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Technical Reference—Linear Costa Master

Read the Safety Manual

PELLERIN MILNOR CORPORATION POST OFFICE BOX 400, KENNER, LOUISIANA 70063-0400, U.S.A.

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for MATLCMSTAE/2001324N
Linear Costa Master

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ABOUT THIS MANUAL

Scope—This reference manual provides programming, monitoring, and operating informaiton about the Linear Costa maqster controller.

Quick Reference Tabs—The tabs along the right edge of the manual mark vital information.

SAFETY—READ FIRST—Safety instructions must be read before operating machine.

COMMISSIONING—Commissioning instructions ensure proper start up.

CONTENTS—See Table of Contents for section/page numbers of cross references used herein.

CHANGES/NEW MATERIALS—These, if any, will be found in an envelope inside the rear cover.

Manual Number/Date Code (When To Discard or Save)—The manual number/date code is located on the inside front cover, upper right corner just above the manual name. Whenever the manual is reprinted with new information, part of this number changes. **If the *date code* after the "/" changes, the new version applies to all machines covered by the old version, but is improved— thus the old version can be discarded. If the *manual number* before the "/" changes, the new manual covers only new machines.** Example: Discard MATMODELAE/8739**C**V when MATMODELAE/8739**D**V is received (minor improvements). Also, discard MATMODELAE/87**39D**V when MATMODELAE/87**46A**V is received (major improvements). But keep MATMODEL**A**E/8746FV when MATMODEL**B**E/8815AV is received, since the new manual no longer applies to machines originally shipped with the old manual.

Documents and Change Bars—The individual documents comprising this manual use the same revision criteria as the manual. Text documents also display change bars. Example: When section MSOP0599AE/9135**B**V becomes MSOP0599AE/9135**C**V, change bars with the letter "C" appear next to all changes for this revision. For a major rewrite (e.g., MSOP0599AE/92**26A**V), all change bars are deleted.

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Autovac	E-P Plus®	Mildata®	Miltron	Totaltrol®

MOVING AROUND ON THE CRT DISPLAY

Across the bottom of each page is an explanation of keystrokes that can be used to move around the display. The most common explanations are shown here:

When Programming

^	Moves the cursor up through any fields.
LINE FEED	Moves the cursor down through any fields.
RETURN	Selects the highlighted field.
ESCAPE	Accepts the data entered and exits to a menu.
CONTROL/P	Prints the display shown.
<	Moves the cursor left through any fields.
>	Moves the cursor right through any fields.

When Monitoring

RETURN	Accesses another display (e.g., cake page).
CONTROL/A	Accesses belt data display (from main page only).
CONTROL/B	Accesses manual menu.
ESCAPE	Exits to a menu.
CONTROL/H	Accesses the help screen.
CONTROL/I	Accesses the input display.
CONTROL/O	Accesses the output display.
CONTROL/P	Prints the display shown.
<	Moves the cursor left through any fields.
>	Moves the cursor right through any fields

Section 1

Programming

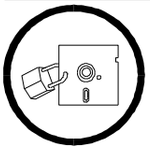
PROGRAM THE LINEAR COSTA MASTER— AN OVERVIEW

Selections on the Program Main Menu

Initialize—Change current time and date, clear memory, and view checksum.
Configure—Tell Linear Costa Master about the laundry layout and controlled devices.
Display Pages—Configure one main page and five cake pages.
Names—Enter, erase, or download data about goods in system.
Exit—Safely return to the run mode. See caution below.

Access the Program Main Menu

⚠ CAUTION ⚠



DATA LOSS HAZARD—Improper use of the *Program/Run keyswitch* may corrupt program data.

- ☞ **Return to *run mode* only when the display prompts *Turn Program Key to Exit.***
- ☞ **Only power off or on with the *Program/Run keyswitch* at *run*.**
- ☞ **Do not leave key accessible to unauthorized personnel.**

0 Three-wire is disabled and operator alarm sounds.

, ESCAPE Accesses the Linear Costa Master Program Main Menu, shown here.

The Linear Costa Master Program Main Menu

INITIALIZE	CONFIGURE	DISPLAY PAGES	NAMES	EXIT
Time & Date	Configure Lcmaster	Main page	Formulas	Exit
Clear Memory	Configure Devices	Cake pages	Extract codes	
Display Checksum			Dry codes	
			Dest codes	
			Customer codes	
			Goods codes	
			Erase codes	
			Download names from Miltrac	

Exit the Program Main Menu

Highlight the *Exit* field.

RETURN The display prompts *Turn Program Key to Exit*.

Returns to a display page.

Initialize

Highlighting and selecting *Initialize* from the Program Main menu allows the user to change the current time and date so the correct information will be printed on tickets. It also allows clearing memory and viewing the checksum.

Time & Date—Allows the user to enter the correct date and time each day at start-up so the information printed on tickets will be accurate. Press RETURN after each field on this screen (e.g., after typing the correct hour, press RETURN to accept the hour and move to the minutes field). If incorrect data is entered, press RETURN until the Main menu reappears, then re-enter the *Time & Date* selection.

Clear Memory—Allows the user to clear all Linear Costa Master memory—including names—and loads valid defaults in all fields. Always clear memory with this selection before programming a newly installed Linear Costa Master system. After highlighting and selecting *Clear Memory*, the display prompts for confirmation. After the memory is cleared, the Program Main menu appears. However, once Linear Costa Master is installed and programmed, use of this option will require complete reprogramming.

Display Checksum—Allows the user to display checksum (i.e., a number generated by the control to represent the amount of data in a specific memeory area; any change in a checksum indicates that data has changed). Pressing any key returns the display to the main program menu.

Configure

Highlighting and selecting *Configure* from the Program Main menu allows the user to define certain characteristices of the Linear Costa Master and the Linear Costas in the system. See “PROGRAM THE LINEAR COSTA MASTER—CONFIGURE”

Configure Lcmaster—Allows the user to configure the system of Linear Costos controlled by the Linear Costa Master. The decisions are divided into three groups: General Configuration, Valid Data (determines which data is being passed in the system), and Remote Displays (determines how many remote displays are being monitored and which page is shown on each).

Configure Devices—Allows configuring and position naming for individual Linear Costos in the system. The selections for each device are as follows:

- **Configuration**—Allows the user to select values for general Linear Costo configuration, loading information, and discharge information.
- **Position Names**—Allows the user to select position names and short names for each Linear Costo in the system.
- **Copy configuration**—Allows the user to copy the configured information for one Linear Costo to another Linear Costo.

Display Pages

Highlighting and selecting *Display Pages* from the Program Main menu allows the user to define the data that appears on operation monitoring displays. See "PROGRAM THE LINEAR COSTA MASTER—DISPLAY PAGES."

Main page—Allows the user to define the data that appears on the main page for monitoring operation.

Cake pages—Allows the user to define the data that appears on each of the cake pages for monitoring operation.

Names

Highlighting and selecting *Names* from the Program Main menu allows the user to define information displayed on the display pages. See "PROGRAM THE LINEAR COSTA MASTER—NAMES."

Formulas—Allows the user to enter up to 64 formula names.

Extract codes—Allows the user to enter up to 16 extract code names.

Dry codes—Allows the user to enter up to 16 drycode names.

Dest codes—Allows the user to enter up to 64 destination names.

Customer codes—Allows the user to enter up to 1000 customer names.

Goods codes—Allows the user to enter up to 256 goods code names.

Erase names—Allows the user to eliminate all Lcosta names, Position names, Position short names, Formula names, Dry code names, Dest code names, Customer code names, or Goods code names.

Download names from Miltrac—Allows the user to download names from Miltrac to Linear Costa Master.

Exit

Highlighting and selecting *Exit* allows the user to exit the Program Main menu and return to run mode. After *Exit* is highlighted and RETURN is pressed, the display prompts *Turn Program Key to Exit*. exits *program mode* and returns to a display page for monitoring operation.

PROGRAM THE LINEAR COSTA MASTER—CONFIGURE

Highlighting and selecting *Configure* on the Linear Costa Master Program allows the user to define certain characteristics of the Linear Costa Master and the Linear Costos (Devices) in the system.

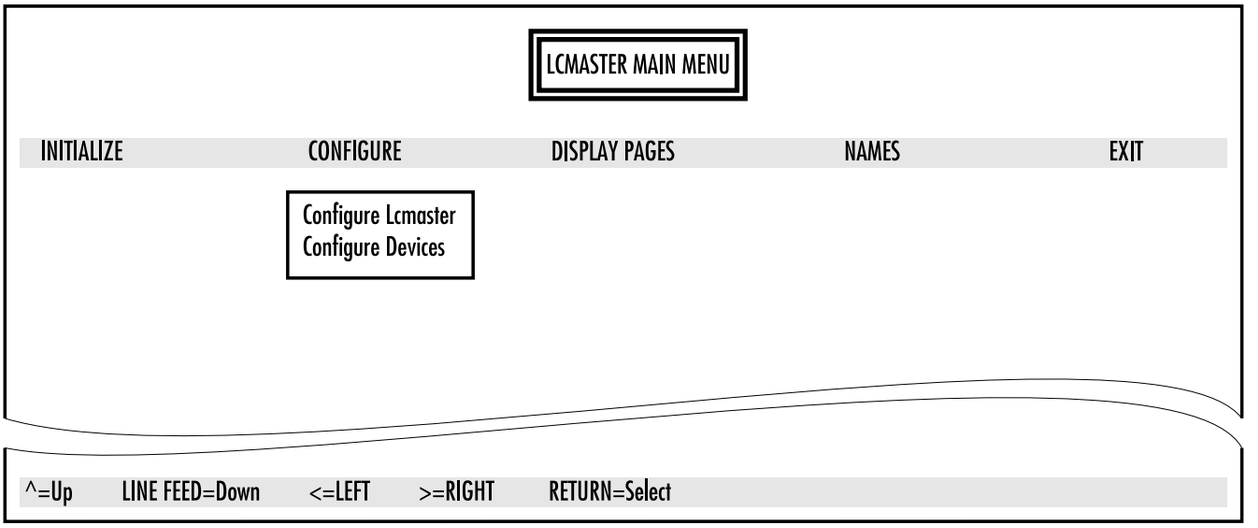


FIGURE 1 (MSOP0943AE)
Program Main Menu with Configure Pages Selected

Configure the Lcmaster

Data entered at the *LCMaster Configuration* page supplies the Linear Costa Master with certain information about the goods flow in the laundry and what options are associated with the Linear Costa Master control system. This page is divided into three parts: *General configuration, Valid Data,* and *Remote Displays.*

For information on how to move the cursor on the display, see the control information in this manual.

