syringe adapter (see section 5.2).
2. Lock the pump lever.

Push the pump lever down and forward simultaneously to minimize the dead space within the pump.

3. Lead the filling tube into a suitable waste vessel.
4. Fill the syringe with the sample.
5. Connect the syringe to the syringe adapter and fill the measuring cell (see fig. 8).



Fig. 8: Filling sample with a syringe

10.2 Performing a Measurement

1. Set the proper measuring units (see section 8).
2. Fill the sample (see section 10.1.1 for filling with the filling tube or section 10.1.2 for filling with a syringe).

The instrument shows continuous live readings of measuring values.

3. Start the measurement:
 - Activate ► (“Start” function) in the quick access area,
 - or use the corresponding gesture (see section 6.6) if gesture control is enabled.

You may abort a measurement by tapping <Cancel> or with the corresponding gesture if gesture control is enabled.

4. When the measurement is finished (indicated in the status bar), the measuring result will “freeze” on the display.

Tap <Live> to “unfreeze” the measuring result and return to showing continuous live readings.

11 Upkeep and Cleaning

NOTICE

- Make sure the solvent that you use for cleaning is suitable. For details on recommended cleaning agents, see section 11.1.4.
- Do not use any mechanical action for cleaning the measuring cell.

11.1 Cleaning the Measuring Cell

1. Empty the measuring cell:
 - a. Lead the filling tube into a suitable waste vessel.
 - b. *If you have filled with the filling tube:*
Press the pump lever to empty the measuring cell.
If you have filled with a syringe:
Unplug the syringe to let the sample drain off through the filling tube.
2. Fill the measuring cell with a suitable solvent.
3. Pump the solvent through the whole measuring system several times.
4. Empty the measuring cell.

TIP: *If the cleaning is done with a syringe, move the plunger of the syringe back and forth vigorously several times so that air bubbles add to the cleaning action.*

11.1.1 Cleaning Interval

The cleaning interval strongly depends on the application. For most samples, a displacement of the previous sample by the next one will suffice. In rare cases a cleaning after each measurement may be necessary.

Displacing the sample	For samples that are very similar to each other. <ul style="list-style-type: none">• To displace the sample, empty the measuring cell after the measurement and rinse it with the next sample before measuring that one.• Clean the instrument thoroughly at the end of your measurement series.
Cleaning after each measurement	For samples with different chemical properties that are immiscible and/or difficult to remove from the measuring cell.

11.1.2 Cleaning at the End of a Measurement Series

At the end of your measurement series, clean your Snap 41 thoroughly before you store it. You need not dry the measuring cell (provided that the cleaning liquid will not freeze in the measuring cell). You can leave deionized water in the measuring cell when you store the instrument for a day.

NOTICE

If you want to dry the measuring cell with compressed air, do not apply an overpressure of more than 1 bar (14.5 psi).

11.1.3 Cleaning Visible Residues in the Measuring Cell

Some samples may cause residues in the measuring cell after longer measurement periods. In this case, use an enzymatic lab cleaner to remove the residues from the cell. We recommend “Winepress Cleaner PM Membrane Presses”, cat. no. 409004, by Wigol® or “TM Desana” by Thonhauser. Refer to the instructions of the manufacturer concerning the concentration of the cleaning agent.

11.1.4 Cleaning Agent – Recommendations

For cleaning the instrument, use two cleaning liquids:

- Cleaning liquid 1 dissolves and removes sample residues in the measuring cell. It has to be a good solvent for all sample components.
- Cleaning liquid 2 removes cleaning liquid 1 (has to be a good solvent for cleaning liquid 1) and evaporates easily so that it accelerates drying of the cell. It must not attack the U-tube or leave any deposits, as drops of cleaning liquid 2 will remain in the U-tube.

TIP: *To prevent limestone deposits, never use tap water as the cleaning liquid 2. Use ultra-pure water instead.*

Strong alkaline lab cleaners (pH > 10.5) should only be applied briefly and at temperatures below 25 °C because strong bases attack the glass surface upon prolonged exposure and at high temperatures.

