KANOMAX
The Ultimate Measurements

AccuFIT 9000® PRO
Powered by KANOMAX

Operation Manual

Users are cautioned to read this manual carefully and understand the warnings described in this manual before operating the product.
Please keep this manual handy for future reference.

01001
25.03

Component List

■ Standard

ITEM	MODEL	QTY
Main Unit	-	1
AC Adapter（100-240V、12V 2A） Power Cord	3000-10	1
Zero Filter	3000-62	1
Alcohol Storage Container	3000-90	1
Storage Cap	3000-91	1
Alcohol Cartridge	3000-64	1
Spare Alcohol Wick	3000-65	2
Twin Tube (1m)	3000-72	1
USB memory	3000-75	1
USB cable	3000-20	1
Ethernet cable	3000-21	1
N95 Neck strap	3000-74	1
"AccuFIT9000 Series Software Download Site" sheet	-	1

■ Consumables

ITEM	MODEL	QTY
Zero Filter	3000-62	1
Alcohol Cartridge	3000-64	1
Spare Alcohol Wick	3000-65	2

■ Optional item

ITEM	MODEL	QTY
N95 Probe Insertion Tool	3000-86	1
N95 Probe Kit (Probe and Push Nut,100 each)	3000-63	1
Hard type carrying case	3000-85	1
Soft type carrying case	3000-79	1
Ultrasonic Particle Generator	3000-84	1
Fit Check Probe (50 pieces)	3000-87	1

For more details about the consumables, please contact your distributor.

Laser Classification

This device is classified as a Class 1 Laser Product in accordance with the following standards:

- **EN60825-1: 2014**

CLASS 1 LASER PRODUCT
EN60825-1 : 2014

Laser Safety Information

Warning – This device employs a laser inside the unit as the light source of the sensor. Do not open/close the case of unit or disassemble the optical sensor inside the unit.

Wave length	660nm
Maximum output	20mW
Beam emission angle	13-22° (Vertical direction)
	6-10° (horizontal direction)

Caution – Any attempt by user to control, adjust, or perform maintenance procedures other than those specified in this manual may result in hazardous exposure to laser radiation.

Important Safety Information

The symbols for the warnings used in this manual are defined below:

Classifications

Warning:

Warnings in this classification indicate risks that may result in serious injury or death if not observed.

Caution:

Warnings in this classification indicate risks that may result in damage to the product and which may void the product warranty if not observed.

Description of Symbols

△ symbol indicates a condition that requires caution (including warning). The subject of each caution is illustrated inside the triangle. (e.g. the high temperature caution symbol is shown on the left.)

⃠ symbol indicates a prohibition. Do not take the prohibited action shown inside or near this symbol. (e.g. the disassembly prohibition symbol is shown on the left.)

● symbol indicates a mandatory action. A specific action is given near the symbol.

Warning	
 Do not modify or disassemble	○ Do not disassemble, modify, or attempt to repair the device. …… A 3B laser diode is used as the optical source inside the device. Never attempt to disassemble the device as it is potentially extremely dangerous. Also, disassembling the unit may result in a malfunction. If any traces of disassembly, modification or repair are found, repairs will be charged even if the product is still within the warranty period.
 Handle properly	○ Use the device properly by carefully following this operation manual. ……Improper use may result in electric shock, fire, or damage, and may result in repairs being charged even if the product is within the warranty period.

○ If any abnormal noises, unusual odor or smoke is observed, or any liquid is permitted to enter into the instrument, turn the power off immediately, remove the battery or disconnect the power cable if connected.

…… These conditions may result in electric shock, fire, or damage to the instrument. Contact your distributor.

Prohibited installation

Do not use this instrument in ambient temperature of 35℃ (95℉) or greater.

…… The performance may deteriorate significantly and component damage may result.

○ When the instrument is not in use, unplug the power cord.
…… Failure to observe the above may result in electric shock, fire or damage to the internal circuit.

○ Install the instrument in a location where the power cord is accessible such that you can disconnect the power cord easily.

○ When using the power cord, make sure that the plug is clean and dry.

○ The AC outlet must be within the specified power requirement.
…… Failure to observe the above may result in fire.

○ Use only the power cord and/or the AC adapter provided with this instrument.
…… Other commercially available cords may have different voltage specifications and polarity, which may result in short circuit, fire or damage to the instrument.

○ While charging the battery with the instrument, do not remove the battery from the instrument.
…… Failure to observe the above may result in battery leakage and damage to the circuitry.

Caution

Prohibition

○ Do not use or leave this instrument in an environment exceeding or falling below the specified temperature/RH levels for the instrument. The instrument should not be exposed to direct sunlight for a prolonged period of time.
…… This instrument may not function properly beyond the specified operable environment.
(15 to 35℃, 20 to 85%RH, with no condensation)


Prohibition

○ Do not use volatile solvents to clean the instrument.
…… The case of the main unit may be damaged by organic solvents.
Use a soft dry cloth to remove any dirt. If this is not effective, the user may soak the cloth in neutral detergent or water and wipe the instrument with the cloth.
Never use volatile solvents such as thinner or benzene.


Prohibition

○ Do not subject the instrument to strong shocks. Do not place heavy objects on the instrument.
……Doing so may result in breakdown or damage, and repairs may be charged even if the product is within the warranty period.


Prohibition

○ If the instrument has been stored in a cold environment, allow the instrument to come to temperature equilibrium with the environment in which it will be operated before turning it on.
……Even when the instrument is used in the specified operating temperature and humidity, a sudden temperature change may cause condensation. Condensation on the sensor may cause inaccurate measurements or in extreme situations, could damage the internal components.

○ Do not allow static electrical discharge to the instrument.

…… Failure to observe the above may affect the measurement value and cause damage to the instrument circuitry.


Handle properly

○ Do not let the instrument draw in highly concentrated particles that exceed the specification level.
<Examples of environments where operation should be avoided>
- Example 1: High particle concentration environments exceeding 100,000 particles/cc
- Example 2: Environments below 15°C or above 35°C
- Example 3: Environments with humidity below 20% or above 85%

…… Doing so may result in breakdown or damage, and repairs may be charged even if the product is within the warranty period.


Prohibition

○ Do not dispose of the instrument as Non-electronic waste.

…… Please note that any disposal of the instrument should be in line with your local or national regulation.
For details, please contact your local distributor.


Handle properly

○ When using this product, if you see condensation or droplets inside of tubes, please fully dry first before measurement.
○ Please turn off the power first if you move the product to somewhere else. If some liquid such as droplets or some solvent still remains inside of tubes, please fully dry first. Those points above may cause clogging, affecting measurement values, etc.

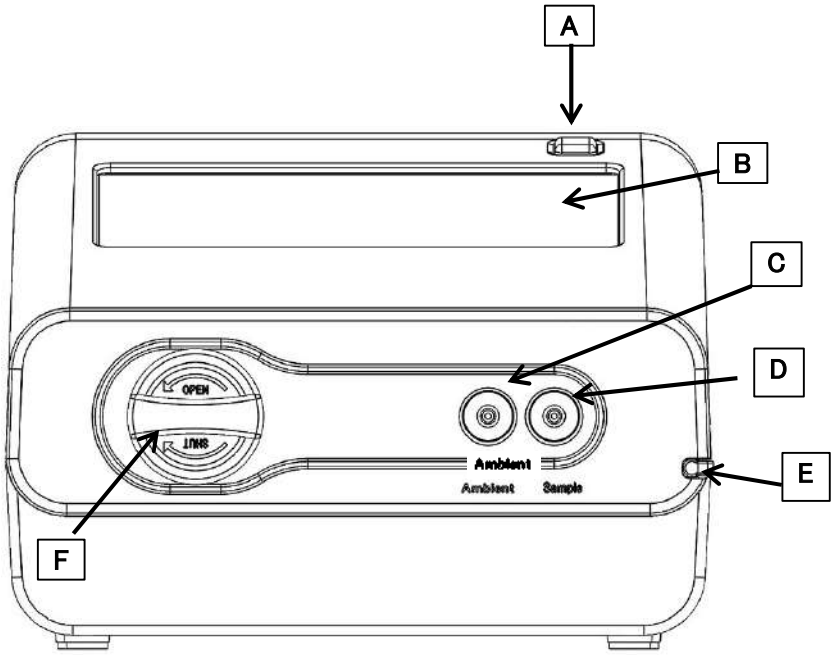
	…… This may cause clogging of the piping of this product and affect the measured values. In addition, if liquid gets inside the optical unit, it may cause a malfunction or damage, and repairs may be required even if the product is still within the warranty period.
 Prohibition	○ Please do NOT vacuum liquid such as water, some solvent, and the like from the inlet. That may cause malfunction and damage. …… Doing so may result in breakdown or damage, and repairs may be charged even if the product is within the warranty period.
 Handle properly	○ When using the optional particle generator (Model 3000-84), keep the unit and the particle generator approximately 3 m apart. ○ Use domestic tap water or 0.1% NaCl solution (solvent: tap water or pure water, solute: NaCl with a purity of 99.5% or higher) as the spray liquid for the particle generator. Do not use any other liquid. ……Using the unit in any way other than the above may cause a malfunction or damage, and may result in a paid repair even if it is within the warranty period.

