NEPHROCHECK® Liquid Control Kit Package Insert

Manufactured for
Astute Medical, Inc.
3550 General Atomics Ct.
Building 2
San Diego, CA 92121
USA

Intended Use

The NEPHROCHECK® Liquid Controls are used for the quality control monitoring of the NEPHROCHECK® Test System.

Reagents

The NEPHROCHECK® Low Liquid Control and NEPHROCHECK® High Liquid Control are bi-level, lyophilized control materials prepared from human urine (collected from apparently healthy donors), as well as human TIMP-2 (Tissue Inhibitor of Metalloproteinase 2) and human IGFBP-7 (Insulin-like Growth Factor Binding Protein 7) proteins with protein stabilizers. TIMP-2 and IGFBP-7 proteins have been added to the urine to achieve specified target concentration levels. The expected concentrations and standard deviations are printed on the enclosed RFID cards.

Warnings and Precautions

- The operator should use Standard Precautions when performing the NEPHROCHECK® Test or operating the ASTUTE140® Meter.
- All human source material used to manufacture this product was non-reactive for antigens to Hepatitis B (HBsAg), negative by tests for antibodies to HIV (HIV-1/HIV-s) and Hepatitis C (HCV), non-reactive for HIV-1 RNA and HCV RNA by licensed NAT, and non-reactive to Serological Test for Syphilis (STS) using FDA-approved testing methods.
- For *in vitro* diagnostic use.
- Do not use the kit beyond the expiration date printed on the outside of the box.
- The NEPHROCHECK® Liquid Control Kit contains materials of human origin (urine). Handle these controls as if they are potentially infectious. Proper handling and disposal methods in compliance with federal and local regulations should be established.
- The NEPHROCHECK® Liquid Control Kit is to be used only with the NEPHROCHECK® Test and ASTUTE140® Meter.
- Use only the NEPHROCHECK® Liquid Control Kit with the NEPHROCHECK® Test System.
- The NEPHROCHECK® Liquid Control Kit requires the use of calibrated precision pipette(s). It is recommended that the users review the proper procedures for the use of these devices in order to ensure accurate dispensing of volumes.

Storage and Stability

- The NEPHROCHECK® Liquid Control material is lyophilized.
- Prior to opening the NEPHROCHECK® Liquid Control Kit, inspect the vials for cracks, chips or broken seals. Do not use the controls should you encounter any damage.

- Prior to opening the NEPHROCHECK® Liquid Control Kit, verify that the contents within each vial appear dry. Do not use the controls should the vial contents appear to be wet.
- Ensure the reconstituted NEPHROCHECK® Liquid Control material is completely dissolved prior to use. Do not use if contents do not appear to be fully dissolved.
- Once opened and reconstituted, each NEPHROCHECK® Liquid Control Vial is stable for 8 hours when stored capped at room temperature 20–25°C (68–77°F).
- Each NEPHROCHECK® Liquid Control Kit Vial is intended for single use only.
- Each NEPHROCHECK® Liquid Control Kit Vial should not be stored after opening or use.
- Each unopened NEPHROCHECK® Liquid Control Vial is stable until the expiration date printed on the box when stored refrigerated or frozen between -20°C – 4°C (-4°F – 39.2°F).

Materials Provided

NEPHROCHECK® Liquid Control Kit (part number 500013) containing:

- NEPHROCHECK® High Liquid Control CONTROL H .....1 x 500 µL (lyophilized)
- NEPHROCHECK® Low Liquid Control CONTROL L .....1 x 500 µL (lyophilized)
- NEPHROCHECK® High Liquid Control RFID Card RFID CONTROL H 1
- NEPHROCHECK® Low Liquid Control RFID Card RFID CONTROL L 1
- NEPHROCHECK® Liquid Control Kit Package Insert 1

Materials Required But Not Provided

- ASTUTE140® Meter Kit (PN 500017)
- NEPHROCHECK® Test Kit (PN 500011)
- NEPHROCHECK® Test Buffer Solution (included in the NEPHROCHECK® Test Kit)
- Calibrated precision pipette, capable of dispensing 100 µL and 500 µL
- Deionized water

Quality Control Considerations

Each NEPHROCHECK® Test cartridge contains two detection zones used as internal controls (one positive and one negative control). These positive and negative controls are run automatically with every sample, in order to confirm the integrity of the NEPHROCHECK® Test cartridge and the performance of the ASTUTE140® Meter. These controls are in addition to the external NEPHROCHECK® Liquid Controls.

