

MICROACTIVE TRISTAR[®] II PLUS

SURFACE AREA AND POROSITY ANALYZER



INSTALLATION INSTRUCTIONS AND CHECKLIST

303-42870-02
Oct 2020
Rev (C)

TRADEMARKS

Alconox is a registered trademark of the Alconox Company.

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Microsoft and Windows are registered trademarks of Microsoft Corporation.

TriStar is a registered trademark of Micromeritics Instrument Corporation.

Copyright

The software described in this manual is furnished under a license agreement and may be used or copied only in accordance with the terms of the agreement.

WARRANTY

MICROMERITICS INSTRUMENT CORPORATION warrants for one year from the date of shipment each instrument it manufactures to be free from defects in material and workmanship impairing its usefulness under normal use and service conditions except as noted herein.

Our liability under this warranty is limited to repair, servicing and adjustment, free of charge at our plant, of any instrument or defective parts when returned prepaid to us and which our examination discloses to have been defective. The purchaser is responsible for all transportation charges involving the shipment of materials for warranty repairs. Failure of any instrument or product due to operator error, improper installation, unauthorized repair or alteration, failure of utilities, or environmental contamination will not constitute a warranty claim. The materials of construction used in MICROMERITICS instruments and other products were chosen after extensive testing and experience for their reliability and durability. However, these materials cannot be totally guaranteed against wear and/or decomposition by chemical action (corrosion) as a result of normal use.

Repair parts are warranted to be free from defects in material and workmanship for 90 days from the date of shipment.

No instrument or product shall be returned to MICROMERITICS prior to notification of alleged defect and authorization to return the instrument or product. All repairs or replacements are made subject to factory inspection of returned parts.

MICROMERITICS shall be released from all obligations under its warranty in the event repairs or modifications are made by persons other than its own authorized service personnel unless such work is authorized in writing by MICROMERITICS.

The obligations of this warranty will be limited under the following conditions:

1. Certain products sold by MICROMERITICS are the products of reputable manufacturers, sold under their respective brand names or trade names. We, therefore, make no express or implied warranty as to such products. We shall use our best efforts to obtain from the manufacturer, in accordance with his customary practice, the repair or replacement of such of his products that may prove defective in workmanship or materials. Service charges made by such manufacturer are the responsibility of the ultimate purchaser. This states our entire liability in respect to such products, except as an authorized person of MICROMERITICS may otherwise agree to in writing.
2. If an instrument or product is found defective during the warranty period, replacement parts may, at the discretion of MICROMERITICS, be sent to be installed by the purchaser, e.g., printed circuit boards, check valves, seals, etc.
3. Expendable items, e.g., sample tubes, detector source lamps, indicator lamps, fuses, valve plugs (rotor) and stems, seals and O-rings, ferrules, etc., are excluded from this warranty except for manufacturing defects. Such items which perform satisfactorily during the first 45 days after the date of shipment are assumed to be free of manufacturing defects.

Purchaser agrees to hold MICROMERITICS harmless from any patent infringement action brought against MICROMERITICS if, at the request of the purchaser, MICROMERITICS modifies a standard product or manufactures a special product to the purchaser's specifications.

MICROMERITICS shall not be liable for consequential or other type damages resulting from the use of any of its products other than the liability stated above. This warranty is in lieu of all other warranties, express or implied, including but not limited to, the implied warranties of merchantability or fitness for use.

CORPORATE PROFILE

Micromeritics Instrument Corporation is the world's leading supplier of high-performance systems to characterize particles, powders and porous materials with a focus on physical properties, chemical activity, and flow properties. Our technology portfolio includes: pycnometry, adsorption, dynamic chemisorption, particle size and shape, intrusion porosimetry, powder rheology, and activity testing of catalysts. The company has R&D and manufacturing sites in the USA, UK, and Spain, and direct sales and service operations throughout the Americas, Europe, and Asia. Micromeritics systems are the instruments-of-choice in more than 10,000 laboratories of the world's most innovative companies, prestigious government, and academic institutions. Our world-class scientists and responsive support teams enable customer success by applying Micromeritics technology to the most demanding applications. For more information, please visit www.Micromeritics.com.

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ABOUT THIS MANUAL



This manual contains instructions for installations in standard and 21CFR11 environments. For instructions on installing the software in a 21CFR11 environment, see the Confirm Administrator Guide [*part number 004-42821-01*].

The following symbols indicate safety precautions and/or supplemental information and may appear in this manual:



NOTE — Notes contain important information applicable to the topic.



CAUTION — Cautions contain information to help prevent actions that may damage the analyzer or components.



WARNING — Warnings contain information to help prevent actions that may cause personal injury.



NOTE — Notes that apply to 21CFR11 environments only (Confirm applications).

GENERAL SAFETY



Do not modify this instrument without the authorization of a Micromeritics service personnel.

Any piece of laboratory equipment can become dangerous to personnel when improperly operated or poorly maintained. All employees operating and maintaining Micromeritics instruments should be familiar with its operation and should be thoroughly trained and instructed on safety.

- Read the manual for any special operational instructions for the instrument.
- Know how the instrument functions and understand the operating processes.



- Wear the appropriate personal protective equipment when operating this instrument — such as eye protection, lab coat, protective gloves, etc.
- When lifting or relocating the instrument, use proper lifting and transporting devices for heavy instruments. Ensure that sufficient personnel are available to assist in moving the instrument. The TriStar weighs approximately 37 kg (82 lb).
- Always pay attention to the safety instructions provided on each label affixed to the instrument and do not alter or remove the labels. When inspecting the instrument, ensure that the safety labels have not become worn or damaged.
- The TriStar II Plus has a safety shield. Ensure it is in place when operating the instrument.
- The TriStar II Plus sound level is below 80 dBA. Hearing protection is optional.
- Proper maintenance is critical to personnel safety and smooth instrument operation and performance. Instruments require regular maintenance to help promote safety, provide an optimum end test result and to prevent costly down time. Failure to practice proper maintenance procedures can lead to unsafe conditions and shorten the life of the instrument.
- If using CO₂ for analyses, ensure an exhaust line is connected to the vacuum pump and the exhaust is run to a ventilation system or out of the building.
- Improper handling, disposing of, or transporting potentially hazardous materials can cause serious bodily harm or damage the instrument. Always refer to the MSDS when handling hazardous materials. Safe operation and handling of the instrument, supplies, and accessories is the responsibility of the operator.



The TriStar II Plus is a stand alone instrument. Safe operation and handling of the instrument, supplies, and accessories is the responsibility of the operator.

INTENDED USE

The Micromeritics TriStar II Plus is an automated, three-station, surface area and porosity analyzer that delivers excellent performance and speed of analysis. With three available analysis ports, the TriStar II Plus provides high sample throughput and advanced data analysis features to the user. The unique stainless steel analysis manifold is designed for highly accurate gas management for confident and repeatable results. The MicroActive for TriStar II Plus software gives the user the ability to interactively evaluate isotherm data and reduce the time required to obtain surface area and porosity results.



The instrument is intended to be operated by trained personnel familiar with the proper operation of the equipment recommended by the manufacturer as well as relevant hazards involved and prevention methods. All use, other than that described in this manual, is seen as unintended use and can cause a safety hazard.



The instrument is intended to be used as per applicable local and national regulations.

TRAINING

It is the responsibility of the customer to ensure that all personnel operating or maintaining the equipment participate in training and instruction sessions. All personnel operating, inspecting, servicing, or cleaning this instrument must be properly trained in operation and machine safety before operating this instrument.

ENVIRONMENTALLY FRIENDLY USE PERIOD

Hazardous Substances Table

Part Name	Hazardous Substances					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr (VI))	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Metal Parts	x	o	o	o	o	o
Power Supplies	x	o	o	o	o	o
Printed Circuit Boards	x	o	o	o	o	o

o Hazardous substance is below the specified limits as described in SJ/T11363-2006.

x Hazardous substance is above the specified limits as described in SJ/T11363-2006.

The Environmentally Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked. Certain parts may have a different EFUP (for example, battery modules) and so are marked to reflect such. The Environmentally Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.



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1 INSTALLATION OVERVIEW

Use these installation instructions and checklists to ensure that installation procedures are completed properly.



- If a Micromeritics Service Technician performs this installation, additional charges apply. Please see [Contact Us on page v](#) for information on how to contact Micromeritics.
- It is recommended that installation procedures be performed in the order presented in this document.
- Use this installation instruction manual in conjunction with the analyzer operator manual.
- If installing in a CFR21 environment, use this installation instruction manual in conjunction with the Confirm Administrator Guide [*part number 004-42821-01*].

PREPARE FOR INSTALLATION

Before installation, ensure the operator has reviewed thoroughly the analyzer *Pre-installation Instructions and Checklist*. Ensure all required equipment and supplies are unpacked and the required personnel are available.

When the equipment is received, unpack and inspect the contents of the shipping container(s). Use the packing list to verify that all products, accessories, software (if applicable), and documentation are received intact and in the correct quantity. The shipping container(s) and contents should be inspected within a few days of receipt in the event damage or loss has occurred. Sort through all packing material before declaring missing equipment or parts.



Micromeritics recommends saving all shipping containers until installation of the equipment is complete. All shipping containers where equipment is to be declared as damaged or lost must be examined by the claims investigator prior to completion of the inspection report.

DEWAR PRECAUTIONS



Always handle glass Dewars with care. Any product incorporating a vacuum is a potential safety hazard and should be treated with caution. If in doubt, contact your safety officer.



Improper handling, disposing of, or transporting potentially hazardous materials can cause serious bodily harm or damage the instrument. Always refer to the MSDS when handling hazardous materials. Safe operation and handling of the instrument, supplies, and accessories is the responsibility of the operator.

Do not pour liquid nitrogen directly into a sink. Doing so may cause drain pipes to burst.

When handling Dewars containing liquefied gases or cryogenic liquids:

- Wear protective equipment:
 - goggles or face shield
 - an insulated or rubber apron
 - insulated gloves
- When pouring liquefied gases from one container to another:
 - cool the receiving container gradually to minimize thermal shock
 - pour the liquified gas slowly to prevent splashing
 - vent the receiving container to the atmosphere

FOR GLASS DEWARS

- Use a plastic stirring rod when stirring substances in a Dewar containing liquefied gases (or other materials of extremely low temperature). Do not use a glass or metal stirring rod unless it has a protective coating.
- Do not handle heavy objects above the Dewar. If unavoidable, place a protective cover over the Dewar opening. If an object of sufficient weight is accidentally dropped into the Dewar, shattering may occur.
- If the Dewar has a protective mesh covering, do not remove it. This cover minimizes the risk of flying particles should the Dewar be knocked over, dropped, or broken.

SAFE SERVICING



Do not modify this instrument without the authorization of a Micromeritics service personnel.

