

UTILITIES DISC

PRINTSPEED DISCFORM TWEAK

Featuring ...

TWEAK

The Ultimate Graphics
Manipulation Package
for the Amstrad
PCW Series of
Computers



For Users of MicroDesign & ProSCAN*

* and Stop Press, Masterscan, The Desktop Publisher and other PCW software.

This Utilities Disc contains programs to enhance the performance of Micro-Design2 & ProSCAN, as well as other PCW graphics and DTP software. The disc includes special drivers to increase the speed of printing via Centronic and Parallel interfaces, a simple program called Discform for formatting floppy discs, and a powerful graphics manipulation package called Tweak.

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This manual was ENTIRELY designed as A4 pages using MicroDesign, ProSCAN and Tweak on an Amstrad PCW8512. These A4 pages were printed as master artwork on a Hewlett-Packard Deskjet Plus printer, and were then photographically reduced to A5 size for mass reproduction on 100% recycled paper.

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You may resell this package, provided that you pass on the original Master disc and this manual to the purchaser, and that you do not keep a copy yourself.

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High-Quality
 Microcomputer
 Software and
 Hardware



10 Park Street
 UTTOXETER
 Staffs ST14 7AG
 Tel 0889 567160
 Fax 0889 563548

CREATIVE TECHNOLOGY (MICRODESIGN) LTD.

COPYING & INSTALLATION

Like MicroDesign2 & ProSCAN, this Utilities Disc is copy-protected and comes with its own installation program allowing you to make 'working copies' of the utilities. The disc as a whole can NOT be copied or verified using Diskit or Locoscript, though the printer-drivers and Discform can be copied individually using any standard method.

To run the installation program, switch on your PCW and insert your CP/M+ System Disc. At the A) prompt, insert your Master Utilities Disc and type ...

INSTALL **RETURN** ... then follow the on-screen instructions.

NOTE: The installation program allows for the printer-drivers and/or Tweak to be copied onto a working MicroDesign2 or ProSCAN disc - **DO NOT INSTALL THESE UTILITIES ON YOUR MicroDesign2 / ProSCAN MASTER DISC.**

As with MD2 & ProSCAN, you should not normally use your master disc to run the programs - after making your working copies. It should be put in a safe place away from magnetic fields, dust, humidity, and ill-disciplined household pets.

IMPORTANT NOTE for PCW8256/8512 USERS

Although we recommend that you install the utility programs on a Micro-Design2 or ProSCAN working disc, the graphics program Tweak will not fit on a Start-of-Day MD2/PS disc made on the 8000-series machines. It will fit if you remake the disc as a non-S-o-D disc (using MDMAKE or PSMAKE), but you may prefer to make a separate Start-of-Day Tweak disc using the INSTALL program. Tweak can, however, be copied onto a PCW9512 Start-of-Day disc because of its greater capacity, and the printer-drivers can be attached to any form of working MD2/PS disc on any PCW.

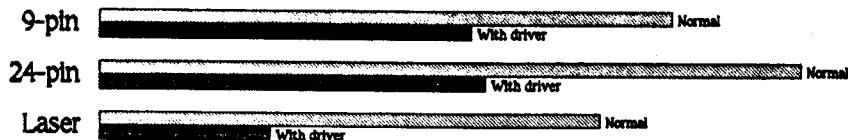
IMPORTANT NOTE FOR PCW9512 USERS

Many PCW9512 users have been supplied with alternative CP/M system discs to support the daisy-wheel's sheet-feeder, or to allow printing on the Parallel port without the daisy-wheel attached. Ideally, you should not use MD2, ProSCAN or Tweak with these replacement CP/Ms as you will encounter problems when you QUIT to CP/M and then run another program. Instead you should use the original CP/M supplied with your PCW (the EMS file on the system disc should be J21CPM3.EMS, not J20 or J29). The printer-drivers on this disc allow you to use the Parallel port without the daisy-wheel connected.

