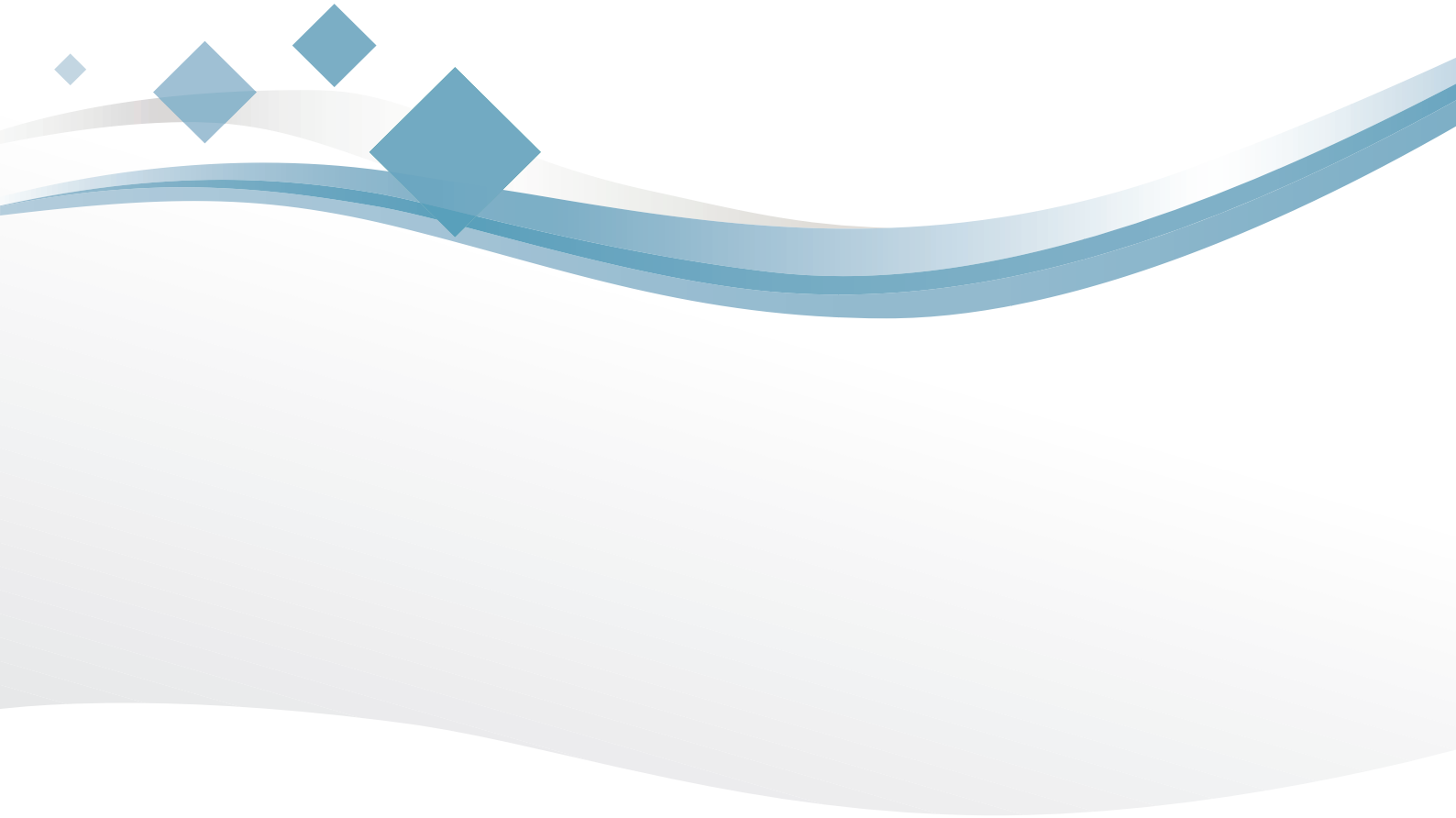
DOMINO

# Domino CaseCoder
# Maintenance Manual



Domino. Do more.

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# EU DECLARATION OF CONFORMITY

**No. Doc-0009848_R02**

**Manufacturers name:** Domino UK Limited
**Manufacturers address:** Bar Hill, Cambridge CB23 8TU.

**This declaration of conformity is issued under the sole responsibility of the manufacturer.**

**Object of the declaration:** Domino Casecoder, from serial number K-16139

**The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:**

2014/35/EU : Low Voltage Directive
2014/30/EU : EMC Directive.

| | |
|---|---|
| **EN 60950-1:2006/A2:2013** | Information technology equipment – safety – Part 1: General requirements. |
| **EN 61000-6-2:2005** | Electromagnetic compatibility (EMC) – Part 6-2: Generic standards – Immunity for industrial environments |
| **EN 61000-6-4:2007/A1:2011** | Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – Emissions standard for industrial environments |

**Signed for and on behalf of**
Domino UK Limited.
Bar Hill,
Cambridge,

Date: 5th May 2016

Signature:

Name and Job title: Group Carl Reynaud, Chief Engineer

# CASECODER
# MAINTENANCE MANUAL

**WARNINGS:**

**(1) Printing inks must be handled with care. Do not allow in into the eyes, mouth, or onto the skin.**

**(2) Some dried inks are highly flammable. Clean up all ink spillages immediately. Don not allow the ink to dry.**

**(3) Do not use the printer in wet or explosive environments.**

**(4) The printer must be correctly connected to ground (earth), for the safety of personnel and to avoid the possibility of component failure.**

**(5) Many inks used in ink jet printing contain nitrocellulose and remain highly flammable when dry. Observe all warnings given on the machine and the following safety instructions:**

**If there is an accumulation of dried ink, do not use ferrous metal (iron or steel) scrapers to remove it, as they can produce sparks.**

**If dry Nitrocellulose base ink ignites, it will generate its own oxygen and can only be extinguished by lowering the temperature with water.**

**If a Nitrocellulose fire occurs, ensure that the electrical power is immediately removed from the printer before water is used to extinguish the fire. For an electrical fire do not use water.**

*CAUTION:* *This is a Class A product as defined in EN 55022. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.*

This manual, Domino Part No. 20519, is for use with the Domino CaseCoder Ink Jet Printers from serial number K-16315 and onwards.

Users of this printer are warned that it is essential to read, understand and act according to the information given in Part 1: Health and Safety.

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# CONTENTS

# AMENDMENT RECORD

| Amendment | Date |
|---|---|
| All Parts at Issue 5 | December 1991 |
| All Parts at Issue 6 | June 1996 |
| All Parts at Issue 7 | April 1999 |
| Removal of pt5 and 6, change to voltage selector, Issue 8 | January 2018 |

# CASECODER
# PRODUCT SAFETY

This product has been carefully designed for maximum safety. Certain parts of the machine are particularly important in this respect and any changes to them may affect the safety of the product and invalidate the certification. These should not be altered, or replaced by other types, without the approval of the Design Authority for the product.

For this printer the components affected are:

| COMPONENT | DOMINO PART No. | MANUFACTURER | MANUFACTURER'S PART No. |
|---|---|---|---|
| Transformer Toroid | 36150 | ILP Electronics | 3D311 |
| Mains Filter Fuse Switch | 10152 | Schaffner | FN285-6-06 |
| Power Cord | 11115 | Bulgin | PZ0100/2M00 |
| Voltage Selector | 11106 | Schurter | SWZ |
| Equipment Wire | | | Type 3 PVC |
| Fan | 11286 | IMC | 3115FS-12W-B30 |

# PART 1 : HEALTH AND SAFETY

## CONTENTS

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**Refer also to the warnings given on page 1-4 at the front of this manual.**

# Introduction

Domino supplies Safety Data Sheets (SDS) giving specific safety information with each of its ink, make-up and wash fluids. There are also warnings on each container. The following notes are, therefore, 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.
- Do not smoke or allow naked flames (or other sources of ignition) in the vicinity of any inks or solvents as this is highly dangerous.
- 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 solvents which may injure the skin. Good working practice must always be employed and risk assessments carried out. Safety Data Sheets are available that give advise on personal protective equipment. Most gloves only offer limited and short term exposure protection and must be changed after any splashing and on a frequent basis.
- 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

Certain inks are allowed for use where they can be in indirect contact with food. In these cases, the following precautions must be observed in addition to those appropriate to hygiene:

- The inks must only be used in printers supplied from new for use with these inks. Any repairs and replacements must use genuine, new and unused spare parts
- The inks must not be used in printers which have previously been used, at any time, for any other purpose.

In other words, a printer using "food grade" ink can be converted for use with other inks, but a printer which has used other inks must not be converted for use with food grade ink.

## Storage

Printing inks must be stored in well ventilated buildings, in areas set aside for the purpose and chosen for safety in case of fire. All fluids must be stored in accordance with local regulations.

## Fire Risk

Observe all warnings given on the machine and the following safety instructions.

For an electrical fire, do not use water.

If there has been an accumulation of dried ink, do not use metal scrapers to remove it, as they can produce sparks.

Fire risk is a most important consideration where printing inks are stored and used. The degree of fire hazard will vary considerably from one type of ink or wash to another.

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.

Solvent-based inks offer a greater degree of hazard depending on the particular solvent or solvent combination. When there is a particular hazard the appropriate information is given on the SDS.

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

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 inside the printer cabinet 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.

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# PART 2 : DESCRIPTION

## CONTENTS

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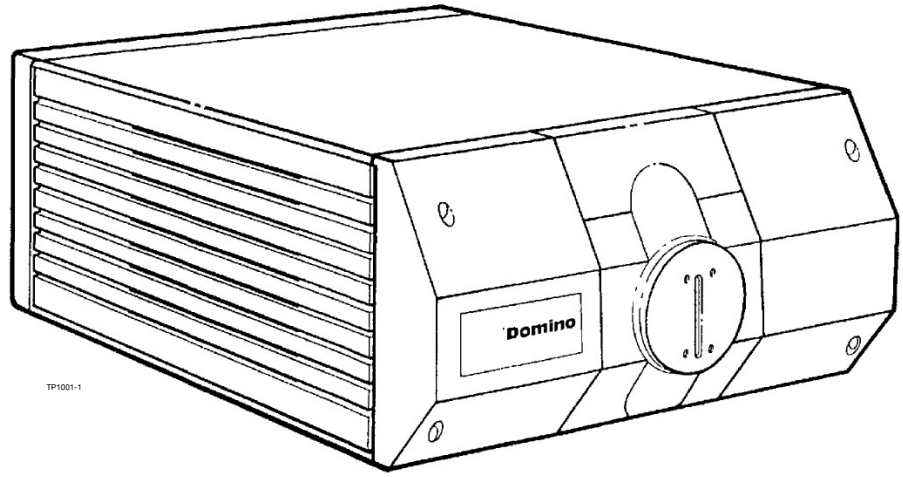
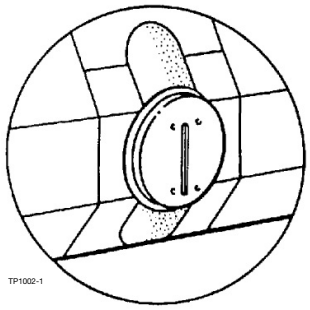
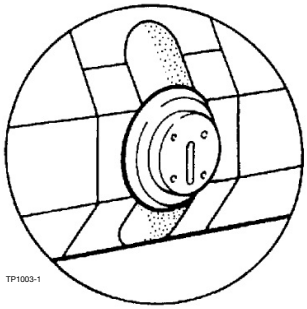


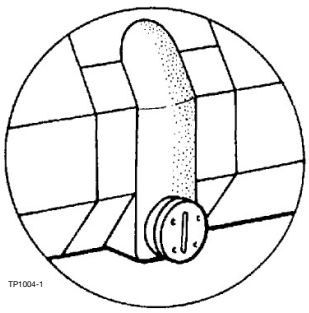

*CaseCoder Front View*



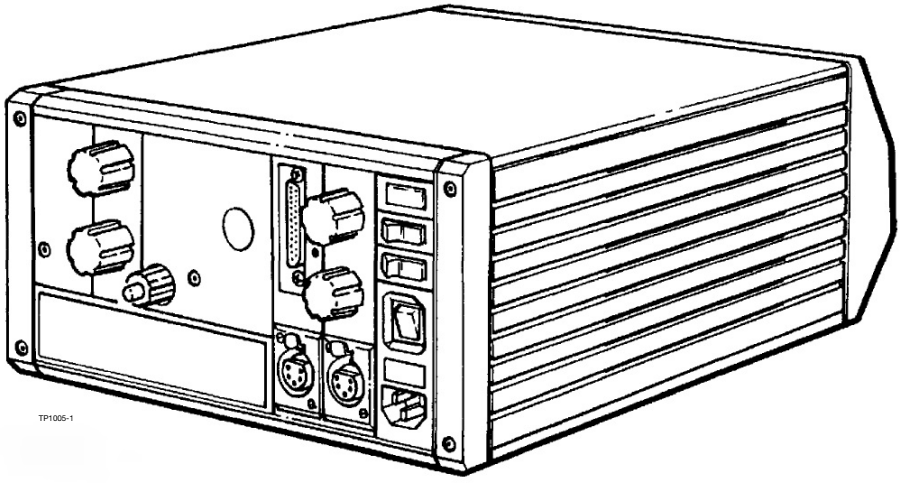

*CaseCoder with 32mm Print Head*




*CaseCoder with high 12mm Print Head*




*CaseCoder with low 12mm Print Head*




*CaseCoder Rear View*

# INTRODUCTION

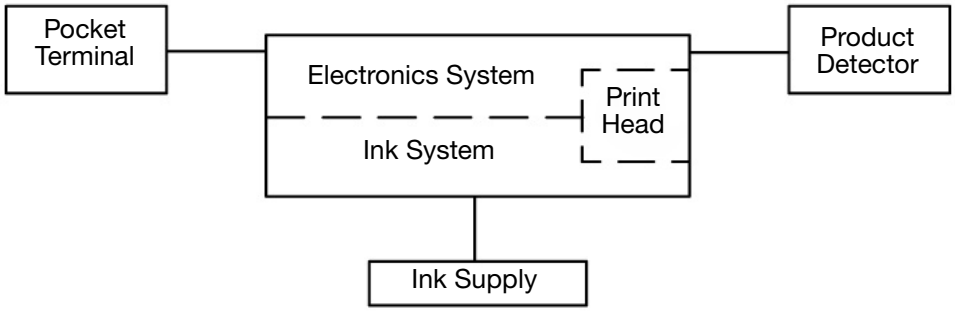
CaseCoder is a valve jet printer, designed to mark items moving along a production line. Valve jet printers do not touch the print surface. Therefore, as well as obvious surfaces, CaseCoder is able to print on soft, irregular or otherwise "difficult" surfaces.

CaseCoder is a small unit containing a print head and the associated ink and electronic control circuits. There are two types of print heads, 7 nozzle 12mm and 16 nozzle 32mm. An external photo-electric sensor, normally mounted on the printer cabinet, detects the product and enables CaseCoder to print at the correct time. Ink is supplied to the printer from a separate, disposable bag-in-box ink container.

The printer is normally installed on a special mounting bracket, with its print head nozzles close to the surface being printed on. It should be level and free from vibrations which could reduce print quality.

CaseCoder is programmed with a Domino pocket terminal. This is a small calculator-style unit which enables messages to be quickly and easily entered into the printer. Once a message is programmed into the printer, it is unaffected by switching off or power failures and can only be changed by the operator. The terminal can be detached for security.

Optional extensions to the CaseCoder include a shaft encoder which will make printing follow variations in the line speed. Also, input of data is not confined to the pocket terminal. CaseCoder is fully capable of becoming part of a larger printing system.



