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# QIAvac Multiwell Handbook

For use with

DirectPrep<sup>®</sup> 96 Miniprep Kit

MinElute<sup>™</sup> 96 UF PCR Purification Kit



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The PCR process is covered by U.S. Patents 4,683,195 and 4,683,202 and foreign equivalents owned by Hoffmann-La Roche AG.

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## Kit Contents

<b>QIAvac Multiwell</b>	
<b>Catalog no.</b>	<b>9014579</b>
QIAvac Multiwell Top	1
QIAvac Multiwell Base	1
Waste Tray	1
Handbook	1

## Storage

The QIAvac Multiwell is shipped at room temperature (15–25°C), and should be stored dry and clean at room temperature. Refer to page 8 for details on cleaning the QIAvac Multiwell.

## Product Use Limitations

The QIAvac Multiwell is intended to be used in combination with the DirectPrep 96 Miniprep Kit and the MinElute 96 UF PCR Purification Kit. For additional kits that can be used with the QIAvac Multiwell, see [www.qiagen.com](http://www.qiagen.com).

All due care and attention should be exercised in the handling of many of the materials described in this text. We recommend all users of QIAGEN® products to adhere to the NIH guidelines that have been developed for recombinant DNA experiments, or to other applicable guidelines.

## Product Warranty and Satisfaction Guarantee

QIAGEN guarantees the performance of all products in the manner described in our product literature. The purchaser must determine the suitability of the product for its particular use. Should any product fail to perform satisfactorily due to any reason other than misuse, QIAGEN will replace it free of charge or refund the purchase price. We reserve the right to change, alter, or modify any product to enhance its performance and design. If a QIAGEN product does not meet your expectations, simply call your local Technical Service Department or distributor. We will credit your account or exchange the product — as you wish.

A copy of QIAGEN terms and conditions can be obtained on request, and is also provided on the back of our invoices. If you have questions about product specifications or performance, please call QIAGEN Technical Services or your local distributor (see back cover).

## **Technical Assistance**

At QIAGEN we pride ourselves on the quality and availability of our technical support. Our Technical Service Departments are staffed by experienced scientists with extensive practical and theoretical expertise in molecular biology and the use of QIAGEN products. If you have any questions or experience any difficulties regarding the QIAvac Multiwell or QIAGEN products in general, please do not hesitate to contact us.

QIAGEN customers are a major source of information regarding advanced or specialized uses of our products. This information is helpful to other scientists as well as to the researchers at QIAGEN. We therefore encourage you to contact us if you have any suggestions about product performance or new applications and techniques.

For technical assistance and more information please call one of the QIAGEN Technical Service Departments or local distributors (see back cover).

## Introduction

The QIAvac Multiwell is a vacuum manifold for processing 96-well purification plates of SBS\* plate standard (e.g., DirectPrep 96 plate) that are supplied with certain QIAGEN nucleic acid purification kits (see Table 1).<sup>†</sup> The QIAvac Multiwell accommodates a 96-well plate, and allows the use of vacuum pressure to bind or retain and to wash nucleic acids at the membranes of the 96-well plate. Depending on the kit being used, the QIAvac Multiwell is also used to elute pure nucleic acids from the 96-well plate. Using the QIAvac Multiwell allows faster and more convenient processing of large numbers of samples by eliminating centrifugation steps and by reducing handling of samples.

**Table 1. QIAGEN Kits Compatible with the QIAvac Multiwell<sup>‡</sup>**

<b>Kit</b>	<b>Application</b>
DirectPrep 96 Miniprep Kit	Purification of plasmid DNA in 96-well format for standard downstream applications
MinElute 96 UF PCR Purification Kit	Purification of PCR products in 96-well format

<sup>‡</sup> QIAGEN continues to develop new kits for use with the QIAvac Multiwell.

\* Society for Biomolecular Screening ( [www.sbsonline.com](http://www.sbsonline.com) )

<sup>†</sup> The QIAvac Multiwell is not compatible with 96-well plates that are not of SBS standard, such as the QIAamp<sup>®</sup> 96 plate, QIAquick<sup>®</sup> 96 plate, TurboFilter<sup>®</sup> 96 plate, or QIAprep<sup>®</sup> 96 plate.

