DOMINO

C-SERIES PRINTERS

OPERATION AND MAINTENANCE MANUAL

MODELS
C7, C16 AND C34

DECLARATION OF CONFORMITY

We

Domino UK Ltd, Bar Hill, Cambridge, England CB3 8TU

declare under our sole responsibility that the products,

Domino C7, C16 and C34 Printers

to which this declaration relates, are in conformity with the following standards:

BS EN 60204 - 1:1992 Safety of machinery - electrical equipment of machines

73/23/EEC : Low Voltage Directive as amended by 93/68/EEC

Council Directive 89/336/EEC EMC compatibility as amended by directive 92/31/EEC of 28th April 1992

BS EN 50082 - 1:1992 Electromagnetic Compatibility-Generic Immunity Standard

BS EN 50081 - 1:1992 Electromagnetic Compatibility - Generic Emission Standard

EN 55022:1987 Limits and measures of measurement of radio interference characteristics of information technology equipment

EN 55011:1996 Conducted emissions

EN 61000 - 4 - 1:1995 Electromagnetic compatibility (EMC). Part 4. Testing and measurement techniques

EN 61000 - 4 - 2:1995 Electromagnetic compatibility (EMC). Electrostatic discharge immunity test

EN 61000 - 4 - 3:1996 Electromagnetic compatibility (EMC). Radiated RF immunity.

EN 61000 - 4 - 4:1995 Electromagnetic compatibility (EMC). Electrical fast transient burst immunity test

EN 61000 - 4 - 6:1996 Electromagnetic compatibility (EMC). Direct injection immunity to RF signals

EN 61000 - 4 - 11:1994 Electromagnetic compatibility (EMC). Part 4. Voltage dips, short interruptions and voltage variations immunity tests.

L. J. Mason
Technical Director

C-SERIES PRINTERS
OPERATION AND MAINTENANCE MANUAL
MODELS C7, C16 AND C34

This manual, Domino Part No. 77091, is for use in the maintenance of Domino C7, C16 and C34 printers.

Users of this equipment are warned that it is essential to read, understand and act according to the information given in Health and Safety, page 9. This part of the manual also specifies a set of symbols which are used elsewhere in the manual to convey special warnings or requirements. It is, therefore, essential that users are also familiar with these symbols and act accordingly.

Domino UK Ltd has a policy of continuous product improvement, the Company therefore reserves the right to modify the specification contained in this manual without notice.

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FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the Federal Communication Commission (FCC) Rules. These limits are designed to provide reasonable 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 communication. Operation of this equipment in a residential area is likely to cause harmful interference, in which case, the user will be required to correct the interference at his own expense.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orientate or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

TÜV CERTIFICATION

This product has been designed for maximum safety, and has been certified as such by TÜV Product Services.

Modifications to this machine that are not approved by Domino, or the use of non-Domino approved spares, will invalidate the CE mark and the TÜV certification.

AMENDMENT RECORD

Amendment	Date
All Parts at Issue 1	October 2001
All Parts at Issue 2	November 2003

CONTENTS

HEALTH AND SAFETY

INTRODUCTION

Domino supplies Safety Data Sheets (SDS's) giving specific safety information with each of its ink products. There are also warnings on each container. The following notes are for general guidance only.

Basic Requirements

When used correctly, printing inks do not cause problems. However, everybody using them should be familiar with the appropriate safety standards and be aware of the precautions that should be taken. The following are basic requirements.

- Proper standards of industrial practice relating to cleanliness and tidiness must be maintained
- Inks and their containers must be stored and handled with care
- All who come into contact with inks must be properly instructed in their use.

Directions for safe working practices vary according to the environment. The following are broad principles so that necessary precautions may be taken.

- Contact with the mouth must be avoided. Therefore eating, drinking or smoking, or any personal habits or actions which may transfer ink to the mouth, must be avoided
- Contact with the eyes must be avoided. Suitable eye protection must always be worn whenever there is any risk of splashing or misting. If ink does get into the eyes, first aid treatment is to flood the affected eye for 15 minutes with saline solution, (or clean water if saline solution is not available), taking care not to allow the water to run into an unaffected eye. Medical aid must be obtained immediately
- Most inks contain ingredients which may injure the skin. Warning of this is given on the SDSs. Barrier creams should be used and protective clothing worn
- Many inks contain materials which vaporise easily and can be inhaled. Good ventilation is necessary
- Any used cleaning materials, e.g. rags, paper wipes, are a potential fire hazard. They must be collected for safe disposal after use
- After exposure to ink, all possible traces must be washed off as soon as possible at the nearest washing facility.

Storage

Store in a cool dry place, avoiding direct sunlight. Keep in the original container and keep the container fully closed.

Fire Risk

For an electrical fire, do not use water. If water must be used, the power MUST BE REMOVED first.

Water-based inks will not burn, although inks based on water-alcohol mixtures may burn if there is sufficient alcohol present. Prolonged exposure of water-based systems to high temperatures may evaporate the water to give a flammable residue.

If there is a fire, there is a likelihood that dangerous fumes will arise from printing inks. For this reason ink must be stored where it can be reached quickly by the fire fighting service, and where it will not spread beyond the store.

Spillages and Disposal

WARNING: **Some dried inks are highly flammable. Clean up all ink spillages immediately. Do not allow the ink to dry or allow any build-up of dried ink spills.**

Spillages must be cleaned up as soon as possible with the appropriate solvent materials and with regard to the safety of personnel. Care must be taken to prevent spillages or residue from cleaning up entering drains or sewage systems.

Inks and associated fluids are materials which conduct electricity. Therefore, power to the printer must be switched off while spillages are being cleaned up.

Printing inks and associated fluids must not be treated as ordinary waste. They must be disposed of using approved methods according to local regulations.

SYSTEM OVERVIEW

INTRODUCTION

The Domino C-Series is a family of high quality ink jet printers enabling printing at speeds of up to 35 metres per minute. Each C-Series unit is designed to be compact and efficient, requiring no external connections except power.

The C-Series printers are capable of printing up to four lines of text at once (depending on the model used), each line containing up to 40 characters. Text heights range from 10mm to 68mm. Each line (or lines) of text printed at once is known as a "message". 50 separate messages can be stored in the printer's memory. Once input, these messages can be recalled for printing at the touch of a button and are entirely unaffected by power loss.

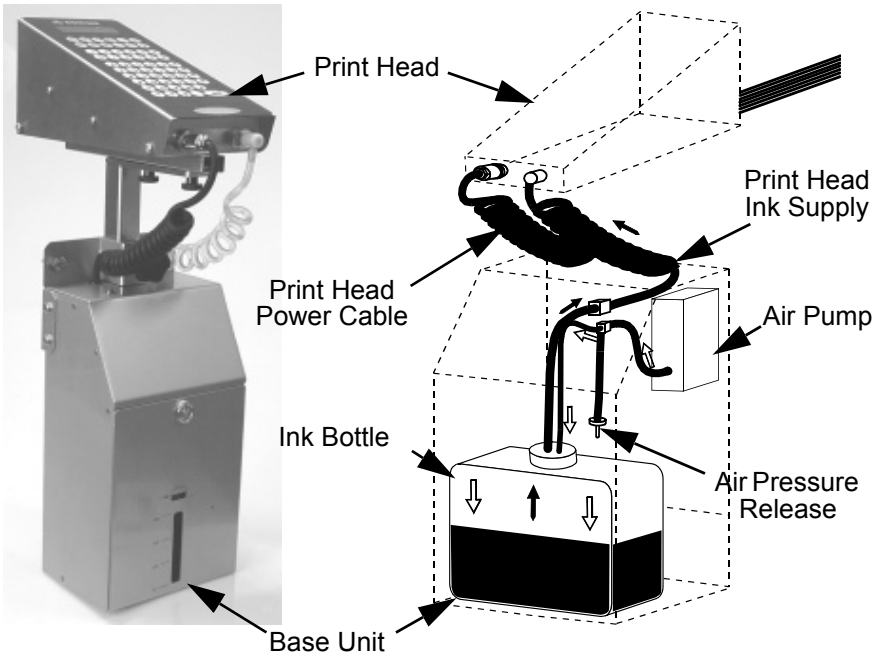
Production dates, sell-by-dates, shift codes and incremental box counting can be generated automatically. The system is quick and easy to install and operate, requiring minimal user input and maintenance. All communication with the printer is made using the combination membrane keypad and LCD panel on the top of the unit.

Ink is held in a special disposable container inside the printer case. A window in the case allows an instant check on ink level to be made.

The C7, C16 and C34 printers are robust, stand-alone units manufactured from high quality metal and will give many years of service in even the most demanding of environments.

HOW IT WORKS

Each printer is manufactured in two main parts. The base unit holds the ink storage and delivery system, power supply unit and in-built air pump.



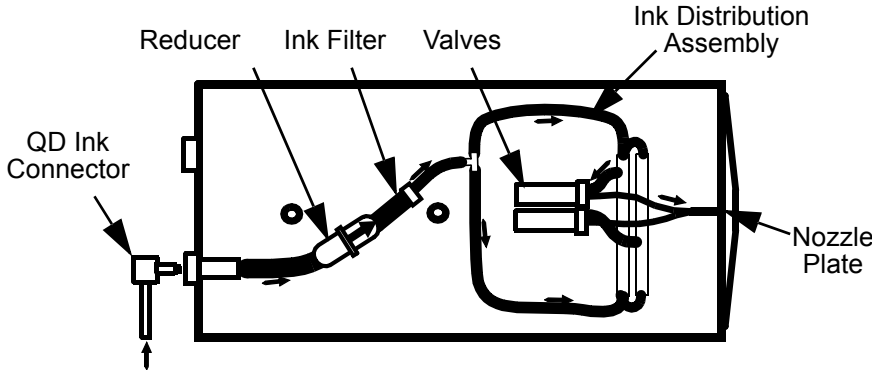
Print Head and Base Unit

The print head contains the printer's processor, memory and ink valve driver electronics, keypad, LCD screen and photocell (or other product sensor). It also contains all the electro-mechanical valves, tubing, filters and ink jet system required to form a matrix of alphanumeric characters.

Air is supplied from an internal air pump mounted in the base unit, which remains active while power is switched on. Low pressure air is fed into the sealed ink bottle, forcing ink up into the print head. A manually operated pressure release

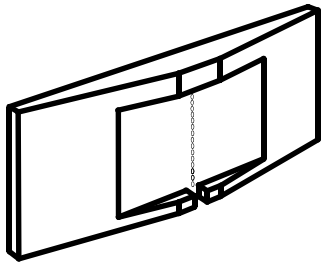
valve is fitted in order to depressurise an empty ink bottle when changing to a fresh supply.

Due to the air pump, there is a constant pressure of ink driven up the coiled supply tube linking the base unit to the print head (a second, separate coiled tube provides the print head with power). A quick disconnect "QD" plug at the end of the ink supply tube is fastened into the rear of the print head.



Print Head Ink Distribution

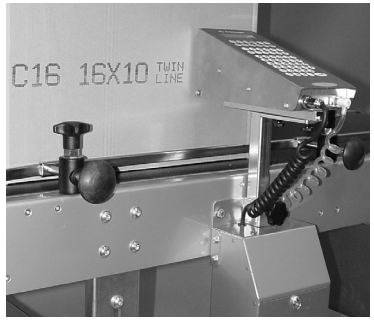
Entering the print head, the ink passes through a 25 micron ink filter which traps any minute particles suspended in it, then an ink reducer. Finally it is distributed to all the inlets in the solenoid valve array. The diagram above shows the ink path in a typical print head. For clarity, only two of the valves are shown. The number of valves and layout of the ink distribution assembly depends on the model used.



Printer Nozzle Plate

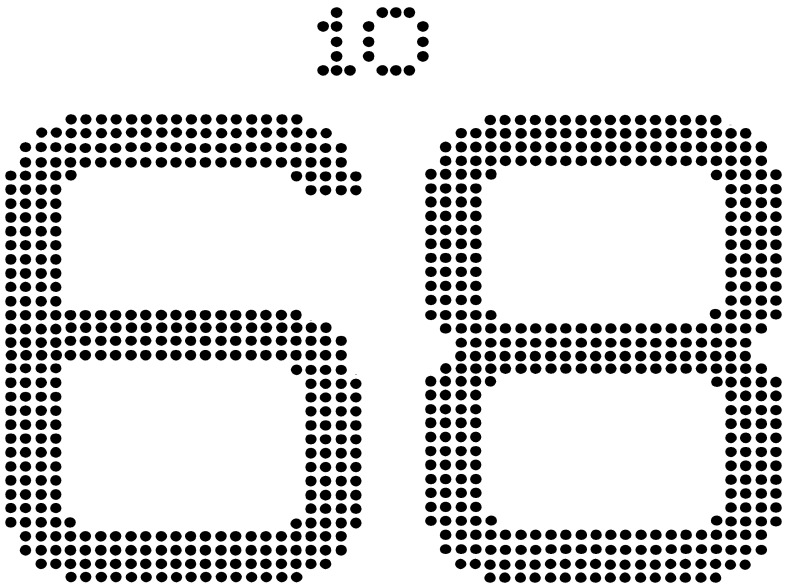
On activation, each solenoid valve allows a measured amount of ink (still under air pump pressure) to move forward into the outlet tube linking the valve with the nozzle plate. The nozzle plate consists of a series of openings arranged vertically. The ink is ejected from these openings in droplets, driven a few millimetres onto the surface of whatever is to be printed. Each time the valve is activated more ink is released into the relevant outlet tube, forcing another droplet of ink out of the nozzle plate.

The vertical component of text is produced by the vertical arrangement of openings in the nozzle plate. Since the printer is fixed in position, the horizontal component of text is produced by the movement of product on the conveyor. It is similar to the action of a typewriter; the place at which printing takes place is fixed, and the carriage moves (to the left) correctly positioning the paper for each character. In the case of the C-Series printers, it is not each character which needs to be positioned but each vertical row of dots.



Printing single and two line text

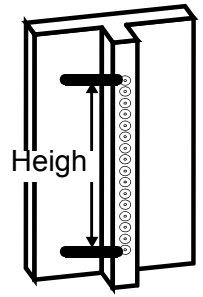
C-Series printers produce text in several available matrices, depending on the text size chosen and the capabilities of the model used. These matrices can range from 5 x 5 (five dots high and five dots wide) to 34 x 24.



The previous diagram shows the smallest and largest matrices available in the C7, C16 and C34 printer range. The text is to scale but not full size; the numbers give

the actual height of the text in millimetres. Each character in the top row is formed using a 5 x 5 matrix; each character in the bottom row is formed using a 34 x 24 matrix.

