communication aids for people who cannot speak

TOBY**!CHURCHILL**

- *KEYBOARD*

For a description of the keys, see Manual, page 8.

MEM then 9 will reduce the volume.

MEM then $ then Space repeatedly then MEM select a function or tune.

QUICKREF Lightwriter SL35, SL56 & SL87

- This brief guide describes the Lightwriter in brief, and refers to full details in the Handbook.
- A LIGHTWRITER TUTORIAL is available, which is a self-contained easy-to-follow guide, written by a Speech Therapist.

SUMMARY

TO:	PRESS:	NOTES:
Write a message:	ON/C and then your message.	(put a space after each word).
Delete one character:	BACK-SPACE.	(hold BACK-SPACE down for repeat-action).
Delete one word:	MEM then BACK-SPACE.	(MEM then BACK-SPACE again, if desired).
Repeat the message:	REPLAY.	(try also SHIFT-REPLAY: last word is spelt).
Clear the display:	ON/C.	(now try pressing REPLAY: message is retrieved!).
Store a memory:	MEM MEM then, for example, H.	(having typed a message).
Recall a memory:	MEM then, for example, H.	(the symbol '*' means 'memory-mode').
Summon attention:	BUZZ or SHIFT-BUZZ.	(the sounds can be changed).

KEYBOARD

- To change from QWERTY to ABCDE layout details, see Manual page **10**.
- You can adjust the key-click, key-repeat, key-pressure and tttttttrrrremmorrrr; see Manual section **4**.
- For full details of the keyboard, see Manual page **8**.

DISPLAYS

- You can type in UPPER-CASE or in lower-case (or mixed: 'Dear Mrs Jones'); see Manual page **43**.
- SL87: the large screen can display predictions or enlarged text, see Manual page **41**. It can also be used for scan; see Manual page **68**.

HANDLE

- The handle has 2 holes (SL35: pull-out); use these for the neck-harness.
- The holes can also be used to tie the Lightwriter to a chair to prevent it falling; mounting systems are also available.

CONNECTORS

- If the scan system is not in use, the **Sw1** and **Sw2** sockets can be used for shortcuts (to recall memories, buzz, print, select a prediction, etc); see Manual page **61**.
- Port 2:   other side of the Lightwriter (if fitted).
- Ext. speaker: see Manual page **56**.
- Charger: see Manual page **12**.
- Switches: see Manual page **61**.

Charger light

Charger-socket
Port-1
Scan-1
Scan-2
External speaker
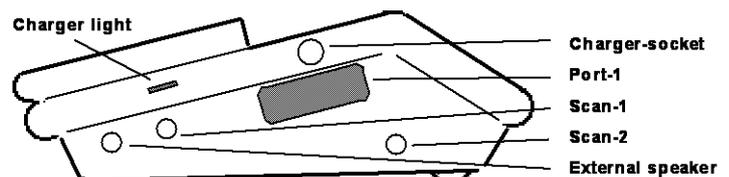
The Lightwriter contains many, many features to speed up your communication.

KEYGUARD
- Two green spacers are supplied, these raise the Keyguard; see Manual page **10**.
- IF THIS 'KEYGUARDING' IS INSUFFICIENT, WE OFFER A DEEPER ONE.

HELP
- Press **MEM MEM MEM H,** then select 1 to 9 for a section; Ø returns to the Index; see Manual page **15**.
- Each of the setups also has a brief help-message; see Manual Section **4**.
- At the rear of the Manual is a fuller Trouble-shooting guide; see Manual Section **7**.

MEMORIES
- Store words and phrases, recall them with 2 keys; see Manual Section **2**.

SETUPS
- Adjust the Lightwriter to suit different users; see Manual Section **4**.
- Volume UP, volume DOWN, choose Male or Female voice, choose when to speak, how to print …

FUNCTIONS
- To show the speech-exceptions, show the amount of memory-free, show the software-version, see Manual page **48**.

SPEEDWRITING
- Store yr favrte abbrevs - they will expand automatically! See Manual page **28**.

SMART-TEXT
- Rules such as 'automatic space after a fullstop'; see Manual page **44**.

WORD-PREDICTION
- The Lightwriter can 'guess' what you are typing; see Manual page **40**.

SPEECH
- The Lightwriter can speak what you have typed; see Manual page **33**.

PRINT
- The Lightwriter can print what you have typed; see Manual page **37**.

PHONE
- The Lightwriter can be used over the phone; see Manual page **35**.

BATTERY
- The Lightwriter contains re-chargeable batteries. It is despatched from the factory in a fully-charged state.
- There is a low-battery symbol on the left of the display; this means that the Lightwriter is very approximately half-discharged; see Manual page **12**.

CARE OF THE EQUIPMENT
- Take care of the Lightwriter! See Manual page **7**.

THERAPISTS, CARERS
- For guidelines on training a user—see Manual page **14**.
- For the safe installation of the equipment—see Manual Section **8**.

PREPARE FOR A DIFFERENT USER
- Erase memories, revert to 'factory' setups; see Manual page **79**.

GUARANTEE, INSURANCE
- See Manual page **13**.

SAFETY, DECONTAMINATION, STATEMENT OF INTENDED USE
- See Manual Section **8**.

TROUBLE-SHOOTING
- Any advanced electronic system can be expected to have occasional problems; the Lightwriter has been designed to cope with these situations without losing any of your memories; see Manual Section **7**.
- If the Lightwriter doesn't work, read the label on the back!

THIS QUICKREF CROSS-REFERS TO MANUAL ISSUE 12

TOBY! CHURCHILL

(SL87 shown)

- **SCAN and MORSE**

  Users who cannot type can use the Lightwriter via the scan system, using a switch (or two switches); see page 68.

  A faster entry-method is our Morse system; this requires two switches; see page 72.

QUICKREF Lightwriter SL85/86/87, Plug-in scan

- This brief guide describes the scanning system in brief, and refers to full details in the Handbook.
- A LIGHTWRITER TUTORIAL is available, which is a self-contained easy-to-follow guide, written by a Speech Therapist.

SETUP

- For setup details, see Manual page **68**.
- Adjust the Lightwriter to suit different users; see Manual Section **4**.
- Volume UP, volume DOWN, choose Male or Female voice, choose when to speak, how to print …

SUMMARY

TO:	SELECT:	IF KEYBOARD AVAILABLE:
Write a message:	Click to select the characters.	(type characters).
Delete one character:	< (1st symbol, top row).	(BACK-SPACE).
Memory-list:	^ (4th symbol, top row).	(MEM-5).
Summon attention:	splat (5th symbol, top row).	(BUZZ).
Repeat the message:	↵(6th symbol, top row.	(REPLAY).
Other:	⇨ (7th symbol, top row).	(all these functions are available via keyboard).
Memory-shortcut:	* then, for example, H.	(MEM then H).
Delete one word:	⇨ then Delete-Word.	(MEM then BACK-SPACE).
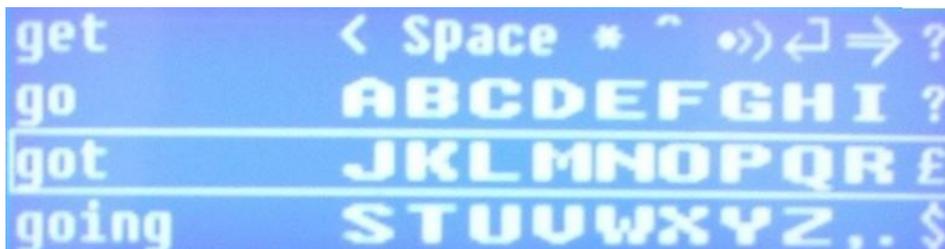
- Further details: see Manual page **68**.

DISPLAYS

- The large screen can display enlarged text in 3 sizes, see Manual page **41**.
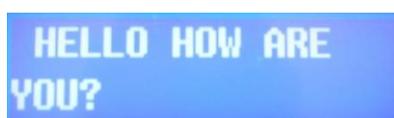
- Or 8 predictions, see Manual page **41**.

The Lightwriter contains many, many features to speed up your communication.

MORSE
- Instead of the scanner on page **68**, you can enter text via Morse system, see page **72**.
- Provided that you can learn the codes, this is a fast 2-switch entry-method.
- For the setup for SL85/87/Plug-in module, see page **74**.
- Photocopy page **75** (printed, laminated list available on request).

MEMORIES
- Store words and phrases, recall them with 2 keys; see Manual Section **2**.

SMART-TEXT
- Rules such as 'automatic space after a fullstop'; see Manual page **44**.

WORD-PREDICTION
- The Lightwriter can 'guess' what you are typing; see Manual page **40**.

SPEECH
- The Lightwriter can speak what you have typed; see Manual page **33**.

PRINT
- The Lightwriter can print what you have typed; see Manual page **37**.

PHONE
- The Lightwriter can be used over the phone; see Manual page **35**.

BATTERY
- The Lightwriter contains re-chargeable batteries. It is despatched from the factory in a fully-charged state.
- There is a low-battery symbol on the left of the display; this means that the Lightwriter is very approximately half-discharged; see Manual page **12**.

CARE OF THE EQUIPMENT
- Take care of the Lightwriter! See Manual page **7**.

THERAPISTS, CARERS
- For guidelines on training a user—see Manual page **14**.
- For the safe installation of the equipment—see Manual Section **8**.

PREPARE FOR A DIFFERENT USER
- Erase memories, revert to 'factory' setups; see Manual page **79**.

GUARANTEE, INSURANCE
- See Manual page **13**.

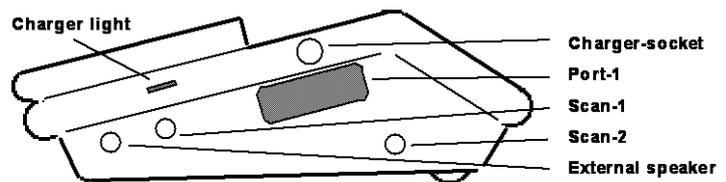## SAFETY, DECONTAMINATION, STATEMENT OF INTENDED USE
- See Manual Section **8**.

TROUBLE-SHOOTING
- Any advanced electronic system can be expected to have occasional problems; the Lightwriter has been designed to cope with these situations without losing any of your memories; see Manual Section **7**.
- If the Lightwriter doesn't work, read the label on the back!

CONNECTORS
- If the scan system is not in use, the **Sw1** and **Sw2** sockets can be used for shortcuts (to recall memories, buzz, print, select a prediction, etc); see Manual page **61**.
- Port 2: other side of the Lightwriter (if fitted).
- Ext. speaker: see Manual page **56**.
- Charger: see Manual page **12**.
- Switches: see Manual page **61**.

Charger light — Charger-socket — Port-1 — Scan-1 — Scan-2 — External speaker

THIS QUICKREF CROSS-REFERS TO MANUAL ISSUE 12

communication aids for people who cannot speak

TOBY! CHURCHILL

Lightwriter Manual (software V5.90)

Currently used in:

SL35, SL56, SL85, SL87, 35/Cherry, 35/BigKeys

ABOUT THIS BOOK

The QuickRef should be read BEFORE this Manual. It refers to pages in this Manual.

This Manual describes the Lightwriter hardware in general terms; see the QuickRef supplied with your machine for details about your model.

This Manual describes the software in full; It explains how to deliver speeches, create tunes, configure the Lightwriter for special needs and so on.

This Manual does not apply to models SL5 or SL55.
It does apply to earlier V5 software-versions, with minor differences.

The same software is used in all the models mentioned above; this Manual therefore applies to all those models.
Scan users should start at Section 6.

Statement of Intended Use - see Section 8.
Decontamination - see Section 8.

SECTION 1: BASICS

HOW TO USE THIS BOOK

This Manual provides full details for advanced users and therapists or carers: it describes the Lightwriter in detail; it is designed for reference, NOT for everyday use.

Do not expect to understand this Manual on its own. Have the Lightwriter in front of you, and *try* the things that you need to learn.

This software contains a 'scanner' (which allows users without hand-control to operate the Lightwriter via a switch); where this Manual says 'press' a key, you can 'select' the same 'virtual-key' on the scan-screen, and the greater part of this book will apply (eg pressing the MEM-key or selecting * on the screen are the same). Scanning is dealt with in Section 6.

Throughout the Manual, words written **Like This** refer to something <u>on the Lightwriter</u>.

The "Fullstop" key is often called "Period" in American. On the display, Ø is the number zero

The Table-of-Contents on the previous pages summarises what the Lightwriter can do.
THIS IS ALSO A GUIDE - USE IT TO HELP YOU FIND YOUR WAY THROUGH THIS MANUAL.

An Index to 'keywords' and to the various messages that may appear on the display is provided inside back cover.

THE MANUAL IS DIVIDED INTO 8 SECTIONS:

1. Basics	An introduction to the Lightwriter.
2. Memories	How to use the powerful memory system.
3. User's Guide	Detailed information on the machine's features.
4. Setups	Adjust the Lightwriter to suit the user.
5. Reference	Advanced features.
6. Scan	Description of the scan software.
7. Troubleshooting	Problems?
8. Safety	Intended Use, Mounting, Decontamination, etc.

>> Looking at the left side
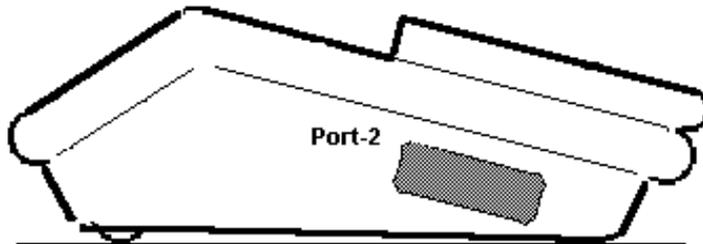
>> Looking at the right side
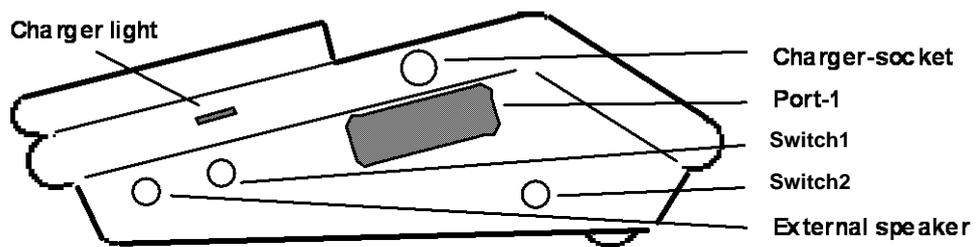
- **Charger** Use only the charger supplied **(9VDC 800mA, positive tip).**
- Insert printer, scanner, computer-connection etc into Port (1) (or Port (2) if fitted)— the Port also needs to be set up, and this is described later.
- Use **External Speaker** for one of our External-speakers, or for direct connection to a speaker.
- **Switch1** and **Switch2** are for use with REMOTE SWITCHES or the PLUG-IN SCAN MODULE, as follows:

Remote Switches:	**Perform one function such as print, sound an alarm, or recall a memory—for details, see page 61.**
Plug-in Scan Module:	**Powerful row-column scanning—for details, see page 68.**

>> The model and serial-number are to be found on the label stuck to the bottom of the Lightwriter.

>> This label also gives details of the speech fitted. Multi-lingual units have a separate label for language-change, see page 67.

GO!

- Lightwriter does not switch on at all? Is the battery charged? See page 79.
- You can use the Lightwriter with the charger connected, if you wish.
- Press **On/C** and type—it will speak each word when **Space** is pressed (if speech is fitted and the setup is **Speak: Each Word**).
- Press **Replay** (bottom-right key).

SETUPS

- These allow you to configure the machine to suit a wide variety of users— experiment, this is the best way to learn!
- Watch the display while you do it, you can probably work out what's going on.
- Press MEM Replay to enter the setup-system at the 'User level', and Shift Fullstop to go to the 'Advanced level'; (there is also an 'Expert level', as you will see later, in Section 4).
- At all levels, use Fullstop, Space and Back-space to navigate the list, and + to change the current setup; press On/C to save-and-quit.

MEMORIES

- Press **MEM 1**, or **MEM H**—there are 14 of these 'suggested' memories.
- Type **PLEASE COMB MY HAIR** then **MEM MEM H Y** then Space then **MEM H**— you have replaced the original **MEM H**.
- Type **ADR=87 WATERBEACH RD** then **MEM MEM + Y** then **Space** then **ADR Space**—this is another kind of memory, called "Abbreviation-expansion Memory".

SHIFT

- Press **Shift** then **2** and **3**—note that only the first key is shifted.
- Press **Shift Shift** then **2**, **3**, and **4**—note that all keys are shifted.
- Press **Shift** again then **2**—now it's un-shifted; watch the indicator at left end of the display.

RESTORE

- To put the Lightwriter back to 'as new', press **MEM MEM MEM L Ø** then **Y**—this will re-load all the 'factory-setups'.

PRIVACY

- To clear a private message. Press **On/C** then **Space** before the Lightwriter turns off. The old message is gone forever, there is no way for anyone to retrieve it.

Care of the Equipment

- Do not drop—this is a delicate instrument.
- Arrange a suitable mounting-system, if required.
- Charge the battery overnight if in use, every month if not in use.

Cleaning

- Use a damp cloth to clean; do not get water in the machine.
- Do not use solvents, especially on the displays.
- To clean the keyboard, see page 9.
- If you need to decontaminate the Lightwriter, see page 83.

**THIS IS ALL YOU NEED TO KNOW TO START USING THE MACHINE EFFECTIVELY.
WORK THROUGH THE REST OF THE MANUAL LATER, TO GET THE MOST OUT OF IT.**

Keyboard

UPPER case

SCREWS

GREEN
SPACER

lower case

To get the 'other'
symbols, press
Shift first

HELLO how are you?

On/C Off 1 ! 2 " 3 / 4 = 5 % 6 ; 7 & 8 ' 9 (Ø)

Q W E R T Y U I O P + Mem

A S D F G H J K L ? *

Z X C V B N M Space

MEMORY

BUZZ

REPLAY

BACK-SPACE

SHIFT

Fit neckstrap
here

Key-surround

HANDLE
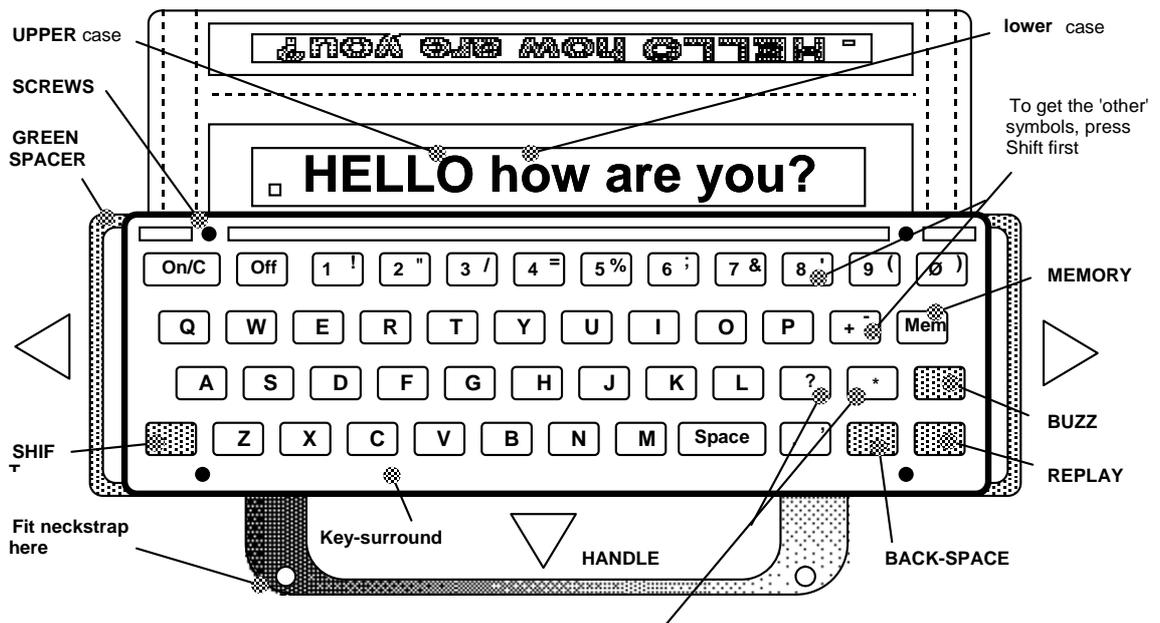
- The two keys to the right of **L** can be altered to suit the country-see page 66.
- Here is a description of the main keys—as will be explained later, combinations of these will produce other functions:

ON/C

- This key turns the Lightwriter on—unless the battery is totally flat!
- If the Lightwriter is already 'on', press it to clear the screen.
- **NEW IN V5.9** Use this mode with caution, it means that the last message reappears (and it might be rude!):

> **You can have the Lightwriter wake up with the previous message. To do this, change the setup to Wake-up: Message, see page 49.**
> **In this mode, to clear the message, press the On/C key a second time.**

- In either 'Wake-up' mode, to recall an accidentally-cleared message, press **Replay** after **On/C** (and no other key in between).

OFF

- This key turns the machine off; if you have saved one or more new memories, the display will show **Backing Up**—the machine is making an automatic backup! (VF displays may not show this).
- The machine turns itself off if unused—you can vary this time-out: for details, see section 4.
- Hold the key down for 15 seconds to clear a 'jammed' condition, or other fault.
- **NEW IN V5.9:** Using the 20 sec auto-off setting means that you may never have to press the Off key!

SPACE

- Press **Space** to put a gap after a word—and to speak the last word, if speech is fitted.
- If you would prefer the message not to be spoken when you press **Space** but only when you press **Replay**—for setup details, see section 4.

BUZZ

- Press **Buzz** to sound the buzzer—to attract attention.
- Press **Shift** then **Buzz** for a different 'level of urgency'.

- Both sounds can be altered—for details, see page 64.

SHIFT

- The **Shift** key accesses the symbols above the numbers; also UPPER-case letters if you are using lower-case—for details, see page 43.
- Press ONCE: the next key only will be shifted.
- Press TWICE and all subsequent keys will be shifted until the shift-mode is cancelled (by pressing the **Shift** key again)—watch the **Display**.

Example	**Press once then type + to produce 'minus'**
Example	**Press once then type 2345 to produce "345. Press twice then 2345 to produce "/=%.**

- There are therefore 3 modes for shift; they are an integral part of the machine—familiarise yourself with how they work!

Not shifted	**The shift symbol does not appear on the display and pressing a number displays a number—and (if the machine is set for lower-case) a letter displays a lower-case letter, see LOWER CASE, page 43.**
Shift once	**The shift symbol appears on the display and the next key ONLY is shifted—and the shift-mode is then cancelled.**
Shift lock	**The shift-lock symbol appears on the display and all keys are shifted—and the shift-mode must be cancelled by pressing the shift-key a third time.**

MEM

- Pressing **MEM** once means "recall a memory"—the status-symbol is *
- Pressing **MEM** twice means "save a memory"—for details, see page 24.
- Pressing **MEM** three times means "do something special"—for details, see page 48.
- Pressing **MEM** a 4th time means "cancel memory-mode".
- All modes will automatically cancel after a few seconds, and this time is adjustable—for setup details, see section 4.

REPLAY

- The **Replay** key replays the message; if you have typed more than 250 characters, it will replay the last 250—if you find the message starts in the middle of a word, this is why!
- **Replay** will normally speak the message as fluidly as possible (if speech is fitted).
- You can have the message scroll across the screen before it is spoken—see page 42.

DELETE A WORD

- Press **MEM** followed by **Back-space** to delete the word before the cursor.

REPEATING KEYS

- SPACE, BACK-SPACE, FULLSTOP, PLUS, MINUS, and EXCLAMATION MARK are repeating keys.
- To adjust the **Key repeat** speed, see Section 4.

ADJUST

- The keys can be set so they must be held down a while to make them operate; the apparent effect is that they are 'stiffer'—for details, see Section 4.
- They can be set so they are ignored after having been operated once, to avoid ttttttttttthhhhhhiiiss ppppprobblem—for details, see Section 4.

CLEANING

- THIS KEYBOARD WILL PERFORM BADLY IF EXPOSED TO FOOD, DRINK, ETC.
- To dismantle:

> **Remove the key-surround or keyguard with the screwdriver provided (work on a clear, flat surface).**
> **Remove the dirty keys.**
> **Wash the keys (leave them damp, the water will help them 'pop on'). Take care not to get water in the machine.**
> **Refit the keys; if the Lightwriter is 'on', this will give you confirmation of what each key does.**
> **Refit key-surround. NEVER OVERTIGHTEN THE SCREWS.**

- If this is a frequent problem, fit a keyboard Glove, or a Raincoat which covers the entire Lightwriter.

