

## Installing a New Cartridge

To install a new cartridge:

- 1 On the WAVE® or WAVE® MD System, stop the flow from the pump and remove the old cartridge.
- 2 Unscrew the black plugs from each end of the new cartridge, noting the arrow located on the barrel.
- 3 Do one of the following:
  - On WAVE Systems, install the new cartridge with the arrow pointing away from the preheat coil; be sure the fittings are tight to prevent a leak.
  - On Systems, install the new cartridge with the arrow pointing toward the front of the oven; be sure the fittings are tight to prevent a leak.
- 4 Flush the cartridge with WAVE Optimized® Solution D, 0.5 mL/min.
- 5 If the pressure is stable, do one of the following:
  - For the DNASep Cartridge, increase flow rate gradually until 0.900 mL/min is established without leaks or excessive pressure (over 2500 psi).
  - For the DNASep HT Cartridge, increase flow rate gradually until 1.5 mL/min is established without leaks or excessive pressure (over 2500 psi).
- 6 Flush the cartridge for 15 minutes.
- 7 To equilibrate the cartridge, manually set the pump to 50% WAVE Optimized® Buffer A and 50% WAVE Optimized Buffer B:
  - For the DNASep Cartridge run 0.900 mL/min for 30 minutes.
  - For the DNASep HT Cartridge run 1.5 mL/min for 30 minutes.
- 8 Run the WAVE DNA Sizing Control Sample, WAVE Low-Range Mutation Standard and WAVE High-Range Mutation Standard to verify cartridge performance.

## Cartridge Maintenance

### Daily Maintenance

Before running any samples, properly equilibrate the cartridge to ensure reproducibility of sample injections. To equilibrate the cartridge:

- 1 Manually set the pump to 50% WAVE Optimized Buffer A and 50% WAVE Optimized Buffer B, and run for 15 minutes using one of the following flow rates:
  - For the DNASep Cartridge - 0.900 mL/min.
  - For the DNASep HT Cartridge - 1.5 mL/min.
- 2 Run 1 to 2 blank gradients. (Should be 0 µL injections or negative control samples.)
- 3 Run the appropriate WAVE Mutation Standard/Control Sample. Use the one that most closely matches the method of the samples being analyzed.
- 4 Run the desired samples.
- 5 Verify the cartridge performance by repeating step 3.

### Weekly Maintenance

To prevent buildup of contaminants on your cartridge, it must be washed regularly and its performance must be tested. An Extended Active Clean Wash (Hot Wash) is recommended every 96 to 192 injections. To perform a Hot Wash:

- 1 Flush the cartridge with WAVE Optimized Solution D, set oven to 80 °C, and run for 15 to 30 minutes using one of the following flow rates:
  - For the DNASep Cartridge - 0.900 mL/min.

- For the DNASep HT Cartridge - 1.5 mL/min.
- 2 Following the wash, equilibrate the cartridge with 50% WAVE Optimized Buffer A and 50% WAVE Optimized Buffer B using one of the following flow rates:
    - For the DNASep Cartridge - 0.900 mL/min.
    - For the DNASep HT Cartridge - 1.5 mL/min.Equilibration time will vary; generally, equilibration length should be set for 2 to 3 times as long as the wash.
  - 3 Run the WAVE DNA Sizing Control Sample, WAVE Low-Range Mutation Standard and WAVE High-Range Mutation Standard to verify cartridge performance.

### High Pressure or > 1,000 Injections

The instructions in this section are specific to the WAVE System. If you are using a System, refer to the System Operator's Guide for instructions on how to perform a Reverse Hot Wash. To prolong cartridge life, every 1,000 injections, or when high pressure is experienced, a Reverse Hot Wash should be performed. High pressure is when the system pressure exceeds 2500 psi at 0.9 mL/min for DNASep, 2000 psi at 1.5 mL/min for DNASep HT, or when the system pressure increases rapidly, that is, pressure increases >200 psi over a series of 20 injections.

