EzGrader
Stamp Grading System™

© SoftPro 2001. & Metrics Software
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Welcome !

Thank You for purchasing EzGrader. Welcome to the next big step in the age of computerized philately. We sincerely believe that EzGrader will provide you with a new way of looking at your collection, and enhancing your collecting experience.

The capabilities of EzGrader are totally unprecedented. We are excited by the opportunity to bring them to you, and are anxious to hear about your experiences with EzGrader. Please send us your suggestions, questions and comments at the address on the first page. EzGrader is a work in progress, so if you have any requests or can suggest new features, 'it would be nice to have', please let us know and we will try to incorporate any useful ideas into future releases.

If you like EzGrader, please tell your friends about us. Dealer inquiries are welcome. If you find any errors or omissions in the documentation, please let us know. We're here to help. Please note our E-mail address is **mariost@shaw.ca** . It is the fastest & easiest way to get help if you need it (other than Reading the Manual). Our web site is located at **http://www.ezstamp.com**/ **http://www.stamptools.com/** or you can also contact us at (705) 254-6201 .

EzGrader Installation

EzGrader includes an automatic Windows Installation program, which makes installation quick and easy (less than one minute on most systems). Place the EzGrader CD into your drive & click on **S**tart, **R**un and enter

D:\Setup.exe (if your CD drive letter is not D, please substitute the correct drive letter)

Follow the On Screen Instructions and **Please Register !**

All installations will require a unique password that belongs to you only. Please do not disclose it to anyone.

You may install EzGrader on any drive (C, D , E, etc). While you may install to any directory, it is recommended that you use the default directory suggested during installation. This is where the program and support files will be copied. Then click on '**OK** ' to proceed. Follow the on screen instructions. When the installer is finished, you will be notified. A shortcut will be placed on your desktop for your convenience. At this point EzGrader is installed on your system and the installer will start EzGrader for you. To begin, just open an image file and have fun!

REMEMBER TO MAIL IN YOUR REGISTRATION FORM. THIS WILL LET US NOTIFY YOU OF FUTURE UPGRADES AND SPECIAL OFFERS.

EzGrader Index Page

I. Introduction

1 . Welcome 2
2 . Installation 3
3 . Quick Start Guide & Quick Tips 6
4 . Perforation Measurements 6

II. EzGrader's Menu Selections

File Menu

1 . Open Image File 8
2 . Reload Image File 8
3 . Save Source Image As 8
4 . Save Measured Image As 8
5 . Save Perf. Image As 8
6 . Print Certificate 8
7 . Print Preview 8
8 . Print Setup 8
9 . Exit 8

Options Menu

1 . Specify 8
2 . Perforations 8

Edit Menu

1 . Preferences 9

View Menu

1 . Toolbar 10
2 . Statusbar 10

Help Menu

1 . Manual 10
2 . About EzGrader 10

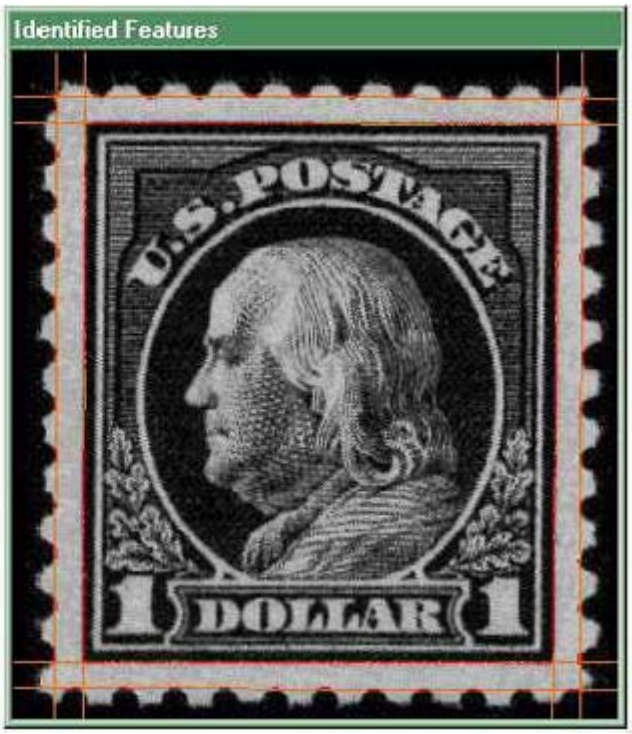
III Getting the Most From EzGrader

1 . The Toolbar & Windows Task Bar 11
2 . The Perforation Window 12
3 . Feature Specification 13-14
4 . The Identified Features Window 14-15
5 . About Perforation Measurements 16-17
6 . The eGrade 17
Centering 18

	Balance	18-19
	% of Stamp	20
	Margin Ratios	20
	Design Size	20
	The eGrade Specifications	21-22
	7 . The Certificate	7, 22
IV	Getting Even More From EzGrader	
	EzGrader's Assumptions	23
	Your Computer's Setup/Settings	23
	The Essentials	24
	Using Ezgrader's Specify Features Options	25-6
	Straight	
	Partial	
	Free Form	
	Perfs Cut Into Design	
	Ornate	
	Scanning Your Stamps	26
	Downloading Stamps	27
	The Stamp & What to Look For	27-29
VII	Tips & Tricks	
	Working With Your Images	30
	Image Files	30
	Compression	30
	Image Editing	30-31
	Gamma Correction	31
	Contrast & Brightness	31
	Cropping Images	32-33
	Rotation	33
	Working with Perforations	34
	The Future …	35
VIII	Appendix I	
	Checking your Scanner's Accuracy	36-37
	LICENSE AGREEMENT	38

Quick Start Guide & Quick Tips

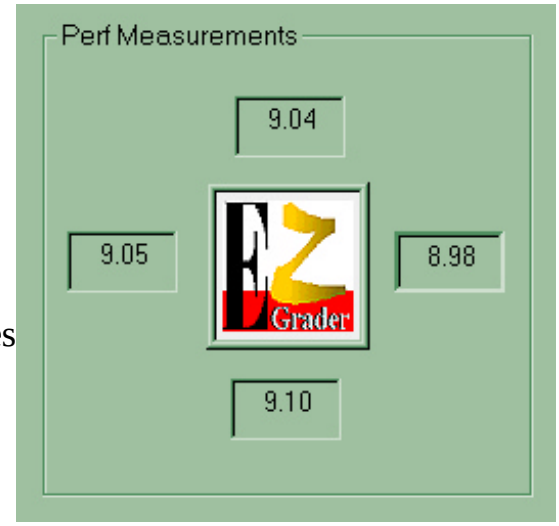
EzGrader measures digitized stamp images. It does not measure the stamp itself. Simply start EzGrader, open the stamp image you want to measure (must be in BMP or JPG format), and EzGrader will statistically analyze the image and show you the results of it's computations (see below) :



EzGrader graphically shows you how it came to its results as well as presenting you with the results in an easy to understandformat

Perforation Measurements

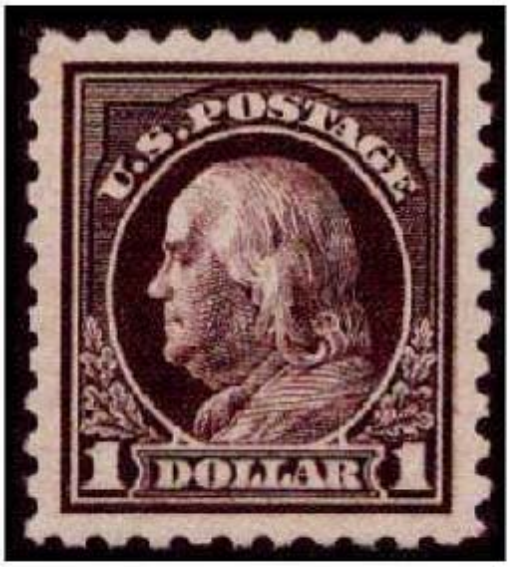
You can then check the perforations of your stamp. Each side is measured and reported independently. The perf measurements are highly dependent on the quality of the scanned image as well as other factors that are reviewed later in the manual. As a general rule, we sugges that you scan your stamps at 300 dpi at 100% of actual size. **DO NOT RESIZE the stamp image or enlarge it during scanning.**



