



» Instructions For Use

Power Processor Inlets, Outlets, Hematology, and Bar Code Verification Modules

For *In Vitro* Diagnostic Use



B01519AD
June 2019



Beckman Coulter, Inc.
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**Power Processor
Inlets, Outlets, Hematology, and Bar Code Verification
Modules Instructions For Use**
PN B01519AD (June 2019)

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Rx Only

Original Instructions

What's New in this Release

These instructions apply to Power Processor systems with the latest software version listed in this document, as well as previous software versions. When a subsequent software version changes the information in this document, a new issue will be released.

B01519AD, June 2019

This Instructions For Use manual is for Power Processor used with PrepLink software Version 5.0.

Changes:

- **Safety Notice:**

Removed Moving Parts Label from the Hardware Labels section. Moved it to “Legacy Hardware Labels” table.

Replaced the Moving Parts symbol to Crushing of hands symbol in the Symbols Glossary table

Added the California Proposition 65 symbol to the Symbols Glossary table

Removed the Country of Origin symbol from the Symbols Glossary table

B01519AC, March 2018

This Instructions For Use manual is for Power Processor used with PrepLink software Version 5.0.

Changes:

- **Safety Notice:**

Added a symbols glossary to address changes to global labeling requirements and identify the symbols that relate to product identification, classification, cautions, and warnings.

Initial Issue

B01519AB, June 2011

This is the initial release of the *Power Processor Inlets, Outlets, Hematology, and Bar Code Verification Modules Instructions for Use*, PN B01519 (June 2011).

This document was created as part of the reorganization of the current *Power Processor Instructions for Use* manual, PN 968232, to improve the content and usability of these instructions, and the method by which this information is delivered to our customers.

Information that was previously contained in the *Power Processor Instructions for Use* manual, PN 968232, is now available as a *Document Set* of separate Power Processor IFU manuals, each specific to the individual Power Processor modules.

Material that is generic to the entire Power Processor system is contained in the *Power Processor General System Operation IFU* manual, PN B01683.

The new Document Set of Power Processor Instructions for Use manuals includes the following:

- *General System Operation IFU*, PN B01683
- *Inlets, Outlets, Hematology, and Barcode Verification Modules IFU*, PN B01519
- *Centrifuge Module IFU*, PN A97119
- *Decapper and Recapper Modules IFU*, PN A97252
- *Aliquot Module IFU*, PN A97103

- *LX and DxI Connection Modules IFU*, PN A97111
- *AU Connection Modules IFU*, PN B01540
- *Generic/IDC and DxI Connection Modules IFU*, PN A97260
- *Stockyard Modules IFU*, PN A97244

Documentation Changes for Inlets, Outlets, Hematology, and Bar Code Verification Connection Modules

Significant new, or changed, Inlets, Outlets, Hematology, and Bar Code Verification Module information, that was not in the Power Processor IFU, PN 968232, include the following:

- Improvements to the “Stop Button Recovery with Instrument Connections” procedure.
- Improvements to the “Stop Button Recovery without Instrument Connections” procedure.
- Added the Dynamic Inlet information, including the Priority loading at Dynamic Inlets is not permitted, and sample tubes manually loaded into sample tube carriers at a Dynamic Inlet will be sorted to the Error Lane.
- Corrections to Inlet Priority Loading procedure.
- New UniCel DxH Personality rack information added.
- WARNING note added to the Safety Notice section noting that each sample tube must have a unique sample ID.
- C-Tick label added to the Safety Notice section.
- Caution note added to the Error Recovery procedures chapter noting that when the Inlets, Outlets, Hematology, and Bar Code Verification Modules are in **PAUSE**, the air system is still active.
- Updated table 3.1 Module Function Codes.

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.

Alerts for Warning, Caution, Important, and Note

WARNING

Warning indicates a potentially hazardous situation which, if not avoided, could cause death or serious injury. Warning can indicate the possibility of erroneous data that could cause an incorrect diagnosis.

CAUTION

Caution indicates a potentially hazardous situation which, if not avoided, can cause minor or moderate injury. Caution can also alert against unsafe practices, or indicate the possibility of erroneous data that could cause an incorrect diagnosis.

IMPORTANT Important indicates important information to follow.

NOTE Note indicates notable information to follow.

TIP Tip indicates information to consider.

General Warnings and Cautions

WARNING

Do not use the equipment in a manner not specified by Beckman Coulter, Inc., as the protection provided by the equipment can be impaired.

WARNING

Each sample tube processed by the system must have a unique sample ID and readable bar code label. The system sends sample tubes with duplicate sample IDs to the Error Lane. Damaged or unreadable bar code labels cause errors.

If you load multiple sample tubes with the same sample ID on the automation system and on a connected analyzer at the same time, the system can send duplicate results to the LIS. Contact your Beckman Coulter Representative for suggestions to implement unique sample ID labeling.

CAUTION

To reduce risk of personal injury, operate the system only with all covers in place.

CAUTION

Do not load or view the Instructions for Use PDF files onto any computer connected to the automation system. Failure to follow this caution can reduce computer processing speed and system performance.

CAUTION

Use only the approved Power Processor parts and supplies as listed in the Power Processor General System Operation IFU, Appendix B. Use only the approved sample tubes as noted in the Power Processor General System Operation IFU, Operational Overview.

Electromagnetic Wave and Noise Precautions

This In Vitro diagnostic (IVD) equipment complies with the emission and immunity requirement described in IEC 61326-2-6.



This equipment has been designed and tested to CISPR 11 Class A. In a domestic environment, it could cause radio interference, in which case, you might need to take measures to mitigate the interference.

It is advised that before operation of the device, the electromagnetic environment be evaluated. Do not use this device near sources of strong electromagnetic radiation (for example, unshielded intentional RF sources), as they could interfere with the correct operation.

Hardware Labels

Biohazard Label

This label indicates a caution to operate only with all covers in position to decrease risk of personal injury or biohazard.



Pneumatic Label

This label indicates a caution that the Inlet module works under a pressure of 0.7 mpa (100 PSI).



Compliance and Certification Markings

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

Recycling Label

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

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



Customers must understand and follow all laws regarding the correct decontamination and safe disposal of electrical equipment. For Beckman Coulter products bearing this label, contact your dealer or local Beckman Coulter office for details on the take-back program that facilitates the correct collection, treatment, recovery, recycling and safe disposal of these products.

For the Japan Market:

This system is considered an industrial waste, subject to special controls for infectious waste. Prior to disposal of the system, refer to the "Waste Disposal and Public Cleaning Law" for compliance procedures.

cNRTLus Certification Mark

This symbol indicates recognition by a Nationally Recognized Testing Laboratory (NRTL) that the instrument has met the relevant product safety standards for the United States and Canada.

OSHA, CEC



CE Marking

The CE marking indicates that a product has been assessed before being placed on the market, and has been found to meet the applicable directives relating to the European Union safety, health, and environmental protection requirements.



RoHS Caution Symbol

This symbol 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 (in years) 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.

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







RCM Symbol

This symbol indicates compliance with the Australian Communications Media Authority (ACMA) requirements (safety and EMC) for Australia and New Zealand.








Symbols Glossary






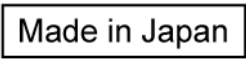
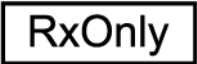

Symbols Glossary

Symbol	Symbol Title, Symbol Meaning, and Symbol Reference
	<p>Title of Symbol: Caution</p> <p>Meaning of Symbol: Indicates the need for the user to consult the instructions for use for important cautionary information such as warnings and precautions that cannot, for a variety of reasons, be presented on the medical device itself.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>ISO 15223-1: Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.4.4</i></p>
	<p>Title of Symbol: In vitro diagnostic medical device</p> <p>Meaning of Symbol: Indicates a medical device that is intended to be used as an in vitro diagnostic medical device.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>ISO 15223-1: Medical devices. Symbols to be used with medical device labels, labelling and information to be supplied. General requirements, clause 5.5.1</i></p>
	<p>Title of Symbol: Dangerous voltage</p> <p>Meaning of Symbol: To indicate hazards arising from dangerous voltages.</p> <p><i>IEC 60417: Graphical symbols for use on equipment - Overview and application, #5036</i></p> <p>Supplemental Product-Specific Manufacturer Information</p> <p>This symbol can also indicate an area of the system to not access under any circumstances, due to possibility of high voltages and the risk of electrical shock.</p>
	<p>Title of Symbol: Warning; Biological hazard</p> <p>Meaning of Symbol: To warn of a biological hazard.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>IEC 60878. Graphical Symbols for electrical equipment in medical practices. #7010-W009</i></p> <p>Supplemental Product-Specific Manufacturer Information</p> <p>This label indicates a caution to operate only with all covers in position to decrease risk of personal injury or biohazard.</p> <p>This label indicates the use of biohazardous materials in the area. Use caution when working with possible infectious samples.</p> <p>Wear Personal Protective Equipment (PPE) such as gloves, eye shields, and lab coats. Handle and dispose of biohazardous materials according to your laboratory procedures.</p>

Symbols Glossary (Continued)






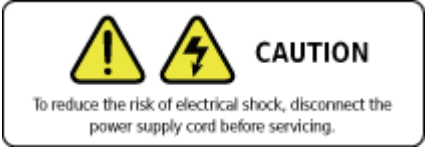


Symbol	Symbol Title, Symbol Meaning, and Symbol Reference
	<p>Title of Symbol: Warning; Crushing of hands</p> <p>Meaning of Symbol: To warn of a closing motion of mechanical parts of equipment</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>ISO 7010. Graphical Symbols for electrical equipment in medical practices. #W024</i></p> <p>Supplemental Product-Specific Manufacturer Information</p> <p>Use caution to avoid injury to hands when close to equipment with moving mechanical parts.</p>
	<p>Title of Symbol: Consult instructions for use</p> <p>Meaning of Symbol: Indicates the need for the user to consult the instructions for use.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.4.3</i></p>
	<p>Title of Symbol: Date of Manufacture</p> <p>Meaning of Symbol: To indicate the date when the medical device was manufactured.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.3</i></p>
	<p>Title of Symbol: Authorised representative in the European Community</p> <p>Meaning of Symbol: Indicates the authorized representative in the European community.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.2</i></p>
	<p>Title of Symbol: Manufacturer</p> <p>Meaning of Symbol: Indicates the medical device manufacturer as defined in EU Directives 90/385/EEC, 93/42/EEC and 98/79/EC.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.1</i></p> <p>Supplemental Product-Specific Manufacturer Information</p> <p>This symbol identifies who the legal manufacturer of the product is.</p>

Symbols Glossary (Continued)



Symbol	Symbol Title, Symbol Meaning, and Symbol Reference
	<p>Title of Symbol: Catalogue Number</p> <p>Meaning of Symbol: Indicates the manufacturer's catalogue number so that the medical device can be identified.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.4</i></p>
	<p>Title of Symbol: Serial number</p> <p>Meaning of Symbol: Indicates the manufacturer's serial number so that a specific medical device can be identified.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>ISO 15223-1. Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General Requirements. #5.1.7</i></p>
	<p>Title of Symbol: Stop</p> <p>Meaning of Symbol: To identify the control or the indicator to stop the active function.</p> <p>Standard Number, Title of Standard, and Symbol Reference Number: <i>IEC 60417: Graphical symbols for use on equipment - Overview and application, #5110A</i></p> <p>Supplemental Product-Specific Manufacturer Information</p> <p>This symbol indicates a stop button.</p>
	<p>Title of Symbol: Cooling Unit</p> <p>Meaning of Symbol: Denotes the cooling unit.</p>
	<p>Title of Symbol: Driver Box</p> <p>Meaning of Symbol: Denotes the driver box.</p>
	<p>Title of Symbol: Made in Japan</p> <p>Meaning of Symbol: Indicates the country where the device hardware was manufactured.</p>
	<p>Title of Symbol: RxOnly Symbol</p> <p>Meaning of Symbol: Caution: U.S. Federal Law restricts this device to sale by or on the order of a licensed practitioner.</p>
	<p>Title of Symbol: California Proposition 65</p> <p>Meaning of Symbol: This product may contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to https://www.P65Warnings.ca.gov.</p>

Historical Power Processor systems may contain the following additional labels.

Legacy Hardware Labels

Symbol	Description
	Please Hold This Portion This symbol, located on the drawer in the Dynamic Inlet and Outlet modules and the top cover of the centrifuge, indicates the most stable position to hold the drawer or cover.
	Stop Button This symbol indicates a stop button that you can use to halt any hazardous condition.
	Power On This symbol indicates the location of the Power On button in the Centrifuge module.
	RoHS Environmental This symbol 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.
	C-Tick Mark The C-Tick mark is intended for use on products that comply with the applicable Electromagnetic Compatibility (EMC) standards in the Australian or New Zealand market.
	Caution To reduce the risk of electrical shock, disconnect the power supply cord before servicing.
	Caution, Biohazard Label This caution symbol indicates a caution to operate only with all covers in position to decrease risk of personal injury or biohazard.
	Sharp Object Label A label reading "CAUTION SHARP OBJECTS" is found on the Decapper device in the Decapper/Serum Level Detection (SLD) module.

Legacy Hardware Labels (Continued)

Symbol	Description
 A015081LEPS	<p>Caution, Moving Parts</p> <p>This caution symbol warns the operator of moving parts that can pinch or crush. This label is found in several locations.</p>
	<p>Moving Parts Label</p> <p>This label indicates moving parts that can pinch or crush. This label is found in several locations.</p> <p>Caution parts move automatically</p> <p>While the system is in operation, do not touch or go close to any moving parts. Close protective guards and covers during operation. Failure to close covers correctly can cause injury or incorrect results.</p>

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[Related Documents](#)

General Information

Intended Use

The basic Power Processor is an automated sample handling system which processes sample tubes from the pre-centrifugation, pre-sorting step to presentation of centrifuged and decapped samples into Generic or Personality Racks for specific instruments. The Power Processor can be configured with optional software and hardware to allow processing of sample tubes on Generic Connection Instruments.

The Power Processor performs all pre-analytical sample tube preparation, and then sorts the sample tubes directly to Generic Connection Modules where the samples are pipetted by the Generic Connection instrument for testing. After the samples are pipetted, the tubes can route to other instruments for additional testing or to Outlet Racks.



Pre-diluted samples should always be processed manually at the instrument. Do not load pre-diluted samples on the automation line for processing to the connected analyzers. Please refer to the instrument specific IFU/User's Guide for the instructions on handling the pre-diluted samples.

Scope of this Manual

This *Instructions For Use* manual is for the Power Processor Inlets, Outlets, Hematology, and Bar Code Verification Modules used with PrepLink software Version 5.0. This manual contains information and instructions that will assist you in performing Power Processor Inlets, Outlets, Hematology, and Bar Code Verification Module operations and troubleshooting functions.

NOTE Be sure to follow all safety cautions and warnings noted in this document.

This document is part of the Power Processor Instructions for Use *Document Set* and, only covers the Power Processor Inlets, Outlets, Hematology, and Bar Code Verification Modules. For information and instructions for other Power Processor modules, refer to the appropriate Power Processor manual from the list below.

Power Processor Instructions for Use Document Set

- *General System Operation IFU*, PN B01683
- *Inlets, Outlets, Hematology, and Barcode Verification Modules IFU*, PN B01519
- *Centrifuge Module IFU*, PN A97119
- *Decapper and Recapper Modules IFU*, PN A97252

- *Aliquot Module IFU*, PN A97103
- *LX and DxC Connection Modules IFU*, PN A97111
- *AU Connection Modules IFU*, PN B01540
- *Generic/IDC and Dxi Connection Modules IFU*, PN A97260
- *Stockyard Modules IFU*, PN A97244

Document Conventions

Safety Information

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.

For more information, refer to the [Safety Notice](#) section, in this document.

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.

Trademarks and Product Names

Associated registered trademark and trademark symbols will only be used in the first instance where they apply.

The product family names, Synchron and UniCel, will only appear associated with members of products in those families the first time the product name is mentioned. Thereafter the product name will be used alone. One exception to this rule is the use of names of instrument racks, since the name of the rack includes the product family and is associated with a specific Beckman Coulter part number.

CHAPTER 1

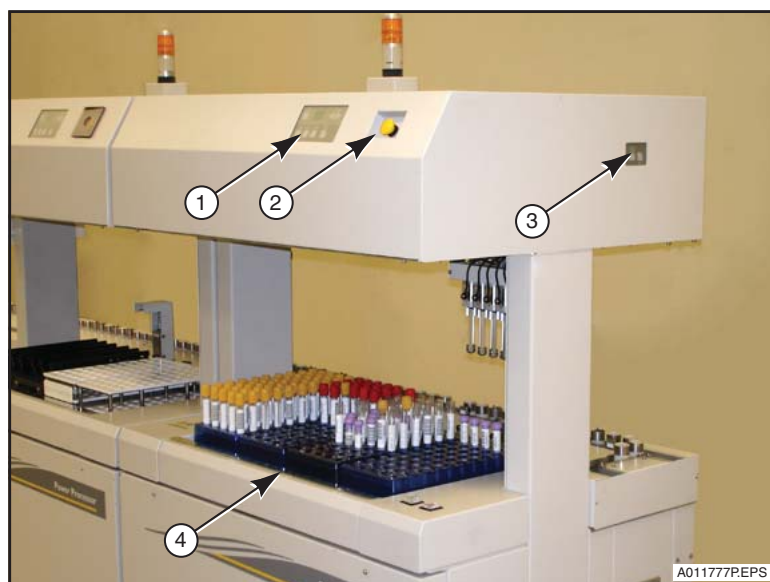
Module Description

This chapter provides a brief description of the Power Processor Inlets, Outlets, Hematology, and Bar Code Verification Modules.

Inlet Module - (Five-Gripper Arm Inlet)

Sample tubes are loaded onto the Power Processor at the Inlet Module (refer to [Figure 1.1](#)). The Inlet Module has four positions for generic collection racks, each with a capacity of 50 sample tubes. Sample tubes are sequentially loaded into sample tube carriers in groups of five or less for transfer through the system. A flashing beacon is activated when the collection racks are empty. The operator can then load additional filled collection racks to provide continuous sample tube flow through the system.

Figure 1.1 Inlet Module



- | | |
|----------------|-------------------------|
| 1. Keypad | 3. Priority Load Button |
| 2. Stop Button | 4. Collection Racks |

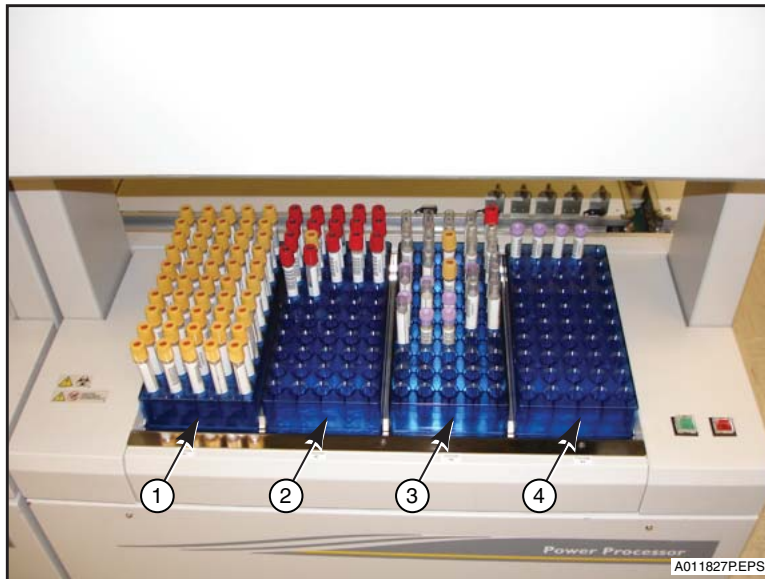
The Inlet Module provides a Priority Load operation (refer to [Figure 1.1](#)). Priority tube loading allows the operator to load sample tubes directly into sample tube carriers ahead of the tubes remaining in the collection racks.

The Inlet Module Transfer Arm loads sample tubes from collection racks onto the automated track system for processing. One to five sample tubes can be loaded at a time (refer to [Figure 1.2](#)).

Module Description

Inlet Module - (Five-Gripper Arm Inlet)

Figure 1.2 Rack Positions



- | | |
|----------------|----------------|
| 1. Position 01 | 3. Position 03 |
| 2. Position 02 | 4. Position 04 |

The operator loads the collection racks sequentially starting at position one, from left to right, onto the Inlet Module (refer to [Figure 1.2](#)). The collection racks are keyed for proper placement. An error will occur if the racks are not placed on the module correctly (refer to [Figure 1.3](#)).

Figure 1.3 Collection Rack Key Location



- | |
|-------------|
| 1. Key Hole |
| 2. Keys |

Bar Code Verification Module

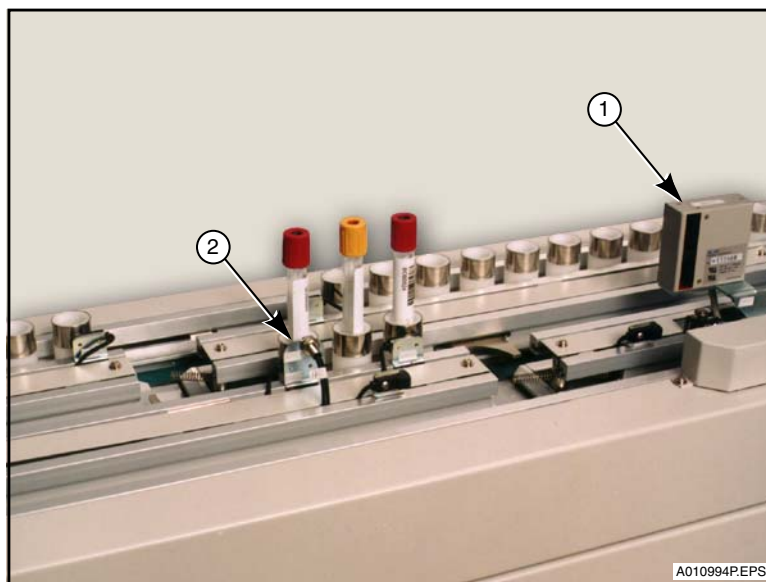
Instead of a Hematology Module, a Power Processor may have a Bar Code Verification Module to verify that sample programming has been received.

After the sample specimens leave the Inlet Module they arrive at the Bar Code Verification Module. The sample tube bar codes are read and sample programming is verified. If sample programming has not been received, the sample tube is routed to the Error Lane in the Bar Code Verification Module.

Error Lane

Up to three tubes are routed to the Error Lane before operator intervention is required (refer to [Figure 1.4](#)). When three sample tubes accumulate in the Error Lane an audible alarm and flashing beacon activate. The operator must remove the tubes from the Error Lane.

Figure 1.4 Error Lane



1. Bar Code Reader
2. Error Lane

Sample tubes are routed to the Error Lane in the Bar Code Verification Module for the following reasons:

- The bar code label is damaged, missing or cannot be read.
- Inconsistent or invalid sample programming.
- The sample specimen bar code has been previously read (duplicate bar code number) and is still on the system.
- The bar code label is the wrong length or type.
- There is no sample programming for the sample specimen.

- The PrepLink cannot determine the correct Outlet Rack destination due to sorting conflicts in the setup information.
- The Line computer is set for Remap but PrepLink is not configured to remap samples.

Hematology Module

The Hematology Module is part of the Power Processor Basic System for software versions 3.1 and greater. For software versions 3.0 and lower the Power Processor can be configured with an optional Hematology Module in the place of the standard Bar Code Verification Module (Error Lane). The Hematology Module provides a sorting destination for sample tubes with hematology and other tests that are not to be centrifuged and decapped.

Key Features

The Hematology Module adds the following features to the Power Processor:

- Pre-analytical sample tube processing and sorting of tubes that don't require centrifugation or decapping
- The sorting of Hemogard or Vacutainer 13 × 75 mm sample tubes to GEN•S Personality Racks (with modified springs)
- The loading and sorting of 13 × 75 and 13 × 100 mm sample tubes to Generic Racks in the Inlet and Hematology Module
- The ability to configure a rack or subsection of any rack in the Hematology Module as a STAT Subsection
- Increased error handling capacity with a 10, 20, 25 or 50-sample tube Error Rack
- The ability to bypass the centrifugation step for pre-spun sample tubes

IMPORTANT Though different sample tube sizes are supported at the Inlet and Hematology Modules, only one size sample tube (either 13 × 75 mm or 13 × 100 mm) can be supported throughout the rest of the system.

IMPORTANT The plastic Universal Generic Rack must be used with the additional metal base plate when used for 13 × 75 mm tubes.

The Hematology Module provides a sorting destination for sample tubes with hematology and other requested tests that are not to be centrifuged or decapped.

The Hematology Module operates much the same as an Outlet Module. Sample tubes travel along the track in sample tube carriers until they reach the bar code reader. The bar code reader scans the bar code label on the tube and sends the information to the PrepLink computer. PrepLink decides whether to sort the tube to a rack in the Hematology Module or to pass the sample tube down the track.

IMPORTANT Throughout this chapter, Hematology Racks include GEN•S, STK•S, LH and DxH personality racks.

Hardware

The Hematology Module option requires the following modifications to a standard Power Processor:

- Modified Inlet Module Gripper Fingers
- Hematology Module (installed in the place of the Bar Code Verification Module)
- Universal Racks at the Inlet and Hematology Modules
- Universal Sample Tube Carrier
- Centrifuge Bypass Lane

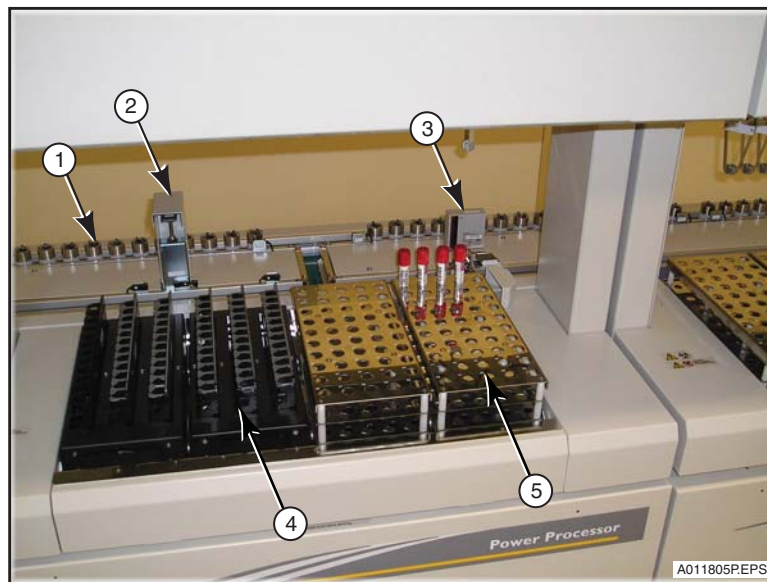
Modified Inlet Module Gripper Fingers

Because the Hematology Module supports 13x75 and 13x100 sample tubes, the gripper fingers at the Inlet Module must be modified to handle tubes of various height also.

Hematology Module

The Hematology Module (refer to [Figure 1.5](#)) is a sorting outlet installed in place of the Bar Code Verification Module.

