Instructions For Use

Power Processor Stockyard Modules

For *In Vitro* Diagnostic Use

A97244AF
June 2019

Beckman Coulter, Inc.
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BECKMAN COULTER

Power Processor
Stockyard Modules
Instructions For Use
PN A97244AF (June 2019)

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Rx Only

Original Instructions

Revision History

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.

A97244AF, 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
- **CHAPTER 4, *Troubleshooting***

  Corrected the description of the Problem for Sensor AS63, in Table 4.6 3060-tube (high-speed) Stockyard Error Codes.

  Updated Figures 4.13, 4.14 and 4.16

A97244AE, 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.

A97244AD, 11/2012
Software Version 5.0

Changes:
This release of the Power Processor Stockyard IFU includes support for the 5440-tube (5K) high-speed Stockyard.

CHAPTER 1, *Module Description*

5440-tube (high-speed) Stockyard
Added information for the newly supported 5K Stockyard.

CHAPTER 2, *Module Procedures*

Control Panel on the 3060-tube and 5440-tube (high-speed) Stockyard Refrigeration Unit
5440-tube (high-speed) Stockyard added to the control panel refrigeration unit section.

CHAPTER 3, *Error Recovery Procedures*
Power Processor Module Function Codes
5440-tube (high-speed) Stockyard function codes added to this chapter.

CHAPTER 4, *Troubleshooting*

5440-tube (high-speed) Stockyard Error Codes
5440-tube (high-speed) Stockyard error codes added to this chapter.

The following sensor diagrams were added to this chapter:

- 5440-tube (high-speed) Stockyard Main Body
- 5440-tube (high-speed) Stockyard First Shelf
- 5440-tube (high-speed) Stockyard Second Shelf
- 5440-tube (high-speed) Stockyard Third Shelf
- 5440-tube (high-speed) Stockyard Fourth Shelf
- 5440-tube (high-speed) Stockyard Conveyor
- 5440-tube (high-speed) Stockyard H-Lane

A97244AC, 12/2011
Software Version 5.0

A97244AB, 06/2011
Software Version 5.0

A97244AA (limited release), 01/2011
Software Version 5.0

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.

⚠ CAUTION

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
	Title of Symbol: Caution 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, the presented on the medical device itself. Standard Number, Title of Standard, and Symbol Reference Number: *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*
IVD	**Title of Symbol: In vitro diagnostic medical device** Meaning of Symbol: Indicates a medical device that is intended to be used as an in vitro diagnostic medical device. Standard Number, Title of Standard, and Symbol Reference Number: *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*
	Title of Symbol: Dangerous voltage Meaning of Symbol: To indicate hazards arising from dangerous voltages. *IEC 60417: Graphical symbols for use on equipment - Overview and application, #5036* **Supplemental Product-Specific Manufacturer Information** 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.
	Title of Symbol: Warning; Biological hazard Meaning of Symbol: To warn of a biological hazard. Standard Number, Title of Standard, and Symbol Reference Number: *IEC 60878. Graphical Symbols for electrical equipment in medical practices. #7010-W009* **Supplemental Product-Specific Manufacturer Information** This label indicates a caution to operate only with all covers in position to decrease risk of personal injury or biohazard. This label indicates the use of biohazardous materials in the area. Use caution when working with possible infectious samples. Wear Personal Protective Equipment (PPE) such as gloves, eye shields, and lab coats. Handle and dispose of biohazardous materials according to your laboratory procedures.

Symbols Glossary *(Continued)*

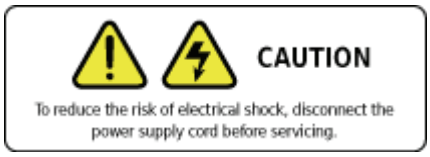
Symbol	Symbol Title, Symbol Meaning, and Symbol Reference
	Title of Symbol: Warning; Crushing of hands Meaning of Symbol: To warn of a closing motion of mechanical parts of equipment Standard Number, Title of Standard, and Symbol Reference Number: *ISO 7010. Graphical Symbols for electrical equipment in medical practices*. #W024 **Supplemental Product-Specific Manufacturer Information** Use caution to avoid injury to hands when close to equipment with moving mechanical parts.
	Title of Symbol: Consult instructions for use Meaning of Symbol: Indicates the need for the user to consult the instructions for use. Standard Number, Title of Standard, and Symbol Reference Number: *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*
	Title of Symbol: Date of Manufacture Meaning of Symbol: To indicate the date when the medical device was manufactured. Standard Number, Title of Standard, and Symbol Reference Number: *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*
EC REP	**Title of Symbol: Authorised representative in the European Community** Meaning of Symbol: Indicates the authorized representative in the European community. Standard Number, Title of Standard, and Symbol Reference Number: *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*
	Title of Symbol: Manufacturer Meaning of Symbol: Indicates the medical device manufacturer as defined in EU Directives 90/385/ EEC, 93/42/EEC and 98/79/EC. Standard Number, Title of Standard, and Symbol Reference Number: *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* **Supplemental Product-Specific Manufacturer Information** This symbol identifies who the legal manufacturer of the product is.

Symbols Glossary *(Continued)*

Symbol	Symbol Title, Symbol Meaning, and Symbol Reference
REF	**Title of Symbol: Catalogue Number** Meaning of Symbol: Indicates the manufacturer's catalogue number so that the medical device can be identified. Standard Number, Title of Standard, and Symbol Reference Number: *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*
SN	**Title of Symbol: Serial number** Meaning of Symbol: Indicates the manufacturer's serial number so that a specific medical device can be identified. Standard Number, Title of Standard, and Symbol Reference Number: *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*
	Title of Symbol: Stop Meaning of Symbol: To identify the control or the indicator to stop the active function. Standard Number, Title of Standard, and Symbol Reference Number: *IEC 60417: Graphical symbols for use on equipment - Overview and application, #5110A* **Supplemental Product-Specific Manufacturer Information** This symbol indicates a stop button.
Cooling Unit	**Title of Symbol: Cooling Unit** Meaning of Symbol: Denotes the cooling unit.
Driver Box	**Title of Symbol: Driver Box** Meaning of Symbol: Denotes the driver box.
Made in Japan	**Title of Symbol: Made in Japan** Meaning of Symbol: Indicates the country where the device hardware was manufactured.
RxOnly	**Title of Symbol: RxOnly Symbol** Meaning of Symbol: Caution: U.S. Federal Law restricts this device to sale by or on the order of a licensed practitioner.
Info for USA only: California Proposition 65 WARNING Cancer & Reproductive Harm www.P65Warnings.ca.gov	**Title of Symbol: California Proposition 65** 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.

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
	Caution, Moving Parts This caution symbol warns the operator of moving parts that can pinch or crush. This label is found in several locations.
	Moving Parts Label This label indicates moving parts that can pinch or crush. This label is found in several locations. Caution parts move automatically 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.

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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.

Scope of this Manual

This *Instructions For Use* manual is for Power Processor Stockyard Modules used with PrepLink software Version 5.0. This manual contains information and instructions that will assist you in performing Power Processor Stockyard 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 Stockyard Modules. For information and instructions for other Power Processor modules, refer to the following Power Processor Instructions for Use Document Set.

Power Processor Instructions for Use Document Set

- *General System Operation IFU,* PN B01683
- *Inlets, Outlets, Hematology, and Bar Code 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

CHAPTER 1

Module Description

This chapter provides a brief description of the Power Processor Stockyard Modules.

Stockyards provide long-time online storage of sample tubes. A Power Processor with instrument connections can be configured with four types of stockyards. The four stockyard types are:

- 200-tube Stockyard, ambient temperature (maximum of 1 can be configured)
- 1020-tube (1K) Stockyard, ambient temperature (maximum of 1 can be configured)
- 3060-tube (3K) Stockyard, refrigerated (maximum of 3 can be configured)

  NOTE The 3060-tube (3K) Stockyard is available in a standard-speed or high-speed configuration.

- 5440-tube (5K) Stockyard, refrigerated (maximum of 3 can be configured)

NOTE Configurations with multiple stockyards must all be of the same type (capacity), i.e., a configuration can have a maximum of three 3060-tube Stockyards or three 5440-tube Stockyards.

Stockyard

The stockyard is automatically configured in Outlet 2A when the PrepLink is configured to manage the Power Processor with connected instruments. For information regarding the large capacity stockyards, refer to Large Capacity Stockyards.

Sample tubes are routed to the stockyard for one or more of the following reasons:

- Sample analysis complete
- Reagent is not calibrated, not loaded, or test number/test volume is zero
- Reagent calibration has timed out
- Reagent level sense error
- Reagent level sense pending
- Reagent load requested
- Calibration requested
- Parameter required
- Test bypassed
- Within lot calibration pending
- Connected instrument is in MANUAL mode
- Connected instrument is Loading Paused
- There were no remaining tests for a primary tube after assigning tests to aliquots
- Remapped samples

Sample tubes in the stockyard have a status of Pending until PrepLink receives a completion message for that sample ID from the instrument. At that time, the status changes to Outlet 2A, if all tests are completed.

If the instrument is unable to perform any of the pending tests after a sample tube waits for the timeout period in the stockyard, the sample tube is routed to the Pending Rack for offline handling by the operator.

IMPORTANT The default stockyard timeout period for an LX/DxC sample tube is 30 minutes but can be overridden if the requested test is specified as an Urgent Chemistry. When tests are configured as Urgent Chemistries, the default stockyard timeout is 15 minutes. In all cases, the lowest timeout value for a sample tube takes precedence.

NOTE The timeout values listed are the defaults. All timeout values can be changed by a Beckman Coulter Service Representative.

If all pending tests become available while a sample tube waits in the stockyard, the sample tube does not have to wait until the timeout period has elapsed. Within minutes the sample tube is retrieved from the stockyard and routed to the instrument. After analysis is complete, the sample tube is routed to the stockyard for storage.

One or more, but not all of the pending tests can be performed on a sample tube that has waited in the stockyard. The system retrieves the sample tube from the stockyard after the completion message is received and the instrument is ready to run the pending test. The sample tube routes to the Pending Rack if the pending tests are not completed within the stockyard timeout period.

IMPORTANT The stockyard timeout restarts each time the sample tube is sorted to the stockyard.

If add-on, the reflex sample or rerun sample programming arrives after the analysis of a sample tube is complete and the tube has been sorted to the stockyard, the system considers the requested tests as new programming. Sample tubes are retrieved from the stockyard and routed to an instrument or to a rack in Outlet 1A or Outlet 1B. If the feature Rack ID is enabled, sample tubes in the stockyard with a status of Outlet 2A, 2B, or 2C change to a status of Storage when the assigned rack is removed by using the Rack Load procedure.

Rerun Requests or Pending Add-on Test Results

To determine the sample ID of the tube(s) with pending tests sorted to stockyard, search for "pending results" at the DL2000 or LIS. To manually retrieve these sample tubes, use the Search by Sample ID function on the PrepLink Locations screen. Rack and position number are shown if the tube is still in the stockyard or if Rack Numbering is used for mapping tube location after racks are removed from the system.

Occasionally, when sample programming includes tests with long instrument incubation times, completed sample tubes can be routed to the Pending Rack.

IMPORTANT If the operator performs the sample retrieve process such that sample tubes are retrieved to the Pending Rack, *and* add-on sample programming is subsequently received at PrepLink, the add-on tests cannot be performed automatically. If additional testing is needed, the operator must remove the sample tube from the Pending Rack and process it offline. If the add-on tests are applicable to the primary sample tube remaining in the stockyard, the add-on tests can be processed.

Large Capacity Stockyards

On connected systems, the outlets can be configured with a maximum of one 1020-tube stockyard, or up to three 3060-tube or 5440-tube Stockyards for longer online sample storage. In any configuration, the large capacity stockyards must all be of the same type.

- A maximum of one 1020-tube Stockyard, ambient temperature.
- Up to three 3060-tube (standard-speed) Stockyards, refrigerated.
- Up to three 3060-tube (high-speed) Stockyards, refrigerated.
- Up to three 5440-tube Stockyards, refrigerated.

340-tube Rack

IMPORTANT There are two types of plastic 340-tube racks. A molded rack that uses plastic standoffs between the three rack layers, and a machined rack that uses metal standoffs. **Never** intermix these two types of racks in a stockyard.

A rack in a large capacity stockyard contains positions (10 × 34) for 340 tubes as shown in Figure 1.1.

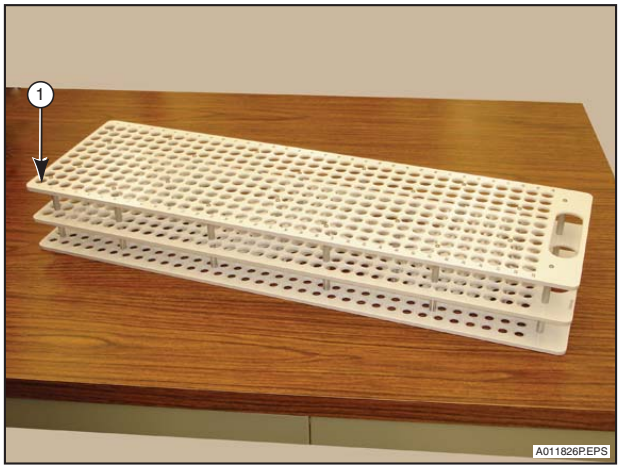
Each shelf in a 1020-tube or 3060-tube large capacity stockyard can hold three racks.

Each shelf in a 5440-tube Stockyard can hold four racks.

- The 1020-tube Stockyard has one shelf (3 racks × 340 tubes/rack = 1020 tubes).
- The 3060-tube (standard or high-speed) Stockyard has three shelves (3 shelves × 1020 tubes/shelf = 3060 tubes).
- The 5440-tube Stockyard has four shelves with 4 racks per shelf (4 shelves × 1360 tubes/shelf = 5440 tubes).

The Transfer Load Arm loads sample tubes from left to right. The first sample tube is put in the left rear corner (1) as shown in Figure 1.1.

Figure 1.1 340-tube Rack for a Large Capacity Stockyard



1. First Sample Tube Loaded Here

1020-tube Stockyard

The 1020-tube Stockyard is shown in Figure 1.2. This stockyard has one shelf that contains three 340-tube racks. The sample tubes are loaded from the rear by a transfer-arm. Another transfer-arm retrieves sample tubes. Removing racks is discussed in the procedures: How to Remove a Rack from a 1020-tube Stockyard and Control Panel on the 3060-tube (standard-speed) Stockyard Refrigeration Unit.

The 1020-tube Stockyard supports one tube size at a time, either 13 x 75 mm tubes or 13 x100 mm tubes, depending on how the automation system is configured.

⚠ WARNING

While the transfer-arms are active, DO NOT put your hand(s) in the opening at the rear of the 1020-tube Stockyard or in the track area. Serious injuries can occur.

Figure 1.2 1020-tube Stockyard

3060-tube Stockyard

The 3060-tube Stockyard is available in two configurations: standard-speed and high-speed. The information in this section applies to both the standard-speed and high-speed configurations.

NOTE The high-speed 3060-tube Stockyard is only supported with PrepLink V5.0 and higher.

A 3060-tube Stockyard is shown in Figure 1.3. The 3060-tube Stockyard has three shelf units at the bottom and a refrigeration unit at the top. The shelf units are numbered one to three, from the floor up to the refrigeration unit.

Each shelf unit has a door and contains three 340-tube racks. The sample tubes are loaded from the rear by a transfer-arm. The retrieve-arm retrieves sample tubes (refer to Figure 1.4). Inside the 3060-tube Stockyard, there is one Arm on each shelf.

The 3060-tube Stockyard supports one tube size at a time, either 13 x 75 mm tubes or 13 x100 mm tubes, depending on how the automation system is configured.

The 3060-tube Stockyard has a door sensor that places the stockyard in PAUSE mode preventing the Transfer or Retrieval Arms from moving when a door is opened. When the door to a shelf unit is opened, the sensor LED displays RED. All three shelf units of the stockyard are in PAUSE mode when any one door is opened. If the Transfer or Retrieval Arm is moving inside the stockyard when a door is opened, the arm completes the present action, then pauses. The arm does not move to the Home position. To resume routine operation after closing the door, press the **PAUSE/RUN** button on the keypad. To prevent injury and blockage of the sample tubes, obey the warnings that follow.

⚠ WARNING

If the sensor LED is not RED when a Shelf Unit door is opened, DO NOT put your hand(s) in the 3060-tube Stockyard before pressing the PAUSE/RUN button on the keypad. Serious injuries can occur.

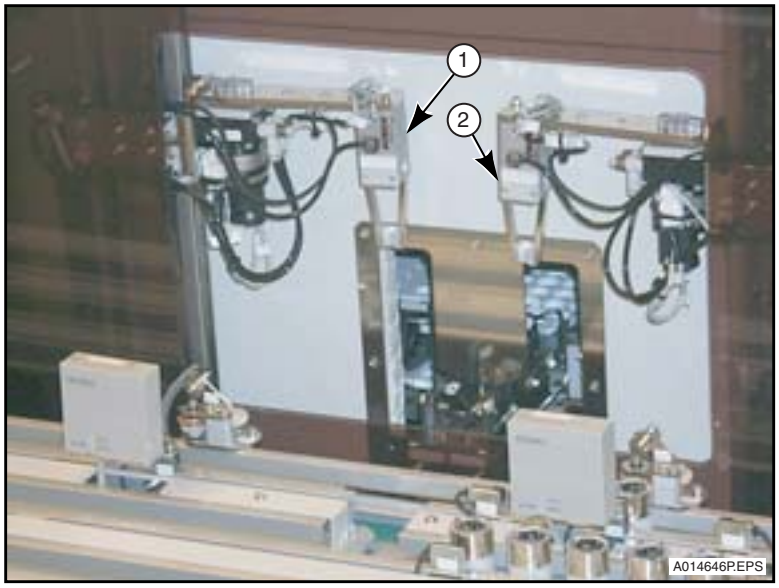
⚠ WARNING

While the transfer-arms are active, DO NOT put your hand(s) in the opening at the rear of the 3060-tube Stockyard or in the track area. Serious injuries can occur.

Figure 1.3 3060-tube (standard-speed) Stockyard

1. Control Panel (with cover opened)

Figure 1.4 Transfer-arms at the Rear of a 3060-tube Stockyard



1. Transfer-arm
2. Retrieve-arm

3060-tube (high-speed) Stockyard Features

Compared to the 3060-tube (standard-speed) Stockyard, the high-speed stockyard provides the following additional features:

- Increased throughput, up to 600 tubes per hour; twice the speed of the standard-speed 3060-tube Stockyard.

  NOTE Module throughput is dependant on factors, such as Bar Code Label quality, tube flow patterns, test category, analyzer's performance, or other site specific/system specific factors.

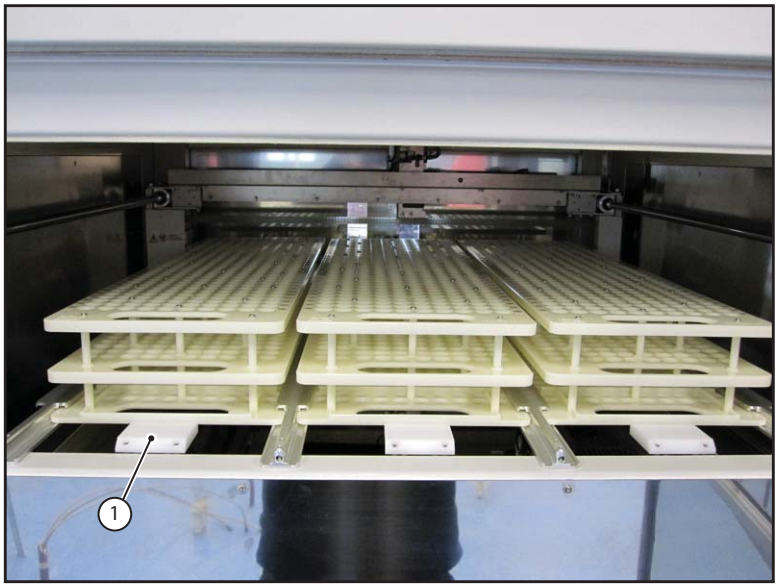
⚠ CAUTION

Do not bypass the Recapper Module while tubes sort to the stockyard. Because of the speed that sample tubes move into and out of the high-speed stockyard, the tubes must have caps to prevent spilling.

- New rack latches to be sure the racks remain securely in place when sample tubes are being loaded to or retrieved from the stockyard. (Refer to Figure 1.5.)
- New temperature monitoring system with audible and visual alarms.

  NOTE The minimum temperature and maximum temperature range, and the timer value or timer wait time before the alarm is generated, are set by your Beckman Coulter Service Representative.

Figure 1.5 3060-tube (high-speed) Stockyard Latching Mechanism



1. Rack Latching Mechanism

5440-tube (high-speed) Stockyard

The 5440-tube (high-speed) Stockyard has four shelf units and a refrigeration unit at the top (refer to Figure 1.6). Each shelf unit has two, side-by-side, doors and contain four 340-tube racks (1,360 tubes per shelf). The 5440-tube Stockyard supports the 13 x100 mm tubes. To configure the stockyard for a different tube size, contact your Beckman Coulter Representative.

Figure 1.6 5440-tube (high-speed) Stockyard

Total tube capacity of the stockyard is 5,440 tubes, with throughput of up to 600 tubes per hour.

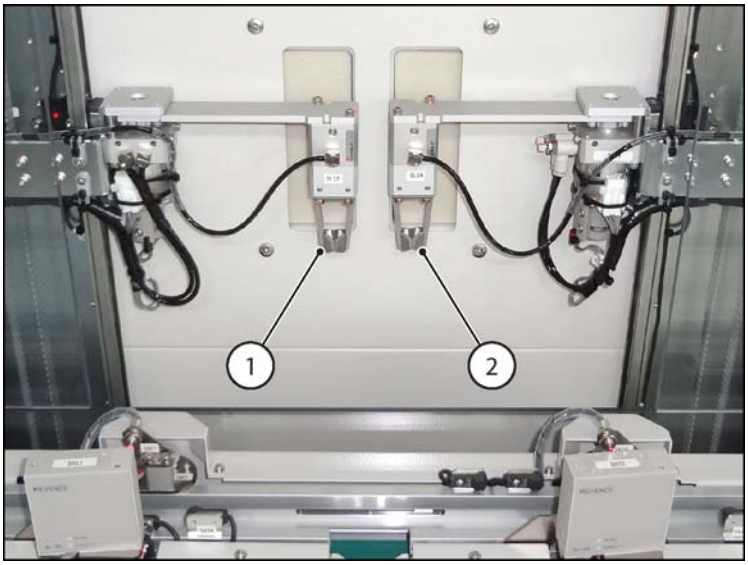
NOTE Module throughput is dependant on factors, such as Bar Code Label quality, tube flow patterns, test category, analyzer's performance, or other site specific/system specific factors.

⚠ CAUTION

Do not bypass the Recapper Module while tubes sort to the stockyard. Because of the speed that sample tubes move into and out of the high-speed stockyard, the tubes must have caps to prevent spilling.

Sample tubes are loaded at the rear of the stockyard by a transfer-arm. The retrieve-arm retrieves sample tubes to send them to a connected instrument or an outlet rack. The transfer and retrieve-arms travel up or down vertical rails to position themselves in front of the tube access doors on each shelf (see Figure 1.7). Inside of the 5440-tube Stockyard, there is one arm on each shelf.

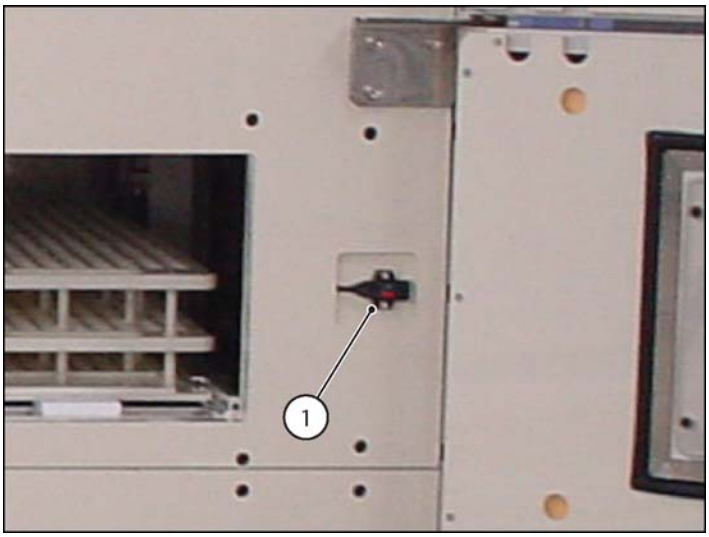
Figure 1.7 Transfer-arms at the rear of a 5440-tube Stockyard.



1. Transfer-arm
2. Retrieve-arm

The 5440-tube Stockyard has a door sensor that places the stockyard in PAUSE mode, preventing the Transfer or Retrieval Arms from moving, when a door opens (see Figure 1.8). When the door to a shelf unit opens, the sensor LED displays RED.

Figure 1.8 5440-tube Stockyard Door Sensor



1. Door Sensor

All four shelf units of the stockyard go to PAUSE mode when any door opens. If the Transfer or Retrieval Arm is moving inside the stockyard when a door opens, the arm completes the present action, then pauses. The arm does not move to the Home position. To resume routine operation after closing the door, press the **PAUSE/RUN** button on the keypad.

To prevent injury and blockage of the sample tubes, obey the warnings that follow.

WARNING

If the sensor LED is not RED when a Shelf Unit door opens, DO NOT put your hand(s) in the 5440-tube Stockyard before pressing the PAUSE/RUN button on the keypad. Serious injuries can occur.

WARNING

While the transfer-arms are active, DO NOT put your hand(s) in the opening at the rear of the 5440-tube Stockyard or in the track area. Serious injuries can occur.

Safety Shields

To provide a safe operating environment for the operator, the Power Processor modules have safety shields. These safety shields provide a protective barrier between the operator and sample preparation activities.

WARNING

Removal of safety shields during operation can expose the operator to physical and biological hazards.

CHAPTER 2

Module Procedures

This chapter contains operational procedures for Power Processor Stockyard modules.

Splash Guard Safety Cover

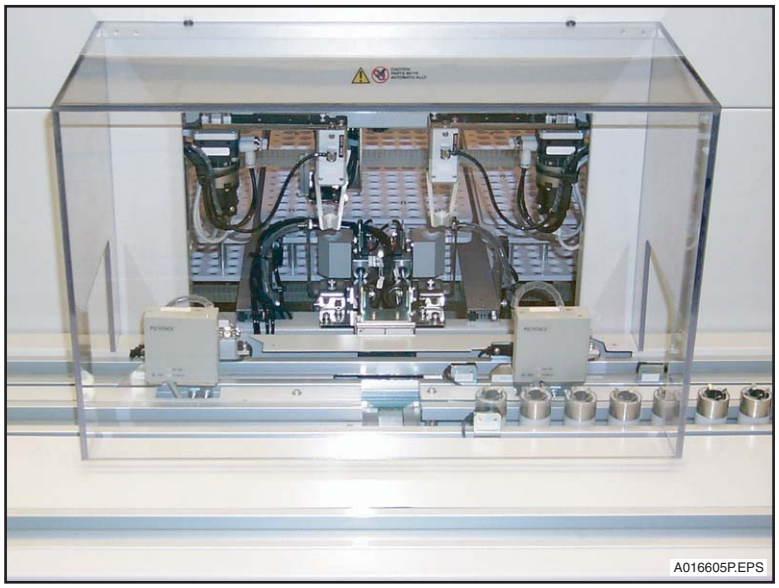
The 1020-tube, 3060-tube, and 5440-tube Stockyards have splash guard covers attached to the back side of the stockyard with a Phillips head screw.

Some error recovery procedures require the operator to remove the splash guard cover to enable access to the module generating the error. Refer to the procedure How to Remove the Splash Guard Cover.

⚠ WARNING

Always operate stockyards with all covers, shields, and doors in place and secured to avoid injury.

Figure 2.1 Stockyard Splash Guard Cover (on a 3K Stockyard)



How to Remove the Splash Guard Cover

⚠ CAUTION

To avoid injury, be sure the module is in PAUSE mode before you remove the splash guard cover.

⚠ CAUTION

Even when a large capacity stockyard is in PAUSE mode, the air system is still active and applying a constant air pressure to the shuttle cups and the gripper arm assembly. This can cause unexpected movement of the shuttle cups and the gripper arm assembly when resolving a jammed object error, creating a possible moving part or mechanical pinch hazard. Use caution when resolving jammed object errors at a large capacity stockyard.

1. Press the **PAUSE/RUN** button on the Stockyard Module keypad to put the module in PAUSE mode.

2. Remove the splash guard cover screw with a Phillips screwdriver.

   After you remove the splash guard cover, you can address the problem that generated the error.

3. Replace the splash guard cover and replace the screw.

   IMPORTANT Be sure to fasten the cover securely.

⚠ WARNING

Always operate stockyards with all covers, shield and doors in place to avoid injury.

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

How Large Capacity Stockyards are Managed

3060-tube Stockyards

For systems configured with one 3K Stockyard, tubes load into the stockyard by filling the bottom shelf first. When all three racks on the bottom shelf fill, a flashing beacon activates. When the third rack on shelf number 3 fills, an audible and visual alarm activates

IMPORTANT Shelves in the 3K Stockyard are numbered from bottom to top and from left to right, as follows (Refer to Figure 2.4):

3-01	3-02	3-03
2-01	2-02	2-03
1-01	1-02	1-03

The operator must remove the oldest rack by performing a Rack Load so the system can resume filling the stockyard. The oldest rack displays on the keypad with the first number for the shelf number and the second number for the rack position. For example, if the oldest rack is on shelf number 2, position 2, the keypad displays "2-02."