You can even print a Certificate identifying the stamp with the measurements

eGrade™

Certificate of Measurement & Grading



Feature Specifications

	Edge	Frame
Left	Perforate	Straight
Right	Perforate	Straight
Top	Perforate	Straight
Bottom	Perforate	Straight

Dimensions

(in pixels)	Width	Height
Image	306	342
Stamp	276	310
Design	247	284

Edge Ratio (Horiz/Vert) 0.88

Centering

Horizontal	**90**	Offset to Right
Vertical	**94**	Offset to Top

eGrade™ XF 90

Margins

Balance	**93**	V/H
Size (% of Stamp)	**18**	

Ratios:

Top: 85

Left: 100 Right: 90

Bottom: 91

Source: F:\manual\pics\work\wf491Ax.bmp

Stamp Images enlarged 2.88 times

EZ Grading Version 1.02

Certificate No. 00-07-00-JB48-0001370
September 13, 2000

This Copy of EzGrader™
Registered to:
Chappie

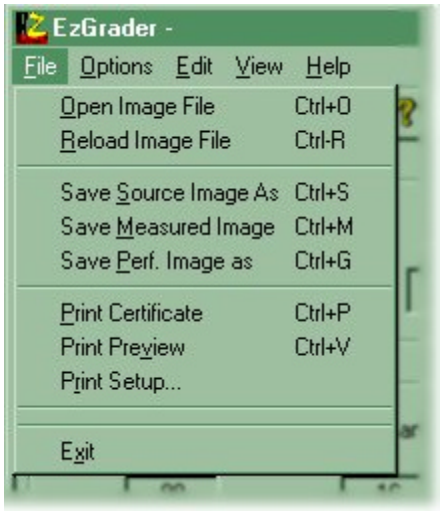
1. Open Image File / Startup

When you begin, you will see EzGrader's menu and toolbar:

At this point, all you can do is load an image, or view this manual. EzGrader accepts images in the BMP or JPG format only. To load an image file, either click on the folder icon, or select File/Open Image File from the menu. Select a BMP or JPG file, and click Open.

As shown in the quick start guide, EzGrader's window is then updated to show you the specific measurements of the stamp image. The menu and toolbar change as well. We'll now look at each of the additional options available to you.

2. File Menu



Open Image File Standard windows file selection.

Reload Image Very useful after a touch-up in an image editor. This option reloads the current image & re-measures it.

Save Source Image Allows you to save the current image to a new file.

Save Measured Image / Save Perf. Image These create image files containing copies of the Measured & Perforation images, respectively.

Print Certificate / Print Preview / Print Setup Preview or print the Certificate for the current image. Print Setup is the standard Windows printer setup dialogue.

Exit This closes the currently opened image & exits EzGrader.

3. Options Menu

Specify Opens the Feature Specification window used to tell EzGrader more about the stamp in the

current image (ie. Is it imperforate, does it have an ornate frame). This is useful especially in cases where the margins are not detected accurately!

Perforations Opens the Perforation Specification window and displays the Perforation image and the perforation measurements.

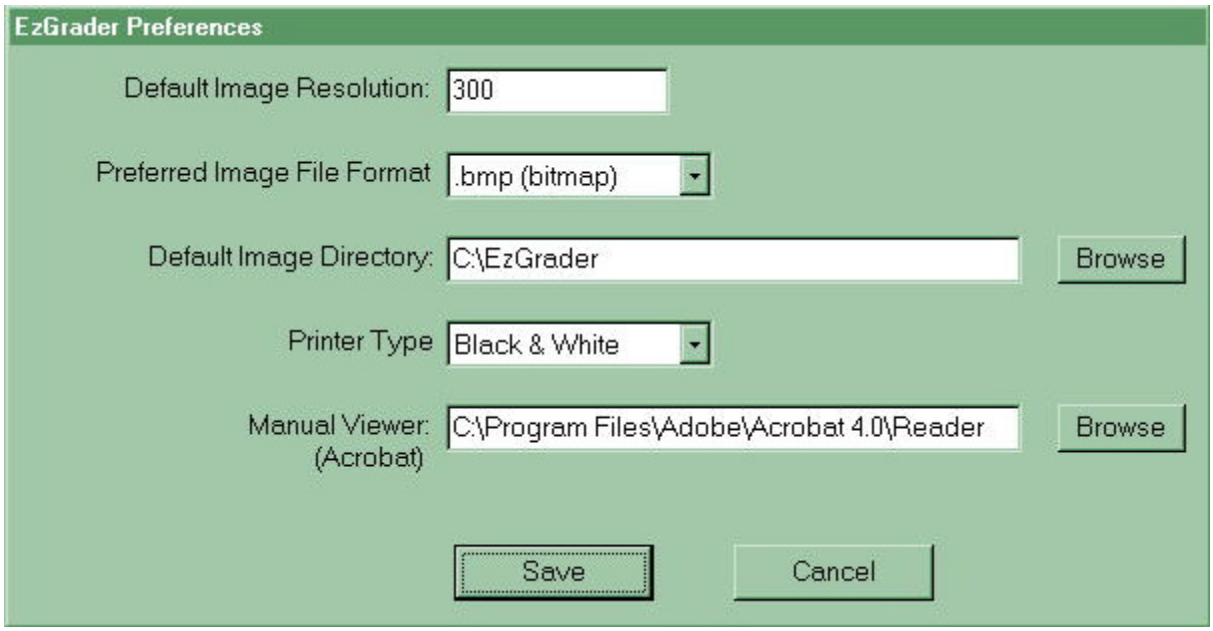
Both options are described in much greater detail later.

4. Edit Menu

Preferences Allows you to maintain your default choices for EzGrader settings:

1. Default Image Resolution: Specify the Image scan resolution in dpi that you normally use (required for measuring perforations accurately).
2. Preferred Image File Format: Select the file format that you normally use. Be aware that all image formats other than BMP are lossy formats & will lose some image data. Although JPG images can appear similar or acceptable on your screen, internally detailed information can be lost. We recommend BMP, but be aware that they consume more disk space. For accurate measurements, BMP images will be better!

3. Default Image Directory: Upon startup, EzGrader will look in this folder that you specify, by default for your for image files, instead of the main EzGrader program folder, which is the initial default value.

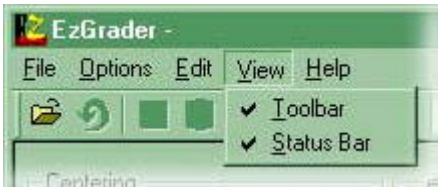


4. Printer Type: When printing certificates, this setting will determine how well the images print. If you normally use a color printer, set this to color.

5. Path to Acrobat Reader: This is the path to the Acrobat Reader (ie where you have Acrobat Reader Installed). Acrobat Reader is used to view this manual. During installation, the path is automatically detected for you, but should you need to change it, this is where you must indicate the path.

Make your changes in the Preferences window, and click Save to record your changes.

5. View Menu



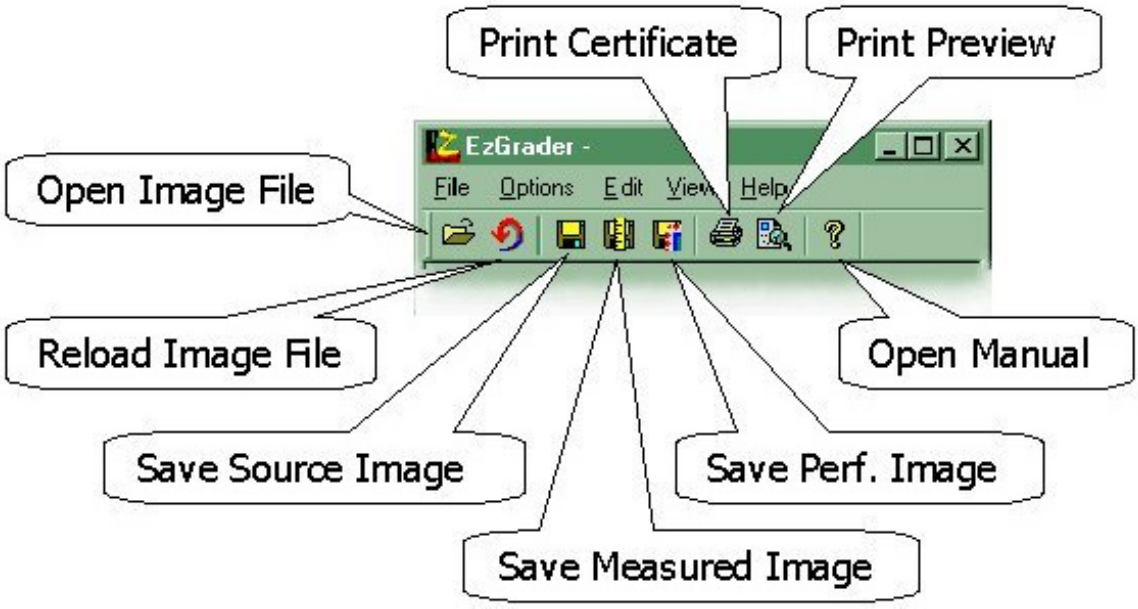
1) Hides or shows the Toolbar & it's Icons
2) Hides or shows the Status Bar at the bottom of the screen which gives you helpful hints as to the function of each icon. By default, both options are on.

