john disc filename fred

Additional notes for disc versions

Disc based versions of cassette softare have reference numbers that are prefixed by a '1' - eg SOFT914 becomes SOFT1914.

Unless otherwise specified, the function of the disc based program is identical to the cassette program, with the exception of the loading instructions where the usual disc loader:

```
RUN"DISC
```

should be used.

By examining the catalogue (directory) of the disc, you will be able to identify the various files that constitute the complete program, and whilst it may be possible to load and run these individual files, it is necessary to use the standard loader to ensure that the correct sequence of chaining is maintained.

Please note that discs are duplicated on both sides: generally the B side and A side are identical unless otherwise specified on the label or within the the supporting text.

SCREEN DESIGNER

© 1984 Amsoft & DJL Software

The complete graphic design utility for the AMSTRAD CPC464.

Soft 197

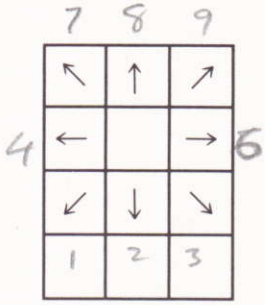
Amsoft Screen Designer Command Summary

PIXEL MODE

KEYS	FUNCTION	EXIT KEY
P	Plot Mode	**[SPACE]** bar
U	Unplot Mode	**[SPACE]** bar
[SPACE] bar	Skip Mode	-
[SHIFT] P	Pen Colour Select	**[ENTER]** key
[SHIFT] U	Paper Colour Select	**[ENTER]** key
[SHIFT] B	Border Colour Select	**[ENTER]** key
[SHIFT] T	Text Mode	**[ENTER]** key
[SHIFT] C	Draw Circle	**[ENTER]/[SPACE]**
[SHIFT] F	Fill Area	**[ENTER]/[SPACE]**
[SHIFT] L	Draw Line	**[ENTER]/[SPACE]**
[SHIFT] S	Scroll Mode	**[ENTER]/[SPACE]**
[SHIFT] M	Magnify Screen	-
[SHIFT] N	De-Magnify Screen	-
[SHIFT] R	Return to the main menu	-
[CLR]	Move Control Window	-
[DELETE]	Remove Control Window	Any other key

NUMERIC KEYPAD

KEYS	FUNCTION
[ENTER] .	Set Pixel at cursor location
[ENTER] Ø	Reset Pixel at cursor location
1	Cursor Down/Left
2	Cursor Down
3	Cursor Down/Right
4	Cursor Left
6	Cursor Right
7	Cursor Up/Left
8	Cursor Up
9	Cursor Up/Right



[SHIFT] with the cursor control keys moves the cursor 8 Pixels.

CTRL/SPACE EXITS SAVE/LOAD
SHIFT/R EXITS TO MAIN MENU

Command Summary continued...

TEXT MODE

KEYS	FUNCTION	EXIT KEY
[CTRL] T	Toggle Print/Merge (Text)	-
[CTRL] B	Border Colour Select	**[ENTER]** key
[SHIFT]/[CTRL] P	Pen Colour Select	**[ENTER]** key
[SHIFT]/[CTRL] U	Paper Colour Select	**[ENTER]** key
[CTRL] G	Print Graphics	**[SPACE]** bar
[CTRL] S	Store Graphics	**[ENTER]/[SPACE]**
[CTRL] I	Stipple Mode	**[SPACE]** bar
1 to -	Select Stipple	-
[CTRL] P	Plot (large cursor)	**[SPACE]** bar
[CTRL] U	Unplot (large cursor)	**[SPACE]** bar
[CTRL] W	Wash Colour Mode	**[SPACE]** bar
[CTRL] T	Toggle All/One (Wash)	-
[CLR]	Delete character under cursor	
[DEL]	Delete character left of cursor	
[ENTER]	Return to pixel mode (except as above)	

CURSOR CONTROL: Arrow keys, with shift for pixel movement

NOTE: Characters cannot be deleted after returning to Pixel mode.

Introduction

SCREEN DESIGNER is a multi-feature Graphics Design utility which allows the user to take full advantage of the excellent high-resolution colour graphics facilities of the Amstrad CPC464 computer.

With a little practice (and artistic talent!) it is possible to create impressive picture screens, which can then be stored on cassette tape (or disc) for future use in basic or machine-code programs, or as a loading screen for a program.

Screen Designer Facilities:

Screen Mode selection
Colour set selection
Pixel Plotting in any colour
Line Drawing in any colour
Circle Drawing in any colour
Area Fill in any colour
Text Printing at Pixel location
Text merging with background
Plotting with large cursor
Stipple character printing
Graphics character store and print
Colour wash facility
Screen Scroll (Pixel or character)
Magnification (4 or 16 times)
Save/Load Screen on cassette
Save/Load graphics characters
Cassette or Disc operation

Instructions

Loading SCREEN DESIGNER

Place the cassette in the CPC464 Datacorder and rewind to start of tape if necessary. Press the key marked **[CTRL]** (Control) and simultaneously press the small **[ENTER]** key at the bottom-right of the numeric keypad. The CPC464 will respond with the message:

```
RUN"
Press PLAY then any key
```

Press the **[PLAY]** key on the Datacorder and then press any key on the main keyboard (except **[SHIFT]** or **[CTRL]**).

