

# QIAsymphony<sup>®</sup> DSP Circulating DNA Kit Instructions for Use (Handbook)



192

Version 2



For In Vitro Diagnostic Use

For use with QIAsymphony DSP Circulating DNA Kit



937556



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# Contents

Intended Use .....	4
Intended User .....	4
Description and Principle .....	5
Summary and explanation .....	7
Materials Provided .....	8
Kit contents .....	8
Materials Required but Not Provided .....	9
Additional reagents .....	9
Consumables .....	9
Equipment .....	10
Protocol and labware .....	10
Warnings and Precautions .....	11
Safety information .....	11
Emergency information .....	12
Precautions .....	12
Disposal .....	13
Reagent Storage and Handling .....	14
In-use stability .....	14
Specimen Collection, Storage, and Handling .....	15
Procedure .....	16
Automated purification on QIAasympyony SP .....	16
Protocol: Purification of circulating cell-free DNA .....	21

Quality Control.....	25
Limitations.....	25
Performance Characteristics .....	26
Troubleshooting Guide .....	27
Symbols.....	29
Contact Information .....	31
Appendix: Quantification of Circulating Cell-Free DNA.....	32
Ordering Information .....	33
Document Revision History .....	35

## Intended Use

The QIASymphony DSP Circulating DNA Kit utilizes magnetic-particle technology for automated isolation and purification of human circulating cell-free DNA from biological specimens.

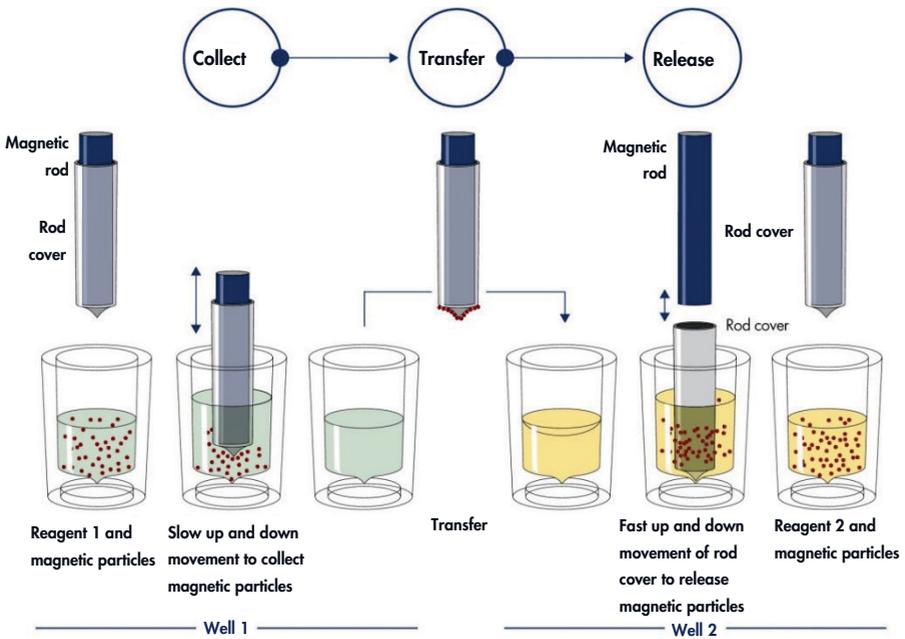
The QIASymphony DSP Circulating DNA Kit is intended for in vitro diagnostic use.

## Intended User

The QIASymphony DSP Circulating DNA Kit is intended to be used by professional users, such as technicians and physicians who are trained in molecular biological techniques.