The number of jets per nozzle plate, and hence the largest matrix available, is fixed for each model. Thus, a C14 has 14 jets arranged in two blocks of seven. This allows two lines of 7 x 5 matrix text to be produced. (Note: it cannot produce one line of text 14 jets high – multi-line text requires a C14.)

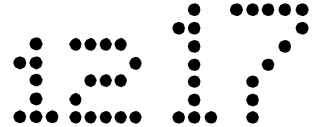


Nozzle Plate Height

The diagrams below show proportionally the print capabilities of each of the printers. In each case, the number is the height of the relevant text in millimetres.

Note: The sizes given are representative only. When dealing with nozzle plates, the "height" is assumed to be the measurement between the middle of the top jet and the middle of the bottom plate in the array.

C7

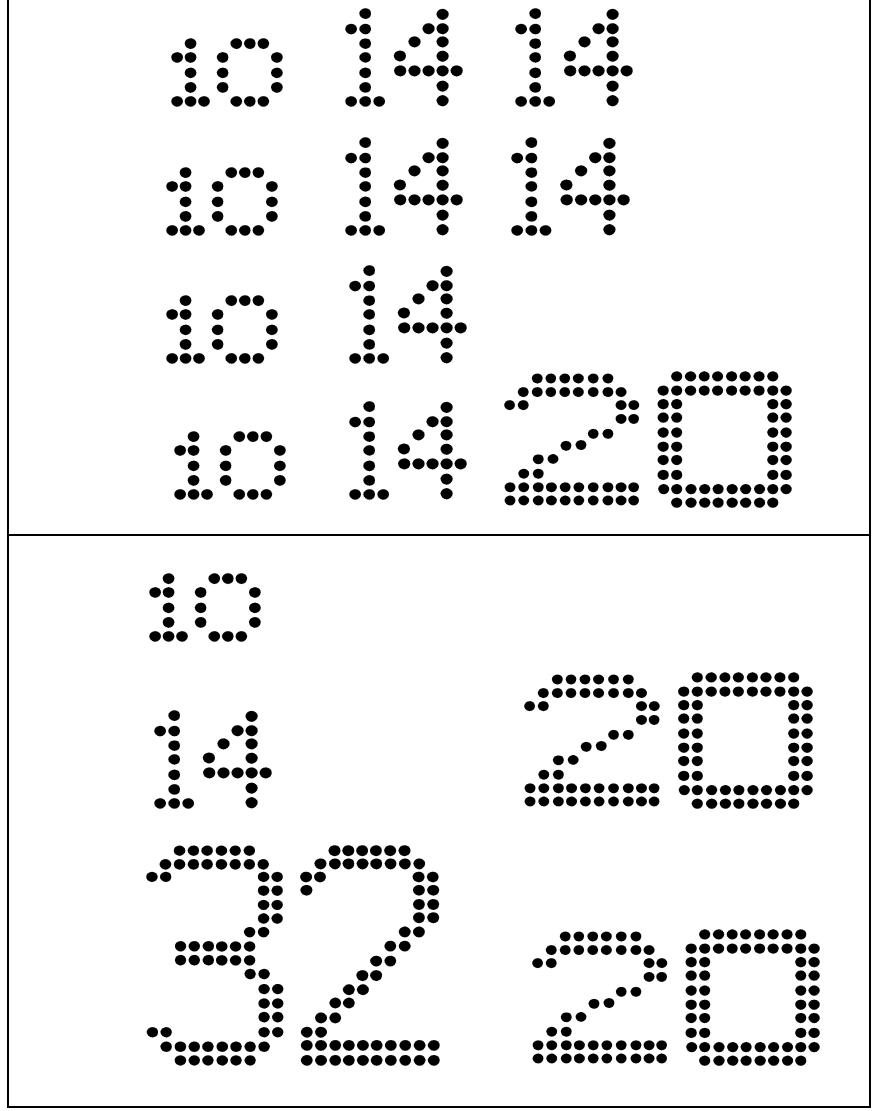


The print capabilities differ widely between models. The larger model number printers are capable of a bigger range of text sizes. The models also differ in the size of LCD screen. Functions and features detailed in this manual are relevant to all models in the range except where indicated.

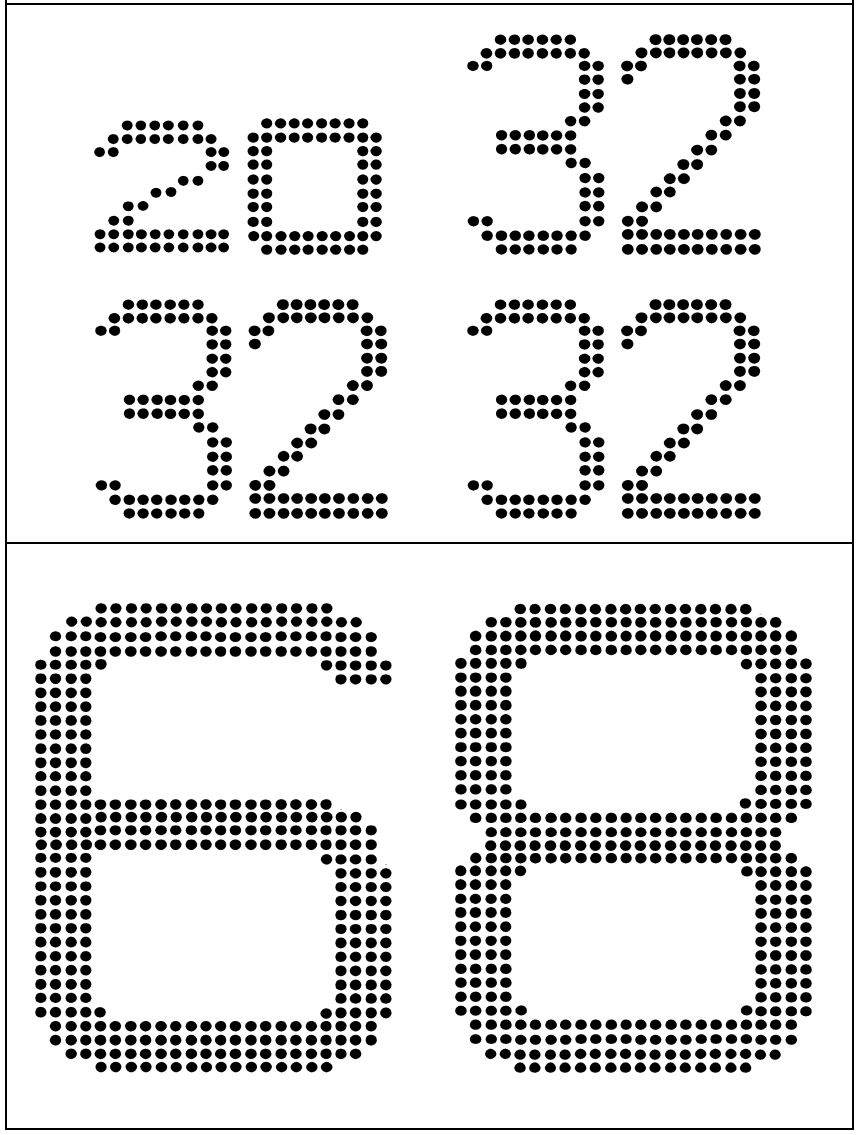
C14
10 14 10 14
20 32

An Example of a Printed Message

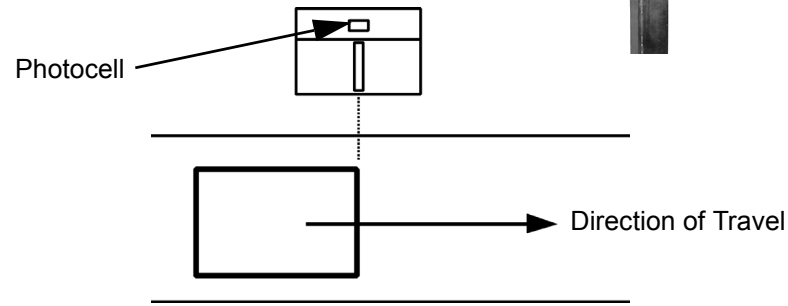
C34



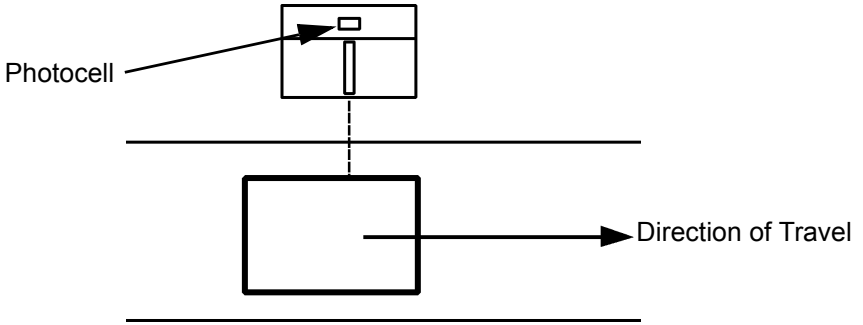
C34 (continued)



The printer is fixed to the side of a conveyor along which move the items to be printed. As an item reaches the print head it is detected by a built-in photocell mounted just above the nozzle plate. (The diagram left shows a C16 print head. The arrangement is slightly different for some printers, but the principle remains the same.)



The system then allows a short time delay to enable the item to be carried on past the print head. This delay depends on the speed of the conveyor and the length and position of the message and is set by the operator for each message.



When the item is at the correct position in respect to the print head, the desired text is printed by repeated triggering of the solenoid valves.

Meanwhile a second item may be approaching the print head. Items do not need to be equally spaced along the conveyor since the printer senses each one individually as it reaches the photocell.

As mentioned earlier, it is the steady horizontal motion of the item along the conveyor which produces the text. On a stationary item only a single vertical band of ink would be produced.

The printer is capable of high volume printing (at a maximum line speed of 35 metres per minute) dependent on the speed of the conveyor. Software controls regulate the speed at which the vertical lines of dots are produced in order to match the speed at which the items pass by the nozzle plate.

It is important that the conveyor runs at a steady, uniform speed. Conveyors which judder or run at variable speed will produce uneven print. On a suitable conveyor the ink jet system is capable of good quality text due to its extremely accurate timing and control of ink drop release.

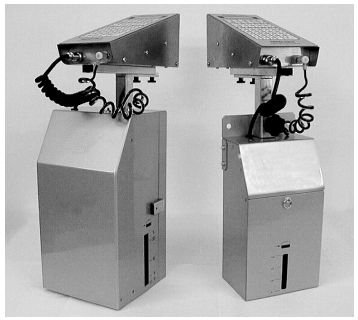
Ink

CAUTION: *Do not use ink or cleaner not supplied by Domino. The use of any other ink or cleaner can cause serious damage to the printer. Contact your nearest distributor or Domino Service for advice on ink and printing applications.*

Printer ink comes in a choice of colours and is specially formulated to maintain the long life of the printer and to provide the optimum performance in a wide variety of applications. There is no messy mixing or topping up of ink as this is supplied in easily-changed disposable containers.

Domino's water-based inks are best suited to porous surfaces such as cardboard, paper and fibres. The main advantage of using water-based ink is that the ink is less prone to drying while in the tube and on the jet openings which are exposed to the atmosphere. Spirit-based inks tend to dry in and on the jets, creating a need for more maintenance. Domino only use water-based ink in the C7, C16 and C34 printers.

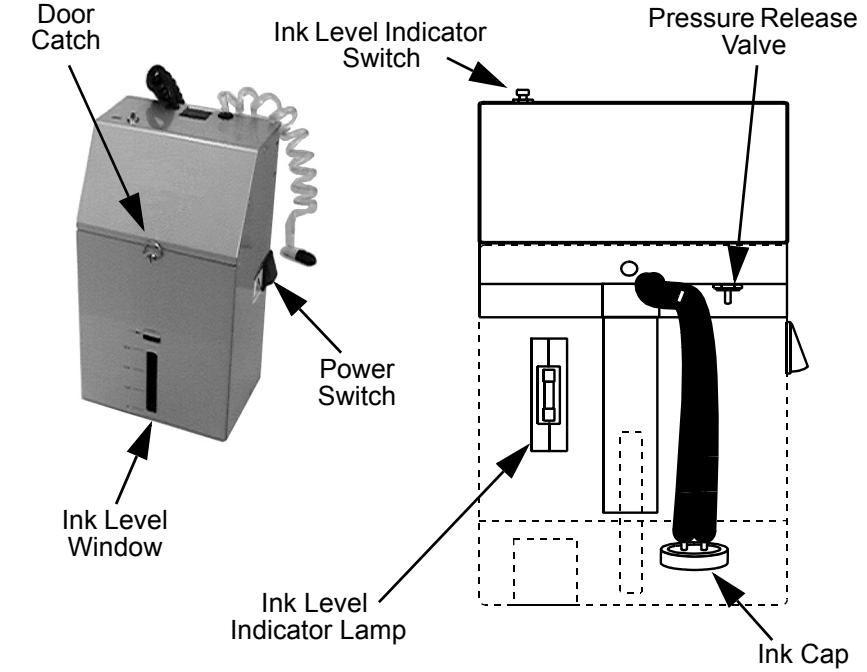
The Base Unit



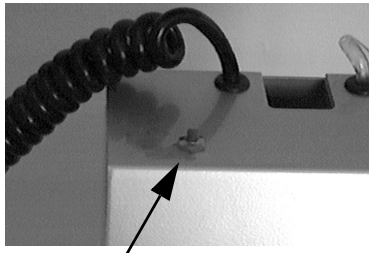
Two different sizes of base unit have ink containers of different capacities.. The C7 and C16 printers are supplied with a one litre base as standard. The C34 is supplied with a three litre base as standard. The larger base with its larger capacity ink container, allows extended operation between ink changes.

One Litre Base

In the one litre base the ink bottle is located inside the base unit, accessed by rotating the door catch ring on the front of the unit 90°, allowing the door to swing down. The diagram below shows the layout of the ink bottle compartment behind the door.

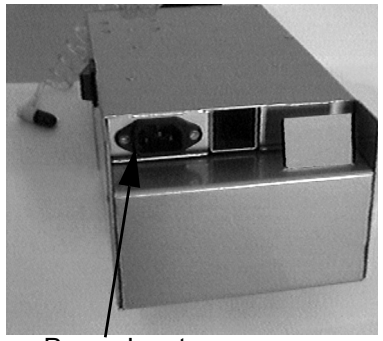


To check the level of ink in the bottle, press the red push-button on the top of the base unit. This switches on the ink level indicator lamp inside the unit. The light from the lamp shines through the ink bottle. The remaining ink can be seen through the ink level window at the front of the base unit. (If the unit has been moved, allow the ink to settle before checking the ink level.) It can then be seen when the ink bottle should be replaced.



