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OPERATOR'S MANUAL

QUANTIFIT®
FITTRACK GOLD™

OHD, Inc.

The OHD Quantifit® Respitrator Fit Test System

Thank you for recognizing the OHD Quantifit as the world leader in respirator fit testing.

We welcome your feedback as we support you with your workplace safety needs.

Quantifit and FitTrack Gold Operating Manual

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Quick Guides

1 Quick Guides

These Quick Guides may be useful when learning to perform routine tasks with the Quantifit and FitTrack Gold software.

Add Subject and Perform Fit Test

USB Transfer to Software

Import Test Data from FitTrack 5.0.1

Print Reports

1.1 Add Subject and Test

1. Go to the Personnel tab
2. If not already selected, select the Company where the employee should be added
3. Click on the Add button
4. Enter appropriate information (only name is required)
5. Click on Save & Test
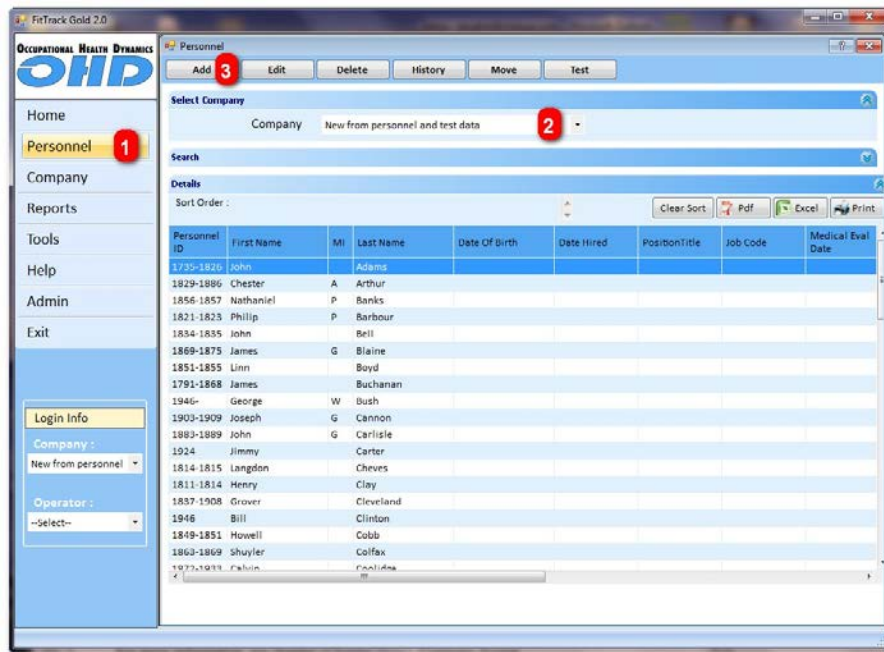
6. Confirm/Select Test Protocol, Mask Manufacturer, and Mask Size
7. Click on the Test button
8. Follow instructions to perform each step
9. After fifth step, click on Save & Print
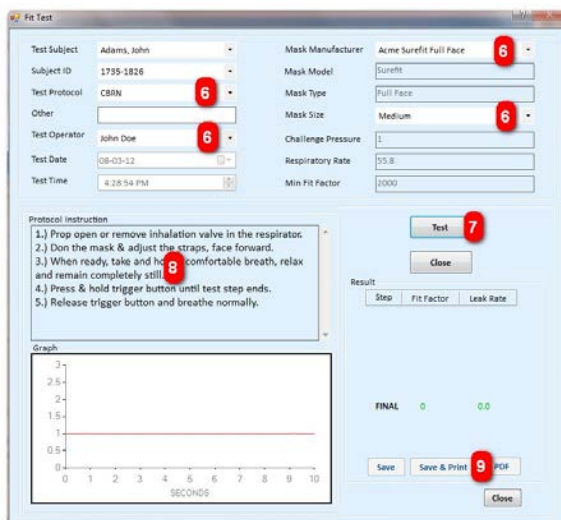
1.2 USB Transfer to Software

Quantifit data can be imported directly into the software when the Quantifit is connected to the computer. Otherwise follow these instructions to import the data file from the Quantifit:

1. Plug a memory stick (thumb drive) into the back of the Quantifit using the upper USB port

2. On Quantifit, go to System > Datalog
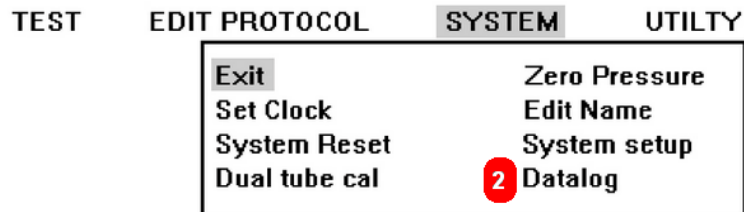
3. Select File > Save Datalog
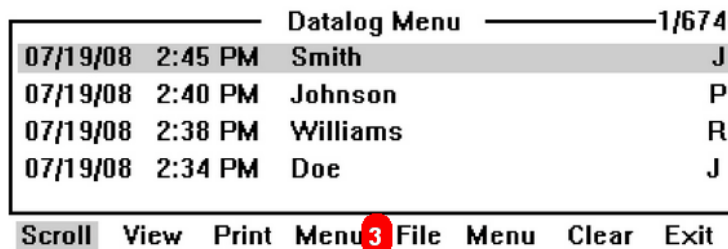
4. Name the file and select Done
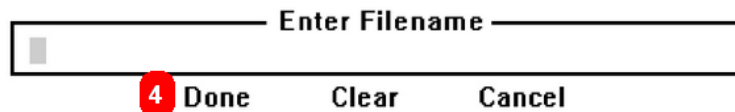
5. When Quantifit is finished saving the file, plug memory stick into computer

6. Open FitTrack Gold, go to the Tools Tab

7. Click on Import From Memory Stick

8. Browse to the memory stick and the file name

9. Import (NOTE: The data will be imported into the currently opened company)
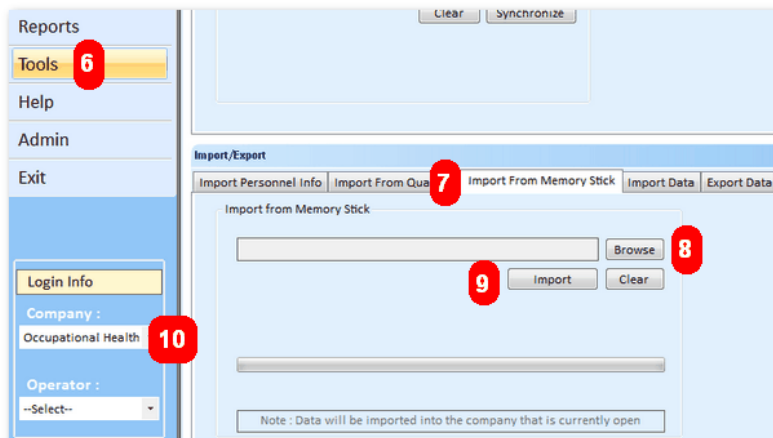
1.3   Import from FitTrack 5.0.1

1. **WARNING:** When restoring the database, all current data will be deleted. Restore only if there are no tests saved in your database.
2. Go to the Tools tab
3. Click on the Restore tab
4. Choose From FitTrack 5.0.1
5. Click Browse to find the FitTrack 5.0.1 database "FitTrack.mdb"
6. Click on Start
7. First you will be asked if you want to back up the current database. Assuming there is no important data, select No
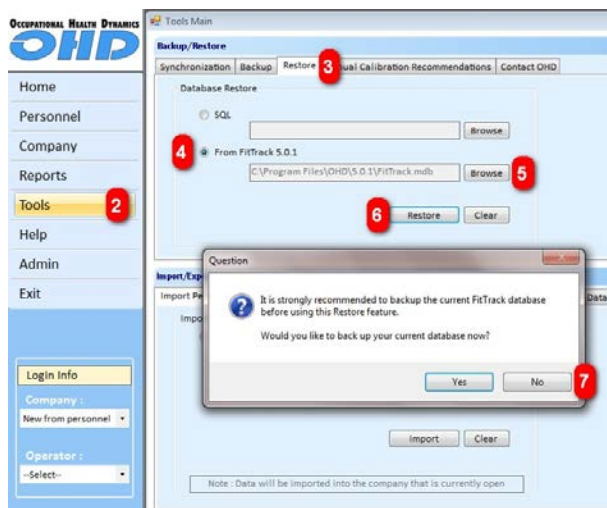
8. Do you want to restore this database? Yes
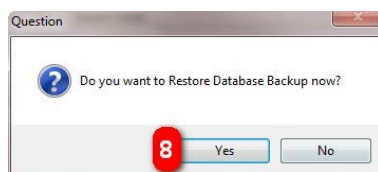
9. Click on Start
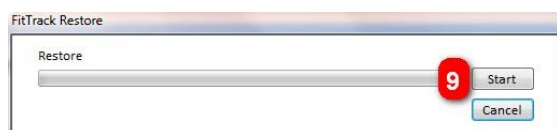
10. Restore complete, click on Close
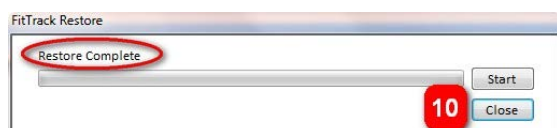
1.4   Print Reports in FitTrack Gold

At the end of each test, the Save & Print option can be selected to print the individual test report. After the test is complete, there are several ways to print out reports. To get to the reports module, select the Reports tab, and choose a company name from which you want to print reports.

1. **Fit Test Report** (the report that prints at the end of each individual test)
   a. Choose Fit Test Result Report
   b. Check Test Date (assuming you are looking for tests on a certain date)
   c. Click on the Search button
   d. Click on the Print button, and reports will first print to screen for people who were tested on the specific date entered
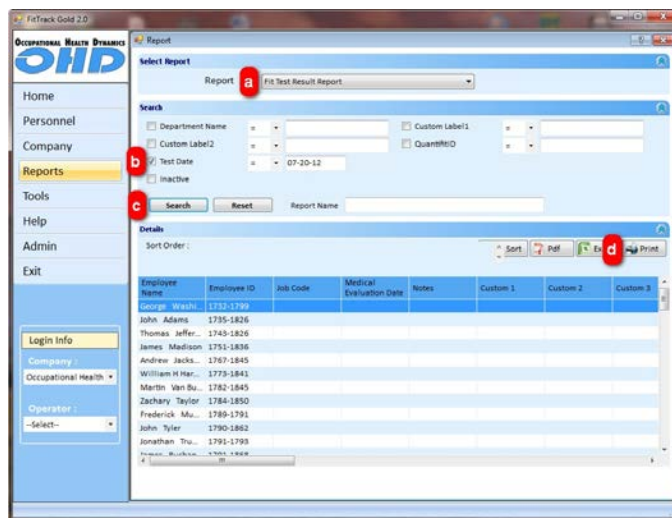
2. **Fit Test Log** (a summary of people tested on a given day)
   e. Follow the steps above, except choose Fit Test Log Report from the selection
   f. The Fit Test Log report gives choices as to which information can be selected to appear on the report. The default selections can be left, or the user can choose which fields are important.
   g. Click on Submit
   h. The data will be populated, click on print as in the first example (d)
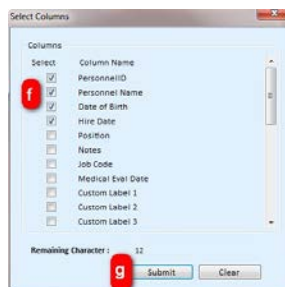
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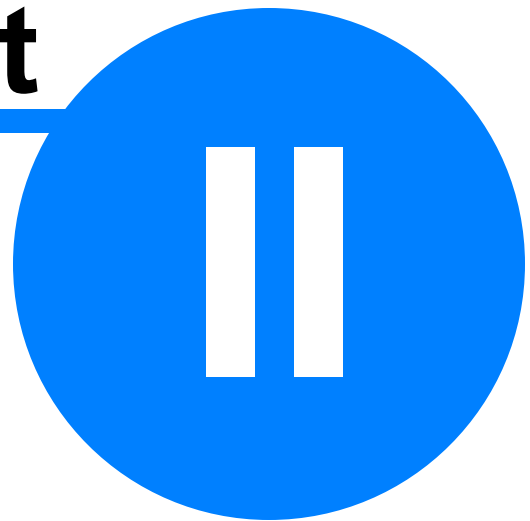
General Information

2   General Information

This chapter give an overview to this manual, where to get help, and about the Quantifit features and specifications.

2.1   Safety and Environmental Considerations

The instrument and related documentation must be reviewed for familiarization with safety markings and instructions before you operating the instrument.

Environmental Conditions

The Quantifit is for use indoors, at an altitude up to 2,000m (6,500 ft.) with a temperature range of 15 to 32 degrees C, (60 to 90 F) maximum relative humidity of 80% non-condensing and pollution degree 2.

Warning

The WARNING! Sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a WARNING! Sign until the indicated conditions are fully understood and met.

Caution

The CAUTION Sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or all of the instrument or data. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.

Manual Addenda

Information concerning improvements or changes to the instrument that occur after the printing of this manual will be on an addendum sheet included with the manual. Be sure to review these changes before attempting to operate or service the instrument.

2.2   The Quantifit and Its Features

2.2.1   Introduction

The Quantifit measures…

Face-to-facepiece fit of a respirator. With a perfect respirator and fit, all inhaled air is forced through the filter system, thereby providing maximum respiratory protection for the individual. If the face-to-facepiece seal leaks, unfiltered air bypasses the filter system and enters the individual's lungs during inhalation, thus reducing respiratory protection.

By design, a respirator should prevent contaminated air from entering the lungs of the individual wearing it. If the respirator is in good working order, the only way contaminated air can enter the individual's lungs is through a leak in the face-to-facepiece seal. The Quantifit measures face-to-facepiece seal leakage and then calculates the fit factor (FF) of the respirator fit being tested.

The Quantifit uses…

…patented Controlled Negative Pressure (CNP) technology. A fit test adapter is used in place of the filter cartridge and inhalation valve on the respirator.* The individual being tested dons the respirator (in accordance with Association National Standards Institute [ANSI] guidelines or manufacturer's instructions), takes a breath, holds the breath, presses the trigger button, and begins the test.

* The inhalation valve must be removed or propped open for the fit test.

The Quantifit functions by…

Creating and maintaining a negative pressure in the respirator mask. This process lasts 8 seconds. Once the adapter valve is closed by pressing the trigger button, sealing the respirator mask, the Quantifit removes air from the respirator mask until the challenge pressure is reached.

At this point, if there isn't a leak, the Quantifit doesn't remove any more air from the respirator mask. If there is a leak, air enters the respirator mask, and the pressure rises. The Quantifit then removes air from the respirator mask until the challenge pressure returns. This process continues for 8 seconds, and then the test ends. The individual under test releases the trigger button and breathes normally.

During the fit test, the Quantifit measures exactly how much air it removed from the respirator mask after reaching the challenge pressure. This measurement is used by the Quantifit to calculate the leak rate.

The Quantifit has two types of protocols: Standard protocols with fixed challenge pressures and modeled breathing rates; and Custom protocols where the user defines parameters, including breathing rate, test steps, and exercises.

Challenge pressure, expressed in hundredths of inches of H20, is the maximum partial vacuum created in a correctly fitting mask when the user is working at a typical rate. The modeled breathing rate is the calculated total inspiration for 1 minute.

The modeled breathing rate (in liters per minute [LPM]) is multiplied by 1000 to provide cubic centimeter and then divided by the leak rate (in cubic centimeters per minute [cc/min]) is the fit factor ratio. This is a ratio of the total inhalation pressure to the air inhaled.

2.2.2   Quantifit Features

If you don't have a quantitative fit-testing program, the Quantifit helps you start one. Or, if you do have a quantitative fit-testing program, the Quantifit integrates easily into your present program.

These features make the Quantifit simple to use:

- Can be used without a personal computer by utilizing the keyboard and optional printer

- On-board data storage

- Versatile file transfer via thumb drive or directly through USB cable

- Interfaces with personal computer USB ports

- Updates are done by the end-user with an easy internet download

- User prompts that make the instrument easier than ever to use, including self testing

- Doesn't require an invasive probe

- Doesn't use messy challenge agents or alcohol.

- Reduces test time compared to other quantitative fit-test systems

- Directly measures leakage flow—the primary measure of respirator fit

- Tests workers in the actual respirator masks they wear in the workplace

- Displays individual results including Fit Factor, Leak Rate, Test Time, Test-Q (Test Quality), Challenge Pressure, Modeled Breathing Rate, and Minimum Passing Fit Factor

- Displays and prints overall fit-test protocol results including Average Percent Leak, Equivalent Fit Factor, Test Date, Test Time, Test Parameter Values, and a step-by-step summary of the protocol

- Meets OSHA and CSA fit-testing protocol requirements

- Offers two custom protocols that can be created and stored in nonvolatile memory

- Displays menu-selectable commands.

- Provides a comprehensive "Help" program that is available at the touch of a button.

- Outputs test results to the display (LCD display), an external printer, or a database.

- Minimizes cross-contamination (air extracted from the mask exits through the "EXHAUST" port, located on the back of the instrument).

2.3 Accessories

2.3.1 Standard Accessories

Description	Part Number
USB Keyboard	9530-4003
USB Computer Cable	3010-4002
Universal Power Cord	3010-4001
Triple Tube Assembly	9503-4003
Trigger Button	3010-4000
User Manual	3010-0208
FitTrack Software	3010-2019
Rigid Carrying Case	9530-4001

2.3.2 Optional Accessories

Description	Part Number
Adapters	9513-XXXX
Printer	9530-4002
Laminator Kit	FTK PL4A PKG

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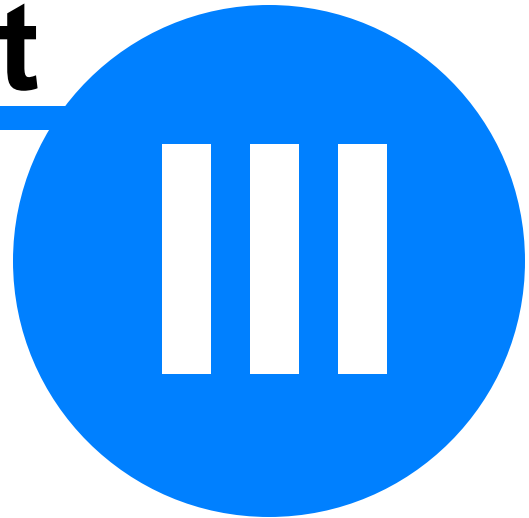
Instrument Set Up

3 Instrument Set Up

This chapter contains information about setup and external connections for the Quantifit.

3.1 Front Panel Controls

Front View of Quantifit

3.1.1 Optical Sensor Knob

The Optical Sensor Knob is used for navigation within the Quantifit menu structure. The knob can be turned clockwise or counter-clockwise to move forward or backward through the menu selections. When the appropriate selection is highlighted, push on the Optical Sensor Knob to accept the menu selection.

To use the Optical Sensor button to go back to the previous screen, the user would need to turn the button counter-clockwise until "Exit" is highlighted. Then the user would press on the knob to exit out to the previous menu.

3.1.2   Front Panel Push Buttons
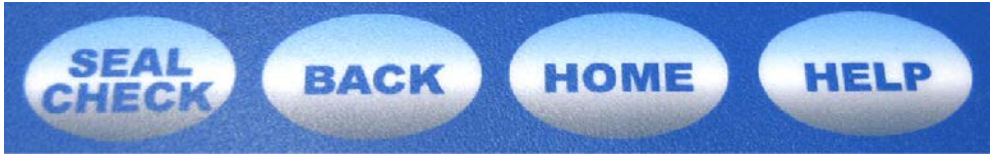
Seal Check

The Seal Check button can be pressed to perform a user-seal check. When the subject has properly donned the respirator and wishes to do a user-seal check, he or she may press the Seal Check button to close off air flow while inhaling to determine if the subject can identify a leak in the respirator. The subject can press the Seal Check button while inhaling, and hold his or her breath for 10 seconds. When the Seal Check button is released, the subject should feel the mask move away from the face as the pressure is released. If this does not occur, this would indicate that the mask leak was so significant that the pressure could not be held for the 10 seconds.

Seal Check + Help

In a rare situation if the trigger button should become lost or damaged, the Seal Check and Help buttons can be pressed together to perform the same function. Hold down the Seal Check button, then depress the Help button. The Help button can be released as long as the seal check is held down for the duration of the test step.

Back

The Back button may be used to back up one step in the menu structure. This button works in the same manner as the back button in an internet web browser. If the user is several levels deep within the menu structure, the back button will bring the user to the previous screen.

Home

The Home button may be used to bring the user back to the main menu of the Quantifit. Regardless of where the user is, he or she can press the Home button to return to the main menu. If this button is pressed during a test or after data input, the user will be asked to confirm that they want to escape the current position and not save the current data.

Help

The help menu may be used to view further details or instructions when the user needs further assistance. Navigate through the help menu by using Optical Sensor Knob. Scroll to the appropriate subject and press on the knob to enter the subject information.

3.1.3   Front Connections

The connectors located on the front of the instrument will be used during calibration and testing.

Flow, Pressure and Valve

These connectors are used for the Triple Tube. The flow will accept the only male connector. The Pressure connector will take the clear female connector, and the Valve port will take the connection on the blue tube.

Trigger

The Trigger connection will be used for the hand-held trigger button that sets each test in motion.

3.1.4   Rear Connections

On-Off Switch

The On-Off Switch functions like a standard power switch. Toggle to the left (-) and the power is turned off. Toggle to the right (o) and the power is turned on.

9 VDC, 5A (Power) Connection

The power connection is to supply power to the unit, and the universal power supply that was shipped with the Quantifit must be used. Take care to be sure that the flat end of the cable is facing up when connecting the power cord. Do not force the cord into place as this may result in damage to the unit.

Dual Tube Cal Ports

During the instrument's daily calibration, the clear tubing sides of the Triple Tube will be connected to these ports. These ports are interchangeable, therefore, it does not matter which tube gets connected to which port. Do not connect the blue tube to this port, this will result in a failure of the daily calibration.

Exhaust Port

This port exhausts air out of the unit during normal operation. This port is also used during factory calibration and should not be tampered with by the user.

USB PC Port

The USB PC Port is used to connect the Quantifit to a personal computer. The Quantifit is shipped with a supplied cable for this purpose. The USB symbol on the cable must face up to properly insert this cable. This cable allows for the Quantifit to be operated from the supplied software. This cable may also be used to upgrade the firmware of the Quantifit.

USB Devices (2)

The two standard USB ports may be used to connect the USB Keyboard and the optional printer. These ports are interchangeable and may be used for either of these devices. The top port (only) may be used to connect a flash drive or memory stick to download testing data. Please note that data download will only work on the top USB port.

Printer Compatibility Information

Compatible printers include select Hewlett Packard (HP) printers that use an "HP PCL3 Enhanced" printer language. If a connected printer does not work, there is no setting that can be changed on the Quantifit. This simply means that the printer is not compatible. See OHD's website, www.ohdusa.com, for an updated printer compatibility list. If the tests are being performed via a personal computer and FitTrack software, any Windows-compatible printer may be used. See our website for an updated list of compatible printers.

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Operating Instructions

4   Operating Instructions

This chapter contains information about menu options and preparing the Quantifit for testing.

4.1   Preparing the Quantifit for testing

1. Location

- Use a room that permits spoken communication between the operator of the Quantifit and the test subject.

- Place the Quantifit on a table large enough to also accommodate a printer, keyboard and accessories, while allowing room for two seated persons.

2. Printer and Keyboard Connections

- Turn the power off to both the printer and the Quantifit.

- Connect the printer and keyboard to the Quantifit through the USB Ports on the back of the unit. Plug the square end of the printer cable into the printer.

- Turn on the power to the Quantifit.

- Turn printer power on.

  NOTE: Refer to Connecting the Printer for printer compatibility and connector specifications.

3. Printer and Keyboard Connections

- When using FitTrack software to operate the Quantifit, use the supplied USB cable.

- The square end of the cable goes into the USB PC port.

- The flat end of the cable goes to a USB port on your PC.

4. Test Adapters

- Replace the respirator's filter cartridge (or cartridges) with the appropriate test adapter (or adapters).

- Be sure to prop open or remove the inhalation valve from the mask.

5. Triple Tube & Trigger Button Connections

- First, attach the triple tube assembly (Part # 9503-4003) to the front of the Quantifit. Use the end of the dual tube assembly that has one male quick-disconnect adapter to connect to Flow, use the clear female connector to connect to Pressure, and the blue female tube to connect to Valve.

- Connect the Trigger Button by inserting the quarter-inch connector into the Trigger port.

4.1.1   Daily Calibration

At the beginning of each day, if the Daily Calibration has not been performed, the instrument will prompt the user to do the calibration. It is recommended that the daily calibration be performed before each day of testing. This calibration assures the user not only that the Quantifit is working properly, but that it is also measuring leak within the specified tolerance.

Zero the Sensor

The Quantifit will first prompt the user to zero the sensor of the instrument. In order to do this step, the user must disconnect the Triple Tube from the front of the instrument and press on the Optical Sensor Knob to zero the sensor.

Daily Calibration

For the next step, the instrument will prompt the user to connect the Triple Tube to the front of the instrument, and then to connect the two ends of the clear tubing to the back of the instrument on the Dual Tube Cal ports. It does not matter which side each tube is connect to, as they are interchangeable.

When the tubes are properly connected, push in the Optical Sensor Knob to "Proceed." The Quantifit will send various flow rates through the instrument to make sure that the measurement of each flow rate is within the accepted tolerance. When the calibration is completed, the Quantifit will confirm that the instrument has passed the calibration requirements. If for some reason the Quantifit should fail this calibration, the user will see an error message to describe the reason for failure. The user should check all connections to make sure they are secure. If the Quantifit does fail calibration, it will be necessary to contact OHD.

4.1.2   Interfacing with the Respirator

The OHD test adapters provide mechanical connections between respirator masks and the Quantifit. Two types of test adapter kits are used:

Single-Piece Adapter

On the single piece adapter, the two clear tubes are connected to the side of the adapter, and the blue tube is connected to the front of the adapter.

Two-Piece Adapters

When using the two-piece adapters, the clear tubes are connected to the adapter piece that contains the two connector ports, and the blue tube is connected to the piece with the single port.

4.1.3 Performing a Fit Test

(See "Running a Protocol," for complete instructions.)

Test Step Instructions

To perform each of the five steps of a fit test protocol, the test subject takes a comfortable breath and holds it, and then presses the trigger button to begin the test. The trigger button simultaneously closes off the breathing airway, and starts the test. At the end of the 8-second test, the instrument automatically releases the airway which allows the test subject to breathe.