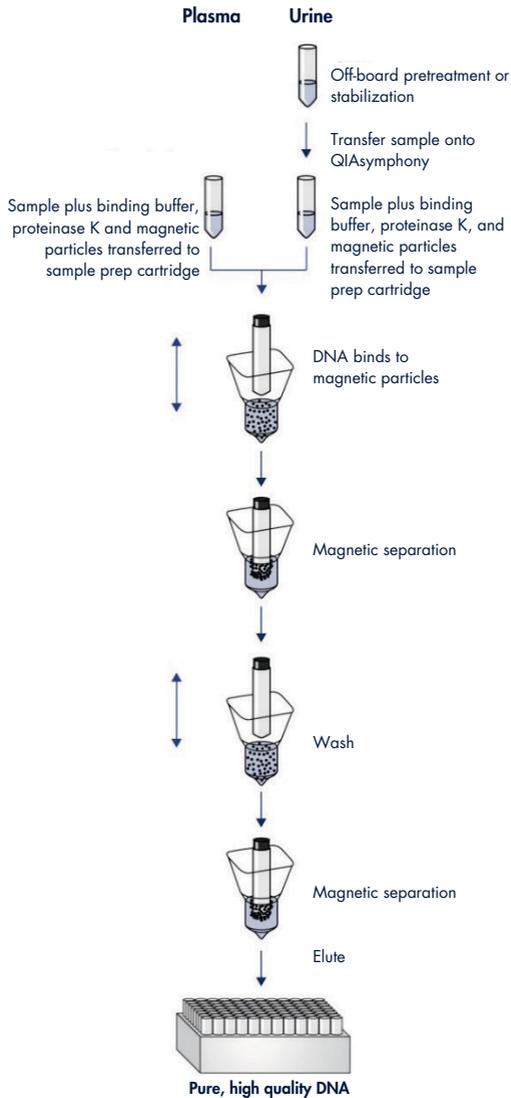
# Description and Principle

QIAsymphony technology combines the speed and efficiency of anion exchange-based nucleic acid purification with the convenient handling of magnetic particles (Figure 1, below). The purification procedure is designed to ensure safe and reproducible handling of potentially infectious samples and comprises 3 steps: bind, wash, and elute (see the flowchart on page 6). The user can choose between different sample input volumes.



**Figure 1. Schematic diagram of the QIAsymphony SP principle.** The QIAsymphony SP processes a sample containing magnetic particles as follows: a magnetic rod protected by a rod cover enters a well containing the sample and attracts the magnetic particles. The magnetic rod cover is positioned above another well, and the magnetic particles are released. These steps are repeated several times during sample processing. The QIAsymphony SP uses a magnetic head containing an array of 24 magnetic rods and can therefore process up to 24 samples simultaneously.

## QIASymphony DSP Circulating DNA Procedure



## Summary and explanation

Circulating cell-free nucleic acids (ccfNAs) are present in plasma or urine usually as short fragments, <1000 bp (DNA) and <1000 nt (RNA). The concentration of ccfNAs in biological fluids such as plasma or urine is usually low and varies considerably between individuals. For ccfNA, the concentration can range from 1 to 100 ng/ml. The QIAasymphony DSP Circulating DNA system constitutes a ready-to-use in vitro system for the qualitative purification of human circulating cell-free DNA (ccfDNA) from human plasma and urine using the QIAasymphony SP instrument.

The QIAasymphony DSP Circulating DNA Kit provides reagents for fully automated and simultaneous purification of human ccfDNA from human plasma and urine. A performance characteristic for every blood collection tube has not been established and must be validated by the user. Magnetic-particle technology enables purification of high-quality nucleic acids that are free of proteins, nucleases, and other impurities. The purified ccfDNA is compatible with a wide range of downstream applications. The QIAasymphony SP performs all steps of the purification procedure. Up to 96 samples, in batches of 24, are processed in a single run. Urine samples may require manual sample pretreatment.

# Materials Provided

## Kit contents

<b>QIASymphony DSP Circulating DNA Kit</b>	<b>(192)</b>
<b>Catalog no.</b>	<b>937556</b>
<b>Number of reactions</b>	<b>192</b>

<b>Abbreviations</b>	<b>Identity</b>	<b>Quantity</b>	<b>Active Ingredients</b>	<b>Concentration [%]*</b>
RC	Reagent cartridge† <b>REAG</b> <b>CART</b>	2	Nonionic detergent Anion exchange magnetic particle NaOH Ethanol	≥0.5 to <10 [w/w] n/a ≥0.05 to <0.1 [w/w] ≥70 to <90 [v/v]
PROTK <b>PROTK</b>	QIAGEN Proteinase K	6 x 10 ml	Proteinase K	≥1 to <3 % [w/w]
PL	Piercing lid	2	n/a	n/a
RSS	Reuse Seal Set‡	2	n/a	n/a
	Instructions for Use (Handbook)	1	n/a	n/a

\* Maximum concentration in single well.

† Contains sodium azide as a preservative.

‡ A Reuse Seal Set contains 8 Reuse Seal Strips.