The tape will start playing, and after a short pause the following message will appear on the screen:

```
Loading SCREEN DESIGNER block 1
```

The program will take several minutes to load, and will `RUN` automatically when loaded.

When loading is complete, the Main Menu selection will appear on the screen.

Main Menu

The main menu appears on the screen as follows:

```
      SCREEN DESIGNER

* EDIT PICTURE SCREEN *
* SELECT SCREEN MODE  *
* CHANGE COLOUR SET   *
* SAVE/LOAD SCREEN    *
* SAVE/LOAD GRAPHICS  *
```

The current selection (intially `EDIT PICTURE SCREEN`) is printed in red on a white bar, instead of the normal yellow-on-black.

The 'Up' and 'Down' cursor keys may be used to change the selection as required, whereupon the white bar will move up or down the menu.

When the white bar is on the required selection, press the large **[ENTER]** key on the main keyboard. The selected function will then be actioned.

The facilities listed in the Main Menu will now be described in detail.

1. Edit Picture Screen

On entry to the screen editor, you will be greeted with a totally blank (black) screen, except for the 'Information Window' at the top of the screen, and the pixel 'cursor' flashing at the centre of the screen.

The Information Window is designed to keep you informed of the current mode that the program is in, and indicate the colours to be used for plotting etc.

Initially, the Information Window will appear as shown below:

```
MODE: SKIP                PAP
SCRN: PIXEL               PEN
```

This tells you that you are currently in 'Skip' mode, which means that you can move the cursor around the screen without drawing any unwanted lines. The screen editor is in 'Pixel' mode, which means that the cursor is only ONE PIXEL in size. Any plotting or drawing on the screen will therefore be done one pixel at a time. (The term 'Pixel' means 'Picture Element', and refers to the smallest dot which the computer can deal with on the screen; in the case of the CPC464, the size of the pixel will vary according to the screen mode selected.)

The small black square to the right of PAP indicates the Paper (or background) colour, and there is a similar square to the right of the word PEN, but it is invisible at present since the initial pen colour is white.

The rectangular box to the left of the colour indicators is the 'Magnification Indicator'; as its name suggests, this indicates the current screen magnification and also shows which part of the screen you are in, when the screen is magnified. This will be explained in greater detail in the section on 'Magnification' of the screen.

The Information Window can be moved to the bottom of the screen, if desired, by pressing the **[CTRL]** key. Pressing the key again will move the window back to the top of the screen.

You can also remove the window completely from the screen (in order to view your masterpiece in all its glory!) by pressing the **[DEL]** (delete) key; pressing **[DEL]** again (or any other key) will then restore the window to its previous position.

If you attempt to move your cursor onto the window, it will move out of the way automatically.

Cursor control in 'Pixel' mode is by means of the number keys on the 'Numeric Keypad' to the right of the main keyboard, and the direction of movement is as follows:

KEY	DIRECTION
1	DOWN/LEFT
2	DOWN
3	DOWN/RIGHT
4	LEFT
5	UNUSED
6	RIGHT
7	UP/LEFT
8	UP
9	UP/RIGHT

If this sounds confusing, a look at the layout of the keypad will show that the direction of movement corresponds to the position of the key in relation to the centre of the keypad (the '5' key).

Pressing either of the **[SHIFT]** keys together with a direction key will make the cursor jump eight pixels (one character square) at a time, instead of one pixel at a time as normal.

This can be useful in order to move the cursor quickly from one side of the screen to the other, or to measure in 8 - pixel steps.

There are two other functions available on the Numeric Keypad, as follows:

SET: pressing the small **[ENTER]** key and the . key at the same time will 'set' the pixel under the cursor to the current pen colour.

RESET: Pressing the small **[ENTER]** key and the **Ø** key at the same time will 'reset' the pixel under the cursor to the current paper colour.

In either case, you will not see any change until you move the cursor out of the way, as the cursor position is not changed by the **SET** or **RESET** commands.

The current Pen and paper colours are as shown in the Information Window; if you Plot a Pixel in black ink on a black background, don't be surprised if you can't see anything!

PLOT and UNPLOT

It would be a bit tedious to draw a picture by setting each of the pixels individually, to say the least; fortunately, there is an easier way!

Pressing the **P** key will select PLOT mode, and this will be indicated in the window. Any subsequent movement of the cursor will leave a 'trail' of pixels set to the currently selected pen colour.

Similarly, pressing the **U** key will select UNPLOT mode, which works in the same way as PLOT, except that the Pixels are set to the currently selected paper colour. Normally, this will be the background colour, but it is possible to set PAP to another colour and use PLOT and UNPLOT to switch between the two 'plotting' colours.

If PAP is set to the background colour, then UNPLOT mode will erase any lines previously drawn on the screen, by restoring the pixels to the background colours.

Pressing the **[SPACE]** bar when in PLOT or UNPLOT modes will return you to SKIP mode.

