Videojet Excel Dual Nozzle

Operator Manual

P/N 361843-01

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Videojet Technologies Inc.

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Distributors Worldwide

Compliance Information

For Customers in the U.S.A.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This device may not cause harmful interference, and

2) This device must accept any interference received, including interference that may cause undesired operation.

Warning

PERSONAL INJURY. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide responsible protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference. In such cases, the users will be required to correct the interference at their own expense.

Shielded cables must be used with this unit to ensure compliance with Class A FCC limits.

The user may find the following booklet prepared by the Federal Communications Commission helpful: How to Identify and Resolve Radio-TV Interference Problems. This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-00-00345-4.

This equipment has been tested and certified for compliance with U.S. regulations regarding safety by TUV Rheinland of North America, Inc.

For Customers in Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This equipment has been tested and certified for compliance with Canadian regulations regarding safety by TUV Rheinland of North America, Inc.

Pour la Clientèle du Canada

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicales aux appareils numerique de las class A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

Cet équipment est certifié CSA.

For Customers in the European Union

This equipment displays the CE mark to indicate conformance to the following legislation:

- EN60950-1:2001, A11:2004 Safety Requirements for Information Technology Equipment
- EN 55022:1998, A1:2000, A2:2003 Class B Radiated and Conducted Emissions
- EN61000-3-2: 2000, A2:2005 Harmonics
- EN61000-3-3: 1995, A1:2001 Voltage Fluctuations
- EN55024:1998, A1:2001, A2:2003

  ITE immunity using:

IEC 61000-4-2	Electrostatic Discharge
IEC 61000-4-3	Radiated Electromagnetic Field
IEC 61000-4-4	Electrical Fast Transient
IEC 61000-4-5	Surge
IEC 61000-4-6	Conducted RF
IEC 61000-4-8	50 Hz Radiated Susc.
IEC 61000-4-11	Voltage Dips, Interrupts

Support and Training

Contact Information

If you have any questions or need assistance, please contact Videojet Technologies Inc. at 1-800-843-3610 (for all customers within the United States). Outside the U.S., customers should contact their Videojet Technologies Inc. distributor or subsidiary for assistance.

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Service Program

About *Total*Source Commitment

*Total*Source® TOTAL SERVICE PLUS RELIABILITY, is the Videojet Technologies Inc. commitment to provide you - our customer - the complete service you deserve.

The *Total*Source Commitment

The Videojet *Total*Source® Service Program is an integral part of our business in providing marks, codes, and images where, when, and how often customers specify for packages, products, or printed materials. Our commitment includes:

- Applications support
- Installation services
- Maintenance training
- Customer response center
- Technical support
- Field service
- Extended hours phone assistance
- Parts and supplies
- Repair service

Customer Training

If you wish to perform your own service and maintenance on the printer, Videojet Technologies Inc. highly recommends you, to complete a Customer Training Course on the printer.

Note: *The manuals are intended to be supplements to (and not replacements for) Videojet Technologies Inc. Customer Training.*

For more information on Videojet Technologies Inc. Customer Training Courses, call 1-800-843-3610 (within the United States only). Outside the U.S., customer should contact a Videojet subsidiary office or their local Videojet distributor for more information.

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Introduction

1

This chapter contains the following topics:

- Introduction
- Who must use this manual
- How to use this manual
- Content presentation
- Videojet Excel Dual Nozzle printer service manual
- Videojet customer training
- The introduction to different chapters in this manual

Warning

You must read Chapter 2, “Safety” before you operate the equipment.

Introduction

The Excel Dual Nozzle printer is a single head, two stream ink jet printer. The printer can overprint, code and do industrial marking.

References to the Videojet Excel Dual Nozzle Printer

The word "printer" refers to the Videojet Excel Dual Nozzle printer for easy reading in the manual.

The Printer Supplies

The printer can print on any type of surface, texture, curve, or shape, because many types of Videojet® inks are available.

Caution

PERSONAL INJURY. Use only Videojet fluids with a flashpoint greater than -22°C (-8°F) and boiling point greater than 56°C (133°F) for protection against the fire hazards.

Contact your Videojet sales representative or distributor for any questions about the supplies selection (ink, make-up fluid, and the cleaning solutions) or product applications.

Who Must Use this Manual

This manual is for the operator. This manual contains the information on how to operate the printer only.

The operator of the printer must perform all the procedures that are described in the manual unless indicated.

Warning

Only the qualified personnel must perform the service and maintenance procedures of the printer. The Service Manual will be a supplement and not a replacement to training.

The qualified personnel are considered to be those persons who have the correct technical training, (successful completion of a training course that covers this printer). The qualified personnel has the experience to work on this equipment, and know the hazards to which they will be exposed.

Note: *Keep this manual in a safe location for easy access and reference.*

How to Use this Manual

Refer to the section “To Begin With” on page 1-4 on first use or if you have minimum knowledge of the printer. This section provides the best method to learn about the printer and tell you how to find the information you need.

If the you have knowledge about the printer, use the information in this manual for reference. This manual is arranged so that, you can find the required information quickly and easily.

Content Presentation

This section describes the styles used to write the information in the manual. The writing styles separate the important information from the common text.

Note: *Refer to Chapter 2, "Safety", for examples of Warning and Caution information.*

Printer Keys and Status Lights

All keys on the keyboard and the status lights are shown in upper case within the text.

Example: Press the HEAD key to start the ink system. The green LED status light is activated to indicate that the printer startup sequence has started.

Notes

The word ***Note*** used in the text supplies additional information to a step or piece of information.

Note: *To reach the frame <01 Edit>, press the ENTER key until the frame appears in the display screen.*

Text in the Display Screen

The words, characters, or symbols within the text that appear on the display screen are shown within the arrow symbols (<,>).

Example: When you press the F3 key to select <VIEW PRINT>, the last message that was loaded into the printer appears.

Videojet Excel Dual Nozzle Printer Service Manual

The printer package includes the Videojet Excel Dual Nozzle Printer Service Manual. The Service Manual includes the information about the installation, setup, maintenance, troubleshooting, and how to service the

printer. The service manual includes more sections about theory of operation, component identification, component removal and replacement, specifications, accessories and spare parts. The manual ends with an illustrated parts list.

Videojet Customer Training

For the customers who select to service and maintain the printer, Videojet recommends a Customer Training Course which covers the Videojet Excel Dual Nozzle Printer. The Service Manual is a supplement and not a replacement to Videojet Customer Training.

To know more about Customer Training Courses, call 1-800-843-3610 (within the U.S.A. only). Outside the U.S.A., customers must contact a Videojet subsidiary office or local distributor for more information.

To Begin With

Read the sections of this manual shown below to understand the printer better and to learn about printing a message on a product.

Note: *Before you continue, get the printer installed by a qualified service technician and set the system parameters.*

1. Read "Content Presentation" on page 1-3 in this chapter.
2. Read Chapter 2, "Safety", to understand the safety rules for this product and the supplies used. Do the reading before you remove the supplies from the package or operate the printer.
3. Read Chapter 3, "Main Parts", to know the main parts of the printer.
4. Read Chapter 4, "Startup and Shutdown", to know the general guidelines and procedures to turn the printer On and Off.
5. Read Chapter 5, "Software Summary Chart", Chapter 6, "Create and Print the Messages"and Chapter 7, "The System and Print Setup" to know the printer software and to operate the printer.
6. Read Chapter 8, "Maintenance", Chapter 9, "Troubleshooting"and Chapter A, "Specifications" to know maintenance, troubleshooting, and specifications.

Safety

2

This chapter contains the following topics:

- Introduction
- Safety conventions used in the manual
- Equipment safety guidelines
- Placement of the printer
- Ink safety guidelines
- Medical emergencies

Caution

EQUIPMENT DAMAGE. Read this chapter thoroughly before attempting to install, operate, service, or maintain this product.

Introduction

The policy of Videojet Technologies Inc. is to manufacture non-contact printing/coding systems and ink supplies that meet high standards of performance and reliability. Therefore, we employ strict quality control measures to eliminate the potential for defects and hazards in our products.

The intended use of this printer is to print information directly onto a product. Use of this equipment for any other purpose may lead to serious personal injury.

The safety guidelines provided in this chapter are intended to educate the operator on all safety issues so that the operator can operate the printer safely.

Safety Conventions Used in the Manual

Specific safety information are listed throughout this manual in the form of Warning and Caution statements. Pay close attention to these statements as they contain important information that help in avoiding potential hazards to yourself or to the equipment.

Warning Statements

- Warning statements are used to indicate hazards or unsafe practices that may result in personal injury or death.
- They have a triangular symbol with an exclamation mark to the immediate left of the text.
- They are always preceded by the word “Warning”.
- They are always found before the step or information referring to the hazard.

Example:

Warning

PERSONAL INJURY. The next step, “Cleaning the Printhead,” must be performed by the service or maintenance personnel. Qualified personnel have successfully completed the training courses, have sufficient experience with this printer, and are aware of the potential hazards to which they may be exposed.

Caution Statements

- Caution statements are used to indicate hazards or unsafe practices that can result in product or property damage.
- They have a triangular symbol with an exclamation mark to the immediate left of the text.
- They are always preceded by the word “Caution”.
- They are always found before the step or information referring to the hazard.

Example:

Caution

EQUIPMENT DAMAGE. Never turn off the printer by switching the AC power switch to the Off (O) position. Before pressing the Off key, allow the printer to complete the three and a half minute shutdown sequence. Failure in following this procedure prevents the printer from drawing the ink in the ink return line, back into the reservoir. This may cause the ink to dry in the ink return line, resulting in problems when you turn the printer on again.

Equipment Safety Guidelines

This section contains important safety guidelines pertaining to the operation and handling of the printer and associated equipment.

Warning

PERSONAL INJURY. Always observe the following safety guidelines while operating and handling the printer and associated equipment.

Comply with Electrical Codes

All electrical wiring and connections must comply with the applicable local codes. Consult the appropriate regulatory agency for more information.

Avoid Breathing Exhaust Vapors

During its operation, the printer releases fumes from the printer exhaust tube. These fumes may be flammable and present a health hazard. For these reasons, do not allow the exhaust to be confined to an area that does not have proper ventilation, or is located near a source of ignition. Printer exhaust fumes are generally heavier than air, so keep all sources of ignition away from low areas where the fumes may travel or accumulate.

If, under any circumstances, the printer is to be kept in a place that lacks proper ventilation, it is necessary to expel the printer exhaust to the outside air. Consult the appropriate regulatory agency in concern with the emission permit and venting system requirements, before giving vent to the printer exhaust into the outside air.

Note: *A Vapor Exhaust Ducting Kit is available at Videojet Technologies Inc.*

Do Not Remove Warning Labels

Do not, under any circumstances, remove or obstruct any warning, caution, or instruction labels present on the printer.

Placement of the Printer

Warning

PERSONAL INJURY. Do not place the printer in a hazardous location. Hazardous locations might create an explosion, leading to personal injury.

Hazardous locations, as defined in the United States, are those areas that may contain hazardous materials in a quantity sufficient to create an explosion. These are defined in Article 500 of the National Electrical Code ANSI/NFPA 70–1993.

Outside the United States, you must ensure compliance with all local regulations regarding equipment placement in potentially hazardous locations.

Using Printer Accessories

To maintain regulatory approval for the printer, you must use only Videojet-approved accessories when attaching any device to the equipment.

The following printer stands have been approved:

- Mobile Floor Stand (P/N-391301-01 (Painted) and 391301-02 (Stainless))
- Table Top Stand (P/N-371156)

- Wall mount bracket (P/N- 379275)

Ink Safety Guidelines

This section provides important safety guidelines pertaining to the usage and handling of printer supplies (inks, make-up fluids, and cleaning solutions).

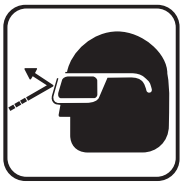
Warning

PERSONAL INJURY. Observe the following safety guidelines while using or handling inks, make-up fluids, and cleaning solutions. For continued protection against a possible fire hazard, use only Videojet supplies having a flash point not lower than -22°C (-8°F) and boiling point not lower than 56°C (133°F).

No Smoking

Do not smoke near the printer or printhead. If the printer exhaust fumes are subjected to an ignition source, it may result in an explosion or fire.

Wear Safety Glasses



Wear safety glasses with side shields (or equivalent eye protection) when handling any ink, make-up fluid, or cleaning solution. If it splashes onto your eyes, flush your eyes with water for 15 minutes and consult a physician immediately.

Avoid Skin Contact

Wear butyl rubber gloves while handling the ink, make-up fluid, or cleaning solution. Avoid contact with skin and mucous membranes (nasal passage, throat). On contact with the skin, remove any contaminated clothing and wash the area with soap and water. Consult a physician if irritation persists.

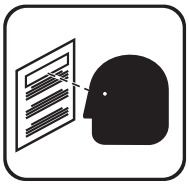
Avoid Breathing in Vapors

Avoid prolonged exposure to the print exhaust vapors. If respiratory protection is needed, a cartridge organic respirator can be used.

Dispose Ink Properly

Do not pour any ink, make-up fluid, or cleaning solution into sinks, sewers, or drains. Waste disposal must comply with local regulations. Contact the appropriate regulatory agency for more information.

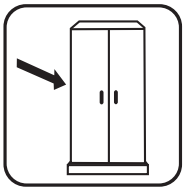
Read the Material Safety Data Sheets



Read and understand the Material Safety Data Sheet (MSDS) before using any ink, make-up fluid, or cleaning solution. An MSDS exists for each type of ink, make-up fluid, and cleaning solution. The appropriate sheet or sheets are supplied along with the shipped product.

Ensure that you retain all MSDS' for future reference in case you need to consult a physician regarding an ink-related accident. Additional copies of MSDSs are available on request, and can be obtained by contacting the Videojet Customer Service Department at 800–843–3610. Outside the U.S, customers should contact a subsidiary Videojet office or their local Videojet distributor.

Store the Inks Properly



Certain inks, make-up fluids, and cleaning solutions are flammable and must be stored appropriately. Storage must comply with local regulations. Contact the appropriate regulatory agency for more information. The label on the bottle or the MSDS indicates if a particular fluid is flammable or not.

Caution

EQUIPMENT DAMAGE. The waste container or service tray grounded to the printhead must be made of metal. Use of a non-metallic waste container/service tray may result in possible electrostatic discharge.

Medical Emergencies

This section provides important medical information in case of an accident.

Warning

PERSONAL INJURY. In the event of a medical emergency, contact a physician immediately.

Emergencies Involving Printer Fluids

If the incident involves an ink, make-up fluid, or cleaning solution, carry the bottle and/or MSDS with you to the physician's office. These items contain important information that the physician may require in order to provide the precise medical treatment.

Rocky Mountain Poison Control Center

All of Videojet inks, make-up fluids, and cleaning solutions are also registered with the Rocky Mountain Poison Control Center, located in the United States. If the bottle or MSDS cannot be located, the physician can contact the Rocky Mountain Poison Control Center to obtain the information required.

Rocky Mountain Poison Control Center
(303) 623-5716

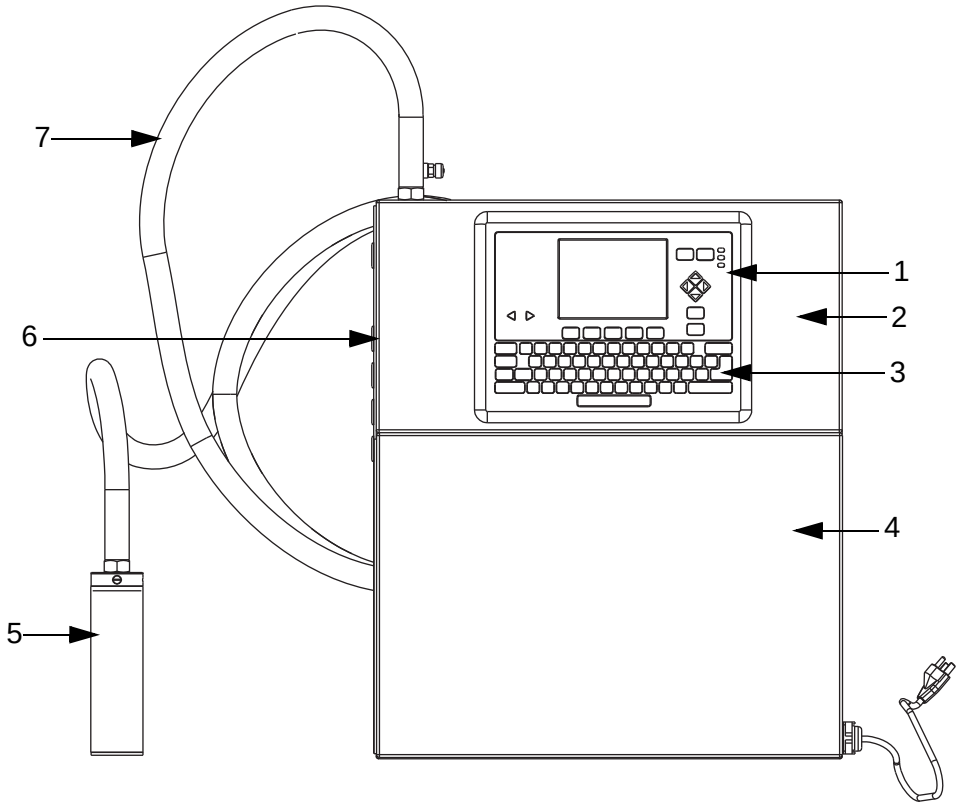
Note: *Persons outside the United States requiring medical attention can have a physician contact the Rocky Mountain Poison Control Center in the United States or a poison control center or hospital in their own area.*

Main Parts

3

This chapter provides a complete description of the following main parts of the Videojet Excel Dual Nozzle printer (Figure 3-1):

- Connector panel
- Electronics compartment
- Ink system cabinet
- Printhead
- Keyboard



1. Control Panel
2. Electronics Compartment
3. Keyboard
4. Ink System Cabinet
5. Printhead
6. Connector Panel
7. Umbilical

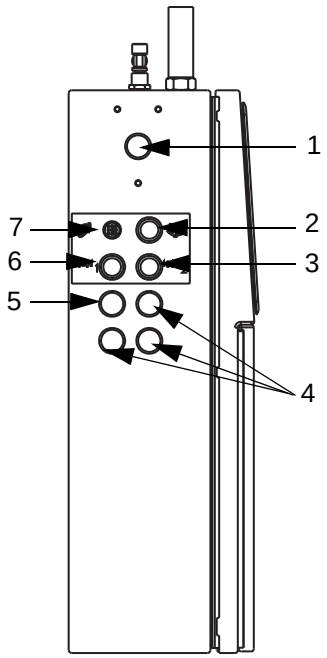
Figure 3-1: Videojet Excel Dual Nozzle Printer Main Parts

Connector Panel

You can find the connector panel on the left side of the printer. The panel contains nine connectors and a mount to install the stack light (optional).

Connectors

Figure 3-2 displays both standard and optional connectors on the connector panel of the Videojet Excel Dual Nozzle printer. The standard Videojet Excel Dual Nozzle printer does not contain all the optional connectors. Your printer can contain some connectors that perform special functions.



1. Stack light Port
2. Shaft Encoder Port
3. Comm 2 Port
4. Optional Ports
5. Basic Input/Output Port
6. Comm 1
7. Product Detect

Figure 3-2: Standard and Optional Connectors on the Connector Panel

Stack light Port

The stack light connector and the mounting holes (three) around the connector help to install the stack light assembly (optional).

Alarm Relay Port

The optional alarm relay port (7-pin, female) has two outputs that gives the signals. The signals indicate the faults that does not allow the printer

to complete the printing process if a fault is detected. To install the alarm relay port, the optional I/O expansion circuit is required.

Basic Input/Output Port

The optional basic input/output (5-pin, female) connector performs two functions:

- The connector gives an output signal which indicates that the printer is ready to print. When the printer cannot print, this signal is useful for the applications that require some external action. For example when the printer fails, some customers need to stop their production line.
- A logic input that is reserved for special applications.

COMM Port 1 and COMM Port 2

The COMM port 1 and COMM port 2 (6-pin, COMM port 1 is male, COMM port 2 is female) are RS-232 serial ports. The COMM port 1 is for the service related functions. COMM port 2 is for remote data and ESI. You can change the baud rate of this port.

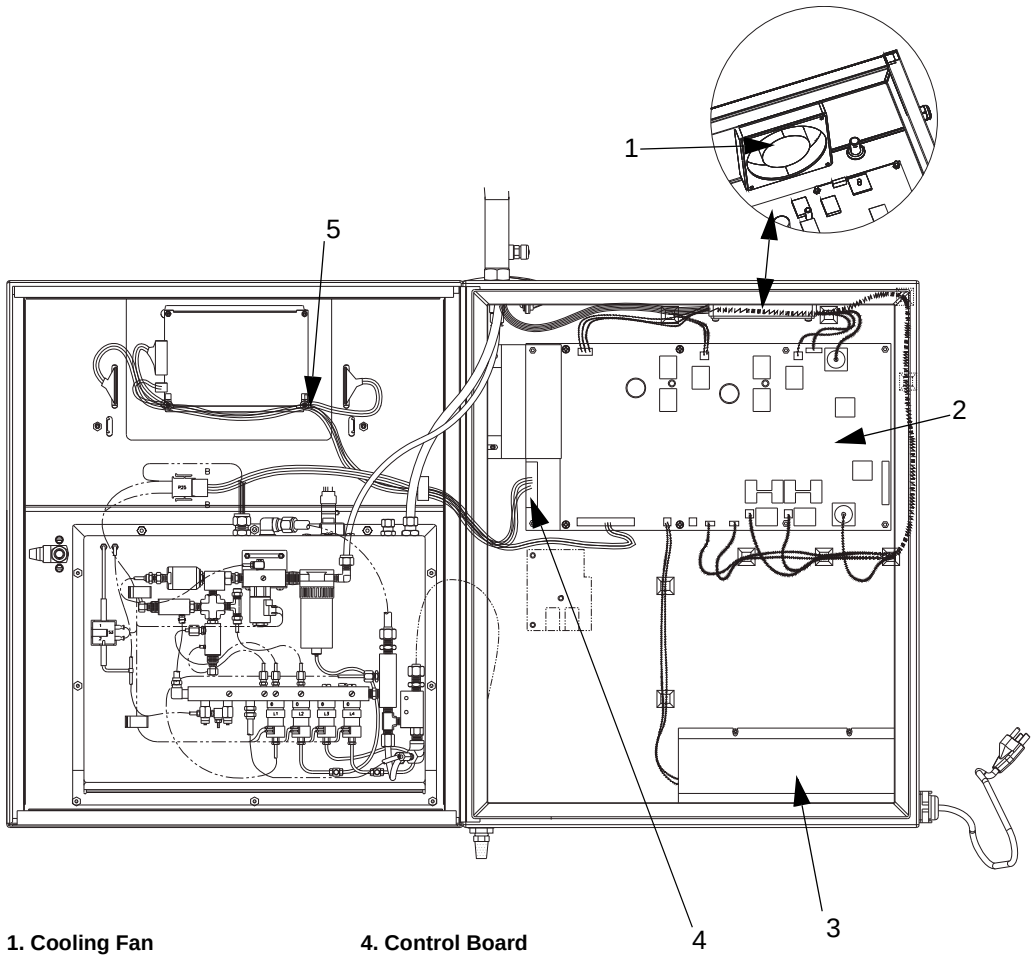
Shaft Encoder Port

The shaft encoder port (4-pin, female) can connect a shaft encoder to the printer. The shaft encoders sense changes in the line speed. The sensing allows the printer to adjust to the line speed with a change in the print speed. Refer to “Select the Method to Match the Product Speed” on page 7-6 of Chapter 7 for more information on the shaft encoder.

Electronics Compartment

The electronics compartment contains the power supply and the control electronics of the printer. The main parts of the electronics compartment are shown in Figure 3-3.

Note: *The following illustration shows an IP 65 model Excel Dual Nozzle printer. IP 65 indicates that the printer contains a fan assembly. IP 54 model Excel Dual Nozzle printers do not include a fan and use the positive air to decrease the temperature in the compartment. An internal cable harness determine if the printer uses an IP 65 or IP 54 configuration.*



1. Cooling Fan
2. Print Engine Circuit Board
3. Power Supply Unit (PSU)
4. Control Board
5. Display Circuitry

Figure 3-3: Electronics Compartment

Warning

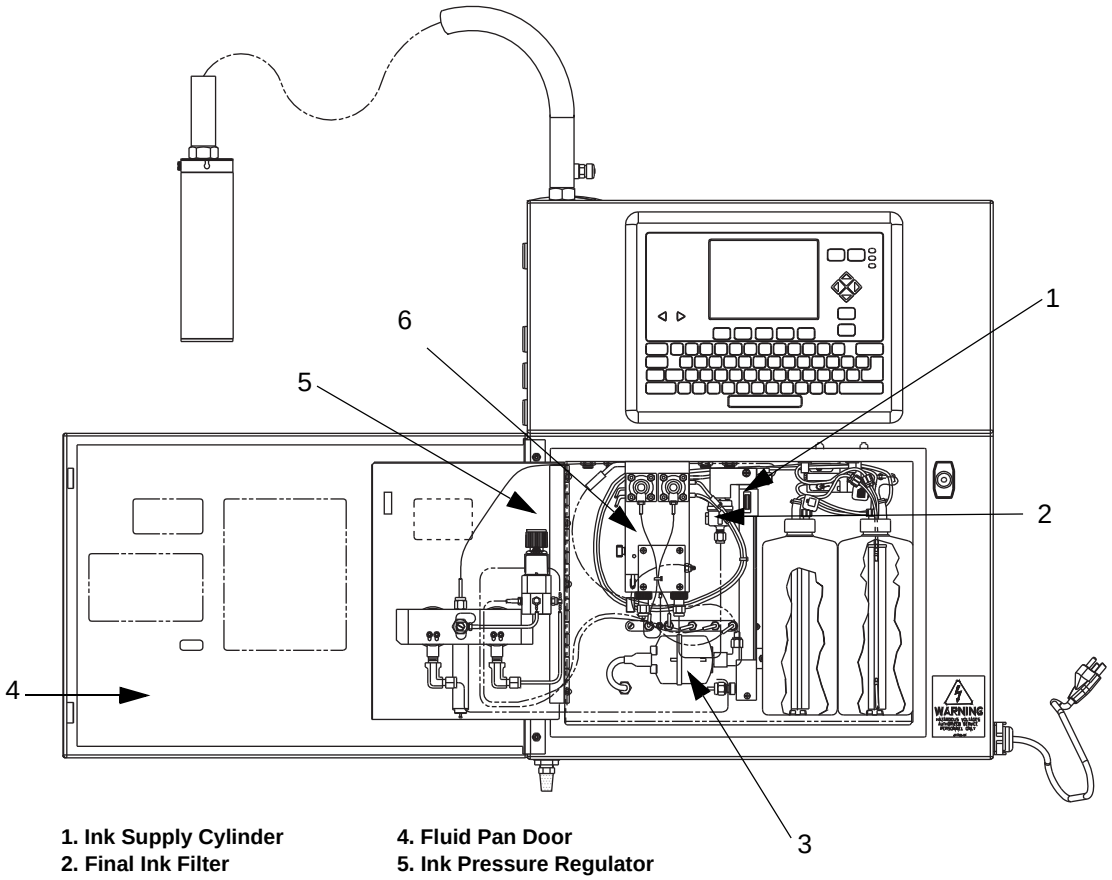
PERSONAL INJURY OR DEATH. Only Videojet-trained service personnel must try to access the electronics compartment of the printer. High voltages are present when the printer is connected to the AC power. Do not change the components in the electronics compartment if the power is turned on.

Control Panel

The control panel manages the data input and output, and the user interface of the printer. The control software in the control board takes the decisions to start different functions. The circuitry on the print engine board performs all these functions.

Ink System Cabinet

The ink system cabinet contains the components that control the air and the fluid in the printer. The main parts of the ink system cabinet are shown in Figure 3-4 on page 3-6.



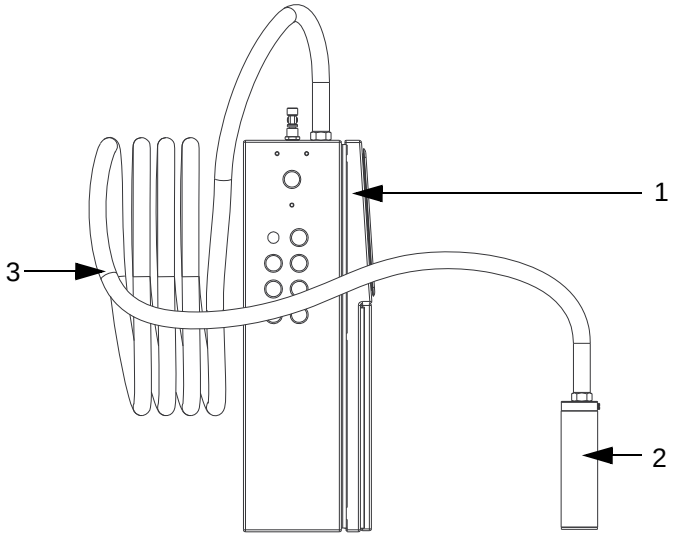
1. Ink Supply Cylinder
2. Final Ink Filter
3. Vacuum Filter
4. Fluid Pan Door
5. Ink Pressure Regulator
6. Ink Module Assembly

Figure 3-4: Ink System Cabinet

The ink bottle and make-up bottle require the replacement when the printer indicates that one of these fluids is low in the supply. Refer to the "How to Replace the Ink and Make-Up Fluid Bottles" on page 8-6 in Chapter 8 for more information.

Printhead

The printhead is connected to the electronics compartment by the umbilical assembly. The printhead receives pressurized ink through the umbilical and turns the ink stream into very small charged ink drops. The deflection plate transfers these small drops to a substrate to form a printed code. The main parts of the printhead assembly are shown in Figure 3-5.



1. Printer
2. Printhead
3. Umbilical Assembly

Figure 3-5: Printhead Assembly

Keyboard

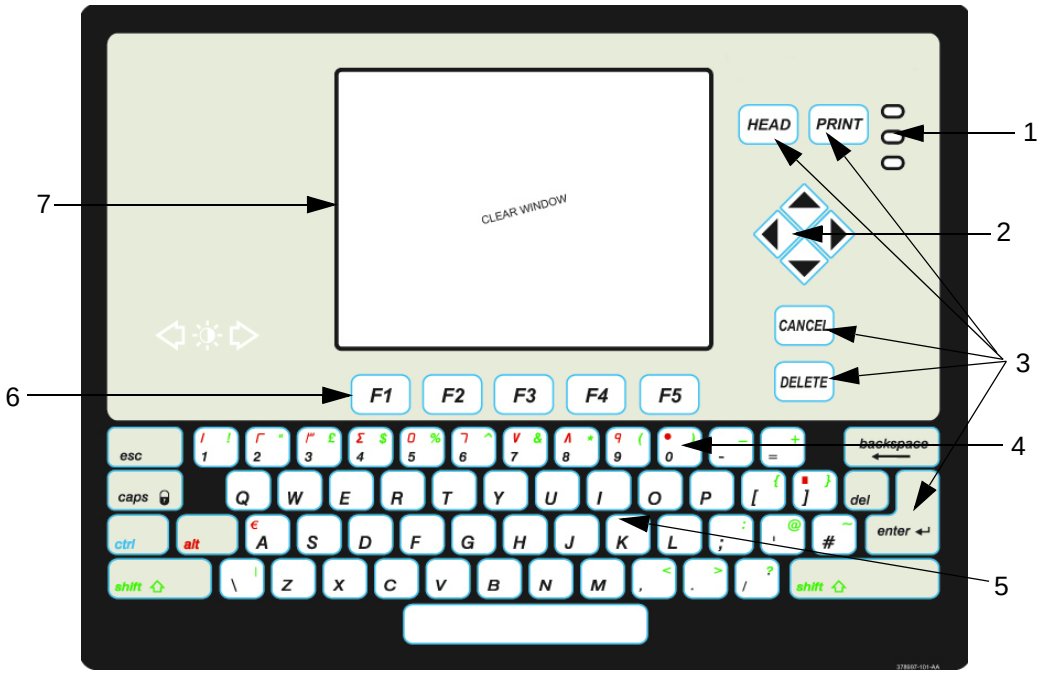
Read the following section before you use the keyboard.

This section describes the keys on the keyboard. The front of the printer cabinet contains the keyboard. The keyboard is arranged into many sections, each of which contains the keys to perform a special printer function (Figure 3-6 on page 3-8).

The keyboard contains the following components

- Control Keys (refer to “Control Keys” on page 3-8)
- Display Screen (refer to “Display Screen” on page 3-10)
- Status Lights (refer to “Status Lights” on page 3-13)
- Function Keys (refer to “Function Keys” on page 3-14)
- Arrow Keys (refer to “Arrow Keys” on page 3-16)

- The Keypad (refer to “Keypad” on page 3-17)



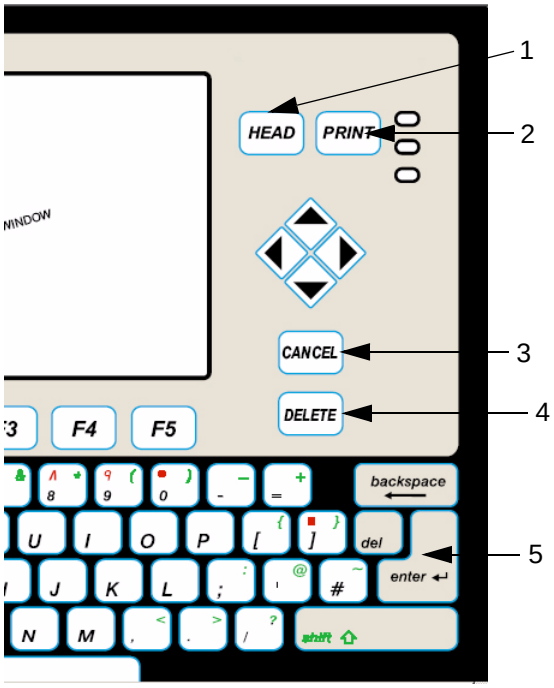
1. Status Lights
2. Arrow Keys
3. Control Keys
4. Numeric Keypad
5. Keypad
6. Function Keys
7. Display Screen

Figure 3-6: Keyboard Layout

Control Keys

The control keys are the keys used to operate the printer (refer to Figure 3-7). The following keys are the control keys:

- CANCEL key
- DELETE key
- ENTER key
- HEAD key
- PRINT key



1. HEAD Key
2. PRINT Key
3. CANCEL Key
4. DELETE Key
5. ENTER Key

Figure 3-7: Control Keys on the Keyboard

CANCEL Key

The CANCEL key can cancel any changes to the existing data. If you press the CANCEL key after you make the changes to the data, the printer ignores the changes, and returns the cursor to the start of the software frame.

DELETE Key

The DELETE key performs the following:

- Deletes a character in the message.

  To delete a character, use the arrow keys to put the cursor (dark, blinking box) on the character and press the DELETE key. All characters which follow the character that is removed move to the left.

- Deletes an insert in the message.

  Use the arrow keys to put the cursor on the first character of the insert and press the DELETE key.

ENTER Key

The ENTER key performs the following:

- Save new values and message information.
- Returns to the software frame that comes before the current frame. Press the ENTER key while a frame appears in the display screen to display the first frame of the same mode. For example, if you are in the first frame of the software modes Insert, Service, System setup or Print setup, press the ENTER key to return to <04 Edit> screen.

HEAD Key

Press the HEAD key to turn on (or off) both the printhead nozzles. When the ink and high voltage are turned on, the dual printhead nozzles can be on. The printer can print a message when the HEAD key and the print key lights are on.

Warning

PERSONAL INJURY. When the HEAD key is turned on, high voltage is applied to the printhead.

PRINT Key

Press the PRINT key to print a message. When the printhead is on and a message is loaded, select the PRINT key to control the print mode. Refer to “Printing the Messages” on page 6-84 for more information.

Display Screen

The display screen (refer to Figure 3-9 on page 3-12) shows the messages, fault and warning information, software frames, and operation commands for the printer.

Status Area

The status area that is found at the top of the display screen has a black background. This section displays the printhead icon status and also shows the fault and warning messages. The status area also displays the time and date.

Editor

The editor is divided into two portions - Nozzle-1 Display and Nozzle-2 Display. You can use one or both of the nozzle displays to create a single message (Figure 3-8 on page 3-11). You can create and edit the Nozzle-1

portion of the message in the Nozzle-1 display. You can create and edit the Nozzle-2 portion of the message in the Nozzle-2 display. Use the

to navigate between the two nozzle displays.

The contents of both the Nozzle-1 and the Nozzle-2 displays are saved into one message.

Use the DELETE key or the backspace key to erase the portions of the messages. Refer to "DELETE Key" on page 3-9 for more information on these keys. Use the function keys to select the menu options that appear in the software frame (refer to "Function Keys" on page 3-14 for more information).

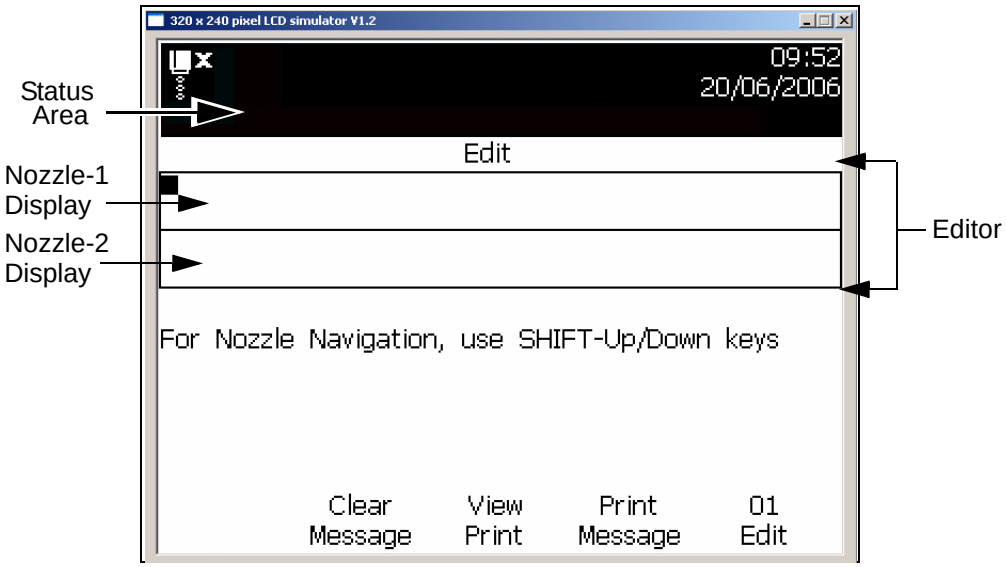


Figure 3-8: Editor with Nozzle Display

Information in the Display Screen

The fault, the warning and the software commands are displayed in the status area or below the editor portion of the display.

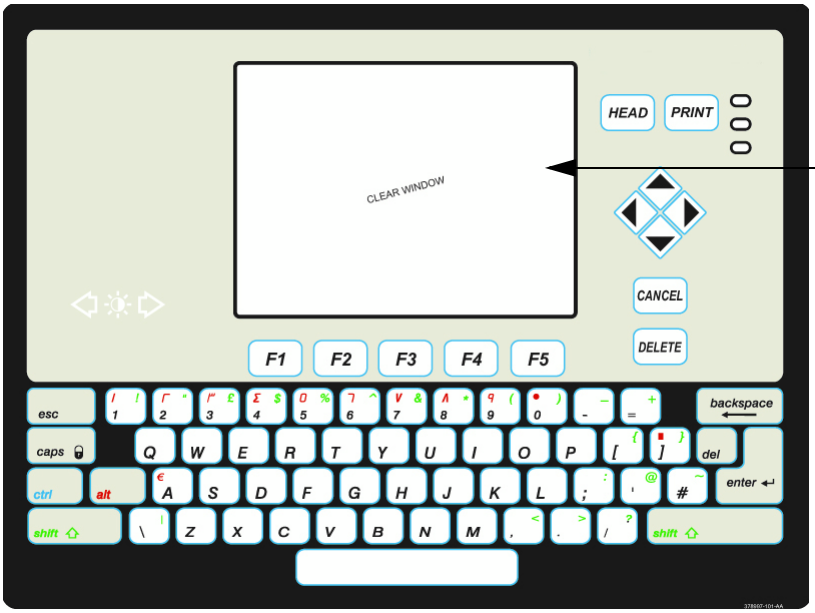


Figure 3-9: Display Screen

Cursor

The cursor is the black, blinking indicator found in the editor portion of the display screen (refer to Figure 3-10 on page 3-13). The cursor helps to find your position within a message. The next character or insert entered into the message is found in the current location of the cursor.

If the cursor is in the top portion of the editor, then the Nozzle-1 display is active. If the cursor is in the bottom portion of the editor, then the nozzle-2 display is active.

When the cursor is on a character and the DELETE key is pressed, the selected character is deleted in the nozzle display. The displayed message moves towards left and fills the space of the deleted character.

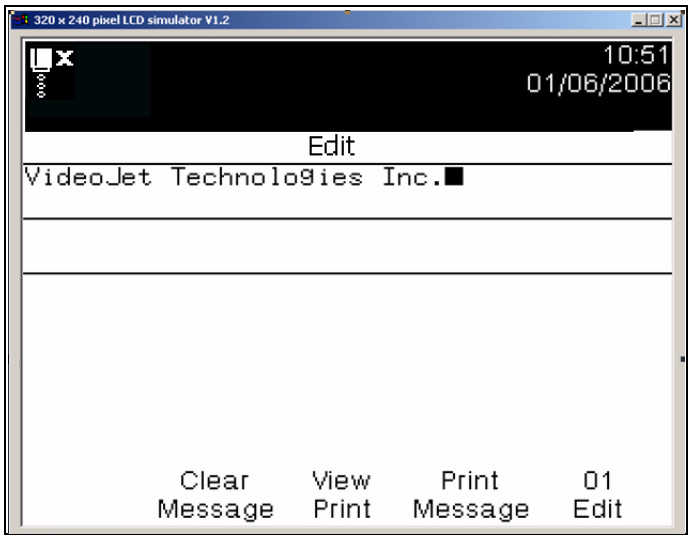


Figure 3-10: Cursor

Status Lights

The three keypad LEDs and the lights on the stack light (optional) show the printer status.

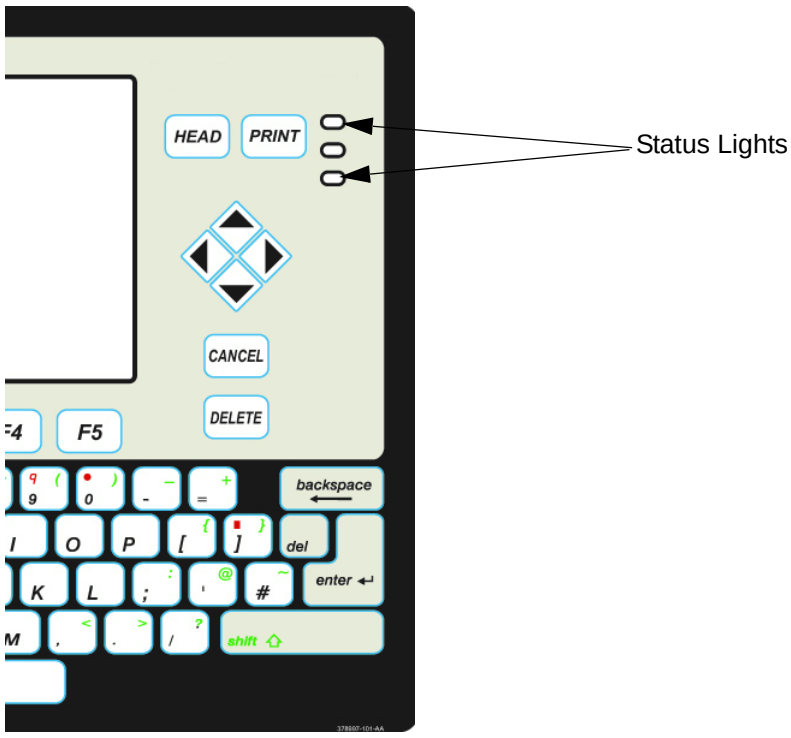


Figure 3-11: Status Lights on the Keyboard

Red

The red light indicates that there is a fault condition that prevents the printing. An icon appears on the screen with a related error message. Refer to "Printer Status Icons" on page 9-5 and "Fault and Warning Messages" on page 9-8 for more information on troubleshooting.

Amber

The amber light indicates:

- The printer is in the service mode (the service mode icon appears)
- A warning condition has occurred (with a warning message)

A warning condition indicates that you must perform the troubleshooting. Normally the conditions that lead to the warning signals do not cause problems to the current application except for small problems like small print distortions. It also includes the potential problems that do not affect the printing currently, but eventually can (for example low ink supply). Refer to the "Troubleshooting Amber LED" on page 9-2 for more information.

Green

The green light indicates the correct operation of the printer. The green LED flashes during the printhead startup or shutdown. If the print is disabled, the green LED flashes.

When off, the green LED indicates that the printer is not ready to print a message.

Function Keys

The function keys (F1, F2, F3, F4, and F5) help to select the options that appear in the software frames in the display screen (Figure 3-12). When an option does not appear above the key, the printer does not perform any operation if you press that function key.

Note: *When the ON key light is illuminated, the function keys are active.*

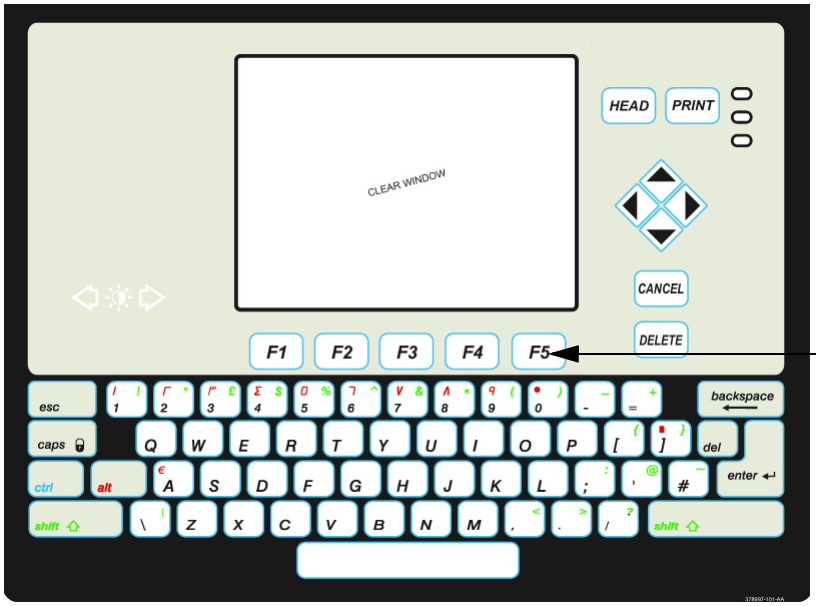


Figure 3-12: Function Keys

How to Use the Function Keys

To select an option that appears in the display screen, press the function key found below the option. Refer to Figure 3-13.

When you press a function key, the display screen navigates to another software frame that contains the additional information or selections for that option. Refer to the following chapters in this manual for complete instructions on how to use the system software:

- Software Summary Chart (chapter 5)
- Create and Print Messages (chapter 6)
- The System and Print Setup (chapter 7)

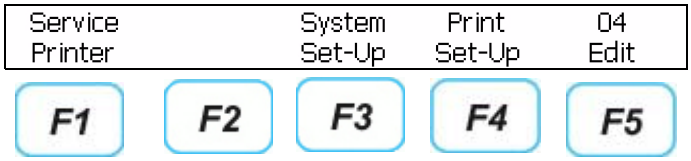


Figure 3-13: .<04 EDIT> Software Frame

Example: This example applies to the software frame shown in Figure 3-13.

- Press the F1 key to select the Service Printer option to navigate from the display screen to the <01 Service> frame).
- The F2 key is not active, because there is no option above it.

- Press the F3 key to select the System Set-Up option (change the display screen to the <01 System> frame).
- Press the F4 key to select the Print Set-Up option (change the display screen to the <01 Print> frame).
- Press the F5 key to change the software frame to the next frame in that mode (<01 Edit> frame).

Arrow Keys

Figure 3-14 shows the location of the arrow keys. The arrow keys:

- Move the cursor within a message in the display screen.
- Increase and decrease the values in some frame options.
- Help to move from Nozzle-1 display screen to the Nozzle-2 display screen (with the SHIFT key).

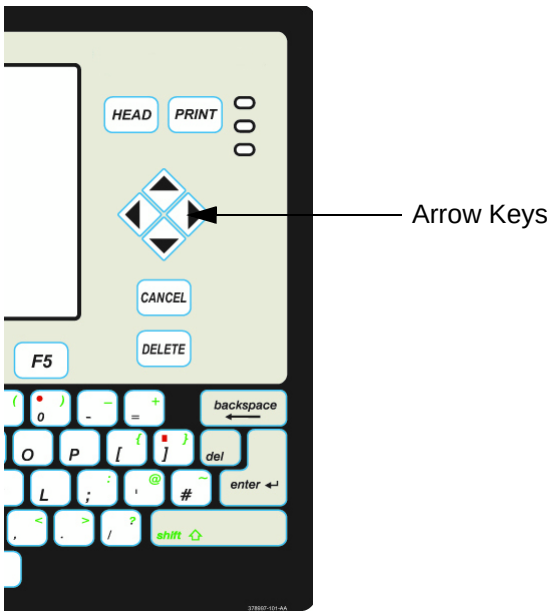


Figure 3-14: Arrow Keys

How to Use the Arrow Keys

When you use the arrow keys, the following guidelines apply:

- Use the up  or down  arrow keys to move the cursor vertically within a multi-line message.

- Use the right or left arrow keys to move the cursor horizontally within a line in a message.
- Use the shift + or shift + arrow keys to move the cursor from one nozzle display screen to another nozzle display screen.
- When a software option contains a value (shown inside a black box), use the arrow keys to increase or decrease the value (refer to Figure 3-15 on page 3-17).

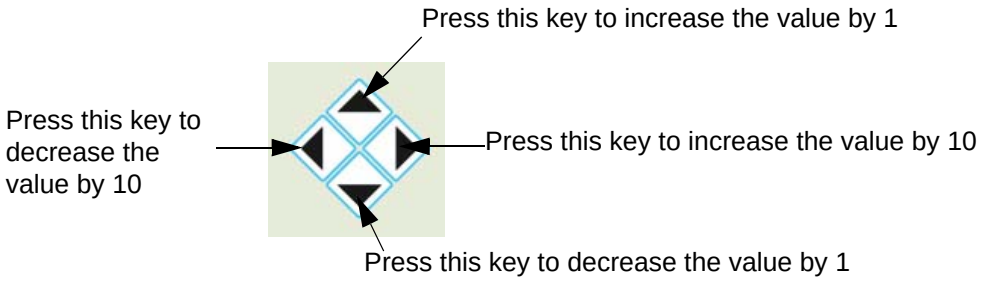


Figure 3-15: Changing Values Using the Arrow Key

Keypad

Use the keypad to enter the alphabets, numbers and special characters into the message that appears in the display screen.

Note: *Special characters are those characters that appear on the keyboard in green and red color.*

How to Create the Alphabets

To enter an alphabet into the message, press the key for that character. The printer puts the upper case version of that character into the message at the current location of the cursor.

