ABI 173A MicroBlotter Capillary HPLC System

Site Preparation and Safety Guide

Applied Biosystems

For Research Use Only. Not for use in diagnostic procedures.

Printed in the USA, 11/2001
Part Number 903829 Rev. E

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Overview

About the Site Preparation and Safety Guide

The *ABI 173A MicroBlotter Capillary HPLC System Site Preparation and Safety Guide* (P/N 903829) is sent to all customers who have purchased an Applied Biosystems instrument. This guide provides the information you need to fully prepare your site for the arrival and installation of the instrument. Complete preparation helps ensure a smooth installation process, as well as correct and safe instrument operation.

In This Guide

This guide for the ABI 173A MicroBlotter Capillary HPLC System contains the following chapters and appendixes:

Chapter Title	Description
Introduction	Provides orientation to this guide and information about ordering Material Safety Data Sheets (MSDSs)
Site Preparation	Provides installation requirements and the preinstallation checklists
Chemical Safety	Provides general chemical handling guidelines and instrument waste profiles (if any)
Instrument Safety	Explains safety alert symbols on instrument and shows instrument input and output connections
Appendix Title	**Description**
Acronyms and Abbreviations	Explains terms used in MSDSs and in this guide
Technical Support and Training	Provides contact information for technical support and training

About Preinstallation

Preparing Your Site

Preinstallation checklists start on page 2-2 of this guide. An Applied Biosystems employee will contact you to verify that everything on the checklists has been done before making an appointment for installation.

Choosing a Location

When deciding where to put the instrument system, keep in mind the following:

- You must be able to disconnect the main power supply to the instrument immediately if necessary.
- You must be able to comply with local, state/provincial, or national air quality regulations while venting the exhaust from this instrument.
- You must be able to provide easy access to all four sides of the instrument for servicing.

About Safety

Using the Instrument Correctly

Use this instrument as specified by Applied Biosystems. If the instrument is used in a manner not specified by the manufacturer, the protection provided by the instrument may be impaired.

Documentation User Attention Words

Five user attention words appear in the text of all Applied Biosystems user documentation. Each word implies a particular level of observation or action as described below.

Note Calls attention to useful information.

IMPORTANT Indicates information that is necessary for proper instrument operation.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ DANGER Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

About Chemical Safety

About Material Safety Data Sheets (MSDSs)

Some of the chemicals used with this instrument may be listed as hazardous by their manufacturer. When hazards exist, warnings are prominently displayed on the labels of all chemicals.

Chemical manufacturers supply a current MSDS before or with shipments of hazardous chemicals to new customers and with the first shipment of a hazardous chemical after an MSDS update. MSDSs provide you with the safety information you need to store, handle, transport, and dispose of the chemicals safely.

We strongly recommend that you replace the appropriate MSDS in your files each time you receive a new MSDS packaged with a hazardous chemical.

⚠ WARNING CHEMICAL HAZARD. Be sure to familiarize yourself with the MSDSs before using reagents or solvents.

Ordering MSDSs

You can order free additional copies of MSDSs for chemicals manufactured ordistributed by Applied Biosystems using the contact information below.

To order documents by automated telephone service:

Step	Action
1	From the U.S. or Canada, dial **1.800.487.6809**, or from outside the U.S. and Canada, dial **1.858.712.0317**.
2	Follow the voice instructions to order documents (for delivery by fax). **Note** There is a limit of five documents per fax request.

To order documents by telephone:

In the U.S.	Dial **1.800.345.5224**, and press **1**.
In Canada	♦ To order in English, dial **1.800.668.6913** and press **1**, then **2**, then **1.** ♦ To order in French, dial **1.800.668.6913** and press **2**, then **2**, then **1.**
From any other country	See the “Applied Biosystems Web Site” on page B-1.”

To view, download, or order documents through the Applied Biosystems web site:

Step	Action
1	Go to **http://www.appliedbiosystems.com**
2	Click **SERVICES & SUPPORT** at the top of the page, click **Documents on Demand**, then click **MSDS.**
3	Click **MSDS Index**, search through the list for the chemical of interest to you, then click on the MSDS document number for that chemical to open a PDF version of the MSDS.

For chemicals not manufactured or distributed by Applied Biosystems, call the chemical manufacturer.

About Waste Profiles

Waste profile(s) are provided with this manual. They list the percentage compositions of the reagents within the waste stream at installation and the waste stream during a typical user application. These profiles assist users in planning for instrument waste handling and disposal, which must be in accordance with local, state/provincial, or national regulations. Read the waste profiles and all applicable MSDSs before handling or disposing of waste.

IMPORTANT Waste profiles are not a substitute for MSDS information.

Chemical Hazard Warning

⚠ WARNING CHEMICAL HAZARD. Some of the chemicals used with Applied Biosystems instruments and protocols are potentially hazardous and can cause injury, illness, or death.

- Read and understand the material safety data sheets (MSDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (*e.g.,* safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (*e.g.*, fume hood). For additional safety guidelines, consult the MSDS.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended on the MSDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

Chemical Waste Hazard Warning

⚠ WARNING CHEMICAL WASTE HAZARD. Wastes produced by Applied Biosystems instruments are potentially hazardous and can cause injury, illness, or death.

- Read and understand the material safety data sheets (MSDSs) provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Handle chemical wastes in a fume hood.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (*e.g.,* safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (*e.g.*, fume hood). For additional safety guidelines, consult the MSDS.
- After emptying the waste container, seal it with the cap provided.
- Dispose of the contents of the waste tray and waste bottle in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

Site Preparation 2

Before You Start

Preinstallation Before the ABI 173A MicroBlotter Capillary HPLC System is installed, the installation site must be prepared so that the instrument can be operated correctly and safely. Follow the requirements presented in “Preinstallation Checklists” on page 2-2, to simplify the installation procedure.

Operator Training Training of operators is one of the primary goals of installation. Personnel requiring training should set aside one uninterrupted day to work with the Applied Biosystems service representative. If this is not possible, please call Applied Biosystems Service Administration to reschedule the installation.

Performance Verification Calibration of the instrument and verification of performance will be performed by an Applied Biosystems service representative during the installation.

Ordering Supplies Before installation, be sure to contact Sales Administration or your sales representative to order the additional supplies necessary for the ongoing operation of the instrument. The chemicals shipped with this instrument will be completely consumed during the installation and initial testing of the instrument.

Unpacking Do not unpack instruments. Inspect instrument cartons and report any damage to your Applied Biosystems service representative. For information and instructions about unpacking the Installation Chemical Kit, see “Items Shipped with This Instrument” on page 2-5.

Preinstallation Checklists

About These Checklists

Use the following preinstallation checklists to ensure that all preparations are made for installing your instrument. All of the personnel and supplies on these checklists are required at the time of installation, but most of them are not supplied by Applied Biosystems. A service representative will contact you to confirm that everything is checked off before making an appointment for installation.

Components Supplied by Applied Biosystems

The following components are supplied by Applied Biosystems. Check off the items after performing the actions.

√	Date Confirmed	Action
		Received instrument(s) and inspected the crates and boxes.
		Verified that the number of crates delivered match the number of crates shipped as listed on the delivery documents.
		Verified that instrument(s), serial number(s), and system configuration, as shown on the packing list and in “Items Shipped with This Instrument” on page 2-5, are the same as ordered.
		Reported any discrepancies in instrument, serial numbers or system configuration, or damage to the crates or boxes to your Applied Biosystems service representative.
		Read all sections of this *ABI 173A MicroBlotter Capillary HPLC System Site Preparation and Safety Guide.*
		Read the MSDSs provided with the Installation Chemistry Kit.
		Unpacked and stored contents of Installation Chemistry Kit, verifying the contents against the packing list in the kit or the list on page 2-6 of this manual.

On-Site Personnel

Check off the items below after confirming the following with your laboratory personnel.