Changing Colours

The initial colour settings for PAP and PEN are black and white respectively, which is not a very exciting combination. However, we can introduce some colour by changing the settings, as follows:

Pressing the **P** key together with either of the **[SHIFT]** keys will make the information window display change to the following format:

```
PEN 2        USE        PAP  □
B/WHITE      ←&→        →PEN □
```

This indicates that the currently selected pen is Pen 2 and the colour of Pen 2 is Bright White.

Pressing the right arrow key will change the pen number to Pen 3 and also indicate that the colour of Pen 3 is Yellow. You will also notice that the colour of the square next to the word 'Pen' has changed to Yellow.

The left and right arrow keys can be used to step through the list of available colours until the required colour is found.

Pressing the **[ENTER]** key will then return you to the screen editor, with the new Pen colour selected. Any subsequent plotting or drawing will be carried out in the new colour.

The number of available pens will depend upon the Screen Mode in which you are working; initially, the screen Mode is set to Mode 0, which allows 16 different pen colours to be used (0 to 15).

If the Screen Mode is changed to Mode 1, then the number of pens is reduced to 4 (0 to 3), and changing to Screen Mode 2 (the highest resolution mode) will reduce the number of pens to 2 (0 and 1). This is because there is a trade-off between the screen resolution (the number of dots which make up the screen) and the number of different colours which can be displayed at a time.

However, if the required colour is not available in the current selection of pens, the 'colour set' can be changed to include the required colour in lieu of any undesired colour at present included in the list. Please refer to the section on 'Change Colour Sets' for further information.

The 'Paper' colour can be changed in exactly the same way as the 'Pen' colour by pressing the **U** key together with either of the **[SHIFT]**keys; after selecting the required paper colour, press **[ENTER]** to return to the screen editor.

The 'Border' colour can also be changed, by pressing the **B** key together with either of the **[SHIFT]** keys, and using the left and right arrow keys to select the required colour. The number of colours available is not limited in the same way as the 'Paper' and 'Pen' functions, and the full range of 27 colours is available. Pressing the **[ENTER]** key will return you to the screen editor, as before.

Line Drawing

Obviously, a line can be drawn on the screen by moving the cursor in `PLOT` mode, but there are instances where this would be difficult or tedious, due to the angle of the required line, for example.

The `LINE` function enables a line to be drawn in the current pen colour, from the `LAST POINT PLOTTED` to the current cursor location. If no point has yet been plotted on the screen, the line command will not funtion.

If no point has been plotted, or the last point plotted is not the desired start position of the line, then use the small **[ENTER]** key and '**.**' to plot the start location of the line.

Next, move the cursor to the desired end location of the line, and press the **L** key together with either of the **[SHIFT]** keys.

The information window will display the message `DRAW LINE IN PEN: □ ENTER=OK, SPACE=ABORT`. To draw the line, simply press the large **[ENTER]** key; otherwise, press the **[SPACE]** bar to return to the screen editor without drawing the line.

Note that the line routine updates the 'last point plotted' so that after drawing a line, the last point plotted is now the end of the line. This feature enables complex shapes to be drawn by simply moving the cursor to the next position and pressing **[SHIFT] L** without plotting the start point for the next line, as this will be the end of the previous line.

Drawing Circles

The circle command works in a similar way to the line drawing function described above, except that the last point plotted is now the centre of the circle, and the cursor position will be a point on the circumference of the circle. In other words, the radius of the circle is an imaginary line from the last point plotted to the current cursor location.

If no point has yet been plotted, or the last point plotted is not at the centre of the desired circle, then use the small **[ENTER]** key and '**.**' to plot a point at the centre of the required circle. Next, move the cursor (in any direction) to a point which will be on the circumference of the circle, and press the **C** key together with either of the **[SHIFT]** keys. The Information Window will display the message `DRAW CIRCLE IN PEN: □ ENTER=OK, SPACE=ABORT`. To draw the circle, press the large **[ENTER]** key; otherwise, pressing the **[SPACE]** bar will return you to the screen editor without drawing the circle.

Note that the 'last point plotted' is not up-dated by the circle routine (unlike the line function) and concentric circles can be drawn by simply moving the cursor to a new location and enter the **[SHIFT] C** command again.

Area Filling

The `AREA FILL` function enables any area of the screen to be filled with a specified colour (the current pen colour). The area should be completely enclosed by AT LEAST a line of pixels of a different colour to the ORIGINAL colour of the area, except for any sides of the area that are the boundary of the screen.

The enclosing line can be the same colour as the Pen with which the area is to be filled, thus giving a solid area of colour without a boundary of a different colour.

The area can be re-filled with a different colour, if required, or simply restored to the original colour, by changing the pen colour and repeating the fill command.

To fill an area, first select the required pen colour, then move the cursor to any position INSIDE the area to be filled.

Press the **F** key together with either of the **[SHIFT]** keys, and the message `FILL AREA WITH PEN: □ENTER=OK,SPACE=ABORT` will appear in the information window. To start the fill, simply press the large **[ENTER]** key, otherwise press the **[SPACE]** bar to return to the screen editor.

If, after the fill has begun, you wish to abort the fill for any reason (e.g. if a small gap exists in the boundary of the area and the fill 'leaks out', threatening to ruin your masterpiece!) you can easily abort the fill by hitting the **[SPACE]** bar, restoring the picture as it was before the fill began. However, once the fill is completed, there is no return except by re-filling the area in the original colour.

