

In-Lab Training Manual

UniCel DxC Synchron Clinical Systems

For *In Vitro* Diagnostic Use

This manual is intended for
UniCel DxC 600
UniCel DxC 800

CE

Rev. A (June 2014)



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UniCel DxC 600/800 Synchron Clinical Systems

WARNINGS AND PRECAUTIONS

Read all product manuals and consult with Beckman Coulter-trained personnel before attempting to operate the instrument.

Beckman Coulter, Inc. urges its customers and employees to comply with all national health and safety standards such as the use of barrier protection. This may include, but is not limited to, protective eyewear, gloves, suitable laboratory attire when operating or maintaining this or any other automated laboratory equipment.

INTENTION FOR USE

This document is not intended to replace the information in your Instrument Instructions For Use Manual (IFU). Information in the Instructions For Use Manual supersedes information in any other manual.

REVISION STATUS

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TRADEMARKS

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UniCel DxC 600/800 In-Lab Training Manual

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Chapter 1

Instrument Overview

Introduction

The UniCel DxC Synchron Clinical System is an automated, computer-driven, general 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, cerebrospinal fluid (CSF), pre-treated whole blood or whole blood (sample type is chemistry dependent). DxC 600 and DxC 800 systems are available. The DxC 800 offers additional STAT chemistries.



DxC 600



DxC 800

System Components

Both the DxC 600 and DxC 800 can be divided into the following components:

- Sample Handling System
- Modular Chemistry (MC) System
- Cartridge Chemistry (CC) System
- Hydropneumatic System
- Operation and Control Components

Sample Handling System

The DxC sample handling system is used to deliver samples to the Modular Chemistry and Cartridge Chemistry systems. The sample handling system is used to: load samples onto the system, identify sample programming by bar code ID or manual programming, position the samples for pipetting and analysis, and remove the samples when they are no longer needed by the system. An optional CTS (Closed Tube Sampling) cap piercing system allows loading and piercing of validated sample container caps.

Modular Chemistry (MC) System

The Modular Chemistry (MC) System performs rapid analysis of the more commonly ordered, high volume analytes.

Both the DxC 600 and DxC 800 systems offer rapid analysis of sodium, potassium, chloride, carbon dioxide, and total calcium. These chemistries are performed by an Ion Selective Electrode (ISE) module consisting of an Electrolyte Injection Cup (EIC), a flow cell, and electrodes specific for each analyte.

DxC 600 systems have one cup module for the analysis of glucose. DxC 800 systems have 6 individual cup modules for the analysis of glucose, BUN/UREA, creatinine, phosphorus, albumin, and total protein.

Each reaction cup module has a precision pump to deliver reagent to the reaction cup. The MC sample probe and syringe deliver sample to the cup where it is mixed with reagent by a stir bar. The detection system is chemistry dependent but will detect either light transmitted or electrical changes.

Bulk reagents for ISE chemistries and cups are stored in the reagent storage area. Alkaline Buffer reagent for the CO₂ analysis is stored in the ISE module.

Cartridge Chemistry (CC) System

The Cartridge Chemistry System provides random access analysis of analytes chosen by the user. Reagent cartridges are stored in a refrigerated compartment that houses up to 59 cartridges. The reactions occur in permanent glass cuvettes that are housed in a reaction carousel. Reagents are delivered to the reaction carousel by reagent probes using a reagent syringe. Sample is added by a CC sample probe using the CC sample syringe. Mixers are responsible for mixing the reagent and sample. Reactions are read by a photometer assembly. A cuvette wash station cleans the cuvettes for reuse.

Hydropneumatic System

The Hydropneumatic System is responsible for providing vacuum, compressed air, diluted wash solution, and deionized water for use on the DxC 600/800 instrument. Wash Concentrate, No Foam and Auto Gloss reagents are stored in this compartment.

Operation and Control Components

Basic operating functions are controlled and reviewed by utilizing the DxC monitor, mouse, touch screen, keyboard, and push-button controls. These provide the interface between the operator and the DxC.

Additional detailed information about DxC 600/800 components can be found in the following References:

- **UniCel DxC Synchron Clinical Systems Instructions For Use Manual**
- **UniCel DxC Synchron Clinical Systems Reference Manual**

Sample Processing Summary

Programming functions are performed, and then the sample rack is loaded onto the autoloader. The operator presses the green RUN button to begin the testing process. After the RUN button is pressed, the sample programming is identified. The CTS (Closed Tube Sampling) will pierce the cap (if present) in preparation for the MC and CC sample probes. The rack is then loaded onto the Sample Carousel by the sample handling system.

MC and CC processes occur simultaneously.

If CC testing is required, the CC reagent probes, using the reagent syringe, aspirate reagent from the CC reagent carousel into a cuvette. The reagent is mixed and warmed to reaction temperature, during which time reagent blank readings are taken.

The MC System begins MC testing (if required) by delivering reagent to the cup(s) and/or the ISE module. Sample is added by the MC sample probe using the sample syringe. The glucose sensor determines the glucose concentration. The BUN electrode determines the BUN concentration while a colorimetric methodology is used to determine the concentration of phosphorus, creatinine, albumin, and total protein. Ion selective electrodes in the flow cell determine the concentration of each of the electrolytes.

When the CC reagent has been warmed to the reaction temperature, the CC sample probe delivers sample to the cuvette containing the pre-warmed reagent. Measurements are taken by the photometer. The reaction readings are converted to concentration.

The sample rack is off-loaded when it is no longer needed by the system.

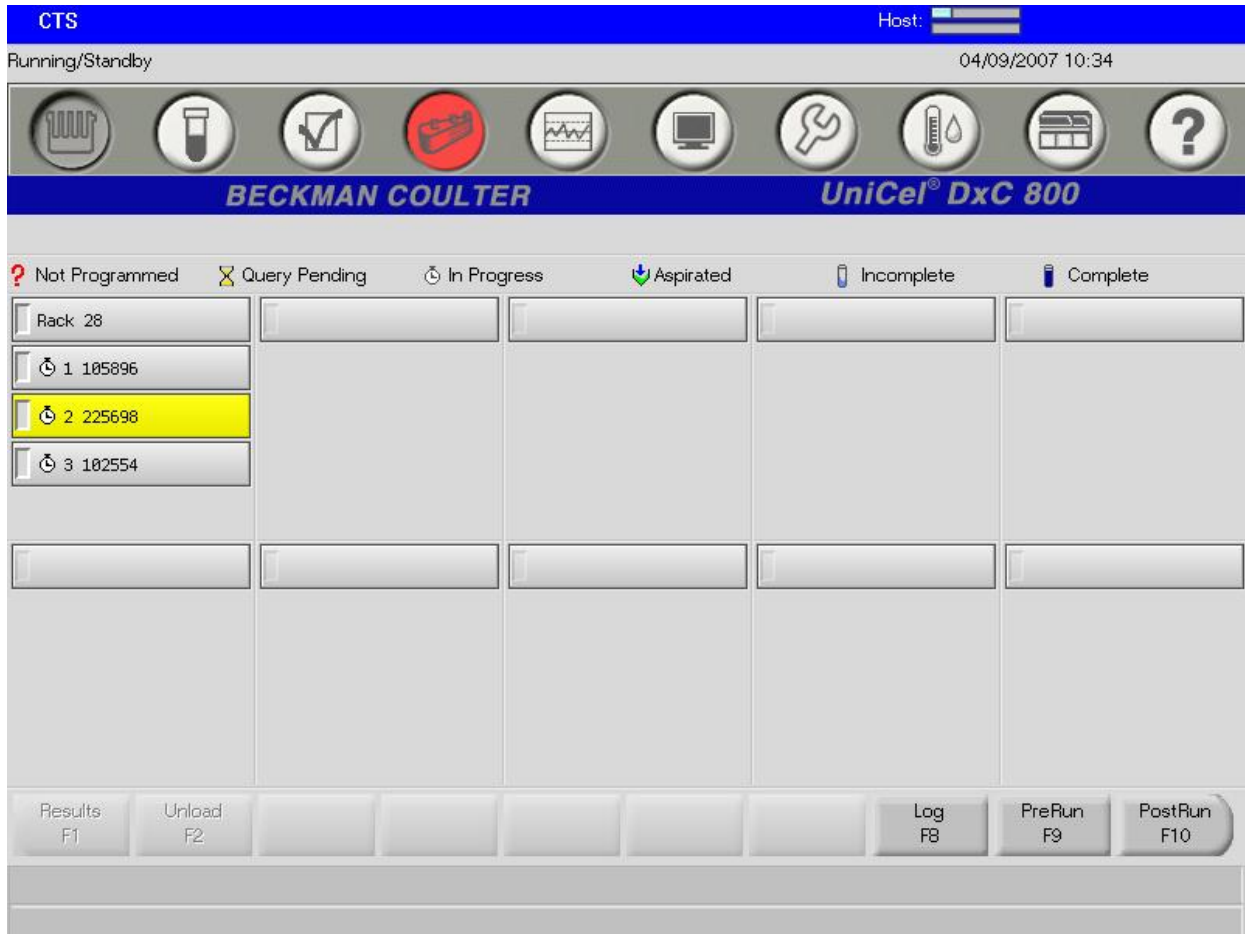
Chapter 2

Software Overview




Introduction

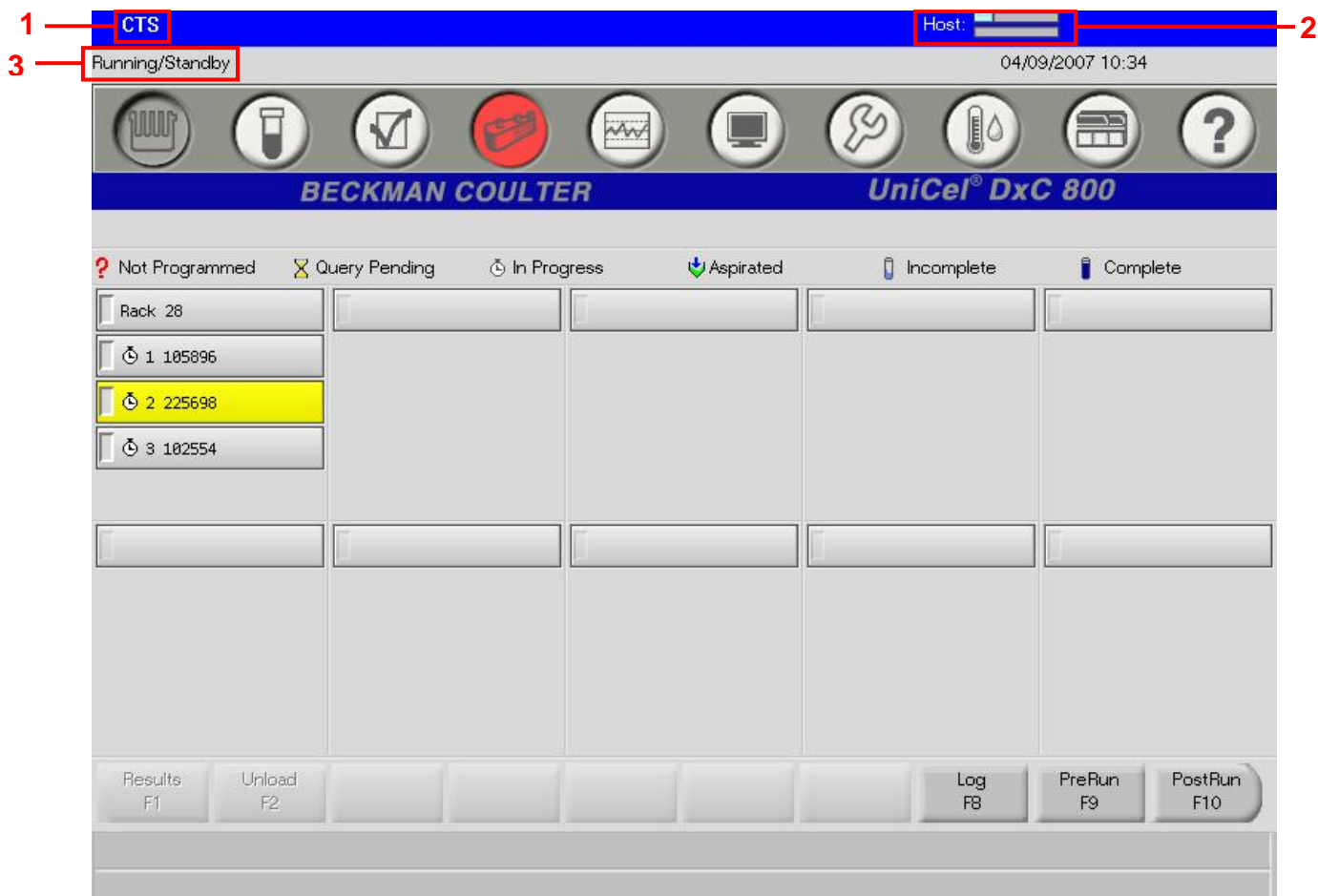
DxC 600/800 operating functions and programming functions are initiated from the main operator screen at the DxC 600/800 analyzer. The screen provides status information to determine the present state of the DxC system.