6. Help Menu

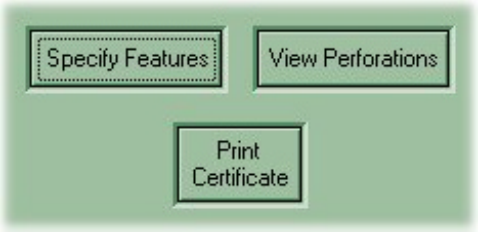
1) Launches Acrobat Reader & displays this manual on your screen.
2) Displays the EzGrader Version and Contact information. A hot-link to our website & email is available from here as well.

7. The Toolbar

The buttons on the toolbar provide a one-click alternative to the Menu for using the most common commands:



For additional convenience, the three most used commands have their own

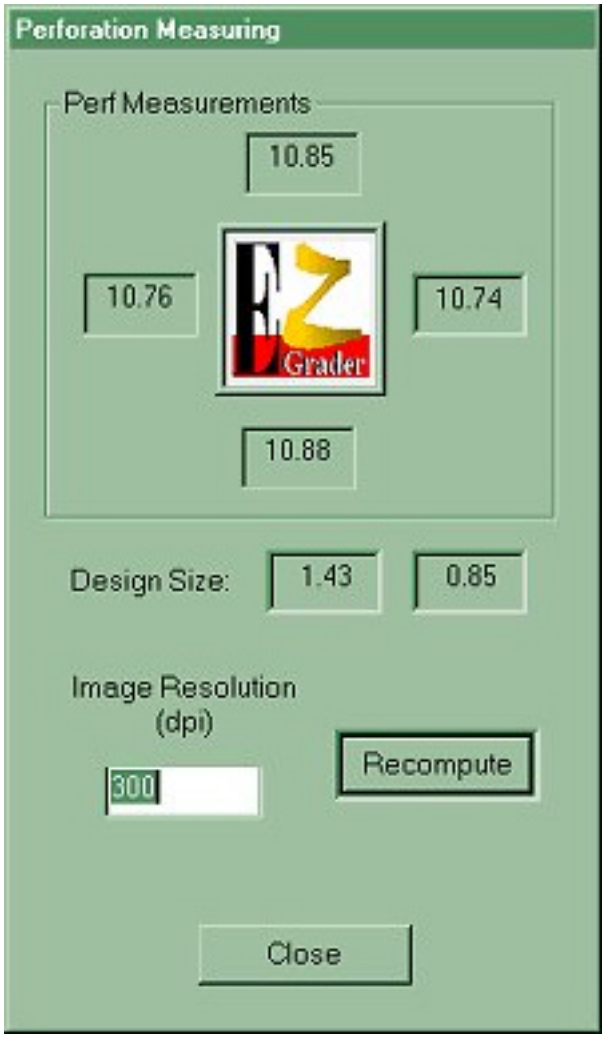


buttons on EzGrader's lower mainwindow.

8. The Windows Task Bar

Each of the Windows created by EzGrader has it's own button on the Windows Task Bar. Clicking a button brings that window to the front

9. Perforation Window

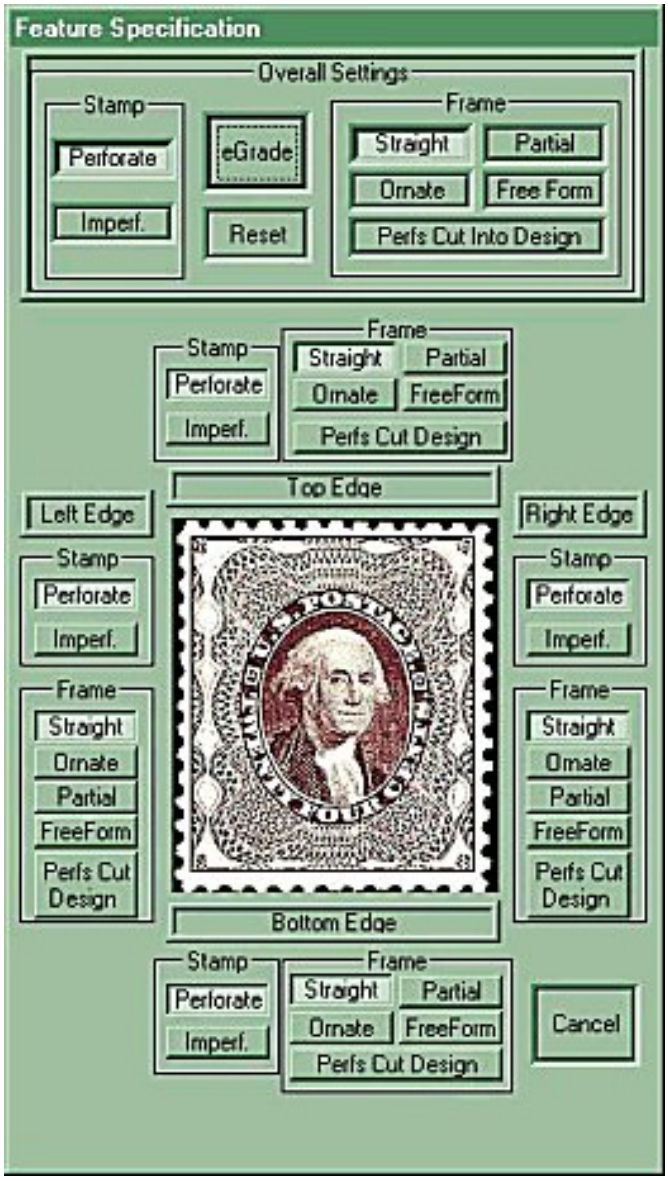


The Perforation Measuring window gives the perforation measurements for each side of the stamp, measured individually. Shown in the perforation window is the stamp image, with the pixels used in the measurement highlighted in red.
Standard perforation measurement is defined as the number of perforations within a two-centimeter distance. EzGrader can only count the number of pixels per perforation. Thus the final conversion to standard units needs the number of pixels per inch, or ***Resolution*** of the image (dpi). Unfortunately, most image files don't provide this, so you will have to. The Image Resolution box allows you to change the default of 300 dots per inch (dpi). Type in the resolution of the image, then click the Recompute button, or press enter. The Edit/Preferences window lets you change this default.

To help protect against falsified or altered images, EzGrader also shows you the dimensions of the design based on the stated resolution. By comparing the calculated dimensions to the actual dimensions, you can easily detect any attempts to falsify perforation measurements by misstating the scanning resolution.
See tips & tricks for more on perfing.

10. Feature Specification

There are as many different stamp designs, as there are ways to put an image on paper. As soon as you load a stamp image, EzGrader measures it. It assumes the stamp has the most common features, perforated edges with solid, straight design edges, like the one in the Feature Specification window on the left. If the stamp has different features, EzGrader can miss them. Feature Specification lets you tell EzGrader what the stamp's features are.



