

Nikon D500 Experience

The Still Photography Guide to Operation
and Image Creation with the Nikon D500

an e-book by:
Douglas J. Klostermann



PREVIEW of
Nikon D500 Experience

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Image Creation with the Nikon D500*

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Douglas J. Klostermann

Full Stop. good writing for better photography

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by: Douglas J. Klostermann

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1. INTRODUCTION

The introduction of the long-awaited Nikon D500 brings about several important updates to its popular and powerful predecessor, the D300s. Most notable is the camera's responsive 153 point autofocus system, with 55 selectable AF Points spread across the full width of the viewfinder, and all points capable of focusing in very dim lighting. The superb autofocus system, combined with a fast 10 frames per second continuous frame rate and extremely large buffer, will allow you to maintain this rapid frame rate for up to 200 RAW images in a continuous burst, making the D500 ideal for sports, action, bird, and wildlife photography. In addition, the D500 includes the *Group-Area AF* Autofocus Area Mode, where several autofocus points work together to focus on a subject that may elude a single point, and the *Highlight-Weighted Metering* Mode, which can help retain highlight details on brightly lit subjects such as in theater and concert scenes.



Figure 1.1 - Detail of the Nikon D500 digital SLR.

The D500 also includes some new controls compared to the D300s, including the Sub-Selector joystick, the i Button, and a touch screen. The Sub-Selector is used to quickly select the desired autofocus point while shooting, and can be used as a focus lock and exposure lock button when pressed straight in. It can even be customized to perform powerful functions such as temporarily switching to a different autofocus AF-Area Mode during shooting. The inclusion of the i Button allows photographers to quickly access mode-specific settings, whether shooting through the Viewfinder, working in Live View or Movie mode, or during image playback. And the camera buttons are now illuminated

for use in low-light shooting situations. The touch screen can be used during image playback, as well as for focusing and shutter release in Live View shooting mode. And the 3.2" rear monitor tilts to assist shooting from unique high and low vantage points.

Filmmakers will be able to take advantage of the numerous video improvements, including 4K Ultra High Definition (UHD) video in addition to Full HD and HD frame rates and sizes. Plus the D500 includes *Electronic Vibration Reduction* for video, simultaneous output to an optional external recorder, and built-in stereo microphones with selectable frequency ranges. The *Flat Picture Style* is designed to best retain shadows and highlights for post-production, and *Highlight Display* "zebra stripes" can be enabled for displaying overexposed areas of the scene when viewed on the camera's LCD Monitor. The *Power Aperture* feature will allow cinematographers to smoothly change the aperture size while recording to either an external device or to the camera's memory cards.



Figure 1.2 - Snowy Egret Over the Water, Ritch Grissom Wetlands near Viera, Florida. (c) Steve Perry, www.backcountrygallery.com. Nikon D500, Shutter speed 1/4000, Aperture f/6.3, ISO 500.

The D500 also boasts a 20.9 megapixel sensor, and a wide native ISO sensitivity range (100 to 51,200, expandable to Lo and Hi ISO settings), enabling photographers to capture clean images in low light situations. The absence of an anti-aliasing *optical low pass filter* will further increase image sharpness, especially when working in controlled situations and with high-quality lenses. And it is the first Nikon DX model to use the

XQD high speed memory card, along with an SD card slot. The D500 boasts a ruggedly built, weather-sealed magnesium alloy and carbon fiber reinforced thermoplastic body, a big and bright 100% coverage viewfinder, Wi-Fi, Bluetooth and NFC capabilities with Nikon's SnapBridge app, and numerous customization options.

The powerful Expeed 5 processor provides faster processing capabilities and improved image quality with better noise reduction at high ISO settings. The camera's high-resolution image sensor along with its highly versatile and customizable 153 point autofocus system, 180K-pixel RGB metering sensor with face detection and improved Auto White Balance, and fast frame rate and large buffer will serve the needs of dedicated photographers of every level, from enthusiasts to professionals. The advanced features and customizable controls of the Nikon D500 will enable photographers to consistently capture sharp, clean, and well-exposed images in most any shooting situation, and the camera will truly excel in sports, action, bird, and wildlife photography.

But the D500 is merely a tool. It is up to you to make use of its features and capabilities to create the images you envision. While the camera's manuals can tell you about all the settings and controls, how to change them, and their intended functions, this guide will build upon that and explain when and why you may wish to use them. All of the buttons, dials, menu items, and Custom Settings of the D500 are there for a reason: to help you consistently capture the images you want. Some of them are more useful to different types of photographers and shooting situations, and you don't necessarily need to learn and use them all immediately, but this guide will help to give you the knowledge to confidently use the features that turn your Nikon D500 into an image capturing tool that works best for you.

1.1 Take Control of Your Camera

Since the camera is a tool to take the images you want to take, you obviously can't always allow the camera to make decisions for you. You have to take control of the camera to ensure that you capture exactly the images you intend - by autofocusing precisely where you intend, setting the aperture or shutter speed that you want, and obtaining the exposure you desire. While the D500 is an intelligent camera, it cannot read your mind and your intentions and does not know that you wish to focus on and properly expose the white flowers at the upper-right in the foreground, while making the background appear out of focus, and the flower petals to be caught still and not be blurred from the motion of the wind, on this bright, sunny day (see *Figure 1.3*).



Figure 1.3 - Flowers, Concord, Mass. - Autofocus modes, exposure metering mode, aperture, shutter speed, ISO, and white balance all considered, even in creating this simple image. Nikon D500, Shutter speed 1/1600, Aperture f/4.5, ISO 100.

You have to tell the camera to do all of this, through the various controls and settings, such as the Autofocus Mode and AF-Area Mode (lock focus on the desired flower), the exposure metering mode (properly expose the petals and the scene), the aperture setting (the out-of-focus background), the shutter speed (freezing the motion of the flowers from the wind), the ISO (bright day) and the white balance (sunny day). Taking control of all of these functions and settings will enable you to consistently create the dramatic and compelling images you envision.

Learning to use and get the most out of an advanced digital SLR (dSLR) camera like the D500 takes time, practice, patience, mistakes, and experimentation. If you have upgraded from a previous dSLR such as the D7200, D90, or D300s (or one of their predecessors), you are in for a treat. Its additional features and capabilities will more easily help you to successfully capture scenes and situations that you may have been limited in consistently attaining before. The camera's sophisticated and accurate autofocus system coupled with the fast continuous shooting speed, plus its exposure metering system and high ISO capabilities will help you get sharp images of subjects and moments that previously you may have missed, especially in lower light situations.

If you are still in the process of learning all the controls of a dSLR and the exposure concepts of digital photography, you have perhaps jumped right into the proverbial deep

end of the pool by choosing the highly advanced D500! But don't worry, this book will help guide you through its features, controls, and capabilities. Be sure to take it slowly and patiently as you learn the features and concepts that I will explain. With practice and experience you will soon be shooting with confidence and can begin to take advantage of the camera's more advanced functions. Even if you are an intermediate or experienced photographer, don't expect to just pick up all the new information at once, in one reading of a single book. (In fact, you wouldn't want to, as the never ending journey of learning and mastering photography is a big part of what it's all about!) Try not to become frustrated if you don't quite understand something or aren't always getting the results you desire. Instead learn the controls, functions, settings, and concepts bit by bit, try them out in real life shooting situations, and return to this guide, the *Nikon D500 User's Manual*, and other photography books to address questions and problems you encounter. Continue to learn and to photograph often and it should all begin to come together, sometimes slowly and sometimes in rapid bursts of discovery and understanding.



Figure 1.4 - 1959 Chevrolet Corvette - MassBay All Vehicle Show, Ashland, Mass. - Nikon D500, Shutter speed 1/500, Aperture f/5.0, ISO 100.

1.2 Using This Guide

There are many different ways to use a dSLR camera and its controls to capture images, and many diverse situations in which photographers work. I'm going to concentrate on the techniques that I believe are the most practical, useful, and effective

for the majority of enthusiast photographers using the D500, while also explaining how settings can apply to specialized uses. The settings and techniques I discuss can apply to various types of photography including general photography, action, wildlife, portrait, and travel photography. Once you have a firm grasp of the controls, settings, and basic techniques you will have the tools and knowledge to address different issues, specific situations, and challenging scenes. I encourage you to then experiment and continue to learn, and to find the techniques that work best and are most comfortable or intuitive for you.

The D500 is a highly sophisticated tool that deserves to be used to its full potential, and that involves taking control of the camera and its numerous functions. While this may be challenging at first, these are the techniques that are necessary to take full advantage of the capabilities of any dSLR including the D500, and will lead you to having more control and consistency over your image making. Hopefully this will inevitably lead to better images!

This guide is intended to be used with the camera in your hands. That is the best way to directly follow and understand the controls, functions, and settings as they are being explained. It is also intended to be used in conjunction with and in addition to the camera's manuals, not to completely replace them, so every bit of information in the *Nikon D500 User's Manual* and *Nikon D500 Menu Guide* will not be repeated here. Among the often brief descriptions and sometimes frustratingly incomplete and disjointed explanations in the manuals, there is some very valuable information, as well as the basics for buttons, controls, menus, and how to access and change all the settings. And I will refer to the manuals for very specialized or rarely-used functions that are well-explained there. Note that the page number references to the manuals given in this text will sometimes be for the *Menu Guide* vs. the *User's Manual*, as will be indicated. The *D500 User's Manual* and the *D500 Menu Guide* can also be obtained as PDF files from the Nikon website, at the webpage below.