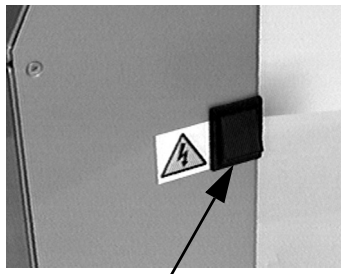
Ink Level Indicator Switch

Power is supplied to the printer by the mains input plug located on the bottom face of the base unit, just behind the hinged door. This is the only input that is required for operation of the printer.



Power Input

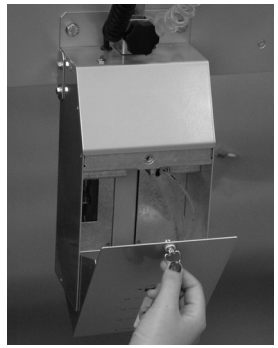
The power switch is located on the right side face of the base unit. When power is turned on, this switch will illuminate. A serial number label near the switch will indicate the supply voltage to which the printer unit is set. Before switching on the printer, ensure that the supply matches the voltage stated on this label. If the unit is set to the wrong voltage, before switching on the printer, change the voltage settings inside the base unit as given in the INSTALLATION chapter of this manual.



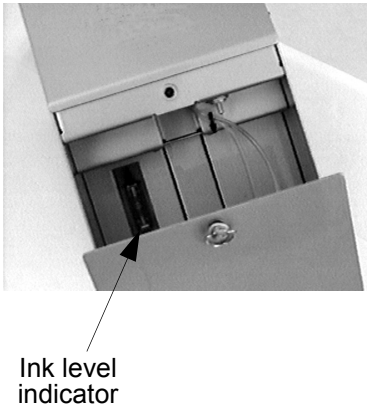
Power Switch

To open the ink compartment door, grasp the door catch ring and rotate it 90° anti-clockwise to disengage the catch. The door will then fall forward on its hinge allowing access to the interior. A stopper beneath the door ensures that it will not trap the mains cable.

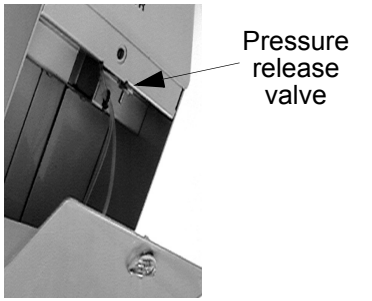
To close the ink compartment door, reverse this procedure. Push the catch in while rotating it 90° clockwise until it holds firm. Take care not to trap the ink and air lines when closing the door.



In this photo the ink level indicator lamp (which looks like a fuse) is visible on the left hand side of the back wall.



A pressure release valve is located just inside the door. This valve safely depressurises the ink bottle when it is exhausted. Since the internal air pump keeps the ink bottle pressurised in order to force ink up into the print head, it is not advisable to attempt to remove an exhausted bottle without first depressurising it.

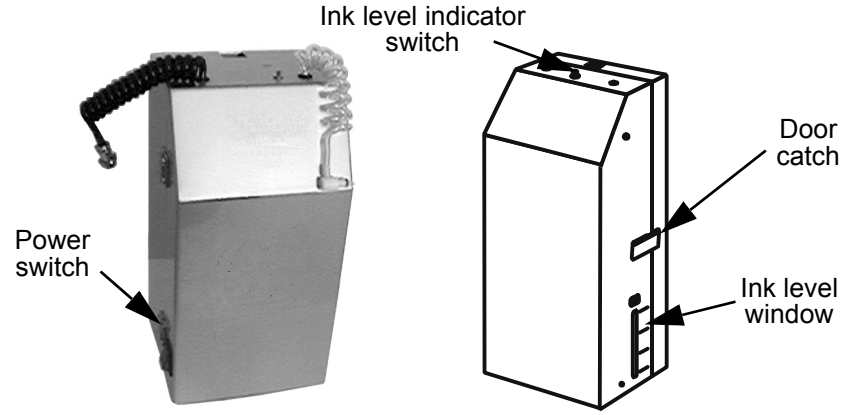


Switch the power off (stopping the air pump) then press the valve stem upwards to release the pressure from the bottle. The bottle can then be removed and discarded.

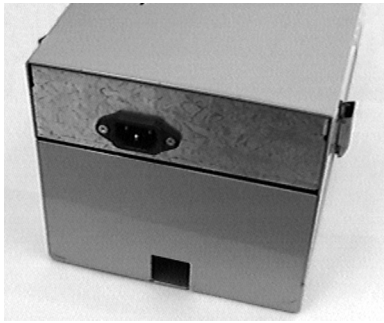
Full instructions on connecting up a new ink bottle are given in the INSTALLATION chapter of this manual.

Three Litre Base

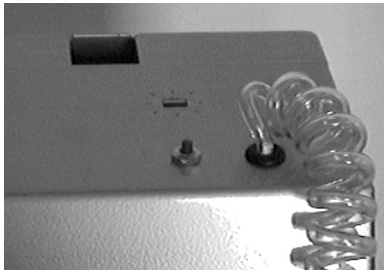
The three litre base is identical in operation to the one litre base; the differences are in the location of the various components and, of course, in the size of ink bottle it uses.



The mains input plug is again located on the bottom of the base unit, this time on the door itself. The power switch is located on the left side face of the base unit door and will illuminate when power is turned on.



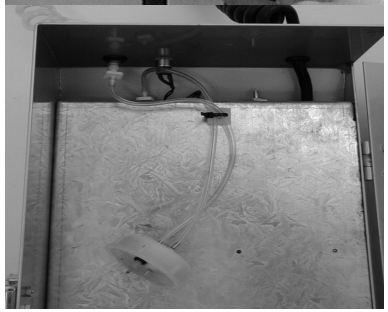
Like the one litre base, an ink level indicator switch is located on the top of the base unit in the form of a red push-button. When it is pressed down the ink level indicator lamp will illuminate and the level of ink in the bottle can be seen through the window on the right side face of the base unit door.



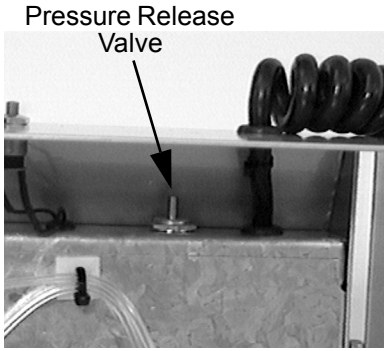
To open the ink compartment door, pull open the door catch so that it disengages with the rear of the base unit (as shown right). The door can then be swung open on its hinge allowing access to the interior.

To close the ink compartment door, reverse this procedure. Hook the catch around the fastening on the rear of the base unit and press it in place. Take care not to trap the ink and air lines when closing the door.

This photo shows the interior of the three litre base's door. The captive ink bottle cap can be clearly seen hanging from its connecting air and ink tubes. All the base unit's electronics are located behind the panel in the door.



The pressure release valve is located at the top of the base unit's door. This valve safely depressurises the ink bottle when it is exhausted, enabling the supply to be renewed.

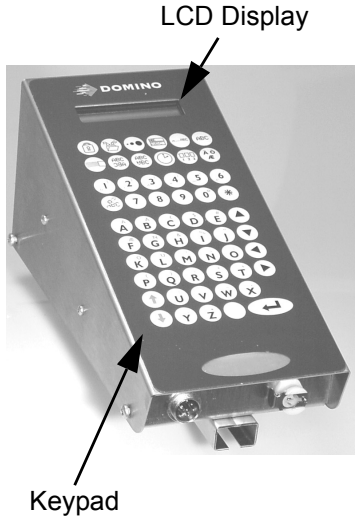


Full instructions on connecting up a new ink bottle are given in the INSTALLATION chapter of this manual.

The Print Head

Communication with the printer is achieved by using the built-in membrane keypad and LCD display on the top of the print head.

The C34 incorporates a four-line LCD display. The other models use a two-line LCD display. This reflects the larger models' increased print capabilities - all other functions are exactly the same.



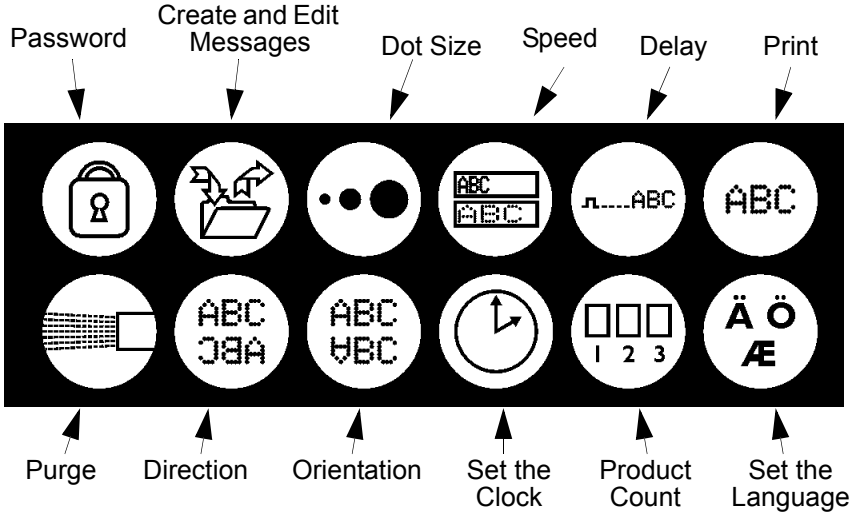
All printers use the same keypad layout and communicate with the operator in the same way, with the same keys accessing the same options and the same prompts requesting the same information.

Notes: (1) The keys are activated by pressure-sensitive pads just beneath the printed surface of the keypad. Press once firmly in the centre of the selected key to activate it.

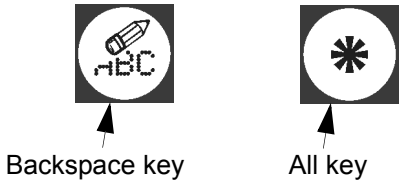
(2) Do not use pens or other sharp objects to activate the keys as serious damage could result. The keypad was designed for fingertip use only.

The keypad is in three sections. Pressing any of the special icon keys at the top accesses the appropriate function as detailed in the Programming and Printing

section of this manual. When pressed in combination with the SHIFT key (see the following page) some of these keys access additional functions.



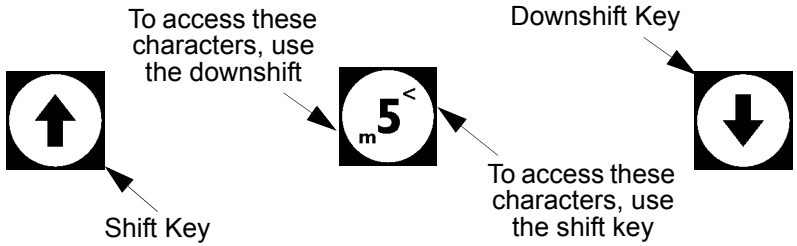
The central section of the keypad contains the number keys and the BACKSPACE and ALL keys. The BACKSPACE key is used when editing messages to delete the character to the left of the currently high-lighted character. When pressed in combination with the SHIFT key (see below), the BACKSPACE key clears the entire message line while editing messages; when not editing messages this key combination erases all the messages in the printer's memory.



The ALL key is used in many functions to select all the messages in the printer's memory.

The bottom section of the keypad contains the letter keys and SPACEBAR. To the right of the letter keys, the arrow keys (in blue) are used for navigating through messages and other entered data.

In the bottom left hand corner there are the SHIFT and DOWN SHIFT keys (in red). The SHIFT key is used in combination with the icon keys to access additional printer functions. It is also used in combination with the letter and number keys to enter the special characters and punctuation marks displayed in red in the top right hand corner of the key.



The DOWN SHIFT key is used in combination with the number keys 1 to 6 to enter the lower case characters displayed in red in the bottom left hand corner of the key.

The key in the bottom right hand corner of the keypad is the ENTER key. This key is used to execute a function once data has been entered. Unlike the other keys, the ENTER key consists of multiple pressure-sensitive pads. Ensure this key is pressed in the correct place to activate it.

INSTALLATION

Where to Site the Printer

WARNINGS: (1) The printer must not be sited where there is a risk of water splashing onto the machine. The printer is not water-resistant.

(2) The printer must not be sited near a source of static or electromagnetic radiation, such as metal detectors or high current sealing machines.

(3) The electricity supply to the printer must be of constant voltage and current and must be free from transient spikes and interference. Check the voltage setting before switching on the machine.

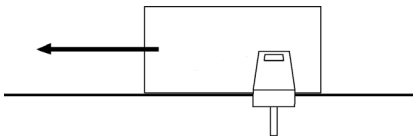
Before installing the system, check the shipment carefully, removing all packaging, to ensure that all the ordered components have arrived and that there is no obvious mechanical damage from shipping. Installation is not complicated, and should take less than half an hour.

The printer is capable of exceptional print quality at high speed. The performance of the system depends greatly on its proper installation. Contact your local distributor or service technician for advice on installing the printer.

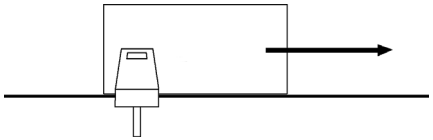
It is important to prepare the site carefully. Choose a suitable place for the printer to be mounted to the conveyor frame. A level, straight sextion of conveyor is required. If printing on both sides of the items, using more than one printer, both sides of the printer must be easily accessibe for programming and maintenance.

Beware of trailing cables. For example, the printer requires a power cable. Therefore, ducting or some other form of cable management may be required.

The printer is equally suited to right-to-left or left-to-right conveyor travel - legibility in the latter case achieved simply by reversing the direction of print using the operating software. Reversed printing also means that it is possible to print simultaneously on both sides of items using more than one printer.



Right to Left Conveyor Travel
Normal Printing



Left to Right Conveyor Travel
Reversed Printing

Each printer will need individual servicing, for example when replacing ink bottles. A printer should not be placed in a location where it may be knocked or jolted. The printer is also sensitive to vibration which may adversely affect print quality.

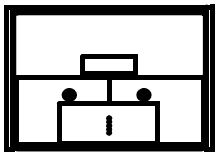
For the best quality of print, select a power-driven section of conveyor for mounting. Guide bars are essential to align the product to pass the print head only just touching the front face.