User Seal Check

If at any time the test subject wishes to do a user-seal check, the Seal Check button on the front panel of the instrument can be used. The subject can press the Seal Check button while inhaling, and hold his or her breath to maintain the negative pressure for 10 seconds. When the Seal Check button is released, the subject should feel the mask move away from the face as the pressure is released. If this does not occur, this would indicate that the mask leak was so significant that the pressure could not be held for the 10 seconds.

NOTE: If the trigger button should be lost or damaged, a test can be performed by using the Seal Check and Help buttons simultaneously. Hold down Seal Check, then press Help. Once the test begins, the Help button can be released, but the Seal Check button must remain depressed. (See Seal Check +Help)

4.2 Quantitative Fit Test Overview

4.2.1 Procedure

The Quantifit does not require an invasive probe in the respirator mask. In most cases, the test subject can be tested using the actual respirator mask that is worn in the workplace.

The respirator mask inlets are capped with one or two of the test adapters described in the previous section, and inhalation valves are removed or propped open. The test subject dons the respirator mask to perform the fit test. When the mask is properly positioned, the test subject takes a breath, holds the breath, and presses the trigger button to close the adapter valve and start the test. This starts the piston moving within the cylinder inside the Quantifit. The piston movement within the cylinder removes air from the facepiece until a predetermined challenge pressure is reached (see Challenge Pressure). Each step of the fit test is completed in 8 seconds or less.

The Quantifit controls the piston movement to maintain the challenge pressure inside the facepiece. The piston speed required to maintain a constant pressure is directly related to the airflow. Since leakage is

directly related to the fit of the respirator mask, the lower the leakage, the better the fit. The leak rate is reported in cubic centimeters per minute.

4.2.2   Protocol

A protocol is a series of quantitative fit tests in various positions or a combination of fit tests and exercises. One quantitative fit test consists of the 8-second-or-less procedure explained above.

See Which Protocol Should I use?

In September, 2004, OSHA approved the Redon protocol to be used only with CNP instruments. This five-step protocol performs tests with three different donnings to assure that the test subject is proficient at donning a respirator to achieve adequate fit. The test steps measured with this protocol are as follows:

1. Face Forward

2. Bend Over

3. Shake Head

4. Redon Respirator (1)

5. Redon Respirator (2)

It is recommended that the user follow the Redon protocol when testing any air-purifying respirators. When Self-Contained Breathing Apparatus (SCBA) Respirators are used, it is recommended that the SCBA protocol is used. This protocol is identical to the Redon protocol with the one exception that the challenge pressure is increased. The assumption is that while wearing an SCBA, the user will be under more stress, therefore creating a higher breathing rate. The Redon protocol uses a challenge pressure of 0.58 H_2O, while the SCBA protocol uses a challenge pressure of 1.50 H_2O.

The CBRN protocol uses a challenge pressure of 1.0 H_2O. The CSA SCBA protocol contains an increased minimum passing fit factor as required by the Canadian Standards Association.

The user may also customize the protocol to meet his company's needs or may alternatively use the factory preset protocols and test values. But please note that in order to comply with current standards for respirator fit testing, the user must use one of the factory-set five-step protocols.

4.2.3   Fit Factor

The ratio of the modeled breathing rate to the measured leak rate is the calculated fit factor and is expressed by the following equation.

$$\text{Fit Factor} = \frac{\text{Modeled Breathing Rate (cc/min)}}{\text{Measured Leak Rate (cc/min)}}$$

The modeled breathing rate (MBR)* is the rate at which an individual breathes, predetermined for the standard protocols. The MBR is calculated from the parameters specified by the operator for custom protocols.

The measured leak rate (MLR) is directly related to facepiece fit. All fit factors are calculated from the leak rate. The leak rate is specified in cubic centimeters per minute (cc/min).

* A feature unique to the Quantifit is its ability to change the modeled breathing rate in order to challenge the mask at different negative pressures. This allows the user to replicate different or extreme

circumstances in the real work environment. By varying the negative pressure, the user can "challenge" or test the mask under varying stress load conditions, and discover how fit will be affected under those loads. The setting of these parameter options is discussed in the PARAMETERS section of Protocol Chapter.

NOTE: The conservative fit factor of the Quantifit is equivalent by definition to fit factors obtained by other quantitative fit test methods (such as ambient aerosol). The direct leakage measurement of the Quantifit is superior to ambient aerosol approximation methods, because the leakage measurement isn't dependent on aerosol in-mask particle accuracy problems, including collection and counting. The Quantifit leak measurement system uses air, not aerosols; therefore, it eliminates mixing and all other related problems associated with quantitative aerosol measurement methods.

4.3   Getting Started

The following section is intended for using the Quantifit in stand-alone mode (without PC connection).

4.3.1   Power-On and Menu Navigation

The power-on/off switch is located adjacent to the power cord plug on the rear panel of the Quantifit.

Use the Optical Sensor Knob to select the menu you wish to enter. The menu options are Test, Edit Protocol, System and Utility. The following four chapters are devoted to describing the functions and options contained under each menu heading.

4.3.2   Using the Optical Sensor Knob and Keyboard

For navigation through the Quantifit menu structure, use the Optical Sensor Knob, the supplied keyboard, or any combination of those two.

The Optical Sensor Knob can be turned clockwise or counter-clockwise to scroll through menus. turn to a selection and simply press on the knob.

The keyboard can be used in the same way by using the cursor arrow keys to navigate through the menus, and by pressing <ENTER> to make a selection.

For the purposes of this manual, all instructions for navigation will use the Optical Sensor Knob. Please know that the keyboard may be used in the same manner for every function performed by the Optical Sensor Knob.

To enter into one of the four menus, press on the Optical Sensor Knob. Turn the knob clockwise to move forward to one of the menu items and press on the knob to make a selection. At any time the "Back" button may be pressed to get back to the previous menu, or use the "Home" button to return to the start-up screen.
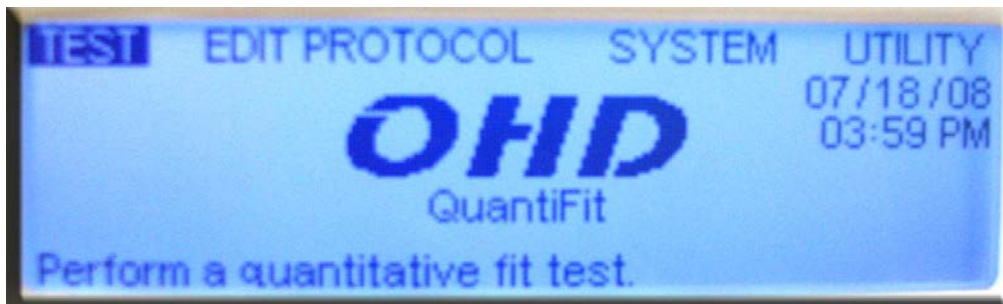
4.3.3   Preparing the Respirator for Fit-Testing

1. **SELECT** the size, brand, and style of respirator that best fits the test subject and is most suitable for the application.

2. **REMOVE OR PROP OPEN** respirator inhalation valve(s) carefully. Upon completion of the fit test, reinstall the respirator inhalation valve(s).

3. **REPLACE** filter cartridge(s) or regulator with test adapter(s).

4. **CONNECT** the blue tube of the Triple Tube (Part # 9503-4003) to single connector on the adapter kit.

5. **CONNECT** two clear tubes of the Triple Tube (Part # 9503-4003) the two connector portion of the fit test adapter kit.

4.3.4   Instructing the Test Subject

Use the instructions below to teach the test subject the procedure for holding one's breath and the guidelines to follow during the fit test.

Have the test subject practice the following steps a few times until comfortable with the procedure.

- Take a breath and hold it, keeping mouth closed. (The breath is to be held as if going under water.)

- Continue holding breath for 8 seconds.

- After holding breath for 8 seconds, relax and breathe normally.

Have the test subject follow these guidelines during a fit test.

- Keep mouth closed (do not swallow or move mouth or tongue).

- Do not exhale any air through the nose.

- Do not make any head or facial movements. Sit or stand as still as possible in the position as instructed. Maintain this position for 8 seconds; then resume normal breathing.

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V

Test Menu

5   Test Menu

This chapter contains information about the Test Menu and Protocols.

5.1   Pre-Test

5.1.1   Introduction

The pre-test is not a requirement, but rather a tool that can be used to familiarize the test subject with the fit test, to conduct donning exercises, and to let the test subject quickly see how donning affects fit factor. The pre-test can also be used to "qualify" a mask before beginning a protocol. The Quantifit can quickly check fit factors on different sizes and models of masks to determine the best-fitting respirator.

This introductory section contains the following:

- Information shown on the display when running a pre-test. *(See instructions on <u>running the pre-test</u>.)*

- Challenge pressure and respirator mask pressure definitions.

- Explanations of the pre-test parameters: inspiratory work rate, respirator mask type, cartridge type, and test subject's gender. *(NOTE: The minimum passing fit factor is a parameter for protocols only; therefore, see the <u>Parameters</u> section for instructions on how to change the minimum passing fit factor.)*

- When the minimum passing fit factor is changed for protocols, it affects the pretest results. (See the <u>Pre-test Results section</u>.)

- From the MAIN MENU, select the TEST MENU. Turn the Optical Sensor Knob or use the cursor arrow keys on the keyboard highlight "Pre-Test" on the TEST MENU. The following display appears:

TEST	EDIT PROTOCOL	SYSTEM	UTILTY

Exit	SCBA Protocol	Custom 2
Pre-Test	CBRN Protocol	Mask Integrity
Redon Protocol	CSA Protocol	
MIL Protocol	Custom 1	

Run a Single Test Exercise.

Next, press the key, and the display shows:

```
IMPORTANT:
Inhalation valves must be PROPPED OPEN
or REMOVED from the respirator mask prior
to the Fit Test!  Press Enter to continue.
```

Press any key to continue, and the display looks like this:

```
        PREPARE RESPIRATOR   (PRE-TEST)
  58    Don the mask, adjust straps and connect
   0    the dual tube. When ready, take a breath
        and hold. Press trigger to seal valve and
        start the test.

        WR:200    Mask:HM    C:Med    Male
```

The two numbers in the upper left corner of the above-illustrated display indicate the challenge pressure and respirator mask pressure.

The challenge pressure (58, above) is located immediately above the respirator mask pressure (0, above). See next page for details about these pressures and parameters.

5.1.2 Challenge Pressure

- For PRE-TEST, and CUSTOM 1 AND CUSTOM 2 PROTOCOLS the Quantifit calculates the negative pressure that would be produced in the respirator mask during inhalation, according to operator-selected parameters.

- For the REDON, CBRN, and SCBA protocols, the challenge pressure is fixed and is not a choice for operator selected parameters.

- The challenge pressure is equal to the pressure produced in the respirator mask during inhalation, and it appears (in hundredths of an inch of water) in the upper left portion of the display during the pre-test.

- The challenge pressure is the pressure at which the leak rate measurement is made.

5.1.3 Respirator Mask Pressure

The Quantifit monitors the respirator mask pressure via the PRESSURE port (located on the front panel).

The respirator mask pressure appears (in hundredths of an inch of water) below the challenge pressure in the upper left portion of the display.

5.1.4   Pre-Test Parameters

The operator specifies values for four parameters: inspiratory work rate, respirator mask type, cartridge type, and test subject's gender.

These parameter values are used directly in two Quantifit calculations: modeled breathing rate (which is then used to calculate the fit factor) and challenge pressure.

Before beginning the pre-test, use the options listed below to set the parameter values. (An explanation of each parameter follows this list.)

WR: Select the inspiratory work rate.

Msk: Select the respirator mask type.

C: Select the cartridge type.

Male: Select the test subject's gender.

5.1.5   Explanation of parameters

WR:

The inspiratory work rate has the largest influence on internal respirator mask pressure. It is measured in units of kcal/hr (energy consumed).

When a person expends more energy (works harder), he breathes harder, causing greater airflow through the cartridge. This increased airflow results in a higher-pressure drop.

Make an estimate of the work rate that the test subject experiences under normal working conditions. Turn the Optical Sensor Knob to highlight WR, and then push on the knob to make a selection. Scroll through the various options.

- 100 kcal/hr Light – standing still or sitting at ease.
- 200 kcal/hr Moderate – walking (casual) without a load.
- 300 kcal/hr Heavy – walking with or moving a light load.
- 350 kcal/hr Extreme – walking with or moving a heavy load, climbing stairs, digging, etc.

Msk:

The Quantifit tests two types of respirator masks.

- FF Full Face or Full Mask
- HM Half Mask

Because the full-face respirator mask has a CO_2 accumulation in the dead space, the test subject must take harder, deeper breaths to compensate for the lower oxygen content. Deeper breaths mean a higher instantaneous airflow rate through the filter cartridge. Challenge pressure, the pressure differential across the filter cartridge, is directly proportional to the airflow rate through the cartridge.

C:

The cartridges are classified into four categories:

- Low   Dust/mist filter
- Medium   Chemical or HEPA

- High   Combination of chemical and HEPA

- NA   Respirator masks that do not use cartridges; for example, SCBA and PAPR

The pressure drop across the cartridge is a function of cartridge resistance and airflow rate; therefore, the higher-density (more resistive) cartridge causes a greater pressure drop across the face-tofacepiece seal.

Male/Female

Men and women both breathe the same volume of air (for a given work rate). They do, however, have differentt inhalation rates. A male inhales faster, which causes a higher instantaneous flow rate to occur and results in a higher challenge pressure.

5.1.6   Running the Pre-Test

- Set parameter values as explained in the previous section PRE-TEST, Pre-Test Parameters.

- Review the breath-holding procedure with the test subject.

- Complete steps 1–4 in Preparing the Quantifit for Testing.

- Complete steps 1–5 in Getting Started, *Preparing the Respirator for Fit-Testing.*

- Have the test subject don the mask and adjust the straps to achieve a good fit.

- Make sure the test subject is seated or standing comfortably with shoulders facing the Quantifit.

- When the test subject is ready, have him take a breath, then press the trigger button.

- There are two beeps. On the second beep, instruct the subject to release the trigger button and to breathe normally and relax.

During the pre-test, a pressure trace appears as shown below:
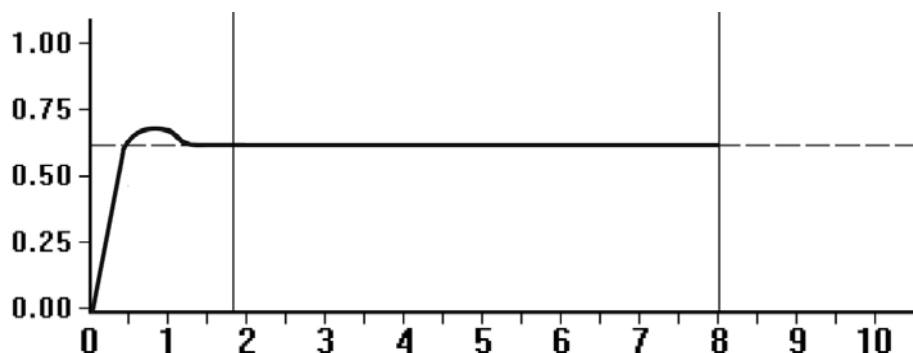
The Quantifit measures respirator mask leakage after the pressure in the mask stabilizes at the challenge pressure.
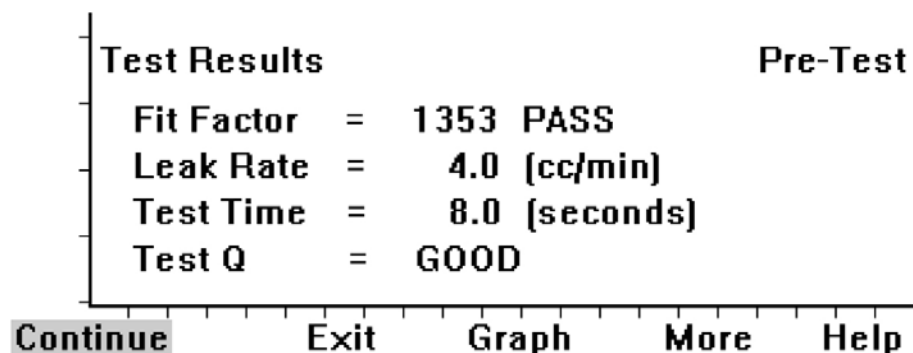
The two beeps signify the following:

- The first beep (visually indicated by the first vertical line) signifies that the challenge pressure has been reached.

- The second beep (visually indicated by the second vertical line) signifies the end of the test.
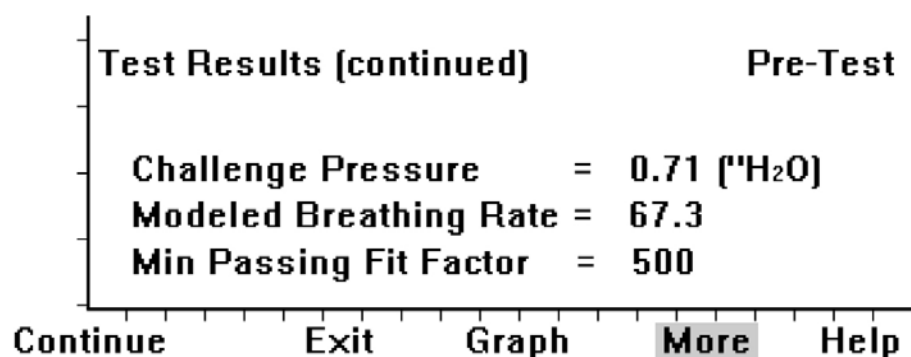
5.1.7 Pre-Test Results

The pre-test results are illustrated below and on facing page.

If the leak rate of the respirator mask yields a measurable fit factor, the display will look similar to this:

```
Test Results                          Pre-Test
   Fit Factor   =   1353  PASS
   Leak Rate    =     4.0  (cc/min)
   Test Time    =     8.0  (seconds)
   Test Q       =   GOOD
```
Continue   Exit   Graph   More   Help

If the leak rate is so great that a fit factor cannot be measured the display will read "NO FIT (fit factor <x)," where x is the lowest fit factor that can be measured for the particular set of parameters. Repeat the pre-test (see instructions below.)

• Select (MORE) for additional information as shown below:

```
Test Results (continued)              Pre-Test


   Challenge Pressure      =   0.71 ["H₂O]
   Modeled Breathing Rate  =   67.3
   Min Passing Fit Factor  =   500
```
Continue   Exit   Graph   **More**   Help

* To change the minimum passing fit factor, refer to PARAMETERS, Editing Parameters.

• Press (MORE) again, and the pressure trace is shown again:

5.1.8 Repeat the Pre-Test

It is recommended that the user keep repeating the pre-test until successful test results are achieved, that is, a "GOOD Test-Q" and a passing fit factor.

Press (CONTINUE) to repeat the pre-test.

5.1.9 Fit Factor

The first test result is the calculated fit factor (FF), the ratio of the modeled breathing rate to the measured leak rate.

$$\text{Fit Factor} = \frac{\text{Modeled Breathing Rate (cc/min)}}{\text{Measured Leak Rate (cc/min)}}$$

The direct leakage measurement of the Quantifit is superior to the aerosol approximation methods because the leakage measurement isn't dependent on aerosol particle-size distribution.

Notice the word "PASS" or "FAIL" next to the fit factor:

- FAIL indicates that the calculated fit factor is less than the *Minimum Passing Fit Factor* (explained on next page).

- PASS indicates that the calculated fit factor is equal to or greater than the *Minimum Passing Fit Factor* (explained on next page).

5.1.10 Leak Rate

The next test result is the leak rate. This is directly related to facepiece fit. It is from this leak rate measurement that all fit-factor calculations are made. Leak rate is specified in cc/min.

5.1.11 Test Time

This number represents the time from start to finish during which the subject holds his or her breath. The test time does not exceed 8 seconds. The total test time in seconds appears on the display beneath the "Leak Rate."

5.1.12 Test-Q

The Test-Q, or test quality, is an indication of acceptability of the fit-test results. Accurate results depend on a constant pressure being sustained during the test measurement interval.

To achieve a "GOOD" test quality, there must be enough consistency in the measurement from which the Quantifit will measure a consistent leak rate. Large pressure variations during the test will result in a "BAD" test quality. When this should happen, the user is instructed to try the step once again.

5.1.13 Additional Parameters

Additional parameters relating to the test can be viewed by using the optical sensor knob to scroll over to the "More" selection. The additional test information includes the following items:

5.1.13.1 Challenge Pressure

Shown in hundredths of an inch of water, the challenge pressure is the pressure at which the leak rate measurement is made. Challenge pressure is explained in the Pre-Test, Challenge Pressure section.

5.1.13.2 Modeled Breathing Rate

The modeled breathing rate is the rate, in liters per minute, at which an individual breathes under the conditions specified in the protocol.

For Custom 1 and Custom 2 Protocols, the modeled breathing rate is set by the same parameters as discussed in the pre-test: work rate and respirator mask type. The modeled breathing rate is used to calculate the fit factor.

For the REDON, CBRN, SCBA, and CSA-SCBA Protocols, challenge pressure and modeled breathing rate are pre-set and hence are unaffected by changes in the parameters.

5.1.13.3 Minimum Passing Fit Factor

The minimum passing fit factor is the minimum fit factor required for a passing result. This parameter is operator-specified as explained in the PARAMETERS, Editing Parameters section and displayed here. The PASS/FAIL indication that appears next to the fit factor, is calculated based on this parameter number.

5.2 Protocols

The protocol is a comprehensive series of test steps that accurately measures the fit of a given respirator. Consistent fit-test results are achieved by using a protocol.

The protocol is a sequence of up to 18 fit tests or exercises. The Quantifit stores five standard and two custom protocols in nonvolatile memory. After all steps in a protocol have been completed, the fit-test results are combined to calculate an overall fit factor for the protocol. The protocol results can be printed.

5.2.1 Which Protocol Should I Use?

Protocol:	REDON	SCBA	CBRN	CSA SCBA
Air Purifying	✓			
PAPR	✓	☆		
SCBA	✓	☆		
CBRN	✓		☆	
Canada SCBA				✓

✓ = Minimum Requirement
☆ = Exceeds Minimum Requirements, may better emulate the mask wearer's actual breathing rate.

This graphic outlines the protocol options available when using the Quantifit. See Preprogrammed protocols to understand the differences between each protocol.

5.2.2 Preprogrammed Protocols

In September 2004, OSHA approved the Redon protocol for use only with CNP instruments. This 5-step protocol uses the strengths of Controlled Negative Pressure to assure that employees are achieving a proper fit. This protocol also reinforces proper donning techniques as the test measures the fit from three separate donnings. The following four protocols use the same 5 steps during the protocol. The difference in each comes from the modeled breathing rate. The Redon protocol, as approved by OSHA (1910.134 App. A), requires that the fit is measured against a Challenge Pressure of 0.58 H2O. The CBRN protocol increases the pressure to 1.0 H2O, with a minimum fit factor of 2,000, and the SCBA protocol increases the breathing rate to 1.5 H2O. With the two latter protocols, it is expected that the respirator wearer will be under more duress on a consistent basis. Because of this, the modeled breathing rate has been increased to match the estimated breathing rate of those respirator wearers. The Canadian Standards Association (CSA) approved the Redon protocol in October, 2011. The CSA SCBA protocol is slightly

different from the U.S. counterpart in that it requires a minimum fit factor of 1,000, rather than the OHD recommended/U.S. 500 fit factor.

Before running a protocol test, the operator must be able to properly operate the fit test instrument, and follow all OSHA requirements that should occur prior to a fit test.

Redon Protocol

Challenge Pressure (0.58 in. H2O)
Modeled Breathing Rate (53.8 L/min.)
Minimum Fit Factor 100/half face; 500/full face

STEP 1: Face Forward
For this first step, after the test subject has selected a respirator and donned it properly, he or she will face forward for this measurement. The employee should be instructed with the proper method for holding breath and remaining still during the test measurement.

STEP 2: Bend Over
The test subject will bend over at the waist and face the floor during this measurement. This step determines if gravity pulling on the mask will create more leak than is permissible. The test subject holds breath and remains still during the test measurement.

STEP 3: Shake Head
The test subject will shake his or her head vigorously from side to side for approximately 5 seconds. The test subject is also required to blow out vigorously or yell while shaking head. The purpose of this exercise is to determine if the mask is unseated, if it will reseat itself properly on the test subject's face. For the test, the subject will stop shaking his or her head, face forward, hold breath, and remain still during the test measurement.

STEP 4: Redon 1
The test subject will release all straps, remove the respirator (doff it), and then redon the respirator. The redon steps are very effective in determining how well a mask fits according to proper or improper donning techniques. Once the respirator is properly donned, the subject holds breath and remains still during the test measurement.

STEP 5: Redon 2
This step is identical to Redon 1. This gives the test subject one more donning with which to assure proper fit.

CBRN Protocol

The CBRN protocol procedure is identical to the Redon above but has a higher stress level than the Redon. The CBRN protocol is designed to be used in military, first responders, Homeland Security, and other professions that may encounter chemical or biological dangers, where the mask stress is high and fit requirements are more critical. The minimum fit factor on this protocol has also been increased to 2,000. This extra measure of protection is expressed in the increased values of:

Challenge Pressure (1.00 in. H2O)
Modeled Breathing Rate (55.8 L/min.)
Minimum Fit Factor 2,000

SCBA Protocol

The SCBA protocol procedure is like the Redon Protocol above. It is designed to place the mask under extraordinary stress to be sure the mask can provide protection in life threatening situations where the SCBA is used. This increased exposure protection is better evaluated by values of:

Challenge Pressure (1.50 in. H2O)
Modeled Breathing Rate (93.1 L/min.)
Minimum Fit Factor 500

CSA SCBA Protocol

The CSA Protocol was developed to meet the current standards of the Canadian Standards Association, Z94.4-02. The latest version of this standard was written in 2011. The only requirement that differs from the U.S. SCBA protocol is that the CSA standard requires a minimum fit factor of 1,000.

Challenge Pressure (1.5 in. H2O)
Modeled Breathing Rate (93.1 L/min.)
Minimum fit factor 1,000

5.2.3   User Definable Protocols

CUSTOM 1 AND 2

The Custom 1 and 2 protocols are designed to be defined by the user. They consist of up to 18 programmable steps of exercises or test measurements. The parameter values for the tests are determined by the selection of four parameter variables (see PARAMETERS). These protocols provide the user with the option to customize a protocol to meet his specific needs. The following chapter will explain in great detail the procedure to set up the custom protocols.

Challenge Pressure (VARIABLE in. H_2O)

Modeled Breathing Rate (VARIABLE L/min.)

5.2.4   Running a Protocol

Use the optical sensor knob to select the desired protocol from the TEST menu. When the selection is made, press on the knob to select.

If a keyboard is detected, the Quantifit will prompt the user to enter test information including:

- Test Subject ID
- First Name
- Middle Initial
- Last Name
- Mask Manufacturer
- Mask Model
- Mask Size
- Mask Type
- Test Operator

The Quantifit will display the message: IMPORTANT: Inhalation valves must be PROPPED OPEN OR REMOVED from the respirator mask prior to the fit test! Press Enter to continue.