DxC 600/800 Main Menu





Navigation The DxC system provides three software navigation methods that can be used to select an item on a screen or in a window:

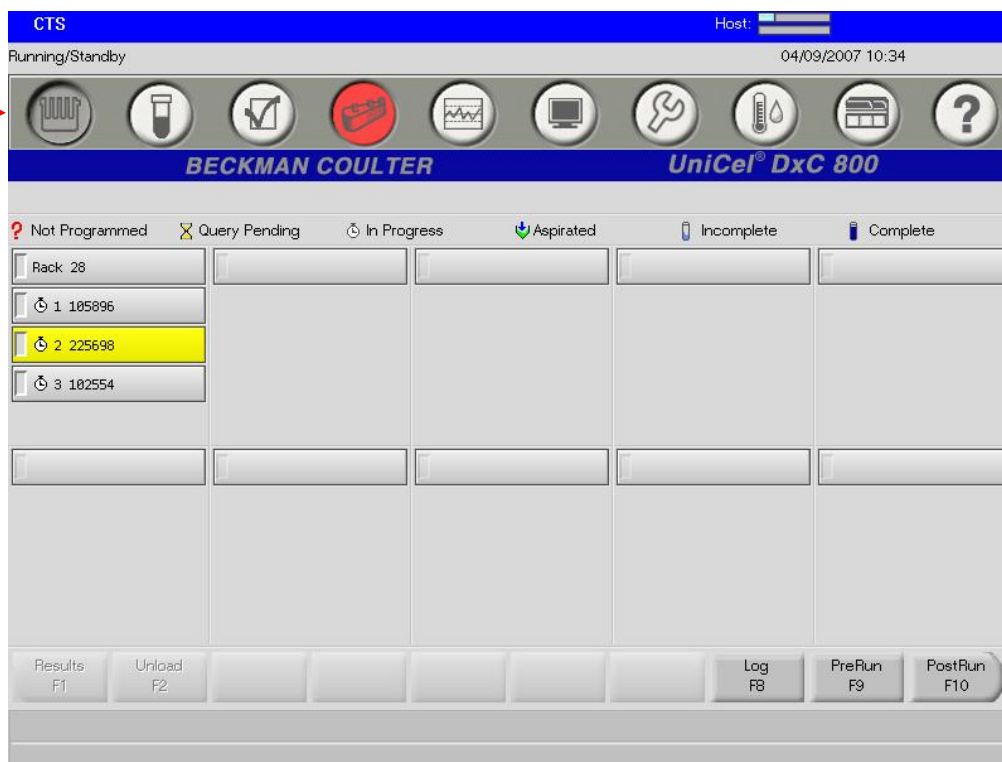
| | |
|---|--|
|  | <p>Touch a part of the screen using the tip of your finger or a touch device</p> |
|  | <p>Use the mouse to point the cursor and click the left mouse button to select an item</p> |
|  | <p>Press a keyboard equivalent such as a function key, the enter key, or the tab key to select an item</p> |



Status Indicators











The status of the system can be determined from any screen on the DxC monitor using the following indicators:

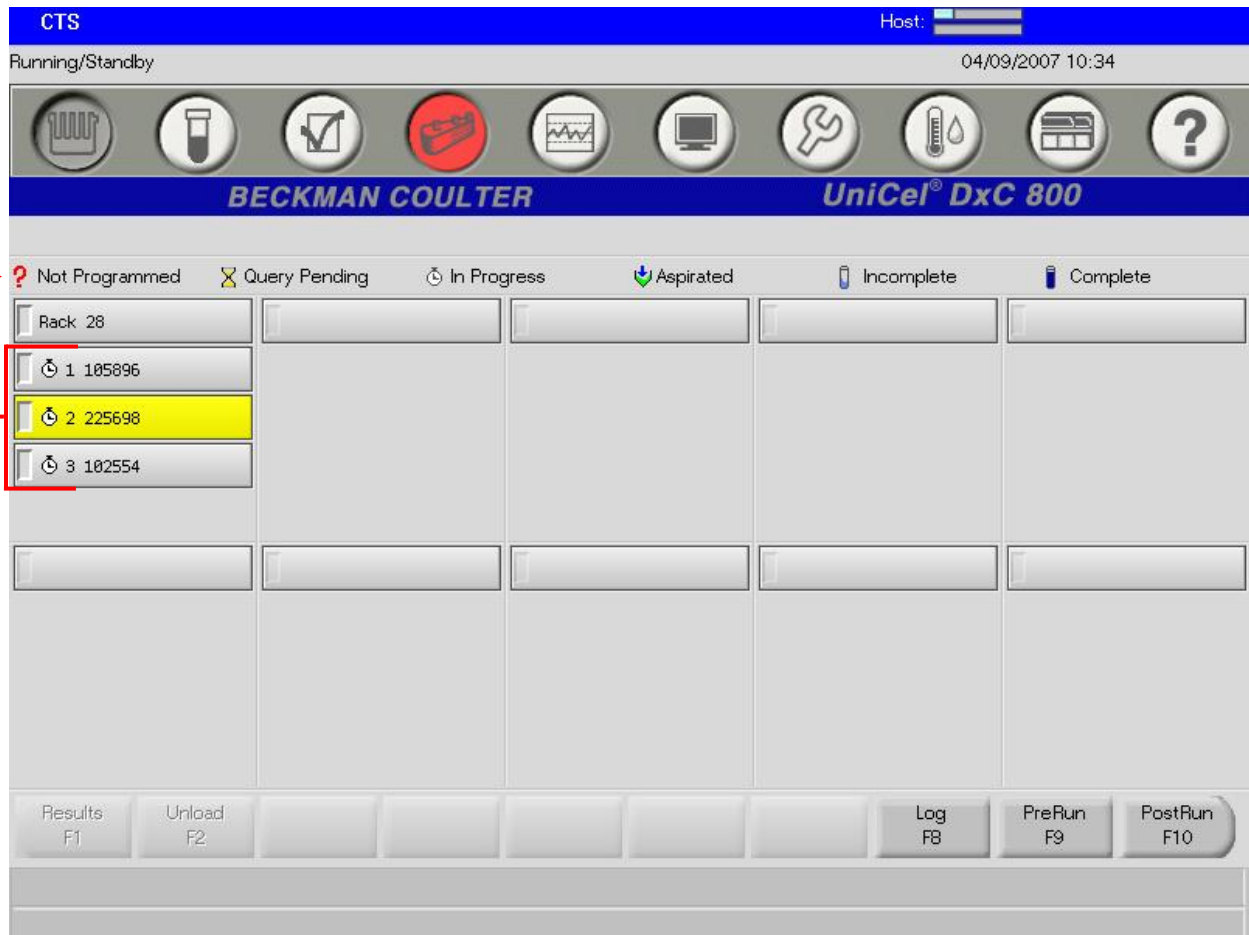
| | |
|--|---|
| <p>1 CTS Indicator</p> | <ul style="list-style-type: none"> Indicates when the Closed Tube Sampling is enabled A red circle with a slash through it indicates the CTS is not enabled  |
| <p>2 Host Communication Bar</p> | <ul style="list-style-type: none"> Shows communication status between host/DxC Blue/Green bar indicates information transfer A red circle with a slash through it indicates the host and DxC are not communicating  |
| <p>3 System Status</p> | <ul style="list-style-type: none"> Identifies the operating status of the entire DxC system One status is displayed if both the MC and CC systems have the same status The status information may be divided: Modular Chemistry (MC)/Cartridge Chemistry (CC) |



Menu Bar

A series of icons provide access to each of the major functional areas of the DxH 600/800 system. The background color of the function icons may change to yellow or red to alert the operator when attention is required.

| | | |
|---|------------------|--|
|  | Main | View status information and perform main operating functions |
|  | Samples | Perform sample programming functions including patients and quality control |
|  | Results | Retrieve results |
|  | Rgts/Cal | View reagent and calibration status and perform reagent and calibration functions |
|  | QC | Define and manage Quality Control functions |
|  | Setup | Perform Setup functions |
|  | Utils | Perform functions such as: priming, maintenance, and diagnostics |
|  | Status | View hardware status information |
|  | Instr Cmd | Initiate specific instrument commands such as: Home, Pause, and Shutdown |
|  | Help | View version information for the Instructions For Use (IFU) Manual. Access the IFU by using Alt + F1 on the keyboard |



Sample Status The Main Menu Screen is used to determine the sample status for each sample.

Sample Status Icons (1) are displayed in front (2) of the Sample ID on the Main Menu screen.

Chapter 3

Daily Start Up

Introduction

The table below and a series of flowcharts will assist you in successfully performing the DxC 600/800 Daily Start Up.

DxC Reagents

| DxC Reagent | Change during... | Software Required? | Yellow Caution | Red Warning |
|-------------|---|--------------------|--|-------------------------------|
| MC Reagent | Standby (CC side can be Running) | Yes | Pop-up warnings at 10%, 5%, and 0% volume | 0 tests available; Expired |
| CC Reagent | Standby or Running | Yes | Pop-up warning at 5 tests remaining in cartridge | 0 tests available; Expired |

Flowcharts

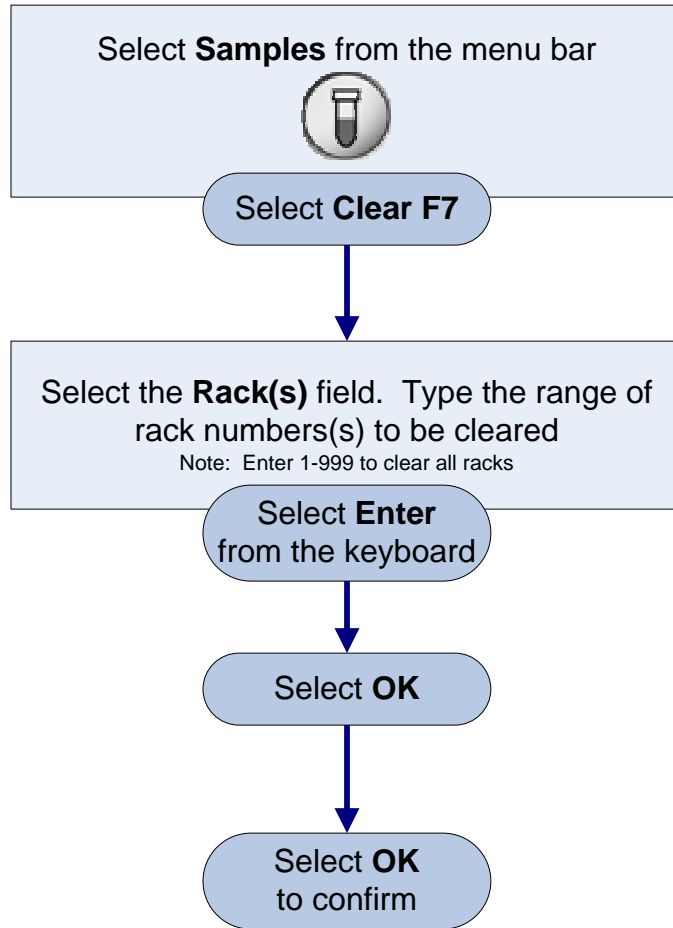
The Daily Start Up table lists all tasks necessary to bring the DxC 600/800 to operating condition for the start of a run.

