Instructions For Use

UniCel DxC 600i
Synchron Access
Clinical Systems

For *In Vitro* Diagnostic Use

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BECKMAN COULTER

Instructions For Use
UniCel DxC 600i Synchron Access
Clinical Systems
PN A93695AC (March 2014)

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Revision History

This document applies to the latest software listed and higher versions. When a subsequent software version changes the information in this document, a new issue will be released.

Initial Issue, A24644AA, 10/05
Software version 1.4

A24644AB, 6/07
Software version 2.0

A24644AC, 2/08
Software version 3.0

A24644AD, 12/08
Software version 4.0

A93695AA, 10/10
Software version 5.0

A93695AB, 10/12
Software version 5.0

A93695AC, 03/14
Changes:
Software version 5.4
Removed references to discontinued CX and LX products.

CHAPTER 1, *System Description:*

• Added QSD 'Insufficient reagent dispensed' to Table 1.18 Access Codes Converted to DxC Codes for DxC 600i Reporting.

CHAPTER 2, *Pre-Test Activities:*

• Information was updated for sample containers in Table 2.1 DxC 600i Sample Containers in table rows marked 'Used in reserved racks' and 'If running Pediatric samples requiring both DxC and Access chemistries'.

• Updated 'Load or Unload MC Reagents' procedure and added the 'Refill the No Foam Container' procedure to 'Check and Load Supplies at DxC Analyzer' section.

CHAPTER 3, *System Calibration* and CHAPTER 4, *Sample Programming and Processing*:

• Updated notes in 'Calibrate Access Chemistries (Assays)' and 'Access: Small Sample Volume Assays' sections: "For Access 2 Total BhCG..."

CHAPTER 5, *Post-Test Activities*:

• Added Extended Shutdown information to 'Power Down the DxC Analyzer' and 'Power Down the Access Analyzer' sections.

• Updated the 'Shutdown' and 'Restart the DxC 600i System' procedures.

CHAPTER 6, *Maintenance Procedures:*

- Updated the 'Electronic Maintenance Tabs and Tasks' for Weekly, Monthly, Three-Month, and Six-Month Maintenance.
- Added Tecan syringe replacement details to the 'Replace CTA Syringes' procedure in 'CTA Maintenance (yearly)'.
- Added note to alignment procedures: "Beckman Coulter recommends that you backup data after every alignment procedure."

Appendix A, *Supplementary DxC 600i Information:*

- Updated the Program Structure diagrams.
- Updated notes in Mode A and Mode B columns in Tables A.2, A.3, A.6, A.7, A.8, and A.9 in the Independent Operating Modes section: "For Access 2 Total BhCG…"

Safety Notice

Read all product manuals and consult with Beckman Coulter-trained personnel before attempting to operate instrument. Do not attempt to perform any procedure before carefully reading all instructions. Always follow product labeling and manufacturer's recommendations. If in doubt as to how to proceed in any situation, contact your Beckman Coulter representative.

Introduction

This safety notice summarizes information basic to the safe operation of the UniCel DxC 600i System described in this manual. All safety instructions should be read and understood before installation, operation, maintenance, or repair of this product. Observance of safety precautions will also help to avoid actions that could damage or adversely affect the performance of this product.

Safety During Installation and/or Maintenance

This product is designed to be installed by a Beckman Coulter Field Service representative. Installation by anyone other than authorized Beckman Coulter personnel invalidates any warranty covering the instrument.

Any servicing of this equipment that requires removal of any covers can expose parts which involve the risk of electric shock or personal injury. Make sure that the power switch is turned OFF and that the product is disconnected from the main power source. Refer such maintenance to qualified service personnel.

Electrical Safety

- To reduce the risk of electrical shock, this product uses a three-wire electrical cord and plug to connect to earth-ground. Make sure that the matching wall outlet receptacle is properly wired and earth-grounded.
- Never remove or install any circuit board, connect or disconnect any plug or cable, while the power is ON.
- Do not place containers holding liquid on top of this product. If a spill occurs, liquid may damage electrical or mechanical components.

Safety Against Risk of Fire

Fuses protect certain electrical circuits within this product against overcurrent conditions. For continued protection against the risk of fire, replace only with the same type and rating specified.

System Hazards

Before operating and/or maintaining the UniCel DxC 600i System, all hazards (i.e., warning and caution statements) associated with the system should be reviewed and understood. The following list summarizes some primary hazards. System hazards are also identified.

Performing Service Procedures

Disconnect the power cord when performing service procedures such as replacing electronic or mechanical components.

Use of Three-Pronged Power Cord

The three-pronged power cord must only be connected to a matching three-wire grounded outlet. DO NOT use an adapter to connect the power plug to a two-pronged outlet.

Biohazardous Materials

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Observe all laboratory policies which pertain to handling of infectious or biohazardous materials.

Electrical Ground

DO NOT UNDER ANY CIRCUMSTANCES OPERATE THE SYSTEM UNTIL AN ELECTRICAL GROUND IS PROVIDED AND THE POWER CORD IS PROPERLY CONNECTED TO THE GROUND.

Electric Shock

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Replacement or servicing of any component where contact with bare, live hazardous parts could occur, possibly resulting in electrical shock, should only be performed by qualified service personnel.

Flammable Materials

Do not use this system in the presence of flammable materials.

Moving Parts

> ⚠ ☣ **CAUTION**
> TO REDUCE RISK OF PERSONAL INJURY,
> OPERATE ONLY WITH ALL COVERS IN PLACE.
> 456161-B
>
> A011459L.EPS

Do not place hands near any moving part while the system is operating. Lower and/or close protective guards and covers during operation. Failure to properly seat covers could lead to erroneous results.

Exposed Working Surfaces

Use caution when performing maintenance, service, or troubleshooting on the system around the CTA and UniCel DxC 600i load area.

When exiting the CTA alignment screen, the CTA canopy is not locked during the homing procedure.

Handling Closed Tube Sampling (CTS) Auto-Gloss

The DxC analyzer and the CTA unit use an Auto-Gloss solution to lubricate CTS components. Be careful when handling the CTS Auto-Gloss bottle. Use care to prevent spills. This lubricant is extremely slippery and difficult to clean from the floor.

Sodium Azide Preservative

Reagents, calibrators, and controls used on the UniCel DxC 600 analyzer may contain small quantities (<0.1%) of sodium azide preservative. Refer to the Material Safety Data Sheets (MSDS) CD for additional information.

ISE Module Pinching Hazard

To avoid personal injury, make sure to keep your fingers clear when the ISE module is lowered at the UniCel DxC 600 analyzer.

Bar Code Labels

The use of bar code labels is a highly accurate and efficient method to identify and process laboratory samples. In order to maintain this type of accuracy, the system must be able to identify and read every bar code label to process each sample correctly. Therefore, bar code labels must be of high quality. Each label must be free from smudges, spots, or other imperfections. Follow the bar code label specifications, and bar code symbology and configuration recommendations to keep the rate of misread labels to a minimum.

Laser Bar Code Caution

A label reading, "CAUTION CLASS 2 LASER LIGHT WHEN OPEN. DO NOT STARE INTO BEAM" is placed near any opening through which a bar code reading beam emits. Do not stare into beam.

Recycling Label

This symbol is required in accordance with the Waste Electrical and Electronic Equipment (WEEE) Directive of the European Union. The presence of this marking on the product indicates:

1. the device was put on the European Market after August 13, 2005 and
2. the device is not to be disposed of via the municipal waste collection system of any member state of the European Union.

It is very important that customers understand and follow all laws regarding the proper decontamination and safe disposal of electrical equipment. For Beckman Coulter products bearing this label please contact your dealer or local Beckman Coulter office for details on the take back program that will facilitate the proper collection, treatment, recovery, recycling and safe disposal of device.

Motion Error

If the same motion error occurs repeatedly, refer to the troubleshooting instructions for the specific system component. If the motion error continues, contact your Beckman Coulter representative.

System Motors

To prevent possible injury, press the **STOP** button on the UniCel DxC 600i System to disable the motors before attempting to clear any jams.

Restriction of Hazardous Substances (RoHS) Labels

These labels and materials declaration table (the Table of Hazardous Substance's Name and Concentration) are to meet People's Republic of China Electronic Industry Standard SJ/T11364-2006 "Marking for Control of Pollution Caused by Electronic Information Products" requirements.

RoHS Caution Label

This logo indicates that this electronic information product contains certain toxic or hazardous elements, and can be used safely during its environmental protection use period. The number in the middle of the logo indicates the environmental protection use period for the product. The outer circle indicates that the product can be recycled. The logo also signifies that the product should be recycled immediately after its environmental protection use period has expired. The date on the label indicates the date of manufacture.

RoHS Environmental Label

This logo indicates that the product does not contain any toxic or hazardous substances or elements. The "e" stands for electrical, electronic and environmental electronic information products. This logo indicates that this electronic information product does not contain any toxic or hazardous substances or elements, and is green and is environmental. The outer circle indicates that the product can be recycled. The logo also signifies that the product can be recycled after being discarded, and should not be casually discarded.

Alerts for Warning, Caution, Important, and Note

⚠️ **WARNING**

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. May be used to indicate the possibility of erroneous data that could result in an incorrect diagnosis (does not apply to all products).

⚠️ **CAUTION**

CAUTION indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. May be used to indicate the possibility of erroneous data that could result in an incorrect diagnosis (does not apply to all products).

IMPORTANT IMPORTANT is used for comments that add value to the step or procedure being performed. Following the advice in the IMPORTANT notice adds benefit to the performance of a piece of equipment or to a process.

NOTE NOTE is used to call attention to notable information that should be followed during installation, use, or servicing of this equipment.

Contents

Introduction

Intended Use

The UniCel DxC 600i System combines the UniCel DxC 600 analyzer and the Access 2 analyzer into a single instrument presentation. Samples are loaded from a single point of entry through a Closed Tube Aliquotter (CTA) unit. The CTA functions as a sample processing manager by aliquotting and routing samples to the Access 2 and/or UniCel DxC 600 analyzer according to programming requirements.

The UniCel DxC 600 Synchron Clinical System is a fully automated, computer-controlled clinical chemistry analyzer designed for the in vitro determination of a variety of general chemistries, therapeutic drugs, and other chemistries. Analysis can be performed on serum, plasma, urine, or cerebrospinal fluid (CSF) and whole blood (sample type is chemistry dependent).

The Access 2 Immunoassay Analyzer is a microcomputer controlled, random access instrument. The analyzer performs enzyme immunoassays utilizing paramagnetic particle solid phase and chemiluminescent detection. The Access 2 Analyzer is intended for the in vitro determination of a variety of analytes of clinical interest in biological fluids such as serum, plasma, urine, cerebrospinal fluid, whole blood, amniotic fluid and others (sample type is chemistry dependent).
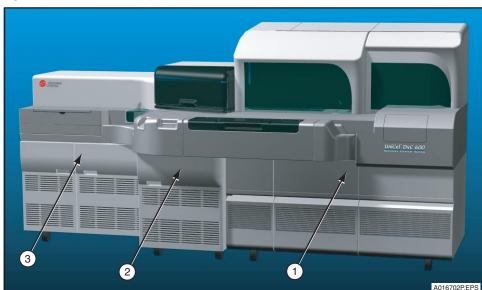
Figure 1 UniCel DxC 600i System

1. UniCel DxC 600 Analyzer
2. Closed Tube Aliquotter (CTA) unit
3. Access 2 Analyzer

Scope of Manual

This manual covers basic operating instructions and maintenance guidelines for the UniCel DxC 600i System. Detailed operation, maintenance, and troubleshooting instructions are not included in this manual. In addition, medical and diagnostic interpretation, or the clinical significance of chemistries or assays are not discussed. Refer to the reference materials in the Related Documents section for detailed information.

Operator Indicator Box

An operator indicator box is located throughout this manual before a procedure. The operator indicator box (shown below) identifies where to start the procedure. In the example below, an "X" is located within the DxC box, which indicates that the operator needs to go to the UniCel DxC 600 analyzer to start the procedure. DxC = UniCel DxC 600 analyzer, CTA = Closed Tube Aliquotter unit, A2 = Access 2 analyzer

Example:

A2	CTA	DxC
		X

IMPORTANT From this point forward, the UniCel DxC 600i System will be described in abbreviated or general terms. The UniCel DxC 600 analyzer will be referred to as the "DxC analyzer", the Closed Tube Aliquotter unit will be referred to as the "CTA unit", and the Access 2 analyzer will be referred to as the "Access analyzer".
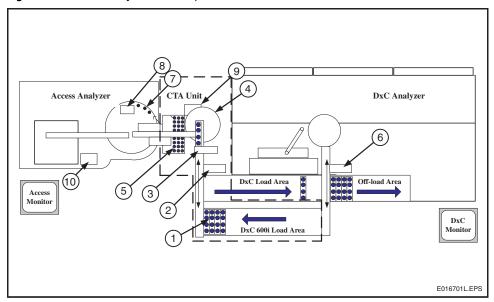
System Description

System Description

Introduction

As shown in Figure 1.1, the DxC 600i System consists of a DxC analyzer, an Access analyzer, and a CTA unit. The following paragraphs give a brief description of the system and how it functions. In addition, this chapter identifies some important hazards inherent to the system in a laboratory environment.

Figure 1.1 DxC 600i System Description

1. Primary Sample Rack
2. CTA Bar Code Reader
3. CTA Tube Clamp
4. CTA Sample Wheel
5. Aliquot Vessels (AVs)
6. DxC Bar Code Reader
7. Access Sample Carousel with AVs
8. Access Bar Code Reader
9. AV Waste Container (behind CTA door)
10. Reaction Vessel (RV) Waste Bag

Shipping Damage

Each DxC 600i System is carefully examined and checked by Beckman Coulter, Inc. before it is shipped. When you receive your new DxC 600i System, visually inspect the shipping container for damage. If there is damage, notify the Beckman Coulter Service Representative before he or she arrives at your facility to install your system.

If there is no damage to the shipping container, the Beckman Coulter Service Representative will supervise the unpacking of your system. If it is damaged in any way, file a complaint with the carrier. If there is no damage, a visual and operational check of your system will be performed.

Specifications

System Clearance

Table 1.1 System Clearance

Area Affected	Clearance Needed
Sides	Minimum of 18 inches (45.8 cm) clearance, both sides.
Back	Zero inches. The venting design of the system allows for "0 inch" clearance at the back.
Top	Minimum of 22 inches (55.9 cm)
Front	Minimum of 25 inches (63.5 cm)

Sunlight and Drafts

Do not place the system in direct sunlight or in drafts. Both of these conditions may affect the temperature control of the system.

Drain

Liquid waste exits the DxC 600i System by 3 separate effluent streams:

Table 1.2 System Waste Disposal

Item	Description
DxC	Waste drain 16 L/hour Maximum drain height of 36 inches (91.4 cm)
CTA	May be plumbed into existing DxC effluent stream
Access	Plumbed to Access Waste Container May be plumbed into existing DxC effluent stream

The DxC System should be located near a sink or floor drain to accommodate the waste effluent at a minimum rate of 16 liters/hour.

The drain must not be placed any higher than 36 inches (91.4 cm) above the floor.

Power Requirements

Table 1.3 Power Requirements – DxC 600 Analytic Unit

Item	Requirement
Operating range	200-240 VAC ± 10% (180-264 VAC) 14 A at low line, exclusive of power on surge
Frequency	50/60 Hz
BTU generated	10,500 BTU/hour
Power connector	20A current rating, NEMA L6-20R twistlock in-line connector

Table 1.4 Power Requirements – DxC Console (PC System and Monitor)

Item	Requirement
Operating range	100-120 VAC ± 10% (90-132 VAC); 4A OR 200-240 VAC ± 10% (180-264 VAC); 2A
Frequency	50/60 Hz
BTU generated	1500 BTU/hour
Power connector	15A current rating, IEC 320 standard connector

Table 1.5 Power Requirements – CTA Component

Item	Requirement
Operating range	100-120 VAC ± 10% (90-132 VAC); 6A (nominal) OR 200-240 VAC ± 10% (180-264 VAC); 3A (nominal)
Frequency	50/60 Hz
BTU generated	2900 BTU/hour
Power connector	15A current rating, IEC 320 standard connector

Table 1.6 Power Requirements – Okidata B4350 LED Printer

Item	Requirement
Operating range	110-127 VAC ± 10% (99-140 VAC); 3A OR 220-240 VAC ± 10% (198-264 VAC); 1.6A
Frequency	50/60 Hz
BTU generated	1228 BTU/hour (printing); 34 BTU/hour (standby power save)
Power connector	15A current rating, IEC 320 standard connector

Table 1.7 Power Requirements – Access 2 Analytic Unit

Item	Requirement
Operating range	100-120 VAC ± 10% (90-132 VAC); 7A (nominal) OR 200-240 VAC ± 10% (180-264 VAC); 3.5A (nominal)
Frequency	50/60 Hz
BTU generated	2730 BTU/hour
Power connector	15A current rating, IEC 320 standard connector

Table 1.8 Power Requirements – Access 2 Console (PC System and Monitor)

Item	Requirement
Operating range	100-120 VAC ± 10% (90-132 VAC); 4A OR 200-240 VAC ± 10% (180-264 VAC); 2A
Frequency	50/60 Hz
BTU generated	1500 BTU/hour
Power connector	15A current rating, IEC 320 standard connector

Notes on the System Power

The system can operate from any standard 3-wire electrical outlet and is wired as shipped from the factory to operate on 220V AC, 50/60 Hz.

IMPORTANT Line Voltage from the electrical outlet should be free of spikes, fluctuations, and dropouts for protection of the electronic circuitry.

⚠ **CAUTION**

> **Only operate the system from a 3-wire power source. DO NOT use a 2-prong adapter or a 2-wire AC power source.**

Environmental Conditions

Table 1.9 Working Environment, Temperature, Warm-up Time, Humidity and Elevation – DxC 600i System

Item	Specification
Working environment	Indoor use only
Ambient temperature	+18°C to +32°C, ≤ 2°C change in 1/2 an hour
Warm-up time	30 minutes (time to reach operating temperature)
Relative humidity	20-85% relative, non-condensing
Elevation	≤ 4200 ft (1280 m) > 4200 ft (1280 m) altitude modification required

NOTE These specifications apply to the DxC analyzer only. For specifications for the Access 2 analyzer, refer to the Access 2 *Instructions for Use*.

Water Requirements

Table 1.10 Water Requirements – DxC Side

Item	Specifications
Flow Rate	0.6 L/min peak flow rate 16 L/hr, minimum continuous flow rate
Temperature	+15°C to +25°C
Water pressure	30-90 psi

Table 1.11 Water Quality Requirements

CLSI (CLRW) 4TH Ed. C03 --A4
Formerly NCCLS (Type I & II)

Notes	Replaces Type I & II. 4th Ed. C03 --A4	
	CLSI **CLRW**	Beckman Coulter Requirements
Organic Impurities Total Organic Carbon (TOC)	500 ng/g TOC (Total Organic Carbon) parts perbillion (ppb)	Not Applicable
Microbiological Impurities Maximum microbial content colony forming unit (CFU/mL)	10 CFU/mL	10 CFU/mL
Ionic Impurities Minimum resistivity, megohm.centimeter (MΩ.Cm@25C)	10 MΩ .Cm	1.0 MΩ .Cm

Table 1.11 Water Quality Requirements *(Continued)*

CLSI (CLRW) 4TH Ed. C03 --A4
Formerly NCCLS (Type I & II)

Notes	Replaces Type I & II. 4th Ed. C03 --A4	
Particulate & Colloid Content	Purification process requirement only: water filtration using 0.22 µm pore size to remove microorganisms and particulates	Purification process requirement only: water filtration using 0.22 µm pore size to remove microorganisms and particulates
pH	Not Applicable	Not Appiicable
Maximum silicate (mg/mL) SiO_2	Not Applicable	Not Applicable

CTA and Access - None required.

Instrument and System Supplemental Specifications

Table 1.12 Instrument and Supplemental Specifications

Item	Description
Installation Category	II
Pollution Degree	2
EN55011	Meets Class A
Sound Pressure Level	≤ 65 dBA with covers down
Maximum Leakage Current	240 V, 50 Hz: 330 µA

A2	CTA	DxC
		X

Version Information

The Version Information screen provides a condensed reference to the software version number and the chemistry database number.

View the Version Information Screen
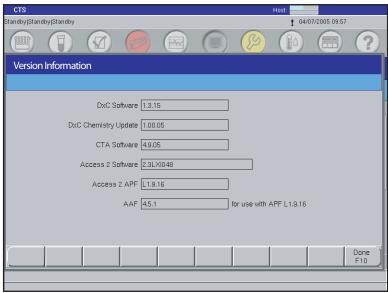
1 Select **Setup** from the menu bar.

2 Select **13 Version Information**.

OR

Type **13** in the **Option Number** field.

3 View the **Version Information** screen.

Figure 1.2 Version Information Screen

System Components

The DxC 600i System consists of three major components: a DxC analyzer, an Access analyzer, and a CTA unit. The following paragraphs briefly describe these components.

DxC Analyzer

The DxC analyzer is designed for the in vitro determination of a variety of general chemistries, therapeutic drugs, proteins, and other chemistries. The DxC analyzer has many components. Refer to the UniCel DxC Synchron Clinical Systems *Reference Manual* for a detailed description.

> ⚠ **WARNING**
>
> **If the equipment is used in a manner not specified by Beckman Coulter, Inc., the protection provided by the equipment may be impaired.**

Access Analyzer
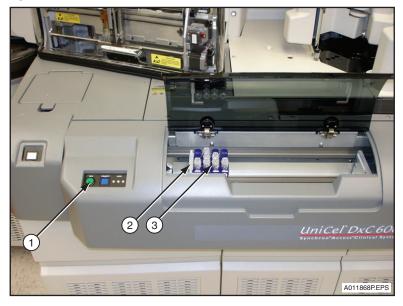
The Access analyzer is an automated system that performs a wide variety of immunoassays on body fluid samples. Refer to the Access 2 *Immunoassay System Reference Manual* for a detailed description on Access components.

Closed Tube Aliquotter (CTA) Unit

As shown in Figure 1.3, sample racks are loaded onto the DxC 600i load area after programming functions are completed. The operator presses the RUN button (1) to begin the test process. When the RUN button is pressed, the CTA load pusher feeds the sample racks towards the CTA shuttle. The shuttle sends each sample rack past the CTA bar code reader and into the CTA sample wheel.

If the sample needs to be tested at the DxC analyzer, the sample rack enters the DxC load area. The DxC load pusher feeds the sample racks toward the DxC shuttle. Finally, the shuttle sends each sample rack past the DxC bar code reader and into the DxC sample wheel.

Figure 1.3 DxC 600i Load Area
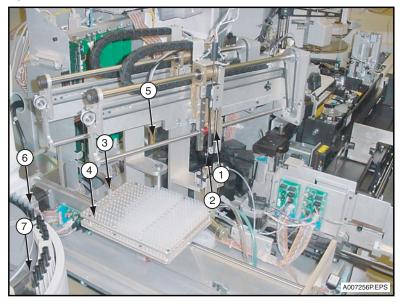
1. RUN Button
2. Load Gate
3. Sample Rack

If the sample needs to be tested at the Access analyzer, the piercing probe (1) in Figure 1.4 is lubricated with an Auto-Gloss solution and a hole is pierced into the sample tube cap. (Note: The CTA goes through the cap piercing sequence on all tubes.) The aliquot probe (2) then moves into position, aspirates the sample, and places it into an aliquot vessel (AV) (3) at the AV queue area (4). The cap piercer probe and aliquotter probe are cleaned with a wash buffer and the process is repeated.

A pick-and-place head (5) picks up each AV from the AV queue tray and places it on the automation rack (6) at the Access sample carousel (7). Finally, the Access analyzer transfers the AV material into reaction vessels (RVs) for processing.

Figure 1.4 Sample Aliquotting Area

1. CTA Piercing Probe
2. CTA Aliquot Probe
3. CTA Aliquot Vessel (AV)
4. CTA AV Queue Tray
5. CTA Pick and Place Head
6. Access Automation Rack
7. Access Sample Carousel

Theory of Operation

The entire operating process is described in the following flow chart (Figure 1.5). When sample preparation and calibration activities are completed, programmed samples are loaded onto the DxC 600i load area. Press the **RUN** button on the CTA to start the testing process.

If an immunoassay sample needs to be tested, the CTA pierces the cap on the sample tube, aliquots the sample into an AV, and sends it to the Access analyzer. If a general chemistry sample needs to be tested, the CTA sends the sample to the DxC analyzer.

An AV holds a maximum of 450 µL. Rarely, the volume needed to complete Access testing for a sample will exceed this maximum. In this event, the sample will be marked as incomplete. To complete the testing, run the sample again.

The test status is viewed from the DxC 600i monitor while the system is operating. A test report may be generated for both analyzers after testing has been completed. If a rerun is required, the operator places the sample rack back onto the DxC 600i load area to rerun the test.
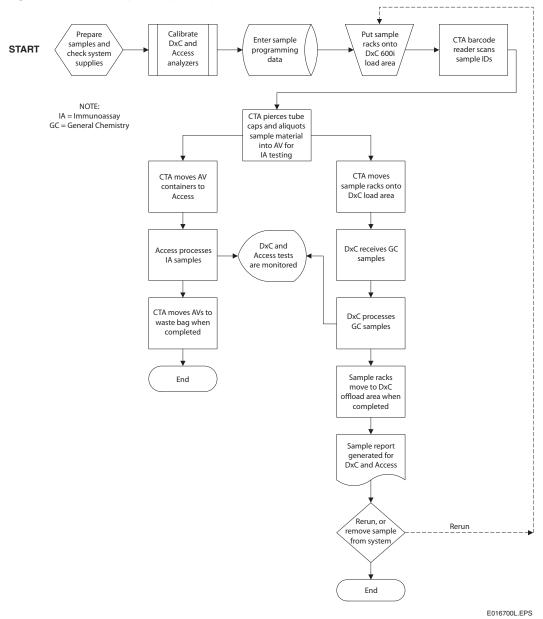
Figure 1.5 DxC 600i System Operating Process

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Access Functional Differences

When the Access analyzer is operating as part of the DxC 600i System, certain operating functions are not available (grayed out) at the Access analyzer. Those functions are listed in Table 1.13.

Table 1.13 Access Functional Differences
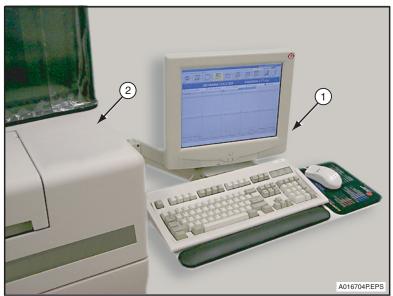
From Access Main Menu	Not Available When CTA is Online
Diagnostics	• Initialize System[a] • Volume Check • Device Diagnostics[a]
From Access Main Menu	**Not Available With DxC 600i**
Configuration	• Derived Results • Reference Ranges (Gray Zone)
Sample Manager (Test Request)	• Dilution Factor

a. Function available when Access is in Not Ready state.

Operator Control Devices
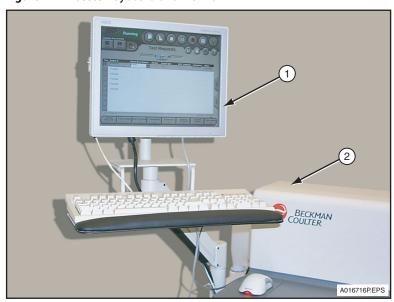
During normal operation, the operator uses various control devices such as the keyboard, a touch-screen monitor, and mouse. Basic operating functions for both analyzers are controlled and reviewed from the DxC 600i monitor and keyboard. Calibration and maintenance functions are controlled from DxC 600i and Access monitors and keyboards. Information is selected and entered into the system through touch screen monitors, with a mouse, or at a keyboard. Refer to Figure 1.6 and Figure 1.7.

Figure 1.6 DxC 600i Keyboard and Monitor

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1. DxC 600i Monitor and Keyboard
2. DxC Analyzer

Figure 1.7 Access Keyboard and Monitor

A016716P.EPS

1. Access Monitor and Keyboard
2. Access Analyzer

Control buttons are used to start the test process, to prioritize a sample run, or to stop the process under certain conditions as described in Table 1.14 through Table 1.16. Control buttons are shown in Chapters 4 and 5.