It is very important that this step is put into practice. Examine the interface where the fit test adapters will be mounted onto the respirator. If there is an inhalation valve visible when looking into the respirator, this valve will interfere with the fit test and must be propped open or removed.

If the inhalation valve is easily removed and replaced, this is the recommendation. If it is difficult to remove and replace the valve, it should be held open with some small apparatus. It is preferable to use the OHD valve prop Opener. However, You may use whatever is available for you or whatever will successfully keep the valve open during the test. Some suggestions include cut up drinking straws or coffee stirs, rubber tubing, or paper clips. These items MUST be removed at the conclusion of the test.

If the inhalation valves are not opened or removed, the Quantifit cannot exhaust air from the respirator to create a negative pressure. This could potentially create an invalid test by only measuring the distance between the dual tube and the inhalation valve.

If a keyboard is not being used, the user will have to select the mask type. HM = half mask, FF = Full Face. This selection will set the minimum passing fit factors to 100 and 500 respectively.

Follow these steps to run a protocol:

1. Review the breath-holding procedure with the test subject.
2. Complete steps 1–4 in Preparing the Quantifit for Testing).
3. Complete steps 1–5 in Getting Started, Preparing the Respirator for Fit-Testing.
4. Follow the on-screen prompts that instruct the test subject on activity to perform for each test step.
5. From the Main Menu, select the Test Menu; then select the desired protocol.

5.3   Test and Protocol Results

There are two types of protocol results: test step results and protocol results (overall fit factor). The test step results appear on the display only after each test-step is completed.

The protocol results appear on the display after all test-steps and exercise-steps are completed. The protocol results are a combination of each step's test result. From this combination of test results, the Quantifit calculates the "average equivalent fit factor" for the test protocol.

5.4   Test Results

Each test result is explained under PRE-TEST, Pre-Test Results.

If the leak rate of the respirator mask yields a measurable fit factor, the display will look similar to this:

Redon Protocol

FitFactor = 3278 PASS

Scroll   Print & Save   Print   Save   Exit
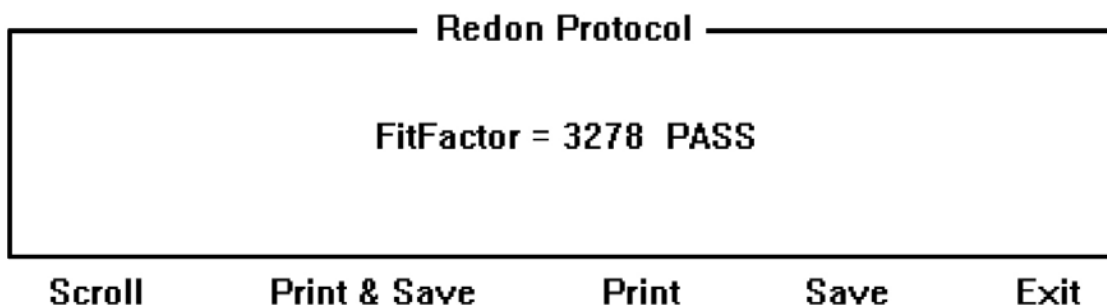
This screen displays the protocol name at the top, the over all fit factor, pass or fail, and then the following options to finish out the test:

Scroll

Scroll will allow the operator to scroll through the results of the test that was just performed. Click on scroll and rotate the knob one click clockwise, and it reveals the date and time of the test as in the following graphic.

```
───────────────── Redon Protocol ─────────────────

      Test Date:                    07/15/08
      Test Time:                    04:06 PM


   Scroll      Print & Save      Print       Save        Exit
```

The following screen displays Mask Type, Challenge Pressure and Modeled Breathing Rate:

```
───────────────── Redon Protocol ─────────────────
   Mask Type                    = Half Mask
   Challenge Pressure           = 0.58 ["H₂O]
   Modeled Breathing Rate       = 53.8 [LPM]


   Scroll      Print & Save      Print       Save        Exit
```

The operator can then scroll through each step of the protocol as seen in step 1 below:

```
───────────────── Redon Protocol ─────────────────
     Step            Type              Description
      1            Fit Test           Face Forward
   Leak Rate       Duration        Fit Factor     Quality
     42.2         8.0 Seconds         2206          GOOD

   Scroll      Print & Save      Print       Save        Exit
```

Print & Save

Print & Save will save the test to the Datalog and print a copy.

Print

Print will print a copy of the results without saving to the Datalog.

Save

Save will save the test to the Datalog without printing a copy.

Exit

Exit will take you out of the results screen. If Save or Print & Save has not been selected, a prompt will appear with a warning: Exit Test – Are you sure? Test data not saved yet! Choose Yes or No.

Select Save or Print and Save, and the option is presented to perform another fit test. This will begin a new test with the same protocol selected as the previous test.

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Edit Protocol Menu

6 Edit Protocol Menu

6.1 Introduction

This section contains instructions on how to use the EDIT PROTOCOL MENU to make adjustments to the protocol and parameters. Explanations are included on how to:

- View, Build, Edit, and Print a Protocol.

- View, Edit, and Print Parameters.

6.2 Edit Protocol Menu

On the main menu of the Quantifit, you can use the Optical Sensor Knob or keyboard to select EDIT PROTOCOL. A screen that shows the 5 standard protocols can be used along with 2 custom protocols and a Parameters selection.

```
TEST        EDIT PROTOCOL       SYSTEM       UTILITY
┌─────────────────────────────────────────────────────┐
│   Exit            CBRN Protocol       Parameters      │
│   Redon Protocol  CSA Protocol                        │
│   MIL Protocol    Custom 1                            │
│   SCBA Protocol   Custom 2                            │
└─────────────────────────────────────────────────────┘
Edit, print, or view Redon Protocol
```

To edit any of the existing protocols, choose that protocol and press the Optical Sensor Knob. In this example we will enter the Redon Protocol. When selecting Redon Protocol, the following options are presented:

```
┌──────────── Redon Protocol ────────────┐
│                                         │
│    EDIT  PRINT  VIEW  HELP              │
│    PARAMETERS  RENAME  EXIT             │
│                                         │
└─────────────────────────────────────────┘
```

Select desired function

The options are edit, print, view, help, Parameters, rename or exit this menu. Each of these options are explained in detail.

Edit Protocol

Select the EDIT function to edit an existing protocol, or to create or define the custom protocols. When entering the option to edit a protocol, a screen will be displayed to show the current setting, and the changes that are being made. See diagram below for step 1.

```
┌──────────────── Redon Protocol ────────────────┐
│            Step    Type        Action        Dur │
│  Current:   1      Test     Face Forward     N/A │
│  New:      [1]     Test     Face Forward     N/A │
│                                                  │
│  Save and Exit              Cancel and Exit      │
└──────────────────────────────────────────────────┘
```

Select Step to Edit

The cursor is highlighted on New Step 1. To change a different step, press on the Optical Sensor Knob, and scroll to the step desired. Press on the knob again, to toggle the next field between Test and Exer (Exercise) and Clr (Clear) to delete that particular step. Finally, move over to the Action to select the desired action. The available actions are all of the standard selections that have been used throughout the history of fit testing. The duration is listed as N/A because this is not a changeable feature. By the definition of the way in which Controlled Negative Pressure works, all tests are preset to measure at 8 seconds.

When one step is completed, scroll to another step if desired. When the protocol is set, select Save and Exit to save that protocol. To delete the changes you've, select Cancel and Exit to exit this menu and lose the settings that have been made.

If Custom 1 or Custom 2 had been selected, you can create up to 18 steps in a protocol if you have specific needs or desire to create a protocol for mask integrity testing or any other function of the Quantifit.

Print Protocol

By selecting Print from the Edit Protocol menu, this will simply print the current settings of the protocol if a printer is connected to the Quantifit.

View Protocol

By selecting View Protocol, the current steps that are assigned to the selected protocol will be displayed.

The display will show the first 4 steps to the selected protocol. Steps beyond step 4 can be viewed by scrolling the Optical Sensor Knob.

```
┌──────────── View Redon Protocol ────────────┐
│  Step    Type    Action                  Dur │
│   1      Test    Face forward            N/A │
│   2      Test    Bend over               N/A │
│   3      Test    Shake head              N/A │
│   4      Test    Re-don 1                N/A │
└──────────────────────────────────────────────┘
```

Parameters

This function allows for a selection of the default mask type (half or full), and set the minimum passing fit factors for half and full. It is recommended that this not be changed, as the default of 100 is the minimum passing fit factor for half masks. Remember that CNP produces very conservative fit factors, and 100 on the Quantifit may equal up to 1,000 using Ambient Aerosol or Nuclei Counting technologies.

Rename Protocol

This function allows the protocol name to be changed. This is especially helpful to change the name of Custom 1 or Custom 2.

Help and Exit

These choices will lead to the obvious place. The Help selection will open an on-board help menu. Exit will back out of the current menu.

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System Menu

7 System Menu

7.1 Introduction

This section contains instructions on how to use the SYSTEM MENU to make adjustments to the system-level parameters. Explanations are included on how to:

- Set the clock.
- Reset protocols and parameters to the factory default values.
- Calibrate the dual tube assembly.
- Zero the pressure transducer.
- Add or edit operator name.
- Setup Quantifit parameters such as view the annual calibration date, change auto advance values, adjust the speaker volume, adjust the screen contrast, and view the version of firmware.

The system menu presents choices displayed on the following diagram. This section will explain operation in each of these selections.

TEST	EDIT PROTOCOL	SYSTEM	UTILTY

Exit	Zero Pressure
Set Clock	Edit Name
System Reset	System setup
Dual tube cal	Datalog
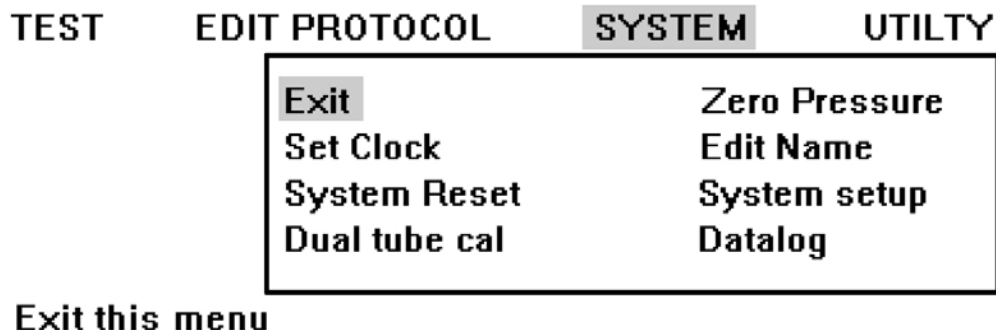
Exit this menu

7.2 Set Clock

Set Clock is used to adjust the time and date of the clock. All printed reports made by the Quantifit include a time and date stamp; therefore, it is important to maintain an accurate date and time.

```
------- Date and Time setup -------
Current:    07/15/08         10:18 AM
New:        07/19/08         10:24 AM
Format:     MM/DD/YY         12 HR
```

Save   Cancel

When this menu is opened, the month is highlighted. To change this value, press on the Optical Sensor Knob, and then scroll left or right to the appropriate value. Press on the knob again to accept that value. Then scroll to the right to change day, year, time and AM or PM.

On the Format row, choose the way in which the data the date is displayed. For the date, you can choose between MM/DD/YY or DD/MM/YY. The time can be displayed as 12 HR or 24HR.

When the time has been set correctly, choose Save at the bottom of the screen.

7.3   System Reset

The System Reset option will force all settings back to the way they were when the unit was first manufactured. Any alterations made in any of the settings will be set back to the default settings. Custom protocols will be lost by pressing System Reset.

A warning will be displayed, "WARNING: System reset will re-load factory default settings. All custom Protocols will be lost! Are you sure?" Select System Reset or Cancel.

7.4   Dual Tube Calibration

The Dual Tube calibration is the same function as the Daily Calibration. The Quantifit has a daily reminder to perform a daily calibration. There may be other times when there is a need to perform the calibration to ensure the accuracy of the instrument.

To accurately measure respirator-mask-fit, the leakage attributed to the triple tube assembly leak orifice must be removed from the total measured fit-test leakage value. Calibrating the dual tube assembly accomplishes this.

The triple tube assembly is terminated with an airtight section of tubing. The Quantifit removes air at eight different flow rates. The pressure developed across the leak orifice is measured at each flow rate and stored in an array of calibration data.

To cancel the effect of orifice leakage during a fit test, an interpolating algorithm uses the array of calibration data to determine orifice leakage at the fit test's particular challenge pressure. This calculated-leakage value is subtracted from the measured-leakage value.

Performing the Calibration:

Select Dual Tube Cal from the SYSTEM MENU. The below screen will be displayed:

```
┌──────────── Daily Calibration ────────────┐
│                                            │
│   It is recommended that daily calibration is done │
│   each day of testing. Last calibration: 07/19/08. │
│   Note - NIST Calibration Due: 06/05/09    │
│                                            │
└────────────────────────────────────────────┘
 Perform Calibration        Print Data        Exit
```

This screen will show the user the last time the unit was calibrated. This screen also shows when the annual NIST Calibration is due. You may Perform Calibration, Print Data, or Exit. If you Print Data, it will print out the last calibration performed on the unit.

Select Perform Calibration to continue with the calibration.

```
┌─────────── Daily Calibration ──────────┐
│                                          │
│  The sensor must be zeroed before        │
│  running the dual tube cal.              │
│  Disconnect the Dual Tube.  0.00 in H₂O  │
│                                          │
└──────────────────────────────────────────┘
    Proceed                      Cancel
```
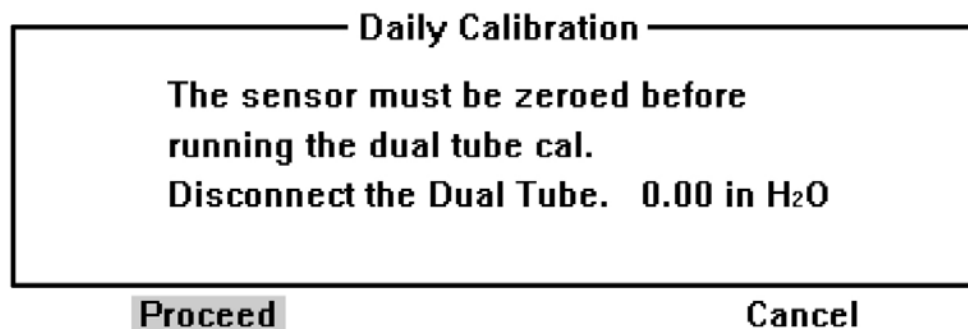
The first part of the calibration performs a Zero Pressure. In order to do this part, the dual tube assemblymust be removed from the instrument. Press the Optical Sensor Knob to proceed. The next step is to "Connect dual tube assembly to 'Flow' and 'Pressure' on the front and to 'Dual Tube Check' ports on the back of the unit." This procedure measures only the two clear tube portion of the triple tube. When connecting to Pressure and Flow on the front of the unit, the male and female connectors must be matched properly. On the back of the unit, the other two ends are interchangeable and it does not matter which port each tube is connected to.

When both ends of the clear tube have been secured, press the knob on Proceed to continue. This calibration check will take approximately one minute to complete. The Quantifit will force different pressures through the instrument and tubing assembly and measure the leakage of the leak orifice. After the calibration has been completed, the calibration results will be displayed and there will be a reminder to remove the tubing from the back of the unit.

```
┌─────────── Daily Calibration ──────────┐
│                                          │
│  Calibration Successful.                 │
│  Remove the Dual Tube Assembly           │
│  from the 'Dual Tube Check' ports.       │
│                                          │
└──────────────────────────────────────────┘
              Print Data         Exit
```
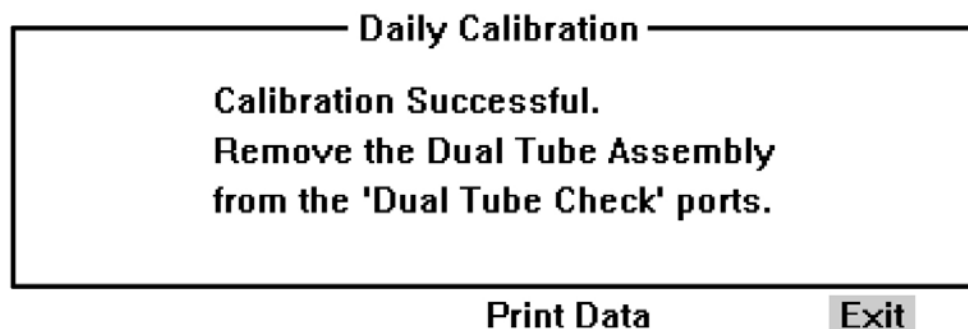
Exit from the Dual Tube Calibration, or Print the report.Only the current day's calibration is held in memory and may be printed until the next calibration is performed.

Calibration Errors

If an error should occur and the Quantifit cannot successfully perform the calibration, the unit may not be operating properly. Check all connections, and try the calibration a second time. If it should fail a second time, contact OHD for further instructions. The following errors may occur:

ERROR–Bypass orifice not within spec. The message appears when there is a problem with the tubing. The leak orifice may be out of the tolerance range, or there may be a leak within the integrity of the tubing. If you have another tubing set, replace the tubing and try an additional calibration.

ERROR–Check connections and repeat. Reconnect quick-disconnect adapters and repeat.

ERROR–Check transducer calibration. Go to the next diagnostic routine, "Zero Pressure," and remove the offset from the pressure transducer.

ERROR–Replace orifice if necessary. Replace the dual tube assembly.

When the Quantifit successfully performs a calibration, this ensures that the unit is working properly and the leak measurements are within tolerance. If an error occurs, this would indicate that there is a problem in the system and it must be corrected before successful fit testing can be accomplished.

7.5 Zero Pressure

"Zero Pressure" removes the offset from the pressure transducer. This step is identical to the first step of the Daily Calibration and Dual Tube Calibration. The Zero Pressure option may be used when the user would like to eliminate any offset without going through the Dual Tube Calibration.
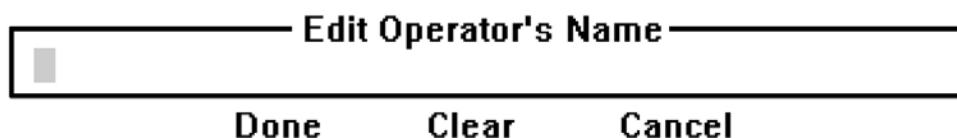
When selecting Zero Pressure remove the Dual Tube from the instrument. Press the Optical Sensor Knob to proceed. After one second, a message will be displayed, "Zero Adjust Successful." Any offset has been removed from the transducer.

There is an acceptable range of zero-offset values. Exceeding that range of values indicates that the dual tube assembly is connected, or that there is a problem in the pressure transducer or the conversion circuit. Fit-testing is not possible if these conditions occur.

7.6 Edit Name

If a keyboard is in use during fit testing, the operator will input his or her name at the beginning of the test. If a keyboard is not being used, the user can enter his or her name into the Quantifit so that it will print out on the report.
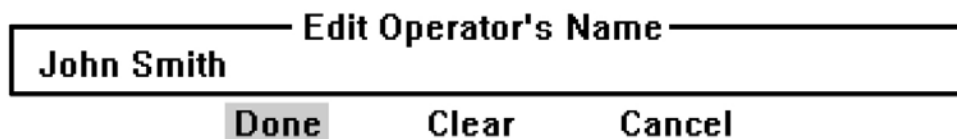
Select Edit Name, the following screen will appear:

```
┌──────────── Edit Operator's Name ────────────┐
│ █                                             │
└───────────────────────────────────────────────┘
       Done          Clear          Cancel
```

If a name is already present in this screen, one can easily "type over" the existing name, or go to "Clear" to delete the name. To enter a name one letter at a time, press on the Optical Sensor Knob to "enter," and then scroll through the alphabet either clockwise or counterclockwise until the desired letter is selected. Press the knob to confirm that letter, and then move one space to the right to continue with the next letter. When the name has been fully entered, select Done. See below.

```
┌──────────── Edit Operator's Name ────────────┐
│ John Smith                                    │
└───────────────────────────────────────────────┘
       Done          Clear          Cancel
```

7.7 System Setup

System Setup contains options and selections pertaining to the way the Quantifit performs. These functions in no way affect performing fit tests. Options include Auto Advance Fit Factors, Screen Contrast and Speaker Volume.

NIST Calibration Date

The NIST calibration date displays the last time the instrument was calibrated to NIST (National Institute of Scientific Testing) standards. This calibration is recommended annually. The Quantifit will display the calibration due date upon startup when the instrument is within 60 days of calibration expiration.

HM Auto Advance Fit Factor

When performing a fit test, the Quantifit recognizes when the test subject has passed a protocol step, and automatically advances to the next step. For the half mask, OSHA determines that the fit factor must be a minimum of 100. If the fit factor is greater than 100, the Quantifit will move to the next step. If it is below 100, the Quantifit will require that the user retry the step. This value does not change the minimum passing criteria, it only changes the value in which the Quantifit will automatically move the user to the next step of the protocol.

To bypass the auto-advance feature, set the value to "0." This will require the user to individually save each step and the Quantifit will not auto-advance.

FF Auto Advance Fit Factor

When performing a fit test, the Quantifit recognizes when the test subject has passed a protocol step, and automatically advances to the next step. For the full-face mask, OSHA determines that the fit factor must be a minimum of 500. If the fit factor is greater than 500, the Quantifit will move to the next step. If it is below 500, the Quantifit will require that the user retry the step. This value does not change the minimum passing criteria, it only changes the value in which the Quantifit will automatically move the user to the next step of the protocol.

To bypass the auto-advance feature, you may set the value to "0." This will require the user to individually save each step and the Quantifit will not auto-advance.

Test Results

Test result determines the way in which the fit factor is calculated. The native technology to the Quantifit is Controlled Negative Pressure (CNP). This measurement is calculated by taking the measured leak rate, dividing it by the modeled breathing rate, which calculates the fit factor. (See page 20)

With the "older" approved method of fit testing, Ambient Aerosol (AA), the fit factor is calculated much differently. The AA instrument counts particles outside the mask and then compares it to particles inside the mask (with the assumption that the particles in the mask leaked in through an opening and that it's actually able to "see" a proper sampling of those particles.) The fit factor is calculated by dividing the particles outside the mask by the particles inside the mask.

Studies show that the fit factors calculated by CNP are at least ten times less than those fit factors calculated using AA or Nuclei Counting technology. The "Aerosol Compatibility" selection will recalculate the CNP fit factor to more directly compare it to a fit factor that would have been determined by Ambient Aerosol tests. However, instead of using the proven ten times factor, the Quantifit is much more conservative by using a four-times factor.

The default and recommended selection for Test Results is set to Standard Mode for the CNP calculation.

Test Device

The selections for Test Device are Mask or Test Cylinder. For demonstration purposes, one may use a test cylinder or leak canister to emulate a fit test. When using a leak canister, the Quantifit is not able to do the initial exhaust of air as with a respirator. So for more accurate measurements, it's best to use the test canister selection when using such to demonstrate the Quantifit. This is the only time Test Cylinder should be used. But even if the user selects Test Cylinder and forgets to change it, the setting will default to Mask the next time the Quantifit is powered up.

Contrast Adjust

This selection is for the contrast of the Quantifit display. At times there may be a need to change this setting according to the lighting situation. The default setting is 10, but this can be changed from 0 (no contrast) to 20 (maximum contrast.)

Speaker Volume

Normal operation of the Quantifit produces many electronic beeps and signals for various features. When operating the Quantifit in a noisy room, there may be a need to increase the volume of these signals. In a quiet room, there is an option to decrease the volume. The default setting is 2, which is moderately quiet. This range is from 0 (no sound) to 20 (loudest).

Firmware Version

The firmware version will display the current version of firmware. If technical assistance is needed, the firmware version may be helpful to the technician in determining a specific problem. Check the OHD website, www.ohdusa.com, periodically to remain updated with the newest version of firmware.

7.8   Datalog

The Datalog displays all the tests that have been saved on the Quantifit. The Quantifit can store uo to 500 tests in the internal memory. The list of tests is displayed with the most recent test at the top of the list.

WARNING: When test #485 is reached, a message will display, "Datalog almost full. 485/500 records stored. Backup and clear log soon." When reaching test 500, the Datalog cannot store more tests. Save the Datalog to a memory stick and clear the log.

In the upper right corner, the number represents the test number (in order of newest to oldest) and the total number of tests. In this diagram, the highlighted test is 1 of 474.

Scroll

Press the Optical Sensor Knob to enter the scroll feature. Scroll anywhere in the list to highlight any specific test. The Optical Sensor Knob has a variable speed, so that the faster it's turned, the faster it accelerates. With a single quick turn, the cursor quickly travels to the bottom of the list. Press the knob again to exit scroll mode, which will allows for another selection from the bottom menu.

View

The view selection will allow show the test in the same manner that would be seen when a test has been completed. Scroll through the screens to see the overall fit factor, test details, and then results for each step. There is an option to print the results for that individual test.

Print Menu

The print menu selection will print a report of fit tests. When selecting this option, there is a choice to print a highlighted record, or print a log. When choosing the Print Record selection, this will print an individual test. When choosing Print Log, to choose to print tests from a specific date, or Print All to print the entire database. This feature will print a landscape (horizontal) page with each test contained within one line. Each line contains date, time, last name, first name, pass/fail, mask model, mask size, fit factor and leak rate. The report contains 40 tests per page.

File Menu

The file menu option is for transferring data. This feature may be used for various reasons including transferring data to FitTrack software (see "Importing Quantifit Data Into FitTrack" in the software section of this manual, page 69), to transfer the test data to another Quantifit, or to simply keep a safe backup of the test data on the instrument.

The **Save Datalog** feature will save the database to a memory stick when one has been inserted into the upper USB port on the back of the Quantifit. If the memory stick is connected to the bottom USB port, there will be a message instructing the user to use the upper USB port. When saving the data, name the file to differentiate it from other possible backups. If a keyboard is connected, ype the name of the file on the keyboard. If no keyboard is connected, use the Optical Sensor Knob to assign the name.

Note: When naming the datalog to a memory stick, there is a limit of 8 alpha-numeric characters.

Note: If a memory stick is placed in the upper port during testing, test results will automatically be saved to the memory stick as well as the Quantifit's datalog. This is a good practice to protect from corrupt or lost data.

The **Load Datalog** option enables a selection from amemory stick that will be imported into the Quantifit. A list of the exported information contained on the memory stick.

Clear

Confirm that the data has been backed up to a memory stick. To clear the data stored on the Quantifit, and purge the information, select Clear. There will be one warning "Erase Datalog? Data cannot be restored." Select Yes or No to complete this task.