To ensure safe servicing and continued safety of the instrument after servicing, service personnel should be aware of the following risks:

Product specific risks that may affect service personnel:

- **Electrical** – servicing or repair could require opening the outer panels and exposing energized electrical components.
- **Liquid nitrogen** – see [Dewar Precautions on page 1 - 2](#).
- **Elevator** – could pose a pinching hazard when lowering. Maintenance may require the elevator screw to be greased. The service engineer can use a manual switch on the elevator assembly to cycle the elevator to distribute the grease to permit safe servicing and continued safety of the equipment after servicing.

Protective measures for these risks:

- **Electrical** – the majority of electrical components operate at low voltage (24V or less) and pose low risk when energized. Maintenance, troubleshooting, and repairs should be performed with the instrument de-energized whenever possible, in accordance with standard electrical safety guidelines.
- **Elevator** – moves very slowly. It is normally operated from the computer attached to the instrument so the operator is physically distanced from the instrument. The safety shield door of the instrument should be closed during elevator operation. Use of the manual switch on the instrument requires particular attention and care by the service personnel.

Verification of the safe state of the instrument after repair:

- Elevator must be in the down position.
- Sample tubes must be removed to prevent accidental breakage. Ports should be capped (recommended).
- Safety shield door is closed (recommended).

POWER

The TriStar II Plus is designed to operate with universal input power supply (100-240V~, 50/60 Hz, 150VA). Noise-free power of the correct voltage and frequency, with a safety earth ground, should be available through a standard wall receptacle. The power outlet should be able to supply 15 amps@ 100 or 115V~ $\pm 10\%$ or 7.5 amps @ 230V~ $\pm 10\%$. These requirements can be checked by using a circuit analyzer (available at most hardware or electronic supply houses) or a multimeter. There should also be sufficient outlets for the computer, dry roughing pump, monitor, printer, and any other peripheral devices.

The power cord, IEC, 300V, 10A (available in the accessories kit) should be connected to noise free power of the correct voltage and frequency, with a safety earth ground, through a standard wall receptacle.



The analyzer and peripheral devices **must** be installed on their own dedicated power line. Other devices — such as motors, generators, or ovens — **should not** be placed on the same power line.



Replacement power supply cords must be rated for the specifications stated above.

PARTS REPLACEMENT

- To ensure proper form, fit, and function, consumables may be purchased from Micromeritics.
- Repair parts are proprietary and must be obtained from Micromeritics.

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2 EQUIPMENT INSTALLATION

VACUUM PUMP INSTALLATION



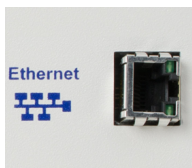
Log in to your [customer portal](#) to access the Vacuum Pump Guide [part number 062-42804-00] for instructions on installing a vacuum pump.



Do not connect the analyzer or vacuum pump to the power source until the proper voltage selection has been made. Doing so could result in electrical shock and/or damage the assembly.

CONNECT ETHERNET CABLE

CONNECT ONE ANALYZER



Ethernet port



RS232 port

1. Plug one end of the Ethernet cable into the Ethernet port on the analyzer.
2. Plug the other end of the Ethernet cable into the computer Ethernet port.

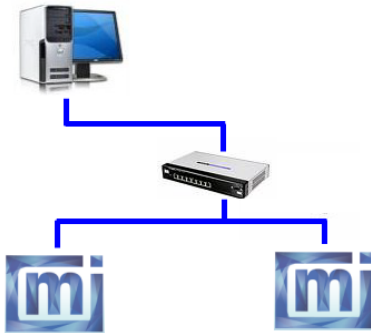
CONNECT MULTIPLE ANALYZERS WITH AN ETHERNET SWITCH



An Ethernet switch is required. The Smart VacPrep unit will be attached to the Ethernet switch. The Ethernet switch will then be connected to the computer.

An Ethernet switch is required to connect:

- Multiple analyzers
- One or more analyzers and one computer



Do not use the uplink port when using an Ethernet switch.

APPLY POWER TO THE ANALYZER

1. Toggle the power switch to the **ON** position.
2. Check the power indicator on the front panel of the analyzer. The indicator will blink green to indicate that power is applied to the analyzer. Once the application is running, the indicator will stop blinking and remain illuminated.

CONNECT OPTIONAL SMART VACPREP TO ANALYZER

No additional software is necessary for the Smart VacPrep. Smart VacPrep functions are built in to the analyzer application.

The Smart VacPrep must be attached to an Ethernet Switch. See [Connect Ethernet Cable on the previous page](#). Log in to your [customer portal](#) to access the Smart VacPrep Operator Manual [part number 067-42801-01].

3 SOFTWARE INSTALLATION

CFR Note

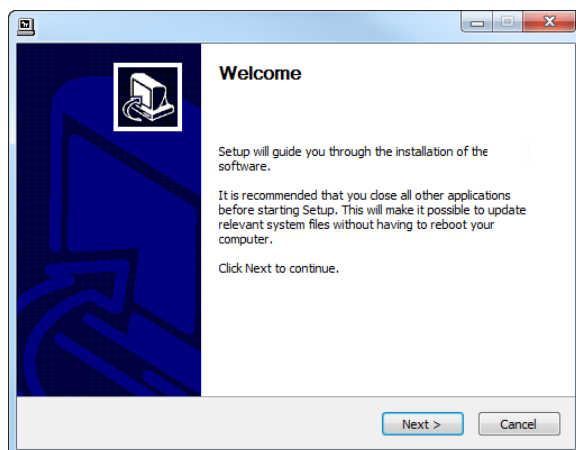
This section is applicable only to standard installations. If installing in a 21CFR11 environment, see Confirm Administrator Guide [004-42821-01]for software installation instructions.



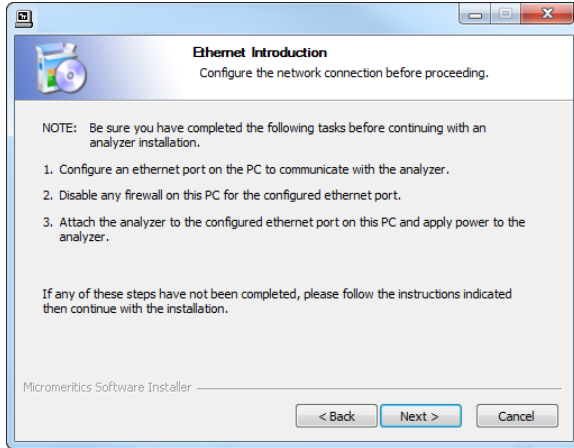
- The application should not be installed on a network drive with shared access. Multiple users cannot operate the application at the same time.
- If the computer is to be connected to a network, a second Ethernet port on the computer must be used for the purpose.

These prerequisites must be completed prior to installing the software:

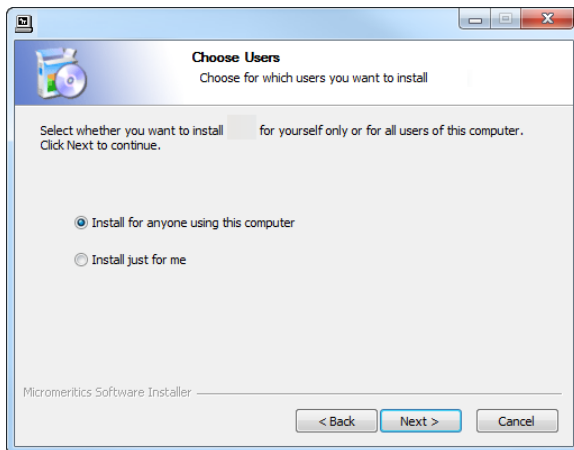
- User Account Control in the Windows operating system must be enabled to ensure all components of the Micromeritics application are installed properly. If UAC is not enabled, right click the *setup.exe* installer file and select *Run as administrator*.
 - Configure an Ethernet port on the computer to communicate with the analyzer. The IP address must be 192.168.77.100. Refer to the computer operator manual for instructions on changing the IP address.
 - Attach the analyzer to the Ethernet port on the computer. Use an Ethernet switch if multiple instruments will be attached.
1. Power ON the Smart VacPrep (if installed).
 2. Insert the installation media into the computer. The setup program automatically starts. If the setup program does not immediately start, navigate to the media device, then locate and double click the *setup.exe* file.
 3. Click **Next** on the *Welcome* window.



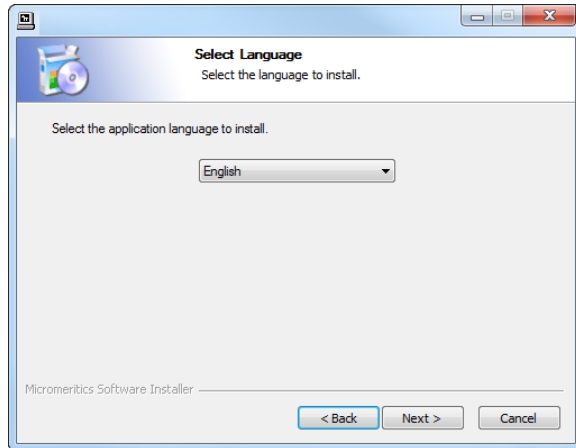
4. On the *Ethernet Introduction* window, verify that all prerequisites have been met.
 - a. If not, click **Cancel** and complete the steps, then restart the installation program. Do not proceed with installation until these tasks have been completed.
 - b. If the prerequisites have been met, click **Next**.



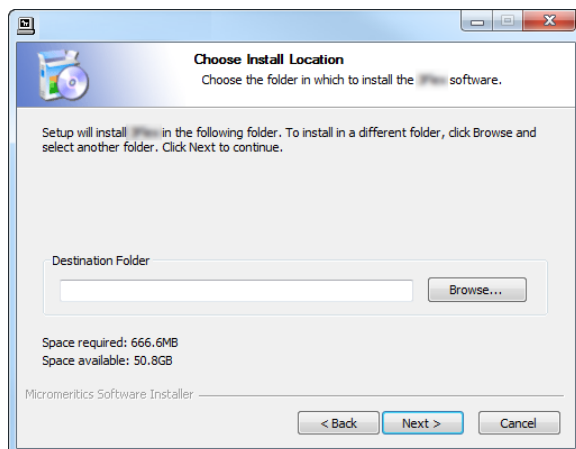
5. On the *Choose Users* window, select either of the following, then click **Next**:
 - **Install for anyone using this computer.** Anyone who logs on to this computer will have access to the analyzer program.
 - **Install just for me.** Only the person logged on to the computer at the time of installation will have access to the analyzer program.



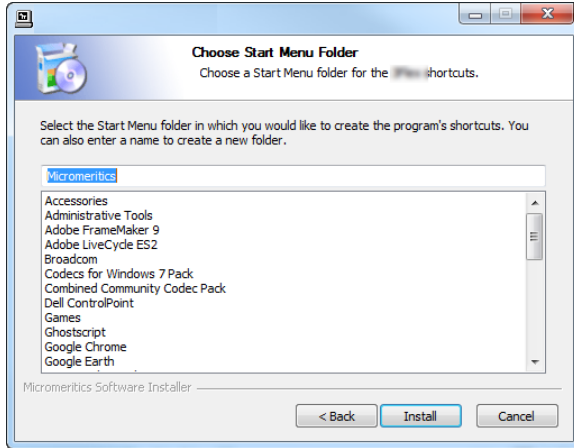
6. On the *Select Language* window, select the default language of the program, then click **Next**.