When the fill has been completed, you will be returned to the screen editor.

Scrolling the Screen

When creating a picture on the screen, it is often difficult to judge the position and size of objects at the start, with the result that the finished picture is off-centre. The `SCROLL` facility enables the picture on the screen to be moved in any direction, either in Pixel steps or 8 pixels at a time (one character).

Pressing the **S** key together with either of the **[SHIFT]** keys will select `SCROLL` mode, and this will be indicated in the Information Window.

The screen can then be scrolled in any direction by using the arrow keys, for pixel movement, or arrow keys with **[SHIFT]** for character movement.

Having decided on the new position for the picture, pressing the **[ENTER]** key will 'freeze' the picture in that position. However, should you decide that it looked better as it was, pressing the **[SPACE]** bar will restore the picture to its original position. Either **[SPACE]** or **[ENTER]** will return you to the screen editor.

Magnifying the Screen

When working on intricate designs, it is often difficult to see exactly what you are doing, particularly in the high-resolution modes (1 and 2). In order to overcome this problem, a MAGNIFY function has been incorporated into SCREEN DESIGNER, which enables a quarter of the screen to be magnified so that it fills the whole screen, i.e. 4 times the original area.

A further stage of magnification is available, which magnifies a quarter of the magnified screen in the same way, i.e. 16 times the original (unmagnified) area.

Pressing the **M** key together with **[SHIFT]** will magnify once; pressing **[SHIFT] M** again will magnify the screen to the 16 times mode.

To reduce magnification from 16 time to 4 times, or from 4 times to normal, press the **N** key together with **[SHIFT]**.

You will note that the size of the cursor is increased according to the magnification selected, indicating the size of a pixel in the magnified mode.

It is possible to PLOT or UNPLOT in magnified mode, but if a LINE, CIRCLE, FILL, SCROLL or TEXT command is executed, the screen will automatically de-magnify to normal size while the operation is carried out, and will re-magnify when completed.

The level of magnification and sector of the picture which is being displayed at any time is shown by the Magnification Indicator; this is a box in the Information Window, just to the left of the PAP and PEN colour indicators. When the screen is normal size, the whole of the area inside the box is displayed in white; however, if the screen is magnified, the box will change to show the sector currently displayed in white, and the remainder of the box in black.

Moving the cursor out of a sector (off the edge of the screen) will automatically switch the display to the next sector of the picture, and the indicator will change accordingly. If the Information Window would be on top of the cursor after such a move, the window is automatically swapped to its alternative position.

Text Mode

TEXT mode is, in fact, a variety of modes which will be detailed individually below; however, they are all extensions of the TEXT mode, and are accessed by pressing the **T** key together with **[SHIFT]**, from the screen editor Pixel mode.

PRINT TEXT

On entry into TEXT mode, the Information Window will display the message:
MODE: PRINT SCRN: TEXT.

This is the standard text mode, which enables characters typed on the keyboard to be printed on the screen, at any pixel location. The text will be printed in the current PEN colour on a background of the current PAPER colour, even if this is not the actual screen background colour.

The cursor, which is character-square size, can be moved around the screen without affecting the screen contents by means of the arrow keys. Normally, the cursor will move a whole character at a time, but if **[SHIFT]** is pressed in addition to the arrow key, the cursor will move by one pixel in the desired direction. The cursor will 'wrap around' onto the next character line when the end of a line is reached if it is being moved in character steps or if text is being printed; it will not 'wrap around' if it is being moved in pixel steps, however.

When printing text, the **[SHIFT]** keys work in the normal way, to enable capital letters to be typed onto the screen. **[SHIFT LOCK]** however, is disabled.

All of the keyboard characters are available, plus a variety of 'block graphics' characters on the Numeric Keypad.

The Pen and Paper Colours can be changed from text mode, by pressing the **[CTRL]** (Control) key in addition to the normal keys for the function; i.e. press **[CTRL]**, **[SHIFT]** and **P** all at the same time for `PEN` colour select, and **[CTRL]**, **[SHIFT]** and **U** for `PAPER` colour select.

The Border colour can be changed by pressing **[CTRL]** and the **B** key together.

In each of the above cases, **[ENTER]** will return you to the text mode which was in operation on entry to the colour select mode

MERGE TEXT

This mode enables text to be merged with an existing multi-colour background; the area around each letter will be treated as 'transparent', allowing the existing background to show through.

Pressing the **T** key together with **[CTRL]** will toggle between the `PRINT` and `MERGE` modes.

PLOT and UNPLOT

Plot and Unplot in text mode? Yes, but this time we have a very large cursor (for those big painting jobs!) which can be used in exactly the same way as in the pixel plot and unplot modes: pressing **[CTRL]** and the **P** key will select `PLOT`; and **[CTRL]** plus the **U** key will select `UNPLOT`. Pressing the **[SPACE]** bar will return you to normal `TEXT` mode.

STIPPLE MODE (entered via Text mode)

`STIPPLE` mode works in a similar way to `PLOT` and `UNPLOT`, except that the character printed on the screen is not a solid block of colour, but one of eleven different 'shaded' or 'stippled' characters.