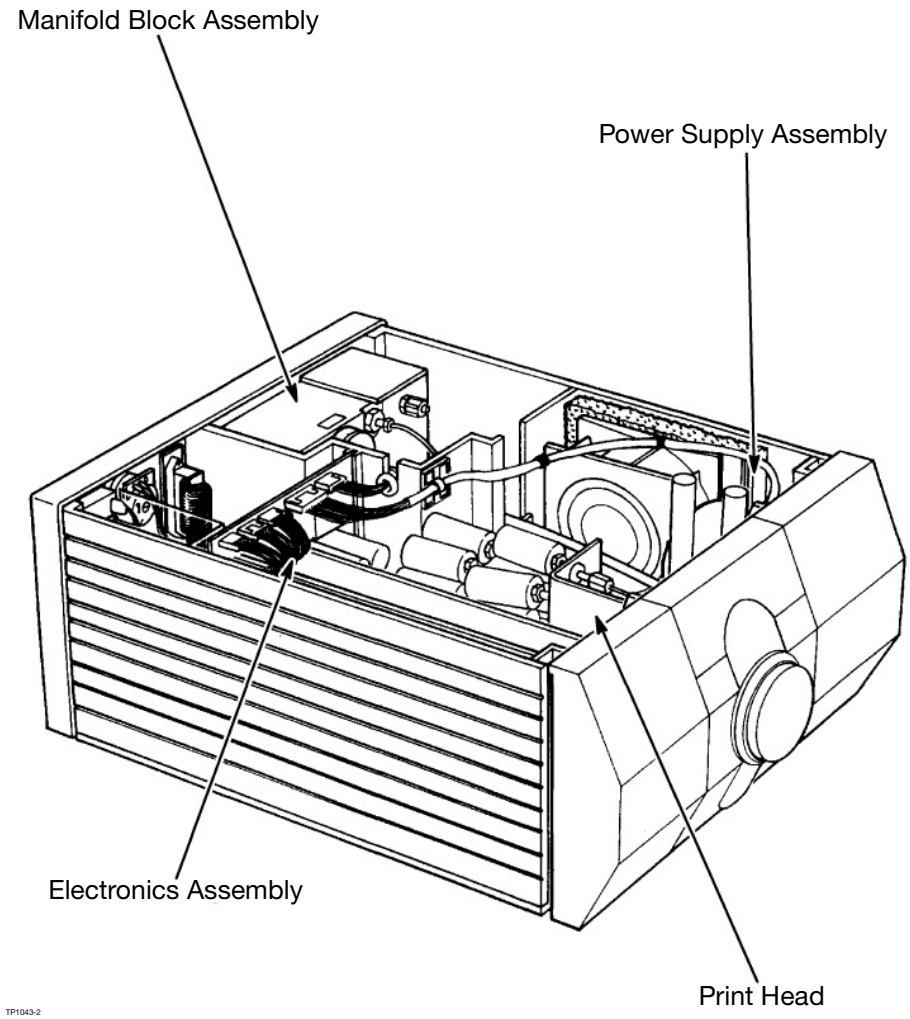

*CaseCoder Block Diagram*

# SPECIFICATION

| **Printing** | |
|---|---|
| Character Heights: | |
| CaseCoder single line: | 8mm (5 x 5 matrix) |
| | 12mm (7x5 matrix) |
| CaseCoder two line: | 8mm (5 x 5 matrix) |
| | 12mm (7x5 matrix) |
| | 32mm (16 x 10 matrix) |
| Maximum print speed (all variants): | 100 m/sec at 12.5mm character width |

| **Ink System** | |
|---|---|
| Ink supply | Disposable bulk ink container capacity 5 litres |
| **Dimensions** | |
| Weight: | 6.8kg. |
| Height: | 130mm. |
| Width: | 262mm. |
| Depth: | 396mm. |
| Print Head Distance: | 6 - 10mm (optimum).<br>- max allowable distance between nozzle and print surface 25mm. |
| **Data Input** | |
| Pocket terminal Type 64 | Message entry |
| Data retention during power off. | |
| Domino Codenet: | Controls up to 24 CaseCoder from one PC. |
| Interface: | RS232 or 20mA current loop. |

| | |
|---|---|
| **Character Control Functions** | |
| User defined clock formats including: | |
| | Programmable shift codes, |
| | Gregorian e.g. Nov 90, |
| | Julian e.g. 0319 = 31 Jan 89, |
| | Quarter hours e.g. 64 = 1600 hours, |
| | Clock offsets for different messages. |
| Two independent serial numbers. | |
| All clock formats and serial numbering change automatically within a message. | |
| Invert, reverse and bolderise characters. | |
| Adjustable character width. | |
| Adjustable drop size. | |
| User programmable changing of messages at a set time. | |
| Auto message repeat. | |
| Product counter. | |
| Options for: | Barcode 2/5 and code 39,<br>Foreign alphabets e.g. Arabic,<br>Custom logos and symbols. |
| Messages: | |
| software 51091: | 50 messages of up to 40 characters length |
| Software 51092: | 40 messages of up to 200 characters length |
| **Environmental** | |
| Temperature: | 5-35°C operating. |
| Humidity: | 10-90% RH (non-condensing). |
| 6 position voltage selector: | 110V/130V/150V or 220V/240V/260V |
| Main fuse rating: | 0.63A (220V - 260V).<br>1.25A (110V - 150V). |
| Power requirements: | 78VA, 50-60HZ. |
| Shaft Encoder input: | Suitable for open collector or TTL encoders. |



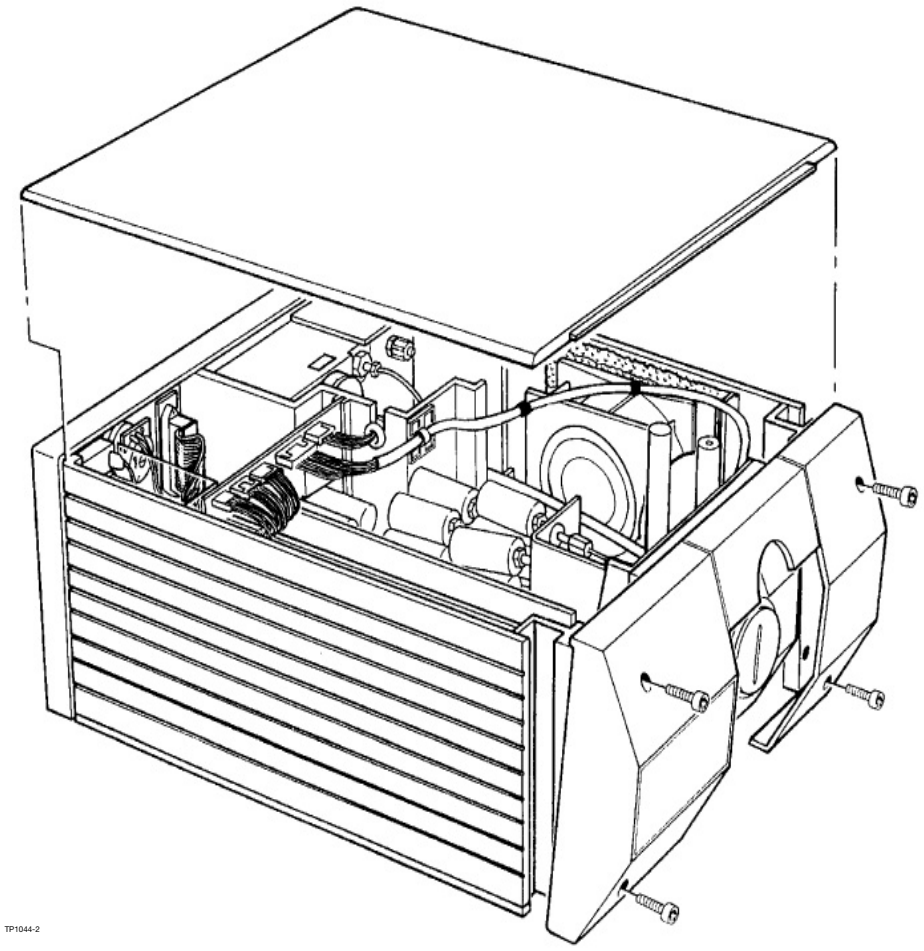

*CaseCoder - Internal View*

# CABINET

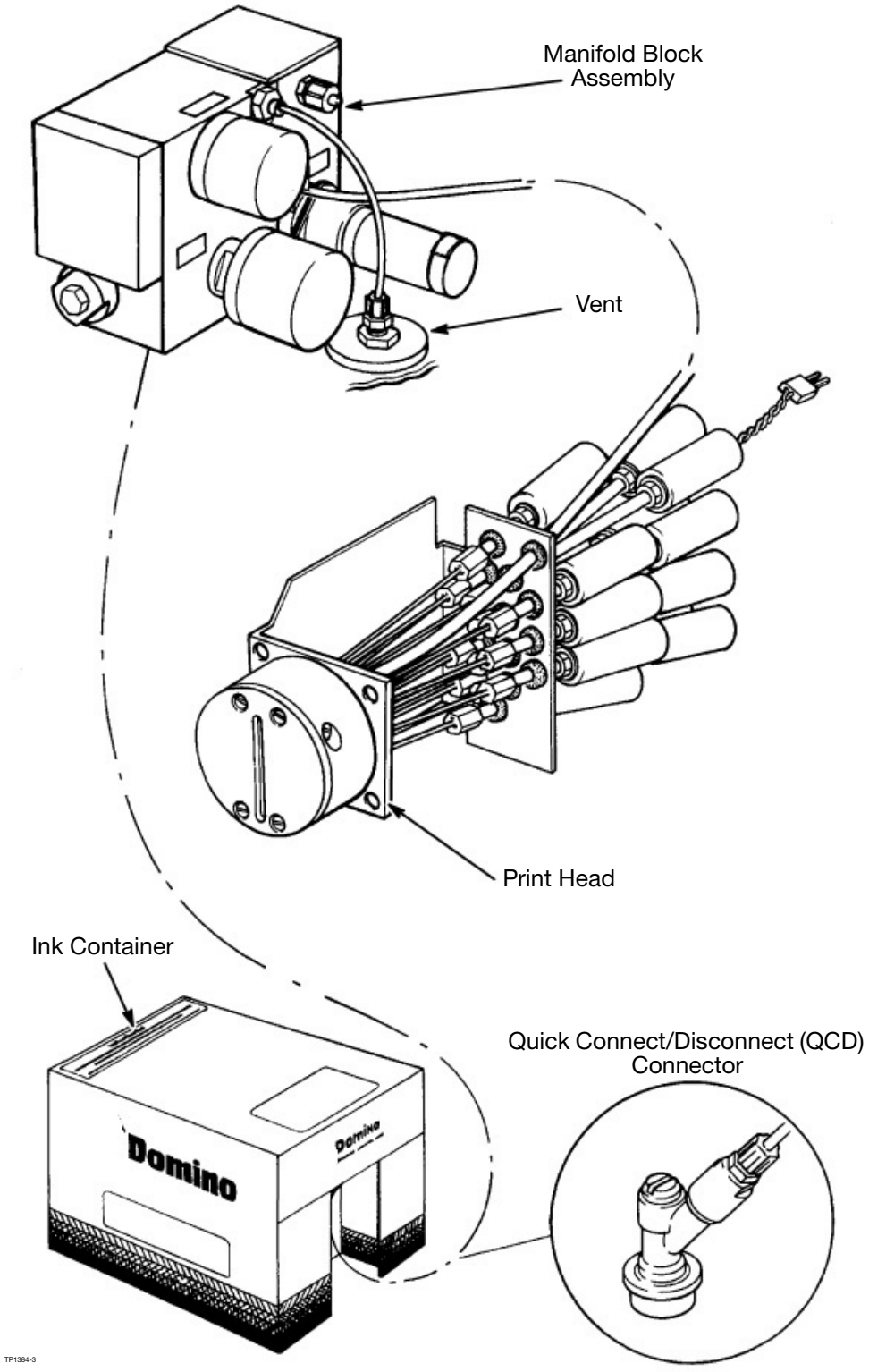
The cabinet consists of a base moulding, front cover, top cover and rear control panel. The front cover has an aperture for the rubber seal surrounding the print head. In the case of the 12mm low print head, this seal is part of the print head assembly. In the case of the 12mm high and 32mm print head, the seal is detachable. Access for maintenance consists of removing the four screws holding the front panel. Removing the front panel then releases the top panel.

The assemblies which make up the ink and electronic systems are fitted as shown in the diagram opposite. A fan provides cooling air and maintains a slightly positive air pressure inside the cabinet to keep out dust, etc.

Controls and external connections are all on the rear panel (see page 2-14).



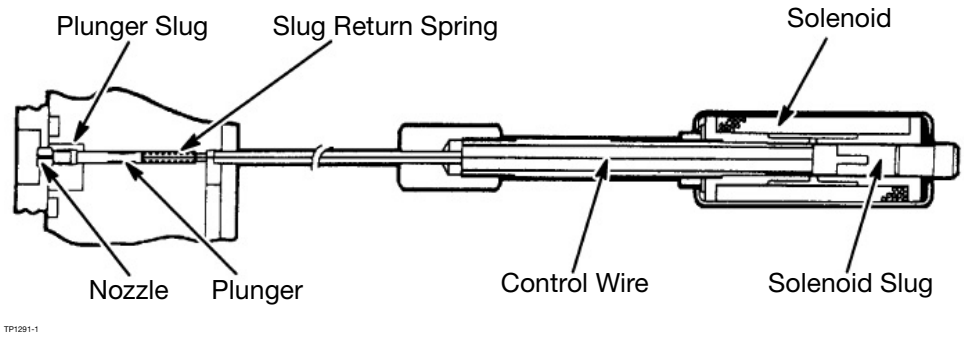

*Removing the Covers for Access*



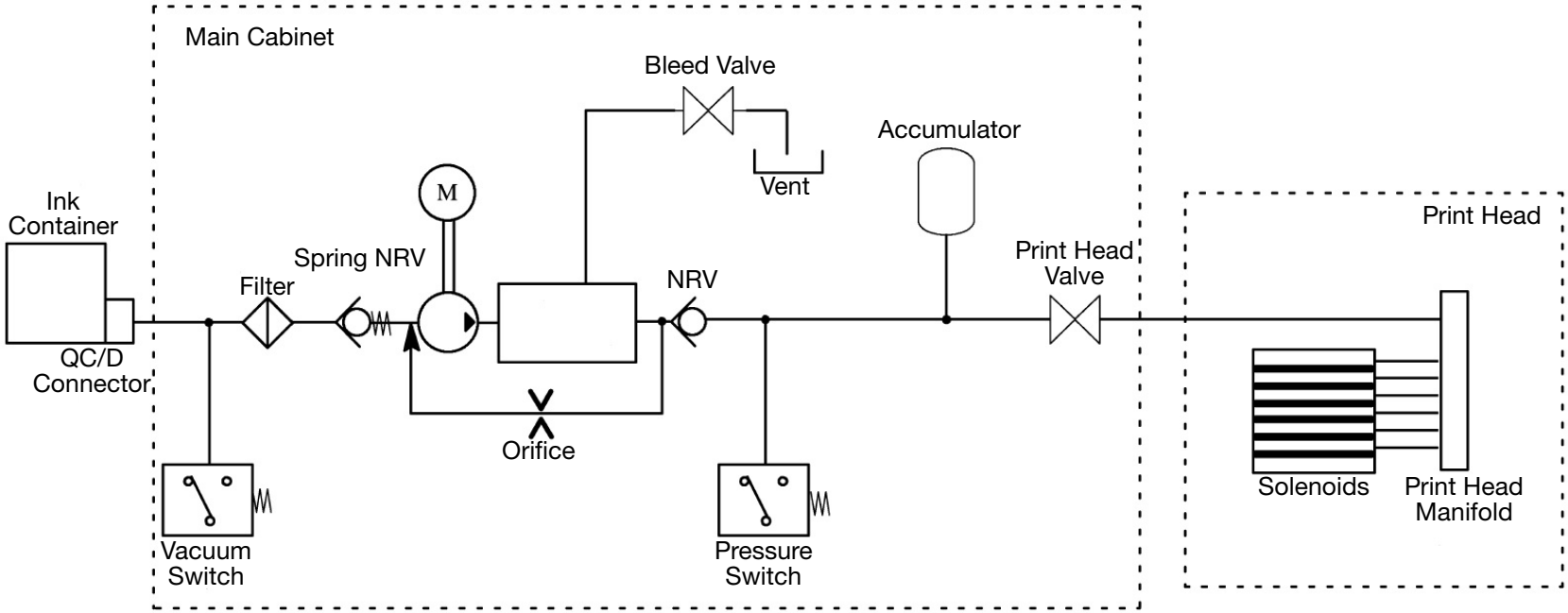

*Ink System Components*

# PRINT HEAD

The ink nozzles are self cleaning in normal operation as the forced ink flow automatically sweeps away any dirt. A manually controlled PURGE function is provided which opens all of the nozzles repeatedly to sweep out any air or other accumulations. Purging is carried out when required.




*Solenoid and Plunger Assembly*




*Ink System Diagram*

# INK SYSTEM

The ink system supplies ink under pressure to the print head. Most of the components in the ink system are built into the manifold block assembly.

Ink is supplied to the printer from a disposable sealed bag-in-box ink container. Connection to the ink container is through a QCD (quick connect/disconnect) connector which is simply pushed onto the sealed ink container spout and locked in place. (Removal is the equally simple reverse operation.)

When all ink has been used the CONTAINER EMPTY warning indicator will light. The pump switches off, but the vacuum is retained by the spring non-return valve, holding the vacuum switch on.

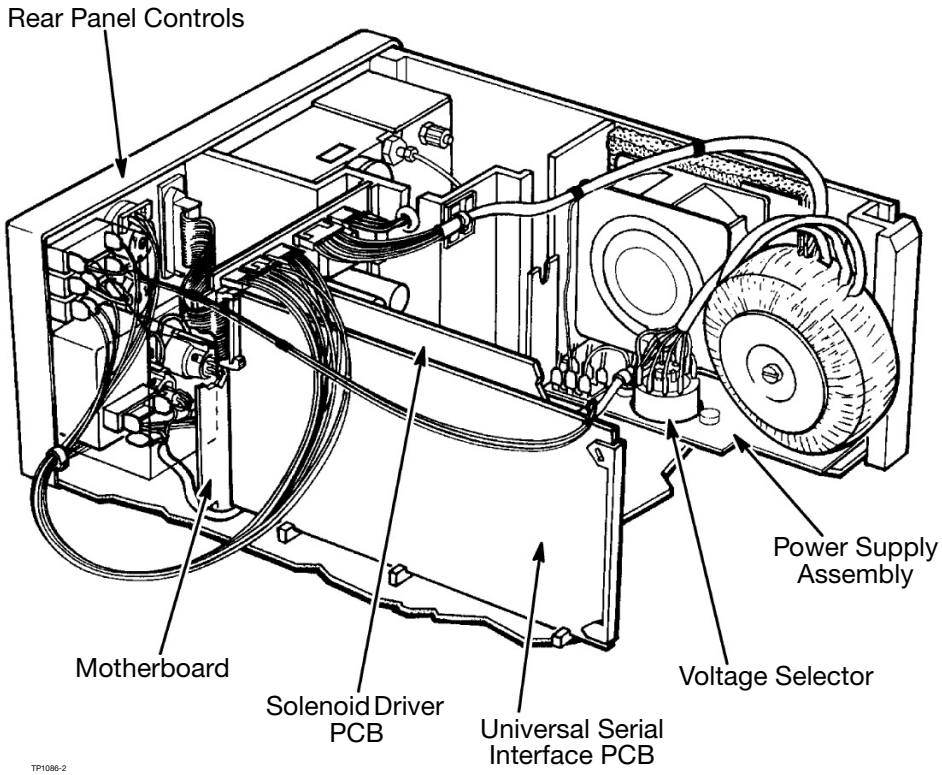
The ink is pumped into a bleed reservoir where any residual air in the ink supply is collected. This air is removed by opening the bleed valve for a short time. Bleeding should be carried out periodically. The recommended period is weekly.