To perform a Reverse Hot Wash:

- 1 Turn pump flow off.
- 2 Reverse direction of the cartridge.
- 3 Set oven temperature to 80 °C.
- 4 Flush the cartridge with WAVE Optimized Solution D and run for 30 minutes using one of the following flow rates:
  - For the DNASep Cartridge - 0.900 mL/min.
  - For the DNASep HT Cartridge - 1.5 mL/min.
- 5 Set oven to 50 °C.
- 6 Return the cartridge to the original flow direction after the oven has cooled slightly. CAUTION! The cartridge is still hot.
- 7 Equilibrate with 50% WAVE Optimized Buffer A and 50% WAVE Optimized Buffer B, for 60 to 90 minutes using one of the following flow rates:
  - For the DNASep Cartridge - 0.900 mL/min.
  - For the DNASep HT Cartridge - 1.5 mL/min.
- 8 Run the WAVE DNA Sizing Control Sample, WAVE Low-Range Mutation Standard and WAVE High-Range Mutation Standard to verify cartridge performance.

## Cartridge Storage

To store a cartridge:

- 1 Flush the cartridge with 100% WAVE Optimized Solution D:
  - For the DNASep Cartridge, 0.900 mL/min for 10 to 15 minutes.
  - For the DNASep HT Cartridge, 1.5 mL/min for 10 to 15 minutes.
- 2 Remove the cartridge from the WAVE oven.
- 3 Cap the cartridge with black end plugs.
- 4 Store the cartridge at room temperature.

## Cartridge Warranty

DNASep Cartridges or DNASep HT Cartridges will be replaced at no charge if the cartridge fails to reach 1,000 injections. If either cartridge fails between 1,000 and 3,000 injections, the buyer is entitled to a 50% discount off the list price of the same model cartridge. If either cartridge fails between 3,000 and 6,000 injections, the buyer is entitled to a 25% discount off the list price of the same model cartridge.

This warranty is subject to the following conditions:

- Cartridges must be used only on a ADS Biotec WAVE System. The WAVE System must be covered under a valid system warranty or customer support plan.
- WAVE Optimized Buffers or buffers made with 2M TEAA solution purchased from ADS Biotec must be used on the WAVE System.
- Acetonitrile must be HPLC Grade with a rating of < 0.005 AU at 260 nm. ADS Biotec Acetonitrile is recommended.
- Any water used for the WAVE System (making buffers, wash solutions, PCR reactions, etc.) must be at least 18 Mohm purity with < 15 ppb T.O.C. and must not be autoclaved.
- The cleaning and maintenance steps in this guide, as well as in the WAVE System Operator's Guide, must be followed.

NOTE: The Cartridge must not be left at low flow/standby for more than two days without performing Daily Maintenance outlined in this document.

DNA isolated using organic extraction procedures, such as phenol/chloroform extraction, requires back extraction with isoamyl alcohol/chloroform before final ethanol precipitation and wash. Extraction kits using chaotropic salts and/or spin column purification require ethanol precipitation and wash. Failure to follow these recommendations voids the cartridge warranty.

- Use of any of the following components in PCR reactions injected on the WAVE System

**voids the cartridge warranty:**

- Bovine Serum Albumin (BSA)
  - Autoclaved Water
  - Mineral Oil
  - Formamide
  - Proteinase K
  - Unidentified "proprietary" ingredients (enhancers, stabilizers or additives)
  - DNA extracted or purified in a manner other than specified in the WAVE System Operator's Guide, System Operator's Guide, and/or the WAVE System Resource CD.
- Use of any of the following components in excess of the stated final (PCR) reaction concentrations when injected on the WAVE System voids the cartridge warranty:
  - High molecular weight stabilizers such as polyethylene glycol (PEG) - 1% max.
  - Detergents including, but not limited to: Triton X100, NP40, Tween 20 and SDS/SLS - 1% max.
  - Use of any of the following components in excess of the stated final (PCR) reaction concentrations when injected on the WAVE System voids the cartridge warranty. Additional cleaning steps will likely be required even when used within these concentration recommendations (contact ADS Biotec Technical Support for assistance when using these components):
    - Glycerol - 2% max.
    - DMSO - 10% max.
    - Betaine - 1.25 - 2.5 M max.

NOTE: ADS Biotec, Inc. does not make specific recommendations for usage of, nor warrant for suitability of, DNA polymerases other than ADS Biotec Optimase® Polymerase, Maximase™ Polymerase and T-Taq™ Polymerase.

In the event of cartridge failure, customer agrees to provide information about PCR protocols and sample preparation to a ADS Biotec Support Representative for analysis. Cartridges are only replaced if all of the above conditions are met. ADS Biotec DNASep® and DNASep® HT Cartridge



## User Guide and Warranty

Warranty effective date: May 1, 2016

<u>Description</u>	<u>Part Number</u>
DNASep® Cartridge	DNA-99-3510
DNASep® HT Cartridge	DNA-99-3710

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