<http://downloadcenter.nikonimglib.com/en/products/323/D500.html>

As you can see, there is a lot to make sense of regarding terminology and controls, so I recommend that you familiarize yourself with the controls and displays of the camera body, as shown on pages 1-8 of the *D500 User's Manual* and explained in the **Camera Controls** chapter below, as well as read through the manual at some point and attempt to understand or absorb as much as possible. Yes, much of it may be complicated or unclear at first, but this guide will explain and clarify the numerous buttons, controls, menus, and settings and explain when and why you will want to use them in your photography.

3. MENUS and CUSTOM SETTINGS

3.1 *Setting Up the D500*

The Menus and Custom Settings of the Nikon D500 allow you to have greater, more precise control over how your camera functions. They are an important part of what makes the D500 a much more powerful and exacting tool than mid-level dSLR cameras, and they allow you to customize the camera to work for you, to work how *you* work. Using them you can also fine-tune settings and operations including white balance, metering, exposure, and autofocus. I highly recommend that you carefully go through these menus and change the settings to the options that allow you to use the camera in the manner that works best for you and your shooting needs.

Some of the Menu items are only used when shooting, reviewing, or processing images, but several of them should be set up in advance. Below are explanations and suggested settings for the Menus and Custom Settings of the Nikon D500. I realize that reading this section at the beginning of this book presents a conflicting situation in that these menu items need to be explained first so that you can initially set up your camera, but you may not yet have the knowledge to fully understand all these menu items until you read through the rest of this guide! So don't get overwhelmed if you don't yet understand the settings or terminology used to describe the Menu and Custom Settings and their options. You will likely wish to return to them later after you have begun to better understand your camera and its controls and start to determine how you want to work.

And I understand that it is not as compelling to read through these lists of menu items as it is to read the more-flowing instructional text later in the book. But you will begin to learn much about the D500 as you patiently work through this Menus and Custom Settings chapter. As I mentioned in the **Introduction**, this section will often refer to upcoming chapters and sections, but it is not necessary for you to jump ahead. This is merely a "heads-up" that the menu item or function that you are currently setting up will be explained in detail later in the guide, in the applicable section of the text (such as **Autofocusing** or **Metering Modes**, etc.).

Also, if you don't yet understand some of the settings or why you might wish to change them, leave those on the default or recommended settings for now. If you have worked with a Nikon D810/D800, D750, D610/D600, or D7200/D7100 body before using the D500, you will find that many of these Menus and Custom Settings options are similar, and you may wish to continue to use most of the same settings that you have determined work best for you. However there are some new additions with the D500.

3.2 *Setup Guide Spreadsheet*

In conjunction with this book, I have also created a comprehensive *Nikon D500 Setup Guide* spreadsheet, with suggested settings for the applicable Menus, all of the Custom Settings, plus some shooting and exposure settings. It has complete and separate camera setup suggestions or starting points for different types of shooting, including:

General / Travel / Street
Landscape / Architecture
Action / Sports
Moving Wildlife / Birds
Studio / Portraits
Concert / Performance

The *Nikon D500 Experience Setup Guide* spreadsheet can be downloaded from my website here:

<http://www.fullstopbooks.com/setup-guides/>

Most all of the suggested settings on the spreadsheet are further explained in this section and throughout this guide, so it is best to use the spreadsheet hand-in-hand with the explanations in this book. And as you read through the Menus and Custom Settings, perhaps make notes of how you may wish to set them and adjust them for the different types of scenes and situations you photograph. Please keep in mind that the reason the Nikon D500 offers so many menu items and customization options is that photographers have different needs and work in different ways, and it is best to determine which settings *you* need or prefer rather than simply rely on the suggested settings from another photographer.

3.3 Playback Menu

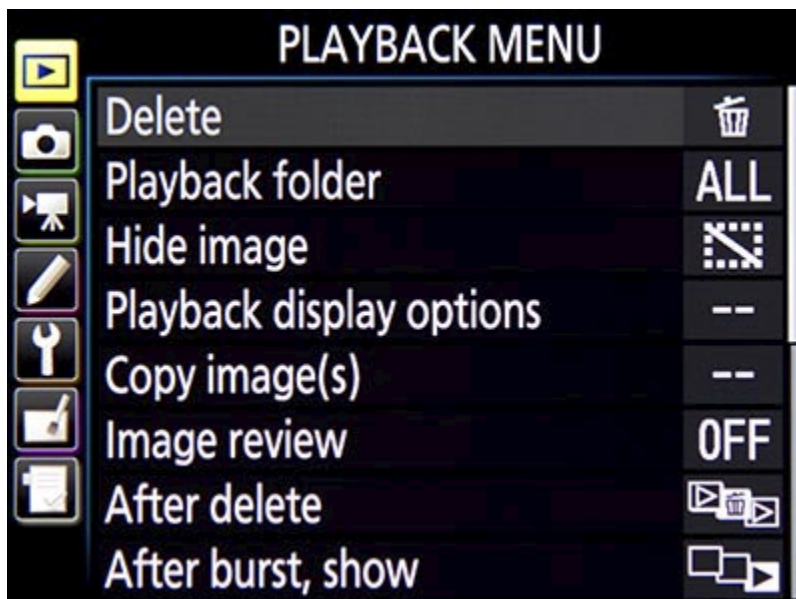


Figure 3.1 - Playback Menu

Delete

Use this to delete a single image or selected number of images (*Selected*), or all images in the current playback folder on the selected memory card (*All*), (see *Figure 3.2*). If you have two memory cards inserted, you will be prompted to choose which memory card to delete, *XQD card slot* or *SD card slot*. If selecting images, use the Multi Selector to

navigate to the desired image, and press Center Button to select it. You can continue to select multiple images, then press the OK Button to delete. Set the Playback Folder item next to determine which images are included in the current playback folder just mentioned.

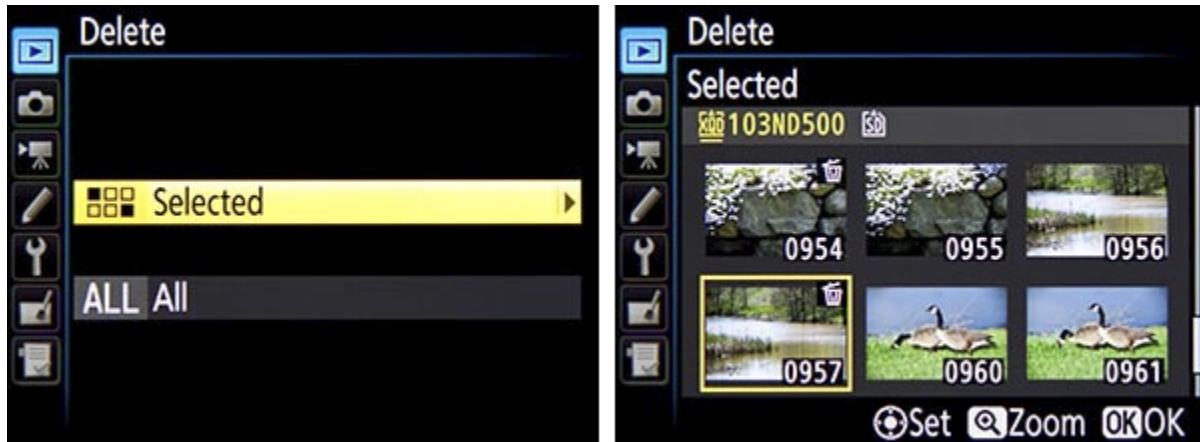


Figure 3.2 - Delete Menu Item (left), used to delete all images in the current folder, or images selected by the user (right). Notice the trash can icon that indicates the image selected for deletion.

However, if you are deleting a single image or just a few, you can more easily do this using the Delete Button on the rear of the camera. If you are deleting all the images on a card, it is better to use *Format Memory Card* (explained in the Setup Menu below). Use large enough memory cards so that you don't need to worry about deleting images in camera while working, and instead it may be best to manage them on your computer after downloading all the images.

Please know that many of the “secondary” types of button uses for menus and on-screen settings don't need to be learned or memorized, as the camera will often display tiny icon reminders on the applicable menu or screen. For example in *Figure 3.2 - right*, the icons at the bottom of the screen indicate that pressing the Center Button will mark the image for deletion, pressing the Zoom-in Button will magnify the selected thumbnail for a closer look, and the OK Button will complete the operation.

Playback Folder

This sets which images will be visible during Playback (see *Figure 3.3 - left*). Leave at the default setting, *ND500* and all the images taken with this camera will be visible. If you are sharing memory cards between different cameras (which is not at all recommended as it may lead to confusion and file management headaches) then you can select *All*. If you just wish to view only the images in the current folder, select *Current*. You can select and create individual folders for organizing your photos in the *Storage Folder* item in the Photo Shooting Menu. Most users will likely wish to leave this set for *ND500*, or for *All* if sharing cards between cameras.