√	Date Confirmed	Action
		Have available one uninterrupted day for in-lab training during installation.
		Designated one person to be the laboratory safety representative. This person is familiar with laboratory safety procedures, knows the location of all safety equipment, and must be available to the Applied Biosystems engineer while the engineer is at your facility.
		Designated one person to be present to assist the service engineer in lifting and/or positioning the instrument.

Laboratory Facility Requirements

Check off each item as you verify that the instrument location meets each of the requirements.

√	Date Confirmed	Requirement
Safety		
		Met requirements specified in “Laboratory Safety Requirements” on page 2-7.
Instrument Location		
		Verified a pathway from the receiving dock to the storage area (if applicable) to accommodate the instrument’s 43.9-cm (17.25-in.) crated width.
		Verified a pathway from the storage area to the laboratory to accommodate the instrument’s 31.1-cm (12.25-in.) width.
		Laboratory space is of correct dimensions to accommodate the system and its ventilation clearances, and is situated so that the instrument is accessible to the installer on all four sides. See “Laboratory Space Required” on page 2-8.
		Total vertical clearance of 46 cm (18 in.) is required to raise the cover of the instrument.
		Situated the computer to allow for proper ergonomics during use.
Ventilation and Waste		
		Met laboratory ventilation requirements, as specified in “Laboratory Ventilation Requirements” on page 2-10.
		Established proper handling and disposal method(s) for hazardous chemical waste (if appropriate).
		Verified that room ventilation can accommodate instrument heat output of 8800 Btu/h (~2600 W).
		Verified that laboratory ventilation can accommodate other environmental requirements as specified in “Laboratory Environmental Requirements” on page 2-12.
Electrical		
		A dedicated 2.0-kVA power line and ground , or a 2.0-kVA power line with a line conditioner or uninterruptible power supply (UPS) is required for the system. A line conditioner or (UPS) on the power line is recommended.
		One standard power outlet is within 2.5 m (8 ft) of the instrument location, preferably near the back of the instrument.
		Met requirements specified in “Electrical Requirements” on page 2-13.

Equipment and Consumables Required

You must supply the following items for installation. Check off each item as you verify its availability.

√	Date Confirmed	Item
		Safety glasses
		Lab coats
		Chemical-resistant disposable gloves
		Waste Bottle with secondary containment
		Strip chart recorder with an external stop/start input signal (unless optional Kipp & Zonen Strip Chart Recorder has been ordered with 173A system)
		Bench-top microfuge for 0.5 mL and 1.5 mL Eppendorf® tubes
		Eppendorf tubes
		Methanol (HPLC-grade)
		Acetone (HPLC-grade)
		Absorbent tissue or paper
		Single-edge razor blades

Items Shipped with This Instrument

Summary List

The 173A system is shipped in six boxes (seven boxes if optional strip chart recorder is ordered) and includes the following:

- Installation Chemical and Accessory Kit (P/N 402066) in one box
- 173A Voltage/Accessory Kit (P/N 604030) in one box
  - 173A Tubing Kit (P/N 604066)
  - *ABI 173A MicroBlotter Capillary HPLC System User Guide* (P/N 905008)
- ABI 173A MicroBlotter (P/N 173-0) in one box
- Oven/Injector (P/N 650-0016) in one box
- ABI 140D Microgradient Delivery System (P/N 140D-01) in one box
- S200 UV/VIS Absorbance Detector (P/N 4323958) in one box
- Kipp & Zonen Strip Chart Recorder (optional) (P/N 400268) in one box

Do Not Move or Unpack Instrument

Do not move or unpack instrument cartons. This protects you from liability if any damage occurred during shipping. Inspect instrument cartons, and report any damage to your Applied Biosystems service representative.

⚠ WARNING PHYSICAL INJURY HAZARD. Do not move or unpack instrument cartons. This instrument is heavy. Any incorrect lifting or moving of the instrument can cause painful and sometimes permanent back injury. The instrument may tip over if moved or unpacked incorrectly, causing serious injury to persons in its path or damage to the instrument itself. Unpacking the instrument will also void your warranty with Applied Biosystems.

Unpacking Chemicals

You must unpack the Installation Chemistry Kit, which is boxed separately from the instrument. Read the MSDSs supplied with the chemicals, and store the components as specified on page 2-6.

⚠ WARNING CHEMICAL HAZARD. Some chemicals used with Applied Biosystems instruments are hazardous and can cause injury, illness, or death. Always read the appropriate MSDSs before interacting with the instrument and chemicals in any way. Hazardous Chemical Warnings are prominently displayed on the labels of all hazardous materials.

Installation Chemistry Kit

Unpack the ABI 173A MicroBlotter Capillary HPLC System Installation Chemistry Kit upon receipt, and store the chemicals and reagents as indicated in the table below. The chemicals in this kit are completely consumed during the installation and initial testing of the instrument.

Installation Chemistry Kit (P/N 402066)

Part Number	Description	Shipping Condition	Storage Condition
100071	Tweezer	Room temperature	Room temperature
100214	Syringe (25 uL, 120A)	Room temperature	Room temperature
400313	Acetonitrile, Solvent B, 120-1L	Room temperature	Room temperature
400445	Trifluoroacetic Acid (10 mL)	Room temperature	Room temperature
400905	Low pH Performance Evaluation Standard	Room temperature (lyophilized)	–15 to –25 °C (reconstituted)
402009	Blotter Tray	Room temperature	Room temperature
402010	Blotter Paper/Membrane, 7 sets	Room temperature	Room temperature
402011	Tweezer	Room temperature	Room temperature
402057	cLC Blotter Protein Standard	Room temperature (lyophilized)	–15 to –25 °C (reconstituted)
402063	cLC Staining Dye (40 mL)	Room temperature	Room temperature
402140	Blotter Tray Covers (10 pack)	Room temperature	Room temperature
402155	Blotter Staining Tray	Room temperature	Room temperature
402256	Dyemark II	Room temperature	2 to 6 °C
630118	8-oz. bottles	Room temperature	Room temperature

Laboratory Safety Requirements

On-Site Representative

We request that a representative from your laboratory be in the vicinity and available to the Applied Biosystems engineer at all times while the engineer is at your facility. This person should be familiar with laboratory safety procedures and know the location of all the safety equipment.

Required Safety Equipment

Your laboratory has specific safety practices and policies designed to protect laboratory personnel from potential hazards that are present. We expect that all applicable safety-related procedures will be followed at all times.

The following safety equipment must be available:

- Fire extinguisher
  - It is your responsibility to provide appropriate fire extinguishers for use on or near Applied Biosystems equipment.
  - The types and sizes of fire extinguishers shall be suitable for use on electrical and chemical fires as specified in currently prevailing codes, regulations and/or standards, and with the approval of the Fire Marshall or other authority having jurisdiction.
  - The installation of appropriate fire extinguishers shall be in addition to other fire protection systems and not as a substitute or alternative to them.
- Eyewash
- Safety shower
- Eye and hand protection
- Adequate ventilation
- First-aid equipment
- Spill cleanup equipment
- Protection from any sources of hazardous chemicals, radiation (lasers, radioisotopes, contaminated equipment, radioactive wastes, etc.) and potentially infectious biological material that may be present in the area where Applied Biosystems engineer(s) will be working

Laboratory Space Required

Dimensions and Weight

Components in the 173A system have the following dimensions:

Instrument	Width	Height	Depth	Weight
ABI 173A MicroBlotter (crated)	43.9 cm (17.25 in.)	22.3 cm (8.75 in.)	24.8 cm (9.75 in.)	2.8 kg (6 lb.)
ABI 173A MicroBlotter (uncrated)	31.1 cm (12.25 in.)	13.3 cm (5.25 in.)	15.9 cm (6.25 in.)	2.3 kg (5 lb.)
Oven/Injector	31.7 cm (12.5 in.)	8.9 cm (3.5 in.)	38.1 cm (15 in.)	8.2 kg (18 lb.)
S200 UV/VIS Absorbance Detector	31.7 cm (12.5 in.)	20.3 cm (8 in.)	38.1 cm (15 in.)	13.7 kg (30 lb.)
ABI 140D Microgradient Delivery System	31.7 cm (12.5 in.)	31.1 cm (12.25 in.)	58.4 cm (23 in.)	23.2 kg (51 lb.)
Optional strip chart recorder	38 cm (15 in.)	9 cm (3.5 in.)	29 cm (11.5 in.)	0.7 kg (1.5 lb.)
Total weight (uncrated)				47.9 kg (105.5 lb.)

