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Technical Reference

Miltrac™ Controller

Read the separate safety manual before installing, operating, or servicing

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

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MATMLTRCAE/18103A

PELLERIN MILNOR CORPORATION
LIMITED STANDARD WARRANTY

We warrant to the original purchaser that MILNOR machines including electronic hardware/software (hereafter referred to as "equipment"), will be free from defects in material and workmanship for a period of one year from the date of shipment (unless the time period is specifically extended for certain parts pursuant to a specific MILNOR published extended warranty) from our factory with no operating hour limitation. This warranty is contingent upon the equipment being installed, operated and serviced as specified in the operating manual supplied with the equipment, and operated under normal conditions by competent operators.

Providing we receive written notification of a warranted defect within 30 days of its discovery, we will at our option repair or replace the defective part or parts, FOB our factory. We retain the right to require inspection of the parts claimed defective in our factory prior to repairing or replacing same. We will not be responsible, or in any way liable, for unauthorized repairs or service to our equipment, and this warranty shall be void if the equipment is tampered with, modified, or abused, used for purposes not intended in the design and construction of the machine, or is repaired or altered in any way without MILNOR's written consent.

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How to Get the Necessary Repair Components

This document uses Simplified Technical English.
Learn more at http://www.asd-ste100.org.

You can get components to repair your machine from the approved supplier where you got this machine. Your supplier will usually have the necessary components in stock. You can also get components from the Milnor® factory.

Tell the supplier the machine model and serial number and this data for each necessary component:

- The component number from this manual
- The component name if known
- The necessary quantity
- The necessary transportation requirements
- If the component is an electrical component, give the schematic number if known.
- If the component is a motor or an electrical control, give the nameplate data from the used component.

To write to the Milnor factory:

Pellerin Milnor Corporation
Post Office Box 400
Kenner, LA 70063-0400
UNITED STATES

Telephone: 504-467-2787
Fax: 504-469-9777
Email: parts@milnor.com

— End of BIUUUD19 —

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Table 1 Trademarks

AutoSpot™	GreenTurn™	Milnor®	PulseFlow®
CBW®	GreenFlex™	MilMetrix®	PurePulse®
Drynet™	Hydro-cushion™	MilTouch™	Ram Command™
E-P Express®	Linear Costa Master™	MilTouch-EX™	RecircONE®
E-P OneTouch®	Linear Costo™	Miltrac™	RinSave®
E-P Plus®	Mentor®	MultiTrac™	SmoothCoil™
Gear Guardian®	Mildata®	PBW™	Staph Guard®

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Comments and Suggestions

Help us to improve this manual by sending your comments and suggestions to:

Mail: Pellerin Milnor Corporation; Technical Publications; P.O. Box 400, Kenner LA 70063-0400

Fax: (504) 469-1849 Attn: Technical Publications

E-mail: mktg@milnor.com Subj: Technical Publications

Machine model: _____ Manual number: _____

Comments: _____

Please attach another sheet of comments if necessary.

Owner/User Information: Machines with a Keypad

MSOP0237CE/9816AV

Take the following important steps before placing this machine in operation:

1. Ensure safety of laundry personnel.
2. Protect against data loss.
3. Customize data (e.g., configure, formula, and productivity data).

Ensure safety of laundry personnel

Ensure that all personnel who will operate or maintain this machine read the safety manual *before permitting them access to the machine*. Also ensure that all user manuals are available to the appropriate personnel and that all precautions explained in the safety and other user manuals are observed.

Protect against data loss

Follow the safeguards listed below to protect against data loss caused by human tampering, electromagnetic interference (EMI), physical damage to the data storage medium, or loss of power to random access memory (RAM).

1. Keep the *Run/Program keyswitch* set to *run* and secure the keys. Users must understand proper use of this control. See "ABOUT THE USER CONTROLS. . ." (see Table of Contents).
2. Keep all electric box doors closed and locked. Secure the keys.
3. Leave machine power on for 48 hours before customizing data. This fully charges the microprocessor battery, which will then supply power to the RAM for 90 days even if machine power is off.
4. Replace the battery board every five years. A capacitor on the processor board can supply power to the RAM for several hours to provide time to change the board.
5. Keep electronic back-up data and/or a printed record of all field-programmed data (e.g., wash formulas, configure values, step names, chemical names) in case of data loss. See the instructions for downloading and printing this data if the machine has this capability.
6. For machines that accumulate productivity data (e.g., count of loads processed), transcribe any needed data frequently, as described in the instructions for data accumulation.

Customize data

When to customize data

- When commissioning the machine
- When restoring a machine to service after a lengthy shutdown
- When required by an error message
- After replacing the CPU board
- After upgrading software (replacing EPROMs)

- After adding or removing optional equipment on a machine
- After adding or removing equipment from a controller system
- When adding or removing formula, dry, destination, customer, or goods codes

What customizing requires

Verify configuration. Program formulas and clear productivity data, if applicable. See the programming and operating sections in this manual for instructions.

Data accessibility

Configure and formula data can only be altered while the keyswitch is in the program position. (Data is keyswitch-protected). Productivity data (not applicable to Miltrac), because it is accumulated in the run mode, cannot be keyswitch-protected and is accessible to anyone. Data is accessible to the extent described in the following table:

Type of Data	Applicable Machines	Uses of Data
Configure Data	Dryer	Read Write/over-write Up/download Clear to default values
	Shuttle, Single-stage press	Read Write/overwrite Clear to zeros
	Two-stage press, Cobuc, Linear Costo, Discharge Sequencer	Read Write/overwrite
	Washer (and textile)-extractor Centrifugal extractor	Read Write/overwrite Up/download
	Miltrac*	Read Write/overwrite Up/down.load Clear to **** and default values

Type of Data	Applicable Machines	Uses of Data
Formula step and chemical names	Washer (and textile)-extractor	Read Write/overwrite Up/download Clear to example values
	Miltrac*	Read Write/overwrite Up/Download Clear to ***
Formulas	Washer (and textile)-extractor, Centrifugal extractor, Dryer	Read Write/overwrite Up/download Clear to empty
	Miltrac*	Read Write/overwrite Up/download Clear to ***
Productivity Data	Washer (and textile)-extractor, Centrifugal extractor, Dryer	Read Clear to empty
* Accessing the program mode in Miltrac stops all communication and transfers between devices.		

If data becomes corrupt

If the microprocessor senses that data is unusable or unreliable, an error message will appear (usually at power-up), possible preventing machine operation. The consequences and appropriate actions for each error message are explained in the troubleshooting instructions. Follow these instructions exactly to ensure that corrupt data is completely eliminated and replaced with valid data. Failure to do so may result in unsafe operation or machine damage.

About Miltrac User Controls

User controls are of two types--electro-mechnical controls (switches and buttons) and microprocessor interface controls (keywitch, CRT display, keyboard, and printer/download connection). All Miltrac microprocessor interface controls are mounted on control boxes.

NOTE: Do not attempt to use your machine merely by referring to the description of controls. Read the operating, programming, and troubleshooting instructions throughout this and the operator manual.

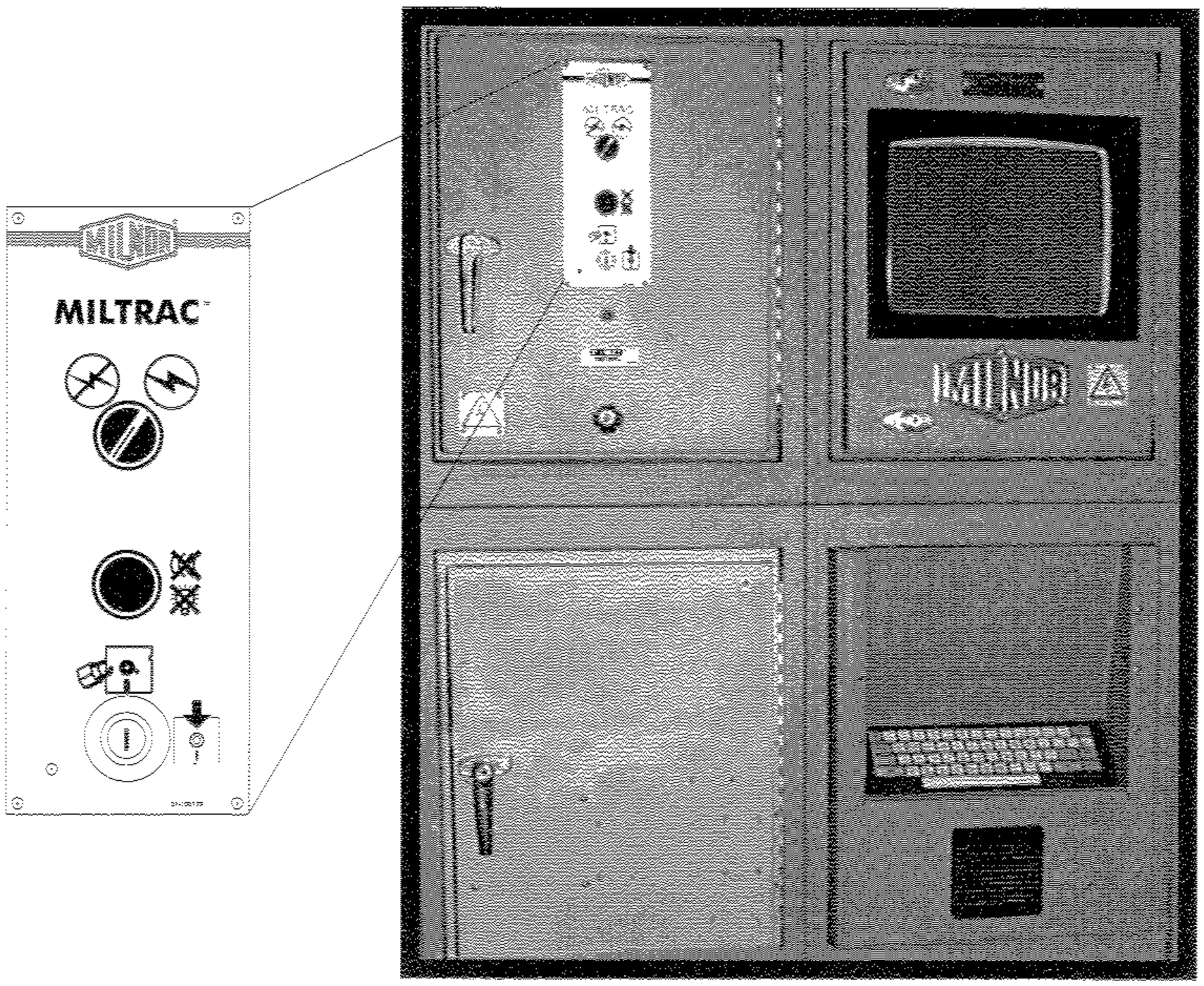


Figure 1: Miltrac control boxes

Electro-Mechanical Controls

Electro-mechanical controls vary with machine model and are explained in the machine-specific operator manual furnished with the machine.

Microprocessor Interface Controls

These controls, shown in Figure 1, include the keyswitch, located on one control box, the display, located on another, the keyboard, located on a third, and the printer/download connection, located on a fourth control box.

Keyswitch

This key-operated switch provides security for all field-propgrammed data in memory. With the keyswitch set to run ( ), this data cannot be changed. The key cannot be removed in the program ( ) position.

CAUTION: Data Loss

Data Loss Hazard--Improper use of the keyswitch may corrupt program data.

- Return to the run mode only when the display says Ok Turn Key to Run.
- Only power off or on with the keyswitch at run.
- Do not leave the key accessible to unauthorized personnel.

Display

This CRT displays programming and configuring screens, monitoring screens, and status messages. Programming and configuring screens prompt the user to enter data at the keyboard. As keys are pressed, the data appears in the data input field on the screen. A blinking cursor always shows where the next character will be entered.

Keyboard

The 58-key keyboard is used for programming, making selections (e.g., selecting new displays, etc.), responding to messages, etc. Applicable procedures are explained in the remainder of this manual and depicted using symbols to indicate pressing keys on the keyboard.

Printer/Download Connection

Connect a Milnor-supplied printer here to print field-programmed data (e.g., formulas) and accumulated data (e.g., count of loads processed), if applicable. Connect a Milnor-supplied serial downloader here or interconnect between machines to copy field-programmed data between devices. Printing and downloading are explained elsewhere.

Overview of Miltrac

What it is

Miltrac is a microprocessor-based communications controller with a keyboard and full color CRT. Miltrac links the controller for each device together to control all devices in a Milnor laundry system. Miltrac allows for field-programming, complete system monitoring, and troubleshooting.

How it operates

Miltrac serves as a laundry system communicator and "traffic cop." The controller prioritizes, sequences, directs, controls, and monitors the flow of goods through the complete goods processing and handling system. The controller also tracks and passes all the necessary goods data about each batch to the next appropriate controller to ensure proper processing. It makes all necessary compatibility decisions based on field-programmed codes.

Field-programming allows the owner/user to input system details like the number of devices and printer type, device details like x and y coordinates of each device and valid goods code ranges, and the number of pieces per batch. Monitoring pages allows the owner/user to evaluate system operation from multiple views including batch activity through the entire laundry layout, batch activity in each tunnel position, and goods data for each batch in the system. Error detection and message display aids the plant technician in efficient troubleshooting.

Miltrac Layout

To configure the Miltrac, assign a device number and an x,y coordinate to each device (machine). If you opted for TUNPLAN when you purchased your system, you should have received a Control Circuit Conductors, Grounds, and Cables diagram with your system. The appropriate x,y coordinates and device numbers for your system are located on that document. If you did not opt for TUNPLAN, assign the correct numbers to each device using the following instructions.

Assigning Device Numbers

Assign the first Miltrac-compatible device (i.e., first device in the serial link) the number 00. Assign numbers to other devices in order of the flow of goods through the system. See Figure 1. For example, in the system shown, the goods begin in the tunnel (00), travel through the press and COINC (01) onto the shuttle (02) and into one of five dryers (03, 05, 07, 09, or 11), a no dry location (04, 06, 08, 10, 12, 16, 18), or two linear costas (13 or 14), etc. For each dryer configured for a no-dry station, assign one device number to the dryer and the next device number to the no-dry location. Assign a shuttle or conveyor only one device number, even if it handles more than one cake or has more than one belt.