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VIII

Utility Menu

8 Utility Menu

8.1 Introduction

This section contains instructions on how to use the UTILITY MENU to test various aspects of the Quantifit. There are options to view the cycle count of how many test steps have been performed, reset all changed protocols, and print the help file.

Perform a diagnostic check of the Quantifit diagnostic routines listed below:

- Speaker Test
- Keyboard Test
- Display Test
- Printer Test

```
TEST      EDIT PROTOCOL      SYSTEM      UTILITY

         ┌─────────────────────────────────────────┐
         │  Exit               Printer test         │
         │  Speaker Test       View cycle count     │
         │  Keyboard Test      Factory protocol     │
         │  Display Test       Print help file      │
         └─────────────────────────────────────────┘

Exit this menu
```
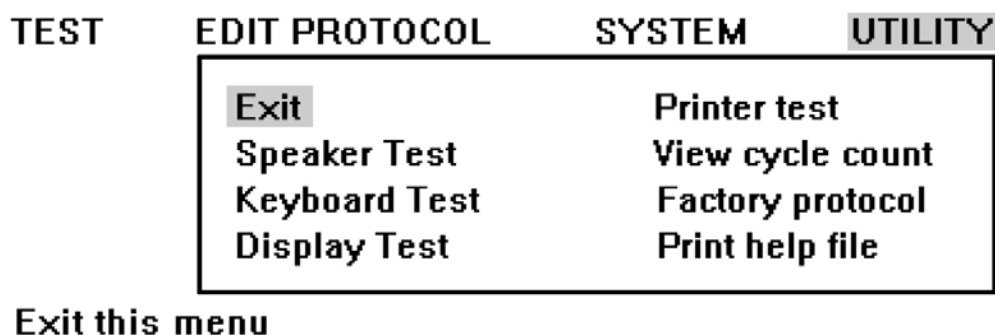
8.2 Speaker Test

The speaker test will confirm that the internal speaker is performing properly. When selecting this option, the Quantifit will output a series of tones. If no tones are heard, make sure that the speaker volume is not set to 0 in the System Setup menu.

8.3 Keyboard Test

The keyboard test will display a screen in which typed characters should appear. If no characters appear, disconnect and reconnect the keyboard. At that time, there should be a "USB Keyboard Connected" message. If this message is not displayed, the keyboard may be faulty.

8.4 Display Test

When selecting this option, the screen will show full dark for 5 seconds, at which time the screen will return to the normal setting. When there are no characters on the screen, check the System Setup menu to make sure the Contrast adjustment is not set to the lowest setting.

8.5 Printer Test

The printer test will print a test page to a qualified printer. If this does not occur, the printer could be connected improperly. Check to make sure that the printer is turned on, and reconnect the printer. The Quantifit will display, "USB Printer Connected." If this does not occur, there may be a problem with the

printer, or the printer may not be approved for use with the Quantifit. Check the OHD web site or call for technical support to determine if this is the problem.

8.6   View Cycle Count

The cycle count is a measure of how many fit test exercises have been performed since the unit was last calibrated. Each time an exercise is completed, the cycle count is incremented then stored in memory.

8.7   Factory Protocol

The Factory Protocol will restore all protocols that may have been changed in the Edit Protocol menu.

8.8   Print Help File

If a printer is connected to the Quantifit, this function will print all the information from the help file to your printer. This may be helpful to keep as a resource rather than going through the on-board help menus.

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IX

FitTrack Gold Installation

9 FitTrack Gold Installation

This section contains information necessary for installing FitTrack Gold.

9.1 Standard Install (Recommended)

The installation requires a person with administrator credentials.

If the installation does not automatically start, open the disc through your computer browser, and double-click on **Setup.exe**.

The installation files will query the computer to see which prerequisites must be installed.
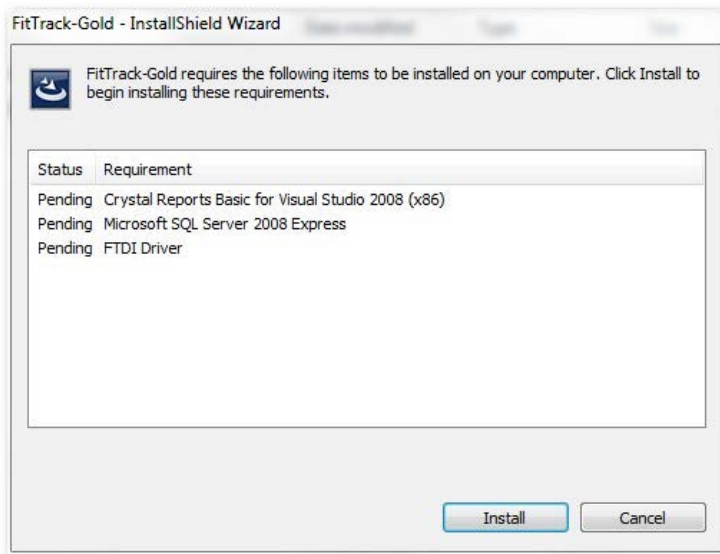
Accept each of the license agreements for individual modules.

If SQL Express installation is required, this may take up to 15 minutes for this portion of the installation.
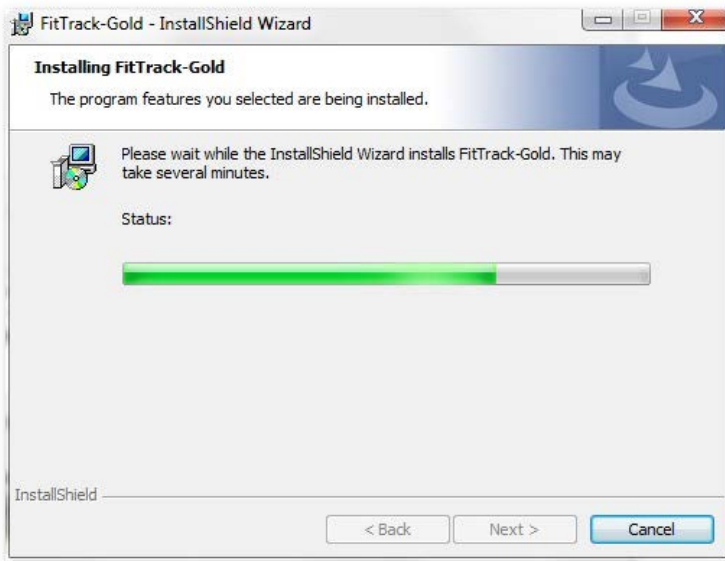
A successful install will state that a database was created successfully.
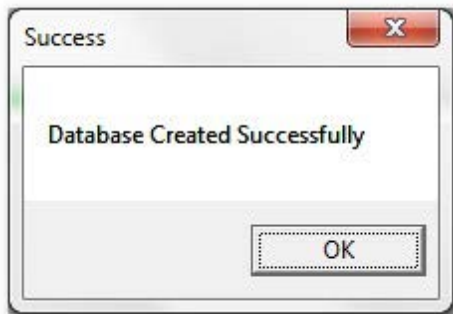
And finally, the confirmation screen.
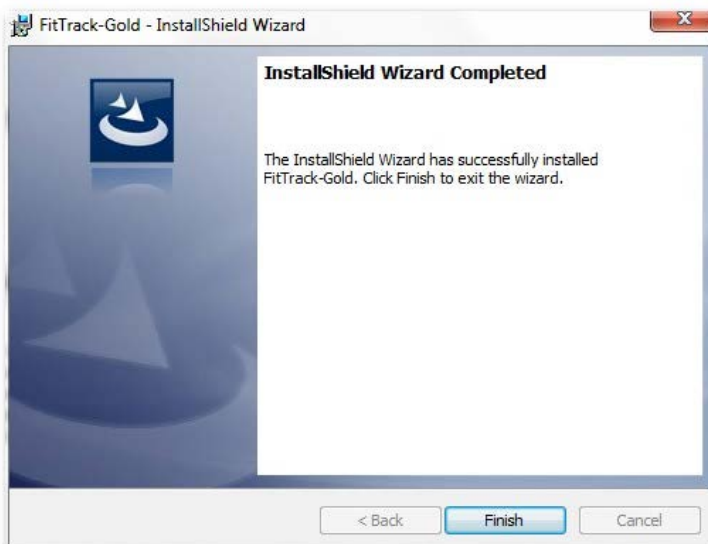
9.2 Custom Install (Advanced)

Custom install may be used for various situations:

    a. To install the FitTrack Gold Database on an existing SQL platform
    b. To change the password and username to something other than the standard default
       i. Username: sa
      ii. Password: ohdusa@123

The installation requires a person with administration privileges.

If the installation does not automatically start, open the disc through your computer browser, and double-click on **Setup.exe**.

The installation files will query the computer to see which prerequisites must be installed.
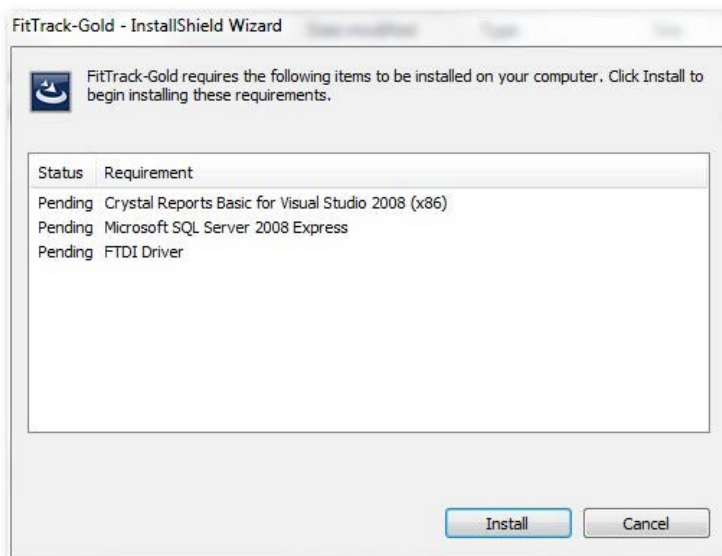
Accept each of the license agreements for individual modules. For Setup Type, choose **Custom**.

Select change to alter the setup options for the database, and/or click **Next**.
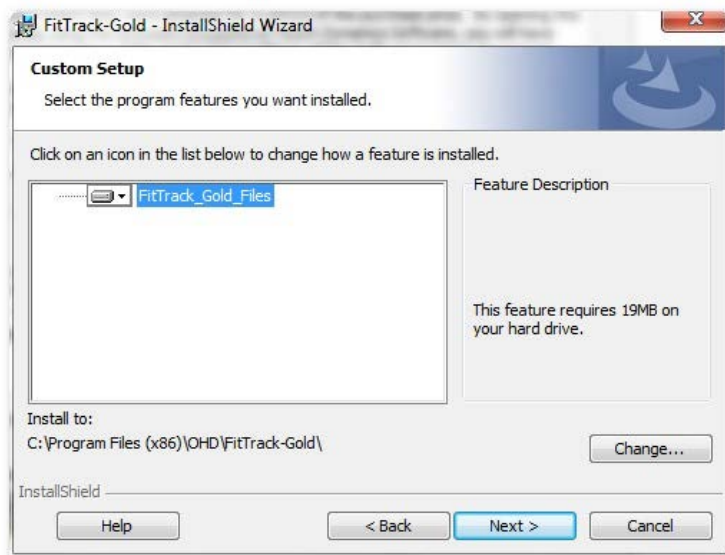
Select the destination for the database.
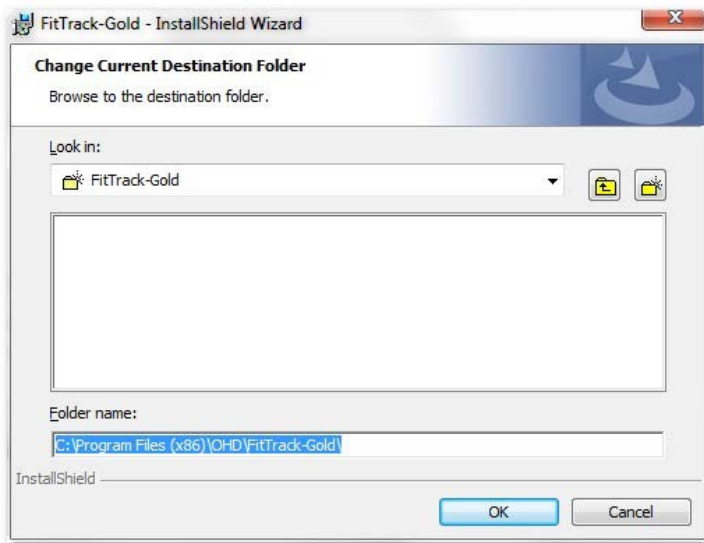
Click **Search Network** to search for other SQL databases. **Test Connection** will confirm the ability to access the SQL database. Click OK to continue.
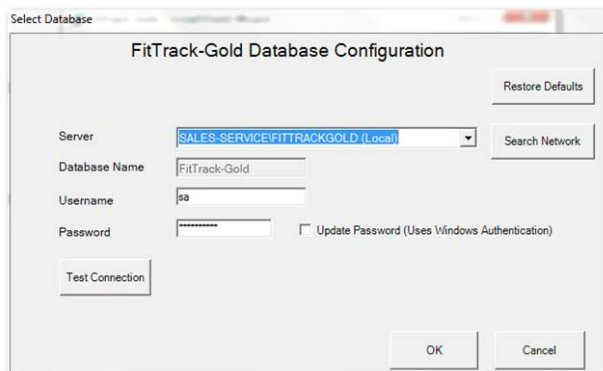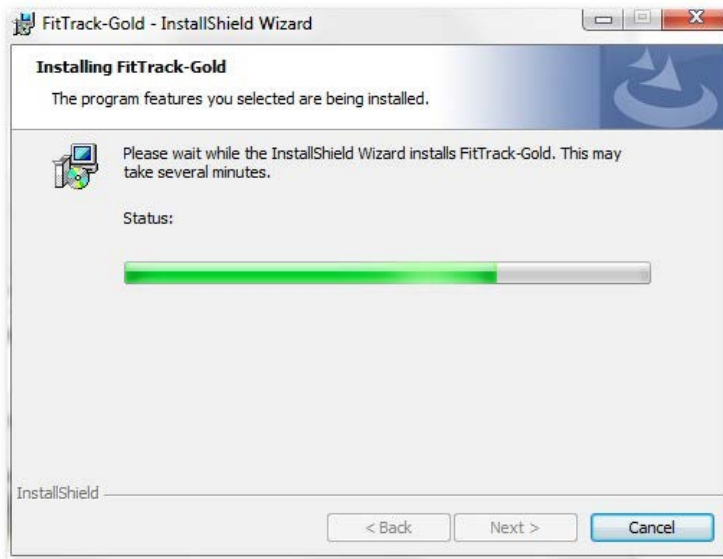
A successful install will state that a database was created successfully.
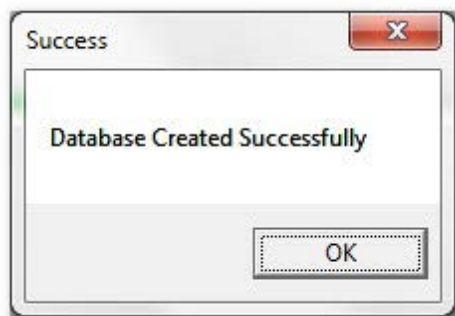
And finally, the confirmation screen.

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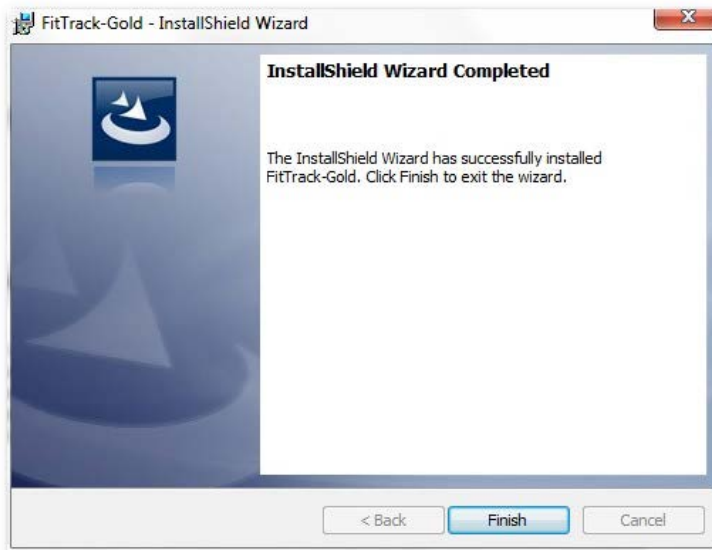
FitTrack Gold Dashboard

10   FitTrack Gold Dashboard

When first starting FitTrack Gold, the Home Screen or Dashboard is displayed. This screen is a snapshot, or dashboard of types, showing the user information that may be helpful or useful in maintaining a respirator fit test program.

All modules on the Home Screen may be collapsed by clicking in the light-blue title bar of each module.

10.1   Navigation

FitTrack Gold consists of several modules that populate the main portion of the work area. The left bar is always visible to guide the user to the different modules. This left panel also contains a drop-down list to select the Company to be used as well as the Operator who will be performing the test or doing work in the software. Companies can be defined in the Company module, and the users can be created in the Admin module under the Users section. Refer to those sections of this manual for further instruction pertaining to those modules.

In some modules, the user must select a tab or division of the module in which the user wants to work or change settings. In other modules, such as Personnel and Company, the user can use the top buttons to perform desired tasks, or right-click on a selection from the list.

The following options may be available after performing a task:

    Save: to save any changes made

Cancel: to leave the open window without saving changes made

Close: When viewing a window that requires no changes

Modify: To make changes to a record or selection

10.2   General

When first starting FitTrack Gold, the Home Screen or Dashboard is displayed. This screen is a snapshot, or dashboard of types, showing the user information that may be helpful or useful in maintaining a respirator fit test program.

All modules on the Home Screen may be collapsed by clicking in the light-blue title bar of each module.

All data on the Home Screen can be selected for all companies in the database, or for a specific company. This can be changed by selecting a company name, or "All Companies" from the drop-down list at the top of the page. This option can be permanently changed on the Admin Screen under Home Screen.

Any module on the Home Screen can be collapsed by clicking on the blue title bar.

10.3 Company/Operator

The company can be selected from the drop-down list at the top of the screen, or from the left sidebar (not shown).

The data on the Home Screen can be listed for the selected company, or All Companies can be selected for data in the entire database.

Companies are created under the Company module.

The Operator can be selected from the drop-down list at the top of the screen, or from the left sidebar (not shown).

Operators can be added under the Admin module. See the Administration section of this manual.
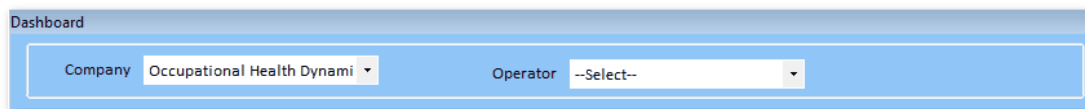
10.4 Quantifit Detail

A quick glance shows if a Quantifit is currently connected to the computer/software.

Displays the last four numerical digits of the serial number, with a button to verify connection if the unit was not already connected when the software was opened.
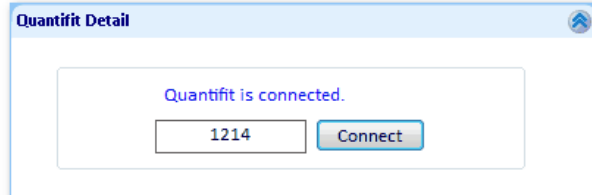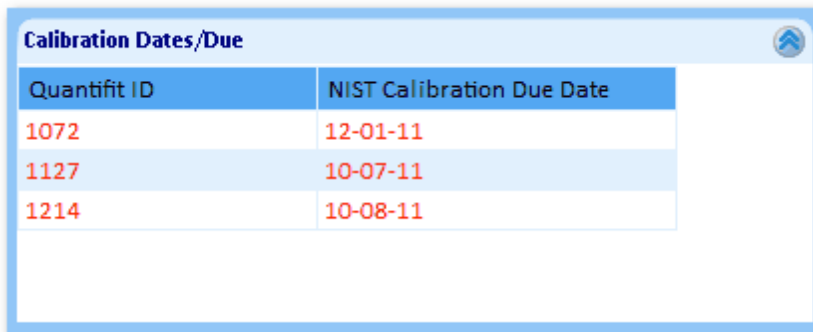
10.5 Calibration Due Date

This shows a list of Quantifits that have been attached to this database, or have been used in an imported database.

The display shows calibration due dates. They display green if the calibration is current, yellow if it's due within a month, and red if it's past due for NIST calibration.

A Quantifit may be removed from this list by right-clicking the unit, and selecting Remove.

10.6   Mask Inventory

The mask inventory module displays a list of masks in use.
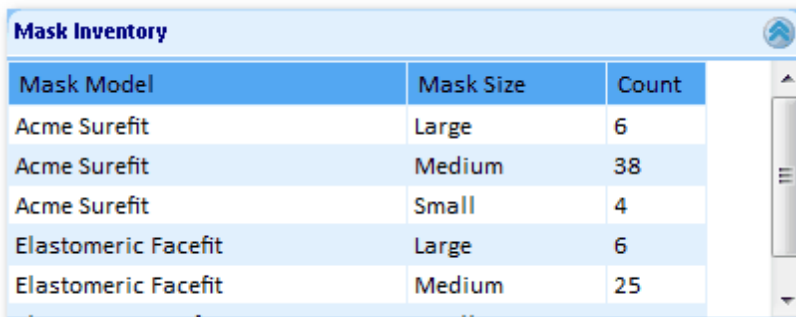
This list reflects all masks that were tested in the previous 12 months.

This shows models and sizes in use, taken from the test database.

The list can be printed by right-clicking on the list and selecting Print.

If a mask is no longer being used, the mask can be removed from the mask inventory by right-clicking, and selecting Remove.

WARNING: If a mask is removed from the list, it cannot be added back.

10.7   Links

The home page displays quick links to OHD's web site, the OHD Service Return Form (used for calibration returns and service), and OSHA 1910.134 Appendix A, which lists all the requirements for respirator fit testing.

These links can be customized or changed in the Admin section.

Four links are available, and three are pre-populated with the links mentioned above.

10.8 Test Statistics

A quick glance provides the number of tests done year-to-date, month-to-date, week-to-date, and current day's testing.

List will show number of tests passed, failed, and incomplete.

Test Summary	Total	Pass	Fail	Incomplete
Today	0	0	0	0
Current Week	0	0	0	0
Current Month	77	77	0	0
Current Year	83	83	0	0

10.9 Due for Test

Due for Test is a quick list of people in the database who are due for a test.

- o The software's default is 48 weeks. Those who have not been tested in the last 48 weeks and are now due. The Administrator can set the number to any number of weeks.

- o If a test subject is tested annually on two masks, the subject will remain on this list until both masks have been tested.

- o The list by default is sorted by last name. Click on the Personnel ID header to sort by the ID field.

If a user is no longer employed, or if the mask being queried has been switched out for another mask, the operator may remove the subject from the Outstanding Test list.

- o Right-click the person on the list

- o Select "Remove."

  - § The test being queried for the Outstanding Test list, will no longer be queried when it is removed from the list.

  - § The test will remain safely in the database.

  - § When making a person inactive, the person will be removed from the list. (See the Personnel section.)

The operator may also print this list by right-clicking on any person in the list, and selecting print.

For a similar report, see Outstanding Test Summary in the Reports section.

Due for Test		
Personnel ID	Name	Job Code
1851-1855	Linn Boyd	
1883-1889	John Carlisle	
1790-1862	John Tyler	

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XI

FitTrack Gold Personnel

11 FitTrack Gold Personnel

The Personnel Screen is the entry point for all test subjects and information that must be retained for each person.

11.1 Personnel General

To view personnel within a company, the user must select a company name from the Company drop-down list either at the top of the screen or on the left panel.

Opening the software will automatically open the company that was active when the program was last closed.

Each module can be collapsed by clicking on the light-blue title bar.

11.2 Personnel Search

As the personnel list grows, it may be easier to find a particular test subject through the search fields.

- o Click on the check-box on a field to be used for a search

- o Change the qualifier if necessary (equal to =, or not equal to <>).

- o Enter the criteria. When using the name or ID fields, the search engine will use whatever letters or digits you enter and conduct a search accordingly. When using "sm" in the last name search field, the results would be names such as Smalley, Smedley, Smith, etc. "Smi" would result in Smith, Smithson, Smithers, etc.

- o Click on the **Search** button to yield results.

    o Click on the **Reset** button to clear the search.

If the search criteria is not needed, the Search section may be collapsed by clicking on the blue title bar.

The choices used for searching can be added or removed as desired. Details for changing search choices can be found under the Admin Screen, Report Filter Settings.

The Report Name field is a custom field that allows the user to specify the name of the report, if the user wants to print the personnel list.

    o Simply type in the name to change the report name.

    o When this field is left blank, the default report name is "Personnel Summary Report."

11.3   Personnel Details

The details section of the Personnel Page shows the list of all personnel within the opened company, or displays the searched criteria if any of the search filters are used.

The sort order may be changed by clicking on any of the column headers.

    o The personnel is sorted by last name as a default.

    o Click on the column header a second time, and it deselects that column header.

    o Click on an additional column header to add to the sort order.

    o Click on **Clear Sort** to restore back to last name order.

11.4   Personnel Output

The information on the personnel screen may be printed or exported by selecting PDF, Excel, or Print.
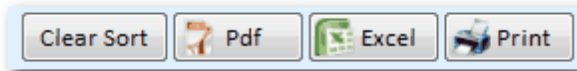
11.5   Add Personnel

Use the **Add** button, or right-click on any person in the list to add a person to the open company.

The Add Personnel Details screen will show.

Only First and Last name is required, but fill in the necessary information for your company's requirements.

NOTE: In order to use the synchronization feature, Personnel ID numbers must be used.

The Personnel ID can be set as a required field under the Company settings.

If the test subjects don't use an employee ID, it is recommended that the last four digits of the Social Security number along with first and last initials be used. For example, 6789JS.

In the Company settings, various fields can be turned on or off, so that there are more or fewer fields shown on this add screen. The custom fields, if needed, can be relabeled under the Company settings. There are some standard fields that also can be changed to display different text.

The inactive button can be checked to eliminate a person from the Personnel list and search results without deleting their records. Removing the check will bring them back to the active records.

After the needed information has been entered, the user can select Save, or Save and Test if the test subject is ready to be tested.

The Personnel Screen can be modified to show only the desired fields and information. See FitTrack Gold Company Screen for more information.

11.6 Edit Personnel

A person's record can be opened by selecting the record and clicking on the **Edit** button, by double-clicking on the test subject, or by right-clicking on the person and selecting **Edit**.

Edit is used when personnel information needs to be viewed or changed.