Though items do not need to be equally spaced on the conveyor, there must be an adequate gap - of at least 100mm - between them for the photocell to register the arrival of each one. Items must not jam up on the conveyor; the photocell will not recognise multiple products in a jam. This will result in missed products and incorrect box counting.

Avoid locations where operators or machinery moving close to the printer are likely to trigger the photocell. Do not place the printer opposite a large reflective area as this may also trigger the photocell. When printing on both sides of product, never place the two printers exactly opposite - the photocells will trigger each other.

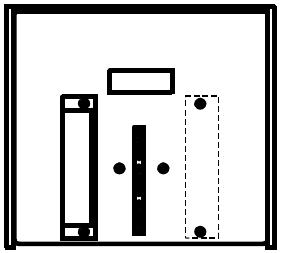
Buffer plate

Each printer incorporates a buffer plate to afford some protection to the nozzle plate, to provide a degree of print-head-to-product spacing for correct character generation and to help prevent smearing before the ink dries. In the C16, this is built into the nozzle plate itself.



Combined Buffer and Nozzle Plate

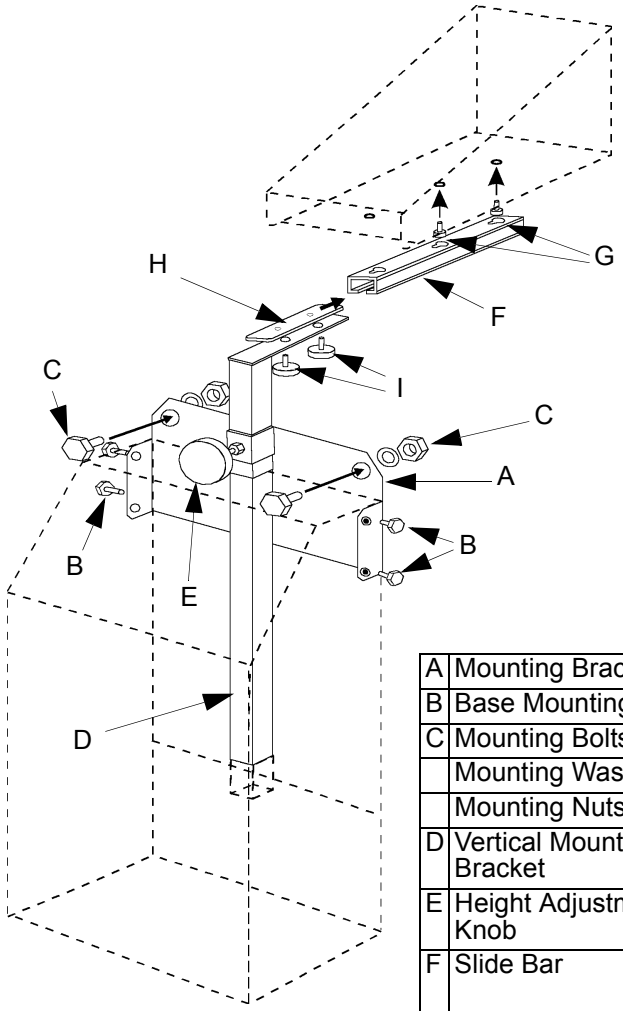
In all other models, the buffer plate is separate to the nozzle plate and is bolted in place. The position of the buffer plate may need to be changed to correspond with the direction of product movement on the conveyor - make sure that the product reaches the buffer plate before it reaches the nozzle plate. This involves removing the print head cover, which is explained in the MAINTENANCE chapter of this manual.



Separate Buffer Plate - Position as Required

Mounting the printer

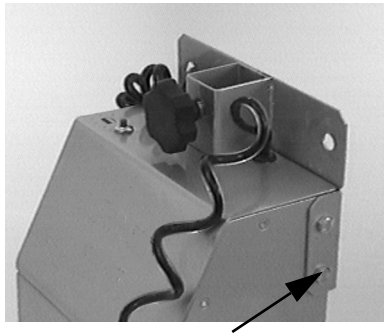
The exploded diagram (below) shows the arrangement of components used in the mounting of a printer with a one litre base. Items A and B are not required when installing a three litre base as they are built into the base unit.



A	Mounting Bracket	MJ/605
B	Base Mounting Bolts	M5x10
C	Mounting Bolts	M8x20
	Mounting Washers	M8
	Mounting Nuts	M8
D	Vertical Mounting Bracket	MF006
E	Height Adjustment Knob	M8x15
F	Slide Bar	MF/ 005M
G	Print Head Fixing Screws	M5x6
H	Clamping Plate	MF/008
I	Overhang Adjustment Screws	M5x10

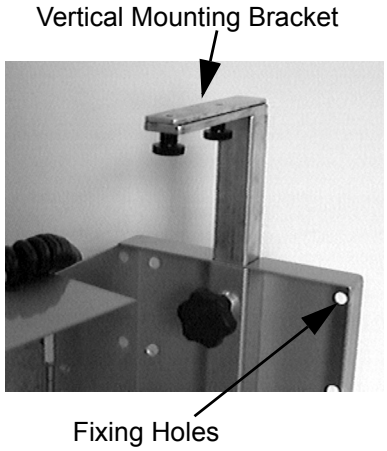
(1) (One litre base only.) Using the mounting bracket (A) as a template, drill two holes at an appropriate place on the conveyor.

(2) (One litre base only.) Fix the mounting bracket to the base unit using the M5 mounting bolts (B) provided. These bolts thread into the holes at the top of the longest edge of each side of the base unit.

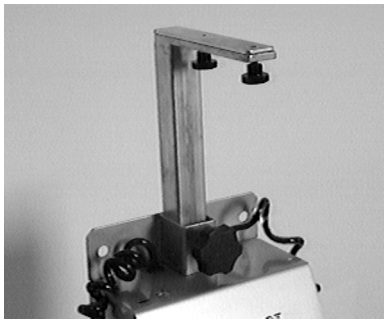


(3) (One litre base only.) Fix the mounting bracket/base unit assembly to the conveyor using the two sets of M8 mounting bolts, washers and nuts provided (C).

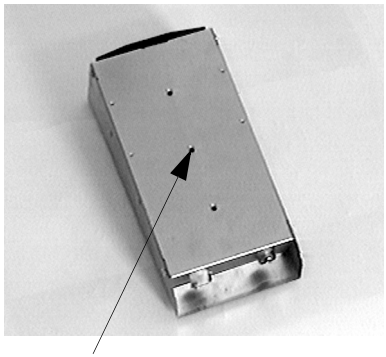
(4) (Three litre base only.) Open the base unit door and locate the fixing holes at the rear of the cabinet. Use these as a template to drill into the conveyor at the appropriate place. Fix the base unit to the conveyor using the M8 mounting bolts, washers and nuts provided (C).



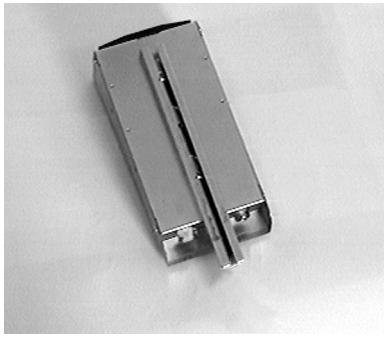
(5) Slot the vertical mounting bracket (D) into the square section of the mounting bracket/base unit and tighten the height adjustment knob (E). The horizontal arm may point towards or away from the conveyor depending on the application.



(6) Turn the print head upside down. On its base are three slide bar mounting holes. Two of the holes (not all three) will be used to fix the print head to the slide bar (F). Screw the two print head fixing screws (G) into two adjacent holes. Which two are depends on the application – in other words, how far from the edge of the conveyor the product will be moving. Do not tighten these screws yet.



(7) Slot the slide bar (F) onto the print head by passing the two fixing screws through two of the "keyhole" cutouts in the slide bar. Make sure the slide bar does not extend beyond the nozzle plate. Tighten the screws.



(8) Thread the slide bar onto the horizontal arm of the vertical mounting bracket so that the upper of the two clamping plates (H) is inside the slide bar. Use the two overhang adjustment screws (I) to hold the print head securely in position.

Print head overhang can be adjusted by sliding the slide bar in and out, or by moving the fixing screws to different holes in the print head or slide bar. The vertical mounting bracket can also be rotated 180° to extend or shorten the overhang. The vertical position of the print head can be adjusted using the height adjustment knob.

Voltage Setting

WARNING: **DANGER OF ELECTRIC SHOCK. Disconnect the printer completely from the mains supply before attempting any internal access or making any adjustments to the PSU.**

Before switching the printer on, ensure that the internal power setting is set to match the local electricity supply - either 240v, 220v or 110v AC. The printer will operate at either 50Hz or 60Hz.

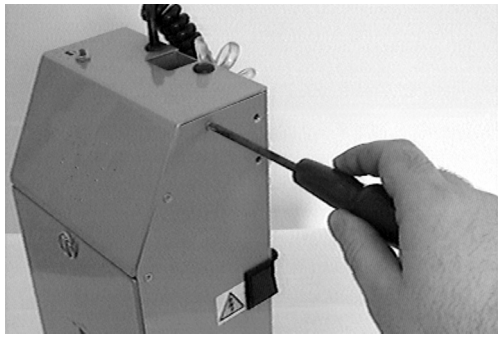
Normally the printer is correctly set during manufacture to match the supply voltage in the country of destination. This is marked on the Serial Number label next to the power switch on the side of the base unit. However, should it become necessary to change the voltage settings, follow this procedure.

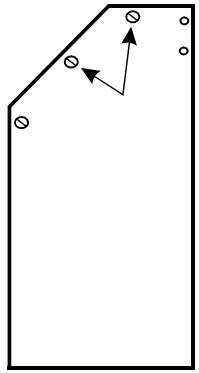
CAUTION: *This procedure involves unscrewing the base unit case to expose the circuitry inside. Do not attempt to remove the base unit case unless qualified to do so. If unsure about mounting or connecting the printer, call Domino Service or your local distributor for assistance.*

One Litre Base

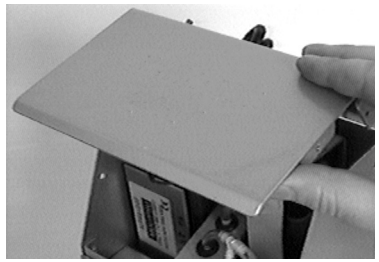
(1) Disconnect the printer from the power supply.

(2) Remove the two screws indicated below from both sides of the base unit.





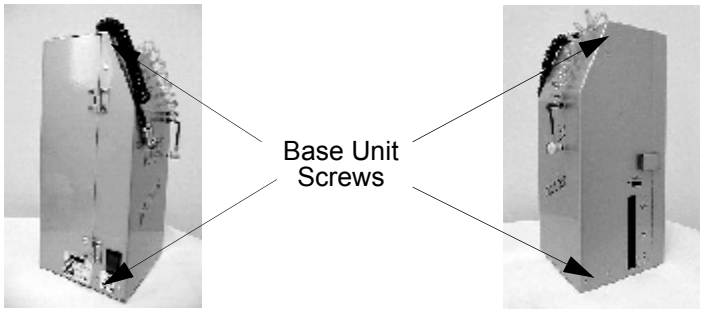
(3) Swing the angled top plate of the base unit up and backwards, taking great care not to stress any of the cables or pipes.



(4) The printer power supply (PSU) is located in the top left hand corner of the exposed circuitry. Changing the voltage setting requires moving the jumper pins on this board. It may also require changing the fuse located nearby. (Jump to the section "ALL MODELS" to continue.)

Three Litre Base

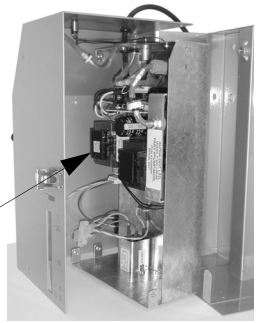
(1) Disconnect the printer from the power supply.



(2) Remove all of the visible screws from both sides of the base unit door. There will be six in total.

(3) Open the base unit door carefully, and rotate the plate containing the electronics. Take great care not to stress any of the cables or pipes.

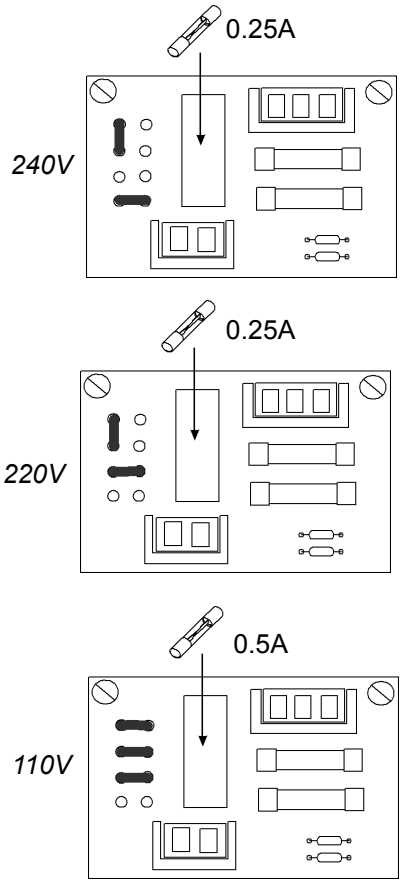
(4) The printer power supply (PSU) is located in the middle of the exposed circuitry. Changing the voltage setting requires moving the jumper pins on this board. It may also require changing the fuse located nearby.