Good Laboratory Practice suggests that the external NEPHROCHECK® Liquid Controls be tested:

- Every 30 days
- With each new lot number of NEPHROCHECK® Test Kits
- With each new shipment of the NEPHROCHECK® Test Kits
- After ASTUTE140® Meter maintenance or servicing
- Should be used in accordance with local, state, and/or federal regulations or accreditation requirements

Test Lot Registration

Prior to running the NEPHROCHECK® Liquid Control Kit, a NEPHROCHECK® Test lot must be registered.

To register a test lot, perform the following steps:

1. Locate the NEPHROCHECK® Test RFID Card included in the NEPHROCHECK® Test Kit from the test lot to be registered.
2. Press the key to display the **Main Menu** (if registering the test lot immediately after successful log in, the **Main Menu** will automatically be displayed).
3. Use the navigation keys to highlight the **Operator Menu** icon.
4. Press the right soft key to display the **Operator Menu**.
5. When the **Operator Menu** is displayed, **Manage Lots** is highlighted. Press the right soft key to display the **Manage Lots** screen.

6. When the **Manage Lots** screen is displayed, **Manage Test Lots** is highlighted. Press the right soft key to display the **Registered Test Lots** screen.
7. On the **Registered Test Lots** screen, a list of all the previously registered test lots will be displayed. If the lot being registered appears on the list, it has already been registered and need not be registered again. Press the left soft key to return to the **Main Menu** and proceed to step 13. If the test lot does not appear on the list, proceed to step 8.
8. On the **Registered Test Lots** screen, press the right soft key to display the **Options** pop-up menu.
9. When the **Options** pop-up menu is displayed, **Print List** is highlighted. Use the  key to highlight **Register Lot** and press the right soft key.
10. When prompted, hold the NEPHROCHECK® Test RFID Card for the test lot next to or against the numeric keypad to register the test lot information and select **OK** by pressing the right soft key.
11. If registered correctly, a screen displaying the test lot number, the test type and the analytes detected by the test will appear. Press the right soft key to select **Accept**. The test lot that was just registered should now appear in the list of registered test lots.
12. If registered incorrectly, an error message will appear. Press the right soft key to select **OK** and close the error message. Repeat steps 10–11. If registered incorrectly a second time, contact Astute Technical Support (See “Ordering and Contact Information” for contact information).
13. After use, place the NEPHROCHECK® Test RFID Card in its sleeve and return it to the kit from which it was removed. Once all the cartridges in the kit have been used, the NEPHROCHECK® Test RFID Card and the NEPHROCHECK® Test Kit may be discarded in accordance with local regulations.
14. To register another test lot, locate the NEPHROCHECK® Test RFID Card for the test lot to be registered and repeat steps 7–13.

Liquid Control Lot Registration

For each NEPHROCHECK® Liquid Control Kit, the liquid control registration process must be carried out twice using the supplied NEPHROCHECK® Liquid Control RFID Cards:

- Once for the NEPHROCHECK® **High** Liquid Control
- Once for the NEPHROCHECK® **Low** Liquid Control

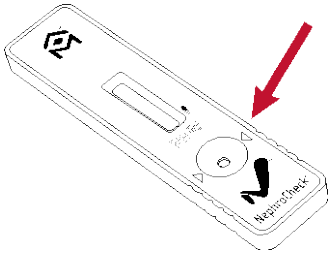
1. From the **Operator Menu** on the ASTUTE140® Meter, select **Manage Lots** and then **Manage LQC Lots** to display the **Registered LQC Lots** screen. If the NEPHROCHECK® Liquid Control lot to be registered appears on the list, it has already been registered and need not be registered again. If the NEPHROCHECK® Liquid Control lot to be registered is not listed, display the **Options** pop-up menu, select **Register Lot** and, when prompted, register the control using the appropriate NEPHROCHECK® Liquid Control RFID card (See “Liquid Control Lot Registration” in the ASTUTE140® Meter User Manual for detailed instructions).
2. If registered correctly, a screen indicating that the liquid control lot number was successfully read from the NEPHROCHECK® Liquid Control RFID Card will appear and the lot number will be displayed. Follow the same procedure for the second level of controls.
3. For additional instructions, please refer to the ASTUTE140® Meter User Manual.