Table 1.14 DxC Control Buttons

Control Type	Location, Function, and Usage
Run (hard wired button)	• Located in front of DxC System, but covered during routine operation. • Starts test process at DxC analyzer for independent operating mode.
Priority (hard wired button)	• Located in front of DxC System, but covered during routine operation. • Starts priority (STAT) test at DxC analyzer for one or more samples for independent operating mode.
Stop (hard wired button)	• Located in front of DxC System. • Stops the test process at DxC analyzer. • Used in maintenance/repair procedures at DxC.
Pause (software button)	• Located under the Instrument Commands icon. • Prevents new or additional tests from starting at DxC System or CTA unit without wasting sample or reagent. Any tests with reagent already added are completed. • Used to interrupt the DxC System when a rack needs to be removed from sample carousel, or to avoid wasting reagent.

Table 1.15 CTA Control Buttons

Control Type	Location, Function, and Usage
Run (hard wired button)	• Located in front of CTA unit. • Starts the test process at DxC 600i System.
Priority (hard wired button)	• Located in front of CTA unit. • Starts a priority (STAT) test at DxC 600i System for one or more samples.
Stop (hard wired button)	• Located in front of CTA unit. • Stops the CTA from routing and/or aliquotting samples. • Used in maintenance/repair procedures at CTA.
Pause (software button)	• Located under the Instrument Commands icon. • Prevents new or additional tests from starting at CTA without wasting sample or reagent. Any tests with reagent already added are completed.

Table 1.16 Access Control Buttons

Control Type	Location, Function, and Usage
Stop (hard wired button)	• Located between Access and CTA unit. • Stops the test process at Access analyzer. • Use during an emergency situation. If the STOP button is pressed, sample processing may not stop immediately because another process is in control of the system. If this is the case, a message appears on the Access monitor to notify the operator. If required, press the **STOP** button again to stop sample processing.
Stop (software button)	• Located on every Access screen. • Stops the test process at Access analyzer. If the STOP button is pressed, sample processing may not stop immediately because another process is in control of the system. If this is the case, a message appears on the Access monitor to notify the operator. If required, press the **STOP** button again to stop sample processing.
Pause (software button)	• Located on every Access screen. • Interrupts the Access analyzer at the next opportunity. In-process tests are completed. • Use to add or delete test requests without initializing the system.
Run (software button)	• Located on every Access screen. • Starts the test process at Access analyzer.
CTA (software button)	• Located on Main menu. • Stops sample processing at CTA unit. • CTA must be placed offline to conduct diagnostic activities at Access analyzer. Refer to CHAPTER 5, *Post-Test Activities* for instructions.

A2	CTA	DxC
X		

Access Online Help Feature

Operating, maintenance, troubleshooting, and diagnostics information for the Access analyzer can be obtained through the Access Online Help feature. Not all Access online help features are applicable to the DxC 600i System.

NOTE The Help ? icon on the DxC 600i menu bar provides information from the DxC 600i and DxC *Instructions For Use* manuals. Similarly, the Access Online Help feature does not provide information for the DxC analyzer or CTA unit.

A2	CTA	DxC
		X

DxC 600i Main Menu Features

Host Communication Status Bar

At the top, right hand corner of the Main menu is a Host Communication Status Bar (1). Refer to Figure 1.8. The blue bar indicates that the host is sending information. The green bar indicates that the host is receiving information. A red circle with a slash through it indicates that the host is not communicating.

Access Event Log Symbol
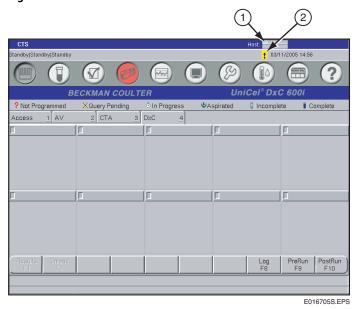
Next to the Host Communication bar is an Access Event Log symbol (2) that looks like an exclamation mark. Refer to Figure 1.8. If the background behind the symbol is clear, the Access is operating normally. If the background behind the symbol turns yellow, a caution condition has occurred at the Access analyzer. If the background turns red, a warning condition has occurred at the Access analyzer that demands immediate attention.

Main Operating Screens

DxC 600i System operating functions and programming functions are initiated from the **Main** menu screen at the DxC 600i monitor. Refer to Figure 1.10.

Figure 1.8 DxC 600i Main Menu Screen

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1. Host Communication Status Bar
2. Access Event Log

The Access analyzer Main menu screen is used during Access calibration, maintenance, reagent load/supply, and diagnostics activities, or when the CTA unit is not functional. Refer to Figure 1.9.

Figure 1.9 Access Main Menu Screen

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System Monitoring

The system can be monitored to check system operating conditions, sample test status, test errors, and assay flags. A printed test report is automatically generated after testing.

System Operating Conditions

During normal operation, the operating condition of the entire DxC 600i System is identified at the top, left corner of any screen at the DxC 600i monitor. The operating condition is arranged in the following order:

Access ¦ CTA ¦ DxC / (MC/CC)

Refer to APPENDIX A, *Supplementary DxC 600i Information* for further details.
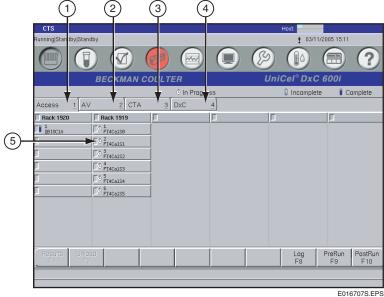
Sample Status

The sample status for each sample can be monitored from the DxC 600i monitor at the Main screen.

The sample status for each sample can be viewed for the Access analyzer, AV area, CTA unit, or DxC analyzer. To view a sample status, select the Access (1), AV (2), CTA (3), or DxC (4) tab on the screen. Refer to Figure 1.10.

Figure 1.10 DxC 600i Main Menu Screen Displaying Access Sample Status

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1. Access Tab	**4.** DxC Tab
2. AV Tab	**5.** Sample Status Icon
3. CTA Tab	

NOTE Any sample programmed as a STAT is highlighted in a yellow rack status box. Other functional keys (tab dependant) include:

- **Results F1** - Retrieves results for samples that are in-progress on the system.
- **Unload F2** - Requests particular racks to be unloaded at next possible opportunity.
- **Pre Run Summary F9** - Lists a variety of information on reagent and calibration status, as well as
- **Post Run Summary F10** - Lists error conditions that occurred on the system, including suppressed results and no sample detected.
- **Log F8** - Lists errors detected on samples, for example, incomplete tests, host query timeout, dulplicate sample ID, programming conflict. If the error is logged, the Log F8 key is highlighted in yellow. The yellow highlight disappears when the key is selected. The error will stay in the Sample Log screen for 12 hours.

A sample status icon (5) Figure 1.10, appears in front of the listed sample. Samples are listed in a rack status box directly below the sample status icon legend. Table 1.17 lists the function of each sample status icon.

Table 1.17 Sample Status Icons

Icon	Function
Not Programmed	Indicates a sample has been loaded without any programming associated with that Sample ID.
Query Pending	Sample is waiting for specific program information to be downloaded from the host.
In Progress	Sample has been identified and is currently being processed.
Incomplete	Sample has some tests that are still pending.
Complete	All tests have been completed.
Aliquotted	Identifies samples aliquotted at the CTA unit.
Aspirated	Indicates initial aspiration of the sample was completed.

Test Result Errors

Test results are checked against chemistry reaction flag limits to qualify the reagent, calibration, or sample. Checks are performed against the final results and on interim reaction data for all samples, including calibrators. Any calibrator, sample result, or reaction step outside of these limits is flagged. Test result errors and codes that affect the chemistry results are described in the UniCel DxC Synchron Clinical Systems *Reference Manual* and the Access 2 *Immunoassay System Reference Manual.*

CTA Event Codes

CTA error codes that an operator may see during normal operation are located in Appendix B of this manual. A complete list of CTA error codes is located in APPENDIX B, *Common Event Codes* of this manual.

Access Codes Converted to DxC Codes for DxC 600i Reporting

Certain Access codes (flags) are converted to DxC codes. This information is noted on the DxC 600i report. Refer to Table 1.18 for details.

Table 1.18 Access Codes Converted to DxC Codes

Access			DxC			
Description	Value	Flag	Remarks	Inst Code	Result	Host Code
Normal result	result	none	none	none	print result	none
Indeterminate	"No value"	IND	INDETERMINATE	none	suppress	RE
Out of range high	>highest	OVR	none	none	print: >X	GT
Curve expired	result	CEX	none	E	print result	none
Substrate expired	result	EXS	none	S	print result	none
Lot expired	result	LEX	none	R	print result	none
Lower than reportable result	result	LOW	OIR LO	none	print result	LO
	< lowest	none	none	none	print: < X	LT
No curve – cal required	"No value"	NCR	CHEM NEEDS CAL	NA[a]	incomplete	NA
Pack expired	result	PEX	none	D	print result	none
Control outside QC limits	NA	QCF	NA	NA	NA	NA
Control lot expired	NA	QEX	NA	NA	NA	NA
Quantity not sufficient	"No value"	QNS	NO SAMP DETECT	NA	incomplete	NA
Insufficient reagent dispensed	"No value"	QSD	INSUF FLUID DISP	NA	incomplete	NA
Reflex test	NA	RFX	NA	NA	NA	NA
Obstruction detected in the primary probe	"No value"	CLT	none	none	Probe Obstruct	none
RLU is out of measuring range	"Cancelled"	RLU	RLU RANGE	none	suppress	OR
Instrument error	NA	SYS	DEVICE ERROR	NA	incomplete	NA
Incubator temperature error	"No value"	TRI	INCUBATOR TEMP	none	suppress	TM
Substrate temperature error	"No value"	TRS	SUBSTRATE TEMP	none	suppress	TM
Carousel temperature error	"No value"	TRW	CAROUSEL TEMP	none	suppress	TM
Gray zone	NA	GRY	NA	NA	NA	NA
AV Expired - loaded > 3 hours	NA	AVX	AV EXPIRED	NA	incomplete	NA
Sample carousel cover opened	NA	AVC	A2 DOOR OPEN	NA	incomplete	NA
User unload automation sample	NA	AVU	SAMP REMOVED	NA	incomplete	NA
Sample ID conflict with DxC 600i console	NA	AVS	A2 ID CONFLICT	NA	incomplete	NA

Table 1.18 Access Codes Converted to DxC Codes *(Continued)*

Access			DxC			
Description	Value	Flag	Remarks	Inst Code	Result	Host Code
Can't run test (Undetected by CTA)	"Cancelled"	other	CHEM NOT RUN	NA	incomplete	NA
Cannot Calculate Result	"No value"	CCR	none	none	RESULT ERR	none

a. NA = Not applicable.

Test Reports

When testing is completed, a test report is generated and printed automatically. Test results are compared against customer defined reference ranges. Various test reports are shown in the UniCel DxC Synchron Clinical Systems *Reference Manual* and the Access 2 *Immunoassay System Reference Manual.*

Relative Light Units (RLUs) are not printed on DxC reports. RLUs are only printed on Access reports.

NOTE Printed test reports may display "#" or "@" in place of numbers or text if the information to be displayed exceeds the maximum allowable display area on the printout. To see the correct information, view the test report from the console.

Recalling Test Results

Test results can be recalled from the Recall Results screen by various methods as shown in .

Figure 1.11 Recall Results Screen

Pre-Test Activities

Introduction

The following pre-test activities should be completed before testing the samples on your DxC 600i System:

- Prepare test samples.
- Check and load system supplies at DxC analyzer, CTA unit, and Access analyzer.

Prepare Test Samples

Select Sample Containers
Prepare samples according to the type of container to be used. The following information describes sample containers used on the DxC 600i System.

IMPORTANT DO NOT put 13 x 75 mm or 16 x 75 mm tubes in 13 x 100 or 16 x 100 racks.

Table 2.1 DxC 600i Sample Containers

Use	Description
Used in non-reserved racks	• 13 x 75 mm and 13 x 100 mm open and capped (B-D Hemogard[a] and Greiner Vacuette[b]) sample tubes • 16 x 100 mm open and capped (B-D Hemogard only) samples tubes • 15 x 92 mm and 15 x 75 mm open and capped Sarstedt S-Monovette[c] sample tubes[d] • 0.5 mL cups (PN 651412) • 2.0 mL cups (PN 81902 or PN 652730)
Used in reserved racks	• 2.0 mL cup (PN 81902 or PN 652730) in 5 mL transfer tubes (PN 979272) • 1.0 mL pediatric insert cup (PN 81916) in a 12 or 13 x 75 mm tube • 2.0 mL insert cup (PN 81917) in a 16 x 75 mm tube

Table 2.1 DxC 600i Sample Containers *(Continued)*

Use	Description
If running Pediatric samples for DxC only chemistries, use	• 0.5 mL cups (PN 651412) in metal cup inserts (PN 476406) • Microtainer (baby bullets) in pediatric tube adapter (PN 472987). Load onto CTA for processing.
If running Pediatric samples requiring both DxC and Access chemistries, use	• 1.0 mL pediatric insert cup (PN 81916) in pediatric tube adapter (PN 472987). First load directly onto Access using racks 1800-1899. When finished processing on Access, transfer sample to CTA for DxC processing. • For Access 2 Total βhCG, diluted βhCG and all Access 2 tests that use sample volumes of less than 20 μL per test, you must use Aliquot Vessel (AV) containers manually loaded in automation racks (1900 -1999).

a. Registered trademark of the Becton Dickinson Corporation.

b. Registered trademark of the Greiner Corporation.

c. Registered trademark of the Sarstedt Corporation.

d. Requires Sarstedt S- Monovette Type CTS and CTA hardware. The 15 x 75 mm tubes must be installed into a special, non-reserved, multi-colored rack (PN A18642, package of 10, amber/purple). Rack IDs for Non-Reserved Racks using 15 x 75 mm tubes, must be defined using the 75 mm Racks field on the "Reserved Racks/Obstruction Detection Setup" screen.

⚠ **CAUTION**

Visible blood MUST be removed from the top of capped tubes using a cotton-tipped applicator moistened with DI water.

A2	CTA	DxC
		X

Check and Load Supplies at DxC Analyzer

1 Select **Rgts/Cal** from the menu bar.

2 Select the **DxC** tab on the screen. Reagents highlighted in yellow indicates that the reagent supply is getting low. Reagents highlighted in red indicates that the particular reagent supply is empty or requires calibration or has exceeded the on-board stability and requires immediate attention.

Load/Unload MC Reagents onto DxC Analyzer
The DxC analyzer loads and unloads MC bulk reagents using the bar code system. The reagent bar code information includes:

- Test or Reagent Name (1)
- Lot Number (2)
- Expiration Date (3)
- Serial Number (4)

Refer to Figure 2.1. Reagent information is encoded on the label and read by the bar code reader when the reagent is loaded or unloaded from the system. This information makes each container unique.

Figure 2.1 MC Reagent Information

1. Test or Reagent Name
2. Lot Number
3. Expiration Date
4. Serial Number

IMPORTANT Reagent preparation may be necessary prior to loading certain MC reagents onto the DxC analyzer. For further details, refer to Table 2.2 and the corresponding chemistry information sheet in the Synchron Clinical Systems *Chemistry Information Sheets*.

Table 2.2 MC Reagent Preparation

Modular Chemistries (MC)	Preparation Required
GLUCm	Allow reagent to equilibrate to room temperature for at least 8 hours.

Load or Unload MC Reagents

IMPORTANT You must wear a CLEAN pair of gloves to load new reagents.

1 Select **Rgts/Cal** from the menu bar.
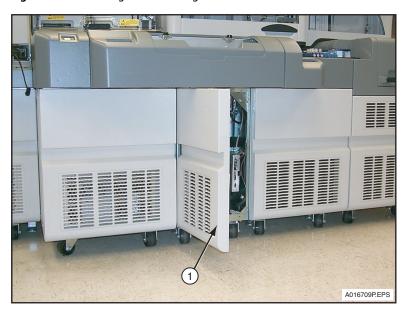
2 Select the **DxC** tab on the screen.

3 Select the modular chemistry **MC Rgts**.

4 Select **Load F1**.

5 Open the door (1) of the DxC Analyzer to access MC reagents.
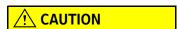
NOTE Wash concentrate and Auto-Gloss are located behind the DxC center door.

Figure 2.2 Accessing DxC MC Reagents

1. DxC Analyzer Door

6 Disconnect the straws from the fittings and remove the reagents from the tray. Do not scan the bar code of the reagent bottle when removing it.

> ⚠️ **CAUTION**
>
> **To avoid contaminating the reagent, do not touch the draw tube in the following steps. Handle the cap/draw tube assembly by the cap only. Do not put the straw on the instrument or on the ground. Do not pool reagents.**
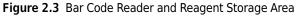
7 Replace the old bottle with the new bottle. Unscrew the caps of both bottles and place the cap from the old bottle onto the new bottle.

8 Replace the reagents on the tray and connect the fittings to the straws.
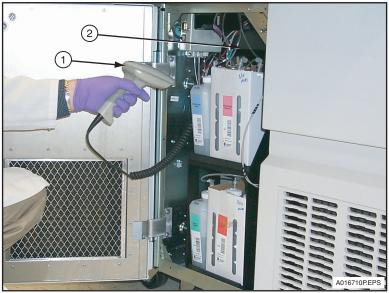
9 Use the hand-held bar code reader (1) shown in Figure 2.3, scan the reagent bar code on the new reagent bottle(s). The system makes a sound to indicate a successful bar code read.

Check the monitor to verify that the reagent data is displayed. When the bar code is scanned, the reagent screen updates with current reagent information. If the bar code can not be scanned, manually clear the reagent by selecting **Clear F1**, type new information (see Figure 2.1).

NOTE The **Lot #** field has 6 characters only. Do not enter the alpha character of the lot number.

Figure 2.3 Bar Code Reader and Reagent Storage Area
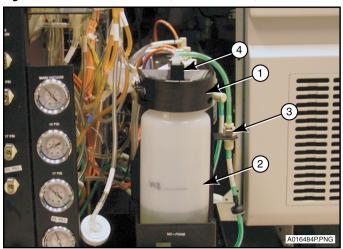
1. Hand-held Bar Code Reader
2. Reagent Storage Area

10 Close the door and select **Done F10**. For loaded chemistries, continue to Step 11.

11 Calibrate reagents and run Quality Control (QC) materials before processing samples.

Refill the No Foam Container

The No Foam Container shown in Figure 2.4 (2) is refilled by pouring a fresh bottle of No Foam solution into the empty container on the instrument.

Figure 2.4 No Foam Container (DxC 800 shown)

1. Lid
2. No Foam Container
3. Quick Connector
4. Cap
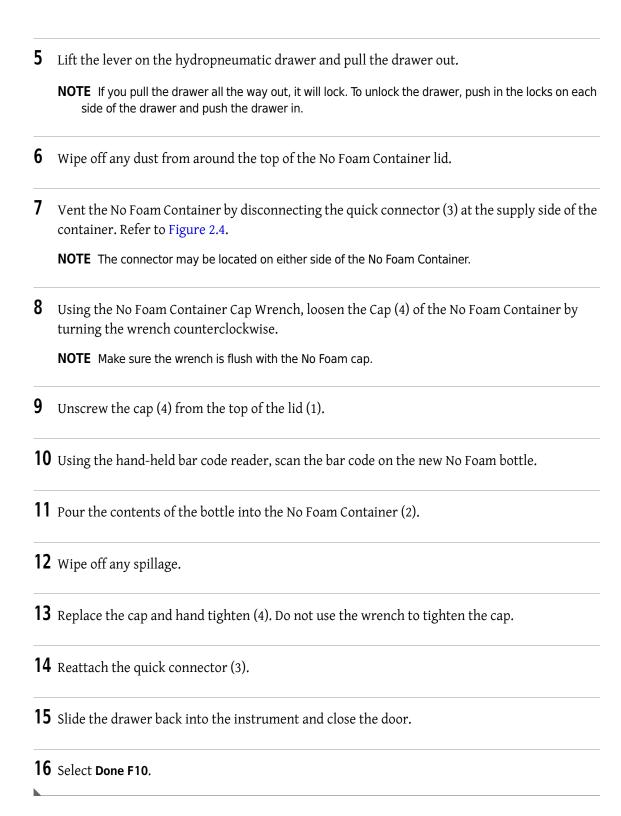
> ⚠ **CAUTION**
>
> **Wear appropriate Personal Protective Equipment (PPE), including face and eye protection.**
>
> **The No Foam Container is pressurized during system operation and must be properly depressurized prior to servicing to avoid sudden depressurization and potential exposure of the skin or eyes to the No Foam solution. To release the air pressure, disconnect the white quick connector located at the supply side of the container. If inhaled, move exposed individual to fresh air. If skin or eye contact with the solution occurs, flush the affected area thoroughly with water for at least 15 minutes. In both cases seek medical attention. Refer to the No Foam Material Safety Data Sheets (MSDS) for additional information.**

Refer to Figure 2.4 and refill the No Foam Container as follows:

1 Select **Rgts/Cal** from the menu bar.

2 Select the DxC tab. Select the **MC Rgts** button.

3 Select **Load F1**.

4 Open the center door on the DxC to access the No Foam Container.

5 Lift the lever on the hydropneumatic drawer and pull the drawer out.

> **NOTE** If you pull the drawer all the way out, it will lock. To unlock the drawer, push in the locks on each side of the drawer and push the drawer in.

6 Wipe off any dust from around the top of the No Foam Container lid.

7 Vent the No Foam Container by disconnecting the quick connector (3) at the supply side of the container. Refer to Figure 2.4.

> **NOTE** The connector may be located on either side of the No Foam Container.

8 Using the No Foam Container Cap Wrench, loosen the Cap (4) of the No Foam Container by turning the wrench counterclockwise.

> **NOTE** Make sure the wrench is flush with the No Foam cap.

9 Unscrew the cap (4) from the top of the lid (1).

10 Using the hand-held bar code reader, scan the bar code on the new No Foam bottle.

11 Pour the contents of the bottle into the No Foam Container (2).

12 Wipe off any spillage.

13 Replace the cap and hand tighten (4). Do not use the wrench to tighten the cap.

14 Reattach the quick connector (3).

15 Slide the drawer back into the instrument and close the door.

16 Select **Done F10**.

A2	CTA	DxC
		X

Load/Unload CC Cartridges at DxC Analyzer

As shown in Figure 2.5 and Figure 2.6, the DxC analyzer also loads and unloads CC reagents using the bar code system. The reagent bar code information includes:

- Test or Reagent Name (1)
- Lot Number (2)
- Expiration Date (3)
- Serial Number (4)

Figure 2.5 CC Reagent Cartridge

1. Test or Reagent Name
2. Lot Number
3. Expiration Date
4. Serial Number

Figure 2.6 CC Reagent Information

1. Test or Reagent Name
2. Lot Number
3. Expiration Date
4. Serial Number

IMPORTANT Reagent cartridge preparation may be necessary prior to loading certain CC reagents onto the DxC analyzer. For further details, refer to the corresponding chemistry information sheet in the Synchron Clinical Systems *Chemistry Information Sheets*.
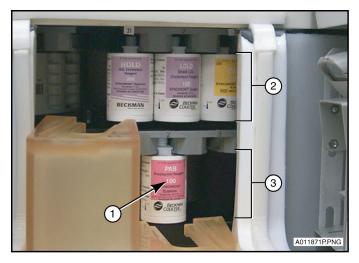
Load or Unload CC Reagents

1 Select **Rgts/Cal** from the menu bar.

2 Select all positions to be loaded or unloaded. Selected positions are highlighted. Use the up and down arrows to access screens for additional chemistries.

3 Select **Load F1**.

4 To unload reagent:

- When the screen prompts you to remove the cartridge (1), open the reagent carousel door. The cartridge to unload is positioned on either the upper or lower reagent carousel. A blinking bar code reader indicates which carousel position to unload from the upper and lower reagent carousels. Upper reagent carousel positions (2) are 31 to 59. Lower reagent carousel positions (3) are 1 to 30. Grasp the cartridge at top and bottom, lift up a little and pull back. Refer to Figure 2.7.

- As the cartridge is moved in front of the bar code reader, a beep indicates that the bar code is read. Check the screen to verify reagent data is removed from the position selected. If the bar code does not read, manually clear the position. To manually clear, select **Clear F1**.

Figure 2.7 CC Reagents

1. Reagent Cartridge
2. Upper Reagent Carousel Positions 31 to 59
3. Lower Reagent Carousel Positions 1 to 30

5 To load reagent:

- When the screen prompts you to load the cartridge, open the reagent carousel door. Move the cartridge in front of the bar code reader that blinks. A beep indicates that the bar code is read.

- Check the screen to verify reagent data is added to the selected position. If the bar code does not scan, manually enter the information.

NOTE This field has 6 characters only. Do not enter the alpha character of the lot number.

6 Close the reagent carousel door.

7 If multiple positions are selected to load or unload, repeat Step 4-6.

8 Before processing samples, calibrate and run QC if needed.

A2	CTA	DxC
	X	

Check and Load Supplies at CTA Unit
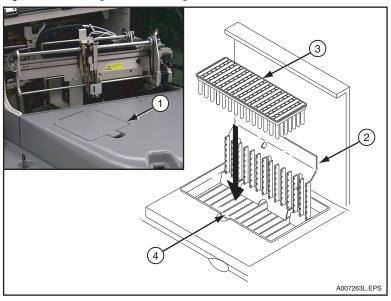
Check the CTA Supplies

1 Select **Rgts/Cal** from the menu bar.

2 Select the **Supplies** tab on the **Reagent/Calibration** screen to view the supply status. A supply highlighted in yellow indicates that the supply is getting low. A supply highlighted in red indicates that the particular supply is too low and requires immediate attention.

Load Aliquot Vessels (AV) Cartridges onto CTA Unit

As shown in Figure 2.8, aliquot vessels are packaged in a cartridge. Each cartridge holds 98 vessels. The AV compartment holds up to 294 AVs. If the AV supply has <60 AVs, the AV Supply button turns yellow. If the AV supply has <28 AVs, the AV Supply button turns red.

Figure 2.8 Loading the AV Cartridge

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1. AV Supply Door   3. AV Cartridge
2. AV Load Door   4. AV Storage Rack
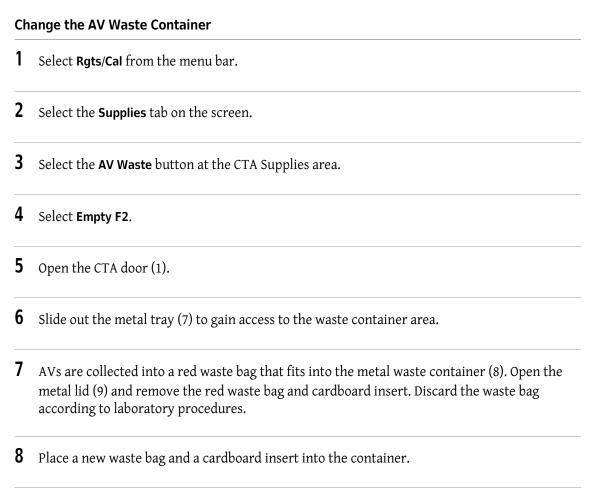
Load the AV Cartridge

1 Obtain an AV container cartridge.

2 Peel off the protective covering from the cartridge.

3 Select **Rgts/Cal** from the menu bar.

4 Select the **Supplies** tab on the screen.

5 Select **AV Supply**.

6 Select **Load F1**.

7 Open the AV supply door.

8 Open the AV load door and insert the AV cartridge into AV storage rack as shown in Figure 2.8.

9 Press down firmly on the AV load door so that the cartridge spine releases from the AVs.

10 Open the AV load door and remove the spine.

11 Close the AV load door.

12 Close the AV supply door.

13 Select **Done** to let the system know that the AVs are loaded.

A2	CTA	DxC
	X	

Change AV Waste Container at CTA Unit

Refer to Figure 2.9. The AV Waste Container is located underneath the CTA on a sliding tray behind the wash buffer. The waste container holds up to 900 AVs. The system counts used AVs. If 900 AVs were counted, the AV Waste button turns red and the CTA unit stops. It is recommended to empty the AV waste container before running the system.

Change the AV Waste Container

1 Select **Rgts/Cal** from the menu bar.

2 Select the **Supplies** tab on the screen.

3 Select the **AV Waste** button at the CTA Supplies area.

4 Select **Empty F2**.

5 Open the CTA door (1).

6 Slide out the metal tray (7) to gain access to the waste container area.

7 AVs are collected into a red waste bag that fits into the metal waste container (8). Open the metal lid (9) and remove the red waste bag and cardboard insert. Discard the waste bag according to laboratory procedures.