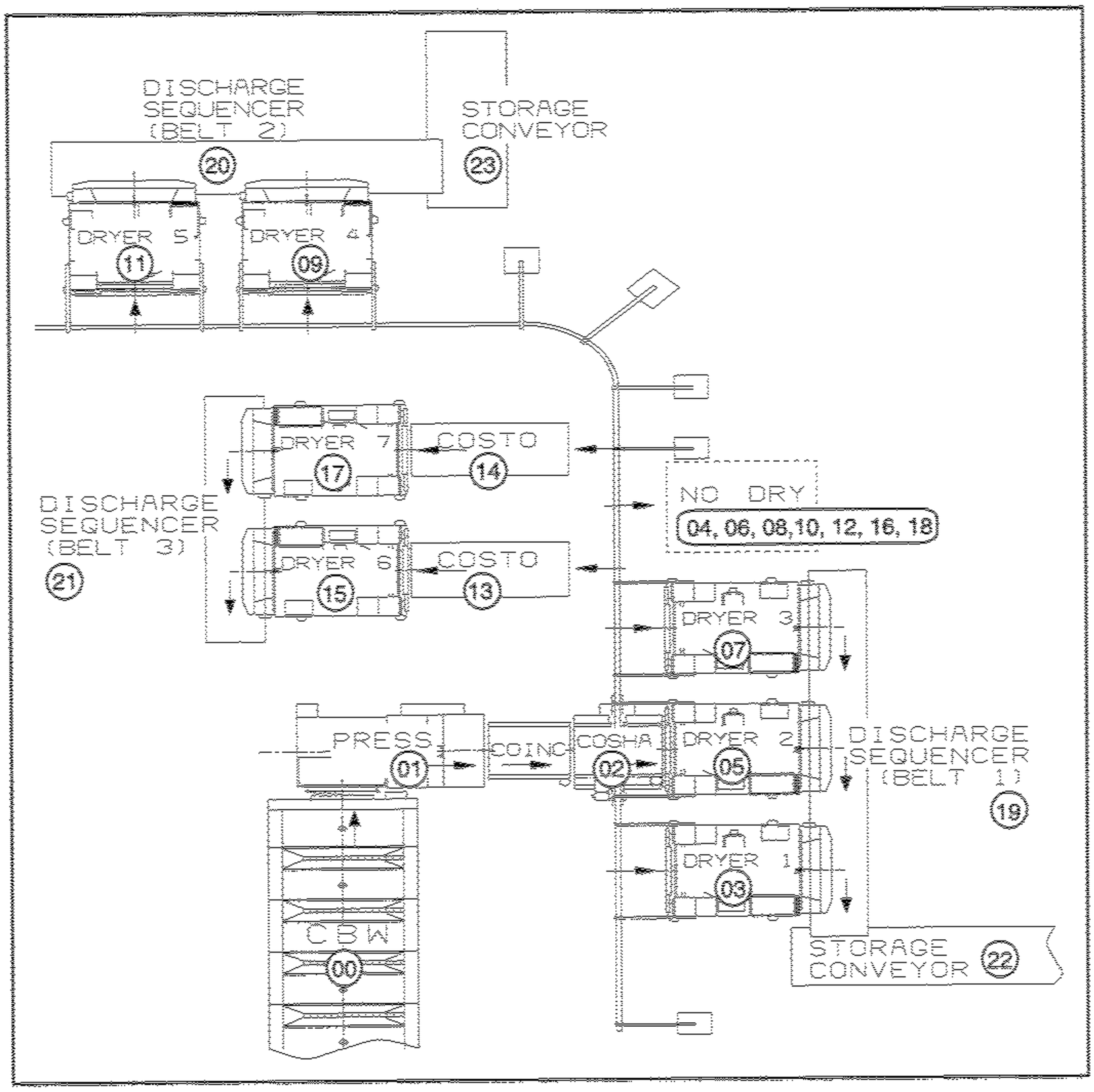
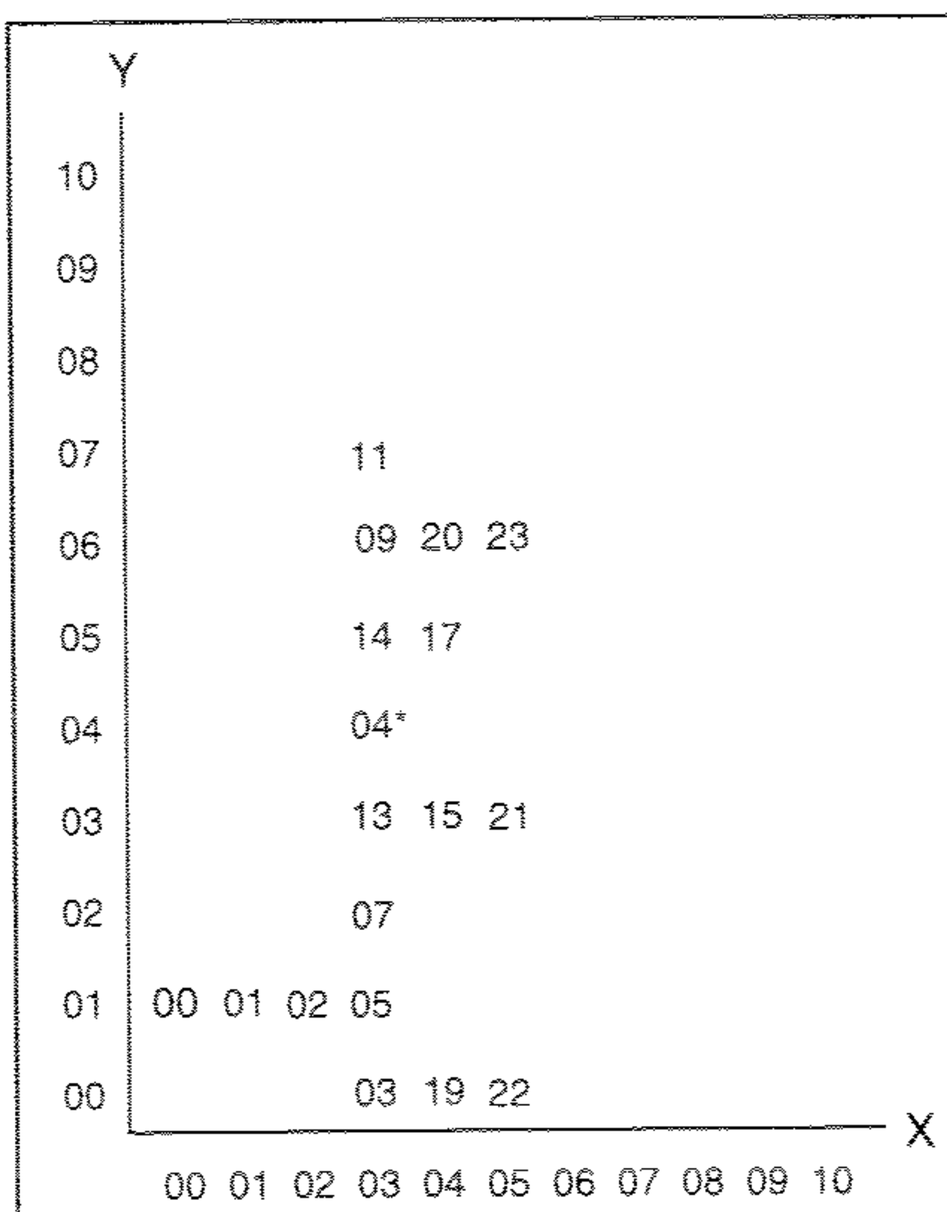


Figure 1: Miltrac system with device numbers

Assigning Coordinates

Once device numbers are assigned, determine the x,y coordinate for each device by graphing your system layout into a conceptual diagram. See Figure 2.



Device #	Device	x	y
00	CBW	0	1
01	press	1	1
02	cosha	2	1
03	dryer1	3	0
04*	nodry	3	4
05	dryer2	3	1
07	dryer3	3	2
09	dryer4	3	6
11	dryer5	3	7
13	costo1	3	3
14	costo2	3	5
15	dryer6	4	3
17	dryer7	4	5
19	dischbelt1	4	0
20	dischbelt2	4	6
21	dischbelt3	5	3
22	storconv1	5	0
23	storconv2	5	6

* 04 represents 04,06,08,10,12,16,18

Figure 2: X,y coordinates for Miltrac system previously illustrated

A grid is provided in Figure 3 for plotting your system. Guidelines for assigning x,y coordinates are as follows:

- Plot devices in "flow of goods" order. Goods must always transfer to the next higher x coordinate (even if the arrangement of devices requires the belt on the transferring device to run backwards). Goods cannot be transferred to devices with a lower x coordinate, the same x coordinate, or two coordinates higher. The plotted devices often resemble a "T" pattern.
- Plot shuttles with curved rails (or other devices that causes the system to curve) as straight on the conceptual diagram. For example, the shuttle should have one x coordinate.
- Plot devices receiving from the shuttle in order of appearance such that the rightmost device has the lowest y coordinate, the second rightmost has the second lowest y coordinate, etc. This directs the shuttle how far left or right to travel to reach each device (based on shuttle targets).
- Plot devices receiving from the shuttle but on the same side of the rail as the press as though they were on the side of the rail opposite the press in the conceptual diagram. Plot devices that share a target (i.e., opposite each other across the shuttle rail) on the same x,y coordinate. These receiving devices have an x coordinate higher than the transferring shuttle.

- Align the shuttle home position with the device discharging to it.
- Plot a device that receives from or transfers to more than one device (e.g., shuttle) along the y axis by the coordinates of its home position.
- Plot the no-dry destination as any other dryer-type device. Plot no-dry device numbers so that they all share the one or two no-dry destinations in the conceptual design.
- Include "phantom" devices when two transferring devices are separated by more than one x coordinate. For example, a system with two conveyors that ultimately feed onto the same storage conveyor may require a phantom device. If one of the conveyors is two devices from the storage conveyor and the other conveyor is only one device away from the storage conveyor, insert a phantom or imaginary device with a device number and x,y coordinate so goods always transfer to the next higher x coordinate. Enter a phantom device into the Miltrac system and/or other controlling system (e.g., Device Master) as though the device is physically present.
- Do not incorporate allied equipment in your laundry into the conceptual design. Allied devices are not part of the Miltrac coordinate system unless they are being controlled by the Miltrac through another device controller.
- Plot a belt that receives from more than one device at the lowest y coordinate of the receiving devices.

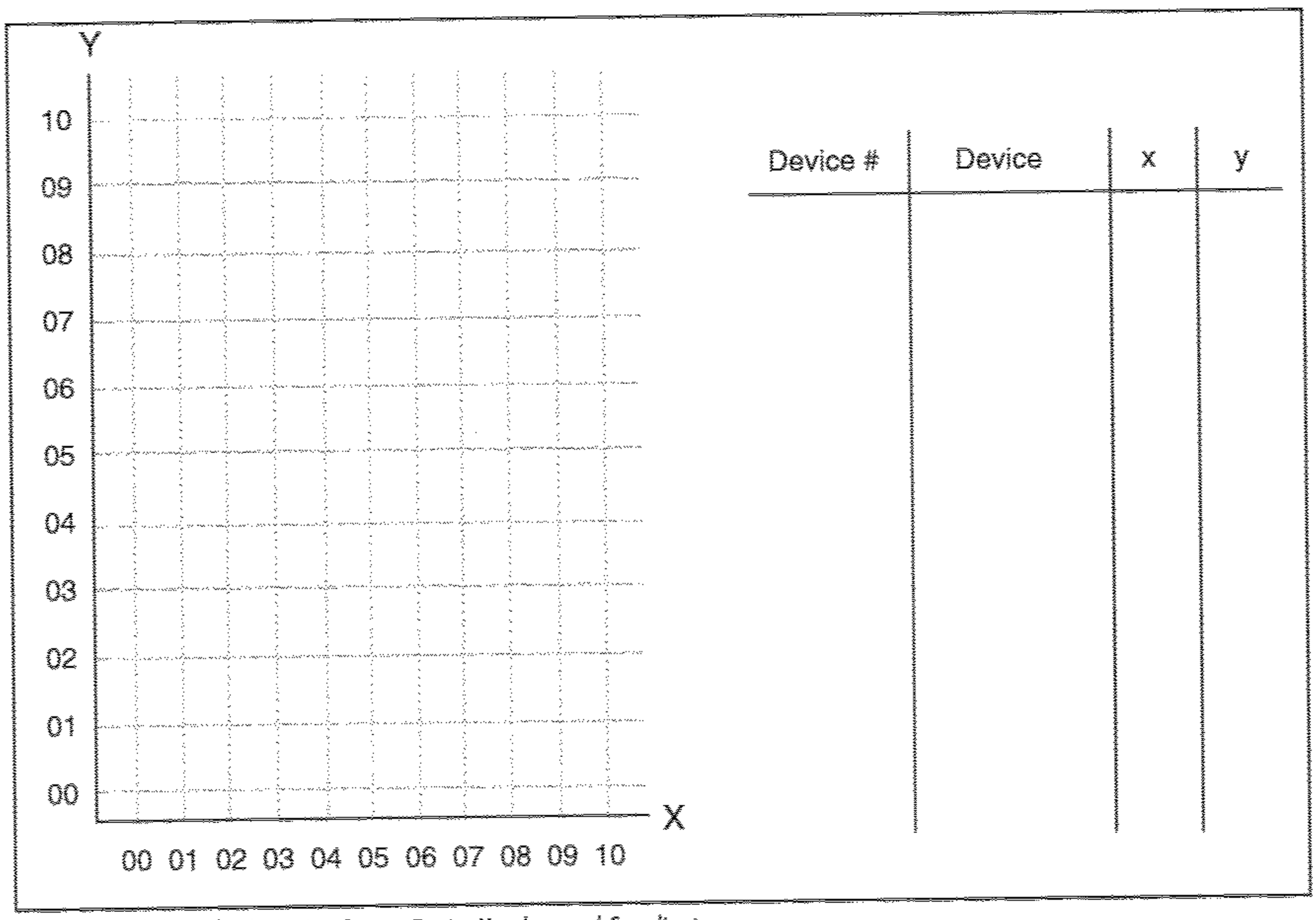


Figure 3: Worksheet for Assigning System Device Numbers and Coordinates

Programming 1

Programming Miltrac: Overview

The Miltrac Main Menu

- Initialize—change current time and date, clear counters or memory, test ticket printer, transfer data to back up memory, print configuration, and view checksum.
- Configure—tell Miltrac about the laundry layout, controlled devices, and device to transfer pieces from.
- Display Pages—configure up to five displays of the main page, one cake page, and one CBW page.
- Names—enter, erase, or download data about goods in system.
- Exit—safely return to the run mode.

How To Access and Exit the Main Menu

Access the Main Menu for configuration and programming by turning / to . Transfers in progress are aborted and shuttles return to the home position.

Exit the Main Menu by selecting Exit and pressing RETURN. Turn the / to only when the display says "Turn Program Key To Exit." If the / is turned to when a data screen is on the display, Miltrac may require reprogramming.

The Main Menu Selections

Initialize	Configure	Display Pages	Names	Exit
Time & Date	System	Main page	Formulas	Exit
Counters	Devices	Cake pages	Extract codes	
Clear memory	Goods data	CBW page	Dry codes	
Ticket printer test			Dest codes	
Data transfer			Customer codes	
Print Configuration			Erase names	
Display checksum			Download names	

Initialize

Time & Date

Enter the correct time and date each day at start-up so the customer ticket information is accurate.

Counters

Clear the run-time counter and total transfers (reset to 0) to track productivity for a given time period. The run-time counter automatically rolls over to 0 after approximately 126 years, 10 months. The total transfers counter automatically rolls over after 65,535 transfers.

Clear Memory

Clear all Miltrac memory—including names—and load valid defaults in all fields with this selection. Always clear memory with this selection before programming a newly installed Miltrac system. This selection requires complete reprogramming once Miltrac is initially installed and programmed.

Ticket Printer Test

Test any ticket printer (up to eight printers) or turn on the operator signal light with this selection.

Data Transfer

Transfer information about Miltrac's configuration to and from a data storage device (Milnor Memory Downloader) to protect against data loss with this selection. Back up data regularly to a separate device, as it is impossible to transfer data from a failed device. The data transfer selection offers these available operations:

- Interrogate Data Storage Device—determine whether the storage device is present and responds properly to Miltrac.
- Upload Data to Data Storage Device—copy all data from Miltrac to a data storage device for safety.
- Download Data from Data Storage Device—restore an earlier copy of data from a data storage device to Miltrac.
- Exit Data Transfer Manager—return safely to the Main Menu

Print Configuration

Print the system configuration, device configurations, programmed display pages, and programmed names.

Display Checksum

Record this checksum number after each programming session, and suspect unauthorized programming if the number changes. The Miltrac controller calculates the checksum—a number—each time the program key is turned to run (i.e., whenever programming changes are made).

Configure

Define three factors in the Miltrac system with this selection.

- System—configure the whole system that Miltrac controls.
- Devices—configure the individual devices Miltrac controls.
- Goods Data—configure the weight per piece and the partial and full load schedule time for each goods code.

System

General Configuration

Configure the system with the following information.

- Language
- Weight Units
- Number of Devices on Miltrac
- Device to Count Transfers
- Discharge How
- X Coordinate to be Discharged
- X Coordinate to be Loaded
- Look for Closest Device
- X Coordinate for No Single Cake
- Last Device on First Link
- Single Load Weight
- Stuffing Logic (X Coordinate to be Stuffed, Number of Cakes for Batch)

Ticket Printers

Configure the Number of Ticket Printers, Copies per Ticket to print, the number of Lines Between Copies, whether you are using a Dot Matrix Printer, and When to Print Tickets.

Valid Data

Tell Miltrac if the following data types are passed in your system.

- Formula
- Extract Code
- Drycode
- Destination Code
- Customer Code
- Goods Code
- Weight
- Pieces
- Cake Number
- Single Cake

Pieces, Alternate Ranges, and Single Load

- Device to Enter Pieces—determine at which device the Miltrac will enter the number of pieces in the batch
- Devices to Time for Alt Ranges—determine which devices that Miltrac monitors when using Alternate Ranges when waiting to transfer
- Switch Ranges Time—determine the amount of time a device should wait for transfer before Alternate Ranges are applied

Devices

Modify the configuration or position names of system devices.

Device Configuration

Configure each device with the following information.

- Device name
- X coordinate
- Y coordinate
- Number of Storage Positions
- Movable Device (Min and Max X Y Coordinate and Changing Y Coordinate)
- Group for Device
- Printer for Device
- Border Color
- Wait for Xfer/Load Time

- Compatibility? (Always Load Compatible, Formula, Extract Code, Drycode, Destination Code, Customer Code, Goods Code)
- Ranges for Device (Formula, Extract Code, Drycode, Destination Code, Customer Code, Goods Code)
- Alternate Ranges for Device (Formula, Extract Code, Drycode, Destination Code, Customer Code, Goods Code)

Position Names

Associate a position name and short name for each potential device position(s).

Goods Data

Modify characteristics of goods codes. Each goods code can be associated with the desired weight/pieces per 100. The schedule time for a partial load and the schedule time for a full load.

Display Pages

Main Page

Select a page and the two data items to display for each device on that page. Then, configure how the devices and data appear on the display.

Cake Pages

Select a page and up to five data items to display for each device on that page. Then, configure how the devices and data appear on each of five pages.

CBW Page

Select a page. Enter the required information about the CBW (Device number assigned to CBW, Number of storage positions on CBW, Number of Wash Positions on CBW). Select up to five types of data to display on each of two pages.

Names

Assign a name to the following codes.

Formulas

Extract codes

Dry codes

Dest codes

Customer codes

Goods codes

Erase names—erase the selected names

Download names—transmit names to Device Master or Linear Costa Master

Exit

Turn ⚙/ to to exit to the run mode.

Programming Miltrac: Initialize and Exit

Initialize

Use the Initialize menu (see Figure 1) to change the current time and date so customer tickets are printed correctly. Use it to clear the counters of total run time and number of transfers (resetting both counters to 0), clear all memory, test ticket printers, transfer data, print configuration, and view the checksum.

