

INSTALLERS, SERVICE & LINE MECHANICS: PLEASE READ THIS MANUAL AND FAMILIARIZE YOURSELF THOROUGHLY BEFORE ATTEMPTING TO INSTALL OR SERVICE THE DALEMARK EQUIPMENT DESCRIBED HEREIN. FOR FURTHER ASSISTANCE, CONSULT OUR FACTORY STAFF.

INSTRUCTION AND PARTS MANUAL

**SERIES 500
LARGE CHARACTER NON-CONTACT PRINTER
MODEL CODAIRE MINI __**

SERIAL NO. _____

When ordering, always provide the following information:

- MODEL NUMBER
- SERIAL NUMBER
- PART DESCRIPTION & PART NUMBER
AS SHOWN IN PARTS LIST

**DALEMARK INDUSTRIES, INC.
EXCEL PARK 2
575 PROSPECT ST., SUITE 211-212
LAKEWOOD, NEW JERSEY 08701
PHONE: 732-367-3100
FAX: 732-367-7031
E-Mail Address: sales@dalemark.com
Website: www.dalemark.com**

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SAFETY INSTRUCTIONS:

1. Always wear approved safety glasses when working with, or around, any ink-jet equipment. Avoid exposure to any ink or solvents.
2. Only trained personnel should operate the CODAIRE Mini System. Only authorized service technicians should perform service on the CODAIRE Mini.
3. Make sure that electrical power to the system is disconnected before opening controller.
4. Inspect all containers of ink and/or ink conditioner, for WARNINGS concerning flammability, ingestion, eye protection, etc.

Follow all safety instructions carefully.

