

Copyright © 1995 FLY'N  
THINGS(tm)yesyesPCXDXF.W\_\_001yesyesyesyesyesnonoyesyesTRU  
EPCX To DXF Conversionpcxdxf

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Help file produced by **HELLLP!**, a product of Guy Software, on 03/31/95 for Philip Koopman.

The above table of contents will be automatically completed and will also provide an excellent cross-reference for context strings and topic titles. You may leave it as your main table of contents for your help file, or you may create your own and cause it to be displayed instead by using the I button on the toolbar. This page will not be displayed as a topic. It is given a context string of `__` and a HelpContextID property of 32517, but these are not presented for jump selection.

HINT: If you do not wish some of your topics to appear in the table of contents as displayed to your users (you may want them ONLY as PopUps), move the lines with their titles and contexts to below this point. If you do this remember to move the whole line, not part. As an alternative, you may wish to set up your own table of contents, see Help under The Structure of a Help File.

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# Welcome!

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The **FLY'N THINGS™ PCX-To-DXF** program converts the **scanned image** from a monochrome **PCX** file's dots into horizontal-line vectors. A line is drawn starting with the first black dot found on a horizontal scan line and continues until a white dot is found -- the last black dot found is the end of the line. This gives a vector-format image made up of horizontal lines.

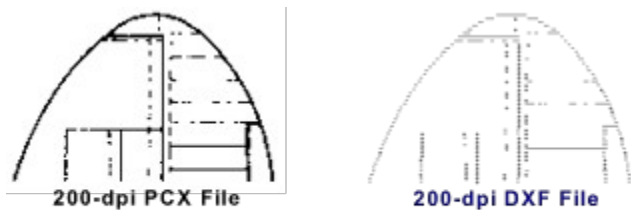
The conversion-program output is in the **DXF-file format** for direct entry into most CAD and Illustration programs. One traces over these vector-line segments to create the final line-art drawing.

The instructions are written for conversion of [aircraft 3-View drawings](#) for CAD and Illustration programs. However, the same techniques can be used for conversion of any type of scanned images in the PCX file format.

## What Is The PCX-To-DXF Conversion Program?

Unfortunately, with rare exceptions like AutoCAD Release 12, CAD programs do not directly accept **scanned images**. The scanned dots must be converted into a vector format for the CAD program.

The **FLY'N THINGS™ PCX-To-DXF** program converts the scanned image from a monochrome **PCX** file's dots into horizontal-line vectors. A line is drawn starting with the first black dot found on a horizontal scan line and continues until a white dot is found -- the last black dot found is the end of the line. This gives a vector-format image made up of these horizontal lines. The conversion-program output is in the **DXF-file format** for direct entry into most CAD programs. One traces over these vector-line segments to create the final line-art drawing.



**Partial View Of Aircraft Fin**

Vector lines, as used for CAD and Illustration programs, are actual lines that have specific start and end points. These data are stored in a drawing data base and tell the program to precisely draw a line from Point A to Point B. One might compare it to plotting a line on graph paper. The line starts at  $x = 1, y = 4$  and ends at  $x = 12, y = 6$ . For 3-D images, a third "z" point is added for depth information if the CAD program has 3-D capability.

Conversion of large scanned images does take time. The **FLY'N THINGS™ PCX-To-DXF** program can run in the background, provided you have set Windows for multitasking. Simply open the conversion program and start the conversion process. Then, reduce the program to an Icon. When the PCX-to-DXF conversion completes, a message box pops up showing that the file is done.

### ▶ See Also

[1/72nd-Scale WWII Scanned 3-View Aircraft Drawings Scanned Images](#)

[Using Drawing Snaps](#)

[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)

[Low-Resolution Conversion/Display](#)

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## Scanned Images

Scanned images, called raster images, are just a series of dots representing the original image. The scanning process sweeps across the original image in a series of horizontal lines of dots, much like the lines one sees on a monochrome TV set. Normally, the vertical distance between these lines of horizontal dots is the same as the horizontal dot spacing. The quality of the image depends on the number of dots per inch. A horizontal line that is one-inch long scanned at 100 dpi would have 100 evenly spaced dots. Scanning the same line at 300 dpi gives 300 evenly spaced dots.

An important value for a scanned-image file is the scan resolution. The amount of detail in a scanned image is limited to the optical resolution of the scanner. This number, expressed in dots per inch (dpi) for monochrome files, is simply the optical resolution of the scanner. One might think of the scanning process by imagining putting a piece of window screen over the original image. Each hole in the screen is a scan dot. The finer the screen's mesh, the more dots per inch and the more precise the image.

For line art, like a scanned 3-view aircraft drawing, a monochrome scan file is made. There is one dot per scan-bit resolution. Where the original image is black, a black dot, called a pixel, is recorded by setting that dot ON. For white areas, the pixel is OFF. Increasing the scan resolution, by software interpolation, above the optical resolution of the scanner does not add detail -- it just adds more dots to the image.

Scan files come in what might seem to be a bewildering array of types, like TIF, BMP, and PCX formats. All still contain the same image data for a monochrome (line art) image ON or OFF dots. These file types just define how these data are recorded in the file.

Many of these file formats were developed to make the scan file smaller by compressing the scan data. While file compression doesn't save any computer memory when working on the image, it does make a drastic difference in the stored scan-file size.

For model design, a scan resolution of 300 dpi is about the minimum for good results. At low scan resolutions, like 100 dpi, a line at an angle looks like a series of stair steps, rather than a straight line. However, a scanned image at 300 dpi does give a monster file. Typically, an uncompressed monochrome scan file for an 8- by 10-inch scan at 300 dpi gives a file of about 750,000 bytes. Compressed, in the PCX format, the same file is only 21,000 bytes in size.

A common file-compression method is to simply count the number of horizontal dots in a specific scan line that are on or off. The scan file then contains a series of numbers showing how many dots in the scan-line sequence that are on or off. For model-design use, the most common file types are the TIF (Tag Image Format), BMP (Windows Bit-Map format) and PCX.

### ► See Also

[Using Drawing Snaps](#)

[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)

[Low-Resolution Conversion/Display](#)

[DXF File-Format Problems](#)

[Making A New DXF Header File](#)

## Using Drawing Snaps

Each element of the converted image is a straight line. An original vertical line in the **scanned drawing** converts to a series of small horizontal lines stacked one above the other. Set the CAD program's "Object Snap" to CENTER and select a suitable APERTURE size for the lines you are working with. Zoom in and start drawing the CAD line at the center of the topmost line. Change the zoom to the bottom of the line segments and snap the other end of the CAD line to the middle of the bottom line.

For some drawings, you may find it easier to use small circles drawn with the circle's center "snapped" to the midpoint of the conversion lines. Then, zoom out and "connect the dots" by snapping between centers of the circles. In other cases, like for centers of a wheel, you might wish to zoom in and place a CAD POINT at the wheel center. Zoom out, and draw a center-and-radius circle by snapping to the center of the wheel and another point placed on the outer edge of the wheel.

For curved lines, like the sweep of the nose of an aircraft, place a series of POINTS or circles along the scan-conversion lines. Connect these points with a polyline. Then, use CAD's ability to curve fit a polyline, generating a smooth curve that passes through all of the points you initially set.

Many Illustration programs, like **Micrografx Designer and DRAW!**, have snaps that are similar to those of CAD programs. Most of the above methods will work. In some cases detail data, like the exact angle of a line, may not be available. Usually the illustration programs allow for visual rotation of a group of lines and snaps can be set to a grid as in CAD. Unlike some CAD programs, curve fitting may also be visual. Generally most illustration programs provide for *Bézier* curves with control points to curve fit a polyline.