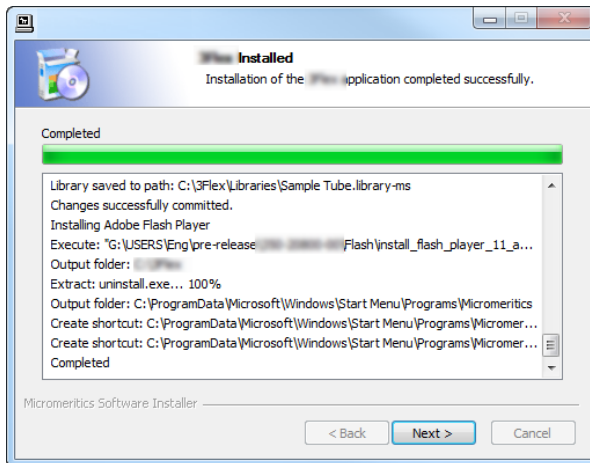
7. On the *Choose Install Location* window, verify that sufficient disk space is available to continue the installation. If not, click **Cancel** and free up the minimum required disk space. If the disk space is OK, click **Next** to accept the default installation directory, or click **Browse** to change the installation location, then click **Next**.



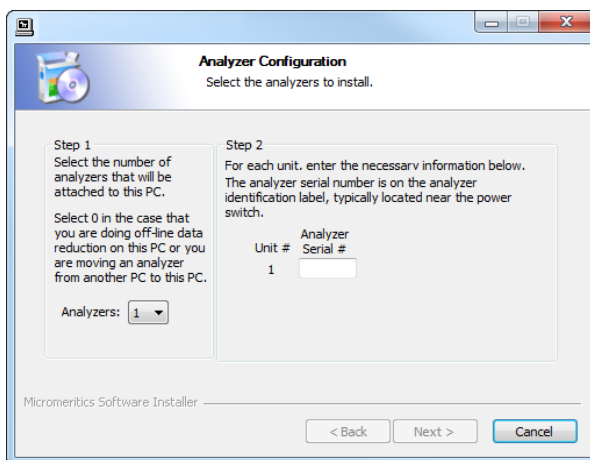
8. On the *Choose Start Menu Folder* window, select a folder for the program shortcut:
 - click **Install** to accept the default location, or
 - select another folder from the list, then click **Install**, or
 - enter a new folder name in the text box, then click **Install**



9. When installation completes, the *Installed* window displays. Click **Next**.



10. The *Analyzer Configuration* window is used to configure the system for each analyzer and serial number to be installed.



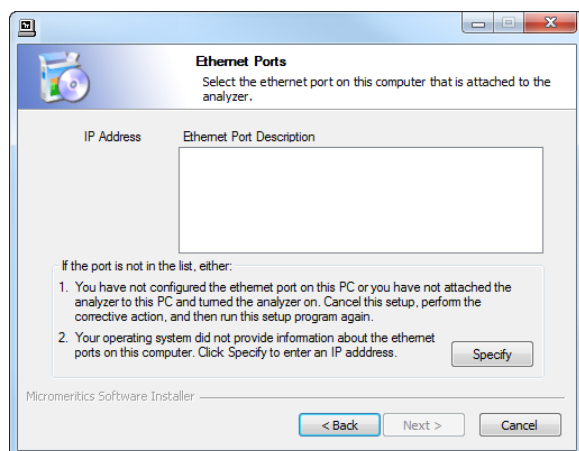
a. In the *Step 1* group box:


If...	Then...
installing the analysis program during initial installation	Select the number of analyzers to be installed.
using the analysis program for off-line data reduction	Select 0 .
moving an analyzer from another computer to this computer	Select 0 .

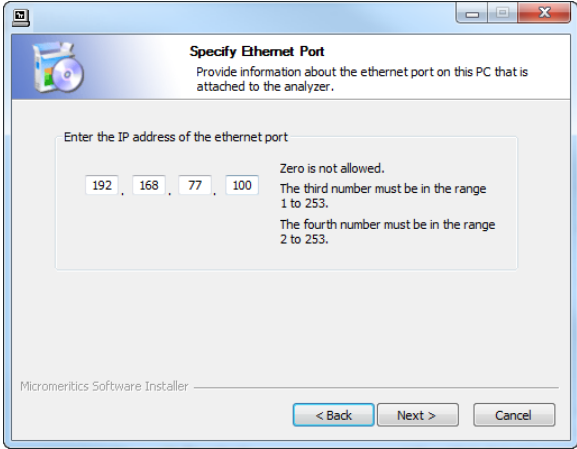
b. In the *Step 2* group box, enter the serial number for each analyzer to be attached to this computer. The serial number label is located either near the incoming power supply or near the **ON/OFF** switch.

c. Click **Next**.

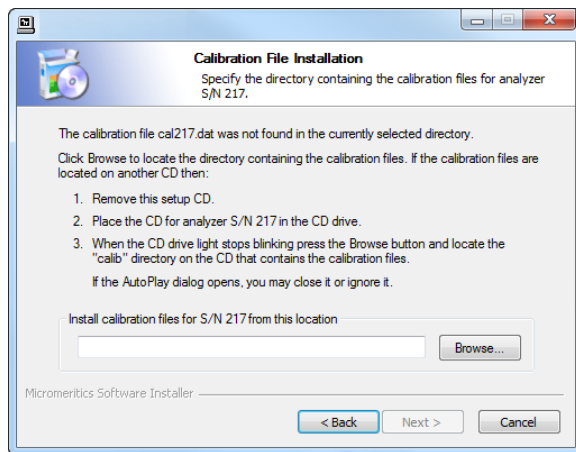
10. On the *Ethernet Ports* window, select one option from the following table:



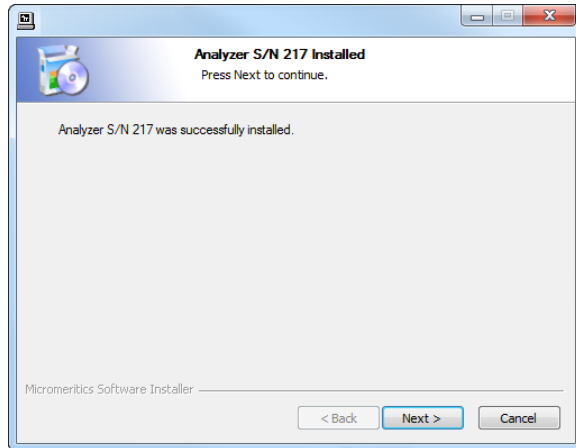
If...	Then...
the configured port is listed	Select the port, then click Next .
the configured port is not listed	Click Specify and enter the remaining portion of the IP Address, then click Next . <div style="border: 1px solid green; padding: 10px; margin-top: 10px;">  <p>The IP Address must be 192.168.77.100.</p> </div>

If...	Then...
	 <p>The 'Specify Ethernet Port' dialog box prompts the user to provide information about the ethernet port on the PC attached to the analyzer. It includes a text field for the IP address, which is currently set to 192.168.77.100. To the right of the text field, there are instructions: 'Zero is not allowed. The third number must be in the range 1 to 253. The fourth number must be in the range 2 to 253.' At the bottom, there are buttons for '< Back', 'Next >', and 'Cancel'.</p>

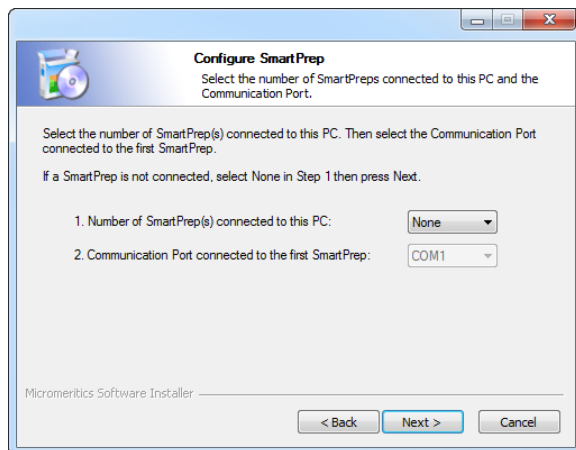
11. If prompted for calibration files, insert the calibration media that shipped with the analyzer. Click **Browse** to locate and select the [calibration] directory. Click **Next**. If not prompted for calibration files, skip this step.



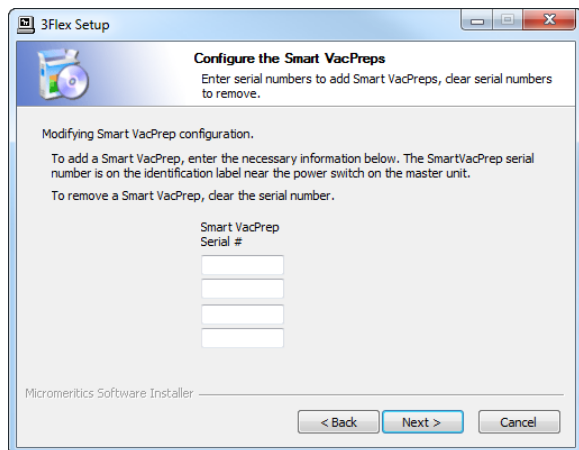
12. On the *Analyzer S/N [n] Installed* window, click **Next**. A window displays for each unit installed.



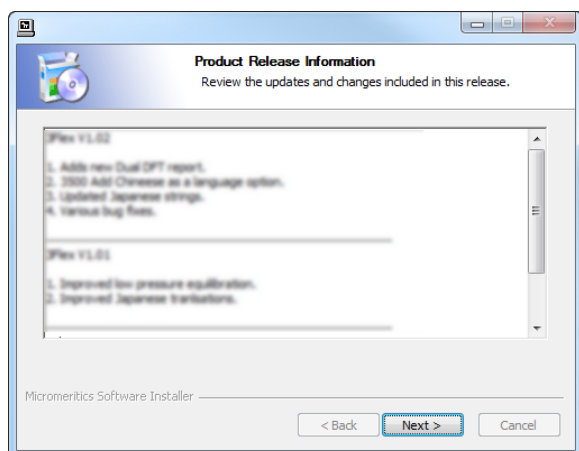
13. If installing a SmartPrep at this time, enter the number of SmartPreps being installed, then select the communication port connected to the first SmartPrep. Click **Next**.