If you are in upper case mode, and need to create a lower case character do one of the following:

- Press the Caps lock key. Refer to Table 3-1 on page 3-18.
- Press the SHIFT key +the character you need.

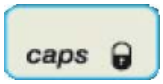
Key	Function
	Press the CAPS key to the default case.

Table 3-1: The keys to Change the Case of the Text

How to Create the Special Character

Special characters are those that appear on the keyboard in green or red color. To enter a special character into the message, follow these guidelines:

- For special characters shown in green color, press and hold the SHIFT key while you press the key for that character.
- For special characters shown in red color, press and hold the ALT key while you press the key for that character.

The printer inserts the special character into the message at the current location of the cursor.

Startup and Shutdown

4

This chapter contains the following topics:

- The guidelines to use the printer
- The procedures to do before you turn on the printer
- Turn on the printer
- Turn off the printer

Note: *Install the printer and complete the system parameters setup before you perform the procedures described in this chapter.*

Warning

PERSONAL INJURY. Only a trained service or the maintenance personnel must perform the maintenance and the service procedures. The qualified personnel must complete the training courses, have knowledge about this printer, and know the possible hazards. The Service Manual is a supplement and not a replacement for training.

This procedure requires access to the areas of the printer that a service technician must service or maintain.

The Guidelines to Use the Printer

The design of Videojet Excel Dual Nozzle printer allows the operator to use the printer continuously. Follow the guidelines described in this section when you use the printer.

The Printer is Not Used Continuously

If you do not use the printer for more than three days, circulate the ink in the printer every fifth day for approximately one hour. Follow this guideline for good printer operation.

Extended Shutdown

Normally you can prepare the printer for extended shutdown if you do not plan to use the printer for more than five days.

The idle time for your printer before you can consider extended shutdown depends on the following factors:

- The type of ink
- The application
- The next time you plan to use the printer (normally more than five days)

The following can occur if the printer is not prepared for extended shutdown:

- Bad printer operation
- The dry ink can create the blockages in the lines or increase the deposits of dried ink in the components

Note: *To prepare the printer for extended shutdown, contact the service or maintenance personnel.*

Before you Turn on the Printer

This section contains a list of procedures to do before you turn on the printer. Perform these procedures at the start of each day or each work shift. These steps are necessary to maintain the best performance of the printer.

Procedure

1. Check the fluid levels in the ink and make-up fluid bottles. If the levels are low, replace the bottles with new bottles of fluid.
2. Inspect the connections of the fluid tube for leaks. If you find a leak, tighten the connection one-quarter turn.

Caution

EQUIPMENT DAMAGE. The service or the maintenance personnel must perform the procedure to clean the printhead. The personnel must have enough training, must know the equipment and the hazards that can occur during service and maintenance.

3 A trained service or the maintenance personnel must inspect, and if necessary clean the printhead.

Note: *The trained Service Technicians must refer to the Videojet Excel Dual Nozzle Service Manual (P/N 361844).*

4 Align the printhead to its mounting.

5 Switch on the printer now. Refer to “Turn On the Printer” on page 4-3 for more information.

Turn On the Printer

This procedure contains the steps to turn on the Videojet Excel Dual Nozzle printer.

1 Turn the main AC power switch On. The AC power switch is found in the printer cabinet (refer to Figure 4-1).

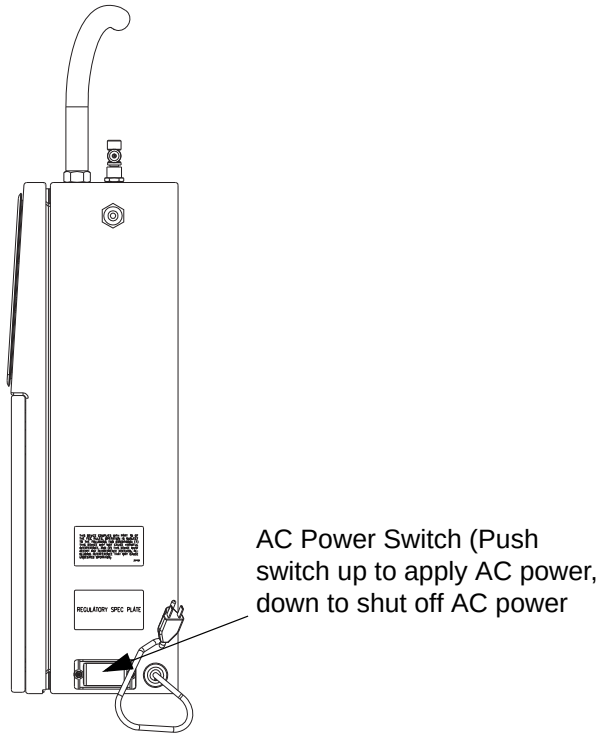


Figure 4-1: Main AC Power Switch

2 Press the HEAD key on the keyboard to begin the startup sequence of the printhead. Refer to Figure 4-2 on page 4-4 for the location of the HEAD key.

The status area shows "Starting Jet". The Jet Running icon and the green LED will be flashing.

Note: *During the startup sequence of the printer, the printer makes sure that the operation of all the parts is correct. Hydraulics, pneumatics, and the electronics are enabled. The system checks are performed, the printer faults are monitored and the ink streams are allowed to become stable.*

When the nozzles are ready to print, the following conditions exist:

- The status area shows "Not Printing"
- The Jet Running icon does not flash
- The green LED illuminates continuously.

Note: *If you press the HEAD key during the startup sequence of the printer, the printer stops the startup sequence. Then the printer automatically starts the shutdown sequence that turns off the printhead.*

3 Press the PRINT key to print a message. When the product detector gets activated, the message that is loaded last on the printer is printed. Refer to Chapter 6, “Create and Print the Messages”, in this manual for the instructions to enter a new message or change an existing message.

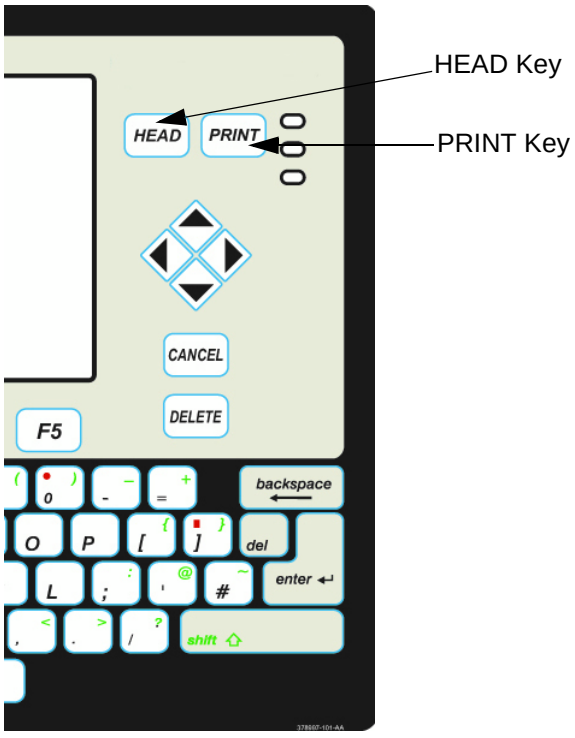


Figure 4-2: Location of PRINT Keys

Turn Off the Printer

This procedure turns off the Videojet Excel Dual Nozzle printer at the end of the day or the end of each work period.

Perform the following steps to turn off the printer (that has the printhead turned on at this time):

1. Press the HEAD key (refer to Figure 4-2 on page 4-4) to turn off the printhead and allow the printer to complete the three and a half minute shutdown sequence.

   When the printhead shutdown sequence occurs, the status area displays the message “Stopping Jet”. Then the printer turns off both the ink pressure and high voltage. The vacuum, in the ON position draws the ink from the ink return line back into the reservoir. Then the power supply is turned Off. After the power supply is turned off, the status area displays the message "Jet shutdown complete, printer ready to power down or press any key to return to menus".

   Note: *The reservoir is found in the ink module.*

   Note: *Press the Head key during the shutdown sequence to interrupt the three and a half minute shutdown sequence. When you press the Head key, the shutdown sequence stops and the printhead startup sequence automatically starts.*

2. When the GUI displays "Not Printing", turn off the main AC power switch. The main AC power switch is found in the printer cabinet.

Caution

EQUIPMENT DAMAGE. Press the HEAD key to turn off the printhead and allow the printer to complete the three and a half minute shutdown sequence. Turn off the AC power switch found within the printer cabinet after the printer completes the three and a half minute shutdown sequence. The failure to follow this shutdown procedure prevents the printer to draw the ink in the ink return line back into the reservoir. This failure can cause the ink to dry in the ink line and leads to bad printer operation when you start the printer.

Caution

EQUIPMENT DAMAGE. The AC power is active at some points in the printer unless the AC switch turns off and power to the printer is removed.

Software Summary Chart

5

This chapter contains the following topics:

- Software summary chart
- Different modes of the Videojet Excel Dual Nozzle software

Software Summary Chart

The software summary chart describes Excel Dual Nozzle Software. Different modes of the software are shown in different colors in the summary chart. Refer to "Videojet Excel Dual Nozzle Software Summary Chart" on page 5-15.

Frame - Definition

Each set of commands seen on the printer display screen is known as a frame. The Software Summary Chart shows the flow of the frames.

When you turn on the printer, Frame <01 Edit> appears on the display screen. The Software Summary chart begins with this frame. Refer to the Software Summary chart at the end of this chapter to find the <01 Edit> frame. Also refer to Figure 5-1 on page 5-2 for illustrations of Frame <01 Edit>.

Note: *The name of the frame (for example, Frame <01 Edit>), is the text that appears in the area above the F5 key. Refer to Figure 5-1.*

Table 5-1 shows the colors used in the summary chart to indicate different modes of the software. These modes are described in the following pages.

Mode	Color
Edit	White
Character Set-Up	Orange
Insert	Yellow

Table 5-1: Different Modes and Colors

Mode	Color
Service	Red
System Set-Up	Blue
Print Set-Up	Green

Table 5-1: Different Modes and Colors (Continued)

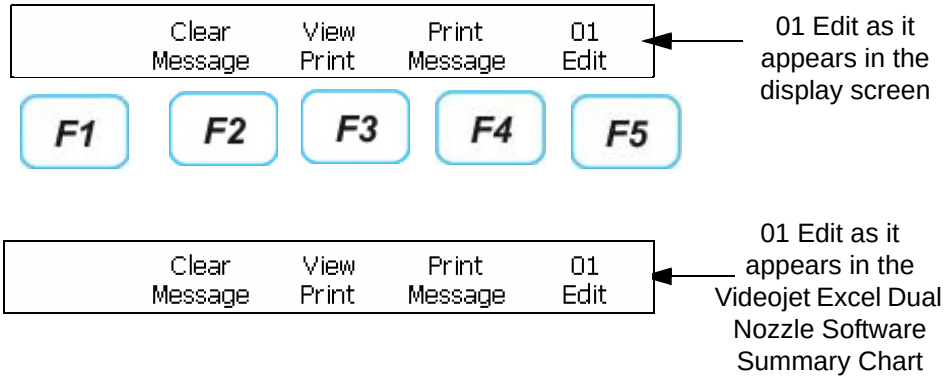


Figure 5-1: Frame <01> Edit

F Keys

Use the F keys (F1, F2, F3, F4, and F5) for the following functions:

- To select an option in a frame
- To move from one frame to another frame

The lines that connect the frames on the summary chart indicate the F key to move to the next frame. (Refer to Figure 5-2 on page 5-3). Press the ENTER key to return to <01 Edit> frame.

Press the F keys found below the display screen to move from one frame to another frame. The illustration in Figure 5-2 on page 5-3 shows how the F keys are set for the words on the display screen.

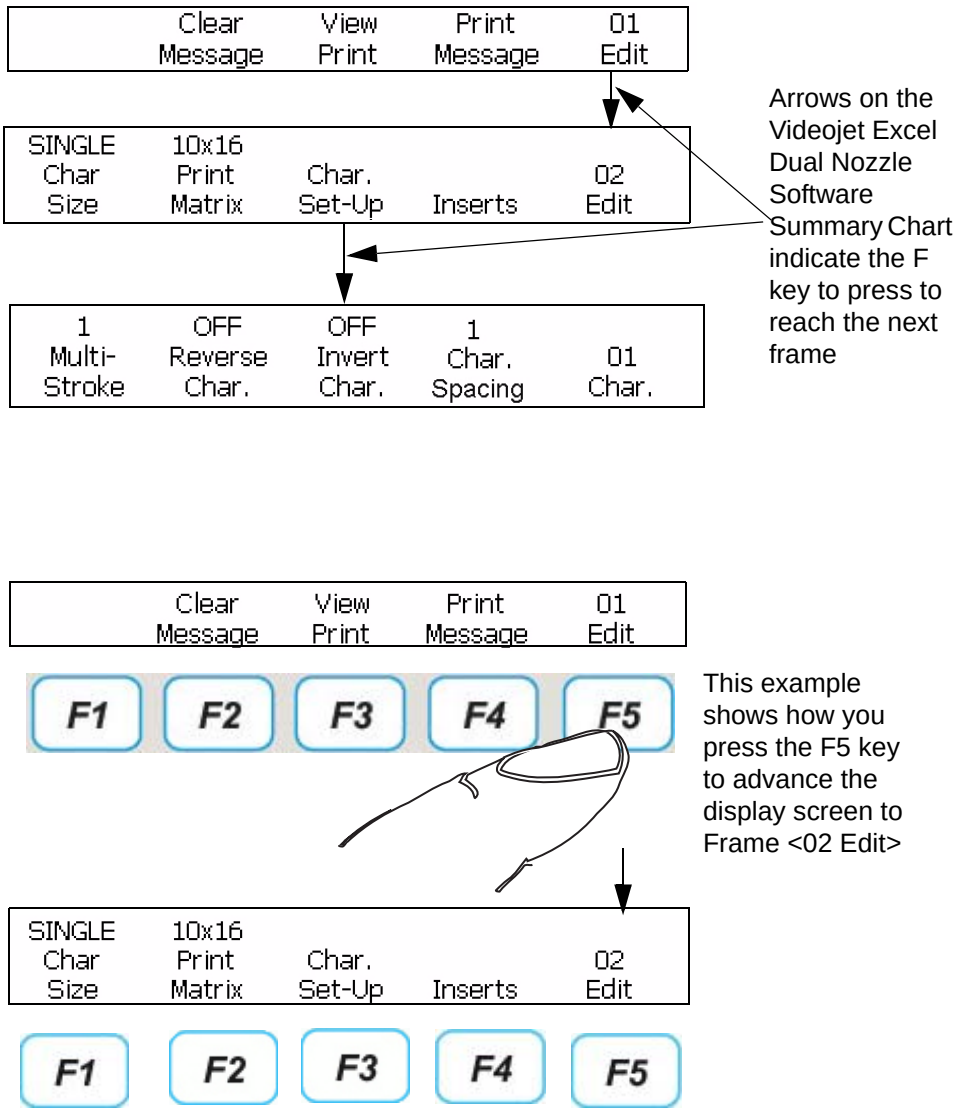


Figure 5-2: F Keys

Different Modes of the Excel Dual Nozzle Software

This section describes different modes of the Excel Dual Nozzle software. The different modes divided into five sections are as follows:

- Edit mode
- Character Set-Up mode
- Insert mode
- Service mode
- System Set-Up mode
- Print Set-Up mode

Edit Mode

Function

When the printer is turned on, the software is in the Edit mode. Use the frames of the Edit mode to enter, edit, and store the messages. The Edit mode is shown in Figure 5-3.

Chart Color: Black

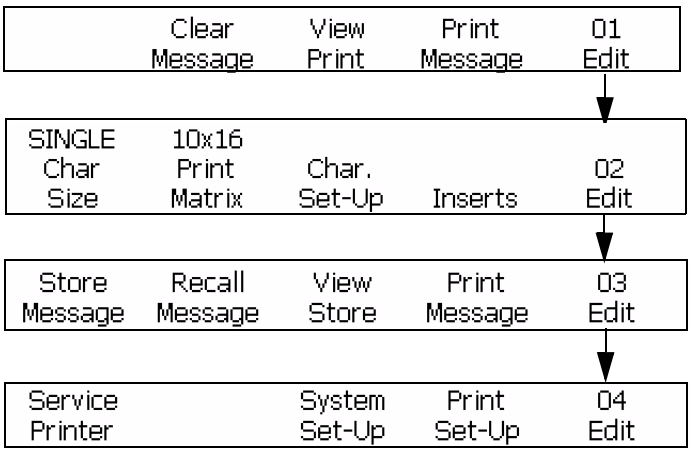


Figure 5-3: Edit Mode

Character Set-Up Mode

Function

Use the Character Set-Up mode to change the direction and look of each character in a message.

Chart Color: Orange

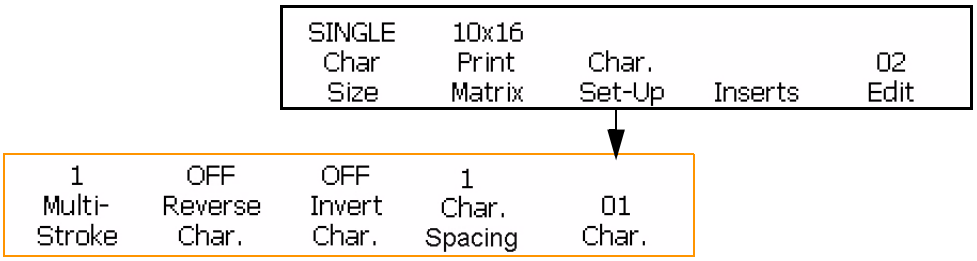


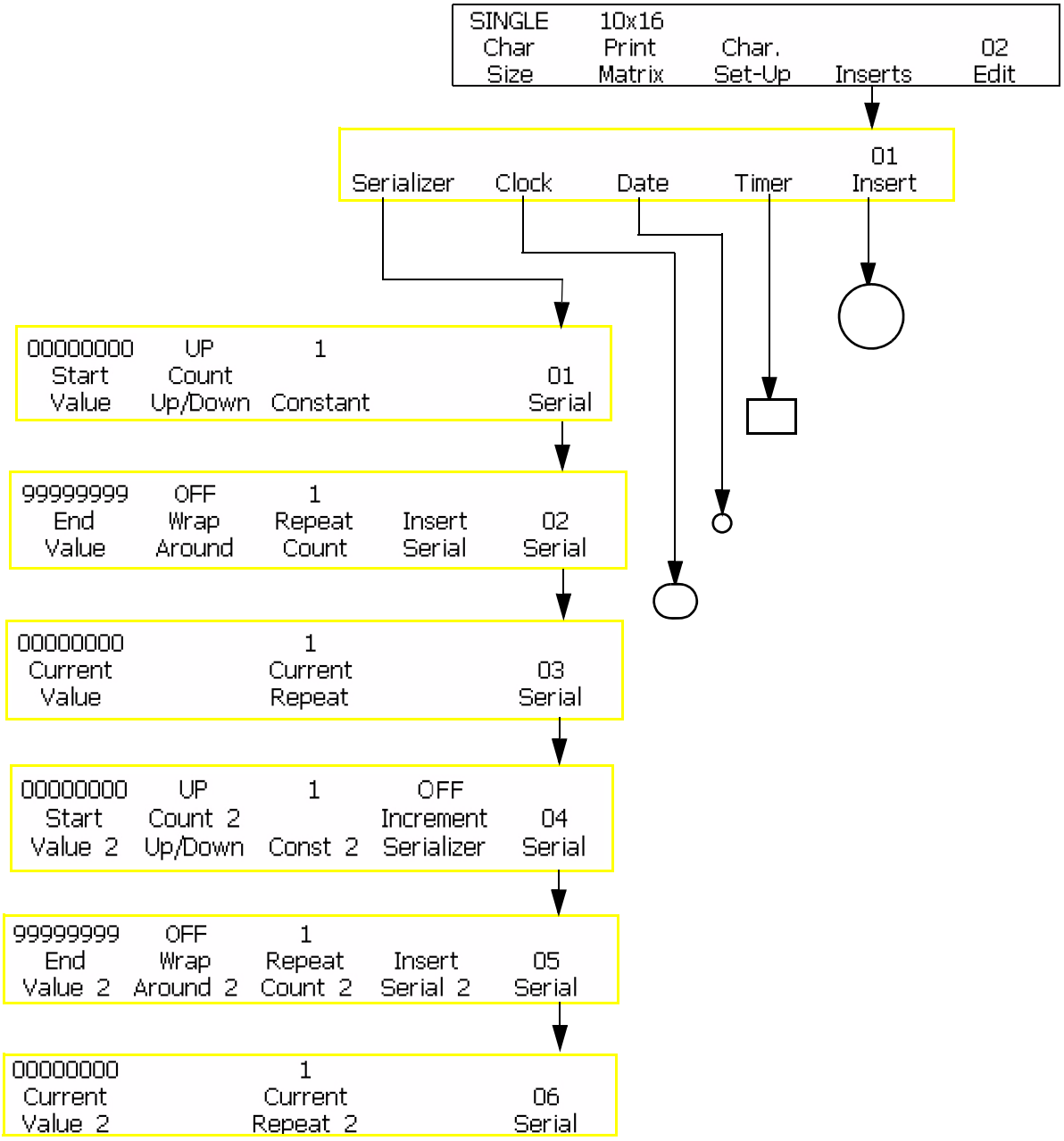
Figure 5-4: Character Set up Mode

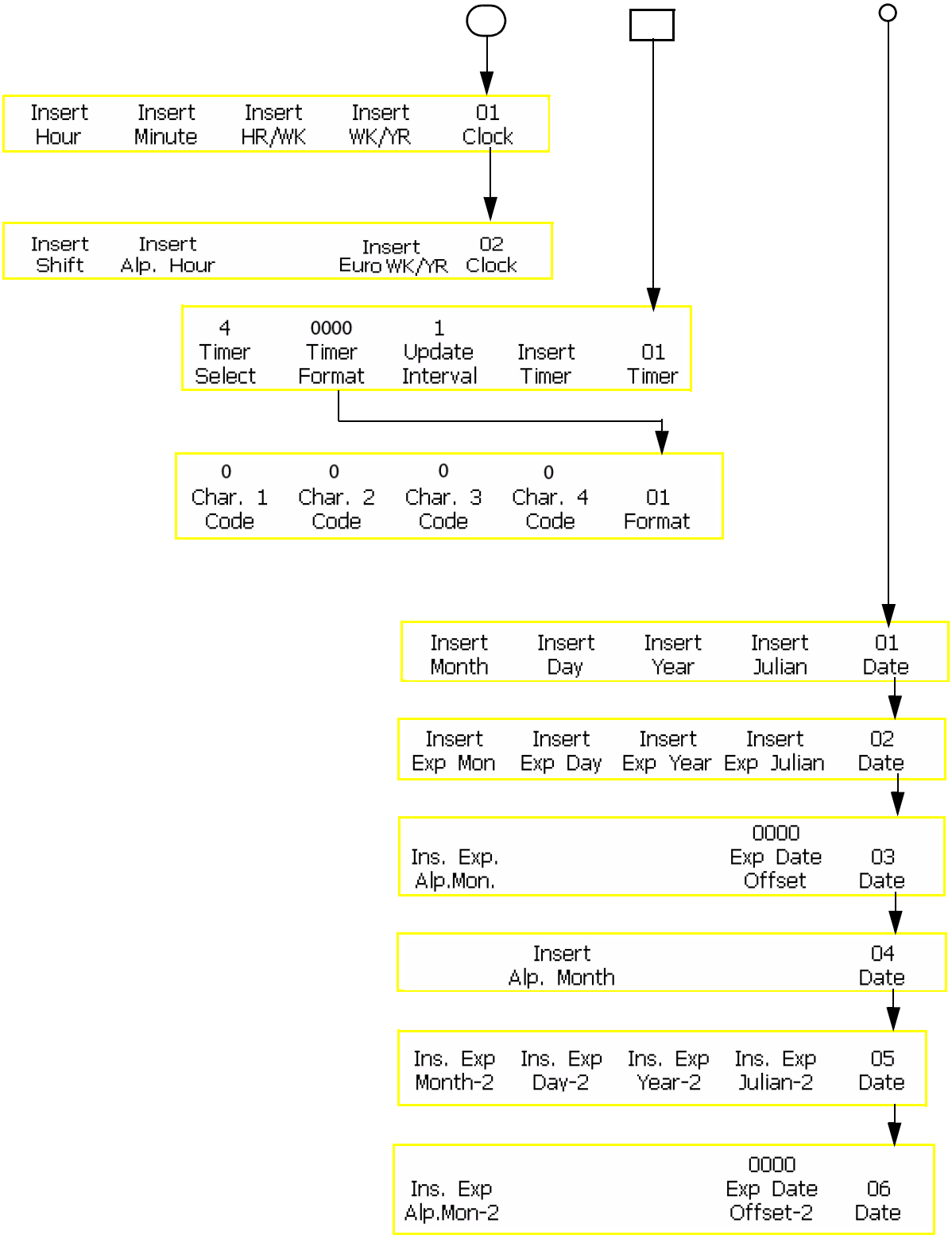
Insert Mode

Function

An insert is an element that contains variable information. You can add this information to a message. This mode is shown in the Figure 5-5 on page 5-8.

Chart Color: Yellow




Insert Hour
Insert Minute
Insert HR/WK
Insert WK/YR
01 Clock
Insert Shift
Insert Alp. Hour
Insert Euro WK/YR
02 Clock
4 Timer Select
0000 Timer Format
1 Update Interval
Insert Timer
01 Timer
0 Char. 1 Code
0 Char. 2 Code
0 Char. 3 Code
0 Char. 4 Code
01 Format
Insert Month
Insert Day
Insert Year
Insert Julian
01 Date
Insert Exp Mon
Insert Exp Day
Insert Exp Year
Insert Exp Julian
02 Date
Ins. Exp. Alp.Mon.
0000 Exp Date Offset
03 Date
Insert Alp. Month
04 Date
Ins. Exp Month-2
Ins. Exp Day-2
Ins. Exp Year-2
Ins. Exp Julian-2
05 Date
Ins. Exp Alp.Mon-2
0000 Exp Date Offset-2
06 Date

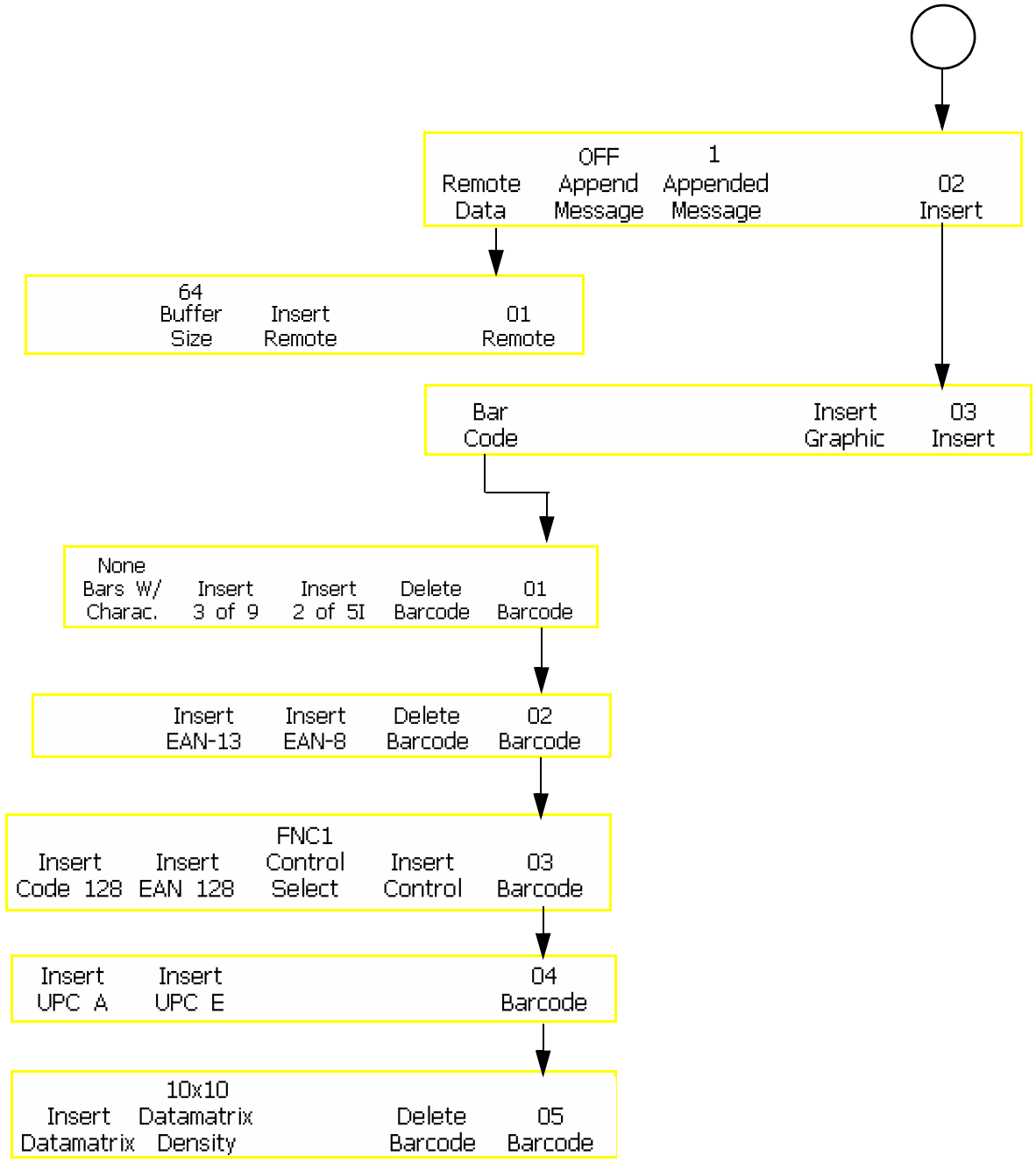


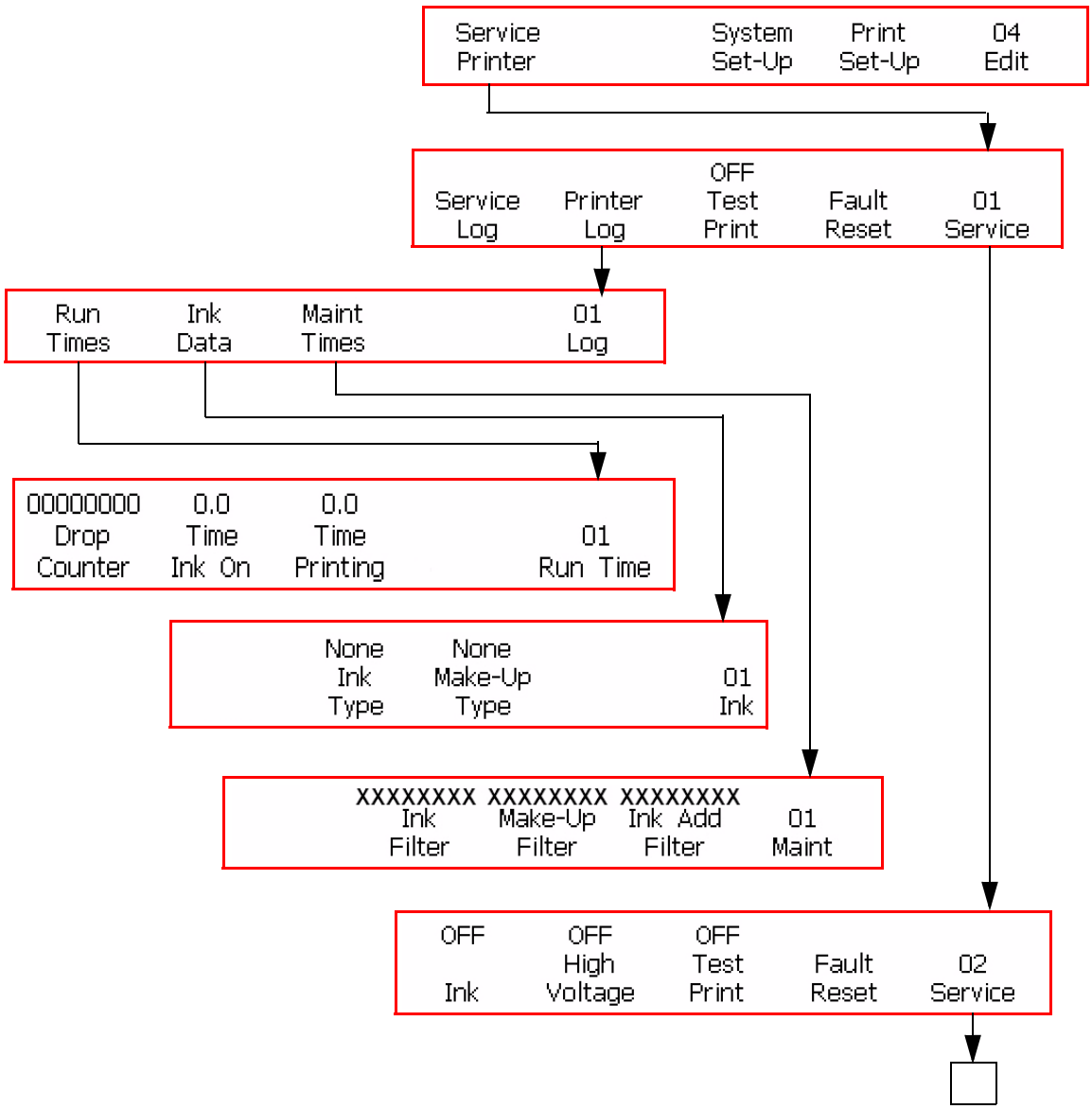
Figure 5-5: Insert Mode

Service Mode

Function

The personnel who need to use the service mode must have enough training and experience to use the printer. The personnel must have knowledge of hazards that can occur. The qualified personnel must refer to the Videojet Excel Dual Nozzle Service Manual for information on the Service mode.

Chart Color: Red



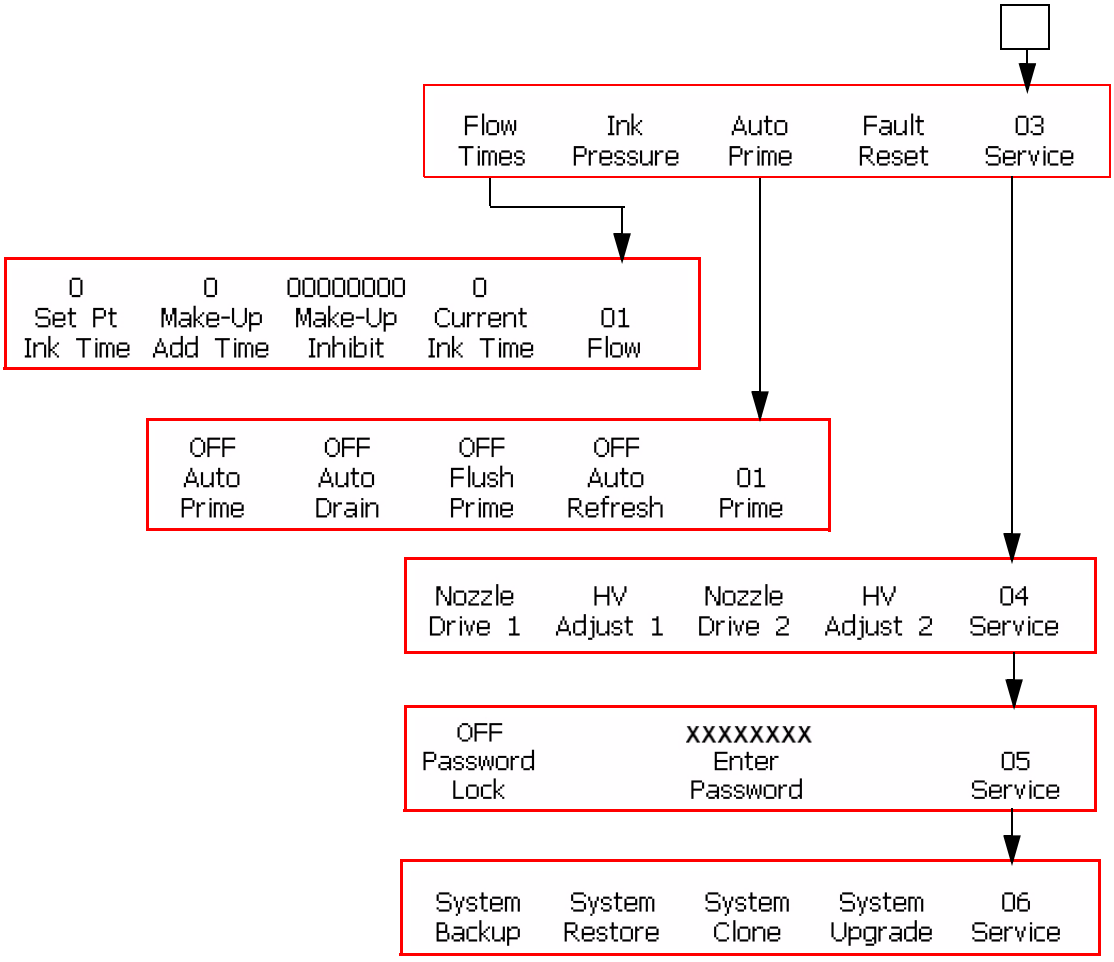


Figure 5-6: Service Mode

System Set-Up Mode

Function

The System Set–up mode is used during the printer installation to enter the parameters like date and time. The parameters that you enter, become a part of the printer memory. The System Set-Up mode is shown in Figure 5-7 on page 5-12.

Chart Color: Blue

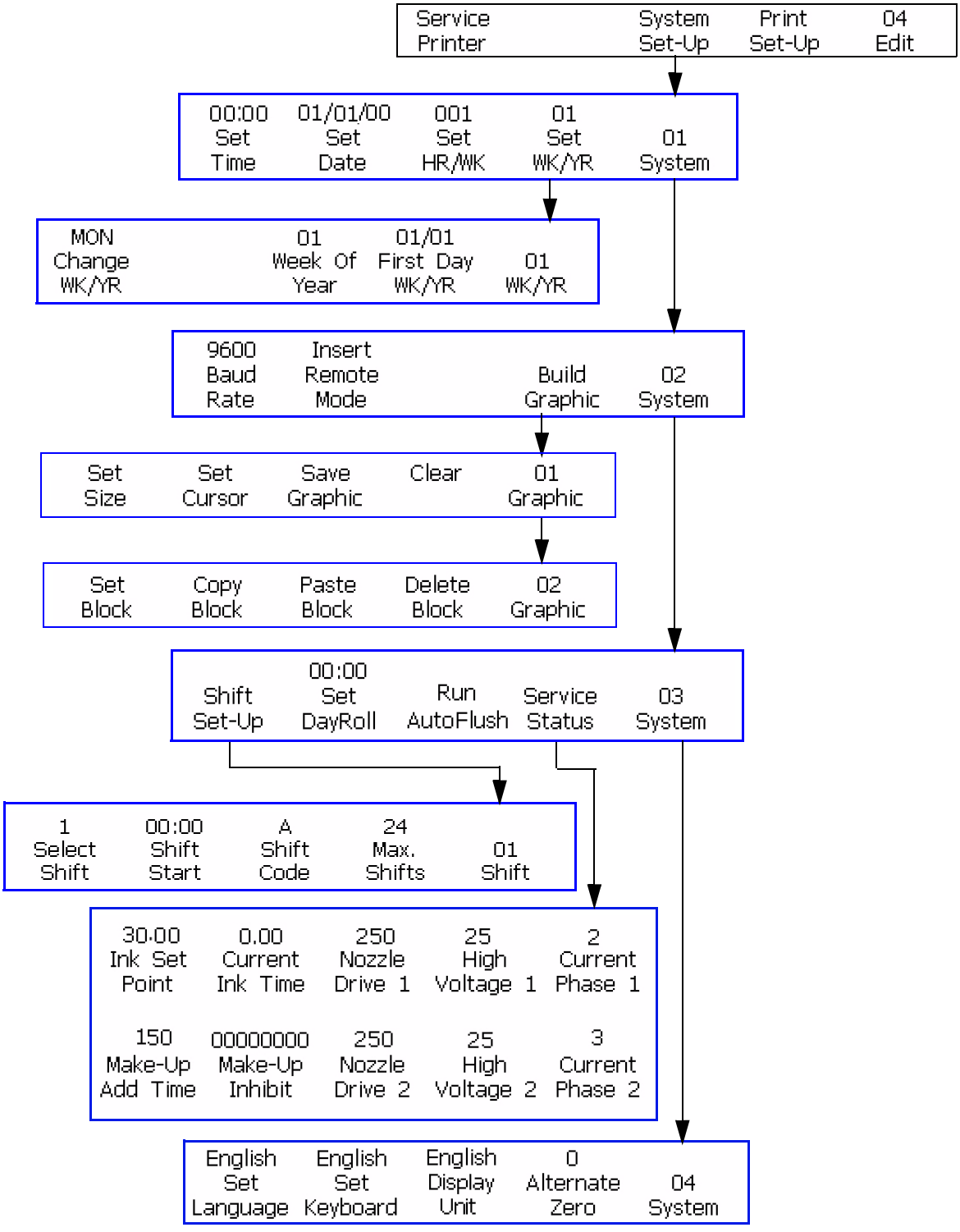


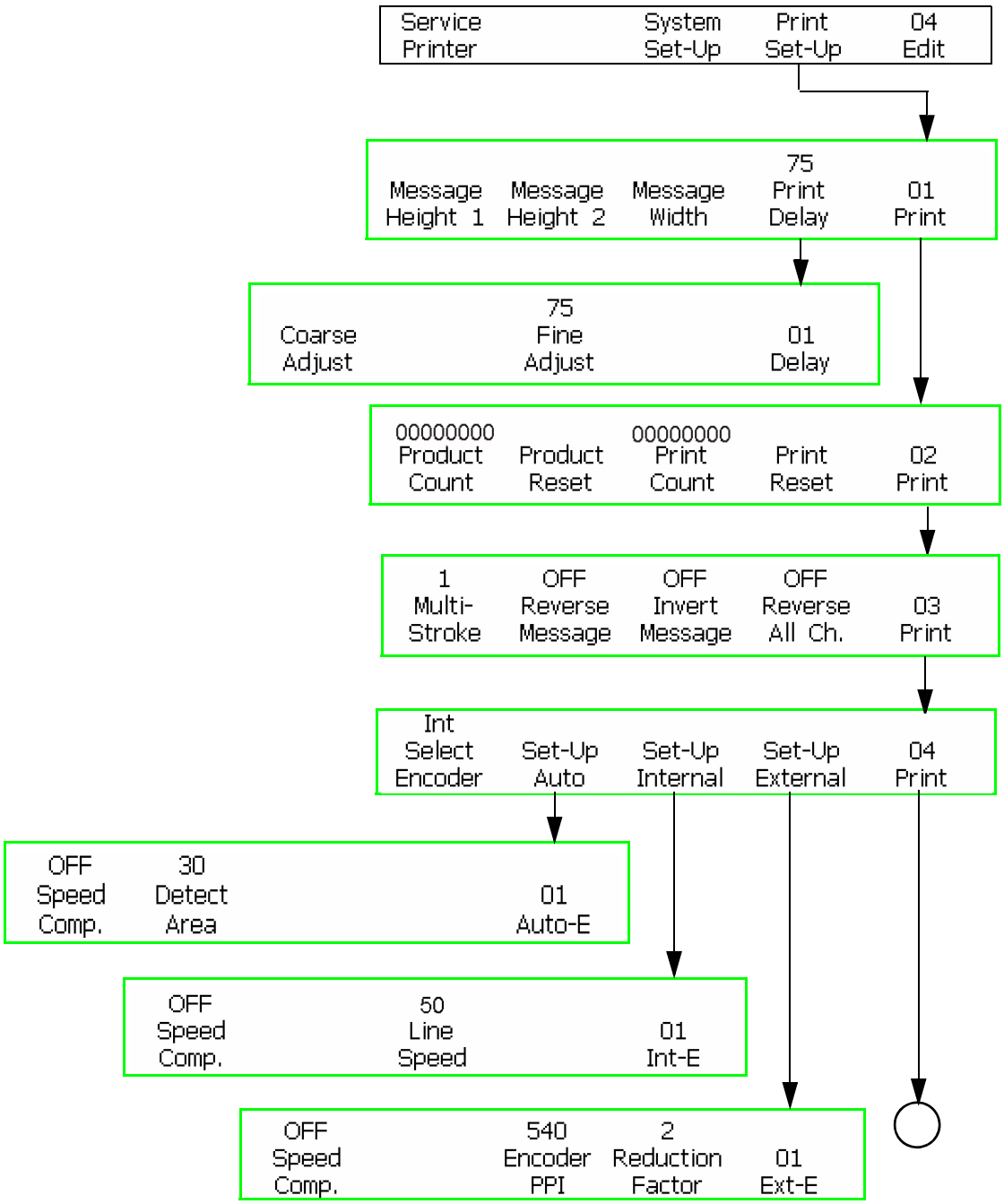
Figure 5-7: System Set up Mode

Print Set-Up Mode

Function

The Print Set-Up mode allows the operator to set special printing parameters that apply to the complete message. The Print Set-Up mode is shown in Figure 5-8 on page 5-14.