8 Place a new waste bag and a cardboard insert into the container.

9 Install the metal lid so it fits over the container shroud.

10 Slide the metal tray back into position. Make sure that the tray is all the way back against the AV chute.
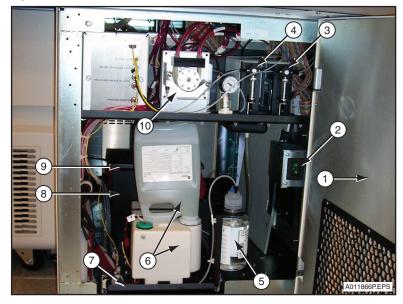
11 Close the CTA door.

12 Select **OK** to let the system know that the AV waste container is emptied. The system resets the count to 900.

A2	CTA	DxC
	X	

Change the Wash Buffer at CTA Unit

The Wash Buffer is used to wash the CTA probes. The wash buffer assembly is located underneath the CTA unit. Refer to Figure 2.9. Visually observe the wash buffer level. The CTA Supply tab turns yellow if the wash buffer level is low (100 aliquots left). After the 100 aliquots are made, the tab turns red and the system stops. It is recommended to check the wash buffer before running the system.

Figure 2.9 Waste Container and Wash Buffer

1. CTA Door
2. CTA Power On/Off Switch
3. Sample Syringe
4. Wash Syringe
5. Auto-Gloss Bottle
6. Wash Buffer Assembly
7. Metal Tray
8. Waste Container
9. Metal Lid
10. Peristaltic Drain Pump

Change the Wash Buffer at the CTA Unit

1 Refer to Figure 2.9. Open the door (1) underneath the CTA. The Wash Buffer Assembly (bottle and reservoir) (6) is mounted on a sliding tray (7).

2 Pull out the sliding tray.

3 Mix the contents of the new wash buffer bottle by gently inverting the sealed bottle 3 or 4 times.
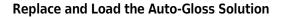
4 Remove the cap and inner seal from new bottle.

5 Remove empty bottle.

6 Remove dispense cap assembly from empty bottle.

⚠ **CAUTION**

To avoid contaminating the wash buffer, DO NOT touch any part of the dispense cap assembly that enters the reservoir. Handle the dispense cap assembly only by the screw cap, not the nozzle.

7 Attach dispense cap assembly to new bottle.

8 Turn the new bottle upside down and place it into reservoir receptacle.

9 Push the sliding tray all the way in until it latches.

10 Close the CTA door.

11 Select **Rgts/Cal** from the menu bar.

12 Select the **Supplies** tab on the screen.

13 Optional:
Type the lot number and expiration date in the **CTA Wash Buffer Level** field located on the **CTA Supplies Status** section of the screen.

A2	CTA	DxC
	X	

Change the Auto-Gloss Solution at CTA Unit

The Auto-Gloss solution is used to lubricate the piercing probe on the CTA unit. Refer to Figure 2.10.

Replace and Load the Auto-Gloss Solution

1 Select **Rgts/Cal** from the menu bar.

2 Select the **Supplies** tab on the screen.
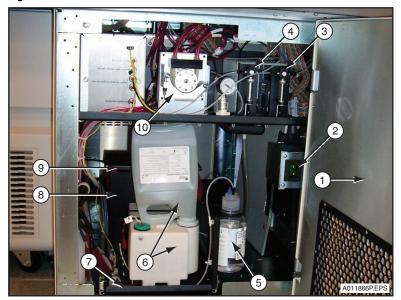
3 Select **CTA Auto-Gloss**.

4 Select **Load F1**. An Auto-Gloss data screen appears.

5 Open the CTA door (1). The Auto-Gloss bottle (5) is located on the bottom shelf.

Figure 2.10 CTA Auto-Gloss
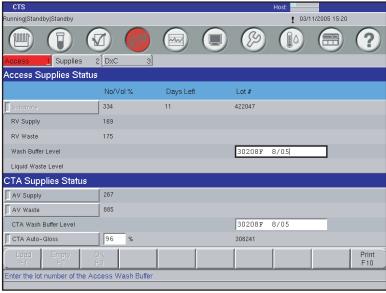
1. CTA Door
2. CTA Power On/Off Switch
3. Sample Syringe
4. Wash Syringe
5. Auto-Gloss Bottle
6. Wash Buffer Assembly
7. Metal Tray
8. Waste Container
9. Metal Lid
10. Peristaltic Drain Pump

6 Unfasten the cap and remove the old bottle.

7 Install the new Auto-Gloss bottle and tighten the cap. Use the DxC hand-held bar code reader (1) Figure 2.3, to scan the Auto-Gloss bottle. The data appears on the screen.

8 Select **Done F10**.

A2	CTA	DxC
X		

Check and Load Access Supplies and Reagents

1 Select **Rgts/Cal** from the menu bar.

2 Select the **Supplies** tab on the **Reagent/Calibration** screen to view the supply status. Refer to Figure 2.11. A supply highlighted in red indicates that the particular supply is low and requires immediate attention. A supply highlighted in yellow indicates that the supply is getting low.

3 Select the **Access** tab to check the reagent status at the Access analyzer. A reagent supply highlighted in yellow indicates that the supply is getting low. A reagent highlighted in red indicates that the particular reagent supply is low and requires immediate attention.

Figure 2.11 Supplies Screen at the DxC 600i Monitor

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Access supplies can also be checked from the **Access Supplies** screen (Figure 2.12) at the Access monitor. Select the **F3 Supplies** button on the **Main** menu to bring up this screen.

Figure 2.12 Access Supplies Screen at Access Monitor

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A2	CTA	DxC
X		

Load the Reaction Vessel (RV) Cartridges onto Access Analyzer

Reaction Vessels (RVs) are used to process immunoassay tests within the Access analyzer. RVs are packaged in a cartridge. Each cartridge holds 98 vessels. Three cartridges can be loaded at one time for a maximum capacity of 294 vessels. If the RV supply is getting low (<60 RVs), the Access system displays a yellow caution. If the RV supply is low (<28 RVs) the RV Supply icon turns red.

It is recommended to load RVs when the yellow caution displays. When the RV Supply icon turns red, the Access must be in *Ready* mode to load a cartridge.
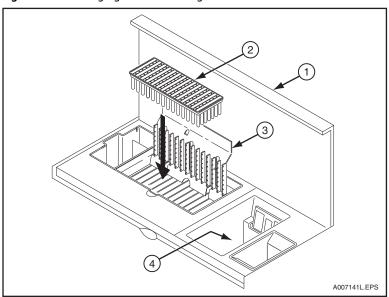
Figure 2.13 Changing the RV Cartridge

A007141L.EPS

1. RV Supply Door
2. RV Cartridge
3. RV Load Door
4. RV Waste Bag Area

Load the RV Cartridges

1 Select **Supplies F3** from any Access screen.

2 Select **Load RVs F4**. The reaction vessel latch disengages.

> ⚠ **CAUTION**
>
> **Loading the RVs without selecting "Load RVs F4" may damage the analyzer.**

3 Refer to Figure 2.13 for steps 3-6. Remove protective covering from the RV cartridge (2).

4 Open the RV supply door (1) at the front of the analyzer.

5 Open the RV load door (3) when prompted by the software.

6 Place the RV cartridge into RV supply area as shown.

7 Press down firmly on the RV load door to release the RVs from the spine.

8 Open the RV load door and remove the spine.

9 Close the RV load door.

10 Close the RV supply door.

11 Select **Done F1**.

▶

A2	CTA	DxC
X		

Change the RV Waste Bag at Access Analyzer

When the RV waste bag has room for 60 or fewer RVs, the RV Waste Bag button turns yellow at the Access and DxC 600i **Supplies** screen. When the RV waste bag becomes full, the Waste Bag button turns red and the system will not process samples. It is recommended to change the bag when the button turns yellow before processing samples.

1 Select **Supplies F3** from any Access screen.

2 Select **Change RV Waste Bag F6**.

3 Open the RV supply door (1). Unfold and expand the new RV waste bag. Refer to Figure 2.13.

4 Remove and seal the old bag.

5 Insert the new bag. Each bag has a plastic flange that fits into a slot. If the system is running, install the bag immediately.

⚠ **CAUTION**

If the system is running when you change the bag, the system may try to eject an RV when the plastic collar on the waste bag is blocking the ejection chute. This causes a jam. To prevent damaging the system, DO NOT push an RV that is sticking out from the ejection chute all the way back into the chute.

6 Close the RV supply door.

⚠ **WARNING**

Dispose of waste bag according to proper laboratory procedures.

7 Select **Done F1**.

NOTE RV Waste bag information is also displayed at the DxC 600i monitor.

A2	CTA	DxC
X		
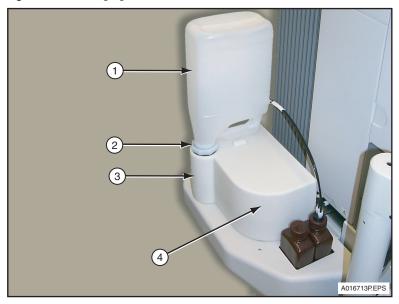
Change the Wash Buffer Bottle at Access Analyzer

The wash buffer bottle, shown in Figure 2.14, may be changed at any time. If the Wash Buffer button turns red at the Access and DxC 600i **Supplies** screen, the system will not schedule any new tests until the wash buffer bottle is changed.

Figure 2.14 Changing the Wash Buffer Bottle

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1. Wash Buffer Bottle
2. Dispense Cap Assembly
3. Reservoir Receptacle
4. Wash Buffer Reservoir

Change the Wash Buffer Bottle

1   Mix the contents of the new wash buffer bottle by gently inverting the sealed bottle 3 or 4 times.

2   Remove the cap and inner seal from the new bottle.

3   Remove the empty bottle.

4   Remove the dispense cap assembly from the empty bottle.

> ⚠ **CAUTION**
>
> **To avoid contaminating the wash buffer, DO NOT touch any part of the dispense cap assembly that enters the reservoir. Handle the dispense cap assembly only by the screw cap, not the nozzle.**

5   Attach dispense cap assembly to the new bottle.

6   Turn the new bottle upside down and place it into the reservoir receptacle.

7   Select **Rgts/Cal** from the menu bar at the DxC 600i monitor.

8   Select the **Supplies** tab on the screen.

9   Optional:
Type the lot number and expiration date in the **Wash Buffer Level** field located on the Access Supplies Status section of the screen.

A2	CTA	DxC
X		

Change the Liquid Waste Bottle at Access Analyzer (Optional Waste Collection Feature)

The Liquid Waste bottle (shown in Figure 2.15) can be changed at any time. If the Liquid Waste button is red, the system will not schedule any new tests.
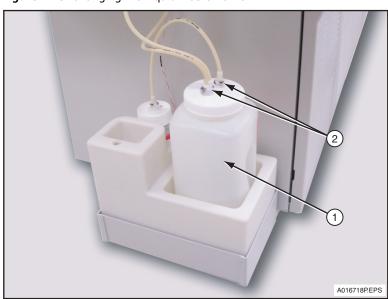
Figure 2.15 Changing the Liquid Waste Bottle

1. Liquid Waste Bottle
2. Quick Disconnect

Change the Liquid Waste Bottle

1 Change the liquid waste bottle (1).

- If the system has stopped processing samples,
  — release the quick disconnects (2) from the full bottle and connect the disconnects to the empty bottle.

- If the system is still processing samples,
  — leave the bottle cap attached to the quick disconnects
  — replace the full bottle with a clean bottle and attach the cap.

2 Decontaminate contents of full liquid waste bottle according to your laboratory protocol.

3 Dispose of liquid waste and rinse bottle thoroughly.

> ⚠ **WARNING**
>
> **Consider liquid waste potentially infectious. handle and dispose of liquid waste according to proper laboratory procedures.**

4 Store a clean bottle for future use.
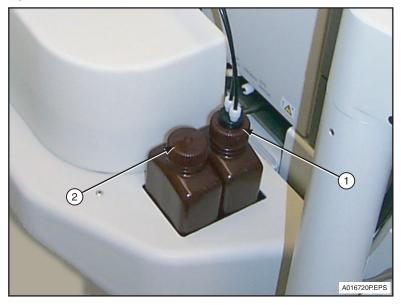
A2	CTA	DxC
X		

Change the Substrate Bottle at Access Analyzer

The **Substrate** icon turns yellow when the system can process 60 or fewer tests with the current supply of substrate. The icon turns red when the substrate bottle is empty. The system cannot start processing samples until you load a new bottle of substrate. The substrate bottle (shown in Figure 2.16) can only be changed when the Access analyzer is in *Ready* mode.

Figure 2.16 Changing the Substrate Bottle

A016720P.EPS

1. Substrate Bottle In Use
2. Substrate Bottle Equilibrating to Room Temperature

> ⚠ **CAUTION**
>
> **Before changing the substrate, always wear powder free gloves so that the substrate does not become contaminated.**

Change the Substrate Bottle

1 Select **Supplies F3** from any Access screen.

2 Select **Change Substrate F5**.

3 Scan the new, equilibrated substrate bottle using the Access hand-held bar code reader.

> **NOTE** Allow the substrate bottle to equilibrate at room temperature for at least 18 hours prior to use.

4 Replace cap on new substrate bottle with cap from old substrate bottle.

5 Discard empty bottle. Equilibrate another new bottle at room temperature for at least 18 hours prior to use.

6 Select **Done F1**.

7 Select **Yes F1**. The system automatically primes the substrate lines.

A2	CTA	DxC
X		
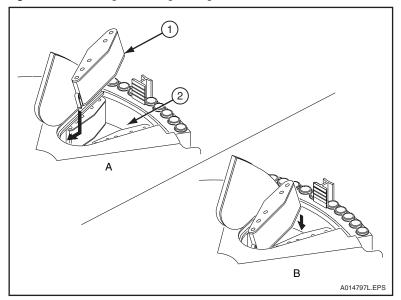
Load a Reagent Pack onto Access Analyzer

The Access Reagent Pack is loaded onto the Access Analyzer to run immunoassay tests. Refer to Figure 2.17 for details.

Figure 2.17 Loading/Unloading a Reagent Pack

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1. Reagent Pack
2. Carousel

Load the Reagent Pack

1 Select **Supplies F3** from any Access screen.

2 Select **Load Reagent Pack F1**.

3 Mix the reagent pack (1) by gentle inversion.

4 When prompted by the software, open the sample carousel cover and reagent carousel door. Insert the reagent pack at a downward angle and press down until it snaps in place. Refer to Figure 2.17, view A. Then gently pull the pack back towards the outer rim of the carousel (2) to ensure it is properly seated in place. Refer to Figure 2.17, view B.

> ⚠ **CAUTION**
>
> **To prevent damage to the reagent pack, be sure it is properly seated in the reagent carousel.**

> ⚠ **CAUTION**
>
> **Do not interchange used Access reagent packs between DxC 600i and: Stand-alone DxC 600i systems, Networked DxC 600i systems, Stand-alone Access 2 systems and Networked Access 2 systems.**
>
> **If you reload a partially used Access reagent pack, it must be returned to the same stand-alone system (Access or DxC 600i) or Access workgroup (systems networked to each other) from which it was inventoried and removed. If loaded on a different stand-alone system or workgroup, it is treated as if it contains 50 tests, and invalid results may occur.**

5 Enter the reagent pack bar code by scanning the reagent pack with the hand-held bar code reader, or by typing the characters above the reagent pack bar code in the barcode field.

6 Select **Done F1**.

7 Close the reagent carousel door and sample carousel cover.

Unload the Reagent Pack

1 Select **Supplies F3** from any Access screen.

2 Select the pack name to unload.

3 Select **UnLoad Reagent Pack F2**.

4 Open the sample carousel cover.

5 Open the reagent carousel door and remove the reagent pack in the presented carousel slot. Push the pack in towards the center of the carousel and lift the back of the pack.

6 Close reagent carousel door.

7 Close the sample carousel cover.

8 Select **Done F1** when finished.

System Calibration

System Calibration

Introduction

System calibration is used to standardize the analysis of samples to existing conditions. Refer to the Synchron Clinical Systems *Chemistry Information Sheets* and the Access *Immunoassay System Assay Manual* for detailed information regarding such conditions. In general, system calibration is required when:

- a new reagent is used (except when within lot calibration applies on DxC System)
- at recommended calibration frequency intervals
- indicated by control results
- after specified maintenance and diagnostic procedures
- after certain parts replacement

IMPORTANT Calibration procedures must be conducted separately at each analyzer. The following tables describe how to calibrate the DxC and Access analyzers under various conditions.

A2	CTA	DxC
		X

Calibrate DxC Chemistries With Bar Code Labels

From the **Rgts/Cal** screen, check the Calibration Time Left column displayed in days:hours:minutes and the Cal Status column to see which chemistries require calibration.

1 Select **Rgts/Cal** from the menu bar.

2 Select the **DxC** tab on the calibration screen.

3 Select the chemistries to be calibrated. If necessary, use the up and down arrows to select more chemistries.

4 Select **Cal F4**.
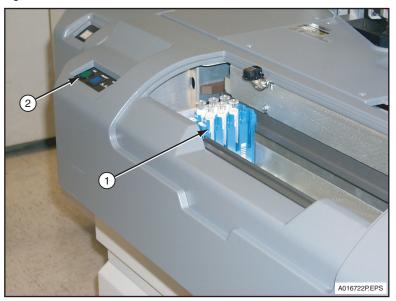
5 Select **List F5** to review the calibrator load list.
   - Make sure the lot number on the calibrator bottle agrees with the lot number seen on the screen.
   - Make sure the correct bar code labels are in the correct positions.

6 Place a calibrator bar code label (with the name of the calibrator to be used) on a 16 mm transport tube. Repeat for all calibrators.

7 Place calibrator into sample cups.
   - For Aqua cals 1, 2, and 3, fill a 0.5 mL cup.

---

8 Refer to Figure 3.1.

- Open the DxC 600i load area cover.
- Place the sample rack (1) onto DxC 600i load area with bar codes facing right.
- Press **RUN** (2).

Figure 3.1 DxC 600i Load Area

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1. Sample Rack
2. RUN Button

A2	CTA	DxC
		X

Calibrate DxC Chemistries Using Assigned Calibrator Racks

From the **Rgts/Cal** screen, check the Calibration Time Left column displayed in days:hours:minutes and the Cal Status column to see which chemistries require calibration.

1 Select **Rgts/Cal** from the menu bar.

2 Select the **DxC** tab on the calibration screen.

3 Select the chemistries to be calibrated. If necessary, use the up and down arrows to select more chemistries.

4 Select **Cal F4**.

5 Select **List F5** to review the calibrator load list. Make sure the lot number on the calibrator bottle is the same as the lot number on the screen.

6 Get the assigned calibrator racks listed on the screen and place the cups into assigned rack positions as shown on the load list.

7 Place calibrator into sample cups.
   - For Aqua cals 1, 2, and 3, fill a 0.5 mL cup.
   - All other calibrators need 3 drops of calibrator in a 0.5 mL cup.

8 Refer to Figure 3.1.
   - Open the DxC 600i load area cover.
   - Place the sample rack (1) onto DxC 600i load area with bar codes facing right.
   - Press **RUN** (2).

A2	CTA	DxC
X		

Calibrate Access Chemistries (Assays)

This procedure is performed at the Access analyzer. Calibrate Access assays as follows in the procedure below:

IMPORTANT For Access 2 Total βhCG, diluted βhCG and all Access 2 tests that use sample volumes of less than 20 µL per test, you must use Aliquot Vessel (AV) containers manually loaded in automation racks (1900 - 1999).

1 Select the Main menu at the Access monitor.

2 Select **Sample Manager F1**.

3 Select an **off-board rack (X)**.

OR

Type the rack ID (X) and press Enter .

4 Select **Test Request F3**.

5 Select **Request Calibration F6**.

6 Select calibration set.

7 Select **OK F1**. The system enters calibration set lot number, calibration levels, and a reagent pack lot number. The system also enters each calibrator level in subsequent sample positions.

8 Select **Load Rack (X) F1**.

9 Insert samples into rack and load the rack onto the Access sample carousel.

10 Select **F1 Done**.

11 Select **RUN**.

A2	CTA	DxC
		X

Calibration Override Function

The Calibration Override option allows the system to override a failed calibration and obtain results based on the failed calibration factors. *Calibration Override* is available only when an attempt to calibrate the chemistries has been previously made and failed, displaying the status *Cal Failed*. A chemistry with any other status, including *Cal Required*, cannot be overridden. The calibration can be overridden while the system status is *Standby, Disabled* or *Running*.

IMPORTANT Overriding a calibration is not usually justified. However, there may be an emergency situation when a delay caused by calibration is unacceptable to the laboratory. The magnitude of error which is deemed acceptable when overriding a failed calibration is totally under the control of the laboratory. Therefore, the Override function should be used with caution.

Override a Calibration for DxC

Override a Calibration

1 Select **Rgts/Cal** from the menu bar.

2 Select the **DxC** tab on the calibration screen.

3 Select the Chem position to override.

4 Select **Options F6**.

5 Select **Calibration override** from the **Cal Options** dialog box.
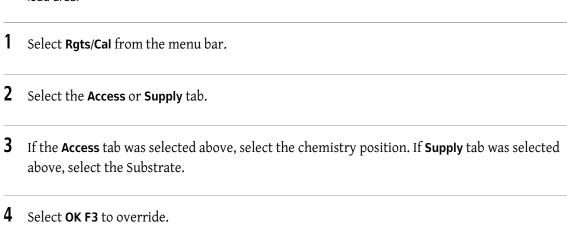
Remove Cal Overridden Status at DxC

The Cal Overridden status can only be removed by successfully recalibrating the chemistry or by selecting Chem Bypass. A flag indicating that a particular chemistry has been overridden appears in the Instrument Code area on the appropriate Summary or Patient Chartable Results report. Although a Cal Overridden status can be bypassed, the Cal Overridden flag is only removed by a successful calibration.

Override a Calibration or Supply for Access

Refer to the following instructions to override an expired Access calibration or Access Substrate expiration status from DxC 600i monitor. The calibration override function does not apply to failed calibrations on the Access analyzer.

IMPORTANT Calibration override for Access must be completed prior to loading samples on the DxC 600i load area.

1 Select **Rgts/Cal** from the menu bar.

2 Select the **Access** or **Supply** tab.

3 If the **Access** tab was selected above, select the chemistry position. If **Supply** tab was selected above, select the Substrate.

4 Select **OK F3** to override.

Remove Cal Overridden Status at Access

The Cal Overridden status can be removed by successfully recalibrating the chemistry. The overridden substrate can be removed by replacing the substrate bottle.

A2	CTA	DxC
	X	X

Run QC Samples

This task is performed when your laboratory protocol indicates that control material should be analyzed. A daily analysis of at least two levels of control materials is highly recommended. In addition, these controls should be run with each new calibration, with each new lot of reagents, and after specific maintenance or troubleshooting activities.

When defining controls, Control IDs should be as descriptive as possible. Refer to the UniCel DxC Synchron Clinical Systems *Instructions For Use* manual for additional information about programming controls. The following procedures describe how to run control samples.

Run Control Samples With Bar Code Labels and Auto Generation of Control Enabled

When Auto Generation of Control is enabled, the automatic Multiple Cartridge option is available. With the Multiple Cartridge option enabled, the system automatically runs all cartridges onboard and runnable for any chemistries for an autogenerated control. To enable Multiple cartridge from the **Setup** screen, scroll down and select **29 Auto Generation of Control**.

If all tests programmed for an Auto Generated control ID do not complete testing (for example, reagent not onboard, calibration required, cal time exceeded, or disabled), the next time the control ID is loaded, all tests for the control Auto Generate and are run again.

1 Place bar-coded control sample(s) in rack(s). All tube bar code labels must be visible through the slots on the same side of the rack as the rack bar code label.

2 Place cups that contain QC material in bar code labeled tubes and place rack(s) in the DxC 600i load area.

3 Press **RUN** on the analyzer.

The instrument automatically runs chemistries that are:
- Defined for the control.
- Loaded and calibrated.
- Contain sufficient volume to run the controls.

Run Manually Programmed Control Samples

If a control ID that was manually programmed does not complete testing, the next time the control ID is loaded, only the incomplete tests will run. A Manually programmed control ID that is incomplete must be manually cleared before reloading the sample in order to Auto Generate all tests for the control.

NOTE In Manual QC Programming, the system automatically runs the oldest cartridge onboard for the selected chemistry. Specific cartridges (other than default) may also be selected. To access duplicate or specific cartridges, select **Rgt Cart F8**. Then select the desired cartridges and select **OK**.

1 Select **Samples** from the menu bar.

2 Clear the QC sample ID to be used.

  • Select **Clear F1**.
  • Type the QC sample ID in the **Sample ID(s)** field.
  • Select **OK**.
  • Select **OK** to confirm.

3 Select **Control F5** and select the control name from the list.

  • Select the pull-down menu next to the **Control ID** field to select from predefined Control IDs. OR
  • Type the QC Sample ID in the **Sample ID** field.

  The **Program Control** screen opens. Make sure the lot number on the screen is the same as the lot number on the Control bottle.

4 Type the rack/position number.

5 Select chemistries to be run.

6 Select **Save F10** to save the control programming and return to the **Program Sample** screen.

7 Pour control material into sample cups.

8 Load racks onto the DxC 600i load area.

9 Press **RUN** on the analyzer.

> **IMPORTANT** If all tests programmed for the control do not complete testing (for example: calibration required, cal time exceeded or disabled), the next time the control ID is loaded, only the incomplete tests will run. To run all chemistries, the control ID must be cleared manually before reloading the sample for Auto Generation of Controls.

▶

Run QC Samples at Access Analyzer

Refer to Access 2 Immunoassay System *Operator's Guide* for instructions. QC samples programmed and processed at the Access analyzer are not uploaded to the DxC QC database.

Sample Programming and Processing

Sample Programming and Processing

Introduction

Sample programming identifies the samples, selects tests to run, describes samples, and designates how to run samples. Samples are programmed through a host computer such as a Laboratory Information System (LIS), or directly from the DxC 600i System. The minimum information required to save a sample program on the DxC 600i System includes:

- a sample ID
- and one test selection

Test selections are assigned by use of panels or by the selection of individual tests. Samples may be described and defined through sample type, sample comment, patient ID, and patient demographic functions. A sample can be programmed as a control sample or as a STAT for priority processing. When programmed, samples are placed onto the DxC 600i load area. The operator presses the RUN button to start the test process. A complete programming tree is located in APPENDIX A, *Supplementary DxC 600i Information*.

Access manual programming overrides programming done at the DxC.
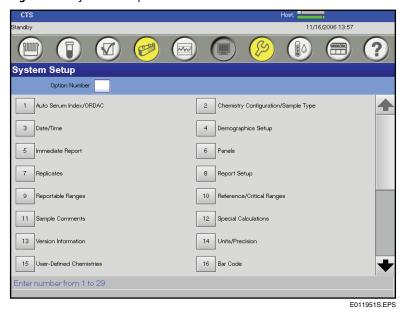
If the System Configuration screen is accessed, press the **Cancel** button instead of the **OK** button to leave the screen. Pressing the **Cancel** button insures that the current IP addresses are retained.

Any sample manually loaded on the Access analyzer (such as Access calibrators) causes the CTA to stop transferring aliquots to the Access analyzer. The CTA resumes transferring aliquots to the Access sample carousel when the Access analyzer has completed aspirating all of the manually loaded samples. Samples manually loaded at the Access must be removed by the operator after aspiration is complete. Samples transferred by the CTA are removed by the CTA.

DxC 600i Setup Options

The following Setup Options should be configured before samples are processed on the DxC 600i System. These setup options include Chemistry Configuration, Units/Precision, Default Sample Type, Reflex Testing, Access Priority, Obstruction Detection and Correction, Reference Ranges (Gray Zone), and Special Calculations. Setup options are accessed through the **System Setup** screen as shown in Figure 4.1.

Figure 4.1 System Setup Screen

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IMPORTANT Chemistry Configuration and Units/Precision must be setup identically at the DxC and Access analyzers.

Access LIS Configuration

On the DxC 600i System, the Access LIS Configuration only permits the selection of the "By Test" mode in the LIS **Send** field. The "By Test" mode sends test results to the DxC console as soon as they are available.

However, the DxC 600i System defaults to hold all test results until the sample is complete. In this configuration, the system sends test results to the LIS in a single transmission. To change this, select an Immediate Report option on the **Immediate Report** screen under **System Setup**. If you select an Immediate Report option, designated results for the sample are sent as they are complete, and when the sample is complete.