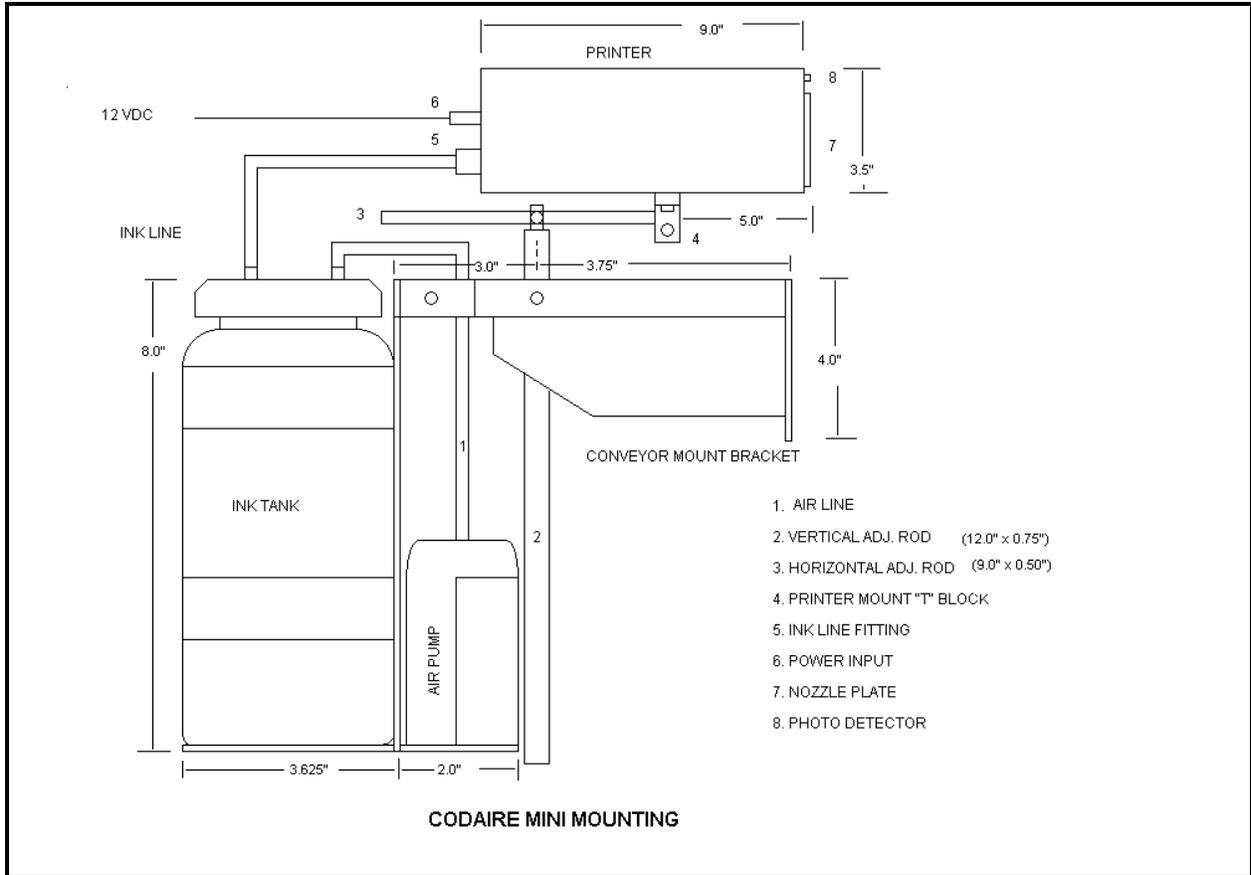
SECTION 2

SYSTEM OVERVIEW:

The CODAIRE Mini Ink-Jet System was designed to be a high-quality printer to print on most porous surfaces. Through the use of advanced technology, the CODAIRE Mini is durable, fast, accurate and economical to run. Standard features of these units include automatic coding such as time, and date.

The CODAIRE Mini works by firing ink droplets, to generate dots on moving objects. These are dots propelled at the precise time required to create characters (letters, numbers etc.) on the surface of an object. A list of the components and a description of how each one works to accomplish these tasks is as follows:

1. Printer
2. Photocell
3. Ink container
4. Air pump
5. Print speed encoder (optional).



1. The Printer

The CODAIRE Mini Printer is a self contained, print system. The printer itself contains all of the electronics, fluid control valves and tubing required to print information on a moving surface.

The printer controller stores messages to be printed and converts this data to electrical signals that open the valves in the printer at the correct time. The printer also controls such things as the direction of print, dot size, positioning of print, as well as keeping track of all stored information. It also receives signals from other devices to accomplish this task, such as the photocell and in some cases, a print speed encoder (optional).

2. The photocell

The photocell or photo detector is a built in component that is found just above the nozzle plate. The Photocell is used to detect the leading edge of the target item as it approaches the printer. Once the item is detected the photocell sends the signal to the printer to start the printing process.

Note: An external photo detector can be added if needed.

3. The Ink container:

The ink container or tank supplies ink to the printer. A small air pump behind the ink tank holder provides the correct air pressure to the ink tank (approx. 4 PSI.). The second line on the ink tank feeds ink from the ink tank to the printer.

4. The Print Speed Encoder (optional)

In some cases where the line speed varies or is subject to frequent stops and starts, it may be necessary to use a Print Speed Encoder. The Print Speed Encoder electronically measures the speed of the conveyor line and thus the speed of the item to be marked. No matter what the variation in speed the encoder can send this signal to the controller to instantly adjust the printing rate.

SECTION 3

TROUBLE SHOOTING:

The CODAIRE Mini System incorporates proven design, both in hardware and software, however in the event of a failure of any kind, this section is included to help minimize down time. If it becomes necessary to localize a problem within the CODAIRE Mini, a logical approach should be used to determine the root cause of the difficulty. First make sure the technician has a fairly clear understanding of all the component parts and how they function together. Next, a visual inspection of the equipment should be made. (The problem, in some cases, can be the simplest of things such as a disconnected cable or a loose wire.) The best approach is to work backwards from the problem. Begin eliminating possibilities until the cause can be narrowed down to one component. Once this is done the component can then be repaired or replaced in order to resume operation as quickly as possible.

To help with this task the following is a table that can help to isolate the problem and all the possible causes.

SYMPTOM

POTENTIAL CAUSE

SOLUTION

No print:

No power

Make sure adaptor is plugged into receptacle and printer.

No ink

Check the level of ink in tank.

Make sure lid on tank is tight

No product detect

Make sure the photocell is working.

An LED on the front panel should turn on when a box is detected.

No encoder signal

Check to make sure the encoder wheel is in firm contact with the moving surface.

Check encoder and cable for any damage. (optional)

Printer not enabled

Printer has not been put into print mode or message does not have any content.

Poor/erratic print:

Ink supply

Check for ink presence by purging.

Check ink level. If ink has been recently changed, purge unit several times.

SYMPTOM

POTENTIAL CAUSE

SOLUTION

Poor/erratic print:

Air in the ink lines

Purge printer six times and wipe print head.

(Make sure the nozzle plate is covered with a rag)

Ink dried on the nozzle plate

Clean the nozzle plate.

Encoder slipping

Check the movement of the encoder.