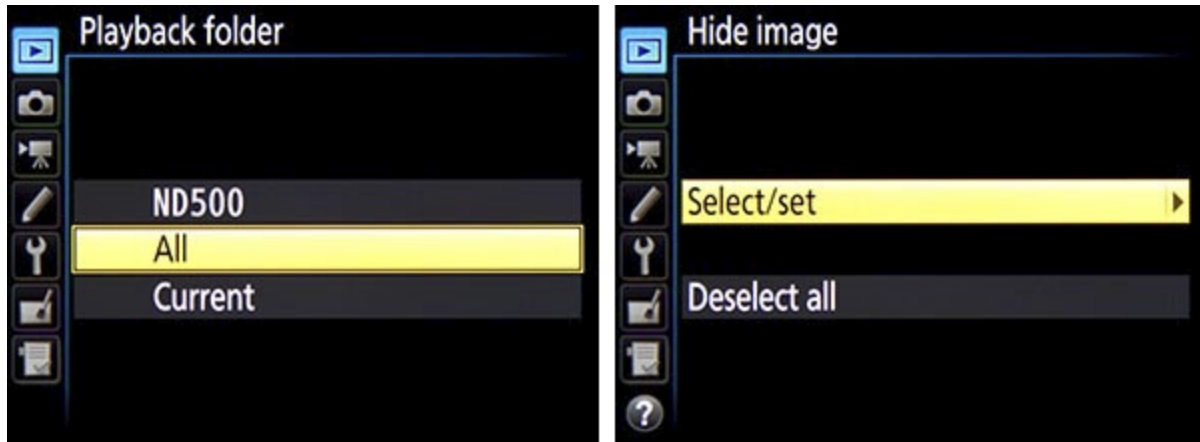


Figure 3.3 - Left: Playback Folder options, to determine which images are visible during image playback. Right: Hide Image options, to hide images from view during image playback.

Hide Image

This is used to hide images from view during playback, which could help prevent accidental erasing of that image (see *Figure 3.3 - right*). You can select the images to hide using *Select/set*, then use the Multi Selector and Center Button to select the desired images. Be aware that hidden images will be deleted by formatting the memory card. View all the previously hidden images by choosing *Deselect all*, which will also remove protection from images that you previously chose to Protect. It is typically best not to use this feature so that you don't lose track of any of your images and accidentally erase hidden images when formatting a memory card.

Playback Display Options

During image playback on the rear LCD Monitor you can scroll through various information displays in order to view your images either full screen or with various shooting data or histograms. This menu item is used to select which of these views will be available during playback (see *Figure 3.4*). I recommend that you select all of the *Additional photo info* options, at least initially. Then after some use you can determine which information views you prefer and deselect the ones you don't need. These will all be illustrated in the **Image Playback** section of Chapter 4.



Figure 3.4 - Playback Display Options, allowing you to select which information and displays are available to view during image playback.

None will display a full screen image with no information, which helps you to inspect the image. *Highlights* will display blinking areas to alert you of where the image has been overexposed, which can help you determine the proper exposure for the subsequent shots. *RGB histogram* will display histogram graphs of the various individual color channels to also assist you in determining proper exposure and help prevent the over-saturation of areas of specific colors. *Shooting data* displays additional information including the lens and focal length used, flash information, and Picture Control settings. This screen is not necessarily very informative immediately after taking the shot since you already know most of these settings, but can be handy when later reviewing an image in-camera. *Overview* displays a thumbnail of the image along with the combined RGB histogram and shooting information (see Figure 3.5). This is perhaps the most important and useful information screen to use while shooting to help determine that you obtained the proper or desired exposure of an image. All the different elements of displayed information in these various information screens will be discussed and explained throughout the guide, particularly in the **Exposure** chapters and in the **Histogram** section.

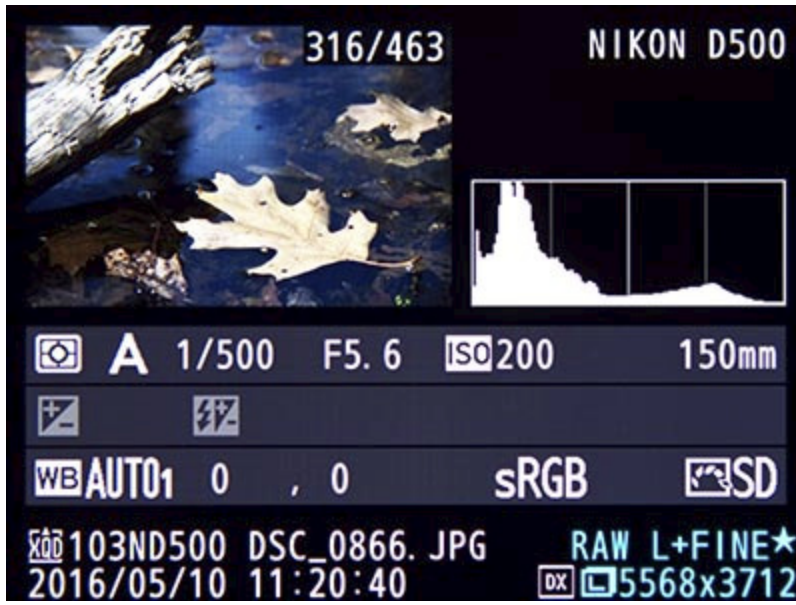


Figure 3.5 - The Overview information display screen during image playback, showing a thumbnail of the image, the combined RGB Histogram, and shooting and file information.



Figure 3.6 - File information view during image playback, with Focus Point Display enabled to show which Focus Point was used for autofocus with this shot, indicated by the tiny red square located on the bird, near the center of the frame.

The first item on the menu, *Focus point*, will show you which Focus Point was used when capturing an image, and will thus verify if you properly focused where you intended (unless you recomposed after locking focus). It is that tiny red square or squares superimposed on your image when you view it on the rear LCD Monitor, but will not be on the actual image (see *Figure 3.6*). It is most helpful for when you let the camera select the autofocus point, such as in action situations, and/ or when using an

AF-Area Mode other than Single Point AF - and then you can see if the camera focused where you wished.

Keep in mind that if you selected a Focus Point, locked focus, and then recomposed the image before taking the shot, the image on your rear LCD will display which AF Point was used, but the displayed Focus Point will not actually be located in the same place on the image that the camera focused (before you recomposed), so it won't actually be helpful! This will be illustrated and explained in the **Autofocusing** chapter of this text.

Copy Image(s)

This is used to copy images from one memory card to the other when two cards are inserted in the camera, and can be used to back up specific images or the entire card at once (see *Figure 3.7*). This could be useful to create back-up copies of your images when you don't have access to your computer, external hard drive, or CD/DVD burner, but it is best to back them up on one of these more permanent devices as soon as possible. This menu item will not be accessible if only one card is inserted.

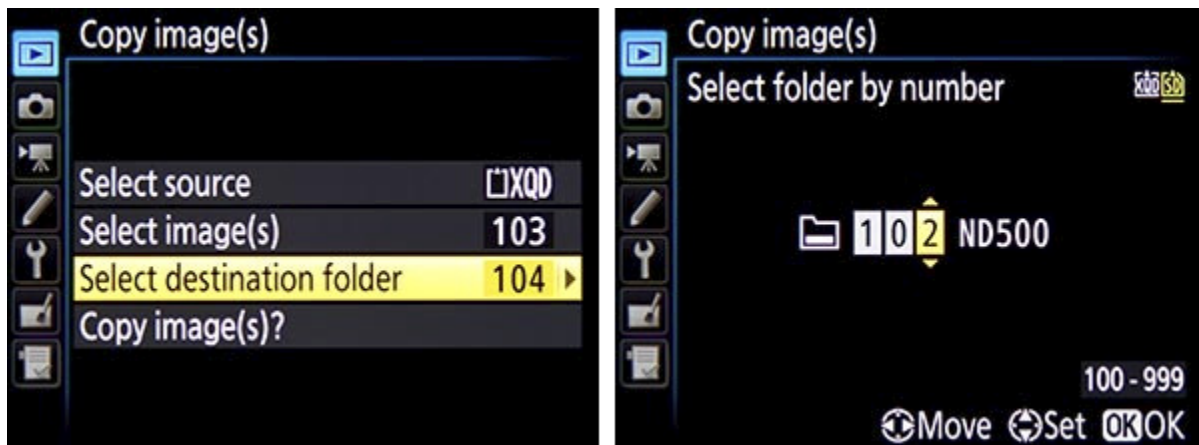


Figure 3.7 - Copy Image(s) Menu Item - Work your way down the options (left) to select the source card, the specific images, and the destination folder (right). Then choose “Copy image(s)” to complete. Note that when selecting an existing folder, the small folder icon will indicate if the folder is currently empty, partially full as shown here, or full.

To make use of this, insert a card in each memory card slot and make sure the destination card is large enough and has enough empty space to accept the images. Select the source card (*Select source*), then select the images. You will first be prompted to choose the folder with the images you wish to copy, and then *Select all images* or *Select protected images*. If you wish to instead copy specific images, choose *Deselect all* first, then proceed to select the individual images by highlighting them and pressing the Center Button. Click OK when finished, then select or create the destination folder, and choose *Copy image(s)?* to initiate the procedure.

