RA LAMB LIMITED

Carousel MicroWriter

Operating Manual

RAYMOND A LAMB LTD.

Carousel MicroWriter Operating Manual

Table of Contents

For the Operator

It is recommended that all laboratory staff using the MicroWriter should read the Operator Section of the manual thoroughly; The technical section (Chapter 2) is for reference only.

Hazards such as mains electricity and High temperatures (Heated Stylus) are present within the MicroWriter, the MicroWriter must be switched off and allowed to cool down before opening or removing any of the covers.

The MicroWriter needs no regular servicing but we do recommend an annual inspection, that will help to ensure its safety and reliability.

A Service Manual is available* which contains information allowing a service engineer to conduct safety checks and to rectify faults. Unqualified personnel should not undertake such work.

* Please see our website www.ralamb.com

For Your Safety

The equipment you have purchased complies with the 89/336/EEC directive (as amended by 92/31/EEC and 93/68/EEC) and 73/23/EEC (as amended by 93/68/EEC). It has also been produced to meet the standards required by IEC1010 directive and the requirements of the Electrical Safety Code for Hospital Laboratory Equipment (ESCHLE).

The requirements of IEC1010 and ESCHLE ensure that equipment is designed and constructed in a manner, which minimises the risk of electric shock to the operator, offers maximum protection from overheating and provides clear and adequate labelling of both controls and internal assembly.

The equipment needs no regular servicing but we do recommend an annual inspection, as detailed in the manual, which will prolong the life of the instrument and ensure continued safety.

It is recommended that all laboratory staff using the instrument should read Section A of the manual thoroughly.

There are no user serviceable parts inside the MicroWriter, only a qualified service engineer using the instructions given in the service manual should make any inspection or maintenance repairs.

The instrument must be protectively earthed. Make sure that it is plugged into a properly earthed mains supply.

The instrument must be on a level and secure surface when in use. It must be possible to interrupt the mains supply at source by removing the plug from the mains supply socket.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

This symbol appears in documents and on equipment to warn that there are hot surfaces on the instrument.

This symbol appears in documents to warn that instructions must be followed to ensure correct or safe operation.

General Description

The Cassette MicroWriter System has been designed and developed as a means of automating the referencing of processing cassettes with relevant specimen information.

The Cassette MicroWriter provides a secure method of cassette identification. It is controlled via an RS232 serial interface making it possible to link the unit to a wide range of computer equipment and Bar Code systems.

The Carousel MicroWriter is a stand-alone instrument, which is used, for the referencing of processing/embedding cassettes.

A feature of MicroWriter is its versatility, particularly with regard to referencing. The operator is permitted to vary the size of character, the number of characters per line and the number of lines. It will be appreciated that the latter two are dependent upon the first. Any alphanumeric reference is reproducible in addition to some special symbols.

MicroWriter is semi-automatic, inasmuch as it is possible to pre-load 'hoppers' with cassettes and program the instrument to proceed with the referencing process while the operator continues with other duties. Should the unit run out of cassettes during the sequence, an audible alarm will sound.

MicroWriter has a serial interface and can be controlled from any device with an RS232 communications port.

MicroWriter responds to a restricted set of 127 ASCII characters. Special characters are available upon request including foreign languages and customised symbols.

Cassette MicroWriter incorporates a heated stylus, which physically writes, on a plotting principle, through heat sensitive foil tape to produce a reference on a cassette.

Cautionary Notes

DO NOT	Use solvent solutions to clean the surfaces of the MicroWriter
	Balance any objects on top of the instrument
	Remove any covers from the instrument before switching off at the mains electricity supply
	Force any moving parts if resistance is felt
	Open front cover until the Power is disconnected and unit allowed to cool for 10 minutes

DO	Switch off the MicroWriter when not in use
	Treat the instrument with respect, it is a sensitive piece of equipment
	Read the contents of this manual to fully acquaint yourself with the equipment
	Contact us if you have any query regarding the equipment, its operation or the contents of this manual

IT IS RECOMMENDED THAT

Equipment is disconnected from the mains when not required for use in the event of mechanical damage to the power cable or instrument, the apparatus should be checked by a service engineer before use.

Allow at least 10 minutes for the heated stylus to cool before opening the front cover.

A trained service engineer should only undertake repair work

Good Housekeeping

Cassette MicroWriter has few parts that move and of those that do, the movement is minimal. The life span, therefore, should be quite extensive. By way of routine cleaning, etc, there is little that the operator can do except: Clear away dust or debris which could either prevent the MicroWriter's parts moving or, air circulating through the case.