Pressing **[CTRL]** and the `I` key together will select `STIPPLE` mode, and the currently selected stipple character will be shown in the Information Window.

The stipple character can be changed (when `STIPPLE` mode is on) by pressing any of the number keys on the top row of the main keyboard, or the - key. The character displayed in the window will change to indicate the type of character selected.

Moving the cursor around the screen by means of the arrow keys will print the selected stipple onto the screen. (Note that moving the cursor in pixel steps can have unexpected results in stipple mode!).

Stipple characters can be 'merged' with the background by selecting `MERGE` (**[CTRL]** and the **T** key will toggle between `PRINT` and `MERGE`, as in Text printing) and some very intresting effects can be obtained in this way. Try experimenting with different coloured stipples, merging them onto each other!

Apart from the unusual effects mentioned above, another use for the stipple effect is to allow a wider range of colours than the Screen Mode will normally permit; by selecting `PRINT STIPPLE` mode, and setting the paper and pen colours suitably, a new 'colour' can be created, which will effectively be a mixture of the paper and pen colours. A further range of colour shades can be generated by using `MERGE STIPPLE` mode for each of the colours available.

These features are particularly useful in the higher-resolution screen modes, in view of the limited number of colours normally available (4 colours in Mode 1, 2 colours in Mode 2).

Pressing the **[SPACE]** bar will return you to the normal text mode.

GRAPHICS MODE

Suppose that you are writing this wonderful original game called Space Invaders, in which the screen is filled with hundreds of little green men whose sole object in life is to bomb you out of existance...

Well, you have just finished designing the first Invader, when the awful truth dawns; you will have to draw the same shape onto the screen 187 times... Or will you?

This is where `GRAPHICS` mode comes in handy; it enables any character-square area of the screen to be copied into memory, for subsequent recall and printing to the screen at any desired location.

A total of 26 different graphics characters can be defined and stored, either as individual small objects or parts of a large object.

The characters are initially defined as the capital letters of the alphabet from A to Z, and are referenced in this way.

PRINT GRAPHICS

Pressing **[CTRL]** and the **G** key from text mode will select the `PRINT GRAPHICS` mode; this works in a similar way to the normal text mode. Any alphabet character typed on the keyboard will result (initially) in the upper-case version of the letter being printed to the screen in the current pen colour; the **[SHIFT]** key has no effect in this mode. The cursor can be moved around the sceen as usual in text mode, either in character steps or pixel steps, as before. The **[SPACE]** bar, however, will not print a space: it will return you to text mode.

STORING GRAPHICS

In order to store an area of the screen as a graphics character, first position the cursor over the area of the screen that you wish to store. Only the area immediately under the cursor will be stored, so position the cursor with care. Pressing **[CTRL]** and the **S** key together will select `STORE GRAPHICS` mode, and the following message will appear in the Information Window:

```
MODE: STORE: ?        SCRN: GRAPHICS
```

Typing a letter on the keyboard (for example A) will cause the letter (`A`) to appear in the window in place of the question mark.

Pressing **[ENTER]** will define the graphics character '`A`' as the area of the screen covered by the cursor and return you to text mode.

If you wish to abort from `STORE GRAPHICS` without defining any characters, simply press the **[SPACE]** bar.

If you type the wrong letter by mistake, or simply wish to change the selection, just type the required letter; the window will display the new letter, and no harm will have been done: the character is only defined when **[ENTER]** is pressed.

Once a graphics character has been defined, it can then be printed at any position on the screen using the `PRINT GRAPHICS` mode, by typing the letter with which it was defined.

Any graphics character which has not yet been defined by the `STORE GRAPHICS` function will appear on the screen as the letter of the alphabet which was typed on the keyboard.

COLOUR WASH

The colour `WASH` function can only be described as the nearest thing to a Magic Wand outside of the Paul Daniels show!

It is another Text Mode extension, which means that the cursor is character-size, but text cannot be printed while `WASH` is selected.

Suppose that you have created a complex multi-coloured picture, using a particular colour (say Red) in many different parts of the picture. You have decided, however, that certain parts of the picture which are at present Red would look much better in Green (for example):

Normally, this would mean re-drawing all of the Red areas in Green, one-by-one; a rather tedious task! Another alternative would be to change the Pen Ink (see Change Colour Sets), but this would change ALL Red areas on the screen to Green.

This is where the `WASH` function can come to your rescue. It has two modes of operation: ONE or ALL.

In the first mode, it will look for ONE specified colour, and change ONLY THAT COLOUR to a second specified colour.

In the second mode, it will change ALL colours OTHER THAN the first colour to the second specified colour.

Pressing **[CTRL]** and the **W** key together, from Text Mode, will select `WASH`; Pressing **[CTRL]** and the **T** key, when in `WASH` mode, will toggle between `ONE` and `ALL` modes.

The 'first colour' is specified by setting the `PAPER` colour. The 'second colour' is specified by setting the `PEN` colour. The colours can be set from within `WASH` mode, by pressing the **[SHIFT]/[CTRL] P** or **[SHIFT]/[CTRL] U** combinations, as in text mode.