### ► See Also

[1/72nd-Scale WWII Scanned 3-View Aircraft Drawings](#)

[Scanned Images](#)

[How To Use Converted Images With CAD Programs](#)

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## How To Use The DXF Conversions With CAD Programs

Vector lines, as used for CAD and Illustration programs, are actual lines that have specific start and end points. These data are stored in a drawing data base and tell the program to precisely draw a line from Point A to Point B. One might compare it to plotting a line on graph paper. The line starts at  $x = 1$ ,  $y = 4$  and ends at  $x = 12$ ,  $y = 6$ . For 3-D images, a third "z" point is added for depth information if the CAD program has 3-D capability.

Unfortunately, with rare exceptions like AutoCAD Release 12, CAD programs do not directly accept scanned images. The scanned dots must be converted into a vector format for the CAD program.

The **FLY'N THINGS™ PCX-To-DXF Conversion** program converts the scanned image from a monochrome PCX file dots into horizontal-line vectors. A line is drawn starting with the first black dot found on a horizontal scan line and continues until a white dot is found -- the last black dot found is the end of the line. This gives a vector-format image made up of these horizontal lines. The conversion-program output is in the DXF-file format for direct entry into most CAD programs. One traces over these vector-line segments to create the final line-art drawing.

### Getting It Straight

A common problem with scanned images is that the image isn't exactly straight -- like the center line of the fuselage isn't quite horizontal on the side view. This is caused by a variety of problems. Obviously, if the original scan is at an angle, then all horizontal and vertical lines will also be at an angle. Care in making the original scan corrects many of these problems.

However, other factors are a work. It's common to find a 3-View drawing that has the original views not drawn exactly square with each other -- much the same problem as the top and side views of a fuselage aren't the same length. In some cases one finds that the original drawing was actually made up of several parts that were pasted together before making the printing plate. And, since most scans are from printed images, the camera lens used to make the original printing plates adds its distortions, too.

One method to help get a scanned image straight is to break the different views into individual parts. Advanced image-processing software, like [Micrografx Picture Publisher](#), can rotate a scanned image with precision of 1/10th of a degree. However, accuracy of rotation is still limited by the scan resolution. A precise rotation is still limited to a single dot -- a long center line on a top view may still not be quite vertical or horizontal.

Start with a scanned image as straight as possible. Then, trace over the image to establish center lines or reference lines for each view, even if they aren't exactly vertical or horizontal. Don't make the mistake of using the computer program's ability to make perfect vertical and horizontal lines. You may find that long vertical center line is right on at one end and as much as 1/8th inch off at the other. If you were to enlarge the drawing eight times, then that error increases to one inch.

After adding these lines, measure the angle of each view's center or reference line. Then, rotate all of a each view's vectors so that the center or reference lines are exactly horizontal or vertical. Then trace over the image for your final drawing.

- ▶ **Hint** To Speed Up CAD Redraws, Put The Side, Top And Front Views On Different Layers. Turn Off And Freeze Unused Layers During Tracing. To Decrease The Drawing Size,

## Delete The DXF Line Segments After Tracing.

### ▶ See Also

[1/72nd-Scale WWII Scanned 3-View Aircraft Drawings](#)

[Scanned Images](#)

[Using Drawing Snaps](#)

[How To Use Converted Images With Illustration Programs](#)

[Low-Resolution Conversion/Display](#)

[DXF File-Format Problems](#)

[Making A New DXF Header File](#)

## How To Use The DXF Conversions With Illustration Programs

In general, you can use the DXF files made by the **FLY'N THINGS™ PCX-To-DXF Conversion** program with most illustration programs that accept AutoCAD standard **DXF** files. However, CAD programs work in units, and illustration programs generally use specific measurements, like 1/100 of an inch. This can cause the image from the DXF file to be too large when imported into an illustration program.

To compensate, the PCX-To-DXF program can be set to make the DXF conversion to the actual size of the original **scanned** image. This method is a bit slower since the DXF file data must be in decimal fractions, rather than integer units; files scanned at 300-dpi would generate DXF file data in increments of 1/300th of an inch. For faster, and more accurate conversion, it is suggested that you use scanned images with resolutions that are even numbers, like 200- or 400-dpi scans.

### ▶ See Also

[1/72nd-Scale WWII Scanned 3-View Aircraft Drawings Scanned Images](#)  
[Using Drawing Snaps](#)  
[How To Use Converted Images With CAD Programs](#)  
[Low-Resolution Conversion/Display](#)  
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## DXF File-Format Problems

Some CAD and illustration programs tested were not completely compatible with the AutoCAD **DXF-file format** . This may vary with different versions of these same programs. The common problem is that some programs, while listed as DXF compatible, will not accept the AutoCAD "Entites Only" DXF file that does not have the complete file-specification header.

An option to add this full DXF header is included in the **FLY'N THINGS™ PCX-To-DXF Conversion** program. These header data are simply copied from the Ascii -text file: **DXFHDR.TXT**. The file-header data provided has been tested for compatability with [AutoCAD LT For Windows, Visual CADD 1.0 and Micrografx Designer 4.1 TE](#).

For other CAD programs, that require the full DXF header, you may need to change file **DXFHDR.TXT** to contain a DXF header from your specific CAD program.

### ▶ See Also

[Making A New DXF Header File](#)

[Scanned Images](#)

[Using Drawing Snaps](#)

[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)

## Making A New DXF Header File

### ► To Make A New DXF Header File:

First, make a backup of DXFHDR.TXT by renaming it DXFHDR.SAV. Then, open a new drawing in your CAD or illustration program. Draw a single line anyplace on the page. Export (for some programs you may have to use: Save As...) the drawing as a DXF file. Copy, or rename, the file to DXFHDR.TXT. Open this file with the Windows Notepad. Delete the ENTITIES section starting with:

```
0                Delete From This Point To The End Of The File
SECTION
2
ENTITIES
0
LINE
8
Layer-1
6
CONTINUOUS
.....Section omitted for clarity
0
ENDSEC
0
EOF                Last Statement In DXF File
```

### ► Delete To The End Of The File

Save the modified file. Make sure that it is in the same directory as FLY'N THINGS™ PCX-To-DXF Conversion program. If you use another text editor, make sure you save the file as text only with line breaks.

### ► Sample DXF File From Visual CADD 1.0

```
0                Start Of Header
SECTION
2
HEADER
9
$ACADVER
1
AC1009
9
$INSBASE
10
0.0
20
0.0
30
0.0
9
$EXTMIN
10
Part Of Header Deleted
```

## For Clarity

TABLE

2

VIEW

70

0

0

ENDTAB

0

ENDSEC

0

SECTION

2

BLOCKS

0

ENDSEC

End Of Header

► Delete From This Point To The End Of The DXF File

0

SECTION

2

ENTITIES

0

LINE

8

Layer-1

6

CONTINUOUS

5

1

10

9.415067

20

43.219113

30

0.0

11

14.325613

21

43.219113

31

0.0

0

ENDSEC

0

EOF

Last Statement In DXF File

► See Also

[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)

[DXF File-Format Problems](#)

# 1/72nd Scale WWII Scanned 3-View Aircraft Drawings

## WWII Allied And Axis Aircraft Over 500 Types From 12 Countries

### Plan Codes:

1. Detail Panel Markings And Structure; Original Drawing Is One 8-1/2 x 11 Sheet
2. Detail Panel Markings And Structure; Original Drawing Is Two 8-1/2 x 11 Sheets
3. Detail Panel Markings And Structure; Original Drawing Is Three 8-1/2 x 11 Sheets
- A. Basic Outlines Only - No Detail Panel Markings; One 8-1/2 x 11 Sheet
- B. Basic Outlines Only - No Detail Panels; Original Drawing Is Two 8-1/2 x 11 Sheets
- C. Basic Outlines Only - No Detail Panels; Original Drawing Is Three 8-1/2 x 11 Sheets

### Index Notes:

1. All Multiple-Sheet Drawings Are Combined Into ONE 11 x 17 Sheet At Reduced Size.
2. Early Drawings Marked As Basic Outlines Do Include Control Surfaces And Major Structure Points. Many Of The Later Aircraft Basic-Outline Drawings DO Include Reasonable Fuselage Detail.
3. ALL Drawings Have A "Scale" Ruler And Include Airfoil And Fuselage Sections.
4. Drawings Followed By "SPLIT" Are Reduced -Size, And Split Across Two Pages. We Cannot Guarantee That The Two Parts Will Be An Exact Match - ORDER ONLY IF IT'S THE ONLY DRAWING YOU CAN FIND.