Image Review

Use this to set whether or not your images are immediately displayed on the rear LCD Monitor after capturing them (see *Figure 3.8 - left*). If you typically review each image

3.6 Custom Setting Menu

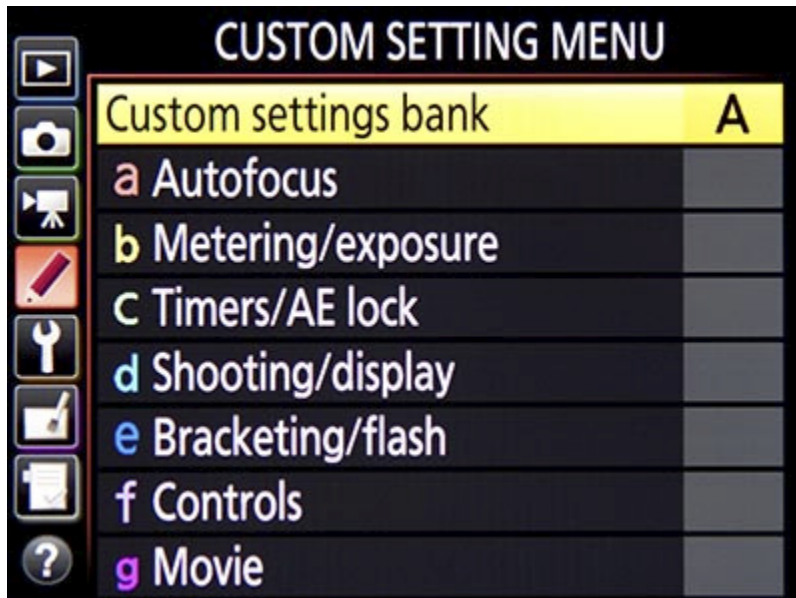


Figure 3.43 - Custom Setting Menu, including the Custom Settings Bank item.

Custom Settings Bank

Similar to the Photo Shooting Menu Bank described earlier, the Custom Settings Bank allows you to register and save specific combinations of Custom Settings. You can save up to four Custom Settings Banks, and name them (see *Figure 3.44*). This is perhaps a more powerful customization option than the Photo Shooting Menu Bank because many of these Custom Settings (such as autofocus settings and camera control settings) may vary based on if you are shooting a portrait or a landscape scene vs. shooting an action or sports scene. As with the previous Photo Shooting Menu Bank, after setting up the Bank you can then later select it and all of the previous settings will be in place, even if you have turned off the camera. But recall that if you change any of the settings while using that Bank, the latest settings used will be in place next time you access that Custom Settings Bank, not the original settings.

As you read through the Custom Settings, perhaps make notes of how you may wish to set them and vary them for the different types of scenes and situations you photograph. Remember that you can also consult my *Nikon D500 Setup Guide Spreadsheet*, which lists suggested settings for various shooting situations such as landscape, sports, or portrait. And I will also point out recommended settings for different uses as I go over the items in this section.

<http://www.fullstopbooks.com/setup-guides/>

To create a Custom Settings Bank, select one of the available four banks, set the camera to your desired Custom Settings by going through the Custom Setting Menu items and choosing the desired options, and those settings will then be registered to

that Custom Settings Bank. Highlight a Bank and press the Delete Button to *Reset* the Bank to the default settings.



Figure 3.44 - The Custom Settings Bank (left), allowing you to register and save a group of selected settings. Press right on the Multi Selector to name the Bank, as shown at right.

To name a Bank, just as with naming a Shooting Menu Bank, highlight the desired bank (A, B, C, or D) and press right on the Multi Selector. Then use the Multi Selector and Center Button to input the name, and press and hold the Zoom-out Button and press right to jump to the text field (see *Figure 3.44*). Or you can use the touch screen to enter text.

a - Autofocus

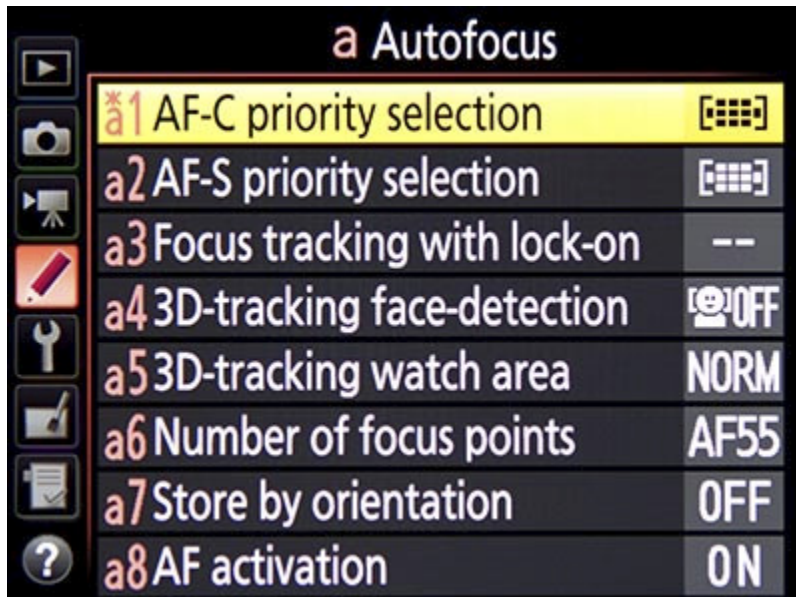


Figure 3.45 - Nikon D500 Custom Settings menu.

Note: The autofocus system of the D500 will be explained in detail in Chapter 5 on **Autofocusing**. Remember to review these Autofocus Custom Settings once you have become familiar with the autofocus system, including the *Autofocus Modes* and *Autofocus AF-Area Modes*.

An asterisk notation shown next to a setting in the Custom Setting Menu will indicate that a setting has been changed from its default value. The default Custom Settings values can be found on pages 292-303 of the *Nikon D500 User's Manual*.

a1: AF-C Priority Selection

This setting determines if attaining focus is top priority when you are working in Continuous-servo AF Mode (AF-C Autofocus Mode), or if you just want the shots to be taken even if exact focus is not attained for each shot (see *Figure 3.46 - left*). It is designed for when you are capturing a burst of images using a continuous Release Mode. Specifically, when you press the Shutter Button, this setting determines if the images are taken immediately (*Release*) even if the first image is not yet in focus, or if the camera waits for focus to be attained before taking the photo (*Focus*). For example, if you are tracking a moving subject such as a runner or an animal, you may wish to just capture a rapid series of shots at all costs in order to ensure getting specific moments, and exact focus of each shot may not be the priority. Or you may wish to make sure the camera has properly focused each shot before the shutter is released. This however may cause a slight (perhaps millisecond) delay for each shot and the exact moments may be missed. If capturing the images at all costs and maintaining the maximum continuous frame rate are the priorities, set for *Release*. If exact focus of every image is your priority, at the risk of missing some shots and encountering small shutter release delays, set on *Focus*.

The *Focus+Release* option means that the camera will acquire focus for the first shot in a continuous burst, but will prioritize the maximum rate of *Continuous High* (CH) or *Continuous Low* (CL) Release Mode for the subsequent photos, rather than ensuring exact focus, and therefore those shots may not be in focus. However, you may wish to use this if you know that the subject distance will not change as you take the burst of photos, and thus the subsequent images are likely to remain in focus.

The *Release+Focus* option act similar to the *Release* option, in that the shutter can be released even if the subject located at the active AF Point is not in focus. However, when using *Continuous High* (CH) or *Continuous Low* (CL) Release Mode, the frame rate will slow down in low-light or low-contrast situations so that focusing is improved.

Both Nikon as well as experienced sports and wildlife photographers suggest that this be set for *Release* for many different types of sports and action situations. Their experience shows that the D500 is going to be able to focus for most all of the shots in a burst, and that it is not worth interrupting the rapid frame rate for the camera to briefly pause and acquire focus. And even when the camera may not be able to confirm focus,

critical areas of the subject are likely still in focus, and thus the *Release* setting can result in more “keepers.”

http://nps.nikonimaging.com/technical_solutions/d500_tips/af/recommended_af_settings/description/

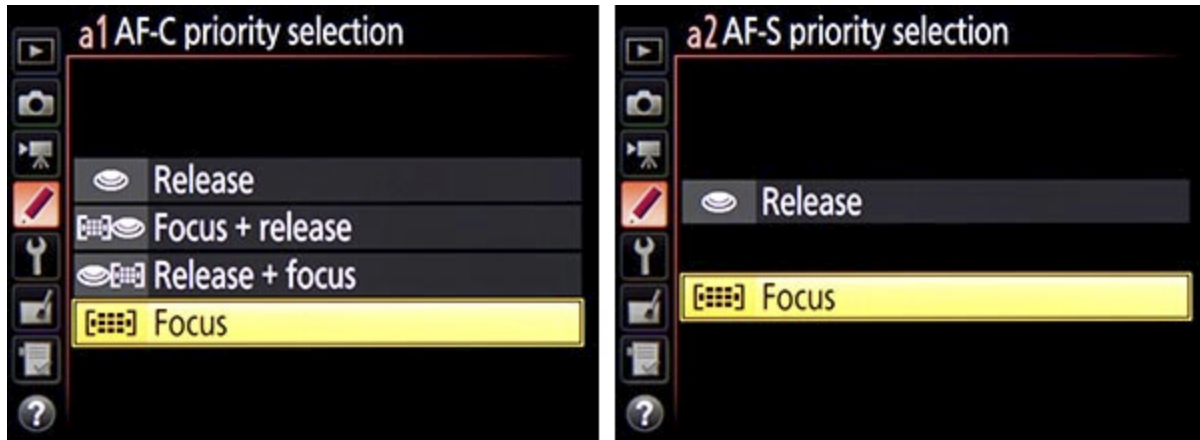


Figure 3.46 - Left: AF-C Priority Selection options, to determine if shutter release and maintaining the maximum continuous frame rate are the priorities, or if exact focus of each shot is the priority. Right: The similar AF-S Priority Selection options, for when working in AF-S Focus Mode.

a2: AF-S Priority Selection

This is similar to AF-C Priority above, except that this setting is for when you are working in Single-servo AF Mode (AF-S Autofocus Mode), typically used when your subject is relatively still or when you are not tracking a moving subject (see *Figure 3.46 - right*). Again, determine if getting the shot (*Release*) or exact focus (*Focus*) is your priority. Since AF-S is typically used with subjects that are not moving, it generally makes more sense to ensure focus is attained, thus you may wish to select *Focus* for this setting.