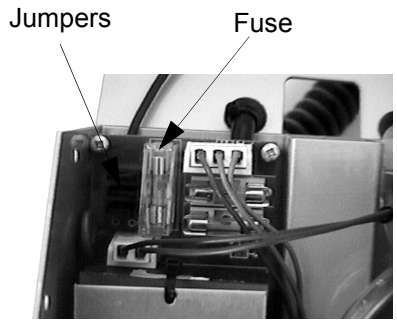


All Models

(5) Set the jumpers and fuse to match the input voltage as shown below (1L base) and over the page (3L base)

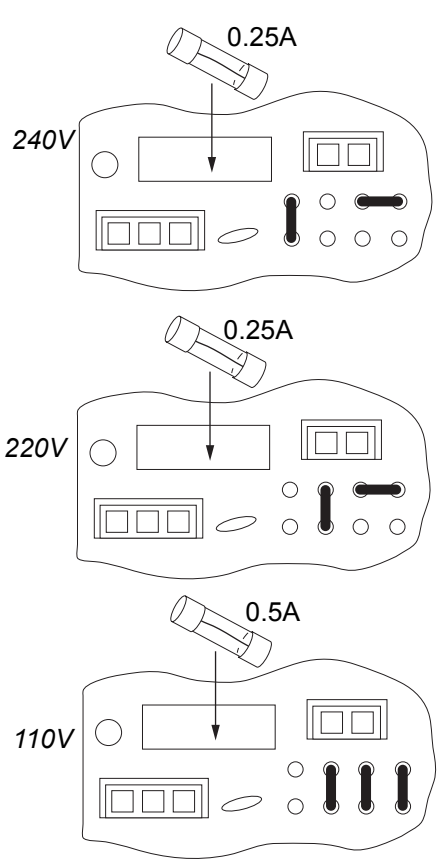
One Litre Base Link Settings and Fuse Ratings

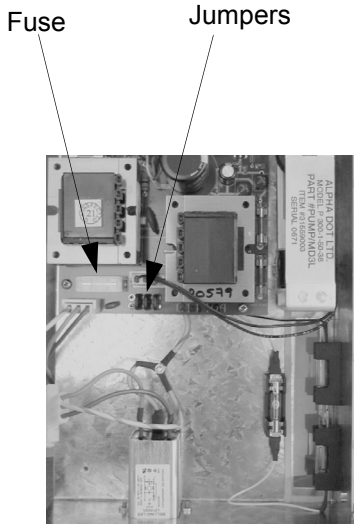




Location of Jumpers and Fuse in One Litre Base

Three Litre Base Link Settings and Fuse Ratings





Location of Jumpers and Fuse in Three Litre Base

(6) Carefully reassemble the base unit and tighten all the screws. Complete the installation process before switching on the machine.

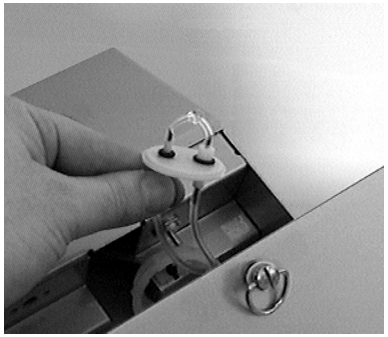
Note: The voltage setting on the serial number label must be changed to correspond to the PSU setting.

Connecting an Ink Bottle

In the photos on this page a one litre base is shown; follow exactly the same procedure for the three litre base.

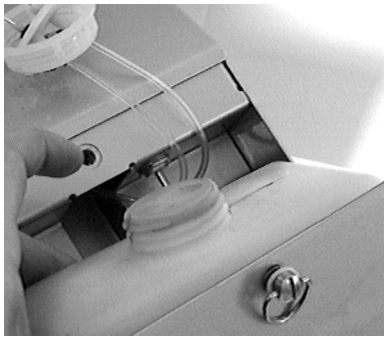
The ink cap is attached to the inside of the base unit by its two feed pipes (air in and ink out). The two metal probes pierce the seal into the ink bottle allowing an air-tight, ink-tight seal to be formed.

(1) If installing the printer for the first time, there may be a piece of protective tubing placed over the ends of the probes. Pull off this piece of tubing carefully - the probes are very sharp. Check that both "O" ring seals are present around the supply stems, otherwise air and ink leaks may occur.

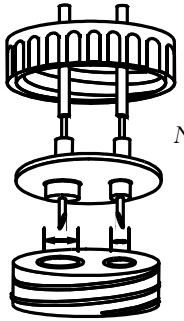


WARNING: **If replacing an empty ink bottle, remember to switch the power off and press the pressure release valve before unscrewing the old bottle.**

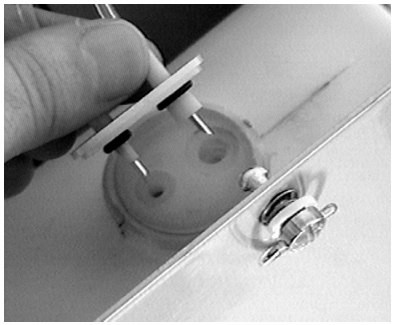
(2) Discard the transit cap from the new ink bottle and push the bottle into place. In the one litre base it slots down into the door of the unit. In the three litre base it sits on the ledge at the bottom of the unit.



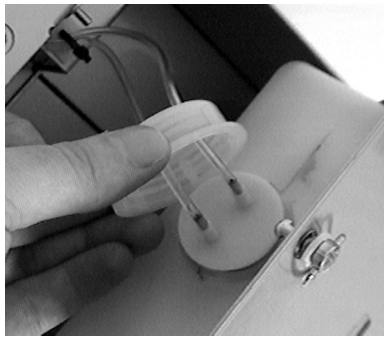
(3) Push the air and ink probes into the correct holes in the ink bottle, puncturing the seals. Notice that the probes have different diameters which must be aligned correctly with the holes in the bottle, otherwise damage will result if the cap is forced on.



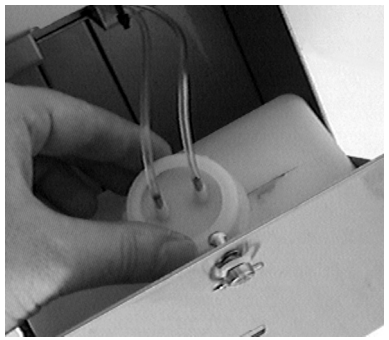
Note: Ensure that the large and small probes go into the correct holes.



(4) Press the centre of the probe assembly firmly with the thumbs to make sure that both probes have pierced the seals. Then screw the bottle cap in place.



(5) Tighten the bottle cap firm (hand tight only). Arrange the air and ink tubes so that when the door is shut they cannot be trapped in the door mechanism. Switch the printer on (activating the air pump) before closing the door and check the cap thoroughly for leaks.

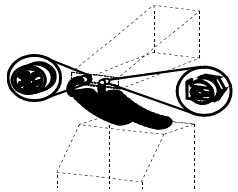


Ensure the ink level is checked regularly (by pressing the ink level indicator switch and looking through the window on the base unit door) since an exhausted ink bottle will draw large quantities of air into the system. The process of changing the ink supply will always cause some air bubbles to become lodged in the ink feed tubes - these must be removed by priming the system.

Note: If the printer is not going to be used for periods of longer than three weeks, it is recommended that to replace all the ink in the system with Domino flushing fluid for the idle period.

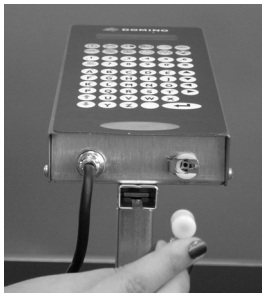
Connecting the Print Head

There are two connections to the print head: a black coiled power cable and a translucent coiled ink supply tube fitted with a quick disconnect ("QD") plug.

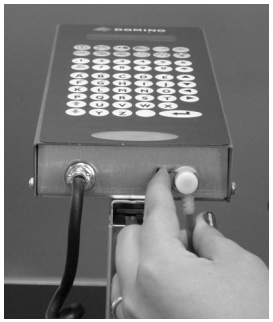


Connect the power cable to the socket on the left hand side of the print head (under the ledge). The pins are arranged to prevent incorrect insertion. Screw the cable firmly in place.

Remove the shipping caps from the end of the ink supply tube and the QD socket on the right hand side of the print head. Connect the QD plug by simply lining it up with the socket and pressing it in place. A "click" will be heard as the locking plate secures the plug.



To remove the QD plug, push the locking plate to the right. The plug will then disconnect and can be easily pulled free.



The tip of the QD plug contains a spring-loaded valve which will automatically seal when removed from the socket. A drip of ink might leak out before the valve closes, but this is normal. Take care not to press the tip of the plug against any object, as ink will then escape under pressure.

Priming the System

On initial installation, and whenever the ink bottle is replaced, air will be trapped in the ink supply tube. In order to remove this air, the system will need to be primed.

If the ink supply tube is connected to the print head, disconnect it as shown on the previous page. Turn the printer on - this will activate the air pump. The air pump remains on whenever there is power to the system.

A large container, not required for any other purpose, will be required to catch expelled ink.

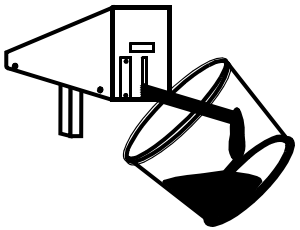
Press the tip of the QD plug against an internal surface of the container. Ink and air will escape into the container. Once all the air has been expelled, release the plug, sealing the ink line, and connect it to the print head.

A purge will now need to be performed. This is explained on the following page.

Note: Discard any expelled ink in accordance with local waste disposal legislation. Do not attempt to re-use old printer ink.

Purging the Print Head

Priming the system expels trapped air from the ink supply tube. Purging the print head continues this process, expelling trapped air and particles from the ink feed system inside the print head itself. A purge may need to be performed whenever changing ink bottles or when changing from ink to flushing fluid or vice versa.

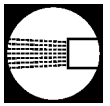


Like priming, a large container will be needed to catch expelled ink. Hold this container at an angle in front of the print head.

Purging is an electronic command; it is achieved by pressing the PURGE key on the printer's keypad.

Two Line LCD Models

Press the key labelled:



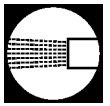
If a password prompt appears on the LCD panel, type it in. The following screen will appear:

```
Cover eye to go
key to stop
```

Ensure that the waste ink container in place, then briefly cover the photocell window on the front of the print head to begin purging.

Four Line LCD Models

Press the key labelled:



If a password prompt appears on the LCD panel, type it in. The following screen will appear:

```
Purge which line
press 1, 2 or 3
```

Type in the number of the line that requires purging. (Each line will need to be purgeed in turn.) The C34 has five.

Purge line 5 for the C34 refers to the two dots between lines 2 and 3 which are only used when printing 34 x 24 (68mm) text.

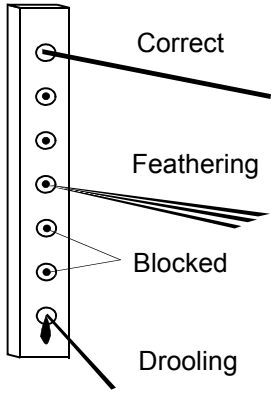
Ensure that the waste ink container in place, then briefly cover the photocell window on the front of the print head to begin purging.

All Models

On initial installation there may be a considerable amount of spluttering while air is driven out of the print head. Continue to purge until all the jets in the nozzle plate are firing consistently.

When finished, press the ENTER key to end the purge. Wipe the nozzle plate clean with a lint-free cloth). The printer is now ready to begin programming and printing messages.

If a good clean jet cannot be obtained by purging, wipe the nozzle plate with a lint-free cloth dipped in cleaning fluid and repeat the purge cycle. For further help in obtaining good jet flow, refer to the TROUBLESHOOTING chapter of this manual.



Types of correct and incorrect jet flow

PROGRAMMING AND PRINTING

Selecting a language

The printer can communicate with the operator in one of several languages (as listed below). To select which language to use, press the key labelled:

A list of available languages will appear. Use the keys

to move up and down the list until the required language is located. Press the ENTER key to confirm choice.

Languages include:

English	Italian
French	Spanish
German	Portuguese
Dutch	

Password Protection

To prevent unauthorised use, the printer requires a password to be entered every time it is switched on. Password protection can be enabled while the printer is in use by pressing the Password key labelled:

The following screen will appear:

2 line LCD models:

```
Enable password
again Y or N
```

4 line LCD models:

```
Press Y to enable
the password, press
any other key to
leave it disabled
```

Press

to enable password protection or any other key to leave the option.

Setting the Clock

This option allows the current system time and date to be changed, and to set up the rollover time (the time at which the date changes as far as each production line is concerned.)

Note: Do not attempt to set the printer's clock while printing is taking place.

It is important that the printer is given the correct current date and time before date stamping or sell-by-dates can be printed. Once entered, the correct time will remain in the printer even if the power is switched off.

Press the key labelled:

The following screen will appear:

2 line LCD models:

```
HR:MI DT/MO/YR D
14:51 28/08/01 2
```

4 line LCD models:

```
use > < to move then
replace numbers
HR:MI   DT/MO/YR   D
14:51   28/04/01   2
```

The top line gives a key for the current time (in 24 hour format) and date which are displayed on the bottom line.

HR:MI stands for hours and minutes. In the example above, the current time is 14:51.

DT/MO/YR stands for day, month and year. In the example above, the current date is 28/08/01, (which is the 28th August 2001.)

D stands for day of the week. In a typical system, Monday = 1, Tuesday = 2 etc. In the example above, the current day is Tuesday.

The day of the week setting can be amended as required, for instance if the working week begins on Sunday. The system will calculate the current day of the week simply by using a seven-day cycle based on whatever value is entered here.

To amend the date or time, use the arrow keys:

to move the cursor to the part of the display requiring change then overtype this with the new entry.

By default the rollover time is midnight. To change this value, press the arrow key.

Press the key labelled:

The following screen will appear:

```
ROLLOVER TIME
00:00
```

This prompt is the same for both types of LCD screen.

Amend the time by using the left and right arrow keys to move the cursor to the digit requiring change then over-typing this with the new value.

When complete press the ENTER key.

Note: If the rollover time does not need to be changed, press the ENTER key instead of the down arrow key.

Creating a Message

A “message” is the line or lines of text that are printed whenever the photocell is triggered. A total of fifty messages can be stored in the printer, each given a reference number from 0 to 49. It is this number which must be entered whenever editing or printing a message.

The number of message lines available depends on the printer:

C7	ONE LINE
C16	TWO LINES
C34	FOUR LINES

All messages are stored in permanent memory, which means that even if the power to the printer is switched off the messages will be retained. When the power is switched back on, all the messages can be recalled.

As many or as few messages (up to the maximum of 50) can be stored and each one can be given whichever reference number required (0 to 49). It is not necessary to start with message 0.

It may be valuable to make a note of the reference number and contents of each of the messages in the system. A space is provided at the end of this manual for this purpose.

Press the key labelled:

the following screen will appear

```
Edit which
message
```

This prompt is the same for both types of LCD screen.

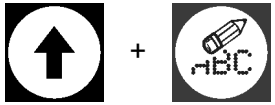
Type in the number (0 to 49) of the message to be created (or edited), then press the ENTER key.

Note: Each message line can be up to 40 characters in length, including formatting codes - refer to the FORMATTING MESSAGES chapter of this manual for further information).

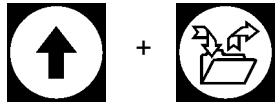
If there is already a message in the chosen location it will be displayed. To leave the message without making any changes, press the ENTER key a second time. If there is no existing message in the chosen location, a blank message screen will appear. Type in the message using the keypad.