For systems configured with up to three stockyards, tubes load to each stockyard sequentially. A tube loads into one stockyard, the next tube loads into the next stockyard, the next tube loads into the last stockyard, if present, and the process repeats for each additional tube.

The system fills the bottom shelf first in each stockyard and moves upward. When a shelf of three racks fills, the flashing beacon activates. When all three shelves in one stockyard fill, an audible and visual alarm activates. The operator must perform a Rack Load to remove racks and resume filling the stockyard.

5440-tube Stockyards

For systems configured with one 5K Stockyard, tubes load into the stockyard by filling the bottom shelf first. When all four racks on the bottom shelf fill, a flashing beacon activates. When the fourth rack on the shelf fills, an audible and visual alarm activates

IMPORTANT Shelves in the 5K Stockyard are numbered from bottom to top and from left to right, as follows (Refer to Figure 2.6):

4-01	4-02	4-03	4-04
3-01	3-02	3-03	3-04
2-01	2-02	2-03	2-04
1-01	1-02	1-03	1-04

The operator must remove the oldest rack by performing a Rack Load so the system can resume filling the stockyard. The oldest rack displays on the keypad with the first number for the shelf number

and the second number for the rack position. For example, if the oldest rack is on shelf number 2, position 2, the keypad displays “2-02.”

For systems configured with up to three 5K stockyards, tubes load to each stockyard sequentially. A tube loads into one stockyard, the next tube loads into the next stockyard, the next tube loads into the last stockyard, if present, and the process repeats for each additional tube.

The system fills the bottom shelf first in each stockyard and moves upward. When a shelf of four racks fills, the flashing beacon activates. When all four shelves in one stockyard fill, an audible and visual alarm activates. The operator must perform a Rack Load to remove racks and resume filling the stockyard.

Outlet Racks

The Rack Types for the large capacity stockyards are:

- "K1" for the 1020-tube Stockyard
- "K3" for the 3060-tube Stockyard
- "K5" for the 5440-tube Stockyard

Table 2.1 gives a summary of the V2.6 or greater rack designations. For other rack designations, refer to Table 2.1 Rack Designations in the *General System Operation IFU*.

IMPORTANT There are two types of plastic 340-tube racks. A molded rack that uses plastic standoffs between the three rack layers, and a machined rack that uses metal standoffs. **Never** intermix these two types of racks in a stockyard.

Table 2.1 Rack Designations for V2.6 or Greater

Rack Type	Rack Description	Tube Allocation	No. of Racks	No. of Groups (Subsections)	Rack Section Name(s)
K1	Outlet #2, 2A, 2B Single Set	340*3	3	1	Stockyard1
K3	Outlet #2, 2A, 2B, 2C Triple Set	340*3, 340*3, 340*3	9	1	Stockyard3
K5	Outlet #2, 2A, 2B, 2C Quadruple Set	340*4, 340*4, 340*4, 340*4	16	1	Stockyard5

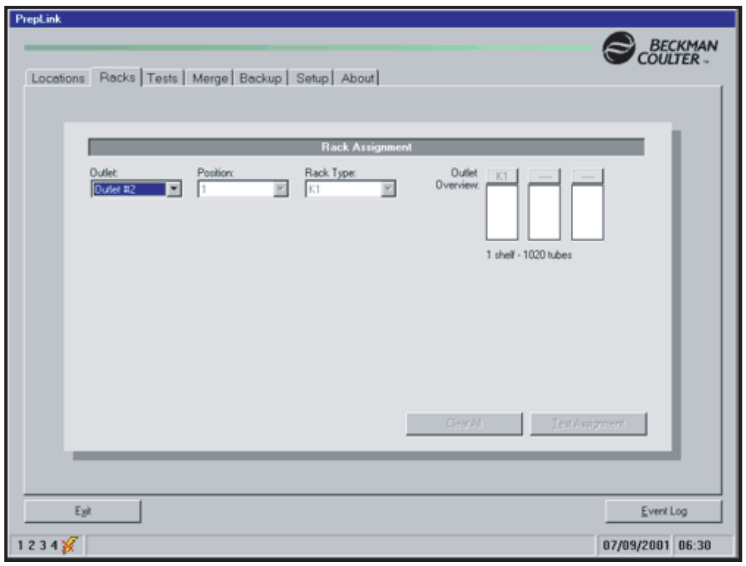
Rack Assignment with Large Capacity Stockyards

At installation, the Service Representative configures the system for Outlet 2, 2A, 2B and 2C. The correct is shown when the Racks tab is selected. The Rack screen shows a G6, K1, K3, or K5 stockyard.

Rack Assignment–1020-tube Stockyard

Figure 2.2 shows a PrepLink screen for an Outlet #2 rack assignment with a 1020-tube Stockyard.

Figure 2.2 Outlet #2 Rack Assignment with a 1020-tube Stockyard



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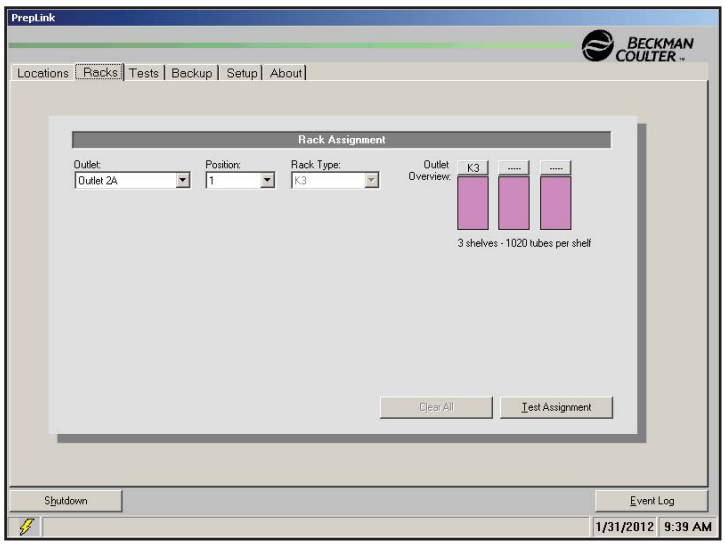
Rack Assignment–3060-tube Stockyard

Figure 2.3 shows a PrepLink screen for an Outlet 2A rack assignment with a 3060-tube Stockyard. The number of shelves and tubes is given under the "Outlet Overview."

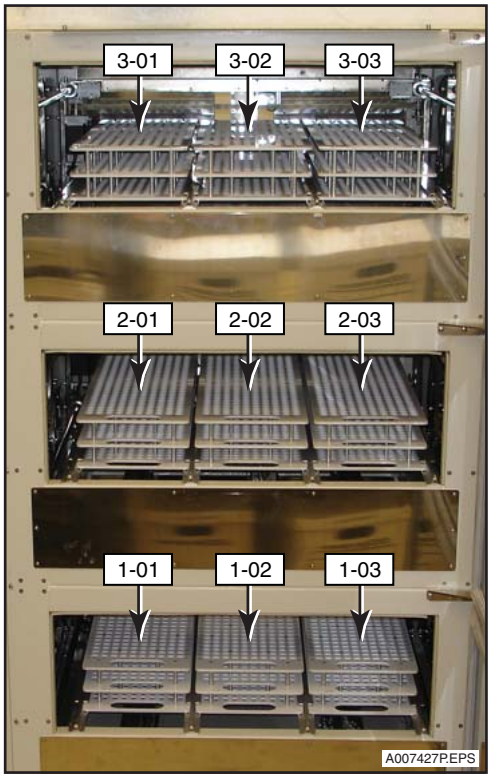
Figure 2.3 Outlet 2A Rack Assignment with a 3060-tube Stockyard



NOTE In the event of an unrecoverable error, shelves can be disabled, to permit partial use of the stockyard.

Figure 2.4 shows the rack positions in a 3060-tube Stockyard.

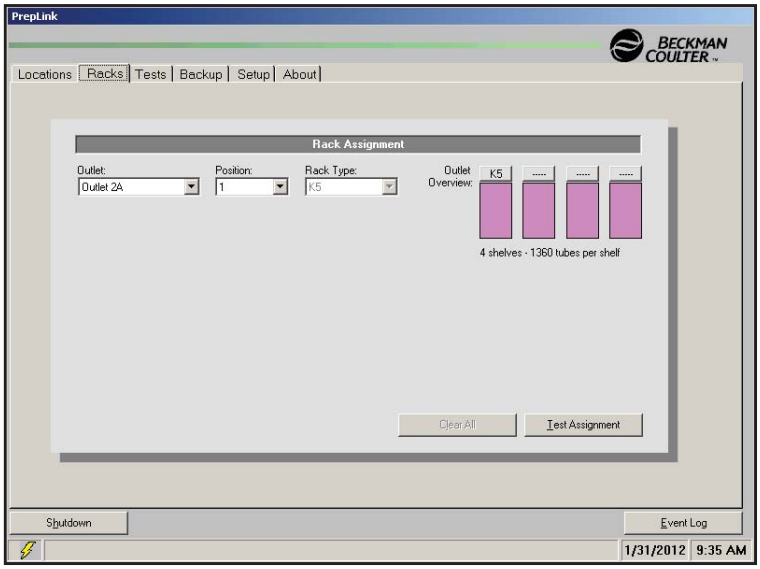
Figure 2.4 3060-tube Stockyard Rack Positions



Rack Assignment–5440-tube Stockyard

Figure 2.5 shows a PrepLink screen for an Outlet 2A rack assignment with a 5440-tube Stockyard. The number of shelves and tubes is given under the "Outlet Overview."

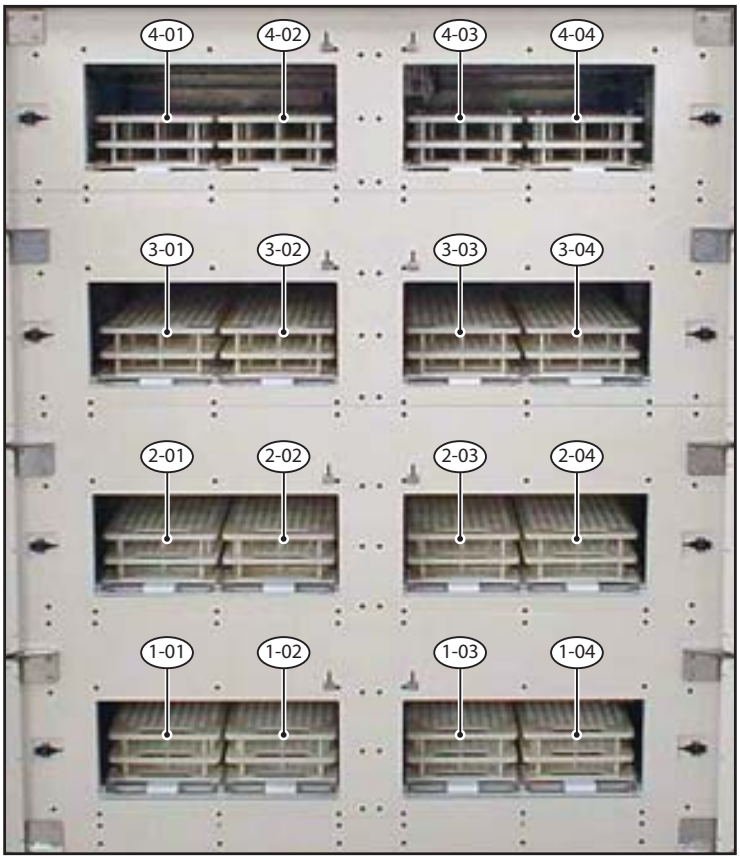
Figure 2.5 Outlet 2A (for PrepLink V5.0 and greater) Rack Assignment with a 5440-tube Stockyard



NOTE In the event of an unrecoverable error, shelves can be disabled to permit partial use of the stockyard.

Figure 2.6 shows the rack positions in a 5440-tube Stockyard.

Figure 2.6 5440-tube Stockyard Rack Positions



Control Panel on the 3060-tube (standard-speed) Stockyard Refrigeration Unit

IMPORTANT If the Control Panel is not available on your stockyard, this section does not apply. To set the temperature on your stockyard, call your Beckman Coulter Service Representative.

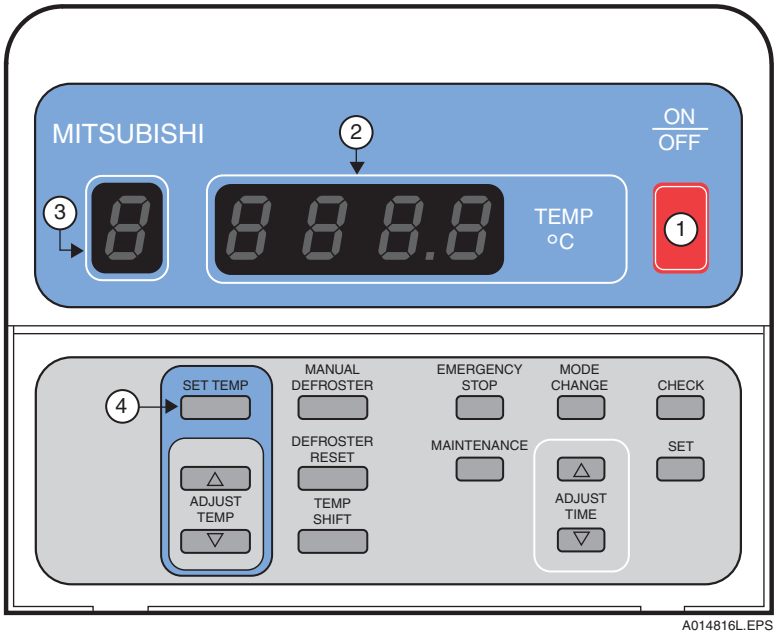
Figure 2.7 shows the Control Panel for the refrigeration unit of the 3060-tube Stockyard. This panel is at the top right side of the refrigeration unit as shown in Figure 1.3. Use this panel to:

- Set the temperature.
- Read the temperature near the refrigeration unit as described in step 6.

  NOTE This temperature does not represent the entire refrigeration unit temperature.

IMPORTANT Some buttons on the Control Panel are **NOT** included in the procedures in this section. Factory or service personnel use these buttons. If you have questions, contact your Beckman Coulter Service Representative.

Figure 2.7 Buttons and Displays on the Control Panel of the Refrigeration Unit



1. ON/OFF Button
2. Set Value Display
3. Operation Mode Display
4. SET TEMP Button

How to Set the Set Point Temperature on the 3060-tube (standard-speed) Stockyard Refrigeration Unit

IMPORTANT If the Control Panel is not available on your stockyard, this section does not apply. To set the temperature on your stockyard, call your Beckman Coulter Service Representative.

1. If necessary, turn the power on. Press the **ON/OFF** button (1) for more than one second until the red light comes on (refer to Figure 2.7).
2. If necessary, open the cover of the Control Panel.
3. Press the **SET TEMP** button (4).
4. A "0" appears on the Operation Mode Display (3).
5. Press the **ADJUST TEMP** buttons to set the temperature on the Set Value Display (2).
6. Press the **SET TEMP** button again. The Set Point of the refrigeration unit appears. After a few seconds, the temperature near the refrigeration unit appears.
7. Close the cover of the Control Panel.

After the Set Point temperature is established, let the 3060-tube Stockyard to equilibrate for 24 hours before monitoring and recording the temperature.

Use a calibrated thermometer to check the temperature. The temperature should be checked and recorded daily.

Control Panel on the 3060-tube and 5440-tube (high-speed) Stockyard Refrigeration Unit

The Temperature Control Panel for the 3060-tube (high-speed) or 5440-tube (high-speed) Stockyard Refrigeration Unit, is located on the right side panel of the stockyard, as shown in Figure 1.3 in the previous chapter. A close-up view of the control panel is shown in Figure 2.8.

The function of this control panel is to display the temperature inside of the refrigeration unit and warn lab personnel if the temperature is out-of-range.

IMPORTANT Buttons on the Temperature Control Panel are **NOT** for customer use, and are not functional. The minimum temperature and maximum temperature range, and timer value or timer wait time before the alarm is generated, are set by your Beckman Coulter Service Representative.

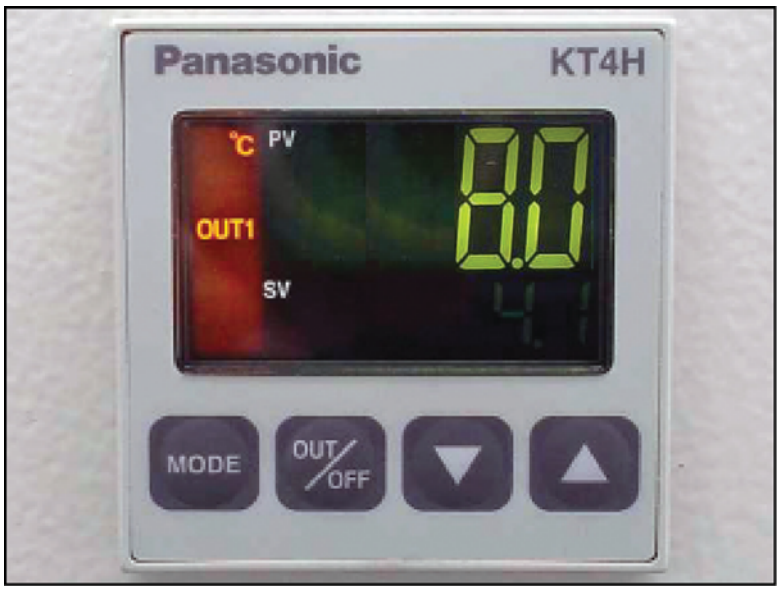
Temperature Control Panel Function

The Temperature Control Panel constantly reads the temperature inside the stockyard and generates an alarm (audible and visual) if the temperature inside the stockyard is above or below the acceptable range for more than the preset timer value (default is 30 minutes).

NOTE The normal operating temperature range is between 2 degrees and 8 degrees Centrigrade.

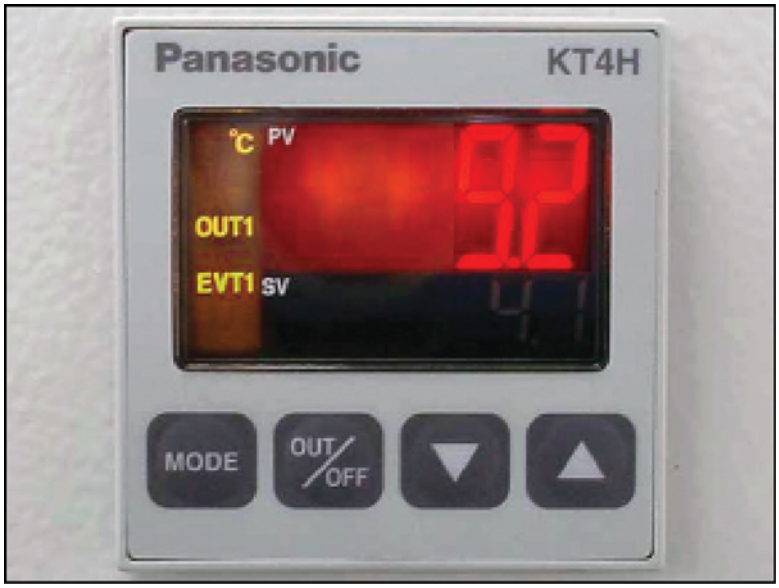
A normal in-range operating temperature is indicated by a solid green light beacon and a green control panel display (refer to Figure 2.8).

Figure 2.8 Temperature Control Panel Display In-Range



An out-of-range temperature condition is indicated by a red control panel display and one or more of the following conditions: Keypad Display error code, Audible Alarm, Amber Light Beacon (steady on, or blinking). Refer to Figure 2.9.

Figure 2.9 Temperature Control Panel Display Out-of-Range



For more information on temperature conditions and temperature error indicators, refer to the below table.

Table 2.2 Temperature Condition and Error Indicators

Temperature Condition	Keypad Display	Audible Alarm	Amber Light Beacon	Green Beacon Light	Display Color	Notes
Temperature in-range (>2 to <9 degrees C)	Blank	OFF	OFF	ON	GREEN	Display is without decimal point and in degrees Centigrade. Temperature is in range and the display turns Green.
Out-of-temperature, but less than Timer Value	Blank	OFF	OFF	ON	RED	Temperature greater than, or equal to 9 degrees Centigrade, or Less than or equal to 2 degrees Centigrade.
Out-of-temperature, and Timer Value met	Error Code 9_01	ON	ON (Blinking)	OFF	RED	Temperature greater than, or equal to 9 degrees Centigrade, or less than or equal to 2 degrees Centigrade for the period of time set in the Timer Value.
Out-of-temperature, Timer Value met, Keypad Alarm cleared	Blank	OFF	ON	OFF	RED	Timer restarts after Alarm has been cleared. If temperature is still not in-range and Timer Value is met again, the Alarm is generated again.

Table 2.2 Temperature Condition and Error Indicators *(Continued)*

Temperature Condition	Keypad Display	Audible Alarm	Amber Light Beacon	Green Beacon Light	Display Color	Notes
Out-of-temperature, Timer Value met, other system error	Error Code x_xx	ON	ON	OFF	RED	While the yellow light is blinking after the 9_01 temperature error has been acknowledged, another type of system error can occur, such as a stuck sample carrier on the stockyard track.
Out-of-temperature, Timer Value met, other system error, Keypad Alarm cleared	Blank	OFF	Slow Blink (1 per second)	OFF	RED	The non-temperature system error is corrected and yellow light returns to blinking if the temperature is still out of range.

How to Recover from an Out-of-Range Temperature Warning

When the Temperature Control Panel senses that the internal temperature of the refrigeration unit is outside of the preset (normal) temperature operating range, an alarm sounds, the amber warning light beacon comes ON and begins to blink, and the keypad displays error code 9_01.

NOTE Various conditions cause different audible and visual indicators. Refer to Table 2.2 for more information.

To recover from an error, do the following:

1. Press the **ALARM** button on the stockyard module keypad to silence the alarm. The alarm stops and the amber warning light beacon changes from a blinking light to steady ON.
2. Confirm that all doors of the stockyard are closed, monitor the situation and, if possible, correct the cause of the temperature problem.
3. To continue operation, press **PAUSE/RUN**. The amber warning light beacon changes from steady ON to a slow blinking light.
4. Continue to observe the warning light beacon. When the temperature returns to normal, the light goes out.

IMPORTANT If the temperature does not return to normal after 30 minutes, confirm all doors are closed. If there are no error conditions to address and the temperature remains out of normal range, contact your Beckman Coulter Service Representative.

Retrieving a Sample from a Stockyard

System-Initiated Retrieval

When the stockyard timeout expires, or it is time to test a sample that is stored in the stockyard, the Retrieve Transfer-arm removes the sample tube from the stockyard. Then the track routes the sample tube to a connected instrument or an outlet rack.

There are two conditions where PrepLink retrieves a sample tube and then routes the tube to a connected instrument or an outlet rack.

- A tube is retrieved for rerun, add-on or reflex testing. The tube is retrieved from the stockyard and routed to a connected instrument or an Outlet Rack.
- A tube is routed to the Pending Rack sort location for an operator to process it.

IMPORTANT DO NOT remove a rack from the stockyard when a sample tube is being loaded to, or retrieved from, the stockyard.

IMPORTANT Before requesting to add on tests, confirm that the sample tube is in the stockyard. If the sample tube has been retrieved to the Pending Rack, the sample add-on can not be processed as expected.

Operator-Initiated Retrieval to the Pending Rack

1. Select the PrepLink **Locations** tab.

2. Select the **By** option button. Select Sample ID.

3. In the **For** text field, type in one of the following:
   - A sample ID
   - Sample IDs with a comma between
   - A range of Sample IDs with a hyphen between (this is the example given in Figure 2.10).

4. Select the **Retrieve** button.

5. The Retrieve Confirmation dialog box appears, refer to Figure 2.11. This screen has two lists:
   - The list at the top of this screen gives the Sample IDs that will be retrieved. These samples have Outlet #2, 2A, 2B, 2C or Pending status.
   - The list at the bottom of this screen gives the Sample IDs that are not available to be retrieved.

6 To retrieve the samples in the list at the top of the screen, select **OK**.
OR
To return to the Locations screen, select **Cancel**.

If you typed in the primary Sample ID and you selected the Retrieve button, the primary and associated aliquot tubes are sent to the Pending Rack sort location. If you typed in a specific aliquot tube Sample ID and you selected the Retrieve button, the aliquot tube is sent to the Pending Rack sort location.

Example:

- Primary sample ID 132436 and aliquot sample ID 132436.1 are in the stockyard.
- Type sample ID 132436 and select **Retrieve**. The primary tube 132436 and aliquot tube 132436.1 route to the Pending Rack sort location.
- Type sample ID 132436.1 and select **Retrieve**. The aliquot tube 132436.1 routes to the Pending Rack sort location, while the primary tube remains in the stockyard.

Figure 2.10 Retrieve Sample by Range of Sample IDs

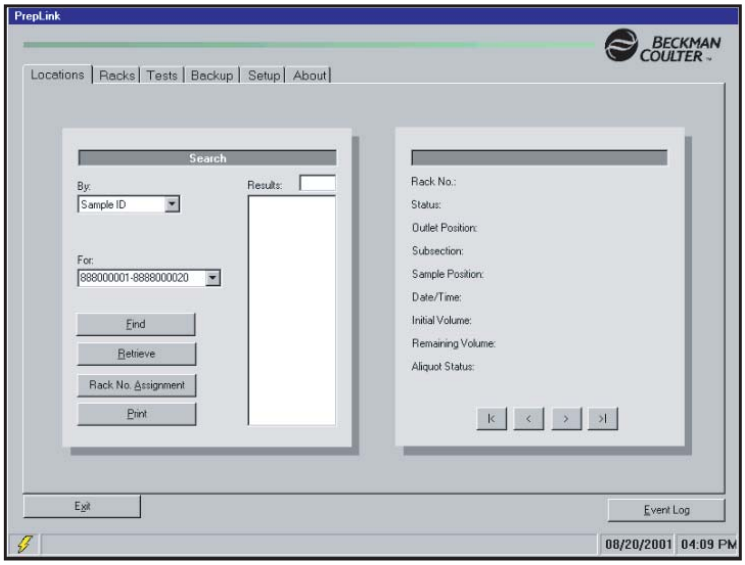


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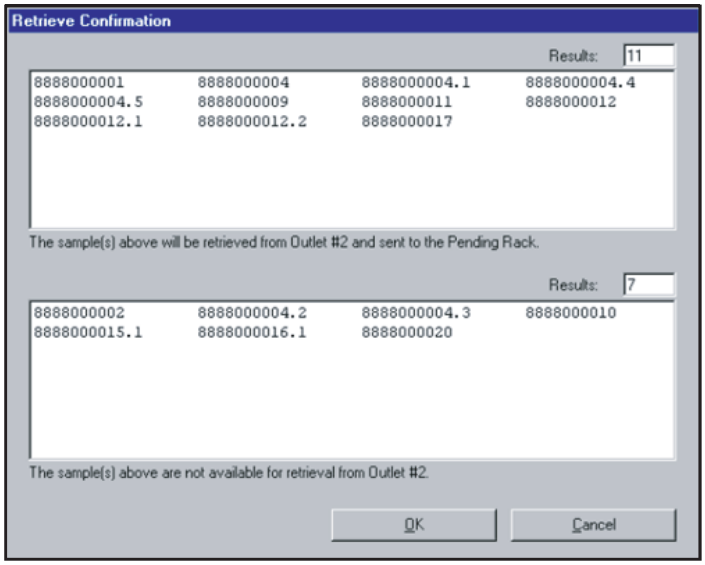
Figure 2.11 Retrieve Confirmation Screen



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How to Remove a Rack from a 1020-tube Stockyard

Safety

Be careful when removing a rack from a 1020-tube Stockyard.

⚠ WARNING

To prevent injury, be sure a large capacity stockyard is in PAUSE mode before you open a door or put your hands inside.

⚠ CAUTION

Use two hands to remove a rack from a large capacity stockyard. Support the rack and keep it horizontal to prevent tubes from falling.

When replacing the rack, push the rack to the back of the rack position.

IMPORTANT DO NOT remove a rack from a large capacity stockyard when a sample tube is being loaded to, or retrieved from, the large capacity stockyard.

System-Initiated Rack Load

When a 1020-tube Stockyard is full the flashing beacon, the audible alarm and the **RACK LOAD** light on the 1020-tube Stockyard keypad come on. The transfer-arm completes the current operation and then moves to the Home position.

1. Press the **ALARM** button on the 1020-tube Stockyard keypad to silence the alarm and stop the flashing beacon.
2. Read the 1020-tube Stockyard keypad display to determine which rack positions to unload. Rack positions are numbered 01 through 03.
3. Remove the racks indicated by the keypad display. Hold each rack by one of the hand-holes in the front of the rack. When pulling out the rack, hold the rack with both hands and keep it horizontal.
4. Load empty racks into the vacant positions. 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 that 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.

IMPORTANT If a rack in the 1020-tube Stockyard is not fully inserted after a rack Removal, when the **PAUSE/RUN** button is pressed to resume normal operation, the sample tubes do not sort to the stockyard as expected.