When the editing is finished, click on **Save** or **Save and Test** to save the changes.

11.7 Delete Personnel

Select a person, click on the **Delete** button or right-click on a person's name and select **Delete** from the list to permanently delete a person.

When a person is deleted, all test records associated with this person are also deleted.

11.8 Personnel Test History

Select a person, click on the **History** button, or right-click on that person and choose **History** to see an individual's test history.

The History screen contains a list of all the tests that have been recorded for this individual.

Select a test from the list, and click on Details to view the details of that particular test.

- o By clicking Print when viewing the test details, FitTrack Gold will print the same report that would normally be printed at the conclusion of a test.
- o Close the report and Details screen to return to the History screen.

Add may be used to add a test to this person's history.

- o A person's test may need to be manually added when the test had not been saved or printed for some reason.
- o Fill in the appropriate information in the same manner as performing a fit test. (See Performing a Fit Test).
- o Click on **Enter Steps**, and a screen will provide the opportunity to enter a fit factor for each step of the test.
- o Click on **Next** after a fit factor has been entered for each step.
- o After the final step, click on **Save** to save the test.
- o At the History screen, select this test from the list, click on **Details** and then **Print** to get a report for this test.

Move Test

- o **Move** may be used to move a person from one company to another.
- o Select a person, click on the **Move** button, or right-click and select **Move**.
- o A list will appear with selections of all the companies that have been created in this database.
- o Select the company and click **OK**.

o A confirmation box will be displayed, click **Yes**.

Test

o A fit test can be initiated by selecting a person, and clicking on the **Test** button, or right-click on the person and select **Test**.

o Please see the Test section to view the details of performing a respirator fit test.

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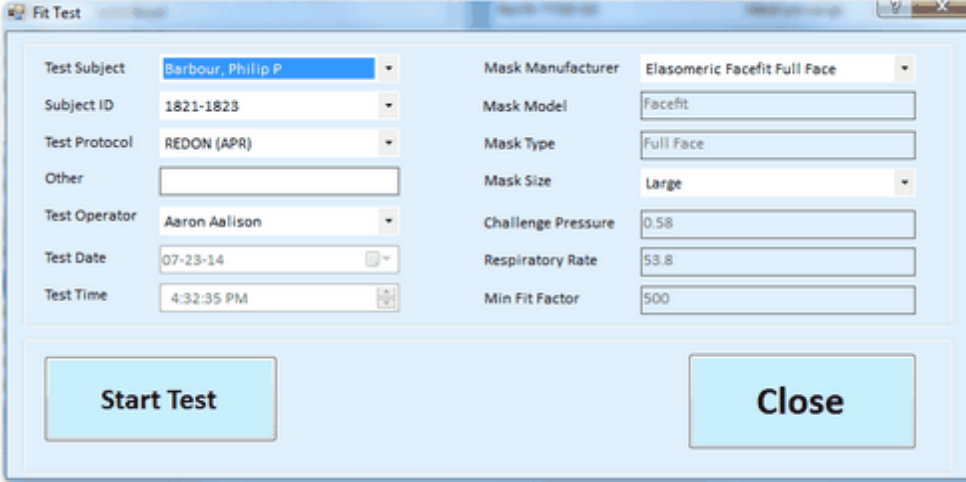
XII

FitTrack Gold Test

12   FitTrack Gold Test

There are various ways to enter the Test Screen:

1. On the Home Screen, enter the appropriate information at the top of the screen and click on **Test**.

2. On the Home Screen, click on a name in the Due for Test, fill in the respirator, protocol and operator information, and click on **Test**.

3. On the Personnel Screen, right-click a person and select **Test**.

4. On the Personnel Screen, select the person, and click on the **Test** button at the top of the screen.

5. On the Personnel Screen, double-click on a person, and select **Save & Test**.

6. On the Personnel Screen, Add a person, enter his or her information, and select **Save & Test**.

If all information is correct, click on **Start Test**.When test instructions appear, the test may begin.
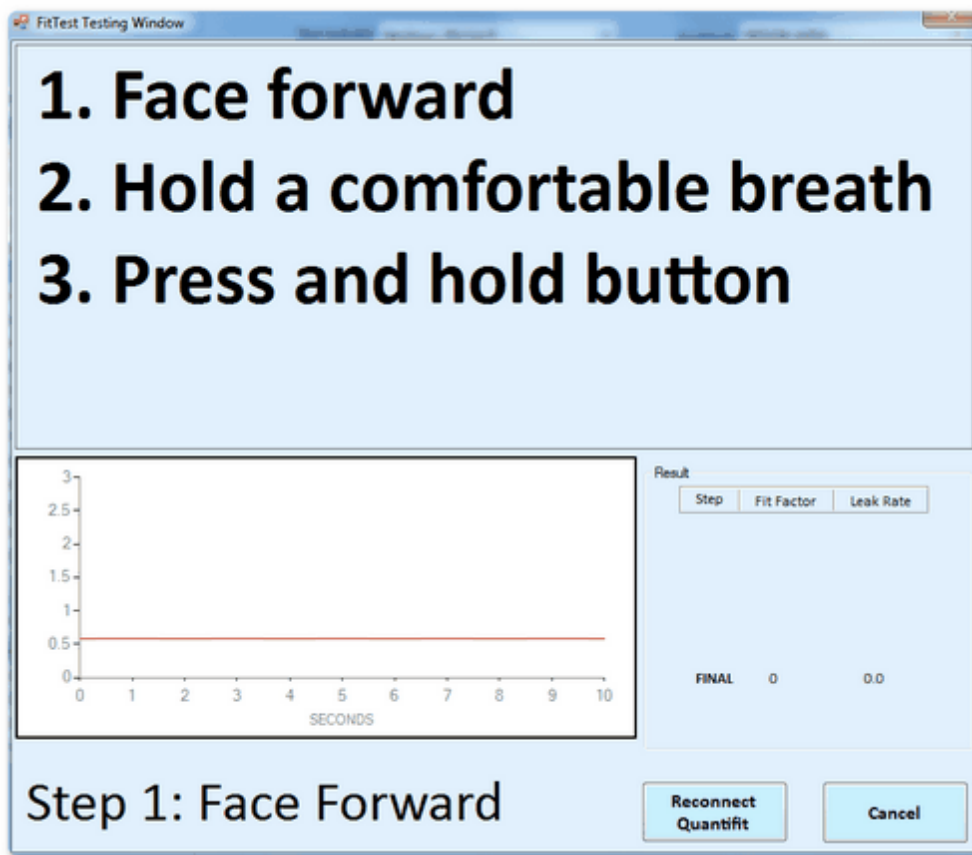
12.1 Test Subject

This field is automatically populated with the test subject who was selected before opening the test screen.

The drop-down list can be used to select a different person.

- o If search criteria was used in the personnel screen, only those subjects defined in the search will be available in the drop-down menu.
- o Press the first letter of the last name to quickly jump to that portion of the list.

12.2 Subject ID

This field is populated and can be used in the same manner as the Test Subject field.

By selecting a specific ID, the Test Subject field will automatically be populated.

12.3 Test Protocol

When selecting a test protocol, this protocol will become your default until it is changed again.

Each standard protocol that comes with FitTrack Gold contain the same five test steps. The difference in the protocols is the challenge pressure, or amount of pressure pulled in the facepiece, for each protocol. The steps are as follows:

Step One: Face Forward.

Step Two: Bend Over
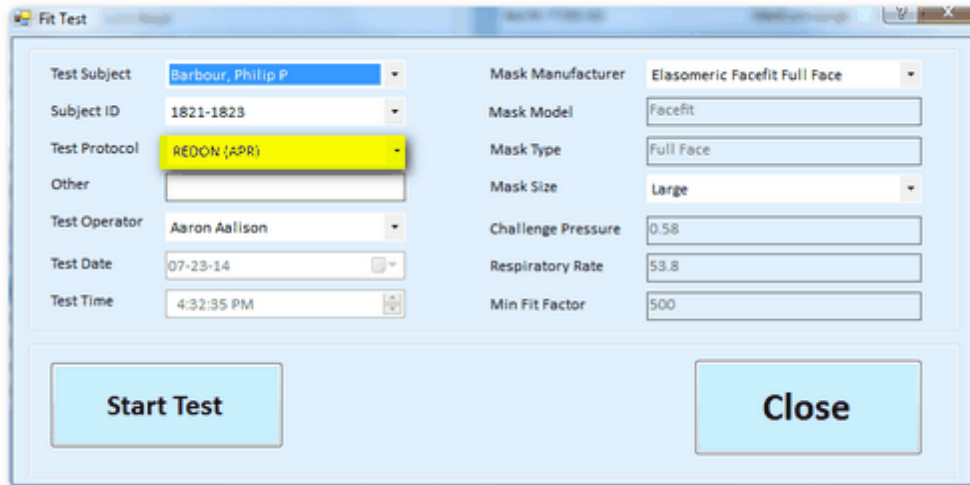
Step Three: Shake Head

Step Four: Redon the Respirator

Step Five: Redon the Respirator

These steps and procedures are explained in detail in the Test Operation section.

Custom protocols may be created. More information on this in the Tools Advanced Options section.

12.4 Qualitative Input

While it is not possible to test N-95 disposable masks with Controlled Negative Pressure, OHD recommends testing these masks with The Bitrex qualitative method. After the test is complete, the results can be recorded in FitTrack Gold so that all fit test scores for a particular individual can be archived in the same database.

To record the results of a qualitative test, select the and choose "Qualitative" as the protocol. Be sure to select the operator, the mask type and size. Then click on the **Start Test** button. The next screen allows input for date and time the test took place and whether the subject passed or failed.

To record the qualitative test, change the date and time fields to record the actual test time. Then select Pass or Fail, accordingly.

The drop-down at the bottom for the report option, has the choice of None, Print, or PDF. When **None** is selected, the software will close the current window after recording the results. When **Print** is selected, the software will load a preview of the report before it is printed out. When selecting **PDF**, a window will appear so that the operator may select a name and location for saving the PDF file. these reports may also be printed from the Reports module, by selecting the Fit Test Report option.
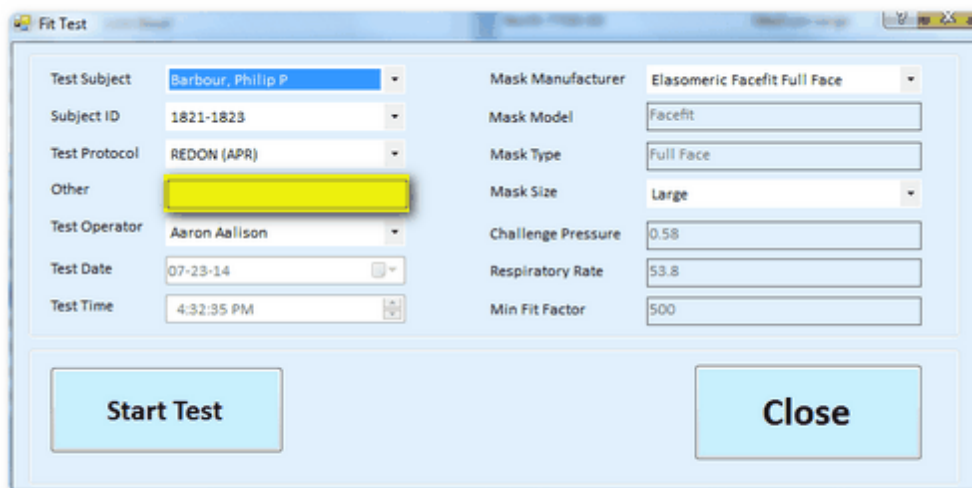
12.5 Test Screen Other

This is an optional field if the operator wants to add test-related information.

This field will print out on the test result printout.

12.6 Test Operator

The selected test operator will be recorded into the database as the person who administered the fit test.

If an Operator is selected in the left side bar, this Operator field will automatically be populated.

If Login is turned on under the Admin Security section, the Test Operator will be grayed out since the user was previously forced to enter his or her login information.

12.7 Test Date

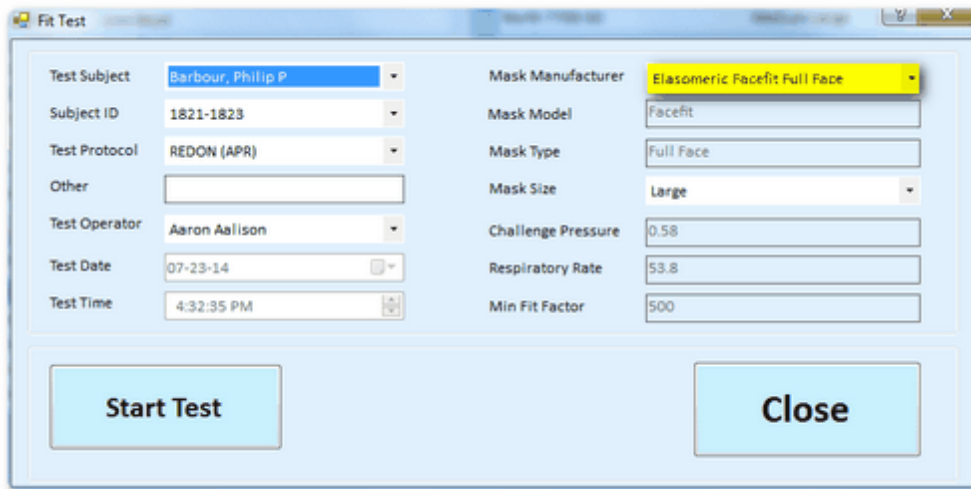This field may not be changed, as it is collected from the computer's internal clock.

12.8 Test Mask Information

Mask Manufacturer

o Use this drop-down to select the respirator that the test subject is wearing for this particular fit test.

o When selecting a respirator, it automatically populates the Mask Model and Mask Type fields.

o If the mask being tested is not on the drop-down list, **Add New Item** may be selected to enter a new mask. This can also be done in the Tools Screen under Advanced Options > Respirator. Instructions on adding a new respirator can be found in that section.

Mask Size

o It is very important to record the proper mask size that is being used for this fit test.

o This list of sizes can be modified in the Admin Screen, Advanced Options.
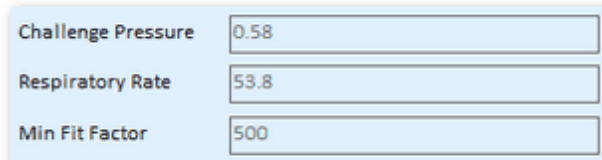
12.9   Test Statistics

These values are determined by the protocol that has been selected. See Protocol section for further details.

12.10 Test Operation

For each step of the test, specific instructions will display in this portion of the screen.

Graph

- o A graph of the fit test will be displayed during the test.

- o The visual reproduction may be helpful in some circumstances to troubleshoot problems with testing.

The test button is used to initiate the test

Close is used to cancel out of the test screen

- o If no test has been initiated, the screen will close.

- o If a test has been initiated, when using the close button, the operator will be asked to save or delete the results.

- o If the result is saved, the test will be recorded as an incomplete test.

- o If the result is not saved, the test information will be deleted as if the test were never attempted.

- o Saving an incomplete test can help to count the total number of tests attempted, including those who failed as well as those whose tests were canceled.

THE Result will display the result of each step after that step has been completed.

Save, Save & Print and PDF will remain grayed out until the test is complete.

Save will save the test to the database. Close window or select another person to resume.

Save & Print will save the data and print a copy of the report to the screen. Click on the printer icon to print a copy, or close to return to the test screen.

PDF will print the report to a PDF file. This will not save the test, so be sure to save the test first.
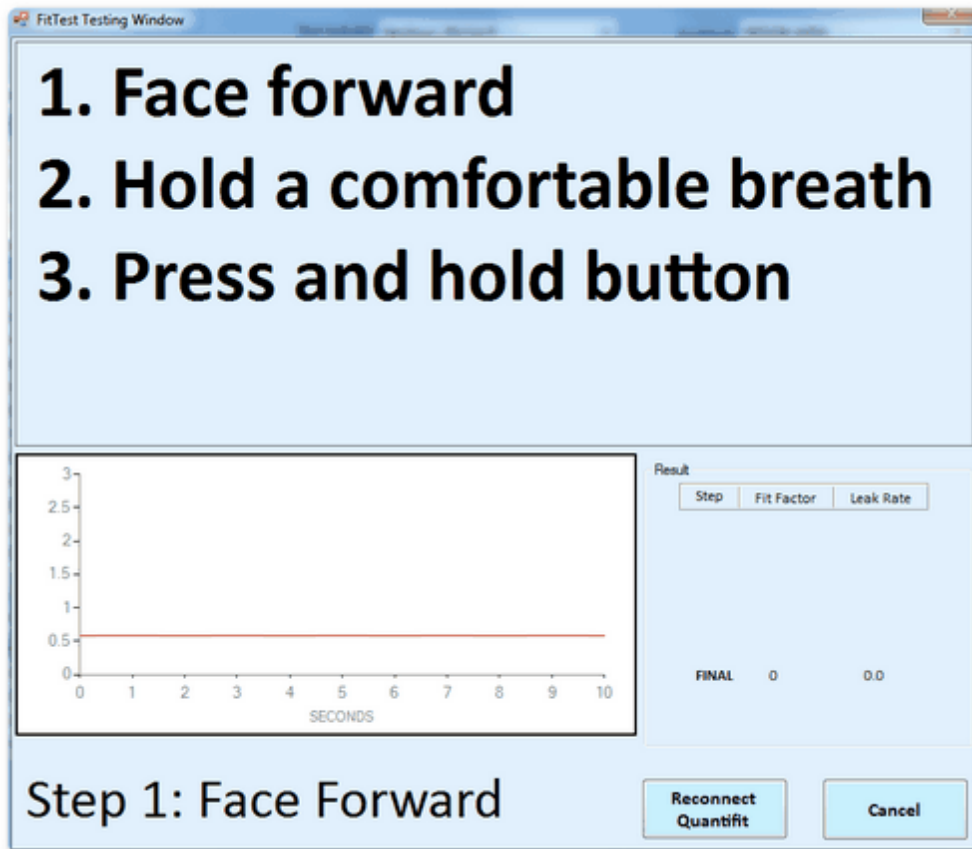
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XIII

FitTrack Gold Company

13 FitTrack Gold Company

13.1 General

The purpose of using companies is to divide the database into different segments. For instance, larger companies may want to create divisions for different buildings, physical locations, or job levels. This is to segment the database to create smaller lists that are easier to work with. A county may use a Quantifit to test several fire departments, and this would allow the user to separate people by the station in which the individuals work.

A user may use only one company, or use an unlimited number of companies, depending on how the user wants to organize the data.

When importing data, the software will import into whichever company is currently open.

Performing a backup will back up all companies.

The Company Name field will appear on each fit test report. All other fields through the notes section are for information/record keeping only.

Some of the labels under the Customize Personnel Fields sections may be changed or turned off.

To change a label, click on the **Change** button, and rename the label for that field.

The check-boxes next to each field, is to include (checked) or excluded (un-checked) these fields on the Personnel Screen for each within each company.

The check-box for Personnel ID under the Required column, would require that a personnel ID is used when adding new personnel. This box would need to be checked if the database will be synchronized with other databases.

Custom Label 1-3 fields are used to change the custom field labels in each personnel screen pertaining to this Company. If these fields are left blank, the custom fields will not appear on the personnel screen.

Checking the Personnel ID check-box will force the Personnel ID field to become mandatory. This is necessary when using the synchronization feature.

The Inactive box will remove a company from the visible company list, but will not delete it altogether. To view Inactive companies, check the "Show Inactive" check-box in the sort criteria.

This illustration shows the Add Person screen with no boxes checked on the Company Screen:

The following illustration shows the Add Person screen with all boxes checked on the Company Screen, and fields filled in under the custom label options:

13.2   Create New Company

Use the **Add** button, or right-click an existing company, and select "Add" to create a new company. The Company Name Field is the only required field. Whatever is entered into this field will print on every report while testing within this company.

All other data fields are optional.

Custom 1 through Custom 3 allows the user to customize personnel information.

- o After filling in a custom field, a new field will be added to the personnel information screen for all entries made under this company (see example below).

- o The custom screens will apply only to this company.

Custom Fields on Company Screen

Custom Field added to Add Personnel.

13.3   Edit/Delete Company

Click on the **Edit** button to make changes to an existing company

With the appropriate company selected, click on the **Delete** button to delete a company.

- o **WARNING!** When a company is deleted, it cannot be retrieved. The company along with all personnel in that company will be deleted.

- o If there is a chance the company might be needed in the future, the user may choose to make the company Inactive instead of deleting it.

13.4   Company Search

As the company list grows, it may be easier to find a particular company through the search fields.

- o Click on the check-box on a field to be used for a search

- o Change the qualifier if necessary (=, <>).

- o Enter the criteria on which to search.

- o Click on the **Search** button to yield results.

- o Click on the **Reset** button to clear the search.

If search criteria is not needed, the Search section may be collapsed by clicking on the blue title bar.

The choices used for searching can be added or removed as desired. Details for changing search choices can be found under the Admin Screen, Report Filter Settings.

The Report Name field is a custom field that allows the user to specify the name of the report, if the user wants to print the personnel list.

o Simply type in the name to change the report name.

o When this field is left blank, the default report name is "Company Summary Report."

13.5 Company Details

The details section of the Company Page shows the list of all companies, or displays the results of the searched criteria if any of the search filters are used.

The sort order may be changed by clicking on any of the column headers.

o The default sort is alphabetically by company name.

o Click on the column header a second time, and it deselects that column header.

o Click on an additional column header to add to the sort order.

o Click on **Clear Sort** to restore back to last name order.

13.6 Company Output

The information on the company screen can be printed or exported by selecting PDF, Excel, or Print.

The company sort order will be defaulted by Company name, or will change if any of the column headers has been selected to change the sort order.

The sort order can return to default by clicking on **Clear Sort**.

13.7 Company Setup

When creating or editing a company, there are many parameters that can be customized to determine the exact information required when adding an employee to the company.

o The enabled check-box column allows the operator to add or remove fields according to the needs of the company. Only checked fields will display in the Add-Personnel screen.

o The Edit Label columns show which fields can be renamed to better suit the company's requirements.

o By checking the **Required** button to the right of Personnel ID, this will require users to enter an ID number for each record. This is especially critical if synchronization will be needed.

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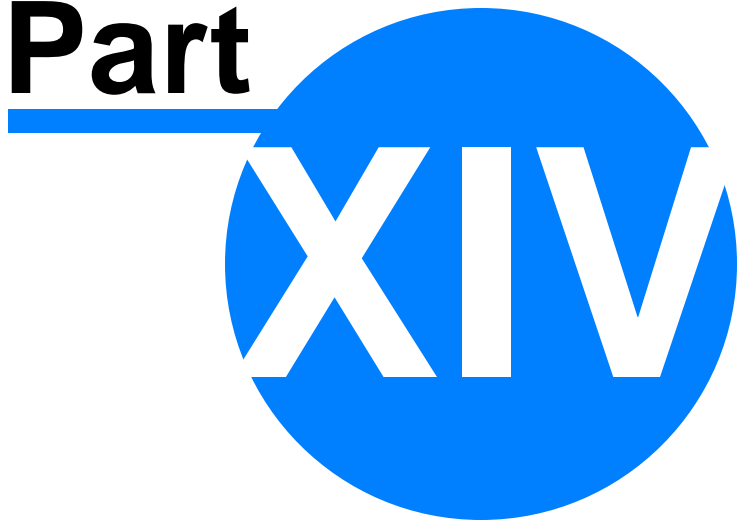
FitTrack Gold Reports

14 FitTrack Gold Reports

While the standard fit test reports print at the end of each test, the report module allows for more flexibility in both reporting and exporting needs. The Reports tab is used when there is a necessity to print reports or export information in a batch. All reports can be saved as a PDF file, exported to Excel, or sent to a printer.

Home

Personnel

Company

Reports

Tools

Help

Admin

Exit
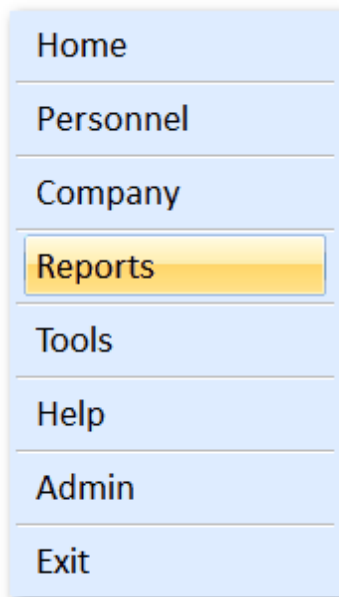
14.1 General

When printing a report, the details portion of the screen will first be populated by relevant data pertaining to the open company, and filtered through the search criteria.

All reports are set to preview before the report is sent to a printer.

The user can add three lines of header information to the top of each report, as well as a logo.

- o The header information is set up in the Report Format Settings of the Administration section.

- o When header information has been set, this will print on all reports regardless of company.

- o Select all reports by the drop-down menu at the top of the screen.

Your Company Name Goes Here
Address or Phone Number
Company Slogan

OCCUPATIONAL HEALTH DYNAMICS
OHD

| Occupational Health Dynamics | Fit Test Result Report | Test Date:- 07-20-12 | 2:31:09 pm |

George Washington
1732-1799

Department Name:
Medical Evaluation Date:
Job Code:
Mask: **Elasomeric Facefit Medium Full Face**

Challenge: Pressure:	1.50	Protocol:	SCBA-1
Last NIST Calibration:	07-20-12	Respiratory Rate:	93.10
Minimum Passing Fit Factor:	500	Last Daily Calibration:	07-20-12
Other :		Serial No:	

Notes

Sample of added text in report header along with company logo. In the lower report header, "Occupational Health Dynamics" is the name of the selected company that is being tested, as opposed to the company doing the fit testing, which appears in the header of the report along with the logo.

14.2 Protocol Summary Report

This report will print information pertaining to each protocol in the database.

The report includes challenge pressures, breathing rates, step details, and minimum passing fit factors.

14.3 Respirator Summary Report

This report lists all the respirators that have been entered into the software.

The report will not show respirators that have been entered directly into the Quantifit, even after data has been transferred. The Quantifit respirator information will remain with the test information, but will not be added to the respirator selection within the software.

For details on respirator usage, view Mask Inventory on the Home Screen.

14.4 Calibration Summary Report

This report will print every recorded calibration.

Users can specify a report for current day, or a range of dates by using the Search criteria.

14.5 Fit Test Summary Report

This report will print all fit tests that belong to the personnel list shown.

This report includes the result of each protocol step as well as overall fit factors for each fit test conducted on an individual.

14.6 Fit Test Result Report

This is the report that prints at the conclusion of an individual fit test.

Printing this report from the report page allows the user to print in a batch.

14.7 Fit Test Log Report

The Fit Test Log Report prints a snapshot of Fit Tests.

Search the current day's date, and the report will be of all individuals tested today.