### INDEX:

The Hypertext 3-View Index is currently available on AOL as file: [FTBOOKS.ZIP](#)

It may also be available on other services, too, as many of our programs and E-Books have been uploaded by others. The Index is also available in standard text format we'll be glad to E-Mail you a copy. Please see the Order Blank for obtaining the Hypertext, PDF and printed versions of the Index by mail.

### DRAWING COST:

For E-Mail Orders and uploads to AOL Members of drawing sets -- 3-View Drawings in PCX format - the cost is \$10 US for the basic set. Each additional drawing page is \$5.00 US. All two- and three-page drawings are combined into a single, reduced-size, 11 x 17 drawing.

For mail orders, the cost for the basic set is US\$15, with US\$5 for each additional drawing page. Add US\$3.50 shipping and handling. Mail orders include a printout of all drawings and data, a plastic holder for prints and the diskette(s). Our standard disk is a 1.44-Mbyte (HD), 3-1/2-in. floppy disk. US Shipments are by Priority Mail. **PLEASE SPECIFY WHAT SIZE DISK if ordering by mail!**

We will try our best to supply special disk formats for IBM-Compatible software. Let us know what you need and we'll convert the files with any format available for Micrografx's Picture Publisher 5.0a. The standard CAD set that has the 300-dpi 3-View drawing for PCX-to-DXF conversion.

### E-Mail Service:

For our overseas friends, please contact us for the shipping costs. We can transmit via InterNet E-Mail with ZIPPed UUENCODed files compatible with PCs and Unix systems. Please remember that these files are large and take a good deal of time to transmit. In ZIPPed format, a single one-sheet set is about 700 kbytes. Our Internet Gateway presently limits us to 32-kbyte files, so a typical set will come to you in about 32 parts. Transmit time presently costs \$3.00 per hour at 14.4k baud.

### TERMS:

All prices are as of 1 January 1995. All prices are subject to change without notice.

We will copy/scan your order when received; upload is done when we receive your

payments in cash or Money Order. Sorry, no personal or company checks accepted. The same terms apply to mail orders. If the aircraft is already scanned, we try and upload/ship in 48 hours. But please allow two weeks total time for delivery, as many of these plans must be carefully scanned and restored.

All images are copyrighted. Permission is granted ONLY for non-commercial personal use. All rights reserved, including file/disk duplication in any form, mechanical or electronic. They may not be duplicated in any form for sale. If you wish to use the 3-views for plan documentation, like a Peanut-Scale model plan, contact us and we'll be happy to work something out.

▶ **See Also**

[Order Blank](#)  
[Index Menu](#)



## Selected Software Programs And Suppliers

(January 1995)

PCX-To-DXF Has Been Tested With These Programs

Autodesk Retail Products  
11911 North Creek Parkway South  
Bothell, WA 98011-9914  
(800) 228-3601

GenericCADD 2D and 3D

AutoCAD LT For Windows

Micrografx  
1303 Arapaho  
Richardson, TX 75081  
(800) 733-3729      Extension 5050

Designer, Picture Publisher,  
Windows Draw & Graphic Works

Numera Software Corporation  
1501 Fourth Ave., Suite 2880  
Seattle, WA 98101  
(800) 622-8142

Visual CADD 2-D For Windows

### Basic Program Features

AutoCAD LT

Windows-based CAD With Limited 3-D  
Imports/Exports All AutoCAD DXF/DWG  
File Formats & WMF Windows Metafiles

Micrografx Designer (Illustration)

Windows/Layers, DXF & Scanned-Image  
Formats, Like PCX, GIF, TIF, WMF, etc.

Micrografx Picture Publisher

Windows Bit-Mapped Scan & Image  
Processing. Image Rotation.

GenericCADD 2D and 3D

DOS-based CAD Systems

Visual CADD

Windows 2-D CAD System; Reads  
& Writes AutoCAD DWG, DXF And  
Generic CAD GCD files.

**NOTE: Some other CAD programs may need a DXF add-on module at extra cost. Please check with the software suppliers for current specifications before buying ANY software.**

### ▶ See Also

[Scanned Images](#)

[Using Drawing Snaps](#)

[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)

[Low-Resolution Conversion/Display](#)

[DXF File-Format Problems](#)

[Making A New DXF Header File](#)

## Memory And Hard-Disk Requirements

Any method of scan conversion does need a fast computer with plenty of memory and hard-disk space. High-resolution **scanned images** can take up over a megabyte of storage. Programs like the **FLY'N THINGS™ PCX-To-DXF Conversion** also generate huge files, as the **DXF-file** program output format is in Ascii-text, like the files made by Windows Notepad.

Once the converted image is in the CAD program, disk space and computer memory also must be considered. Normally, most CAD programs make a backup file of the original. This temporarily doubles the amount of disk space needed for a drawing.

Typically, an 8- x 10-inch drawing scanned at 300 dpi, generates a DXF file of between 8 and 10 megabytes. As is obvious, the faster the computer and the more memory available the better, to process these large graphics files. Most of the new Windows-based graphics and CAD programs need at least 8-Mbytes memory to run efficiently. A 33-MHz 80386 or 80486 microprocessor is generally considered the minimum, with a 66-MHz 80486 DX2 microprocessor preferred.

One can use older computers, like a 80386SX running at 16 MHz, but performance is very slow. For most CAD and Illustration programs, a math co-processor adds speed. For some, like DOS-based AutoCAD, the program will not run without the co-processor.

### ▶ See Also

[1/72nd-Scale WWII Scanned 3-View Aircraft Drawings](#)

[Scanned Images](#)

[Using Drawing Snaps](#)


[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)

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## HELP!

- ▶ If you have never used the Windows Help System before, just press key  for detailed instructions.



- ▶ Or, with the mouse, pull down the **Help** Menu by clicking on it and then click on the menu item **How To Use Help**.



- ▶ For keyboard access, or if you have mouse problems, hold down the  Key and press the



key. **RELEASE**


**BOTH KEYS**, then press the  key.

- ▶ **See Also**

Click Here for: [Basic Help Instructions](#)

## Basic Help Instructions

### Help Basics

You can find information in a Help file by using the index or the Search feature. To return to the Help Index after you read the instructions below, click on the  button or press the



key.

- ▶ For detailed instructions on how to use Help: Press the



key.

To return to this Help File, click on How To Use Help's  button or press the  key.

- ▶ To scroll in the Help window

Do one of the following:



1. Press the



or



keys.