The sample tubes stop at the stockyard with no error indication on the LED display. After the rack is fully inserted, the sample tubes resume processing when the **PAUSE/RUN** button is pressed.

Operator-Initiated Rack Load

Racks in the 1020-tube Stockyard can be unloaded before they fill using the Rack Load procedure.

1. Press the **RACK LOAD** button on the 1020-tube Stockyard keypad. The alarm and beacon activate.
2. Press the **ALARM** button to silence the alarm and stop the flashing beacon.
3. Remove the racks you want to unload. Hold each rack by one of the hand-holes in the front. When pulling out the rack, hold the rack with both hands and keep it horizontal.

4 Load racks in the empty positions. 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 that 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.

IMPORTANT If a rack in the 1020-tube Stockyard is not fully inserted after a rack Removal, when the **PAUSE/RUN** button is pressed to resume normal operation, the sample tubes will not sort to the stockyard as expected.

The sample tubes stop at the stockyard with no error indication on the LED display. After the rack is fully inserted, the sample tubes resume processing when the **PAUSE/RUN** button is pressed.

How to Remove a Rack from a 3060-tube (standard-speed) Stockyard

Safety

Be careful when removing a rack from a 3060-tube Stockyard. Support the rack and keep it horizontal to prevent tubes from falling. Figure 2.12 shows a rack not fully removed from the shelf unit of a 3060-tube Stockyard.

⚠ WARNING

To prevent injury, be sure the large capacity stockyard is in PAUSE mode before you open a door or put your hands inside.

⚠ CAUTION

Use two hands to remove the rack from a large capacity stockyard. Support the rack and keep it horizontal to prevent tubes from falling.

When replacing the rack, push the rack to the back of the rack position.

IMPORTANT DO NOT remove a rack from the large capacity stockyard when a sample tube is being loaded to, or retrieved from, the large capacity stockyard.

Figure 2.12 A Rack Not Fully Removed from a Shelf Unit of a 3060-tube Stockyard

System-Initiated Rack Load

When a 3060-tube Stockyard is full, the flashing beacon, the audible alarm and the **RACK LOAD** light on the 3060-tube Stockyard keypad come on. The transfer-arm completes the current operation and then moves to the home position.

Select the image below to start a video on how to perform a System-Initiated Rack Load.

⚠ CAUTION

Before viewing this video, confirm that the IFU PDF files are not installed on, or viewed from, a computer connected to the Power Processor system.

NOTE This video is provided as an aid to help perform the following procedure.

1. Press the **ALARM** button on the 3060-tube Stockyard keypad to silence the alarm and stop the flashing beacon.

2. Read the 3060-tube Stockyard keypad display to determine which rack positions to unload. The keypad displays the racks that need be removed. Refer to Figure 2.4.

   IMPORTANT Shelves are numbered from bottom to top and from left to right as follows:

Shelf Three	3-01	3-02	3-03
Shelf Two	2-01	2-02	2-03
Shelf One	1-01	1-02	1-03

3. Open the door of the related shelf unit of the 3060-tube Stockyard.

4. Remove the racks indicated by the keypad display. Hold each rack by one of the hand-holes in the front of the rack. When pulling out the rack, hold the rack with both hands and keep it horizontal.

5. Load empty racks into the vacant positions. The PAUSE/RUN light flashes after a rack is loaded. Close the door.

   If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, verify that 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.

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

IMPORTANT If a rack in the 3060-tube Stockyard is not fully inserted after a rack Removal, when the **PAUSE/RUN** button is pressed to resume normal operation, the sample tubes will not sort to the stockyard as expected.

The sample tubes stop at the stockyard with no error indication on the LED display. After the rack is fully inserted, the sample tubes resume processing when the **PAUSE/RUN** button is pressed.

Operator-Initiated Rack Load

Racks in the 3060-tube Stockyard can be unloaded before they fill using the Rack Load procedure. Refer to Figure 2.4.

Select the image below to start a video on how to perform an Operator-Initiated Rack Load.

⚠ CAUTION

Before viewing this video, confirm that the IFU PDF files are not installed on, or viewed from, a computer connected to the Power Processor system.

NOTE This video is provided as an aid to help perform the following procedure.

1 Press the **RACK LOAD** button on the 3060-tube Stockyard keypad. The alarm and beacon activate.

2 Press the **ALARM** button to silence the alarm and stop the flashing beacon.

3 Open the door of the related shelf unit of the 3060-tube Stockyard.

4 Remove the racks you want to unload. Hold each rack by one of the hand-holes in the front of the rack. When pulling out the rack, hold the rack with both hands and keep it horizontal.

5 Load racks into the empty positions. The PAUSE/RUN light flashes after a rack is loaded. Close the door.

If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, verify that 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.

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

IMPORTANT If a rack in the 3060-tube Stockyard is not fully inserted after a Rack Removal, when the **PAUSE/RUN** button is pressed to resume normal operation, the sample tubes will not sort to the stockyard as expected.

The sample tubes stop at the stockyard with no error indication on the LED display. After the rack is fully inserted, the sample tubes resume processing when the **PAUSE/RUN** button is pressed.

How to Remove a Rack from a 3060-tube (high-speed) Stockyard

Safety

Be careful when removing a rack from a 3060-tube Stockyard. Support the rack and keep it horizontal to prevent tubes from falling. Figure 2.12 shows a rack not fully removed from the shelf unit of a 3060-tube Stockyard.

⚠ WARNING

To prevent injury, be sure the large capacity stockyard is in PAUSE mode before you open a door or put your hands inside.

⚠ CAUTION

Use two hands to remove the rack from a large capacity stockyard. Support the rack and keep it horizontal to prevent tubes from falling.

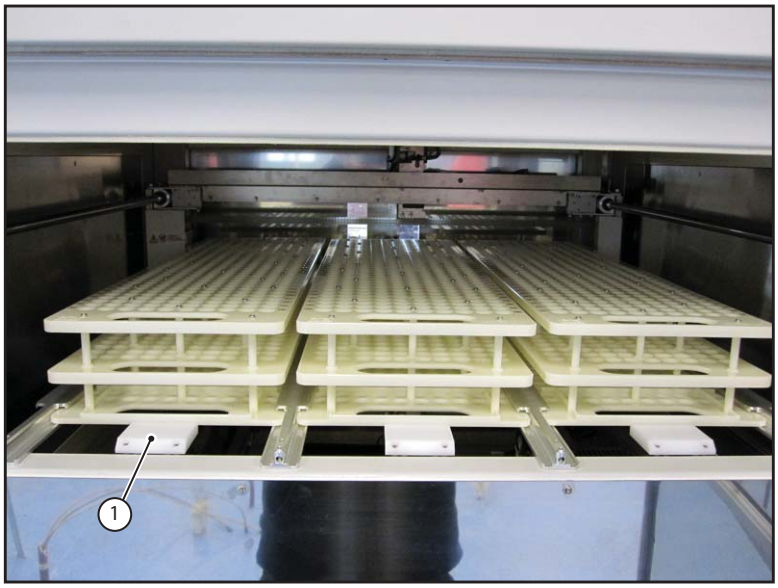
When replacing the rack, push the rack to the back of the rack position.

IMPORTANT DO NOT remove a rack from the large capacity stockyard when a sample tube is being loaded to, or retrieved from, the large capacity stockyard.

Removing a Rack from the 3060-tube (high-speed) Stockyard

The 3060-tube (high-speed) Stockyard has a rack latching mechanism to confirm that each rack on a shelf is securely held in place. Refer to Figure 2.13.

Figure 2.13 3060-tube (high-speed) Stockyard Latching Mechanism



1. Rack Latching Mechanism

In front of each rack is a spring-loaded latch that is depressed by the rack as it slides over it while being inserted into the shelf unit. When the rack is fully inserted, the latch rises-up and snaps into position to secure the rack.

To remove the rack, press down on the latch to move it below the front edge of the rack, and pull the rack toward you. Refer to Figure 2.14.

Figure 2.14 Removing a Rack from the 3060-tube (high-speed) Stockyard

1. Rack Latching Mechanism

System-Initiated or Operator-Initiated Rack Load

Performing a System-Initiated or Operator-Initiated rack load on a 3060-tube (high-speed) Stockyard, is the same as performing it on a 3060-tube (standard-speed) Stockyard.

For instructions, or to view a video, on these procedures, select one of the following:

System-Initiated Rack Load

Operator-Initiated Rack Load

How to Remove a Rack from a 5440-tube (high-speed) Stockyard

Safety

Be careful when removing a rack from a 5440-tube Stockyard. Support the rack and keep it horizontal to prevent tubes from falling. Figure 2.12 shows a rack not fully removed from the shelf unit of a 3060-tube Stockyard.

⚠ WARNING

To prevent injury, be sure the large capacity stockyard is in PAUSE mode before you open a door or put your hands inside.

⚠ CAUTION

Use two hands to remove the rack from a large capacity stockyard. Support the rack and keep it horizontal to prevent tubes from falling.

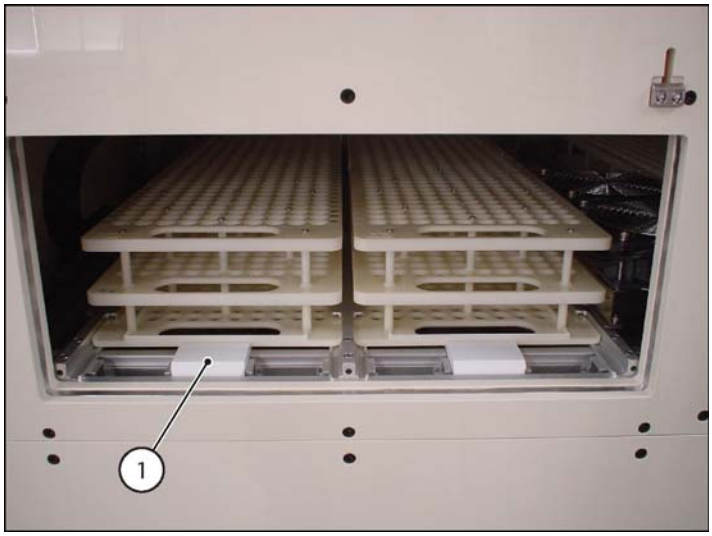
When replacing the rack, push the rack to the back of the rack position.

IMPORTANT DO NOT remove a rack from the large capacity stockyard when a sample tube is being loaded to, or retrieved from, the large capacity stockyard.

Removing a Rack from the 5440-tube (high-speed) Stockyard

The 5440-tube (high-speed) Stockyard has a rack latching mechanism to confirm that each rack on a shelf is securely held in place. Refer to Figure 2.15.

Figure 2.15 5440-tube (high-speed) Stockyard Latching Mechanism



1. Rack Latching Mechanism

In front of each rack is a spring-loaded latch that is depressed by the rack as it slides over it while being inserted into the shelf unit. When the rack is fully inserted, the latch rises-up and snaps into position to secure the rack.

To remove the rack, press down on the latch to move it below the front edge of the rack, and pull the rack toward you. Refer to Figure 2.16.

Figure 2.16 Removing a Rack from the 5440-tube (high-speed) Stockyard

1. Rack Latching Mechanism

System-Initiated Rack Load

When a 5440-tube Stockyard is full, the flashing beacon, the audible alarm, and the **RACK LOAD** light on the stockyard keypad come on. The transfer-arm completes the current operation and then moves to the home position.

---

1 Press the **ALARM** button on the 5440-tube Stockyard keypad to silence the alarm and stop the flashing beacon.

---

2 Read the 5440-tube Stockyard keypad display to determine which rack positions to unload. The keypad displays the racks to be removed. Refer to Figure 2.6.

IMPORTANT Shelves are numbered from bottom to top and from left to right as follows:

Shelf Four	4-01	4-02	4-03	4-04
Shelf Three	3-01	3-02	3-03	3-04
Shelf Two	2-01	2-02	2-03	2-04
Shelf One	1-01	1-02	1-03	1-04

3 Open the door of the related shelf unit of the 5440-tube Stockyard.

4 Remove the racks indicated by the keypad display. Hold each rack by one of the hand-holes in the front of the rack. When pulling out the rack, hold the rack with both hands and keep it horizontal.

5 Load empty racks into the vacant positions. The PAUSE/RUN light flashes after a rack is loaded. Close the door.

If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, verify that 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.

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

IMPORTANT If a rack in the 5440-tube Stockyard is not fully inserted after a rack Removal, when the **PAUSE**/**RUN** button is pressed to resume normal operation, the sample tubes will not sort to the stockyard as expected.

The sample tubes stop at the stockyard with no error indication on the LED display. After the rack is fully inserted, the sample tubes resume processing when the **PAUSE**/**RUN** button is pressed.

Operator-Initiated Rack Load

Racks in the 5440-tube Stockyard can be unloaded before they fill using the Rack Load procedure. Refer to Figure 2.6.

1. Press the **RACK LOAD** button on the 5440-tube Stockyard keypad. The alarm and beacon activate.
2. Press the **ALARM** button to silence the alarm and stop the flashing beacon.
3. Open the door of the related shelf unit of the 5440-tube Stockyard.
4. Remove the racks you want to unload. Hold each rack by one of the hand-holes in the front of the rack. When pulling out the rack, hold the rack with both hands and keep it horizontal.
5. Load racks into the empty positions. The PAUSE/RUN light flashes after a rack is loaded. Close the door.

   If the PAUSE/RUN light does not flash and the rack to be removed is still displayed on the LED, verify that 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.
6. Press the **PAUSE/RUN** button to resume routine operation.

IMPORTANT If a rack in the 5440-tube Stockyard is not fully inserted after a rack Removal, when the **PAUSE/RUN** button is pressed to resume normal operation, the sample tubes will not sort to the stockyard as expected.

The sample tubes stop at the stockyard with no error indication on the LED display. After the rack is fully inserted, the sample tubes resume processing when the **PAUSE/RUN** button is pressed.

How to Disable the 3K or 5K Stockyard Shelves if an Unrecoverable Error Occurs

In the event of an unrecoverable error, individual shelves can be disabled to permit partial use of the stockyard.

⚠ CAUTION

Do not disable all stockyards or all shelves at the same time. A minimum of one shelf of one stockyard is needed for continued sample processing on the system. If all stockyards or all shelves are disabled at the same time, samples destined for the stockyard will have no place to sort and will circulate around the track until one shelf is enabled.

⚠ CAUTION

Do not bypass all of the stockyard modules at the same time. If all stockyards are bypassed at the same time, samples destined for the stockyard will have no place to sort and will circulate around the track until one stockyard is put into AUTO mode.

Select the image below to start the video for enabling/disabling the stockyard.

⚠ CAUTION

Before viewing this video, confirm that the IFU PDF files are not installed on, or viewed from, a computer connected to the Power Processor system.

NOTE This video is provided as an aid to help perform the following procedure.

1 Silence the alarm and follow the error recovery for the error code at the keypad display.

NOTE If the problem is a single shelf and you cannot recover from this problem, then continue with this procedure and disable the shelf.

2 At the Line Controller main screen, select **System Setup** from the menu bar.

3 Select the System Setup option. The System Setup dialog box appears.

4 In the System Setup dialog box, select **Unit Enable/Disable**.

The Unit Enable/Disable dialog box appears. The status (enabled or disabled) of the stockyard shelf and other connections is shown.

5 Select the status of the correct shelf to Disable, then select **OK**. The Verify Stockyard Inactive window displays (refer to Figure 2.17).

Figure 2.17 Verify Stockyard Inactive

6 Do the following:

a. Verify the stockyard is inactive.

b. Check that the **PAUSE/RUN** on the keypad display is lit.

c. Select **OK** from the pop-up window.

7 If all shelves in all stockyards are disabled, the following pop-up window will display (PP version 5.0 or later) indicating that no stockyard is available to store samples (refer to Figure 2.18).

a. Select **Cancel** to stop this action.

b. If this pop-up did not display, continue to step 8.

NOTE If all stockyards or all shelves are disabled at the same time, samples destined for the stockyard will have no place to sort and will circulate around the track until one shelf is enabled.

Figure 2.18 No Stockyard(s) Available

8 Select **Exit** to close the System Setup menu.

9 At the stockyard, verify the Control Panel is in Manual mode. Press **PAUSE/RUN** to clear the Error at the keypad.

10 Remove the splash guard cover at the rear of the stockyard as follows:

- Press the **PAUSE/RUN** button on the stockyard module keypad to put the module in PAUSE mode.

⚠ CAUTION

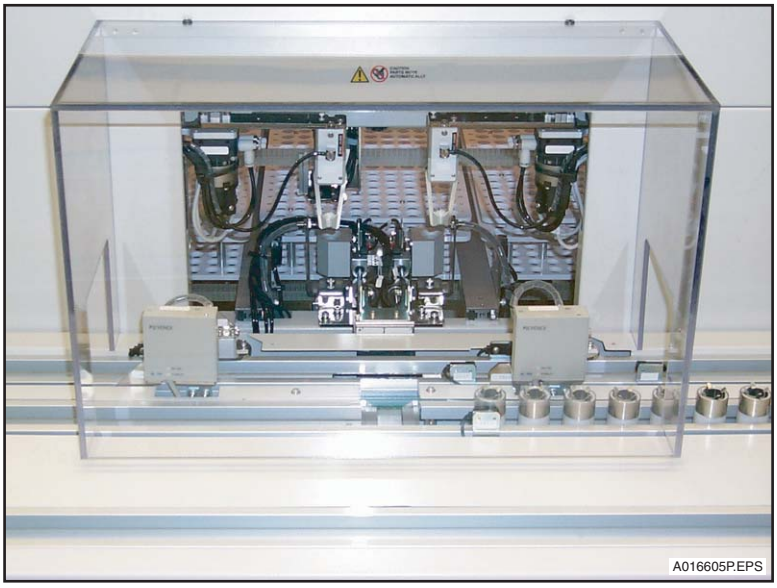
Before you continue with this procedure, be sure the module is in PAUSE mode.

⚠ CAUTION

Even when a large capacity stockyard is in PAUSE mode, the air system is still active and applying a constant air pressure to the shuttle cups and the gripper arm assembly. This can cause unexpected movement of the shuttle cups and the gripper arm assembly when resolving a jammed object error creating a possible moving part or mechanical pinch hazard. Use caution when resolving jammed object errors at a large capacity stockyard.

- Remove the splash guard cover screw with a Phillips screwdriver.

Figure 2.19 Splash Guard (on a 3K Stockyard)



NOTE Only remove the rear stockyard cover if access to the 3rd shelf is needed.

11 If tubes are in front of the bar code reader at the load or unload position, remove the tubes.

12 Remove any tubes from either the transfer-arm or retrieve-arm.

13 At the rear of the stockyard, verify there are no tubes or other obstructions in the path of the load and unload shuttle cups for each level.

14 Remove any tubes in the load and unload shuttle cups as follows:

- Press the **FUNCTION +/-** buttons to set the display at "31."
- Press the **ENTER** button on the keypad to move the six shuttle cups to the Load/Unload position to remove tubes.
- Remove any tubes from the shuttle cups. Press **ENTER** to clear FUNCTION "31."

15 At the front of the stockyard, remove any tubes inside the stockyard as follows:

- Press the **PAUSE/RUN** button to exit PAUSE mode.
- Press the **FUNCTION +/-** button to set the display at "30."

⚠ CAUTION

After Function "30" has been activated, wait 30 seconds before opening any unit doors. Serious injuries can occur if the user places their hands inside the unit while the internal gripper arms are moving.

- Press the **ENTER** button on the keypad to move the internal grippers on each shelf to the front of the stockyard. Wait 30 seconds before opening any door.

16 Follow the steps below one shelf at a time.

- Remove the middle rack below the gripper.
- Check for the presence of a tube in the internal gripper, if a tube is present remove the tube.
- Replace the removed rack.
- Proceed to next shelf.

17 Remove all racks and tubes on the disabled shelf. Those samples can be remapped for future use.

⚠ CAUTION

Failure to remove all samples from the disabled shelf or shelves can cause system errors, hardware damage, sample tube breakage, and operator exposure to biohazard conditions.

18 Replace empty racks in the stockyard shelf.

19 Reinstall all covers.

20 Press **ENTER** to clear FUNCTION "30."

21 On the stockyard control panel, press **AUTO** button twice and the stockyard will initialize. When initialization is complete the stockyard will continue normal operation.

22 Verify the status in PrepLink, or the LIS, for sample tubes recovered from the BCR load and unload, transfer-arm, retrieve-arm, internal grippers, and shuttle cups to determine if the samples need further processing.

a. If needed, manually process any recovered sample tube(s).

b. If processing is complete, the sample(s) can be remapped to the stockyard for future use.

23 Contact your Beckman Coulter Service Representative if needed.

How to Disable a Shelf in the 3K or 5K Stockyard

If you want to disable a shelf of the stockyard for maintenance, for example, and you Do Not have an unrecoverable error, perform the following procedure.

⚠ CAUTION

Do not disable all stockyards or all shelves at the same time. A minimum of one shelf of one stockyard is needed for continued sample processing on the system. If all stockyards or all shelves are disabled at the same time, samples destined for the stockyard will have no place to sort and will circulate around the track until one shelf is enabled.

1 At the Line Controller main screen, select the System Setup from the menu bar.

2 Select the System Setup option. The System Setup dialog box appears.

3 In the System Setup dialog box, select **Unit Enable/Disable**.

The Unit Enable/Disable dialog box appears. The status (enabled or disabled) of the stockyard shelf and other connections are shown.

4 Select the status of the correct shelf to Disable, then select **OK**. The Verify Stockyard Inactive window displays (refer to Figure 2.20).

Figure 2.20 Verify Stockyard Inactive

5 Do the following:

a. Verify the stockyard is inactive.

b. Check that the **PAUSE/RUN** on the keypad display is lit.

c. Select **OK** from the pop-up window.

6 If all shelves in all stockyards are disabled, the following pop-up window will display (PP version 5.0 or later) indicating that no stockyard is available to store samples. Refer to Figure 2.21.

a. Select **Cancel** to stop this action.

b. If this pop-up did not display, continue to step 7.

NOTE If all stockyards or all shelves are disabled at the same time, samples destined for the stockyard will have no place to sort and will circulate around the track until one shelf is enabled.

Figure 2.21 No Stockyard(s) Available

7 Select **Exit** to close the System Setup menu.

8 At the stockyard, verify that the Control Panel is in Manual mode.

9 Remove all the racks and tubes on the disabled shelf.

Those samples can be remapped for future use.

10 When ready to resume operation, press the **AUTO/MANUAL** button on the stockyard control panel twice to initialize the stockyard.
When initialization is complete, the stockyard continues normal operation.

How to Enable the 3K or 5K Stockyard

1 Confirm that the sample tubes are not in the process of being transferred into, or out of, the stockyard.

2 At the Line Controller main screen, select the System Setup from the menu bar.

3 Select the System Setup option. The System Setup dialog box appears.

4 In the System Setup dialog box, select **Unit Enable/Disable**.

5 The Unit Enable/Disable dialog box appears. The status (enabled or disabled) of the stockyard shelf and other connections is shown.

6 Select the status box of the correct shelf to switch from Disabled to Enabled.

7 Select **OK**.

8 Select **Exit** to close the System Setup menu.

9 At the stockyard, press **AUTO/MANUAL** button on the keypad twice to change from MANUAL mode to AUTO mode. When the initialization is complete, the stockyard will continue normal operation.

CHAPTER 3

Error Recovery Procedures

This chapter provides information to identify and resolve errors related to the stockyard modules, and 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 correct Power Processor Module Instructions for Use documentation.

⚠ WARNING

Perform Power Processor maintenance activities with caution.

Wear 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 correct laboratory policies and laboratory procedures related to the handling of biohazardous materials.

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

⚠ CAUTION

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

⚠ CAUTION

Even when a large capacity stockyard is in PAUSE mode, the air system is still active and applying a constant air pressure to the shuttle cups and the gripper arm assembly. This can cause unexpected movement of the shuttle cups and the gripper arm assembly when resolving a jammed object error creating a possible moving part or mechanical pinch hazard. Use caution when resolving jammed object errors at a large capacity stockyard.

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 stockyard, with descriptions of the action that was 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
Outlet	01	Lane through
	54	Stop the arm while the gripper fingers are opened
5440-tube (high-speed) Stockyard	01	Lane through
	30	Move Inside Arms on all shelves to the door side with grippers closed
	31	Move shuttle cups on all shelves to the outside of unit
3060-tube (high-speed) Stockyard	01	Lane through
	30	Move Inside Arms on all shelves to the door side with grippers closed
	31	Move shuttle cups on all shelves to the outside of unit
3060-tube (standard-speed) Stockyard	01	Lane through
	30	Internal gripper arm moves to front, closed gripper
	31	Move cups out (back side of Stockyard)
1020-tube Stockyard	01	Lane through

General Error Recovery Procedure

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.

   NOTE The leading zero is not displayed.

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 correct hardware module. For example, if the error occurs at the 3K Stockyard, refer to Table 4.5, 3060-tube (standard-speed) Stockyard Error Codes in CHAPTER 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 correct 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. Confirm 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. There are no specific error recovery procedures for Stockyard modules.

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 the sample tube positioning and the Error Tables to resolve gripper finger errors.

⚠ CAUTION

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.

⚠ CAUTION

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 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 up the track, check the sensor number nearest the stopped sample carrier and refer to the correct 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).

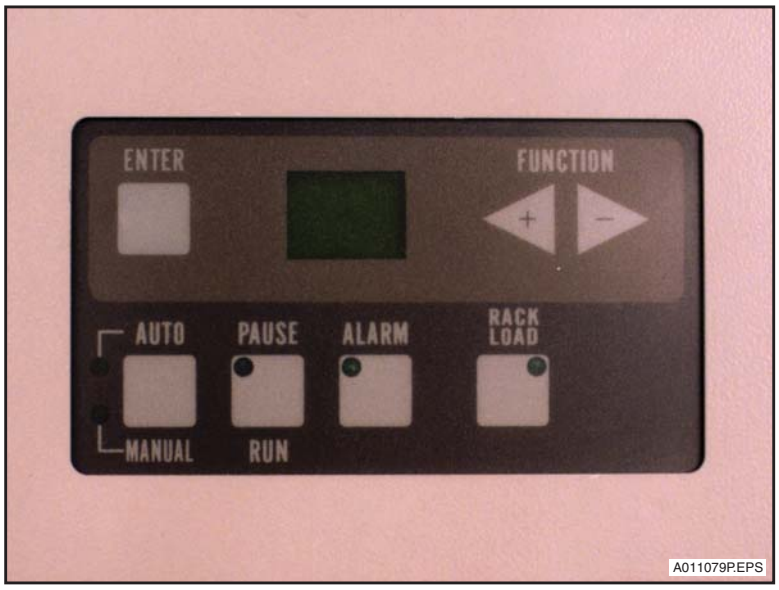
1. Press the **ALARM** button on the keypad to silence the alarm.

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 can 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.

⚠ CAUTION

Do not bypass all of the stockyard modules at the same time. If all stockyards are bypassed at the same time, samples destined for the stockyard will have no place to sort and will circulate around the track until one stockyard is put into AUTO mode.

1. Press the **AUTO/MANUAL** button twice to switch to MANUAL mode. The **AUTO/MANUAL** button indicator light 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 after 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 a minimum of 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 sample 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 it in the correct 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 the tubes in the waiting sample tube carriers. remove the sample tubes, and process the sample tubes offline. remove the sample tube from the sample tube carrier, and process the sample tube offline.
the Generic (CLSI)/IDC Connection Module,	clear the sample tubes in the queue (from BCR03 to BCR02) by entering Function 84 at the Generic Connection module keypad. These sample tubes must be processed offline.
the 1K, 3K, or 5K 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 after 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 that was 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 a serum sample will drip slowly. The Serum Drip Trays might 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 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 are 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 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 in front of the Centrifuge Track bar code reader, it can proceed down the track and bypass the Centrifuge when the Centrifuge is set to AUTO mode in step 35. This situation 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 31b.
- **c.** 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 Confirm 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. Confirm 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, confirm that the Centrifuge transfer-arm is completely in the Home position.

26 Open the Centrifuge lid.

- **a.** If there are tubes in the Centrifuge, follow your laboratory procedures to determine if the tubes have been fully spun or need to be re-spun. If the tubes need to be re-spun, proceed to step 27.
- **b.** If you determine that the tubes do not need to be re-spun, proceed to step 31c.
- **c.** 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. Confirm the load is balanced.

28 Close the Centrifuge lid and confirm both latches are secure.

29 Confirm 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,

- **a.** Turn the release door switch to the Right to open the Centrifuge lid.
- **b.** Manually unload the sample tube from step 18b 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 confirm both latches are secure.
- **e.** 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, confirm the Centrifuge is in MANUAL mode. Press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**.

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

35 After 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 it 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 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 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 that was sorted by the system can not be accurately represented at the Sample Locations screen.