General Configuration—Enter the appropriate value for each decision, as explained below.

Decision	Range	Explanation
Miltrac Address	000-255	Enter the starting address for the first Linear Costo on the Linear Costa Master. Each subsequent Linear Costo will add one to this number. If the address for Linear Costa Master is 010, the address for Linear Costo 0 is 010, the address for Linear Costo 1 is 011, and for Linear Costo is 012.
Bytes in Network String	24, 30	Enter the number of bytes in the network string.
Mildata Address	000-255	Enter the address for the Linear Costa Master in the Mildata network.
Number of Linear Costos	1-8	Enter the total number of Linear Costos being controlled by the Linear Costa Master.

General Configuration, continued

Decision	Range	Explanation
Weight Units	0,1	Enter 0 to measure loads in pounds. Enter 1 to measure loads in kilograms.
Peripheral Boards Check	0,1	Enter 0 if a peripheral boards check is not desired. Enter 1 if a peripheral boards check is desired.

Valid Data—Entering correct information here prevents Linear Costa Master from displaying data that may be misleading. Enter 0 next to each data type that is not being passed in your system. Enter 1 next to each data type that is being passed in your system. Data types include formula code, dry code, destination code, customer code, goods code, weight, pieces, cake number, and single cake information.

Remote Displays—At *Number of Remote Displays*, enter the number of remote displays attached to this system; do not include the main (local) display. Which data page should appear on any one remote display can not be configured.

Configure Devices

Configure Devices displays the available devices (as determined by *Number of Linear Costas* decision). Highlight the device to be configured and press RETURN. The *Device Menu* displays three types of information to be configured for each Linear Costo in the system: *Configuration, Position Names*, and *Copy configuration*.

Device Configurations—The *Device Configuration* page supplies the Linear Costa Master with certain information about each Linear Costo associated with the Linear Costa Master control system. This page is divided into three parts: *General configuration, Loading*, and *Discharge.*

For information on how to move the cursor on the display, see the control information in this manual.

Before beginning to configure the device, enter the desired device name (maximum 10 letters) at the *Device Configuration* page.

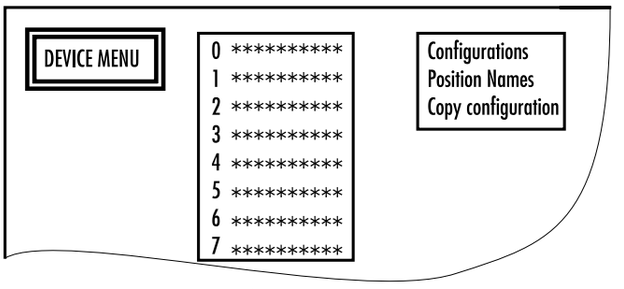


FIGURE 2 (MSOP0943AE)
Device Configuration

General Configuration——Enter the appropriate value for each decision, as explained below.

Decision	Range	Explanation
Number of Storage Positions	1-8	Enter the maximum number of storage positions on the Linear Costo.
Clear Belt Time	5-50	Enter the number of seconds the belt should run to ensure the belt is clear.
Load/Unload to Same Device	0,1	Enter 0 if the Linear Costo receives and discharges to different devices. Enter 1 if the Linear Costo receives and discharges to the same device.
Border Color	0-15	Enter code for the border color for this device on the Linear Costa Master display.

Loading—Enter the appropriate value for each decision, as explained below.

Decision	Range	Explanation
Trailing time	00-99	Enter the number of tenths of seconds after detecting a load on the load-end during loading that the belt should stop running (e.g., 10=1 second).
Eye Loading Error	0,1	Enter 0 to prevent the Linear Costa from signalling an error if the discharge eye is blocked during a loading process. Enter 1 to enable the Linear Costa to signal an error if the discharge eye is blocked during a loading process.
Loading Type	0,1	Enter 0 if the Linear Costo will load from a Miltrac controlled device. Enter 1 if the Linear Costo will load from an allied device.
Weight Passing*	0,1	Enter 0 if the Linear Costo does not collect the weight of the load from the allied device. Enter 1 if the Linear Costo collects the weight of the load from the allied device.
Loading Level	0-7	Enter the level at which the device should receive goods.
Direction for Loading Device	0,1	Enter 0 if the loading device should run its belt forward when transferring goods to the Linear Costo. Enter 1 if the loading device should run its belt backward when transferring goods to the Linear Costo.
Hold Loader Time	0-99	Enter the number of minutes a full Linear Costo should hold a loading device that has more loads to discharge.

*Allied loading only

Discharge—Enter the appropriate value for each decision, as explained below.

Decision	Range	Explanation
Optimum Number of Cakes	1-total storage	Enter the optimum number of cakes for the Linear Costo to discharge.
Optimum Discharge Time	00-99	Enter the number of minutes desired to delay discharging the cake(s) on the Linear Costo if optimum number of cakes is not met (0-99).
Discharge Type	0,1	Enter 0 if the Linear Costo will discharge to a Miltrac device. Enter 1 if the Linear Costo will discharge to an allied device.
Discharge Level	0-7	Enter the level at which the Linear Costo will discharge.
Direction for Rec. Device	0,1	Enter the 0 if the receive device should run its belt forward to accept goods from the Linear Costo. Enter the 1 if the receive device should run its belt backward to accept goods from the Linear Costo.
Hold Unload Device	0,1	Enter the number of minutes an empty Linear Costo should hold a receiving device that can accept more loads.
Run Time after Discharge	000-255	Enter the number of seconds the belt should run after the discharging load passes the discharge photo-eye. When set to 000, the belt runs programmed *Clear Belt Time*.
Wait for Rec. Device Time	00-99	Enter the number of minutes the Linear Costo should wait to discharge a cake if the receiving device is full.
Allied Disch Compatibility*	0,1	Enter 0 for each data type that does not effect whether loads can be combined. Enter 1 for each data type that effects whether loads can be combined. This allows loads to be separated by wash formulas, drycodes, destinations, customers, or goods code.

Position Names—The *Position Names* page supplies the Linear Costa Master with the position names for each Linear Costo associated with the Linear Costa Master control system. For each device, enter a name and a shorter version of that name that will appear on display pages when monitoring operation.

For information on how to move the cursor on the display, see the control information in this manual.

Copy Configuration—the *Copy Device Configuration* selection allows the configured information for one Linear Costo to be copied to the Linear Costa being configured. Entering *Y* (*yes*) and pressing RETURN at the prompt, prompts for choosing the source device (Linear Costo with the desired configuration). Upon selecting a source device and pressing RETURN, displays the new configuration for the device. This display allows adjusting decision values as necessary.

For information on how to move the cursor on the display, see the control information in this manual.

*Allied loading only

PROGRAM THE LINEAR COSTA MASTER— DISPLAY PAGES

Highlighting and selecting *Display Pages* on the Linear Costa Master Program Main Menu (highlight *Display Pages* and press RETURN) allows the user to define what information is available for viewing on the display pages when monitoring operation.

