

# The ICECABLE

Mac 512

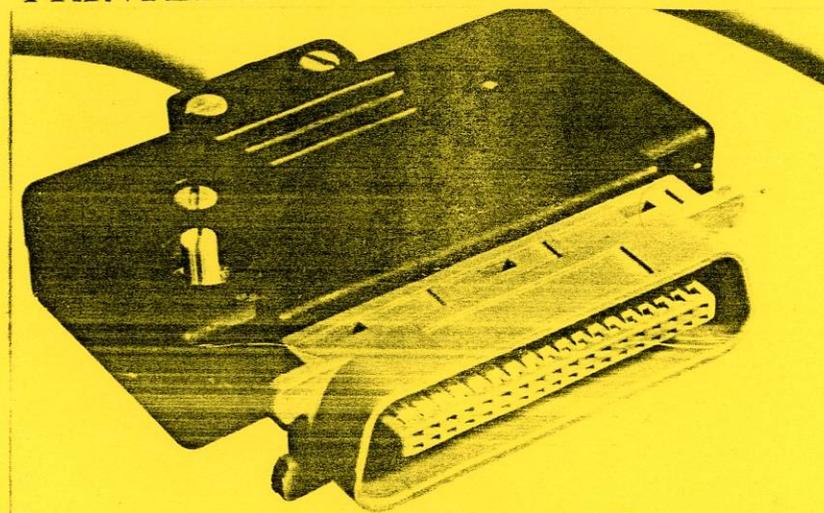
Apple //e

Apple //c

Apple //gs  
 Mac

# THE ICECABLE

URNS ANY EPSON COMPATIBLE  
PRINTER INTO AN IMAGEWRITER.



**AUTOMATIC ICE CO.**

10 SMITH STREET,  
CHARLESTOWN 2290

PH: (049) 63 3188

Mac 512    Apple //e    Apple //c    Apple //gs, Mac

# THE ICECABLE

TURNS ANY EPSON COMPATIBLE  
PRINTER INTO AN IMAGEWRITER.



**AUTOMATIC ICE CO.**

10 SMITH STREET,  
CHARLESTOWN 2290  
PH: (049) 63 3188

Mac 512    Apple //e    Apple //c    Apple //gs, Mac

# The ICECABLE



- Mac 512
- Apple //e
- Apple //c
- Apple //gs
- Mac

# THE ICECABLE

Turns any Epson compatible printer into an imagewriter.