Refer to individual flowcharts on the following pages for instructions on each task.

DxC 600/800 Daily Start Up Routine

| Step | Tasks |
|------|--|
| 1 | Clear Manually Assigned Racks |
| 2 | Check Reagent Status and Load Reagents <ul style="list-style-type: none">• Check Reagent Status• Load MC Reagents• Load CC Reagents• Unload CC Reagents |
| 3 | Check Calibration Status and Calibrate Chemistries <ul style="list-style-type: none">• Check Calibration Status• Calibrate |
| 4 | Program and Process Quality Control <ul style="list-style-type: none">• Process Quality Control using Auto Generation of Control• Manually Program/Process Quality Control |

Clear Manually Assigned Racks



- Clearing Racks does not clear programming for Sample ID's; it only clears the assignment to a rack/position. Your Closed Tube Tracking Database tracks which samples have been pierced by Sample ID.
- You may get a message informing you that some racks are In-Progress, Removed, Requested for calibration, or Reserved for Cal. This feature protects you from inadvertently clearing a rack that is needed for one of these conditions.

Check Reagent Status

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

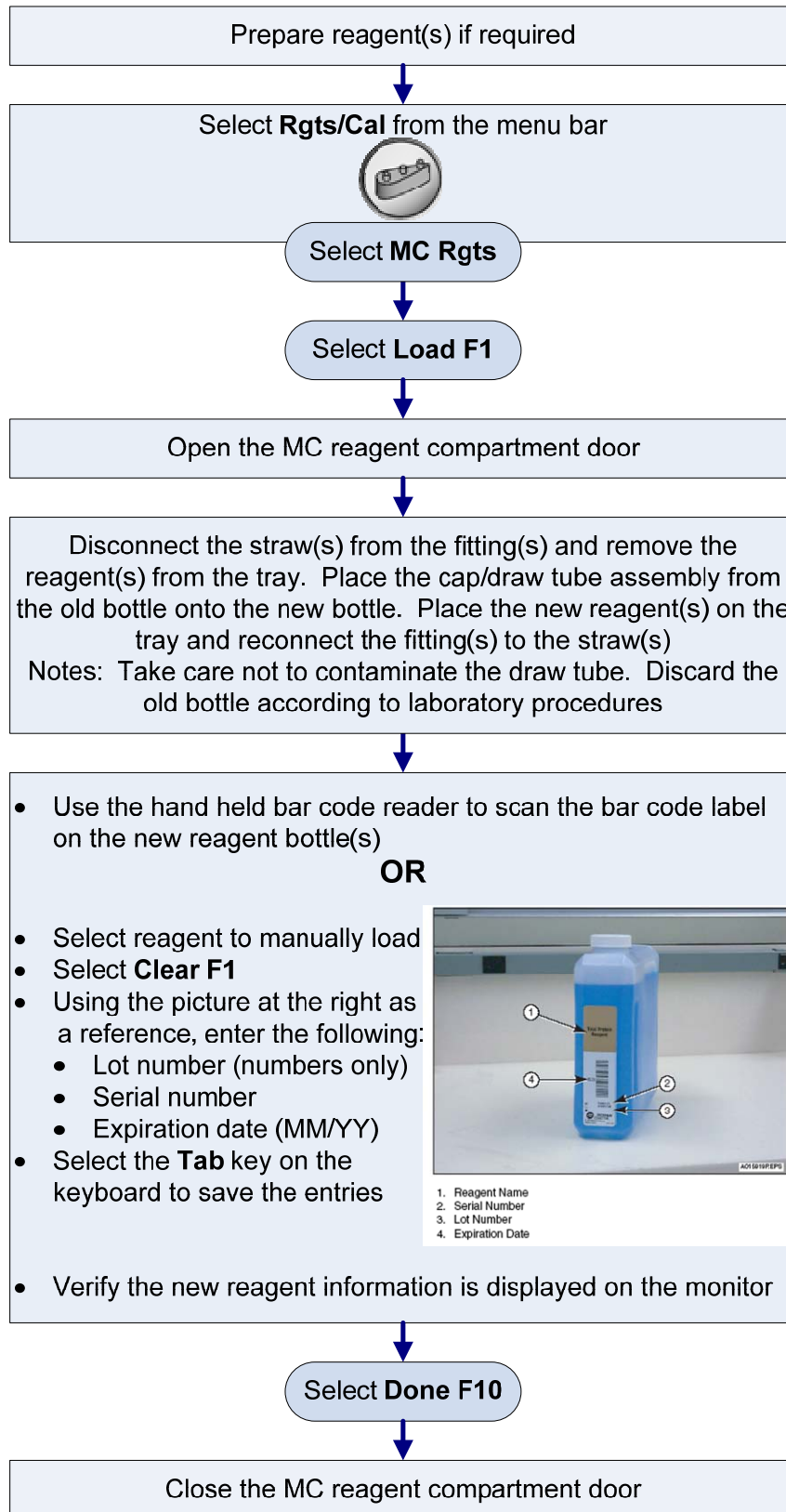


Select **Print F10**

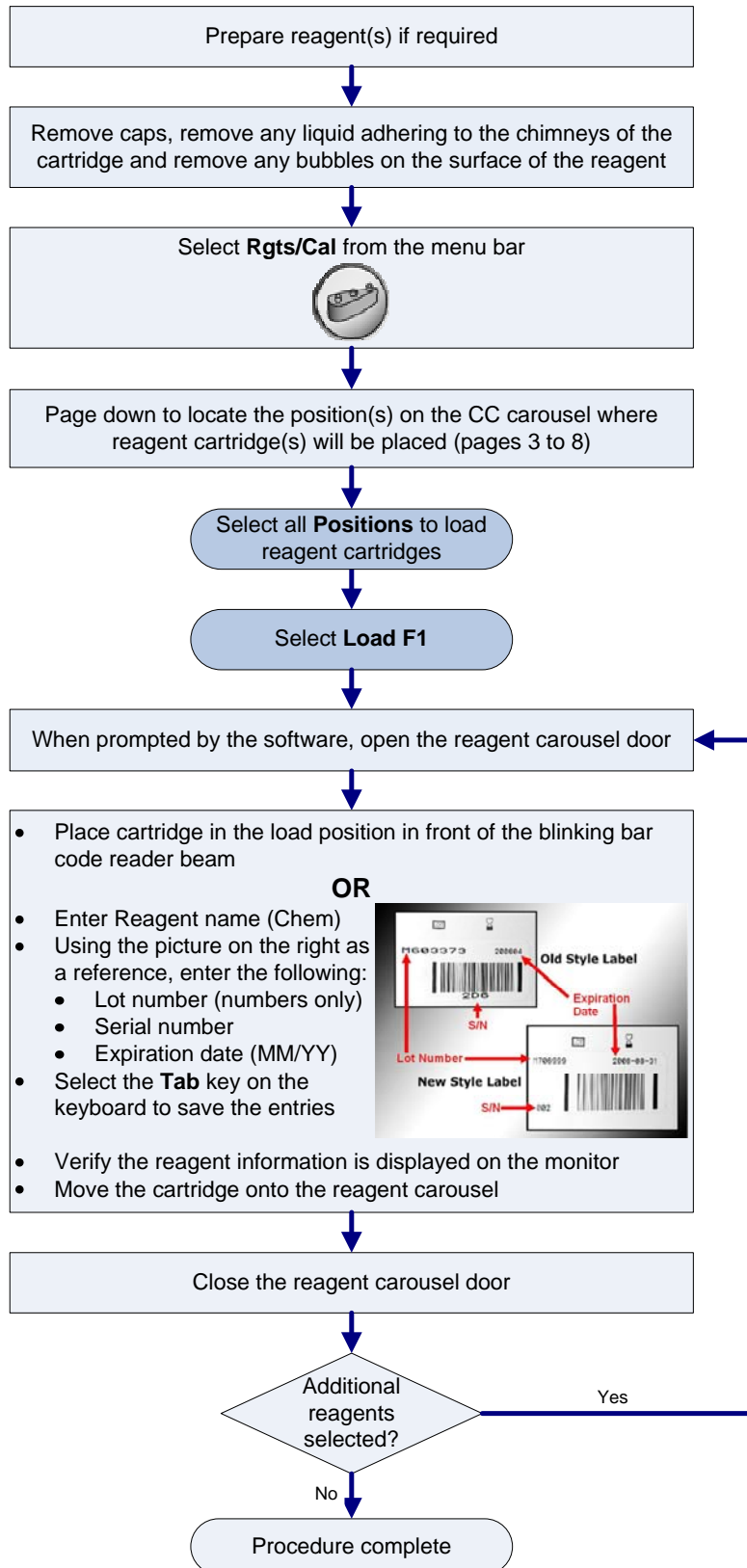
Note: Reagent status can also be viewed on the software

Review the *Vol (%)*/*Tests Left*, *Days Left*, and *Reagent Status* columns for reagent requirements