The QIAvac Multiwell consists of the QIAvac Multiwell top and the QIAvac Multiwell base (see diagram, page 10). The QIAvac Multiwell top accommodates the 96-well plate for nucleic acid purification. The QIAvac Multiwell base can accommodate one of three items:

- Waste tray — collects waste liquid during binding/retaining and washing of nucleic acids
- Elution microtube adapter\* — holds an elution microtube rack with elution microtubes for collecting vacuum-eluted nucleic acids
- Elution microplate adapter\* — holds a microplate for collecting vacuum-eluted nucleic acids

With the DirectPrep 96 Miniprep Kit, nucleic acids are eluted from the DirectPrep 96 plate into racked elution microtubes by vacuum pressure. Therefore the elution microtube adapter is required. With the MinElute 96 UF PCR Purification Kit, purified nucleic acids are recovered from the MinElute 96 UF PCR Purification plate by adding elution buffer to the wells of the plate and then removing elution buffer-dissolved nucleic acids from the wells of the plate. Therefore neither the elution microtube adapter nor the elution microplate adapter are required.

The QIAvac Multiwell base contains a connector through which vacuum is applied to the QIAvac Multiwell. Vacuum pressure from a vacuum source is regulated using the QIAGEN vacuum regulator (available separately).

## Equipment and Reagents to Be Supplied by User

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, consult the appropriate material safety data sheets (MSDSs), available from the product supplier.

- Vacuum Regulator (cat. no. 19530)
- Vacuum source (for details about vacuum requirements, refer to the handbook supplied with the kit you are using) and appropriate tubing
- Elution Microtube Adapter, SBS (cat. no. 9236778) (to determine whether the elution microtube adapter is required, refer to the handbook supplied with the kit you are using)
- Elution Microplate Adapter 3000, SBS (cat. no. 9236850) (to determine whether the elution microplate adapter is required, refer to the handbook supplied with the kit you are using)
- QIAGEN nucleic acid purification kit (see ordering information on page 14)

\* To determine whether this adapter is required, refer to the handbook of the kit you are using.

## Important Notes

### Handling the QIAvac Multiwell

- The vacuum source for the QIAvac Multiwell can be a house vacuum or a vacuum pump.
- Always place the QIAvac Multiwell on a secure bench top or work area. If dropped, it may crack.
- Do not use 96-well plates that are damaged.
- Always store the QIAvac Multiwell in a clean and dry state. To clean, rinse all components with water and dry with paper towels. Do not air dry, as the screws may rust and then need to be replaced. Do not use abrasives or solvents.
- Always use caution and wear protective goggles when working with the QIAvac Multiwell under applied vacuum. Refer to the handbook of the QIAGEN kit you are using for safety information on its chemical components.
- Switch off the vacuum between steps to ensure that a consistent, even vacuum is applied during manipulations.
- Contact QIAGEN Technical Services or your local distributor for any questions regarding the performance or maintenance of the QIAvac Multiwell.

### Using the vacuum regulator

The vacuum regulator from QIAGEN, or other similar vacuum regulator with pressure gauge, is required for regulating the vacuum that is applied to the QIAvac Multiwell. The QIAGEN vacuum regulator displays the vacuum pressure, which is the pressure differential between the inside of the QIAvac Multiwell and the atmosphere (standard atmospheric pressure is 1013 mbar or 760 mm Hg). The displayed vacuum pressure has a negative value to indicate the reduction in pressure with regard to atmospheric pressure. For example, in DirectPrep 96 Miniprep procedures, vacuum pressures of –650 to –800 mbar are required for binding and washing steps, and vacuum pressures of –550 to –650 mbar are required for elution steps. In MinElute 96 UF PCR Purification procedures, a vacuum pressure of –800 mbar must be applied and maintained at all vacuum steps.



If using a vacuum regulator from another manufacturer, and the units of pressure are different, refer to Table 2 for the conversion values.

**Table 2. Conversion Table for Pressure Units**

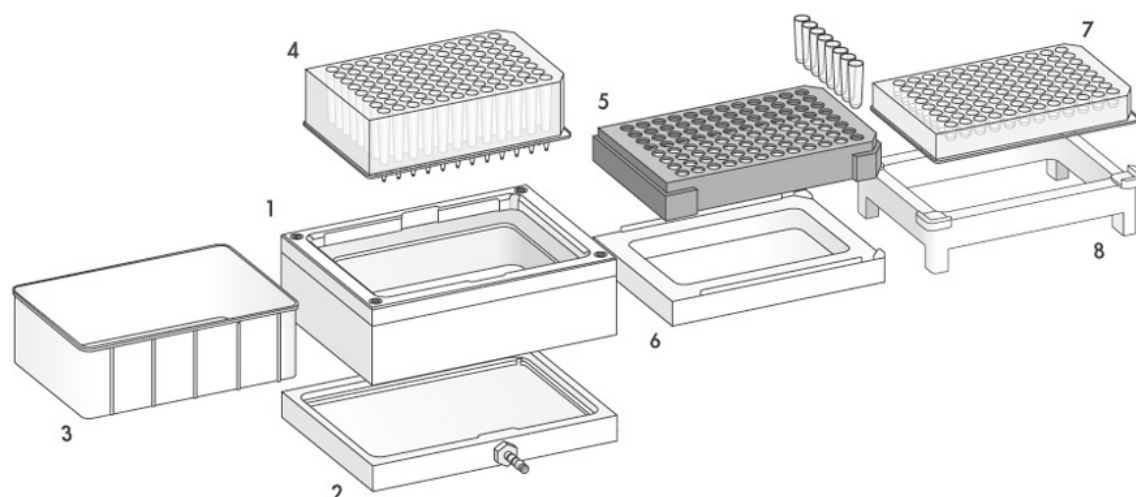
<b>To convert from millibars (mbar) to:</b>	<b>Multiply by:</b>
Millimeters of mercury (mm Hg)	0.75
Kilopascals (kPa)	0.1
Inches of mercury (inch Hg)	0.0295
Torrs (Torr)	0.75
Atmospheres (atm)	0.000987
Pounds per square inch (psi)	0.0145