11.2 Cleaning the Filling Pump

Clean the filling pump regularly. Intervals depend on your application.

Dismounting the pump

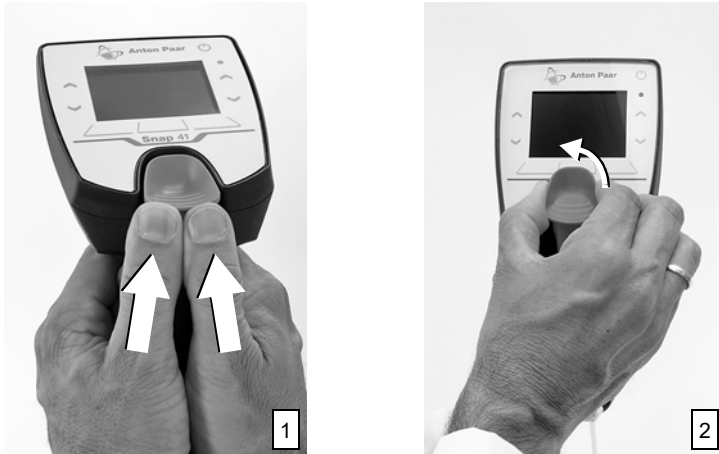


Fig. 9: Dismounting the pump

1. Push the pump lever upwards with both thumbs (see fig. 9).
2. Release the pump by a quarter turn counterclockwise.
3. Pull out the pump.

Cleaning the pump

1. Rinse the pump with running tap water.
2. Dry the pump with a lint-free cloth.

Remounting the pump

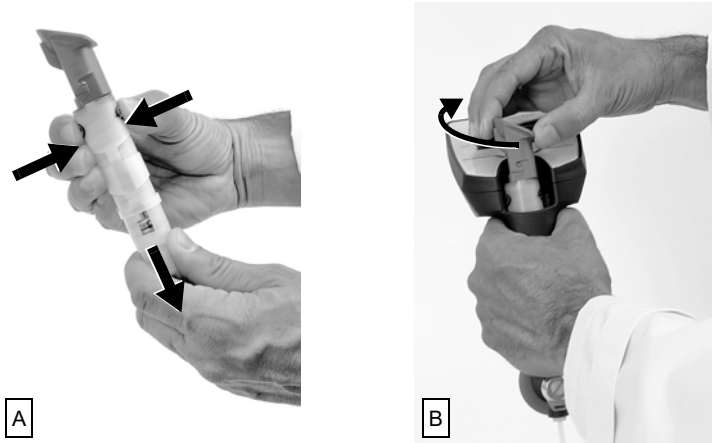


Fig. 10: **A:** Releasing a locked pump | **B:** Remounting the pump

1. If the pump shaft has been locked, release the lock (see fig. 10, A):
 - a. Press on the marks on the front and rear of the pump shaft.
 - b. Pull at the end of the pump shaft.
2. Insert the pump with the pump lever's top pointing to the left (see fig. 10, B).
3. Turn the pump clockwise until it engages.
The pump lever's top should point towards the instrument's display.
4. Push the pump lever down to fix the pump.

11.3 Cleaning the Housing and the Display

To clean the housing and the display, use a soft cloth dipped in ethanol or warm water. If necessary, you can use a mild solvent (pH < 10).

Remove the rubber housing of the measuring cell regularly to ensure that there is no liquid between the measuring cell and the rubber housing.

Cleaning the rubber housing of the measuring cell

1. Remove the rubber housing by pulling it off the cell cartridge.
2. Clean and dry the outside of the measuring cell and the entire rubber housing.
Ensure that all parts are completely dry.
3. Push the rubber housing back onto the measuring cell.

11.4 Storing the Instrument

Before you store the instrument for a longer period, clean the measuring cell as described in section 11.1.

For storage lasting less than one day, fill the measuring cell with ultra-pure water. If you have filled the liquid with the plastic syringe, leave the syringe in the adapter to keep the liquid from running out.