The user can choose which columns appear on this report. This is confined by the space limitations of the width of the printed page.
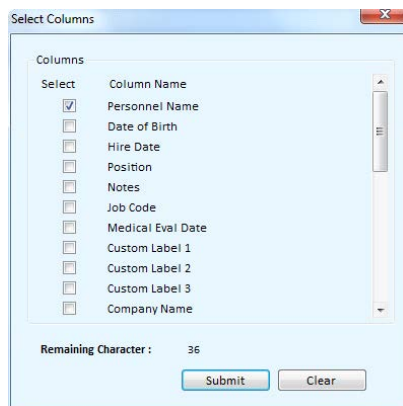
Sample of FitTest Log report shown below.

This report includes test statistics at the top of the report as seen in the following image.

14.8 Fit Test Card Report

This report allows the user to print fit test cards to be distributed to the respirator wearer who is being tested.

These can be printed in a batch or one at a time. However, a batch will better maximize the use of paper.

Any standard pre-perforated business card stock will work for this report.

The user can choose the starting place when printing these cards. This allows for a sheet to pass through the printer more than once in order to fill up the sheet. However, it is not recommended to use a sheet that already has cards that have been removed.

14.9   Fit Test Card Printer

This report allows the user to print fit test cards to a dedicated plastic card printer. These cards can be kept in an employee's wallet, or punched and attached to a lanyard to wear around the employee's neck. One fit test can be recorded on each side of the card.

Select the Fit Test Card Report, and choose the type of report under the details section. This selection has the default of "Normal," but may be changed to "Badgy" to select the plastic card printer.

14.10 Outstanding Summary Report

Much like the Due for Test section on the Home Screen, this report will print a list of individuals who have not tested within a specified period of time.

The list takes into account different respirators on which the user has been tested.

14.11 Search

   o Click on the check-box on a field to be used for a search

   o Change the qualifier if necessary (=, <>).

   o Enter the criteria on which to search.

o Click on the **Search** button to yield results.

o Click on the **Reset** button to clear the search.

If search criteria is not needed, the Search section may be collapsed by clicking on the blue title bar.

The choices used for searching can be added or removed as desired. Details for changing search choices can be found under the Admin Screen, Report Filter Settings.

The Report Name field is a custom field that allows the user to specify the name of the report, if the user wants to print the personnel list.

o Simply type in the name to change the report name.

o When this field is left blank, the default report name is the respective name of each report.

14.12 Details

The details section of the Reports Page shows results of the searched criteria if any of the search filters are used.

The sort order may be changed by clicking on any of the column headers.

o The default sort is alphabetically by employee name.

o Click on the column header a second time, and it deselects that column header.

o Click on an additional column header to add to the sort order.

o Click on **Clear Sort** to restore the original order.

14.13 Output

The information on the report screen can be printed or exported by selecting PDF, Excel, or Print.

The sort order will be defaulted by last name, or will change if any of the column headers has been selected to change the sort order.

The sort order can return to default by clicking on **Clear Sort**.

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XV

FitTrack Gold Tools

15 FitTrack Gold Tools

The Tools screen allows access to database functions including backup, restore, import, export, and the ability to create default settings to the software.
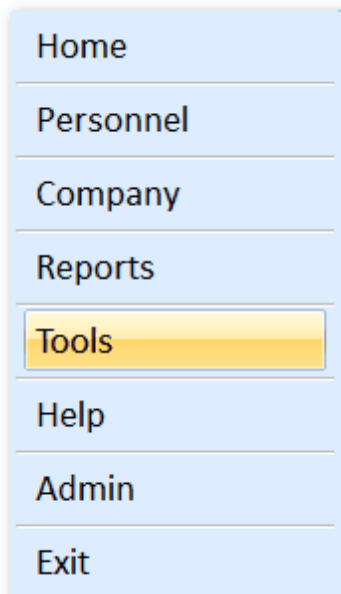
15.1 Backup/Restore
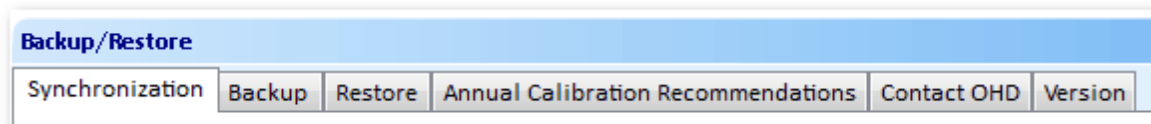
The Backup and Restore functions allow for database functions when synchronizing data or keeping it safe via another storage location.

15.1.1 Synchronize

Synchronization will allow for users to do a two-way synchronization between two databases.

In order to do a synchronization, these requirements must be met:

o The synchronization will use unique Employee ID numbers to match records.

▪ The Employee ID box must be checked in the Company record (See Company section.)

▪ All Employee ID's must be unique.

▪ If the company does not utilize employee ID numbers, OHD recommends using the last four digits of the test subject's Social Security number with his or her first and last initial following: 1234AB.

o The two computers that contain the databases to synchronize must be able to view each other through a network domain.

o A typical scenario would have a central database that has been installed on a server. Then each individual user could connect to the server and synchronize the database.

o Synchronization can be used to synchronize one company at a time, or the entire database.

Peer 1 will be populated with the database from which the user is syncing.

Peer 2 is the database the user will synchronize to.

o Click on **Browse**.

o Click on the **Select Peer** drop-down bar. (This may take a minute or two to search for all databases.

o The list will populate with all found SQL databases. They will be listed as: computer_name/FITTRACKGOLD. Select the desired database.

o The Username and Password will automatically populate with the assumption that the user did not change this when installing FitTrack Gold software.

o The default selection for Peer 1 is **Use All Companies Here**. This selection will allow all companies on Peer 1 to be synchronized (and/or added) to Peer 2.

o Click on **Connect**.

o Click on **Synchronize**.

o The user will select the company to synchronize FROM Peer 1, and TO Peer 2.
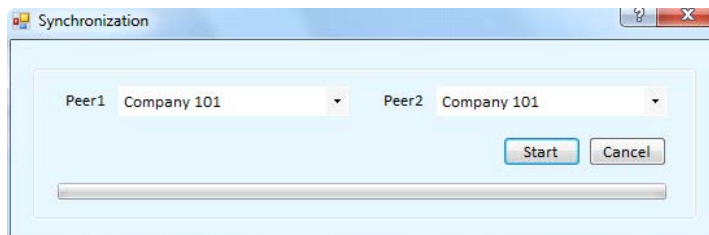
o If the user wants to COPY a company from Peer 1 to Peer 2, there is an option to select –New Company–. This will not synchronize a company, but rather copy all of the company information to the Peer 2 database.

o To synchronize all companies on Peer 1 or Peer 2, choose **--Use ALL COMPANIES Here--**. If this option is selected on Peer 1, all Peer 1 companies will be synchronized to Peer 2 companies, matching companies by name.
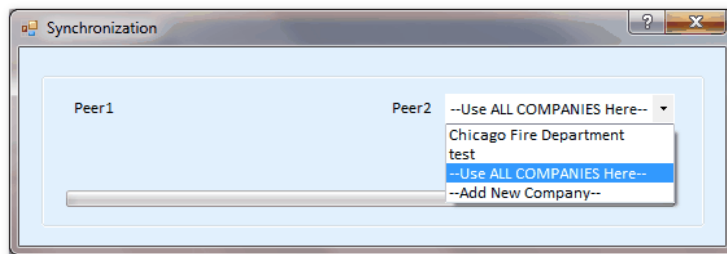
o Click on **Start**, and synchronization will occur.

o When synchronization is complete, the user will see an information screen detailing synchronized records, added records, and any errors that occurred.

o **NOTE:** If the synchronization process takes longer than just a few minutes, there may be an accumulation of empty records in the database. This can be cleared by clicking **Delete empty records before sync**. This will delete all empty records taking up space, thereby reducing the amount of time required to do a synchronization.

15.1.2 Backup

FitTrack Gold has a built-in schedule to prompt the user to do backups at specified intervals. (The default interval is 0 days.) The Backup section in the Tools section allows the user to do a backup at-will. This may be helpful when using a backup to move the database to another computer, or if the user is required to send his or her database to OHD for analysis.

Backups must be written to a folder on the root drive of the computer. For instance the user could create a folder C:/FitTrack Gold Backup.

Select the **Browse** button to select a predetermined location.

After the location has been selected, click on **Backup**, and then **Start** for the backup process to begin.

15.1.3 Restore

The restore options are to restore a database from SQL or from Microsoft Access.

SQL restore is the best way to move data from one computer to another within FitTrack Gold.

o Do a backup of the files.

o Restore that file on a new install of FitTrack Gold.

FitTrack 5.0.1 is used to restore data from an older version of a FitTrack database.

o This version must come from FitTrack version 5.0.1.

o The file to be restored should be named **FitTrack.mdb**.

o **WARNING:** when a database is restored, the previous existing data will be deleted.

To initiate the Restore

o Select SQL or FitTrack 5.0.1.

o Browse to the file to be restored.

o After selecting the file, click on **Open**.

o Click on **Restore** and then **Start**, and wait for the restore to complete.

o This may require a lengthy period of time when restoring a large MS Access database.

15.2   Import/Export
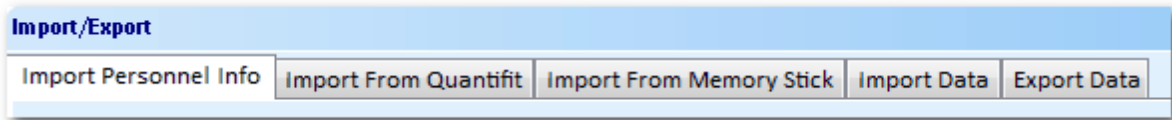
The import/export features allow data to be imported from the Quantifit or another database, or exported for use in other software packages.

15.2.1   Import Personnel Info

Incremental/Non-Incremental

This feature is used to import a list of people that are to be tested. The data will be imported into the open Company only.

Back up the current FitTrack Gold database before importing to avoid mistakes during the import.

The Excel data must be put into a specific order to correctly match fields with FitTrack Gold. The field headers are required, and must match exactly, or else the data will not be imported for that incorrect column.

Click on **Save Personnel Template to** download a copy of the template that is necessary for importing personnel information into FitTrack Gold.

While the column headers are required. columns may be left blank. Label the column must match these exact headers (case sensitive) in this order:

- PersonnelID
- FirstName
- MiddleInitialName
- LastName
- PositionTitle
- DateOfBirth
- DateHired
- MedicalEvalDate
- DepartmentName
- JobCode
- Notes
- CustomLabel1
- CustomLabel2
- CustomLabel3

Click on the **Browse** button to find the file that will be imported.

With the file selected, click on **Open**.

Click on **Import** below the importing options.

In the new window, select **Get Data**.

Data will populate into the window. Select Import at the bottom of the screen, and the shown data will be imported into the open company.

If a company is not open, this will result in an error.

15.2.2 Import from Quantifit

When this tab is selected, the serial number of the current Quantifit connected to the computer will be displayed next to the Connect button.

If no Quantifit number is displayed, click on the **Connect** button to establish a connection.

Select the **Import** button.

A message will be displayed when the import is complete, and the data currently on the Quantifit will be present in the open company.

The below Conflict Resolver window uses "smart match" to allow the person importing to decide if two people are the same. If the import tool recognizes two last names that are the same, and the first initial is the same (but first name is not an exact match), the Conflict Resolver will pop up. This would allow the user to match Dave Short with David Short as seen below. If the matched people are in fact the same person, click on the person in New Records and then Existing records and select **Update**. If they are not the same person, select **Add New**. A final option is **Skip**, if the person selected should not be imported into the database.

15.2.3 Import from Memory Stick

Save to memory stick from Quantifit

o Place memory stick in the upper USB port on the back of the Quantifit

o On the Quantifit, scroll to the System menu

o Scroll down to the last option, Datalog

o Turn the knob counter-clockwise to the File Menu option

o Select **Save Datalog**

o Type name (up to 8 standard alpha-numeric characters)

o Select **Done**

Import from Memory Stick

o Click on the **Browse** button to browse to the file from the Quantifit.

o This file may remain on a memory stick, or may have been copied to the location on the computer.

o Select the file and click **Open**.

o Back on the FitTrack Gold screen, select **Import**. The data from the selected file has been imported into the open company.

o The below Conflict Resolver window uses "smart match" to allow the person importing to decide if two people are the same. If the import tool recognizes two last names that are the same, and the first initial is the same (but first name is not an exact match), the Conflict Resolver will pop up. This would allow the user to match Dave Short with David Short as seen below. If the matched people are in fact the same person, click on the person in New Records and then Existing records and select **Update**. If they are not the same person, select **Add New**. A final option is **Skip**, if the person selected should not be imported into the database.

15.2.4 Import Data

The purpose of this tool is to import data that was exported from another instance of FitTrack Gold. (Please view the Backup and Restore options when moving a complete database from one computer to another.)

Data Type defaults to export Personnel and Test Data tables, which is what most users will want to transfer people along with their test results. However, other options include all tables from within the FitTrack Gold database.

- o Click on **Browse** to browse to the file to be imported.

- o When the file is found and selected, click **Open**.

- o Click on **Import**.

- o In the new window, you must first select **Get Data** to populate the data into the open window.

- o Click **Import**, and a message will confirm that the data has been imported.

15.2.5 Export Data

The Export option is useful when it is necessary to transfer data to another instance of FitTrack Gold. (Please view the Backup and Restore options when moving a complete database from one computer to another.)

This option defaults to export Personnel and Test Data tables, which is what most users will want to transfer people along with their test results. However, other options include all tables from within the FitTrack Gold database.

The data will be exported only from the company that is currently open.

When **Include All Dates** is checked, the export will include all tests within the open company.

When the **Include All Dates** is not checked, the user can enter a date range of tests to be exported.

- o Click on **Export**, and browse to a location where the data will be saved.

- o A name of the file will be required in the File Name field.

- o Click on **Save**, and a notification will display to confirm that the data had been exported.

15.2.6 Export to Cority

The Export to Cority (formerly Medgate) option allows the data to be exported and formatted so that it can be imported into Cority medical records software.

The data will be exported only from the company that is currently open.

In the drop-down menu, which is pre-populated with "Personnel and Test Data," select "Cority."

When Include **All Dates** is checked, the export will include all tests within the open company.

When the Include **All Dates** is not checked, the user can enter a date range of tests to be exported.

- o Click on **Export**, and browse to a location where the data will be saved.

- o A name of the file will be required in the File Name field.

- o Click on **Save**, and a notification will display to confirm that the data had been exported.
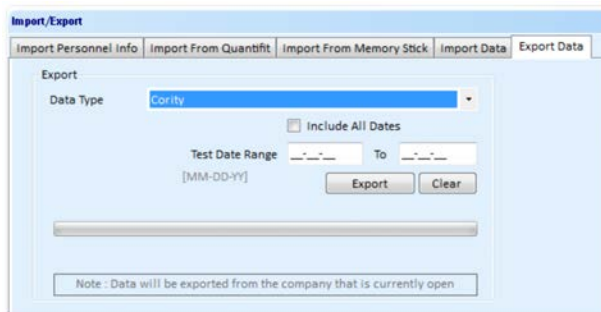
15.3   Advanced Options
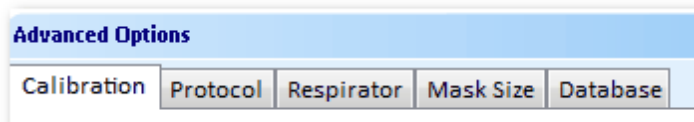
Advanced options include setup information for test protocols, respirators, mask sizes, and calibration retrieval

15.3.1 Calibration

When a Quantifit is connected to a computer and powered up when launching FitTrack Gold, the software will automatically retrieve the daily calibration information.

If for some reason the user wants to retrieve the calibration a second time, or if the Quantifit was not connected when the software was launched, **Retrieve Calibration** may be used to import the calibration data from the Quantifit.

 o Click on **Retrieve Calibration**

 o Click **Yes** to confirm.

 o A message will display confirming that the retrieval was successful.

15.3.2 Protocol
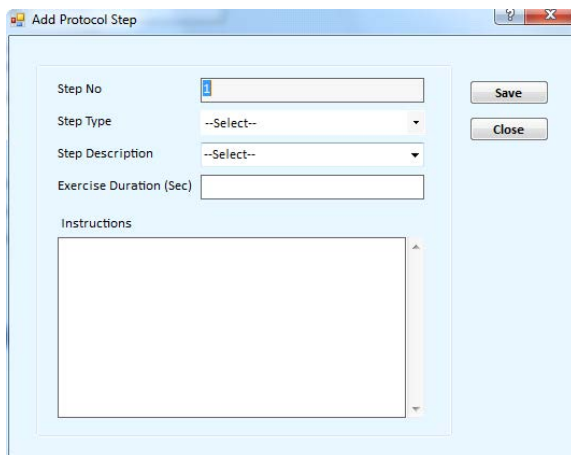
The Protocol section allows the user to view, edit, delete, or add, or copy protocols used during testing.

The standard protocols issued by OHD cannot be edited or deleted.

Add Protocol

 o Protocol Name: A protocol name must be given.

 o Minimum Passing Fit Factor is the minimum passing fit factors for half mask and full face.

 o Fit Factor Calculation

  ▪ Controlled Negative Pressure is the native fit factors calculated using the Quantifit.

  ▪ Ambient Aerosol converts the fit factor as it correlates to Ambient Aerosol measurements if this number is preferred.

 o Challenge Pressure is the modeled breathing rate, or amount of negative pressure held within the mask during the test.

  ▪ 0.58, Normal, is the negative pressure approved by OSHA and is used in the Redon protocol. This pressure is 0.58 inch of water column, and emulates a "normal" inhalation pressure.

  ▪ 1.0 Heavy, is a negative pressure beyond that of OSHA requirements. This pressure is used for the CBRN protocol. This pressure is 1.0 inches of water column, and emulates a "heavy" inhalation pressure.

- 1.5 Extreme, is a negative pressure beyond that of OSHA requirements. This pressure is used for the SCBA protocol. This pressure is 1.5 inches of water column, and emulates an "extreme" inhalation pressure.

o Click on **Add** to add a step to the protocol.

- Step No. will indicate which step of the protocol is being edited or created.

- Step Type will be exercise or test.

- Step Description is a list of common test or exercise types.

- Duration is the length of time for the exercise selected. (All test durations will default to 8 seconds.)

- Instructions allows for instructions to the user to be typed in this field.

Edit Protocol allows the user to make changes to an existing protocol, with the exception of protocols that are standard with FitTrack Gold. Edit follows the same guidelines as Add Protocol (above).

Delete Protocol can be used to delete any protocol with the exception of protocols that are standard with FitTrack Gold.

Print is used to print protocol details of any selected protocol.

Copy may be used to copy an existing protocol so that changes can be made without changing the original protocol.

15.3.3 Respirator

The respirator module allows the user to Add, Edit, or Delete respirators that are available on the test screen.

Click on **Edit Respirator** to enter the edit screen in order to add, remove, or edit a respirator.
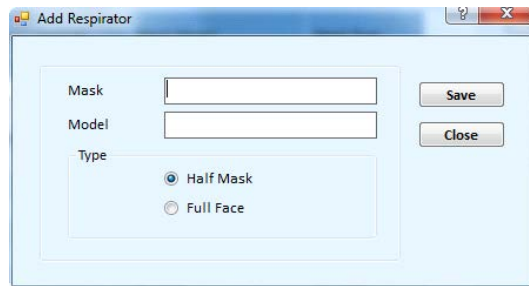
Add will allow the user to add a respirator and make it available for all test subjects.

- o The Mask field is intended for the respirator manufacturer's name.

- o The Model field is for the respirator model.

- o Type determines whether the mask is a half mask or full face. This selection allows the software to determine the minimum passing fit factor.

- o Edit will bring up a screen similar to the Add Respirator screen, allowing the user to make changes to existing respirators.

- o Delete allows the user to delete a respirator that is no longer used.

- o Print will print a list of respirators that have been entered into FitTrack Gold.

- o Close will close the Respirator window and bring the user back to the Tools screen.

Mask Size

- o The mask size selection contains all the mask sizes that are typically used.

- o A user may add a non-standard mask size to make it available for selection, or delete masks sizes that are not applicable.

15.3.4 Mask Size

FitTrack Gold offers the standard sizes for respirator selection. However, if there is ever a need to create an additional mask size, simply add a mask size to this list, which would make the new size available for selection on the test screen.
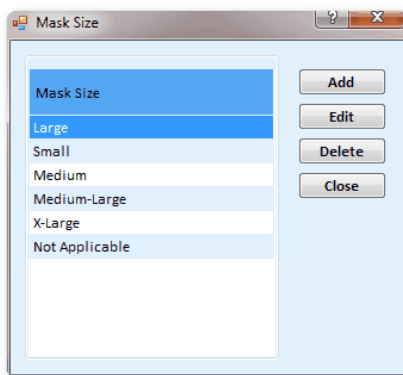
15.3.5 Database

The Database tab allows for the user to attach to a different database to FitTrack Gold. Databases can reside on a server, or even on another workstation connected to the server. The drop-down bar will show the available databases from which to choose. Choose the database, and click on the OK button to connect. If a database does not appear in the selection list, type the path and name, and then click **Test Connection**. If a connection is established, the newly selected database is being used. Click **OK** to close the window.
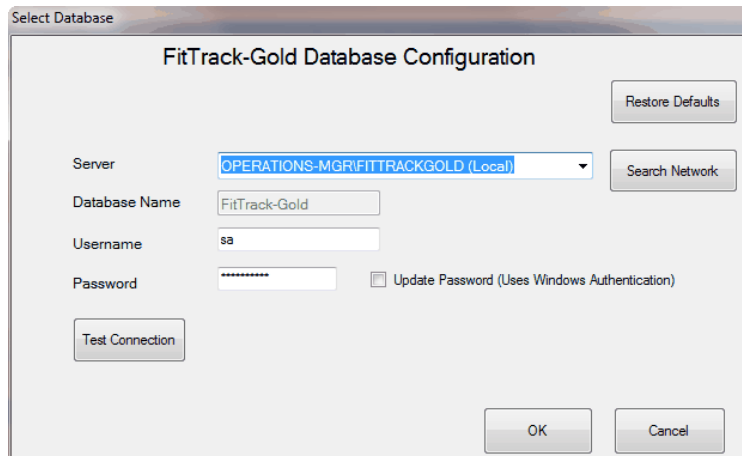
o With a default installation, a standard username and password is assigned. In this Database window, those standard fields are automatically populated. If a custom install was done whereby the installer changed the username and password, those credentials would be needed at this time.

o Restore Defaults is to change the screen back to the original defaults if the user wants to undo any of the changes that might have been created.

o When the Database window is opened, FitTrack Gold scans fort the available databases. The Search Network button may be used to perform another search.

o The Update Password option is a safety feature in case the original password is no longer available. This function will only perform this change on a local instance of the database.

OHD Quantifit
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The Gold Standard in
Respiratory Protection

Part

XVI
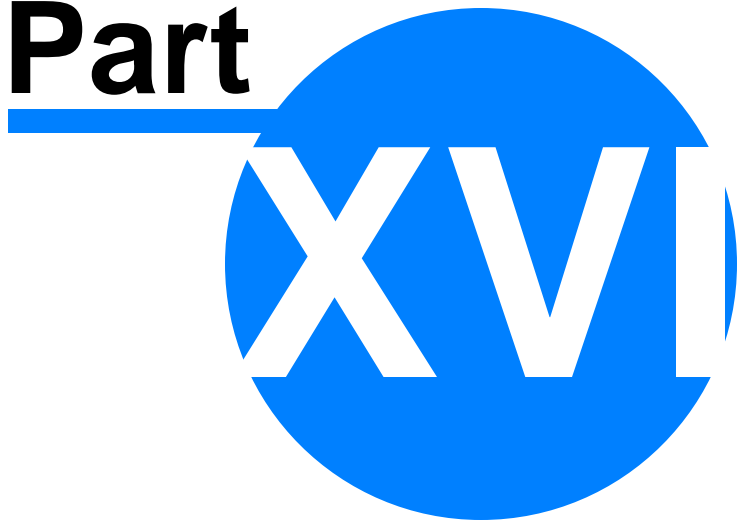
**FitTrack Gold
Administration**

16 FitTrack Gold Administration

The Administration section allows for flexibility in the way that FitTrack Gold may be used. This includes the way the software opens, security options with users, and functions that average operators can be kept from initiating.
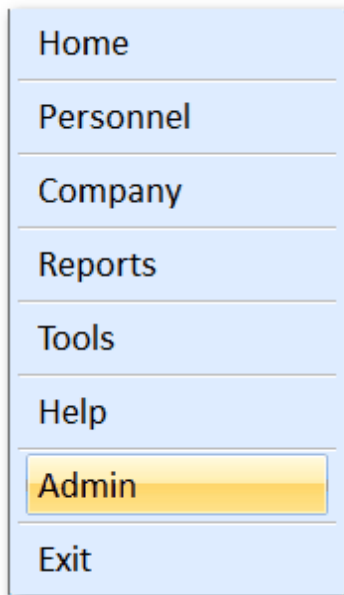
16.1 General

The General Administration fields will assist with enforcing security settings, and allow for flexibility in how the software opens, and determine where database backup information will be stored.
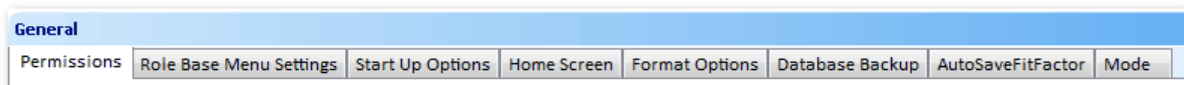
16.1.1 Permissions
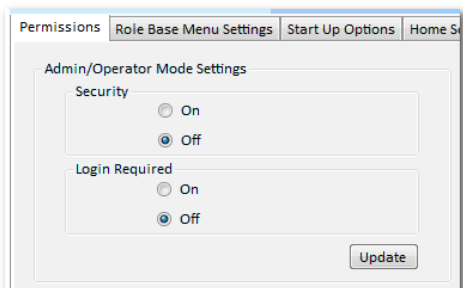
Security pertains to the security of FitTrack Gold. When Security is turned on, there are two roles that may be assigned: Operator and Admin. The Admin can select which items the Operators will have permission to use (see next section, Role Base Menu Setting).

Login Required defines whether or not login credentials are needed to launch FitTrack Gold. (See User Management to learn how to set up login credentials.)

There are four possible configurations for the Admin/Operator Mode Settings. The user or administrator may turn permissions on or off as desired, going from the least secure to the most secure:

- **Security OFF, Login Required OFF**. This is the default setting for FitTrack Gold, which means the security settings are turned off. There are no login credentials required, and any user has full access to FitTrack Gold and all its settings.