Instrument Location

Plan on providing sufficient laboratory space for the instrument system as well as the following accommodations:

- 15.3 cm (6 in.) of clearance at the rear of the instrument for adequate ventilation.
- 46 cm (18 in.) of vertical clearance to raise the instrument cover.
- Access to all four sides of instrument for servicing. Do not block access to the rear of the instrument.
- Laboratory bench of correct dimensions and weight tolerance to accommodate the system.

Typical Laboratory Layout

For minimum volume between the 140D and the column, the instruments, including the stripchart recorder, should be placed side by side on the same bench or table, requiring a total width of approximately 165 cm (65 in.). A typical laboratory layout for the 173A system and accessory equipment is shown in Figure 2-1.

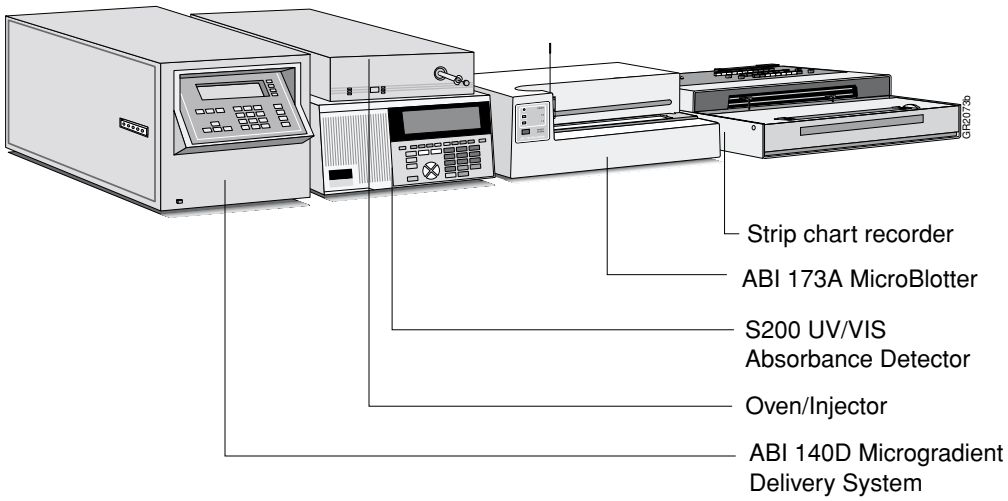


Figure 2-1 Typical laboratory layout for the 173A system and accessories

Laboratory Ventilation Requirements

Venting

This instrument produces minimal waste, no gaseous waste, and does not require installation under a fume hood. However, some of the chemicals provided with the instrument are hazardous and must be prepared under a fume hood.

The information presented here reflects U.S. regulations and practices for venting waste from Applied Biosystems instruments to a fume hood or to a duct.

⚠ WARNING CHEMICAL HAZARD. Some of the chemicals used with Applied Biosystems instruments and protocols are potentially hazardous and can cause injury, illness, or death.

- Always use adequate ventilation such as that provided by a fume hood.
- Read and understand the material safety data sheets (MSDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (*e.g.,* safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (*e.g.,* fume hood). For additional safety guidelines, consult the MSDS.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended on the MSDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

Fume Hood

Following are important points about the fume hood:

- The fume hood should operate continuously, including nights and weekends, because vented waste bottle contents can escape to surroundings.
- The fume hood should be located away from air currents generated by air conditioning ducts, fans, windows, doors, and moving equipment and persons.
- The fume hood exhaust vent should be located where gaseous waste cannot be drawn back into the building.
- A sign or label should be present that shows where to locate the fume hood sash so as to give an average flow of 100 ft/min (linear) face velocity. The minimum velocity flow at any point in the hood must be 80 ft/min (linear). The maximum flow must not exceed 125 ft/min.
- The fume hood must meet local, state, and federal health and safety requirements. Refer to current fume hood standards established by the American Society of Heating, Refrigeration, Air Conditioning Engineers (ASHRAE), American Conference of Governmental Industrial Hygienists (ACGIH), and Occupational Safety and Health Agency (OSHA).
- The fume hood must be constructed of materials that are compatible with the waste materials/chemicals being generated or exhausted.
- Check and record face velocity periodically (at least yearly).
- Inspect and maintain exhaust system, including fans and motors periodically (at least yearly).

Heat Production

The thermal output of the instrument is 8800 Btu/h (~2600 W). Consult your facilities department regarding ventilation requirements for this level of heat output.

Connecting the Fluid Waste Line

Connect the fluid waste line from the instrument to the waste bottle so that it drops vertically. Doing so prevents liquid and waste from accumulating and blocking the flow.

Laboratory Environmental Requirements

Altitude

This instrument is for indoor use only and for altitudes not exceeding 2000 m (6500 ft) above sea level.

Temperature and Humidity

The laboratory temperature should be maintained between 15 to 30 °C (59 to 85 °F). The instrument can tolerate up to 80% relative humidity. Avoid placing the instrument adjacent to heaters, cooling ducts, or in direct sunlight.

Pollution

The installation category (overvoltage category) for this instrument is II, and it is classified as portable equipment. The instrument has a pollution degree rating of 2 and may be installed in an environment that has nonconductive pollutants only.

Emission/Immunity Statement

For our European customers, any product marked with the CE label meets the European requirements for emission and immunity as defined in the EMC Directive 89/336/EEC. This product has been evaluated to the Standard for Emissions for Industrial Scientific Equipment (EN 55011 – Class A), and to the Standard for Generic Immunity (EN50082-1).

Electrical Requirements

Power

IMPORTANT You must be able to disconnect the main power supply to the instrument immediately if necessary.

The following table specifies the electrical operating range for the instrument in various parts of the world.

Location	Voltage (VAC)	Frequency	Amperage (A)
Japan	100 ±10%	50/60 Hz ±1%	10
USA/Canada	120 ±10%	50/60 Hz ±1%	10
Europe (pre-1992)	220 ±10%	50/60 Hz ±1%	10
EC	230 ±10%	50/60 Hz ±1%	10
UK (pre-1992)	240 + 6%/–10%	50/60 Hz ±1%	10
Australia	240 + 6%/–10%	50/60 Hz ±1%	10

Power Line

The electrical receptacle must have a dedicated 2.0 kVA power line and ground or a 2.0 kVA power line with a line conditioner or uninterruptible power supply (UPS).

Electrical Outlets

The electrical receptacle must be located within 2.5 m (8 ft) of the instrument rear panel. Do not use extension cords.

Power Rating

This instrument is rated for a maximum output of 240 VA or 240 W.

Power Cords

The instrument is supplied with a Universal Voltage Kit (P/N 603615) which contains a cord compatible with the electrical wiring used in the country in which the instrument is installed.

Grounding

Certain types of electrical noise are greatly exaggerated by poor or improper electrical ground connections. To prevent these problems, it is very important to have a dedicated line and ground between the instrument and building main electrical service.

Power Line Regulator

In areas where the supplied power is subject to voltage fluctuations exceeding ±10% of the nominal value (above), a power line regulator may be required. High or low voltages can have adverse effects on the electronic components of the instrument.

Voltage Spikes

Short-duration, high-voltage spikes often cause random failures in microprocessor-controlled instrumentation. These spikes can be caused by other devices using the same power source (refrigerators, air conditioners, and centrifuges) or by outside influences such as lightning. A dedicated line and ground between the instrument and building main electrical service will prevent such problems.