Table of Contents

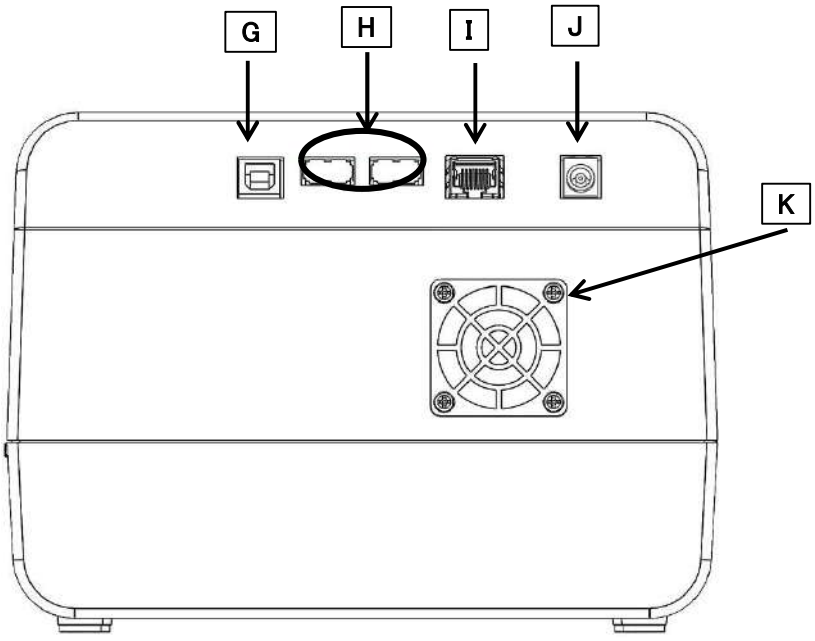
1. Part Names and Functions

1.1 Main Unit

・Front



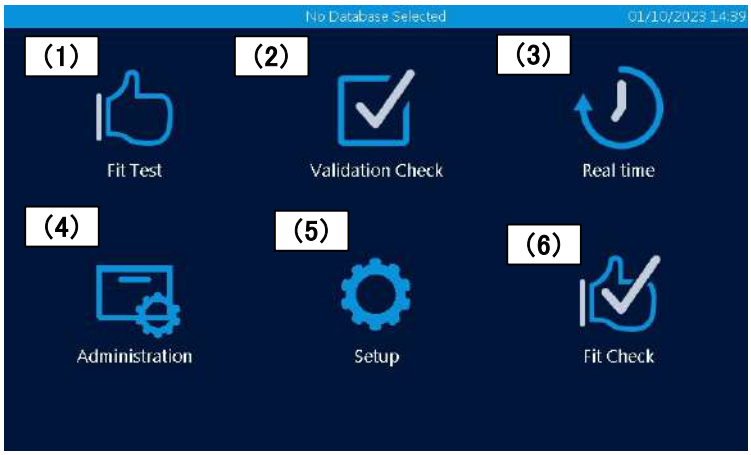
・Back



(A)	Power button	On/Off switch
(B)	Touch panel	Use this screen to operate the system.
(C)	Inlet nozzle (ambient)	Instrument uses this inlet to sample the particle concentration in the ambient air.
(D)	Inlet nozzle (sample)	Instrument uses this inlet to sample the particle concentration inside of the mask.
(E)	Touch pen	Use this pen to operate the touch panel (B).
(F)	Alcohol cartridge	Contains alcohol that is necessary for measurement
(G)	USB port (Type B)	Connects to the PC
(H)	USB port (Type A)	Connects to the USB flash drive or the printer
(I)	LAN port	Connects to the LAN cable
(J)	AC jack	Supplies power from the provided AC adapter
(K)	Cooling fan	Maintains correct operating temperature (This cooling fan is to maintain appropriate processing temperatures.)

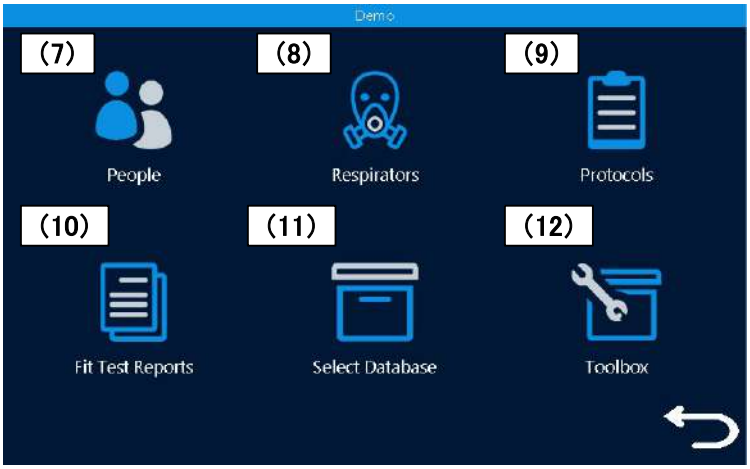
1.2 Software Screen

①Activities



(1)	Fit Test	Performs mask fit test
(2)	Validation Check	Conducts a system check prior to performing series of measurements
(3)	Realtime	Displays the fit factor graph and particle concentration of the ambient air on a real time basis
(4)	Administration	Proceeds to the screen ② (Refer to **5. Administration and Setup for details**.)
(5)	Setup	Proceeds to the screen ③ (Refer to **5. Administration and Setup for details**.)
(6)	Fit Check	Performs mask fit check

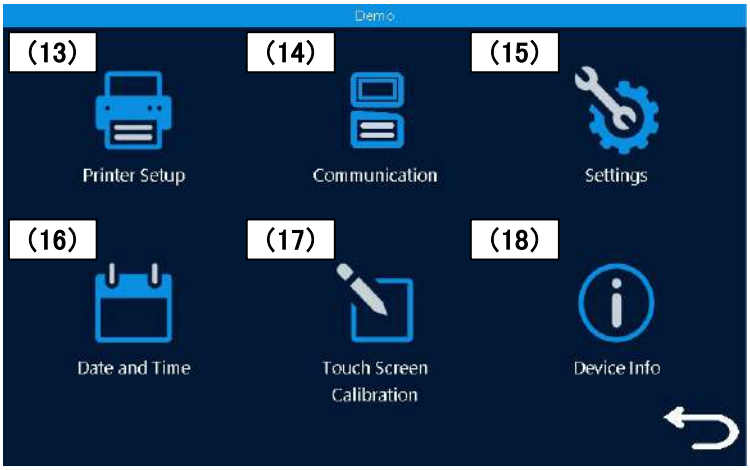
② Administration



(7)	People	Confirms and selects the list of people being tested. Enters a new person to database
(8)	Respirators	Confirms and selects the list of respirators Enters a new respirator to database

(9)	Protocols	Confirms and selects the test protocol Enters a new test protocol to database
(10)	Fit Test Reports	Displays the result of conducted fit tests
(11)	Select Database	Selects database to load as active
(12)	Toolbox	Sets the advanced mode

③ Setup



(13)	Printer Setup	Configures the printer setting
(14)	Communication	Confirms and sets the internet environment
(15)	Settings	Configures the setting for the device
(16)	Date and Time	Edits the date and time setting
(17)	Touch Screen Calibration	Calibrates the touch screen
(18)	Device Info	Checks the device information

2. Principle of Measurement

2.1 Principle

This device measures particle concentration in the ambient air and inside of the mask, and determines how well a mask fits by comparing the ratio of these particle concentrations. The ratio of the above concentrations is called "fit factor". If the fit factor is 100, it essentially means that the inside of the mask is 100 times as clean as the ambient air.

$$\text{Fit factor} = \frac{Particle\ concentration\ in\ the\ ambient\ air}{Particle\ concentration\ inside\ of\ the\ mask}$$

This device measures particle concentration in the ambient air twice in total, before and after a mask fit test exercise. Particle concentration in the ambient air can be variable over time; therefore this device measures the particle concentration in the ambient air before and after each measurement, and uses the average value. The particle concentration in the ambient air must be measured for the first measurement. For the second measurement and subsequent measurements, the concentration after the previous measurement will be used and there is no need for a redundant second measurement of the ambient air.

$$F = \frac{\bar{x}(C_{before} + C_{after})}{2\,Conc_{mask}}$$

The sequence would thus be as follows:

$C_{ambient}$ // C_{mask} // $C_{ambient}$ // C_{mask} // $C_{ambient}$ …*etc*.

F: Fit factor
C_{before} : Particle concentration in the ambient air before measurement
C_{after} : Particle concentration in the ambient air after measurement
C_{mask} : Particle concentration inside of the mask

3. Getting Started

3. 1 Recharging the Alcohol Cartridge

⚠ **Warning**	Isopropyl alcohol used for this device is a hazardous material. Do not allow the alcohol to contact your eyes and skin. Refer to the Safety Data Sheet (SDS) for chemical material when storing alcohol in a special container and when using it.
⚠ **Caution**	Recap the alcohol container immediately after use to prevent the alcohol from absorbing moisture and from evaporating. Do not use the device at any tilt angle. If to do so, alcohol could leak from the bottle, which may damage the device.

The CPC (Condensation Particle Counter) in this device detects particles using isopropyl alcohol vapor. Installing the alcohol cartridge soaked in the alcohol solution to this device will provide the alcohol vapor in the CPC. When the alcohol vapor and an airborne particle come in contact, a droplet which has the particle at its center will be formed. If the alcohol solution in the alcohol cartridge becomes depleted, the device cannot measure particles correctly. To avoid this, please recharge the alcohol cartridge before using the device.

3.1.1 Preparation

Isopropyl alcohol or ethanol and the following components are required.

- ・Alcohol storage container
- ・Storage cap
- ・Alcohol cartridge

The **isopropyl alcohol or ethanol** used for this device must be a high-purity guaranteed reagent alcohol.
Please do not use isopropyl alcohol or ethanol that is available from pharmacies or supermarkets. The purity of this alcohol is low (about 70%), and may cause damage to the CPC. Any problems caused by a use of alcohol other than specified below is not covered by the warranty.
Please be sure to use the appropriate alcohol with strict adherence to the handling directions.
The alcohol used for this device must be a guaranteed reagent satisfying at least the following requirements:

Chemical name: 2-Propanol
Synonym: Isopropyl alcohol
Chemical formula: $(CH_3)_2CHOH$
Formula weight: 60.10
Assay: 99.5% or better

Chemical name: Ethanol
Synonym: Ethyl alcohol
Chemical formula: C2H5OH
Formula weight: 46.07
Assay: 99.5% or better

When the device is not in use, the alcohol cartridge must be stored in the alcohol storage container and the alcohol cartridge inlet must be sealed with the storage cap to keep dust out.
When the device is in use, the storage cap must be used to seal the alcohol storage container.

3.1.2 Recharging the Alcohol Cartridge

⚠ **Caution**	Do not leave the alcohol cartridge inlet open. Failure to observe the above may cause contamination of the optical system or a malfunction.

1. Turn the device off.

2. Open the alcohol storage container by turning the storage cap (or the alcohol cartridge) about 45° counterclockwise.

Stand the storage cap (or the alcohol cartridge) straight up in a clean place.

3. Pour isopropyl alcohol or ethanol in the alcohol storage container up to the marked level.
Be careful not to tip the bottle and spill the alcohol.

[Caution]
Do not pour more than the upper limit of the alcohol filling range. If you exceed the upper limit, the liquid may overflow when inserting the alcohol cartridge.

4. Insert the alcohol cartridge into the alcohol storage container, and turn it about 45° clockwise until it is firmly locked. Do not use excessive force.

[Caution]
When inserting the alcohol cartridge into the alcohol bottle, insert it gently and slowly. If you insert it too forcefully, the liquid may overflow.

5. After the alcohol cartridge is inserted, the Alcohol Wick in the cartridge will be soaked in alcohol. You can use the device after a few minutes of soaking the Alcohol Wick in alcohol.