Once the required `WASH` mode has been selected, and the colours set up as desired, moving the cursor 'paintbrush' around the screen will `WASH` the colours as described above.

The **[SPACE]** bar will return you to Text Mode; **[ENTER]** will return you to the screen editor in pixel mode.

DELETE

In any of the Text modes described above, the **[CLR]** and **[DEL]** keys will work exactly as they do in BASIC; i.e. the **[CLR]** key will delete the character under the cursor, and the **[DEL]** key will delete the character to the left of the cursor. The **[DEL]** key will repeat if held down, enabling whole lines of text to be deleted quickly and easily. The cursor will 'wrap around' onto the line above the current line when the left hand side of the screen is reached.

However, if a return to the screen editor has been made (by pressing **[ENTER]**), you will find that on re-entering Text Mode, the text already on the screen cannot be deleted by **[CLR]** or **[DEL]**. This is because the delete function works by copying from the picture memory 'store' area to the area of the main screen under the cursor. This can be done because the 'store' is not up-dated with the text that has been typed on the screen until a return is made to the screen editor. However, once the 'store' has been updated with the text characters, the delete function will simply copy the character to the main screen, and therefore have no effect.

The motto is: be sure that the characters are correct in all respects before pressing the **[ENTER]** key to return from any of the Text Modes.

Note that it is safe to press **[ENTER]** to return from setting the Paper, Pen or Border colours while in a text mode, but pressing **[ENTER]** again will cause a return to the screen editor.

Exiting from the Screen Editor

Press **[SHIFT] R** to return to the main menu from pixel mode.

2. Select Screen Mode

Select Screen Mode is the second function listed in the main menu. It enables the desired screen mode to be selected from the three modes available on the Amstrad CPC464:

`MODE Ø:`	20 Column, Pixel Resolution 160 x 200, 16 colour sets
`MODE 1:`	40 Columns, Pixel Resolution 320 x 200, 4 colour sets
`MODE 2:`	80 Columns, Pixel Resolution 640 x 200, 2 colour sets

The selection is made by moving the white 'bar' up or down the menu using the up and down arrow keys, and then pressing the **[ENTER]** key to activate the selection. You will then be returned to the main menu.

If you do not wish to change the screen mode, pressing the **[SPACE]** bar will return you to the main menu without any other action being taken.

PLEASE NOTE that pressing **[ENTER]** will clear the picture memory 'store' to the currently selected `PAPER` colour, and also that a Screen Mode change will clear the graphics characters back to their initial settings (letters of the alphabet).

Any picture or graphics characters that may be required again should therefore be `SAVED` to cassette BEFORE a screen mode change is made

Note that the picture screen memory can only be cleared by a screen mode command; there is no 'clear screen' function in the screen editor section of the program, in order to prevent inadvertent loss of the picture.

The number of available colour sets for Pen and Paper are set automatically by the mode selection; if these do not include the desired colours, the selection can be changed by using the 'Change Colour Sets' section of the program.

3. Change Colour Sets

The third item in the main menu is Change Colour Set, which enables the user to select from a list of 27 colours in order to form a palette. The number of colours available on the palette will depend on the screen mode. (2 in mode 2, 4 in mode 1 and 16 in mode 0).

One way to visualise this is to consider the Pens as being re-fillable with different coloured inks.

For example, in mode 1 you are allowed 4 Pens, each of which can be 'filled' with an 'ink' from the list of 27 different coloured inks.

However, each of the Pens can be filled with TWO different inks, if desired, in which case the colour of the pen will flash between the two inks at a speed determined by the Speed Ink setting. If BOTH pen inks are the same colours, then the colour of the pen will be steady (not flashing).

On entry to the Change Colour Set section, you will see that the available Pens for the current screen mode are listed on the left-hand side of the screen, and the full selection of 27 coloured inks is listed on the right hand side.

Next to each pen number is the ink colour that the pen is currently set to, together with the 'grey scale' reference number for the ink colour (see CPC464 manual).

One of the pens will be high-lighted by a white bar, which can be moved up or down the list by means of the up and down arrow keys. A small box at the right hand end of the bar shows the actual colour of the ink for each pen.

Pressing **[ENTER]** will cause the corresponding entry in the ink colour table to be high-lighted in a similar way. You can then use the arrow keys (up, down, left or right) to move this high-lighted bar around the ink colour table, until you find the desired new colour for the pen.

Pressing the **[ENTER]** key will then change the ink setting for the pen in question to the newly selected colour.

This process can be repeated for any (or all) of the available pens, until you are satisfied that the pallette of pen colours will meet your needs.

There are also a small group of commands immediately below the ink colour table: these are `RESET PENS`, `PEN BLOCK` and `SPEED INK`. One of these items will be high-lighted with a 'bar', and the bar can be moved from one item to another by pressing **[SHIFT]** together with the up or down arrow keys.

If the bar is on `RESET PENS`, then pressing **[SHIFT]** and **[ENTER]** at the same time will cause the message `ARE YOU SURE? ENTER=OK, SPACE=ABORT` to be printed on the screen.

Pressing the **[ENTER]** key again (without **[SHIFT]**) will `RESET` the pen ink selection to the original ink colours, if they have been changed since loading the program.