If your environment contains devices that are electrically noisy or you are in an area with frequent electrical storms, a line conditioner with a recommended capacity of 2.0 kVA will enhance the reliability of your system. This may be lower depending on the conditioner or power supply design.

Power Outages

The instrument has been designed to recover from short periods of power outage (loss) and continue operation, provided that the line voltage does not become excessively noisy before the outage. If you want increased protection during a power outage, install a UPS with a capacity of 2.0 kVA. The UPS will involve a higher cost than a line conditioner.

Chemical Safety 3

Overview

In This Chapter

This chapter contains general information about handling hazardous chemicals and waste. It also contains information for the ABI 173A MicroBlotter Capillary HPLC System about:

- Material safety data sheets (MSDSs)
- Hazardous waste produced during the installation procedure
- Hazardous waste produced during typical use of the instrument, if appropriate

Applied Biosystems assumes that all operations in your laboratory will be conducted in accordance with safety practices detailed in the MSDSs for the chemicals used in your laboratory, and with all local, state/provincial, or national regulations.

Material Safety Data Sheets Overview

About MSDSs

Some of the chemicals used with this instrument may be listed as hazardous by their manufacturer. When hazards exist, warnings are prominently displayed on the labels of all chemicals.

MSDSs are supplied by the chemical manufacturer and provide information about:

- Physical characteristics
- Safety precautions
- Health hazards
- First aid
- Spill cleanup
- Disposal procedures

⚠ WARNING CHEMICAL HAZARD. Be sure to familiarize yourself with the MSDSs before using reagents or solvents.

Explanations of acronyms and abbreviations used in MSDSs can be found in Appendix A of this guide.

Updating MSDSs

Chemical manufacturers supply a current MSDS before or with shipments of hazardous chemicals to new customers, and with the first shipment of a hazardous chemical after an MSDS update.

Replace the MSDSs in your files regularly so that the safety information is current.

Ordering MSDSs from Applied Biosystems

You can order free additional copies of MSDSs for chemicals manufactured or distributed by Applied Biosystems. See “Ordering MSDSs” on page 1-3 for details.

Ordering MSDSs from Other Manufacturers

Applied Biosystems does not furnish MSDSs for chemicals used on this instrument that are not manufactured or distributed by Applied Biosystems. Contact the manufacturer(s) of those chemicals to obtain additional MSDSs.

Hazardous Chemicals

Overview

This instrument may use chemicals that are hazardous.

⚠ WARNING CHEMICAL HAZARD. Hazardous chemicals used with this instrument can cause injury, illness, or death. Handle all chemicals as potentially hazardous.

Chemicals are classified as hazardous when they are physically hazardous or if they can cause acute or chronic health hazards upon exposure.

- Physically hazardous chemicals are materials that are flammable, combustible, under compression (gases), explosive, oxidative, organically peroxidic, pyrophoric, reactive or unstable, or water reactive.
- Chemicals that may cause health hazards include carcinogens; materials that are toxic or highly toxic; reproductive toxins; irritants; corrosives; sensitizers; materials that are toxic to the liver, kidney or blood-forming (hematopoietic) system; and agents that damage the lungs, skin, eyes, or mucous membranes.

Handling Hazardous Chemicals

Here are some of the important requirements for handling hazardous chemicals:

- Read and understand all applicable MSDSs before handling hazardous chemicals.
- Always wear gloves, safety glasses, and protective clothing when handling chemicals.
- Always provide adequate ventilation when handling chemicals. Some chemicals require handling only in a properly functioning fume hood.
- Provide secondary containment for all reagent bottles.
- Do not store chemicals in direct sunlight or heat (on or off the instrument).

⚠ WARNING BOTTLE FRACTURING HAZARD. When replacing reagents, always install a new bottle on the instrument. Do not add new solution to previously used reagent bottles. Some chemicals reduce the integrity of glass bottles. As a result, repeated use beyond 6 weeks may result in the bottle fracturing when it is pressurized during operation.

Hazardous Waste

Overview

This instrument may generate hazardous waste.

⚠ WARNING CHEMICAL WASTE HAZARD. Wastes produced by Applied Biosystems instruments are potentially hazardous, and can cause injury, illness, or death.

- Read and understand the material safety data sheets (MSDSs) provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Venting hazardous waste may require local, state/provincial, or national air permits.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (*e.g.,* safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (*e.g.*, fume hood). For additional safety guidelines, consult the MSDS.
- Handle chemical wastes in a fume hood.
- Seal the waste container with the cap provided.
- Dispose of the contents of the waste tray and waste bottle in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

Composition

The instruments in the 173A system do not produce hazardous vapor waste, however, some chemicals collected in the waste bottle of the ABI 140D Microgradient Delivery System, such as radioactive or biohazardous materials applied to the instrument, are hazardous and require special handling.

⚠ WARNING BIOHAZARD. Biological samples such as tissues and blood have the potential to transmit infectious diseases. Follow the U.S. Department of Health and Human Services guidelines published in *Biosafety in Microbiological and Biomedical Laboratories* (stock no. 017-040-00547-4) and in Occupational Safety and Health Standards, Toxic and Hazardous Substances (29 CFR §1910.1030) concerning the principles of risk assessment, biological containment, and safe laboratory practices for activities involving clinical specimens. You can obtain additional information by connecting to the government Web site http://www.cdc.gov.

Do not store, handle, or work with radioactive or biohazardous materials until you have read and understood all related MSDSs provided by the chemical supplier.

Instrument Waste System

The waste for this instrument is collected in a 500 mL (1-pt) glass bottle provided by the customer. Dispose of the waste when the waste bottle is 3/4 full. Do not allow waste to back up into the waste collection line.

The composition of the chemical waste may vary depending upon the protocols used, the number of samples, the volumes specified, and the reagents included in the protocols.

Handling Chemical Waste

When handling chemical waste we strongly recommend that you:

- Read the waste profile(s) in this chapter before handling or disposing of hazardous waste.
- Read all applicable MSDSs before handling or disposing of hazardous waste.
- Ensure that the waste container is correctly installed.
- Always handle hazardous materials beneath a fume hood that is connected in accordance with all installation requirements.
- Always wear chemical-resistant gloves, safety glasses, and protective clothing when handling hazardous waste material.
- During transfer, ensure that the waste container is tightly sealed with the waste cap provided.
- Dispose of hazardous waste in accordance with all local, state/provincial, or national regulations.

Storing Hazardous Waste

⚠ WARNING CHEMICAL STORAGE HAZARD. Never collect or store waste in a glass container because of the risk of breaking or shattering. Reagent and waste bottles can crack and leak. Each waste bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position. Wear appropriate eyewear, clothing, and gloves when handling reagent and waste bottles.

The following are guidelines for storing hazardous waste:

- Always use secondary containment when storing chemical waste.
- Store waste for only short periods of time.
- Store only small amounts of waste in the laboratory.
- Store waste away from direct sunlight or sources of heat (on or off the instrument).

Disposing of Hazardous Waste

As the generator of potentially hazardous waste, it is your responsibility to:

- Characterize the waste generated with your applications.
- Ensure the health and safety of all personnel in your laboratory.
- Ensure that instrument waste is stored, transferred, transported, and disposed of according to all local, state/provincial, or national regulations.

Waste Profiles

Overview

The waste profiles for installation and for the instrument are provided to assist you in disposing of hazardous waste in accordance with local, state/provincial, or national regulations. The waste profiles include the following:

- Percent composition of chemicals in the instrument waste
- Chemical Abstract Service (CAS) number, if the chemical is not a mixture.

About the Waste Profiles

Installation Waste Profile

The installation waste profile characterizes the waste produced during the installation process performed by the Applied Biosystems representative.