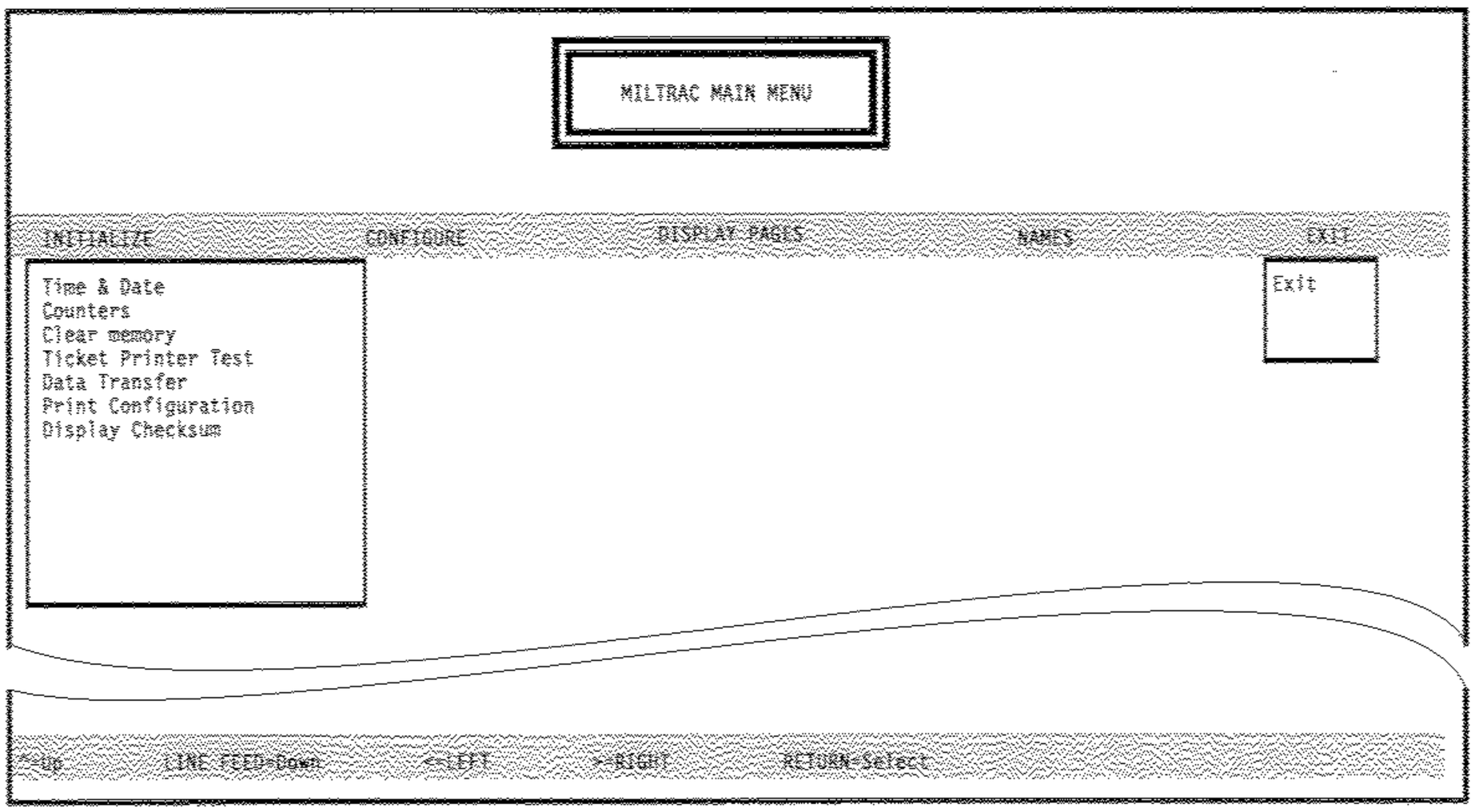


Figure 1: Miltrac Main Menu: Initialize and Exit

Time & Date

Enter the correct time and date on this page (Figure 2) each day at start-up so ticket information is 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). To correct an error, press RETURN until the Main Menu reappears, then re-enter the time & date selection.

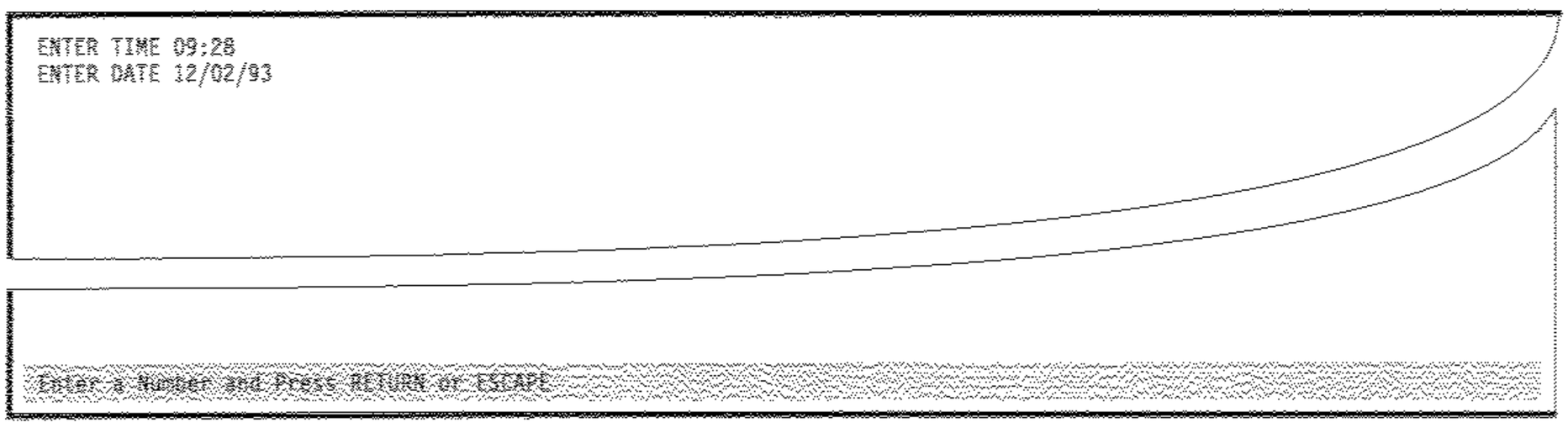


Figure 2: Detail: Time & Date Page

Counters

Clear and reset four Miltrac production counters (Figure 3) to track productivity for a given period. View the run-time counter on the time/date line of the Miltrac main page and view the total transfers counter on the state page. View the transfer and receive timers on the Timer page. Although the run-time and transfer timer have relatively large capacities (a minimum of one year of continuous operation), clear the counters before basing precise productivity calculations on the contents.

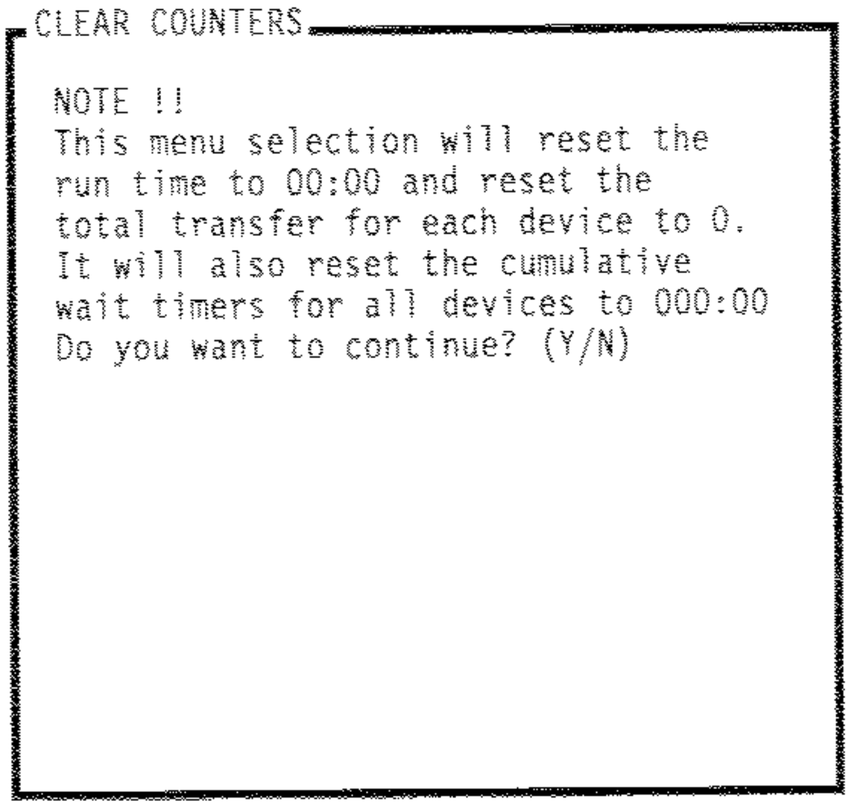


Figure 3: Detail: Clear Counters Page

Clear memory

Clears all Miltrac memory (Figure 5)—including names—and loads valid defaults in all fields. Always clear memory with this selection before programming a newly installed Miltrac system. However, once Miltrac is installed and programmed, using this option requires complete reprogramming.

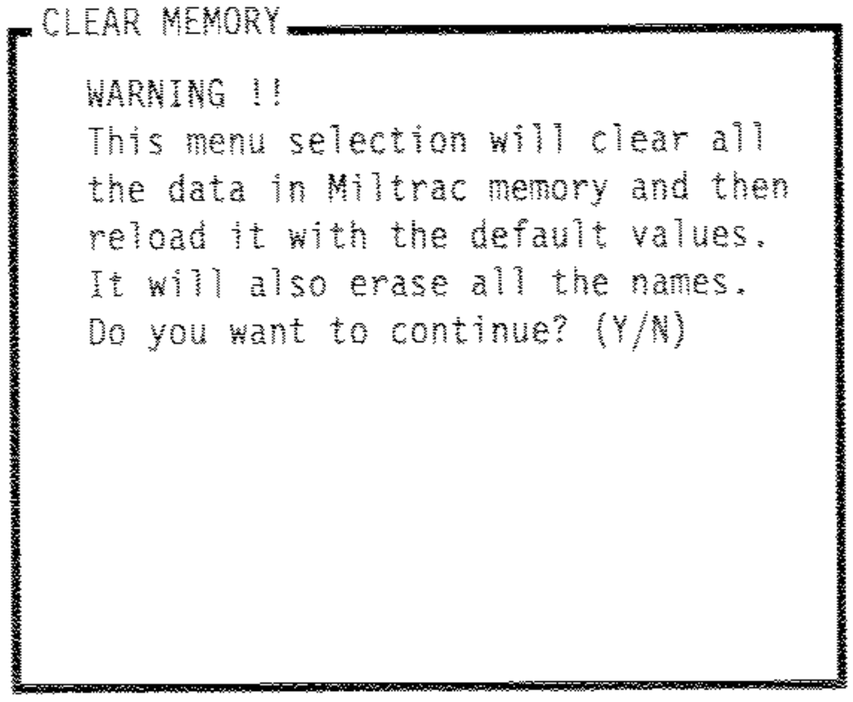


Figure 5: Detail: Clear Memory Page

Ticket printer test

Test any ticket printer or test the operator signal light.

Press 1 to test ticket printer #1 (or another number for the corresponding printer). Miltrac displays "Printing . . ." while the printer prints a standard ticket (Figure 4). Miltrac supports up to eight ticket printers. Press ESCAPE to exit this test.

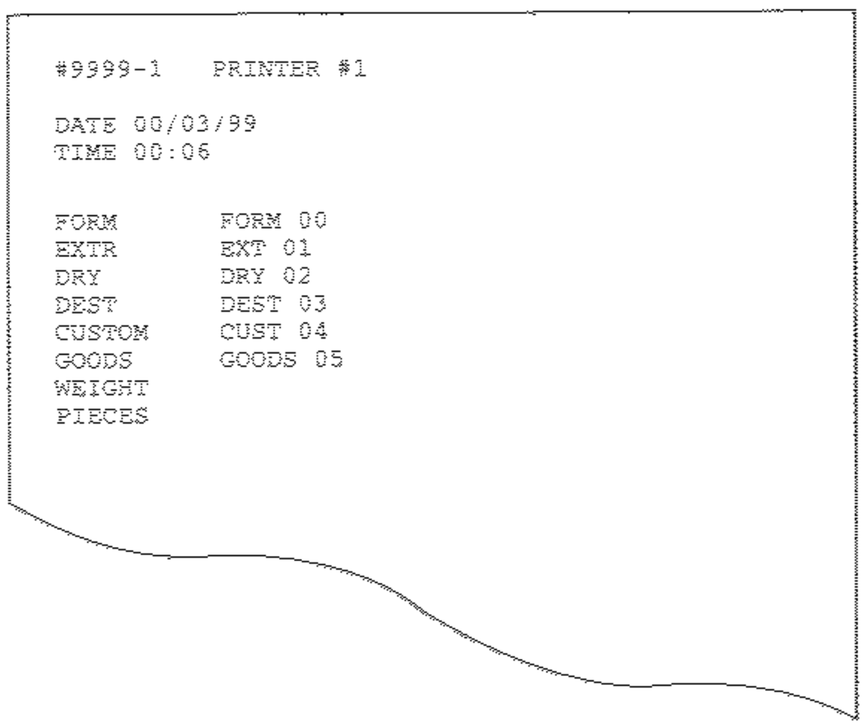


Figure 4: Sample printed page as result of Ticket Printer Test

Data transfer

Transfer information about Miltrac's configuration to and from a data storage device (Milnor Memory Downloader) as security against data loss. Back up data regularly to a separate device (the Memory Downloader), to prevent reprogramming the device even in the case of changing the Miltrac processorboard. Back up data whenever configuration changes because it is *impossible* to transfer data from a failed device. Select data transfer for a (Figure 6) list of available operations.

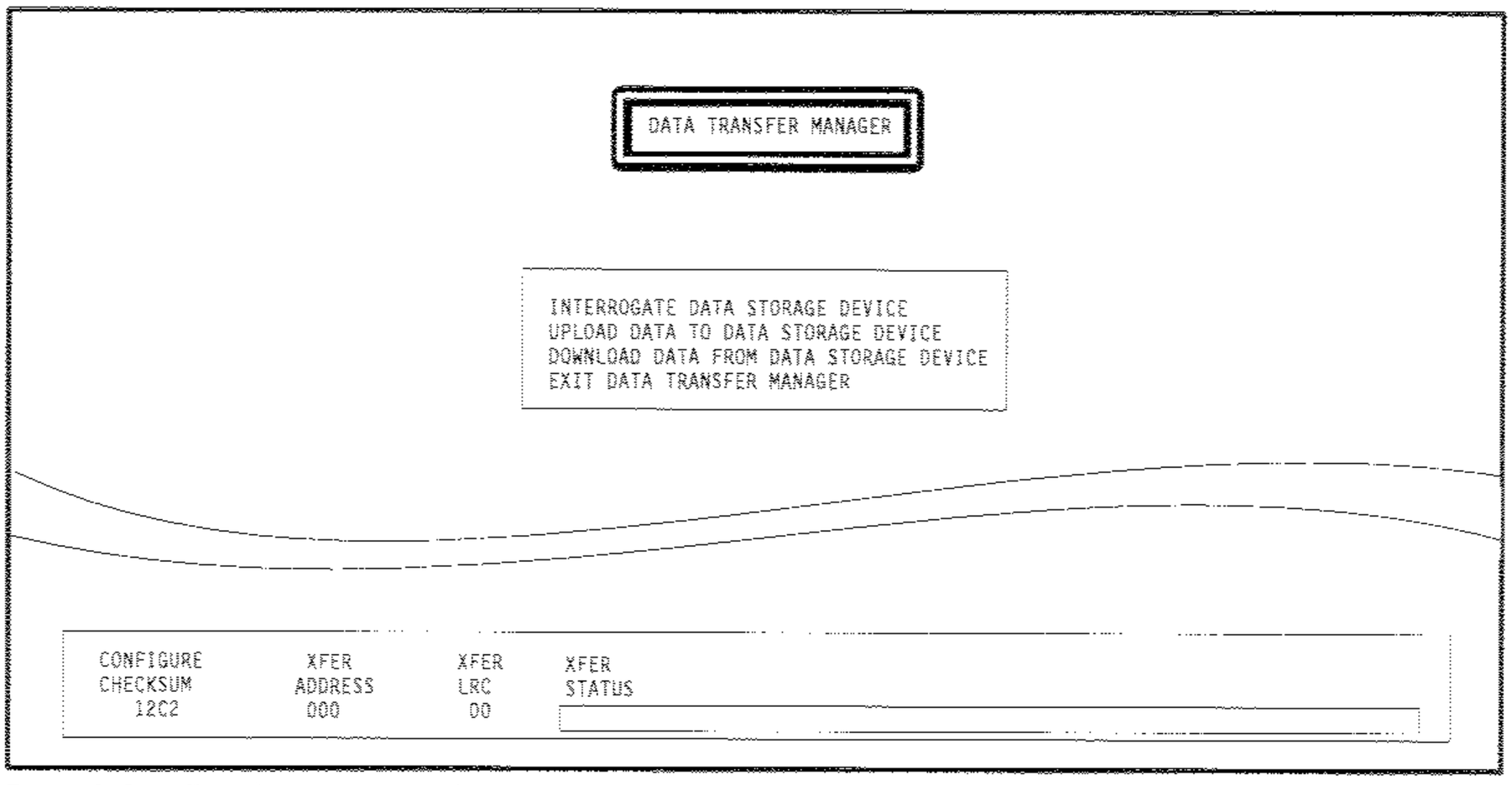


Figure 6: Data Transfer Manager Display

Interrogate data storage device

Determine whether the storage device is present and responding properly to Miltrac.

Upload data to data storage device

Copy all data from Miltrac to a data storage device for safety.

Download data from data storage device

Restore an earlier copy of data from a data storage device to Miltrac.

Exit data transfer manager

Return to the Main Menu.

Transfer Status Messages

Transfer data with the Milnor® Memory Downloader

1. Connect the Memory Downloader (Figure 7) to the serial port on the Miltrac controller using the Memory Downloader cable.
2. Turn the keyswitch to Clear Memory and back again on the Memory Downloader. Wait for the ready light to come back on.
3. During data transfer, observe the three status lights (Ready, Transmit, and Receive) on the Memory Downloader to verify that the desired data transfer is occurring.
4. Upon completion of the transfer, Miltrac calculates the checksum and verifies that the calculated checksum value matches the checksum value in the Memory downloader. Any discrepancy indicates that the received data does not match the data in the sending device, thus the received data is corrupt.See "Display Checksum" in this section for more about how to check the Miltrac checksum value.