THE PRINTER-DRIVERS

These CP/M drivers, written for us by Cirtech, allow faster data transfer between the PCW and an external printer connected via a Centronics or Parallel interface. The improvement in speed varies with the application, but as a general rule we have found that printing from MicroDesign2 with an external 9-pin dot-matrix takes about 65% of the time it used to, while a 24-pin (or Canon BJ10e) takes just over half. Lasers and Deskjets are improved most of all, taking only about a third of the old time.

Some relative timings for an arbitrary 'average' MD page ...



The drivers also remove the need to keep the PCW9512's daisy-wheel connected when using a printer on the Parallel port.

! A FEW 9-PIN PRINTERS, eg SOME CITIZEN & PANASONIC MODELS, CANNOT PRINT ANY FASTER DESPITE THE ACCELERATED DATA TRANSFER OF THESE DRIVERS. THIS IS A FEATURE OF THE PRINTER DESIGN, AND CANNOT BE OVERCOME.

The drivers are supplied in two forms:

Firstly as the files MDCEN.RSX and MDPAR.RSX (for 8000-series CENTronic and 9000-series PARAllel interfaces respectively), the appropriate one of which may be attached to a working copy of MicroDesign2 or ProSCAN as part of the Utilities Disc INSTALL program. Full on-screen instructions are given, and INSTALL will modify a working copy of MD2/PS so that these faster drivers are always installed when MD2 or PS is run.

Secondly the drivers are also supplied as the programs FASTCEN.COM and FASTPAR.COM, either of which may be run from the A) prompt to install the appropriate driver within the operating system for use with other CP/M software. These .COM files may be copied to any disc you wish using PIP, NSWP or Locoscript.

PLEASE NOTE THAT MANY PCW SOFTWARE PACKAGES USE THE ENTIRE AVAILABLE CP/M PROGRAM SPACE, AND THAT THE DRIVERS CANNOT THEREFORE BE INSTALLED TO WORK WITH THESE PROGRAMS. Appropriate CP/M messages will result from errors connected with this memory limitation, which is not improved by adding extra RAM to your PCW.

When these drivers are used ALL printer output is redirected to the selected port (CEN or PAR). Changing the Printer interface option in MD2/PS (or using DEVICE.COM) will have no effect. To use the 8256/512 integral dot-matrix or the 9512 daisy-wheel after using the drivers, you will have to re-boot your PCW using a normal system disc.

! THESE ARE CP/M .RSX DRIVERS FOR EXTERNAL PRINTERS ONLY. THEY CAN NOT BE USED WITH LOCOSCRIPT, AND DO NOT AFFECT THE PERFORMANCE OF THE PCW 8256/8512 INTEGRAL DOT-MATRIX PRINTER.

PRINTER ERROR and TIME-OUT

... when attached to *MicroDesign2* or *ProSCAN*:

If the printer is off-line or unconnected, or does not respond within a few seconds, press the STOP key to cancel the print. Remember, though, that a 24-pin printer can still be expected to take up to ten seconds or so per print-stripe.

... when installed with other programs using *FASTCEN.COM* or *FASTPAR.COM*:

If the printer is off-line or unconnected, the PCW will 'lock up' until communication can be established with it - the only way out of this is to put the printer on-line or to re-boot the PCW. Do not attempt to print if you have no printer connected!

TECHNICAL INFORMATION

The drivers are .RSX extensions to the CP/M operating system which replace all calls to the CEN or PAR printer-port routines with faster, more direct code.

... when installed with other programs using *FASTCEN.COM* or *FASTPAR.COM*:

The BIOS LIST and LISTST vectors are re-directed, and BDOS calls 5 (OUT to logical device LST) and 112 (LIST to logical device LST) are re-directed.

... when attached to *MicroDesign2* or *ProSCAN*:

Only BDOS functions 5 and 112 are redirected.

Some older PCW hard drive systems used a fair amount of program memory for their own purposes, which may mean that they cannot run *MicroDesign2* or *ProSCAN* with the drivers attached - this will result in an error message. If this is the case, contact your hard-drive manufacturer for an updated CP/M.