Chart Color: Green



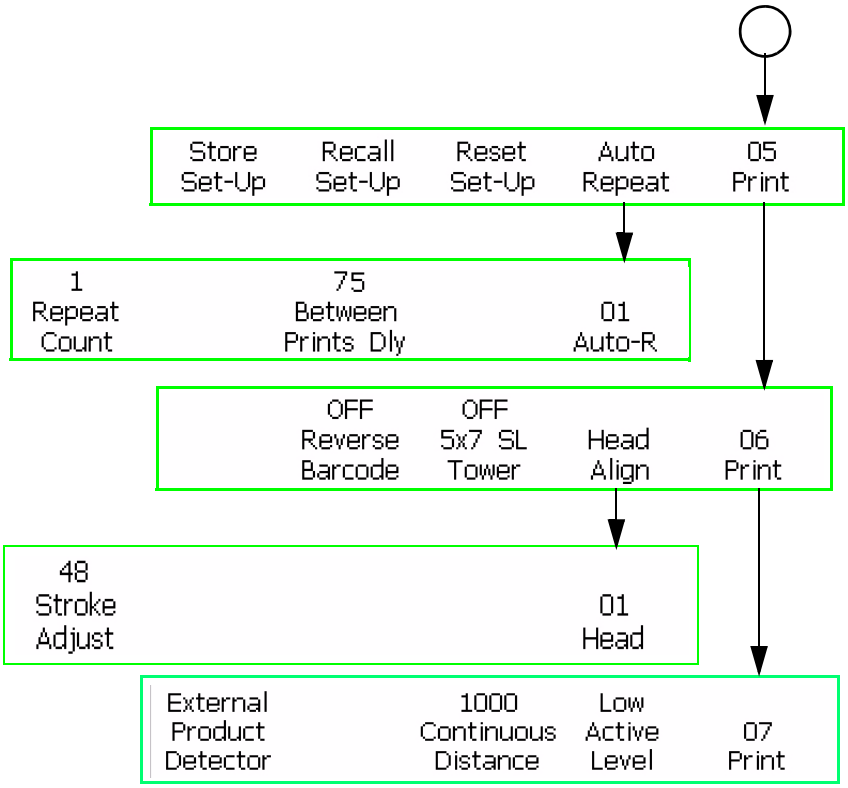
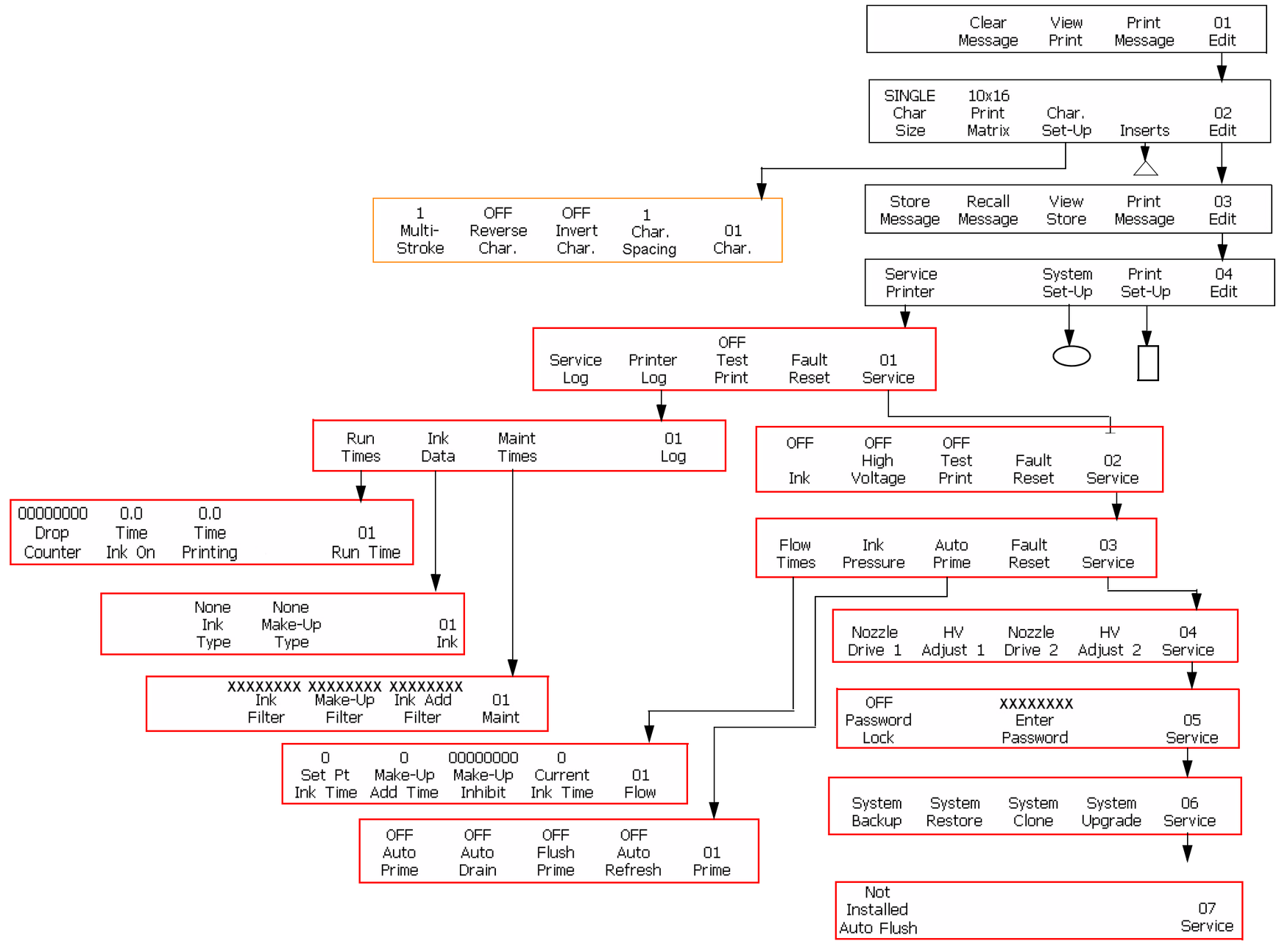
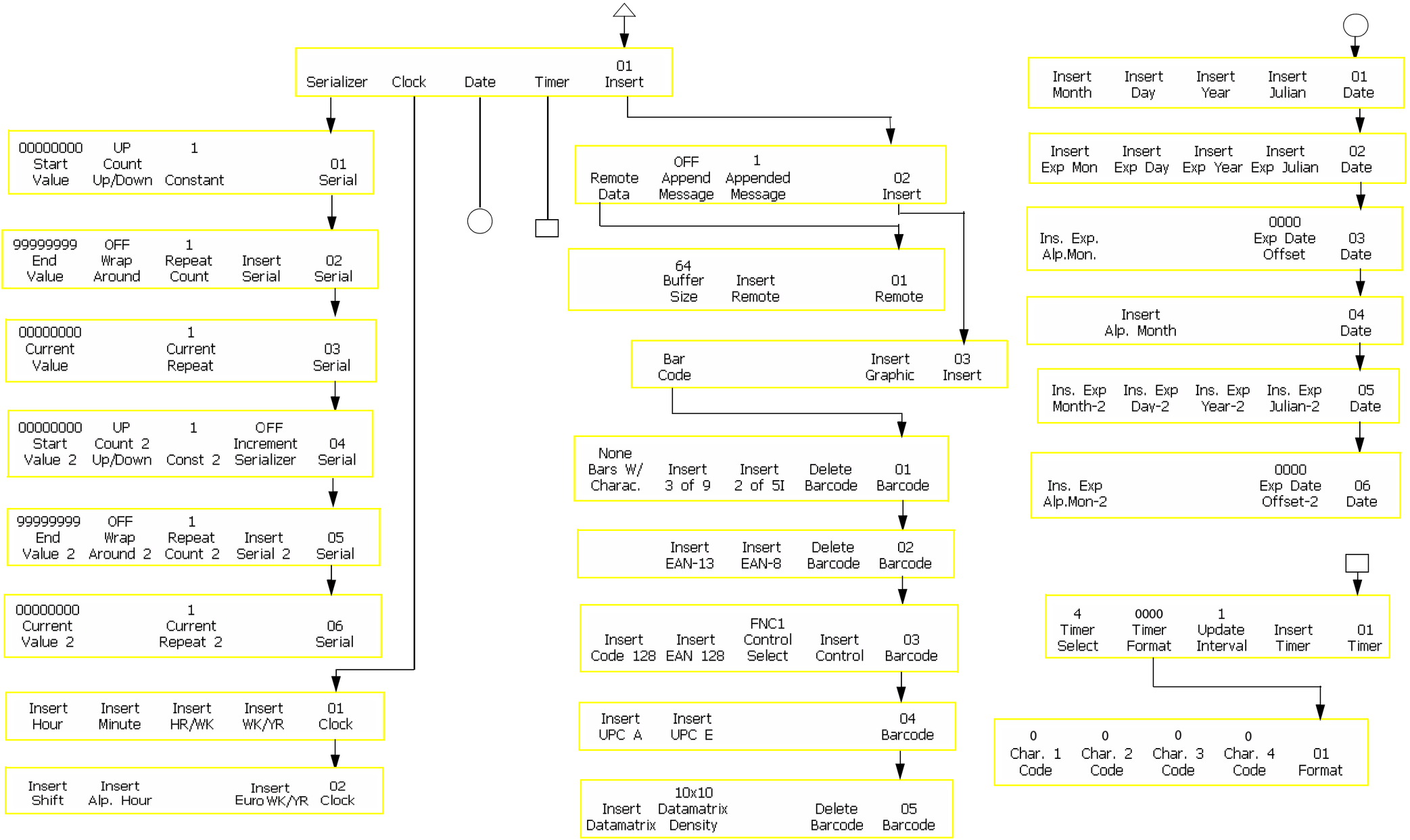
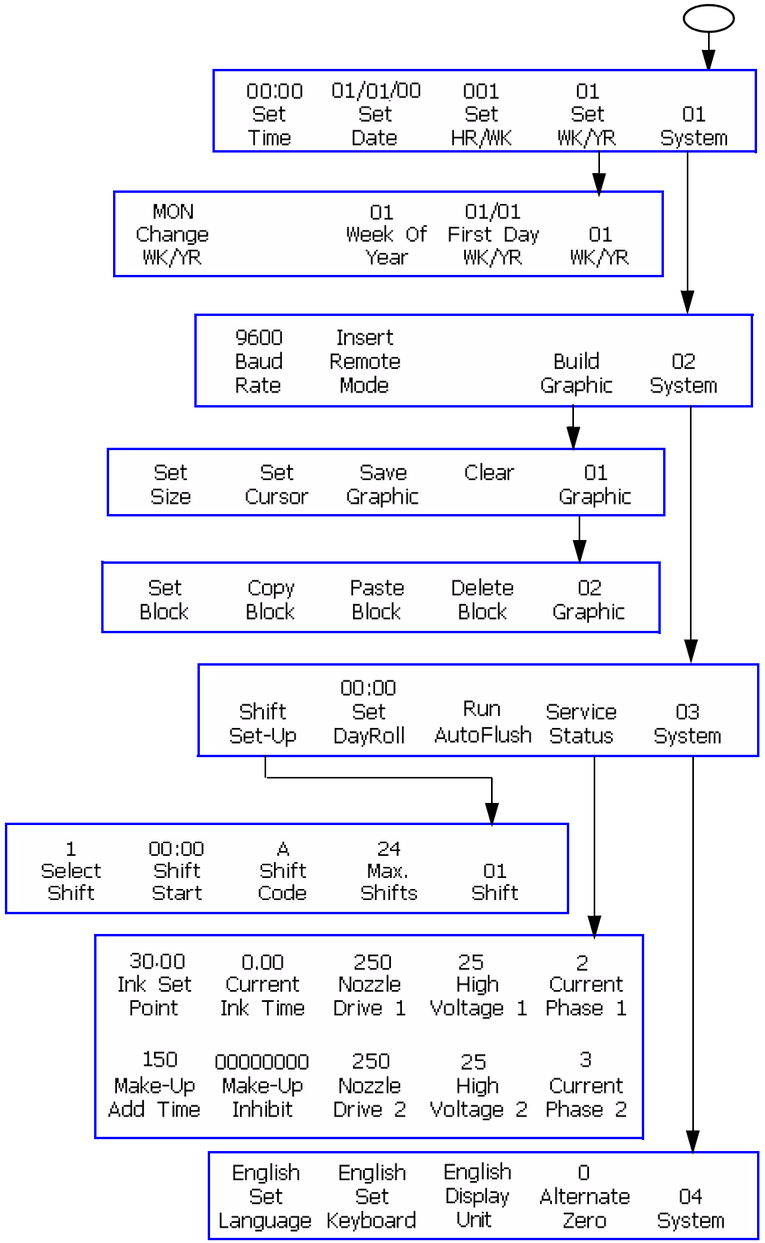


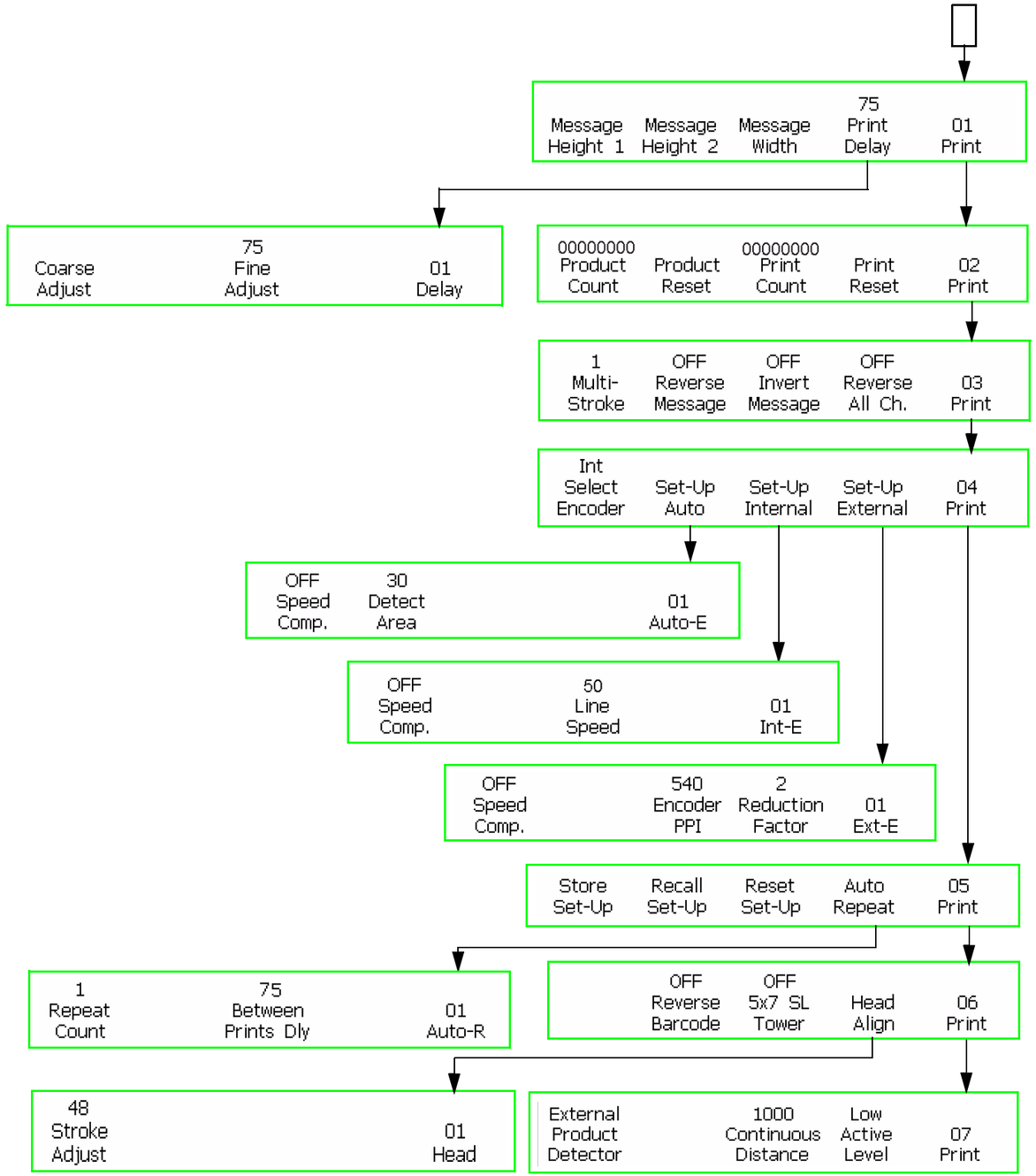
Figure 5-8: Print Set up Mode

Videojet Excel Dual Nozzle Software Summary Chart




Serializer Clock Date Timer 01 Insert
00000000 Start Value | UP Count Up/Down | 1 Constant | 01 Serial
99999999 End Value | OFF Wrap Around | 1 Repeat Count | Insert Serial | 02 Serial
00000000 Current Value | 1 Current Repeat | 03 Serial
00000000 Start Value 2 | UP Count 2 Up/Down | 1 Const 2 | OFF Increment Serializer | 04 Serial
99999999 End Value 2 | OFF Wrap Around 2 | 1 Repeat Count 2 | Insert Serial 2 | 05 Serial
00000000 Current Value 2 | 1 Current Repeat 2 | 06 Serial
Insert Hour | Insert Minute | Insert HR/WK | Insert WK/YR | 01 Clock
Insert Shift | Insert Alp. Hour | Insert Euro WK/YR | 02 Clock
Remote Data | OFF Append Message | 1 Appended Message | 02 Insert
64 Buffer Size | Insert Remote | 01 Remote
Bar Code | Insert Graphic | 03 Insert
None Bars W/ Charac. | Insert 3 of 9 | Insert 2 of 5I | Delete Barcode | 01 Barcode
Insert EAN-13 | Insert EAN-8 | Delete Barcode | 02 Barcode
Insert Code 128 | Insert EAN 128 | FNC1 Control Select | Insert Control | 03 Barcode
Insert UPC A | Insert UPC E | 04 Barcode
Insert Datamatrix | 10x10 Datamatrix Density | Delete Barcode | 05 Barcode
Insert Month | Insert Day | Insert Year | Insert Julian | 01 Date
Insert Exp Mon | Insert Exp Day | Insert Exp Year | Insert Exp Julian | 02 Date
Ins. Exp. Alp.Mon. | 0000 Exp Date Offset | 03 Date
Insert Alp. Month | 04 Date
Ins. Exp Month-2 | Ins. Exp Day-2 | Ins. Exp Year-2 | Ins. Exp Julian-2 | 05 Date
Ins. Exp Alp.Mon-2 | 0000 Exp Date Offset-2 | 06 Date
4 Timer Select | 0000 Timer Format | 1 Update Interval | Insert Timer | 01 Timer
0 Char. 1 Code | 0 Char. 2 Code | 0 Char. 3 Code | 0 Char. 4 Code | 01 Format


00:00 Set Time
01/01/00 Set Date
001 Set HR/WK
01 Set WK/YR
01 System
MON Change WK/YR
01 Week Of Year
01/01 First Day WK/YR
01 WK/YR
9600 Baud Rate
Insert Remote Mode
Build Graphic
02 System
Set Size
Set Cursor
Save Graphic
Clear
01 Graphic
Set Block
Copy Block
Paste Block
Delete Block
02 Graphic
Shift Set-Up
00:00 Set DayRoll
Run AutoFlush
Service Status
03 System
1 Select Shift
00:00 Shift Start
A Shift Code
24 Max. Shifts
01 Shift
30.00 Ink Set Point
0.00 Current Ink Time
250 Nozzle Drive 1
25 High Voltage 1
2 Current Phase 1
150 Make-Up Add Time
00000000 Make-Up Inhibit
250 Nozzle Drive 2
25 High Voltage 2
3 Current Phase 2
English Set Language
English Set Keyboard
English Display Unit
0 Alternate Zero
04 System


Message Height 1
Message Height 2
Message Width
75 Print Delay
01 Print
Coarse Adjust
75 Fine Adjust
01 Delay
00000000 Product Count
Product Reset
00000000 Print Count
Print Reset
02 Print
1 Multi-Stroke
OFF Reverse Message
OFF Invert Message
OFF Reverse All Ch.
03 Print
Int Select Encoder
Set-Up Auto
Set-Up Internal
Set-Up External
04 Print
OFF Speed Comp.
30 Detect Area
01 Auto-E
OFF Speed Comp.
50 Line Speed
01 Int-E
OFF Speed Comp.
540 Encoder PPI
2 Reduction Factor
01 Ext-E
Store Set-Up
Recall Set-Up
Reset Set-Up
Auto Repeat
05 Print
1 Repeat Count
75 Between Prints Dly
01 Auto-R
OFF Reverse Barcode
OFF 5x7 SL Tower
Head Align
06 Print
48 Stroke Adjust
01 Head
External Product Detector
1000 Continuous Distance
Low Active Level
07 Print

Create and Print the Messages

6

This chapter contains the following topics:

- Software illustration standards
- How to create the messages
- Message size storage
- Select a print matrix (message format)
- How to create a reversed, upside down, or bold character
- Change the character spacing
- How to apply the features to messages
- Adjust the height of the message
- Adjust the width of the message
- Add inserts into the messages
- How to remove an insert from the Message
- How to load a message into the printer
- How to Store the Messages
- Printing the messages

Software Illustration Standards

The illustration in Figure 6-1 shows how to use the software illustrations provided for each procedure to navigate through the software.

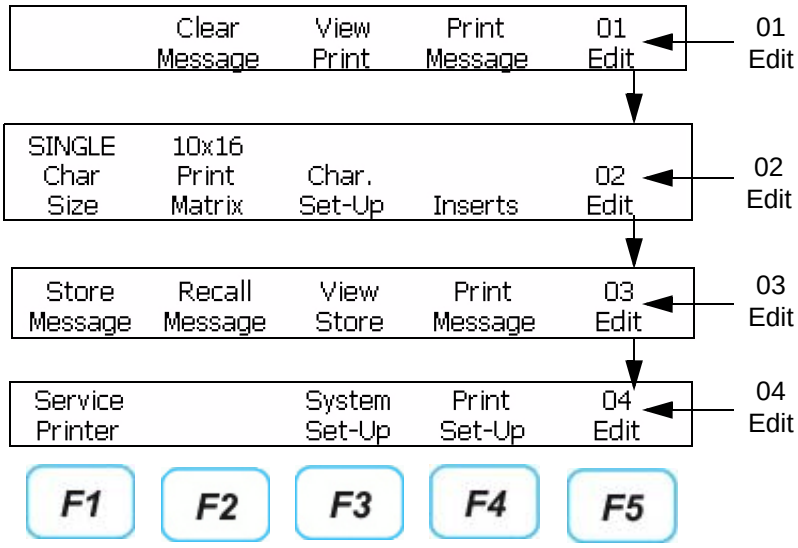


Figure 6-1: Software Illustration Example

Note: *Use the correct function key to move from one frame to the next frame.*

How to Create the Messages

Editor

Refer to “Editor” on page 3-10 for information on editor.

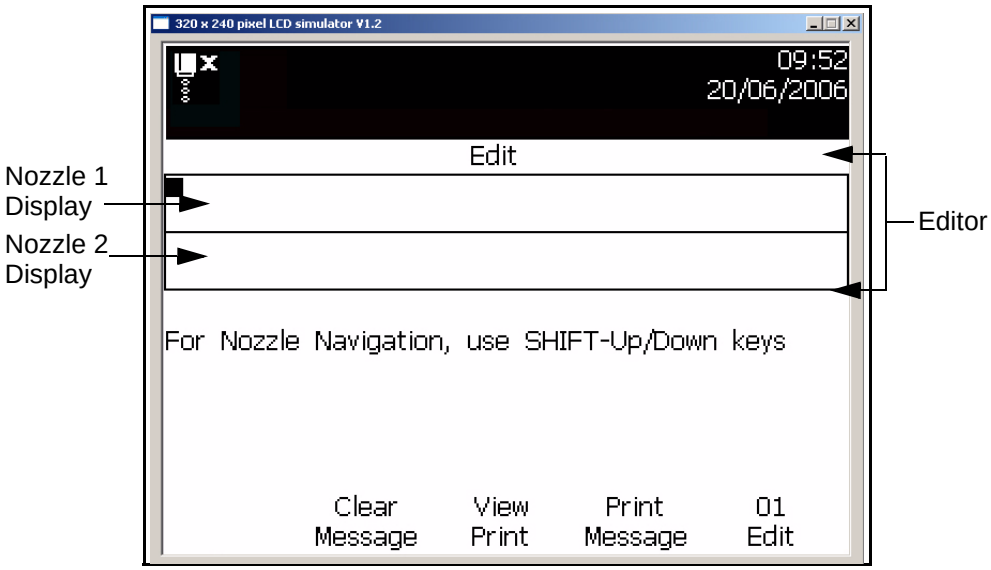


Figure 6-2: Editor

Do the following tasks to create a new message with the help of the two displays:

1. Check for an existing message in the display screen
   - If YES, clear the existing message. Refer to“Clear an Existing Message” on page 6-5.
   - Else, continue to the next step.
2. Select the print matrix for the current display. Refer to “Select a Print Matrix (Message Format)” on page 6-6.

   Note: *Both nozzle displays must have the same print matrix, but the character size of selections for F1<Char Size> can change.*

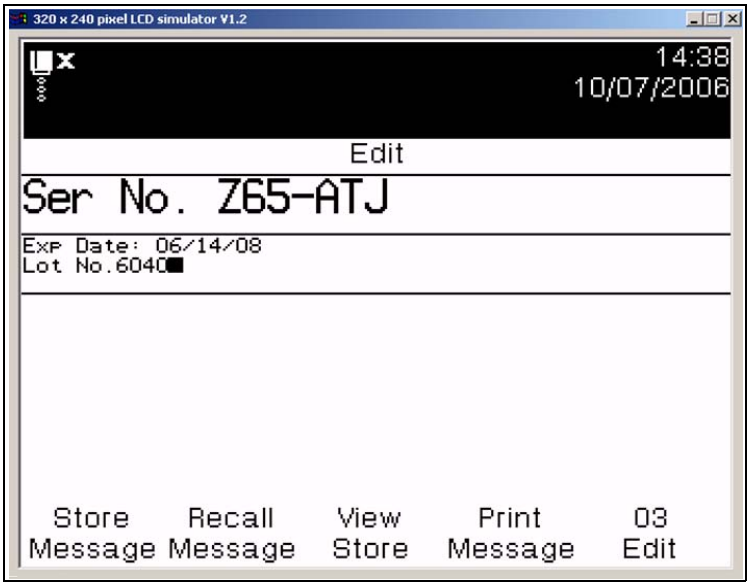


Figure 6-3: Nozzle Screen

3 Create the new message in the required nozzle display. When you create a message, you can include one or many of the following in the message:

- Alphabets, numeric and special characters
- Different inserts

4 To add more information to the other nozzle display, use the shift + ▲ or shift + ▼ to move between the two displays.

5 Load the message into the printer. Refer to "How to Load a Message into the Printer" on page 6-80 for more information.

6 Print the message. Refer to "Printing the Messages" on page 6-84 for more information on printing the message.

See the Last Message Printed

This procedure describes how to see the last message that was printed.

Note: *The message that you can see in the display screen is not the last message printed by the printer always.*

Procedure

1. Begin in the frame <01 Edit>. Refer to Figure 6-4.

   Note: *To reach the Frame <01 Edit>, press the ENTER key until the frame appears in the display screen.*

   Figure 6-4: Frame <01 Edit>

2. Press F3 to select <View Print>.

   The last message that was printed appears in one or both nozzle display screens (depends on how the message was created).

   Note: *The message is not seen if there was no previous message printed.*

3. Press the ENTER key to return to the Frame <01 Edit> after you see the message.

Clear an Existing Message

This procedure describes how to clear the portions of the message that appear in one or both display screens.

Note: *The existing message is not the last message that is loaded into the printer always.*

Note: *A message includes both nozzle-1 display and nozzle-2 displays. If you clear a message, both the displays are erased.*

Procedure

1. Make sure that the messages you must clear, appear in the display screen.
2. Begin in the Frame <01 Edit>. Refer to Figure 6-5 on page 6-6.

Note: *To reach the Frame <01 Edit>, press the ENTER key until the frame appears in the display screen.*

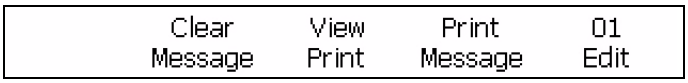


Figure 6-5: Frame <01 Edit>

3 Press F2 and SHIFT+ F2 to clear the message from both the nozzle displays.

Note: *To clear one nozzle display at a time, use the Backspace or DELETE key.*

Message Size and Storage

- The maximum size of a message is 6000 strokes with a height of 48 drops.
- The maximum number of messages stored are 250 messages of 6000 strokes each.

Select a Print Matrix (Message Format)

The following section describes how to select the print matrix for both nozzle displays. The print matrix gives the number of lines in the message, and the size of the printed characters.

The character size is the height of the number of dots by the width of the number of dots of the character. For example if you select a 5 x 7 TL (Twin Line) type of print matrix, you can create two printed lines in each nozzle display. Each line then contains the characters that are 5 dots in the height by 7 dots in the width.

When you select the print matrix, follow the guidelines given below:

- Before you replace a current type of matrix with a different type of matrix, delete the current type of matrix.

  Note: *If you press F2 <Clear Message>, both the nozzle displays are cleared. To erase a character from one nozzle display, use the Backspace or Delete keys.*

- You can enter inserts and characters into the message after you select the print matrix.

- When you enter a character or insert into the message, you cannot change the print matrix (unless you clear the message first).

The Message Formats Available

Both nozzle-1 and nozzle-2 displays use the same print matrix (message format).

The print matrix is selected in the Frame <02 Edit> (refer to Figure 6-6). You can use the <Char Size> option with the type of print matrix selected. This option changes the size of characters when you use a matrix with many sizes of characters.

If the software cannot change the size of character in the nozzle display, Frame <02 Edit> leaves the <Char Size> blank.

Refer to Table 6-1 for examples of print matrix options.

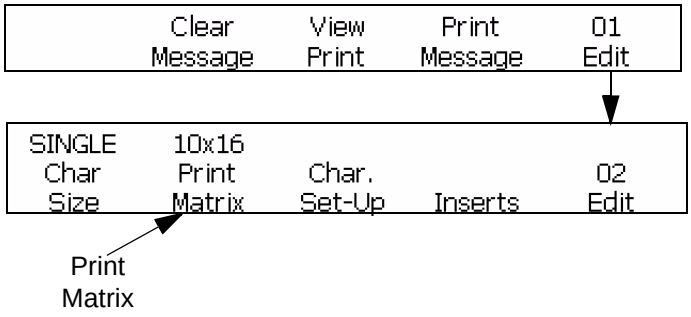


Figure 6-6: Frame <02 Edit>

The print matrix types and definitions are shown in Table 6-1.

Matrix Type	Definition	
5 x 5 SL	This format prints one 5 x 5 line (Single Line Accudrop).	VIDEOJET
5 x 5 TL	5 x 5 TL format prints two 5 x 5 lines (Twin-Line Accudrop).	VIDEOJET VIDEOJET
5 x 7 SL	This format prints one 5 x 7 line (Single-Line).	VIDEOJET
6 x 7 SL	This format prints one 6 x 7 line (Single-Line). This format provides a larger character that is better visible than the 5 x 7 SL.	VIDEOJET

Table 6-1: Print Matrix Descriptions

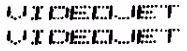
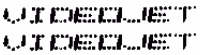
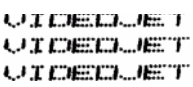
Matrix Type	Definition	
5 x 7 TL	5 x 7 TL format prints two 5 x 7 lines (Twin-Line).	
5 x 7 STL	5 x 7 STL format prints two 5 x 7 lines (Standard Twin-Line). 5 x 7 STL format prints at a lower speed, and provides a higher quality print than the 5 x 7 TL.	
7 x 9 SL	This format prints one 7 x 9 line (Single-Line).	
10 x 16 Mixed	This format prints one 16 high line, two 7 high lines, or a combination of both the lines (mixed-Line). Select <Char. Size> to move between single and double line options within the message.	
10 x 16 Mixed HS	This format prints one 16 high line, two 7 high lines, or a combination of both the lines (Mixed-Line) at high speed. Select <Char. Size> to move between single and double line options within the message.	
16 x 24 Mixed	Prints: -One line (24 high line) -Two lines (one 16 high or two 16 high with the bottom offset) -Three lines (seven high lines) -The combination of all three lines (Mixed-Line) Select <Char. Size> to move between one, two and three line options within the message.	
16 x 24 Mixed HS	Prints at high speed: -One line (24 high line) -Two lines (one 16 high or two 16 high with the bottom offset) -Three lines (seven high line) -A combination of all three (mixed-line) Select <Char. Size> to move between single, double and three line options within the message.	
5 x 7/5 x 7/5 x 7	Prints three 5 x 7 lines	
5 x 5 5 x 5 5 x 5 5 x 5 Mixed	Prints four 5 x 5 lines, or one 24 high line, or a combination of both lines (quad-line mixed). Select <Char. Size> to move between the single line and quad line options with the message.	

Table 6-1: Print Matrix Descriptions (Continued)

Procedure

Do the following tasks to select the print matrix for both nozzle displays:

1. Press F5 until the Frame <02 Edit> appears in the display. Refer to Figure 6-7.
2. See if an existing message appears in the display screen
   - If yes, clear the existing message. Refer to "Clear an Existing Message" on page 6-5 for more information.
   - Else, continue to the next step.
3. Begin in the Frame <02 Edit>.

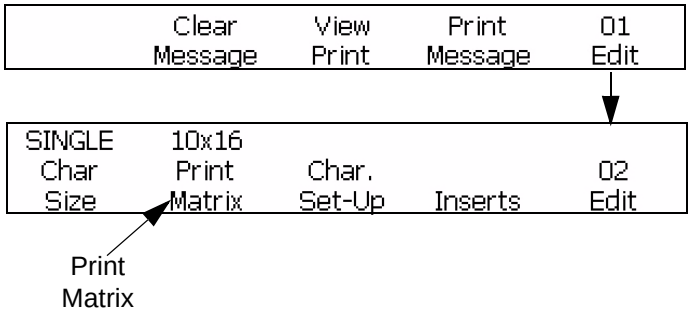


Figure 6-7: Accessing Frame <02 Edit>

4. Set the cursor in the nozzle display to begin the message. See the current setting above <Print Matrix>. Press F2 if you want to change the setting.

   Note: *If the message contains the characters in another matrix size, the printer will not allow to change the print matrix setting unless you clear the message first.*

5. See the current setting above <Char Size>. Press F1 if you want to change the setting. The <Char Size> field is not seen if you cannot change the size of the characters within the message.
6. You can enter either an insert, or the character (or both insert and the character) into the message in the current nozzle display.

   If you need inserts or characters for the other nozzle display, use shift + ▲ or shift + ▼ to put the cursor in that nozzle display and repeat steps 4 through 6.

How to Create a Reversed, Upside Down, or Bold Character

The procedures in this section describe how to create the characters that are reversed, upside down (invert), or bold within a message. Any character settings turned on or turned off change both nozzle-1 and nozzle-2 display entries. You must reload the message if any changes to the characters settings are required.

Note: *Refer to "How to Create a Reversed, Upside Down (Inverted), Bold Message or Reverse All Characters" on page 6-15 to apply reverse, or turn upside down (invert), or bold, or reverse all characters to the full message.*

You can create a character that is a combination of these features. For example you can create a character that is both reversed and upside down. You can create a character that is upside down and bold in the same method.

Note: *The reverse message, upside down (invert) message, and bold message settings cancel the character settings. Refer to "How to Create a Reversed, Upside Down (Inverted), Bold Message or Reverse All Characters" on page 6-15 for more information.*

Reverse a Character

This procedure describes how to reverse each character within a message. When you reverse a character, the character rotates by 180 degrees in the horizontal direction. Refer to Figure 6-8. You can reverse only new characters and not an existing character in the message.

Figure 6-8: Reversing the Character

Procedure

1. Use the arrow keys to move the cursor to the location in the message where you need the character to appear.
2. Begin in the Frame <01 Char>. Refer to Figure 6-9 on page 6-11.

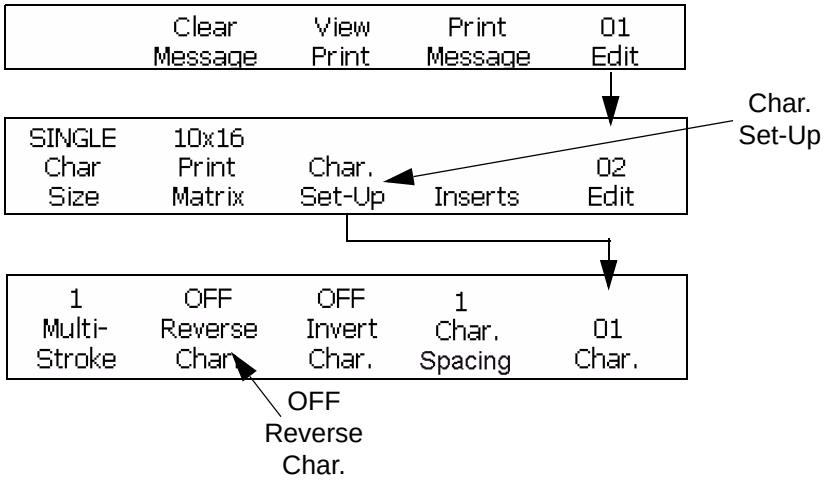


Figure 6-9: Accessing <Reverse Char>

3 See the current setting above <Reverse Char.>.

- If the setting is <OFF>, press F2 to change the setting to <ON>.
- If the setting is <ON>, continue to the next step.

4 Enter the new character into the message. The character appears in the display screen reversed.

Note: *The next character entered is reversed unless you press F2 to change the setting to <OFF> before you enter the character.*

Turn a Character Upside Down (Invert)

This procedure describes how to turn a character upside down (inverted) within a message. Refer to Figure 6-10. You can turn new characters upside down and not the current character.

Figure 6-10: Inverting the Character

Procedure

1. Use the arrow keys to move the cursor to the location in the message where you need the character to appear.
2. Begin in the Frame <01 Char>. Refer to Figure 6-9 on page 6-11.
3. See the current setting above <Invert Char.>.
   - If the current setting is <OFF>, press F3 to change the setting to <ON>.
   - If the current setting is <ON>, continue to the next step.
4. Enter the new character into the message. The character appears upside down in the display screen.

   Note: *The next character entered is turned upside down unless you press F3 to change the setting to <OFF> before you enter the character.*

Change the Character Multi-Stroke (Bold)

The following procedure describes how to change the multi-stroke value of each character within a message. If you want to increase the thickness of the character, increase the multi-stroke (bold) value of the character.

Note: *The software increases the number of vertical ink drop strokes which increases the thickness of the character.*

When you increase the multi-stroke value, the thickness (dark) of the character changes. You can change new characters to bold, but not the existing characters in the message.

Procedure

1. Use the arrow keys to move the cursor to the location in the message where you need the character to appear.

2 Begin in the Frame <01 Char>. Refer to Figure 6-11.

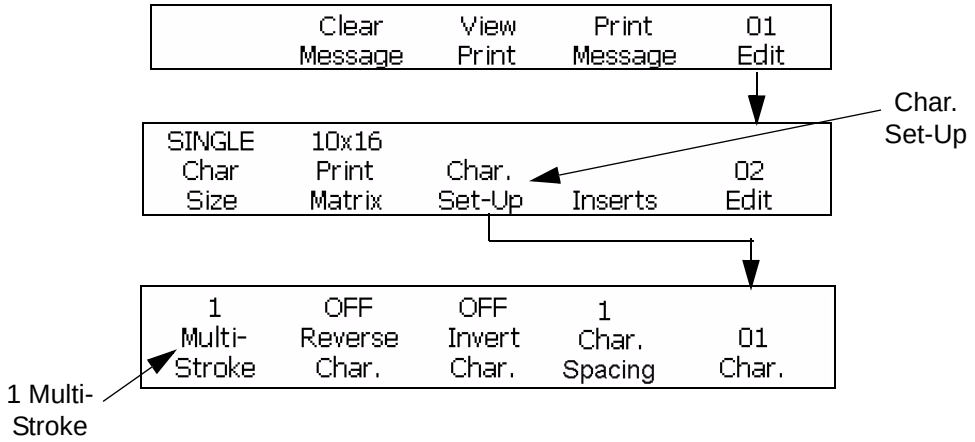


Figure 6-11: Accessing Frame <01 Char>

3 See the current setting above <Multi-Stroke>. Press F1 to change the setting (Settings: 1, 2, 3, 4).
The multi-stroke settings and their descriptions shown in Table 6-2.

Multi-Stroke Setting	Description
<1>	Indicates the default setting
<2>	Indicates that the character is bold by two times than the default setting
<3>	Indicates that the character is bold by three times than the default setting
<4>	Indicates that the character is bold by four times than the default setting

Table 6-2: Multi-Stroke (Bold) Values

4 Enter the new character into the message. The character appears bold in the display screen.

Note: *The next character gets the multi-stroke (bold) value of the previous character unless you press F1 to change the setting.*

Change the Character Spacing

The following procedure describes how to change the character spacing of each character within a message. If you increase the character space value, then the character distance increases by the number of vertical strokes used to create the character spaces (vertical strokes which are blank).

You can change the spacing of the new characters, but not the existing character in the message.

Procedure

Do the following tasks to change the character spacing:

1. Use the arrow keys to move the cursor to the location in the message where you need the character spacing to appear.
2. Begin in the Frame <01 Char>. Refer to Figure 6-12.

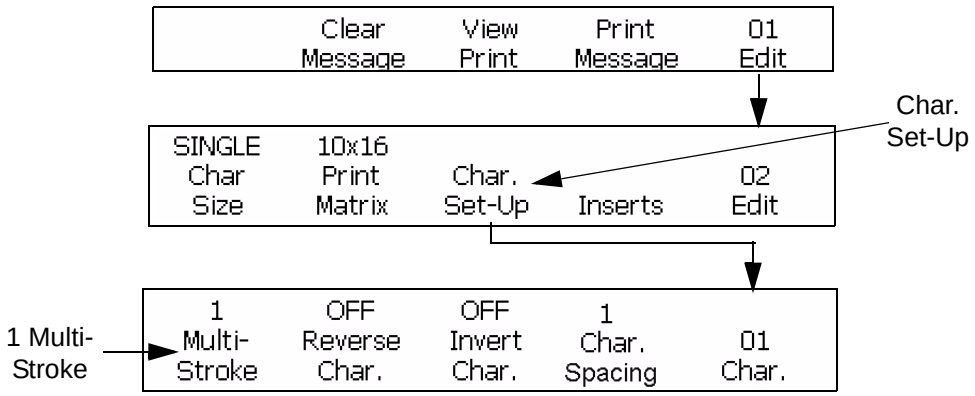


Figure 6-12: Accessing Frame <01 Char>

3. See the current setting above <Char Spacing>. Press F4 to change the setting (Settings: 1, 2, 3, 4, 5, 6, 7, 8, 9).

The character spacing settings and their descriptions are shown in Table 6-3.

Character Spacing Setting	Description
<1>	Indicates the default space setting
<2>	Indicates a character spacing of 2
<3>	Indicates a character spacing of 3
<4>	Indicates a character spacing of 4
<5>	Indicates a character spacing of 5

Table 6-3: The Values for Character Spacing

Character Spacing Setting	Description
<6>	Indicates a character spacing of 6
<7>	Indicates a character spacing of 7
<8>	Indicates a character spacing of 8
<9>	Indicates a character spacing of 9

Table 6-3: The Values for Character Spacing (Continued)

4 Enter the new character into the message. The character appears in the display screen with a character spacing that is proportional.

Note: *The next character entered has the same value for character spacing unless you press F4 to change the setting.*

How to Create a Reversed, Upside Down (Inverted), Bold Message or Reverse All Characters

The procedures in this section describes how you can reverse, make bold, or turn upside down (invert) the whole message. To make the changes to the settings, you do not require to reload the message.

Note: *The message features that are turned on change the whole nozzle-1 and nozzle -2 display message.*

You can create a message that is a combination of these features. For example:

- You can create a message that is both reversed and turned upside down.
- You can create a message that is reversed and bold.

Figure 6-13 on page 6-16 shows the frames used in this section.

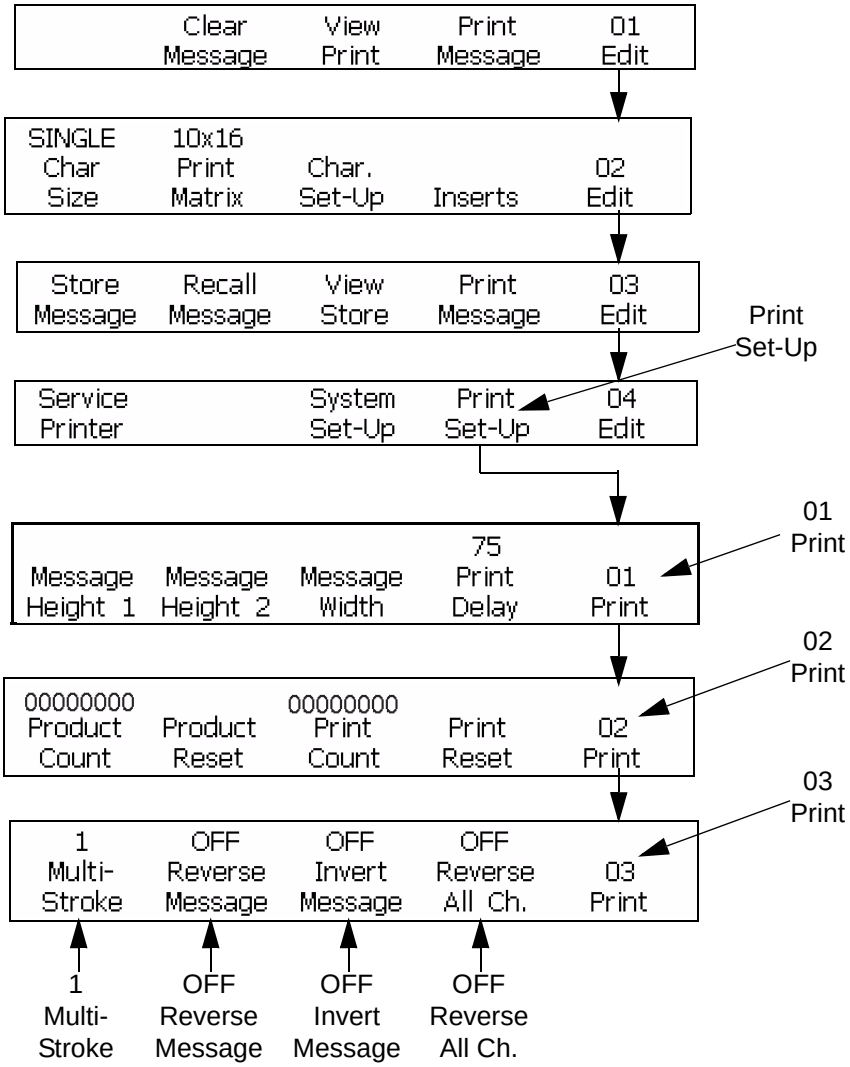


Figure 6-13: Accessing Frame <03 Print>

Reverse a Message

The following procedure describes how to reverse a full message. If you reverse a message, the software prints the last character first, and the first character last. Refer to Figure 6-14.

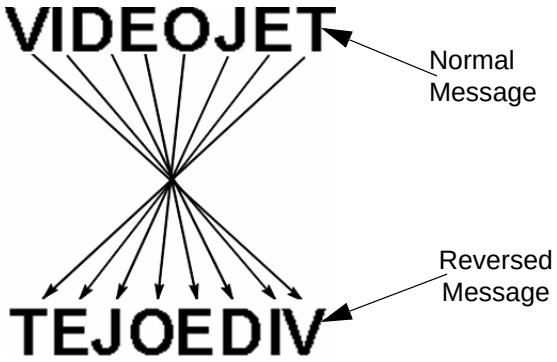


Figure 6-14: Reversing the Message - Example

Procedure

1. Load the stored message into the printer or create a new message and load that message into the printer.
2. Begin in the Frame <03 Print>. Refer to Figure 6-13 on page 6-16.
3. See the current setting above <Reverse Message>.
   - If the current setting is <OFF>, press F2 to change the setting to <ON>. The full message is reversed.
   - If the current setting is <ON>, the message is reversed.

   Note: *The message will not appear reversed in the display screen, but in the print it gets reversed.*

   Note: *When the product moves past the printhead from left to right, you must reverse all characters and reverse the full message. The printhead direction also must change by 180 degrees.*

Turn a Message Upside Down (Invert the Message)

The following describes how to turn a full message upside down. If you turn a message upside down, each character is rotated 180 degrees about the horizontal axis. Refer to Figure 6-15 on page 6-18 for an example.

This feature is used in the following conditions:

- If the printhead, is upside down with reference to the product.
- If the product is upside down, and you do not need the print upside down.

This setting cancels any change made to turn each of the characters upside down (made in the frame <01 Char>). Refer to "Turn a Character Upside Down (Invert)" on page 6-12 for more information.

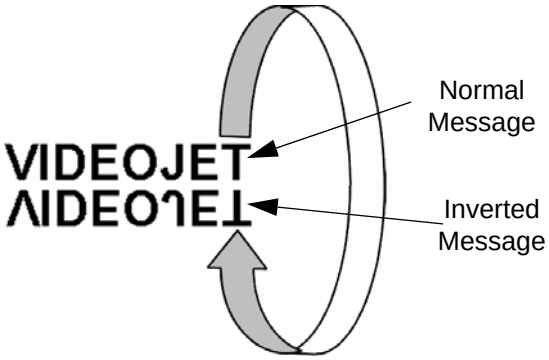


Figure 6-15: Inverting the Message - Example

Procedure

1. Load the stored message into the printer or create a new message and load that message into the printer.
2. Begin in the Frame <03 Print>. Refer to Figure 6-13 on page 6-16.
3. See the current setting above <Invert Message>.
   - If the setting is <OFF>, press F3 to change the setting to <ON>. The full message is turned upside down.
   - If the setting is <ON>, the message is turned upside down.

   Note: *The message will not appear turned upside down in the display screen, but the message is printed upside down on the product.*

The Message Reversed and Turned Upside Down

Figure 6-16 shows an example of a message that is reversed, and turned upside down (inverted).

Figure 6-16: Reversed and Inverted Message

Reverse All Characters

The following procedure describes how to reverse all the characters in a message. If you reverse all the characters, then each character is rotated 180 degrees in the horizontal direction. Refer to Figure 6-17.

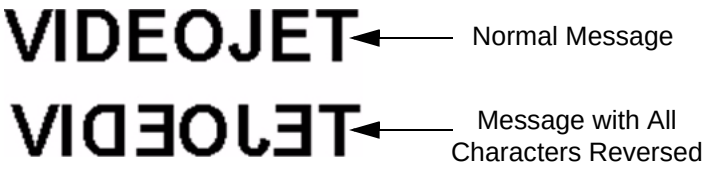


Figure 6-17: Reversing All Characters - Example

Procedure

1. Load the stored message into the printer or create a new message and load that message into the printer.
2. Begin in the Frame <03 Print>. Refer to Figure 6-13 on page 6-16.
3. See the current setting above <Reverse All Ch.>.
   - If the setting is <OFF>, press F4 to change the setting to <ON>. Every character in the message is reversed in the message.
   - If the setting is <ON>, the message is reversed for all characters.

   Note: *The characters in the message will not appear reversed in the display screen, but the message is reversed in the print.*

   Note: *When the product moves past the printhead from left to right, you must reverse all characters and reverse the full message. This method is followed to print the code correctly on the product.*

The Message with all Characters Reversed and Turned Upside Down

Figure 6-18 shows an example of a message with all characters reversed and turned upside down (inverted).

Figure 6-18: Characters Reversed and Turned Upside Down

Change the Message Multi-Stroke (Bold)

The following procedure describes how to change the multi-stroke (bold) value for the full message. The multi-stroke (bold) setting adjusts the number of vertical strokes of drops used to create a character. When multi-stroke value increases, the width and the thickness (bold) of each character increases.

This setting cancels any change to make each of the characters bold (made in the Frame <01 Char>). Refer to "Change the Character Multi-Stroke (Bold)" on page 6-12 for more information.

Procedure

1. Begin in the Frame <03 Print>. Refer to Figure 6-13 on page 6-16 for information on how to access the Frame <03 Print>.
2. Load the stored message into the printer or create a new message and load that message into the printer.
3. See the current setting above <Multi-Stroke>. Press F1 to change the setting (Settings: 1, 2, 3, 4).

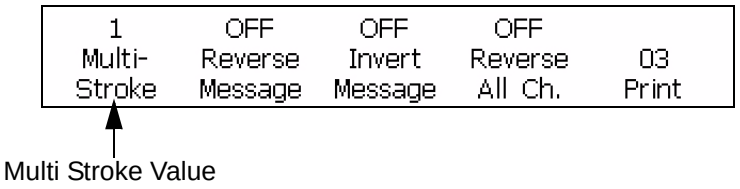


Figure 6-19: Changing the Multi-Stroke Value of a Messages

When you select the multi-stroke level for the loaded message, you can select from the values in the following table.
The multi-stroke (bold) settings and descriptions are shown in Table 6-4.

Multi-Stroke Setting	Description
1	Indicates the default setting
2	Indicates that the character is bold by two times than the default setting
3	Indicates that the character is bold by three times than the default setting
4	Indicates that the character is bold by four times than the default setting

Table 6-4: Multi-Stroke (Bold)

Note: *The message will not appear bold in the display screen, but is bold in the print.*

Adjust the Height of the Message

The procedure describes how to adjust the height of a message separately for either nozzle-1 or nozzle-2 displays in the frame <01 Print>. It is not required to reload the message, for changes in the message height to become active. Refer to Figure 6-20.

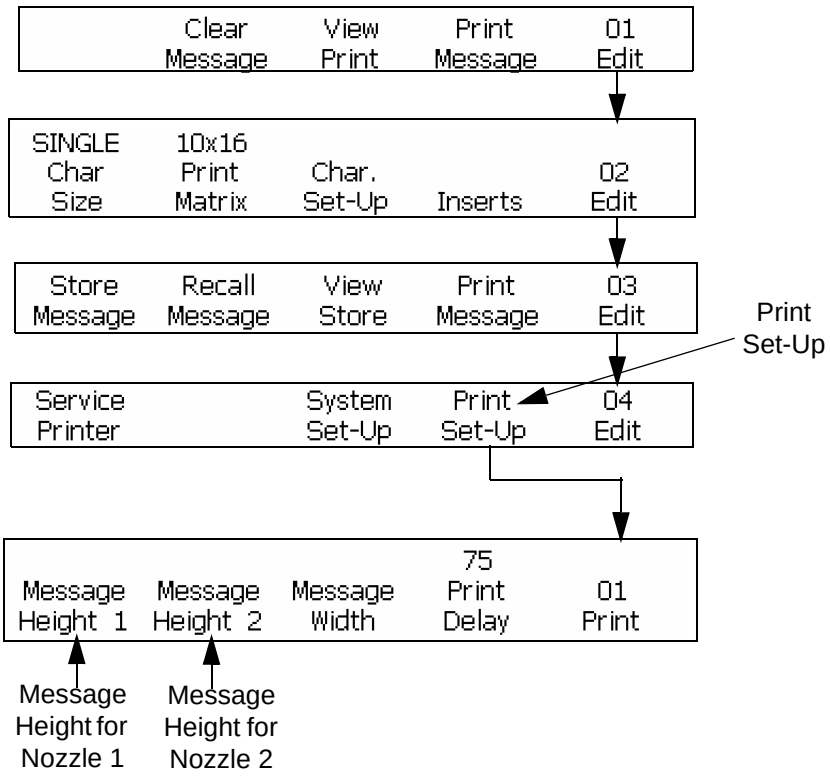


Figure 6-20: Assessing Frame <01 Print>

Procedure

1. Begin in the Frame <01 Print>. Refer to Figure 6-20.
2. Press F1 <Message Height 1> to adjust the message height for Nozzle-1. Press F2 <Message Height 2> to adjust the message height for nozzle-2. Refer to Figure 6-21 on page 6-22 for the information that appears in the display screen.

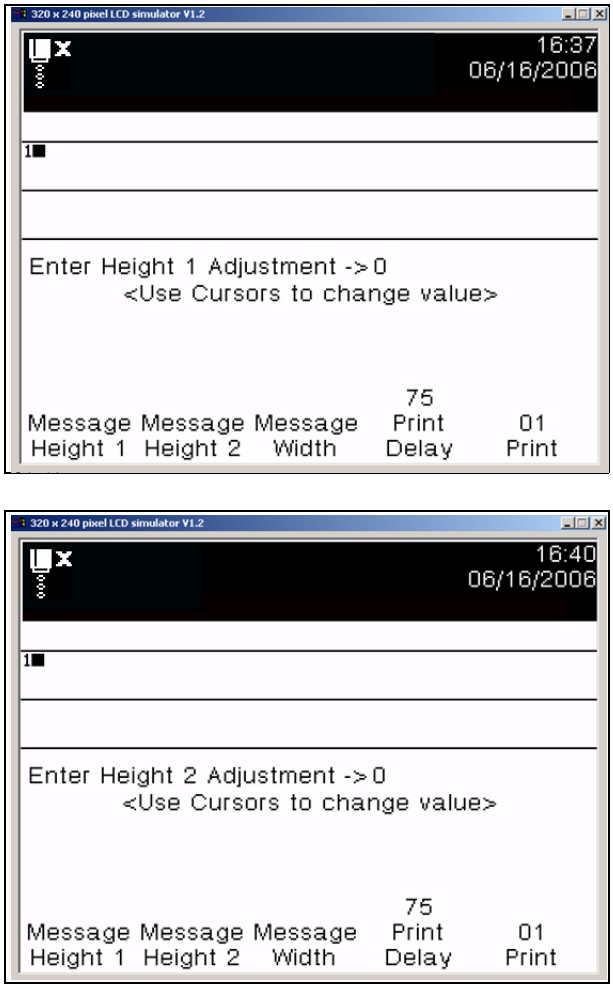


Figure 6-21: Height Adjustment

3 Use the arrow keys to adjust the height of the printed message for the selected nozzle display. The entry must be between 0 and 100.