If *Focus* is selected for Custom Setting a2, then this setting coordinates with Custom Setting a8 - *AF Activation* if you have the camera set up for certain back-button focus techniques where you lock focus and recompose the framing of the shot before taking the photo using the AF-ON Button. The Custom Setting a8 options can allow you to make use of, or avoid, the “trap focus” set up. This will be explained in Custom Setting a8, and in the **Trap Focus** and the **Back-Button Focusing** sections.

a3: Focus Tracking with Lock-On

The D500 adds additional customizations to this menu item compared to what was available on previous models. Two separate parameters are now offered, which determine how the autofocus system will react to blocked and moving subjects when working in AF-C autofocus mode (see *Figure 3.47 - left*).

Blocked Shot AF Response

This setting determines how the autofocus system reacts to sudden, dramatic changes in the distance of the subject when you are working in AF-C autofocus mode, such as when another, closer object enters the frame and blocks your original subject. The camera can be set to wait a brief period of time before refocusing at the new distance with setting *1 (Quick)*, or wait a longer period of time with setting *5 (Delayed)*, or steps in-between, from 1 to 5.

For example, you may be tracking a football player across the field when another player much closer to you temporarily comes between you and your intended subject. This setting will determine if and how quickly the camera then focuses on this nearer player, or if it continues to focus at the original distance, as the closer player passes through your field of view. If you do not wish for the camera to suddenly change focus to the nearer player, set to a longer period such as *4* or *5*. If you wish to switch focus to a closer or farther object, such as perhaps a group of runners where focusing on any runner and not a specific runner is the priority, then set for a shorter period, *1* or *2*, and focus will quickly change. Keep this option in mind with the various AF-C Autofocus Mode and AF-Area Mode configurations (discussed in the **Autofocusing** chapter), as your preference will likely vary depending on your subject and situation. Sometimes you may not want the camera to quickly refocus on a closer or more distant subject, while other times you might.

Subject Motion

The setting provides a scale ranging from *Erratic* to *Steady*, which you can set to best match the type of movement of the subject, so that the camera can best maintain continuous focus. As with the above parameter, this applies when working in AF-C autofocus mode, used to track and retain focus on moving subjects. Nikon suggests that a soccer player represents the mid-point of the scale, and that the middle setting can be used for most sporting events. If the subject is going to suddenly stop and start (such as a tennis player), adjust this towards the *Erratic* setting. If the subject is going to be moving at a steady pace, such as a runner, adjust towards the *Steady* setting.

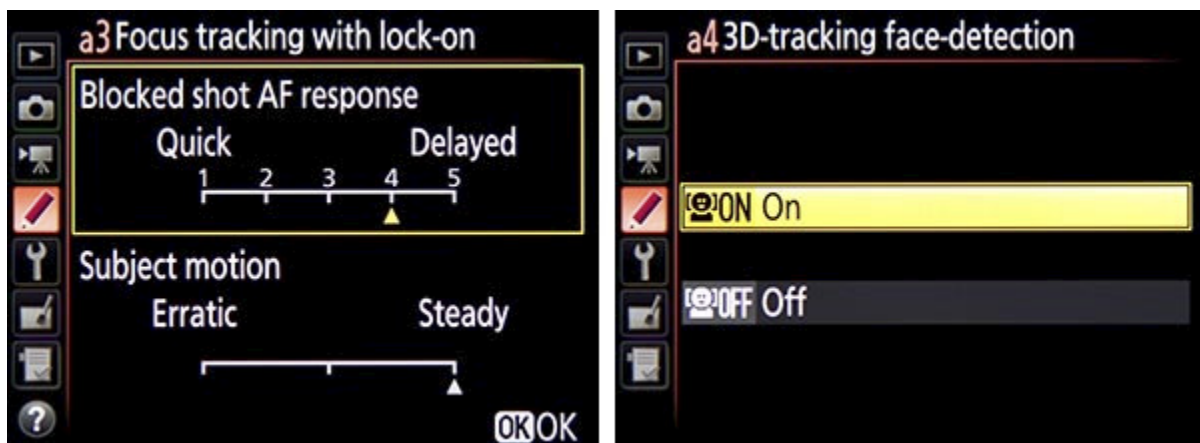


Figure 3.47 - Left: Focus Tracking With Lock-On settings - When working in AF-C Autofocus Mode, these settings determine how long the camera waits before refocusing

on a subject at a different distance, and lets the camera know what type of Subject Motion to expect. Right: 3D-Tracking Face-Detection item, to enable face-detection when using AF-C Autofocus Mode and “3D-Tracking” AF-Area Mode.

a4: 3D-Tracking Face-Detection

This option applies when using the *3D-Tracking* AF-Area Mode along with *AF-C* Focus Mode. With *3D-Tracking* AF-Area Mode, you choose an initial AF Point to begin tracking a moving subject, and then the camera will retain focus on the subject as it moves about the frame, passing from one AF Point to the others. The camera makes use of color information to retain focus on the subject. If this menu option is enabled (*On*), the camera will also make use of face detection in order to help retain focus on the subject (see *Figure 3.47 - right*). This can obviously be helpful if the subject you are tracking is a person, and if their face will remain visible to the camera.

a5: 3D-Tracking Watch Area

As with the above setting, this applies when using the *3D-Tracking* AF-Area Mode along with *AF-C* Focus Mode. This Custom Setting is used to dictate how large of a focus point area the camera will use to acquire focus and track a moving subject (see *Figure 3.48 - left*). With the *Normal* setting, the camera looks to an area about the size of the selected AF Point, as seen in the Viewfinder. When set for *Wide*, the camera makes use of a larger area around the selected AF Point in order to locate and track the subject. The *Normal* setting can be used for most situations, however if you find it difficult to keep a small or fast-moving subject located under the selected AF Point, you can take advantage of the *Wide* setting.



Figure 3.48 - 3D-Tracking Watch Area options of Wide and Normal. Right: Number of Focus Points, to choose if 55 AF Points or 15 AF Points are selectable in the Viewfinder.

a6: Number of Focus Points

This setting determines the number of autofocus points that are available for selection in the Viewfinder (see *Figure 3.48 - right*). If you are manually selecting your Focus Point (as you typically should) you may find that it is quicker and easier, at least at first, to limit the number of AF Points to *15 points*. But to take full advantage of the D500

autofocus system, you will want to make use of all 55 selectable AF Points, as will be explained in the **Autofocus** chapter. (There are 153 total AF Points, but only 55 of them are user-selectable.) If you prefer to have all the AF Points available for your selection, set this at *55 points*. If you set to *15 points* your selection will be limited to those 15 AF Points, but all 153 points will still be used by the camera in subject tracking (such as when working in AF-C Autofocus Mode along with one of the AF-Area Modes that uses multiple AF Points), so the camera is still potentially taking advantage of all the Focus Points of the autofocus system. The 55 vs. 15 selectable AF Points are illustrated in *Figure 3.49*.

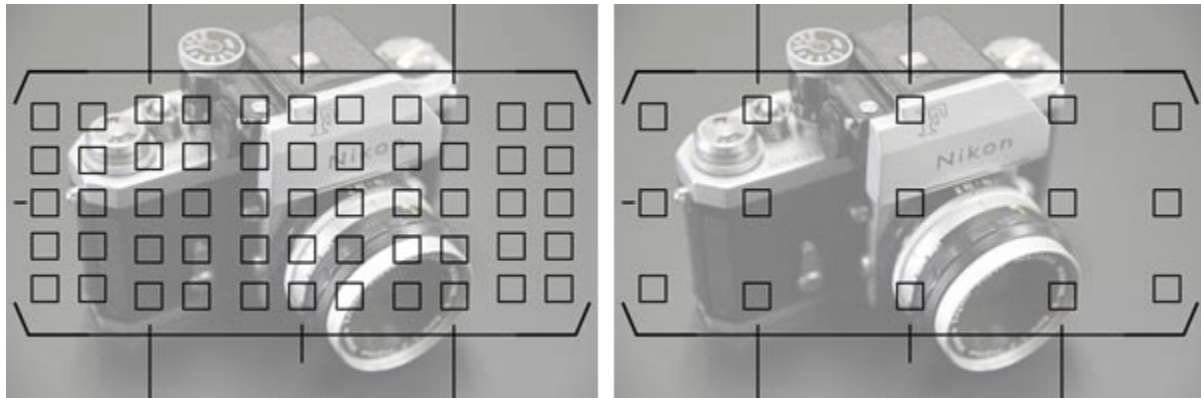


Figure 3.49 - 55 AF Points vs. 15 AF Points - Left: A simulated view of the D500 Viewfinder showing the configuration of the 55 selectable AF Points. Right: The selectable 15 Focus Points, available when the 15 Points setting is chosen in Custom Setting a6 - Number of Focus Points. Background image is shown at 50% opacity to better view the AF Points. Note that typically only the single selected Focus Point (or Group) will be visible in the Viewfinder during actual shooting.

a7: Store by Orientation

This can be used to have a specific AF Point, or a specific combination of AF Point plus AF-Area Mode, be automatically selected when you hold the camera in a certain orientation (see *Figure 3.50*). If you set this for *Off*, the current AF Point and AF-Area Mode that you have selected will remain the active AF Point and AF-Area Mode when you change camera orientation, as you would generally expect. However, if you set this for *Focus point*, the camera will return to the AF Point last selected when the camera was in that orientation. If you set this for *Focus point and AF-area mode*, the camera will return to both the AF Point and the AF-Area Mode last selected when the camera was in that orientation.