A PRONOUNCEMENT

The printer-drivers on this Utilities Disc are short, self-contained pieces of code which reside in an area defined by the CP/M operating system in the PCW. Thus they may be attached to many different programs.

The "drivers" for the different printer types in *MicroDesign2* and *ProSCAN*, however, are huge, inter-dependent pieces of program which cannot simply be lifted from their current environment and transported to another package. Thus the *ProSCAN* driver which produces quadruple-density output on the integral 8000-series dot-matrix cannot be incorporated into *MicroDesign2* as it simply will not fit!

Whilst we are always working on updates and improvements to the *MicroDesign* family, and are happy to provide free disc-replacements when we add the smaller extensions needed for eg the Canon BJ10e printer, we cannot provide the quad-density driver as an add-on for *MicroDesign2*.

There is (contrary to some of our correspondents' apparent beliefs) a limit to what even Creative Technology can squeeze into a program retrospectively!



DISCFORM

This simple CP/M command-line program can format floppy discs in Drive A: or B: on any PCW, and can be used in CP/M batch (.SUB) files.

DISCFORM is not copy-protected and can be transferred to any working or other disc using any standard method. For example, to copy it onto a working MD2 disc ...

- 1) Boot up your PCW using a CP/M+ system disc.
- 2) At the A) prompt, type `PIP RETURN`
- 3) At the # prompt, insert your master Utilities Disc and type `M:=DISCFORM.COM RETURN`
- 4) At the next # prompt, insert the working MD2 disc on which you want to put the program, and type `A:=M:DISCFORM.COM RETURN`
- 5) A final press of `RETURN` will return you to CP/M.

DISCFORM is used by typing, at the CP/M A) prompt:

- `DISCFORM A RETURN` to format a disc in drive A:
- `DISCFORM B RETURN` to format a disc in drive B:

! The drive-letter given refers to floppy drives only - Cirtech Diamond hard-drive users can give A: or C: to format their first floppy drive, and B: or D: for their second one. Discform will NOT format your hard disc!

There are two optional parameters which may be typed as part of the command:

- If a Q is included in the command-line, the error-checking is reduced, and the formatting process is speeded up considerably. (Q='QUICK')
- If a K is included, the normal 'Insert Disc to Format then Any Key' stage is omitted, allowing DISCFORM to be used within a batch file without waiting for a key-press each time. Be very careful when using this option, as you may accidentally re-format the disc with DISCFORM itself on! (K='KEYMISS')

- eg `DISCFORM B Q RETURN` ... format disc in B: with reduced error-checking
- `DISCFORM A Q K RETURN` ... format disc in A: with reduced error-check and no wait-for-key

! PLEASE NOTE THAT DISCS FORMATTED WITH DISCFORM CANNOT BE USED AS START-OF-DAY DISCS ... YOU WILL STILL NEED TO USE LOCOSCRIPIT OR DISKIT TO FORMAT A DISC FOR S-O-D USE.

TWEAK

TWEAK is a program for manipulating bit-image files created using MicroDesign2, ProSCAN, Stop Press, The Desktop Publisher, Masterscan, etc. It works by loading an 'ORIGINAL' file, then one of the TWEAK operations is selected and a new 'DESTINATION' file is created - the resulting 'tweaked' image is always saved to disc as part of the operation itself. The program can load and create images as .MDA, .CUT or .GRF files, and can convert between these formats.

RUNNING THE PROGRAM

The INSTALL program allows you two main options for using TWEAK on floppy disc ...



Firstly you can add the program to a working copy of MicroDesign2 or ProSCAN, provided that there is sufficient space on the disc. If you do this, you can then QUIT to CP/M from MicroDesign2 or ProSCAN, then at the A) prompt, with the disc in the drive, type ...

