

AccuPyc[®] III

GAS DISPLACEMENT PYCNOMETER



PRE-INSTALLATION INSTRUCTIONS AND CHECKLIST

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Nov 2023
(Rev -)

TRADEMARKS

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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, 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 and 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.

CONTACT US

Micromeritics Instrument Corporation

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Norcross, GA 30093-2901 USA
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www.Micromeritics.com

Instrument Service or Repair

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International: Contact your local distributor or call 1-770-662-3636
Service.Helpdesk@Micromeritics.com

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Support@Micromeritics.com

ABOUT THIS MANUAL

The following symbols or icons 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.

GENERAL SAFETY



Do not modify this instrument without the authorization of 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 operator 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 AccuPyc 1350 weighs approximately 11.5 kg (25.3 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 AccuPyc III sound level is <65dBA from the operator's normal position, and approximately 75dBA at 20 cm from the back of the instrument. 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.
- Improper handling, disposing of, or transporting potentially hazardous materials can cause serious bodily harm or damage to the instrument. Always refer to the SDS when handling hazardous materials. Safe operation and handling of the instrument, supplies, and accessories are the responsibility of the operator.



If you have an ICD or pacemaker, avoid close or prolonged contact with magnets or their magnetic fields. Keep magnets at least six inches from where your device is implanted.

INTENDED USE

The **AccuPyc** Series Pycnometers are fast, fully automatic pycnometers that provide high-speed, high-precision volume measurements and true density calculations on a wide variety of powders, solids, and slurries. After analyses are started with a few touches, data are collected, calculations are performed, and results displayed. A minimal amount of operator attention is required.



The instrument is intended to be operated by trained personnel familiar with the proper operation of the equipment recommended by the manufacturer and as well as relevant hazards involved and prevention methods. Other than what is described in this manual, all use 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 customer's responsibility 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)
Cover	o	o	o	o	o	o
Power Supplies	o	o	o	o	o	o
Printed Circuit Boards	o	o	o	o	o	o
Cables, Connectors & Transducers	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 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.



SYMBOLS THAT APPEAR ON THIS INSTRUMENT



When this symbol is displayed, refer to this manual for additional information.

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AccuPyc III UK Declaration of Conformity _____ **DoC - 1**

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1 *PRE-INSTALLATION DOCUMENT OVERVIEW*



If a Micromeritics Service Technician performs this installation, additional charges apply. Please see [Contact Us on page iii](#) for information on how to contact Micromeritics.

MICROMERITICS INSTALLED INSTRUMENTS ONLY

APPLICATION RELATED ISSUES

To ensure a thorough installation, it will be helpful for Micromeritics to know which types of samples will be tested. If known, list them in [*Application Related Issues Checklist on page 3 - 4.*](#)

Please advise Micromeritics if samples require any pretreatment. If required, do you have the proper equipment to pretreat your samples? Micromeritics offers application assistance through our materials analysis laboratory (Micromeritics Particle Testing Authority).

HAZARDS AND PRECAUTIONS

Inform Micromeritics of any on-site conditions that may present hazards to Micromeritics employees or equipment. Advise Micromeritics of any precautions that need to be taken.

SAFETY MEASURES

Inform Micromeritics of any safety equipment, requirements, or procedures necessary for Micromeritics employees to enter and install the system at your facility.

PERSONNEL SECURITY CLEARANCE

If security clearances, insurance certificates, or any other special arrangements are required for Micromeritics employees to enter your facility, see [*Personnel Security Clearance Checklist on page 3 - 4*](#) to explain. Inform Micromeritics how much advance notice you require to obtain clearance.

PROJECTED INSTALLATION DATE

Read this entire document carefully. Complete all checklists in this document. Sign and return all checklists and the [*Dates and Signatures on the facing page*](#) to Micromeritics. Micromeritics will contact you to confirm an installation date.

DATES AND SIGNATURES



All checklists and this completed form should be returned only if Micromeritics will be performing this installation.

PROJECTED INSTALLATION DATE

This is not a commitment for a specific installation date. After reading the site preparation requirements in this document, enter a date your site will be prepared and a preferred date for installation. After returning the checklist and signed form to Micromeritics, your Micromeritics representative will contact you to confirm an installation date.