So, for example, set this for *Focus point*, then hold the camera in the standard orientation and select a far-right AF Point. Then position the camera vertically with the grip side up and select a far-left AF Point. When you return the camera to the standard horizontal orientation, the camera will return to the far-right point as the active AF Point. When you return the camera to the grip-up orientation, it will jump again back to the far left point.

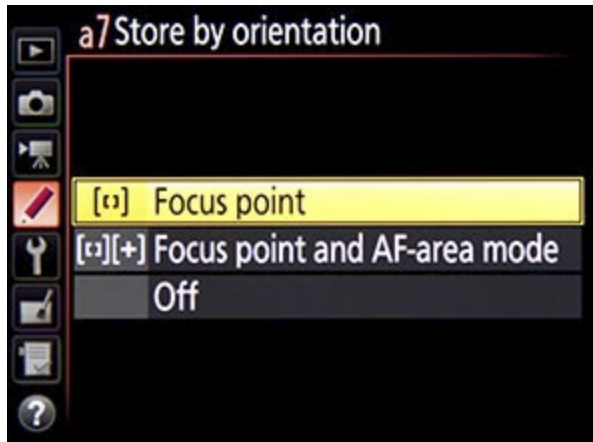


Figure 3.50 - Left: Store By Orientation, to choose if the camera remembers the last Focus Point and/or AF-Area Mode used when the camera is held in a specific orientation.

Or, for example, set this menu item for *Focus point and AF-area mode*, then hold the camera in the standard orientation and choose AF-Area Mode *Single-Point AF* and then select the far-right AF Point. Then position the camera vertically with the grip side up and select AF-Area Mode *Group-Area AF* and then select a group at the far-left. When you return the camera to the standard horizontal orientation, the camera will return to *Single-Point AF* mode and to the far-right AF Point as the active AF Point. When you return the camera to the grip-up orientation, it will jump again back to *Group-Area AF* and a far-left group of points.

The camera will recognize three different orientations: horizontal, vertical with the camera grip side of the camera up, and vertical with the camera grip facing down. This can be handy in situations such as when you are taking portraits and you switch between horizontal and vertical camera orientation, yet you want an AF Point at the relative “upper-right” position to remain selected, near where you have located the model’s face. Typically you may wish to use the same AF-Area Mode for each orientation and not switch between *Single-Point AF*, *Dynamic-Area AF*, or even *Auto-Area AF* - unless you have a specific need to do so.

However if you enable one of these options and then use your camera later and forget that you have it set this way, the autofocus Area Modes and AF Points will seem to be acting extremely erratic as you change camera orientation, until you remember to set this back to *Off*.

a8: AF Activation

This is used to determine which button or buttons can be used to initiate autofocusing. By default the camera is set to *Shutter/AF-ON* and thus either the Shutter Button can be half-pressed or the rear AF-ON Button can be pressed to start autofocusing. If you wish to disable the autofocusing function from the Shutter Button, set for *AF-ON only* and then you will need to press the rear AF-ON Button to focus on your subject (see Figure 3.51 - left). This *AF-ON only* option is used for a technique called back-button focusing,

5. AUTOFOCUSING

5.1 Using Autofocus

One of the essential steps in taking a successful and sharp photo is controlling where and how the camera autofocuses. The versatile and customizable autofocus system of the D500 is a major part of what makes it such a powerful camera, and in any Exposure Mode you can, and should, take control of the autofocus system. The autofocus system includes the autofocus related controls (see *Figure 5.1*), the Autofocus Modes (such as *Single-servo AF* also called AF-S), the autofocus Focus Points and AF-Area Modes (such as *25-Point Dynamic-Area AF*), and the autofocus related menu and Custom Setting items described at the beginning of this text, which customize how the AF system works. You will select an Autofocus Mode generally based on whether the subject is still or moving, and select an AF-Area Mode based on where and how you want the camera to locate and focus on your intended subject - ranging from a single point, to a wider Dynamic-Area, to all the available 153 AF Points (with 55 selectable AF Points). You can set the Autofocus Modes and AF-Area Modes in a variety of combinations based on what and how you are shooting.



Figure 5.1 - Autofocus controls and other shooting-related controls of the Nikon D500.

If you allow the camera to autofocus by automatically choosing its own Focus Point(s), such as when using Auto-Area AF autofocus area mode, it typically focuses on the closest object. This may or may not be what you want to focus on, so you should select

or at least narrow down where the camera focuses using the autofocus Focus Points, or Group-Area AF, or one of the Dynamic-Area groups of points. By doing so you are telling the camera exactly where to autofocus or where to look to find a moving subject to track. For example, you often want to focus on a subject's eyes, but if you allow the camera to choose the autofocus point by itself, it may select another part of the face to focus on, or somewhere else on the body, or even a raised hand that is nearer to the camera than the face. If you are capturing an image of a bird in a tree the camera has no idea you want the autofocus system to zero in on the bird so that it is in sharp focus, and not on the branches or leaves near it, or perhaps even on the leaves closer to you.

Be sure to read the **Menus and Custom Settings** section first to make sure your camera is properly set up to make use of all the autofocus points, to always illuminate your active Focus Point if desired, and various other recommended autofocus settings. Most of these settings are in the Custom Setting *a: Autofocus* menu.

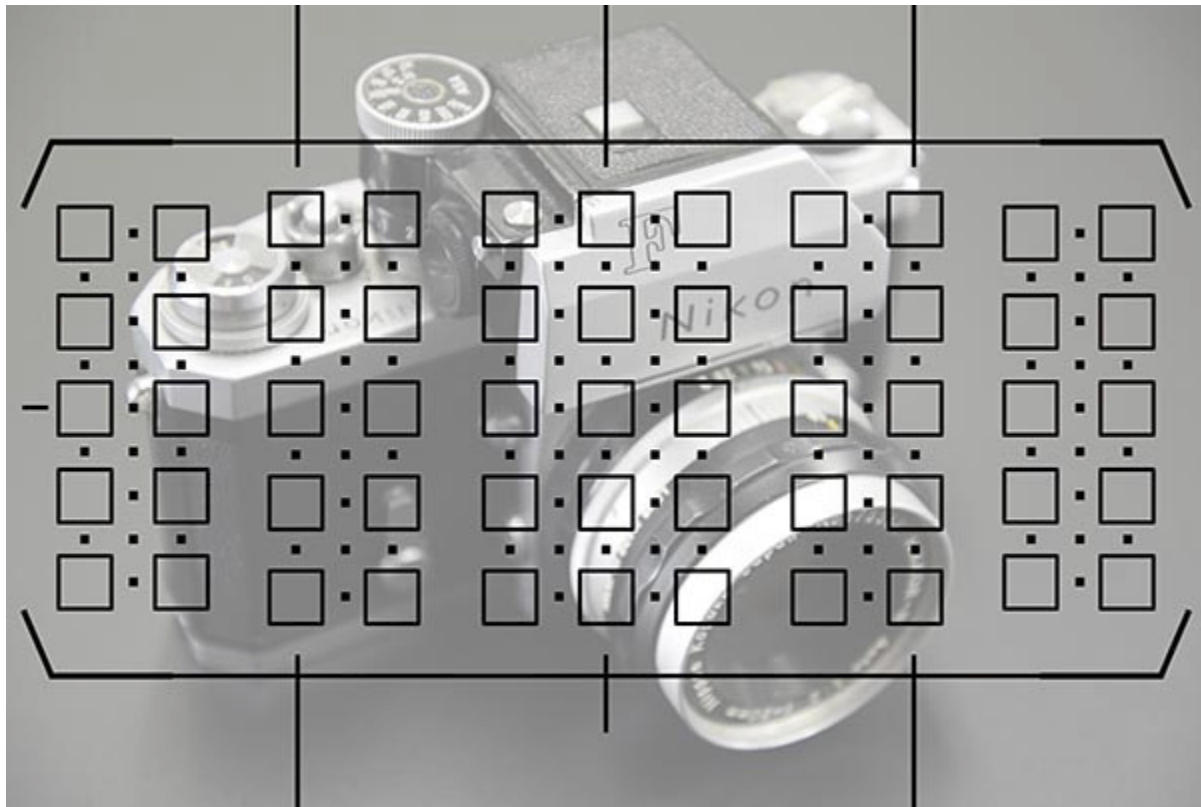


Figure 5.2 - Simulated view of the Nikon D500 Viewfinder, showing the location of all 153 AF Points and the optional grid display. Note that you will not actually see all 153 AF Points, only the active one(s). And you will only be able to select and view the larger AF Points, not the smaller assist points also shown here. Background image shown at 50% opacity to better see Viewfinder elements.

Autofocus works in part by looking for contrast so try to focus (locate your Focus Point as you view it in the Viewfinder) on a texture or a detail with a pronounced line or some amount of contrast between light and dark. It may not be able to focus on a large area

of consistent color - such as a white wall or clear blue sky, or even a uniformly colored and illuminated shirt - or on a subject or scene that is too dark. It can be disrupted by regular patterns and fine detail, or confused when looking through close objects to objects farther away, such as looking through a screen or fence. And it sometimes fails to work well in highly contrasting or dim light.

