5750-212
Revision A

I.V./700
Ink Jet Printer
Service Manual

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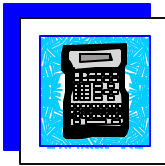Printed in the United States of America

Diagraph
CORPORATION

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Basics

Product Specifications

Controller / Ink Delivery System
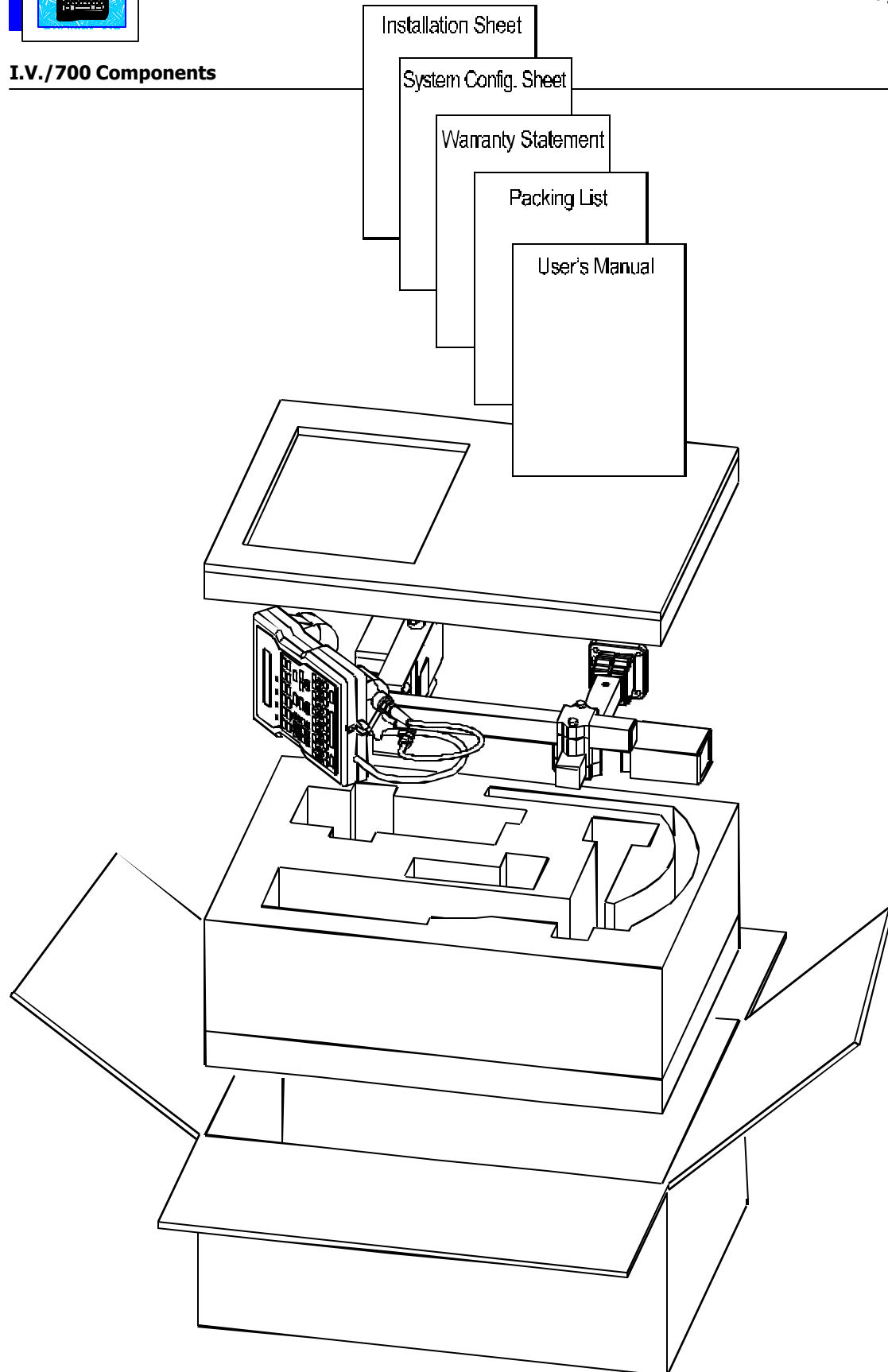
Two models Weight	English/European 15 lb. (6.8 kg) English/Asian 15 lb. (6.8 kg)
Microprocessor	32-bit CMOS 68332
LCD	European display: 20 characters, 5 x 8 matrix, European character set Asian display: 20 characters, 5 x 8 matrix, Japanese character set
LED	Four status
Keypad	Twelve special function keys; numeric keypad; QWERTY array with ALT key combinations for multiple character sets; four keys for cursor control.
Message Storage	Ninety-nine 50-character messages
Languages	European: English, French, German, Italian, Spanish Asian: English and selected Katakana & Kanji characters
Enclosure	Injection molded thermoplastic
Ink Capacity	Can, 13.5 fluid ounces (400 ml.)
Electrical	100V - 240V, 0.7A 50/60 Hz
Dimensions	8.75 in x 6.25 in x 3.25 in (222 mm x 159 mm x 83 mm)

Printhead

Resolution	7 dots/inch vertical, 12 dots/inch horizontal
Dot Diam. Range	0.100-0.125 in (2.54 - 3.175 mm)
Rec. Throw Distance	0.50 in max. at 50 ft/min; 12.7 mm at 15.24 m/min 0.625 in max at 150 ft/min; 1.59 mm at >45.72 m/min
Max. Line Speed	250 ft/min (76.2 m/min)
Character Height	.50 in (12.7 mm) 7 dot .36 in (9 mm) 5 dot
Ink Colors	Black, red, green, blue, yellow, orange
Ink Line Pressure	20-90 psi (1.4 -6.2 bar)
Operating Temperature	40º to 110º F (4.4º to 43.3º C)
Photosensors	Two with up to .75 in max. read distance
Ink Compatibility	All inks are miscible, water-based, nonflammable and odorless
Ink Compliance	I.V./700 type inks contain no chemicals reportable under SARA section 313. These inks meet CONEG legislation for printing onto packaging components. All components of these inks are included in the European inventory of existing chemical substances (EINECS list).
Dimensions	3.2 in x 3.4 in x 6.4 in (81 mm x 87 mm x 164 mm)
System Compliance	UL / CE / CSA
Options	External photosensor model available.

I.V./700 Components

Installation Sheet

System Config. Sheet

Warranty Statement

Packing List

User's Manual

Keypad Assignments

DISPLAY
1   Two-line, twenty character per line, liquid crystal display (LCD).

LEDs
2   Power LED; lit when the printer has power.
3   Photo-eye LED; on while a product passes by.
4   Print LED; lit when the printer is in print mode.
5   Ink out LED; blinks when the ink can is out of ink.

FUNCTION KEYS
6   PRINT: Starts and stops printing.
7   EDIT: Create, edit or delete a message.
8   PURGE: Purge all ink channels; with ALT (24), it purges single channels.
9   MESSAGE INDENT: Sets the message indentation from the leading edge of the product.
10 FONT: Selects the font to print.
11 TIME: Inserts the printed time into a message. With ALT (24), it inserts a work shift code.
12 SET-UP: For configuration of the system.
13 INFORMATION: Provides status and setting information.
14 DOT SIZE: Increases or decreases all dot sizes at once.
15 CHARACTER WIDTH: Changes the width of printed characters which produces changes in the length of printed messages.
16 DATE: Inserts the date into a message. With ALT (24), it inserts an expiration date.
17 ITEM COUNT: Inserts the item count into a message. With ALT (24), it inserts pallet counts.

NUMERIC KEYPAD
18 Keys for number entry which will show alternate characters when scrolled with the arrow keys (22).

EDIT KEYS
19 DELETE: Erases the character under the cursor and does not repeat.
20 BACKSPACE: Deletes the character to the left of the cursor and will continue to delete when held down.
21 ENTER: Completes entries and enacts changes.
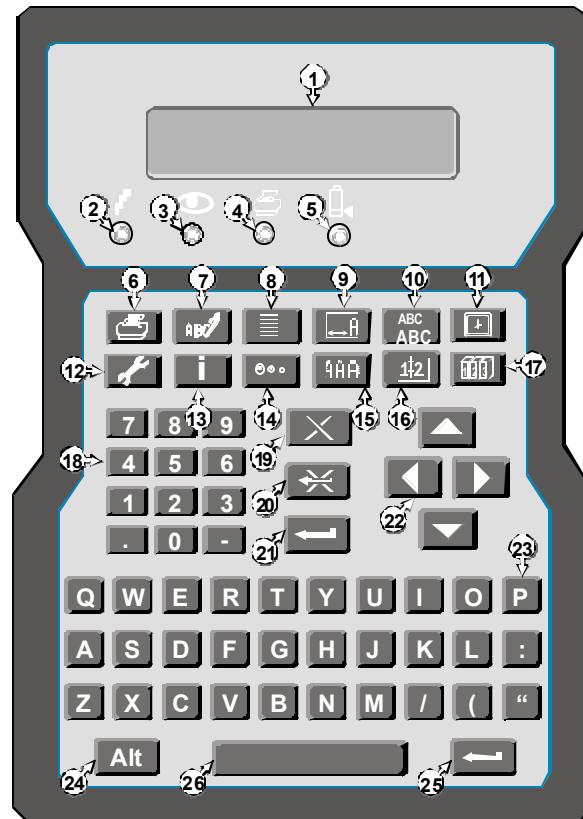
ARROW KEYS
22 Keys that provide cursor movement and screen scrolling.

ALPHABETIC KEYS
23 Keys for character entry. Each character will show alternate characters when scrolled with the up and down arrow keys.

ALTERNATE KEYS
24 ALT: Provides alternate characters and functions when used in combination with other keys.
25 ENTER: This key duplicates the function of key 21

SPACE BAR
26: Enters spaces in messages; can be scrolled with the up and down arrows to show alternate characters

Initializing the system

| Alt | Space Bar |

Keystrokes & Controller CommandPrompts

| Self Test |
| Passed |

| User Initializing |

| Select Language |
| 1-English |
| 2-Español |
| 3-Deutsch |
| 4-Français |
| 5- Italiano |
| 6- Suomi |
| 7- Nederlands |
| 8- Svenska |
| 9-Português |
| A-Norsk |

Set Date	YYYY / MM / DD
1-No 2-Yes	1997 02 17

Set Time	HH : MM PM/AM
1-No 2-Yes	12 : 42 PM

Select Units	1:Inches 2:Meters
1-No 2-Yes	Units:1

Setting variables through the Set-Up menu

Set-Up Menu 1-Date	YYYY / MM /DD 1997　　02　　17		

Set-Up Menu 2-Expiration Date	Expiration Days 0000		

Set-Up Menu 3-Time	HH : MM　PM/AM 00 : 00　　　　AM		

Set-Up Menu 4-Work Shifts	Set Shifts (1-6): Shift :1	Start: 08:00	Shift Name: A<

Set-Up Menu 5-Item Count	Start: 0000001	End: 0009999	Change: 01

Set-Up Menu 6-Pallet Count	Items per Pallet 0000012	Start: 0000001	End 0009999

Set-Up Menu 7-Message Indent	Set Message Indent 000.5 inches		

Set-Up Menu 8-Character Width	Set Character Width 4		

Set-Up Menu 9-Dot Size	Dot Diameter (1-9): 4		

Set-Up Menu A-Font	1:7B　2:7　3:5 Set Font:		

Set-Up Menu B-Print Mode	Print Multiple 1-No　2-Yes　　:1		

Set-Up Menu C-Box Length	Box Length: 000.2 inches		

Set-Up Menu D-Message Gap	Message Gap: 000.4 inches		

Set-Up Menu E-Print Speed	Fixed Speed: 1-No　2-Yes　　:2	Print Speed: 040.0 ft/min	

Set-Up Menu F-Print Direction	Fixed Direction (Y/N): 1-No　2-Yes　　:2	Fixed Direction 1:<---　2:--->　:2	

Set-Up Menu G-Code Date	Rollover Hr (0-23): 00		

Set-Up Menu H-Password	Password 1-Enable	Password	Password Invalid Password　X
	Password 2-Disable	Disabling Password...	
	Password 3-Change	Old Password	New Password
		Password OK	Confirm Password