At the top of the window, the feature descriptions apply to the entire stamp on all 4 sides. For instance, clicking the ***Imperf*** button indicates that the stamp is straight edged (SE) . Clicking ***Ornate*** indicates that the frame edge is curvy or scrolled. As you select options, the center image changes accordingly, as indicated on the right. Click **eGrade**, and the image is re-measured with the new feature assumptions. Use ***Partial Frame*** when the design edge has a partial frame. ***Free Form*** is useful when there is no edge whatsoever. If there is no margin whatsoever, ***Perfs Cut Into Design*** tells EzGrader to use the stamp edge as the frame line

Imperf, Ornate

Partial

Free Form

Perfs Cut Design

Below the Overall Setting controls are the Edge Specific buttons, which operate only on individual sides of the image. For instance, setting the Stamp's top and bottom margins to ***Imperf*** defines a coil stamp:

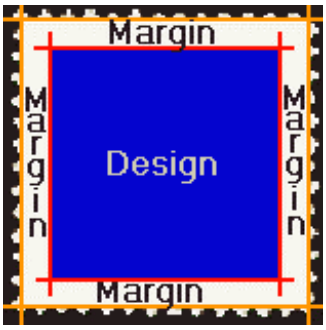
The different Feature Settings allow EzGrader to measure a wider range of stamps. They also add complexity to using and understanding eGrades. EzGrader will give different results when you change Feature Settings, so the settings are included on the Certificate.

As a final note, even with different feature types, there are designs beyond the abilities of EzGrader. Lack of symmetry, poor printing, indistinct colors or bad perforations can all make it difficult to identify features adequately. Above all, the scanned image of your stamp is of great importance. EzGrader is a tool to evaluate your stamps, so while it will do it's best to give you accurate measurements, it's up to you to make sure the results make sense, and interpret them appropriately.

11. The Identified Features Window

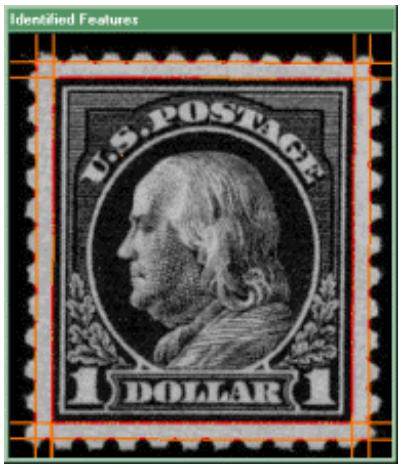
When EzGrader measures a stamp image, it finds and measures the ***Margins***. It does so by looking for specific features. For each type of feature, EzGrader finds the optimum set of points or pixels to use in its calculations. An equation defining the feature is then computed from these pixels. These equations are then used to compute the various components of the eGrade.

In order for EzGrader to accurately measure a stamp, precise definitions for the parts of a stamp are needed. For reference, these are the ***Stamp*** features recognized by EzGrader:



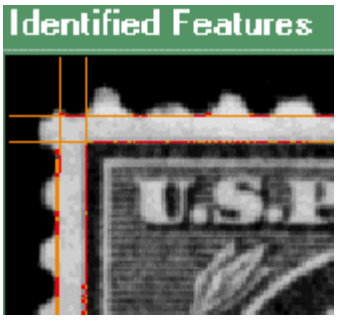
Background	Dark area around the ***Stamp***
Design	Printed area of the ***Stamp***
Frame Edge	Outside edge of the ***Design***
Stamp Edge	Physical edge of the stamp, where the paper ends, disregarding ***Perf Tips***
Margin	Area between a ***Frame Edge*** and its corresponding ***Stamp Edge***.
Perforations	Places where paper was removed for separation of adjacent stamps – the holes.
Perf Tips	Paper left between the ***Perforations***.

EzGrader reports its findings in two ways. The main window shows the eGrade and other computed statistics, and the Identified Features window displays them graphically.



First, the image is converted to ***gray scale***, so the features will be visible. The pixels selected by EzGrader are shown in **Red**. Finally, each pixel with a Feature line through it is colored **Dark Yellow,** to show you where the line is. If a pixel is part of the line and one of those selected, it is shown as **red**.
It is normal for a few pixels to not be on the line, especially along the Stamp Edges.

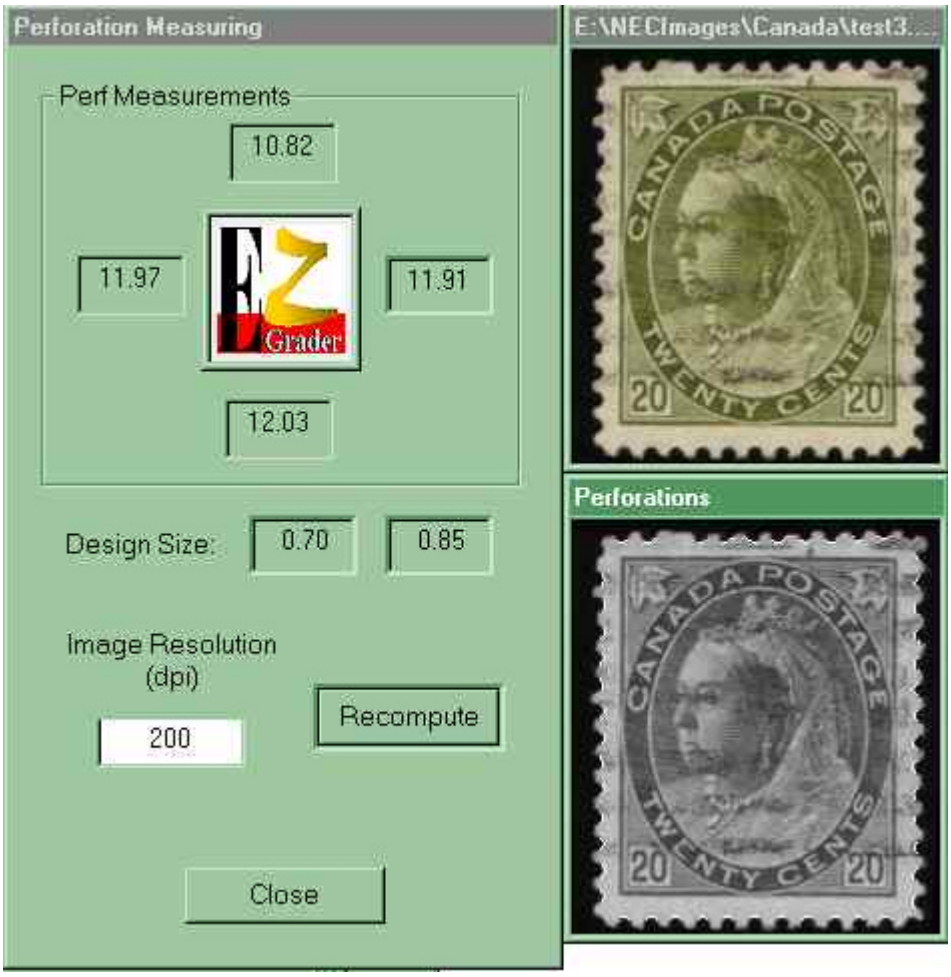
Displaying the Identified Features serves several purposes. Foremost, you ***see*** the stamp and how it was measured. You see it objectively, without distraction or distortion. Human perception and memory are notoriously unreliable. What we see is often distorted by a multitude of factors, from where we are – the noise, lighting, crowding or type of chair, to who owns the stamp – you or someone else. Memory fails us in comparing different copies of a stamp while browsing at a show or auction. Worst of all, the more a stamp interests you, the better it looks!



Finally, the Identified Feature window lets you visually confirm that EzGrader has properly found the features. When an image confuses EzGrader, you'll see it here. Causes and cures for such confusion are discussed in detail in tips and tricks.

12. Perforations Measurements

To measure the stamps perforations, EzGrader finds the perforations (the holes) by extracting a different set of pixels. They are shown in***RED*** in the Perforations window.
Each side is processed independently. To eliminate confusion, EzGrader doesn't consider corner perforations. The measurements are taken directly from the pixels, so there are no lines to draw.
It is important to check this window. Given a clean image of a clean stamp, like this one, EzGrader has no problem with perfing. But things like short perfs or blind perfs sometimes confound the measurement. Such things are easily visible in this window. The specifics of what to watch for, and their fixes, are examined in tips and tricks.