Pressing **[SPACE]** will abort from this function without changing any of the pen inks.

PEN BLOCK enables flashing colours to be set up for any pen; the initial (default) setting for this function is BOTH. This means that when setting the ink colour for a pen, BOTH of the pen inks are set to the same colour, and the pen colour will therefore be 'steady', or NOT flashing.

With the high-lighted 'bar' on PEN BLOCK, pressing **[SHIFT]** and the left or right arrow key will move the PEN BLOCK selection onto ONE, BOTH or TWO.

IF pen block ONE is selected, any subsequent changes made to the pen ink colour selections will affect only the first ink colour of the pen, and the pen colour will therefore flash (if the two colours are different).

Similarly, if pen block TWO is selected, only the second ink colour will be changed when selecting a new pen ink.

When the PEN BLOCK setting is changed, the pen colour table will also change (if appropriate) to show the corresponding ink colour (first or second).

A 'flashing' pen is also denoted by an asterisk (*) next to the pen number.

If the SPEED INK item is highlighted, then pressing **[SHIFT]** and the left or right arrow key will change the direction of the pointer between the two numbers in the SPEED INK section. The two numbers represent the time, in 50ths of a second, for which each of the colours of a flashing pen is turned 'on'. The left-hand number refers to the first ink, and the right-hand number refers to the second ink.

When the 'pointer' is towards the first number, pressing the left or right arrow key will decrement or increment the number, cycling through 255 (the maximum value) to zero again. The second number can be changed in the same way.

If the pen selection 'bar' is on a flashing pen when the SPEED INK values are being changed, the coloured square will indicate the effect of changes to the rate of flash.

Pressing the **[SPACE]** bar will return to the main menu.

4. Save/Load Screens

This section enables a picture screen to be saved onto disc or tape for future use, or loaded back into SCREEN DESIGNER for further enhancement. The currently selected medium is shown at the top of the screen, highlighted in the usual way.

If the Amstrad DDI1 Disc Drive and Interface are connected, the initial selection will automatically be set to `DISC`; otherwise the setting will be on TAPE.

Pressing **SHIFT** and the left or right arrow keys will change the selection, provided that the DDI1 Interface is connected. It is not possible to select `DISC` without the interface being present.

Pressing the up or down cursor arrows will select `LOAD`, `SAVE` or `CAT` (catalog), or `DIR` (directory) in the case of disc.

Pressing **[ENTER]** will activate the appropriate selection.

When saving, there are two available Baud rates: 1000 Baud, or 2000 Baud. If a screen is saved at 1000 Baud, it will take just over two minutes to save or load; at 2000 Baud, it will take about one minute. Use the up and down arrow keys to select the required Baud rate, then Press **[ENTER]**. Type in the filename, and press **[ENTER]** again. Press **[RECORD]** and **[PLAY]**, then any key.

When saving to disc, simply type in the filename and press the **[ENTER]** key. If a file of the same name already exists, the message `"OVERWRITE? Y/N"` will appear on the screen: Pressing the `Y` key will cause the original file to be erased, and the new file will be saved to the disc. Pressing the `N` key will abort the save and return you to the selection mode.

If `LOAD` is selected, use the up and down arrow keys to select `NEXT FILE` or `TITLE`, and enter the filename, if appropriate. When a screen is loaded into SCREEN DESIGNER, it will obviously clear the current contents of picture screen memory. It will also elect the correct mode for the picture, and restore all pen colours to the inks which were selected when the picture was saved.

When loading from disc, the filename must be specified.

A picture saved from SCREEN DESIGNER can be loaded into the CPC464 without having the program in memory. There are two possible methods, as follows:

1. Press **[CTRL]** and the small **[ENTER]** key simultaneously, and start the tape. The screen will load, but you will find that you cannot 'break out' when loading has finished.
2. Enter the following short program:

```
10 MEMORY 29999: CLEAR
20 LOAD "",30000
30 CALL 30000
40 GOTO 40
```

Run the program, and start the tape. When loading has finished, you will find that you can 'break out' of the loop at line 40.

The address 30000 can be changed, if desired, to virtually any address below normal HIMEM, but the CALL address must always be the same as the loading address.

This routine could be incorporated into any BASIC program, in order to load a screen which has been created using SCREEN DESIGNER.

For the benefit of users who are conversant with assembler, the following routine can be used to load a picture screen created using SCREEN DESIGNER into any spare area of memory:

```
LD   HL,XXXX    ;Start address of screen store area
LD   DE,4000H
LD   A,FFH
CALL BCA1H      ;CASREAD
RET
```

Position the tape just after the short first block of data, then CALL the above routine and start the tape playing.

5. Save/Load Graphics

This section works in exactly the same way as SAVE/LOAD SCREEN except that it saves the Graphics characters to cassette instead of the screen.

Note that the current screen mode and pen inks are not saved by this section, unlike the screen version, and you may need to make a note of the original colours used.

If you load graphics characters into the CPC464 with the wrong screen mode selected, an error message will inform you of this, and tell you which mode is required for the characters. You can then change the mode and load the characters again.