4 Press the ENTER key. Frame <01 Print> appears again in the display screen.

Adjust the Width of the Message

The following procedure describes how you can to adjust the width of the message that equally changes both Nozzle-1 and Nozzle-2 displays. The message width is adjusted in the Frame <01 Print>. Refer to Figure 6-22.

You can adjust the width of the message if the printer uses internal or auto encoder. You cannot adjust the width of the message if the printer uses external encoder (uses a shaft encoder). You are not required to reload the

message for changes in height of the message to become active.

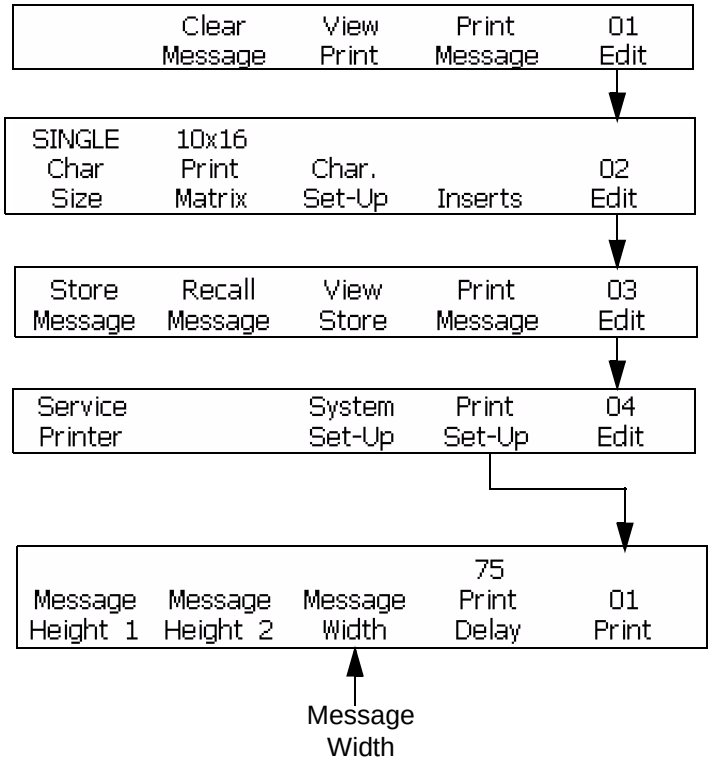


Figure 6-22: Height Adjustment Setting

Procedure

1. Begin in the Frame <01 Print>. Refer to Figure 6-22.
2. Press F3 to select <Message Width>. The following appears in the display screen:

```
Width Adjustment Setting ->40
      <Use Cursors to change value>
```

3. Use the arrow keys to adjust the width of the printed message. The entry must be in between from 0-100.

   Note: *When the values increase in the increments of 10, the characters per inch increase in the increments of 0.5. Refer to Table 6-5 on page 6-24.*

4 Press the ENTER key. Frame <01 Print> appears again in the display screen. The width adjustment settings are shown in Table 6-5.

Width Adjustment Setting	Characters Per Inch	Characters Per Centimeter
100	7.0	2.8
90	7.5	3.0
80	8.0	3.2
70	8.5	3.4
60	9.0	3.5
50	9.5	3.7
40	10.0	3.9
30	10.5	4.1
20	11.0	4.3
10	11.5	4.5
0	12.0	4.7

Table 6-5: Width Adjustment Settings

Add Inserts into the Messages

The procedures in this section describes how the inserts are added into a message.

An insert is defined as a segment of information that is added into the message. When the messages are printed, the printer changes the messages automatically.

There are three types of inserts:

The types of inserts and their characteristics are shown in Table 6-6.

Insert Type	Insert Characteristics
Type 1	The operator defines the parameters (information that appears in the message). The internal clock of the printer does not define the parameters. The insert is updated according to the settings made during the setup.

Table 6-6: The Types of Insert

Insert Type	Insert Characteristics
Type 2	The parameters of the inserts depend on the current reading in the internal clock of the printer. The printer automatically updates the insert according to the changes in the internal clock of the printer.
Type 3	The Type 3 insert is a combination of Type 1 and Type 2. You must define more than one parameter (information which appears in the message) before you put the insert into the message. When the internal clock of the printer changes, the printer updates the insert automatically.

Table 6-6: The Types of Insert (Continued)

You can insert some types of inserts many times in a message (if there is space) and for other types you can insert one or two times only.

Refer to Table 6-7 on page 6-26 for the type and number of inserts you can put into a message.

Note: *If you have same insert in both the nozzle displays, then the inserts in both nozzle displays print the same.*

When you add inserts into a message, you must load the message into the printer before you can print. If you do not load the message, the insert(s) added will not appear in the message. Refer to "How to Load a Message into the Printer" on page 6-80 for more information.

Insert Reference Table

Table 6-7 describes the following:

- The number of inserts available to include in a message
- The type of insert
- The maximum number of inserts of that type you can have in a single message

  Note: *A single message includes both nozzle-1 and nozzle-2 display contents.*

- The page number where you can refer to in this manual for information about that insert

Note: *SLO = Space Limitations Only (meaning you can add many inserts into the message that the space allows).*

Insert	Max. Digits per Insert	Type	Max. per Message*	Page
Alpha Hour	1	2	SLO	6-28
Alpha Month	3	2	SLO	6-29
Hour of Day	2	2	SLO	6-31
Minute of Hour	2	2	SLO	6-33
Hour of Week	3	2	SLO	6-33
Week of Year	2	2	SLO	6-34
Euro Week of Year	2	2	SLO	6-35
Month of Year	2	2	SLO	6-36
Alpha Hour	1	2	SLO	6-28
Day of Month	2	2	SLO	6-37
Year	2	2	SLO	6-38
Julian Date	3	2	SLO	6-39
Expiration Alpha Month	3	2	SLO	6-40
Expiration Month of Year	2	3	SLO	6-42
Expiration Day of Month	2	3	SLO	6-44
Expiration Year	2	3	SLO	6-45
Expiration Julian Date	3	3	SLO	6-47
Expiration Alpha Month	3	2	SLO	6-40

Table 6-7: The Insert Information

Insert	Max. Digits per Insert	Type	Max. per Message*	Page
Serializer	8	1	2[1]	6-49
Timer	4	3	1	6-54
Programmable Shift Timer	1	3	SLO	6-56
Appended Message	Message length	1	1	6-60
Remote Data	32	1	1	6-63
Graphics	Message length	1	SLO	6-66
Barcodes	BLO[2]	3	SLO	6-72

Table 6-7: The Insert Information (Continued)

1. You can add one Serializer-1 insert and one Serializer-2 insert to a message. If there is space in the message, you can add many copies of the Serializer inserts to the same message.
2. BLO = Barcode Limitations Only (meaning some barcodes have size and data content limitations)

Alpha Hour Insert

The following procedure describes how to put an Alpha Hour insert into a message. The Alpha Hour insert is a one-digit character that indicates the current hour of the day in a 24-hour format. You cannot change the character (A-X) for each hour because the characters are fixed.

The value for the insert depends on the internal clock of the printer. When the internal clock changes, the value is updated.

The alpha hour value inserts are shown in Table 6-8.

Value	Time of Day	Value	Time of Day
A	12:00 a.m. (midnight)	M	12:00 p.m. (noon)
B	1:00 a.m.	N	1:00 p.m.
C	2:00 a.m.	O	2:00 p.m.
D	3:00 a.m.	P	3:00 p.m.
E	4:00 a.m.	Q	4:00 p.m.
F	5:00 a.m.	R	5:00 p.m.
G	6:00 a.m.	S	6:00 p.m.
H	7:00 a.m.	T	7:00 p.m.
I	8:00 a.m.	U	8:00 p.m.
J	9:00 a.m.	V	9:00 p.m.
K	10:00 a.m.	W	10:00 p.m.
L	11:00 a.m.	X	11:00 p.m.

Table 6-8: Alpha Hour Insert Values

Procedure

1. Begin in the Frame <02 Clock>. Refer to Figure 6-23 on page 6-29.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F2 to select <Insert Alp. Hour>. The insert appears in the message.

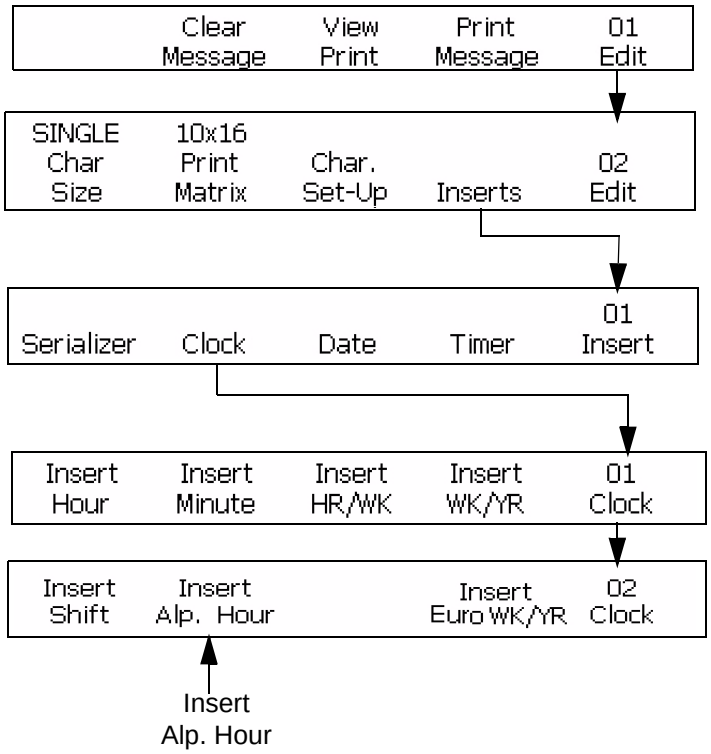


Figure 6-23: Accessing Frame <02 Clock>

Alpha Month Insert

The following procedure describes how to put an Alpha Month insert into a message. The Alpha Month insert is a three-digit character that indicates the current month of the year. You cannot change the characters (Jan - Dec) for each month because the characters are fixed.

The value for the Alpha Month insert depends on the internal clock of the printer. When the internal clock changes, the value is updated.

The values of the alpha month insert are shown in Table 6-9.

Value	Month of Year	Value	Month of Year
JAN	January	JUL	July
FEB	February	AUG	August
MAR	March	SEP	September
APR	April	OCT	October
MAY	May	NOV	November
JUN	June	DEC	December

Table 6-9: Alpha Month Insert Values

Procedure

1. Begin in the Frame <04 Date>. Refer to Figure 6-24 on page 6-31.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F2 to select <Insert Alp. Month>. The insert appears in the message.

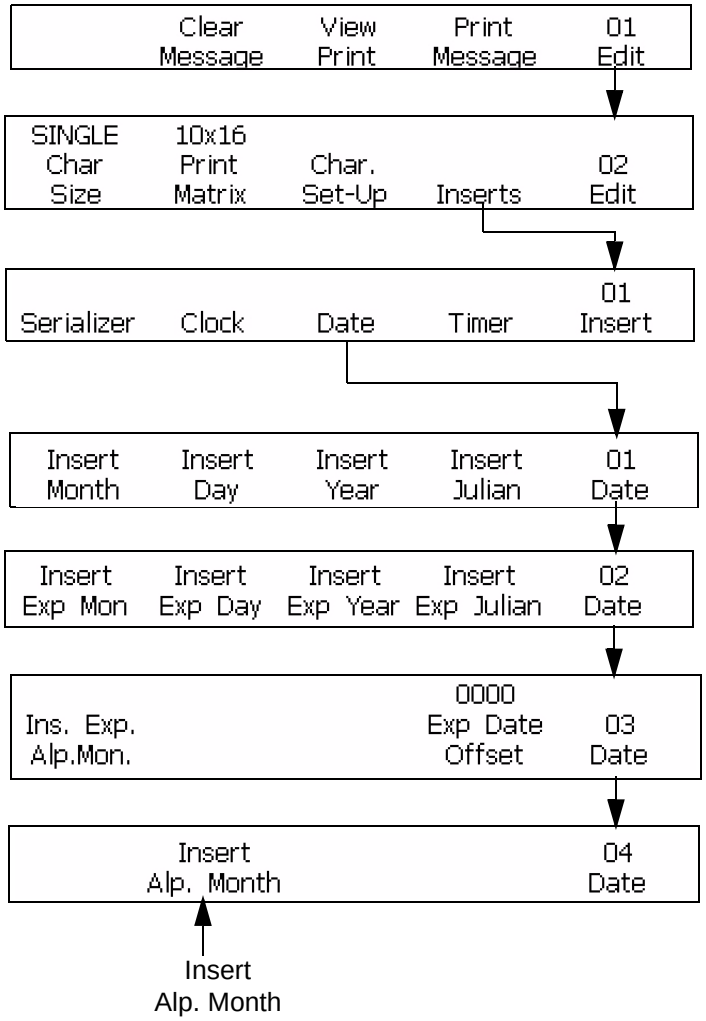


Figure 6-24: Accessing Frame <04 Date>

Hour of Day Insert

The following procedure describes how to put an hour of day insert into a message. The hour of day insert is a two-digit number that indicates the current hour of the day in a 24-hour format. The value for the insert depends on the internal clock of the printer. When the internal clock changes, the value is updated.

The hour of day inserts are shown in Table 6-10.

Value	Time of Day	Value	Time of Day
00	12:00 a.m. (midnight)	12	12:00 p.m. (noon)

Table 6-10: Hour of Day Inserts Values

Value	Time of Day	Value	Time of Day
01	1:00 a.m.	13	1:00 p.m.
02	2:00 a.m.	14	2:00 p.m.
03	3:00 a.m.	15	3:00 p.m.
04	4:00 a.m.	16	4:00 p.m.
05	5:00 a.m.	17	5:00 p.m.
06	6:00 a.m.	18	6:00 p.m.
07	7:00 a.m.	19	7:00 p.m.
08	8:00 a.m.	20	8:00 p.m.
09	9:00 a.m.	21	9:00 p.m.
10	10:00 a.m.	22	10:00 p.m.
11	11:00 a.m.	23	11:00 p.m.

Table 6-10: Hour of Day Inserts Values (Continued)

Procedure

1. Begin in the Frame <01 Clock>. Refer to Figure 6-25.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F1 to select <Insert Hour>. The insert appears in the message.

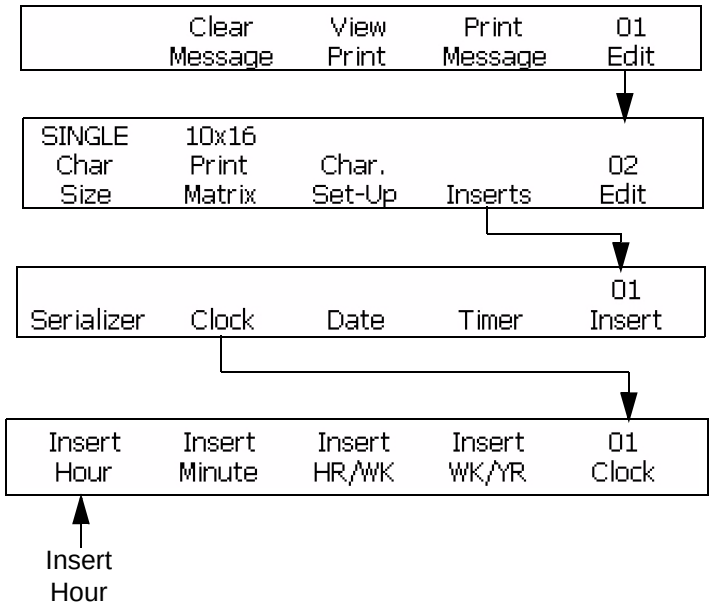


Figure 6-25: Accessing Frame <01 Clock>

Minute Insert

The following procedure describes how to put the minute insert into a message. The minute insert is a two-digit number that indicates the current minute. The value for the insert depends on the internal clock of the printer. When the internal clock of the printer changes, the value is updated.

Procedure

1. Begin in the Frame <01 Clock>. Refer to Figure 6-26.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F2 to select <Insert Minute>. The insert appears in the message.

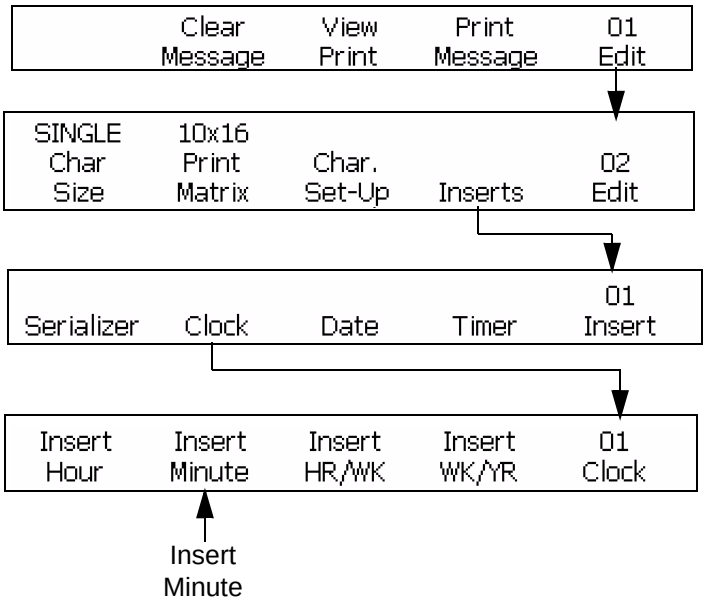


Figure 6-26: Accessing Frame <01 Clock>

Hour of the Week Insert

The following procedure describes how to put an hour of the week insert into a message. The hour of the week insert is a three-digit number that indicates the current hour of the week. A value of 001 indicates the first hour of the week, and a value of 168 indicates the last hour of the week.

The internal clock of the printer with the Change WK/YR function and the DayRoll function, calculates the value for this insert. When the internal clock of the printer changes, the Hour of the Week is updated. Refer to see "Set the Week of the Year and Hour of the Week" on page 7-12, and "Set the Date Roll" on page 7-14.

Procedure

1. Begin in the Frame <01 Clock>. Refer to Figure 6-27.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F3 to select <Insert HR/WK>. The insert appears in the message.

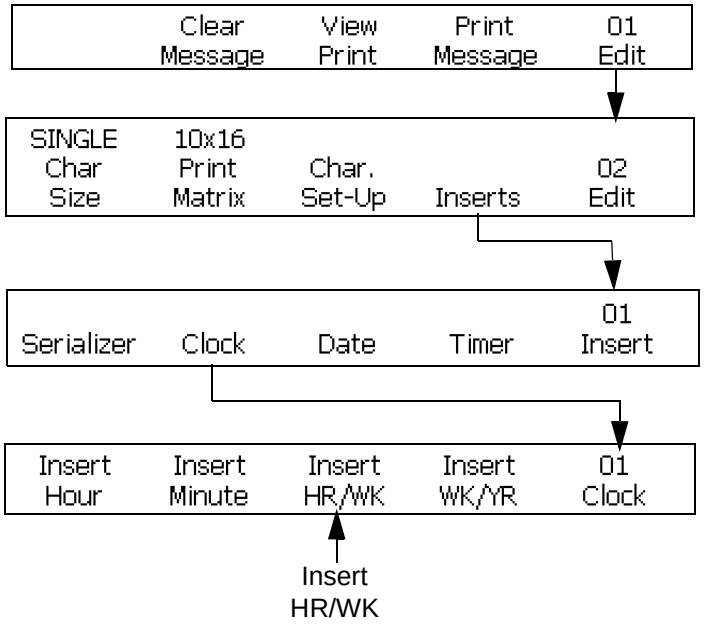


Figure 6-27: Accessing Frame <01 Clock>

The Week of the Year Insert

The following procedure describes how to put a week of the year insert into a message. The week of the year insert is a two-digit number that indicates the current week of the year. A value of 01 indicates the first week of the year, and a value of 53 or 54 indicates the last week of the year.

The internal clock of the printer with the Change WK/YR and First Day WK/YR functions (see "Set the Week of the Year and Hour of the Week" on page 7-12) calculates the value of this insert. When the internal clock of the printer changes, the week of the year is updated.

Procedure

1. Begin in the Frame <01 Clock>. Refer to Figure 6-28 on page 6-35.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.

3 Press F4 to select <Insert WK/YR>. The insert appears in the message.

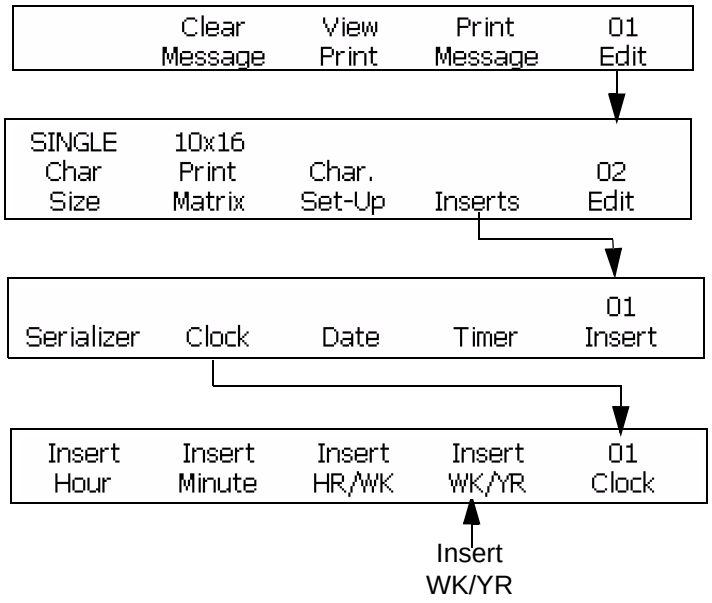


Figure 6-28: Accessing Frame <01 Clock>

The European (Euro) Week of the Year Insert

The following procedure describes how to put a European week of the year insert into a message. The European week of year is based on the ISO 8601 standard. The standard describes that the first week of the year is the week that contains the first Thursday. The Euro week of the year insert is used in some European countries. A two-digit value of 01 indicates the first week of the year, and a value of 52 or 53 indicates the last week of the year. The Change WK/YR or Set DayRoll functions do not change the insert.

Procedure

1 Begin in the Frame <02 Clock>. Refer to Figure 6-29 on page 6-36.

2 Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.

3 Press F4 to select <Insert Euro WK/YR>. The insert appears in the message.

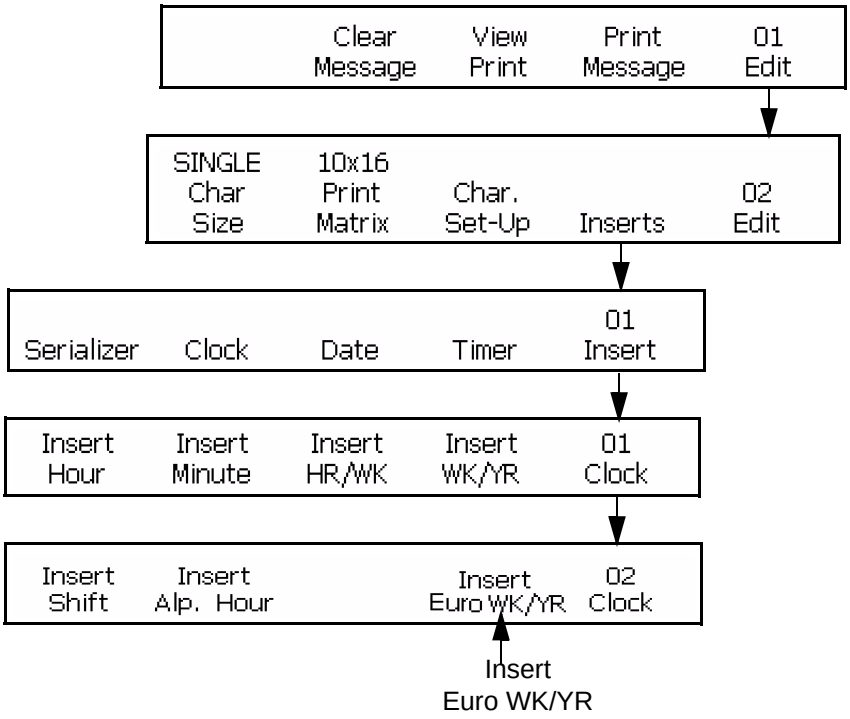


Figure 6-29: Access Frame <02 Clock>

The Month Insert

The following procedure describes how to put a month insert into a message. The month insert is a two-digit number that indicates the current month of the year. When the internal clock of the printer changes, the month value is updated.

The values of month inserts are shown in the Table 6-11.

Value	Month	Value	Month
01	January	07	July
02	February	08	August
03	March	09	September
04	April	10	October
05	May	11	November
06	June	12	December

Table 6-11: Month Insert Values

Procedure

1 Begin in the Frame <01 Date>. Refer to Figure 6-30.

2 Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.

3 Press F1 to select <Insert Month>. The insert appears in the message.

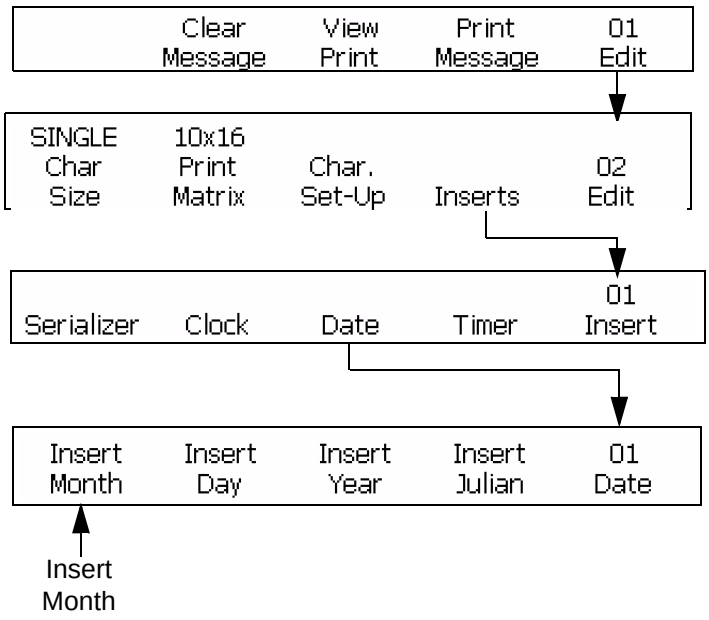


Figure 6-30: Accessing Frame <01 Date>

Day of Month Insert

The following procedure describes how to put a day of month insert into a message. The day of month insert is a two-digit number that indicates the current day of the month. The value for the insert depends on the internal clock of the printer. When the internal clock of the printer changes, the day of month is updated.

Procedure

1 Begin in the Frame <01 Date>. Refer to Figure 6-31 on page 6-38.

2 Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.

3 Press F2 to select <Insert Day>. The insert appears in the message.

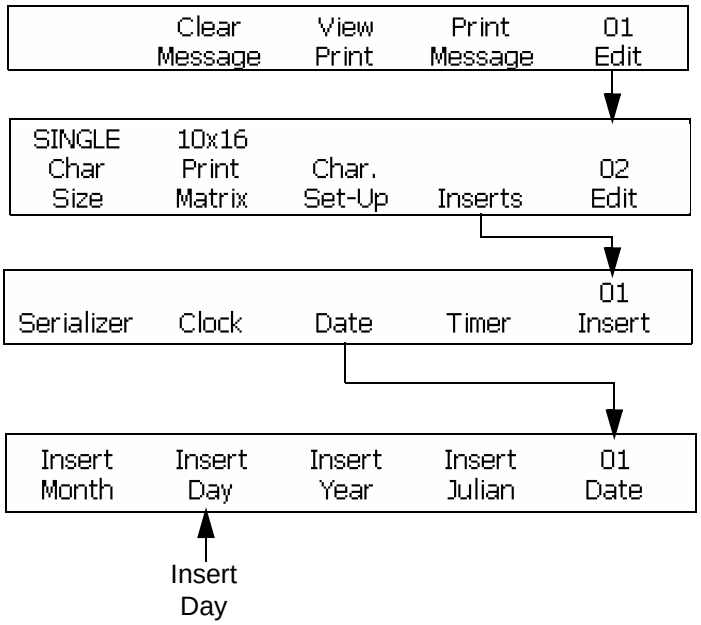


Figure 6-31: Accessing Frame <01 Date>

The Year Insert

The following procedure describes how to put a year insert into a message. The year insert is a two-digit number. For example, the printer displays "06" for the year "2006".

The value for the insert depends on the internal clock of the printer. When the internal clock of the printer changes, the year value is updated.

Procedure

1. Begin in the Frame <01 Date>. Refer to Figure 6-32 on page 6-39.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F3 to select <Insert Year>. The insert appears in the message.

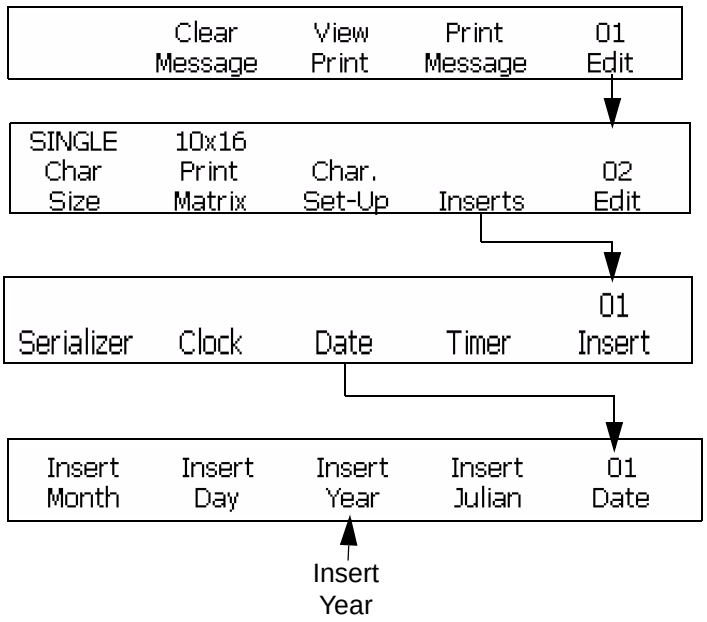


Figure 6-32: Accessing Frame <01 Date>

The Julian Date Insert

This procedure describes how to put a Julian date insert into a message. The Julian date insert is a three-digit number which indicates the current day of the year. A value of 001 indicates the first day of the year, and a value of 365 or 366 indicates the last day of the year.

The value for the insert depends on:

- Internal clock of the printer
- Change Wk/YR and First Day Wk/YR functions (see "Set the Week of the Year and Hour of the Week" on page 7-12)
- Set DayRoll function (see "Set the Date Roll" on page 7-14)

Procedure

1. Begin in the Frame <01 Date>. Refer to Figure 6-33 on page 6-40.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F4 to select <Insert Julian>. The insert appears in the message.

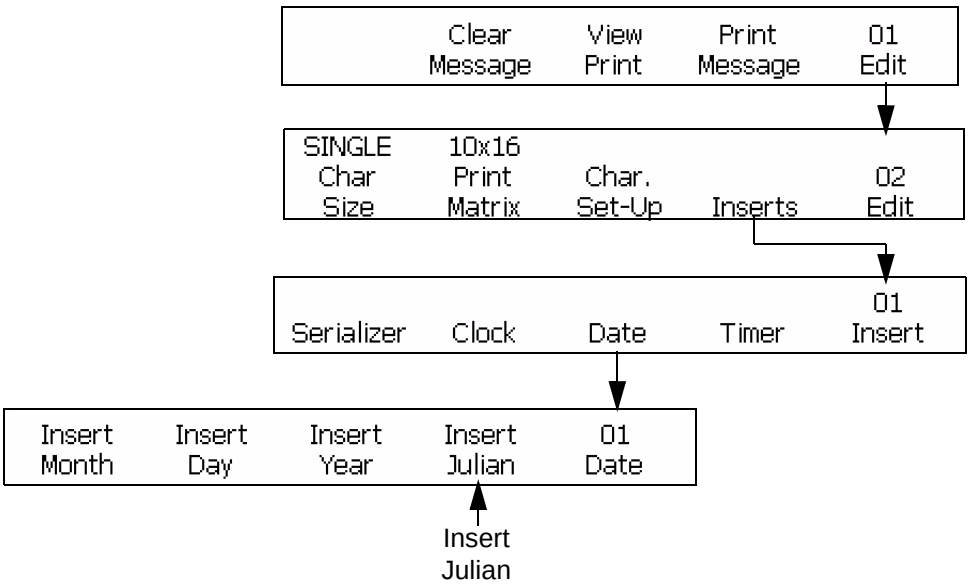


Figure 6-33: Accessing Frame <01 Date>

Expiration Alpha Month Insert

This procedure describes how to put an expiration alpha month insert into a message. The expiration alpha month insert is a three-digit character that indicates that the product expires in that month. You cannot change the characters (Jan - Dec) for each month because they are fixed. The value for the insert depends on the internal clock of the printer, but you must set the expiry date (from the current date) of the product. When the internal clock of the printer changes, the insert is updated. You can add two separate expiration alpha month inserts per message.

The value for the insert depends on the internal clock of the printer and the Set DayRoll function (see "Set the Date Roll" on page 7-14)

The values for expiration alpha month insert are shown in Table 6-12.

Value	Month of the Year	Value	Month of the Year
JAN	January	JUL	July
FEB	February	AUG	August
MAR	March	SEP	September
APR	April	OCT	October
MAY	May	NOV	November
JUN	June	DEC	December

Table 6-12: Expiration Alpha Month Insert Values

Example: If the current date is January 24 and you set the expiration date of the product to be 70 days from the current date, the printer prints APR for the expiration month of year insert. The month April (APR) is the month that is 70 days from the current date.

Procedure

1. Begin in the Frame <03 Date>. Refer to Figure 6-34.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F1 to select <Ins Exp Alp Mon>. The insert appears in the message.

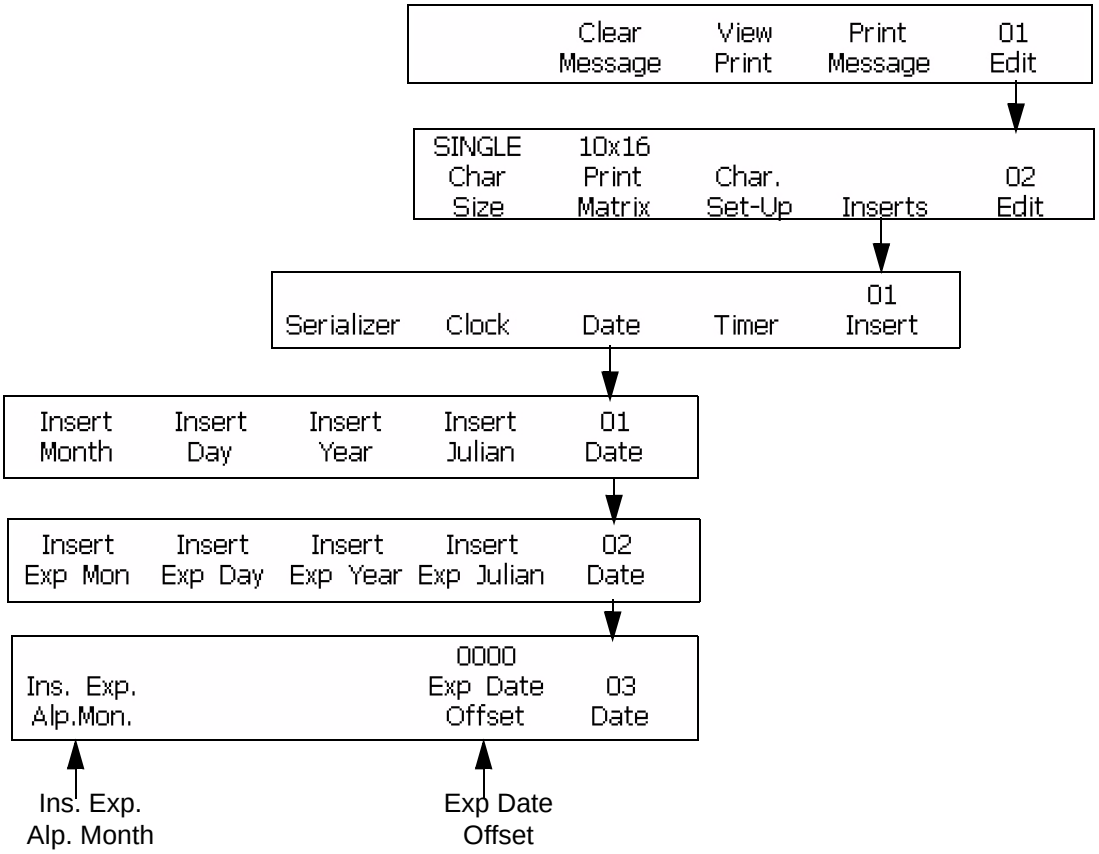


Figure 6-34: Accessing Frame <03 DATE>

4. Press F4 to select <Exp Date Offset>. The following appears on the screen.

```
Enter Offset Days(1-2048)->

   <Use CANCEL to exit with no change>
```

5 Enter the number of days that can pass before the product expires. The entry must be from 1-2048 (2048 days indicate 5 ½ years approximately).

6 Press the ENTER key. The insert appears in the message and Frame <03 Date> appears in the display screen.

7 To create another separate expiration alpha month insert, repeat steps 1 through 6, but begin in the Frame <06 Date>. Set the offset value in the same frame <06 Date>.

Expiration Month of Year Insert

This procedure describes how to put an expiration month of year insert into a message. The expiration month insert is a two-digit character that indicates that the product expires in that month. The value for the insert depends on the internal clock of the printer and the Set DayRoll function (see "Set the Date Roll" on page 7-14). You must set the expiration date offset to indicate the expiry date (from the current date) on the product. When the internal clock of the printer changes, the insert is updated. You can add two separate expiration month inserts per message.

Example: If the current date is January 24 and you set the expiration date offset of the product to be 14 days from the current date, the printer prints 02 for the expiration month of year insert. The value 02 indicates the month of February (which is the calculated expiration month 14 days from the current date).

Procedure

1 Begin in the Frame <02 Date>. Refer to Figure 6-35 on page 6-43.

2 Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.

3 Press F1 to select <Insert Exp Mon>. The insert appears in the message.

4 Press F5 to go to Frame <03 Date>. Refer to Figure 6-35 on page 6-43.

5 Press F4 to select <Exp Date Offset>. The following appears in the display screen:

```
Enter Offset Days(1-2048)->

   <Use CANCEL to exit with no change>
```

6 Enter the number of days that can pass before the product expires. The entry must be from 1-2048 (2048 days indicate 5½ years approximately).

7 Press the ENTER key. The insert appears in the message and Frame <03 Date> appears in the display screen.

8 To add a separate expiration month of year insert, repeat steps 1 through 7 but begin in the Frame <05 Date>. Set the offset value in the Frame <06 Date>.

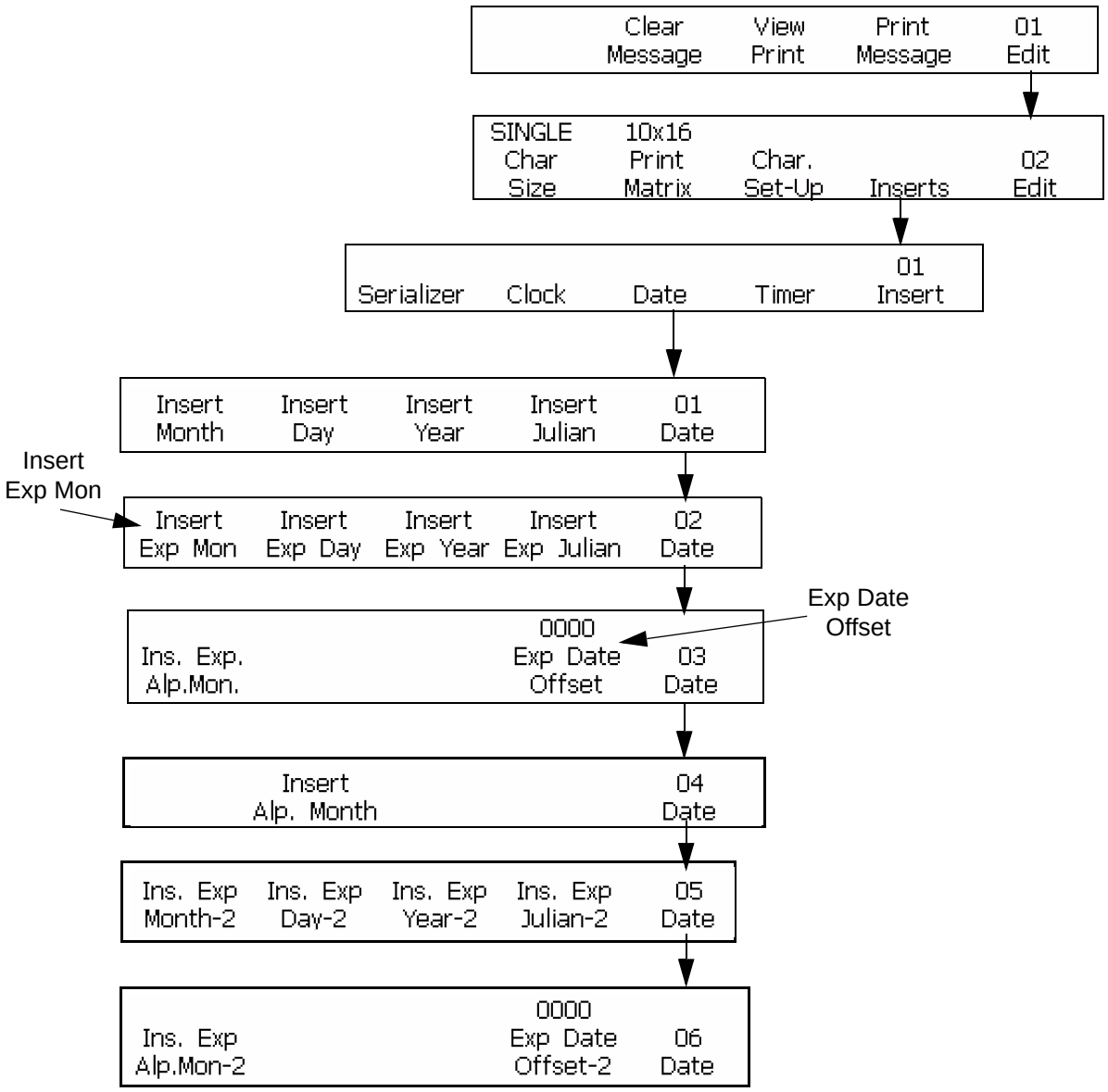


Figure 6-35: Accessing Frame <03 DATE>

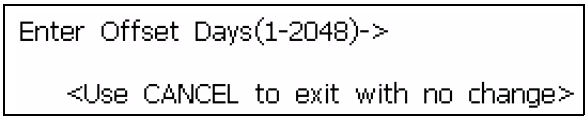
Expiration Day of Month Insert

This procedure describes how to put an expiration day of month insert into a message. The expiration day of the month insert is a two-digit character that indicates that the product expires on that day of the month. The value for the insert depends on the internal clock of the printer and the Set DayRoll function (see "Set the Date Roll" on page 7-14). You must set the expiration date offset to indicate the expiry date (from the current date) on the product. When the internal clock of the printer changes, the printer updates the insert. You can add two separate expiration day of month inserts per message.

Example: If the current date is January 24th and you set the expiration date offset of the product to be 14 days from the current date, then the printer prints 07 for the expiration day of year insert. The value 07 indicates February 7 (which is the day of the month 14 days from the current date).

Procedure

1. Begin in the Frame <02 Date>. Refer to Figure 6-36 on page 6-45.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F2 to select <Insert Exp Day>. The insert appears in the message.
4. Press F5 to go to Frame <03 Date>. Refer to Figure 6-36 on page 6-45.
5. Press F4 to select <Exp Date Offset>. The following appears in the display screen:



6. Enter the number of days that can pass before the product expires. The entry must be from 1-2048 (2048 days indicate 5½ years approximately).
7. Press the ENTER key. The insert appears in the message and Frame <03 Date> appears in the display screen.
8. To add a separate expiration day of month insert, repeat steps 1 through 7 but begin in the Frame <05 Date>. Set the offset value in the Frame <06 Date>.

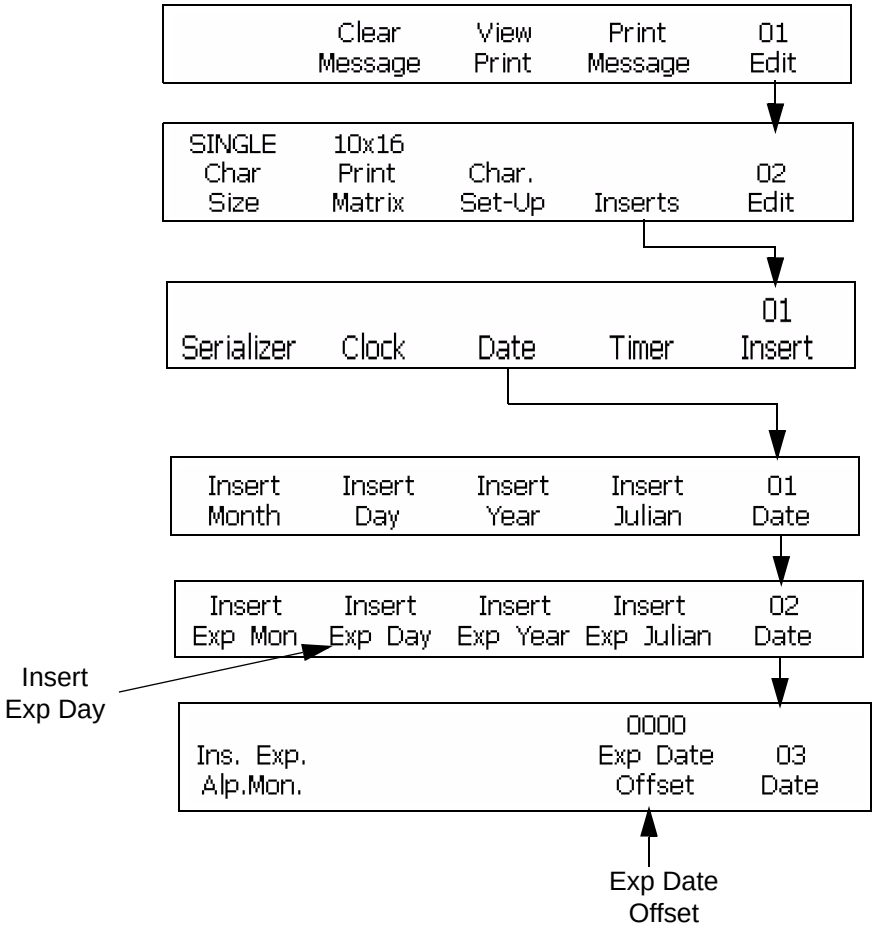


Figure 6-36: Accessing Frame <03 DATE>

Expiration Year Insert

This procedure describes how to put an expiration year insert into a message. The expiration year insert is a two-digit character that indicates that the product expires in that year. The value for the insert depends on the internal clock of the printer and the Set DayRoll rollover function (see "Set the Date Roll" on page 7-14). You must set the expiration date offset to indicate the expiry date (from the current date) on the product. When the internal clock of the printer changes, the printer updates the insert. You can add two separate expiration year inserts per message.

Example: If the current date is November 24th, 2006 and you set the expiration date of the product to be 60 days from the current date, then the printer prints 07 for the expiration year insert. The value 07 indicates the year 2007 (60 days from the current date).

Procedure

1. Begin in the Frame <02 Date>. Refer to Figure 6-37 on page 6-47.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F3 to select <Insert Exp Year>. The insert appears in the message.
4. Press F5 to go to Frame, <03 Date>. Refer to Figure 6-37.
5. Press F4 to select <Exp Date Offset>. The following appears in the display screen:

```
Enter Offset Days(1-2048)->

   <Use CANCEL to exit with no change>
```

6. Enter the number of days that can pass before the product expires. The entry must be in between 1-2048 (2048 days indicate 5½ years approximately).
7. Press the ENTER key. The insert appears in the message and Frame <03 Date> appears in the display screen.

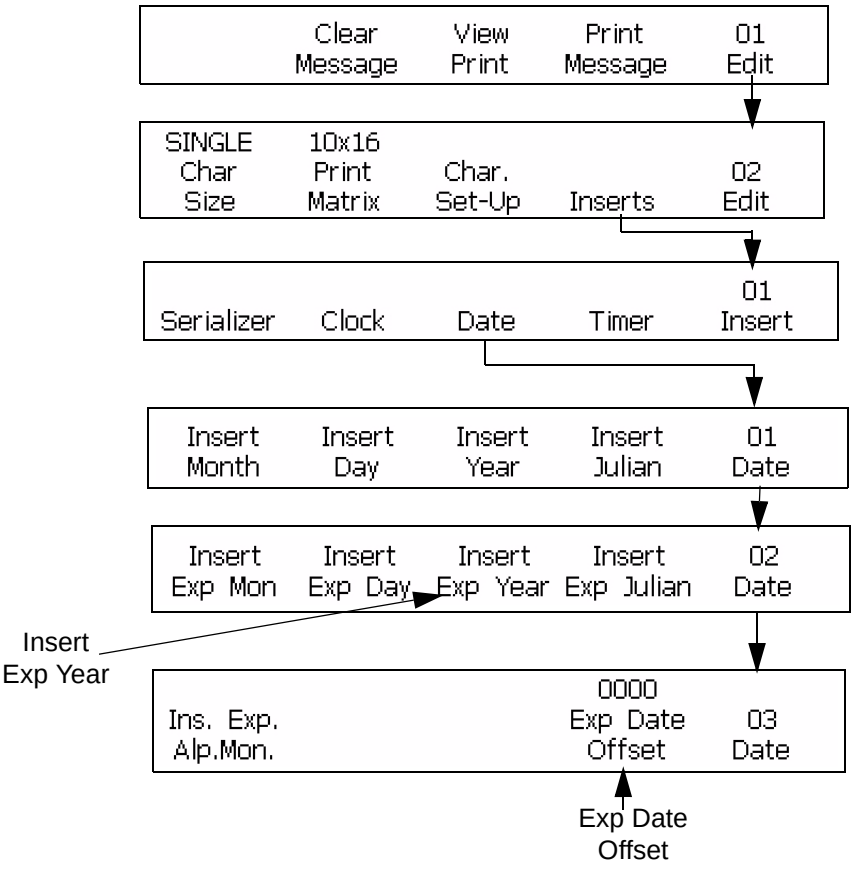


Figure 6-37: Accessing Frame <03 DATE>

8 To add a separate expiration year insert, repeat steps 1 through 7 but, begin in the Frame <05 Date>. Set the offset value in the Frame <06 Date>.