- **Security OFF, Login Required ON**. This setting requires an operator to log in, but once the operator is in the program, he or she has permission to do anything within FitTrack Gold.

- **Security ON, Login OFF**. This setting does not require any user to log in, but there are restrictions to the user's activities as defined by the Role Base Menu Settings (next section). In order to do anything that has been restricted, the user must log into the Administrator screen using administrator credentials, or the default Administrator credentials.

- **Security ON, Login ON**. This is the most secure way to operate FitTrack Gold. All users must be assigned log in credentials, and only those users with Administrator privileges have full access to FitTrack Gold.

16.1.2 Role-Based Settings

| Menu	Access	Add	Update	Delete	InActive
Personnel	Both	Both	Both	Admin	Both
HistoryPersonnel	Both	Admin	Both	Admin	NA
MovePersonnel	Both	NA	NA	NA	NA
PerformTest	Both	Both	Both	Both	NA
Company	Both	Both	Both	Admin	Admin
Protocol	Both	Both	Both	Admin	Admin
Respirator	Both	Both	Admin	Admin	NA
MaskSize	Both	Both	Both	Admin	NA
AutoSaveFitFactor	Admin	Admin	Admin	Admin	NA
SetAdminPassword	Admin	Admin	Admin	Admin	NA
AllImport	Both	Both	Both	Both	NA
AllExport	Both	Both	Both	Both	NA
BackupDatabase	Both	Both	Both	Both	NA
RestoreDatabase	Admin	Both	Both	Both	NA
SynchronizeDatabase	Both	Both	Both	Both	NA
UpdateFirmware	Both	Both	Both	Both	NA
WarrantyAndHelp	Both	Both	Both	Both	NA

When Security is turned ON in the Permissions screen, these settings will be enforced.

With security turned ON, only an Administrator can make changes to this grid.

When any field in this grid is set to "Both," this means that and Administrator and a User both have permission for this type of action.

When any field in this grid is set to "Admin," this means that only those persons logged in as an Administrator has permission to perform the actions referenced in the grid.

Before any changes take place, the Administrator must click on the Update button.

16.1.3 Start-Up Options

Home Page, when selected, will always open FitTrack Gold to the Home Screen.

Personnel Page with Last Company Opened, when selected, will bypass the Home Screen and go directly to the Personnel screen of the last company opened.

16.1.4 Home Screen

The fields under this tab are used to customize the appearance of the Home Screen.

Due for Test

- o On the Home Screen there is a section for Due for Test. This field allows the user to change the number of weeks that FitTrack Gold is using as a guide to notify the user of the people who are due for test.

- o The default value is set to 48, which means that FitTrack Gold polls the software, and populates the Home Screen with a list of people who have not been tested in the past 48 weeks.

Mask Inventory

- o The mask inventory will reflect only the inventory from the company that is currently opened.

- o With All Companies selected, the mask inventory will reflect the mask inventory from all companies in the database.

Test Statistics for
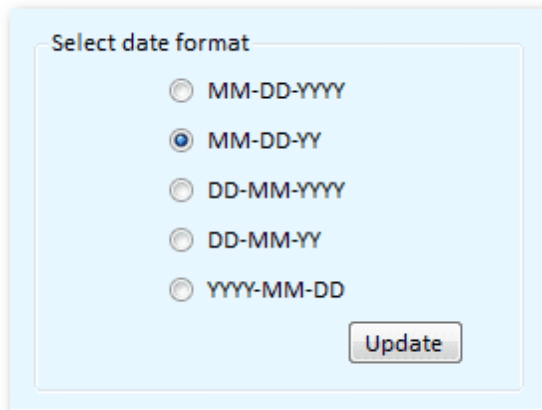
- o With Company selected, the test statistics will reflect only the information from the company that is currently selected.

- o With All Companies selected, the test statistics will reflect the information from all companies in the database.

Link Details

- o For the users convenience, links have been included for popular sites pertaining to fit testing, and OHD. These links can be changed at any time by the user.

  - ▪ The OHD link will bring the user to the OHD web site for information and updates on respiratory protection as it pertains to the Quantifit.

- The Service Return Form link will bring the user to the service return form required when sending the Quantifit in for service or calibration.

- OSHA 1910.134 Appendix A is a link to the OSHA Fit Test Standard, which outlines all the requirements for respirator fit testing.

16.1.5 Date Format
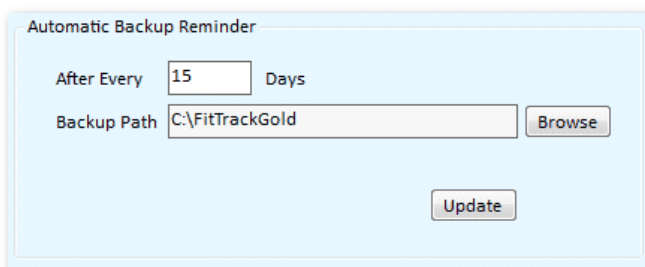
The Date Format is user-selectable to the user's preference as to how dates should be displayed.

Changes in the dates will be throughout the program, and includes intelligent sorting when searching or sorting by date.

MM is for a two-digit month, DD is for a two-digit day, YY is for a two-digit year, and YYYY is for a four-digit year.

The User must select **Update** before leaving this screen in order for the required changes to take place.
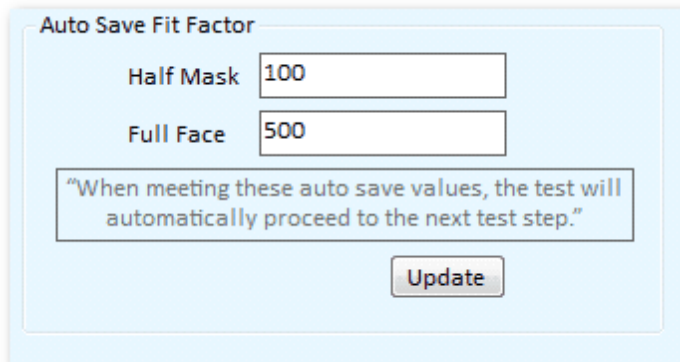
16.1.6 Backup

When closing FitTrack Gold, the user will occasionally be prompted to backup the database. This setting allows the user to determine how often that reminder should appear, as well as where the database backup will be saved.

Click **Update** for changes to take effect.

16.1.7 Auto-Save

After each test step, FitTrack Gold automatically determines a pass or fail. After a pass, the software forwards the user to the next step of the test.

These settings for the Auto Save Fit Factor do NOT determine whether the test passed or not, they determine whether the step is automatically saved or not.

By default, the values are set to the minimum passing fit factors.

The user can set the values to "0" to turn this function off. The result would be that after each step, the user would have to click **Save** or **Retry**.
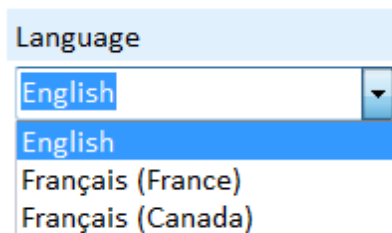
16.1.8 Mode

Each time FitTrack Gold starts, the software searches for a connected Quantifit. If a Quantifit has never been connected to the computer, there will always be a warning that the **FTDI Drivers have not been installed**. This is because a Quantifit must be attached to complete the driver installation.

If a specific computer is being used only for the FitTrack Gold database, it is a good idea to click on this Disconnected Mode. This will eradicate the FTDI message, as well as save computer resources by not querying for an attached Quantifit.

16.1.9 Languages

Languages may be changed in FitTrack Gold software for use in countries other than English speaking countries. Languages will continue to be added as particular needs arise. When a language is changed, the user will be prompted to restart FitTrack Gold.

16.1.10 Fit Test Expiration

When selecting the Fit Test tab, the operator can enter the number of years that a fit test would expire. According to OSHA regulations, that period is one year. However, there are other countries that allow a single fit test to be valid for up to two years. This change in expiration will only affect the Badgy Card report.

16.2 Reports

The report settings will allow the user to customize header information on the reports, as well as which search options will be available when printing reports from the Reports tab.
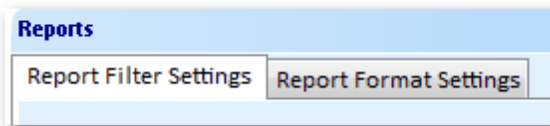
16.2.1 Report Filter Settings
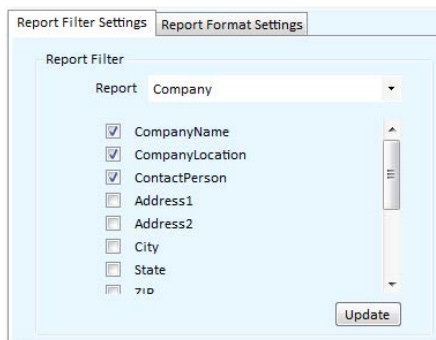
Report filter settings allow the users to turn on or turn off the filters that appear on the report screen, the Personnel screen, or the Company screen.

When a box is checked, the filter criteria will be available on the screen. When the box is unchecked, the filter will not appear as part of the search criteria.
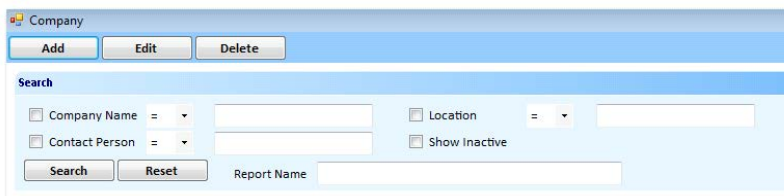
Show Inactive is always available as a filter criteria in case there is a need to find an item that has been made inactive.

Filters can be edited for screen and reports including Company, Personnel, Protocol, Respirator, Calibration Data, Fit Test Summary, Fit Test Result, Fit Test Log, Fit Test Card and Outstanding Test Summary.
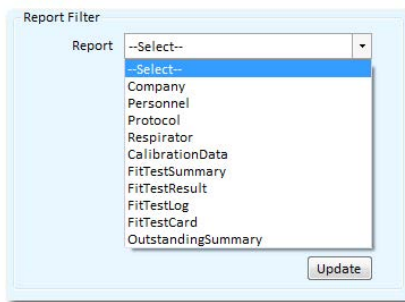
16.2.2 Report Format Settings

Report Format Settings allows the user to customize the header section of each report. Changes made in this tab will affect all reports to be printed from FitTrack.
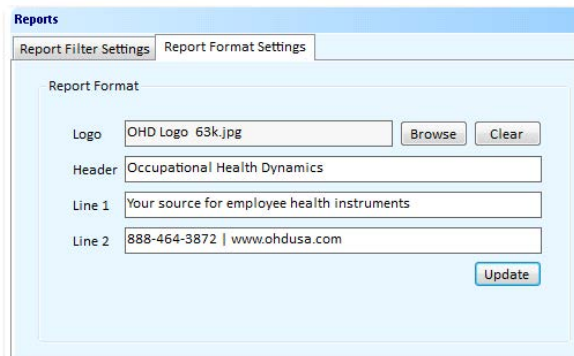
To place a company logo in the upper right side of the report, browse to a location where a logo has been saved, and this will be loaded into the report template.

Header, Line 1 and Line 2 are for the user's discretion. The header line is typically the name of the company who is performing the fit tests. Line 1 and 2 can be an address, or additional information that the user would like to see appear on the reports as seen below.
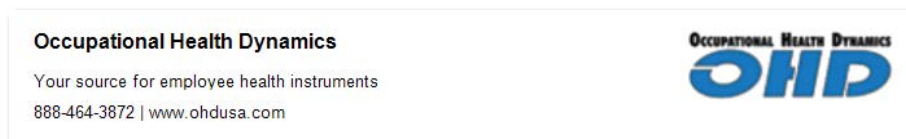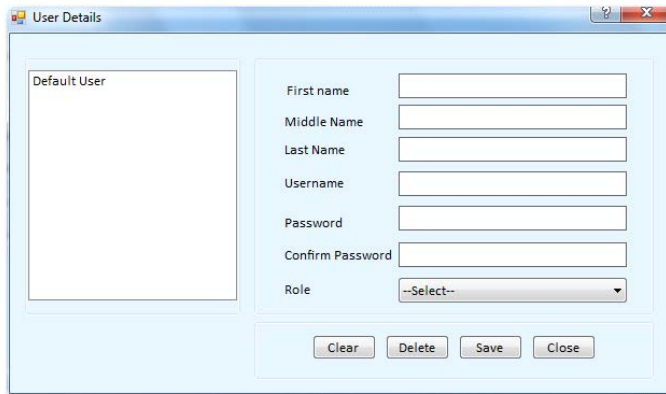
16.3 Security

Security settings include User Management for setting up login accounts, and Update Firmware for when updates become available for the Quantifit.
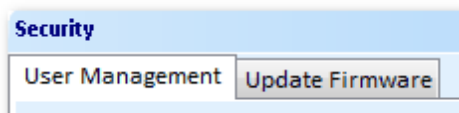
16.3.1 User Management

User details is used to create, edit or delete users.

These users will appear in the "Operator" drop-down list when performing a test.

If the login feature is turned on, these profiles will be used for each user to open FitTrack Gold.

The appropriate fields can be edited to create a user's profile.

Role options are either Admin or Operator

16.3.2 Update Firmware

1. Update Firmware allows the user to update the Quantifit firmware directly into the Quantifit.
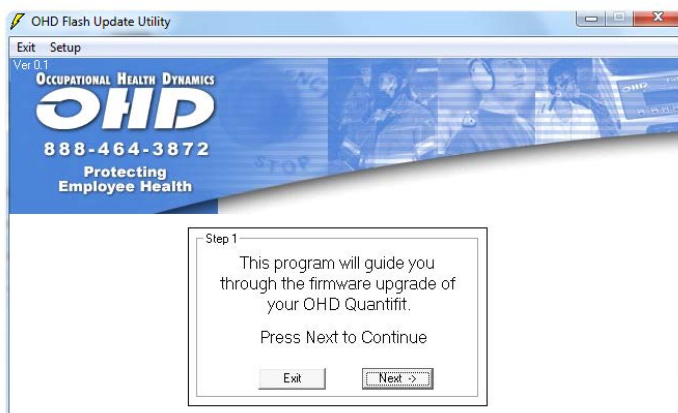
2. Connect the Quantifit and turn it on, and press **Next**.

```
┌─ Step 2 Connect Device ──────────────────┐
│                                          │
│   Connect the device to a USB port       │
│          on the computer.                │
│        Turn on the Device                │
│       Press Next to Continue             │
│                                          │
│      [  Exit  ]        [ Next -> ]        │
│                                          │
└──────────────────────────────────────────┘
```

3. The software will search for a Quantifit and confirm the connection.

```
┌─ Step 3 Searching for Device ────────────┐
│ ┌─ Status ──────────────────────────────┐│
│ │   Found a Quantifit on Com 5          ││
│ │                                        ││
│ │                                        ││
│ └────────────────────────────────────────┘│
│       Press Next to Continue             │
│  [ <- Back ]  [  Exit  ]  [ Next -> ]    │
└──────────────────────────────────────────┘
```
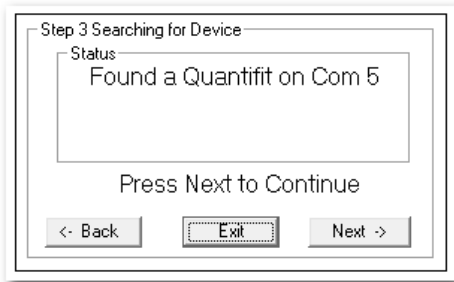
4. If the computer in use has an internet connection, use the **Browse Internet Files** selection. This will access a specific internet location that contains Quantifit firmware.

```
┌─ Step 4 Select File to Download ─────────┐
│ Recently Used Files:                     │
│ ┌──────────────────────────────────┐ [▼] │
│ └──────────────────────────────────┘     │
│ [ Browse Local Files ] [ Browse Internet Files ]│
│                                          │
│                                          │
│  [ <- Back ]    [  Exit  ]   [ Next -> ] │
└──────────────────────────────────────────┘
```
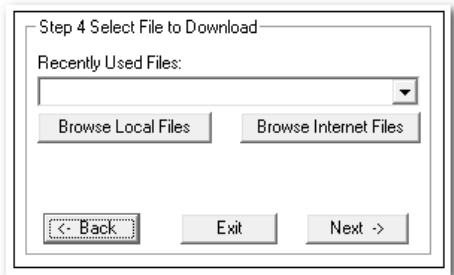
If the computer in use does not have an internet connection, the firmware file must be downloaded from another computer, via the OHD website, and then transferred to the computer containing the FitTrack Gold software. On Step 4 of Update Firmware, the user would select **Browse Local Files** and then browse to the location in which the firmware file was saved.

5. Shown below is what appears when Browse Internet Files is Selected. Select the file name (to highlight it in blue), and then select Use Selected File.
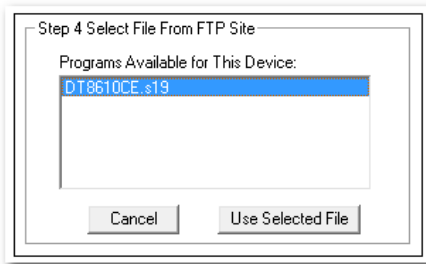
6. The following message will appear in the window, and the Quantifit will display the message, "Flash programming enabled."
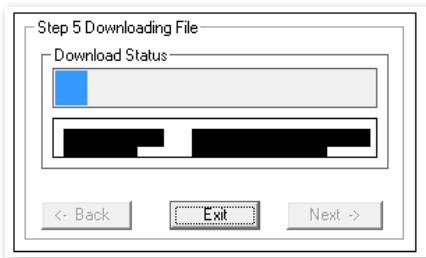
7. The following message will appear indicating that the update was successful. The Quantifit will restart. Select **Finish**, and the update is complete.
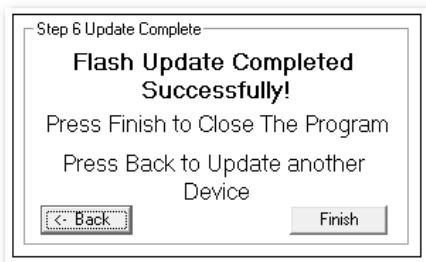
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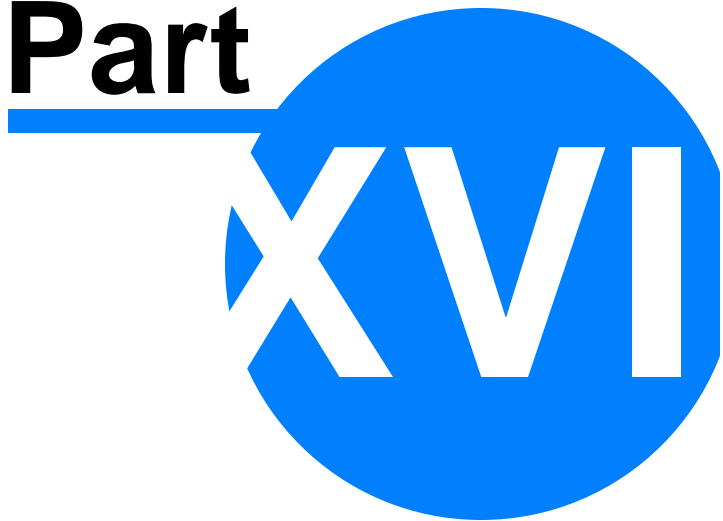
Troubleshooting

17   Troubleshooting

This chapter contains information about problems and possible solutions.

17.1   Test Measurements

Occasionally, test measurements may be contrary to the operator's expectation. Descriptions of some of these common situations and possible solutions have been included to aid the user in obtaining more accurate measurements.

17.1.1   High Leakage

In many cases, the measured leakage exceeds the ability of the Quantifit to measure. Within the Quantifit, once the measuring cylinder reaches the maximum capacity, the cycle will immediately cease and abort. If the test time does not travel the full 8 seconds of the test, the leak is too great. The FitFactor will equal "0" and the Leak Rate will equal "0.0." After determining the source of the large leak, repeat the step.
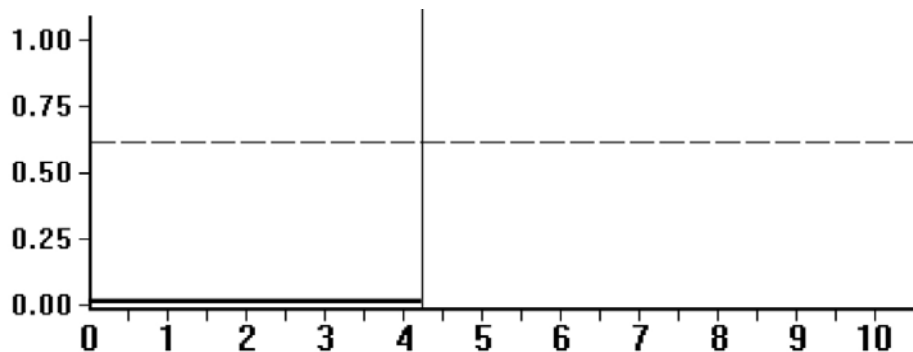
17.1.2   Large Leak

At other times the Quantifit will labor to create the negative pressure only to end the test measurement before the 8-second time. This leakage, although less than maximum, still fills the cylinder and abruptly ends the test. It will look something like this:
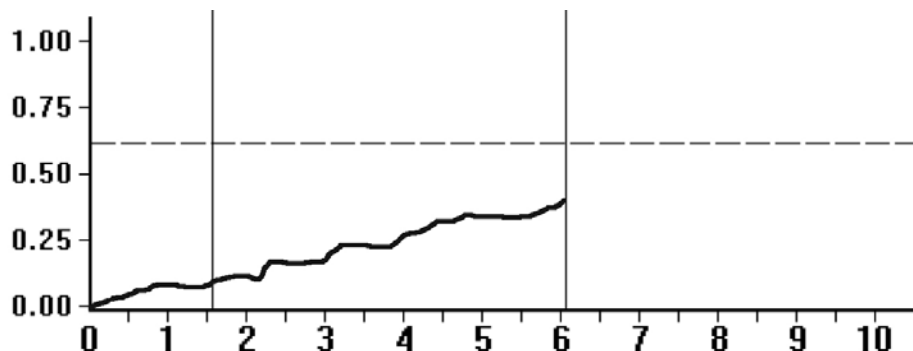
Possible Solutions

1.   Check all connections for proper attachment.

2. Check to ensure that the Quantifit mask adapter is properly attached to the respirator. Look for cross-threading, loose connection, etc.

3. Check mask for proper tightness to the face and check that no hair, beard stubble, or other objects inhibit a good face-to-facepiece seal.

4. TRY A DIFFERENT MASK! Many masks SEEM to fit well but are NOT properly sized to a specific wearer. In other cases a different size or style may be better suited for the individual wearer. This is the reason a fit test must be performed!

17.1.3 Erratic Mask Pressure

The Quantifit is very sensitive to pressure changes inside the mask. If the pump motor sound alternates between high-and low-pitched whines and the pressure tracing line, even after challenge pressure is attained, is erratic, the Quantifit is sensing variations in pressure.

If the traceline varies significantly, and the Quantifit cannot obtain a consistent challenge pressure through the duration of the test. The operator will retry the test. There are a number of causes for this type of reading.
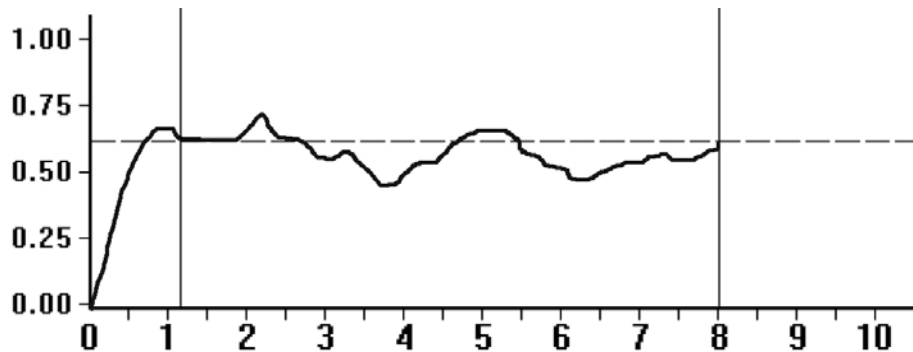
Possible Solutions

1. Movement by the person being tested needs to be minimized. Actions such as swallowing, opening the mouth, and moving the tongue can adversely affect the pressure sensor.

2. Air inhalation or exhalation, even slightly, creates dramatic changes within the mask. Re-instruct the test subject to maintain breath holding during the test measurement.

3. A test subject may be unable to stop the flow of air through the nose while holding his breath. A nose clip can assist the subject (be sure that the nose clip does not interfere with the fit if the respirator).

4. Improper breath hold. Instruct the user to relax, take a medium breath and hold as if going under water.

17.1.4 Consistently Low Fit Factors

When fit factors are consistently low, the mask may be a poor fit for that person. If the graph looks normal and the fit factor is low, that means that the Quantifit is successful in meeting the challenge pressure, but a large volume of air had to be removed to achieve that pressure, which means the leak is too great.
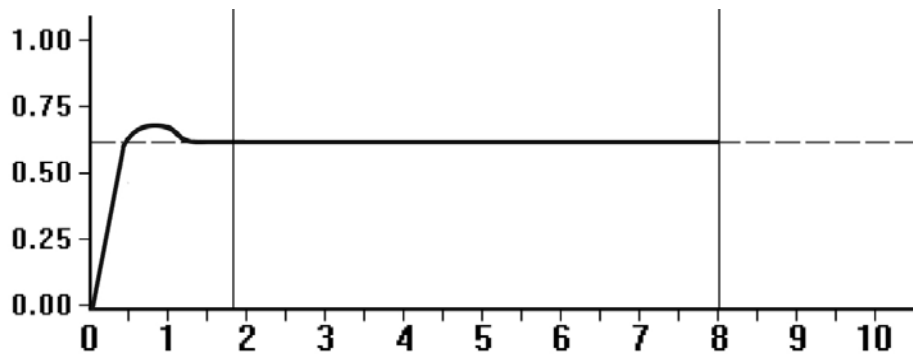
When the leak rate is high, the graph can still look somewhat normal. The Quantifit will often be able to keep up with the leak and give a good test result, regardless of the fact that the leak is too large to yield a passing fit factor.

Possible Solutions

1. As in other leakage situations (see HIGH LEAKAGE), check all hose connections, adapters, and adapter connections to respirators.