# ELECTRONICS SYSTEM

The major components of the CaseCoder electronics system are shown in the diagram. Not shown is the external product detector which triggers printing. The system comprises two printed circuit boards (PCBs) fitted into a printed circuit motherboard.

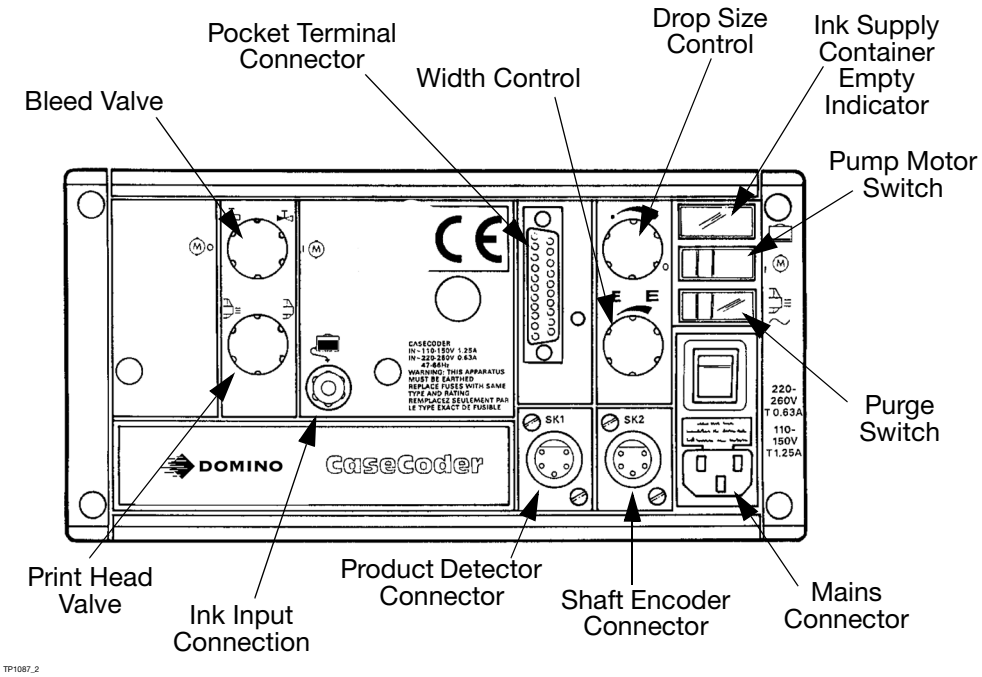
The printed circuit boards are:

- the Universal Serial Interface PCB, concerned with the data processing
- the Solenoid Driver PCB, concerned with driving the print head.

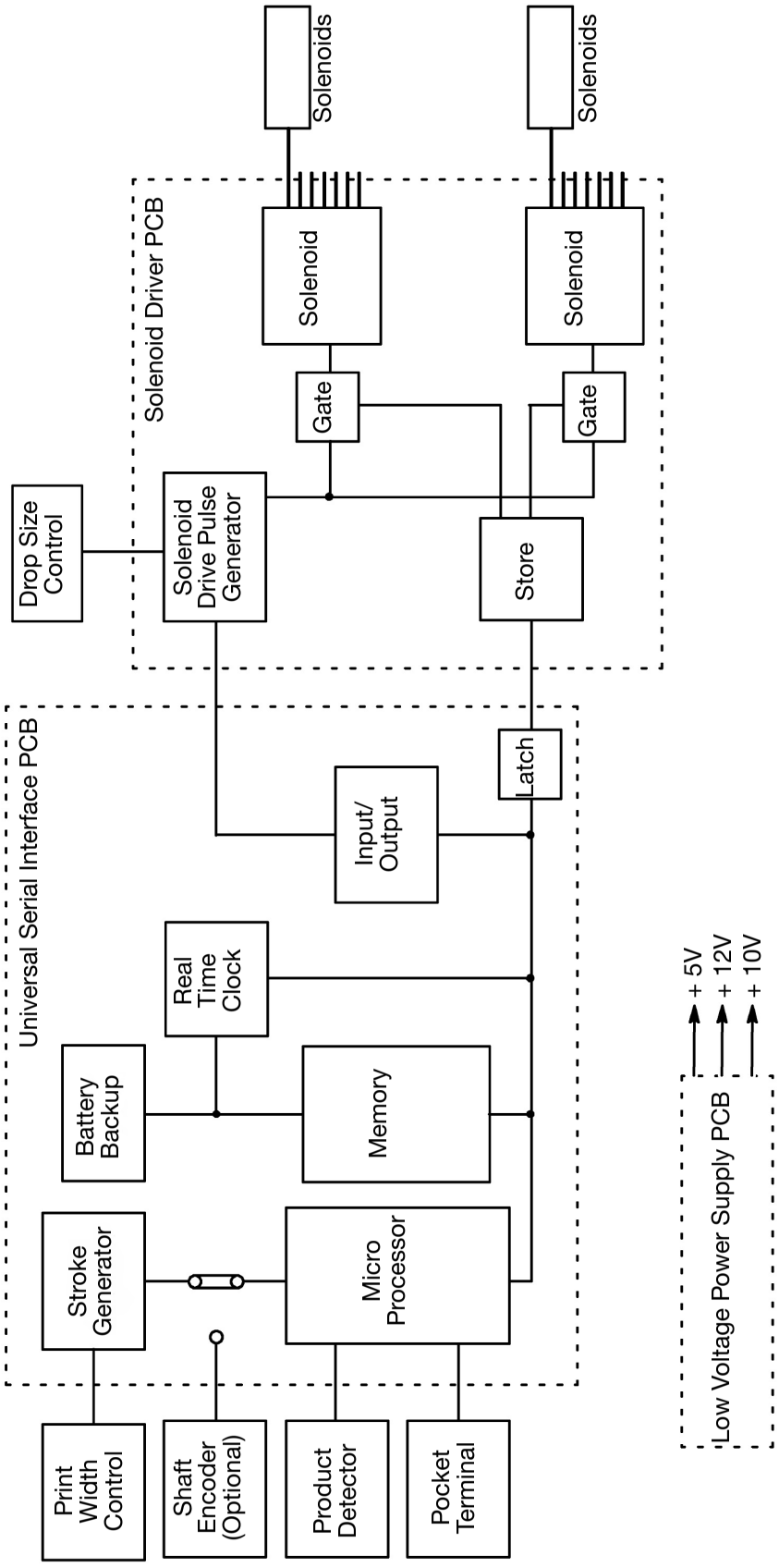



*Electronic System Components*

The controls and indicators are grouped on the rear panel as shown in the diagram.



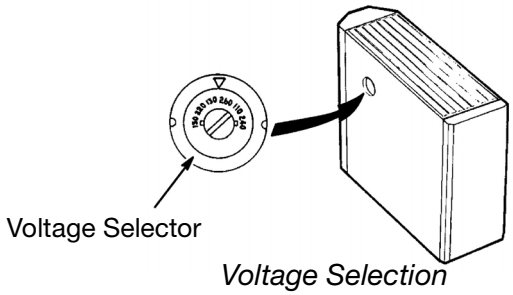

*Rear Panel Controls*




*The Electronic Control System*

## Power Supply Assembly

The power supply assembly consists of a transformer, a fan, a voltage selector and a fuse. The selector allows inputs of 110, 130, 150, 220, 240 or 260V. Normal protection is provided by a fuse fitted into a holder immediately above the mains input connector on the back panel. The fan is a 110V unit which is automatically provided with the correct supply by the voltage selector.




TP2195-2

*Voltage Selection*

## Product Detector

CaseCoder uses an external detector to sense the approach of a product. This is normally mounted on the side of the printer in an adjustable clamp provided as part of the installation kit.A delay can be programmed into the printer as part of the input data from the pocket terminal to allow the product time to reach the correct position for printing.

## Shaft Encoder (Optional)

Internal stroke control assumes a constant product speed and gives a constant stroke rate. If the product speed changes, the width of the printed characters will change. Fitting a shaft encoder allows the stroke rate to vary with the product speed.

# EXTERNAL CONNECTIONS

## Product Detector and Shaft Encoder Connectors (5-pin AXR)

**WARNING:** **The printer must be connected securely to ground.**

There are two connectors, SK1 and SK2. Both connections are wired with the same connections so that a product detector can be connected with either connector and a shaft encoder connected into the other. Alternatively, SK1 and SK2 can be used to loop a single product detector, or a shaft encoder to another similar printer in an extended system. Connection details are shown following table.

| PIN | SIGNAL |
|---|---|
| 1 | 0V |
| 2 | Encoder input |
| 3 | Print Go input |
| 4 | +5V |
| 5 | +12V |

## Mains Connector

Euroconnector with moulded lead:

| | |
|---|---|
| Line | brown |
| Neutral | blue |
| Ground | green\yellow |

## Pocket Terminal Data Entry Connector (25-way D connector)

For RS232 operation pins 13 and 24 are linked to disable the 20mA loop. Pins 4 and 9 may also be linked to set CTS. For 20mA loop operation pins 21 and 22 are linked. The terminal as supplied has the connections set for RS232 operation.

| PIN | SIGNAL | PIN | SIGNAL |
|---|---|---|---|
| 1 | 0V | 12 | Tx +ve |
| 2 | RS232 Data In | 13 | RX+ve |
| 3 | RS232 Data Out | 18 | -12V |
| 4 | CTS (Input) | 21 | 20mA Enable |
| 5 | RTS (Output) | 22 | +12V |
| 7 | 0V | 24 | Tx -ve |
| 9 | +5V | 25 | Rx -ve |
| 11 | 20mA Source | | |

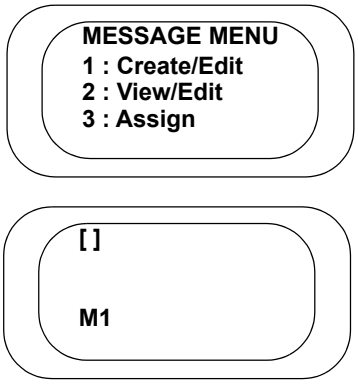
# ENTERING A MESSAGE

*Note: For complete instructions, refer to the pocket terminal pocketbook.*

Casecoder can store 50 messages of up to 40 characters each (7x5 matrix) and 20 characters each (16x10 matrix).

## Function1. The Editor Screen

This shows:




Option 1 should be highlighted, press enter to choose. The screen shows:

### Mode 1

Shown in **black** gives normal uppercase alphanumeric characters.

### Mode 2

Shown in **Red** is for special functions, such as clock, barcodes, logos.

### Mode 3

Shown in **Blue** is used for symbols and punctuation characters.

### Mode 4

Shown in **White characters on a blue background** is used for lowercase characters.

To select the required mode, press the mode key, this will cause the mode number or screen to increment. In the top left hand corner is a flashing box called the cursor, this moves as the message is entered.

For example, to enter the message: BEST BEFORE

**MAY 20**

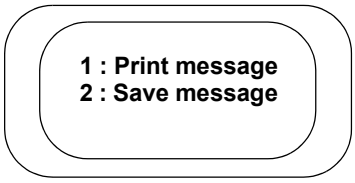
Start in **Mode 1,** type in BEST BEFORE.

Select **Mode 2,** press ↓ to move to the next line.

Select **Mode 2,** and press the [BB] key. Characters from now will be bold. Once this function has been selected, the terminal will automatically return to **Mode 1** for text entry. Enter **MAY 20.**

To transfer the message to the printer, press EXIT.

The screen shows:




To print the message immediately, select option 1.

The screen will then return to the message menu.

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# PART 3 : MAINTENANCE PROCEDURES

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# GENERAL

**WARNING:** **When working on or near the ink system, protective clothing (especially safety glasses) must be worn.**

CaseCoder does not require regular maintenance routines. Cleanliness and the recommended operating practices will be sufficient to ensure continuous high level performance.

This section, therefore, contains the procedures to be used in refurbishing, repairing or replacing parts of the printer after it has shown signs of abnormal performance or failed. (A guide to identifying the part of the printer requiring attention is given in Part 4: Fault Diagnosis). Details on fitting a shaft encoder (optional) are given at the end.

*CAUTION:* *The ink system is on the underside of the printer cabinet. Clean away any ink deposits which may occur under the cabinet.*

# START UP

## Switch Mains On

The other controls should be in their normal running positions.

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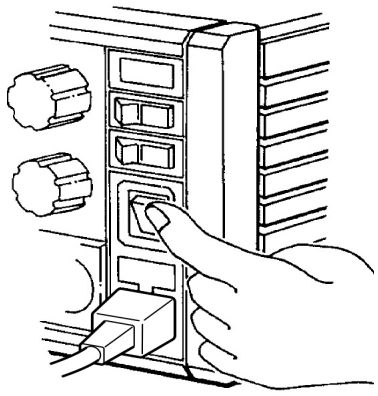


**Checklist**

Mains On.

Motor switch (green) On.

- If not, switch motor switch On.

Bag empty lamp (amber) Off.

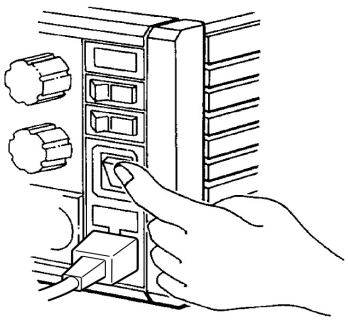
- If not, fit a new ink box.

Print head valve fully anti-clockwise. Bleed valve fully clockwise.

Recommendation: PURGE print head after start-up.

Printing will begin when message is entered and product passes sensor.

# SHUT-DOWN



TP2312_2

## Switch Mains Off

Clean nozzle plate with wash and lint-free tissue.

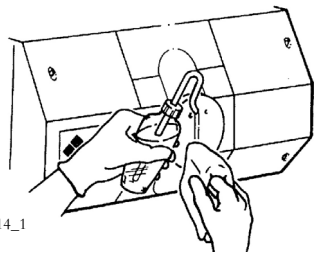
Do not allow wash to spread away from the nozzle plate.

The printer is now shut down.

Recommendation:

Bleed the ink supply system after shut down (see below).

For a long shut down (more than 1 week), close the print head valve.



TP2314_1

# BLEEDING THE INK SYSTEM

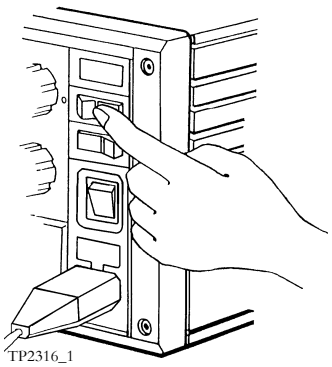
This does not interrupt the printing. Bleed the system weekly.

Set Motor switch to Off (0).

Open the bleed valve (turn anti-clockwise) for a few seconds and then close.

Set motor switch to On (1)

When the bleed valve is opened, a short sound of air being expelled and a small amount of ink coming from the vent underneath the printer is normal.



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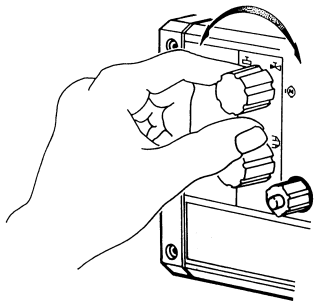


# PRINT HEAD

For maintenance purposes the print head is considered as a separate assembly. It can be isolated from the pressurised ink system by closing the print head valve and made electrically safe by switching off the printer.

## Nozzle Plate

It may be necessary to remove the nozzle plate for cleaning if any nozzles become blocked.

(1) Ensure the printer is switched off

(2) Close the print head valve by turning the knob clockwise.

(3) Using a container to catch the ink, unscrew the retaining screws and carefully remove the nozzle plate.

(4) Clean the nozzle plate in an ultrasonic bath for 10 minutes max using the appropriate washing solution. When clean, inspect for wear or damage.