Immediate Report of Access 2 by Test

If you select **Immediate Report of Access 2 by Test**, each individual Access assay result is sent to the Host and/or Printer as soon as it becomes available.

If you do not select **Immediate Report of Access 2 by Test**, the Access test results are sent to the Host or Printer in a single transmission when all Access test results for the sample are complete.

A2	CTA	DxC
X		X

Chemistry Configuration

The Chemistry Configuration function accommodates the installation of desired tests from a comprehensive list of available chemistries. Of the total tests available, 180 chemistries/immunoassays can be selected and positioned onto the menu at one time and customized to match the test order on the lab request forms.

Modular chemistries (MC) are permanently configured on the system. These chemistries may be relocated on the configuration screen, but not removed.

The Chemistry Configuration screen may be viewed at any time, but modifications can only be made when the system status is *Standby*, *Stopped*, *Startup, Instrument Down*, or *Homing*.

Configure a Beckman Coulter Chemistry

The chemistry menu, available in sample programming, quality control, panel definition and other screens, is defined by the user.

Define Beckman Coulter Chemistries

1   Select **Setup** from the menu bar.

2   Select **2 Chemistry Configuration/Sample Type**.

OR

Type **2** in the **Option Number** field.

3   Select Configured chemistry position number. (Configured chemistry position number refers to how the chemistries are displayed throughout the system and appear on the reports.)

4   If the Beckman Coulter chemistry acronym is known (e.g., CO_2), type the acronym in the blank position.

5   Select **Chems F1** to view a comprehensive listing of the available Beckman Coulter tests and the appropriate test acronyms. Only those chemistries which appear on the list can be configured.

6   Select the Beckman Coulter chemistry from the **Chemistries** list number. The Chemisty acronym appears in the blank position.

7   Repeat Steps 3-6 until all applicable chemistries are placed in the desired positions. Any positions left blank appear the same on all menu displays.

A2	CTA	DxC
		X

Units/Precision

The Units/Precision option is used to select the units and the number of decimal places for each result. If the units are altered, all features affected by this change, such as reference ranges and calibration values, automatically converts to match the new units. Units can only be selected when the DxC 600i System is in the *Standby*, *Stopped*, *Startup, Instrument Down*, or *Homing* mode.

Select Chemistry Units or Precision Values

1 Select **Setup** from the menu bar.

2 Select **14 Units/Precision**.

OR

Type **14** in the **Option Number** field.

3 Select the pull-down menu below the **Units** column and select the desired units for the chemistry.

4 Select the pull-down menu below the **Precision** column and select the desired precision for the chemistry.

5 Repeat Steps 3-4 until all of the desired units and precision have been selected.

6 Select **Done F10** when complete.

Figure 4.2 Units/Precision Screen

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A2	CTA	DxC
		X

Default Sample Type

The default sample type option allows for the definition of the default sample type for all programmed samples. The sample type may be changed for individual samples within the sample programming function.

Set the Default Sample Type

1   Select **Setup** from the menu bar.

2   Select **2 Chemistry Configuration/Sample Type.**

OR

Type **2** in the **Options Number** field.

3   Select the pull-down menu next to the **Default Sample Type** field.

4   Select a sample type and select **Done F10**.

A2	CTA	DxC
X		X

DxC 600i Reflex Testing

Access-to-Access Reflex Testing Defined at Access Analyzer:

The Access analyzer has a reflex test feature that can be used in a DxC 600i configuration. The operator defines reflex testing rules at the Access analyzer. When a sample is programmed for an Access test that could trigger a reflex text, the CTA recognizes that a reflex test may be required. As a result, additional sample volume is aliquotted for that test up to the maximum volume allowed in an AV.

An AV holds a maximum of 450 µL. Rarely, the volume needed to complete Access testing for a sample exceeds this maximum. In this event, the sample is marked as incomplete. To complete the testing, run the sample again.

The AV remains on the Access analyzer until it is determined if it needs to perform the reflex test. At that point, the Access analyzer performs the reflex test or discards the AV. Refer to the Access 2 Immunoassay System *Operator's Guide* for further details.

Reflex Testing Defined at the DL2000 or LIS:

Reflex rules are defined externally to the DxC 600i at the DL2000 Data Manager, or at the Laboratory Information System (LIS). The operator has the option of setting up DxC to DxC, DxC to Access, or Access to Access to run reflex tests. Refer to the DL2000 *Operations Manual* or your LIS *Operations Manual* for further details.

Setup the DxC 600i System to Setup the Reflex Test on the DL2000 or LIS

1 Select **Setup** from the menu bar.

2 Select **30 Access 2 Priority/Reflex Test** Setup.

OR

Type **30** in the **Option Number** field.

3 Check the box next to the chemistry which triggers the reflex test defined at DL2000 or LIS.

Select **Done F10**.

4 Select **20 Host Communication**.

5 Select the **Requery** box on the screen and **Done F10**.

Figure 4.3 Reflex Test Setup

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The DxC 600i automatically recirculates the sample racks that contain a sample programmed with a reflex conditioned test. When the initial test is completed, the DL2000 or LIS determines if the reflex test needs to be performed. The DxC 600i queries the DL2000 or LIS again for the reflex test. If the DxC 600i receives the reflex test programming, the reflex test is performed for that sample. If the DxC 600i does not receive additional tests for that sample, the rack is offloaded. If the sample becomes INCOMPLETE, it is offloaded and no reflex test is performed.

NOTE When the DxC 600i re-queries DL2000 or the LIS, the prior test programming for the sample is deleted from the DxC console and CANNOT be recalled. These results should be available at DL2000 or LIS.

A2	CTA	DxC
		X

Access Priority Option

The Access Priority option allows programmed samples to be processed on the Access analyzer first.

Setup the Access Priority Option

1   Select **Setup** from the menu bar.

2   Select **30 Access 2 Priority/Reflex Test Setup**.

OR

Type **30** in the **Option Number** field.

3   Select the **Access Priority** check box on the screen and **Done F10**.

IMPORTANT   If the Access Priority Option is enabled, and the Access is not operational, samples programmed for general chemistries and immunoassays are not processed.

A2	CTA	DxC
	X	X

Obstruction Detection and Correction (ODC)

The CTA unit and the DxC analyzer use Obstruction Detection and Correction to detect the difference between a normal fluid sample and a clotted sample. This is accomplished by measuring the pressure when a sample is aspirated. If the pressure exceeds the normal range, the sample is flagged. Obstruction Detection for the CTA and the DxC function independently of each other. For detailed information on the Obstruction Detection for the DxC analyzer, refer to the UniCel DxC Synchron Clinical Systems *Instructions For Use* manual.

The system uses Obstruction Detection on every open or closed sample tube. There must be sufficient volume in the sample tube for the requested tests. If the sample tube has insufficient volume, the probe may get too close to the bottom of the sample tube and cause Obstruction Detection messages.

If the CTA detects a complete blockage of the sample probe, an Obstruction Detection message is displayed indicating which rack and sample is involved. An Obstruction Detection message on the CTA causes the CTA to go to *Stopped*. The message: "*Unrecovered CTA Sample Probe Obstruction 0x07000809*" indicates that the CTA ODC requires operator intervention.

Remove an Obstruction Detection Error at the CTA

1 Verify that the CTA is *Stopped*. If not, press the CTA **STOP** button.

2 Follow the procedure for flushing the CTA probe in CHAPTER 6, *Maintenance Procedures*, "CTA Maintenance (As-Needed)".

> ⚠ **CAUTION**
>
> **The procedure for flushing the CTA probe is not recommended for removing gel from the Aliquot Probe. Replace the probe if gel is present, or if the clot cannot be removed.**

3 When the obstruction is removed, unload the racks with the suspect samples.

4 Inspect the samples for clots. Remove clots, if present, and centrifuge the samples again.

5   Load the samples onto the DxC 600i load area and press **RUN** to process the samples.

> **IMPORTANT** DO NOT remove aliquotted AVs if present in the AV Queue area. The AVs are processed when the CTA is operational (if within 3 hours).

IMPORTANT If the obstruction in the CTA Aliquot probe cannot be removed, or if samples need to be processed immediately, process samples as follows in the procedure below.
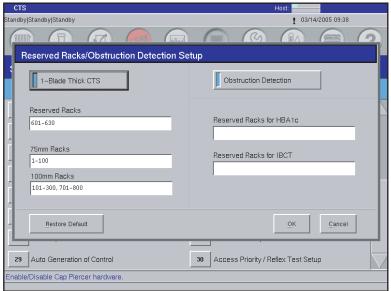
What to do if an Obstruction Detection Error at the CTA Cannot be Removed

1   Verify that the CTA is *Stopped*. If not, press the CTA **STOP** button.

2   Open the door below the CTA, and locate the CTA Sample Syringe (the syringe on the right).

3   Obtain the Probe Cleaning Tubing Assembly, PN 756613.

4   Unscrew the threaded fitting on the right side of the Sample syringe. Place the removed fitting and tubing in a beaker placed next to the Sample syringe.

5   Connect the black fitting of the Probe Cleaning Tubing Assembly to the right side of the Sample syringe.

6   Close the CTA canopy and *Home* the CTA.

7   When the CTA is at *Standby*, remove the fitting from the Probe Cleaning assembly and securely reattach the threaded fitting for the Sample syringe. Tighten the fitting finger tight and one-fourth turn to secure.

8   Off load all racks on the CTA Sample Carousel using the **Instr Cmd** icon. Then select **8 Unload All**.

9   An **Unload All Racks** screen appears. Remove all racks from the DxC 600i load area and select **2 CTA**.

10 Press **RUN** at the DxC 600i load area. The CTA moves all AV's presently aliquotted in the AV Queue area onto Access for processing.

11 To continue sample processing, refer to the Independent Mode procedure in APPENDIX A, *Supplementary DxC 600i Information* of this manual.

Figure 4.4 Obstruction Detection Screen

E016727S.EPS

A2	CTA	DxC
		X

Special Calculations

The Special Calculations option provides a means of selecting predefined calculations or operator-defined calculations that are reported with each sample. The system provides capability of 40 calculations. The pre-programmed special calculations for DxC cannot be modified or deleted from the system. Additional calculations may be defined and/or modified by the operator. The selected calculations are reported only if the appropriate chemistries/assays for the equation are programmed and run for a given sample ID. While the calculations may be viewed at any time, the system status must be *Standby, Stopped, Startup, Instrument Down*, or *Homing* to program or modify special calculations. The default for predefined and operator defined calculations is disabled.

IMPORTANT To define special calculations for Access assays at the DxC 600i monitor, use DxC 600i chemistry acronyms.

IMPORTANT The predefined Free Thyroxine calculation for DxC is not equal to Free Thyroxine Index (FTI) calculation (derived results) from Access.

NOTE If you have both CO_2 and CO_2E loaded on your system, the Anion Gap special calculation uses CO_2. You must create a user-defined special calculation for CO_2E.

If you have only CO_2E loaded on your system, you must create a user-defined Anion Gap special calculation for CO_2E.

Enable or View a Predefined Special Calculation

1 Select **Setup** from the menu bar.

2 Select **12 Special Calculations**.

OR

Type **12** in the **Option Number** field.

3 Select the check box beside the desired predefined special calculation to enable or disable.

4 To view a predefined special calculation, select the calculation, then select **View F1**.

5 Select **Cancel** to exit the view screen.

Define or Edit a Special Calculation

1 Select **Setup** from the menu bar.

2 Select **12 Special Calculations**.

OR

Type **12** in the **Option Number** field.

3 Select an unused special calculation position number.

4 Select **Define F2**.

5 Define the calculation name with a maximum of 15 alphanumeric characters.

6 To enable the use of the formula select **Enable Calculation**.

7 Type the calculation formula with a maximum of 64 alphanumeric characters.

NOTE Mathematical operations in a calculation formula are in a left to right precedence order of:

1. ( ) brackets
2. ** exponent
3. ×, / multiplication, division
4. +, - addition, subtraction

8 Select the **Sample Type** pull-down menu. Default is serum.

9 Select precision setting. Default is X.X.

10 Type the units with a maximum of 8 alphanumeric characters. Default is none.

11 Select **OK** to define the calculation formula.

OR
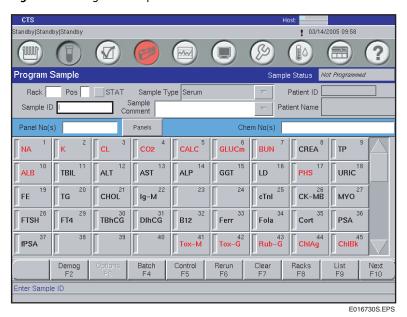
Select **Cancel** to exit without defining/editing a calculation formula.

A2	CTA	DxC
		X

Sample Programming With Bar Codes

1   Select **Samples** from the menu bar. A Sample Programming screen appears as shown in Figure 4.5. Chemistry names are abbreviated on the programming screen.

Figure 4.5   Program Sample Screen

E016730S.EPS

2   Type the sample ID number in **Sample ID** field.

3   For routine samples, go to Step 4. If the sample is a STAT sample, select the **STAT** check box.

4   If desired, select **Demog F2** to add more information.

NOTE   Minimum information required to run a programmed sample is one chemistry and a sample ID.

5 DxC 600i chemistries are listed on the DxC Sample Programming screen by their configured acronyms. Select individual chemistries, or select by panel (group of chemistries). When required, use the DOWN arrow and scroll for more chemistries.

> **NOTE** Chemistry selections are listed in the UniCel DxC Synchron Clinical Systems *Instructions For Use* manual. If required, refer to the Synchron Clinical Systems *Chemistry Information Sheets* and the Access *Immunoassay System Assay Manual* for chemistry definitions.

6 Select **Next F10**.

7 Repeat Steps 2-6 to program additional samples.

8 To verify all samples are programmed:

- Select **List F9**.
- Type the sample IDs used.
- Select **Print** to print out the load list.

A2	CTA	DxC
		X

Sample Programming Without Bar Codes (Manual Programming)

1 Select **Samples** from the menu bar. A Sample Programming screen appears.

2 Do the following:
- Select the **Rack** field.
- Type an available rack number.
- Type a position number.
- Type the sample ID.

3 For routine samples, go to Step 4.
- If the sample is a STAT sample, select the **STAT** check box.

4 If desired, select **Demog F2** to add more information.

5 Select individual chemistries, or select by panel (group of chemistries). When required, use the DOWN arrow and scroll for more chemistries.

6 Select **Next F10**.

7 Repeat Steps 2-6 to program additional samples.

8 To verify all samples are programmed:
- Select **List F9**.
- Type the rack numbers used.
- Select **Print** to print out the load list.
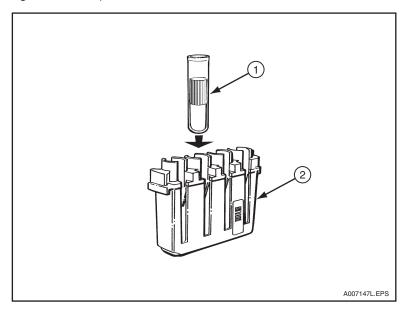
A2	CTA	DxC
	X	

Sample Processing

When the samples are programmed they are ready for processing. The following instructions explain how to process the samples.

1 Remove visible blood from the top of capped tubes using a cotton-tipped applicator moistened with DI water.

2 Place Sample tubes (1) into racks so that the bar codes show through the slots in the sample rack (2).
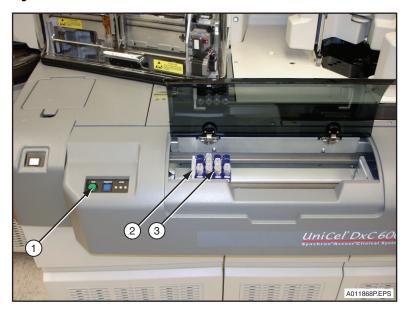
Figure 4.6   Sample Tube and Rack

A007147L.EPS

3 Raise the DxC 600i load area cover and load the sample racks (3) Figure 4.7, onto the DxC 600i load area as shown below. Load the racks starting from left to right with bar codes facing right. A maximum of 18 sample racks can be loaded at one time.

Chlamydia patient samples, chlamydia QC, and chlamydia controls (calibrators) cannot be run through the CTA. Run these directly at the Access.

Figure 4.7 DxC 600i Load Area

1. RUN Button
2. Load Gate
3. Sample Rack

4 A RUN button and a PRIORITY button are located in front of the CTA unit. Press **RUN** (1) for routine tests. Refer to Figure 4.7.

NOTE To run a STAT sample, press **PRIORITY**. In the DxC 600i load area, prior to loading the STAT rack, wait for the CTA load pusher to retract to the right and pause in the Home position. Push the routine sample racks away from the CTA load gate (2) to create an empty space. Insert the STAT sample rack into that space in front of routine samples. Then press **RUN** to start the process.

5 The CTA routes samples to the DxC and/or Access analyzer during a run. As shown in Figure 4.8, samples scheduled to run at the DxC analyzer enter the DxC load area (1) prior to processing.

When testing is completed, sample racks enter the DxC offload area (2). Lift the cover and unload the sample racks from the DxC 600i System.
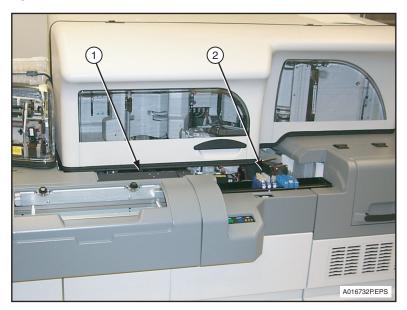
Figure 4.8   DxC Sample Rack Load/Offload

A016732P.EPS

1. DxC Load Area
2. DxC Offload Area

A2	CTA	DxC
	X	X

Sample Reruns

1 Select **Samples** from the menu bar. A Sample Programming screen appears as shown in Figure 4.5.

2 Select **Rerun F6**.

3 Type the desired Sample ID, or rack and position number.

> **NOTE** Racks do not require position numbers to rerun. Any racks entered without a specific position will rerun all positions within the rack.

4 Press the appropriate icon to request specific tests.

- If **Select** is pressed,
  - — The previously run program appears. This allows you to select additional tests or to remove tests that do not require rerunning. Select **Remove F8** to clear all existing programming. Then select the test to be re-run.

- If **All** is pressed,
  - — This reruns all completed tests in all requested samples.

5 Select **Next F10**.

6 Load the sample rack onto DxC 600i load area and press **RUN** to process the sample.

Critical Rerun Option

The Critical Rerun option is not available for Access tests and for HbA1c2 from the Reference Range screen as shown in Figure 4.9. To program a critical rerun for an Access test, you must set up a Reflex test.
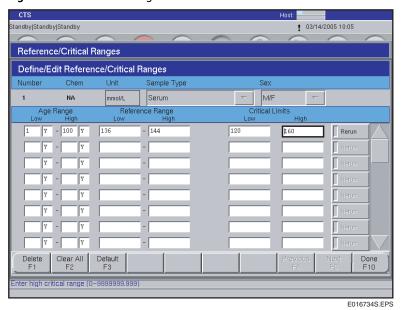
Figure 4.9 Reference Range Screen

E016734S.EPS

Independent Operating Modes

During normal DxC 600i System operation, test samples are programmed at the DxC 600i monitor (or LIS) and loaded onto the DxC 600i load area for processing. However, due to various operating conditions, programming and processing functions could be accomplished independently. Refer to APPENDIX A, *Supplementary DxC 600i Information*, for additional information.

Access: Small Sample Volume Assays

Access 2 Total βhCG, diluted βhCG and all Access 2 assays that use small sample volumes of less than 20 μL per test may experience a difference in result recovery due to the use of different sample containers. Calibration, patient and QC samples must be performed in the same type container. For these assays, you must use Aliquot Vessel (AV) sample containers prepared by the CTA or manually loaded in automation racks (1900 - 1999).

To avoid assay recovery differences between the Access and the DxC 600i, you must:

• Calibrate using manually loaded Aliquot Vessel (AV) containers in automation racks (1900-1999).

• Process patient and QC samples through the Closed Tube Aliquotter (CTA) to ensure that they are also measured in AV containers.

• Use AV containers for measuring any manually loaded patient or QC samples scheduled for immunoassay testing.

Post-Test Activities

Introduction

This chapter describes various post test activities such as power down and power up instructions, rebooting the computers, homing the DxC analyzer, priming procedures, and viewing event logs.

System Power Down Procedures

It is recommended to leave the electrical power on when the DxC 600i in the *Standby ¦ Standby ¦ Standby* mode and it is not in use. While in *Standby*, auto primes occur as necessary to keep the system operating properly. Powering down the DxC 600i System is recommended only during the following situations:

- power must be turned off to replace parts
- when moving the system to another location
- when advanced warning has been given that the laboratory power will be turned off
- after laboratory power has gone off.

The DxC 600i System is powered down individually at the Access analyzer, CTA unit, and DxC analyzer. To protect system files and a potential loss of data, always power down the DxC 600i System using the following procedures.

A2	CTA	DxC
		X

Power Down the DxC Analyzer

Introduction

Shutdown is used to place the system into a state where it is safe to reset or turn power off. System files are closed to prevent data corruption.

IMPORTANT When you perform a shutdown, it is very important to read and follow the instructions on the screens. Do not turn the console off until "*Shutdown: It is now safe to reboot your computer*" appears on the monitor. If power is turned off before this, there is a potential for data corruption.

Extended Shutdown

If you need to shut down the DxC analyzer or the Access analyzer for an extended period, contact your local Beckman Coulter representative for assistance.

Shutdown
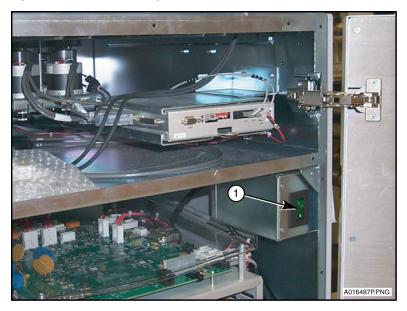
1 Verify that the DxC analyzer is in *Standby*, *Stopped* or the *Instrument Down* state.

2 Select **Instr Cmd** from the menu bar.

3 Select **4 Shutdown**.

4 Select **OK** . The Shutdown in Progress screen appears with the message:
"Please wait for further instructions. DO NOT TURN THE POWER OFF."
The system status goes to *Shutdown.*

5 From the **Select Reboot or Shutdown** dialog box, select the appropriate option:
- Select **Shutdown** to prepare the system to have the power turned off. When the message, "*Shutdown Complete: It is now safe to reboot your computer*" appears on the screen:
  — Turn off the DxC console (4) power: open the door under the Access analyzer, then press and hold the power button until the light goes out. Refer to Figure 5.2.
  — Turn the instrument main power switch (1) behind the far right door to the OFF (O) position. Refer to Figure 5.1.

- Select **Reboot** to return the system to an operational state. The system automatically reboots and returns to the **Main** screen.
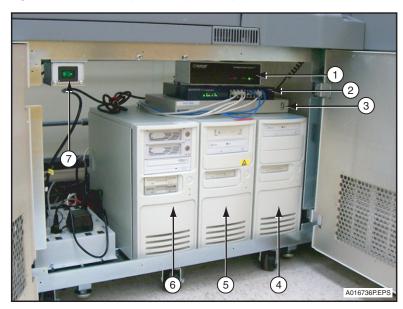
Figure 5.1 DxC ON/OFF (O/|) Switch

1. Main Power ON/OFF (O/|) Switch

IMPORTANT When the DxC is powered down, the CTA must be powered down.

Figure 5.2 DxC 600i System Peripheral Equipment - Behind Access Doors

A016736P.EPS

1. Printer Software Box		**5.** Access Computer	
2. E Hub		**6.** DL2000/Remisol 2000 Advance Data Manager	
3. KVM Software Box		System (Not available with all systems)	
4. DxC Computer		**7.** Access Power ON/OFF Switch	

A2	CTA	DxC
	X	

Power Down the CTA

1 Make sure the CTA unit is in *Standby* or *Stopped* mode.

2 Open the lower door on the CTA.

3 Turn off the power to the CTA unit at lighted Power switch as shown in CHAPTER 2, *Pre-Test Activities*, Figure 2.10, (2). The CTA is now powered OFF.

IMPORTANT Prior to powering up the CTA, the DxC must be rebooted.
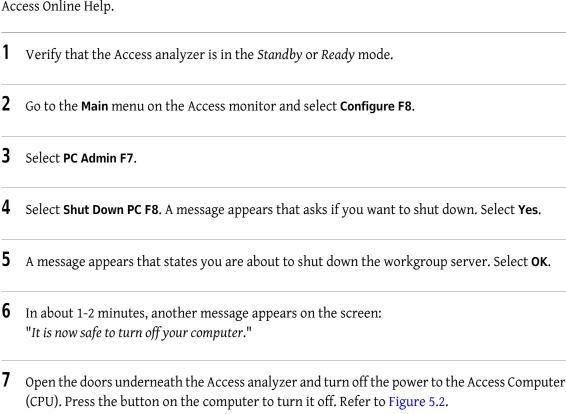
IMPORTANT If there are no racks on the CTA sample wheel or no aliquotted AVs at the AV Queue area, the CTA can be powered OFF/ON without rebooting the DxC analyzer.

A2	CTA	DxC
X		

Power Down the Access Analyzer

If you need to shut down the DxC analyzer or the Access analyzer for an extended period, contact your local Beckman Coulter representative for assistance. Refer to *Shutting Down the System* in the *Access Online Help*.

1 Verify that the Access analyzer is in the *Standby* or *Ready* mode.

2 Go to the **Main** menu on the Access monitor and select **Configure F8**.

3 Select **PC Admin F7**.

4 Select **Shut Down PC F8**. A message appears that asks if you want to shut down. Select **Yes**.

5 A message appears that states you are about to shut down the workgroup server. Select **OK**.

6 In about 1-2 minutes, another message appears on the screen:
"*It is now safe to turn off your computer.*"

7 Open the doors underneath the Access analyzer and turn off the power to the Access Computer (CPU). Press the button on the computer to turn it off. Refer to Figure 5.2.

8 Turn off the power to the Access analyzer (7) Figure 5.2. The lighted Power switch is located at the left side of the cabinet.

9 The Access computer and analyzer are now powered OFF.

A2	CTA	DxC
	X	X

Restart the DxC 600i System

The following procedures describe how to restart the DxC analyzer and the CTA unit from a powered *OFF* state.

Restart the DxC Analyzer, DxC Computer, and CTA Unit

1 Turn the DxC analyzer main power switch behind the far right door to the ON (|) position. Refer to Figure 5.1.

2 If the monitor is off, turn it on.

3 Press the power button to turn on the DxC console behind the Access doors. Refer to Figure 5.2. If you have an external UPS, make sure that it is turned on.

4 When the DxC shows the Main screen and is *Homing*, power ON the CTA.

5 If the printer is off, turn it on.

6 The CTA and DxC Home.

7 The DxC analyzer, computer and CTA are now powered up when the system condition goes to *Standby*.

A2	CTA	DxC
X		

Restart the Access Analyzer

Restart the Access Analyzer from a Powered Down State.

1 Press the Power switch **ON** on the Access analyzer (7) Figure 5.2.

2 Press the **ON** button on the Access computer (CPU). The Access computer is located underneath the Access analyzer as shown in Figure 5.2.

3 The Access analyzer returns to *Standby* or *Ready* mode.

4 If the analyzer has been shut down for more than 5 days, perform the optional steps below. Refer to the *Help* system on the Access screen for more information on optional steps.

Optional Steps:

- Prime system fluidics
- Perform probe volume checks
- Replenish supplies
- Run the Special Clean routine
- Run the System Check routine

A2	CTA	DxC
	X	X

Reboot the DxC 600i System

1   Verify that the system is in a *Standby* or *Stopped* mode.

2   Select **Instr Cmd** from the menu bar.

3   Select **4 Shutdown**.

OR

Type **4** in the **Command No.** field.

4   The following message appears on the screen: "*This will shut-down instrument and console operation. Continue shutdown?*"

- Select **OK** to accept the Shutdown option.

    OR

- Select **Cancel** to exit the screen without shutting down.

    NOTE   If **OK** is selected, the system condition goes to *Shutdown*.

5   From the **Select Reboot or Shutdown** dialog box, select the **Reboot** option. The DxC automatically reboots and returns to the main screen.

▶

IMPORTANT   Anytime the DxC requires reboot, the CTA must be rebooted.