3.1.3 Installing the Alcohol Cartridge

1. Remove the alcohol cartridge from the alcohol storage container and gently shake off any excess alcohol solution. Failure to do this may cause the absorbed alcohol to clog the front of the alcohol cartridge. As a result, the flow of the incoming airborne particles and alcohol vapor will be disturbed, making it impossible to measure correctly.
   Please wait until the outer surface of the alcohol cartridge dries or wipe the excess alcohol off with a non-abrasive lint-free wipe.

The front of the Alcohol cartridge

2. Insert the alcohol cartridge into the inlet as shown on the right, and turn the alcohol cartridge clockwise about 45°.

   To install the alcohol cartridge correctly, be sure to turn it firmly until it stops. (See the picture at right.)

【Caution】

If alcohol accumulates inside the cartridge inlet, wipe the alcohol off with a non-abrasive, lint-free wipe. Alcohol cartridges for AccuFIT9000 and AccuFIT9000 PRO (Model 3000-60) cannot be used with this product.

Caution

- This alcohol cartridge (Model 3000-64), alcohol bottle (Model 3000-90), and storage cap (Model 3000-91) are for AccuFIT9000 PRO Series Ⅱ only. They are not compatible with AccuFIT9000 and AccuFIT9000 PRO alcohol cartridges, alcohol bottles, and storage caps.
- To prevent the alcohol from absorbing moisture and from evaporating, always recap the alcohol storage container with the storage cap. Contaminated alcohol must be disposed of.
- When the device is not in use, the alcohol cartridge must be stored in the alcohol storage container. To keep the inside of the instrument clean, seal the cartridge inlet with the storage cap.
- **Do not carry or store the device with the alcohol cartridge installed.** Failure to observe the above may allow the alcohol solution to get into the optical system and affect measurements. When carrying or storing the device, seal the alcohol cartridge inlet with the storage cap to keep dust out.
- Always keep the storage cap and alcohol cartridge clean. (Refer to **6. Maintenance**.) If dust sticks to the side of the cartridge or inside of the cap, it may get into the device during operation, affecting measurtement.
- After measuring for a long period of time, alcohol may accumulate inside the cartridge inlet. If you notice that the measured value of the ambient particle

concentration has shifted dramatically check the cartridge inlet, and wipe the accumulated alcohol off with a non-abrasive, lint-free wipe before restarting the device.

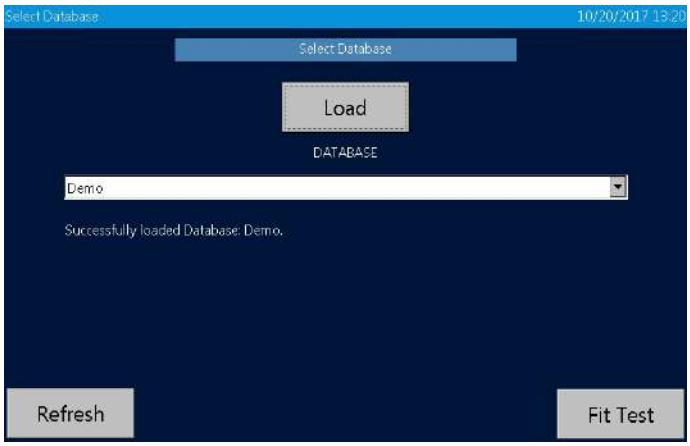
3.2 Getting Started (Main Unit)

Turn on the device to display the Activities screen (①). Prior to performing a series of measurements, you need to perform Validation Check (2) to confirm that the device is operating correctly and the environment is appropriate for measurements (i.e., that there are sufficient particles present and the instrument can measure them). Failure to do this may cause unreliable test results. Always ensure that a Validation Check is performed prior to conducting a mask fit test or a series of fit tests.
Fit Test (1) cannot be performed without conducting a Validation Check (2). To perform the check, follow the procedures as follows:

3.2.1 Confirming the External Memory

This device does not have a built-in memory to record the measurement results. Before starting a measurement, make sure that a USB flash drive that has been configured with the required information to perform measurement is connected to the device.

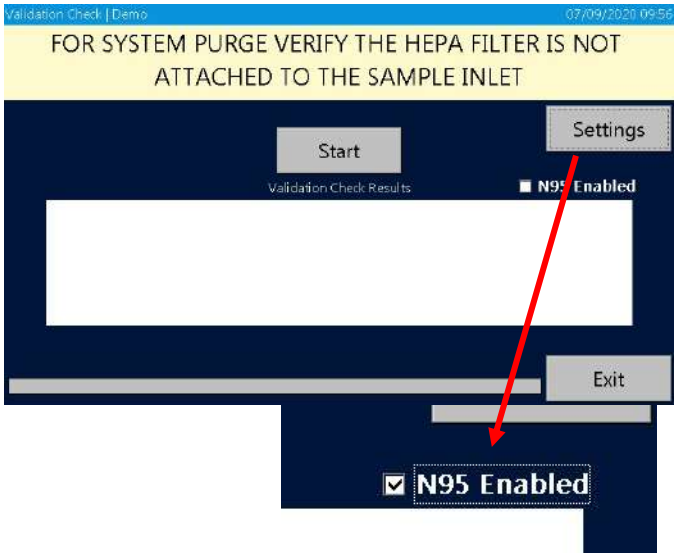
3.2.2 Database Selection



Insert the USB flash drive into the USB port Type A (H) of the device, prior to performing Validation Check (2).
Select the desired database and tap [Load] then tap[Fit Test] or [Exit] button.

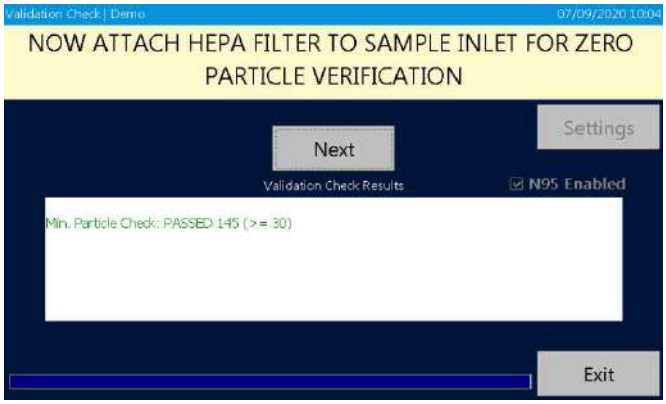
By tapping the [Refresh] button, the databases in the pull-down menu box will be updated to display the databases stored in the USB flash drive.

3.2.3 N95 Selection



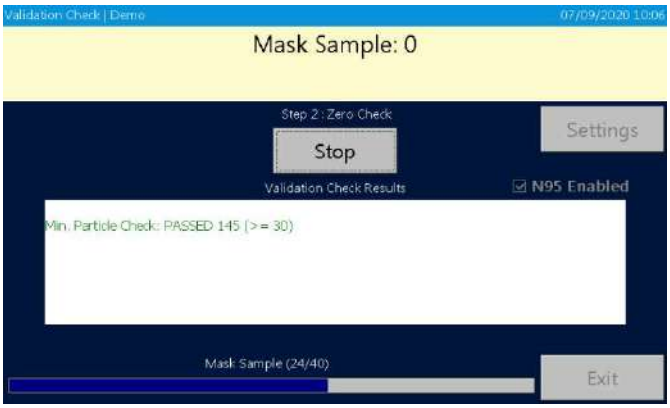
If you perform Validation Check in the N95 mode, select the N95 Enabled check box.

3.2.4 Particle Check



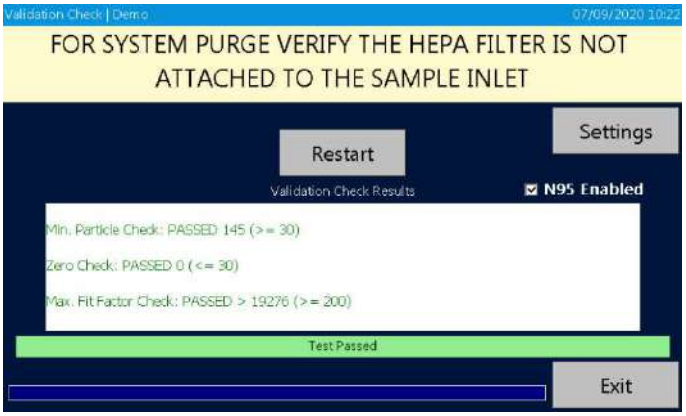
Remove the HEPA filter or the mask if attached, and tap the [Start] button to check that the particle concentration in the ambient air is sufficiently high enough to calculate the mask fit factor.
Depending on the ambient particle concentration (i.e., outside of the mask), the environment may be inappropriate to perform a mask fit test. This process also confirms that the device is operating properly. When this measurement is complete, procede to the Zero Check

3.2.5 Zero Check



If a leak occurs inside of the device, the test result may be affected. The Zero Check determines that there are no internal leaks or loose connections.
Install the HEPA filter to the sample inlet line (making sure that the arrow on the HEPA cartridge is aligned with the flow), and tap [Next] to begin the Zero Check measurement. When the Zero Check is complete the AccuFIT9000 PRO SeriesⅡ automatically continues to the next check.

3.2.6 Fit Factor



To confirm whether the device performs correctly, this test confirms the fit factor using the HEPA filter. The instrument measures the particle concentration in the ambient air and calculates the ratio to the particle concentration via the HEPA Filter. By determining this ratio, the device confirms that it is correctly performing this function.
If the Validation Check is passed, a message "Test Passed" will appear. If no message appears, perform Validation Check again.

*If there is no database, the alarm appears. Execute the Save As command from Toolbox (12) to create a database.

3.2.7 Validation Check Settings

By tapping the [Setting] button on the Validation Check screen, you can change the value(s) for the check as necessary. After changing the value(s), tap the [Save] button to save the change(s).
Recommended values are >/= 1000 Minumum particles, </= 20 Zero particles, and >/= 100,000 Max Fit factor

If you select the **Validation Check Settings for N95** check box in the N95 Mode, you can change values necessary in the Validation Check.

3.2.8 Precautions when using the generator

Keep the main unit and particle generator (Model 3000-84) approximately 3 m apart when using.
Use domestic tap water(Hardness: 300 mg/L or less) or NaCl solution as the spray liquid.
When mixing NaCl, make sure the concentration is approximately 0.1%.
Also, use NaCl with a purity of 99.5% or higher.
(Tap water can also be used for dilution.)