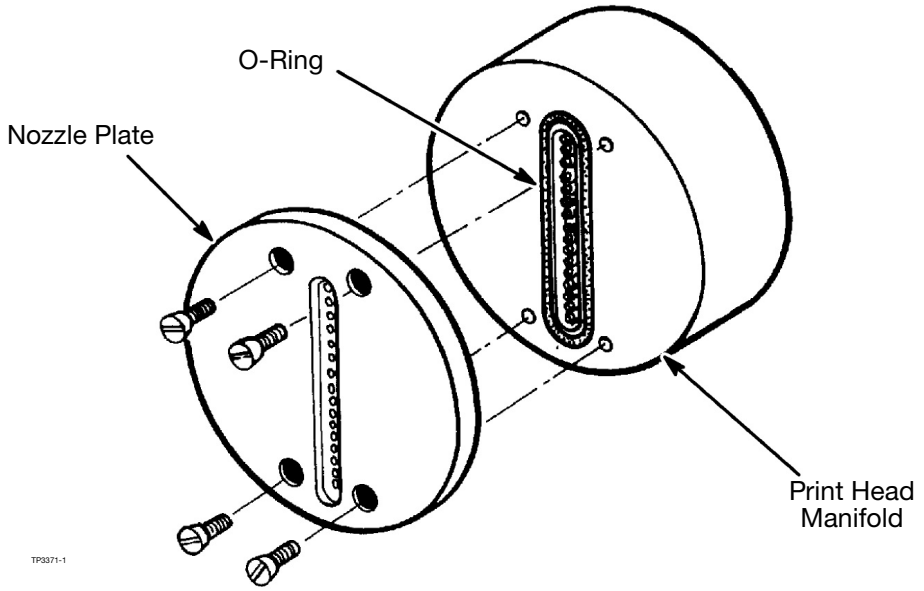
(5) Inspect the O-Ring in the manifold block against which the nozzle plate is secured. Ensure that it is clean and undamaged. Wet the seal with the wash solution.

(6) Refit the nozzle plate and retaining screws.

(7) If a new nozzle plate assembly is fitted, it may be necessary to adjust the solenoids (see page 3-7).

(8) Open the print head valve by turning the knob anti-clockwise.

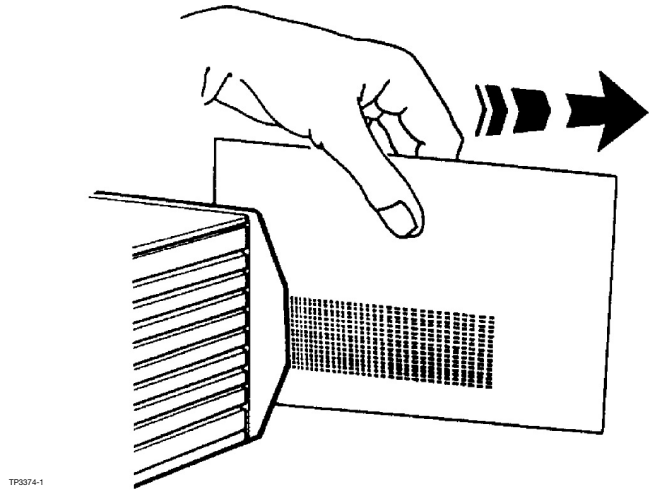
(9) Purge the head and check for leaks




*Nozzle Plate Removal*

# Checking Dot Size

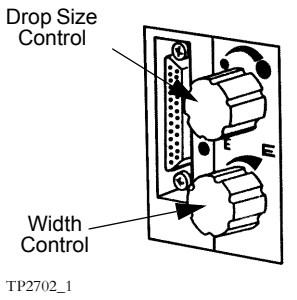
The dot size on the print surface should be 2.5 to 3.0mm diameter. Solenoid adjustment consists of setting the size of the print drops so that the dot size is correct and the same as those from the other nozzles.




*Checking Dot Size*

(1) Clean the nozzle plate (see above).

(2) Switch on the CaseCoder and turn the drop size control fully clockwise.




(3) Move a piece of card at a constant speed across the front of the print head assembly at a distance of approximately 10mm. At the same time operate the purge switch. With a little practice it will be possible to draw a series of vertical lines on the card.

(4) Inspect the lines printed on the card. All lines should be 2.5 to 3.0mm and of uniform width. Any noticeable variation in the size of an individual drop may require adjustment of the appropriate solenoid.

(5) Character width adjustment may be necessary if the speed of the production line changes. Turn the width control accordingly. This adjustment does not interrupt printing.

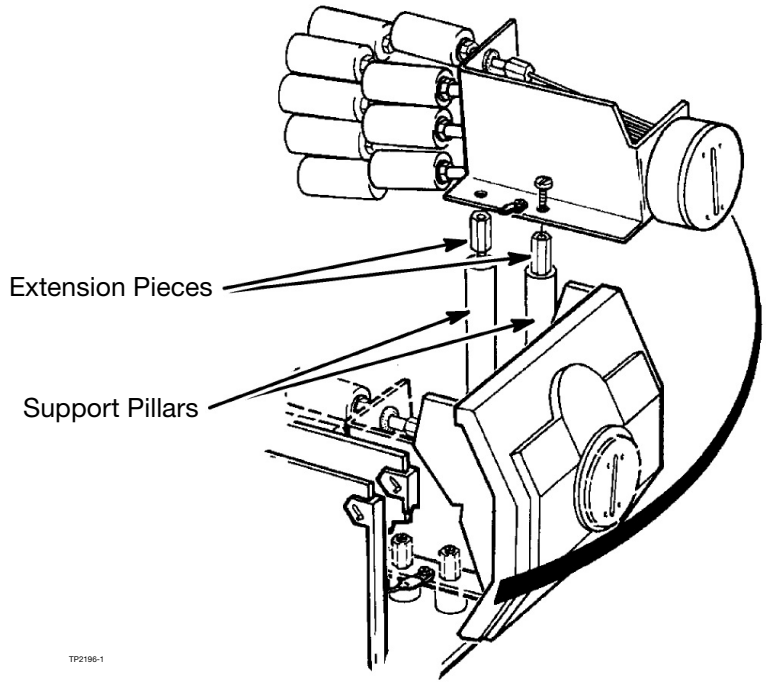
# Solenoid Adjustment

**WARNING:** **The Solenoid Adjustment procedure must only be undertaken by suitably qualified personnel. High voltages are present in CaseCoder.**

(1) Ensure the printer is switched off.

(2) Remove four fixing screws and take off the front cover. Remove the top cover.

(3) Remove the print head fixing screws. Lift the print head and fit it onto the special support pillars with the fixing screws, inserting the extension pieces as shown in the diagram. Ensure that the pipe and cable connections are not strained or damaged.




*Print Head on Support Pillars*

(4) Identify the nozzle corresponding to any incorrect dot. (A label showing the solenoid arrangement can be found either on the print head or the cabinet).

(5) Hold the solenoid body and loosen the locknut securing the associated solenoid. To increase the drop size, turn the solenoid anticlockwise to reduce it turn the solenoid clockwise. Tighten the locknut.

(6) Switch power on.

(7) Check dot size as in step (2) of Checking Dot Size procedure.

(8) Repeat the adjustment until the drop size is correct.

(9) Repeat the adjustment on any other solenoids as required.

(10) Switch off the CaseCoder and refit the print head and covers.

# Solenoid Replacement

Ensure the printer is switched off. Remove the front and top covers and fit the print head onto the support pillars (see Solenoid Adjustment Procedure page 3-7).

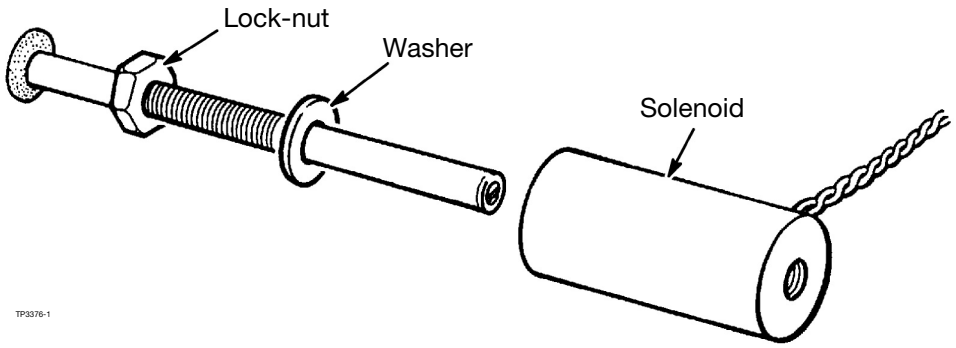
(1) Disconnect the solenoid wiring from the connector.

(2) Hold the solenoid body and loosen the locknut sufficiently to allow the solenoid to be unscrewed and removed from the mounting tube. Leave the locknut to mark the position of the solenoid.

(3) Screw the new solenoid onto the mounting tube, up to the locknut.

(4) Reconnect the solenoid wiring.

(5) Do the drop size test and adjust the solenoid as necessary.




*Solenoid Removal*

# Print Head Plunger Slug Replacement

Plunger slugs in a print head will occasionally require replacement due to wear. This is indicated by ink leakage from the nozzles. The nozzle plate should be carefully cleaned first to ensure that the leakage is not caused by dirt. While the plate is removed, check the condition of the plunger slugs. Also inspect the nozzle plate to check that the jewels forming the nozzles are not damaged or displaced.

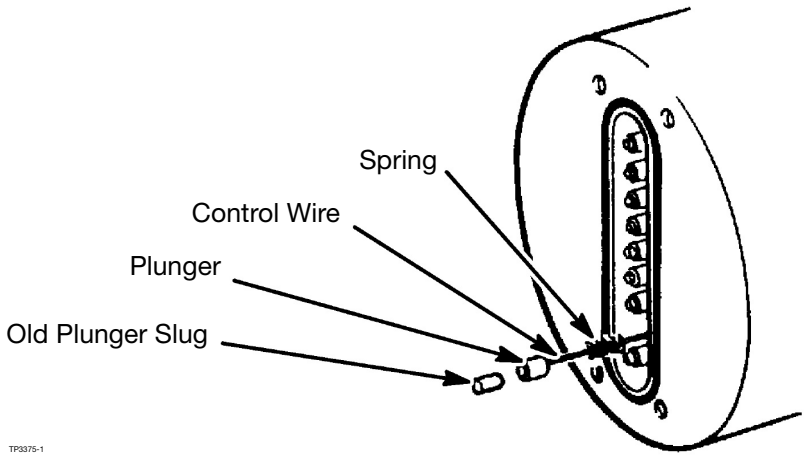
Replacing a damaged plunger slug requires an insertion tool, Domino part number 33574. The tool consists of a base, a top and an insertion pin. A small amount of silicone grease will also be necessary.

Having identified the faulty plunger, proceed as follows:

(1) Close the print head valve by turning the knob fully clockwise. Remove the nozzle plate.

(2) Carefully pull the plunger out as far as possible from the print head manifold block.

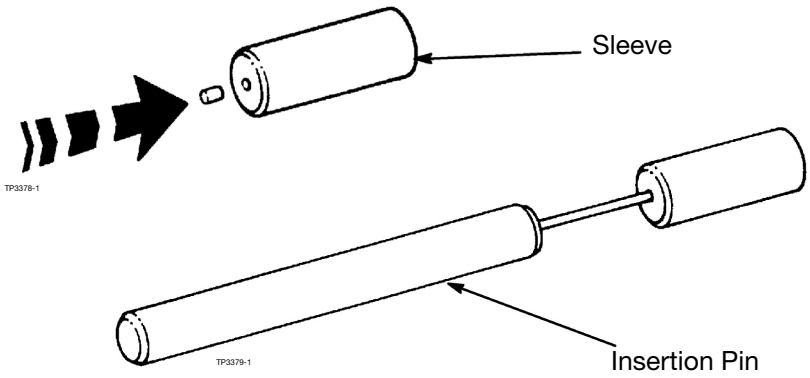
(3) Remove the damaged plunger slug. Make sure that the recess for the plunger slug is clean.



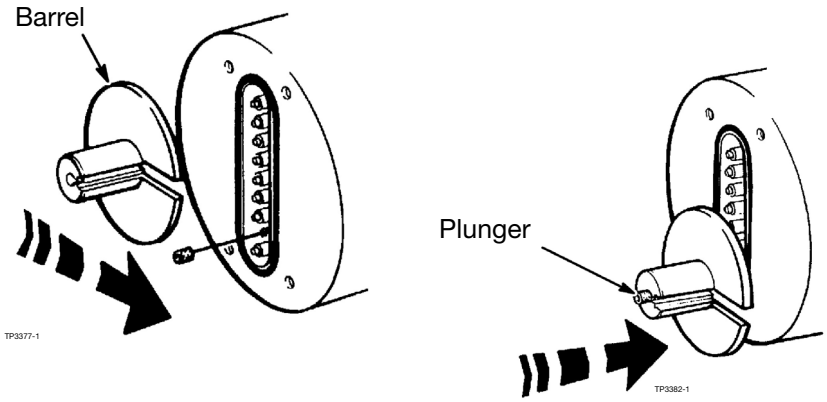

*Note:* *The insertion tool consists of a barrel, sleeve and insertion pin. The hole through the sleeve should be prepared by inserting a little silicone grease (MS4) and pushing a plunger slug through several times with the insertion pin. Wipe away excess grease and discard the slug.*

(4) Apply a thin film of silicone grease to the new slug. Insert the new slug into the top of the sleeve as shown.

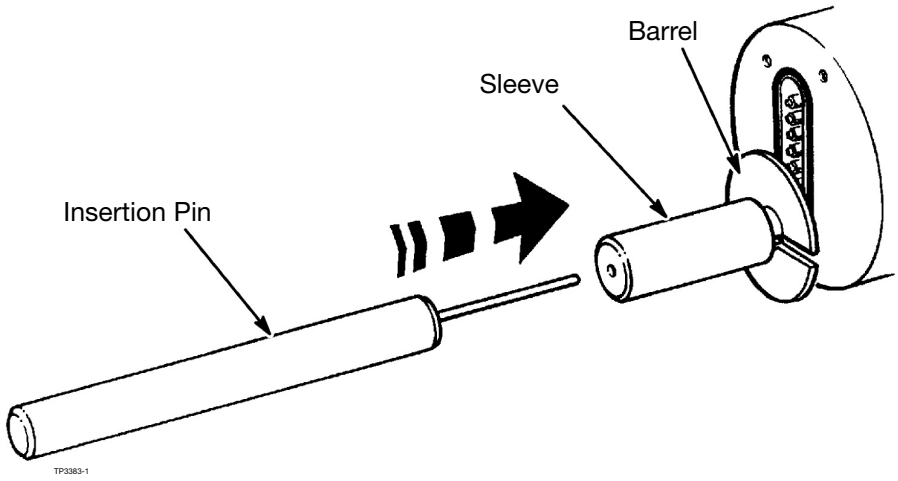
(5) Slide the spring down and fit the barrel onto the control wire. Push the plunger down until it is seated in the barrel.




(6) Push the barrel down onto the manifold (keeping the plunger correctly seated) and fit the sleeve over the barrel. Do not let the barrel slip sideways, as it will damage the plunger and control wire.



(7) Fit the insertion pin into the sleeve and push the new slug into the plunger. Only push the slug until it is felt to be fully inserted - excessive force will damage the slug.




(8) Remove the insertion pin and sleeve. Pull out the plunger and control wire sufficiently to remove the barrel.

(9) Inspect the plunger, plunger slug and control wire to ensure that they are not damaged and refit into the manifold.

(10) Check for free movement of the assembly.

(11) Refit the nozzle plate and open the print head valve.

*Note: There may be a small leakage of ink from the nozzles. This will stop once the slugs are bedded in.*

# INK SYSTEM

**WARNING:** **The ink system MUST BE DEPRESSURISED before any work is carried out on it. After the work is completed the ink system must be repressurised. Both procedures are given below.**

## Ink System Depressurising

This procedure must be carried out before any work on the ink systems commences. Do the following steps in the order given.

(1) Ensure power is removed from the printer.

(2) Close the print head valve by turning the knob fully clockwise.

(3) Position the nozzle plate over a suitable container and loosen the nozzle plate screws to allow ink to drain.

(4) Slowly open the print head valve and drain the ink system into the beaker.

(5) When all ink has drained, close the print head valve and retighten the nozzle plate.


*Draining the Print Head*

# Ink System Priming

(1) Ensure that the power is removed from the printer.

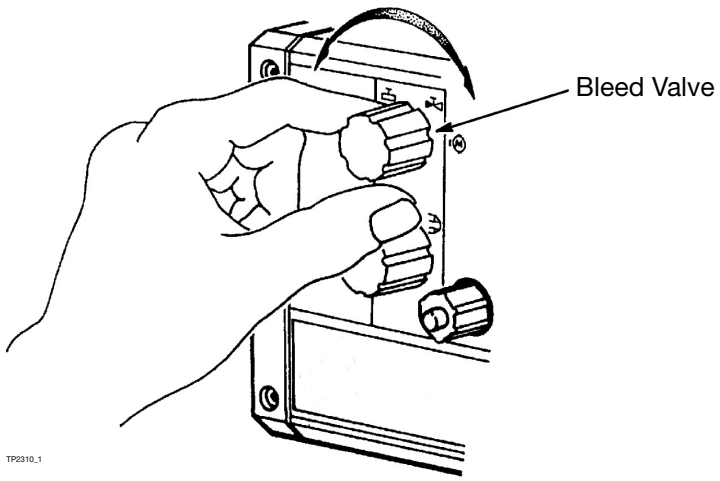
(2) Open the bleed valve by turning the knob fully anti-clockwise.