Expiration Julian Date Insert

This procedure describes how to put an expiration Julian date insert into a message. The expiration Julian date insert is a three-digit number that indicates that the product expires on that day of the year. A value of 001 indicates the first day of the year, and a value of 365 (or 366) indicates the last day of the year.

The value for the insert depends on the internal clock of the printer, but you must set the time when the product expires from the current date. When the internal clock of the printer changes, the printer updates the insert. You can add two separate expiration Julian date inserts per message.

Example: If the current Julian date is 012 (January 12) and you set the expiration date offset of the product to be 14 days from the current date,

then the printer prints 026 for the expiration Julian date insert. The value 026 indicates January 26 (which is 14 days from the current date).

1. Begin in the Frame <02 Date>. Refer to Figure 6-38 on page 6-49.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F4 to select <Insert Exp Julian>. The insert appears in the message.
4. Press F5 to go to Frame <03 Date>.
5. Press F4 to select <Exp Date Offset>. The following appears in the display screen:

```
Enter Offset Days(1-2048)->

   <Use CANCEL to exit with no change>
```

6. Enter the number of days that can pass before the product expires. The entry must be in between 1-2048 (2048 days indicate 5½ years).
7. Press the ENTER key. The insert appears in the message and Frame <03 Date> appears in the display screen.

Note: *To add a second expiration Julian date insert, repeat steps 1 through 7 but begin in the Frame <05 Date>. Set the offset value in the frame <06 Date>.*

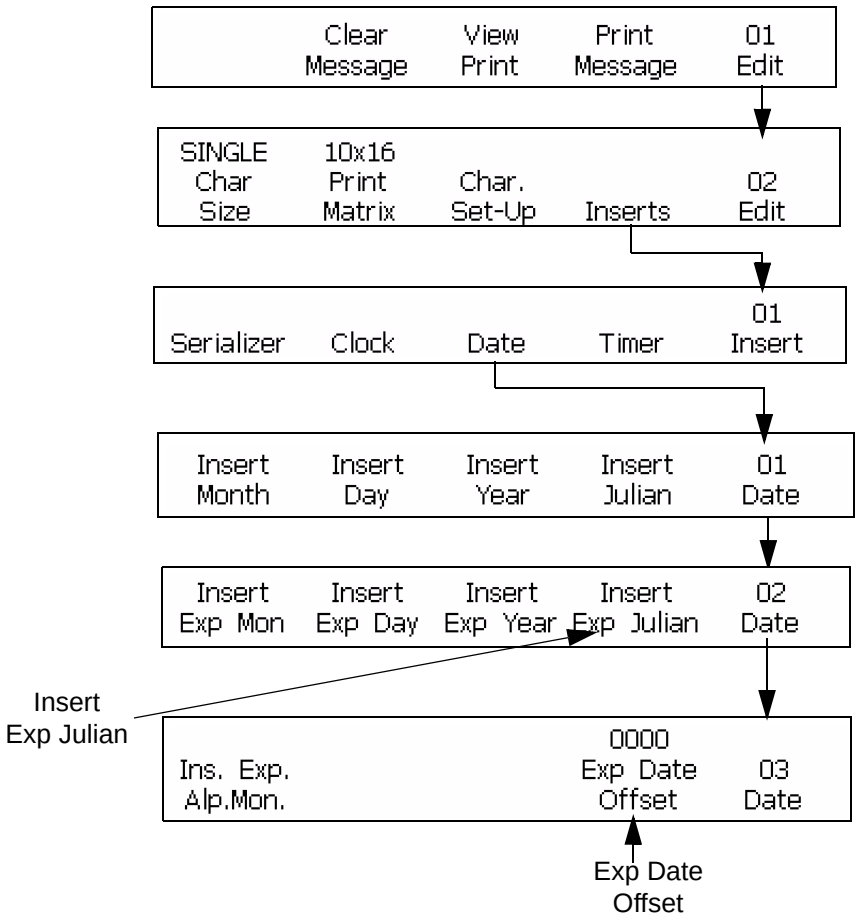


Figure 6-38: Accessing Frame <03 DATE>

Serializer Insert

This procedure describes how to put a serializer insert into a message.

A serializer is an alphanumeric counter value that is added into a message and automatically changed by the printer. When the signal from the product detector is received, the message is printed and the serializer (that is a counter) gets updated. You can add two separate serializer inserts (serializer-1 and serializer-2) per message.

The operator defines the serializer parameters of the printer. Before you insert a serializer into the message, you must set the following serializer parameters for either serializer selected.

The parameters of the serializer insert are shown in Table 6-13.

Parameters	Explanation
Start Value	The start value is the first value to get printed. The value must be less than the max. count (end value) and from 00000000--99999999 (if the content has numbers only). The alphanumeric arrangement and length of the end value depends on the start value. You can configure the Start value in upper case and lower case alpha mode.
Max Count (End Value)	The value that the counter reaches at the end of the count. The value must be greater than the starting value, and from 00000001--99999999 (if the start value has numbers only). The end value length and alphanumeric arrangement depends on the Start Value configuration. You can configure the value in upper case and lower case alpha mode.
Count Up/ Down	Set the serializer: • <UP> to update the value in a positive (upward) direction • <DOWN> to update the value in a negative (downward) direction
Constant	The counter increases or decreases by this value. The setting must be from 1--99.
Wrap Around	Set the serializer • <ON> to begin again at the start value after the serializer reaches the end value • <OFF> to stop the printing after the serializer reaches the end value
Repeat Count	Set the number of times you must print the message with the same serializer value before you update the value. The setting must be from 1--9999.
Off Increment Serializer	Set the second serializer to increase after the first serializer has rolled over (reached its End value)
Current Value	You can change the Starting Value to a current value. The changes to current value must match the alphanumeric arrangement and length of the start value
Current Repeat	You can change the Repeat Count value to a current repeat value. The setting ranges from 1-9999

Table 6-13: Serializer Insert Parameters

You must reload the message to make any changes to the serializer parameters. The serializer in the display screen will not change if the serializer is updated, but changes in the printed message. Serializers store their current values unless the F4<Print Message> button is pressed, which resets the serializers.

Procedure

1. Begin in the Frame <01 Serial>. Refer to Figure 6-39 on page 6-52.
2. Use the arrow keys to move the cursor to the location in the message where you need the serializer to appear.
3. Press F1 to select <Start Value>. The following appears in the display screen:

```
   Enter Start Value -->

<Use CANCEL to exit with no change>
```

4. Enter the starting value. The alphanumeric arrangement and length of the end value depends on the starting value. The alphanumeric mode shows, 0=a or 0=A and 9=j or 9=J.

   Note: *When you enter the starting value, you can enter the letters instead of numbers.*

5. Press the ENTER key. Frame <01 Serial> appears in the display screen again.

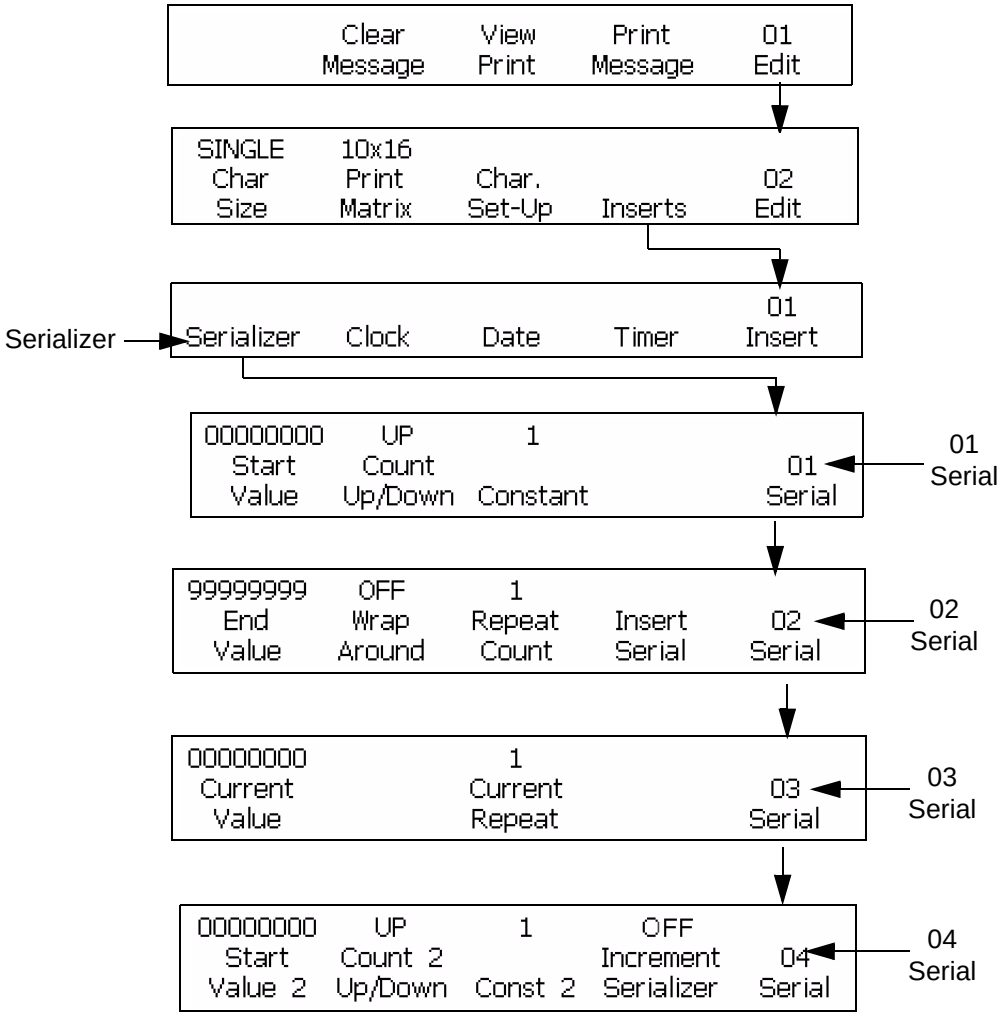


Figure 6-39: Accessing Frame <01 Serial>

6 See the current setting above <Count Up/Down>. Press F2 to change the setting (Up, Down).

7 Press F3 to select <Constant>. The following appears in the display screen:

```
Enter Constant (1-99) -->

 <Use CANCEL to exit with no change>
```

8 Enter the constant. The entry must be from 1-99.

9 Press the ENTER key. Frame <01 Serial> appears in the display screen.

10 Press F5 to go to Frame <02 Serial>. Refer to Figure 6-39.

11 Press F1 to select the End Value. The following appears in the display screen:

```
    Enter End Value -->

<Use CANCEL to exit with no change>
```

12 Enter the end value (the value the serializer stops at or moves over). The end value length and alphanumeric arrangement must match the starting value. The alphanumeric mode shows, 0=a or 0=A and 9=j or 9=J.

Note: *For example if the starting value is 0AA85, then the end value can be 9ZZ99. Both the start and the end values need the same alphanumeric arrangement and length.*

13 Press the ENTER key. Frame <02 Serial> appears in the display screen.

14 See the current setting above <Wrap Around>. Press F2 to change the setting (ON, OFF).

15 Press F3 to select <Repeat Count>. The following appears in the display screen:

```
Enter Repeat Cnt.(1-9999)->

    <Use CANCEL to exit with no change>
```

16 Enter the repeat count. The entry must be from 1-9999.

17 Press the ENTER key. Frame <02 Serial> appears in the display screen.

18 Press F4 to select <Insert Serial>. The starting value of the serializer is inserted in the message.

19 To insert a second serializer in the message, repeat steps 1 through 18 but begin in the Frame <04 Serial>.

20 To make the second serializer increment after the first serializer has rolled over or reached a value that is more than its end value:

a. Press ENTER to reach the Frame <04 Serial>

b. Press F4 and change the <Increment Serializer> value to ON.

c. Set F2 <Wrap Around> to ON in the Frame <02 Serial>.

21 Press the F5 key to go to Frame <03 Serial>.

22 Press the ENTER key. Frame <03 Serial> appears in the display screen.

The Timer Insert

This procedure describes how to put a timer insert into a message. You can use one timer insert per message.

A timer insert is a time code that contains the numbers or alphabets (or a combination of numbers or alphabets) and indicates the time of the day. This feature keeps the information confidential so that the persons who know the code only can understand the code.

The internal clock of the printer updates the timer insert but you must set the parameters before you include the insert into the message. When the internal clock of the printer changes, the printer updates the insert automatically (according to the setting made in the <Update Interval> option).

Note: *When the timer select is set to 2, the insert operates as a counter that prints the number of time intervals that have occurred in a day. If the timer select is set to 4, the insert operates as a timer that prints the time of day at a required interval.*

The parameters of the timer insert are shown in Table 6-14.

Parameters	Explanation
Timer Select	Select the total number of digits or characters that you require to have in the insert. You have two options: • Two • Four
Update Interval	Select the interval (in minutes) of when you need the insert to get updated. Your have two options • 15, 30, or 60 minutes for a two-digit insert • Every minute or every 15, 30, or 60 minutes for a four-digit insert
Timer Format	If you need each digit in the insert to remain as a digit or appear as an alphabet (that indicates the digit), then select the parameter: You can select separately for each digit. Replace the digits with the alphabets to change the time into a code. Character/digit cross-reference: A=0 B=1 C=2 D=3 E=4 F=5 G=6 H=7 I=8 J=9

Table 6-14: The Parameters of the Timer Insert

Note: *When you use two-digit insert, the printer does not allow to set the interval to 1. If you set the interval to 1, the result can be a number greater than two digits because there are more than 99 minutes in a day.*

Timer Example: If the current time is 8:45 a.m. (according to the internal clock of the printer), and the timer parameters are set to the following:

<Timer Select> = 4

<Update Interval> = 30

<Timer Format> Parameters:

- <Char. 1 Code> is set to an alphabet
- <Char. 2 Code> is set to a digit
- <Char. 3 Code> is set to an alphabet
- <Char. 4 Code> is set to a digit

The insert in this example appears like <A8D0> in the message. The decoded insert is 0830 (08:30 a.m. with a 24-hour clock) because A=0 and D=3. The following is a cross-reference of alphabets to digits (assigned by the printer):

A=0 B=1 C=2 D=3 E=4

F=5 G=6 H=7 I=8 J=9

The insert is not updated again until the time reaches 9:00 a.m, because the <Update Interval> is set to 30 (meaning every 30 minutes). The insert reads <A9A0> at that point, where the decoded insert is 0900 (9:00 a.m. with a 24-hour clock). The timer insert is updated every 30 minutes.

Procedure

1. Begin in the frame <01 Timer>. Refer to Figure 6-40 on page 6-56.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. See the current setting above <Timer Select>. If necessary, press F1 to change the setting (Settings: 2, 4).
4. See the current setting above <Update Interval>. If necessary, press F3 to change the setting (Settings: 1, 15, 30, 60).

   Note: *If the <Timer Select> option is set to 2, the printer will not allow 1 for the setting selections in the <Update Interval> option.*
5. Press the F2 key to select <Timer Format>. Frame <01 Format> appears in the display screen. Refer to Figure 6-40 on page 6-56.

   Note: *If the <Timer Select> option is set to 2, the options <Char 1 Code> and <Char 2 Code> are not active. If set to 4, all of the options in the frame are active.*

6 See the current setting found above each of the active options in the Frame <01 Format>. If you want to change the setting from a digit to an alphabet (or an alphabet to a digit), press the function key found below that option.

7 Press the ENTER key. Frame <01 Timer> appears in the display screen.

8 Press F4 to select <Insert Timer>. The timer insert appears in the message.

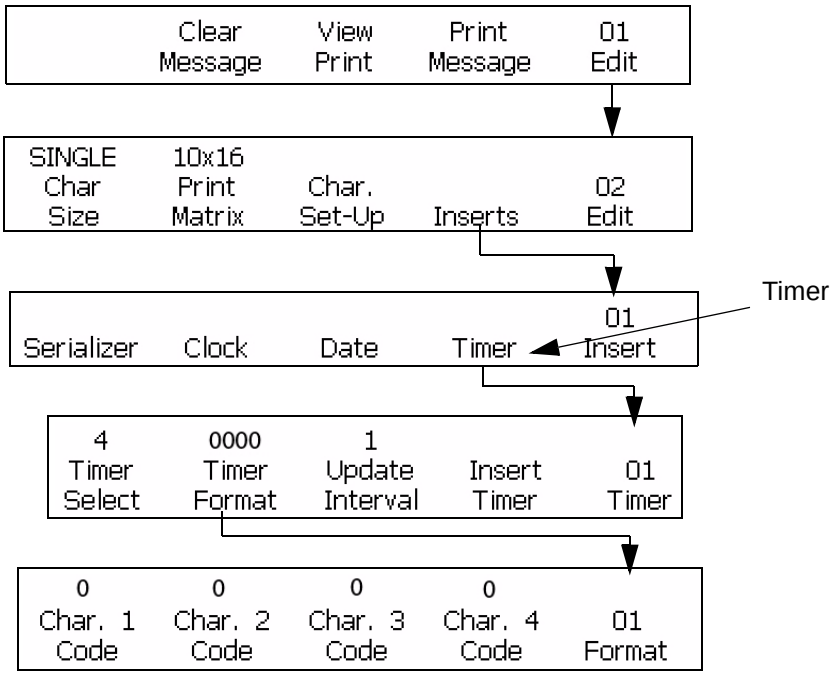


Figure 6-40: Accessing Frame <01 Timer>

Programmable Shift Timer

This procedure describes how to insert a programmable time-based (shift timer) code into a message.

Use a programmable time-based code to insert a single character (alphanumeric) work-shift code (A-Z, 0-9) in a printed message. This "code" depends on the time of the work-shift. You can insert a maximum of 24 shifts that uses 26 letter options and 24 number options.

The printer has default shifts, codes, and times setup for the operator. The internal clock of the printer starts at midnight (00:00) and ends at 11:59 p.m. (23:59). The default 24-shift start times and codes are as follows:

The shifts and their timings are shown in Table 6-15.

Shift	Timer	Shift	Timer
Shift 1 (A)	00:00	Shift 13 (M)	12:00
Shift 2 (B)	01:00	Shift 14 (N)	13:00
Shift 3 (C)	02:00	Shift 15 (O)	14:00
Shift 4 (D)	03:00	Shift 16 (P)	15:00
Shift 5 (E)	04:00	Shift 17 (Q)	16:00
Shift 6 (F)	05:00	Shift 18 (R)	17:00
Shift 7 (G)	06:00	Shift 19 (S)	18:00
Shift 8 (H)	07:00	Shift 20 (T)	19:00
Shift 9 (I)	08:00	Shift 21 (U)	20:00
Shift 10 (J)	09:00	Shift 22 (V)	21:00
Shift 11 (K)	10:00	Shift 23 (W)	22:00
Shift 12 (L)	11:00	Shift 24 (X)	23:00

Table 6-15: Shift Timer

Note: *If you want to use the default shift settings shown in* Table 6-15 *(without changes), go to the next section ("Shift Insert Procedure" on page 6-60). It is not necessary to complete the next procedure.*

Setup Procedure

Complete the following steps to change a programmable time-based (shift timer) code insert from the default setting or from a previous setting:

1. Begin in the frame <03 System>. Refer to Figure 6-41 on page 6-58.
2. Press F1 to access <Shift Set-Up>. Frame <01 Shift> appears.
3. Press F4 to access <Max. Shifts> to set the number of shifts. You can create a maximum of 24 shifts. The following dialog box appears in the display screen:

```
Enter Shifts Used(1-24)->

 <Use CANCEL to exit with no change>
```

4. Enter the number of shifts you need. The entry must be from 1-24.

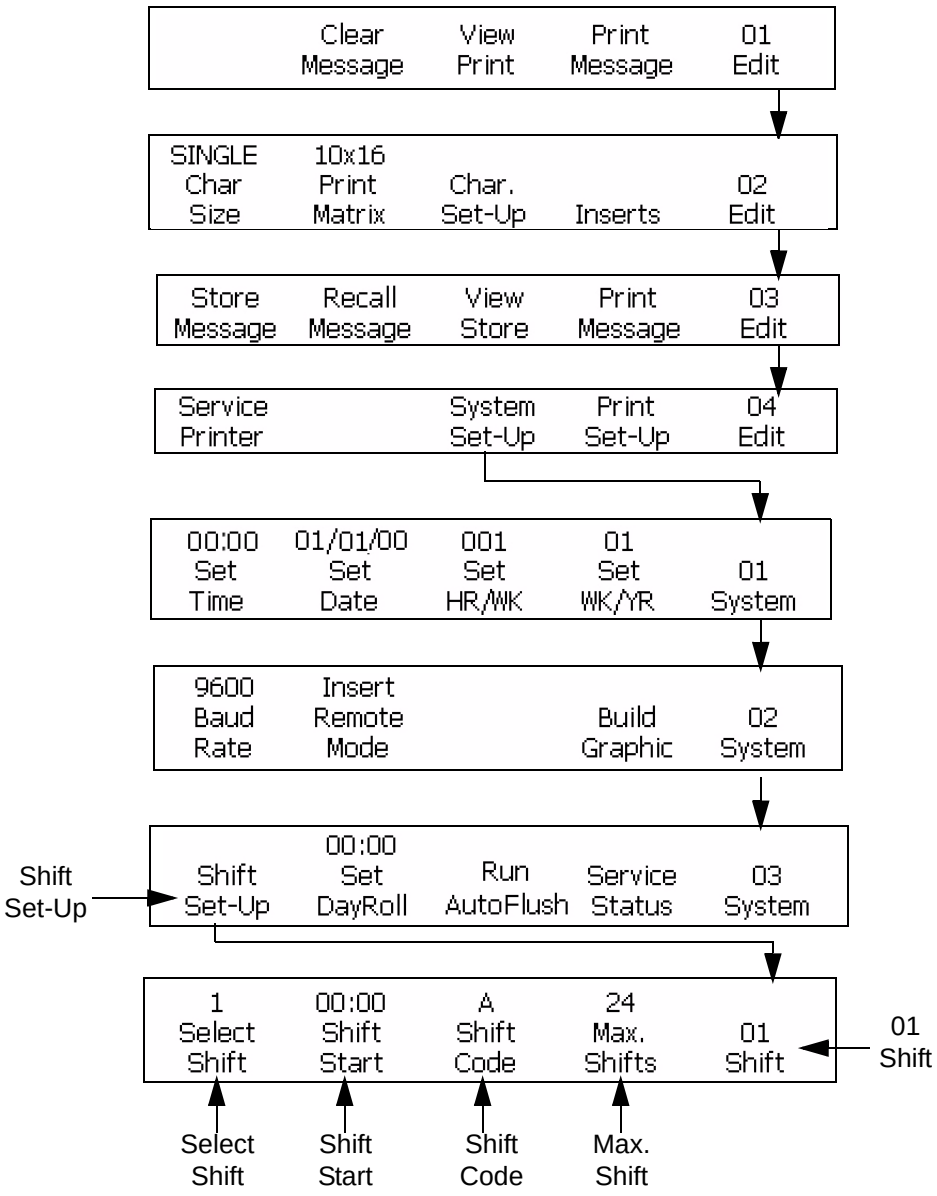


Figure 6-41: Accessing Frame <01 Shift>

5 Press the ENTER key. The number you entered appears above F4 <Max. Shifts> in the display screen. Frame <01 Shift> appears.

6 Press F1 to access <Select Shift>, so that you can select the number of the work-shift to edit. The following appears in the display screen:

```
Enter Shifts Number(1-xx)->

   <Use CANCEL to exit with no change>
```

7 Enter the shift number. The entry must be from 1-24 (or the maximum number found above F4<Max Shifts>). Refer to Figure 6-41 on page 6-58.

Note: *The largest shift number depends on the maximum value of the shifts. If the maximum value of the shifts is 12, then the largest shift number entered can be 12.*

8 Press the ENTER key. The number you entered appears above <Select Shift> in the display screen.

9 Press F2 to access <Shift Start> and enter the starting time for the work-shift. The following dialog box appears in the display screen:

```
      Enter HHMM ---->

<Use CANCEL to exit with no change>
```

10 Enter the starting time for the current work-shift number.

11 Press the ENTER key. The number you entered appears above <Shift Start> in the display screen. Frame <01 Shift> appears.

Note: *Make sure that every start time (shift) you enter is in an order where the shift value increases. For example, enter 0100 for shift 1, 0200 for shift 2, and 0400 for shift 3. Do not enter the sequences like 0100 for shift 1, 0400 for shift 2, and 0200 for shift 3. This rule does not apply to the shift code that can be any character in any order.*

12 Press F3 to access <Shift Code> and enter a single alphanumeric work-shift code (A-Z, a-z, or 1-24). The following appears in the display screen:

```
Enter Alphanumeric Code ->

   <Use CANCEL to exit with no change>
```

13 Enter the single alphanumeric work-shift code (A-Z, a-z, or 1-24).

14 Press the ENTER key. The number or letter you entered appears above <Shift Code> in the display screen. Frame <01 Shift> appears.

Shift Insert Procedure

Complete the following steps to insert your work-shift code into a message:

1. Begin in the Frame <02 Clock>. Refer to Figure 6-42.
2. When you press F1 to select <Insert Shift>, the work-shift code is inserted at the current location of the cursor.

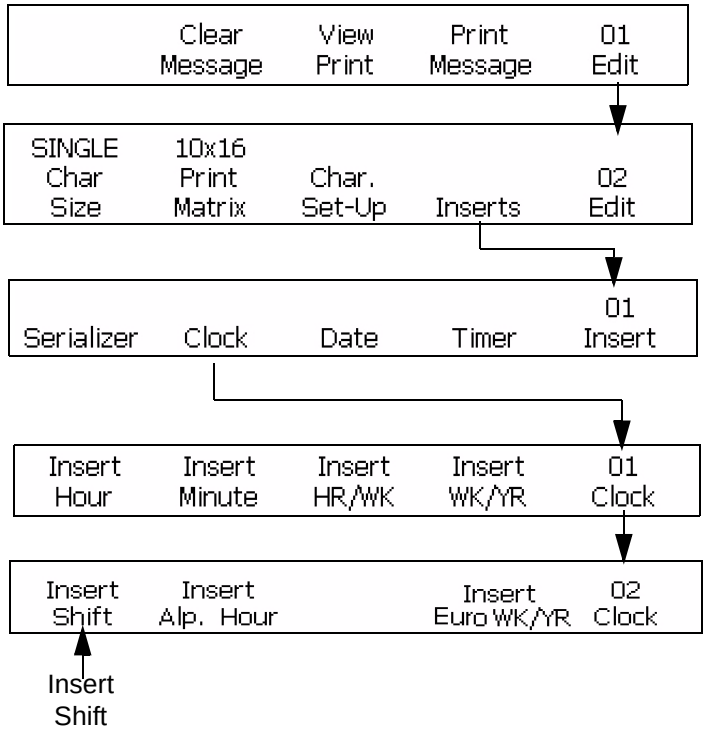


Figure 6-42: Inserting a Work-shift Code into a Message

Appended Message Insert

This procedure describes how to put an appended message insert into a message. An appended message insert is fixed text that you can add to the current message. The insert enables the operator to create messages that are longer than the original message. The messages that are saved under the <F1 Store Message> found in the Frame <03 Edit> are potential options for an appended message insert.

Note: *Both the appended and non-appended message lengths depend on the maximum number of characters in the message.*

Both the appended message extension and current message must have the same print matrix.

If both nozzle-1 and nozzle-2 displays, contain an Appended Message insert, then both of these nozzles print the same appended message selected in F3<Appended Message>.

Procedure

You can have one appended message insert per message. The appended message insert appears always at the end of the original message when you print the message. The position of the appended insert does not depend on the cursor location. This procedure describes how to create an appended message insert and gives a description on how to create a new message that accepts the appended message insert.

1 Begin in the Frame <01 Edit>. Refer to Figure 6-43.

Figure 6-43: Frame <01 Edit>

2 Press F2 and the SHIFT key at a time to select <Clear Message>. The existing message disappears from both nozzle-1 and nozzle-2 display screens.

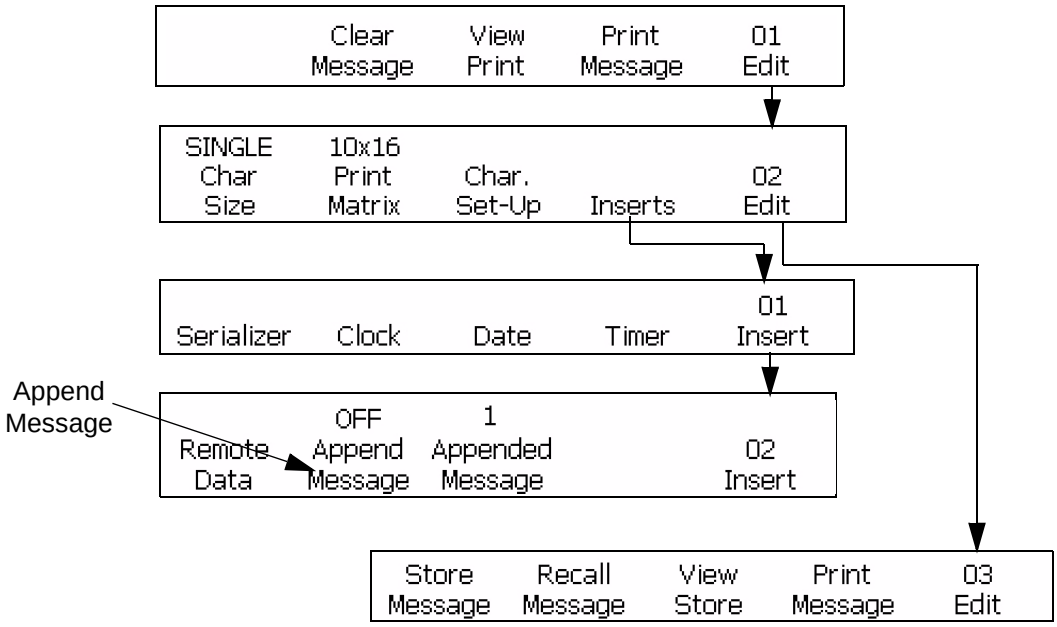


Figure 6-44: Accessing Frame <03 Edit>

3 Use the editor to create the information to appear in the appended message insert (information that will be attached to the end of the message).

4 Navigate to Frame <03 Edit>. Refer to Figure 6-44.

5 Press F1 to select <Store Message>. The following appears in the display screen:

```
Enter Message Name --->

 <Use CANCEL to exit with no change>
```

6 Enter a name for the message that is appended.

7 Press the ENTER key. Frame <03 Edit> appears in the display screen, and the appended message that appears in the display screen is stored.

8 Navigate to the Frame <01 Edit>. Refer to Figure 6-44 on page 6-61.

9 Press the SHIFT key and the F2 key at a time to select <Clear Message>. The existing message disappears from the display screen.

Note: *Before you create the message that contains the appended message insert, make sure that the message and the appended message insert, use the same print matrix. The print matrix of the message and the insert must be same for the printer to print the message.*

10 Use the keyboard to create the message that contains the appended message insert or refer to "Recall a Stored Message" on page 6-82 to recall an existing message.

11 Navigate to Frame <02 Insert>. Refer to Figure 6-44 on page 6-61.

12 See the current setting above <Append Message> and make sure that the setting is set to <ON>

- If the setting is <OFF>, press the F2 key to change the setting to <ON>.
- If the setting is <ON>, continue to the next step

13 Press F3 to select <Appended Message>. The following appears in the display screen:

```
Message to append -> Edit
  <Use Cursors to change value>
```

14 Use the cursors to see the contents of current messages.

15 Press the ENTER key to select the message created and saved at the start of this procedure to append. Frame <02 Insert> appears in the display screen again.

Note: *The selected appended message is included in the current message if both has the same print matrix. An error message is displayed if the print*

matrices for the appended message does not match the current message or the combined message length is very long.

16 To save the new appended message, refer to "Store a Message" on page 6-81 for more information.

17 Load the message into the printer. Refer to "How to Load a Message into the Printer" on page 6-80 for more information.

18 Print the message.

When the printer receives the signal from a product detector, the printer prints a message with the appended message insert.

Remote Data Insert

This procedure describes how to put a remote data insert into a message. A remote data insert downloads the fixed or variable information from a host computer (PC) into the message.

The remote data insert is used if a host PC is connected through a serial cable to the Comm 2 port of the printer.

You can use only one remote data insert per message.

If the displays of both Nozzle-1 and Nozzle-2 contain a remote data insert, then both nozzles print the same remote data insert.

To use the remote data insert, set the F2 <Remote Mode> menu in the Frame <02 System> to Insert.

The operator must send two carriage returns (press the Enter key) in the sequence for the two last keystrokes of the data string. The operator must send the carriage returns in the sequence to send data from a remote location. The two carriage returns are not included in the remote data length. For example, the operator configures a remote data buffer size with the length of five characters. The operator can enter the message "HELLO" from a remote location followed by two carriage returns.

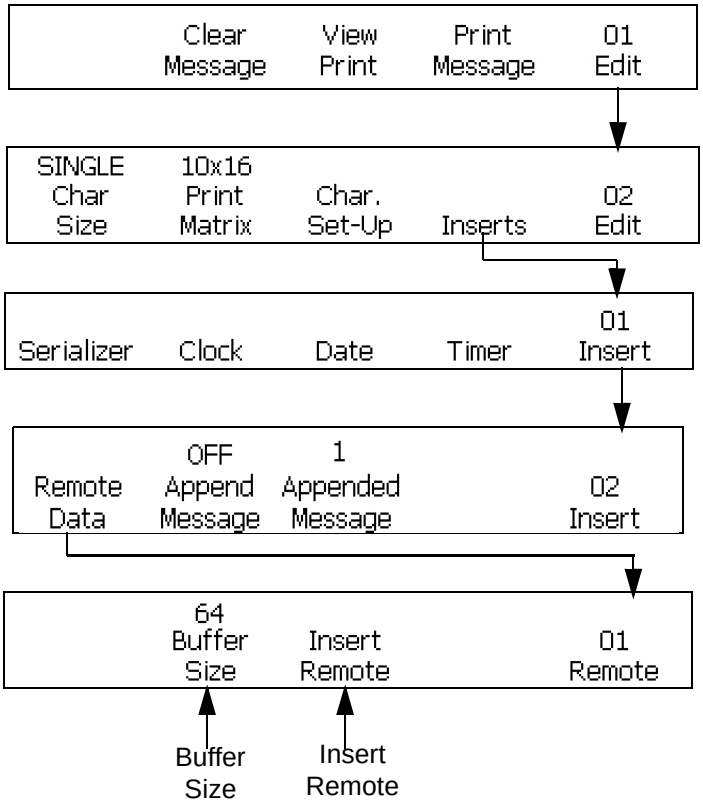


Figure 6-45: Accessing Frame <01 Remote>

Procedure

1. Begin in the frame <01 Remote>. Refer to Figure 6-45.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. Press F2 to select <Buffer Size>. The following appears in the display screen:

   Enter Buffer Size (1-64)-->

4. Enter the buffer size. The entry must be from 1-32.

   The buffer size is the maximum number of characters that appear in the longest line of the remote data insert.

   Example: If the longest line is eight characters, you must enter the number eight for the buffer size (carriage return is not required).

5. Press the ENTER key. Frame <01 Remote> appears in the display screen again.

6 Press F3 to select <Insert Remote>. The insert appears in the message as "insert remote symbols". Refer to Figure 6-46.

An insert remote symbol appears for each character entered in <Buffer Size>. If the <Buffer Size> option is set to 8, eight insert remote symbols (or dots) appear in the message, where the remote information is printed. Refer to Figure 6-46.

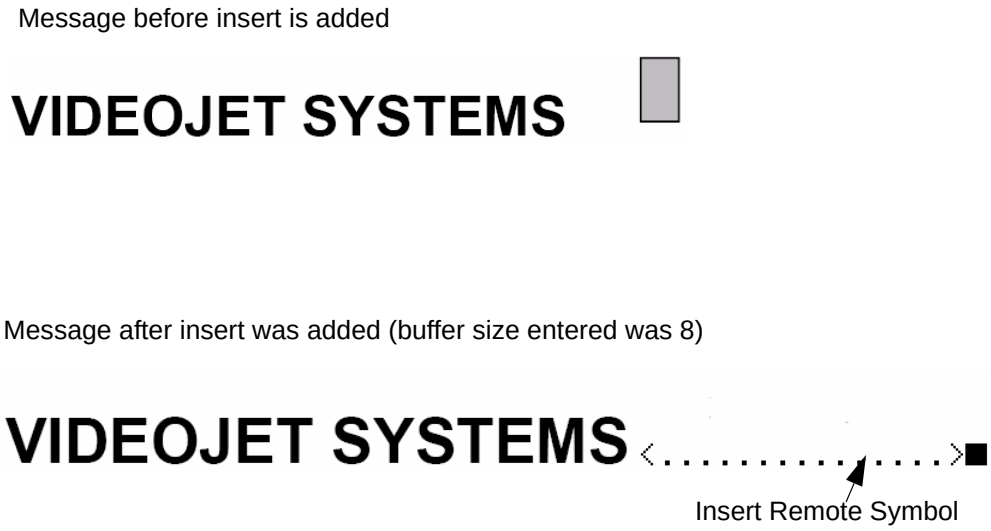


Figure 6-46: Message with a Remote Insert

Graphic Insert

This section allows the operator to create and insert graphic symbols (like logos or custom characters).

Create a Graphic Symbol

Do the following tasks to create a graphic symbol:

1 Begin in the frame <02 System>. Select <Build Graphic>. Refer to Figure 6-47.

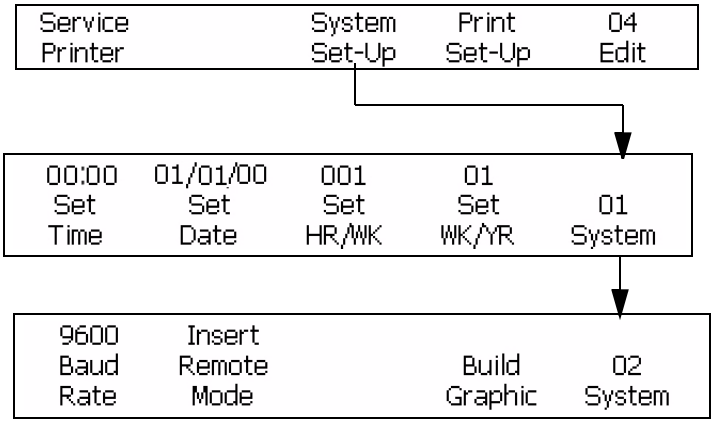
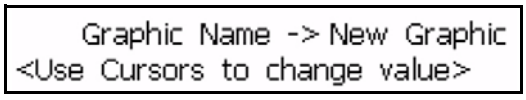


Figure 6-47: Accessing Frame <02 System>

2 The following appears in the display screen:



3 Press the ENTER key to create a new graphic. To edit a graphic, use the   keys to select a stored graphic name in this field.

4 Press the ENTER key to open the Graphic Editor, and create and save new graphics or custom characters.

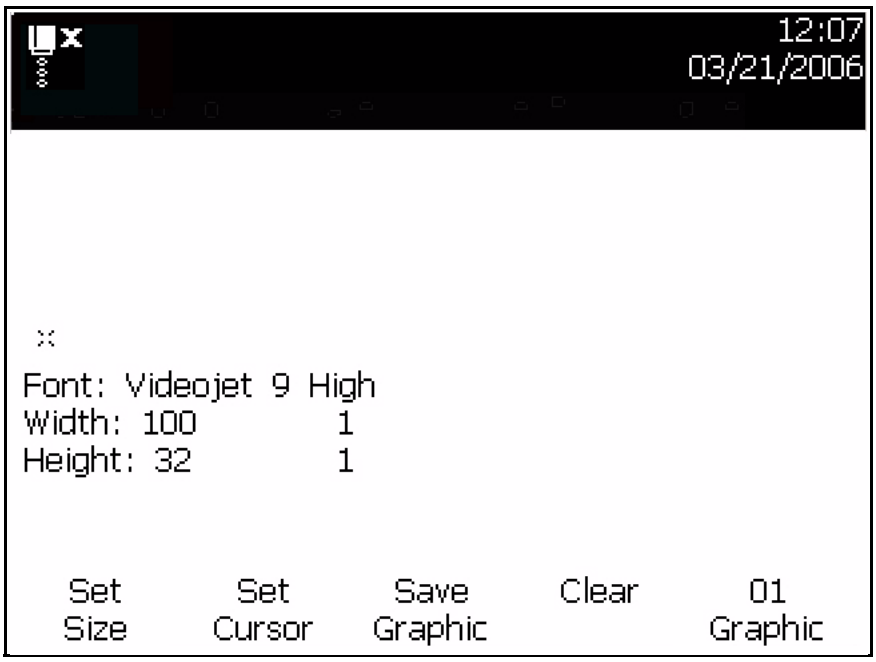


Figure 6-48: Graphic Editor

5 Use a combination of the keys from the keypad to control the cursor and create the required graphic. Refer to Table 6-16 on page 6-69 for the key combinations and their functions.

Note: *You can enter typed text after you use the <Set Cursor> option in the <01 Graphic> menu.*

Note: *The print matrix size selected in F2<Print Matrix> in the <02 Edit> frame sets the size of the font for text entered in the graphics.*

6 If necessary, use the Copy Block and Paste Block options found in the <F2 Graphic> frame to edit the Graphics.

7 Crop the graphic insert to the required size (refer to "How to Crop a Graphic" on page 6-70 for instructions).

8 Press F3 <Save Graphic> in the <01 Graphic> frame to save the name of your graphic.

How to Change the Graphic Size

Do the following tasks to change the height and width of the graphics:

1 Begin in <01 Graphic> and select F1 <Set Size>.

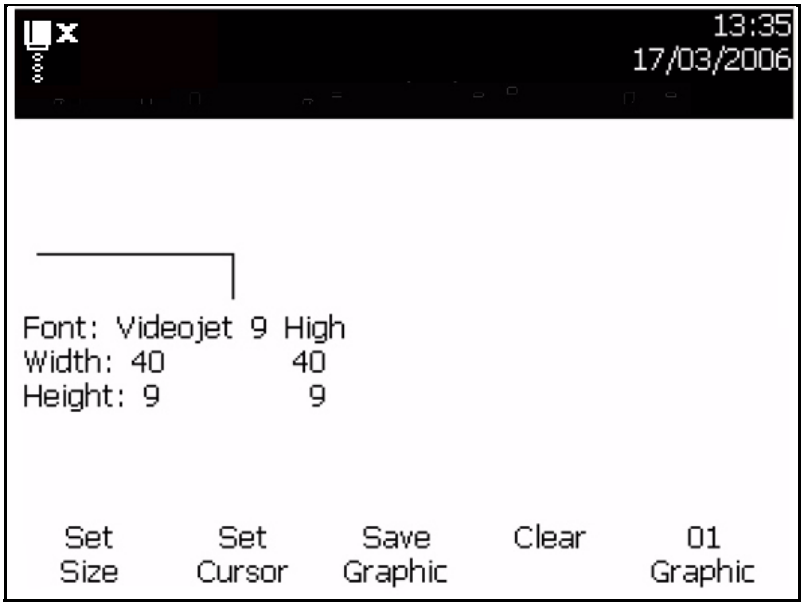


Figure 6-49: Editor Attributes

2 Use the keys to change the height of the graphic insert to the required size.

3 Use the keys to change the width of the graphic insert to the required size.

The Block Editing Function

The block editing function uses an area of the graphic that has the shape of a rectangle (also referred to as a block) to edit. You can delete this block or make a copy of this block.

Do the following tasks to select a block after you create a graphic insert:

1 Select F1<Set Block> in the <02 Graphic> frame. The boundary lines of a block appear in the graphic editor.

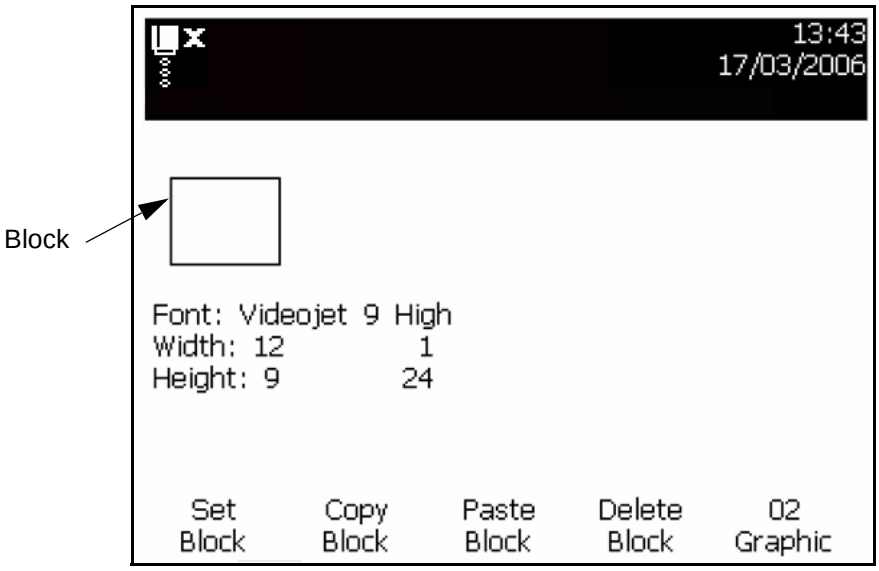


Figure 6-50: Block Editor

2 Use a series of key combinations on the keypad to adjust the boundary lines (refer to Table 6-16 for the different key combinations).

The key combinations and their functions are shown in Table 6-16.

Key Combinations	Functions
caps + ◀ or ▶	Move the right edge
shift + ◀ or ▶	Move the left edge
shift + ▲ or ▼	Move the top edge
caps + ▲ or ▼	Move the bottom edge
◀, ▶, ▲ and ▼	Move the whole boundary line by one dot at a time

Table 6-16: The Key Combinations and Functions

Key Combinations	Functions
	Move the whole boundary line by ten dots at a time

Table 6-16: The Key Combinations and Functions (Continued)

3 When the boundary line position and size adjustments are complete, press the ENTER key. The boundary lines of the rectangle disappear.

How to Delete a Selected Block

Do the following tasks to clear the contents of a selected block:

1 Select F1<Set Block> in the <02 Graphic> frame. Make sure that the block appears in the editor and set the block on the area that you must delete.

2 Select F4<Delete Block> in the <02 Graphic> frame to clear the contents of the selected block.

Copy and Paste a Selected Block

Do the following tasks to copy and paste a selected block:

1 Select F1<Set Block> in the <02 Graphic> frame.

2 Press the ENTER key to see the selected block appear in the window.

3 Set the block over the area you must copy. Select F2<Copy Block> in the <02 Graphic> frame.

4 Move the cursor to the required location where you must paste the contents of the selected block. The upper left corner of the graphic is pasted at the cursor location.

5 Select F3<Paste Block> in the <02 Graphic> frame.

6 Press the ENTER key to paste the contents of the selected block in the location selected.

How to Crop a Graphic

When you crop a graphic, the software cuts the edges of a graphic to remove the empty space around the graphic.

1 Select F1<Set Size> in the <F1 Graphic> frame.

2 Press the ENTER key to see the preview of a frame that shows the current boundaries of the graphic.

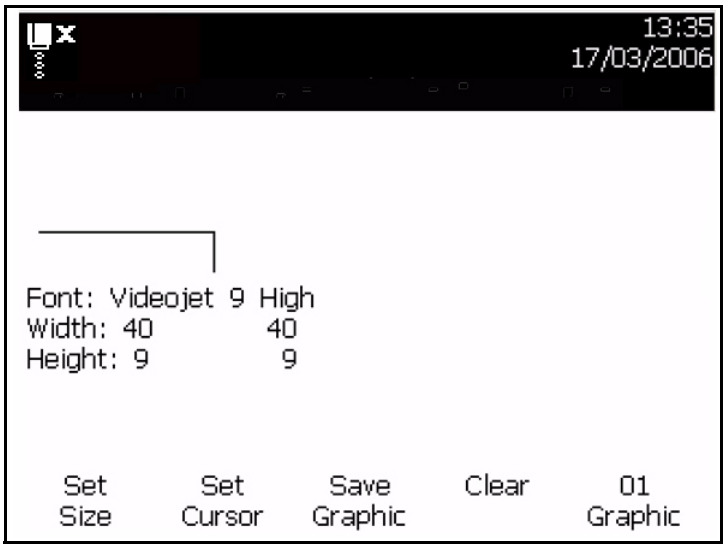


Figure 6-51: Cropping Graphic

3 Use a combination of controls to adjust the size of the frame until boundaries of the graphic are as required. Refer to Table 6-17 for the controls used and their functions.

Table 6-17 shows the key combinations and their functions used to define the boundary.

Key Combinations	Functions
, , and	Adjust the frame size, one dot at a time
alt, , , and	Adjust the frame size, ten dots at a time

Table 6-17: The keys to Crop Graphic

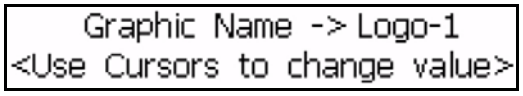
4 Navigate to F3<Save Graphic> in the <01 Graphic> frame to save the graphic.

How to Insert a Saved Graphic

This procedure describes how to insert saved graphics (created in the Frame 02 System under the menu F4 <Build Graphic>) into a message:

1 Set the cursor position where you need the graphic, in the current message.

2 Select the frame F4<Insert Graphic> in the frame <03 Insert>. The following appears in the display screen:



3 Use the right/left cursor keys to select a maximum of 25 possible graphic names.

4 When the necessary graphic name appears, press the ENTER key to insert the graphic image into the message at the cursor location.

Note: *If the necessary graphic name is not shown, then the print matrix for the current nozzle display does not match the print matrix of the graphic.*

The Bar Code Insert

This procedure describes how to put a bar code insert into a message. There are eight types of bar code inserts that you can add into the message.

The bar code types and their descriptions are shown in Table 6-18.

Bar Code Type	Description
3 of 9	Use for both upper case alphabets, and numerals
2 of 5 Interleaved (2 of 5I)	Use for an even number of numerals
EAN-8	Use for numerals only
EAN-13	Use for numerals only
UPC-A	Use for numerals only
UPC - E	Use for numerals only
Code 128	Use for both alphabets and numerals
EAN 128	Use for both alphabets and numerals
2D Data Matrix	Use for both alphabets and numerals

Table 6-18: Bar Code Types

If the space allows, you can use any number of bar code inserts in the message.

The zero(s) are added to fixed length barcodes that do not have the correct amount of data.

Correct checksum is included in each barcode automatically. The code 128 and EAN 128 barcodes do not display the checksum, but their checksum values are encoded in the printed bar pattern.

The print matrix for the current nozzle display must be either 10x16 high or higher to select the data that you can read below the barcode. To activate the barcode that you can read, press F1 above the selection <Bars W/Charac.> until the text "Below" appears.