3.3 Get the Person being Tested Ready

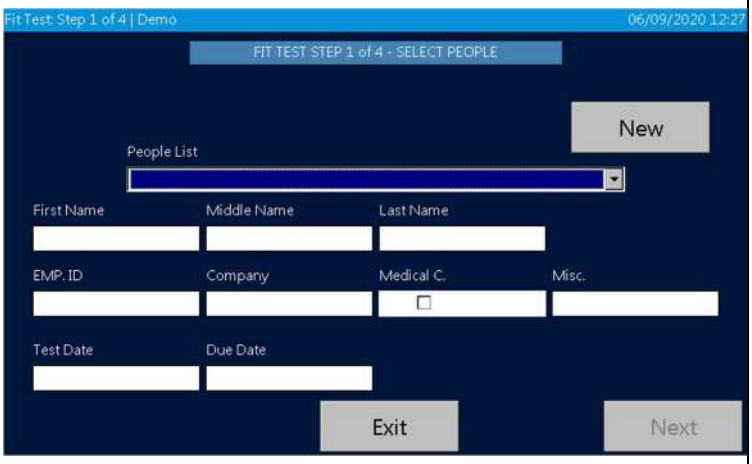
Prior to a mask fit test, attach the mask to the inlet of the Device using the appropriate adapter, have the person being tested don the mask and check the seal of the mask by himself or herself, and confirm whether he or she is wearing the mask properly. After that, the person being tested must continue to wear the mask for approximately 5 minutes (29 CFR 1910.134) to clear the respirable particles from inside of the mask, and then proceed to the measurement process.
Every person being tested for respirator fit must have been previously trained in the proper procedures for wearing respiratory protective devices. Inappropriate use may result in inaccurate measurements. The mask may not be adjusted once a fit test is initiated in order to ensure the reliability of the fit test results.

4. Measurement

4.1 Fit Test

By selecting the fit test, you can perform a quantitative fit test as specified by JIS T 8150 or OSHA. You can perform a fit test by selecting a pre-set mask type and protocol. You can also create a new protocol. By registering it in the database, you can save and print the results of the fit test.

4.1.1 Step 1



Fit Test

Tap Fit Test icon (1) on the Activity screen ① to start a measurement.

*If Validation Check (2) has not been completed, the screen for the check will be displayed.

Refer to **3.2 Getting Started (Main Unit)** to conduct the check prior to a measurement.

SELECT PEOPLE

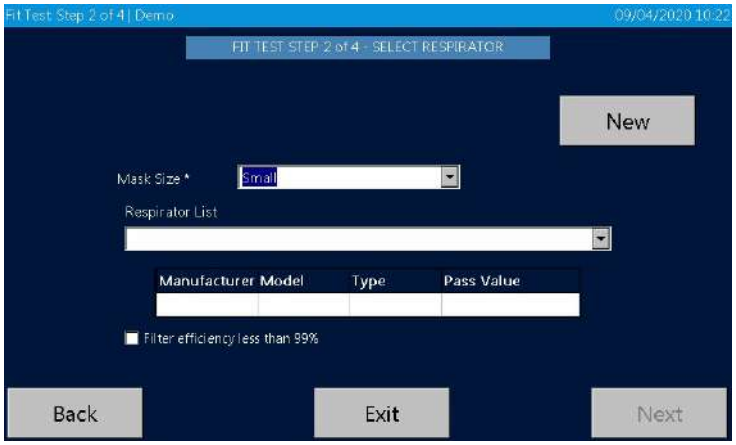
If the person to be tested is already in the database, select the name from the pull-down menu.

When the person is being tested for the first time, or is not in your database the subject's data must be entered prior to the fit test.

Tapping the [New] button allows these data to be entered. Use the provided touch pen and display keypad to enter the personal information.

When the entry is complete, tap the [Save] button to finish the entry.

4.1.2 Step 2



Mask size
Select the size (Small, Medium, Large, Other, or One Size Fits All)

SELECT RESPIRATOR
Select the mask to use for the test.
If the mask is already in the database, you can select it. If the mask is not already in the database it must be entered prior to the test.

When you select the N95 Mask, the check box of the **Filter efficiency less than 99%** is marked. You cannot deselect this.

Tapping the [New] button allows these data to be entered. Use the provided touch pen and display keypad to enter the personal information.
When the entry is complete, tap the [Save] button to finish the entry.

4.1.3 Step 3

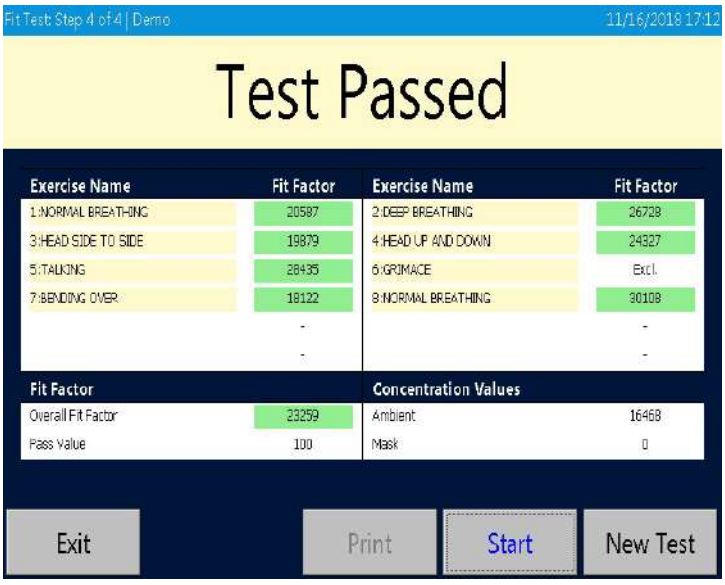
Confirming the measurement parameters (Protocols)
Select the appropriate protocol.

Enter the name, initials, or ID of the person conducting the fit test. (Operator) (REMEMBER it's your database so be consistent)

Check the next test date (Due Date)
The date of the next test is displayed. (Per 29 CFR Part 1910.134 this would be one year from current date.)

To entry a new protocol, tap the [New] button.
For details, refer to **5.1.3. Protocols**.

4.1.4 Step 4



Start and Exit

The fit test exercises for the selected protocol are displayed.
If not correct, tap the [Exit] button to return to the previous page and configure the setting again. After confirmation, tap the [Start] to start the test.

When the test completes, the test result (passed or failed) will be displayed at the top of the screen. The measurement result will be saved automatically in the selected database.

*If the test result is not passed and there is reason to believe that there may be a malfunction, refer to **8. Troubleshooting** for details.

Tap the [Print] button to print the result of the mask fit test.
To start a new test, tap the [New Test] button.

*If there is no database, the alarm appears. Execute the Save As command from Toolbox (12) to create a database.

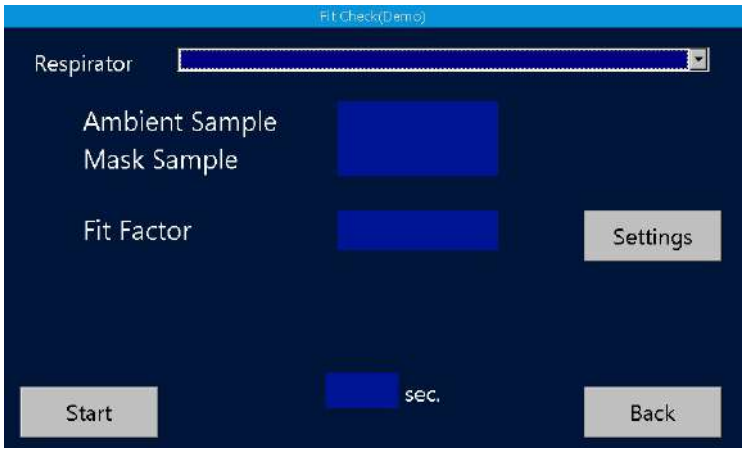
Caution

To keep the inside of the device clean, attach the zero (HEPA) filter to the inlet after using the device and run the AccuFIT9000 PRO Series Ⅱ for approximately 5 minutes before turning the power off. Allowing the contaminated particles to accumulate inside of the device could potentially cause trouble. When the device is not in use, keep the zero filter attached to the inlet.

4.2 Fit Check Mode

Fit check is a mode that simply checks whether the mask is worn correctly. By performing a fit check using a fit check probe, you can check the degree of contact between the mask and the face without destroying the mask. If you want to perform a quantitative fit test specified by JIS T8150 or OSHA, etc., please perform a fit test (see 4.1 Fit Test).

4.2.1 Step 1



Fit Check

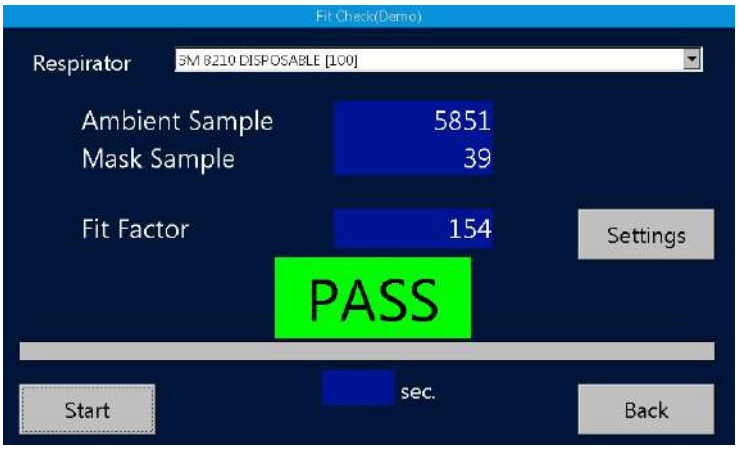
Tap Fit Test icon (6) on the Activity screen ① to start a measurement.

SELECT RESPIRATOR

Select the mask to use for the test.

If the mask is already in the database, you can select it. If the mask is not already in the database it must be entered prior to the test.

4.2.2 Step 2

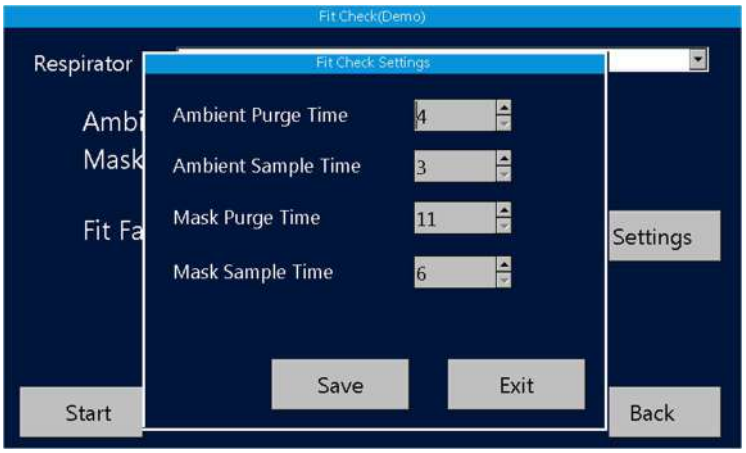


Start and Exit

Tap the [Start] to start the test.