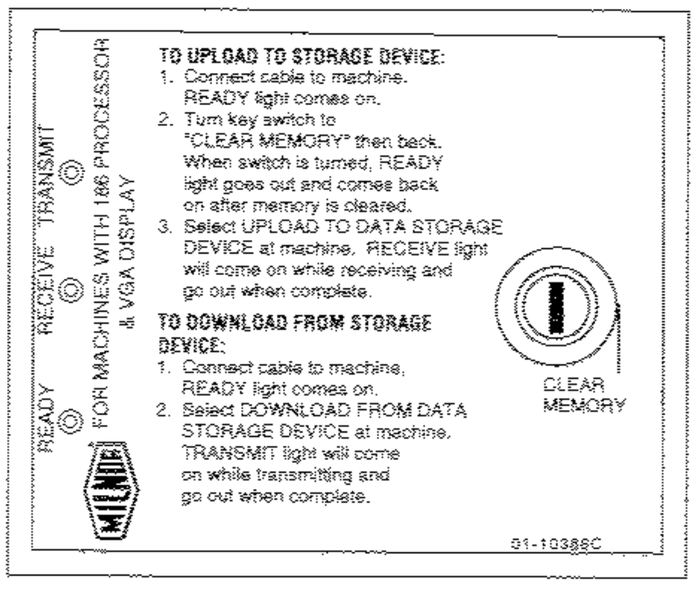


Figure 7: Milnor Memory Downloader

Monitor data transfer

- Monitor the Configure Checksum display on Miltrac to establish the final configure checksum value after the download.
- Monitor the Xfer Address display on Miltrac to determine the progress of downloading. The displayed hexidecimal number will begin at 0000 and probably end at FFFD when the download is successfully completed.
- Monitor the Xfer LRC display on Miltrac to establish the final LRC checksum value after the download.
- Monitor the Xfer Status display for important messages about the status of the download procedure.

Xfer Status display messages

Message	A	B	C	Explanation
A=Interrogate Data Storage Device B=Upload Data to Data Storage Device C=Download Data from Data Storage Device				
Data device ready	✓			The Memory downloader is connected and responding properly.
Waiting to receive			✓	The Miltrac controller has not received the download data.
Data device not responding	✓	✓	✓	The Miltrac controller got an improper response from the Memory downloader.
Communication error	✓	✓	✓	The Miltrac controller got an improper response from the Memory downloader.
Receiving data			✓	Data is being downloaded from the external device to the Miltrac controller. Downloading may take several minutes. Data is being uploaded from the Miltrac controller to the Memory Downloader. Uploading make take several minutes.
Verifying data			✓	Data transfer is complete, but the Miltrac controller is calculating a new configure checksum to compare with the downloaded checksum. See "How the Configure Checksum is Used" in this section.
Data transfer aborted		✓	✓	The user cancelled the data transfer in progress by pressing *Escape*
Data checksum error detected			✓	The configure checksums did not match. See "How the Configure Checksum is Used" in this section.
Download error detected			✓	The LRC checksum calculated by Miltrac did not match. See "How the XFER LRC (LRC Checksum) is Used" in this section.

Message	A	B	C	Explanation
Upload error detected		✓		The LRC checksum calculated by the Memory Downloader did not match. See "How the XFER LRC (LRC Checksum) is Used" in this section.
Download complete			✓	Indicates a successful download.
Upload complete		✓		Indicates a successful upload.

Print Configuration

Turn the printer on and online. Press RETURN to print or ESCAPE to exit.

Display Checksum

Display the checksum to verify that the programming information has not been changed or corrupted. This value is calculated each time a programming change occurs and displayed in hexadecimal notation. The most recently calculated configure checksum is displayed at power up.

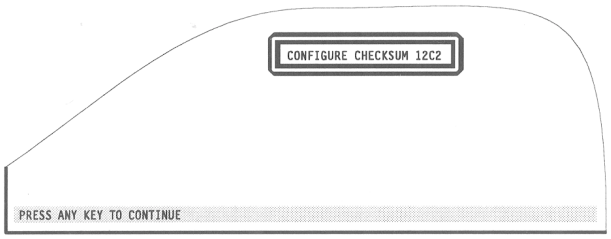


Figure 8: Detail: Configure Checksum

Exit

Choose exit before turning / to to return to the run mode without losing or corrupting programmed data. Miltrac saves all programmed data and calculates a new checksum before exiting to help prevent data loss.

Programming Miltrac: Configure

MSOP0973AE/9816AV

Use the Configure selection to describe the overall system being controlled, describe the devices in the system, and establish the goods data (goods codes) for the goods that will be processed in the system.

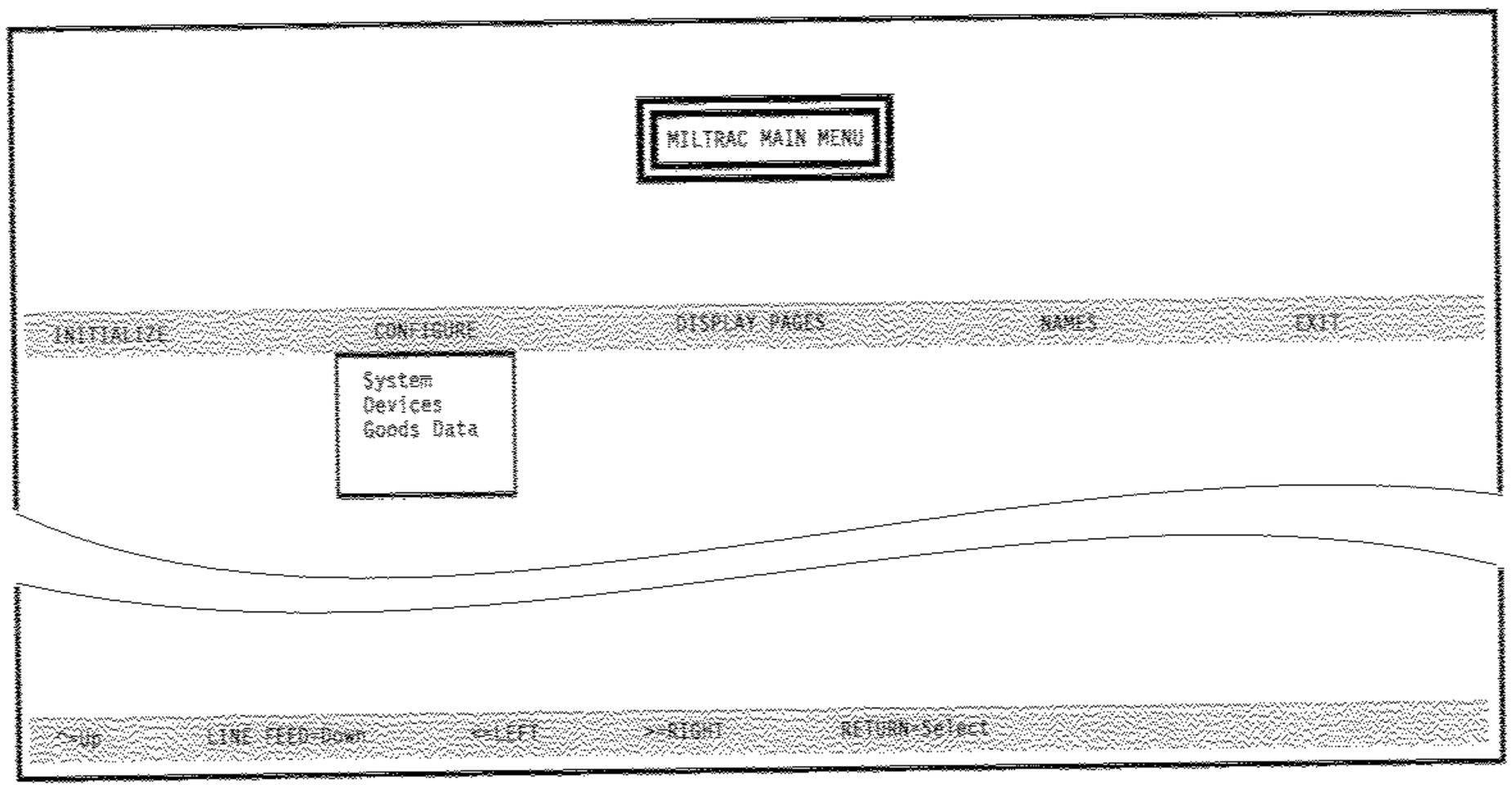


Figure 1: Miltrac Main Menu: Configure

System

Supply the Miltrac controller with information about the goods flow in the laundry and what options are associated with the Miltrac control system with the system configuration page. See Figure 2 for decision categories and the following tables for specific decisions.

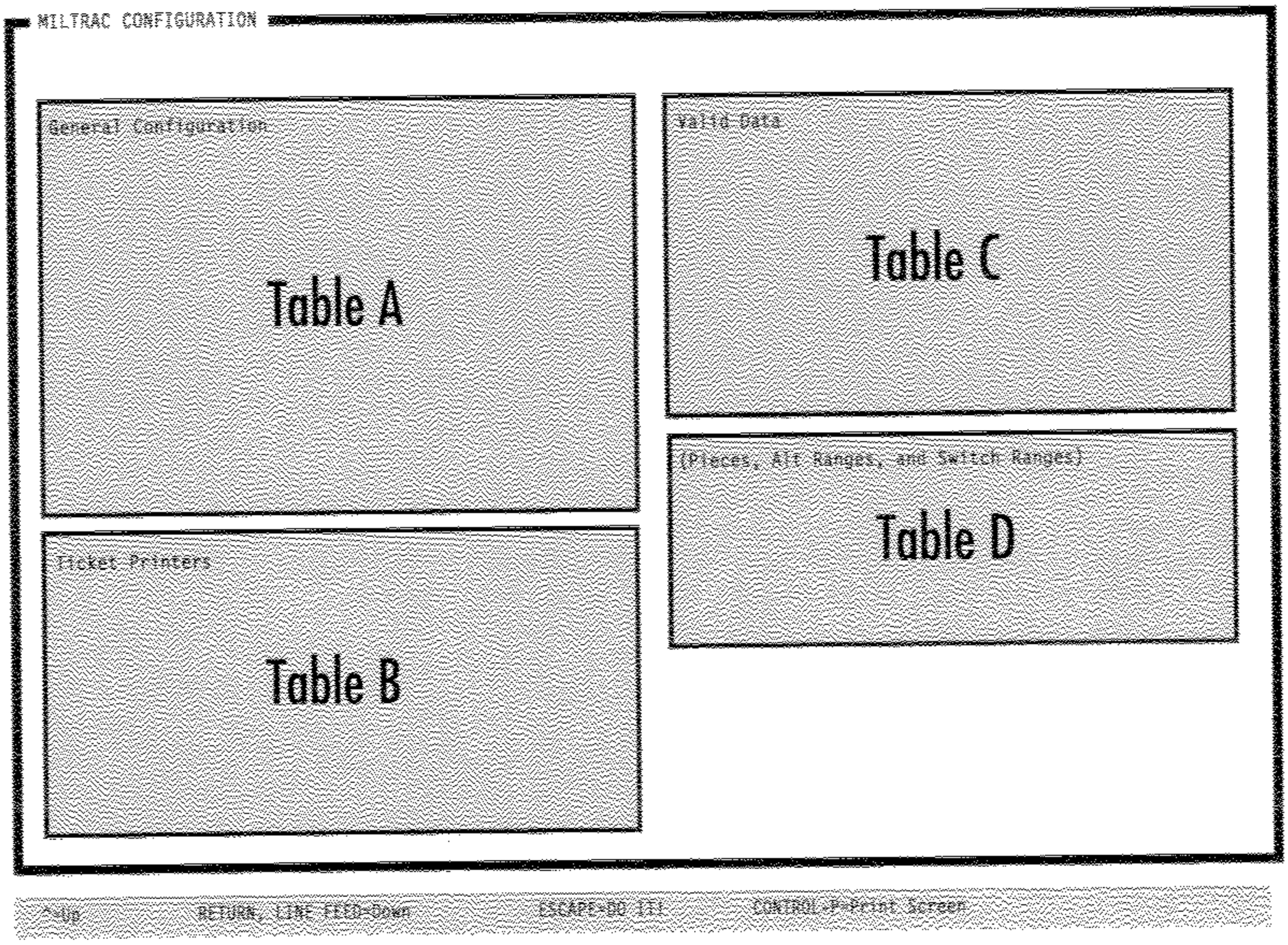


Figure 2: Overview: System Configuration Page

General Configuration: Table A

Decision	Valid Entries	Explanation (Detailed descriptions follow table.)
Language	0-4	0=English 2=Dutch 4=Italian 1=French 3=Spanish
Weight Units	0,1	Enter 0 to use pounds as the unit of weight. Enter 1 to use kilograms as the unit of weight.
Number of Devices on Miltrac	up to 35	Enter the number of devices communicating with Miltrac. See "Determining the number of devices" in this section for more detail.

Decision	Valid Entries	Explanation (Detailed descriptions follow table.)
Device to Count Transfers	any device	Enter the number of any device which handles all goods passing through the system (e.g., the press in a CBW system or the shuttle in a system with multiple washer-extractors). The total tranfers counter for this device is displayed on the Time/Date line on the main page.
Discharge How	0,1	Enter 0 to have the device that has waited the longest discharge first (time discharge). Enter 1 to have the first load to enter the system discharge first. (FIFO discharge).
X Coordinate to be Discharged	any valid x coordinate	See "Determining the x coordinates to discharge and load."
X Coordinates to be Loaded	any 3 valid x coordinates	
Look for Closest Device	0,1	Enter 0 to have Miltrac load the device that has been waiting the longest for a load. Enter 1 to have Miltrac load the device with a coordinate specified above that is closest to the transfer device.
X Coordinate for No Single Cake	any valid x coordinate	Enter the x coordinate where Miltrac should ignore the single cake flag when transferring to or from devices.
Last Device on First Link	any device	Operate Miltrac faster by dividing systems with several devices into two serial links, each connecting half of the devices in the system.
Single Load Weight	000-999	Enter the weight of an average single load.

Determining the number of devices

When configuring Miltrac, count only those devices which have microprocessors and ignore all slave devices (e.g., loading conveyor and COINC). Because devices are connected through a cable (serial link) and non-programmable devices are operated by signals from programmable devices, all devices in a system do not require microprocessors (e.g., the loading conveyor is operated by the Miltron CBW controller, and the COINC is operated by the press). For Device Master and Linear Costa Master, each device counts as one device in Miltrac.

Determining the x coordinates to discharge and load

Enter the value of the *X Coordinate to be Discharged* configure decision based upon whether the *Discharge How* decision is configured for time discharge or FIFO discharge.

- Time--Miltrac will discharge the device at this x coordinate that has been waiting the longest to discharge.

- FIFO--Enter the x coordinate of the device(s) (usually one x coordinate up from dryers) that Miltrac should control (i.e., hold from discharging) to maintain FIFO order.

Enter the value of the *X Coordinates to be Loaded* based on which devices Miltrac should control for loading. Enter the values (up to three) that represent all devices on that x coordinate. When a device that discharges to a device at one of these coordinates desires to discharge, Miltrac loads the device at that coordinate that has waited the longest for a load. Miltrac loads the first available device on the first coordinate before checking the second and third coordinates, if they are used.

Overview of Stuffing Logic: Table A continued

Decision	Valid Entries	Explanation
Stuffing Logic	0, 1	Enter 0 to disable stuffing logic. Enter 1 to use stuffing logic (e.g., to require that Miltrac calls for full-dryer batches of compatible goods). This decision is normally used when storage conveyors (Linear Costas) load the dryers. If a storage conveyor has one cake and a second storage conveyor has no cakes, Miltrac tries to fill the first storage conveyor with a compatible cake before it puts a cake on the second (empty) storage conveyor.
X Coordinate to be Stuffed	any valid x coordinate	Enter the x coordinate of the storage conveyor(s).
Number of Cakes for Batch	1-8	Enter the maximum number of cakes that can be accepted by the smallest dryer in the system.

Ticket Printers: Table B

Decision	Valid Entries	Explanation
Number of Ticket Printers	0-8	Enter the number of ticket printers Miltrac controls. Note: If 0 is entered here (no ticket printer), other decisions regarding ticket printers are not accessible. Systems with more than one printer require a printer expansion board. Systems with a printer expansion board must be configured for at least two ticket printers, even if only one is attached.
Copies per Ticket	1-5	Enter the number of copies of each ticket to print.
Lines between Copies	1-60	Enter the number of blank lines between tickets. Note: For standard US paper (11" long), the total of this number plus the number of lines typed on each ticket should equal 66.

Decision	Valid Entries	Explanation
Dot Matrix Printer	0, 1	Enter 0 if using a standard ticket printer. Enter 1 if using a dot-matrix printer (e.g., Epson LX-810 or similar). Note: All ticket printers on a Miltrac system must be of the same type.
When to Print Ticket	0, 1	Enter 0 to print a ticket when a device receives a load. Enter 1 to print a ticket when a device discharges a load.

Valid Data: Table C

Decision	Valid Entries	Explanation
each decision	0, 1	Enter 0 for each data type that is not used. Enter 1 for each type of data that is used in this system. This prevents Miltrac from displaying false data that might be misleading.