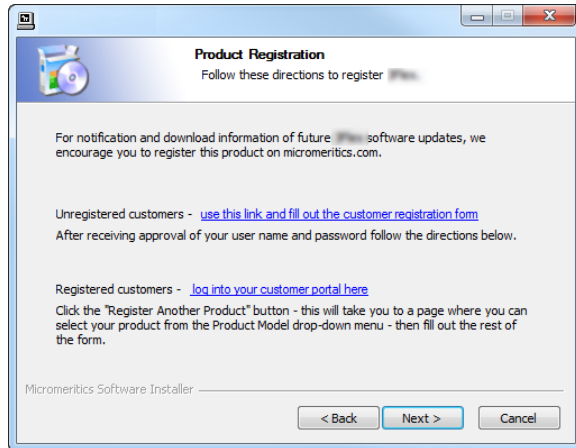
14. If installing a Smart VacPrep at this time, enter the serial number of up to four Smart VacPreps on the *Configure the Smart VacPreps* window, then click **Next**. If not installing a Smart VacPrep, click **Next**. A Smart VacPrep can also be installed after the analyzer software installation is complete.



15. The *Product Release Information* window contains information about updates and changes included in the release. Click **Next**.



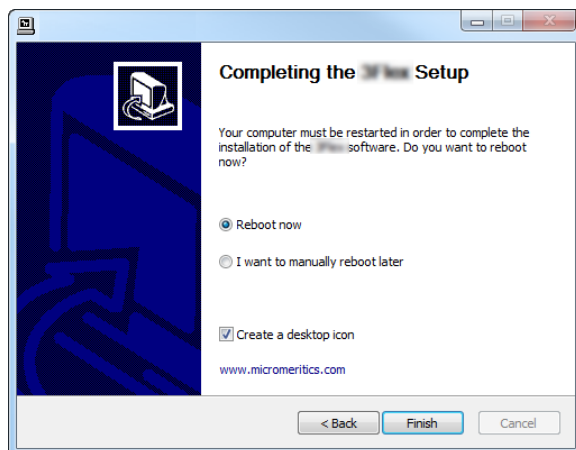
16. The *Product Registration* window is available to register the analyzer and to receive future notifications of software updates.
- Click the appropriate link to register the product or to log in to the customer portal. After registration, click **Next**.
 - To register later, click **Next**.



17. On the *Completing the Setup* window, select either:

- Reboot now
- I want to manually reboot later

To create a desktop shortcut, select the *Create a desktop icon* checkbox. Click **Finish** to close the setup program.



START THE APPLICATION

To start the application, click the application shortcut on the desktop or select the application from the Windows program list.

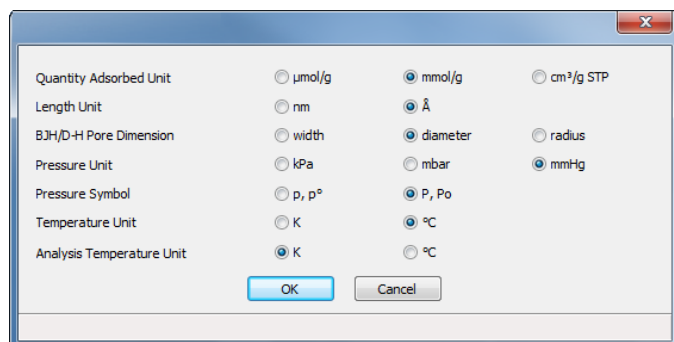
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4 ANALYZER PREPARATION

UNIT SELECTION

Options > Units

Use to specify how data should appear on the application windows and reports. This menu option is not available if using *Restricted* option presentation in a standard installation environment.



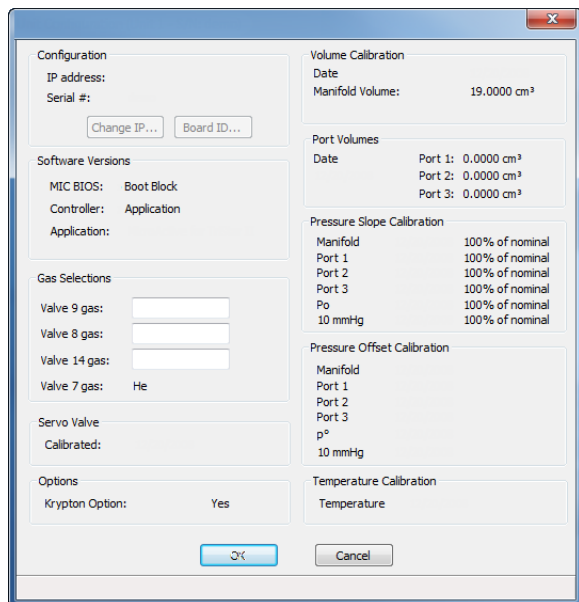
SPECIFY GAS PORTS AND UNIT CONFIGURATION

Unit [n] > Unit Configuration

CFR Note

In 21CFR11 environments, this feature is applicable to members of the Developer group only.

The analyzer has gas inlets for up to three analysis gases and a dedicated inlet for helium. The gases connected to the inlets must be specified in the analysis program. If the gases are changed on one of the inlets, make the same change on the *Unit Configuration* window. The analysis program must be kept informed of any changes in gases.



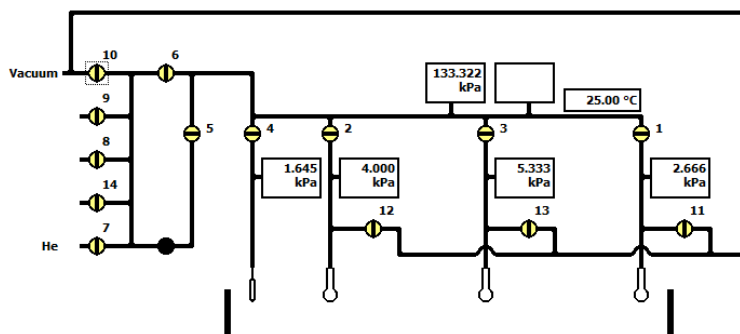
Unit Configuration

Field or Button	Description
Configuration [group box]	<p>Displays the IP address used by the analysis program, serial number, and type of analyzer.</p> <p>IP address. Displays the IP address of the analyzer.</p> <p>Change IP. [button] Click to display the <i>Unit IP Setup</i> window. Use to change the IP address and subnet mask assigned during installation. Do not edit these fields unless instructed by a Micromeritics Service Representative.</p> <p>Board ID. [button] Click to display information from the electronic circuit boards in the analyzer. These parameters cannot be edited.</p>
Gas Selections [group box]	Enter the gas connected to the specified port.
Options [group box]	Displays options installed on the analyzer.
Servo Valve [group box]	Displays the last calibration date for the servo valve.
Software Versions [group box]	Displays the software versions of the MIC BIOS, controller, and analysis program.

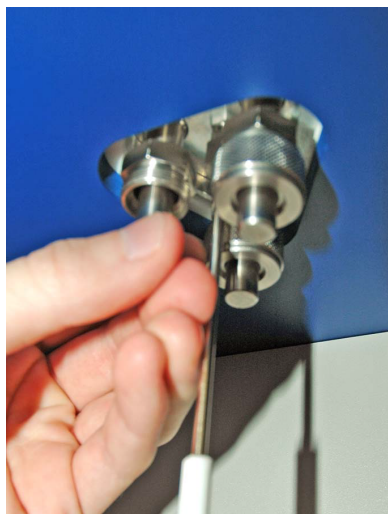
MANIFOLD EVACUATION

Prior to the connection of the gas lines to the instrument, the manifolds are evacuated to prepare them for the installation of the gas lines.

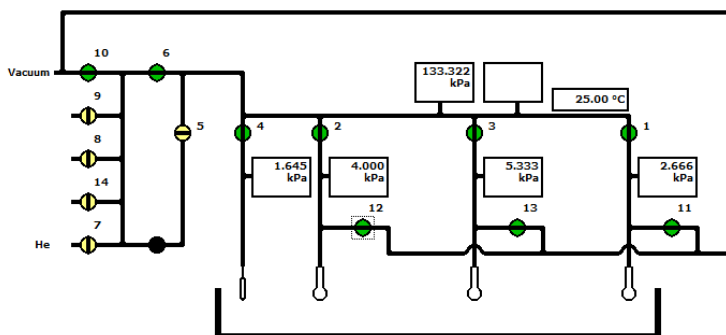
1. Go to **Unit [n] > Enable Manual Control**. Ensure a checkmark displays to the left of the menu item. If the analyzer schematic does not display, go to **Unit [n] > Show Instrument Schematic**.



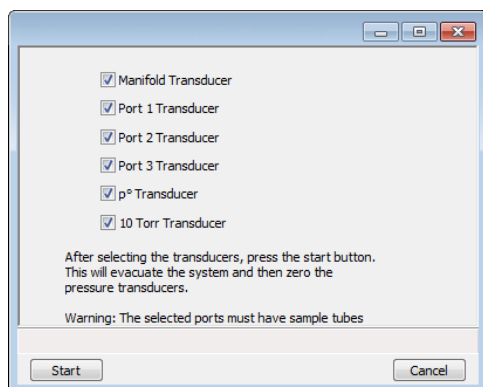
2. Verify that all 3 plugs are installed on the sample ports.



3. Open valves 1- 4, 6, 10, 11, 12 and 13 by double clicking on the valve. This will allow the analysis components to be evacuated at the same time other installation tasks are completed.



4. All four transducer readings should begin to pull down. The transducer readings should all come down to 0.00 ± 0.30 .
 - If the instrument cannot pull down this low, check the vacuum pump connections for leaks, including the oil vapor trap O-rings, and check the oil level.
 - If the transducer readings are within tolerances, wait 15 to 20 minutes to allow the manifold time to clean up under vacuum.
5. Go to **Unit [n] > Calibration > Pressure Offset** to zero the transducers. Select all transducers and click **Start**. Verify the pressure transducers have been zeroed.



5 GAS CONNECTIONS

GUIDELINES FOR CONNECTING GASES



These instructions refer to the installation of a gas line, regulator, and gas cylinder for each type of gas used. Expansion kits or other accessories may be used in the lab. If so, special consideration should be given to these configurations when installing the gas lines.



Improper handling, disposing of, or transporting potentially hazardous materials can cause serious bodily harm or damage the instrument. Always refer to the MSDS when handling hazardous materials. Safe operation and handling of the instrument, supplies, and accessories is the responsibility of the operator.

- Place gas cylinders within 6 feet (2 m) of the gas inlets of the analyzer. Place the cylinders close enough to allow for proper connection at the analyzer inlet.

Using gas line extenders on gas cylinders located in remote areas may degrade gas quality and reduce pressure. Gas lines are typically five to six feet long.