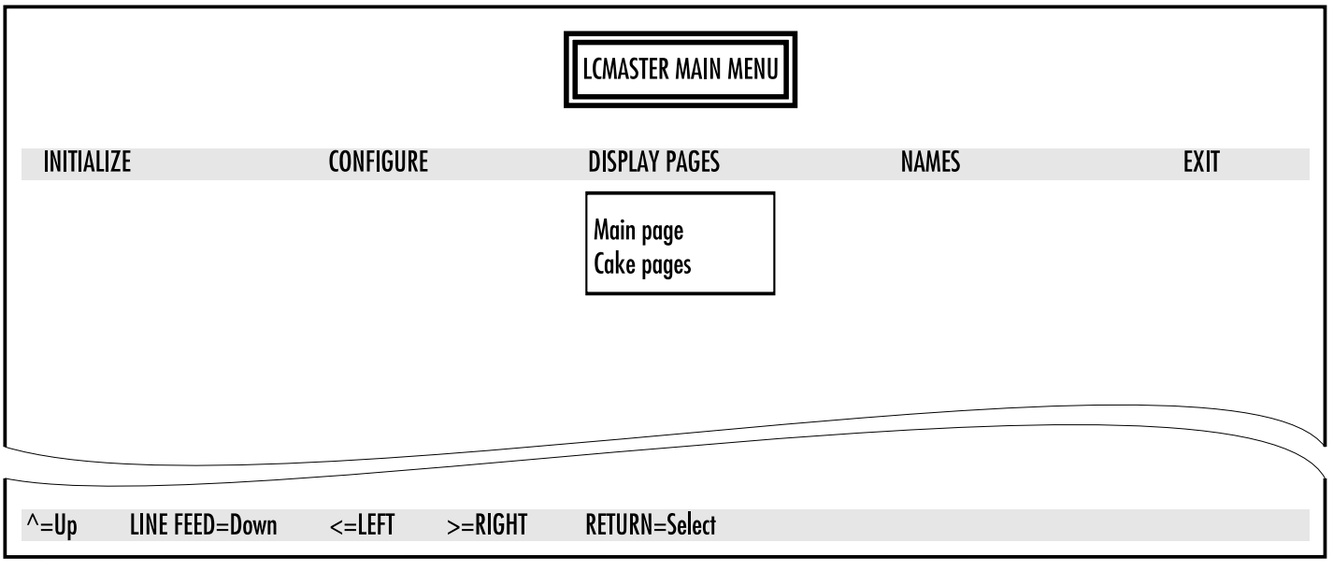


FIGURE 1 (MSOP0944AE)
Program Main Menu with Display Pages Selected

Main Page

Highlighting and selecting *Main Page* (highlight *Main page* and press RETURN) allows the user to choose a page to configure (0-4). After highlighting a page number, press RETURN to select the page. This prompts the user to choose two types of data to represent each Lcosta on this page. Enter a 1 by two items in the list of data.

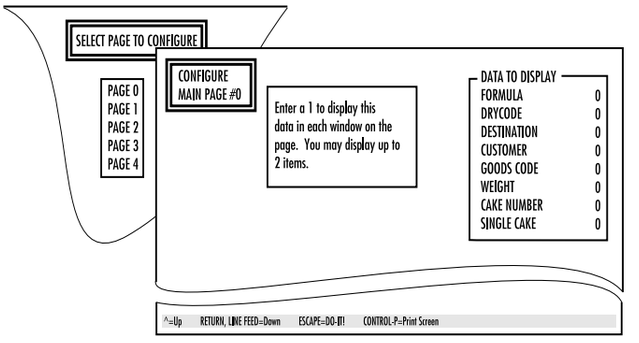


FIGURE 2 (MSOP0944AE)
Configuring Page Content

ESCAPE displays a screen of windows (see FIGURE 3). Enter the Linear Costo number and postion for each window that should appear on the main page during monitoring. Enter a non-existent Linear Costo number for each window that should not appear on the monitoring screen. Type lines of data or description between rows of windows.

The short name and the two types of data configured will appear in each window on the main display page when monitoring operation.

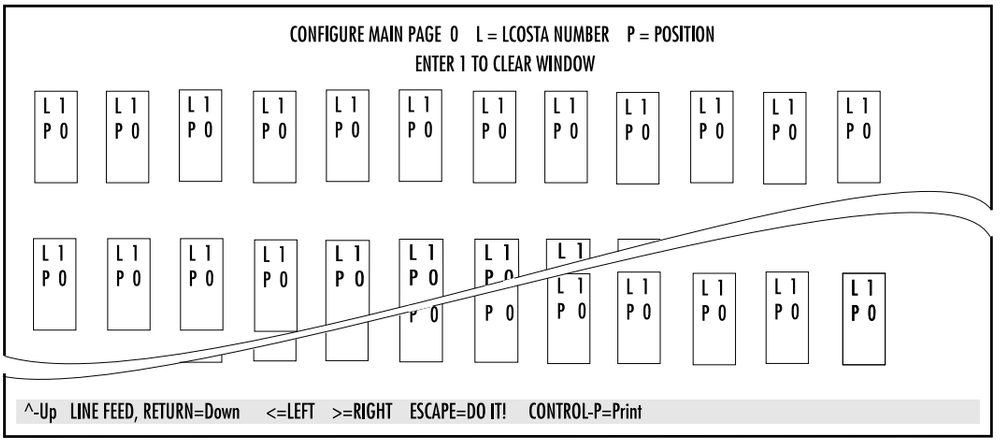


FIGURE 3 (MSOP0944AE)
Configuring Main Page Layout

Cake Pages

Highlighting and selecting *Cake Pages* allows the user to select a page to configure (0-4). After highlighting the desired page number, press RETURN to select that page. This prompts the user to choose up to five types of data to display. Enter 1 by up to five items in the list of data to display.

ESCAPE displays a screen of windows (see FIGURE 4). Enter the Linear Costo number and position for each window that should represent a Linear Costo position on the cake page during monitoring. Enter a non-existent Linear Costo number for each window that should not appear on the monitoring screen. Each cake page allows only fifteen position entries. Use pages 1 through 4 to show positions that could not be shown on page 0.

The long name and the five types of data configured will appear in each window on the main display page when monitoring operation.

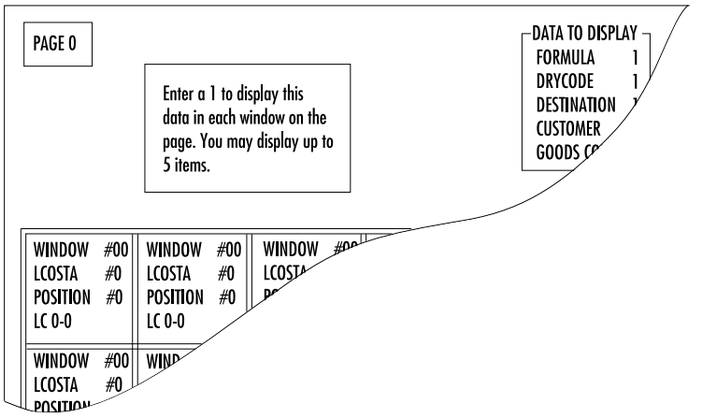


FIGURE 4 (MSOP0944AE)
Configuring Cake Page Layout

PROGRAM THE LINEAR COSTA MASTER—NAMES

Highlighting and selecting *Names* on the Linear Costa Master Program Main Menu allows the user to edit or erase user assigned names or to download names from Miltrac.

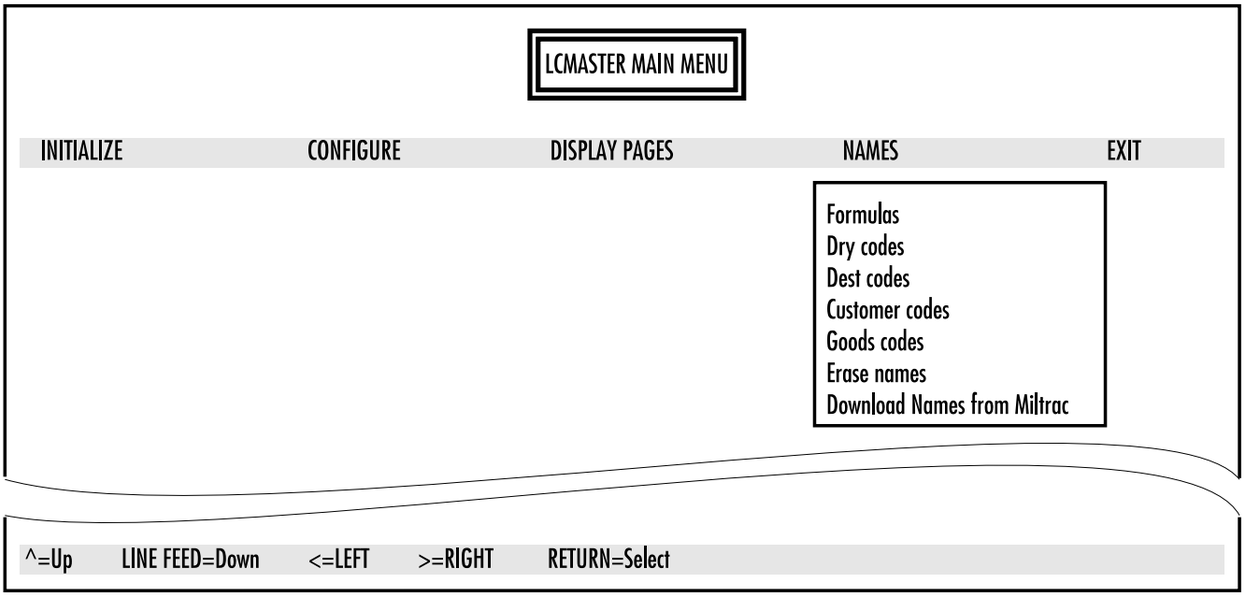


FIGURE 1 (MSOP0945AE)
Program Main Menu with Names Pagees Selected

Formulas

Highlighting and selecting *Formula Names* allows the user to enter formula names by each of the 64 formula numbers.

Extract codes

Highlighting and selecting Extract codes allows the user to enter extract code names by each of the 16 extract codes.

Dry codes

Highlighting and selecting *Drycode Names* allows the user to enter dry code names by each of the 16 drycodes.

Dest codes

Highlighting and selecting *Destination Code Names* allows the user to enter destination code names by each of the 64 destination codes.

Customer codes

Highlighting and selecting *Customer Code Names* allows the user to enter customer names by each of the 1000 customer codes.

Goods codes

Highlighting and selecting *Goods Code Names* allows the user to enter goods code names by each of 256 goods codes.