Pieces, Alternate Ranges, and Switch Ranges: Table D

Decision	Valid Entries	Explanation
Device to Enter Pieces	any device	Enter the device number for any device that handles all pieces passing through the system. In a CBW system, this is usually the press, but may be any other device.
Devices to Time for Alt Ranges	any 3 devices	Enter the device numbers of up to three devices (often shuttle(s)) to use the alt ranges feature. Miltrac switches to its alternate ranges when one of these devices has waited to transfer for the time configured in Switch Ranges Time. Normal ranges resume after device transfers. NOTE: When Miltrac switches to alternate ranges, all devices in the system that use ranges switch to the alternate ranges. Using alternate ranges allows the system to keep transferring instead of holding goods because a certain type of goods should not go to a particular device. Enter 00 for these values to use normal ranges at all times.
Single Load Weight	000-999	Enter the number of pounds of an average single load.
Switch Ranges Time	0-999 seconds	Enter the number of minutes a device configured for alt ranges should wait to transfer before switching to alternate ranges.

Devices Configuration

Select the device for which to define configuration and position names. The number of devices available for configuration is determined by the number of devices configured in the System menu. Select configuration or position names to begin defining the selected device. Define the configuration and name

each position for each device on this screen to appear on the normal run display pages.

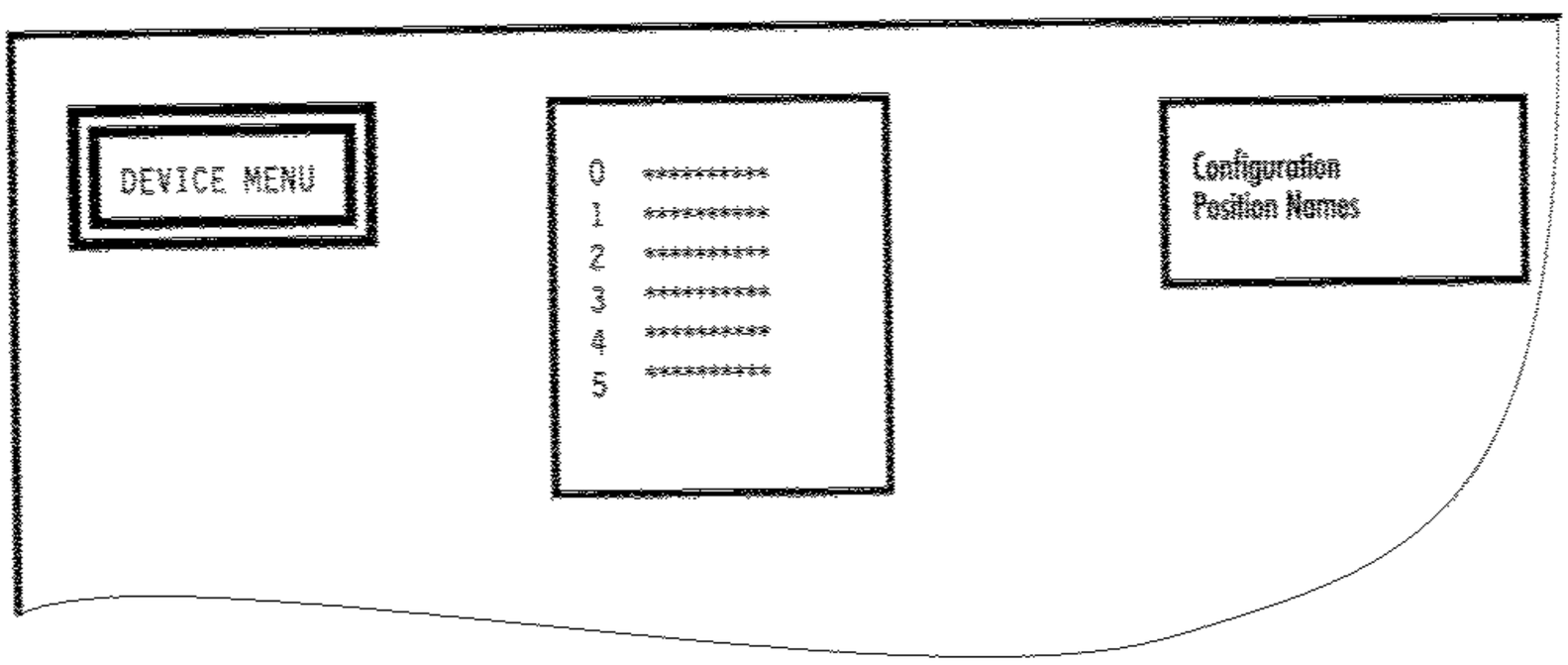


Figure 3: Devices menu (typical)

Enter the correct values for configuration on the General Configuration page. The top line of the screen displays the number and name of the device as entered on the previous page (Figure 3). In most CBW

systems, the device number for the first device is 00, and the device name is the name that Milnor assigns collectively to the loading conveyor, and tunnel washer.

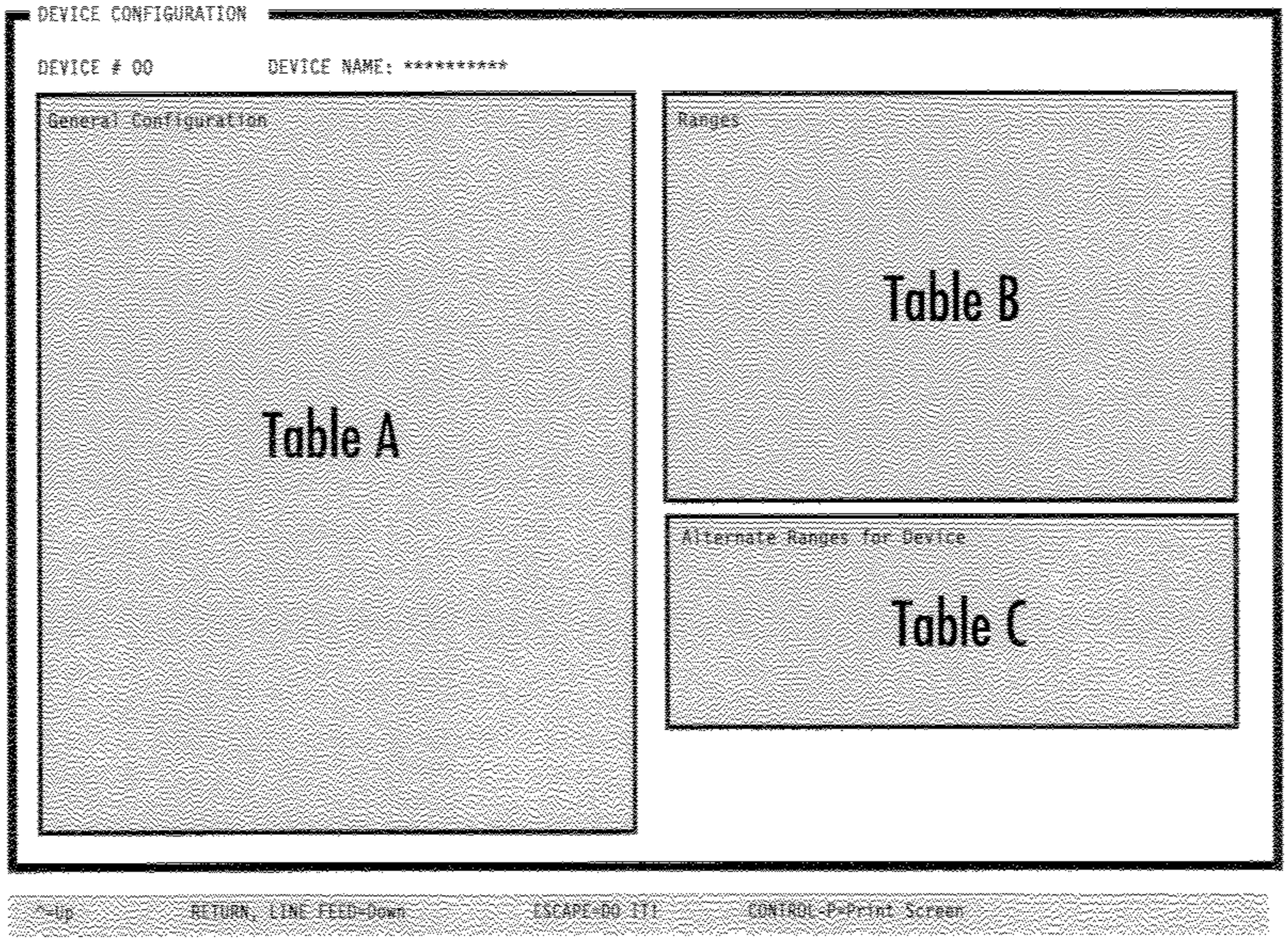


Figure 4: Overview: Device Configuration Page

General Configuration: Table A

Decision	Valid Entries	Explanation
X Coordinate	x coordinate of the device	Enter the coordinates previously assigned to the device (see Miltrac Layout if necessary) These decisions define the location of a stationary device or the home position of a mobile device.
Y Coordinate	y coordinate of the device	
Number of Storage Positions	01-30	Enter the number of storage positions on this device. For storage conveyors, multiply the number of belts by the number of cake positions per belt.

Decision	Valid Entries	Explanation
Movable Device	0,1	Enter 0 for a stationary device. Enter 1 for a mobile device (i.e., receives from or discharges to multiple y coordinates) like a shuttle.
Min Y Coordinate	00-99	Enter the minimum y coordinate at the end of the device's travel. This decision available only if Movable Device=1.
Max Y Coordinate	00-99	Enter the maximum y coordinate at the end of the device's travel. This decision available only if Movable Device=1.
Changing Y Coordinate	0,1	Enter 0 if the device returns to the original y coordinate. Enter 1 if the y coordinate is updated each time the device moves. This applies to shuttles that have the Always Return Home configure decision set to no.
Group for Device	00-99	Enter a group number to assign this device to a group. Usually, all devices in a group discharge to the same device (e.g., all extractors in a group discharge to the same conveyor).
Printer for Device	0 or any valid printer	Enter 0 or the number of the printer to print a ticket when this device transfers.
Border Color	01-15	Enter the number representing the color of this device as viewed on the normal operating display (Main page). The available color codes are shown in the help window.
Wait for Transfer Time	1-254, 255	Enter the number of minutes that this device should wait to discharge before Miltrac causes its display to blink. Enter 255 to disable the blinking.
Wait for Load Time	1-254, 255	Enter the number of minutes that this device should wait to receive before Miltrac causes its display to blink. Enter 255 to disable the blinking.

Compatibility: Table A continued

Decision	Valid Entries	Explanation
Compatability?	0,1	Enter 0 if goods can be incompatible. Enter 1 if goods must be grouped into batches by code.

Decision	Valid Entries	Explanation
Always Load Compatible	0,1	Enter 0 for a system that does not have a two cake shuttle that is receiving loads from two or more different devices. Enter 1 so Miltrac will load compatible even if from different transfer devices. This should only be set for multi-cake shuttle that loads from different devices.
Formula	0, 1	Enter 0 if formula compatibility is not necessary. Enter 1 if you want Miltrac to create full batches of goods with compatible formula codes.
(all other decisions)	0, 1	See the formula explanation above for all other decisions in this area.

Ranges: Table B

Decision	Valid Entries	Explanation
Ranges for Device	0, 1	Enter 0 to allow this device to accept goods with any codes. Enter 1 to restrict the range of codes that can be accepted by this device.
Formula	000-255	Enter the range of codes of each type that Miltrac should send to this device. For example, an installation with dryers and a no-dry station could be required to send all goods with drycodes between 00 and 14 to this dryer and all goods with drycodes 15 or greater would go to the no-dry station.
(all other decisions)	(varies with device)	

Alternate Ranges for Device: Table C

Decision	Valid Entries	Explanation
Formula	000-255	Enter the range for each type of code that Miltrac should send to this device. Alternate ranges allow the system to keep transferring instead of holding because a certain type of goods is not supposed to go to a particdular device. Alternate ranges serve the same purpose as the ranges defined in the Ranges section, but are used only if the alternate ranges input is provided. This input is usually provided by a timer (i.e., when the Alternate ranges timer counts to the configured time, the Alternate ranges input is made, and these ranges replace the normal ranges).
(All other decision)	(varies with device)	

Position Names

Assign common language names and short names to each position on a device. The number of positions requiring names is determined by the Number of Storage Positions configure decision.

The position name may be up to eight characters long. Position names identify each device position on the cake and state pages.

The short name is an abbreviation of the position name, and may be up to four characters. It appears on each Main page.

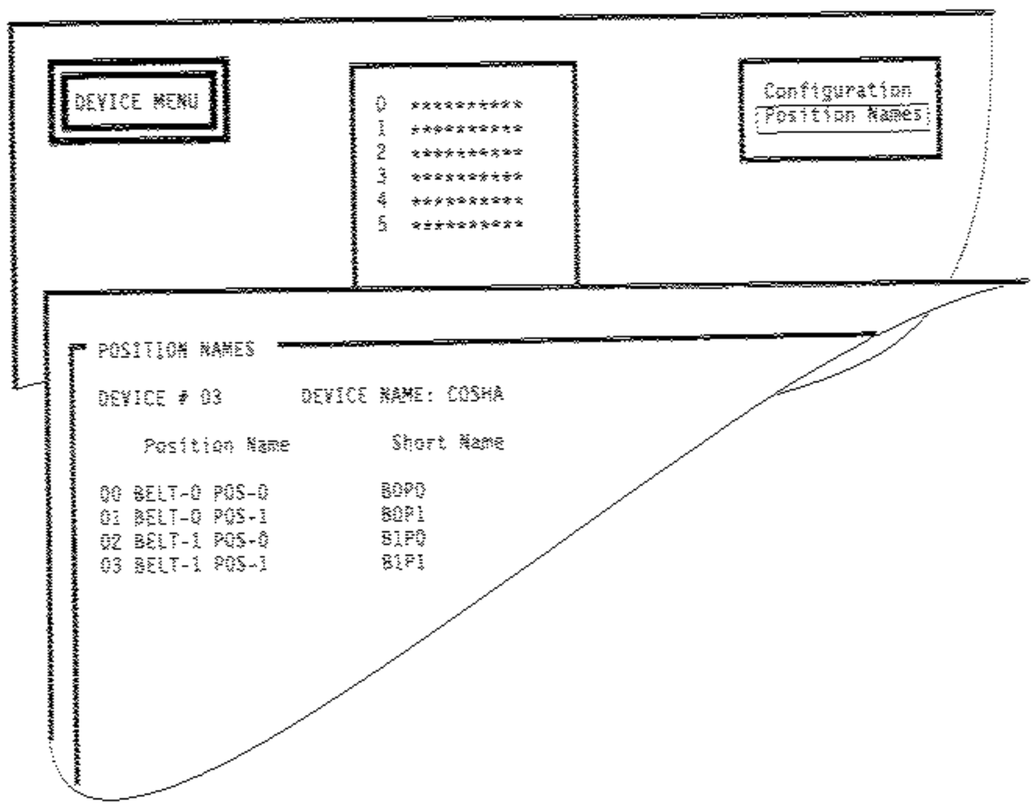


Figure 5: Sample Position Names Page

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Stuffing Logic for the Miltrac Controller

The Miltrac controller uses stuffing logic to arrange cakes of goods so the receiving device is always loaded at its maximum capacity with compatible goods. The most common application is when dryers are loaded by Linear Costa devices. Other applications include multi-cake shuttles loaded by Linear Costa devices.

For example, assume that two dryers can each process two cakes. Each dryer is loaded by a Linear Costa device. If one of the Linear Costa devices already contains one cake, the Miltrac controller will sequentially check each cake for compatibility with the already-loaded cake. The Miltrac controller will send the first compatible cake to the Linear Costa device that already contains a cake to make a full load for the dryer.

1. How to Enable Stuffing Logic

On the MilTrac controller *System Configure* page:

1. Set *Stuffing Logic* = 1.
2. Set *X Coordinate to be Stuffed* = [X-coordinate for the Linear Costa devices]
3. Set *Number of Cakes per Batch* = [maximum number of cakes per dryer load]

On the Miltrac controller *Device Configure* page, set *Compatibility* for the Linear Costa devices. Stuffing logic uses compatibility attributes to match cakes together for a load.

2. Other Guidelines

Follow these guidelines if there are problems with stuffing logic:

- Set the value for *X Coordinate to be Loaded* to a value OTHER THAN the X-coordinate of the Linear Costa devices.
- Set the value for *X Coordinate to be Discharged* to a value OTHER THAN the X-coordinate of the Linear Costa devices.
- Set the shuttle configuration value for *Hold Unld Device Til Full* = 0.