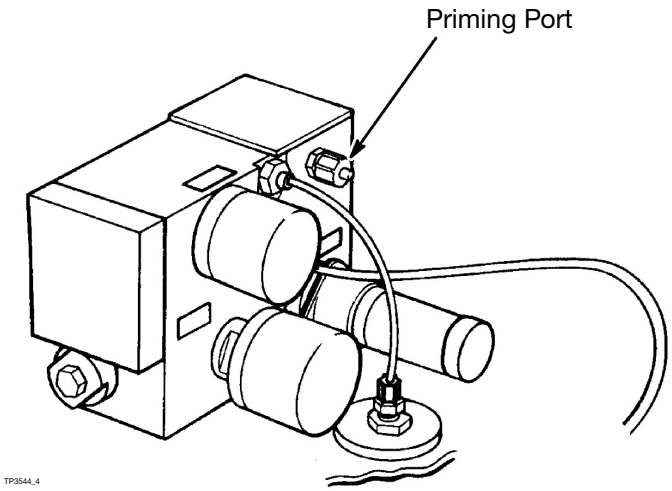
(3) Remove the blanking plug from the priming port on the ink manifold block assembly.

(4) Use the wash bottle to force wash solution into the priming port until it flows out of the vent underneath the printer.

(5) Close the bleed valve by turning the knob fully clockwise.

(6) Replace the priming port blanking plug.




*Ink System Priming*

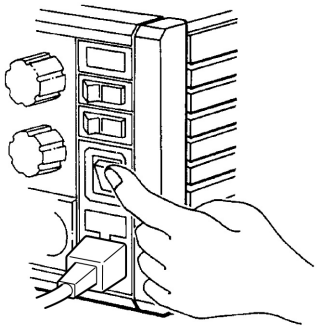
# Repressurising the Ink System

This procedure should be carried out after any work which causes loss of ink from the ink system.

(1) Ensure that the printer is connected to mains power and an ink supply container.

(2) Close the print head valve by turning the knob fully clockwise.

(3) Set the power switch to ON (1) and ensure that the Motor Switch is ON (1).

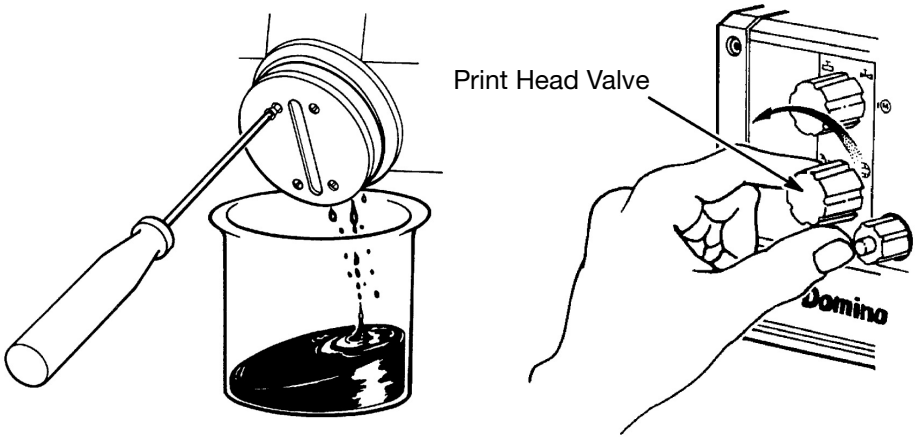


(4) Place a suitable container under the nozzle plate.

(5) Loosen the nozzle plate fixing screws sufficiently for ink to escape.

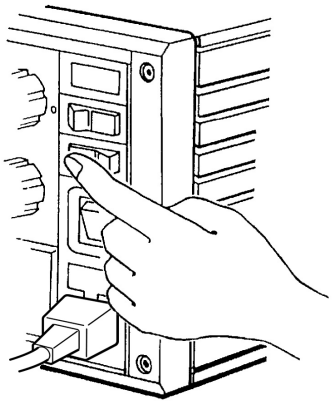
(6) Arrange plenty of tissue around the beaker to catch any drops of ink.

(7) Very slowly open the print head valve and allow air and ink to escape into the beaker. Continue until approximately 50ml of ink has been collected.

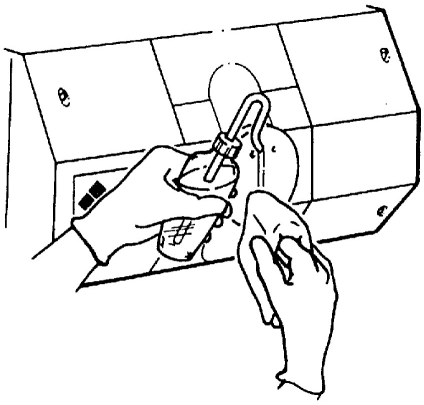



(8) Close the print head valve by turning the knob fully clockwise and tighten the nozzle plate screws.

(9) Hold the container in front of the nozzle plate. Operate the purge switch until all air is forced out of the print head manifold and an unbroken stream of ink comes out of each nozzle.



(10) Clean the nozzle plate with wash solution and dry with lint-free tissue.



TP2314_1

(11) Set the motor switch to OFF (0).

(12) Hold a piece of tissue under the vent in the bottom of the case. Open the bleed valve fully anti-clockwise. Leave open for a few seconds then close the bleed valve.

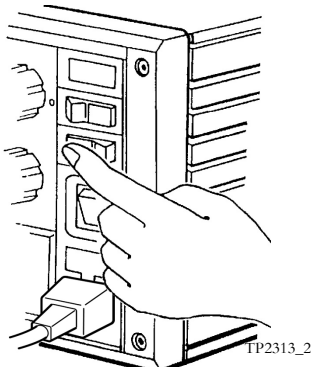
(13) Set the motor switch to ON (1).

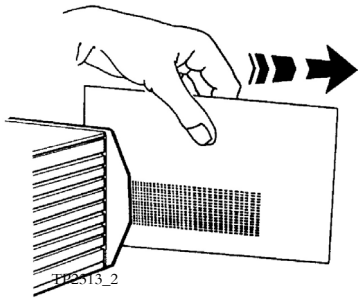
# Purge

Requires a short interruption to the printing.

Purging maintains the print head in good working order. It should be carried out if the print quality deteriorates, and is recommended after printer start-up.

Move a piece of card across the front of the nozzle plate as the purge switch is operated for 2-3 seconds, the released.




The sample should show a series of vertical lines of uniform width.

# Ink System Removal

Most ink system repairs are carried out with the ink system removed. Ink spillages must be cleaned up with tissue.

(1) Disconnect mains lead and disconnect the ink supply container.

(2) Depressurise the ink system (see page 3-12).

(3) Remove the four fixing screws and remove the front cover. Remove the top cover.

(4) Disconnect wiring from the pump, pressure switch and vacuum switch by unplugging PL4 on the motherboard.

(5) Remove the vent pipe at the manifold.

(6) Disconnect the pipe to the print head at the manifold. Keep the pipe-end high to minimise ink spillage. Ensure that ink does not come into contact with any electronics.

(7) Disconnect ink feed pipe from the ink supply container at the manifold. (Use a blanking plug to seal off the port.)

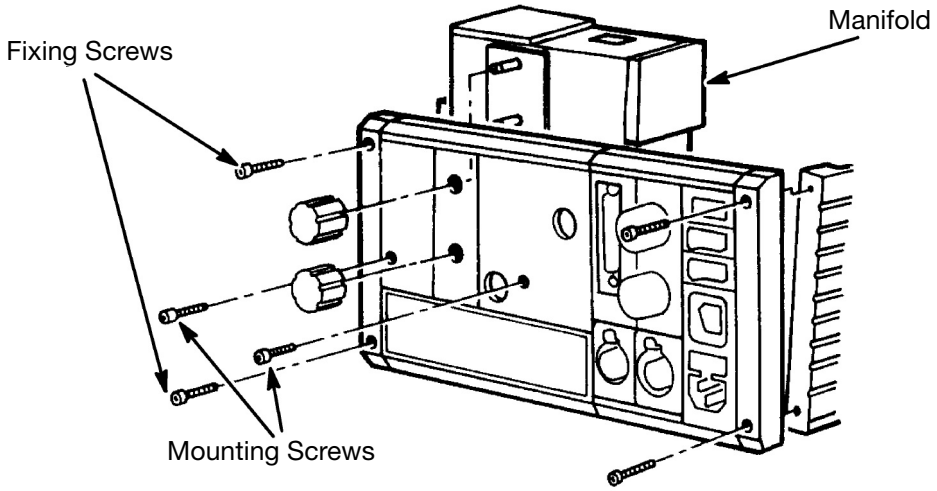
(8) Pull the knobs off the print head and bleed valves.

(9) Remove the two mounting screws in the rear panel below the bleed valve to release the manifold. Remove the screws holding the rear panel, ease the rear panel back and lift the complete ink system out of the cabinet.

Replacement is carried out in the reverse order.

(10) Reconnect the mains lead to the printer.

(11) Repressurise the system (see page 3-14).




*Removal of Manifold*

# Ink Filter Replacement

Ink filters should always be replaced, never washed and refitted.

Proceed as follows.

(1) Remove the ink system from the cabinet (see page 3-17).

(2) Unscrew the end cap (which also carries the vacuum switch) from the manifold with a 20 mm A/F spanner.

(3) Remove and discard the filter and O-Rings. Flush out the filter chamber with solvent that matches ink type and clean the end cap.

(4) Fit a new filter disc into the manifold block with the sharp edge of the disc facing inward.

(5) Insert a new inner O-Ring.

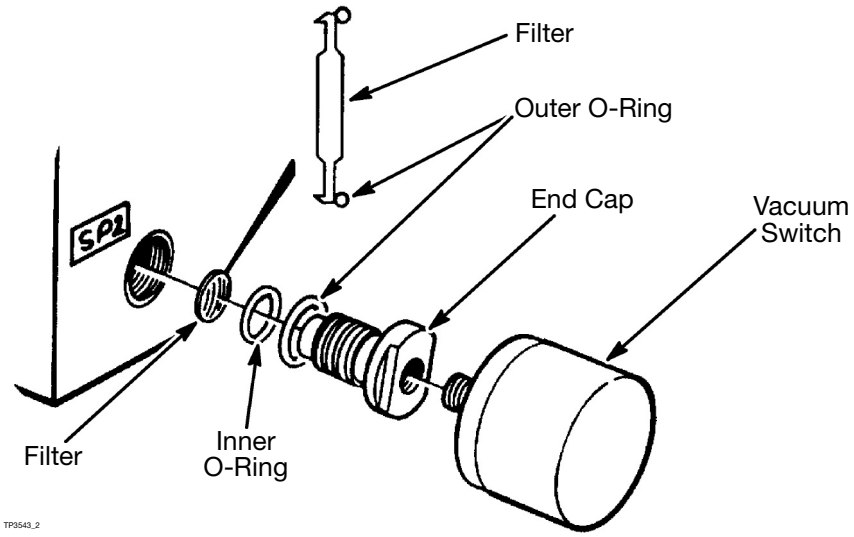
(6) Fit a new outer O-Ring in the groove in the manifold block.

(7) Refit and tighten the end cap.

(8) Refit the ink system into the case (see page 3-17).

(9) Remake all connections.

(10) Re-pressurise the ink system (see page 3-14).




*Filter Parts and Assembly into Block*

# Filter and NRV External Leaks

Air or ink leaks may occur at the end cap. Check that the end cap is tight. If the leak continues replace the outer O-Ring on the end cap and tighten the blanking plug (see Ink Filter Replacement step (2) to step (10)).

# Refurbishing a Spring NRV

(1) Depressurise and remove the ink system from the cabinet (see page 3-17).

(2) Release the NRV end cap with a 20mm A/F spanner.

(3) Remove the rubber diaphragm and spring.

(4) Flush out the housing with wash solution and clean the spring and end cap.

(5) Refit the spring and a new diaphragm. Replace the O-Rings.

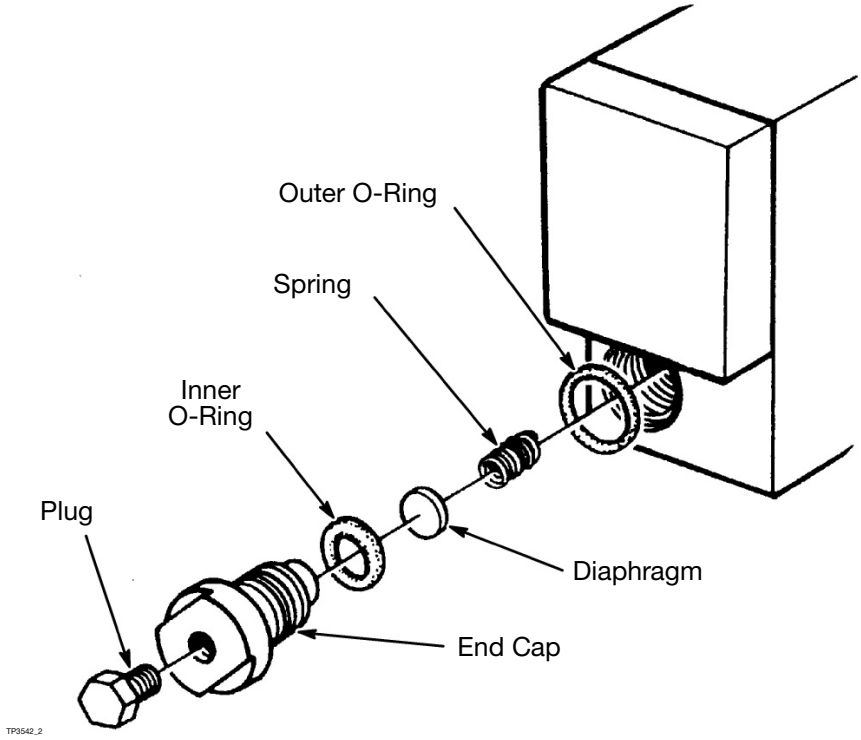
(6) Fit a new inner O-Ring onto the end of the cap.

(7) Fit a new outer O-Ring into the groove in the manifold.

(8) Refit and tighten the end cap.

(9) Refit the ink system into the case and remake all connections (see page 3-17).

(10) Repressurise the ink system (see page 3-14).




*Spring NRV*

# Refurbishing a Plain NRV

(1) Depressurise and remove the ink system from the cabinet (see page 3-17).

(2) Release the NRV end cap with a 20mm A/F spanner.

(3) Remove the rubber diaphragm.

(4) Flush out the housing with wash solution and clean the end cap.

(5) Fit a new diaphragm.

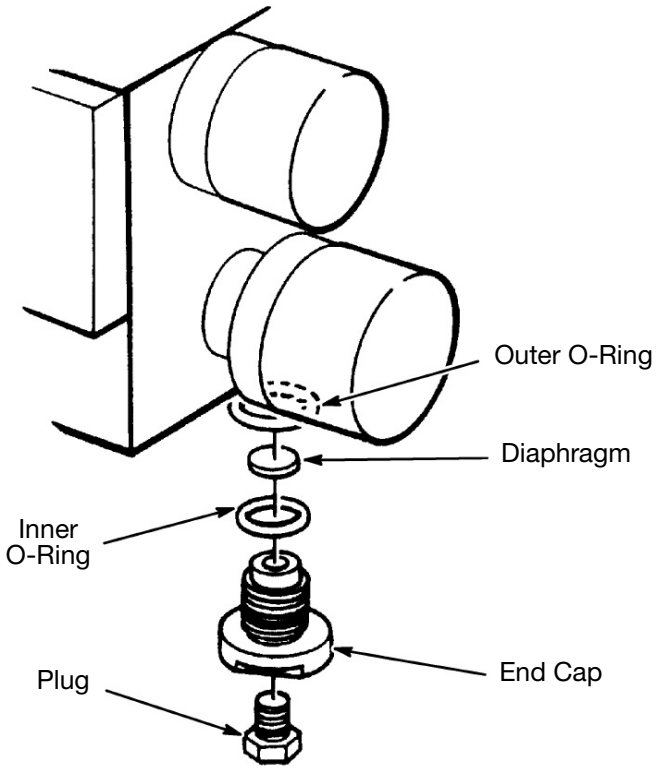
(6) Fit a new inner O-Ring onto the end of the cap.

(7) Fit a new outer O-Ring into the groove in the manifold.

(8) Refit and tighten the end cap.

(9) Refit the ink system into the case and remake all connections.

(10) Repressurise the ink system (see page 3-14).




*NRV*

# Pressure Switch

The pressure switch is factory set and should not be adjusted. Replacement is as follows.

(1) Disconnect the mains lead from the printer.

(2) Depressurise the ink system (see page 3-12) and remove the top cover.