KEYGUARD

- Two green spacers are supplied, these raise the Key-surround to prevent more than one key being pressed at the same time.

- To fit or remove:

> **Slacken the 4 black screws with the screwdriver provided (work on a clear, flat surface).**
> **Raise the key-surround sufficiently to insert or remove the two green spacers.**
> **Refit key-surround. NEVER OVERTIGHTEN THE SCREWS.**
> **Fit them whenever it is important that the machine does not turn on in transit.**
> **When fitted, the keycaps may 'tilt' if the machine is knocked; press the keycaps down firmly at the corners when this happens, and after a little use they will 'seat themselves'.**

- If this 'keyguarding' is insufficient, we offer a deeper one.

QWERTY TO ABCDE

- To change the keyboard layout from QWERTY or ABCDE (or vice verca):

- First, change the setup **Keyboard**:

> **Press On/C to turn the Lightwriter on.**
> **With a clear screen, type the word EXPERT.**
> **Press MEM then Replay. The display show "Expert Setups".**
> **Press K repeatedly until the setup is 'Keyboard'.**
> **Press '+' repeatedly until the setup is 'Keyboard: ABCDE'.**
> **Press On/C.**

- Next, move the keytops:

> **Remove the key-surround or keyguard (work on a clear, flat surface).**
> **Wash the keys (leave them damp, the water will help them 'pop on'). Take care not to get water in the machine.**
> **Replace the keys in the new positions. If the Lightwriter is 'on', this will give you confirmation of what each key does.**
> **Refit key-surround. NEVER OVERTIGHTEN THE SCREWS.**

- A screwdriver is available to remove the 4 screws, and this has both Posi 0 and Posi 1 blades to suit the different screwheads in use.

- This will be sent to you free of charge if you quote the serial number of your Lightwriter.

Displays

- The symbols at the left end of the **Displays** are as follows for LCD:

Symbol:Small square	**"Shift-once"—for details, see page 9.**
Symbol:Large square	**"Shift-lock"—for details, see page 9.**
Symbol:Colon	**"Symbols" mode—for details, see page 43.**
Symbol:Flashing arrow	**"On"; can be hidden—for details, see page 46.**
Symbol:Dot	**"Battery getting low"—charge when convenient.**
#	**"2nd Conversation"—for details, see page 36.**

- If the display is VFD, the differences are:

Symbol:Solid square	**"Shift-lock"**
Symbol:Dot in a circle	**"Low Battery"**

- The (default) setup **VFD:Automatic** will combine maximum brightness with power-saving—you can also select **Bright** or **Dim**—for setup details, see Section 4.

- To have your message appear on the **User-Display** only, turn the Lightwriter 'on' like this: **On/C Shift On/C**— this is called the 2nd-conversation mode, see page 36. If the machine is already 'on', press **Shift On/C**.

Battery

- When the low-battery symbol appears on the left side of the **Display**, it is time to charge the battery with the charger supplied—but there is plenty of power 'in reserve' if needed.
- Charge the battery—overnight if in use, every three months if not in use.
- The charger-socket is on the side of the machine—keep the battery charged!
- The machine turns itself off if unused—you can vary this time-out to save power; for setup details, see Section 4.

CAPACITY

- The time between charges depends on the displays fitted; to a lesser extent, machines with no speech will last longer:

Both displays LCD	**Approx 10 hours**
1 LCD, 1 VFD	**Approx 7 hours**
Both displays VFD	**Approx 4 hours**

- These figures are for CONTINUOUS use—often several days of normal use.

Charger

- Charge overnight after use—regular charging prolongs battery-life. Use it with the charger plugged in, if you wish.
- You may leave the Lightwriter on charge for several days without harm—take it off charge next morning if possible.
- Use the charger supplied—other chargers are unsuitable.
- A car charging-lead is available—this charges the Lightwriter from a car cigarette-lighter socket.
- If you plan to travel, the existing charger will work (with a suitable adaptor)—**provided the supply is 200 - 250 volts (**Europe, Australia, New Zealand, etc).
- We can supply 2-pin adaptors, suitable for most of these countries—you can also buy a 'multi-plug' adaptor in many shops (eg Boots, or at the airport).
- For USA/Canada or Japan where the voltage is lower, you cannot use the original charger—you can buy a charger for USA/Canada from us. For a fuller explanation, see:

    http://kropla.com/electric2.htm

- If you buy a charger yourself, it must have an output of **9VDC** at least **800mA**—and the jack-plug dimensions must be **5.5mm** barrel, **2.1mm** pin, and **12.0mm** long.
- If in doubt, check the voltage in the country you are going to; the frequency (cycles-per-second, or 'Hz') is immaterial.
- The charger may become warm in normal use.

Guarantee

- The machine is guaranteed for 24 months from the date of supply.

Exceptions	**Mechanical damage, eg dropping.**
	Abuse.
	Unauthorised removal of the back of the Lightwriter.

- A 6-year guarantee is available (UK ONLY)—this extends the guarantee by a further 4 years.

RETURNING THE EQUIPMENT

- If you need to return the equipment to us, here is what to do **(UK only)**:
- Pack the machine and its charger with plenty of protection, preferably in the original box.

  Ensure the ON button cannot be pressed in transit.
  Tape up the parcel securely.

- Put two address labels on the outer packaging, in case one is unreadable, or torn off—and put your (sender's) name and address on it.
- Enclose a note to say <u>who</u> it is from, and <u>why</u>.
- Return the machine (including charger) to this address, using a reliable carrier such as Parceline or Royal Mail (Guaranteed Delivery)—if using the Post, ask for a Certificate of Posting.

  TOBY CHURCHILL Ltd,
  Unit 12,
  Barnwell Business Park,
  Barnwell Drive,
  Cambridge, CB5 8UY.

- Ring us, or send a letter separately, quoting:

  Your name, address and phone-number.
  The serial number (on the back).
  The invoice number (if known).
  The date of despatch.
  The faults (or reason for return).
  The courier.

- If you would like us to arrange to have your machine picked up, please ring us—a charge will be made for this, even if it is a guarantee repair.
- The equipment is at your risk during transit, even after a sale-or-return trial; you can take out your own insurance.

INSURANCE

- You may wish to insure the equipment—many companies offer policies to cover this type of equipment against Fire, Theft and Accidental Damage. You may be able to include it on your House Contents Policy.

SERVICING

- The Lightwriter is extremely reliable if treated properly.
- By far the most frequent cause of damage is mechanical abuse (dropping it, knocking it about, coffee-spillage, etc).
- The equipment does not need regular maintenance, and is designed to give many years trouble-free use.
- We recommend that faulty equipment is returned to us for repair, as we can do this quickly and economically.
- We undertake to carry a full range of spare parts for this model for at least 5 years, or to supply a model or newer circuitry at our cost.

Problems?

- If the machine 'locks up' and the keyboard won't respond, press **Off** then **On/C**.
- If the machine works but won't behave as expected, press **MEM MEM MEM L Ø Y**.
- If this does not cure it, press **Off** and hold it down for 15 secs or more, then release: the machine should start up after a few seconds—note that your memories and setups will NOT be lost.
- If the battery runs completely flat (for example if stored in a cupboard), connect the charger: then, after a few minutes, press **Off** and hold it down for 15 seconds or more, then release: the machine should start up after a few seconds—continue to charge for at least 15 hours.
- For further help, see TROUBLESHOOTING, Section 7.

THERAPISTS!

- A short 'confidence-building' session with the user will be helpful—emphasise the simplicity; some users may find the equipment daunting.
- We appreciate that some users will be unable to read this Manual—we have designed the machine to be as simple as possible.
- The user may therefore be relying on you for a summary—draw some simple diagrams, write a few notes and explain through conversation; use all three methods of communication so that the user can 'build a picture'.
- The user may need a follow-up a few days or weeks later—check that settings are still appropriate.

AIRCRAFT

- Airlines are becoming increasingly aware that electrical equipment used by passengers can interfere with the aircraft navigation system. Most airlines prohibit the use of mobile phones at all times during the flight because they can cause interference—phones are particularly problematic in this respect.
- If you are advised by a stewardess not to use other electrical equipment such as portable computers, video recorders, or Walkmans during parts of the flight such as take-off or landing, you should also refrain from using the Lightwriter during these periods.
- Carry the Lightwriter as hand-luggage and not in a suitcase or bag; show airport-security staff how it works—this may make the security-check faster.
- In any event, allow an extra 15 minutes in case there are problems.
- The Lightwriter will not be affected by the security X-ray machines.

Help

- The setups have their individual 'helps': press **?** while in setups!

- The setup **AuditoryBrowse: On** may be useful for beginners, as the **MEM 5** list and all setups will be spoken.

- The Lightwriter also has a built-in 'help' system—use this as a 'memory-jogger':
   Press **MEM MEM MEM H** to run the on-line 'help' system.

   > **Press 1 to 9 to go to the section you want.**
   > **Press any key to pause (except the keys below).**
   > **Press Replay to replay the section.**
   > **Press Ø to return to the Index.**
   > **Press P to print all sections—make sure that a printer is set up.**
   > **Press On/C to leave the help-system.**

- Here is a printout of the on-screen help sections:

0: HELPS. 1=BROWSE. 2=MEMORIES. 3=SPEECH. 4=CALCULATOR. 5=SYMBOLS. 6=PRINTING. 7=SOUNDS. 8=SETUPS. 9=OTHER.

1: BROWSE. PRESS "2" TO "9" TO GO TO A SECTION, "REPLAY" TO REPEAT IT, "0" TO GET BACK TO THE INDEX, "P" TO PRINT ALL, "ON" TO ESCAPE.

2: MEMORIES. ENTER TEXT TO SAVE (E.G. "FOOD") THEN "MEM MEM" AND THE KEY TO SAVE IT ON (E.G. "MEM MEM F"). (ABBREVIATION-EXPANSION) ENTER ABBREVIATION=TEXT (E.G. "FØ=CABBAGE" OR "F42=FISH AND CHIPS") THEN "MEM MEM +". TO RECALL, TYPE THE ABBREVIATION (F42) THEN A SPACE.

3: SPEECH. TO ADJUST, SEE SECTION 8. TO STORE A SPEECH-EXCEPTION, ENTER !TEXT=PRONOUNCIATION (E.G. "!SEAN=SHORN" THEN "MEM MEM +").

4: CALCULATOR. "ON" THEN EXPRESSION (E.G. 2+3) THEN "=" TO CALCULATE. EQUATIONS CAN BE STORED IN MEMORY. FOR MULTIPLY USE "X", FOR DIVIDE USE "/".

5: SYMBOLS. "MEM SPACE SPACE ETC." TO BROWSE THE SYMBOL LIST. THEN "MEM" TO SELECT ONE. SHIFT-KEY ACCESSES THE SYMBOLS OVER THE NUMBER-KEYS.

6: PRINTING. "MEM MEM MEM P" SENDS MESSAGE TO A PRINTER. (SELECT PORT AND PRINTER-TYPE IN SETUP).

7: SOUNDS. BUZZ AND SHIFT-BUZZ CAN BE CHANGED IN SETUP.

8: SETUPS. "MEM REPLAY" TO ENTER. "SPACE" OR "BACK-SPACE" TO BROWSE, "+" AND '-" TO CHANGE VALUE, "?" FOR "HELP", "ON" TO FINISH.

9: OTHER. "MEM BACK-SPACE"" DELETES LAST WORD. "ON REPLAY" RE-TYPES MESSAGE. "SHIFT REPLAY" SPELLS LAST WORD. "SHIFT ON" FOR 2ND CONVERSATION.

Special needs

AUDITORY BROWSE

- The setup **AuditoryBrowse** allows the user to have setups, functions and the **Mem-5** memory-list spoken automatically, at a volume controlled by **Auditory vol**. This setup is a good 'learning-aid'.
- This happens anyway if you select **Speak: Every Key** or **Speak: Announce**.

SEVERAL LIGHTWRITERS

- When there are several Lightwriters in a room, it can be difficult to tell who is speaking.
- EuroTalk has 2 voices—Male and Female.
- DECtalk has 9 voices and each machine could be set up with a different voice—but a class of children are all likely to want Kit, the child's voice.
- There is a **Pitch** control, and this can be used for this purpose.

KEYBOARD

- The keyboard can be changed from QWERTY to ABCDE—see page 10.
- There are 3 setups to alter the response of the keyboard: **Key touch**, **Key repeat** and **Tremor**.
- A plug-in EXPANDED KEYBOARD is available.

TEACHING

- CHILDREN: with the **Speak: Every key** feature, each key is spoken as it is pressed, enabling children to associate the sound of a letter with its written-form.
- All keys and functions will be spoken, including **ON**, **OFF**, setups and functions, at a volume controlled by **Auditory Vol** (use a low level, to make it distinct from the 'selections and words'). The **MEM 5** memory-list will be spoken; press **MEM** to select, **Space** for next.
- During typing, press **Space** between each word, but the word won't be spoken; press **REPLAY** to 'speak the message so far'.
- Spelling: press **Shift** then **Replay** to spell the last word.

- OLDER STUDENTS: there is an easy-to-use calculator. (Maths teachers note: In addition to add, subtract, multiply, divide, the Lightwriter can calculate percentages, powers, roots and exponents).

- FOREIGN LANGUAGES: You can plug in one of our foreign-language units.
- We have made the machine fun to use with a selection of 'arcade-game' sounds in an attempt to increase the child's attention-span.
- The user can compose jingles, melodies, etc; this has a serious aspect—some users (eg aphasics) have a strong residual memory for music, and this can help them to 'associate' with the Lightwriter.

REMOTE SWITCHES

- Consider encouraging the user to start using the Lightwriter with the 2 Remote-switches. This system allows you to program them to play Direct-Memories, replay, buzz, print and so on.
- Use our Click-switches or 'Lolly' switches.

PREDICTION SWITCHES

- A particular application for the **Remote switches** is 'Show next prediction' and 'Select this prediction'.
- The setup is **Remote switch 1: 40** and **Remote switch 2: 17**.
- **Switch 1** is now a **+** key ('show next prediction'), and **Switch 2** is now **Replay** ('select this prediction').
- This does not work on scanners, because the switches are used for scanning.

BLIND

- If the setup is **Speak: Announce**, each key is spoken as it is pressed, but it will not be entered onto the display until it is pressed a second time; this means that a blind user can 'fish about' and 'confirm'—for setup details, see page 46.
- All keys and functions will be spoken, including **On**, **Off**, setups and functions, at a volume controlled by **Auditory Vol** (use a low level, to make it distinct from the 'selections, confirmations and words').
- The **MEM 5** mem-list will be spoken automatically: again, the volume is controlled by **Auditory vol**—press **Mem** when you hear the memory you want.

IN THE DARK

- A frequent need is to use the Lightwriter in the car at night—in this situation, the keyboard is unreadable.
- As described above, set **Speak: Announce**, and **Auditory Vol**.

LIMITED MOVEMENT

- A plug-in scanner is available, see our current literature.
- All our scanners can be used by single-switch, with the option to fit a second switch which cancels the current operation and starts a fresh scan.
- Alternatively, the two switches can be configured to a step-scanning system (MOVE and SELECT); this requires no timing accuracy, and this suits some disabilities.

FACILITATED COMMUNICATION

- Therapists can record a user's progress, using the macro feature; this is particularly useful in FACILITATED COMMUNICATION.
- To start the recording, press **MEM MEM Fullstop Y** then a key (eg: **Z**).
- To replay the session on-screen, setup **Mem speed: Medium** and **Volume: Off**; then press **MEM** then the key; 'Back-spaces' will be replayed, allowing you to see how often the user has made mistakes.
- To print it, set up a printer then press **MEM 6 Z P Space Y**, assuming you used **Z**.
- For printer details—see page 37.
- For macro details—see page 58.

SECTION 2: MEMORY-SYSTEM

>> This section describes the Lightwriter's powerful memory-system

- Many users will only need to use the memories at the simplest level, and these pages may be glanced through.

Overview

- The memory-system consists of a single, generalised method of storing text or keystrokes; there are seven variations on this basic theme—and there are some 'suggested examples'; users are encouraged to replace the suggested examples to suit their individual needs.

Direct-Memories	Allow you to store text in the format: Single-key=Expansion Words & Phrases are suggested examples.
Abbreviation-expansions	Allow you to store text in the format Abbreviation=Expansion or Expansion=Abbreviation
Speech-exceptions	Allow you to store text in the format !Word=Misspelling This enables you to pronounce 'special words' (names etc).
Musical-keys	Allow you to store tunes for the various system-functions such as 'ON'. There are 15 suggested examples.
Buzz	Allow you to replace any of the 5 'buzz' or 'alert' sounds with tunes. Unless replaced by a tune, these use a choice of sounds.
Tunes	Allow you to store tunes in the format Abbreviation=::nab..c+c^de...fg There are 5 suggested examples.
Macros	Allow you to record keystrokes and replay them with a few keys. **MEM 6** to **MEM Ø** are suggested examples.

- This section describes Direct-memories and Abbreviation-expansions.
- 'Musical keys' and 'Buzz' are described in section 5.
- 'Tunes' and 'Macros' are described in section 5.
- ALL memories are automatically backed up, and restored if there is a problem—see page 26.
- Longer memories may need an increased Auto-off setting, see page 49.

- Press **MEM 5** to show all the memories:

  > **Press J to go to the memories beginning with J.**
  > **Space or Back-space to browse.**
  > **Fullstop to show/hide the abbreviation, + to scroll the expansion.**
  > **Replay to 'sample', MEM to select and play at 'mem speed'.**

- To print the memories: if either **Port** is set up to **Print**, the **P**-key behaves in a special way—first, make sure that a printer is set up.

  > **Press P then Y to print <u>all</u> memories and speech-exceptions.**
  > **Press P P Y to print the <u>current</u> memory only.**
  > **Press P P P (then Space repeatedly) to view memories starting with the letter P.**

- Memories starting with a non-alpha character are shown in a special list (**MEM** then the key to the right of **?** repeatedly, **Back-space** to go back—we suggest that this list is used for tunes, macros, etc.
- Press **Fullstop** to show/hide the tune or macro to see how they are 'built'; entries starting **=::** are tunes, entries starting **=*** are macros.
- Press **MEM** to select.

- If **MEM 5** has been overwritten by a user-memory, use **MEM ?**.

RESTORE THE SUGGESTED EXAMPLES
- Memories that you store will replace a factory-suggestion in that location.
- Erasing your own memory will restore the factory-suggestion, if there is one.
- This rule applies in all 7 cases opposite.

RETROSPECTIVE SAVING
- You can save an Abbreviation-expansion <u>after</u> it has been composed.
- Put the abbreviation at <u>either end</u>—the system automatically assumes the shorter item is the abbreviation.

  > **Example: H1=HELLO or HELLO=H1**

Direct-Memories

>> Basic memories.

- These are often called 'memories'. This is incorrect; there are many types of user-memory in the Lightwriter, as described on page 18.
- 'Direct-Memories' refers to the 26 locations **Mem-A** to **Mem-Z**.
- You can also use the 10 number-keys—but you will be losing the controls on those keys; we suggest you keep these for 'temporary' use.

SAVE	Clear the display, enter your word or phrase; press MEM MEM; the Display will show Save? A to Z, +.
	Press the letter you want to store it on; the display will now show
	Save? Y=Ok; press Y to confirm—the Display will show Saved.
	Press any key other than Y to leave the old memory intact.

> **Example**   **MY NAME IS ANDREA then MEM MEM A Y**

RECALL
- MEM then the letter (or number).

REPLACE
- See MAKING CHANGES, page 24.

ERASE ONE
- See MAKING CHANGES, page 24.

ERASE ALL
- You can erase all the memories for a new user—for details, see page 79.

NUMBER-MEMORIES
- Though the Direct-Memories on the numbers can be replaced, this may not be desirable—these contain useful words and functions!
- However, all of the functions are available elsewhere—for example, if **MEM 6** is 'overwritten', then use **MEM MEM MEM P** to print.

CONTROL
- The expansion-speed of Memories is governed by **Mem speed**—for setup details, see Section 4.
- Controls:

> **To cancel the message-expansion, press On/C or Off.**
> **To pause, press and hold any other key.**

- Illustration:

> **Setup:**   **Mem speed: Slow.**
> **Mem-C (or other)**   **the memory will start to expand.**
> **Press and hold any key** **the expansion will pause (resumes when the key is released).**
> **Press On/C**   **the expansion will be aborted.**

WORDS, PHRASES, CONTROLS

- Word, Phrases & Controls are 'suggested examples' for the Memory system.
- There are 10 pre-stored Direct-Memories—you can change them if you want.
- And 10 number-memories—don't replace these unless you want to override their suggested functions.

MEM C	_PLEASE WOULD YOU PUT THE LIGHTWRITER ON CHARGE
MEM D	_I AM DEAF, PLEASE FACE ME WHILE SPEAKING
MEM G	_GOODBYE
MEM H	_HELLO HOW ARE YOU?
MEM I	_I AM SORRY
MEM M	_MY HEARING IS OK, PLEASE SPEAK NORMALLY
MEM P	_WOULD YOU PLEASE
MEM S	_SAY THAT AGAIN?
MEM T	_THANK YOU
MEM W	_WHAT IS YOUR NAME?

MEM 1	_AND
MEM 2	_YOU
MEM 3	_THE
MEM 4	_YES
MEM 5	Memory-list
MEM 6	Print (if a printer has been set up)
MEM 7	Flips speech off/on
MEM 8	["] (emphasise next word during Replay—best in DECtalk)
MEM 9	Volume down
MEM Ø	Volume up

- Note that these memories have a preceding space so that they are automatically separated from any exiting text.
- To have no 'scrolling' of the memories, set **Mem speed: Auto** or **Instant**.

RECALL
- MEM then the letter or number.

Example	**MEM W to recall WHAT IS YOUR NAME?**

REPLACE
- Clear the screen, enter your word or phrase, then MEM MEM then the key, then Y, to save your own messages instead.

Example	**Clear the screen and enter GEOFF then MEM MEM G Y.**
	MEM G will now produce GEOFF until you erase it.

HIDE
- Clear the screen, enter Space, then MEM MEM then the key, then Y.

Example	**Clear the screen then Space then MEM MEM G Y to temporarily hide GOODBYE**

RESTORE ONE
- Clear the screen, then MEM MEM then the key, then Y Y.

Example	**Clear the screen then MEM MEM G Y Y to restore GOODBYE**

RESTORE ALL
- To restore all the Words & Phrases and functions listed above, erase all user-memories—for details, see page 79.

Abbreviation-expansions

>> This powerful system has many uses—a few of them are described below.

- You can turn shorthand into longhand:

    GDBY=GOODBYE
    ACLT=ACCELERATE

- You can link messages and phrases to abbreviations:

    H1=HELP ME WITH THIS, PLEASE
    Z9=LET'S GO TO THE ZOO
    FD=APPLE-PIE AND CUSTARD
    DRK=GIVE ME A PINT OF YOUR BEST PORTER, LANDLORD!

- You can use a 'key-word' for the abbreviation—be careful to precede the word with a symbol such as **FullStop**; this means you can still type 'FOOD' or 'DRINK' as ordinary words.

    .FOOD=APPLE-PIE AND CUSTARD
    .DRINK=GIVE ME A PINT OF YOUR BEST PORTER, LANDLORD!

- You can link dates-to-appointments, names-to-addresses and phone-numbers— again, notice the use of fullstops; in the third case, the FullStop ensures that SUE.SMITH is a single word.

    .DENTIST=MON 19TH AT 2.30
    .HELEN=24 THE HIGH, HARLOW, ESSEX CM22 7DP.
    SUE.SMITH=0583 553784

SAVE
- Enter a code or keyword, then '=', then the message: (H1=HELLO, FD=APPLE PIE AND CUSTARD), then MEM MEM then + then Y.

RECALL
- Type Space (if necessary) to produce a gap, then H1 or FD (in the examples) then Space to recall according to the Abbrv-expnsn setting—see page 23.

REPLACE
- See MAKING CHANGES, page 24.

ERASE ONE
- See MAKING CHANGES, page 24.

ERASE ALL
- It is useful to be able to erase all the memories for a new user—for details, see page 79.

CONTROL

- The memory-expansion speed is governed by **Mem speed**—for setup details, see page 49.
- To speed-up, pause or cancel, see page 20.
- The **Abbrv-expnsn** setup controls if/when the system operates; there are 3 modes—for setup details, see page 49.