2. Use the **scroll bars** with the mouse.

- ▶ To use the Help Index, Do one of the following:



1. Click on an **underlined** word or graphic.



2. Or, press the



key until you highlight the topic

you want, then press the  key.

- ▶ To return to the previous topic

Click the  button or press the




key.

- ▶ To open the Search feature in Help

Click on the  button or press the


 key.

▶ **Menu Names**

File menu names and commands are shown in the text as **LARGE colored letters** with the underlined letter showing the key to press. For: **Help** you would press the letter  key.

▶ **Keyboard-Shortcut Examples:**



■ For keyboard access, or if you have mouse problems, hold down the  Key and press the

 key. **RELEASE**

**BOTH KEYS**, then press the  key.

■ This keyboard sequence may also be shown as:

 &

 then, press




Or as:  &




▶ **To close the Help window**




1. Click on the  key.



2. From Help's File menu, choose **Exit** by pressing the  key and the

 key, release them, and

then press the  key.

## Choosing a Menu Command

You can choose commands with the mouse or by pressing key combinations.

### ► To choose a menu command



1. Point to a menu name.
2. To display the menu, click the left mouse button.
3. Point to a command name.
4. Click the command name with the left mouse button.



1. To make the menu bar active, press the key.
2. To display a menu, press the underlined letter in the menu name.
3. To choose a command, press the **underlined** letter in the command name.

A command name followed by the three-dot ellipsis (...) indicates that a dialog box appears when you select that item.

### ■ Tip

Many Windows programs assign some commands to shortcut keys so you can choose the commands without displaying a menu. If a command has shortcut keys, the keys appear in the menu next to the command.

### ► See Also

[Keyboard Access To Menus](#)  
[The Conversion Display](#)  
[Menu Bar](#)

## Closing a Menu

You can close a menu without choosing a command.

► To close a menu do one of the following:



Click outside the menu.





Press



or



**Note:** After you press  to close a menu, the menu name is still selected. To return to your document, press  again.

► **See Also**

[The Conversion Display](#)

## Program Control Menu



### A Click With The Mouse



### "Drops Down" The Control Menu

Located at the left end of the **title bar** of an application window.

To display the commands that control the size and position of an application window, click the application Control-menu box or press:



### ▶ See Also

[Keyboard Access To Menus](#)



## The Conversion Program Menus

### All Menu

- [The Conversion Display](#)
- [Keyboard Access to Menus](#)

### File Menu

- [Open](#)
- [Exit](#)

### Options Menu

- [File-Open Prompt](#)
- [File-Save Prompt](#)
- [Actual Size](#)
- [Fast Conversion Mode](#)
- [Low-Resolution Conversion/Display](#)
- [Add DXF Header](#)

### Help Menu

- [Contents](#)
- [Search For ...](#)
- [How To Use Help](#)
- [About...](#)

### Index Menu

- [Drawing Index](#)
- [1/72nd-Scale WWII 3-View Aircraft Drawings](#)

### Register Menu

- [How To Register Your Program](#)
- [Register The Program](#)

# Program Environment, Windows & Buttons

## Program Environment & Dialog Boxes

- [The Conversion Display](#)
- [File-Open Dialog Box](#)
- [File-Save Dialog Box](#)
- [The About Dialog Box](#)

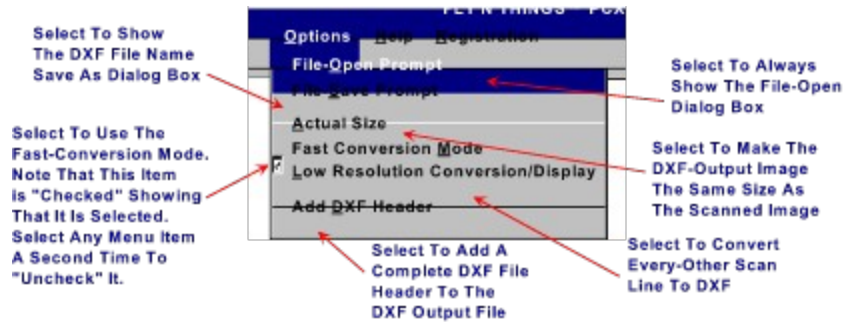
## Program Image-Processing Buttons

- [Program Control Buttons](#)
- [PCX Header](#)
- [Show PCX File](#)
- [Make DXF File](#)
- [Stop Processing](#)

## Program Window & Buttons

- [The Conversion Title Bar & Menu Bar](#)
- [Program Control Menu](#)
- [Size](#)
- [Minimize](#)
- [Restore](#)
- [Move](#)
- [Close](#)
- [Title Bar](#)
- [Menu Bar](#)
- [Check-Box Bar](#)
- [Disabled "Grayed" Out Controls](#)

## Options Menu



Select the option text to enable/disable that function. When an option is active, a check mark appears next to the text, as shown above for the Fast Conversion Mode. Selecting any of the processing options automatically checks or unchecks the "Check Box" for that function on the program display.

► See Also

[The Conversion Display](#)

## File-Open Prompt (Options Menu)

Select this option to automatically have the **File-Open Dialog** box appear when any processing button, like **Make DXF File**, is selected. If the **File-Open Dialog** option is not selected, file processing is done with the current open file.

■ This option can only be selected prior to starting a file conversion.

▶ See Also

[Options Menu](#)

[Check-Box Bar](#)

[The Conversion Display](#)

## File-Save Prompt (Options Menu)

Select this option to automatically have the **File-Save-As Dialog** box appear when any file-output processing button, like **Make DXF File**, is selected. This lets you change the name of the processed output file. If the **File-Save Dialog** option is not selected, the output file name is the same as that of current open file. For example, without this option selected, the DXF output from an open file named **AIRMDL.PCX** would automatically be saved as **AIRMDL.DXF**

■ You **MUST** select this option before starting a file conversion.

▶ See Also

[Options Menu](#)

[Check-Box Bar](#)

[The Conversion Display](#)

## Actual Size (Options Menu)

Use this option to set the physical dimensions of the output DXF file data to that of the scanned image. It is provided primarily for use with Illustration programs. Selecting this option sets the dot-to-line conversion resolution to that of the input PCX file. If the input file is scanned at 200 dpi, the the DXF line output will be measured in increments of 1/200th of an inch.

For maximum precision, do not use this option with scans that are not an even number, like 300 dpi. Division of odd numbers results in the line precision measured in non-ending decimal numbers; a 300-dpi scanned image gives increments of 0.0033333333... etc.

If this option is NOT SELECTED, the DXF-file output is in units. A series of 223 horizontal dots in the scanned image generates a line that is 223 units long. Set the value of these units to whatever dimension you wish in your CAD program. For example, if your CAD program is set so that each unit is equal to 1/100th of an inch, the line would measure 2.23-inches long. Spacing between the DXF lines matches the horizontal resolution, so there is not image distortion.

■ You MUST select this option before starting a file conversion.

► See Also

[Options Menu](#)

[Check-Box Bar](#)

[The Conversion Display](#)

[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)

## Fast Conversion Mode (Options Menu)

Use this option to disable the display of the PCX file being processed. It increases the conversion speed by eliminating the time needed to convert the input data to the Windows display format.

- This option CAN be selected/deselected during file conversion.

You may turn this option on or off during processing to see what part of the image is currently being processed. Processing does wait until the Options Menu is closed.

### ▶ See Also

[Options Menu](#)

[Check-Box Bar](#)

[The Conversion Display](#)

[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)

## Low Resolution Conversion/Display (Options Menu)

Selecting this option changes vertical resolution of the DXF-output file and the visual processing display, if enabled. When selected, the low-resolution option changes the file processing so that every other line of horizontal dots in the PCX file is processed. It DOES NOT change the horizontal resolution of the DXF output.