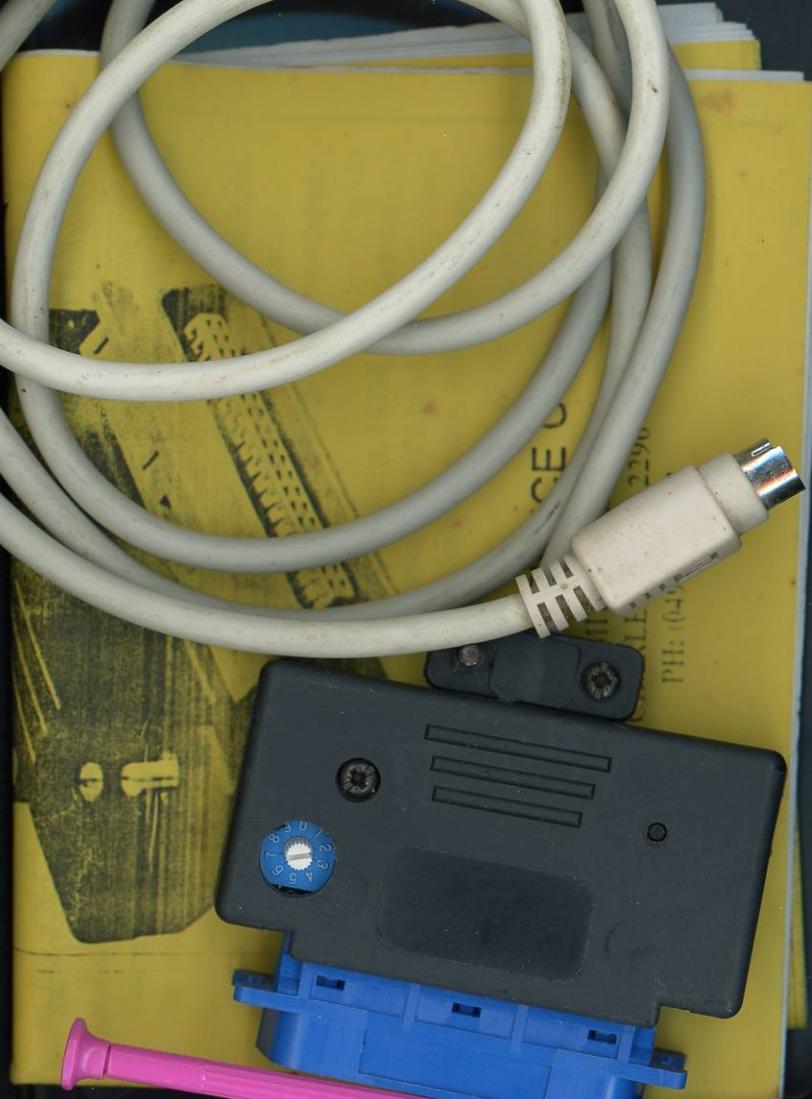


**AUTOMATIC ICE CO.**

10 SMITH STREET,  
CHARLESTOWN 2290  
PH: (049) 63 3188

- Mac 512
- Apple //e
- Apple //c
- Apple //gs, Mac

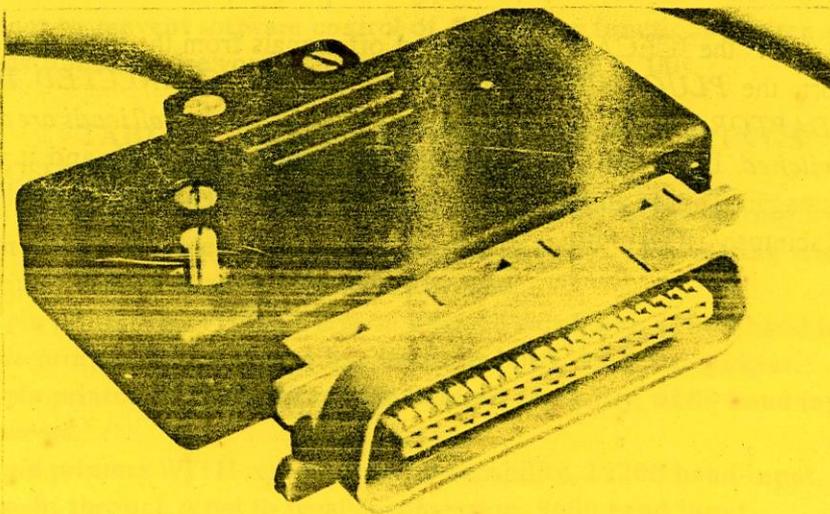
BETAC





# THE ICECABLE

URNS ANY EPSON COMPATIBLE  
PRINTER INTO AN IMAGEWRITER.



**AUTOMATIC ICE CO.**

10 SMITH STREET,  
CHARLESTOWN 2290  
PH: (049) 63 3188

As the ICECABLE is powered off signals from the computer output port, the **PLUG MUST NOT BE REWIRED, CONNECTED TO AN ADAPTOR CABLE or connected to a switch box unless all leads are directly switched.** If the plug is rewired it will probably not work and it will be damaged. The IIe and IIc versions also have different handshake levels to the Macintosh/ IIGS units.

## ICECABLE - OPERATING INSTRUCTIONS

Installation is simply a matter of setting the switch position on the ICECABLE to suit your printer as outlined in table 1 and plugging one end into the computer, the other end into an EPSON compatible printer set in "EPSON" mode. The printer is now virtually the same as an IMAGEWRITER II or IMAGEWRITER LQ if it has a 24 pin printhead. Switch positions 0,1, 5 & 8 require an input signal of 19200 baud with 8 data bits, no parity, one stop bit and hardware handshaking. This mode is used with the Apple Macintosh having an IMAGEWRITER LQ software driver installed in the system folder running a 24 pin printhead printer. The Macintosh LQ driver always outputs 19200 baud data. All other switch positions require 9600 baud with the above data format. This is the normal default output data format from Apple computers and generally should not concern you except to ensure that the Super Serial Card DIP switches are set correctly on the Apple II and IIe (see below). If your printer has panel switches for selecting special operating modes, these switches should be set so as not to prevent software control of the printer functions - often called "Standard Mode". See your printer manual for details of this.

### TABLE 1 ICECABLE DIPSWITCH SETTINGS

#### SW POSITION

0. Emulates the 24 pin IBM Proprinter XL24. This is the setting for the Canon BJ10e Bubblejet printer. ("Little Squirt"). This setting assumes the printer is NOT capable of reverse line feed.
1. 24 pin printers WITHOUT reverse linefeed capability, 19200 baud input.
2. 9 pin printers WITH reverse line feed capability, 9600 baud input.
3. 24 pin printers WITHOUT reverse linefeed capability, 9600 baud input.
4. Reserved.
5. 24 pin printers WITH reverse linefeed capability, 19200 baud input.
6. Straight through serial to parallel conversion, 9600 baud input.
7. 9 pin printers WITHOUT reverse linefeed capability, 9600 baud input.
8. Same as number 0.
9. Same as number 1.

The switch on the ICECABLE is set by rotating the white plastic shaft until the vertically inscribed slot on the shaft is adjacent to the desired number position. The new setting does not come into effect until the ICECABLE is reset by turning off the printer and computer or unplugging the ICECABLE. It will only work properly if connected to an EPSON compatible printer set to operate in "EPSON" mode and with no switches set to override normal software control of printer functions such as character pitch or font style. EPSON compatible printers will have at least bit image graphic commands ESC K, ESC L, ESC Y & ESC Z. If the printer has a 24 pin printhead, the switch should be set to position 0,1,3,5 or 8. 24 pin printers will work with the other switch settings but the graphics will be washed out and the printer will not receive the high resolution graphic codes, also 24 pin printers increment in 1/180 inches while 9 pin printers increment in 1/216 inches so the graphic images and page length will be incorrectly dimensioned if the wrong printer type is set. This setting also determines the answer given to the printer driver when it asks for identification and hence what the driver will send to the printer. If the printer supports the reverse line feed command "ESC j n", you should select switch position 5 for a 24 pin printer and position 2 for a 9 pin printer. See the section below on reverse linefeeds for further discussion. A 24 pin printer combined with the ICECABLE will mimic the IMAGEWRITER LQ printer which defaults to an input baudrate of 19200. A nine pin printer mimics an IMAGEWRITER II which defaults to 9600 baud. The Apple II series of computers normally default to 9600 baud serial output but there is no switch position on the ICECABLE for 24 pin printers with reverse linefeed operating at 9600 baud. You could use position 3 and ignore the printer's reverse linefeed or preferably you should use position 5 and change the computer's output to 19200 baud. With the IIGS, you can change this on the control panel, the II & IIe can be changed with the dipswitch settings on the Super Serial Card and the IIc baudrate can be changed from the keyboard. Of course if your 24 pin printer cannot do reverse linefeeds, leave the baudrate at the default of 9600 and select position 3 when using the ICECABLE with the Apple II series of computers. For 9 pin printers the baudrate is always 9600.