Throw distance

Adjusted distance between product and printer.

Dots missing:

Plugged orifice

Clean the nozzle plate with brush and water. If this does not work remove the nozzle plate and check for blocked nozzle with syringe. (Requires nozzle cleaning kit)

Failure to power up:

Not plugged in

Check power adaptor connection. PWR LED should be on.

SECTION 4

REGULAR MAINTENANCE:

In order to ensure that the CODAIRE Mini prints perfectly all the time, the following are a few

tips the operator should be aware of:

1. To keep the print quality high, the print head nozzle plate should be wiped after extended down periods. Simply take a small paper towel and wet it with water. Next, wipe the nozzle plate until free of contaminants. **(Never use anything hard or sharp to clean the faceplate.)** Purge the unit after wiping the nozzle plate.
2. During a shutdown (several hours or more), the CODAIRE Mini has been designed in such a way as to not require any special procedure to prevent clogging. However, be aware that the holes on the nozzle plate may be susceptible to hardening with ink.
3. During an extended shutdown (several weeks or more), or if the system has been running for a long time, at least one year, it is advisable to flush the entire ink system with water.
4. Wipe the photocell clean of any ink or other obstructions using a paper towel with a small amount of water.
5. If an encoder is being used, check it occasionally to make sure that it is rotating properly. If the encoder wheel has a build up of dirt, clean with a rag and solvent to maintain proper friction with the conveying line.
6. The filter in the printer should be changed at least once a year. Consult your CODAIRE Mini distributor for details.

Printer maintenance:

Note: The nozzle face should be cleaned before each daily start up, or whenever print quality suffers from ink build up on the nozzle plate.

To clean nozzle face:

1. Put a small amount of water on a lint free cloth.

2. When ready to start. Place a clean cloth in front of the nozzle plate and lightly press on the plate.

Flushing the printer:

1. Remove ink from tank.
2. Fill the tank with warm water and install it in the ink tank holder.
3. Hold an empty container in front of nozzles and purge water through the ink line and printer. Observe the streams coming from front of printer. The streams should be straight. There should be 7 streams
4. If all of the streams do not run true and clean, then the nozzle plate should be cleaned.
5. Remove water from the head by purging ink through printer.

Filling unit with ink:

Remove ink tank cap by turning bottle.

Fill ink tank with ink.

3. Re-install ink tank lid by turning tank into place. If the printer has been run completely dry, the printer will require several purges to remove all air.

SECTION 5

HOW TO INSTALL:

Location of Components:

The most important consideration in locating the components for an installation is choosing a site where access is easily gained to optimize the following:

1. Ease of use
2. Easy to monitor
3. Ease of maintenance
4. Low levels of vibration

The printer should be mounted in a position that is easily accessible and safe from collision (guard rails are always recommended). The faceplate of the printer should be as close to the surface of the item to be marked as possible, while still maintaining a safety factor (Print quality is compromised when the distance exceeds 0.5".) The ink tank and printer should be accessible. When mounting directly to a conveyor, the conveyor should be free of vibration. This makes it easier to monitor the print while inputting data or servicing the equipment. It is highly recommended that the printer be furnished with a dedicated power source. A line conditioner is also recommended in order to minimize any source of interference. Be sure to stay away from any external source of interference such as high voltage lines, transformers or large electric motors.

If static is present, a static eliminator must be installed up stream of the printer.

The ink tank should be placed as close as possible to the printer in order to minimize the length of ink tubing used.

If an external detector is used, the photocell should be mounted upstream from the printer. To which side of the printer the photocell is mounted, will be governed by conveyor direction.

It must "see" the substrate before the printer. It must be mounted as close as possible to the printer to minimize any error in printing. If the photocell has to be mounted away from the printer, adjust the print delay to properly position the code on the substrate. The optimum distance between the printer and the substrate is 1/8" with 1/2" as the maximum. Place the photocell so that items to be printed on pass within 1/2" to 3" away.

SECTION 6

THE CONTROLLER:

In order to understand the use of the controller, it is important that the operator be familiar with several terms relating to the operation of ink jet equipment.

1. TERMS AND DEFINITIONS:

DELAY:

Delay: The distance between the location at which the leading edge of an object is detected by the photo detector, and the point at which the print starts. Adjusting the delay moves the print position forward or backwards on the object being printed. In WEB mode (printing on a continuous sheet or similar material), this also controls the distance between prints (See also WEB and SINGLE SHOT.)