Adjusting dot sizes

| Alt | i | 🔧 |

Set-Up Menu	Column Dot Adjust
I-Column Dot Adjus	0

Set-Up Menu	Dot:1	Factory Setting Y/N
J-Single Dot Adjust	Dot Size:250	1-No 2-Yes :1

Set-Up Menu	1st Dot Time:000 sec	1st Dot Adjust:1	Factory Setting Y/N
K-First Dot Adjust		Dot Adjustment:00	1-No 2-Yes :1

Accessing system information

| i |

Information	Unused Messages:
1-Unused Messages	96

Information	1997 / 02 / 17
2-Date	

Information	12:32:49
3-Time	

Information	Print Speed:
4-Print Speed	40ft/min

Information	Item Count:
5-Item Count	000000

Information	Ver. E 1.90
6-Version	

Information	Call your
7-Support/Supplies	Diagraph Distributor

Printing a message

| 🖨 |

1-Print	Name:DIAGRAPH
2-Cancel Print	DIAGRAPH<

Editing a message

| 1-New Message
2-Edit Message | Enter Message Name
DD< | Editing...
DIAGRAPH< | 1-Save:DD
2-Cancel Changes: DD |
| 2-Edit Message
3-Delete Message | | | 2-Cancel Changes: DD
3-Edit: DD |

| 1-New Message
2-Edit Message | Name:DD
DIAGRAPH< | Editing...
DIAGRAPH< | 1-Save:DD
2-Cancel Changes: DD |
| | | | 2-Cancel Changes: DD
3-Edit: DD |

| 2-Edit Message
3-Delete Message | Name:DD
DIAGRAPH< | 1-Cancel Changes:DD
2-Ok. Delete: DD |

Setting the item count

| Editing...
DIAGRAPH< | Editing...
DIAGRAPH{1}< |
| | Count 1,2,3
DIAGRAPH{1}< |

Setting the pallet count

| Editing...
DIAGRAPH< | Editing...
DIAGRAPH{1}< |
| | Pallet 10,20,30...
DIAGRAPH{1}< |

Setting the character width

| Editing...
DIAGRAPH< | Set Character Width
6 |

Setting the message indent

| Editing...
DIAGRAPH< | Set Message Indent
000.5 inches |

Setting the font

| Editing...
DIAGRAPH< | 1:7B 2:7 3:5
Set Font: 1 |

Placing the time in a message

[ABC] 2 [▲] [↵] [🕐]

Editing... DD<	Editing... DD{13:49}<
[▼]	hh:mm DD{13:49}<
	hhmm DD{1349}<
	hh:mmAM/PM DD{13:49PM}<
	hh DD{13}<
	mm DD{49}<
	AM/PM DD{PM}<
	(1:AM/2:PM) DD{2}<

Placing the date in a message

[ABC] 2 [▲] [↵] [1|2]

Editing... DD<	Editing... DD{02/17/97}<
[▼]	MM/DD/YY DD{02/17/97}<
	DD/MM/YY DD{17/02/97}<
	YYYY DD{1997}<
	YY DD{97}<
	MON DD{FEB}<
	DD DD{17}<
	MM DD{02}<
	DDD DD{048}<
	WW DD{07}<
	M DD{B}<
	W/W DD{G}<

Placing the date in a message

| ABC | Alt | 1{2} |

Editing... DD<	Expiration Days 0030	Editing... DD{19/03/97}<
▼		XDD/MON/YY DD{19/MAR/97}<
		XMM/DD/YY DD{03/19/97}<
		XDD/MM/YY DD{19/03/97}<
		XMON YY DD{MON 97}<
		XDD DD{19}<
		XMON DD{MAR}<
		XMM DD{03}<
		XYY DD{97}<
		XYYYY DD{1997}<
		XWW DD{11}<
		XDDD DD{078}<
		XM DD{C}<

Purging all channels in the system

| ≡ |

| Hold for Long
Purge   55/100 |

Purging individual channels in the system

| Alt | ≡ |

| Dot: 1
Press i to Exit | Dot: 1
Purge: 44/100 |

Maintenance   **Loading Ink**

Even when the can is empty, the I.V./700 has enough ink in its delivery system to print 400 to 1000 characters after the ink low light begins to flash.

1   Unscrew the old can and set aside.
2   Remove the cap from the new can, invert and screw into the ink receptacle.
3   Dispose of the old can in accordance with state and federal regulations
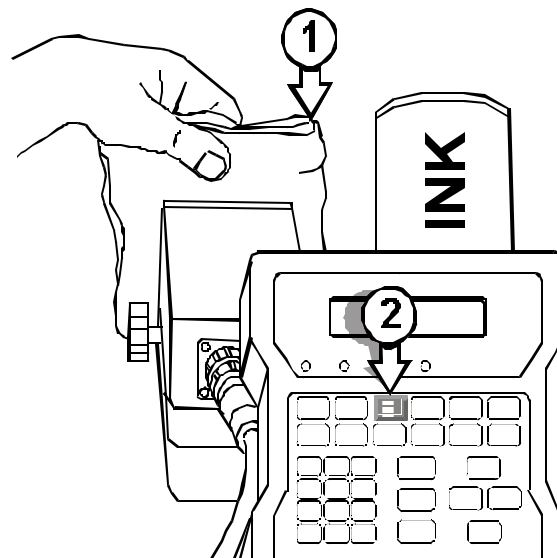
NOTE: DO NOT SHAKE THE INK CAN
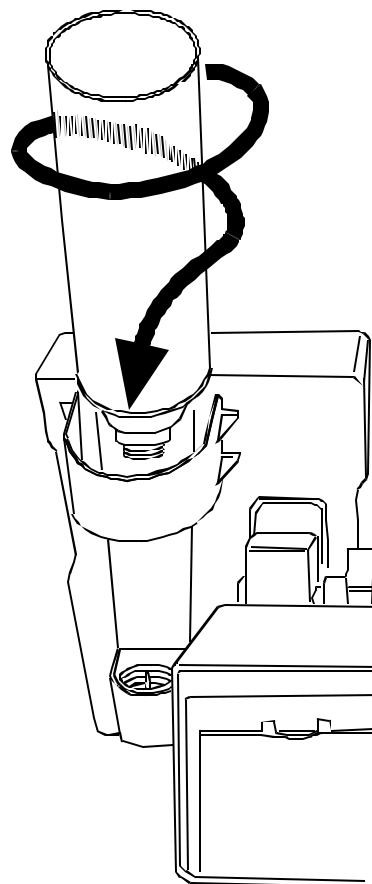
Purging All Channels

Purge the printer at the start of the workday.

1 Hold a disposable towel in front of the printhead.
2 Press PURGE.
   The printhead will expel ink for approximately two seconds.
   Continue to press PURGE if you a want a long purge of ink.
3 Clean the face of the printhead with water.

> **Hold for long purge**
> **Purge   96/100<**

Purging with Conditioner

Extended shutdowns of a week or more will require purging the printhead with conditioner.

1 Remove the ink canister and attach a canister of conditioner.
2 Hold a disposable towel in front of the printhead.
3 Press PURGE.
4 Continue to press PURGE until the expelled fluid is clear.
5 Remove the conditioner canister and attach the ink canister.
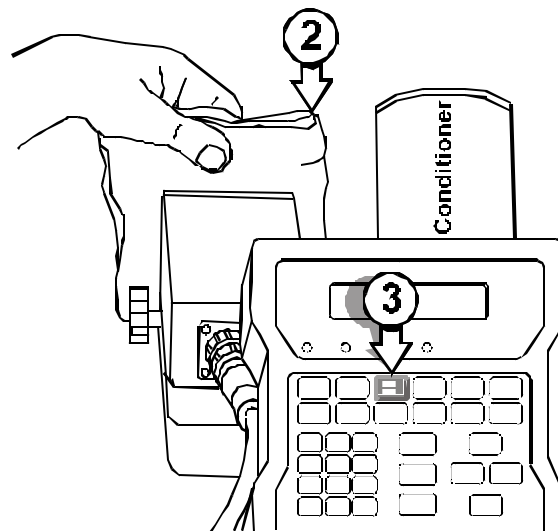
Purging Individual Channels

Purge a single channel when a dot is missing or undersized.

1 Press and hold ALT and PURGE.
2 Press the corresponding numeric key to select a channel to purge.
3 Hold a disposable towel in front of the printhead.
4 Press PURGE.
   The printhead will expel ink for approximately two seconds.
5 Clean the face of the printhead with water.
6 Press i to exit or enter another channel to purge and repeat steps 3 and 4.
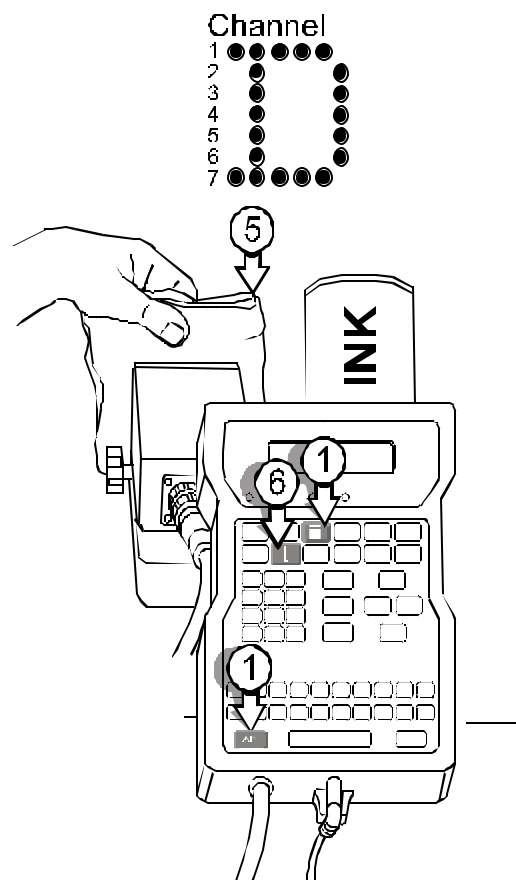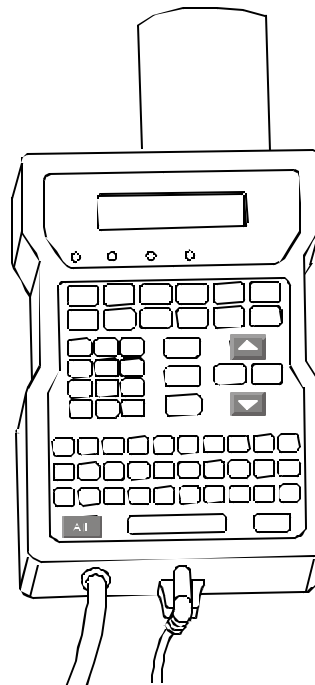
Adjusting the Screen Contrast

You can change the contrast on the LCD by using the UP and DOWN arrows with the ALT key.

1 Press and hold ALT and the DOWN arrow. Hold for at least five seconds. The screen contrast will gradually dim.

2 Press and hold ALT and the UP arrow. Hold for at least five seconds. The screen contrast will gradually become darker.

Troubleshooting

Problems with the I.V./700 divide into three areas: (1) the unit is not printing; (2) the unit is printing but the results are unsatisfactory; and (3) the unit is printing but some aspect of its operation is unsatisfactory.

(1)   Not Printing, Questions and Solutions

Q1   The I.V./700 is not printing and the power LED is not lit. Why?

S1   The printer does not have power. Check the following:

[1] The barrel plug connection at the base of the controller;

[2] The cable connection at the base of the power supply;

[3] The barrel plug for a 15 VDC output;

[4] The cable connection at the rear of the printhead;

[5] The wall receptacle to make sure that it is supplying power.

If the printer passes all the previous tests but still will not print, then install a new controller board (P/N 5750-208E for European units and 5750-208A for Asian units).

Q2   The I.V./700 is not printing, the print mode LED is on, and the photosensor LED is not blinking. Why?

S2   The photosensors can not detect the product. They can be either too far from the product or dirty. Clean the photosensors and adjust the printhead to within 0.25 inch of the product.

If cleaning the photosensor and adjusting the position of the printhead does not fix the problem, then put a finger in front of each photosensor alternately and watch for the photosensor LED to light. If a photosensor is working, then the LED will light when you touch it. If one does not light, the driver board must be replaced.