TWEAK **[RETURN]**

(PCW9512 users - read the Important Note on page 3 regarding CP/M versions)



Secondly you can make a separate Start-of-Day TWEAK disc - if you use INSTALL to copy the program onto a non MD2/PS disc, you will be given the option of making it into a Start-of-Day disc, and will be asked to insert your CP/M system disc for the relevant S-o-D files to be copied. You can then simply turn on the PCW and insert the disc, or press SHIFT-EXTRA-EXIT to reset the machine with the disc in the drive if it is already switched on.

Hard drive users are also catered for ...



Hard drive users may add TWEAK to their system wherever it will be most useful - INSTALL allows you to copy it to any drive, User 0-9. As with MD2/PS a 'key-disc' is needed in a floppy drive for the program to run, but any MD2 or ProSCAN or TWEAK disc will do for this.

IMPORTANT NOTE - MEMORY AND DRIVE M:

TWEAK will normally use up to 512k of memory if it can find it, obliterating any files stored in the M: drive. However, the program WILL take advantage of any extra RAM you may have added to your machine if needed for a very large image (more than a full MD page area). Tweak can therefore be used with Flipper, provided that 512k RAM is allocated, but may overrun its partition if a large image is created.

NOTE: If you wish to run any program other than MicroDesign2 or ProSCAN after using TWEAK, we strongly recommend that you re-boot your PCW, especially if you intend to use the M: drive.

LOADING & SAVING IMAGE FILES

Before using TWEAK, you will need to have saved on disc any material you wish to manipulate, and you will need some free space on a formatted disc for the tweaked versions of your designs. As with all of the MicroDesign & ProSCAN family, once the program is running you can remove the program disc from the drive, so you do not have to have the files or the free space on the same disc as TWEAK itself.

FILENAMES AND SEARCH-STRINGS

All the graphic operations in TWEAK require that there be an ORIGINAL file loaded into memory, and when you first run the program, you will find that it automatically launches the Load operation, asking you to:

Enter ORIGINAL Area Name ---- ■ or Search String (eg *.MDA) for Directory

Filenames for both loading and saving can have an .MDA, .CUT or .GRF suffix, and may include a drive letter. The file format is selected by giving the appropriate suffix. The file suffix and/or drive letter can be omitted, in which case the program will assume the same type and/or drive as was last used. Thus the following are all valid filenames for loading or saving:

MYPIC.MDA YOURPIC.CUT B:HERPIC.GRF A:HISPIC OURPIC

A Search String is a filename with ? and/or * included, and is entered in order to view a Directory of available files when loading or saving. Here the file suffix must be given if you wish to see eg all the .MDA files on a particular disc.

e.g. A:*.MDA _____ Show all .MDA files on A:
 *.GRF _____ Show all .GRF files on last accessed drive
 B:MYPIC???.CUT _____ Show all files on B: named MYPICanything.CUT

The maximum number of files that can be listed is 100.

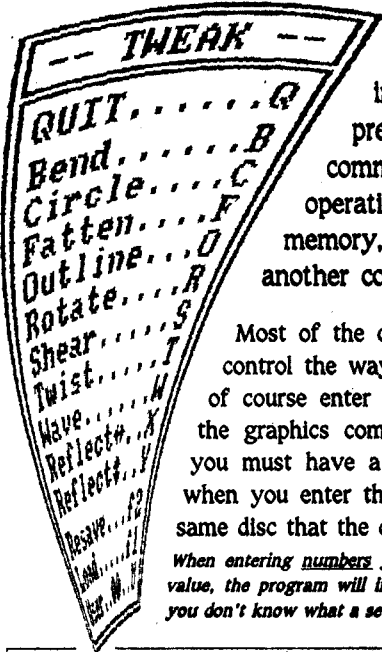
Since all the graphic operations in TWEAK create a DESTINATION file on disc, you do not need to save your work as you proceed. However, the RESAVE operation is included so that you may copy a file to a different disc, save it with a different suffix to perform a format conversion, or CROP the image, removing the spare white space around your design which will result from many of the TWEAK operations.

