
BreathTracker™

DIGITAL MICROLYZER

BREATHTRACKER H2+ INSTRUMENT MANUAL



QUINTRON

THE BREATH TESTING EXPERTS SINCE 1962

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USER ASSISTANCE

Operators of the QuinTron BreathTracker™ Digital MicroLyzer H2+ should read this instrument manual completely before operating this device. If the instrument user has any difficulty in the operation of the instrument, please contact our Customer Service Department.

When contacting the Customer Service Department, please indicate the device type:
BREATHTRACKER H2+.

QuinTron Customer Service
3712 West Pierce Street
Milwaukee, WI 53215 USA

Phone (414) 645-4222 or (800) 542-4448 (USA and Canada)

Fax (414) 645-3484

Web: <http://www.QuinTron-USA.com>

E-mail: support@quintron-usa.com

*****BreathTracker H2+ Users*****

Sample Drying Tube Conditioning Procedure:

Flush 60 mL of QuinGas-2 (QT07225-G) through each freshly filled sample flush drying tube.

This procedure will condition the Drierite and negate the effects of possible CO₂ absorption in the drying tube for subsequent use in drying the patient samples.

Fresh indicating Drierite (QT01156-C) used in QuinTron's sample flush drying tube (QT01135-K) can absorb CO₂ from a patient sample. Since the BreathTracker H2+ utilizes CO₂ concentration as a reference for correcting H₂, absorption of CO₂ may lead to inaccurate correction factors unless the Drierite is conditioned.

This procedure must be followed each time a sample drying tube is refilled with Drierite.

Illustrated instructions on this procedure are located in the
BreathTracker H2+ Training Tutorial
located on your QuinTron InfoCenter CD-ROM.

Product Compatibility Issues

All products sold by QuinTron are either manufactured by QuinTron or tested thoroughly with our instrumentation to ensure that the product does not interfere with patient samples. Many products not supplied by QuinTron use materials/solvents/lubricants in the manufacturing process that adversely affect both patient samples and the sensors in the QuinTron instrumentation; it is highly recommended to use only products offered by QuinTron. This awareness of product compatibility should be strongly adhered to and applies to the science of breath-testing, not just QuinTron instrumentation.

Many products may seem similar to QuinTron's (e.g. calibration gas, syringes, stopcocks, evacuated glass tubes, etc.) but have not been tested with our instrumentation and can cause problems affecting your patient samples and/or cause damage to your instrumentation.

Please ***do not*** develop or modify any collection techniques or devices without consulting QuinTron's Customer Service Department. QuinTron shall not be held responsible for any patient samples that have been jeopardized or damage to your instrumentation by use of products not supplied by QuinTron.

We know for certain that:

- Syringes manufactured by "BD" are NOT compatible with MicroLyzer or BreathTracker instrumentation.
- Glass evacuated tubes (Exetainer®) from Labco Limited are NOT compatible with BreathTracker instrumentation. In addition, the vacuum in the tubes supplied by Labco Limited may be inconsistent causing varying degrees of sample contamination and/or improper Hydrogen readings which cannot be detected by end-users. Therefore, it is not recommended to use evacuated tubes for any breath-testing samples which are to be analyzed on MicroLyzer or BreathTracker instrumentation from any other vendor other than QuinTron to ensure sample collection and analysis are not compromised.

When using products other than those supplied by QuinTron, it is very difficult for the end-user to detect if the resulting sample is inadequate. If users are found to be using products not supplied by QuinTron (i.e. stopcocks, syringes, glass evacuated tubes or collection supplies), QuinTron cannot provide any interpretation help, servicing assistance, or technical support until all supplies are proven to be from QuinTron.

For an updated list of products that have been discovered to be incompatible with our instrumentation, please visit our web site: www.QuinTron-USA.com.

Please review all the information provided for collection and analysis of patient samples prior to attempting the collection or analysis of actual patient samples to minimize potential error.

Exetainer® is a Registered Trademark of Labco Limited

1. INTRODUCTION

This manual will help the operator apply the BreathTracker H2+ to measure trace concentrations of breath H₂ and express the values in terms of alveolar concentration for research and medicine. Because the instrument is used to analyze very small concentrations of trace breath gases, it is important to understand its operating procedures. With careful attention to details, the operator can analyze components in a single sample with an accuracy of approximately 3-4 parts per million (ppm) for H₂, and correct the reading for dilutions of the sample that may occur during the sampling procedure.

The BreathTracker H2+ is a stand-alone analyzer, which measures hydrogen in a gas sample in levels of parts per million (ppm). The trace gas concentrations of the sample, and the values calculated for alveolar concentrations, are presented in ppm on the 2-line instrument display.

2. THE PRINCIPLE BEHIND THE CO₂ CORRECTION FACTOR

This BreathTracker utilizes a CO₂ correction factor technique to minimize error caused by improper sampling techniques. The CO₂ correction factor is based on the concept that carbon dioxide is present in alveolar (lung) air at a virtually constant concentration, while CO₂ in room air is virtually zero (in fact it is present, but in extremely trace concentrations). Therefore, if an alveolar air sample is accidentally contaminated (mixed) with room air, the CO₂ concentration in the sample will be reduced, as will any other trace gases in the sample (e.g. H₂). By knowing the degree to which the CO₂ is diluted, it is possible to apply a correction to the analysis of each trace gas of interest (e.g. H₂) to estimate the “true alveolar” concentration of these trace gases. The sample concentrations of H₂ are multiplied by the factor calculated from:

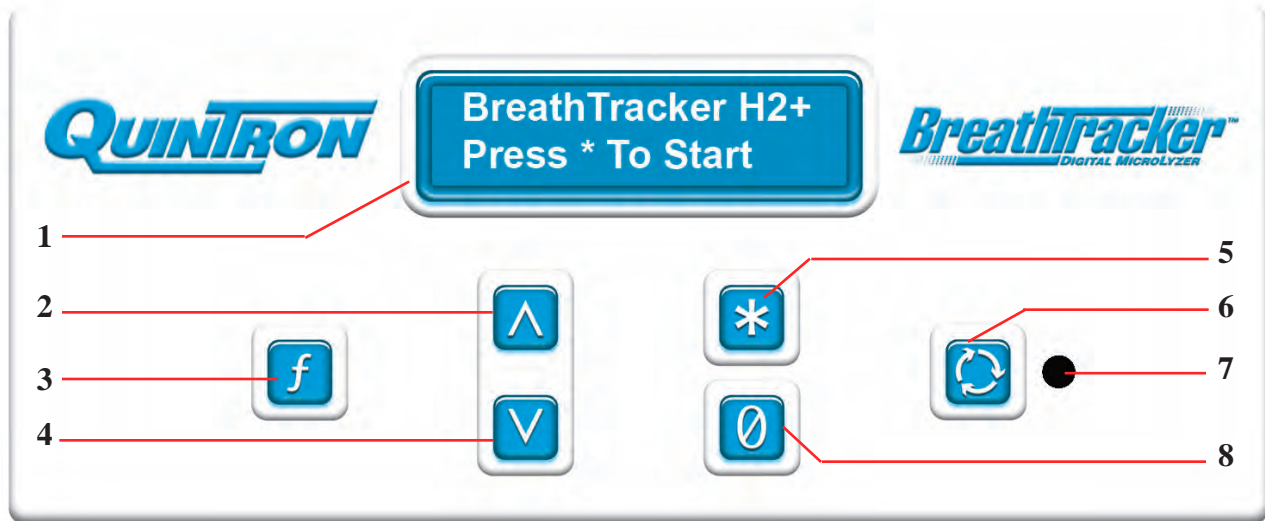
$$\text{FACTOR} = \text{Alveolar CO}_2 \text{ concentration} / \text{Sample CO}_2 \text{ concentration}$$

CO₂ is the physiological regulator of breathing and the whole breathing system is dedicated to keeping the alveolar CO₂ pressure (PACO₂) constant at 40 mm Hg (torr). Therefore, CO₂ is the most reliable “normalizing” component in the sample because it ordinarily has the most constant alveolar composition of any gas in the sample.