Note: If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired".

Cleaning

a) As required the casing may be wiped using minimal quantities of mild domestic detergents or polishes on a soft cloth.
b) Ensure the instrument is disconnected from the power supply before cleaning.
b) Allow at least ten minutes for the Heated Stylus to cool before opening the Front Cover.

Note:
In the event of liquids being spilt on or inside the instrument, the equipment should be checked by a qualified service engineer.

Before using any cleaning method except those recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment.

Chapter

1

Operator Section

1.1 Unpacking the MicroWriter

Before unpacking the MicroWriter first check the container for damage and report any if necessary to the shipping agent.

The MicroWriter is supplied in a carton designed to protect it during shipping, in addition a removable bracket locks the Stylus in position to prevent damage from shock movement.

To unpack the MicroWriter:

Open the outer carton and take out the foam packing spacer, lift out the inner box containing the MicroWriter; remove the MicroWriter from the box and plastic bag.

Open the Front Cover (see Figure 1) and remove the Transit Bracket as shown.

Figure 1

1.2 Connecting the MicroWriter

Before connecting the MicroWriter to the mains supply it is essential to check for any damage to the unit and the Mains Cable, if any damage is found DO NOT CONNECT the mains supply. Ensure that all packing material has been removed (see1.1) particularly from around the Stylus.

Check the Mains Cable is the correct type for your region and is not damaged. Please note if you are using your own cable or a custom made cable it is essential the cable has connections for LIVE, NEUTRAL and EARTH.

1. Ensure the mains switch (see Figure 2) is in the "0" OFF position.

2. Connect the Mains Cable to the MicroWriter Inlet Socket first then plug into the Mains Supply Socket.

Figure 2

Temp. Adjust. Switch

Mains Switch

DIL Switch

Mains Inlet Socket

Reset Button

Identification Plate

RS232 Serial Socket
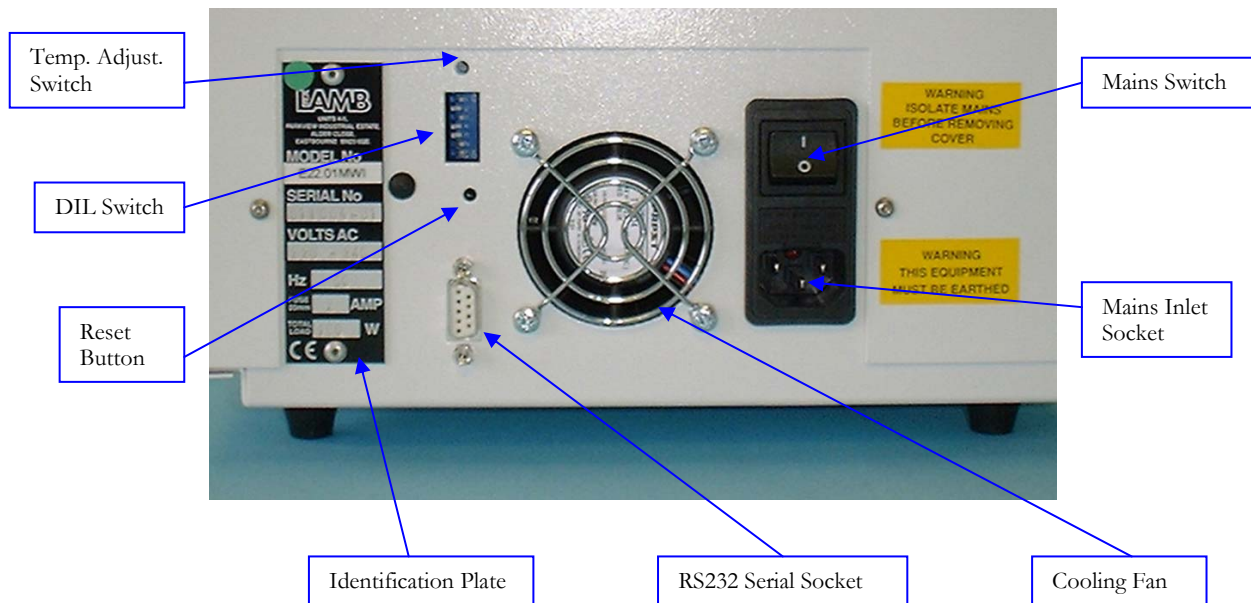
Cooling Fan

1.3 Operating The MicroWriter for the first time.

The MicroWriter can now be switched on for the first time.