11.5 Exchanging the Batteries

Battery charge status

A symbol in the header of the main screen indicates the battery charge status (see fig. 4). When the batteries are almost empty, the icon starts to flash, and after a short time the instrument switches itself off.

To exchange the batteries



WARNING

When you open the battery compartment or exchange batteries, sparks may be generated, which can cause an explosion or fire in hazardous areas. Serious injuries are possible.

- Never open the battery compartment in hazardous areas.
- Exchange the batteries only outside hazardous areas.



Fig. 11: Removing the battery compartment

1. With the supplied Allen key, unscrew the screw fixing the battery compartment to the rear of the instrument's display (see fig. 11).
2. Lift off the battery compartment.

The screw stays loosely attached to the battery compartment so that it cannot get lost.

3. Remove the cover of the battery compartment by pressing on it and sliding it forward simultaneously (see fig. 12).



Fig. 12: Removing the cover of the battery compartment

4. Exchange the batteries for new ones.

NOTICE

- Observe the correct polarity when you insert the batteries, see the engraving in the battery compartment.
- Use only batteries of the same type and with the same charge level.
- Ensure that the interior of the instrument is perfectly dry. Any kind of liquid will cause damage to the electronic parts of the instrument.

5. Reassemble all parts in reverse order.

11.6 Exchanging the Pump Lever

1. Dismount the pump as described in section 11.2.
2. The pump lever sits on the two pivot pins. Pull it off carefully by hand. Do not use any tools.
3. Mount the new pump lever by shifting it in place.
4. Remount the pump as described in section 11.2.

11.7 Software Update

Your Anton Paar representative will inform you when a new software update for your Snap 41 is available. After you have received the update file, you can import it into the instrument via Bluetooth.

1. Save the update file (file extension “.afp”) on a Bluetooth-enabled PC.
2. On the PC, right-click the update file and select “Send it to Bluetooth”.
3. On Snap 41, tap <Menu> and select *Setup > Software Update*.
4. Tap <Start> to start the automatic update procedure.

11.8 System Information

The instrument holds system information comprising:

- Instrument type
- Serial number of the instrument
- Software version
- Hardware version
- Serial number of the density measuring cell
- Deviation of the adjustment (Adj. Alc. Dev.)
- Number of boot-ups performed
- Operating time

Accessing system information

1. Tap <Menu> and select *System Information*.
2. Tap <Back> repeatedly to return to the main screen.

12 Maintenance and Repair

12.1 Maintenance Performed by an Authorized Anton Paar Service Engineer

The instrument requires no periodical maintenance. However, optional services are available from your local Anton Paar representative upon request.

Following parts are generally excluded from the warranty (wear and tear parts)

- syringes
- hoses
- adapters, connectors, fittings
- pump diaphragms
- filters
- O-rings, seals, gaskets
- cables
- fuses
- batteries
- desiccants
- protection foils and covers
- filling tube

All parts damaged in consequence of a fall of the instrument are generally excluded from the warranty as well.

12.2 Repair Performed by an Authorized Anton Paar Representative

In case your instrument needs repair, contact your local Anton Paar representative, who will take care of the necessary steps. If your instrument needs to be returned, request an RMA (Return Material Authorization Number). It must not be sent without the RMA and the filled "Safety Declaration for Instrument Repairs". Please make sure it is cleaned before return.

TIP: *Contact your local Anton Paar representative from the Anton Paar website under "Contact" (<https://www.anton-paar.com>).*

IMPORTANT: *You must not return instruments that are contaminated by radioactive materials, infectious agents, or other harmful substances that cause health hazards.*