- This option CAN be selected/deselected during a file conversion.

You may wish to use this option during processing to decrease the size of the output DXF file. Many areas of a drawing may not need closely spaced DXF lines, like large sections that just have vertical or angled straight lines. For critical areas, like a horizontal centerline, deselecting this option restores the full vertical resolution.

- ▶ See Also

[Options Menu](#)

[Check-Box Bar](#)

[The Conversion Display](#)

[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)



## Add DXF Header (Options Menu)

This option is provided to add a complete DXF header to the DXF-output file. The normal program output is a DXF, Entites-Only file the file does not contain any header information, like line type(s) or view ports. Some CAD and Illustration programs may not accept a DXF file without these data.

Choosing this option adds the contents of an external DXF header file to the conversion output. The header file included with this program was generated with AutoCAD LT for Windows. You can substitute a header file from your own CAD program if you wish.

■ You MUST select this option before starting a file conversion.

▶ See Also

[Options Menu](#)

[Check-Box Bar](#)

[The Conversion Display](#)

[Scanned Images](#)

[Using Drawing Snaps](#)

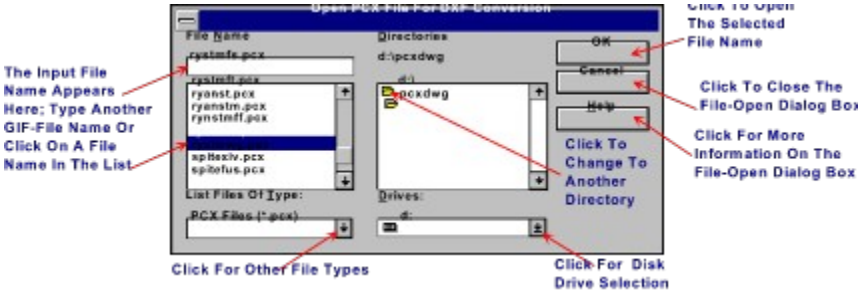
[How To Use Converted Images With CAD Programs](#)

[How To Use Converted Images With Illustration Programs](#)

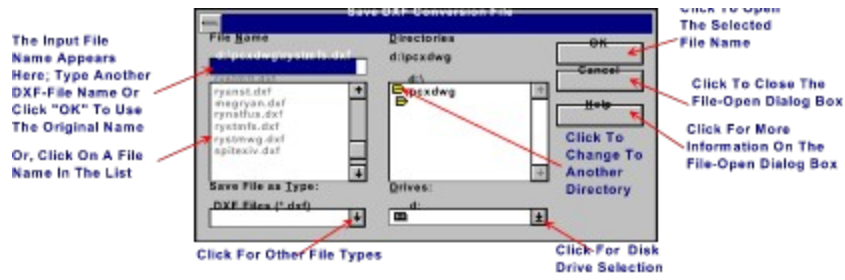
[DXF File-Format Problems](#)

[Making A New DXF Header File](#)

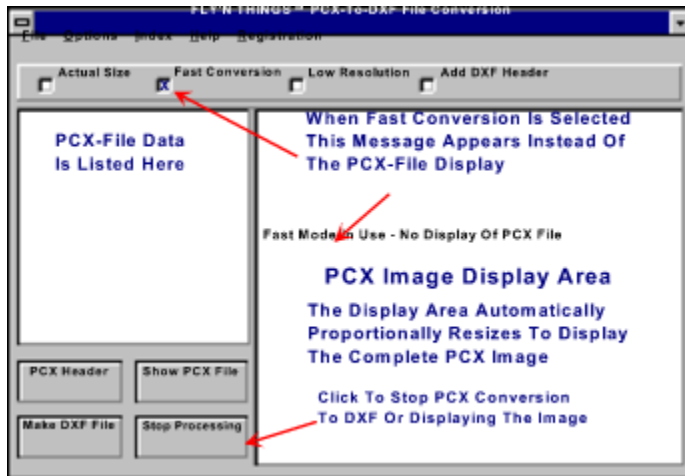
# File-Open Dialog Box



# File-Save Dialog Box



## The PCX-To-DXF Conversion Display



### ► See Also

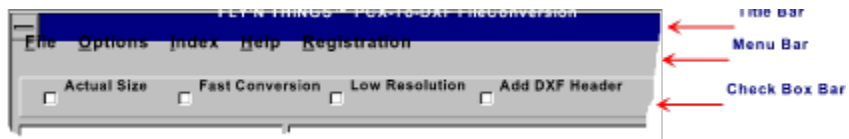
[The Program Title Bar & Menu Bar](#)

[Title Bar](#)

[Check-Box Bar](#)

[Menu Bar](#)

## The Conversion Title Bar, Menu Bar & Check-Box Bar



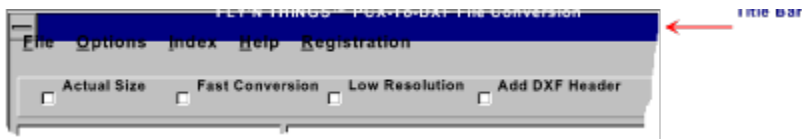
### ► See Also

[The Conversion Display](#)

[Title Bar](#)

[Menu Bar](#)

## Title Bar



Located along the top of a main Application Window and contains the name of the application and/or document. To move the window, drag the title bar.

**Note:** You can also move dialog boxes, like File Open, by **dragging** their title bars.

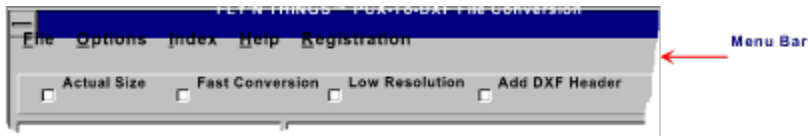
A title bar may contain the following elements:

- Application Control-menu button
- Image Control-menu button
- Maximize button
- Minimize button
- Name of the application
- Name of the image file
- Restore button

► See Also

[The Conversion Display](#)

## Menu Bar



Located below the title bar, along the top of the application window, and contains all menu names.

- ▶ To view all the commands in a menu, do one of the following:



Click the menu name.



Press



&



where **n** is the **underlined** letter

in the menu name. For example, press  &



to open the **File** menu.

- Choosing A Processing Option-Menu Selection automatically sets the corresponding check box.

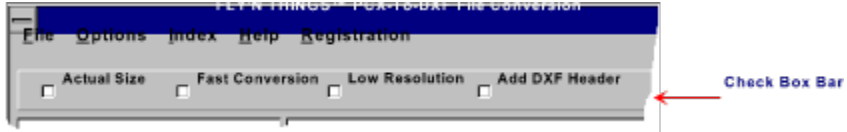
- ▶ See Also

[Choosing A Menu Command](#)

[The Conversion Display](#)

[Check-Box Bar](#)

## Check-Box Bar



- **Choosing A Check Box Option Automatically "Checks" The Corresponding Options-Menu item.**

### ▶ See Also

[Check Boxes](#)

[Grayed Out Buttons, Menu Items & Check Boxes](#)

[Options Menu](#)

[Actual Size](#)

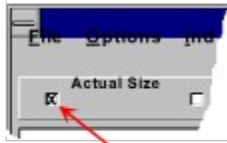
[Fast Conversion Mode](#)

[Low Resolution Conversion/Display](#)

[Add DXF Header](#)

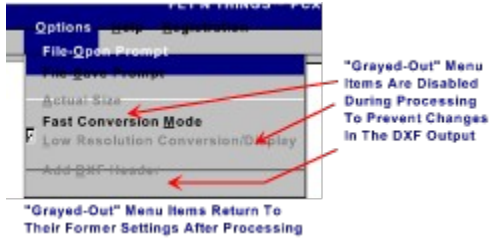


## Check Boxes






Click To Select A Check Box.  
Click Again To Undo The Check

## Grayed Out Buttons, Menu Items & Check Boxes



## Keyboard Access To Menus




Hold down the  key and then **press** letter key  of the **UNDERLINED Letter** in the menu name.