With the Macintosh you must install a software printer driver in the system folder. For 9 pin printers, use the "chooser" to select the "IMAGEWRITER II" driver and select the "printer" or "modem" port as the output. This driver always outputs at 9600 baud and will drive the ICECABLE on switch settings 2,3,6 & 7. For 24 pin printers you should select the "IMAGEWRITER LQ" driver. This driver always outputs at 19200 baud on the Macintosh and will drive switch settings 0,1,5 & 8. If a Macintosh "IMAGEWRITER LQ" driver is not available, you can use the "IMAGEWRITER II" driver with switch position 3 but this driver will not supply the high resolution graphic commands, although if the output was only intended for a 9 pin printer, this is of no consequence. The Apple IIGS when used with the GSOS operating system also requires an "IMAGEWRITER II" or "IMAGEWRITER LQ" driver installed in the system folder but the output baudrate is determined by the computer's control panel settings, not the driver. Both these drivers request an ID string before printing a document. The IMAGEWRITER II driver is not too fussy about the answer and will usually work even if the printer says it is an LQ but the LQ driver is very particular and will give an error message refusing to print the document unless it receives an acceptable ID. (see section "ICECABLE COMMANDS" below for a discussion of strings returned). When set to position 6, the ICECABLE will accept serial input data and pass it to the printer in parallel format without altering the data. This could be useful if you want to use a special feature of your printer which is not available on the IMAGEWRITER. It can also be useful in debugging programs. Switch the printer off and hold down the form feed and linefeed buttons as you switch the printer back on. The printer will now print a hexadecimal dump of the data stream from the computer. The ICECABLE can also be switched to this straight through serial to parallel mode by the software command "ESC ESC %" (see below).

## GENERAL

The rest of this pamphlet is general information which you may not necessarily need to know unless writing your own software. The ICECABLE accepts the serial printer output from the full range of Apple computers and

converts it to a format suitable for EPSON and EPSON compatible printers. Most printers require Centronics parallel input signals and operate on a more or less standard set of control codes made popular by the EPSON company. Apple computers generate a serial printer output with their own unique range of graphics and character control codes, ensuring that only the Apple IMAGEWRITER printer will work satisfactorily with Apple computers. The ICECABLE changes this serial output to Centronics parallel format and converts the control codes so that EPSON compatible printers mimic the IMAGEWRITER almost perfectly, even generating the Apple Mousetext characters. Table 3 lists all the control codes for the IMAGEWRITER II and the IMAGEWRITER LQ along with discrepancies of the ICECABLE. The major differences are lack of downloadable characters and reverse line feed on some printers. Download characters are not important with the Macintosh because it contains its own fonts and they are not available on the IMAGEWRITER LQ printer anyway. Some printers are not capable of reverse line feed but it is used infrequently especially in graphics applications.

## 24 PIN PRINTERS

Most dot matrix printers have an array of nine needles in their printhead. As these move across the paper, they are fired in a controlled sequence to form the printed characters. Recently printers with a vertical array of 24 needles, producing much higher quality printout, have become available at very competitive prices. The ICECABLE emulates an IMAGEWRITER II with a 9 pin printer and an IMAGEWRITER LQ with a 24 pin printer.

## RESET

The ICECABLE contains a low power CMOS microprocessor which scavenges its operating power from the computer signal currents, putting itself to sleep between characters to conserve power. When the printer and the computer are first powered up, both the ICECABLE and the printer are reset to predetermined initial conditions. Thereafter the ICECABLE keeps a record in its internal memory of the current state of the printer by remembering the control codes sent to the printer. If the printer is momentarily switched off, it will be reset but the ICECABLE will not be

and results may be erratic. In this case the computer and printer can be switched off to reset both the ICECABLE and printer. The ICECABLE resets itself when first powered up but if the computer is momentarily turned off, some printers may continue to supply sufficient voltage to it to prevent a reliable reset when the computer is turned back on. In such case, turn off both the printer and computer or unplug the ICECABLE momentarily. It may be necessary to leave the computer off for up to 5 seconds to get a reliable reset. If the computer is used in the normal manner, reset presents no problems. The ICECABLE must be reset after changing the switch position.

## ICECABLE VERSIONS

The ICECABLE is available with four different types of plugs to cover the full range of Apple computers:-

1. MINI DIN 8 - for the IIs, Macintosh II and more recent Macintoshes. Plugs into the printer port on the rear.
2. Five pin DIN - for the Apple IIc. The IIc has a built-in serial port equivalent to the Super Serial Card. The ICECABLE plugs into a socket on the rear of the computer.
3. DB9 MALE - for the older Macintosh computers. This plugs into the printer socket on the rear of the computer.
4. DB25 MALE - for the Apple II,II+ and IIe. These computers do not have an inbuilt printer output port and require a serial printer card installed in one of the computer slots. Apple's Super Serial Card is a suitable choice with the DIP switches set for 9600 baud as follows:-  
SW-1 OFF OFF OFF ON OFF ON ON  
SW-2 ON OFF OFF ON ON OFF OFF  
19200 baud settings are:-  
SW1 OFF OFF OFF OFF OFF ON ON  
SW2 ON OFF OFF ON ON OFF OFF

As the ICECABLE is powered off signals from the computer output port, the **PLUG MUST NOT BE REWIRED, CONNECTED TO AN ADAPTOR CABLE** or connected to a switchbox unless all leads are directly switched. If the plug is rewired it will probably not work and it could be damaged. The IIe and IIc versions also have different handshake levels to the IIG & Macintosh ICECABLES.