Appendix A: Technical Data

A.1: Specifications

Alcohol	
Measuring range	0 % v/v to 100 % v/v (0 °Proof to 200 °Proof)
Accuracy	0.2 % v/v ^a
Repeatability, s.d. ^b	0.1 % v/v
Reproducibility, s.d. ^b	0.15 % v/v
Resolution	0.01 % v/v
Temperature	
Measuring range	5 °C to 30 °C (41 °F to 86 °F)
Accuracy	0.2 °C (0.4 °F)
Repeatability, s.d. ^b	0.1 °C (0.2 °F)
Resolution	0.1 °C (0.1 °F)
Sample volume	2 mL
Sample temperature	max. 100 °C (212 °F)

a Valid water adjustment at ambient temperature required

b According to ISO 5725

A.2: Instrument Data and Operating Conditions

Ambient temperature	0 °C to +35 °C (+32 °F to +95 °F)
Air humidity	5–90 % relative humidity, non-condensing
Protection class	IP 54
Interfaces	Bluetooth® (for software update only)
Power supply	
Battery type	3x alkaline battery 1.5 V AA (LR6)
Battery life	> 100 hours
Dimensions (L x W x H)	245 mm x 103 mm x 126 mm (9.6 in x 4.1 in x 5 in)
Weight	630 g (22.2 oz)

A.3: Wetted Parts

The following materials are in contact with the samples and cleaning agents:

Material	Part
Borosilicate glass	measuring cell, filling pump
Kalrez	flat seal between connection block and measuring cell
PP (polypropylene)	housing
PTFE (polytetrafluoroethylene)	filling tube
PVDF (polyvinylidene fluoride)	connection block, screw plug, adapter Luer, pump lever
Viton Extreme	sealing of the filling pump

Appendix B: Declarations of Conformity

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EU Declaration of Conformity (original)



The Manufacturer **Anton Paar GmbH**, Anton-Paar-Str. 20, A-8054 Graz, Austria – Europe hereby declares that the product listed below

Product designation: **SNAP 41 PORTABLE ALCOHOL METER**
Model: **Snap 41**
Material number: **183054**

is in conformity with the relevant European Union harmonisation legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.

Electromagnetic Compatibility (2014/30/EU, OJ L 96/79 of 29.3.2014)

Applied standards:

- EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements

Low Voltage Directive (2014/35/EU, OJ L96/357 of 29.3.2014)

Additional applied standard:

- EN 61010-1:2010 +A1:2019 +A1:2019/AC:2019 Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements

Radio Equipment Directive (2014/53/EU, ABl. L153/62 vom 22.5.2014)

Applied standards:

- ETSI EN 300328 V2.1.1
- ETSI EN 301489-17 V2.2.1

RoHS Directive (2011/65/EU, OJ L 174/88 of 1.7.2011)

Place and date of issue: Graz, 2022-05-10

DocuSigned by:

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DI Steffen Riemer, MBA
Executive Director
Business Unit Measurement

DocuSigned by:

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DI Dr. Wolfgang Baumgartner
Head of Lab Density & Concentration
Business Unit Measurement

UK Declaration of Conformity



The Manufacturer **Anton Paar GmbH**, Anton-Paar-Str. 20, A-8054 Graz, Austria – Europe hereby declares that the product listed below

Product designation: **SNAP 41 PORTABLE ALCOHOL METER**
Model: **Snap 41**
Material number: **183054**

is in conformity with all the relevant UK legislation

Electrical Equipment (Safety) Regulations 2016, 2016 No. 1101

Electromagnetic Compatibility Regulations 2016, 2016 No. 1091

Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012, 2012 No. 3032

is in conformity with all the UK safety objectives of the

Radio Equipment Regulations 2017, 2017 No. 1206

complies with the designated standards:

- EN 61010-1:2010 +A1:2019 +A1:2019/AC:2019
- EN 61326-1:2013
- ETSI EN 300 328 V2.1.1
- ETSI EN 301 489-17 V2.2.1

This declaration of conformity is issued under the sole responsibility of the manufacturer.

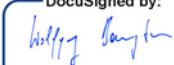
Importer: Anton Paar Ltd, Unit F, The Courtyard, Hatfield Rd, St Albans AL4 0LA, United Kingdom;

Place and date of issue: Graz, 2022-05-10

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Business Unit Measurement

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DI Dr. Wolfgang Baumgartner
Head of Lab Density & Concentration
Business Unit Measurement

Appendix C: Menu Tree

Setup	Water Adjustment
	Factory Adjustment
	Display Settings
	Gesture Control
	Sound
	Language
	Software Update
System Information	