Abbrv-expnsn:Space	**Select a Space after H1, and your memory will expand.**
Abbrv-expnsn:Auto	**No space required after H1; BEWARE! IF YOU STORE QU=QUESTION, YOU CAN NEVER WRITE QUEEN, OR QUERY.**
Abbrv-expnsn:Off	**Prevents your memories expanding; they are safely stored until you next need them.**

- Suppose (in the example) you want to write **H1** and not **HELLO**, do you need to set **Abbrv-expnsn** to **Off**? No: to bypass the system enter **H Space 1**.
- To have no 'scrolling' of the memories, set **Mem speed: Auto** or **Instant**.

RULES

- The abbreviation must be a single-word—with punctuation and symbols, but <u>not</u> spaces; for example:

  +OH.MY+=DEAR ME, and not OH MY=DEAR ME.

- They must be TWO or MORE characters—to use one-character abbreviations use SMARTKEYS, see page 29.
- **D1**, **D.1**, **D,1**, **D+1**, **D-1** and **D:1** can all store different memories—think of them as different 'words' ... as are **J.SMITH** and **JSMITH**.
- Use abbreviations that aren't "real words"—avoid road-names and postcodes!
- Never 'refer' (eg: ARM=PLEASE LIFT MY ARM or DR=I NEED TO SEE THE DR).
- If the correct format is not used, the message will be **Cannot Save This!**
- Here is an example of the correct format:

WW2=WORLD WAR 2, then MEM MEM + Y

CHAINING

- One Abbreviation-expansion memory can call another. For example:

Store this	**L1=I LIKE SC VERY MUCH**
And this	**SC=SUGAR-COATED POPSICLES**
Resulting in	**I LIKE SUGAR-COATED POPSICLES VERY MUCH**

- The same 'chain' can be used elsewhere; you have created a "button":

Example	**IDS=I DISLIKE SC**

- If more than 4 'chains' are required, use a special 'linking' technique—see DELIVER A SPEECH.

LONG ABBREVIATIONS

- Normally, the Abbreviation-expansion system assumes that the 'shorter side' of **MC=MOTORCYCLE** or **MOTORCYCLE =MC** is the abbreviation.
- If the abbreviation is to be the same length or longer than the phrase, type <u>**Space**</u> then **ABCDE=XYZ**, then save as normal with the **MEM MEM +** command.

Example	**Save WATER=EAU WATER appears when you type EAU**
Example	**Save Space WATER=EAU EAU appears when you type WATER**

- If in doubt, use the **MEM 5** list to see what is going on; use **Fullstop** to show the abbreviation.

Making changes

>> Altering the Lightwriter memories.

SAVING

To save Direct-memories
- Clear the screen, type **ARM** (for example) , then **MEM MEM A** then **Y**.

To save an Abbreviation-expansion
- Clear the screen, type **FD=APPLE-PIE AND CUSTARD** (for example) , then **MEM MEM +** then **Y**.

REPLACING

To change a Direct-Memory
- Expand the memory (**MEM A** expands to **ARM**, for example).
- Type **RESTS** to change the display to **ARMRESTS**, then **MEM MEM A** then **Y**.

To change an Abbreviation-expansion
- Expand the memory (**FD Space** expands to **APPLE-PIE AND CUSTARD**, for example).
- Press **MEM Back-space**, then type **CREAM=FD**, then **MEM MEM +** then **Y**.
- In both cases, the User's Display will ask **Delete Old? Y=Ok**. Press **Y** to confirm.

ERASING

To delete a Direct-Memory
- Press **On/C** to clear the screen, then **MEM MEM T** (for example) then **Y**.
- The User's Display will ask **Save? Y=Ok**. Press **Y** to confirm.
- The User's Display will ask **Delete Old? Y=Ok**. Press **Y** to confirm.
- Notice that **MEM T** has reverted to **THANK YOU** (the factory-suggestion)—to get HIDE the factory-suggestion, see page 21.

To delete an Abbreviation-expansion
- Type the 3 characters **FD=** (in our example), then **MEM MEM + Y**.
- The User's Display will ask **Delete Old? Y=Ok**. Press **Y** to confirm.

DUPLICATING

To duplicate a Direct-Memory
- Expand the memory (**MEM A** expands to **ARM**, for example).
- Press **MEM MEM X** to also have the phrase both on **MEM A** and **MEM X**.
- Type **=AR** then **MEM MEM + Y** to have the phrase both on **MEM A** and **AR**.

To duplicate an abbreviation-expansion
- Expand the memory (**FD Space** expands to **APPLE-PIE AND CUSTARD**, for example).
- Press **MEM MEM Q Y** to have the phrase both on **FD** and **MEM Q**.
- Type **=AP** then **MEM MEM + Y** to have the phrase both on **FD** and **AP**.

- You cannot edit Macros, Tunes or Speech-exceptions; you must record them afresh—replacing the old one if desired.
- If you are doing so, the display will show **Delete Old? Y=Ok**—press **Y** to confirm.

Notes on the Memory-system

IDEAS

- Frequent words or phrases; names, addresses, phone numbers.
- Memos, shopping-lists ('HAM, EGGS, BREAD, PENCIL-SHARPENER').
- Courtesy ('WOULD YOU PLEASE')—fill in the rest of the sentence manually.
- Travel ('JE M'APPELLE MIKE', 'GUTEN TAG')
- Short words ('A1') are worth entering, because a space is inserted automatically after—2 keys (MEM-A) instead of 3 (A-1-Space).

PRINT THE MEMS

- If either of the ports setups is **Port:Printer**:-
- Press **Mem 5** and navigate to the memory that you want.
- Press **P** then **Y** to print *all* memories—as defined on page 18.
- Press **Space** then **Mem** to print the currently-displayed memory.
- Press **Space** then **Mem** to go to the first memory-**P**.

NOTES

- The Lightwriter does not put a space before the memory unless you insert one—this allows you to store **ILITY** on **MEM B**, so that **COMPATIB MEM B** gives **COMPATIBILITY**.
- The Lightwriter puts a space after the last word in memory—in order to speak it if the setup is **Speak: Every Word**.

MEM SPEED

- There are 7 memory speeds:

Mem speed:Auto	**Instant (or Brisk if no speech).**
Mem speed:Instant	**Memories spoken as quickly as possible and then displayed.**
Mem speed:V.fast	**Displays scroll as quickly as possible.**
Mem speed:Brisk	**Brisk.**
Mem speed:Fast	**Fast.**
Mem speed:Medium	**Medium.**
Mem speed:Slow	**Slow.**

- **Brisk** or **Instant** will only display the last 19 characters of the memory—press **Replay** to scroll it.
- For all speeds except **Auto** or **Instant**:

   Press any key except On/C or Off to pause.
   Press On/C or Off to cancel.

- For setup details, see page 49.

MANAGEMENT

- Often, you will want to recall a memory, edit or add to it, and then put it back into the same memory—if editing an important message, save a copy on a different key, in case you do something silly.
- It is a good idea to keep a few locations empty, ready for 'instant use', for example, A, B and C—this means that the next time you meet someone, you can take their address without worrying about where to put it.
- Therefore, from time to time, transfer from your 'keep-ready-for-instant-use' area to your 'main' area—reviewing the old memories first

Review	**Recall MEM A, MEM B, and so on—make a mental note of the unwanted ones.**
Transfer	**Save any memories you want to keep onto an available 'main' memory-location.**

- Remember to erase the memory in your 'keep ready for instant use' area—check that the transfer has been successful before erasing.

> **Note** **If anyone is with you, they will naturally think you are talking to them, and this can result in a great deal of confusion.**

TO AVOID THIS, ENTER 2ND CONVERSATION MODE, AND TURN THE SPEECH OFF.
OR, EXPLAIN WHAT YOU ARE GOING TO DO, OR WAIT TILL YOU ARE ALONE.

SELF-CLEARING MEMORIES

- A Memory or an Abbreviation-expansion can clear the display before being recalled—so that the typing-buffer contains that memory alone.
- To do this, the memory must begin **&CLEAR** then **Space**.

Memory	**J=&CLEAR MY NAME IS JAMIE MCPHERSON**
Abbrv-expnsn	**J1=&CLEAR MY NAME IS JAMIE MCPHERSON**

DUPLICATING THE ABBREVIATIONS

- You may want several abbreviations to produce the same expansion—for example, if you can't remember whether it was **P1** or **P2** or **P3**.
- Store **P1=PLEASE CLENCH MY FIST FOR ME, AND RAISE IT ALOFT IN A GESTURE OF DEFIANCE**.
- Then, store **P2=P1**, **P3=P1**, **P4=P1**, etc.

SIZE

- Each Memory (or Abbreviation-expansion) is limited to 250 characters—including spaces.
- The machine will make an Alert sound after the 230th character as a warning—save the message to memory as soon as possible after the warning, if it will be needed again.
- Selections after the 250th will delete the ones at the beginning—saving at this stage means that you'll be saving the last 250 characters.
- The total memory capacity (for ALL memories) is 14k characters ("bytes").
- When the amount of memory free is less than **4%**, each new save will carry a warning **Memory Nearly Full.**
- When full, the message will be NOT saved; Mem full!.
- Press MEM MEM MEM F ('free') to show the percentage of memory unused.

BACKUPS

- The machine automatically makes a backup ('duplicate') of ALL your Memories in a high-security memory-device—similar to an aircraft's black-box.
- These backups will not be lost if the battery runs flat or if the machine has a fault— the backups will be re-loaded automatically!
- If a memory is changed, all the others ones are 'shuffled' at turn-off time to make room—this can take a few seconds if the memories are large.
- The backup capacity is 14k characters—the same size as the 'working-memory'.
- When you turn the machine off, watch the machine **Backing Up** new or changed memories—for a fuller discussion, see MEMORY AREAS.
- If the machine has a fault, watch the machine **Restoring**—magic!
- Backups can be transferred to any other model with **V5.x** software if this machine is damaged—another application is, you may want to trade-in for another model, taking your memories with you.
- You can decide <u>when</u> to backup—for setup details, see page 46.
- You cannot decide <u>what</u> gets backed up—the system makes a duplicate of the ENTIRE memory-system, that is its purpose.
- You can use the Backup-system to undo accidental memory-saves—for details, see page 79.

MACROS

- This system allows you to perform the actions that you need frequently—you need this if you find yourself saying 'I wish I didn't have to keep pressing twelve keys to perform a task I do often'.

- Pre-stored examples are **MEM 6, MEM 7, MEM 8, MEM 9** and **MEM Ø**; replace these if you wish.

- Many of the functions in this Manual involve several keys; you may want to record these 'key-sequences', to make the job easier in future—remember, you can always do it 'longhand', too.

- Another use for Macros is to change several setups at once, for example if you regularly change the Tremor setting according to the time of day, see page 42.

- To record a macro, clear the screen, then **MEM MEM Fullstop** then **Y**, then the key to store it on, for example **A**, (and **Y** again if asked); then type the keys you wish to record, and finally press **Off** to stop recording.

- To play the macro, press **MEM A** (for example).

- Macros of the form **MEM [key]** share the same access-method as Direct-Memories: a choice must therefore be made: a key cannot be used both for a Memory and for a Macro—you can store macros in a different way which does not use up a Memory-key; for details, see page 58.

- We have stored a simple example which changes 'case'; to use it, press **MEM** then the key to the right of **?**, navigate to it using **Space** and **Back-space**, then:

  > **Fullstop to show/hide the 'body' of the macro, + to scroll it (to see how it was 'built').
  > MEM to play it once.**

MONITOR

- Therapists can use the key-macro system to record a user's activity—particularly useful in Facilitated Communication.

- To start the recording: clear the screen, enter **+JOHN.12DEC=** (for example), then **MEM MEM Fullstop** then **Y**.

- The machine will now record every key until it is switched off, or until it turns off automatically—the machine should be well charged, and you should set **Auto off (mins): 60**.

- The first 250 characters that are typed will be recorded.

- To replay the session on-screen, press **MEM** then the key to the right of **?**, and navigate to **+JOHN.12DEC**, then press **MEM**—Back-spaces will be replayed, allowing you to see how often the user has made mistakes.

- To print the session, make sure that a printer is set up, then press **MEM** then the key to the right of **?**, and navigate to **+JOHN.12DEC**, then press **P Space Y.**

Q **Are MEM 6, MEM 7, MEM 9 and MEM Ø macros?**
A **Yes (so is +CHANGE.CASE in the 'Mem-£' list): macros are useful!**

Q **I don't want them, can I get rid of them?**
A **Save a Space on each of those keys to 'hide' them.**

Q **MEM 8 looks strange, what's that all about?**
A **It is the command required by the DECtalk system to emphasise the next word when you press Replay; it works on EuroTalk too, very subtly.**

Q **MEM 9 is factory-programmed to be 'Volume down'; Volume also appears in the set-up list; what's the difference?**
A **The set-up list will always be there; MEM 9 is a suggested shortcut, but it can be removed or replaced and therefore may not be available.**

Q **What happens if MEM 9 is replaced? Is it lost for good?**
A **No: it is hidden by what you've replaced it with: it will reappear if the replacing-memory is erased; this also applies to the Words & Phrases, suggested Tunes and Musical-keys and so on.**

Q **How do I store memories in lower-case?**
A **Set the machine to CASE: lower, type and save. If already occupied (by an UPPER- or lower-case memory), you will be asked if you want to replace it.**

Q **Not sure what's where, can I have a list?**
A **Press MEM 5, see LIST.**

Q **Mem Y contains 'rubbish'; why is this?**
A **The screen-prompt Save? Y=Ok means that it is particularly easy to accidentally save abbreviation expansions, tunes or macros on Y.**

Speedwriting

- You can store your own favourite abbreviations:

KBD	**Keyboard**
S.T	**Speech Therapist**

- To store, type:

  KBD=Keyboard

- Press **MEM MEM** then **+**.
- You are using the Abbreviation-Expansion system—for details, see page 22.
- Note that the 2nd example uses the abbreviation **S.T** not **ST**—because **ST** is also commonly used for 'street' (and 'saint'!).

SmartKeys

- In the **SmartKeys** mode, each key will play the Direct-Memory stored on that key—but abbreviation-expansions are inaccessible in this mode.
- This allows low-cognitive users to press a single key to deliver a message—up to 36 such messages are possible.
- The keys could have small icons stuck on—house, car, food, school.
- To enable the system, turn **SmartKeys: On**—for setup details, see page 46.
- You should also set **Mem speed:Auto** for smooth speech output.
- **P** (or **MEM P**) will produce **WOULD YOU PLEASE**, unless replaced.
- **1** (or **MEM 1**) will produce **AND**, unless replaced.
- Unless you replace them, **MEM 6** to **MEM Ø** will execute a one-key command:

5	**Memory list**
6	**Print**
7	**Speech off/on**
8	**Emphasise the next word for DECtalk**
9	**Speech quieter**
Ø	**Speech louder**

- Keys without Direct-Memories on them will be entered as normal; if you wish **A** to display <u>and speak</u> **A**, you should store **A** as a memory on key **A**:

  Clear the screen
  Type A
  Press MEM MEM A Y

- You might prefer **A** to emit a 'bip'; to do this, save a one-note tune on them, for example:

  Clear the screen
  Type ::9c (for a low note), or ::9^C (for a high note)
  Press MEM MEM A Y

- You can have tune(s) on the keys—for details, see page 62.

NOTES

- To *temporarily* disable SmartKeys (eg: to change the Direct-Memories, or to type normal messages), press **MEM** then **Fullstop**—to revert to the SmartKeys mode, press **Off** then **On**.
- To *permanently* disable SmartKeys (to revert to normal typing), press **MEM** then **Replay** then **S** repeatedly until the setup is **SmartKeys**, then **Ø**.

Deliver a speech

- To deliver a speech, you need to store memories; these can be created on the Lightwriter—or downloaded from a computer: for details, see page 56.
- The memories must be linked so that each one calls the next; the need for this is because each memory is limited to 250 characters—allow 10 for the abbreviation and the 'link', leaving approx 240 for the 'message'.
- Over 80 of these blocks can be stored—resulting in a 10-20 minute speech.
- Use **MEM MEM MEM F** to check how much memory is free.
- In the following examples, _ means **Space**; **+** means the **+\-** key, not the word "and".

> **Z1=LADIES_AND_GENTLEMEN,_GOOD_EVENING! I WOULD LIKE..._&LINK_Z2_** then
> **MEM MEM + Y Y**
> **Z2=ONCE_UPON_A_TIME,_A_BIG ... (up to 240 characters) _&WAIT _&LINK_Z23_** then
> **MEM MEM + Y**
> **Z23=IS_IT_NOT_TRUE,_CITIZENS, ... (up to 240 characters) _&LINK_Z49_** then MEM MEM
> **+ Y**

- **Z1 Space** will now play the entire speech.
- **Z14 Space** (for example) will play from memory **Z14**.

- For best speech 'flow', set **Mem speed: Auto**.
- If the memories won't link, check that the setup is **Abbrv-expnsn: Space**.
- To turn off unexpected sounds when you play the speech, set **Alert sounds: None**.
- Experiment with **Speech rate** and **Speech gaps** for best clarity.

PREPARE

- Who will you be speaking to? How many people? For how long? What about?
- Has the venue got a PA system + a 3.5mm mono adaptor—if not, we sell a system.
- Play each memory, edit them, press Replay, save them 'over the top of' the old ones; do this repeatedly until you are happy with them—allow plenty of time.
- There will be short gaps between the memories, if they end with a FullStop.
- For longer gaps, do not link the next memory—recall the next memory 'when the laughter has died down', and continue linking until the next 'long gap'.
- DECtalk users can change voices mid-sentence—this can be very effective indeed.

READY?

- When complete, charge the battery—and ensure the **ON** and **Off** keys will not be pressed in transit! Fit a keyguard if you have one.
- This requires 3 keys (**On/C**, **MEM**, **1**); this can be reduced to a single key-press if your disability is severe, or if you are very nervous—for details, see page 61.
- The Master of Ceremonies will be more nervous than you are: give him a printout of your speech!—you need this anyway, just in case the Lightwriter goes wrong!

STAY COOL

- In the examples, memories are linked—each one calls the next.
- This means that you will be delivering the entire speech with a couple of keys! You can therefore have a few drinks before the speech, you will enjoy the whole experience all the more—the able-bodied do not have this power!

EXAMPLE

- This was a radio-interview given by Toby, on a DECtalk machine.
- The speech runs for about 75 seconds if **Speech rate** is **Normal**.
- Other setups were **Mem speed: Instant**, and **Sound vol: Off** to prevent any warnings or random clicks.
- Each of these 6 blocks was saved:

> **Z1=HELLO, BEFORE I INVENTED THE LIGHTWRITER, I HAD TO USE AN ALPHABET-BOARD, WHICH IS FAIRLY SLOW AND REQUIRES GOOD CO-OPERATION BY THE PERSON YOU ARE SPEAKING TO. IT IS NOT POSSIBLE TO TELL A JOKE ON AN ALPHABET-BOARD. &LINK Z1**
>
> **Z1=I WANTED SOMETHING BETTER, AND DECIDED TO PUT MY ENGINEERING SKILLS INTO ACTION, TO BUILD MY OWN ["] COMMUNICATION AID. &LINK Z2**
>
> **Z2=I WANTED TO MAKE IT AS SMALL AS POSSIBLE, SO I COULD TAKE IT WITH ME WHERE-EVER I ["] WENT. I DECIDED TO MAKE A TYPEWRITER BUT WITH AN ILLUMINATED DISPLAY INSTEAD OF A PRINTED OUTPUT, SO I CALLED IT A ["] LIGHTWRITER. &LINK Z3**
>
> **Z3=THE ADDITION OF SPEECH HELPED ME RUN MY BUSINESS, AS I COULD NOW TALK OVER THE PHONE DIRECTLY, WITHOUT HAVING SOMEONE ELSE HAVING TO MAKE THE CALL ["] 4 ME. &LINK Z4**
>
> **Z4=I COULD NOW TALK TO OTHER LIGHTWRITER USERS AND SPEECH THERAPISTS, OVER THE PHONE, AND GET DIRECT FEEDBACK ABOUT THEIR NEEDS, AND HOW LIGHTWRITERS COULD BE IMPROVED IN THE FUTURE. &LINK Z5**
>
> **Z5=AND NOW FOR THAT JOKE. WHAT DO YOU CALL A FLY WITH NO ["] WINNGS? A ["] WALK. &LINK Z6**
>
> **Z6=::2Bg+...**

- **Z1 Space** was used to play the entire talk; one might have expected a 'rehearsal', but the first time the radio-presenter heard it was live on air—he seemed a bit nervous, but fortunately I adhered to my written script!

NOTES

- The speech was given with a **DECtalk** machine, hence the **["]** stress-marks.
- Note the stress-marks, and deliberate mis-spellings; these things can only be perfected by experiment, re-saving as you go when you are happy with the new version; use the editing features—for details, see page 45.
- **Z6** is a loony-tune, to wake the listeners up again.
- Memory **Z3** ends with **&LINK Z4** (it will call memory Z4, which will in turn call Z5 and Z6)**.** If you want to disable this temporarily, set **Abbrv-Expnsn: Off**.
- If the speech will be large, your other day-to-day memories should be 'dumped' onto a computer, and the memory system erased before creating the speech—reload your memories after the speed.

SUMMARY

- You can see how powerful the memory-system can be!
- Try it—you may not want to give a speech, but you are certain to learn new things about the Lightwriter.

SECTION 3: USER'S GUIDE

>> This section describes other Lightwriter features.

SETUPS

- Before we go on, we need to discuss setups—these allow you to configure the machine to suit a wide variety of users.
- Press **MEM Replay** to enter the setup-system at the 'User level', and **Shift Fullstop** to go to the 'Advanced level'; (there is also an 'Expert level', as you will see later).
- At all levels, use **Fullstop**, **Space** and **Back-space** to navigate the list, and **+** to change the current setup; press **On/C** to save-and-quit.
- There is a shortcut: **K K K K K** will browse all setups beginning with **K**—this shortcut method will be used throughout the rest of the Manual.
- Full details later on Section 4—watch the display while you do it, you can probably work out what's going on.

PORTS

- We also need to discuss ports—these allow you to connect external devices.
- The ports have many powerful uses—for details, see page 56.
- If your machine has one 9-way connector, it's simple—set it up for Printers, External displays or keyboard, Scanner, etc.
- Its setup is **Port 1**; to access it, press **MEM Replay** then **P** to find the setup, and **+** to change its value.

- If your machine has two 9-way connectors, you can have two external devices connected at the same time—for example, a Printer and a Scanner.
- To access the 2nd port setup, press **On/C MEM Replay P P** then **+** repeatedly—this setup will be hidden if the port is not fitted.
- In this Manual, **Port** means either port—according to the one in use.
- If the 2nd Port is fitted, other setups starting with **P** (eg **Predict after**) will need an extra **P** to access them—**MEM Replay P P P**, not **MEM Replay P P P**.

Speech

BASICS

- You can set the volume and voice of the speech system.
- You can speak each word as it is typed, or wait till you select **Replay**.
- You can have each key spoken as it is pressed—for education.
- You can have each key spoken as it is pressed, but not displayed until it is pressed a second time—for the blind.
- You can spell the word before the cursor—useful over the phone.
- You can always speak what is on the display by pressing Replay.
- You can plug in a range of external speakers.
- You can send the speech to an external speech-synthesiser.
- You can fine-tune the speech characteristics—for setup details, see Section 4.
- You can turn the speech system off temporarily.

VOLUME

- You can 'volume-down' and 'volume-up' with **MEM 9** and **MEM Ø** respectively.
- But as you may have already gathered, these macros may have been replaced by the user, in which case you must use the **Volume** setup—for setup details, see Section 4.
- You can flip the speech off with **MEM 7**, and flip it on again with **MEM 7** (it will turn on again automatically, the next time you turn the machine on).
- More volume is achieved by connecting one of our external speakers—details in our current literature.

SPEAK

- Models with speech can speak in 4 ways.

Speak:Each Word	**The normal setting, this holds the listener's attention as you type.**
Speak:Every key	**Every key is spoken, useful for education.**
Speak:Announce	**Each key is spoken but not displayed until pressed again, for the blind.**
Speak:Replay only	**No speech until you press the Replay key.**

- **Each word** speaks after each word (press **Space**), to hold the listener's attention.
- **Every key** speaks each key, setup, function, etc; press **Replay** if you want to hear 'the message so far'.
- **Announce** speaks each key without displaying it; if the key is pressed a 2nd time it will then be entered on the display, allowing the blind to 'fish about' and 'confirm'; this setup-option is added to the **Speak** list when at the **EXPERT** level—see page 46. For other features for the blind, see page 17.
- **Replay only** does not speak until you press **Replay**. It will then speak the entire message with maximum smoothness—but has the disadvantage that there is a long silence while the user types and chortles; it is usually less spontaneous.
- **Each key** and **Announce** volume are selected by **Auditory vol**—for setup details, see Section 4.
- **Announce** will confirm the word at <u>speech</u>-volume.
- For **Replay only, Each key** and **Announce**: select a **Space** between each word, but the word won't be spoken; press **Replay** to 'speak the message so far'.