When used with the Macintosh, the ICECABLE (also the IMAGEWRITER) requires that an IMAGEWRITER driver be present in the system folder (see section "ICECABLE DIPS SWITCH SETTINGS" above). Some Apple programs ask you to specify the printer and interface being used. "IMAGEWRITER", "IMAGEWRITER II" or IMAGEWRITER LQ is correct for the ICECABLE. Older Apple II programs running on the IIGs will generally work under "Super Serial" if a IIGs option is not provided.

### PRINT QUALITY

Most of the printed output from the Macintosh, even apparently pure text, is in fact graphics output generated from the computer's internal bit mapped fonts. For this reason it is important that the horizontal dot density of any emulation exactly match that available from the Macintosh, otherwise the text will not format properly. Although the dot densities on the EPSON differ markedly from those on the IMAGEWRITER, the ICECABLE uses elaborate conversion algorithms so that its output exactly matches that of the IMAGEWRITER. The horizontal graphics dot density of the IMAGEWRITER is dependent on the various character pitches and modes selected, the ICECABLE duplicates these and maps 24 pin printers into the 27 pin space of the IMAGEWRITER LQ. Table 2 shows the commands for horizontal dot density. After the print command is given, there may sometimes be a substantial delay before printing commences. This is not due to the ICECABLE but is caused by the computer organising the material for graphic printing. There is very little delay in the ICECABLE and any speed reduction compared to the IMAGEWRITER is mostly inherent in the substitute printer. In Macintosh "DRAFT" mode, the text is printed using the printer's internal fonts but is spaced out along the line by graphic positioning commands as determined

by the software and driver. The software and driver take complete control of the typestyle, pitch and character positioning. Any attempt to override these by setting printer switches may be incompatible with the graphic spacing commands and generate a distorted printout but "DRAFT" is by far the fastest mode and experimenting with different font sizes and styles may generate an acceptable final document in a much faster time, even more so with 24 pin printers. (e.g. Geneva font, "tall adjusted" with the IMAGEWRITER II driver gives a good appearance). The other modes, "BETTER" and "BEST" are much slower, especially with 24 pin printers, due to the large amount of information that has to be processed and printed for high quality bit mapped fonts. The alternate faster solution is a LASERWRITER but the cost is much higher. LQ printers are able to print at 216 dots per inch compared to the LASERWRITER output of 288 dots per inch but they both will only give high quality text if fonts of sufficient resolution are available in the system folder for the "printmanager". The "printmanager" looks for an installed font to match the 216 DPI resolution (three times the 72 DPI screen resolution) and if it can't find one it scales a better or more generally a worse quality font, in which case the printout may be no better than that available from a 9 pin IMAGEWRITER II. If you want high quality printout from a 24 pin printer in "BEST" mode you must install a font three times the point size of the font you are using, thus if you wish to print high quality Geneva 24 point text in your document you must have the Geneva 72 point font installed in the system folder. 9 pin printers require fonts installed at twice the nominated text size for best quality printout. 24 point Geneva text on the document needs 48 point Geneva fonts installed in the system folder. Alternatively, if your computer has sufficient memory you can use a program called "Adobe Type Manager" which automatically generates the required high quality bit mapped fonts but this may slow down the computer. All these problems will be fixed when the Macintosh System 7 operating system becomes available.

### COLOUR

If your printer supports EPSON compatible colour, colour commands will be properly interpreted and printed, if not the commands will have no effect

since the EPSON colour commands are "ESC r" followed by CONTROL @ - CONTROL G. Printers gobble the the first character after "ESC", even if they don't recognise it, and the next character is a non printing control character. If you don't get colour when you expect to, it is likely that your software printer driver does not support colour commands. The original IMAGEWRITER was not a colour printer but you may get a result by telling the software that the printer is an "APPLE SCRIBE" if this option is available.

### REVERSE LINE FEED

The IMAGEWRITER printers have the ability to reverse linefeed tractor paper although this is not operable when a cut sheet feeder is engaged or the tractor is set in "pull" position. The ICECABLE supports the reverse linefeed command but many printers do not. The EPSON form of the command is "ESC j n" where "j" is the lower case character and "n" is a number  $0 < n < 255$ . If your printer supports this command, the switch should be set to position 2 for a 9 pin printer or position 5 for a 24 pin printer. On switch positions 0,1,3,7 & 8 the device keeps track of forward and reverse linefeeds and only advances the paper for a nett forward linefeed. This is the same as the algorithm used by the IMAGEWRITER LQ printer when it is in "pull tractor" mode or a cut sheet feeder is installed. If the correct switch position is not set, the first line of a document may be overprinted and the reverse linefeed command may generate spurious characters on the printout. Newer software rarely uses the command because of the advent of cut sheet feeders and pull tractors and it is hardly ever used in graphic modes because of the difficulty of getting proper vertical alignment due to the backlash of the paper drive mechanism. The Macintosh sometimes uses it in draft mode, the difectory printout in draft mode is an example:- it prints the heading, moves to the bottom of the page, prints the page number, moves back to the top of the page and then prints the listing down the page. If this is a problem, the solution is to print using the "BETTER" or "BEST" options which are the graphic modes. When using the LQ driver with switch positions 1,3 & 7, it will see from the ID command that a pull tractor is installed and refuse to print in draft mode

giving an advice message to use "BETTER" or "BEST" mode. Some versions of a spreadsheet program "EXCELLON" use reverse linefeed extensively in draft mode. "Appleworks" does not use the proper commands for superscript or subscript, superscript feeds the paper in reverse for half a line and then forward half a line when finished, subscript does the opposite. This will make a mess of the document if reverse linefeed is not supported. A similar problem arises in the printout of some music programs. If you have trouble you suspect may be due to reverse linefeeds, print out on a true IMAGEWRITER and observe the paper motion. Many of the more recent printers do support reverse linefeed and these, when used with the ICECABLE will mimic the IMAGEWRITER almost perfectly. Some printers ignore the reverse linefeed command if friction feed, pull tractor or cut sheet feeders are active, others specify in the manual that reverse linefeed is only reliable over small increments.