Erase names

Highlighting and selecting *Erase Names* allows the user to erase any user assigned names. By entering a 1 next to any of the data displayed and pressing RETURN, all names entered for that data type will be erased.

Download Names From Miltrac

Highlighting and selecting *Download Names From Miltrac* allows the user to download the data names from Miltrac to Linear Costa Master. All the names in the Linear Costa Master will be overwritten. Answering Y (yes) and pressing RETURN places Linear Costa Master in a wait state to receive names from Miltrac. Download begins when Miltrac initiates the data transfer.

Memory Download Box Applications

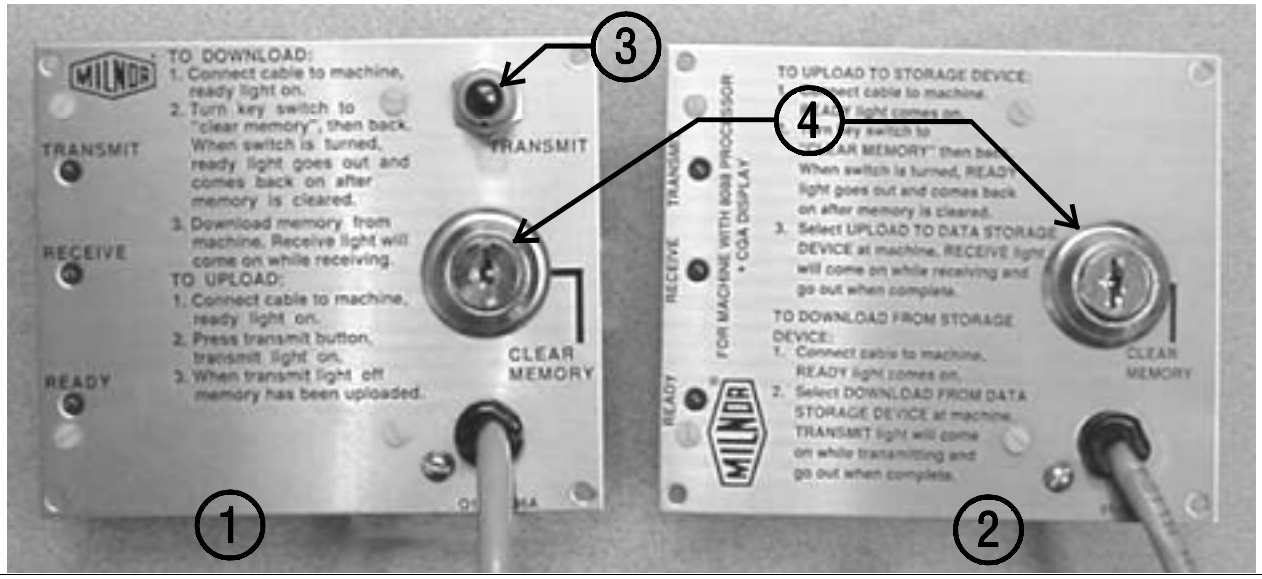
Document..... BICUDC01
Specified Date..... 20010807
As-of Date..... 20010807
Access Date..... 20010807

Applicability..... YUD CUD
Language Code..... ENG01

The memory download box is used to store configuration and formula data for most current models of Milnor® machines. Two types of download boxes (Figure 1) are available: one with a *Transmit* button on the front panel, and one without the button. The *Transmit* button is not required for machines—usually CBW® controllers and similar devices—which are capable of initiating the data transfer.

Figure 1: Download Box Identification

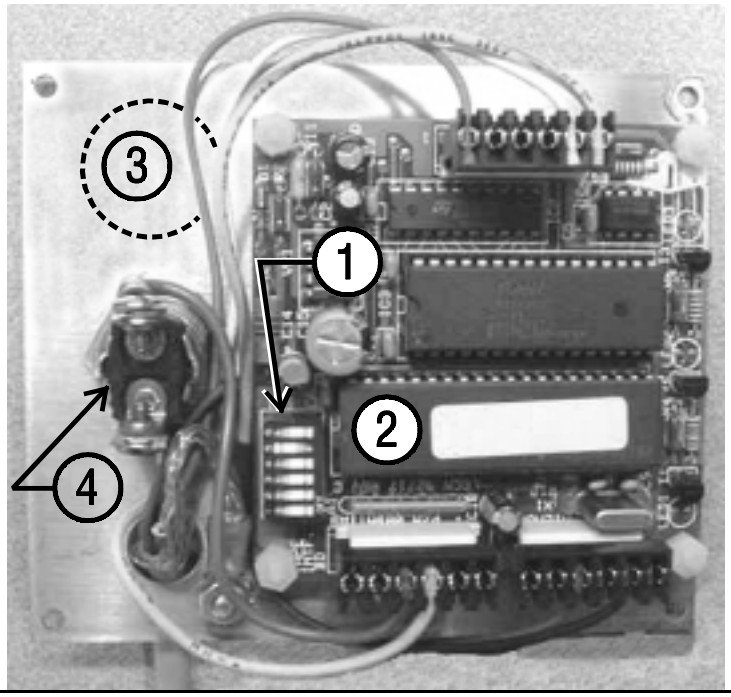
Faceplate Comparison



Legend

1. Download box **with** *Transmit button*
2. Download box **without** *Transmit button*
3. *Transmit button*
4. Key switch

Figure 2: Rear View of Circuit Board

View	Legend
	**1.** DIP switch **2.** Software chip **3.** Location of *Transmit button*, if equipped **4.** Key switch

Supplement 1

Interpreting the DIP Switch Settings

Use the following codes and their definitions to set the DIP switch positions for the equipment, as shown in Table 1.

A. All switch positions are OFF.

B. Switch position 4 is ON; all other switch positions are OFF.

C. Switch position 5 is ON; all other switch positions are OFF.

D. Switch positions 1 and 5 are ON; all other switch positions are OFF.

Note 1: If necessary, a memory download box with the *Transmit* button may be used to store configuration and formula data from any machine that's capable of downloading. When using a button-equipped download box to store data from one of the devices listed in Table 1 as requiring the *Transmit* button, ignore the button. The download will begin when commanded from the device control panel.

Table 1: DIP Switch Positions

Processor Board	Software Version	DIP Switch Setting
Uses Memory Download Box WITH Transmit Button		
Washer-extractor Models		
8088	All	C
80186	98000-98003	C
	98004-99004	not supported
	99005-9900B	D
	20000-20003	D
FxW, FxP, and FxS Washer-extractor models		
8088	All	C
80186	98000-98003	C
	98004-98009	not supported
	9800A-9800H	D
	20000-2000B	D
Textile and Dye Machine Models		
8088	All	C
80186	95000-95305M	C
	95305N-95306	D
	20000-20004	D
Dryer Models		
8088	All	C
80186	All	C
Centrifugal Extractor Models		
8088	All	C
80186	All	C
Single-station Press Models		
8088	All	C

Processor Board	Software Version	DIP Switch Setting
Uses Memory Download Box WITHOUT Transmit Button		
Miltron Controller for CBW System		
8088	All	A
80186	All	B
Miltrac		
8088	All	A
80186	All	B
Milrail Rail Controller		
8088	All	A
80186	All	B
Device Master		
8085	All	not supported
8088	All	not supported
80186	94000-94017	not supported
	94018	B
	20000-present	B
Linear Costo Master		
8085	All	not supported
8088	All	not supported
80186	94000-94011	not supported
	20000-present	B

Key:

A	All switch positions OFF
B	Position 4 ON; all others OFF
C	Position 5 ON; all others OFF
D	Positions 1 and 5 ON; all others OFF

— End of BICUDC01 —

Section 2

Operating

MONITORING MAIN PAGE, CAKE PAGES, AND STATE PAGES

Monitoring the Main Page

After applying power to the Linear Costa Master controller and answering the prompts, the screen displays the Main Page. At the Main Page, the operator can view the Linear Costos in the system and the cakes loaded on them. This page can be configured to represent the laundry layout. The key on the bottom right indicates which cake data is displayed in each rectangle representing a Linear Costo cake position.

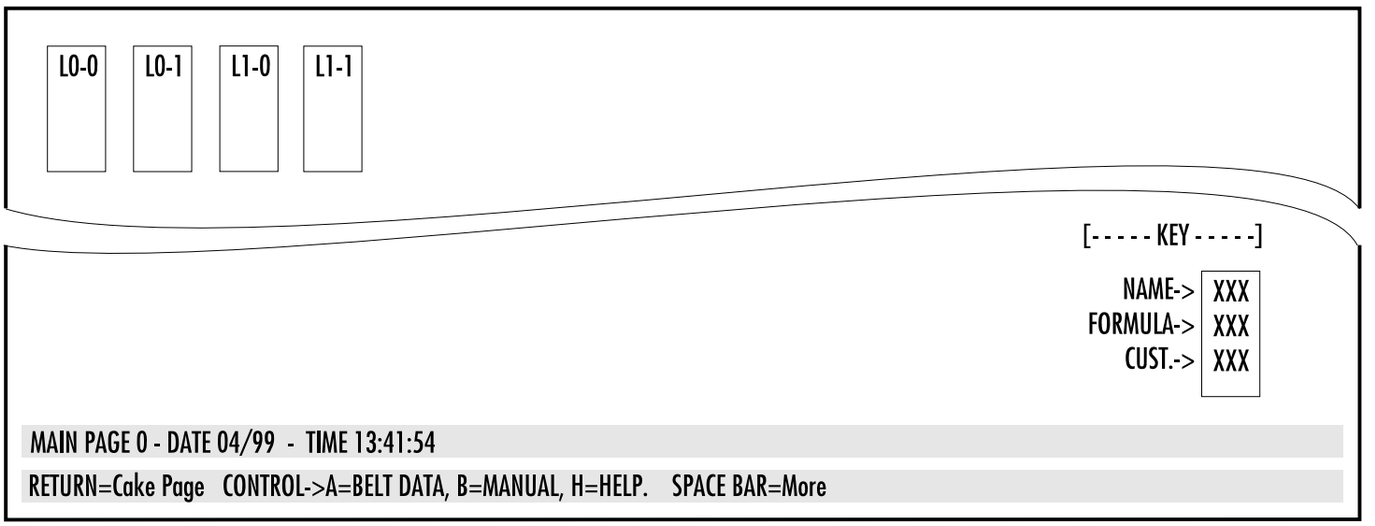


FIGURE 1(MSOP0947AE)
Monitoring the Main Page

Monitoring the Cake Page

The screen displays the Cake Page when RETURN is pressed while viewing the Main Page. At the Cake Page, the operator can view up to five kinds of cake data for each Linear Costo cake position. The menu shown at the bottom of the page allows the operator to enter a number to view any of the four cake pages.