At the end of each message line, a marker will appear (a vertical line) indicating the limit of entered text. To move to the next (or previous) line of a multi-line message use the keys

These keys also allow the user to move to successive and previous messages (in reference number order) held in the printer's memory. As many messages as required can be edited or created in one editing session. The following message editing keys can also be used:

<table>
<tr><td>  </td><td>Enters a space at the cursor position.</td><td>  </td><td>Removes the character to the left of the cursor position. To delete the last character in a line, position the cursor over the vertical marker.</td></tr>
<tr><td>  </td><td>Moves forward through the current message line.</td><td colspan="2" rowspan="2">  </td></tr>
<tr><td>  </td><td>Moves backward through the current message line.</td></tr>
<tr><td colspan="3"></td><td>Clears the contents of the entire current line.</td></tr>
</table>

To preview the message on the LCD screen, press together the keys labelled:



This displays the message as it will actually print within the limitations of the screen. Left and right arrow keys will assist to view the whole message. Formatting codes such as date codes and sell-by-dates will show values correct for the time at which print preview was accessed. To return to the editing screen, press the ENTER key.

When the message is complete, press the ENTER key to fix the changes in the printer's memory.

Note: Print preview is unable to show bold characters (they will display as normal). Reverse formatting is included to eliminate the use of added spaces within the message edit function for print alignment. Therefore print in reverse will come out the same as in forward as per print preview.

Printing a Message

To print a message, enter the required message reference number (0-49) to be printed. Once this has been done, the printer will print the selected message whenever the photocell is triggered.

Press the key labelled:

The following screen will appear:

2 line LCD models:

```
Print msg no.?
```

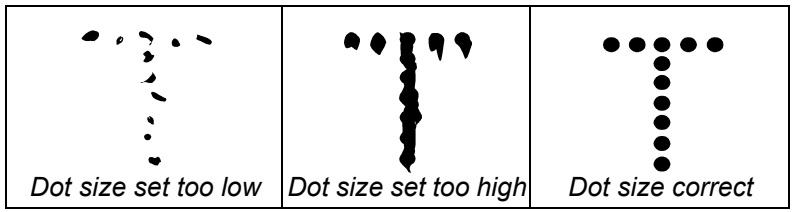
4 line LCD models:

```
Which message number
do you want to print
Type in number then
press EXE.?
```

Type in the number of the message to print then press the ENTER key. The next time the photocell is triggered the selected message will be printed.

Adjusting the Dot Size

Use this option to set up the optimum print quality for the system. Dot size adjustment can be applied to one particular message or to all the messages in the printer's memory.



Press the key labelled:

The following screen will appear:

2 line LCD models:

```
For which msg
(* for all)
```

4 line LCD models:

```
For which  message
Enter number or
press * for all...
```

Enter the number (0-49) of the message to change, or press the key labelled:

to change the setting for all the messages held in the printer. Now press the ENTER key.

If a specific message is chosen the screen will change to:

2 line LCD models:

```
Dotsize =
New value:
```

4 line LCD models:

```
Type in a new number
or press EXE to quit
Dot size =
Enter new value:
```

If all messages are chosen, the screen will change to:

2 line LCD models:

```
All messages
New value:
```

4 line LCD models:

```
Now altering the
settings for all the
messages.
Enter new value:
```

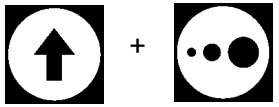
Type in a value greater than 100 and press the ENTER key to store the changes in memory and exit the dot size setting routine.

Perform a test print. If the print quality is incorrect, increase or reduce the dot size value. Higher values increase the dot size and lower numbers reduce it. In some circumstances the value may need to be reduced to less than 100.

Adjusting the line print density

Use this option to adjust the print density of individual lines in a multi-line message.

Press together the keys labelled:



The following screen will appear:

2 line LCD models:

```
Dotsize     1 2
0...3       0 0
```

Note: This screen presumes a printer capable of two line messages.

4 line LCD models:

```
Dot size      1 2 3 4
0...3         0 0 0 0
```

Note: This screen presumes a printer capable of four line messages.

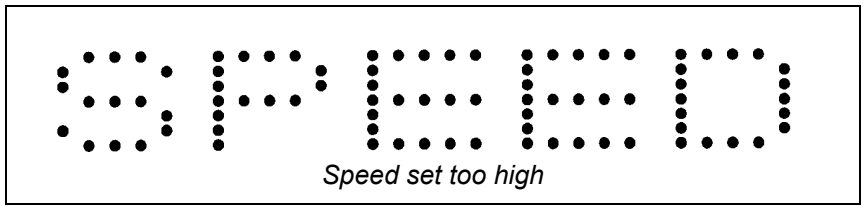
For each of the message lines, enter a number from 0 to 3 where 0 is the least print density and 3 is the most.

When finished, press the ENTER key to store the changes in memory and exit the line print density setting routine.

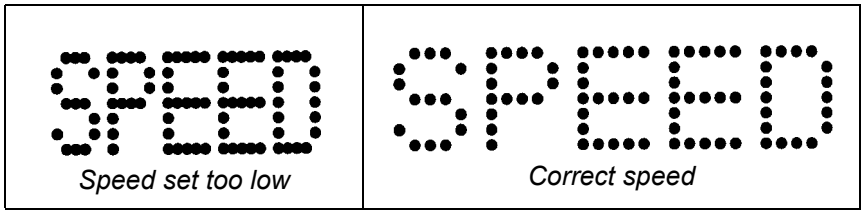
Adjusting the Speed

Use this option to match the speed of printing (the rate at which vertical lines in the dot matrix are produced) to the speed of the conveyor. The faster the conveyor, the faster the text must be printed in order to be legible. Speed adjustment can be applied to one particular message or to all the messages in the printer's memory.

Note: The larger the speed value the longer the gap between printing the vertical lines in the dot matrix.



Speed set too high



Press the key labelled:

The following screen will appear:

2 line LCD models:

```
For which msg
(* for all)
```

4 line LCD models:

```
For which  message
Enter number or
press * for all...
```

Enter the number (0-49) of the message to change, or press the key labelled:

to change the setting for all the messages held in the printer. Now press the ENTER key.

If a specific message is chosen the screen will change to:

2 line LCD models:

```
Speed =
New value:
```

4 line LCD models:

```
Type in a new number
or press EXE to quit
Speed =
Enter new value:
```

If you chose all messages the screen will change to:

2 line LCD models:

```
All messages
new value:
```

4 line LCD models:

```
Now altering the
setting for all the
messages.
Enter new value:
```

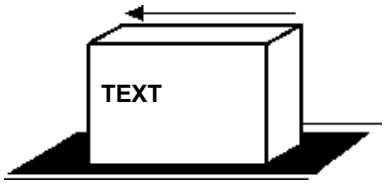
Type in a value between 15 and 255. Lower numbers produce a faster print rate, forming narrower characters; higher numbers produce a slower print rate, forming broader characters.

The faster the conveyor, the smaller the speed value. This may need to be fine tuned in order to obtain optimum print quality.

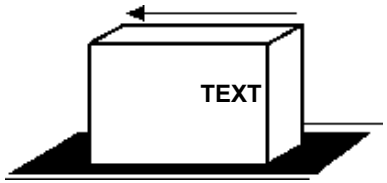
When finished, press the ENTER key to store the changes in memory and exit the speed setting routine.

Adjusting the delay

The delay setting determines the time gap between the photocell being triggered and the nozzle plate beginning to emit ink. Since the photocell is triggered by the leading edge of the items on the conveyor, the larger the delay setting the further along the side of the item each message will begin to print.



Small delay setting: message printed close to the leading edge of item



Small delay setting: message printed close to the leading edge of item

Delay is normally set for each individual message since different messages will be of different lengths. Long messages may need shorter delay times than brief messages. The delay value used will also depend on the speed of the conveyor – faster conveyors may need lower delay times.

Press the key labelled:

The following screen will appear:

2 line LCD models:

```
For which msg
(* for all)?
```

4 line LCD models:

```
For which message
Enter number or
press * for all
```

Enter the number (0-49) of the message to change, or press the key labelled:

to change the setting for all the messages held in the printer. Now press the ENTER key.

If a specific message is chosen, the screen will change to:

2 line LCD models:

```
Delay =
New value:
```

4 line LCD models:

```
Type in a new number
or press EXE to quit
Speed =
Enter new value:
```

If all messages are chosem, the screen will change to:

2 line LCD models:

```
All messages
new value:
```

4 line LCD models:

```
Now altering the
setting for all the
messages.
Enter new value:
```

Type in a value between 0 and 255. Higher numbers increase the delay time, retarding printing along the side of the product. A value of 0 means that there is no delay - in other words the message will begin printing the moment the photocell is triggered.

When finished, press the ENTER key to store the changes in memory and exit the delay setting routine.

Setting the Print Direction

Use this option to set the print direction for the printer. Messages can be printed in either forward or reverse direction, enabling products moving in either direction on conveyors (right to left (forward print) or left to right (reverse print)) with respect to the print head. It also allows the product to be printed on both sides (with more than one printer on the line). The system assumes a normal conveyor movement from right to left.

MESSAGE *Printing "forward" for a conveyor moving right to left*	ƎGASSƎM *Printing "reverse" for a conveyor moving right to left*
ƎGASSƎM *Printing "forward" for a conveyor moving left to right*	MESSAGE *Printing "forward" for a conveyor moving left to right*

Forward printing means that the first character of the message is printed first, just like a typewriter. Reverse printing means that the last character is printed first.

Press the key labelled:

The following screen will appear:

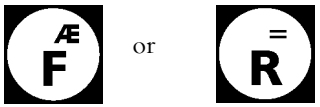
2 line LCD models:

```
Direction
Press F or R
```

4 line LCD models:

```
Set direction
press F for forward,
R for reverse or EXE to
leave
```

Press:



for forward or reverse printing respectively. Then press the ENTER key to confirm.

Setting the Print Orientation

Use this option to set the print orientation for the printer. Messages can be printed in either normal or inverted orientation, enabling the message to be printed upside down. When printing inverted messages on conveyors moving right to left, the message direction will also need to be set to reverse.

MESSAGE *Printing "normal" for a conveyor moving right to left*	MESSAGE *Printing "inverted" for a conveyor moving right to left*
MESSAGE *Printing "inverted" and "reverse" for a conveyor moving right to left*	MESSAGE *Printing "inverted" for a conveyor moving left to right*

Press the key labelled:

The following screen will appear:

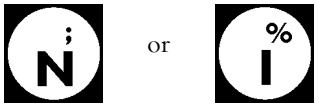
2 line LCD models:

```
Orientation
Press N or I
```

4 line LCD models:

```
Set orientation
press N for normal,
I for inverse or EXE to
leave
```

Press:



for forward or reverse printing respectively. Then press the ENTER key to confirm the choice.

When printing inverted, each individual line of the message is inverted, not the whole message. So a four line message which prints like this in normal orientation:

MESSAGE LINE 1
MESSAGE LINE 2
MESSAGE LINE 3
MESSAGE LINE 4

will print like this in inverted orientation:

MESSAGE LINE 1
MESSAGE LINE 2
MESSAGE LINE 3
MESSAGE LINE 4

Each line of the message has been inverted, but line 1 is still line 1, line 2 is still line 2, and so on. The layout of the message may need to be amended ensure legibility in multi-line messages.

Product Count

This option displays the total number of product triggers registered by the printer so far - in other words since the last time the value was reset to zero. It is not the same as the box count automatic attribute.

Press the key labelled:

The following screen will appear:2 line LCD models:

```
Count
Zero count = Y/N
```

4 line LCD models:

```
Box count =
Press Y to zero the
count or any other key
to leave it.
```

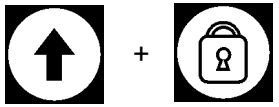
The current product count appears at the top of the screen. This value can be reset to zero at any time by pressing

Setting Up a Second Password

The printer allows two passwords to be used. One password is set into the printer at the factory and cannot be changed. The other can be set to the operator's own preference. When using the system, enter either password to access printer functions (presuming that password protection has been set).

To maintain security, whenever the password is entered in order to access a printer function, the password characters will not appear on the screen. Instead, a series of ash marks will appear (e.g. ######).

To set up a second password press together the keys labelled:



At the prompt, type in the new password. Printer passwords can be up to six characters in length using any alphanumeric characters. This new second password will replace any password previously set.

When finished, press the ENTER key to store the new password in the printer's permanent memory.

Clearing all Messages

This option will clear all the messages and settings from the printer's memory. Both password protection and a confirmation prompt are provided to reduce the risk of accidental erasure.

Note: Do not run this routine unless absolutely certain it is necessary. Once the messages have been erased, it will not be possible to retireve them.

Press together the keys labelled:

The following screen will appear:

2 line LCD models:

```
Type in password
```

4 line LCD models:

```
Type in your
password first...
```

Enter the password. If password is less than 6 digits press enter key. The screen will change to:2 line LCD models:

```
N.B. This will
wipe memory Y/N
```

4 line LCD models:

```
N.B. This will erase
our messages. Press
Y to do this or any
other key to quit
```

Press:

to erase all messages from the printer's memory or any other key to exit the routine.

FORMATTING MESSAGES

Formatting Text

When setting up messages, a wide range of different codes and attributes can be included which enables the way text is printed to be changed, or to include variable information in the messages such as production dates or shift indicators.

Non-printing formatting information, included into messages, may include things such as square or curly brackets or letters in lower case. The non-printing characters can all be found in the top right and bottom left corners of the number keys (1 to 6).

Each message line can be up to 40 characters long. This includes any non-printing formatting codes.

Note: The lower case letters on the keypad do not print. They are used exclusively as codes.

To include a non-printing bracket in a message, hold down the key labelled:

while pressing the relevant number key. To include one of these lower case letters in a message, hold down the key labelled:

while pressing the relevant number key.

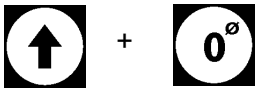
The letter keys contain a range of international characters and punctuation marks (in the top right hand corner of each key) which can be included in a message. Due to the limitations of the LCD screen the international characters will display using lower case letters - the correct characters will be printed. To include one of these characters in a message, hold down the key labelled:

while pressing the relevant letter key.

Slashed and Non-Slashed Zeros

The printer can print zeros either with a slash (Ø) or without (0). This is set for all messages at once. The slash will appear on the screen during message editing but will print correctly.