### IMAGEWRITER LQ COMPATIBILTY

The IMAGEWRITER LQ is only available with a 15" carriage. When asked for an ID by the LQ printer driver, the ICECABLE, if set in one of the 24 pin printer modes, replies with "LQ1C<cr>" which is what the LQ driver always expects. If your printer only has a 9" carriage, you must ensure that you don,t exceed this width or you will end up with unpredictable results. If the printer has a dipswitch setting that adds a carriage return after linefeed, it should be set to "OFF" for maximum IMAGEWRITER compatibilty.

As well as the IMAGEWRITER codes, there are three commands which act directly on the ICECABLE:-

ESCAPE ESCAPE ? - On receipt of this code sequence, the firmware version nuber of the ICECABLE is printed.

ESCAPE ESCAPE % - This turns on straight through serial to paralell mode with no code conversion. When used with the hex dump mode available on many EPSON compatible printers, this can be useful for observing and debugging printer output or for using features of your printer which are not

available on the IMAGEWRITER. This can only be cancelled by power off.

**ESCAPE ESCAPE #** - When programs are printing under control of the "Print manager" in the Apple Macintosh and IIGS, at the start of a print, it sends the code "E SC ?" to the printer and expects the printer to reply with identity and configuration information so that it can select the appropriate fonts and options. In the normal 9 pin EPSON configuration (switch positions 2 & 7), the ICECABLE returns the string "IW10C<cr>", where "IW"=IMAGEWRITER II, "10"=10 inch carriage, "C"= colour ribbon installed. In switch position 5 (24 pin printer with reverse linefeed), it returns the string "LQ1C"<cr> where "LQ"=IMAGEWRITER LQ. For switch positions 0,1,3 & 8 (24 pin printers without reverse line feed), the string "LQ1CP" is returned. The "P"= "pull tractor installed" and will generally stop the driver sending reverse line feeds. It was felt that this was the most general setup and if incorrect (e.g. no colour ribbon installed) the program could cope. However it is possible to change this string by entering the sequence ESC ESC # followed by a string of up to 8 characters terminated by a carriage return. A possible use for this feature might be to add "F" to the string ("LQ1CF<cr>") to signify a cut sheet feeder installed. This string remains in effect until the ICECABLE is turned off or a new string is entered.

The above commands and most of the printer commands require the "ESCAPE" code [CHR\$(27)]. Usually the software takes care of this transparently to the user, but you may require to input "ESC" directly, especially when using the above commands. While the key marked "ESC" exists on some Apple computers, pressing it does not generate output to the printer as with other printable and control characters. It must be sent under program control.

An example in Applesoft Basic on the APPLE II, IIc or IIgs:-

```
]10 PRINT CHR$(27);CHR$(27);"?"  
]20 REM-PRINTS VERSION NUMBER AND CONFIGURATION ON  
PRINTER PAPER  
]RUN
```

#### IF IT DOESN'T WORK PROPERLY.

1. Check that the serial data stream being fed to the ICECABLE is the correct baudrate. Switch settings 0,1,5 & 8 require 19200 baud, all other switch settings require 9600 baudrate. For the Apple II & IIc, the baudrate is determined by the dipswitch settings on the Apple Super Serial Card and is usually set to 9600 baud with the dipswitch settings as shown previously.. The default baudrate for the IIc & IIGS is 9600. In the IIc, this can be changed by a software command and the IIGS baudrate can be changed from the IIGS control panel. With the new GSOS operating system you will need an IMAGEWRITER II or IMAGEWRITER LQ software driver installed in the system folder but neither of these control the baudrate, it must be set from the IIGS control panel. If you have a 24 pin printer WITH reverse linefeed, it may be worthwhile to set the baudrate to 19200 so that you can use switch position 5 for maximum compatibility. With the Macintosh you will need an IMAGEWRITER LQ software driver installed in the system folder for switch positions 0,1,5 & 8. This driver always outputs 19200 baud. All other switch positions will require an IMAGEWRITER II driver which always runs at 9600 baud.

2. Is it set correctly for a 9 pin or a 24 pin printhead? Switch positions 1,3 or 5 are correct for 24 pins. On an incorrect setting the printer may appear to work but the graphics will be washed out, graphic dimensions and the page length may be incorrect. There are also differences in the graphic command codes for 9 pin & 24 pin.

3. For printers with reverse line capability, the switch should be set to position 2 or 5. Other switch positions keep track of the nett credit of forward and reverse linefeeds. Incorrect setting can cause the first line of a document to be overprinted, incorrect page lengths and spurious characters on the printed text. See the section on reverse linefeeds above.

4. Is your printer EPSON compatible and if so, are the printer dipswitches set to "EPSON" mode? Some printers have an IBM or PROPRINTER

emulation and although these may appear to work, some control codes and linefeeds are different. Switch positions 0 or 8 are the correct setting for a 24 pin PROPRINTER, Canon Bubblejet or EPSON 24 pin printer set for IBM mode.

5. The printer dipswitches and panel switches must be set in "standard" mode. On some printers it is possible to lock in certain pitches and character sets by front panel switches so that they can't be overridden by software commands. This will give unpredictable results.

6. If the computer has been momentarily turned off or the switch position changed, the ICECABLE may not be properly reset. Turn off both the computer and printer for 5 - 10 seconds. See the section on "RESET" above.

7. Has the ICECABLE plug been rewired or is it plugged into an adaptor cable or switchbox? It is designed to plug directly into the computer with the appropriate socket and takes its power from the socket. If modified, it may not work and could be damaged.