For further information about the QIAGEN vacuum regulator, refer to the *QIAvac Handbook* supplied with it.

# Assembling the QIAvac Multiwell

Before using a kit that requires the QIAvac Multiwell, we recommend that you familiarize yourself with the components of the QIAvac Multiwell and on how to assemble them together. We also recommend that you read “Important Notes”, page 8.

## Components of the QIAvac Multiwell



Components of the QIAvac Multiwell:

1. QIAvac Multiwell top
2. QIAvac Multiwell base (holds the waste tray, or the elution microtube adapter,\* or the elution microplate adapter\*)
3. Waste tray
4. 96-well plate<sup>†</sup> (in this diagram, the DirectPrep 96 plate)
5. Elution microtube rack with elution microtubes<sup>†</sup>
6. Elution microtube adapter\*
7. Microplate (96-well)<sup>†</sup>
8. Elution microplate adapter\*

\* Adapter available separately; to determine whether it is required, refer to the handbook of the kit you are using

<sup>†</sup> Plasticware available separately or provided with the kit being used; if necessary, check the handbook supplied with the kit for ordering information.

## 1. QIAvac Multiwell top

The QIAvac Multiwell top is the upper part of the QIAvac Multiwell, and holds a 96-well plate (e.g., Directprep 96 plate). First place the 96-well plate into the QIAvac Multiwell top, and then place the QIAvac Multiwell top onto the QIAvac Multiwell base.

## **2. QIAvac Multiwell base**

The QIAvac Multiwell base is the lower part of the QIAvac Multiwell. Depending on the QIAGEN kit being used and on the procedural step being carried out, the QIAvac Multiwell base holds:

- A waste tray, or
- An elution microtube adapter carrying an elution microtube rack with elution microtubes, or
- An elution microplate adapter carrying a 96-well microplate

Vacuum pressure is applied at the QIAvac Multiwell base, allowing liquid to be drawn through the membranes of the 96-well plate held in the QIAvac Multiwell top. Liquid is then collected in the waste tray, racked elution microtubes, or 96-well microplate, depending on the procedural step being carried out.

Use vacuum tubing to connect the QIAGEN vacuum regulator between the QIAvac Multiwell and the vacuum source.

## **3. Waste tray**

Upon application of vacuum pressure, the waste tray collects waste liquid from the 96-well plate held in the QIAvac Multiwell top. The waste tray is required in the purification procedure step in which nucleic acids are bound to or retained at the membranes of the 96-well plate. The waste tray may also be required in the steps in which the membranes are washed.

To load the waste tray, first remove the QIAvac Multiwell top from the QIAvac Multiwell base. Then place the waste tray into the QIAvac Multiwell base, and replace the QIAvac Multiwell top.

## **4. 96-well plate**

The 96-well plate is the plate that enables nucleic acid purification (e.g., Directprep 96 plate). Be sure that the 96-well plate is placed securely in the QIAvac Multiwell top.

## **5. Elution microtube rack with elution microtubes**

Racked elution microtubes are required for certain purification procedures; please refer to the handbook of the kit you are using. Upon application of vacuum pressure, the racked elution microtubes collect eluted nucleic acids from the 96-well plate held in the QIAvac Multiwell top. Racked elution microtubes must be used in conjunction with the elution microtube adapter (see below).

## **6. Elution microtube adapter**

The elution microtube adapter positions the racked elution microtubes correctly below the nozzles of the 96-well plate held in the QIAvac Multiwell top, enabling efficient elution of nucleic acids.

To load the elution microtube adapter with racked elution microtubes, first remove the QIAvac Multiwell top from the QIAvac Multiwell base, and take the waste tray out of the QIAvac Multiwell base. Place the elution microtube adapter containing racked elution microtubes into the QIAvac Multiwell base, and replace the QIAvac Multiwell top.