A2	CTA	DxC
	X	

Reboot the CTA Unit

Reboot the CTA by turning the CTA Power switch off and on. Refer to CHAPTER 2, *Pre-Test Activities*, Figure 2.10.

IMPORTANT Anytime the DxC analyzer requires reboot, it is also necessary to reboot the CTA. Turn the CTA off, reboot the DxC, and restart the CTA after the DxC homes. This ensures that correct communications are established between all system components. The Access analyzer may be in any operating mode during the reboot process.

However, you may reboot the CTA ONLY without having to reboot the DxC analyzer. If the CTA is in STANDBY and there are no racks on the CTA sample wheel, or no aliquotted AV's at the AV Queue area, the CTA can be powered ON/OFF.

Failure to follow these instructions may cause a communication problem between CTA and DxC system components resulting in incorrect information on the Supplies tab.

A2	CTA	DxC
X		

Reboot the Access Analyzer
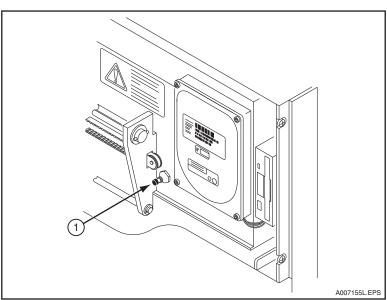
Rebooting the Access is conducted using either the:

- Reset button,

  OR

- Power switch.

Reboot Using the Reset Button

1 Open the front panel of the analyzer.

2 Locate the **Reset** button (1). Refer to Figure 5.3.

Figure 5.3 Access Analyzer Reset Button

3 Press the **Reset** button and hold in for 1 second, then release.

4 Close the front panel immediately.

NOTE If the front panel remains open too long, the system cannot home its mechanical devices. If this occurs, press the **Reset** button again and close the front panel immediately.

5 Wait until the analyzer is in the *Standby* or *Ready* mode before continuing.

Reboot Using the Power Switch

1 Using the Power switch, turn off the power to the Access. Refer to Figure 5.2, (7).

2 Wait about 20 seconds and press the Power switch again to turn on the power.

3 Wait until the analyzer is in the *Standby* or *Ready* mode before continuing.

A2	CTA	DxC
X		

Place the CTA Unit Offline

The CTA unit must be placed offline before conducting diagnostic or troubleshooting activities on the Access analyzer.

1 Press the **CTA** icon located at the upper right corner of any Access screen. A CTA status screen appears that states the current status of the CTA unit. Refer to .

2 Select **OK F1** to confirm the current CTA status.

OR

Select **Set CTA Offline F8** to place the CTA unit offline. If the CTA unit is placed offline, go to Steps 4-6.

3 Another box appears to initiate that process. (If desired, press the **Cancel** button to stop the process.)

4 Check that the **CTA** icon turns red and the Access status goes to the *local* mode at DxC 600i monitor.

5 When diagnostics activities are completed, press the **CTA** icon again to place the CTA back online.

6 Select **Set CTA Online F8** to place CTA online. (Check that the **CTA** icon turns a neutral color, and the CTA unit goes back online.) The CTA status should go to *Standby*.

Figure 5.4 CTA Status Screen

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A2	CTA	DxC
		X

Home the DxC Analyzer and CTA Unit

All mechanical assemblies must start at their "home" position in order to run a test. This occurs automatically when the DxC 600i System is started or rebooted. However, sometimes it may be necessary to home the system again under the following conditions:

- to recover from a motion error.
- to return the system from a *Stopped* state to *Standby*.

1 When the system is in the *Stopped* mode, select **Instr Cmd** from the menu bar.

2 Select **1 Home**. A box appears with three options to choose from.

3 Select an option:
- **3 Both** to *Home* both the DxC and CTA.

  OR
- **1 DxC** to *Home* the DxC analyzer,

  OR
- **2 CTA** to *Home* the CTA unit.

The system returns to the *Standby* mode in approximately 5 minutes.

A2	CTA	DxC
		X

Prime the DxC 600i System

When the DxC analyzer or CTA is turned off for diagnostic or maintenance activities, it may be necessary to manually prime the DxC analyzer and/or CTA unit.

1 Select **Utils** from the menu bar at the DxC 600i monitor.

2 Select **1 Prime**.

OR
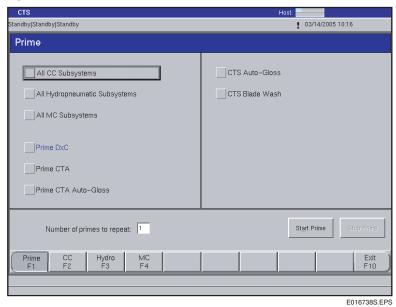
Type **1** in the **Option Number** field.

3 A Prime screen comes into view as shown in Figure 5.5. Select the box next to the area you want to prime. Type the number of primes required.

4 Select the **Start Prime** button to start the priming process. When the priming process is completed, the system goes to *Standby*. When the prime has started, the operator can stop the prime, if required. To stop the prime, select the **Stop Prime** button.

To prime the Access analyzer, refer to the Access 2 Immunoassay System *Operator's Guide* for instructions.

Figure 5.5 Prime Screen

E016738S.EPS

A2	CTA	DxC
		X

Event Log Screens

An event log is a record of events and errors. Event logs are often used as a diagnostic tool. A typical DxC 600i Event Log screen is shown in Figure 5.6. Event logs are selected by specifying a class number and/or date and time range. DxC 600i related class numbers are:

12 = Access communication events
13 = CTA events

Events may be viewed from the DxC 600i and/or Access monitor.

View an Event Log from the DxC 600i Monitor

1 Select **Utils** from the menu bar.
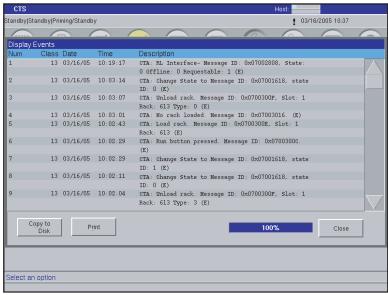
2 Select **3 Event Log**.

3 To view Access related events:

- Select **12 Access 2 Communications**.

4 To view CTA related events:

- Select **13 CTA Events**.

5 Select **Display** to view the events. A typical DxC 600i event log is shown in Figure 5.6.

6 Select **Copy to External Media** from the **Display Events** dialog box to transfer information to external media. Follow the instructions under *Copy to External Media*.

NOTE You cannot save events to a CD.

7 Select **Print** to print the information. This prints the entire event log, not just the current page. Press (PrtScn) to print one or two pages.

8 Select **Close** when completed.

Figure 5.6 DxC 600i Event Log

E016739S.EPS

Access events and errors may be viewed from the Event Log screen at the Access analyzer monitor. Refer to the Access 2 Immunoassay System *Operator's Guide* for further information.

A2	CTA	DxC
X		

Home (Initialize) the Access Analyzer

If the Access analyzer is stopped for any reason, it must be homed (initialized) before use.

Initialize the Access Analyzer

1 Set CTA offline at the Access monitor.

2 When the Access analyzer is in the *Not Ready* or *Stopped* mode, go to the Access monitor and select **Diagnostics F7** and **Initialize System F1** from any Access screen.

3 An "*Initialize the System*" message appears. Select **Yes F1**.

4 The initialization routine begins with a "*Cleanout in progress*" message and ends with a "*Completed Initialization*" message. Select **OK F1** on the "Completed Initialization" box.

5 The Access analyzer returns to the *Standby* or *Ready* mode in approximately 5 minutes.

Maintenance Procedures

Introduction

The DxC 600i System requires routine maintenance to keep it running properly. As shown in Figure 1, UniCel DxC 600i System, in the Introduction section, the DxC 600i System has three major components; the Access analyzer, the DxC analyzer, and the CTA unit. Each of these components is maintained individually. Routine maintenance instructions are located in the UniCel DxC Synchron Clinical Systems *Instructions For Use* manual and the Access 2 Immunoassay System *Operator's Guide*.

> ⚠ **WARNING**
>
> **Maintenance procedures may expose the operator to potentially infectious materials. Proper hand, eye, and facial protection is required. Handle and dispose of biohazard materials according to proper laboratory procedures.**

Electronic Maintenance Log

Feature Summary

Maintenance items are grouped together by frequency of performance. Only the maintenance items appropriate for the particular system and installed hardware are shown. For example, a system that does not have Closed Tube Sampling (CTS) hardware does not show the maintenance items for that hardware. On the **Scheduled Maintenance Log** screen these groups have been placed under separate tabs labeled:

- Daily
- Weekly[a]
- Twice-Monthly
- Monthly
- Two-Month
- Three-Month
- Four-Month
- Other
  — Six-Month
  — Yearly

a. Twice Weekly Maintenance is located under the Weekly tab.

To identify the maintenance procedures that are DUE, follow the yellow highlights listed below:

- Select **Utils** from the menu bar,
- Select **2 Maintenance**,
- Select **Log F2**.
- Select the appropriate highlighted maintenance tab.

The yellow highlights appear according to the following schedule:

- Daily - 1 day
- Twice Weekly - 4 days/3 days
- Weekly - 7 days
- Twice-Monthly - 15 days
- Monthly - 31 days
- Two-Month - 61 days
- Three-Month - 91 days
- Four-Month - 121 days
- Six-Month - 181 days
- Yearly - 366 days

Maintenance information is not lost during normal software version updates but the maintenance counter is reset to zero if a complete install of the software is performed under unusual troubleshooting or system repair situations.

IMPORTANT Beckman Coulter recommends backing up maintenance files onto external media at scheduled intervals. You can also print and store Electronic Maintenance data if required by laboratory policy.

Accessing the Scheduled Log Feature

1 Select **Utils** from the menu bar.

2 Select **2 Maintenance** from the **Utilities** screen.

3 Select **Log F2**.

4 Select the tab representing the desired maintenance items.

Screen Description

Each of the tabs shown and all of the functions available under each tab are accessed by using the touch screen or by using the mouse to position the cursor over the desired tab and then depressing (clicking) the left button on the mouse. Data can be entered into any data field by selecting the field as described above and entering the information using the keyboard.

The displays and functions available under each tab of the Scheduled Maintenance Log feature are described below.

Help

Online Help is available through the Scheduled Maintenance Log feature and Automated Maintenance Procedures. Select the Help icon next to the event number to show specific information about the procedure. A grey Help icon indicates that the *Instructions For Use* manual is not loaded.

Procedure

This area lists all of the procedures required at the specified frequency. Each of the maintenance procedures has a number associated with it. These numbers indicate any action that might be necessary after a maintenance procedure has been completed. The definitions for each number are:

- 0 = No action required.
- 1 = Run Controls. If controls are within specifications, no more action is necessary. If controls are out of specification, calibration or routine troubleshooting may be necessary (usually verifying that there are no leaks or loose components due to maintenance resolves the issue.)
- 2 = Calibrate the affected assays and run controls. If controls are out of specification, calibration or routine troubleshooting may be necessary (usually verifying that there are no leaks or loose components due to maintenance resolves the issue.)

An abbreviated version of these definitions can be found at the bottom of each **Scheduled Maintenance Log** screen.

Select All
This function allows the user to select all the maintenance procedures available on the screen for initial and date entry all at one time. (Refer to initial and date Initial and Date Check Box/Initial and Date Button in this chapter).

Initial and Date Check Box/Initial and Date Button
This function allows the operator to select the procedure and enter the initials of the person who performed the procedure and the date it was performed. When a maintenance procedure is completed, select the **Initial and Date** checkbox. To complete the entry of this information, select the **Initial and Date** button.

When a procedure has had initials and date entered, the maintenance counter resets for the appropriate time interval.

Date Performed Field
Shows the date entered by the operator on which the maintenance was performed.

Initials Field
Shows the initials entered by the operator of the person who performed the maintenance.

Days Left Field
Shows the number of days left until a maintenance procedure is due. The word DUE is shown in this area highlighted in yellow when a procedure is actually due or past due to be performed.

A yellow DUE indication will NOT prevent the system from being run.

IMPORTANT If a maintenance procedure was never entered into the system by inputting initials and date, only the **DUE** field is yellow. The pathway is not be activated. This gives the operator the option to not use the Scheduled Maintenance Log feature. There is no way to deactivate the yellow DUE highlighting at the **Scheduled Maintenance Log** screen level.

Counts Left Field
Certain maintenance procedures are better tracked by the counting the number of samples run through the system. This column shows a countdown of the number of samples that can be run until the maintenance procedure is due. If no numbers appear in this column the procedure is tracked by time not count.

History
The History icon provides a stored history of maintenance performance with dates and initials for the procedure selected.

Delete
The operator can use this option to delete old maintenance information from stored history.

NOTE Beckman Coulter recommends that you print out any maintenance history before you delete it. Once deleted, there is no way to recover the information.

Print
Select this button and enter the Month and Year to printout a list of all tabs with maintenance data.

Approve
This option allows a separate review and approval by allowing the reviewer to enter their initials and the review date into the fields shown.

Maintenance Action Legend
This area gives a brief description of the actions that should be taken when a maintenance procedure is completed.

Done
This option will exit the Scheduled Maintenance Log feature and returns the operator to the **Maintenance** screen.

IMPORTANT Make sure Electronic Maintenance files are protected by performing system backup at scheduled intervals. For backup instructions, refer to the UniCel DxC Synchron Clinical Systems *Instructions For Use* manual, CHAPTER 11, *Utilities*, Backup/Restore. In addition, Electronic Maintenance data may be printed and stored if required by laboratory policy.

Electronic Maintenance Tabs and Tasks

Daily Maintenance

- Check Access 2 Zone Temperatures
- Check Access 2 System Supplies
- Check Access 2 Liquid Waste Container (If not using the Access Waste to Drain Option)
- Check Access 2 System Backup Successful?
- Inspect Access 2 Fluidic Module
- Clean Access 2 Probe Exteriors
- Prime Access 2 Substrate
- Run Access 2 Clean Routine

Weekly Maintenance

- Check Reagent Levels
- Replace Cuvette Wiper
- Clean Probes (Exterior)
- Clean Flow Cell (Perform this procedure twice weekly.)
- Clean Cups
- CC Probe Cleaning
- Check CL Calibration Span
- Clean Access 2 Instrument Exterior
- Check Access 2 Waste Filter Bottle (If not using the Access Waste to Drain Option)
- Clean Access 2 Primary Probe
- Remove/Clean Access 2 Aspirate Probes
- Run Access 2 System Check
- Verify Access 2 System Check Passed
- Check Syringe Tightness

Twice Monthly Maintenance

- Clean CTA Piercing Probe
- Clean CTA Aliquot Probe
- Clean CTA Auto-Gloss Dispense Station
- Clean CTA Probe Wash Station

Monthly Maintenance

- Replace Alkaline Buffer
- Clean All Cup Modules
- Clean Mixers
- Calibrate Lamps and Sensor
- Replace CTS Blade (1-Blade Narrow CTS Option)
- Clean Chloride Electrode Tip and Flow Cell Port

Two-Month Maintenance

- Replace CTS Blade/Wick (1-Blade Thick CTS Option)
- Change/Clean Air Filters

Three-Month Maintenance

- Replace 500 μL Reagent Syringe Plunger

Four-Month Maintenance

- Clean MC Reagent Lines

Six-Month Maintenance

- Replace CALC Electrode Tip
- Replace K Electrode Tip
- Replace GLUCm Sensor
- Replace 100 μL Sample Syringes

Yearly Maintenance

- Replace CTA Aliquot Probe
- Replace CTA Piercing Probe
- Replace CTA Sample Syringe
- Replace CTA Wash Station Syringe
- Replace CTA Peristatic Pump Tubing

Maintenance Instructions

The DxC and Access analyzers should be in *Standby* and *Ready* modes. Refer to the UniCel DxC Synchron Clinical Systems and Access 2 *Instructions For Use* manuals for complete maintenance and special handling instructions. Record all maintenance in the Electronic Maintenance Log.
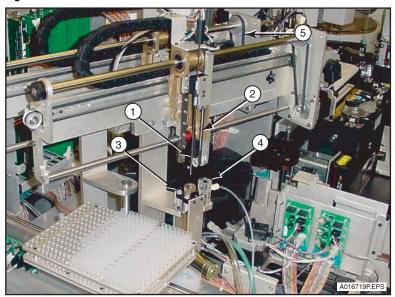
CTA Maintenance (Twice-Monthly)

CTA Maintenance

The CTA Aliquot Probe, CTA Piercing Probe, CTA Probe Wash Station, and Auto-Gloss Dispense Station should be inspected every two weeks for cleanliness. The CTA probes may require inspection and cleaning more often, if necessary. If buildup is observed, follow the procedure below.

Figure 6.1 CTA Probes and Stations

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1. CTA Aliquot Probe   4. CTA Auto-Gloss Dispense Station
2. CTA Piercing Probe   5. Pick and Place Mount Pulley
3. CTA Probe Wash Station

Clean the CTA Aliquot Probe, CTA Piercing Probe, CTA Probe Wash Station, and Auto-Gloss Dispense Station

Materials Required:

- Fiber-free polyester swabs
- Access Wash Buffer

⚠ **CAUTION**

The CTA Piercing Probe tip is extremely sharp and has been exposed to potentially biohazardous fluids. To prevent injury or exposure, avoid the piercing tip. Use caution when you clean the CTA Piercing Probe.

CTA Cleaning Procedure (Twice-monthly)

1 CTA must be in *Standby* status. Lift the CTA canopy.

2 Clean the CTA Aliquot Probe with swabs moistened with Wash Buffer.

3 Clean the CTA Piercing Probe with swabs moistened with Wash Buffer.

4 Clean the CTA Probe Wash Station with swabs moistened with Wash Buffer.

5 Clean the Auto-Gloss Dispense Station with swabs moistened with Wash Buffer.

6 Discard the swabs in a biohazard container and close the CTA canopy.

CTA Maintenance (Yearly)

Replace the CTA Piercing Probe and the CTA Aliquot Probe yearly. These procedures are usually performed by a Beckman Coulter Service representative as part of preventive maintenance. These probes are shown in . If possible, replace both probes at the same time for efficiency. Perform the CTA Carryover PVT after you replace the CTA Aliquot Probe.

Replace the CTA Piercing Probe

The DxC and CTA must be in *Standby* before starting this procedure.

Materials Required:

- 3/32 inch Allen wrench
- CTA Piercing Probe

⚠ **CAUTION**

To prevent damage due to electrical static discharge (ESD), wear the wrist ground strap when you perform this procedure.

⚠ **CAUTION**

The CTA Piercing Probe tip is extremely sharp and has been exposed to potentially biohazardous fluids. To prevent injury or exposure, avoid the piercing tip. Use caution when you remove and replace the CTA Piercing Probe.

1 Press the CTA **STOP** button.

2 Lift the CTA canopy.

3 Use an Allen wrench to loosen the 2 retaining screws in the bracket. **DO NOT** remove the retaining screws from bracket.

4 Pull the probe forward and to the right until the probe is free of the bracket.

5 Lift the probe up and away from the probe guard.

6 Discard the used probe in an appropriate biohazard container.

7 Install the new probe assembly.

8 Tighten the Allen screws.

9 Close the CTA canopy.

10 Home the CTA.

11 Select **Instr Cmd** from the menu bar.

12 Select **1 Home**.

A **Home** pop-up window opens. Select **2 CTA**. The DxC 600i monitor shows the CTA is *Homing* and the DxC is in *Standby*.

Replace the CTA Aliquot Probe

The DxC and CTA must be in *Standby* before you start this procedure.

NOTE You must perform the CTA Carryover PVT after you replace the CTA Aliquot Probe. This procedure requires one hour to complete.

Materials Required:
- 3/32 inch Allen wrench
- CTA Aliquot Probe

⚠ **CAUTION**

To prevent damage due to electrical static discharge (ESD), wear the wrist ground strap when you perform this procedure.

1 Press the CTA **STOP** button.

2 Lift the CTA canopy.
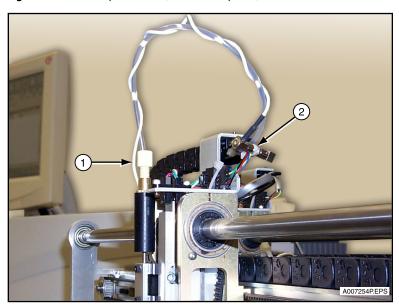
3   Disconnect the Level Sense Harness (2). Refer to Figure 6.2, which also shows the threaded fitting (1).

Figure 6.2 CTA Aliquot Probe (Remove/Replace)

1. Threaded Fitting
2. Level Sense Harness

4   **DO NOT** clamp the probe tubing. The liquid in the probe tubing will not leak out or back flow because the valve is closed.

5   Remove the threaded fitting (1) from the top of the CTA Aliquot Probe. Refer to Figure 6.2.

6   Use the Allen wrench to loosen the 2 retaining screws in the bracket. **DO NOT** remove the retaining screws from bracket.

7   Pull the probe forward and to the left until the probe is free of the bracket.

8   Discard the used probe in an appropriate biohazard container.

9   Install the new probe assembly.

> **IMPORTANT** The plastic protective sleeve must be removed from the new aliquot probe prior to installation.

10 Tighten the Allen screws.

11 Reinsert and tighten the threaded fitting on top of the CTA Aliquot Probe. Tighten the fitting no more than finger tight and 1/4 of a turn. Refer to Figure 6.2.

> **NOTE** If the probe tubing is not seated properly, leaks occurs which cause Level Sense errors.

12 Wrap the Level Sense Harness around the probe tubing and reconnect the Level Sense Harness (2). Refer to Figure 6.2.

13 Close the CTA canopy.

14 Home the CTA.

15 Select **Instr Cmd** from the menu bar.

16 Select **1 Home**. A **Home** pop-up window opens.

17 Select **2 CTA**. The DxC 600i monitor shows the CTA is *Homing* and the DxC is in *Standby*.

18 When the CTA Aliquot Probe is replaced, the CTA must be primed twice to remove bubbles in the probe tubing and to make sure there are no leaks.
With the CTA in *Standby*,
- Open the CTA canopy.
- Select **Utils** from the menu bar.
- Select **1 Prime**.

19 From the **Prime** screen,
- Select **Prime CTA**.
- Type **2** in the **Number of primes to repeat** field.
- Select **Start Prime**.

20 As the CTA primes, check the top of the CTA Aliquot Probe for leaks.
- If leaks occur,
  — Remove and re-insert the threaded fitting.
  — Repeat Steps 12-19.

21 Perform the CTA Aliquot Probe Vertical Alignment procedure.

CTA Aliquot Probe Vertical Alignment

The CTA Aliquot Probe Vertical Alignment should be performed after CTA Aliquot Probe replacement. Make sure the CTA, Access, and DxC are in *Standby* and that the CTA canopy is open before you proceed.

> ⚠ **CAUTION**
>
> **To prevent damage due to electrical static discharge (ESD), wear the wrist ground strap when you perform this procedure.**

1 Select **Utils** from the menu bar.

Select **5 Alignment**.

The CTA and DxC status changes to Alignment and the **Alignment** screen opens.

2 Select **CTA Assemblies** in the **Functional Area** field.

3 Select **5 Aliquot Probe (Vertical)**.

OR

Type **5** in the **Procedures No.** field.
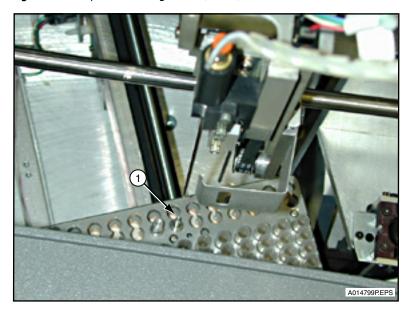
The **Alignment: Aliquot Probe (Vertical)** screen opens and Step 1 is highlighted.

4 Step 1:

- Disregard the prerequisite alignments.
- Select **Continue**. After the CTA moves to the alignment position, Step 2 is highlighted.

  OR

- Select **Stop** to cancel this procedure and to keep old alignment settings.
- Select **Close** on the **Alignment Recovery: Alignment Probe** screen and return to the **Alignment** screen.
- Select **Exit F10** to exit alignments and return to the **Utilities** screen.
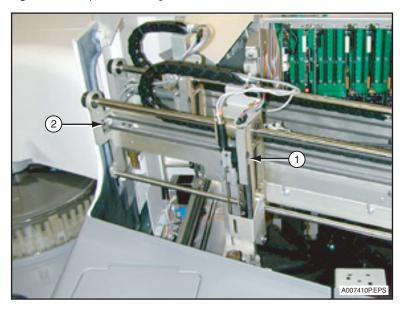
5 Align the Aliquot Probe tip to the center of the small alignment pin (1) in column #8 (count from left to right) of the AV shuttle. Refer to Figure 6.3.

Figure 6.3 Aliquot Probe Alignment (Part 1)

6 Refer to Figure 6.4. Move the Aliquot Probe horizontally over the pin as you gently push the probe mount (1), or as you turn the Probe Crane pulley (2), until the Aliquot Probe is positioned over the alignment pin.
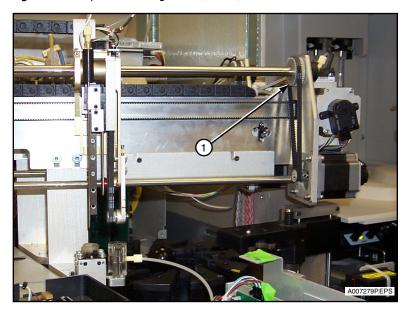
Figure 6.4 Aliquot Probe Alignment (Part 2)

7 Move the Aliquot Probe down until it touches the top of the alignment pin as you turn the Probe mount pulley, (1). Refer to Figure 6.5.

Figure 6.5 Aliquot Probe Alignment (Part 3)

8 Center the probe tip on the alignment pin by moving the Probe Crane pulley.

9 When the Aliquot Probe is centered, select **Continue** to advance to Step 3 of the **Alignment** dialog box.

10 Step 3 is highlighted.

- Select **Continue** again to exit the procedure and return to the **Alignment** dialog box.

  If the **Continue** button is pressed, the alignment setting is saved.

  OR

- Select **Stop** to cancel this procedure and to keep old alignment setting.

11 When the alignment procedure is completed, close the CTA canopy and select **Exit F10**.

The CTA homes and the CTA probe primes. The DxC is in *Standby* and *Working* shows in the lower left corner of the screen.

12 When the CTA goes to *Standby*, an **Alignment** dialog box opens with the message: "*Do you want to back up Alignment data?*"

    IMPORTANT Beckman Coulter recommends that you backup data after every alignment procedure.

- Select **Yes** to save the new alignment settings to the hard drive. A **Backup** dialog box opens. Continue to Step 13.

  OR

- Select **No** to exit the **Alignment** dialog box and return to the **Utilities** screen.

13 From the **Backup** dialog box,

- Select **OK** to save the alignment settings. The dialog box closes and reopens with instructions.

14 Follow the instructions in the **Backup** dialog box.

- Insert external media into the appropriate drive.
- Select **OK**.

      NOTE Alignment data cannot be saved to CD.

15 When the alignment data has downloaded, the **Backup** dialog box shows the message: "*Alignment Data Backup Completed Successfully. Please remove the external media and label it properly.*"

- Remove the external media and label it.
- Select **OK** to close the **Backup** dialog box and return to the **Utilities** screen.

16 If you replaced the CTA Aliquot Probe, perform the CTA Carryover PVT procedure.

Replace CTA Syringes

Replace the CTA syringes every year. This procedure is usually performed by a Beckman Coulter Service representative as part of preventive maintenance. The syringes should be replaced one at a time. Complete the entire procedure for one syringe before replacing the second syringe. A DxC 600i system can be configured with two Tecan syringes, two Hamilton syringes, or one of each type. The replacement procedures vary slightly according to the syringe type.

NOTE Follow any assembly instructions that come with the package, if syringe components are packaged separately.

Material Required:

- 2 CTA syringes

1   The CTA and DxC must be in *Standby.*

2   Open the door below the CTA and locate the 2 syringes. Refer to CHAPTER 2, *Pre-Test Activities*, Figure 2.10, Sample Syringe (3) and Wash Syringe (4).

3   Loosen the coupling at the base of the sample syringe on the right.

4   Select **Utils** from the menu bar and select **4 Diagnostics**.

The CTA and DxC status shows *Diagnostics* in the upper left corner of the screen.