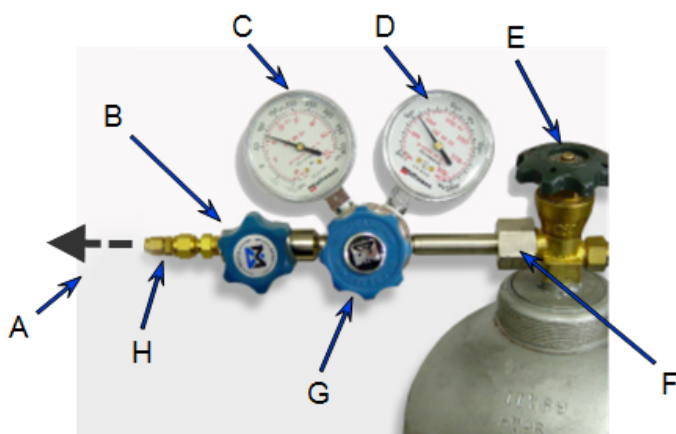
Long gas lines, such as those used with gas cylinders placed in remote areas, must be evacuated for an extended period of time to remove ambient gases. When possible, avoid placing gas cylinders in remote locations. It is always best to have gas cylinders located near the analyzer

- Use a retaining strap (or other appropriate tether) to secure the gas cylinder.
- Always use the gas lines provided with the analyzer. It is very important that proper gas lines are used with the analyzer.
 - **Do not use** polymer tubing for the gas line.
 - **Do not use** flexible gas lines. Some flexible lines may appear to be appropriate, such as those with a herringbone covering, but the line may be coated internally with a polymer.
- Carefully route the gas lines from the cylinder to the analyzer avoiding overlapping or entangling gas lines. This will help avoid confusion when maintenance is required.
- Label the gas line at the analyzer inlet for proper identification and maintenance.
- Replace gas cylinders before gas is depleted. It is best to replace a gas cylinder when the pressure reads approximately 500 psi (3500 kPa) on the high pressure gauge. Contaminants absorbed to the walls of the cylinder will desorb as the pressure decreases.
- Ensure the gas cylinder is closed before connecting to the analyzer.

CONNECT A REGULATOR AND A GAS LINE TO A GAS CYLINDER

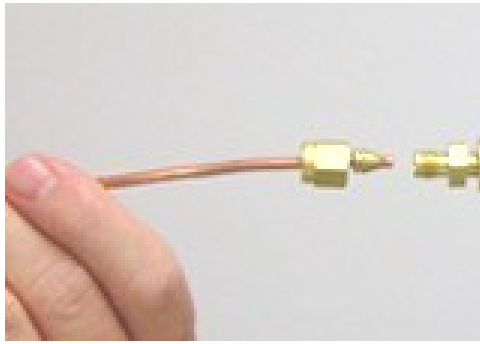


The equipment images in this topic may differ slightly from your equipment, however the instructions are the same unless otherwise noted.



- A. Gas tubing to instrument
- B. Gas regulator shut-off valve
- C. Low pressure gauge
- D. High pressure gauge
- E. Gas cylinder shut-off valve
- F. Regulator connector nut
- G. Regulator control knob
- H. Brass reducer fitting

1. Move the gas cylinder close to the analyzer.
2. Secure the cylinder in place using straps or chains connected to a wall bracket or other fixed surface, or use a cylinder stand.
3. Use an appropriate cylinder wrench to remove the protective cap from the cylinder by turning the protective cap counterclockwise.
4. Attach the gas regulator to the connector on the gas cylinder. Hand tighten the nut, then use an appropriate wrench to tighten an additional 3/4 turn.
5. Check for leaks at the high pressure side of the regulator and in the connector.
 - a. Turn the regulator control knob fully counterclockwise.
 - b. Slowly open the gas cylinder shut-off valve, then close it.
 - c. Observe the pressure on the high pressure gauge.
 - d. If pressure drops, repair the leak.
6. Connect the gas line to the regulator.
 - a. Connect the gas line to the regulator connector.



- b. Use two 7/16 in. (11 mm) wrenches to tighten the gas line connection — one to hold the fitting steady and one to tighten the connector nut.
7. Purge the air from the gas line.
 - a. Open the regulator shut-off valve.
 - b. Open the gas cylinder shut-off valve and flow gas for 10 to 30 seconds.
 - c. Close the gas cylinder shut-off valve and allow regulator pressure to go to zero.

CONNECT GAS TO ANALYZER

Regulator Pressure Settings

Analyzer Series	Gauge should indicate
3Flex	15 psig (103 kPag)
AccuPyc	25 psig (172 kPag)
ASAP	15 psig (103 kPag)
AutoChem	15-18 psig (103 - 124 kPag)
AutoPore	50-60psig (345 - 404 kPag)
Gemini	15-18 psig (103 - 124 kPag)
MIC SAS II	15-20 psig (103-138 kPag)
TriStar	15-18 psig (103 - 124 kPag)



Exceeding the maximum recommended air pressure could cause personal injury or damage the instrument.



Ensure the gas cylinder is closed before connecting the gas line to the analyzer.

1. Loosen, then remove the plug from the analysis port to be used.
2. Insert the gas line into the port and hand tighten the connector nut. Use a 7/16 in. (11 mm) wrench to tighten the nut until very snug.
3. Connect all the remaining gases.

GAS LINE LEAK CHECK

Use the `c:\.....\Service\gline[n].svt` file to check the gas lines from the instrument to the regulator when gases are connected to ports 7, 8, 9, and 14. Test one line at a time; plug all unused lines during testing.



Ensure that the gas cylinder shut-off valve is closed and the regulator valve is open and the pressure is zero.

1. To go into Service Test mode, go to **Options > Service Test Mode** and enter the service password.
2. Go to **Unit [n] > Service Test > Start**.
3. Click **Browse** and select the `gline[n].SVT` file. Click **Open**.
4. Click **Edit** and enter an operator name in the *Operator* field.
5. Click **Save all as** and enter a new file name in the *File name* text box. An example of a file name would be `gline[n]-SN.SVT` where *SN* is the serial number of the instrument. Click **Save** to create a copy of the original file with the new operator name.
6. Click **Close** to close the file saved in step 5. Click **No** when prompted to save the file.
7. Click **Browse** to locate and open file created in step 5.
8. Click **Start** to begin the test. The test will take approximately one hour. A report is generated at the completion of the test verifying that it has passed or failed. If failed, check the gas line and regulator for leaks.



If the test fails, address the problem and rerun the test.

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6 OPERATIONAL VERIFICATION

Tools required for checking instrument calibration

Tool	Part Number
Pressure Gauge	003-09622-10
Temperature Calibration Standard	512-09800-00

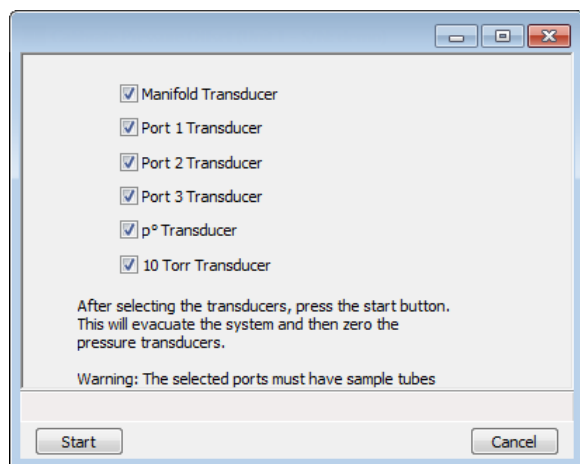
CHECK THE PRESSURE OFFSET

Unit [n] > Calibration > Zero Pressure



Only the transducers currently installed are enabled.

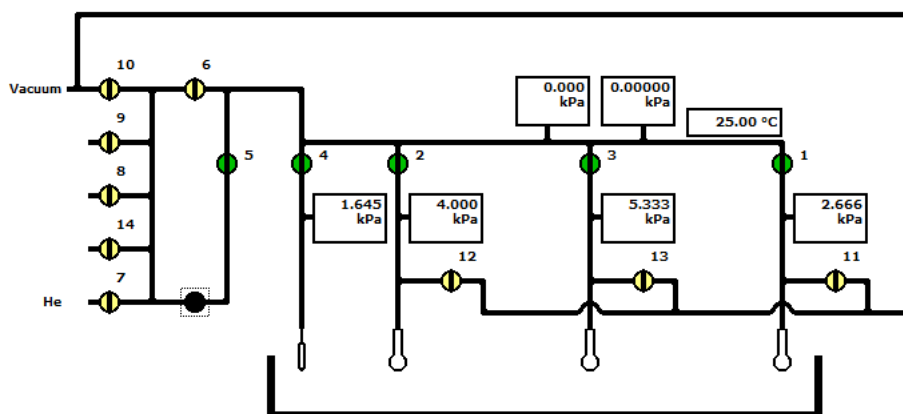
This procedure evacuates the system and zeroes the pressure transducers. This calibration should only be performed by qualified service personnel. In order to perform this procedure, sample tubes must be attached to each port.



1. Install a blank sample tube or small plug on each applicable port.
2. Ensure that all applicable transducers are selected, then click **Start**. Click **OK** when the process is complete.

CHECK TRANSDUCER PRESSURE SCALE CALIBRATION

1. Use to enable the manual control of certain system valves and elevator components on the analyzer schematic. When this option is enabled, a checkmark appears to the left of **Unit [n] > Enable Manual Control**. If the analyzer schematic is not immediately visible, go to **Unit [n] > Show Instrument Schematic**.



2. Open valves 1, 2, 3, 4, and 5. Ensure all other valves remain closed.
3. Use the servo valve to manually pressurize the system including the three sample ports and Po tube to 760 mmHg by right clicking on the servo valve, click **Set**, then select *Automatic*, and *Dose*, and enter 760 mmHg as the *Target Pressure*. Click **OK**.
4. Open the N2 gas valve. When the main manifold transducer reaches 760 mmHg, close the N2 gas valve.
5. Remove one of the port plugs. The pressure on all transducers will read atmospheric pressure.
6. Check all transducer readings against your external pressure gauge. If the readings are within 2 mmHg, do not change the transducer's calibration.

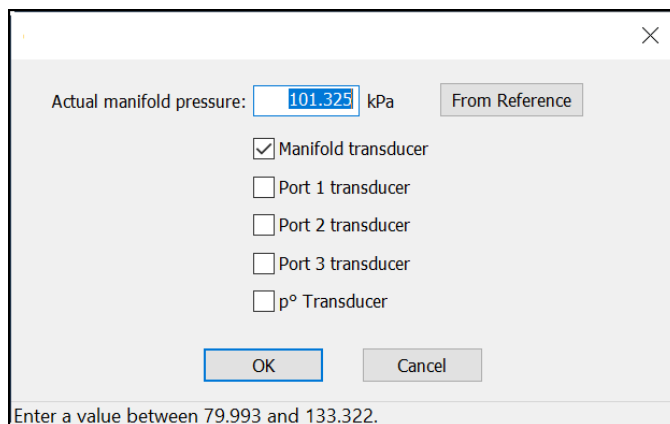
If transducer readings differ more than 2 mmHg from your external gauge, calibration may be needed.