# Materials Required but Not Provided

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

## Additional reagents

- Buffer ATL (for pretreatment of urine samples; cat. no. 939016)
- Phosphate-buffered saline (PBS, may be required for topping up sample volumes)

For additional information needed for pretreatment and stabilization of urine samples, please refer to the protocol sheet, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

## Consumables

- Sample Prep Cartridges, 8-well cartridges (cat. no. 997002)
- 8-Rod Covers (cat. no. 997004)
- Filter-Tips, 200 and 1500 µl (cat. nos. 990332 and 997024)
- Sample tubes. For compatible primary and secondary tube formats, see the labware list, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).
- Elution tubes or plates. For compatible elution tube and plate formats, see the labware list, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

## Equipment\*

- QIAasymphony SP (cat. no. 9001297)
- Vortexer

## Protocol and labware

Next to the handbook, the instructions for use consist of the protocol sheet, labware list, and performance characteristics, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

\* Prior to use, ensure that instruments have been checked and calibrated according to the manufacturer's recommendations.

# Warnings and Precautions

Please be aware that you may be required to consult your local regulations for reporting serious incidents that have occurred in relation to the device to the manufacturer and/or its authorized representative and the regulatory authority in which the user and/or the patient is established.

For in vitro diagnostic use

Read all instructions carefully before using the kit.

Please be aware of following remaining risks:

- When using secondary tubes, please ensure that the sample IDs are not mixed up during transfer of sample ID from primary to secondary tube.
- Sample IDs can also be entered manually (for details, refer to the *QIAasymphony SP User Manual*). If wrong ID data are entered manually, wrong correlation between sample and patient can occur.

## Safety information

When working with chemicals, always wear a suitable lab coat, disposable gloves, and protective goggles. For more information, please consult the appropriate safety data sheets (SDSs). These are available online in convenient and compact PDF format at [www.qiagen.com/safety](http://www.qiagen.com/safety), where you can find, view and print the SDS for each QIAGEN kit and kit component.

- All chemicals and biological materials are potentially hazardous. Specimens and samples are potentially infectious and must be treated as biohazardous materials.

- Discard sample and assay waste according to your local safety procedures.

**WARNING** Risk of personal injury



Do not add bleach or acidic solutions directly to the sample preparation waste.

Buffers in the reagent cartridge contain sodium azide. If buffers of the kit are spilled, clean with suitable laboratory detergent and water. If the spilled liquid contains potentially infectious agents, clean the affected area first with laboratory detergent and water, and then with 1% (v/v) sodium hypochlorite.

Specimens and samples are potentially infectious. Discard sample and assay waste according to your local safety procedures.

### Emergency information

CHEMTREC

USA & Canada 1-800-424-9300

Outside USA & Canada +1 703-527-3887

### Precautions

The following hazard and precautionary statements apply to components of QIA Symphony DSP Circulating DNA Kit.

#### MBS3

**Sodium azide**

Contains: Sodium azide. Warning! May be harmful if swallowed. Call a POISON CENTER or doctor/physician if you feel unwell.

## Proteinase K



Contains: Proteinase K. Danger! Causes mild skin irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Avoid breathing dust/fume/gas/mist/vapors/spray. Dispose of contents/container to an approved waste disposal plant. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Wear respiratory protection.

## QSW9



Contains: ethanol. Danger! Causes serious eye irritation. Highly flammable liquid and vapor. Dispose of contents/container to an approved waste disposal plant. If eye irritation persists: Get medical advice/ attention. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Store in a well-ventilated place. Keep cool. Wear protective gloves/protective clothing/eye protection/face protection.

## Disposal

The waste contains samples and reagents. This waste may contain toxic or infectious material and must be disposed properly. Refer to your local safety regulations for proper disposal procedures.

For more information, please consult the appropriate safety data sheets (SDSs). These are available online in PDF format at [www.qiagen.com/safety](http://www.qiagen.com/safety) where you can find, view, and print the SDS for each QIAGEN kit and kit component.

# Reagent Storage and Handling

The QIAAsymphony DSP Circulating DNA Kit should be stored upright at room temperature (15–25°C). The magnetic particles in the reagent cartridges remain active when stored at this temperature.

The QIAAsymphony DSP Circulating DNA Kit contains ready-to-use proteinase K solution that can be stored at room temperature.

**Note:** The label on the QIAAsymphony DSP Circulating DNA Kit box displays the expiration date of the kit. The result file documents the expiration dates for only the reagent cartridge.

Do not use the QIAAsymphony DSP Circulating DNA Kit once it has expired.