If neither photosensor activates LED Q2, remove the top cover of the printhead replace the printhead driver board (P/N 5750-198).

You can use the defective unit while waiting for the replacement driver board by configuring the I.V./700 so that it operates in fixed speed mode and fixed direction (see Controller directions below).

Setting the Print Speed

1 Press SET-UP.

2 Press E for "E-Print Speed." The LCD will prompt for a Yes or No to fixed speed printing.

If you select "1-No", the display will return to the Set-Up menu. If you select "2-Yes", the LCD will ask for the speed in feet or meters per minute.

3 Type the speed and press ENTER.

Setting the Print Direction

1 Press SET-UP.

2 Press F for "F-Print Direction." The LCD will prompt for a Yes or No to fixed direction printing.

If you select 1-No, the LCD will return to the Set-Up menu.

3 If you select 2-Yes, the LCD will ask you to set the print direction.

4 Select a direction and press ENTER.

Q3 **The I.V./700 is not printing and the ink LED is flashing. Why?**

S3 The printer is out of ink. Replace the old ink can with a new can. If the can is not empty, replace it anyway to eliminate the possibility of a can that has lost pressure causing the problem.

Q4 **The I.V./700 is not printing but all LED signals are normal. Why?**

S4 Address the simplest possibility first: is the I.V./700 in print mode? Carry out the operations described below to print a message and verify that the printer is in print mode and can print.

If the printer is still not printing, it is possible that the character width setting is too small for the product line speed. To rectify this, increase the character width by following the directions below on setting the character width.

DIAGRAPH

Printing a Message

1 Press PRINT and the LCD will show "1-Print" and "2-Stop Print"

2 Press 1 and the LCD will show the name of the last message printed and its corresponding text.

3 Scroll until "DIAGRAPH" appears as the message to print appears on the LCD.

4 Press ENTER to print.

5 Press 2 to stop printing.

The scanned print sample above is the default DIAGRAPH message printed with controller default settings.

Changing the Character Width in a Message

1 Press EDIT.

2 Press 2. Scroll until the target message is on-screen.

3 Press ENTER.

4 Press CHARACTER WIDTH.

5 The LCD will show a range of 1 (narrow) to 9 (wide).

Select a new width by scrolling and press ENTER.

6 Press ENTER to complete the edit change.

Character Width 1	Character Width 4	Character Width 6
ABCD	ABCD	ABCD

Q5 **The I.V.700 is not printing even though all of the LED's are working normally.**

S5 Remove the four Phillips screws from the controller housing and check the cable connection between the printhead and the controller board. Check the continuity of the controller to printhead cable. If the cable is defective, replace it with cable 5750-192.

Q6 **The I.V./700 is not printing and ALL the LEDS are blinking. Why?**

S6 A short-circuit has occurred. To determine whether the short is in the printhead or the controller, disconnect the barrel plug connector and the printhead connector at the printhead.

Connect the barrel plug connector but DO NOT connect the printhead. If the unit initializes normally, replace the printhead (P/N 5750-199). If the unit does not initialize normally, replace the controller (P/N 5750-201 for a European model and 5750-202 for an Asian model).

(2) Unsatisfactory Print

The easiest way to approach any printing problem is to reset the printer to its factory defaults and then print the default "DIAGRAPH" message. This simple procedure avoids all the complications of extreme settings that interfere with the printing process.

After the printer successfully prints "DIA-GRAPH", then try each message that was created by the customer until you find the one with parameters (font, indent or character width) that produced unsatisfactory printing.

Q7 All indications are normal but the I.V./700 prints on every other box. Why?

S7 The box length distance is longer than the length of the product. Decrease the box length distance by following the directions below.

Q8 The I.V./700 is printing normally but it's the wrong message. Why?

S8 The wrong message has been selected to print. Follow the directions below to print a message and select another message to print.

Q9 The I.V./700 is printing the correct message but the message is too far to one side. Why?

S9 The message indent distance is incorrect. Adjust the distance by following the directions below to change an individual message indent and the directions to change the default message indent.

Setting the Box Length

1 Press SET-UP.
2 Press C for "C-Box Length." The display will prompt for a distance.
3 Type in the box length in inches or centimeters.

Printing a Message

1 Press PRINT and the LCD will show "1-Print" and "2-Stop Print"
2 Press 1 and the LCD will show the name of the last message printed and its corresponding text.
3 Scroll until "DIAGRAPH" appears as the message to print appears on the LCD.
4 Press ENTER to print.
5 Press 2 to stop printing.

   The scanned print sample above is the default DIAGRAPH message printed with controller default settings.

Setting an Individual Message Indent

1 Press EDIT.
2 Press 2 and scroll until the target message is onscreen.
3 Press ENTER.
4 Press INDENT, move the cursor to the number for change and type in a new indent value.
5 Press ENTER to finish.

Setting the Default Message Indent

1 Press SET-UP.
2 Press INDENT.
3 Type in an indent value.
4 Press ENTER to finish.

Q10 The I.V./700 is printing normally but the message is too wide. Why?

S10 The character width is too wide or too narrow. Perform one of the following procedures:

Increase or decrease the character width by following the directions below for changing the character width.

If the unit is using the fixed speed feature then increase or decrease the fixed speed by following the directions below for changing the fixed speed.

Q11 The I.V./700 is printing the correct message but one or more rows of ink dots are missing from some of the characters. Why?

S11 The most likely cause is some impediment on the faceplate that is blocking ink jet orifices. Clean the faceplate with a wipe wetted with water and purge the printhead. Follow the purging instructions in the Maintenance section.

No Noise from the Solenoid

As you conduct the individual purge procedure, listen for the each solenoid to make a noise. If the solenoid for the missing dot is silent, you have a defective controller board, a defective driver board or a defective solenoid.

Remove the cover of the controller and the keypad to expose the controller board. Check the controller board pins for the outputs shown on sheet HBD1. If the outputs do not match those shown, replace the controller board (P/N 5750-208E for European models and 5750-208A for Asian models).

If the controller board performs according to specifications, take readings on the outputs of the printhead driver board. If the board outputs do not match the specifications shown on HBD1 and the scope plots at the end of this section, replace the printhead driver board (P/N 5750-198).

If the driver board performs according to specifications, the solenoid is defective. Replace the print module which contains new solenoids (P/N 5750-205).

The solenoid is making noise but is not printing.

If you hear the "whine" of a solenoid while purging individual channels but see no ink

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Changing the Character Width in a Message

1 Press EDIT.
2 Press 2. Scroll until the target message is on-screen.
3 Press ENTER.
4 Press CHARACTER WIDTH.
5 The LCD will show a range of 1 (narrow) to 9 (wide).

Select a new width by scrolling and press ENTER.
6 Press ENTER to complete the edit change.

Setting the Print Speed

1 Press SET-UP.
2 Press E for "E-Print Speed." The LCD will prompt for a Yes or No to fixed speed printing.

If you select "1-No", the display will return to the Set-Up menu. If you select "2-Yes", the LCD will ask for the speed in feet or meters per minute.
3 Type the speed and press ENTER.
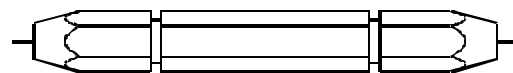
1902-857

coming from that channel, then the ink jet orifice remains blocked. Remove the obstruction with a broach Kit (P/N 1902-857, shown below).

Q12 **The I.V./700 is printing the correct message but all of the ink dots are too small. Why?**

S12 The ink pressure is too low. Follow the procedure in this section to adjust the regulator and the ink flow in the printhead.

You will need a Phillips screwdriver, a multimeter and a fresh can of ink (5750-085) for this adjustment. Disconnect the power before starting.

1. Remove the printhead cover to access test points on the printhead driver board.

2. Attach the black lead from the multimeter to the bare wire (pin 16, [A]) of the cable connecting the CPU board to the driver board (see diagram below).

3. Attach the red lead of the multimeter to test point 3 (TP3, [B]) on the driver board.

4. Set the mulitmeter to DC voltage.

5. Install the new can of ink into the controller recepticle.

6. Power ON the I.V./700 and wait for a menu to appear.

7. Check the mulitmeter display; you should see a value in the range of 5 to 8 volts DC.

8. Lift the lock ring on the regulator and slowly turn the adjustment knob counterclockwise. The vol-tage reading should decrease as you turn the knob.

9. Turn the knob counterclockwise until it stops and shuts off the ink flow. The multimeter should show zero volts.

10. Place absorbent material or a container in front of the printhead and purge until the ink low lamp flashes.

11. Turn the regulator knob slowly clockwise and watch the voltage increase on the multimeter.

12. Stop turning the knob when the multimeter reads 7.0 volts.

13. Press the regulator locking-ring back into place; disconnect power and the multimeter leads; and replace the printhead cover.
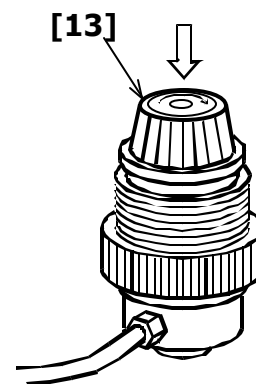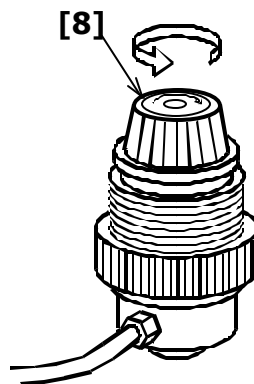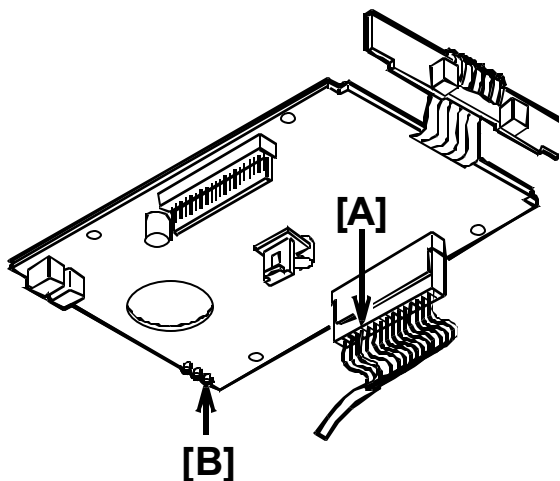
Q13 **The I.V./700 is printing the correct message but the characters are out of position and there are a lot of extra dots. Why?**

S13 The printhead is too far from the product (see the scanned sample at right below). Adjust the printhead until it is closer to the box. The faster the box travels, the closer the printhead must be to the box.

Q14 **After sitting idle for a few minutes, the first dots printed in the message are too small when the I.V./700 starts printing again. Why?**

S14 Undersized dots on startup can result from two adjustments: dot size and first dot. These variables need to be tested and set at the same time to achieve a satisfactory solution.
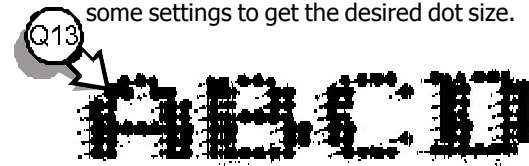

First Dot Adjustment

1 Press and hold ALT + INFORMATION.

2 Plug in the barrel connector.

3 Release the keys when the LCD shows "Information".

4 Press SET-UP.

5 Press K. The LCD will prompt for the number of seconds that the printer will stand idle.

6 Type in the amount of time and press ENTER.

7 The first line of the LCD will show "1st Dot Adjust:1" for the first valve (dot) at the top of the printhead.

   The second line of the LCD will prompt for "Dot Adjustment". If the first printed dot was small in the sample print, increase the value by 10 which will increase the size of the first printed dot by valve 1.

   If the first printed dot by valve 1 was full-sized, DO NOT enter a new value: leave the existing value and press ENTER.

8 The LCD will change to "1st Dot Adjust:2" for valve 2. Repeat this process for all valves.

9 After the seventh dot, press SET-UP. The LCD will prompt for "Factory Setting". Select "2-Yes". Wait the time designated in step 5 and make a print sample. If it is satisfactory, this procedure is complete. If the sample is not satisfactory, unplug the barrel connector and repeat this procedure.

Adjust the size of the first printed dots by following the directions below.

Q14 **I selected fixed speed and now my I.V./700 prints backwards or random dots. Why?**

S14 The I.V./700 print direction is wrong. Change the print direction by following the directions below.