When would installation be most convenient? Date: _____/_____/_____

COMMITMENT STATEMENT AND SIGNATURE FORM

I have read this document and understand my responsibilities regarding preparations for the installation of our analysis system. I believe this site is ready for the system to be installed.

Signature: _____ Date: _____
Name (Printed): _____
Title (Printed): _____
Company: _____
City / State / Zip: _____
Phone Number: _____ Fax Number: _____
E-mail: _____
Analyzer: _____ Model: _____ Serial No.: _____

Is the Customer Representative also the End User? **Yes** _____ **No** _____

RETURN THE COMPLETED CHECKLIST AND FORMS TO:

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

Email: Service.Helpdesk@Micromeritics.com

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2 PRE-INSTALLATION INSTRUCTIONS

UNPACKING AND INSPECTION

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.

SHIPPING DAMAGE

If equipment is damaged or lost in transit, you are required to make note of the damage or loss on the freight bill. The freight carrier, not Micromeritics, is responsible for all damage or loss occurring during shipment. If damage or loss of equipment is discovered during shipment, report the condition to the carrier immediately. Insurance claims **must** be made with the freight carrier, **not** Micromeritics.

- Keep all software, manuals, and accessories with the equipment.
- Report any shipping damage immediately to the carrier and follow their directions.
- Report missing or wrong parts to Micromeritics, in addition to any shipping damage, only after filing a claim with the carrier.
- Micromeritics will NOT file a claim for shipping damage.
- Do not discard shipping boxes and containers until installation is complete. If space is available, it is recommended that shipping containers be saved for future use in the event of return to factory for repair.

ANALYZER SPACE

An unobstructed lab work space that will accommodate the following specifications is needed:



SPACE REQUIRED FOR INSTALLATION

Physical

Height	20.5 cm (8.1 in.)
Width	26.5 cm (10.4 in.)
Depth	43.0 cm (16.9 in.)
Weight	11.5 kg (25.3 lbs.)

INSTALLATION CONFIGURATION

Standard installation requires the use of 1/8 in. copper or stainless steel gas supply lines, located in the instrument accessories kit. A nonstandard installation will be created if another gas supply line is used or if the gas cylinders cannot be placed within 6 ft (2 m) of the analyzer. There may be additional costs associated with a nonstandard installation. Please contact the Micromeritics Service Department at 1-770-662-3636 to discuss a nonstandard installation.

ENVIRONMENTAL FACTORS

POWER

The AccuPyc III uses a 24 V, 11.7 amp power supply with an input range of 100-240 VAC ($\pm 10\%$), 280 VA, 50-60 Hz. Noise-free power of the correct voltage and frequency, with a safety earth ground, should be available through a standard wall receptacle. There should also be sufficient outlets and easy access to those outlets for all devices.



The external power adapter required for the AccuPyc III is Micromeritics' part number 003-40001-02. Use of any other power adapter could damage equipment and/or cause harm to the operator. The AccuPyc III is intended to be powered from the output of the approved power adapter rated Class I, manufactured by Mean Well, P/N GST280A24-C6P. Micromeritics supplies a suitably rated approved power supply cord appropriate for the applicable country with the power adapter.



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.



This instrument does not have a power switch and must be disconnected from the wall outlet when powering off; therefore it is important to position the instrument where the wall outlet is easily accessible.

TEMPERATURE AND HUMIDITY

Temperature and humidity must be controlled to within:

Temperature: Stable between 10 to 35 °C (50 to 96 °F). Temperature change up to 2 °C per hour.

Humidity: 10 to 80% relative (non-condensing) for laboratory temperature from 10 to 25 °C, maximum RH decreasing linearly to 50% at 35 °C.

Do Not:

- Allow room temperature or humidity to exceed limits.
- Install the analyzer where it is exposed to direct sunlight.
- Locate the analyzer near air conditioning or heating vents.

VENTILATION



Adequate ventilation is required to ensure effective temperature control and system longevity. Ensure that the underside and back of the instrument are free of obstruction and receive sufficient air flow.



