Manual Dilution Procedure

POLICY

This procedure includes any assay for which the measured value may exceed the established analytical measurement range or manual counting is not possible and requires manual dilution of the sample to report a clinically useful result.

SAFETY

All specimens, reagents and controls should be handled as though capable of transmitting infectious diseases. Wear appropriate personal protective equipment when running patient samples or performing scheduled maintenance. Refer to: Policy and Procedures Safety Manual Infection Control and Procedures 11-085-01

DILUTION PROCEDURE

XN-9000 Sample Volume

Type of Analysis	Specimen	Tube type	Cap Open	Aspirated Sample Volume	Minimum Required Sample Volume
Manual Analysis	Whole Blood	Closed Tube	OFF	88 uL	1 mL
		Open Tube	ON		300 uL
		Open Micro tube	ON		160 uL
		RBT (Closed)	OFF		250 uL
	Body Fluid	Closed tube	OFF		1 mL
		Open tube	ON		300 uL
		Open Micro tube	ON		160 uL

XN-9000 Pre-Dilution Mode

NOTE: You cannot use Pre-dilute mode to determine out of linearity range counts that were reported "+++++" or "@". To determine over range counts, make the appropriate dilution, run in manual mode, then multiply the results by the dilution factor. Refer to "Procedure for Preparing off-board dilution for XN-9000 Exceeding Linearity Range (Whole Blood and Body Fluid)" section.

Manual Dilution Procedure, Continued

DILUTION PROCEDURE, Continued

Procedure for preparing a 1:7 Dilution (Pre-Dilution Mode)

The pre-dilute mode is used for analyzing a small amount of blood. Only CBC results are reported on a predilute mode sample.

The Predilute mode requires 1:7 (X7) dilution. The XN-9000 automatically calculates the correct results based on a times seven dilution.

Pre-Dilution Mode Patient Analysis

Step	Action
1.	Deliver 300 uL of **CELLPACK® DCL** to an empty 12x75 tube. **NOTE:** Do not use **CELLPACK® DST** for any dilutions.
2.	Transfer 50 uL of the patient sample into the DCL tube.
3.	Cap the tube and mix by gentle inversion 10 times before analyzing
4.	Check the indicator LED on the analyzer. If the status indicator LED is not lit green, wait until it does
5.	Eject the sample holder by pressing the "**Mode Switch".**
6.	Click "**Change Analysis Mode"**  button on the control menu. Specify the analysis mode by selecting Pre-Dilution, then click OK
7.	Click on the "**Manual Analysis button"**  on the control menu and enter the sample number and patient ID.
8.	Select a Discrete profile to run, then click OK
9.	Mix, uncap and place sample in the appropriate sample holder
10.	Press "**Start**" button. The sample retracts into the analyzer to process the specimen. Once analysis is complete, the sample holder ejects so that the sample can be removed
11.	Press "**Mode Switch**" button to retract the sample holder back to the analyzer

Manual Dilution Procedure, Continued

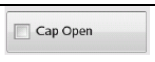
DILUTION PROCEDURE, Continued

Procedure for Preparing off-board dilution for XN-9000 Exceeding Linearity Range (Whole Blood and Body Fluid)

The following sample and diluent volumes show the minimum required sample volume and should be used as a guide when performing off-board dilutions on XN-9000

Dilution Factor	Sample volume (µL)	CellPack (DCL) volume (µL)
2	200	200
3	100	200
4	100	300
5	100	400

Off-Board Dilution Patient Analysis

Step	Action
1.	Prepare an appropriate dilution with **CELLPACK® DCL** diluent to minimize interference. Dilutions greater than 1:5 should not be used. **NOTE:** Do not use **CELLPACK® DST** for any dilutions.
2.	Cap the tube and mix by gentle inversion 10 times before analyzing
3.	Check the indicator LED on the analyzer. If the status indicator LED is not lit green, wait until it does
4.	Eject the sample holder by pressing the "**Mode Switch".**
5.	Click on the "**Manual Analysis button"**  on the control menu and program the sample with MRN (Not Accession #) in the sample number.
6.	Place a check mark for the discrete test to run.
7.	Place a check mark on the "**Cap Open**"  button, then click OK
8.	Mix, uncap and place sample in the appropriate sample holder
9.	Press "**Start**" button. The sample retracts into the analyzer to process the specimen. Once analysis is complete, the sample holder ejects so that the sample can be removed
10.	Press "**Mode Switch**" button to retract the sample holder back to the analyzer

Manual Dilution Procedure, Continued

DILUTION PROCEDURE, Continued

Step	Action
11.	Multiply the diluted test result with the dilution factor. Enter the result manually onto WAM or Cerner
12.	Use the test results obtained from the original run as a guide to verify proper re-dilution of the specimen.

Dilution Preparation for Cell Count Body Fluid

The following sample and diluent volumes should be used as a guide when performing off-board dilutions.

Dilution Factor	Sample volume (µL)	Saline volume (µL)
2	150	150
3	100	200
4	100	300
5	100	400
6	50	250
7	50	300
8	50	350
9	50	400
10	50	450
20	50	950

NOTE: For specific directions in performing Cell Count see P&P HEM.03-0130, HEM.03-0130 Spinal Fluid Cell Count and HEM.03-0140 Body Fluid Analysis.

Document History Page

Change type: New, Major, Minor etc.	Changes Made to SOP – describe	Name of responsible person/date	Med. Dir. Reviewed/ Date	Lab Manager reviewed/ date	Date change Implemented
New	Manual Dilution P&P. Step by step procedure on how to prepare a manual dilution for both the XN-9000 and body fluid manual bench	Marlon Esguerra 7/16/18			