Resave...f2

The USER facility allows access to files in different user areas (groups) - press U repeatedly to make the User Number count up from 0 to 15 and round again.

User..00..U

THE GRAPHICS OPERATIONS



TWEAK has ten graphics manipulation commands, each of which performs a different image transformation, and is selected by pressing the listed key. Only one of these commands may be used at a time, but after each operation the result is always left in the PCW's memory, so that it may immediately be manipulated by another command in order to combine effects.

Most of the operations require that you input a few 'parameters' to control the way that they operate, and for every command you must of course enter a filename for the DESTINATION tweaked image. All the graphics commands work by creating a tweaked file ON DISC, so you must have a disc with enough free space in the appropriate drive when you enter the destination filename. (This does not have to be the same disc that the original image was loaded from)

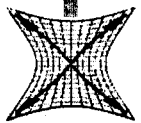
When entering numbers you will find that if you simply press RETURN without typing in a value, the program will insert a sensible default value for the parameter in question. So ... if you don't know what a setting does, just press RETURN!

... OF TIME ...



The different commands take varying times to execute - the Circle operation is by far the slowest (the mathematics involved are working the PCW very hard indeed) and can take anything up to 200 times as long to process an image as Y-Reflect, for example. As well as displaying their output as they go along, all operations give you an idea of their progress from the Line x of y report.

... AND SPACE ...



The different effects also create differing sizes of tweaked image. In some cases the result is the same size as the original, whereas in others it will be smaller or larger. The width and height of the current file are given on screen, so you will be able to tell from this whether it will fit on the MD2 page (a 256k Upright A4 page is 960 wide by 1088 tall, for example, and a 256k Sideways A4 is 1152 by 952).

... AND ERRORS



The maths involved in some of the graphics commands is extremely complex, and accumulated rounding errors may result, particularly near the edges of an image. Saving a little space around a design can protect it from this edge effect to some extent.

There now follows a description of each of the commands in turn, with details of the various parameters and their meanings, and then we will see how several of the operations may be combined in sequence to produce virtually limitless graphic effects.

BEND

This operation wraps your original image onto the surface of a cylinder with variable amounts of 'bend' and 'end-rounding'.

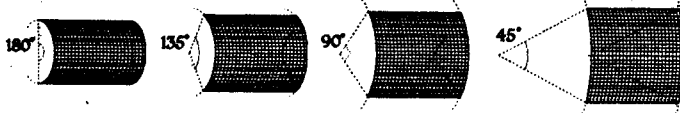
PARAMETERS

Vert/Horizontal

The axis of the cylinder can be chosen to run across the page (HORIZONTAL) or down it (VERTICAL). As with many of the commands, the effect of a cylinder at an angle 'in between' can be achieved by combining Rotate and Bend - more about this later.

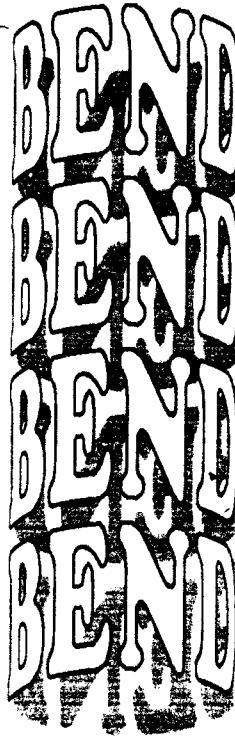
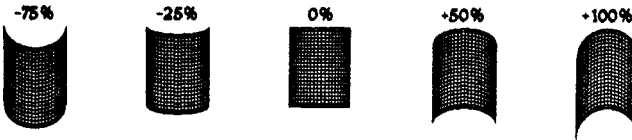
Degrees of Bend

The amount of bend is measured in degrees, where the maximum (180°) represents the image being wrapped onto the entire front face of a cylinder, and lower values mean progressively gentler bending. *These examples show a Horizontal Bend of ...*