Figure 1.5 Hematology Module



- | | |
|--------------------------|--------------------------------------|
| 1. Return Lane | 4. Hematology Personality Rack |
| 2. Tube Alignment Tapper | 5. Universal Generic Rack/Error Rack |
| 3. Bar Code Reader | |

A bar code reader at the Hematology Module scans each sample tube bar code label to determine whether to sort the sample to a rack in the Hematology Module, or to pass the sample down the track.

The Hematology Module must have an Error Rack configured. It can also be configured to support Hematology Personality Racks, STAT Racks and Generic Racks.

Hematology Module Racks

Several types of racks can be assigned to the Hematology Module:

- Error Rack (a G2, G3 or G7 Universal Generic Rack) Refer to the “Aliquot Module Configuration” section in CHAPTER 2 of the [Aliquot Module IFU](#).
- Personality Racks for GEN•S, STK•S, LH and DxH hematology cassettes.
- Stainless Steel Universal Generic Rack.
- Plastic Generic Rack with Base Plate.

Error Rack

Since the Hematology Module replaces the Bar Code Verification Module and Error Lane, an Error Rack (sort location) must be configured in the Hematology Module to provide a sorting destination for sample tubes that cannot be run on the system.

After the sample specimens leave the Inlet Module they arrive at the Hematology bar code reader. The sample tube bar codes are read and sample programming is verified. If sample programming has not been received, the sample tube is routed to the Error Rack in the Hematology Module.

Sample tubes are routed to the Error Rack for the following reasons:

- No sample programming.
- Duplicate sample ID.
- Sorting conflict.

Hematology Personality Racks

Personality Racks for GEN•S, STK•S, LH and DxH cassettes are available for use on the Hematology Module. The operator can unload racks from the Hematology Module, remove the cassettes from the Personality Racks and place the cassettes directly on the appropriate instrument.

STAT Subsections

The STAT subsection at the Hematology Module works differently from the STAT subsection in the Outlet Module. In the Hematology Module, the operator can configure any rack or subsection of a rack as a STAT sorting destination (except the Error Rack subsection), while STAT Racks in the outlets are physical racks containing LX/DxC/DxI and Access instrument racks.

If a rack or subsection of a rack is configured as STAT in the Hematology Module:

- There must be a corresponding rack or subsection of a rack configured for routine sorting (though it is not necessary to configure a STAT rack or subsection to correspond to every routine rack or subsection).
- Tests must be assigned to both the routine and STAT racks or STAT subsections.
- For any given test, if there is only a routine rack or subsection configured, the tube will sort to the routine rack whether the programming is ordered STAT or not.
- If both a routine and STAT rack are configured, the tube will sort according to whether the programming is ordered STAT or routine.

IMPORTANT If a rack or a subsection of a rack is configured as a STAT Rack and a test is assigned to that STAT rack or subsection but not to a routine rack, sample tubes with routine sample programming for that test will be routed to the Error Rack.

Universal Sample Tube Carriers

A sample tube carrier holds one sample tube and moves it on the track.

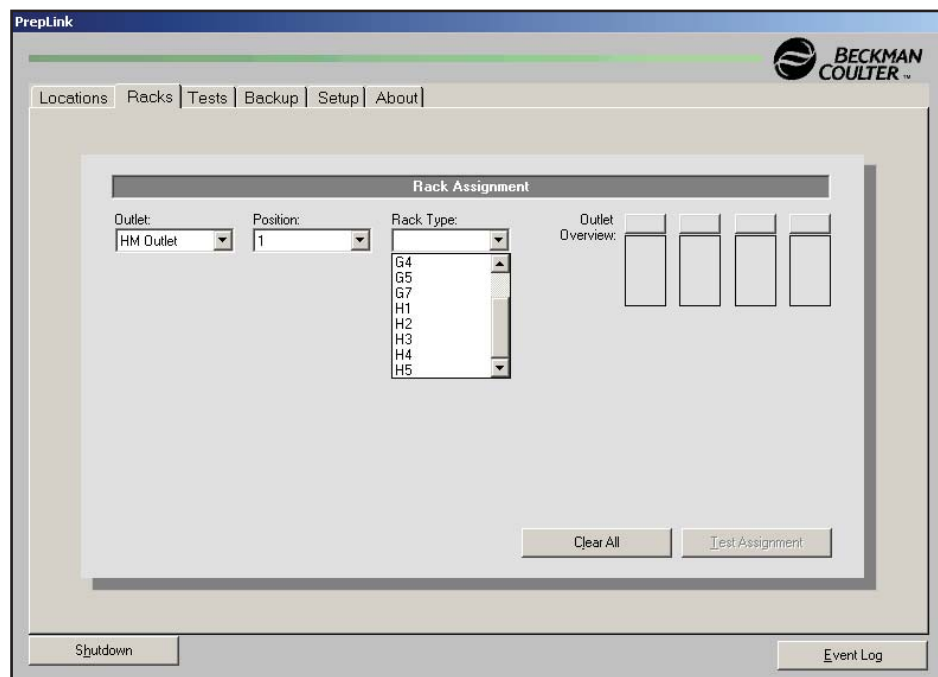
Software

The PrepLink and Line Control Computer feature slightly different screens when they are configured to manage the Power Processor with the Hematology Module. During installation, a Service Representative will configure both computers to match the system hardware.

PrepLink

The Rack Assignment screen has an HM Outlet so that the operator can assign racks to positions in that outlet (refer to [Figure 1.6](#)).

Figure 1.6 PrepLink Rack Assignment Screen

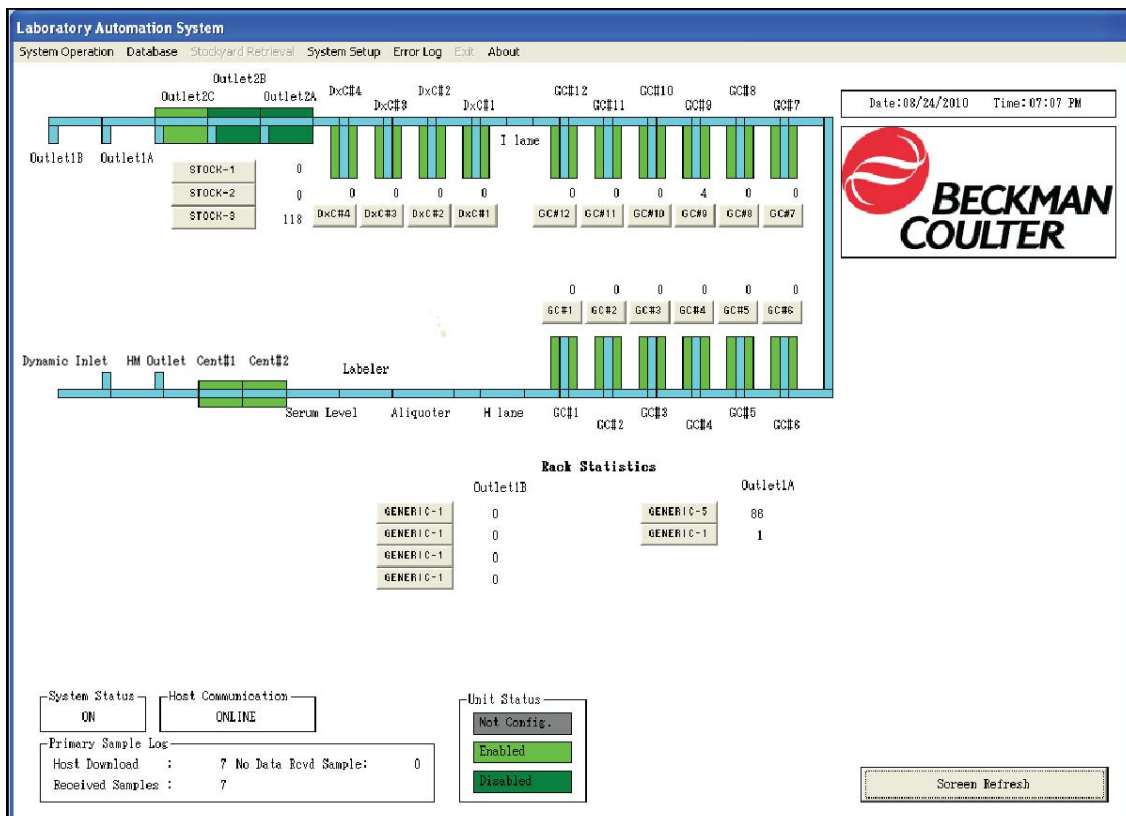


E011806S.EPS

Line Control Computer

When the Line Control Computer is configured to manage the Power Processor with the Hematology Module, the Hematology Module replaces the Bar Code Verification Module (Error Lane) on the Main screen (refer to [Figure 1.7](#)).

Figure 1.7 Line Control Computer Main Screen for Power Processor V5.0

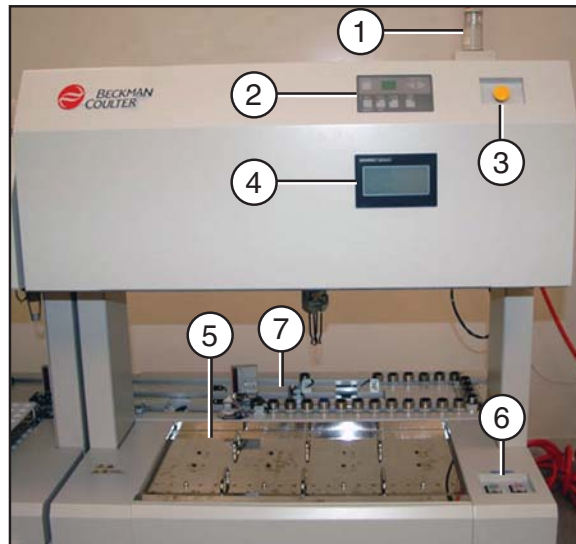


Dynamic Inlet Module (Single-Arm Inlet)

Sample tubes are loaded onto the Power Processor at the Dynamic Inlet Module.

The Dynamic Inlet Module has four positions for specialized Power Processor Inlet racks, each with a capacity of 50 sample tubes. These inlet racks are identified by color (red, blue, yellow and white).

Figure 1.8 Dynamic Inlet Module



- | | |
|-------------------------|--------------------|
| 1. Beacon | 5. Rack Area |
| 2. Inlet Module Keypad | 6. ON/OFF Switches |
| 3. Stop Button | 7. Error Lane |
| 4. Inlet Module Display | |

The single-gripper arm transfers sample tubes individually from the Inlet racks onto the automated track system for processing.

A flashing beacon is activated when the collection racks are empty. The operator can then load additional collection racks to provide continuous sample tube flow through the system. All samples must be loaded onto the Power Processor via racks, no manual tube introduction directly into sample carriers is allowed.

NOTE Tubes manually loaded into tube carriers will be sorted to the Error Lane.

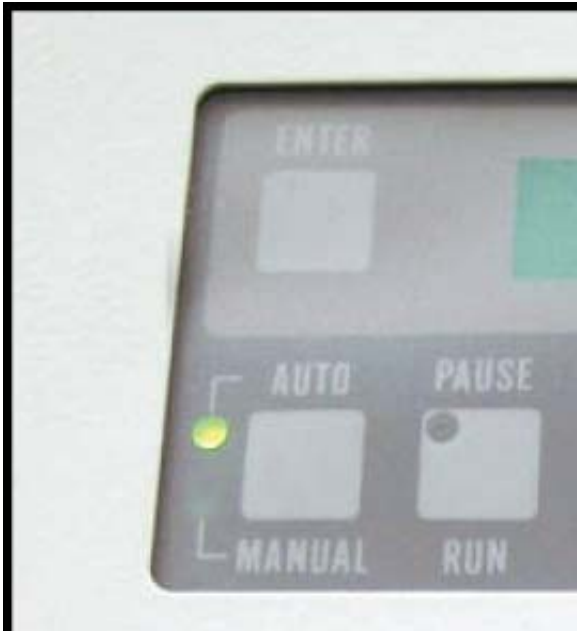
When the Dynamic Inlet is processing sample tubes, the display will be green and when it has completed processing the sample tubes it will be amber.

The display shows the rack types processing samples at the Inlet.

Module Description

Dynamic Inlet Module (Single-Arm Inlet)

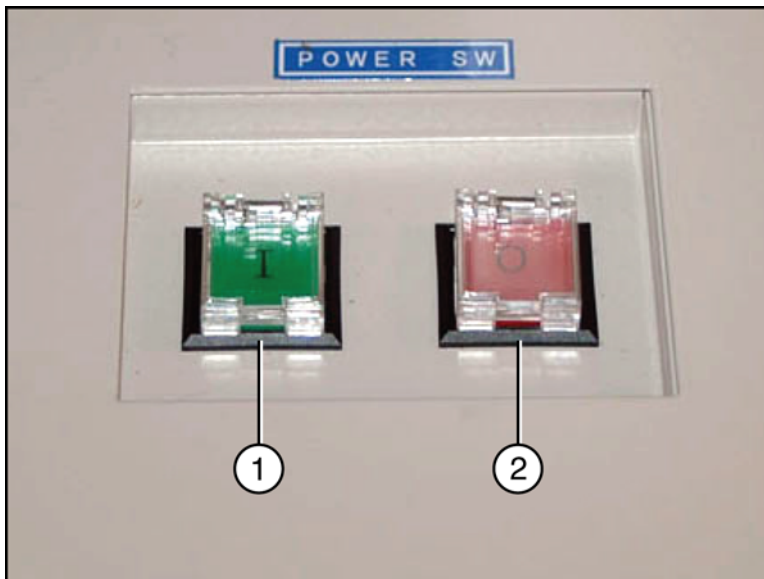
Figure 1.9 Keypad and Display Panel



1. Inlet Module Keypad
2. Inlet Module Display

The Dynamic Inlet Module has power ON/OFF buttons. The green power ON button in the Inlet Module distributes the electric power to the Power Processor system. The red power OFF button is for System power down (refer to [Figure 1.10](#)).

Figure 1.10 System Power ON/OFF Buttons



1. ON Button
2. OFF Button

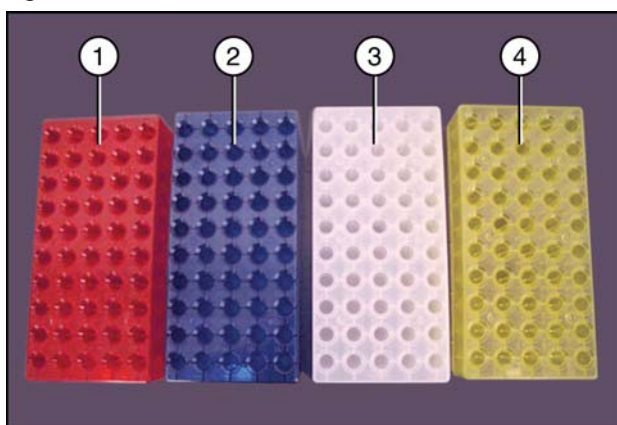
Dynamic Inlet Rack Type

There are four rack types with specific part numbers: Priority, Routine, Centrifuge Bypass and Remap Racks (refer to [Figure 1.11](#)) can be placed in any position and any combination of rack types can be used.

Racks are processed in the following priority order independent of their physical location in the Inlet.

- Priority Rack: RED, PN A87422
- Routine Rack: BLUE, PN A87421
- Centrifuge Bypass Rack: WHITE, PN A87423
- Remap Rack: YELLOW, PN A87420

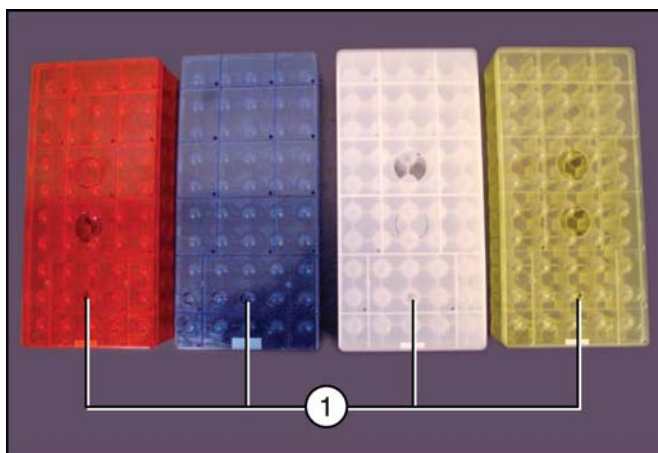
Figure 1.11 Collection Racks



- | | |
|------------------|---------------------------|
| 1. Priority Rack | 3. Centrifuge Bypass Rack |
| 2. Routine Rack | 4. Remap Rack |

The rack types from the bottom of the racks are “Priority”, “Routine”, “Centrifuge Bypass” and “Remap” (refer to [Figure 1.12](#)).

Figure 1.12 Collection Racks Bottoms



1. Key Hole for each Rack

Each collection rack is keyed to fit one way on the Inlet. Rack positions are numbered 01 to 04 from left to right. Four collection racks must always be present on the Inlet or the system will generate an error.

When loading sample tubes into the rack place the first sample in the left corner of the rack, in the number 1 position. Fill the row from left to right, with each new row starting at the left.

IMPORTANT Make sure no empty positions exist between sample tubes in the same row. If a sample is not detected by the gripper arm then it will proceed to the next priority rack.



Errors caused by putting samples in the incorrect rack type are possible, and can result in possible wrong answers, delayed results and instrument damage. If the operator mistakenly puts a Priority sample in a Routine rack or in a Remap rack a delayed result may occur. If the operator mistakenly puts a priority sample or a routine sample in a Centrifuge Bypass rack a possible wrong answer may occur. Instrument damage may occur if a priority or routine sample is mistakenly put in a Centrifuge Bypass rack. Double check that samples are placed in the correct rack type to ensure proper processing at the Inlet.

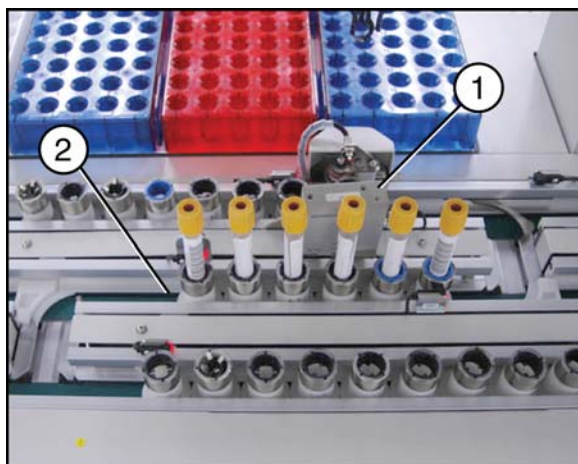
Dynamic Inlet Error Lane

When a sample tube is removed from a rack by the gripper arm, the sample tube bar code is read and sample programming verified. Sample tubes that cannot be verified are routed to the error lane for the following reasons:

- The bar code cannot be read.
- The bar code is the wrong length or type.
- The sample tube was placed manually into a sample tube carrier on a Dynamic Inlet where priority loading is not permitted.

Up to six tubes are routed to the Error Lane before operator intervention is required (refer to [Figure 1.13](#)). When six sample tubes accumulate in the Error Lane an audible alarm and flashing beacon activate. The operator must remove the tubes from the Error Lane.

Figure 1.13 Error Lane (Rear View)

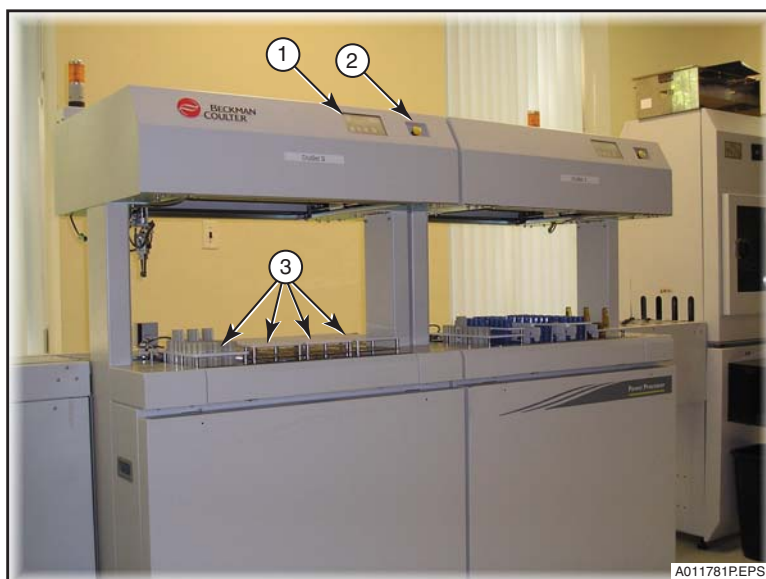


1. Bar Code Reader
2. Error Lane

Outlet Module

The Outlet Module sorts sample tubes into outlet racks to be removed by the operator (refer to [Figure 1.14](#)).

Figure 1.14 Outlet Modules



1. Keypad
2. Stop Button
3. Outlet Racks

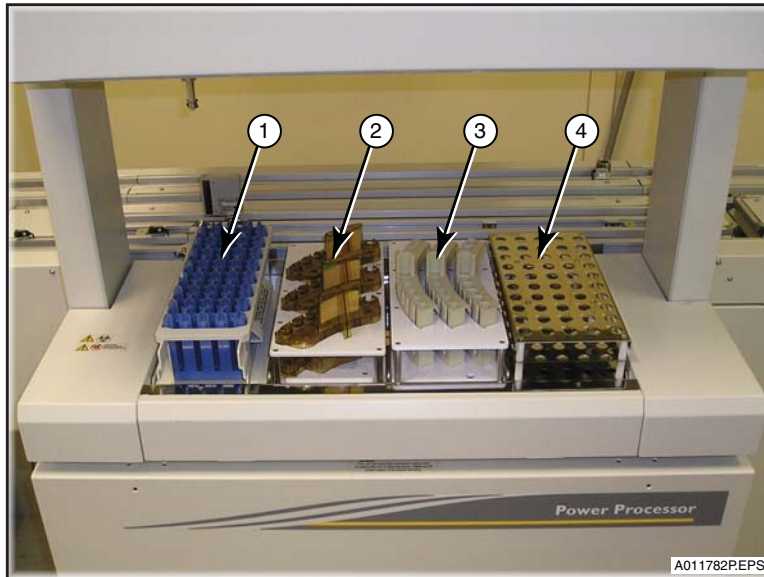
Outlet Module Racks

Sample tubes are picked up by the Outlet Module Transfer Arm and placed into specific Personality Racks or 50-tube Generic Racks. These racks include:

- Synchron LX, UniCel DxC and DxI compatible
- Synchron ALX
- Access
- Hematology (GEN•S, STK•S and LH and DxH)
- STAT (holds one Access rack and three LX/DxC/DxI instrument racks)
- Generic (13 × 75, 13 × 100, white metal, stainless steel, and blue plastic)

When the sample tubes are placed into Personality Racks, the bar codes are automatically aligned for placement on the instrument (refer to [Figure 1.15](#)).

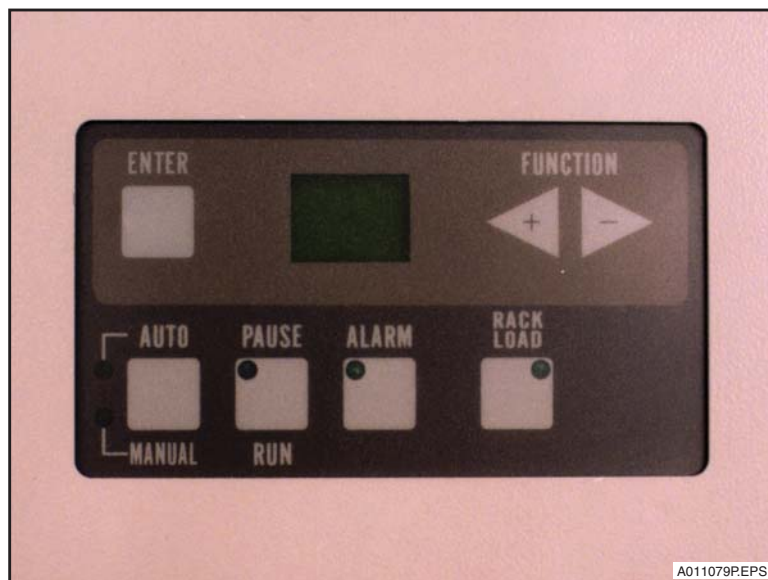
Figure 1.15 Outlet Racks



- | | |
|---|----------------------------|
| 1. LX/DxC Personality Rack/DxI Personality Rack | 3. Access Personality Rack |
| 2. ALX Personality Rack | 4. Generic Rack |

When an outlet rack is full, a flashing beacon alerts the operator. A rack can be removed before it is full by pressing the RACK LOAD button on the keypad (refer to [Figure 1.16](#)).

Figure 1.16 Outlet Module Keypad



CHAPTER 2

Module Procedures

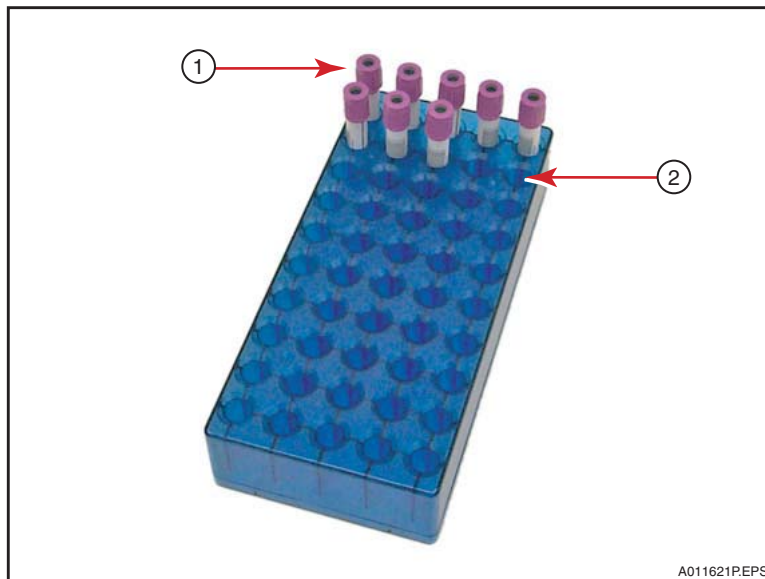
This chapter contains operational procedures for the Inlets, Outlets, Hematology, and Bar Code Verification modules.

Loading Tubes into Racks - (Five-Gripper Arm Inlet)

The Inlet Module Transfer Arm checks only the first tube position in the first row of a collection rack. If the Transfer Arm finds that the first position of the first row is empty, the system assumes the collection rack is empty and moves to the next collection rack.

If the system finds a sample tube in the first position of the first row of a collection rack, the Transfer Arm loads the row of sample tubes into the sample tube carriers waiting on the track. Once the Transfer Arm has loaded a row from a rack, it checks for sample tubes in every row of that collection rack. If an empty space between sample tubes in a row is found, the system generates an error message.

-
- 1** Place the first sample tube in the left corner of the rack, in the “#1” position (refer to (1) in [Figure 2.1](#)).
 - 2** Fill the row from left to right, with each new row starting at the left.
 - 3** Make sure that no vacant positions exist between sample tubes in the same row. Rows with fewer than five tubes are acceptable if the empty positions are to the right of loaded positions.
-

Figure 2.1 Partially Loaded Collection Rack

1. Start Position #1 in Row #1 (Top Left Corner)
2. Partially Filled Row

Loading the Inlet - (Five-Gripper Arm Inlet)

Each collection rack is keyed to fit one way on the Inlet Module (refer to [Figure 2.2](#)).