## In-use stability

Partially used reagent cartridges can be stored for a maximum of 4 weeks, upright at room temperature (15–25°C), enabling cost-efficient reuse of reagents and more flexible sample processing. If a reagent cartridge is partially used, replace the cover of the trough containing the magnetic particles and seal the reagent cartridge with the provided Reuse Seal Strips (RSS) immediately after the end of the protocol run to avoid evaporation.

To avoid reagent evaporation, the reagent cartridge should be open for a maximum of 15 hours (including run times) at a maximum environmental temperature of 32°C. Incorrect storage of the kit components can lead to accelerated aging of buffers.

Running batches with low sample numbers (<24) will increase both the time that the reagent cartridge (RC) is open and the required buffer volumes, potentially reducing the total number of sample preparations possible per cartridge.

Avoid exposure of the reagent cartridges to UV light (e.g., used for decontamination) as exposure may cause accelerated aging of the reagent cartridges and buffers.

# Specimen Collection, Storage, and Handling

For more information about the automated procedure (including information about sample tubes that can be used with specific protocols), sample storage, handling and specific sample pretreatments, see the relevant protocol sheet and labware list, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

# Procedure

## Automated purification on QIASymphony SP

The QIASymphony SP makes automated sample preparation easy and convenient. Samples, reagents and consumables, and eluates are separated in different drawers. Simply load samples, reagents provided in special cartridges, and preracked consumables in the appropriate drawer before a run. Start the protocol, and remove purified DNA from the “Eluate” drawer after processing. Refer to the user manuals supplied with your instrument for operating instructions.

**Note:** Optional maintenance is not mandatory for instrument function, but is highly recommended to reduce risk of contamination.

The range of protocols available is continually expanding, and additional QIAGEN protocols can be downloaded free of charge at [www.qiagen.com](http://www.qiagen.com) under the resource tab of the individual kits.

### Loading reagent cartridges into the “Reagents and Consumables” drawer

Reagents for purification of DNA are contained in an innovative reagent cartridge (Figure 2, page 17). Each trough of the reagent cartridge contains a particular reagent, such as magnetic particles, binding buffer, wash buffer, or elution buffer. Partially used reagent cartridges can be reclosed with Reuse Seal Strips for later reuse, which avoids generation of waste due to leftover reagents at the end of the purification procedure.



**Figure 2. QIASymphony reagent cartridge.** The reagent cartridge contains all reagents required for the protocol run.

Before starting the procedure, make sure that the magnetic particles are fully resuspended. Remove the magnetic-particle trough from the reagent cartridge frame, vortex it vigorously for at least 3 minutes, then replace it in the reagent cartridge frame before the first use.

**Note:** Magnetic particles can change color. This has no influence on performance.

Place the reagent cartridge into the reagent cartridge holder. Before using a reagent cartridge for the first time, place the piercing lid (PL) on top of the reagent cartridge (Figure 2, above).

**Note:** The piercing lid is sharp. Take care when placing it onto the reagent cartridge. Make sure to place the piercing lid onto the reagent cartridge in the correct orientation.

After the magnetic-particle trough cover is removed, the reagent cartridge is subsequently loaded into the “Reagents and Consumables” drawer.

Partially used reagent cartridges can be stored until needed again (see “Reagent Storage and Handling,” page 14).

**Note:** Proteinase K must be added according to information given in the protocol sheet under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

**Note:** Make sure that the reagent cartridges, magnetic-particle troughs, and Proteinase K bottles are not interchanged between different kit lots.

## Loading plastic ware into the “Reagents and Consumables” drawer

Sample prep cartridges, 8-Rod Covers (both preracked in unit boxes), and disposable filter-tips (200 µl tips provided in blue racks and 1500 µl tips provided in black racks) are loaded into the “Reagents and Consumables” drawer.

**Note:** Make sure that the covers of the unit boxes are removed before loading the unit boxes into the “Reagents and Consumables” drawer.

**Note:** Tips have filters to help prevent cross-contamination.

Tip rack slots on the QIASymphony SP worktable can be filled with either type of tip rack. The QIASymphony SP will identify the type of tips loaded during the inventory scan.

**Note:** Do not refill tip racks or unit boxes for sample prep cartridges or 8-Rod Covers before starting another protocol run. The QIASymphony SP can use partially used tip racks and unit boxes.

For the consumables required, see the relevant protocol sheet, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com). For plasticware ordering information, see page 33.