Alveolar PCO₂ remains constant at 40 torr among normal individuals if ventilation is normal. The percent of CO₂ in an alveolar sample is affected by the barometric pressure (altitude) at which the sample is collected. Alveolar air with a PCO₂ of 40 torr in Miami (at sea level) (where barometric pressure is close to 760 torr) will have a CO₂ concentration of about 5.5% in dry air (40/(760-37)), while alveolar air in Denver (where barometric pressure is closer to 625 torr) will be near 6.8% (40/(625-37)). Significant differences in barometric pressure exist at different altitudes, as demonstrated by Miami and Denver. However, by using a single correction factor, alveolar concentration will simplify the process without introducing significant error, because all the samples will be normalized to the same (constant) CO₂ level.

Using an alveolar concentration of 5.5% will be adequate for calculating the correction factor for CO₂. However, when the absolute alveolar pressure for the trace gases is important, you may adjust the instrument to your specification.

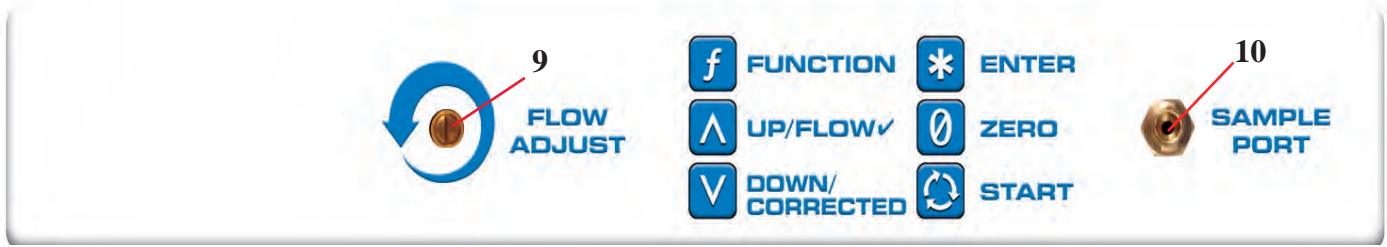
3. DESCRIPTION OF CONTROLS



Front Panel Layout

A. FRONT PANEL COMPONENTS

1. The **FRONT PANEL DISPLAY** is a 2-line by 20 character display which the system uses to display gas concentrations, data entry information, function selection displays, flow rate data (with a warning display when the flow rate changes from the desired value), and pertinent system information.
2. The **UP/FLOW CHECK** key is a dual function switch. In the Data mode, this switch increases the value of the displayed cal gas concentration for H₂ or CO₂. In the Run or Cal modes, this switch allows the flow rate to be checked.
3. The **FUNCTION** key is normally used only in the Run mode to select the Linearizing (½ cal) Function; which is performed with a 50% dilution of the cal gas. Other functions can be performed using the Function switch, but are not recommended for access in the normal operation of this instrument.
4. The **DOWN/CORRECTED** key is a dual function switch. In the Data mode, this switch decreases the value of the displayed cal gas concentration for H₂ or CO₂. In the Run mode, this switch allows the user to toggle the display back and forth showing the gas concentration values or the “corrected” gas values.
5. The **ENTER** key selects which mode in the Menu to enter (Run, Cal, or Data). It also steps the system through the startup sequence, which is used to enter data values, and to place the system to the Run or Cal mode.
6. The **START** key initiates a sample analysis when pushed, and returns the system to the “Ready” mode when an analysis has been completed.
7. The Tri-color **LED** used to indicate instrument status:
 - Green = system ready for a sample
 - Amber = processing
 - Blinking Red = analysis done, recovery not done
 - Blinking Green = analysis and recovery done
8. The **ZERO** key operates in the Run and Cal mode and is used to zero the values for H₂ and CO₂.

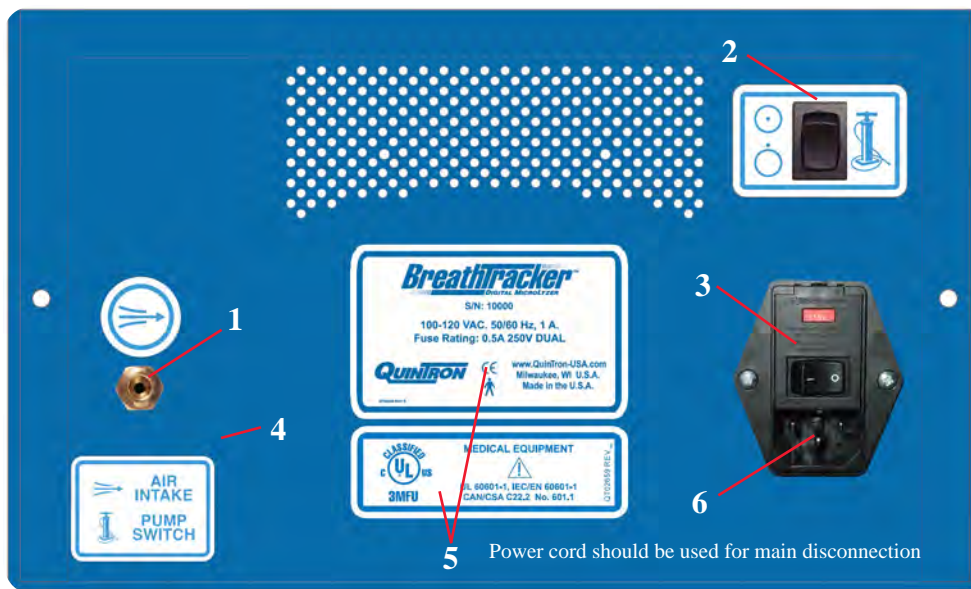


Lower Panel Layout

9. The **FLOW ADJUST** is used to adjust the flow rate of the instrument.

10. The **SAMPLE PORT** is where gas or breath samples are injected into the instrument for analysis.

B. REAR PANEL DESCRIPTION



Rear Panel

1. Air-In Port

(Draws room air in through the SivRite-4 Bottle)

2. Pump Power Switch (Standby)

(Turns the internal pump ON/OFF)



3. Main Power Switch

(Turns the instruments main power ON/OFF)



4. Symbol Legend

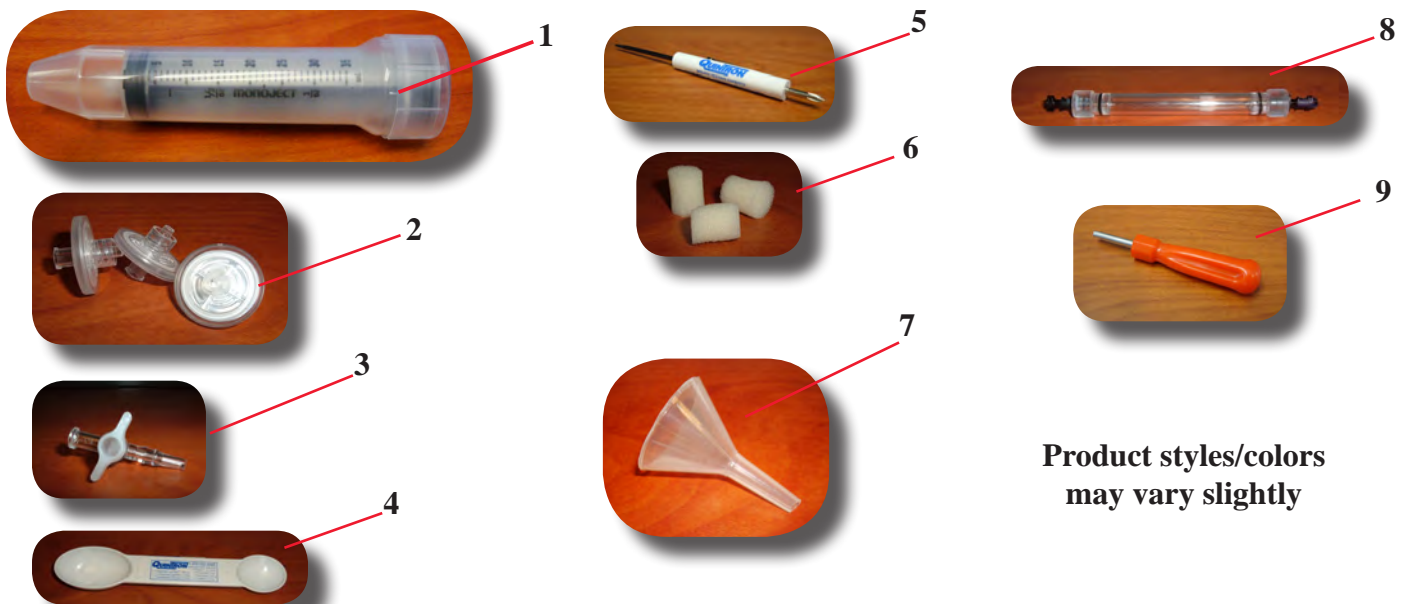
(Displays the symbols and their meanings)