The air intake may gather dust and impede performance. The intake filter should be inspected weekly and cleaned with a duster or compressed air, if necessary. If extremely dirty, wash and dry overnight, especially if in a dirty environment.

GAS SUPPLY

GAS CYLINDERS AND GAS SUPPLY LINES



Gas lines not supplied by Micromeritics will not be installed by Micromeritics Service Personnel.

- **Do not** use gas cylinders with less than 500 psig (3549 kPag) pressure.
- **Do not** use any other gas lines to connect the gas supply to the analyzer except those supplied in the accessories kit.
- **Do not** use gas purifiers; they can cause operational problems. Oxygen traps are preferred.

GAS SUPPLY HARDWARE

Micromeritics recommends the gas regulators to be used with the analyzer be purchased from Micromeritics. The regulators Micromeritics provides have been carefully evaluated and tested to provide superior performance.



If purchased from a source other than Micromeritics, please keep in mind that many commercially available gas regulators lack key features which are required for gas adsorption measurements. These vital criteria must be met:

- **Cleanliness.** Clean regulators designed specifically for high-vacuum service are required. Other regulators often contain elastomeric material or oils which can contaminate the gas.
- **High stability.** Excess pressure at the gas inlet ports to the analyzer can interfere with accurate gas dosing and flow rates. The combined change in the outlet pressure from the gas regulator, as the gas cylinder pressure decreases or as the flow rate stops, should not change more than 5 psig (34.4 kPag) from the selected setting. When the analyzer is idle for an extended period of time, such as 8 to 10 hours, this same stability of gas delivery pressures should be achieved.
- **Suitable sub-assemblies.** The regulator must have a shutoff or outlet isolation valve compatible with 1/8 in. or 1/4 in. Swagelok compression fittings.



To purchase regulators from Micromeritics, contact your local Micromeritics Sales Representative.

REGULATOR EXPANSION KITS

It is sometimes beneficial to attach more than one analyzer, and/or accessory device, or different inlet ports to a single gas supply. Any time this is done, it is critically important that there be a means of isolating, or shutting-off, each device attached to the gas supply regulator. Micromeritics recommends the use of a vacuum rated shutoff/isolation valve for this purpose.

This shutoff/isolation valve is required in order to prevent problems when changing gas cylinders or servicing any of the devices attached to the gas supply.

If the need to attach more than one inlet or one analyzer and/or accessory device is anticipated, one or more of the following regulator expansion kits must be acquired:

Regulator Expansion Kits

Part Number	Description
004-33601-00	Regulator Expansion Kit (2 outlet, 1000 psi maximum). This kit contains one T fitting, two vacuum rated shutoff valves, and other necessary hardware. This expansion kit allows gas to be provided to two inlets.
004-33601-01	Regulator Expansion Kit (3 outlet, 1000 psi maximum). This kit contains one cross fitting, three vacuum rated shutoff valves, and other necessary hardware. This expansion kit allows gas to be provided to three inlets.

LABORATORY EQUIPMENT AND SUPPLIES

ANALYSIS GASES

Helium or nitrogen (99.995%) is recommended. Other inert, dry gases can also be used for different applications.

ANALYSIS EQUIPMENT AND SUPPLIES

To clean the equipment and verification standards, isopropyl alcohol is recommended.

3 PRE-INSTALLATION CHECKLISTS

For each question, circle **Y** if the condition applies to your laboratory or **N** if it does not. When this *Pre-installation Checklist* has been completed, see [Dates and Signatures on page 1 - 3](#). Sign and date the form, then send it along with all completed checklists to Micromeritics.