Rack positions are numbered from 01 to 04, from left to right (refer to [Figure 2.3](#)). Four collection racks must always be present on the Inlet Module, or the system will generate an error.

The operator loads the collection racks sequentially starting at position one, from left to right, onto the Inlet Module. The collection racks are keyed for proper placement. An error will occur if the racks are not placed on the module correctly (refer to [Figure 2.3](#)).

CAUTION

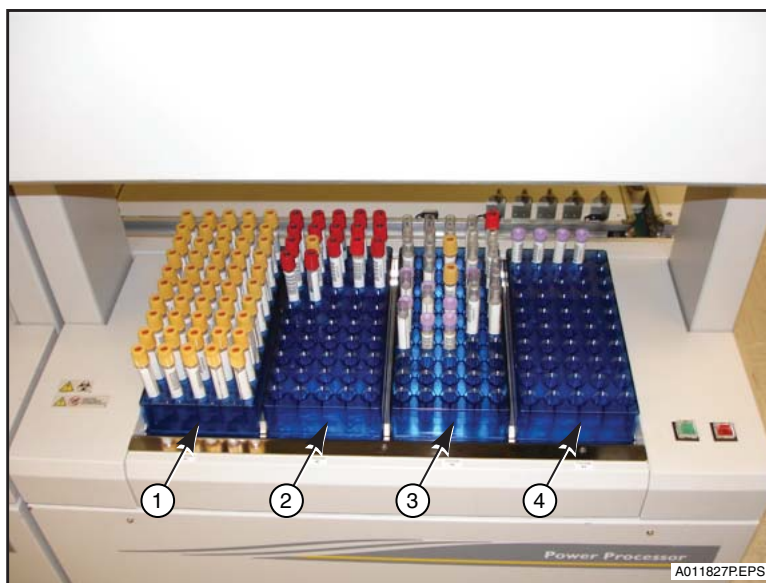
To prevent loading errors, tube breakage, and damage to the system, collection racks must be loaded correctly onto the system.

Figure 2.2 Collection Rack Key Positions



1. Key Hole
2. Keys

Figure 2.3 Rack Positions



- | | |
|----------------|----------------|
| 1. Position 01 | 3. Position 03 |
| 2. Position 02 | 4. Position 04 |

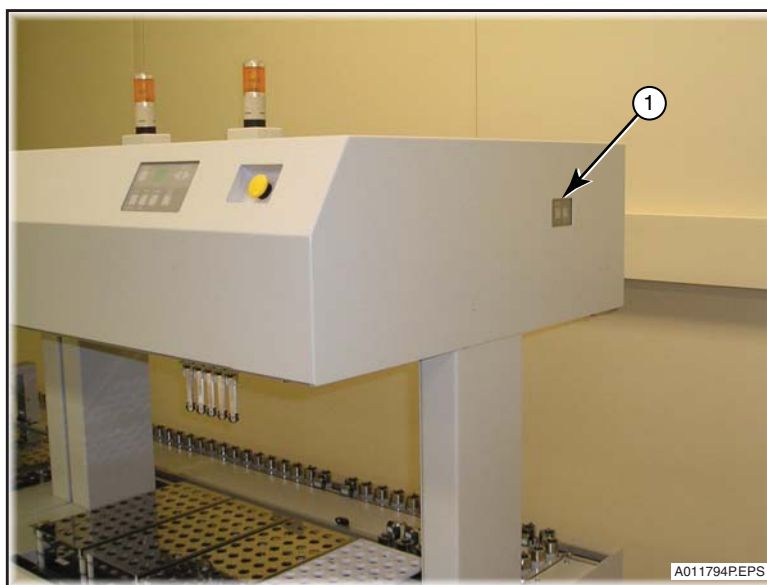
Priority Loading - (Five-Gripper Arm Inlet)

Priority Loading (Five-Gripper Arm Inlet) allows the operator to place any number of sample tubes on the system ahead of sample tubes waiting in collection racks.

To load sample tubes ahead of those waiting in collection racks, follow the procedure below.

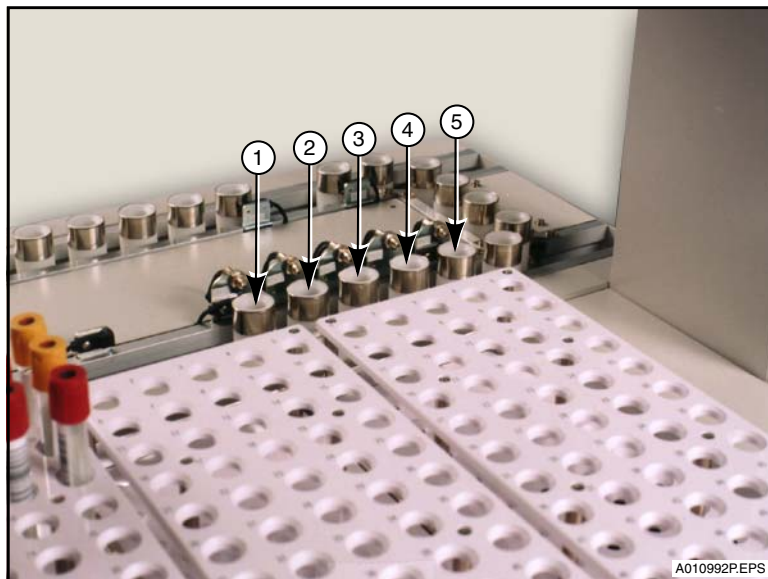
- 1 Press the **PRIORITY LOAD** button on the right side of the Inlet Module hood, above the track (refer to [Figure 2.4](#)). The keypad display flashes as the Transfer Arm completes the current operation and moves to the Home position.
- 2 Wait for the Priority light to stop flashing and change to “solid green.”
- 3 Manually load priority sample tubes into empty sample tube carriers at the loading positions.
IMPORTANT If Priority Loading a 13 × 75 mm sample tube, ensure that the tube is not pushed so deep into the sample tube carrier that the bar code label is obstructed.
IMPORTANT When performing Priority Load, ensure that no gaps exist between sample tubes in the loading positions. Sample tubes will not be sent down the track until a sample tube is placed in position one (refer to [Figure 2.5](#)).
- 4 Press the **RUN** button next to the PRIORITY LOAD button to resume routine sample processing.

Figure 2.4 Priority Load Button



1. PRIORITY LOAD Button

Figure 2.5 Sample Tube Loading Positions



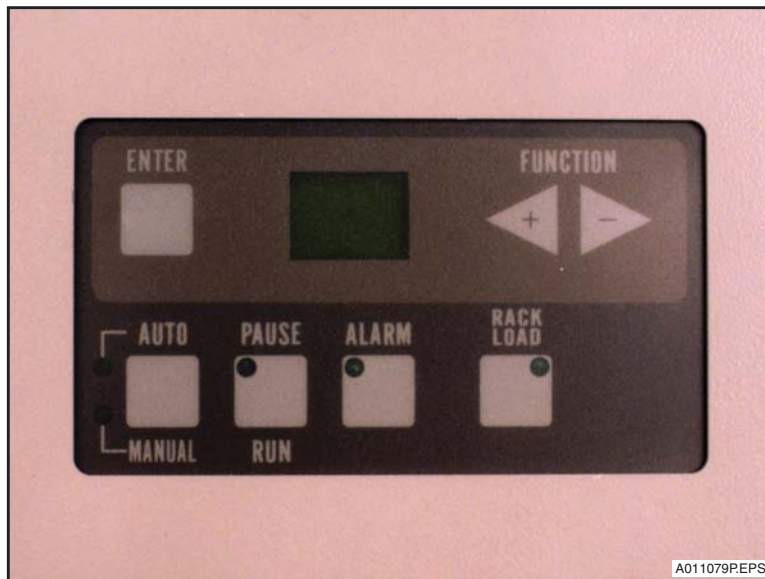
- | | |
|---------------|---------------|
| 1. Position 1 | 4. Position 4 |
| 2. Position 2 | 5. Position 5 |
| 3. Position 3 | |

System-Initiated Rack Load - (Five-Gripper Arm Inlet)

When the system has completely unloaded all the tubes from the collection racks at the Inlet Module, a flashing beacon and a lit RACK LOAD button on the Inlet Module keypad alert the operator. To perform a System-Initiated Rack Load, follow the procedure below (refer to [Figure 2.3](#) and [Figure 2.6](#)).

- 1 Remove collection rack(s) from the Inlet Module.
- 2 Place loaded collection rack(s) onto the Inlet Module. The PAUSE/RUN light flashes when a rack is loaded.
 - If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, make sure the Line Control Computer is on the Main screen.
 - If the Line Control Computer is on the Database Query/Sample Search screen, return to the Line Control Computer Main screen.
- 3 Press the **PAUSE/RUN** button on the Inlet Module keypad to begin sample processing.

Figure 2.6 Inlet Module Keypad



Operator-Initiated Rack Load - (Five-Gripper Arm Inlet)

The operator can load collection racks at the Inlet Module before the system initiates a Rack Load. To perform an Operator-Initiated Rack Load, follow the procedure below.

IMPORTANT Incorrectly loading or unloading a collection rack in the Inlet Module during processing can interrupt the unloading sequence and prevent the system from completely unloading the original collection rack. If this occurs, move one sample tube to the number one position in the rack. Lift and replace the original collection rack. Press the **PAUSE/RUN** button on the Inlet Module keypad to resume routine sample processing.

- 1 Press the **RACK LOAD** button on the Inlet Module keypad. The RACK LOAD button flashes and the alarm activates.
- 2 Press the **ALARM** button to silence the alarm.
 - The Transfer Arm completes the current operation and moves to the Home position.
 - The RACK LOAD button stays lit.
- 3 Remove a collection rack(s) from the Inlet Module. The PAUSE/RUN light goes on.
- 4 Place loaded collection rack(s) onto the Inlet Module. Racks are keyed to fit only one way in each loading position. The PAUSE/RUN light flashes after racks are loaded.
 - If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, make sure the Line Control Computer is on the Main screen.

- If the Line Control Computer is on the Database Query/Sample Search screen, return to the Line Control Computer Main screen.

5 Press the **PAUSE/RUN** button on the Inlet Module keypad to resume routine sample processing.

Loading the Dynamic Inlet (Single-Arm Inlet)

The Dynamic Inlet Module has four positions for specialized Power Processor Inlet racks, each with a capacity of 50 sample tubes. These inlet racks are identified by color (red, blue, yellow and white). The single- gripper arm transfers sample tubes individually from the Inlet racks onto the automated track system for processing.

A flashing beacon is activated when the collection racks are empty. The operator can then load additional collection racks to provide continuous sample tube flow through the system. All samples must be loaded onto the Power Processor via racks; no manual tube introduction directly into sample carriers is allowed.

NOTE Sample tubes directly loaded into tube carriers will be routed to the error lane.

When the Dynamic Inlet is processing sample tubes, the Inlet Module display will be green and when it has completed processing the sample tubes it will be amber.

System-Initiated Rack Load - (Dynamic Inlet)

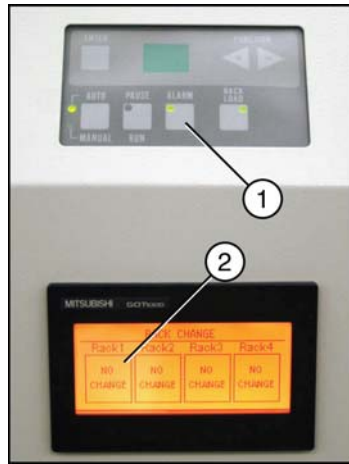
IMPORTANT Make sure no empty positions exist between sample tubes. If a sample is not detected by the gripper arm then it will proceed to the next rack.

When the system has completely unloaded all the tubes from the collection racks, the Inlet Module display turns amber and the beacon and ALARM button will flash ON and OFF for 5 seconds to alert the operator. On the keypad the RACK LOAD button will be lit and the display will show NO CHANGE.

CAUTION

When loading a rack, verify the Inlet Module display matches the rack types in the Inlet after pressing the PAUSE/RUN button. If there is a rack type mismatch, repeat rack load. If rack type mismatch continues, contact your Beckman Coulter Representative.

Figure 2.7 Keypad and Display

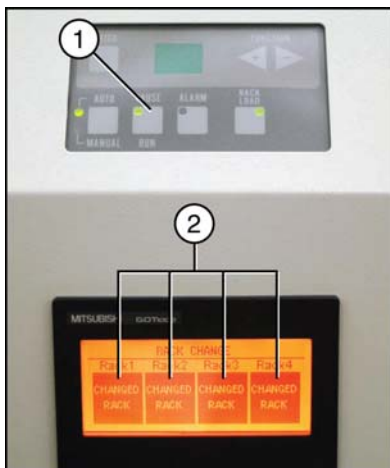


1. ALARM Button
2. Inlet Module Display

To perform a System-Initiated Rack Load, follow the procedure below.

- 1 Remove collection rack(s) from the Inlet Module.
- 2 Place loaded collection rack(s) in the Inlet Module. The PAUSE/RUN light flashes when a rack is loaded. The display will show CHANGED RACK.

Figure 2.8 PAUSE/RUN Button Flashing



1. PAUSE/RUN Button
2. Display indicates CHANGED RACK

- 3 Press the **PAUSE/RUN** button on the keypad. The Inlet Module display turns green and sample processing begins.

CAUTION

Ensure the display matches the rack types loaded.

Figure 2.9 Sample Processing Display



Operator-Initiated Rack Load - (Dynamic Inlet)

IMPORTANT Make sure no empty positions exist between sample tubes in the same row. If a sample is not detected by the gripper arm then it will proceed to the next priority rack.

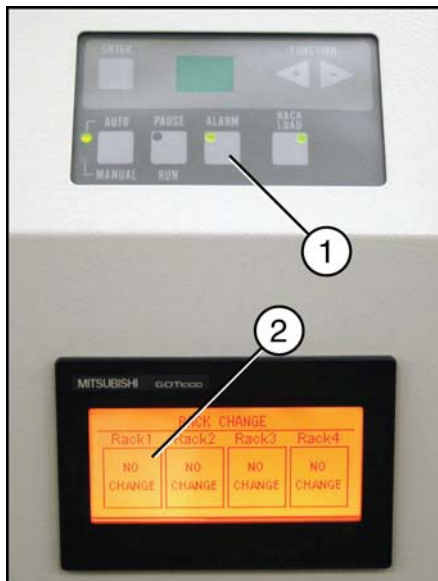
The operator can load collection racks at the Inlet Module before the system initiates a Rack Load. To perform an Operator-Initiated Rack Load, follow the procedure below.

CAUTION

When loading a rack, verify the Inlet Module display matches the rack types in the Inlet after pressing the PAUSE/RUN button. If there is a rack type mismatch, repeat rack load. If rack type mismatch continues, contact your Beckman Coulter Representative.

- 1 Press the **RACK LOAD** button in the Inlet Module keypad. The RACK LOAD button flashes and the alarm activates.

Figure 2.10 RACK LOAD and ALARM Button Flashing

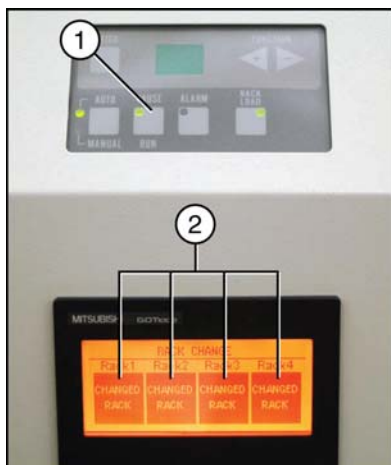


1. ALARM Button
2. Inlet Module Display

2 Press the **ALARM** button to silence the alarm.

3 PAUSE/RUN light goes ON and the Inlet Module display indicates CHANGED RACK. Remove a collection rack(s) from the Inlet Module.

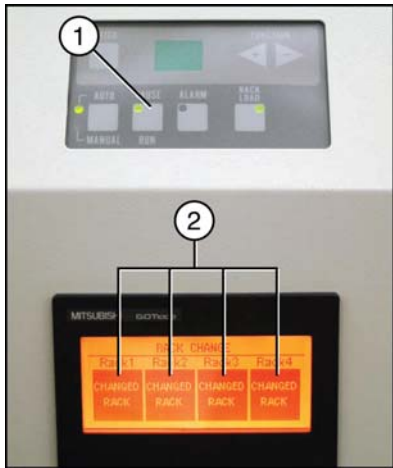
Figure 2.11 PAUSE /RUN Light ON



1. **PAUSE/RUN** Button
2. Display indicates CHANGED RACK

4 Place collection rack(s) in the Inlet Module. The PAUSE/RUN light flashes after racks are loaded.

Figure 2.12 PAUSE /RUN Flashing



- 1. PAUSE/RUN Button Flashing
- 2. Display indicates CHANGED RACK

5 Press the **PAUSE/RUN** button on the keypad. The Inlet Module display turns green and sample processing begins.

 **CAUTION**

Ensure the display matches the rack types loaded.

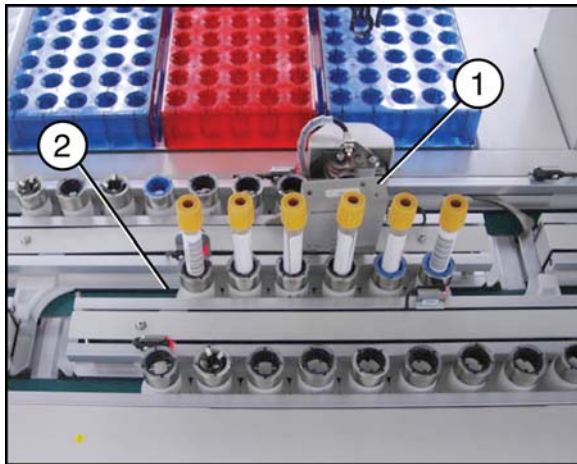
Figure 2.13 Sample Processing Display



Dynamic Inlet Error Lane

Up to six tubes are routed to the Error Lane before operator intervention is required (refer to [Figure 2.14](#)). When six sample tubes accumulate in the Error Lane an audible alarm and flashing beacon activate. The operator must remove the tubes from the Error Lane.

Figure 2.14 Error Lane (Rear View)



1. Bar Code Reader
2. Error Lane

Sample tubes that cannot be processed at the Dynamic Inlet are routed to one of two error holding locations; the Error Lane of the Dynamic Inlet or the Error Rack of the Hematology Outlet.

Sample tubes that cannot be processed are routed to the Error Lane of the Dynamic Inlet because:

- The bar code cannot be read.
- The bar code is the wrong length or type.
- The sample tube was placed manually into a sample tube carrier on a Dynamic Inlet where priority loading is not permitted.

Sample tubes that cannot be processed are routed to the Hematology Outlet Error Rack because:

- no sample programming
- duplicate sample ID
- sorting conflict

Evaluating Samples in the Bar Code Verification Module Error Lane

The Bar Code Verification Module reads the bar code labels on the sample tubes. If the system detects one of the following conditions, the sample tube is routed to the Error Lane.

- The bar code label is damaged, missing or cannot be read.
- Inconsistent or invalid sample programming.

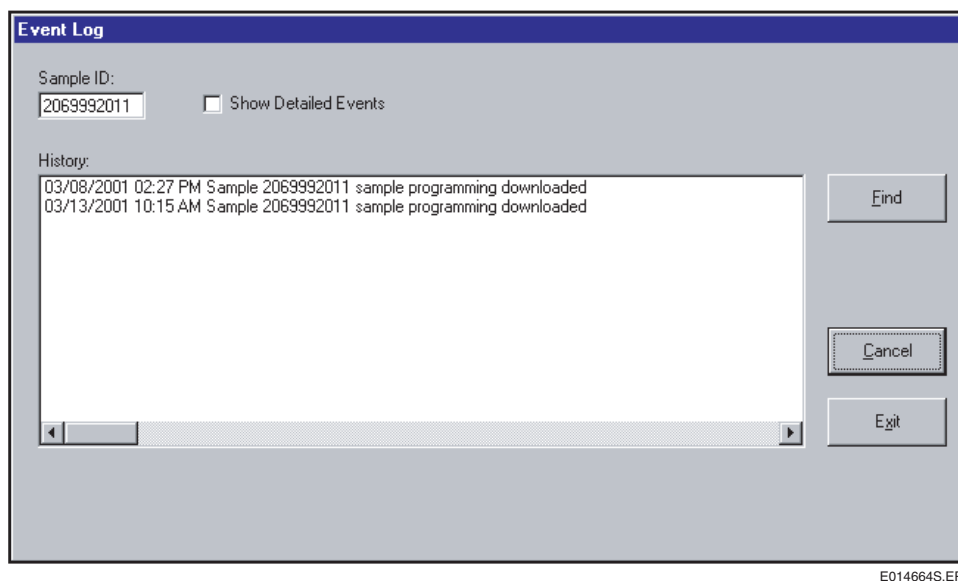
- The sample specimen bar code has been previously read (duplicate bar code number).
- The bar code label is the wrong length or type.
- There is no sample programming for the sample tube.
- The PrepLink cannot determine the correct Outlet Rack destination due to sorting conflicts in the setup information.
- The Line Control Computer is set for Remap but the Prelink is not configured to Remap Samples.

If three sample tubes accumulate in the Error Lane, the system activates an audible alarm and a flashing beacon. The Inlet Module stops loading sample tubes from collection racks into sample carriers until the operator removes sample tubes from the Error Lane.

IMPORTANT The Power Processor can be configured for only one type of bar code label at a time. Introducing a sample tube with a different bar code type causes the system to route the sample tube to the Error Lane.

The PrepLink Event Log or the Line Control Computer Operations Error Log can be used to determine why sample tubes are routed to the Error Lane.

Figure 2.15 PrepLink Event Log



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How to Evaluate Samples in the Error Lane

- 1 Remove the sample tube from the Error Lane.
- 2 Select **Event Log** on the PrepLink screen. The Event Log dialog box appears (refer to [Figure 2.15](#)).

3 Type the Sample ID in the **Sample ID** text box.

NOTE For more detailed Event Log messages, check the **Show Detailed Events** ☒ on the Event Log screen.

4 Select **Find**. The sample history for that Sample ID appears in the history table.

5 To stop a search, select **Cancel**.

6 Select **Exit** to exit the Event Log.

7 Select **Error Log** from the Line Control Computer menu bar.

8 Select **Operations Error Log**. For software versions 3.0 and lower, refer to [Figure 2.16](#). For software versions 3.1 and greater refer to [Figure 2.17](#).

9 Scroll up and down the Operations Error Log to locate the sample tube ID number(s). Make sure that the Unit Name column contains “BC Verify.”

10 Read the information contained in the Message column.

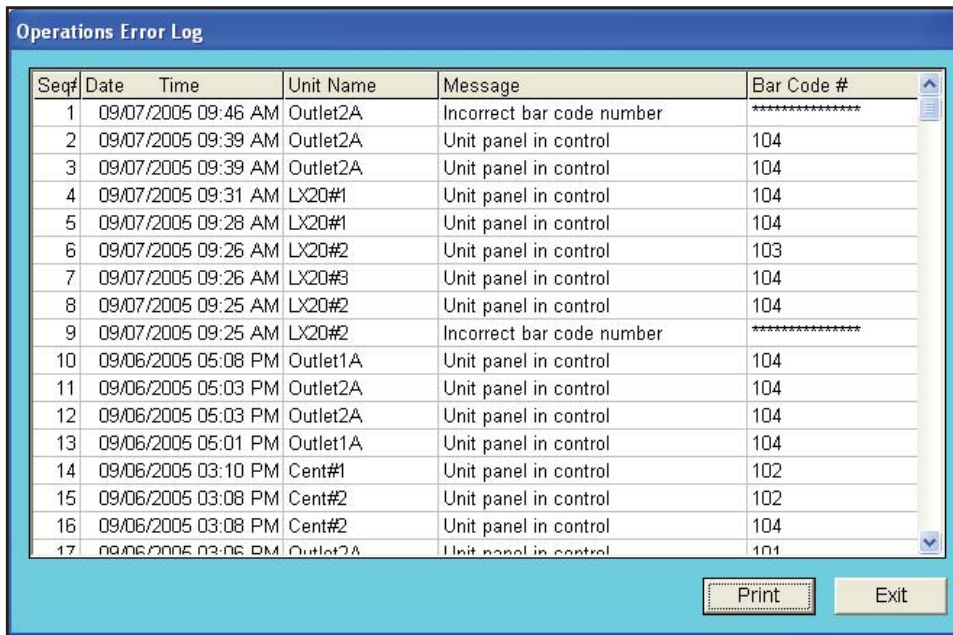
If...	Then...
“Incorrect bar code number” appears in the Message column and a series of asterisks appear in the Bar Code # column,	the sample tube bar code could not be read by the system.
“Aliquot/Sort info unavailable” appears in the Message column,	sample programming has not been received by the system, or sorting information is incorrect.
“Sample at incorrect unit” appears in the Message column,	a sample tube with the same bar code has been read by the system (duplicate bar code).
“Sample XXXXXX routed to Error Rack because Remap mode is not enabled” appears in the Event Log history or description,	the PrepLink software is not configured to Remap sample tubes. Contact your Beckman Coulter Service Representative to configure PrepLink software for Sample Remapping.