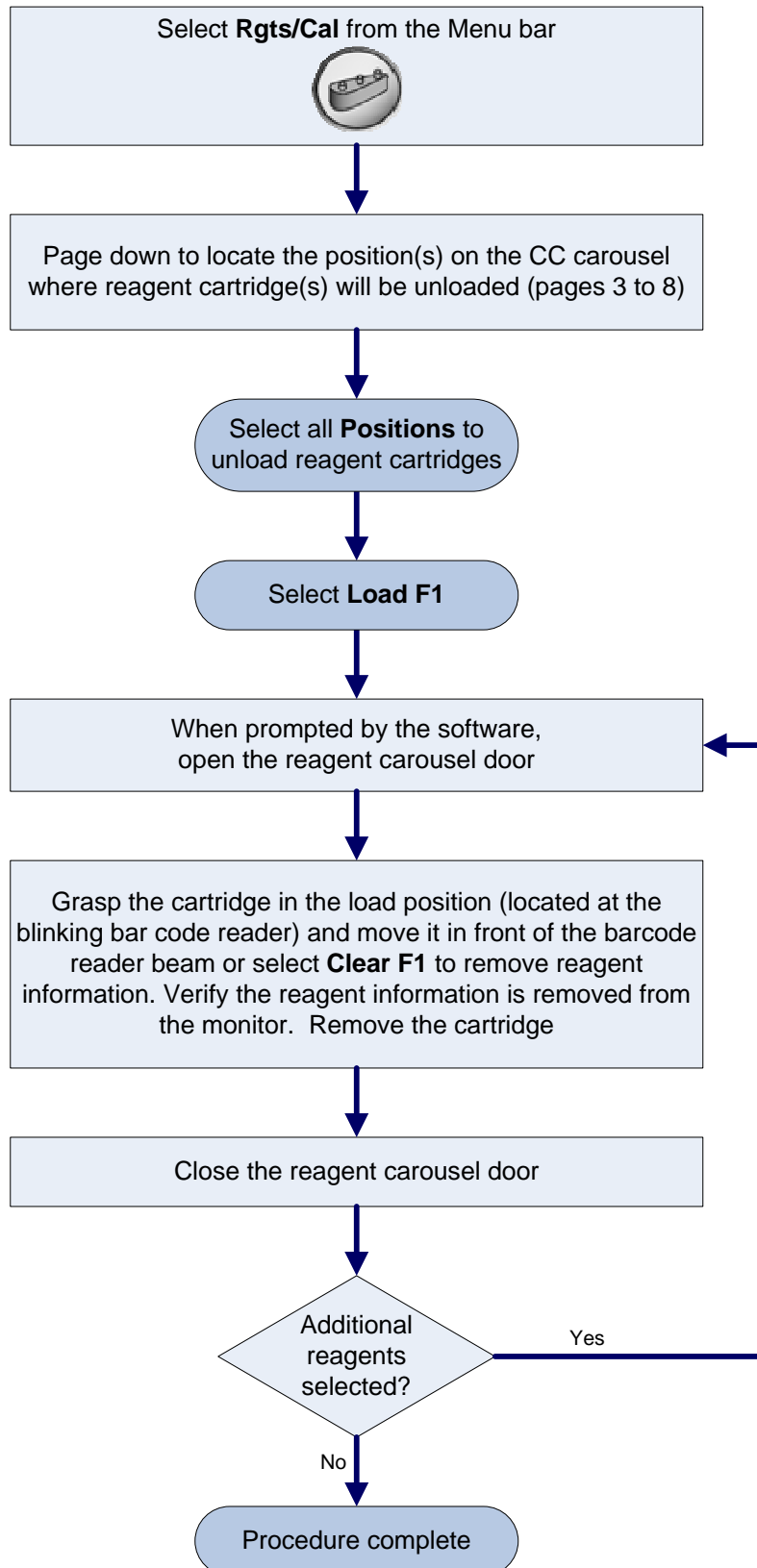
Load MC Reagents



Load CC Reagents



Unload CC Reagents



Check Calibration Status

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

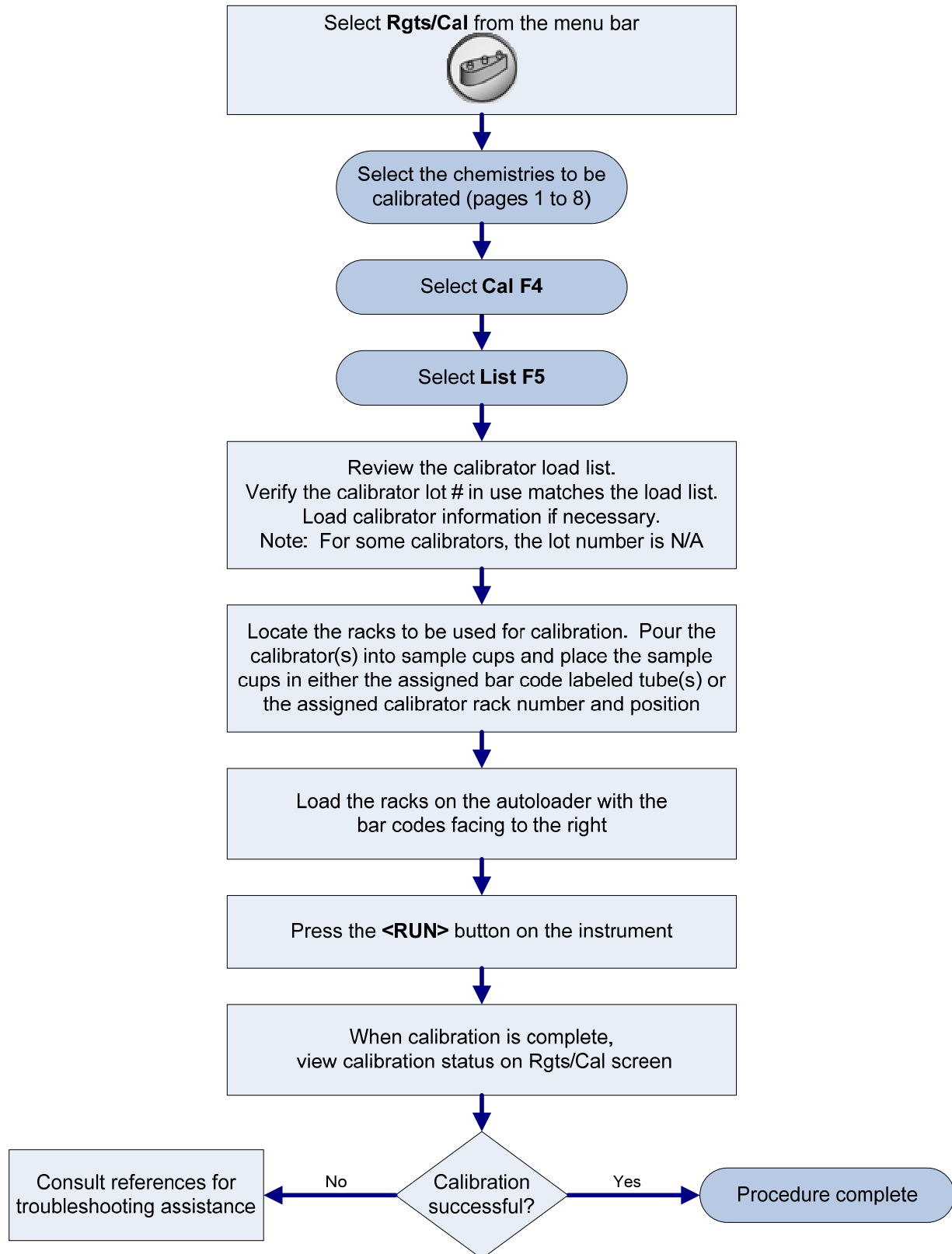


Select **Print F10**

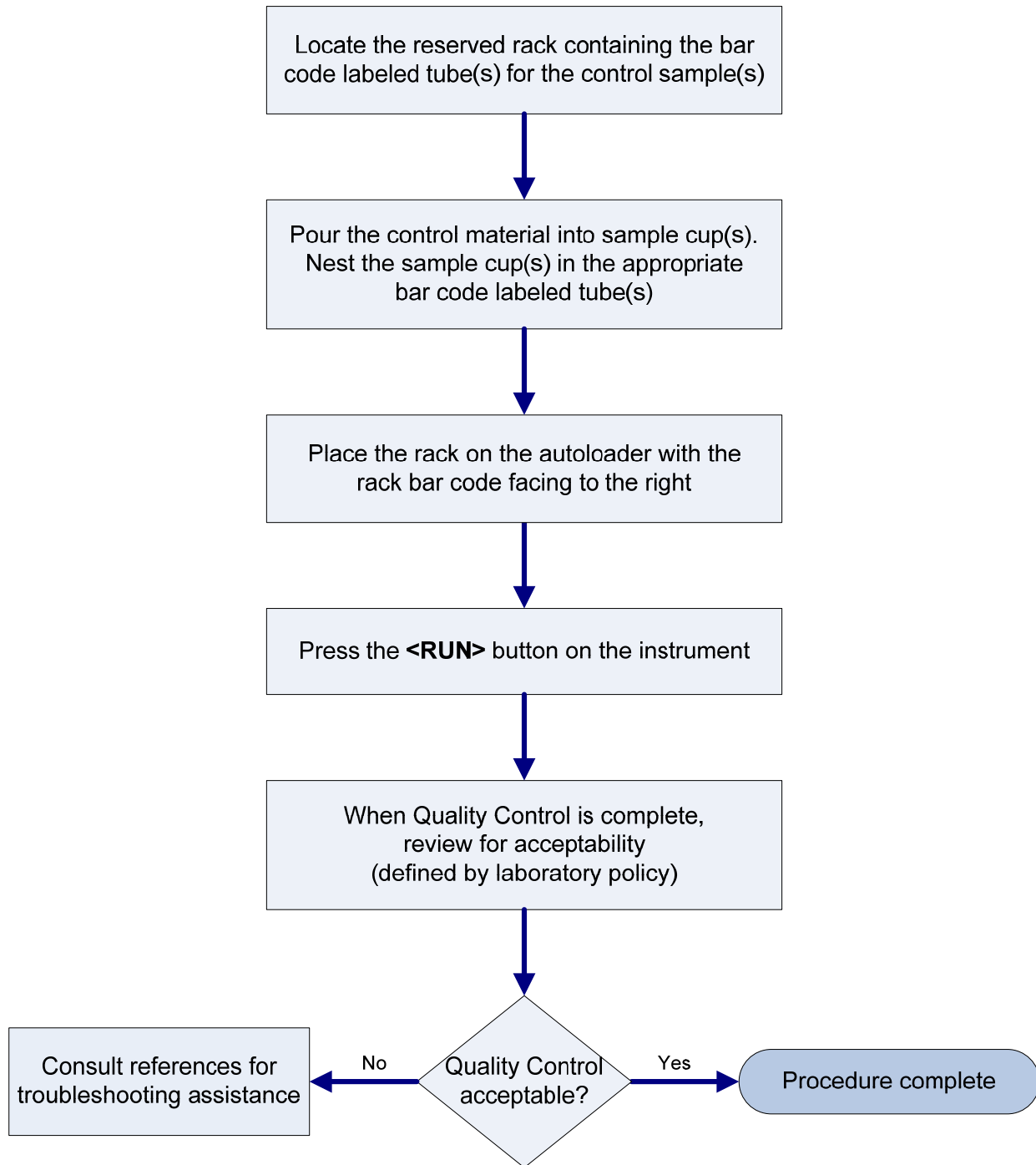
Note: Calibration status can also be viewed on the software

Review the *Cal Time Left* and *Cal Status* columns to identify reagents requiring calibration