Choose which the printer will use by pressing together the keys labelled:



Repeated pressing of this key combination "toggles" slashed zero printing on and off. No confirmation message will appear - do a test print to check that zeros are printing correctly.

Bold

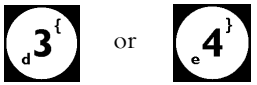
All or part of any message can be printed in bold text. (Unless specified, messages always print in normal text.) Bold text produces thicker letters (as shown below).

Normal 7x5 Text

Bold 7x5 Text

To print in bold, enclose the relevant part of the message in the curly brackets which can be accessed by holding down

and pressing:



Any text inside these non-printing brackets will be printed in bold; any text outside these brackets will be printed in normal. For example:

```
This will print normal
{This will print bold}
```

Text Size

The range of sizes of text available depends on the printer. Some text sizes may occupy more than one message line. All text sizes can be printed in bold by enclosing the relevant piece of text in curly brackets.

This is 7x5 text. Each character is produced by a matrix 7 dots high and 5 dots wide.

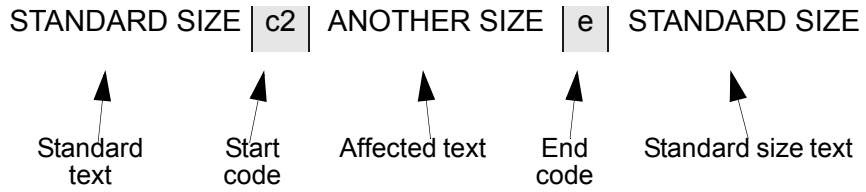
The "size" of any text means the matrix used to create it. So a text size 5 x 5 means that each character is formed by a matrix five dots high and five dots wide. A text size 34 x 24 means that each character is formed by a matrix 34 dots high and 24 dots wide. (Bold text, of course, slightly increases the width of each character's matrix.) For detailed information on how this system works, refer to the SYSTEM OVERVIEW chapter of this manual.

Each printer model has a standard text size. All text will be printed in this size of text unless otherwise indicated. To print in any other size than standard, a text size formatting code must be used. Like the curly brackets used to indicate bold text, the text size formatting code encloses the text whose size requires changing. Any text outside of the formatting code prints in the standard size.

The text size formatting code consists of two separate parts: a start code and an end code. The start code says "everything that follows, up to the end code, is to be in this size of print". Though the start code is different for each different size of text, the end code is always the same: it is a lower-case letter e. For example:

Note: It is vitally important to use the correct case characters when formatting messages.

The following chart shows the different sizes of text available for each printer and the text size formatting code required in each case. Remember that only the text whose size requires changing needs to be included inseide the code; any text outside the code will print at the standard size. Whenever a code is used, both parts must be used - don't forget the lower-case e at the end



Standard Text Sizes

Refer to pages 15 to 17 for examples of the print.

The standard text sizes is 7x5.

Size of Text	Start Code	End Code
C7		
7 x 5	None	None
5 x 5	cA	e
C16		
7 x 5	None	None
5 x 5	cA	e
10 x 10 *(see Note 1 below)*	c2cA	e
16 x 10 *(see Note 1 below*)	c2	e
C34		
7 x 5	None	None
5 x 5	cA	e
10 x 10 *(see Note 1 below)*	c2cA	e
16 x 10 *(see Note 1 below)*	c2	e
34 x 24 *(see Note 2 below)*	c4	e

Notes: (1) Only available on line 1 or 3 of the message.

(2) Only available on line 1 of the message.

More than one size of text can be used in the same message line. For example:

```
WEIGHT c2cA4,5e cAKGe
```

This prints “Weight” in standard size 7x5 text, “4.5” in size 10x10 text and “Kg” in size 5x5 text.

Text which fills more than one message line can also be printed. The C34, for example, allows text up to four lines high to be printed.

Note that text larger than one line projects down from the line into which it is written. Therefore, text which fills more than one message line can only be included if there is room beneath it to form the entire dot matrix. For example, 16x10 text cannot be placeed on the last line of a message in a C34 since each line is only seven dots high, it can only be placed on the first or third line.

Where a piece of text fills more than one message line, the other text in the message must be placed carefully to make room for it. If necessary, the printer will shift any text on succeeding lines to the right of multi-line text. For example:

```
c2LARGE TEXTe FIRST SMALL TEXT
SECOND SMALL TEXT
```

"Large text" occupies two message lines so "Second small text" is shifted to the right to make room:

Note that the two lines of small text do not line up. This is because the first line of the message has a space after the end code e. To correct this, begin the second line with a space:

```
c2LARGE TEXTe FIRST SMALL TEXT
 SECOND SMALL TEXT
```

Where the large text comes in the middle or at the end of a line, it again takes priority over any text on lower lines. For example:

```
SMALL TEXT C2LARGE TEXTe
SMALL TEXT
```

If the small text on line 2 was longer than the small text on line 1, the extra characters must jump to the end:

```
FIRST C2LARGE TEXTe
SECOND LINE
```

The first six characters of the small text on both lines (including the space on line 1) print before the large text. The rest of line 2 has been shifted to the right.

```
WEIGHT c2RICEe CATERING
4,5 KG PACKS
```

In this example the word “Packs” has been shifted to the right. Note the double space after the word “KG” used to line up the word “Packs” with “Catering”.

These are fairly straightforward examples using only two sizes of text in two line messages. Using messages of more than two lines, or using four-line as well as

single- and two-line text can cause unexpected results, especially to inexperienced users. For example:

```
c2BIGe c2MEDIUM TEXTe

SMALL TEXT
SMALL TEXT
```

BIG **MEDIUM TEXT**

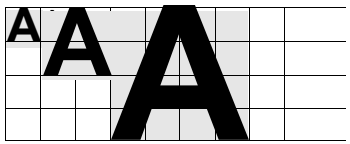
SMALL TEXT

SMALL TEXT

In this example nothing has been entered in line 2 (which is being occupied by the text in line 1), and the standard size text in lines 3 and 4 has been padded with a space to align with "Medium Text". (It will line up correctly since the space between the two blocks of text in line 1 is also at standard size.)

In practice, always run a test print (for example by "sweeping" a piece of paper or card across the front of the printer) to check message programming.

It may even be useful to map the message out on a grid of squared paper. For a C34, a grid 4 squares deep will be needed. Use one square per single-line character, a block of four squares per two-line character and a block of sixteen squares per four-line character.



(The longest possible message a C34 can print, using all 40 characters at the largest possible print size for each line, would require a grid 296 squares wide. When printed, this message would be about 3.5 metres long!)

Box Counting

Incremental and decremental box counting is generated by a special code called an "automatic attribute" entered as part of a message. This automatic attribute code can be entered on any line and along with any other text or formatting information.

The incremental box count attribute consists of the number from which counting is to commence enclosed in the pointed brackets which can be accessed by holding down.

and pressing:

or

For example:

```
<001>
```

In this example the number 001 has been entered. This means that the next item to trigger the photocell will be printed 001; the following 002 and so on.

The maximum box count will be 999, after which numbering will revert to 000 and continue incrementally from there as before.

Incremental box counting can begin from any value. The number framed by the brackets is the number from which counting will begin. So an entry of <100> will begin with 100, 101 and so on up to 999, when it will revert to 000.

The number of digits entered indicates the maximum number that box counting will reach. An entry of <1000> will begin with 1000, 1001 and so on up to 9999. Any number of up to seven digits can be entered, with a theoretical maximum box count of 9999999.

To start box counting at, say, 100 and count into the thousands, enter 100 as a four digit number – <0100>. All numbers under 1000 will be padded with zeros.

Decremental box counting uses exactly the same method as incremental box counting, but in this case the brackets are reversed:

```
>100<
```

Here decremental counting will start at 100 – the next item to trigger the photocell will be printed 100, the next 099 and so on down to 001, after which the count prints 000 and then repeats the decremental count from 999.

Note: For multiple attributes or formatting codes a system of "nesting" is used, with one set of codes nested inside another. This is explained below.

To print an incremental or decremental box count in a different text size than standard, or as part of a longer message, "nest" the automatic attribute inside any other formatting code to be used. For example:

```
BOX NUMBER c2<0501>e
```

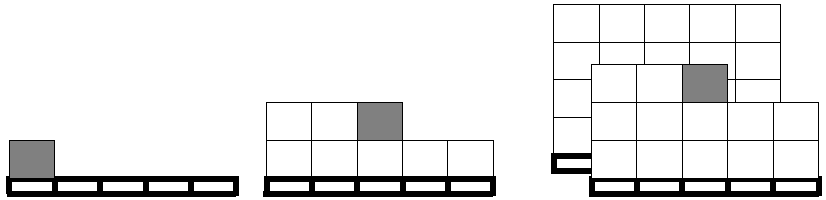
In this example the words "Box number" will be printed in standard size text on each item, followed by the box count value in large text:

BOX NUMBER **0501**

Note: Ensure formatting codes do not overlap. Thus, referring to the above example, the following is NOT acceptable:
BOX NUMBER c2<0501e>

Pallet Counting

Pallet counting is used for logging multiple product counts for bundling onto a pallet. The incremental box and pallet count can both be included in messages for printing.

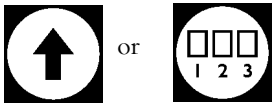


For example, if there are 20 boxes per pallet, count each box up to 20 as belonging to pallet 1 - Pallet 1 Box 1, Pallet 1 Box 2 etc. The 21st box is therefore the first box on pallet 2 - Pallet 2 Box 1.

There are two parts to the pallet count procedure, both of which must be performed correctly for pallet counting to commence. First tell the system the number of boxes per pallet for each message which uses pallet counting, then create a pallet count automatic attribute in those messages.

Setting Up Counting

To record how many boxes are held on each pallet, press together the keys labelled:



The following screen will appear:

2 line LCD models:

```
Pallet count on
which msg?
```

4 line LCD models:

```
Pallet count on
which message?
```

Enter the message number (0-49) in which a pallet count will be set-up, then press the ENTER key.

The screen will change to:2 line LCD models:

```
Boxes/Pallet=99
New value:
```

4 line LCD models:

```
Current number of
boxes per pallet = 50
Enter new value:
```

Enter the number of boxes per pallet (01 to 99). Pad numbers less than 10 with a zero (e.g. 01). In the example screen above, each pallet holds 50 boxes.

When finished, press the ENTER key to store the value in the printer's memory. Pallet counting automatic attributes can now be set-up in the chosen message.

Printing the Count

Access the relevant message. To print the box and pallet count, use a code consisting of the lower case letter b (for "boxes") or p (for "pallets") followed by the start count value. Each pallet can hold up to 99 boxes, and a total of 999 pallets can be counted. For example:

```
b01 p001
```

The two numbers give the start values for the box and pallet counts. The box count value must be two digits long (00 to 99) and the pallet count value must be three digits long (001 to 999).

In the example above, both box and pallet counts will begin at 1. (The code letters b and p are not printed.) With the boxes-per-pallet count set a 50, the first box along the conveyor will be printed 01 001, the second 02 001, the third 03 001 and so on up to 50 001. This fills the first pallet, so the next box will be printed 01 002.

*Note: A box/pallet count value **must** be set in the box count function for every message in which box and pallet count codes are to be used. If using different numbers of boxes per pallet for different applications, make a note of which messages have been assigned to which box/pallet count numbers.*

The codes can be included as part of a longer message including text or other formatting codes or automatic attributes. For example:

```
BOX: b01
PALLET: p125
```

Note: Both box and pallet codes must be included in the message - this is not a substitute for incremental box counting. They do not need to be on the same line of the message but the whole code must be included with the box count code coming before the pallet count code.

Printing the Date and Time

Like box counting, the current date and time is generated by an automatic attribute code entered as part of a message. This automatic attribute can be entered on any line and along with any other text or formatting information, when a system of nesting can be used. The date and time can be printed in a variety of formats entirely defined by the user.

Note: Ensure the system date and time are correct using the CLOCK function. Both date codes and sell-by-dates rely on the printer's internal clock being accurate. For information on changing the printer's internal clock, see page 48.

The date code automatic attribute consists of a set of formatting letters (and, optionally, punctuation marks) enclosed in the square brackets which can be accessed by holding down:

and pressing:

or

The difference between day of the year (KLM) and Julian day of the year (UVW) is only apparent on leap years. In the European system of counting leap year days the 29th of February is counted as day 60, following directly on from day 59 (28th of February). The 31st of December is therefore day 366. To follow this system, use the KLM code.

In the American (Julian) system, the 29th of February is counted as day 366, with all other days counted exactly as non-leap year days. The 31st of December, for

example, is always day 365, whether it is a leap year or not. To follow this system, use the UVW code.

After the 29th of February in leap years, the KLM code will print a value one day ahead of the value printed by UVW.

A full list of the available formatting letters is given below.

Code	Meaning	Example
AB	Hours	23
CD	Minutes	59
EF	Day	31
GH	Month	12
IJ	Year	01
KLM	Day of the year	366
NO	Week number	52
P	Day of week (number)	7
RST	Month in words	DEC
UVW	Julian day of the year	365
X	Day of week (letter)	G

For example:

```
[AB:CD]
```

In this example, the brackets frame the letters AB and CD separated by a colon. This code prints the current time in hours and minutes, using the colon to separate the two numbers - 12:15, for example. AB represents hours (in the twenty-four hour clock 00 to 23) and CD represents minutes (00 to 59).

```
[EF/GH/IJ]
```

Here the punctuation mark / has been used to separate the three sets of code letters EF, GH and IJ. It prints the current date in day, month and year order - 25/01/01, for example.

When printed, day of the year (either code) always pads out values under 100 with zeros - for instance 001 or 023. Numerical day of week (P) can have the value 1 to 7, and alphabetical day of week (X) the corresponding letter A to G.

It is not necessary to use the whole code when printing. For instance, [IJ] included in the message will print the last two digits of the current year - 01 for instance. The code [J] in the message will only print the last digit - in this case 1.

The punctuation marks available for use include colons, obliques and spaces. For example:

```
[AB:CD GH/EF/IJ]
```

This will print the current time (hours and minutes separated by a colon) and then the current date in American format (month/day/year):

12:15 01/25/01

Date codes, like all other automatic attributes, can be included as part of a longer message and nested inside text size formatting codes.

Printing a Sell-by-Date

Sell-by-dates use the same code letters as date codes (see the table in the previous section) allowing them to be printed in a wide variety of formats, entirely defined by the user. Again, since sell-by-dates are calculated from the printer's internal clock, make sure the clock is correctly set before attempting to print.

Note: It is vitally important that the sell-by-date code is correctly entered. Check codes thoroughly. Make especial note of the upper and lower case characters required.