When the test completes, the test result (passed or failed) will be displayed at the screen.

4.2.3 Settings



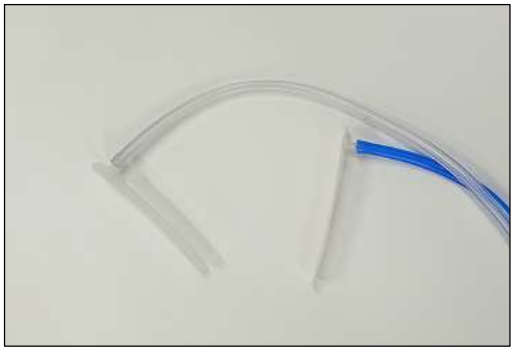
Settings

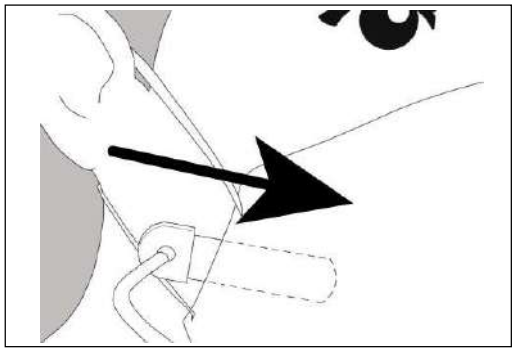
Set each item of Ambient purge time, Ambient sample time, Mask purge time, Mask sample time.

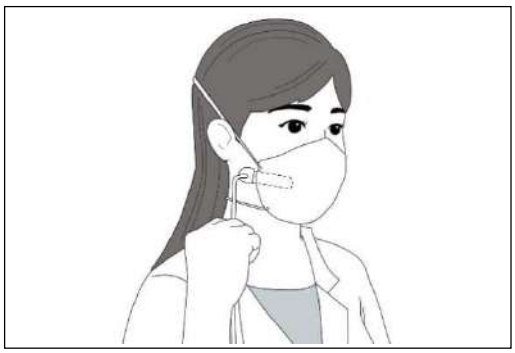
Ambient purge time can be set in the range of 4 to 99.
Ambient sample time can be set in the range of 3 to 99.
Mask purge time can be set in the range of 11 to 99.
Mask sample time can be set in the range of 6 to 99.

4.2.4 How to use the fit check probe

An optional fit check probe is required to use the Fit Check mode.







①Wipe the fit check probe with ethanol to clean it before use.

②Connect the twin tubes to the inlet of the main unit, and connect the fit check probe to the opposite tube (both transparent and blue).

③Insert the fit check probe connected to the tube on the sample side between the face and the mask from around the cheek. Insert the tip of the fit check probe until it is between your mouth and nose.

④If the fit-check probe is pulled by the sampling tube and the position of the fit-check probe shifts, or if there is a gap between the face and the mask, accurate measurement will not be possible. Please support me with

⑤Carry out the fit check while holding the fit check probe.

Caution	Since the fit check probe comes into direct contact with the face, it may cause symptoms such as rashes. Please check for any problems before use. Please refrain from using if you see any abnormalities. When disposing of the fit check probe, follow the instructions of each local government.
Caution	Please use the dedicated fit check probe. Using any other probe may result in inaccurate testing.

4.3 Record

After measurement, the data will be saved automatically into the active database on the USB flash drive. If the AccuFIT9000 PRO SeriesⅡ is used in Standalone mode data cannot be saved on the fit test instrument by itself. To save data, use a USB flash drive that is configured with the database. If you do not have a USB flash drive, the device can perform measurements, but it can not record the data.

4.4 Print

By connecting the device and the printer using a USB cable, you can print the measurement results. You can configure printer setting from Printer Setup (13).

4.5 Real-time Measurement

By selecting the Realtime（3）icon on the Activities screen, real-time particle counts can be displayed graphically and digitally.

***NB: This data can not be saved.**

This function is used for training in the use of respirators, determining whether or not a respirator can be fit tested, and for troubleshooting.　Using this function allows you to confirm changes in the fit factor due to minor adjustment of masks.

*Do not use this function immediately prior to the mask fit test.

To start a measurement,
tap the [Start] button.
To stop the measurement,
tap the [Stop] button.
To return to the Activities screen (①), tap the [Exit] button.
By selecting the [100], [500], or [1000] button, a reference line indicating the selected pass value can be inserted on the chart.

If you select the **N95 Enabled** check box, the real time measurement in the N95 Mode is performed.

Mode	Description
Ambient Particle Count	Displays the particle counts in the ambient environment
Realtime Particle Count	Displays the particle counts in the breathing zone of the mask
Fit factor	Displays the fit factor

4.6 Toolbox (Advanced Modes)

(12) Toolbox

Mode	Functions
Clean Copy	Copies data other than the fit test results from the original data base
Copy	Copies all data saved in the database
Statistics	Shows the number of records of each information type (Validation Check, people, mask, protocol, fit test results) saved in the database and confirms the file size
Save	Stores the database in a USB flash drive. In the event that the measurement data can not be saved in the USB flash drive in use, you can use this command to save the measurement data in a substitute USB flash drive.
Save As	Creates and Stores a database by a different name from the current one. When the device starts for the first time, there is a demo database only; therefore, you can use this command to create and save a new database. This command can also be used to create a backup database.
Delete	Deletes data from the USB flash drive Please note that the deleted data can not be restored.

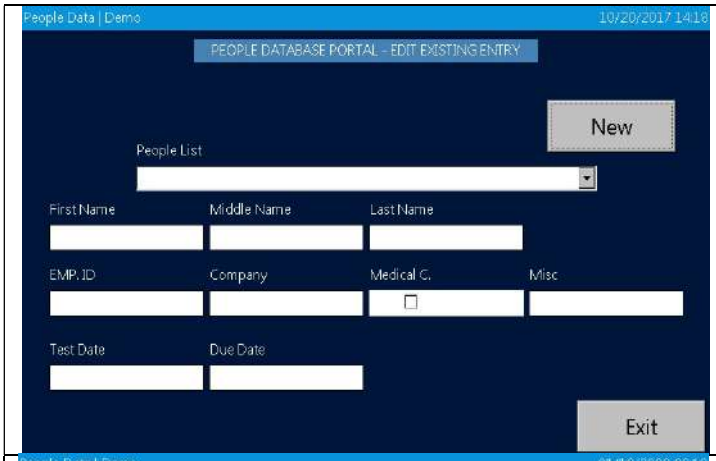
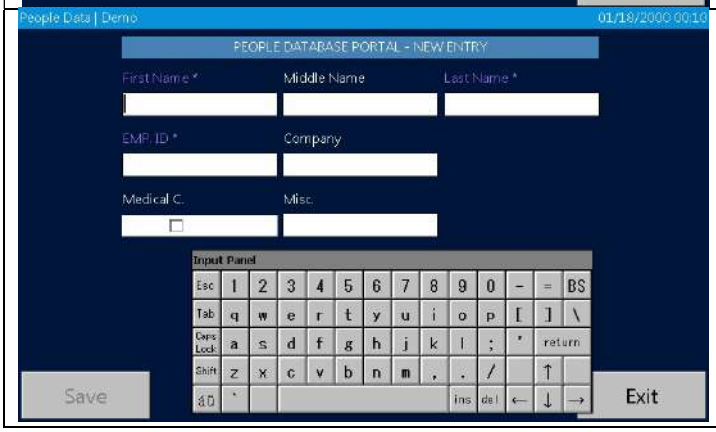
4.7 Remote Control Mode

If the software for this device is installed in your PC, you can use your PC to remotely control the device. For details, refer to the separately provided Software User Manual.

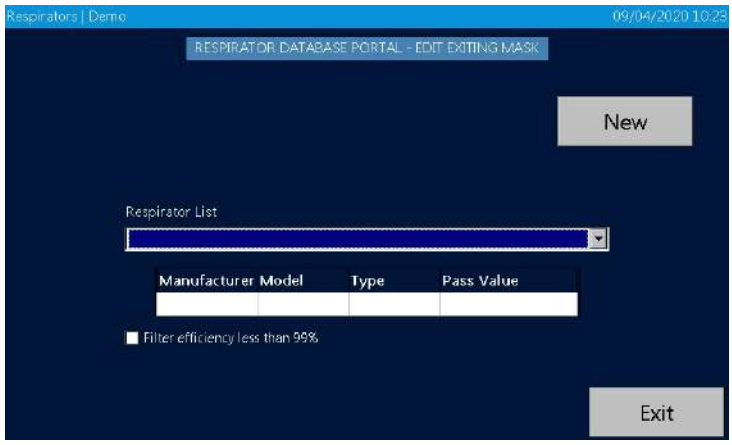
5. Administration and Setup

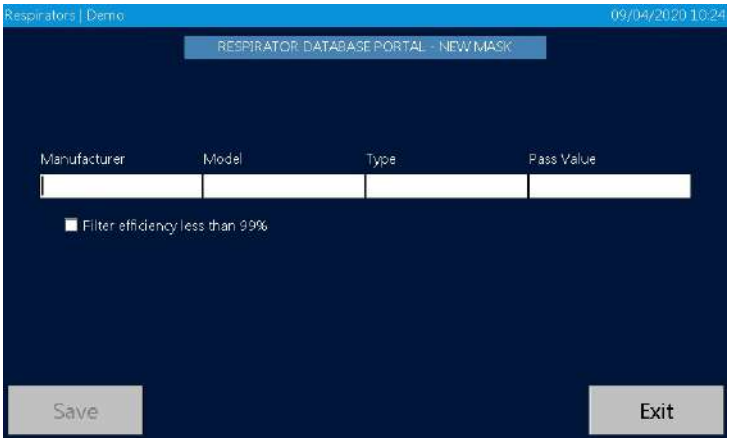
5.1 Administration

5.1.1 People

	You can check the existing entry of people. Select the person whose data you wish to check from the pull-down menu. Tap the [New] button to start a new entry as necessary.
	For a new entry, the first name, last name, and EMP.ID are required. Enter the other information as desired. Tap the [Create] button to allow these data to be entered.