Figure 2.16 Line Control Computer Operations Error Log for Software Versions 3.0 and Lower

Operations Error Log					
Seq#	Date	Unit Name	Message	Bar Code #	
1	06/19/00	08:39 AM	LX20#2	Unit panel in control	101
2	06/15/00	10:28 AM	LX20#2	Unit panel in control	104
3	06/15/00	10:24 AM	LX20#1	Unit panel in control	103
4	06/15/00	10:24 AM	LX20#1	Unit panel in control	104
5	06/15/00	10:24 AM	LX20#1	Incorrect bar code number	*****
6	06/15/00	10:22 AM	HM Outlet	Unit panel in control	104
7	06/15/00	10:22 AM	HM Outlet	Unit panel in control	104
8	06/15/00	10:21 AM	HM Outlet	Unit panel in control	104
9	06/15/00	10:21 AM	HM Outlet	Unit panel in control	104
10	06/15/00	10:21 AM	HM Outlet	Unit panel in control	104
11	06/15/00	10:21 AM	HM Outlet	Unit panel in control	104
12	06/15/00	10:05 AM	LX20#2	Unit panel in control	104
13	06/15/00	10:03 AM	Control CPU	Operation in progress	
14	06/13/00	10:18 AM	Control CPU	Host Communication error	
15	06/13/00	10:17 AM	Control CPU	Opn terminated by operator	
16	06/12/00	03:16 PM	HM Outlet	Aliquot/sort info unavailable	5315310611
17	06/12/00	03:09 PM	Control CPU	Operation in progress	

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Figure 2.17 Line Control Computer Operations Error Log for Software Versions 3.1 and Greater



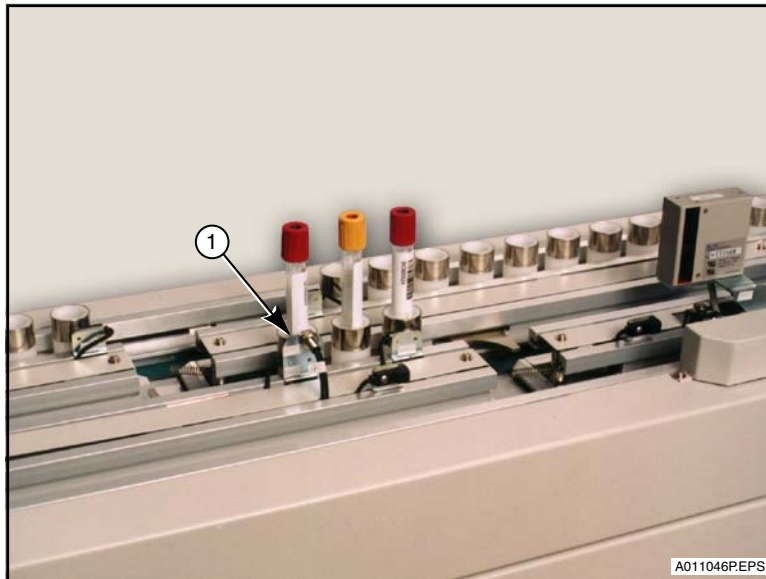
Seq#	Date	Time	Unit Name	Message	Bar Code #
1	09/07/2005	09:46 AM	Outlet2A	Incorrect bar code number	*****
2	09/07/2005	09:39 AM	Outlet2A	Unit panel in control	104
3	09/07/2005	09:39 AM	Outlet2A	Unit panel in control	104
4	09/07/2005	09:31 AM	LX20#1	Unit panel in control	104
5	09/07/2005	09:28 AM	LX20#1	Unit panel in control	104
6	09/07/2005	09:26 AM	LX20#2	Unit panel in control	103
7	09/07/2005	09:26 AM	LX20#3	Unit panel in control	104
8	09/07/2005	09:25 AM	LX20#2	Unit panel in control	104
9	09/07/2005	09:25 AM	LX20#2	Incorrect bar code number	*****
10	09/06/2005	05:08 PM	Outlet1A	Unit panel in control	104
11	09/06/2005	05:03 PM	Outlet2A	Unit panel in control	104
12	09/06/2005	05:03 PM	Outlet2A	Unit panel in control	104
13	09/06/2005	05:01 PM	Outlet1A	Unit panel in control	104
14	09/06/2005	03:10 PM	Cent#1	Unit panel in control	102
15	09/06/2005	03:08 PM	Cent#2	Unit panel in control	102
16	09/06/2005	03:08 PM	Cent#2	Unit panel in control	104
17	09/06/2005	03:06 PM	Outlet2A	Unit panel in control	101

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How to Prevent Error Lane Pause

- 1 Observe the Bar Code Verification Module Error Lane for sample tubes as the system operates.
- 2 Manually remove each sample tube upon arrival in the Error Lane.

Figure 2.18 Bar Code Verification Module Error Lane Location



1. Error Lane

Hematology Module Configuration

The Power Processor with the Hematology Module enables hematology sample tubes to be sorted to racks without being centrifuged and decapped. For details about setup strategy, refer to the “Setup Strategy” section in CHAPTER 2, of the [General System Operation IFU](#). Setup strategies and procedures for the Hematology Module are fundamentally the same as that of the Outlet Modules, though the types of racks that can be configured in each are different.

Sample tubes can be sorted to the following racks in the Hematology Module:

- Hematology Personality Racks
- Stainless Steel Universal Generic Racks
- Plastic Generic Racks with base plate
- Hematology, Generic Racks with STAT subsections
- Error Rack (In position four of the Hematology Module, either a complete Generic Rack or the last subsection within a Generic Rack).

IMPORTANT When the sum of the Group numbers exceeds 15 in the Hematology Module, the Line Control Computer will not allow the configuration to be saved.

Hematology Module Rack Designations

Personality Racks for the Hematology Module enable the Power Processor to unload sample tubes directly into Hematology instrument racks. The operator unloads a Hematology Personality Rack from the Hematology module, removes the instrument racks from the Personality Rack, then loads the instrument racks containing sample tubes onto the appropriate instruments.

NOTE Prior to loading the instrument specific racks on the analyzer, confirm the sample tubes are fully seated in the instrument specific racks and that the bar code label is visible in the instrument rack read window.

Table 2.1 Hematology Module Rack Designations

Rack Type	Rack Description	Tube Allocation	No. of Racks	No. of Groups (Subsections)	Tube Location Numbering	Rack Section Name(s)
F1	DxH Single Set	5*6	1	1	1-30	Hematology-1
F2	DxH Dual Set	5*6, 5*6	2	1	1-30	Hematology-2
F3	DxH Triad Set	5*6, 5*6, 5*6	3	1	1-30	Hematology-3
F4	DxH Dual Subsection	5*4, 5*2	1	2	1-20 21-30	Hematology-4
F5	DxH Triple Subsection	5*2, 5*2, 5*2	1	3	1-10 11-20 21-30	Hematology-5
H1	GEN•S/STK•S/LH	12*3	1	1	1-36	Hematology-1
H2	GEN•S/STK•S/LH	12*3, 12*3	2	1	1-36	Hematology-2
H3	GEN•S/STK•S/LH	12*3, 12*3, 12*3	3	1	1-36	Hematology-3
H4	GEN•S/STK•S/LH	12*2, 12	1	2	1-24 25-36	Hematology-4
H5	GEN•S/STK•S/LH	12, 12, 12	1	3	1-12 13-24 25-36	Hematology-5
G1	Generic Rack #1	50	1	1	1-50	Generic-1
G2	Generic Rack #2	25, 25	1	2	1-25 26-50	Generic-21, Generic-22
G3	Generic Rack #3	10, 20, 20	1	3	1-10 11-30 31-50	Generic-31, Generic-32, Generic-33
G4	Generic Rack #4	50, 50	2	1	1-50	Generic-4
G5	Generic Rack #5	50, 50, 50	3	1	1-50	Generic-5
G7	Generic Rack #7	10, 10, 10, 10, 10	1	5	1-10 11-20 21-30 31-40 41-50	Generic-71, Generic-72, Generic-73, Generic-74, Generic-75

UniCel DxH Personality Rack

The following information pertains to the DxH Personality Rack.

- The DxH Personality Rack, PN B00279, is for use in the Hematology Module.
- The instrument cassette type used for the DxH rack is a Type A.
- Tube size used for the DxH rack is 13 X 75.
- Tube type used for the DxH rack is the BD Hemogard, BD rubber closure, Greiner non-ridged closure or a mixture of these types.

Installation and configuration of the DxH Personality rack must be performed by a Beckman Coulter Representative.

When ordering DxH Personality Racks for your Power Processor, please contact the Beckman Coulter Technical Support Center from the United States or Canada, or your local Beckman Coulter Representative to coordinate an on-site visit.

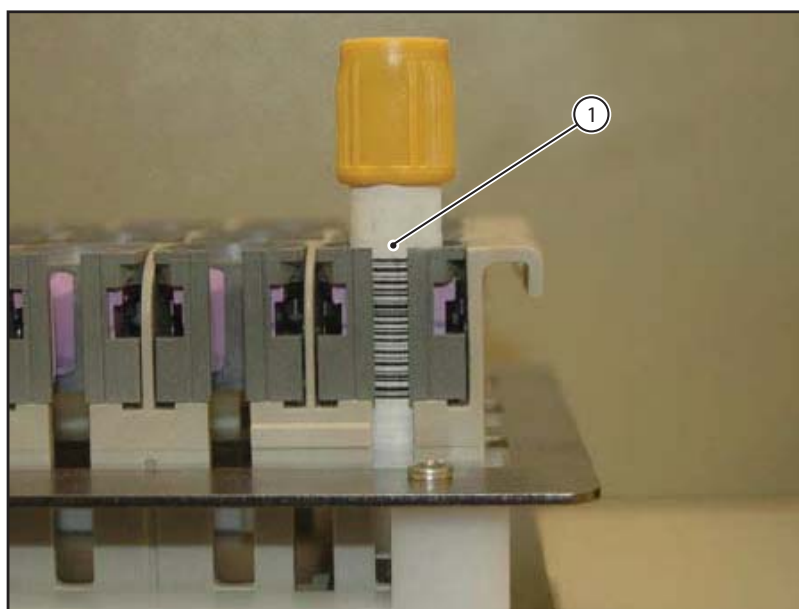
Tube Bar Code Alignment

CAUTION

Ensure the Tube Bar Code is aligned and the tube is inserted down into the rack as shown in [Figure 2.19](#). Misalignment of the tube may prevent proper reading of the Bar Code label and may cause delayed results.

IMPORTANT Maintenance on the Bar Code Spinner at the hematology module must be performed weekly. The weekly maintenance is necessary for the proper alignment of the Bar Code label in the DxH rack.

Figure 2.19 Tube Bar Code Alignment



1. Ensure tube label is lined up and tube is down all the way.

Assign Racks

Follow the procedure in the sections “Line Control Computer Rack Configuration” and “PrepLink Rack Assignment” in CHAPTER 2, of the [General System Operation IFU](#).



When assigning racks and configuring tests, ensure that all tests associated with sample tube sizes supported only in the Hematology Module are configured to the Hematology Module and not to Outlet 1 or 2. If sample tubes of an unsupported size proceed down the track, system errors will occur.

How to Configure the Error Rack

To provide a sorting destination for sample tubes with bar code, sample programming, or setup configuration problems, the operator must configure a G2, G3 or G7 Universal Generic Rack to position four in the Hematology Module. The last subsection of this rack must then be assigned as the Error Rack.

IMPORTANT The Error Rack must be configured in the last subsection of position four of the Hematology Module before the system will run. If the Error Rack is not assigned in PrepLink, the message “No Error Rack” appears in yellow in the status bar at the bottom of the screen.


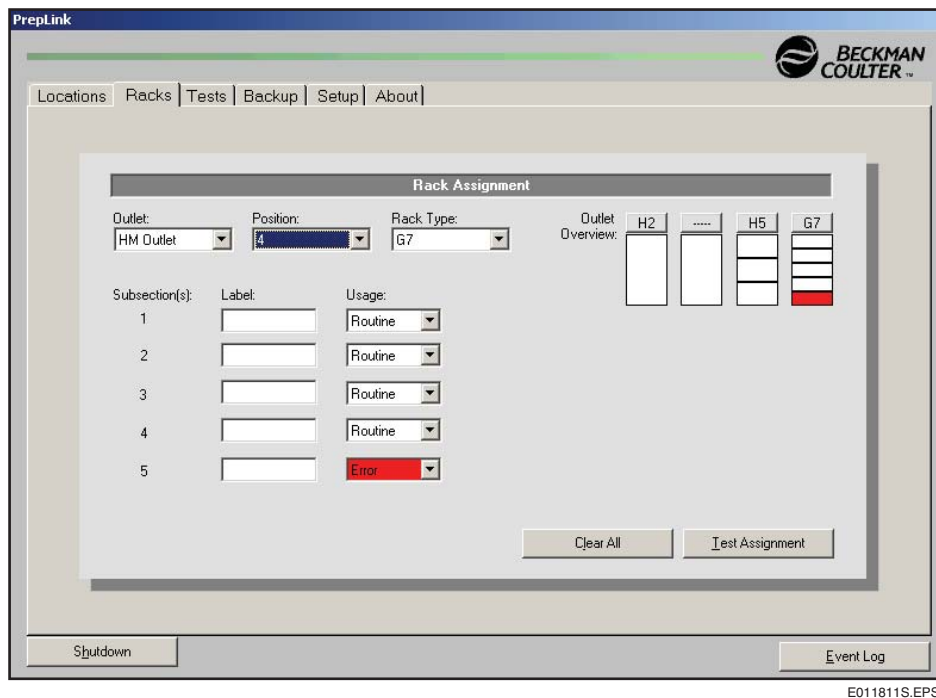

- 1 Configure and assign either a G2, G3 or G7 rack type to position four in the Hematology Module according to the “Rack Types and Groups” and “Rack Assignment” procedures in CHAPTER 2, of the [General System Operation IFU](#).
- 2 At the Rack Assignment screen in PrepLink, in the “Outlet Overview” in the upper right of the screen, select the box with the Rack Type of the Generic Rack (**G2, G3 or G7**) assigned to position four.
- 3 To configure a region of the rack as the Error Rack, in its “Subsection”:
 - a. Select the **Usage** .
 - b. Select “Error.”
 - c. If required, type up to 10 characters in the text box to identify the subsection **Label**.
When correctly configured, the subsection will be highlighted in red in the **Outlet Overview**.
Tests can be assigned to the remaining subsections of the Error Rack.

Figure 2.20 Rack Assignment as an Error Rack



How to Configure the STAT Rack

- 1 Configure and assign either an H1, H2, H3, H4, H5, G1, G2, G3 or G7 rack type to a position in the Hematology Module according to the “Rack Types and Groups” and “Rack Assignment” procedures in CHAPTER 2, of the [General System Operation IFU](#).
- 2 At the Rack Assignment screen in PrepLink, in the “Outlet Overview” in the upper right of the screen, select the box with the Rack Type to be configured as the STAT subsection.
- 3 To configure a region of the rack as the STAT subsection:
 - a. Select the **Usage** .
 - b. Select “STAT.”
 - c. If required, type up to 10 characters in the **Label** text box to identify the subsection. When correctly configured, the STAT subsection will be highlighted in blue in the “Outlet Overview.”
- 4 Assign STAT tests to the STAT Subsection according to the “Test Assignment” procedure in CHAPTER 2, of the [General System Operation IFU](#). Routine tests can be assigned to non-STAT subsections.

Test Configuration and Assignment

PrepLink Rack Assignment, Test Configuration and Test Assignment procedures for the outlets also work for the Hematology Module. To assign racks, configure and assign tests to the Hematology Module, refer to the “PrepLink Rack Assignment,” “Test Configuration,” and “Test Assignment” procedures in CHAPTER 2, of the *General System Operation IFU*.

IMPORTANT If Test Configuration screen changes are made to a test AFTER it is assigned to a rack(s), the operator must verify that the test is assigned to the applicable rack(s).

Evaluating Samples in the Error Rack

The Hematology Module will sort sample tubes to the Error Rack for the following reasons:

- The bar code label is damaged, missing or cannot be read.
- Inconsistent or invalid sample programming.
- The sample specimen bar code has been previously read (duplicate bar code number).
- The bar code label is the wrong length or type.
- There is no sample programming for the sample tube.
- PrepLink cannot determine the correct Outlet Rack destination due to sorting conflicts in the setup information.
- The Hematology Module is set for Remap but Prelink is not configured to Remap Samples.

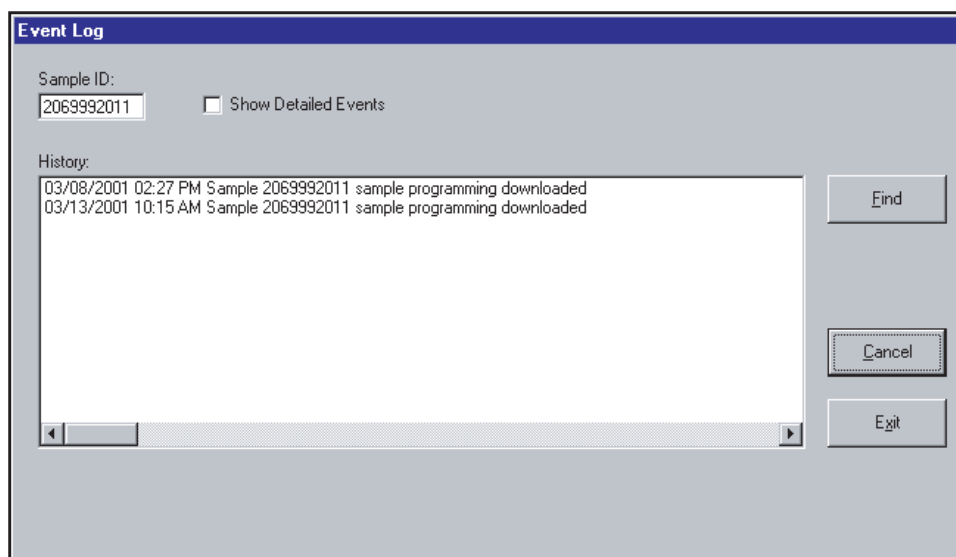
The PrepLink Event Log or the Line Control Computer Operations Error Log can be used to determine why sample tubes are routed to the Error Rack (refer to [Figure 2.21](#) and [Figure 2.22](#) or [Figure 2.23](#)).

-
- 1 Remove the sample tube from the Error Rack.
 - 2 Select **Event Log** on the PrepLink main screen. The Event Log dialog box appears.
 - 3 Type the Sample ID in the **Sample ID** text box.
IMPORTANT For more Event Log messages, check the “Show Detailed Events” box on the Event Log screen.
 - 4 Select **Find**. The sample history for that sample ID appears in the history table.
 - 5 To stop a search, select **Cancel**.
-

- 6 Select **Exit** to exit the Event Log.
- 7 Select **Error Log** from the Line Control Computer menu bar.
- 8 Select **Operations Error Log**. For software versions 3.1 and greater refer to [Figure 2.22](#). For software versions 3.0 and lower, refer to [Figure 2.23](#).
- 9 Scroll up and down the Operations Error Log dialog box to locate the sample tube ID number(s). Make sure that the Unit Name column contains “HM Outlet.”
- 10 Read the information contained in the Message column.

If...	Then...
“Incorrect bar code number” appears in the Message column and a series of asterisks appear in the Bar Code # column,	the sample tube bar code could not be read by the system.
“Aliquot/Sort info unavailable” appears in the Message column,	sample programming has not been received by the system, or sorting information is incorrect.
“Sample at incorrect unit” appears in the Message column,	a sample tube with the same bar code has been read by the system (duplicate bar code).

Figure 2.21 PrepLink Event Log



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Figure 2.22 Line Control Computer Operations Error Log for Software Versions 3.1 and Greater

Seq#	Date	Time	Unit Name	Message	Bar Code #
1	09/07/2005	09:46 AM	Outlet2A	Incorrect bar code number	*****
2	09/07/2005	09:39 AM	Outlet2A	Unit panel in control	104
3	09/07/2005	09:39 AM	Outlet2A	Unit panel in control	104
4	09/07/2005	09:31 AM	LX20#1	Unit panel in control	104
5	09/07/2005	09:28 AM	LX20#1	Unit panel in control	104
6	09/07/2005	09:26 AM	LX20#2	Unit panel in control	103
7	09/07/2005	09:26 AM	LX20#3	Unit panel in control	104
8	09/07/2005	09:25 AM	LX20#2	Unit panel in control	104
9	09/07/2005	09:25 AM	LX20#2	Incorrect bar code number	*****
10	09/06/2005	05:08 PM	Outlet1A	Unit panel in control	104
11	09/06/2005	05:03 PM	Outlet2A	Unit panel in control	104
12	09/06/2005	05:03 PM	Outlet2A	Unit panel in control	104
13	09/06/2005	05:01 PM	Outlet1A	Unit panel in control	104
14	09/06/2005	03:10 PM	Cent#1	Unit panel in control	102
15	09/06/2005	03:08 PM	Cent#2	Unit panel in control	102
16	09/06/2005	03:08 PM	Cent#2	Unit panel in control	104
17	09/06/2005	03:06 PM	Outlet2A	Unit panel in control	101

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Figure 2.23 Line Control Computer Operations Error Log for Software Versions 3.0 and Lower

Seq#	Date	Time	Unit Name	Message	Bar Code #
1	06/19/00	08:39 AM	LX20#2	Unit panel in control	101
2	06/15/00	10:28 AM	LX20#2	Unit panel in control	104
3	06/15/00	10:24 AM	LX20#1	Unit panel in control	103
4	06/15/00	10:24 AM	LX20#1	Unit panel in control	104
5	06/15/00	10:24 AM	LX20#1	Incorrect bar code number	*****
6	06/15/00	10:22 AM	HM Outlet	Unit panel in control	104
7	06/15/00	10:22 AM	HM Outlet	Unit panel in control	104
8	06/15/00	10:21 AM	HM Outlet	Unit panel in control	104
9	06/15/00	10:21 AM	HM Outlet	Unit panel in control	104
10	06/15/00	10:21 AM	HM Outlet	Unit panel in control	104
11	06/15/00	10:21 AM	HM Outlet	Unit panel in control	104
12	06/15/00	10:05 AM	LX20#2	Unit panel in control	104
13	06/15/00	10:03 AM	Control CPU	Operation in progress	
14	06/13/00	10:18 AM	Control CPU	Host Communication error	
15	06/13/00	10:17 AM	Control CPU	Opn terminated by operator	
16	06/12/00	03:16 PM	HM Outlet	Aliquot/sort info unavailable	5315310611
17	06/12/00	03:09 PM	Control CPU	Operation in progress	

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Unloading the Hematology Module

System-Initiated Rack Load

If a subsection within a rack fills and a sample tube on the track can only be sorted to that full Subsection, a flashing beacon, an audible alarm and the RACK LOAD light on the Hematology Module keypad come on and will remain on until the operator deactivates them. The operator must perform a rack load before the system will operate again.

When one physical rack within a rack group in the Hematology Module fills, a flashing beacon and the RACK LOAD light on the keypad come on for 15 seconds. The system continues to place sample tubes in racks in the Hematology Module.

When the Error Rack fills, a flashing beacon, an audible alarm and the RACK LOAD light on the Hematology Module come on. The Transfer Arm completes the current operation and moves to the Home position.

To unload full racks, follow the procedure below (refer to [Figure 2.24](#)).

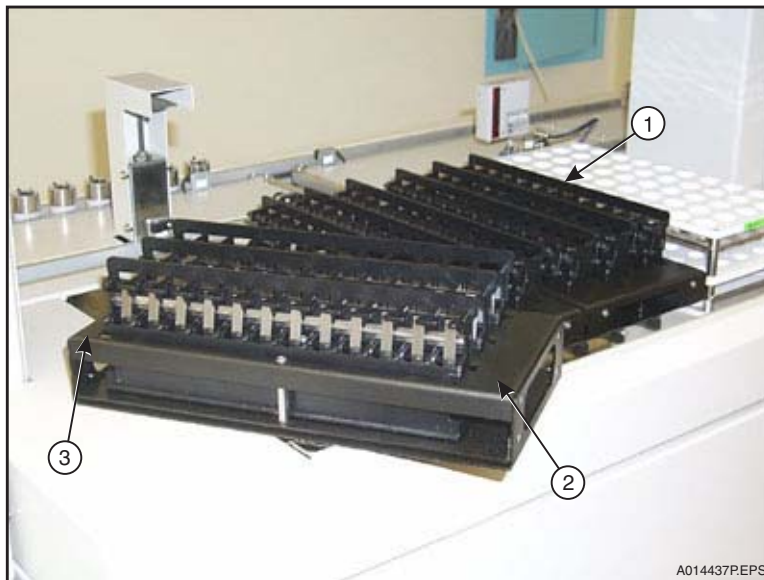
- 1 Press the **ALARM** button on the Hematology Module keypad to stop the flashing beacon and audible alarm.
- 2 Read the keypad display to determine which rack position(s) to unload. Rack positions are numbered 01 through 04.
- 3 Remove the rack(s) indicated by the keypad display.
- 4 Load the appropriate empty rack(s) into the vacant position(s). The PAUSE/RUN light flashes after a rack is loaded.
 - If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, verify the Line Control Computer is on the Main screen.
 - If the Line Control Computer is on the Database Query/Sample Search screen, return to the Line Control Computer Main screen.
- 5 Press the **PAUSE/RUN** button on the keypad to resume routine operation.

Operator-Initiated Rack Load

Racks at the Hematology Module can be unloaded before they fill using the Rack Load procedure. To perform a rack load, follow the procedure below (refer to [Figure 2.24](#)).

- 1 Press the **RACK LOAD** button on the Hematology Module keypad. The alarm and beacon activate.
- 2 Press the **ALARM** button to silence the alarm and stop the flashing beacon.
- 3 Remove the rack(s).
- 4 Load the appropriate empty rack(s) into the vacant position(s). The PAUSE/RUN light flashes after a rack is loaded.
 - If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, verify the Line Control Computer is on the Main screen.
 - If the Line Control Computer is on the Database Query/Sample Search screen, return to the Line Control Computer Main screen.
- 5 Press the **PAUSE/RUN** button to resume routine operation.

Figure 2.24 Hematology Personality Rack Positioning



1. GEN•S Cassettes Face Left
2. Wide Edge of Personality Rack Faces Operator
3. Narrow Edge of Personality Rack Faces Track

Outlet Module Configuration

Assign Racks

Follow the procedure in the sections “Line Control Computer Rack Configuration” and “PrepLink Rack Assignment” in CHAPTER 2, of the *General System Operation IFU*.

CAUTION

When assigning racks and configuring tests, ensure that all tests associated with sample tube sizes supported only in the Hematology Module are configured to the Hematology Module and not to Outlet 1 or 2. If sample tubes of an unsupported size proceed down the track, system errors will occur.

IMPORTANT Power Processor Version 3.0 through Version 3.6 allows up to four outlets (Outlet 1A, 1B, Outlet 2A, 2B). Power Processor 2.6 and lower allows a maximum of two outlets (Outlet 1 and Outlet 2). Refer to Table 1.4 in the *General System Operation IFU*.

Test Configuration and Assignment

To assign racks, configure and assign tests to the Outlet Modules, refer to the “PrepLink Rack Assignment,” “Test Configuration,” and “Test Assignment” procedures in CHAPTER 2, of the *General System Operation IFU*.

IMPORTANT If Test Configuration screen changes are made to a test AFTER it is assigned to a rack(s), the operator must verify that the test is assigned to the applicable rack(s).

Personality Racks

Personality Racks enable the Power Processor to unload sample tubes directly into LX, ALX, Dx C, Access or DxI or Hematology instrument racks. The operator unloads a Personality Rack from an Outlet Module, removes the instrument racks from the Personality Rack, then loads the instrument racks containing sample tubes onto the appropriate instruments.

NOTE Prior to loading the instrument specific racks on the analyzer, confirm the sample tubes are fully seated in the instrument specific racks and that the bar code label is visible in the instrument rack read window.