## **7. Microplate (96-well)**

A 96-well microplate is required for certain purification procedures; please refer to the handbook of the kit you are using. Upon application of vacuum pressure, the 96-well microplate collects eluted nucleic acids from the 96-well plate held in the QIAvac Multiwell top. The 96-well microplate must be used in conjunction with the elution microplate adapter (see below).

## **8. Elution microplate adapter**

The elution microplate adapter positions the 96-well microplate correctly below the nozzles of the 96-well plate held in the QIAvac Multiwell top, enabling efficient elution of nucleic acids.

To load the elution microplate adapter with 96-well microplate, first remove the QIAvac Multiwell top from the QIAvac Multiwell base, and take the waste tray out of the QIAvac Multiwell base. Place the elution microplate adapter containing 96-well microplate into the QIAvac Multiwell base, and replace the QIAvac Multiwell top.

## Troubleshooting Guide

This troubleshooting guide may be helpful in solving any problems that may arise. The scientists in QIAGEN Technical Services are always happy to answer any questions you may have about either the information and protocols in this handbook or molecular biology applications (see back cover for contact information).

### Comments and suggestions

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#### No vacuum pressure

96-well plate is damaged	Check that the 96-well plate is not damaged.
QIAvac Multiwell is not correctly assembled	Check that the rubber seal has not detached from the QIAvac Multiwell.  Check that the QIAvac Multiwell top is correctly positioned on top of the QIAvac Multiwell base.
Vacuum regulator is open to atmospheric pressure	Check that the QIAGEN vacuum regulator is at least partially closed (its knob is turned clockwise).  Apply vacuum and carefully press down on the 96-well plate.

## Ordering Information

Product	Contents	Cat. no.
QIAvac Multiwell	Vacuum manifold for processing DirectPrep 96 Plates and MinElute 96 UF PCR Purification Plates; includes QIAvac Multiwell Top and Base	9014579
<b>Accessories</b>		
Elution Microtube Adapter, SBS	Adapter for accommodating racked elution microtubes in the QIAvac Multiwell	9236778
Elution Microplate Adapter 3000, SBS	Adapter for accommodating a 96-well microplate in the QIAvac Multiwell	9236850
Vacuum Regulator	Vacuum regulator for use with QIAvac vacuum manifolds	19530
96-Well Microplates RB (24)	96-well microplates with round-bottom wells plus lids; pack of 24	19581
Elution Microtubes RS	Elution microtubes, plus caps for strips	120008
Tape Pads (5)	Adhesive tape sheets for sealing multiwell plates and blocks; 25 sheets per pad, 5 pads per pack	19570
<b>Related products</b>		
<b>DirectPrep 96 Miniprep Kit — for high-throughput purification of plasmid DNA from high-copy vectors</b>		
DirectPrep 96 Miniprep Kit (4)	4 DirectPrep 96 Plates, Reagents, Buffers, Flat-Bottom Blocks and Lids, Elution Microtubes RS, AirPore Tape Sheets, Tape Pads	27361
<b>MinElute 96 UF PCR Purification Kits — for high-throughput purification of PCR products</b>		
MinElute 96 UF PCR Purification Kit (4)	4 MinElute 96 UF PCR Purification Plates	28051
MinElute 96 UF PCR Purification Kit (24)	24 MinElute 96 UF PCR Purification Plates	28053

For up-to-date licensing information and product-specific disclaimers, see the respective QIAGEN kit handbook or user manual. QIAGEN kit handbooks and user manuals are available at [www.qiagen.com](http://www.qiagen.com) or can be requested from QIAGEN Technical Services or your local distributor.

[www.qiagen.com](http://www.qiagen.com)

**Australia** ■ Orders 1-800-243-800 ■ Fax 03-9840-9888 ■ Technical 1-800-243-066

**Austria** ■ Orders 0800-28-10-10 ■ Fax 0800-28-10-19 ■ Technical 0800-28-10-11

**Belgium** ■ Orders 0800-79612 ■ Fax 0800-79611 ■ Technical 0800-79556

**Brazil** ■ Orders 0800-557779 ■ Fax 55-11-5079-4001 ■ Technical 0800-557779

**Canada** ■ Orders 800-572-9613 ■ Fax 800-713-5951 ■ Technical 800-DNA-PREP (800-362-7737)

**China** ■ Orders 86-21-3865-3865 ■ Fax 86-21-3865-3965 ■ Technical 800-988-0325

**Denmark** ■ Orders 80-885945 ■ Fax 80-885944 ■ Technical 80-885942

**Finland** ■ Orders 0800-914416 ■ Fax 0800-914415 ■ Technical 0800-914413

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**Korea (South)** ■ Orders 080-000-7146 ■ Fax 02-2626-5703 ■ Technical 080-000-7145

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