When the menu opens, release the  key and the  **Then, Press** the letter  key for the underlined letter of the menu item you wish to use.

**NOTE:** Pressing just the  key closes any open menu.

### Example:



▶ For keyboard access to the Help menu and then to select the Help On Help menu item, **hold down** the  Key and **press** the  key. **RELEASE** **BOTH KEYS**, then **press** the  key.

## Moving a Window or Dialog Box

You can position image windows anywhere in the Viewer's application window. Dialog boxes may be positioned anywhere on the main display. For example, you can move and size two document windows so they appear side by side as you work.

**Note:** You cannot move a window that has been enlarged to its maximum size.

- ▶ To move an application window, a Child window or dialog box:



Point to the **title bar** of the window or dialog box and **drag** it to the new position.



1. From the application Control menu, choose

**Move** 



and the

mouse pointer changes to



2. To position the outline of the window, use the **arrow keys**.

**Note:** To return the window to its former location, press 

3. When the window appears where you want it, press 

### ■ Tip

To view Help as you work in a document, you can arrange the Help window and the Viewer's window so they appear side by side.

### ▶ See Also

[Keyboard Access To Menus](#)

[Program Control Menu](#)

[How To Use Help](#)

## Registering A Program

When the **FLY'N THINGS™ Installer** program opens, write down the User name you entered, and the program's Serial Number. If this is a new, or update installation, install the unregistered version first. If you are installing an upgrade, make sure that the name and serial number *exactly* match your original program. If they do not, change them to match: see [Typing and editing in dialog boxes.](#)

## How To Register Your Program

### ▶ To Register your program or E Book

1. Select the **Register** menu and then select the **Register Program ...** menu item. This automatically takes you to the **Registration & Order Form** for the program you are installing.
2. Print out the **Order Blank**. Fill in your Name as it appears in the **About ...** dialog box **User Name** text box and the Serial Number as it appears in the **Serial Number** text box.  
**PLEASE PRINT!**
3. Indicate the type of registration you want; E-Mail or disk sets by mail. Enclose the Registration Fee in the amount and type of payment shown, and mail to the address on the form.
4. If you registered via E-Mail, follow the procedure to upgrade when you receive the Password. If you ordered the registered disk set upgrade, do an initial installation and follow with the install upgrade steps above.

### ▶ See Also

[Basic Help Instructions](#)

[Typing and Editing in dialog boxes](#)

[Copyright And Fair Use](#)

[Warranty](#)

[Registration and Ordering Information](#)

[Order Blank](#)

## Initial Program Registration

### ► To Initially Register your program or E Book

1. Select the **Register** menu and then select the **Register Program ...** menu item. This automatically takes you to the **Registration & Order Form** for the program you are installing.
2. Print out the **Order Blank**. Fill in your Name as it appears in the Installer's **User Name** text box and the Serial Number as it appears in the Installer's **Serial Number** text box. **PLEASE PRINT!**
3. Indicate the type of registration you want; E-Mail or disk sets by mail. Enclose the Registration Fee in the amount and type of payment shown, and mail to the address on the form.
4. If you registered via E-Mail, follow the procedure to install and when you receive the Password. If you ordered the registered disk set upgrade, do an initial installation and follow with the install upgrade steps above.
5. When you received your program password, run the program and open the Registration Dialog Box (About...). Type in your password as shown below and then press the ENTER key. The program "Beeps" .....on entry and the program registration changes to **REGISTERED**.

**UNREGISTERED** Changes To:  
This Program Is Registered To:



To Register Your Software, Type In Your Password In the Password/Status Text Box

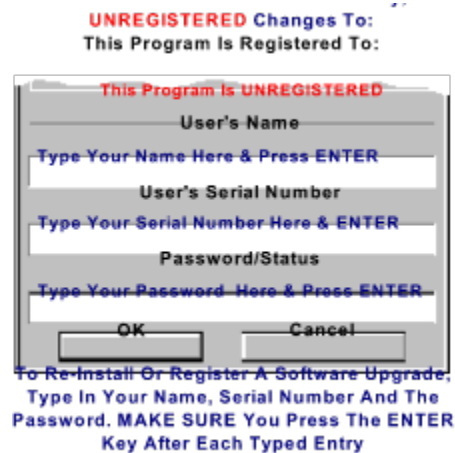
### ► See Also

[Basic Help Instructions](#)  
[Typing and Editing in dialog boxes](#)  
[The About Dialog Box](#)  
[Copyright And Fair Use](#)  
[Warranty](#)  
[Registration and Ordering Information](#)  
[Order Blank](#)

## Reinstalling Or Installing An Upgrade

### ► To Reinstall Or Install An Upgrade

1. Select the install button.
2. Type in your Password in the dialog box when requested.
3. If you entered the Password correctly the program acknowledges acceptance and installs the complete program. If your Password is rejected, double check that your **User Name** and **Serial Number** are correct, correct if needed, and repeat Step 1.
4. If you still cannot install the program, please see the README file that came with the program; Passwords are unique to each program and **ONLY** work with that program. If you still have difficulty, contact us via E-Mail for help.



### ► See Also

[Basic Help Instructions](#)  
[Typing and Editing in dialog boxes](#)  
[The About Dialog Box](#)  
[Copyright And Fair Use](#)  
[Warranty](#)



## Typing and editing in dialog boxes

Some dialog boxes contain text boxes in which you can type a response -- for example, a file name or file extension that you want to find in the current directory, or entry of your name or password.

### The Program's Serial Number Text Box



#### ▶ To replace text in a text box:

1. Select the text you want to replace then do one of the following:



Drag the mouse pointer over the text you want to replace.



Or, press the



key until you highlight the text box you want.

2. Type your response.  
The selected text is deleted as soon as you start typing.


#### ▶ To edit text in a text box, do one of the following:

To Do this

- Move the insertion point

Press the 



or  key, or click at the new location.

- Select text



key

Hold down the

and press the 





key, or



, or

hold down the left mouse button and **drag**.



or



key, or

■ **Cancel a selection**

Press the

click anywhere in the text box.

■ **Replace a selection**

Start typing.

■ **Delete text**

Delete one character at a time by pressing the BACKSPACE



or



key.

Or, delete more than one character at a time by selecting the text and pressing the



key.

▶ **When the text entry or change is complete:**

■ **Change**

Press the



key. The

program "Beeps" and your name or serial number are automatically updated and displayed.

■ **Password or Name**

Select the



button.

▶ **To close a dialog box:**

■ **Close**

Select the



button.

▶ **See Also**

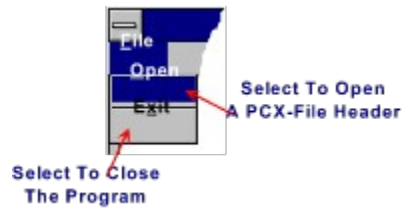
[Basic Help Instructions](#)

[Keyboard Access To Menus](#)

[The Conversion Display](#)

[The About Dialog Box](#)

## File Menu



### ▶ See Also

[Open Command](#)

[Exit Command](#)

[Keyboard Access To Menus](#)

## Open Command (File menu)

Use this command to open and display the Header Information for a PCX file.