Table 2.2 Rack Designations

Rack Type	Rack Description	Tube Allocation	No. of Racks	No. of Subsections	Tube Location Numbering	Rack Section Name(s)
A1	Access Single Set	10*3	1	1	1-30	Access-1
A2	Access Dual Set	10*3, 10*3	2	1	1-30	Access-2
A4	Access Rack #4	10*2, 10	1	2	1-20 21-30	Access-4

Table 2.2 Rack Designations (*Continued*)

Rack Type	Rack Description	Tube Allocation	No. of Racks	No. of Subsections	Tube Location Numbering	Rack Section Name(s)
A5	Access Rack #5	10, 10, 10	1	3	1-10 11-20 21-30	Access-5
C1	CX Single Set	7*3	1	1	1-21	CX-1
C2	CX Dual Set	7*3, 7*3	2	1	1-21	CX-2
C3	CX Quad Set	7*3, 7*3, 7*3, 7*3	4	1	1-21	CX-3
D1	Dxl Rack #1	4*8	1	1	1-32	Dxl-1
D2	Dxl Rack #2	4*8, 4*8	2	1	1-32	Dxl-2
D4	Dxl Rack #4	4*4, 4*4	1	2	1-16 17-32	Dxl-4
D5	Dxl Rack #5	4*2, 4*3, 4*3	1	3	1-8 9-20 21-32	Dxl-5
D7	Dxl Rack #7	4*2, 4*2, 4*2, 4*2	1	4	1-8 9-16 17-24 25-32	Dxl-7
G1	Generic Rack #1	50	1	1	1-50	Generic-1
G2	Generic Rack #2	25, 25	1	2	1-25, 26-50	Generic-21, Generic-22
G3	Generic Rack #3	10, 20, 20	1	3	1-10, 11-30, 31-50	Generic-31, Generic-32, Generic-33
G4	Generic Rack #4	50, 50	2	1	1-50	Generic-4
G5	Generic Rack #5	50, 50, 50	3	1	1-50	Generic-5
G6	Generic Rack #6	50, 50, 50, 50	4	1	1-50	Generic-6
G7	Generic Rack #7	10, 10, 10, 10, 10	1	5	1-10, 11-20, 21-30, 31-40, 41-50	Generic-71, Generic-72, Generic-73, Generic-74, Generic-75
L1	LX/DxC Single Set	4*8	1	1	1-32	LX/DxC-1
L2	LX/DxC Dual Set	4*8, 4*8	2	1	1-32	LX/DxC-2
L3	LX/DxC Quad Set	4*8, 4*8, 4*8, 4*8	4	1	1-32	LX/DxC-3
S1	Stat Rack ^a	10, 4, 4, 4	1	4	1-10 1-4 1-4 1-4	Access, LX/DxC-1, LX/DxC-2, LX/DxC-1/ LX/DxC-2

a. With PP V5.0, the S1 Stat Rack is only available for configurations without connected instruments.

S1 STAT Racks

IMPORTANT STAT Racks at the Hematology Module function differently than those at the outlets. The S1 STAT Rack is only used on systems without connected instruments. Refer to [How to Configure the STAT Rack](#) on page 2-21.

The S1 STAT Rack contains three LX/DxC/DxI instrument racks and one Access instrument rack. If the S1 STAT Rack is configured, the Power Processor recognizes sample tubes with STAT programming for LX/DxC/DxI and Access instruments, and automatically routes these sample tubes to the S1 STAT Rack.

The system considers each instrument rack in the S1 STAT Rack as one separate rack group, so if one instrument rack is filled with sample tubes, the system will alert the operator to change racks, even if the other instrument racks are empty.

When a STAT subsection is full, the flashing beacon comes on for 10 seconds. If all STAT subsections remain full (i.e., no other tube can be sorted to the S1 STAT Rack), the flashing beacon and audible alarm will remain on until cleared by the operator. If this happens, perform a Rack Load to resume system operation. Refer to the following procedures:

- “Line Control Computer Rack Configuration” and “PrepLink Rack Assignment” in the [General System Operation IFU](#).
- [Operator-Initiated Rack Load](#) on page 2-31.

IMPORTANT Sorting for sample tubes will be based on the initial downloaded information for STAT or routine status. If a status is changed from routine to STAT at the LIS, sample tubes will be sorted into routine racks.

Optional STAT Alarm Feature

IMPORTANT By default, this PrepLink STAT notification feature is disabled. Contact a Beckman Coulter Representative to enable this feature for each outlet.

There is an optional alarm feature when a STAT sample tube is sorted to the STAT Rack.

If this feature is enabled, when a STAT sample tube is sorted to the STAT Rack:

1. After a preset *delay*, a flashing beacon and an audible alarm come on.
2. The flashing beacon and audible alarm remain on for a preset *duration* for each STAT sample tube.

NOTE The *delay* time starts again if another STAT sample tube enters the outlet before a delay ends.

Generic Racks

Generic Racks are generally the destination for tests that will not be run on LX/DxC, ALX, Access or Instrument Dynamic Connection (IDC), such as DxI instruments. Generic Racks can also be used as collection racks at the Inlet Modules.

Unloading the Outlet

As the Power Processor system processes sample tubes, the Outlet Module Transfer Arm places sample tubes into Instrument and Generic Racks. Sample tubes loaded into Personality Racks are aligned by the Transfer Arm for instrument bar code reading.

When one physical rack within a rack group is full, the beacon flashes for 15 seconds to inform the operator that a subsection has been filled.

When a sample tube cannot be sorted to a rack because that rack group is full, the flashing beacon and the audible alarm activate to alert the operator to change racks. After a rack group has been filled, the system will not process tubes until the operator performs a rack load.



To avoid tube breakage after a rack load, push tubes fully down in the rack.

The keypad display shows which rack to remove. If several physical racks comprise the rack group, the left-most rack position is shown on the keypad display. After that rack has been removed, the position number for the rack to the right of the removed rack is shown in the keypad display.

IMPORTANT Each rack is keyed to fit only one way on the Outlet Module. The Transfer Arm will fail to load sample tubes correctly if racks are not placed on the Outlet Module correctly (refer to [Figure 2.2](#)).

System-Initiated Rack Load

When an outlet rack is full the flashing beacon, the audible alarm and the **RACK LOAD** light on the Outlet Module keypad come on. The Transfer Arm completes the current operation and moves to the Home position.

- 1 Press the **ALARM** button on the Outlet Module keypad to silence the alarm and stop the flashing beacon.
- 2 Read the Outlet Module keypad display to determine which rack position(s) to unload. Rack positions are numbered 01 through 04.
- 3 Remove the rack(s) indicated by the keypad display.
- 4 Load the appropriate empty rack(s) into the vacant position(s). The PAUSE/RUN light flashes after a rack is loaded.
 - If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, make sure the Line Control Computer is on the Main screen.
 - If the Line Control Computer is on the Database Query/Sample Search screen, the return to the Line Control Computer Main screen.

-
- 5 Press the **PAUSE/RUN** button on the keypad to resume routine operation.
-

Operator-Initiated Rack Load

Racks at the Outlet Module can be unloaded before they fill using the Rack Load procedure.

-
- 1 Press the **RACK LOAD** button on the Outlet Module keypad. The alarm and beacon activate.
-
- 2 Press the **ALARM** button to silence the alarm and stop the flashing beacon.
-
- 3 Remove the rack(s).
-
- 4 Load appropriate rack(s) in the empty position(s). The PAUSE/RUN light flashes after a rack is loaded.
 - If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, make sure the Line Control Computer is on the Main screen.
 - If the Line Control Computer is on the Database Query/Sample Search screen, the return to the Line Control Computer Main screen.
-
- 5 Press the **PAUSE/RUN** button to resume routine operation.
-

Assigning Rack Numbers

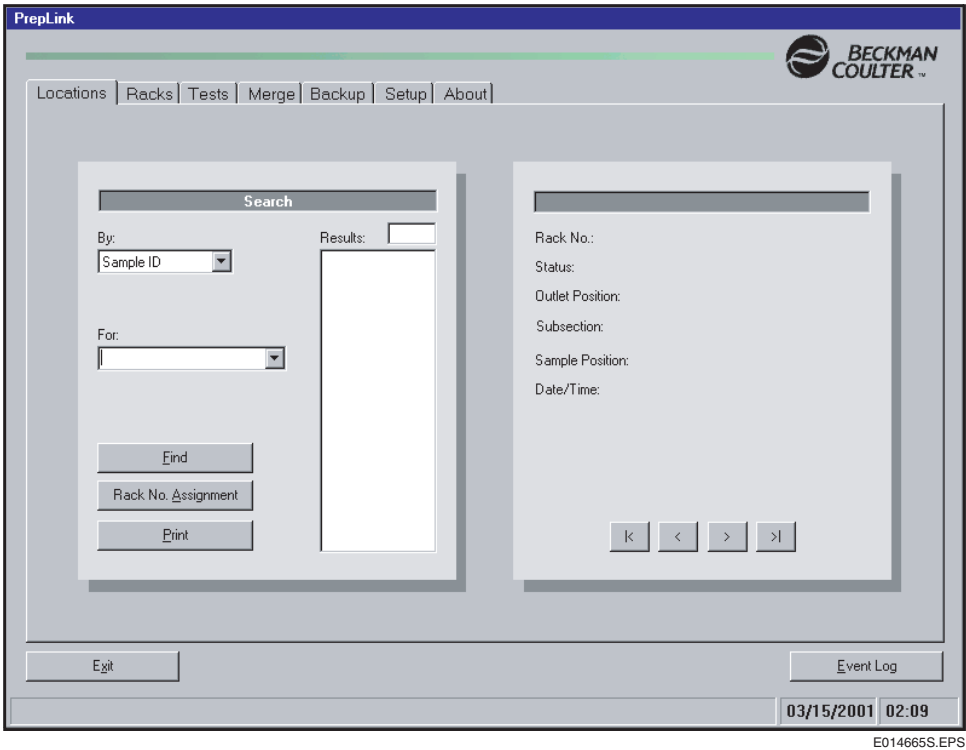
This feature applies to racks in Outlet #2, 2A and 2B with connected instrument configurations and to the Storage Rack in the Aliquot Module configuration. When the Rack Numbering feature is enabled and the operator performs a rack load at Outlet #2, a Rack Number Assignment button appears on the PrepLink Locations screen (refer to [Figure 2.25](#)). When the rack is assigned a number, sample tube location information appears in the Sample Locations Table.

IMPORTANT Before attempting to assign rack numbers, make sure that the Rack No. Assignment button appears at the lower left corner of the Sample Locations screen. If the button is not there, perform the Enabling Rack Numbering procedure in the [General System Operation IFU](#), CHAPTER 2, *Preparing for Operation*.

How to Assign Numbers

- 1 Perform a rack load at Outlet #2, 2A or 2B for systems with connected instrument connections or a rack load of the Storage Rack for systems with the Aliquot Module.
- 2 Select **Rack No. Assignment**. One sample ID for each unloaded rack appears in the Results table. This sample ID corresponds to the sample in Sample Position 1 of each physical rack. Select this sample ID to view all the other sample IDs in that rack.
- 3 In the **Enter Rack No.:** text box at the lower right side of the screen, type in up to 8 alphanumeric digits.
- 4 Select **Save**.
- 5 Select **Done**.

Figure 2.25 Locations Tab with Rack Numbering Enabled



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CHAPTER 3

Error Recovery Procedures

This chapter provides information to identify and resolve errors related to the Inlets, Outlets, Hematology, and Bar Code Verification modules, as well as system operational errors that are not specific to any Power Processor module.

NOTE For error recovery information for other Power Processor Modules, refer to the appropriate Power Processor Module Instructions for Use documentation.

WARNING

Perform Power Processor maintenance activities with caution.

Wear appropriate Personal Protective Equipment (PPE), such as gloves, eye shields, lab coats, etc.

Wash hands thoroughly after contact with sample media and after all maintenance activities.

Observe appropriate laboratory policies and procedures related to the handling of biohazardous materials.

Refer to the appropriate sources (Material Safety Data Sheets, etc.) for specific hazard information.

CAUTION

Before performing an error recovery procedure, make sure that the PAUSE button is lit on that module.

CAUTION

Even when the Standard Inlet, Dynamic Inlet, Hematology Module and the Outlet Module are in PAUSE mode, the air system is still active and applying a constant air pressure to the gripper arm assembly. This may cause unexpected movement of the gripper arm assembly when resolving jammed object errors at these modules. Use caution when resolving jammed object errors.

CAUTION

Even when the Bar Code Verification Module is in PAUSE mode, the air system is still active and applying a constant air pressure to the carrier stopper air cylinders. This may cause unexpected movement of the carrier stopper air cylinders when resolving a jammed object error creating a possible moving part or pinch hazard. Use caution when resolving jammed object errors at the Bar Code Verification Module.

Contact a Beckman Coulter Representative for assistance resolving operational issues not discussed in this chapter.

Error Recovery General Information

When an error condition occurs, the system generates an error message, sounds an alarm and flashes a warning beacon. Error messages are shown on the keypad of the module where the error has occurred, and in the Line Control Computer System Event Log, except for the Inlet, Decapper, Recapper and the Secondary Decapper. The System Event Log automatically stores the 200 most recent error messages in the order they occurred.

Power Processor Module Function Codes

The procedure to recover from an error condition can include entering one or more Function Codes into one of the keypads on the Power Processor or a connected instrument.

The following sections offer specific procedures for recovering from identified errors. [Table 3.1](#) lists the Power Processor Module Function Codes by associated module, with descriptions of the action triggered by the Function Code. All Function Codes must be entered in MANUAL mode.

Table 3.1 Power Processor Module Function Code Definitions

Unit	Function Code	Definition
Inlet	01	Lane through
Error Lane	01	Lane through
Hematology Outlet	01	Lane through
	54	Stop the arm while the gripper fingers are opened
Outlet	01	Lane through
	54	Stop the arm while the gripper fingers are opened

General Error Recovery

When an error occurs at a hardware module, a flashing beacon and audible alarm activate. The keypad display at the affected module will show which error code the error generated. This error code is a four-digit numeral that the keypad display shows in 2, two-digit segments.

The procedure below should be performed any time an error occurs on the system.

- 1 Read the two-digit code from the keypad display on the affected hardware module.
- 2 Press the **ALARM** button on the keypad of the affected hardware module to silence the alarm.

- 3 Press one or both of the **FUNCTION +/-** buttons on the keypad to view the second two-digit code from the keypad display.
- 4 Refer to the Error Code tables for the appropriate hardware module. For example, if the error occurs at the Inlet Module, refer to [Table 4.3, Inlet Module Error Codes](#) on page 4-4.
- 5 Look up the code in the "Keypad Display" column of the error code table.
- 6 Read the information in the "Sensor," "Problem" and "Solution" columns for that error code. Do not attempt to perform steps suggested in the Solution column yet.
- 7 Locate the sensor on the appropriate Sensor Diagram.
- 8 Spend a moment looking at the hardware. Try to find the cause of the error.
- 9 After investigating the cause of the error, perform the steps suggested in the "Solution" column.
- 10 Press **PAUSE/RUN** to resume routine operation. Pay attention to the area around the sensor that generated the error. Make sure that the error has been resolved.
- 11 If the error persists, repeat this procedure. Contact your local Beckman Coulter Representative for any unrecoverable errors.

System Error Recovery Procedures

This section provides information to identify and resolve errors related to system operational problems that are not specific to any Power Processor module.

System Error Recovery Procedures include:

- [Gripper Finger Error Recovery](#)
- [Jammed Sample Tube Carrier Recovery](#)
- [Bypassing a Module](#)
- [Flashing AUTO/MANUAL Button on Keypad](#)
- [Stop Button Recovery without Instrument Connections](#)

- [Stop Button Recovery with Instrument Connections](#)

Gripper Finger Error Recovery

Error Recovery

The operator must evaluate gripper finger/transfer arm errors to understand where the error occurred in the loading or unloading process. Study sample tube positioning and the Error Tables to resolve gripper finger errors.



Even when a module is in PAUSE mode, gripper fingers can open or close unexpectedly, creating a possible pinch hazard. Use caution when resolving the gripper finger error conditions.

Jammed Sample Tube Carrier Recovery

The Power Processor system uses a series of sensors and stoppers to control the movement of sample tube carriers through the system. The pneumatic stoppers engage and disengage to halt sample tube carriers at specific locations. If a sensor is out of adjustment, the stopper can engage as a sample tube carrier passes by, pinching the sample tube carrier and causing a jam. When a sample tube carrier becomes jammed, the system generates an error message, sounds an alarm and flashes a warning beacon.



Before attempting to release a jammed carrier, verify that the carrier is really jammed by gently pushing it in the opposite direction that the conveyor belt is moving. After doing this, if the carrier moves easily up the track, it is NOT jammed and this procedure must NOT be used. Refer to the following NOTE for corrective action.

NOTE If the carrier moves easily up the track, check the sensor number nearest the stopped sample carrier and refer to the appropriate error code table to resolve the error. Contact your Beckman Coulter Representative for assistance.

Error Recovery

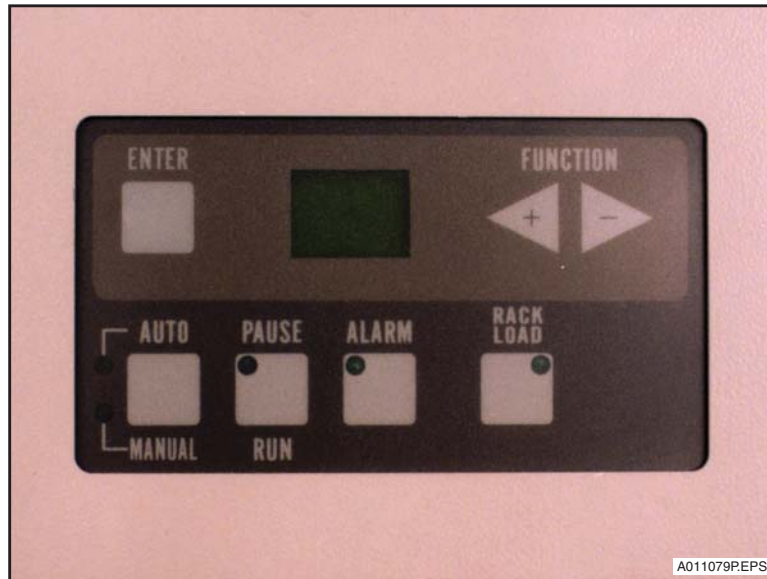
To recover from a jammed sample tube carrier error, follow this procedure (refer to [Figure 3.1](#)).

- 1 Press the **ALARM** button on the keypad to silence the alarm.
- 2 Gently push the sample tube carrier in the direction that the belt is moving until it "clicks" free.

IMPORTANT A jammed tube carrier should move with only a moderate amount of force. Excessive pressure may damage the system.

- 3 Press the **PAUSE/RUN** button to resume routine operation.

Figure 3.1 Module Keypad (can vary slightly)



Bypassing a Module

When a module is bypassed, transfer belts move sample tube carriers through the system. Sample tube carriers can be bypassed at all modules by following the same procedure.

How to Bypass a Module

Any module of the Power Processor system can be bypassed using the procedure below. When bypassing the Centrifuge, this must be done at the Centrifuge Track keypad.

- 1 Press the **AUTO/MANUAL** button twice to switch to MANUAL mode. The AUTO/MANUAL button indicator light flashes, then stays lit to indicate that the module is in MANUAL mode.
- 2 Press the **FUNCTION +/-** buttons to set the readout to "01."
- 3 Press the **ENTER** button on each module keypad.
- 4 Wait for all sample tube carriers to pass through the module.

-
- 5 Press the **AUTO/MANUAL** button twice to return the module to AUTO mode.
-

Flashing AUTO/MANUAL Button on Keypad

Error Recovery

To recover from a condition where the **AUTO/MANUAL** button flashes continuously on the module keypad and the module cannot be recovered, follow the steps below.

IMPORTANT If an error occurs once a module returns to AUTO mode, press **PAUSE/RUN** to clear the error.

IMPORTANT The following procedure applies to Inlet, Outlet, Centrifuge, Connection Module and Aliquot keypads.

Error Recovery Procedure

- 1 Press and hold the flashing **AUTO/MANUAL** button for at least 10 seconds on the keypad. The keypad changes to MANUAL mode.

If the condition occurs at...	Then...
the Bar Code Verification Module in front of the bar code reader,	remove the sample tube from the sample tube carrier and process the tube offline.
the Hematology Outlet and a sample tube is being placed in a personality or generic rack,	remove the sample tube from the gripper fingers and place in the appropriate rack.
the LX/DxC Connection Module and sample tubes are being placed in the Unload Shuttle, OR the sample tubes are in the Load Shuttle, or being placed in the Load Shuttle, OR there is a sample tube in front of the bar code reader in the LX/DxC Connection Module,	remove the sample tubes from the Unload Shuttle and place in the waiting sample tube carriers. remove the sample tubes and process the tubes offline. remove the sample tube from the sample tube carrier and process the tube offline.

If the condition occurs at...	Then...
the Generic (CLSI)/IDC Connection Module,	clear sample tubes in the queue (from BCR#3 to BCR#2) by entering Function 84 at the Generic Connection processing keypad. These sample tubes must be processed offline.
the 1K or 3K Stockyard and a sample tube is being loaded into the Stockyard, OR the sample tube is being unloaded from the Stockyard,	remove the sample tube from the sample tube carrier. remove the sample tube from the Retrieve Arm and place in the waiting sample tube carrier.

- 2 Press the **AUTO/MANUAL** button twice to return to AUTO mode at the module keypad. The module Homes and sample processing continues.

IMPORTANT If an error occurs once a module returns to AUTO mode, press **PAUSE/RUN** to clear the error.

Stop Button Recovery without Instrument Connections

Pressing any STOP button (except the Centrifuge Stop Button) will disconnect power to the Power Processor system at any time during operation. The Line Control Computer and the PrepLink will remain ON. The air system is not shut off when the STOP buttons are pressed.

NOTE If the Centrifuge Stop Button is pressed, refer to the procedure, *Stop Button Recovery for the Centrifuge* in the [Centrifuge IFU](#).

IMPORTANT The STOP button can be pressed to halt any hazardous condition.

IMPORTANT The location of the last sample tube sorted by the system cannot be accurately represented at the Sample Locations screen in the Line Control Computer.

CAUTION

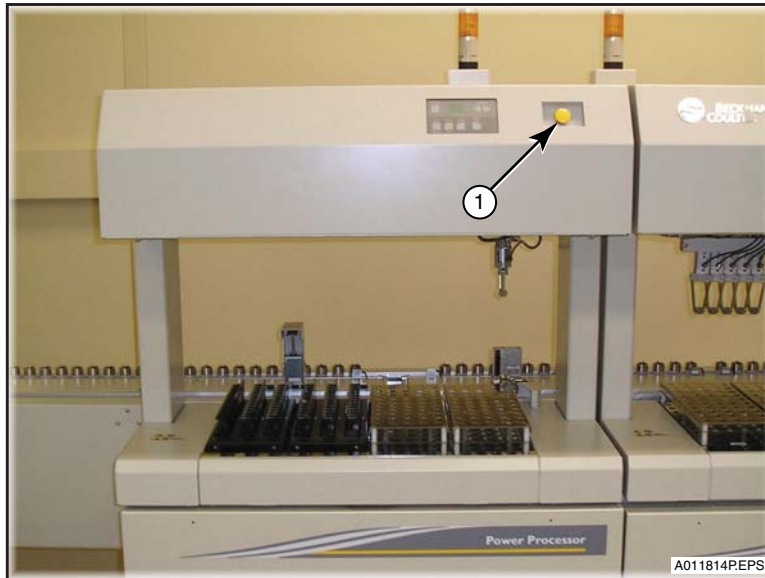
For system configurations with the Aliquot Module, when a STOP button is pressed, aliquot tips containing serum sample will drip very slowly. The Serum Drip Trays may need to be cleaned. For information on how to clean the serum drip trays, refer to CHAPTER 5, “Daily Maintenance Procedures” in the [General System Operation IFU](#).

Stop Button Recovery

IMPORTANT Only perform the STOP Button Recovery steps that apply to the laboratory's specific Power Processor configuration.

- 1 Disengage the **STOP** button by pressing the button(s) again.

Figure 3.2 STOP Button



1. STOP Button

- 2 For system configurations with the Aliquot Module, at the Aliquot Unit, lift and raise the aliquot tip Transfer Arms.

- 3 At the Outlet Modules, if any sample tubes are present in the gripper fingers or in front of the bar code reader, manually remove the tubes and process OFFLINE.

- 4 Press the green **ON** button at the Inlet Module to restore power to the system.

IMPORTANT Perform the system recoveries beginning with the Outlet or Stockyard at the end of the track. Correct any errors on each module and place modules back in **AUTO** mode, recovering backward to the Inlet.

- 5 At the Outlet Module(s), press the **AUTO/MANUAL** button twice to set to AUTO mode. The gripper arm(s) will initialize and return to home position.

-
- 6 For system configurations with an Aliquot Module and a sample tube in front of bar code reader #1, place a blockage between the sample at bar code reader #1 and the samples that may be preceding bar code reader #1 in the Aliquot Unit.

 - 7 At the Aliquot Unit, press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**. The aliquot sample tubes will sort to the Aliquot Error Rack.

 - 8 At the Labeler Unit, remove any dropped aliquot tubes from the top of the aliquot tube tray, in the roller area, and in the aliquot tube chute.

 - 9 Set the **AUTO/MANUAL** button on the Labeler Unit to AUTO mode. Aliquot sample tubes that were being processed will be discarded into the defective aliquot tube disposal container.

 - 10 Set the **AUTO/MANUAL** button on the Aliquot Unit to AUTO mode. The aliquot tip Transfer Arms will move forward and discard the aliquot tips into the biohazard container. The primary tubes will sort to the Aliquot Error Rack.

 - 11 At the bar code reader #1 in the Aliquot Unit, remove the blockage that was set there in step 6.

 - 12 Set the **AUTO/MANUAL** button on the Decapper Module to AUTO mode. Sample tubes that are waiting will be decapped.

 - 13 For system configurations with the Aliquot Module, if there are no sample tubes present in the Serum Level Detector Unit, set the **AUTO/MANUAL** button to AUTO mode and proceed to step 16.

 - 14 If tubes are present in the Serum Level Detector gripper fingers, or in the optical wells, remove the tubes and place them in sample tube carriers inside the Serum Level Detector Unit.

 - 15 Press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**. This will move the sample tube carriers from the Serum Level Detector Unit.

 - 16 Set the **AUTO/MANUAL** button on the Serum Level Detector Unit to AUTO mode.

 - 17 If there are no samples at the Centrifuge, set the **AUTO/MANUAL** button on the Centrifuge to AUTO mode, and proceed to step 36.

-
- 18** If a sample tube is present in front of the Centrifuge Track bar code reader, it may proceed down the track and bypass the Centrifuge when the Centrifuge is set to AUTO mode in step 35. This could be a problem if that tube required centrifugation.
- Check the sample programming to determine if the tube requires centrifugation.
 - If centrifugation is needed, set the sample tube aside and record the sample ID (identification of this tube will be needed in step 31b).
 - If centrifugation is not needed, do not remove the tube.
-
- 19** Turn the Centrifuge power OFF and remove the Centrifuge safety shield.
-
- 20** Remove any sample tubes or balance tubes from the grippers. Set them aside and determine if these tubes were being loaded or unloaded from the Centrifuge.
-
- 21** Make sure there are no jammed sample tube carriers in the Centrifuge Track queue (D-Lane).
-
- 22** Remove any sample tubes from sample tube carriers that have entered the Centrifuge Track D-Lane. Set them aside and determine if these tubes were being loaded or unloaded from the Centrifuge.
-
- 23** Push the Centrifuge Transfer-arm to the Home position over the loading area of the Centrifuge Track D-Lane.
-
- 24** Turn the Centrifuge power ON. Make sure the Centrifuge is in MANUAL mode.
-
- 25** Turn the Door Release Lock switch to the right to unlock the Centrifuge. If the Centrifuge does not unlock, make sure that the Centrifuge Transfer Arm is completely in the Home position.
-
- 26** Open the Centrifuge lid.
- If there are tubes in the Centrifuge, follow your laboratory policy to determine if the tubes have been fully spun or need to be re-spun. If they need to be re-spun, proceed to step 27.
 - If you determine that the tubes do not need to be re-spun, proceed to step 31c.
 - If there are no tubes in the Centrifuge, proceed to step 27.
-
- 27** Manually load the Centrifuge with the tubes set aside in steps 18b, 20, and 22 that needed to be spun. Make sure the load is balanced.
-
- 28** Close the Centrifuge lid and make sure both latches are secure.