Ninety-nine of the 153 total AF Points are more sensitive cross-type points, including the points at the central area and the sides of the Viewfinder (see *Figure 5.3*). A cross-type AF Point detects contrast in both the horizontal and vertical directions, as opposed to AF Points which are only sensitive to contrast in one of these directions. Thirty-five of these cross-type points are selectable, with the non-selectable cross-type points located adjacent to them. However, when using a lens or a lens-teleconverter combination slower than f/5.6 (a lens whose maximum aperture is f/5.6 or narrower), both the number of available AF Points and the number of cross-type AF Points is reduced (see *Figure 5.4 - left*). So for example, if you are using a 500mm f/4 lens and a 2x teleconverter, the teleconverter causes a 2-stop loss, effectively turning the lens into an f/8 lens. The number of available AF Points is severely reduced to 15 points (9 selectable), with only 5 centrally located cross-type points, 1 of which (the center point) is selectable (see *Figure 5.4 - right*). The available Autofocus AF-Area Modes are thus limited as well, with *3D-Tracking* and *Auto-Area AF* no longer an option. If set for these modes the camera will actually use *Single-Point AF*. This will impact bird and sport photographers making use of long lenses plus teleconverters.

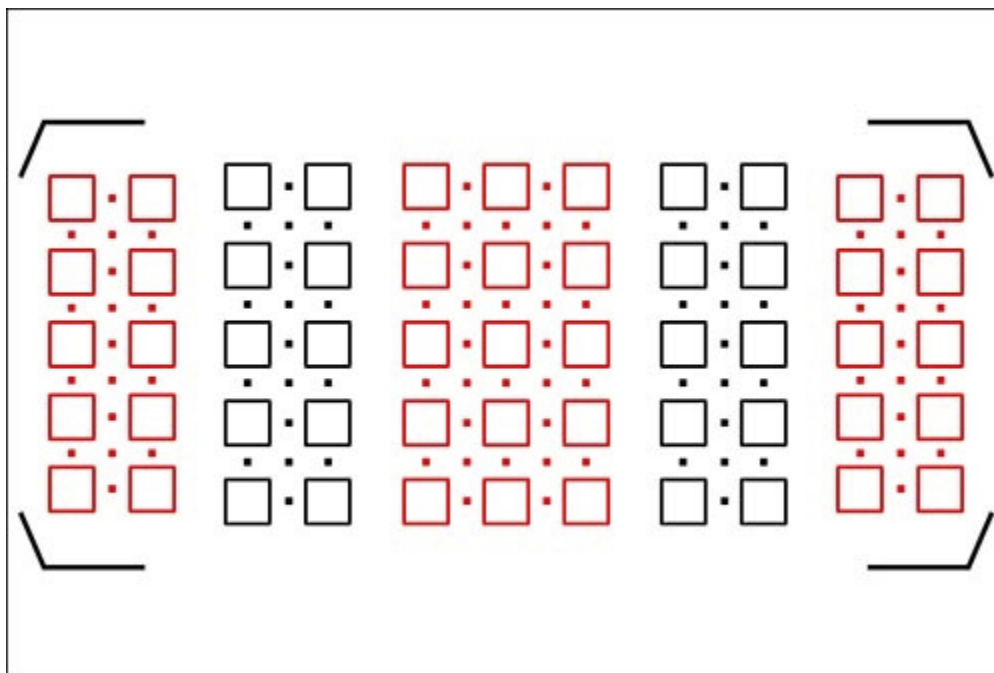


Figure 5.3 - Cross-Type Autofocus Points - The 99 more sensitive cross-type AF Points (35 of which are selectable) are shown here in red, located in the central area and at the left and right of the frame. Note that all of the AF Points will not actually be visible in the

Viewfinder, only the currently active AF Point(s), and only the larger selectable AF Points.

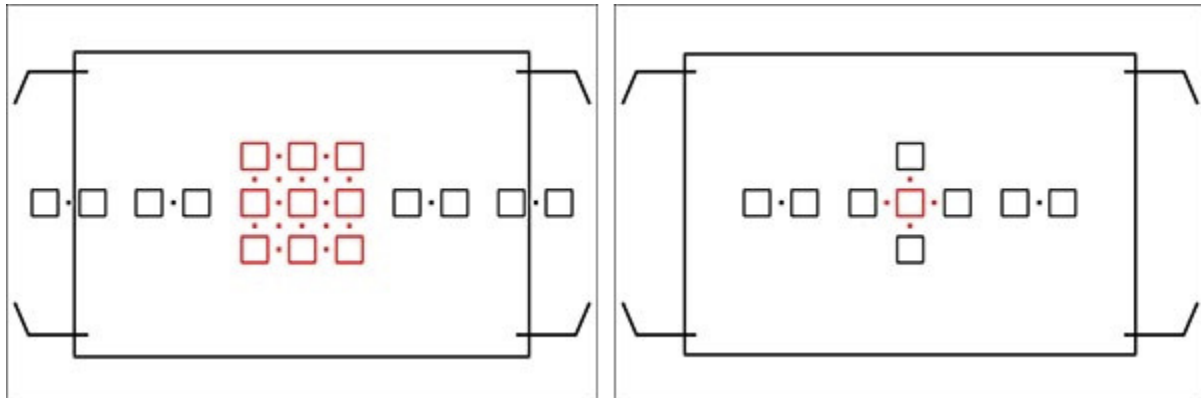


Figure 5.4 - Autofocus Points - Left: When using a lens or lens-teleconverter combination with a maximum aperture between $f/5.6$ and $f/8$, only these AF Points will be available (17 selectable), with the central AF Points indicated in red acting as cross-type points (9 selectable). Right: When using a lens or lens-teleconverter combination with a maximum aperture of $f/8$, only these AF Points will be available (9 selectable), with the central AF Points indicated in red acting as cross-type points (1 selectable).

Autofocusing when working in Live View and Movie Live View works differently, with different Autofocus Modes and AF-Area Modes. This will be explained in the **Live View** chapter.

I will use the term “recompose” a few times throughout the text. By this I mean moving the camera after you have set the focus, such as with a half-press of the Shutter Button or use of the AF-ON Button, but before you fully press the Shutter Button and take the picture. This means that what you see in the Viewfinder changes from when you do those first actions to when you take the picture; you have re-composed the view you see in the Viewfinder.

When discussing autofocusing, I will assume that Custom Setting a8 - *AF Activation* is set for *Shutter/AF-ON*, so that both the Shutter Button and the AF-ON Button can be used to initiate and/or lock autofocus. The exception to this is when I discuss **Back-Button Focusing** and **Trap Focus**, where I will specify that Custom Setting a8 be set for *AF-ON only*, so that only the rear AF-ON Button is used for focusing and not the Shutter Button.

Before diving into the autofocus system, I'll briefly explain how autofocus point selection works. You will manually select your desired autofocus point (also called Focus Point or AF Point) using the Multi Selector thumb pad, as you look through the Viewfinder. If you set Custom Setting f2 - *Multi Selector Center Button* for *Select center focus point*, you can use the central button to quickly select the center AF Point. You can also use the Sub-Selector joystick to select the AF Point. And in Custom Setting f1 - *Custom Control Assignment*, you can assign the Sub-Selector Center press to the *Select center focus point* option so that you can also press this control to select the center AF Point.

Make sure the Focus Selector Lock switch surrounding the Multi Selector thumb pad is *not* set to *L*. Set the Focus-Mode Selector switch, near the base of the lens, to *AF* (see *Figure 5.5*). Make sure the focus mode switch on your lens is also set for autofocus (*A* or *M/A*). If it ever seems that your camera or lens is not autofocusing, be sure to check these two switches - one on the camera body and one on the lens. Press the AF-Mode Button inside the Focus-Mode Selector switch and set the Autofocus Mode to *AF-S* (Single-servo AF) using the rear Main Command Dial, and set the AF-Area Mode to Single-Point AF using the front Sub-Command Dial. Look at the top Control Panel to view the settings as you change them. You will see *AF-S* for the mode, and a large *S* for the area mode.



Figure 5.5 - Additional autofocus controls of the D500.

1. Set the Exposure Mode to P (Program), or to the mode of your choice if you are familiar with them.
2. Tap the Shutter Button with a half-press to wake up the camera and start the exposure metering.
3. Looking through the Viewfinder, use the Multi Selector thumb pad or Sub-Selector joystick to select the Focus Point that is nearest to where you want to focus.
4. Place that point over your intended subject.

5. Press and hold the Shutter Button halfway down and see that point blink red. The Focus Indicator circle should light up in your Viewfinder (at the lower-left). You have locked the focus.

6. Keeping the Shutter Button pressed halfway, recompose if necessary, and take the shot by fully pressing the Shutter Button.

You can also press and hold the AF-ON Button to focus, and then keep it fully pressed as you recompose and then press the Shutter Button to capture the image.

If the Focus Indicator does not light up and the camera does not take the photo, the camera may not be finding something to focus on, may not be finding enough contrast to lock in on, or you may be too close to your subject for the lens to focus.