## Loading the “Waste” drawer

Sample prep cartridges and 8-Rod Covers used during a run are re-racked in empty unit boxes in the “Waste” drawer. Make sure that the “Waste” drawer contains sufficient empty unit boxes for plastic waste generated during the protocol run.

**Note:** Make sure that the covers of the unit boxes are removed before loading the unit boxes into the “Waste” drawer. If you are using 8-Rod Cover boxes for collecting used sample prep cartridges and 8-Rod Covers, ensure that the box spacer has been removed.

A bag for used filter-tips must be attached to the front side of the “Waste” drawer.

**Note:** The presence of a tip disposal bag is not checked by the system. Make sure that the tip disposal bag is properly attached before starting a protocol run. For more information, see the user manuals provided with your instrument. Empty the tip bag after a maximum of 96 samples have been processed to avoid a tip jam.

A waste container collects liquid waste generated during the purification procedure. The “Waste” drawer can only be closed if the waste container is in place. Dispose of the liquid waste according to your local safety and environment regulations. Do not autoclave the filled waste bottle. Empty the waste bottle at the latest after a maximum of 96 samples have been processed.

## Loading the “Eluate” drawer

Load the required elution rack into the “Eluate” drawer. As long-term storage of eluates in the “Eluate” drawer may lead to evaporation or condensation, the cooling position must be used. Only use “Elution slot 1” with the corresponding cooling adapter.

## Inventory scan

Before starting a run, the instrument checks that sufficient consumables for the queued batch(es) have been loaded into the corresponding drawers.

## Preparation of sample material

The QIAasymphony DSP Circulating DNA Kits are designed for automated purification of human circulating cell-free DNA from human plasma and urine.

Prevent formation of foam in or on the samples. Foam on samples can lead to pipetting of wrong sample volume. Depending on the starting material, sample pretreatment may be required. Samples should be equilibrated to room temperature (15–25°C) before starting the run.

For more information about the automated procedure (including information about sample tubes that can be used with specific protocols) and specific sample pretreatments, see the relevant protocol sheet and labware list, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

## Storing DNA

**Note:** Eluate stability highly depends on various factors and relates to the specific downstream application. It has been established for the QS DSP Circulating DNA Kit in conjunction with exemplary downstream applications. It is the responsibility of the user to consult the instructions for use of the specific downstream application used in their laboratory and/or validate the whole workflow to establish appropriate storage conditions.

After sample preparation, eluates can be stored at 2–8°C for up to 1 month and at –20°C or at –80°C for up to 2 months. Frozen eluates must not be thawed more than three times.

# Protocol: Purification of circulating cell-free DNA

## Protocol overview

**Table 1. Protocol overview**

Sample	Sample volume (µl)	Elution volume (µl)	QIASymphony SP protocol
Plasma, urine	2000	60	circDNA_2000_DSP
Plasma, urine	4000	60	circDNA_4000_DSP

Detailed information are given in the protocol sheets and labware list, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

The following is a general protocol for using the QIASymphony DSP Kits. Detailed information for each protocol, including volumes and tubes, is provided in the protocol sheets, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

## Important points before starting

- Make sure that you are familiar with operating the QIASymphony SP. Refer to the user manuals supplied with your instrument for operating instructions.
- Optional maintenance is not mandatory for instrument function but is highly recommended to reduce risk of contamination.
- Before beginning the procedure, read “Description and Principle”, page 5.
- Make sure that you are familiar with the protocol sheet corresponding to the procedure you want to use. (Protocol sheets can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).)
- Avoid vigorous shaking of the reagent cartridge otherwise foam may be generated, which can lead to liquid-level detection problems.

Before starting a pretreatment that requires Buffer ATL, check whether precipitate has formed in Buffer ATL. If necessary, dissolve precipitate by heating at 70°C with gentle agitation in a water bath. Aspirate bubbles from the surface of Buffer ATL.

## Things to do before starting

- Before starting the procedure, make sure that the magnetic particles are fully resuspended. Vortex the trough containing the magnetic particles vigorously for at least 3 minutes before first use.
- Make sure that the piercing lid is placed on the reagent cartridge and the lid of the magnetic-particle trough has been removed or, if using a partially used reagent cartridge, make sure the Reuse Seal Strips have been removed.
- Proteinase K is not included in the reagent cartridge but has to be provided by the user (sample drawer, slot A, position 1, 2 and/or 3). Make sure that correct proteinase K volume is available. (For detailed information, see the protocol sheet which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com)).
- If samples are bar coded, orient samples in the tube carrier so that the bar codes face the bar code reader at the left side of the QIAasympphony SP.
- For information about sample tubes compatible with a certain protocol, see the corresponding labware list, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).
- For information about minimum sample volumes for secondary tubes, see the corresponding labware list, which can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

## Procedure

1. Close all drawers and the hood.
2. Power ON the QIAasympphony SP, and wait until the **Sample Preparation** screen appears and the initialization procedure has finished.