2. Check for proper tension of respirator to face.

3. Try a different size or different respirator.

4. Have Adapter checked for leaks (call OHD for this service).

17.1.5 Rapid or Erratic Graph Movement

(Before or During Test)

When the Quantifit gives erratic, jerky movement during the test, especially before the challenge pressure is attained, and the challenge pressure takes awhile to attain, the problem might be an easy one to find and solve.
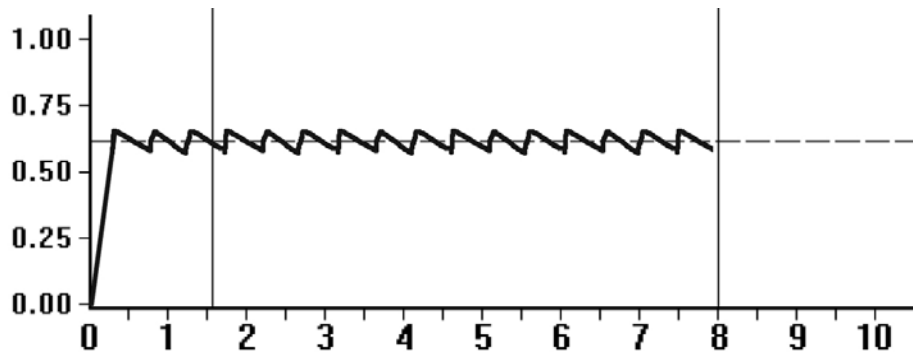
When the inhalation valve is not propped open or removed, the Quantifit is unable to get to the airspace touching the facepiece seal. The Quantifit is only looking at the seal of the inhalation valve, which can rapidly "flutter" with the sealing and breaking of the seal. The inhalation valve can easily be missed on some full-facepiece respirators that can be converted from SCBA or airline to Air Purifying Respiratory.

Possible Solution

Insure that the Inhalation Valve is propped open or removed.

17.2   Other Problems

17.2.1   Daily Calibration

The Daily Calibration normally functions to completion without any intervention by the user. Occasionally a problem may arise. The calibration procedure may stop abruptly or display an error message.

Possible Problem:

1. Something has blocked or partially obstructed the leak orifice on the Dual Tube Assembly and has rendered the tube out of tolerance.

2. Pressure in the transducer has not been zeroed.

3. The transducer needs factory calibration.

4. Blockage of exhaust port on back of the Quantifit.

Possible Solutions

1. Turn Quantifit off at the power switch, wait 15 seconds, power on the Quantifit, zero pressure, and retry Dual Tube Calibration.

2. Replace Dual Tube Assembly.

3. Call OHD to evaluate problem or to arrange return for factory calibration.

17.2.2   What do I do when people are not passing a fit test?

This problem could include a number of variables, but most likely would fall into three categories: machine fault, adapter/mask fault, or subject/operator error. If it's a one-time problem when other people can pass, the answer simply may be that the mask is not a good fit on the subject. When several subjects can't pass, look at the other variables:

Instrument Failure

1. You must do the Daily Calibration at the beginning of each day.

2. If the Quantifit finishes the daily calibration without an error message, this assures that the instrument is operating properly and within tolerance.

3. If the Quantifit does not complete the daily calibration, service might be needed. Please contact OHD customer service.

Mask/Fit Fault

1. The operator must first determine that there is a proper fit. Any facial hair, hair getting anywhere under the mask seal, temple hair too far forward, sunken temples or facial scarring, protrusions or blemishes, having the mask too loose or too tight, can all be reason enough to keep the Quantifit from pulling a negative pressure within the mask. There are other obstacles that can come into play which are too numerous to list. With more experience fit testing, it's easier for one to see potential problems with fit.

2. To further check on the mask fit, do a user seal check for 10 seconds. Press the Seal Check button on the front of the instrument and take and take in a breath and hold the pressure allowing for plenty of suction on the mask. If after 10 seconds the mask "drops" when releasing the Seal Check button, then there was a good seal in place. If there is no felt movement when the Seal Check button is released, then the air has leaked out in those 10 seconds, indicating leak.

3. Exhalation valves may be dirty or creased allowing air to be pulled into the mask. While the inhalation valves must be removed or propped open, the exhalation valve must remain in place and maintain a good seal.

4. On the mask, the apex of the head straps should sit on the crown of the head and not off to one side or the other.

5. Check the manufacturer's recommendation for properly donning a respirator and ensure that the user has been properly trained in donning that respirator as part of the OSHA requirements. All straps must be pulled with equal tension at each point.

Adapter Fault

1. The adapters must be kept clean and in good shape.

2. Disconnect and reconnect all tubes to make sure the connectors "snap" into place. Hold the the assembly by the tubes rather than the metal connector.

3. If the adapter had been dropped or crushed, a hairline crack might cause leakage.

4. Hold down Seal Check button, and place finger over the the side of the blue tube that connects to the adapter, to see if this changes the sound of the air flow. If air flow does not change, it could indicate a fault with the pressure.

6. To verify the adapter is air-tight, connect only the blue tube to the adapter with the single hose connection. Submerge the adapter and hose connection completely under water. Then press and hold the SEAL CHECK button for at least 5 seconds. Repeat this several times. If bubbles are seen coming from the adapter, there is a leak in the diaphragm or in the eight screws holding the top plate on. Replace the diaphragm and tighten screws firmly. Conduct the test again to ensure no bubbles are seen.

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XVII

Instrument Operating
Guidelines

18   Instrument Operating Guidelines

To ensure that the Quantifit is working properly and within specification, a daily calibration must be performed before each day of testing, and an annual factory calibration must be done once each year.

18.1   Calibration & Maintenance

The Quantifit is an OSHA accepted Quantitative (QNFT) fit test instrument. It utilizes the Controlled Negative Pressure (CNP) fit test method as outlined in the Respiratory Protection Standard - 29 CFR 1910.134, Appendix A. The Quantifit is a highly accurate precision instrument that uses electronic pressure sensors to detect minute changes to very low levels of negative pressure to an accuracy of +/- 0.25%. To ensure the instrument operates at the parameters for which it is designed, OHD requires the Quantifit to receive annual maintenance and calibration at an authorized service facility.

Reasons for Annual Maintenance & Calibration:

- OSHA Mandate – 29 CFR 1910.134 Appendix A Part I.C.1.(b) – "The employer shall ensure that QNFT equipment is kept clean, and is maintained and calibrated according to the manufacturer's instructions so as to operate at the parameters for which it was designed."

- Best Practice – Annual calibration and maintenance is the accepted industry standard for Industrial Hygiene and Occupational Health instrumentation.

- Reliable Results – The Quantifit is a precision instrument that is used to help ensure employee safety. Critical decisions are made based on the results provided by the Quantifit. All precision instruments require some degree of calibration to ensure the measurements are accurate.

- Limits Liability – Complying with the manufacturer's guidelines establishes good faith efforts towards employees' health and safety. Failure to comply with established safety protocols could be viewed as negligent.

- Extends Service Life – The heart of the Quantifit is a mechanical piston type pressure engine. Included in the calibration procedure are pressure engine checks. The pressure engine is completely disassembled, cleaned, and lubricated where warranted.

- Upgrades – The calibration process includes upgrades to the latest firmware versions and modifications as needed.

- Confidence – Our NIST (National Institute of Standards and Technology) traceable calibration assures that the unit is operating properly within accepted parameters.

18.2   Operating Conditions & Specifications

Operating Range
   o 15 to 30 Degrees C
   o 60 to 86 Degrees F
Storage Range
   o -40 to 60 Degrees C
   o -40 to 140 Degrees F
Power Source
   o 100 –240 VAC, 50/60 Hz
Power Supply Adapter
   o 9 VDC, 5000 mA
Power Consumption

o Less than 1000 mA

Certifications
o UL, CE, CSA

FitTrack Software
o Pentium 133 MHz or better
o 2GB RAM
o Windows XP SP3, Vista, 7, 8, Server 2008, 2012
o USB 2.0 Port
o 25MB minimum disc space
o Any Windows-compatible printer

18.3   Service Return Form

OCCUPATIONAL HEALTH DYNAMICS

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Service Return Form

Include a completed copy of this form with your shipment.

▶ **Quantifit Serial #(s)** _____

▶ **List accessories included in shipment:** *(Required accessories notated with *)*

Quantifit/FitTester 3000		**Noise Instruments**	**Audiometers**
❑ Tube Assembly*	❑ Vinyl Pouch	❑ doseBadge Mounts	❑ Headphones*
❑ Power Cord	❑ Computer Cable	❑ Windscreens	❑ Bioacoustic Simulator*
❑ Printer	❑ Keyboard	❑ AC Adapter	
❑ Trigger Button* or Squeeze Bulb*		❑ Carry Case	
❑ Adapters (Kit #s:_____)		❑ Keyfob	
❑ Other: _____			

NOTE: We are not responsible for non-OHD accessories shipped with service units.

▶ **Reason for return:**

   ❑ Warranty   ❑ Calibration   ❑ Repair/Other

▶ **Payment Information** (This section must be completed in order for us to service your instrument):

   ❑ Warranty Repair   ❑ Previously Purchased Maintenance Contract

   ❑ Purchase Order# _____ Maximum Amount Authorized: _____
   *We **do** require a copy of your purchase order.*
   Purchase order copy is: ❑ Enclosed   ❑ Being Mailed   ❑ Being Faxed

   ❑ Credit Card: Type: _____ Number: _____ Exp: _____ CID:_____

▶ **Describe any known problems:** _____

   _____

▶ **Before/After Data Needed?** ❑ No   ❑ Yes *(Additional charges will be applied)*

▶ **Expedited (24hr) Service Needed?** ❑ No   ❑ Yes *(Additional charges will be applied)*

Please note: Requiring an estimate before work may delay service return time.

Bill To:	**Ship To:** (❑ *check here if same as billing*)
Name:	Name:
Company:	Company:
Address:	Address:
City, State, Zip:	City, State, Zip:
Phone:	Phone:
Fax :	Fax:
Email:	Email:

To expedite your repair:
   ❖   Please include a copy of this form when shipping your instrument.
   ❖   It is required that one Service Return Form be completed for each unit (except doseBadge kits).
   ❖   Terms are net 30 days OAC. **No RMA number is required.**

Return equipment, billing information and all correspondence to:

Occupational Health Dynamics
2687 John Hawkins Parkway | Hoover, AL 35244
Phone: (888) 464-3872 | Fax: (205) 980-5764
calibration@ohdusa.com

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18.4   What's New

To update FitTrack Gold, visit our website to see if the Quantifit has the latest version. Check the version number under the Tools section, and click on the Version tab, which is the top right tab. Our website will list the version number as well as the release date. After downloading the update file, simply install the update. No need to uninstall your current version. While nothing should happen to your data, it's always a good idea to do a backup before changing any software.

The following is a list of updates, added features, and bug fixes that have been added to each incremental update. The newest version is listed first.

DATE: 08/25/2017
VERSION: 2.0.6.11

- BUG FIX: SQL Server restore fixes.
- ENHANCEMENT: Updates to the Badgy fit test card report.
- ENHANCEMENT: Full Version now appears at top of the window
- BUG FIX: Fixed issues with restoring backups from different SQL databases.
- ENHANCEMENT: 2-year expiration now a choice.
- BUG FIX: Fixed bug with default protocol.
- ENHANCEMENT: Edits to French language.
- BUG FIX: Date and Time of test was not being exported to Excel when running the Fit Test Result report. This has been corrected.
- ENHANCEMENT: Added support for the Badgy Printer when printing a Card report.
- BUG FIX: Import from Quantifit was not importing the Personnel ID. This has been corrected.
- ENHANCEMENT: Changed Medgate Export to be titled Cority export, and other Cority export fixes.

DATE: 07/10/2017
VERSION: 2.0.6.10

- ENHANCEMENT: Report User Interface improved: Hitting the enter key on the report search boxes will cause a search to be performed, instead of having to click the "Search" button, and also the search checkboxes will be automatically checked when typing in a search field.
- ENHANCEMENT: Automatically creates the default database backup folder during software installation at the location specified in the FitTrackGold.Presentation.exe.config file, if the folder does not exist. This will be c:\FitTrackGold unless changed. Does not apply to upgrades, but would apply to an uninstall/reinstall.
- ENHANCEMENT: Run backup immediately: When user clicks "OK" to the question of would you like to run the backup (Start button is no longer present).
- ENHANCEMENT: On brand new installations, the default Backup Reminder will now be set to 0 days. This will not affect customers that already have the software installed, even when performing an uninstall/reinstall. This value can be changed to anything desired in the Admin screen.
- BUG FIX: Earlier versions of FitTrackGold 2.0.6.6 introduced some issues with SQL Server 2008, specifically for Backups and Restores. This has been corrected.
- ENHANCEMENT: No Reboot required (Change in InstallShield) for Installations that include SQL Server.
- ENHANCEMENT: Added "Total Personnel" calculation to the Personnel Screen

- ENHANCEMENT: Added an option to be able to "Save Personnel Template" from the Import screen. This can be useful for importing Personnel data from an Excel file.
- ENHANCEMENT: Skip blank and back records in the Quantifit file import: These records will now be skipped, instead of causing the import to stop.
- BUG FIX: A deleted user can be added back into the system, which previously was not possible.
- ENHANCEMENT: Required field in the Company screen should only be visible when Personnel ID field is checked.
- ENHANCEMENT: Protocols can now be hidden from the Edit Protocol Screen in the Admin menu. When hidden, the Protocol will not appear in any Protocol drop-downs.
- ENHANCEMENT: For a manual backup, it now defaults to the automatic database backup folder.
- ENHANCEMENT: Changed default filter fields for the Fit Test Result Report to be more meaningful.
- ENHANCEMENT: For new companies, made Date Hired, Medical Eval, Date of Birth, and Job Code as hidden fields by default. These can be easily be made visible when creating or editing a company.
- ENHANCEMENT: Created new version of the Card report, and added a feature to specify the expiration date from a test in years (It defaults to 1). The old version of the Card report can still be run by holding down the "shift" key when clicking the "Print" button.

DATE: 05/09/2017
VERSION: 2.0.6.9

- BUG FIX: Fixed issue where new "Qualitative" protocol was not present on new installs.
- ENHANCEMENT: Improved margins on Badgy fit test card

DATE: 04/24/2017
VERSION: 2.0.6.8

- ENHANCEMENT: Added support for Badgy 100 printer to print fit test cards to PVC card.
- ENHANCEMENT: Fix for database name dependency when upgrading database version.

DATE: 11/30/2016
VERSION: 2.0.6.7

- BUG FIX: Add date and time to Fit Test Result report.
- BUG FIX: Corrected .qft file imports, which will now import employee ID field.

DATE: 10/10/2016
VERSION: 2.0.6.6

- BUG FIX: Fixed Medgate export.

DATE: 09/26/2016
VERSION: 2.0.6.5

- BUG FIX: Installer now works with upgrading the software.

DATE: 08/31/2016
VERSION: 2.0.6.4

- BUG FIX: Fixed issue on Fit Test Report related to character lengths.
- ENHANCEMENT: InstallShield now removes fragments of old install files pertaining to FitTrack Gold.

DATE: 06/30/2016
VERSION: 2.0.6.3

- UPDATE: Updated OHD address and email change.

DATE: 06/27/2016
VERSION: 2.0.6.2

- BUG FIX: Allow an update from 2008 version of SQL Express.
- BUG FIX: Allow logo to be printed on all reports.
- BUG FIX: Fixed incorrect breathing rate for "Heavy" when creating custom protocol.
- ENHANCEMENT: Added the ability to record qualitative fit tests so that all fit test records can be contained in one place.
- UPDATE: Updated the manual and help files.

DATE: 03/31/2016
VERSION: 2.0.5.9

- BUG FIX: Included updated FitTrack Gold Manual.

DATE: 03/01/2016
VERSION: 2.0.5.8

- BUG FIX: Allows users to update SQL 2008 files to SQL 2012 versions.

DATE: 02/01/2016
VERSION: 2.0.5.7

- BUG FIX: When using the "delete NULL records" function introduced in 2.0.5.6, there is now a "busy" cursor when it's working and a "Done" message when it has completed. This is to reduce confusion with the user.

DATE: 01/25/2016
VERSION: 2.0.5.6

- BUG FIX: Security settings had been tied to Windows login, so Security settings did not copy among logins. This has been fixed.
- ENHANCEMENT: A button has been added when doing a synchronization to give the user an opportunity to delete NULL records. This helps to keep the database clean when syncing.
- ENHANCEMENT: Added a tool to automatically index the database, which will help with speed with larger databases.

DATE: 01/03/2016
VERSION: 2.0.5.5

- BUG FIX: Last version (2.0.5.4) created an install issue that was fixed in this version.

DATE: 11/04/15
VERSION: 2.0.5.4

- BUG FIX: Worked more on English words that were not translated.
- BUG FIX: Removed "Extra Large" from default mask sizes, because there was already an "X-Large"

DATE: 10/27/15
VERSION: 2.0.5.3

- BUG FIX: Added some more translations that were missed previously, and updated words that had not yet been translated.

DATE: 9/11/15
VERSION: 2.0.5.2

- BUG FIX: Testing revealed minor problem with changing languages in 2.0.5.1.

DATE: 09/10/15
VERSION: 2.0.5.1

- ENHANCEMENT: Language feature works with Canadian and European French. Install Shield will detect language version of Windows and default to that version, although this can be changed at any time in the Admin > Mode tab.

DATE: 07/25/15
VERSION: 2.0.4.9

- ENHANCEMENT: "Use All Companies Here" is now the default selection for the synchronization.
- BUG FIX: For custom protocols where exercises were used, the fit factor calculated the 0's for the exercises into the overall fit factor. This has been corrected.
- ENHANCEMENT: Minor behind-the-scene changes for the language feature, mostly related to reports.

DATE: 06/24/15
VERSION: 2.0.4.8

- ENHANCEMENT: Work added with language translations, but not yet finished.
- BUG FIX: Corrected an issue on the Fit Test Results report where the report date did not follow the same format as the rest of the dates.

DATE: 03/26/15
VERSION: 2.0.4.7

- BUG FIX: Corrected issue when conflicting with another device that uses the FTDI driver.
- ENHANCEMENT: Added Medgate export functionality as a drop-down option under Export in Tools.
- ENHANCEMENT: Created an executable with SQL Express 2012

DATE: 02/06/15
VERSION: 2.0.4.6

- ENHANCEMENT: Added scroll bar to Home screen
- ENHANCEMENT: Added Medgate export functionality as a drop-down option under Export in Tools.

DATE: 09/09/14
VERSION: 2.0.4.5

- BUG FIX: Canceling a test would cause an issue with the following test. There was an issue in the way the graph was being drawn, as well as storing the fit factor for each step. This has been corrected.

DATE: 08/11/14
VERSION: 2.0.4.4

- o ENHANCEMENT: A scroll bar has been added to the test screen, to allow scrolling when a screen resolution is less than 900 pixels high

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DATE: 08/07/14
VERSION: 2.0.4.2

- ENHANCEMENT: Added fields to Home Screen to enable testing direction from this screen by choosing Company and Name, or by selecting a person from the Due for Test section.
- ENHANCEMENT: Updated test screen to have much larger and simpler test instructions, making it easier for an individual to test him or herself.
- ENHANCEMENT: Changed Personnel Screen so that many labels can be changed, or turned off, according to the user's needs. The Personnel Screen is set up through the Company Screen, and will only affect the particular company where the changes are assigned.
- ENHANCEMENT: Changed hyperlink properties on the Home Screen so that users can use a hyperlink to point to a specific file on the computer using "File://Path"
- BUG FIX: Corrected an issue when the software receives a 0 leak rate from the Quantifit.
- MAINTENANCE: Updated manual and help files.

DATE: 01/13/14
VERSION: 2.0.3.2

- ENHANCEMENT: Moved "Help" tab below Admin tab.
- BUG FIX: When printing Fit Track Card report directly to PDF, letters were being doubled because of a font issue.

DATE: 10/07/13
VERSION: 2.0.3.1

- BUG FIX: Changed coding to recognize international versions of Windows so that numbers all agree. Some countries use periods where we use commas, and vice versa. This was causing errors with fit factors. All measurement values will be switched to U.S. values, but these only apply to leak rates and fit factors, and should be transparent to the end user.

DATE: 06/04/13
VERSION: 2.0.3.0

- ENHANCEMENT: Added the Version tab to the Tools screen
- ENHANCEMENT: Updated manual
- ENHANCEMENT: Changed the FTDI driver to be the latest D2XX FTDI driver, version 2.08.28

DATE: 05/24/13
VERSION: 2.0.2.9

- ENHANCEMENT: Added the new disconnected mode, which will prevent the driver message and slowdown from occurring when no Quantifit has been attached. It will also prevent the "Quantifit Not Connected" message.
- BUG FIX: For Custom Install, the default password was incorrect, and this has been fixed.
- BUG FIX: When printing Outstanding Report from the dashboard, this would print ALL companies. The fix prints only the open company

DATE: 05/14/13
VERSION: 2.0.2.8

- BUG FIX: Updated Fit Test Card Report. Made report to fit margins of pre-perforated sheets, cleaned up text, added color.
- BUG FIX: Made one change to when SQL Server Express detects a restart is needed.
- ENHANCEMENT: Added additional logging when a database backup or restore error occurs.

DATE: 04/24/13
VERSION: 2.0.2.5

- ENHANCEMENT: Created an install package with no SQL database, which delivers a smaller file and quicker installation for upgrades or for those with SQL already installed.
- BUG FIX: Fixed an issue where the custom installer might fail, when selecting a different database.
- ENHANCEMENT: Added a new "Select Database" option in the Tools Menu.

- BUG FIX: Fixed a bug when changing the local sa password and the prompt was not displaying correctly.

DATE: 04/24/13
VERSION: 2.0.2.3

- BUG FIX: Corrected issues and errors that some customers experienced when doing a custom install.
- ENHANCEMENT: The tools menu now has the new "Select Database" button.

DATE: 04/02/13
VERSION: 2.0.2.2

- BUG FIX: With no middle initial present, the Fit Test Result report would only print last name of employee.
- ENHANCEMENT: Synchronization now has an "All Companies" option.

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Terms & Conditions

19 Terms & Conditions

19.1 Claims

Our routine method of shipment is via common carrier, FOB origin. Upon delivery, if physical damage is found, retain all packing materials in their original condition and contact the carrier immediately to file a claim.

If the instrument is delivered in good physical condition but does not operate within specifications, or if there are any other problems not caused by shipping damage, please contact OHD or your local sales representative.

19.2 Standard Terms and Conditions

Refunds & Credits Please note that only serialized products (products labeled with a distinct serial number) and accessories are eligible for partial refund and/or credit. Non-serialized parts and accessory items (cables, carrying cases, auxiliary modules, etc.) are not eligible for return or refund. In order to receive a partial refund/credit of a product purchase price on a serialized product, the product must not have been damaged by the customer or by the common carrier chosen by the customer to return the goods, and the product must be returned complete (meaning all manuals, cables, accessories, etc.) within 90 days of original purchase and in "as new" and resellable condition. The Return Procedure must be followed to assure prompt refund/credit.

Restocking Charges Only products returned within 90 days from the date of original purchase are eligible for refund/credit. Products returned within 30 days of original purchase are subject to a minimum restocking fee of 15%. Products returned in excess of 30 days after purchase, but prior to 90 days, are subject to a minimum restocking fee of 20%. Additional charges for damage and/or missing parts and accessories will be applied to all returns. Products not returned within 90 days of purchase, or products which are not in "as new" and resellable condition, are not eligible for credit return and will be returned to the customer.

Return Procedure Every product returned for refund/credit must be accompanied by a Return Material Authorization (RMA) number, to be obtained from our Order Processing Department. All items being returned must be sent freight prepaid to our factory location.

Certification This instrument was thoroughly tested and inspected and found to meet OHD manufacturing specifications when it was shipped from the factory. Calibration measurements are traceable to the National Institute of Standards and Technology (NIST). Devices for which there are no NIST calibration standards are measured against in-house performance standards using accepted test procedures.

19.3 Warranty and Product Support

The Quantifit is warranted by OHD against defects in materials and workmanship for two full years from the date of original purchase. During the warranty period, we will repair or, at our option, replace at no charge a product that proves to be defective, provided you return the product, shipping prepaid, to OHD. This warranty does not apply if the product has been damaged by accident or misuse or as the result of service or modification by other than OHD. IN NO EVENT SHALL OHD BE LIABLE FOR CONSEQUENTIAL DAMAGES.

Only serialized products and their accessory items (those items bearing a distinct serial number tag) are covered under this two-year warranty. PHYSICAL DAMAGE CAUSED BY MISUSE OR PHYSICAL

ABUSE IS NOT COVERED UNDER THE WARRANTY. Items such as cables and non-serialized modules are not covered under this warranty.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state, province to province, or country to country. This warranty is limited to repairing the instrument to OHD specifications. When an instrument is returned to OHD, for service, repair, or calibration, we recommend using United Parcel Service, Federal Express, or Air Parcel Post. We also recommend that you insure your shipment for its actual replacement cost. OHD will not be responsible for lost shipments or instruments that are received in damaged condition due to improper packaging or handling. All warranty claim shipments must be made on a freight prepaid basis. Also, in order to expedite your claim, please include a properly completed copy of the Service Return Form. Recalibration of instruments, which have a recommended annual calibration frequency, is not covered under the warranty.

Use the original carton and packaging material for shipment. If they are not available, we recommend the following guide for repackaging:

- Use a double–walled carton of sufficient strength for the weight being shipped.

- Use heavy paper or cardboard to protect all instrument surfaces. Use nonabrasive material around all projecting parts.

- Use at least four inches of tightly packed, industrial–approved shock–absorbent material around the instrument.

Warranty Disclaimer Should you elect to have your instrument serviced and/or calibrated by someone other than OHD, please be advised that the original warranty covering your product becomes void when the tamper-resistant Quality Seal is removed or broken without proper factory authorization. We strongly recommend, therefore, that you send your instrument to OHD for factory service and calibration, especially during the original warranty period. In all cases, breaking the tamper-resistant Quality Seal should be avoided, as this seal is the key to your original instrument warranty. In the event that the seal must be broken to gain internal access to the instrument (e.g., in the case of a customer-installed firmware upgrade), you must first contact OHD technical support department at (205) 980-0180. You will be required to provide us with the serial number for your instrument as well as a valid reason for breaking the Quality Seal. You should break this seal only after you have received factory authorization. Do not break the Quality Seal before you have contacted us! Following these steps will help ensure that you will retain the original warranty on your instrument without interruption.

WARNING Unauthorized user modifications or application beyond the published specifications may result in electrical shock hazards or improper operation. OHD will not be responsible for any injuries sustained due to unauthorized equipment modifications.

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Unpacking and Inspection Follow standard receiving practices upon receipt of the instrument. Check the shipping carton for damage. If damage is found, stop unpacking the instrument. Notify the carrier and ask for an agent to be present while the instrument is unpacked. There are no special unpacking instructions, but be careful not to damage the instrument when unpacking it. Inspect the instrument for physical damage such as bent or broken parts, dents, or scratches.

All written requests must be submitted to the contact information as follows:

OHD, LLLP
2687 John Hawkins Parkway
Hoover, Alabama 35244
(205) 980-0180
(205) 980-5764 FAX
sales@ohdusa.com
www.ohdusa.com

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