▶ **See Also**

[File Menu](#)

[Keyboard Access To Menus](#)

## Exit Command (File menu)

Use this command to end your viewing session. You can also use the **Close** command on the application's **Control** menu.

### ▶ Shortcuts



Double-click the application's [Control-menu button](#).



&

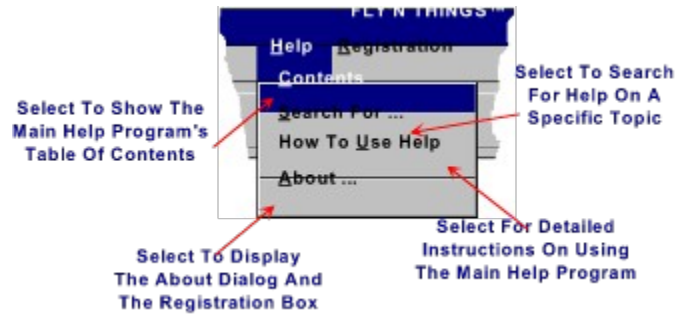


### ▶ See Also

[File Menu](#)

[Keyboard Access To Menus](#)

## Help Menu



### ► See Also

[Contents Command](#)

[Searching For A Help Topic](#)

[How To Use Help](#)


[About Command](#)

[Keyboard Access To Menus](#)

[The Conversion Display](#)

## Contents Command (Help menu)

Use this command to display the opening screen of Help ([Table Of Contents](#)). From the opening screen, you can jump to step-by-step instructions, answers to common questions and various types of reference information.

Once you open Help, you can click the first button on the left  in the Help window whenever you want to return to the opening screen.

## How To Use Help (Help Menu)

Choose to open the FLY'N THINGS™ Program **Help-On-Help** instructions.



## About Command (Help Menu)

Use this command to display the version number, and Copyright, of your copy of the FLY'N THINGS™ Program.

▶ See Also

[The About Dialog Box](#)

## The About Dialog Box



Choose To Accept  
Changes Made  
To The Text

Choose To Close The  
Dialog Box Without  
Making Any Changes

### ► See Also

[How To Register Your Program](#)

[Initial Program Registration](#)

[Reinstalling Or Installing An Upgrade](#)

[Register Program](#)

## Index Menu



The **Index** Menu is a special "hidden" menu. This menu links the Conversion program to external-Index Programs, like the **FLY'N THINGS™** WWII Hypertext Index of aircraft 3-view drawings. It is automatic in operation, and **ONLY** appears when a **FLY'N THINGS™** index is present.

Use the Index Menu like all other menus, either with the keyboard or mouse. Choosing the **Drawing Index ...** name starts the external index program.

### ▶ See Also

[Drawing Index](#)  
[1/72nd-Scale WWII Scanned 3-View Aircraft Drawings](#)  
[Registration and Ordering Information](#)  
[Order Blank](#)

## Restore Command (Control menu)

Use this command to return the active window to its size and position before you chose the Maximize or Minimize command. Clicking  in the upper-right corner of a maximized window is the same as choosing the Restore command.

### ▶ Shortcuts



Double-click the title bar.



&



restores an image window



&



restores the Viewer main window

### ▶ See Also

[Reducing The Viewer Window To An Icon](#)

[Minimize Button](#)

[The Conversion Display](#)

## Move Command (Control menu)

Use this command to display a four-headed arrow  so you can move the active window or dialog box with the **arrow keys**.

**Note:** This command is unavailable if you maximize the window.

### ▶ **Shortcut**



&




moves a window

### ▶ **See Also**

[Moving A Window Or Dialog Box](#)

## Size Command (Control menu)

Use this command to display a four-headed arrow  so you can size the active window with the **arrow keys**.

**Note:** This command is unavailable if you maximize the window.

## Maximize Command (Control Menu)

Use this command to enlarge the active window to fill the available space.

- An image window expands to fill the program window.
- The program window expands to fill the entire screen.

▶ **Shortcut**



Double-click the **title bar**.

## Close Command (Control Menu)

Use this command to close the program, active window or dialog box.



Program Window

Dialog Box



### Shortcuts



Double click on the Control-Menu Button.



&



closes the program window or a dialog box.



### See Also

[Exit Command \(File Menu\)](#)

[Program Control Buttons](#)



## Minimize button

Located at the right end of the title bar in an application window.

Clicking the Minimize button  is the same as choosing Minimize from the application Control menu: The application window shrinks to an icon.

▶ **See Also**

[Reducing A Window To An Icon](#)  
[The Conversion Display](#)

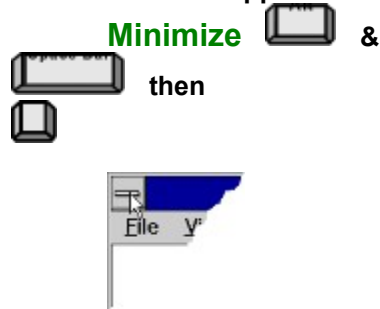
## Reducing The Program Window To An Icon

When you are finished working with the Installer, you can either quit the Installer or leave it temporarily by reducing, or "minimizing," it to an icon. When you want to resume working with the Installer, just double-click on the icon with your mouse.

When you reduce a application-program window to an icon, the icon goes behind any other application you have enlarged to full size.

- ▶ **To reduce the Installer window to an icon:**

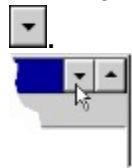
From the application Control menu, choose





- ▶ **Shortcut**



- ▶ **Click the Installer's Minimize button**



To restore the Installer to a window

1. Press  &  to display the Task List.

2. Do one of the following:

- Select Installer, and then choose the Switch To button.
- Double-click the Installer program name

**Shortcut**



- ▶ **Double-click the Installer icon**



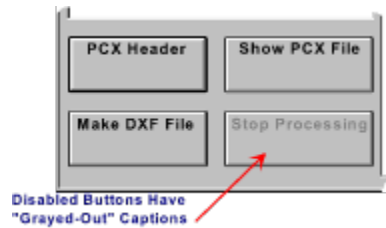
on your desktop.



**See Also**

[The Conversion Display](#)

## Program Control Buttons



These buttons control the processing of a selected **PCX** file. These individual buttons allow you to open a PCX file and display its header information, show the file on the display, convert it to a **DXF** file and stop processing an image.

- How these buttons function is controlled by the program options

### ▶ See Also

[PCX Header Button](#)  
[Show PCX File Button](#)  
[Make DXF File Button](#)  
[Stop Processing Button](#)  
[Grayed Out Buttons](#)  
[The Conversion Display](#)  
[Options Menu](#)  
[Check-Box Bar](#)

## PCX Header (Buttons)

Choose this button to open a **PCX** file and display the header information. The display shows the size and resolution of the PCX image file selected.



▶ **See Also**

[Show PCX File Button](#)

[Make DXF File Button](#)

[Stop Processing Button](#)

[Grayed Out Buttons](#)

[The Conversion Display](#)

[Options Menu](#)

[Check-Box Bar](#)

## Show PCX File (Buttons)

Choose this button to display a **PCX** file without converting it to a **DXF** file.



■ How this button functions is controlled by the program options

► See Also

[PCX Header Button](#)

[Make DXF File Button](#)

[Stop Processing Button](#)

[Grayed Out Buttons](#)

[The Conversion Display](#)

[Options Menu](#)

[Check-Box Bar](#)

## Make DXF File (Buttons)

Choose this button to generate a DXF file from the selected PCX file.



