

NucleoVac 96 Vacuum Manifold

User manual

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1 Contents

	NucleoVac 96 Vacuum Manifold	
REF	740681	
NucleoVac 96 Manifold Base	1	
NucleoVac 96 Manifold Lid	1	
Waste Container	2	
Rack of Tube Strips	2	
(1 set consists of 1 rack, 12 strips with 8 tubes each, and 12 Cap Strips)		
Spacer Set	2 spacers 'MTP/MULTI-96 PLATES'	
	2 spacers 'ROUND-WELL BLOCKS'	
	2 spacers 'SQUARE-WELL BLOCKS'	
	2 spacers 'MICROTUBE RACKS'	
User manual	1	

<u>Note</u>: For processing the NucleoSpin[®] 8-well strips on the NucleoVac 96, Starter Set A is required (see ordering information).

2 Product description

The NucleoVac 96 Vacuum Manifold is designed for the rapid manual parallel purification of nucleic acids using the 8-well and 96-well NucleoSpin[®] kits and the NucleoFast[®] kits. The **NucleoSpin[®] 8/96** kits are based on MACHEREY-NAGEL's well known NucleoSpin[®] silica-membrane technology and allow rapid simultaneous purification of high-quality nucleic acids. Time consuming centrifugation and decanting steps are eliminated by use of vacuum. The **NucleoFast[®]** kits are based on ultrafiltration technology and offer a fast and convenient way of nucleic acid purification. The NucleoVac 96 manifold provides spacer sets to accommodate suitable microtiter plates, deep-well blocks (round-well and square-well blocks), or microtube racks for collecting samples.



Figure 1: Overview

3 General remarks

3.1 Assembly of the NucleoVac 96 Vacuum Manifold

Place manifold base on a secure lab bench.

For the use of the **NucleoSpin® 8** kits on the NucleoVac 96, the Starter Kit A is needed (see ordering information). This set contains the Column Holders A and NucleoSpin® Dummy Strips. The Column Holders A are used to hold the desired number of 8-well strips (up to six) during the preparation. The NucleoSpin® Dummy Strips are used to fill the unused rows of the Column Holders A.

If using a **NucleoSpin[®] 8** kit with filter and binding strips, please refer to section 4.1 for setup of the vacuum manifold. If the **NucleoSpin[®] 8** kit contains only binding strips, please see figure 4.2.

For the use of **NucleoSpin® 96** kits no additional hardware is necessary. If using a kit with filter and binding plates (e.g., NucleoSpin® 96 Plasmid) the setup is shown in section 5.1. The setup for **NucleoSpin® 96** kits with only binding plates, the setup can is shown in section 5.2.

Please make sure that you place the appropriate spacers into the NucleoVac 96 Manifold Base to insert the binding strips/plate, the MN Wash Plate, the Rack of Tube Strips, or the Elution Plate in the right distance underneath the outlets of the plate inserted into the manifold top.

For the use of **NucleoFast**[®] kits, insert a waste container into the manifold base. Close the manifold with the lid. Insert the **NucleoFast**[®] Plate into the manifold lid and start the procedure according to the kit protocol. Unused wells do not have to be taped. The use of the provided spacers is not necessary. For the detailed setup, refer to section 6.

3.2 Setting up vacuum

Connect the manifold to a suitable vacuum source such as a water aspirator, house vacuum, or vacuum pump (e.g., KNF Laboport vacuum pump NB 840.3; vacuum pump specifications: final vacuum < 100 mbar*, max. airflow > 1.8 m³/h). Close the manifold's valve before adjusting vacuum. Adjust vacuum according to the kit protocol by using an appropriate regulator (e.g., REF 740641, see ordering information, section 8.4). Alternatively, vacuum can be adjusted by measuring the flow-through of samples (see kit protocols).

3.3 Apply vacuum

Load samples into the individual wells of the filter or binding strips/plate. Open valve and if necessary press down the strips/plate shortly until flow starts.

^{*} Reduction of atmospheric

3.4 Release vacuum from manifold

When the samples have passed the wells, close valve and wait about 10–20 seconds until the NucleoSpin[®] 96-well plate or the Column Holder A with the 8-well strips can be removed easily. For NucleoFast[®] plates, make sure that the vacuum is released after each vacuum step (60–90 s).