There are reasons to make use of all the Focus Points and not just the center one all the time, which will be discussed. It may sound difficult to manually select the Focus Point each time, but it is actually very quickly done and will become instinctive. You may even start to set your AF Point as you approach a scene before even bringing your camera to your eye, using your thumb on the Multi Selector or Sub-Selector. For example, press right multiple times so that when you bring the camera to your eye, a far-right AF Point is already selected. But if you wish, you can start by using the center AF Point and recomposing before taking the shot. And remember that Custom Setting a6 - *Number of Focus Points* allows you to limit the number of selectable points to 15 Points to perhaps make this process more manageable at first.

5.2 Autofocus Modes

The D500 has two different Autofocus Modes to choose from, typically depending on if your subject is still, or if it is moving and you wish to track its movement and remain continuously focused on it. It also has several different autofocus AF-Area Modes (discussed in the next section) to specify how many of the Focus Points are active and how they follow or track a moving object. You can set these two functions in various combinations. First the Autofocus Modes. Select the Autofocus Mode by pressing the AF-Mode Button (the button located inside the Focus-Mode Selector switch that says *AF M* on the camera body near the base of the lens) and rotating the rear Main Command Dial while monitoring the settings on the top Control Panel or in the Viewfinder. If the Information Display is on (by first pressing the Info Button), you can also view the settings on the rear Monitor (see *Figure 5.6*).

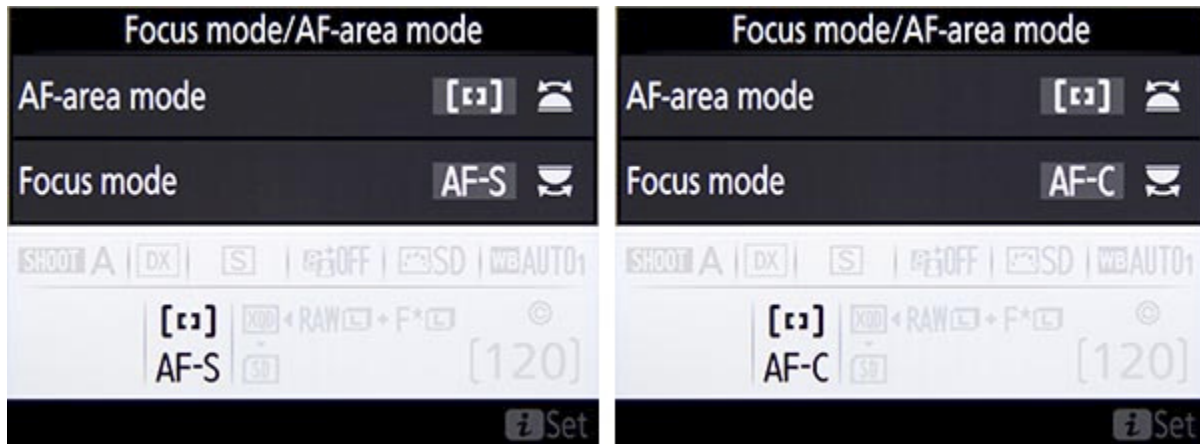


Figure 5.6 - Autofocus Modes, as viewed on the Information Display on the rear LCD Monitor, while changing the settings - Left: AF-S mode. Right: AF-C Mode.

Single-Servo AF (AF-S)

Use this mode when your subject is stationary, or is still and not going to move. It can also be used if your subject is not going to move very much, or if the distance between you and the subject is not going to change between the time you lock focus, recompose, and take the shot. Lock focus on the subject by half-pressing the Shutter Button (or pressing and holding the AF-ON Button) and recompose if necessary. This mode can even be used for moving people or subjects if you quickly take the shot after establishing or locking focus. When using AF-S, you can select from three AF-Area Modes: Single-Point AF where you select the Focus Point, Group-Area AF to select a small group of points, or Auto-Area AF, where the camera selects the AF Point(s) for you. I suggest you nearly always select your own desired Focus Point or Group, so that the camera autofocuses exactly where you want it to.

As noted above, focus on your subject by pressing the Shutter Button halfway. The active AF Point will illuminate (blink), and the Focus Indicator light at the lower left in the Viewfinder will illuminate as well. Continue to press the Shutter Button all the way to take the shot. If you half-press the Shutter Button to lock focus on your subject, the camera will remain focused at that distance as long as you keep half-pressing the Shutter Button. Or you can press and hold the AF-ON Button to lock focus. You can recompose the shot as you wish and then fully press the Shutter Button to take the photo. Again, if the Focus Indicator light does not light up and the camera does not take the photo, the camera may not be finding enough contrast to focus on, you may be too close to your subject for the lens to focus, or the lighting may be too dim for the AF system to work well.

However, if you are photographing a subject that is approaching or receding from view at a relatively constant rate, or photographing fast or erratic or unpredictably moving subjects, or photographing sports, action, or wildlife you will usually want to use Continuous-Servo AF (AF-C) Autofocus Mode.

Continuous-Servo AF (AF-C)

This mode, used in conjunction with the various AF-Area Modes, can help you to capture images of action and motion (see *Figure 5.7*). To take full advantage of this mode you will need to also understand the AF-Area Modes, as described in the **Autofocus AF-Area Modes** section just below. Continuous-Servo AF mode is used to track and maintain continuous focus on moving subjects, and is ideal for capturing sports and wildlife including birds. If the subject is moving towards you or away from you, the camera will keep evaluating the focus distance. And if the subject is moving from side to side or throughout the frame, the camera can track it as it passes from one AF Point to other ones (depending on the selected AF-Area Mode). Custom Setting a3 - *Focus tracking with lock-on > Blocked shot AF response* will even allow you to tell the camera exactly how fast to react to changes in focus distance, such as new subjects that come into the frame or that pass between you and your subject. And the *Subject motion* item of this menu will enable you to tell the camera to expect *Steady* or *Erratic* subject motion.



Figure 5.7 - Continuous-Servo (AF-C) Autofocus Mode can be used to track and retain focus on a moving subject, such as this egret in flight. Snowy Egret Over the Water, Ritch Grissom Wetlands near Viera, Florida. (c) Steve Perry, www.backcountrygallery.com. Nikon D500, Shutter speed 1/4000, Aperture f/6.3, ISO 800.

You first need to select which Focus Point the camera uses to start tracking the subject, place that point over the subject, and press the Shutter Button half-way. Or you can press and hold the AF-ON Button. Then as long as you keep the selected AF Point on the subject and the Shutter Button pressed half-way or the AF-ON Button pressed, the camera will continuously evaluate the focus distance so that the subject will be in focus when the shot is taken. If the subject is going to be difficult to follow or keep located as a single AF Point, you can use Group-Area AF so that five selectable AF Points (along with adjacent assist points) work together to focus, sort of like a very large AF Point. Or you can make use of the *Dynamic-Area AF* Area Modes so that some or all of the surrounding points will help retain focus if the subject moves away from the selected Focus Point. If the subject will be moving across your field of view as you keep the camera relatively still, you can make use of the 3D-Tracking mode. The Focus Indicator light in the Viewfinder will illuminate when using AF-C mode when the subject is in focus, or the triangles surrounding the Focus Indicator dot will illuminate to show that focusing operation is in progress.

This subject tracking of AF-C will even work in conjunction with continuous shooting. If you keep the Shutter Button fully pressed and continue to take photos, even at 10 frames per second, the camera will (ideally) keep focusing on the moving subject. As you can imagine, this is effective for tracking a player running across a field, a dog running toward you, a toddler in action, or a bird moving across the frame. Note that when shooting with Continuous High Speed, not every shot may be in sharp focus as the camera sometimes can't keep up and accurately predict the subject's speed or location. But you should be able to capture more sharp images than previously possible with an older camera.

As you will see, when using AF-C mode your compositions will be partially dictated by the positions of the autofocus points in your Viewfinder. The subject needs to be at one of these AF Points in order for the camera to maintain focus on it. That is why making use of all 153 Focus Points is important with moving subjects. And also why in certain situations, when your subject is located away from the Focus Points as viewed in the Viewfinder, becoming skilled at quickly focusing and recomposing using AF-S mode - even for action scenes - will sometimes give you more ability to control your compositions. (Though with the wide coverage of the AF Points in the D500 Viewfinder, this may rarely be necessary.)

While other Nikon models have an AF-A Autofocus Mode that automatically switches from AF-S to AF-C if a still subject starts moving, the D500 does not offer this option. However, switching between AF-S and AF-C is sometimes useful, such as photographing a still bird that suddenly takes flight. In this type of situation, you will not have a chance to switch your camera from AF-S to AF-C. The solution to this is to use AF-C and back-button focusing (which will be fully explained in the **Back Button Focusing** section of Chapter 5). This is sometimes also referred to as AF-ON Button Focusing. To do this, assign Custom Setting a8 - *AF activation* to the *AF-ON only* setting, which means the Shutter Button will no longer perform any autofocusing functions, only the AF-ON Button will (see *Figure 5.8 - left*). When choosing this *AF-ON*

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Douglas Klostermann is a travel, culture, and humanitarian photographer, as well as the author and publisher of *Full Stop* e-book camera guides including the best-selling *Nikon D750 Experience* and *Nikon D810 Experience*. He has photographed for numerous organizations in the United States and Latin America, been recognized by the *United Nations Development Programme* for his humanitarian photography, and been published in magazines, books, and websites including *Conde Nast Traveler*, *Sherman's Travel*, *NationalGeographic.org*, *South American Explorer*, and *Viva Travel Guides*. Doug is a member of the North American Nature Photography Association (NANPA).

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