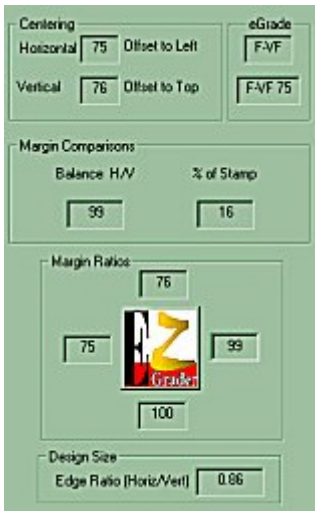


Carefully examine the above Canadian stamp . The stamp physically measures as perf 12 on all edges. But, EzGrader has correctly identified 3 sides as being Perf 12. One edge, the top was miscalculated. Can you see why? If you look at the top edge, the 3rd & 4th perforations are not separated

(ie. a blind perf). To EzGrader, this will count as 1 perf instead of 2, & thus the incorrect measurement. Interpretation of the results is important especially when unexpected results are reported. Other problematic stamps will be stamps with syncopated or elliptical perforations, as in the GB Machin series!

Also examine the figure above to view images that will be problematic for measuring perforations. There are damaged perfs, parts of adjoining stamps, blind perforations as well as edges of adjoining stamps. If your perforation measurements seem off, examine your image carefully for artifacts or any of the above problems.

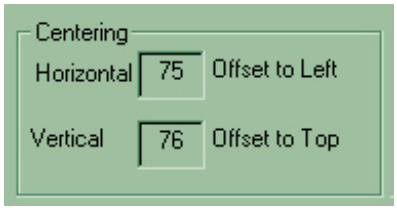
13. eGrade



The eGrade has three basic components: Centering, the Margin Comparisons, and the Ratios. The numerical ratings are computed as percentages, with comparisons made so the ratings always range from 0 to 100, with 100 being perfect.
Ratings appear in the main window and on the Certificate. For illustration we will be looking at the main window, with the eGrade results for this stamp pictured below:

Centering

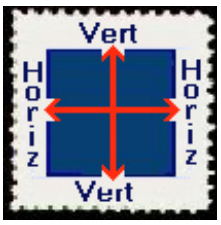
The centering ratings are the result of comparing opposite margins: ***Horizontal*** compares Left and Right margins, ***Vertical*** the Top and Bottom. In either case, the smaller of the two margins is divided by the larger, and the result multiplied by 100. Following the numerical rating, "***Offset to***" identifies the smaller of the two margins.

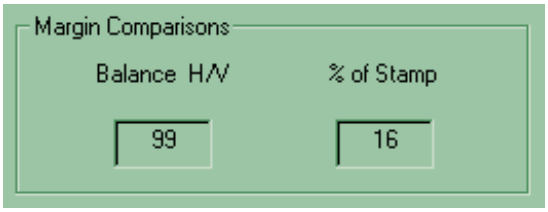


The overall appearance of a stamp depends on more than just centering, however. Margins play a major role in determining the visual impact of a stamp. Until now, this contribution, while recognized as important, could only be discussed in vague, general language. Words like ***balanced, generous, tight*** and ***boardwalk*** left considerable room for interpretation. In developing EzGrader, we had to decide how to **quantify** this relationship between margins and the rest of the stamp. While the centering on our sample stamp above isn't great, it is still attractive, in large part due to the exceptionally large and well-balanced margins.

Balance

Balance gives the relative sizes between the Horizontal and Vertical Margins. The Left and Right (Horizontal) margins are added, then compared with the sum of the Bottom and Top (Vertical) margins. In order to keep the rating in the range 0- 100, the measurement is then the ratio of the smaller to the larger. The caption above the Balance rating will read "***Balance H/V***" if the Horizontal sum is less than the Vertical, and "***Balance V/H***" should Vertical be less than Horizontal.





For example, the two "stamps" to the right have identical designs, are very well centered, with boardwalk margins. The first has a balance of 30 (H/V), the second 75 (H/V). Which would you prefer?
The stamp to the left will grade very poorly by EzGrader.

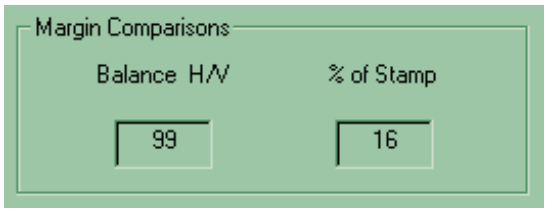
The margins although huge, will easily fool EzGrader into determining that this stamp is way off center to the right & bottom. Software cannot make judgements in this kind of situation.

The stamp on the right will grade quite well but the margin ratios will be quite large!

Yes, it's a real stamp!

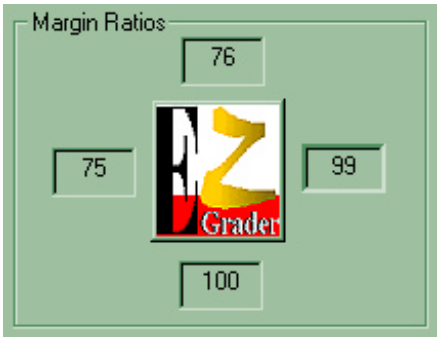
% Of Stamp

The above picture says it all. Divide the area of the Design by the area of the Stamp itself (the region bounded by the Stamp Edges) and you have the Margin Size as percentage of the overall stamp. In other words, how much of the stamp is margin and how much is design?



Margin Ratios

The Margin Ratios give the relative size of the margins. The largest margin is given as 100, the rest show their size relative to the largest. A perfectly balanced stamp would have margin ratios of 100% on each side!



Design Size

The Edge Ratio is simply the ratio of the Horizontal and Vertical Frame lengths. It is always Horizontal / Vertical. The Edge Ratios for these stamps are 1.02, 1.09, 1.53 and .59 (left to right). EzGrader measures the frame lines, then compares the horizontal frame lines to the vertical frame lines. The *Edge Ratio* is calculated by dividing the length of the horizontal frame by the length of the vertical frame.

Because the *Edge Ratio* is computed from the printed design, it is constant for all copies of a given stamp.

Both of these stamps have an *Edge Ratio* of 1.83 despite the vast differences in their overall size and margins.

All copies of the same stamp should have exactly the same edge ratio. Any difference is a clear sign that the image is distorted or from a different stamp entirely, as is the case with the the US Flat Plate and Rotary Plate printings. One cause of distortion is covered in section 3 in Tips & Tricks. The only exception to this rule is due to paper shrinkage encountered in stamps printed using a wet printing process. Interpretation of the measurements is left to you to decide.

The eGrade Specifications

EzGrader gives you over a dozen measurements, precisely describing the stamp. It was clear to us during EzGrader's evolution what we could measure. What we didn't know was how other collectors would use these numbers. So we asked them. During discussions with fellow collectors about how to make these results most useful, they consistently told us they wanted a short, precise grade to highlight the key measurements, something to replace the existing grading schemes. Two themes came up in every discussion: broad overall ratings and centering. The result is the eGrade.

An eGrade begins with the old, familiar grades. What is new is that this grade is determined precisely without any subjective influence. EzGrader looks up the ***lowest*** of the ***Centering*** measures in this chart:

eGrade	Lowest Centering Rating	
	Minimum	Maximum
Perfect	99.50	100.00
Superb	97.50	99.49
XF	87.50	97.49
VF	77.50	87.49
F-VF	67.50	77.49
Fine	50.00	67.49
VG	35.00	49.99
Good	25.00	34.99
Fair	5.0	24.99
SF	0.0	4.99

This is the eGrade in the top box. To make it more precise, we extend the eGrade by including the Centering rating. We now have a short and precise grade. But it is a brutal grade, focusing on the worst rating without considering the rest. As they say, the numbers don't lie ! EzGrader measures the stamp image. There can be no mercy or allowance given "for period of issue". Early & classic US perforated stamps are rarely anything other than fair to good – the perfs usually cut into the design somewhere. So for these and

similar issues, we need to go further. To characterize a stamp more fully, we can simply extend the eGrade by adding additional ratings. For instance, the stamp shown while describing Centering could have an extended eGrade like

This could be written as F-VF 75L 76T 99H 16%. For those early US stamps, it is possible that just the Margin Ratios and % Size might work best.
We don't know how you will use eGrades, so these are only a suggestions. Please write to us and tell us what you do with it.

The Certificate

Printing a stamp's Certificate gives you a permanent record of its eGrade. The images, ratings and measurements work together with the unique Certificate number to provide reliable documentation for the stamp.