Position the MicroWriter to allow air circulation via the Cooling Fan located at the rear of the main cover.

Before connecting the MicroWriter to your PC / Barcode Scanner it is advisable to check the operation of the MicroWriter using the Self Test Function.

To perform a Self Test proceed as follows:

1. Switch on the MicroWriter and allow at least one minute for the Stylus to reach operating temperature.

2. Load the MicroWriter with cassettes (see section 1.5)

3. If the ERROR light is not shown – Press and hold the ON LINE key and press SELECT key. The MicroWriter will print a test cassette if it is OK.

1.4 Connecting to a PC or Barcode Reader.

Commands sent to the MicroWriter are received via the 9 Pin Serial Socket located at the rear of the main cover (see Figure 2.) For technical information regarding the Serial Socket please see Chapter 2.

The cable used to connect the MicroWriter to a PC should either be supplied by RA Lamb Ltd. Or custom made to ensure that connections between the two devices are correct. Please note "off-the-shelf" Serial Cables from PC Suppliers are usually not suitable.

If a software package is used please refer to the software manual for installation and operating instructions.

1.5 Loading With Cassettes

The MicroWriter is designed to be loaded with plastic tubes pre-packed with cassettes, the plastic tubes can be also be loaded manually (see Figure 3.)

The seam where the plastic tube is joined should be towards the front when it is loaded into the MicroWriter.

Figure 3

The pre-packed tubes are loaded onto the Carousel MicroWriter using the Hopper Holder. There are six hopper positions on the carousel, they can be selected individually or allowed to run through automatically switching to the next hopper when empty. (See Figure 4.)

Figure 4

The suggested Loading procedure is as follows:

Figure 5

1. Invert tube of cassettes (so that the cassette's 45° writing surface is upwards). Note if the tube is not full of cassettes pinch the tube above the last cassette in the tube to prevent cassettes sliding out of position (see Figure 5.)

2. Remove plastic tube end cap and insert the Tube into the Hopper Holder, the writing surface of the cassettes should be the side of the black parts of the holder.
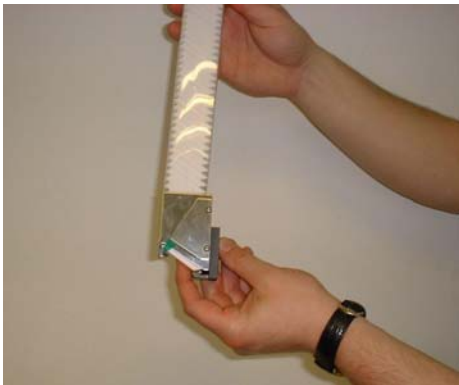

Figure 6

3. Rotate the Hopper Holder and support the cassettes as they move down to touch the Cassette Stop (see Figure 6.) The Hopper Holder is now ready to load onto the Carousel.

1.5.1 Hopper Mode

The Carousel MicroWriter has two options regarding the operation of the Hoppers, *Single Colour* and *Multi-Colour Mode*. Please see 2.1 for a full description.

1.5.2 Hopper Holder Adjustment

Variations in cassette design affect the position of cassettes in the Hopper Holder, it is important to check the adjustment of the Hopper Holders (individually) to ensure reliable operation. Hopper Holders are adjustable to raise or lower their position on the carousel, adjustment is via a screw at the top of the plastic guide block.

Adjust as follows:

1. Switch off the MicroWriter and allow several minutes for the stylus to cool down.

2. Load a tube filled with the desired cassette type into the Hopper Holder

3. Slide the Hopper Holder onto the Carousel (position 1-6)

4. Rotate the carousel by hand to swing the Hopper Holder across the Chute /Dispensing mechanism, check that the bottom cassette in the holder is clear by approximately 0.75mm at the closest point.

5. Use adjustment screw to raise or lower the Hopper Holder if necessary.

6. Repeat the procedure for the other Hopper Holders.

Note: *For Carousel MicroWriters with a serial number suffix preceding –03 that do not have the newer type Cassette Latch / Hopper type, please see the Service Manual for the correct adjustment procedure.*

1.6 Foil Tape Replacement

Warning – Switch off the MicroWriter & Allow at least 10 minutes for the Heated Stylus to cool down. Failure to do so could result in painful burning.