SAY THAT AGAIN

- Press the **Replay-key** to repeat the message—see page 42.

SPEECH EXCEPTIONS

- If the speech system cannot pronounce a word correctly, you can store it as a 'speech-exception'—for example, **SEAN**.
- Press **On/C,** then **Shift 1** to produce **!** then the incorrectly-pronounced word, then **=** then a guess at the 'phonetic spelling', then **Replay**.

> | **Example** | !SEAN=SHORR

- That's better, but the ending could be improved. Press **Back-space** TWICE to get rid of the **R**, type **N Replay**. Good!

> | **Example** | !SEAN=SHORN

- To save it: press **MEM MEM +**; now, every time you type **SEAN** it will be pronounced correctly—until erased as follows.
- To erase it: type **!SEAN =** then press **MEM MEM Y Y**: you can erase all speech-exceptions, but this will also erase all user-memories—for details, see page 79.
- You can list the speech-exceptions you have saved: press **MEM MEM MEM E**, then Space or Back-space repeatedly.

SPECIALS

- The speech-systems can cope with some common words and numbers:

> | **Try these:** | **IM, ID, WHERES, HES, HED, WERENT, HAVENT, ARENT, 9.876, 1st, 123rd, T3M, £4.31, $839.99, MR, MRS, MS, DR, PROF, RD, ST, AVE, CRES, PK.**

- DECtalk requires a **Fullstop** after abbreviations (**MR.** not **MR**; **ETC.** not **ETC**).

PAUSES

- There is a short pause after a **Comma**, and a longer pause after a **Fullstop**.
- You can also put pauses between each word, using the **Speech gaps** setup—for setup details, see Section 4.
- Pauses take effect during 'Replay', not while you are typing—the pauses make speech less 'natural', but it can be more intelligible; experiment!

DECTALK

- To achieve the superb intonation and 'flow' of DECtalk, the sentence must be completed, then replayed.
- To stress a word during replay, precede it by **["]**.

> | **Example** | ME ["] AND YOU. ME AND ["] YOU. <Replay>

- For a demonstration, select **Mem speed: Instant, On/C** then type **DEMO1**.
- For convenience, **MEM 8** contains the **["]** control-code, with all its own 'spaces' in—thus saving you typing a space.
- As you have seen, factory-programmed Direct-Memories can be replaced by the user—so, **MEM 8** may not behave as described.
- Put punctuation in the sentence (Commas, Fullstops, Question-marks, Brackets, Exclamation-marks, etc).
- When you press **Replay**, DECtalk will scan the sentence for syntax, punctuation and control-codes.
- DECtalk can change voices in mid sentence—for details, see page 60.
- The final Fullstop can normally be omitted—DECtalk interprets "no more text" as "end of sentence", though in rare cases a Fullstop will change the phrasing.

MULTIVOICE

- These models can be used with the MultiVoice (external DECtalk unit).
- The setups are **Speech: DECtalk** and **Port: Speech**—for details, see page 60.
- The MultiVoice can be programmed from the Lightwriter—see our MultiVoice Handbook.
- Internal speech can be retained (for bi-lingual speech); simply re-select **EuroTalk** and **Language** (for example), and set the port(s) for anything except **Speech**.
- You can create a macro to do all 3 setup-changes at once.

DATES

- 4-figure numbers in the range 1900 to 2009 are assumed to be dates. However DECtalk will speak these as a number, if the comma is inserted (**1,956**).
- 4-figure numbers outside this range are assumed not to be dates, and are spoken as numbers (without the need for a comma for DECtalk).
- Babile-Infovox. 4-fig numbers between 1000 and 1999. Space if 20 15.

PHONE

- For phone use, fit our external speaker, and use a loud-speaking phone—from us or from high street shops.

SPELL ONE WORD

- Over the phone, or in the classroom, it is often useful to spell out a word.
- Press **Shift Replay** to spell the word before the cursor.

EXTERNAL SPEAKER

- You can connect an external speaker—for details, see page 56.

CONTROLS

- Press **MEM Ø**, **MEM Ø**, **MEM Ø** a few times to increase the volume—at the maximum level, the Lightwriter will beep.
- Press **MEM 9**, **MEM 9**, **MEM 9** a few times to decrease the volume; the minimum is **Volume: Off**—if the speech system does not work, this may be the reason.
- The following setups control the speech system:

Volume	**Select the volume—for setup details, see Section 4.**
Speech	**Select external speech synthesiser—for details, see page 46.**
Voice	**Select male or female—for setup details, see Section 4.**
Pitch	**Select the speech-pitch—for setup details, see Section 4.**
Speak	**Select when to speak—for setup details, see Section 4.**
Speech rate	**Select the speed that each word is spoken—for details, see Section 4.**
Speech gaps	**Select the gap between each word—for setup details, see Section 4.**
Language	**Select the language, when purchased—for details, see page 46.**

FLUIDITY

- To speak the message as smoothly as possible, press **Replay**—this makes a significant difference with DECtalk: it can only "parse" (read) the sentence and provide "prosody" (intonation) if the sentence is spoken as a whole.
- **Speech gaps: None** is normally best.

PROBLEMS?

- **MEM-9** and **MEM-Ø** don't control the volume? Use setups—for details, see Section 4.
- For internal speech to work, BOTH Port setups must NOT be Port 1 or 2:Speech— because then the Lightwriter will only send 'speech' to the Port, whether a synthesiser is present or not.
- If problems, check the Speech setup, see page 60.
- See also TROUBLE-SHOOTING at end of Manual.

2nd Conversation

- It is often useful to 'hold two conversations at once'—for example "and then I went - milk, no sugar - to Hong Kong"
- With the machine already 'on', press the shift-key (bottom left) then **On/C—**a cross-hatch indicates the 2nd Conversation mode.
- The 1st conversation ("and then I went") is frozen on the **Far Display** and the 2nd Conversation ("milk, no sugar") is entered on the **User's Display** only, for privacy—useful for 'private' messages, whispers, insults etc.
- The 2nd Conversation will be 'cleared' if you press **On/C**—this does not affect the 1st conversation.
- If you do clear the 2nd Conversation accidentally, or if you wish to recall the last session when you switch on, press **Replay**—if it is the first key after **On/C**, the message will come back.
- Press **Shift** then **On/C** to revert to the main conversation—your first message will reappear.
- The memory-system and calculator are available in the 2nd conversation buffer—this means you can do 'private work' without interrupting others, if you turn speech-volume off.
- Another application is to enter the word **EXPERT** in the 2nd conversation buffer, and use the Expert-setups without affecting messages in the 1st Conversation buffer.
- Or, use it to enter speech-exceptions while composing a speech!

Print

- Hardware setup:

Miniprinter	**Connect the printer to the Lightwriter.**
HP Deskjet or similar	**Remove all the protective cardboard and plastic; put paper in it if appropriate; connect the printer to the mains if necessary, and connect the printer to the Lightwriter, with one of our Interface-leads.**

- Software setup:

Lightwriter	**Press MEM Replay Shift Fullstop then P repeatedly until the setup is Port, then + repeatedly to select Printer; then P repeatedly until the setup is Printer, then + repeatedly to select your printer.**

- Press **MEM 6** to send the message on the **Displays** to the printer—if the user has used **MEM 6** to store a memory of their own, you can use **MEM MEM MEM P** instead.
- If the printer has font and style controls, use them to get the results you want—for setup details, see page 39.
- Use the memories to store text for printing later: press **MEM H MEM 6** to print memory-H, **MEM F MEM 6** to print <u>that</u> memory, and so on.

… MiniPrinter

- Select **Port: Printer** and **Printer: MiniPrintr**.
- The printer is turned on and off by the Lightwriter; it consumes very little power unless printing, and can therefore be left permanently plugged into the ' Lightwriter.
- Instructions are supplied with the MiniPrinter.
- To advance the paper, press **Feed**—or, clear the screen, enter a fullstop, and print it: this will feed 4 lines.

- When the low battery light comes on, charge the printer overnight—any Lightwriter charger is suitable.

- This may be ignored except when used with Lightwriters SL20 or SL30.
- Other models control the style via setups, see Section 4.

- Press the **FEED** button briefly (if the motor stays on, press **FEED** or **ON** to cancel).

- Hold the **FEED** button down for a few seconds—the motor will then stay on for a while, allowing you to feed a new roll of paper in one-handed; to cancel, press **FEED** or **ON**.
- The paper-roll is a standard 57 x 57 adding-machine roll; the ribbon is a "standard" Epson part.
- Both are available from us, if unobtainable.

… Epson-compatibles

- Select Port: Printer and Printer: "Epson"—and Style if desired.
- The printer must be Epson-compatible—a few are not, but most are.
- Instructions are supplied with our 80-column printer—copies on request.

DESKJET AND LASERJET

- Select Port: Printer and Printer: Deskjet or Printer: Laserjet—and Style if desired.
- Save everything that you wish to print into the memory-system—you don't have to create memories, but this makes it easier to do 'trial-and-error' printouts:

MEM 1	DEAR SIR,
MEM 2	THANKS FOR YOUR LETTER.
MEM 3	THE ANSWER IS NO. BYE-BYE!

- Now press the keys in the left column:

MEM Replay PP Ø On/C	The following text will be Normal (watch the display!)
On/C MEM 1	DEAR SIR,
MEM 6	Sends Mem-1 to the printer
On/C MEM 6	Sends a new line to the printer
MEM Replay PP + On/C	The following text will be Bold
On/C MEM 2	THANKS FOR YOUR LETTER.
MEM 6	Sends Mem-2 to the printer
On/C MEM 6	Sends a new line to the printer
MEM 6	Sends another new line to the printer
MEM Replay PP + On/C	The following text will be Italic
MEM Replay CC + On/C	The following text will be in the next colour
On/C MEM 3	THE ANSWER IS NO. BYE-BYE!
MEM 6	Sends Mem-3 to the printer
On/C	Clear the screen
Fullstop MEM 6	Print a fullstop=finished composing, print the whole page!

- Although we say 'press **P** twice' (for example), you may need to press **P** a third time on some models—watch the display.
- This type of printer usually does nothing until the last step—up till then, you are loading the printer's memory, and there may be a humming noise associated with this: but it is not printing yet.
- Experiment to get the effect you want—you can get very professional results.
- The above can be saved as a key-macro, if several copies are needed.
- Instructions are supplied with our Deskjets—copies on request.

TABS

- Text can be indented with spaces—put 40 spaces in a memory to have your address start 'on the right' by a set amount.
- There is no facility for tabulation as found on typewriters and computers.

PRINT 'HELPS'

- You can print the on-line 'help'—see page 15.

PRINT MEMORIES

- You can print the memories and speech-exceptions—see page 25.

EDITING

- The editing feature is particularly useful when printing—see page 45.

LINE-FEED & FORM-FEED

- The Lightwriter can send a new-line—press **On/C MEM 6.**
- The Lightwriter can advance a page (80-column Epson-compatible printers, Laser/Deskjet only): clear the screen then type **Fullstop MEM 6**.
- For 80-column Epson-compatible printers fitted with a cut-sheet feeder, the next sheet will feed automatically upon completion of a page—in other words, you don't need to advance a page, it is automatic.

STYLE

- Press **MEM Replay P P** then **+** repeatedly to select the **Print** style (available on the MiniPrinter and <u>some</u> other printers).
- The Lightwriter controls the style via setups, see Section 4.
- The selected style will apply to all following text, until you select a different style. A macro can be created to step to another style—see page 58.

COLOUR

- Most modern computer-printers support colour-printing.
- Select **Port (?): Deskjet-C**; the setup **Colour** will now be added.
- The selected colour will apply to all following text, until you select a different colour. A macro can be created to step to another colour—see page 58.
- If you select **Colour: Black** with single-cartridge printers such as H-P 6<u>00</u>, a helper should fit the black cartridge—these are 'blacker', and cheaper to replace than colour.
- If you select **Colour: Black** with dual-cartridge printers such as H-P 6<u>60</u>, it will automatically select the black cartridge.

PRINTERS SUPPORTED

- MiniPrinter, Datac (predecessor to MiniPrinter).
- Any Epson-compatible using the so-called "Escape-@ command set" ... this means the vast majority of dot-matrix printers, bubble-jets, etc etc—use the general print-driver **Print: "Epson"**).
- Some printers using one of the Hewlett-packard PCL page-description languages— HP Deskjet, Laserjet, or (many) compatibles.
- If you have a printer—try it! It may not work, but you won't damage it.

PROBLEMS?

- Ensure that the Lightwriter setup is **Port(?): Printer** and **Printer: [?]** (unnecessary for SL20 or SL30).
- If, when attempting to print, the message is **Printer not Selected!** then the Port is set up wrongly; you need to set it to **Printer**—for setup details, see Section 4.
- If **Port 1** is set to **Printer**, a printer fitted to the 2nd Port will not work—because the Lightwriter will 'print' to Port(1), whether or not a printer is present.
- You must use one of our printer cables—the Serial-to-Parallel version, unless the printer is serial-only (and this is rare).
- See also TROUBLE-SHOOTING at end of Manual.

Word prediction

>> All models have word-prediction (in most languages).

- There is a simple predictor, for:

  Slow typists.
  Headpointer users.
  Scan users.
  People with poor spelling skills.
  People who have difficulty finishing words.

- You can have it predict after **0**, **1**, **2**, or **3** letters: the setup is **Predict After**—for setup details, see page 49.
- You can use external switches to select next/previous ('+/minus')—see page 61.
- To turn off the prediction-system, press **MEM Replay P P P (P) Ø On/C**.
- Consideration should be given as to whether the '+/minus' technique is used; in most cases this is slower than typing another character and getting a more accurate list—however, it is educational.
- If a prediction is selected when the setup is **Speak: Replay only**, it will be spoken; to avoid this, select **Replay: Speak**.

KEYBOARD

- If the word you want is shown, press **Replay** to select it.
- If the word you want is not shown, type the next character in your word and a more accurate prediction-list will be offered.
- If you want to see more predictions, press **+** repeatedly—and 'minus' to go back to previous predictions.
- If set to **Predict after: 1**, a letter followed by **Replay** will give you 26 common A-Z words—memorise them for speed. For example:

Press	**I Space D Replay K Replay E Replay ....**

SL86/87 PREDICTIONS

- The scan-screen can display 8 predictions instead of the scanner.
- Setups: **Kbd screen: Predict** and **Predictions: 1**, **2** or **3**—for details, see page 49. The Lightwriter may need to be turned off and On to make the predictions appear.
- To select a prediction:

Either	**Press key1 to key8 (eg: '5' selects the 5th prediction).**
Or	**Insert a scan-switch in Switch1; scanning of the 8 predictions will start when the switch is pressed; press again to select, double-click to restart—scan-setups apply, see page 68.**

- If you want to see more prediction-screens, press **+** repeatedly—and 'minus' to go back to previous prediction-screens.

'Scan' screen

>> Some models have a multi-line display.

- On SL85 this sits where the keyboard would be on SL35.
- On SL87 this is mounted at the back of the unit, facing the user.
- It also available as a stand-alone unit (Plug-in Scan module).
- This can be set up in one of 5 ways:

MESSAGE

- The message can be duplicated on the scan-screen, in a choice of 3 modes:

  4 lines of small text
  2 lines of medium text
  1 line of large text

- Setups: **Kbd screen: Small**, **Medium** or **Large**—for details, see page 49.
- On SL85, this necessitates Morse input, see page 72.

PREDICTIONS (WITHOUT SCANNER)

- When entering text via keyboard or Morse, you can display 8 predictions.
- To select a prediction:

  Either   **Press key1 to key8 (eg: '5' selects the 5th prediction).**

  Or   **Insert a scan-switch in Switch1; scanning of the 8 predictions will start when the switch is pressed; press again to select—scan-setups apply, see page 68.**

- If you want to see more predictions, press **+** repeatedly—and 'minus' to go back to previous prediction-screens.
- Setups: **Kbd screen: Predict** and **Predictions: 1**, **2** or **3**—for details, see page 49.

PREDICTIONS (WITH SCANNER)

- When using scanner, you can display 4 predictions, using the same basic system—for details, see page 68.
- For scan, insert a plug-in switch—for details, see page 6.

Other

>> The Lightwriter has many powerful features, to help you communicate more effectively; take the time to learn them:

KEY TOUCH

- The **Key touch** setup ignores keys for an adjustable time; this means that the keys must be 'held down'—for setup details, see Section 4.
- The setup makes the keys more 'deliberate'—this can be useful for some disabilities.
- It also has the apparent effect of making the keys 'feel stiffer'—use this if you prefer a heavier keyboard.

TREMOR

- The **Tremor** setup accepts the first key-press and then ignores that key for an adjustable time—for setup details, see Section 4.
- This prevents unwwanntted chaaarrrrrrrrrrrrrrrracttters if you have shaky fingers—eg Parkinson's Disease.

REPLAY

- You can alter the way the **Replay** key works, using the **Replay** setup; there are 4 replay modes—for setup details, see Section 4.

Replay:Scroll	The key clears the screen, retypes at Mem speed: Brisk, then speaks the buffer fluently. Any key pauses the retyping.
Replay:Re-type	The message will scroll across the screen at Mem speed—models without speech are always in this mode. Similar to Scroll, but in this instance, at slower mem-speeds the speech is word - by - word.
Replay:Speak	The message will be spoken as smoothly as possible.
Replay:Fast	The message will scroll across the screen at the Mem speed:V Fast setup, then it will be spoken as smoothly as possible.

- In all 4 modes:

To cancel the message-scroll, press On/C or Off.
To 'pause', press and hold any key (unavailable if the setup is Mem speed: Auto or Instant).

MEM CONTROL

- Normally, if you press any key except **On/C** or **Off** you will 'pause' a memory-recall or a re-type.
- If this setup is changed to **Mem control: Add**, your key-presses will be added to the end of the memory-recall or replay—for setup details, see page 46.
- This means that you can be typing while the machine is scrolling the memory, in order to save time:

Example	**MEM P G O Space T O**
Result	**WOULD YOU PLEASE GO TO**

CALCULATOR

- Press **On/C** to clear the display; enter the sum to be calculated, then **=** (**Shift 4**).
- If incorrectly entered, the message will be **Can't Calculate!**
- Equations can be printed, using **MEM 6**.
- Equations can be stored in memory! Compose the calculation, then save it as for a normal message—and recall it in the regular way.
- Equations can be spoken, but it slows the calculation down. To increase the speed of the calculator, turn speech off using **MEM 7**.
- Nb: Previously, calculate was **MEM-?**; now, it is **=**.

Addition	3+3+5+5 then =	now press **Replay**
Subtraction	**6-2** then **=**	press **Shift** then **+** to get **-**
Multiplication	4x2.7 then =	press the letter 'x' for **x**
Division	10/5 then =	press **Shift** then **3** to get **/**
Percent	68+5% then =	press **Shift** then **5** to get **%**
Squares or cubes	4xx2 or 4xx3 then =	any power: **4xx5**, etc.
Roots	4xx(1/2) or 4xx(1/3)　then =	any power: **4xx(1/5)**, etc.
Exponents	5x9e8 or 7x2e-2　then =	for mathematicians only!

- **Parsing**: Operations are carried out left-to-right, except that operations inside brackets are carried out first; thus **(2+4)x3=18** and **2+(4x3)=14**.
- **68.95+17.5%** (for example) gives the VAT-inclusive price.
- **68x5%** (for example) does not work; do it this way: **68x5/100** or **68x0.05**.
- Decimal places: Calculations are displayed to 2-DP (10/3=3.33, not 3.33333333333...); the number of DP can be altered—for details, see page 46.
- Exponents: 9e8 means "9 times (10 to the power of 8)"; 2e-2 means "2 times (10 to the power of minus 2)". Note that 2e-3=0.00 (because calculations are displayed to 2 decimal-places!!).

CASE

- If the setup is **Case:UPPER,** characters appear in UPPER-case, for legibility.
- If **Case:lower**, they will be in lower-case—for setup details, see Section 4.
- Changing this setup will affect new selections and memory-recalls—it won't alter what's already on-screen!
- While in lower-case mode, precede a letter by **Shift** to get that letter in UPPER-case—and press **Shift** twice to get <u>all</u> ensuing letters in UPPER-case, until the shift-mode is cancelled (by pressing **Shift** a 3rd time).
- When the setup is **Text:Smart**, the first letter you type and then each letter after a Fullstop will automatically be in UPPER case.
- Lower-case memories will be displayed in UPPER- or lower-case, according to the current setup—but UPPER-case memories will always be displayed in UPPER-case, irrespective of the current setup.

REPEAT-KEYS

- There are six repeat-keys: **Fullstop**, **Space**, **Back-space**, **Plus**, **Minus**, and **Exclamation mark**; hold these keys down to get multiple-entries.
- You can set the **Key repeat** rate—for setup details, see Section 4.

SYMBOLS

- This gives you access to some 'extra' characters, for occasional use—either for adding to the message, or for programming external devices such as the MultiVoice.
- Press **MEM Space** to enter the system—symbols are shown one at a time at the left end of the display.

- Press **Space** repeatedly until you get to the symbol you want, or **Back-space** to go 'backwards'—the keys repeat if held down.
- Press **MEM** to select the displayed symbol: it will be added to your message—any other key escapes with no changes.
- The list contains all the 'national characters' (**è**, **å** etc); you can put the most useful ones for that country onto the two 'national keys' to the right of **L**—for details, see page 66.
- Using the macro system, you can store one of these symbols on a memory for quick access. Eg **Mem-1**.

SMARTTEXT

- The machine obeys 'smart' rules, as below; these are all turned on and off with the **Text** setup—for setup details, see Section 4.

> **First letter in the sentence is capitalised.**
> **"i" with spaces before and after is capitalised.**
> **'Q' is displayed 'QU'.**
> **Exclamation-mark or question-mark is followed by a space; the next letter is capitalised.**
> **Fullstop is followed by space, the next letter is capitalised (unless numerals both sides of Fullstop).**
> **Comma is followed by a space.**
> **Semi-colon, percent, or close-bracket is followed by a space.**
> **Open-bracket, £ or $ is preceded by a space.**
> **The first, third, fifth etc quotation-marks are displayed "space-then-".**
> **A character (except Fullstop, comma, question-mark or exclamation-mark) after the second, fourth, sixth etc quotation-marks is displayed "-then-space-then-character".**

- Note: unless **Case** is set to **Lower**, you won't see capitalisation (first two items).
- Rule 2 applies only if Language: English or Language: American.
- In most European **Language** setups, a comma is <u>not</u> followed by a space if there are <u>numerals both sides of the comma</u>—this allows you to type **1,1**

EXTERNAL KEYBOARD

- This applies to the Expanded Keyboard, SL85's programming-keyboard, and to custom external keyboards.
- Press **MEM Replay P** or **P P** then **+** repeatedly to select **Port: Keyboard**.
- Press **Off** and insert the external keyboard into one of the ports, then **On/C**, and use the external keyboard as normal—note that both keyboards can be used at the same time!
- To temporarily 'force' **Port 1** to recognise an external keyboard, press **MEM MEM MEM K** on the Lightwriter—'temporarily' means until the Lightwriter is next turned off.
- Differences between an external keyboard and the Lightwriter's own keyboard:

> **The On/C will clear the display, but not turn the Lightwriter on.**
> **The shift symbol is not displayed.**
> **Shift-lock is not available (precede every key to be shifted by the 'Shift' key)..**

- All other keys will operate as expected.

REMOTE DISPLAY

- Connect a remote display into one of the ports, and configure that port to the appropriate display as follows:
- Press **MEM Replay P** or **P P** then **+** repeatedly to select **Port:LCD** or **VFD**—according to the type of remote display to be used.
- Press **Off** and insert the display, then **On/C** and type—the remote display should now operate.

<u>EDITING</u>

- You have seen how the **Back-space** key erases the last character.
- You can also 'go back into' the message to edit mistakes.
- It's a good idea to try this paragraph before you use it 'for real': enter a message—**MEM S** is a good test message.
- Press **Shift Shift** to get into the 'shift-lock' mode, then hold down **Back-space** to go to the left, and hold down **Space** to go to the right—they are 'repeat-keys'.
- To speed this up, set **Key repeat** to maximum—for setup details, see Section 4.