⚠ CAUTION

For system configurations with the Aliquot Module, when a STOP button is pressed, aliquot tips containing a serum sample will drip slowly. The Serum Drip Trays might 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 continue to 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:

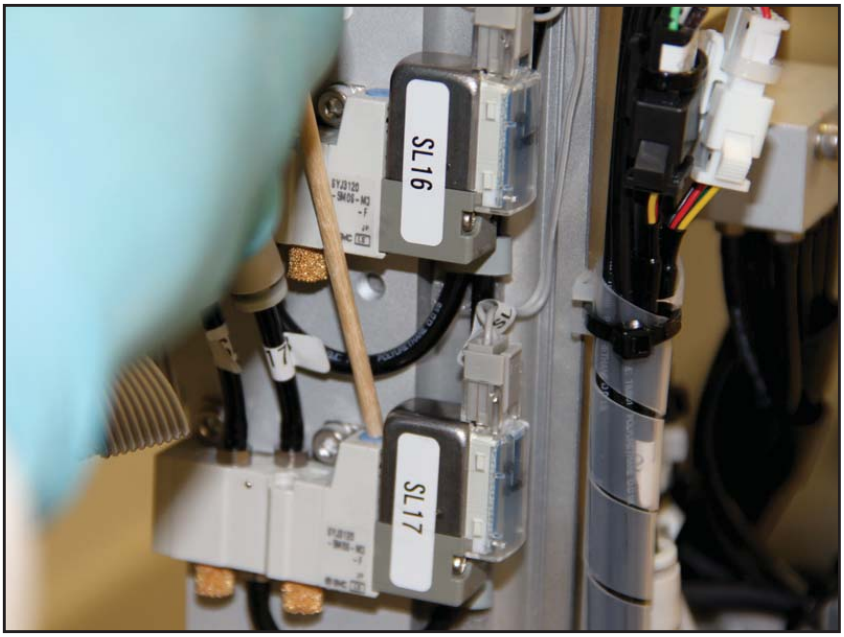
a. Open the access door above the LX/DxC auto-loader to gain access to the quadruple-gripper transfer-arm.

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

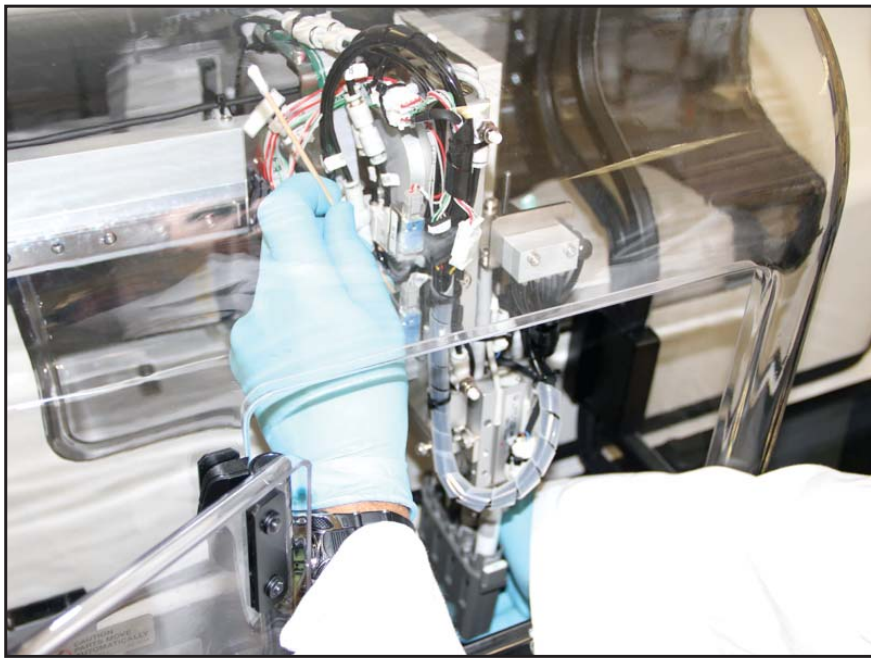


d. Place a LX/DxC rack under the tubes, raise it so the tubes are inside the rack and hold it in place.

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 after 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 the instrument console to confirm 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 into AUTO mode. Process a maximum of 2 racks at a time to permit the automation system to continue loading racks onto the LX/DxC instrument after 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 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 door and rear door.
- **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 away from the capping area.
- **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. Confirm there are no caps on the track.

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

27 In the Recapper:

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

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

If...	Then...
there is a sample tube *without* a cap,	the Recapper puts a cap on the sample tube.
a sample tube *with* 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 Confirm 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 AU2700/5400 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 NOT* 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 are 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 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 in front of the Centrifuge Track bar code reader, it might proceed down the track and bypass the Centrifuge when the Centrifuge is set to AUTO mode in step 65. This situation 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 Confirm 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. Confirm 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, confirm 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 procedures to determine if the tubes have been fully spun or need to be re-spun. If the tubes 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. Confirm the load is balanced.

58 Close the Centrifuge lid and confirm both latches are secure.

59 Confirm 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 confirm 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, confirm the Centrifuge is in MANUAL mode. Press the **FUNCTION +/-** buttons to set the readout to "84" and press **ENTER**.

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

65 After 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 then process it 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 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 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.

Stockyard Module Error Recovery Procedures

This section provides information to identify and resolve errors related to the Stockyard modules. Stockyard error recovery procedures include:

- Outlet Module Error Recovery
- Fallen Sample Tube Inside the 1020-tube Stockyard
- Fallen Sample Tube Inside the 3060-tube or 5440-tube Stockyard

Outlet Module Error Recovery

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 the Outlet Module Error Codes section of the Power Processor manual.

5 Resolve the condition causing the error message.

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

Fallen Sample Tube Inside the 1020-tube Stockyard

1 Press the **ALARM** button on the module keypad to silence the alarm.

IMPORTANT Confirm that the module is in PAUSE mode before proceeding.

2 If required, move the Transfer Load or Transfer Retrieval Arm before reaching inside the stockyard to remove the dropped sample tube.

Hold the transfer-arm while retrieving the dropped sample tube.

3 After removing the dropped sample tube, release the transfer-arm. The arm moves to the Home position.

4 Press **PAUSE/RUN** to resume routine operation and then process the sample tube offline.

Fallen Sample Tube Inside the 3060-tube or 5440-tube Stockyard

NOTE During this procedure, if you see that a cap is missing from a sample tube in the stockyard, double-check that the module is in PAUSE mode and then place a cap on the tube. Also remove any fallen caps from within the stockyard. Contact your Beckman Coulter Service Representative to make any needed adjustments to the Recapper.

1 Press the **ALARM** button on the module keypad to silence the alarm.

IMPORTANT Confirm that the module is in **PAUSE** mode before proceeding.

2 Determine where the error occurred. Open the shelf doors and then use a flashlight to search inside the module.

3 If required, move the transfer load or transfer retrieval-arm before reaching inside the stockyard to remove the dropped sample tube.

Hold the transfer-arm while retrieving the dropped sample tube.

4 If the sample tube has dropped on top of a rack, pull out the rack and retrieve the tube.

5 If the sample tube has dropped near the shuttle cup area, remove the tube as follows:

- Press the **FUNCTION +/-** buttons to set the display at “31.”

- Press the **ENTER** button on the keypad to move the six shuttle cups to the Load/Unload position and remove the dropped tube from the shuttle cup area.
- Press **ENTER** to clear FUNCTION "31."

6 If the sample tube dropped to the bottom level of the stockyard, open the lowest level doors. Use a flexible claw-like grabber tool to reach inside the stockyard to retrieve the sample tube.

7 If you are unable to remove the dropped sample tube, contact your Beckman Coulter Service Representative.

8 After removing the dropped sample tube, release the transfer-arm. The arm moves to the Home position.

9 Verify the status in PrepLink, or the LIS, for the sample tube recovered from the stockyard to determine if the sample needs further processing.

a. If needed, manually process the recovered sample tube.

b. If processing is complete, remap the sample to the stockyard for future use.

10 Press **PAUSE/RUN** to resume routine operation.

CHAPTER 4

Troubleshooting

This chapter provides important troubleshooting information on how to locate and resolve problems with the Stockyard module. It is divided into 2 sections:

- Error Code Tables
- Sensor Diagrams

Error Code Tables

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

The "Keypad Display" column contains the error 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 "Sensor" column of the Error Code tables in this chapter.

Use this table and the color diagrams in the Sensor Diagrams section, 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, then this represents Sensor Error 03(SN03). The sensor for the Stockyard indicates that Rack #3 is not set correctly. Refer to Table 4.4, 1020-tube Stockyard Error Codes, and Figure 4.2, 1020-tube Stockyard Main Body Side in this chapter.

- 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.	• Attach valid bar code. • Check that the bar code label is correct and clean.
		Sample information was not received from LIS.	• Valid communication needed.
		Sample is not at the correct position.	
1_xx	Cannot pass carrier to sensor SNxx. Can also refer to ASxx.		• Check the sensor position and then look for possible jamming.
		At Startup sample tube carrier was located in the sensor.	• Check that carrier is separated from the sensor at Startup.
2_xx	Cannot move cylinder.		• Check the solenoid/cylinder position and look for possible jamming.
3_xx	Bar code reader not working or label not facing bar code reader.		• Check that the bar code reader light comes on and that the carrier rotates.
4_xx	Pulse Motor/AC Motor Error.		• Check motors and drive belts.
5_xx	Analyzer is not ready, or the tube has stopped somewhere.		• Confirm that the Analyzer is Ready or whether the cassette is jammed between Analyzer and Connection Unit.
7_xx	Auto sensor error (ASxx).		• Confirm that the sensor position and the cylinder work correctly.
9_xx	AC motors on arm.		• Confirm that the AM1 and AM2 work correctly.
	Temperature error	Stockyard internal temperature out-of-range.	• Check the condition of refrigerator. To continue operation, press the **PAUSE**/**RUN** button.

200-tube Stockyard Error Codes

Table 4.3 represents Error Codes as they appear in the Line Control Computer Systems Error Log and Error Signals as they appear on the 200-tube Stockyard keypad display. A brief description of the problem and a possible solution are also found in the table.

Table 4.3 200-tube Stockyard Error Codes

Sensor	Keypad Display	Problem	Solution
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.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN22 to turn it ON.
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.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN23 to turn it ON.
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.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN33 to turn it ON.
SL20	2_20	The first stopper on the sample tube carrier sorting lane did not engage completely.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL21 ON	2_21	The stopper on the sorting point on the sample tube carrier sorting lane did not retract completely.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL21 OFF	2_21	Error at the sensor before the sorting point of the sorting lane.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL22	2_22	Diverter malfunction at the intersection of the through lane and the empty sample tube carrier waiting lane.	Confirm 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.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL31 OFF	2_31	The stopper at the empty sample tube carrier waiting lane did not retract completely.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL32 ON	2_32	Sensor error in the empty sample tube carrier waiting lane.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.

Table 4.3 200-tube Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL32 OFF	2_32	Error at the sensor before the sorting point of the through lane.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL33	2_33	Error at the 1st sensor of the through lane.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL34	2_34	Error at the 2nd sensor before the sorting point of the through lane.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL35 ON	2_35	Error at the diverter at the empty sample tube carrier waiting lane.	Confirm 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.	Confirm that a sample tube carrier is not jammed and that the diverter is closed.

1020-tube Stockyard Error Codes

Table 4.4 represents Error Codes as they appear in the Line Control Computer Systems Error Log and Error Signals as they appear on the 1020-tube Stockyard keypad display. A brief description of the problem and a possible solution are also found in the table.

Table 4.4 1020-tube Stockyard Error Codes

Sensor	Keypad Display	Problem	Solution
BUZZ CMD	0_11	Bar code reader #1: Error at bar code reader.	**1.** Inspect the sample to see if the bar code label is readable. **2.** Press **PAUSE/RUN**.
BUZZ CMD	0_12	Bar code reader #1: Positioning error at bar code reader.	**1.** Inspect the sample to see if the bar code label is readable. **2.** Remove the sample and press **PAUSE/RUN**.
BUZZ CMD	0_13	Bar code reader #1: 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**.
BUZZ CMD	0_21	Bar code reader #2: Error at bar code reader.	**1.** Inspect the sample to see if the bar code label is readable. **2.** Press **PAUSE/RUN**.
BUZZ CMD	0_22	Bar code reader #2: Positioning error at bar code reader.	**1.** Inspect the sample to see if the bar code label is readable. **2.** Remove the sample and press **PAUSE/RUN**.
BUZZ CMD	0_23	Bar code reader #2: 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**.
SN01 OFF	1_01	Rack #1 is not set correctly.	Set the rack correctly.
SN02 OFF	1_02	Rack #2 is not set correctly.	Set the rack correctly.
SN03 OFF	1_03	Rack #3 is not set correctly.	Set the rack correctly.
SN04 ON	1_04	A sample was not loaded into the sample tube carrier.	Confirm that loading/retrieving of sample tubes works correctly. If necessary, adjust the fiber sensor SN04.
SN05 ON	1_05	A sample was not retrieved from the sample tube carrier.	Confirm that loading/retrieving of sample tubes works correctly. If necessary, adjust the fiber sensor SN05.
SN40	1_40	Error at proximity sensor SN40 in the inner lane.	**1.** Confirm that the sensor works correctly. The Red LED should be on when a carrier is within range of SN40. **2.** Press **PAUSE/RUN** to clear the error.

Table 4.4 1020-tube Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN43 PAS	1_43	The expected sample tube carrier did not arrive at SN43 within the specified period of time. This error is associated with fiber optic sensor SN44.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN43 to turn it ON.
SN44 ON	1_44	The sample tube being picked up by the loading arm gripper might have fallen out of the gripper fingers, so SN44 still senses the tube in the sample tube carrier.	**1.** Remove the sample tube from the tube carrier in front of SN44 and place the tube in the loading arm gripper fingers. **2.** Press **PAUSE**/**RUN** to continue. **IMPORTANT** DO NOT put a sample tube in the sample tube carrier below the SL07 loading arm gripper. This can result in bending the loading arm, and breaking the sample tube.
SN45 PAS	1_45	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #1 or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN45 to turn it ON.
SN48 PAS	1_48	Bar code reader #1 does not detect a sample tube carrier.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN48 to turn it ON.
SN49 OFF	1_49	Bar code reader #2 does not detect a sample tube.	Confirm that the sample tube was not retrieved from the sample tube carrier.
SN51 PAS	1_51	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #2).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN51 to turn it ON.
SN57 PAS	1_57	A passage sensor does not detect a sample tube carrier (after it passed the T-Lane sensor sorting #1 or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN57 to turn it ON.
SN58 PAS	1_58	A passage sensor does not detect a sample tube carrier (after it passed the T-Lane sensor sorting #1).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN58 to turn it ON.

Table 4.4 1020-tube Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN60 PAS	1_60	A passage sensor does not detect a sample tube carrier (after it passed the stopper under T-Lane sensor SN57).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN60 to turn it ON.
SN62 PAS	1_62	A passage sensor does not detect a sample tube carrier (after it passed the T-Lane sensor sorting #2).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN62 to turn it ON.
SN63 PAS	1_63	A passage sensor does not detect a sample tube carrier (after it passed the T-Lane sensor sorting #2).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN63 to turn it ON.
SN65 PAS	1_65	A passage sensor does not detect a sample tube carrier (after it passed the stopper under T-Lane sensor SN64).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN65 to turn it ON.
SN66 PAS	1_66	A passage sensor does not detect a sample tube carrier (after it passed the stopper under T-Lane sensor SN65).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN66 to turn it ON.
SL01 ON	2_01	Cylinder error: a sample tube did not load into a sample tube carrier.	Confirm that the transfer-arm movement is not blocked.
SL01 OFF			
SL02 ON	2_02	Cylinder error: a sample tube was not retrieved from a sample tube carrier.	Confirm that the transfer-arm movement is not blocked.
SL02 OFF			
SL03 ON	2_03	Error of Z-axis cylinder on the transfer-arm.	Confirm that the transfer-arm movement is not blocked.
SL03 OFF			
SL04 ON	2_04	Gripper error on the transfer-arm.	Confirm that AS07 is ON when the gripper is closed.
SL04 OFF			Confirm that AS07 is OFF when the gripper is closed.

Table 4.4 1020-tube Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL05 ON	2_05	Error of sample tube pushing cylinder.	Confirm that the sample pushing operates correctly.
SL05 OFF			Confirm that the pushing cylinder is returned.
SL06 ON	2_06	Error of rotating cylinder on the loading arm.	Confirm that the transfer-arm movement is not blocked.
SL06 OFF			
SL07 ON	2_07	Gripper error on the transfer-arm.	Confirm that AS12 is ON when the gripper is open.
SL07 OFF			Confirm that AS12 is OFF when the gripper is open.
SL08 ON	2_08	Error of rotating cylinder on the retrieving arm.	Confirm that the transfer-arm movement is not blocked.
SL08 OFF			
SL09 ON	2_09	Gripper error on the retrieving arm.	Confirm that AS15 is ON when the gripper is open.
SL09 OFF			Confirm that AS15 is OFF when the gripper is open.
SL20 ON	2_20	Error of Z-axis cylinder on the loading arm.	Confirm that the transfer-arm movement is not blocked.
SL20 OFF			
SL21 ON	2_21	Error of Z-axis cylinder on the retrieving arm.	Confirm that a sample tube carrier is not jammed.
SL21 OFF			
SL40 ON	2_40	Stopper error at the 2nd stopper before bar code reader #1.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL40 OFF			Confirm that AS40 is OFF.
SL41 ON	2_41	Stopper error before bar code reader #1.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL41 OFF			Confirm that AS41 is OFF.

Table 4.4 1020-tube Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL43 ON	2_43	Stopper error at bar code reader #1	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL43 OFF			Confirm that AS42 is OFF.
SL44 ON	2_44	Stopper error at the 2nd stopper before bar code reader #2.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL44 OFF			Confirm that AS43 is OFF.
SL45 ON	2_45	Stopper error at the stopper before bar code reader #2.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL45 OFF			Confirm that AS44 is OFF.
SL46 ON	2_46	Stopper error at bar code reader #2.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL46 OFF			Confirm that AS45 is OFF.
SL48 ON	2_48	Stopper error at the stopper before empty sample tube carrier waiting lane sorting position.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL48 OFF			Confirm that AS46 is OFF.
SL49 ON	2_49	Stopper error at the empty sample tube carrier waiting lane sorting position.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL49 OFF			Confirm that AS47 is OFF.
SL50 ON	2_50	Divider error at the empty sample tube carrier waiting lane sorting position.	Confirm that the divider works correctly.
SL50 OFF			
SL55 ON	2_55	Stopper error before the T-Lane sensor sorting position.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL55 OFF			Confirm that AS55 is OFF.

Table 4.4 1020-tube Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL56 ON	2_56	Stopper error at the T-Lane sensor sorting position.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL56 OFF			Confirm that AS56 is OFF.
SL57 ON	2_57	Divider error at the empty sample tube carrier waiting lane sorting position.	**1.** Confirm that a sample tube carrier is not jammed. **2.** Confirm that a divider is out.
SL57 OFF			**1.** Confirm that AS58 is ON. **2.** Confirm that a divider is in completely.
SL58 ON	2_58	Stopper error before the T-Lane empty sample tube carrier sorting position.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL58 OFF			Confirm that AS59 is OFF.
SL59 ON	2_59	Stopper error at the T-Lane empty sample tube carrier sorting position.	Confirm that AS60 is OFF.
SL59 OFF			Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL60 ON	2_60	Stopper error under the T-Lane sensor SN57.	Confirm that AS61 is OFF.
SL60 OFF			Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL61 ON	2_61	Stopper error at T-Lane sensor sorting position #2.	Confirm that AS62 is OFF.
SL61 OFF			Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL62 ON	2_62	Divider error at T-Lane sensor sorting position #2.	**1.** Confirm that a sample tube carrier is not jammed. **2.** Confirm that a divider is out.
SL62 OFF			**1.** Confirm that AS64 is ON. **2.** Confirm that a divider is in completely.
SL63 ON	2_63	Stopper error at the T-Lane empty sample tube carrier lane.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL63 OFF			Confirm that AS65 is OFF.

Table 4.4 1020-tube Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL64 ON	2_64	Stopper error at the T-Lane empty sample tube carrier lane.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL64 OFF			Confirm that AS66 is OFF.
BR01 INI	3_01	Bar code initialization or reader failure error.	Press **PAUSE**/**RUN** to continue sample processing. 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 motion error, X-axis (PM01).	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM02	4_02	Transfer-arm motion error, X-axis (PM02).	**1.** Check for and remove any obstructions **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
AS07 OFF	7_07	Error of auto switch at the transfer-arm gripper.	Confirm that the sample tube is held correctly. Adjust AS07.
AS07 OFF	7_12	Error of auto switch at the loading arm gripper.	Confirm that the sample tube is held correctly. Adjust AS12.
AS07 OFF	7_15	Error of auto switch at the retrieving arm gripper.	Confirm that the sample tube is held correctly. Adjust AS15.

3060-tube (standard-speed) Stockyard 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 3060-tube Stockyard keypad display. A brief description of the problem and a possible solution are also found in the table.

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes

Sensor	Keypad Display	Problem	Solution
BUZZ CMD	0_11	Bar code reader #1: Error at bar code reader.	Inspect the sample to see if the bar code label is readable. Press **PAUSE**/**RUN**.
BUZZ CMD	0_12	Bar code reader #1: Positioning error at bar code reader.	Inspect the sample to see if the bar code label is readable. Remove the sample and press **PAUSE**/**RUN**.
BUZZ CMD	0_13	Bar code reader #1: Invalid route code at bar code reader. Additional sample programming caused a sorting conflict.	Remove the sample tube and press **ENTER**. Remove the sample tube and press **PAUSE**/**RUN**.
BUZZ CMD	0_21	Bar code reader #2: Error at bar code reader.	Inspect the sample to see if the bar code label is readable. Press **PAUSE**/**RUN**.
BUZZ CMD	0_22	Bar code reader #2: Positioning error at bar code reader.	Inspect the sample to see if the bar code label is readable. Remove the sample and press **PAUSE**/**RUN**.
BUZZ CMD	0_23	Bar code reader #2: Invalid route code at bar code reader. Additional sample programming caused a sorting conflict.	Remove the sample tube and press **ENTER**. Remove the sample tube and press **PAUSE**/**RUN**.
SN01 OFF	1_01	Rack #1 is not set correctly.	Set the rack correctly.
SN02 OFF	1_02	Rack #2 is not set correctly.	Set the rack correctly.
SN03 OFF	1_03	Rack #3 is not set correctly.	Set the rack correctly.
SN04 ON	1_04	A sample was not loaded into the sample tube carrier on the first shelf.	Confirm that loading/retrieving of sample tubes works correctly. If necessary, adjust the fiber sensor SN04.
SN05 ON	1_05	A sample was not retrieved from the sample tube carrier on the first shelf.	Confirm that loading/retrieving of sample tubes works correctly. If necessary, adjust the fiber sensor SN05.
SN18 OFF	1_18	Rack #4 is not set correctly.	Set the rack correctly.
SN19 OFF	1_19	Rack #5 is not set correctly.	Set the rack correctly.
SN20 OFF	1_20	Rack #6 is not set correctly.	Set the rack correctly.
SN21 OFF	1_21	A sample was not loaded into its sample tube carrier on the second shelf.	Confirm that loading/retrieving of sample tubes works correctly. If necessary, adjust the fiber sensor SN21.

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN22 OFF	1_22	A sample was not retrieved from its sample tube carrier on the second shelf.	Confirm that loading/retrieving of sample tubes works correctly. If necessary, adjust the fiber sensor SN22.
SN29 OFF	1_29	Rack #7 is not set correctly.	Set the rack correctly.
SN30 OFF	1_30	Rack #8 is not set correctly.	Set the rack correctly.
SN31 OFF	1_31	Rack #9 is not set correctly.	Set the rack correctly.
SN32 OFF	1_32	A sample was not loaded into its sample tube carrier on the third shelf.	Confirm that loading/retrieving of sample tubes works correctly. If necessary, adjust the fiber sensor SN32.
SN33 OFF	1_33	A sample was not retrieved from its sample tube carrier on the third shelf.	Confirm that loading/retrieving of sample tubes works correctly. If necessary, adjust the fiber sensor SN33.
SN43 PAS	1_43	Bar code reader #2 does not detect a sample.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN43 to turn it ON.
SN44 ON	1_44	The grippers of the retrieve transfer-arm did not hold the sample tube carrier.	Confirm that the grippers did not hold the sample tube carrier. Adjust the fiber sensor SN44.
SN45 PAS	1_45	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #1 or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN45 to turn it ON.
SN48 PAS	1_48	Bar code reader #1 does not detect a sample tube carrier.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN48 to turn it ON.
SN49 ON	1_49	Bar code reader #2 does not detect a sample tube.	Confirm that the sample tube was not retrieved from its sample tube carrier.
SN51 PAS	1_51	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #2).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN51 to turn it ON.

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN57 PAS	1_57	A passage sensor does not detect a sample tube carrier (after it passed the T-Lane sensor sorting #1 or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN57 to turn it ON.
SN58 PAS	1_58	A passage sensor does not detect a sample tube carrier (after it passed the T-Lane sensor sorting #1).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN58 to turn it ON.
SN60 PAS	1_60	A passage sensor does not detect a sample tube carrier (after it passed the stopper under T-Lane sensor SN57).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN60 to turn it ON.
SN62 PAS	1_62	A passage sensor does not detect a sample tube carrier (after it passed the T-Lane sensor sorting #2).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN62 to turn it ON.
SN63 PAS	1_63	A passage sensor does not detect a sample tube carrier (after it passed the T-Lane sensor sorting #2).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN63 to turn it ON.
SN65 PAS	1_65	A passage sensor does not detect a sample tube carrier (after it passed the stopper under T-Lane sensor SN64).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN65 to turn it ON.
SN66 PAS	1_66	A passage sensor does not detect a sample tube carrier (after it passed the T-Lane sorting).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN66 to turn it ON.
SL01 OFF	2_01	Cylinder error: a sample tube did not load into a sample tube carrier on the first shelf.	Confirm that the first shelf sample tube carrier is completely in.
SL01 ON			Confirm that the first shelf sample tube carrier is completely out.
SL02 OFF	2_02	Cylinder error: a sample tube was not retrieved from a sample tube carrier on the first shelf.	Confirm that the first shelf sample tube carrier is completely in.
SL02 ON			Confirm that the first shelf sample tube carrier is completely out.

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL03 OFF	2_03	Error on cylinder of first shelf transfer-arm Z-axis.	Confirm that the arm lifts up correctly.
SL03 ON			Reset the sample and confirm a correct position for sample on CPU screen.
SL04 ON	2_04	Gripper error on the transfer-arm.	Confirm that AS07 is ON when the gripper is closed.
SL04 OFF			Confirm that AS07 is OFF when the gripper is closed.
SL05 OFF	2_05	Error of the first shelf pushing cylinder.	Confirm that a pushing cylinder is pulled accurately.
SL05 ON			Confirm that the pushing cylinder is not blocked.
SL06 OFF	2_06	Error of rotating cylinder on the loading arm.	Confirm that the arm movement is not blocked.
SL06 ON			
SL07 ON	2_07	Gripper error on the transfer-arm.	Confirm that AS12 is ON when the gripper is open.
SL07 OFF			Confirm that AS12 is OFF when the gripper is open.
SL08 OFF	2_08	Error of rotating cylinder on the retrieving arm.	Confirm that the arm movement is not blocked.
SL08 ON			
SL09 ON	2_09	Gripper error on the retrieving arm.	Confirm that AS15 is ON when the gripper is open.
SL09 OFF			Confirm that AS15 is OFF when the gripper is open.
SL10 OFF	2_10	Cylinder error: a sample tube did not load into a sample tube carrier on the second shelf.	Confirm that the second shelf sample tube carrier is completely in.
SL10 ON			Confirm that the second shelf sample tube carrier is completely out.
SL11 OFF	2_11	Cylinder error: a sample tube was not retrieved from a sample tube carrier on the second shelf.	Confirm that the second shelf sample tube carrier is completely in.
SL11 ON			Confirm that the second shelf sample tube carrier is completely out.
SL12 ON	2_12	Error on cylinder of second shelf transfer-arm Z-axis.	Reset the sample and confirm a correct position for sample on CPU screen.
SL12 OFF			Confirm that the arm lifts up correctly.

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL14 OFF	2_14	Error of the second shelf pushing cylinder.	Confirm that a pushing cylinder is pulled accurately.
SL14 ON			Confirm that the pushing cylinder is not blocked.
SL15 OFF	2_15	Cylinder error: a sample tube did not load into a sample tube carrier on the third shelf.	Confirm that the third shelf sample tube carrier is completely in.
SL15 ON			Confirm that the third shelf sample tube carrier is completely out.
SL16 OFF	2_16	Cylinder error: a sample tube was not retrieved from a sample tube carrier on the third shelf.	Confirm that the third shelf sample tube carrier is completely in.
SL16 ON			Confirm that the third shelf sample tube carrier is completely out.
SL17 ON	2_17	Error on cylinder of third shelf transfer-arm Z-axis.	Reset the sample and confirm a correct position for sample on CPU screen.
SL17 OFF			Confirm that the arm lifts up correctly.
SL19 ON	2_19	Error of the third shelf pushing cylinder.	Confirm that the pushing cylinder is not blocked.
SL19 OFF			Confirm that the pushing cylinder is pulled accurately.
SL40 ON	2_40	Stopper error at the 2nd stopper before bar code reader #1.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL40 OFF			Confirm that AS40 is OFF.
SL41 ON	2_41	Stopper error before bar code reader #1.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL41 OFF			Confirm that AS41 is OFF.
SL43 ON	2_43	Stopper error at bar code reader #1.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL43 OFF			Confirm that AS42 is OFF.
SL44 ON	2_44	Stopper error at the 2nd stopper before bar code reader #2.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL44 OFF			Confirm that AS43 is OFF.