5. Serial Number Tag/Info

6. Power Connection

(Insert/Remove the power cord)

4. ACCESSORIES



Product styles/colors may vary slightly

ACCESSORIES LIST:

1. The **SYRINGE** is used to inject calibration gas samples into the SAMPLE PORT of the instrument.
2. The **WATER/DUST TRAP** is used to help filter/block dust particles and water from entering the instrument.
3. The **1-WAY STOPCOCK** is attached to a QuinTron syringe to hold the gas sample in the syringe.
4. The **SUGAR SCOOP** is for measuring different substrates based on an approximate grams to tablespoon conversion.
5. The **SCREWDRIVER** is used to adjust the flow rate of the instrument when necessary.
6. The **FOAM FILTER PLUGS** are used in the ends of the SAMPLE DRYING TUBE to keep the indicating Drierite contained in the tube.
7. The **FUNNEL** is used to dispense Drierite from its container into the patient sample drying tube.
8. The **SAMPLE DRYING TUBE** is placed between the SAMPLE SYRINGE and the SAMPLE PORT. It dries the patient sample gas entering the instrument.

See notification on Page 3 of this manual concerning the activation of fresh Drierite used in this Sample Drying Tube.

9. The **QUINGAS VALVE TOOL** is used to disengage the valve inside the calibration tank for proper disposal.
10. The **SIVRITE-4 TUBING ASSEMBLY** attaches the SivRite-4 tube to the “Air-In” port on the instrument. (Not Pictured)

5. ENVIRONMENTAL CONDITIONS

This instrument has sensitivity to changes in temperature and humidity.

If your instrument is in an environment that has a higher humidity, certain consumables will expire faster. Temperature changes can cause the instrument to require more frequent calibrations or changes in the sensors accuracy of analyzing samples consistently.

Recommended temperature setting of the room is 72°F (22°C) ±3°F/C

Please keep the instrument away from:

- Direct sunlight
- Drafts from ventilation systems and windows

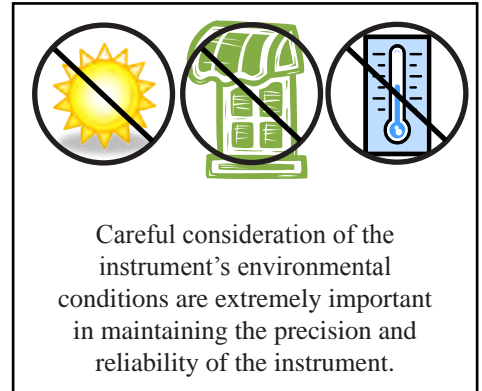
This instrument is sensitive to contaminants in the room such as:

- Alcohol
- Carbon monoxide
- Smoking materials
- Silicon sealant vapors

6. INSTALLATION

Follow the instructions for installing the BreathTracker **CAREFULLY AND PRECISELY**. This is necessary to ensure proper and satisfactory operation of the instrument. It cannot be overemphasized that this system is a delicate and sensitive instrument, and that it must be handled and operated as such.

1. Carefully unpack the BreathTracker and determine, by observation, if any physical damage has occurred as a result of shipment. If damage is found, an immediate report should be made to the shipping agency and to QuinTron or its distributor. Confirm that the accessory package contains the above items shown on the Accessories List, as well as the Information CD which shipped in the same box as instrument.



2. Make sure that the main power switch on the instrument is turned **OFF** before plugging in any cables.

Attach the power cord to the instrument and plug the system into a grounded power outlet of the appropriate AC voltage. **NOTE: Check the Serial Number/Power Rating Plate to ensure the proper line voltage and frequency.**

3. Before applying power to the instrument, attach the SivRite-4 tube to the instruments Air-In port on the rear of the instrument. (See Rear Panel Layout for the location of the “Air-In” connection).

4. Turn on the instrument’s main power, and then the pump power.

7. INSTRUMENT WARM UP / SHUTDOWN / STANDBY

At any point you may experience a flow warning. (See the section regarding flow rate for more information)

Instrument ON = Main Power **ON** and Pump Power **ON**


Instrument STANDBY = Main Power **ON** and Pump Power **OFF**

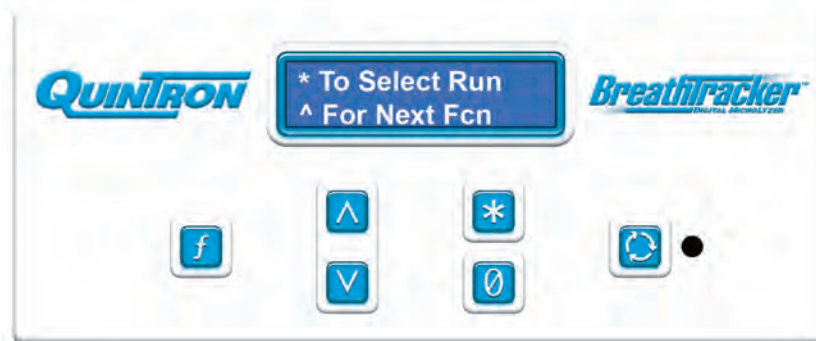
Instrument OFF = Main Power **OFF** and Pump Power **OFF**

- Upon first installation or from prolonged shutdown, allow the BreathTracker to warm up for at least 48 hours before attempting calibrations or analysis of patient samples.
- After the initial warm up period of 48 hours, if the instrument is put into STANDBY, allow the BreathTracker to warm up for at least 8 hours prior to calibration.

You should leave the MAIN POWER SWITCH on at all times even when the instrument is in standby, unless you do not plan on running any breath samples for at least three days or if you need to relocate the instrument.

8. MAIN MENU

Following the sufficient warm-up period, press the ENTER () key. The following menu mode is displayed. Access to the menu can only occur from the Startup Screen, Run Ready, Cal Ready or the 1/2 Cal Ready screens.



Main Menu - Run display

At this point, the instrument is in the main menu. There are three functions that can be selected in the main menu, Run (analyzing samples), Cal (the system will automatically calibrate the instrument to the cal values entered in the Data mode), and Data (where calibration values are entered).

Pressing the UP () key advances the instrument to the next menu option.

9. CALIBRATION

The entire calibration procedure must be performed each day prior to analyzing patient samples.