Where the date and time automatic attribute used the square brackets to enclose the code letters, sell-by-dates use a special code similar to the text size formatting code:

Start Code	Value	Date Code	End Code
cD or cM			e

There are four parts to this code:

Start code

This tells the system that what follows is a sell-by-date. Use the code cD for a sell-by-date based on an incremental number of days calculated from the current date. Use the code cM for a sell-by-date based on an incremental number of months calculated from the current date.

Incremental value

Enter a three digit value (001-999) representing the number of days or months to be added to the current date.

Note: A three digit code must be entered. Pad out values less than 100 with zeros, e.g. 030.

Date code letters

Enter here the actual date code to be printed. This can consist of a number of punctuation marks - colons, obliques and spaces, just as when printing a date code - and the date code letters EF, GH, IJ and RST. None of the other date code letters are used.

End code "e"

For example:

```
cD030EF RST IJe
```

In this example, the code cd has been used, telling the system to add a number of days to the current date to calculate the sell-by-date. The three digit number that follows gives the number of days to be added - 030. The date code letters to be printed follow - EF RST IJ - and finally the end code e.

Presuming that today is the 25th of January 2001, this example would print:

24 FEB 01

For another example

```
cM006EF RST IJe
```

Here, a number of months are to be added to the current date. Note that the value 006 has been padded with zeros.

Presuming that today is the 25th of January 1997, this example would print:

25 JUL 97

If two sell-by-dates are to be printed in the same message line, the second start code must be entered slightly differently - both letters must be in lower case:

Start Code	Value	Date Code	End Code
cd or cm			e

It is only possible to have two sell-by-dates in the same message line.

Note: Like other codes, sell-by-dates can be included as part of a longer message and nested in other formatting codes. If the end codes of a sell-by-date and a text size formatting code coincide, you only need to enter it once. For example:

```
c2cM060RST IJe
```

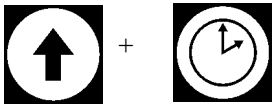
Printing Shift Codes

Up to four production shifts can be programmed into the printer, each designated a shift code letter defined by the operator (for example A B C D). This shift code letter can be included in messages for printing, automatically changing when the shift changes.

There are two parts to the printing shift codes procedure. First set up the number and times of the shifts used, then create a shift code automatic attribute in the messages.

Note: It is assumed that the factory only uses one shift system. Once set up, shift details apply to all the messages in the printer.

Press together the keys labelled:



The following screen will appear:

2 line LCD models:

```
From . . SHIFT 1
04:00 A
```

4 line LCD models:

```
Enter start time and
letter to print for
each shift   1
04:00     A
```

This is the first of four similar screens, in each of which the start time of the relevant shift and the shift code letter to be included in messages needs to be entered. In this example the first shift starts at 04:00 and has been designated the shift code letter A.

When the correct first shift details have been entered, press the DOWN arrow key:

The screen will change to:2 line LCD models:

```
From . . SHIFT 2
10:00 B
```

4 line LCD models:

```
Enter start time and
letter to print for
each shift   2
10:00     B
```

Enter here the start time of the second shift of the day and its shift code letter. In the example above the second shift starts at 10:00 and has been designated the shift code letter B.

Now press the DOWN arrow key again:

The third shift setup screen will appear. Enter here the start time of the third shift of the day and its shift code letter. For example:

2 line LCD models:

```
From . . SHIFT 3
16:00 C
```

4 line LCD models:

```
Enter start time and
letter to print for
each shift   3
16:00     C
```

Repeat this procedure for the fourth shift setup screen. For example:

2 line LCD models:

```
From . . SHIFT 4
22:00 D
```

4 line LCD models:

```
Enter start time and
letter to print for
each shift   4
22:00     D
```

Continue to use the DOWN arrow key to loop through the four screens until the shifts are correctly entered. When finished, press the ENTER key to store the shift details in the printer's memory.

The examples so far assume a four-shift system. A two-shift or a three-shift system can also be set-up. To do this, enter the details of the last shift of the day in all the unused screens.

So for a three-shift system, enter the same details - start time and shift code letter - in both the third and the fourth shift screens:

```
SHIFT 1     06:00     A
SHIFT 1     14:00     B
SHIFT 1     22:00     C
SHIFT 1     22:00     C
```

For a two-shift system, enter the same details in the second, third and fourth shift screens:

```
SHIFT 1     06:00     A
SHIFT 1     16:00     B
SHIFT 1     18:00     B
SHIFT 1     18:00     B
```

To print the current shift code letter, a code letter similar to those used when printing the current date or time must be included - in fact the shift code letter operates exactly the same way as any of the other letters used in date codes.

Code	Meaning	Example
Q	Current shift	A

Just like date code letters, the shift code letter is enclosed in square brackets. For example:

```
PACKED ON SHIFT [Q]
```

This message prints "Packed on shift" followed by the current shift code letter:

PACKED ON SHIFT A

Since the shift code letter acts just like the date code letters, they can all be incorporated into the same brackets. For example:

```
PACKED [EF/GH/IJ Q]
```

MAINTENANCE

GENERAL

CAUTION: *Do not use needles or other pointed objects to clear the ink jet orifices, or use sharp objects such as screwdrivers to scrape off dried ink from the nozzle plate.*

Ensure the printer and ink is correctly configured for the application, otherwise print performance and component life span will be affected. The life of the printer depends on the working environment in which it is placed and the treatment it receives at the hands of operators. Ensure that the printer is installed where it will not be knocked, protect it as much as possible from heat, dust and vibration and never allow any part of the printer to come into contact with water or other liquids.

ROUTINE MAINTENANCE

Under normal operating conditions the printer requires minimal maintenance. A few periodic checks are all that is needed to keep the system running at optimum performance.

Inspect and clean the system regularly. Periodic maintenance will be required at the beginning and end of each working day, before holidays and every six months. Most maintenance can be carried out by the operator and involves no more than replacing ink bottles, cleaning the nozzle plates or performing a prime. The printer warranty may be invalidated by damage caused through not following proper maintenance procedures.

Where a problem occurs, refer to the TROUBLESHOOTING chapter of this manual for help. It may be, should a degradation in print quality occur, that a wipe of the ink or dust from the surface of the nozzle plate is all that is required.

Daily

Use only the genuine Domino inks, cleaners and flushing fluids specifically matched to your application. Do not use any other inks, solvents or chemicals, as they will certainly damage the printer and may invalidate the warranty.

Check the ink level by pressing the red indicator lamp button at the top of the case and looking through the viewing window in the front of the door. Try not to let the ink become fully exhausted before replacement, otherwise air (which has to be purged) can be introduced into the system from an empty bottle.

Dust from the environment (particularly cardboard, paper and fibre dust) can mix with the jet mist on the front of the nozzle plate and form a sticky paste that disrupts the jet pattern or can cause a complete jet blockage.

With a clean, lint-free cloth dipped in domino nozzle cleaner, wipe the front of the nozzle plate sideways to remove any contamination. Clean the photocell window.

Check for damage to ink and air lines in the ink compartment, as they may have been trapped when closing the front door. Inspect external cables and tubing for signs of chafing and splits, especially near the connectors.

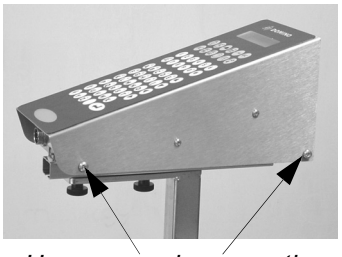
Before Long Holidays

If the printer is not going to be used for more than three weeks, ensure the ink in the system is replaced with Domino flushing fluid.

Six Monthly Check

Every six months the printer should receive a complete examination. Check the external and internal tubing for signs of ageing, kinking or leaking, and have them replaced if necessary.

Every six months the ink filter unit (IF/01) must be replaced. This involves opening the print head unit. Unscrew the four screws around the bottom edge of the print head (not those further up) and lift off the top of the chassis, complete with keypad, LCD display and electronics. Support the top out of the way or disconnect the cables – do not let it hang!

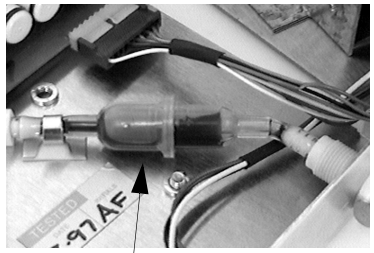


Unscrew and remove the print head screws

Lift off the top of the chassis

Replace the ink filter, checking that it is installed correct way around (an arrow is printed on the filter to show ink flow direction – toward the nozzle plate). To help eliminate air in the ink system, fill the ink filter with nozzle cleaner fluid before fitting.

When completed, perform a purge.

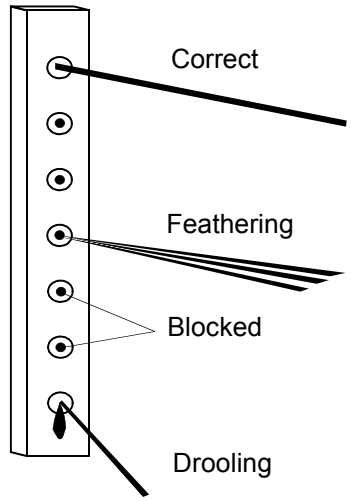


Ink filter

TROUBLESHOOTING

The Ink Line

Problems with the ink line may lead either to the incorrect firing or total absence of one or more jets, or the entire loss of ink supply, affecting all the jets. The diagram (right) shows a good jet stream for comparison with incorrectly firing jets.



Types of correct and incorrect jet flow

Drooling and feathering are generally caused by a build-up of contaminants on the nozzle plate and can be cleared by cleaning the nozzle plate with Domino nozzle cleaner and a soft, lint-free cloth. If this does not cure the problem, perform a purge.

Individual missing jets can be restored by checking the nozzle plate, then the tubing inside the print head leading back to the relevant valve. The ink problem can be followed back to the distribution assembly, after which the ink path is common to all valves. If the tubes are not blocked, the solenoid valve itself is suspect. This is easily isolated by plugging a known good valve into the suspect socket.

If no ink is present at any of the jets, withdraw the QD plug from the print head and press the tip against the inside of an old container. If ink flows freely, suspect a clogged ink filter or blocked tubing. No ink signifies a loss of supply from the ink bottle - check the cap and probes.

Total loss of ink to all jets can also be due to an air pump failure, which is easily detected by the absence of pump noise and vibration from the base. Check the mains input, that the ON/OFF switch is illuminated and that the LCD screen shows a display. Check all the ink and air supply lines and the pressure release valve for leaks.

Alternatively, an electronic problem in the print head may be preventing any valve from firing. Listen for the sound of valves firing to see if this is the case. Check the LCD screen – if there is a display, check all setup parameters (is it an incorrect dot size value). If the parameters are satisfactory, contact Domino Service for further advice.

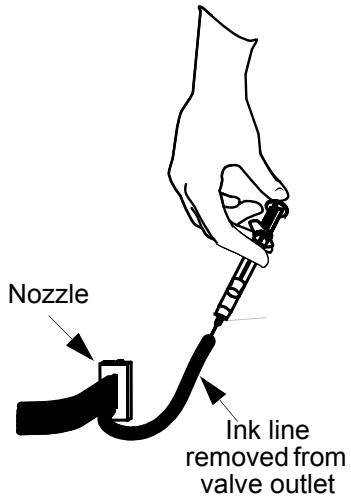
Flushing the Jets

If cleaning the front face of the nozzle plate and performing a purge operation cannot restore a partially or fully blocked jet to working order, then a particle of dust may be trapped inside the jet. The syringe flushing method will have to be used to remove it.

Switch off the power and remove the print head cover. With a small, flat-bladed screwdriver, gently pry off the valve outlet tube which is connected to the suspect jet, noting the refitting order if more than one tube is released. The valves plug into the board and can be pulled out to make this operation slightly easier.

Connect the detached end of tubing to a syringe (SY/1, supplied in the cleaning kit) filled with Domino nozzle cleaning fluid. Press the syringe plunger to force cleaning fluid down the tubing, watching for fluid being ejected from the jet. When the syringe is down to a quarter full, pull the plunger back up to withdraw fluid and any debris back into the syringe.

Discard this spent fluid immediately and recharge with fresh fluid, repeating the process until satisfied that the blockage and debris have been completely cleared from the jet. Trim the tubing slightly before refitting to prevent leaks from the joint. Finally, perform a purge.



The presence of matter in the jets could be an indication that the ink filter (IF/01) has failed. If this is suspected, the ink filter should be replaced immediately.

Qualified service personnel only. This operation requires specialist skills or tools.

Solenoid Valve Tubing Order

Note: The printer operates with solenoid valves which are not interchangeable with valves in other printer models.

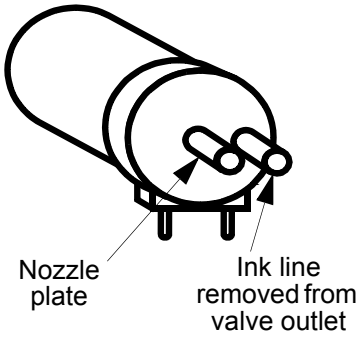
If any solenoid valves are changed, or the syringe flushing procedure is carried out, there is a risk that tubing may be replaced in the wrong order, creating illegible print characters when reassembled.

Shown on the following pages are tubing order diagrams which clarify the connections between the jets on the nozzle plate and their corresponding solenoid valves. All valve diagrams are viewed from the rear of the print head looking forward.

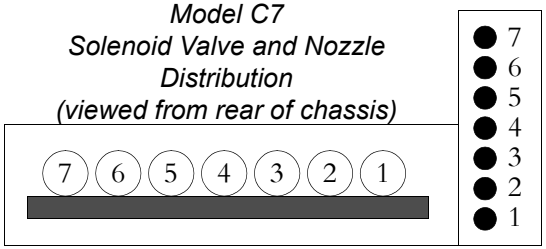
It is very important that outlet tubing from one valve is not transposed to another valve outlet, as this creates a character illegibility problem. If more than one set of tubing is reassembled in the wrong order, then greater character disruption occurs.

However, if valve inlet tubing is transposed to another valve inlet, this is not as critical, as all the inlets are commonly connected through the distribution assembly.

Trim back the tubing by a small amount wherever removal and refitting is performed.



Model C7
Solenoid Valve and Nozzle
Distribution
(viewed from rear of chassis)



Model C16
Solenoid Valve and Nozzle
Distribution
(viewed from rear of chassis)

Model C34
Solenoid Valve and Nozzle
Distribution
(viewed from rear of chassis)