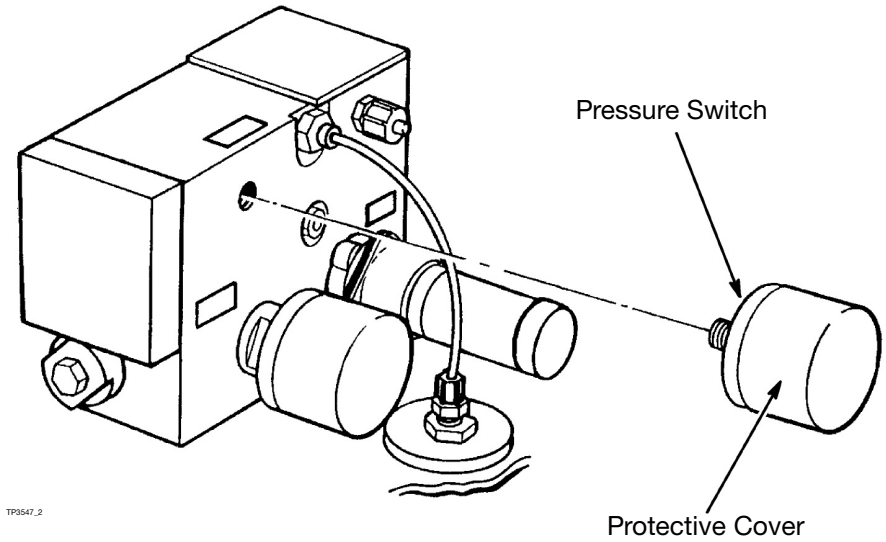
(3) Remove the protective cover.

(4) Unsolder the wires from the pressure switch (note the connections).

(5) Unscrew the pressure switch and discard.

(6) Add Loctite 542 to the thread of the replacement pressure switch and screw into the manifold block.

(7) Re-solder the wires to the new pressure switch as shown in the diagram. Ensure that the switch is fitted with a 6R8 Ohm resistor.




*Pressure Switch*

# Vacuum Switch

The vacuum switch is factory set and should not be adjusted. Replacement is as follows.

(1) Ensure power is removed from the printer.

(2) Depressurise the ink system (see page 3-12) and remove the top cover.

(3) Remove the protective cover.

(4) Remove the screws holding the rear panel and ease it back to gain access to the vacuum switch.

(5) Unsolder the wires to the vacuum switch (note the connections).

(6) Unscrew the vacuum switch from the filter cap on the ink manifold and discard.

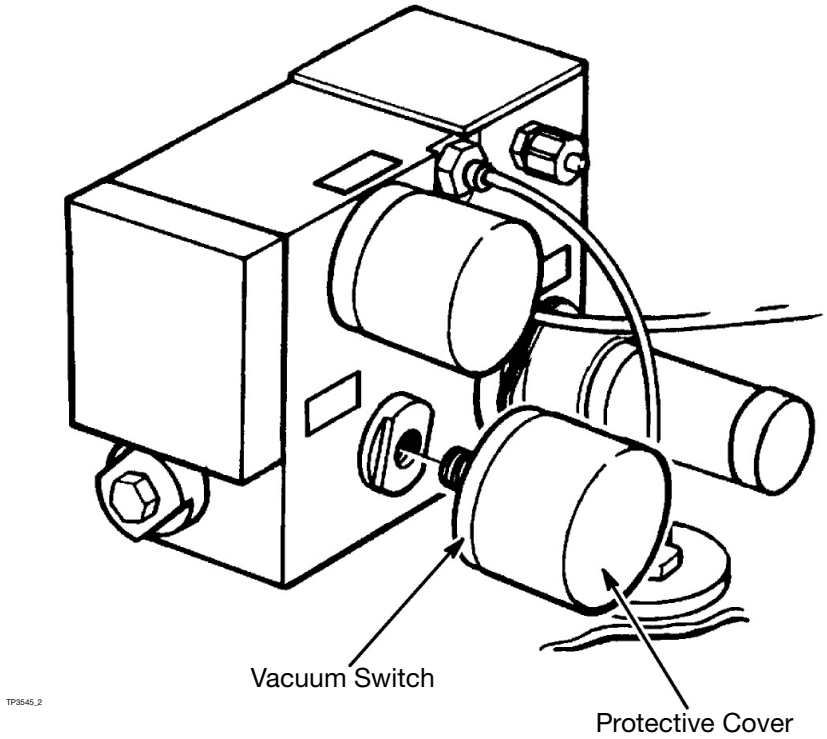
(7) Add Loctite 542 to the thread of the replacement switch and screw into the filter cap.

(8) Re-solder the wires to the new switch.

(9) Reconnect the mains lead to the printer.

(10) Replace the top cover.

(11) Switch on the printer and repressurise the ink system (see page 3-14).




*Vacuum Switch*

# Pump

The pump is a reliable unit and before being replaced all other possible causes of failure to pressurise the ink system should be investigated. This includes air leaks elsewhere in the system.

# Pump Replacement

(1) Disconnect the mains lead from the printer.

(2) Depressurise the ink system (see page 3-12) and remove the top cover.

(3) Remove the ink system from the cabinet (see page 3-17).

(4) Unsolder the two wires from the pump.

(5) Remove the two cap head screws securing the pump to the manifold block.

(6) Remove the pump and clean the manifold area with wash solution.

(7) Fit new O-Rings into pump manifold.

(8) Ensure the new pump has a 10µF 35V capacitor fitted across the terminals.

(9) Fit the pump to the manifold block, ensuring that the locating peg fits into the corresponding hole in the manifold block.

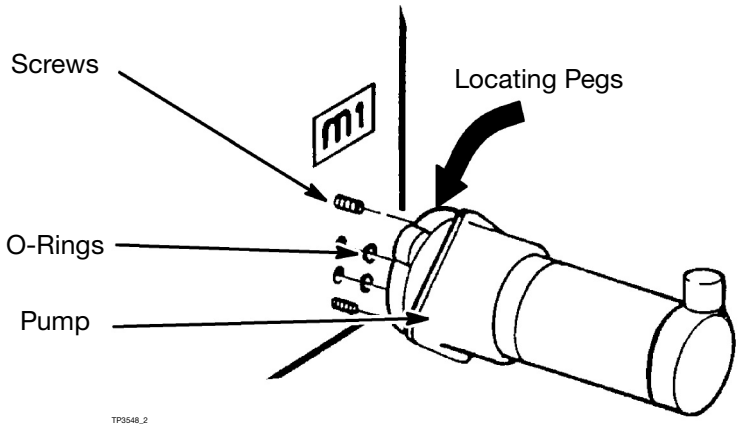
(10) Solder the two wires to the pump. The yellow wire must be connected to the red terminal and the black wire to the plain terminal.

(11) Refit the ink system into the case and remake all connections (see Ink System Removal, page 3-17).

(12) Reconnect the mains lead and switch on the printer.

(13) Repressurise the system (see page 3-14).

(14) Refit the top cover.




*Pump Withdrawl*

# Refurbishing the Accumulator

(1) Depressurise the ink system (see page 3-12) and remove the top cover.

(2) Remove the ink system from the cabinet (see page 3-17).

(3) Remove the four screws holding the accumulator cover.

(4) Take off the cover, being careful not to lose the spring and button contained within.

(5) Pull out the bellows and remove the O-Ring.

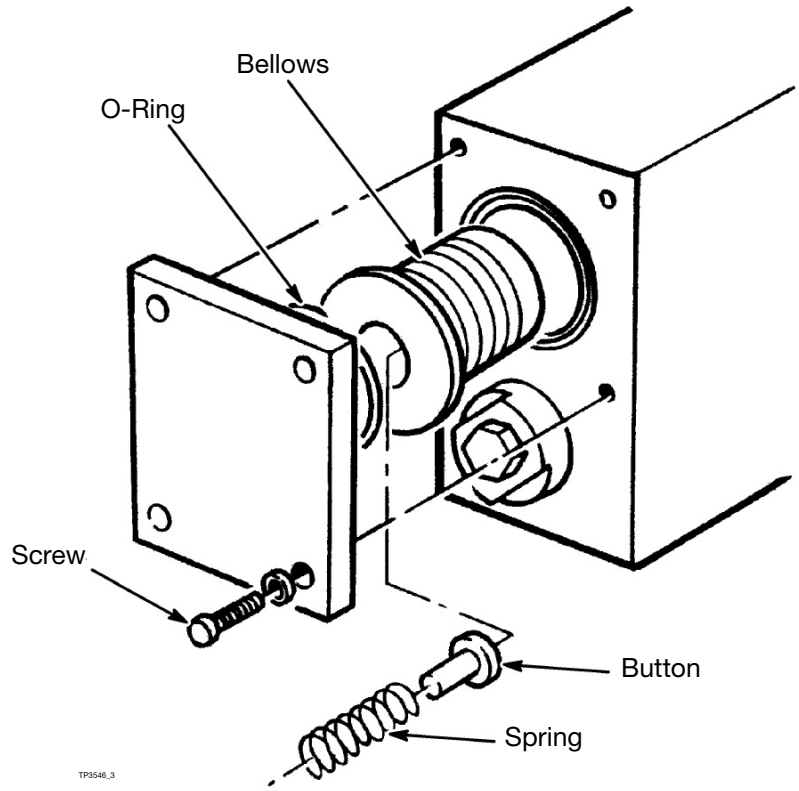
(6) Clean the items removed in step (4) and step (5).

(7) Refit the O-Ring and bellows then, refit the button and the spring. There is a locating hole in the centre of the cover for the spring.

(8) Replace the cover, ensuring the spring is correctly in place, and push close. Refit the four screws with an equal pressure on each.

(9) Refit the ink system (see page 3-17).

(10) Repressurise the ink system (see page 3-14).

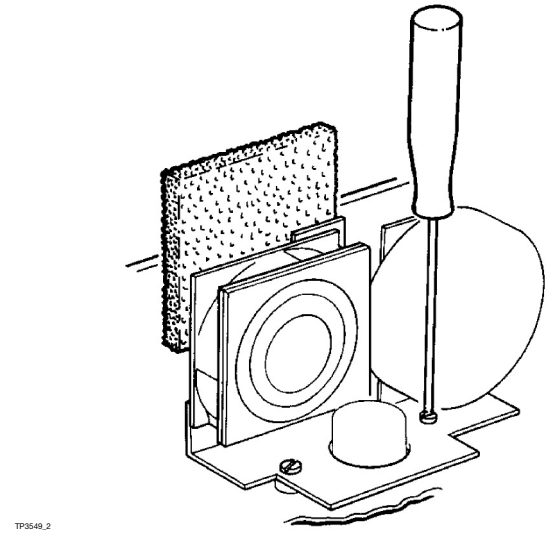



*Assembly of Accumulator*

# Air Filter Replacement

(1) Disconnect the mains lead from the printer and remove the top cover.

(2) Slacken the three screws securing the power supply assembly to the bottom of the CaseCoder. (One screw is accessed underneath the base of the CaseCoder.) Pull the assembly away from the sidewall to release the filter. Clean or renew the filter and refit between the fan and the CaseCoder wall. Tighten the power supply securing screws.




*Air Filter Replacement*

# ELECTRONIC SYSTEM

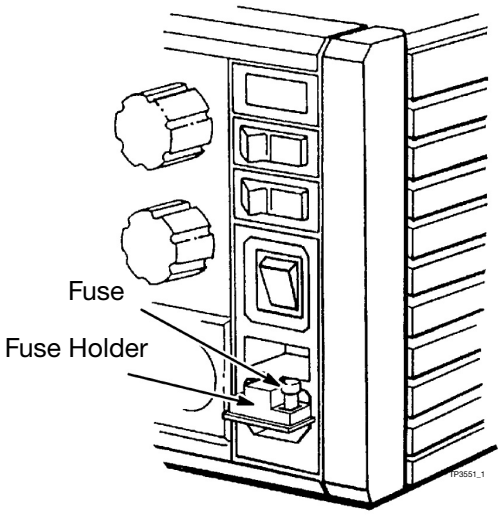
## Fuse Replacement

The mains fuse is fitted behind a small cover immediately above the mains input connection on the rear panel. The value of this fuse depends upon the mains voltage:

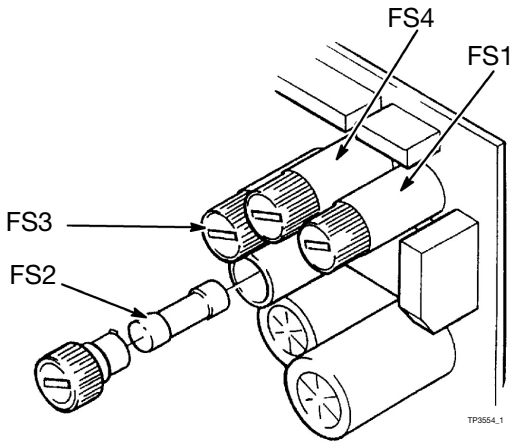
110V (nominal): 1.25A,
220V (nominal): 0.63A.

The d.c. supplies have fuses in their a.c. inputs from the transformer. These fuses are mounted on the motherboard.

FS1 2A (7 drop print head),
4A (16 drop print head),
FS2 250mA,
FS3 250mA,
FS4 1A.




*Power Fuse Replacement*




*Motherboard Fuse Replacement*

## Switch and Indicator Replacement

The switches and indicators on the rear panel are complete items and are replaced in the same way. Pull off the electrical connections, ease back the clips behind the rear panel and draw the item forward out of its hole in the panel (it may be necessary to remove the four securing screws and move the rear panel to improve access). Refit the new switch or indicator using the reverse procedure.

## PCB Replacement

*CAUTION:* *Switch off power and use anti-static precautions before removing or refitting PCBs .*

Disconnect the mains lead before removing connectors, PCBs, etc.

Each printed circuit board (PCB) is fitted into a socket on the motherboard. The PCB sockets and connectors are polarised. To avoid possible damage, inspect the board or connector and the socket before fitting.

To remove a PCB, remove the four fixing screws and take off the front panel, then remove the top panel. In the case of the Universal Serial Interface, remove the connector at the top. The PCBs can then be pulled forward out of their sockets in the motherboard.

To remove the motherboard, pull it vertically out of its guides after pulling off the eight connectors. When refitting the top cover, be sure that the PCBs are properly located in their guides in the bottom and in the top cover. Refit the front cover.

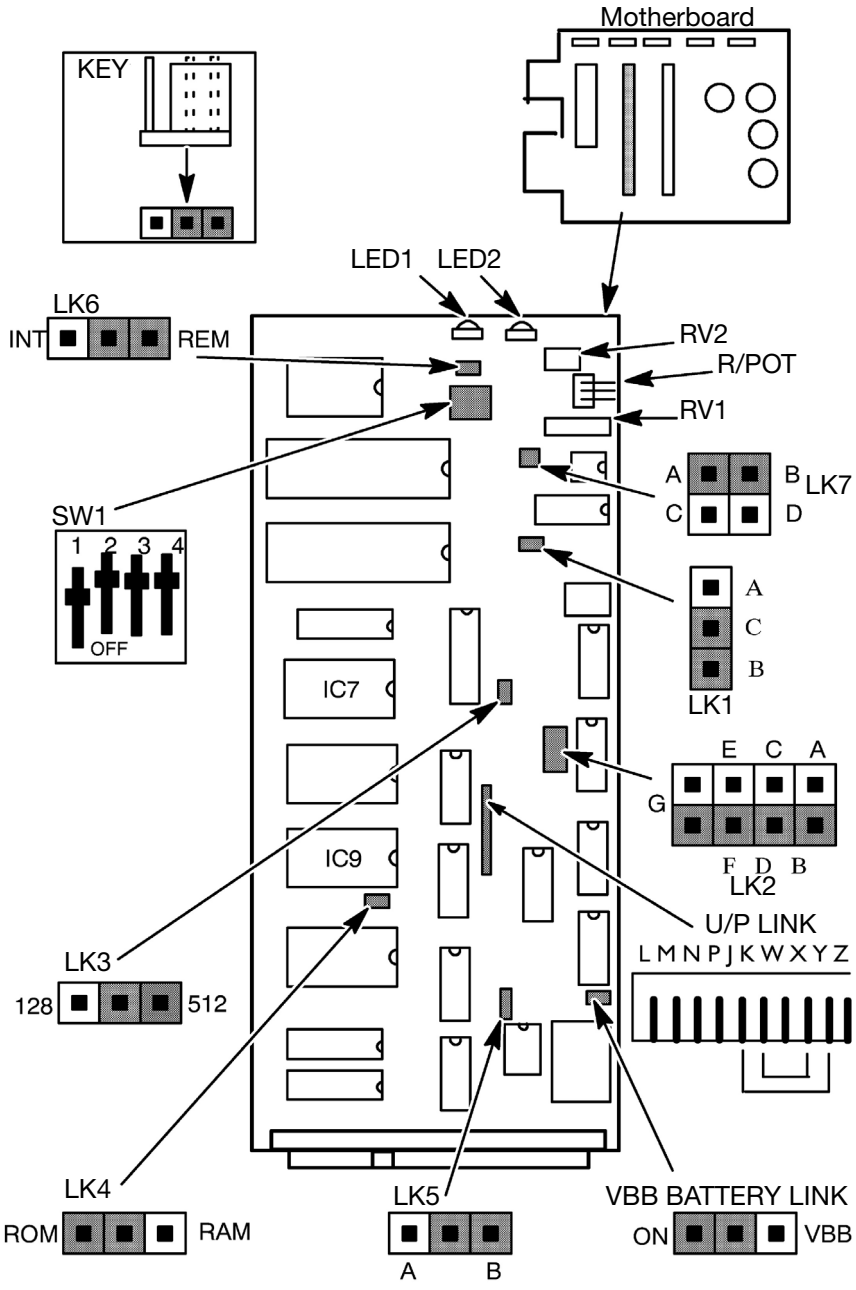
## Replacing the Universal Serial Interface PCB

The printer must be shut down, the power removed and the upper door open.