4 NucleoVac 96 setup with NucleoSpin[®] 8 kits

4.1 Filtration step

Performing the filtration step of a NucleoSpin[®] 8 kit procedure, **NucleoSpin[®] Filter** Strips and **NucleoSpin[®] Binding Strips** are used (e.g., using NucleoSpin[®] 8 Plasmid, REF 740621).

Filtration step



Step 4:

Place the NucleoSpin® Filter Strips in the second Column Holder A and place it on top of the manifold lid. Unused rows have to be filled with NucleoSpin® Dummy Strips.

Step 3:

Place the manifold lid on top of the manifold base.

Step 2:

Put the NucleoSpin® Binding Strips in the first Column Holder A and place it in the manifold.

Step 1:

Insert spacers 'MTP/MULTI-96 PLATE' in the manifold base.



Binding, washing, and elution steps 4.2

Performing the binding, washing, or elution step of a NucleoSpin® 8 kit procedure, only NucleoSpin® Binding Strips are used.

Elution is performed into Tube Strips or Elution Plate. Using the Elution Plate, spacers 'MTP/MULTI-96 PLATE' are needed. Please see the relating kit's user manual for more information regarding specific requirements.

Binding / Washing / Elution in MTP

Elution in Rack of Tube Strips



Step 4:

Place the NucleoSpin® Binding Strips inserted the Column Holder A on top of the manifold lid. Unused rows have to be filled with NucleoSpin® Dummy Strips.

Step 3: Place the manifold lid on top of the manifold base.

Step 2: Place the MN Wash Plate in the manifold.

Step 1: Insert spacers 'MTP/MULTI-96 PLATE in the manifold base.





Step 4:

Place the NucleoSpin® Binding Strips inserted the Column Holder A on top of the manifold lid. Unused rows have to be filled with NucleoSpin® Dummy Strips.

Step 3:

Place the manifold lid on top of the manifold base.

Step 2: Place the Rack of Tube Strips in the manifold.

Step 1: Insert spacers 'MICROTUBE RACK' in the manifold base.



Final setup



5 NucleoVac 96 setup with NucleoSpin[®] 96 kits

5.1 **Filtration step**

Performing the filtration step of a NucleoSpin® 96 kit procedure, the NucleoSpin® Filter Plate and the NucleoSpin® Binding Plate are used (e.g., using NucleoSpin® 96 Plasmid, REF 740625.1).

Filtration step



Step 4: Place the NucleoSpin® Filter Plate on top of the manifold

Step 3: Place the manifold lid on top of the manifold base.

Step 2: Place the NucleoSpin® Binding Plate into the manifold.

Step 1: Insert spacers 'MTP/MULTI-96 PLATE' in the manifold base.



5.2 Binding, washing, and elution steps

Performing the binding, washing, or elution step of a NucleoSpin[®] 96 kit procedure, only the **NucleoSpin[®] Binding Plate** is used.

Elution is performed into the Elution Plate. Alternatively, a Round-well Block, Squarewell Block, or Rack of Tube Strips can be used together with appropriate spacers. Please see the relating kit's user manual for more information regarding specific requirements.





Final setup



6 NucleoVac 96 setup with NucleoFast[®] 96 kits

NucleoFast[®] kits (e.g., NucleoFast[®] 96 PCR) can easily be used on the NucleoVac 96. The spacers provided with the NucleoVac 96 manifold are not used. Only the waste container is placed inside the vacuum chamber.



Step 3: Place the NucleoFast® Plate on top of the manifold

Step 2: Place the manifold lid on top of the manifold base.

Step 1: Insert Waste Container in the manifold base.



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NucleoVac 96 setup with NucleoSpin® Blood L Vacuum 7 kits

7.1 Binding and washing steps

NucleoSpin[®] Blood L Vacuum kits are especially developed to be used with NucleoVac 96 Vacuum Manifold. The use of Starter Set Midi (See ordering information, section 8.4) is required.

Performing the binding and washing steps, the spacers 'SQUARE-WELL BLOCK' and 'HTP/MULTI-96 PLATE' are used

Setup of vacuum manifold:

Binding step



Step 4: Place the NucleoSpin® L Columns inserted in the Column Holder Midi on top of the manifold lid. Unused positions have to be filled with Dummy Columns.