7. To calibrate, go to **Unit > Calibration > Pressure Scale**.

8. Use a pressure gauge to determine atmospheric pressure.



9. Select all transducers.



10. Enter the pressure from the pressure gauge in the *Actual manifold pressure* field.
11. Click **OK** to close the window.
12. A confirmation message is displayed. Click **OK**.



The 10 mmHg transducers should not be calibrated at this time.

TEMPERATURE CALIBRATION



The instrument must be at operating temperature before checking the calibration.

1. Remove the four retaining screws from the top of the analyzer.



Remove 4 retaining screws from top cover

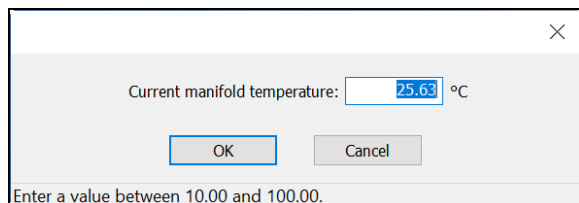
2. Remove the top panel from the analyzer.
3. Locate the dosing manifold and insert the temperature probe into the hole next to the RTD.



Temperature probe

4. Replace the top panel but do not replace the screws.
5. Wait until the temperature stabilizes (approximately 1 to 2 minutes).

6. Remove the cover.
7. Go to **Unit [n] > Calibration > Temperature**.



8. Enter the temperature obtained using the calibration device. Click **OK**.
9. Remove the temperature probe from the analyzer.
10. Reattach the top panel using the four screws removed in step 1. Insert each of the screws and turn slightly. When all four screws are in place, tighten each with a screwdriver.

TRANSUCER VERIFICATION

To verify all transducers are within specification, use the following table to check and record scale of transducers.

1. Enter all atmospheric transducer readings in row 1.
2. Reinstall port plug.
3. Ensure valves 1, 2, 3, and 4 are open. Open valves 5 and 8. Right click the servo valve, click *Set*, select *Automatic, Evacuate*, and enter *500* in the *Target Pressure* field. Click **OK**.
4. All transducer readings should go to 500 mmHg. Close valve 5. Record all readings.
5. Right on the servo valve, click *Set*, and enter *300* in the *Target Pressure* field.
6. Open valve 5. Record all readings. Do the same for all targeted pressures readings.

Transducer Readings

External Gauge	Targeted Pressure Readings	Port 1	Port 2	Port 3	Main Manifold	P ₀
ATM Reading		ATM Reading	ATM Reading	ATM Reading	ATM Reading	ATM Reading
Tolerance ± .5 mmHg	500					
Tolerance ± .5 mmHg	300					
Tolerance ± .5 mmHg	100					
Tolerance ± .5 mmHg	20					

Transducer Readings (continued)

External Gauge	Targeted Pressure Readings	Port 1	Port 2	Port 3	Main Manifold	P₀
Tolerance ± .3 mmHg	9					
Tolerance ± .3 mmHg	5					
Tolerance ± .3 mmHg	2					
Tolerance ± .2 mmHg	.08					

CLEAN AND LABEL SAMPLE TUBES



The equipment images in this topic may differ slightly from your equipment, however the instructions are the same unless otherwise noted.

Sample tubes and filler rods must be clean and dry before samples are added and weighed. The following table indicates which materials are needed for cleaning. The procedures following the materials list are recommended.

Supplied by Micromeritics	Supplied by User
<ul style="list-style-type: none"> ■ Filler rod ■ Funnel ■ Sample data worksheet ■ Sample tube ■ Sample tube brush ■ Sample tube rack ■ Sample weighing support ■ Stopper for sample tube 	<ul style="list-style-type: none"> ■ Acetone or isopropyl alcohol ■ Analytical balance ■ Detergent (such as Alconox) ■ Drying oven ■ Forceps ■ Insulated gloves ■ Pipe cleaners ■ Rubber gloves or clean, lint-free cloth ■ Safety glasses ■ Ultrasonic cleaning unit ■ Waste container

1. Preheat drying oven to 110 °C.
2. Verify that the ultrasonic cleaning unit is clean.
3. Use 5 grams of Alconox (or other suitable detergent) per 500 mL of warm water and fill the ultrasonic unit with enough water to cover the sample tubes and filler rods (if used). If too much detergent is used, it may be difficult to rinse from the sample tubes. Ensure the detergent is dissolved before placing the sample tubes and filler rods into the water.
4. Fill the sample tubes with warm water and place them in the ultrasonic cleaning unit, then place the filler rods in the unit. Turn on the ultrasonic cleaning unit for approximately 15 minutes.



5. Use rubber gloves to ensure no oils or residue are transferred to the clean tubes and filler rods, then remove the sample tubes and filler rods from the unit.
6. Clean the interior of the sample tubes with the brush supplied with the analyzer.
7. Rinse the sample tubes and filler rods thoroughly with hot water. Rinse again with isopropyl alcohol or acetone. If isopropyl alcohol or acetone is not available, deionized water may be used.



8. Stand the sample tubes on the sample tube rack and place the filler rods in a basket or in the rack. Bake in a vacuum oven for two hours at 110 °C.



Samples tubes can also be cleaned with high purity acetone or isopropyl alcohol and dried for about 10 minutes under heat. If using this method, continue with step 10.

9. Remove the sample tubes and filler rods from the oven and allow to cool.



Do not insert the filler rods at this time. Filler rods are inserted before the sample tube is installed on the analysis port.

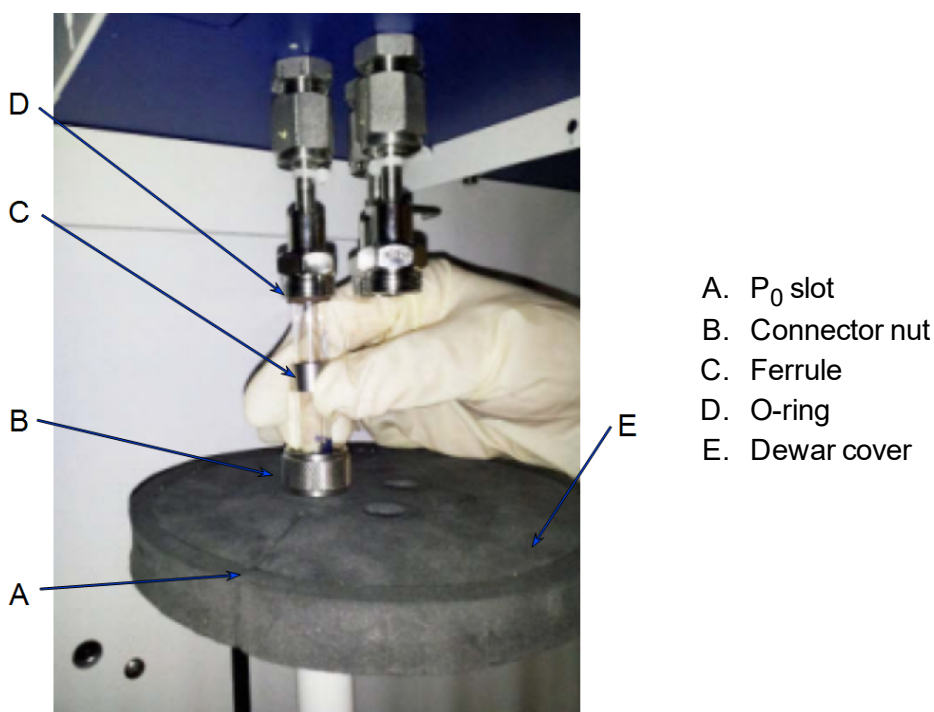
10. Blow out the sample tubes with oil-free compressed air.
11. Rinse the sample tube closure with isopropyl alcohol, then wipe the sample tube closure dry with a clean, lint-free cloth.
12. Label the sample tube and stopper for identification.
13. Replace the rubber stopper, Check Seal, or TranSeal.

PERFORM AN EMPTY TUBE ANALYSIS



The equipment shown in this section may differ slightly from your equipment, however, the process remains the same.

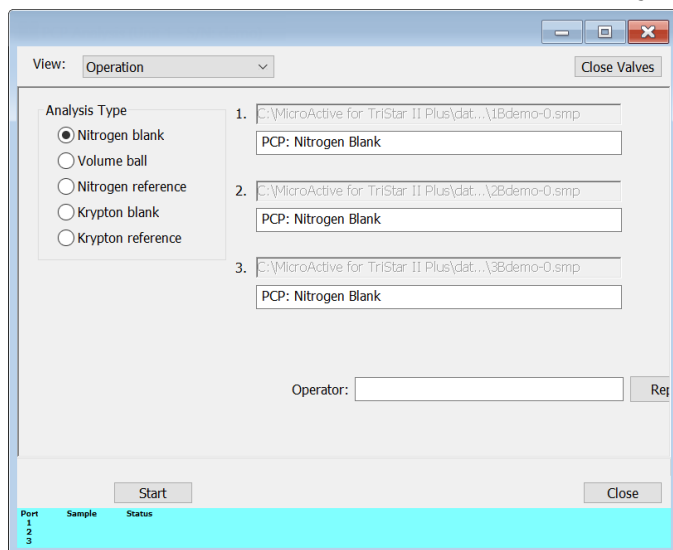
1. If Service Test mode is not enabled, go to **Options > Service Test Mode** and enter the required password.
2. Install blank tubes with filler rods and isothermal jackets into each of the sample ports. Ensure the O-rings are in good condition. Ensure the Dewar cover is within 3/4 in. (19 mm) below the sample port nut.



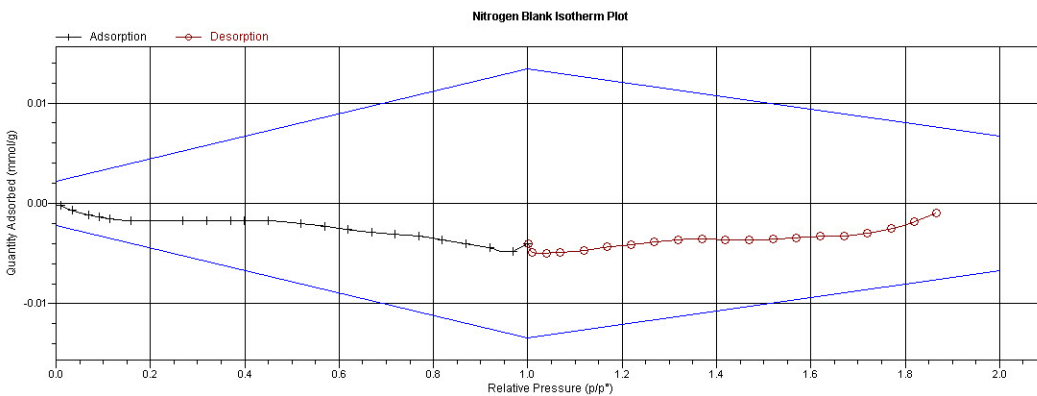
3. Fill the Dewar with LN₂ and check the level using the dipstick.