If not, select **Exit F10** on the **Diagnostics** screen and repeat Step 4 until both the CTA and DxC status show *Diagnostics.*

5   Select **Sample System** in the **Functional Area** field.

6   Select **CTA Diagnostics** in the **Sub-Functional Area** field.

7   Select **1 Electro-Mechanical Test**.

8   Select **Devices**.

9   For the right syringe, select **11 Sample Syringe**.

OR

For the left syringe, select **12 Wash Syringe**.

10   Select **6 Move syringe valve to input position**. The valve moves to the input position.
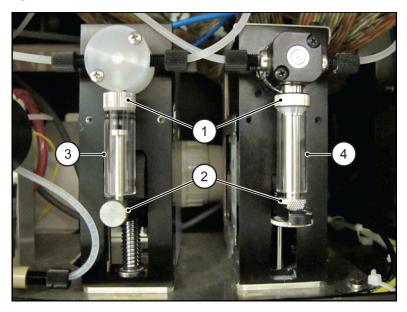
11   Select **3 Aspirate syringe volume**.

12 The **Syringe Volume** dialog box appears.

- Type **1** in the **Speed** field.
- Type **1** in the **Acceleration** field.
- Type **2000** in the **Volume** field and press ⏎Enter
- Select **OK** to accept the entries and close the dialog box.

The syringe valve rotates to stop the liquid flow, while the syringe drive (1) Figure 6.6, moves down to allow access to the syringe plunger. Figure 6.6 shows an example of a system configured with a Tecan sample syringe (3) and a Hamilton sample syringe (4), but a system can be configured with two Tecan syringes or two Hamilton syringes.

Figure 6.6 Syringe Remove/Replace

1. Syringe Drive
2. Valve Coupling/Thumb Screw
3. Tecan sample syringe
4. Hamilton sample syringe

13 To remove either type syringe, refer to Figure 6.6.

a. Tecan syringe (3): Loosen the thumb screw on the front of the arm supporting the bottom of the syringe drive (2). Then loosen the valve coupling at the top of the syringe until the syringe is free.

b. Hamilton syringe (4): Loosen the thumb screw at the bottom of the syringe drive (2). Then loosen the valve coupling approximately 1 or 2 revolutions or until the syringe is free.

14 Discard the used syringe assembly.

NOTE The box containing the new syringe includes instructions that describe how to lubricate the syringe plunger tip with deionized water prior to inserting the plunger into the syringe barrel. Lubricate the syringe plunger tip with deionized water, which extends the life of the plunger tip.

15 Insert the new syringe into the valve coupling. Turn the coupling approximately 1 or 2 revolutions to tighten.

> **NOTE**   It is impossible to install a Tecan syringe on a Hamilton syringe drive or to install a Hamilton syringe on a Tecan syringe drive because the mismatched parts will not align correctly.

16 Pull down the plunger of the syringe and insert it into the syringe drive coupling. Ensure proper orientation of the syringe plunger in the syringe drive coupling. Tighten the coupling.

> **NOTE**   Make sure the couplings are turned until they are tight; otherwise, the syringes leak.

17 To replace the wash syringe on the left:

* Loosen the coupling completely at the base of the syringe.
* Select **Cancel** on the **Sample Syringe** screen to return to the **Devices** screen.
* Repeat Steps 8-15.

OR

If you have finished syringe replacement continue to Step 18.

18 Make sure the CTA canopy is closed before continuing to Step 19.

19 Select **Cancel** from the **Devices** screen.

* Select **Close** on the **Electro/Mechanical** screen to return to the **Diagnostics** screen.
* Select **Exit F10** to exit Diagnostics.

The CTA status shows *Homing* and the DxC status shows *Standby*. In the lower left corner of the screen, *Working* shows.

20 When homing is complete, the CTA status shows *Standby*.

21 Select **Utils** from the menu bar.

22 Select **1 Prime**.

23 Select **Prime CTA** and type **2** for the **Number of primes to repeat** field. Select **Start Prime**.

24 Check the syringes for leaks.

If leaks occur, tighten the valve couplings and repeat Steps 19-22.

25 When syringe priming is complete, select **Exit F10**. Then select **Main** to return to the **Main** screen.

26 Close the door below the CTA.

Replace the Peristaltic Drain Pump Tube (Hoses at Top of Pump)

There are two ways the Peristaltic Drain Pump can be oriented inside the door below the CTA.

If the Peristaltic Drain Pump inside your system is oriented with the Drain Hoses at the top of the pump, use the following procedure to replace the Peristaltic Drain Pump.

If the Peristaltic Drain Pump inside your system is oriented with the Drain Hoses at the bottom of the pump, use the, Replace the Peristaltic Drain Pump Tube (Hoses at Bottom of Pump) procedure to replace the Peristaltic Drain Pump.

The DxC system and the CTA must be in *Standby* BEFORE starting this procedure.

Materials Required:

- Peristaltic Drain Pump Tubing Set (PN A29657)

1 Press the CTA **STOP** button.

2 Open the door below the CTA and locate the Peristaltic Drain Pump.
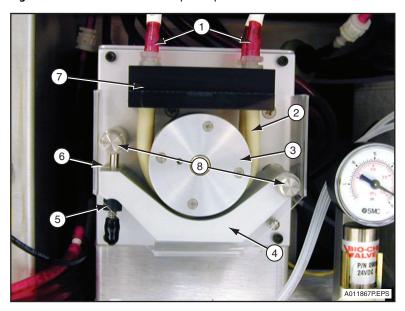
Figure 6.7 Peristaltic Drain Pump with Cover

3 Loosen the Mounting Screws (8) and remove the clear plastic Peristaltic Drain Pump cover.
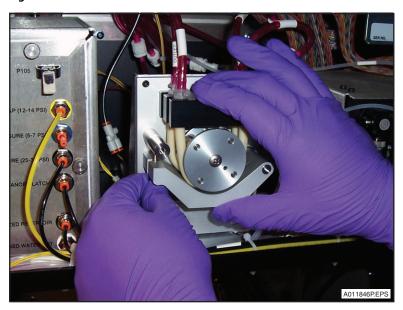
Figure 6.8 Peristaltic Drain Pump Components

1. Drain Hoses
2. Peristaltic Drain Tubes
3. Roller
4. Track
5. Locking Knob
6. Tension Arm
7. Tube Holder
8. Mounting Screws

Figure 6.9 Release the Track

> ⚠ **CAUTION**
>
> **DO NOT loosen the locking knob (5) Figure 6.8. If the locking knob is loose, the peristalic pump may not work correctly.**

4 Refer to Figure 6.8 and Figure 6.9.

- Grasp and squeeze the Track (4) and the black Tube Holder (7). This relieves pressure on the Tension Arm (6).

- Pull the Locking Knob (5) down and to the left to release the Track. The Track is now out of the way of the Roller (3).

5 Pull the Peristaltic Drain Tubes (2) up and away from the black Tube Holder. Refer to Figure 6.8.

6 Disconnect the Peristaltic Drain Tubes from the fittings on the red Drain Hoses (1) Figure 6.8, and then attach new Peristaltic Drain Tubes (PN A29657) onto the Drain Hose fittings.

Figure 6.10 Peristaltic Pump Tubing with Open Clamp

7 Install the first Peristaltic Drain Tube by pushing the tube into the rear slot of the Roller. Then install the second tube in the front Roller slot. Orient the tubes on the Roller carefully to ensure proper operation.

8 Grasp and squeeze the Track and the black Tube Holder again and swing the Tension Arm back into its Track. Check that the Tension Arm is locked into position.

9 Select:

- **Instr Cmd** from the menu bar,
- **1 Home**,
- **2 CTA**.

10 Select:

- **Utils** from the menu bar,
- **1 Prime**.

11 Select:

- **Prime CTA** from the **Prime** dialog box.
- Type **2** in the **Number of primes to repeat** field.
- **Start Prime**.

12 As the CTA primes, check the Peristaltic Pump tubing connections for leaks.

If leaks occur, tighten the connection or replace any damaged tubes, if necessary. Repeat Step 11.

13 Re-install the drain pump cover.

Replace the Peristaltic Drain Pump Tube (Hoses at Bottom of Pump)

There are two ways the Peristaltic Drain Pump can be oriented inside the door below the CTA.

If the Peristaltic Drain Pump inside your system is oriented with the Drain Hoses at the bottom of the pump, use the following procedure to replace the Peristaltic Drain Pump.
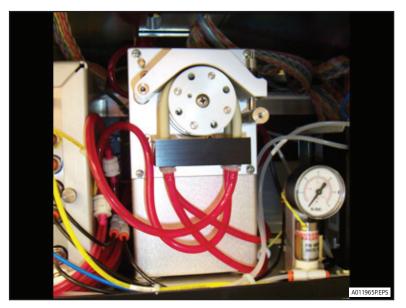
If the Peristaltic Drain Pump inside your system is oriented with the Drain Hoses at the top of the pump, use the, Replace the Peristaltic Drain Pump Tube (Hoses at Top of Pump) procedure to replace the Peristaltic Drain Pump.

The DxC system and the CTA must be in *Standby* BEFORE starting this procedure.

Materials Required:

- Peristaltic Drain Pump Tubing Set (PN A29657)

1 Press the CTA **STOP** button.

2 Open the door below the CTA and locate the Peristaltic Drain Pump.
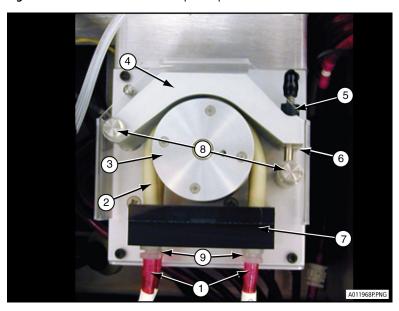
Figure 6.11 Peristaltic Drain Pump

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3 Loosen the Mounting Screws (8) and remove the clear plastic Peristaltic Drain Pump cover.

Figure 6.12 Peristaltic Drain Pump Components

1. Drain Hoses
2. Peristaltic Drain Tubes
3. Roller
4. Track

5. Locking Knob
6. Tension Arm
7. Tube Holder
8. Mounting Screws

Figure 6.13 Release the Track

> ⚠ **CAUTION**
>
> **DO NOT loosen the locking knob (5) Figure 6.12. If the locking knob is loose, the peristalic pump may not work correctly.**

4 Refer to Figure 6.12 and Figure 6.13.

- Grasp and squeeze the Track (4) and the black Tube Holder (7). This relieves pressure on the Tension Arm (6).

- Pull the Locking Knob (5) up and to the right, to release the Track. The Track is now out of the way of the Roller (3).

5 Pull the Peristaltic Drain Tubes (2) down and away from the black Tube Holder. Refer to Figure 6.12.

6 Disconnect the Peristaltic Drain Tubes from the fittings on the red Drain Hoses (1) Figure 6.12, and then attach new Peristaltic Drain Tubes (PN A29657) onto the Drain Hose fittings.

Figure 6.14 Peristaltic Pump Tubing with Open Clamp

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7 Install the first Peristaltic Drain Tube by pushing the tube into the rear slot of the Roller. Then install the second tube in the front Roller slot. Orient the tubes on the Roller carefully to ensure proper operation.

8 Grasp and squeeze the Track and the black Tube Holder again and swing the Tension Arm back into its Track. Check that the Tension Arm is locked into position.

9 Select:

- **Instr Cmd** from the menu bar,
- **1 Home**,
- **2 CTA**.

10 Select:

- **Utils** from the menu bar,
- **1 Prime**.

11 Select:

- **Prime CTA** from the **Prime** dialog box.
- Type **2** in the **Number of primes to repeat** field.
- **Start Prime**.

12 As the CTA primes, check the Peristaltic Pump tubing connections for leaks.

If leaks occur, tighten the connection or replace any damaged tubes, if necessary. Repeat Step 11.

13 Re-install the drain pump cover.

CTA Maintenance (As-Needed)

Flush the CTA Aliquot Probe

The CTA Aliquot Probe flushing procedure is used only to remove clots or red cells blocking the inside of the Probe. If gel is aspirated into the CTA Aliquot Probe, the probe must be replaced. In addition, the Access, CTA and DxC must be in *Standby* to perform the cleaning procedure.

Materials Required:

- Probe Cleaning Tubing Assembly (PN 756613)
- 4 x 4 gauze pads
- 12 x 75 test tube, non gel
- Beaker of warm water
- Syringe

> ⚠ **CAUTION**
>
> **To prevent damage due to electrical static discharge (ESD), wear the wrist ground strap when you perform this procedure.**

---
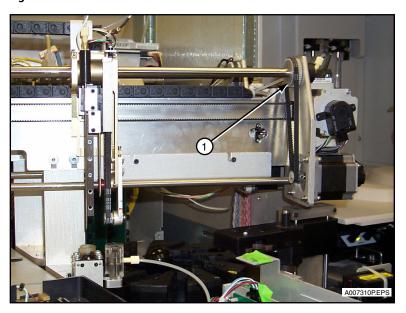
1 Press the CTA **STOP** button. The menu bar shows the CTA status as *Stopped*.

---

2 Open the CTA canopy.

---

3 Make sure the CTA Aliquot Probe is over the CTA Wash Station.

If not, gently push the Aliquot Probe mount until it is positioned over the Wash Station.

---

4 Remove the threaded fitting (1) on top of the CTA Aliquot Probe. Refer to Figure 6.2.

---

5 Connect the black fitting on the Probe Cleaning Tubing Assembly to the top of the CTA Aliquot Probe.

---

6 Place several 4 x 4 gauze pads under the CTA Aliquot Probe.

---

7 Fill the syringe with warm distilled water and attach the syringe to the free end of the Probe Cleaning tubing.

8 Flush warm water through the probe to dislodge blood and clots while observing the gauze below for the removed debris. The probe may require more than one flushing.

9 Discard the wet 4 x 4 gauze in a biohazard container.

10 Push the probe mount to move the aliquot probe away from the Probe Wash Station.

11 Lower the probe into a 12 x 75 mm test tube by turning the Probe Mount Pulley (1).

Figure 6.15

12 Fill the syringe with warm water and flush the probe. Use a back and forth motion to "scrub" the inside of the probe. Repeat the scrubbing several times. Change the water in the test tube as required.

13 Raise the probe out of the test tube by turning the Probe Mount Pulley (1). Refer to Figure 6.15.

14 Push the probe mount to move the aliquot probe above the Probe Wash Station.

15 Fill the syringe again with warm water and flush the probe.

- Make sure the stream exiting the probe is a steady flow of liquid. Refer to Figure 6.16.
  - — If OK, remove and discard the test tube in a biohazard container.

    OR
  - — If not, repeat Steps 12-14.

    Figure 6.16 Probe Flushing

16 Remove the Probe Cleaning Tubing Assembly from the CTA Aliquot Probe.

17 Reconnect the threaded fitting to the top of the CTA Aliquot Probe. Tighten the fitting no more than finger tight and 1/4 of a turn.

18 Close the CTA canopy.

19 Select:

- **Instr Cmd** from the menu bar,
- **1 Home**,
- **2 CTA**.

The CTA status changes to *Homing* on the DxC **Main** screen.

20 When homing is complete, the CTA status shows *Standby*.

21 Open the CTA canopy.

22 Select:

- **Utils** from the menu bar
- **1 Prime**,
- **Prime CTA** and type **5** in the **Number of primes to repeat** field
- **Start Prime**

23 Check for leaks.

If leaks occur, remove and reinsert the threaded fitting on top of the CTA Aliquot Probe after priming stops. Repeat Steps 18-22.

24 When priming is complete, select **Exit F10**. Then select **Main** to return to the **Main** screen.

25 Close the CTA canopy.
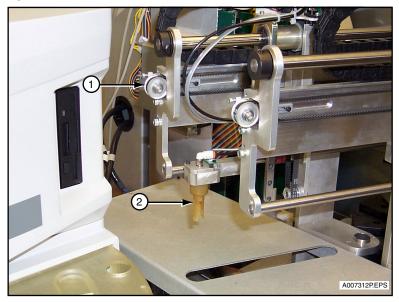
Replace the CTA Pick and Place Head

The CTA Pick and Place Head may break as a result of motion errors. The motion error may be caused by misalignment of the Pick and Place Head. If the Pick and Place Head is broken, it must be replaced before processing new samples. Follow the procedure below to replace the Pick and Place Head. The Access, CTA and DxC must be in *Standby* to perform this procedure.

Materials Required:

- Pick and Place Head (Pick and Place Collett Assembly, PN 388668)
- 3/32 inch Allen Wrench

Figure 6.17 CTA Pick and Place Crane

1. Pick and Place Crane Pulley
2. Pick and Place Head
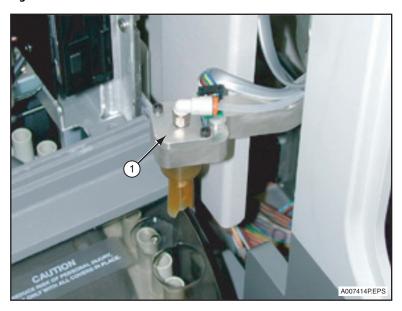
> ⚠ **CAUTION**
>
> **To prevent damage due to electrical static discharge (ESD), wear a wrist ground strap when you perform this procedure.**

1 Press the CTA **STOP** button.

2 Open the CTA canopy and the Access front cover.

3 Move the Pick and Place Head horizontally to the left by turning the Pick and Place Crane pulley. Position the Pick and Place Head at an accessible area. Refer to Figure 6.17.

4 Use the Allen wrench to remove the two Allen screws on the holding plate (1).

Figure 6.18 Pick and Place Head

5 Lift the holding plate away from the crane arm.

6 Remove the O-ring from the holding plate.

7 Remove the broken Pick and Place Head and replace it with a new one. Make sure the key on the Pick and Place Head locks into the key notch on the crane.

8 Replace the O-ring into the holding plate.

9 Position the holding plate onto the crane.

10 Replace the Allen screws. Tighten them securely.

11 Raise the Pick and Place Head to its highest position by turning the Pick and Place mount pulley (5). Refer to Figure 6.1.

> ⚠ **CAUTION**
>
> **The Pick and Place Head may be damaged during homing if it is in a lowered position.**

12 Close the CTA canopy. Home the CTA.

Select **Instr Cmd** from the menu bar. Select **1 Home** and **2 CTA**.

13 Close the Access front cover.

14 Perform the Pick and Place Crane (Horizontal) Alignment, Pick and Place Head (Vertical) Alignment and Pick and Place Head to AV Shuttle Automatic Fine Alignment Procedures.

CTA Alignment: Pick and Place Crane (Horizontal)

The Pick and Place Crane (Horizontal) Alignment should be performed after CTA Pick and Place Head replacement. Make sure the CTA, Access, and DxC are in *Standby* and that the CTA canopy and Access front cover are open before proceeding.

Materials Required:

- Pick and Place Alignment Tool (PN A18918)
- Automation Rack (Access)

⚠ **CAUTION**

> **To prevent damage due to electrical static discharge (ESD), wear a wrist ground strap when you perform this procedure.**

1 Select **Utils** from the menu bar and select **5 Alignment**. The CTA and DxC status changes to *Alignment* and the **Alignment** dialog box opens.

2 Select **CTA Assemblies** in the **Functional Area** field. The **Functional Area** field updates to show CTA assemblies.

3 Select **2 Pick and Place Crane (Horizontal)**.

OR

Type **2** in the **Procedures No.** field.

The **Alignment: Pick and Place Crane (Horizontal)** screen opens and Step 1 is highlighted.

4 Step 1:

- Disregard the prerequisite alignments.
- Select **Continue**. After the CTA moves to the alignment position, Step 2 is highlighted.

  OR

- Select **Stop** to cancel this procedure and to save old alignment settings.
- Select **Close** on the **Alignment Recovery: Alignment Probe** screen and return to the **Alignment** dialog box.
- Select **Exit F10** to exit alignments and return to the **Utilities** screen.

5 Step 2:

- Select the **CTA** button on the Access screen.
- Select **Set CTA Offline F8**.
- Select:
  - **Main Menu**
  - **Diagnostics F7**
  - **Device Diagnostics F4**
  - **Mechanics F1**
  - **Disable Motors F8**.
- Go to the DxC 600i monitor and select **Continue**. Step 3 is highlighted.

6 Step 3:

- Move the Pick and Place Head horizontally by turning the Pick and Place Crane pulley (5) Figure 6.1, until the Pick and Place Head is positioned over the small alignment pin (column #8).
- Place the Pick and Place Alignment Tool (refer to Figure 6.19) in the Pick and Place Head by inserting the large end into the Pick and Place Head.
- Move the Pick and Place Head down by turning the Pick and Place mount pulley until the tip of the Pick and Place Alignment Tool touches the top of the alignment pin. Refer to Figure 6.19.
- Center the Pick and Place Alignment Tool to the alignment pin by turning the Pick and Place Crane pulley.
- Go to the DxC 600i monitor and select **Continue**. Step 4 is highlighted.

Figure 6.19 Pick and Place Alignment

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7 **Step 4:**

- Raise the Pick and Place Head by turning the Pick and Place mount pulley.

- Move the Pick and Place Head horizontally by turning the Pick and Place Crane pulley until the alignment tool is positioned over the automation rack on the Access Sample Carousel. Refer to Figure 6.20.

- Move the automation rack until it is centered below the Pick and Place Alignment Tool.

- Move the Pick and Place Head down by turning the Pick and Place mount pulley until the alignment tool is centered in the automation rack.

- Go to the DxC 600i monitor and select **Continue**. Step 5 is highlighted.

Figure 6.20 Pick and Place Head Alignment (Access Sample Carousel)

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8 **Step 5:**

- Move the Pick and Place Head down by turning the Pick and Place mount pulley to verify the placement of the alignment tool in the automation rack.

- Raise the Pick and Place Head and remove the alignment tool.

- Go to the DxC 600i monitor and select **Continue**. Step 6 is highlighted.

9 Select **Continue** again to save the new alignment settings and to return to the **Alignment** dialog box.

OR

Select **Stop** to cancel this procedure and keep the old alignment setting.

10 Select another alignment procedure to be performed,

OR

Close the CTA canopy and select **Exit F10** to exit the dialog box. The CTA homes and the CTA probe primes. The DxC is in *Standby* and *Working* shows in the lower left corner of the screen. Continue to Step 11.

11 Wait for the CTA to go into *Standby*. An **Alignment** dialog box opens with the message: "*Do you want to back up Alignment data?*"

IMPORTANT Beckman Coulter recommends that you backup data after every alignment procedure.

Select **Yes** to save the new alignment settings to the hard drive.

OR

Select **No** to exit the **Alignment** dialog box and return to the **Utilities** screen.

12 A **Backup** dialog box opens. Select **OK** to save the alignment settings and open the screen with the Backup instructions.

13 Follow the instructions on the **Backup** dialog box. Insert external media into the appropriate drive. Select **OK**.

NOTE Alignment data cannot be saved to CD.

14 When the backup is complete, the **Backup** dialog box shows the message:
"*Alignment Data Backup Completed Successfully. Please remove the external media and label it properly.*"

- Remove the external media and label it.
- Select **OK** to close the **Backup** dialog box and return to the **Utilities** screen.

15 Go to the Access monitor.

- Select **Enable Motors F8**
- Press **F9** to return to the **Main** menu.
- Close the Access front cover.

16 At the Access **Main** menu:

- Select **Diagnostics F7**.
- Select **Initialize System F1**. A dialog box opens with the message: "*Initialize the system?*"
- Select **Yes F1**.

17 When initialization completes, a dialog box opens with the message:
"*Completed Initialization.*" Select **OK F1**.

18 Select the **CTA** button on the Access screen. Select **Set CTA Online F8**.

19 Perform the Pick and Place Head to AV Shuttle Automatic Fine Alignment after the Pick and Place Crane (Horizontal) Alignment and Pick and Place Crane (Vertical) alignments are complete.

20 Only after all alignments are complete, verify the correct operation of the Pick and Place Head by programming an Access sample and requesting an Access test.

Make sure the Pick and Place Head transfers the AV from the AV queue to the automation rack on the Access Sample Carousel.

CTA Alignment: Pick and Place Head (Vertical)

The Pick and Place Head (Vertical) Alignment should be performed after CTA Pick and Place Head Replacement. Make sure the CTA, Access, and DxC are in *Standby* and that the CTA canopy and Access front cover are open before proceeding.

Materials Required:

- An Aliquot Vessel
- Automation Rack (Access)

⚠ **CAUTION**

> **To prevent damage due to electrical static discharge (ESD), wear a wrist ground strap when you perform this procedure.**

1 Start at Step 3 if continuing from the Pick and Place Crane (Horizontal) Alignment procedure.

Select the **Utils** icon from the menu bar and select **5 Alignment**. The CTA and DxC status changes to *Alignment* and the **Alignment** screen opens.

2 Select **CTA Assemblies** in the **Functional Area** field.

The **Functional Area** field updates to show CTA assemblies.

3 Select **3 Pick & Place Head (Vertical)**.

OR

Type **3** in the **Procedures No.** field and press ⌷Enter⌷.

The **Alignment: Pick and Place Head (Vertical)** screen opens and Step 1 is highlighted.

4 Step 1:

- Disregard the prerequisite alignments.
- Select **Continue**. After the CTA moves to the alignment position, Step 2 is highlighted.

    OR

    Select **Stop** to cancel this procedure and save the old alignment settings.
- Select **Close** on the **Alignment Recovery: Alignment Probe** screen and return to the **Alignment** screen.
- Select **Exit F10** to exit alignments and return to the **Utilities** screen.

5 Step 2:
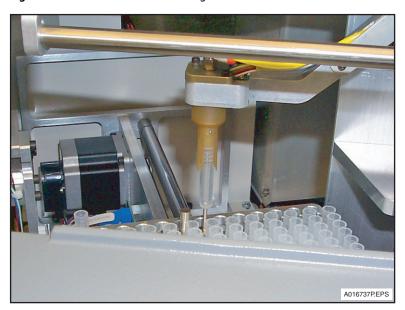
This step is completed if continuing from the Pick and Place Crane (Horizontal) Alignment.

- Select **Continue** on the DxC 600i screen and proceed to Step 3.

  OR

- Select the **CTA** button on the Access screen.

- Select **Set CTA Offline F8**.

- Select:

  — **Main Menu**

  — **Diagnostics F7**

  — **Device Diagnostics F4**

  — **Mechanics F1**

  — **Disable Motors F8**.

- Go to the DxC 600i monitor and select **Continue**. Step 3 is highlighted.

6 Step 3:

- Move the Pick and Place Head horizontally by turning the Pick and Place Crane Pulley until the Pick and Place Head is positioned over the small alignment pin (column #8).

- Place an AV (Aliquot Vessel) into the Pick and Place Head.

- Move the Pick and Place Head down by turning the Pick and Place mount pulley until the bottom of the AV touches the top of the alignment pin. Refer to Figure 6.21.

- Go to the DxC 600i monitor and select **Continue**. Step 4 is highlighted.
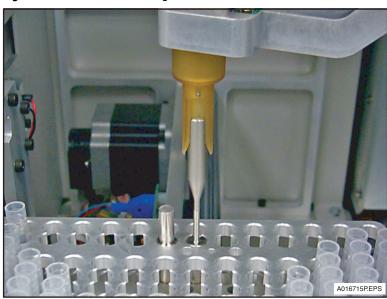
Figure 6.21 Pick and Place Head Alignment
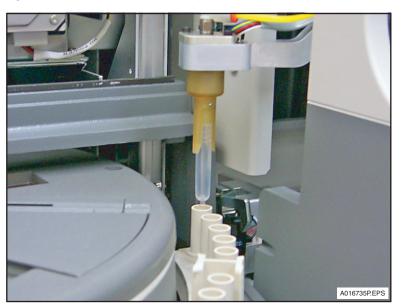
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7 Step 4:

- Raise the Pick and Place Head by turning the Pick and Place mount pulley.

- Move the Pick and Place Head horizontally by turning the Pick and Place Crane pulley until the Pick and Place Head is positioned over the automation rack on the Access Sample Carousel. Refer to Figure 6.22.

- Move the Pick and Place Head down by turning the Pick and Place mount pulley until the bottom of the AV touches the bottom of the automation rack.

- Go to the DxC 600i monitor and select **Continue**. Step 5 is highlighted.

Figure 6.22 Pick and Place Head Alignment (Access Sample Carousel)

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8 Step 5:

- Raise the Pick and Place Head and remove the AV.

- Go to the DxC 600i monitor and select **Continue** to save the probe alignment settings and return to the **Alignment** screen.

  OR

- Select **Stop** to cancel this procedure and keep the old alignment setting.