Step 3: Place the manifold lid on top of the manifold base.

Step 2: Place the Sample Waste Block in the manifold.

Step 1: Insert spacers 'SQUARE-WELL BLOCK' in the manifold.



Step 4:

Place the NucleoSpin® L Columns inserted in the Column Holder Midi on top of the manifold lid. Unused positions have to be filled with Dummy Columns.

Step 3: Place the manifold lid on top of the manifold base.

Step 2: Place the Wash Plate Midi in the manifold.

Step 1: Insert spacers 'MTP/MULTI-96 PLATE' and the waste container in the manifold base



Final setup



Final setup

Washing step

7.2 Drying and elution step

For drying step only the waste container is placed inside the vacuum chamber. The elution step requires the use of spacers 'MICRO TUBE RACK'.

Setup of vacuum manifold:

Drying step

Elution step



Step 3: Place the NucleoSpin® L Columns inserted in the Column Holder Midi on top of the manifold lid. Unused positions have to be filled with Dummy Columns.

Step 2: Place the manifold lid on top of the manifold base.



Step 4:

Place the NucleoSpin® L Columns inserted in the Column Holder Midi on top of the manifold lid. Unused positions have to be filled with Dummy Columns.

Step 3: Place the manifold lid on top of the manifold base.

Step 2:

Step 1:

Place the 1.5 mL Collection Tubes inserted the Elution Tube Holder Midi in the manifold.



Step 1: Insert the equiped waste container in the manifold base.



Insert spacers 'MICROTUBE RACK' in the manifold base.



Final setup



8 Appendix

8.1 Pressure conversions

1 mbar = 100 Pa = 0.987×10^{-3} atm = 0,750 mm Hg = 14.504 x 10^{-3} psi

8.2 Manifold care

The manifold consists of an acrylic base and spacers, a PVC cover lid, and a valve made of stainless steel and other metals. Do not autoclave either manifold or cover lid. The parts of the manifold are resistant to diluted acetic acid, ethanol, guanidine-HCl, NaCl, NaOH, SDS. However, prolonged exposure of the manifold to these chemicals should be avoided. Therefore, after DNA purification rinse all parts of the manifold (particularly the valve) carefully with water and dry them thoroughly. The manifold must not come in contact with acetone, phenol, toluene, or other apolar organic solvents.

8.3 Troubleshooting

Problem	Possible cause and suggestions			
	Gasket			
Vacuum is	 Insert a microtiter plate with closed, rectangular bottom into the manifold lid. The gasket of the vacuum manifold must be covered completely by the microtiter plate. Apply vacuum to the manifold and test the vacuum. The microtiter plate should be fixed now by vacuum. 			
properly	Vacuum manifold			
	Are there any cracks on the surface of the vacuum manifold?			
	Check the main valve: is it tightly fixed into the vacuum manifold?			
	Are there any cracks around the valve?			

8.4 Ordering information

Product	REF	Pack of		
NucleoVac 96 Vacuum Manifold	740681	1		
Replacement parts for the NucleoVac 96 are available on request				
NucleoVac Vacuum Regulator	740641	1		
Starter Set A (for processing NucleoSpin [®] 8-well strips on NucleoVac 96 Vacuum Manifold)	740682	1 set		
Starter Set Midi	740744	1 set		
NucleoSpin® Dummy Strips	740685	6		
Rack of Tube Strips (1 set consists of 1 rack, 12 strips with 8 tubes each, and 12 Cap Strips)	740637	5 racks		
Elution Plate U-bottom	740486.24	24		
Square-well Block	740481 740481.24	4 24		
Round-well Block with Cap Strips (set consists of 1 Round-well Block and 12 Cap Strips)	740475 740475.24	4 sets 24 sets		
Self-adhering PE Foil	740676	50 sheets		
Gas-permeable Foil	740675	50 sheets		

Visit *www.mn-net.com* for more detailed product information.

8.5 Product use restriction/warranty

NucleoVac 96 Vacuum Manifold components are intended, developed, designed, and sold FOR RESEARCH PURPOSES ONLY, except, however, any other function of the product being expressly described in original MACHEREY-NAGEL product leaflets.

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