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL45 ON	2_45	Stopper error at the stopper before bar code reader #2.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL45 OFF			Confirm that AS44 is OFF.
SL46 ON	2_46	Stopper error at bar code reader #2.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL46 OFF			Confirm that AS45 is OFF.
SL48 ON	2_48	Stopper error at the stopper before empty sample tube carrier waiting lane sorting position.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL48 OFF			Confirm that AS46 is OFF.
SL49 ON	2_49	Stopper error at the empty sample tube carrier waiting lane sorting position.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL49 OFF			Confirm that AS47 is OFF.
SL50 ON	2_50	Divider error at the empty sample tube carrier waiting lane sorting position.	**1.** Confirm that a sample tube carrier is not jammed. **2.** Confirm that a divider is out.
SL50 OFF			**1.** Confirm AS49 is turned OFF. **2.** Confirm a divider is completely in.
SL55 OFF	2_55	Error of the stopper before T-Lane sensor sorting position.	Confirm that AS55 is turned OFF.
SL55 ON			Confirm that a sample tube carrier is not jammed.
SL56 OFF	2_56	Stopper error, T-Lane sensor sorting position 1.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL56 ON			Confirm that AS56 is turned OFF.
SL57 OFF	2_57	Divider error, T-Lane sensor sorting position 1.	**1.** Confirm that AS58 is turned OFF. **2.** Confirm that a divider is completely in.
SL57 ON			**1.** Confirm that a sample tube carrier is not jammed. **2.** Confirm that a divider is out.

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL58 ON	2_58	Error of the stopper before T-Lane empty sample tube carrier sorting position.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL58 OFF			Confirm that AS59 is turned OFF.
SL59 ON	2_59	Stopper error, T-Lane empty sample tube carrier sorting position.	Confirm that AS60 is turned OFF.
SL59 OFF			Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL60 ON	2_60	Error stopper under the T-Lane SN57.	Confirm that AS61 is turned OFF.
SL60 OFF			Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL61 OFF	2_61	Stopper error, T-Lane sensor sorting position 2.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL61 ON			Confirm that AS62 is turned OFF.
SL62 OFF	2_62	Divider error, T-Lane sensor sorting position 2.	**1.** Confirm that AS64 is turned ON. **2.** Confirm that a divider is completely in.
SL62 ON			**1.** Confirm that a sample tube carrier is not jammed. **2.** Confirm that a divider is out.
SL63 OFF	2_63	Stopper error, T-Lane empty sample tube carrier lane.	Confirm that AS65 is turned OFF.
SL63 ON			Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL64 ON	2_64	Stopper error, T-Lane empty sample tube carrier lane.	Confirm that AS66 is turned OFF.
SL64 OFF			Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL65 OFF	2_65	Divider error, T-Lane sorting.	Confirm that the sorting divider works correctly.
SL65 ON			

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL66 OFF	2_66	Error of stopper before empty return lane sorting position.	Confirm that AS69 is turned OFF.
SL66 ON			Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL67 ON	2_67	Stopper error, empty return lane sorting position.	Confirm that AS70 is turned OFF.
SL67 OFF			Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
BR01 INI	3_01	Bar code initialization or reader failure error.	**1.** Press **PAUSE/RUN** to continue sample processing. **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.
BCR COM			
BR02 INI	3_02	Error during initialization at bar code reader #2.	**1.** Confirm that bar code reader cable is connected and not damaged. **2.** Reset the power of this unit, and rerun with the operational panel.
BCR COM		Error during bar code reading process at bar code reader #2.	
PM01	4_01	Transfer-arm motion error on first shelf, X-axis (PM01).	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM02	4_02	Transfer-arm motion error on first shelf, Y-axis (PM02).	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
PM03	4_03	Transfer-arm motion error on rear of module, left side, Z-axis (PM03).	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM04	4_04	Transfer-arm motion error on rear of module, right side, Z-axis (PM04).	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM05	4_05	Transfer-arm motion error on second shelf, X-axis (PM05).	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM06	4_06	Transfer-arm motion error on second shelf, Y-axis (PM06).	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM07	4_07	Transfer-arm motion error on third shelf, X-axis (PM07).	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.

Table 4.5 3060-tube (standard-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
PM08	4_08	Transfer-arm motion error on third shelf, Y-axis (PM08).	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
AS07 OFF	7_07	The first shelf transfer-arm grippers could not hold the sample securely.	Check to see if the arm is trying to remove a tube from the rack. Then do the following: **1.** If the sample location is empty, add a tube to the gripper. **2.** If the tube is present but not in gripper, manually insert the tube into the gripper. **3.** If tube is in gripper but not being detected, call Beckman Coulter service. **4.** Press **PAUSE**/**RUN**.
AS12 ON	7_12	The auto switch was turned ON when the inlet arm grippers have to be closed.	Confirm that the grippers are completely closed, or confirm that AS12 is turned OFF.
AS12 OFF		The loading transfer-arm grippers could not hold the sample securely.	The grippers did not hold the sample, or adjust fiber sensor SN12.
AS15 OFF	7_15	The retrieving transfer-arm grippers could not hold the sample securely.	Press **PAUSE**/**RUN**.
AS22 OFF	7_22	The second shelf transfer-arm grippers could not hold the sample securely.	Check to see if the arm is trying to remove a tube from the rack. Then do the following: **1.** If the sample location is empty, add a tube to the gripper. **2.** If the tube is present but not in gripper, manually insert the tube into the gripper. **3.** If tube is in gripper but not being detected, call Beckman Coulter service. **4.** Press **PAUSE**/**RUN**.
AS31 OFF	7_31	The third shelf transfer-arm grippers could not hold the sample securely.	Check to see if the arm is trying to remove a tube from the rack. Then do the following: **1.** If the sample location is empty, add a tube to the gripper. **2.** If the tube is present but not in gripper, manually insert the tube into the gripper. **3.** If tube is in gripper but not being detected, call Beckman Coulter service. **4.** Press **PAUSE**/**RUN**.

3060-tube (high-speed) Stockyard Error Codes

Table 4.6 represents Error Codes as they appear in the Line Control Computer Systems Error Log and Error Signals as they appear on the 3060-tube (high-speed) Stockyard keypad display. A brief description of the problem and a possible solution are also found in the table.

Table 4.6 3060-tube (high-speed) Stockyard Error Codes

Sensor	Keypad Display	Problem	Solution
BUZZ CMD	0_11	Bar code reader #1: Error at bar code reader.	Inspect the sample to see if the bar code label is readable. Press **PAUSE**/**RUN**.
BUZZ CMD	0_12	Bar code reader #1: Positioning error at bar code reader.	Inspect the sample to see if the bar code label is readable. Remove the sample and press **PAUSE**/**RUN**.
BUZZ CMD	0_13	Bar code reader #1: Invalid route code at bar code reader. Additional sample programming caused a sorting conflict.	Remove the sample tube and press **ENTER**. Remove the sample tube and press **PAUSE**/**RUN**.
BUZZ CMD	0_21	Bar code reader #2: Error at bar code reader.	Inspect the sample to see if the bar code label is readable. Press **PAUSE**/**RUN**.
BUZZ CMD	0_22	Bar code reader #2: Positioning error at bar code reader.	Inspect the sample to see if the bar code label is readable. Remove the sample and press **PAUSE**/**RUN**.
BUZZ CMD	0_23	Bar code reader #2: Invalid route code at bar code reader. Additional sample programming caused a sorting conflict.	Remove the sample tube and press **ENTER**. Remove the sample tube and press **PAUSE**/**RUN**.
SN03 PAS	1_03	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN03 to turn it ON.
SN04 PAS	1_04	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN04 to turn it ON.
SN07 PAS	1_07	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN07 to turn it ON.
SN08 PAS	1_08	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN08 to turn it ON.

Table 4.6 3060-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN15 PAS	1_15	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN15 to turn it ON.
SN22 PAS	1_22	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN22 to turn it ON.
SN23 ON	1_23	Loading gripper arm failed to pick up the tube from the shuttle cup.	Manually place the tube in the gripper and clean fiber optic sensor. If the error occurs again, contact a Beckman Coulter Representative.
SN24 PAS	1_24	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN24 to turn it ON.
SN26 PAS	1_26	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN26 to turn it ON.
SN28 PAS	1_28	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN28 to turn it ON.
SN29 OFF	1_29	Unload arm failed to put a sample tube into a shuttle cup.	**1.** Inspect the area for a dropped tube. **2.** Manually place the tube in the shuttle cup and continue. **3.** If the error occurs again, contact a Beckman Coulter Representative.
SN30 PAS	1_30	A passage sensor does not detect a sample tube carrier (after it passed bar code reader #x or the empty sample tube carrier lane).	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metallic object in front of SN30 to turn it ON.
SN71 ON	1_71	Unknown sample tube is present in the 1st shelf loading shuttle cup.	Manually remove the sample tube from the 1st shelf loading shuttle cup. If no tube is found in the carrier, check that sensor (SN71) is working correctly.
SN71 OFF	1_71	The 1st shelf loading shuttle cup sensor did not turn ON while loading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN71) is working correctly.

Table 4.6 3060-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN72 ON	1_72	Unknown sample tube is present in the 1st shelf unloading shuttle cup.	Manually remove the sample tube from the 1st shelf unloading shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN72) is working correctly.
SN72 OFF	1_72	The 1st shelf unloading shuttle cup sensor did not turn ON while unloading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN72) is working correctly.
SN73 ON	1_73	Unknown sample tube is present in the 2nd shelf loading shuttle cup.	Manually remove the sample tube from the 2nd shelf loading shuttle cup. If no tube is found in the carrier, check that sensor (SN73) is working correctly.
SN73 OFF	1_73	The 2nd shelf loading shuttle cup sensor did not turn ON while loading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN73) is working correctly.
SN74 ON	1_74	Unknown sample tube is present in the 2nd shelf unloading shuttle cup.	Manually remove the sample tube from the 2nd shelf unloading shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN74) is working correctly.
SN74 OFF	1_74	The 2nd shelf unloading shuttle cup sensor did not turn ON while unloading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN74) is working correctly.
SN75 ON	1_75	Unknown sample tube is present in the 3rd shelf loading shuttle cup.	Manually remove the sample tube from the 3rd shelf loading shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN75) is working correctly.
SN75 OFF	1_75	The 3rd shelf loading shuttle cup sensor did not turn ON while loading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN75) is working correctly.
SN76 ON	1_76	Unknown sample tube is present in the 3rd shelf unloading shuttle cup.	Manually remove the sample tube from the 3rd shelf unloading shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN76) is working correctly.
SN76 OFF	1_76	The 3rd shelf unloading shuttle cup sensor did not turn ON while unloading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN76) is working correctly.
SL01 ERR	2_01	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL02 ERR	2_02	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL03 ERR	2_03	Divider error. The Divider is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL05 ERR	2_05	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.

Table 4.6 3060-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL06 ERR	2_06	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL07 ERR	2_07	Divider error. The Divider is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL11 ERR	2_11	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL12 ERR	2_12	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL13 ERR	2_13	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL14 ERR	2_14	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL15 ERR	2_15	Divider error. The Divider is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL21 ERR	2_21	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL22 ERR	2_22	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL23 ERR	2_23	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL24 ERR	2_24	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL25 ERR	2_25	Stopper error.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL26 ERR	2_26	Divider error. The Divider is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL28 ERR	2_28	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.

Table 4.6 3060-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL29 ERR	2_29	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL30 ERR	2_30	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL31 ERR	2_31	Error on loading arm rotating cylinder.	Confirm nothing is interfering with the loading arm movement.
SL33 ERR	2_33	Error on unloading arm rotating cylinder.	Confirm nothing is interfering with the unloading arm movement.
SL41 ERR	2_41	Error on the 1st shelf inside arm Z-axis cylinder.	Check that the 1st shelf inside arm Z-axis ascends completely and does not touch anything while descending.
SL44 ERR	2_44	Error on the 1st shelf sample pushing cylinder.	Check that the 1st shelf pushing cylinder is extended or retracted completely and does not touch anything while ascending.
SL51 ERR	2_51	Error on the 2nd shelf inside arm Z-axis cylinder.	Check that the 2nd shelf inside arm Z-axis ascends completely and does not touch anything while descending.
SL54 ERR	2_54	Error on the 2nd shelf sample pushing cylinder.	Check that the 2nd shelf pushing cylinder is retracted completely and does not touch anything while ascending.
SL61 ERR	2_61	Error on the 3rd shelf inside arm Z-axis cylinder.	Check that the 3rd shelf inside arm Z-axis ascends completely and does not touch anything while descending.
SL64 ERR	2_64	Error on the 3rd shelf sample pushing cylinder.	Check that the 3rd shelf pushing cylinder is retracted completely and does not touch anything while ascending.
SL71 ERR	2_71	Error on cylinder of the 1st shelf loading shuttle cup.	**1.** Verify the 1st shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL73 ERR	2_73	Error on cylinder of 1st shelf unloading shuttle cup.	**1.** Verify the 1st shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL75 ERR	2_75	Error on cylinder of the 2nd shelf loading shuttle cup.	**1.** Verify the 2nd shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).

Table 4.6 3060-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL77 ERR	2_77	Error on cylinder of the 2nd shelf unloading shuttle cup.	**1.** Verify the 2nd shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL79 ERR	2_79	Error on cylinder of the 3rd shelf loading shuttle cup.	**1.** Verify the 3rd shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL81 ERR	2_81	Error on cylinder of the 3rd shelf unloading shuttle cup.	**1.** Verify the 3rd shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
BR01 INI	3_01	Bar code initialization or reader failure error.	**1.** Press **PAUSE**/**RUN** to continue sample processing. **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.
BR02 INI	3_02	Bar code initialization error at bar code reader #2.	**1.** Press **PAUSE**/**RUN** to continue sample processing. **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.
PM01 OFF	4_01	Transfer-arm motion error on first shelf inside arm X-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM02 OFF	4_02	Transfer-arm motion error on first shelf inside arm Y-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.

Table 4.6 3060-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
PM03 OFF	4_03	Transfer-arm motion error on rear of module, left (loading) side, Z-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM04 OFF	4_04	Transfer-arm motion error on the rear of module, right (unloading) side, Z-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM05 OFF	4_05	Transfer-arm motion error on the second shelf arm X-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM06 OFF	4_06	Transfer-arm motion error on theon the second shelf arm Y-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM07 OFF	4_07	Transfer-arm motion error on the third shelf arm X-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.

Table 4.6 3060-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
PM08 OFF	4_08	Transfer-arm motion error on the third shelf arm Y-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
AS43	7_43	Inside gripper on the 1st shelf failed to detect a tube, or detected a tube when a tube was not expected.	Determine the gripper location. **1.** If the gripper is over the loading shuttle cup, a sample tube might have been dropped. • Locate the sample tube and place it into the empty loading cup, or... • Place an empty tube into the empty loading cup. **2.** If the gripper is over the unloading shuttle cup, and a sample tube is not in the cup, check for a tube in the gripper. If a tube is in the gripper, remove the tube and place it in the unloading cup. **3.** If the gripper is over a rack position, a tube might have been dropped or it was manually removed from the rack. • Place an empty tube into the rack below the gripper, and press **Enter**. Then place the tubes into the designated location. • Check for any dropped tubes in the stockyard, and use PrepLink to determine the correct location for any tubes found.

Table 4.6 3060-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
AS53	7_53	Inside gripper on the 2nd shelf failed to detect a tube, or detected a tube when a tube was not expected.	Determine the gripper location. **1.** If the gripper is over the loading shuttle cup, a sample tube might have been dropped. • Locate the sample tube and place it into the empty loading cup, or... • Place an empty tube into the empty loading cup. **2.** If the gripper is over the unloading shuttle cup, and a sample tube is not in the cup, check for a tube in the gripper. If a tube is in the gripper, remove the tube and place it in the unloading shuttle cup. **3.** If the gripper is over a rack position, a tube might have been dropped or it was manually removed from the rack. • Place an empty tube into the rack below the gripper, and press **Enter**. Then place the tubes into the designated location. • Check for any dropped tubes in the stockyard, and use PrepLink to determine the correct location for any tubes found.
AS63	7_63	Inside gripper on the 3rd shelf failed to detect a tube, or detected a tube when a tube was not expected.	Determine the gripper location. **1.** If the gripper is over the loading shuttle cup, a sample tube might have been dropped. • Locate the sample tube and place it into the empty loading cup, or... • Place an empty tube into the empty loading cup. **2.** If the gripper is over the unloading shuttle cup, and a sample tube is not in the cup, check for a tube in the gripper. If a tube is in the gripper, remove the tube and place it in the unloading shuttle cup. **3.** If the gripper is over a rack position, a tube might have been dropped or it was manually removed from the rack. • Place an empty tube into the rack below the gripper, and press **Enter**. Then place the tubes into the designated location. • Check for any dropped tubes in the stockyard, and use PrepLink to determine the correct location for any tubes found.
TEMP ERR	9_01	Stockyard internal temperature is not within the required temperature range.	Check the condition of refrigerator. To continue operation, press the **PAUSE/RUN** button.

5440-tube (high-speed) Stockyard 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 5440-tube (high-speed) Stockyard keypad display. A brief description of the problem and a possible solution are also found in the table.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes

Sensor	Keypad Display	Problem	Solution
BUZZ CMD	0_11	Bar code reader #1: Error at bar code reader.	Inspect the sample to see if the bar code label is readable. Press **PAUSE**/**RUN**.
BUZZ CMD	0_12	Bar code reader #1: Positioning error at bar code reader.	Inspect the sample to see if the bar code label is readable. Remove the sample and press **PAUSE**/**RUN**.
BUZZ CMD	0_13	Bar code reader #1: Invalid route code at bar code reader. Additional sample programming caused a sorting conflict.	Remove the sample tube and press **ENTER**. Remove the sample tube and press **PAUSE**/**RUN**.
BUZZ CMD	0_21	Bar code reader #2: Error at bar code reader.	Inspect the sample to see if the bar code label is readable. Press **PAUSE**/**RUN**.
BUZZ CMD	0_22	Bar code reader #2: Positioning error at bar code reader.	Inspect the sample to see if the bar code label is readable. Remove the sample and press **PAUSE**/**RUN**.
BUZZ CMD	0_23	Bar code reader #2: Invalid route code at bar code reader. Additional sample programming caused a sorting conflict.	Remove the sample tube and press **ENTER**. Remove the sample tube and press **PAUSE**/**RUN**.
SN03 PAS	1_03	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN03 to turn it ON.
SN04 PAS	1_04	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN04 to turn it ON.
SN07 PAS	1_07	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN07 to turn it ON.
SN08 PAS	1_08	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN08 to turn it ON.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN15 PAS	1_15	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN15 to turn it ON.
SN22 PAS	1_22	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN22 to turn it ON.
SN23 ON	1_23	Loading gripper arm failed to pick up a sample tube.	Manually place the tube in the gripper and clean fiber optic sensor. If the error occurs again, contact a Beckman Coulter Representative.
SN24 PAS	1_24	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN24 to turn it ON.
SN26 PAS	1_26	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN26 to turn it ON.
SN28 PAS	1_28	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN28 to turn it ON.
SN29 OFF	1_29	Unload arm failed to put sample tube into a carrier.	**1.** Inspect the area for a dropped tube. **2.** Manually place the tube in the shuttle cup and continue. **3.** If the error occurs again, contact a Beckman Coulter Representative.
SN30 PAS	1_30	Carrier passage error.	**1.** Check that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery. **2.** Place a metalic object in front of SN30 to turn it ON.
SN71 ON	1_71	Unknown sample tube is present in the 1st shelf Load shuttle cup.	Manually remove the sample tube from the 1st shelf Load shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN71) is working correctly, and adjust it if necessary.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN71 OFF	1_71	The 1st shelf Load shuttle cup sensor did not turn ON while loading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN71) is working correctly and adjust it if necessary.
SN72 ON	1_72	Unknown sample tube is present in the 1st shelf Unload shuttle cup.	Manually remove the sample tube from the 1st shelf Unload shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN72) is working correctly, and adjust it if necessary.
SN72 OFF	1_72	The 1st shelf Unload shuttle cup sensor did not turn ON while unloading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN72) is working correctly and adjust it if necessary.
SN73 ON	1_73	Unknown sample tube is present in the 2nd shelf Load shuttle cup.	Manually remove the sample tube from the 2nd shelf Load shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN73) is working correctly, and adjust it if necessary.
SN73 OFF	1_73	The 2nd shelf Load shuttle cup sensor did not turn ON while loading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN73) is working correctly and adjust it if necessary.
SN74 ON	1_74	Unknown sample tube is present in the 2nd shelf Unload shuttle cup.	Manually remove the sample tube from the 2nd shelf Unload shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN74) is working correctly, and adjust it if necessary.
SN74 OFF	1_74	The 2nd shelf Unload shuttle cup sensor did not turn ON while unloading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN74) is working correctly and adjust it if necessary.
SN75 ON	1_75	Unknown sample tube is present in the 3rd shelf Load shuttle cup.	Manually remove the sample tube from the 3rd shelf Load shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN75) is working correctly, and adjust it if necessary.
SN75 OFF	1_75	The 3rd shelf Load shuttle cup sensor did not turn ON while loading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN75) is working correctly and adjust it if necessary.
SN76 ON	1_76	Unknown sample tube is present in the 3rd shelf Unload shuttle cup.	Manually remove the sample tube from the 3rd shelf Unload shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN76) is working correctly, and adjust it if necessary.
SN76 OFF	1_76	The 3rd shelf Unload shuttle cup sensor did not turn ON while unloading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN76) is working correctly and adjust it if necessary.
SN77 ON	1_77	Unknown sample tube is present in the 4th shelf Load shuttle cup.	Manually remove the sample tube from the 4th shelf Load shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN77) is working correctly, and adjust it if necessary.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SN77 OFF	1_77	The 4th shelf Load shuttle cup sensor did not turn ON while loading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN77) is working correctly and adjust it if necessary.
SN78 ON	1_78	Unknown sample tube is present in the 4th shelf Unload shuttle cup.	Manually remove the sample tube from the 4th shelf Unload shuttle cup. If no tube is found in the shuttle cup, check that sensor (SN78) is working correctly, and adjust it if necessary.
SN78 OFF	1_78	The 4th shelf Unload shuttle cup sensor did not turn ON while loading.	Verify the samples are in the shuttle cup correctly. Check that sensor (SN78) is working correctly and adjust it if necessary.
SL01 ERR	2_01	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL02 ERR	2_02	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL03 ERR	2_03	Divider error. The Divider is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL05 ERR	2_05	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL06 ERR	2_06	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL07 ERR	2_07	Divider error. The Divider is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL11 ERR	2_11	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL12 ERR	2_12	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL13 ERR	2_13	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL14 ERR	2_14	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL15 ERR	2_15	Divider error. The Divider is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL21 ERR	2_21	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL22 ERR	2_22	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL23 ERR	2_23	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL24 ERR	2_24	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL25 ERR	2_25	Stopper error. The Stopper is not working CORRECTLY.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL26 ERR	2_26	Divider error. The Divider is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL28 ERR	2_28	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL29 ERR	2_29	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL30 ERR	2_30	Stopper error. The Stopper is not working correctly.	Confirm that a sample tube carrier is not jammed or stuck. Refer to CHAPTER 3, Jammed Sample Tube Carrier Recovery.
SL31 ERR	2_31	Error on the loading arm rotating cylinder.	Confirm nothing is interfering with the loading arm movement.
SL33 ERR	2_33	Error on the unloading arm rotating cylinder.	Confirm nothing is interfering with the unloading arm movement.
SL41 ERR	2_41	Error on the 1st shelf inside arm Z-axis cylinder.	Check that the 1st shelf inside arm Z-axis ascends completely and does not touch anything while descending.
SL44 ERR	2_44	Error on the 1st shelf sample pushing cylinder.	Check that the 1st shelf pushing cylinder is retracted completely and does not touch anything while ascending.
SL46 ERR	2_46	Cylinder error on the door at the 1st shelf loading area.	Check that AS46 turns ON when the door is opened and AS47 turns ON when the door is closed. Also, check that there is no obstruction preventing the door from opening or closing.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL48 ERR	2_48	Cylinder error on the door at the 1st shelf unloading area	Check that AS48 turns ON when the door is opened and AS49 turns ON when the door is closed. Also, check that there is no obstruction preventing the door from opening or closing.
SL51 ERR	2_51	Error on the 2nd shelf inside arm Z-axis cylinder.	Check that the 2nd shelf inside arm Z-axis ascends completely and does not touch anything while descending.
SL54 ERR	2_54	Error on the 2nd shelf sample pushing cylinder.	Check that the 2nd shelf pushing cylinder is retracted completely and does not touch anything while ascending.
SL56 ERR	2_56	Cylinder error on the door at the 2nd shelf loading area.	Check that AS56 turns ON when the door is opened and AS57 turns ON when the door is closed. Also, check that there is no obstruction preventing the door from opening or closing.
SL58 ERR	2_58	Cylinder error on the door at the 2nd shelf unloading area.	Check that AS58 turns ON when the door is opened and AS59 turns ON when the door is closed. Also, check that there is no obstruction preventing the door from opening or closing.
SL61 ERR	2_61	Error on the 3rd shelf inside arm Z-axis cylinder.	Check that the 3rd shelf inside arm Z-axis ascends completely and does not touch anything while descending.
SL64 ERR	2_64	Error on the 3rd shelf sample pushing cylinder.	Check that the 3rd shelf pushing cylinder is retracted completely and does not touch anything while ascending.
SL66 ERR	2_66	Cylinder error on the door at the 3rd shelf loading area.	Check if AS66 turns ON when the door is opened and AS67 turns ON when the door is closed. Also, check that there is no obstruction preventing the door from opening or closing.
SL68 ERR	2_68	Cylinder error on the door at the 3rd shelf unloading area.	Check if AS68 turns ON when the door is opened and AS69 turns ON when the door is closed. Also, check that there is no obstruction preventing the door from opening or closing.
SL71 ERR	2_71	Error on cylinder of 1st shelf loading shuttle cup.	**1.** Verify the 1st shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL73 ERR	2_73	Error on the cylinder of 1st shelf unloading shuttle cup.	**1.** Verify the 1st shelf unloading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL75 ERR	2_75	Error on the cylinder of 2nd shelf loading shuttle cup.	**1.** Verify the 2nd shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
SL77 ERR	2_77	Error on the cylinder of 2nd shelf unloading shuttle cup.	**1.** Verify the 2nd shelf unloading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL79 ERR	2_79	Error on the cylinder of 3rd shelf loading shuttle cup.	**1.** Verify the 3rd shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL81 ERR	2_81	Error on the cylinder of 3rd shelf unloading shuttle cup.	**1.** Verify the 3rd shelf unloading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL83 ERR	2_83	Error on the cylinder of 4th shelf loading shuttle cup.	**1.** Verify the 4th shelf loading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL85 ERR	2_85	Error on the cylinder of 4th shelf unloading shuttle cup.	**1.** Verify the 4th shelf unloading shuttle cup is completely in or completely out. **2.** Check for an obstruction (dropped tube or cap).
SL91 ERR	2_91	Error on the 4th shelf inside arm Z-axis cylinder.	Check that the 4th shelf inside arm Z-axis ascends completely and does not touch anything while descending.
SL94 ERR	2_94	Error on the 4th shelf sample pushing cylinder.	Check that the 4th shelf pushing cylinder is retracted completely and does not touch anything while ascending.
SL96 ERR	2_96	Cylinder error on the door at the 4th shelf loading area.	Check if AS96 turns ON when the door is opened and AS97 turns ON when the door is closed. Also, check that there is no obstruction preventing the door from opening or closing.
SL98 ERR	2_98	Cylinder error on the door at the 4th shelf unloading area.	Check if AS98 turns ON when the door is opened and AS99 turns ON when the door is closed. Also, check that there is no obstruction preventing the door from opening or closing.
BC01 INI	3_01	Bar code reader initialization error.	**1.** Press **PAUSE**/**RUN** to continue sample processing. **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 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
BR02 INI	3_02	Bar code initialization error at bar code reader #2.	**1.** Press **PAUSE/RUN** to continue sample processing. **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.
PM01 OFF	4_01	Transfer-arm motion error on the first shelf inside arm X-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM02 OFF	4_02	Transfer-arm motion error on the first shelf inside arm Y-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM03 OFF	4_03	Transfer-arm motion error on the rear of module, left (loading) side, Z-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by cycling the Power OFF and then ON. Refer to *General System Operation IFU,* System Shutdown and System Startup procedures. **3.** If the transfer-arm does not move to the Home position, or occurs again, contact a Beckman Coulter Representative.
PM04 OFF	4_04	Transfer-arm motion error on the rear of module, right (unloading) side, Z-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
PM05 OFF	4_05	Transfer-arm motion error on the second shelf arm X-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM06 OFF	4_06	Transfer-arm motion error on the second shelf arm Y-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM07 OFF	4_07	Transfer-arm motion error on the third shelf arm X-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM08 OFF	4_08	Transfer-arm motion error on the third shelf arm Y-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
PM09 OFF	4_09	Transfer-arm motion error on the fourth shelf arm X-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
PM10 OFF	4_10	Transfer-arm motion error on the fourth shelf arm Y-axis motor.	**1.** Check for and remove any obstructions. **2.** Reset the module by switching to **MANUAL** mode, then to **AUTO** mode. **3.** If the transfer-arm does not move to the Home position, contact a Beckman Coulter Representative. **4.** If the error occurs again, contact a Beckman Coulter Representative.
AS43	7_43	Inside gripper on the 1st shelf failed to detect a tube, or detected a tube when a tube was not expected.	Determine the gripper location. **1.** If the gripper is over the loading shuttle cup, a sample tube might have been dropped. • Locate the sample tube and place it into the empty loading cup, or... • Place an empty tube into the empty loading cup. **2.** If the gripper is over the unloading shuttle cup, and a sample tube is not in the cup, check for a tube in the gripper. If a tube is in the gripper, remove the tube and place it in the unloading cup. **3.** If the gripper is over a rack position, a tube might have been dropped or it was manually removed from the rack. • Place an empty tube into the rack below the gripper, and press **Enter**. Then place the tubes into the designated location. • Check for any dropped tubes in the stockyard, and use PrepLink to determine the correct location for any tubes found.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
AS53	7_53	Inside gripper on the 2nd shelf failed to detect a tube, or detected a tube when a tube was not expected.	Determine the gripper location. **1.** If the gripper is over the loading shuttle cup, a sample tube might have been dropped. • Locate the sample tube and place it into the empty loading cup, or... • Place an empty tube into the empty loading cup. **2.** If the gripper is over the unloading shuttle cup, and a sample tube is not in the cup, check for a tube in the gripper. If a tube is in the gripper, remove the tube and place it in the unloading cup. **3.** If the gripper is over a rack position, a tube might have been dropped or it was manually removed from the rack. • Place an empty tube into the rack below the gripper, and press **Enter**. Then place the tubes into the designated location. • Check for any dropped tubes in the stockyard, and use PrepLink to determine the correct location for any tubes found.
AS63	7_63	Inside gripper on the 3rd shelf failed to detect a tube, or detected a tube when a tube was not expected.	Determine the gripper location. **1.** If the gripper is over the loading shuttle cup, a sample tube might have been dropped. • Locate the sample tube and place it in the empty loading cup, or... • Place an empty tube into tube into the empty loading cup. **2.** If the gripper is over the unloading shuttle cup, and a sample tube is not in the cup, check for a tube in the gripper. If a tube is in the gripper, remove the tube and place it in the unloading cup. **3.** If the gripper is over a rack position, a tube might have been dropped or it was manually removed from the rack. • Place an empty tube into the rack below the gripper, and press **Enter**. Then place the tubes into the designated location. • Check for any dropped tubes in the stockyard, and use PrepLink to determine the correct location for any tubes found.