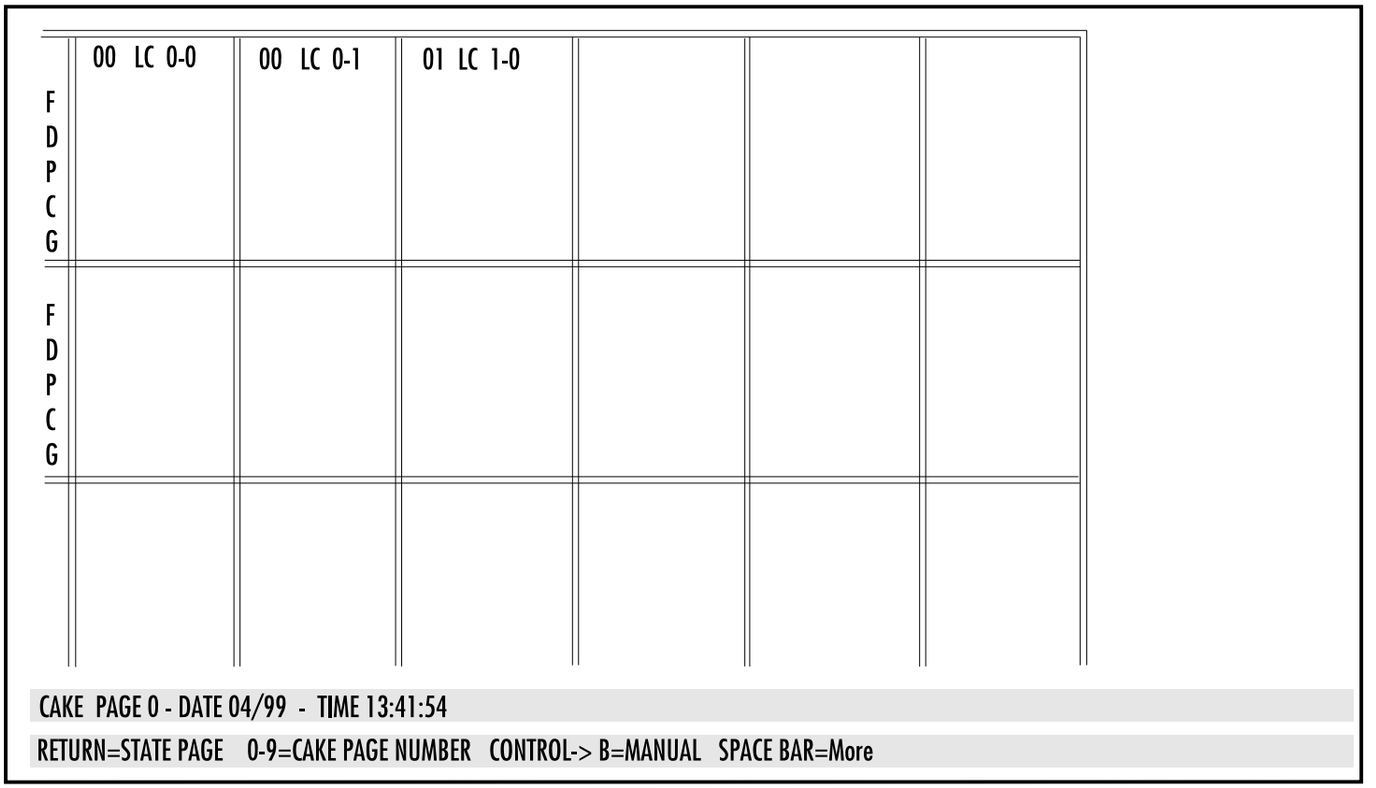


FIGURE 2 (MSOP0947AE)
Monitoring Cake Data

Monitoring the State Page

The screen displays the State page when RETURN is pressed while viewing the Cake Page. At the State Page, the operator can view the receive state (RS), receive command (RC), receive level (RL), transfer state (TS), transfer command (TC), and transfer level (TL) of each Linear Costo cake position.

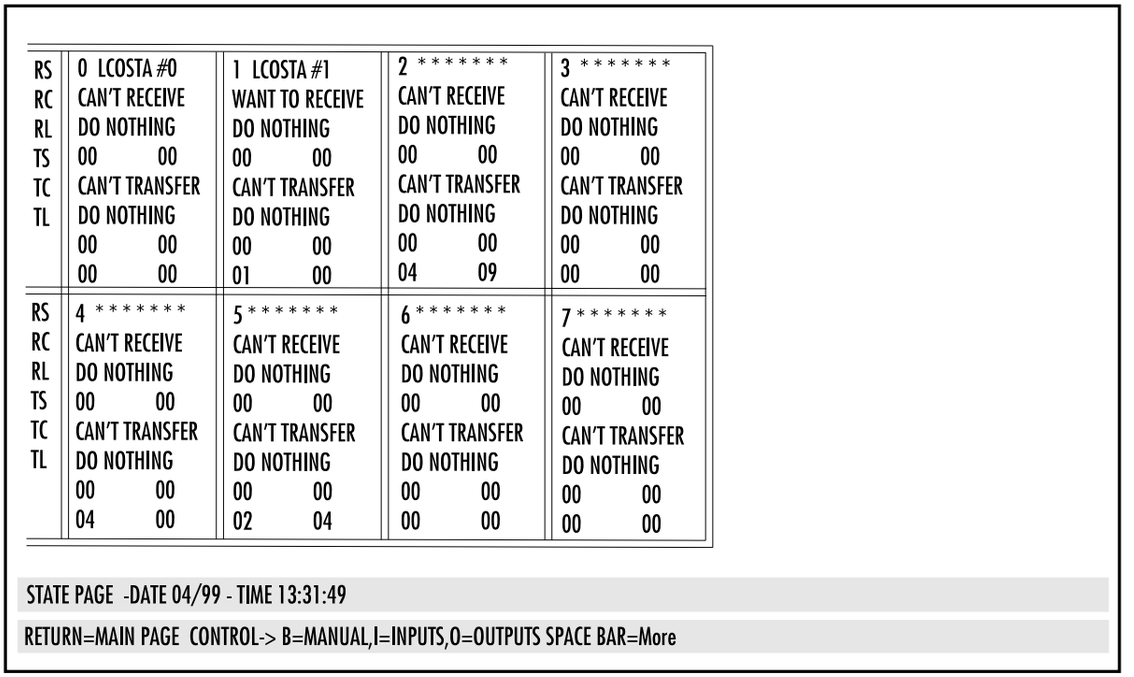


FIGURE 3 (MSOP0947AE)
Monitoring the State Page

MONITORING INPUTS, OUTPUTS, AND BELT DATA

Monitoring Inputs

The screen displays inputs for monitoring when the CONTROL and I are pressed simultaneously while monitoring the Main page, Cake pages, or State page. A "+" indicates the input is made and a "-" indicates the input is not made. Press RETURN to return to the Main Page.