1. From the Main Menu, press the UP (▲) key to display “To Select Data” (Data mode)

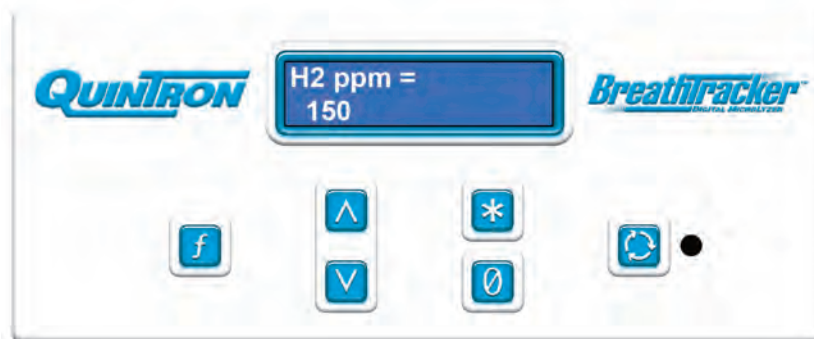


Menu mode - Data display

Refer to the label on your calibration gas tank for the calibration values of H₂ and CO₂.

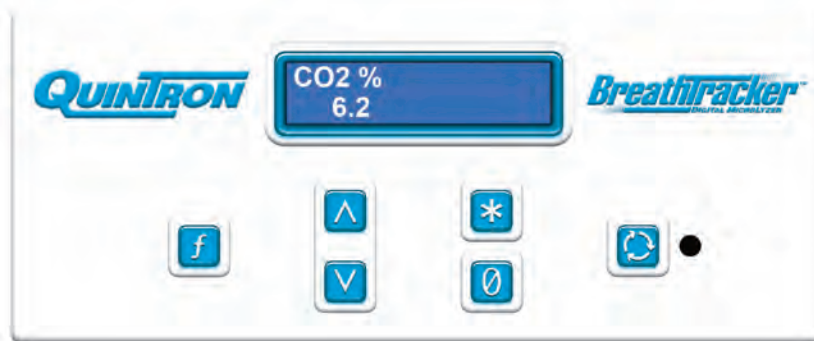
QuinGas 2 [QT07225-G] is required for calibrating this instrument.

3. Press the ENTER (✱) key to select the Data mode, then the following will display:






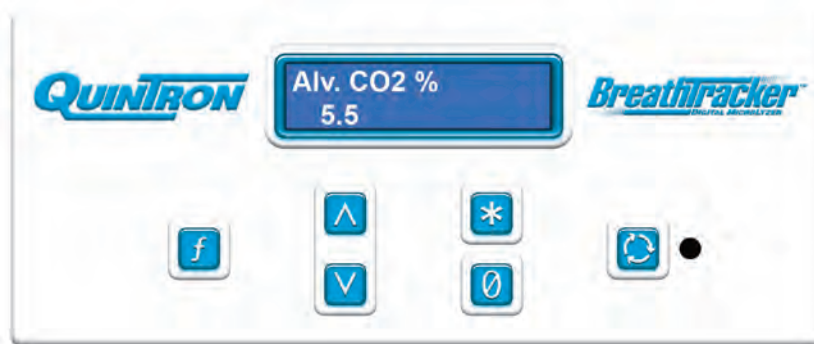
H₂ Cal Value Adjust

4. Press the UP (▲) key to increase the calibration value for H₂ or press the DOWN (▼) key to decrease the value. When the value on the display matches the calibration gas tank, press the ENTER (✱) key to advance to the next screen.
5. Press the UP (▲) key to increase the calibration value for CO₂ or press the DOWN (▼) key to decrease the value. When the value on the display matches the calibration gas tank, press the ENTER (✱) key to advance to the next screen.




CO₂ Cal Value Adjust

6. Press the **UP** () key to increase the alveolar value for CO₂ or press the **DOWN** () key to decrease the value. When the value on the display equals 5.5% press the **ENTER** () key to exit the Data mode, the instrument will automatically enter the Cal mode. See the section titled *The Principle Behind the CO₂ Correction Factor* in the front of this manual to determine if a setting other than 5.5% is appropriate.



Alveolar CO₂ Value Adjust

7. The instrument can now be calibrated using gas from the calibration cylinder. If the display does not indicate zero for each gas, press the **ZERO** () key to zero all gas values.
8. Collect at **least** 20 mL of calibration gas (QT07225-G) into your syringe (*supplied with Accessory Kit*). (*Refer to Use and Disposal of QuinGas Calibration Tanks Section of this manual for instructions.*) Insert the stopcock and syringe into the sample port on the lower panel of the BreathTracker. Open the stopcock and inject at least 20 mL of gas.

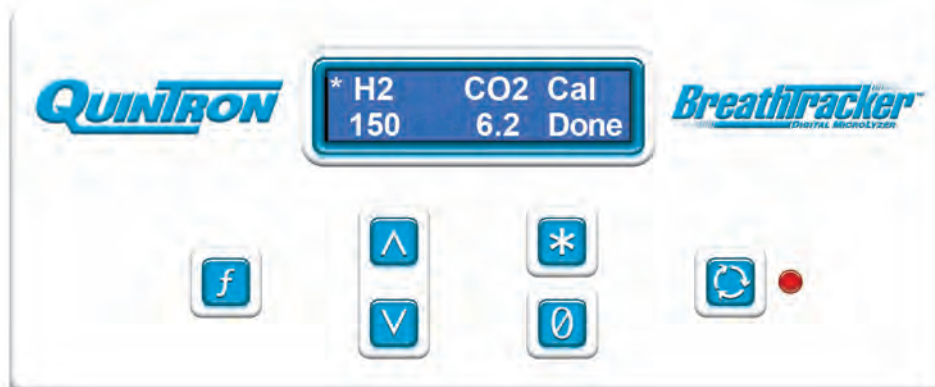


Inject Full Calibration Gas

9. After injecting the calibration gas, press the **START** () key on the front panel to start the analysis. The following “CAL WAIT” display appears. Note the LED color is amber to indicate processing.

10. As the system processes each gas, an audible train of sounds will indicate sensor tracking. The individual gas concentrations will appear in their locations on the screen once they have finished analyzing.

When the instrument is finished processing the data, the Cal Done display will appear.



Note: Your numbers should match the values indicated on your calibration cylinder.

Full Calibration Done

11. Note the LED is blinking red...this indicates the instrument is in a recovery period. When this recovery period is over (approximately three minutes), the LED will start blinking green indicating the instrument is ready for another sample. Press the **START** (START) key to advance to the next step in calibration.

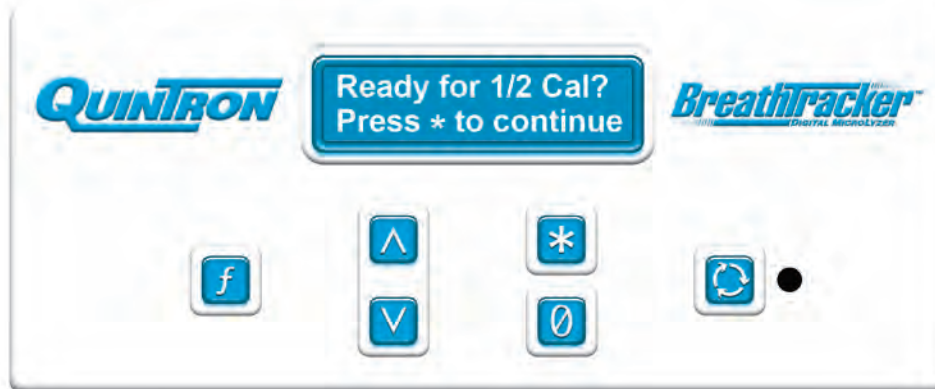
Once the status light begins blinking GREEN,
press the START button to clear the screen and ready the instrument for the 1/2 CAL procedure.

NEVER attempt to bypass the recovery period on the instrument

*****THE FOLLOWING PART OF CALIBRATION (1/2 CAL) IS REQUIRED AND EXTREMELY IMPORTANT FOR THE LINEARITY OF THE BREATHTRACKER. IF THIS PROCEDURE IS NOT PERFORMED PROPERLY YOU WILL RECEIVE ERRORS INCLUDING ERRATIC AND POTENTIALLY IMPROPER ANALYSIS RESULTS.*****

12. Fill your QuinTron syringe with *exactly* 15 mL of QuinGas, then add *exactly* 15 mL of room air. This will dilute your QuinGas by 50% which will allow for a ½ Cal to be accurately measured.