Q15 **The I.V./700 is printing dots of different sizes. Why?**

S15 First, verify that the dot sizes identified on the label on the bottom of the printhead match those programmed into the unit, if not, change them per the instructions below. If they do match, you may have to increase or decrease some settings to get the desired dot size.

Setting the Print Direction

1 Press SET-UP.

2 Press F for "F-Print Direction." The LCD will prompt for a Yes or No to fixed direction printing.

   If you select 1-No, the LCD will return to the Set-Up menu.

3 If you select 2-Yes, the LCD will ask you to set the print direction.

4 Select a direction and press ENTER.

Changing All Printed Dot Sizes

1 Press SET-UP.

2 Press DOT SIZE. The LCD will prompt for a dot diameter.

3 Scroll to a new dot diameter and press ENTER.

   Run some print samples with the new dot diameter to see if the printing is improved. If not, change the dot diameter again and run more print samples.

(3) Satisfactory Print with Other Problems

This section covers problems that do not cause the printer to stop printing nor produce unsatisfactory prints. These situations are warnings that more serious problems might be on the way.

Q15 Shouldn't I shake the ink can before I install it in the printer?   I always have to shake paint cans.

S15   No. Never shake a can of Diagraph ink. The ink in the can is actually in a bag that is attached to the fitting at the top of the can. The can has been pressurized with air that pushes against the sides of the bag and forces ink through the fitting. If vigorously shaken, the bag can tear loose and ink will not flow from the can.

Q16 Do I need to cover my I.V./700 printer during a washdown?

S16   Yes.

Q17 I've noticed ink accumulating on the faceplate. Is this normal?

S17   Yes. Over the course of an 8-hour shift enough ink may accumulate to form a hanging drop. This ink may allow environmental debris to accumulate, which is why the frontplate should be wiped after at the beginning and end of each shift.

Q18 I'm running the I.V./700 eight hours per day and have to replace the ink can every other day. Is this normal?

S18   Perhaps. Each can of ink will print approximately 225,000 characters. Actual usage varies depending upon operating conditions.

Q19 I see ink in the receptacle for the ink can when I install a new can. Is this normal?

S19   Yes. A few drops of ink may accumulate each time the ink can is changed, eventually building up if not cleaned away.

Q20 Ink is leaking from the fitting where the ink line attaches to the controller. What should I do?

S20   Replace the lower enclosure assembly of the controller (P/N 5750-207).

Q21 Ink is leaking from the fitting on the pigtail from the printhead? Is this normal?

S21   No. Replace the fittings. Use P/N 5750-214 for the female and 5750-213 for the male.
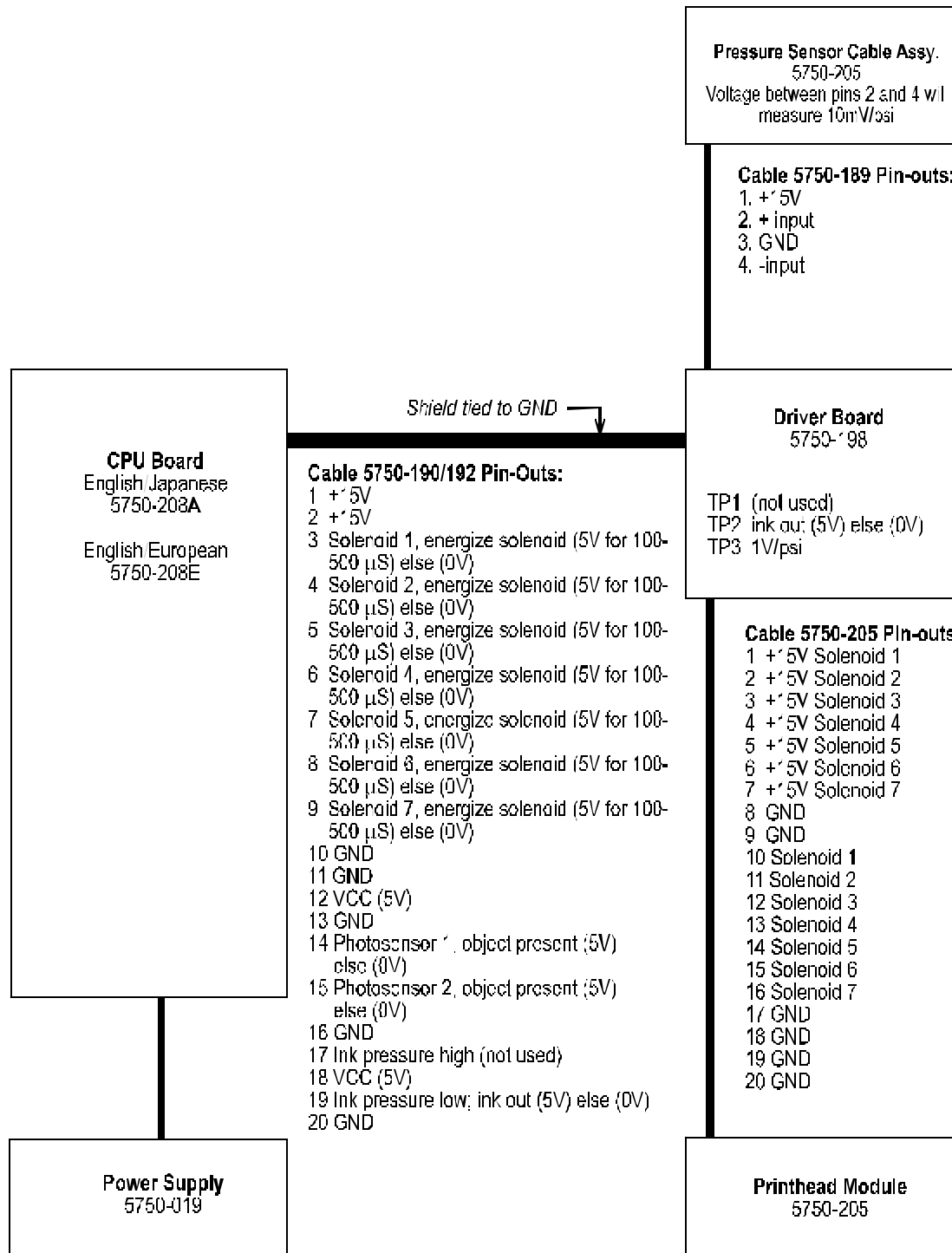
Q22 What parts should I expect to replace after a year of 8-hour-per-day usage?

S22   None in a normal environment. Generally, the first thing to fail is the printhead, which lasts over a year.

**Hardware Block Diagram**   **HBD1**

Pressure Sensor Cable Assy.
5750-205
Voltage between pins 2 and 4 will
measure 10mV/psi

Cable 5750-189 Pin-outs:
1. +15V
2. + input
3. GND
4. -input

Shield tied to GND →

Driver Board
5750-198

TP1 (not used)
TP2 ink out (5V) else (0V)
TP3 1V/psi

CPU Board
English/Japanese
5750-208A

English/European
5750-208E

Cable 5750-190/192 Pin-Outs:
1 +15V
2 +15V
3 Solenoid 1, energize solenoid (5V for 100-500 μS) else (0V)
4 Solenoid 2, energize solenoid (5V for 100-500 μS) else (0V)
5 Solenoid 3, energize solenoid (5V for 100-500 μS) else (0V)
6 Solenoid 4, energize solenoid (5V for 100-500 μS) else (0V)
7 Solenoid 5, energize solenoid (5V for 100-500 μS) else (0V)
8 Solenoid 6, energize solenoid (5V for 100-500 μS) else (0V)
9 Solenoid 7, energize solenoid (5V for 100-500 μS) else (0V)
10 GND
11 GND
12 VCC (5V)
13 GND
14 Photosensor 1, object present (5V) else (0V)
15 Photosensor 2, object present (5V) else (0V)
16 GND
17 Ink pressure high (not used)
18 VCC (5V)
19 Ink pressure low; ink out (5V) else (0V)
20 GND

Cable 5750-205 Pin-outs
1 +15V Solenoid 1
2 +15V Solenoid 2
3 +15V Solenoid 3
4 +15V Solenoid 4
5 +15V Solenoid 5
6 +15V Solenoid 6
7 +15V Solenoid 7
8 GND
9 GND
10 Solenoid 1
11 Solenoid 2
12 Solenoid 3
13 Solenoid 4
14 Solenoid 5
15 Solenoid 6
16 Solenoid 7
17 GND
18 GND
19 GND
20 GND

Power Supply
5750-019

Printhead Module
5750-205

Oscilloscope Plot of Driver Board 15 V Output

Veritcal Setting: 5.0 VDC per division
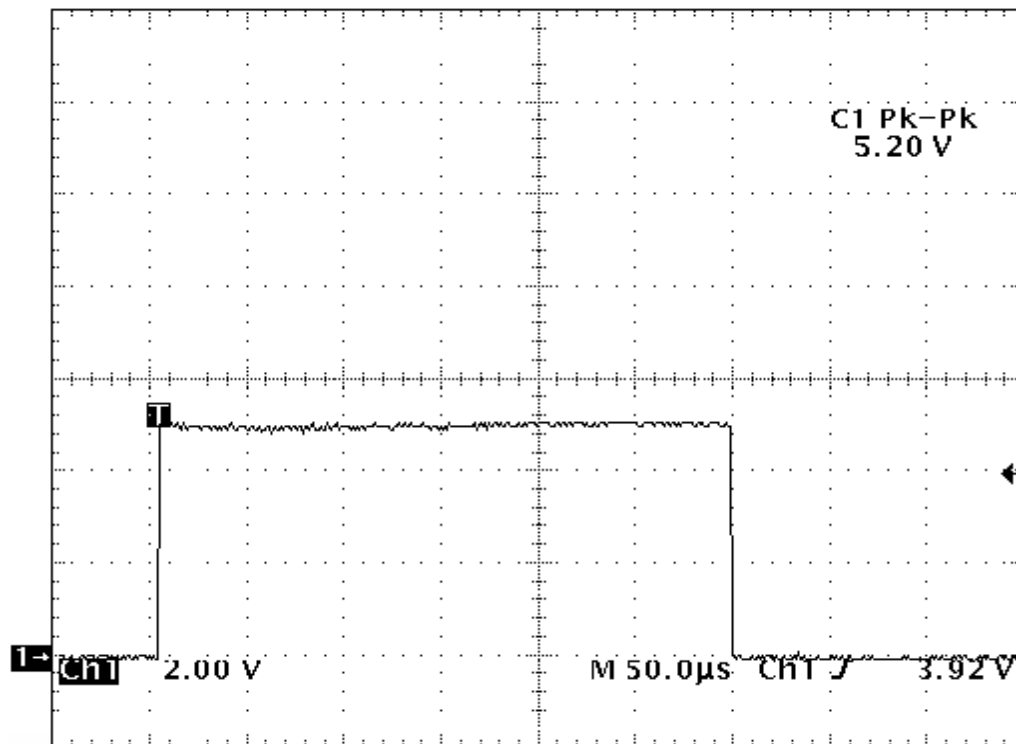Horizontal Setting: 50 microseconds per division
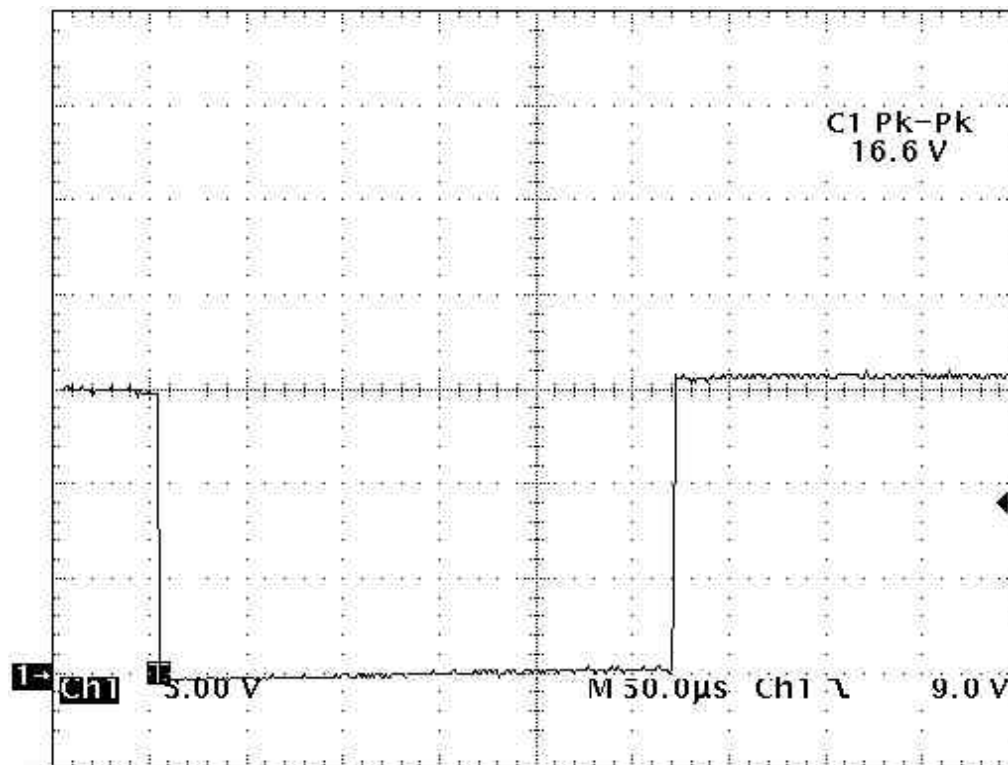
Oscilloscope Plot of CPU Board 5 V Output