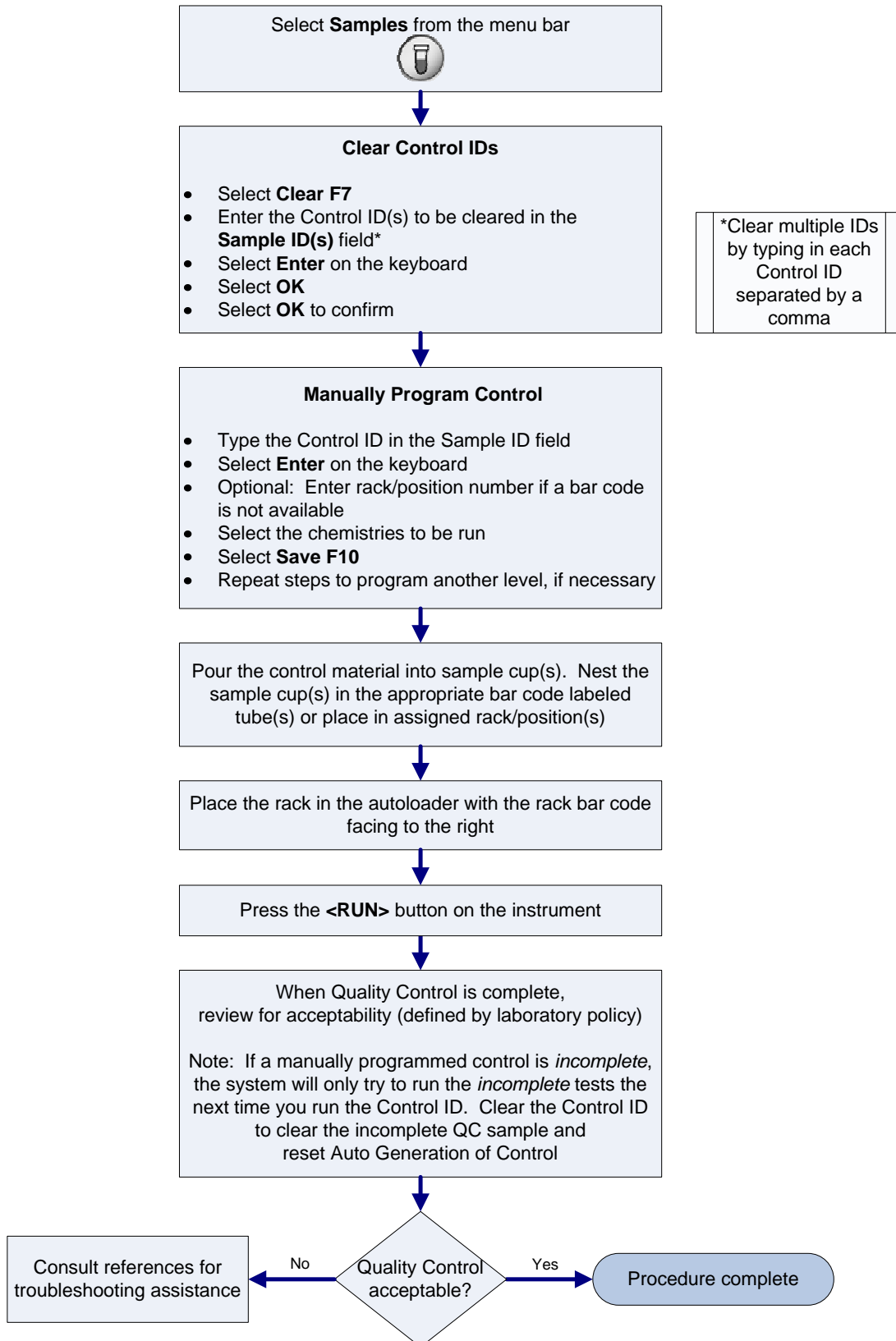
Calibrate



Process Quality Control using Auto Generation of Control



Manually Program/Process Quality Control



Chapter 4

Sample Processing

Sample Racks Sample racks are available in multiple sizes and colors to assist in rack usage and organization for the operator:

- Available rack sizes: 13 x 75 mm, 13 x 100 mm, 16 x 75 mm, 16 x 100 mm
- Available rack colors: blue, brown, green, gray, and purple

Sample racks are configured in the DxC software. Racks are designated as Non-Reserved or Reserved. The system identifies the rack designation by the rack bar code label.

The following pages define Non-Reserved and Reserved racks and list the validated sample containers available for processing samples on the DxC.

Closed Tube Sampling (CTS)

The CTS Cap Piercer assembly (optional) pierces validated primary sample tube caps. The sample probes aspirate sample from the tube without the need for cap removal.

Non-Reserved Racks

Validated sample tubes in Non-Reserved racks are evaluated for the presence of a cap.

- **The DxC will pierce capped tubes in Non-Reserved racks**
- Only validated caps should be used with the CTS option
- Uncapped tubes and sample cups may also be placed in these racks




Validated Sample Containers for Non-Reserved Racks

- **Primary sample tube with cap (1-Blade Thick CTS)**
 - Becton Dickinson VACUTAINER with HEMOGARD
 - 13 x 75 mm
 - 13 x 100 mm
 - 16 x 100 mm
 - Greiner VACUETTE
 - 13 x 75 mm
 - 13 x 100 mm
 - Sarstedt S-Monovette (requires 1-Blade Narrow CTS)
 - 15 x 92 mm
 - 15 x 75 mm (requires rack PN A18642)
- **Primary or secondary sample tube with cap removed**
- **0.5 mL Sample Cup (PN 651412)**
placed directly on a rack (Dead Volume = 40 μ L)
- **2.0 mL Sample Cup (PN 652730 or 81902)**
placed directly on a rack (Dead Volume = 360 μ L)

Reserved Racks









Reserved racks are optimized for use with low volume samples.

- Racks are identified by a  sticker
- The DxC will not check tubes for caps
- The DxC will not pierce capped tubes
- **Capped tubes must not be loaded and processed in Reserved racks**
- Systems without a CTS installed can have all racks designated as Reserved in the DxC software

**Validated
Sample
Containers
for
Reserved
Racks**

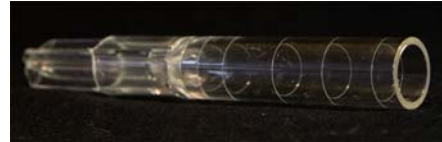


| | |
|---|--|
|  | <ul style="list-style-type: none"> • 0.5 mL Sample Cup (PN 651412) nested in a 5 mL Transfer Tube (PN 979272) • Dead Volume = 50 μL • 2.0 mL Sample Cup (PN 652730 or 81902) nested in a 5 mL Transfer Tube (PN 979272) • Dead Volume = 150 μL |
|  | <ul style="list-style-type: none"> • 1.0 mL Insert Cup (flat bottom – PN 81915) in 13x100 mm or 13x75 mm tube • Dead Volume = 250 μL |
|  | <ul style="list-style-type: none"> • 1.0 mL Pediatric Insert Cup (conical bottom – PN 81916) in 13x100 mm or 13x75 mm tube • Dead Volume = 50 μL  |
|  | <ul style="list-style-type: none"> • 2.0 mL Insert Cup (PN 81917) in 16x100 mm tube • Dead Volume = 150 μL |

**Validated
Sample
Containers
for
Reserved
Racks,

continued**



- SYNCHRON Microtube (PN 448774)
- Dead Volume = 60 µL



- 0.5 mL Sample Cup nested in a Red Metal Cup Insert (PN 476406)
- Dead Volume = 20 µL



- BD Microtainer in a Pediatric Tube Adapter (PN 472987)
- Use [Primary Tube Sample Template](#) for volume requirements



- Reserved Racks for HbA1c
- Reserved Racks for IBCT

Processing Samples

Sample Preparation

Prepare samples as follows prior to loading on the system:

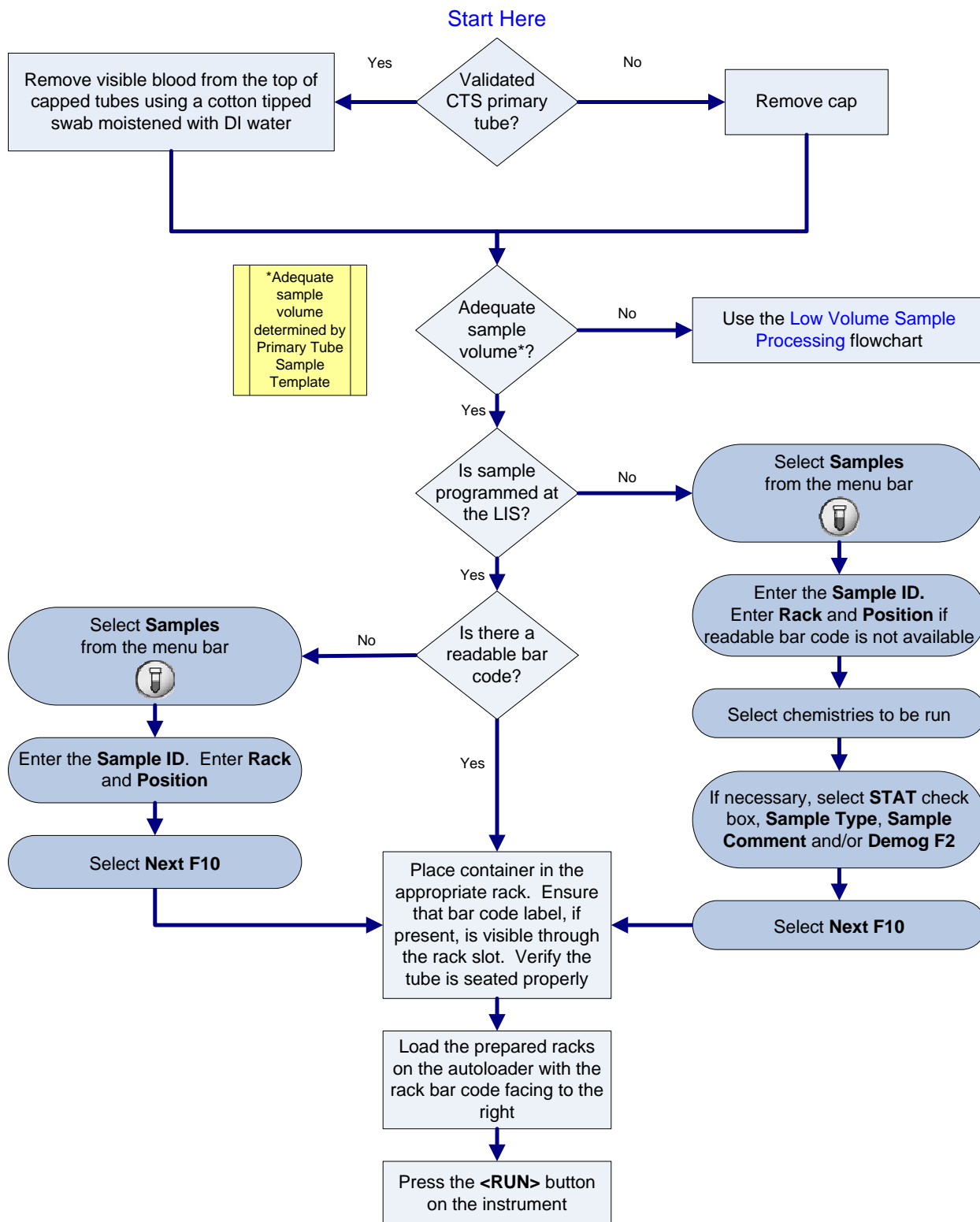
- Use the UniCel DxC Synchron Clinical Systems [Primary Tube Sample Template](#) to determine adequate sample volume in a primary tube; verify all other samples meet sample container dead volume requirements
- Remove visible blood from the top of capped tubes with a cotton-tipped applicator moistened with deionized water
- Place primary sample tubes with or without caps, 0.5 mL sample cups, and 2.0 mL sample cups in Non-Reserved racks
- Place all other sample containers in Reserved racks
- Ensure there are no bubbles in the sample
- Do not overfill insert cups
- Ensure that the bar code label is properly placed on the tube and is aligned so that it is visible through the slot in the rack
- Ensure the sample tube is seated correctly in the appropriate rack