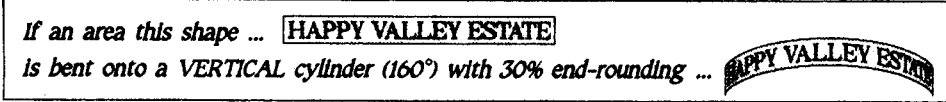


End Rounding

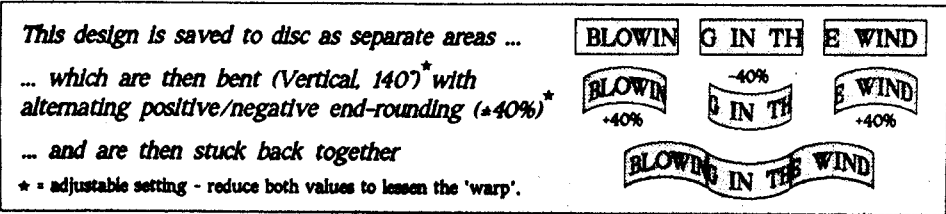
This parameter controls the curvature of the ends of your Bent design, creating a variable 'viewing-angle' effect. A negative value for this parameter makes the ends curve in the opposite direction. *These examples show a Vertical Bend of 180° with rounding of ...*



BEND may be used particularly effectively to create an 'arch' effect like the Utilities Disc title on the front cover of this manual:



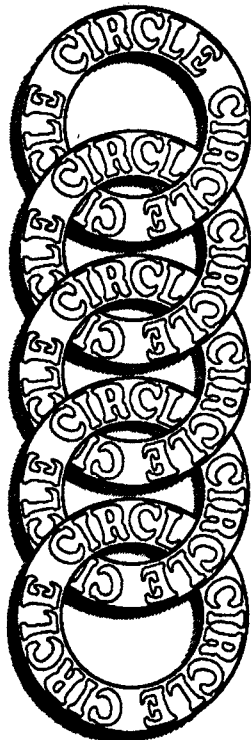
Spectacular 3-D 'rippled banner' effects may also be created by breaking an image into more than one section, each of which is then bent separately - alternate sections should have positive/negative end-rounding:



*This design is saved to disc as separate areas ...
... which are then bent (Vertical, 140°)* with alternating positive/negative end-rounding (+40%)*
... and are then stuck back together
* = adjustable setting - reduce both values to lessen the 'warp'.*

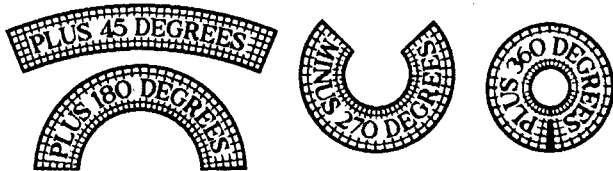
CIRCLE

This operation curves your original image into a circular arc. The number of degrees around which it is curved, and whether it curves 'up' or 'down' are controllable.



PARAMETERS

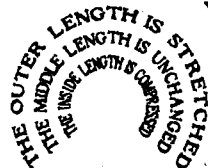
Angle This controls the degrees of arc covered by the curved design. A positive number gives a curve over the top of a circle, and a negative one gives a curve around the bottom.



Correction Because of the problem of the PCW's non-square pixels, the image must be created with the destination page format in mind if it is to be exactly circular, so you may choose Upright or Sideways page correction. Users of ProSCAN's HIGH-Q printing on 24-pin/Laser/Inkjet printers should select None.

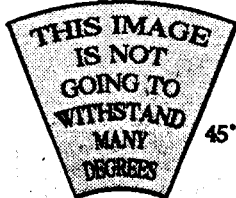
N.B. Circle performs a large number of complex calculations for each pixel and can therefore take a very long time to process a large area.* If you are not absolutely sure how much curve to use, you should create a much smaller version of your image to experiment with before using the Circle command on your full-sized design. This applies equally to the other more complex commands such as Bend, Twist and Wave.

* The longest we have ever run took 5 hours to Circle an area 1104 by 932.