9 Select another alignment procedure to be performed,

OR

Close the CTA canopy and select **Exit F10** to exit and return to the **Alignment** screen. The CTA homes and the CTA probe primes. The DxC is in *Standby* and *Working* shows in the lower left corner of the screen. Continue to Step 10.

10 Wait for the CTA to go into *Standby*. An **Alignment** dialog box opens with the message: "*Do you want to backup the alignment data?*"

> **IMPORTANT** Beckman Coulter recommends that you backup data after every alignment procedure.

Select **Yes** to save the new alignment settings to the hard drive. Continue to Step 11.

OR

Select **No** to exit the **Alignment** dialog box and return to the **Utilities** screen.

11 A **Backup** dialog box opens. Select **OK** to save the alignment settings and open the screen with the Backup instructions.

12 Follow the instructions on the **Backup** dialog box. Insert external media in the appropriate drive. Select **OK**.

> **NOTE** Alignment data cannot be saved to CD.

13 When the backup is complete, the **Backup** dialog box shows the message: "*Alignment Data Backup Completed Successfully. Please remove the external media and label it properly.*"

- Remove the external media and label it.
- Select **OK** to close the **Backup** dialog box and return to the **Utilities** screen.

14 Go to the Access monitor.

- Select **Enable Motors F8**.
- Exit to the Access **Main** menu.
- Close the Access front cover.

15 From the Access **Main** menu:

- Select **Diagnostics F7**.
- Select **Initialize System F1**. A dialog box opens with the message: "*Initialize the system?*"
- Select **Yes F1**.

16 When initialization completes, a dialog box opens with the message: "*Completed Initialization.*" Select **OK F1**.

17 Select **CTA** on the Access screen. Select **Set CTA Online F8**.

18 Perform the Pick and Place Head to AV Shuttle Automatic Fine Alignment after the Pick and Place Crane (Horizontal) Alignment and Pick and Place Crane (Vertical) alignment are complete.

19 After all alignments are complete, verify the correct operation of the Pick and Place Head by programming an Access sample and requesting an Access test.

Make sure the Pick and Place Head transfers the AV from the AV queue to the automation rack on the Access Sample Carousel.

CTA Alignment: Pick and Place Head to AV Shuttle Automatic Fine Alignment

The Pick and Place Head to AV Shuttle Automatic Fine Alignment should be performed after Pick and Place Crane (Horizontal) Alignment and Pick and Place Head (Vertical) Alignment. Make sure the CTA, Access, and DxC are in *Standby* and that the CTA canopy and Access front cover are closed before proceeding.

No items are needed for this procedure.

1 Select **Utils** from the menu bar and select **5 Alignment**. The CTA and DxC status changes to *Alignment* and the **Alignment** screen opens.

2 Select **CTA Assemblies** in the **Functional Area** field.

The **Functional Area** field updates to show CTA assemblies.

3 Select **10 Pick & Place Head to AV Shuttle Automatic Fine Alignment**.

The Alignment: **Pick and Place Head to AV Shuttle Automatic Fine Alignment** screen opens. Follow the instructions on the screen.

4 Select:

- **Continue** to save the new alignment settings and to return to the **Alignment** screen.

  OR

- **Stop** to cancel this procedure and save the old alignment settings.

- **Close** on the **Alignment Recovery: Alignment Probe** screen and return to the **Alignment** screen.

- **Exit F10** to exit alignments and return to the **Utilities** screen.

5 Select another alignment procedure to be performed.

OR

Select **Exit F10** to exit the **Alignment** screen and return to the **Utilities** screen.

The CTA homes and the CTA probe primes. The DxC is in *Standby* and *Working* shows in the lower left corner of the screen. Continue to Step 6.

6 Wait for the CTA to go into *Standby*. An **Alignment** dialog box opens with the message: "*Do you want to backup the alignment data?*"

IMPORTANT Beckman Coulter recommends that you backup data after every alignment procedure.

- Select **Yes** to save the new alignment settings to the hard drive. A **Backup** dialog box opens. Continue to Step 7.

  OR

- Select **No** to exit the **Alignment** dialog box and return to the **Utilities** screen.

7 A **Backup** dialog box opens.

- Select **OK** to save the alignment settings and open the screen with the Backup instructions.

8 Follow the instructions on the **Backup** dialog box. Insert the external media into the appropriate drive. Select **OK**.

NOTE Alignment data cannot be saved to CD.

9 When the backup is complete, the **Backup** dialog box shows the message: "*Alignment Data Backup Completed Successfully. Please remove the external media and label it properly.*"

- Remove the external media and label it.
- Select **OK** to close the **Backup** dialog box and return to the **Utilities** screen.

10 Only after all alignments are complete, verify the correct operation of the Pick and Place Head by programming an Access sample and requesting an Access test.

Make sure the Pick and Place Head transfers the AV from the AV queue to the automation rack on the Access Sample Carousel.

CTA Accuracy PVT Procedure

Test Summary
The CTA Accuracy PVT Procedure evaluates the performance of the CTA Aliquot Probe and confirms that a consistent volume of fluid is aspirated and dispensed.

Time Required
This test takes approximately 30 minutes to complete.

Materials Required:
- Three 13 x 75 mm Sample Racks
- Nine 13 x 75 mm sample tubes
- Pipette capable of delivering 110, 300 and 550 µL
- Deionized (DI) water
- 5 mL syringe with a needle (if using closed tubes)
- 1900 Series Automation Rack

1 Dispense a minimum of 2.0 mL of DI water into each of nine 13 x 75 mm sample tubes.
- If you are using the CTS (closed tube sampling) option, fill the vacuum tubes with a syringe.
- If air bubbles form inside the tube, gently tap the side of the tube and allow enough time for bubbles to dissipate.

2 Make sure the DxC, CTA and Access System status is *Standby.*

3 Make sure there are a minimum of 9 AVs available.

4 Select **Utils** from the menu bar.

5 Select **6 PVT**.

6 Select **CTA Performance Verification Tests** from the **Functional Area** pull-down menu.

7 Select **2 CTA Accuracy**.

8 Perform Step 1 of the instructions on the screen.

9 Press **Start** on the screen to begin the CTA Accuracy PVT procedure.

The first phase of the PVT procedure takes approximately 9 minutes as the system aliquots the necessary samples into aliquot vessels (AVs). A timer is shown to indicate that the CTA is processing samples.

10 While the CTA is processing the test AVs:

- Prepare three AVs filled with deionized (DI) water to which the test AVs will be compared.
  - Dispense 110 μL (DI water) into the first comparison AV.
  - Dispense 300 μL (DI water) into the second comparison AV.
  - Dispense 550 μL (DI water) into the third comparison AV.

NOTE When the CTA finishes aliquoting the samples into the appropriate AVs, a new screen appears for the next phase of the PVT procedure.

11 When the **PVT Recovery** screen appears open the CTA canopy.

12 Perform Step 1 of the instructions on the screen. When performing Step 1, transfer AVs in order from left to right to an Automation Rack.

NOTE The AVs are numbered from left to right in the front row of the CTA AV Queue Tray.
Example:
AV #2 is the second AV from the left in the front row of the Queue Tray.

13 Close the CTA canopy.

14 Perform Step 2 of the instructions on the screen.

If the meniscus of fluid in the Test AV is the same as or ABOVE the meniscus of the appropriate comparison AV, the CTA accuracy is acceptable.

Troubleshoot by performing the following steps:

a. Make sure the CTA Aliquot Probe is not obstructed.

b. Make sure the fittings and connections are tight on the CTA Aliquot Probe and the CTA Obstruction Detection and Correction (ODC) assembly.

c. Make sure the CTA syringes are functioning properly, and that the fittings and connections are secure.

d. Make sure the CTA Aliquot Probe, CTA ODC assembly, and CTA syringe tubings are clear of blockages.

If additional assistance is needed, contact Beckman Coulter Support Center.

15 Perform Step 3 of the instructions on the screen.

▶

CTA Carryover PVT Procedure

Test Summary

The CTA Carryover PVT Procedure evaluates the cleanliness of the CTA Aliquot Probe and the effectiveness of the probe wash between uses.

Time Required

This test takes approximately one hour to complete.

Materials Required:

- Two 13 x 75 mm Sample Racks
- Eight 2 mL Sample Cups
- Clean empty AVs
- Wash Buffer
- System Check Solution
- Automation Rack
- Pipette capable of delivering 650 μL

1 Make sure the DxC, CTA and Access System status is *Standby.*

2 Make sure there are a minimum of 8 AVs on the CTA AV Queue Tray.

3 Select **Utils** from the menu bar.

4 Select **6 PVT**.

5 Select **CTA Performance Verification Tests** from the **Functional Area** pull-down menu.

6 Select **1 CTA Carryover**.

7 Perform Step 1 of the instructions on the screen.

Label 2 mL sample cups as follows:

- Test 1
- Test 2
- Test 3

- High 1
- High 2
- High 3

- Wash 1
- Wash 2

8 Perform Step 2 of the instructions on the screen.

9 Perform Step 3 of the instructions on the screen.

> **NOTE** Load rack 1 followed by rack 2.

10 Perform Step 4 of the instructions on the screen.

> **NOTE** The first phase of the PVT procedure takes approximately 8 minutes as the system aliquots the necessary samples into aliquot vessels (AVs). A timer is shown to indicate that the CTA is processing samples.
>
> When the CTA finishes aliquoting the samples into the appropriate AVs, a new screen appears for the next phase of the PVT procedure.

11 When the **PVT Recovery** screen appears, open the CTA canopy. Perform the instructions on the screen.

> **NOTE** The AVs are numbered from left to right in the front row of the CTA AV Queue Tray. (Example: AV #2 would be the second AV from the left in the front row of the Queue Tray.)

12 When the AVs are removed from the CTA, close the CTA canopy and exit the PVT procedure by selecting **Close** on the screen.

13 Select:

- **CTA** from the Access screen,
- **Set CTA Offline F8**,
- **Sample Manager F1**.

14 Type the Automation Rack number in the **Rack ID** field and press ⌨Enter .

15 Select **Test Request F3**.

- If the Test menu is not shown
  — Select **Show Test Menu F3**.

16 Select **More Options F8**.

17 Select **Request Service Assay F3**.

18 Type **Control 1** for the Sample ID in position 1, then select **OK F1**.

19 Select **LumiAP 907** three times to program 3 replicates, then press (Enter). Press (Enter) again to advance to the next line.

20 Repeat Steps 18-19 for positions 2-6 in the Automation Rack. Use Sample IDs listed below:

- Control 1
- Control 2
- Test 1
- Test 2
- Test 3
- Wash 3

21 To load the Automation Rack:

- Select **Load Rack F1** from the **Sample Manager** screen then load the rack.
- Select **F1 Done**.
- Select **Run** from the Access screen.

22 When testing is complete:

- Select **CTA** from the Access screen.
- Select **CTA Online F8**.

23 Use the following criteria to evaluate the results of the CTA Carryover PVT procedure.

- If the mean of the three replicates for each of the Test AVs (Test 1, Test 2, and Test 3) are < 25,000 RLUs, the test results are acceptable.
- If the replicate mean exceeds 25,000 RLUs, troubleshoot by checking the following:
  — Make sure the CTA Aliquot Probe is clean.

— Make sure the CTA wash syringe is functioning properly, and that its fittings and connections are secure.

— Make sure there is sufficient delivery of Wash Buffer solution.

- If additional assistance is needed, contact your local Beckman Coulter representative.

24 Remove Automation Rack from the Access and discard AVs.

Supplementary DxC 600i Information

Supplementary Information
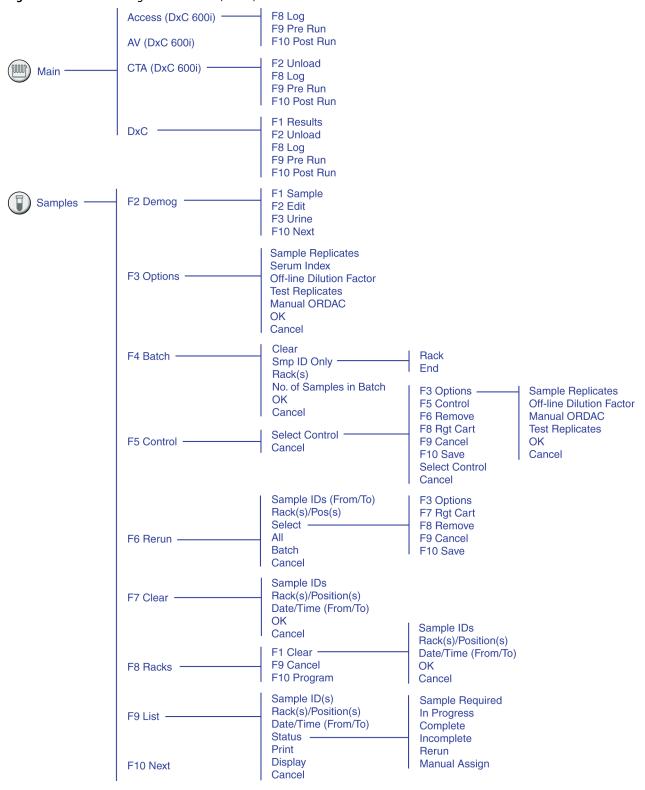
Introduction

Appendix A contains Supplementary Information on the:

- Software Program Structure,
- System Operating Conditions for the system components (shown on the DxC 600i screen), and
- Independent Operating Modes for the CTA, Access, and DxC components.

Program Structure

Figure A.1 DxC 600i Program Structure (1 of 8)

Main

Access (DxC 600i) — F8 Log
F9 Pre Run
AV (DxC 600i) — F10 Post Run

CTA (DxC 600i) — F2 Unload
F8 Log
F9 Pre Run
F10 Post Run

DxC — F1 Results
F2 Unload
F8 Log
F9 Pre Run
F10 Post Run

Samples

F2 Demog — F1 Sample
F2 Edit
F3 Urine
F10 Next

F3 Options — Sample Replicates
Serum Index
Off-line Dilution Factor
Test Replicates
Manual ORDAC
OK
Cancel

F4 Batch — Clear
Smp ID Only — Rack
Rack(s) — End
No. of Samples in Batch
OK — F3 Options — Sample Replicates
Cancel — F5 Control — Off-line Dilution Factor
F6 Remove — Manual ORDAC
F8 Rgt Cart — Test Replicates

F5 Control — Select Control — F9 Cancel — OK
Cancel — F10 Save — Cancel
Select Control
Cancel

F6 Rerun — Sample IDs (From/To) — F3 Options
Rack(s)/Pos(s) — F7 Rgt Cart
Select — F8 Remove
All — F9 Cancel
Batch — F10 Save
Cancel

F7 Clear — Sample IDs
Rack(s)/Position(s)
Date/Time (From/To)
OK — Sample IDs
Cancel — Rack(s)/Position(s)

F8 Racks — F1 Clear — Date/Time (From/To)
F9 Cancel — OK
F10 Program — Cancel

F9 List — Sample ID(s) — Sample Required
Rack(s)/Position(s) — In Progress
Date/Time (From/To) — Complete
Status — Incomplete
Print — Rerun
Display — Manual Assign
F10 Next — Cancel

Figure A.2 DxC 600i Program Structure (2 of 8)

Results
- Sample ID(s)
- Rack(s)/Pos(s)
- Patient ID
- Patient Name
  - (Last Name/First Name/MI)
- Multi-Sample Report
- Run Date/Time (From/To)
- F1 Results
- F7 Sum
- F8 Host
- F10 Print

- F1 Disk
- F2 Recall
- F3 ABS
- F4 Edit
- F6 Host
- F7 Print
- F8 Prev
- F9 Next
- F10 Done

- Plot
- Table
- Both
- Print
- Next
- Prev
- Done

Rgts/Cal — DxC

MC Rgts
- F1 Load
- F2 Params
- F3 No Load
- F4 Cal
- F5 List
- F6 Options

- F1 Clear
- F10 Exit (CC Rgts)/F10 Done (MC Rgts)

- Load calibrator from External Media
- Calibrator acceptance limits
- Modify set points
- Slope/Offset adjustment
- Within lot calibration
- Enzyme Validator
- Calibration override
- Bypass chemistry
- Extend calibration time
- Print cal report
- Archive Calibration

- Current Cal Report
- Previous Cal Report(s)
- Cancel

F7 Assign
- Avail Racks
- Next
- Prev
- Close

F8 No Cal

F9 Sort (CC List)
- Position
- Chemistry
- Tests Left
- Days Left
- Cal Time Left
- OK

F10 Print

Access (DxC 600i)
- F3 OK
- F9 Sort
- F10 Print

- Position
- Chemistry
- Tests Left
- Days Open
- Pack Expires
- Cal Expires
- OK

Supplies (DxC 600i)

Access — Substrate
- F3 OK
- F10 Print

CTA — AV Supply
- F1 Load
- F10 Print

AV Waste
- F2 Empty
- F10 Print

CTA Auto-gloss
- F1 Load
- F10 Print

Figure A.3 DxC 600i Program Structure (3 of 8)

QC ── F1 Review ─── F2 Control ID
                    F3 Delete
                    F9 Print
                    F10 Done

      F2 Define ─── F1 Chems
                    F2 Control ID
                    F3 Delete
                    F10 Done
                    Control Name
                    Control Lot #
                    Serum Index
      F3 Delete   Sample Type

      F4 List ───── F1 All Chem
                    F2 All File
                    F10 Done

      F5 Log ────── QC Date Range ─── F1 Chem
                    OK   F2 Rgt Lot
                    Cancel   F3 Delete
                                    F4 Action
                                    F9 Print
                                    F10 Done

      F6 Summary ── QC Date Range ─── F7 QAP Copy
                    OK   F8 InterLab
                    Cancel   F9 Print
                                    F10 Done

      F7 Chart ──── QC Date Range ─── Serum Index ─── F1 Chems
                    OK   QC Chemistries   F2 Filenum
                    Cancel   OK   F7 Prev
                                    Cancel   F8 Next
                                                     F9 Print
                                                     F10 Done

      F8 Archive ── Option 1 Archive to External Media
                    Option 2 Review External Media
      F10 Print   Cancel

Setup ── 1. Auto Serum ─── F1 Restore
            Index/ORDAC   F10 Done

         2. Chem Config/ ── F1 Chems
            Sample Type   F2 UDR
                            F3 Define
                            F4 Clear
                            F5 Insert
                            F6 Delete
                            F10 Done

         3. Date/Time ───── F1 Date
                            F2 Time
                            F3 Restore
                            F10 Done

         4. Demographics ── F1 Restore
            Setup   F10 Done

Figure A.4 DxC 600i Program Structure (4 of 8)

Setup, Continued

5. Immediate Report
- STAT Host/Printer
- ALL Host/Printer
- Access By Test
- Immediate Report of DxC
- Immediate Report of Serum Index
- Immediate Report of Access 2 By Test
- Immediate Report of Critical Rerun
- OK
- Cancel

6. Panels
- F1 Define
- F2 Delete
- F3 Default
- F10 Done

7. Replicates
- F1 Restore
- F10 Done

8. Report Setup
- Report Header
- Report Format (Patient)
  - Continuous Lab Report
  - Chart Report Format A
  - Lab Report
  - Lab Report with raw data
- Control
  - Control Chart Report
  - Control Chart Report with raw data
- Print Options
  - Disable Reports
  - Print Patient and Control Reports
  - Print Only Patient Report
  - Print Only Control Report
- Inter-Laboratory
  - ID-Number
  - Attention Person
- F1 Restore
- F3 Cal
  - Print Calibration Reports
  - Archive Calibration Warnings
- F10 Done

9. Reportable Ranges
- Define/Edit
  - F1 Restore
  - F8 Prev
  - F9 Next
  - F10 Done
  - Suppress Results
- Cancel

10. Reference/Critical Ranges
- Define/Edit
  - F1 Delete
  - F2 Clear All
  - F3 Default
  - F8 Previous
  - F9 Next
  - F10 Done
  - Sample Type
  - Sex M/F
- Clear Ranges
- Summary by Sample Type
  - Serum
  - CSF
  - Plasma
  - Random Urine
  - Timed Urine
  - Blood
  - Amniotic
  - Urethral
  - Saliva
  - Cervical
  - Synovial
  - Other
- Ranges Summary
- Zone Summary
- Cancel

11. Sample Comments
- F10 Done

12. Special Calculations
- F1 View
- F2 Define
- F3 Delete
- F10 Done
- Enable
- Calibration No.

13. Version Information
- F1 License
  - OK
- F10 Done

Figure A.5 DxC 600i Program Structure (5 of 8)

Setup, continued

14. Units/Precision — F1 Restore / F10 Done — F1 Restore / F3 UDR+ / F9 Cancel / F10 Done

15. User-Defined Chemistries — F1 Define / F2 Delete / F4 Config / F9 Print / F10 Done — Default Sample Type / F1 Chems / F2 UDR / F3 Define / F4 Clear / F5 Insert / F6 Delete / F10 Done

16. Barcode — Code 39 Parameters / Codabar Parameters / Interleaved 2 of 5 Parameters / Code 128 / Barcode Mode / Rack/Position Mode / Maximum Sample Program Age (Days/Hours) / F10 Done

17. Reserved Racks/ Obstruction Detection — 1-Blade Thick CTS/1-Blade Narrow CTS (based on CTS type installed) / Reserved Racks / 75mm Racks / 100mm Racks / Reserved Racks for HbA1c / Reserved Racks for IBCT / Restore Default / OK / Cancel

18. Disable Service Monitor

20. Host Communication — F1 Restore / F2 Diag / F3 Messages / F10 Done / Transport (ASTM only) / IP Address (ASTM only) / Port Number (ASTM only) / Data Bits / Stop Bits / ASTM Header (ASTM only) / Device ID / Flow Control / Data Transmission Mode / Interface / Parity / Baud Rate / Query Timeout / Query Terminator (ASTM only) / Requery / 3 Digit Rack Number / Host does not except either > or < symbols — F1 Restore / F2 HostCom / F10 Done

21. Language/Keyboard — Language / Keyboard / OK / Cancel

22. Printer Setup — Restore Default / Paper Size / Printer Connection / OK / Cancel

23. Service Setup — OK / Cancel

24. System Configuration — OK / Cancel

25. Version Upgrade — Insert CD / OK / Cancel

Figure A.6 DxC 600i Program Structure (6 of 8)

Setup, continued

26. Status Alarm/Annunciator
- Alarm/No Alarm
- Test
- OK
- Cancel

27. Chem Update
- System
  - DxC
    - Media
      - OK
      - Cancel
  - AAF
  - OK
  - Cancel

28. Password Setup
- OK
- Cancel

29. Auto Generation of Control
- Control Samples
- Multiple Cartridges
- F10 Done

30. Access 2 Priority/Reflex Test Setup (DxC 600i only)
- Access Priority
- Reflex
- F10 Done

Utils

1. Prime
- F1 Prime
  - All CC Subsystems
  - All Hydropneumatic Subsystems
  - All MC Subsystems
  - Prime DxC
  - Prime CTA
  - Prime CTA Auto-Gloss
  - CTS Auto-Gloss
  - CTS Blade Wash
  - Number of Primes to Repeat
- F2 CC
  - Reagent Delivery Subsystem
  - Sample Delivery Subsystem
  - Cuvette Wash
  - Number of Primes to Repeat
- F3 Hydro
  - Fill Canisters and reservoirs
  - CC Drain waste sump
  - CC Drain waste B sump
  - Drain gravity drain sump
- F4 MC
  - Cup Selection:
    - GLUCm
  - Prime Cup(s) with:
    - Reagent
    - DI Water
- Start Prime
  - Sample Delivery Subsystem
  - ISE All
  - Electrolyte Buffer
  - Electrolyte Reference
  - EIC/SDC Wash
  - ISE CO2 Alkaline Buffer
  - Reference and Acid
  - Number of Primes to Repeat
- Stop Prime
- F10 Exit

2. Maintenance
1. CTS Blade Replacement
2. Cartridge Chemistry Probe Cleaning
3. ISE Service
- Electrode Maint/Drain
- Sample Dilution Cup (SDC) Maintenance
4. Cup Maintenance
- Prime20
- Prime5
- Drain
- Rinse
- Cancel
- Glucose
5. Hydropneumatic Maintenance
6. Wash All Cuvettes
7. Syringe Maintenance — Syringe or Syringe Plunger Replacement
8. CUPs Lamp/Sensor Calibration
9. CC Reagent Wash All Cuvettes
10. Clean Flow Cell, Cups and CC Probes/Mixers
- Glucose
- CC Probes/Mixers
- CC Cuvettes
- Start
- Close
F1 Action
- Available Racks
- Rack Number
- ISE/MC Rack
- CC Rack
F2 Log
- Scheduled Maintenance Log
- Initial/Date
- Print
- Approve
F10 Exit
- Done

Figure A.7 DxC 600i Program Structure (7 of 8)

Utils,
continued

3. Event Log

Display
Copy
Time
Clear
Print
Done
1. Chemistry Errors
2. Motion Errors
3. Status Monitor Errors
4. Other Instrument Errors
5. Instrument Events
6. LIS Comm. Errors
7. Other Console Errors
8. Input Device Events
9. Other Console Events
10. Sample Processing Events
11. Deleted Results
12. Access 2 Communications
13. CTA Events

4. Diagnostics

Functional Area

Sample System
Reagent System
Reaction System
Hydropneumatic System
ISE Module System
Modular Cup Chemistry Module
Valve and Fluidics

Sub-functional Area — Based on Functional Area selected

Test No. — Based on Sub-Functional Area selected
F10 Exit

5. Alignment

Functional Area

Align All
Reaction Carousel
Cuvette Wash Station
Reagent Carousel
Sample Carousel
Sample Rack Handling
Sample Rack Barcode Reader
Cap Piercer
CC Sample Crane or Probe
CC Sample Crane Smart Module (B2)
MC Sample Crane or Probe
MC Sample Crane Smart Module (52)
Reagent A Crane or Probe
Reagent A Crane Smart Module (C2)
Reagent B Crane or Probe
Reagent B Crane Smart Module (C3)
CC Sample Mixer Crane or Body
CC Sample Mixer Smart Module (B3)
Reagent Mixer Crane or Body
Reagent Mixer Smart Module (C1)
CTA Assemblies

Procedure No. — Based on Functional Area selected
F10 Exit

Figure A.8 DxC 600i Program Structure (8 of 8)

Utils,
continued

6. PVT — Functional Area — Performance Verification Tests
CTA Performance Verification Tests

Sub-Functional Area — Based on Functional Area Selected

7. Modem

Test No. — Based on Sub-Functional Area Selected
F10 Exit

8. Backup/Restore — System Parameters
Alignment Data Files
Backup
Restore
Cancel

9. Metering — F1 Copy
F2 Replen
F3 Report
F4 Off
F5 Modem
F9 Cancel
F10 Done
Facility Name
Facility Address
Meter day-of-the-month
10. Touch Screen Calibration — Meter Period Duration

Status — 1. Summary
2. Count
3. Temp
4. Power
5. Hydro
6. SmrtMdl
7. CuvStat
8. CTS
F10 Print

Instr
Cmd

1. Home
2. Pause
3. Stop Print
4. Shutdown
5. Pause Waste B
6. Resume Waste B
7. Enable/Disable Modules
8. Unload All Racks

Help — Back
Forward
Home
Print
Install
Properties
Return to DxC SW

System Operating Conditions

The following table lists various operating conditions for the system components which are shown on the DxC 600i screen.

Table A.1 Operating Conditions

Access	CTA	DxC[a]
Standby	Standby	Standby
Running	Running	Running
Paused	Pausing	Pausing
Stopped	Stopped	Stopped
Line Down	Homing	Homing
Local	Priming	Priming
	Maintenance	Maintenance
	Diagnostics	Diagnostics
	Loading	Loading (loading racks)

a. The DxC shows the condition of MC and CC separately except when they are the same.

Independent Operating Modes

CTA – Non-operational in Mode A

Table A.2 CTA – Non-operational in Mode A

Mode A	Then

IF the CTA becomes non-operational *during* sample processing.
 	
CTA is NOT OK to Run
 	
Note 1: For Access 2 Total βhCG, diluted βhCG and all Access 2 tests that use sample volumes of less than 20 µL per test, you must use Aliquot Vessel (AV) containers manually loaded in automation racks (1900-1999).
 	