Sample Programming

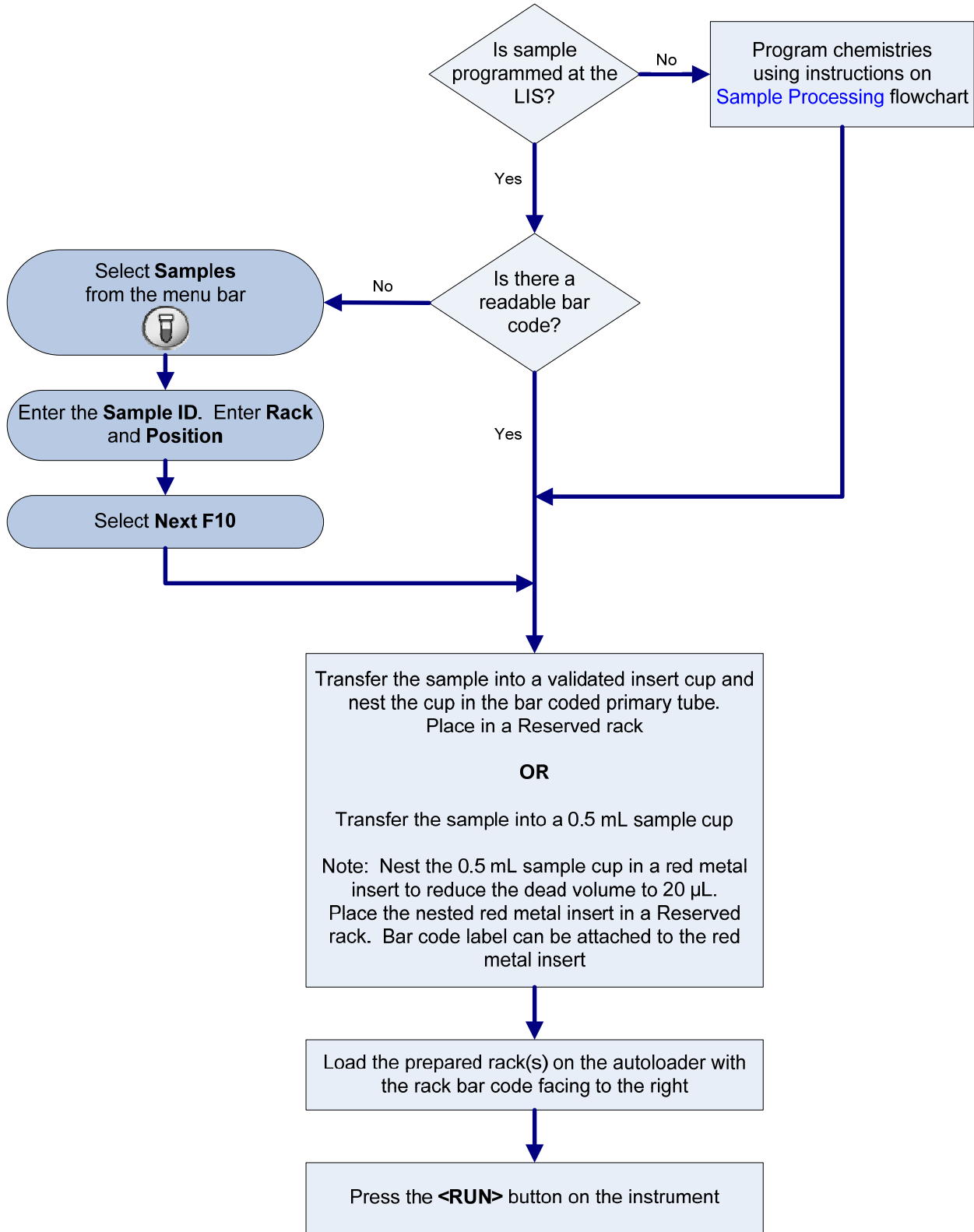
Samples may be processed using various programming methods on the DxC 600/800 system. Samples may be programmed at the LIS/Host, Data Management system, or DxC 600/800. Samples may be processed with or without bar codes. Use the instructions on the following pages to process samples based on programming and bar code availability.

Note: Additional programming features available include: batch mode, rerun, off-line dilution, serum index, manual ORDAC, etc. Detailed instructions for these options may be found in the UniCel DxC Synchron Clinical Systems Instructions For Use Manual or the UniCel DxC Synchron Clinical Systems Reference Manual.

Sample Processing



Low Volume Sample Processing



Chapter 5

DxC 600/800 Instrument Commands

Instrument Commands

The DxC 600/800 instrument commands are used to control functions of DxC instrument components. Instrument commands include:

Home:

- Moves mechanical assemblies to their “home” positions and primes the system
- Recovers from a motion error
- Returns the system from the *Stopped* state to *Standby*

Pause:

- Prevents initiation of new or additional tests at the DxC
- Tests in process are completed
- Use to return the system to *Standby* as soon as possible

Shutdown:

- Use to properly reboot or shutdown the system to prevent data corruption (failure to follow recommended procedure may result in data corruption)

Enable/Disable Modules:

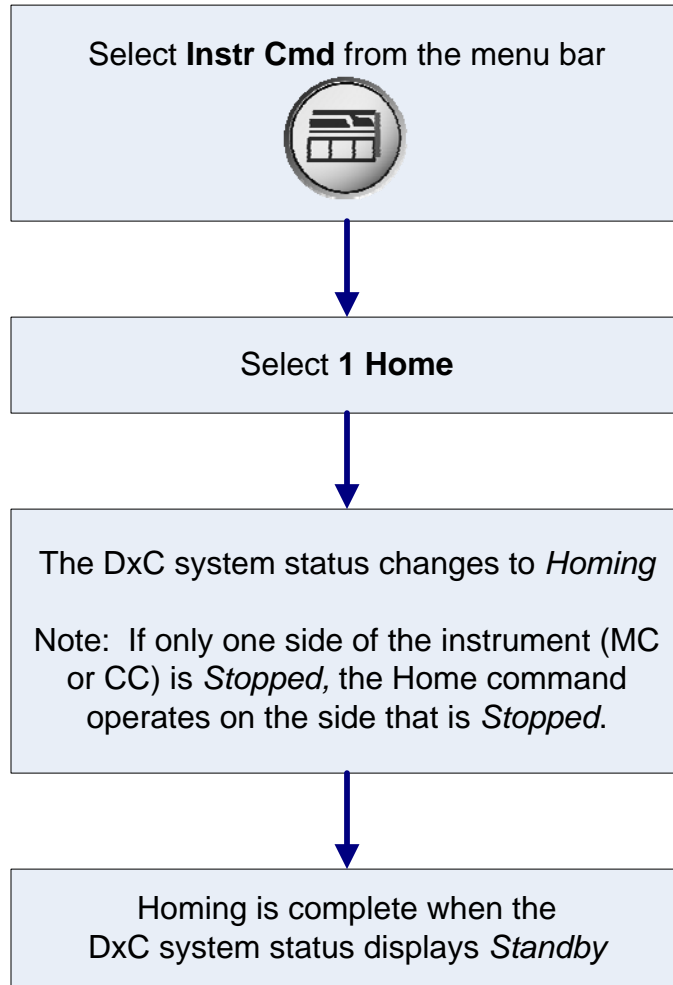
- Use to enable/disable a single MC cup module, the MC ISE module, the entire MC side, the CC Photometer, the LPIA module, the CC lower reagent carousel, or the entire CC side of system
- All programming for disabled modules is aborted. When a module is disabled the system will not run, prime, perform diagnostics, or maintenance procedures using that module
- The system may disable modules automatically after certain unrecoverable error conditions
- When a module is enabled, it will automatically prime

Unload All Racks:

- Use to unload racks from the DxC 600/800 sample carousel
- Use when access to an on board sample(s) is required
- Use when the screen displays racks on the Main Screen but the racks are not on the sample carousel following a system error

Other instrument commands include: **3 Stop Print**, **5 Pause Waste B**, and **6 Resume Waste B**. Information about these commands may be found in the UniCel DxC Synchron Clinical Systems Instructions For Use Manual.

Home



Pause

Select **Instr Cmd** from the menu bar



Select **2 Pause**

Note: The Pause command is available only if the system status is *Running*.

Select one of the options:

- **1 MC Only**
- **2 CC Only**
- OR
- **3 Both MC and CC**

The DxC system status will change to *Pausing* and return to *Standby* when in progress tests are completed

IMPORTANT

When *Pausing* the system, cuvette washing stops as soon as the last result is available. Cuvettes may be left dirty. Do not request a **Pause** and leave the DxC sitting for a long period of time without washing the cuvettes.

See the IFU for more details on when to use **Pause**.

Shutdown and Power Up

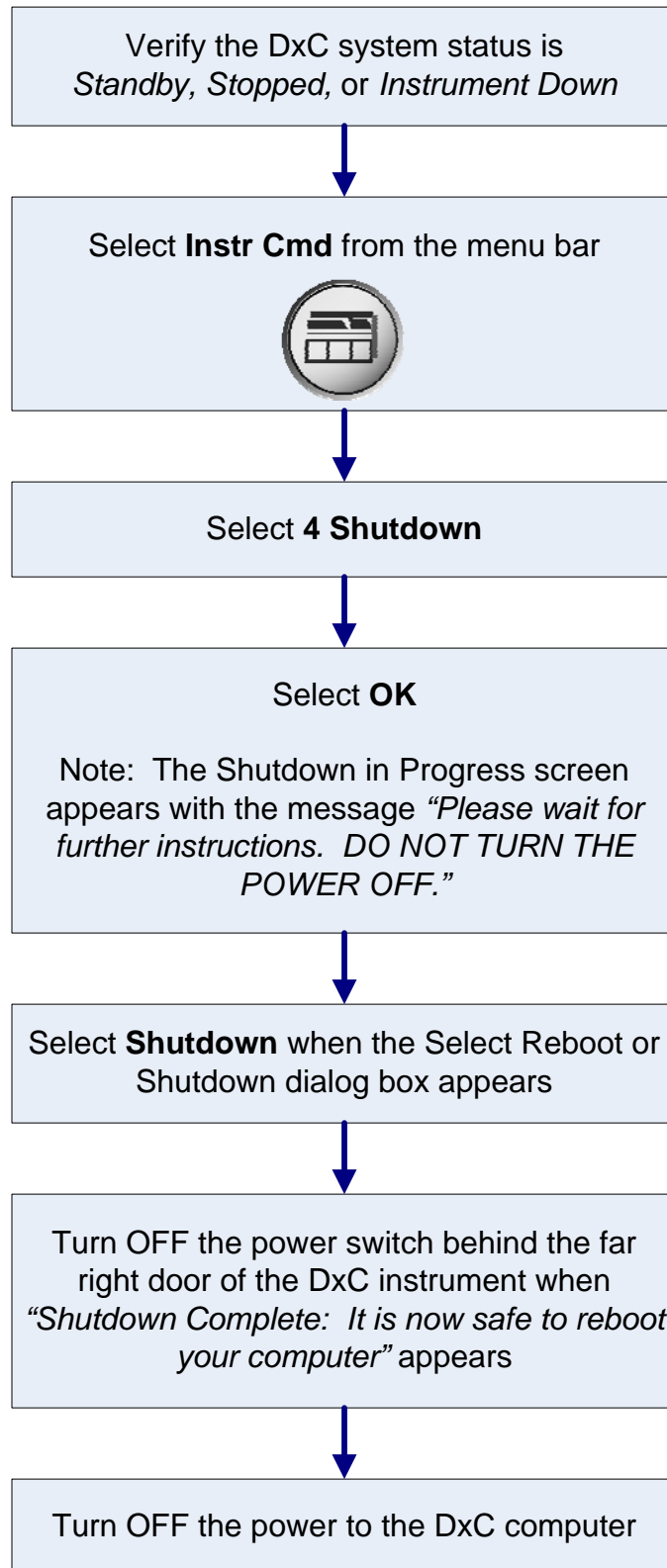
Shutdown and Power Up

The DxC 600/800 system may require a Shutdown and Power Up when:

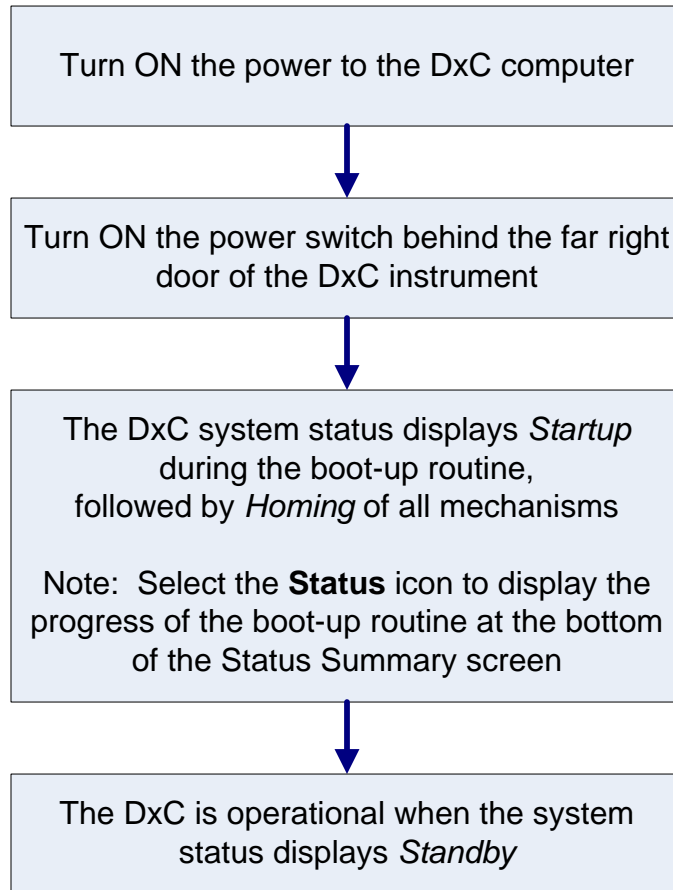
- Some parts replacement procedures require power to be turned off
- The lab power goes off
- The system is moved to a new location
- Recommended by a BCI specialist or a reference for troubleshooting purposes

Use the flowcharts on the following pages when shutting down and powering up the DxC 600/800 system.