Veritcal Setting: 2.0 VDC per division

Horizontal Setting: 50 microseconds per division

Parts Drawings

Modular Parts Kits
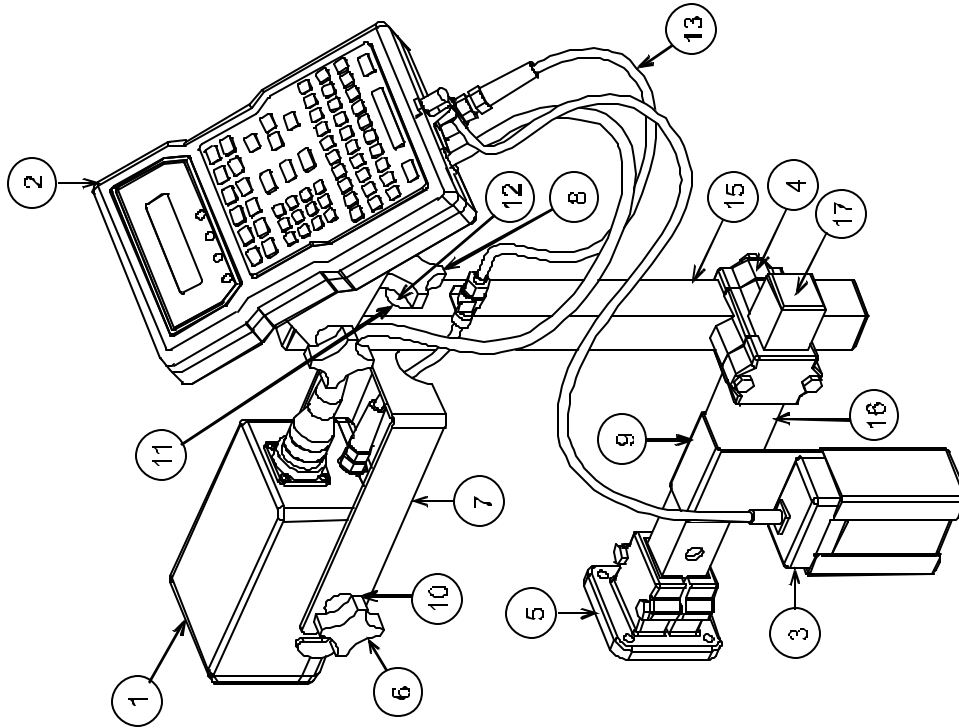
TABLE 1	
PART NO.	QTY
5750-201 KIT, CONTROLLER (ENG/EURO)	1
5750-202 KIT, CONTROLLER (ENG/ASIAN)	1

ITEM	PART NO.	DESCRIPTION	QTY
17	2460-150	CAPLUG 1-1/4" x 11GA.	2
16	5750-073	SQUARE TUBING 12"	1
15	5750-026	SQUARE TUBING 16"	1
14	5750-192	CABLE, CPU TO PRINTHEAD	1
13	5750-125	KIT, IV700 INK LINE	1
12	5750-078	BOLT, CARRIAGE 5/16-18 X 1-3/4	2
11	5310-305	WASHER, LOCK 1/4	1
10	5310-500	WASHER, LOCK 5/16 EXT-TOOTH	2
9	5750-087	BRACKET, POWER SUPPLY	1
8	5750-077	KNOB, 4 PRNG. 5/16-18 X 7/16	2
7	5750-194	BRACKET, PRINTHEAD	1
6	1900-890	5/8-18 X 1" PLAST CKNOB ASSY	2
5	2460-139	VERT BASE CLAMP SQUARE 1-1/4"	1
4	2460-137	CROSS CLAMP 1-1/4" SQUARE	1
3	5750-113	POWER SUPPLY R-PLACEMENT KI	1
2	SEE TABLE	CONTROLLER KIT	1
1	5750-199	KIT, PRINT-HEAD ASSY REPLACEMENT	1

Controller Assembly

Printhead Assembly

5	5750-190	BASE, PRINTHEAD IC CPU	1
4	5750-206	ASSY MODULE SERVICE	1
3	5750-188	DRIVER BOARD ASSY IV/700	1
2	5750-190	ENCLOSURE UPPER PRINTHEAD	1
1	5750-213	PRINTHEAD ENCLOSURE LOWER	1
ITEM	PART NO	DESCRIPTION	QTY

Test Results

Declaration of Conformity

Application of the Council Directive(s):   89/336/EEC and 73/23/EEC

Standard(s) to which conformity is declared: EN55022, EN 50082-1, and
                                                EN 60950

Manufacturer's Name: Diagraph Corporation

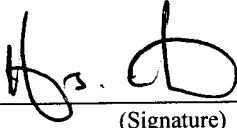Manufacturer's Address: 3401 Rider Trail South
                                                St. Louis, MO 63045

Type of Equipment: Ink Jet Printer

Model Number: IV 700

Year of Manufacture: 16 April 1997 or later

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Place: St. Louis, Missouri

Date: 16 April 1997

_____
(Signature)

Anthony B. Castro
_____
(Full Name)

Director of Quality
_____
(Position)

Inchcape Testing Services
7435 4th Street North, Lake Elmo, MN 55042

EMC VERIFICATION No. 2582-320

EQUIPMENT UNDER TEST

Type of equipment   Ink Jet Printer

Brand name   Diagraph

Type/Model   IV-700

Manufacturer   Diagraph Corporation

Tested by request of   Diagraph Corporation

STANDARDS   **TEST REPORT No. J960002582.003**

Emissions
EN 55022:1995, Class B

Immunity
EN 50082-1:1992

SUMMARY OF RESULTS

We confirm that the product tested and our review of the above numbered report without reasonable doubt will fulfill the requirements concerning electromagnetic compatibility according to the above mentioned standards harmonized with the EMC Directive 89/336/EEC.

EMC Department
Date of issue: December 13, 1996

Signature: _____ **Yuriy Litvinov, EMC Team Leader**

NVLAP

Appendix A   Service Parts Instructions

I.V./700   Modular Printhead   **5750-199N**

Contents
1 I.V./700 Printhead
1 Installation Instructions

Materials Required
Clean Wipes

Specifications
Resolution: 7 dots veritcal, 12 dots/inch horizontal (4.8 dots/cm)
Dot Diameter Range: 0.100 inch to 0.125 inch (2.54 mm to 3.175 mm)
Recommended Throw Distance: 0.25 in. max (6.35mm)
Max. Line Speed: 250 ft/min (76.2 m/min)
Photosensors: Two photosensors to measure speed and direction.
Operating Pressure: 7psig-9 psig
Character Height: .50 in (12.7 mm) 7-dot font
   .36 in. (9 mm) 5-dot font

Printhead Installation
Before starting the installation, note the label on the bottom of the printhead. This label shows the optimal adjustments for printhead variables at the time of manufacture. Each printhead is unique and requires individual adjustments for optimal printing. Copy these values so you can enter them into the controller.   At right is an example of the label. DO NOT USE THE VALUES IN THIS SAMPLE LABEL. Use the values on the label on your printhead.

1   Secure the printhead in its bracket with the four-prong knobs at [A].
2   Connect the ink line from the I.V./700 controller to the ink fitting at [B].
3   Connect the signal cable from the I.V./700 controller to the printhead at [C].
4   Insert the ink can and power up the controller.
5   Place a clean wipe against the faceplate and press PURGE.

Printhead Settings
1   Simultaneously press ALT and INFORMATION and plug in the barrel connector. Release the keys when the display shows the information menu.
2   Press SET-UP. The LCD will show the extended menu with additional choices.
3   Press I and the LCD will show "Column Dot Adjust:" Press ENTER.

[D]
[C]
[A]
[B]
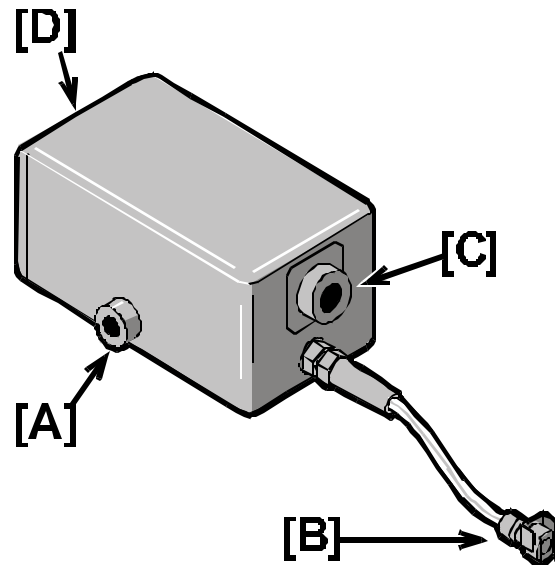
Valve	Dot Size	1st Dot
1	270	40
2	320	20
3	320	35
4	335	45
5	320	40
6	265	30
7	330	30

Column Dot =   0

INK
5
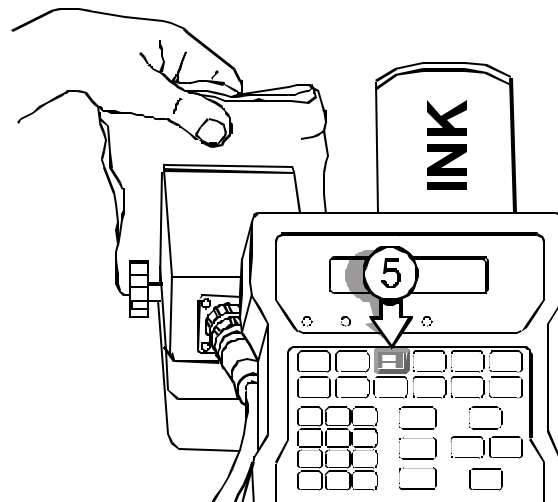
4   Type the value from the bottom of the label identified as "Column Dot =". Press Enter.

5   Press SET-UP then J. The LCD will show "Dot: 1". The controller is waiting for a dot diameter value for the dot from the first valve in the printhead.

6   Refer to the "Dot Size" value for valve 1 on the printhead label and enter it at the prompt. Press ENTER when done. Repeat this operation for all seven valves.

7   After typing the label value for dot 7, press SET-UP. The LCD will show "Factory Setting Y/N?" Select 2-YES.

8   Press Set-Up then K. The LCD will show "1st Dot Time:000 sec" Accept this default time by pressing ENTER. If the controller shows value other than zero, change that value to zero and press ENTER.

9   The LCD will display "1st Dot Adjust.: 1." Press ENTER.

10 The second line of the LCD will display "Dot Adjustment: 00". Refer to "1st Dot" for valve 1 on the printhead label and type it at the prompt. Press ENTER when done.