Note: *When the data is entered, you can see the completed image of the barcode in the current nozzle display.*

Note: *In the editor, data entered for a barcode always appears above the barcode whether the <Bars W/ Charac.> is either None or Below. This feature allows the operator to check the barcode content. But the printed barcode either has the data you can read below or no data (None). The feature depends on the F1 <Bars W/ Charac> setting in the frame <01 Barcode>.*

When you add an insert to a barcode, validate if the insert contains the correct data content and the length required. To delete a barcode, put the cursor inside the barcode and press F4 <Delete Barcode>. The option F4 <Delete Barcode> is found in the Frame <01 Barcode> or Frame <02 Barcode>.

When the barcodes are configured to print in a reverse image barcode mode, the bars become the spaces and the spaces become the bars for a normal barcode. See "Reverse Image Bar Code" on page 7-30.

Procedure for 3 of 9 or 2 of 5I Bar Codes

1. Begin in the frame <01 Barcode>. Refer to Figure 6-53 on page 6-75.
2. Use the arrow keys to move the cursor to the location in the message where you need the insert to appear.
3. You can add a 3 of 9 or 2 of 5 Interleaved (2 of 5I) barcode into the message. The data limit of the barcodes depend on the message length:
   - To insert a 3 of 9 bar code, press F2 to select <INSERT 3 OF 9>. Enter the required upper case alphanumeric data for this barcode. The editor displays the barcode image for that data.
   - To insert a 2 of 5I bar code, press F3 to select <INSERT 2 OF 5I>. Enter the required numeric data for this barcode. The editor displays the barcode image for that data.
4. Use the correct keys on the keyboard to enter the barcode information.

   Note: *The 2 of 5I code requires an even number of digits entered. To make the odd number entry even, a zero is added in the first position to the odd number entry. For example, a code of "12345" becomes "012345" in the print (checksum is not included).*

Figure 6-52: Messages with Bar Code Inserts

Procedure for EAN-8 and EAN-13 Bar Codes

1. Begin in the frame <03 Insert>. Refer to Figure 6-53.
2. Press F1 to select <Bar Code>. Then press F5. Frame <02 Barcode> appears in the display.
3. Use the arrow keys to move the cursor to the location in the message where you need the bar code insert to appear.
4. You can add a bar code into the message:

   To insert an EAN-13 bar code, press F2 to select <Insert EAN-13>. Enter 12 numeric digits for this barcode (the 13th-digit checksum is calculated automatically). The editor displays the barcode image for that data. Refer to Figure 6-54.

   To insert an EAN-8 bar code, press F3 to select <Insert EAN-8>. Enter seven numeric digits for this barcode (the 8th-digit checksum is calculated automatically). The editor displays the barcode image for that data. Refer to Figure 6-54.
5. Use the correct keys on the keyboard to enter the information that must appear in the bar code.

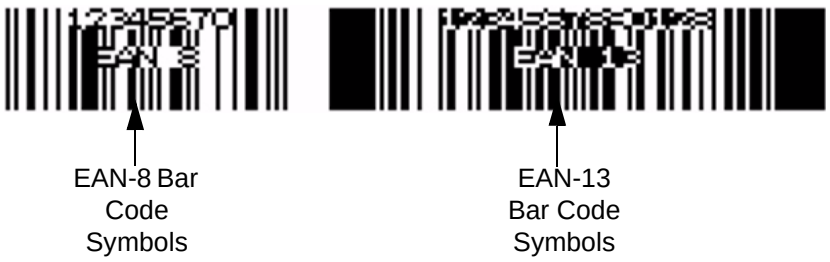


Figure 6-54: Messages with Bar Code Inserts

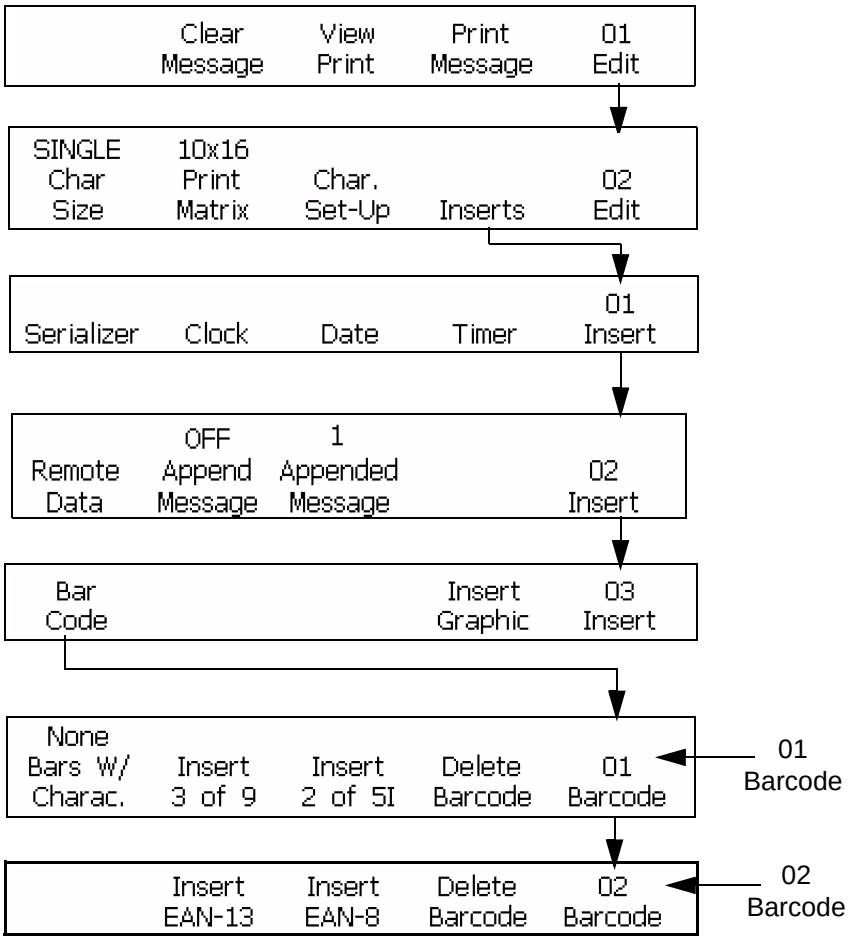


Figure 6-53: Accessing Frame <02 Barcode>

Procedure for UPC-A and UPC-E

1 Begin in the frame <03 Insert>. Refer to Figure 6-55.

2 Press F1 to select <Bar Code>. Then press F5. Frame <04 Barcode> appears in the display. Refer to Figure 6-55.

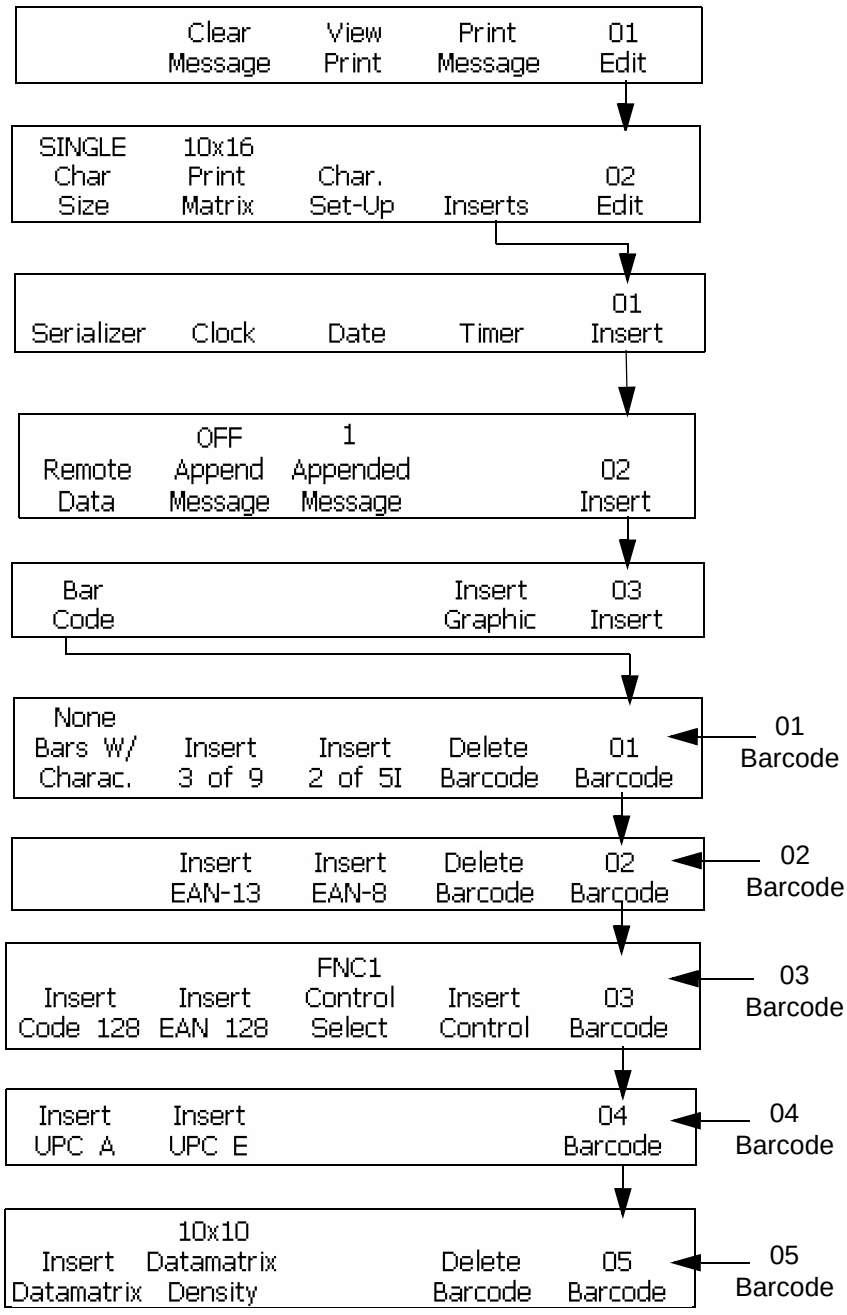


Figure 6-55: Accessing Frame <05 Barcode>

3 Use the arrow keys to move the cursor to the location in the message where you need the bar code insert to appear.

4 Add a bar code into the message.

- To insert an UPC-A bar code, press F1 and select <Insert UPC-A>. Enter the 11 numeric digits for this barcode (the 12th-digit checksum is calculated automatically). The editor displays the barcode image for that data.
- To insert an UPC-E bar code, press F2 to select <Insert UPC-E>. Enter seven numeric digits for this barcode (the eighth-digit checksum is calculated automatically). The editor displays the barcode image for that data.

Figure 6-56: Messages with Bar Code Inserts

Note: *The first digit of the UPC-E barcode must be 0.*

Procedure for Code 128 and EAN 128 Bar Codes

1 Begin in the frame <03 Insert>. Refer to Figure 6-53 on page 6-75.

2 Press F1 to select <Bar Code>. Then press F5 for two times. Frame <03 BarCode> appears in the display. Refer to Figure 6-55 on page 6-76.

3 Use the arrow keys to move the cursor to the location in the message where you need the bar code insert to appear.

4 Add a bar code into the message:

- To insert a Code 128 bar code, press F1 to select <Insert Code 128>. Enter the necessary alphanumeric data for this barcode. The editor shows the barcode image for that data. Refer to Figure 6-57.
- To insert an EAN 128 barcode, press F2 to select <Insert EAN 128>. Enter the necessary alphanumeric data for this barcode. The editor shows the barcode image for that data. The EAN 128 barcode does not need a FNC1 function code to lead the code because the FNC 1 code is included in the barcode automatically.

Figure 6-57: Messages with Bar Code Inserts

5 Use the correct keys on the keyboard to enter the bar code information.

Control Select, Insert Control, and Function Characters	
	When you enter a Code 128 bar code, you can use the <Control Select> option to include FNC1, FNC2, FNC3 or FNC4 function code. Normally, the function codes are not needed for the Code 128 barcode. The FNC1 control code is added at the first position automatically for the EAN 128 barcode, so that the operator does not need to include another. <Insert Control> uses four special function codes by name FNC1, FNC2, FNC3, and FNC4. The special function codes depend on the code 128 application. • The EAN 128 bar code accepts FNC1 only. • Before the operators can insert the function codes, they must have good knowledge on functions of the insert. Else, the operator creates incorrect barcodes. • F3 <Control Select> selects the function character. • F4 <Insert Control> inserts the character into the message.

6 The operator can enter in the necessary data to make the Code 128 and EAN 128 barcode. There is no need to use switch codes because the printer configures the data automatically into the correct formats.

2D Data Matrix Barcodes

Introduction

The Excel Dual Nozzle supports 2D Data Matrix barcodes in matrix size from 10x10 to 24x24. The 2D data matrix provides a compressed code for use in a wide range of applications where there is a limit in space.

When inserting 2D data matrix barcode into a message, use the same method as 1D barcode (like EAN128 or UPCA). You must follow some guidelines while you create the message to include the barcode. Select the Font of minimum height to contain the 2D Barcode. For the 10x10, 12x12, 14x14, and 16x16 2D Data Matrix barcodes, select the 10x16, 16x24 Print Matrix and DOUBLE Char Size. For 18x18, 20x20, 22x22, and 24x24 2D Data Matrix barcodes, select the 16x24 Print Matrix and TRIPLE Char Size. These selections provide the greatest readability of the barcodes.

Procedure

1 Begin with the frame <02 Edit>.

2 Press F2 <Print Matrix> until the necessary Print Matrix is displayed (10x16, 10x16 HS, 16x24 or 16x24 HS).

3 Press F1 <Char Size> until the necessary Char Size is displayed.

4 From the frame <05 Barcode> (Refer to Figure 6-55 on page 6-76), Press F1 <Insert Datamatrix> to insert Data matrix barcode.

5 Press F2 <Datamatrix Density> to select the necessary Data matrix Density.

6 Enter the necessary data into the Data Matrix barcode.

7 To change to standard text entry, exit from the barcode inserts.

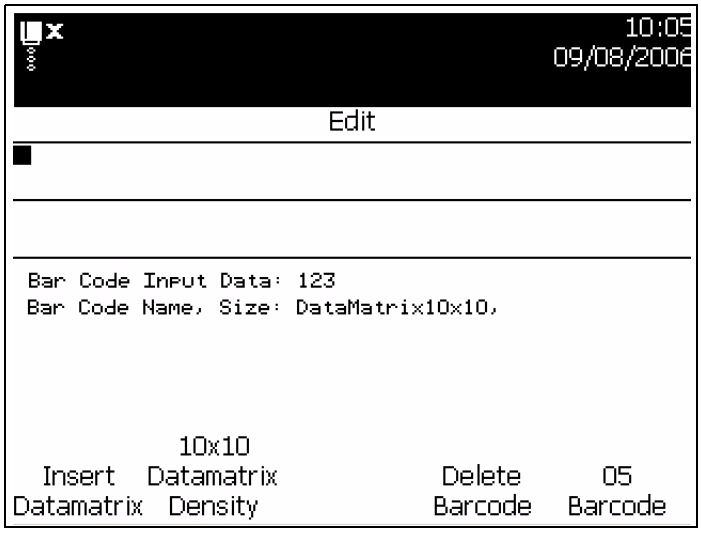


Figure 6-58: 2D Data Matrix Barcodes

How to Remove an Insert from the Message

This procedure describes how to delete an insert from a message. The procedure to remove an insert from the message is same for all types of inserts (except barcodes).

This procedure describes how to remove an insert from the message.

Procedure

1. Use the arrow keys to put the cursor on the required insert.
2. Press the DELETE key. The sequence of events that occur are as follows:
   a. The full insert is removed from the message.
   b. The position of the cursor is not changed.
   c. The next characters, or inserts, or spaces in the message line move towards left until the first character, insert, or space takes the current position of the cursor.

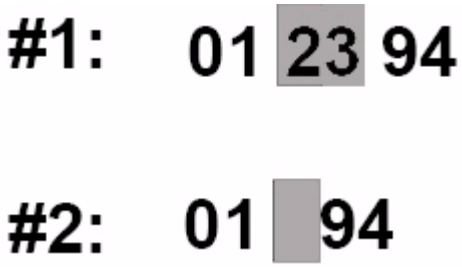


Figure 6-59: Removing an Insert

How to Load a Message into the Printer

You can load a message into the printer after you have done any of the following:

- Created a new message
- Made changes to an existing message
- Recalled a message from the storage

Note: *A message that appears on the display screen does not indicate that the message is the last message loaded into the printer. The message can be a new message or a message that is edited. Always load the necessary message into the printer before printing to make sure that the correct message is printed.*

Procedure

1 Begin in the frame <01 Edit> or <03 Edit>. Refer to Figure 6-60.

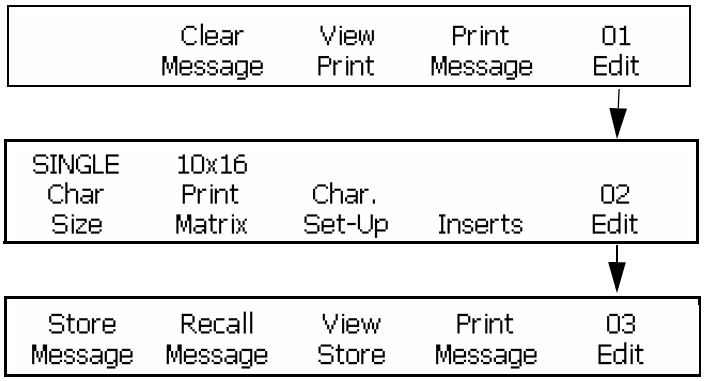


Figure 6-60: Frame <01 Edit>

2 Make sure the message you require to print appears in the display screen.

3 Press F4 to select <Print Message>. The text "Message Loaded" appears at the bottom of the display screen.

How to Store the Messages

The procedure in this section shows you how to do the following:

- Store a Message
- Recall a Stored Message
- View a Stored Message

Store a Message

When you create a new message or change an existing message, you can store that message in one of the 256 storage locations in the printer.

Procedure

1 Begin in the frame <03 Edit>. Refer to Figure 6-61 on page 6-82.

2 Make sure that the required message appears in the display screen.

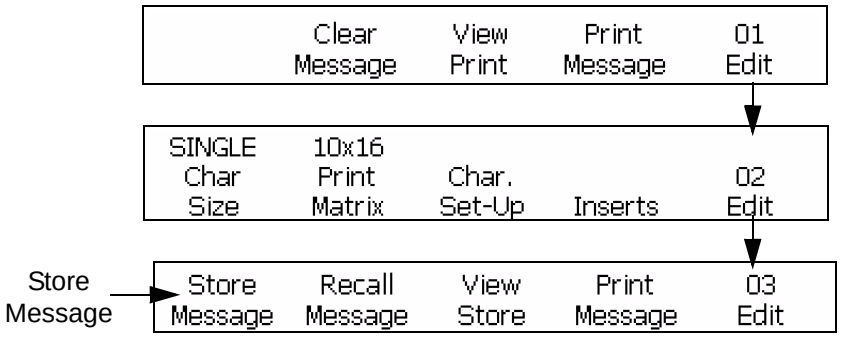
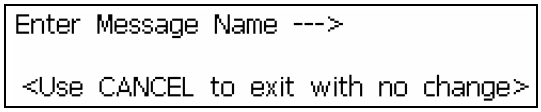


Figure 6-61: Accessing Frame <03 edit>

3 Press F1 to select <Store Message>. The following appears in the display screen:



4 Enter an alphanumeric name (1 to 8 characters the length).

5 Press the ENTER key. The message that appears in the display screen is stored in the location entered.

Recall a Stored Message

To recall a stored message, you must find the storage name of the message. When you find the storage name, recall the message, load the message into the printer and print the message.

If you do not know the name of the message, refer to "View Stored Messages" on page 6-83 for more information.

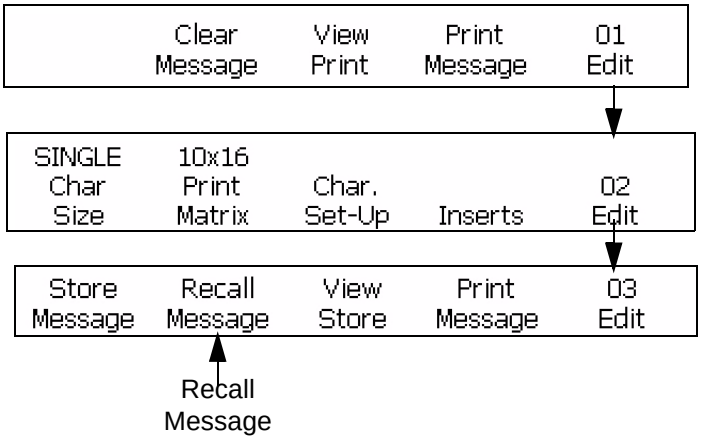


Figure 6-62: Accessing Frame <03 edit>

Procedure

1 Begin in the frame <03 Edit>.

2 Press F2 to select <Recall Message>. The following appears in the display screen:

```
Enter Recall Message -->

<Use CANCEL to exit with no change>
```

3 Enter in the name of the required message. The length of the message name must not be more than eight characters in length.

4 Press the ENTER key. The message stored by that name appears in the display screen.

Note: *Remember that you must load the message into the printer before you can print the message. Turn to "How to Load a Message into the Printer" on page 6-80 for more information.*

View Stored Messages

Refer to following section to see the messages stored in the printer memory at this time. The printer can store a maximum of 256 messages. You can use the cursors to see the stored messages. The operator can load and delete the messages from < View Store>. If you do not know the name of the storage location of a message, use the arrow keys to search through the names of the storage locations of the message.

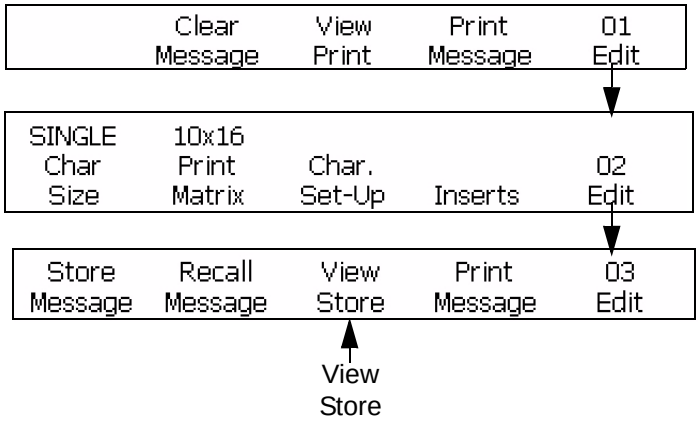
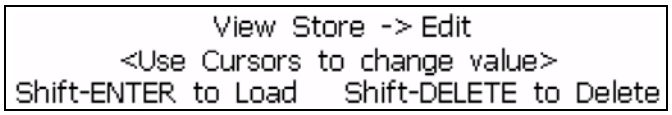


Figure 6-63: Accessing Frame <03 edit>

Procedure

1 Begin in the frame <03 Edit>. Refer to Figure 6-63 on page 6-83.

2 Press F3 to select <View Store>. The following appears in the display screen:



3 Use   keys to see the contents of all the stored messages.

When you change the stored message, use the arrow keys as shown below:

Arrow Key	Description
	Press this key to increment to the next message.
	Press this key to decrement to the next message.

Table 6-19: The arrow keys to Change the values

Select SHIFT+ENTER to load the message that appears in the display screen and select SHIFT+DELETE to delete the message from the storage.

Note: *The system will not allow to delete a message that is loaded at this time.*

Printing the Messages

This section describes the procedures to print a message when the signal from the product detector comes, or if there is a delay. The delay is after the printer receives the signal from the product detector.

The Conditions to Print a Message

Before you can print a message, make sure about the following:

- Press the Print Message to load the message into the printer.
- The green LED status light in the upper-right corner of the keyboard must be solid green in color. Also the status area must show the solid jet running icon. Press the PRINT key when the message "Printing" appears at the top of the display.

The green LED illuminates continuously when the printhead is on (indicated by the jet running icon) and the message is loaded.

Figure 6-64: Keyboard

Note: *While in the Service mode, press F3 <Test Print> found in the frame <01 Service> to print a loaded message at this time.*

Print a Message

This procedure describes how to print a message normally (without a delay).

Procedure

1. Make sure that the message you must print appears in the display screen.
2. Make sure that the message that appears in the screen is loaded into the printer:
   - If YES, continue to the next step.
   - Else, go to Frame <01 Edit>. Refer to Figure 6-65. Press F4 to select <Print Message>

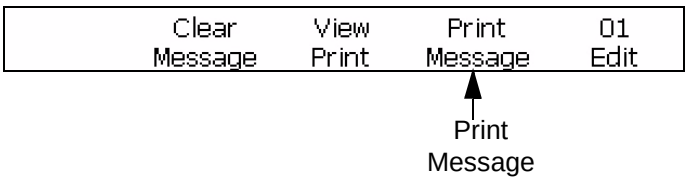


Figure 6-65: Frame <01 edit>

3. Make sure that the green LED is turned on and the solid jet running icon appears at the top of the display.
   - If YES, continue to the next step.
   - Else, press the HEAD key. Wait until the green LED flashes and the jet running icon appears in the status area.
   - Make sure that the green LED is solid and the jet running icon is seen at the top of the display.

- Else, press the PRINT key. If the light is not illuminated, and the Status Area shows "Not Printing" message, press the Print Message button.

When the printer receives a signal from the product detector, illuminated green LED and the solid jet running icon at the Status Area indicates that the printer can print a message from either nozzle.

Delay Printing of a Message

You can delay the printing of a message on the product after the printer receives the signal from the product detector. The delay in printing enables the operator to control the position of the message on the product to appear horizontally.

You can delay the printing of a message on the product after the printer receives the signal from the product detector. The delay in printing enables the operator to control the position of the message on the product.

The delay value is entered in the print strokes, and the entry must be from 0-7500 for inches.

The changes that occur because of the delay values, are the same in both nozzle-1 and nozzle-2 messages. If the starting points for messages in nozzle-1 and nozzle-2 display, do not align, then refer to “The Stroke and Drop Adjust” on page 7-32.

Refer to Figure 7-13 in “Set Print Delay” on page 7-22, for information on how to set the print delay.

Note: *To set the print delay, measure the distance from the product detector to the printhead (x). Next, measure the distance from the leading edge of the product to the point on the product from where you start the printing (y). Add x and y values. The value is the delay value you must enter. Refer to Figure 6-66. For the correct operation of the delay, set the correct encoder values.*

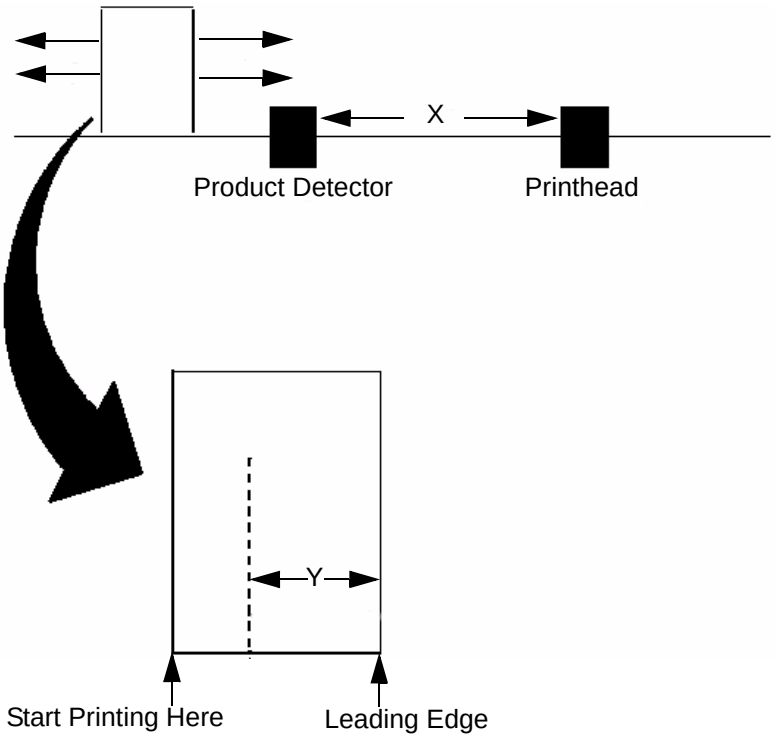


Figure 6-66: Delaying the Printing of a Message Example

The System and Print Setup

7

This chapter describes how to use the Software Summary Chart to perform the procedures necessary to prepare the system for printing.

This chapter contains the following topics:

- Software illustration standards
- How to view and reset the print count
- How to view and reset the product count
- Select the method to match the product speed
- Set the internal system clock
- Set the baud rate
- Set the remote mode to receive the external message
- Set auto repeat
- Service status
- Run autoflush
- Set print delay
- Set the print setup parameters
- 5 x 7 SL tower
- Reverse image bar code
- The stroke and drop adjust
- Set the language
- Set the keyboard
- Unit display
- Alternative zero
- The product detect
- Internal distance
- Active level
- System backup
- System restore

- System clone
- System upgrade

Software Illustration Standards

The illustration (Figure 7-1) shows how to use the software illustrations provided for each procedure to navigate through the software.

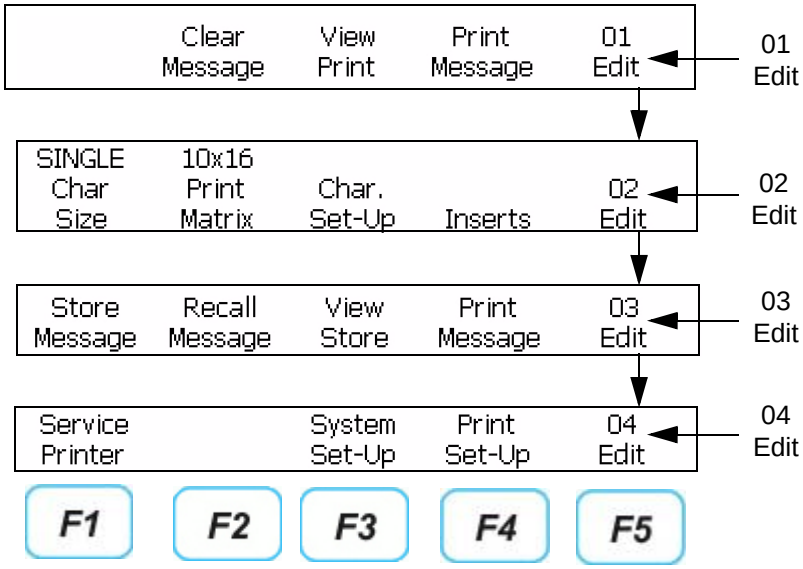


Figure 7-1: Software Illustration Example

Note: *Use the correct function (F) keys to move from one frame to another frame for a known procedure.*

How to View and Reset the Print Count

The procedures in this section describe how to see the current print count, and reset the print count to zeros. The print count gives the number of messages printed by the printer. The product count and print count are displayed in the frame <02 Print>.

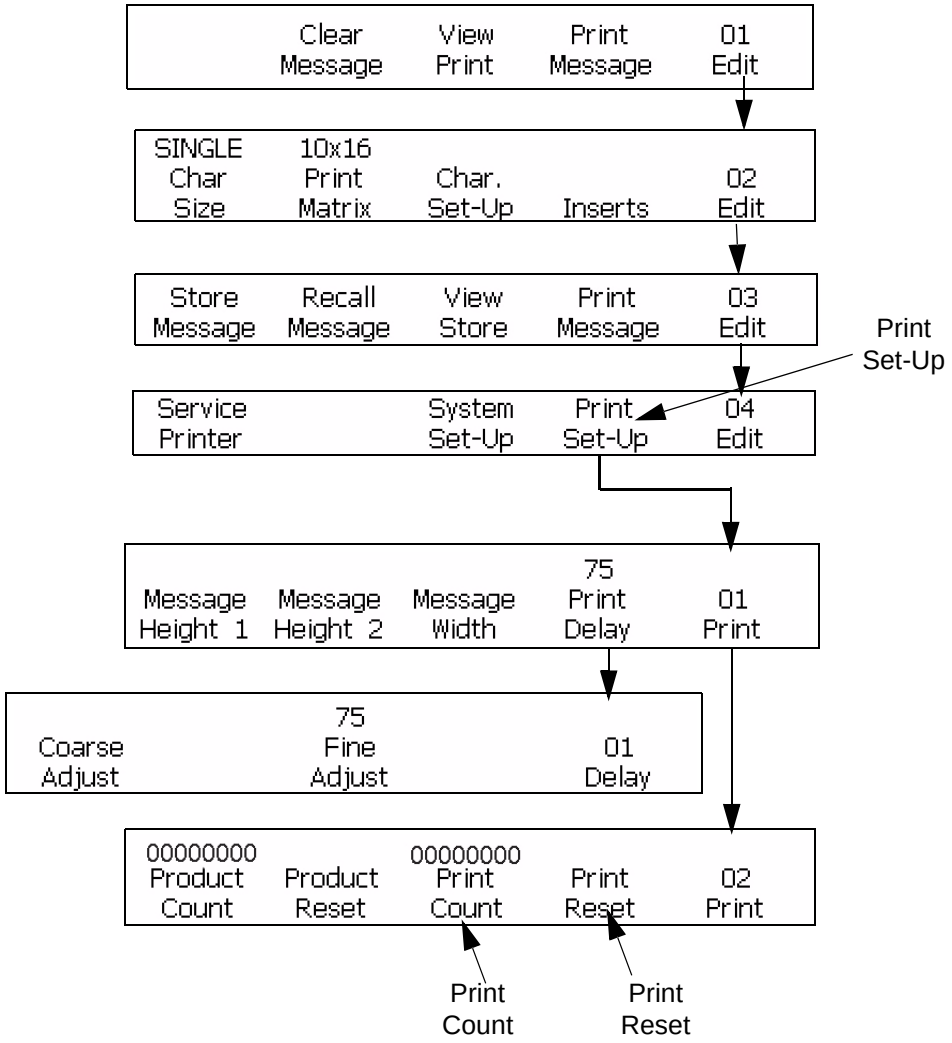


Figure 7-2: Access Menus <Print Reset> and <Print Count>

How to see the Print Count

This procedure shows you how to see the print count.

Procedure

1. Begin with the frame <02 Print>. Refer to Figure 7-2 on page 7-3.
2. You can see the current value above <Print Count>.

Reset the Print Count

This procedure shows you how to reset the print count to zeros.

Procedure

1. Begin with the frame <02 Print>. Refer to Figure 7-2 on page 7-3.
2. Press F4 to select <Print Reset>. The value above <Print Count> changes to zeros.

How to View and Reset the Product Count

The procedures in this section shows you how to see the current product count, and reset the product count to zeros. The product count is the number of signals from the product detector received by the printer. The product count is displayed in the frame <02 Print>.

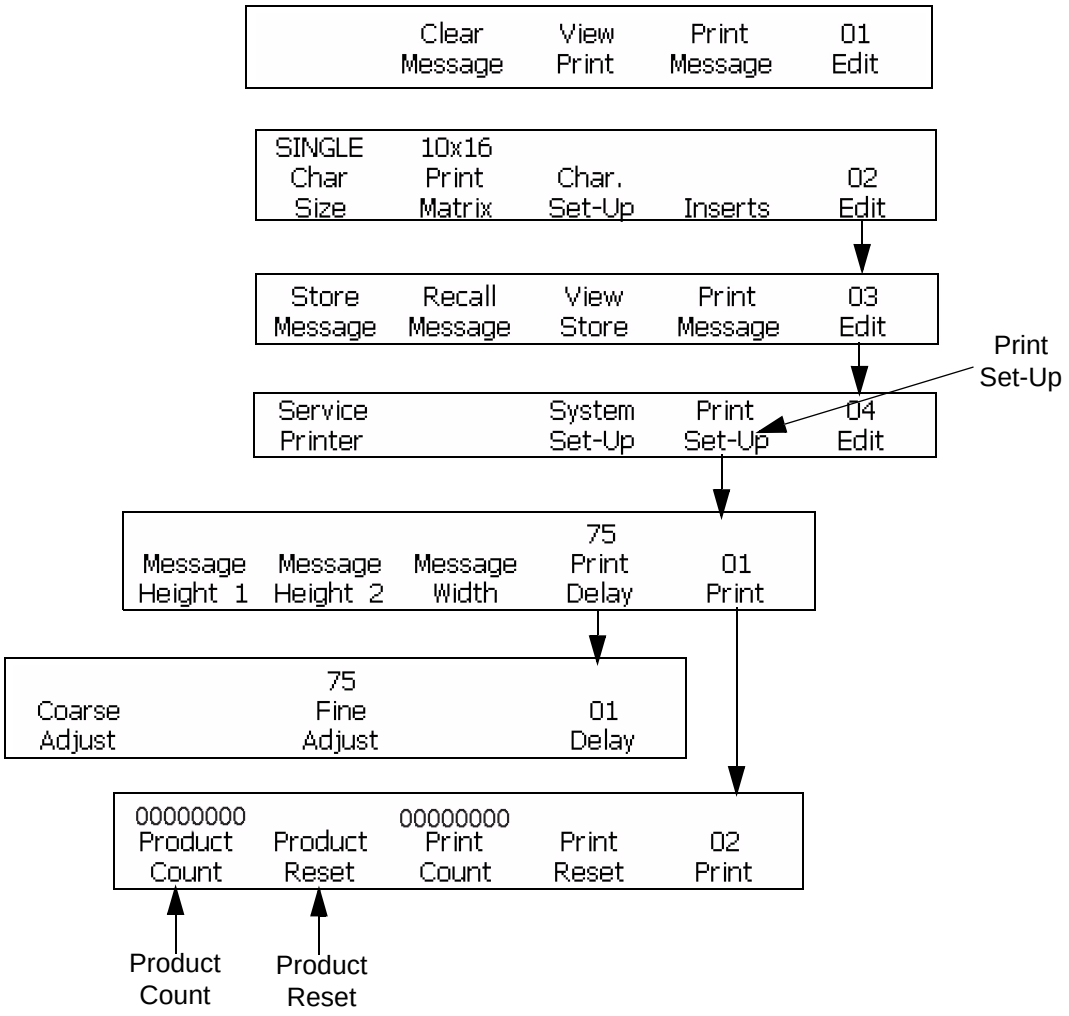


Figure 7-3: Access Frame <02 Print>

How to see the Product Count

This procedure shows you how to see the product count.

Procedure

1. Begin with the frame <02 Print>. Refer to Figure 7-3.
2. View current value above <Product Count>.

Reset the Product Count

This procedure shows you how to reset the product count to zeros.

Procedure

1. Begin with the frame <02 Print>. Refer to Figure 7-3 on page 7-5.
2. Press F2 to select <Product Reset>. The value above <Product Count> changes to zeros.

Select the Method to Match the Product Speed

The procedures in this section describe how to select the type of encoder, and how to enter the encoder settings for your application.

There are four types of encoder settings:

- Internal
- Direct
- Reduced
- Auto

Refer to Table 7-1 below to select the correct setting for your application.

If the Product Speed:	Then the Encoder Type Should Be Set to:
Constant	<Int> Internal
changes with the conveyor	<Reduced> External
	<Direct> External
Changes and cannot use an external encoder	<Auto> Automatic

Table 7-1: The selection of the correct setting for application

Note: *Only Direct and Reduced settings use the external encoder.*

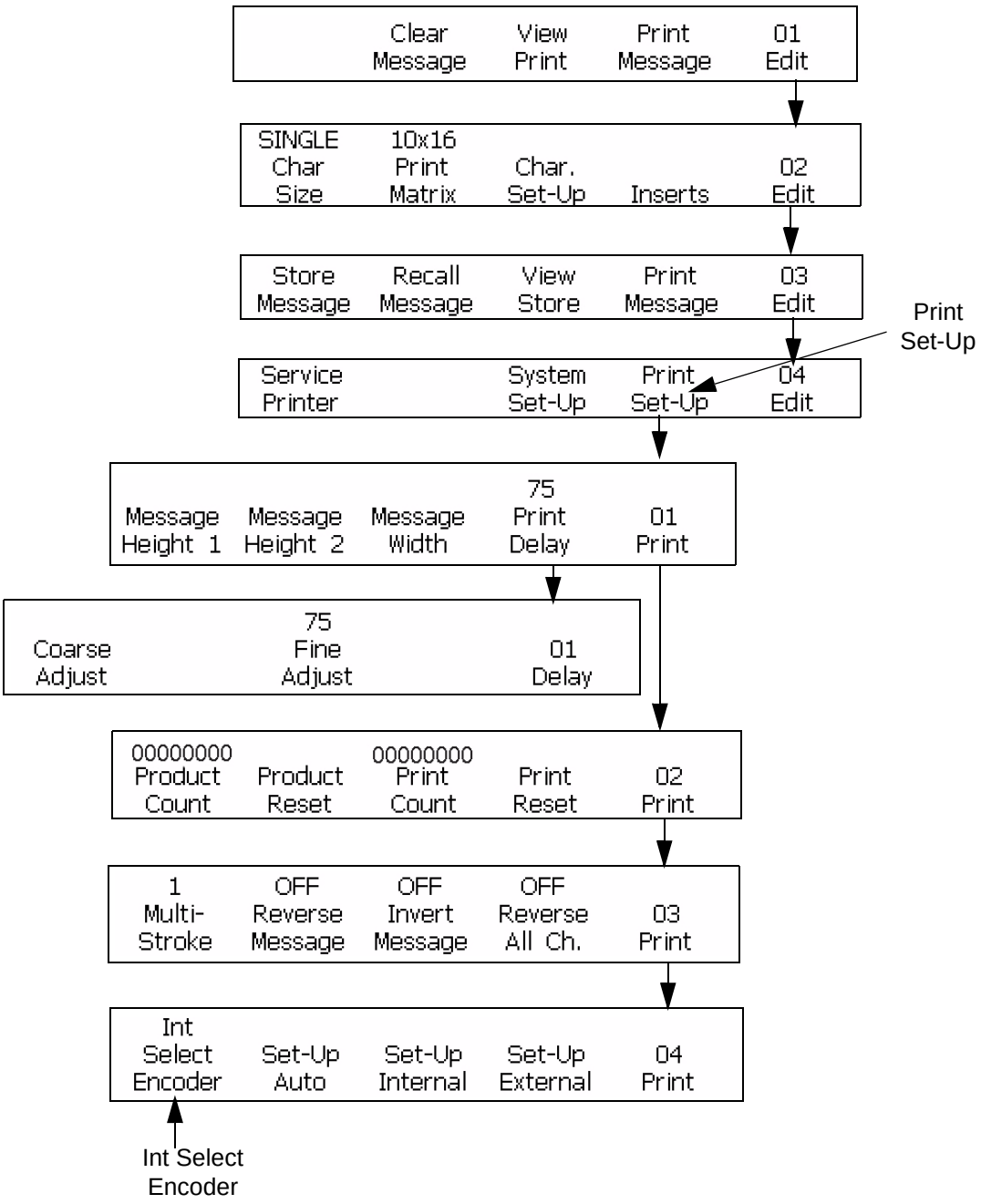


Figure 7-4: Access Frame <04 Print>

Procedure

1. Begin with the frame <04 Print>. Refer to Figure 7-4.
2. See the current setting above <Select Encoder>. Press F1 to change the setting. (Settings are Internal, Auto, Reduced, and Direct)

3 Refer to Table 7-2 below to complete the next step.

If <SELECT ENCODER> is set to:	Then Select:	Use the Keypad to Enter the Following Values:
<INT>	<Set-Up Internal> press (F3)	Enter Feet/Minute (1-1111)->
<AUTO>	<Set-Up Auto> press (F2)	Enter Tenths of In.(1-130)->
<REDUCED>	<Set-Up External> press (F4)	Enter Enc. PPI (60-1200)-> Enc. Reduction (2-9999)->
<DIRECT>	<Set-Up External> press (F4)	Enter Enc. PPI (60-1200)->

Table 7-2: Setting Correct Encoder Values

Note: *To set the Auto encoder setting you must set the F1 <Product Detector> setting in the frame <07 Print> to <External Product Detector>.*

4 Press the ENTER key.

5 This step is optional. If you do not need the speed adjustment (<Speed Comp>) turned on, continue to step 6. Follow these instructions to turn on the speed adjustment.

See the setting above <Speed Comp>. If necessary, press F1 to change the settings to On or Off.

Note: *Refer to the "Speed Compensation Summary" on page 7-9 for more information.*

6 Press the ENTER key. Frame <04 PRINT> appears in the display screen.

Note: *The print delay increases by 60 strokes if the speed adjustment (<Speed Comp>) is turned on. If you need the message to remain in the same position on the product, then subtract 60 strokes from the current print delay.*

Speed Compensation Summary	
	When the speed changes, the Speed Compensation enables the printer to print a message in the same position on a product. The feature helps if the conveyor speed is high and the product is small. The printer calculates a delay in variable stroke for each product and enables the speed compensation. When the product speed is decreased, the delay in variable stroke increases. This feature is for a print distance of 3/16 or 0.1875 inch (4.76 mm).

Set the Internal System Clock

The procedures in this section show you how to set the internal clock. The internal clock of the printer updates of the following variable information inserts:

- Time
- Date
- Timer
- Hour of the week
- Week of the year

The information inserts, depend on the settings entered in the internal clock.

Note: *You must enter the time and date into the system accurately, so that message inserts are accurate.*

Complete the procedures given below to accurately set the system clock. Turn to the page numbers indicated for related procedures.

- "Set the System Time" on page 7-10
- "Set the System Date" on page 7-11
- "Set the Week of the Year and Hour of the Week" on page 7-12
- "Set the Date Roll" on page 7-14

Set the System Time

This procedure shows you how to set the internal clock of the printer. The system clock is important because the system clock controls the time inserts, date inserts, and timer inserts. The internal time clock also controls the time of day that appears in the display screen.

The system time clock is set in the frame <01 System>.

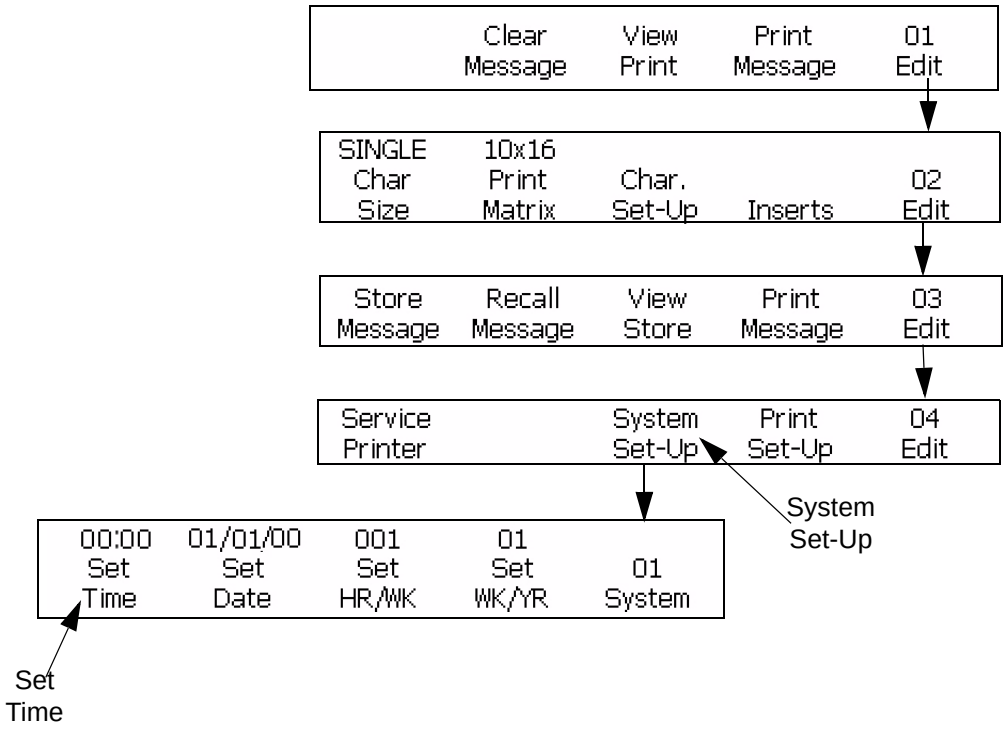
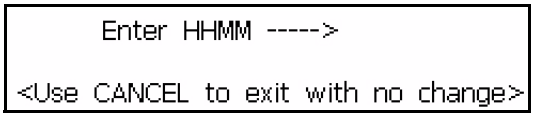


Figure 7-5: Access Frame <01 System>

Procedure

1. Begin with the frame <01 System>. Refer to Figure 7-5.
2. Press F1 to select <Set Time>. The following appears in the display screen:



3. Enter in 24-hour clock time, the two-digit hour-of-the-day (HH) followed by the two-digit minute (MM).

   Example: If the time is 9:45 AM, enter 0945 where 09 is the hour and 45 is the minute. If the time is 4:02 PM, enter 1602 where 16 is the hour (24-hour clock) and 02 is the minute.

4 Press the ENTER key. The display screen shows the time above <Set Time>. It also appears in the upper right corner of the display screen always.

Set the System Date

This procedure shows you how to set the system date. The system date is important, because date inserts that you print in the messages depend on the system date that you enter here.

Note: *The year range is from 00 to 99 (for the range 2000 to 2099).*

The system date is set in the frame <01 System>.

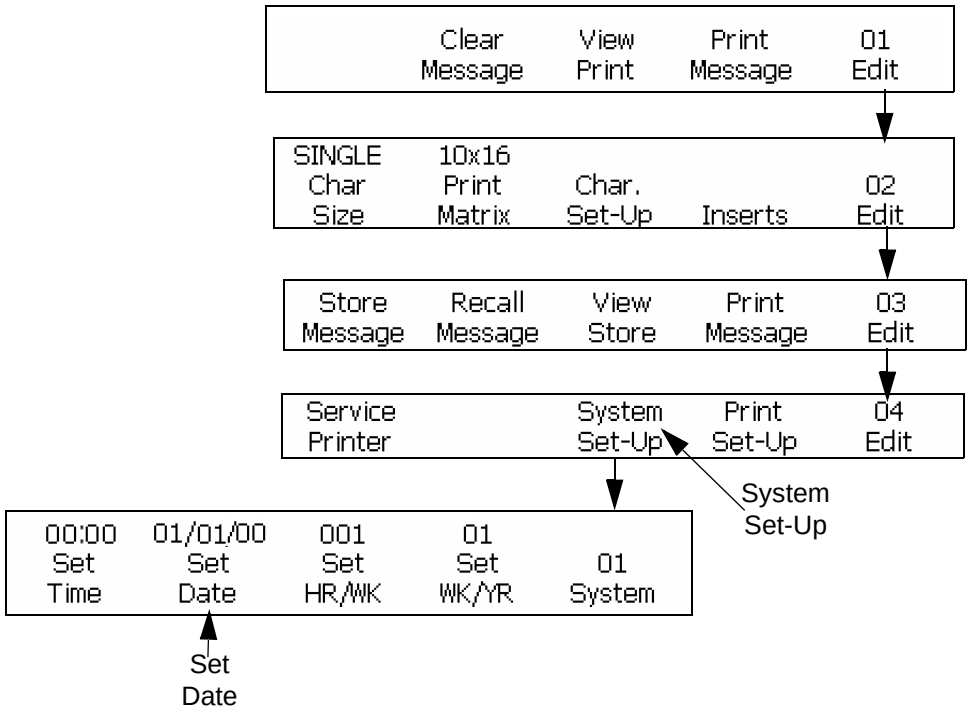
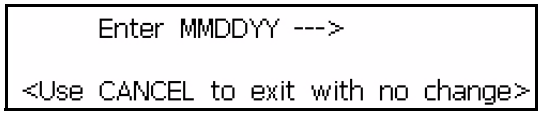


Figure 7-6: Access Frame <01 System>

Procedure

1 Begin with the frame <01 System>. Refer to Figure 7-6.

2 Press F2 to select <Set Date>. The following appears in the display screen:



Note: *When F3 <Display Unit> is set to Metric mode, the format of the date code changes to DDMMYY.*

3 Enter the following:

a. Two digits for the current month (MM)

b. Followed by two digits for the current day of the month (DD)

c. Two digits for the current year (YY)

Example: The date given is February 9, 2006. Enter 020906 where 02 is the month, 09 is the day of the month and 06 is the year.