The normal link and switch positions are shown in the separate diagrams for when the printer is being used with the white PT64/T64 pocket terminal or the blue T14 pocket terminal.

If the replacement PCB is not fitted with the software PROM integrated circuits (IC7, IC10 and IC9), these must be transferred from the old PCB to the new PCB. It is vital that each IC is transferred into the identical position, has pin 1 in the correct position and no pins are bent or damaged. It is also essential that anti-static precautionary procedures are also used.

A spare PCB must have its links and switches set up correctly before fitting. The usual positions are shown in the diagram.




*Universal Serial Interface Mk6 PCB*
*Link and Switch Settings - Terminal 64*

Alternatively, the links and switches can be set for individual requirements. Therefore, the options available are given below.

**VBB Battery Link.** This link is usually set to OFF when the PCB is in transit. It is essential that the link is set to ON before the PCB is inserted into the printer.

| LINK | OPTION |
|---|---|
| On | Board fitted |
| Off | Board in transit |

The link enables the battery fitted onto the PCB to maintain a permanent supply to the memory ICs. In this state, data in the memory can be retained even when the PCB is removed. Thus, for example, a PCB being used as a replacement may still have this link in the ON position and hold unwanted data. To completely clear the memory, fit the VBB link temporarily into the OFF position.

### LK1 Print Go Polarity

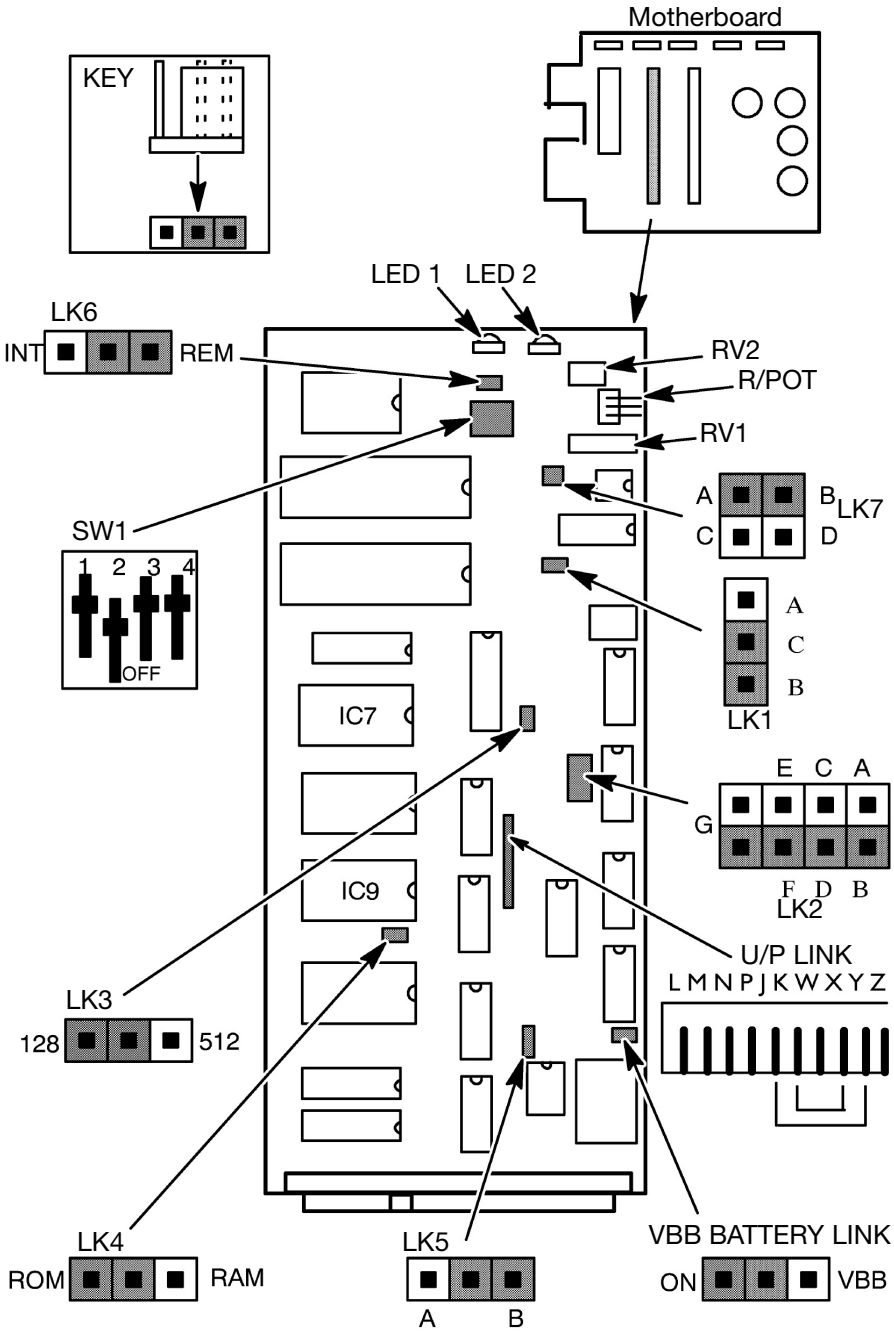
| LINK | OPTION |
|---|---|
| A-C | Trailing |
| B-C | Leading |

Where the product detector is a photocell detecting when a product breaks a light beam, a trailing edge is generated as the beam is broken and a trailing edge is generated when the light beam is restored.

Where the product detector is the photocell type detecting a reflection from the print surface, a Print Go leading edge is generated as the product moves in front of the detector and begins to reflect the light beam. A trailing edge, therefore, is generated by the product leaving the front of the detector and no longer reflecting the beam.

### LK2 Stroke Go Control.

| LINK | OPTION |
|---|---|
| G-F, D-B | Internal |
| G-E, D-B | Shaft Encoder |




*Universal Serial Interface Mk6 PCB*
*Link and Switch Settings - Terminal 14*

**LK3** This link must be set according to the type of pocket terminal in use.

| LINK | OPTION |
|---|---|
| 128 | Issue 6 Software |
| 512 | Issue 7 Software |

**LK4** This link is only altered for special applications.

| LINK | OPTION |
|---|---|
| ROM | Normally set to ROM |
| RAM | |

**LK5** This link must be set according to the type of printer in which the PCB is used.

| LINK | OPTION |
|---|---|
| A | XT4 Printer |
| **B** | **Other Printers** |

**LK6** This link is used to select an internal or external width control. It can be set to any position if a shaft encoder is selected at LK2

| LINK | OPTION |
|---|---|
| INT | Internal Control RV2 |
| REM | External Control Through R/Pot |

**LK7** This link must be set to position A-B. In the event of a major software change, consult Domino.

**U/P Links** These arrange the user port connections and consist of wire links between pins on a 10-way connector. Details are given with the User Port option in Part 6 of this manual.

**SW1** This is a dual-in-line switch controlling the data exchange between the printer and control panel. The switch functions differ, depending upon the pocket terminal in use.

*Note:* *After changing any of these switches, it will be necessary to set the battery link VBB to off and then to on (see page 3-29) to delete the previous settings.*

Functions with the white PT64/T64 terminal are:

| BAUD RATE | SW1/1 | SW1/2 |
|---|---|---|
| 300 | Off | Off |
| 2400 | On | Off |
| 9600 | Off | On |
| 19200 | On | On |

| SW1/3 | | SW1/4 | |
|---|---|---|---|
| ON | OFF | ON | OFF |
| CTS/RTS | XON/XOFF | Fault Bus Off | Fault Bus On |

The baud rate required by the white PT64/T64 terminal is 9600 and hand shaking is CTS/RTS.

Functions with the blue T14 terminal are:

| BAUD RATE | SW1/1 | SW1/2 | SW1/3 | SW1/4 |
|---|---|---|---|---|
| 75 | On | On | On | On |
| 110 | Off | On | On | Off |
| 150 | Off | On | On | In |
| 300 | On | Off | On | On |
| 600 | Off | Off | On | On |
| 1200 | On | On | Off | On |
| 2400 | Off | On | Off | On |
| 4800 | On | Off | Off | On |
| 9600 | Off | Off | Off | On |
| 19200 | On | On | On | Off |

The baud rate required by the blue T14 terminal is 300

## Minimum Width Adjustment

The Printer should be running and ready to print messages.

(1) Locate potentiometer RV2 (preset minimum width control) on the top edge of the Universal Serial Interface PCB. Turn it fully counter clockwise. Turn the width control on the rear panel fully counter clockwise.

(2) Enter the message ABCDE into the printer.

(3) Use a piece of card moved across the front of the product detector and the print head to observe the printed message. Slowly adjust RV1 until printing stops or strokes are missed. Reverse the adjustment of RV1 until proper printing is restored.

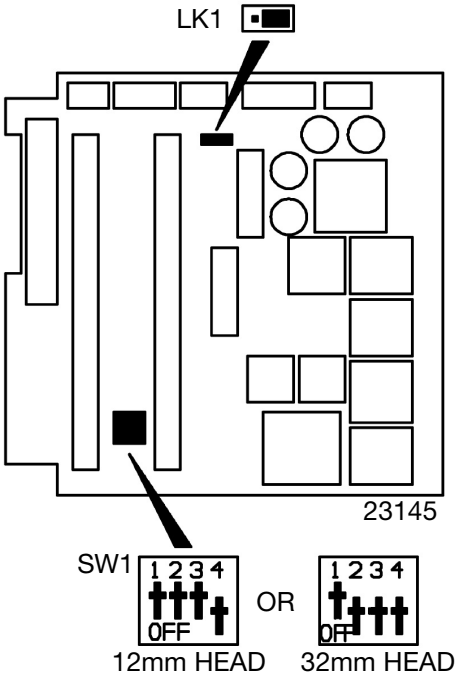
## Replacing the Solenoid Driver PCB

The two links L2 and L3 (see page 3-35) should both be set to correspond to the type of print head, as follows:

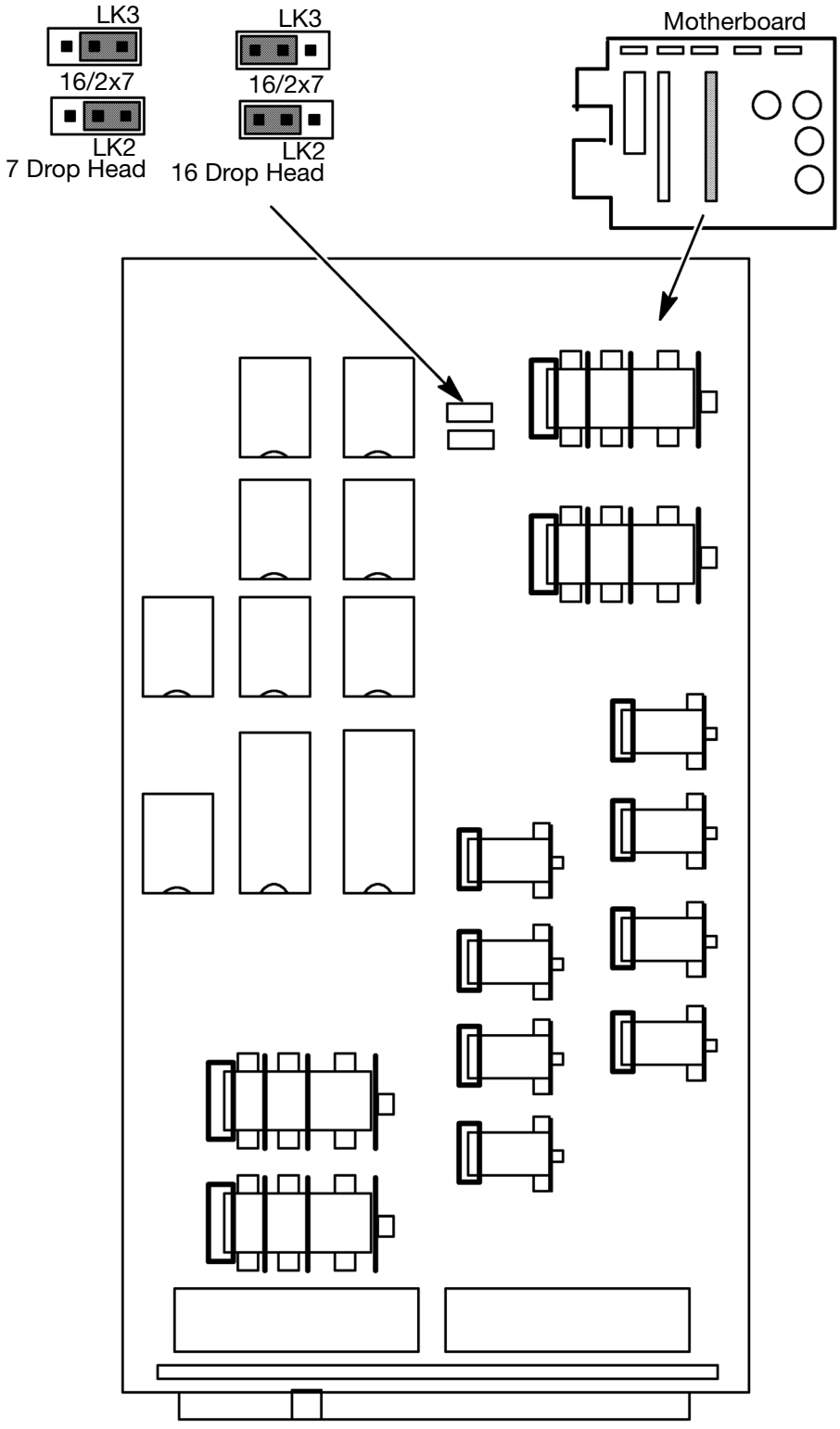
| |
|---|
| 12mm 7-drop head: common - 2x7 |
| 32mm 16-drop head: common - 1x16 |

## Replacing the Motherboard

The motherboard has a 4 way DIL switch controlling the printed character aspect ratio which must be set according to the print head size. It also has a jumper link setting the Print Go signal input. Their positions are shown in the diagram.




*Electronic Motherboard*




*Solenoid Driver PCB*

# SHAFT ENCODER (OPTIONAL)

Domino will provide advice on an appropriate encoder, details depend upon the installation. The encoder connector is fitted into the rear panel of the printer.

When fitting a shaft encoder, set the Stroke Go links on the Universal Serial Interface PCB to G-E, D-B (see page 3-29).

Selection of a particular encoder is based on the print width required and the line speed. The following calculation illustrates how these factors are used.

Each printed character is made up of a fixed number of strokes. This number must be determined from the type of print. Examples are as follows:

| | | |
|---|---|---|
| 7 x 5 | Single print, single space | = 6 strokes |
| 7 x 5 | Single print, double space | = 7 |
| 7 x 5 | Bolderise print, single space | = 12 |
| 7 x 5 | Bolderise print, double space | = 14 |
| 7 x 5 | Double bolderise, single space | = 24 |
| 7 x 5 | Double bolderise, double space | = 28 |
| 16 x 10 | Single space | = 12 |
| 16 x 10 | Double space | = 14 |
| 16 x 10 | Bolderise, single space | = 24 |
| 16 x 10 | Bolderise, double space | = 28 |
| 16 x 10 | Double bolderise, single space | = 48 |
| 16 x 10 | Double bolderise, double space | = 56 |

Calculate the number of pulses required from the shaft encoder as follows.

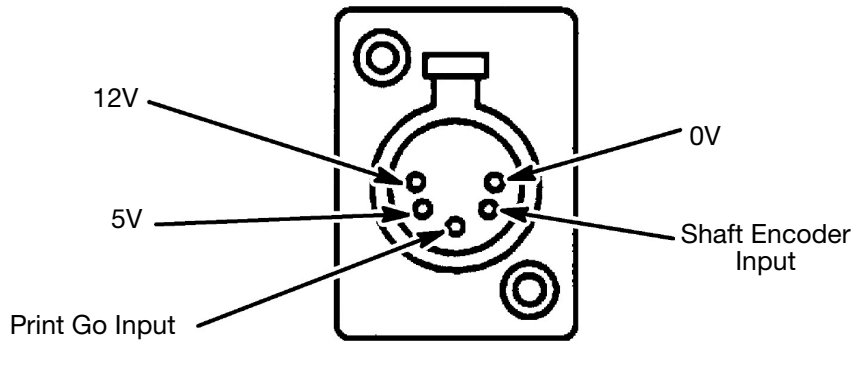
*Note: Two pulses are equivalent to one stroke.*

Determine the number of strokes per character "N".

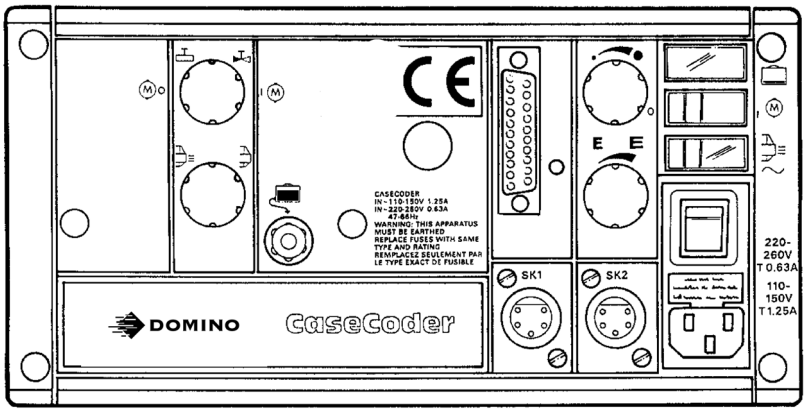
Determine the pitch of the characters "P". This is the distance from the front edge of one character to the front edge of the next character, in millimetres.