Table 4.7 5440-tube (high-speed) Stockyard Error Codes *(Continued)*

Sensor	Keypad Display	Problem	Solution
AS93	7_93	Inside gripper on the 4th shelf failed to detect a tube, or detected a tube when a tube was not expected.	Determine the gripper location. **1.** If the gripper is over the loading shuttle cup, a sample tube might have been dropped. • Locate the sample tube and place it in the empty loading cup, or... • Place an empty tube into tube into the empty loading cup. **2.** If the gripper is over the unloading shuttle cup, and a sample tube is not in the cup, check for a tube in the gripper. If a tube is in the gripper, remove the tube and place it in the unloading cup. **3.** If the gripper is over a rack position, a tube might have been dropped or it was manually removed from the rack. • Place an empty tube into the rack below the gripper, and press **Enter**. Then place the tubes into the designated location. • Check for any dropped tubes in the stockyard, and use PrepLink to determine the correct location for any tubes found.
TEMP ERR	9_01	Stockyard internal temperature is not within the required temperature range.	Check the condition of refrigerator. To continue operation, press the **PAUSE/RUN** button.

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

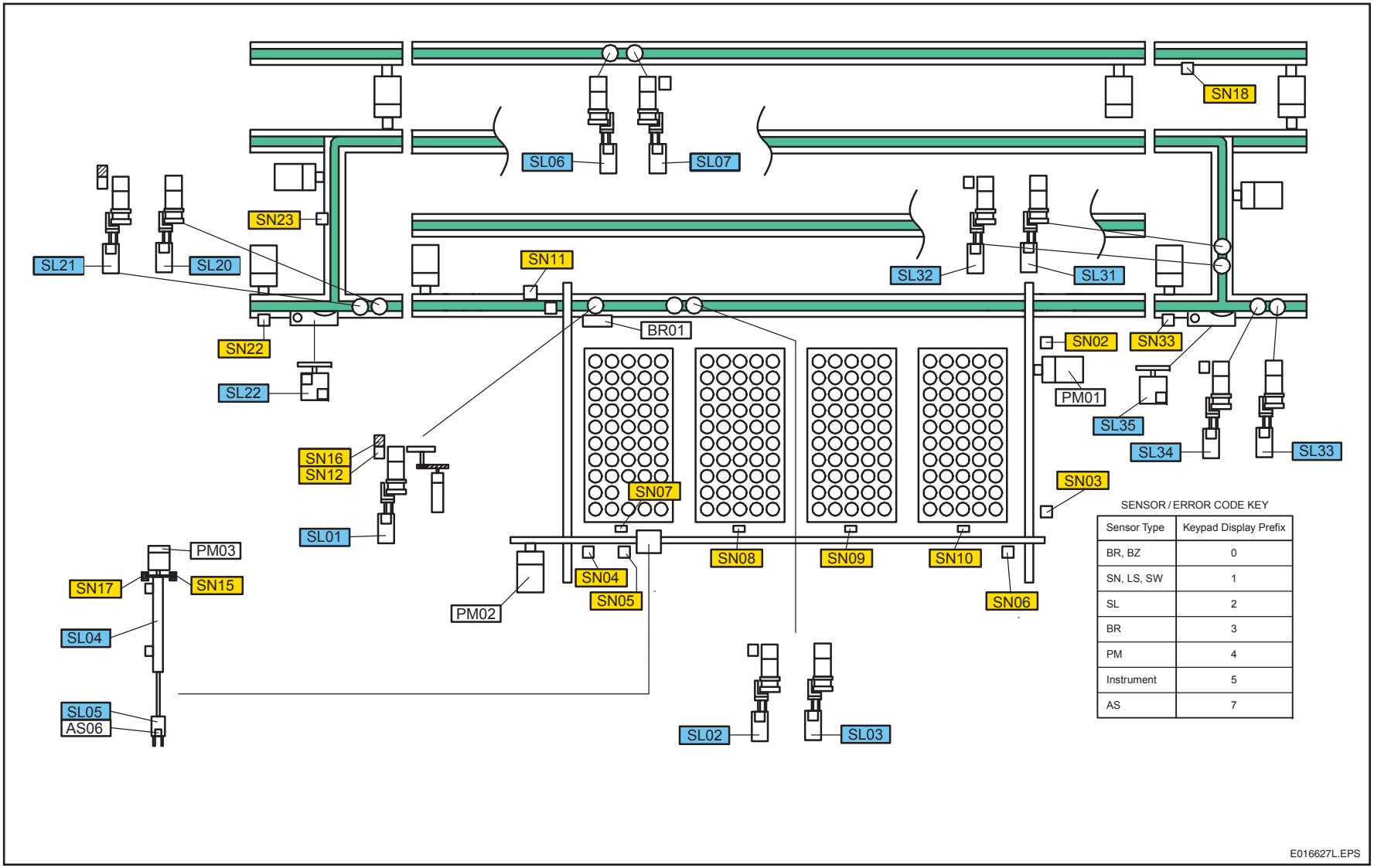
Each hardware module uses a series of magnetic, fiber optic and other sensors to detect sample tube carriers, sample tubes in sample tube carriers, hardware positioning, and whether or not a gripper has grasped a tube.

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 can happen anywhere along the track.

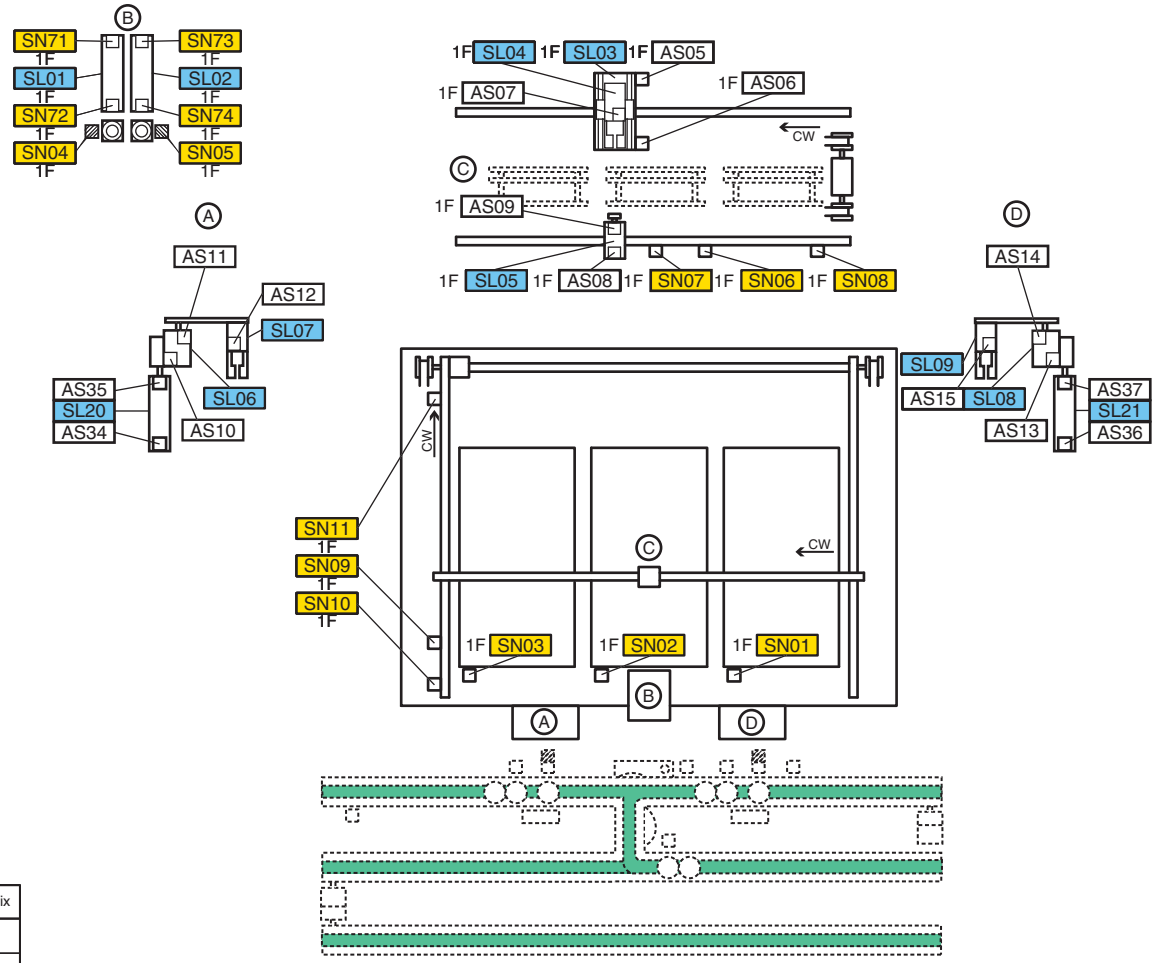
Outlet #2 (200-tube Stockyard)

Figure 4.1 Outlet #2 (200-tube Stockyard)



1020-tube Stockyard Main Body Side

Figure 4.2 1020-tube Stockyard Main Body Side



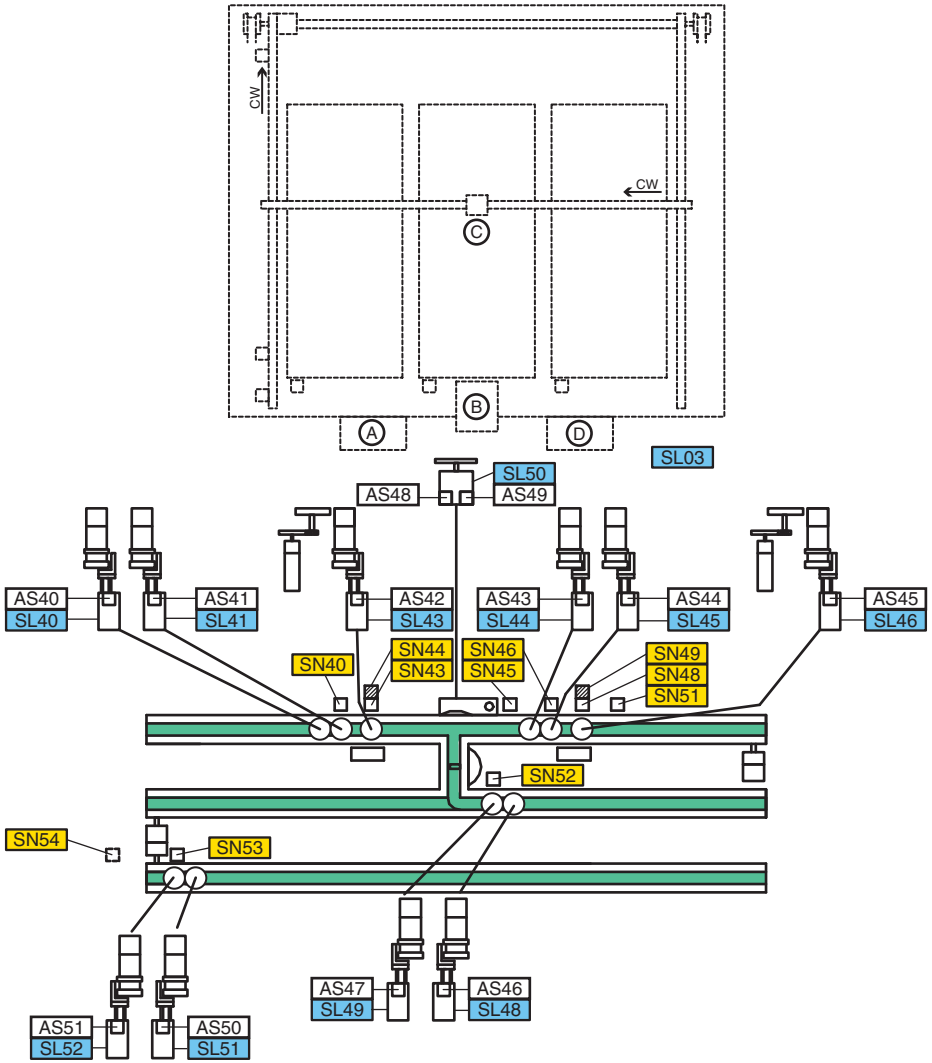
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Prefix
SN	1
SL	2

E014648L.EPS

1020-tube Stockyard Track Side

Figure 4.3 1020-tube Stockyard Track Side



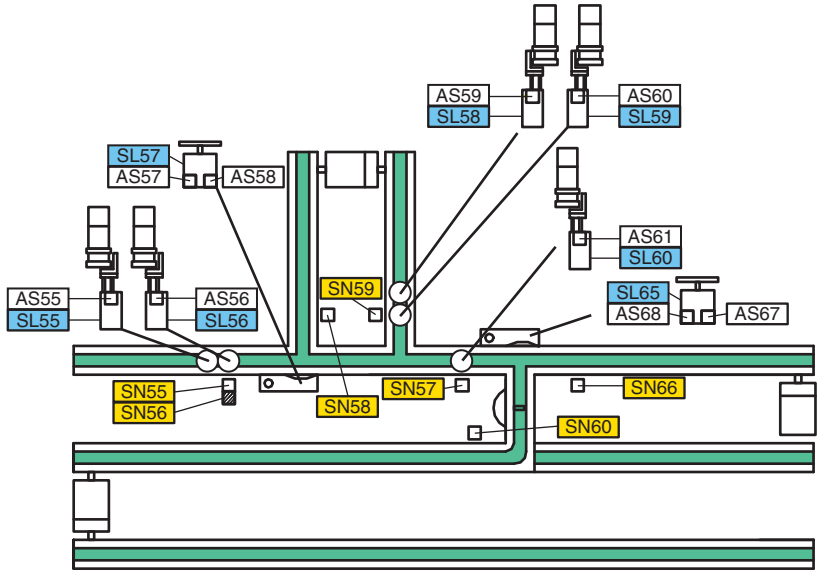
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Prefix
SN	1
SL	2

E014649L.EPS

1020-tube Stockyard T-Lane

Figure 4.4 1020-tube Stockyard T-Lane



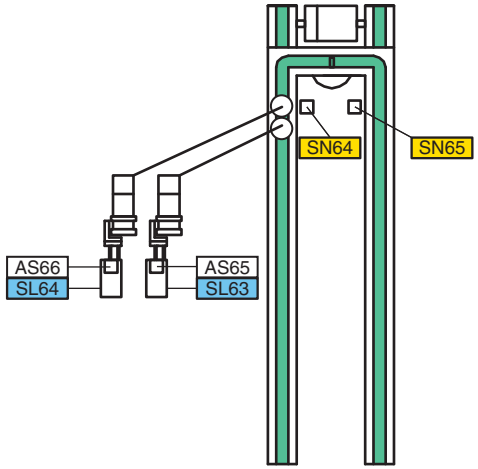
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Prefix
SN	1
SL	2

E014650L.EPS

1020-tube Stockyard U-Lane

Figure 4.5 1020-tube Stockyard U-Lane



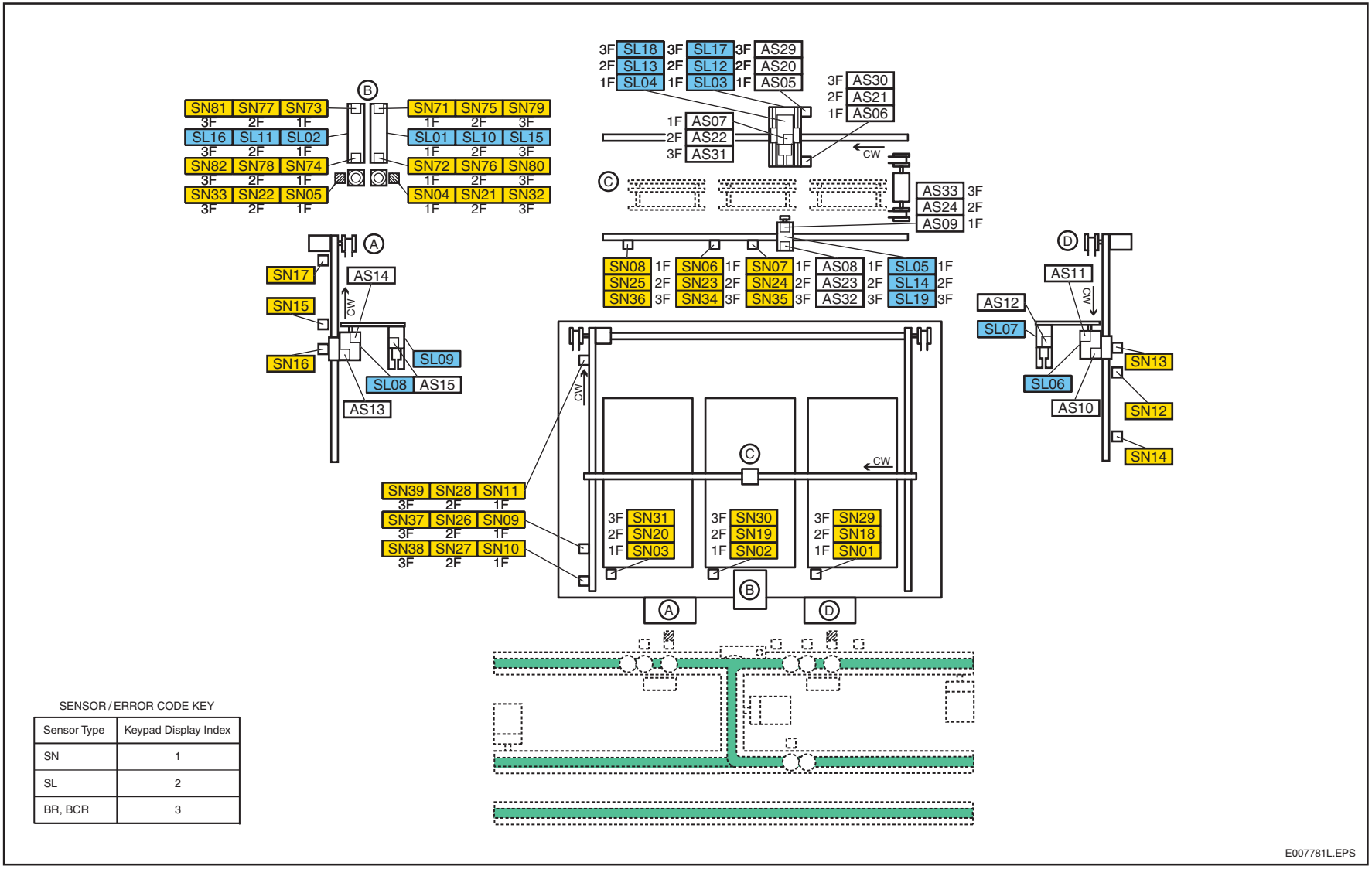
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Prefix
SN	1
SL	2

E014651L.EPS

3060-tube (standard-speed) Stockyard Main Body Side

Figure 4.6 3060-tube (standard-speed) Stockyard Main Body Side

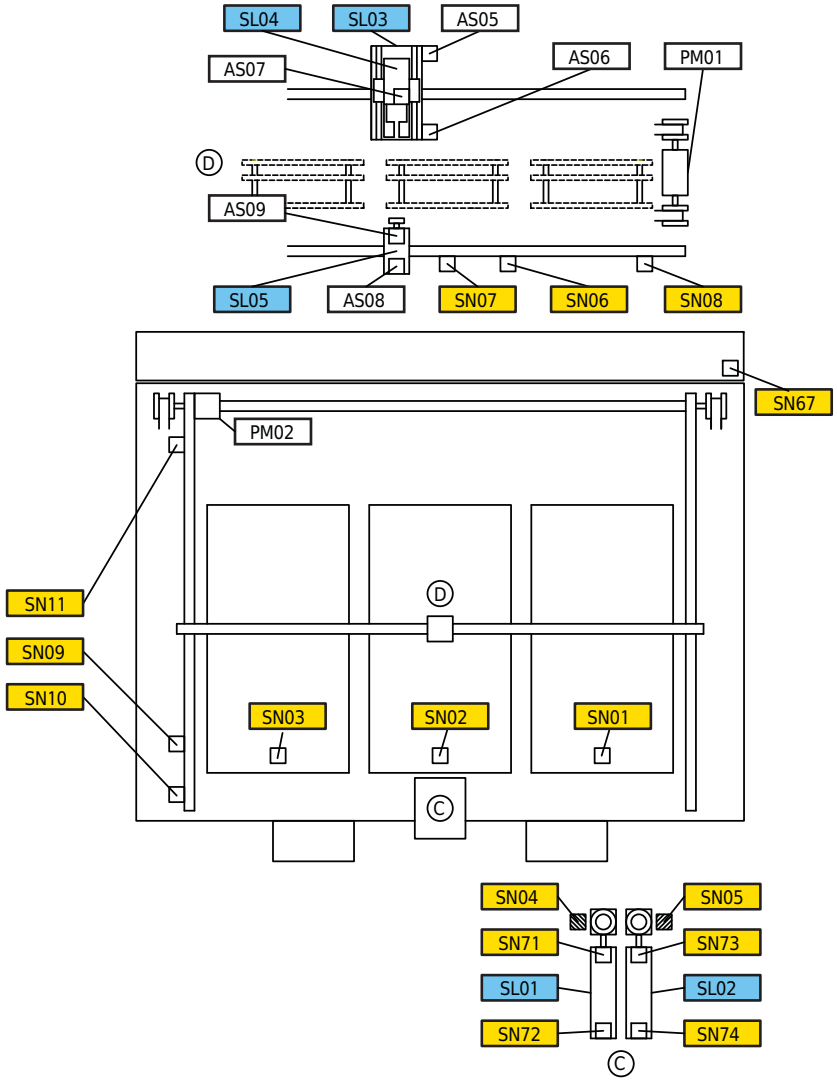


SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Index
SN	1
SL	2
BR, BCR	3

3060-tube (standard-speed) Stockyard First Shelf

Figure 4.7 3060-tube (standard-speed) Stockyard First Shelf



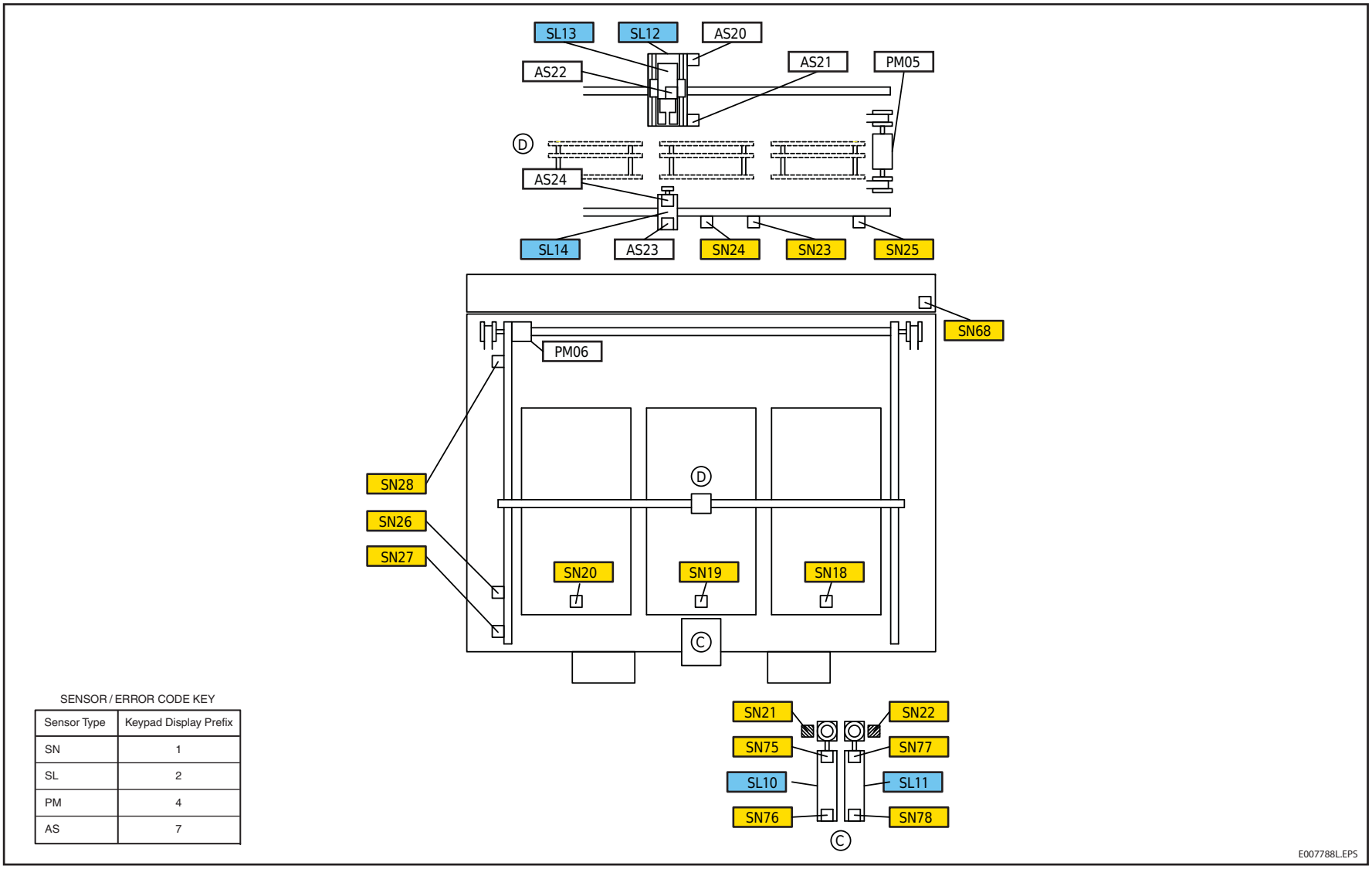
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Prefix
SN	1
SL	2
PM	4
AS	7