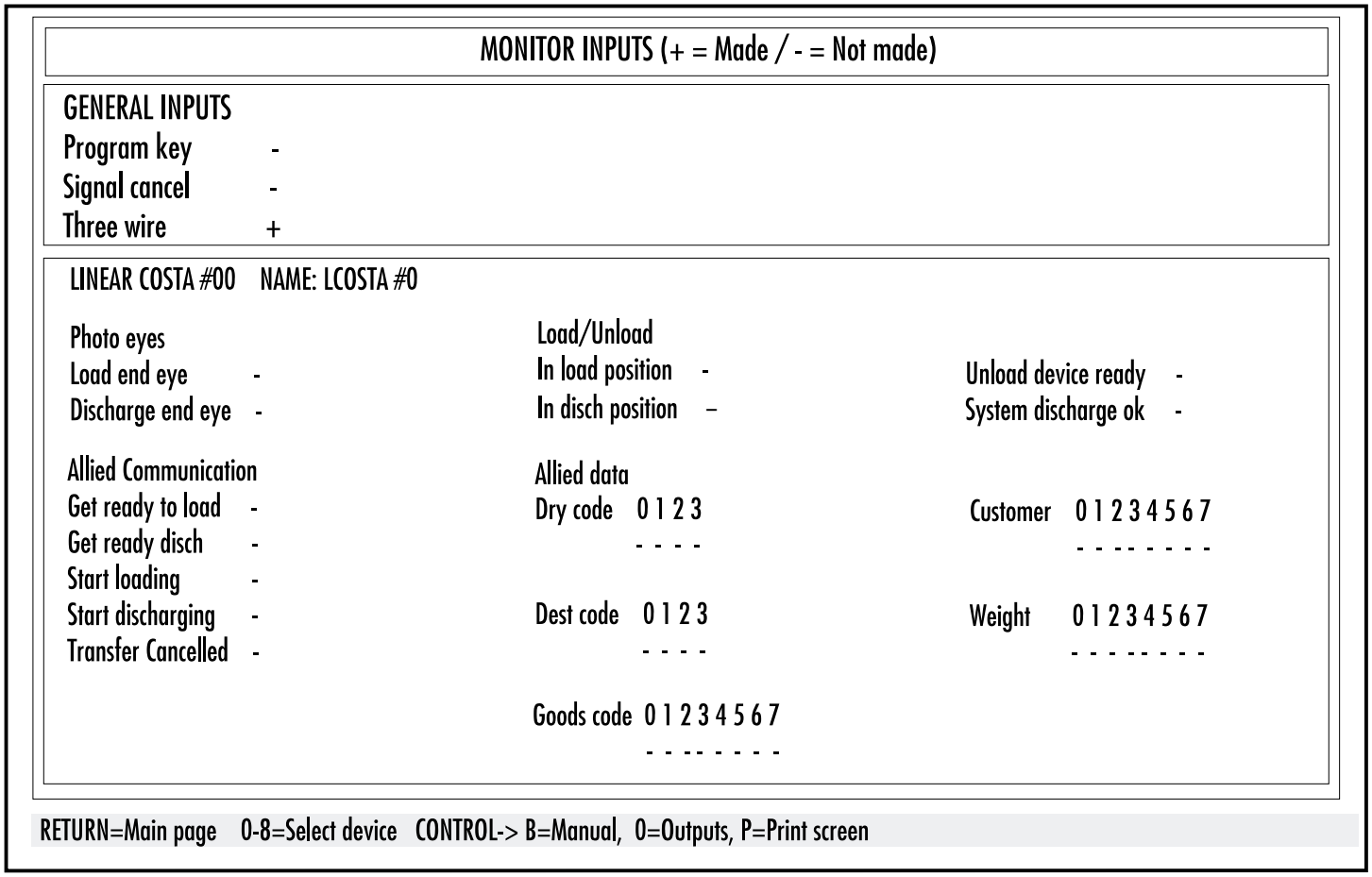


FIGURE 1 (MSOP0948AE)
Monitoring Inputs

Monitor Outputs

The screen displays outputs for monitoring when CONTROL *and* O *are pressed simultaneously while monitoring the Main Page, Cake Pages, State Page, or Monitor Inputs screen. A "+" indicates the output is on and a "-" indicates the output is off. Press* RETURN *to return to the Main Page.*

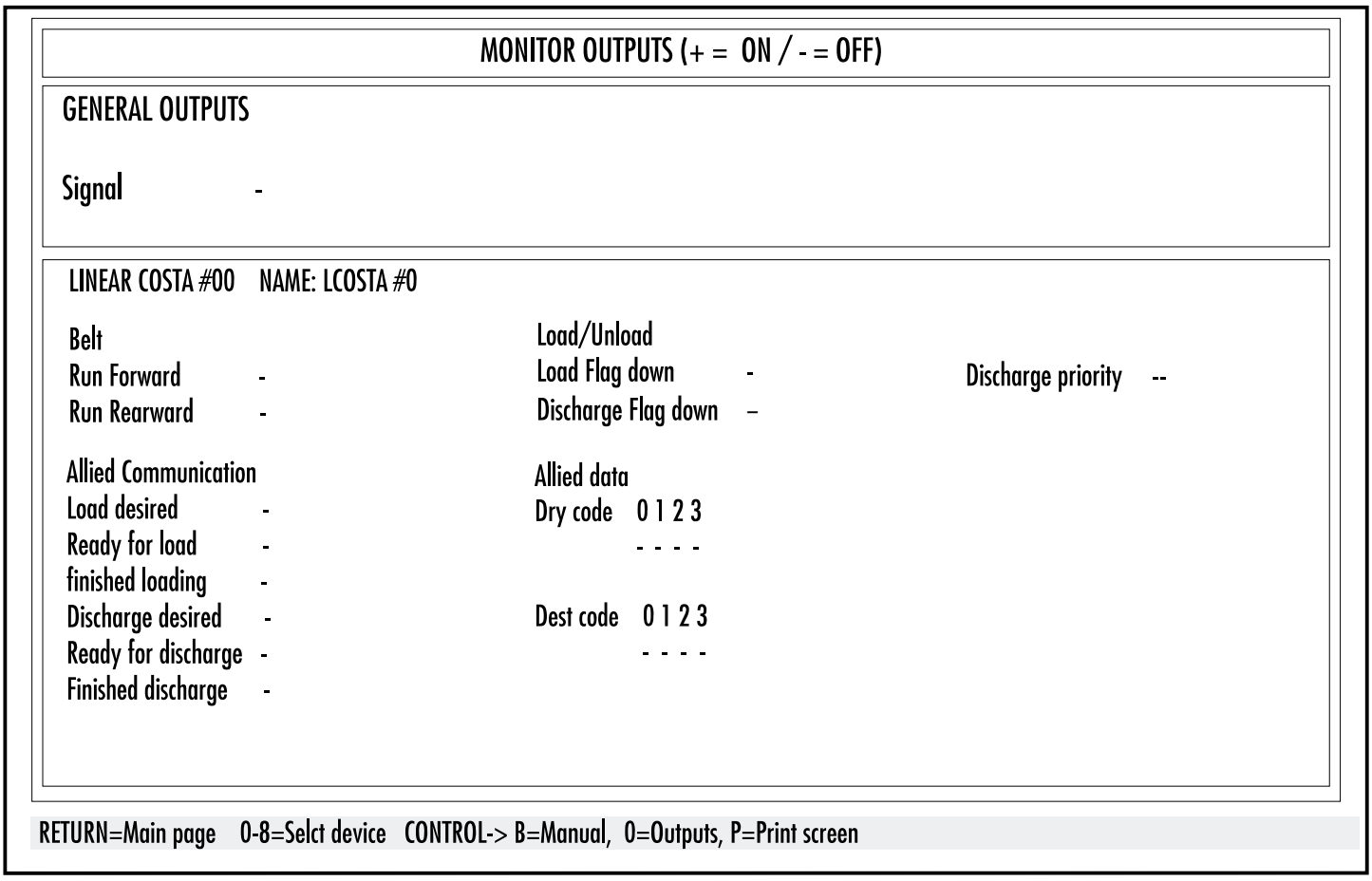


FIGURE 2 (MSOP0948AE)
Monitoring Outputs

Monitor Belt Data

The screen displays Belt Data for monitoring when CONTROL *and* A *are pressed simultaneously while monitoring the Main page. The Main Page screen remains, and the belt data for the highlighted Linear Costo appears on the screen. Press* ESCAPE *to return to the Main Page.*