13. Press the **ENTER** (*****) key to perform the ½ Cal operation.



Ready for ½ Cal / Linearize Display

If the display does not indicate zero for each gas, press the **ZERO** (**0**) key to zero all gas values.

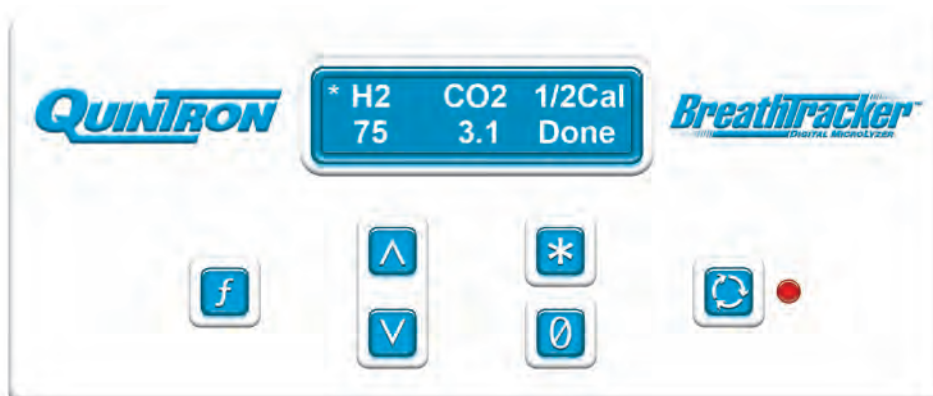


½ Cal / Linearize Ready Display

14. Inject **at least** 20 mL of this gas into the Sample Port and press the **START** () key.

The following display will be seen when analysis is complete.

(Your values should equal approximately half the concentration of your gas cylinder)



½ Cal / Linearize Done

After the status LED starts blinking green, press the **START** () key to enter the Run mode in order to ready the instrument for patient sample analysis.



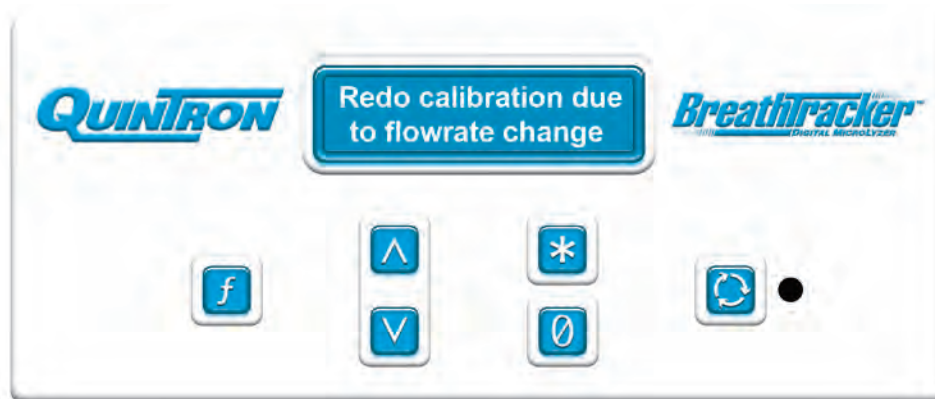
Run Ready

Normally, the BreathTracker instrument will automatically advance the user from the full calibration analysis into the ½ calibration step. The ½ calibration process can also be accessed by entering the Run Mode of the instrument and then pressing the Function key, then pressing the Enter key.

NOTE: If during your ½ calibration procedure the “Flow Warning” screen appears, you must adjust the flow rate back to the optimal setting of 120 mL/min (+/- 3 mL/min).

Press the ENTER key to exit the flow warning screen, the screen below will appear for 4 seconds before returning to the use the CAL mode. If this occurs you must and redo your FULL and HALF calibrations explained in Section 9 of this manual.

The following screen will appear with will ask operators to repeat the full calibration procedure. Due to the sensitivity characteristics of the H2 sensors, a flow rate change during any portion of the calibration procedure can affect the linearity of the instrument.



Redo calibration due to flowrate change (only displayed in CAL or 1/2 CAL MODE)

You may perform more than one (1) calibrations during the day if necessary. On average, QuinTron recommends *at least* two (2) full calibrations per day if you are analyzing multiple patients over an eight (8) hour period. If you'd like to check the instrument's calibration throughout the day, you may inject some calibration gas in the RUN mode of the instrument (like you would a patient) and analyze the sample (do not “correct” the sample).

Typically the instrument will be within +/- 3ppm from the label on the calibration tank, unless you've diluted the calibration gas. If the instrument is out of range by more than +/-3ppm, perform an entire calibration session.

If you are experiencing any difficulties or have any questions regarding calibration, please contact QuinTron.

10. ANALYZING SAMPLES

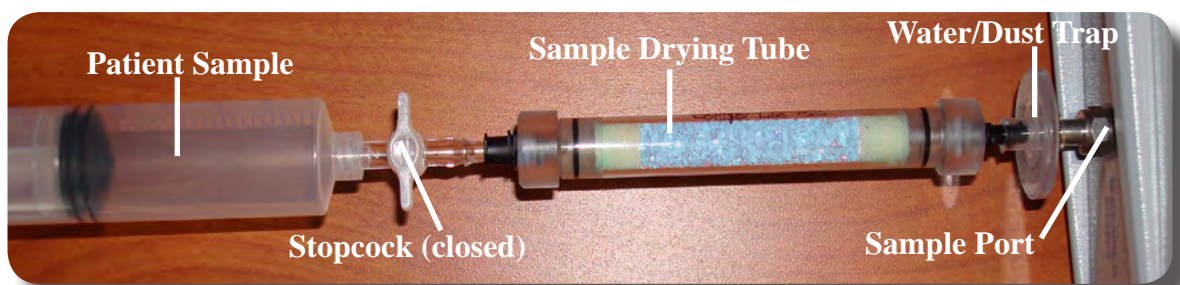
NOTE: While calibration gas can be injected into the instrument without the Sample Drying Tube, all patient samples must be injected into the instrument using the Sample Drying Tube.

Collect your patient's sample using one of QuinTron's collection devices.

Remember to only use QuinTron products to ensure proper collection and accurate analysis results.

If the display does not indicate zero for each gas, press the ZERO () key to zero all gas values.

Inject at ***least*** 20 mL of the patient sample **through the Sample Drying Tube** and into the sample port of the instrument and press the START () key.

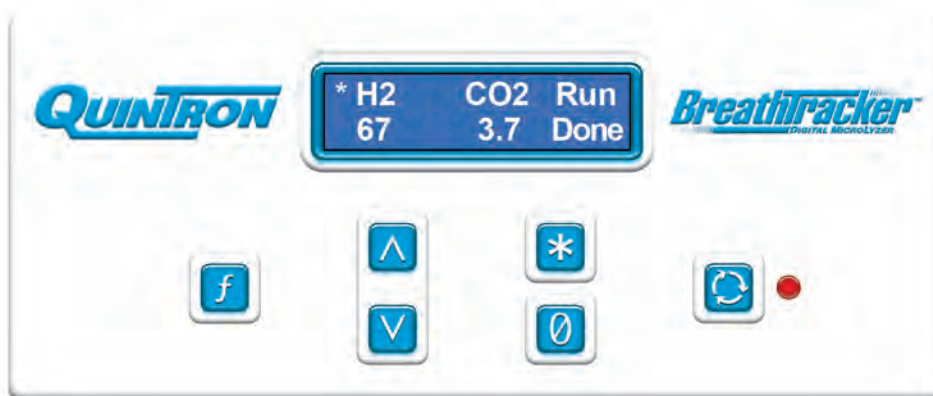


Inject Patient Sample Into Instrument

As the system is processing each gas, an audible trail of sounds will indicate sensor tracking, and the individual gas concentrations will appear in their locations as each one finishes analyzing.