Instrument Waste Profile

The instrument waste profile characterizes the waste produced during a typical user application. The specific application profiled was chosen to provide the most useful information to the largest number of users, given the variety of uses of the instrument. It may not be an application used in your laboratory.

The composition of the chemical waste may vary depending upon the specific reagents, the number of samples, and the volumes specified in each application.

IMPORTANT The instrument waste profile is not a substitute for MSDS information. See specific MSDSs for chemical constituent, health, toxicological, and hazard information.

Installation Waste Profile

The following table characterizes the waste that will be in the waste container of the instrument at the end of the installation process.

Installation Waste Profile

CAS # (if available)	Chemical	Weight Percent Composition
75-05-8	Acetonitrile	>50.0
76-05-1	Trifluoroacetic Acid	~0.1
7732-18-5	Water, deionized	<50.0
Not assigned	Dyemark II	0.001

Instrument Waste Profile

The following table characterizes the waste that will be in the waste container after a typical one protein mixture separation gradient.

Instrument Waste Profile

CAS # (if available)	Chemical	Weight Percent Composition
75-05-8	Acetonitrile	~50.0
76-05-1	Trifluoroacetic Acid	~0.1
7732-18-5	Water, Deionized	~50.0

4 Instrument Safety

Overview

In This Chapter

This chapter provides you with the safety information you need to prepare your laboratory and personnel for the installation and use of the ABI 173A MicroBlotter Capillary HPLC System. The safety labels and safety alert symbols that may be found on this instrument are provided in several languages. The inputs and outputs for the instrument are also provided.

Safe Operation

This guide provides only site preparation information. Before operating this instrument, read the information in the *ABI 173A MicroBlotter Capillary HPLC System User Guide* (P/N 903836) concerning hazards and potential hazards. Ensure that anyone involved with the operation of the instrument is instructed both in general safety practices for laboratories and in specific safety practices for the instrument.

Detailed safety information on the following topics is included in the user guide for this instrument:

- Battery safety
- Electrical safety
- Lamp safety
- Ultraviolet (UV) light safety

Routine Maintenance for Safe Operation

Maintain the instrument in good working order. If the instrument has been subjected to adverse environmental conditions (such as fire, flood, or earthquake), an Applied Biosystems service representative should inspect the instrument.

We recommend that an Applied Biosystems service representative check the instrument yearly to verify that:

- The safety interlocks protecting the user from various hazards are working properly.
- The protective housing is functional. Loose or distorted panels will not protect the user or the equipment.
- Airflow is not hindered in any way.

Instrument Labeling

Instrument Safety Labels

Safety labels are located on the instrument. Each safety label has three parts:

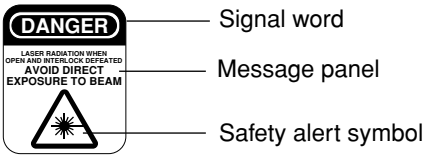
- A signal word panel, which implies a particular level of observation or action (*e.g.,* CAUTION or WARNING). If a safety label encompasses multiple hazards, the signal word corresponding to the greatest hazard is used.
- A message panel, which explains the hazard and any user action required.
- A safety alert symbol, which indicates a potential personal safety hazard. See “Safety Alert Symbols” on page 4-4 for an explanation of all the safety alert symbols. This information is provided in several languages.

Signal Words

- **CAUTION** indicates a potentially hazardous situation that could result in minor or moderate injury to the user or damage to the instrument.
- **WARNING** indicates a potentially hazardous situation that could result in death or serious injury.
- **DANGER** indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury (most extreme).

Parts of an Instrument Safety Label

Parts of an instrument safety label are identified below.



Examples of Instrument Safety Labels

Below are some examples of instrument safety labels.

Labels That May Be Found on the Instrument

The following Danger, Caution, and Warning labels, listed in English and French, may be found on your instrument:

English	French
CAUTION: Hazardous chemicals. Read the Material Safety Data Sheets (MSDSs) before handling.	ATTENTION: Produits chimiques dangeureux. Lire les fiches techniques de sûreté de matériels avant la manipulation des produits.
CAUTION: Hazardous waste. Read the waste profile before handling or disposal.	ATTENTION: Déchets dangereux. Lire les renseignements sur les déchets avant de les manipuler ou de les éliminer.
WARNING: Risk of electric shock. Disconnect power cord from supply before replacing fuses or removing power supply module from instrument.	AVERTISSEMENT: Risque de choc électrique. Débrancher le cordon d'alimentation avant de remplacer les fusibles ou de retirer le bloc d'alimentation de l'instrument.
WARNING: For continued protection against risk of fire, replace only with Listed and Certified fuse of the specified type and ratings.	AVERTISSEMENT: Pour une protection continue contre les risques d'incendie, utiliser uniquement des fusibles agréés et certifiés du type et du courant nominal spécifiés.
WARNING: Hot lamp.	AVERTISSEMENT: Lampe brûlante.
WARNING: Hot. Replace lamp with an Applied Biosystems lamp.	AVERTISSEMENT: Composants brûlants. Remplacer la lampe par une lampe Applied Biosystems.
WARNING: Disconnect supply cord before opening. Grounding circuit continuity is vital for safe operation of equipment. Never operate equipment with grounding conductor disconnected.	AVERTISSEMENT: Débrancher le cordon d'alimentation avant d'ouvrir. La continuité du circuit de masse est essentiel à la sécurité du fonctionnement de l'appareil. Ne jamais utiliser l'appareil avec la prise de terre débranchée.
WARNING: For protection against fire hazard, replace only same type and rating of fuse.	AVERTISSEMENT: Pour assurer la protection contre les risques d'incendie, remplacer uniquement par un fusible de même type et de même courant nominal.
CAUTION: Hot.	ATTENTION: Surface brûlante.
DANGER: High voltage.	DANGER: Haute tension.
WARNING: To reduce the chance of electrical shock, do not remove covers that require tool access. No user serviceable parts are inside. Refer servicing to Applied Biosystems qualified service personnel.	AVERTISSEMENT: Pour éviter les risques d'électrocution, ne pas retirer les capots dont l'ouverture nécessite l'utilisation d'outils. L'instrument ne contient aucune pièce réparable par l'utilisateur. Toute intervention doit être effectuée par le personnel de service qualifié de Applied Biosystems.
DANGER: Laser radiation when open and interlock defeated. Avoid direct exposure to beam.	DANGER: Rayonnement laser en cas d'ouverture et d'une neutralisation des dispositifs de sécurité. Eviter toute exposition directe avec le faisceau.
CAUTION: Moving parts.	ATTENTION: Parties mobiles.

Safety Alert Symbols

Electrical Symbols

The following chart is an illustrated glossary of all electrical symbols that are used on Applied Biosystems instruments. Whenever such symbols appear on instruments, please observe appropriate safety procedures.

	This symbol indicates the On position of the main power switch.
	This symbol indicates the Off position of the main power switch.
	This symbol indicates the On/Off position of a push-push main power switch.
	This symbol indicates that a terminal may be connected to another instrument's signal ground reference. This is not a protected ground terminal.
	This symbol indicates that this is a protective grounding terminal that must be connected to earth ground before any other electrical connections are made to the instrument.
	A terminal marked with this symbol either receives or delivers alternating current or voltage.
	A terminal marked with this symbol can receive or supply an alternating and a direct current or voltage.
	This symbol indicates the presence of high voltage and warns the user to proceed with caution.
	This symbol alerts you to consult the manual for further information and to proceed with caution.

Non-electrical Symbols

The following is an illustrated glossary of all nonelectrical safety alert symbols found on Applied Biosystems instruments.

	This symbol illustrates a heater hazard. Proceed with caution when working around these areas to avoid being burned by hot components.
	This symbol indicates that a laser is present inside the instrument.

Symboles des alertes de sécurité

Symboles électriques

Le tableau suivant donne la signification de tous les symboles électriques qui figurent sur les appareils Applied Biosystems. En présence de l'un de ces symboles, il est impératif de se conformer aux consignes de sécurité appropriées.