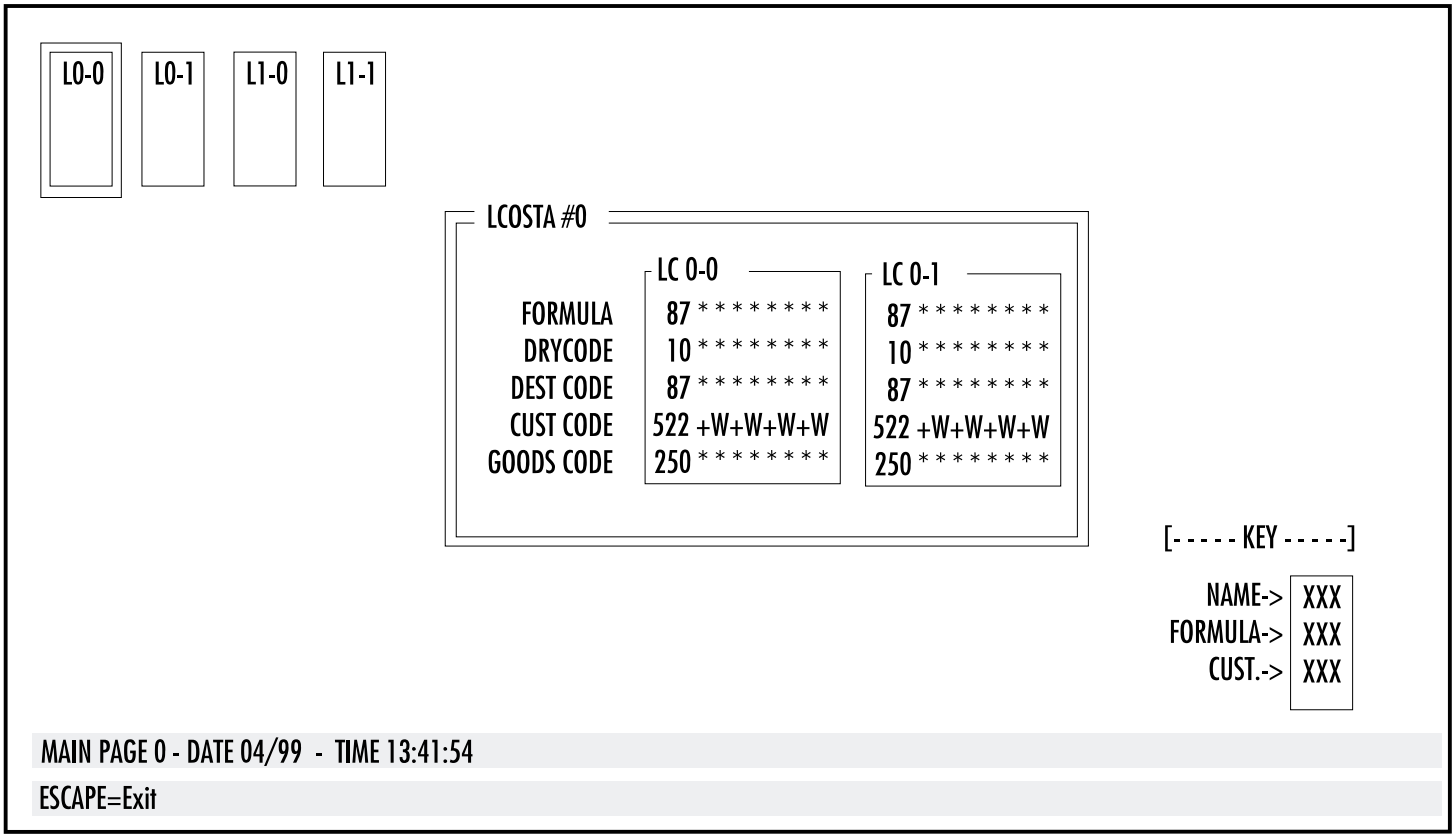


FIGURE 3 (MSOP0948AE)
Monitoring Belt Data

RUNNING THE LINEAR COSTA MASTER IN AUTOMATIC

Normal Automatic Operation

The Linear Costa Master's normal operating mode is fully automatic. Once set for automatic operation, a new cake (and its batch codes) passes from the loading device (e.g., a Milnor shuttle) to one of the Linear Costa belts. The belt then discharges a batch of one or more cakes to the receiving device (e.g., a Milnor dryer).

Linear Costa Master controls from one to eight Linear Costa belts. These belts load, store, and discharge batches consisting of one or more cakes. Each belt operates independently. The following describes the loading and discharging process for a belt.

Cake Loading

The loading state for the Linear Costa belt is completely empty or with the last cake loaded at the back of the belt. When a Linear Costa receives a load, it waits for its load end eye to block, then runs its belt until the eye clears plus the configured "trailing time." The trailing time controls the spacing between the cakes on the belt. The Linear Costa will continue to load cakes until it is full, it has enough cakes to make an optimum batch (see Optimum Number of Cakes under Configure Devices), or the optimum discharge time has expired (see Optimum Discharge Time under Configure Devices).

Cake Discharging

The loading state for the Linear Costa belt is with one or more cakes on the belt and both the load and discharge eyes clear. When a Linear Costa discharges, it waits for its discharge eye to block, then clear to indicate that a cake has gone past. If there is another cake on the belt, the belt runs until the eye blocks again. If the receiving device can take this cake, the belt continues to run and the Linear Costa Master repeats the same process until the receive device cannot take any more cakes or the Linear Costa belt is empty. If the receiving device cannot take the next cake, the belt runs backwards until the load eye blocks, and then runs forward for the programmed "trailing time." This returns the Linear Costa to the loading state.

The Power Up Sequence

⏻/⏻ to ⏻	Energizes control power, but not Linear Costa Master power. Displays sign on screen. Operator alarm sounds until ① is pressed.
any key	Prompts *Enter Time*.
Enter the hours and press RETURN.	
Enter minutes and press RETURN.	Prompts *Enter Date*.
Enter month and press RETURN.	
Enter day and press RETURN.	
Enter year and press RETURN.	Displays the *LCMaster Auto Manual* menu. The *Return to auto mode* selection is highlighted.
Press RETURN.	Displays the *Main page* with the message *THREE WIRE DISABLED, PRESS START TO GO* if ① has not already been pressed.
Press ①.	Displays the initialization screen. Each belt runs backwards until the load-end eye blocks or for the programmed belt clear time. If the load-end eye blocks, the belt runs forward until the eye clears and the programmed trailing edge time expires.
When load-end eye is blocked, the controller prompts, *DOES LCOSTA #x - NAME: ******** POSITION #0 HAVE A CAKE (Y/N) ?*	If *Y(yes)* see "When Cake Data Must Be Confirmed" in this section.

INITIALIZE LCOSTAS

	REARWARD	LOAD EYE	FORWARD
Lcosta 0	ON	-	OFF
Lcosta 1	ON	-	OFF
Lcosta 2		NOT APPLIED	
Lcosta 3		NOT APPLIED	
Lcosta 4		NOT APPLIED	
Lcosta 5		NOT APPLIED	
Lcosta 6		NOT APPLIED	
Lcosta 7		NOT APPLIED	

FIGURE 1 (MSOP0954AE)
Initialization Screen

The Displays During Normal Operation

See *Monitoring Main Page, Cake Pages, and State Pages.*

When Cake Data Must Be Confirmed

When normal operation resumes following morning start up, a power loss, a three-wire error or any other error (see "LINEAR COSTA MASTER ERROR MESSAGE"), or manual intervention, the controller cannot know how many cakes are present. Therefore, the controller considers the batch codes for each position unreliable and prompts the user for the information explained below. The controller prompts for cake data for a particular belt only if the load end eye was blocked during belt initialization. If the eye was not blocked, the controller assumes that all positions for that belt are empty.

Responding to Prompts for Linear Costa Cake Information

To verify its cake information the controller will prompt

DOES LCOSTA #x--NAME: name x
POSITION #x HAVE A CAKE (Y/N) ?

N(No) tells the controller that the prompted position is empty.
Y(Yes) that the prompted position has a cake. The data entry form appears.

Fill in the cake information. Use the LINE FEED key to move down and the ^ key to move up. Press the ESCAPE key when done. The Linear Costa Master will prompt for information about the next position. When cake information for the last position has been verified, the Linear Costa Master returns to automatic operation.

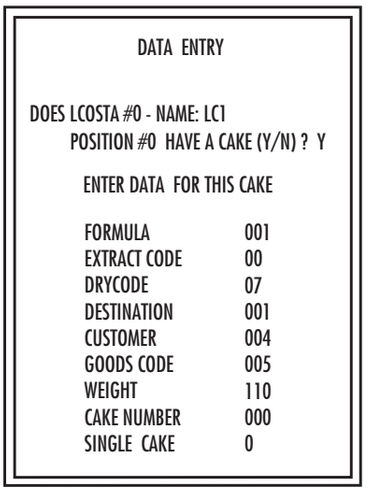


FIGURE 2 (MSOP0954AE)
Cake Data Entry Display

Interruptions in Normal Operation

Holds Ahead of the Linear Costa

Anytime the flow of goods onto a linear costa stops, its operation depends on how many cakes are already loaded. If the configured Optimum Number of Cakes are already loaded, these are discharged. If less than the optimum number of cakes are loaded, the linear costa waits for the configured Optimum Discharge Time before discharging these cakes. If the Linear Costa is empty and the *hold unload device configure decision* is set to 1, the linear costa holds the device that it discharges to if that device can take more cakes. When the flow of goods resumes processing continues without manual intervention.

Holds Behind the Linear Costa

Anytime the Linear Costa desires to discharge but cannot because the device that it discharges to is not ready to receive, the Linear Costa's actions depends on the *hold loader timer* and the *wait for rec. device time configure decisions.* If the Linear Costa is full and the loading device has more cakes, the Linear Costa will hold the loading device for the time specified by the *hold loader timer configure decision*.

Usually, if the Linear Costa has more than one cake to discharge but the receive device cannot take all of them, the Linear Costa moves the remaining cakes to the rear of the belt and tries to load more cakes after filling up the receive device. However, if the *wait for rec. device time* is set, the Linear Costa holds the remaining cakes at the front of the belt for the time configured. This allows the receive device to discharge its cakes and immediately receive more cakes from the Linear Costa.

Power Loss or Three-Wire Disabled Condition

If the Linear Costa Master either loses power or the three-wire circuit drops out (e.g. if a Stop switch is pressed), all of the belts controller by the Linear Costa Master stop immediately. The Linear Costa Master resumes operation, as explained in the "Power Restoration Sequence" in this section, as soon as the three-wire circuit is closed, regardless of how long the Linear Costa was stopped. See **NOTE** below.

NOTE: It is not usually necessary to load or unload the Linear Costa before returning it on-line with the controller. Upon restoring power, the Linear Costa Master requests cake data and resumes automatic operation. It automatically synchronizes with its interfacing devices (e.g. shuttle, dryers), unless a Linear Costa was loading or discharging a cake at power loss. See "Power Restoration Sequence" in this section.

The Power Restoration Sequences

If Power Is Lost Other Than During Load or Discharge

Powering up is as described in "The Power Up Sequence" in this section.