The MicroWriter prints using a Heated Stylus to melt each character through the Foil Tape and onto the Cassette surface. The Foil Tape can only be printed onto once. The amount of cassettes each roll of tape will print will depend on factors such as the Font Size used and the Number of Lines of Text.

It is recommended that the Foil Tape be replaced before it completely runs out. This will help prolong the life of your Stylus and keep it in good working order.

Tape Part Number E22.01/MW/CT

Removing the used tape

SWITCH OFF THE MICROWRITER before undertaking replacement of the tape. To access the tape roll mechanism on the Carousel MicroWriter, it is necessary to open the front cover of the instrument. No tools are required to do this. The cover Hinges on the Left side and is opened by pulling the Right side towards you by using the underside lip. The tape mechanism will now be clearly seen – (see Figure 7.)

Figure 7
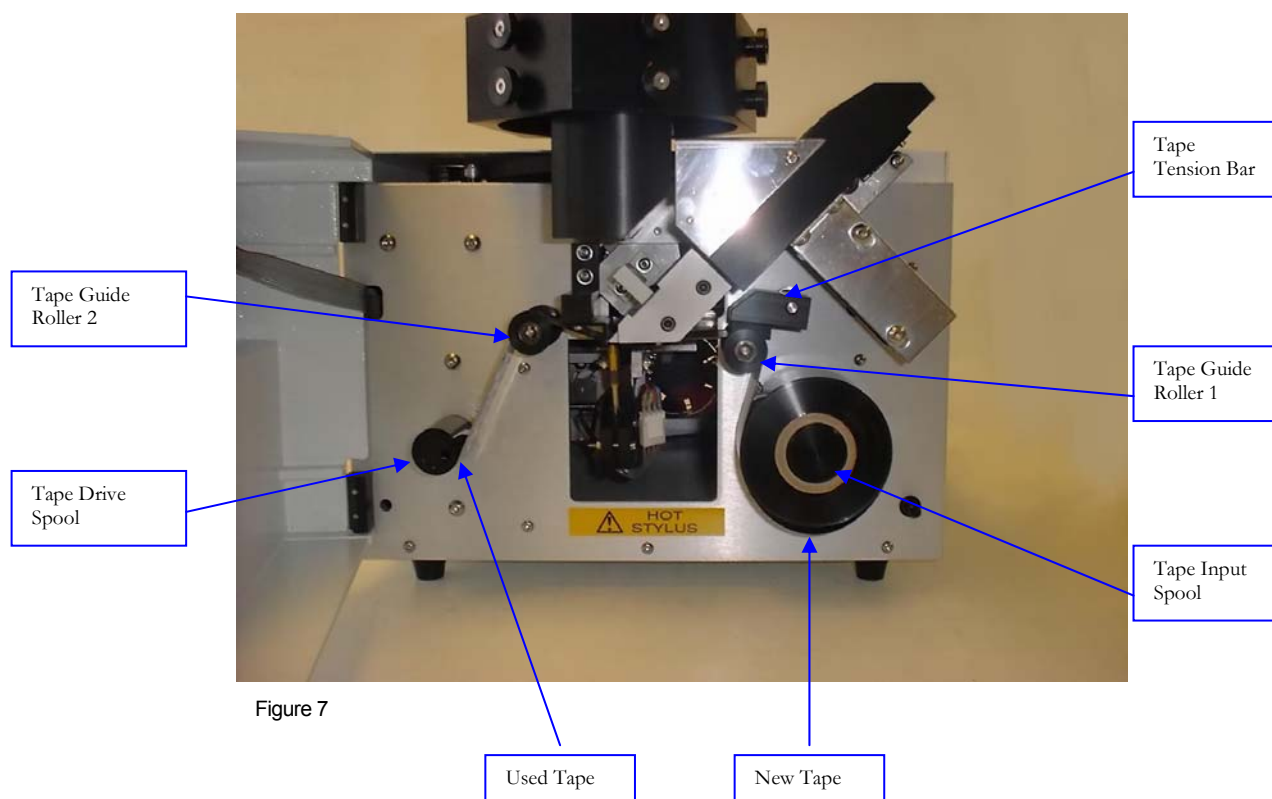
If tape has not fully passed through the tape tension bar, lift the bar against its spring and pull clear any tape residue from tape guide roller No 1. The cardboard inner roll of the spent spool can be slid off the Tape Input Spool. Next, lift residue tape off tape guide roller No 2.