-
- 29** Ensure that the Centrifuge is in MANUAL mode.
-
- 30** On the Centrifuge, press the **FUNCTION +/-** buttons to set the readout to "80" and press **ENTER**. Press the **PAUSE/RUN** button to start centrifugation.
-
- 31** After centrifugation is complete,
- Turn the release door switch to the Right to open the Centrifuge lid.
 - Manually unload the sample tube from step 18b and return it to the empty carrier in front of the Centrifuge Track bar code reader.
 - Manually unload the sample tubes into the sample tube carriers in the Centrifuge Track D-Lane.
 - Close the Centrifuge lid and make sure both latches are secure.
 - Replace the Centrifuge safety shield.
-
- 32** If there were any tubes set aside in step 20 and 22 that did not need to be re-spun, manually load those tubes into the sample tube carriers in the Centrifuge Track D-Lane.
-
- 33** On the Centrifuge Track keypad, ensure the Centrifuge is in MANUAL mode. Press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**.
-
- 34** On the Centrifuge keypad, **PAUSE/RUN** button to move the sample tube carriers from Centrifuge Track D-Lane area.
-
- 35** Once all the sample tubes have cleared the last Centrifuge Track D-Lane, set the **AUTO/MANUAL** button on the Centrifuge to AUTO mode.
-
- 36** If the system is configured with a Hematology Outlet,
- remove the tube from the gripper fingers and process OFFLINE. Set the **AUTO/MANUAL** button to AUTO mode.
- If the system is configured with a Bar Code Verification Module,
- set the **AUTO/MANUAL** button to AUTO mode.
-
- 37** At the Inlet Module...
- If any samples are still in the Inlet gripper finger(s), they must be removed and placed back into the partially unloaded rack.
 - If a partially unloaded rack (any four Inlet racks) needs to be processed, place a sample tube in location #1 of the rack and move all tubes forward so there are no empty tube positions.

IMPORTANT For a Dynamic Inlet, this step is especially important if the rack that is being processed is a Priority Rack, as an empty tube position will cause the Priority Rack to be ignored.

- Finally, set the **AUTO/MANUAL** button to AUTO mode to continue sample tube processing.

Stop Button Recovery with Instrument Connections

If the STOP button at any Power Processor module (except the Centrifuge Stop Button) is pressed when samples are on the instrument(s), follow the procedure below to recover.

NOTE If the Centrifuge Stop Button is pressed, refer to the procedure, *Stop Button Recovery for the Centrifuge* in the [Centrifuge IFU](#).

This procedure includes all module options and supported instrument types. Only perform steps for modules and instruments that are specific to the laboratory's system configuration.

IMPORTANT The STOP button can be pressed to halt any hazardous condition.

IMPORTANT If a sample tube breaks in the Load or Unload Shuttle on the instrument Connection Module and all debris can be completely removed from the shuttle, proceed with established laboratory cleanup procedures. If all debris **CANNOT** be removed from the shuttle, contact your local Beckman Coulter Representative.

IMPORTANT The location of the last sample tube sorted by the system may not be accurately represented at the Sample Locations screen.



For system configurations with the Aliquot Module, when a STOP button is pressed, aliquot tips containing serum sample will drip very slowly. The Serum Drip Trays may need to be cleaned. For information on how to clean the serum drip trays, refer to CHAPTER 5, "Daily Maintenance Procedures" in the [General System Operation IFU](#).

Stop Button Recovery

IMPORTANT Only perform the STOP Button Recovery steps that apply to the laboratory's specific Power Processor configuration.

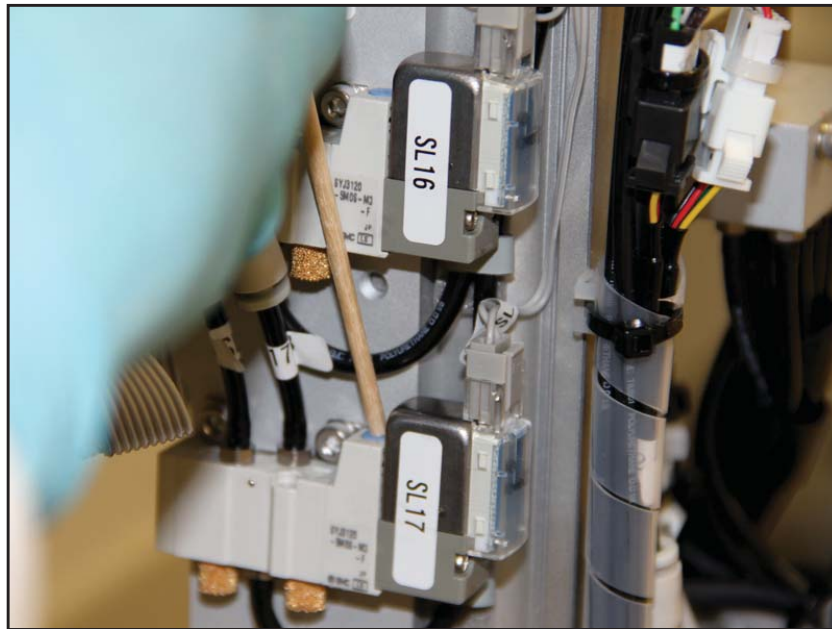
Perform the system recoveries beginning with the LX/DxC connected instruments, Aliquot Module, and Outlet or Stockyard at the end of the track, and work your way towards the Inlet Module. Correct any errors on each module and place modules back in AUTO mode, recovering backward to the Inlet.

- 1 Let the instrument(s) continue to run and process samples.
- 2 If sample tubes are in the quadruple-gripper transfer arm of the LX/DxC connection unit, do the following to remove them:

- a. Open the access door above the LX/DxC auto-loader to gain access to the quadruple-gripper transfer arm.
- b. Reach through the access door and manually pull the transfer arm toward the door so the grippers can be accessed from the door opening.
- c. Locate solenoid SL17 on the transfer arm and note the button on top of the solenoid. This button can be either blue or orange. (Refer to [Figure 3.3](#).)

NOTE This button will open the quadruple-grippers. **Do Not** press this button until you have inserted a LX/DxC loading rack under the tubes to hold them in place when the grippers open.

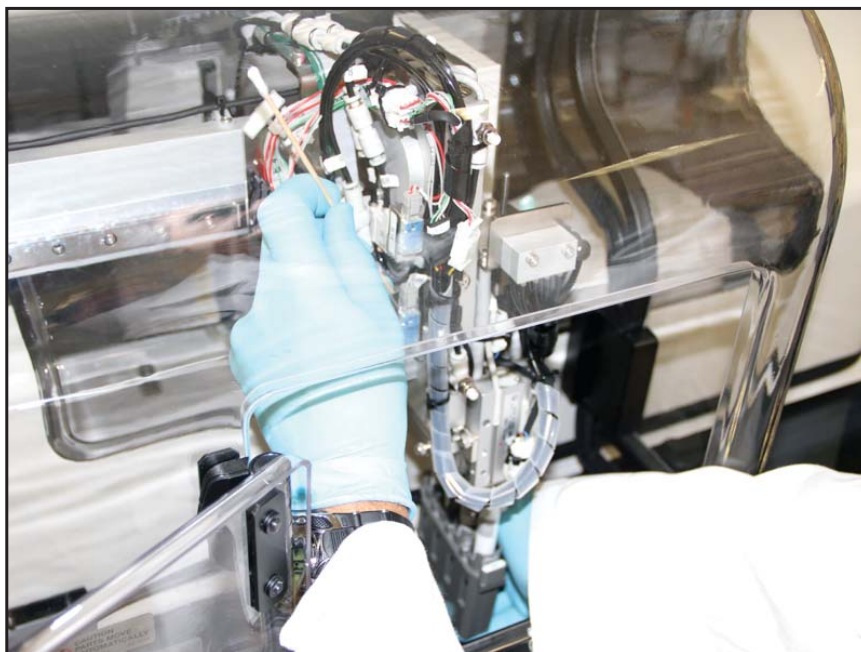
Figure 3.3 Gripper release solenoid SL17



- d. Place a LX/DxC rack under the tubes, raise it so the tubes are inside the rack and hold it in place.
- e. While holding the LX/DxC rack with tubes securely in the rack, use the end of a lab swab or other implement to push the button on top of solenoid SL17. The grippers will open and the tubes can be removed. (Refer to [Figure 3.4](#).)

NOTE Hold down the button securely to keep the grippers open while you remove the tubes.

Figure 3.4 Opening the quadruple-grippers



- f. Lower the rack and tubes, and then release the solenoid button.
- g. Remove the rack and tubes and close the access door.

3 Check the sample tube status at the LX/DxC instrument console to see if they are completed.

If...	Then...
samples are completed,	transfer these tubes to the sample tube carriers that are waiting to be unloaded at the Connection Module once the Connection Module is put back in AUTO mode.
samples are not completed,	transfer these tubes to an offline instrument rack in the output tray on the right side of the instrument.

- 4** Remove sample tubes from the racks in the LX/DxC instrument load tray. Transfer these tubes to another rack(s) and put this rack(s) in the output tray on the right side of the instrument(s).
- 5** Remove sample tubes from the instrument load shuttle. Place these tubes into another rack and place this rack in the output tray on the right side of the instrument.
- 6** Check instrument console to make sure that the instrument is functional. If it is not, refer to the instrument IFU for instructions on restoring the instrument to operation.

-
- 7** Process the racks in the right side output tray using **PRIORITY LOAD**. When these samples are completed, transfer these tubes to sample tube carriers that are waiting for unloading at the Connection Module after the Connection Module is placed back into AUTO mode. Process a maximum of 2 racks at a time to allow the automation system to continue loading racks onto the LX/DxC instrument once the track is re-started.
-
- 8** Disengage the **STOP** button by pressing the button(s) again.
-
- 9** For system configurations with the Aliquot Module, lift and raise the aliquot tip Transfer Arms.
-
- 10** Remove the stockyard splash guard cover.
-
- 11** Remove the sample tube from the stockyard grippers. The Home position for the input arm opens the grippers and the sample tube falls after the stockyard is put in AUTO mode.

If...	Then...
the STOP button was pressed during a sample tube retrieval from the stockyard,	remove the sample tube(s) in the stockyard from all gripper fingers (inside and back) and loading or unloading shuttles.
a tube was stuck on or between the third shelf,	remove the protective rear cover to retrieve the sample.

-
- 12** Replace the stockyard splash guard cover.
-
- 13** Open each large capacity stockyard door and check each rack for tubes that fell inside or behind the stockyard during the stop procedure. Remove all fallen tubes.
-
- 14** At the PrepLink <Locations> tab, search by Sample ID and record the location for each tube removed from the stockyard. Put all samples shown on the <Locations> tab back in their identified rack locations. Process any samples that are not shown on the <Locations> tab OFFLINE.
-
- 15** At Outlet Modules 1A and 1B, if any sample tubes are present in the gripper fingers, manually remove the tubes and process OFFLINE.
-
- 16** Press the green **ON** button on the Inlet Module to restore power to the system.
-

17 At Outlet Modules 1A and 1B, set the **AUTO/MANUAL** button to AUTO mode.

18 Set the **AUTO/MANUAL** button on the Secondary Decapper to AUTO mode.

19 If there are no large capacity stockyard errors, proceed to step [21](#).

If...	Then...
the STOP button was pressed during a sample tube load at the stockyard, with a tube in the grippers,	after powering ON, wait for the arm to move to the second shelf input area.

20 At the large capacity stockyard keypad(s), press the **PAUSE/RUN** button.

21 At the large capacity stockyard keypad(s), set the **AUTO/MANUAL** button to AUTO mode.

22 Set the **AUTO/MANUAL** button on the Recapper to AUTO mode.

23 If there are no sample tubes at the Recapper, proceed to step [30](#).

24 Check for caps in the Recapper chute.

- a. At the Recapper, open the front and rear doors.
 - b. Look for caps in the chute and lateral cap pusher (1).
 - c. If there are caps, proceed to step [25](#). If there are no caps, proceed to step [26](#).
-

25 To remove caps from the chute:

- a. From the *rear* of the Recapper, lift and remove the curved (clear plastic) cap deflector (3) from over the chute loop.
- b. Remove all caps in the chute.
- c. Reinstall the cap deflector.

26 From the *rear* of the Recapper, remove caps from the lateral cap pusher:

- a. If there are sample tubes in the capping area, push them back on the track.
- b. Remove all caps at the lateral cap pusher. If there is a cap in the metal cylinder, use a flat head screwdriver to push the cap down and out of the cylinder. Make sure there are no caps on the track.

IMPORTANT If one or more caps stay in the lateral cap pusher, there may be a 2_10 error.

27 In the Recapper:

If...	Then...
there is a sample tube <i>with</i> a cap,	remove the sample tube from its sample tube carrier. IMPORTANT If the capped tube stays in its sample tube carrier, there will be a 1_06 error.
there is a sample tube <i>without</i> a cap,	do NOT remove the sample tube from its sample tube carrier.

28 At the Recapper, set the **AUTO/MANUAL** button to AUTO mode.

If...	Then...
there is a sample tube <i>without</i> a cap,	the Recapper puts a cap on the sample tube.
a sample tube <i>with</i> a cap was removed in step 27.	the empty sample tube carrier will route to the bar code reader at the large capacity stockyard. Put the capped tube in the sample tube carrier.

29 Follow the instructions in the Error Code section for any errors that occur at the Recapper. Refer to the [Decapper and Recapper Modules IFU](#).

30 Make sure there are 8 empty automation racks in the LX/DxC instrument load tray. (Refer to the “Returning LX/DxC Load Tray to 8 Racks” procedure in the [LX and DxC Connection Modules IFU](#).) Set the **AUTO/MANUAL** button on the Connection Module to AUTO mode.

-
- 31** Remove any remaining tubes from the instrument(s) unload tray and transfer them to the sample tube carriers that are waiting for unloading at the Connection Module.

IMPORTANT Pause the Connection Module while placing tubes into carriers. Press **PAUSE/RUN** to resume processing.

- 32** At the Generic Connection Modules:

If...	Then...
the Generic Connection is an AU connection,	contact your local Beckman Coulter Representative for error recovery instructions for this module.
a sample tube is at the aspiration location,	check the Sample ID status at the Generic or IDC Connection instrument(s). If the sample is in process, it will go to sample completion.
the sample was aspirated before the STOP button was pressed,	sample processing will continue at the instrument(s).
the sample was <i>NOT</i> aspirated before the STOP button was pressed,	the sample must be processed OFFLINE.

- 33** Sample tubes in the queue (from BCR03 to BCR02), must be processed OFFLINE. At the processing keypad, press **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**.
-

- 34** After the sample queue is cleared, set the **AUTO/MANUAL** button at each Generic and IDC Connection Module keypad to AUTO mode.
-

- 35** Set the **AUTO/MANUAL** button on the H-Lane to AUTO mode.
-

- 36** For system configurations with an Aliquot Module and a sample tube in front of bar code reader #1, place a blockage between the sample at bar code reader #1 and the samples that may be preceding bar code reader #1 in the Aliquot Unit.
-

- 37** At the Aliquot Unit, press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**. Any sample tubes that were not aliquoted, will route to Aliquot Error Rack.
-

- 38** At the Labeler Unit, remove any dropped aliquot tubes from the top of the aliquot tube tray, in the roller area, and in the aliquot tube chute.
-

-
- 39** Set the **AUTO/MANUAL** button on the Labeler Unit to AUTO mode. Aliquot sample tubes that were being processed will be discarded into the defective aliquot tube disposal container.
-
- 40** Set the **AUTO/MANUAL** button on the Aliquot Unit to AUTO mode. The aliquot tip Transfer Arms will move forward and discard the aliquot tips into the biohazard container. The primary tubes will sort to the Aliquot Error Rack.
-
- 41** At the bar code reader #1 in the Aliquot Unit, remove the blockage that was set there in step [36](#).
-
- 42** Set the **AUTO/MANUAL** button on the Decapper to AUTO mode. Waiting sample tubes will be decapped.
-
- 43** If there are no sample tubes present at the Serum Level Detector Unit, set the **AUTO/MANUAL** button to AUTO mode. Proceed to step [47](#).
-
- 44** If tubes are present in the Serum Level Detector gripper fingers, or in the optical wells, remove the tubes and place them in sample tube carriers inside the Serum Level Detector Unit.
-
- 45** At the Serum Level Detector keypad, press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**. This will move the sample tube carriers from the Serum Level Detector Unit.
-
- 46** Set the **AUTO/MANUAL** button on the Serum Level Detector Unit to AUTO mode.
-
- 47** If there are no samples at the Centrifuge, set the **AUTO/MANUAL** button to AUTO mode and proceed to step [66](#).
-
- 48** If a sample tube is present in front of the Centrifuge Track bar code reader, it may proceed down the track and bypass the Centrifuge when the Centrifuge is set to AUTO mode in step [65](#). This could be a problem if that tube required centrifugation.
- a.** Check the sample programming to determine if the tube requires centrifugation.
 - b.** If centrifugation is needed, set the sample tube aside and record the sample ID (identification of this tube will be needed in step [61b](#)).
 - c.** If centrifugation is not needed, do not remove the tube.
-
- 49** Turn the Centrifuge power OFF and remove the Centrifuge safety shield.

-
- 50** Remove any sample tubes or balance tubes from the grippers. Set them aside and determine if these tubes were being loaded or unloaded from the Centrifuge.
-
- 51** Make sure there are no jammed sample tube carriers in the Centrifuge Track queue (D-Lane).
-
- 52** Remove any sample tubes from sample tube carriers that have entered the Centrifuge Track D-Lane. Set them aside and determine if these tubes were being loaded or unloaded from the Centrifuge.
-
- 53** Push the Centrifuge Transfer-arm to the Home position over the loading area of the Centrifuge Track D-Lane.
-
- 54** Turn the Centrifuge power ON. Make sure the Centrifuge is in MANUAL mode.
-
- 55** Turn the Door Release Lock switch to the right to unlock the Centrifuge. If the Centrifuge does not unlock, make sure that the Centrifuge Transfer-arm is completely in the Home position.
-
- 56** Open the Centrifuge lid.
- a. If there are tubes in the Centrifuge, follow your laboratory policy to determine if the tubes have been fully spun or need to be re-spun. If they need to be re-spun, proceed to step [57](#).
 - b. If you determine that the tubes do not need to be re-spun, proceed to step [61c](#).
 - c. If there are no tubes in the Centrifuge, proceed to step [57](#).
-
- 57** Manually load the Centrifuge with the tubes set aside in steps [48b](#), [50](#), and [52](#) that needed to be spun. Make sure the load is balanced.
-
- 58** Close the Centrifuge lid and make sure both latches are secure.
-
- 59** Ensure that the Centrifuge is in MANUAL mode.
-
- 60** On the Centrifuge, press the **FUNCTION +/-** buttons to set the readout to "80" and press **ENTER**. Press the **PAUSE/RUN** button to start centrifugation.
-
- 61** After centrifugation is complete,
- a. Turn the release door switch to the Right to open the Centrifuge lid.

- b. Manually unload the sample tube from step 48b and return it to the empty carrier in front of the Centrifuge Track bar code reader.
- c. Manually unload the sample tubes into the sample tube carriers in the Centrifuge Track D-Lane.
- d. Close the Centrifuge lid and make sure both latches are secure.
- e. Replace the Centrifuge safety shield.

62 If there were any tubes set aside in step 50 and 52 that did not need to be re-spun, manually load those tubes into the sample tube carriers in the Centrifuge Track D-Lane.

63 On the Centrifuge Track keypad, ensure the Centrifuge is in MANUAL mode. Press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**.

64 On the Centrifuge keypad, **PAUSE/RUN** button to move the sample tube carriers from Centrifuge Track D-Lane area.

65 Once all the sample tubes have cleared the last Centrifuge Track D-Lane, set the **AUTO/MANUAL** button on the Centrifuge to AUTO mode.

66 If the system is configured with a Hematology Outlet,

- remove the tube from the gripper fingers and process OFFLINE. Set the **AUTO/MANUAL** button to AUTO mode.

If the system is configured with a Bar Code Verification Module,

- set the **AUTO/MANUAL** button to AUTO mode.

67 At the Inlet Module...

- If any samples are still in the Inlet gripper finger(s), they must be removed and placed back into the partially unloaded rack.
- If a partially unloaded rack (any four Inlet racks) needs to be processed, place a sample tube in location #1 of the rack and move all tubes forward so there are no empty tube positions.

IMPORTANT For a Dynamic Inlet, this step is especially important if the rack that is being processed is a Priority Rack, as an empty tube position will cause the Priority Rack to be ignored.

- Finally, set the **AUTO/MANUAL** button to AUTO mode to continue sample tube processing.
-

Inlets, Outlets, Hematology, and Barcode Verification Module Recovery Procedures

This section provides information to identify and resolve errors related to Inlets, Outlets, Hematology, and Bar Code Verification modules. These recovery procedures include:

- [Inlet Module Error Recovery Procedure](#)
- [Dynamic Inlet Module Error Recovery Procedure](#)
- [Bar Code Verification Module Error Recovery Procedures](#)
- [Hematology Outlet Error Recovery Procedure](#)
- [Outlet Module Error Recovery Procedure](#)
- [Stuck Sample Tube at Bar Code Reader](#)

Inlet Module Error Recovery Procedure

Inlet Module errors are usually caused by a collection rack loading error. Inlet Module errors can also include:

- Gripper finger errors
- Transfe-arm blockage
- Sensor malfunction
- Jammed sample tube carrier

Inlet Rack Loading Error Recovery



Before performing an error recovery procedure, make sure that the **PAUSE** button is lit.

-
- 1 Press the **ALARM** button on the keypad to silence the alarm.
 - 2 Read the error code from the keypad display.
 - 3 Press the **FUNCTION +/-** buttons on the keypad to show the complete error code.
 - 4 Locate the error code in [Table 4.3, Inlet Module Error Codes](#) on page 4-4.
 - 5 Correct the problem causing the error message.
-

-
- 6 Press the **PAUSE/RUN** button on the keypad to resume routine operation.
-

Dynamic Inlet Module Error Recovery Procedure

Dynamic Inlet Module errors may also include:

- Sensor malfunction
- Jammed sample tube carrier

 **CAUTION**

Before performing an error recovery procedure, verify that the **PAUSE/RUN** button is lit.

-
- 1 Press the **ALARM** button on the Inlet Module keypad to silence the alarm.
-
- 2 Read the error code from the keypad display.
-
- 3 Press the **FUNCTION +/-** buttons on the keypad to show the complete error code.
-
- 4 Locate the error code in [Table 4.4, Dynamic Inlet Module Error Codes](#) on page 4-6.
-
- 5 Correct the problem causing the error message.
-
- 6 Press the **PAUSE/RUN** button on the keypad to resume routine operation.
-

Bar Code Verification Module Error Recovery Procedures

 **CAUTION**

Before performing an error recovery procedure, make sure that the **PAUSE** button is lit.

-
- 1 Press the **ALARM** button on the Bar Code Verification Module keypad to silence the alarm.
-

- 2 Read the error code from the keypad display.
- 3 Press the **FUNCTION** +/- buttons on the keypad to show the complete error code.
- 4 Locate the error code in [Table 4.5, Bar Code Verification Module Error Codes](#) on page 4-8.
- 5 Resolve the condition causing the error message.
- 6 Press the **PAUSE/RUN** button on the keypad to resume routine operation.

Hematology Outlet Error Recovery Procedure



Before performing an error recovery procedure, make sure that the **PAUSE** button is lit.

- 1 Press the **ALARM** button on the Hematology Module keypad to silence the alarm.
- 2 Read the error code from the keypad display.
- 3 Press the **FUNCTION** +/- buttons on the keypad to show the complete error code.
- 4 Locate the error code in [Table 4.6, Hematology Module Error Codes](#) on page 4-10.
- 5 Resolve the condition causing the error message.
- 6 Ensure the sample tube bar code label is aligned properly in the instrument rack read window.
- 7 Press the **PAUSE/RUN** button on the keypad to resume routine operation.

Outlet Module Error Recovery Procedure

Outlet Module errors can include:

- Operator Rack Load error
- Bar code reader error
- Sensor malfunction
- Gripper finger error

CAUTION

Before performing Outlet Module error recovery, make sure that the **PAUSE** button is lit.

- 1 Press the **ALARM** button on the Outlet Module keypad to silence the alarm.
- 2 Read the error code from the keypad display.
- 3 Press the **FUNCTION +/-** buttons on the keypad to show the complete error code.
- 4 Locate the error code in [Table 4.7, Outlet Module Error Codes](#) on page 4-13.
- 5 Resolve the condition causing the error message.
- 6 Ensure the sample tube bar code label is aligned properly in the instrument rack read window.
- 7 Press the **PAUSE/RUN** button on the keypad to resume routine operation.

Stuck Sample Tube at Bar Code Reader

If a sample tube halts at the Outlet Module bar code reader without generating an error, additional sample programming can have been downloaded while the sample tube traveled between the Hematology Module/Bar Code Verification Module and the Outlet Module.

- 1 Press the **PAUSE/RUN** button on the Outlet Module keypad to pause the module. When the **PAUSE/RUN** light is on, the module is in **PAUSE** mode.
- 2 Rotate the sample tube so that the bar code label faces the bar code reader.

-
- 3** Press the **PAUSE/RUN** button on the Outlet Module keypad.

If...	Then...
the bar code reader scans the label and the transfer arm places the sample tube in an outlet rack,	the problem is solved and the system is functioning normally.
the sample tube remains stuck at the bar code reader,	proceed to step 4 in this table.

-
- 4** Press the **PAUSE/RUN** button on the Outlet Module keypad to pause the module. When the PAUSE/RUN light is on, the module is in PAUSE mode.

-
- 5** Remove the sample tube.

-
- 6** Simultaneously press the **PAUSE/RUN** button and the **ENTER** button on the Outlet Module keypad to resume routine operation.

-
- 7** Process the sample tube offline.
-

CHAPTER 4

Troubleshooting

This chapter provides important troubleshooting information on how to locate and resolve problems with the Inlets, Outlets, Hematology, and Bar Code Verification modules. It is divided into 2 sections:

- [Error Code Tables](#)
- [Sensor Diagrams](#)

Error Code Tables

The Error Code tables describe error messages generated by the Power Processor system. The tables provide system error codes, a brief explanation of the possible problem, and possible solutions.

Error Code Explanation

The "Error Code" column contains the alphanumeric codes as they appear in the Line Control Computer Error Log. These codes, (SN09 PAS for example) refer to specific sensors on the track.

The "Keypad Display" column contains the codes shown on the keypads located at each module of the system.

The "Problem" column provides a description of the cause of the error.

The "Solution" column provides a way to resolve an error condition.

Nomenclature

Table 4.1 contains definitions of the alphabetic portion of error codes found in the "Error Code" column of the following Error Code tables.

Use this table and the color diagrams in the [Sensor Diagrams](#) section on page 4-16, to locate errors on the system.