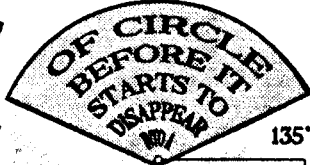


You will notice that the Circled image is EXPANDED around the outside of the curve and COMPRESSED around the inside. The centre remains exactly the same length, though it is now along a circular arc. This effect will lead to some distortion in lettering and graphics if the image is tall compared to its length, but this can be avoided with lettering by using Rotate instead (more later).

For taller images, there is a limit to the degrees of Circle you can apply before your design starts to fold in on itself ...



45°



135°

Note how a 'vanishing point' is developing here

... but this shouldn't stop you using this effect, which can be most interesting:

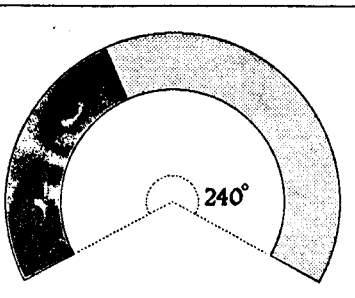


180° Circle



Although CIRCLE only operates around the top or bottom of a circle, you can wrap an image onto an 'off-centre' arc by including some white space in your saved image:

The inclusion of the blank space pushes the image itself across onto an off-centre part of the circle.



The CIRCLE operation can be used on sections of an image to create a wavy design somewhat like that described for BEND. As in that case, the sections of the design are Circled with alternately positive/negative angles :

The separate sections:



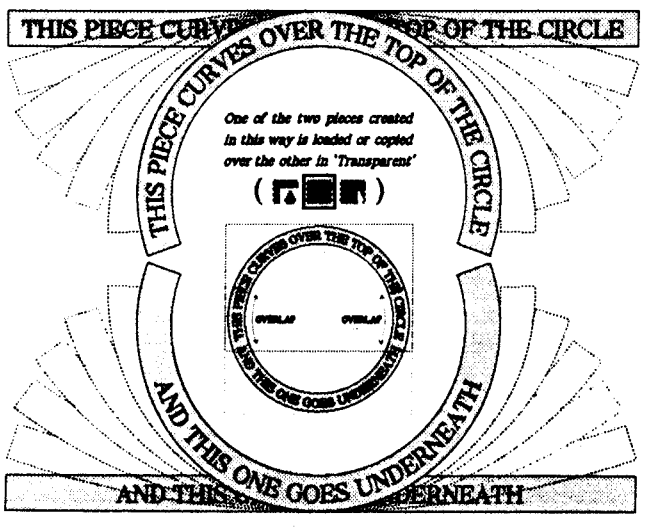
These are each Circled by alternately plus/minus 140 degrees. As with the banner ripple in BEND, the number of degrees can be altered to taste.



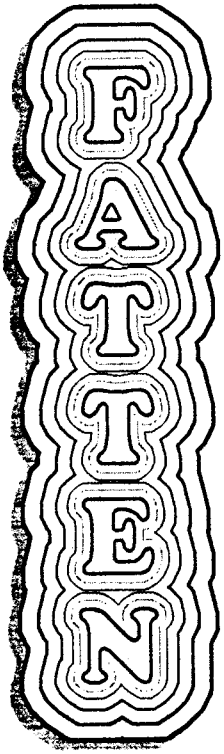
If you are creating a ring of lettering where some must curve over the top of the circle and some under the bottom, then to ensure that the two pieces fit together exactly make both original images the same size and use the same angle for both:

The top section of the lettering is 1.5 times longer than the bottom section, so the top must be Circled through 1.5 times as many degrees as the bottom. This means 220° for the top and 140° for the bottom, adding up to a full circle of 360 degrees.

However, we save the lower section with enough blank space either side to make it the same length as the upper, and Circle both pieces by the same 220°. We then simply overlap the two resulting circular sections to give the final design.



FATTEN



This command is used to thicken or 'thin' your designs. When thickening, each pixel of the original is expanded into a blob, thereby darkening the image, whereas when thinning the black areas are shrunk to lighten the image.