It will be noticed that the plastic Tape Drive Spool (on the Left side) has a small keyway; turning the spool in a clockwise direction releases the spool, allowing it to be pulled away**. DO NOT DISCARD THE SPOOL.**

It is recommended that the next procedure be carried out over a waste receptacle. Allow the tape to unwind or push the spool out from the centre. Detach the tape end from the spool and replace the spool on the spindle, ensuring that it locates correctly on the keyway.

Fitting the New Foil Tape

Remove the sticky label holding the free end of the tape and place the roll on the Tape Input Spool as indicated in Fig 7.

NB Ensure that the matt surface of the tape is uppermost when it passes under the cassette transport clamp. Lift the tape tension bar and feed the tape over tape guide roller No 1. Thread the tape over No 2 tape guide roller, ensuring that it passes cleanly beneath the cassette transport clamp.

Fix the lead end of the tape onto the Tape Drive Spool with a small piece of adhesive tape. Lift the tape tension bar and turn the take-up spool clockwise to wind on a short length of tape to ensure that it is straight and winding on correctly. Release tape tension bar and take up tape slack by winding back new tape reel. Close the front cover. The MicroWriter may now be switched on and returned to use.

Chapter

2

Technical Information

2.0.1 Serial Interface

MicroWriter connection via Serial Communications Port – RS232c 9 pin D Type Socket

Socket Pin Detail – Pin 2 Receive; Pin 3 Transmit; Pin 5 Signal Ground

Transmission – 9600 Baud; 8 Data Bits; 1 Stop Bit; Odd Parity (No Parity selectable – see 2.2)

2.0.2 DIL Switch Settings

It is possible to customise certain aspects of the MicroWriter's operation using the DIL Switches, accessible through the cut out in the rear of the main cover (see Figure 2.) The switches are not intended for daily use and should only be used by personnel familiar with the equipment.

PRINT ORIENTATION – Print can be Normal or Inverted

HOPPER MODE – Selects action taken when a hopper is found to be empty

COMMUNICATIONS – Depending on the method chosen to command the MicroWriter it may be necessary to configure the MicroWriter's serial port. For more detailed information see later in this section.

* Default factory setting for Carousel MicroWriter

Switch Number	Position	Description
1	On*	Odd Parity
	Off	No Parity
2	On*	Default setting – do not change
	Off	Not used
3	On*	Normal echoing communication
	Off	X-On / X-Off handshaking
4	On	Not Used (test facility)
	Off*	Default Setting – do not change
5	On	
	Off*	Default Setting – do not change
6	On*	Single Colour Hopper Mode
	Off	Multi Colour Hopper Mode
7	On	
	Off*	Default Setting – do not change
8	On	Inverted Print
	Off*	Normal Print

2.0.3 Summary of Basic Command Codes

$	Code to define the beginning of a command string
#N	New Line
#I	Increment preceding number/ letter
#Gnn	Quantity (nn) of Cassettes to print
#Hn	Directs hopper feed to hopper n (1-2)
#1 (2; 3 or 4)	Selects Font Size from (1 to 4) for the Characters that follow
CR (carriage Return)*	Code to define the end of the command string and begin printing

* CR, LF, <ret> or <enter>

For a full description of all command codes available please see later in this section.

2.1 Control Functions

The machines are controlled by software that communicates with an RS232 interface, normally to an IBM PC or terminal. Data transmission between the printer and the controlling device via the serial interface is at: 9600 baud, 8 data bits, 1 stop bit and odd parity. Parity can be set to 'none' using DIL switch 1 (see 2.0.2)

A protocol has been developed for describing the labels, or sequence of labels, which are to be written. Machine operation is controlled by 3 console keys, while usage of each machine is personalised by 8 DIL switches. All these facilities are described in the following paragraphs.

Labels comprise up to 96 characters for Cassette MicroWriters. In practice 60 characters should be more than adequate for real applications. Characters are written in four fonts, controlling their size. Font 1 is large to font 4 is small. Font 2 is the default when the machine is powered up, but when a new font is selected this remains in force until the next change command is issued, possibly many cassettes later. It is possible to mix fonts on the same label. See the protocol function '#f ' (2.2) for details.

A label may comprise more than one line of text, with rules as described for the protocol command **'#N'**.

The Carousel MicroWriter has six hopper positions from which cassettes may be fed. To select cassettes from a specific hopper the protocol **#H**n must be used. If it is not included in the command string a cassette will be taken from the last hopper used, or the default hopper 1.