	Position marche de l'interrupteur d'alimentation principale.
	Position arrêt de l'interrupteur d'alimentation principale.
	Positions marche-arrêt de l'interrupteur d'alimentation principale à bouton poussoir.
	Borne pouvant être reliée à la mise à la terre d'un autre appareil. Ce n'est pas une borne de mise à la terre protégée.
	Borne de mise à la terre de protection devant être reliée à la terre avant d'effectuer tout autre raccordement électrique à l'appareil.
	Borne recevant ou fournissant une tension ou un courant de type alternatif.
	Borne pouvant recevoir ou fournir une tension ou un courant de types alternatif et continu.
	Indique la présence d'une haute tension et avertit l'utilisateur de procéder avec précaution.
	Avertit l'utilisateur de la nécessité de consulter le manuel pour obtenir davantage d'informations et de procéder avec précaution.

Symboles non électriques

Le tableau suivant donne la signification des symboles d'alertes de sécurité non électriques qui figurent sur les appareils Applied Biosystems.

	Danger associé à la présence d'un appareil de chauffage. Procéder avec précaution pour éviter de se brûler au contact de pièces ou d'éléments chauds.
	Indique que l'appareil renferme un laser.

Sicherheitswarnsymbole

Elektrische Symbole

Die folgende Tabelle enthält Beschreibungen aller auf den Geräten von Applied Biosystems verwendeten elektrischen Symbole. Wenn diese Symbole auf den Geräten erscheinen, beachten Sie bitte die entsprechenden Sicherheitsmaßnahmen.

	Dieses Symbol zeigt die Ein-Position des Hauptnetzschalters an.
	Dieses Symbol zeigt die Aus-Position des Hauptnetzschalters an.
	Dieses Symbol zeigt die Ein/Aus-Position eines einrastenden Hauptnetzdruckschalters an.
	Dieses Symbol zeigt an, daß ein Anschluß an die Betriebserdung eines anderen Geräts angeschlossen werden kann. Dies ist keine geschützte Erdklemme.
	Dieses Symbol zeigt eine geschützte Erdklemme an, die geerdet werden muß, bevor andere elektrische Anschlüsse zum Gerät hergestellt werden.
	Ein mit diesem Symbol gekennzeichneter Anschluß kann Wechselstrom oder -spannung erhalten oder abgeben.
	Ein mit diesem Symbol gekennzeichneter Anschluß kann Wechselstrom oder -spannung und Gleichstrom oder -spannung erhalten oder abgeben.
	Dieses Symbol zeigt das Vorliegen von Hochspannung an und warnt den Anwender, vorsichtig vorzugehen.
	Dieses Symbol fordert Sie auf, das Handbuch zwecks näherer Informationen zu konsultieren und vorsichtig vorzugehen.

Nicht-elektrische Symbole

Die folgende Tabelle enthält Beschreibungen aller auf den Geräten von Applied Biosystems verwendeten nicht-elektrischen Symbole.

	Dieses Symbol zeigt eine Gefahr durch die Heizung an. Gehen Sie vorsichtig vor, wenn Sie in der Nähe dieser Bereiche arbeiten, damit Sie sich nicht an heißen Komponenten verbrennen.
	Dieses Symbol zeigt das Vorliegen eines Lasers im Innern des Geräts an.

Simboli degli allarmi di sicurezza

Simboli elettrici

La tabella seguente è un glossario illustrato di tutti i simboli elettrici utilizzati su strumenti Applied Biosystems. Ogni volta che tali simboli compaiono sugli strumenti, rispettare le procedure di sicurezza appropriate.

	Questo simbolo indica la posizione On dell'interruttore di alimentazione generale.
	Questo simbolo indica la posizione Off dell'interruttore di alimentazione generale.
	Questo simbolo indica la posizione On/Off di un interruttore di alimentazione generale a pulsante.
	Questo simbolo indica che un terminale può essere collegato alla messa a terra di un altro strumento. Non è un terminale di terra protetto.
	Questo simbolo indica un terminale protettivo di messa a terra che deve essere collegato a terra prima di realizzare qualsiasi altro collegamento elettrico allo strumento.
	Un terminale contrassegnato con questo simbolo riceve o fornisce tensione o corrente alternata.
	Un terminale contrassegnato con questo simbolo può ricevere o fornire tensione o corrente alternata e continua.
	Questo simbolo indica la presenza di alta tensione e invita l'utente a procedere con cautela.
	Questo simbolo invita l'utente a consultare il manuale per ulteriori informazioni e a procedere con cautela.

Simboli non elettrici

Segue un glossario illustrato dei simboli degli allarmi di sicurezza non elettrici trovati su strumenti Applied Biosystems.

	Questo simbolo illustra un rischio di alte temperature. Procedere con cautela quando si lavora in queste aree per evitare ustioni causate da componenti a temperature elevate.
	Questo simbolo indica la presenza di laser nello strumento.

Símbolos de alerta de segurança

Símbolos elétricos

A tabela a seguir constitui um glossário ilustrado de todos os símbolos elétricos usados nos instrumentos Applied Biosystems. Sempre que um desses símbolos aparecer num instrumento, siga os procedimentos adequados de segurança.

	Este símbolo indica que o interruptor de energia elétrica está na posição ligado.
	Este símbolo indica que o interruptor de energia elétrica está na posição desligado.
	Este símbolo indica a posição ligado/desligado de um interruptor principal de energia elétrica do tipo botão de pressão.
	Este símbolo indica que um terminal pode estar conectado a uma referência de aterramento de sinal de um outro instrumento. Este não é um terminal terra protegido.
	Este símbolo indica que este é um terminal de aterramento de proteção, que deve ser ligado à terra antes de se fazer qualquer outra ligação elétrica ao instrumento.
	Um terminal marcado com este símbolo recebe ou transmite tensão ou corrente alternada.
	Um terminal marcado com este símbolo recebe ou fornece tensão ou corrente alternada ou contínua.
	Este símbolo indica a presença de alta tensão e avisa o usuário para proceder com cuidado.
	Este símbolo serve como alerta, para que se consulte o manual a fim de se obter mais informações e que se proceda com cuidado.

Símbolos não-elétricos

A seguir, apresentamos um glossário ilustrado de todos os símbolos de alerta de segurança não relacionados à electricidade encontrados nos instrumentos Applied Biosystems.

	Este símbolo representa um perigo devido a aquecedor no local. Proceda com cuidado ao trabalhar em áreas próximas a aquecedores, para evitar queimaduras devidas ao contato com componentes quentes.
	Este símbolo indica que há um laser dentro do instrumento.

Símbolos de alerta de seguridad

Símbolos eléctricos

En la siguiente tabla se muestra un glosario ilustrado de todos los símbolos eléctricos que se utilizan en los instrumentos de Applied Biosystems. Cuando tales símbolos figuran en los instrumentos, lleve a cabo los procedimientos de seguridad apropiados.

	Este símbolo indica la posición de encendido del interruptor principal.
	Este símbolo indica la posición de apagado del interruptor principal.
	Este símbolo indica la posición de encendido/apagado de un interruptor principal de presión.
	Este símbolo indica que existe la posibilidad de conectar esta terminal a la toma de tierra de referencia de otro instrumento. Ésta no es una toma de tierra protegida.
	Este símbolo indica que la toma de tierra protegida debe ser conectada a tierra antes de realizar cualquier otro tipo de conexión eléctrica al instrumento.
	Una terminal marcada con este símbolo recibe o suministra corriente o tensión alterna.
	Una terminal marcada con este símbolo puede recibir o suministrar corriente o tensión alterna y continua.
	Este símbolo indica la presencia de alta tensión y advierte al usuario que proceda con precaución.
	Este símbolo indica que consulte el manual para obtener más información y que proceda con precaución.

Símbolos no eléctricos

A continuación se presenta un glosario ilustrado de todos los símbolos de seguridad y alerta no eléctricos que aparecen en los instrumentos de Applied Biosystems.

	Este símbolo indica peligro de altas temperaturas. Proceda con cautela cuando trabaje cerca de estas zonas para evitar quemarse con componentes calientes.
	Este símbolo indica que hay un láser dentro del instrumento.

安全警告符號

電源符號 下列爲 Applied Biosystems 公司儀器之電源符號所代表的意思。每當儀器上出現這些符號時，請依照適當的安全程序操作。

	本符號表示主電源開關處於「開」的位置。
	本符號表示主電源開關處於「關」的位置。
	本符號表示按鍵式主電源開關的「開 / 關」位置。
	本符號表示此接線端可能與另一儀器的接地端相連接，但並非安全接地端。
	本符號表示此端須先接好安全地線，然後方可在此儀器上進行其它電連接。
	本符號表示可接受或提供交流電源。
	本符號表示可接受或提供交流以及直流電源。
	本符號表示此處有高壓電，小心處理。
	本符號表示請查閱操作手冊並小心處理。

非電源符號 下列爲 Applied Biosystems 公司儀器之非電源符號所代表的意思：

	本符號表示燙熱，在此類區域工作時須小心處理以免燙傷。
	此符號表示儀器內含有雷射光（激光）。

安全上の警告マーク

電気に関するマーク

Applied Biosystems 装置に使用されている全ての電気に関するマークを下表に示します。このようなマークが装置に表示されている場合は、安全上、該当する指示を必ず守ってください。

	主電源スイッチのオンの位置を示します。
	主電源スイッチのオフの位置を示します。
	押しボタン式主電源スイッチのオン / オフの位置を示します。
	この表示は、端子を別の機器のグランドに接続できることを示します。これはグランド保護端子ではありません。
	この装置に電気的接続を行う前に、アースに接続する必要があるグランド端子を示します。
	この表示は、交流電流又は交流電圧の出力又は入力端子を示します。
	この表示は、交流及び直流の電流又は電圧の出力又は入力端子を示します。
	高電圧のため注意が必要です。
	詳細についてはマニュアルを参照した上で、注意して行ってください。

電気以外のマーク

次に示すマークは Applied Biosystems 装置で使用されている電気以外の安全上のマークです。

	このマークはヒータに関する危険を示します。この表示のある周囲で作業する場合は、部品が高温になっているため火傷を負わないように注意が必要です。
	装置内にレーザーを用いていることを示します。

안전 경보 기호

전기 기호

다음의 챠트는 Applied Biosystems 기기에서 사용되는 모든 전기 기호들의 도해 해설입니다. 이런 기호가 기기 상에 표시된 경우, 적합한 안전 절차를 항상 준수해야 합니다.

	이 기호는 주 전원 스위치가 켜짐 임을 나타냅니다.
	이 기호는 주 전원 스위치가 꺼짐 임을 나타냅니다.
	이 기호는 푸쉬푸쉬 주 전원 스위치가 켜짐/꺼짐 됨을 나타냅니다.
	이 기호는 전극이 다른 기기의 신호 접지 레퍼런스에 연결되었을 수 있음을 나타냅니다. 이것은 보호되는 접지 전극이 아닙니다.
	이 기호는 기기에 어떠한 전기 연결이 되기전에 접지로 반드시 연결되어야 하는 보호되는 접지 전극임을 나타냅니다.
	이 기호가 있는 전극은 교류 또는 전압을 받거나 보낼 수 있습니다.
	이 기호가 있는 전극은 교류 및 직류 또는 전압을 받거나 공급할 수 있습니다.
	이 기호는 고압이 흐름을 나타내며 사용자들이 주의할 것을 경고합니다.
	이 기호는 더 자세한 정보를 얻기 위해 설명서를 참고할 것을 알리며 주의할 것을 알려줍니다.

비 전기 기호

다음의 챠트는 Applied Biosystems 기기에서 발견되는 비 전기 안전 경고의 도해 해설입니다.

	이 기호는 가열 위험을 나타냅니다. 이 주변에서 작업할 때는 뜨거운 부품에 의한 화상을 피하기 위해 주의해야 합니다.
	이 기호는 레이저가 기기내에 존재함을 나타냅니다.

เครื่องหมายเตือนเพื่อความปลอดภัย

เครื่องหมายที่เกี่ยวข้องกับไฟฟ้า

แผนภูมิต่อไปนี้ ทำไว้เพื่ออธิบายความหมายของเครื่องหมายต่างๆ ที่ใช้ในเครื่องวัดชนิดต่างๆ ของ Applied Biosystems โปรดปฏิบัติตามขั้นตอนที่เหมาะสมเพื่อรักษาความปลอดภัย ทุกครั้งที่เครื่องหมายประเภทนี้ได้ปรากฏบนเครื่องวัดชนิดใด

	เครื่องหมายนี้ แสดงตำแหน่งเปิด ของสวิทซ์กำลังหลัก
	เครื่องหมายนี้ แสดงตำแหน่งปิด ของสวิทซ์กำลังหลัก
	เครื่องหมายนี้ แสดงตำแหน่งเปิด-ปิด ของสวิทซ์กำลังหลักชนิดผลัก-ผลัก
	เครื่องหมายนี้ แสดงว่าขั้วต่อสามารเชื่อมต่อกับสายดินร่วมกับสายดินของสัญญาณอ้างอิงของเครื่องวัดอีกเครื่องหนึ่ง ซึ่งไม่ใช่ขั้วต่อลงดินที่ได้รับการป้องกัน
	เครื่องหมายนี้ แสดงว่ามีขั้วต่อลงดินเพื่อความปลอดภัยอยู่อันหนึ่งที่ต้องเชื่อมต่อกับสายลงดินก่อนที่จะสามารทำการต่อไฟอื่นใดกับเครื่องวัดนี้ได้
	ขั้วต่อที่ติดเครื่องหมายนี้ ได้รับหรือส่งกระแสหรือแรงดันสลับ
	ขั้วต่อที่ติดเครื่องหมายนี้ สามารรับหรือจ่ายกระแสหรือแรงดันไฟฟ้าทั้งกระแสสลับและกระแสตรงได้
	ครื่องหมายนี้แสดงว่ามีกระแสแรงดันสูง และเตือนผู้ใช้เครื่องว่าจะต้องทำงานด้วยความระมัดระวัง
	ครื่องหมายนี้มีไว้เพื่อเตือนผู้ใช้เครื่องว่า จะต้องดูรายละเอียดเพิ่มเติมในคู่มือแล้วทำงานด้วยความระมัดระวัง

เครื่องหมายที่ไม่เกี่ยวข้องกับไฟฟ้า

ข้อความต่อไปนี้ เขียนไว้เพื่ออธิบายความหมายของเครื่องหมายเตือนอันตรายต่างๆ ที่ไม่เกี่ยวข้องกับไฟฟ้า และปรากฏบนเครื่องวัดชนิดต่างๆ ของ Applied Biosystems

	ครื่องหมายนี้ แสดงภาวะอันตรายที่เกิดจากเครื่องทำความร้อน จงใช้ความระมัดระวังในขณะที่ทำงานในบริเวณเหล่านี้ เพื่อหลีกเลี่ยงไม่ให้ผิวหนังไหม้จากชิ้นส่วนใดๆ ที่ร้อนจัด
	เครื่องหมายนี้ แสดงว่ามีเลเซอร์อยู่ภายในเครื่องวัดนี้

Input/Output Connections

Location The locations of the input/output connections on the ABI 173A MicroBlotter Capillary HPLC System are shown in Figure 4-1. The input/output connections are also labeled on the instrument.

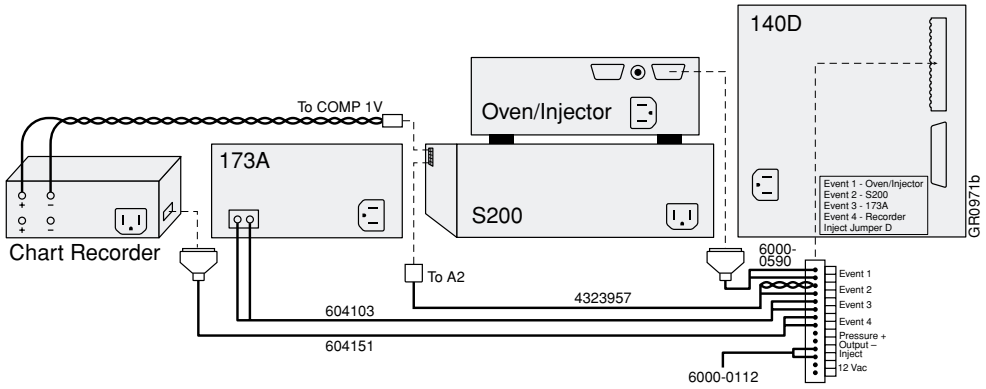


Figure 4-1 Input/output connections on the 173A system

Acronyms and Abbreviations

A

Acronyms and Abbreviations Used in Material Safety Data Sheets

Introduction

Material Safety Data Sheets (MSDSs) use acronyms and abbreviations for certain organizations, government regulations, common scientific terminology, units of measurement, chemicals, and other materials. This appendix is provided to help you understand these references while reading the MSDSs for the chemicals used in your laboratory.

Organizations, Regulations, and Scientific Terminology

The following table lists acronyms and abbreviations for organizations, government regulations, and scientific terminology:

Abbreviation	Explanation
ACGIH	American Conference of Governmental Industrial Hygienists
CAS#	Chemical Abstract Service Reference Number for Specific Pure Chemical
cc	Closed cup testing of flash point
CFR	Code of Federal Regulations. Regulations published by the United States Government
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act (Superfund) is a federal law administered by EPA
DFG MAK	Federal Republic of Germany's Maximum Contamination Value in the workplace (similar to PEL in the USA)
DOT	United States Department of Transportation, regulates transportation of hazardous material (USA)
EPA	United States Environmental Protection Agency, regulates use, disposal, or emission of hazardous material (USA)
IDLH	Immediate Danger to Life and Health
LC_{LO}	Lowest published lethal concentration
LC_{50}	Lethal concentration in air that kills 50% of a specified population
LD_{50}	Lethal dose that kills 50% of a specified population
LEL	Lower explosion limit
MSHA	Mine Safety and Health Administration, recommends respirators
NFPA	National Fire Protection Association, publishes recommended regulations for local or state governments in the United States (hazardous rating system developed by this association)
NIOSH	National Institute of Occupational Safety and Health (USA) recommends exposure levels and respirators
oc	Open cup testing for flash point

Abbreviation	Explanation
OSHA	Occupational Safety and Health Administration (USA), sets chemical exposure levels
PEL	Permissible exposure limit; the federal OSHA limit, usually expressed as time weighted average (TWA) for an 8-hour work shift
PPM	Parts per million
Prop 65	A California law requiring warnings for chemicals that are known to the state to be carcinogenic or to cause reproductive harm
RCRA	Resource Conservation and Recovery Act
RTECS	Registry of Toxic Effects of Chemical Substances
SARA	Superfund Amendments and Reauthorization Act; a federal act administered by EPA
SCBA	Self-Contained Breathing Apparatus
STCC	Standard Transportation Commodity Code
STEL	Short Term Exposure Level, published by ACGIH
TC_{LO}	Lowest published toxic concentration
TLV	Threshold limit value; the ACGIH-recommended TWA, usually for an 8-hour work shift
TWA	Time weighted average
UEL	Upper explosive limit
u or U	Unknown
UN	United Nations. This designation identifies hazardous chemicals in the process of worldwide transportation.

Units of Measure

The following table lists abbreviations for common units of measure:

Abbreviation	Unit of Measure
#	number
°C	degrees Celsius
°F	degrees Fahrenheit
µL	microliter
µm	micron
µmol	micromole
AUFS	absorbency units full-scale
Btu	British thermal unit
ft	foot
gal	gallon
h	hour
i.d.	inside diameter
in.	inch
kVA	kilovoltampere
L	liter
m	meter
mg	milligram

Abbreviation	Unit of Measure
mL	milliliter
mm	millimeter
o.d.	outside diameter
psi	pounds per square inch
sec	second
V	volt
VA	volt ampere
VAC	volts, alternating current
W	watt

Chemicals and Other Materials

The following table lists some common abbreviations for chemicals, protecting groups and materials used in peptide and DNA synthesis.

Abbreviation	Definition
A	adenine
AA	amino acid
Ac	acetyl
Act	acetylimidazole
Acm	acetamidomethyl
Ac_2O	acetic anhydride
ACN	acetonitrile
ACT	activator vessel
BHA resin	benzhydrylamine resin
Boc	tert-butyloxycarbonyl
Bzl	benzyl
Br-Z	2-bromobenzyloxcarbonyl
t-Bu	tert-butyl
C	cytosine
CHO	formyl
CH_3Bzl	4-methylbenzyl
$CH_3$0Bzl	4-methoxybenzyl
Cl-Z	2-chlorobenzyloxycarbonyl
CPG	controlled pore glass
DCA	dichloroacetic acid
DCC	dicyclohexylcarbodiimide
DCM	dichloromethane
DCU	dicyclohexylurea
DIEA	diisopropylethylamine
DMAP	4-dimethylaminopyridine
DMF	dimethylformamide
DMSO	dimethylsulfoxide
DNA	deoxyribonucleic acid

Abbreviation	Definition
Dnp	2,4-dinitrophenyl
Et	ethyl
EtOH	ethanol
Fmoc	9-fluorenylmethyloxycarbonyl
G	guanine
HBTU	*N*-[(*H*-benzotrizol-1-yl) (dimethylamino)methylene]-*N*-methylanaminium hexafluorophosphate *N*-oxide, formerly 2-(1*H*-benzotriazol-1-yl)-1,1,3,3-tetramethyl-uronium hexafluorophosphate
HLP	high loaded polystyrene
HMP resin	*p*-hydroxymethylphenoxymethyl-polystyrene resin
HOAc	acetic acid
HOBt	1-hydroxybenzotriazole
MBHA resin	4-methylbenzhydrylamine resin
MeOH	methanol
Mob	4-methoxybenzyl
Mtr	4-methoxy-2,3,6-trimethyl-benzene sulfonyl
Mts	mesitylene-2-sulfonyl
NMI	1-methylimidazole
NMP	*N*-methylpyrrolidone, *N*-methyl-2-pyrrolidone
OEt	ethyl ester
OMe	methyl ester
PAM resin	phenylacetamidomethyl resin
PEG	polyethylene glycol
RV	reaction vessel
SPPS	solid-phase peptide synthesis
T	thymine
t-Boc	tert-butyloxycarbonyl
TETD	tetraethylthiuram disulfide
TFA	trifluoroacetic acid
TFMSA	trifluoromethane sulfonic acid
THF	tetrahydrofuran
Tos	4-toluenesulfonyl (tosyl)
Tri	trityl
U	uracil
Z	benzyloxcarbonyl

Technical Support and Training

B

Services & Support

Applied Biosystems Web Site

To access the Applied Biosystems Web site, go to:

http://www.appliedbiosystems.com

At the Applied Biosystems Web site, you can:

- Search through frequently asked questions (FAQs)
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- Order Applied Biosystems user documents, MSDSs, certificates of analysis, and other related documents
- Download PDF documents
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In addition, the Applied Biosystems Web site provides a list of telephone and fax numbers that can be used to contact Technical Support.

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Printed in the USA, 11/2001
Part Number 903829 Rev. E

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