If Power Is Lost During Load or Discharge

If power was lost when the Linear Costa was loading or discharging a cake, some manual intervention may be required. If a cake is not completely on the Linear Costa, the belt must be run manually to get the cake completely on the belt. If the main display shows *THREE WIRE DISABLED, PRESS START TO GO*, press -B to got into manual mode. Select *Belt/Load/Unload outputs* to run the belt forward or backwards as appropriate (See "Performing Manual Operation" later in this section). When finished, select *Return to auto mode*. The Linear Costa Master will initialize and prompt for cake data (see "When Cake Data Must Be Confirmed" in this section). After the cake data is entered, the Linear Costa Master automatically synchronizes with its interfacing devices.

Viewing Data During Operation

See *Monitoring Inputs, Outputs, and Belt Data.*

PERFORMING MANUAL OPERATION

The screen displays the Auto Manual Menu when CONTROL and B are pressed simultaneously while monitoring the Main page. To choose a manual function, move up or down to highlight the selection and press RETURN. Select *Return to Auto Mode* or press ESCAPE to return to automatic operation.

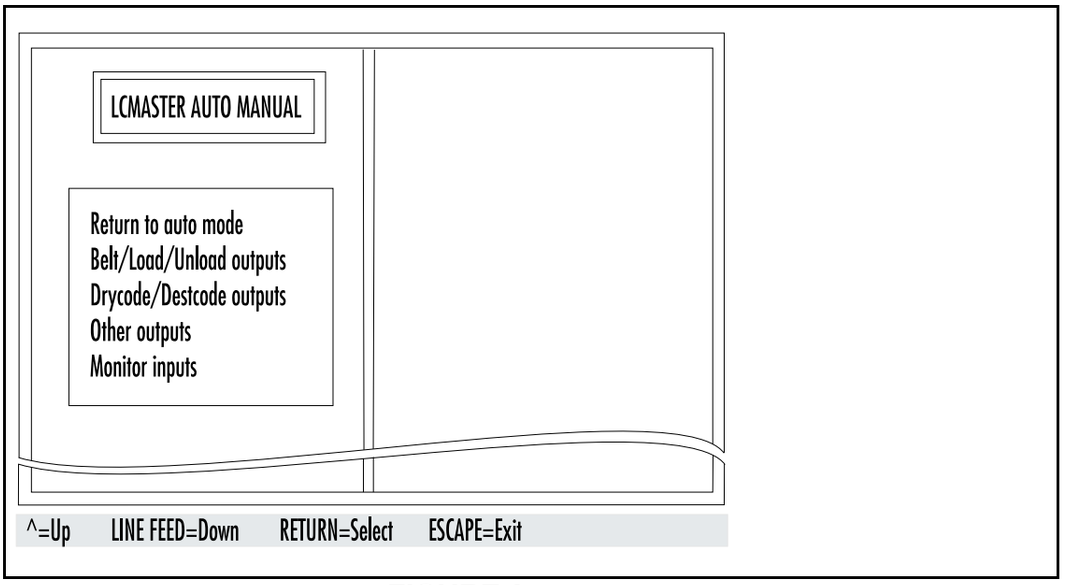


FIGURE 1 (MSOP0949AE)
Main Manual Menu

Belt/Load/Unload Outputs

To manually move belts, load belts, or unload belts, select *Belt/Load/Unload Outputs*. Choose the Linear Costo you wish to operate by highlighting your choice and pressing RETURN. A list of outputs will appear. To choose the function described, highlight the item and press RETURN. This turns the output on and off as indicated on the screen. Press ESCAPE to return to the Auto Manual menu.

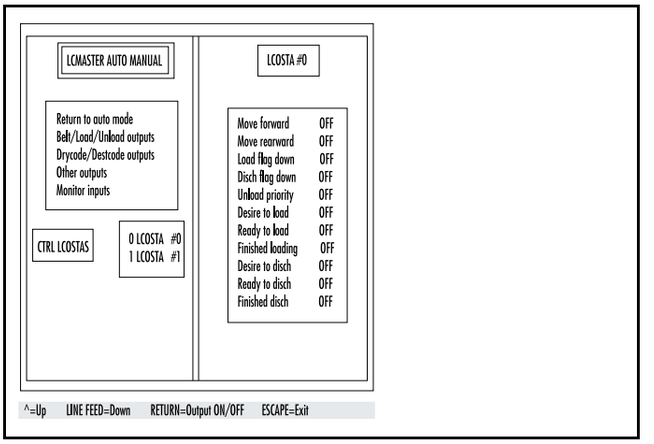


FIGURE 2 (MSOP0949AE)
Manually Actuating Outputs

Drycode/Destination Code Outputs

To manually test the drycode and destination code outputs for the Linear Costos, select *Drycode/Destcode Outputs*. Highlight and press RETURN for dry code and destination code bits to turn them on or off. Press ESCAPE to return to the Auto Manual menu.

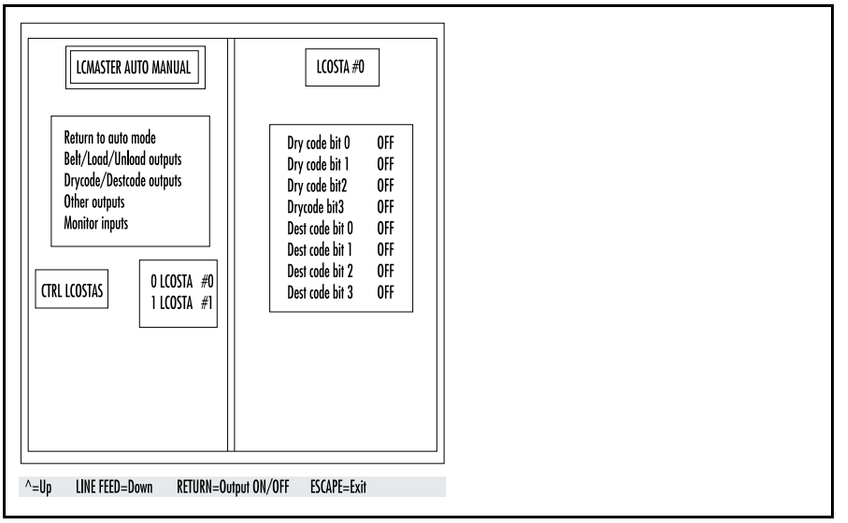


FIGURE 3 (MSOP0949AE)
Manually Setting Drycodes and Destination Codes

Other Outputs

To manually turn the operator signal on, highlight Other Outputs and press RETURN. To sound or silence the operator signal, higlight *Signal* and press RETURN. *On* will sound the alarm, and *Off* will silence it. Press ESCAPE to return to the Auto Manual menu.

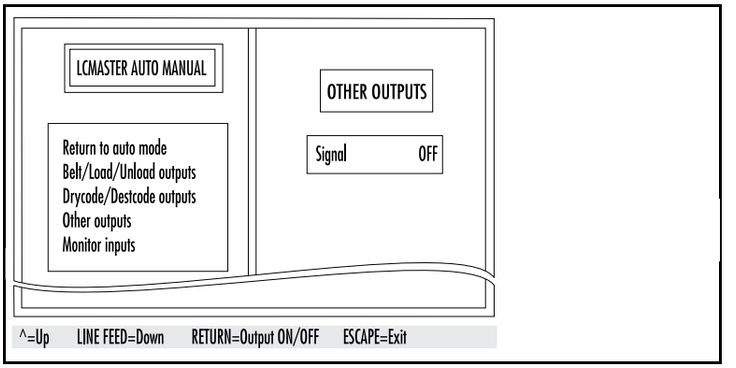


FIGURE 4 (MSOP0949AE)
Manually Sounding the Signal

Monitor Inputs

To monitor inputs, highlight *Monitor Inputs* and press RETURN. Press escape to return to the Auto Manual menu.

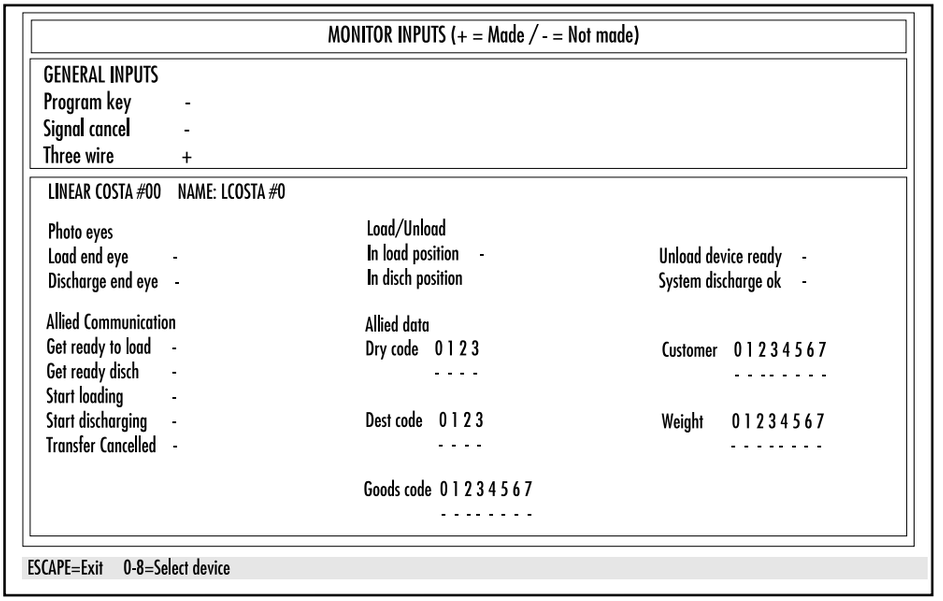


FIGURE 5 (MSOP0949AE)
Monitoring Inputs (Sample Display)