■ **How this button functions is controlled by the program options**

▶ **See Also**

[PCX Header Button](#)  
[Show PCX File Button](#)  
[Stop Processing Button](#)  
[Grayed Out Buttons](#)  
[The Conversion Display](#)  
[Options Menu](#)  
[Check-Box Bar](#)

## Stop Processing (Buttons)

Choose this button to stop all processing of an input file, like display or **DXF** conversion. If a DXF conversion is in process, a partial DXF file is made the DXF file is correctly terminated and can be used.



### ▶ See Also

[PCX Header Button](#)  
[Show PCX File Button](#)  
[Make DXF File Button](#)  
[Grayed Out Buttons](#)  
[The Conversion Display](#)  
[Options Menu](#)  
[Check-Box Bar](#)



## The Registration Menu



Selecting the **Register Program ...** menu item takes you directly to the registration and order section of the program you have installed. For **FLY'N THINGS™** Electronic Books, you have to at least install the unregistered version to access the specific program information. Most application programs, are accessible after the initial disk "Setup" program runs.

### ► See Also

[The Conversion Display](#)

[Order Blank](#)

[Registration & Order Information](#)

## Copyright And Fair Use

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**NEXT**


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**FLY'N THINGS™ PCX To DXF Conversion Program**

Press the  Button To Make A Copy

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

\_\_\_\_\_

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E-Mail Registration For A Single Personal Computer                      US\$20.00

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## Shareware

### About Shareware

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**Registration** involves payment, and the receipt of a registration password. You then re-install the Shareware program, using your name and the registration password, to unlock all features of this program. The registration number and the user's name is displayed in the copyright box when the Electronic Book or program starts.

## **Advantages Of Registering**

**As an example, when you register the WWII Dime-Weight Flying Paper-Card Model PDF Program/E-Book, you can print out the detailed, illustrated instruction sheets and all six paper models in either color or black and white. Other programs, like the PCX To DXF File Conversion, removes the image-size limits and let you process large PCX images into DXF files for CAD input.**


**And, program upgrades are free for the downloading. Minor program enhancements can be "unlocked" with your registered program's serial number and password. Please remember that major program changes, like new features, **WILL** require a new registration.**

**The shareware system and the continued availability of quality shareware products depend on your willingness to register and pay for the shareware you use. It's the registration fees you pay which allow authors to support and continue to develop new products. Please show your support for shareware by registering those programs you actually use.**

## Why Does The Help File's Text Look Jagged?

These Windows Electronic-Books and Help Files use Microsoft's Arial True Type fonts. The Arial Font comes with Windows and is automatically installed. If the text has a bad case of the "Jaggies", it's because the Arial True Type Font is either not installed, or the True Type Fonts have been disabled in the Windows Control Panel. Windows substitutes a system font for the missing True Type letters.

### To Change The True Type Font Settings:

Open the Windows Control Panel and double click on the Fonts Icon:  Then, press



for help. Read the section on True Type Options and Installing Fonts.



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## **Drag**

Hold down the left mouse button as you move the mouse, "Dragging" along an object, like the edge of a window frame, you selected.

## Underlined Word Or A Graphic

Help topics can include graphics and text that link to other Help topics or to more information about the current topic. These are called jumps. Jumps are usually identified by a color and an underline (unless the jump is a graphic, then it's usually marked with: **Click On ...** ). When you point to a jump, the pointer changes to a hand shape . When you click on the underlined text or a graphic, the Help program "jumps" to another topic or gives you more information in a pop-up window like this.

- ▶ **To close this pop-up window:**



**Click anywhere on the screen, or press any key.**

## Arrow Keys





**The LEFT, UP, DOWN, and RIGHT Arrow Keys;**  
Used to move the insertion point or to select from a menu or a list of options.

## Help Basics

Windows Help offers a quick way to find information, like how to perform a particular task. Within a Help topic, there may be one or more jumps, which you can click (or select and press  ) to display a new Help topic. You can move, resize, maximize, or minimize the Help window, just like any other window. When you are ready to return to the **Installer's Table Of Contents**, choose the  button.

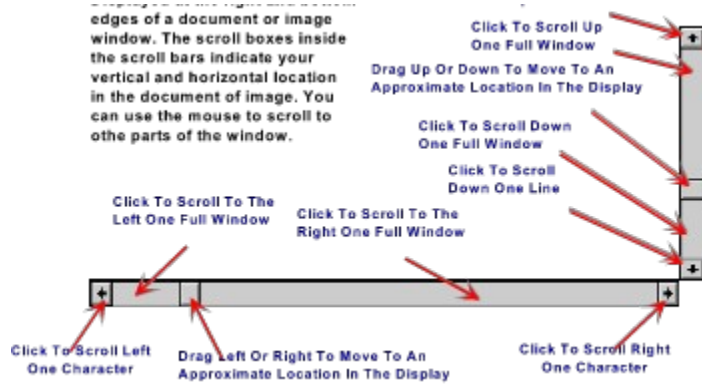
- ▶ **For detailed instructions on how to use Help:** Press the  key.

To return to this Help File, click on **How To Use Help's**  button or press the  key.


- ▶ **To close this pop-up window:**

**Click anywhere on the screen, or press any key.**

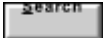
# Scroll Bars





## Searching for a Help Topic

You can find information quickly by using the  button in the Help window. The Search button opens the Search dialog box, where you select a word that you want to search for. All Help topics associated with that word are listed, and you can select one to view. For example, to find out how to save a file, you could select "save" from the list. Topics that have the word "save" associated with them would then be listed in the Search dialog box.

▶ **To search for Help information:**

1. In the Help button bar, choose the  button.

Or, type .

2. Select the word or phrase you want to search for. When you start typing, the words that most closely match the text you type are displayed.
3. Choose the  button.
4. Select the topic you want to view. If necessary, use the scroll bar to see more topics.
5. Choose the  button.

▶ **See Also**

[Basic Help Instructions](#)

## DXF Files

**Data Exchange Files (DXF)** Files are the *de facto* standard for the exchange of line-art drawing data between CAD, Illustration and Page Composition programs. The basic DXF standard was established by AutoCAD for use with its CAD programs.

The DXF file is in Ascii-Text format. It can be viewed and edited by any text editor that can handle large files and save these files in a text format, like Microsoft's Word For Windows™.

DXF data input and output are documented with your specific program. Data output/input capabilities does vary from program to program. Data for a curve, for example, may be in the form of a series of line segments or a polyline rather than in the B-Spline or *Bézier* form it was created in.



## PCX Files

The **P**ersonal **C**omputer **eX**change (PCX) File was developed by Z-Soft as a means to transfer bit-map graphics files between programs. It, and variations like those used by some of the paint-type programs, use a file-compression method normally referred to as **R**un **L**ength **L**imited (RLL). Repeated dot images are stored as a "count" of the number of horizontal dots in a scan line, rather than as individual dots. This gives a significant file-size compression. PCX file compression is "lossless", so no image details are lost the expanded file is an exact match of the original image.

## Scanned Images

Scanned images, called raster images, are just a series of dots representing the original image. The scanning process sweeps across the original image in a series of horizontal rows of dots, much like the lines one sees on a monochrome TV set.

Normally, the vertical distance between these lines of horizontal dots is the same as the space between the dots. This is called the scan resolution, and is normally expressed as dots per inch (dpi).

One might think of the scanning process by imagining putting a piece of window screen over the original image. Each hole in the screen is a scan dot. The finer the screen's mesh, the more dots per inch and the more precise the image.