In **Single Colour Mode** all hoppers are assumed to be equal. Cassettes are pre-loaded in readiness for a printing command. When a hopper is empty, the MicroWriter will automatically progress to the next. It stops, and returns to hopper 1 as default, when two consecutive hoppers are empty. If a hopper selection **#H**n protocol is included in the command, it will affect the hopper selection for the following cassette.

In **Multi-Colour Mode** the hoppers are assumed to contain different coloured cassettes. Cassettes are only loaded after a printing command is received, so that a hopper selection can be included in the command. When a hopper is empty, the MicroWriter stops without accessing any other hopper.

2.1.1 Communications Protocol

a.)   Labels (and commands) are defined by the text input between a **'$'** which resets the input and output streams and <enter> which indicates the end of label, and initiates writing if the machine is ready. Comment lines of text without the **'$'** character are ignored.

b.)   Labels (and commands) are terminated by either a 'carriage return' CR or 'line feed' LF character. Either character is echoed as CR LF. The common CR LF combination is treated as a termination character followed by a blank comment line, which is ignored.

c.)   The text may comprise digits, 0 -9; letters A -Z; ' . / * + - ( ) -#' characters ; and a number of 'special ' characters, with effects listed below. Lower case letters a-z are accepted, but converted to upper case for printing.

d.)   All characters 00H to FFH (0 to 127) are recognised and converted through the Font EPROM. At present any characters not described here are converted into spaces.

e.)   Any characters which would be written outside the normal area are suppressed.

f.)   5 special characters are recognised, these are:

Shape	Key to press
Dot in a circle	; (semi-colon)
Upward arrow	, (comma)
Downward arrow	[(open square bracket)
Left arrow	] (close square bracket)
Right arrow	' (apostrophe)

g.)   Five 'foreign' characters are allowed, although their ASCII codes are above the normal limit of 127.
Lower case versions are written as upper case.

Character	Upper Case	Lower Case
Ä ä	142. 8EH	132. 84H
Å å	143. 8FH	143. 86H
Æ æ	146. 92H	145. 91H
Ö ö	153. 99H	148. 94H
Ü ü	154. 9AH	129. 81H

Incrementing these characters by **'#I'** or **'#J**n**'** commands is not meaningful. Sometimes another of these characters is generated (add 1 to the decimal or hex values in the table above) but mostly the resulting characters are not recognised by the MicroWriter, and are therefore ignored.

2.2 Control Sequences

Various control sequences, introduced by a **'#'** character may be included within the label text, with the following effects.

The control letter may be typed in upper or lower case. **'f '**, **'n'** and **'nn'** represent numeric digits as an identity number or count.

If the character following **'#'** is not recognised then the **'#'** is ignored and the character is written. This allows **'##'** to be typed for a single **'#'** in the label.

2.2.1 Positioning and size of label text

#f   Font selection. The numeric digit '**f** ' identifies the selected Font.
Fonts 1 to 4 are defined, ranging from large characters to small.

Font	Cassette
1	1 line of 8 characters
2	2 lines of 13 characters
3	3 lines of 16 characters
4	3 lines of 19 characters

The font selection can be changed anywhere within the text of the label and as often as desired. The effective Font at the end of a label remains effective at the start of the next label.

#N   New line. Calculates the position of the top left hand corner of characters on the next line down on the label. The next character is positioned as far to the left as possible, while avoiding the space occupied by any larger Font characters already included. This calculation takes no account of any '**#U**nn' or '**#D**nn' commands.

2.2.2 Positioning of Stylus

#Unn	Up. Adjusts the current writing position upwards by **nn** x 0.1mm.
#Dnn	Down. Adjusts the current writing position downwards by **nn** x 0.1mm.
#Lnn	Left. Adjusts the current writing position to the left by **nn** x 0.1mm.
#Rnn	Right. Adjusts the current writing position to the right by **nn** x 0.1mm.

The orientation of Up, Down, Left and Right, in the above commands, corresponds to reading the label as printed, regardless of the 'Inverse Writing' option.

2.2.3 Sequence Numbers or Codes and Label Repetition

#I   Increment. Positioned after a number or code causes the preceding character to be incremented after writing. If the character was '9' it is made '0', if it was 'Z' or 'z' it becomes 'A' .In any of these cases the next preceding character is also incremented in the same way, until the start of the line is reached. A space character + 1 becomes 1.

#Jn   Left increment. Start from the character '**n**' positions left of the #, and increment it in the same way as for '**#I**' above. If the character was '9', 'Z' or 'z' adjust it and increment the next character to the right. This 'carry' continues (if required) until the '#' character is reached.