When the instrument has completed processing the data, the "RUN DONE" display will appear. These are your raw values and still need to be checked for sample contamination. (See Section 11)

Once the status light begins blinking GREEN,
press the START button to clear the screen and ready the instrument for another patient sample.
NEVER attempt to bypass the recovery period on the instrument!



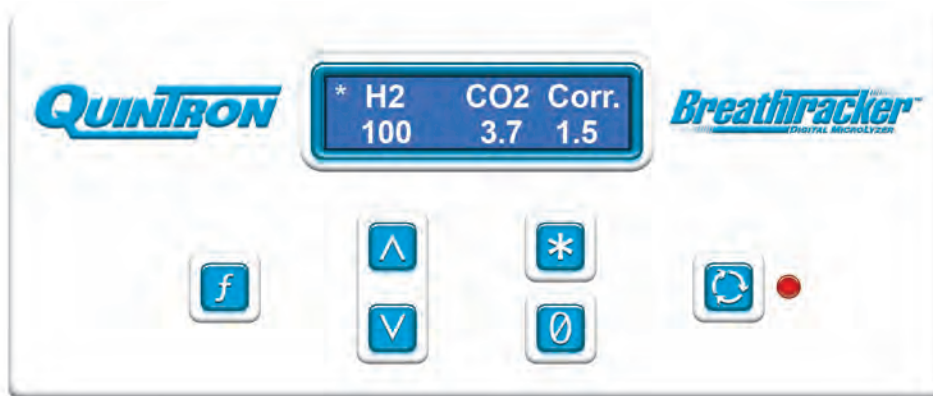
Patient Sample Done

NOTE: These numbers are for demonstration purposes only; your actual values will vary from sample to sample.

11. SELF-CORRECTION FEATURE

(USE THIS FEATURE FOR EVERY PATIENT SAMPLE)

To use the self-correction feature of the BreathTracker H2+, press the **DOWN** (▼) key. The following display will appear indicating the corrected values for H₂ and the correction factor that was applied. In this case, the correction factor is 1.5, H₂ is 100 (67 x 1.5). Note: The display for CO₂ is unchanged. (Pressing the **DOWN** (▼) key again will toggle the display back to the original data).

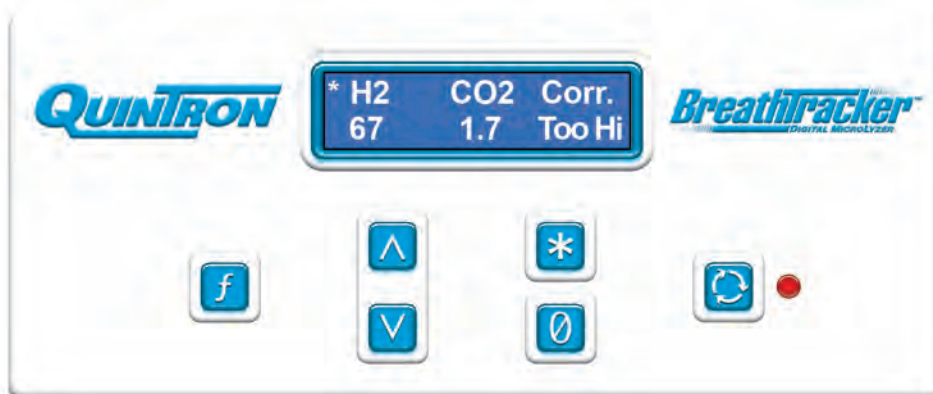


Corrected Data Display

Record the patient's sample values, then press the **START** (↻) key when the status LED begins to blink green. After pressing the Start Key the instrument automatically steps into the Run Ready mode and is ready for more patient samples. Follow sections 9-10 until you have finished all your patient samples.

NOTE: The BreathTracker H2+ has a maximum correction factor (CORR.) of 4.0. Any correction factor above 4.0 indicates the patient sample is too contaminated to be considered valid. Users should attempt to collect another sample if possible.

In the case where the correction factor is too high, the following display is shown when the **DOWN** (▼) key is pressed. If you are unable to analyze another sample from the same time collected, you should indicate on your analytical record that the sample was "Too High", "Invalid", or some other means for the physician to know that the sample was inadequate.



Correction Factor Too High


12. OTHER FEATURES AND DISPLAYS ASSOCIATED WITH NORMAL OPERATION

FLOW MONITORING FEATURE:


The BreathTracker instrument has built-in flow monitoring to continually monitor the internal flow rate (which is set to 120 mL/min +/- 3 mL/min) and displays the following warning when the flow rate falls out of this range.



Flow Rate Display

When the above display warning appears, the operator must adjust the flow rate using the mini screwdriver on the Flow Control on the instrument adjusting to 120 mL/min +/- 3 mL/min. When the flow rate is set to the correct value as in this display above, the operator can press the **ENTER** () key to return to the Run Mode.

AUTOMATIC FLOW RATE MONITORING:

The * indicator in the upper left of the display indicates that the instrument is automatically monitoring flow rate. **This feature should always be enabled.** If the * indicator is not present, contact QuinTron for instructions on how to enable this feature. If the operator wants to check flow rate at any time while the instrument is in the Run mode or Cal mode, pressing the **UP** () key will display the current flow rate values.

13. PREVENTATIVE MAINTENANCE

Preventative maintenance is extremely important to the life of the instrument as well as to ensure your ability to use the BreathTracker to its full potential.

If regular preventative maintenance is not performed and damage occurs to the instrument, your instrument's warranty will be voided.

Water/Dust Trap:

- Make sure that the water/dust trap is always in place on the Sample Port (located on the front of the instrument) and on the SivRite-4 Bottle.
- Replace both traps every 6 months or more frequently if the inside of the trap becomes discolored or dirty. Failure to do so may damage the instrument and void your warranty.

SivRite-4:

SivRite-4 is a room-air conditioning desiccant. The expiration of the contents will vary from climate to climate, change in humidity, and the length of time the instrument is completely turned on with the pump running.

- Replace your SivRite-4 tube when the contents expire. (See product label for more information.)
- When your SivRite-4 tube is expired, dispose of it in the trash; attach a new SivRite-4 tube and allow the instrument to acclimate to the new tube **at least 2 hours** before calibrating.
- After the 2 hour acclimation is complete, perform the entire calibration series on the instrument prior to analyzing patient samples.

Failure to change the SivRite-4 as required may result in damage to your instrument and void your warranty.

Do not dispose of your SivRite-4 Tubing assembly unless it becomes damaged.

Sample Flush Drying Tube:

- When 3/4 of your Sample Drying Tube contents (Drierite) turns from blue to pink, empty the contents from the tube into the trash receptacle, then replace the contents with fresh Drierite and condition them with the calibration gas (see *Sample Drying Tube Conditioning Procedure* on Page 3 for instructions).

Failure to change the Drierite as needed may result in damage to your instrument and void your warranty.

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ADDITIONAL IMPORTANT INFORMATION!!!

FOLLOW INSTRUCTIONS!

The science of breath-testing is very specific and sensitive, therefore it is strongly recommended to NOT modify steps in our procedures for breath collection or use of the instrument. This may result in improper breath analysis values and/or damage to your instrument. QuinTron accepts **NO** responsibility for modifications to our procedures and reserves the right to refuse technical or customer support to users which do not follow our instructions.

Use of Incompatible Products:

Failure to use compatible products (e.g. syringes, stopcocks, calibration gas) may result in damage to your instrument and/or improper breath analysis values. QuinTron will not support users not using compatible products.

14. TROUBLESHOOTING

“ERR” DISPLAY: (ERR warnings only occur while the instrument is in the CAL or 1/2 CAL MODE)

Should an operator accidentally press the **START** () key without flushing Cal gas into the instrument, the display will indicate “ERR”.