Table 4.1 Error Code Definitions

Code	Definition
AM	AC synchronous motor
AS	Magnetic auto switch
BR	Bar code reader
BZ	Audible alarm (buzzer)
DM	DC motor
LP	Lamp (keypad and warning light)
LS	Mechanical limit switch
PM	Pulse/stepper motor
SL	Pneumatic solenoid
SN	Sensor
SW	Keypad switch

Unit Error Code Categories

- The Error Code is a *three-digit* number. The keypad on the error unit shows the 1_digit segment. The first digit represents the error category. (Refer to [Table 4.2.](#))
- Press the **FUNCTION** - button on the keypad and the last two digits appear. These digits refer to the component (for example, solenoid or sensor) causing the error.

Example:

If the Error Code is 1_03, this represents Sensor Error 03(SN03). The sensor did not detect a sample tube at the Error Lane of the Bar Code Verification Module. Refer to [Table 4.5, Bar Code Verification Module Error Codes](#) on page 4-8 and [Figure 4.8, Bar Code Verification Module \(Error Lane\)](#) on page 4-20.

- Press the **FUNCTION** + and **FUNCTION** - button alternately to toggle back and forth to see both sets of digits.

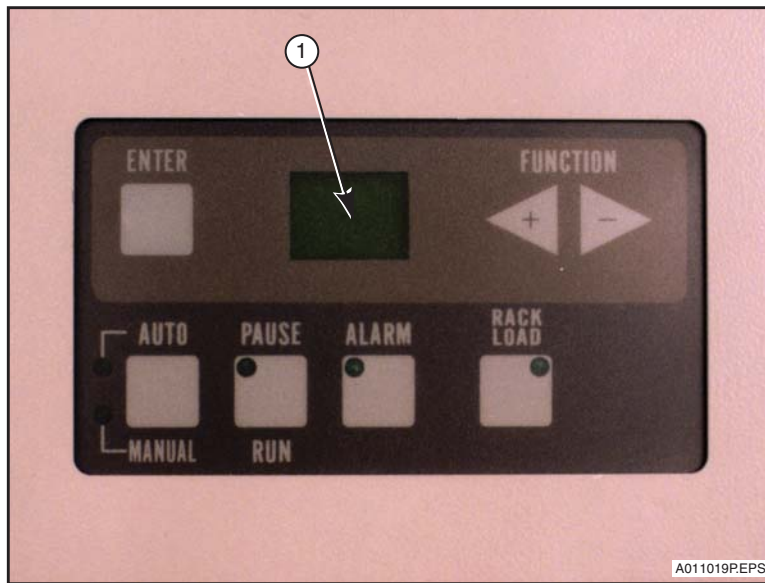
Table 4.2 Unit Error Code Categories

Category	Error Description	Problem	Solution
0_xx	Could not read bar code.	Invalid bar code.	<ul style="list-style-type: none"> • Attach valid bar code. • Check that the bar code label is correct and clean.
		Sample information was not received from LIS.	<ul style="list-style-type: none"> • Valid communication needed.
		Sample is not at the correct position.	
1_xx	Cannot pass carrier to sensor SNxx. Can also refer to ASxx.		<ul style="list-style-type: none"> • Check the sensor position and look for possible jamming.
		At Startup sample tube carrier was located in the sensor.	<ul style="list-style-type: none"> • Check that carrier is separated from the sensor at Startup.
2_xx	Cannot move cylinder.		<ul style="list-style-type: none"> • Check the solenoid/cylinder position and look for possible jamming.
3_xx	Bar code reader not working or label not facing bar code reader.		<ul style="list-style-type: none"> • Check that the bar code reader light comes on and that the carrier rotates.
4_xx	Pulse Motor/AC Motor Error.		<ul style="list-style-type: none"> • Check motors and drive belts.
5_xx	Analyzer is not ready, or the tube has stopped somewhere.		<ul style="list-style-type: none"> • Confirm that the Analyzer is Ready or whether the cassette is jammed between Analyzer and Connection Unit.
7_xx	Auto sensor error (ASxx).		<ul style="list-style-type: none"> • Confirm that the sensor position and cylinder work correctly.
9_xx	AC motors on arm.		<ul style="list-style-type: none"> • Confirm that the AM1 and AM2 work correctly.

Inlet Module Error Codes

Table 4.3 lists error codes as they appear in the Line Control Computer Systems Error Log and on the Inlet Module keypad display (refer to Figure 4.1). A brief description of the problem and a possible solution are also found in the table.

Figure 4.1 Inlet Module Keypad



1. Display

Table 4.3 Inlet Module Error Codes

Sensor	Keypad Display	Problem	Solution
SN07 OFF	1_07	Rack #1 positioning error.	Inspect the Inlet to see if rack #1 is present or set correctly.
SN08 OFF	1_08	Rack #2 positioning error.	Inspect the Inlet to see if rack #2 is present or set correctly.
SN09 OFF	1_09	Rack #3 positioning error.	Inspect the Inlet to see if rack #3 is present or set correctly.
SN10 OFF	1_10	Rack #4 positioning error.	Inspect the Inlet to see if rack #4 is present or set correctly.
SN11 PAS	1_11	Sensor SN11 does not detect a sample tube carrier.	Inspect the track to see if a sample tube carrier is jammed and that the belt moves.
SN12 PAS	1_12	The sensor does not detect a sample tube carrier at the bar code reader.	Inspect the track to see if a sample tube carrier is jammed between the sensor and the bar code reader.
SN13 OFF	1_13	The sensor does not detect a sample at the #1 loading position.	Manually put a sample in the #1 position. Samples must be loaded sequentially.
SN18 PAS	1_18	Sensor SN18 does not detect a sample tube carrier at the return lane.	Inspect the track to see if a sample tube carrier is jammed and that the belt moves.

Table 4.3 Inlet Module Error Codes (*Continued*)

Sensor	Keypad Display	Problem	Solution
SN21 PAS	1_21	Sensor SN21 does not detect a sample tube carrier at the return lane.	Inspect the track to see if a sample tube carrier is jammed and that the belt moves.
SN22 OFF	1_22	The sensor does not detect a sample at the #2 loading position.	Manually put a sample in the #2 position. Samples must be loaded sequentially.
SN23 OFF	1_23	The sensor does not detect a sample at the #3 loading position.	Manually put a sample in the #3 position. Samples must be loaded sequentially.
SN24 OFF	1_24	The sensor does not detect a sample at the #4 loading position.	Manually put a sample in the #4 position. Samples must be loaded sequentially.
SL01	2_01	Sensor SL01 does not detect a sample tube carrier at the starting position.	The pneumatic stopper does not work correctly. Make sure that the air compressor is on.
SL02	2_02	Sensor SL02 does not detect a sample tube carrier at the starting position.	The pneumatic stopper does not work correctly. Make sure that the air compressor is on.
SL04	2_04	Vertical motion problem at the transfer arm.	Make sure that the air compressor is on and that the transfer arm is not blocked by an obstruction.
SL05 ON	2_05	Gripper finger error.	The grippers are jammed open. Make sure that the air compressor is on and that the arm is not blocked by an obstruction.
SL05 OFF	2_05	Gripper finger error.	The grippers cannot open. Make sure that the air compressor is on.
SL06	2_06	Error at sensor SL06 on the return lane.	The pneumatic stopper does not work correctly. Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL07	2_07	Error at sensor SL07 on the return lane.	The pneumatic stopper does not work correctly. Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL10	2_10	Error at sensor SL10 on the return lane.	The pneumatic stopper does not work correctly. Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL11	2_11	Error at sensor SL11 on the return lane.	The pneumatic stopper does not work correctly. Make sure that the air compressor is on and that a sample tube carrier is not jammed.

Dynamic Inlet Module Error Codes

Table 4.4 Dynamic Inlet Module Error Codes

Sensor	Keypad Display	Problem	Solution
BUZZ CMD	0-**	Line Control Computer error. (Bar-code reading error, sample positioning error, etc.)	Clear the error and retry to read the bar-code. In the case the error occurs again, check if the bar-code reader reads bar-code properly and if the bar-code is readable.
SN07 OFF	1-07	Rack #1 detection error.	Ensure to use the rack change button on the control panel when at the time of rack change.
SN08 OFF	1-08	Rack #2 detection error.	Ensure to use the rack change button on the control panel when at the time of rack change.
SN09 OFF	1-09	Rack #3 detection error.	Ensure to use the rack change button on the control panel when at the time of rack change.
SN10 OFF	1-10	Rack #4 detection error.	Ensure to use the rack change button on the control panel when at the time of rack change.
SN12 PAS	1-12	Error on sample holder passage between SN14 and SN12.	Ensure that a sample holder is not stuck on the conveyor.
SN18 PAS	1-18	Error on sample holder passage between SN12 and SN18.	Ensure that a sample holder is not stuck on the conveyor.
SN22 PAS	1-22	Error on sample holder passage between SN12 and SN18.	Ensure that a sample holder is not stuck on the conveyor.
SN42 PAS	1-42	Error on sample holder passage between SN41 and SN42.	Ensure that a sample holder is not stuck on the conveyor.
SN42 ON	1-42	Error on sample holder passage between SN52 and SN42.	Ensure that a sample holder is not stuck on the conveyor.
SN51 OFFS	1-51	Error on sample holder passage between SN18 and SN51.	Ensure that a sample holder is not stuck on the conveyor.
SL01 ERR	2-01	Error at the stopper to sort sample holders.	Ensure that a sample holder is not stuck at the stopper (Check AS01).
SL02 ERR	2-02	Error at the stopper to sort sample holders.	Ensure that a sample holder is not stuck at the stopper (Check AS02).
SL03 ERR	2-03	Error at the stopper to sort sample holders.	Ensure that a sample holder is not stuck at the stopper (Check AS03).
SL04 ERR	2-04	Error at the Z-axis cylinder on the arm.	Verify that air is supplied and the gripper arm moves properly. Check the arm for misalignment or other condition that may prevent the movement of the arm.
SL41 ERR	2-41	Error at the stopper to sort sample holders.	Ensure that a sample holder is not stuck at the stopper. Also check AS41 to see if it works properly.
SL42 ERR	2-42	Error at the stopper to sort sample holders.	Ensure that a sample holder is not stuck at the stopper. Also check AS42 to see if it works properly.

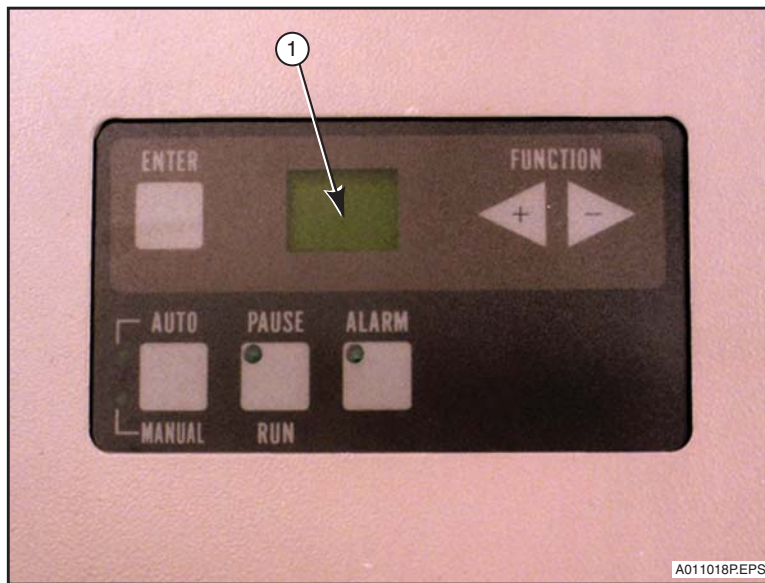
Table 4.4 Dynamic Inlet Module Error Codes (Continued)

Sensor	Keypad Display	Problem	Solution
SL51 ERR	2-51	Error at the Holder Sorting/Merging Divider.	Verify that the divider works properly. Also check AS51 to see if the Divider comes out completely and AS52 to see if the Divider retracts to its standby position.
SL53 ERR	2-53	Error at the stopper to sort sample holders.	Ensure that a sample holder is not stuck at the stopper. Also check AS53 to see if it works properly.
SL54 ERR	2-54	Error at the stopper to sort sample holders.	Ensure that a sample holder is not stuck at the stopper. Also check AS54 to see if it works properly.
SL55 ERR	2-55	Error at the Holder Sorting/Merging Divider.	Verify that the divider works properly. Also check AS55 to see if the Divider comes out completely and AS56 to see if the Divider retracts to its standby position.
BR01 INI	3-01	Error of the bar-code reader on initial setting.	Verify that the cable is properly connected or not damaged. To resume the operation, reboot the unit and set to AUTO mode on the control panel.
BR01 TIM	3-01	Error of the time out during the bar-code verification process.	Verify that the cable is properly connected or not damaged. To resume the operation, reboot the unit and set to AUTO mode on the control panel.
PM01 JOG	4-01	Limit sensor detection error on the robotic arm.	Verify that the Arm X-axis Motor rotates to the limit side and the Proximity Sensor works properly. To resume the operation, reboot the unit and set to AUTO mode on the control panel.
PM01 INI	4-01	Error on Arm Motor while moving to the home position.	Ensure that nothing interferes with the movement of arm and the both Arm Home and Proximity sensors work properly. To resume the operation, reboot the unit and set to AUTO mode on the control panel.
PM01 POS	4-01	Error on the process of arm positioning.	Ensure that nothing interferes with the movement of arm. To resume the operation, reboot the unit and set to AUTO mode on the control panel.
PM02 JOG	4-02	Limit sensor detection error on the robotic arm.	Verify that the Arm X-axis Motor rotates to the limit side and the Proximity Sensor works properly. To resume the operation, reboot the unit and set to AUTO mode on the control panel.
PM02 INI	4-02	Error on Arm Motor while moving to the home position.	Ensure that nothing interferes with the movement of arm and the both Arm Home and Proximity sensors work properly. To resume the operation, reboot the unit and set to AUTO mode on the control panel.
PM02 POS	4-02	Error on the process of arm positioning.	Ensure that nothing interferes with the movement of arm. To resume the operation, reboot the unit and set to AUTO mode on the control panel.

Bar Code Verification Module Error Codes

Table 4.5 represents Error Codes as they appear in the Line Control Computer Systems Error Log and Error Signals as they appear on the Bar Code Verification Module keypad display (refer to Figure 4.2). A brief description of the problem and a possible solution are also found in the table.

Figure 4.2 Bar Code Verification Module Keypad



1. Display

Table 4.5 Bar Code Verification Module Error Codes

Sensor	Keypad Display	Problem	Solution
BUZZ CMD	0_01	Line Control Computer error reading bar code label.	Inspect the sample in the Error Lane to see if the bar code label is readable.
SN03 PAS	1_03	The sensor does not detect a sample tube at the Error Lane.	Inspect the track to see if a sample tube carrier is jammed and if the belt moves.
SN04 PAS	1_04	The sensor does not detect the passage of a sample tube carrier through the Error Lane.	Inspect the track to see if a sample tube carrier is jammed and if the belt moves.
SN06 PAS	1_06	The sensor does not detect a sample tube carrier at the return lane.	Inspect the track to see if a sample tube carrier is jammed and if the belt moves.
SN09 PAS	1_09	The sensor does not detect a sample tube carrier in the bar code reader area.	Inspect the track to see if a sample tube carrier is jammed and if the belt moves.
SL01	2_01	Stopper error at sensor SL01.	Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL02	2_02	Stopper error at sensor SL02.	Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL03	2_03	Stopper error at sensor SL03.	Make sure that the air compressor is on and that a sample tube carrier is not jammed.

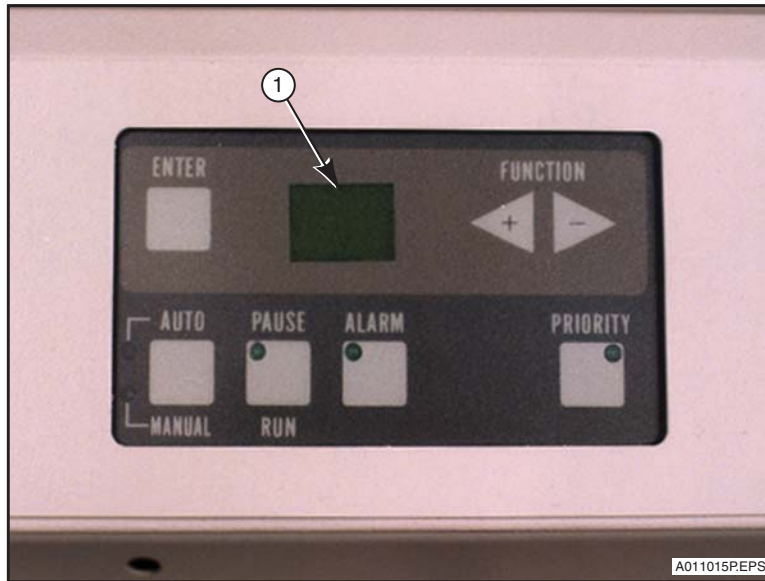
Table 4.5 Bar Code Verification Module Error Codes (*Continued*)

Sensor	Keypad Display	Problem	Solution
SL04	2_04	Stopper error at sensor SL04.	Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL05	2_05	Error at the sorting divider.	Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL06	2_06	Error at the bar code reader stopper.	Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL08	2_08	Error at the bar code reader stopper.	Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL09	2_09	Error at the bar code reader stopper.	Make sure that the air compressor is on and that a sample tube carrier is not jammed.
SL10	2_10	Error at the divider.	Make sure that the air compressor is on and that the divider is engaged.
BR01	3_01	Bar code reader initialization/read error.	Make sure that the bar code reader cable is attached to the back of the reader. If the cable is attached and the error occurs again, contact a Beckman Coulter Representative.

Hematology Module Error Codes

Table 4.6 lists error codes as they appear in the Line Control Computer Systems Error Log and on the Hematology Module keypad display (refer to Figure 4.3). A brief description of the problem and a possible solution are also found in the table.

Figure 4.3 Hematology Module Keypad



1. Display

Table 4.6 Hematology Module Error Codes

Sensor	Keypad Display	Problem	Solution
BUZZ COM	0_01	Line Control Computer error reading bar code label.	Inspect the sample in the Error Lane to see if the bar code label is readable.
SN07 OFF	1_07	Rack loading procedure error at rack #1.	Follow the Unloading the Outlet procedure on page 2-30 in CHAPTER 2.
SN08 OFF	1_08	Rack loading procedure error at rack #2.	Follow the Unloading the Outlet procedure on page 2-30 in CHAPTER 2.
SN09 OFF	1_09	Rack loading procedure error at rack #3.	Follow the Unloading the Outlet procedure on page 2-30 in CHAPTER 2.
SN10 OFF	1_10	Rack loading procedure error at rack #4.	Follow the Unloading the Outlet procedure on page 2-30 in CHAPTER 2.
SN11 PAS	1_11	The sensor does not detect a sample tube carrier after the bar code reader.	Inspect the track to see if a sample tube carrier is jammed between the sensor and the bar code reader. Make sure that the rotating wheel at the bar code reader turns.
SN12 PAS	1_12	The sensor does not detect a sample tube carrier at the bar code reader.	Inspect the track to see if a sample tube carrier is jammed between the sensor and the bar code reader.

Table 4.6 Hematology Module Error Codes (*Continued*)

Sensor	Keypad Display	Problem	Solution
SN15 ON	1_15	Error of the axis of rotation of the outlet arm.	<ol style="list-style-type: none"> 1. Make sure that the motor of the arm rotation-axis rotates correctly. 2. Make sure that the sensor works correctly. 3. Press PAUSE/RUN.
SN18 PAS	1_18	Sample tube carrier detection error at sensor SN18.	Inspect the track to see if a sample tube carrier is jammed upstream from SN18.
SN19 ON	1_19	Sample tube carrier detection error at sensor SN19 at the bar code reader.	<ol style="list-style-type: none"> 1. Make sure that a tube was not left in a sample tube carrier at SN14. 2. Make sure that the fiber optic sensor at SN14 is clean.
SN20 PAS	1_20	Tube detection error at sensor SN20.	Inspect the track to see if a sample tube carrier is jammed upstream from SN20.
SL01 OFF	2_01	Error at the stopper at the bar code reader.	Inspect the track to see if a sample tube carrier is jammed. Press PAUSE/RUN .
SL02 OFF	2_02	Error at the stopper next to the bar code reader.	Inspect the track to see if a sample tube carrier is jammed. Press PAUSE/RUN .
SL03 OFF	2_03	Error at the stopper next to the bar code reader.	Inspect the track to see if a sample tube carrier is jammed. Press PAUSE/RUN .
SL04 OFF	2_04	Vertical motion problem at the transfer arm.	Make sure that the air compressor is turned on and that the transfer arm is not blocked by an obstruction.
SL05 OFF	2_05	Gripper opening error.	Make sure that the transfer arm is not blocked by an obstruction.
SL06 OFF	2_06	Error at stopper SL06.	<ol style="list-style-type: none"> 1. Inspect the track to see if a sample tube carrier is jammed. 2. Press PAUSE/RUN.
SL07 OFF	2_07	Error at stopper SL07.	<ol style="list-style-type: none"> 1. Inspect the track to see if a sample tube carrier is jammed. 2. Press PAUSE/RUN.
SL08 OFF	2_08	Sorting divider error at the through lane intersection.	<ol style="list-style-type: none"> 1. Make sure that the divider is not jammed. 2. Press PAUSE/RUN.
SL10 OFF	2_10	Error at stopper SL10 next to the tube taper.	<ol style="list-style-type: none"> 1. Inspect the track to see if a sample tube carrier is jammed. 2. Press PAUSE/RUN.
SL11 OFF	2_11	Error at stopper SL11 at the tube taper.	<ol style="list-style-type: none"> 1. Inspect the track to see if a sample tube carrier is jammed. 2. Press PAUSE/RUN.
SL12 OFF	2_12	Error at stopper SL12 inside the tube taper.	Make sure that a tube is not jammed in the sample tube carrier, preventing the tube taper from pushing it down.

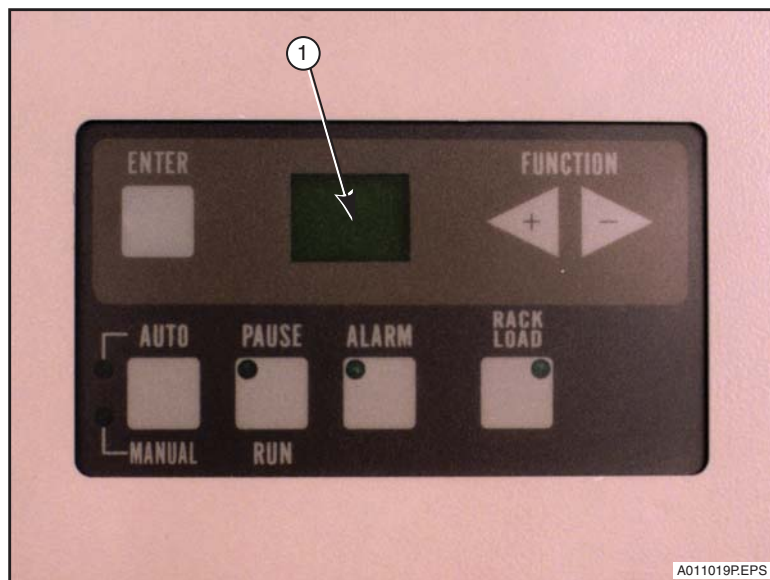
Table 4.6 Hematology Module Error Codes (*Continued*)

Sensor	Keypad Display	Problem	Solution
BR01	3_01	Bar code reader interruption error, reader failure error, or alignment problem.	Press PAUSE/RUN to continue sample processing (check the placement of the sample tube in the rack; adjust if necessary). If the error repeats or if there is no sample tube at the bar code reader, reset the module by switching to MANUAL mode, then to AUTO mode. If the error occurs again, contact a Beckman Coulter Representative.
PM01	4_01	Transfer arm positioning error.	Reset the module by switching to MANUAL mode, then to AUTO mode. If the transfer arm does not move to the Home position, contact a Beckman Coulter Representative.
PM02	4_02	Transfer arm positioning error.	Reset the module by switching to MANUAL mode, then to AUTO mode. If the transfer arm does not move to the Home position, contact a Beckman Coulter Representative.
PM03	4_03	Transfer arm rotational error.	Reset the module by switching to MANUAL mode, then to AUTO mode. If the transfer arm does not move to the Home position, contact a Beckman Coulter Representative.
AS06 ON	7_06	Sample grasping error while module is initializing.	Remove the tube from the gripper.
AS06 OFF	7_06	Gripping error due to sensor failure to detect a sample tube.	Inspect the outlet to see if the gripper dropped a tube. Replace the tube, then press PAUSE/RUN .
AS06 OFF	7_06	Loading error at outlet rack due to unopened gripper.	Make sure that the transfer arm is not blocked by an obstruction.
COMM ERR	9_01	Communication error between the unit and the control Line Control Computer.	Make sure that the communication cable is intact. Reset the module by switching to MANUAL mode, then to AUTO mode. If the transfer arm does not move to the Home position, contact a Beckman Coulter Representative.

Outlet Module Error Codes

Table 4.7 represents Error Codes as they appear in the Line Control Computer Systems Error Log and Error Signals as they appear on the Outlet Module keypad display (refer to Figure 4.4). A brief description of the problem and a possible solution are also found in the table.

Figure 4.4 Outlet Module Keypad



1. Display

Table 4.7 Outlet Module Error Codes

Sensor	Keypad Display	Problem	Solution
BUZZ CMD	0_01	Line Control Computer error reading bar code label.	Inspect the sample to see if the bar code label is readable.
BR11	0_11	Error at bar code reader.	Inspect the sample to see if the bar code label is readable. Press PAUSE/RUN .
BR12	0_12	Positioning error at bar code reader.	Remove the sample from the sample tube carrier and reset the error. Then process the sample off-line.
BR13	0_13	Invalid route code at bar code reader. Additional sample programming caused a sorting conflict.	1. Remove the sample tube and press ENTER . 2. Remove the sample tube and press PAUSE/RUN .
BR23	0_23	Bar code read problem.	Remove the sample tube and press PAUSE/RUN .
SN07 OFF	1_07	Outlet rack loading procedure error, rack #1.	Press the RACK LOAD button before removing racks.
SN08 OFF	1_08	Outlet rack loading procedure error, rack #2.	Press the RACK LOAD button before removing racks.
SN09 OFF	1_09	Outlet rack loading procedure error, rack #3.	Press the RACK LOAD button before removing racks.