5.1.2 Respirators

	You can review a mask that is already in the database. Select the mask to display the following information: Manufacturer, Model, Type, and Pass Value. When you select the N95 Mask, the check box of the **Filter efficiency less than 99%** is marked. Tap the [New] button for a new entry as necessary.



Enter information into the [Manufacturer], [Model], [Type], [Pass Value] fields, and tap the [Save] button to confirm the entry.

For the N95 Mask, select the **Filter efficiency less than 99%** check box.

If the entry in each field is not appropriate, tapping the [Save] button will have no effect.

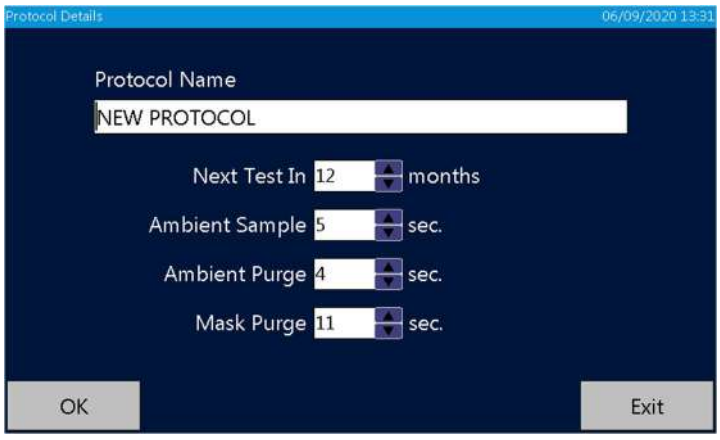
5.1.3 Protocols

You can check the mask fit test protocols.

Select the protocol you wish to check from the pull-down menu and tap the [Display] button.

You can confirm the details of the protocol

By checking the box at the bottom left of the screen, you can modify parameters of condition(s) to the mask fit test.

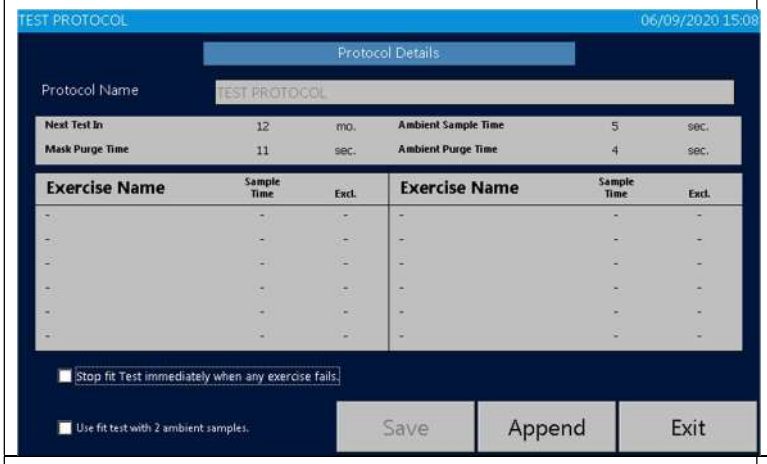


To entry a new protocol, tap the [New] button.

Enter Protocol Name you wish to add, followed by the Next Test, Ambient Sample time, Ambiebnt Purge time, and Mask Purge time.

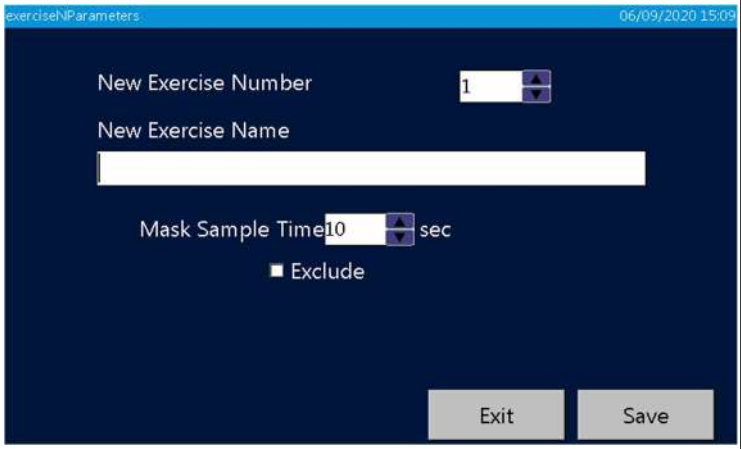
To save your entry, tap the [OK] button. The screen for entering an exercise will appear.

If you tap the [Exit] button, data you entered is discarded, and the current screen will return to the Protocol Selection screen.



Tap the [Append] button to add an Exercise.

When you tap the [Append] button, the screen for entering an exercise will appear.



Confirm New Exercise Name, Mask Sample Time and Exclude.

When multiple exercises are entered, change the New Exercise Number to modify.

To save your entry, tap the [Save] button. The current screen will return to the Protocol Details screen.

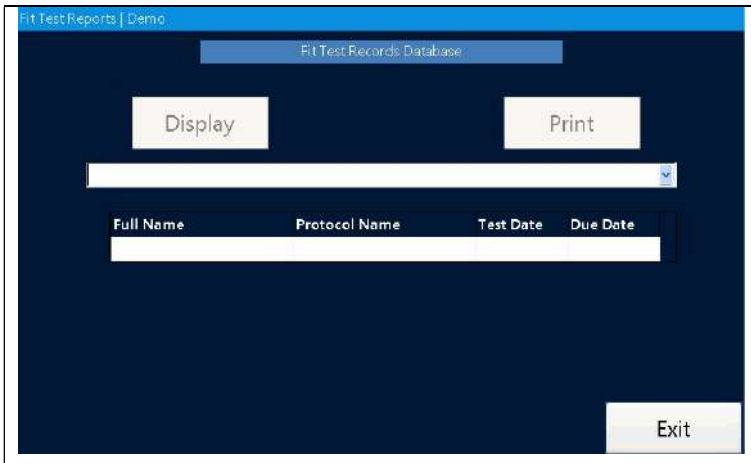
If you tap the [Exit] button, your entry is discarded, and the current screen will return to the Protocol Details screen.

If you wish to add another exercise, tap the [Append] button.

To save your entry, tap the [Save] button. The current screen will return to the Protocol Details screen.

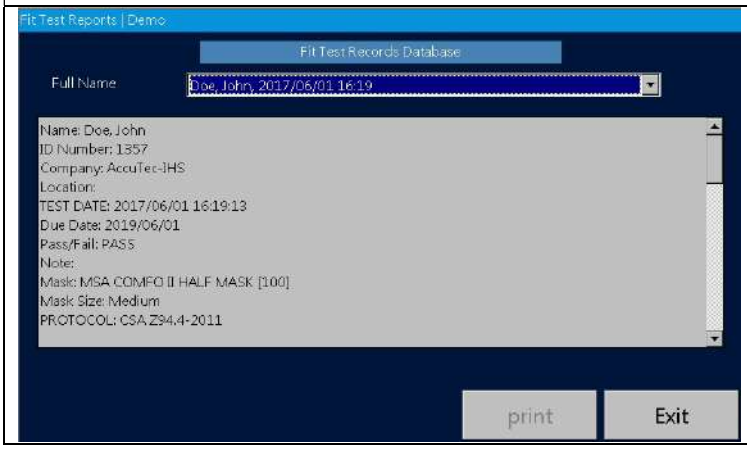
If you tap the [Exit] button, all protocols and exercises you have entered are discarded, and the current screen will return to the Protocol Selection screen.

5.1.4 Fit Test Reports



You can review the fit test results saved in the database.

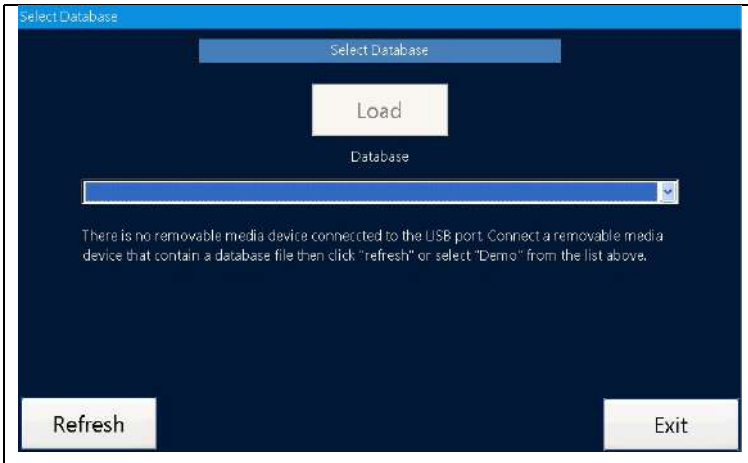
Tap the [Display] button to check the results. To print the results, tap the [Print] button. Prior to printing the results, configure the printer settings from the Printer Setup (13).



The screen shown to the left displays the test results.

This screen also can be printed by tapping the [Print] button.

5.1.5 Select Database

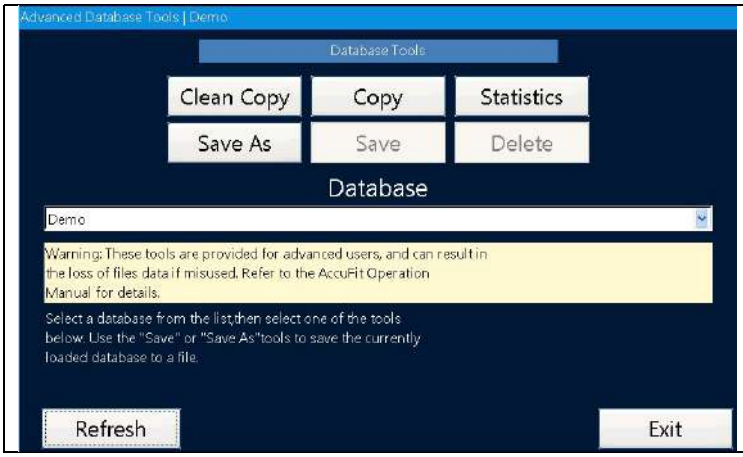


You can load the database and renew it.

Highlight the database you wish to use from the pull-down menu and tap the [Load] button to use the selected database.

The [Refresh] button is to renew the pull-down menu after changing the USB flash drive.