The Certificate features:

- Original Stamp Image and filename
- Measured Image
- eGrade and it's component ratings, as described above
- A unique Certificate Number
- Feature Specifications used in measuring
- Dimensions of the stamp in terms ofthe image (that is, pixels)
- Edge Ratio
- Scaling factor used to optimize the images on the Certificate
- Date of grading
- EzGrader version number
- Who registered the EzGrader software that created the Certificate

Getting the most out of EzGrader

EzGrader is the result of years of study and experimentation. We have measured tens of thousands of stamps and stamp images in the process. When we started, scanners were expensive, uncommon and not very good. Few collectors had any use whatever for stamp images. EzGrader was way ahead of the technology it required for it to be useful and effective.
Things have changed. Home computers are fast. The memory and disk storage needed for image handling are now standard. Good scanners are inexpensive. Internet connection is cheap, fast and reliable. Now, on the Internet, collectors share their "virtual" collections– made up of nothing but images. The booming Internet stamp market wouldn't exist without stamp images. Now is the time to take the next step.
As we worked with EzGrader over the years, we have learned a lot about what we could and could not do with it. We were also learning techniques to help EzGrader work with difficult stamps, as well as how to recognize and avoid problems inherent in working with images. This section is here to help you get the most from EzGrader.

Assumptions

In order to find an image's features, EzGrader makes a couple of simple assumptions about what's in the image:

- The background is dark and relatively monochrome. It completely surrounds the stamp, with no part of the stamp touching the edge of the image. This requires that there be a monochrome border of sufficient contrast to the stamp (a black background around the stamp works best!)
- The Stamp itself is rectangular, and is printed on white or light paper.
- The center of the image lies inside the design.

Your Computers Setup/Settings

We recommend a screen resolution of 800 x 600 or larger with color setting at 24 bit true color. EzGrader will still work at 640 x 480 but yourscreen size and image viewer will be reduced in size.

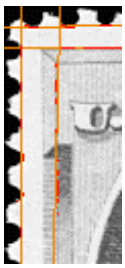
Your computer's **display settings must be set to "Small Fonts"** for the Feature Specification window to work properly. If not, you will see something like this. To reset the display settings: right click on your screen's background; select "properties"; the *Display*

Properties window appears, then click on the "Settings" tab; in the *Font size box*, select "Small Fonts"; click "OK". This will not take effect until you restart your computer. (You can increase the "*Desktop area*" at the same time to 800 x 600 or larger if your video card & monitor size allow it.)

After installation, we recommend you create a new folder (directory), then make this the *default image directory* using the Preference option on the toolbar. When you download or scan an image, put it in this folder. You'll know where you put it, and deleting obsolete images will be safer and easier.

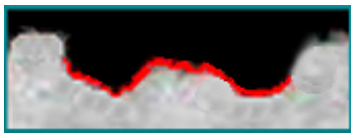
The Essentials

Always keep in mind that EzGrader measures the *image* of a stamp, not the actual stamp.



- **Always check** the two measurement windows for problems. If it doesn't look right, there is probably a problem in the image.

- When **inspecting Perforations**, always check for misidentified perfs. Look for missing perf tips, pulled perfs, blind perfs or paper fragments.



- **Measuring Perforations** is possible when you don't know the scan resolution. Try using different values until the measurements make sense. Of course this works only if the resolution is a round number. Typical values are 300 (recommended), 150, or some other multiple of 50.

- **Take a closer look** at the windows. You can save the desired image (via the menu command or toolbar button), then load it into your image editor. This lets you find and correct problems at the same time. Alternately, there are programs that magnify the image right on the screen. Windows98 comes with such a screen magnifier, or try one of the many others available as a free/shareware program from http://download.cnet.com.

Using Ezgrader's Specify Features Options

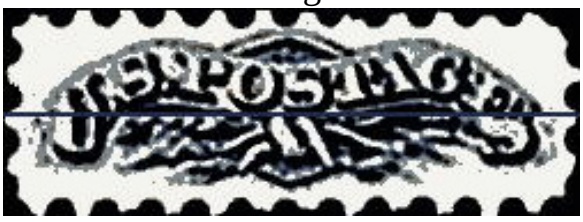
EzGrader provides five different ways to find the edges of the design. Each was developed to work best with a specific design type. The *Specify Features* window displays these frame types:

- **Straight**: EzGrader finds the best straight line, using as many pixels as possible.
- **Partial**: used with rectangular designs with partial frame lines. This Australian stamp was the prototype for the partial feature.

- **Free Form**: for stamp designs without obvious edges. EzGrader starts at the margin, then works toward the center of the stamp. When it finds something, it draws the frame line through it. As a paper inclusion or dirt speck can easily mislead EzGrader, pay special attention to the Measured Image window. Any false features can be easily erased in your image editor, and the new image re-measured.

- **Perfs cut into design**: EzGrader has to assume that a margin exists before it can measure it. Use this when there is in fact no margin – when the perforations overlap the design or, for imperforate stamps, when the edge cuts the design. EzGrader then uses the margin as the frame edge, so that the margin size becomes zero. By comparing *Edge Ratios* between stamps, it is possible to calculate how much of the design has been lost.

- **Ornate**: for when all else fails. EzGrader draws the best-fit line using all pixels visible from each margin. Many older stamps have their designs outlined with scrollwork or baroque elements that defy attempts to identify an "edge". EzGrader is extending the existing concepts behind stamp grading, and there is no precedent that says where the "edge" is for such stamps. The current visual approach is mostly based on an intuitive "measuring" of the white space on each margin that includes all of the design elements simultaneously. This is exactly what *Ornate* does. There are problems with this approach, however. Our visual processing automatically compensates for a number of things that a computer cannot. For example, we often see smooth, continuous lines or areas of color even when small breaks or jagged edges are visible to



EzGrader. Unfortunately for us, this leads to misinterpreting what we see. For instance, this stamp is unquestionably very well centered. Yet strict application of existing grading standards insists that this stamp is much further down the scale: the perfs touch the design at the top! Further, the design itself is not symmetric. There are many other issues to be decided by the collecting community before we can truly handle these designs. In working with Ornate frames, keep in mind that images that aren't vertical are especially confusing. Using your image editor to rotate the image a few degrees often helps.

Scanning your stamps

- **Determine** your scanner's true Optical Resolution, then always use it as the scanning resolution. 300 dpi is common in consumer oriented scanners.
- **Scan** at actual size.
- **Save** your scans as Windows bitmaps (.bmp) to avoid loss of information.
- **Make** image adjustments using your image editing software. It will usually do a better job than the software that came with your scanner.
- **Lay out** your stamps on an approval card or stock sheet. Mounts are ok, but tend to cause chromatic distortion. This ensures a good background and the stamps will lay flat.

- **Leave** some space between the stamp and any edges. Give yourself some room to crop the edge lines. Especially important are cases where you have scanned a stamp still in its mount. These will invariably leave reflections near the bottom, which will be detected as an edge by EzGrader. Where possible, always scan your stamp out of the mounts! Take a close look at the bottom of the scan on the right!
- **Orient** the stamps as vertically as possible.
- **Avoid** digital cameras. If you must, make sure you have a good background, the stamp lies flat, and the camera is centered over the stamp. Here's why.
- **Read** more about scanners and scanning. There are excellent web sites devoted to this, including the Philatelic Computing Study Group (http://www.pcsg.org), Peter Aitken's page

(http://www.pgacon.com/stampcol.asp), and from Computer User, (http://www.computeruser.com/magazine/national/1513/cov1513.html).

Downloading Images

? **Compare** stamp images from the Internet, especially useful in buying online at auctions or dealers. To measure an image you've found on the web, you have to first get a copy on your computer: Load it with your browser and right click on the image. Select "save picture [or image] as", which starts the standard "file save" window. Save it in your image folder, using a meaningful file name. You can use .bmp or .jpg/.jpeg images directly. You need to covert other formats (e.g. .GIF) with an image editor.

? **Ask** for a better image when the one supplied is too small, blurry, or distorted. Sellers especially should be happy to oblige.

? **Collectors** can include copies of EzGrader's grading and measured images with their sale listings. Dealers, please contact SoftPro before doing so.

The Stamp

Many of the issues that EzGrader encounters in measuring a stamp are due to the stamp itself. Here are some examples.