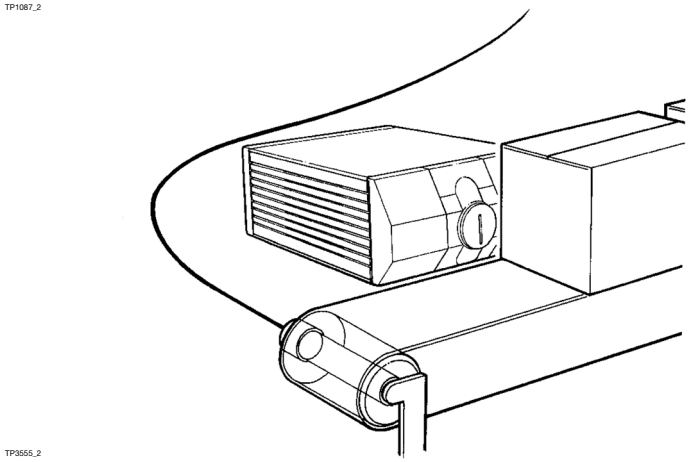
Determine the distance the product moves in one revolution of the encoder "D", in millimetres.

Calculate: Required pulses per revolution= $\frac{D \times N \times 2}{}$




*Connector (Front View)*




*Fitting and Connecting Shaft Encoder*

Thus, for example:

To print 7 x 5 characters, single space (i.e. N = 6), at 15mm character pitch with the product moving 180mm per rev. of the shaft encoder:

Calculate: Required shaft encoder output = $\frac{180 \times 6 \times 2}{15}$

= 144 pulses per revolution.

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# PART 4 : FAULT DIAGNOSIS

## CONTENTS

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# INTRODUCTION

**WARNINGS:** **(1) Protective equipment such as gloves and glasses must be worn when working on or near the printer. Physical contact with the ink or wash can cause skin or eye damage.**

**(2) Do not smoke or allow naked flames (or other sources of ignition) in the vicinity of any inks or solvents as this is highly dangerous.**

Due to its simple and reliable design, CaseCoder has only one fault indicator (the INK CONTAINER EMPTY lamp). Beyond this, faults are diagnosed from the faulty performance. A list of symptoms and probable causes are given in this section, together with suggested repairs or further checks. Refurbishment, repair and replacement procedures are given in the Maintenance section.

# NORMAL RUNNING CONDITIONS

The following are the controls and indicators in their normal running condition. They are not normally changed except for a specific purpose. For example, switching on and off only requires operation of the mains switch. The only other control which might be touched would be the print head valve if the switch-off were to be lengthy. Apparent malfunctions are frequently a result of controls being in unexpected positions.

| | |
|---|---|
| Mains switch | On (1) |
| Pump Motor switch | On (1) |
| Mains on indicator | On |
| Ink supply container empty indication (Amber) | Off |
| Print head valve | Open (fully anti-clockwise) |
| Bleed valve | Closed (fully clockwise) |
| Character width control | Adjusted for best character shape |
| Drop size control | Adjusted for best print quality |
| Purge switch | Off |

# FAULT ANALYSIS

Initial checks are to inspect the printer externally and internally for leaks and damage. With the top and front covers removed, check:

(1) Ink system for leaks and damaged pipework,

(2) Cabling for insecure connections and damaged wiring,

(3) Printed circuit boards for incorrect fitting and incorrect switch and link settings.

| INDICATION | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Printer will not run - no indicator lit | Mains fuse blown | Replace mains fuse |
| | +24V supply failed. | Check +24V d.c. (See page 4-9) |
| Printer will not print - indicators correct | No Print-Go signal | Check Print-Go - faulty sensor or Serial PCB (See page 4-9) |
| | Incorrect data from print Pocket terminal | Check data for on/off commands, etc. (see Pocket Terminal Guide) |
| | Faulty Serial Interface PCB | Replace Serial Interface PCB (See page 3-27) |
| | Faulty Solenoid Driver PCB | Replace Solenoid PCB. (See page 3-33) |
| | Faulty power supply | Check d.c. power supplies. (See page 4-9) |
| Pump runs too long or too frequently | Pressure loss due to: | |
| | - leaking accumulator (air or ink) | Refurbish accumulator (See page 3-24) |
| | - back leakage through the NRV | Refurbish NRV (See page 3-20) |
| | - excessive air in bleed reservoir or pump and return choke dry | Prime system. (see page 3-13) |

| INDICATION | PROBABLE CAUSE | REMEDY |
|---|---|---|
| | - bleed valve leaking (ink loss from vent) | Close bleed valve |
| | - faulty pressure switch | Replace switch (See page 3-21) |
| | - faulty pump | Replace pump (See page 3-23) |
| Container empty lamp lit (pump intermittent) - container not empty | Blocked ink filter. | Replace filter (See page 3-18) |
| | Faulty vacuum switch | Replace switch (See page 3-22) |
| | Restriction in inlet pipe | Check inlet pipe |
| Container empty lamp flashes, (pump intermittent) - container empty | Back leakage through spring NRV | Refurbish spring NRV. (See page 3-19) |
| | Air leaking in at: | |
| | -Ink container QCD | Refurbish/replace QCD. |
| | -filter | Repair leak (See page 3-18) |
| | -vacuum switch | Repair leak (See page 3-22) |
| | Faulty vacuum switch | Replace switch (See page 3-22) |

| INDICATION | PROBABLE CAUSE | REMEDY |
|---|---|---|
| One nozzle not printing ink | Blocked nozzle | Clean nozzle plate (See page 3-5) |
| | Air in print head | Purge print head (See page 3-16) |
| | Stuck plunger | Clean plunger and control wire (See page 3-9) |
| | Faulty Solenoid | Check solenoid connections, circuity, pull, adjustment (See page 4-8) |
| | Faulty solenoid driver PCB | Replace Solenoid PCB (See page 3-33) |
| Ink drop misaligned | Partly blocked nozzle | Clean nozzle plate (See page 3-5) |
| | Nozzle jewel displaced | Replace nozzle plate (See page 3-5) |
| | Ink pressure low | Check ink system, replace pressure switch (See page 3-21) |
| | Printer too far from product | Reposition printer (See page 2-5) |
| Ink drop size cannot be adjusted large enough | Faulty solenoid | Check solenoid pull (See page 4-8) |
| | Partially blocked nozzle | Clean nozzle plate (See page 3-5) |

| INDICATION | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Nozzle leaking | Faulty plunger slug | Replace plunger slug (See page 3-9) |
| | Faulty plunger spring | Check spring (See page 3-9) |
| | Dirty nozzle plate | Clean nozzle plate (See page 3-5) |
| All printer drops too small | Drop size set too low | Turn drop size knob clockwise (See page 4-3) |
| | Print head valve partially closed | Turn print head valve fully anti-clockwise (See page 4-3) |
| | Faulty pressure switch | Replace pressure switch (See page 3-21) |

# To Test a Solenoid

Ensure the printer is switched off, the front and top covers are removed and the print head is fitted onto the test pillars (see page 3-7: Solenoid Adjustment).

The first test on any suspect solenoid is to remove its connector and measure its resistance. At room temperature this should be 1.0 Ohms± 10%.

All solenoids are driven by identical circuits on the Solenoid Driver PCB. To check whether a solenoid or its drive circuit is faulty, proceed as follows:

(1) Identify a working nozzle and its connector.

(2) Remove the working nozzle connector and fit the connector from the suspect solenoid into its position.

(3) Switch on the printer and carry out the dot size check (see page 3-6).

(4) If the suspect solenoid still does not work, carry out further checks on the solenoid as outlined in step (5) to step (11) below. If the suspect nozzle now operates, check the connections in the 16-way sockets. If these are satisfactory, replace the Solenoid Driver PCB.

To test a suspect solenoid for pull:

(5) Disconnect solenoid wiring from connector.

(6) Holding the solenoid body, loosen the locknut sufficiently to release the solenoid. Unscrew the solenoid and remove it from the mounting tube, leaving the locknut to mark its original position.

(7) Reconnect the solenoid wiring to the connector.

(8) Switch on the printer, insert a small steel screwdriver into the solenoid and operate the purge switch on the rear panel. There should be a magnetic pull on the screwdriver. Switch off the printer.

(9) No pull indicates either faulty drive from the Driver PCB or a bad connection. Check the connections at the print head 16-way connectors and at the motherboard connector. Connect the solenoid into the connection for another (working) solenoid and re check.

(10) If the solenoid is found to be faulty, it must be replaced. Fit the solenoid, reversing the procedure for its removal and using the locknut as a guide to its position.

(11) Carry out the dot size test and adjust the solenoid as necessary (see page 3-6: Checking Dot Size and page 3-7: Solenoid Adjustment).

## To Check the d.c. Power Supply Voltages

Ensure that the voltage selector is set to the correct mains voltage. The d.c. voltages are generated by circuits on the motherboard. Use a multimeter set to the appropriate range to measure the voltages between C1 on the Universal Serial Interface Board (0V connection) and the following points:

| | |
|---|---|
| +24V +/- 10% | Motherboard PL4 pin 1 |
| - 12V +/- 10% | Motherboard PL6 pin 1 |
| +12V +/- 10% | Rear panel product sensor connector pin 5 |
| +5V +/- 10% | Rear panel product sensor connector pin 4 |
| +10V +/- 10% | Motherboard SK2 pin 3b |

*Note: Absence of the +10V will always be accompanied by loss of +5V.*

If a supply is missing check the motherboard fuses (see page 3-26).

If any voltage is not correct or is still missing, switch off the printer and remove a PCB. Switch on the printer again and recheck the voltages. If the voltage is now correct, the fault is probably in the PCB. If the fault remains, repeat the check with the other PCB.

## To Check Stroke Go

The product detector sends a Print Go signal to the printer. The resulting printed message is controlled by a series of Stroke Go signals. The Stroke Go signals are shown by light emitting diode LED 1 on the Universal Serial Interface PCB. This LED glows with an intensity proportional to the stroke rate.

*Note: If a shaft encoder is in use LED 1 does not operate*

## Testing the Accumulator

The accumulator has a reserve ink capacity of approx. 6-8ml, provided by compressing air behind a rubber diaphragm. Any fault in the accumulator will be either with the diaphragm or with the sealing of the air compartment. Therefore ink will leak into the air compartment, or air will be lost from the air compartment. In either case, the result will be a reduction in the reserve capacity of the accumulator.

To check that the accumulator is working properly, ensure that there is no evidence of low ink pressure and proceed as follows:

(1) Switch on the printer as for normal running. Allow the printer to run until the pump stops.

(2) Place a calibrated beaker under the nozzle plate.

(3) Switch the pump off, using the switch on the back panel, and close the print head valve.

(4) Slacken the screws holding the nozzle plate sufficiently to release ink into the beaker. Allow the print head to drain and then empty the beaker.

(5) Open the print head valve slowly and catch the resulting ink in the beaker.

(6) The total ink collected in the beaker should be between 20 and 30ml.

(7) If the volume of ink collected is less than the minimum, refurbish the accumulator (see page 3-24: Refurbishing the Accumulator) and re-test the accumulator. If the accumulator still shows less than the minimum ink capacity, replace the pressure switch.

# Replacing a Print Head

The printer must be switched off. Remove the top and front covers.

(1) Trace the print head solenoid cables back to the flat cable connector from the motherboard. (There will be one flat cable for a 7-drop print head and two for a 16-drop print head.)

(2) Look to see how the solenoid wire connectors are connected into the flat cable connector for future reference, then pull all of the solenoid connectors out of the flat cable connector(s).

(3) Disconnect the ink pipe from the print head at its connection to the manifold.

(4) Remove the print head fixing screws and remove the print head from the cabinet.

(5) In the cases of the 12mm and 32mm high heads, remove the front cover seal.

*Notes: (1) Each print head assembly has a label showing the solenoids, as seen from the end of the assembly. Alternatively, a label will be found in the cabinet. Each solenoid is identified by the number of the nozzle which it operates.*

*(2) A 7-drop print head has a single cable fitted into motherboard PL1. A 16-drop print head has a cable fitted into PL1 (for solenoids 9 to 16) and a cable fitted into PL2 (for solenoids 1 to 8).*

*(3) Each connector on the flat cable from the motherboard has a "V" either impressed into the plastic or marked on with paint. This shows the pin 1 end of the connector. As a second check, the flat cable has a blue edge which goes to pin 1 in the connector.*

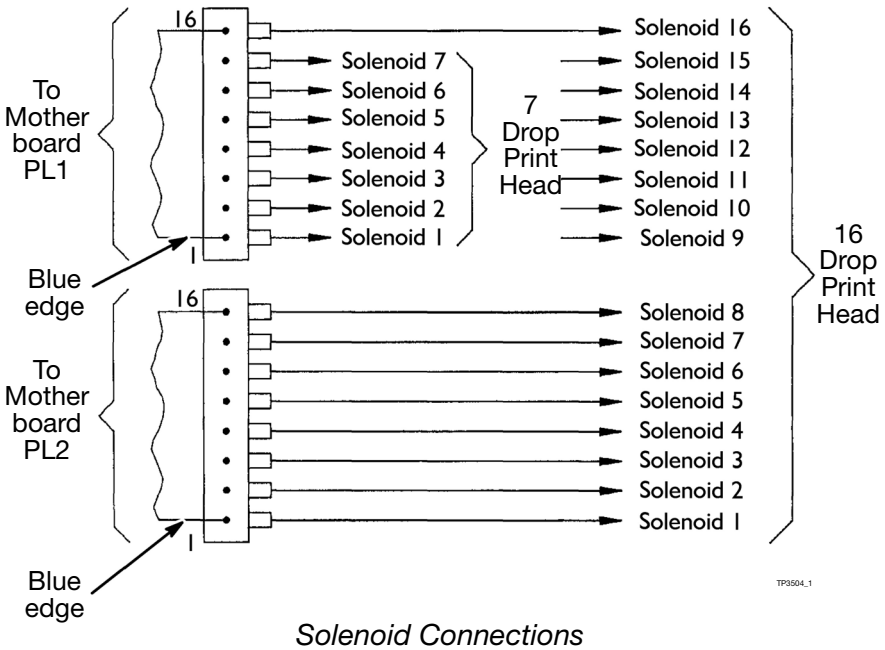
Continue as follows:

(6) Fit the new print head onto the special support pillars.

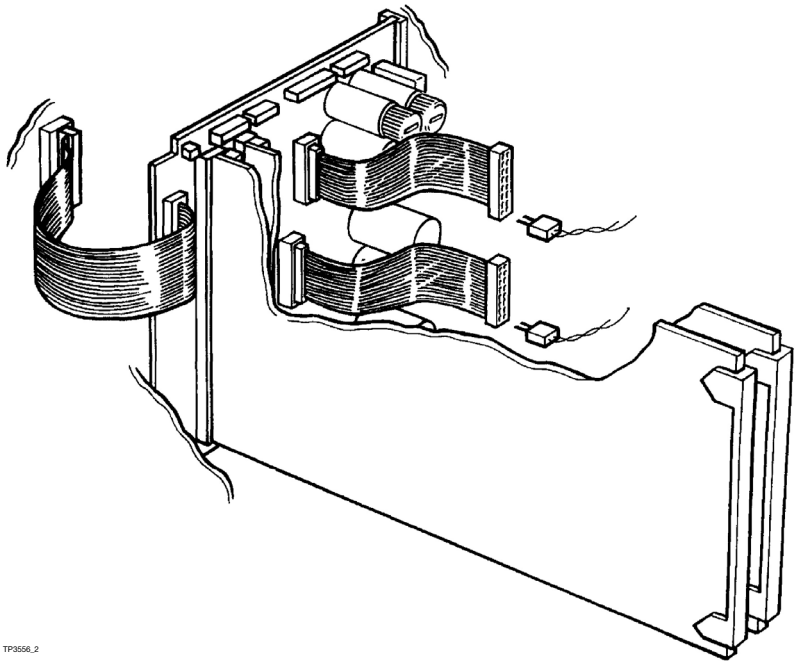
(7) Fit the connector on the wires to solenoid 1 into the flat cable connector at the pin 1 end (for a 16 drop print head, this will be the cable to mother board PL2 - see notes above).

(8) Fit the connector on the wires to solenoid 2 into the next position in the flat cable connector.

(9) Repeat this procedure for the remaining solenoids. For a 16-drop print head, continue this onto the second connector, fitting solenoid 9 into the pin 1 position.




*Solenoid Connections*




*Connecting the Print Head*

(10) Connect the ink pipe from the print head to the manifold

(11) Take the print head off the support pillars and fit it into the normal position in the cabinet. (In the cases of the 12mm and 32mm high heads, fit the front cover seal and then fit the head into the cabinet.) Secure the print head with fixing screws, ensuring that the extension pieces are in place under the heads.

(12) Check that the print head connections are still secure, then replace the front cover and cabinet top.

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Domino CaseCoder Maintenance Manual - Part No. 20519

Domino Printing Sciences plc has a policy of continuous product improvement, the Company therefore reserves the right to modify the specification contained within this pack without notice.



For additional documentation, including other available languages, either scan the QR code, or go to **https://mydomino.domino-printing.com**

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