#Gnn   Go. When typed anywhere in the label text this command will write '**nn**' labels, with increments as defined by '**#I**' commands.

2.2.4 Hopper Selection

#Hn   Directs cassette feed to hopper '**n**' (1-6). In Single Colour Mode this is effective after the printing of the current cassette. In Multi Colour Mode the command selects the hopper from which to feed the cassette.

2.2.5 Flow Control

#W   Wait before writing. When this command is included anywhere in the label, the label text is echoed as usual but writing is not initiated. The user may initiate writing, after checking the echoed text, by typing '**$**<enter>', '**$#G**<enter>, or '**$#G***nn*<enter>'.

Note that when XON/XOFF handshake flow control is selected from the DIL switch 3 there is no echo of the labels or commands, so this facility is not relevant in this case.

2.2.6 Status Requests

The following commands are complete lines of text and do not contain any label information.

$#T**<enter> Responds with the machine Type as **$#T*ab cd ef*<ret> where letters *a* to *f* are each a hexadecimal digit 0-9, A-F Value 0-15.

ab	DIL Switch S2 (PCB edge) setting byte. B0 = SW1 to B7 =SW8
c	Carousel position sensors reading. Note: Not fitted to MicroWriter I, will read F.
d	Stylus Heater Rotary Switch S3 position (temp. setting)
ef	DIL Switch S4 (PCB middle) setting byte. B0 = SW1 to B7 =SW8

$#S<enter> Status request. This command returns a report on the current MicroWriter status. This action does not affect memory of the current or last written label, but does destroy any pending label received. The returned status comprises:

8 character Serial No. unique to this MicroWriter
The first character is 'C' for Cassette MicroWriters (Carousel MicroWriter)
1 character Hopper No. (1 to 6 for the Carousel MicroWriter.)
5 character status R C L J E. Each character position contains a letter (as below) to show that the relevant status is effective, or a space character if not.

'**R**'eady to receive the next label, possibly while writing the previous one.
'**C**'olour Mode selected (**SELECT** lamp lit)
'**L**'ive if On-Line lamp lit.
e' **J** 'ect lamp lit.
'**E**'rror lamp lit.

1 space character as separator.

A copy of the current or last label, which may be repeated by '**$**<enter>' or '**$#G***nn*<enter>'.

$#Q<enter> Responds with the current total Quantity of cassettes printed (counter begins at 10000.)

2.2.7 Stop or Continue Label Sequences.

$<enter> Sets or reduces the repeat count to 1. This has the effect of stopping a '**#G***nn*' sequence of cassettes or slides after the current one is completed, or producing one more copy, with appropriate '**#I**' or '**#J***n*' action as specified, if the previous label sequence is already complete.

$#G**<enter> Has the same effect as '**$<enter>' above, except that any '**#G***nn*' command in the previous label is allowed to initiate a further sequence of '*nn*' labels, while continuing numbering by '**#I**' and/or '**#J***n*' commands.

$#G*nn*<enter> Initiates a sequence of '*nn*' (from this command) copies of the previous label.

$#C<enter> Cancel any '**#G***nn*' sequence of labels, after completion of the current label. Do not initiate a new copy of the previous label.

2.2.8 Control Panel Key Simulation.

$#K*a*<enter> Simulates key actions as from the front panel of the MicroWriter. Acceptable values for the letter **'*a*'** (upper or lower case) are as follows:

'E'	Eject current cassette. Not effective if the unit is already in the 'ejected' position.
'L'	Load cassette or slide. Not effective unless the unit is in the 'ejected' position.
'C'	Colour Mode. Switch to Multi Colour Mode
'N'	Normal Mode. Switch out of Multi Colour Mode
'R'	Reset. Reset MicroWriter as if powered off and then re-started.