Control Procedure

Prepare each NEPHROCHECK® Liquid Control Kit Vial as follows:

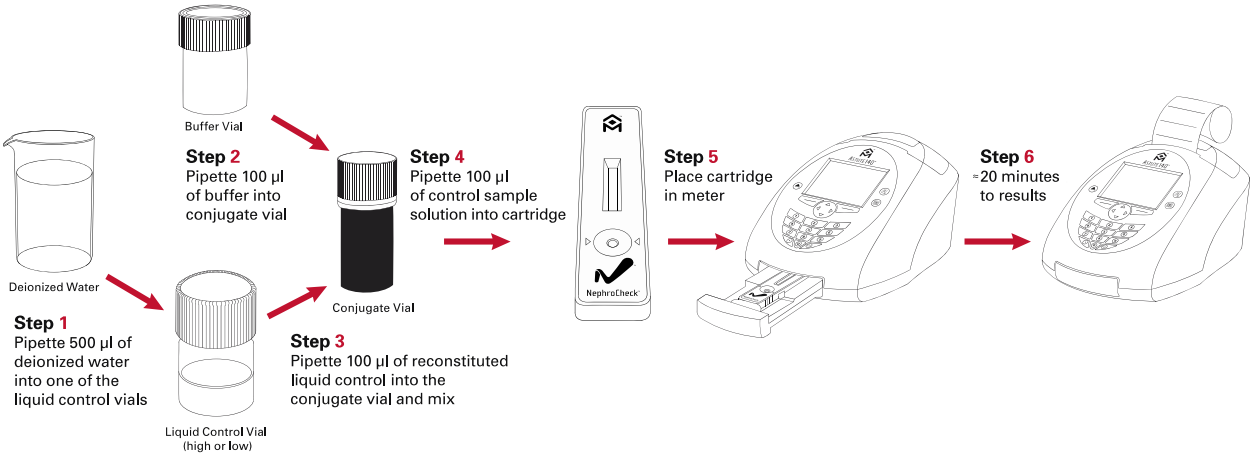
1. Remove the cap from a single NEPHROCHECK® Liquid Control Vial (high or low).
2. Add 500 µL deionized water using a calibrated, precision pipette.
3. Recap the vial and invert the vial three times to mix.
4. Visually confirm the lyophilized material is completely dissolved before use.
5. Configure the ASTUTE140® Meter to test the first liquid control sample (See “External Liquid Quality Control” in the ASTUTE140® Meter User Manual for detailed instructions).
6. Remove a new NEPHROCHECK® Test cartridge and NEPHROCHECK® Test Conjugate Vial from the foil pouch and place on a flat surface.
7. Each NEPHROCHECK® Test Conjugate Vial contains a single conjugate bead. Remove the cap from the NEPHROCHECK® Test Conjugate Vial. Visually inspect the cap and vial to ensure that the conjugate bead has not adhered to the cap and is present in the vial. If the bead has adhered to the cap, place the cap on the vial and tap three times. Repeat if necessary until the bead drops into the vial. Do not touch the bead or attempt to remove the bead from the cap by any other means.

8. Pipette 100 µL of NEPHROCHECK® Test Buffer Solution (included in the NEPHROCHECK® Test Kit) into the conjugate vial containing the conjugate bead. This will result in reconstitution of the conjugate bead into solution.
9. Pipette 100 µL of reconstituted NEPHROCHECK® Liquid Control solution into the NEPHROCHECK® Test Conjugate Vial that now contains the reconstituted conjugate bead solution. Mix thoroughly (mix at least three times using the pipette tip).
10. Pipette 100 µL of mixed control sample solution into the designated sample port on the NEPHROCHECK® Test cartridge. Wait approximately one minute for the sample to be absorbed into the round well.



11. Using the grips on the side of the NEPHROCHECK® Test cartridge, position the cartridge inside the ASTUTE140® Meter drawer with the Astute Medical logo towards the inside of the meter drawer. Keep the NEPHROCHECK® Test cartridge horizontal and avoid tipping the test cartridge during placement into the ASTUTE140® Meter drawer.
12. Close the ASTUTE140® Meter drawer. In approximately 20 minutes the control result will be displayed (The NEPHROCHECK® Test incubation time must be ≤ 25 minutes from the sample incubation time set in the ASTUTE140® Meter). The ASTUTE140® Meter will display liquid control results numerically and as **Passed/Failed**.
13. Press the key to open the ASTUTE140® Meter drawer. Remove the NEPHROCHECK® Test cartridge and discard the cartridge, the control vial and the conjugate vial in accordance with local regulations.
14. Repeat steps 1–13 for the second NEPHROCHECK® Liquid Control Kit Vial.

NEPHROCHECK® Liquid Control Preparation Process



Results

The ASTUTE140® Meter will compare the high and low control results with the expected values transferred to the meter's memory from the NEPHROCHECK® Liquid Control RFID Card.

The control results will be displayed with the word **Passed** if the procedure passed or **Failed** if it did not. A failed result will be reported if the liquid control results fall outside two standard deviations of the expected value. An **Invalid** result will be reported if the onboard controls fail. If the LQC procedure fails, run the LQC procedure again, using a new NEPHROCHECK® Test. If the procedure fails a second time, contact Astute Technical Support. Manufacturing default settings for acceptable control results are set at two standard deviations of the expected value.