8. Unexpected characters on the printout. Check that the printer is set to "EPSON" mode and that the ICECABLE switch is set to a position consistent with the printer's reverse linefeed capability.

9. If print quality is poor, read the section in this manual about required fonts to be installed in the Macintosh System folder.

10. If it still doesn't work, read this pamphlet again and contact your dealer or Automatic Ice Co.

**ICECABLE COMMANDS :** For easy readability, command characters are printed here with spaces between adjacent characters but when issuing commands, there are no spaces between characters unless "space" is a specific command character, in which case it is shown as " " (e.g. ESCD CTRL@). If digits are part of the command (e.g. ESC G 0024), leading zeros can be replaced by spaces. The horizontal and vertical dot spacing of the ICECABLE is identical to the IMAGEWRITER.

**TABLE 2 - GRAPHICS HORIZONTAL DOT DENSITY -**

CHARACTER PITCH	SELECTION CODE	DOTS / INCH
Extended	ESC n	72
Pica	ESC N	80
Elite	ESC E	96
Pica proportional	ESC p	160
Elite proportional	ESC P	160
Semi condensed	ESC e	108
Condensed	ESC q	120
Ultra condensed	ESC Q	136

**TABLE 3 - IMAGEWRITER II PRINTER CONTROL CODES**

FUNCTION	KEYSTROKES	COMMENT	I/C SUPPORT
<b>CHAR PITCH:</b>			
Extended	ESCn	9 chars/in	Uses 10CPI
Pica (default)	ESCN	10 chars/in	YES
Elite	ESCE	12 Chars/inch	YES
Pica proportional	ESCp		YES
Elite proportional	ESCP		YES
Semicondensed	ESCe	13.4 CPI	Uses 15 CPI
Condensed	ESCq	15 CPI	YES
Ultracondensed	ESCQ	17 CPI	YES
Set n dots	ESC_n	Between proportional chars. (n=1to6)	YES
Space n dots	ESCs_n	Between proportional chars.	NO
<b>PRINT FORMATTING:</b>			
Underline begin	ESCX		YES
Underline end	ESCY		YES
Boldface begin	ESC!		YES
Boldface end	ESC"		YES

Headline begin	CONTROLN	YES
Headline end	CONTROLO	YES
Superscript begin	ESCx	YES
Superscript end	ESCz	YES
Subscript begin	ESCy	YES
Subscript end	ESCz	YES
Half high begin	ESCw	YES
Half high end	ESCw	YES
Repeat character	ESCRnnnc Print"c"nnn times	YES
Slashed zero on	ESCD CTRL@ CTRLA	
Slashed zero off	ESCZ CTRL@ CTRLA	

Slashed zero printing is determined by EPSON printer DIP switch setting.

#### DOWNLOADING CHARACTERS

Select download ch's	ESC'	No download char.	
Select download ch's	ESC*	functions are	
Select ROM ch. set	ESC\$	supported and the	
16 col'm max width ch's	ESC+	IMAGEWRITER LQ	
8 col'm max width ch's	ESC-	also does not	
Begin download	ESCI	support them.	
End download	CONTROLD		

#### BIT IMAGE GRAPHICS:

Print next nnnn bytes as standard resolution bit image graphics.	ESC G nnnn	nnnn=no. of bytes	YES
Print next nnnX8 bytes as standard resolution bit image graphics.	ESC g nnn		YES
Repeat std. res. dot pattern nnnn times	ESC V nnnn a	1 byte pattern	YES
Begin printing at std. res. dot position nnnn	ESC F nnnn		YES

The next four are IMAGEWRITER LQ commands and are only available on 24 pin printers when the ICECABLE switch position is 0,1,3,5 or 8.

Print next nnnnX3 bytes as high res. graphic.	ESC C nnnn		YES
---	------------	--	-----

Repeat hi - res. dot pattern (abc) nnnn times.	ESC U nnnn abc		YES
Start printing at hi - res dot position nnnn.	ESC h nnnn		YES
Shift printing down n/216 inches.	ESC t n	n = 1,2 or 3	YES

#### MISCELLANEOUS

Ignore 8th bit	ESCD CTRL@ (_=space)	Default	YES
Recognise 8th bit	ESCZ CTRL@ (_=space char)		YES
Paper detector off	ESCO		YES
Paper detector on	ESCO	Default	YES
Software reset	ESCc	Restore defaults	YES
Self ID	ESC?		YES

#### PRINTER DIRECTION

Left to right only	ESC>		YES
Bidirectional	ESC<		YES
Backspace & print	CTRL H		YES

#### POSITIONING

Feed to top form	CTRL L		YES
Set top of form	ESCv		YES
Set left margin	ESCLnnn	nnn=char position	YES
6 lines per inch	ESCA		YES
8 lines per inch	ESCB		YES
Line spacing	ESCTnn nn/144	(nn=01 - 99)	YES
Set form length	ESCHnnnn	nnnn/144 inches	Only set to nearest 1/6 in.