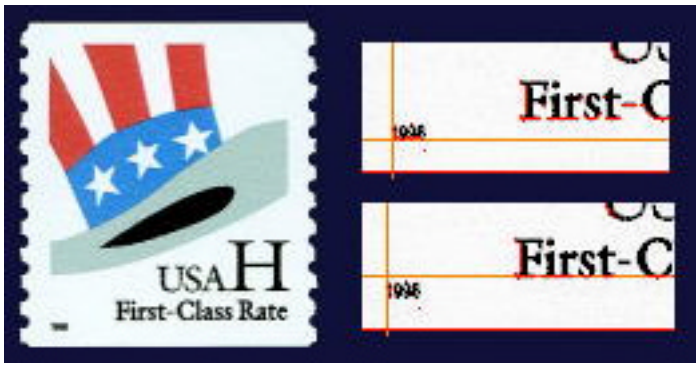
? **Cancellations** and overprints sometimes make a stamp **unmeasurable**.

The stamp at the right will not grade properly by EzGrader due to the very heavy cancellation. The cancel hides the edges of the stamp design thus giving EzGrader no chance to detect them!

There are many such stamps though, where EzGrader works beautifully, such as the ones below, which have moderate cancels which do not hide the stamp design. As long as there is enough contrast between the cancel, the stamp image and the edges of the stamp design, chances are that EzGrader will perform quite well. If

EzGrader can detect the EDGES of the design, the stamp will grade properly. Always check the identified features images for the detected edges!

? **Marginal inscriptions** or markings require a decision on your part– should it be part of the design or not. The question for this common US stamp is whether the date in the lower left hand corner is part of the design, or should it be excluded from the centering?



What about this Australian stamp? The word "tourism" seems an integral part of the design. Does the bottom inscription qualify as part of the design? In general we believe that this stamp should be graded from the top of the word TOURISM to the bottom of the 39c denomination. The rectangle bounded by those portions of the stamp is how it should be graded!

? **Perforations** can be particularly unpleasant to deal with. This stamp (right) has it all: blind perfs, pulled perfs, stretched perfs, short perfs and even irregular perfs. Fortunately, these defects can be corrected in your editor, to be discussed later.

? **Alterations,** such as the rather obvious addition of perforations at the top of this stamp (left).

? **Printing** and production problems create their share of problem stamps as well. From the incomplete die impressions of early US stamps to over inking to worn lithographic stones to paper inclusions, the difficulties in stamp production seem limitless.

? **Design** issues, including the non-symmetric features discussed earlier, often add an element of uncertainty. Color selection is one of the more common problems. This is our favorite example of self defeating color

selection. Another is shape. How do you measure centering on a round stamp?

Many modern stamps where there is a continuous design stretching to the edges of the stamp perforations will be difficult to grade. We are working on it and we are hopeful we will be able to provide a solution. For now, EzGrader will prove to be a valuable tool to analyze and measure the perforations of your stamps. Enjoy & please write us!

Unlisted Varieties?
This beauty includes the edges of the stamps on either side and at the top. It should be perfectly centered, but EzGrader measures these three margins as all different. The Left Margin is the widest, with the Top margin 7% narrower and the Right Margin 13% narrower! We now know there are at least two constant plate varieties: horizontal pairs with wide or narrow spacing. Is this a single dropped transfer, or is an entire row or column affected? EzGrader can help you analyze your stamps in many ways!

Tips & Tricks

Working with your images

EzGrader has few problems with most images you will supply, but there will be images that EzGrader won't know how to handle without help from you. For instance, we have not yet found a full, adequate solution for cancelled stamps. Occasionally, a perforation gets skipped, or a feature recognized incorrectly. A quick edit to the image file can usually help.
We have deliberately left out image editing features. Existing programs give you everything needed. Rather than reinvent thewheel, we chose to keep EzGrader as inexpensive as we could. Excellent editing programs abound, and if you are already working with a scanner or digital camera, you are already using one. Even the Paint and Photo Editor programs that come with Windows have everything you'll need.

Image files

Digital images are stored and transmitted as numbers. Unfortunately, representing images exactly as scanned requires a lot of numbers! Images stored as full bitmaps (*.bmp) grow exponentially with the size of the image. To get around this, many different techniques are used to simplify and compress images, but information in the original bitmap gets discarded in the process. Furthermore, the different compression methods store their results in files that are incompatible with other formats.
For accuracy and simplicity, EzGrader prefers the uncompressed .bmp format. We recommend you save the images you scan or have modified with your editor as .bmp files. EzGrader always saves images as .bmp files.
Compression does become important when sending and receiving images from other computers. Bitmap files are uncommon on the Internet due to their larger size. EzGrader also reads images in the most common of the compressed formats, .jpg (or .jpeg). Conversion of other formats to .bmp or .jpg format is a quick, simple job for your editing program.

Image editing

The first key to editing images is to change as little of the information contained in the original as possible. Compare your edited image to the original, making sure you haven't added or subtracted significant details.
Avoid operations that change the size or shape of an image. Many edits may seem useful, but in fact alter the image in ways that radically affect the

eGrade. Among the worst are re-sizing, edge enhancement, rotation, sharpening and use of filters.
Try to keep the original scan as intact as possible. You can reduce the amount of editing by ensuring that you place your stamps squarely on the scanner and scan your stamps consistently (ie 300 dpi at 100% of actual size).
Experiment and practice. Go back and forth between EzGrader and your editor, trying different tools and watching what EzGrader does after each change.
When an image doesn't grade properly or is obviously wrong, there are four edits that fix it 90% of the time. To make these changes, load the image into your editor, use the appropriate tools, then save the image and reload it into EzGrader. The first three adjustments adjust the balance between the image, the paper, and the background.

Gamma Correction, despite an intimidating name, is the tool to try first. Adjust the gamma until the stamp on the screen looks like the actual stamp. If you're curious about what actually happens, this web site has it all:

http://www.inforamp.net/~poynton/GammaFAQ.html

Contrast gives a similar effect. The original image is on the left, with EzGrader's initial measurements to it's right. It can't find the frame lines because there isn't enough difference (contrast) between the color of the paper and the design. The contrast in the third stamp has been increased 40%, which highlights the design enough for EzGrader to get it right.

Brightness adjustments also highlight features, and are particularly useful where paper color, aging or toning interfere with EzGrader finding the design. Changes in brightness are usually done along with Contrast changes. In this image, the original is on the left, the center slice has a straight contrast boost (40%), and the right segment is the same contrast adjustment with an added 10%

increase in Brightness. Notice how the paper toning becomes almost invisible. A word of warning, however. Overdoing it can erase some of the fainter parts of the design.

Crop an image to get rid of anything that doesn't belong. If, after cropping the image, the stamp touches the edge of the image at any point, extend the background by adding a border. The two most common reasons for cropping are extra lines in the image, and extra pieces attached to the stamp (selvedge or parts of adjacent stamps, stamp mounts).

In this example, the original image includes a line from the mount holding the stamp. EzGrader detects the mount edge, as seen in the Measured Image, and gives an erroneous result. A quick crop of the image, and the image measures perfectly.

Cropping is all that's needed to fix this image as well:

Here the mount line was removed with a reverse crop: select an area that includes the line but not the stamp, then convert that area to the background color. The bottom problem is solved, but there is still a big problem at the top. A close look finds a white line at the top, just one pixel wide. For some reason, lines like this appear inmany images on the Internet. They are easily overlooked, but easy to fix. Again, a simple crop and it's fixed.

If you make a habit of cropping off wide borders, most of these problems are eliminated before they can show up.

Cropping is the tool of choice for isolating individual stamps from scans like this that include multiple stamps. It also works for stamp multiples, pairs, blocks, etc. Also useful for trimming selvedge, like this:

This outstanding block (left) grades 89-77-78 as a block, but if broken up, the separate stamps have different eGrades. Cropping out and measuring each stamp lets you know if there is a perfect stamp in there that is worth far more on it's own, or if the block is better left whole.
One problem shows up almost exclusively in the process of cropping multiples. Perforations between stamps tend to appear brighter, probably because of light scattering from the stamp edges around the holes, as the first

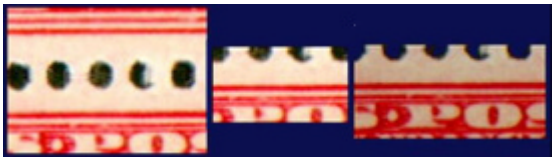


image below shows. After cropping and adding a border, it's hardto tell if the holes are part of the border or part of the stamp. The cure? The rightmost image has had the Contrast boosted 20% and the Brightness lessened by 10%.