PURGE:

Purging the printer causes continuous and repeated firing of the valves. The length of the purge and the time between firings is set in the controller and cannot be adjusted.

COLUMN SPACE:

Column space is the space between each vertical column of dots in a printed character. Setting this parameter allows characters and messages to be made shorter or longer, independent of the print speed setting.

CHARACTER SPACE:

Character space is the space between each character.

SINGLE SHOT MODE:

When the controller is set in SINGLE SHOT mode, it will print only one time for each triggering of the photo detector.

WEB MODE:

In WEB mode, the controller will print repeatedly as long as the photo detector is covered. The distance between each print is controlled by the Delay.

FONT:

Ink jet FONTS are similar to the FONTS used by the printer connected to an office computer. They are made bolder by increasing the number of dots used in each character. A change of FONT will also allow the character height to be adjusted in mid print.

AUTO CODE:

An AUTO CODE is a group of characters that are placed in a message to be printed. Before the controller prints the message, it replaces these characters with the information associated with them, e.g. “*JU*” would be replaced by the Julian date “365”

| | | |
|--------|---|------------|
| “*DA*” | Full date string. | “DD/MM/YY” |
| “*TI*” | Full time string. | “HH:MI:SS” |
| “*DD*” | Day as two digits. | “DD” |
| “*MM*” | Month as two digits. | “MM” |
| “*YY*” | Year as two digits. | “YY” |
| “*HH*” | Hour as two digits. | “HH” |
| “*MI*” | Minutes as two digits. | “MI” |
| “*SS*” | Seconds as two digits. | “SS” |
| “*JU*” | Julian date as three digits. | “365” |
| “*S7*” | Switch to font 1. Single stroke, seven dots high. | |
| “*D7*” | Switch to font 2. Double stroke, seven dots high. | |
| “*S5*” | Switch to font 3. Single stroke, five dots high. | |
| “*D5*” | Switch to font 4. Double stroke, five dots high. | |

MESSAGE:

A MESSAGE is a line of text stored in the controller. Up to 99 messages can be stored.

2. CONTROLLER OPERATIONS:

Text editing:

When entering text, pressing the control key (**CTR**) on the keypad enables the cursor movement keys and allows access to punctuation marks. The cursor will flash indicating that the control key has been pressed.

Number editing:

When editing numbers, it is not necessary to delete mistakes. The cursor will wrap around to the beginning of the number.

CODAIRE Mini Version 1.7

| | |
|-----------|----------|
| MAIN MENU | |
| 1.Print | 4.Edit |
| 2.Stop | 5.Setup |
| 3.Purge | 6. Delay |

1. Print:

1. The controller requests a message number to be printed. If you are unsure of the message needed then just press enter (**ENT**).
2. The message currently in print will be shown in the display.
3. If this is the message you need to print then press enter (**ENT**).
If this is not the message to be printed, scroll through the messages using the left or right arrow keys.
4. When the correct message is found press enter (**ENT**). The message selected will start printing on the next item.

2. Stop:

Printing will stop. To continue printing, press the number “1” key while in the MAIN MENU.

3. Purge:

1. When printing and the need to purge arises, press the “3” key.
2. The controller will ask if you wish to purge “Y” or “N”. Pressing the “N” key returns the controller to the MAIN MENU and printing will continue.
3. If the “Y” key is selected, printing will stop, and the unit will purge a fixed number of times. To stop purging, press either the “N” or (**DEL**) key.
4. When in the “Stopped Print” mode and the need to purge arises, press the “3” key.
5. The controller will ask if you wish to purge “Y” or “N”. Pressing the “N” key

returns controller to the main menu.

6. Printing will be stopped. Press the “1” key to reactivate the printer.
7. If the “Y” key is selected, the unit will purge a fixed number of times. To stop purging, press either the “N” or delete key (DEL).

4. Edit:

Quick method:

From the main menu press the “E” key. The display will show the message currently being printed. Edit message as needed, followed by pressing and the print will change immediately. The Quick method does not change any of the printing parameters already set.