Table 4.7 Outlet Module Error Codes (*Continued*)

Sensor	Keypad Display	Problem	Solution
SN10 OFF	1_10	Outlet rack loading procedure error, rack #4.	Press the RACK LOAD button before removing racks.
SN11 PAS	1_11	The sensor does not detect a sample tube carrier after the bar code reader.	Inspect the track to see if a sample tube carrier is jammed between the sensor and the bar code reader.
SN12 PAS	1_12	The sensor does not detect a sample tube carrier at the bar code reader.	Inspect the track to see if a sample tube carrier is jammed between the sensor and the bar code reader.
SN15 ON	1_15	Transfer arm sensor ON/OFF error.	Inspect the module to see if the motor works.
SN18 PAS	1_18	The sensor does not detect a sample tube carrier at the return lane.	Inspect the track to see if a sample tube carrier is jammed and if the belt moves.
SN19 ON	1_19	Sensor detects sample tube though a sample tube carrier is not present at bar code reader.	<ol style="list-style-type: none"> 1. Clean the fiber optic sensor. 2. Press the ENTER and PAUSE/RUN buttons on the keypad simultaneously.
SN19 OFF	1_19	The gripper failed to grasp a tube.	<ol style="list-style-type: none"> 1. Make sure that the fiber optic sensor is clean and that the gripper sensor is on. 2. Place the tube in the gripper. 3. Press PAUSE/RUN.
SN22 PAS	1_22	A sample tube carrier was passed through from the sorting point on the through lane, but the sample tube carrier was not detected.	Make sure that a sample tube carrier is not jammed.
SN23 PAS	1_23	A sample tube carrier was diverted to the empty sample tube carrier waiting lane, but the sample tube carrier was not detected.	Make sure that a sample tube carrier is not jammed.
SN33 PAS	1_33	The stopper retracted at the intersection of the empty sample tube carrier waiting lane, but the sample tube carrier was not detected.	Make sure that a sample tube carrier is not jammed.
SL01	2_01	Error at the bar code reader stopper.	Inspect the track to see if a sample tube carrier is jammed.
SL02	2_02	Error at the bar code reader stopper.	Inspect the track to see if a sample tube carrier is jammed.
SL03	2_03	Error at the bar code reader stopper.	Inspect the track to see if a sample tube carrier is jammed.
SL04	2_04	Vertical motion problem at the transfer arm.	Make sure that the air compressor is turned on and that the transfer arm is not blocked by an obstruction.
SL05 OFF	2_05	Gripper opening error.	Make sure that the transfer arm is not blocked by an obstruction.

Table 4.7 Outlet Module Error Codes (*Continued*)

Sensor	Keypad Display	Problem	Solution
SL06	2_06	The sensor does not detect a sample tube carrier on the return lane.	Inspect the track to see if a sample tube carrier is jammed.
SL07	2_07	The sensor does not detect a sample tube carrier on the return lane.	Inspect the track to see if a sample tube carrier is jammed.
SL20	2_20	The first stopper on the sample tube carrier sorting lane did not engage completely.	Make sure that a sample tube carrier is not jammed.
SL21 ON	2_21	The stopper on the sorting point on the sample tube carrier sorting lane did not retract completely.	Make sure that a sample tube carrier is not jammed.
SL21 OFF	2_21	Error at the sensor before the sorting point of the sorting lane.	Make sure that a sample tube carrier is not jammed.
SL22	2_22	Diverter malfunction at the intersection of the through lane and the empty sample tube carrier waiting lane.	Make sure that a sample tube carrier is not jammed and that nothing is jammed on the diverter.
SL31 ON	2_31	The stopper at the empty sample tube carrier waiting lane did not engage completely.	Make sure that a sample tube carrier is not jammed.
SL31 OFF	2_31	The stopper at the empty sample tube carrier waiting lane did not retract completely.	Make sure that a sample tube carrier is not jammed.
SL32 ON	2_32	Sensor error in the empty sample tube carrier waiting lane.	Make sure that a sample tube carrier is not jammed.
SL32 OFF	2_32	Error at the sensor before the sorting point of the through lane.	Make sure that a sample tube carrier is not jammed.
SL33	2_33	Error at the 1st sensor of the through lane.	Make sure that a sample tube carrier is not jammed.
SL34	2_34	Error at the 2nd sensor before the sorting point of the through lane.	Make sure that a sample tube carrier is not jammed.
SL35 ON	2_35	Error at the diverter at the empty sample tube carrier waiting lane.	Make sure that a sample tube carrier is not jammed and that the diverter is open.
SL35 OFF	2_35	Error at the diverter at the empty sample tube carrier waiting lane.	Make sure that a sample tube carrier is not jammed and that the diverter is closed.
BR01	3_01	Bar Code Reader initialization error, reader failure or alignment problem.	<ol style="list-style-type: none"> 1. Press PAUSE/RUN to continue sample processing (confirm the correct position of the sample tube in the rack; adjust if necessary). 2. If the error repeats or if there is no sample tube at the bar code reader, reset the module by switching to MANUAL mode, then to AUTO mode. If the error occurs again, contact a Beckman Coulter Representative.

Table 4.7 Outlet Module Error Codes (*Continued*)

Sensor	Keypad Display	Problem	Solution
PM01	4_01	Transfer arm positioning error.	Reset the module by switching to MANUAL mode, then to AUTO mode. If the transfer arm does not move to the Home position, contact a Beckman Coulter Representative.
PM02	4_02	Transfer arm positioning error.	Reset the module by switching to MANUAL mode, then to AUTO mode. If the transfer arm does not move to the Home position, contact a Beckman Coulter Representative.
PM03	4_03	Transfer arm rotational error.	Reset the module by switching to MANUAL mode, then to AUTO mode. If the transfer arm does not move to the Home position, contact a Beckman Coulter Representative.
AS06 ON	7_06	Sample grasping error while module is initializing.	Remove the tube from the gripper.
AS06 OFF	7_06	Gripping error due to sensor failure to detect a sample tube.	Inspect the outlet to see if the gripper dropped a tube. Replace the tube, then press PAUSE/RUN .
AS06 OFF	7_06	Loading error at outlet rack due to unopened gripper.	Make sure that the transfer arm is not blocked by an obstruction.

Sensor Diagrams

Sensor diagrams are provided to assist the operator in locating errors on the system, and are intended to supplement the error code tables.

Background Information

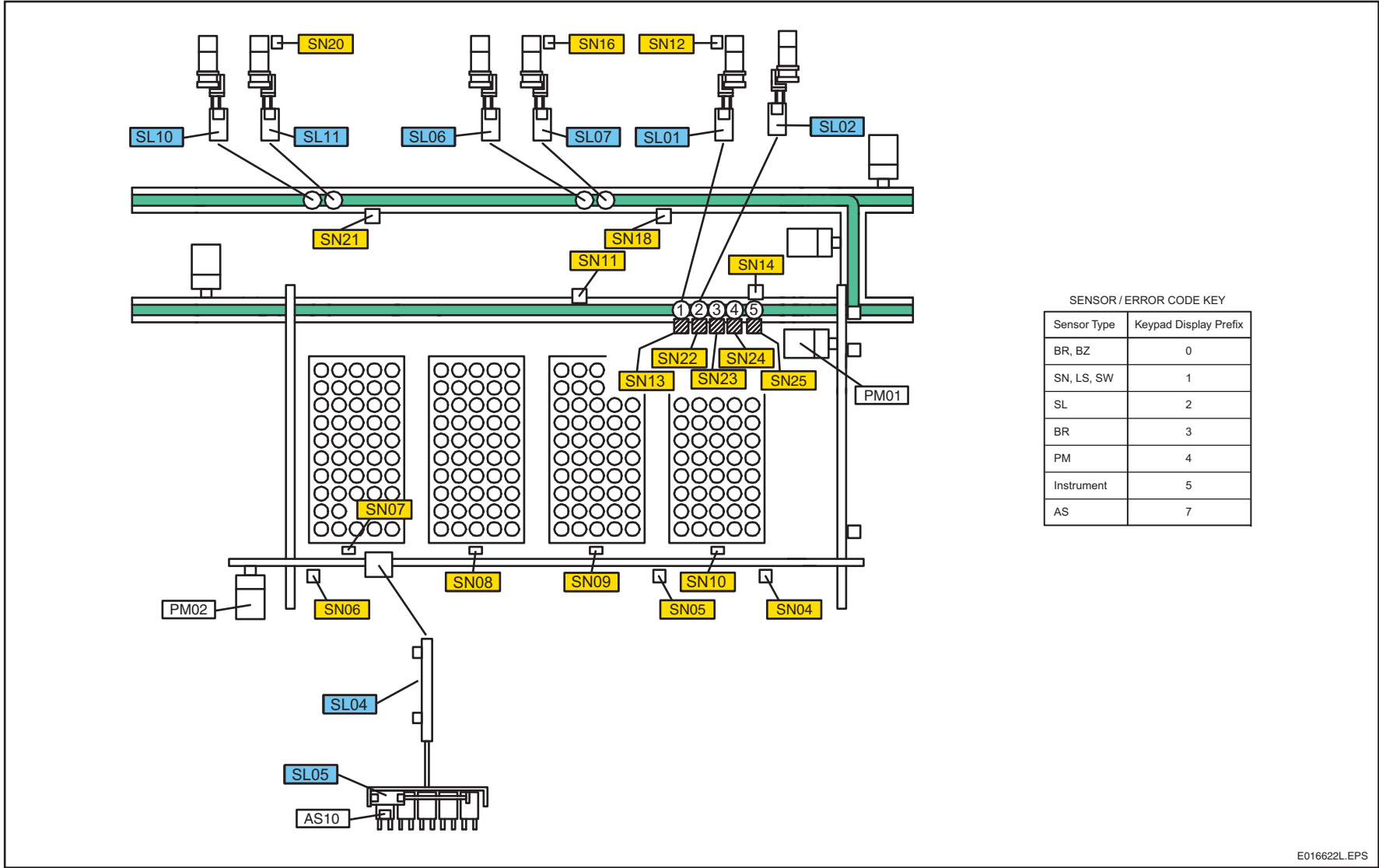
Each hardware module uses a series of magnetic, fiber optic and other sensors to detect sample tube carriers, sample tubes in sample tube carriers, hardware positioning, and whether or not a gripper has grasped a tube.

When a sensor detects a problem on the system, an audible alarm and flashing beacon activate on the module where the error occurred. The operator should first identify the hardware module where the error has occurred and then look up the error code in the error code tables in this document.

The most common errors tend to be stuck sample tube carriers which may happen anywhere along the track.

Inlet Module (Five-Gripper Arm Unit)

Figure 4.5 Inlet Module



E016622L.EPS

Dynamic Inlet Module

Figure 4.6 Dynamic Inlet Module (Single-Arm Unit): Arm Area

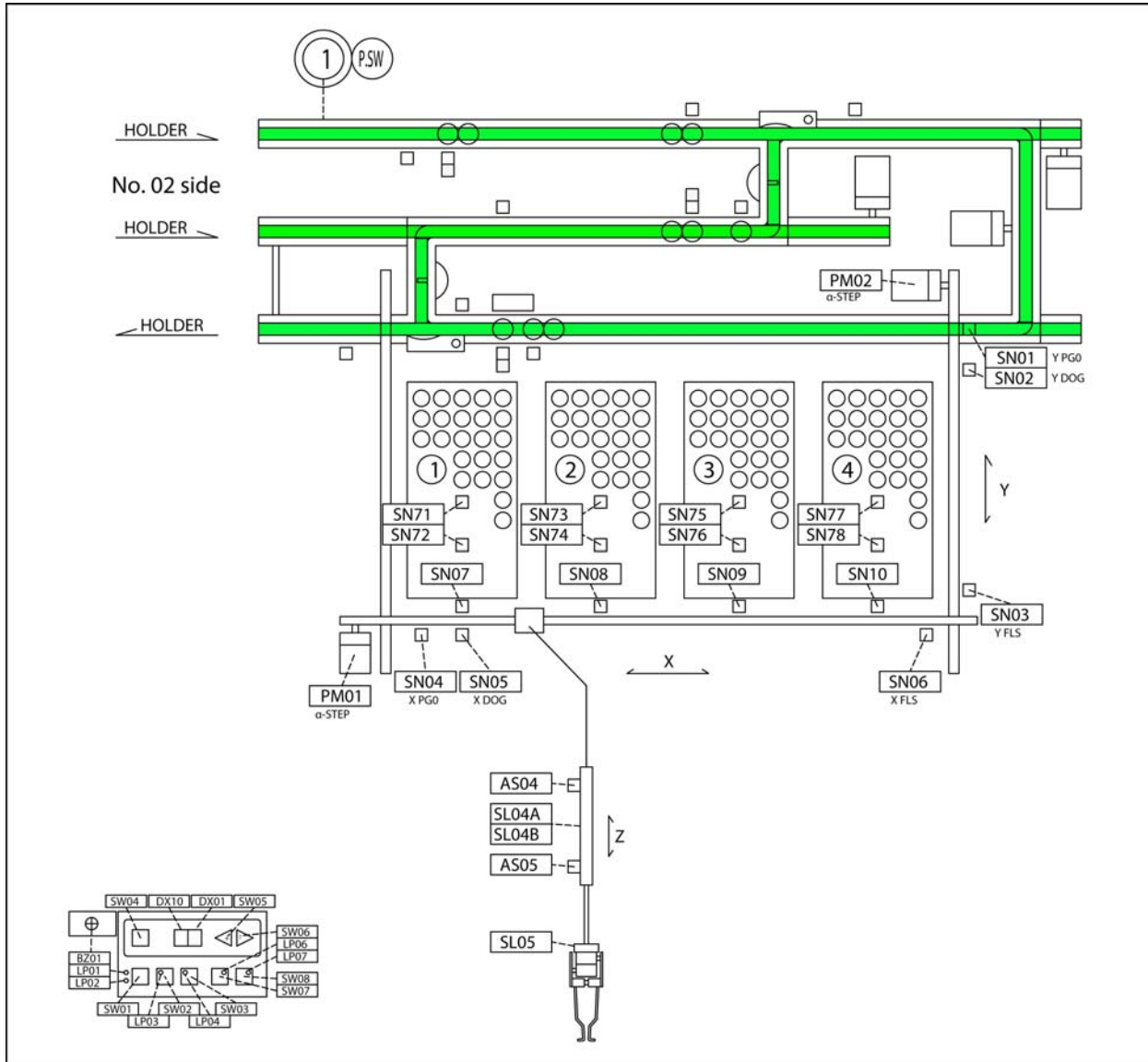
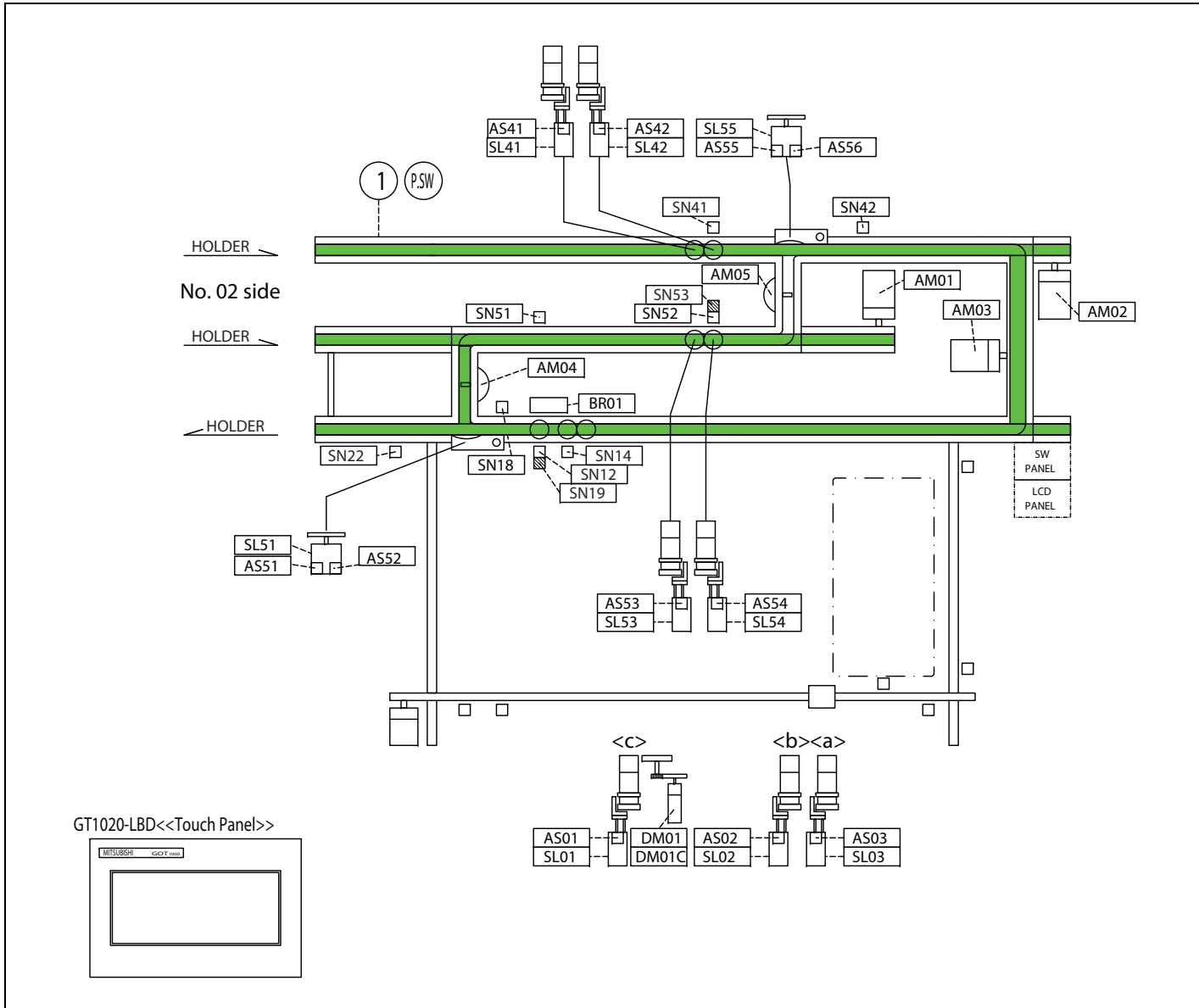
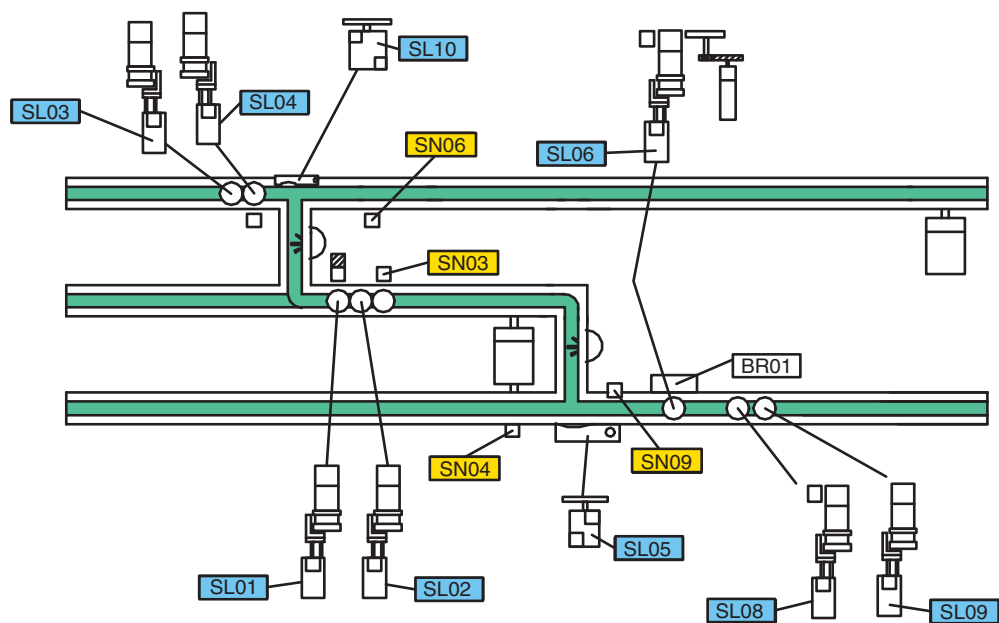


Figure 4.7 Dynamic Inlet Module (Single-Arm Unit): Conveyor Area



Bar Code Verification Module (Error Lane)

Figure 4.8 Bar Code Verification Module (Error Lane)



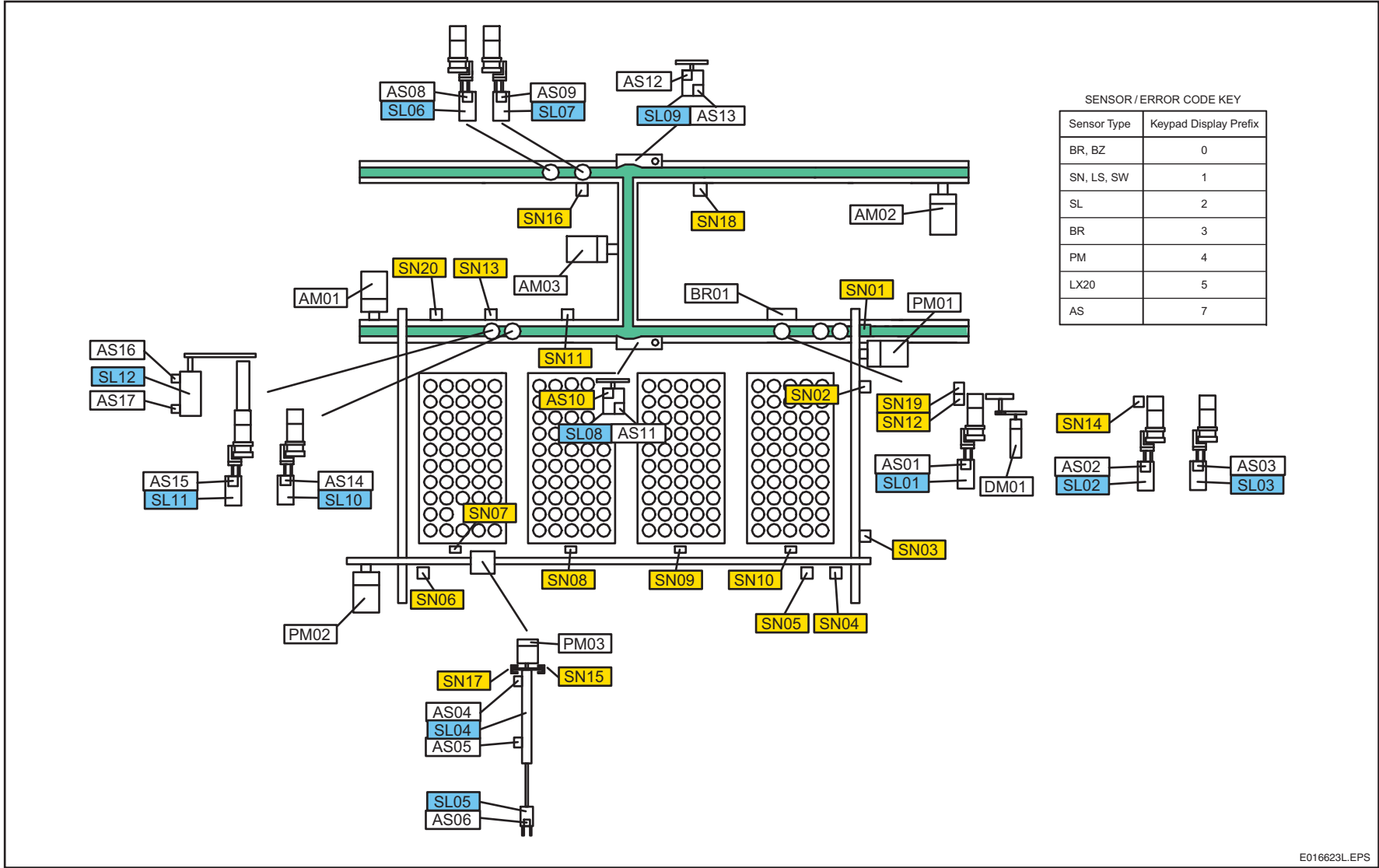
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Prefix
BR, BZ	0
SN, LS, SW	1
SL	2
BR	3
PM	4
Instrument	5
AS	7

E011441L.EPS

Hematology Module

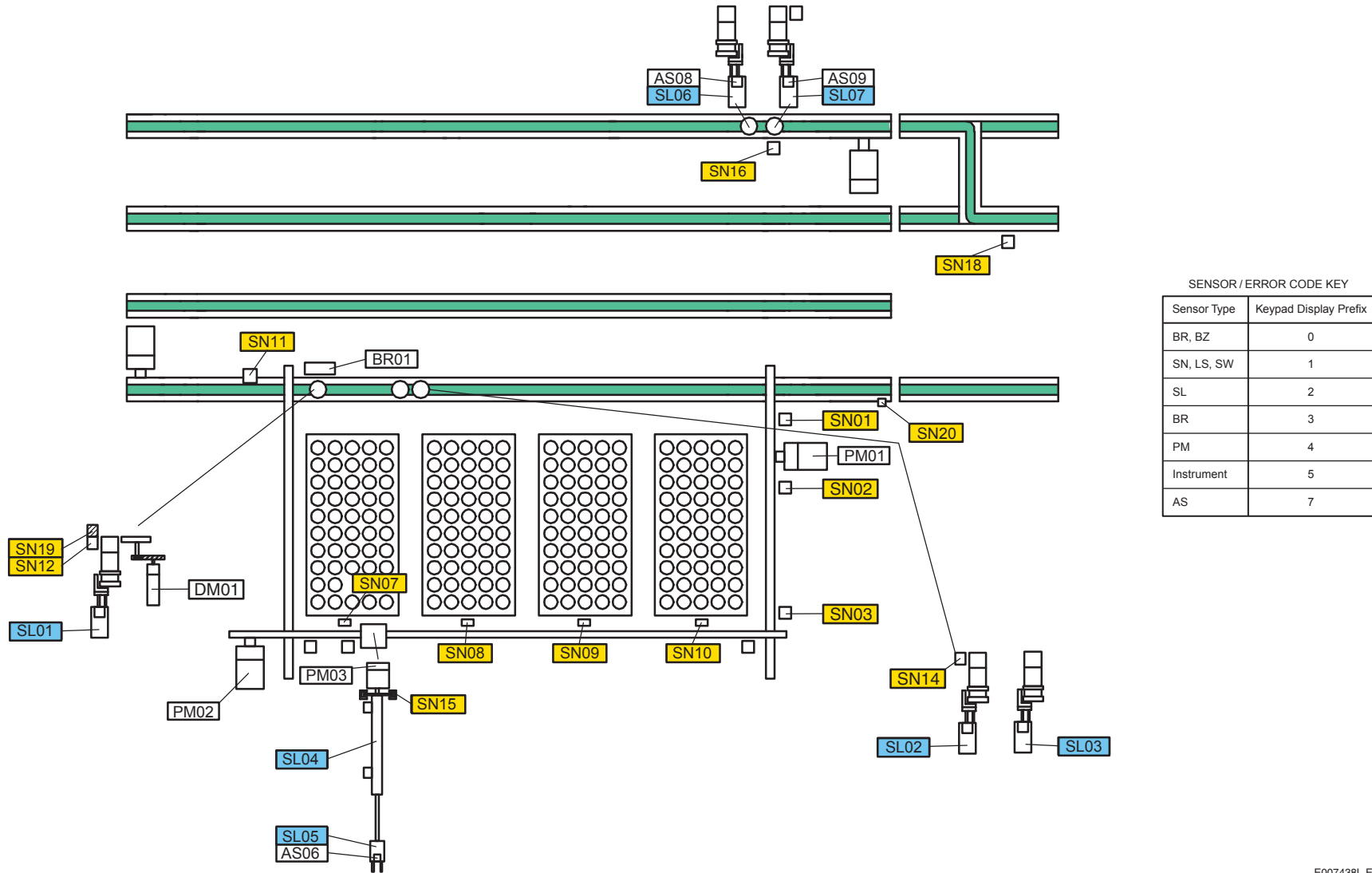
Figure 4.9 Hematology Module



E016623LEPS

Outlet

Figure 4.10 Outlet



E007438L.EPS

Related Documents

Power Processor *General System Operation IFU*,
PN B01683

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