PARAMETERS

Thickness If the thickness given is POSITIVE, the image is Fattened by the quoted amount. If the thickness given is NEGATIVE, it is thinned by the same amount.

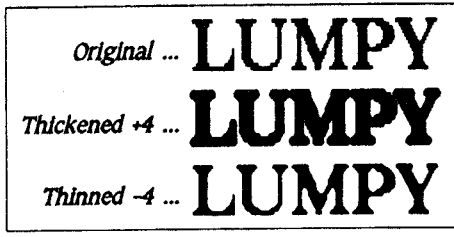
MINUS 1 NORMAL PLUS 2
 MINUS 3 PLUS 5

The effect on one pixel of thickening by values 1 to 5 is shown here:

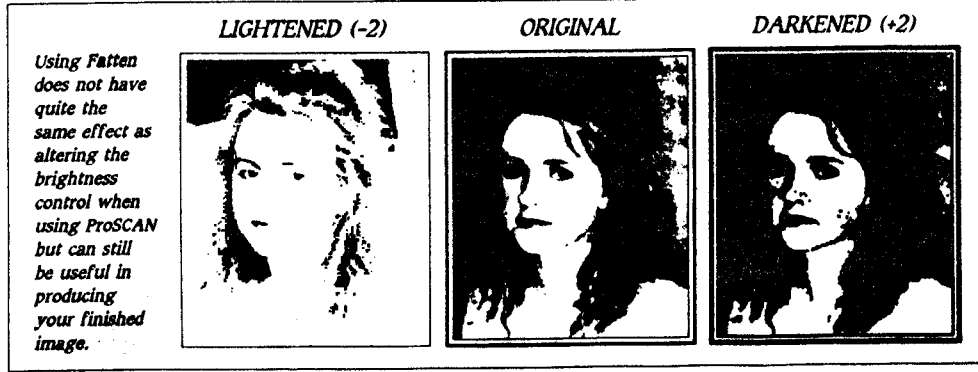


If you want to expand the white areas of a design, use a negative thickness. Positive values conversely shrink the white.

If an image is thick-ened and then thin-ened again, the result is a rounding of edges and corners. This may help to improve jagged shapes such as are produced when lettering is expanded by rescaling.



One of the obvious uses of Fatten is to darken or lighten an image, especially a photo. Using the technique described above to thicken-and-thin will also help to remove unwanted ragged detail from photographic scans.



Using Fatten does not have quite the same effect as altering the brightness control when using ProSCAN but can still be useful in producing your finished image.

OUTLINE

This operation traces a 'key-line' of variable thickness around a design, following the edges of either the black or the white areas.

PARAMETERS

Outline Thickness

If you give a POSITIVE value, an outline of the requested thickness is created around the OUTSIDE of the black areas (eg letters). A NEGATIVE value will create an outline around the INSIDE of the black (ie the outside of the white).

MINUS 1 PLUS 2
MINUS 3 NORMAL PLUS 5

When creating a keyline around the outside of lettering (when using positive thicknesses), you should be careful that the outlines of the letters do not crash into each other:

This lettering was created with its 'normal' spacing *Extra spacing was used here to allow for the fattening of the letters*

TOO CLOSE **BETTER**

To create a key-line which stands AWAY from a design, Fatten the image first and then Outline the fattened version:

Original ... Fattened +4 ... Outlined +2 ... Add Original ...
LINE **LINE** **LINE** **LINE**

Repeatedly Outlining an image is interesting, though the result can easily become confusingly complex if you overdo it:

WOW

Another rather fun effect is achieved when a photographic image is Outlined:

This is our original grey-scale image (a video-digitised Herbert):



This 'Top-of-the-Pops' effect is the result of a direct Outline of +2:



If, however, the grey shades are blurred out to black using Fatten first ...



... then the Outline will produce an 'emptier' result as shown here:



If recombined with the original, we get a photo image with a traced outline:

