

GeneAmp[®] PCR System 9700

96-Well Sample Block Module

User's Manual

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Printed in the USA, 08/2010
Part Number 4316011 Rev. E

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Safety

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.

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.

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.

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 or distributed by Applied Biosystems using the contact information below.

To order documents by automated telephone service:

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 specific region under "To Contact Technical Support by Telephone or Fax (Outside North America)".

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 of the MSDS.

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

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 “Symbols and Conventions” on page 4 for an explanation of all the safety alert symbols provided in several languages.

About Waste Disposal

As the generator of potentially hazardous waste, it is your responsibility to perform the actions listed below.

- ◆ Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- ◆ Ensure the health and safety of all personnel in your laboratory.
- ◆ Ensure that the instrument waste is stored, transferred, transported, and disposed of according to all local, state/provincial, or national regulations.

Note Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

Before Operating the Instrument

Ensure that everyone involved with the operation of the instrument has:

- ◆ Received instruction in general safety practices for laboratories
- ◆ Received instruction in specific safety practices for the instrument
- ◆ Read and understood all related MSDSs










⚠ CAUTION Avoid using this instrument in a manner not specified by Applied Biosystems. Although the instrument has been designed to protect the user, this protection can be impaired if the instrument is used improperly.

Safety Symbols

Symbols and Conventions


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.

Electrical Symbols



	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 non-electrical 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.
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Instrument Warnings **Instrument Labels**

	<p>⚠ WARNING ELECTRICAL HAZARD. Disconnect supply cord before opening. Grounding circuit continuity is vital for safe operation of equipment. Never operate equipment with grounding conductor disconnected.</p> <p><i>AVERTISSEMENT: Debrancher le cordon d'alimentation avant d'ouvrir la continuité des masses est essentielle.</i></p> <p><i>Pour un fonctionnement sans danger. Ne jamais utiliser l'équipement si le fil de terre n'est pas raccorde.</i></p>
	<p>This symbol indicates the danger of burns, if precautions are not followed, due to the presence of heat in this area of the instrument. There may also be hot surfaces that can be easily touched.</p> <p><i>Attention. Surface chaude.</i></p>

Electrical Safety Testing

Routine safety testing of analytical instruments (e.g., high potential voltage testing) may be required by various safety agencies.

	<p>Testing should only be carried out by qualified personnel after seeking advice from the Applied Biosystems Service Department.</p>
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Danger of Burns

⚠ WARNING PHYSICAL INJURY HAZARD. During instrument operation, the temperature of the heated cover can be as high as 108 °C, and the temperature of the sample block can be as high as 100 °C. Before performing the procedure, keep hands away until the heated cover and sample block reach room temperature.

AVERTISSEMENT: Surface chaude.



Instrument Storage The system 9700 must be stored at a temperature between $-20\text{ }^{\circ}\text{C}$ and $60\text{ }^{\circ}\text{C}$ ($-4\text{ }^{\circ}\text{F}$ and $140\text{ }^{\circ}\text{F}$) at altitudes ranging from 0 to 12,000 meters above sea level.



	WARNING This instrument should be used according to the instructions provided in this manual. If used otherwise, the protection provided by this instrument may be impaired.
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Operating Precautions





Precautions The following precautions should be taken whenever you operate the GeneAmp PCR System 9700. Read this section before you install the instrument.

Note This instrument is able to withstand transient overvoltage according to Installation Category II as defined in IEC 1010-1.

Sample Block

	WARNING PHYSICAL INJURY HAZARD. To protect yourself against burns, do not open the heated cover or touch the sample block when the word Hot displays on the screen. This indicates a block temperature above $50\text{ }^{\circ}\text{C}$.
	IMPORTANT To protect your samples and to guarantee the best temperature uniformity, keep the heated cover closed at all times, except when loading or unloading samples.

Temperature, Humidity, and Environment

	IMPORTANT This instrument is designed for indoor use.
	IMPORTANT Do not operate in a Cold Room or a refrigerated area. The system 9700 will operate safely when the ambient temperature is $5\text{ }^{\circ}\text{C}$ to $40\text{ }^{\circ}\text{C}$ ($41\text{ }^{\circ}\text{F}$ to $104\text{ }^{\circ}\text{F}$) and will meet performance specifications when the ambient temperature is $15\text{ }^{\circ}\text{C}$ to $30\text{ }^{\circ}\text{C}$ and the ambient relative humidity is 20 to 80%. These specifications have been calculated for altitudes between 0 and 2,000 meters.
	WARNING FIRE HAZARD. This instrument is not designed for operation in an explosive environment. Do not place the instrument close to potentially explosive materials or objects.
	IMPORTANT This instrument is not designed for operation with the heated cover retracted when running at 4°C . If the cover is retracted and the instrument runs at 4°C , water condensation may be excessive in the block area.

**Routine
Maintenance for
Safe Operation**

Before using any cleaning or decontamination method, except those recommended in the manual, the user should check with Applied Biosystems to ensure that the proposed method will not damage the equipment.

Maintain your instrument in good working order. In the event that the instrument has been subjected to adverse environmental conditions (such as fire, flood, earthquake, etc.), a service inspection of the instrument should be made to insure safe operation.

Regulatory Information

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.

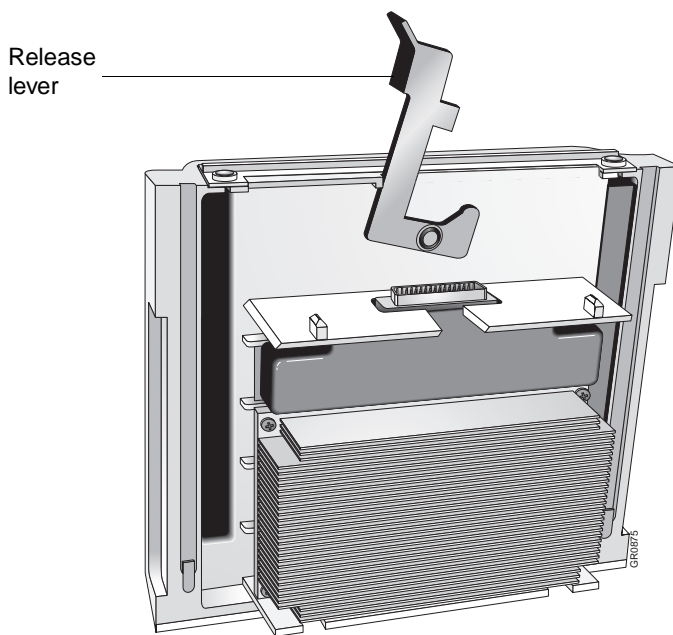
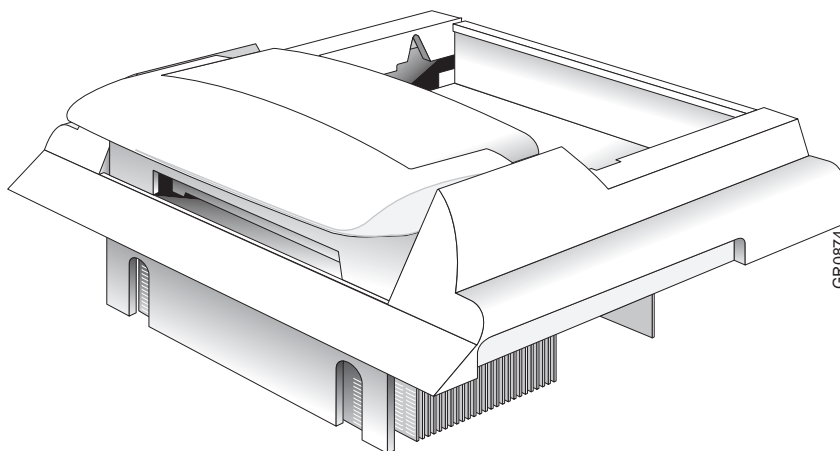
**Communautes
Europeennes (CE)
Compliance**

For our European customers, any product marked with the CE label meets the European EMC directive 89/336/EEC and the Low Voltage Directive 72/23/EEC. This product meets Class B emission limits.

96-Well Sample Block Modules

Introduction You can remove a sample block module and replace it with another Sample Block Module to change sample well formats as well as throughput capacity.

Sample Block Diagram The following are two diagrams of the top and bottom of a generic sample block module. A lever at the rear of the interchangeable sample block releases the sample block module from the base unit.



The Sample Compartment

The sample compartment holds up to 96 MicroAmp Reaction Tubes (0.2 mL).



Placing the Sample Block

To place the sample block into the instrument base:

Step	Action
1	Pull lever out from the block module.
2	Place block module onto the base.
3	Pull the lever left and into the instrument to secure the module.

Note If the sample block module is not seated in place correctly, the power on/off switch will not function.

Heating and Cooling

▲ WARNING PHYSICAL INJURY HAZARD. During instrument operation, the temperature of the heated cover can be as high as 108 °C, and the temperature of the sample block can be as high as 100 °C. Before performing the procedure, keep hands away until the heated cover and sample block reach room temperature.

The internal Peltier heating/cooling unit is housed in the sample block module.

Platinum sensors provide:

- ◆ Wide temperature range: 4 °C to 99.9 °C
- ◆ Accuracy: ±0.25 °C from 35 °C to 100 °C
- ◆ Long term stability and high reliability

Electrical Requirements

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) Nominal
Japan	100 ±10%	50/60 Hz ±1%	3.16
USA/Canada	120 ±10%	50/60 Hz ±1%	4.20
EC	230 ±10%	50/60 Hz ±1%	3.14

Note The Volt-Amp number for this instrument is 725VA.

Part Numbers You can order modules, accessories, and disposables from Applied Biosystems:

Modules/Accessories/Disposables	Part Number
60-Well 0.5 mL Sample Block Module	4309131
Auto-Lid Sample Block Module	4312904
96-Well Gold Sample Block Module	4314443
96-Well Aluminum Sample Block Module	4314445
Dual 384-Well Sample Block Module	N805-0400
Temperature Verification System	4317939

Disposables

You can order disposables for the GeneAmp® PCR System 9700 with 96-Well Sample Block Module from Applied Biosystems by part number.

Disposable	Part Number
MicroAmp® 96-Well Tray/Retainer Sets	403081
MicroAmp® Cap Installing Tool	N801-0438
MicroAmp® Splash-Free Support Base	4312063
MicroAmp® Reaction Tubes	N801-0533
MicroAmp® Caps, Twelve Caps/Strip	N801-0534
MicroAmp® Caps, Eight Caps/Strip	N801-0535
MicroAmp® Reaction Tubes with Caps	N801-0540
MicroAmp® 96-Well Tray for Tubes with Caps	N801-0541
MicroAmp® 96-Well Full Plate Cover	N801-0550
MicroAmp® Optical 96-Well Reaction Plate	N801-0560
MicroAmp® 8-Strip Reaction Tubes	N801-0580
MicroAmp® Centrifuge Adapter	N801-3822

Sample Tube Configurations

Introduction The following section describes the possible tube configurations, choosing a tube configuration, and sample tray and plate configurations.

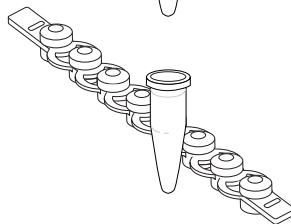
Note The Tray or the Tray Retainer Set are essential for the operation of the GeneAmp PCR System 9700.

Tube Configurations The MicroAmp disposables you can use to hold your PCR samples include four different types of tube configurations, as shown in the figure below.

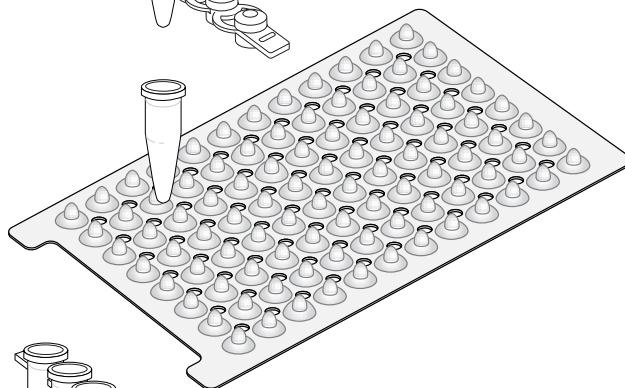
MicroAmp Reaction
Tubes with Caps



MicroAmp Reaction
Tubes with
MicroAmp 8-Strip Cap



MicroAmp Reaction
Tubes with Full Plate
Cover



MicroAmp 8-Strip
Reaction Tubes



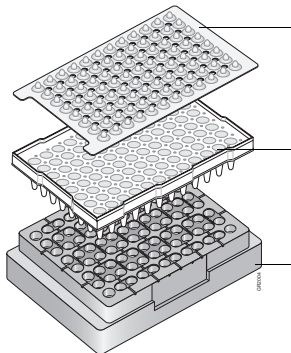
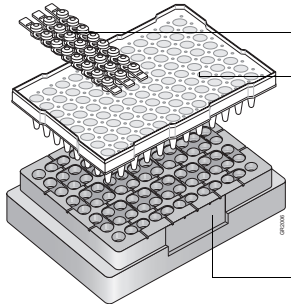
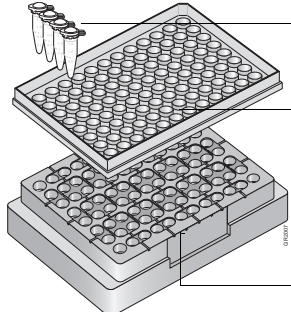
Choosing a Tube Configuration

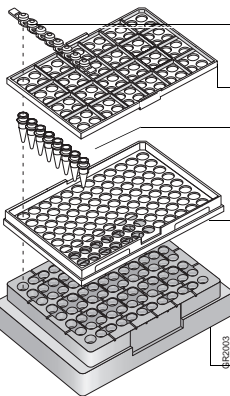
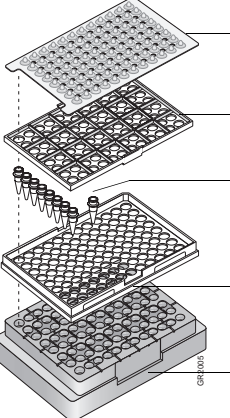
Use the following table to help you choose a tube configuration. You can prepare samples for the instrument using any of the four tube configurations. All the tube configurations, except the MicroAmp Reaction Tubes with Caps use the MicroAmp 96-Well Tray Retainer Set.

If you want to use...	Choose a tube configuration that uses the...
eight or more samples	MicroAmp 96-Well Tray Retainer Assembly.
<ul style="list-style-type: none"> ◆ Only a few samples, or ◆ Want to remove single tubes from the sample block without removing the caps from all the tubes 	MicroAmp Tray for tubes with attached caps.

Sample Tray and Plate Configurations

The following table lists the possible sample tray and plate configurations.

With this vessel...	Use...	As Shown
MicroAmp Optical 96-Well Reaction Plate	MicroAmp 96-Well Full Plate Cover	 <ul style="list-style-type: none"> MicroAmp 96-Well Full Plate Cover MicroAmp Optical 96-Well Reaction Plate MicroAmp Splash-Free Support Base
	MicroAmp 8-Strip Caps	 <ul style="list-style-type: none"> MicroAmp Caps, 8-Strip MicroAmp Optical 96-Well Reaction Plate MicroAmp Splash-Free Support Base
MicroAmp Reaction Tubes with Caps	MicroAmp 96-Well Tray for Tubes with Caps	 <ul style="list-style-type: none"> MicroAmp Reaction Tubes with Caps MicroAmp 96-Well Tray for Tubes with Caps MicroAmp Splash-Free Support Base

With this vessel...	Use...		As Shown
MicroAmp 8 Strip Tubes or Single Tubes	MicroAmp 96-Well Tray Retainer Set	MicroAmp 8-Strip Caps	 <ul style="list-style-type: none"> MicroAmp Caps, 8-Strip MicroAmp 96-Well Retainer MicroAmp 8-Strip Tubes or Single Tubes MicroAmp 96-Well Tray MicroAmp Splash-Free Support Base
		MicroAmp 96-Well Full Plate Cover	 <ul style="list-style-type: none"> MicroAmp 96-Well Full Plate Cover MicroAmp 96-Well Retainer MicroAmp 8-Strip Tubes or Single Tubes MicroAmp 96-Well Tray MicroAmp Splash-Free Support Base

Loading Samples

Procedures for Loading Samples

The following procedures describe how to load samples for:

- ◆ Tubes with attached caps
- ◆ 96-Well reaction plate
- ◆ 96-Well Tray Retainer Assembly
- ◆ Sample volume range:
 - 5–50 μL in “9600 mode”
 - 5–100 μL in “Standard” or “Max” mode

Note Do not use mineral oil or glycerine in the sample block or as a vapor barrier over the PCR reaction mixture in the tubes. The MicroAmp Reaction Tubes fit tightly in the wells and a heated cover exerts an even pressure on all tubes and eliminates condensation on the tubes.

Loading Tubes with Attached Caps

To load tubes with attached caps:

Step	Action
1	Set the 96-Well Tray on a Splash-Free Support Base.
2	Place the reaction tubes in the tray.
3	Pipette the samples into the reaction tubes.
4	Cap the tubes. See “Placing the Sample Tray or Plate Onto the Sample Block” on page 15.

Loading the 96-Well Reaction Plate

To load the 96-well reaction plate:

Step	Action
1	Place the reaction plate on the Splash-Free Support Base.
2	Pipette the samples into the sample wells.
3	Cap the tubes using either the MicroAmp 96-Well Full Plate Cover or the MicroAmp 8-Strip Caps. See “Placing the Sample Tray or Plate Onto the Sample Block” on page 15.

Loading the 96-Well Tray Retainer Assembly

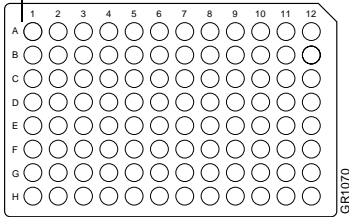
To load the 96-Well Tray Retainer Assembly:

Step	Action
1	Place the tray on the Splash-Free Support Base.
2	Load tubes onto the tray, either using single tubes or using the 8-well tubes.
3	Place retainer over the tubes.
4	Pipette the sample into the tubes.
5	Cap the tubes using either the MicroAmp 96-Well Full Plate Cover or the MicroAmp 8-Strip Caps. See “Placing the Sample Tray or Plate Onto the Sample Block” on page 15.

Placing the Sample Tray or Plate Onto the Sample Block

The steps for placing the sample tray in the block are the same for a sample Tray Retainer Assembly, a sample Tray without a retainer, for tubes with attached caps, or for the 96-well plate.

To place the 96-Well Sample Tray in the block:

Step	Action
1	<p>Lift the 96-Well Sample Tray from the Splash-Free Support Base and place it in the sample block.</p> <p>Place the MicroAmp 96-Well Sample Tray or Plate onto the sample block so that the well numbered A1 is located at the upper left corner of the tray, as shown below. This orients the tray for proper fit.</p> <div style="text-align: center;"> <p>A1</p>  </div> <p>IMPORTANT Do not place the base in the sample block.</p>
2	<p>Slide the heated cover forward.</p> <p>Note To ensure proper seal, ensure that the cover is pulled completely forward.</p>
3	<p>Pull the lever down to engage the heated cover and the sample tray.</p>

Removing the Samples

CAUTION Sample caps may pop off or jam if the cover is opened when the block temperature is above 27 °C.

Cleaning the Sample Block Module

How to Clean the Sample Block Module

To clean the sample block module, raise the front of the lid through the slots on each side of the module. The cleaning position is shown below. For more information on cleaning, see “Cleaning the Sample Block Module” below.



Cleaning the Sample Wells

⚠ WARNING PHYSICAL INJURY HAZARD. During instrument operation, the temperature of the heated cover can be as high as 108 °C, and the temperature of the sample block can be as high as 100 °C. Before performing the procedure, keep hands away until the heated cover and sample block reach room temperature.

Before using any cleaning or decontamination method, except those recommended in the manual, you should check with Applied Biosystems to ensure that the proposed method will not damage the equipment. Clean the sample wells once a month or as needed.

To clean the sample wells:

Step	Action
1	If a method is running, press the Stop key twice.
2	Turn off the instrument.
3	Wait 1 minute for the block to cool.
4	Remove the sample tray from the block and set it aside.
5	Use a cotton swab soaked in pure isopropanol to clean the sample wells thoroughly. ⚠ WARNING CHEMICAL HAZARD. Isopropanol is a flammable liquid and vapor. It may cause eye, skin, and upper respiratory tract irritation. Prolonged or repeated contact may dry skin and cause irritation. It may cause central nervous system effects such as drowsiness, dizziness, and headache, etc. Please read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.

To clean the sample wells: *(continued)*

Step	Action
6	<p>Remove any remaining isopropanol from the cover before reloading the sample tray.</p> <p>Note If the sample wells become contaminated from the samples, clean the wells thoroughly with a cotton swab soaked in bleach and then rinse with water.</p> <p>⚠ WARNING CHEMICAL HAZARD. Sodium hypochlorite (bleach) is a liquid disinfectant that can be corrosive to the skin and can cause skin depigmentation. Please read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.</p>

Cleaning the Heated Cover

⚠ WARNING PHYSICAL INJURY HAZARD. During instrument operation, the temperature of the heated cover can be as high as 108 °C, and the temperature of the sample block can be as high as 100 °C. Before performing the procedure, keep hands away until the heated cover and sample block reach room temperature.

To clean the heated cover:

Step	Action
1	If a method is running, press the Stop key twice.
2	Turn off the instrument.
3	Wait 20 to 30 minutes for the heated cover to cool down.
4	<p>Raise the heated cover lever and slide the cover back almost, but not completely to the back of its slide.</p> <p>Note There are vertical channels in the cover rails at about the midpoint of the rails.</p>
5	Line up the protrusions on the side of the heated cover so that the protrusions, which are closer to the front of the instrument, line up with the vertical channels.
6	Lift up the front of the heated cover until the protrusions travel up the vertical channels all the way to the top.
7	<p>Soak a cotton swab or piece of clean cloth with pure isopropanol and gently wipe the bottom of the cover.</p> <p>⚠ WARNING CHEMICAL HAZARD. Isopropanol is a flammable liquid and vapor. It may cause eye, skin, and upper respiratory tract irritation. Prolonged or repeated contact may dry skin and cause irritation. It may cause central nervous system effects such as drowsiness, dizziness, and headache, etc. Please read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.</p>
8	<p>Remove any remaining isopropanol from the cover and return the cover to its normal position.</p> <p>If the cover becomes contaminated with amplified DNA, raise the heated cover to the cleaning position, and wipe the cover with a cloth or cotton swab soaked in bleach and then rinse with water.</p> <p>⚠ WARNING CHEMICAL HAZARD. Sodium hypochlorite (bleach) is a liquid disinfectant that can be corrosive to the skin and can cause skin depigmentation. Please read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.</p> <p>Note Clean the heated cover once a month or as needed.</p>

Running the Calibration Verification Test

Overview This test may be used to verify the temperature calibration of your system 9700 with a 0.2-mL Sample Block Module.

The Calibration Verification Test consists of several subprocedures, which must be done in order:

Subprocedure	See Page
Setting Up the 0.2-mL Probe Assembly	19
Configuring the System 9700	19
Running the Test	20
Evaluating the Results	22
Ending the Test	22

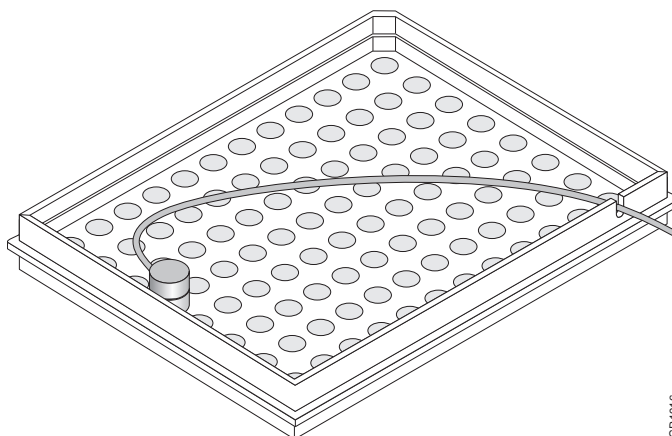
⚠ WARNING PHYSICAL INJURY HAZARD. Hot Surface. Use care when working around the heated cover and sample block to avoid being burned by hot components.

Equipment Required This test requires the 0.2-mL Sample Block Module Temperature Verification Kit (P/N 4317939).

Your kit includes:

- ◆ Cotton swabs
- ◆ Light mineral oil
- ◆ 9700 Temperature Verification Frame
- ◆ 0.2-mL Probe Assembly
- ◆ Digital thermometer Model 4500 with 9V battery installed

Using the Equipment When you perform temperature verification tests on the system 9700, you use the equipment provided in your kit. In this procedure, you are instructed to use a cotton swab to coat specific wells on the sample block with mineral oil. Next, you place the 9700 Temperature Verification Frame around the wells with the channel facing you. Then you place the 0.2-mL Probe Assembly in a specific well and thread the probe wire through the channel to prevent damaging the wire when the thermal cycler's heated cover is closed, as shown below.



GR1016

Setting Up the 0.2-mL Probe Assembly

To set up the 0.2-mL Probe Assembly:

Step	Action
1	If the heated cover is in the forward position, lift the lever, then slide the heated cover back.
2	Place the 9700 Temperature Verification Frame on the sample block.
3	Using a cotton swab, coat well A6 with mineral oil.
4	Place the 0.2-mL Probe Assembly into well A6.
5	Thread the probe wire through the channel in the 9700 Temperature Verification Frame to prevent damage to the probe and lead wires.
6	Make sure the probe is connected to the digital thermometer.
7	Slide the heated cover forward and pull the lever down. IMPORTANT The probe must be seated properly and the heated cover closed carefully. If the probe wire is crushed when the heated cover is closed, the probe may be damaged.
8	Turn on the digital thermometer. Note Refer to the instructions included with your Temperature Verification Kit for a detailed description on operating the digital thermometer, Model 4500.

Configuring the System 9700

To configure the system 9700 for the Calibration Verification Test:

1	Turn on the system 9700. The Main menu appears.
2	Press F4 (Util). The Utilities screen appears.
3	Press F1 (Diag). The Diagnostics screen appears.
4	Press F3 (TmpVer). The Temperature Verification screen appears. <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <pre> Temperature Verification Temp - Calibration Verification TNU - Temperature Non-Uniformity Temp TNU Exit F1 F2 F3 F4 F5 </pre> </div>

To configure the system 9700 for the Calibration Verification Test:

5	<p>Press F1 (Temp).</p> <p>This automatically configures the system 9700 for the Calibration Verification Test. The Calibration Verification screen appears.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Calibration Verification</p> <p>Block temp = xx.x°C Cover temp = xxx°C</p> <p>Place probe in well A6</p> <p>Press Run</p> <div style="display: flex; justify-content: space-between; width: 100%;"> Run Cancel </div> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p>
----------	---

Running the Test

Use the digital thermometer to take temperature readings of the sample well connected to the 0.2-mL Probe Assembly. You will take a reading at two different setpoint temperatures.

Note If necessary, press F5 (Cancel) to exit the test.

To run the Calibration Verification Test:

Step	Action
1	<p>Press F1 (Run).</p> <p>This starts the Calibration Verification Test. The Calibration Verification screen appears with the setpoint value displayed.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Calibration Verification</p> <p>Block temp = xx.x°C Cover temp = xxx°C</p> <p>Setpoint is 85°C</p> <p>Cover must be within 10°C of 85°C</p> <div style="text-align: right; margin-top: 5px;">Cancel</div> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p> <p>Note The cover must be within 1 °C of 105 °C. It may take several minutes for the system 9700 to ramp up.</p>
2	<p>The Calibration Verification screen counts down the time until the setpoint is reached.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Calibration Verification</p> <p>Block temp = xx.x°C Cover temp = xxx°C</p> <p>Stabilizing at setpoint x:xx</p> <div style="text-align: right; margin-top: 5px;">Cancel</div> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p> <p>When the “Stabilizing at setpoint” value decrements to zero, read the digital thermometer.</p> <p>Note Refer to the instructions included with your Temperature Verification Kit for a detailed description on operating the digital thermometer, Model 4500.</p>

To run the Calibration Verification Test: *(continued)*

Step	Action
3	<p>Using the numeric keys, type the value displayed on the digital thermometer in the "Enter actual block temperature" field.</p> <div data-bbox="586 384 1247 575" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre> Calibration Verification Block temp = xx.x°C Cover temp = xxx°C Enter actual block temperature <input type="text" value="xx.x"/> <input type="button" value="Cancel"/> </pre> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p> <p>Note The digital thermometer displays a four-digit value; round this off to three digits before typing it in the Calibration Verification screen.</p> <p>Note If desired, record this value on the Calibration Verification Test Data Sheet (page 23) to keep a permanent record of the test.</p>
4	<p>Press Enter.</p> <p>The system 9700 automatically begins the second reading (45 °C setpoint). The Calibration Verification screen appears with the setpoint value displayed.</p> <div data-bbox="586 924 1247 1115" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre> Calibration Verification Block temp = xx.x°C Cover temp = xxx°C Setpoint is 45°C Cover must be within 30°C of 45°C <input type="button" value="Cancel"/> </pre> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p> <p>Note The cover must be within 1 °C of 105 °C.</p>
5	<p>Repeat step 2 through step 4 for the second reading.</p>
6	<p>The system 9700 evaluates the calibration of the sample block temperature for the setpoint values you entered and displays the results. A summary screen appears at the conclusion of the test.</p> <div data-bbox="586 1392 1247 1583" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre> Calibration Verification Actual temperature at 85 °C <input type="text" value="xx.x"/> Actual temperature at 45 °C <input type="text" value="xx.x"/> <input type="button" value="Accept"/> <input type="button" value="Cancel"/> </pre> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p> <p>If you entered values on the Calibration Verification Test Data Sheet, compare those values with the actual test results.</p>
7	<p>Press F1 (Accept).</p>

Evaluating the Results

When the system 9700 completes the Calibration Verification Test, one of two screens appears. See the table below to evaluate the results.

If the sample block module...	Then the...
is properly calibrated	<p>Calibration Verification screen appears with the following message displayed.</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Calibration Verification</p> <p>Calibration is good</p> <p style="text-align: right;">Exit</p> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p>
does not pass the Calibration Verification Test	<p>Calibration Verification screen appears with the following message displayed.</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Calibration Verification</p> <p>Instrument may require service. Contact Applied Biosystems Technical Support.</p> <p style="text-align: right;">Exit</p> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p> <ul style="list-style-type: none"> ◆ If the test fails, repeat the procedure to make sure the digital thermometer was not misread or that errors were not made entering data. ◆ If the test fails again, contact Applied Biosystems Technical Support. See "Technical Support" on page 33.

Ending the Test

When you have completed all measurements, end the test.

To end the test:

Step	Action
1	Press F5 (Exit).
2	Remove the 0.2-mL Probe Assembly from the sample block.
3	Turn off the digital thermometer and clean off the oil.
4	Wait for the sample block to reach room temperature (~25 °C), then remove the 9700 Temperature Verification Frame from the sample block.
5	Clean the oil off the sample block.

Running the Temperature Non-Uniformity Test

Overview This test may be used to verify the temperature uniformity of the system 9700 with a 0.2-mL Sample Block Module.

The Temperature Non-Uniformity Test consists of several subprocedures, which must be done in order:

Subprocedure	See Page
Setting Up the 0.2-mL Probe Assembly	24
Configuring the System 9700	25
Running the Test	26
Evaluating the Results	28
Ending the Test	28

⚠ WARNING PHYSICAL INJURY HAZARD. Hot Surface. Use care when working around the heated cover and sample block to avoid being burned by hot components.

Equipment Required This test requires the 0.2-mL Sample Block Module Temperature Verification Kit (P/N 4317939).

Your kit includes:

- ◆ Cotton swabs
- ◆ Light mineral oil
- ◆ 9700 Temperature Verification Frame
- ◆ 0.2-mL Probe Assembly
- ◆ Digital thermometer Model 4500 with 9V battery installed

For further information, see “Using the Equipment” on page 18.

Setting Up the 0.2-mL Probe Assembly To set up the 0.2-mL Probe Assembly:

Step	Action
1	If the heated cover is in the forward position, lift the lever, then slide the heated cover back.
2	Place the 9700 Temperature Verification Frame on the sample block.
3	Use a cotton swab to coat the following wells with mineral oil: A1, A12, C4, C9, F4, F9, H1, H12.
4	Place the 0.2-mL Probe Assembly into well A1. Note As the test progresses, you will move the 0.2-mL Probe Assembly to each of the test wells.
5	Thread the probe wire through the channel in the 9700 Temperature Verification Frame to prevent damage to the probe and lead wires.
6	Make sure the probe is connected to the digital thermometer.

Running the Test The Temperature Non-Uniformity Test uses the 0.2-mL Probe Assembly to test the temperature uniformity of 8 different wells in the sample block.

Note If necessary, press F5 (Cancel) to exit the test.

To run the Temperature Non-Uniformity Test:

Step	Action
1	<p>Press F1 (Run).</p> <p>This starts the Temperature Non-Uniformity Test. The TNU Performance screen appears with the setpoint value displayed.</p> <div data-bbox="540 583 1198 779" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre style="font-family: monospace; font-size: 0.9em;"> TNU Performance Sample temp = xx.x°C Cover temp = xxx°C Setpoint is 37°C Sample must be within 1.0°C of setpoint Cancel</pre> </div> <p style="text-align: center; margin: 0;">F1 F2 F3 F4 F5</p> <p>Note The sample block must be within 1.0 °C of the setpoint. In addition, the cover must be within 1 °C of 35 °C. It may take several minutes for the system 9700 to stabilize at the setpoint temperature.</p>
2	<p>The TNU Performance screen counts down the time until the setpoint is stabilized.</p> <div data-bbox="540 1003 1198 1199" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre style="font-family: monospace; font-size: 0.9em;"> TNU Performance Sample temp = xx.x°C Cover temp = xxx°C Stabilizing at setpoint x:xx Cancel</pre> </div> <p style="text-align: center; margin: 0;">F1 F2 F3 F4 F5</p> <p>When the “Stabilizing at setpoint” value decrements to zero, read the digital thermometer.</p> <p>Note Refer to the instructions included with your Temperature Verification Kit for a detailed description on operating the digital thermometer, Model 4500.</p>
3	<p>Using the numeric keys, type the value displayed on the digital thermometer in the “Enter actual block temperature” field.</p> <div data-bbox="540 1497 1198 1692" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <pre style="font-family: monospace; font-size: 0.9em;"> TNU Performance Sample temp = xx.x°C Cover temp = xxx°C Enter actual block temperature 00.0 Cancel</pre> </div> <p style="text-align: center; margin: 0;">F1 F2 F3 F4 F5</p> <p>Note The digital thermometer displays a four-digit value; round this off to three digits before typing it in the TNU Performance screen.</p> <p>Note If desired, record this value on the Temperature Non-Uniformity Test Data Sheet (page 29) to keep a permanent record of the test.</p>

Evaluating the Results

When the system 9700 completes the Temperature Non-Uniformity Test, the TNU Performance screen appears. See the table below to evaluate the results.

If the...	Then...
temperature of the sample block wells is uniform,	<p>“Pass” appears after each setpoint temperature.</p> <div data-bbox="743 415 1404 604" style="border: 1px solid black; padding: 10px; text-align: center;"> <p>TNU Performance</p> <p>TNU at 94°C is xx.xx - Pass</p> <p>TNU at 37°C is xx.xx - Pass</p> <p style="text-align: right;">Cancel</p> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p>
temperature variation of the sample block wells exceeds performance specifications,	<p>“Fail” appears after the setpoint temperature(s) for which the test failed.</p> <div data-bbox="743 743 1404 932" style="border: 1px solid black; padding: 10px; text-align: center;"> <p>TNU Performance</p> <p>TNU at 94°C is xx.xx - Fail</p> <p>TNU at 37°C is xx.xx - Fail</p> <p style="text-align: right;">Cancel</p> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p> <ul style="list-style-type: none"> ◆ If the test fails, repeat the procedure to make sure the digital thermometer was not misread or that errors were not made entering data. ◆ If the test fails again, contact Applied Biosystems Technical Support. See “Technical Support” on page 33.

Ending the Test

When you have completed all measurements, end the test.

To end the test:

Step	Action
1	Press F5 (Cancel).
2	Remove the 0.2-mL Probe Assembly from the sample block.
3	Turn off the digital thermometer and clean off the oil.
4	Wait for the sample block to reach room temperature (~25 °C), then remove the 9700 Temperature Verification Frame from the sample block.
5	Clean the oil off the sample block.

**Data Sheet:
Temperature
Non-Uniformity Test**

When running the Temperature Non-Uniformity Test, record the setpoint values for the wells listed on this data sheet. At the end of the Temperature Non-Uniformity Test, check the values displayed on the system 9700 against the values recorded here. This will help maintain accurate test records.

Note If desired, you may photocopy this page.

Date		
Tested By		
Probe Serial No.		
Thermometer Serial No.		
Setpoint Value	94 °C	37 °C
A1		
A12		
C4		
C9		
F4		
F9		
H1		
H12		

Running System Performance Diagnostics

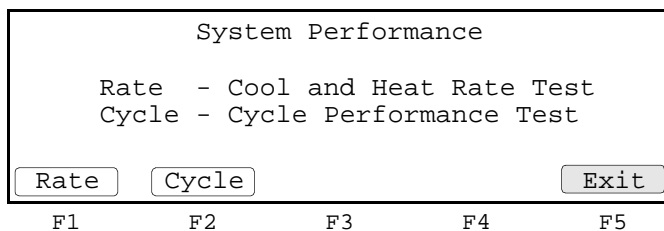
Overview After you have configured the GeneAmp PCR System 9700, conduct the system performance tests to verify the integrity of the cooling and heating system.

There are two system performance tests:

- ◆ Rate Test
- ◆ Cycle Test

IMPORTANT Before you begin these tests, make sure that you place an empty 96-Well plate with full plate cover on the sample block (or use an empty tray and cover the wells with caps or the full plate cover). Slide the heated cover forward, and pull the lever down.

Accessing the Tests To access the tests, press System from the Diagnostics screen. The System Performance screen appears.



Running the Rate Test

Use the Rate Test to verify that the Peltier units are operating correctly. The test takes approximately two minutes to run.

To run the Rate Test:

Step	Action									
1	<p>Press Rate from the System Performance screen.</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>WARNING!!!</p> <p>Install the appropriate empty Consumables into the Sample Block. Refer to System Performance Section of the Block User Manual.</p> <p> <input type="button" value="Cont"/> <input type="button" value="Cancel"/> </p> <p>F1 F2 F3 F4 F5</p> </div>									
2	<p>After you have installed a plate and cover, press Cont.</p> <p>The instrument then runs through a series of tests where the sample block is stabilized at 35 °C, 94 °C, and 4 °C.</p>									
3	<p>At the conclusion of the test, the Cool and Heat Test screen appears. The screen displays the test results and whether the test results passed or failed.</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Cool and Heat Rate Test Pass</p> <p>Heating rate: x.xx °C/s</p> <p>Cooling rate: x.xx °C/s</p> <p> <input type="button" value="Print"/> <input type="button" value="Cancel"/> </p> <p>F1 F2 F3 F4 F5</p> </div> <p>The following table lists the passing ranges for the Rate Test.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Block Type</th> <th>Heating Rate</th> <th>Cooling Rate</th> </tr> </thead> <tbody> <tr> <td>Gold 96-well</td> <td>3.0 to 6.0 °C/second</td> <td>3.0 to 6.0 °C/second</td> </tr> <tr> <td>Aluminum 96-well</td> <td>1.5 to 2.5 °C/second</td> <td>1.5 to 2.5 °C/second</td> </tr> </tbody> </table>	Block Type	Heating Rate	Cooling Rate	Gold 96-well	3.0 to 6.0 °C/second	3.0 to 6.0 °C/second	Aluminum 96-well	1.5 to 2.5 °C/second	1.5 to 2.5 °C/second
Block Type	Heating Rate	Cooling Rate								
Gold 96-well	3.0 to 6.0 °C/second	3.0 to 6.0 °C/second								
Aluminum 96-well	1.5 to 2.5 °C/second	1.5 to 2.5 °C/second								

Running the Cycle Test

Use the Cycle Test to verify that the PCR cycling function operates properly. This test takes approximately 15 minutes to run.

To run the Cycle Test:

Step	Action				
1	<p>Press Cycle from the System Performance screen. This runs the Cycle Test.</p> <div data-bbox="544 451 1209 651" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>WARNING!!!</p> <p>Install the appropriate empty Consumables into the Sample Block. Refer to System Performance Section of the Block User Manual.</p> <p>Cont Cancel</p> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p>				
2	<p>After you have installed a plate cover, press Cont.</p> <p>The Cycle Test executes a standard PCR cycling reaction, measures, and reports the average cycle time, and the cycle to cycle variation.</p> <p>Note Pressing Pause during the Cycle Test may generate false test results. Re-run the Cycle Test if Pause was pressed during the test.</p>				
3	<p>At the conclusion of the test, the display indicates test results and whether the test results passed or failed.</p> <div data-bbox="544 955 1209 1155" style="border: 1px solid black; padding: 5px; text-align: center;"> <p>Cycle Performance Pass</p> <p>Average Cycle Time: xxx.x sec</p> <p>Cycle Time STD: x.x sec</p> <p>Print Cancel</p> </div> <p style="text-align: center;">F1 F2 F3 F4 F5</p> <p>The following table lists the passing ranges for the Cycle Test.</p> <table border="1" data-bbox="544 1270 998 1344" style="margin-left: auto; margin-right: auto;"> <tbody> <tr> <td>Average Cycle Time</td> <td><= 160 sec</td> </tr> <tr> <td>Cycle Time STD</td> <td>< 5 sec</td> </tr> </tbody> </table>	Average Cycle Time	<= 160 sec	Cycle Time STD	< 5 sec
Average Cycle Time	<= 160 sec				
Cycle Time STD	< 5 sec				

Technical Support

Contacting Technical Support

You can contact Applied Biosystems for technical support:

- ◆ By e-mail
- ◆ By telephone or fax
- ◆ Through the Applied Biosystems web site

You can order Applied Biosystems user documents, MSDSs, certificates of analysis, and other related documents 24 hours a day. In addition, you can download documents in PDF format from the Applied Biosystems web site. (Please see the section "To Obtain Technical Documents" following the telephone information below)

To Contact Technical Support by E-Mail

You can contact Applied Biosystems Technical Support by e-mail for help in the following product areas:

Product/Product Area	E-mail address
Genetic Analysis (DNA Sequencing)	galab@appliedbiosystems.com
Sequence Detection Systems (Real-Time PCR) and PCR	pclab@appliedbiosystems.com
Protein Sequencing, Peptide, and DNA Synthesis	corelab@appliedbiosystems.com
<ul style="list-style-type: none"> ◆ Biochromatography (BioCAD[®], SPRINT[™], VISION[™], and INTEGRAL[®] Workstations and POROS[®] Perfusion Chromatography Products) ◆ Expedite[™] 8900 Nucleic Acid Synthesis Systems ◆ MassGenotyping Solution 1[™] (MGS1) Systems ◆ PNA Custom and Synthesis ◆ Pioneer[™] Peptide Synthesizers ◆ Proteomics Solution 1[™] (PS1) Systems ◆ ICAT[™] Reagent ◆ FMAT[™] 8100 HTS Systems ◆ Mariner[™] ESI-TOF Mass Spectrometry Workstations ◆ Voyager[™] MALDI-TOF Biospectrometry Workstations ◆ CytoFluor[®] 4000 Fluorescence Plate Reader 	tsupport@appliedbiosystems.com
LC/MS (Applied Biosystems/MDS Sciex)	support@sciex.com
Chemiluminescence (Tropix)	tropix@appliedbiosystems.com

To Contact Technical Support by Telephone or Fax (North America)

To contact Applied Biosystems Technical Support in North America, use the telephone or fax numbers in the table below.

Note To schedule a service call for other support needs, or in case of an emergency, dial **1.800.831.6844**, then press **1**.

Product/Product Area	Telephone	Fax
ABI PRISM® 3700 DNA Analyzer	1.800.831.6844 , then press 8^a	1.650.638.5981
DNA Synthesis	1.800.831.6844 , press 2 , then press 1^a	1.650.638.5981
Fluorescent DNA Sequencing	1.800.831.6844 , press 2 , then press 2^a	1.650.638.5981
Fluorescent Fragment Analysis (including GeneScan® applications)	1.800.831.6844 , press 2 , then press 3^a	1.650.638.5981
Integrated Thermal Cyclers (ABI PRISM® 877 and Catalyst 800 instruments)	1.800.831.6844 , press 2 , then press 4^a	1.650.638.5981
ABI PRISM® 3100 Genetic Analyzer	1.800.831.6844 , press 2 , then press 6^a	1.650.638.5981
Peptide Synthesis (433 and 43x Systems)	1.800.831.6844 , press 3 , then press 1^a	1.650.638.5981
Protein Sequencing (Procise® Protein Sequencing Systems)	1.800.831.6844 , press 3 , then press 2^a	1.650.638.5981
Sequence Detection Systems (Real-Time PCR) and PCR	1.800.762.4001 , then press: 1 for PCR ^a 2 for TaqMan® applications and Sequence Detection Systems including ABI Prism: 7700, 7900, and 5700 ^a 6 for the 6700 Automated Sample Prep System ^a or 1.800.831.6844 , then press 5^a	1.240.453.4613
<ul style="list-style-type: none"> ◆ Mariner™ ESI-TOF Mass Spectrometry Workstations ◆ Voyager™ MALDI-TOF Biospectrometry Workstations ◆ MassGenotyping Solution 1™ (MGS1) Systems ◆ Proteomics Solution 1™ (PS1) Systems ◆ ICAT™ Reagent 	1.800.899.5858 , press 1 , then press 3^b	1.508.383.7855

Product/Product Area	Telephone	Fax
Biochromatography (BioCAD [®] , SPRINT [™] , VISION [™] , and INTEGRAL [®] Workstations and POROS [®] Perfusion Chromatography Products)	1.800.899.5858, press 1, then press 4 ^b	1.508.383.7855
Expedite [™] 8900 Nucleic Acid Synthesis Systems	1.800.899.5858, press 1, then press 5 ^b	1.508.383.7855
Pioneer [™] Peptide Synthesizers	1.800.899.5858, press 1, then press 5 ^b	1.508.383.7855
PNA Custom and Synthesis	1.800.899.5858, press 1, then press 5 ^b	1.508.383.7855
♦ FMAT [™] 8100 HTS Systems ♦ CytoFluor [®] 4000 Fluorescence Plate Reader	1.800.899.5858, press 1, then press 6 ^b	1.508.383.7855
Chemiluminescence (Tropix)	1.800.542.2369 (U.S. only), or 1.781.271.0045 ^c	1.781.275.8581
LC/MS (Applied Biosystems/MDS Sciex)	1.800.952.4716	1.508.383.7899

- a. 5:30 AM to 5:00 PM Pacific time.
b. 8:00 AM to 6:00 PM Eastern time.
c. 9:00 AM to 5:00 PM Eastern time.

To Contact Technical Support by Telephone or Fax (Outside North America)

To contact Applied Biosystems Technical Support or Field Service outside North America, use the telephone or fax numbers below.

Region	Telephone	Fax
Eastern Asia, China, Oceania		
Australia (Scoresby, Victoria)	61 3 9730 8600	61 3 9730 8799
China (Beijing)	86 10 64106608 or 86 800 8100497	86 10 64106617
Hong Kong	852 2756 6928	852 2756 6968
India (New Delhi)	91 11 653 3743/3744	91 11 653 3138
Korea (Seoul)	82 2 593 6470/6471	82 2 593 6472
Malaysia (Petaling Jaya)	60 3 79588268	60 3 79549043
Singapore	65 896 2168	65 896 2147
Taiwan (Taipei Hsien)	886 2 2358 2838	886 2 2358 2839
Thailand (Bangkok)	66 2 719 6405	66 2 319 9788
Europe		
Austria (Wien)	43 (0)1 867 35 75 0	43 (0)1 867 35 75 11
Belgium	32 (0)2 532 4484	32 (0)2 582 1886
Denmark (Naerum)	45 45 58 60 00	45 45 58 60 01
Finland (Espoo)	358 (0)9 251 24 250	358 (0)9 251 24 243
France (Paris)	33 (0)1 69 59 85 85	33 (0)1 69 59 85 00
Germany (Weiterstadt)	49 (0)6150 101 0	49 (0)6150 101 101
Italy (Milano)	39 (0)39 83891	39 (0)39 838 9492

Region	Telephone	Fax
Norway (Oslo)	47 23 12 06 05	47 23 12 05 75
Portugal (Lisboa)	351.(0)22.605.33.14	351.(0)22.605.33.15
Spain (Tres Cantos)	34.(0)91.806.1210	34.(0)91.806.12.06
Sweden (Stockholm)	46 (0)8 619 4400	46 (0)8 619 4401
Switzerland (Rotkreuz)	41 (0)41 799 7777	41 (0)41 790 0676
The Netherlands (Nieuwerkerk a/d IJssel)	31 (0)180 392400	31 (0)180 392409 or 31 (0)180 392499
United Kingdom (Warrington, Cheshire)	44 (0)1925 825650	44 (0)1925 282502
European Managed Territories (EMT)		
Africa, English speaking (Johannesburg, South Africa)	27 11 478 0411	27 11 478 0349
Africa, French speaking (Paris, France)	33 1 69 59 85 11	33 1 69 59 85 00
India (New Delhi)	91 11 653 3743 91 11 653 3744	91 11 653 3138
Poland, Lithuania, Latvia, and Estonia (Warszawa)	48 22 866 40 10	48 22 866 40 20
For all other EMT countries not listed (Central and southeast Europe, CIS, Middle East, and West Asia)	44 1925 282481	44 1925 282509
Japan		
Japan (Hacchobori, Chuo-Ku, Tokyo)	81 3 5566 6230	81 3 5566 6507
Latin America		
Caribbean countries, Mexico, and Central America	52 55 35 3610	52 55 66 2308
Brazil	0 800 704 9004 or 55 11 5070 9654	55 11 5070 9694/95
Argentina	800 666 0096	55 11 5070 9694/95
Chile	1230 020 9102	55 11 5070 9694/95
Uruguay	0004 055 654	55 11 5070 9694/95

To Reach Technical Support Through the Applied Biosystems Web Site

At the Applied Biosystems web site, you can search through frequently asked questions (FAQs) or a solution database, or you can submit a question directly to Technical Support.

Search FAQs

To search for FAQs:

Step	Action
1	Go to http://www.appliedbiosystems.com
2	Click SERVICES & SUPPORT at the top of the page, then click Frequently Asked Questions .
3	Click your geographic region for the product area of interest.
4	Follow the instructions under the Frequently Asked Questions section (1) to display a list of FAQs for your area of interest.

Search the Solution Database

To search for solutions to problems using the Solution Database:

Step	Action
1	Go to http://www.appliedbiosystems.com
2	Click SERVICES & SUPPORT at the top of the page, then click Frequently Asked Questions .
3	Follow the instructions under the Search the Solution Database section (2) to find a solution to your problem.

Submit a Question

To submit a question directly to Technical Support:

1	Go to http://www.appliedbiosystems.com
2	Click SERVICES & SUPPORT at the top of the page, then click Frequently Asked Questions .
3	In the Personal Assistance – E-Mail Support section (3), click Ask Us RIGHT NOW .
4	In the displayed form, enter the requested information and your question, then click Ask Us RIGHT NOW . Within 24 to 48 hours, you will receive an e-mail reply to your question from an Applied Biosystems technical expert.

To Obtain Technical Documents

You can obtain technical documents, such as Applied Biosystems user documents, MSDSs, certificates of analysis, and other related documents for free, 24 hours a day. You can obtain documents:

- ◆ By telephone
- ◆ Through the Applied Biosystems web site

Ordering Documents by Telephone

To order documents by telephone:

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.

Obtaining Documents Through the Web Site

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, then click Documents on Demand .
3	In the search form, enter and select search criteria, then click Search at the bottom of the page.
4	In the results screen, do any of the following: <ul style="list-style-type: none">◆ Click the pdf icon to view a PDF version of the document.◆ Right-click the pdf icon, then select Save Target As to download a copy of the PDF file.◆ Select the Fax check box, then click Deliver Selected Documents Now to have the document faxed to you.◆ Select the Email check box, then click Deliver Selected Documents Now to have the document (PDF format) e-mailed to you. Note There is a limit of five documents per fax request, but no limit on the number of documents per e-mail request.

To Obtain Customer Training Information

To obtain Applied Biosystems training information:

Step	Action
1	Go to http://www.appliedbiosystems.com
2	Click SERVICES & SUPPORT at the top of the page, then click Training .

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Printed in the USA, 08/2010
Part Number 4316011 Rev. E