— End of BIYCMC03 —

Programming Miltrac: Display Pages

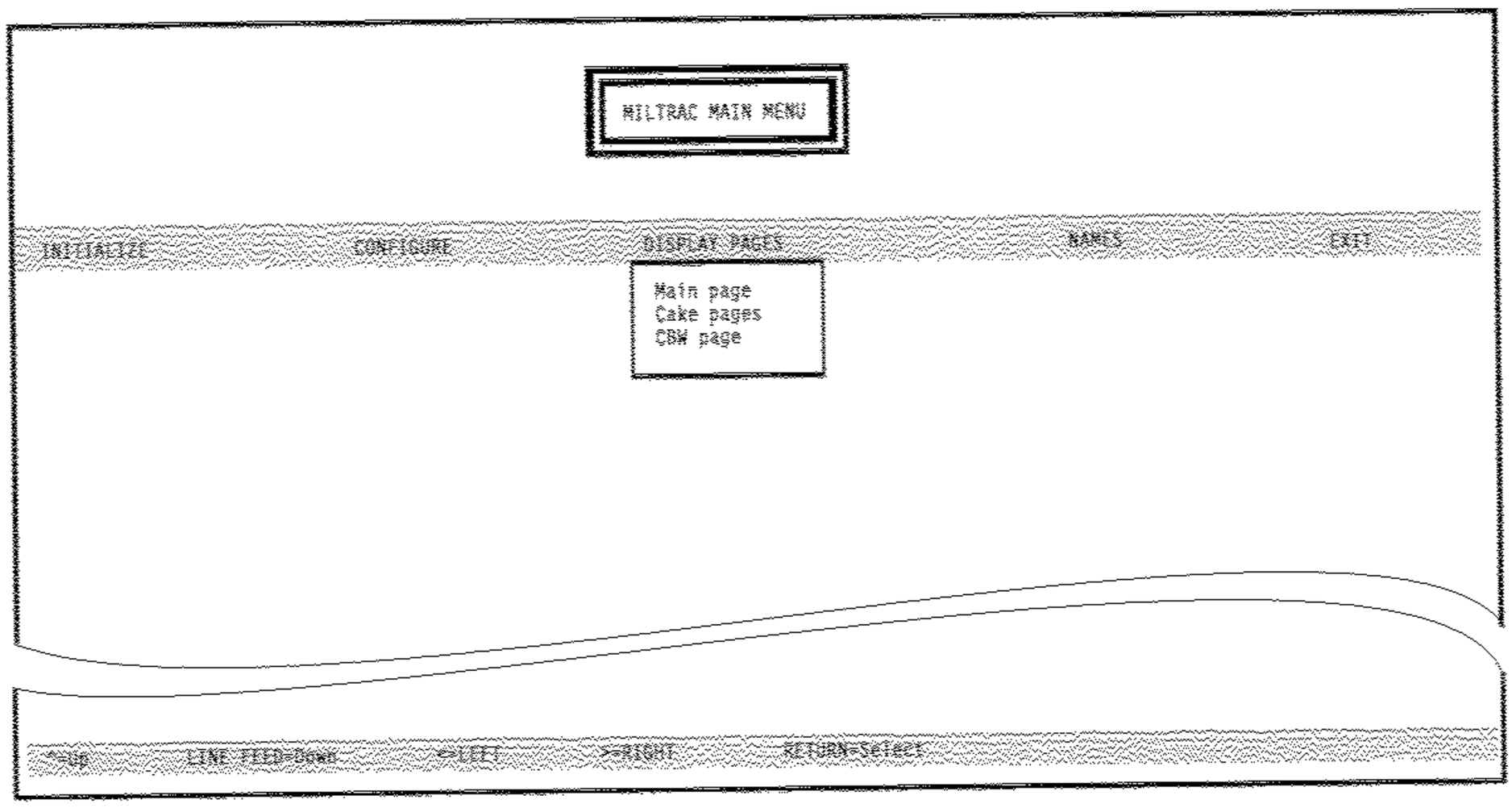


Figure 1: Miltrac Main Menu: Display Pages

Main Page

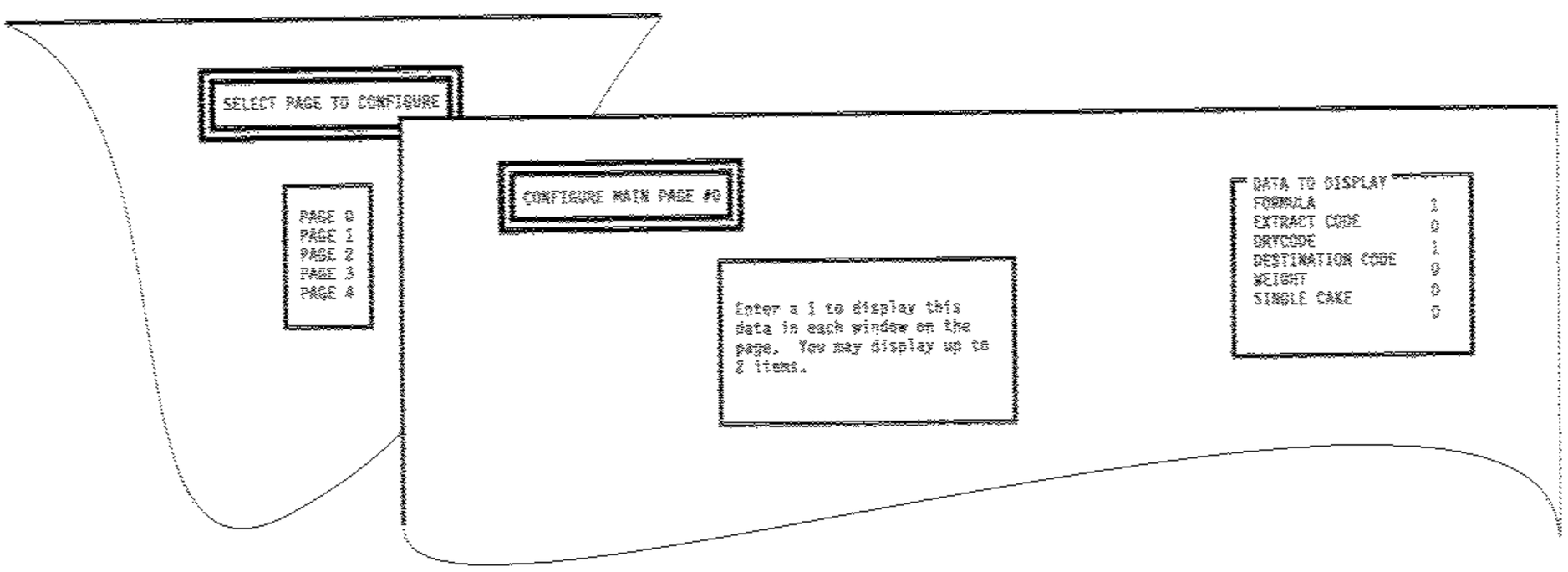


Figure 2: Main page display selections

Select the page to configure (0-4) and which data to display on the main page.

Configure the Miltrac main pages to schematically represent the system layout. Use some or all of the five Main pages available to define specific views of the system or to accommodate systems that are too large to view completely with a single page.

Each main page device position displays up to two valid data types. To view additional data types, configure a second main page with the additional data types. Only data types configured as valid on the Configure/System page can appear on main pages.

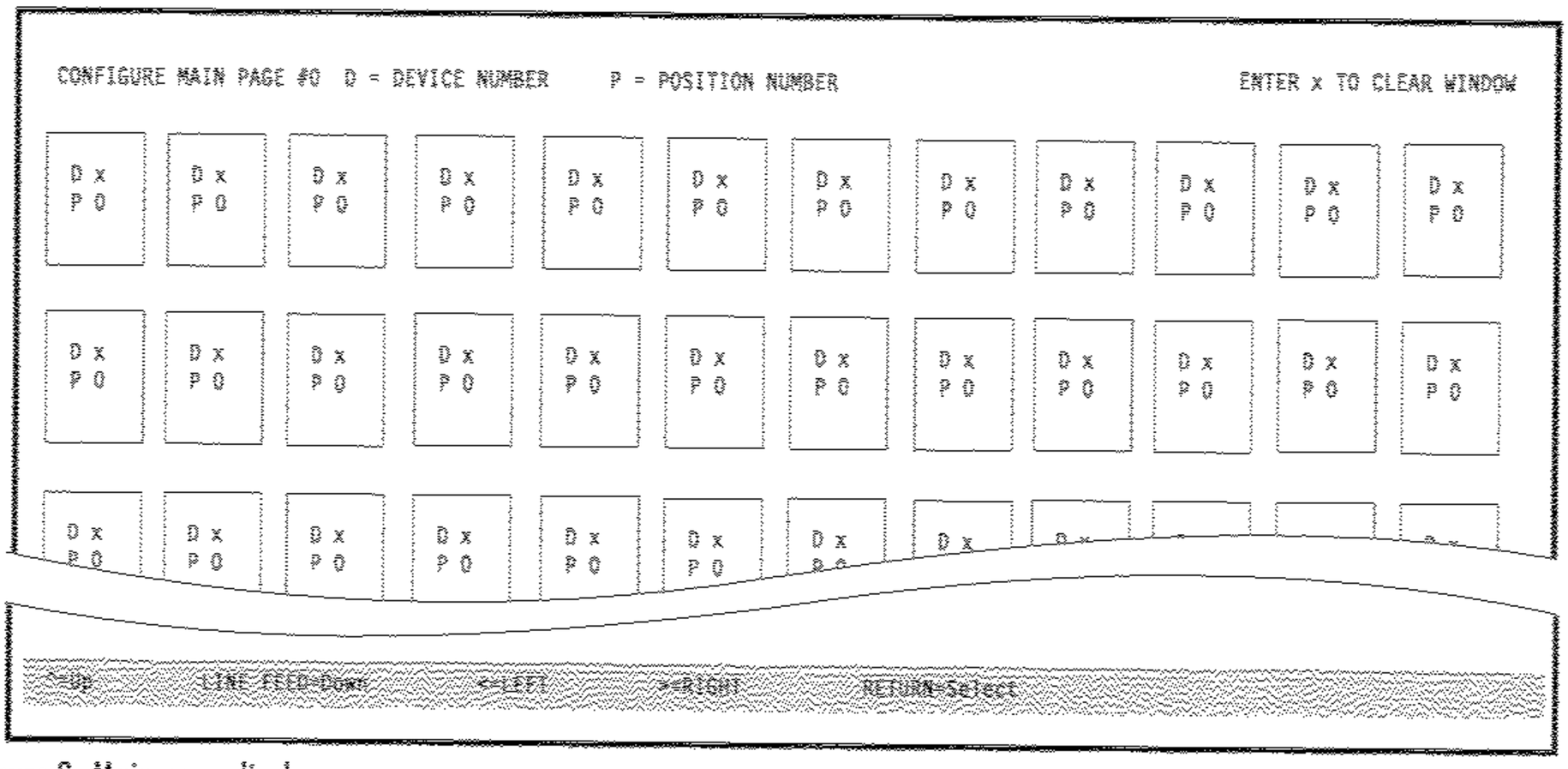


Figure 3: Main page display

Cake page

Select the page to configure (0-4) and which data to display on the cake page.

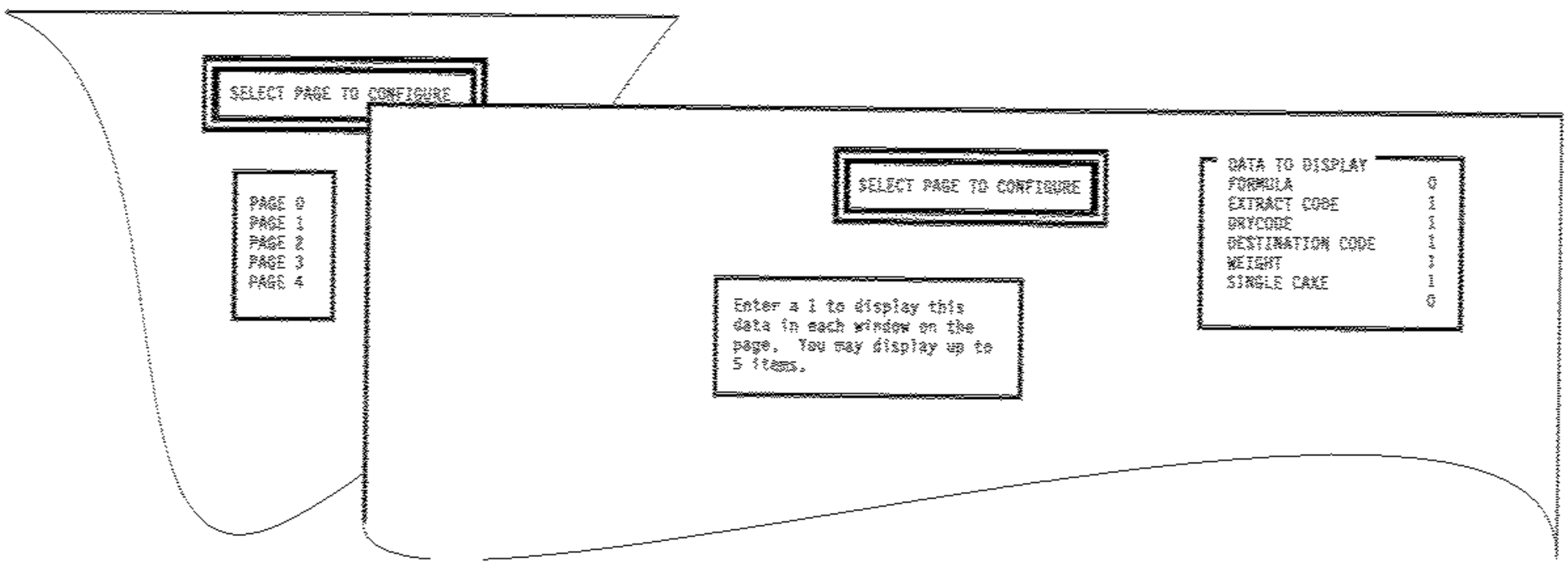


Figure 4: Cake page display selections

Configure the Miltrac cake pages to schematically represent the system layout. Use some or all of the five cake pages available (0-4) to define specific views of the system or to accommodate systems that are too large to view completely with a single page.

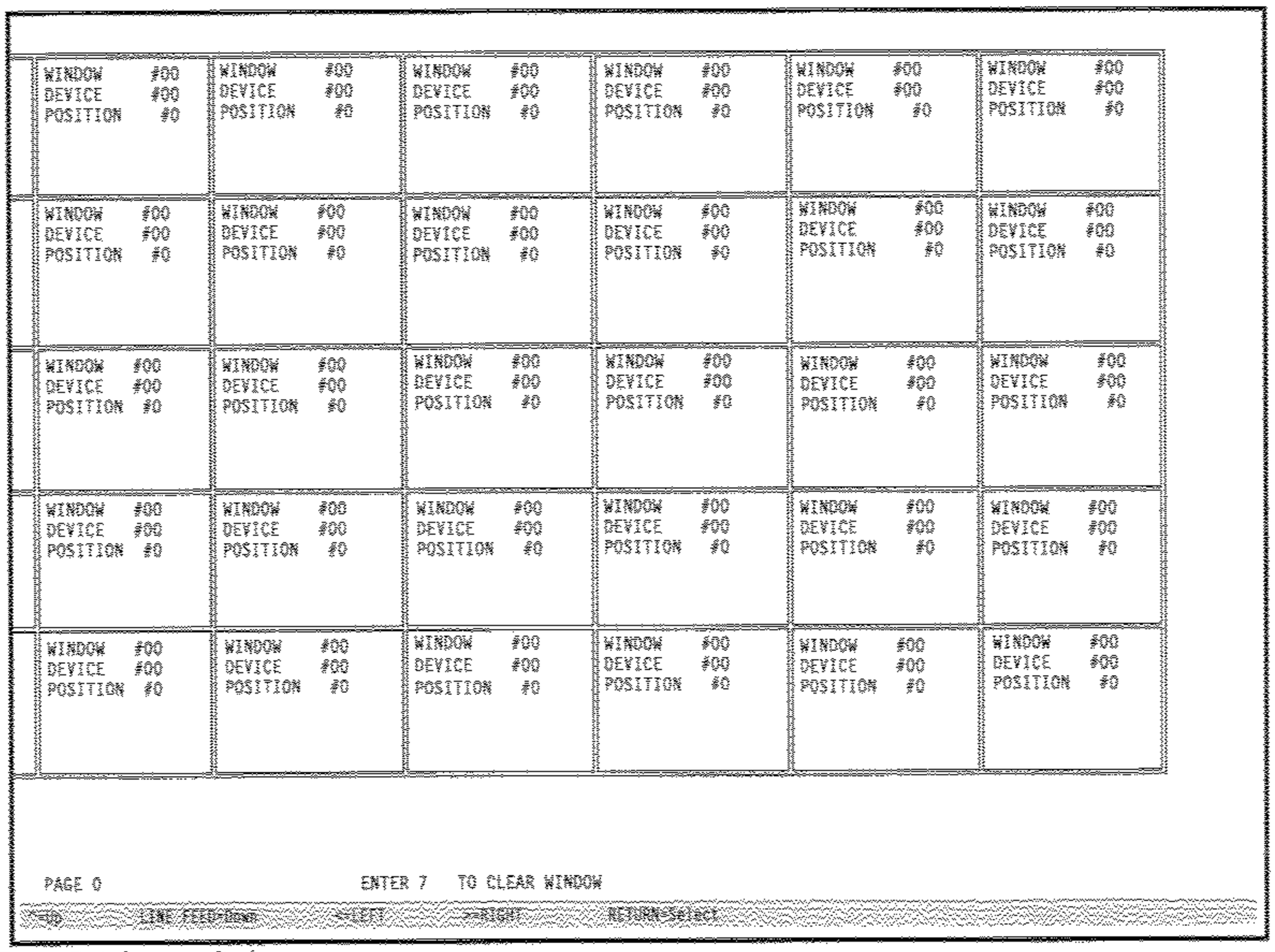


Figure 5: Cake page display

CBW page

Select the page to configure (0-1). Enter general configuration information and determine which data to display on the CBW page.