5.1.6 Toolbox

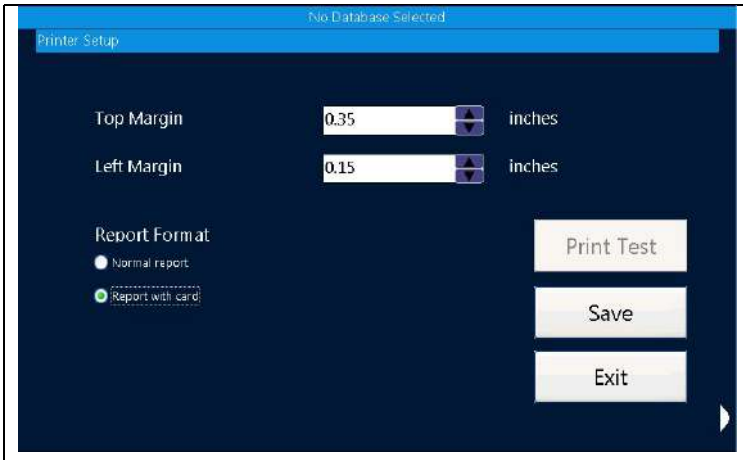


These are the tools for advanced users. For the details, refer to **4.9 Toolbox (Advanced Modes)**.

The [Refresh] button is to renew the pull-down menu after changing the USB flash drive.

5.2 Setup

5.2.1 Printer Setup



You can configure the printer settings.

Select the top/left margins and report format as necessary.

To confirm your printer setting, tap the [Print Test] button to perform the print function.

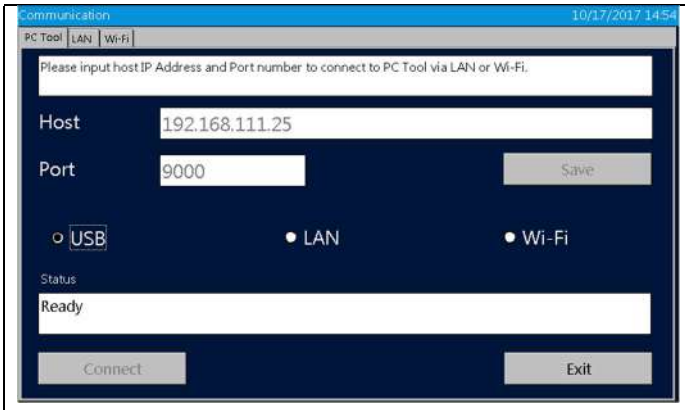
Tap the [Save] button to save your settings.

A printer supporting PLC3 is a printer you can connect.
Our recommended printer is HP OfficeJet Pro 8210. (Function checks has been made successfully.)

5.2.2 Communication

※For more information about the Communication settings, please refer to the User's Manual for Software Application.

To connect the Device(s) to your PC, you have three optional methods: USB, LAN and Wi-Fi connections. Please refer to the following procedures.



- PC Tool

  For the connection to your PC, enter IP Address to the Host field, and Port No. to the Port field.

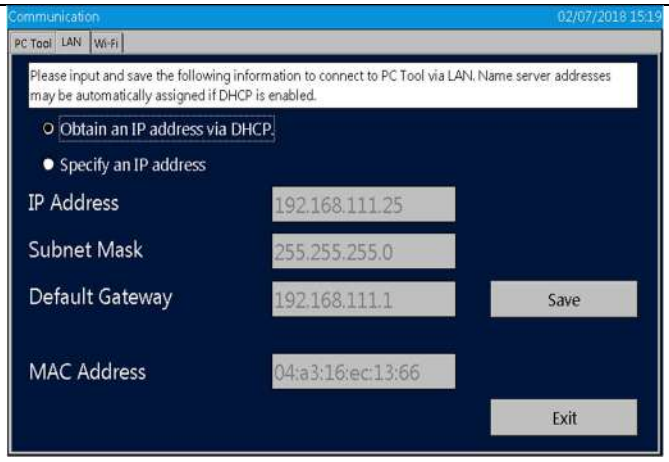
  Entering IP Address and Port No. is necessary for LAN and Wi-Fi connections, but not for USB connection.

  After you enter IP Address and Port No., tap **Save** button to save the data.

  You can select your desired connection method by tapping the appropriate button. The status of the connection method you selected will appear in the **Status** text box.

  When **Ready** is displayed in the text box, tap **Connect** button to complete the connection.

  When you establish the connection, tap **Exit** button to close the Communication settings screen.



- LAN Connection

  For LAN Connection, you are required to enter IP Address, Subnet Mask and Default Gateway.

  If DHCP is enabled, select **Obtain an IP address via DHCP** to obtain IP Address, Subnet Mask and Default Gateway automatically.

  If DHCP is not enabled, select **Specify an IP address.** Upon confirming the network setting, enter IP Address, Subnet Mask and Default Gateway manually. Selecting the appropriate text box allows you to enter this required information.

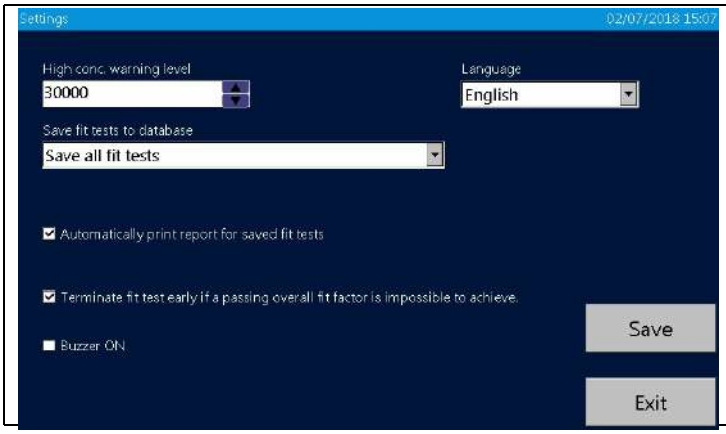
  When you enter the required fields, tap **Save** button to save the data. And then tap **Exit** button to close the Communication settings screen.

- Wi-Fi Connection

  Tap [search SSID] button, and select SSID of wireless router you use from the displayed list. And then, enter the password of SSID you selected. Set **Show password characters** to reveal the password hidden behind asterisks. If DHCP is enabled, select **Obtain an IP address via DHCP** to obtain IP Address, Subnet Mask and Default Gateway automatically. If DHCP is not enabled, select **Specify an IP address.** Upon confirming the

	network setting, enter IP Address, Subnet Mask and Default Gateway manually. Selecting appropriate text box allows you to enter this required information. When you enter the required fields, tap **Save** button to save the data. And then, tap **Exit** button to close the Communication settings screen.

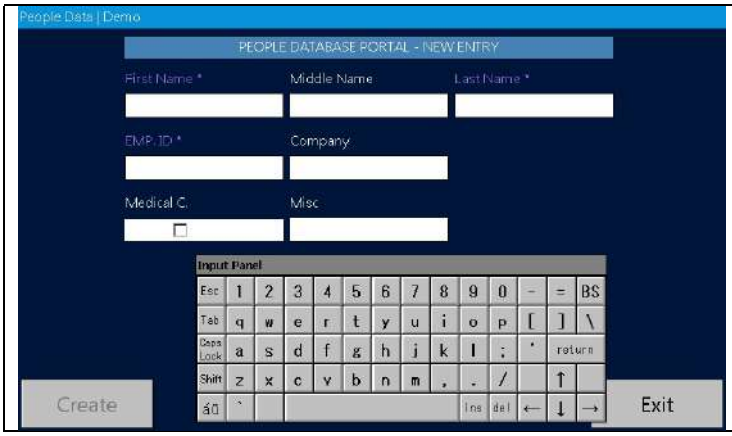
5.2.3 Settings



You can configure the settings for measurement and language.

Tap the [Save] button to save your settings. Please note: Changing language requires a re-start.

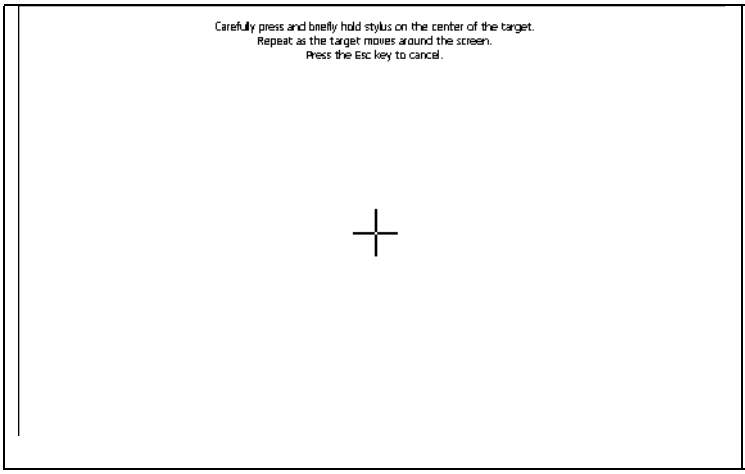
5.2.4 Date and Time



You can change the date and time settings of the device.

Tap the [OK] button to save your change(s).

5.2.5 Touch Screen Calibration



You can calibrate the touch pen.

Tap the center of the cross icon on the screen. Repeat tapping the center as the cross icon moves around the screen.

When completed, the cross icon disappears. Tap the screen to return to the Setup screen (③).

5.2.6 Device Info

	You can check the device information.

6. Maintenance

This device requires routine maintenance according to the instruction below:
In addition, an annual calibration will ensure that the instrument is operating within manufacturer's required parameters in order to perform accurate measurements. Please contact your distributor for annual calibration.

⚠ **Warning**	**DO NOT OPEN the outer case of the device.** It is hazardous to open the outer case of the device because a Class 3B laser diode is contained in the device. Opening the outer case will void the warranty. For necessary maintenance or for any service that is not described in this manual, please contact your distributor.

6.1 Calibration

Do not attempt to calibrate this device by yourself. Contact your distributor.
Failure to observe the above may result in problems in measurements.

6.2 Alcohol Cartridge

The Alcohol Wick inside of the alcohol cartridge absorbs and retains alcohol. The alcohol cartridge is inserted into the main unit and therefore it must be kept clean. If dust gets into the device, it may clog the internal nozzle and affect the proper operation. Be careful when storing and handling the alcohol cartridge and storage cap to protect them from contamination.

・Cleaning and replacing the Alcohol Wick
The Alcohol Wick inside the alcohol cartridge are user-replaceable.
The device is provided with 2 sets of Alcohol Wick. In normal use, there is no need for replacing the Alcohol Wick unless a problem described below occurs.