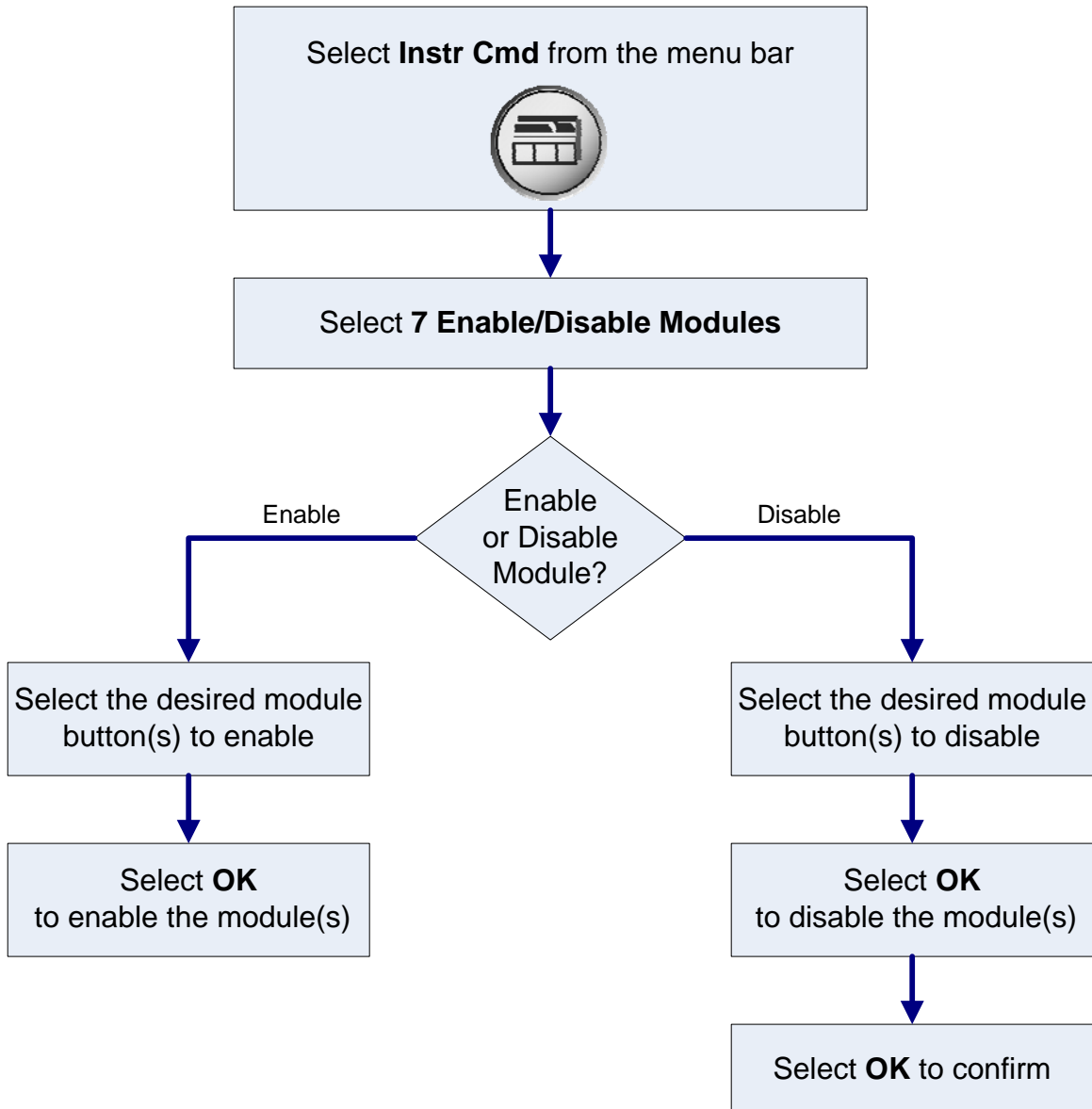
Shutdown



Power Up



Enable/Disable Modules



Unload All Racks

Select **Instr Cmd** from the menu bar



Select **8 Unload All Racks**

All racks in the sample carousel will be removed to the off-load area

Note: The DxC system status displays *Loading* during the Unload All command

Resources

Introduction

The following list will identify and describe resources available for your use.

Support Personnel

Technical Support (Hotline):

- Provides 24 hour phone support
- Contact at 1-800-854-3633

Applications Specialist:

- Provides installation support
- Your application specialist is _____ and
(Name)
can be reached at _____
(Phone)

Field Service Engineer:

- Installs the instrument
- Repairs and assists in maintaining your instrument
- Your Field Service Engineer is _____ and
(Name)
can be reached at _____
(Phone)

Instructions For Use



The Instructions For Use (IFU) Manual includes basic operating instructions and maintenance guidelines for the UniCel DxC 600/800 system. Detailed operation, maintenance, and troubleshooting instructions are included in this manual.

The DxC 600/800 Instructions For Use manual is available on the DxC system through the Help menu bar icon.

Reference Materials

- UniCel DxC Synchron Clinical Systems *Instructions For Use Manual*
 - Basic operating instructions and maintenance guidelines for the UniCel DxC System
 - Available to view and print through Help icon at the DxC monitor
 - Available at www.beckmancoulter.com and Product Manuals CD
- UniCel DxC Synchron Clinical Systems *Reference Manual*
 - Contains detailed system description, operating instructions, theory of operation, system calibration, programming procedures, and quality control information
 - Available at www.beckmancoulter.com and Product Manuals CD
- Synchron Clinical Systems *Chemistry Information Sheets* and Synchron Clinical Systems *Chemistry Reference Manual*
 - Contains specific chemistry information for the full range of analytes available on the DxC system
 - Contains information about serum index
 - Available at www.beckmancoulter.com
- UniCel DxC Synchron Clinical Systems *Host Interface Specifications*
 - Provides necessary information to interface the DxC system to a Laboratory Information System (LIS)
 - Includes Tables/Codes to interpret instrument codes printed on patient reports
 - Available at www.beckmancoulter.com and Product Manuals CD
- *Performance Verification Manual*
 - Assists in making a smooth transition integrating your new system into your daily routine
 - Includes guidelines for evaluating precision, accuracy, linearity, and method comparison
 - Available at www.beckmancoulter.com
- UniCel DxC Synchron Clinical Systems *Primary Tube Sample Template*
 - Use to verify adequate sample volume
 - Provided as a laminated sheet
- UniCel DxC Synchron Clinical Systems *Reagent Preparation Quick Reference*
 - Provides information on reagents that require preparation
 - Provided as a laminated sheet

In-Lab Training Checklist

UniCel DxC 600/800 Synchron Clinical System

Introduction The following In-Lab Training Checklist can be used to document the In-Lab training of laboratory staff members on the operations of the DxC 600/800 system. As each operator is trained, both the trainer and the trainee initial and date the documentation form.

UniCel DxC 600/800 In-Lab Training Checklist

Operator Name: _____

| Task | Trainee's Initials | Date | Trainer's Initials | Date |
|--|--------------------|-------|--------------------|-------|
| System Overview: | | | | |
| • Identify DxC components | | | | |
| – Autoloader | _____ | _____ | _____ | _____ |
| – Sample Carousel | _____ | _____ | _____ | _____ |
| – GLUCm cup | _____ | _____ | _____ | _____ |
| – Additional MC reaction cups (DxC 800 only) | _____ | _____ | _____ | _____ |
| – EIC | _____ | _____ | _____ | _____ |
| – Flowcell | _____ | _____ | _____ | _____ |
| – Bulk Reagent Compartment | _____ | _____ | _____ | _____ |
| – MC Bar Code Reader | _____ | _____ | _____ | _____ |
| – MC and CC Sample Syringes | _____ | _____ | _____ | _____ |
| – MC and CC Sample Probes | _____ | _____ | _____ | _____ |
| – CC Sample and Reagent Mixers | _____ | _____ | _____ | _____ |
| – CC Wash Station | _____ | _____ | _____ | _____ |
| – CC Reaction Carousel | _____ | _____ | _____ | _____ |
| – CC Reagent Probes | _____ | _____ | _____ | _____ |
| – CC Reagent Syringe | _____ | _____ | _____ | _____ |
| – CC Reagent Carousel | _____ | _____ | _____ | _____ |
| Software Overview | | | | |
| • Identify Software Indicators | | | | |
| – CTS Indicator | _____ | _____ | _____ | _____ |
| – Host Communication Bar | _____ | _____ | _____ | _____ |
| – System Status | _____ | _____ | _____ | _____ |
| • Identify Menu Bar Icons | _____ | _____ | _____ | _____ |
| • Identify Sample Status Icons | _____ | _____ | _____ | _____ |
| Daily Start Up | | | | |
| • Determine supply/reagent status | _____ | _____ | _____ | _____ |
| • Load Reagents | | | | |
| – Load MC Reagent | _____ | _____ | _____ | _____ |
| – Load CC Reagent | _____ | _____ | _____ | _____ |
| – Unload CC Reagent | _____ | _____ | _____ | _____ |
| • Calibrate Chemistries | _____ | _____ | _____ | _____ |
| • Clear Racks | _____ | _____ | _____ | _____ |
| • Process QC using Auto Generation | _____ | _____ | _____ | _____ |
| • Manually Program and Process QC | _____ | _____ | _____ | _____ |

UniCel DxC 600/800 In-Lab Training Checklist

Operator Name: _____

| Task | Trainees Initials | Date | Trainers Initials | Date |
|--|----------------------|-------|----------------------|-------|
| Samples/QC | | | | |
| • Determine correct sample rack/container for sample processing | _____ | _____ | _____ | _____ |
| • Identify volume requirements for sample processing by container type | _____ | _____ | _____ | _____ |
| • Program and process routine and STAT patient samples | _____ | _____ | _____ | _____ |
| • Process Low Volume samples | _____ | _____ | _____ | _____ |
| Reagent Handling | | | | |
| • Identify reagents requiring preparation | _____ | _____ | _____ | _____ |
| • Identify proper reagent storage conditions | _____ | _____ | _____ | _____ |
| Miscellaneous | | | | |
| • Shutdown and Power Up | _____ | _____ | _____ | _____ |
| • Home DxC | _____ | _____ | _____ | _____ |

UniCel DxC 600/800 Competency Exercise

Name _____

Instructions The Competency Exercise should be completed at the end of the In-Lab Training session. All materials supplied with the instrument or used during the training may be used to complete this exercise. Save all reports generated during the exercise. Submit all printed reports and this exercise to your supervisor and/or your Beckman Coulter Applications Specialist.