4. Place the Dewar on the elevator and close the safety shield.
5. Go to **Unit [n] > Service Test > PCP Analysis**.



6. Select **Nitrogen Blank**.
7. Click **Start** to begin the analysis.
8. When the analysis completes, go to **Reports > Start Report** to view the report. Locate the report file in the `c:\.....Data\PCP\` directory. An example of the file name is `1B217-0.SMP` where the first digit is the port number (1, 2, or 3), the letter B (for blank), the unit serial number (217), and -0 (1, 2, 3, etc.) to indicate the number of the run.
9. Select the report and click **Report**.
10. On the **Report Settings** window, select **Preview** as the destination for the report and click **OK**.
11. Click the **Report** icon 1, 2, or 3 to view reports. Scroll the tabs across the top of the report to locate the **Nitrogen Blank Isotherm Plot**. The run and upper and lower limits will display.



PERFORM A REFERENCE MATERIAL ANALYSIS

A reference material analysis is used to verify the analyzer is operating properly and producing optimum results. These methods provide specifications for critical report quantities and reporting of whether quantities are in or out of specification.

When running a reference material analysis, use the appropriate reference material provided in the accessories kit to perform this analysis. The results should match those shown on the label of the reference material bottle, within the tolerance level.

DETERMINE THE SAMPLE MASS FOR PHYSISORPTION

■ [*Sample Data Worksheet for Gas Adsorption on page A - 1*](#)

Clean, dry sample tubes are essential for accurate results. How much sample to use can be determined best by experiment. In general, a sample providing 40 to 120 square meters of total surface area is recommended for nitrogen analysis. Less than 40 square meters may cause unreliable results. More than 120 square meters will extend analysis time.

Smaller quantities are required for samples having high surface areas. These samples require careful weighing after degassing because a small error may represent a considerable percent of total weight. Proper weighing techniques are most important in this case. Use no less than 100 mg to reduce the effect of weighing errors.

Care should be taken when loading powders — the accessory funnel is useful for this purpose. Large granules or chunks may be loaded with forceps.

Analysis results are expressed in units of surface area per gram of sample; therefore, it is important to know the true sample mass.

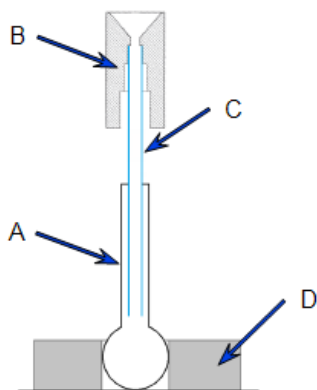
Follow the instructions on the *Sample Data Worksheet* and complete all fields to find the true sample mass.

1. Record the sample tube identification on the *Sample Data Worksheet*.
2. Place the sample weighing support on the balance. Tare the balance and allow it to stabilize at zero (0).
3. Place the empty sample tube set (empty sample tube and stopper) on the sample weighing support and place it on the balance.
4. Record the stabilized mass on the *Sample Data Worksheet*. Remove the sample tube set from the balance.



Do not touch the sample with bare hands while performing the following steps. Doing so could affect the accuracy of results.

5. Place a sample container on the balance. Tare the balance and allow it to stabilize to zero.
6. Slowly pour the specified amount of sample into the sample container.
7. Remove either the rubber stopper, Seal Frit, Check Seal, or TranSeal from the sample tube.
8. Use the sample tube funnel (provided in the accessories kit) and pour the sample from the weighing container into the sample tube.



- A. Sample tube
- B. Funnel
- C. Straw
- D. Weighing support

TIP: Use a drinking straw tube (approx. 6mm [1/4in.] diameter) that fits inside the sample tube to keep the inside wall of the sample tube clean.

Balance

9. Replace either the rubber stopper, Seal Frit, Check Seal, or TranSeal.
10. On the *Sample Data Worksheet*, record the following:
 - a. Mass of the sample tube set with the sample.
 - b. Subtract the *Mass of empty sample tube set* from the *Mass of sample tube set plus sample*.

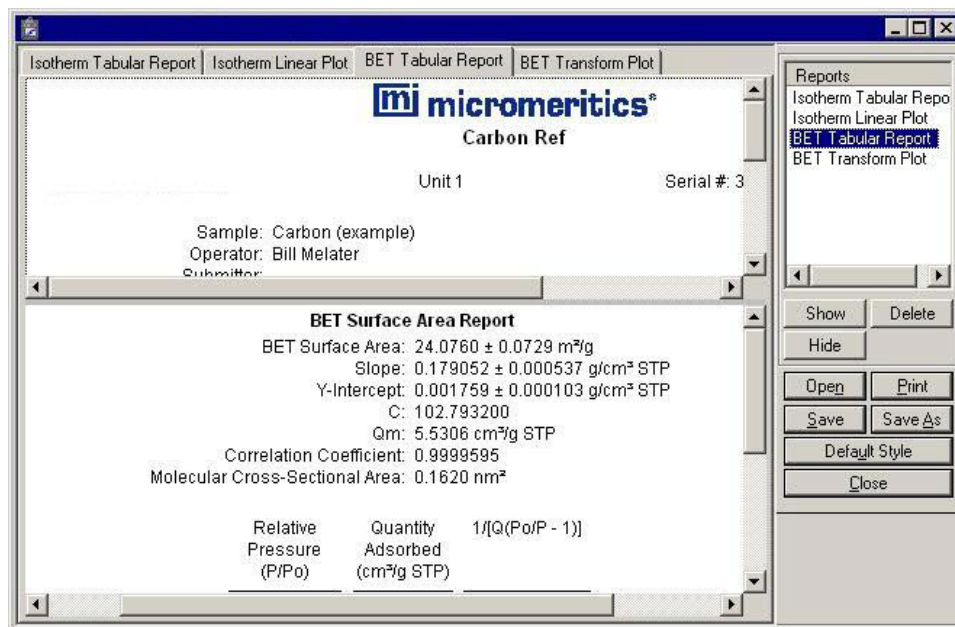
DEGAS SAMPLES

After the sample has been weighed, use a degassing unit to remove any contaminants which may have adsorbed to the surface or pores of the sample. Appropriate degassing units are available from Micromeritics. Parts and accessories can be found online at www.Micromeritics.com.

If using the Smart VacPrep degasser, use the *Smart VacPrep* tab in the application to set degas parameters. Log in to your [customer portal](#) to access the Smart VacPrep Operator Manual.

Perform the Reference Analysis after Degassing

1. After removing the sample tubes from the degassing unit, reweigh the samples.
2. Place the filler rods into the sample tubes. Place the isothermal jackets on the sample tubes and install the tubes on the sample ports.
3. Go to **Unit [n] > Service Test > PCP Analysis**.
4. Select the correct sample for the instrument:
 - **Nitrogen** - if the instrument is a nitrogen unit.
 - **Krypton** - if running an alumina sample for a krypton analysis.
5. Click **Start** to begin the analysis.
6. When the analysis completes, go to **Reports > Start Report** to view the report. Locate the report file in the `c:\.....Data\PCP\` directory. An example of the file name is `1N217-0.SMP` where the first digit is the port number (1, 2, or 3), the letter N (for Nitrogen), the unit serial number (217), and -0 (1, 2, 3, etc.) to indicate the number of the run.
7. Select the report and click **Report**.
8. On the *Report Settings* window, select *Preview* as the destination for the report and click **OK**.
9. When the analysis is complete, compare the BET Surface Area shown in the report with the BET Surface Area shown on the reference material bottle.



- If the results are within tolerance, the instrument is operating properly.
- If the results are not within tolerance, refer to the following table for possible causes and actions. After performing the action, perform the reference analysis again.

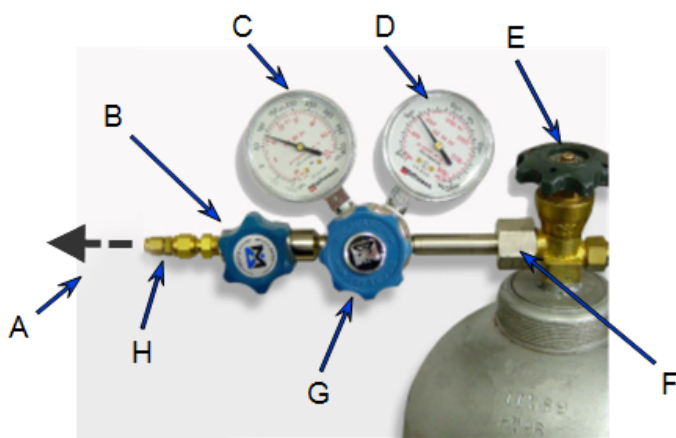
Cause	Action
The sample was not degassed properly	Degas the sample again.
The gas lines are not clean.	Clean and verify the gas lines. Refer to Cleaning and Verifying Gas Lines, page 55.
The measured free space is too high. This indicates the helium may not be pure enough.	Ensure the helium is 99.999% pure. See Clean and Verify the Gas Line on the next page .

CLEAN AND VERIFY THE GAS LINE

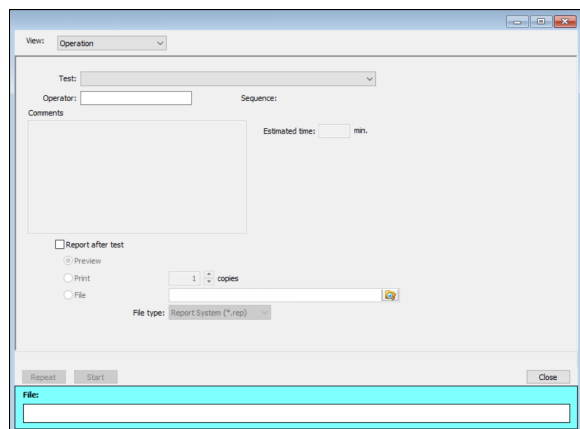
Unit [n] > Diagnostics > Start Diagnostic Test

Always clean the gas lines and verify there are no leaks at the connections after a gas cylinder is connected. This test examines the gas line from the analyzer to the gas cylinder, then from the analyzer to the regulator shut-off valve. A report is generated at the completion of the test to verify that it has passed or failed. Causes and corrective action for a failure are provided.