11 Repeat the procedure from steps 7 and 8 for all seven dots. After the seventh dot, press SET-UP. The LCD will prompt for "Factory Setting Y/N". Select 2 = YES.
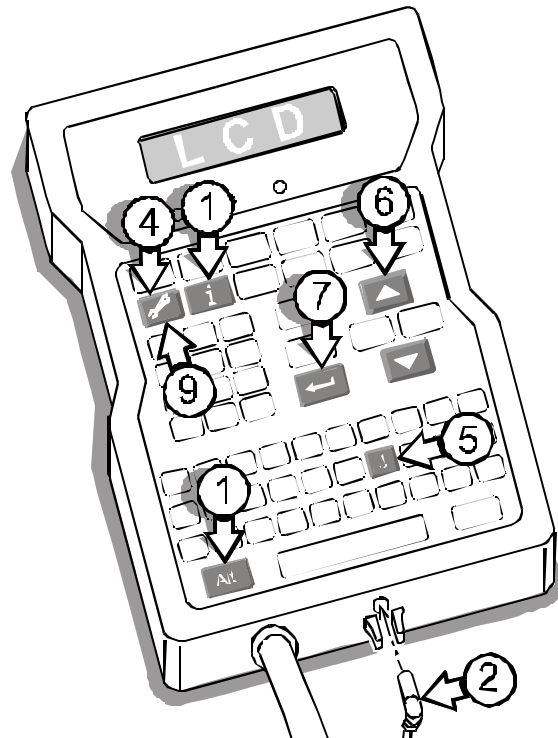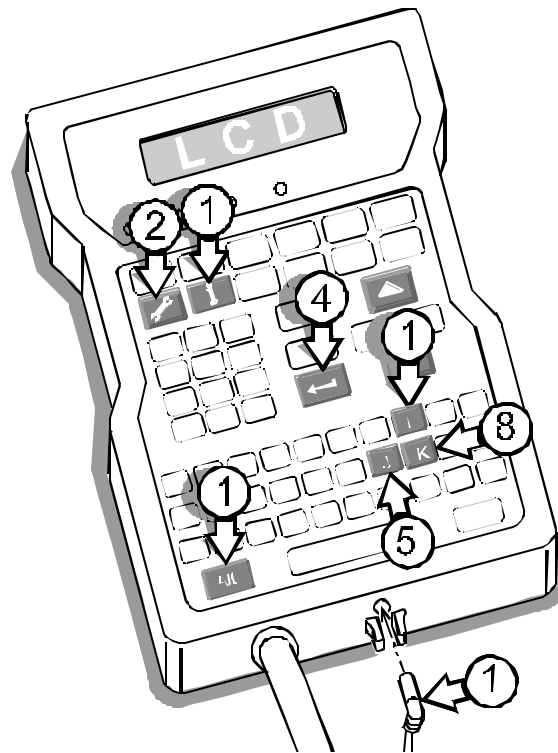
Printing Problems

Do not make any adjustments described in this section until you have eliminated incorrect settings on the controller as a probable source of the problem.

One or more of the printed dots is consistently too small.

Single Dot Diameter Adjustment

This function allows you to change the dot diameter of individual dots by altering the stroke, in microseconds, of a piston in an ink channel.

1   Press and hold ALT+INFORMATION.

2   Plug in the barrel connector.

3   Release the keys when the LCD shows "Information."

> **Information**
> **1-Unused Messages**

4   Press SET-UP

Dot #4 reduced by 25	Dot #4 at preset value	Dot #4 increased by 40

5 Press J on the QWERTY keypad. The LCD will prompt for the number of the dot that is not printing like the other dots. The top dot on the printhead is dot number 1 and the bottom dot is dot number 7.

6 Scroll to the number of the problem dot.

7 Press ENTER.

8 The LCD will prompt for a new diameter of the selected dot. Move to the second digit (250) and scroll to a new value. The scroll changes by units of 10.

9 Press SET-UP. The LCD will ask if you want to keep the "Factory Setting Y/N?" Select "1-NO." When you select NO, the I.V./700 remembers the new dot diameter value only until the next initialization.

By running print samples and altering the diameter of a single dot, you can make that single dot match the appearance of the other dots.

10 When you achieve the best print, select "2-YES" when exiting this function. This choice makes the new pulse width value permanent.

Small Dot #4	Dot #4 adjusted correctly	Dot #4 oversized

After sitting idle for several minutes, the initial prints have dots that are too small.

First Dot Adjustment

This procedure allows you to overcome this problem by independently increasing dot sizes exclusively on the first print. Second and all subsequent prints return to their defined dot-size settings.

1 Press and hold ALT+INFORMATION.

2 Plug in the barrel connector.

3 Release the keys when the LCD shows "Information."

> **Information**
> **1-Unused Messages**

4 Press SET-UP

5 Press K on the QWERTY keypad. The LCD will prompt for the time in seconds that the printer will stand idle."

> **1st dot time:000 sec**

6 Type in the amount of time and press ENTER.

7 The LCD will show "1st Dot Adjust:1" for the first valve (dot) at the top of the printhead. Press ENTER.

> **1st dot adjust:1**
> **Dot Adjustment:30**
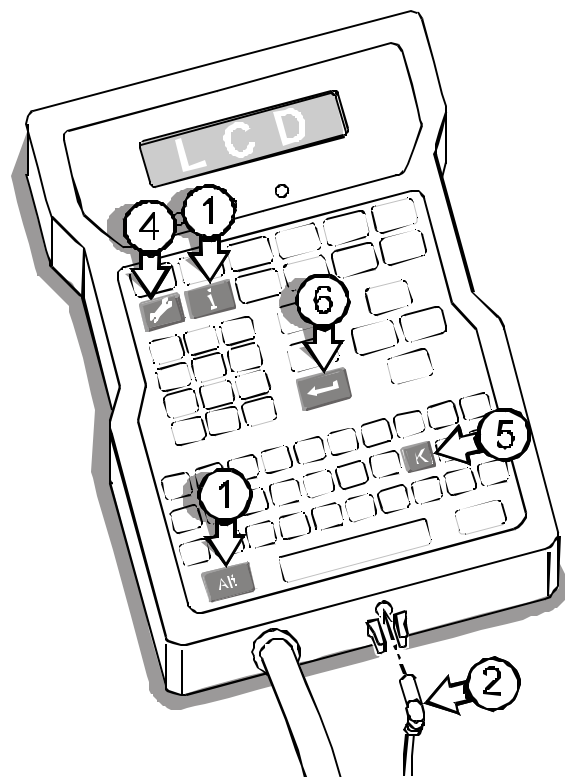
The second line of the LCD will prompt for "Dot Adjustment." If this dot is small in the sample print (see the first sample below), increase the value by 10 which increases the size of the dot for the first print.

If the dot was full-size, DO NOT enter a new value: leave the existing value and press ENTER

8   The display will change to "1st Dot Adjust:2" for the second valve. Press ENTER and the second line will prompt for "Dot Adjustment." Repeat this process through all seven dots.

9   After the seventh dot, press SET-UP. The LCD will prompt for "Factory Setting." Select "2-YES."

Wait the time designated in step 5, then print a message. If the print is satisfactory, unplug and replug to set the I.V./700 in print mode. If the print is unsatisfactory reset the first dot by repeating this procedure (C8) and run another sample. Repeat until you achieve a satisfactory first print.

Noticeable size differences between dots printed in rows (Ö) and dots printed in columns (×)

Dots with column adjustment set too low	Nominal Letters	Dots with column adjustment set too high

Column Dot Adjustment

When the I.V./700 prints a single dot, the printing channel has individual access to ink pressure. When all seven channels print simultaneously, they share the ink pressure. This sharing can produce printed dots in columns that are slightly smaller in diameter than single printed dots. The column dot adjustment enables you to eliminate slight size variances between dots printed in rows and dots printed in columns. Start by unplugging the I.V./700.

1   Press and hold ALT and INFORMATION.

2   Plug in the barrel connector.

3   Release the keys when the LCD shows "Information."

> **Information**
> **1-Unused Messages**

4   Press SET-UP

5   Press I on the QWERTY keypad. The LCD will prompt for a change in value of the column dot adjustment:

> **Column Dot Adjust:**
> **3**

6   Scroll to a higher or lower number.

7   Press ENTER.

8   Run a print sample at the speed of a production run.

9   Continue adjusting until the dots in columns match the size of dots printed in rows.
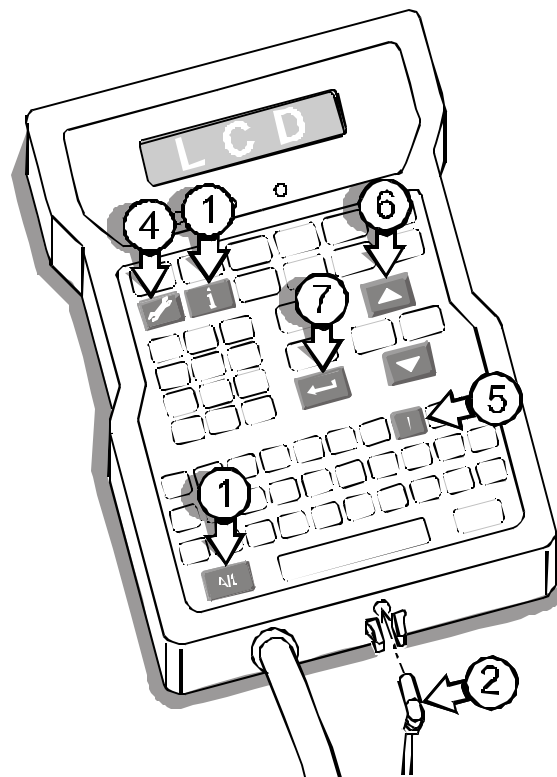
I.V./700	Controller	5750-201N

Contents

1   Controller Assembly
1   Instruction set

**Record the Printhead Settings**

Replacing the controller will eliminate all message formats and printhead values. Use the chart at right to record the column dot value and the settings for single dot diameters and first dot values. If the old controller is inoperable, skip to the next section, "Disconnecting the Old Controller", and use the label on the bottom of the printhead. Start by unplugging the controller.

1   Simultaneously press ALT and INFORMATION and reconnect the power. Release the keys when the LCD shows the information menu.

2   Press SET-UP. The LCD will show the beginning of the Set-Up menu. Press I. The LCD will display "Column Dot Adjust:".

3   Record the value shown in the second line of LCD under "Column Dot Adjust:". Press ENTER.

4   Press SET-UP then J. The LCD will show "Dot: 1". Press ENTER.

Materials Required

Clean wipes

5 Record the value shown after "Dot Size" on the LCD in the Valve 1 row in the chart at right. Repeat this operation for all seven dots.

6 After the seventh dot, press SET-UP. The LCD will respond with "Factory Setting Y/N?" Press ENTER.

7   Press Set-Up then K. The LCD will show "First Dot Time" and a number of seconds. Record the number of seconds in the chart at right and press ENTER.

8   The screen will display "1st Dot Adjust.: 1" for the first valve (dot) at the top of the printhead. The second line of the LCD will show a value for "Dot Adjustment." Record this value in the "1st Dot" column below and press ENTER to scroll through each of the seven first dot settings.