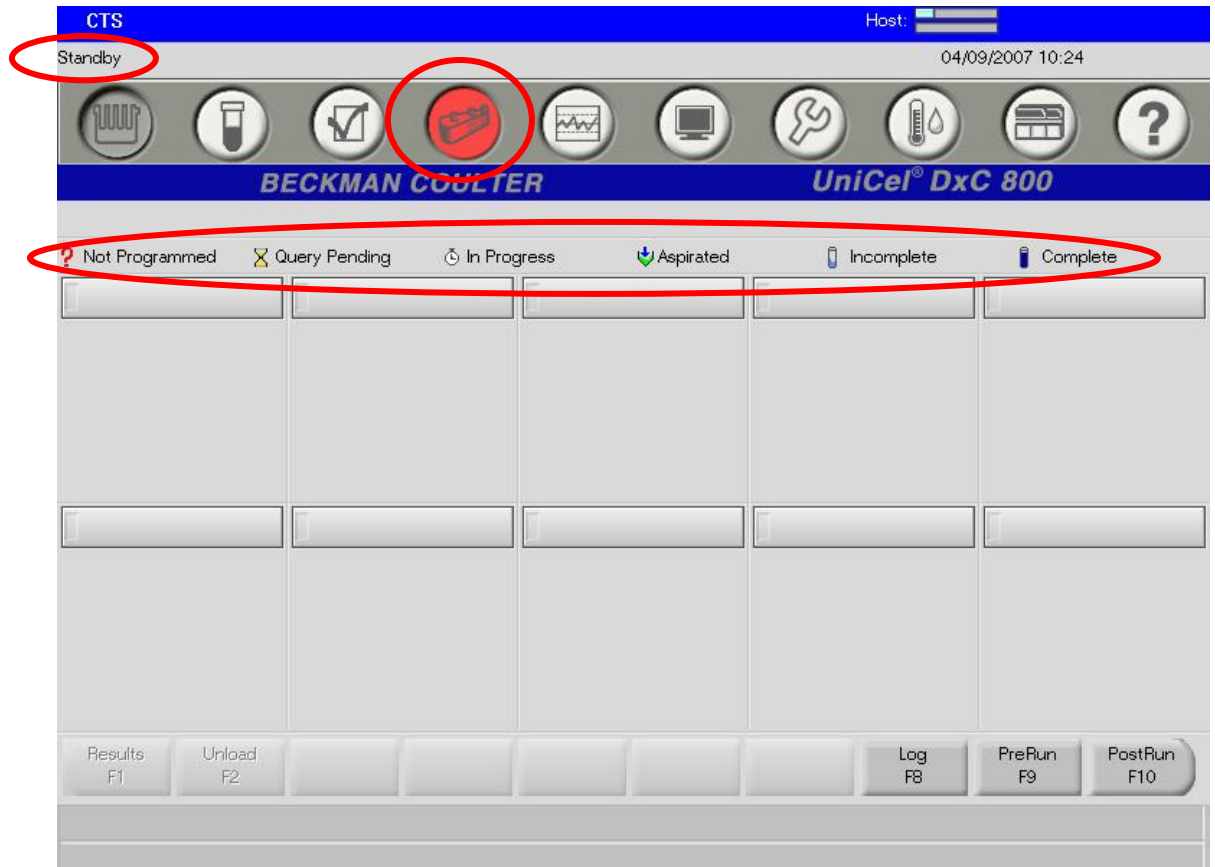
Instrument Overview

- 1) The DxC 600 Modular Chemistry side of the analyzer is composed of a _____ cup module and an ISE module where a _____ houses electrodes for measurement of sodium, potassium, chloride, CO₂, and calcium.
- 2) The DxC 800 has additional cup modules on the MC side for testing the following analytes: _____, _____, _____, and _____.
- 3) The DxC Cartridge Chemistry side of the analyzer delivers reagent from cartridges stored in a refrigerated compartment that houses _____ reagent cartridges.

Software Overview

4) Label each circle on the picture below with the letter corresponding to its description:

- a System Status
- b Reagents/Calibration Menu Bar Icon
- c Sample Status Icons



**Daily Start
Up**

- 5) Which reagents are stored in the Hydropneumatic compartment?

- 6) Where is the Alkaline Buffer stored?

- 7) What is the software pathway to print the Cal Load List from the DxC Main Menu?

- 8) Perform a Daily Start Up on your DxC 600/800 system. Keep all reports and show them to your supervisor and/or Beckman Coulter representative when the Daily Start Up is completed.

Sample Processing

9) Place a check mark in the box to the right of the samples shown below that should be placed in a Reserved rack:



10) Tubes with caps must always be placed in a _____ rack.

11) How do you determine adequate sample volume in a primary tube before processing it on the system?

Sample Processing

12) Manually program and process samples using the following information:

Note: You may use any material you have available for the samples.

| Sample ID | Sample Type | Priority | Tests | Additional Information |
|-----------|-------------|----------|-----------------------|---------------------------------|
| Test 1 | Serum | Routine | NA, K, CL, CO2, GLUCm | Name: Test Sample Age: 3 yrs |
| Test 2 | CSF | STAT | GLUCm | N/A |
| Test 3 | Timed Urine | Routine | CR-S or CREm | Volume: 1340 mL Time: 24 hrs |

13) Show the reports to your supervisor and/or Beckman Coulter representative.

Instrument Commands

14) Draw a line between the Instrument Command you would use to perform the described function:

| Instrument Command | Function |
|--------------------|---|
| Home | Use to reboot the system |
| Pause | Use to remove racks from the Main Menu screen that are not present on the sample carousel |
| Shutdown | Use to turn on the LPIA |
| Enable Module | Use to recover from a motion error |
| Unload All Racks | Use to complete in progress tests but to prevent any new tests from starting |

Completion

15) Give all reports and answers to the competency questions to your supervisor and/or Beckman Coulter representative for comparison to the Answer Key.

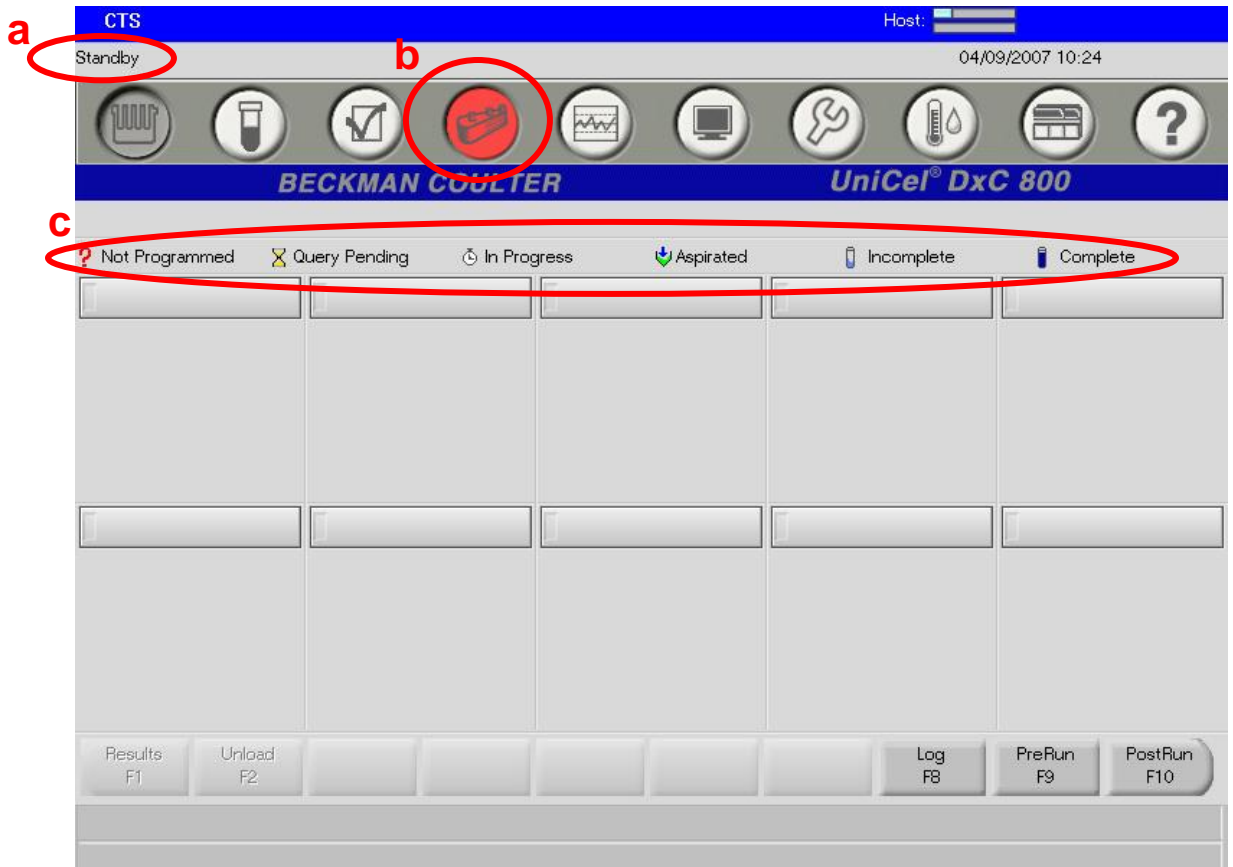
Answer Key

Instrument Overview

- 1) The DxC 600 Modular Chemistry side of the analyzer is composed of a glucose cup module and an ISE module where a flow cell houses electrodes for measurement of sodium, potassium, chloride, CO₂, and calcium.
- 2) The DxC 800 has additional cup modules on the MC side for testing the following analytes: BUN/UREA, phosphorus, creatinine, total protein, and albumin.
- 3) The DxC Cartridge Chemistry side of the analyzer delivers reagent from cartridges stored in a refrigerated compartment that houses 59 reagent cartridges.

Software Overview 4) Label each circle on the picture below with the letter corresponding to its description:

- a System Status Indicator
- b Reagents/Calibration Menu Bar Icon
- c Sample Status Icons



Daily Start Up

- 5) Which reagents are stored in the Hydropneumatic compartment?

Wash Concentrate II, No Foam, and Auto-Gloss

- 6) Where is the Alkaline Buffer stored?

In the ISE module.

- 7) What is the software pathway to print the Cal Load List from the DxC Main Menu?

Main Menu → Rgts/Cal → List F5

- 8) Perform a Daily Start Up on your DxC 600/800 system. Keep all reports and show them to your supervisor and/or Beckman Coulter representative when the Daily Start Up is completed.

Sample Processing

9) Place a check mark in the box to the right of the samples shown below that should be placed in a Reserved rack:



10) Tubes with caps must always be placed in a Non-Reserved rack.

11) How do you determine adequate sample volume in a primary tube before processing it on the system?

Compare the tubes to the Primary Sample Tube Template.

Sample Processing

12) Manually program and process samples using the following information:

Note: You may use any material you have available for the samples.

| Sample ID | Sample Type | Priority | Tests | Additional Information |
|-----------|-------------|----------|-----------------------|---------------------------------|
| Test 1 | Serum | Routine | NA, K, CL, CO2, GLUCm | Name: Test Sample Age: 3 yrs |
| Test 2 | CSF | STAT | GLUCm | N/A |
| Test 3 | Timed Urine | Routine | CR-S or CREm | Volume: 1340 mL Time: 24 hrs |

13) Show the reports to your supervisor and/or Beckman Coulter representative.

Instrument Commands

14) Draw a line between the Instrument Command you would use to perform the described function:

| Instrument Command | Function |
|--------------------|---|
| Home | Use to reboot the system |
| Pause | Use to remove racks from the Main Menu screen that are not present on the sample carousel |
| Shutdown | Use to turn on the LPIA |
| Enable Module | Use to recover from a motion error |
| Unload All Racks | Use to complete in progress tests but to prevent any new tests from starting |



Has satisfactorily completed the In-Lab Training Course
on the operation of the

UniCel DxC 600/800 Synchron Clinical System



Beckman Coulter Representative

Date