UNPACKING AND INSPECTION CHECKLIST

Unpacking and Inspection			Initial / Date
Have the shipping cartons been unpacked and their contents inspected?	Y	N	
Was there any shipping damage?	Y	N	
<ul style="list-style-type: none"> ▪ If Yes, has a claim been filed with the freight carrier? 	Y	N	
Were all items on the packing list received?	Y	N	
<ul style="list-style-type: none"> ▪ If No, has Micromeritics been notified? 	Y	N	

ANALYZER SPACE CHECKLIST

Analyzer Space			Initial / Date
Can the lab area where the analyzer and computer will be placed accommodate the combined dimensions of the analyzer and any accessories, peripheral devices (such as a printer), or computer (when applicable)?	Y	N	
Will there be adequate space to easily access the gas lines, power supply lines, and sufficient clearance for maintenance and inspection?	Y	N	

INSTALLATION CONFIGURATION CHECKLIST

Gas and Gas Supply Lines			Initial / Date
Will 1/8 in. copper gas supply lines (supplied with the analyzer for standard installation) be used?	Y	N	
<ul style="list-style-type: none"> ▪ If No, have 1/8 in. stainless steel gas supply lines been ordered and received from Micromeritics? 	Y	N	

ENVIRONMENTAL FACTORS CHECKLIST

Environmental Factors			Initial / Date
Is power available with the correct voltage and frequency, and a safety earth ground?	Y	N	
Are temperature and humidity controlled within specifications?	Y	N	
Are hazards present or precautions necessary in area of installation?	Y	N	
<ul style="list-style-type: none"> ▪ If Yes, please explain: 			
Are safety measures required?	Y	N	
<ul style="list-style-type: none"> ▪ If Yes, please explain: 			

GAS SUPPLY CHECKLIST

Gas Supply			Initial / Date
Are gas cylinders located within 6 ft (2 m) of where the instrument will be installed?	Y	N	
Were gas regulators purchased from Micromeritics?	Y	N	
<ul style="list-style-type: none"> ▪ If No, do your gas regulators meet Micromeritics' specifications? 	Y	N	

Required Gases			Initial / Date
Is one of the following required gases available? <u>The installation will not be scheduled until this gas is available:</u>			
(CGA 580) N ₂	99.995%	Y	N
(CGA 580) He	99.995%	Y	N

LABORATORY EQUIPMENT AND SUPPLIES CHECKLIST

APPLICATION RELATED ISSUES CHECKLIST

Application Related Issues		Initial / Date	
What types of samples will be tested?			
Initial / Date:			
Will these samples require pretreatment?	Y	N	
Will any application assistance from Micromeritics Particle Testing Authority be required?	Y	N	

PERSONNEL SECURITY CLEARANCE CHECKLIST

Security Clearance		
Are there any special arrangements required concerning security clearance?	Y	N
<ul style="list-style-type: none"> ▪ If Yes, please explain: 		
Initial / Date:		



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:

AccuPyc III Automatic Gas Pycnometer

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)

IEC 61010-1:2010/AMD:2016 - Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements.

EN 61010-2-010:2019 - Particular requirements for laboratory equipment for the heating of materials.

IEC 61010-2-081:2019 – Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes.

2014/30/EU (EMC)

IEC 61326-1:2020 Ed.3 - Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements

IEC 61000-3-2:2018 /AMD1:2020 - Part 3-2: Limits — Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)

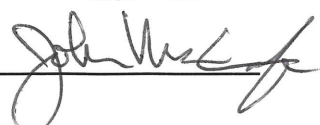
IEC 61000-3-3:2013 - Part 3-3: Limits — Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16 A per phase and not subject to conditional connection

2011/65/EU (RoHS)

EN 63000:2018 - 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: **05/19/2023**

Location: **Norcross, GA USA**



UK 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:

AccuPyc III Automatic Gas Pycnometer

is in conformity with the following UK legislation:

Electrical Equipment (Safety) Regulations 2016
Electromagnetic Compatibility Regulations 2016
Restriction of the Use of Certain Hazardous Substances in E&E Equipment Regulations 2012

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

Electrical Equipment (Safety) Regulations 2016

IEC 61010-1:2010/AMD1:2016 - *Safety requirements for electrical equipment for measurement, control, and laboratory use — Part 1: General requirements.*

EN 61010-2-010:2019 - *Particular requirements for laboratory equipment for the heating of materials.*

IEC 61010-2-081:2019 – *Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes.*

Electromagnetic Compatibility Regulations 2016

IEC 61326-1:2020 - *Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements*

IEC 61000-3-2:2019 - *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*

Restriction of the Use of Certain Hazardous Substances in E&E Equipment Regulations 2012

EN 63000:2018 - *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: 05/19/2023

Location: Norcross, GA USA