9   After the seventh dot, press SET-UP. The LCD will respond with "Factory Setting Y/N?". Press ENTER.
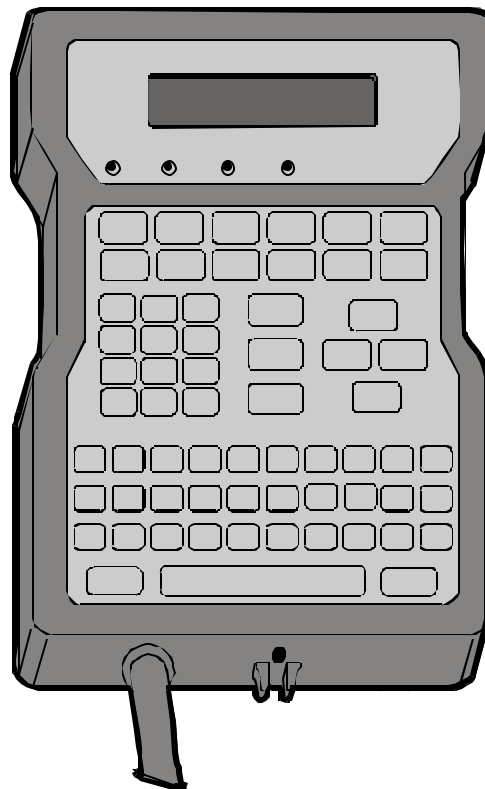
Valve	Dot Size	1st Dot
1		
2		
3		
4		
5		
6		
7		

1st Dot Time: _____
Column Dot: _____

Disconnecting the Old Controller

1   Unplug the barrel connector [A].

2   Unscrew the ink container and set aside [C].

3   Disconnect the signal cable from the printhead [B].

4   Disconnect the ink line from the printhead [D].

5   Remove the 4-prong knob [E] and the carriage bolt from the mounting bracket on the back of the controller. Set the old controller aside.
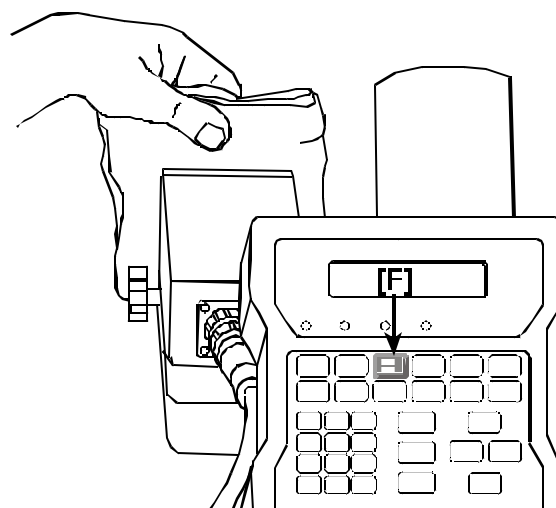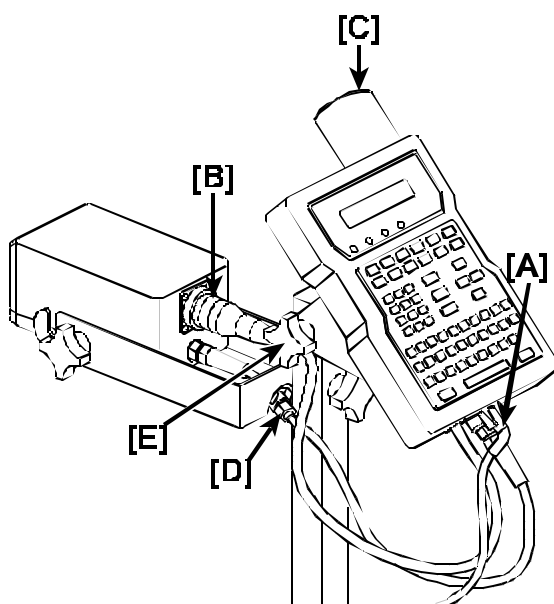
New Controller Installation

1   Unwrap the new controller and secure in place with the 4-prong knob [E] and the carriage bolt previously removed.

2   Connect the ink line to the printhead [D].

3   Connect the signal cable to the printhead [B].

4   Screw in the ink can [C].

5   Plug the power supply into an outlet and then the barrel connector [A] into the controller. The "Diagraph Corporation" prompt will confirm proper operation.

6   Press a clean wipe against the face of the printhead and press PURGE [F].

Initialization

Setting Language, Time, Date and Units

1   Press and hold both ALT and the left arrow key while connecting the power. Release the keys when "Erase all messages?" appears on the LCD. Press 1 for "No" and then ENTER.

2   The LCD will request a choice of language. Enter the number that matches your language choice:

   1   English   3   Deutsch   5 Italiano

   2   Español   4   Français

3   The next choice is Date. The LCD will prompt for year-month-day entry (YYYY/MM/DD).   Enter today's date and press ENTER.

4   The LCD will prompt for time in an HH:MM format and a designation of AM or PM. Enter the current time and press ENTER.

5   After time, the screen will prompt for the units of measurement. Enter Y to select and choose either "INCHES" or "METERS." After this choice, the I.V./700 controller will automatically reboot and display the print screen.

Printhead Adjustments

The next instructions cover transferring the previously recorded values to the I.V./700 controller. The "chart" in these instructions is the one filled in on page 1 of these instructions. Start by unplugging the controller.

1 Simultaneously press ALT and INFORMATION and plug in the barrel connector. Release the keys when the display shows the information menu.

2 Press SET-UP. The LCD will show the extended menu with additional choices.

3 Press I and the LCD will show "Column Dot Adjust:" Press ENTER.

4 Type the value from the bottom of the chart identified as "Column Dot =". Press Enter.

5 Press SET-UP then J. The LCD will show "Dot: 1". The controller is waiting for a dot diameter value for the dot from the first valve in the printhead.

6 Refer to the "Dot Size" value for valve 1 on the chart and enter it at the prompt. Press ENTER when done. Repeat this operation for all seven valves.

7 After typing the label value for dot 7, press SET-UP. The LCD will show "Factory Setting Y/N?" Select 2-YES then press ENTER.

8 Press Set-Up then K. The LCD will show "1st Dot Time:000 sec" Accept this default time by pressing ENTER.

9 The LCD will display "1st Dot Adjust.: 1." Press ENTER.

10 The second line of the LCD will display "Dot Adjustment: 00". Refer to "1st Dot" for valve 1 on the chart and type it at the prompt. Press ENTER when done.

11 Repeat the procedure from step 10 for all seven dots. After the seventh dot, press SET-UP. The LCD will prompt for "Factory Setting Y/N". Select 2 = YES then press ENTER.
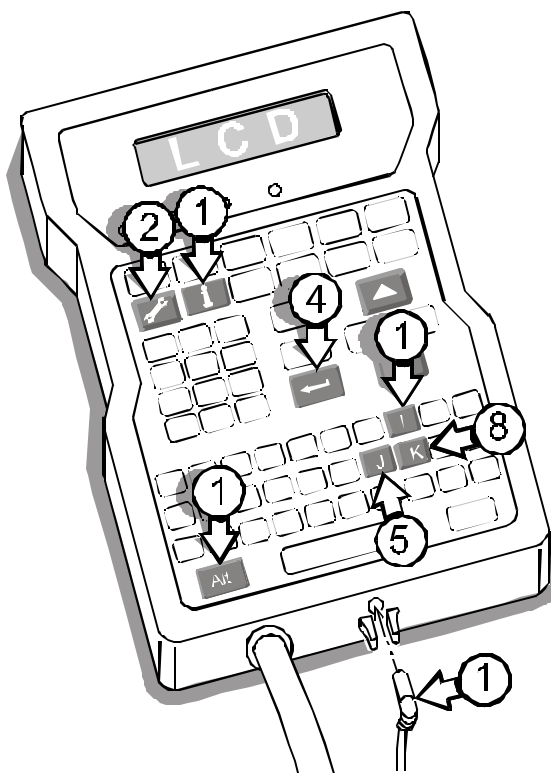
I.V./700   **P o w e r   S u p p l y**   **5 7 5 0 - 1 1 3 N**

Contents

1   I.V./700 Power Supply 5750-113

1   Instruction Sheet   5750-113N

Tools

None required.

Specifications

Input: 100V - 240V
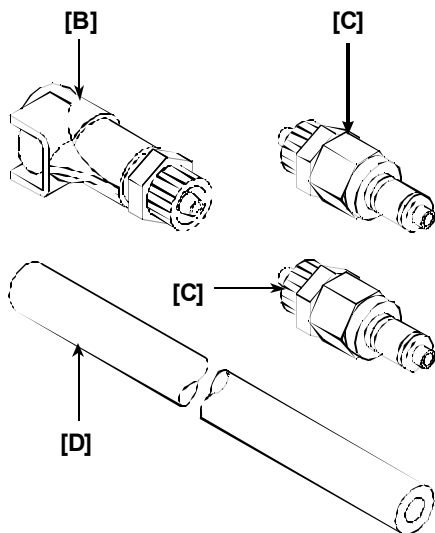   0.7A   50/60Hz

Output: 1.5V - 2.0A
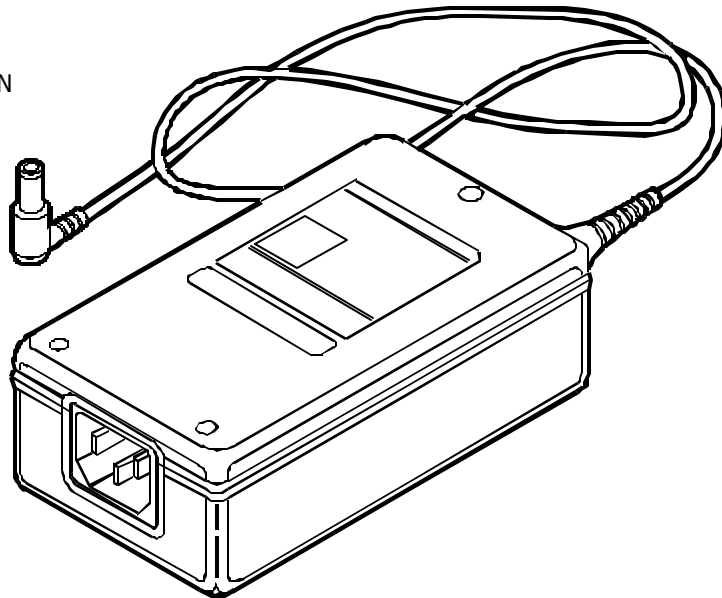
| I.V./700 | Tubing Kit | 5750-125N |

[B]   [C]
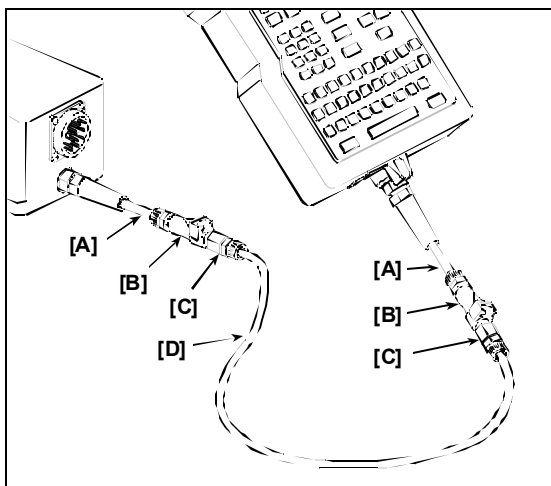
[C]

[D]

Typical Installation

This tubing kit enables you to replace a damaged ink line segment between an I.V./700 controller and an I.V./700 printhead. The illustration above shows a typical installation.

Installation Notes

_Unscrew the ink can from the controller and set aside before starting the ink line replacement.
_Before cutting away damaged tubing, depress the nipple end of the original male quick-disconnect fitting to bleed ink from the tubing.

Warning: This ink pressure can be up to 90 PSIG (6.2 Bar). Exercise Caution!

_Wrap a clean wipe around the original ink line before cutting to absorb spilled ink.
_Use a sharp blade such as a single-sided razor blade, utility knife or diagonal side cutters to make a clean cut in the replacement tubing. Avoid crimping the tubing when cutting.
_Loosen the nut on the fitting. Slip the tubing over the barbed end of the fitting. Tighten the nut until it comes to a stop.
_Exercise caution when pressurizing the tubing for the first time.

Contents

1 Quick-Disconnect Female Inline Fitting [F] 5750-214

2 Quick-Disconnect Male Fitting [C] & [G] 5750-213

1 Tubing, 0.25-inch OD, 24 inches [D]

Tools & Materials

Utility Knife & Clean Wipes

Safety Goggles

[A] Original ink line.

[B] Replacement female quick-disconnect fitting.

[C] Replacement male quick-disconnect fitting.

[D] Replacement ink line cut to desired length from the 24 inches of tubing provided in this kit.

I.V./700	Firmware	5750-117N &118N

WARNING: ESD SENSITIVE DEVICE. OBSERVE PRECAUTIONS.
Use anti-static protection throughout these procedures. Follow the directions included with disposable wrist strap.

Record the Printhead Settings

Replacing the firmware (chips U3 and U4) will eliminate all message formats and printhead values. Use the chart above to record the column dot value and the settings for single dot diameters and first dot values.

1 Simultaneously press ALT and INFORMATION and reconnect the power. Release the keys when the LCD shows the information menu.

2 Press SET-UP. The LCD will show the beginning of the Set-Up menu. Press I. The LCD will display "Column Dot Adjust:".

3 Record the value shown in the second line of LCD under "Column Dot Adjust:". Press ENTER.

4 Press SET-UP then J. The LCD will show "Dot: 1". Press ENTER.

5 Record the value shown after "Dot Size" on the LCD in the Valve 1 row in the chart below. Repeat this operation for all seven dots.