Rotation of an image is generally to be avoided, except for right angle rotations (90, 180 and 270 degrees). There is one exception: when you are using Ornate to locate the frame. An image out of vertical by even a couple of degrees can be dramatically misread, especially designs with rounded corners. This is the one case where using your editor to bring an image to vertical can gain more than you lose.

The operations described so far operate on the image as a whole. There are occasional problems that can't be solved without changing a particular part of the image. All sorts of extraneous things get into images: paper inclusions, pen and pencil marks, bits of paper, postal markings (of course), food, nasty little organic sorts of things, and a very flattened bug (we lost the image). Should a wayward blob interfere with a measurement,feel free to take it out of the picture. It's not unusual to encounter such things when locating features with Free Form in particular.
Finally, there are situations where you need to change the image because of the design itself. A case in point is this stamp. No matter what we tried, EzGrader couldn't find the upper left corner. The outside edge is just too weakly colored to be detectable. So, we fixed it by drawing our own line in the image, as you see here, which worked fine. (For the record, the eGrade

measurements are 89H, 67V, 92Balance and 15% margins– Fine-67 due to the offset towards the bottom.)

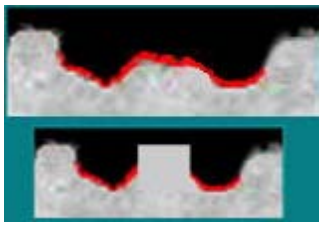
While strengthening part of the design or erasing a cancellation may seem drastic, if you do it with a particular objective, and affect only those parts of the image that need it, sometimes it's the only way. Please be sure to describe your alterations if you publish an eGrade.

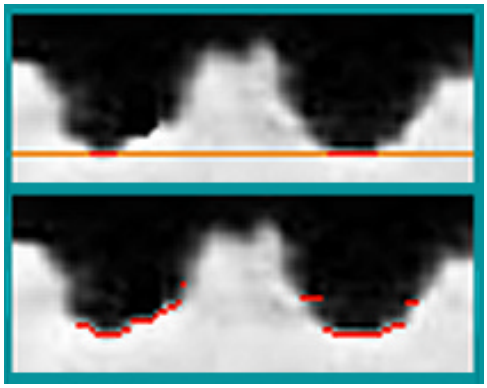
Perforations

There are a number of unique considerations which come up when dealing with perforations. Some originate during production, such as ragged or blind perfs. Separation, travels through the mail stream and abuse during subsequent handling finish the job.

EzGrader shows you exactly which pixels it selected in finding perfs. Look for the red pixels in the Measured and Perforation Images; different criteria are used in each case. To get a closer look, save the appropriate image and load it into your editor, or use one of the screen magnifier programs mentioned earlier. Ideally, what you see will be similar to what is in this pair of images. The top is from a Measured Image, the bottom from the Perforations image.

This is what a short perf looks like to EzGrader, along with an edit that corrects it. Extending the tip does the trick.





Adding or removing "paper" on perf tips is safe, as long you don't change anything from the red pixels at the bottom of the perf inward. Our Perforation Rogues Gallery has, at the top left, "hammerhead" perf tips, followed by a variety of other tip extensions. Extra paper like this sometimes blocks EzGrader's view, giving a misreading. Just erase or crop it. At the bottom left we see what happens when the holes are too small. These perfs go from barely usable to indistinguishable. Carefully expand the holes (in the image, not the stamp!) can get you a valid perf gauge reading. At top right, it's the opposite problem: missing paper. From the pulled perf to the short perfs to the clipped perfs, the answer is to replace the missing

paper. Finally, below is an example where blind perf remnants remain. Erase these, if need be.

The Future

We're not stopping here. Originally EzGrader was just an experiment, which turned into a hobby, which became a toy, and, when the time was right, a tool for general use. It's still in its infancy. Already we are working on new features and conveniences. Easier to use, more capability: those are our goals. Some of the things we're working on now:

- Addition of a user operated perf gauge.
- Built in scanner and image calibration, both automatic or semi-automatic.
- Provide basic edits and adjustments: gamma, brightness, contrast, cropping
- More convenient image handling: scanning directly into EzGrader, more image file formats, drag and drop, and use of the clipboard.
- Links to EzStamp and other databases.
- Enhanced analytics to take advantage of the next generation of 600 dpi scanners.
- A more useful version of the Ornate frame finder.

Of course this list can and will change as you tell us what you want from EzGrader. We need your suggestions and comments.

✍ Metrics Software wishes to thank and acknowwledge Dr. Mary Parker, for her encouragement and support during the early times. Without her contributions, EzGrader would not be available to you today. The collaborative development, testing & design efforts of Metrics Software & SoftPro 2010 have, in our opinion, brought to fruition, a work of great scope and importance to the philatelic software arena, as yet unparalleled by anyone!

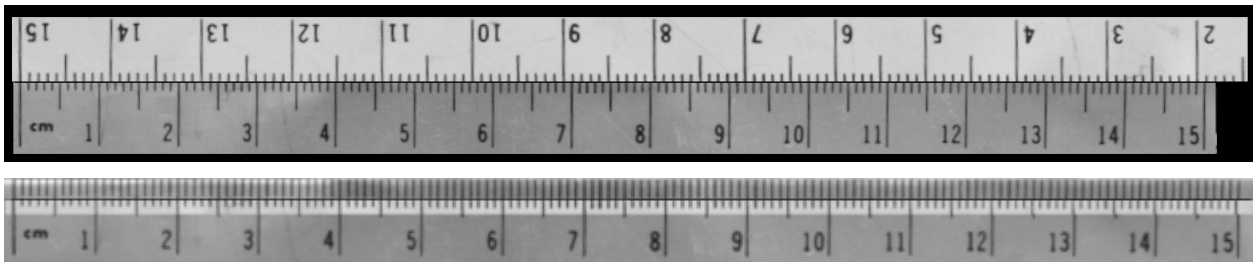
Appendix 1

Check your Scanner for accuracy. We have found two serious mechanical defects in scanners that seriously distort the images they create. To date, we have found mention of either of these issues in the literature. Both problems are due to hardware defects within the scanner. Fortunatelythey are easy to detect.

Scanners have two basic components that determine resolution. The ***light bar*** carries a light bulb and the light sensors (CCD's). The spacing between the CCD's determines the ***optical resolution*** of your scanner. Most inexpensive scanners have 300 sensors per inch, giving an optical resolution of 300 pixels per inch (abbreviated ***dpi***). Further, each sensor has 3 different CCD's. Each CCD measures a single color: red, green or blue. To generate a scan, the bar is moved across the scanner, recording separate measurements to create the second dimension in the image. Most scanners use a stepping motor to move the bar in the precise amount required.

The images at right demonstrate one of the problems. Images consistently show a red, green or blue halo on the **horizontal** edges, also referred to as a ghosting effect. It can be obvious, as in the first example, or subtle, but the distortion is in **every** image. We believe misaligned CCD's on the light bar cause the separate red, green and blue images that make up a scanned image to not line up, resulting in the misregistration shown here. This decreases the accuracy of EzGrader's measurements, especially at lower resolution.

A more common problem is caused by poor calibration of the stepping motor. At 300 dpi, the light bar must be moved exactly 1/300 inch for each pixel. Any variation stretches or compresses your images. Checking your scanner for miscalibration is simple. Make separate horizontal and vertical images of a ruler, and compare the lengths. Any difference you find should



affect all scans made with that scanner. These images show stretching of up to 15% on some scanners and as low as 1% on other scanners. You can determine your scanner's accuracy directly this comparison.

The first of the above two images shows a scanner with a bad stepping motor and the second shows a good typical stepping motor.
Unlike problems with the light bar, this could change over time. We suggest checking your scanner every month or so. Since the image itself is distorted, EzGrader's results will be skewed as well in a proportionate manner.

The real problem these deformations cause is with images from unknown scanners. Examples are images downloaded from the Internet or received from friends etc. We have seen examples of both defects. Misregistration can only be determined by close examination of the image. EzGrader's **Edge Ratio** will help you spot miscalibrated images. This ratio is fixed for any given stamp design, so any variation between copies of the same stamp is a sign of miscalibration. Some editing programs have a feature that stretches or shrinks an image along one dimension, but use this only as a last resort. The cost is a decrease in accuracy.

If your scanner shows either defect, drop us a note. We'd like to know how widespread these problems are. Then, if warranted, we can include a mathematical correction in a future version of EzGrader.

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