E007787L.EPS

3060-tube (standard-speed) Stockyard Second Shelf

Figure 4.8 3060-tube (standard-speed) Stockyard Second Shelf

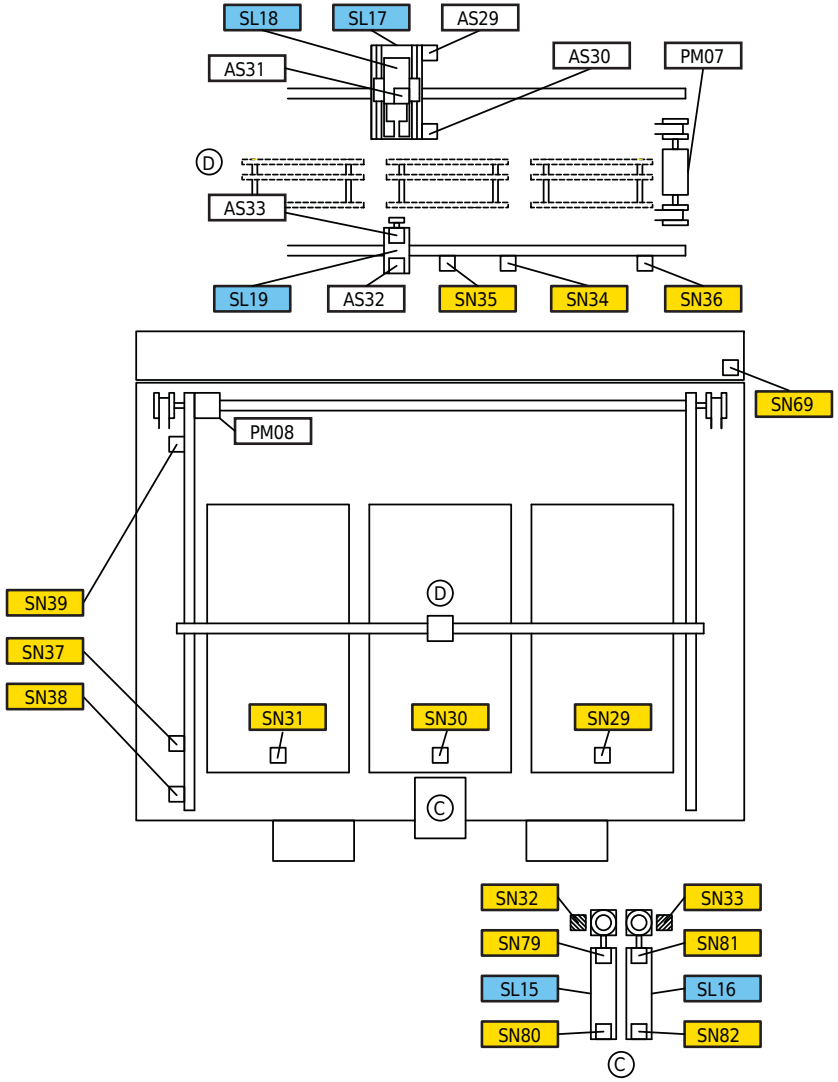


SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Prefix
SN	1
SL	2
PM	4
AS	7

3060-tube (standard-speed) Stockyard Third Shelf

Figure 4.9 3060-tube (standard-speed) Stockyard Third Shelf



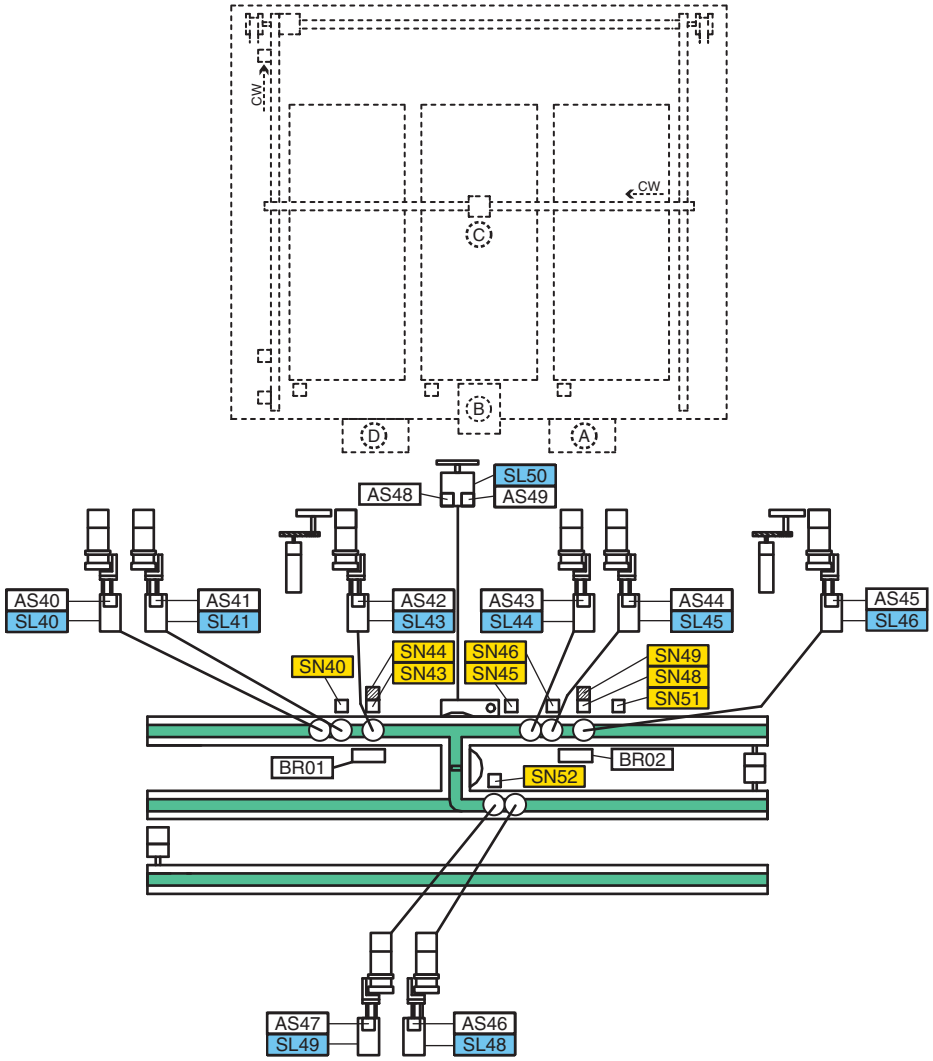
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Prefix
SN	1
SL	2
PM	4
AS	7

E007789L.EPS

3060-tube Stockyard Track Side

Figure 4.10 3060-tube Stockyard Track Side



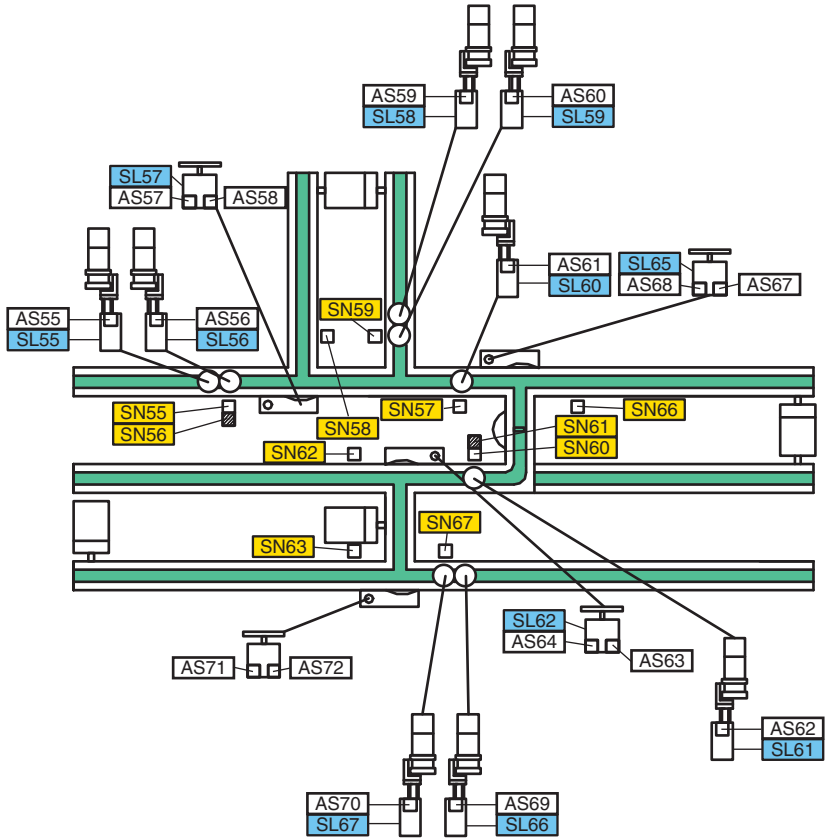
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Index
SN	1
SL	2
BR, BCR	3

E014654L.EPS

3060-tube Stockyard T-Lane

Figure 4.11 3060-tube Stockyard T-Lane



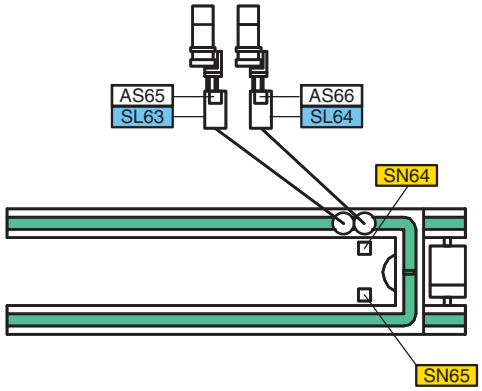
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Index
SN	1
SL	2
BR, BCR	3

E014655L.EPS

3060-tube Stockyard U-Lane

Figure 4.12 3060-tube Stockyard U-Lane



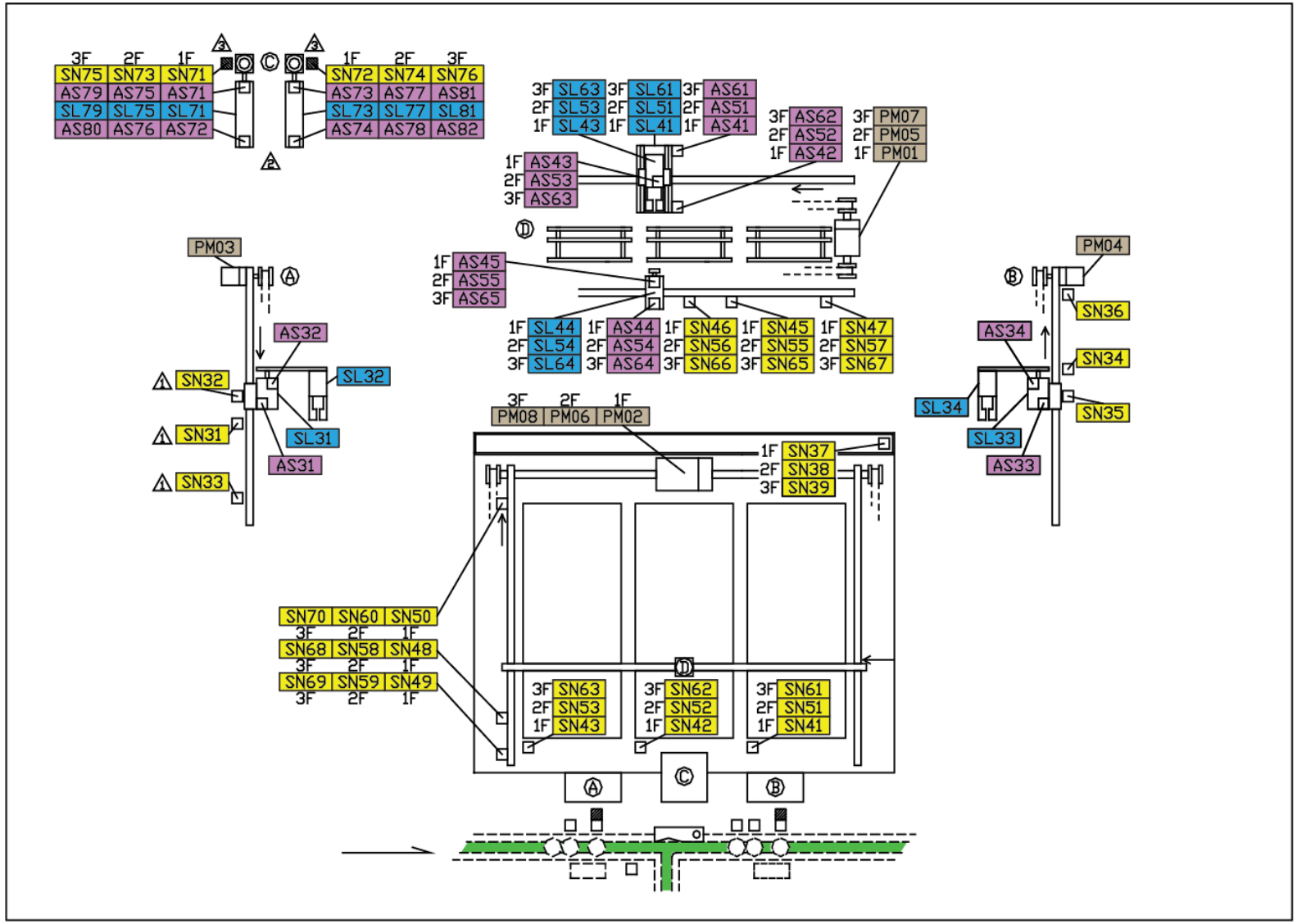
SENSOR / ERROR CODE KEY

Sensor Type	Keypad Display Index
SN	1
SL	2
BR, BCR	3

E014619L.EPS

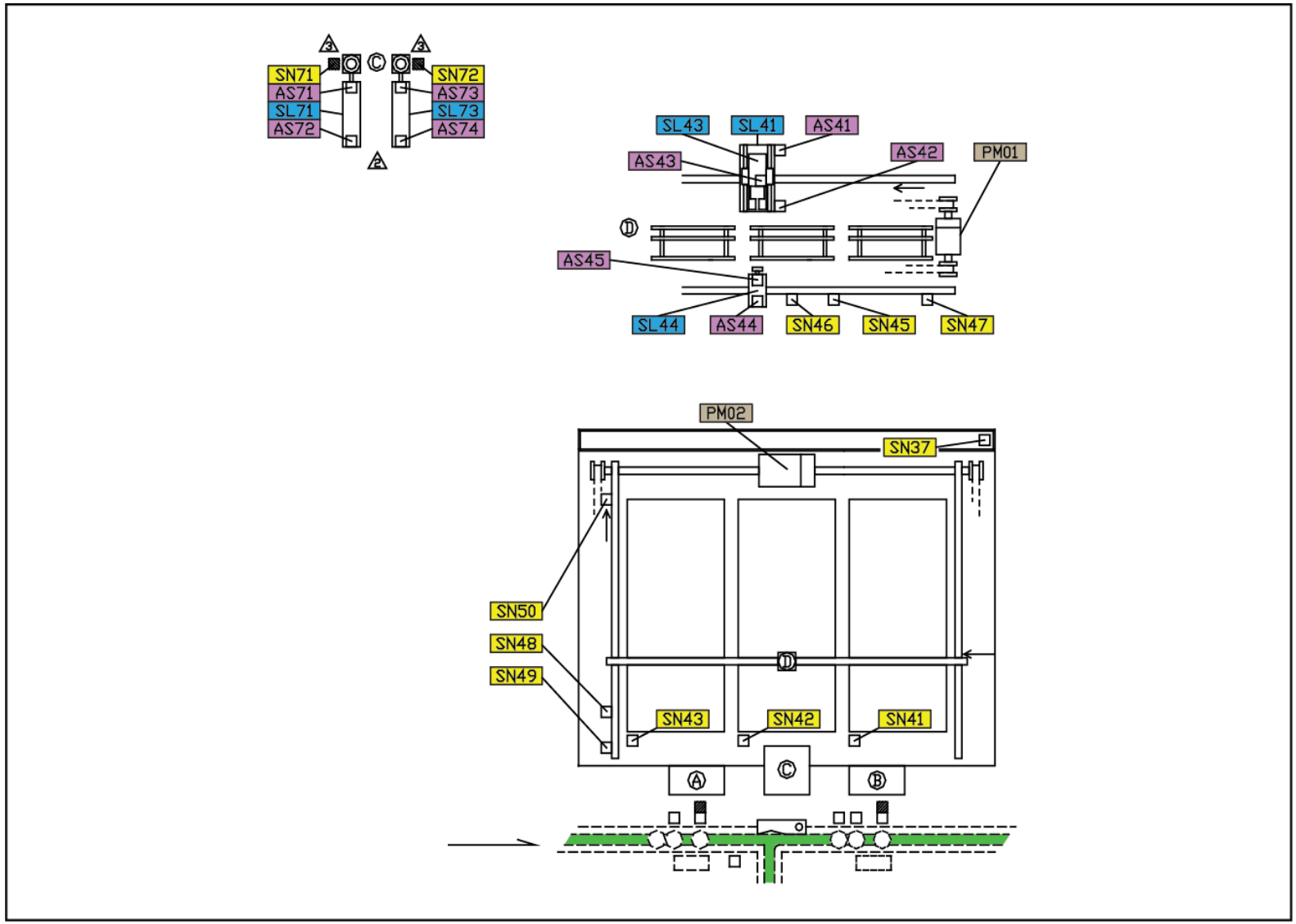
3060-tube (high-speed) Stockyard Main Body

Figure 4.13 3060-tube (high-speed) Stockyard Main Body



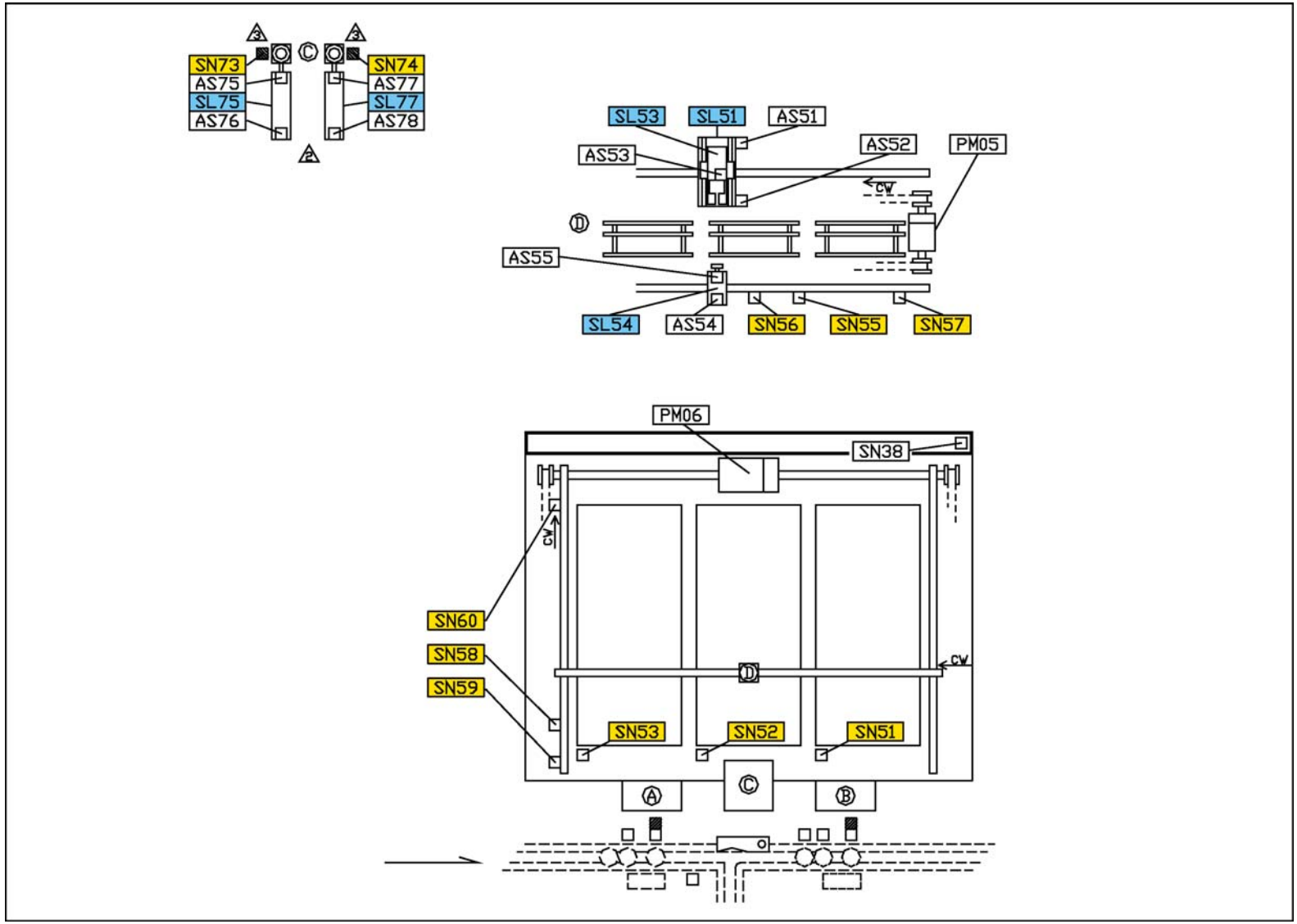
3060-tube (high-speed) Stockyard First Shelf

Figure 4.14 3060-tube (high-speed) Stockyard First Shelf



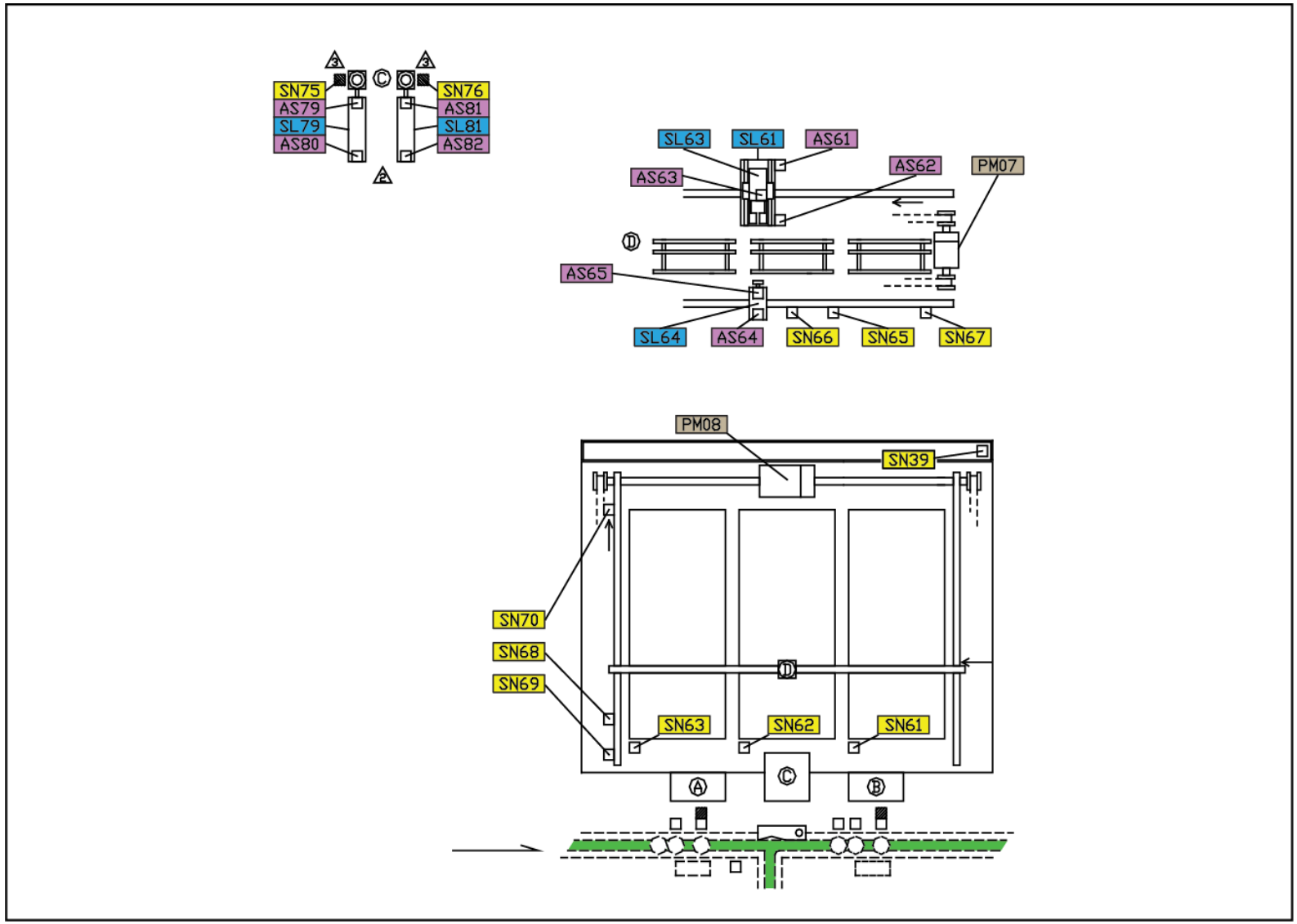
3060-tube (high-speed) Stockyard Second Shelf

Figure 4.15 3060-tube (high-speed) Stockyard Second Shelf



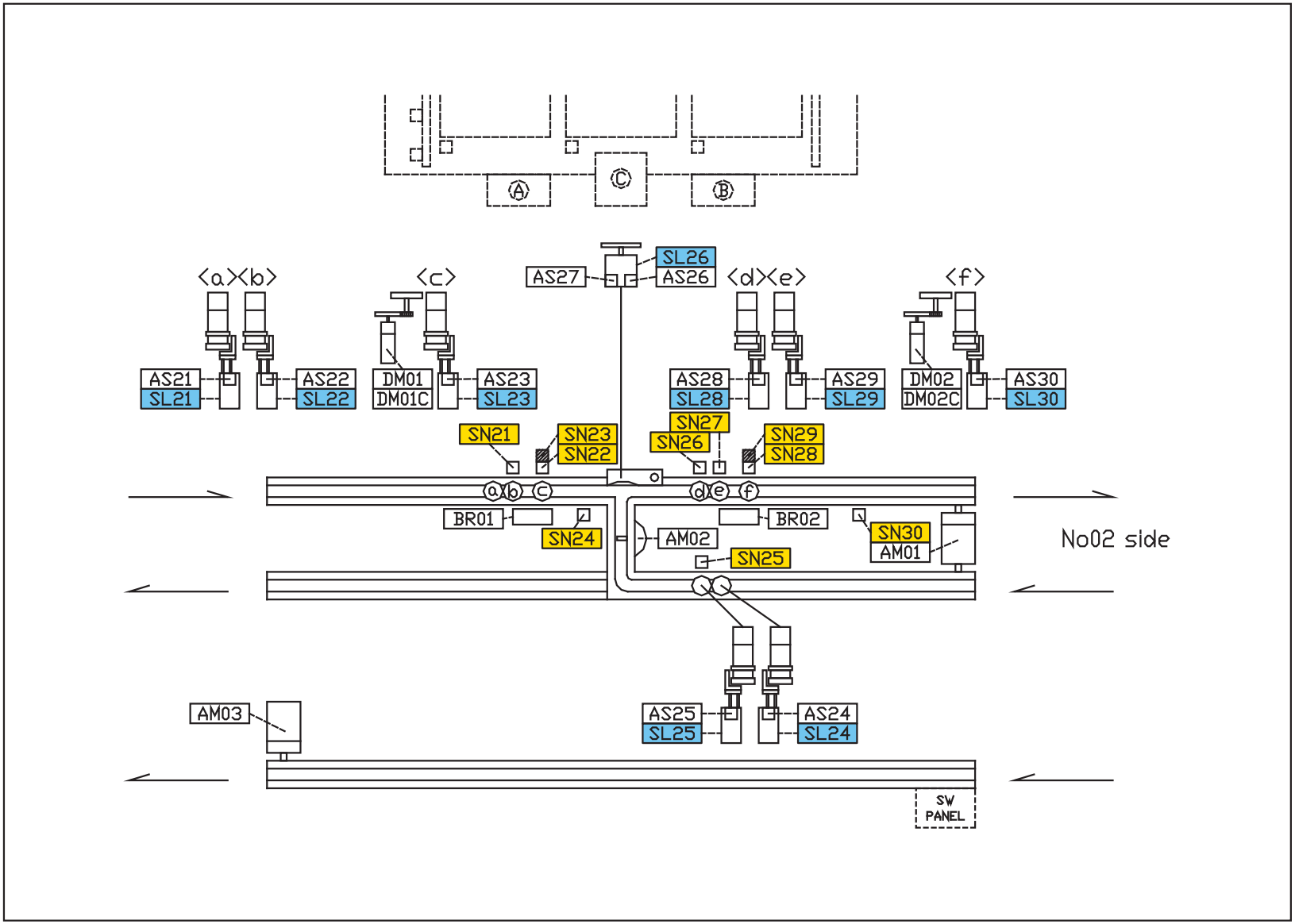
3060-tube (high-speed) Stockyard Third Shelf