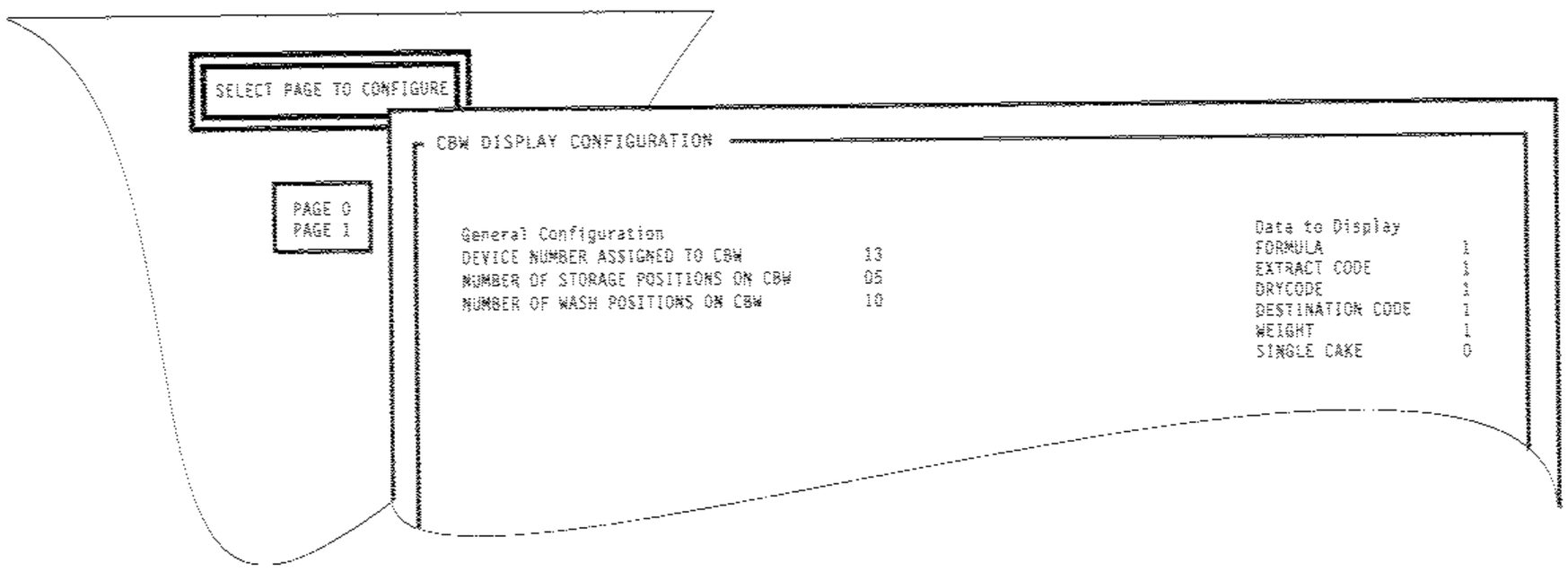


Figure 6: CBW page display selections

Programming Miltrac: Names

MSOP0975AE/9816AV

Select the code to name. Then, enter names for each code number of that type.

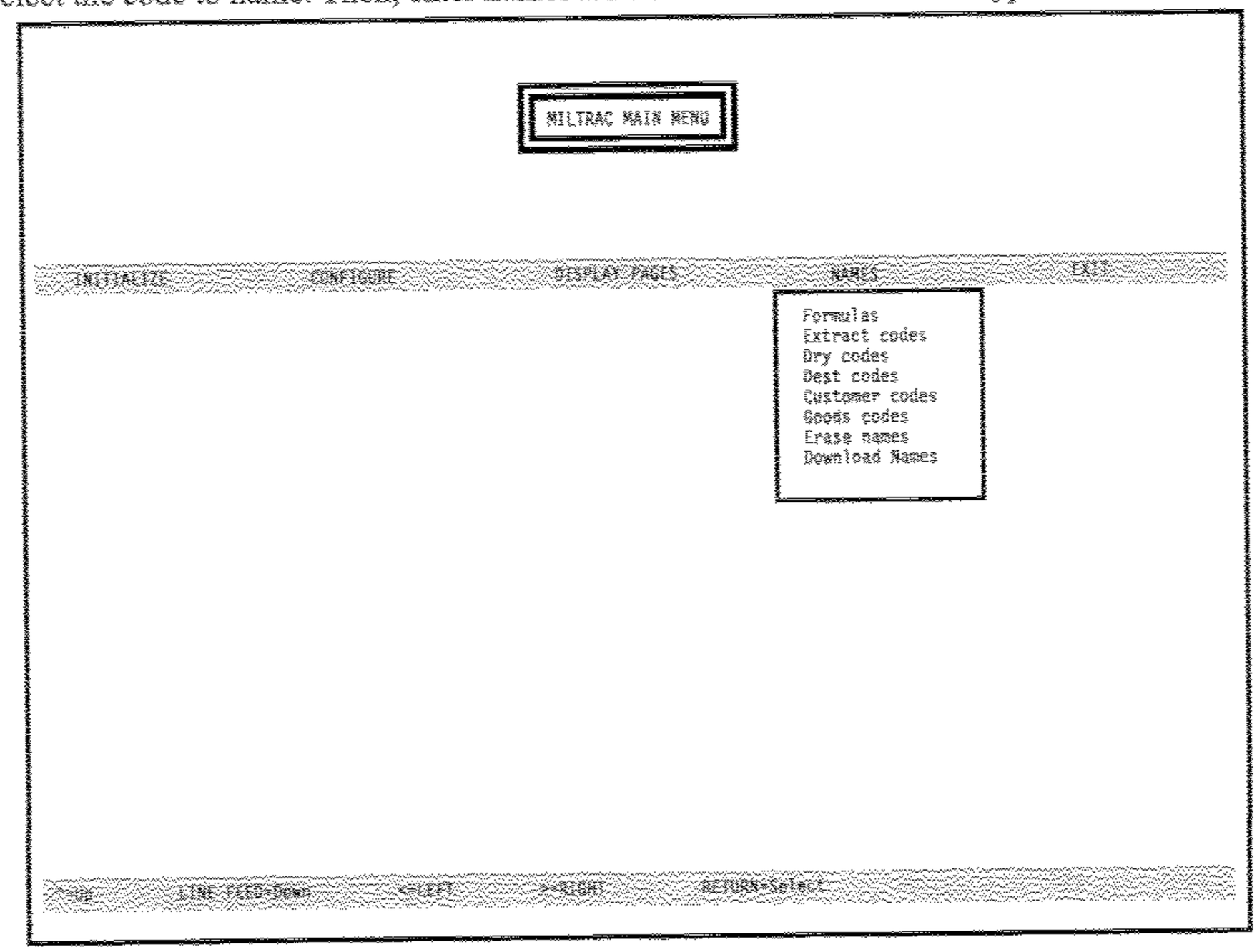


Figure 1: Miltrac Main Menu: Names

Formulas

Name up to 255 formulas, numbers 0 through 254.

Extract codes

Name up to 16 extract codes, numbers 0 through 15.

Dry codes

Name up to 16 dry codes, numbers 0 through 15.

Destination codes

Name up to 64 destination codes, numbers 0 through 63.

Customer codes

Select the range of customer numbers to name, then name up to 64 customer codes at a time for a total of 1000 customer codes.

Goods codes

Select the range of goods codes to name, then name up to 64 goods codes at a time for a total of 256 goods codes.

Erase Names

Enter 1 to erase the following code names: Devices, Positions, Position short names, Formulas, Extract codes, Dry codes, Destination codes, Customer codes, Goods codes. To keep names as already specified, enter a 0.

Download Names

Download all of the names to another device, such as Linear Costa Master, Device Master, or Versto. Set the receiving device on and prepare it to receive names from Miltrac. Answer yes to Miltrac and press return to begin downloading. To exit press escape.

Supplemental Information 2

Monitoring with Miltrac

At the Miltrac copyright display, press any key. Enter the time and press RETURN. Enter the date and press RETURN. The main page is displayed.

Main page

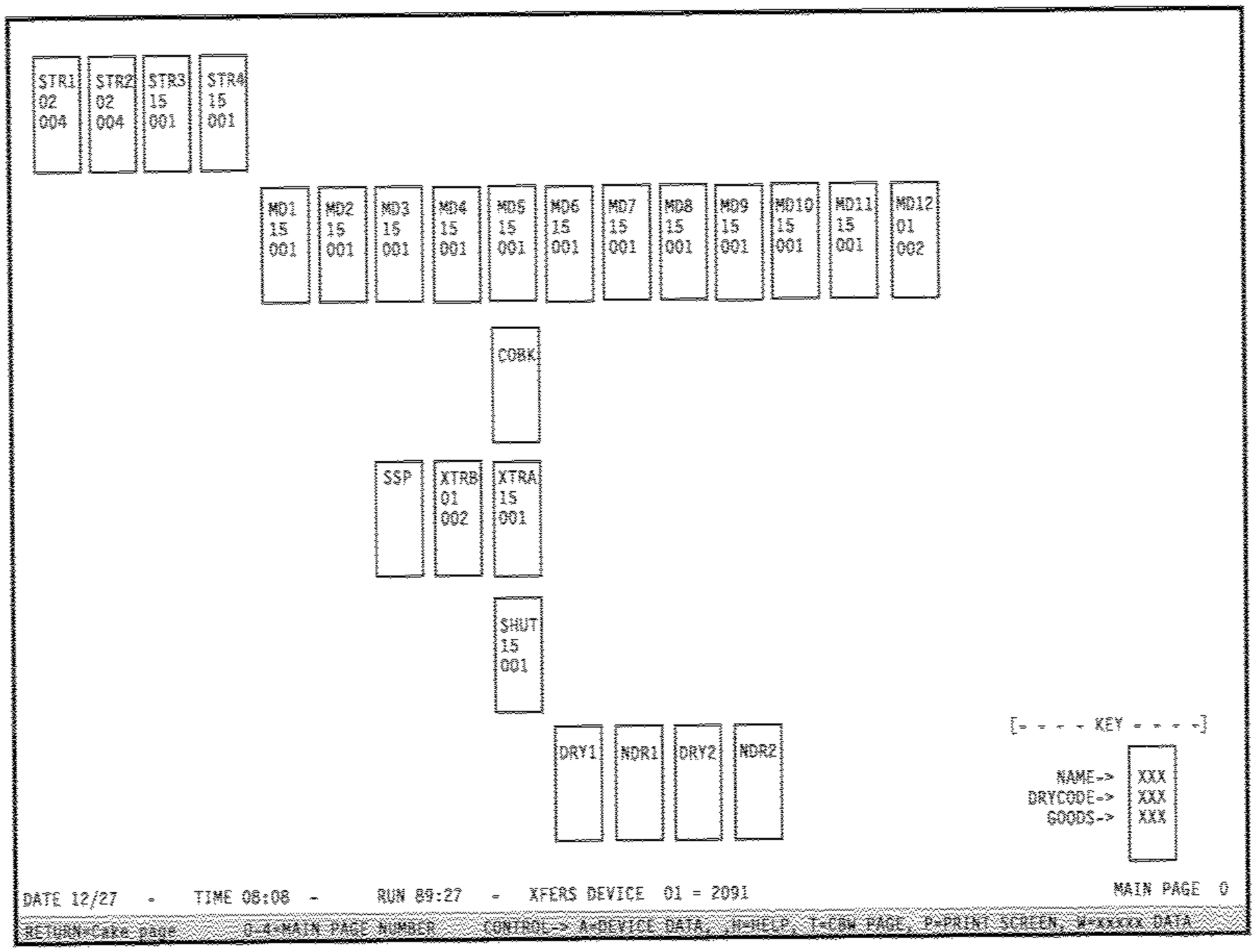


Figure 1: Main page

The Main page displays the laundry equipment from an overhead (plan) view. Up to five Main pages may be programmed to display a laundry layout. Main pages one through four can be accessed from page zero. The display shows the machine short name and any two other types of goods data (chosen in programming) for each device.

The highlighted information at the bottom of the display indicates the keys for accessing other displays from this display.

Help

View color codes that appear on the Main page (Help) by pressing CONTROL and H. Colors displayed inside each device indicates the device's state:

AAA = hold/run
BBB = desire to load
CCC = getting ready for load or discharge
DDD = loading or discharging
EEE = device error

Device data

View all the valid goods data for any device (Device data) by pressing CONTROL and A. Move around the display using SHIFT and <, >, ^ or LINE FEED to highlight the desired device. Press RETURN to display all valid data for the desired device. Press ESCAPE to return to the normal Main page display.

Adjust ranges for efficient transfers

View ranges information on the bottom right of any monitoring display.

ALT RANGES = Miltrac is using alternate ranges to link devicesfor transfer.

> Miltracs programmed to use alternate ranges for some devices (up to three) use alternate ranges when a device has waited too long to transfer. Miltracs that use this configure decision use normal ranges after the transfer. Miltracs with an Alternate Ranges switch use alternate ranges as long as the switch is in the on position (i.e., the Alternate Ranges input on MTA38-6 is made).

OVERRIDE RANGES = Miltrac is ignoring all standard or alternate ranges to link devicesfor transfer.

> Press * to override ranges.

Cake Page

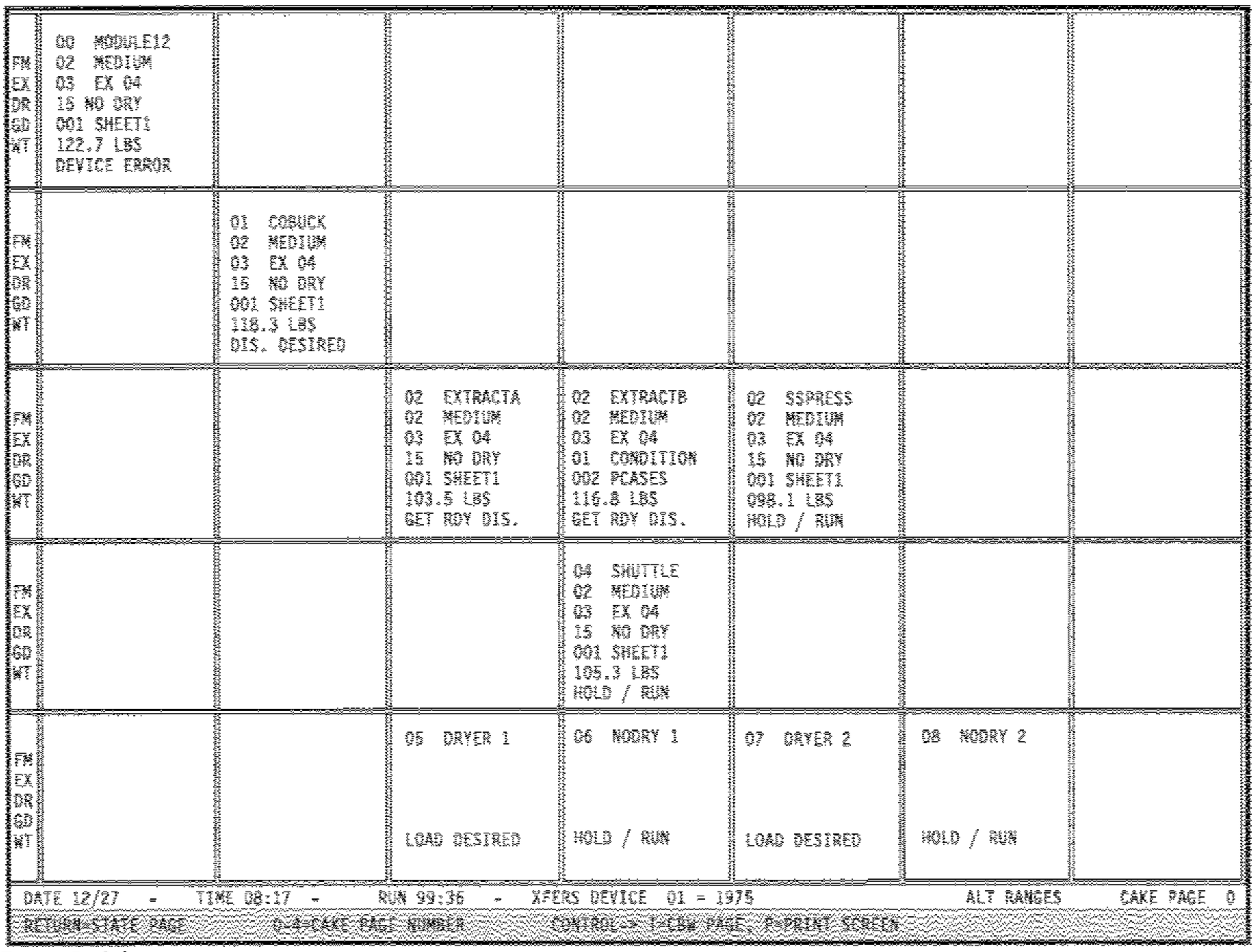


Figure 2: Cake page

The Cake page displays the laundry equipment. Cake pages one through four can be accessed from page zero. The Cake page displays the machine device number and name and up to five other types of goods data (chosen in programming) for each device.

The highlighted information at the bottom of the display indicates the keys for accessing other displays from this display.