4 Press the ENTER key. The date appears in the display screen above <Set Date>.

Set the Week of the Year and Hour of the Week

This procedure shows you how to enter the settings so that the system can calculate following values:

- Current week of the year insert
- Hour of the week insert

The current week of the year is displayed in the frame <01 System>. Refer to Figure 7-7 on page 7-13 for directions to reach this frame.

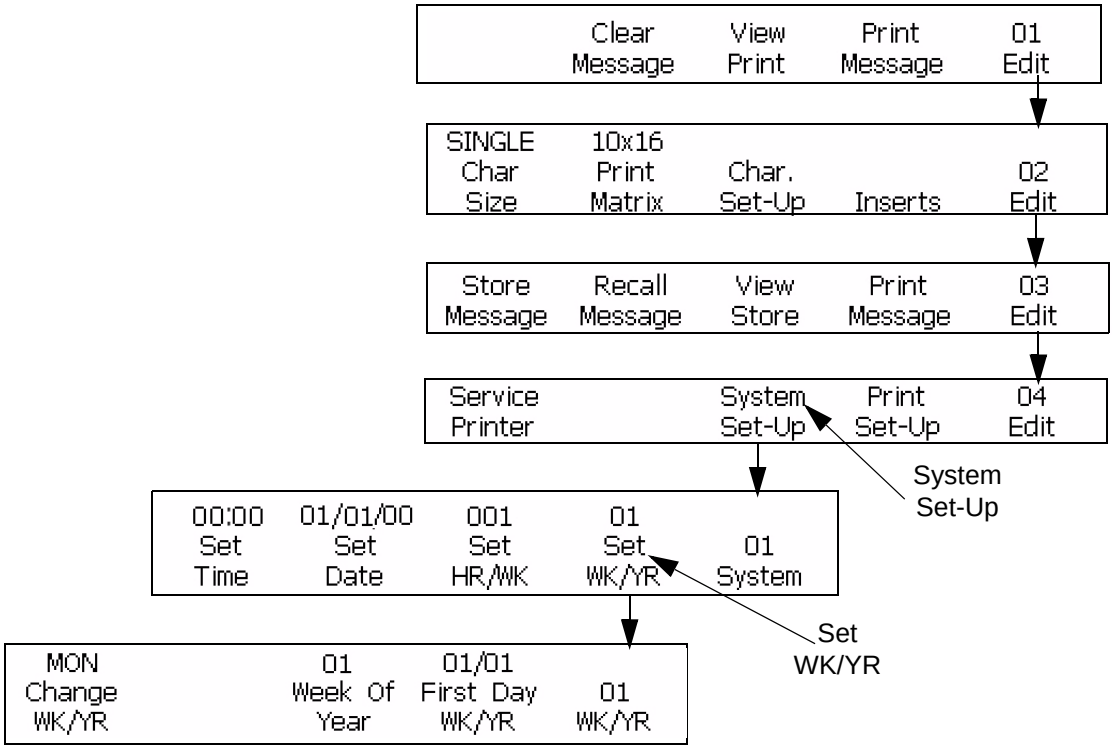


Figure 7-7: Access Frame <01 WK/YR>

Procedure

1. Begin with the Frame <01 System>. Refer to Figure 7-7.
2. Refer to <Set Date> in the frame <01 System> to see if the system date is set. If the date is set, then current date appears above <Set Date>. If the date is not set, a set default date appears.

   If the date is set, go to step 3. If the date is not set, then follow the procedure to set the system date ("Set the System Date" on page 7-11). Return to this page and go to step 3 after you complete the procedure.
3. Press F4 to select <Set WK/YR>. Frame <01 WK /YR> appears in the display.
4. From the Frame <01 WK/YR>, complete the following steps to automatically enter the week of the year.

   a. See the current setting above <Change WK/YR>. From this day of the week, the week of the year will move forward. If necessary, press F1 to change the setting. (Settings: MON, TUE, WED, THU, FRI, SAT, SUN.)

   Example: If you set the <Change WK/YR> to occur on MON, the week of the year setting will start at 12:00am on Monday morning.

This can be got if the F2 <Set DayRoll> value in Frame <03 System> is set to the default 00:00.

b. Press F4 to select <First Day WK/YR>. The following appears in the display screen.

```
Enter 1st Day Wk. MMDD ->

   <Use CANCEL to exit with no change>
```

Enter the starting day of the year in MMDD format where:

- The two digits are for the month (MM)
- The two digits are for the day of the month (DD)

Example: If the start of the year is January 3, enter 0103 where 01 is for the month and 03 is for day-of-the-month.

Note: *The date February 29 cannot be the starting date of WK/YR.*

5 Press the ENTER key. The week of the year appears above <Week Of Year> in the display screen.

6 Press the ENTER key again to return to Frame <01 System>.

Refer to "The Week of the Year Insert" on page 6-34 for the procedure to insert the current week-of-the-year into a message.

Note: *First Day of WK/YR setting also changes Julian Date inserts. See "The Julian Date Insert" on page 6-39.*

Set the Date Roll

You can program the date roll-over feature in the software. You can program the date inserts to move forward to a time that is different from the default value (midnight). The printer now can update its date to the next day after the system clock time reaches that day roll time. The new date insert replaces the default value. All day functions given below will roll over from the time setup by the function:

- Expiration date
- Expiration day
- Expiration month
- Expiration year
- Expiration alpha month
- Hour/week insert
- Julian insert

Setup Procedures:

Complete the following steps to set the date roll over:

7 Begin with the frame <03 System>. Refer to Figure 7-8.

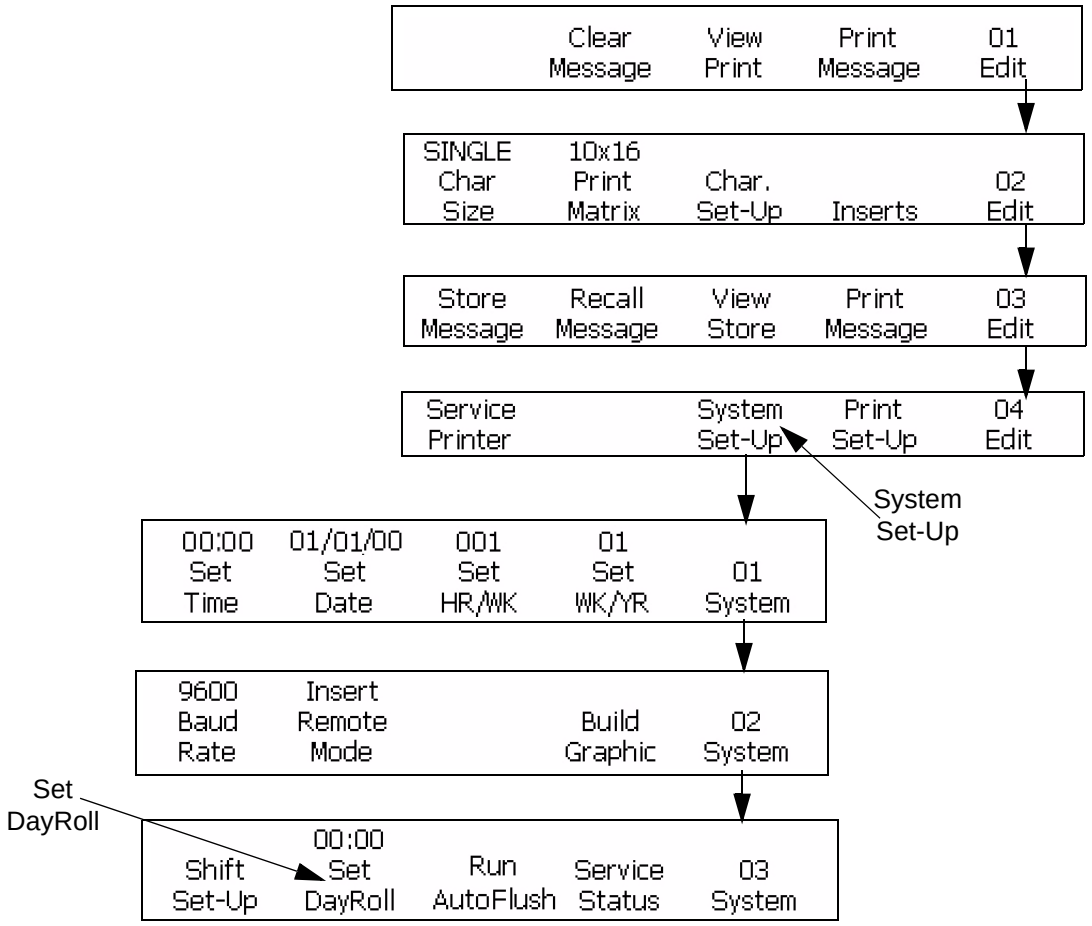


Figure 7-8: Setting the Programmable Date Rollover

8 Press F2 to select <Set DayRoll>.The following appears in the display screen:

```
Enter Day-Roll Time(0-2359)->

     <Use CANCEL to exit with no change>
```

9 Enter the time to start for the date roll-over where two digits are for the hour and two digits are for the minutes.

10 Press the ENTER key. The time from where the date inserts roll-over appears above <Set Day Roll> in the display screen.

11 Press the ENTER key again to return to Frame <01 System>

Set the Baud Rate

This procedure shows you how to set the COMM 1 baud rate for external data transmission. This procedure requires the RS-232 interface.

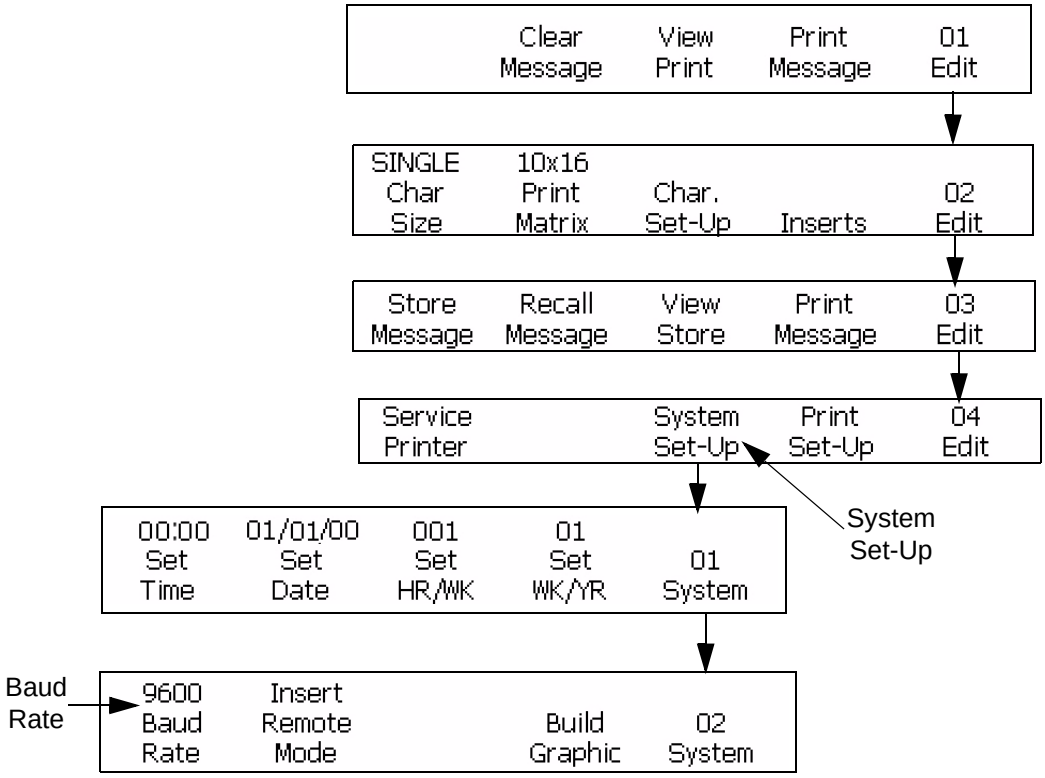


Figure 7-9: Accessing Frame <02 System>

Procedure

1. Begin with the Frame <02 System>. Refer to Figure 7-9.
2. See the current setting above <Baud Rate>. Press the shift key and the F1 key at a time to change the setting. (Settings: 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200).

Set the Remote Mode to Receive the External Message

This procedure shows you how to set the remote mode for external data transmission:

Note: *Refer to "Remote Data Insert" on page 6-63 for instructions how to insert a remote data insert in a message.*

The settings for remote mode is shown in Table 7-3.

If <REMOTE MODE > Is Set to:	Then:
<Message>	Use for external data transmissions like ESI and Connector.
<Insert>	Use for external data transmissions like remote data.

Table 7-3: Remote Mode Settings

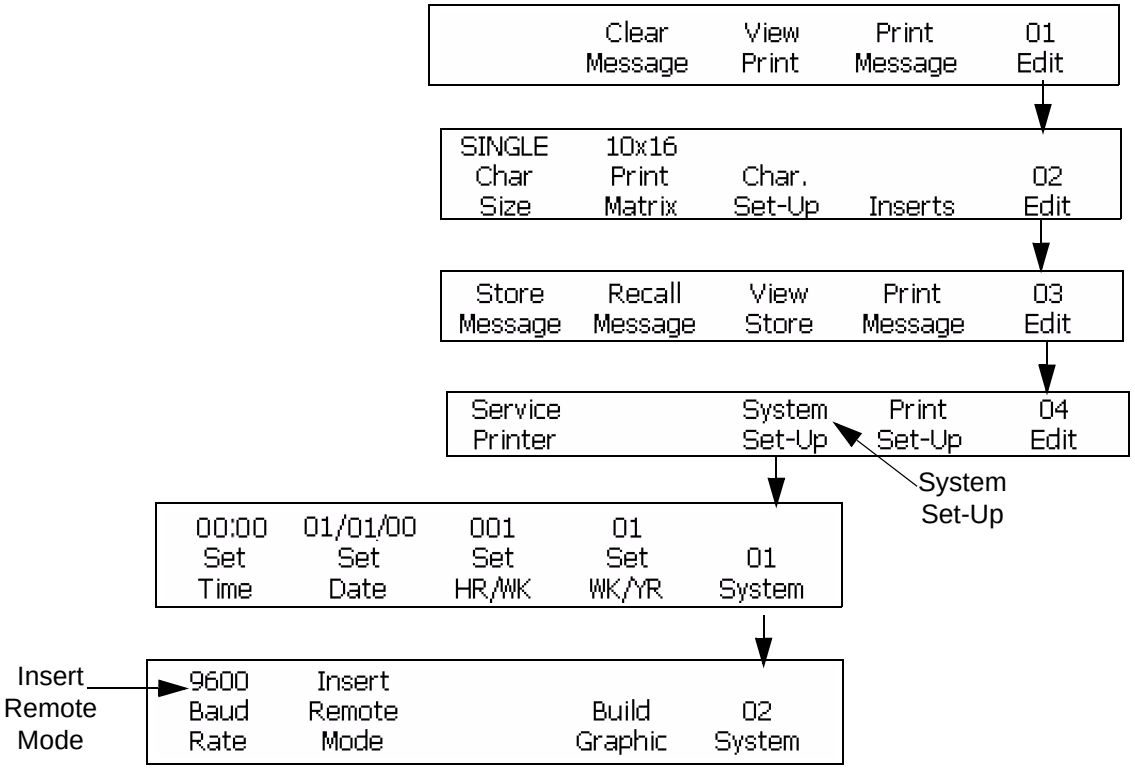


Figure 7-10: Access Frame <02 System>

Procedure

1 Begin with the Frame <02 System>. Refer to Figure 7-10.

2 See the current setting above <Remote Mode>. Press the SHIFT key and F2 to change the setting (Settings are Message, and Insert).

3 Press the ENTER key to save the setting.

Set Auto Repeat

This procedure shows you how to set a message to print more than one time. After the signal from the product detector is received, the automatic repeat sets the number of times that a message is printed.

Note: *Remember that Auto Repeat is different from the <Repeat Count> option in the frame <02 Serial> in the Insert mode. When the printer receives the signal from the product detector continuously, the <Repeat Count> option in the frame <02 Serial> prints the same serializer value. The Automatic Repeat option described in this section prints the same message, many times on the same product after a single product detect.*

Example: The Auto Repeat is best when marking a wire because there is no break in the product and one product detect signal is enough. One product detect is received and the same message gets printed continuously (to a maximum of 255 times) on the complete length of the wire.

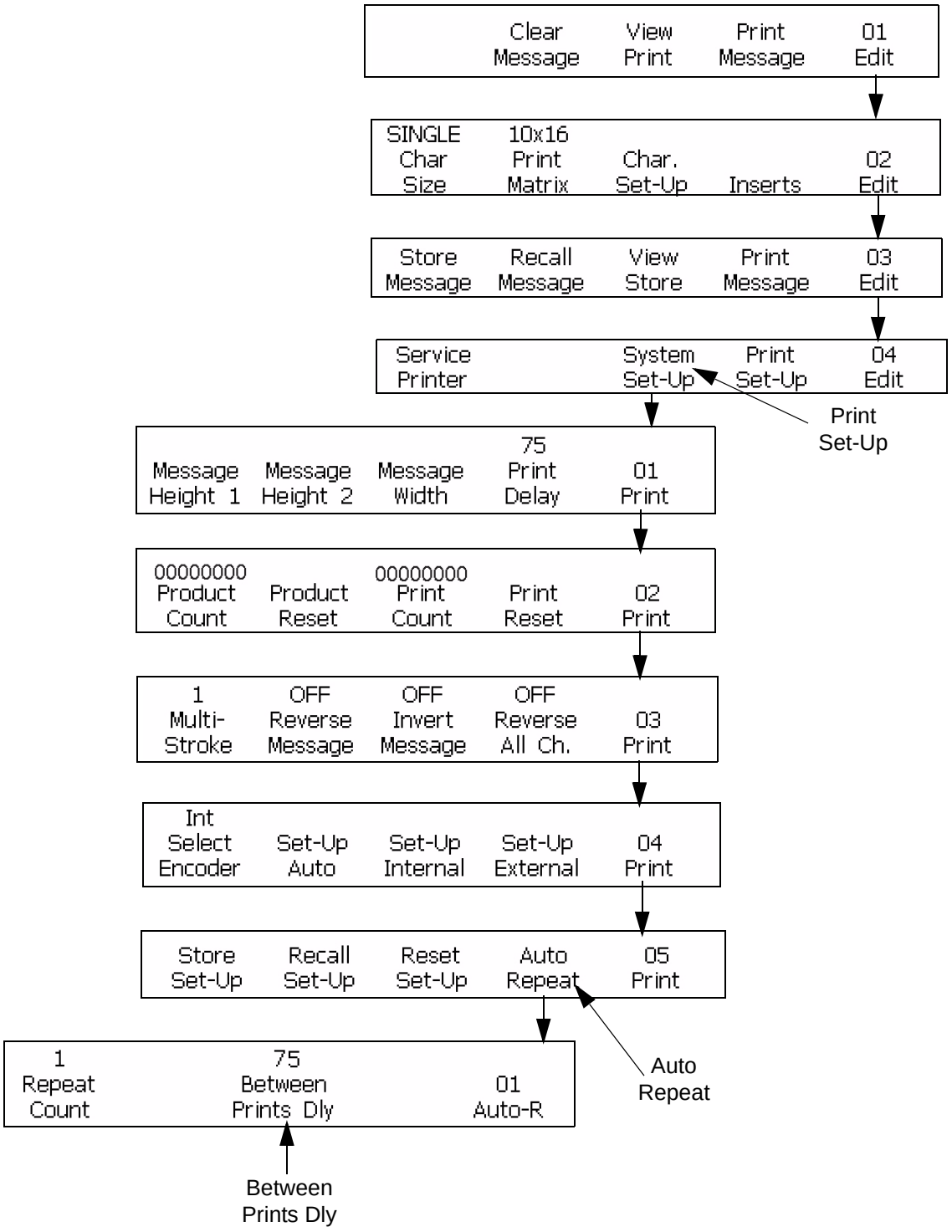


Figure 7-11: Access Frame <01 Auto-R>

Procedure

1. Begin with the Frame <05 Print>. Refer to Figure 7-11 on page 7-19 on the previous page.
2. Press F4 to select <Auto Repeat>. Frame <01 Auto-R> appears in the display screen.
3. Press F1 to select <Repeat Count>. The following appears in the display screen:

```
Enter Repeat Cnt.(1-255)->

  <Use CANCEL to exit with no change>
```

4. Enter the number of times (from 1-255) that a message prints for each signal received from the product detector.
5. Press the ENTER key. The frame <01 Auto-R> appears again on the display screen.
6. Press F3 to select <Between Prints Delay>.
7. Use this frame to can make the adjustments to the amount of space in between each message. The following appears in the display screen.

```
Enter 1/100 In.(0-7500)->

 <Use CANCEL to exit with no change>
```

   Enter a number between 0-7500. This value is for the distance (in 1/100ths of an inch or 0.254 mm) between each message.

   Example: A value of 100 is equal to 1 inch (100 x 1/100 = 1).

8. Press the ENTER key to save the entry. The frame <01 Auto-R> appears again in the display screen.

Service Status

This procedure shows you how to see the flow time settings that you set in the Service. The flow time settings include:

- Ink Set Point
- Current Ink Time
- Nozzle Drive 1 and 2
- High Voltage 1 and 2

- Current Phase 1 and 2
- Make-up Add Time
- Make-up Inhibit.

The change in the settings is done only in the Service mode. The software can monitor the settings while the system is printing, instead of stopping the printer to check the settings in the Service mode.

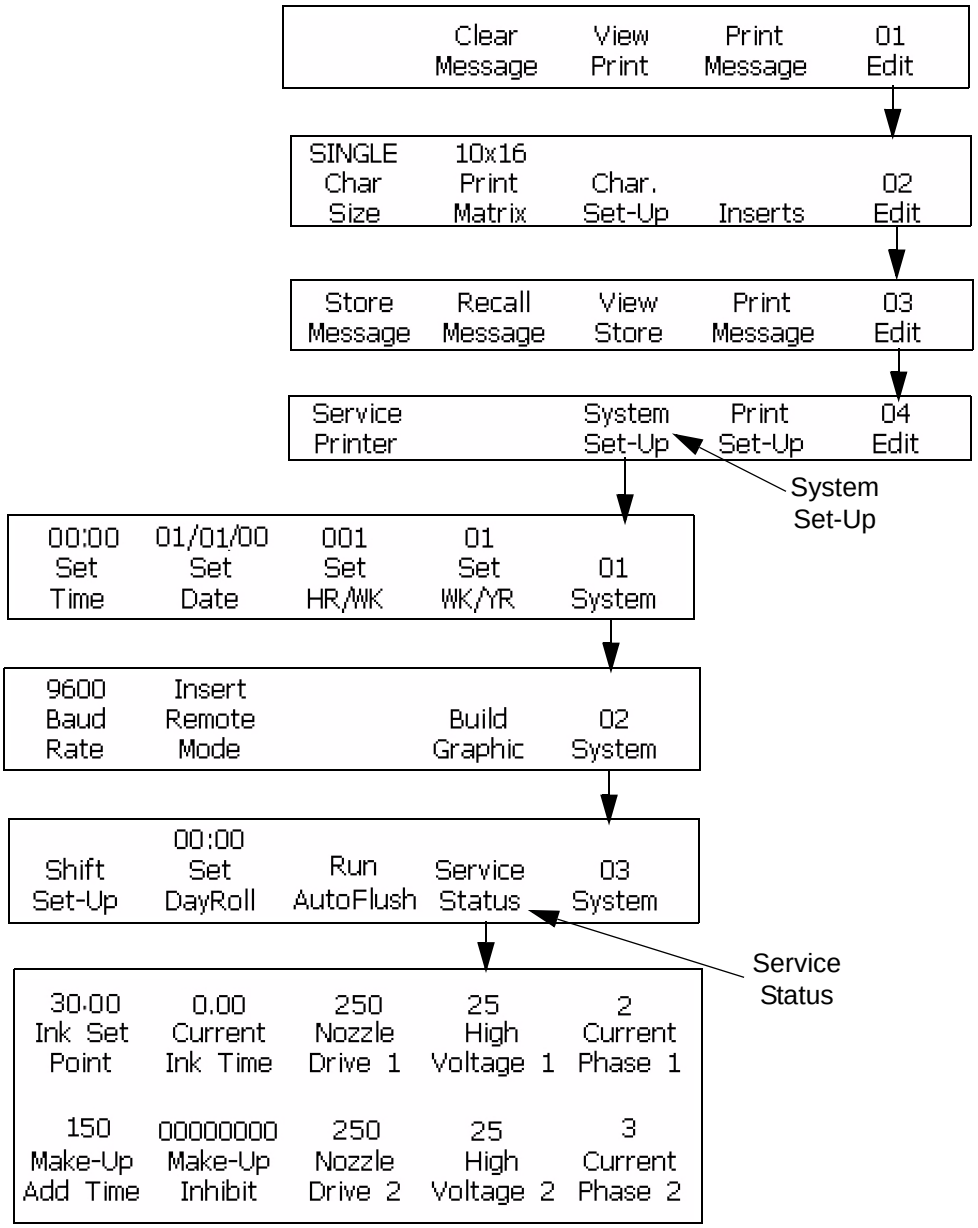


Figure 7-12: Access Service Status frame

Procedure

1. Begin with the Frame <03 System>. Refer to Figure 7-12 on page 7-21.
2. Press the F4 key to select <Service Status>. The service Status frame appears in the display screen. See the current readings above each of the labels in this frame (values depend on the printer status).
3. Press the ENTER key or CANCEL key to exit this frame. Frame <03 System> appears in the display screen.

Run Autoflush

Only Videojet Excel Dual Nozzle printers with the autoflush umbilical contain the autoflush features. The following frames have the autoflush feature:

- Frame <03 System> menu 03 <Run Autoflush>
- Frame <07 Service> menu 01 <Autoflush>.

If autoflush is not installed in the system software, the label above F1 <Autoflush> in the frame <07 Service> reads "Not Installed".

Refer to the Videojet Excel Dual Nozzle Service manual (PART NUMBER 361844) for more information on these two autoflush features.

Warning

Only a trained service or the maintenance personnel must perform the autoflush procedure. The qualified personnel must complete the training courses, have knowledge about this printer, and know the potential hazards.

Set Print Delay

The print delay function changes the positions of a printed message (for both nozzle-1 and nozzle-2 displays) on a product. The number you enter is for the number of 1/100-inch units that delays the message before printing. The delay can be a maximum of 7500 units, which equals 75 inches (7500 x 1/100” = 75 inches). Remember each unit is 1/100 inch.

Print Delay Use

To change the print position, enter a print delay. This method is easier than to change the setup information of the product detect, or to add the spaces at the start of a message.

The print delay is set in the frame <01 Print>.

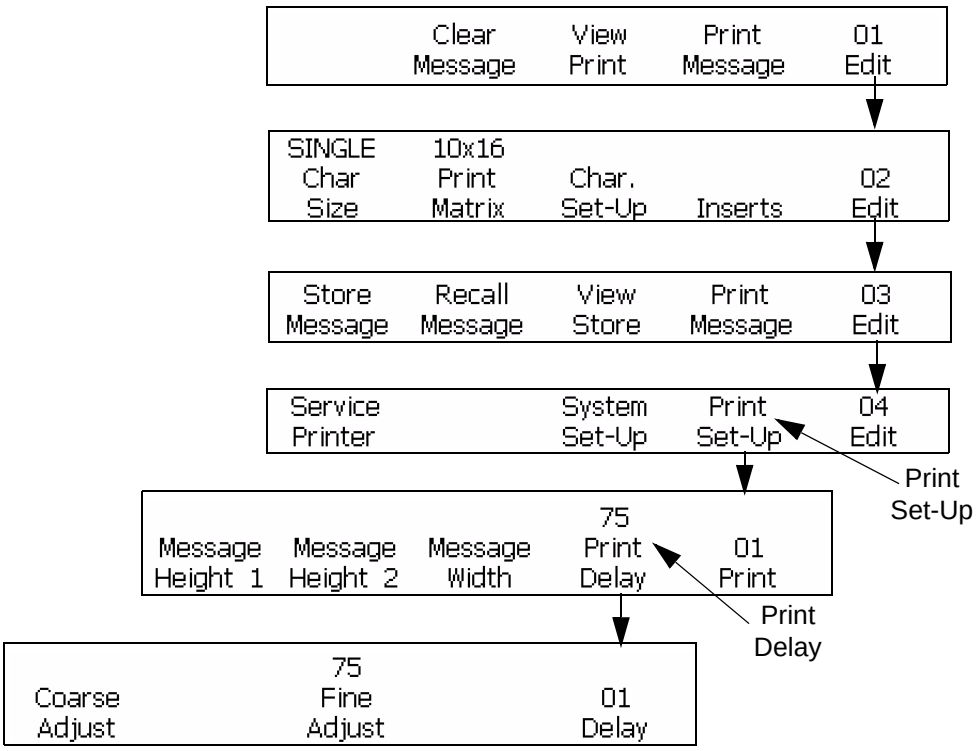


Figure 7-13: Access Frame <01 Print>

Procedure

1. Begin with the Frame <01 Print>. Refer to Figure 7-13.
2. Press F4 to select <Print Delay>.
3. Here you can make fine and large adjustments to the distance allowed (delay) before the message is printed:
   - The large adjustment adjusts the spacing by 1/100 inch (0.254 mm). To make a large adjustment to the delay, press F1 to select <Coarse Adjust>. The following appears in the display screen:

```
Enter 1/100 In.(75-7500)->

  <Use CANCEL to exit with no change>
```

Enter a number between 75-7500. This value is for the distance (in inches) allowed before the message is printed.

Example: A value of 100 is equal to 1 inch (100 x 1/100 = 1).

- The fine adjustment feature adjusts the spacing by 1/200 (0.005 mm). To make a fine adjustment to the delay, press the F3 key to select <Fine Adjust>. The following appears in the display screen:

```
   Enter 1/200 In.->75
<Use Cursors to change value>
```

Use  and  to increase or decrease the delay.

Note: *When you print, you can make the fine adjustments.*

Press the ENTER key to save the entry.

Set the Print Setup Parameters

The procedures in this section describe how to store, recall, and reset the parameters that you set in the Print Setup mode. You can store a maximum of five sets of parameters with this feature. The recall feature applies the setup parameters to different messages. When your application changes, this feature saves you from entering the same information again and again.

The following values are stored in the memory when you store the print setup parameters. Refer to the page numbers recorded below for some procedures.

Procedures Found in Chapter 6

- "Reverse a Message" on page 6-17
- "Turn a Message Upside Down (Invert the Message)" on page 6-17
- "Reverse All Characters" on page 6-19
- "Change the Message Multi-Stroke (Bold)" on page 6-20
- "Adjust the Height of the Message" on page 6-21
- "Adjust the Width of the Message" on page 6-22

Procedures Found in Chapter 7

- The encoder setup (Refer to the procedure from "Select the Method to Match the Product Speed" on page 7-6)
- Set Auto repeat (Refer "Set Auto Repeat" on page 7-18)

- Set Print delay (“Set Print Delay” on page 7-22)

Note: *The product count and print count values are not stored in the memory when you store the setup parameters.*

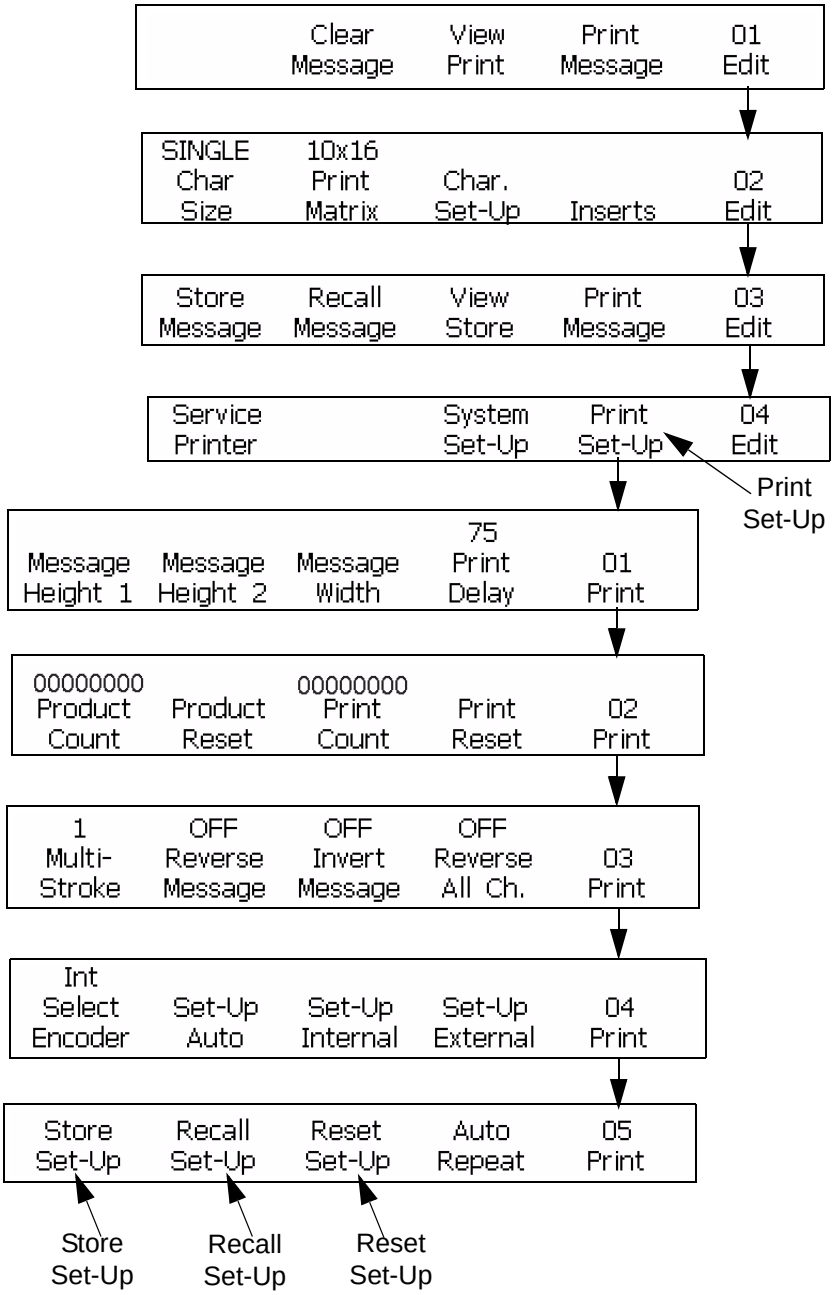


Figure 7-14: Access Frame <05 Print>

Store the Setup Parameters

This procedure shows you how to store the print Setup parameters.

Procedure

1. Begin with the Frame <05 Print>. Refer to Figure 7-14 on page 7-25.

   Note: *Complete this procedure after you enter all correct settings in the Print Setup modes.*

2. Press F1 to select <Store Set-Up>. The following appears in the display screen:

```
Enter Store Location (1-5)->

    <Use CANCEL to exit with no change>
```

3. Enter a value 1 through 5 to indicate the number of the storage location.
4. Press the ENTER key.

Recall the Setup Parameters

This procedure shows you how to recall the print Setup parameters.

Procedure

1. Begin with the Frame <05 Print>. Refer to Figure 7-14 on page 7-25.
2. Press F2 to select <Recall Set Up>. The following appears in the display screen:

```
Set-up to Recall (1-5)->

<Use CANCEL to exit with no change>
```

3. Enter a value 1 through 5 to indicate the number of the storage location.
4. Press the ENTER key.

Reset the setup Parameters

This procedure shows you how to reset the Print Setup parameters. This function resets the values to the current setup parameters.

Note: *The ink jet must be Off to reset the parameters.*

Procedure

1. Begin with the Frame <05 Print>. Refer to Figure 7-14 on page 7-25.
2. Press F3 to select <Reset Set-Up>. All values in the Print Setup mode (except product count and print count) resets to the default values.
3. The message “Reset Value Restored” appears on the display screen.

5 x 7 SL Tower

This procedure shows you how to use the 5 x 7 SL Tower function. The function prints a message on a substrate with the effect of printing in a vertical direction, instead of the normal horizontal direction. This application is useful for marking wire and cable. Refer to Figure 7-15.

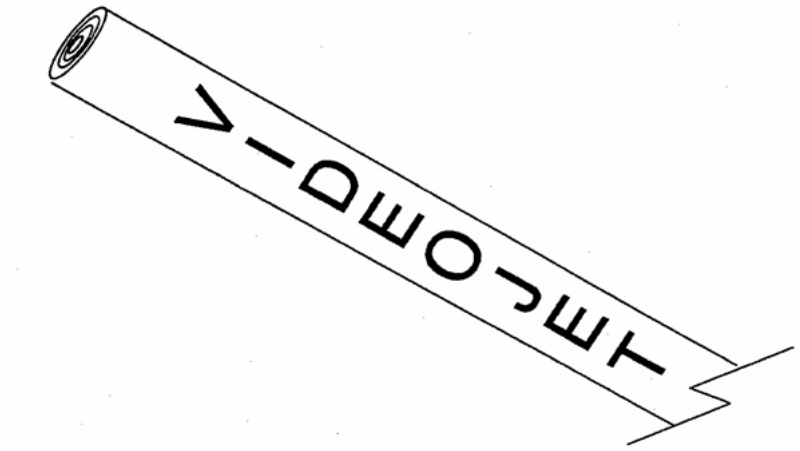


Figure 7-15: Sample Application for Tower Font Printing.

Note*: The tower font is available only in the 5 x 7 SL print matrix. Tower print is not available in other print matrices.*

The tower print font rotates each character of the 5 x 7 font by 90 degrees, to the left. Now, the print matrix becomes 7 drops wide by 5 drops high, and the characters are printed "sideways". Refer to Figure 7-16 on page 7-28.

VIDEOJET

Message Printed in Standard Horizontal Direction

Message Printed in 5 x 7 SL Tower (Vertical Direction)

Figure 7-16: Tower Printing Example

Procedure

1. Load the existing message into the printer or create a new message and load into the printer.
2. Begin with the Frame <06 Print>. Refer to Figure 7-17 on page 7-29.
3. See the current setting above <5 x 7 SL Tower>.
   - If the current setting is turned off, press F3 to change the setting to <ON>. The full message is printed in the tower font.
   - If the current setting is turned on, the message is set to print in the tower font.
4. Press the ENTER key to return to Frame <01 Print>.

Note: *The message will not appear in the tower font in the display screen, but the printed message will be in the tower font direction.*

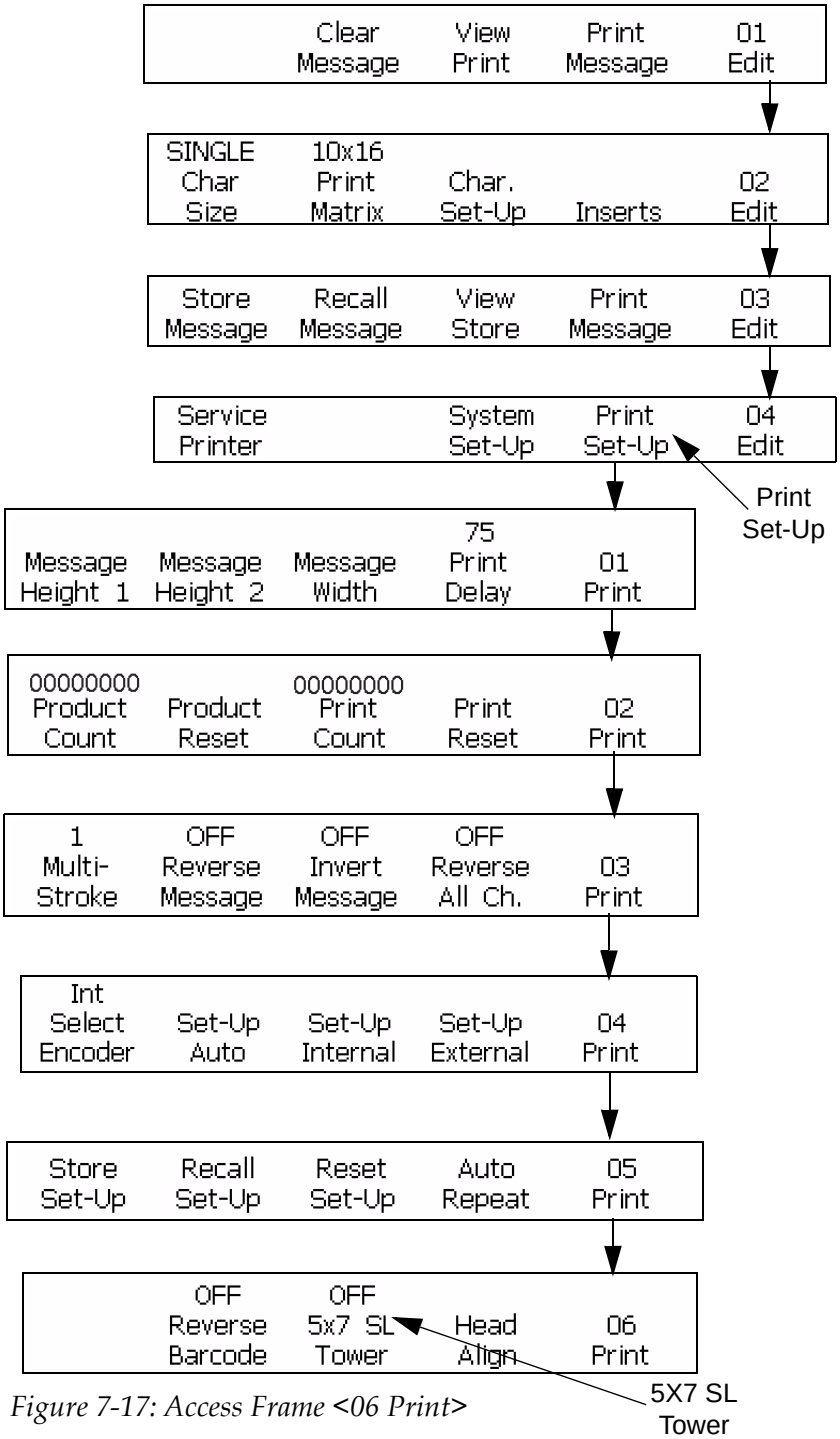


Figure 7-17: Access Frame <06 Print>

Reverse Image Bar Code

The procedure in this section describes how to print a reverse image bar code. When the printer prints, the space in a non-reversed barcode becomes a line in a reversed barcode. A line in a non-reversed barcode becomes a space in a reversed barcode. Refer to Figure 7-18 for an example of a reverse image bar code.

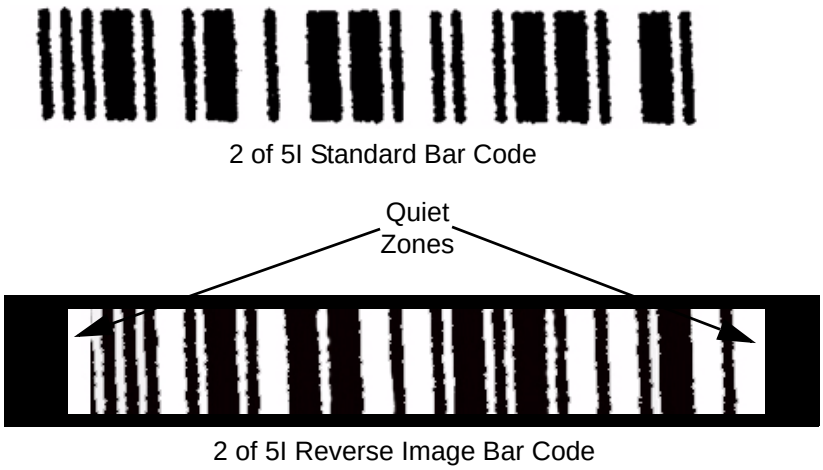


Figure 7-18: Reverse Image Bar Code

You can print all barcodes that are 10x16 high or sizes of greater print matrix in reverse images.

Note: *The bar code reverse function changes only the bar code messages and not the text.*

Procedure

1. Load the necessary message which exists into the printer or create a new message and load into the printer.
2. Begin with the Frame <06 Print>. Refer to Figure 7-19 on page 7-31.
3. See the current setting above <Reverse Barcode>.

   When you print the message with <Reverse Barcode> set to <ON>, the bar code is printed in reverse image.

   If the <Reverse Barcode> is set to <OFF>, press F2 which changes the setting to <ON>. Then the bar code is printed in reverse image.
4. Press the ENTER key to return to Frame <01 Print>.

Note: *The bar code symbols will not appear in reverse image in the display screen. But the bar code message is printed in reverse image.*

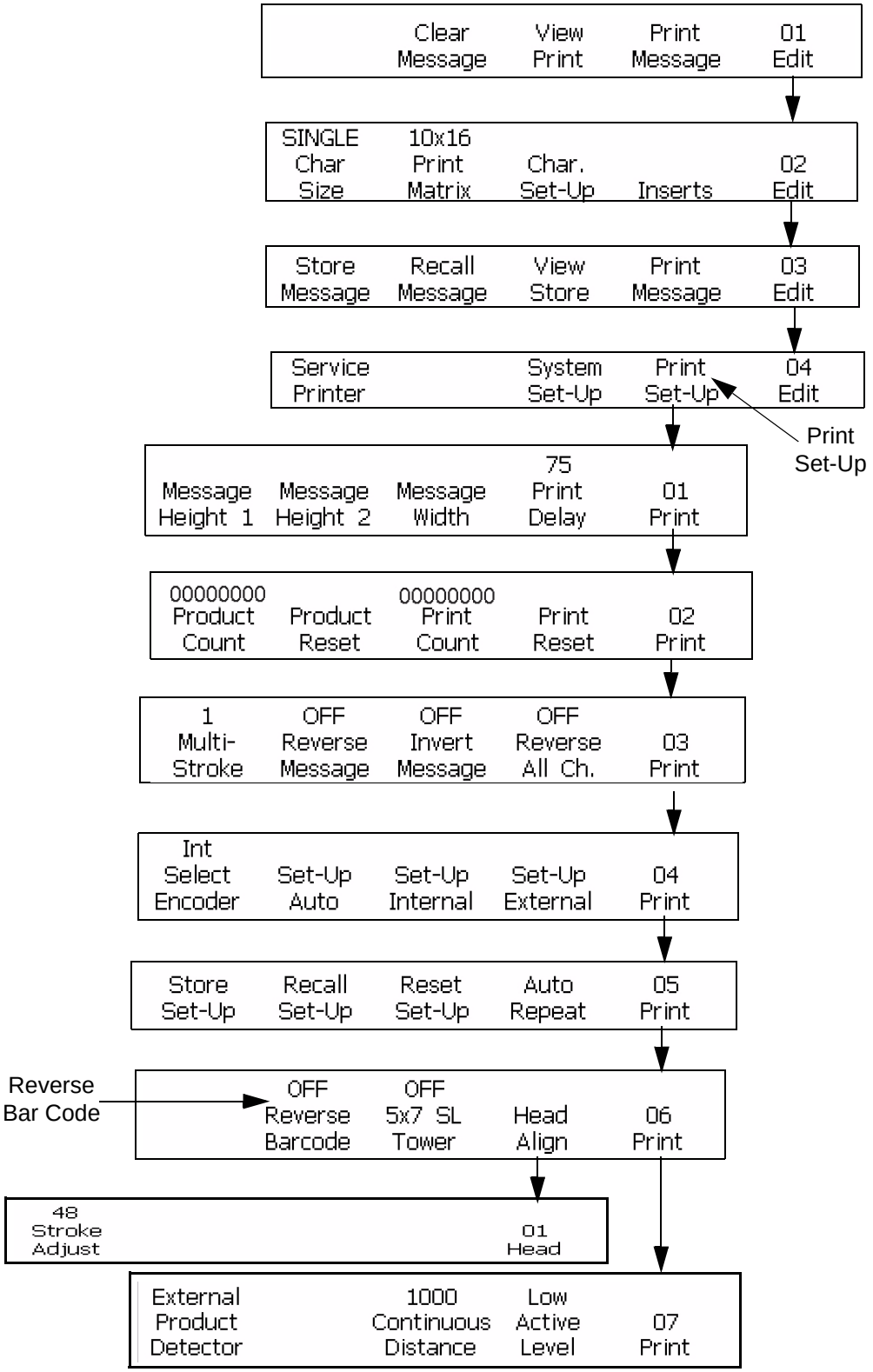


Figure 7-19: Accessing Frame <07 Print>

The Stroke and Drop Adjust

This procedure describes how to align the starting points for both nozzle-1 and nozzle-2 portions of the message.