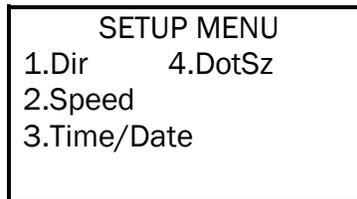
Long method:

1. From the main menu, press “4” to enter the edit menu.
2. Enter the message number to be edited, starting with the left most number first, i.e. 01. For example, if message number 23 is needed, press 2 then 3, for 23.
3. Press to view the message.
4. The display will show the current contents of the message selected. Enter the new text or edit the existing text.
5. Press and the controller will ask whether or not you need to edit the print parameters “Y” or “N”. These include font, character spacing and column spacing.
6. Pressing “N” returns to MAIN MENU.
7. Pressing “Y” allows a change in FONTS. Press “1”, “2”, “3”, or “4” to select the desired font as described below:

| | | |
|---------|-------|---------------------|
| FONT 1: | 7 X 5 | Single stroke. |
| FONT 2: | 7 X 5 | Double stroke bold |
| FONT 3: | 5 X 5 | Single stroke. |
| FONT 4: | 5 X 5 | Double stroke bold. |

8. After selecting the desired font press enter (**ENT**). The screen changes to edit the **Character Width**. The range shown is in terms of dots. Increasing the number expands each character by placing additional “blank columns” **between each printed dot column**. Likewise, decreasing the number condenses the character.
9. Press enter (**ENT**) to save the changes and the screen changes to edit the **Character Space**. The range shown is in terms of dots. Increasing the number expands the space **between each** character by placing additional “blank columns” between each character. Like wise, decreasing the number condenses spacing between each character.
10. Press to save the changes and return to the MAIN MENU.

5. Setup Menu:



Print Direction.

1. Press “5” when in MAIN MENU brings you to the SETUP menu.
2. Press “1” to change print direction. The screen states current direction. To change the direction, press either “L” or “R” keys. The screen returns to the SETUP MENU.

Speed.

Note: If an encoder is being used the print speed does not need to be set.

1. Press “2” to change the line speed of the unit to match the line speed of the conveyer line.
2. Enter the proper numbers going from left to right; e.g., for a speed of 210, press, in order, keys “2”, “1”, and “0”.
3. Press to save the changes and return to the SETUP MENU.

Time/Date

Note: This unit uses a 24-hour clock.

1. Press “3” to change the time and set the date.
2. Enter values for each: Hour, Min, Sec, Day, Month, and Year. Following each entry, press to advance to the next value. After each value has been reviewed and/or changed, pressing returns to the SETUP MENU while saving all changes. When you come to a value not requiring a change simply press to pass on the next value.

Dot Size

Model Mini 1

1. From the MAIN MENU select 5 for the SETUP MENU

2. From the SETUP MENU select 4 for the DOT SIZE.
3. Select 'Y' for yes.
4. The display should show the following.

XXXXXXXXXX
B G12345678 T

Where: X is a number between 1 and 9
B is the bottom of the line.
T is the top of the line.

- The number above the G is the global setting. Increase this number to increase the size of all the dots.
- The number above each digit is the setting for each dot from the bottom up. Dot 1 is the bottom dot.
- Position eight is not active on a seven dot printer.

5. Press the 'CTRL' to enable the cursor movement mode.
6. Use the arrow keys to move the cursor to the dot position you need to edit.
7. Press the 'DEL' key to remove the position to be adjusted.
8. Press the 'CTRL' key to take the unit out of edit mode.
9. Press the number you wish to change to.
10. Press 'ENT' to make the change.

Model Mini 2

1. From the MAIN MENU select 5 for the SETUP MENU
2. From the SETUP MENU select 4 for the DOT SIZE.
3. Select 'T' for the top line on the printer and 'B' for the bottom.
4. The display should show the following.

XXXXXXXXXX
B G12345678 T

Where: X is a number between 1 and 9
B is the bottom of the line.
T is the top of the line.

- size
- The number above the G is the global setting. Increase this number to increase the size of all the dots. This number controls both the bottom and top lines.
 - The number above each digit is the setting for each dot from the bottom up. Dot 1 is the bottom dot on the line selected. (T or B).
 - Dot eight on the bottom line is dot eight in a double height print.
 - Position eight is not active on the top line.

5. Use the left and right arrow key to position the cursor bellow the position to be changed.
6. Enter the new dot size number.
7. Press 'ENT' to make the change.

6. Delay:

Quick method:

When in the "MAIN MENU" pressing the Left and Right arrow keys will move the

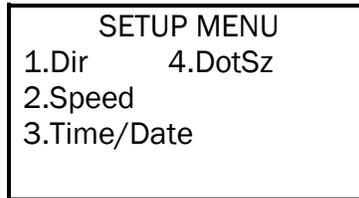
code forward and back on the substrate.