Figure 4.16 3060-tube (high-speed) Stockyard Third Shelf



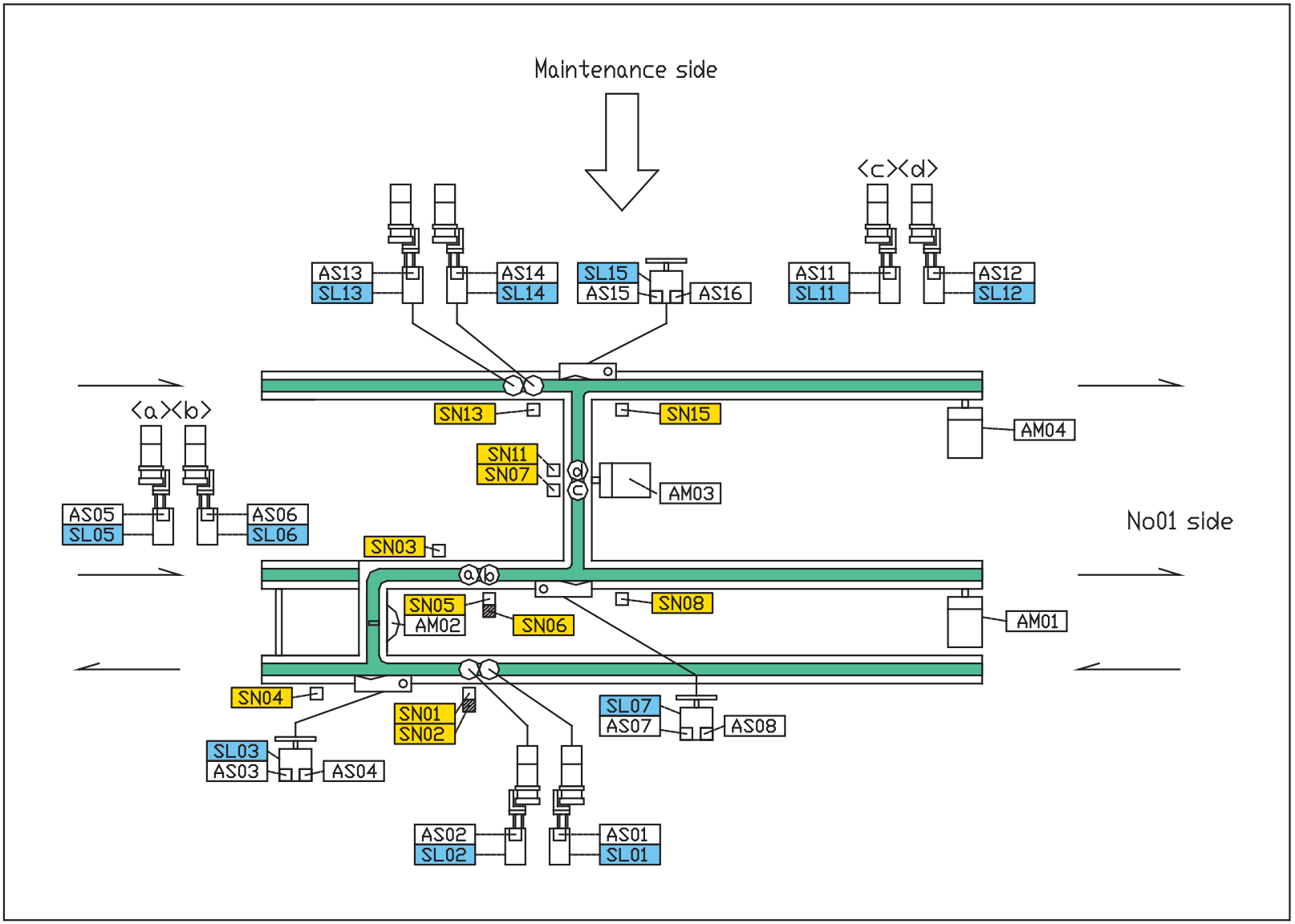
3060-tube (high-speed) Stockyard Conveyor

Figure 4.17 3060-tube (high-speed) Stockyard Conveyor



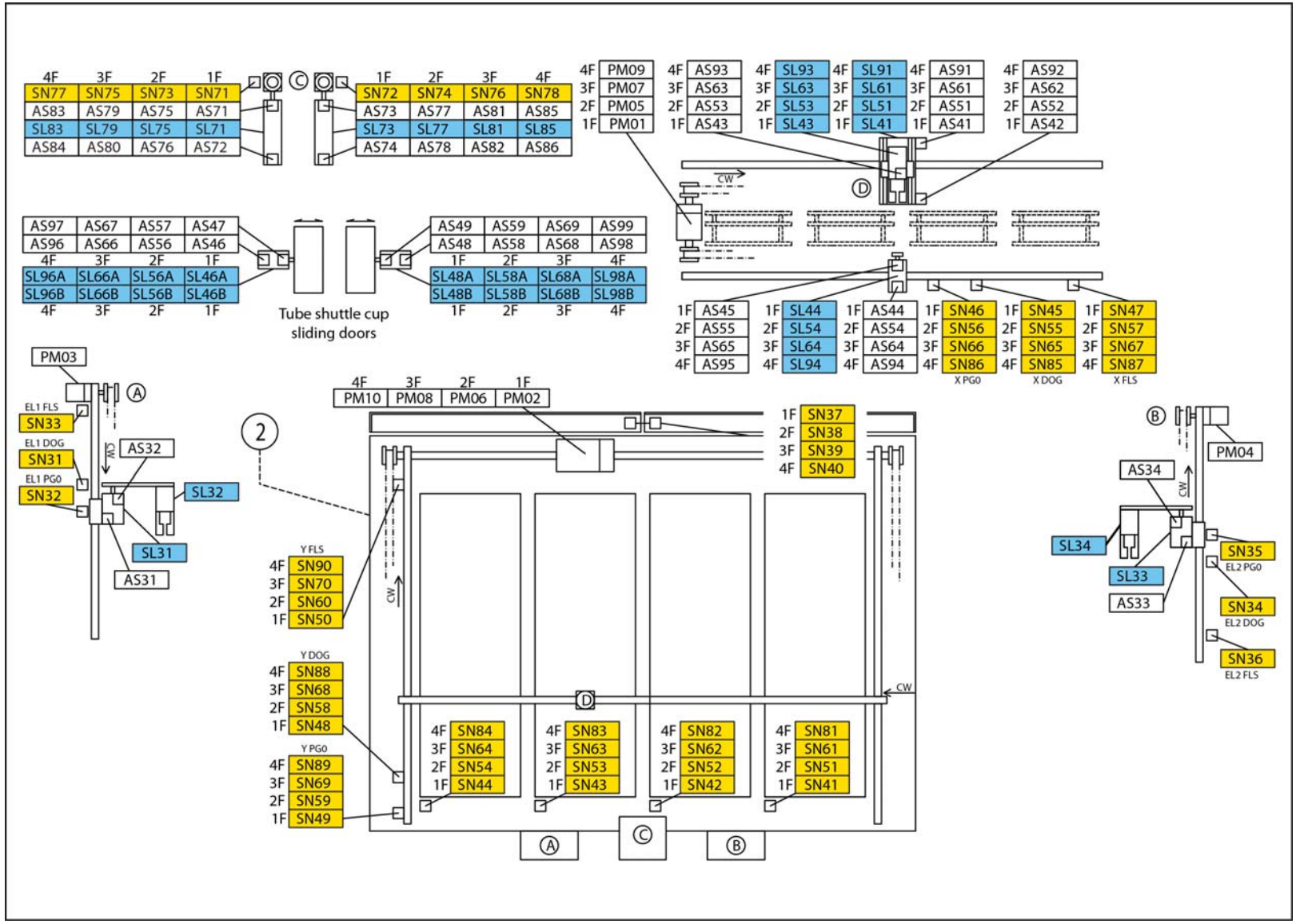
3060-tube (high-speed) Stockyard H-Lane

Figure 4.18 3060-tube (high-speed) Stockyard H-Lane



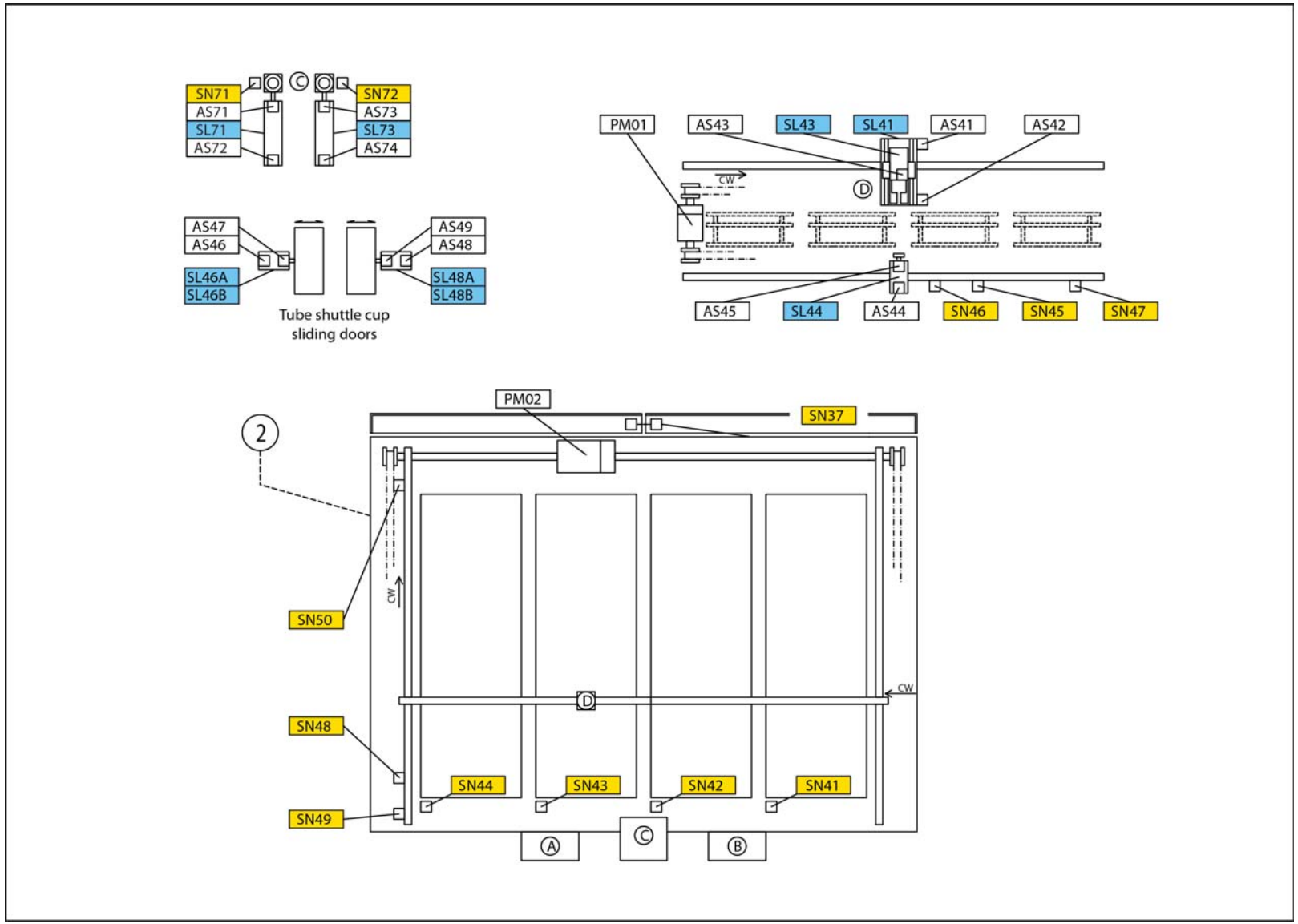
5440-tube (high-speed) Stockyard Main Body

Figure 4.19 5440-tube (high-speed) Stockyard Main Body



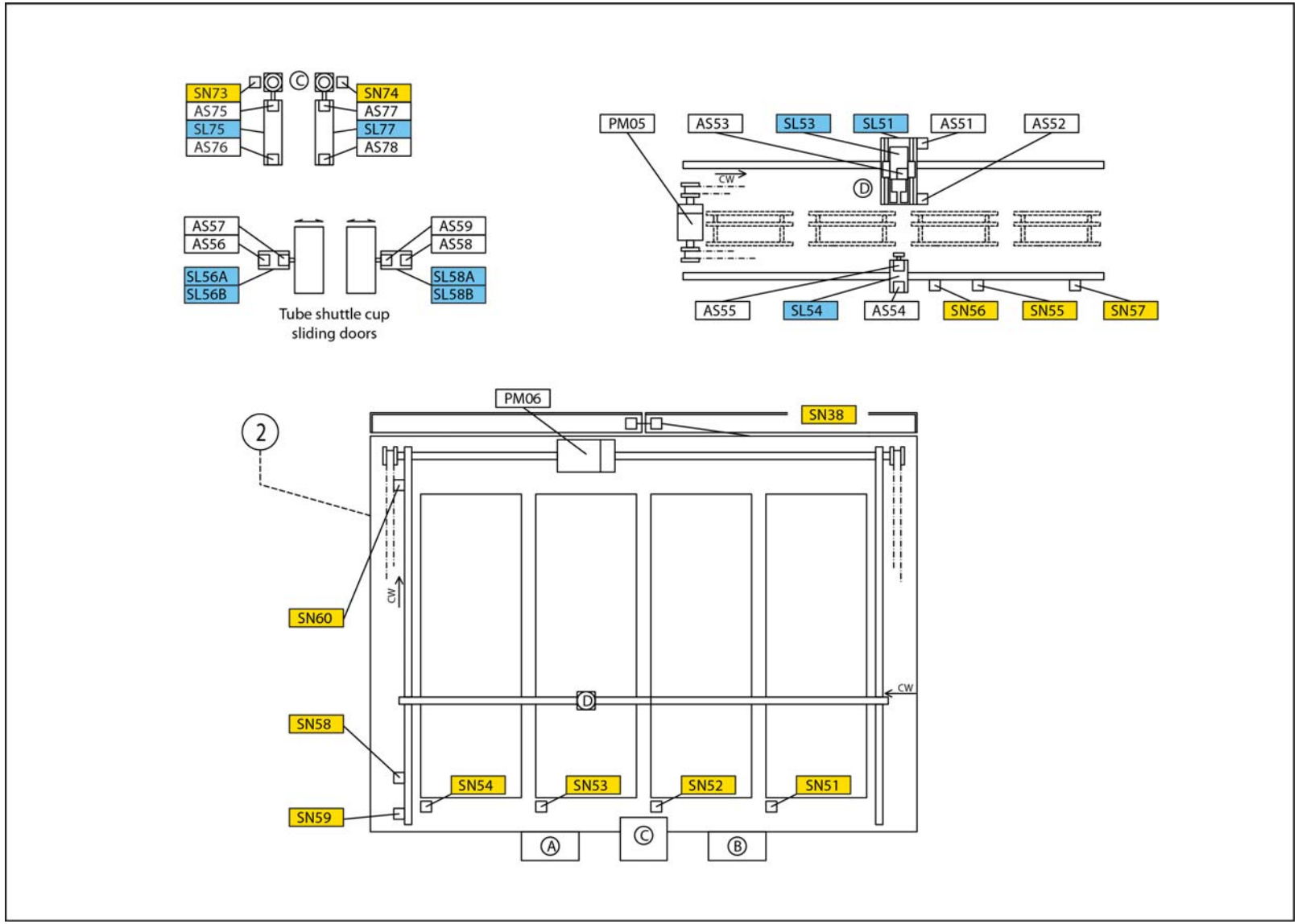
5440-tube (high-speed) Stockyard First Shelf

Figure 4.20 5440-tube (high-speed) Stockyard First Shelf



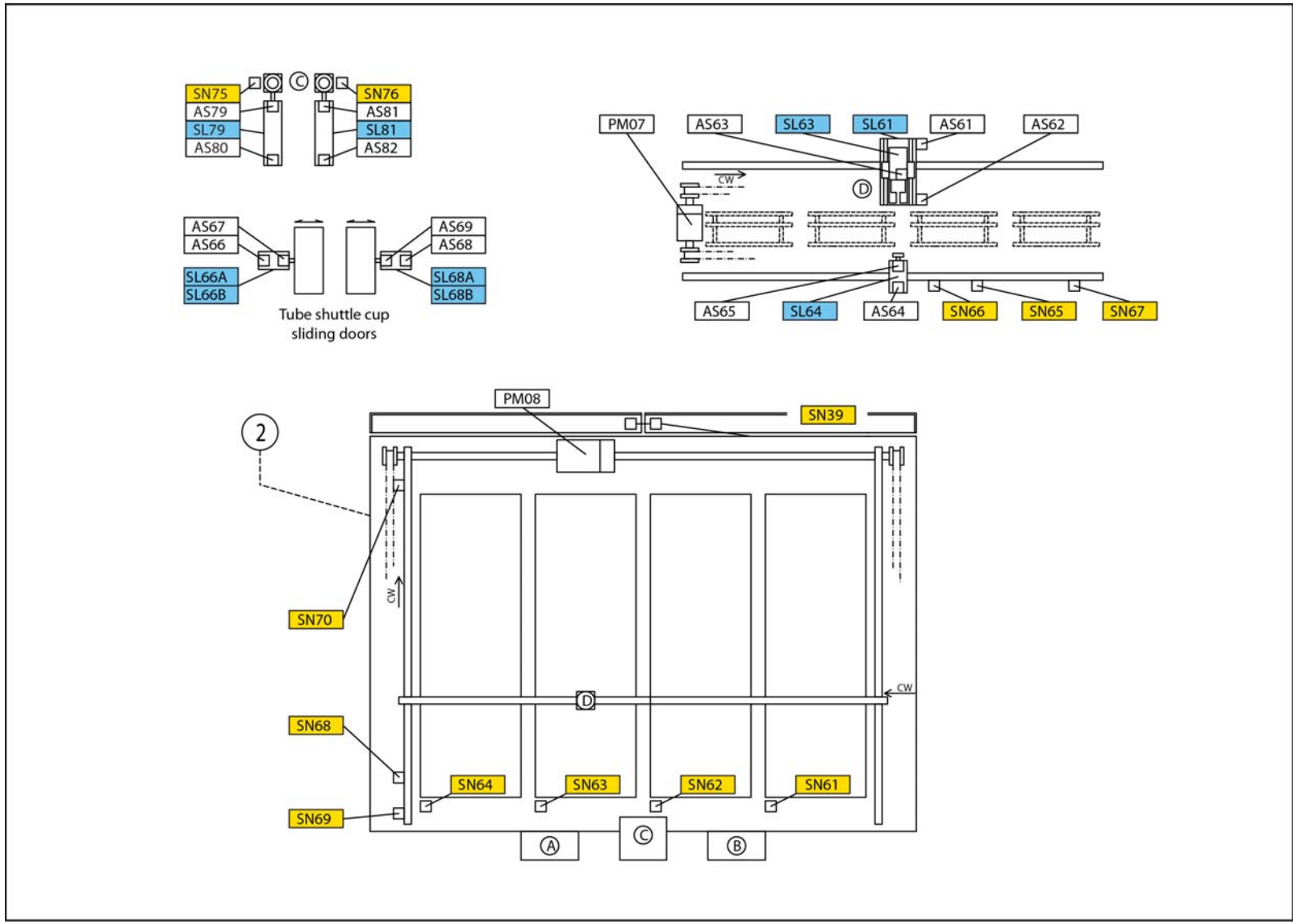
5440-tube (high-speed) Stockyard Second Shelf

Figure 4.21 5440-tube (high-speed) Stockyard Second Shelf



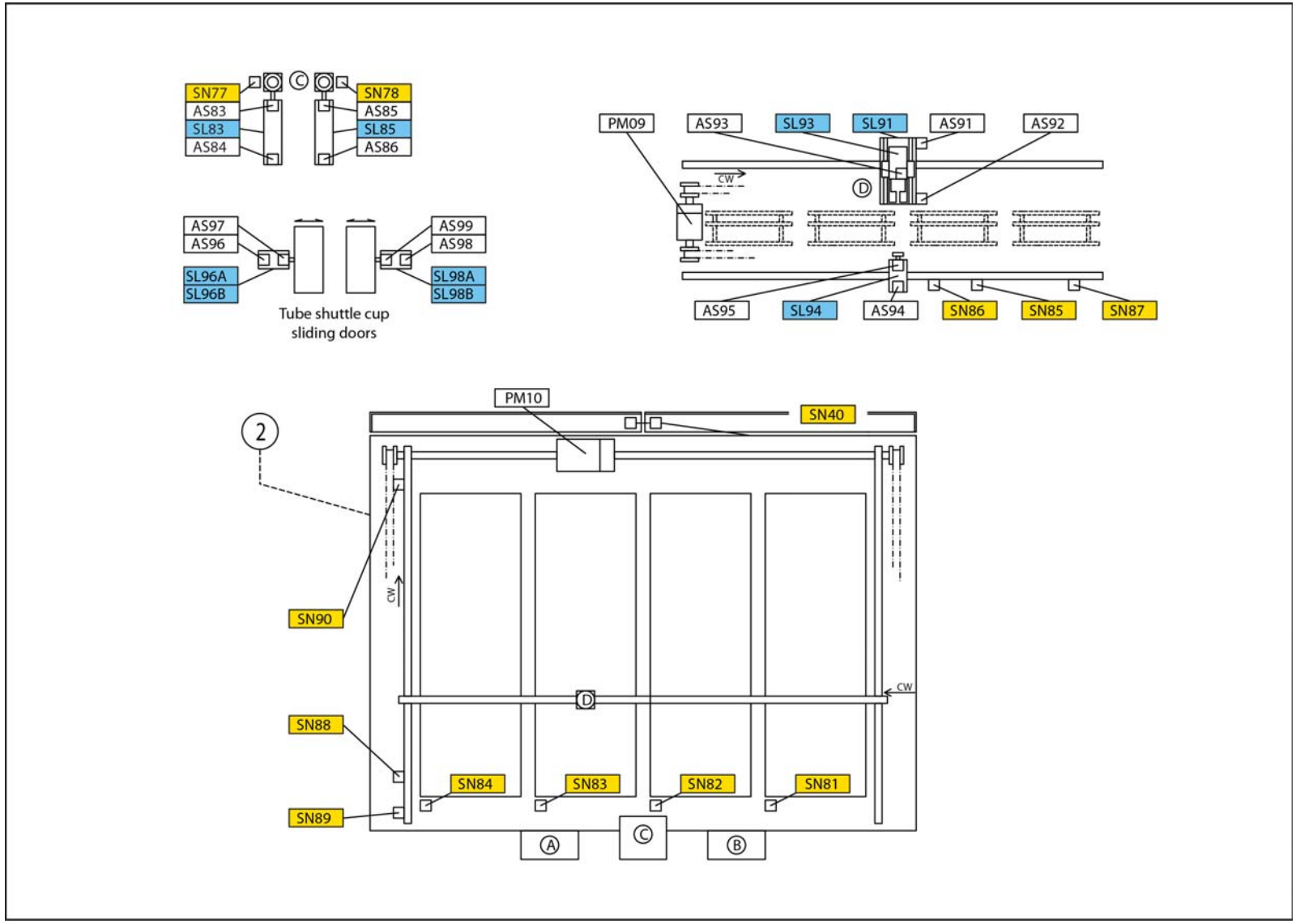
5440-tube (high-speed) Stockyard Third Shelf

Figure 4.22 5440-tube (high-speed) Stockyard Third Shelf



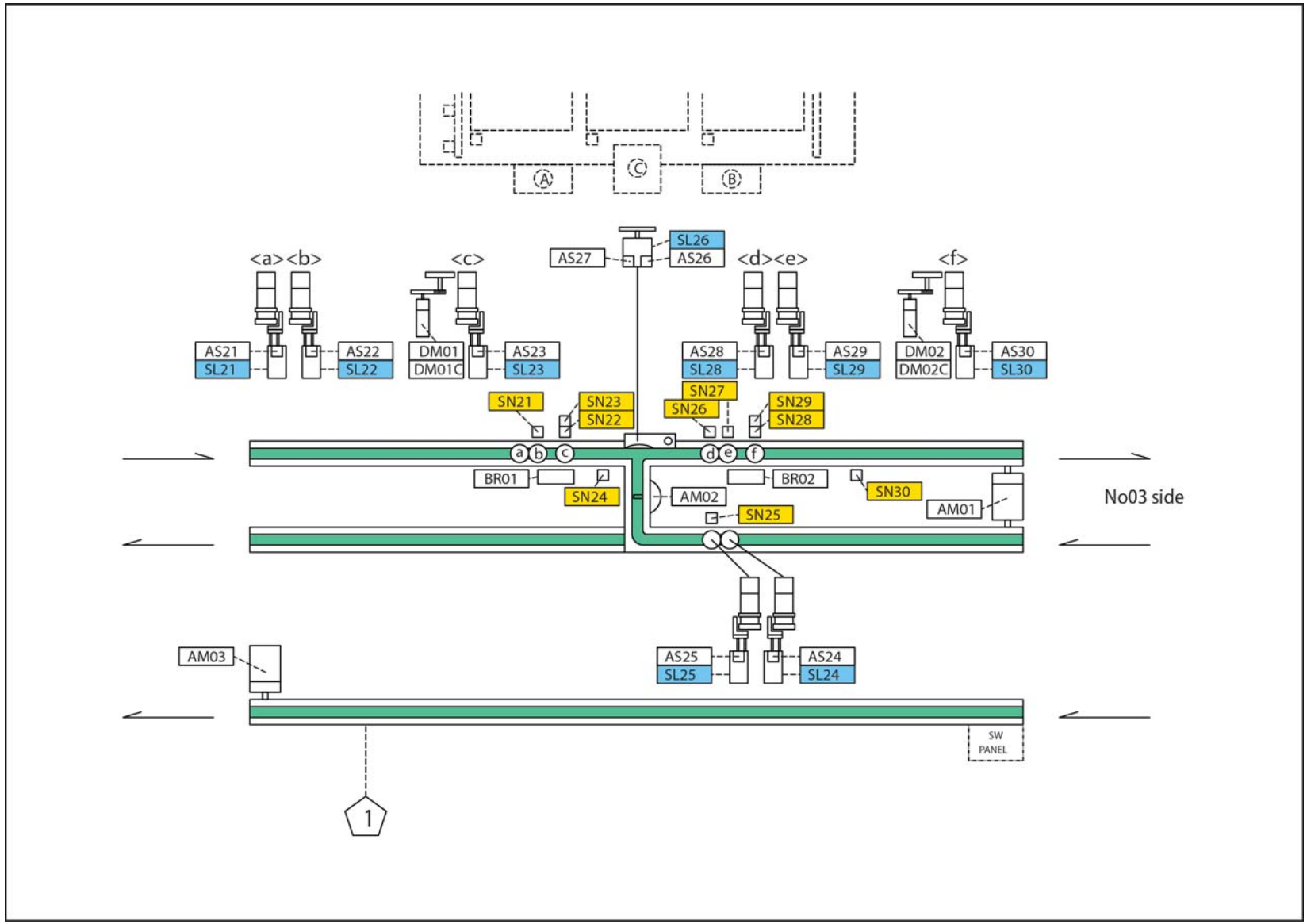
5440-tube (high-speed) Stockyard Fourth Shelf

Figure 4.23 5440-tube (high-speed) Stockyard Fourth Shelf



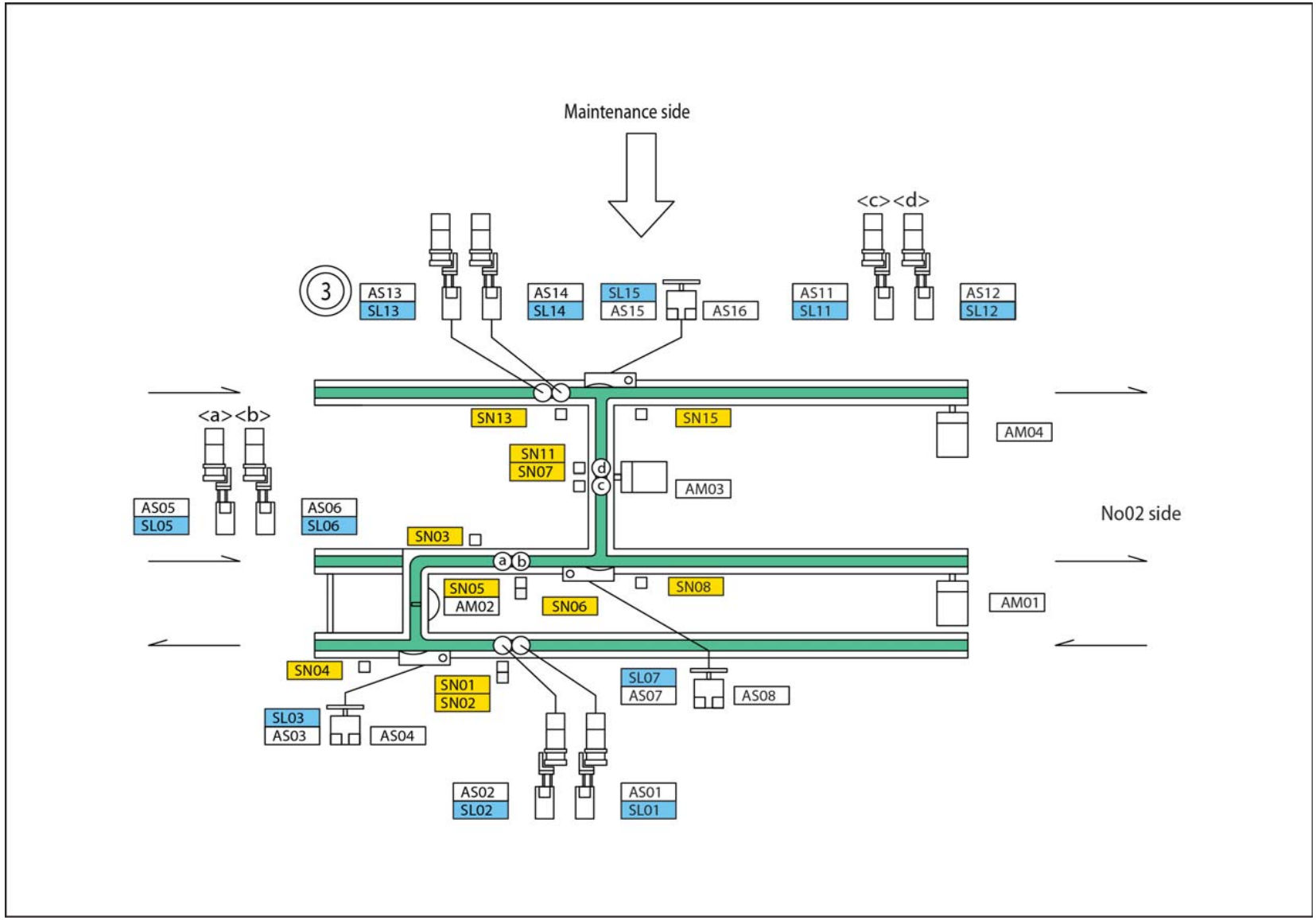
5440-tube (high-speed) Stockyard Conveyor

Figure 4.24 5440-tube (high-speed) Stockyard Conveyor



5440-tube (high-speed) Stockyard H-Lane

Figure 4.25 5440-tube (high-speed) Stockyard H-Lane



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