Procedure

1. Begin with the Frame <01 Head>. Refer to Figure 7-19 on page 7-31.
2. Make sure that there are messages in both the nozzle-1 and nozzle-2 displays.
3. To align the starting points of the nozzle-1 portion of the message with the nozzle-2 portion of the message, press F1 <Stroke Adjust>.
4. Use the arrow keys or enter in a value to align the nozzle-2 portion of the message with then nozzle-1 portion of the message. (Refer to Figure 7-21)

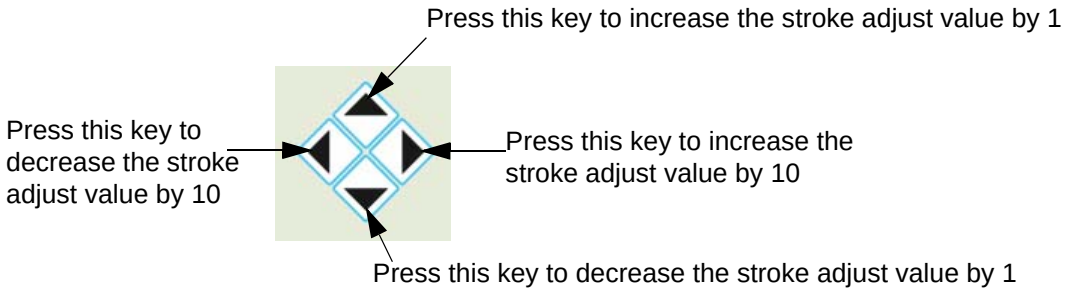


Figure 7-20: Keys to adjust the Strokes

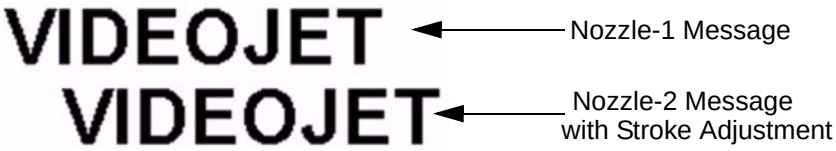


Figure 7-21: Stroke and Drop Adjust - Example

5. Use F2<Drop Adjust> to give a fine (drop) adjustment if necessary.

Set the Language

This procedure shows you how to change the menu display to a new language. When you select a new language, all the Excel Dual Nozzle menus change to the new language selected. You can select the following languages:

- English
- UK
- French
- German
- Dutch
- Italian
- Spanish
- Portuguese
- Danish
- Finnish
- Swedish
- Turkish

Procedure

1 Begin with the Frame <04 System>. Refer to Figure 7-22.

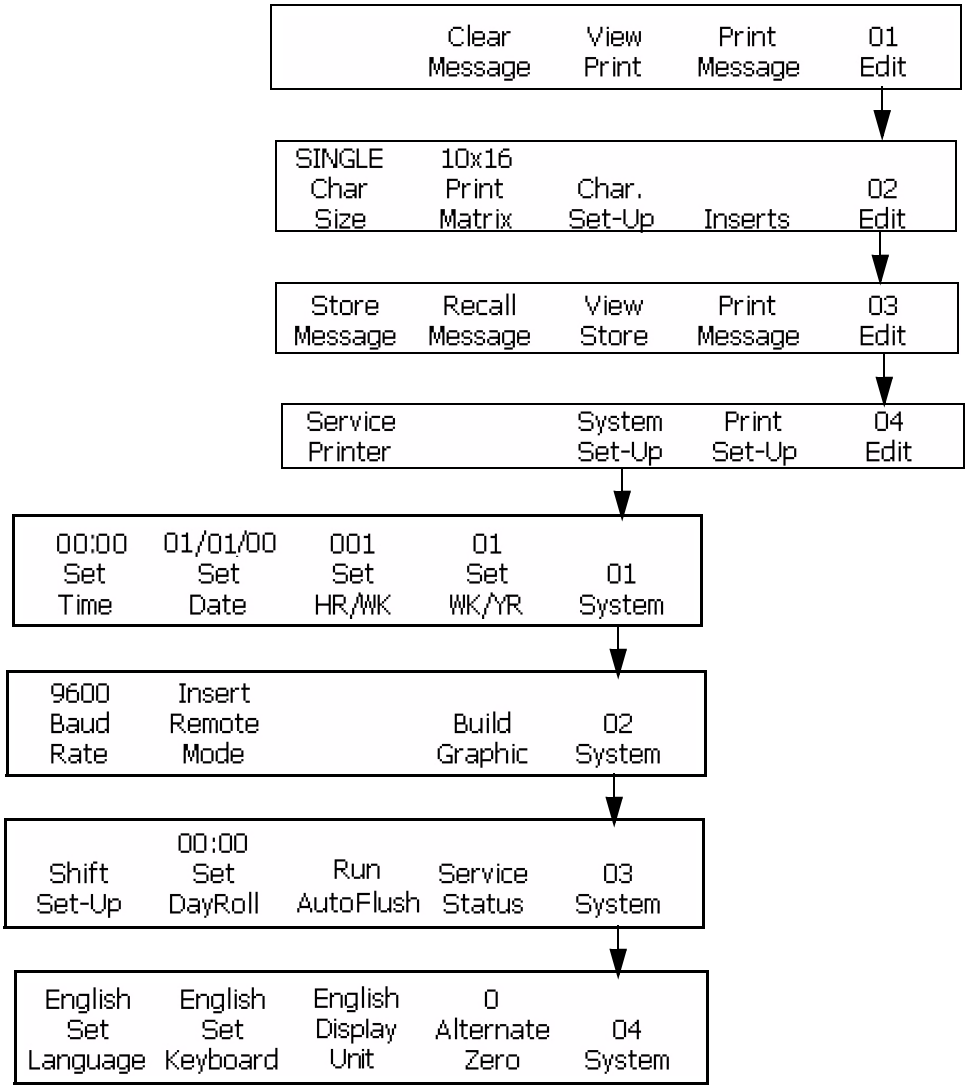


Figure 7-22: Access Frame <04 System> to Set Language

2 See the current language selected above <Set Language>. All the display menus must be in the language selected.

3 Press the SHIFT-F1 keys <Set Language> to change the menu display to a new language after you select the needed language.

Set the Keyboard

This procedure shows you how to change the keyboard type. The following keyboard types are available:

- English/UK
- European (Western)
- Turkish/Scandinavian

Procedure

1 Begin with the Frame <04 System>. Refer to Figure 7-23.

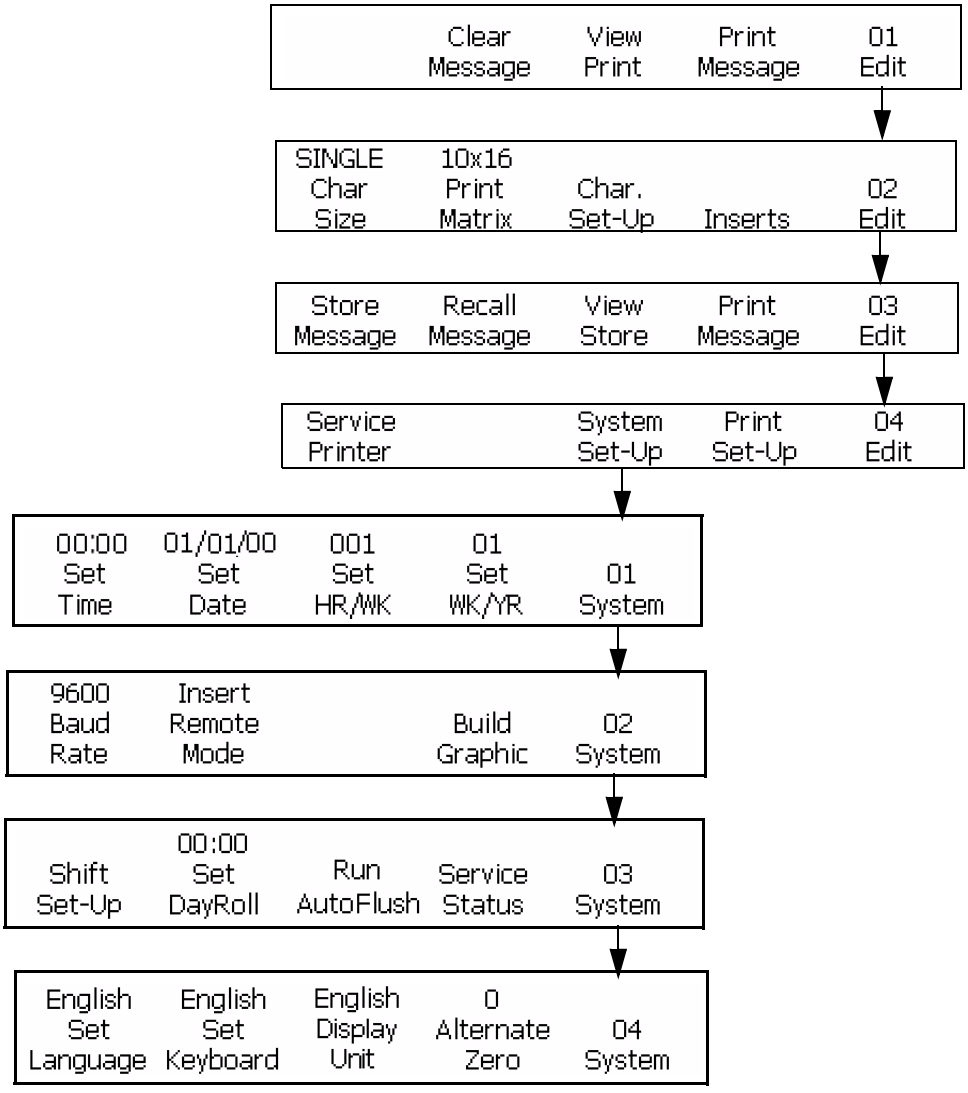


Figure 7-23: Access Frame <04 System> to Set Keyboard

2 See the current keyboard selected above <Set Keyboard>. The keyboard selected requires the related keyboard layout.

3 Press the SHIFT-F1 keys <Set Keyboard> to change to a new keyboard.

Unit Display

This feature changes the input lengths for some menu selections, from inches to metric units and metric units to inches. Further more, the format for F2<Set Date> in the frame <01 System> changes to DDMMYY in metric mode. Metric unit is used in all the countries except the United States.

The menu selections changed by the Display Unit feature are given below:

- F2 <Set Date> in the Frame <01 System>
- F3 <Line Speed> in the Frame <01 Int-E>
- F3 <Encoder PPI> in the 0Frame <01 Ext-E>
- F1 <Coarse Adjust> and F3 <Fine Adjust> in the Frame <01Delay>
- F3 <Between Prints Dly> in the Frame <01 Auto-R>
- F2 <Detect Area> in the Frame <01 Auto-E>
- F3 <Internal Distance> in the Frame <07 Print>

Procedure

1 Begin with the Frame <04 System>. Refer to Figure 7-23 on page 7-35.

2 Press F3 to move from the <Display Unit> from the english which is non-metric mode to metric mode or from metric mode to non-metric mode. All label values for the changed menus change and they depend on the mode selected.

3 Press the F3 key again to change the display unit mode to the original configuration.

Alternative Zero

This section describes how to change the version of the zero character in the display and printed message.

Procedure

1 Begin with the Frame <04 System>. Refer to Figure 7-23 on page 7-35.

2 Press F4 to select <Alternative Zero>. The following appears in the display screen:

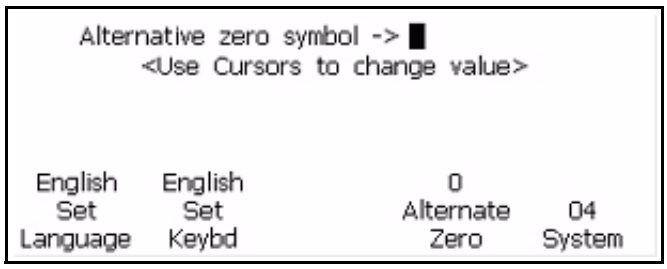


Figure 7-24: Access F4 <Alternate Zero>

3 Use the cursors (right or left) to change the zero symbol.

4 Press the ENTER key to save the selection.

The Product Detect

This setting sets the product detector for Internal or External configuration. The external-product-detection feature uses an external-product-detector connected to the printer. Internal-product -detector starts internal product detects at a rate calculated in F3<Internal Distance> setting.

Procedure

1 Begin with the Frame <07 Print>. Refer to Figure 7-19 on page 7-31.

2 Press F1 to move from <Product Detector> into an External or Internal setting.

Internal Distance

This section calculates the rate of internal product detects. The range is from 50 to 12500 (in 1/100th inch increments). The <Internal Distance> selection is started if F1<Product Detector> is set to <Internal Product Detector>.

Procedure

1 Begin with the Frame <07 Print>. Refer to Figure 7-19 on page 7-31.

2 Press F3 to select <Internal Distance>. The following message appears in the display screen.

```
Enter 1/100 In(50-12500)->

   <Use CANCEL to exit with no change>
```

3 Set the necessary internal distance for the settings of the internal product detect and press the ENTER key.

Active Level

This selection makes a decision if the product detector activates on a high or low level.

Procedure

1 Begin with the Frame <07 Print>. Refer to Figure 7-19 on page 7-31.

2 Press F4 to move from <Active Level> to a High or Low level.

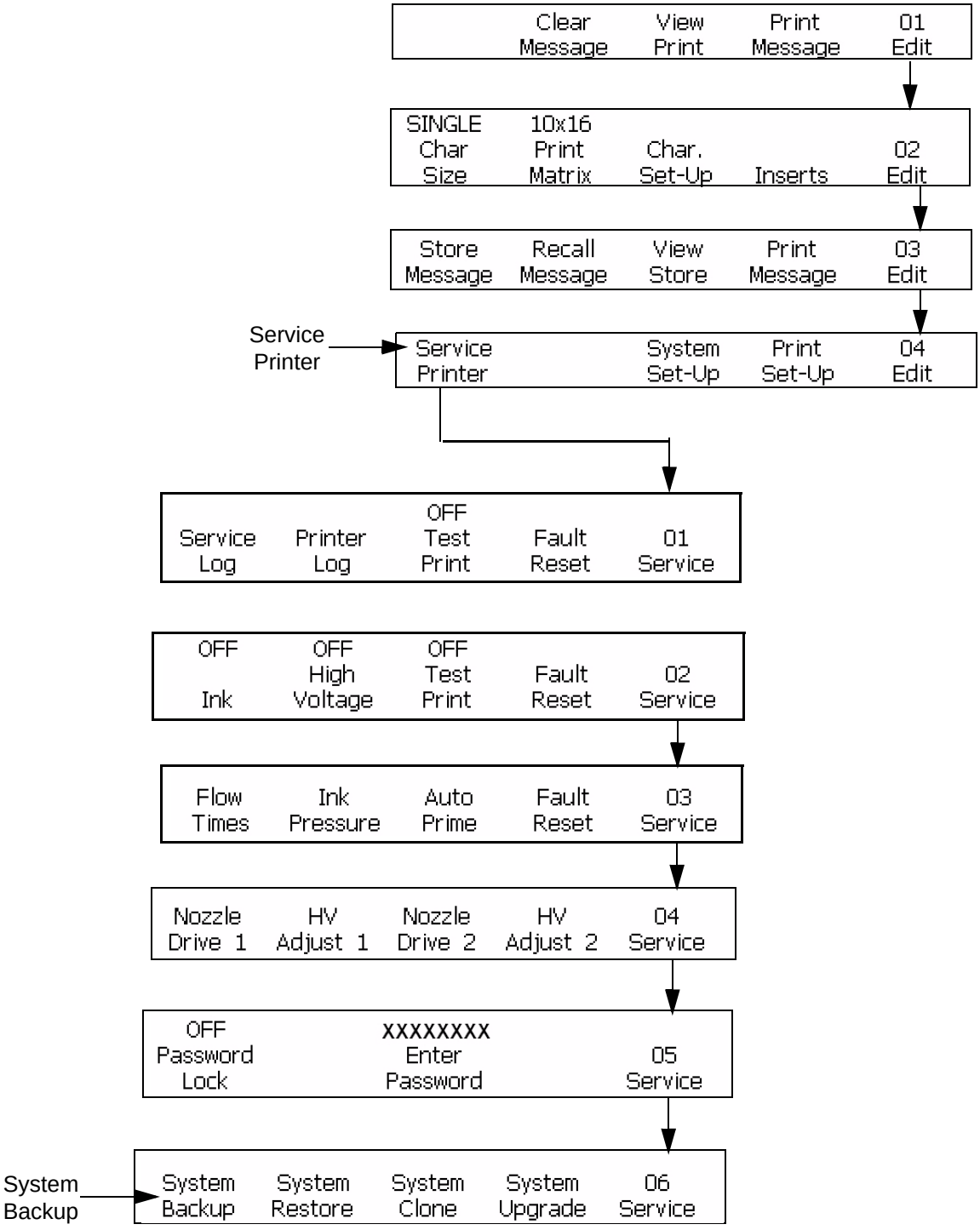


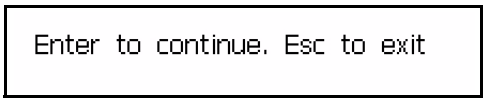
Figure 7-25: Access Frame <06Service>

System Backup

This procedure shows you how to make a copy of all configured settings and messages to the CF1 card (main).

Procedure

1. Begin with the Frame <06 Service>. Refer to Figure 7-25 on page 7-39.
2. Press F1 to select <System BackUp>. The following appears on the display screen:



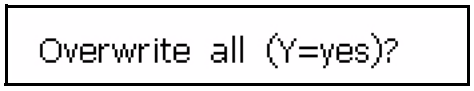
3. Press the ENTER key.
4. The backup is finished when the display message reads "Backup Complete".

System Restore

This procedure shows you how to restore all configured settings and messages, from the auxiliary copy on the CF1 card.

Procedure

1. Begin with the Frame <06 Service>. Refer to Figure 7-25 on page 7-39.
2. Press F2 to select <System Restore>. The following appears in the display screen:



3. Press the “Y” key.

   A message appears, “Updating system..." on the screen for a second. Then the system uses the restored settings to reset.

System Clone

This procedure shows you how to copy the configuration of the current settings and messages to the CF2 card.

Note: *The CF2 card is found in the CF2 slot.*

Procedure

1. Begin with the Frame <06 Service>. Refer to Figure 7-25 on page 7-39.
2. Insert a blank CF card in the CF2 slot.
3. Press F3 to select <System Clone>. The following appears in the display screen:

   ```
   Card in second slot (Y=yes)?
   ```

4. Press the "Y" key if a blank CF card is in the slot CF2.

   The message "Backing up system..." appears on the screen for a second. When the system backup is complete, the system displays "Backup complete". The system will not allow a backup if a CF card is not in the CF2 slot.

System Upgrade

The procedure in this section shows you how to restore the backup configuration of the current settings and messages from the CF card found in the CF2 slot.

Procedure

1. Begin with the Frame <06 Service>. Refer to Figure 7-25 on page 7-39.

   Note: *Make sure that the CF card that was used to upgrade, is found in the CF2 slot.*

2. Press F4 to select <System Upgrade>. The following appears in the display screen.

   ```
   Update and Restart (Y=yes)?
   ```

3. Press the "Y" key if the CF card that contains the auxiliary information for the upgrade is in the slot CF2.

The message "Updating system...". appears on the screen for a second. When the system update is complete, the system displays "Completed Printer restart". The system will not allow an upgrade if a CF card is not in the CF2 slot.

The printer restarts.

Maintenance

8

This chapter contains the following topics:

- How to clean and inspect the printer
- How to replace the ink and make-up fluid bottles
- How to see the run hour timers

How to Clean and Inspect the Printer

The maintenance procedures that you must perform at normal intervals are as follows:

- Visual inspection of the air and fluid tubes for leaks (refer to "Visual Inspection of the Printer" on page 8-1).
- Inspect and clean the printhead at normal intervals (refer to "Inspect and Clean the Printhead" on page 8-1).

Perform the visual inspection when you open the ink cabinet or one time in a week.

The schedule you must follow to inspect and clean the printhead depends on the operating conditions of the printer. When you install a new printer, you must perform these tasks one time in a week.

Visual Inspection of the Printer

Inspect the printer cabinet carefully. Open the fluids cabinet and inspect all fluid bearing components for leaks. If the fluids (or dried fluids) collect at the bottom of the ink cabinet, contact a trained Videojet service technician immediately.

Inspect and Clean the Printhead

When the ink collects in the printhead, clean the printhead for the correct operation of the printer. When you turn on or turn off the printer, the system automatically cleans the nozzles and ink return lines with the make-up fluid. The printhead remains clean for many days because of the above reason.

Note: *The Videojet Excel Dual Nozzle printer allows the operator to perform the autoflush procedure manually. The printer can perform the autoflush when you turn off the HEAD key also (if autoflush is found in the system software).*

Printhead Inspection

Do the following tasks to inspect the printhead:

1. If the printer is turned on, press the HEAD key to begin the three and a half minute printhead shutdown sequence.
2. When the shutdown sequence is complete, disconnect the AC power cable from the AC power.

Warning

PERSONAL INJURY. Before you continue, make sure that the AC power is disconnected (unplugged).

3. Remove the screw that fastens the front printhead cover (use a screwdriver).
4. Remove the front printhead cover and keep the screw (Figure 8-1).

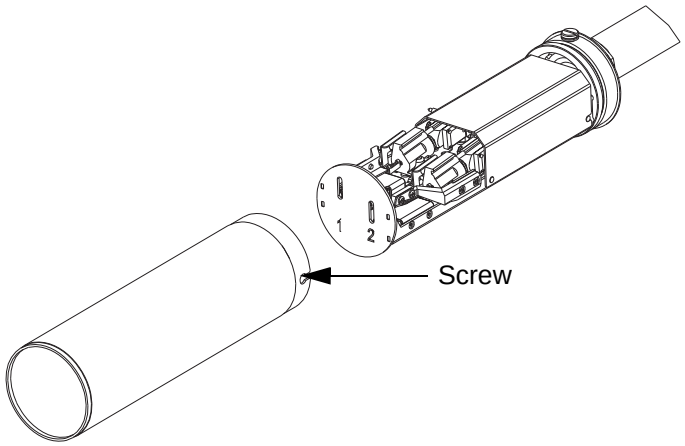
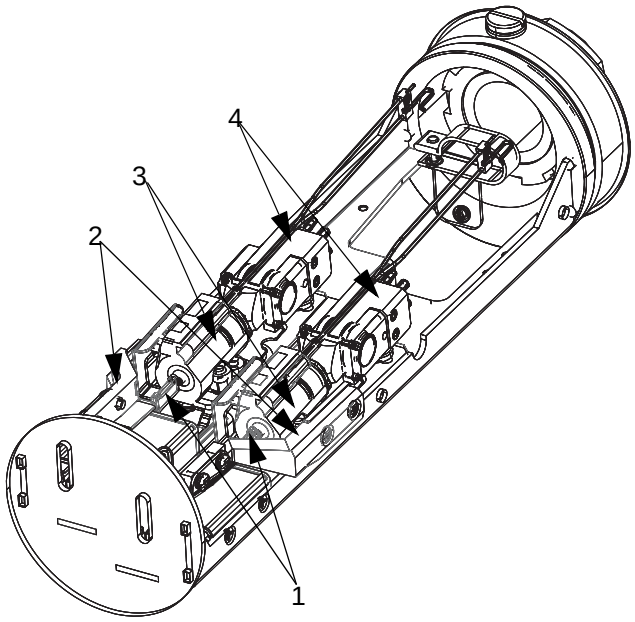


Figure 8-1: Front Printhead Cover Removal

5. Inspect the printhead assembly for foreign particles and ink build-up in the:
   - Orifice of the nozzles (found at the front of the nozzles)
   - Charge tunnels
   - Deflection plates
   - High voltage assemblies
   - Ink return blocks

Refer to Figure 8-2 for the location of each component of the printhead.



1. Charge Tunnel Assembly (x2)
2. High Voltage Assembly (x2)
3. Nozzle (x2)
4. Ink Return Block (x2)

Figure 8-2: Printhead Component Identification

6 If the ink build-up is found in the components described, refer to “Inspect and Clean the Printhead” on page 8-1.

7 If the ink build-up is not found, replace the cover and fasten with the screw kept in step 4.

Clean the Printhead

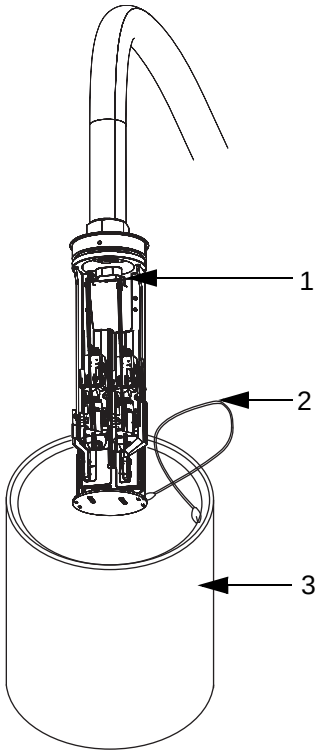
Do the following tasks to clean the printhead:

1 Put the service tray (Item 3, Figure 8-3) below the printhead (Item 1) to collect the ink and make-up fluid.

2 Attach one end of the ground wire (Item 2) to the service tray and the other end to the printhead faceplate.

Warning

PERSONAL INJURY. The failure to ground correctly the service tray and printhead when you use flammable ink can cause the fire because of static discharge.



1. Printhead
2. Ground wire
3. Service tray

Figure 8-3: Grounding the Service Tray to the Printhead

Caution

EQUIPMENT DAMAGE. Clean the charge tunnel carefully. When you clean the printhead if you apply more force, wrong alignment or damage can occur.

3 Make sure that the printhead points downward to the service tray connected to an electrical ground. Flush away the contamination

from Nozzle-1 or Nozzle-2 using the recommended Videojet solution to clean or make–up fluid (Figure 8-4).

Note: *Use less quantity of solution to clean. Do not flush large amount of solution into the ink return block.*

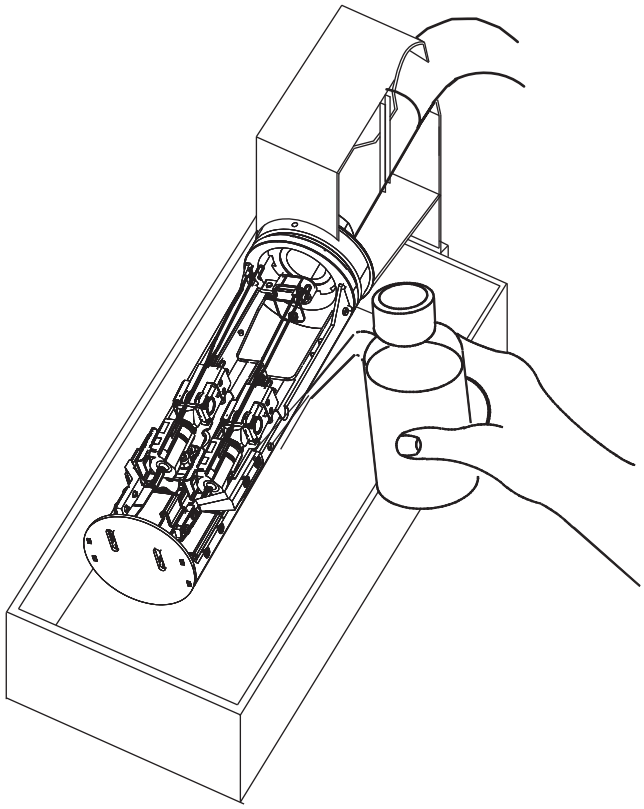


Figure 8-4: Cleaning the Printhead

4 Use either compressed air at approximately 20psi (1.4 bar) or compress the blow bulb (PART NUMBER 21000170) to dry the printhead completely.

Caution

EQUIPMENT DAMAGE. Use only the air dry method. Do not use cloth or paper towels to dry the printhead or the cover. The cloth or paper towels can leave the contamination in the printhead.

Do not pass compressed air by force into the ink return block.

5 Disconnect the ground wire from the printhead and the service tray.

6 Clean the front printhead cover, if necessary.

7 Fasten the cover to the printhead with the screw that keeps the cover in correct position.

8 Discard the cleaning solution in the service tray.

Caution

EQUIPMENT DAMAGE. Do not put the cleaning solution into sinks, sewers, or drains. When you discard the printer fluids, follow the regulations. Contact the correct regulatory agency for more information.

How to Replace the Ink and Make-Up Fluid Bottles

When the printer indicates that the ink and the make-up fluid are low in the supply, replace the ink and make-up fluid bottles.

When the ink is low, empty, or full, the printer displays the icons shown in Figure 8-5.

Figure 8-5: Ink Supply Icons

When the make-up fluid is low, empty, or full, the printer displays the icons shown in Figure 8-6.

Figure 8-6: Make-Up Fluid Supply Icons

Make-Up Fluid

The inks used in the Videojet Excel Dual Nozzle printers dry very fast. When the ink is left open to air, or if the ink is circulated within the printer, the ink becomes hard. To correct this problem the printer adds make-up fluid to keep the ink thin.

How to Replace the Bottle

Note: *When the Ink Full icon or Make-Up full icon appear in the display screen, do not add a new bottle to the related tank.*

Do the following tasks to replace the ink bottle or the make-up fluid bottle:

1 Open the door of the ink cabinet (Figure 8-7).

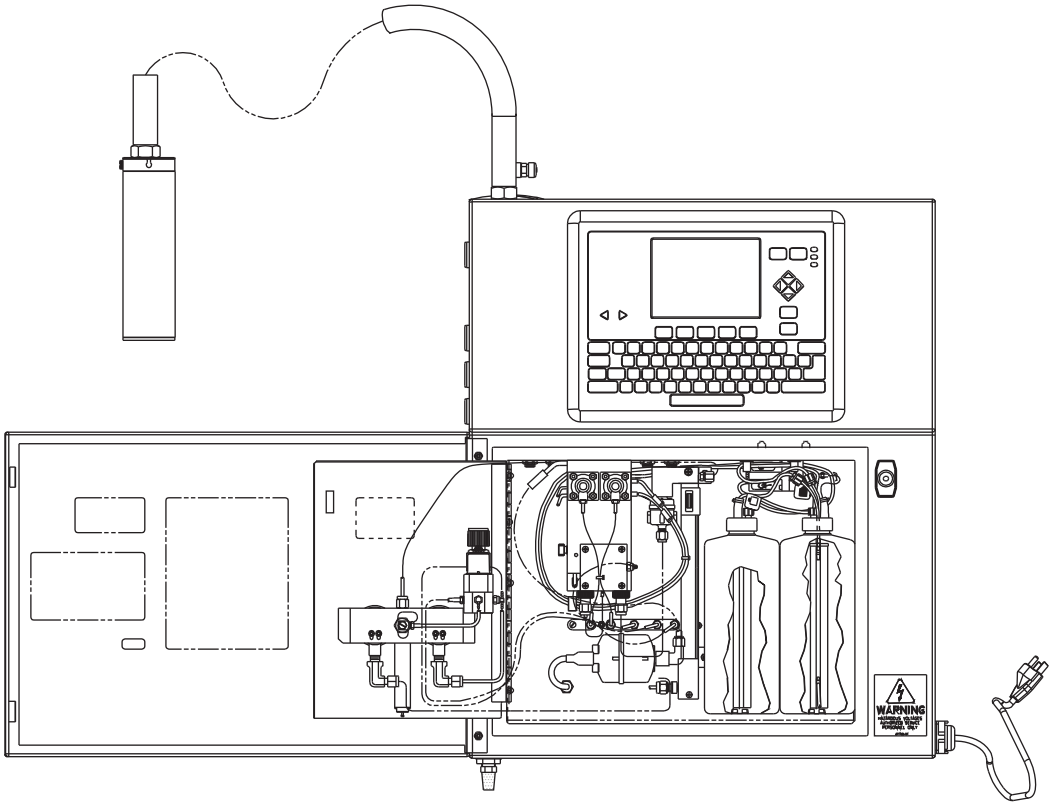


Figure 8-7: Ink System Compartment

2 Rotate the arm on the tank to your right and replace the bottle.

3 Slide the empty bottle outside.

4 To replace the make-up fluid bottle, go to step 5.

5 Slide in a new bottle of the fluid into the correct bracket in the ink cabinet.

Note: *You cannot insert an ink bottle into the make-up fluid bracket or a make-up fluid bottle into the ink bracket. You cannot insert the wrong bottles because of the shape of the bottles.*

6 When you insert the bottle completely into the bracket, rotate the arm to your left. This procedure fits the bottle to the tank.

How to See the Run Hour Timers

The printer maintains two timers that monitor the length of operation time. The timers perform following functions:

- *Time Ink On:* This timer considers the total number of hours that the main ink system pump is in use. You cannot reset the Time Ink On timer.
- *Time Printing:* This timer considers the total number of hours that the printer is turned on. You cannot reset the Time Printing timer.
- *System Million Drops Counter:* This timer displays the total number of ink drops (in millions). You cannot reset the counter.

When the printer requires the routine maintenance, the service personnel trained by Videojet use these timers to turn on the service alarms.

Do the following tasks to see both the timers:

1. Select the option *"Data Logging"* from the menu bar.
2. Use the  arrow key to select the View Run Hours option from the Data Logging menu.
3. Press the ENTER key to open the Run Hours dialog box and see the readings (Figure 8-8).

Figure 8-8: Run Hours Dialog Box

Troubleshooting

9

This chapter contains the following topics:

- Troubleshooting procedures
- The procedure to check the software version

Troubleshooting Procedures

The trained Videojet service personnel only must perform the troubleshooting tasks normally. But the operator also can perform a number of processes.

There are seven basic categories of problems:

- You cannot power on the printer (there is no display on screen).
- The printer displays the amber LED.
- The printer is turned on, but does not print.
- Problems with the size of the print or position.
- The quality of the print is bad.
- The printer displays an error message or a status icon.

Troubleshooting Power Problems

If you cannot power on the printer (there is no display on the screen), the printer is not receiving the power supply.

Do the following tasks to correct the above problem:

1. Make sure that the power cord is connected correctly to the AC outlet.
2. Make sure that the AC outlet receives the power.

   Connect a device that is in the operating condition, to the same outlet to check the supply of power. The incorrect operation of the device indicates the fault in the power supply.

   If the outlet does not provide the power, check the electrical connections in the building or the fuse.
3. If the conditions given above are OK, contact the Videojet-trained service personnel for more troubleshooting information.

Troubleshooting Amber LED

The illuminated amber LED in the upper right corner of the keypad indicates one of the following warning conditions:

The Service Mode

The service mode icon (Figure 9-1) that appears on the screen indicates that the printer is in the service mode.

Figure 9-1: "Service Mode" Icon

The Service technicians use the service mode for maintenance tasks.

General Warnings

The printer indicates a general warning if the service mode icon does not appear on the screen. An icon appears on the screen with a warning message. Refer to "Printer Status Icons" on page 9-5 and "Fault and Warning Messages" on page 9-8 for more troubleshooting information.

The Printer is Turned On, but Does Not Print

This condition indicates that some error condition exists, or the printer is not in the print mode.

Note: *If the printer is not in the service mode, examine the three LEDs (indicator lights) in the upper right corner of the keypad. Try the solutions recommended in Table 9-1 after you examine the three LEDs.*

Red	Green	Causes	Solutions
On	Off	There is a fault condition that prevents the printing. An icon appears on the screen with a related error message.	Refer to “Printer Status Icons” on page 9-5 and “Fault and Warning Messages” on page 9-8 for troubleshooting information.
Off	Off	The printhead has not started.	Press the HEAD key to start the printhead.
Off	Flashing	• The printhead is about to start or shutdown • The printhead is turned on, but the printer is not in the print mode.	Wait for five minutes to see if the LED turns completely on or off. If the LED flashes even after five minutes, the printer is not in the print mode. Select *the Print Key*
Off	On	The printer is ready to print, but cannot print because: • The Print Message button is not selected. • The printer is not receiving the shaft encoder pulses • The printer is not detecting products to print on	1. Press the F4 <Print Message> key (the F4 <Print Message> key is found in the Frame <01 Edit>). 2. Check the top of the display for this message -"Printing”. 3. If the display does not read “Printing”, check for incorrect operation of the shaft encoders and product detectors. 4. Check the related printer settings.

Table 9-1: Causes and Solutions to Printer Errors

If the problem continues, contact the Videojet-trained service personnel.

Problems with the Print Position or the Size

The problems with the print position and size are related to the message setup normally. Try to adjust the setup according to the instructions given below. If the problem continues, contact the Videojet-trained service personnel.

Adjust the Print Position

Do the following tasks to adjust the print position:

1. Change the print delay value. Refer to "Delay Printing of a Message" on page 6-86.
2. Make sure that there are no spaces, which are not required, at the start of the message.

Adjust the Print Size

Do the following tasks to adjust the size of the print:

1. Change the size of the text used in the message. Refer to "Adjust the Height of the Message" on page 6-21, and "Adjust the Width of the Message" on page 6-22.
2. Make sure that the distance between the printhead and the product is accurate. The character height depends on the distance between the print head and the product.
3. Edit the message parameters for the message being printed. The following parameters control the size of the print:
   - The Message Width (changes the width of the characters)
   - The Message Height 1 and 2 (changes the height of the Message Height 1 or the Message Height 2 characters)

Bad Quality of Print

When the ink deposits collect on the printhead, you can get problems with the print quality. Clean the printhead according to the instructions in "Inspect and Clean the Printhead" on page 8-1.

If the problem continues, contact the Videojet-trained service personnel.

Printer Status Icons

The printer can display in the Status Area, four categories of printer status icons on the screen.

- Indication of major faults
- The fluid low icons
- The fluid full icons
- General status icons

Indication of Major Faults

The printer displays major faults through the icons, at the top of the screen and status messages at the bottom of the screen (Table 9-2). One icon and related message only can appear on the screen at a time. Refer to "Troubleshooting Faults and Warnings" on page 9-8 for information to clear the faults and return the printer to service.

Icon	Name	Description
	Cabinet Over Temperature Fault	This icon indicates that the temperature of the printer cabinet has increased a lot. The printer stops automatically to prevent any damage. You can restart the printer after the temperature decreases. Report all increase in the temperature incidents to the service personnel trained by Videojet.
	No Signal Fault	This icon indicates that the ink is not entering the ink return block for either Nozzle-1 or Nozzle-2. Clean and dry the printhead. If the fault continues, then report the condition to the service personnel trained by Videojet.
	Phasing Fault	This icon indicates that you must clean either Nozzle-1 or Nozzle-2. If the failure continues even after you clean and dry Nozzle-1 or Nozzle-2, report the fault to the service personnel trained by Videojet.
	High Voltage Arc Fault	When a High Voltage arcing is sensed in either Nozzle-1 or Nozzle-2, this icon appears. You must clean the Nozzle-1 or Nozzle-2. If the failure continues even after you clean the nozzles, report the fault to the service personnel trained by Videojet.

Table 9-2: Major Faults Icons

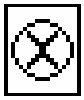
Icon	Name	Description
	Fan Failure Fault	This icon indicates that the internal fan of the printer is not operating. This fan failure can increase the temperature of the printer. Contact the Videojet-trained service personnel to repair or replace the fan.
	Overspeed Warning	This warning icon indicates that the line speed is high for the print width required. If the print width is not acceptable, report this condition to the service personnel trained by Videojet.
	Other Fault	This icon indicates that a fault, different from the faults recorded above, has occurred. The status text at the bottom of the screen indicates the exact fault reported.
	Other Warning	This icon indicates that a warning, different from the warnings recorded above, have occurred. The status text at the bottom of the screen indicates the exact warning reported.

Table 9-2: Major Faults Icons

The Fluid Low Icons

The fluid low icons (Table 9-3) are technical fault and warning conditions. The printer can display the fluid low icons with other major faults or warning conditions.

Icon	Name	Description
	Ink Low Warning	This icon indicates that the ink supply tank is low. Insert a new bottle of ink.
	Ink Out Fault	This icon indicates that the ink supply tank is empty. The printer cannot print until a new bottle of ink is inserted.
	Make-Up Low Warning	This icon indicates that the make-up fluid supply tank is low. Insert a new bottle of make-up fluid.
	Make-Up Out Fault	This icon indicates that the make-up fluid supply tank is empty. The printer cannot print until a new bottle of make-up fluid is inserted.

Table 9-3: The Fluid Low Icons

The Fluid Full Icons

The fluid full icons (Table 9-4) are warning conditions. The printer can display these icons separately and also with other major faults or warning conditions

Icon	Name	Description
	Ink Full Warning	This icon indicates that the ink supply tank is full. When this icon is displayed, do not insert a new bottle of ink.
	Make-up Full Warning	This icon indicates that the make-up fluid supply tank is full. When this icon is displayed, do not insert a new bottle of make-up fluid.

Table 9-4: The Fluid Full Icons

General Status Icons

The general status icons (Table 9-5) do not indicate the faults and warnings. They indicate the printer status. When the general status icons appear, troubleshooting is not needed.

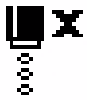
Icon	Name	Description
	Jet Running	The ink jet flows and the machine is prepared to print. When the ink jet starts, the icon flashes.
	Jet Stopped	The ink jet is being stopped. When the ink jet stops, the icon flashes
	Service Mode On	The printer is in the service mode at this time. This mode allows qualified service personnel to make quick adjustments necessary for some service operations. Do not operate the printer in this mode. If you must operate the printer in this mode, take the help of service personnel trained by Videojet.
	Service Due	The printer is due for the scheduled maintenance service.

Table 9-5: General Status Icons

Fault and Warning Messages

The printer displays the fault messages on the screen and logs them in the service log. When more than one fault is found, only the most important fault message is displayed.

Troubleshooting Faults and Warnings

To clear a fault or warning, go to Frame <01 Service> and press <F4 Fault Reset> or press the CANCEL button.

List of Faults and Warnings

Table 9-6 shows all the fault and warning messages. The troubleshooting instructions are included for selected faults and warnings. Only the service personnel trained by Videojet must perform the troubleshooting procedures for most of the faults.

Fault	Troubleshooting
250 Volt Status Fault	Service personnel only
Nozzle-1 Charge Tunnel Supply Fault Nozzle-2 Charge Tunnel Supply Fault	Service personnel only
Auto-Nozzle Drive Failed	Service personnel only
Cabinet Over Temperature Fault	Service personnel only
Crossflow Filling Prime Fault Crossflow Emptying Prime Fault	Service personnel only
Encoder overflow	Service personnel only
Encoder Overrun (Product missed)	The fault is an information message that indicates that the printer cannot print on the first product detected. Because the printer has not entered the print mode it cannot print on the first product. The printer prints on the remaining products normally.
Fan Failure Fault	Service personnel only
Fluid Pressure Low Fault	Service personnel only
Fluid Pressure High Fault	Service personnel only
Nozzle-1 High Voltage Arc Fault Nozzle-2 High Voltage Arc Fault	This message indicates that a High Voltage arcing is sensed for either Nozzle-1 or Nozzle-2. You must clean the print head. If the fault continues, report the condition to the service personnel trained by Videojet.
Nozzle-1 High Voltage Status Fault Nozzle-2 High Voltage Status Fault	Service personnel only
Fluids Out	This message indicates that the ink supply is empty. The printer cannot print until a new bottle of ink is inserted.

Table 9-6: Faults and Warnings

Fault	Troubleshooting
Fluids Low	This warning message indicates that the ink supply tank is low. Insert a new bottle of ink.
Ink Pump Overspeed	Service personnel only
Insert Update Failure	Service personnel only
Invalid Bar Code	This message indicates that the data in the barcode of the current message is not valid for the type of barcode used. Create the barcode again so that the barcode follows to the guidelines shown in Appendix B.
Flow Time Too Long Fault	Service personnel only
Flow Time Too Short Fault	Service personnel only
Empty Time Too Long Fault	Service personnel only
Fill Time Too Long Fault	Service personnel only
Transfer Request Too Long Fault	Service personnel only
Air Pressure Fault	Service personnel only
No Air Fault	Service personnel only
Pressure Tank Switches Fault	Service personnel only
Reservoir Switches Fault	Service personnel only
Assertion Fault	Service personnel only
Nozzle Wash Fault	Service personnel only
Nozzle Wash Prime Fault	Service personnel only
Trap Overfill Fault	Service personnel only
Stroke Com Timeout Fault	Service personnel only
AP Com Link Fault	Service personnel only
Pressure Tank Overfill Fault	Service personnel only
Undefined Fault	Service personnel only
Printhead Cover Fault	Service personnel only
Invalid Message Height Fault	Service personnel only
Ink Return Filling Prime Fault	Service personnel only
Ink Return Emptying Prime Fault	Service personnel only
Valve Control Logic Fault	Service personnel only
Makeup Supply Switch Fault	Service personnel only
Ink Supply Switch Fault	Service personnel only
Message Truncated	When this message appears, create and save the message again. If the problem continues, contact the service personnel trained by Videojet.

Table 9-6: Faults and Warnings (Continued)

Fault	Troubleshooting
Missing Font Data	Service personnel only
No Signal Fault Nozzle-1 No Signal Fault Nozzle-2	This message indicates that the ink is not entering the ink return block in either Nozzle-1 or Nozzle-2. Clean and dry the printhead. If the fault continues, report the condition to the service personnel trained by Videojet.
Not Ready to Print	This message indicates that the printer is not in the print mode. Select *Print Enable* from the Print menu, and make sure that the Print setting shows - “Enable.”
Overspeed Warning	This message indicates that the line speed is too high to get the print width required. The print appears to be stretched. If the stretching is not acceptable, decrease the conveyor speed.
Overspeed (Data Lost)	Service personnel only
Overspeed (no stroking)	Service personnel only
Overspeed (no image)	Service personnel only
PEAP Watchdog Timeout	Service personnel only
PEAP 24V Disabled	Service personnel only
Phasing Fault	This message indicates that you must clean either Nozzle-1 or Nozzle-2. If the failure continues even after you clean and dry Nozzle-1 or Nozzle-2, report the fault to the service personnel trained by Videojet
Prime Required	Service personnel only
Print Engine Undefined Fault	Service personnel only
Print Queue Overflow	Service personnel only
Production line fail - bad job or line setup	Service personnel only
Product Queue Overflow	Service personnel only
RAM Re-Initialized Fault	Service personnel only
Render Image Failure	Service personnel only
Reservoir Low Too Long Fault	Service personnel only
Reservoir Overfill	Service personnel only
Reservoir Prime Failed	Service personnel only
Serial Data Error (Unknown)	Service personnel only
Unable to put print engine into print mode	Service personnel only

Table 9-6: Faults and Warnings (Continued)

Check the Software Part Number and Build Version

Do the following tasks to check the version of the software:

1. Move to frame <01 System> (or any System frame).
2. The top of all the System frames display the software part number after the label "SW". The number contains eight digits (SW XXXXXX-01).
3. The software build version is shown after the label "Build" (for example, Build 0.06).

Specifications

A

Appendix A contains the following topics:

- Physical specifications
- User Interface specifications
- Environmental requirements
- Electrical requirements
- Energy requirements
- Ink and solvent capacity
- Printed output
- Miscellaneous

Physical Specifications

Table A-1 lists the physical specifications of the Videojet Excel Dual Nozzle printer.

Control Unit	Stainless steel (refer Figure A-1 for the dimensions).
Printhead	Stainless steel front cover and chassis (refer Figure A-1 for the dimensions) Dual Nozzle type: 66 micron, universal.
Umbilical	Flexible PVC tubing, reinforced by rigid PVC spiral Dimensions: 6 m (20 feet) in length, 26.7 mm (1.05 inch) in diameter Bend radius: 178 mm (7 inches), minimum
Weights	Approx. 29 kg (65 lbs.), unpacked and without fluid Approx. 32 kg (70 lbs.), unpacked and loaded with fluid

Table A-1: Printer Physical Specifications

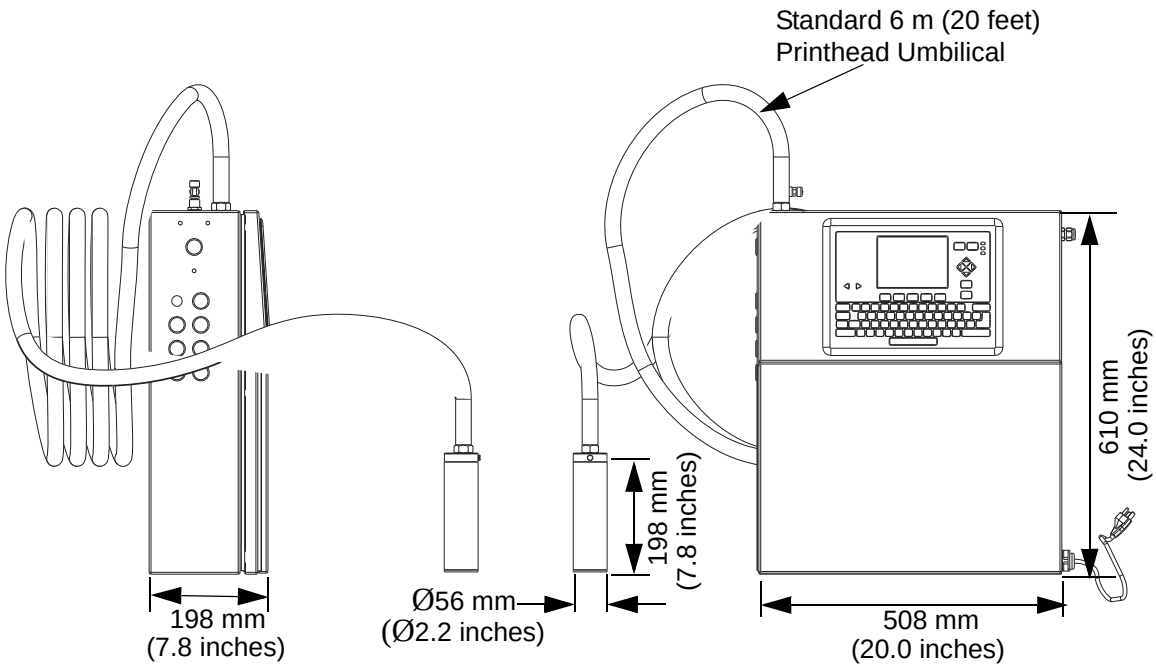


Figure A-1: Printer Dimensions

User Interface Specifications

Table A-2 lists the user interface specifications.

Display	1/4 VGA (320x240) backlit monochrome, 144mm (5.7 inches) diagonal
Keyboard	Moisture and ketone resistant, membrane-type.

Table A-2: User Interface Specifications

Environmental Requirements

Table A-3 lists the environmental requirements of the Videojet Excel Dual Nozzle printer.

Note: *The typical temperature and humidity ranges specified in Table A-3 are subject to the type of ink used. A positive air dryer accessory (378937) is recommended when operating in environments with greater than 70% RH to minimize the chances of condensation occurring in the printhead.*

Temperature	Operating, 4°C to 43°C (40°F to 110°F) Storage, -20°C to +60°C (-4°F to +140°F)
Humidity	Operating, 10% to 90% RH without condensation Storage, 5% to 95% RH without condensation.
Industrial Protection Rating	There are two models: IP65 Model IP54 Model (the printer includes a limited amount of protection against dust and dripping water)

Table A-3: Printer Environmental Requirements

Note: *The IP ratings are valid only for the enclosure. The ratings are not valid for the print head unless printhead cover (part number 379246) is installed in position of the existing printhead cover. The printhead cover (part number 379246) has a sealed end that prevents the printing. The IP ratings are not valid for strobe light option (part number 378772) that has a rating as IP23.*

Electrical Requirements

Table A-4 lists the electrical requirements of the Videojet Excel Dual Nozzle printer.

Voltage	85 to 264 VAC.
Frequency	50/60 Hz, universal.
Power Consumption	75 watts, maximum to 60 watts standard.
Current	1 amp, maximum

Table A-4: Printer Electrical Requirements

Energy Requirements

Compressed Air

Input Air Pressure	4.8 bar (70 psi) minimum to 6.9 bar (100 psi) maximum
Air Consumption	1.1 SCFM (0.52 liters/second) at 2.8 bar (40 psi) ink pressure
Air Quality	Filtered to 0.03 microns and no more than 1PPM oil content

Table A-5: Compressed Air Specifications

Ink and Solvent Capacity

Table A-6 lists the ink and solvent capacity of the Videojet Excel Dual Nozzle printer.

Total Working Fluid (amount of fluid in circulation)	TBD
FMS Reservoir	TBD
Ink Filter	TBD
Ink Bottle	1qt
Make-Up Bottle	1qt

Table A-6: Printer Ink and Solvent Capacity

Printed Output

Table A-7 lists the printed output specifications of the Videojet Excel Dual Nozzle printer.

Resolution	70 dots per inch (approximately)
Spot Size	0.381 mm to 0.508 mm (0.015 inch to 0.020 inch). The values depend on ink and the substrate properties.
Throw Distance	4.76 mm (3/16 inch) (the distance between the substrate and the printhead faceplate for best print quality)
Minimum Line Gap (5x5 Quad/5x5 Quad)	0.8 mm @12.7 mm (1/2 inch) throw distance
	1.5 mm @4.76 mm (3/16 inch) throw distance

Table A-7: Printed Output Specifications

Maximum Line Gap (5x5 SL/5x5 SL)	9.1mm @12.7 mm (1/2 inch) throw distance
	9.8mm @4.76 mm (3/16 inch) throw distance

Table A-7: Printed Output Specifications

Miscellaneous

Maximum Message Length	6000 strokes of 48 drops high
Message storage capacity	250 messages of 6000 strokes

Table A-8: Printer Miscellaneous