#### END OF LINE

EOL at <cr> only	ESCZ@CTRL@	Always <cr> & FF	YES
EOL at <cr> or FF	ESCD@CTRL@		YES

#### LINE FEEDS

No <cr> before LF	ESC11		YES
Add <cr> before LF	ESC10		YES
Forward line feed	ESCf		YES
Reverse line feed	ESCr	Depends on printer.	
Feed n lines	CTRL_n	1<n<9	YES

### BUFFER CONTROLS

Cancel unprinted text	CTRLX	YES
No LF at buffer full	ESCZ_CTRL@ (_=space char)	YES
LF added at buffer full	ESCD_CTRL@ (_=space char)	YES

### TABBING CONTROLS

Set horizontal tabs	ESC(a,b,n.	abn = column no. to nth col.	YES
Set one more tab	ESCun		NO
Clear selected tabs	ESC)a,b,n.	abn = column no. to nth col.	NO
Clear horizontal tabs	ESCO		YES

### CHARACTER SETS

96 ASCII characters	ESC\$	The IMAGEWRITER LQ	YES
MouseText characters	ESC&	does not have mousetext chars.	YES

### FONTS

Draft	ESCa1	Same as standard font	
Standard	ESCa0		YES
Near letter quality	ESCa2		YES

### COLOURS

Black	ESCK0		YES
Yellow	ESCK1		YES
Red	ESCK2		YES
Blue	ESCK3		YES
Orange	ESCK4		YES
Green	ESCK5		YES

### INTERNATIONAL LANGUAGE FONTS

American	ESCZ CTRLG CTRL@		YES
British	ESCZ CTRLD CTRL@	ESCD CTRLD CTRL@	YES
German	ESCZ CTRLC CTRL@	ESCD CTRLD CTRL@	YES
French	ESCZ CTRLA CTRL@	ESCD CTRLF CTRL@	YES
Swedish	ESCZ CTRLB CTRL@	ESCD CTRLB CTRL@	YES
Italian	ESCZ CTRLF CTRL@	ESCD CTRLA CTRL@	YES
Spanish	ESCD CTRLG CTRL@		YES
Danish	ESCZ CTRLB CTRL@	ESCD CTRLB CTRL@	YES

MouseText Characters

@.....  
A.....  
B.....  
C.....  
D.....  
E.....  
F.....  
G.....  
H.....  
I.....  
J.....  
K.....  
L.....  
M.....  
N.....  
O.....  
P.....  
Q.....  
R.....  
S.....  
T.....  
U.....  
V.....  
W.....  
X.....  
Y.....  
Z.....  
[.....  
\  
].....  
^.....  
\_.....



24/04/2016 19:57



24/04/2016 19:56

Print Shop 85

Captured for

ImageWriter 2

Canon BJE240

Epson EQ mode

IceCable dial 0

emulating

ImageWriter EQ

THIS IS A TEST PRINT

APPLEWORKS GS ON SYSTEM 6.0.3 WITH POINTLESS &

HARMONIE IMAGEWRITER LQ DRIVER

PRINTING TO CANON BJC-240 CONFIGURED FOR EPSON LQ

EMULATION & AUTO ICE CABLE SET TO DIAL POSITION 0

(EMULATES IMAGEWRITER LQ)

**SERIAL PORT IS AT 19200 BAUD**

*Paintworks Gold (Apple IIGS Harmonie  
ImageWriter LQ driver) printing to  
Canon BJC-240 (in Epson LQ mode)  
& ICECABLE (dial position 0 - emulates  
ImageWriter LQ)*

MILLS



## JUNE LETTER

Hello again,  
 Let's start off June with a sale. Why not! Everything's reduced. You'll save up to 50% off the normal purchase price. But you'll have to hurry. Last year we ran out of hours.

it? Two reasons. First, k to minimum levels or e value of all unsold have a hard core of bably about 30%, who s unless it's a REAL oted by freebies, dis- rs etc. They just hang ce to the lowest price to get them to buy is ST PRICE available hey can buy disks in 0 respectively (They an unlabelled Tai- heir business we have price around. Which f the month and we're QUALITY BRANDS es valued at \$25 to \$30

new suppliers of rib- continue to carry pre- brand disks and prog- ource Micro-Educational e coming through in the

## PRINTER INTERFACES

### (5) Ice-Cable

New from Automatic Ice Co. This product is finally working and available ex. stock. With the Icecable, you can use any Epson compatible parallel printer on your Apple IIc, IIGS or Mac, and it will function just like a serial Imagewriter.

The Icecable accepts the serial printer output from the Mac, IIGS or IIc and converts it to a format suitable for the Epson printer (or compatible such as Panasonic, STAR etc). The IIc, and Mac send out a unique range of graphics and symbols, ensuring that they only work with Apple's printer - the Imagewriter. This product lies to the computer and tells it that it is an Imagewriter!

Installation is simply a case of plugging one end of the cable into the printer, and the other into your computer. The cable is 1m long.

No other extras are required. It takes its power from the printer.

Normally \$130. Sale price **\$99**. Please specify which computer. Apple IIc, IIe, Mac 512 and Mac Plus/IIGs versions available.



### (6) Xetec Super Graphix Jr

After a long time out of stock, we now have X Super Graphix Jr interfaces for the Commo 64/128 back in stock. These devices allow the

## APPLE PR

### (7) Digicard 80

The 80 column card for the RAM, an Apple standard play and enhanced graphics samples of software that extra memory include Pro Mousepaint, 128K Zardax a covered by a 12 month war



### (8) Disk Drives for

An Apple compatible 5.25" disk Apple IIe, II+, II, IIc, IIGs. S Apple II, II+, IIe ( Apple IIc, IIGs (d



**Ice-Cable - early revisions (pre-1990)**  
**Separate models for 9 and 24-pin printers were available (emulating ImageWriter I/II & ImageWriter LQ, respectively)**

# Icecable Review

Apple Bug (May 1989)  
Newsletter of Apple-Q Brisbane  
Scan courtesy of Jason Scott  
[https://archive.org/details/89.05\\_apple-bug](https://archive.org/details/89.05_apple-bug)

by *Graham Back*

**ICECABLE:** from Automatic Ice Co.

Do you have the problem of owning software that will only recognise the Imagewriter printer, and not your Epson, or Epson compatible printer? I do, and I got fed up with it, so I bought the new *ICECABLE* which is the *Epson to Imagewriter converter*, and it works. I will have it at the next Open-Day, so if you are interested you can have a look at it. This one I bought is for the LQ series with the 24 pin head (there is also one for the 9 pin head printers).