Note 2: When processing samples on Access and DxC directly, refer to the appropriate Sample Template for each system.
	• Remove samples from the DxC 600i Load Area waiting to be processed.
	• Allow samples being processed by the Access and DxC to go to completion.
	• Disable Access Priority if it is enabled (system must be in *Stopped* or *Standby* mode). At the DxC 600i Main menu, select **Setup**, **Access Priority**/**Reflex Test Setup** then uncheck the box for **Access Priority**.
	• For those samples requiring both DxC and Access tests, you can either:
	  — Run them on the Access first or
	  — Pour off an aliquot for the Access
	• At the Access, place the bar coded samples (except small sample volume tests, refer to Note 1) in the appropriate Access racks and load directly onto the Access sample wheel.
	• For those samples without bar codes, program only sample IDs manually at the Access console, place samples (except small volume tests, refer to Note 1) in appropriate Access racks and load directly onto the Access sample wheel.
	• Remember to remove the caps on the sample tubes.
	• At the Access console, select **RUN** to start processing samples.
	• Press **STOP** on the CTA.
	• To process samples at DxC, remove the DxC Load Area cover. Place the bar coded samples in the appropriate DxC racks and load directly onto the DxC Load Area.
	• For those samples without bar codes, program manually at the DxC 600i console, place in appropriate DxC racks and load directly onto the DxC Load Area.
	• Press **RUN** on DxC Load Area to start processing samples.
	• When the CTA issue is resolved and the DxC has finished processing samples.
	  — At the DxC 600i console, select **Instr Cmd** and power down the DxC system. Refer to CHAPTER 5, *Post-Test Activities* for instructions.
	  — Turn off the CTA by pressing the On/Off switch located behind the CTA module door.
	  — Power up the DxC system.
	  — When the DxC 600i Main menu appears, turn on the CTA unit by pressing the On/Off switch located behind the CTA module door.
	• Enable Access Priority (optional) (system must be in *Stopped* or *Standby* mode). At the DxC 600i Main menu, select **Setup**, **Access Priority**/**Reflex Test Setup** then check the box for **Access Priority**.
	• Now begin processing samples through the CTA.

Table A.3 CTA – Non-operational in Mode B

Mode B	Then

IF the CTA becomes non-operational *before* samples are processed,
 	
CTA is NOT OK to Run
 	
Note 1: When processing samples on Access and DxC directly, refer to the appropriate Sample Template for each system.
 	
Note 2: For Access 2 Total βhCG, diluted βhCG and all Access 2 tests that use sample volumes of less than 20 μL per test, you must use Aliquot Vessel (AV) containers manually loaded in automation racks (1900 -1999).
	• Disable Access Priority if it is enabled (system must be in *Stopped* or *Standby* mode). At the DxC 600i menu bar, select **Setup**, **Access Priority/Reflex Test Setup** then uncheck the box for **Access Priority**.
	• For those samples requiring both DxC and Access tests, you can either:
	  — Run them on the Access first or
	  — Pour off an aliquot for the Access
	• At the Access, place the bar coded samples (except small sample volume tests, refer to Note 2) in the appropriate Access racks and load directly onto the Access sample wheel.
	• For those samples without bar codes, program sample IDs manually at the Access console. Place samples (except small sample volume tests, refer to Note 2) in appropriate Access racks and load directly onto the Access sample wheel.
	• Remember to remove the caps from the sample tubes.
	• At the Access console, select **RUN** to start processing samples.
	• Press **STOP** on the CTA.
	• To process samples at the DxC, remove the DxC Load Area cover. Place the bar coded samples in the appropriate DxC racks and load directly onto the DxC Load Area.
	• For those samples without bar codes, program manually at the DxC 600i console, place in appropriate DxC racks and load directly onto the DxC Load Area.
	• Press **RUN** on DxC Load Area to start processing samples.
	• When the CTA issue is resolved and the DxC has finished processing samples.
	  — At the DxC 600i console, select **Instr Cmd** and power down the DxC system. Refer to CHAPTER 5, *Post-Test Activities* for instructions.
	  — Turn off the CTA by pressing the On/Off switch located behind the CTA module door.
	  — Power up the DxC system.
	  — When the DxC 600i Main menu appears, turn on the CTA unit by pressing the On/Off switch located behind the CTA module door.
	• Enable Access Priority (optional) (system must be in *Stopped* or *Standby* mode). At the DxC 600i Main menu, select **Setup**, **Access Priority/Reflex Test Setup** then check the box for **Access Priority**.
	• Now begin processing samples through the CTA.

Access – Non-operational

Table A.4 Access – Non-operational in Mode A

Mode A	Then

IF Access becomes non-operational *during* sample processing.
 	
Access is NOT OK to Run
 	
Note: When processing samples on Access and DxC directly, refer to the appropriate Sample Template for each system.
	• **DO NOT** place additional samples at DxC 600i Load Area,
	• Allow samples processing at Access and DxC to go to completion if possible.
	• At the DxC 600i console, unload all racks on the CTA Sample Wheel under **Instr Cmd**.
	  — Select **Pause** from **Instr Cmd**.
	  — Select **Unload All Racks**.
	  — Select **CTA**.
	  — Select **OK**.
	• Press **STOP** on the CTA.
	• Home the CTA at the DxC 600i console under **Instr Cmd**. This will discard any AV's at the CTA AV Queue area.
	• Disable Access Priority if it was enabled (system must be in *Stopped* or *Standby* mode). At the DxC 600i Main menu, select **Setup**, **Access Priority/ Reflex Test Setup** then uncheck the box for **Access Priority**.
	• For those samples requiring both DxC and Access tests, you can either:
	  — Run them on an alternative analyzer before running on the DxC or
	  — Pour off an aliquot to be run when Access is operational.
	• If possible, unload all automation racks (1900-1999) from Access sample wheel.
	• Load the samples for DxC tests through the DxC 600i Load Area.
	• Press **RUN** at the DxC 600i Load Area to start processing samples.
	• When the Access issue is resolved and Access is in *Ready* mode, enable Access Priority (optional) (system must be in *Stopped* or *Standby* mode). At the DxC 600i Main menu, select **Setup**, **Access Priority/Reflex Test Setup**, then check the box for **Access Priority**.
	• if required, load automation rack (1900-1999) onto Access sample wheel.
	• Now begin processing samples through the CTA.

Table A.5 Access – Non-operational in Mode B

Mode B	Then

IF Access becomes non-operational *before* sample are processed.
 	
Access is NOT OK to Run
 	
Note: When processing samples on Access and DxC directly, refer to the appropriate Sample Template for each system.
	• If possible, unload all automation racks (1900-1999) from Access sample wheel.
	• Make sure that Access displays *Stopped* at DxC 600i console and *Not Ready* at Access console. (Press **STOP** on Access touch screen).
	• Disable Access Priority if it is enabled (system must be in *Stopped* or *Standby* mode). At the DxC 600i Main menu, select **Setup**, **Access Priority/Reflex Test Setup** then uncheck the box for **Access Priority**.
	• For those samples requiring both DxC and Access tests, you can either:
	  — Run them on an alternative analyzer before running on the DxC or
	  — Pour off an aliquot to be run when Access is operational
	• Load the samples for DxC tests through the DxC 600i Load Area.
	• Press **RUN** at the DxC 600i Load Area to start processing samples.
	• When the Access issue is resolved and Access is in the *Ready* mode, enable Access Priority (optional) (system must be in *Stopped* or *Standby* mode). At the DxC 600i Main menu, select **Setup**, **Access Priority/Reflex Test Setup** then check the box for **Access Priority**.
	• If required, load automation racks (1900-1999) on to Access sample wheel.
	• Now begin processing samples through the CTA.

DxC – Non-operational (Chemistry Analytical Unit and Console)

Table A.6 DxC (Chemistry Analytical Unit and Console) – Non-operational in Mode A

Mode A	Then

IF DxC becomes non-operational *during* sample processing.
 	
DxC is NOT OK to run
 	
Note 1: When processing samples on Access directly, refer to the appropriate Sample Template.
 	
Note 2: DxC console is non-operational.
 	
Note 3: For Access 2 Total βhCG, diluted βhCG and all Access 2 tests that use sample volumes of less than 20 µL per test, you must use Aliquot Vessel (AV) containers manually loaded in automation racks (1900 -1999).
	• There is NO further download or upload of sample programming until the DxC 600i console is operational.
	• **DO NOT** place additional samples to be processed at the DxC 600i Load Area.
	• Allow samples processing at Access and DxC to go to completion if possible.
	• At the DxC 600i, unload any sample racks left on the CTA Sample wheel under **Instr Cmd**.
	  — Select **Pause** from **Instr Cmd**.
	  — Select **Unload All Racks**.
	  — Select **CTA**.
	  — Select **OK**.
	• Pull "Load List" from LIS for "Incomplete Samples".
	• For those samples requiring both DxC and Access tests, you can either:
	  — Run them on the Access before running on an alternative analyzer or
	  — Pour off an aliquot to be run simultaneously
	• Manually program samples at Access console, place samples (except small sample volume tests, refer to Note 3) in appropriate Access rack and load directly onto the Access sample wheel. Remember to remove the caps from the sample tubes.
	• Enable Access Report (Access must be in *Ready* mode). At the Access **Main** menu, select **Configure**, **System Setup**, **Report Setup**, then check the box for **Continuous Sample Report**.
	• At the Access console, select **RUN** to start processing samples.
	• When the DxC issue is resolved:
	  — Turn off the CTA by pressing the On/Off switch located behind the CTA module door.
	  — Reboot the DxC system. Refer to CHAPTER 5, *Post-Test Activities* for instructions.
	  — When the DxC 600i Main menu appears, turn on the CTA unit by pressing the On/Off switch located behind the CTA module door.
	• Send Access results for samples processed while DxC is not operational to the LIS. At the Access **Main** menu, select **Test Results**, then select **Send to LIS**, **Resend LIS Fail** then **OK**.
	• Disable Access Report (Access must be in *Ready* mode). At the Access **Main** menu, select **Configure**, **System Setup**, **Report Setup**, then uncheck the box for **Continuous Sample Report**.
	• Now begin processing samples through the CTA.

Table A.7 DxC (Chemistry Analytical Unit and Console) – Non-operational in Mode B

Mode B	Then

IF DxC becomes non-operational *before* processing samples.
 	
DxC is NOT OK to run
 	
Note 1: DxC console is non-operational.
 	
Note 2: For Access 2 Total βhCG, diluted βhCG and all Access 2 tests that use sample volumes of less than 20 μL per test, you must use Aliquot Vessel (AV) containers manually loaded in automation racks (1900-1999).
 	
Note 3: When processing samples on Access directly, refer to the appropriate Sample Template.
	• There is NO further download or upload of sample programming until the DxC 600i console is operational.
	• For those samples requiring both DxC and Access tests, you can either:
	  — Run them on the Access before running on an alternative analyzer or
	  — Pour off an aliquot to be run simultaneously
	• Enable Access Report (Access must be in *Ready* mode). At the Access **Main** menu, select **Configure**, **System Setup**, **Report Setup**, then check the box for **Continuous Sample Report**.
	• Manually program samples at Access console, place samples (except small sample volume tests, refer to Note 2) in appropriate Access rack and load directly onto the Access sample wheel. Remember to remove the caps from the tubes.
	• At the Access console, select **RUN** to start processing samples.
	• When the DxC issue is resolved:
	  — Turn off the CTA by pressing the On/Off switch located behind the CTA module door.
	  — Reboot the DxC system. Refer to CHAPTER 5, *Post-Test Activities* for instructions.
	  — When the DxC 600i Main menu appears, turn on the CTA unit by pressing the On/Off switch located behind the CTA module door.
	• Send Access results for samples processed while DxC is not operational to the LIS. At the Access **Main** menu, select **Test Results**, **Send to LIS**, **Resend LIS Fail** then **OK**.
	• Disable Access Report (Access must be in *Ready* mode). At the Access **Main** menu, select **Configure**, **System Setup**, **Report Setup**, then uncheck the box for **Continuous Sample Report**.
	• Now begin processing samples through the CTA.

DxC – Non-operational (Chemistry Analytical Unit Only)

Table A.8 DxC (Chemistry Analytical Unit Only) – Non-operational in Mode A

Mode A	Then

IF DxC becomes non-operational *during* sample processing.
 	
DxC is NOT OK to run
 	
Note 1: When processing samples on Access directly, refer to the appropriate Sample Template.
 	
Note 2: For Access 2 Total βhCG, diluted βhCG and all Access 2 tests that use sample volumes of less than 20 μL per test, you must use Aliquot Vessel (AV) containers manually loaded in automation racks (1900 -1999).
	• **DO NOT** place additional samples to be processed at the DxC 600i Load Area.
	• Allow samples processing at Access and DxC to go to completion if possible.
	• At the DxC 600i, unload any sample racks left on the CTA Sample wheel under **Instr Cmd**.
	  — Select **Pause** from **Instr Cmd**.
	  — Select **Unload All Racks**.
	  — Select **CTA**.
	  — Select **OK**.
	• Pull "Load List" from LIS for "Incomplete Samples".
	• For those samples requiring both DxC and Access tests, you can either:
	  — Run them on the Access before running on an alternative analyzer or
	  — Pour off an aliquot to be run simultaneously
	• Place samples (except small sample volume tests, refer to Note 2) in appropriate Access rack and load directly onto the Access sample wheel. Remember to remove the caps from the sample tubes.
	• Assign Sample ID to a rack at the Access console for samples without bar codes.
	• At the Access console, select **RUN** to start processing samples.
	• When the DxC issue is resolved:
	  — Turn off the CTA by pressing the On/Off switch located behind the CTA module door.
	  — Reboot the DxC system. Refer to CHAPTER 5, *Post-Test Activities* for instructions.
	  — When the DxC 600i Main menu appears, turn on the CTA unit by pressing the On/Off switch located behind the CTA module door.
	• Now begin processing samples through the CTA.

Table A.9 DxC (Chemistry Analytical Unit Only) – Non-operational in Mode B

Mode B	Then

IF DxC becomes non-operational *before* processing samples.
 	
DxC is NOT OK to run
 	
Note 1: When processing samples on Access directly, refer to the appropriate Sample Template.
 	
Note 2: For Access 2 Total βhCG, diluted βhCG and all Access 2 tests that use sample volumes of less than 20 µL per test, you must use Aliquot Vessel (AV) containers manually loaded in automation racks (1900-1999).
	• For those samples requiring both DxC and Access tests, you can either:
	  — Run them on the Access before running on an alternative analyzer or
	  — Pour off an aliquot to be run simultaneously
	• Place samples (except small sample volume tests, refer to Note 2) in appropriate Access rack and load directly onto the Access sample wheel. Remember to remove the caps from the sample tubes.
	• Assign Sample ID to a rack at the Access console for samples without bar codes.
	• At the Access console, select **RUN** to start processing samples.
	• When the DxC issue is resolved:
	  — Turn off the CTA by pressing the On/Off switch located behind the CTA module door.
	  — Reboot the DxC system. Refer to CHAPTER 5, *Post-Test Activities* for instructions.
	  — When the DxC 600i Main menu appears, turn on the CTA unit by pressing the On/Off switch located behind the CTA module door.
	• Now begin processing samples through the CTA.

Common Event Codes

Common Event Codes

Introduction

Appendix B contains event codes that may occur during routine operation. For additional event codes, refer to the UniCel DxC Synchron Clinical Systems *Reference Manual*.

Online Help is available for troubleshooting common error messages. On the DxC console, error messages will contain links to the Online manuals. Selecting the Help icon next to the event number displays specific troubleshooting information about the error. A grey Help icon indicates that the *Instructions For Use* manual is not loaded. For error messages that do not have the Help icon next to the event number, refer to the UniCel DxC Synchron Clinical Systems *Reference Manual* for troubleshooting information.

Online Manual Links

The system may display an "Error -- The page cannot be displayed" pop-up message when you select the **Event ID** button to link to the online manual from an instrument pop-up error message, or when you select a link in the online manual. To continue, select **OK** from the Error pop-up message and then use the search feature of the online manual to find the topic you were seeking.

NOTE To view the instrument pop-up error Event ID number, use the ⟮Alt⟯ + ⟮F1⟯ key combination to return to the instrument screen.

CTA Event Codes

Table B.1 CTA Event Codes

Event Number	Event Class	Message	Event or Log Description	Cause and/or Corrective Action
0x07000501	13	CTA: Motion Error Dev: Err:	**CTA:** Hardware motion error. **Message ID:** 0x07000501 **Device:** **Motion Error Code:** *id*	**(IM) Hardware motion error.** 1. Home the CTA. Refer to Home the DxC Analyzer and CTA Unit. 2. Move obstruction away from device if applicable. 3. Reboot the CTA Unit. 4. If problem continues, contact your Beckman Coulter representative.
0x07000505	13	CTA: Probe Section is Down	**CTA:** Probe hardware is down. **Message ID:** 0x07000505	**(IM) Probe section is down.** 1. Home the CTA. Refer to Home the DxC Analyzer and CTA Unit. 2. Reboot the CTA Unit. 3. If problem continues, contact your Beckman Coulter representative.
0x07000506	13	CTA: AV Shuttle Section is Down	**CTA:** AV shuttle section hardware is down. **Message ID:** 0x07000506	**(IM) AV shuttle section is down.** 1. Home the CTA. Refer to Home the DxC Analyzer and CTA Unit. 2. Reboot the CTA Unit. 3. If problem continues, contact your Beckman Coulter representative.
0x07000507	13	CTA: Rack Section is Down	**CTA:** Rack section hardware is down. **Message ID:** 0x07000507	**(IM) Rack section is down.** Troubleshoot the Rack area, Sample Shuttle and Latch in Diagnostics/Sample System/CTA. 1. Home the CTA. Refer to Home the DxC Analyzer and CTA Unit. 2. Reboot the CTA Unit. 3. If problem continues, contact your Beckman Coulter representative.

Table B.1 CTA Event Codes *(Continued)*

Event Number	Event Class	Message	Event or Log Description	Cause and/or Corrective Action
0x07000509	13		**CTA:** AV is stuck. **Message ID:** 0x07000509	**(E) An AV is stuck in the Pick and Place, the AV stage or the Access Wheel.** **1.** Check for stuck AV in Pick and Place, AV Shuttle or Access Wheel. **2.** Remove stuck AV. **3.** Home the CTA. Refer to Home the DxC Analyzer and CTA Unit. **4.** If problem continues, contact your Beckman Coulter representative.
0x0700050a	13	CTA: AV hardware is stuck trying to eject	**CTA:** AV hardware stuck trying to eject. **Message ID:** 0x0700050A	**(IM) An AV is stuck in the Pick and Place at eject.** CTA will stop the run. **1.** Lift CTA canopy. **2.** Remove AV from Pick and Place Head. **3.** Home the CTA. Refer to Home the DxC Analyzer and CTA Unit. **4.** Reboot the CTA Unit. **5.** If problem continues, contact your Beckman Coulter representative.
0x0700050c	13	CTA: AV Pick and Place Sensor failure.	**CTA:** AV Pick and Place Sensor failure. **Message ID:** 0x0700050C	**(IM) AV Pick and Place Sensor failure.** **1.** Home the CTA. Refer to Home the DxC Analyzer and CTA Unit. **2.** Reboot the CTA Unit. **3.** If problem continues, contact your Beckman Coulter representative.

Table B.1 CTA Event Codes *(Continued)*

Event Number	Event Class	Message	Event or Log Description	Cause and/or Corrective Action
0x0700050d	13	CTA: Failed to transfer AV at AV Storage Rack Position. Position: *number* Row: *number* Column: *number* Remove the AV manually prior to loading AV's.	**CTA:** Failed to transfer AV at AV Storage Rack Position. **Message ID:** 0x0700050D **Position:** *number* **Row:** *number* **Column:** *number* Remove the AV manually prior to loading AV's.	**(IM) Failed to transfer AV at AV Storage Rack Position.** 1. Remove stuck AV prior to loading any new AV's. 2. Check the Pick and Place device to ensure it is functioning properly. 3. If problem continues, contact your Beckman Coulter representative.
0x07000801	13	CTA: Level Sense Error Sample ID: *id* Rack ID: *number* Position: *number*	**CTA:** Sample level sense error. **Message ID:** 0x07000801 **Sample ID:** *id* **Rack ID:** *number* **Position:** *number*	**(IM) Sample level sense error. Probe failed to detect fluid when being lowered into sample for aspiration.** 1. Check for air bubbles, short sample or empty sample container. 2. Reload the sample. 3. If problem continues, contact your Beckman Coulter representative.
0x07000802	13	CTA: Level Sense Error Sample ID: *id* Rack ID: *number* Position: *number*	**CTA:** Level sense false trigger error. **Message ID:** 0x07000802 **Sample ID:** *id* **Rack ID:** *number* **Position:** *number*	**(IM) Level sense falsely triggered. Probe failed to detect fluid to air transition after being lowered into sample for aspiration.** 1. Check for air bubbles, short sample or empty sample container. 2. Reload the sample. 3. If problem continues, contact your Beckman Coulter representative.
0x07000803	13	CTA: Obstruction Detected Making Aliquot Sample ID: *id* Rack ID: *number* Position: *number*	**CTA:** Obstruction detected making aliquot. **Message ID:** 0x07000803 **Sample ID:** *id* **Rack ID:** *number* **Position:** *number*	**(IM) Obstruction detected on sample aspirate.** 1. Check specified sample for clots. 2. Remove clots and rerun. 3. Consistent failures in non-clotted samples may indicate transducer or board issues. 4. If problem continues, contact your Beckman Coulter representative.

Table B.1 CTA Event Codes *(Continued)*

Event Number	Event Class	Message	Event or Log Description	Cause and/or Corrective Action
0x07000804	13	CTA: Level Sense Error Sample ID: *id* Rack ID: *number* Position: *number*	**CTA:** Level sense failure sample 2. **Message ID:** 0x07000804 **Sample ID:** *id* **Rack ID:** *number* **Position:** *number*	**(IM) Level sense error on second sample aspirate (for volume greater than 300µL). Probe failed to detect fluid when being lowered into sample for second aspiration.** 1. Check for air bubbles, short sample or empty sample container. 2. Reload the sample. 3. If problem continues, contact your Beckman Coulter representative.
0x07000805	13	CTA: Obstruction Detected Making Aliquot Sample ID: *id* Rack ID: *number* Position: *number*	**CTA:** Obstruction detected making aliquot 2. **Message ID:** 0x07000805 **Sample ID:** *id* **Rack ID:** *number* **Position:** *number*	**(IM) Obstruction detected on second sample aspirate (for volume greater than 300µL). Obstruction detected in sample.** 1. Check specified sample for clots. 2. Remove clots and rerun. 3. Consistent failures in non-clotted samples may indicate transducer or board issues. 4. If problem continues, contact your Beckman Coulter representative.
0x07000806	13	CTA: Level Sense Error Sample ID: *id* Rack ID: *number* Position: *number*	**CTA:** Level sense failure sample dispense. **Message ID:** 0x07000806 **Sample ID:** *id* **Rack ID:** *number* **Position:** *number*	**(IM) Sample dispense level sense error. Probe failed to detect fluid to air transition after being lowered into AV and dispensing sample.** 1. Check Probe alignment. Refer to CTA Aliquot Probe Vertical Alignment. 2. If problem continues, contact your Beckman Coulter representative.

Table B.1 CTA Event Codes *(Continued)*

Event Number	Event Class	Message	Event or Log Description	Cause and/or Corrective Action
0x07000807	13	CTA: Level Sense Error Sample ID: *id* Rack ID: *number* Position: *number*	**CTA:** Level sense failure sample dispense 2. **Message ID:** 0x07000807 **Sample ID:** *id* **Rack ID:** *number* **Position:** *number*	**(IM) Level sense error on second sample dispense (for volume greater than 300µL). Probe failed to detect fluid to air transition after being lowered into AV on second sample dispense.** 1. Check Probe alignment. Refer to CTA Aliquot Probe Vertical Alignment. 2. If problem continues, contact your Beckman Coulter representative.
0x07000809	13	CTA: Unrecovered CTA Sample Probe Obstruction: DO NOT Home the CTA before manually clearing the obstruction from the probe.	**CTA:** Unrecovered CTA Sample Probe Obstruction: DO NOT Home the CTA before manually clearing the obstruction from the probe. **Message ID:** 0x07000809	**(IM) Sample probe cannot recover from an obstruction.** CTA Stops and will deliver no more sample. Make sure the obstruction is clear or damage to the obstruction detection hardware may occur. 1. Check/fix the Obstruction Detection hardware, check for probe plugs. 2. Clear the probe from the obstruction or replace probe if obstruction cannot be cleared. Refer to Flush the CTA Aliquot Probe and Replace the CTA Aliquot Probe. 3. Home the CTA. Refer to Home the DxC Analyzer and CTA Unit. 4. Reload the sample. 5. If problem continues, contact your Beckman Coulter representative.
0x07003008	13	CTA: Access offline. Access testing may be incomplete	**CTA:** Access offline: release Access samples. **Message ID:** 0x07003008	**(IM) Status message only. Access was offline too long, so CTA will unload Access samples.** CTA will transfer pending Access samples to DxC. 1. Put Access back online. 2. Reload racks. 3. Press CTA Run button.

Table B.1 CTA Event Codes *(Continued)*

Event Number	Event Class	Message	Event or Log Description	Cause and/or Corrective Action
0x07003037	13	CTA: Access will not run duplicate Sample ID X	**CTA:** Access will not run duplicate Sample ID X **Message ID:** 0x07003037	**(IM) The Access cannot run the AV because the Sample ID matches a Sample ID on the Access.** The AV will be discarded. 1. Identify the location of the sample on the Access. • If the sample is in an On Board Access rack, wait until the sample has finished processing on the Access, unload the sample, then clear the sample from the rack. • If the sample is in an Off Board Access rack, clear the sample from the rack. • If the rejected Sample ID matches an Access Control ID, delete the control definition at the Access console. 2. Reload the sample onto the DxC 600i.
0x13A7000D	13	Instrument not in proper state.	**ICMD:** System Error. Cannot HOME CTA. **File:** filename **Line:** line number	**(IM) The CTA did not transition to the Homing state after the HOME command within the allocated time period.** • Wait for the system to HOME. • Reboot if necessary. Refer to System Power Down Procedures.

Index

Related Documents

UniCel DxC Synchron Clinical Systems *Primary Tube Sample Template*
This template is used to determine if primary tube samples have at least 264 µL of sample available for testing. This volume of sample is sufficient to run most 20-test general chemistry panels.

Synchron Clinical Systems *Chemistry Information Sheets* **and Synchron Clinical Systems** *Chemistry Reference Manual*
Contain specific chemistry information for the full range of analytes available on UniCel DxC Synchron Systems.

Synchron Clinical Systems *Performance Verification Manual*
Helps you integrate the UniCel DxC System into your laboratory.

UniCel DxC Synchron Clinical Systems *Host Interface Specifications*
Contains the necessary information to interface UniCel DxC Systems to a Laboratory Information System (LIS).

UniCel DxC Synchron Clinical Systems *Reference Manual*
Contains detailed operating instructions and supplemental maintenance and troubleshooting guidelines for UniCel DxC Systems. It also contains information about the UniCel DxC Systems, such as theory of operation, system specifications and safety information.

UniCel DxC Synchron Clinical Systems *Instructions For Use* **Manual**
Contains basic operating instructions, maintenance guidelines and troubleshooting information for UniCel DxC Systems.

UniCel DxC 600i Synchron Access Clinical System *CTA Primary Tube Sample Template*
This template is used to determine if primary tube samples have at least 1000 µL of sample available for testing. This volume of sample is sufficient to run most general chemistry and immunoassay panels.

UniCel DxC 600i Synchron Access Clinical System *In-Lab Training Manual*
Used to train laboratory personnel about the CTA component and DxC 600i routine operations.

UniCel DxC 600 and DxC 800 Synchron Clinical Systems *In-Lab Training Manual*
Used to train laboratory personnel on DxC 600 and DxC 800 routine operations.

Access 2 Immunoassay System *Operator's Guide*
Provides the step-by-step information needed for everyday operation of the Access 2 module.

Access 2 Immunoassay System *Instructions For Use* **Manual**
Contains short instructions for everyday use and routine maintenance. It also contains information about the Access 2 module, such as theory of operation, system specifications, safety labeling, and troubleshooting.

Access 2 Immunoassay System *Reference Manual*
Provides background, theory, troubleshooting and advanced maintenance information for the Access 2 module.

Access 2 *Installation Implementation Guide*
Helps you integrate the Access 2 module into your laboratory.

Access *Assay Summary Tables*
Contains frequently referenced information for assays run on the Access systems.