Long method:

When in the “MAIN MENU” press the number “6” key. The display will show the current delay setting for the message being printed. If adjustment is necessary, use the specific number keys to make the change. When complete, to save the change, press enter (ENT).

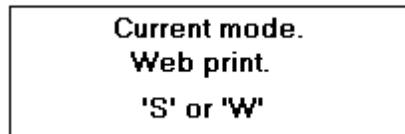
Hidden menus

The CODAIRE Mini “Setup menu” contains a hidden sub menu. To access these menus, the unit must be in the “SETUP MENU” mode and showing this screen.



This menu allows the service technician to adjust the printers’ print mode.

Pressing the ‘M’ key while in the “SETUP MENU” allows the service technician to set the print mode of operation, whether it’s printing on a continuous substrate or on a box. The screen changes to the following.



Entering ‘W’ sets the printer in web mode. In this mode the printer will print as long as the photo detector is covered. The distance between prints is set by the delay.

Entering ‘S’ will put the printer in single shot mode. In this mode the printer will print one time after the photo-detector is covered, as is the case when printing on a box moving down a conveyer line. Once either “S” or “W” is pressed, the screen returns to the SETUP MENU and automatically saves the change. If a change is not necessary, simply press delete (DEL) and the screen will return to the SETUP MENU. Press delete (DEL) again, and the screen returns to the MAIN MENU.

Auto Codes for the CODAIRE Mini

“*DA*” -> Full date string. “DD/MM/YY”

| | | | |
|----------|----|---|------------|
| "*Tl*" | -> | Full time string. | "HH:MI:SS" |
| "*DD*" | -> | Day as two digits. | "DD" |
| "*MM*" | -> | Month as two digits. | "MM" |
| "*YY*"-> | | Year as two digits. | "YY" |
| "*HH*" | -> | Hour as two digits. | "HH" |
| "*MI*" | -> | Minute as two digits. | "MI" |
| "*SS*" | -> | Seconds as two digits. | "SS" |
| "*JU*" | -> | Julian date as three digits. | "365" |
| "*S9*" | -> | Switch to font 1. Single stroke, nine dots high. | |
| "*D9*" | -> | Switch to font 2. Double stroke, nine dots high. | |
| "*S7*" | -> | Switch to font 3. Single stroke, seven dots high. | |
| "*D7*" | -> | Switch to font 4. Double stroke, seven dots high. | |

Warranty information.

Dalemark Industries Inc. systems are sold with a standard warranty covering defects in materials and workmanship. Warranty coverage is for a period of 90 days for labor and a period of one year for parts, beginning from date of shipment. Dalemark Industries Inc. will not honor warranties on equipment damaged by customer abuse, neglect, operator error, acts of war or natural disaster. The customer assumes the responsibility of ensuring the air and power sources are within required standards.

Parts not covered under warranty:

1. Fuses
2. Ink and line filters
3. Lamps, Light bulbs and LED's
4. Ink supply containers
5. Gaskets
6. Quick disconnects
7. Ink pressure regulators
8. O-Rings
9. Nozzle array plates.
10. Peripheral equipment not manufactured by Dalemark Industries Inc.*

* Original manufactures warranty covers where applicable

Dalemark Industries Inc.' only obligation shall be to replace portions of the product deemed to be defective. Dalemark Industries Inc. is not liable for injury, loss or damage, direct or consequential arising out of use or inability to use the product. Before using, user shall determine the suitability of the product for his/her intended use and user assumes all risk and liability whatsoever in connection therewith.

SPARE PARTS LIST

| Part description | P/N |
|--------------------------------|-----|
| LCD Display 4X16 | |
| Keypad | |
| Nozzles | |
| Ink tank with lid | |
| Nozzle plate 7 dot | |
| Nozzle plate 15 dot | |
| Valve board with valves (7) | |
| Valve board with valves (8) | |
| Valve board upper | |
| Valve board lower | |
| Large ink line tube | |
| Small ink line | |
| Manifold 7 valve | |
| Manifold 8 valve | |
| Male ink line fitting | |
| Female bulk head fitting | |
| Bracket assembly. | |
| Adapter 12VDC @ 1.5A | |
| Main controller card 7 dots | |
| Main controller card 15 dots | |
| 5 gallon pail of porous ink | |
| 5 gallon cage assembly | |
| Ink line filter | |
| Driver card cable | |
| Data port cable and connectors | |

Options.

- Encoder with mounting bracket.
- Photo detector.
- Five gallon pail of ink.
- Five gallon pail assembly.