2.3 The Front Panel Keys and Lamps

The front panel comprises 5 lamps and 3 keys, as follows:

a.)   The **'POWER'** lamp is lit whenever there is power connected to the unit. The remainder are under software control.

b.)   The **'ERROR'** lamp. This lamp is normally used to indicate when no cassette is found in the printing position, although it will also be lit if the writing mechanism fails to return to its 'park position' within a set time.

c.)   The **'ON-LINE'** key and lamp.
When the MicroWriter is **'ON-LINE'** with this lamp lit, it is allowed to receive command and label data from a PC or terminal etc. and will respond to them. When it is 'Off-line' it will ignore input with the exception of the following commands: **$#S<enter>**; **$#Q<enter>**; **$#T<enter>**; **$#K*a*<enter>**; **$#C<enter>**.
The ON-LINE key toggles the status and therefore the lamp state.

d.)   The **'EJECT'** key and lamp.
When the EJECT key is pressed during normal running of the MicroWriter, the current Cassette is completed and ejected as normal and the machine stops with the drawer open.

e.)   The **'SELECT'** key and lamp.
The SELECT key toggles between Single and Multi Colour Hopper Modes. In Multi Colour Mode the SELECT led is illuminated. The mode selection at start up is defined by DIL switch S2 number 6.

2.4 Self Test Label

Holding the ON-LINE key pressed while pressing the SELECT key causes the MicroWriter to enter a self test mode which loads a specific label from the Fonts EPROM, as if it had been received from the Communications Port. This exercises all the stepper motors and solenoids to write a cassette.

A cassette must be loaded for the Self Test to perform correctly.

Note that the ON-LINE lamp is toggled when it is pressed, and may need to be reset by pressing the ON-LINE button to receive data.

2.5 Heated Stylus Out For Maintenance

Holding the ON-LINE key pressed while pressing the EJECT key drives the Heated Stylus forward, for easy inspection. When the EJECT key is pressed following this action, the Stylus mechanism is returned to its normal position.

Warning- The Stylus is extremely hot and should not be touched.

Chapter

3

WARRANTY/GUARANTEE

Please complete the warranty card enclosed in your package and return to Shandon Lipshaw to register your unit for coverage under our one-year limited warranty.

Those customers outside the U.S. do not have to return the warranty card, as the distributor in their region will handle the warranty.

This warranty covers manufacturing defects due to materials or workmanship
for a period of one year from the date of the invoice. It does not cover problems resulting from:

>   Unauthorised repairs
>   Misuse or failure to follow user instructions
>   Accidents or lack of proper maintenance

Disclaimer

Except for the express warranty set forth above, no other warranty, either expressed or implied and including a warranty of merchantability and fitness for a particular purpose, has been or will be made by or on behalf of the manufacturer or the seller or by operation of law with respect to the equipment and accessories or their installation, use, operation, replacement or repair or any services provided by or on behalf of the manufacturer or the seller.

Seller's liability to buyer in the even of loss or damage due to breach of contract, breach of any warranty or for negligence, strict liability or other tort, or other causes or otherwise shall be limited to the return of the purchase price and shall not include special, indirect or consequential damages arising out of, resulting from, or in any way connected with the equipment and accessories or their installation, use, operation, replacement or repair or any services provided even if seller is advised of the possibility of such damages.

No agent, employee, or representative of the seller, unless authorised in writing by an officer of the seller, has authority to bind the seller to any affirmation, representation, promise or warranty concerning the equipment and accessories or their installation, use, operation, replacement or repair or any services provided.

For instructions on how to obtain warranty service, call our Service Department. Please have the serial number, the part number and the operating voltage of your unit ready. The sole obligation of Shandon Lipshaw under this warranty shall be to repair or replace any product it delivers which is found to be defective.

SHANDON LIPSHAW
171 Industry Drive
Pittsburgh, PA 15275

Specification

Physical	Height (without Hoppers) Width Depth Weight (inc. Hoppers)	26.0cm 26.5cm 39cm 10 Kg
Hopper Capacity	75 cassette x 6	
Tape	29mm Wide; (prints approximately 20,000 cassettes per roll)	
Serial Interface	'D' Type 9 pin connector (socket) RS232c 9600 Baud 8 Data Bits 1 Stop Bit Odd Parity (No Parity is selectable)	
Electrical	Voltages Frequency Power	115V a.c (~) 230V a.c (~) 50 / 60 Hz 100w
Fuses	Mains Cable plug	5A 240V (where applicable)
	Mains Input Socket	230VAC Supply T1.25A H250V 115VAC Supply T1.6A H250V
	Transformer PCB F1 (Internal fuse)	T 5A L250V
	Note: Fuses should only be replaced after checking for possible fault	
Switch convention	**I** **O**	Power On Power Off
Environment	General Temperature Humidity Altitude Pollution Installation Category	Indoor use only +5°C to +40°C 80% max. for temperatures <31°C 50% max. for temperatures <31°C to 40°C (Non condensing environment) up to 2000m 2 as defined in IEC1010 II as defined in IEC1010