6 After the seventh dot, press SET-UP. The LCD will respond with "Factory Setting Y/N?" Press ENTER.

7 Press Set-Up then K. The LCD will show "First Dot Time" and a number of seconds. Record the number of seconds in the chart above and press ENTER. This setting is usually 000.

8 The screen will display "1st Dot Adjust.: 1" for the first valve (dot) at the top of the printhead. The second line of the LCD will show a value for "Dot Adjustment." Record this value in the "1st Dot" column at right and press ENTER.

9 The LCD will change to "1st Dot Adjust.: 2." Repeat the process in step 8 until all the values for first dot are recorded in the chart.

10 After the seventh dot, press SET-UP. The LCD will respond with "Factory Setting Y/N?" Press ENTER.

Removing the Old Chips

1 Disconnect power by unplugging the barrel connector from the base of the controller.

2 Unscrew the ink canister and set aside.

3 Unscrew the four Phillips screws at the corners of the controller and remove the top cover. Set aside the cover and the screws.

4 Remove the keypad assembly by prying up at the pin strip connectors on each side of the keypad board with a small screwdriver. Set aside the keypad assembly.

5 Remove chips U4 and U3 by pressing on the clips at the top and bottom of the DIP sockets.

6 Set aside chips for RGA return.

Valve	Dot Size	1st Dot
1		
2		
3		
4		
5		
6		
7		

1st Dot Time: _____
Column Dot: _____
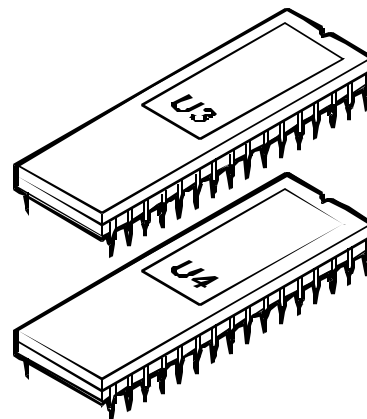
Installing the New Chips

1 Remove the chip set from the foam packing and match labels of "U3" and "U4" with the chip sockets on the controller board.

2 Orient chips with the notches at the top-towards the LCD screen. Ensure that no pins are bent.

3 Carefully align pins and firmly push each chip into its socket. DIP socket clips will snap into place when the chips are seated correctly.

4 Replace the keypad assembly by matching and pressing into place the pin strip connectors on each side of the keypad board.

5 Replace the top cover and secure in place with the four Phillips screws removed earlier.

Initialization

Setting Language, Time, Date and Units

The first time you plug in the I.V./700 with new firmware, you must select the language, time, date and unit of measure.

1 Plug in the barrel connector.

2 The LCD will request a choice of language. Enter the number that matches your language choice:

   1 English   3 Deutsch   5 Italiano

   2 Español   4 Français

3 The next choice is Date. The LCD will prompt for year-month-day entry (YYYY/MM/DD).   Enter today's date and press ENTER.

4 The LCD will prompt for time in an HH:MM format and a designation of AM or PM. Enter the current time and press ENTER.

5 After time, the LCD will prompt for the units of measurement. Enter Y to select and choose either "INCHES" or "METERS." After this choice, the I.V./700 controller will change to the print message screen.

Printhead Adjustments

The next instructions cover transferring the previously recorded values to the I.V./700 controller. The "chart" in these instructions is the one filled in on page 1 of these instructions. Start by unplugging the controller.

1 Simultaneously press ALT and INFORMATION and plug in the barrel connector. Release the keys when the display shows the information menu.

2 Press SET-UP. The LCD will show the extended menu with additional choices.

3 Press I and the LCD will show "Column Dot Adjust:" Press ENTER.

4 Type the value from the bottom of the chart identified as "Column Dot =". Press Enter.

5 Press SET-UP then J. The LCD will show "Dot: 1". The controller is waiting for a dot diameter value for the dot from the first valve in the printhead.

6 Refer to the "Dot Size" value for valve 1 on the chart and enter it at the prompt. Press ENTER when done. Repeat this operation for all seven valves.

7 After typing the label value for dot 7, press SET-UP. The LCD will show "Factory Setting Y/N?" Select 2-YES.

8 Press Set-Up then K. The LCD will show "1st Dot Time:000 sec" Accept this default time by pressing ENTER.

9 The LCD will display "1st Dot Adjust.: 1."

10 The second line of the LCD will display "Dot Adjustment: 00". Refer to "1st Dot" for valve 1 on the chart and type it at the prompt. Press ENTER when done.

11 Repeat the procedure from step 10 for all seven dots. After the seventh dot, press SET-UP. The LCD will prompt for "Factory Setting Y/N". Select 2 = YES.
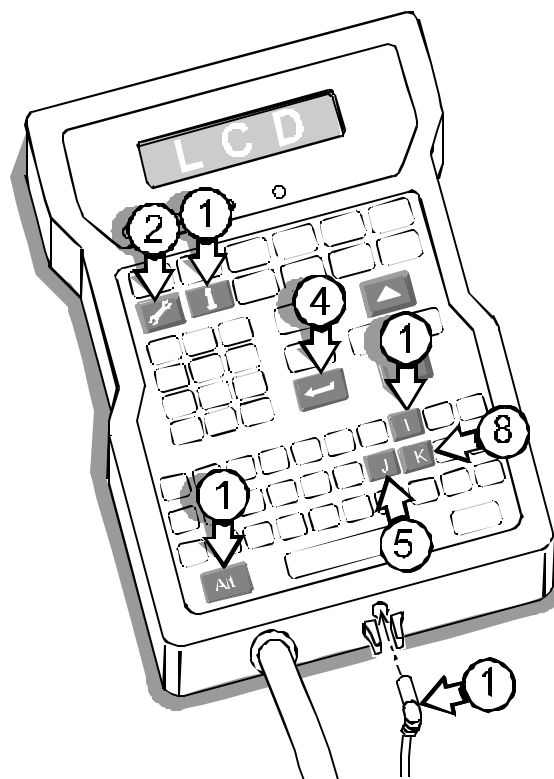
I.V./700	External Photosensor	5750-183N

These instructions cover the configuration of the I.V./700 ink jet printer with the external photosensor.

Contents

External Photosensor [1] and bracket [2]
5750-113
Photosensor/Controller Cable [3]
5750-182
Instruction Sheet
5750-183N

Configuration

See the diagram on page 2 for the configuration command sequence.

Note dimension "X" in the illustration at right--the distance from the center of the photosensor to the center of the printhead. When mounting the photosensor, make sure that the X dimension is less than the gap between the products as they move by on the conveyor. If X is greater than the gap between products, some products will missed when the I.V./700 is printing.

Measure X and use it to set Message Indent in the controller. With an external photosensor, the indent distance is the sum
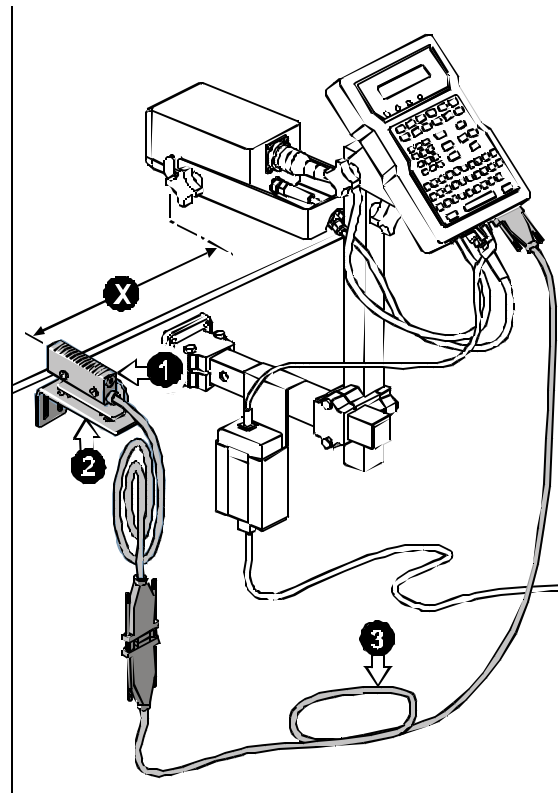
of the distance from the edge of the product to the first printed character plus the distance from center-to-center of the photosensor and the printhead. For example, if you wanted the message to be printed 2 inches from the leading edge of the product and the X dimension is 10 inches, then the indent setting is 12 inches. See the User's Manual on setting the message indent.

Setting the controller for the external photosensor requires accessing a menu that is available only after a special initialization. DO NOT USE THIS MENU option if you are using the standard I.V./700 and its built-in photosensors. Start by unplugging the I.V./700

1   Press and hold ALT and INFORMATION.
2   Plug in the barrel connector.
3   Release the keys when the LCD shows "Information".

> **Information**
> **1-Unused Messages**

4   Press SET-UP.
5   Press L on the QWERTY keypad. The LCD will prompt for an external photocell.

> **External Photocell?**
> **1-No   2-Yes   :1**

6   Press 2 and then ENTER. The LCD will prompt for a fixed print speed.

> **Print Speed:**
> **040.0 ft/min**

7   Type in a print speed and press ENTER. The LCD will prompt for a fixed print direction.

> **Fixed Direction:**
> **1:<--- 2: ---> :2**
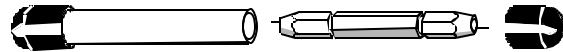
8   Select the print direction and press ENTER.

IV/700 SERVICE MANUAL
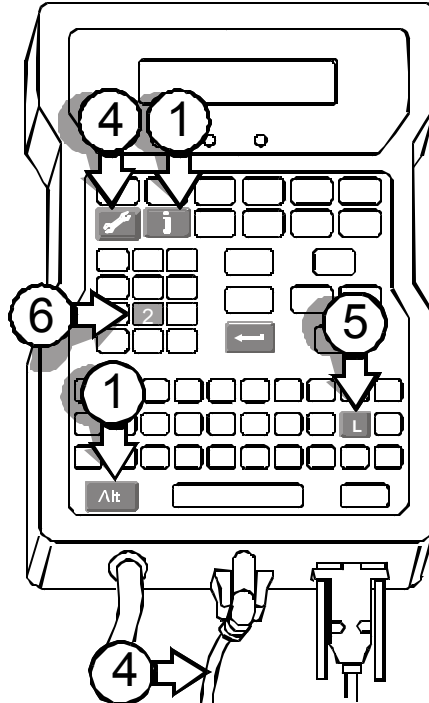
I.V./700	Broach Kit	1902-857N

Contents

| 1 Broach & Cardboard Tube	1902-857
1 Instruction Sheet	1902-857N

Tools

Conditioner, Wipes, Flashlight

Using the Broach

WARNING: Improper use of a broach can damage the printhead membrane.

1. Make sure the broach pin does not extend out of the handle any more than 0.10 inch. This will ensure that the broach pin will not poke a hole in the membrane and cause internal leaking.

2. Wipe the front plate clean with a cloth and conditioner.

3. Identify the clogged orifice by identifying the missing dot(s) from a print sample.

4. Count the orifices on the front plate up or down until you locate the clogged orifice. A flashlight or other concentrated light source will help, as the orifices are very small.

5. Carefully insert the broach pin in the clogged orifice until the handle touches the front plate. Remove the broach pin from the orifice and create a print sample.

NOTE: Avoid broaching repeatedly. The broach pin is like a microscopic file that with repeated insertions will enlarge the orifice. The enlarged orifice will seep ink, print off target, or produce other print anomalies.

6. If the print sample shows that the orifice is still clogged, purge the printhead and make a second print sample.

7. If orifice is still clogged, count the orifices again to make sure that you are broaching the correct orifice.

8. If orifice is still clogged, repeat steps 5 to 6.

[1]

0.10 inch

[3]

1
2
3
4
5
6
7
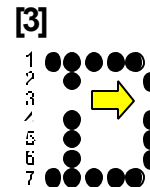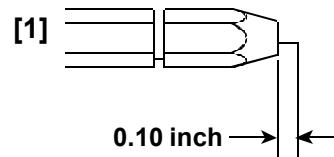
This broach kit works with both single and double column (as shown below) models of I.V. printheads.