State Page

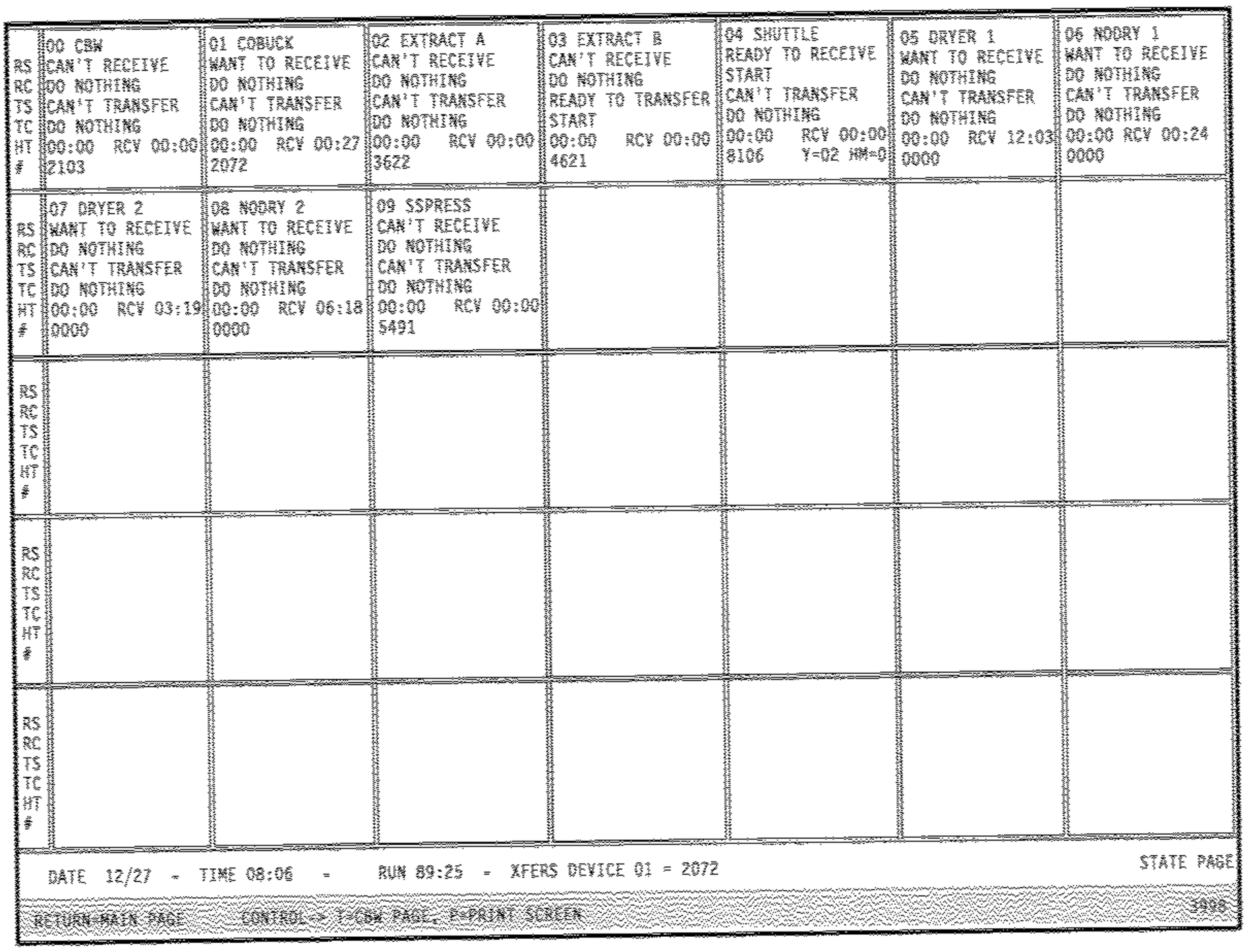


Figure 3: State page

The State page displays each piece of equipment in device number order. The page will accommodate up to 35 devices. The display shows the device number and name, the receive state (RS), the receive command (RC), the transfer state (TS), the transfer command (TC), the hold time (HT), and the number of transfers (#).

The following statuses and commands may be viewed on the state page.

Receive status/command	Description
CAN'T DO ANYTHING	The receiving device cannot receive any goods; therefore do not try to send any goods to the receiving device.
WANT TO RECEIVE	The receiving device wants to receive goods.
READY TO RECEIVE	The receiving device is ready to receive goods.
FINISHED RECEIVING	The receiving device just finished receiving goods.
FINISHED RECEIVING DO NOT HOLD	The receving device finished receiving one load of goods and is not to be held to receive another.
Transfer Statuses	Description
CAN'T DO ANYTHING	The transferring device cannot transfer any goods, therefore; do not try to transfer any goods from this transferring device.
WANT TO TRANSFER	The transferring device wants to transfer a load of goods.
READY TO TRANSFER	The transferring device is ready to transfer a load of goods.
FINISHED TRANSFERRING	The transferring device has completely transferred the goods.
FINISHED TRANSFERRING DO NOT HOLD	The transferring device finished transferring a load of goods and cannot transfer another.
Command	Description
DO NOTHING	The controller is commanding the receiving device to wait and do nothing until further commanded.
GET READY	The controller is commanding the receiving device to prepare to receive goods or the transferdevice to prepare to transfer goods.
GET READY RIGHT	The controller is commanding the receiving device to prepare to receive goods from or the transfer device to to prepare to transfer to the right direction.
GET READY LEFT	The controller is commanding the receiving device to get ready to receive goods from or the transfer device to prepare to transfer to the left direction.
START	The controller is commanding the receiving device to start receiving the goods or the transferring device to start transferring goods.
YOU'RE FINISHED DO NOT HOLD	Means that the receiving device has completely received the goods. The transferring device has completely transferred the goods.

The number in the lower right corner of the State page display indicates each time Miltrac attempts to communicate with another device. This number should change continuously.

CBW Page

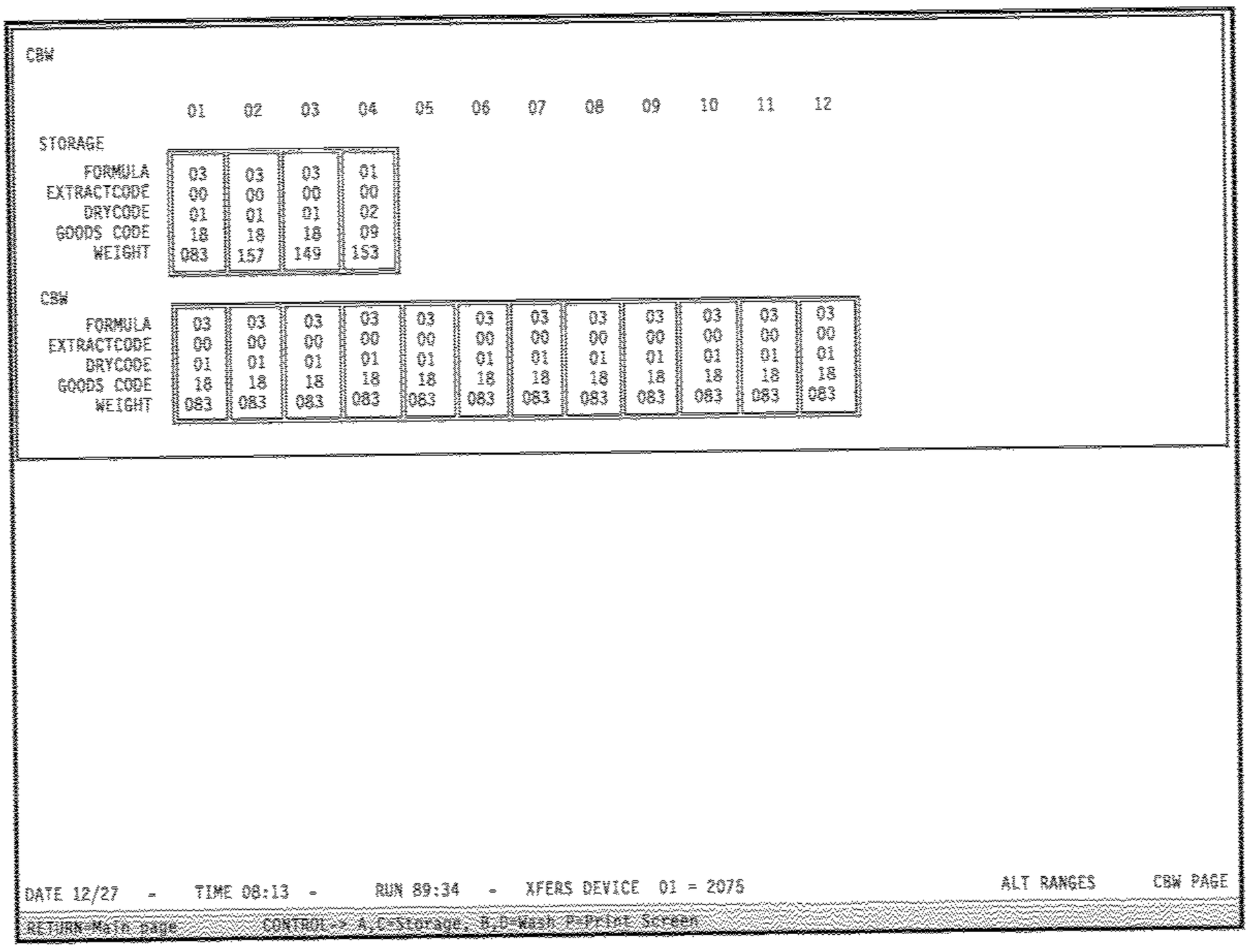


Figure 5: CBW page

The CBW page displays each position on the loading (storage) device, and the tunnel. The display shows up to five types of goods data (chosen in programming) for each position.

The highlighted information at the bottom of the display indicates the keys to accessing other displays from this display.

Timer page

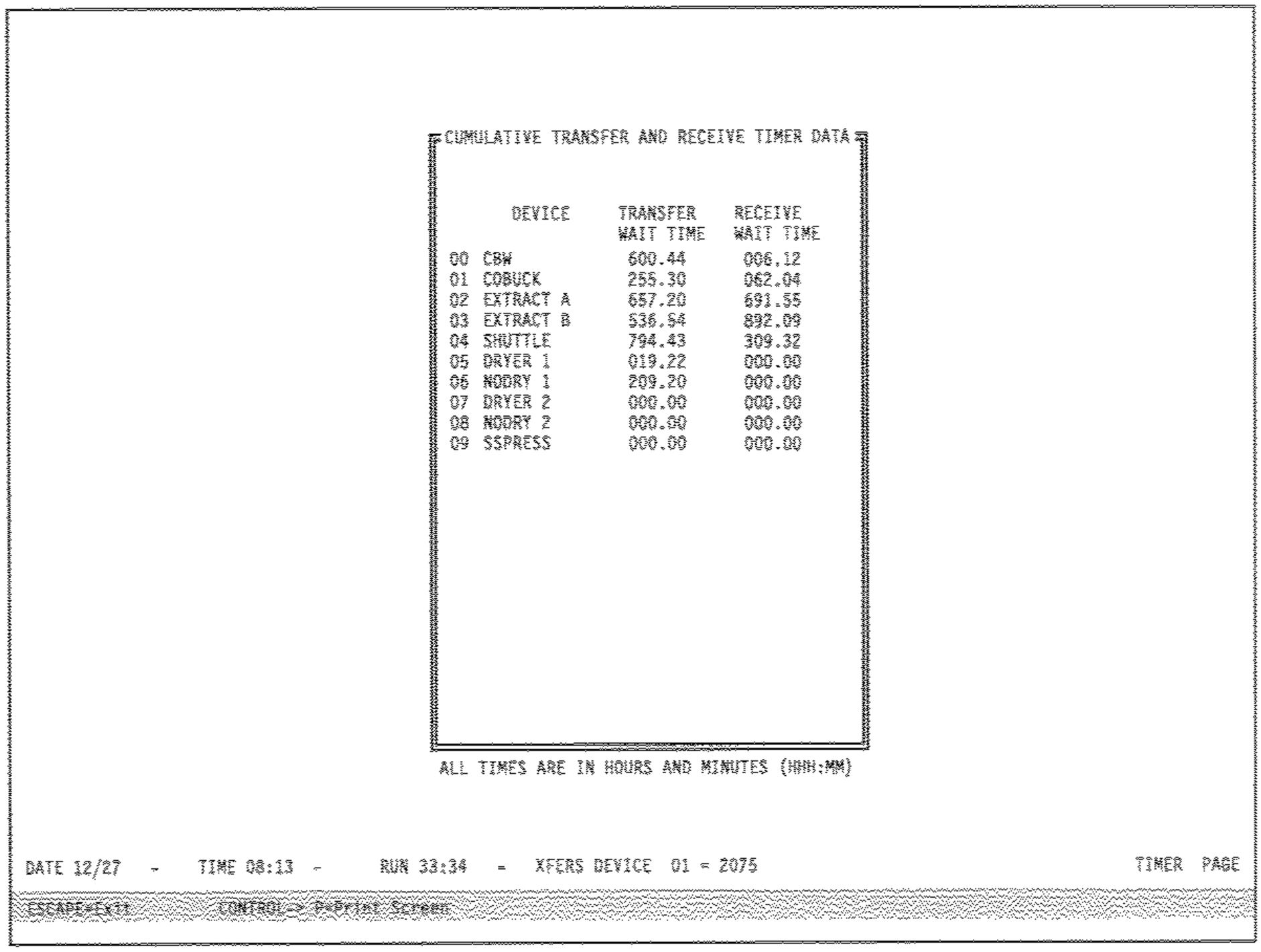


Figure 5: Timer page

The Timer page displays the cumulative transfer and receive times for each device in hours and minutes (HHH:MM). For details about how to reset counters, see "Counters" under "Programming Miltrac: Initialize and Exit."

Memory Download Box Applications

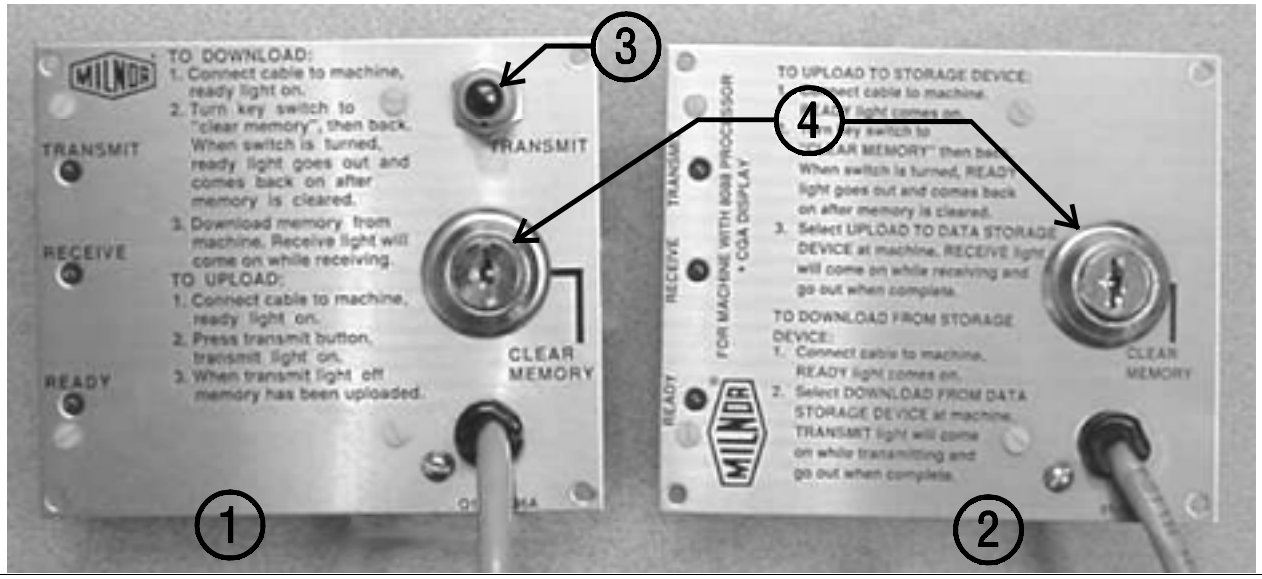
Document..... BICUDC01
Specified Date..... 20010807
As-of Date..... 20010807
Access Date..... 20010807

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

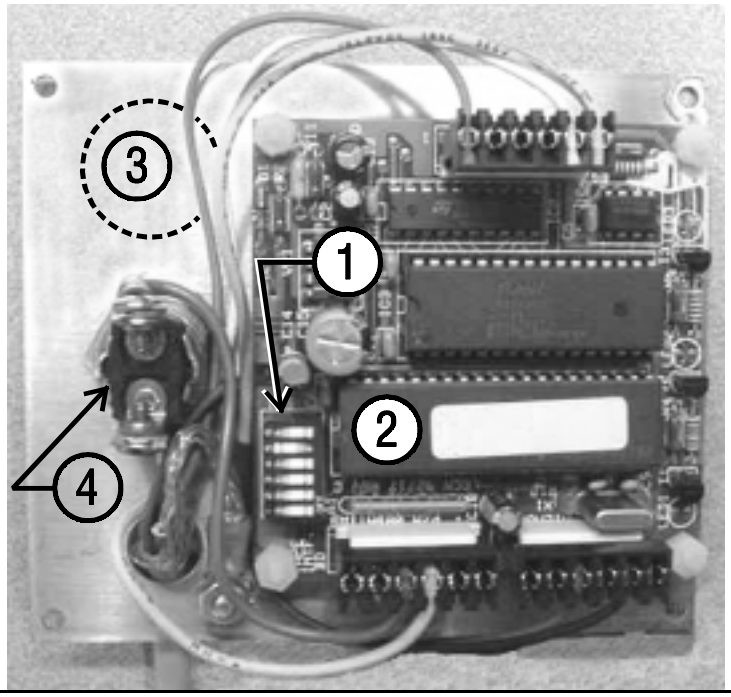
Faceplate Comparison



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 —

Troubleshooting 3

Troubleshooting Miltrac

The following two errors may appear during power up or operation of Miltrac.

CONFIGURE ERROR--TURN PROGRAM KEY TO CONFIGURE MILTRAC

Appears at power up if the configuration is corrupt.

Recovery: Configure Miltrac or restore memory by using the download feature.

DEVICE #xx-name IS NOT TALKING

Appears when a device is not communicating to Miltrac.

Recovery: Inspect the serial link to ensure connection. Ensure the device is powered up.

Device blinking on a red background

The device has an error.

Recovery: Access that device's controller to determine the error.