Start-of-text

- Press **Shift** to leave shift-mode if not already done, then **MEM Shift +** to go to the start of the text.
- The last 250 characters entered will be 'editable'.

End-of-text

- Press **Shift** to leave shift-mode if not already done, then **MEM +** to go to the end of the text—cursor will be off-screen if you have entered more than 19 characters!

Insert and Delete

- Characters or memories will be inserted into the text at the cursor-position, moving the text to the right.
- To insert a 'space', ensure you have left shift-mode—because shift-Space means cursor-right.
- To 'Back-space', ensure you have left shift-mode for the same reason—note that characters will be deleted to the left of the cursor, causing the text to contract.
- To insert numbers or lower case letters you must also leave shift-mode—and, if you have not already done so, select **Case: lower** in setup.

- As you can see, you must be familiar with the way the 'shift-mode' works—watch the symbols at the left-end of the display.

```
    CATS _DOGS

         ┆     (INSERTS TO LEFT OF CURSOR)
         ┆
    AND
```
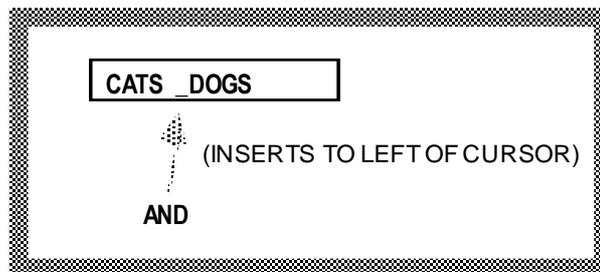
SECTION 4: SETUPS

>> The setup facility allows you to change the way the Lightwriter behaves.

- Setups can be changed at any time without affecting what you are typing.
- There are 4 levels of access:

Locked	**No access, setups are hidden from the user.**
User	**Low-level access.**
Advanced	**Includes setups for the Therapist, Carer and Advanced user.**
Expert	**ALL setups including some for special-needs.**

Lock

- Sometimes, it is appropriate to prevent users from accessing ANY setups.
- To hide the setup-system <u>entirely</u>, press **MEM MEM MEM Shift Fullstop Q** to lock.
- When hidden, an attempt to access the setups (**MEM Replay**) will show **Setups Unavailable**.
- To unlock, press **MEM MEM MEM Shift Fullstop Q** again.

User

- Press **MEM Replay** for a simple setup-list; the display shows **Setups**. You can press **?** for an introduction, then **On/C** to return to the setup-system.
- Press **Fullstop** repeatedly to step through the groups.
- For a list, see page 49.
- It can be inappropriate to let the user have access to the Advanced and Expert Setups—do NOT issue this Manual to users who will not be able to cope with them: it is easy to tamper with the Lightwriter (eg, lose speech altogether, albeit temporarily).
- Press **On/C** to exit the setup system—any changes are stored and you will return to the typing-buffer.

Advanced

- The User-list (above) contains 17 simple setups.
- To add about 12 **Advanced setups**, press **Shift Fullstop** <u>while in setups</u>.
- The list can be further expanded to approx 45—for details, see Expert below.
- For a list of all setups, see page 49.

Expert

- There are also some 'special-need' setups—for a list, see page 49.
- To access these, clear the display, type **EXPERT**, then **MEM Replay**.

<u>**NOTES**</u>

- **Keyboard**: This setup is for our **Light-Touch** keyboard, which has moveable key-tops—use this setup with care!!
- **Abbrv-expnsn**: This setup controls when (or if) an Abbreviation-expansion will expand—**Auto** means that it will expand without the need for a space.
- **Mem control**: If this setup is **Pause**, any keys pressed [while a memory is being recalled or a message replayed] will pause the recall or replay—hold the key down to pause, release to resume. If it is **Add**, any keys pressed [while a memory is being recalled or a message replayed] will be added after the recall or replay has finished—this allows you to 'complete the sentence' while the machine is scrolling the memory.
- **Backup**: If this setup is **Auto**, the Lightwriter backs up new or changed memories when you press **Off**—while this is simplest, it does mean that someone may accidentally replace a good backup with a bad one. If it is **Manual**, the Lightwriter backs up new memories whenever you press **MEM MEM MEM B**—alert users therefore have total control: the backup-memory contains what you put in it last time you backed up.
- **Decimals**: This setup controls decimal-places for the result of a calculation.
- These **Port** settings are worth noting (and are available at Expert level only):

  Port:VFD-1   **Support for VFD-1 (not in current use).**
  Port:VFD-2   **Support for VFD-2 (not in current use).**

- This **Speech** setting is also worth noting (and are available at Expert level only):

  Speak:Announce   **Select this mode for the blind; further details, see page 17.**

<u>**SETUP NOTES**</u>

- Ensure that the machine is not in shift-mode when using setups.
- **Key touch**: this setup <u>ignores</u> keys unless they are held down for an adjustable time—this has the apparent effect of making the keys "feel heavier"; furthermore, the hand can be 'brushed across the keys' without actuating them.
- **Tremor**: this setup accepts the first key-press and ignores repeats unless the key is released and not pressed again for an adjustable time—this prevents mmmmmmultiple eeeeeeeeeeentries.
- **Cancel (secs)**: this setup controls the time that Mem-modes and setups "self-cancel"—normally 30 seconds, this can be adjusted to suit slow users.
- **Auditory browse**: If this setup is **On**, the Mem-5 list and setups will be spoken automatically (useful for the blind). If it is **Off**, the setups are spoken when you press **Replay**.
- **Auditory vol**: this setup controls the AuditoryBrowse volume AND the Speak-keys volume.
- Therapists can save ALL values at once, for 'instant loading' for a particular user—for details, see page 65.
- Users can take advantage of this feature too—different situations may require different setups; this will change them quickly and easily.
- Some setups will not always appear; they are displayed when they are needed—for example, **Predict** does not appear if **Predict After: Off**.

Functions

- This system allows you to access the more advanced features of the machine—this is divided into 'User' and 'Advanced', as with setups.
- Press **MEM MEM MEM**: the display shows **Functions**. Press **?** for an introduction.
- Press **On/C** to escape the introduction, **Space** for next, **Back-space** for previous.
- The above will show 9 simple functions (as asterisked). For the non-asterisked functions, see **Advanced Functions** below.
- Press the letter displayed to execute the function—eg, **V** for Software-version.
- Press **MEM** or **On/C** to leave the system at any time.

B: Macro 'beep'	**Program a 'beep' within a macro.**
D: Download	**Send the memories to another SL35 or a computer.**
E: Exceptions***	**Show the speech-exceptions. 'Space' and 'Back-space'.**
F: Memory free ***	**Show memory available.**
H: Help ***	**Enter main help system.**
K: Ext keyboard ***	**External keyboard enable; this is a shortcut.**
L: Load ***	**Load all setups at once; first, save them!**
P: Print ***	**Send the on-screen message to a printer.**
S: Save ***	**Save all setups at once.**
T: Test***	**Run a non-stop test-message, for battery endurance.**
U: Upload	**Upload the memories from another SL35/computer.**
V: Version ***	**Show the Lightwriter's software date.**
W:Macro 'wait'	**Program a 'wait' within a macro.**
X: Erase	**Erase user-memories? Erase their backups?**
Z: Macro 'off'	**Program an 'off' at the end of a macro.**
Ø: Load Library Ø	**Unload all Word-libraries (future).**
1: Load Library 1	**Load Word-library 1 (future).**
2: Load Library 2	**Load Word-library 2 (future).**
3: Load Library 3	**Load Word-library 3 (future).**
4: Load Library 4	**Load Word-library 4 (future).**
5: Load Library 5	**Load Word-library 5 (future).**
6: Load Library 6	**Load Word-library 6 (future).**
7: Load Library 7	**Load Word-library 7 (future).**
8: Load Library 8	**Load Word-library 8 (future).**
9: Load Library 9	**Load Word-library 9 (future).**
Q: Setup access	**Lock and unlock the setups.**

HELPS

- Press **?** for a description of the function; press **Space** to pause the help, **Space** again to continue, **?** to repeat the help, **On/C** to leave the help and return to the function.
- Press **Replay** to speak the function —useful for the blind.

SHORTCUTS

- You can 'select directly': **MEM MEM MEM F** to get **Memory free** and **MEM MEM MEM H** to show the 'help-system', as explained throughout this Manual.
- **MEM MEM MEM K** sets up an external keyboard on Port (1) <u>temporarily</u>—this feature lets you use the external keyboard without altering the **Port (1)** setup; however, this must be re-entered every time you turn on (it is temporary).

ADVANCED FUNCTIONS

- **MEM MEM MEM** will show 9 simple functions (same principle as setups)—and the 'more powerful' controls are hidden. To include the 17 **Advanced functions**, press **Shift Fullstop**. This gives access to 'therapist-only' features.
- Do not give this information to users who cannot cope with it: also, it is not a good idea to allow 'meddlers' to erase all the memories, for example!

Setup list

- Use **Space** to scroll down the setup list, **Back-space** to go up the list—these keys repeat if held down, for faster navigation.
- The list will 'wrap-round'—if you press **Space** repeatedly you will get **Predict/Start Of List.../Volume**—this means you can always get to where you want using the **Space** key alone.
- Press a letter-key to show the setups beginning with that letter (try **S** repeatedly)—if a key has no effect: there are no setups starting with that letter.
- Defaults are shown in **bold**.

HELPS

- Press **?** for a description of what that setup does; press **Space** to pause the help, **Space** again to continue, **?** to repeat the help, **On/C** to leave the help and return to the setup.
- Press **Auditory browse: On** to speak the setups—useful for the blind.

THE OPTIONS

- Press **+** or 'minus' to alter the option—'minus' is "shift-+".
- All values 'wrap-round': if you press **+** repeatedly you will see (for example) **Slow/Medium/Fast/Slow/Medium**—this means you always see ALL the values using the **+** key.
- Press **Ø** at any time to 'default' that particular setup to the 'factory' setting.

User Setups (Mem Replay)	*Advanced Setups* (Mem Replay Shift fullstop (period)	*Expert Setups* (EXPERT Mem Replay)

… SPEECH …		
Select the speech volume:		
Volume: Off, **# # # #** - - -	Volume: Off, **# # # #** - - -	Volume: Off, **# # # #** - - -
Select a speech synthesiser; further details, see page 60:		
		Speech: DECtalk
		Caiku
		Apollo
		Juno
		Infovox
		Eurovocs
		EurovocsII
		Keynote
		Electrel S3
		Psola
		Ciber
		Elan
		External
		Off
		Articulate
		EuroTalk
Select male or female voice (EuroTalk):		
Voice: **Male**	Voice: **Male**	Voice: **Male**
Female	Female	Female
Select male or female voice (DECtalk):		
Voice: **Paul**	Voice: **Paul**	Voice: **Paul**
Harry	Harry	Harry
Dennis	Dennis	Dennis
Frank	Frank	Frank
Betty	Betty	Betty

Wendy	Wendy	Wendy
Rita	Rita	Rita
Ursula	Ursula	Ursula
Kit	Kit	Kit

Select the pitch of speech; further details, see page 16:		
	Pitch: [0-**4**-9]	Pitch: [0-**4**-9]

Select when to speak:		
Speak: **Each Word**	Speak: **Each Word**	Speak: **Each Word**
Every Key	Every Key	Every Key
		Announce
Replay Only	Replay Only	Replay Only

Select the speed that each word is spoken:		
Speech rate: **Normal**	Speech rate: **Normal**	Speech Rate: **Normal**
Brisk	Brisk	Brisk
Fast	Fast	Fast
Slow	Slow	Slow

Select the gap between each word:		
Speech Gaps: **None**	Speech Gaps **None**	Speech Gaps: **None**
Short	Short	Short
Medium	Medium	Medium
Long	Long	Long

Select automatic speech of the setups, auto-browser, speak-keys etc:		
AuditoryBrowse **Off** / On	Auditory Browse **Off** / On	Auditory Browse: **Off** / On

Select auditory volume (not available if Auditory Browse: Off):		
Auditory vol: Off, **# #** - - -	Auditory vol: Off, **# #** - - -	Auditory vol: Off, **# #** - - -

… SOUNDS …

Select the buzzer sound:		
Buzz sound: **Bell**	Buzz sound: **Bell**	Buzz sound: **Bell**
Whizz	Whizz	Whizz
Ding	Ding	Ding
Uh-oh	Uh-oh	Uh-oh
Zap	Zap	Zap
Meep	Meep	Meep
None	None	None
Buzz	Buzz	Buzz

Select the shift-buzz sound: use for a different 'level of urgency':		
Shift-buzz: (choices as above)	Shift-buzz: (choices as above)	Shift-buzz: (choices as above)

Select the sound every 60 seconds if the Lightwriter is unused:		
	Idle sound: (choices as above)	Idle sound: (choices as above)

Select the sound for screen-prompts etc:		
	Alert sound: (choices as above)	Alert sound: (choices as above)

Select the sound for low-battery etc:		
	Warn sound: (choices as above)	Warn sound: (choices as above)

Select the sound-level for all sounds:		
Sound vol: Off, **#** - - -	Sound vol: Off, **#** - - -	Sound vol: Off, **#** - - -

Select volume for 'system-tunes':		
Musical-keys: Off, **#** - - -	Musical-keys: Off, **#** - - -	Musical-keys: Off, **#** - - -

… DISPLAYS …

Select the language of screen-messages and speech, see page 66:		
		Language: (according to model

Select UPPER or lower case:		
Case: **UPPER**	Case: **UPPER**	Case: **UPPER**
lower	lower	lower

SmartText = automatic space-after-comma etc etc, to save typing:

Text: **Normal**	Text: **Normal**	Text: **Normal**
Smart	Smart	Smart
Select VFD display brightness: 'Automatic' for power-saving. (this setup available if VFD fitted):		
VFD: **Automatic**	VFD: **Automatic**	VFD: **Automatic**
Dim	Dim	Dim
Bright	Bright	Bright

… KEYBOARD …

Select the characters to the right of 'L'; this overrides the automatic 'Language tracking':		
	Keys: **Auto**	Keys: **Auto**
	British	British
	American	American
	Dan + Norw	Dan + Norw
	Swed + Fin	Swed + Fin
	German	German
	French	French
	Italian	Italian
	Span + Port	Span + Port
	Japanese	Japanese
	Icelandic	Icelandic
Select the key-click:		
Key click: Off, **#** -	Key click: Off, **#** -	Key click: Off, **#** -
Select repeat-rate for Space, Back-Space, Fullstop and !:		
Key repeat: Off, **# # - - - -**	Key repeat: Off, Off, **# # - - - -**	Key repeat: Off, **# # - - - -**
Select the time that a key must be held down before it operates:		
Key touch: **Off**, # - - - -	Key touch: **Off**, # - - - -	Key touch: **Off**, # - - - -
Select the time that a key is ignored after it has been operated once:		
Tremor: **None**	Tremor: **None**	Tremor: **None**
Medium	Medium	Medium
Max	Max	Max
Select a function for Switch1; further details, see page 61:		
	Remote switch 1: [0-**32**-42]	Remote switch 1: [0-**32**-42]
Select a function for Switch2:		
	Remote switch 2: [0-**4**-42]	Remote switch 2: [0-**4**-42]
Select the keyboard layout:		
		Keyboard: **QWERTY**
		ABCDE
		AZERTY
		QWERTZ
Select the Morse pause:		
Morse pause: **Off**, 1 - 9	Morse pause: **Off**, 1 - 9	Morse pause: **Off**, 1 - 9

… GENERAL …

Select the speed of 'Memory-recall':		
Mem speed: **Auto**	Mem speed: **Auto**	Mem speed: **Auto**
Instant	Instant	Instant
V Fast	V Fast	V Fast
Brisk	Brisk	Brisk
Fast	Fast	Fast
Medium	Medium	Medium
Slow	Slow	Slow
Select when the abbreviation-expansion memory-system operates:		
		Abbrv-expnsn: **Space**
		Auto
		Off
Select what happens if keys are pressed while a memory is playing:		

		Mem control: **Pause**
		Add
Select when the memories are backed up:		
		Backup: **Auto**
		Manual
Select how the Lightwriter wakes up:		
		Wake-up:: **Clear**
		Message
Select the device for the 9-way connectors:		
Port 1: **Printer**	Port 1: **Printer**	Port 1: **Printer**
LCD	LCD	LCD
VFD-1	VFD-1	VFD-1
VFD-2	VFD-2	VFD-2
VFD-3	VFD-3	VFD-3
Scanner	Scanner	Scanner
Computer	Computer	Computer
Link	Link	Link
Text	Text	Text
Speech	Speech	Speech
Switches	Switches	Switches
None	None	None
Keyboard	Keyboard	Keyboard
Select the device for the 2nd 9-way connector if fitted:		
Port 2: **Keyboard**	Port 2: **Keyboard**	Port 2: **Keyboard**
(choices as above)	(choices as above)	(choices as above)
Select the Morse-speed:		
	Morse: **0** 1 - 9	Morse: **0** 1 - 9
Select the type of printer:		
Printer: **MiniPrinter**	Printer: **MiniPrinter**	Printer: **MiniPrinter**
DeskJet	DeskJet	DeskJet
DeskJet-C	DeskJet-C	DeskJet-C
LaserJet	LaserJet	LaserJet
Datac	Datac	Datac
"Epson"	"Epson"	"Epson"
Norwegian	Norwegian	Norwegian
Select the printer style for some printers:		
Print: **Plain**	Print: **Plain**	Print: **Plain**
Wide	Wide	Wide
Tall	Tall	Tall
Wide + Tall	Wide + Tall	Wide + Tall
Select when mem-modes and setups "go away":		
	Cancel (sec): [Off, **30**, 60, 120]	Cancel (sec): [Off, **30**, 60, 120]
Select automatic turn-off time;		
	Auto-off (sec): [20-**60**-600]	Auto-off (sec): [20-**60**-600]
Select on/off for the flashing "On" symbol, 'Off' for epileptics:		
		Cursor flash: Off / **On**
Select the way the Replay key behaves, see page 42:		
Replay: **Scroll**	Replay: **Scroll**	Replay: **Scroll**
Re-type	Re-type	Re-type
Speak	Speak	Speak
Fast	Fast	Fast
Select the flashing 'R' during key-macro recording:		
		Record symbol: Off / **On**
Select SmartKeys, see page 29:		
		Smart Keys: **Off** / On
Select when the word-completion predictor operates:		
Predict after: [**Off**, 1-3]	Predict after: [**Off**, 1-3]	Predict After: [**Off**, 1-3]

Select the displayed decimal-places for the calculator:		
		Decimals: [0-**2**-15]
Select Windows, DOS or Mac for computer transfer:		
		Computer: **LW/Win**
		Dos
		Mac

Note:	Next group only available if Port: Scanner selected

… SCANNER …		
Select 'Word' or 'Beeps' or 'Off':		
Auditory scan: **Beep**	Auditory scan: **Beep**	Auditory scan: **Beep**
Word	Word	Word
Off	Off	Off
Select auditory scan volume (not available if Auditory Scan: Off):		
Auditory vol: Off, **# #** - - -	Auditory vol: Off, **# #** - - -	Auditory vol: Off, **# #** - - -
Select scan-speed unlike other setups, to decrease you must use minus (Shift '+'):		
Scan speed: [1-**7**-10]	Scan speed: [1-**7**-10]	Scan speed: [1-**7**-10]
Select ABCD, EARDU, QWERTY or AZERTY:		
	Scan layout: **ABCD**	Scan layout: **ABCD**
	EARDU	EARDU
	QWERTY	QWERTY
	AZERTY	AZERTY
Select Small, Medium or Large text, or 8 predictions:		
	Kbd screen: **Off**	Kbd screen: **Off**
	Small	Small
	Medium	Medium
	Large	Large
	Predict	Predict
Select the 'go-faster' speed ... use 'Off' if the user cannot release controllably:		
Scan accel: **Off**	Scan accel: **Off**	Scan accel: **Off**
Medium	Medium	Medium
Fast	Fast	Fast
Select the pause before 'select', during which a second click will 'cancel':		
Scan pause: [0-**5**-10]	Scan pause: [0-**5**-10]	Scan pause: [0-**5**-10]
Select the viewing-angle/contrast of the scan-screen (not SL85):		
Scan contrast: [0-**5**-10]	Scan contrast: [0-**5**-10]	Scan contrast: [0-**5**-10]
Select scan-mode, see page 69:		
Scan (1): **Auto**	Scan (1): **Auto**	Scan (1): **Auto**
Manual	Manual	Manual
Select how many column-scans until 'escape to row-scans'; ('Off' = don't escape).		
Scans: [Off, 1-**5**-10]	Scans: [Off, 1-**5**-10]	Scans: [Off, 1-**5**-10]
Select the scan-mode, see page 69:		
Scan release: **No**	Scan release: **No**	Scan release: **No**
Yes	Yes	Yes
Select the number of scan-cycles before the system pauses when unused:		
	Suspend after: Off, 1-**5**-10	Suspend after: Off, 1-**5**-10

SECTION 5: REFERENCE

>> More advanced Lightwriter features.

SPECIFICATIONS

Size	**215 x 130 x 50 mm**
Weight unboxed	**Approx 1 Kg according to model**
Weight boxed	**Approx 2 Kg with charger, etc**
Keys	**49 keys**
Key pitch	**V: 12 mm; H: 16 mm**
Displays	**20-character, LCD or VFD, (10 /5 mm high characters)**
Memory size	**14k bytes**
Backup size	**14k bytes**
Battery life	**4 - 10 hours between charges, according to model**
Charger circuit	**9VDC, 200-800 mA according to model**
Charging time	**14 hours if totally discharged**
Ports	**2 x 9-way Dee. Cables connected to these should be shielded.**
External Switches	**2 x 3.5mm mono. Cables connected to these should be fitted with ferrites or other EMC suppression devices.**

ACCESSORIES

External speakers	**Improved volume and sound-quantity**
External displays	**Reader(s) can see the message remotely**
Carry bags, cases	**Protection in transit**
Wheelchair mounting	**Mounting-systems**
Phone systems	**Use the Lightwriter over the phone**
Scan systems	**Use the Lightwriter with one switch, suck-puff, even by eye**
Speech synthesisers	**Articulate, EuroTalk, DECtalk; foreign-language synthesisers**

DEFINITIONS

Typing-buffer	**The store which remembers the text you are typing**
Cursor	**The place in the typing-buffer where you are now**
Display	**The part of the typing-buffer you can see**

- The Lightwriter has an operating capacity of 250 characters, and this is called the **typing-buffer**—the screen is 19 characters long and can display any part of the typing-buffer.
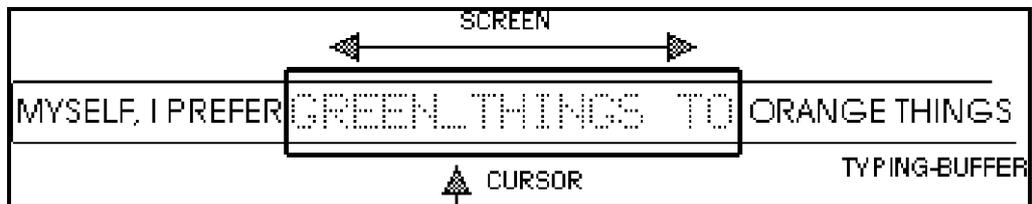
- You can move backwards and forwards in the text—for details, see page 45.
- This moves the **cursor** (the writing-position)—for VFD displays it will blink slowly so you can see the character 'under' it.

Note	**If the cursor is not on the screen, the next character will be entered at the right-hand end of the display.**

LIGHTWRITER TO COMPUTER

- The memories can be uploaded <u>to</u> most computers, for archiving; and downloaded <u>from</u> most computers, to load or restore the memories.
- Several machines' memories can be stored in the PC, or different versions from the same machine—save them as separate files.
- There are separate instructions available for this—please specify IBM-compatible or Mac.
- Use our Lightwriter-to-IBM or Lightwriter-to-Mac cable—they are Null-modem; othe cables may not work.

TO/FROM A LIGHTWRITER

- The memories can be sent to or received from another Lightwriter SL35, 56, 85, 86, 35/Cherry or 35/BigKeys.
- All of the memories will be sent from one machine and <u>added</u> to the other's existing memories, replacing those in the same locations (C, C4, CM, etc) (normally, you will want to erase this Lightwriter first)—it is not possible to send part of the memories.
- Connect with our Lightwriter-to-IBM null-modem cable.
- Select **Port: Link** on BOTH machines, and arrange them side-by-side so that you can read both screens at once.
- On the machine you wish to use as a 'sender', press **MEM MEM MEM Shift Fullstop** then **U** then **Y**—that Lightwriter is now ready to send.
- On the 'receiver' (the machine whose memories you wish to change), press **MEM MEM MEM Shift Fullstop** then **D** then **Y**—memory transfer will begin.