This is necessary because Graphics characters are saved in their 'expanded' form: that is, with the colour data for each pixel encoded in the same form as in the screen display. Otherwise, it would not be possible to save and load multi-coloured graphics.

However, the colour-encoding for each pixel is different for each of the screen modes, and the appearance of the graphics characters will therefore be incorrect if the wrong mode is selected before loading.

Each character is saved as a block of 32 bytes (a total of 832 bytes for all 26 characters) in order to allow for Mode 0, although not all of the bytes will be used in Modes 1 and 2. The format for Mode 0 is 4 bytes for each horizontal pixel line of the character; Mode 1 uses 2 bytes per line, and Mode 2 uses one byte per line. The bytes for each character are stored consecutively, working from left to right along each pixel line, from top to bottom of the character. The experienced user should be able to develop routines to allow characters to be used in their own programs.

AMSTRAD CPC464 Screen Display Mapping

For the benefit of users who may be interested in delving deeper into the intricacies of the machine, here is a brief description of the way in which the screen display is organised:

The screen display occupies 16K bytes in the top of the memory map, from C000H (49152) decimal) to the FFFFH (65535 decimal).

This area is effectively split up into 8 blocks of 2K bytes, with the first 2K block containing the top pixel lines of each of the 25 character rows, the second block containing the 2nd pixel lines of all 25 character rows, and so on.

Each pixel line is 80 bytes in length, regardless of screen mode; since 80 x 25 = 2000, and 2K = 2048 bytes, there are 48 unused bytes at the end of each 2K block. From the aspect of screen addressing, however, the odd 48 bytes are not important.

In order to calculate the address of the byte immediatey below any byte in the screen, simply add 0800H (2048 decimal) to the first address, provided that the result is not greater than FFFFH (65535 decimal). If it is, then subtract 3FB0H (16304 decimal) from the total.

The number of pixels in a byte will vary according to the screen mode: 2 pixels per byte in Mode 0, 4 per byte in Mode 1 and 8 per byte in Mode 2.

Mode 0:	Pixel 1	Bits 1,5,3,7	(msb to lsb)
	Pixel 2	Bits 0,4,2,6	(msb to lsb)
Mode 1:	Pixel 1	Bits 3,7	
	Pixel 2	Bits 2,6	
	Pixel 3	Bits 1,5	
	Pixel 4	Bits 0,4	
Mode 2:	Bit mapped as normal - leftmost Pixel msb		

Appendix for Disc System Users

When a screen or graphics characters are saved to disc, the files are given special 'type' identifiers in the header record for the file, as follows:

.SDS	Screen Designer Screen Loader and Data
.SCN	Screen Dump
.SDG	Screen Designer Graphics Array

When loading a screen into a basic program, the LOAD command should be as follows:

```
LOAD "NAME.SDS", ADDRESS or (RUN "NAME.SDS")
```

The .SDS loader will load the screen dump .SCN, after setting the mode, colours, border etc. to the correct values for the picture.

The Screen Designer LOAD/SAVE routines will only recognise files with the .SDS or .SDG type identifier. Only .SDS files will be recognised by SAVE/LOAD SCREENS and only .SDG files will be recognised by SAVE/LOAD GRAPHICS. This also applies to the DIR commands for each section respectively.

When a file is saved to disc, the message SEARCHING will appear on the screen. This indicates that the DOS is searching for a file with the same name and type identifier as the file to be saved.

If the search is unsuccessful, the report NAME.SDS NOT FOUND will appear followed by SAVE OK, to indicate that a file of the same name did not exist, and the new file has been saved to disc.

If a file of the same name does exist, the message FILE ALEADY EXISTS: OVERWRITE? Y/N will appear on the screen.

Pressing the **Y** key will cause the existing file to be erased, and the new file will be saved in its place. On the other hand, if the **N** key is pressed, the save will be aborted.

Appendix for Disc System Users

When a screen or graphics character set is saved to disc, the files are given special type identifiers in the header record for the file as follows:

.SDS	Screen Designer Screen Loader and Data
.SCN	Screen Dump
.SDG	Screen Designer Graphics Array

When loading a screen into a basic program, the LOAD command should be as follows:

```
LOAD "NAME.SDS", ADDRESS or RUN "NAME.SDS"
```

The .SDS loader will load the screen dump .SCN after setting the mode, colours, border etc. to the correct values for the picture.

The Screen Designer LOAD/SAVE routines will only recognise files with the .SDS or .SDG type identifier. Data .SDS files will be recognised by SAVE/LOAD SCREENS and only .SDG files will be recognised by SAVE/LOAD GRAPHICS. This also applies to the DIR commands for each section respectively.

When a file is saved to disc, the message SEARCHING will appear on the screen. This indicates that the DOS is searching for a file with the same name and type identifier as the file to be saved.

If the search is unsuccessful, the report NAME.SDS NOT FOUND will appear followed by SAVE OK to indicate that a file of the same name did not exist and the new file has been saved to disc.

If a file of the same name does exist, the message FILE ALREADY EXISTS: OVERWRITE Y/N will appear on the screen.

Pressing the Y key will cause the existing file to be erased and the new file will be saved in its place. On the other hand, if the N key is pressed, the save will be aborted.