1. The Alcohol Wick is contaminated with dust or oil.
   → This problem does not occur when the device is used in normal ambient air.
   If the device is used for sampling highly-concentrated particles (e.g. sampling in a boiler room or sampling combustion aerosols), the Alcohol Wick may become contaminated and will require replacement.
2. The device is not able to measure due to humidity.
   → Because of the fact that reagent grade 2-propanol is extremely hydroscopic, if extremely humid air is drawn into the device, moisture may accumulate in the alcohol cartridge and reduce the efficiency of the CPC. In this case, remove the Alcohol Wick to allow it to dry and replace it with the spare Alcohol Wick. When the moisture-contaminated Alcohol Wick is dry, it can be re-used. If the Alcohol Wick is obviously

contaminated with something other than moisture it must be replaced with the provided spare.
Over time, the Alcohol Wick may become discolored. Usually this will not cause a Performance problem.

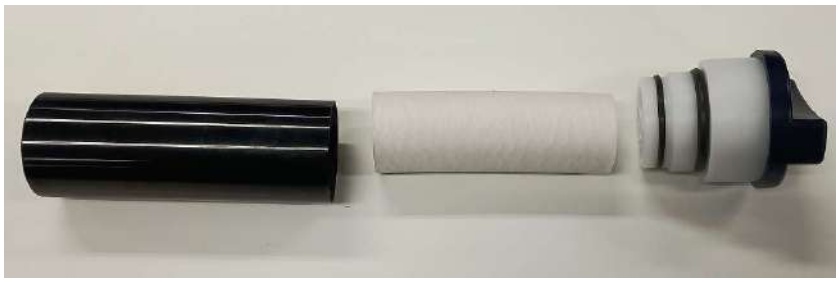
・Checking and replacing the Alcohol Wick

1) To remove the Alcohol Wick from the cartridge, hold the cartridge at the joint line with both hands and push the cap off the cylinder. The cartridge will be separated into the 2 parts, and the white Alcohol Wick will be visible (Figure 1).

2) After the cartridge is separated, push the Alcohol Wick out of the cartridge cylinder (Figure 2).

3) Make sure that the Alcohol Wick are clean.
If no contamination is found on the Alcohol Wick, it can be reused. Dry the Alcohol Wick and reassemble it.
If the Alcohol Wick is obviously contaminated, it must be replaced with the spare and disposed of.

1) Disassemble the Alcohol cartridge.



2) Remove the Alcohol Wick from the cartridge cylinder.

・Assembling the Cartridge

⚠ **Caution**	Before assembling, make sure that each part is clean. If there is dust or debris stuck to the Alcohol Wick, it may get into the device and cause several problems. Please confirm that there is no dust in the alcohol cartridge or on the Alcohol Wick.

Insert the Alcohol Wick until it reaches the bottom of the cylinder, and assemble the alcohol cartridge by reversing the steps shown above. Finally, blow air on the surface of the alcohol cartridge to remove any dust particles.

6.3 Mesh (Inlet)

Over time, the mesh inside of the inlet may become clogged by dirt. Remove the inlet and mesh for cleaning as necessary.

7. Specifications

Product name	Mask Fit Tester AccuFIT 9000 PRO SeriesⅡ
MODEL	3000-A2
Concentration Range	0~100,000 particles/c㎥
Particle Size Range	0.015~1μm
Flow Rate	Sample : 350c㎥/min, Total : 1000c㎥/min
Alcohol	Isopropyl alcohol or ethanol (purity: 99.5%) A single full charge allows for approximately 10 hours of continuous measurement. (when the measurement environment temperature is 20°C) *Customers must provide their own isopropyl alcohol and ethanol. *If the measurement environment temperature changes, the continuous measurement time will also vary. Please consider this as a guideline only.
Operating environment	Temperature: 15 to 35 °C, Humidity: 20 to 85 %RH (with no condensation)*
Storage environment	Temperature: -20 to 50 °C, Humidity: 0 to 85%RH (with no condensation)
Inlet Ports	Ambient (left,blue) Sample(right, silver)
Tect Protocol	OSHA (comply with new protocol OSHA1910.134) ANSI, CSA, INDG, JIS
Langueges	English, Chinese, Japanese, French, Spanish, Portogese
Interface	USB (Port3 : Device 1 , Host2), Ethernet (Port1), Wi-Fi
PC Application	Control 4 units simultaneously. *This device can be used together with AccuFIT9000 and AccuFIT9000 PRO.
Software	Windows10,11 Misrosoft.Net version 3.5
Power Supply	AC Adapter (AC 100 to 240V 50/60Hz)
Dimension	208(w) x 263(D) x 152(H) mm
Weight	Approximately 3.4kg
Standard Accessories	AC adapter, Power cord, Zero check HEPA filter, Alcohol storage container, Alcohol cartridge, Storage cap, Spare Alcohol Wick (2 pcs.), Twin tube (1m), USB memory, USB Cable, Earthnet, Earthnet Cable, Net Strap, "AccuFIT9000 Series Software Download Site" sheet
Available Accessories	Probe Insertion Tool, Probe Kit (100set) Hard type carrying case,Soft type carrying case, Ultrasonic Particle Generator

*AccuFIT9000 PRO SeriesⅡis not waterproof. Be careful not to splash water or other liquid onto the device.

8. Troubleshooting

Symptom	Possible Cause	Troubleshooting
A count value is too low (lower than expected).	Alcohol depletion	Recharge the alcohol cartridge with alcohol. (Refer to **3.1 Recharging the Alcohol Cartridge with Alcohol**.)
	The actual particle count in the ambient area is low.	—
	Moisture has accumulated inside the alcohol cartridge.	Replace the Alcohol Wick inside of the alcohol cartridge or dry the Alcohol Wick. (Refer to **6.2 Alcohol Cartridge**.)
	Pump has problems due to low flow (or no flow).	Check the pump performance. Check the touchscreen for an error message. Check the flow rate of the pump. The flow rate must be approximately 700cc/min.
	The device is being operated in an environment outside the specified operable range.	Operate the device in the specified environment. (15 to 35℃, 20 to 85%RH, with no condensation)
	The alcohol is poor quality or is contaminated.	Replace the Alcohol Wick inside the alcohol cartridge. Use only the appropriate alcohol. (Refer to **6.2 Alcohol Cartridge**.)
	Dust and/or alcohol may have gotten into the optical system.	Contact your distributor.
	The device requires a calibration or service.	Contact your distributor.
【PD LD Error】 message	The optical system in the main body is faulty.	Contact your distributor.
【Pump Error】 message	The pump in the main body is faulty.	Contact your distributor.
【Peltier Error】 message	The Peltier device in the main body is faulty.	Contact your distributor.
【Low Alcohol】 message	The amount of alcohol is low.	Replenish the alcohol cartridge with alcohol.

【Count Over】 message	Measurement concentration is too high.	Ensure that ambient particle concentration is 100,000 particles/cc or less.
【Power Supply Voltage Error】 message	No appropriate AC adapter is connected.	Make sure that the provided AC adapter is connected.
	The circuit in the main body is fautly	Contact your distributor.

9 Warranty and After-Sales Service

The limited warranty set below is given by KANOMAX Japan, Inc. (hereafter referred to as “KJI”) with respect to this instrument, its attachment parts including standard accessories (hereafter referred to as “PRODUCT”) that you have purchased. PRODUCT you have purchased shall be the only one that the limited warranty stated herein applies to.

Your PRODUCT, when delivered to you in new condition in its original container, is warranted against defects in materials or workmanship as follows: for a period of two (2) years from the date of original purchase, defective parts or a defective PRODUCT returned to KJI, as applicable, and proven to be defective upon inspection, will be exchanged for a new or comparable rebuilt parts, or a refurbished PRODUCT as determined by KJI. Warranty for such replacements shall not extend the original warranty period of the defective PRODUCT.

To obtain service under this warranty, you must notify Kanomax Japan, Inc. on or before the expiration of the warranty period to obtain directions for returning the defective product. You are responsible for all return shipping charges to the authorized Kanomax service center.

This limited warranty covers all defects encountered in normal use of the PRODUCT, and does not apply to the following cases:
(1) Use of parts or supplies other than the PRODUCT sold by KJI, which cause damage to the PRODUCT or cause abnormally frequent service calls or service problems.
(2) If any PRODUCT has its serial number or date altered or removed.
(3) Loss or damage to the PRODUCT due to abuse, mishandling, improper packaging by the owner, alteration, accident, electrical current fluctuations, failure to follow operating, maintenance or environmental instructions prescribed in the PRODUCT's instruction manual provided by KJI, or service performed by other than KJI.

NO IMPLIED WARRANTY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, APPLIES TO THE PRODUCT AFTER THE APPLICABLE PERIOD OF THE EXPRESS LIMITED WARRANTY STATED ABOVE, AND NO OTHER EXPRESS WARRANTY OR GUARANTY, EXCEPT AS MENTIONED ABOVE, GIVEN BY ANY PERSON OR ENTITY WITH RESPECT TO THE PRODUCT SHALL BIND KJI. KJI SHALL NOT BE LIABLE FOR LOSS OF STORAGE CHARGES, LOSS OR CORRUPTION OF DATA, OR ANY OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES CAUSED BY THE USE OR MISUSE OF, OR INABILITY TO USE, THE PRODUCT, REGARDLESS OF THE LEGAL THEORY ON WHICH THE CLAIM IS BASED, AND EVEN IF KJI HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL RECOVERY OF ANY KIND AGAINST KJI BE GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT SOLD BY KJI AND CAUSING THE ALLEGED DAMAGE. WITHOUT LIMITING THE FOREGOING, THE OWNER ASSUMES ALL RISK AND LIABILITY FOR LOSS, DAMAGE OF, OR INJURY TO THE OWNER AND THE OWNER'S PROPERTY AND TO OTHERS AND THEIR PROPERTY ARISING OUT OF USE OR MISUSE OF, OR INABILITY TO USE, THE PRODUCT NOT CAUSED DIRECTLY BY THE NEGLIGENCE OF KJI. THIS LIMITED WARRANTY SHALL NOT EXTEND TO ANYONE OTHER THAN THE ORIGINAL PURCHASER OF THE PRODUCT, OR THE PERSON FOR WHOM IT WAS PURCHASED AS A GIFT, AND STATES THE PURCHASER'S EXCLUSIVE REMEDY.

10. Contact Information

KANOMAX JAPAN INC.
Department : Asia Business Development
2-1 Shimizu Suita City, Osaka 565-0805, Japan
TEL: +81-6-6877-0183 **FAX: +**81-6-6877-5570
URL: http://www.kanomax.co.jp/
E-Mail: ABD@kanomax.co.jp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