SOFTWARE VERSION

- Press **MEM MEM MEM V** to show the software-version—it is also shown on the front cover of this Manual.
- Quote this number if there is a problem with the machine.
- This Manual describes the latest software—if it describes features you need but haven't got in your machine, ask for an upgrade.

IDEAL SETUPS

- V5.3 onwards uses **MEM MEM MEM L Ø Y** to re-load 'machine-specific' setups which were stored when the machine was built—thus, machines with a synthesiser on Port(2) are set up at the factory to **Port (2): Speech** (while getting the machine working), and then the 'known-good' setups are stored.
- The 'defaults' which you will get if you press **Ø** while in setups are not necessarily the same as the 'ideal' for that particular setup—in the example, Port (2) will default to Keyboard while in setups.

CUSTOMISING

- You can store your own 'preferences', and load <u>your</u> setups rather than <u>ours</u>:

  Change individual setups to the way you prefer them to be.
  Press MEM MEM MEM S Z Y—you have now loaded them all into setup-group Z.
  Load them at any time with MEM MEM MEM L Z Y.

External Devices

>> The Lightwriter has sockets for external devices.

... switches

- The 3.5 mm mono sockets labelled **Sw1** and **Sw2** are inputs for external switches. You may use any switch with a suitable plug.

… external speaker

- The 3.5 mm mono socket labelled **Ext Spkr** is an output to passive external speaker systems.
- Passive speakers are powered by the Lightwriter (eg the TCL 'blue' speaker).

… ports

- All models have a 9-way connector on the right side of the machine—this allows you to connect one device only, and the selection is made with the setup **Port 1**.
- Some models have a second 9-way connector, on the left—this allows you to connect a second device, and the selection is made with the setup **Port 2**.
- If you configure both Ports for the same device, when you next turn the Lightwriter on you will get a message such as **Two Printers?** —press a key to cancel the warning beep, and then alter the setups appropriately.

PRINTER

- To use an external printer, select **Port:Printer.**
- If **Port 1** is set to **Printer**, a printer fitted to the 2nd Port will not work—because the Lightwriter will print to Port(1) if it can, although no printer is there.
- Use the separate **Printer** setup to select the type of printer.
- If using a printer with style-controls, use the **Print** style setup—for full details see page 37.

DISPLAY

- To use an external LCD (grey) display, select **Port:LCD.**
- To use an external VFD (bright green) display, select **Port:VFD.**
- See also page 44.

SCANNER

- If you lose the use of your hands, you can use the machine with a single switch.
- To do this, select **Port:Scanner**—for details, see page 68.

COMPUTER

- The Lightwriter can communicate with a computer in several ways, and these are described in the instructions that will accompany the cable and software—specify PC or MAC.
- There are 3 methods of communicating :

- To send and receive keystrokes, select **Port:Computer** ; everything you type on the Lightwriter is simultaneously sent to the PC, and vice-versa. If sending Lightwriter-to-Computer, you need to "capture" the keystrokes, then copy/paste as required (on a PC use a terminal-emulator program such as **Windows Terminal**). The communications protocol is 1200-baud, 8-data, 1-stop-bit, no-parity.

- To send or receive ALL of the Lightwriter's memories, select **Port:Link** ; use this to backup, restore or pre-load the Lightwriter's memories; or to prepare a speech. The communications protocol is **9600-baud**, **8-data**, **1 stop-bit**, **no-parity**.

- To use the computer's screen as an enlarged screen with letters up to 2" high, select **Port:Text;** in this mode, the Lightwriter 'expansions' such as memories and predictions will be sent to the computer. The communications protocol is **1200-baud**, **8-data**, **1 stop-bit**, **no-parity**.

- Always use our Lightwriter-to-Mac—it has a built-in level-shifter and is Null-modem; other cables without these features may not work. For PC's, a standard data-cable should work.

SPEECH

- You can use most popular external speech-synthesisers; select **Port:Speech**—for details, see page 60.

KEYBOARD

- Permanent setup: select **Port:Keyboard.**

- Temporary setup (applies to **Port (1)** only): enter **MEM MEM MEM K**: this instructs the Lightwriter to recognise an external keyboard until the Lightwriter is switched off, whereupon the setup for **Port (1)** will revert to what it was before—view the setups to see this.

- See also page 44.

Macros

>> Create macros for commonly-used operations.

- Set up remote display, printer, external speech synthesiser, turn tremor on, send memories to a computer, etc.
- You can record a sequence of keys—and then recall that macro with a few keys.
- You can insert a 'pause' in the macro— the macro continues when you press a key.
- You can insert a 'buzz' in the macro—as an alert.
- You can have the macro turn the Lightwriter off when it is finished.
- Store frequently-used symbols or foreign characters—for details, see pages 43, 66.
- TRY THESE ON THE LIGHTWRITER—otherwise this will be VERY confusing!

RECORD

- First, choose a name for inclusion in the **MEM 5** list; the code is arbitrary, we suggest a meaningful word (with a **+** before and after to reduce the chances of running the macro accidentally!)

Example	**+STYLES+=**

- Next, **MEM MEM Fullstop**; display shows **Record? Y=Ok**; press **Y** to confirm.
- If there is an existing memory in that location, you will be asked if you want to delete it—press **Y** if you are quite certain that the answer is 'yes'.
- If the code is missing or illegal, the display will show **Record where?**—this gives you a second chance to press **P** in the first example; but there is no second chance to save multi-key codes, you must get it right!
- The recording has now begun: every key you press will now be recorded, until you next press **Off**—with the exception of **Buzz**: this key will not be recorded.
- During recording, there will be a flashing '**R**' at the left of the display (except when the battery is low); you can turn the '**R**' off—for details, see page 46.

- When programming a macro which alters the setups, record **On/C** to 'escape the setups when finished'—see next page for an example.
- If you are programming a setup and wish to have the new setup remain on screen while you read it, press **1**, **2** or **3** (for **0.3**, **1.5** or **3.0**-second delays, respectively)— see next page for examples.
- Press **MEM MEM MEM Shift Fullstop W Space** to program a 'Wait'—on recall, the macro will wait at this point in the macro until you press a key.
- Press **MEM MEM MEM Shift Fullstop B** to program a 'Buzz'—on recall, the macro will emit a standard buzz at this point in the macro.
- Press **MEM MEM MEM Shift Fullstop Z** to program an 'Off'—on recall, the macro will turn the machine off.
- The time between keys is NOT recorded, mistakes and Back-spaces ARE—take your time, get it right!
- Press **Off** to finish recording.

RECALL

- Press **MEM** then the key to the right of **?** repeatly, **Back-space** to go back.
- Press **Fullstop** to show/hide the macro to see how it is 'built':

  m means that you recorded the MEM key.
  r means that you recorded the Replay key.
  ^ means that you recorded the Shift key.
  @ means that you recorded the Clear key.
    means that you recorded the Space key.
  < means that you recorded the Back-space key.
  all other keys are represented by themselves.

- Press **MEM** to select.
- Or, type the abbreviation (**+STYLES+** in the example), then **Space**.

CLEAR

- Type (for example) **+STYLES+=** then **MEM MEM + Y**.
- This will remove the macro from the '**MEM** then the key to the right of **?**' list; it is not however possible to remove **+CHANGE.CASE** (but you can make it 'do nothing' by typing this: **+CHANGE.CASE=** then **MEM MEM Fullstop Y Off**).

EXAMPLE : 1

- To go to the next style for the MiniPrinter, record the following macro; the display will help you to understand what's going on—but if the display doesn't change when you press a certain key, don't worry; <u>carry on</u>!

PRESS THESE KEYS:	EXPLANATION:
MEM MEM Fullstop Y	Start recording
P (then Y if required)	Record on 'P', replacing it if in use
MEM Replay	Enter the setup list
P P +	Go to "Print"; increase it one.
1	New style remains on-screen for 0.3 sec
Off	Finish recording

- Connect a MiniPrinter, then press **MEM P**—the next style will be applied.
- **MEM P** used to say **WOULD YOU PLEASE** and this is temporarily replaced.

EXAMPLE : 2

- To print 4 memories on an Epson (the first one in bold-type), record this macro:
- It will print Direct-Memories **MEM O**, **P**, **Q** and **R** in 'styles'.

PRESS THESE KEYS:	EXPLANATION:
+STYLES+ (then Y if required)	Record under '+STYLES+', replacing it if in use
Shift 4	Puts '=' on the display
MEM MEM Fullstop Y	Start recording
MEM Replay Shift Fullstop	Enter the Advanced setup list
P Ø	Select "Port (1)"; 'zero' it to "Port (1): Printer
3	New Port setup will remain on-screen for 3 secs.
P P Ø +	Select "Printer" and 'zero' it; set "Printer: "Epson"
P Ø +	Select "Print" and 'zero' it; set "Print: Bold"
On/C	Escape the setups
MEM O MEM 6	Print Memory-O in Bold
MEM Replay	Enter the setup list
P Ø On/C	Select "Print"; 'zero' it to "Plain"; Escape setup list
On/C MEM 6 MEM 6 MEM 6	Clear the buffer; 3 new lines
MEM P MEM 6	Print Memory-P in Plain
MEM MEM MEM Shift Fullstop W	Insert a 'Wait'
On/C On/C MEM 6 MEM 6	Escape the wait-routine; Clear the buffer; 2 new lines
MEM Q MEM 6	Print Memory-Q in Plain
MEM MEM MEM Shift Fullstop W	Insert a 'Wait'
On/C On/C MEM 6 MEM 6	Escape the wait-routine; Clear the buffer; 2 new lines
MEM R MEM 6	Print Memory-R in Plain
MEM MEM MEM Shift Fullstop W On/C	Insert a 'Wait'
On/C Fullstop MEM 6	Eject the page from the printer
MEM MEM MEM Shift Fullstop B	Insert a 'Buzz'
Off	Finish recording

- Set up an 80-column printer, turn Lightwriter on, type **.STYLES.** then **Space**.
- Press **Space** after each memory prints—you programmed the macro to 'wait'.

BEWARE

- If you record a macro, then (later) alter the setups manually, and then recall the macro, it may go to the wrong setup—because the setup-list changes when necessary! Eg: if you turn Predictions on, a new setup appears in Advanced.
- Macros must be created on the Lightwriter's keyboard—not from the scan-screen, or downloaded from a computer.

Synthesisers

- Technically-speaking, the Lightwriter sends the text to be spoken **internally** provided BOTH Port (1) and Port (2) are NOT set to Speech. If one of either the EuroTalk or the DECtalk synthesisers is available, the text-string will be spoken.

- If either Port (1) or Port (2) are set to Speech, the Lightwriter sends the text to be spoken **externally** (to other synthesisers) via that port. Some synthesisers are 'internal' mechanically (mounted in a box attached to the base of the Lightwriter), but are in fact 'external' as far as the software is concerned: these are wired to Port 2 inside the blue casing.

INTERNAL

- **DECtalk** or **EuroTalk**: many words in the English language can be pronounced in more ways than one: these are called 'Homonyms'. If the pronunciation is wrong, Back-space and type the last letter a 2nd time (**READD**, **LEADD**, **WINDD**, **TOWERR**, **ENTRANCEE**); there are hundreds of homonyms in the English language—list available.

- **DECtalk** only: is capable of changing voices in mid-sentence:

Example	**J=[:NP] I SAY, I SAY, I SAY. What do you call a man with a seagull on his shoulder? [:NB] I don't know, what do you call a man with a seagull on his shoulder? [:NP] Cliff! [:NK] BOOM-BOOM**

- Inserting control-codes into the sentence has the effect of instructing DECtalk to change voice.

- **[:NP]** for **Paul**, **[:NB]** for **Betty**, **[:NK]** for **Kit**, **[:NH]** for **Harry**—you can guess the rest!

EXTERNAL

- Select **Port (?):Speech** and select the speech synthesiser, using the **Speech** setup—for setup details, see page 49.

- Specific drivers are provided in the Lightwriter:

Speech:EuroTalk	**TCL internal speech.**
Speech:DECtalk	**Internal DECtalk, or external MultiVoice.**
Speech:Caiku	**Finnish.**
Speech:Apollo	**Most languages.**
Speech:Juno	**Most languages.**
Speech:Infovox	**Danish French German Italian Norwegian Spanish Swedish Icelandic.**
Speech:Eurovocs	**Dutch, German, French (University of Ghent).**
Speech:Eurovocs II	**Portable version (University of Ghent).**
Speech:Keynote	**American-English French Spanish.**
Speech:Electrel S3	**French, Electrel.**
Speech:Psola	**French, Elan Informatique.**
Speech:Elan	**French, Elan Informatique.**
Speech:Ciber	**Spanish, Ciber.**
Speech:External	**For synthesisers not listed above.**
Speech:Off	**Use this to remove all speech setups from the setup-list.**

- Many speech synthesisers require special codes to program them. Examples:

Apollo	**Where it requires the @-sign, press MEM Space Space MEM; a special cable is available from us.**
Infovox	**Where it requires an escape-code substitute an @ symbol: press Replay so that the command is sent to the Infovox— example: @F means esc F.**
Eurovocs	**Where it requires an ^ symbol, press MEM Space Space Space MEM**

- Infovox and Keynote send at 4800; Juno and Eurovocs II at 9600; all others at 1200.

- If the Speech setup is not set to EuroTalk or DECtalk, most of the speech-controls will be hidden—they are inappropriate, because the Lightwriter has no control over the way external synthesisers behave!

Remote Switch

>> A switch in Sw1 or Sw2 can have one of 42 functions

- The 2 switches can be used to carry out 2 functions, from the list below.
- These sockets are used by the scan-system if it is in use.
- To program the switches, press **On/C** then type **MEM Replay Shift Fullstop** then **R** repeatedly, until the setup is **Remote Switch 1** or **Remote Switch 2**.

SINGLE-HIT MEMORIES - CAN ALL BE REPLACED BY THE USER, see page 20

1	MEM-1	("AND")
2	MEM-2	("YOU")
3	MEM-3	("THE")
4	MEM-4	("YES")
5	MEM-5	("Auto-browse")
6	MEM-6	("Print")
7	MEM-7	("Speech On/Off")
8	MEM-8	("Stress next word")
9	MEM-9	("Quieter")
Ø	MEM-Ø	("Louder")

INTERNATIONAL CHARACTERS - see page 66

18	¥	Japanese
19	æ	Danish/Norwegian
2Ø	ä	Danish/Norwegian/Swedish/Finnish
21	ö	German/Swedish/Finnish
22	ü	German/Swedish/Finnish
23	å	Danish/Norwegian/Swedish/Finnish
24	ß	German
25	â	French
26	é	French
27	è	French
28	ç	French
29	¢	American
3Ø	ñ	Spanish
31	Ø	Danish (different from 'zero')

COMMANDS

1Ø	Buzzer
11	Flips from 1st Conversation to 2nd, and back to 1st ...
12	Turns the machine on if off and off if on ...
13	Delete character before cursor
14	Delete word before cursor
15	Spell word before cursor
16	Print
17	Replay
32	Clear
33	Calculate
34	Auto-browse (independent of MEM-5)
35	Toggle speech on/off (independent of MEM 7)
36	Stress next word (independent of MEM 8)
37	Quieter (independent of MEM 9)
38	Louder (independent of MEM Ø)
39	Space
4Ø	'+' (next prediction or prediction-screen)
41	'minus' (previous prediction or prediction-screen)
42	switch has no action

- Pressing the switch will turn the Lightwriter on and then carry out the function selected: for example, option **Ø** could be **"PLEASE TAKE ME TO THE TOILET"**; option **4** could trigger the delivery of a speech, option **1Ø** could provide an alarm-system.
- There are defaults (the thingies when the Lightwriter is new):
    Sw1 defaults to function 32 (Clear).
    Sw2 defaults to function 4 (and this plays whatever is in memory 4).

Tunes

>> Compose a tune, save it as a memory.

- To show all the tunes that are in the Lightwriter's memory, press **MEM** then the key to the right of **?**, then:

  Space and Back-space to scan the list.
  Replay to play the displayed tune repeatedly, or MEM to play it once.
  Fullstop to show/hide the 'body' of the tune, + to scroll it (to see how it was 'built').

- There are 6 pre-stored tunes and 17 national anthems:

  Tune:.BEETHOVEN'S.5TH(German).
  Tune:.CLUMSY.LOVER   (Scottish).
  Tune:.HAPPY.BIRTHDAY (American).
  Tune:.MAN.FROM.ARRAN   (Irish).
  Tune:.PADUSHKO   (Hungarian).
  Tune:.RULE.BRITANNIA   (Thomas Arne, early 19th century).
  Tune:.TEE.HEE!   (C Millard).

- The volume is controlled by the **Sounds vol** setup—NOT the **Volume** setup.
- Press any key to stop the tune while it is playing.

You can compose your own tunes and add them to the list—for details, see page 62.

- Temporarily flip speech off, using **MEM-7**—the speech will turn on again automatically, the next time you turn the machine on.
- Clear the screen, then **MEM Space MEM MEM Space MEM**.
- Type a number from **Ø** to **9** to define the replay-speed of the tune— **Ø** is slowest, **9** fastest, **6** is 'average' and this speed is assumed if no speed is specified.
- Text following **::n** will be interpreted as musical notes—five and a half octaves of even-tempered notes are available.
- Changing from lower- to Upper-case will raise the note by one octave:

  To change case   **MEM Replay C + On/C**

- Preceding a note by a caret (**^**) will raise the note by two octaves; preceding a note by two carets (**^^**) will raise the scale by four octaves.

  To obtain ^   **MEM Space Space Space MEM**

- **Fullstops** after a note will sustain the note twice, thrice, four times as long, etc.
- **Spaces** before the next note will insert one, two, three, four pauses, etc.
- Some notes have sharps (written **c+**, **d+**, etc)—a total of 65 tones and semi-tones.
- It is possible to transcribe tunes direct from sheet-music!

  a   a+   b   c   c+   d   d+   e   f   f+   g   g+
  A   A+   B   C   C+   D   D+   E   F   F+   G   G+

  ^a   ^a+   ^b   ^c   ^c+   ^d   ^d+   ^e   ^f   ^f+   ^g   ^g+
  ^A   ^A+   ^B   ^C   ^C+   ^D   ^D+   ^E   ^F   ^F+   ^G   ^G+

  ^^a   ^^a+   ^^b   ^^c   ^^c+   ^^d   ^^d+   ^^e   ^^f   ^^f+   ^^g   ^^g+
  ^^A   ^^A+   ^^B   ^^C   ^^C+

- Press **Replay**. If the format is correct, it will play.

- Now add notes, press **Replay** again to hear it as you 'build it up'.
- Here is an example of the correct format; _ means **Space**:

$$::6e.._e\_^f\_f.._f+..^^ed.c+.b....\_^g...f+..$$

- Edit the tune to get it right—for details, see page 62.

SAVE, RECALL, ERASE

- After composition, enter **=**, then a single-word code with no spaces in it (if you precede it by a **Fullstop**, it will be listed correctly), then **MEM MEM + Y**.

    Example   ::Øe.._e_f_f.._e_f..eD.C.b....._g...f..ec^Fdg.f.e...d...c=.TUNE1

- Your tune will be added to the list on page 62.

- The volume is controlled by the **Sounds vol** setup—NOT the **Volume** setup.
- Press any key to stop the tune while it is playing.
- To show all the tunes that are preceded by a **Fullstop** or other non-alpha character, press **MEM** then the key to the right of **?**, then:

    Space and Back-space to scan the list.
    Replay to play the displayed tune repeatedly, or MEM to play it once.
    Fullstop to show/hide the start of the tune, + to scroll it (to see how it was 'built').

- If you save (for example) **.PADUSHKO=** (without the two colons) you will erase any tune you might have saved on it, and our suggested jingle will re-appear.
- If you save (for example) **.PADUSHKO=::** (with the two colons) as in the last example, you are saving 'no tune'—the result is total silence.

EDIT

- You can repeat the same few bars over and over, join tunes together or set a new speed mid-tune; use normal editing and memory-handling techniques—see Section 2.

    Example   ::Øe.._e_f_f.._e_f..ed.c.b...._9g...f..ecfdg.f.e...d...c....e.._7e_f_
                f.._e_f..ed.c.b...f..ecfdg.f.e...d...c....5ac+e=.TUNE2

MUSICAL-KEYS

- Certain keys and functions can have 'jingles' associated with them, to provide additional information about the status of the machine:

    Clear
    Shift-once, Shift-lock
    Mem-recall, Mem-save, Functions, Advanced functions
    Setups, Advanced setups
    2nd Conversation

- To alter the volume: press **MEM Replay M** to access **Musical-keys**; when **Off**, all keys will emit a key-click.

- You can change each individual Musical-key sound—you could have silent turn-on and a rising arpeggio when you enter setups, for example.
- Saving your own will override our suggested examples—again, note the two **Fullstops** before, and another between words:

SAVE THIS:	TO ALTER THE TUNE WHEN YOU:
..CLEAR=::5[tune]	Press CLEAR
..ENTER.SETUPS=::7[tune]	Enter setups
..EXIT.SETUPS=::3[tune]	Leave setups
..SECOND.CONVERSATION=::1[tune]	Enter 2nd Conversation
..MAIN.CONVERSATION=::4[tune]	Leave 2nd Conversation
..MEMORY=::Ø[tune]	Press MEM once
..MEMORY.SAVE=::8[tune]	Press MEM twice
..ENTER.FUCTIONS=::6[tune]	Press MEM thrice
..EXIT.FUNCTIONS=::2[tune]	Leave functions

..RECORD.ON=::9[tune]	**Start recording a key-macro**
..SHIFT=::7[tune]	**Press Shift once**
..SHIFT.LOCK=::4[tune]	**Press Shift twice**
..SHIFT.NORMAL=::5[tune]	**Press Shift thrice**
..OFF=::	**Turn OFF (this is silent when new)**

- All the normal tune-creation rules apply. **Musical-keys** are examples of tunes.
- If you save (for example) **..OFF=** (<u>without</u> the two colons) you will erase "your" jingle, and our suggested jingle will re-appear.
- If you save (for example) **..OFF=::** (<u>with</u> the two colons), you are saving 'no tune'— the result is total silence when you turn OFF.
- To turn <u>all</u> the musical-key jingles off, turn the setup **Musical-keys** to **Off.**
- In addition, **Sounds Vol:Off** will disable Musical keys.

Sounds

>> The Lightwriter can play .wav sounds.

BUZZ

- There are 2 buzz-sounds, using the **Buzz** key, and **Shift** then **Buzz**. You can alter these and the 3 other 'system' sounds—for setup details, see Section 4.

Buzz sound	**Select the sound for the buzzer.**
Shift-buzz	**Select the sound for shift-buzz.**
Idle sound	**Select the sound for reminders every 60 secs if no keyboard-use.**
Alert sound	**Select the sound for the various system sounds.**
Warn sound	**Select the sound for warnings such as "low battery".**

- The first two sounds can be 'tried out' while in setups—make a change to the **Buzz sound**, and press **Buzz** to hear it.
- Shift-buzz is always at the maximum volume (as long as **Sound vol** is not **Off**)—use this for a different 'level of urgency'.
- The other four sound-levels are controlled by the setup **Sound vol**.
- Set any or all of these sounds to **None** if the user cannot cope with unexpected sounds—for example, certain spasm conditions.
- You can write a tune for the **Buzz**-key: it will replace <u>all</u> the sounds (**Meep**, etc); and the same for **Shift-buzz**. The routines are:

  Clear the screen, then ..BUZZ=::8[tune] then MEM MEM + Y
  Clear the screen, then ..SHIFT.BUZZ=::8[tune] then MEM MEM + Y

- Note the two **Fullstops** before, and another between the words **SHIFT** and **BUZZ**.
- If you save with 'nothing' after the '**=**'-sign you will erase your tune, and the buzz-key will revert to the sounds (**Bell**, etc); the same applies to shift-buzz.

Save/Load Setup Groups

>> You can load all the setups at once, for a particular user.

- You have already seen how you can set approximately 40 'controls' with the **Setups**—this is called a 'setup group'.
- You can store 26 of these setup groups, to configure the machine for 26 different users or applications—some users need different tremor-delay settings according to the time of day.