Also, if an improper calibration is performed; (i.e. 1/2 calibration completed with undiluted gas) an “ERR” will occur. To resolve, perform a proper FULL and HALF calibration procedure.

If you have experienced this error and are certain it is not user error, please contact QuinTron.

“OVR” DISPLAY:

Verify that the contents of the SivRite-4 desiccant are NOT EXPIRED past the indicating line on the product. If this has occurred, follow the instructions on the SivRite-4 product label to continue.

If a patient sample contains H₂ above levels that the instrument can normally read, the display will indicate **OVR**.

It is recommended that this sample be diluted by 50% with room air and re-analyzed.

Example: If the syringe has 20 mL of a sample, draw in 20 mL of room air so that the total sample in syringe to equal 40 mL.

If you are still experiencing the “OVR” display after attempting the above instructions, please contact QuinTron.

“MAX” DISPLAY:

This code is displayed during the patient sample correction feature activation. If this code appears it means that the pre-correction (Raw) values multiplied by the CO₂ correction factor is above the limit the BreathTracker can accurately determine. Users should revert back to and record the raw values for the physician to use during interpretation. Users should also write MAX on the sample sheet so the physician understands that the sample analyzed was above the limit the instrument can accurately calculate.

NEGATIVE NUMBERS BEING DISPLAYED DURING ANALYSIS:


Negative numbers can be caused by improper calibration procedures being performed. Perform a full and 1/2 Calibration procedure. If the problem continues, call QuinTron technical support.

FLOW RATE SUDDENLY DROPS:

If your flow rate suddenly drops significantly, first check to make sure that the SivRite-4 desiccant tubing is not obstructed or bent. If the tubing from the bottle to the machine is deemed adequate and you are still experiencing an extremely low flow rate, proceed with the following instructions:

If the flow rate warning does not automatically appear, press the **UP** () key to check the flow rate and verify that it is in proper operating range.

If the instrument is still not in the proper operating range, you may adjust the flow rate with the QuinTron screwdriver by inserting it into the flow rate adjust slot on the instrument.

When the flow rate returns to the necessary operating value (120 mL/min +/- 3 mL/min), press the **ENTER** () key to return to the Run mode.

HOW TO USE YOUR QUINGAS™ TRANSFER VALVE

The QuinGas transfer valve is used to remove calibration gas from the QuinGas cylinder for analysis in your BreathTracker breath-testing instrument.

1. Attach a 1-way stopcock to a QuinTron syringe.
2. Insert the blue transfer valve into the threaded opening on the top of the QuinGas cylinder. (Figure 1)
DO NOT PUSH DOWN ON THE TRANSFER VALVE YET!
3. Insert the syringe with stopcock into the small opening on the transfer valve. (Figure 2)
MAKE SURE THAT THE STOPCOCK IS OPEN.
4. **GENTLY** press down on the transfer valve to fill the syringe with at least 20 mL of calibration gas.
5. Close the stopcock and remove the syringe with stopcock. (Figure 3)

The transfer valve should also be removed from the top of the QuinGas cylinder when not in use.

Failure to remove the transfer valve when not in use may lead to loss of calibration gas.

Press down gently and slowly, make sure that your stopcock is open when applying pressure to the blue transfer valve.



Figure 1



Figure 2



Figure 3

Be sure to stop applying pressure and close the stopcock before removing the syringe from the blue transfer valve.

QUINGAS TANK DISPOSAL

This tank disposal tool is used to release the remaining gas in the QuinGas cylinder for safe disposal.

1. Insert the valve removal tool into the threaded top of the tank.
2. Wiggle the tool until it catches the valve stem.
3. Twist the tool to the counter-clockwise 10 times to loosen the valve.
The cylinder valve does not need to be removed.
4. Recycle cylinder. **Do not dispose of your valve tool.**

Tank Disposal Tool - Catalog Number - QT02592



Varying local regulations exist across the country regarding recycling and what may or may not be acceptable for land-fill sites. The best thing is to recycle the cylinders so the metals can be reclaimed, but this may not be practical for your office. You will need to contact your local waste management company for more specific instructions if you require them. **Always disengage the valve for safe disposal.**

Classifications, per IEC/UL/CSA/EN 60601-1:

Class 1 Equipment

Type B Applied Part

Classification according to the degree of protection against ingress of water: IPX0

Equipment not suitable for use in the presence of flammable mixtures

Mode of operation: Continuous



Type B Applied Part



Protective Earth

Any terminal which is intended for connection to an external protective conductor for protection against electric shock in case of a fault.



Attention, consult accompanying documents

Medical electrical equipment needs special precautions regarding electromagnetic compatibility (EMC) and needs to be installed and put in to service according to the EMC information provided:

- a. **Portable and mobile radio frequency (RF) communications equipment can affect medical electrical equipment. This product is intended for use in the electromagnetic environments specified.**
- b. **The end user of this product should assure it is used in such an environment.**
 - i. **Portable and mobile RF Communications equipment (cell phones) should not be used at close distances.**
 - ii. **Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.**



**MEDICAL EQUIPMENT
WITH RESPECT TO ELECTRIC SHOCK,
FIRE AND MECHANICAL HAZARDS ONLY
IN ACCORDANCE WITH UL 60601-1,
IEC/EN 60601-1. CAN/CSA C22.2 No.601.1**

Shipping and Storage conditions:

Temperature range within -40C to +70C;
Relative humidity range within 10% - 100%;
Atmospheric pressure range within 500 to 1060 hPa

Ratings: 100-120 VAC, 60/Hz, 1 A; 230-240VAC, 50/60Hz, 1 A

If you have any questions or need further information please contact:

QuinTron Instrument Company
Phone: (414)645-4222
Fax: (414)645-3484
www.QuinTron-USA.com



QuinTron-EU
www.QuinTron-EU.com

QuinTron Instrument Company - Limited Warranty for Products

QuinTron Instrument Company (“QuinTron”) warrants that the products, instruments and all components thereof purchased from QuinTron (“Product(s)”) shall be free from defects in material and workmanship for a period of one (1) year upon date of delivery of product, this warranty may be extended up to three (3) years from the date of delivery of the Products to the original retail purchaser or end-user of the Product (“Warranty Period”) upon completion of the warranty activation/product registration, as specifically set forth hereunder (“Limited Warranty”). For purposes of this Limited Warranty, the term “Products” shall not include the internal chromatographic separating column (“ICS Column”), unless the ICS Column performs poorly or is non-functional immediately upon receipt by the original retail purchaser or end-user. Additionally, the term “Products” shall not include any wear and tear parts or other consumable parts and items for the Products.

To exercise this Limited Warranty, QuinTron must receive written notice of a valid warranty claim within the Warranty Period, which includes the submission of a completed warranty information form and repair packing list (“Warranty Claim”), all sent to QuinTron at: QuinTron Instrument Company, Attn.: Product Warranty Department, 3712 West Pierce Street, Milwaukee, WI 53215 – U.S.A. Contact QuinTron’s customer service department at 414-645-4222 or toll free (within the Continental U.S. and Canada) at 1-800-542-4448 to obtain a warranty information form and repair packing list.

The Product(s) subject to the Warranty Claim must be made available to QuinTron at any place and time as designated by QuinTron for inspection, repair and/or replacement. If QuinTron determines the Product(s) subject to the Warranty Claim was/were defective in material or workmanship in the manufacturing process, in QuinTron’s sole discretion, then the Warranty Claim shall be valid and QuinTron shall repair or replace, in QuinTron’s sole discretion, the defective Product(s) within a reasonable time thereafter at no charge. This Limited Warranty shall not be applicable to, and a Warranty Claim shall not be valid for, defective Product(s) whereby the defect was caused, in part or in whole, by the action, inaction or misuse of the Product(s) by the retail purchaser or end-user, a shipper/carrier for the Product(s), or any other individual or entity other than QuinTron, as determined by QuinTron in QuinTron’s sole discretion. The retail purchaser or end-user shall bear all costs in providing the Product(s) to QuinTron and QuinTron shall be responsible for all costs in returning the repaired or replaced Product(s) to customer or end-user for a valid Warranty Claim.