Before beginning, confirm that the state for valves and the low pressure gauge are as follows:

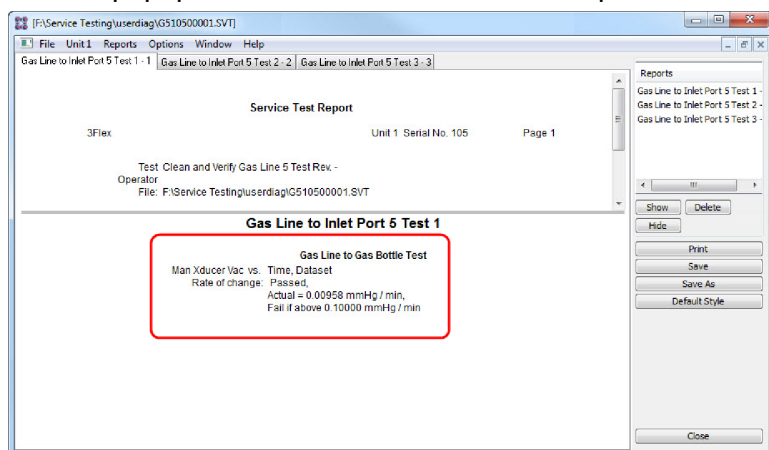


- A. Gas tubing to instrument
- B. Gas regulator shut-off valve - OPEN
- C. Low pressure gauge - 14-15 psig
- D. High pressure gauge
- E. Gas cylinder shut-off valve - CLOSED
- F. Regulator connector nut
- G. Regulator control knob - OPEN
- H. Brass reducer fitting



1. Select *Clean and Verify Analysis Gas Line [n] Test Rev [n]* in the *Test* field. The length of time a test will run is also indicated on the window. The *Sequence* field indicates the file created as a result of this test.
2. In the *Operator* field, enter either the name or initials of the operator performing this test.
3. Resize the window (if necessary) to display the *Report after test* option, then select *Preview* as the destination. Click **Start**.

4. From the **View** drop-down list, select either *Operation*, *Instrument Log*, or *Instrument Schematic*.
5. The following series of prompts display on the window requiring operator response:
 - a. This is the gas line clean and leak check test for inlet port [n]. Inlet ports being tested must be connected to a gas cylinder according to the user manual. A Nupro isolation valve should be installed on the line between the analyzer and the regulator.
 - b. The test starts with a manual leak check (requires Snoop or equivalent, and IPA), then the line and regulator are evacuated for 20 minutes for cleaning. Next, the leak rate of the gas line is determined.
 - c. With the regulator set to 15 psig, open the cylinder, regulator shut-off valve, and isolation valve. Check each joint for bubbles with Snoop or equivalent. If a joint is leaking, attempt tightening (without over-tightening) or replace ferrules.
 - d. When there are no leaking joints, use IPA to remove water from each joint, then wipe dry.
 - e. Close the gas cylinder valve. Leave the regulator shut-off and isolation valves open.
 - f. User will be needed in 30 minutes to close the isolation valve. Click **OK** to begin automated testing.
6. A popup window indicates the test is complete. Click **OK**. The reports display.



7. Click each tab across the top of the window and look for a reading of *Passed*. A *Passed* reading indicates all valves are in a proper state for operation. If any test shows a *Failed* reading, refer to the following table to help determine the location of the gas leak.

Tab	Test	If <i>Failed</i> status, then...
Gas Line to Inlet Port [n] Test 1	Gas Line to Gas Bottle Test	This test will show a reading of <i>Failed</i> if any of the other tabs has a <i>Failed</i> reading. Correct the failed connection and rerun the test.
Gas Line to Inlet Port [n] Test 2	Gas Line to Isolation Valve Test	Check for a leak between the gas line and the isolation valve. Correct the problem and rerun the test.
Gas Line to Inlet Port [n] Test 3	Isolation Valve To Bottle Leak Rate	Check for a leak between the isolation valve and the gas cylinder. Correct the problem and rerun the test.

If the *Fail if above* field indicates *Failed*, one or more valves is not in the proper position. Set the valves, then ensure the appropriate pressure is displayed on the low pressure gauge.

If re-running the test, close the gas cylinder valve before starting the test.

7 INSTALLATION CHECKLISTS

Use these codes to complete the tables in this section, then initial and date each section. If the table has an *Initial / Date* column, the person completing the procedure should enter their initials and the date.

P	Pass. Indicates the procedure has been successfully completed without error.
F	Fail. Indicates the procedure has been unsuccessful and prevents the analyzer from being installed for use.
Y	Yes. Indicates the procedure has been performed.
N	No. Indicates the procedure has not been performed.
N/A	Not Applicable. Indicates the procedure does not apply to your system.

Prepare for Installation

Procedure	Evaluation Code	Initial / Date
Review the <i>Pre-installation Instructions and Checklist</i> document and ensure that the laboratory is prepared for installation.	P F N/A	
Ensure that the required personnel are available.	P F N/A	
Ensure that all equipment has been unpacked and verified using the packing list.	P F N/A	
Ensure that all equipment has been checked for shipping damage.	P F N/A	
<ul style="list-style-type: none"> ■ If damage occurred during shipment, has it been reported to the carrier? 	P F N/A	
Analyzer is located in a suitable environment	P F N/A	
Ensure computer is ready for installation.	P F N/A	
Are the gas supply cylinders within 6 ft (2 m) of the analyzer inlet valves for standard installation?	P F N/A	
Line voltage has been verified to be within tolerances and changed if required.	P F N/A	

Computer Setup

Procedure	Evaluation Code	Initial / Date
The analyzer has been connected to a power source?	P F N/A	
Configure the Ethernet port.	P F N/A	
Connect computer to analyzer.	P F N/A	
Connect the Ethernet switch, if applicable. ■ If one Ethernet based analyzer was purchased, connect the Ethernet cable to the analyzer and the computer, or ■ If more than one Ethernet based analyzer was purchased, connect an Ethernet cable from the computer to the Ethernet switch. Then connect the Ethernet based analyzers to the Ethernet switch.	P F N/A	
Install application software.	P F N/A	

Computer Information

Device	Description
Computer (make / model / SN)	
Computer Operating System	
Printer (make / model / SN)	
Was the computer supplied by Micromeritics?	Y N

Computer Installed By:

Name: _____

Date: _____

Comments: _____

Connect Cables

Procedure	Evaluation Code	Initial / Date
Connect the power cord to the analyzer and power source.	P F N/A	
If one Ethernet based analyzer was purchased, connect the Ethernet cable to the analyzer and the computer, or if more than one Ethernet based analyzer was purchased, connect an Ethernet cable from the computer to the Ethernet switch. Then connect the Ethernet based analyzers to the Ethernet switch.	P F N/A	

Degasser Installation

Procedure	Evaluation Code	Initial / Date
Optional Smart VacPrep installed?	P F N/A	

Install the Software

Standard Installations Only	Evaluation Code	Initial / Date
Install the Micromeritics software.	P F N/A	
Start the application.	P F N/A	

Install the Software

Confirm Environments Only	Evaluation Code	Initial / Date
Required personnel are available (including Windows Administrator)	P F N/A	
Install the Micromeritics software.	P F N/A	
Network hardware is local.	P F N/A	
Network prepared by network administrator, if applicable.	P F N/A	
Personnel with all network access rights is available.	P F N/A	
All Developer and Analysis users added to Windows user groups.	P F N/A	
Password configuration parameters entered. Expire: _____ Warn: _____ Remember: _____ Disable: _____ Must match Windows user: _____	P F N/A	
Micromeritics application started.	P F N/A	
Logins tested for Administrator, Developer, and Analysis users.	P F N/A	

Install the Vacuum Pump

Procedure	Evaluation Code	Initial / Date
Install the components of the vacuum pump.	P F N/A	
Check the pump voltage setting.	P F N/A	
Connect the vacuum pump to analyzer.	P F N/A	
Power ON the vacuum pump switch (if applicable).	P F N/A	
Power ON the analyzer.	P F N/A	

Connect Gases

Procedure	Evaluation Code	Initial / Date
Verify that the gas supply location is standard - meaning that the gas supply cylinders are located within 6 ft. (2 m) of the gas port.	P F N/A	
Regulators attached to gas cylinders?	P F N/A	
Nitrogen connected to gas cylinder?	P F N/A	
Gas lines attached to the instrument?	P F N/A	
Gas lines tested for leaks?	P F N/A	
Gas specified in application?	P F N/A	

Reference Material Analysis

Procedure	Evaluation Code			Initial / Date
Required reference material samples degassed?	P	F	N/A	

Reference Material Documentation

Reference Material: _____			
Lot Number	Expected Surface Area	Measured Surface Area	OK?
			Y N
The actual results must match the expected results, within the specified tolerance range, in order for this procedure to pass.			
Sample file name: (use the SN and your initials) _____			

Reference Material Documentation

Reference Material: _____			
Lot Number	Expected Surface Area	Measured Surface Area	OK?
			Y N
The actual results must match the expected results, within the specified tolerance range, in order for this procedure to pass.			
Sample file name: (use the SN and your initials) _____			

Reference Material Documentation

Reference Material: _____			
Lot Number	Expected Surface Area	Measured Surface Area	OK?
			Y N
The actual results must match the expected results, within the specified tolerance range, in order for this procedure to pass.			
Sample file name: (use the SN and your initials) _____			

EXCEPTIONS

Explain the procedures that were categorized as **Fail** or **No**.

Procedure	Comment	Initial / Date

SIGNATURES**INSTALLER**

Name: _____ Date: _____
Position: _____
Company: _____
Signed: _____

Service Request Order (or FSR#) : _____

CUSTOMER REPRESENTATIVE

Name: _____ Date: _____
Position: _____
Company: _____
Signed: _____

FINAL DOCUMENTATION

In order to provide consistent analyzer service, Micromeritics retains records of installation, operational verification, and calibration data in its Service Support Center in Norcross, GA, USA. After completing the installation process, representatives of Micromeritics who install analyzers are required to send the following documents to Micromeritics for inclusion in the customer's analyzer history:

- Completed Service Request Order or Field Service Report
- Completed and signed Installation Checklist
- Blank Tube Analysis Sample Files
- Reference Material Analysis Sample Files

RETURN THE COMPLETED CHECKLIST AND FORMS TO:

Micromeritics Instrument Corporation
ATTN: Service Operations Manager
4356 Communications Drive
Norcross, GA / USA / 30093-2901

Email: Service.Helpdesk@Micromeritics.com
Fax: 1-770-662-3604

Sample tube identification:

Degas Information	
Degas apparatus	
Temperature (°C)	
Time (hours)	
Actual time started	
Actual time finished	

Degas Notes:



EU DECLARATION OF CONFORMITY

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

Micromeritics Instrument Corporation
4356 Communications Drive
Norcross, GA 30093, USA

Hereby declares that the product:

TriStar II Plus Gas Adsorption Analyzer
Model 3030

is in conformity with the following **EU harmonization legislation**:

2014/35/EU - LVD Directive
2014/30/EU - EMC Directive
2011/65/EU - RoHS Directive

and that the equipment is in conformity with the following harmonized and other appropriate standards;

2014/35/EU (LVD)

EN 61010-1:2010 + A1:2019 - *Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements.*

2014/30/EU (EMC)

IEC 61326-1:2012 - *Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements*

IEC 61000-3-2:2014 - *Part 3-2: Limits — Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)*

IEC 61000-3-3:2013 - *Part 3-3: Limits — Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection*

2011/65/EU (RoHS)

EN 50581:2012 - *Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances*

Name: John McCaffrey, Ph.D.

Title: Vice President, R & D

Signature: 

Date of issue: 09/22/2020

Location: Norcross, GA USA