FIRSTLY	**Set up the Lightwriter the way you want it—for details, see page 49.**
SECONDLY	**Record the state of the machine as it is "now".**
THIRDLY	**You can load "now" anytime, no matter how the machine has been changed in the intervening time.**
FOURTHLY	**You can re-record "now" anytime, replacing the old "now".**

- Press **MEM MEM MEM S** to record (or 'save') a setup group. You will be asked **Which Setup?** Press **J** for John's, **M** for Mary's, etc; the current setups will <u>all</u> be saved, in a single 'snapshot'—**Delete Old?** means that there is already a group saved on that key; you may be intending to replace it.
- Press **MEM MEM MEM L** to load a previously-saved setup group. You will be asked **Which Setup?** (**J** for John's, **M** for Mary's, etc)—**No Setup Data** means that there is no setup-group saved on that key.

Example 1:
low volume, male-speech, upper-case, "On-symbol" flashing, no keyboard-click, no tremor-delay, slow repeats, abbreviation-expansions auto, remote-switch recalls memory 5, warning-beeps on, 5-minute turn-off, and a "buzz" buzzer sound.

Example 2:
max volume, female speech, lower-case, "On-symbol" not flashing, loud keyboard-click, max. tremor-delay, rapid repeats, abbreviation-expansions turned off, remote-switch as a "delete-key", warning-beeps off, no turn-off, and a "bell" buzzer sound.

SUMMARY

- The order of events is:

    Change the setups to how you would like them (eg: a Female voice and no Speech-gaps).
    Record this "personality" (MEM MEM MEM S then one of the letters A to Z, then Y).
    From now on, MEM MEM MEM L then the letter will load ALL your preferences.

- These can be changed, modified and improved on at any time—think of the system as 'up to 26 different 'records' of how the setups are'.

NEW IN V5.9

- We have added 5 special-purpose setup-groups for changing languages in multi-language machines, see page 67.
- These 5 are backed-up (and will be restored if the Lightwriter has a problem).
- You can use some or all of these 5 for your own purposes. Contact us if interested.
- The A - Z setup-groups may be lost if the Lightwriter needs a restart, see page 79.

International Setups

>> You can set up the Lightwriter to suit your country.

LANGUAGES

- The factory-suggested memories, screen-messages and 'helps' will be changed to the appropriate language by the **Language** setup if they have been translated by us, otherwise the screen-messages and 'helps' will be displayed in English.
- The two keys to the right of **L** will be set automatically if the setup is **Keys: Auto**— see below.
- The Lightwriter can have a variety of languages for the speech-system, either internally or externally—these are controlled by the **Speech** setup.

NATIONAL KEYS

- To alter the function of the two 'special' keys to the right of the **L** key, press **MEM Replay Shift Fullstop K** then **+** to select as follows:

	Left-key	Shifted-left-key	Right-key	Shifted-right-key
British	?	?	£	$
American	?	?	$	¢
Danish & Norwegian	ø	?	æ	å
Swedish & Finnish	ö	?	ä	å
German	ö	?	ä	ü
French	é	?	è	ç
Spanish & Portuguese	?	¿	ñ	ç
Japanese	?	?	¥	¥
Icelandic	?	?	Ð	'p'
Turkish	?	?	$	¢

- This defaults to **Keys: Auto**, and this will automatically set up the correct keys for the **Language** setup— however, you may wish to have independent control.
- Characters such as '¿' and the Icelandic characters are displayed on VFD displays—on LCD displays you will get '?', 'p' and 'd', but they will be correctly printed on an Epson-compatible printer, and correctly pronounced by an Infovox synthesiser (if fitted).

SYMBOLS LIST

- This list contains all the above characters and more—see page 43.
- Press **MEM** then press **Space** repeatedly, and **MEM** to select
- Using the macro system, you can store one of these symbols on a memory for quick access. Eg **Mem-1**.

'DEAD KEYS'

- This system is an alternative to the SYMBOLS system.
- Press **MEM** then **Fullstop** repeatedly, then a letter: the symbol on the far left of the display will modify the subsequent letter, as follows:

å	**Puts a dot over a following character (eg å)**
ä	**Puts an umlaut over a following character (eg ü)**
é	**Puts an acute-accent over a following character (eg á)**
è	**Puts a grave-accent over a following character (eg à)**
â	**Puts a circumflex over a following character (eg â)**
ç	**Puts a cedilla under a following character (eg ç)**
ñ	**Puts a tilde over a following character (eg ã)**

Example	**MEM Fullstop Fullstop-O= ö**
Example	**MEM Fullstop Fullstop-U= ü**

- You can record this as a key-macro; you could have **MEM-1** produce the French **à**:

PRESS THESE KEYS:	EXPLANATION:
MEM MEM Fullstop Y	**Enter macro-recorder**
1	**Store to Mem-1**
MEM Fullstop Fullstp etc	**Cycle the list of available accents; alight on è**
A	**'à' appears on VFDs ('a' appears on LCDs)**
Off	**Macro complete**
On, MEM-1	**à should appear (on VFDs)**

- Further details of macros on page 58.
- The system above follows the **ANSI / ISO** standard; characters may not all be displayed correctly on the Lightwriter—but should be if the Lightwriter is connected to an IBM-compatible PC or Epson-compatible printer, and correctly pronounced by a speech-synthesiser.

MULTI-LANGUAGE

- The Lightwriter can be fitted with two or more languages.
- It can be useful to flip from one language to another quickly—home/school, French lessons, going out to the restaurant, driving across the border, impressing your friends, social one-upmanship etc.
- To switch from one language to another, use one of the following 5 routines (this applies to 'factory-fitted speech', and will not work with external synthesisers that you might happen to connect to Port1 or Port2).
- There is a label specifying the languages for your particular machine.

PRESS THESE KEYS:	TO LOAD THIS LANGUAGE, IF IT IS FITTED:
MEM MEM MEM L 1	**Load language 1 (see label)**
MEM MEM MEM L 2	**Load language 2 (see label)**
MEM MEM MEM L 3	**Load language 3 (see label)**
MEM MEM MEM L 4	**Load language 4 (see label)**
MEM MEM MEM L 5	**Load language 5 (see label)**

- If the response is **No Setup Data**, your machine is not fitted a language in that location.

- You may need to change **Volume**, **Voice**, **Speech-gaps**, **speech-rate**, or **Pitch**. You can save these changes.
- The sequence of events is:

> **Change the setups to how you would like them (eg: a Female voice and slower Speech-rate).**
> **Save this "personality" - MEM MEM MEM S then one of the numbers above, then Y (YES you DO want to replace it!).**
> **From now on, MEM MEM MEM L then the number will load the language with your preferences added.**

SECTION 6: SCAN and MORSE

Scan

>> The scan-system allows users without hand-control to use the Lightwriter—*the keys and functions appear on the scan-screen instead.*
>> The scan-user may find it difficult to read these pages, and is dependent on the carer for demonstration and support.
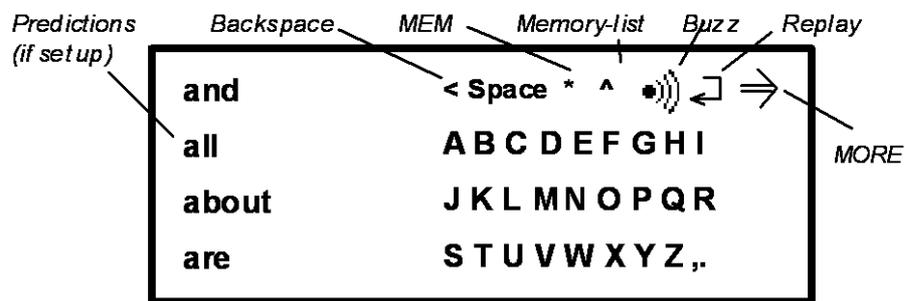
- This is the main- or top-screen.
- **MORE** will take you to a second screen; this also contains a **MORE** button, and this will take you to a third screen.
- These **MORE** screens contain controls, functions and setups; they also contain controls that should be used with care - eg, **Clear** and **Off** - they delete your entire message - to retrieve it, select **REPLAY**.
- For details of the contents of the **MORE** screens, see page 70.

SETTING UP

SL85 (Scan-only; plug-in keyboard).

- Connect the Programmer's keyboard to Port 2, then turn on the SL85 … the keyboard is now active.
- If there is only one port, connect to it. Then, on the SL85, press **ON** then **SPEED** then **DELETE** - the message "Port 1: keyboard" flashes up momentarily - the keyboard is now active. This procedure needs to be repeated every time the SL85 is turned off/on.

SL87 (Combined keyboard and scan).

- Turn the scan system on using a switch plugged into **Switch1** or **Switch2**.

Plug-in Scan Module (Converts keyboard models to scanning).

- Connect the Plug-in Scan Module, after having set up the port, as follows:

  Port 1: MEM REPLAY P then + repeatedly until the setup is Port1: Scanner. OR:
  Port 2: MEM REPLAY P P then + repeatedly until the setup is Port2: Scanner.
  (Do not set both ports to Scanner).

All

- Insert a suitable scan-switch into **Switch1**, and a second switch into **Switch2** if desired (the sockets are on the Lightwriter, even for the Plug-in Scan Module!).
- The two switches need not be the same type, use whatever the user can manage (eg: one click, one foot)—for connection details, see page 6.
- All except SL85: On the keyboard, **MEM Replay Comma** then **Fullstop** repeatedly to **SCANNER** then **Space** and **Back-space** to navigate to these setups then **+** as required, then **ON/C**—see page 53 for scanner setups.

- Check the scan-module from the user's viewpoint for distance, angle, reflections and neck strain. Except on SL85, the contrast of the scan-screen may be altered, see page 53—the scan-user can also do this.

- While the user is getting used to the system, the carer should select **Auditory scan: Word**; the carer should also make use of this feature, for a guided-tour.

- ·Setups and memories should be entered by the carer. it is easier with the keyboard; however, both can be done by the scan-user, by selecting the 'same' keys (mem-replay = setups).

CAREFULLY-PLANNED MEMORIES AND SETUPS WILL GREATLY INCREASE THE USER'S SPEED.

SETUPS

- The scanner setups are listed on page 53.

- Suggested values for other setups:

Predict after: 1	**If you want predictions.**
Auto off (sec): 600	**This takes full advantage of the Scan Suspend feature.**
Speech rate: Fast	**This helps 'Auditory scan: Word' to keep up with a fast Scan speed.**

MOUNTING

- See Safety, page 80.

- The scan-module may be secured using two M4 screws in the base, or with a camera tripod mount to alter the viewing angle.

- The therapist or carer should regularly check that the user's setups are still appropriate to their needs.

USE

SELECTION

- There are 3 methods of selection:

ONE SWITCH, ONE CLICK

- Press and hold **Switch1** to select the row, release to select the item.

  Setups: Scan(1): Auto and Scan release: Yes.

ONE SWITCH, TWO CLICKS

- Click **Scan1** to select the row, again to select the item.

  Setups: Scan(1): Auto and Scan release: No.

TWO SWITCHES

- Click **Switch1** to advance to next row or item, click **Switch2** to select that row or item.

  Setups: Scan(1): Manual, (and Scan release: Yes or No).

SUMMARY

To turn on	**Press either switch.**
To select a row or letter	**Click when the row or item is highlighted.**
To delete one letter	**Select BACK-SPACE (or click, a short pause, click).**
To delete one word	**Select MORE then Delete-word (or MEM then BACK-SPACE).**
To clear the display	**Select MORE then Clear.**
To repeat the message	**Select REPLAY.**
To summon attention	**Select BUZZ (plays the chosen Buzz sound); click to cancel.**
To recall a memory	**Select MEM then, for example, H.**
To show the memory-list	**Select Up-arrow on the top row (equiv. to Mem-5 on the kbd).**
To save memories, etc	**Select MORE then MORE (... explore!).**

SHORTCUTS

Go-faster	**Hold down Switch1, ('go-faster' is selected using Scan accel).**
Select Back-space	**Click Switch1 twice, with a short pause between the clicks.**
Delete one word	**Select MEM then Back-space.**

Cancel a row	**Click Switch2, double-click Switch1, or hold Switch1 down until time-out (according to the setup 'Scans').**
Cancel MORE screen	**As above, or select √ ("OK") as many times as necessary.**
Select top row of MORE	**Select MORE, click again before screen has re-drawn.**

ITEMS

- Most of the objects on the scan-screens are self-explanatory, and users are encouraged to experiment; a few need explanation:

- On the 2nd line of the 2nd screen (**'MORE'**) are the symbols **<<**, **<**, **>** and **>>**; these "editing" controls allow you to insert or delete characters—see page 45. These are:

<<	**'Go to beginning of text'.**
<	**'Cursor-left' (click to stop).**
>	**'Cursor-right' (click to stop).**
>>	**'Go to end of text'.**

- On the 3rd line of the 3rd screen ('**MORE-MORE**') is **Stress**—use this to stress the next word in DECtalk (equivalent to **MEM-8** on the keyboard).

- On the 4th line of the 3rd screen ('**MORE-MORE**') is Setups. Scan-users have access to a few setups appropriate to their needs.

- 3 setups, **Volume**, **Contrast** and **Speed**, are on the 3rd line of **MORE**. SL85 has no Contrast adjustment.

- All the features available from the keyboard are accessible from most scan-screens. Where this Manual says 'press' a key, you can 'select' the same 'virtual-key' on the scan-screen.

Examples:	**Select MEM Space, Space ... MEM for symbols-list. Select MORE then = to calculate.**

MEMORIES

- The 4th object on the top row of the main page scan-screen is **Memory-list**. The memories will appear in this form:
  C= Would you please put the Lightwriter on charge
- Shortcut: you could select this memory by selecting **MEM** (3rd object) and then **C**.
- To change the memories, see page 24. [If SL85, use the Programming keyboard wherever possible. However it can be done on the scan-screen, select MORE then MORE].
  C = My name is Colin.

PREDICTIONS

- Change the setup **Predict after** from **Off** to **1**, **2** or **3**. Four predictions will be shown on the left of scan-screen.
- Select a prediction if the word you want is shown; if it is not, select the next character in your word, and a more accurate list will be displayed.

ABILITY

- If the user's timing skills are poor or reactions are slow, manual step-scanning may be preferable to automatic scanning, see page 53.

SPEED RANGE

- This is controlled by the setup **Scan speed**—for details, see page 53.

Min	**1 per 10 secs.**
Max:	**2 per sec.**

- If **Auditory scan: Word**, the system is slowed down by 'speaking'—set **Speech rate: Fast** to minimise this.

- Fast speeds require skill, the system may appear to overshoot—start at a slow speed.

FEEDBACK FOR VISUALLY-IMPAIRED USERS

- If the setup **Auditory scan: Word** is selected, each letter or item will be spoken during scanning.

- If the setup **Speak: Every key** is selected, each letter or item will be spoken upon selection, as a confirmation.
- If the setups **Auditory scan: Word** and **Speak: Every key** are selected, each letter or item will be spoken during scan, and repeated if selected.

MESSAGE LOST?

- If the message is lost (for example, if you select **Clear),** simply select **Replay**, the message is retrieved!
- This works after OFF, as well!!

DOUBLE-CLICK

- Double-clicking Switch1 cancels the row, and goes back the main screen.
- The double-click speed can be adjusted with the setup **Scan pause**—for details, see page 53.

GO-FASTER

- You can have the scanning 'go faster' if **Switch1** is held down.
- This is adjusted with the setup **Scan accel**—for details, see page 53.

RESPONSE

- If the user has problems with the scan system, consider the following:

Slow to 'go faster'?	**Reduce Scan pause.**
Can't double-click?	**Increase Scan pause.**
Overshoots?	**Reduce Scan speed; change Auditory scan: Word to Auditory scan: Beep or Auditory scan: Off.**

SUSPEND

- Software V5.8 (onwards): the scanner will suspend if unused, according to the setup **Suspend after**; the reasons for this are:

  To save the user the effort of turning off after speaking.
  To allow others to speak without interruption.
  To avoid the loss of message between communication-sessions.
  To save power, thus extending the use.

- You will probably want to increase the setup Auto-off (sec) to 600. This means that the system wakes up 'instantly' for 10 mins. After that, wake-up takes a few seconds.

OFF

- To turn off manually, select **MORE** then **OFF**—or, press **OFF** on the keyboard, or SL85 panel.
- The Lightwriter turns off automatically if the scanner is unused, according to the setup **Auto off (mins)**; this should be increased if necessary to compensate for slow scan-users.
- The message is not lost when the Lightwriter turns off—if first selection is **REPLAY**, the message is restored from last time.
- This feature is important—it can save a lot of work!

BATTERY

- If the scan-screen starts to get dim, the battery needs charging.
- If preferred, use the scanner and/or the Lightwriter with the charger plugged in.

Morse

>> Some users cannot use the Lightwriter's keyboard but can use two switches, eg: one each side the head—*alertness is required to learn the codes to use this system effectively!*
>> The morse-user may find it difficult to read these pages, and is dependent on the carer for demonstration and support.

- This system is an alternative to our Scan system, for high-cognitive users.

SETUP

- Clear the screen and press **MEM** then **Replay**; the display shows **Setups**.
- Press **M** repeatedly to go to the **Morse pause** setup, and press **+** repeatedly to change it to a number other than **Off** —the lower number, the faster system (**3** is a good starting-value).
- Insert switches into **Switch1** and **Switch2**—they will emit different 'key-clicks' when pressed, which helps you to learn the codes.
- If using our click-switches, you could adjust them to different pressures so that they feel different.

ON

- Tap **Switch1** or **Switch2** once to wake up the Lightwriter in the 'Morse' mode.

BASICS

- Tap in a code (see page 75) and then release both switches.

> **Switch1 represents the classical Morse code "dot" (or "dit")**
> **Switch2 represents the classical Morse code "dash" (or "dah")**

- **Morse pause** is an [adjustable] pause after entering the code; this is to allow you to add more 'clicks'.
- After this pause, the character or function will be displayed.
- The Lightwriter will chirrup if an incorrect code is entered.

CONTROLS

- The following setups control the Morse system:

> **Morse pause**
> **Key click**
> **Key repeat**
> **Tremor**
> **Key touch**
> **Case**

- **Morse pause** alters the pause after releasing the last switch; the lower number, the shorter the pause and the faster system; to use a **Morse pause: 1**, you need to have fast reactions.
- **Key click** alters the loudness of the morse feedback-sound.

- **Key repeat** alters the speed of repeat if the Morse switches are held down. The fastest repeat-speeds should only be selected for accurate users.
- **Tremor** prevents inadvertent multiple-inputs; each press must followed by a deliberate pause. **Tremor: Max** requires a **Morse pause** setting of 5 or more.
- **Key touch** adjusts the time that the Morse switches must be held down before they start to work. During this period you can change your mind.
- **Case:** characters will be in UPPER or lower-case as selected, see page 43.
- The Morse-user can alter these (by entering **Mem** then **Replay** then **M**, **K**, **K**, **C** or **Space**-repeatedly).

WHAT'S AVAILABLE

- You can access all of the Lightwriter's features described in this Manual.
- You can also use Shift—to access 'Spell', '2nd-Conversation', etc.
- When replaying a long message, hold down either switch to pause the scroll. Hold it down for at least 7 "clicks" if you get spurious characters added to the message.
- You or your helper can use the keyboard at the same time, if you want to.

AUDITORY FEEDBACK

- You may find it useful to hear the "key" that has been entered.
- The setup is **Speak: Every key**—see page 33.

AUTO-KEYING

- The Morse-keys repeat. That is to say, if held down the system will 'click-click-click'. This means that the clicks can be counted, with a minimal physical effort; this is called auto-keying.
- There are 6 settings, controlled by the **Key repeat** setup:

Key repeat: Off	**Morse-keys do not repeat.**
Key repeat: 1	**Morse-keys repeat slowly.**
Key repeat: 2	**Morse-keys repeat faster.**
Key repeat: 3	**Morse-keys repeat faster.**
Key repeat: 4	**Morse-keys repeat faster.**
Key repeat: 5	**Morse-keys repeat faster.**
Key repeat: 6	**Morse-keys repeat fastest.**

- To see this, press **MEM-replay shift fullstop**:

> **Press M, M; set Morse pause: 2.**
> **Press K, K, K; set Key repeat: 1.**
> **Hold down Switch1 and count exactly 6 clicks.**
> **Release, wait 2 seconds, press +.**
> **Hold down Switch1 and count exactly 6 clicks.**
> **Release, wait 2 seconds, press +.**
> **Hold down Switch1 and count exactly 6 clicks.**
> **Release, wait 2 seconds, press +.**
> **Hold down Switch1 and count exactly 6 clicks.**
> **Release, wait 2 seconds, press +.**
> **Hold down Switch1 and count exactly 6 clicks.**
> **Release, wait 2 seconds, press +.**
> **Hold down Switch1 and count exactly 6 clicks.**
> **Press + repeatedly to select the most suitable.**

MORSE ON SL85, SL87 AND PLUG-IN SCAN

- You can have text or predictions on the large multi-line screen; to do this, select one of the four **Kbd screen** options, see page 41:

  Small
  Medium
  Large
  Predict

- To change from Morse to Scan:

  Press MEM replay M M; the user-display should show Morse pause.
  Press the Zero key, you should now have Morse pause: Off.
  Turn the Lightwriter Off.
  Pressing either of the switches will now wake up the Lightwriter in the 'Scan' mode.

NATIONAL-KEYS

- The national-keys are defined by the **Language** setup, and vary according to country—see page 49. The English symbols are shown in brackets, below.
- Look at the 2 keys to the right of L on the keyboard—this will tell you which 4 symbols are available on your machine.
- You can store more on Mem-[1, 2, A, B, C, etc]. For example; you could have **MEM-1** produce the French **à**
- You will create these using the Dead Keys system, page 66, and record them using the key-macro system, page 58:

PRESS THESE KEYS:	EXPLANATION:
MEM MEM Fullstop Y	Enter macro-recorder
1	Store the macro on Mem-1; flashing R…
MEM Fullstop Fullstp etc	Cycle the Dead Keys list of available accents; alight on è
A	à appears on VFDs (a appears on LCDs)
Off	Macro complete
On, MEM-1	à should appear (on VFDs)

- The system described here follows the **ANSI / ISO** standard; characters may not all be displayed correctly on the Lightwriter—but should be if the Lightwriter is connected to an IBM-compatible PC or Epson-compatible printer, and correctly pronounced by a speech-synthesiser.

MORSE OFF

- To disable the Morse system press **MEM replay M M**; the display should show **Morse pause.**
- You cannot turn this setup **Off** with the **+** and **–** keys. You must press **Zero**. MORSE-USERS MUST NOT DO THIS, AS THEY WILL LOSE MORSE!!!
- The only reason to turn the system off is so that the switches can make use of the Scan or Remote switches systems—see pages 68 and 61.
- If these are not required, you can leave the setup alone. Simply disconnect the switches.

- Here are the codes for the letters, numbers and functions.
- This page is available printed and laminated (on request).
- For example, to enter the word **BE** then **Space**, press:

> **Switch2, Switch1, Switch1, Switch1, (wait)**
> **Switch1, (wait)**
> **Switch1, Switch1, Switch2, Switch2, (wait)**

Space	**1-1-2-2**
Back-space	**1-2-1-2**

A	**1-2**
B	**2-1-1-1**
C	**2-1-2-1**
D	**2-1-1**
E	**1**

F	**1-1-2-1**
G	**2-2-1**
H	**1-1-1-1**
I	**1-1**
J	**1-2-2-2**

K	**2-1-2**
L	**1-2-1-1**
M	**2-2**
N	**2-1**
O	**2-2-2**

P	**1-2-2-1**
Q	**2-2-1-2**
R	**1-2-1**
S	**1-1-1**
T	**2**

U	**1-1-2**
V	**1-1-1-2**
W	**1-2-2**
X	**2-1-1-2**
Y	**2-1-2-2**
Z	**2-2-1-1**

MEM	**2-2-2-1**
Replay	**2-2-2-2**
Clear	**2-2-1-2-2**
Buzz	**1-1-1-2-1**

1	**1-2-2-2-2**
2	**1-1-2-2-2**
3	**1-1-1-2-2**
4	**1-1-1-1-2**
5	**1-1-1-1-1**
6	**2-1-1-1-1**
7	**2-2-1-1-1**
8	**2-2-2-1-1**
9	**2-2-2-2-1**
Ø	**2-2-2-2-2**

Exclamation-mark	**1-1-2-2-1**
Plus	**1-2-1-1-1**
Minus	**1-2-1-1-2**
Open-bracket	**1-2-1-2-1**
Close-bracket	**1-2-1-2-2**
Slash	**1-2-2-1-1**
Percent	**1-2-2-1-2**
Equals	**1-2-2-2-1**

Shift	**2-1-1-1-2**
Cursor-left	**2-1-1-2-1**
Cursor-right	**2-1-1-2-2**
Shift-left nat'l-key (?)	**2-1-2-1-1**
Left national-key (?)	**2-1-2-1-2**
Right national-key (£)	**2-1-2-2-1**
Shift-right nati'l-key ($)	**2-1-2-2-2**
Ampersand	**2-2-2-1-2**

Quotes	**1-2-1-1-2-1**
Fullstop (Period)	**1-2-1-2-1-2**
OFF	**1-2-2-1-2-2**
Apostrophe	**1-2-2-2-2-1**
Comma	**2-2-1-1-2-2**

SECTION 7: TROUBLE-SHOOTING

>> Common faults are listed below; further details are to be found in this Manual—make full use of the Table of Contents (front) and the Index (back).