This Limited Warranty shall remain in effect for the Warranty Period only if, as determined by QuinTron in QuinTron’s sole discretion, all of the following have occurred:

1. The Product(s) was/were operated and used at all times in accordance with the Owner’s Manual for the Product(s);
2. There is no evidence of modifying, altering, tampering, mishandling, accidental damage, neglect or unauthorized use or repair done to the Product(s) by any individual or entity other than QuinTron;
3. The Limited Warranty was registered with QuinTron upon QuinTron’s receipt of the Warranty Activation Information form from the original purchaser or end-user prior to the occurrence of valid Warranty Claim;
4. The Product(s) was/were continually owned and maintained by the original purchaser or end-user, or a transferee expressly approved by QuinTron in writing; and
5. All other terms of this Limited Warranty set forth hereunder are complied with and/or satisfied.

This Limited Warranty shall be the only warranty, express or implied, for the Product(s).

QUINTRON HEREBY DISCLAIMS ANY EXPRESS WARRANTY NOT PROVIDED HEREIN, AND ANY STATUTORY OR IMPLIED WARRANTY, GUARANTEE OR REPRESENTATION AS TO THE DESCRIPTION, PERFORMANCE, QUALITY, MERCHANTABILITY, COMPLETENESS, NON-INFRINGEMENT, FITNESS OR SUITABILITY FOR ANY PARTICULAR PURPOSE, AND ABSENCE OF HIDDEN DEFECTS OF/WITH THE PRODUCTS, WHICH BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, STATUTE, CUSTOM OF TRADE OR COURSE OF DEALING, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH ARE HEREBY EXCLUDED AND DISCLAIMED. THE PRODUCTS ARE SOLD ON AN “AS IS” AND “AS AVAILABLE” BASIS.

Disclaimer

The Products are specifically designed for the purpose as set forth in the Owner’s Manual for the Products and for no other purpose. The Products should only be used and operated by those skilled individuals that have read and fully understand the Owner’s Manual and are of legal age and sound mind, and only in a manner consistent with its specifically designed purpose as set forth in the Owner’s Manual.

THE REMEDY OF REPAIR AND REPLACEMENT PROVIDED FOR HEREIN SHALL BE THE CUSTOMER OR END-USER’S SOLE AND EXCLUSIVE REMEDY IN THE EVENT OF A BREACH OF THIS LIMITED WARRANTY. ADDITIONALLY, UNDER NO CIRCUMSTANCES SHALL QUINTRON BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO, LOST PROFITS AND PUNITIVE DAMAGES, AND TO THE EXTENT ALLOWED BY LAW, FOR PERSONAL INJURY OF ANY PERSON AND FOR DAMAGE OR LOSS OF ANY PROPERTY, ARISING FROM THE OWNERSHIP, SALE OR USE OF THE PRODUCTS OR A BREACH OF THIS LIMITED WARRANTY, WHETHER BASED IN CONTRACT, TORT OR ANY FORM OF STRICT LIABILITY.

BreathTracker Maintenance Matrix

The BreathTracker maintenance matrix can be used to help end-users determine what maintenance products are utilized in BreathTracker systems.

Models

Catalog # & Description	SC	DP	H2+	H2	Additional Info.
QT01154-C - SivRite-4 Desiccant	X	X	X	X	Attaches to Air-Intake port on the BreathTracker, replace when desiccant changes color to line indicated on label.
QT01156-C - 10/20 Mesh Indicating Drierite®	X	X	X	X	Used to remove water vapor in patient samples via Patient Sample Drying Tube. Replace contents when 3/4 pink.
QT07210-G - QuinGas-1 (~150ppm H ₂)				X	Reorder when psi reaches below 50psi.*
QT07220-G - QuinGas-2 (~150ppm H ₂ , 75ppm CH ₄)		X			Reorder when psi reaches below 50psi.*
QT07225-G - QuinGas-2 (~150ppm H ₂ , 6% CO ₂)			X		Reorder when psi reaches below 50psi.*
QT07230-G - QuinGas-3 (~150ppm H ₂ , 75ppm CH ₄ , 6% CO ₂)	X				Reorder when psi reaches below 50psi.*
QT07008-G - QuinGauge, Pressure Gauge	X	X	X	X	Used to check psi levels in QuinGas cylinders, replace if lost or broken.
QT02592 - QuinGas Valve Removal Tool	X	X	X	X	Used to disengage valve on QuinGas cylinders for disposal
QT01140-K - Water Barrier/Dust Trap (Package of 5)	X	X	X	X	Should be replaced at least once every 6 months or if dirty/discolored
QT01135-K - Patient Sample Drying Tube	X	X	X	X	Filled with Drierite, and 2-Foam Filter Plugs. Used in-line with instrument and patient sample
QT00527-T - Foam Filter Plugs	X	X	X	X	Used with Patient Sample Drying Tube and should be replaced periodically
QT01741 - Plastic Syringe	X	X	X	X	Used for injection of QuinGas into instrument or transferring of samples

All products listed above do not need to be replaced when analyzing multiple patient samples.

Maintenance materials are used to ensure longevity of the BreathTracker system.

Failure to replace components when needed can result in damage to the product and/or adversely affect your patient samples.

If there are any questions regarding these products or their use please consult with QuinTron's Customer Service Department.

*psi = pound per square inch

*ppm = parts per million

Drierite® is a registered trademark of W.A. Hammond Drierite Company, Ltd.

Contact Information



U.S. Office



www.QuinTron-USA.com

QuinTron Instrument Company
3712 West Pierce Street
Milwaukee, WI 53215 USA

Customer Service:
(800) 542-4448 (Toll-Free US & Canada Only)
1-414-645-4222
Fax: (414) 645-3484
E-mail: Sales@QuinTron-USA.com

Technical Support:
(800) 542-4448 (Toll-Free US & Canada Only)
1-414-645-3778
E-mail: Support@QuinTron-USA.com

European Union Office



www.QuinTron-EU.com

QuinTron-EU
Phone: +39-06-4067873
Fax: +39-06-4065151
E-mail: Support@QuinTron-EU.com

NOTES

BreathTracker Warranty Activation

In order to activate your full instruments warranty with QuinTron-USA, please fill out the below information and fax or e-mail this page to us.

Register online at: www.QuinTron-USA.com/productregister

PRINT CLEARLY

Circle your BreathTracker model: SC DP H2+ H2 CH4+ CH4 (Serial Number: _____)

Facility Name: _____

Main Contact Name: _____ Contact Phone: _____

Main contact e-mail*: _____

Address: _____

City _____ State _____ Postal Code _____

Country _____

Where did you purchase your BreathTracker? (Proof of Purchase Required)

___ QuinTron-USA Directly

___ QuinTron-EU Directly

___ Distributor: _____

If you purchased your BreathTracker from anywhere other than directly from QuinTron, in order to activate this warranty with QuinTron-USA, QuinTron-USA must receive a proof of purchase from the end-user.

If not received, the warranty for the BreathTracker will only be valid for 1 year from date of manufacture.

QuinTron will have no liability for any Product returned if QuinTron determines that:

The asserted defect or issue:

- is not present or cannot be replicated,
- cannot reasonably be fixed because of damage occurring when the Product is in the possession of someone other than QuinTron, or
- is attributable to misuse, improper installation, alteration (including removing or obliterating labels and opening or removing external covers (unless authorized to do so by QuinTron or an authorized Service Center)), accident or mishandling while in the possession of someone other than QuinTron.
- The Product was not sold to you as new.
- The product was not used in accordance with QuinTron specifications and instructions.

*Providing an e-mail allows us to update you of important protocol changes, product updates.

We will not sell or distribute your e-mail address to any company.