The power switch is located at the bottom, left corner of the QIA Symphony SP.

3. Log on to the instrument.

4. Load the required elution rack into the "Eluate" drawer.

Do not load a 96-well plate onto "Elution slot 4". "Elution slot 1", with the corresponding cooling adapter, must be used.

When using a 96-well plate, make sure that the plate is in the correct orientation, as incorrect placement may cause sample mix-up in downstream analysis.

When using the Elution Microtubes CL rack, remove the bottom by twisting the rack until the bottom comes off.

5. Make sure the "Waste" drawer is properly prepared and perform an inventory scan of the "Waste" drawer, including the tip chute and liquid waste. Replace the tip disposal bag if necessary.

6. Load the required reagent cartridge(s) and consumables into the "Reagents and Consumables" drawer.

7. Perform an inventory scan of the "Reagents and Consumables" drawer.

8. Place the samples into the appropriate sample carrier, and load them into the "Sample" drawer.

9. Using the touchscreen, enter the required information for each batch of samples and for proteinase K to be processed.

Enter the following information:

- Sample information (depending on sample racks used)
- Protocol to be run (Assay Control Set)
- Elution volume and output position

After information about the batch has been entered, the status changes from LOADED to QUEUED. As soon as one batch is queued, the Run button appears.

10. Place the proteinase K into the appropriate sample carrier on position 1, 2, and/or 3, and load them into slot A of the "Sample" drawer.

11. Define the proteinase K by pressing the IC button.

12. Press the Run button to start the purification procedure.

All processing steps are fully automated. At the end of the protocol run, the status of the batch changes from RUNNING to COMPLETED.

13. Retrieve the elution rack containing the purified nucleic acids from the “Eluate” drawer.

14. The DNA is ready to use or can be stored at 2–8°C, –20°C, or –80°C.

We recommend removing the eluate plate from the “Eluate” drawer immediately after the run has finished. Depending on temperature and humidity, elution plates left in the QIASymphony SP after the run is completed may experience condensation or evaporation.

In general, magnetic particles are not carried over into eluates. If carryover does occur, magnetic particles in eluates will not affect most downstream applications.

If magnetic particles need to be removed before performing downstream applications, tubes or plates containing eluates should first be placed in a suitable magnet and the eluates transferred to a clean tube (see “Troubleshooting Guide”, page 27).

Result files are generated for each elution plate.

15. If a reagent cartridge is only partially used, seal it with the provided Reuse Seal Strips after the end of the protocol run to avoid evaporation.

**Note:** For more information about storage of partially used reagent cartridges, see “Reagent Storage and Handling”, page 14.

16. Discard used sample tubes and waste according to your local safety regulations.

See “Warnings and Precautions”, page 11, for safety information.

17. Clean the QIASymphony SP.

Follow the maintenance instructions in the user manuals supplied with your instrument. Make sure to clean the tip guards regularly to minimize the risk of cross-contamination.

18. Close the instrument drawers and power OFF the QIASymphony SP.

# Quality Control

In accordance with QIAGEN's ISO-certified Quality Management System, each lot of QIASymphony DSP Circulating DNA Kit is tested against predetermined specifications to ensure consistent product quality.

## Limitations

System performance has been established in performance evaluation studies purifying human ccfDNA from human plasma and urine.

It is the user's responsibility to validate system performance for any procedures used in their laboratory that are not covered by the QIAGEN performance evaluation studies.

To minimize the risk of a negative impact on the diagnostic results, adequate controls for downstream applications should be used. For further validation, the guidelines of the International Conference on Harmonisation of Technical Requirements (ICH) in *ICH Q2 (R1) Validation of Analytical Procedures: Text and Methodology* are recommended.

Any diagnostic results that are generated must be interpreted in conjunction with other clinical or laboratory findings.

# Performance Characteristics

The applicable performance characteristics can be found under the resource tab of the product page on [www.qiagen.com](http://www.qiagen.com).