Control results are stored in the ASTUTE140® Meter memory and may be accessed at any time (See the ASTUTE140® User Manual for instructions on accessing or managing test results).

Expected Results

NEPHROCHECK® Liquid Control RFID Cards for each control (high and low) are included in the NEPHROCHECK® Liquid Control Kit and contain information including the lot number and expiration date of the controls and the expected value (concentration) ranges of the proteins. This information is transferred from the NEPHROCHECK® Liquid Control RFID Card to the ASTUTE140® Meter during registration of the NEPHROCHECK® Liquid Control Kit. The lot number and expiration date can be accessed through the ASTUTE140® Meter at any time (See the ASTUTE140® Meter User Manual for instructions).

Expected values are determined by testing the NEPHROCHECK® Liquid Controls with the NEPHROCHECK® Test during product manufacturing. The expected value ranges are determined from the average and standard deviation of these testing results.

The expected values transferred to the ASTUTE140® Meter's memory from the NEPHROCHECK® Liquid Control RFID Card represent the results that should be obtained using the NEPHROCHECK® Test. Failure to obtain the expected results may indicate that the test was not performed properly or that the test kit components were not functioning properly. If the expected control results are not obtained, do not report the NEPHROCHECK® Test results and repeat running the control(s). If the expected results are not obtained a second time, contact Astute Technical Support.

Standardization

The NEPHROCHECK® Liquid Controls are traceable to reference standard solutions that contain defined mass (concentration) of TIMP-2 and IGFBP-7 proteins, in accordance with EN ISO 17511. The NEPHROCHECK® Liquid Controls and NEPHROCHECK® Test are traceable to the same reference standard solutions.

Limitations of the Procedure

The ranges given for the expected values are intended only as guidelines. Laboratories should determine their ranges and standard deviations based on their own testing policies and tolerance limits.

Ordering and Contact Information

NEPHROCHECK® Liquid Control Kit (PN 500013)

For questions regarding the use or performance of the NEPHROCHECK® Liquid Control Kit or any Astute Medical, Inc. product, please contact Astute Technical Support.

Astute Medical, Inc.
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Website: www.astutemedical.com

Symbols Glossary

Symbol	Standard Reference	Symbol Title	Symbol Reference Number	Symbol Description as Provided by the Referenced Standard
	a	Manufacturer	5.1.1	Indicates the medical device manufacturer, as defined in EU Directives 90/385/EEC, 93/42/EEC and 98/79/EC.
	a	Consult instructions for use	5.4.3	Indicates the need for the user to consult the instructions for use.
	a	*In vitro* diagnostic medical device	5.5.1	Indicates a medical device that is intended to be used as an *in vitro* diagnostic medical device.
	a	Catalogue number	5.1.6	Indicates the manufacturer's catalogue number so that the medical device can be identified.
	a	Batch code	5.1.5	Indicates the manufacturer's batch code so that the batch or lot can be identified.

Symbol	Standard Reference	Symbol Title	Symbol Reference Number	Symbol Description as Provided by the Referenced Standard
	a	Use-by date	5.1.4	Indicates the date after which the medical device is not to be used.
	a	Do not re-use	5.4.2	Indicates a medical device that is intended for one use, or for use on a single patient during a single procedure.
	a	Temperature limit	5.3.7	Indicates the temperature limits to which the medical device can be safely exposed.
	a	Biological risks	5.4.1	Indicates that there are potential biological risks associated with the medical device.
$\overline{X}$	b	Average, Sample mean	1.15	Arithmetic mean sum of random variables in a random sample divided by the number of terms in the sum
σ	b	Standard deviation	2.37	Positive square root of the variance
CONTENTS	c	Contents	--	Contents
EXPECTED VALUES	c	Expected Values	--	Expected values
CONTROL H	c	High Liquid Control	--	High Liquid Control
CONTROL L	c	Low Liquid Control	--	Low Liquid Control
RFID CONTROL H	c	RFID Card High Liquid Control	--	RFID Card High Liquid Control
RFID CONTROL L	c	RFID Card Low Liquid Control	--	RFID Card Low Liquid Control
RFID LOT	c	RFID Lot	--	RFID Lot
LIQUID CONTROL KIT	c	Liquid Control Kit	--	Liquid Control Kit

Legend for Standard Reference (designation number and title):

a) ANSI/AAMI/ISO 15223-1:2012 & ISO 15223-1 Second edition, 2012-07-01 Medical Devices to be used with medical device labels, labeling and information to be supplied – Part 1: General requirements
b) ISO 3534-1:2006 Second Edition Statistics — Vocabulary and symbols —Part 1: General statistical terms and terms used in probability
c) Symbol containing explanatory text for clarity

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