It connects directly to your Super Serial Card, if you have a ][+ or ][e, and directly to the serial printer port on the ][c, ][GS and Mac. Mind you, you need to specify which machine you have, because the plugs are different on each machine. The *ICECABLE* allows your *EPSON* to impersonate the *IMAGEWRITER*, but it can also be used as a direct Serial/Parallel converter, without any imitating what-so-ever.

Which means, you can still pass the normal control codes to the printer.

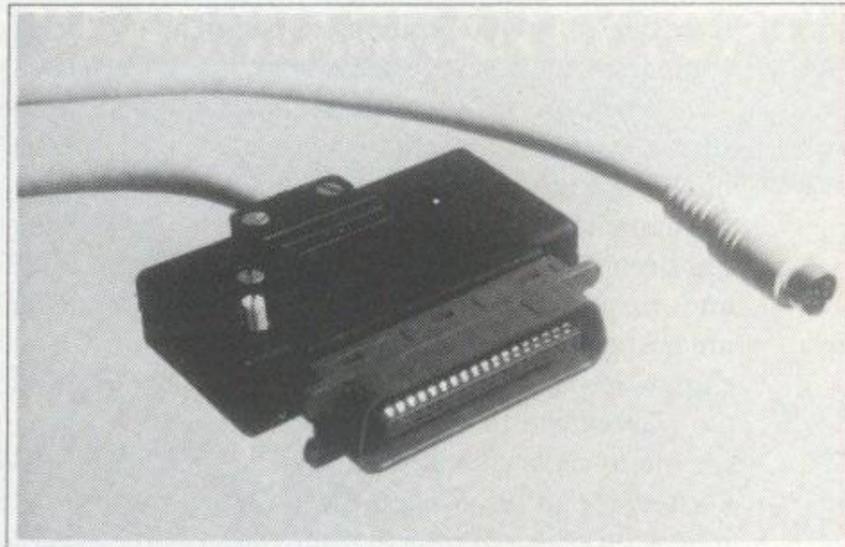
Let me quote from the manual:

*"The ICECABLE accepts the serial printer output from the full range of Apple computers and converts it to a format suitable for EPSON and EPSON COMPATIBLE printers. Most printers require Centronics Parallel input signals and operate on a more-or-less standard set of control codes made popular by the EPSON company. Apple computers generate a serial printer output with their own unique range of graphic and character control codes, ensuring that only the Apple Imagewriter printer will work satisfactorily with Apple computers. The ICECABLE changes this serial output to Centronics parallel format and converts the control codes so that EPSON compatible printers mimic the Imagewriter almost perfectly, even generating the Apple Mousetext characters."*

They work really well for what they are and can be ordered through the Trading Table for \$99.00.

**Remember the new Apple-Q Inc. BBS Phone Number:  
(07) 851-1711**

# You Can Afford A Mac Printer



Revised model with configurable dial and all-in-one 9 & 24-pin support

Fully compatible with Apple IIGS

## The IceCable

### You now have a choice

No more are you restricted to Apple's Imagewriter – and it's pricing. With the IceCable from Australia's own Automatic Ice Co, you can now use your choice of any Epson or compatible parallel printer on your Macintosh 512, Plus, SE or II.

### Works with most printers

Any printer that is Epson compatible. And that includes most Star, Oki, Panasonic, Brother, and Toshiba printers. Plus many others.

### Fill your world with colour

The IceCable works in colour too. Plug it into an Epson compatible colour printer, such as the Star NX-1000CL, and you have a colour Imagewriter compatible printer.

### Easy to use

The Icecable needs no special software or expertise to use. It uses Apples own Imagewriter printer drivers, so it's as easy to print with the Icecable as it is with the Imagewriter. The IceCable just plugs directly into your printer in place of a cable.

### Available from:

**MICRO-EDUCATIONAL**

256 Darby St, Newcastle NSW 2300  
Phone (049) 26 4122 Fax (049) 26 2194

Epson, Star, Panasonic, Apple, Imagewriter, Brother, and Toshiba are registered trademarks of their respective owners. Copyright © 1990.

### 24 pin printing too

The IceCable even works with 24 pin printers such as the Star LC-2410. When using a 24 pin printer, the printer will emulate an Imagewriter LQ. At way below the cost of the LQ.

### Thousands of satisfied users

Thousands of IceCable's have been sold across Australia since its release. In schools, homes and businesses.

### Money Back Guarantee

We're so confident that you'll love the IceCable that if you're not completely satisfied, we'll give you your money back. Return the IceCable in original condition within 10 days of purchase for your money back. No questions asked. So what have you got to lose?

### Order Now

The IceCable is available directly from Micro-Educational for \$130 per unit, plus delivery by post for \$5, or \$13 for delivery by courier.

**Credit Card Orders**  
**008 025 229**

### SPECIAL OFFER

Purchase the Panasonic KX-P1081 printer plus the Icecable for \$499 (saving \$30) plus receive a free box of 3.5" DSDD disks. Offer ends 30th May, 1990.

## ORDER FORM/MORE INFORMATION

Yes, I want an inexpensive printer for my Mac, please send me the following:

- More details on the IceCable
- Icecable for the Macintosh (specify) \_\_\_\_\_ @ \$130 ea.
- Plus the Panasonic KX-P1081 printer @ \$369 inc. 3.5" disks

Enclosed please find cheque/Bankcard/MasterCard/Visa#

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Postcode: \_\_\_\_\_

Phone: \_\_\_\_\_ Signed: \_\_\_\_\_



30/05/2016 10:13