# Troubleshooting Guide

This troubleshooting guide may be helpful in solving any problems that may arise. For more information, see also the Frequently Asked Questions page at our Technical Support Center: [www.qiagen.com/FAQ/FAQList.aspx](http://www.qiagen.com/FAQ/FAQList.aspx). The scientists in QIAGEN Technical Services are always happy to answer any questions you may have about either the information and/or protocols in this handbook or sample and assay technologies (for contact information, visit [www.qiagen.com](http://www.qiagen.com)).

## Comments and suggestions

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### General handling

Error message displayed on the touchscreen	If an error message is displayed during a protocol, refer to the user manuals supplied with your instrument.
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### Precipitate in reagent trough of opened cartridge of the QIAasympy DSP kit

- |                                 |   |
|---------------------------------|---|
| a) Buffer evaporation           | Excessive evaporation may lead to increased salt concentration in buffers. Discard the reagent cartridge. Make sure to seal buffer troughs of a partially used reagent cartridge with Reuse Seal Strips when not being used for purification. |
| b) Storage of reagent cartridge | Storage of reagent cartridge below 15°C may lead to formation of precipitates.  |
- 

### Low yield of DNA

- |   |  |
|---|--|
| a) Magnetic particles were not completely resuspended   | Before starting the procedure, ensure that the magnetic particles are fully resuspended. Vortex for at least 3 min before use.   |
| b) Clogging of pipet tip due to insoluble material      | Insoluble material was not removed from the sample prior to starting the QIAasympy purification procedure.<br>If required, use pretreatment procedures as described in the corresponding protocol sheet, which can be found under the resource tab of the product page on <a href="http://www.qiagen.com">www.qiagen.com</a> . |
| c) Sample material contains low concentration of ccfDNA | Due to very low amounts of ccfDNA in sample material, it is possible not to detect DNA concentration depending on the quantification method used.<br>Use of sensitive qPCR is recommended to check DNA concentration in eluates.   |
| d) Incomplete reclosing of reagent cartridge            | Exchange with surrounding air may lead to reduced stability of buffers leading to reduced efficiency of ccfDNA extraction with a partially used reagent cartridge. Make sure to carefully seal buffer troughs of a partially used reagent cartridge with Reuse Seal Strips when not being used for purification.               |

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### Comments and suggestions

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- e) Rapid degradation of ccfDNA in non-stabilized urine sample
- Due to rapid degradation of ccfDNA in nonstabilized urine samples after sample collection, it is possible to detect no/low DNA concentration in eluates. It is recommended to stabilize urine sample as described in the corresponding protocol sheet.
- Alternatively, subject urine samples immediately after collection and centrifugation to ATL-pretreatment and subsequent DNA extraction on the instrument as described in the corresponding protocol sheet.
- 

### No/incomplete sample transfer

- a) Incorrect sample volume is loaded
- If less than 2.4 ml sample volume and 4.5 ml sample volume is loaded, there is an increased risk of unclear flagging of the sample.
- If less than 1.4 ml sample volume and 3.6 ml sample volume is loaded, there is an increased risk of invalid flagging and no transfer of the sample.
- Load the correct sample volume as described in the corresponding labware list. If insufficient sample is available, add PBS to the sample up to the required sample volume before loading the sample.
- b) Bubbles and/or foam in sample tube
- Bubbles or foam in the sample and/or sample input tube may result in false liquid level detection and subsequent incomplete sample transfer. Remove bubbles from the sample tube.
- 

### Bubbles on tips visible during instrument run

- Use of FIX labware in combination with reduced sample input volume
- If less than 2.1 ml sample volume and 4.1 ml sample volume is loaded using FIX labware, there is an increased risk of reduced transfer of sample volume that is not detected by the instrument. This may result in bubble formation during sample transfer and/or the subsequent binding step.
- Load the correct sample volume as described in the corresponding labware list when using FIX labware. If insufficient sample is available, add PBS to the sample up to the required sample volume before loading the sample.
- 

### Brown pellet in eluate visible

- Bead carryover into the eluate
- If bead carryover does occur, magnetic particles in eluates will not affect most downstream applications.
- If magnetic particles need to be removed, apply the tube containing the DNA to a suitable magnetic separator until the magnetic particles are separated.
- If a suitable magnetic separator is not available, centrifuge the tube containing the DNA for 1 min at full speed in a microcentrifuge to pellet any remaining magnetic particles.