Symptom	Possible Fault	Remedy
Lightwriter seems dead.	Flat battery.	Charge batteries for a few hours and try again.
	Batteries need replacing.	Contact TCL or your local distributor.
Lightwriter charger-light does not illuminate.	Mains is not switched on.	Check mains socket with another electrical appliance.
	Charger is dead.	Contact TCL or your local distributor.
Charger gets very hot.	Faulty charger.	Contact TCL or your local distributor.
Lightwriter gets very hot when on charge (some heat is normal).	The wrong charger is being used.	Use a 9V DC 800 mA charger with a TCL label.
Batteries don't hold as much charge as they used to.	Try a full discharge and recharge, as follows (this is recommended every 3 months, to extend the battery life).	Flip speech off (MEM-7). Press MEM MEM MEM T. Leave Lightwriter to run self-test (this will take 6-12 hours). It will turn itself off. Then charge for 18 hours.
Keys stiff, delayed or sticky.	The Key touch setup is not Off.	If individual keys are stiff, the keyboard needs to be replaced.
	The Tremor setup is not Off.	If all keys are stiff, the setups are in question.
The 2 keys to the right of 'L' produce foreign symbols.	The Keys setup has been changed.	Set it to your country.
LCD works but VFD doesn't.	Low Battery.	Connect charger.
	VFD not selected.	Contact TCL or your local distributor.
Won't speak.	Check speech is fitted. Speech is turned off.	See label on bottom of Lightwriter.
	The synthesiser is not selected in the setup called Speech. Synthesiser not selected. Speak is set to Replay only. Port(s) set up for external synthesiser.	MEM MEM MEM L Ø Y to restore 'Ideal setups'.
Won't print.	Check the correct type of printer is set up.	Check that Port 1 (or Port 2 as appropriate) is set to Printer.
	Check the cable is connected firmly at both ends. Check you are using a TCL cable.	If the printer is on physical port 2, check that software Port 1 is NOT set to Printer.
Won't scan.	Check the scanner is set up.	Check that Port 1 (or Port 2 as appropriate) is set to Scanner.
	If using one switch, check that it is in the socket marked switch-1.	No switch in socket "Switch-1" is a common problem.
	Check switch that the works.	Try another switch.
Setups unavailable.	Setup access locked.	MEM MEM MEM shift fullstop Q to lock / unlock setups.
Non-EuroTalk foreign-language speech synthesiser doesn't work.	Port 2 setup has been altered.	MEM MEM MEM L Ø Y to restore 'Ideal setups'.
No buzzer, tunes, chirrups or warbles.	The setup Sound vol is Off.	MEM MEM MEM L Ø Y to restore 'Ideal setups'.
	Individual sounds have been redefined as 'silence'.	

|		
Abbreviation-expansions don't expand.	The setup Abbrv-expnsn is Off.	Change to Abbrv-expnsn:Space.
	The expansion is shorter than the abbreviation; to check, enter the 'expansion'—you will get the abbreviation!	Erase this memory, then store with a space before the abbreviation.
Abbreviation-expansions expand over and over again.	You have probably stored something 'illegal' such as an expansion which refers to itself.	We have limited 'nesting' to 5; if it repeats 5 times, this is probably what is happening.
Keys produce the memories that are stored on them (eg, 1 produces AND).	The Lightwriter is in SmartKeys mode; in this mode (which is for low-cognitive users), each key plays its memory.	To get out, press MEM Replay then S repeatedly until setup is SmartKeys, then +.
'Hello how are you' memories unavailable.	The Language setup has been altered.	Change it back to English, American, etc.
	The memories have been hidden.	Example: Clear the display; MEM MEM P = unhide MEM-P, if it has been hidden)
Keys speak, but do not display.	The Lightwriter is in Speak:Announce mode; in this mode (which is for the blind), each key must be pressed TWICE.	Setups are incorrect. To get out, type EEXXPPEERRTT, press MEM MEM Replay Replay S S S S Ø.
Works but doesn't behave as expected.	Setups awry.	Press MEM MEM MEM L Ø Y... all your 'personal' setups will be wiped and the machine returned to Ideal Setups (the ones that were stored at the factory). However, your memories will be retained.
'Locks up' and nothing happens on the displays.	System error.	Press Off then On/C. Try a Restart.
Makes a "shrieking" or "motorboat" noise.	System error.	Press Off then On/C. Try a Restart.
General problems.	Restart.	Connect the charger—check the Lightwriter charging-light is lit. After a few minutes, press Off and hold it down for 15 seconds or more, then release. The Lightwriter should start up after a few seconds—the machine should Restart and re-initialise. It will then rebuild the entire memory-system—your memories and setups will NOT be lost. Continue to charge for 18 hours—you may use the machine while on charge.
Still nothing?	If no result, try the previous step a few more times.	Ring us, we may be able to fix it over the phone. Please arrange return to TCL service dept.

Serial/RS232

>> The Lightwriter has one (or two) serial outputs, and may be connected to other equipment which sends or receives serial data—*computers, printers, speech synthesisers, remote displays, etc.*

- The Lightwriter has a **9-way "Dee"** output on the right-side (another on the left, if a 2nd port is fitted)—as far as possible, this conforms to PC standard:

1	**not used**	**used by a PC for DCD**	**(Data-Carrier-Detect)**
2	**Rx**	**used by a PC for Rx**	**(Receive-Data)**
3	**Tx**	**used by a PC for Tx**	**(Transmit-Data)**
4	**not used**	**used by a PC for DTR**	**(Data-Terminal-Ready)**
5	**0V**	**used by a PC for Signal-Ground**	
6	**not used**	**used by a PC for DSR**	**(Data-Set-Ready)**
7	**5V**	**used by a PC for RTS**	**(Request-to-Send)**
8	**CTS**	**used by a PC for CTS**	**(Clear-to-Send/bar)**
9	**not used**	**used by a PC for RI**	**(Ring-Indicator)**

- Looking into the connector on the Lightwriter:
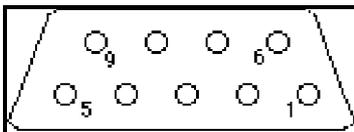
- The protocol is: **?-baud, 8-data, 1-stop-bit, no-parity**. The baud rate is **1200**, **2400**, **4800**, or **9600** or **38400** depending on the application.
- +5V unregulated (4.5V-5.3V depending on battery level) is available on pin **7**—currents exceeding 50mA will reduce the operating-life of the machine; the pin is short-circuit protected.
- The Lightwriter transmits at +5V and OV logic levels—some equipment will receive at these levels.
- Other machines require that the +5V logic-level be 'shifted' to +12V, and the OV logic to -12V—this is part of the RS232 communication-standard, and is necessary over long distances or in electrically noisy environments.
- We offer interface-cables with a built-in level-shifter, and with the appropriate connector at the other end.
- All machines (including the Lightwriter) which claim to be RS232-compatible have to be designed to accept incoming +12V and -12V levels—in other words, use of our level-shifter will never be harmful to the equipment if it is truly RS232-compatible; it is simply that in some cases it isn't necessary.

- The Lightwriter can receive input from a computer, using a terminal-emulator program—details on request; we supply cables for both IBM and Mac.
- The setup must be Port: Computer or Port: Keyboard.
- If **Port: Computer** the baud-rate must be **1200**.
- If **Port: Keyboard** the baud-rate can be **300, 1200, 2400** or **9600** as selected with the setup **Kbd baud**.

Re-build the system

RESTART

- Won't start? Locked up? Put the machine on charge, check that the charging-light is on, and (after a few minutes) press **Off**, hold it down at least 15 seconds, then release. If necessary, repeat this sequence.

RESTORE SETUPS

- **MEM MEM MEM L Ø Y**. If someone has altered the setups in such a way that the machine doesn't behave as expected (won't speak, for example), restore all Setups to 'Ideal'.

UNDO MEMORY-CHANGES

- **MEM MEM MEM Shift Fullstop X Y Y Space.** This operation erases all User-memories and Speech-Exceptions, and restores them from Backup—if you make a mistake and want to put them back to how they were last time a backup was made.
- If **Backup** is set to **Auto**, do <u>NOT</u> press **Off** after a mistake—if you do, the backup-system makes a faithful copy of all your errors!!

ERASE ALL MEMORIES

- **MEM MEM MEM Shift Fullstop X Y Y Y Y**. This operation clears all User-memories, Speech-exceptions and their Backups, and restores all factory-suggested memories (**HELLO HOW ARE YOU?** etc)—ready for a new user.
- Your Setup-groups are retained.

AS NEW

- 'Restore Setups', then 'Erase All Memories'—this is the condition in which we despatched the machine.

Memory Areas

ROM

- Read-only memory: contains the system software plus default-Setups, the 15 pre-stored Words & Phases and the Macros 'Volume-Up' and 'Volume-Down', stored in permanent memory—the mems can be replaced, but the original information can't be destroyed or corrupted (providing a 'fixed starting point').

RAM

- High-speed working-memory: all memories are stored here—if the battery runs flat (which it will over many months) or if there is a problem, all memories are automatically restored from backup memory.

EEPROM

- Backup memory: contains Setup changes, Setup-groups, and User-memories (Memories, Abbreviation-expansions, Speech-exceptions, and Macros), stored in non-volatile backup memory, which can be erased <u>deliberately</u> but will not be lost under any other circumstances.
- All these will be restored if the machine is restarted (even after a software-change).

SECTION 8: SAFETY ISSUES

Statement of Intended Use

- The Lightwriter is intended to be used as an augmentative communication device for people with speech impairment. It is intended to be used as a portable unit or as a freestanding unit on a table or other similar support or as a wheel chair mounted unit.
- The MiniPrinter is an accessory for use only with TOBY CHURCHILL Ltd (TCL) Lightwriter range of communication devices.
- The buzzer is not to be relied upon as an alarm for life- or safety-critical use.
- See also Accessories, page 81.

GENERAL CONDITIONS OF USE

- The Lightwriter, charger and most accessories have been subjected to extensive quality control and test procedures to ensure compliance with the essential requirements of the Medical Devices Directive (MDA), and the National Health Service Purchasing and Supplies Agency specification for Electronic Assistive Technology. These tests include the simulation of fault conditions, in order to confirm the design and manufacturing process, and to ensure the safety of users of our equipment.
- Lightwriters should not interfere with the correct operation of adjacent electronic equipment. Appropriate E.B.M.E. staff must confirm their safe use in critical areas such as Intensive Care Units.

Ingress of Fluids

- The Lightwriter is splashproof but not waterproof. To prevent accidental damage to this electronic equipment, avoid fluids entering inside the case. If accidental spillage of fluid over the unit is likely to occur, it may be advisable to use our optional *Keyboard Glove* or *Raincoat* covers, or to cover the unit with a flexible transparent membrane such as polythene or Clingfilm.
- When cleaning the unit please follow the '*Cleaning and Decontamination Procedures'* described on page 83.
- The Lightwriter operates at low voltage, and there is no risk of electric shock if the unit becomes wet.

Safety Precautions

- If the Lightwriter is used as a portable unit then the harness that is available from TCL should be considered. If the harness is not used the Lightwriter must be held securely so that it cannot fall. A fall may result in damage to the Lightwriter or in personal injury.
- If the Lightwriter is freestanding it may be supported on a suitable stand. Due consideration must be given to the stability of the unit. Care must be taken that any cables connected to the Lightwriter or to an external power supply are secured or placed so that:

    They cannot be trapped in any way which could damage a cable.
    A cable cannot be accidentally pulled which could result in Lightwriter or the power-supply falling.
    Cables and connectors must not be put under strain by putting them under tension or by bending the cable sharply.
    Care must be taken in the selection of input switches, accessories and printers. It is recommended that only TCL accessories are used with a Lightwriter.
    Connectors for switches, printers etc are fitted with black plastic covers. These should be refitted whenever the connector is not in use.

> **The external speaker socket must not be used to connect the Lightwriter to any externally powered amplification system, e.g. Public Address systems.**
> **Input switches which have removable cables should not be used.**

- If the Lightwriter is wheel chair mounted it must be fitted securely to the wheel chair so that it cannot become loose.

ACCESSORIES

- We recommend that TOBY CHURCHILL Limited accessories should be the first choice as they have been specifically designed to work with the Lightwriter. However other accessories may be used providing they are compatible with the Lightwriter. If other than genuine TOBY CHURCHILL Limited accessories are used, assessment of any associated risk is the responsibility of the installer. As a guide, the recommended switch input devices specification is:

> **3.5mm mono jack plug.**
> **Removable jack plug to jack plug cables are prohibited from use.**
> **Screened input cable.**
> **Cable length shall be the minimum necessary.**
> **Surplus cable to be secured carefully away from risk of mechanical damage.**

- Accessories shall comply with EN60950, or EN60601-1-1.

CHARGER

- Our chargers are approved to EN60950. In addition we inspect and test them to ensure user-safety, in accordance with EN60601-1-1.

- Use of non-TCL chargers is not recommended, and may cause a hazard and/or damage the Lightwriter. We have taken every precaution to avoid a fire-risk in this circumstance, but cannot accept responsibility should this occur. If you need to use any other supply, for example: an external battery, obtain approval for the use of the supply from TCL <u>before</u> using it.

- The charger lead should be safely positioned in order to avoid hazards.

PLUG-IN DEVICES

- Refit the blanking plugs to all connectors after use.

- Plug-in devices (including the cabling) should be suppressed in order that the complete Lightwriter and peripheral and/or plug-in switches and/or plug-in speakers meets CE standards.

- All cable leads should be safely positioned in order to avoid hazards.

- Input switches that have removable cables should not be used.

MOUNTING

- The therapist or carer is RESPONSIBLE FOR THE SAFETY of mounting-systems for the Lightwriter and Plug-in Scan Module, SL87 and the switches where these are mounted.

- The stability of a wheelchair may be affected (where the Lightwriter is mounted on the wheelchair and is swung to the side when transferring in or out of the chair).

- The Lightwriter must be mounted so that the wheel chair is stable for all positions of the Lightwriter and its mount, particularly while the wheel chair is in motion.

- If an external battery unit is used it must be mounted securely and in such a position as to enhance the stability of the wheel chair.

- Any cables connected to the Lightwriter must be positioned and secured so that:

> **They cannot be trapped by any part of the wheel-chair where they could be crushed or cut.**
> **They are not subject to abrasion by moving parts.**
> **They do not impede the movement of the Lightwriter mount.**
> **They are not liable to be snagged by objects external to the wheel-chair.**
> **The cables and connectors must not be put under strain by putting them under tension or by bending a cable sharply.**

- In the UK it is recommended that the Toby Churchill Ltd mounting system be used.

- If the Lightwriter is used in any other way due consideration must be given to the security and stability of any mount and the safety of any cables and connectors.

TRAVEL CARE WARNING

- Hard objects in front of passengers or loose in a vehicle could be dangerous in the event of emergency braking. Therefore, we recommend that if you remain in a wheelchair when travelling in a vehicle, lift the Midimount pole out of the mounting-block complete with your Lightwriter or other communication-aid, and stow the assembly securely so that it cannot easily become dislodged. See MDA document No. DB 2001 (03).

ENVIRONMENTAL CONDITIONS

- **Water and other liquids**: the Lightwriter should not be exposed to heavy rain. Use in very light rain is possible. If there is ingress of water or other liquid into the Lightwriter the system should be allowed to dry before use.

- **Humidity**: the Lightwriter should not be exposed to conditions where condensation can occur inside the case. Usually when the system is operating it will not be affected by humidity but it should not be left for long periods in very humid conditions, for example in a bathroom or swimming pool. If condensation does occur when it is not operating it should be allowed to dry before switching it on.

- **Temperature**: the Lightwriter can be operated in ambient temperatures in the range 0°C to 30°C. Note that the temperature may be outside this range if the Lightwriter has been left in a vehicle exposed to the sun or to cold nighttime temperatures, in which case it should be allowed to reach a safe temperature before operation.

MULTIPLE PORTABLE SOCKET-OUTLETS

- This section specifies the requirements for the construction of a safe system, when installed with other equipment in a home, hospital, or other residence.

- This sub-section refers to mains extension socket-strips.

- The socket-strip should be wall-mounted, not be placed on the floor.

- Cables should be protected from traffic (foot or wheelchair wheel),

- Cables should be securely clipped; there should be no risk of tripping, or pulling the equipment onto the floor.

- Socket-strips should not be daisy-chained; each socket-strip should be plugged into to the wall.

- Extension-reels should not be plugged into the socket-strip.

- Care must be taken not to exceed the rating of the socket strip, or of the wiring of the ring-main. Lightwriter chargers are rated at 17VA, and will not present an overload problem.

- The socket-strip should only be used for supplying power to equipment which is intended to form part of the system. Other equipment will be connected entirely at the installer's risk.

- The connection of non-approved accessories to the socket-strip may constitute a hazard to the patient under fault-conditions. A risk assessment is recommended in these circumstances.

EN60601

- Lightwriters meet the essential requirements of EN60601.

EARTH LEAKAGE
All readings below 5μA

ENCLOSURE LEAKAGE CURRENT
All readings below 2μA

PATIENT LEAKAGE CURRENT
All readings less than 45μA

PATIENT AUXILIARY CURRENT
All readings less than 40μA

- The Lightwriter, together with accessories provided by TOBY CHURCHILL Ltd, are suitable for use within the PATIENT ENVIRONMENT; other accessories are not approved, and are to be used at the installer's risk.

- The Scan and Morse systems require a lot of switch actions. Care must be taken to recommend and mount switches which minimise fatigue or the risk of Repetitive Strain Injury.

FURTHER READING

- www.doh.gov.uk/   DOH (Dept of Health)
- www.nhs.uk/   NHS
- www.medical-devices.gov.uk/   MDA
- www.medical-devices.gov.uk/ > seach for 'DB' > Device Bulletins 2001 > MDA document No. DB 2001 (03) "Guidance on the Safe Transportation of Wheelchairs"
- www.doh.gov.uk/scg/communityequipment.htm   Community Equipment
- www.becta.org.uk/cap/   BECta

Decontamination

- The Lightwriter and associated equipment may become dirty through a variety of means such as saliva, mucus, spilt food and drink, and from contact with dirty hands.
- There may also be a need to decontaminate equipment to reduce the risk of infection transmission.

CLEANING PROCEDURE

- The recommended cleaning procedure is wipe affected external surfaces with a cloth soaked in hot water with some washing-up liquid, and use a nail brush for more stubborn dirt.
- The Lightwriter is splashproof but not waterproof. Do not allow water to enter inside the Lightwriter. It is recommended that you turn the Lightwriter on end with the charger point lowest and to clean the Lightwriter in this position, reducing the risk of any water entering inside the Lightwriter.
- If the Lightwriter is fitted with a LightTouch keyboard, this may be dismantled by removing the 4 screws in the keyguard after which the keyguard and the 48 keys can then be lifted off (check first that you have a Quick Reference Card or Handbook handy to show you how to replace the keys in the right order!) The keyguard and 48 plastic keys can be soaked in water and given a more thorough cleaning. Ensure the plastic keys and keyguard are dry before re-fitting.

DECONTAMINATION PROCEDURE

- There may be a requirement to decontaminate a Lightwriter and/or associated equipment after use to reduce the risk of infection transmission to other people. The Central Public Health Laboratory (a division of the Department of Health in the UK) has recommended the following decontamination procedure for this type of low-risk equipment:
  > **Clean the external surfaces with a disposable paper wipe moistened with warm detergent solution.** *(see Cleaning Procedure)*
  > **Allow the surfaces to dry.**
  > **Wipe the surfaces with a commercially-available alcohol-impregnated disposable wipe.**

- Note that this equipment should not be sterilised, nor should disinfecting fluids be used as these may attack the plastic materials, and can make the transparent display filters go opaque.

CAUTION:
> **Do not immerse equipment in water**
> **Do not use disinfecting fluids (such as surgical spirit, Hibitane (a brand name for chlorhexidene) or Cidex (a brand name for 2% alkaline-buffered glutaraldehyde)**
> **Do not autoclave equipment or expose to elevated temperatures**

CARRY BAG

- The Carry Bag cannot be decontaminated, and should be disposed of if cross-infection is a possibility.

Summary

- This is a summary of what the Lightwriter can do: read up on the ones useful to you—*see table of contents, inside front cover.*

HELP

Type:	**MEM MEM MEM H**.
Result:	Plays the help-file Index.
Sections:	**1** to **9** to go to the section you want.
Index:	**Ø** to return to the Index.
Repeat:	Press the number again.
Print:	**P** to print all sections—*make sure that a printer is set up.*
Quit:	**On/C** to escape the help-system.

DIRECT-MEMORIES

Type:	**MEM** then a letter/number—Words & Phrases such as **MEM H** are 'suggested examples'.
Result:	Recalls the memory stored on that key.
Store:	**MEM MEM** then a letter or number to store what's on-screen.
Replace:	As 'Store'. You will be warned that there already is a memory on that key.
Erase:	**On/C** then **MEM MEM** then the letter or number, then **Y** (ie, store 'nothing').

ABBREVIATION-EXPANSION MEMORIES

Type:	Combinations of letters (plus punctuation/numbers)—*eg:* **NY**, **S2N**, **ADDR**, **ADDR2**.
Result:	Recalls the memory stored on that key-combination—*eg:* **HH=HELLO HOW ARE YOU?**
Store:	**[Code]=[Text]** or **[Text]=[Code]**, then **MEM MEM** then **+**.
Replace:	As 'Store'. You will be warned that there already is a memory on that key.
Erase:	**On/C** then **MEM MEM** then **+** then **Y** (ie, store 'nothing').

SPEECH

Type:	Any text, then **Replay**. The Lightwriter will speak it, if speech is fitted (see rear label).

SOUNDS

Type:	**MEM Replay B-key Plus-key Buzz-key B-key Plus-key Buzz-key** etc.
Result:	Each buzz-sound is played.
Type:	**MEM Replay S S S + Shift-key Buzz-key Shift-key Buzz-key** etc.
Notes:	**Shift Buzz** gives a 2nd 'level of urgency'.

CALCULATOR

Type:	**On/C** then **2+2** then = (Shift-key 4).
Result:	**2+2=4.**

PRINT

Type:	**MEM 6** (but if the user has stored a message on **MEM 6**, use **MEM MEM MEM P**).
Result:	Prints the message—*make sure that a printer is set up.*

FEATURES

Delete a word:	**MEM**-**Back-space** deletes the last word.
Spell a word:	**Shift**-**Replay** spells the last word.
2nd Conversation:	Hold two conversations at the same time!
Symbols:	A list of special symbols.
Editing:	Insert/delete/change your on-screen message.
Ports:	Use printer, scan, etc

SETUP SYSTEM

Type:	**MEM Replay**.
Result:	Enters the setup system.
Browse:	**Space** or **Back-space**.
Change:	**+** to change the current setup.
Spoken:	**Replay** to speak the current setup.
Help:	**?** for a description of what the current setup does.
Quit:	**On/C** to escape the setup system - all changes are saved.

A FEW SETUPS

Speak: Every key	For education.
Speak: Announce	For the blind.
Tremor:	For shaaaaaaaaaaaakkkkkkkkkkkkkyyyyyyyyy fingers.
Key touch:	Change the apparent key-pressure.
Key click:	Select the electronic 'click' on each key.
Key repeat:	Control the speed of the four repeat-keys.
Lower case:	Select UPPER or lower-case.
SmartText:	Insert automatic spaces after Fullstops, etc.
Mem speed:	Choose speed of memory-recall.

SPECIAL FUNCTIONS

Type:	**MEM MEM MEM**.
Result:	Enters the special-functions system.
Browse:	**Space** or **Back-space**.
Execute:	Press the displayed key.
Help:	**?** for a description of what the current special-function does.
Quit:	**On/C** to escape the special-functions system.

MALFUNCTION?

Restart: Hold down the "Off" key for 15 seconds (do this on charge if unsuccessful); Your memories will be preserved!