# Symbols

The following symbols appear in the instructions for use or on the packaging and labeling:

Symbol	Symbol definition
 $\Sigma$ <N>	Contains reagents sufficient for <N> reactions
	Use by
	This product fulfills the requirements of the European Regulation 2017/746 for in vitro diagnostic medical devices.
	In vitro diagnostic medical device
	Catalog number
	Lot number
	Material number (i.e., component labeling)
	Components
	Contains
	Number
	Global Trade Item Number
Rn	R is for revision of the Instructions for Use and n is the revision number

Symbol	Symbol definition
	Temperature limitation
	Manufacturer
	Consult instructions for use
	Warning/caution
<b>PROTK</b>	Proteinase K
<b>WELL</b>	Well number (i.e., reagent cartridge well)
<b>REAG</b>   <b>CART</b>	Reagent cartridge
Sodium azide	Sodium azide
<b>E1OH</b>	Ethanol
<b>UDI</b>	Unique device identifier

# Contact Information

For technical assistance and more information, please see our Technical Support Center at [www.qiagen.com/Support](http://www.qiagen.com/Support), call 00800-22-44-6000, or contact one of the QIAGEN Technical Service Departments or local distributors (see back cover or visit [www.qiagen.com](http://www.qiagen.com)).

## Appendix: Quantification of Circulating Cell-Free DNA

Because of very low concentrations of ccfDNA in sample materials, measurement of DNA with a spectrophotometer is not recommended. For determination of concentration of circulating cell-free DNA, a sensitive and accurate fluorescence-based quantitation assay or a PCR assay should be used.

# Ordering Information

Product	Contents	Cat. no.
QIASymphony DSP Circulating DNA Kit (192)	Includes 2 reagent cartridges and Proteinase K Tubes and accessories	937556
QIASymphony SP	QIASymphony sample prep module, 1 year warranty on parts and labor	9001297
<b>Related products</b>		
Buffer ATL (4 x 50 ml)	4 x 50 ml Buffer ATL for pretreatment of urine samples	939016
Proteinase K (10 ml)	1 x 10 ml bottle	19134
Reagent Cartridge Holder (2)	Reagent cartridge holder for use with the QIASymphony SP	997008
Cooling Adapter, 2 ml, v2, Qsym	Cooling adapter for 2 ml screw-cap tubes. For use in the QIASymphony "Eluate" drawer	9020674
Cooling Adapter, EMT, v2, Qsym	Cooling adapter for EMT racks. For use in the QIASymphony "Eluate" drawer	9020730
Cooling Adapter, Snap-Cap Microtube QIASymphony, Qsym	Cooling adapter for 1.5 ml Eppendorf® LoBind Snap Cap Safe-Lock tubes. For use in the QIASymphony "Eluate" drawer	9020731
Sample Prep Cartridges, 8-well (336)	8-well sample prep cartridges for use with the QIASymphony SP	997002
8-Rod Covers (144)	8-Rod Covers for use with the QIASymphony SP	997004

Filter-Tips, 200 µl (1024)	Disposable Filter-Tips, racked; (8 x 128). For use with the QIAcube® and the QIASymphony SP/AS	990332
Filter-Tips, 1500 µl (1024)	Disposable Filter-Tips, racked; (8 x 128). For use with the QIASymphony SP/AS	997024
Tip Disposal Bags (15)	Tip disposal bags for use with the QIASymphony SP	9013395
Reuse Seal Set (20)	Reuse seal sets for sealing partly used QIASymphony reagent cartridges	997006
Elution Microtubes CL (24 x 96)	Non-sterile polypropylene tubes (0.85 ml maximum capacity, less than 0.7 ml storage capacity, 0.4 ml elution capacity); 2304 in racks of 96; includes cap strips	19588

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# Document Revision History

Revision	Description
R1, June 2022	<p data-bbox="409 376 628 397">Version 2, Revision 1</p> <ul data-bbox="460 424 960 663" style="list-style-type: none"><li data-bbox="460 424 960 448">• Update to version 2 for compliance to IVDR</li><li data-bbox="460 469 960 525">• Update of Materials Provided (add active ingredients)</li><li data-bbox="460 545 960 569">• Update of Warnings and Precautions</li><li data-bbox="460 590 960 614">• Update of Reagent Storage and Handling</li><li data-bbox="460 635 960 659">• Add section Disposal</li></ul> <p data-bbox="409 684 983 708">Update of Troubleshooting guide (add bead carryover)</p>

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